City of Aurora Public Works Department

BUILDING PERMIT APPLICATION

Building Division • 15151 E. Alameda Parkway, Ste 2400 • Aurora, CO 80012 • 303-739-7420 • Fax: 303-739-7412
Email: ***permitcounter@auroragov.org***

Project Address 1444 S Patomac st.		**Unit #** 170
Project Name: Dr. Barker		
Contractor Company Name FAS	**Phone** 3-466-8800	**Fax** 3-466-8820
Contact Person Clay Mullens	**Phone** 7-260-6600	
Email claym@fasonline.cc		**Fax**
Architect and/or Engineer Contact information for correction items		
Architect or Engineer name Ware Malcomb	**Email**	
Phone 7-488-2626	**Fax**	
Owner (Required for Certificate of Occupancy) only Dr. Barker		
Owner address		
Email		
Valuation / FDA:$ 2050 — JW	**Materials Cost: $** 800 —	

FDA = Fee Determination Assessment. (Also known as the value of project) has no relationship to the construction costs for the building which can vary greatly. Rather, The assessment is used only to determine the appropriate level of fees to fund our code compliance activities.

Describe The Work You Will Be Doing: relocate one horn strobe.
install 2 horn strobes

I declare under penalty that this application has been examined by me and that the statements made herein are made in good faith pursuant to City of Aurora tax and licensing regulations; and to the best of my knowledge and belief are true, correct and complete.

Print Name Gabriel Young **Signature** Gabriel Young **Date** 5-27-16

BOARD OF APPEALS: Contractor's Appeals and Standards Board. Applicants have the right to have the board hear appeals of orders, decisions or determinations made by the building official relative to the application and interpretation of the building code. Any application for appeal to the board shall be based on a claim that the true intent of the code or the rules legally adopted there under have been incorrectly interpreted, the provisions of the building code do not fully apply or an equally good or better form of construction is proposed.

THIS SPACE FOR OFFICE USE ONLY

Fee Determination Assessment: $ _____

Change of occupancy/use: ☐ Yes ☒ No

REVIEWS
- ☐ Structural
- ☐ Mechanical
- ☐ Plumbing
- ☐ Electrical
- ☐ Fire-Life Safety
- ☐ Building Life Safety

INSPECTIONS
- ☐ Structural
- ☐ Mechanical
- ☐ Plumbing
- ☐ Electrical
- ☒ Life Safety
- ☐ Gate/Hazard

Intake Date: 5-27-16 LT

Balance Due: $ _____

PRE APPROVAL Initial — ☐ Zoning ☐ Water
Exterior changes? ☐ Yes ☒ No
Homeowner verified: ☐ Yes ☒ No
Permit Type: LT
Mid roof / Ave Bldg Height: —
Parent Permit RSN: 1108364
Plans Examiner: JW
Subtype: Fire Alarm
RSN: 1117102

Plans Picked Up By: _____
Company Name: _____
Phone Number _____

APPROVED
City of Aurora Building Division
JW 5-27-16

Fire Alarm Services, Inc.
4800 W. 60th Avenue
Arvada, CO 80003

Phone (303) 466-8800
Fax (303) 466-8820

Fire Alarm System Addition at:

Project: Dr. Barker
Aurora Medical Center
1444 South Potomac St., Suite 170
Aurora, CO 80012

Scope of Work:

1. Relocate one (1) existing horn strobe.
2. Provide and install two (2) horn strobes.

Steven Sprague
NICET Fire Alarm Systems
Level III
Certification #137416
Date: 5-25-16

Overview

The Genesis line of signals are among the smallest, most compact audible-visible emergency signaling devices in the world. About the size of a deck of playing cards, these devices are designed to blend with any decor.

Thanks to patented breakthrough technology, GE Security Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the minimum UL-required "T" pattern, significantly exceeding UL-1971 and ULC-S526 light distribution requirements.

Genesis strobes and horn-strobes offer 15 to 110 candela output, which is selectable with a conveniently-located switch on the side of the device. Models are also available that offer fixed 15/75 cd output. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

Genesis signals feature textured housings in architecturally neutral white or traditional fire red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak. Models with "FIRE" markings are also available.

Standard Features

- Unique low-profile design
  - The most compact UL-1971/ULC-S526 listed strobe available
  - Ultra-slim – protrudes less than one inch
  - Attractive appearance
  - No visible mounting screws
- Four field-configurable options in one device
  - Select 15, 30, 75, or 110 cd strobe output
  - Select high (default) or low dB horn output
  - Select temporal (default) or steady horn output
  - Select public mode flash rate (default) or private mode temporal flash
- **Fixed 15/75 cd model available**
- **Easy to install**
  - Fits standard 1-gang electrical boxes – no trim plate needed
  - Optional trim plate accommodates oversized openings
  - Pre-assembled with captive hardware
  - #12 AWG terminals – ideal for long runs or existing wiring
- **Unparalleled performance**
  - Industry's most even light distribution
  - Meets tough synchronizing standards for strobes
  - Single microprocessor controls both horn and strobe
  - Low current draw minimizes system overhead
  - Independent horn control over a single pair of wires
  - Highly regulated in-rush current
  - Multiple frequency tone improves sound penetration
  - Industry's first temporal strobe output

Field Configurable
Horns and Strobes
Genesis Series

Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA)*.

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices.

Strobes

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed specified levels, where occupants use hearing protection, and in areas of public accommodation. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes exceed UL synchronization requirements (within 10 milliseconds other over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

NOTE: The flash intensity of some visible signals may not be adequate to alert or waken occupants in the protected area. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. GE Security recommends that strobes in sleeping rooms be rated at at least 110 cd.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

Horns

Genesis horn output reaches as high as 99 dB and features a unique multiple frequency tone that results in excellent sound penetration and an unmistakable warning of danger. Horns may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB. Horn-only models may be ceiling-mounted or wall-mounted.

The suggested sound pressure level for each signaling zone used with alert or alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

Installation

Genesis horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional trim plates are used to cover oversized openings and can accommodate one-gang, two-gang, four-inch square, or octagonal boxes, and European 100 mm square.

Genesis Horn/Strobe with optional trim plate

All Genesis signals come pre-assembled with captive mounting screws for easy installation. Two tabs at the top of the signal unlock the cover to reveal the mounting hardware. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a **three-pulse temporal pattern**. Units may be configured for use with coded systems by cutting a jumper on the circuit board. This results in a **steady output** that can be turned on and off (coded) as the system applies and removes power to the signal circuit. A Genesis Signal Master is required when horn-strobe models are configured for coded systems. Non-temporal, horn-only models sound a steady tone.

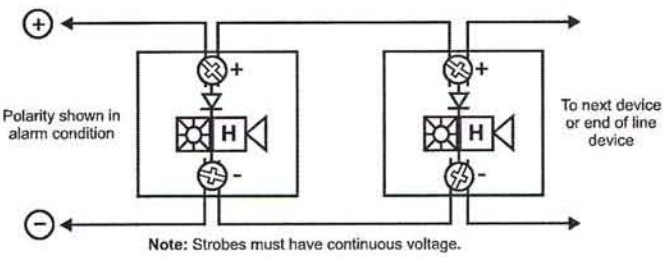
Genesis strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

Genesis strobes and horn-strobes may be set for **15, 30, 75, or 110 candela output**. The output setting is changed by simply opening the device and sliding the switch to the desired setting. The device does not have to be removed to change the output setting. The setting remains visible through a small window on the side of the device after the cover is closed.

Horns and horn-strobes are factory set for **high dB output**. **Low dB output** may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horns, strobes, and combination horn-strobes are interconnected with a single pair of wires as shown below.



Note: Strobes must have continuous voltage.

Current Draw

Strobes, Horn-Strobes

Multi-cd Wall Strobes (G1-VM)

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	103	141	152	255	311
16 Vfwr	125	179	224	346	392

*G1-VM multi-cd; **G1F-V1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	85	79	127	124	150	140	245	243	285	283
20 Vdc	71	66	98	96	123	114	188	186	240	238
24 Vdc	59	55	82	80	104	97	152	150	191	190
33 Vdc	46	44	64	63	84	77	112	111	137	136
16 Vfwr	119	64	169	97	223	126	332	203	376	240
20 Vfwr	103	51	143	76	189	100	253	150	331	198
24 Vfwr	94	44	129	65	169	85	218	121	262	152
33 Vfwr	87	37	112	52	148	68	179	89	205	106

Wall Temporal Horn-strobes – High dB Setting

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	129	167	172	281	337
16 Vfwr	176	230	269	397	443

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	102	89	135	129	160	152	246	242	309	305
20 Vdc	88	77	109	104	137	129	193	190	248	243
24 Vdc	81	71	94	90	122	114	161	158	203	200
33 Vdc	74	64	72	74	106	98	124	121	154	151
16 Vfwr	144	77	182	106	247	143	352	212	393	249
20 Vfwr	141	68	162	87	220	120	274	158	362	210
24 Vfwr	136	65	152	76	203	106	235	133	282	165
33 Vfwr	125	54	144	65	196	94	201	101	232	123

Wall Temporal Horn-strobes – Low dB Setting

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	122	160	146	274	330
16 Vfwr	162	216	231	383	429

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	96	84	130	124	158	149	243	240	302	297
20 Vdc	79	70	104	99	133	124	189	186	241	237
24 Vdc	68	61	88	84	119	110	156	154	197	193
33 Vdc	56	52	71	68	100	93	118	116	146	143
16 Vfwr	128	69	180	104	241	139	344	204	389	244
20 Vfwr	118	60	157	84	213	115	266	156	343	200
24 Vfwr	113	54	144	74	195	101	230	128	279	161
33 Vfwr	112	48	137	64	182	87	197	99	226	117

Horns

Wall or Ceiling Mounted Temporal Horns (G1-HD)

UL Rating	High dB (RMS)	Low dB (RMS)
16 Vdc	26	19
24 Vdc	36	27
33 Vdc	41	33
16 Vfwr	51	37
24 Vfwr	69	52
33 Vfwr	76	70

Typical Current	High dB		Low dB	
	RMS	Mean	RMS	Mean
16 Vdc	22	17	17	14
20 Vdc	24	19	19	16
24 Vdc	27	21	22	18
33 Vdc	32	25	26	22
16 Vfwr	34	15	30	14
20 Vfwr	40	19	34	16
24 Vfwr	45	21	38	18
33 Vfwr	52	24	47	22

Wall or Ceiling Mounted Horns (G1-P)

UL Designation	Voltage Range	Max. Current, RMS
Regulated 24 Vdc	16 - 33 Vdc	13 mA
24 fwr	16 - 33 Vfwr	11 mA

Typical Current	RMS	Mean
24 Vdc	10	10
24 Vdc	11	11
31 Vdc	12	12
20 Vfwr	9	8
24 Vfwr	10	9

Notes and Comments

1. Current values are shown in mA.
2. UL Nameplate Rating can vary from Typical Current due to measurement methods and instruments used.
3. GE Security recommends using the Typical Current for system design including NAC and Power Supply loading and voltage drop calculations.
4. Use the Vdc RMS current ratings for filtered power supply and battery AH calculations. Use the Vfwr RMS current ratings for unfiltered power supply calculations.
5. Fuses, circuit breakers and other overcurrent protection devices are typically rated for current in RMS values. Most of these devices operate based upon the heating affect of the current flowing through the device. The RMS current (not the mean current) determines the heating affect and therefore, the trip and hold threshold for those devices.
6. Our industry has used 'mean' currents over the years. However, UL will direct the industry to use the 2004 RMS values in the future.

dBA output

Temporal Horns, Horn-strobes (G1-HD, G1-HDVM series)

High dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	81.4	85.5	91.4	94.2
24 Vdc	84.4	88.6	94.5	97.6
33 Vdc	86.3	90.4	96.9	99.5

Low dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	76.0	80.1	86.3	89.2
24 Vdc	79.4	83.5	89.8	92.5
33 Vdc	82.1	86.5	92.5	95.3

Steady Tone Horns (G1-P series)

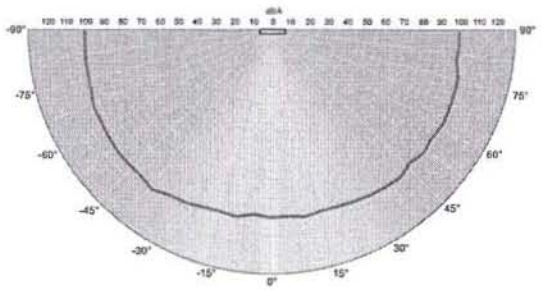
	UL464	Average	Peak
16 Vdc	77 dBA, min	85 dBA	91 dBA
16 Vfwr	77 dBA, min	85 dBA	91 dBA

Notes

1. All values shown are dBA measured at 10 feet (3.01m).
2. UL464 values measured in reverberation room.
3. Average and Peak values are measured in anechoic chamber.

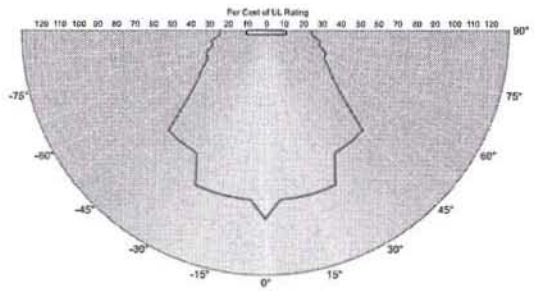
Average Sound Output (dBA)

(High dB setting, anechoic, 24V, measured at 10ft)



Light output - (effective cd)

Percent of UL rating versus angle



ˈcifications

Housing	Red or white textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating.
Lens	Optical grade polycarbonate (clear)
Mounting (indoor only)	Strobes and horn-strobes are for wall-mount installation only. Horn-only models may be ceiling- or wall-mounted. Flush mount: 2½ inch (64 mm) deep one-gang box Surface mount: Model 27193 surface mount box, wiremold box, or equivalent surface-mount box With optional trim plate: One-gang, two-gang, four-inch square, octagonal, or European single-gang box
Wire connections	Screw terminals: single input for both horn and strobe. #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	Indoor only: 32-120°F (0-49°C) ambient temperature. 93% relative humidity
Agency listings/approvals	UL 1971, UL 1638, UL 464, ULC S525, ULC S526, CSFM, CE, FCC, MEA (FM pending). (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)
Dimensions (HxWxD)	Signal: 4-1/2" x 2-3/4" x 13/16" (113 mm x 68 mm x 21 mm) Trimplate: 5" (127 mm); Height – 5-7/8" (149 mm); Depth – ½" (13 mm)
Operating voltage	G1-HD series temporal-tone horns: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded when horn set to steady tone) G1-HDVM series temporal-tone horn-strobes: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded (audible NAC only) when used with optional G1M Genesis Signal Master) G1-VM series strobes: non-coded, filtered 16 - 33 Vdc or unfiltered 16-33 Vdc FWR G1-P series steady-tone horns: coded or non-coded, filtered 20-31 Vdc or unfiltered 20-27 Vfwr
Strobe output rating	UL 1971, UL 1638, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Strobe flash rate	G1-VM strobes and G1-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) Temporal setting (private mode only): synchronized to temporal output of horns on same circuit
Synchronization Sources	G1M, G1M-RM, SIGA-CC1S, SIGA-MCC1S, BPS6A, BPS10A
ˈ ˥ pulse rate	G1-HD temporal-tone horns and G1-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) G1-P steady-tone horns: continuous, steady tone only
Temporal audible pattern	½ sec ON, ½ sec OFF, ½ sec ON, ½ sec OFF, ½ sec ON, 1½ sec OFF, then repeat cycle

Ordering Information

Catalog Number		Description	Ship Wt. lbs (kg)
White Finish	Red Finish		
G1-HDVM	G1R-HDVM	Genesis Horn-Strobe (selectable 15, 30, 75, or 110 cd output, selectable high/low dB output)	0.25 (0.11)
G1-VM	G1R-VM	Genesis Strobe (selectable 15, 30, 75, or 110 cd output)	
G1-HD	G1R-HD	Genesis Temporal Horn (selectable high/low dB output)	
G1-P	G1R-P	Genesis Steady Horn (not compatible with Genesis Signal Master)	
G1F-HDVM	G1RF-HDVM	Genesis Horn-Strobe (selectable 15, 30, 75, or 110 cd output, selectable high/low dB output) – with "FIRE" marking	
G1F-VM	G1RF-VM	Genesis Strobe (selectable 15, 30, 75, or 110 cd output) – with "FIRE" marking	
G1F-HD	G1RF-HD	Genesis Temporal Horn (selectable high/low dB output) – with "FIRE" marking	
G1F-P	G1RF-P	Genesis Steady Horn with "FIRE" marking (not compatible with Genesis Signal Master)	
G1F-HDV1575	G1RF-HDV1575	15/75 cd temporal horn-strobe, hi/lo dB-24V – with "FIRE" marking (see note 1)	
G1F-V1575	G1RF-V1575	15/75 cd strobe – with "FIRE" marking (see note 1)	
Mounting Accessories			
G1T	G1RT	Genesis Trim Plate (for two-gang or 4" square boxes)	0.15 (0.7)
G1T-FIRE	G1RT-FIRE	Genesis Trim Plate (for two-gang or 4" square boxes) with "FIRE" markings	0.15 (0.7)
27193-16	27193-11	One-gang surface mount box	1 (0.4)
Synchronization Modules			
G1M		Genesis Signal Master – Snap-on Mount	0.2 (0.1)
G1M-RM		Genesis Signal Master – Remote Mount (1-gang)	
SIGA-CC1S		Intelligent Synchronization Output Module (2-gang)	0.5 (0.23)
SIGA-MCC1S		Intelligent Synchronization Output Module (Plug-in UIO)	0.18 (0.08)

Note 1: These 15/75 cd models provide fixed output and are not multi-candela devices. The 15 cd output component complies with UL1971, while the 75 cd output component complies with UL 1638.

Genesis Horn-Strobes may be ordered in red or white, with or without 'FIRE' marking. Order matching trim plates separately.

GE
Security

T 888-378-2329
F 866-503-3996

Canada
T 519 376 2430
F 519 376 7258

Asia
T 852 2907 8108
F 852 2142 5063

Australia
T 61 3 9259 4700
F 61 3 9259 4799

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T 32 2 725 11 20
F 32 2 721 86 13

Latin America
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F 305 593 4300

www.gesecurity.com/est

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imagination at work

AURORA MEDICAL CENTER

FIRE ALARM SYSTEM
SHOP DRAWINGS FOR:

BUILDING CLASSIFICATIONS AND CODES

OCCUPANCY GROUP:	I-2
USE:	MEDICAL OFFICE BUILDING
CONSTRUCTION TYPE:	TYPE-IA
STORIES:	BASEMENT + 3 FLOORS
SPRINKLERED:	FULLY
REQUIREMENTS:	MODIFIED PER 2015 IFC
CODES:	2015 IFC 2015 IBC 2015 IMC 2013 NFPA 72 2014 NFPA 70

SYSTEM TYPE AND MONITORING

SYSTEM CLASSIFICATION:	(NFPA 72, CHAPTER 26), REMOTE STATION
SYSTEM TYPE:	CONVENTIONAL
WIRING CLASSIFICATION:	NAC – CLASS B IDC – CLASS B COMMUNICATION RISER – CLASS A
NOTIFICATION TYPE:	TEMPORAL PATTERN
MONITORING:	THIS SYSTEM IS AND WILL CONTINUE TO BE MONITORED BY A REMOTE SUPERVISING STATION, PER NFPA 72 CHAPTER 26, SECTION 2.
MONITORING COMPANY:	TMS 1-800-662-1711
MONITORING ACCOUNT:	A21-0952

DRAWING INFORMATION

FAS WORK ORDER #:	16011202
FAS CAD FILE:	16011202FA-00.dwg

SCOPE OF WORK

1. RELOCATE ONE (1) EXISTING HORN STROBE.
2. PROVIDE AND INSTALL TWO (2) HORN STROBES.

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- KEY MAP
- WIRE COLOR CODE CHART

FA-02 RISER/CALCULATIONS/SEQUENCE
- ONE-LINE RISER DIAGRAM
- VOLTAGE CALC
- BATTERY CALC
- SEQUENCE OF OPERATIONS MATRIX

PROJECT:
DR. BARKER
1444 SOUTH POTOMAC ST.
AURORA, CO 80012

ELECTRICAL CONTRACTOR:
FIRE ALARM SERVICES, INC.
4800 W. 60TH AVENUE
ARVADA, CO 80003
PH:(303)466-8800
FAX:(303)466-8820
SHANNON SMITH

FIRE ALARM DESIGNER:
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4800 W. 60TH AVENUE
ARVADA, CO 80003
PH:(303)466-8800
FAX:(303)466-8820

Fire Alarm SERVICES, INC.

Fire Alarm Services, Inc.
4800 W. 60th Avenue
Arvada, CO 80003

(303)466-8800 (Phone)
(303)466-8820 (Fax)
contactus@fasonline.cc (E-Mail)
www.fasonline.cc

GENERAL CONTRACTOR:
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15350 E. HINSDALE DR., STE. C
CENTENNIAL, CO 80112
PH:(720)273-7470
FAX:(720)489-8228
DANA MARTIN

ARCHITECT
WARE MALCOMB
1600 CHAMPA STREET, SUITE 350
DENVER, CO 80202
PH:(720)488-2626
JAN DAVIS

GENERAL NOTES

1. FIRE ALARM SYSTEMS CANNOT BE COMBINED WITH BURGLAR ALARM SYSTEMS.
2. THE INSTALLER IS REQUIRED TO COORDINATE WITH THE MECHANICAL CONTRACTOR TO DETERMINE INSTALLATION OF SMOKE DETECTORS OR SENSORS (I.E., NOT CLOSER THAN 3 FEET FROM ANY SUPPLY/RETURN DIFFUSER AND THAT ADDITIONAL DETECTION MAY BE REQUIRED DUE TO THE RELOCATION OR SPACING ADJUSTMENT OF DETECTORS, AS A RESULT).
3. FIRE ALARM DEVICES MUST BE PLACED IN PROTECTED AREAS WITH AMBIENT TEMPERATURE RANGING FROM 32 DEGREES TO 120 DEGREES F.
4. DO NOT PLACE SMOKE DETECTORS WITHIN 3 FEET OF AIR SUPPLY REGISTERS AND DIFFUSERS.
5. FIRE ALARM SYSTEM SHALL BE MONITORED BY A CLASS 1 CENTRAL STATION.
6. FIRE ALARM CONTROL PANEL WILL BE PLACED IN THE LOCATION SPECIFIED WITHIN THE PLAN SUBMITTAL UNLESS APPROVED BY THE LIFE SAFETY FIELD INSPECTOR.
7. CITY OF AURORA BUILDING CODES DIVISION DOES NOT GRANT APPROVAL FOR ANY VIOLATIONS OF ADOPTED FIRE CODE. CODE VIOLATIONS UNCOVERED DURING FIELD INPECTIONS MUST BE CORRECTED.
8. PER THE 2009 IFC AND THE 2005 NEC THE INSTALLER MUST REQUEST A ROUGH WIRING INSPECTION ON THE FIRE ALARM SYSTEM PRIOR TO REQUESTING A FIRE ALARM FINAL INSPECTION.
9. THE CONTRACTOR SHALL CONDUCT A "PRE-TEST" OF THE PROJECT AREA PRIOR TO SCHEDULING AN ACCEPTANCE TEST WITH THE BUILDING CODES DIVISION.
10. REMOTE ALARM INDICATORS SHALL BE PROVIDED FOR ANY FIRE ALARM DETECTOR LOCATED IN A CONCEALED LOCATION WITH A NORMALLY LOCKED DOOR.
11. AT THE TIME OF FINAL FIRE ALARM INSPECTION, THE SYSTEM MUST BE SUPERVISED/MONITORED BY A CLASS 1 CENTRAL MONITORING AGENCY.
12. THE INSTALLING CONTRACTOR (OR DESIGNEE) MUST PROVIDE ALL NECESSARY TESTING EQUIPMENT AND PERORM ALL TESTING REQUIRED BY THE LIFE SAFETY FIELD INSPECTOR.
13. IN-DUCT SMOKE DETECTORS INSTALLED IN CONCEALED LOCATIONS OR, WHERE THE DETECTORS ALARM INDICATOR IS NOT READILY VISIBLE TO RESPONDING PERSONNEL SHALL BE PROVIDED WITH A REMOTE INDICATOR, REMOTE TEST STATION AND PLACARDING.
14. ALL NEW OR EXISTING FIRE ALARM SYSTEMS MUST BE CONNECTED TO ANY EXTERIOR HORN AND STROBE DEVICE. IF THE BUILDING IS FIRE SPRINKLED, A GENERAL ALARM ACTIVATION AT THE FIRE ALARM CONTROL PANEL WILL ACTIVATE THE EXTERIOR HORN AND STROBE. SILENCING THE PANEL MUST ALLOW THE VISUAL DEVICE TO CONTINUE UNTIL THE PANEL IS RESET.
15. FIRE ALARM SYSTEMS SHALL INCLUDE BOTH AUDIBLE AND VISUAL ALARMS. VISUAL ALARMS WILL BE REQUIRED IN ALL ACCESSIBLE PUBLIC AND COMMON- USE AREAS PER THE 2009 IFC AND THE 2003 ANSI A117.1 STANDARD.
16. PROVIDE A PRIMARY AND SECONDARY POWER SUPPLY FOR THE FIRE ALARM SYSTEM PER THE 2009 IFC, SECTION 907.5 AND THE 2007 NFPA 72.

CI APPROVED
City of Aurora Building Division
WEH 5-27-16

Steven Sprague
NICET Fire Alarm Systems
Level III
Certification #137416
Date: 5-26-16

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REVISIONS

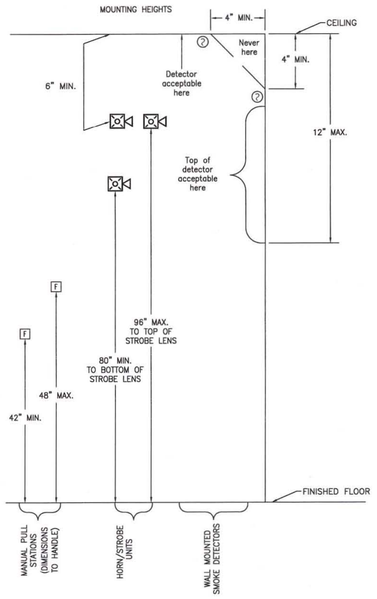
NO.	DATE

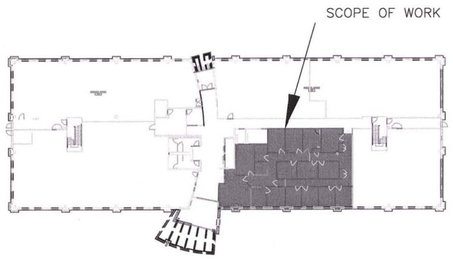
DRAWN BY: J. MCCLURE
DATE: 5/24/16
APPR. BY:
DATE:

PROJECT TITLE: FIRE ALARM SYSTEM TENANT FINISH FOR: DR. BARKER
BUILDING NAME & ADDRESS: AURORA MEDICAL CENTER 1444 SOUTH POTOMAC ST, SUITE 170 AURORA, CO 80016
PROJECT NUMBER: 16011202

FIRE ALARM & DETECTION SYSTEM
DRAWING TITLE: 1ST FLOOR COVER PAGE
SCALE: N/A

PROJECT SHEET TITLE
FA-00





KEY MAP
SCALE: NOT TO SCALE
NORTH

GENERAL NOTES:

1. THE CEILING IS A TYPICAL 9' A.F.F. DROPPED CEILING WITH NO SLOPES.

FIRE ALARM WIRE COLOR CODE CHART				
Code	Description	Wire Type	Color (+)	Color (–)
AC	120VAC Power Wiring	3#12 AWG Solid (w/ Green Ground)	Black (hot)	White (neu)
A	Annunciator Wiring	#18 AWG Twisted/Shielded Pair	Red	Black
D	Door Holder Wiring	2#14 AWG Solid	Red	Black
L	SLC Wiring (Signaling Line Circuit)	2#18 AWG Solid	Red	Black
P	24VDC Power Wiring	2#16 AWG Solid	Red	Black
R	Remote Light/Test Wiring	2#18 AWG Solid	Red	Black
S	Notification Appliance (Horns) Wiring	2 or 4#14 AWG Solid	Red	Black
S	Notification Appliance (Speaker) Wiring	2#16 AWG Twisted/Shielded Pair	Red	Black
T	Telephone Circuit Wiring	2#16 AWG Twisted/Shielded Pair	Red	Black
V	Notification Appliance (Strobe) Wiring	2 or 4#14 AWG Solid	Red	Black
X	Auxiliary Circuit (Relay) Wiring	2#14 AWG Solid	Red	Black
Z	IDC Wiring (Initiating Device Circuit)	2#18 AWG Solid	Red	Black
WIRE TYPE CLASS & STYLE	IDC – CLASS B	NAC – CLASS B		

FIRE ALARM SYMBOLS LEGEND

EXISTING	DESCRIPTION	PROPOSED
	STROBE – Wall Mount or CM = Ceiling Mount	
$?_X$	SMOKE DETECTOR – x = photo, ion	$?_X$
	HORN STROBE – Wall Mount or CM = Ceiling Mount	
	HORN = Wall Mount or CM = Ceiling Mount	
EOLR	END OF LINE RESISTOR	EOLR
BSTR	BOOSTER PANEL	BSTR
F	PULL STATION	F
$\downarrow_X$	HEAT DETECTOR – x =135, 200, ROR	$\downarrow_X$
TS	TAMPER SWITCH	TS
FS	FLOW SWITCH	FS
$(?)_X$	DUCT DETECTOR – x = photo, ion	$(?)_X$

NOTIFICATION APPLIANCE CIRCUIT NUMBER
NOTIFICATION APPLIANCE PANEL NUMBER
DEVICE NUMBER

NAC1-2-3

POWER EXPANDER NUMBERING

RL = RELOCATED DEVICES
RR = REMOVE AND REINSTALL
J = J-BOX

1ST FLOOR FIRE ALARM PLAN

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

NORTH 0 5 10 15 30 FEET

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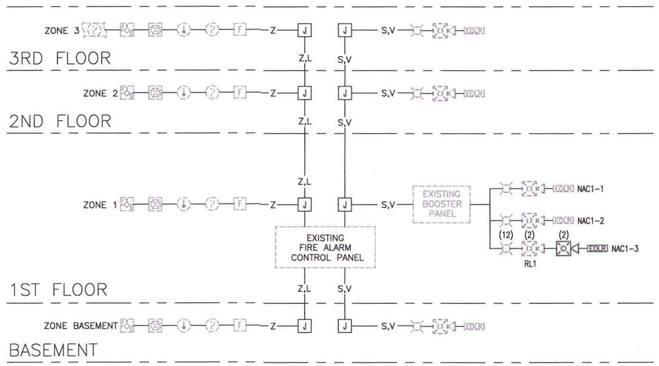
BUILDING NAME & ADDRESS: AURORA MEDICAL CENTER 1444 SOUTH POTOMAC ST. DENVER, CO 80202
PROJECT NUMBER: 16011202

FIRE ALARM & DETECTION SYSTEM
DRAWING TITLE: 1ST FLOOR FIRE ALARM PLAN
SCALE: AS SHOWN

PROJECT SHEET TITLE
FA–01



ONE-LINE RISER DIAGRAM

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS
MINIMUM UL RATED VOLTAGE: 16 VOLTS
Current shown in calculations is RMS current at 16 volts.

Resistance	12 Gauge	2.01
	14 Gauge	3.19
	16 Gauge	5.08

Circuit Number: NAC1-3
Location: 1ST FLOOR BOOSTER PANEL — INPUT VOLTAGE = 20.4 VOLTS

Notification Circuit	Current (in amps)	Wire Distance (in feet)	Total Distance (in feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
Horn/Strobe 15CD	0.129	52	52	14	0.3318	0.5388	19.8612
Strobe 15CD	0.103	47	99	14	0.2999	0.4870	19.3742
Strobe 15CD	0.103	13	112	14	0.0829	0.1262	19.2481
Horn/Strobe 15CD	**0.129**	**30**	**142**	**14**	**0.1914**	**0.2714**	**18.9767**
Strobe 15CD	0.103	25	167	14	0.1595	0.2056	18.7711
Strobe 15CD	0.103	21	188	14	0.1340	0.1589	18.6122
Horn/Strobe 15CD	0.129	22	210	14	0.1404	0.1520	18.4602
Strobe 15CD	0.103	27	237	14	0.1723	0.1643	18.2959
Strobe 15CD	0.103	23	260	14	0.1467	0.1249	18.1710
Strobe 15CD	0.103	21	281	14	0.1340	0.1002	18.0708
Strobe 15CD	0.103	18	299	14	0.1148	0.0741	17.9967
Horn/Strobe 15CD	**0.129**	**17**	**316**	**14**	**0.1085**	**0.0588**	**17.9379**
Strobe 15CD	0.103	18	334	14	0.1148	0.0474	17.8905
Strobe 15CD	0.103	36	370	14	0.2297	0.0712	17.8193
Strobe 15CD	0.103	19	389	14	0.1212	0.0251	17.7942
Strobe 15CD	0.103	25	414	14	0.1595	0.0166	17.7776
End of Line Resistor	0.001	0	414	14	0.0000	0.0000	17.7776
Totals:	**1.753**	**414**			**2.6413**	**2.6224**	**17.7776**
Total Devices:							

1444 S. POTOMAC BUILDING SEQUENCE OF OPERATIONS

SYSTEM OUTPUTS

	SYSTEM INPUTS	FACP Annunciation: A Actuate Common Alarm Signal Indicator	B Actuate Audible Alarm Signal	C Actuate Common Supervisory Signal Indicator	D Actuate Audible Supervisory Signal	E Actuate Common Trouble Signal Indicator	F Actuate Audible Common Trouble Signal	G Display Change of Status	Notification: H Actuate 1st Floor Evacuation Signals (Horn/Strobes)	I Actuate 2nd Floor Evacuation Signals (Horn/Strobes)	J Actuate 3rd Floor Evacuation Signals (Speakers/Strobes)	K Actuate Exterior Horn/Strobe	L Silence Audible Signal (Horns)	Fire Safety Ctrl.: M Release Magnetically Held Smoke Doors	N Recall Elevator(s) to 1st Floor – Primary Recall	O Recall Elevator(s) to 2nd Floor – Alternate Recall	P Shut Down Air Handling Units	Monitoring: Q Transmit Fire Alarm Signal to Supervising Station	R Transmit Trouble Signal to Supervising Station	S Transmit Supervisory Signal to Supervising Station	T Transmit Waterflow Signal to Supervising Station	
1	Manual Pull Station – 1st Floor	X	X					X	X	X	X			X			X	X				1
2	Manual Pull Station – 2nd Floor	X	X					X	X	X	X			X			X	X				2
3	Manual Pull Station – 3rd Floor	X	X					X	X	X	X			X			X	X				3
4	Smoke Sensor – 1st Floor Elev Machine	X	X					X	X	X	X			X	X		X	X				4
5	Smoke Sensor – 1st Floor Elev Lobby	X	X					X	X	X	X			X		X	X	X				5
6	Smoke Sensor – 2nd Floor Elev Lobby	X	X					X	X	X	X			X	X		X	X				6
7	Smoke Sensor – 3rd Floor Elev Lobby	X	X					X	X	X	X			X	X		X	X				7
8	Smoke Sensor – All Other Locations	X	X					X	X	X	X			X			X	X				8
9	Duct Smoke Sensor – 1st Floor			X	X			X									X			X		9
10	Duct Smoke Sensor – 3rd Floor			X	X			X									X				X	10
11	Heat Sensors – 1st Floor Elevator Machine	X	X					X	X	X	X			X	X		X	X				11
12	Heat Sensors – 1st Floor	X	X					X	X	X	X			X			X	X				12
13	Sprinkler Waterflow – 1st Floor	X	X					X	X	X	X	X		X				X			X	13
14	Sprinkler Waterflow – 2nd Floor	X	X					X	X	X	X	X		X				X			X	14
15	Sprinkler Waterflow – 3rd Floor	X	X					X	X	X	X	X		X				X				15
16	Sprinkler Control Valve			X	X			X												X		16
17	FACP AC Power Failure					X	X	X						X					X			17
18	FACP Low Battery					X	X	X											X			18
19	Open Circuit					X	X	X											X			19
20	Ground Fault					X	X	X											X			20
21	Notification Appliance Circuit Short					X	X	X											X			21
22	Alarm Signal Silence												X									22
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	

BOOSTER CALCULATIONS

FOR: 1444 S. Potomac
Aurora, CO 80012

HOURS OF SUPERVISION: 24 HOURS
MINUTES OF ALARM: 5 MINUTES

PANEL: EST BPS-10

ITEM	QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	1	EXISTING	Notification Booster Panel	0.070000	0.190000	0.070000	0.190000
			TOTAL:			0.070000	0.190000

PERIPHERAL:

ITEM	QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
16		EXISTING	15cd Strobe	0.000000	0.103000	0.000000	1.648000
4		EXISTING	30cd Strobe	0.000000	0.141000	0.000000	0.564000
2		EXISTING	75cd Strobe	0.000000	0.255000	0.000000	0.510000
8		EXISTING	15cd Horn/Strobe	0.000000	0.129000	0.000000	1.032000
2		EXISTING	30cd Horn/Strobe	0.000000	0.167000	0.000000	0.334000
1		EXISTING	75cd Horn/Strobe	0.000000	0.281000	0.000000	0.281000
2		**G1RF-HDVM**	**15cd Horn/Strobe**	**0.000000**	**0.129000**	**0.000000**	**0.258000**
			TOTAL:			0.000000	4.627000

SUPERVISORY:

PANEL:	0.070000	AMPS
PERIPHERAL	0.000000	AMPS
SUB-TOTAL:	0.070000	AMPS
X HOURS OF SUPERVISORY:	24.0000	HOURS
SUB-TOTAL:	1.680000	AMP HOURS

ALARM:

PANEL:	0.190000	AMPS
PERIPHERAL:	4.627000	AMPS
SUB-TOTAL:	4.817000	AMPS
X MINUTES OF ALARM:	0.08333	HOURS
SUB-TOTAL:	0.401417	AMP HOURS

TOTALS:

TOTAL SUPERVISORY:	1.680000	AMP HOURS
TOTAL ALARM:	0.401417	AMP HOURS
TOTAL:	2.081417	AMP HOURS
TOTAL PLUS SAFETY FACTOR(20%)	2.49770	AMP HOURS
Batteries Supplied – 1 Set of:	7.00000	AMP HOURS

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BUILDING NAME & ADDRESS: AURORA MEDICAL CENTER, 1444 SOUTH POTOMAC ST., DENVER, CO 80202
PROJECT NUMBER: 16011202

FIRE ALARM & DETECTION SYSTEM
DRAWING TITLE: 1ST FLOOR RISER/CALCULATIONS/SEQUENCE
SCALE: AS SHOWN

PROJECT SHEET TITLE
FA-02