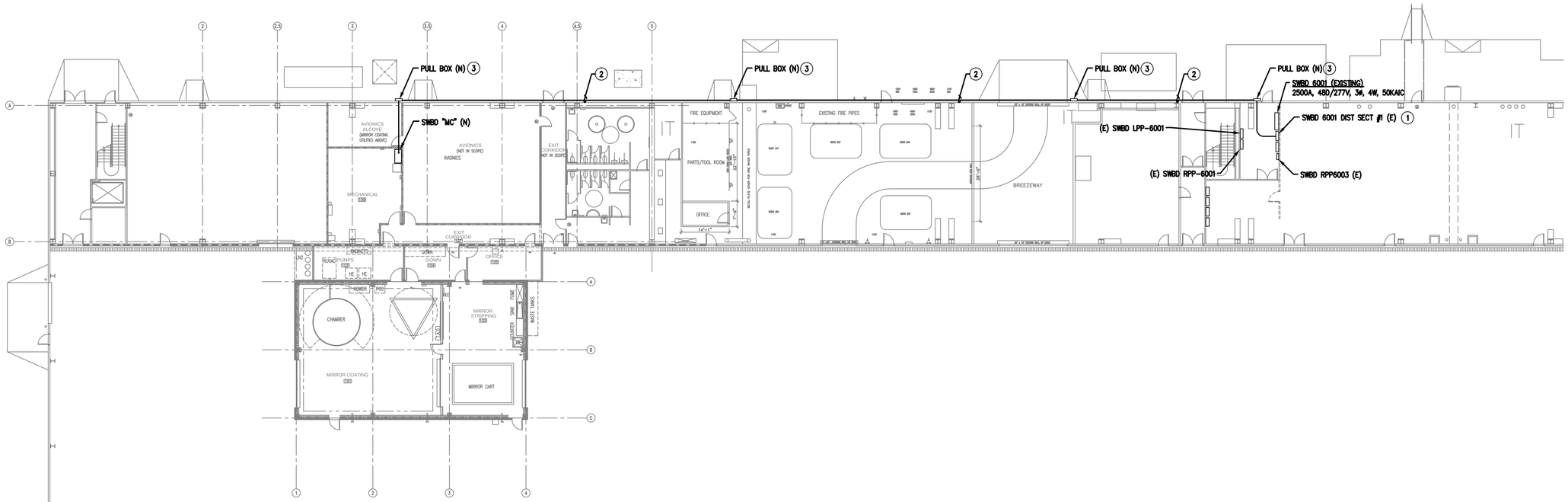
SHEET SPECIFIC NOTES:

1. PROVIDE NEW 500A, 3-POLE CIRCUIT BREAKER IN EXISTING SWITCHBOARD SPACE, CIRCUIT BREAKER TYPE AND AIC RATING TO MATCH EXISTING. PROVIDE SWITCHBOARD "MC" FEEDER AS SPECIFIED ON SINGLE LINE DIAGRAM (SHEET E6).
2. PROVIDE FEEDER RGS CONDUIT ON EXTERIOR OF BUILDING WITH HEIGHT FIELD DEVELOPED TO AVOID OBSTRUCTIONS. PROVIDE MOUNTING PER CODE AND PULL BOXES AS REQUIRED.
3. PROVIDE 36"x36"x8"D, NEMA TYPE 3R PULL BOX, MOUNTED ON EXTERIOR WALL, EVERY 100' IN CONDUIT RUN.



NORTH

ELECTRICAL PARTIAL BUILDING FLOOR PLAN

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

1 E2 E2

DONN C. GILMORE & ASSOCIATES, INC.
Consulting Mechanical and Electrical Engineers
DCGA
4051 E. La Palma Ave., Ste. A
Anaheim, CA 92807
Ph.: 714.630.4291
Fax: 714.630.4805

DATE	SYM	REVISION	BY	A'PD
05-03-11	△	AS-BUILT		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
ELECTRICAL PARTIAL BUILDING FLOOR PLAN

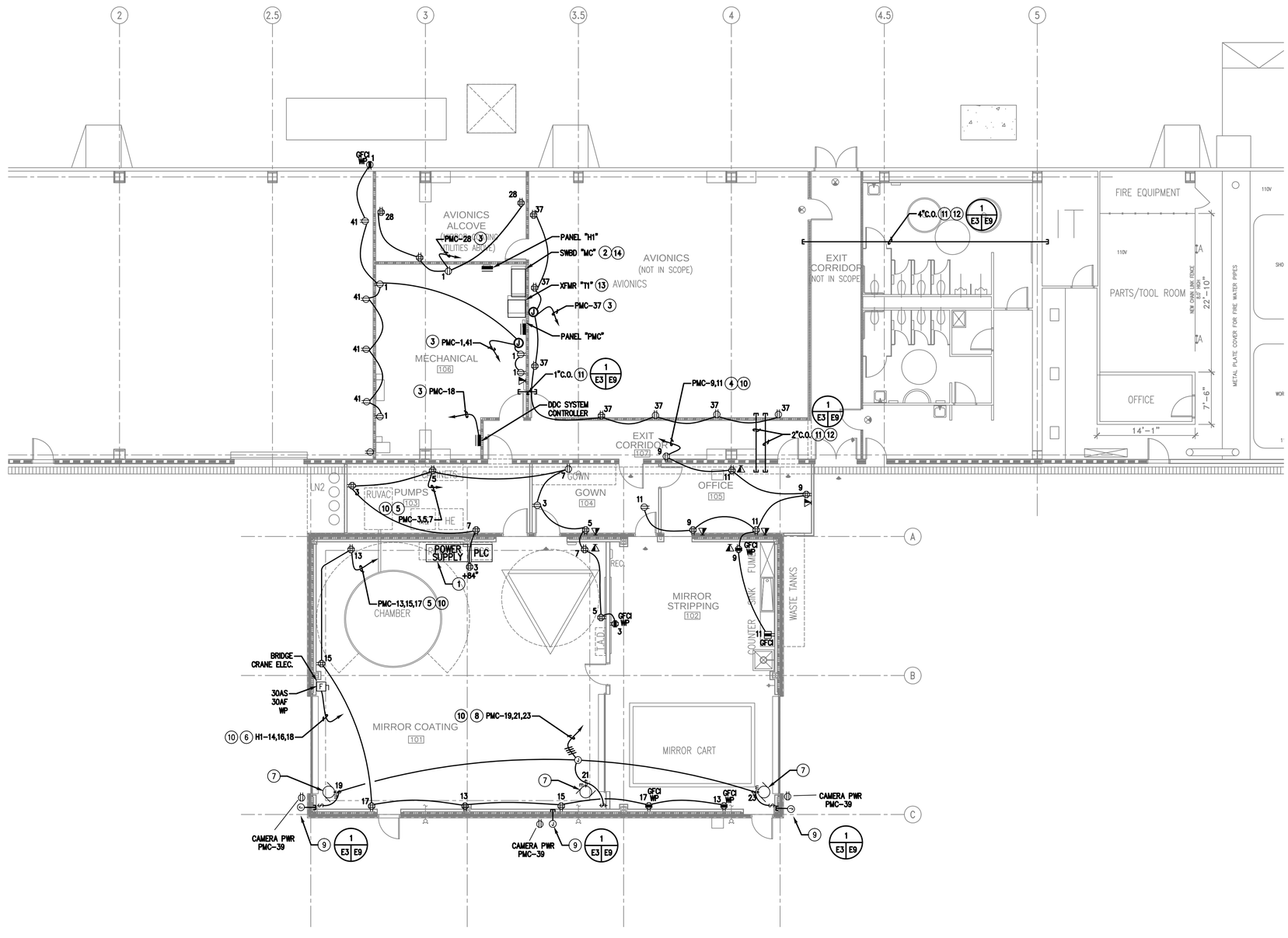
PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Requestor	
Safety Office	
Telecom	

DRAWN BY	ANH, JZ, LL	DATE STRTD	4-18-08
W.O. #		DATE PRNTD	4-14-09
PLOT SCALE / CAD FILE NAME	TRADE SH. No. E2	EDM-1685	
		SHEET No. 31 of 40	

AS-BUILT

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\3D-EDM-1685-As-Built-E2.dwg USER: Nelson
DATE: Jun 21, 2011 11:38am XREFS: 8039 M1 IMAGES:



SHEET SPECIFIC NOTES:

1. GOVERNMENT PROVIDED AND WIRED EQUIPMENT. PROVIDED WIRE DISCONNECT SWITCH ONLY, FOR POWER SUPPLY FEEDER INSTALLATION BY GOVERNMENT.
2. SEE SINGLE LINE DIAGRAM (SHEET E6) FOR SWITCHBOARD FEEDER SPECIFICATION AND PARTIAL BUILDING PLAN (SHEET E7) FOR SWITCHBOARD FEEDER CONDUIT ROUTING ON EXTERIOR OF BUILDING, USING RGS CONDUIT, THREADED FITTINGS AND SUPPORT PER NEC AND SECTION 260500.0040.
3. 3/4"C. 2 #12, 1 #12 GND.
4. 3/4"C. 3 #12, 1 #12 GND.
5. 3/4"C. 4 #12, 1 #12 GND.
6. 3/4"C. 3 #10, 1 #10 GND.
7. CONNECT MOTORIZED ROLL UP DOOR CONTROLS PER MANUFACTURER'S REQUIREMENTS.
8. 3/4"C. 4#10 & 1#10 GND.
9. PROVIDE JUNCTION BOX, RECESSED IN EXTERIOR WALL, WITH 1" CONDUIT PENETRATION TO THE INTERIOR, FOR SECURITY CAMERA MOUNT. COORDINATE JUNCTION BOX HEIGHT AND HORIZONTAL LOCATION WITH SECURITY SYSTEM INSTALLER REQUIREMENTS.
10. PROVIDE FIRE STOPPING ON CONDUIT WALL PENETRATIONS PER SHEET E9, DETAIL #1.
11. PROVIDE CONDUIT PENETRATION IN APPROMIMATE LOCATION SHOWN, AT +120" ABOVE FINISHED FLOOR.
12. PROVIDE SPECIFIED CONDUIT WITH PULL STRING.
13. SEE STRUCTURAL SHEET S3, DETAIL 4 FOR ANCHORAGE
14. SEE STRUCTURAL SHEET S5, DETAIL 10 FOR ANCHORAGE.

REFERENCE NOTES:

1. CONTRACTOR SHALL COORDINATE WITH FIRE ALARM SYSTEM INSTALLER (SIMPLEX) ON POWER AND CONDUIT REQUIREMENTS.

NORTH

ELECTRICAL FLOOR PLAN

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

1 E3 E3

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DATE	SYM	REVISION	BY	A'PD
06-03-11	2	AS-BUILT		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
ELECTRICAL FLOOR PLAN

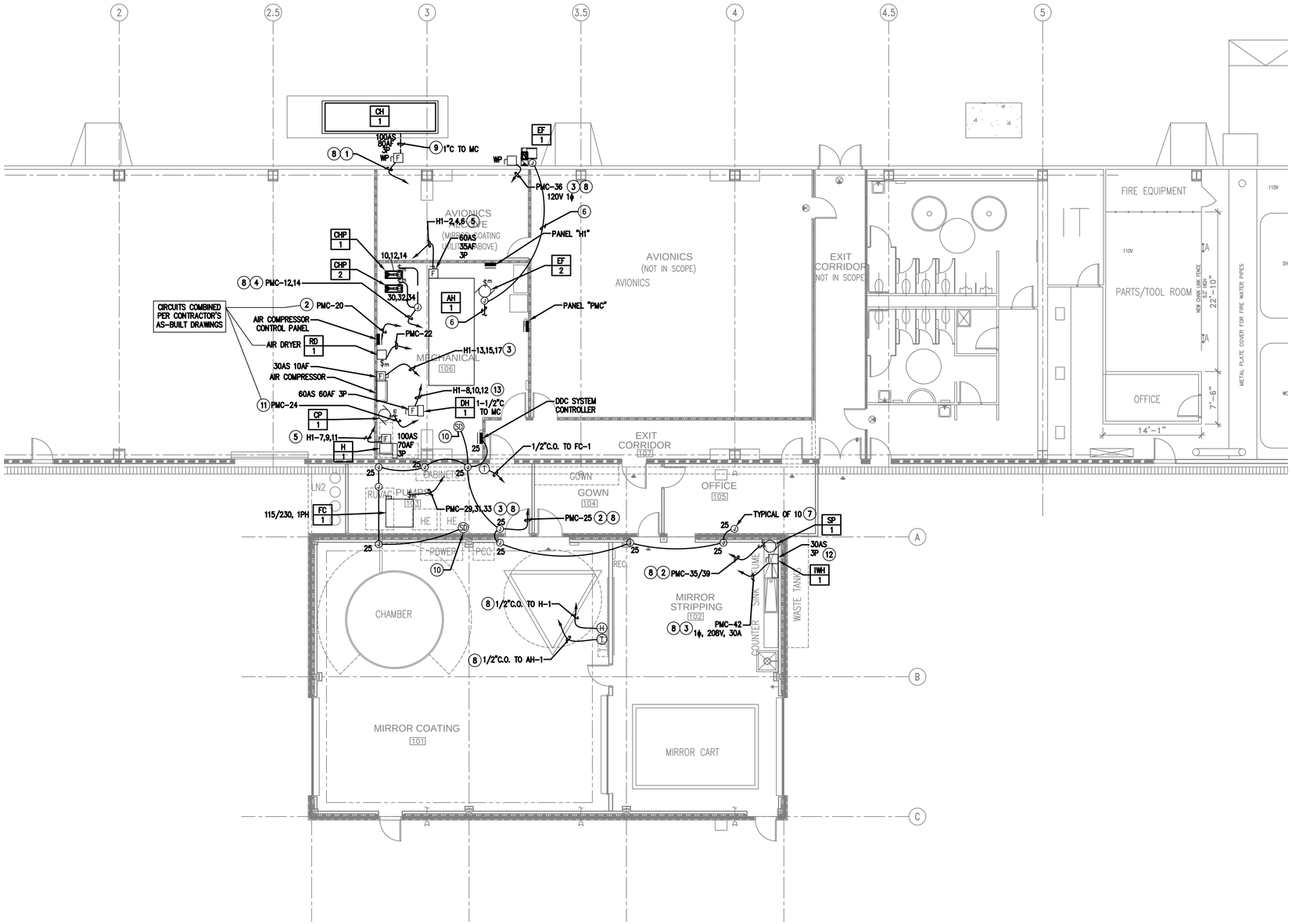
PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Requestor	
Safety Office	
Telecom	

DRAWN BY	ANH, JZ, LL	DATE STRTD	4-18-08
N.O. #		DATE PRNTD	4-14-09
PLOT SCALE	TRADE SH. No.	EDM-1685	
CAD FILE NAME	E3	SHEET No. 32 of 40	

06-03-11 AS-BUILT

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\31-EDM-1685-As-Built-E3.dwg USER: Nelson
DATE: Jun 21, 2011 11:32am XREFS: 8039 M2 IMAGES:



SHEET SPECIFIC NOTES:

1. SEE SINGLE LINE DIAGRAM, SHEET E6, FOR FEEDER AND CONDUIT SPECIFICATION, FROM SWITCHBOARD "MC".
2. 3/4"C. 2 #12, 1 #12 GND.
3. 3/4"C. 3 #12, 1 #12 GND.
4. 3/4"C. 3 #10, 1 #10 GND.
5. 1"C. 3 #4, 1 #8 GND.
6. ROUTE 1/2"C.O. TO AH-1 AND INTERCONNECT AS REQUIRED. COORDINATE WITH MECHANICAL CONTRACTOR.
7. CONNECT SMOKE FIRE DAMPER AS REQUIRED.
8. PROVIDE FIRE STOPPING ON CONDUIT WALL PENETRATIONS PER SHEET E9, DETAIL #1.
9. CONTINUE SPECIFIED FEEDER, UNDERGROUND IN PVC SCHEDULE 80 CONDUIT, TO CHILLER PAD STUB-UP.
10. CONNECT DUCT SMOKE DETECTOR (PROVIDED BY MECHANICAL) PER MANUFACTURER'S DIRECTIONS.
11. 3/4"C. 2#10 & 1#10 GND.
12. MOUNT UNDER SINK.
13. 1"C.-3 #4 & 1 #10 GND.

REFERENCE NOTES:

1. CONTRACTOR SHALL COORDINATE WITH FIRE ALARM SYSTEM INSTALLER (SIMPLEX) ON POWER AND CONDUIT REQUIREMENTS.

NORTH

ELECTRICAL FLOOR PLAN

SCALE: 1/8"=1'-0" | 1 | E4 | E4

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DATE	SYM	REVISION	BY	A'PD
7-8-11	△	AS-BUILT		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
ELECTRICAL FLOOR PLAN

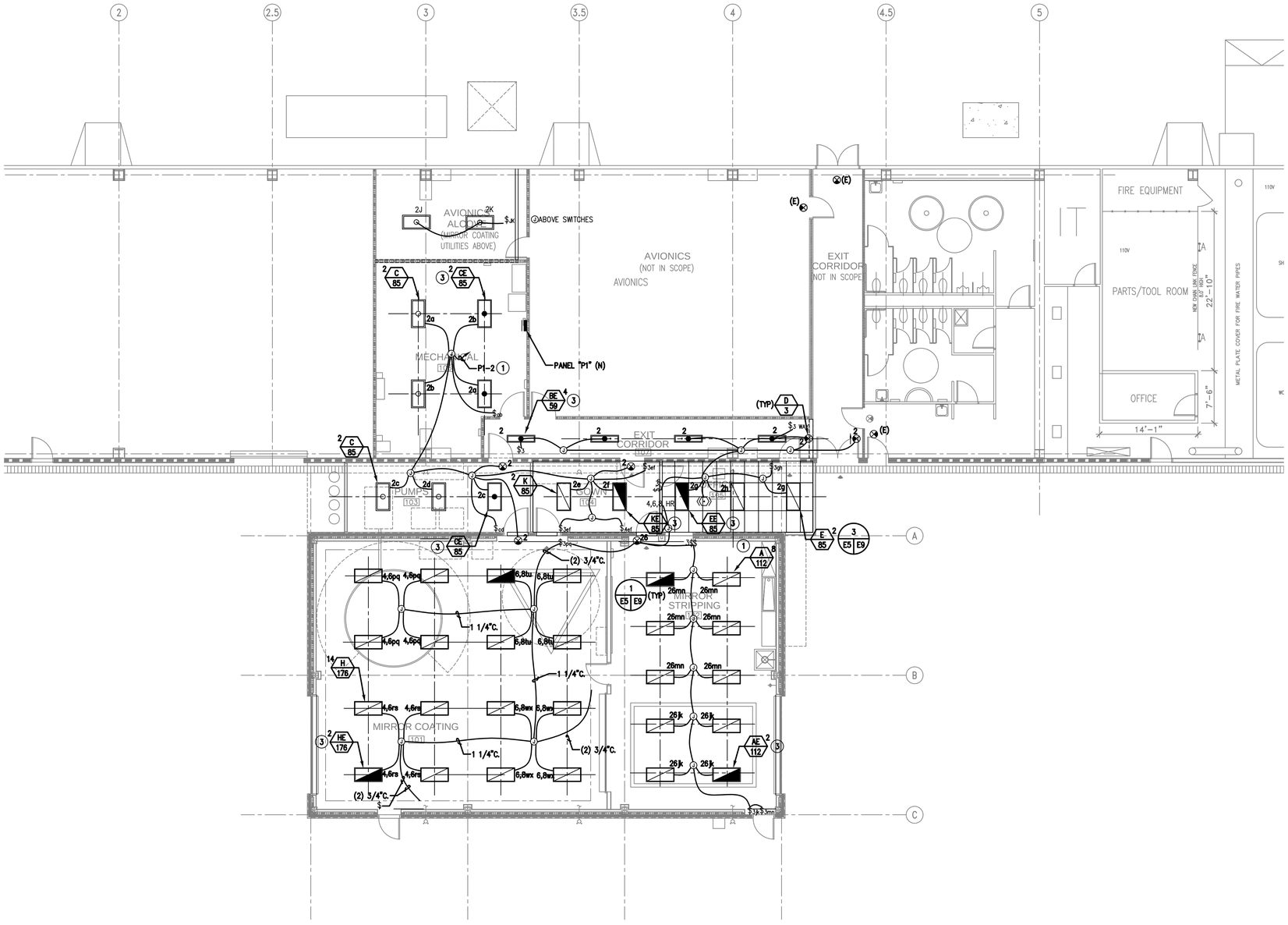
PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Requestor	
Safety Office	
Telecom	

DRAWN BY	ANH, JZ, LL	DATE STRTD	4-18-08
W.O. #		DATE PRNTD	4-14-09
PLOT SCALE		TRADE SH. No.	EDM-1685
CAD FILE NAME		E4	SHEET No. 33 of 40

AS-BUILT

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\32-EDM-1685-As-Built-E4.dwg USER: Nelson
DATE: Jun 21, 2011 11:35am XREFS: 8039 M2 IMAGES:



REFERENCE NOTES:

1. 3/4"C 2 #12, 1 #12 GND.
2. 3/4"C 4 #10, 1 #10 GND.
3. PROVIDE EMERGENCY BALLAST VOLTAGE SENSOR AHEAD OF SWITCH FOR 120V UNINTERRUPTED.

NORTH

ELECTRICAL CEILING PLAN

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

1 E5 E5

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DATE	SYM	REVISION	BY	A'PD
06-03-11	2	AS-BUILT		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
ELECTRICAL CEILING PLAN

PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Requester	
Safety Office	
Telecom	

DRAWN BY	ANH, JZ, LL	DATE STRTD	4-18-08
W.O. #		DATE PRNTD	4-14-09
PLOT SCALE		TRADE SH. No.	EDM-1685
CAD FILE NAME		E5	SHEET No. 34 of 40

06-03-11 AS-BUILT

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\33-EDM-1685-As-Built-E5.dwg USER: Nelson
DATE: Jun 21, 2011 11:37am XREFS: 8039 M1 IMAGES:

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\34-EDM-1685-As-Built-E6.dwg USER: Nelson
DATE: Jun 21, 2011 11:39am XREFS: IMAGES:

CERTIFICATE OF COMPLIANCE (Part 1 of 4) LTG-1-C

PROJECT NAME: NASA DRYDEN SOFIA MIRROR COATING	DATE: 10/31/08
PROJECT ADDRESS: 2825 AVE. P, BLDG. 703, PALMDALE, CALIF.	Building Permit #
PRINCIPAL DESIGNER - LIGHTING: KURT KAISER — TELEPHONE: (714) 630-4291	
DOCUMENTATION AUTHOR: Donn C. Gilmore & Associates, Inc. — TELEPHONE: (714) 630-4291	Checked by/Date Enforcement Agency Use

GENERAL INFORMATION

DATE OF PLANS	BUILDING CONDITIONED FLOOR AREA: 4,809 Sq.Ft.	CLIMATE ZONE: 0

- BUILDING TYPE: ☒ NONRESIDENTIAL ☐ HIGH RISE RESIDENTIAL ☐ HOTEL/MOTEL GUEST ROOM ☒ CONDITIONED SPACES ☐ UNCONDITIONED SPACES ☐ INDOOR & OUTDOOR SIGNS
- PHASE OF CONSTRUCTION: ☐ NEW CONSTRUCTION ☐ ADDITION ☒ ALTERATION
- METHOD OF LIGHTING COMPLIANCE: ☐ COMPLETE BUILDING ☒ AREA CATEGORY ☐ TAILORED ☐ PERFORMANCE ☐ COMMON LIGHTING

STATEMENT OF COMPLIANCE

This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to building lighting requirements.

The documentation preparer hereby certifies that the documentation is accurate and complete.

DOCUMENTATION AUTHOR	SIGNATURE	DATE
KURT KAISER		

The Principal Lighting Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the lighting requirements contained in Sections 110, 119, 130 through 132, and 146, 148 and 149 of Title 24, Part 6.

Please Check One: (These sections of the Business and Professions Code are printed in full in the Nonresidential Manual.)

☒ I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am licensed in the State of California as a civil engineer or electrical engineer, or I am a licensed architect.

☐ I affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code by Section 5537.2 or 6737.3 to sign this document as the person responsible for its preparation; and that I am a licensed contractor performing this work.

☐ I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code to sign this document because it pertains to a structure or type of work described as exempt pursuant to Business and Professions Code Sections 5537, 5538 and 6737.1.

PRINCIPAL LIGHTING DESIGNER - NAME	SIGNATURE	DATE	LIC. #
KURT KAISER			E15151

LIGHTING MANDATORY MEASURES

Indicate location on plans of Note Block for Mandatory Measures: SHEET E5

LIGHTING COMPLIANCE FORMS & WORKSHEETS (Check box if worksheet is included)

- ☒ LTG-1-C, Parts 1 of 4 and 2 of 4: Certificate of Compliance. Part 1 of 4 and 2 of 4 are required for all submittals
- ☐ LTG-1-C, Part 3 of 4: Certificate of Compliance. Part 3 of 4 submittal is required only if Control Credits are claimed
- ☒ LTG-1-C, Part 4 of 4: Certificate of Compliance. Part 4 of 4 submittal is required when lighting controls are installed
- ☒ LTG-2-C: Interior Lighting Schedule
- ☐ LTG-3-C: Portable Lighting Worksheet
- ☐ LTG-4-C: Lighting Controls Credit Worksheet
- ☒ LTG-5-C: Interior Lighting Power Allowance
- ☐ LTG-6-C: Tailored Method Worksheet
- ☐ LTG-7-C: Room Cavity Ratio Worksheet
- ☐ LTG-8-C: Common Lighting Systems Method Worksheet
- ☐ LTG-9-C: Line Voltage Track Lighting Worksheet

CERTIFICATE OF COMPLIANCE (Part 2 of 4) LTG-1-C

PROJECT NAME: NASA DRYDEN SOFIA MIRROR COATING — DATE: 10/31/08

INSTALLED INTERIOR LIGHTING POWER FOR CONDITIONED AND UNCONDITIONED SPACES

	INSTALLED WATTS
INSTALLED LIGHTING, CONDITIONED SPACES (From LTG-2-C)	5,218
PORTABLE LIGHTING (From LTG-3-C)	0
LIGHTING CONTROL CREDIT, CONDITIONED SPACES (From LTG-4-C)	0
CONDITIONED SPACE ADJUSTED INSTALLED LIGHTING POWER	5,218
INSTALLED LIGHTING, UNCONDITIONED SPACES (From LTG-2-C)	0
LIGHTING CONTROL CREDIT, UNCONDITIONED SPACES (From LTG-4-C)	0
UNCONDITIONED SPACE ADJUSTED INSTALLED LIGHTING POWER	0

ALLOWED INTERIOR LIGHTING POWER FOR CONDITIONED SPACES

- ☒ COMPLETE BUILDING METHOD (From LTG-5-C)
- ☐ AREA CATEGORY METHOD (From LTG-5-C)
- ☐ TAILORED METHOD (From LTG-5-C)

ALLOWED LIGHTING POWER — ALLOWED WATTS: 5,323

ALTERNATE COMPLIANCE

- ☐ PERFORMANCE METHOD
- ☐ COMMMON LIGHTING SYSTEM (From LTG-8-C)

ALLOWED INTERIOR LIGHTING POWER FOR UNCONDITIONED SPACES (From LTG-5-C): -

MANDATORY INTERIOR AND DAYLIGHTING AUTOMATIC CONTROLS

CONTROL LOCATION (Room #)	CONTROL IDENTIFICATION	CONTROL TYPE (Auto Time Switch, Dimming, etc.)	SPACE CONTROLLED	Check if Daylighting	NOTE TO FIELD
ELEC. ROOM	LTG PNL	AUTO-TIME SWITCH	FLOOR SPACE		
OFFICES		AUTO - OCC SENSOR	EACH SPACE		

NOTES TO FIELD - For Building Department Use Only

INTERIOR LIGHTING SCHEDULE (Part 1 of 2) LTG-2-C

PROJECT NAME: NASA DRYDEN SOFIA MIRROR COATING — DATE: 10/31/08

INSTALLED LIGHTING POWER FOR CONDITIONED SPACES

Luminaire		Lamps/Ballasts				Installed Watts				
		C	D	E	F	G	H		I	J
Name	Type Description	Lamp Type	Number of Lamps per Luminaire	Watts per Lamp	Number of Ballast per Luminaire	Watts per Luminaire	CEC Default? Yes	No	Number of Luminaires	Installed Watts (G x I)
A,AE	2'x4' RECESSED FLUOR.	FLUORESCENT	4	32	2	112	X		10	1,120
BE	1'x4' SURFACE FLUOR.	FLUORESCENT	2	32	1	59	X		4	262
C,CE	2'x4' SURFACE FLUOR.	FLUORESCENT	3	32	1	85	X		7	595
E,EE	2'x4' RECESSED FLUOR.	FLUORESCENT	3	32	1	85	X		3	255
H,HE	2'x4' RECESSED FLUOR.	FLUORESCENT	6	32	2	176	X		16	2,816
K,KE	2'x4' RECESSED FLUOR.	FLUORESCENT	3	32	1	85	X		2	170
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
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-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-
-	-	-	-	-	-	-	X		-	-

PAGE TOTAL	5,218
BUILDING TOTAL (sum of all pages)	0
PORTABLE LIGHTING (From LTG-3-C)	0
CONTROL CREDIT (From LTG-4-C)	0
ADJUSTED ACTUAL WATTS	5,218

LIGHTING FIXTURE SCHEDULE

LUMINAIRE INFORMATION			LAMP INFORMATION	MISCELLANEOUS INFORMATION
TYPE	MANUFACTURER, CATALOG # AND EQUAL PRODUCT INFO.	WATTS VOLTS	MANUFACTURER, QUANTITY CATALOG # AND EQUAL	FIXTURE GENERAL DESCRIPTION LAMP GENERAL DESCRIPTION
A / 112	CD LIGHTING #CFA24-4-32-120-EB-12PA-AFP (WHITE)	112W 120V	(4) 32W T8	2'X4' FLUORESCENT WITH (2) ELEC. BALLAST, PRISMATIC LENS, RECESSED, FLANGED CLASS 10,000 CLEANROOM, BOTTOM ACCESS, SEALED HOUSING/LENS.
AE / 112	CD LIGHTING #CFA24-4-32-120-EB-12PA-AFP (WHITE)-EM	112W 120V	(4) 32W T8	2'X4' FLUORESCENT WITH (2) ELEC. BALLAST, PRISMATIC LENS, RECESSED, FLANGED CLASS 10,000 CLEANROOM, BOTTOM ACCESS, SEALED HOUSING/LENS. (WITH EMERGENCY BATTERY PACK)
BE / 59	LSI LIGHTING #1SPA125X232SDSSOEM-120	59W 120V	(2) 32W T8	1'X4' FLOURESCENT WITH ELEC. BALLAST, PRISMATIC LENS, SURFACE MOUNTED. (WITH EMERGENCY BATTERY PACK)
C / 85	LSI LIGHTING #2SPA125X332SDSSO-120	85W 120V	(3) 32W T8	2'X4' FLUORESCENT WITH ELEC. BALLAST, PRISMATIC LENS, SURFACE MOUNTED.
CE / 85	LSI LIGHTING #2SPA125X332SDSSOEM-120	85W 120V	(3) 32W T8	2'X4' FLUORESCENT WITH ELEC. BALLAST, PRISMATIC LENS, SURFACE MOUNTED. (WITH EMERGENCY BATTERY PACK)
D / 3	DUAL-LITE #LXSRWE	3W 120V	3W LED	EXIT SIGH WITH EMERGENCY BATTERY, LED LAMP
E / 85	LSI LIGHTING #2TGA125332SDSSO-120	85W 120V	(3) 32W T8	2'X4' FLUORESCENT WITH ELEC. BALLAST, PRISMATIC LENS, T-BAR GRID RECESSED.
EE / 85	LSI LIGHTING #2TGA125332SDSSOEM-120	85W 120V	(3) 32W T8	2'X4' FLUORESCENT WITH ELEC. BALLAST, PRISMATIC LENS, T-BAR GRID RECESSED. (WITH BATTERY PACK)
H / 176	CD LIGHTING #CFA24-6-32-120-EB-12PA-AFP (WHITE)	176W 120V	(6) 32W T8	2'X4' FLUORESCENT WITH (2) ELEC. BALLAST, PRISMATIC LENS, RECESSED, FLANGED CLASS 10,000 CLEANROOM, BOTTOM ACCESS, SEALED HOUSING/LENS.
HE / 176	CD LIGHTING #CFA24-6-32-120-EB-12PA-AFP (WHITE)-EM	176W 120V	(6) 32W T8	2'X4' FLUORESCENT WITH (2) ELEC. BALLAST, PRISMATIC LENS, RECESSED, FLANGED CLASS 10,000 CLEANROOM, BOTTOM ACCESS, SEALED HOUSING/LENS. (WITH EMERGENCY BATTERY PACK)
K / 85	LSI LIGHTING #2TGA125332SDSSO-120	85W 120V	(3) 32W T8	2'X4' FLUORESCENT WITH ELEC. BALLAST, PRISMATIC LENS, RECESSED.
KE / 85	LSI LIGHTING #2TGA125332SDSSOEM-120	85W 120V	(3) 32W T8	2'X4' FLUORESCENT WITH ELEC. BALLAST, PRISMATIC LENS, RECESSED. (WITH BATTERY PACK)

CERTIFICATE OF COMPLIANCE (Part 4 of 4) LTG-1-C

PROJECT NAME: NASA DRYDEN SOFIA MIRROR COATING — DATE: 10/31/08

Designer:
This form is to be used by the designer and attached to the plans. Listed below are all the acceptance tests for lighting systems. The designer is required to check the boxes by all acceptance tests that apply and list all equipment that require an acceptance test. If all equipment of a certain type requires a test, list the equipment description and the number of systems to be tested in parentheses. The NJ number designates the Section in the Appendix of the Nonresidential ACM Manual that describes the test. Also indicate the person responsible for performing the tests (i.e. the installing contractor, design professional or an agent selected by the owner). Since this form will be part of the plans, completion of this section will allow the responsible party to budget for the scope of work appropriately.

Building Departments:
Before an occupancy permit is granted for a newly constructed building or space, or a new lighting system system serving a building or space is operated for normal use, all control devices serving the building or space shall be certified as meeting the Acceptance Requirements for Code Compliance. In addition a Certificate of Acceptance, LTG-1-A, Forms shall be submitted to the building department that:

A. Certifies plans, specifications, installation certificates, and operating and maintenance information meet the requirements of 10-103(b) and Title 24 Part 6.

Test Description	Test Performed By:
☒ LTG-2-A: Lighting Control Acceptance Document - Occupancy Sensor Acceptance - Manual Daylight Controls Acceptance - Automatic Time Switch Control Acceptance Equipment requiring acceptance testing	
☐ LTG-3-A: Automatic Daylighting Controls Acceptance Document Equipment requiring acceptance testing	

INTERIOR LIGHTING POWER ALLOWANCE LTG-5-C

PROJECT NAME: NASA DRYDEN SOFIA MIRROR COATING — DATE: 10/31/08

ALLOWED LIGHTING POWER (Choose One Method)

COMPLETE BUILDING METHOD - CONDITIONED SPACES

BUILDING CATEGORY (From Section 146 Table 146-B)	WATTS	COMPLETE BLDG. AREA	ALLOWED WATTS

AREA CATEGORY METHOD - CONDITIONED SPACES

AREA CATEGORY (From Section 146 Table 146-C)	WATTS PER SF	AREA (SF)	ALLOWED WATTS
PRECISION INDUSTRIAL	1.3	3,083	4,008
MECHANICAL ROOM	0.7	1,080	756
OFFICE	1.2	230	276
LOCKER/DRESSING	0.8	170	136
CORRIDOR	0.6	246	147
PAGE TOTAL		4,809	5,323
BUILDING TOTAL		4,809	5,323
		AREA	WATTS

TAILORED METHOD - CONDITIONED SPACES

TOTAL ALLOWED WATTS (From LTG-6-C or from computer run.)

UNCONDITIONED SPACES

Complete Building and Area Catagory Methods Category (From Section 146 Table 146-B&C)	WATTS PER SF	AREA (SF)	ALLOWED WATTS
PAGE TOTAL			
BUILDING TOTAL			
		AREA	WATTS

TAILORED METHOD - UNCONDITIONED SPACES

TOTAL UNCONDITIONED SPACES ALLOWED WATTS (From LTG-5-C and LTG-6-C)

LIGHTING MANDATORY MEASURES LTG-MM

PROJECT NAME: NASA DRYDEN SOFIA MIRROR COATING — DATE: 10/31/08

DESCRIPTION	Designer	Enforcement
☒ 131(d)1 For every floor, all interior lighting systems shall be equipped with a separate automatic control to shut off the lighting. This automatic control shall meet the requirements of Section 119 and may be an occupancy sensor, automatic time switch, or other device capable of automatically shutting off the lighting.		
☒ 131(d)2 Override for Building Lighting Shut-off: The automatic building shut-off system is provided with a manual, accessible override switch in sight of the lights. The area of override is not to exceed 5,000 square feet.		
☒ 119(h) Automatic Control Devices Certified: All automatic control devices specified are certified, all alternate equipment shall be certified and installed as directed by the manufacturer.		
☒ 111 Fluorescent Ballast and Luminaires Certified: All fluorescent fixtures specified for the project are certified and listed in the Directory. All installed fixtures shall be certified.		
☐ 132 Tandem Wiring for One and Three Lamp Fluorescent Fixtures: All one and three lamp fluorescent fixtures are tandem wired with two lamp ballasts where required by Standards Section 132; or all one and three lamp fluorescent fixtures are specified with electronic high-frequency ballasts and are exempt from tandem wiring requirements.		
☒ 131(a) Individual Room/Area Controls: Each room and area in this building is equipped with a separate switch or occupancy sensor device for each area with floor-to-ceiling walls.		
☒ 131(b) Uniform Reduction for Individual Rooms: All rooms and areas greater than 100 square feet and more than 0.8 watts per square foot of lighting load shall be controlled with bi-level switching for uniform reduction of lighting within the room.		
☐ 131(c) Daylight Area Control: All rooms with windows and skylights that are greater than 250 square feet and that allow for the effective use of daylight in the area shall have 50% of the lamps in each daylit area controlled by a separate switch; or the effective use of daylight cannot be accomplished because the windows are continuously shaded by a building on the adjacent lot. Diagram of shading during different times of the year is included on plans.		
☐ 131(e) Display Lighting. Display lighting shall be separately switched on circuits that are 20 amps or less.		

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Fax: 714.630.4805

DATE	SYM	REVISION	BY	A'PD
06-03-11	2	AS-BUILT		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

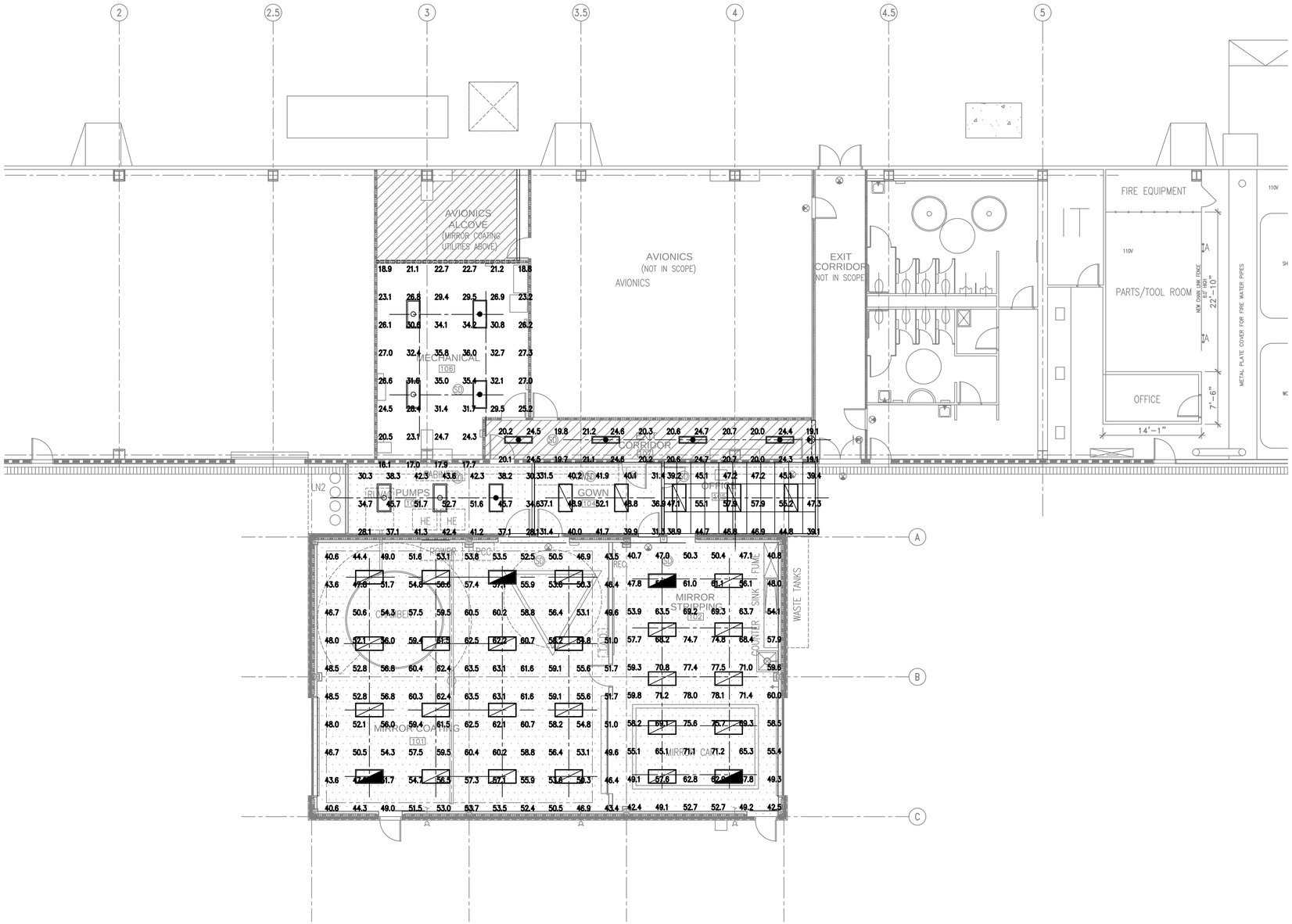
DRAWING TITLE
TITLE-24
LIGHTING FIXTURE

PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Requestor	
Safety Office	
Telecom	

DRAWN BY	ANH, JZ, LL	DATE STRTD	4-18-08
W.O. #		DATE PRNTD	4-14-09
PLOT SCALE	TRADE SH. No.	EDM-1685	
CAD FILE NAME	E6	SHEET No. 35 of 40	

06-03-11 AS-BUILT



NORTH

LIGHTING PHOTOMETRIC STUDY

SCALE:	1
1/8"=1'-0"	E7 / E7

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
LIGHTING PHOTOMETRIC STUDY

PROJECT TITLE
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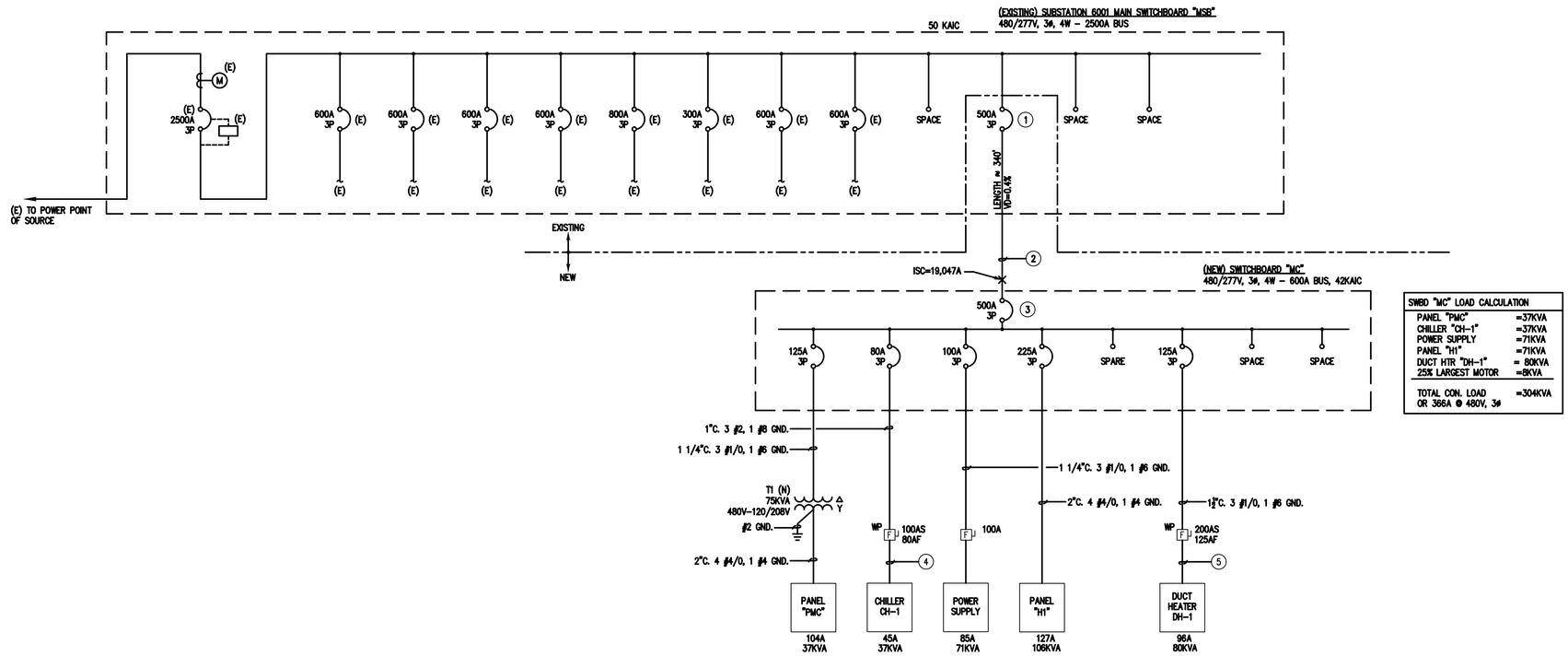
W.O. #		DATE PRNTD	4-14-09
PLOT SCALE / CAD FILE NAME	TRADE SH. No. E7	EDM-1685	
		SHEET No. 36 of 40	

06-03-11 AS-BUILT

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\35-EDM-1685-As-Built-E7.dwg USER: Nelson
DATE: Jun 21, 2011 11:40am XREFS: 6039 M1 IMAGES:



SWBD "MC" LOAD CALCULATION	
PANEL "PMC"	=37KVA
CHILLER "CH–1"	=37KVA
POWER SUPPLY	=71KVA
PANEL "H1"	=71KVA
DUCT HTR "DH–1"	= 80KVA
25% LARGEST MOTOR	=8KVA
TOTAL CON. LOAD OR 366A @ 480V, 3ø	=304KVA

SINGLE-LINE SPECIFIC NOTES:

1. PROVIDE 500A, 3–POLE CIRCUIT BREAKER IN EXISTING SWITCHBOARD SPACE. TYPE AND AIC RATING TO MATCH EXISTING.
2. PROVIDE (2) 3 1/2"C.–4 #500MCM, 1 #1 GND. (IN EACH)
3. PROVIDE ARC FLASH AND SHOCK HAZARD WARNING LABEL PER NFPA 70E, AND LISTING FLASH HAZARD CATEGORY, INCIDENT ENERGY (MIN. ARC RATING), FLASH PROCTECTION BOUNDARY AND PERSONAL PROTECTIVE EQUIPMENT.
4. PROVIDE 1"C.–3 #2 & #8 GND. FROM WALL MOUNTED DISCONNECT SWITCH, UNDERGROUND IN PVC SCHEDULE 80, TO CHILLER PAD STUB–UP. TREMINATE CONDUIT AT CHILLER CONTROL PANEL WITH LAST 3 FEET USING SEAL–TIGHT FLEXIBLE METAL CONDUIT.
5. PROVIDE CONTINUATION OF FEEDER CIRCUIT IN CONDUIT TO UNIT AND TERMINATE PER MANUFACTURER'S INSTRUCTIONS.

PANEL PMC — 120/208 VOLT 3PH, 4W — 225 AMP COPPER BUS

LOCATION: Mechanical Room #106 — MAIN C.B: 225 AMPS

MOUNTING: Surface — LOAD: 111 AMP 40 KVA

CK #	LOAD (VA) LINE A	LINE B	LINE C	LOAD DESCRIPTION	OUTLETS MIS	RC	CO	LT	P	C.B. TRP	BUS ABC	C.B. TRP	P	OUTLETS LT	CO	RC	MIS	LOAD DESCRIPTION	LOAD (VA) LINE A	LINE B	LINE C	CK #
1	1080			Mechanical Rm.			6		1	20	A	20	1	16				Rms. #103,104,105,106,107	1400			2
3		900		Pump,Gown, Mirrior Coat.,Strip.	5			1	20	B	20	1	5					Mirror Coating #101		880		4
5			1080	Pump,Gown, Mirrior Coat.,Strip.	6			1	20	C	20	1	6					Mirror Coating #101			1056	6
7	900			Pump,Gown, Mirrior Coat.,Strip.	5			1	20	A	20	1	5					Mirror Coating #101	880			8
9		1260		Corr.,Office,Gown,Mirror Strip.	7			1	20	B	20	1	10					CHP–1				10
11			1080	Corr.,Office,Gown,Mirror Strip.	6			1	20	C	30	1						CHP–1				12
13	1080			Mirror Coating, Stripping	6			1	20	A	30	1						CHP–1				14
15		720		Mirror Coating, Stripping	4			1	20	B	20	1						EF–2		860		16
17			720	Mirror Coating, Stripping	4			1	20	C	20	1						DDC Controller			500	18
19	1660			Motorized Doors				1	30	A	20	1						Air Comp Control Panel	500			20
21		1660		Motorized Doors				1	30	B	20	1						Air Dryer		500		22
23			1660	Motorized Doors				1	30	C	30	1						CP–1			1660	24
25	500			Fire Smoke Dampers	5			1	20	A	20	1						DDC Controller	200			26
27		500		Fire Smoke Dampers	5			1	20	B	20	1						Avionic Recep.		1080		28
29			793	FC–1				3	20	C								CHP–2				30
31	793			------				--	---	A								CHP–2				32
33		793		------				--	---	B								CHP–2				34
35			864	SP–1				1	20	C								EF–1 & EF–2				36
37	1260			Recep. – Avionics				1	20	A	20	3						Instant. Water Heater	1800			38
39				Space						B	---	--						------		1800		40
41				Space						C	---	--						------			1800	42
	7273	5833	6197	SUBTOTALS														SUBTOTALS:				
																		LINE TOTALS:				
																		LCL ADDER:				
																		TOTAL VA/PHASE:				
																		LINE AMPS:				

NOTES:

PANEL H1 — 480/277 VOLT 3PH, 4W — 225 AMP COPPER BUS

LOCATION: Mechanical Room #106 — MAIN LUG ONLY

MOUNTING: Surface — LOAD: 127 AMP 106 KVA

CK #	LOAD (VA) LINE A	LINE B	LINE C	LOAD DESCRIPTION	OUTLETS MIS	RC	CO	LT	P	C.B. TRP	BUS ABC	C.B. TRP	P	OUTLETS LT	CO	RC	MIS	LOAD DESCRIPTION	LOAD (VA) LINE A	LINE B	LINE C	CK #
1	277			EF–1					3	20	A	60	3					AHU–1	7467			2
3		277		------					--	---	B	---	--					------		7467		4
5			277	------					--	---	C	---	--					------			7467	6
7	11703			H–1					3	70	A	60	3					DH–1	11667			8
9		11703		------					--	---	B	---	--					------		11667		10
11			11703	------					--	---	C	---	--					------			11667	12
13	2107			Air Compressor					3	20	A	30	3					Bridge Crane	2000			14
15		2107		------					--	---	B	---	--					------		2000		16
17			2107	------					--	---	C	---	--					------			2000	18
19				Space							A							Space				20
21				Space							B							Space				22
23				Space							C							Space				24
25				Space							A							Space				26
27				Space							B							Space				28
29				Space							C							Space				30
31				Space							A							Space				32
33				Space							B							Space				34
35				Space							C							Space				36
37				Space							A							Space				38
39				Space							B							Space				40
41				Space							C							Space				42
	14087	14087	14087	SUBTOTALS														SUBTOTALS:	21134	21134	21134	
																		LINE TOTALS:	35221	35221	35221	
																		LCL ADDER:				
																		TOTAL VA/PHASE:	35221	35221	35221	
																		LINE AMPS:	127	127	127	

NOTES:

DATE	SYM	REVISION	BY	A'PD
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
SINGLE LINE DIAGRAM AND PANEL SCHEDULES

PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

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Project Requestor	
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Telecom	

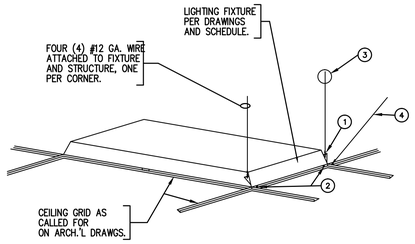
DRAWN BY	ANH, JZ, LL	DATE STRTD	4–18–08
W.O. #		DATE PRNTD	4–14–09
PLOT SCALE	TRADE SKL No.	EDM–1685	
CAD FILE NAME	E8	SHEET No. 37 of 40	

AS-BUILT

SINGLE LINE DIAGRAM

SCALE: NONE — 1 — E8 E8

DWG: Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\36-EDM-1685-As-Built-E8.dwg USER: Nelson
DATE: Jun 21, 2011 11:42am XREFS: IMAGES:

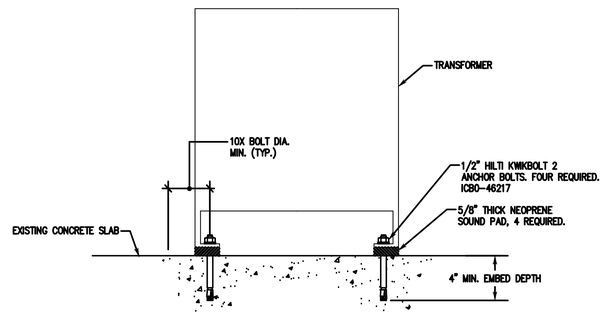


NOTES:

1. ATTACH WIRE TO FIXTURE (3 TIGHT TURNS MIN. IN 1 1/2" MAX.)
2. "TEK" SCREW GRID TO FIXTURE @ EACH CORNER.
3. ATTACH HANGER WIRES TO STRUCTURE AS PER STRUCTURAL & ARCHITECTURAL DETAILS.
4. CEILING SYSTEM SPLAY /HANGER WIRES AS OCCUR, SEE PLANS.

GRID RECESSED LIGHT FIXTURE DETAIL

SCALE: NONE | 3 | E9 | E5

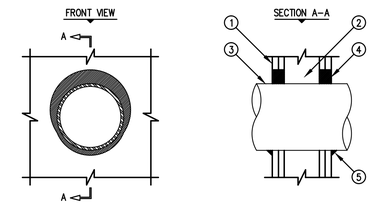


TRANSFORMER WITH VIBRATION ISOLATORS ANCHORAGE DETAIL

SCALE: NONE | 2 | E9 | E3

UL/ SYSTEM NO. W-L-1054
METAL PIPE THROUGH 1-HR. OR 2-HR. GYPSUM WALL ASSEMBLY

F-RATING = 1-HR. OR 2-HR.
T-RATING = 0-HR.
L-RATING AT AMBIENT = LESS THAN 1 CFM/SQ. FT.
L-RATING AT 400°F = 4 CFM/SQ. FT.

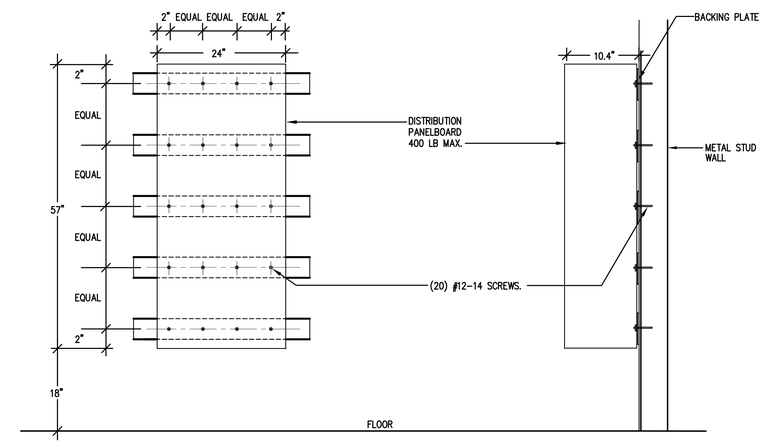


1. GYPSUM WALL ASSEMBLY (UL/ULC CLASSIFIED U300 OR U400 SERIES) (1-HR. OR 2-HR. FIRE-RATING) (2-HR. SHOWN).
2. (NOT SHOWN). WOOD STUDS TO CONSIST OF NOMINAL 2" x 4" LUMBER. STEEL STUDS TO BE MINIMUM 2-1/2" WIDE.
3. PENETRATING ITEM TO BE ONE OF THE FOLLOWING :
   A. MAXIMUM 30" DIAMETER STEEL PIPE (SCHEDULE 10 OR HEAVIER).
   B. MAXIMUM 30" DIAMETER CAST IRON PIPE.
   C. MAXIMUM 6" NOMINAL DIAMETER COPPER PIPE.
   D. MAXIMUM 6" NOMINAL DIAMETER STEEL CONDUIT.
   E. MAXIMUM 4" NOMINAL DIAMETER EMT.
4. HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT :
   A. MINIMUM 5/8" FOR A 1-HR. FIRE-RATING.
   B. MINIMUM 1-1/4" DEPTH, FOR A 2-HR. FIRE-RATING.
5. MINIMUM 1/2" BEAD HILTI FS-ONE HIGH PERFORMANCE INTUMESCENT FIRESTOP SEALANT AT POINT OF CONTACT.

NOTES : 1. MAXIMUM DIAMETER OF OPENING :
A. 32-1/4" FOR STEEL STUD WALLS.
B. 14-1/2" FOR WOOD STUD WALLS.
2. ANNULAR SPACE = MINIMUM 0", MAXIMUM 2-1/2".

RATED WALL CONDUIT FIRE STOP DETAIL

SCALE: NONE | 1 | E9 | E3



600A DISTRIBUTION SWITCHBOARD MOUNTING DETAIL-STUD WALL

SCALE: NONE | 4 | E9 | E3

SCALE: NONE | - | E9 | E9

DATE	SYM	REVISION	BY	A'PD
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
ELECTRICAL DETAILS

PROJECT TITLE
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DAOF BUILDING 703
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CAD FILE NAME		E9	SHEET No. 38 of 40

AS-BUILT

06-03-11

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DATE: Jun 21, 2011 11:43am XREFS: IMAGES:

NASA 703 MIRROR COATING ROOM
FIRE ALARM SYSTEM

PROJECT

BLDG 703
NASA DRYDEN REASERCH CENTER
EDWARDS AIR FORCE BASE

ELECTRICAL CONTRACTOR

WIRE RITE INC
1720 W. AVENUE L-4
LANCASTER, CA

CONSTRUCTION MANAGER

TACT CONTRUCTION
1957 RICE ROAD
OJAI, CA

tyco / Fire & Security / SimplexGrinnell

2788 N. LARKIN AVE. # 101
FRESNO, CA 93727

SALES: 559-348-0614
SERVICE: 559-348-0614
FAX: 559-348-1281

AS-BUILT
DATE: 6/3/11

06/03/11 AS BUILT

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6/21/2011 12:12 PM NELSON
36" x 36"

GENERAL NOTES

1. THESE DRAWINGS DEPICT GENERAL LOCATIONS OF LIFE SAFETY EQUIPMENT & FIELD DEVICES. EXACT ROUTING OF CONDUITS TO BE DETERMINED IN THE FIELD BY THE INSTALLING CONTRACTOR TO SUIT CONDITIONS. ALL CHANGES SHALL BE CLEARLY INDICATED ON THE RECORD DRAWINGS.
2. SHOULD ANY CONDITIONS EXIST THAT DIFFER FROM WHAT IS INDICATED ON THESE DRAWINGS WHICH CAUSE MAJOR DEVIATIONS IN THE WORK SHOWN, THE CONTRACTOR SHALL CONTACT SIMPLEXGRINNELL IN A TIMELY MANNER SO AS NOT TO IMPAIR THE CONSTRUCTION SCHEDULE.
3. CONTRACTOR IS RESPONSIBLE FOR MAKING AND OBTAINING APPROVAL FOR ALL NECESSARY ADJUSTMENTS IN CIRCUITING AS REQUIRED TO ACCOMMODATE THE RELOCATION OF EQUIPMENT AND/OR DEVICES WHICH ARE AFFECTED BY ANY AUTHORIZED CHANGE. ALL CHANGES SHALL BE CLEARLY INDICATED ON THE RECORD DRAWINGS.
4. A STAMPED SET OF APPROVED FIRE ALARM DRAWINGS SHALL BE AT THE JOB SITE AND SHALL BE USED FOR INSTALLATION.
5. THE POWER CIRCUIT TO THE FACP AND TO THE FIRE ALARM POWER SUPPLIES SHALL BE ON A DEDICATED 120V, 20A BRANCH CIRCUIT BREAKER, AND SHALL HAVE A RED MARKING, LOCK-ON PROVISION AND SHALL BE IDENTIFIED AS "FIRE ALARM CIRCUIT CONTROL." THE LOCATION OF THE CIRCUIT DISCONNECT MEANS (CIRCUIT BREAKER) SHALL BE PERMANENTLY IDENTIFIED AT THE FIRE ALARM CONTROL UNIT.
6. EXISTING FIRE ALARM SYSTEM SHALL NOT BE DISCONNECTED OR TAKEN OUT OF SERVICE WITHOUT WRITTEN PERMISSION FROM THE OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER THE TIMING OF THE EXISTING FA SYSTEM DEMOLITION WORK. THE LOCAL FIRE AUTHORITY AND CENTRAL MONITORING STATION SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF EXISTING FA SYSTEM SHUTDOWN.
7. UPDATE THE AS-BUILT DRAWING SET DAILY WITH JOB PROGRESS. RETURN THE AS-BUILT DRAWING SET TO SIMPLEXGRINNELL NO LATER THAN 7 DAYS AFTER FINAL TEST.
8. THE CONTRACTOR WILL MAINTAIN ALL AREAS OF THE BUILDING IN A NEAT AND WORKMAN LIKE MANNER.
9. DO NOT APPLY POWER EXCEPT IN THE PRESENCE OF A FACTORY TRAINED SIMPLEXGRINNELL TECHNICAL REPRESENTATIVE.
10. ANY SMOKE DETECTOR HEAD INSTALLED BEFORE THE BUILDING IS CLEANED AND ACCEPTED SHALL BE COVERED TO PROTECT FROM DUST. ANY FALSE ALARMS DUE TO DIRT CONTAMINATED HEADS SHALL BE THE RESPONSIBILITY OF THE FIRE ALARM INSTALLER.
11. THE FIRE ALARM INSTALLER WILL MAINTAIN THE FIRE RESISTANCE INTEGRITY OF ALL WALL, CEILING, AND ROOF ASSEMBLIES ANY TIME THAT WORK IS NOT ACTIVELY BEING PERFORMED.
12. INSTALLATION OF DEVICES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. POWER LIMITED AND NON-POWER LIMITED FIELD WIRING MUST BE INSTALLED WITHIN THE FACP ENCLOSURE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NEC.
13. ALL WIRING SHALL BE INSTALLED ACCORDING TO NFPA 70 (NEC).
14. FIRE ALARM CIRCUITS SHALL BE IDENTIFIED IN ACCORDANCE WITH NEC SECTION 760-10. MARK ALL FIRE ALARM WIRES IN ACCORDANCE NEC SECTION 760-31g AND 760-42.
15. FIRE ALARM CABLE INSTALLED IN DUCTS, PLENUM, AND OTHER SPACES USED FOR ENVIRONMENTAL AIR SHALL BE TYPE FPLP.
16. FIRE ALARM CABLE INSTALLED IN THE VERTICAL RUNS AND PENETRATE MORE THAN ONE FLOOR OR CABLES INSTALLED IN VERTICAL RUNS IN SHAFTS SHALL BE TYPE FPLR.
17. FIRE ALARM CABLE INSTALLED IN UNDERGROUND CONDUIT OR OTHER WET LOCATIONS SHALL BE UL LISTED FOR WET LOCATIONS.
18. FIRE ALARM CIRCUITS EXTENDING BEYOND ONE BUILDING AND RUN OUTDOOR SHALL BE INSTALLED IN ACCORDANCE WITH NFPA 70 ARTICLES 760-7, 770, 725 AND 800 WHERE APPLICABLE.
19. ALL WIRING, INCLUDING SHIELDS MUST BE DRY AND FREE OF SHORTS AND GROUNDS.
20. ALL SHIELDED WIRE MUST HAVE SHIELD CONTINUITY AT FULL LENGTH OF THE WIRE.
21. ONLY SYSTEM WIRING CAN BE RUN IN THE SAME CONDUIT.
22. 120VAC IS NOT PERMITTED IN THE SAME CONDUIT WITH LOW VOLTAGE WIRING.
23. MAINTAIN 40 PERCENT CONDUIT FILL RATIO AS PER NEC REQUIREMENTS.
24. EXISTING CONDUITS MAY BE USED BY THE INSTALLATION CONTRACTOR AS DEEMED NECESSARY, HOWEVER, ANY EXISTING CONDUIT WILL BE USED ONLY IF CONDUITS MEET CURRENT STANDARDS AND CODES. SIMPLEXGRINNELL MAKES NO STATEMENTS WRITTEN OR VERBAL AS TO THE CONDITION OF EXISTING CONDUITS.

WIRE SCHEDULE

FIRE ALARM WIRE LIST (POWER LIMITED)

M MAPNET/IDNET CIRCUIT - 1 PAIR 18 AWG TWISTED OVERALL SHIELD

NON-PLENUM RATED: FPL	NON-PLENUM RATED: FPLR	PLENUM RATED: FPLP
CSC 250099	CSC 250100	CSC 125005
AREA=0.0320 SQ. INCH	AREA=0.0191 SQ. INCH	AREA=0.0235 SQ. INCH

V ADDRESSABLE VISUAL/SIGNAL CIRCUIT - 2 CONDUCTOR 14 AWG SOLID

NON-PLENUM RATED: FPLR	PLENUM RATED: FPLP
CSC 250017	CSC 123010
AREA=0.0340 SQ. INCH	AREA=0.0308 SQ. INCH

********** REFER TO SIGNAL CIRCUIT DISTANCE CHART **********

CONDUIT SIZE	CONDUCTOR AREA	CONDUIT SIZE	CONDUCTOR AREA
1/2"	0.12 SQ INCH *	1-1/4"	0.60 SQ INCH *
3/4"	0.21 SQ INCH *	1-1/2"	0.82 SQ INCH *
1"	0.34 SQ INCH *	2"	1.34 SQ INCH *

* 40% FILL PER N.E.C.

THE CABLES SPECIFIED HERE ARE FOR REFERENCE OF REQUIRED ELECTRICAL CHARACTERISTICS AS WELL AS CODE REQUIREMENTS. ALTERNATE SUPPLIERS MAY BE SUBSTITUTED PROVIDING EQUIVALENT CHARACTERISTICS ARE MAINTAINED. ITEMS SUCH AS CAPACITANCE BETWEEN CONDUCTORS AND WIRE GAUGE CAN BE CRUCIAL TO THE CIRCUIT DESIGN OF THIS SYSTEM INSTALLATION.

SYSTEM DESCRIPTION / SCOPE OF WORK

OCCUPANCY TYPE: U MISCELLANEOUS GROUP

SPRINKLER PROTECTION: BUILDING IS FULLY SPRINKLED.

ADDITION TO THE EXISTING FIRE ALARM SYSTEM. MIRROR COATING ROOM BEING ADDED TO THE HANGER WILL REQUIRE THE ADDITION OF 12 SMOKE DETECTORS, 4 PULL STATIONS, 7 CEILING MOUNT HORN STROBES AND 7 CEILING MOUNTED AMBER STROBES. WITH 2 WALL MOUNTED HORN STROBES AND 2 WALL MOUNTED AMBER STROBES BEING RELOCATED DUE TO THE EXPANSION OF THE MIRROR COATING ROOM. 2

THE EXISTING FIRE ALARM SYSTEM SHALL NOT BE DISCONNECTED OR TAKEN OUT OF SERVICE WITHOUT WRITTEN PERMISSION FROM THE OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER THE TIMING OF ANY EXISTING FIRE ALARM SYSTEM DEMOLITION WORK.

FIRE ALARM APPLICABLE CODES & STANDARDS

- NASA-STD-8719.11A (SAFETY STANDARD FOR FIRE PROTECTION) 2
- CALIFORNIA FIRE CODE, 2007 EDITION, TITLE 24, PART 9. (CALIFORNIA AMENDED INTERNATIONAL FIRE CODE, 2006 EDITION)
- CALIFORNIA ELECTRIC CODE, 2007 EDITION, TITLE 24, PART 3. (CALIFORNIA AMENDED NATIONAL ELECTRIC CODE, 2005 EDITION)
- CALIFORNIA ELEVATOR SAFETY CONSTRUCTION CODE 2007. (CALIFORNIA CODE OF REGULATION, TITLE 8)
- NFPA 72 (NATIONAL FIRE ALARM CODE) 2

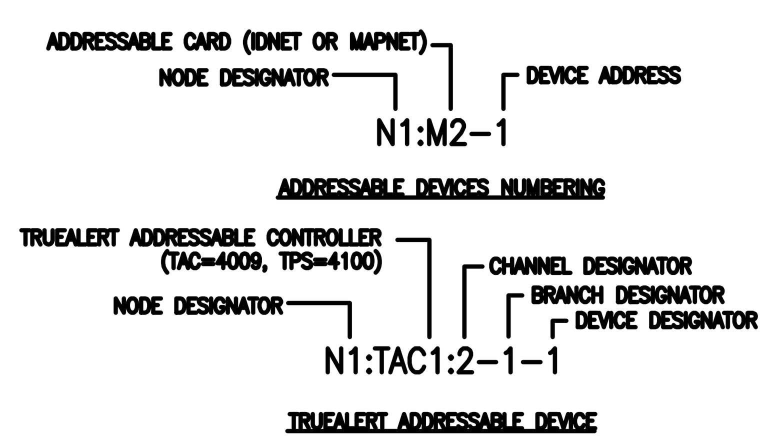
ABBREVIATIONS LEGEND

AC = ABOVE CEILING
C = CEILING MOUNTED
E = EXISTING TO REMAIN
RC = EXISTING TO REMOVE AND COVER
RD = EXISTING DEVICE TO BE RELOCATED
RL = RELOCATED DEVICE
RR = REMOVE EXISTING AND REPLACE W/NEW
WP = WEATHERPROOF
XP = EXPLOSION PROOF

AFF = ABOVE FINISHED FLOOR
AHJ = AUTHORITY HAVING JURISDICTION
ALM = ALARM
ANN = ANNUNCIATOR
BMS = BUILDING MANAGEMENT SYSTEM
CBC = CALIFORNIA BUILDING CODE
CD = (eg. 15CD) CANDELA
CSFM = CALIFORNIA STATE FIRE MARSHALL
DET = DETECTOR
DGP = DATA GATHERING PANEL
EOL = END OF LINE
EPO = EMERGENCY POWER OFF
FACP = FIRE ALARM CONTROL PANEL
FATC = FIRE ALARM TERMINAL CABINET
FBO = FURNISHED BY OTHERS
FCC = FIRE COMMAND CENTER
FAA = FIRE ALARM ANNUNCIATOR
FTR = FIRE ALARM TRANSPONDER
FSD = FIRE SMOKE DAMPER

HT = HEIGHT
HVAC = HEATING, VENTILATION, & AIR CONDITIONING
IMS = INFORMATION MANAGEMENT SYSTEM
MAX = MAXIMUM
MIN = MINIMUM
N/A = NOT APPLICABLE
NAC = NOTIFICATION APPLIANCE CIRCUIT EXTENDER
NDU = NETWORK DISPLAY UNIT
NEC = NATIONAL ELECTRICAL CODE
NFPA = NATIONAL FIRE PROTECTION ASSOCIATION
NIC = NOT IN CONTRACT
NPU = NETWORK PROCESSING UNIT
NTS = NOT TO SCALE
PAP = PRE-ACTION PANEL
SCC = STATUS COMMAND CENTER
SLC = SIGNALING LINE CIRCUIT
SMK = SMOKE
SUPV = SUPERVISORY
TAC = TRUEALERT ADDRESSABLE CONTROLLER
TRBL = TROUBLE
TS = TAMPER SWITCH
TYP = TYPICAL
UON = UNLESS OTHERWISE NOTED
VCC = VOICE COMMAND CENTER
VT = VALVE TAMPER
WF = WATER FLOW
W = (eg. 1/2W) WATT
W/ = WITH
W/O = WITH OUT

DEVICE ADDRESSING LEGEND



AS-BUILT
DATE: 6/3/11

SYMBOL KEY

FIRE ALARM SYMBOLS LEGEND

QTY.	SYMBOL	DESCRIPTION	MODEL#	BACKBOX
(E)	4100 U	FIRE ALARM CONTROL PANEL W / 33AH BATTERY SET	SIMPLEX 4100-9111 SIMPLEX 2081-9271	SUPPLIED BY SIMPLEXGRINNELL
(E)	NAC#	TRUEALERT ADDRESSABLE CONTROLLER # DESIGNATES THE CONTROLLER PANEL NUMBER W / 12.7AH BATTERY SET	SIMPLEX 4009-9401 SIMPLEX 2081-9288	SUPPLIED BY SIMPLEXGRINNELL
12	ⓩ	SMOKE SENSOR / BASE	SIMPLEX 4098-9714 SIMPLEX 4098-9792 BASE	4" OCTAGONAL BOX 1 1/2" DEEP
4	F	MANUAL PULL STATION	SIMPLEX 4099-9001	SINGLE GANG BOX 2 1/2" DEEP
7	HC #	ADDRESSABLE CEILING MOUNT MULTI-CANDELA A/V RED # =CANDELA RATING	SIMPLEX 4906-9228	4" SQUARE BOX 1 1/2" DEEP
7	# A	ADDRESSABLE AMBER CEILING MOUNT MULTI-CANDELA V/O WHITE # =CANDELA RATING	SIMPLEX 4906-9207	HANDY BOX 1 1/2" DEEP
N/A	JB	JUNCTION/PULL BOX	SUPPLIED BY OTHERS	SUPPLIED BY OTHERS

1

SEQUENCE OF OPERATION

CONTROL UNIT ANNUNCIATION — NOTIFICATION — REQUIRED FIRE SAFETY CONTROL — SUPPLEMENTARY

SYSTEM OUTPUTS:
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 TROUBLE SIGNAL
G. ACTUATE APPROPRIATE LOCATION INDICATOR
H. ACTUATE ALL AUDIBLE EVACUATION SIGNALS
I. ACTUATE ALL VISIBLE EVACUATION SIGNALS
K. DISPLAY / PRINT CHANGE OF STATUS
L. TRANSMIT ALARM SIGNAL TO SUPERVISING STATION
M. TRANSMIT SUPERVISORY SIGNAL TO SUPERVISING STATION
N. TRANSMIT TROUBLE SIGNAL TO SUPERVISING STATION
O. RELEASE MAGNETICALLY HELD SMOKE DOORS
P. UNLOCK SECURITY DOORS
Q. RELEASE ELEVATOR FIRE DOORS
R. ELEVATOR SHUNT TRIP
S. MAIN FLOOR ELEVATOR RECALL
T. ALTERNATE FLOOR ELEVATOR RECALL
U. ELEVATOR HAT FLASH
W. ACTUATE PRE-ACTION SPRINKLER SOLENOID
X. ACTUATE AREA HORN - SLOW PULSE
Y. ACTUATE AREA HORN - FAST PULSE
Z. ACTUATE AREA HORN - CONTINUOUS
AA. ACTUATE RELEASE STROBE
AB. BEGIN 30 SECOND COUNTDOWN
AC. AGENT RELEASE
AD. AGENT RELEASE DELAY
AE. REMOTELY DISPLAY ACTIVE STATUS
AF. FAN SHUT DOWN
AG. DAMPER SHUT DOWN
AH. PRESSURIZE STAIRWELLS

#	SYSTEM INPUTS	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	#	REMARKS
1	SMOKE SENSOR/DETECTOR	•	•					•	•	•		•	•			•	•															•	•	•	•	1	
2	MANUAL PULL STATION	•	•					•	•	•		•	•			•	•															•				2	
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2

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1	04/23/10	PER AHJ COMMENTS	
2	6/14/10	PER AHJ COMMENTS	

REGISTERED PROFESSIONAL ENGINEER R.J. HARDIN NO. 9125 EXP. 09-30-11 ELECTRICAL STATE OF CALIFORNIA

FIRE ALARM SYSTEM GENERAL INFORMATION PAGE

NASA BLDG 703 MIRROR COATING ROOM

NASA DRYDEN RESEARCH CENTER
EDWARDS AIR FORCE BASE

DRAWN BY: P. OZIER	DATE: 10/26/09
DESIGNED BY: P. OZIER	DATE: 10/26/09
APPROVED BY:	DATE:

PROJECT NUMBER: 413-947028201

SHEET TITLE: FIRE ALARM SYSTEM GENERAL INFORMATION PAGE

SHEET NUMBER: FA-001

06/03/11 AS BUILT

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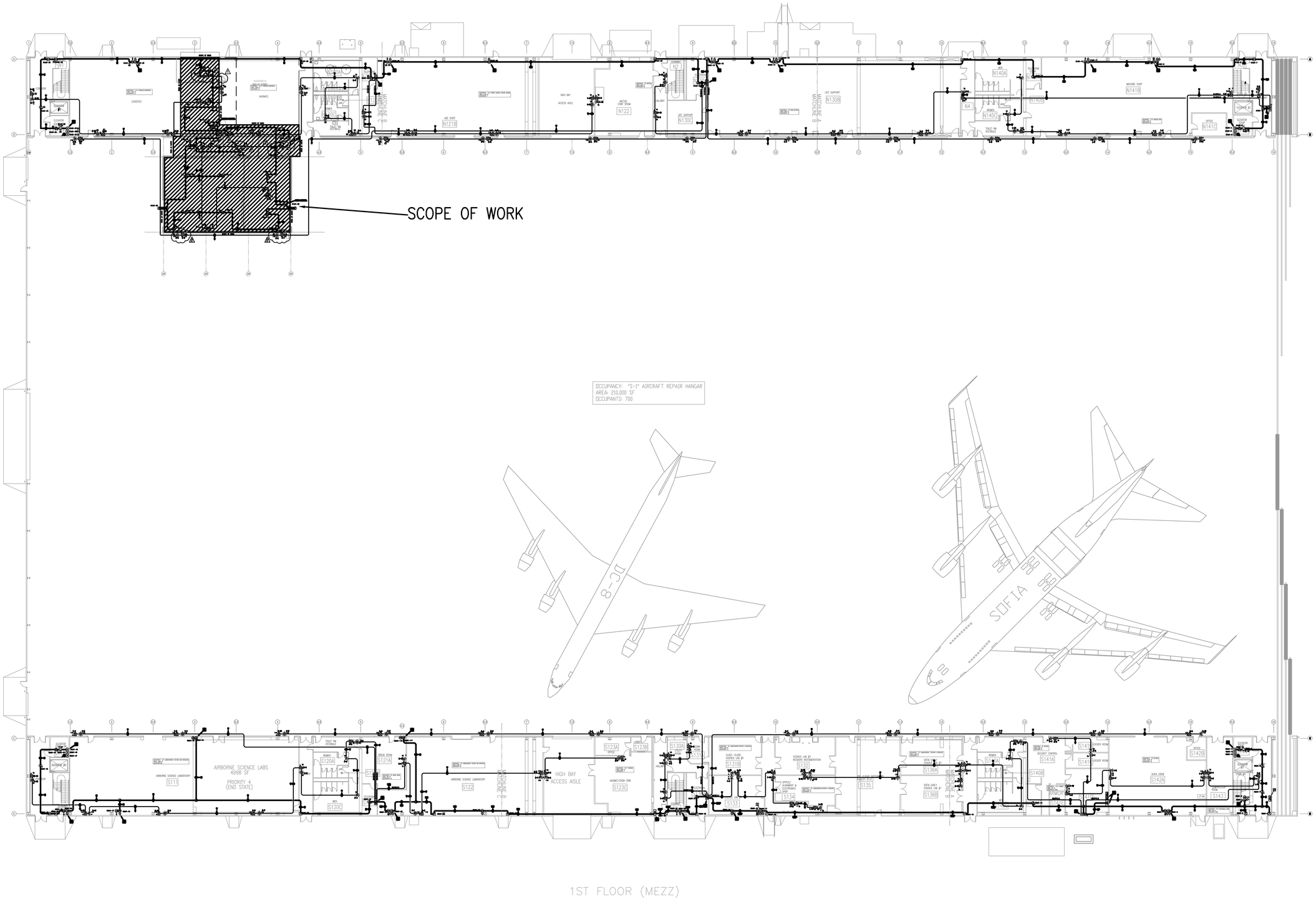

FIRE ALARM OVERALL PLAN

SCALE: NOT TO SCALE

AS-BUILT
DATE: 6/3/11

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REGISTERED PROFESSIONAL ENGINEER
R.J. HARDIN
NO. 9125
EXP. 09-30-11
ELECTRICAL
STATE OF CALIFORNIA

FIRE ALARM SYSTEM
OVERALL PLAN

NASA BLDG 703 MIRROR COATING ROOM

NASA DRYDEN RESEARCH CENTER
EDWARDS AIR FORCE BASE

DRAWN BY:	DATE:
P. OZIER	10/26/09
DESIGNED BY: P. OZIER	DATE: 10/26/09
APPROVED BY:	DATE:

PROJECT NUMBER: 413-947028201

SHEET TITLE: FIRE ALARM SYSTEM OVERALL PLAN

SHEET NUMBER: FA-100

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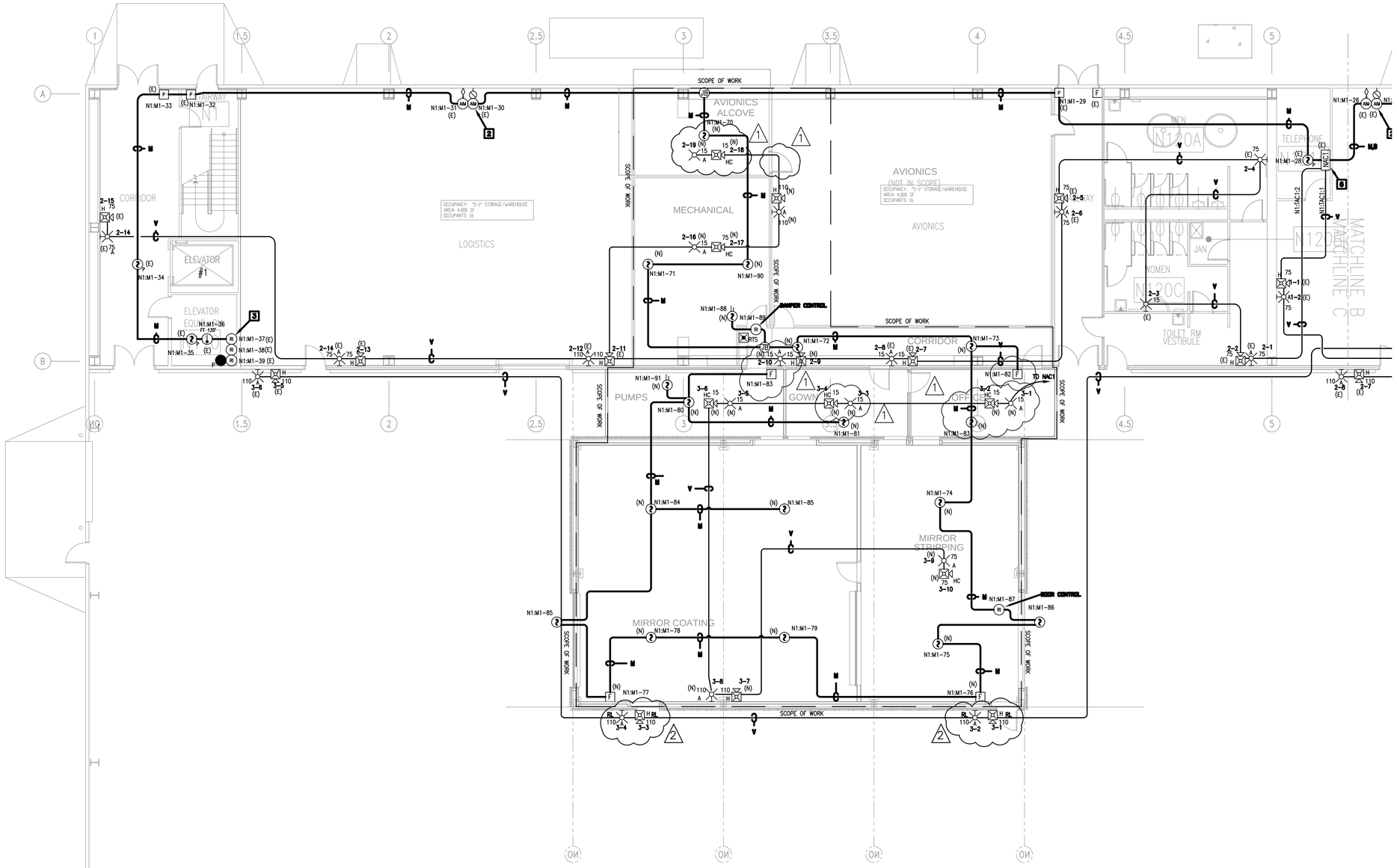
36" x 36"



PARTIAL FIRE ALARM PLAN

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

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DATE: 6/3/11

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R. J. HARDIN
NO. 9125
EXP. 09-30-11
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FIRE ALARM SYSTEM
PARTIAL FLOORPLAN

NASA BLDG 703 MIRROR COATING ROOM

NASA DRYDEN RESEARCH CENTER
EDWARDS AIR FORCE BASE

DRAWN BY: P. OZIER	DATE: 10/26/09
DESIGNED BY: P. OZIER	DATE: 10/26/09
APPROVED BY:	DATE:

PROJECT NUMBER: 413-947028201

SHEET TITLE: FIRE ALARM SYSTEM PARTIAL FLOOR PLAN

SHEET NUMBER: FA-101

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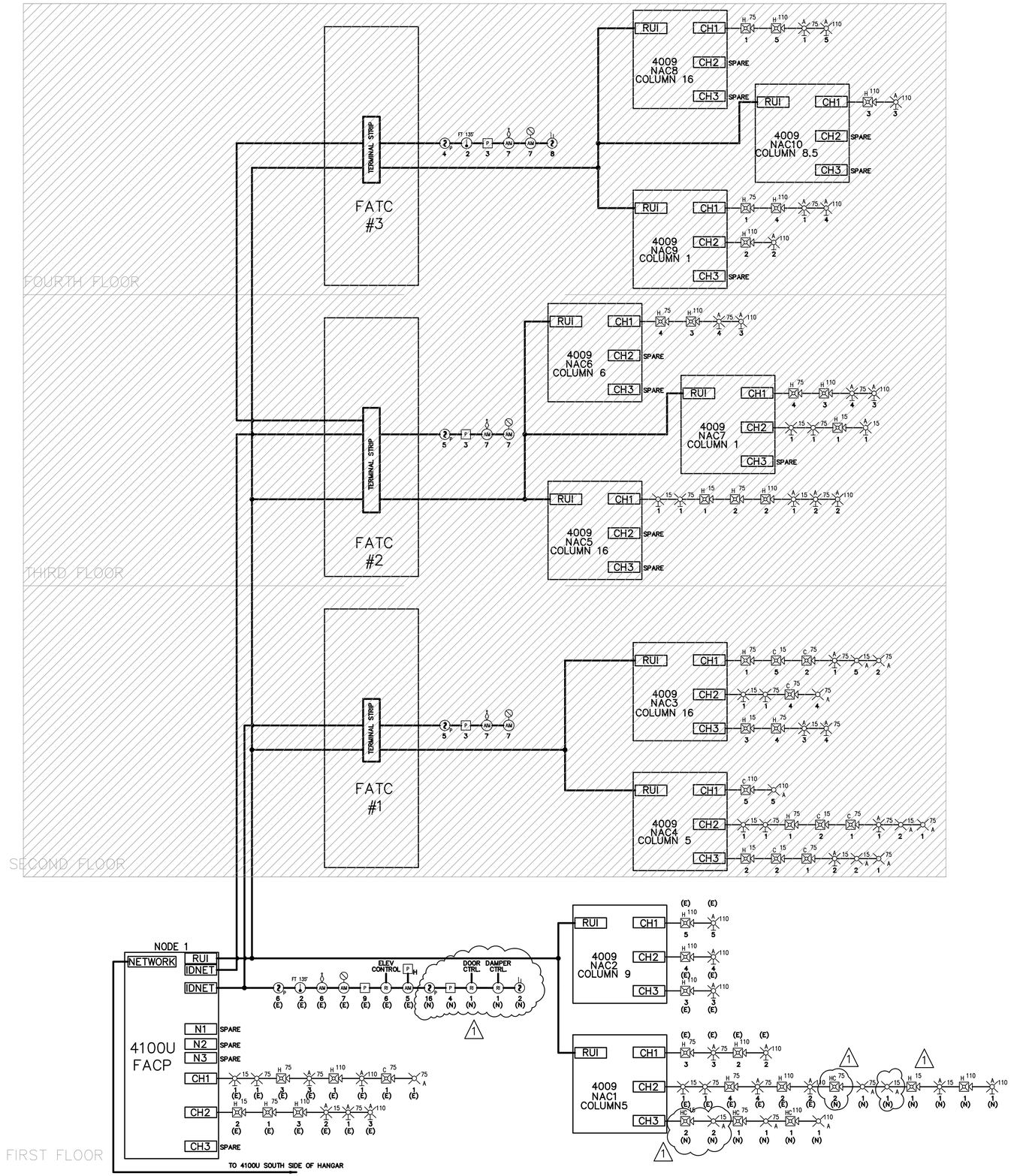

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FIRE ALARM SYSTEM RISER DIAGRAM

NASA BLDG 703 MIRROR COATING ROOM

NASA DRYDEN RESEARCH CENTER
EDWARDS AIR FORCE BASE

DRAWN BY: P. OZIER	DATE: 10/26/09
DESIGNED BY: P. OZIER	DATE: 10/26/09
APPROVED BY:	DATE:

PROJECT NUMBER: 413-947028201

SHEET TITLE: FIRE ALARM SYSTEM RISER DIAGRAM

SHEET NUMBER: FA-201

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36" x 36"

4100U–SOUTH–COLUMN 13.5

Module	Qty	Description			Standby Current	Total Standby	Alarm Current	Total Alarm
Panel Equipment								
4100–9111	1	4100U CONFIG. DOMESTIC 120V		EXISTING	0.373000	0.373000	0.470000	0.470000
4100–5120	1	TRUEALERT POWER SUPPLY, 3 CHANNELS, 120V		EXISTING	0.088000	0.088000	0.100000	0.100000
4100–6014	1	NETWORK IF CARD, WIRED		EXISTING	0.046000	0.046000	0.046000	0.046000
4100–6056	2	NETWORK MEDIA CARD WIRED		EXISTING	0.055000	0.110000	0.055000	0.110000
4100–6052	1	EVENT REPORTING DACT		EXISTING	0.030000	0.030000	0.040000	0.040000
4100–6062	1	TFX NETWORK INTERFACE		EXISTING	0.132000	0.132000	0.132000	0.132000
4100–3101	1	IDNET MODULE, UP TO 250 POINTS	*	EXISTING	0.075000	0.075000	0.115000	0.115000
					Total Panel Stby	0.854000	Total Panel Alarm	1.013000
Peripheral Devices								
4098–9714	22	TRUEALARM PHOTO SMOKE SENSOR		EXISTING	0.000000	0.000000	0.000000	0.000000
4098–9733	4	TRUEALARM HEAT SENSOR		EXISTING	0.000000	0.000000	0.000000	0.000000
4098–9792	26	TRUEALARM SENSOR BASE	*	EXISTING	0.000000	0.000000	0.000000	0.000000
4098–9751	10	TRUEALARM PHOTO IN DUCT SMOKE SENSOR W/ RELAY	*	EXISTING	0.000240	0.002400	0.030000	0.300000
4098–9843	8	ENCAPSULATED RELAY PIM–SD		EXISTING	0.000000	0.000000	0.015000	0.120000
4099–9001	20	IDNET SINGLE ACTION PULL STATION	*	EXISTING	0.000000	0.000000	0.000000	0.000000
4090–9001	55	IDNET SUPERVISED IAM	*	EXISTING	0.000000	0.000000	0.000000	0.000000
4090–9002	8	IDNET RELAY IAM	*	EXISTING	0.000000	0.000000	0.000000	0.000000
4009–9401	10	TRUEALERT ADDRESSABLE CONTROLLER		EXISTING	0.000000	0.000000	0.000000	0.000000
4904–9350	1	TRUEALERT 15CD VISIBLE ONLY RED		EXISTING	0.000200	0.000200	0.083000	0.083000
4904–9351	3	TRUEALERT 75CD VISIBLE ONLY RED		EXISTING	0.000200	0.000600	0.205000	0.615000
4903–9450	0	TRUEALERT 15CD AUDIBLE/VISIBLE RED		EXISTING	0.000200	0.000000	0.097000	0.000000
4903–9451	8	TRUEALERT 75CD AUDIBLE/VISIBLE RED		EXISTING	0.000200	0.001600	0.219000	1.752000
4903–9452	4	TRUEALERT 110CD AUDIBLE/VISIBLE RED		EXISTING	0.000200	0.000800	0.240000	0.960000
4903–9459	0	TRUEALERT 15CD AUDIBLE/VISIBLE WHITE CEILING		EXISTING	0.000200	0.000000	0.111000	0.000000
4903–9460	1	TRUEALERT 75CD AUDIBLE/VISIBLE WHITE CEILING		EXISTING	0.000200	0.000200	0.302000	0.302000
4903–9461	0	TRUEALERT 110CD AUDIBLE/VISIBLE WHITE CEILING		EXISTING	0.000200	0.000000	0.370000	0.000000
4098–9714	14	TRUEALARM PHOTO SMOKE SENSOR		NEW	0.000000	0.000000	0.000000	0.000000
4098–9792	14	TRUEALARM SENSOR BASE	*	NEW	0.000000	0.000000	0.000000	0.000000
4099–9001	2	IDNET SINGLE ACTION PULL STATION	*	NEW	0.000000	0.000000	0.000000	0.000000
Mult–Candela Strobes (Select Candela Rating)								
4906–9205	0	ADDRESSABLE WALL MNT MC AMBER V/O, RED		15cd	0.000200	0.000000	0.064000	0.000000
4906–9205	8	ADDRESSABLE WALL MNT MC AMBER V/O, RED		75cd	0.000200	0.001600	0.187000	1.496000
4906–9205	4	ADDRESSABLE WALL MNT MC AMBER V/O, RED		110cd	0.000200	0.000800	0.253000	1.012000
4906–9207	1	AMBER ALERT MCVO CEILING WHT (75CD)		75cd	0.000200	0.000200	0.288000	0.288000
					Total Periph Stby	0.0064	Total Periph Alarm	6.928
					Total Standby Amps	0.862	Total Alarm Amps	7.941

* Additional Current Draw Included With Device Addresses Used (See additional current draws)
1. 2–wire detector alarm current is included in the alarm current of the Initiating Device Circuit.

Battery Set #1 (Cabinet/Charger #1)		Qty	Standby Current		Alarm Current
Cabinet #1 Card Power			0.854	Backup Amplifier	1.013
Current Draw For 100 Watt Or 95 Watt Amplifiers		0	0.000	0	0.000
Current Draw For Flex 35 and 50 Watt Amplifiers		0	0.000		0.000
Power For External Peripheral Devices			0.00840		6.92800
			0.862	<— Sub Totals —>	7.941
Additional Current Draws					
RUI Connected Peripheral Devices		10	0.000		0.000
MAPNET/IDNet Device Addresses ordered / used	145	145.0	0.115		0.135
Spare addressable point capacity included for battery calc	0%	0	0.000		0.000
			0.977	<—Grand Totals —>	8.076
Additional Battery Capacity Required	0%		0.000		0.000
Standby Time =	96	Hrs	93.830	Standby Ah	
Alarm Time =	5	Mins.	0.673	Alarm Ah	
Standby + Alarm =			94.503		
Battery Required No Match			110.602	Total Ah Required (see note below)	

Note: The total Ah required takes into account any physical and chemical properties of battery discharge rates, high alarm current draw of a battery after a long (standby) low current draw, and reflects the manufacturers discharge rates per their recommendations and UL standards.

NAC1–NORTH–COLUMN 5

Module	Qty	Description		Standby Current	Total Standby	Alarm Current	Total Alarm
Panel Equipment							
4009–9401	1	TRUEALERT ADDRESSABLE CONTROLLER	EXISTING	0.088000	0.088000	0.195000	0.195000
				Total Panel Stby	0.088000	Total Panel Alarm	0.195000
Peripheral Devices							
4904–9350	1	TRUEALERT 15CD VISIBLE ONLY RED	EXISTING	0.000200	0.000200	0.083000	0.083000
4904–9351	1	TRUEALERT 75CD VISIBLE ONLY RED	EXISTING	0.000200	0.000200	0.205000	0.205000
4903–9450	0	TRUEALERT 15CD AUDIBLE/VISIBLE RED	EXISTING	0.000200	0.000000	0.097000	0.000000
4903–9451	7	TRUEALERT 75CD AUDIBLE/VISIBLE RED	EXISTING	0.000200	0.001400	0.219000	1.533000
4903–9452	4	TRUEALERT 110CD AUDIBLE/VISIBLE RED	EXISTING	0.000200	0.000800	0.240000	0.960000
4903–9459	0	TRUEALERT 15CD AUDIBLE/VISIBLE WHITE CEILING	EXISTING	0.000200	0.000000	0.111000	0.000000
4903–9460	0	TRUEALERT 75CD AUDIBLE/VISIBLE WHITE CEILING	EXISTING	0.000200	0.000000	0.302000	0.000000
4903–9461	0	TRUEALERT 110CD AUDIBLE/VISIBLE WHITE CEILING	EXISTING	0.000200	0.000000	0.370000	0.000000
4904–9350	1	TRUEALERT 15CD VISIBLE ONLY RED	NEW	0.000200	0.000200	0.083000	0.083000
4903–9452	1	TRUEALERT 110CD AUDIBLE/VISIBLE RED	NEW	0.000200	0.000200	0.240000	0.240000
Mult–Candela Strobes (Select Candela Rating)							
4906–9205	4	ADDRESSABLE WALL MNT MC AMBER V/O, RED	15cd	0.000200	0.000800	0.064000	0.256000
4906–9205	7	ADDRESSABLE WALL MNT MC AMBER V/O, RED	75cd	0.000200	0.001400	0.187000	1.309000
4906–9205	5	ADDRESSABLE WALL MNT MC AMBER V/O, RED	110cd	0.000200	0.001000	0.253000	1.265000
4906–9228	3	ADDRESSABLE CEIL MNT MC A/V, RED	15cd	0.000200	0.000600	0.082000	0.246000
4906–9228	3	ADDRESSABLE CEIL MNT MC A/V, RED	75cd	0.000200	0.000600	0.249000	0.747000
4906–9228	1	ADDRESSABLE CEIL MNT MC A/V, RED	110cd	0.000200	0.000200	0.335000	0.335000
4906–9207	1	AMBER ALERT MCVO CEILING WHT (15CD)	15cd	0.000200	0.000200	0.097000	0.097000
4906–9207	2	AMBER ALERT MCVO CEILING WHT (75CD)	75cd	0.000200	0.000400	0.288000	0.576000
4906–9207	1	AMBER ALERT MCVO CEILING WHT (110CD)	110cd	0.000200	0.000200	0.358000	0.358000
				Total Periph Stby	0.008	Total Periph Alarm	8.291
				Total Standby Amps	0.096	Total Alarm Amps	8.486

* Current Draw Included With Device Addresses Used (See additional current draws)
1. 2–wire detector alarm current is included in the alarm current of the Initiating Device Circuit.

Battery Calculations			Standby Current		Alarm Current
Control Panel Card Power			0.088		0.195
Power For External Peripheral Devices			0.00840		8.29100
			0.096	<— Sub Totals —>	8.486
Additional Current Draws					
MAPNET/IDNet Device Addresses ordered / used	0	0.0	0.000		0.000
Spare addressable point capacity included for battery calc	0%	0	0.000		0.000
			0.096	<—Grand Totals —>	8.486
Additional Battery Capacity Required	0%		0.000		0.000
Standby Time =	96	Hrs	9.254	Standby Ah	
Alarm Time =	10	Mins.	1.414	Alarm Ah	
Standby + Alarm =			10.669		
Battery Required 2081–9275 18AH			13.597	Total Ah Required (see note below)	

Note: The total Ah required takes into account any physical and chemical properties of battery discharge rates, high alarm current draw of a battery after a long (standby) low current draw, and reflects the manufacturers discharge rates per their recommendations and UL standards.

AS-BUILT
DATE: 6/3/11

tyco Fire & Security / SimplexGrinnell
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1	04/23/10	PER AHJ COMMENTS	
2	6/14/10	PER AHJ COMMENTS	

REGISTERED PROFESSIONAL ENGINEER R.J.HARDWICK NO. 9125 EXP. 09-30-11 ELECTRICAL STATE OF CALIFORNIA

FIRE ALARM SYSTEM
BATTERY CALCULATIONS
NASA BLDG 703 MIRROR COATING ROOM
NASA DRYDEN RESEARCH CENTER
EDWARDS AIR FORCE BASE

DRAWN BY: P. OZIER	DATE: 10/26/09
DESIGNED BY: P. OZIER	DATE: 10/26/09
APPROVED BY:	DATE:

PROJECT NUMBER: 413–947028201
SHEET TITLE: FIRE ALARM SYSTEM BATTERY CALCULATIONS
SHEET NUMBER: FA–202

06/03/11 AS BUILT

Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\FA_202_As-Built.dwg 6/21/2011 12:08 PM NELSON 36" x 36"

Estimated Voltage Drop and Current Draws
NAC Starting Voltage = 19.00
Units = FT

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 1
Amber OFF:
Total NAC Current = 1.076
Total Current Load for 4009T [Addressable] - 1 = 3.830
Branch Length = 230.0

PID	Device#	Distance	Wire Gauge	Description	Current (A) of the appliance	Voltage (V) at the device	Drop %
4903-9451	N1:SAC1:1-1-1	20	14	75cd A/V Wall Mount - Red	0.197	18.88	0.63%
4906-9205	N1:SAC1:1-1-2	10	14	Amber Strobe V/O Wall Mount - 75cd Red	0.006	18.83	0.88%
4903-9452	N1:SAC1:1-1-3	40	14	110cd A/V Wall Mount - Red	0.219	18.63	1.95%
4906-9205	N1:SAC1:1-1-4	10	14	Amber Strobe V/O Wall Mount - 110cd Red	0.005	18.59	2.16%
4903-9452	N1:SAC1:1-1-5	50	14	110cd A/V Wall Mount - Red	0.222	18.41	3.10%
4906-9205	N1:SAC1:1-1-6	10	14	Amber Strobe V/O Wall Mount - 110cd Red	0.005	18.39	3.21%
4906-9205	N1:SAC1:1-1-7	60	14	Amber Strobe V/O Wall Mount - 75cd Red	0.005	18.25	3.94%
4903-9451	N1:SAC1:1-1-8	10	14	75cd A/V Wall Mount - Red	0.205	18.22	4.10%
4903-9451	N1:SAC1:1-1-9	10	14	75cd A/V Wall Mount - Red	0.205	18.21	4.16%
4906-9205	N1:SAC1:1-1-10	10	14	Amber Strobe V/O Wall Mount - 75cd Red	0.005	18.21	4.16%

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 1
Amber ON:
Total NAC Current = 1.012
Total Current Load for 4009T [Addressable] - 1 = 3.042
Branch Length = 230.0

PID	Device#	Distance	Wire Gauge	Description	Current (A) of the appliance	Voltage (V) at the device	Drop %
4903-9451	N1:SAC1:1-1-1	20	14	75cd A/V Wall Mount - Red	0.006	18.89	0.58%
4906-9205	N1:SAC1:1-1-2	10	14	Amber Strobe V/O Wall Mount - 75cd Red	0.169	18.83	0.89%
4903-9452	N1:SAC1:1-1-3	40	14	110cd A/V Wall Mount - Red	0.005	18.64	1.89%
4906-9205	N1:SAC1:1-1-4	10	14	Amber Strobe V/O Wall Mount - 110cd Red	0.232	18.59	2.16%
4903-9452	N1:SAC1:1-1-5	50	14	110cd A/V Wall Mount - Red	0.005	18.42	3.05%
4906-9205	N1:SAC1:1-1-6	10	14	Amber Strobe V/O Wall Mount - 110cd Red	0.234	18.39	3.21%
4906-9205	N1:SAC1:1-1-7	60	14	Amber Strobe V/O Wall Mount - 75cd Red	0.175	18.27	3.84%
4903-9451	N1:SAC1:1-1-8	10	14	75cd A/V Wall Mount - Red	0.005	18.26	3.89%
4903-9451	N1:SAC1:1-1-9	10	14	75cd A/V Wall Mount - Red	0.005	18.25	3.94%
4906-9205	N1:SAC1:1-1-10	10	14	Amber Strobe V/O Wall Mount - 75cd Red	0.175	18.24	4.00%

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 1
Total Wire Length by Gauge

Quantity	Units	Description
230	ft	Size14AWG

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 2
Amber OFF:
Total NAC Current = 2.021
Total Current Load for 4009T [Addressable] - 1 = 3.830
Branch Length = 315.0

PID	Device#	Distance	Wire Gauge	Description	Current (A) of the appliance	Voltage (V) at the device	Drop %
4906-9205	N1:SAC1:2-1-1	30	14	Amber Strobe V/O Wall Mount - 75cd Red	0.005	18.66	1.79%
4906-9227	N1:SAC1:2-1-2	5	14	A/V Wall Mount - 75cd Red	0.179	18.6	2.10%
4904-9350	N1:SAC1:2-1-3	10	14	15cd Strobe Wall Mount - Red	0.076	18.5	2.63%
4904-9351	N1:SAC1:2-1-4	10	14	75cd Strobe Wall Mount - Red	0.19	18.4	3.16%
4906-9227	N1:SAC1:2-1-5	15	14	A/V Wall Mount - 75cd Red	0.182	18.26	3.89%
4906-9205	N1:SAC1:2-1-6	5	14	Amber Strobe V/O Wall Mount - 75cd Red	0.005	18.23	4.05%
4906-9227	N1:SAC1:2-1-7	30	14	A/V Wall Mount - 15cd Red	0.069	17.99	5.31%
4906-9205	N1:SAC1:2-1-8	5	14	Amber Strobe V/O Wall Mount - 15cd Red	0.005	17.95	5.52%
4906-9227	N1:SAC1:2-1-9	20	14	A/V Wall Mount - 15cd Red	0.07	17.81	6.26%
4906-9205	N1:SAC1:2-1-10	5	14	Amber Strobe V/O Wall Mount - 15cd Red	0.005	17.77	6.47%
4906-9227	N1:SAC1:2-1-11	30	14	A/V Wall Mount - 110cd Red	0.251	17.56	7.57%
4906-9205	N1:SAC1:2-1-12	5	14	Amber Strobe V/O Wall Mount - 110cd Red	0.005	17.55	7.63%
4906-9227	N1:SAC1:2-1-13	40	14	A/V Wall Mount - 75cd Red	0.19	17.46	8.10%
4906-9205	N1:SAC1:2-1-14	50	14	Amber Strobe V/O Wall Mount - 75cd Red	0.005	17.41	8.36%
4906-9227	N1:SAC1:2-1-15	5	14	A/V Wall Mount - 75cd Red	0.191	17.4	8.42%
4906-9207	N1:SAC1:2-1-16	20	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.005	17.5	7.89%
4906-9228	N1:SAC1:2-1-17	5	14	A/V Ceiling Mount - 75cd Red	0.243	17.48	8.00%
4906-9205	N1:SAC1:2-1-18	10	14	Amber Strobe V/O Wall Mount - 110cd Red	0.005	17.46	8.10%
4906-9227	N1:SAC1:2-1-19	5	14	A/V Wall Mount - 110cd Red	0.253	17.45	8.15%
4906-9228	N1:SAC1:2-1-20	5	14	A/V Ceiling Mount - 15cd Red	0.08	17.45	8.15%
4906-9207	N1:SAC1:2-1-21	5	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.005	17.45	8.15%

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 2
Amber ON:
Total NAC Current = 1.328
Total Current Load for 4009T [Addressable] - 1 = 3.042
Branch Length = 315.0

PID	Device#	Distance	Wire Gauge	Description	Current (A) of the appliance	Voltage (V) at the device	Drop %
4906-9205	N1:SAC1:2-1-1	30	14	Amber Strobe V/O Wall Mount - 75cd Red	0.17	18.78	1.16%
4906-9227	N1:SAC1:2-1-2	5	14	A/V Wall Mount - 75cd Red	0.006	18.74	1.37%
4904-9350	N1:SAC1:2-1-3	10	14	15cd Strobe Wall Mount - Red	0.005	18.68	1.68%
4904-9351	N1:SAC1:2-1-4	10	14	75cd Strobe Wall Mount - Red	0.005	18.61	2.05%
4906-9227	N1:SAC1:2-1-5	15	14	A/V Wall Mount - 75cd Red	0.005	18.52	2.52%
4906-9205	N1:SAC1:2-1-6	5	14	Amber Strobe V/O Wall Mount - 75cd Red	0.172	18.48	2.74%
4906-9227	N1:SAC1:2-1-7	30	14	A/V Wall Mount - 15cd Red	0.005	18.32	3.58%
4906-9205	N1:SAC1:2-1-8	5	14	Amber Strobe V/O Wall Mount - 15cd Red	0.06	18.29	3.73%
4906-9227	N1:SAC1:2-1-9	20	14	A/V Wall Mount - 15cd Red	0.005	18.19	4.26%
4906-9205	N1:SAC1:2-1-10	5	14	Amber Strobe V/O Wall Mount - 15cd Red	0.06	18.17	4.37%
4906-9227	N1:SAC1:2-1-11	30	14	A/V Wall Mount - 110cd Red	0.005	18.03	5.10%
4906-9205	N1:SAC1:2-1-12	5	14	Amber Strobe V/O Wall Mount - 110cd Red	0.24	18.01	5.21%
4906-9227	N1:SAC1:2-1-13	40	14	A/V Wall Mount - 75cd Red	0.005	17.97	5.42%
4906-9205	N1:SAC1:2-1-14	50	14	Amber Strobe V/O Wall Mount - 75cd Red	0.178	17.92	5.68%
4906-9227	N1:SAC1:2-1-15	5	14	A/V Wall Mount - 75cd Red	0.005	17.92	5.68%
4906-9207	N1:SAC1:2-1-16	20	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.072	17.98	5.37%
4906-9228	N1:SAC1:2-1-17	5	14	A/V Ceiling Mount - 75cd Red	0.005	17.97	5.42%
4906-9205	N1:SAC1:2-1-18	10	14	Amber Strobe V/O Wall Mount - 110cd Red	0.24	17.95	5.52%
4906-9227	N1:SAC1:2-1-19	5	14	A/V Wall Mount - 110cd Red	0.005	17.95	5.52%
4906-9228	N1:SAC1:2-1-20	5	14	A/V Ceiling Mount - 15cd Red	0.005	17.95	5.52%
4906-9207	N1:SAC1:2-1-21	5	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.072	17.95	5.52%

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 2
Total Wire Length by Gauge

Quantity	Units	Description
315	ft	Size14AWG

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 3
Amber OFF:
Total NAC Current = 0.733
Total Current Load for 4009T [Addressable] - 1 = 3.830
Branch Length = 350.0

PID	Device#	Distance	Wire Gauge	Description	Current (A) of the appliance	Voltage (V) at the device	Drop %
4906-9207	N1:SAC1:3-1-1	10	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.006	18.96	0.21%
4906-9228	N1:SAC1:3-1-2	10	14	A/V Ceiling Mount - 15cd Red	0.074	18.92	0.42%
4906-9207	N1:SAC1:3-1-3	10	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.006	18.88	0.63%
4906-9228	N1:SAC1:3-1-4	10	14	A/V Ceiling Mount - 15cd Red	0.074	18.84	0.84%
4906-9207	N1:SAC1:3-1-5	200	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.005	18.2	4.21%
4906-9228	N1:SAC1:3-1-6	10	14	A/V Ceiling Mount - 15cd Red	0.077	18.16	4.42%
4906-9205	N1:SAC1:3-1-7	40	14	Amber Strobe V/O Wall Mount - 110cd Red	0.005	18.05	5.00%
4906-9227	N1:SAC1:3-1-8	5	14	A/V Wall Mount - 110cd Red	0.245	18.04	5.05%
4906-9207	N1:SAC1:3-1-9	50	14	Amber Strobe V/O Ceiling Mount - 75cd White	0.005	17.97	5.42%
4906-9228	N1:SAC1:3-1-10	5	14	A/V Ceiling Mount - 75cd Red	0.236	17.96	5.47%

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 3
Amber ON:
Total NAC Current = 0.702
Total Current Load for 4009T [Addressable] - 1 = 3.042
Branch Length = 350.0

PID	Device#	Distance	Wire Gauge	Description	Current (A) of the appliance	Voltage (V) at the device	Drop %
4906-9207	N1:SAC1:3-1-1	10	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.068	18.96	0.21%
4906-9228	N1:SAC1:3-1-2	10	14	A/V Ceiling Mount - 15cd Red	0.006	18.92	0.42%
4906-9207	N1:SAC1:3-1-3	10	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.068	18.89	0.58%
4906-9228	N1:SAC1:3-1-4	10	14	A/V Ceiling Mount - 15cd Red	0.006	18.86	0.74%
4906-9207	N1:SAC1:3-1-5	200	14	Amber Strobe V/O Ceiling Mount - 15cd White	0.071	18.23	4.05%
4906-9228	N1:SAC1:3-1-6	10	14	A/V Ceiling Mount - 15cd Red	0.005	18.2	4.21%
4906-9205	N1:SAC1:3-1-7	40	14	Amber Strobe V/O Wall Mount - 110cd Red	0.238	18.1	4.73%
4906-9227	N1:SAC1:3-1-8	5	14	A/V Wall Mount - 110cd Red	0.005	18.09	4.79%
4906-9207	N1:SAC1:3-1-9	50	14	Amber Strobe V/O Ceiling Mount - 75cd White	0.229	18.02	5.15%
4906-9228	N1:SAC1:3-1-10	5	14	A/V Ceiling Mount - 75cd Red	0.005	18.02	5.15%

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\SLC [Addressable] - 3
Total Wire Length by Gauge

Quantity	Units	Description
350	ft	Size14AWG

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\AUX Power 500 mA - 1
Amber OFF:
Total NAC Current = 0.000
Total Current Load for 4009T [Addressable] - 1 = 3.830

\4100U - 1 (N1 1ST FLOOR NORTH()\4009T [Addressable] - 1 ((1ST FLOOR NORTH CLOUMN 5))\AUX Power 500 mA - 1
Amber ON:
Total NAC Current = 0.000
Total Current Load for 4009T [Addressable] - 1 = 3.042

AS-BUILT
DATE: 6/3/11

Z:\Aerospace and Defense\NASA\mirror coating facility\as-built complete\Deliverable\FA_203_As-Built.dwg
NELSON
6/21/2011 12:10 PM

tyco Fire & Security / SimplexGrinnell
2788 N. LARKIN AVE. # 101
FRESNO, CA 93727
SALES: 559-348-0614
SERVICE: 559-348-0614
FAX: 559-348-1281

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NO.	DATE	REVISION DESCRIPTION	CHK'D BY
1	04/23/10	PER AHJ COMMENTS	
2	6/14/10	PER AHJ COMMENTS	

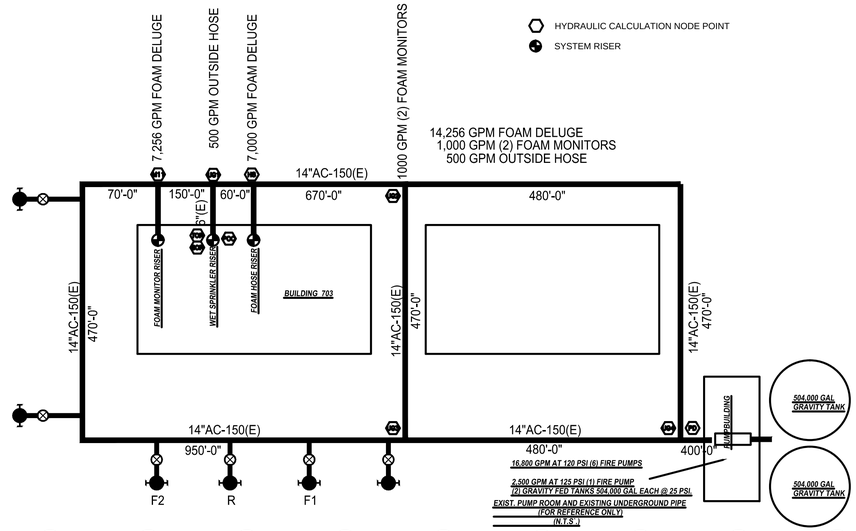
REGISTERED PROFESSIONAL ENGINEER
R.J. HARDIN
NO. 9125
EXP. 09-30-11
ELECTRICAL
STATE OF CALIFORNIA

FIRE ALARM SYSTEM VOLTAGE DROP CALCULATIONS
NASA BLDG 703 MIRROR COATING ROOM

NASA DRYDEN RESEARCH CENTER
EDWARDS AIR FORCE BASE

DRAWN BY: P. OZIER DATE: 10/26/09
DESIGNED BY: P. OZIER DATE: 10/26/09
APPROVED BY: DATE:
PROJECT NUMBER: 413-947028201
SHEET TITLE: FIRE ALARM SYSTEM VOLTAGE DROP CALC
SHEET NUMBER: FA-203

06/03/11 AS BUILT



PROJECT ADDRESS: 2825 AVENUE P, PALMDALE, CA 93550
ASSESSORS NUMBER 3022–029–273 IN THE COUNTY OF LOS ANGELES, CITY OF PALMDALE DESCRIPTION.

OWNER: LAWA/NASA

SCOPE OF WORK: REMODEL BUILDING 703 FOR MIRROR COATING FACILITY ON GROUND FLOOR IN HANGAR, NORTH SIDE

GENERAL CONTRACTOR: NASA & SUBCONTRACTORS
NASA DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA 93523–0273

PROJECT MANAGER: RON SUN (661) 276–3374

MAIN HANGAR OCCUPANCY: S–1
PROJECT AREA OCCUPANCY: F–2

CONSTRUCTION TYPE: II–A

QUALIFICATION OF BUILDING: UNLIMITED AREA WITH AN APPROVED SPRINKLER SYSTEM AND SEPARATION ON ALL FOUR SIDES: ORDINARY HAZARD CLASS 2 OCCUPANCY.

TOTAL GROUND FLOOR AREA: 271,397 SQ. FT.
TOTAL AREA THIS PROJECT: 4,695 SQ. FT.

GOVERNING BUILDING CODES:
2007 CALIFORNIA BUILDING CODE WITH PALMDALE AMENDMENTS
2007 CALIFORNIA ELECTRICAL, MECHANICAL, PLUMBING AND ENERGY CODES
2008 LA COUNTY FIRE CODE
2008 NEC
NASA STD. 8719.11 SAFETY STANDARD FOR FIRE PROTECTION CHAPTER 5.4

GENERAL NOTES:

1. ALL MATERIALS AND INSTALLATIONS TO BE U.L. LISTED AND SHALL CONFORM TO CBC 2007 ED. AND N.F.P.A. #13 (2002 ED.) NFPA 409 (2004 ED.) AS PERTAINS TO THIS PROJECT.
2. UNDERGROUND PIPING IS EXISTING AND HAS BEEN FLUSHED BY THE INSTALLING CONTRACTOR PER N.F.P.A. #24 BEFORE CONNECTING TO THE OVERHEAD FIRE SPRINKLER SYSTEM.

3. PIPING FOR THE SYSTEM ADDITION TO THE EXISTING FIRE SPRINKLER SYSTEMS SHALL BE HYDROSTATICALLY TESTED AT 200 PSI FOR 2 HOURS OR AT 50 PSI ABOVE SYSTEM OPERATING PRESSURE, WHICHEVER IS GREATER.

4. SYSTEMS SERVING 20 OR MORE SPRINKLERS SHALL BE SUPERVISED BY AN APPROVED CENTRAL STATION MONITORING SYSTEM IN CONFORMANCE WITH CBC 903.4. FLOW AND TAMPER SWITCHES ARE EXISTING AND NOT PROVIDED BY RLH. ANY WIRING IS BY OTHERS.

5. ALARM DEVICES SHALL BE EXISTING ON THE EXTERIOR OF THE BUILDING IN AN APPROVED LOCATION.

6. ALL ELECTRICAL OR ALARM WIRING, PAINTING, AND FIRE EXTINGUISHERS ARE BY OTHERS.

7. ANY PORTION OF THIS SPRINKLER SYSTEM, WHICH IS EXPOSED TO FREEZING, SHALL BE ADEQUATELY PROTECTED AGAINST THIS EXPOSURE. TO BE PROVIDED BY OTHERS.

8. SPRINKLERS ON THE CENTERLINE OF TILE, LIGHTS, ETC. IS PROVIDED.

9. A STOCK OF SPARE SPRINKLERS OF EACH TYPE AND TEMPERATURE RATING, ALONG WITH A WRENCH SHALL BE LOCATED AT THE EXISTING FIRE SPRINKLER RISER.

10. MAIN PIPING 2½" AND LARGER IS TO BE SCH. 40 BLACK STEEL PIPE (ROLL GROOVED) WITH WELDED OR MECHANICAL OUTLETS, GROOVED COUPLINGS AND FITTINGS.

11. BRANCHLINE PIPING 2" AND SMALLER IS TO BE SCH. 40 BLACK STEEL PIPE WITH CAST IRON SCREWED FITTINGS OR MECHANICAL OUTLETS.

12. BUILDING OCCUPANCY: MIRROR COATING FACILITY IS ORDINARY HAZARD GROUP 2

13. FIRE SPRINKLER SYSTEM DESIGN: .20 / 3000 SQ. FT. PER SPECIFICATION.

14. FLOW TEST INFORMATION: SEVEN (6) EXISTING DIESEL FIRE PUMPS
CAPABLE OF DELIVERING 16,800 GPM at 120 PSI
FROM THE EXISTING 504,000 GALLON WATER STORAGE TANKS
1 PUMP FOR SYSTEM DESIGN: STATIC = 150 PSI, RESIDUAL = 125 PSI @ 2500 GPM.

NEW FLOW TEST 10-1-09 (2½" OUTLET) STATIC = 140 PSI, RESIDUAL 150 PSI @1306 GPM.
REDUCED X 10% STATIC = 126 PSI, RESIDUAL 135 PSI @1306 GPM

INFORMATION PROVIDED BY GRINNELL FIRE PROTECTION PLANS APPROVED BY THE CITY OF LOS ANGELES DEPARTMENT OF AIRPORTS, ENGINEERING 5-19-2000.

L.A.COUNTY VERBATIM NOTES: REGULATION #7

a. It is the responsibility of the owner to properly maintain the fire protection system in an operable condition at all the time.

b. The fire protection contractor will provide the owner with the necessary instruction manuals for the upkeep system as well as a copy of NFPA 25

c. Only new sprinklers shall be employed in the installation of the sprinkler system.

d. The system shall only employ the use of approved materials and devices.

e. Fire protection plans shall be approved prior to the installation of any pipe. A set of approved plans shall be maintained at all times on the job site.

f. An appointment shall be made a minimum of two working days in advance with the appropriate Fire Prevention Division regional office for all inspections and tests.

g. All underground mains and lead-in connections shall be flushed as indicated in NFPA prior to connection to the overhead piping flushing shall continue until water is clear. Flushing should be performed at the time of hydrostatic test, and shall be witnessed by a Fire Prevention Division inspector.

H. System piping shall be hydostatically tested at 200 PSI for 2 hours or at 50 PSI above the maximum system operating pressure, whichever is greater.

i. Fire Department connection shall be located on the the address side of the building, face the street, be visible and accessible, have NST female inlets, have protective caps, and an accessible , approved check valve located in the main line (as close to the inlets as possible)

j. All valves shall have a permanently affixed sign, indicating their function.

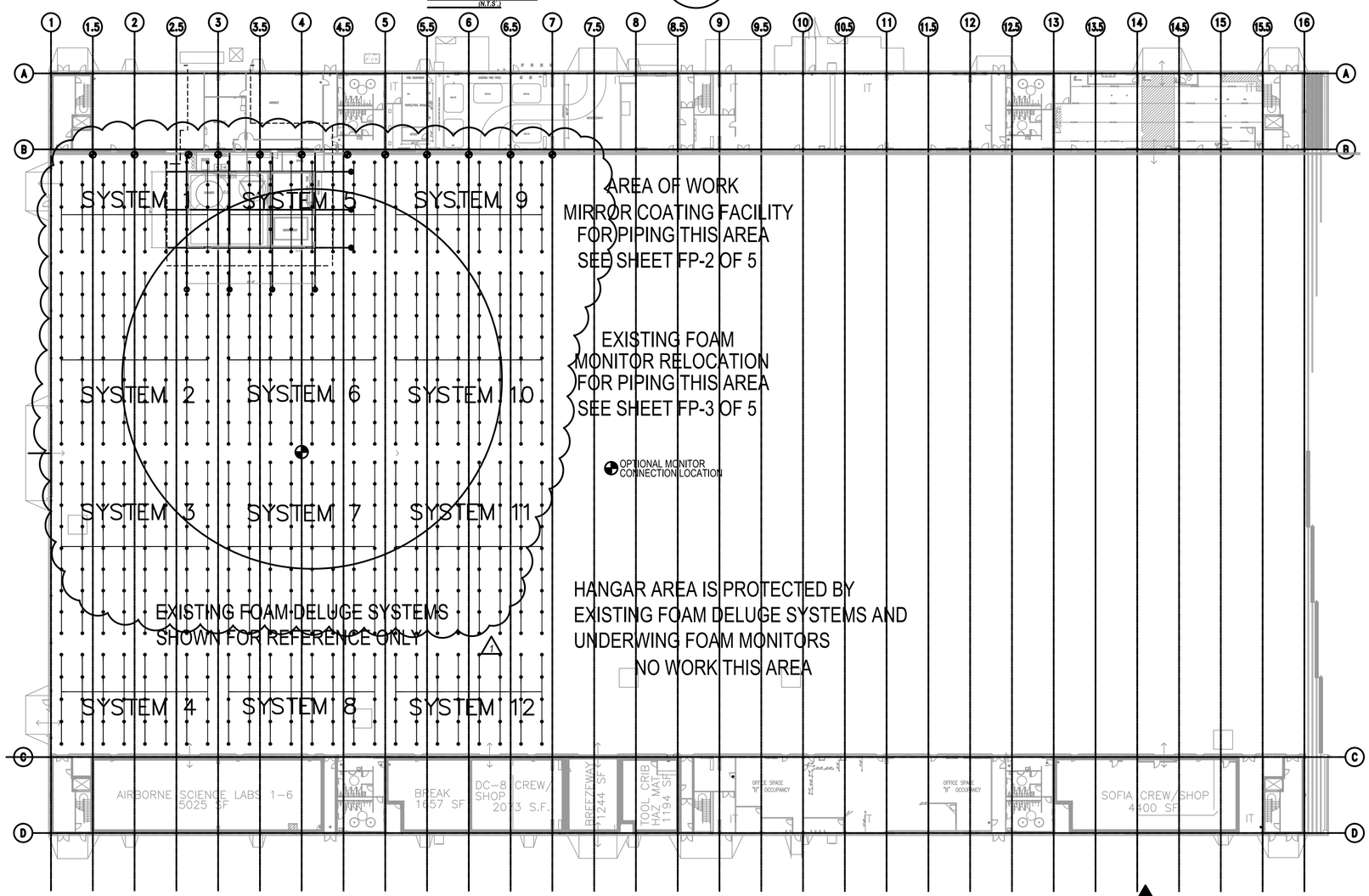
k. A stock of spare sprinklers of each style , type, and temperature rating along with a sprinkler wrench shall be located at the main riser.

l. Any portion of wet fire protection system exposed to freezing temperatures be adequately protected . (Heat tape is not an acceptable method of protection)

m. Welding shall be performed per NFPA #13 requirements

n. Automatic sprinkler systems shall be supervised by a listed/ approved central remote station, or a local alarm when approved by Chief, which will give an audible signal at a constantly attended location when the number of sprinklers is 100 or more.

Exception: 20 or more in Group I, Division 1.1 and 1.2 occupancies.



BLDG 703 HANGAR FIRE PROTECTION SITE PLAN

SCALE: 1/32" = 1'-0"

NORTH

SITE

AVENUE "P"

VICINITY MAP

NTS

NORTH

AS BUILT

Design, Installation
Inspection, and Repair of
Fire Sprinkler Systems

Fire Protection

RLH

16735 Saticoy St. #110
Van Nuys, CA 91406
Phone: 818-908-9300
Fax: 818-908-9400

2430 Unicorn Rd.
Bakersfield, CA 93308
Phone 661-322-8344
Fax 661-322-6616

JASON L. NORTON
No. FP 1521
Exp. 6/30/12
REGISTERED PROFESSIONAL ENGINEER
FIRE PROTECTION
STATE OF CALIFORNIA

FIRE PROTECTION CONTRACTOR
STATE OF CALIFORNIA
LICENSED
C-16
LICENSE No.
777710
Exp. 4/30/12

FIRE SPRINKLER DESCRIPTIONS

QTY.	SYM.	SPRINKLER TYPE	TEMP.	FINISH	ORIFICE	CANOPY	FINISH
-	○	Q.R. UPRIGHT - VIKING VK300	-	-	-	-	-
-	⊗	Q.R. UPRIGHT ON 1" SPRIG - VIKING VK300	-	-	-	-	-
-	●	Q.R. CONCEALED PENDENT - VIKING VK404	-	-	-	-	-
-	●	Q.R. PENDENT ON LINE - VIKING VK302	-	-	-	-	-
-	◓	Q.R. PENDENT - VIKING VK302	-	-	-	-	-
-	●	Q.R. RECESSED PENDENT - VIKING VK302	-	-	-	-	-
-	●	RESIDENTIAL PENDENT - VIKING VK466	-	-	-	-	-
-	●	Q.R. UPRIGHT HIGH TEMP. - VIKING VK300	-	-	-	-	-
-	▼	HORIZONTAL SIDEWALL - VIKING VK305	-	-	-	-	-
-	⊘	Q.R. UPRIGHT - VIKING VK300 (BULLHEADED TEE)	-	-	-	-	-
-		Q.R. PENDENT - VIKING VK302	-	-	-	-	-
-		TOTAL SPRINKLERS THIS SHEET	-	-	-	-	-

	STATUS	DATE
1	FOR APPROVAL	1/12/10
2	PLAN CHECK REVISIONS	9/30/10
3	FOR CONSTRUCTION	11/2/10
4	AS BUILT	1-28-11

MIRROR COATING FACILITY
Dryden Flight Research Center
2825 Avenue P
Palmdale, CA 93550

SHEET TITLE: FIRE PROTECTION SITE PLAN, NOTES

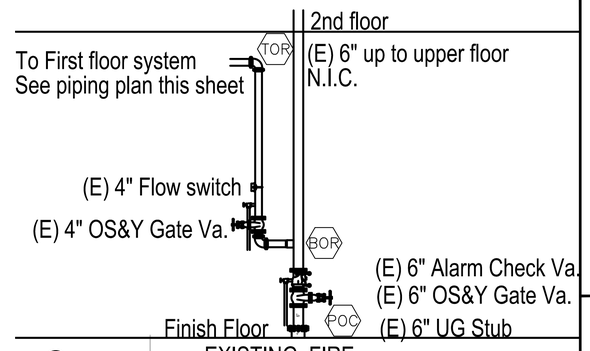
SHEET #: FP-1 of 5

SCALE: AS NOTED
DATE: 1-12-10
JOB #: 9382
DRAWN BY: Ken Gould

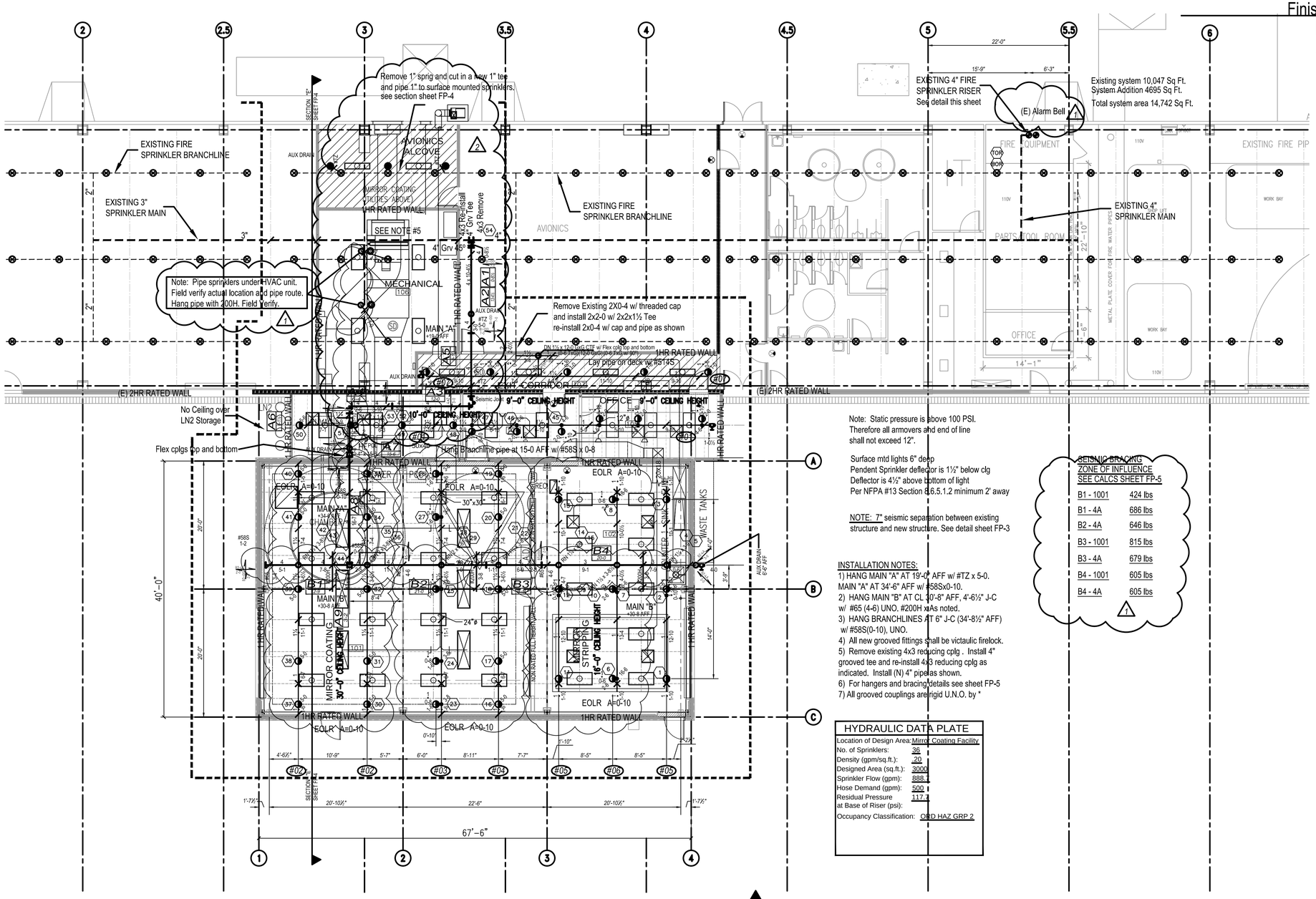
06/03/11 AS BUILT

SYMBOLS & ABBREVIATIONS

- RIGID GROOVED COUPLING
- GROOVED CAP
- GROOVED ELBOW
- FLEXIBLE GROOVED COUPLING
- SCREWED PLUG
- SYSTEM RISER — SEE DETAIL THIS SHEET
- B-C — BOTTOM OF BEAM TO CENTERLINE OF PIPE
- J-C — BOTTOM OF JOIST (PURLIN) TO CENTERLINE OF PIPE
- S-C — BOTTOM OF SHEATHING TO CENTERLINE OF PIPE
- CL — CENTERLINE OF PIPE ABOVE FINISH FLOOR
- AFF — ABOVE FINISH FLOOR
- UNO — UNLESS NOTED OTHERWISE
- HYDRAULIC CALCULATION NODE POINT
- HANGER DESIGNATION — SEE SHEET FP-5
- HANGER & BRANCHLINE RESTRAINT — SEE SHEET FP-5
- 4-WAY EARTHQUAKE BRACE — SEE SHEET FP-5
- 2-WAY EARTHQUAKE BRACE — SEE SHEET FP-5
- HANGER PROVIDES 2-WAY EARTHQUAKE BRACE
- #58(1-0) — HANGER NUMBER AND ROD LENGTH (SEE DETAIL)
- (3-0) — 1" x 3-0 DROP LENGTH WITH REDUCING COUPLING
- #12 — BRANCHLINE NUMBER
- A1 — MAIN PIECE NUMBER



EXISTING FIRE SPRINKLER RISER
NTS



Note: Static pressure is above 100 PSI.
Therefore all armovers and end of line shall not exceed 12".

Surface mtd lights 6" deep
Pendent Sprinkler deflector is 1½" below clg
Deflector is 4½" above bottom of light
Per NFPA #13 Section 8.6.5.1.2 minimum 2' away

NOTE: 7" seismic separation between existing structure and new structure. See detail sheet FP-3

INSTALLATION NOTES:
1) HANG MAIN "A" AT 19'-0" AFF w/ #TZ x 5-0.
MAIN "A" AT 34'-6" AFF w/ #58Sx0-10.
2) HANG MAIN "B" AT CL 30'-8" AFF, 4'-6½" J-C w/ #65 (4-6) UNO. #200H xAs noted.
3) HANG BRANCHLINES AT 6" J-C (34'-8½" AFF) w/ #58S(0-10), UNO.
4) All new grooved fittings shall be victaulic firelock.
5) Remove existing 4x3 reducing cplg . Install 4" grooved tee and re-install 4x3 reducing cplg as indicated. Install (N) 4" pipe as shown.
6) For hangers and bracing details see sheet FP-5
7) All grooved couplings are rigid U.N.O. by *

SEISMIC BRACING
ZONE OF INFLUENCE
SEE CALCS SHEET FP-5

B1 - 1001	424 lbs
B1 - 4A	686 lbs
B2 - 4A	646 lbs
B3 - 1001	815 lbs
B3 - 4A	679 lbs
B4 - 1001	605 lbs
B4 - 4A	605 lbs

1

HYDRAULIC DATA PLATE

Location of Design Area:	Mirror Coating Facility
No. of Sprinklers:	36
Density (gpm/sq.ft.):	.20
Designed Area (sq.ft.):	3000
Sprinkler Flow (gpm):	888.1
Hose Demand (gpm):	500
Residual Pressure at Base of Riser (psi):	117.3
Occupancy Classification:	ORD HAZ GRP 2

FIRE PROTECTION PIPING PLAN

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

NORTH

AS BUILT

Design, Installation Inspection, and Repair of Fire Sprinkler Systems
Fire Protection
RLH
3430 Ultimo Rd.
Bakersfield, CA 93308
Phone 661-322-8344
Fax 661-322-6816
16735 Saticoy St. #110
Van Nuys, CA 91406
Phone: 818-908-9300
Fax: 818-908-9400

REGISTERED PROFESSIONAL ENGINEER — JASON L. MORRISON — No. FP 1521 — Exp. 6/30/12 — FIRE PROTECTION — STATE OF CALIFORNIA

FIRE PROTECTION CONTRACTOR — LICENSED — STATE OF CALIFORNIA — C-16 — LICENSE No. 777171 — Date 10/01/12

FIRE SPRINKLER DESCRIPTIONS

QTY.	SYM.	SPRINKLER TYPE	TEMP.	FINISH	ORIFICE	CANOPY	FINISH
-	O	O.R. UPRIGHT - VIKING VK300	-	-	-	-	-
-	⊗	E.S.R. UPRIGHT ON 1" SPRIG TO REMAIN	-	-	-	-	-
-	●	O.R. CONCEALED PENDENT - VIKING VK404	-	-	-	-	-
5	●	S.R. PENDENT CPA LINE - VIKING VK102	200U	Chrome	K=5.6	None	-
-	●	O.R. PENDENT - VIKING VK302	-	-	-	-	-
44	●	S.R. RECESSED PENDENT - VIKING VK102	200U	Chrome	K=5.6	REC w/ Chrome	-
-	●	RESIDENTIAL PENDENT - VIKING VK466	-	-	-	-	Expansion Plate
-	▼	O.R. UPRIGHT HIGH TEMP. - VIKING VK300	-	-	-	-	-
-	⊘	HORIZONTAL SIDEWALL - VIKING VK305	-	-	-	-	-
-		O.R. UPRIGHT - VIKING VK300 (BULL HEADED TEE)	-	-	-	-	-
-		O.R. UPRIGHT - VIKING VK302 (BULL HEADED TEE)	-	-	-	-	-
49		TOTAL SPRINKLERS THIS SHEET					

	STATUS	DATE
1	FOR APPROVAL	1/12/10
1	PLAN CHECK REVISIONS	9/30/10
1	FOR CONSTRUCTION	11/2/10
2	AS BUILT	1-28-11

MIRROR COATING FACILITY
Dryden Flight Research Center
2825 Avenue P
Palmdale, CA 93550

SHEET TITLE: FIRE SPRINKLER PIPING PLAN

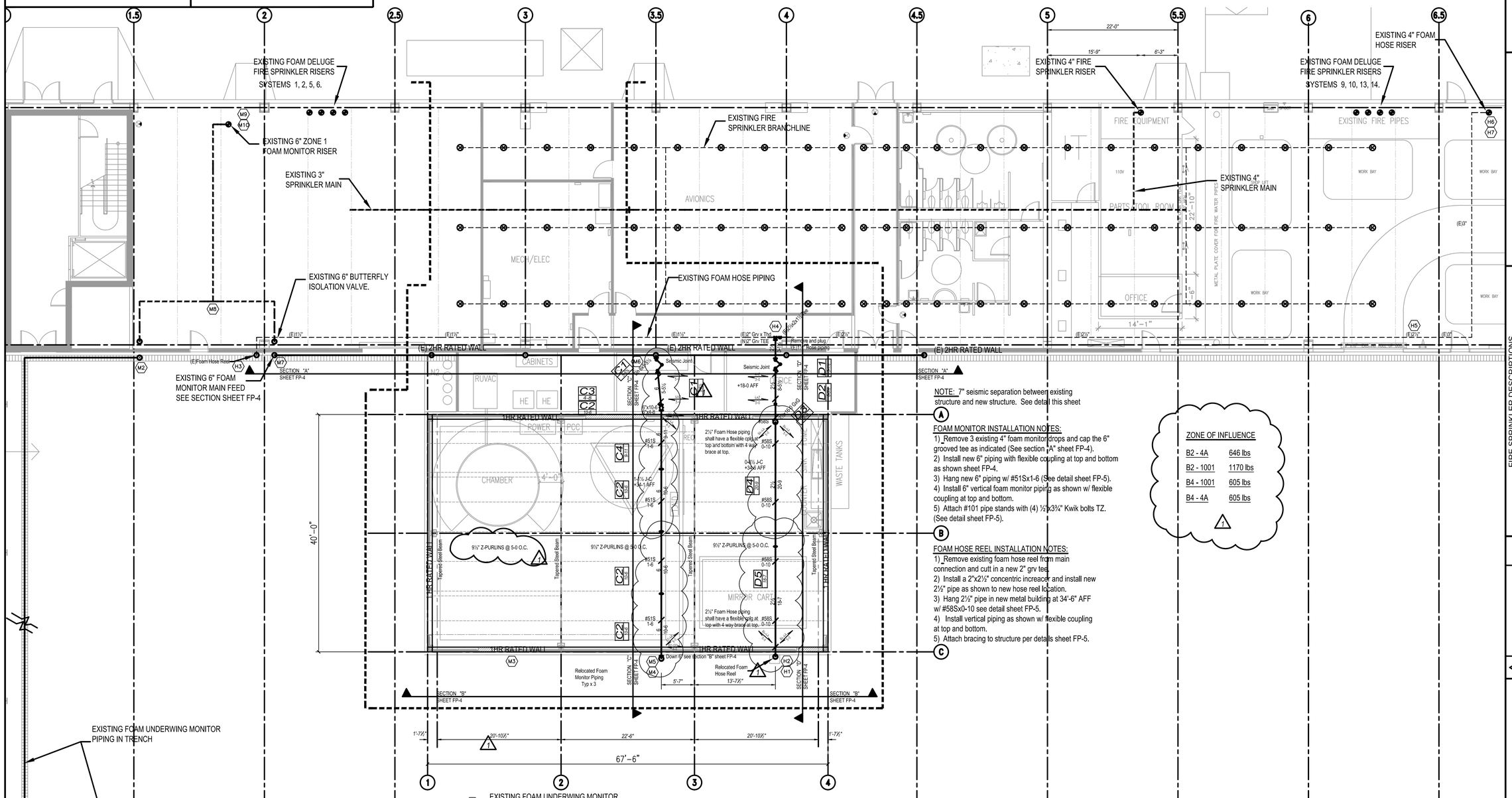
SHEET #: FP-2 of 5

SCALE:	AS NOTED	DATE:	1-12-10
JOB #:	9382	DRAWN BY:	Ken Gould

06/03/11 AS BUILT

SYMBOLS & ABBREVIATIONS

- RIGID GROOVED COUPLING
- GROOVED CAP
- GROOVED ELBOW
- FLEXIBLE GROOVED COUPLING
- SCREWED PLUG
- SYSTEM RISER
- B-C BOTTOM OF BEAM TO CENTERLINE OF PIPE
- J-C BOTTOM OF JOIST (PURLIN) TO CENTERLINE OF PIPE
- S-C BOTTOM OF SHEATHING TO CENTERLINE OF PIPE
- CL CENTERLINE OF PIPE ABOVE FINISH FLOOR
- AFF ABOVE FINISH FLOOR
- UNO UNLESS NOTED OTHERWISE
- HYDRAULIC CALCULATION NODE POINT
- HANGER DESIGNATION
- HANGER & BRANCHLINE RESTRAINT
- 4-WAY EARTHQUAKE BRACE
- 2-WAY EARTHQUAKE BRACE
- HANGER PROVIDES 2-WAY EARTHQUAKE BRACE
- #58(1-0) HANGER NUMBER AND ROD LENGTH (SEE DETAIL)
- (3-0) 1" x 3-0 DROP LENGTH WITH REDUCING COUPLING
- #12 BRANCHLINE NUMBER
- A1 FP-4 MAIN PIECE NUMBER



RELOCATE FOAM FIRE PROTECTION PIPING PLAN

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

NORTH

Design, Installation Inspection, and Repair of Fire Sprinkler Systems

RLH Fire Protection

2430 Unicorn Rd. Bakersfield, CA 93308 Phone 661-322-9344 Fax 661-322-6616

16735 Saticoy St. #110 Van Nuys, CA 91406 Phone: 818-908-9300 Fax: 818-908-9400

REGISTERED PROFESSIONAL ENGINEER JASON L. NORDIN No. FP 1521 Exp. 06/30/12 FIRE PROTECTION STATE OF CALIFORNIA

FIRE PROTECTION CONTRACTOR LICENSED STATE OF CALIFORNIA C-16 CLASSIFICATION LICENSE No. 777777 Exp. 4-30-13

	DATE	STATUS
0	1/12/10	FOR APPROVAL
1	9/30/10	PLAN CHECK REVISIONS
2	11/2/10	FOR CONSTRUCTION
3	1-28-11	AS BUILT

FIRE SPRINKLER DESCRIPTIONS

QTY.	SYM.	SPRINKLER TYPE	TEMP.	FINISH	ORIFICE	CANOPY	FINISH
-	O	Q.R. UPRIGHT - VIKING VK300	-	-	-	-	-
-	⊗	Q.R. UPRIGHT ON 1" SPRIG - VIKING VK300	-	-	-	-	-
-	●	Q.R. CONCEALED PENDENT - VIKING VK404	-	-	-	-	-
-	●	Q.R. PENDENT ON LINE - VIKING VK302	-	-	-	-	-
-	●	Q.R. PENDENT - VIKING VK302	-	-	-	-	-
-	●	Q.R. RECESSED PENDENT - VIKING VK302	-	-	-	-	-
-	●	RESIDENTIAL PENDENT - VIKING VK456	-	-	-	-	-
-	▼	Q.R. UPRIGHT HIGH TEMP. - VIKING VK300	-	-	-	-	-
-		HORIZONTAL SIDEWALL - VIKING VK305	-	-	-	-	-
-	⊘	Q.R. UPRIGHT - VIKING VK300 (BULL HEADED TEE)	-	-	-	-	-
-		Q.R. SIDEWALL - VIKING VK310	-	-	-	-	-
-		TOTAL SPRINKLERS THIS SHEET					

MIRROR COATING FACILITY

Dryden Flight Research Center

2825 Avenue P

Palmdale, CA 93550

SHEET TITLE: *FOAM PIPING RELOCATION PLAN*

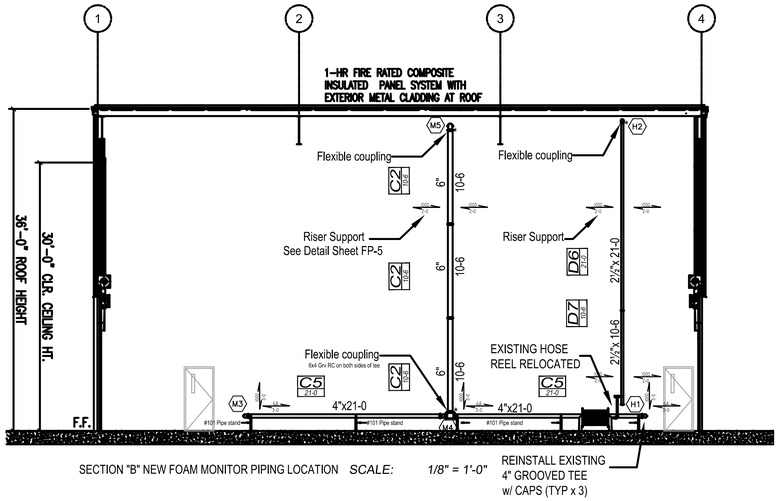
SCALE: *AS NOTED* DATE: *1-12-10* DRAWN BY: *Ken Gould* JOB #: *9382*

SHEET #: *FP-3* of *5*

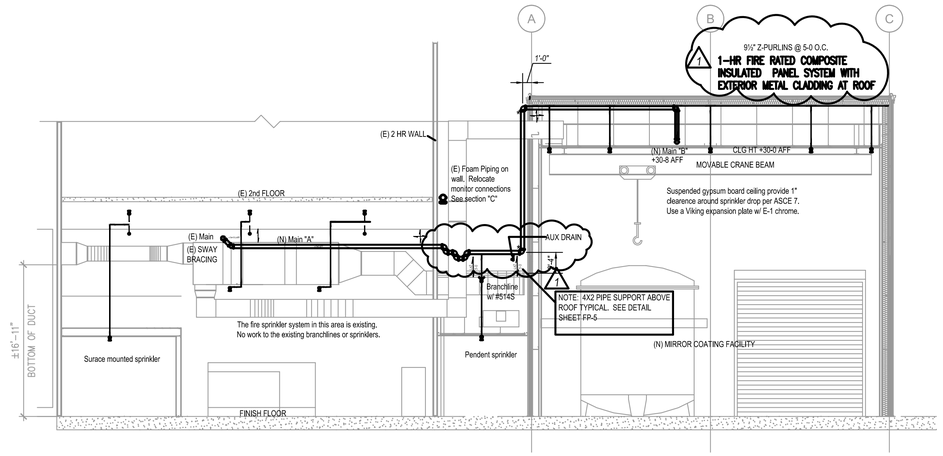
06/03/11 AS BUILT

SYMBOLS & ABBREVIATIONS

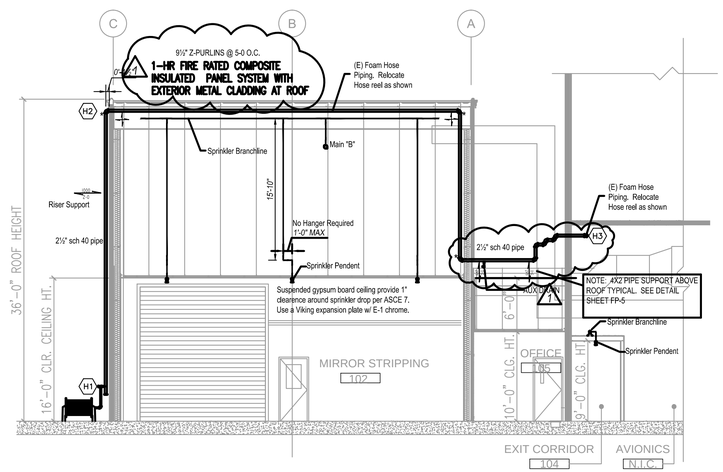
- RIGID GROOVED COUPLING
- GROOVED CAP
- GROOVED ELBOW
- FLEXIBLE GROOVED COUPLING
- SCREWED PLUG
- SYSTEM RISER
- B-C BOTTOM OF BEAM TO CENTERLINE OF PIPE
- J-C BOTTOM OF JOIST (PURLIN) TO CENTERLINE OF PIPE
- S-C BOTTOM OF SHEATHING TO CENTERLINE OF PIPE
- CL CENTERLINE OF PIPE ABOVE FINISH FLOOR
- AFF ABOVE FINISH FLOOR
- UNO UNLESS NOTED OTHERWISE
- HYDRAULIC CALCULATION NODE POINT
- HANGER DESIGNATION
- HANGER & BRANCHLINE RESTRAINT
- 4-WAY EARTHQUAKE BRACE
- 2-WAY EARTHQUAKE BRACE
- HANGER PROVIDES 2-WAY EARTHQUAKE BRACE
- #58(1-0) HANGER NUMBER AND ROD LENGTH (SEE DETAIL)
- (3-0) 1" x 3-0 DROP LENGTH WITH REDUCING COUPLING
- #12 BRANCHLINE NUMBER
- A1 100'-0" MAIN PIECE NUMBER



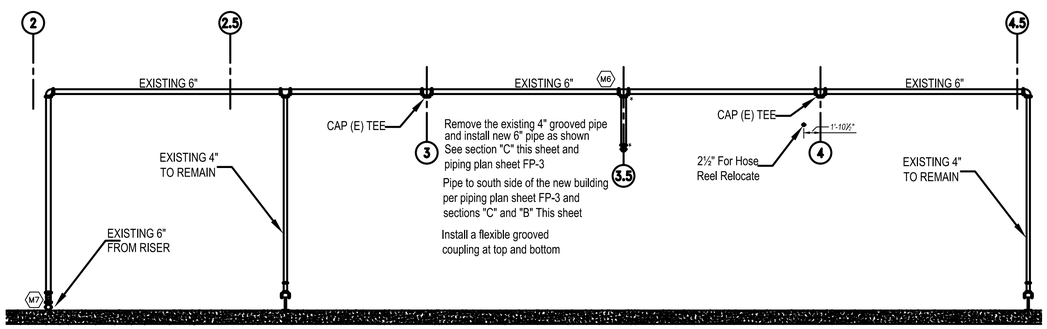
SECTION "B" NEW FOAM MONITOR PIPING LOCATION *SCALE:* *1/8" = 1'-0"*



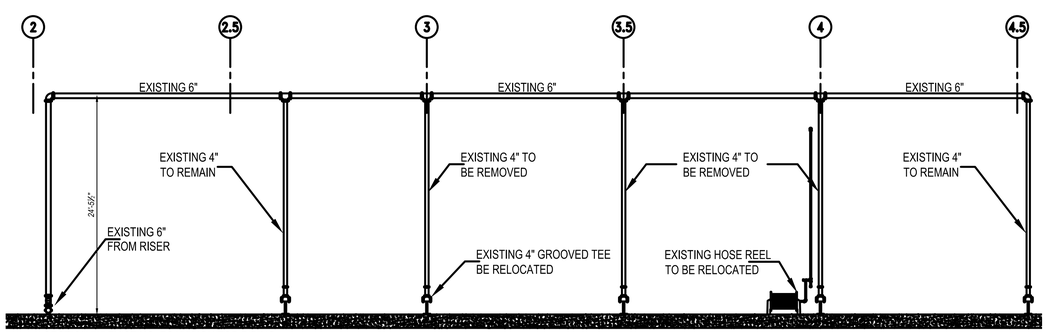
SECTION "E" *SCALE:* *1/8" = 1'-0"*



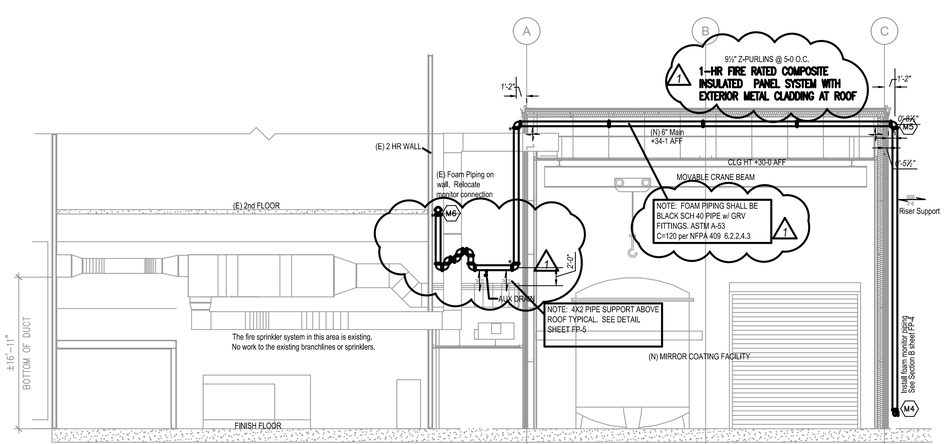
SECTION "D" *SCALE:* *1/8" = 1'-0"*



SECTION "A" EXISTING FOAM MONITOR PIPING REVISED *SCALE:* *1/8" = 1'-0"*



SECTION "A" EXISTING FOAM MONITOR PIPING *SCALE:* *1/8" = 1'-0"*



SECTION "C" *SCALE:* *1/8" = 1'-0"*

AS BUILT

Design, Installation Inspection, and Repair of Fire Sprinkler Systems

RLH Fire Protection

2430 Unicorn Rd. Bakersfield, CA 93308 Phone: 661-322-9344 Fax: 661-322-6616

16735 Saticoy St. #110 Van Nuys, CA 91406 Phone: 818-908-9300 Fax: 818-908-9400

JACOB L. NORDIN ENGINEER REGISTERED PROFESSIONAL ENGINEER No. FP 1521 Exp. 6/30/12 FIRE PROTECTION STATE OF CALIFORNIA

FIRE PROTECTION CONTRACTOR STATE OF CALIFORNIA LICENSED CLASSIFICATION C-16 LICENSE No. 777777 Exp. 06/30/12

FIRE SPRINKLER DESCRIPTIONS

QTY.	SYM.	SPRINKLER TYPE	TEMP.	ORIFICE	CANOPY	FINISH
-	○	Q.R. UPRIGHT - VIKING VK300	-	-	-	-
-	⊗	Q.R. UPRIGHT ON 1" SPRIG - VIKING VK300	-	-	-	-
-	●	Q.R. CONCEALED PENDENT - VIKING VK404	-	-	-	-
-	◐	Q.R. PENDENT - VIKING VK302	-	-	-	-
-	●	Q.R. RECESSED PENDENT - VIKING VK302	-	-	-	-
-	●	RESIDENTIAL PENDENT - VIKING VK456	-	-	-	-
-	▼	Q.R. UPRIGHT HIGH TEMP. - VIKING VK300	-	-	-	-
-	∅	HORIZONTAL SIDEWALL - VIKING VK305	-	-	-	-
-		Q.R. UPRIGHT - VIKING VK300 (BULL-HEADED TEE)	-	-	-	-
-		Q.R. PENDENT - VIKING VK302	-	-	-	-
		TOTAL SPRINKLERS THIS SHEET				

	STATUS	DATE
1	FOR APPROVAL	1/12/10
1	PLAN CHECK REVISIONS	9/30/10
1	FOR CONSTRUCTION	11/2/10
2	AS BUILT	1-28-11

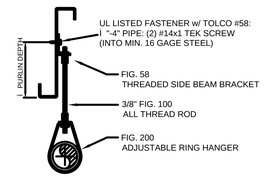
MIRROR COATING FACILITY
Dryden Flight Research Center
2825 Avenue P
Palmdale, CA 93550

SHEET TITLE: FIRE SPRINKLER PIPING PLAN

SCALE: AS NOTED | DATE: 1-12-10 | SHEET #: FP-4 of 5

JOB #: 9382 | DRAWN BY: Ken Gould

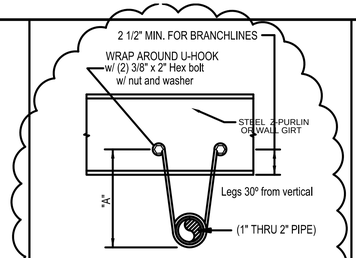
06/03/11 AS BUILT



FOR 4" PIPE AND SMALLER

HANGER # 58S

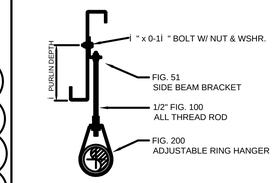
"Z" PURLIN CONSTRUCTION ⟋ PLAN SYMBOL



NOTE ON PLAN: HANGER # AND "A" DIMENSION

END OF BRANCHLINE RESTRAINT

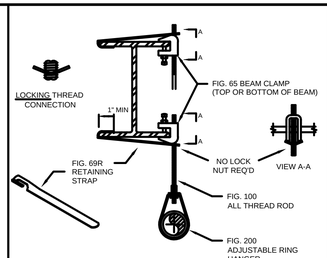
× EOLR PLAN SYMBOL



FOR 6" PIPE AND LARGER

HANGER # 51S

"Z" PURLIN CONSTRUCTION ⟋ PLAN SYMBOL



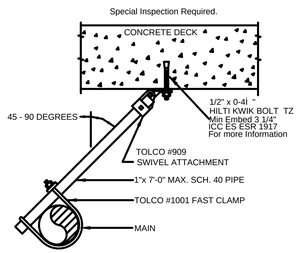
HANGER # 65

Design, Installation
Inspection, and Repair of
Fire Sprinkler Systems

Fire Protection

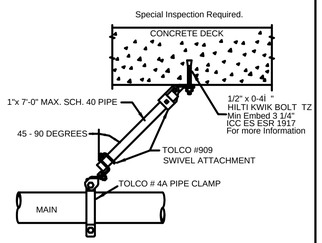
9430 Union Rd.
Bakersfield, CA 93308
Phone 661-322-9344
Fax 661-322-6816

16735 Saticoy St. #110
Van Nuys, CA 91406
Phone: 818-908-9300
Fax: 818-908-9400



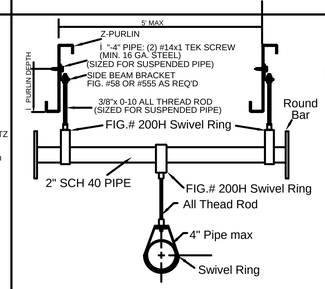
B1-1001 LATERAL SWAY BRACE

TO CONCRETE DECK



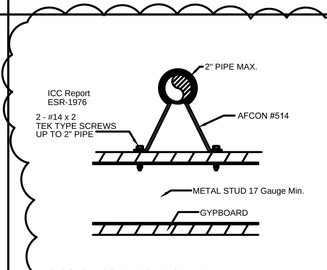
B1-4A LONGITUDINAL SWAY BRACE

TO CONCRETE DECK



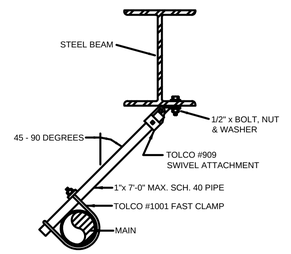
HANGER # 200H

TRAPEZE TO Z-PURLIN



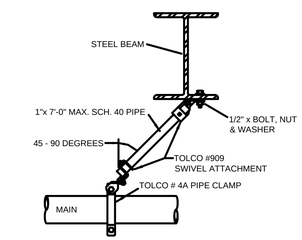
HANGER # 514S

STEEL CONSTRUCTION ABOVE OR BELOW CEILING



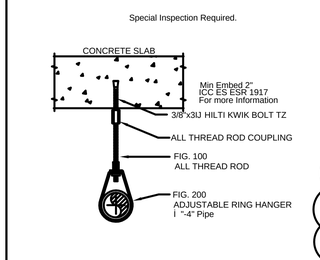
B2-1001 LATERAL SWAY BRACE

TO STEEL BEAM



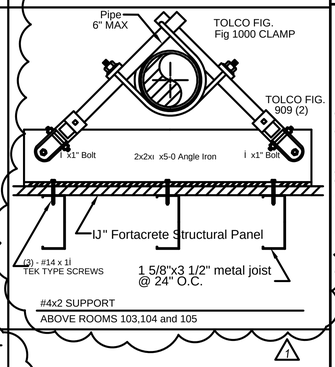
B2-4A LONGITUDINAL SWAY BRACE

TO STEEL BEAM



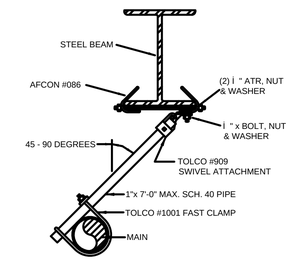
HANGER # TZ

CONCRETE SLAB



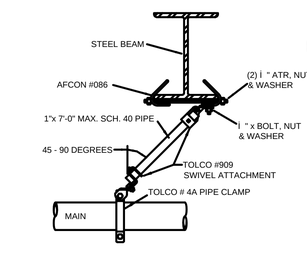
#4x2 SUPPORT

ABOVE ROOMS 103,104 and 105



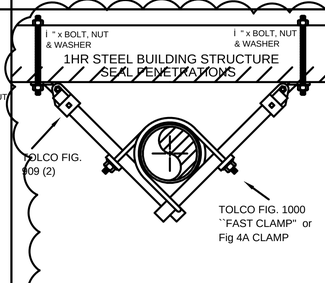
B3-1001 LATERAL SWAY BRACE

TO STEEL BEAM



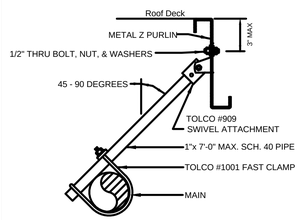
B3-4A LONGITUDINAL SWAY BRACE

TO STEEL BEAM



RISER SUPPORT

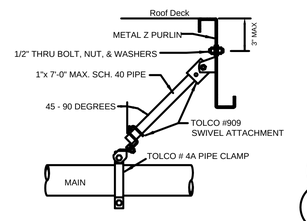
TO STEEL STRUCTURE



NOTE: DIRECTION SHOWN FOR CLARITY
FIELD VERIFY ACTUAL CONFIGURATION

B4-1001 LATERAL SWAY BRACE

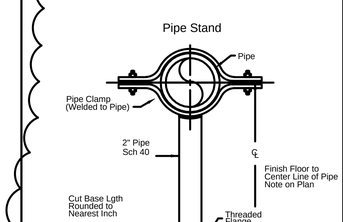
TO STEEL STRUCTURE



NOTE: DIRECTION SHOWN FOR CLARITY
FIELD VERIFY ACTUAL CONFIGURATION

B4-4A LONGITUDINALL SWAY BRACE

TO STEEL STRUCTURE



HANGER # 101 - PIPE STAND

AS BUILT

FIRE SPRINKLER DESCRIPTIONS

QTY.	SYM.	SPRINKLER TYPE	TEMP.	FINISH	ORIFICE	CAN/CP	FINISH
-	○	Q.R. UPRIGHT - VIKING VK300	-	-	-	-	-
-	⊗	Q.R. UPRIGHT ON 1" SPRIG - VIKING VK300	-	-	-	-	-
-	●	Q.R. CONCEALED PENDENT - VIKING VK404	-	-	-	-	-
-	●	Q.R. PENDENT ON LINE - VIKING VK302	-	-	-	-	-
-	●	Q.R. PENDENT - VIKING VK302	-	-	-	-	-
-	◓	Q.R. RECESSED PENDENT - VIKING VK302	-	-	-	-	-
-	●	RESIDENTIAL PENDENT - VIKING VK466	-	-	-	-	-
-	▼	Q.R. UPRIGHT HIGH TEMP. - VIKING VK300	-	-	-	-	-
-	⌀	HORIZONTAL SIDEWALL - VIKING VK305	-	-	-	-	-
-		Q.R. UPRIGHT - VIKING VK300 (BULLHEADED TEE)	-	-	-	-	-
-		Q.R. SIDEWALL - VIKING VK302	-	-	-	-	-
-		TOTAL SPRINKLERS THIS SHEET					

	STATUS	DATE
1	FOR APPROVAL	1/12/10
1	PLAN CHECK REVISIONS	9/30/10
1	FOR CONSTRUCTION	11/2/10
2	AS BUILT	1-28-11

PROFESSIONAL ENGINEER
JACKY L. NORTON
No. FP 1521
Exp. 6/30/12
FIRE PROTECTION
REGISTERED
STATE OF CALIFORNIA

FIRE PROTECTION CONTRACTOR
LICENSED
C-16
LICENSE No.
777777
Exp. 4/30/12
STATE OF CALIFORNIA

MIRROR COATING FACILITY

Dryden Flight Research Center

2825 Avenue P
Palmdale, CA 93550

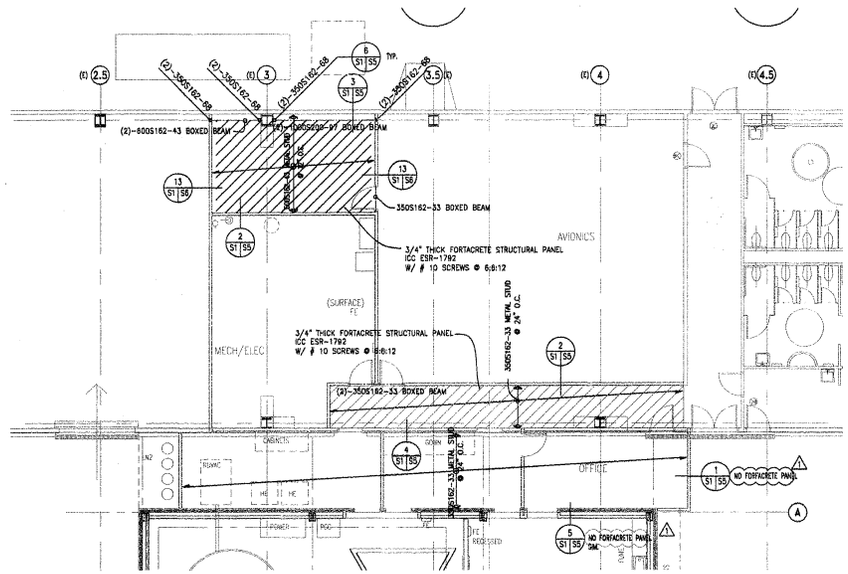
SHEET TITLE: HANGERS AND BRACING DETAILS PLAN

SCALE: AS NOTED | DATE: 1-12-10 | SHEET #: FP-5 of 5

JOB #: 9382 | DRAWN BY: Ken Gould

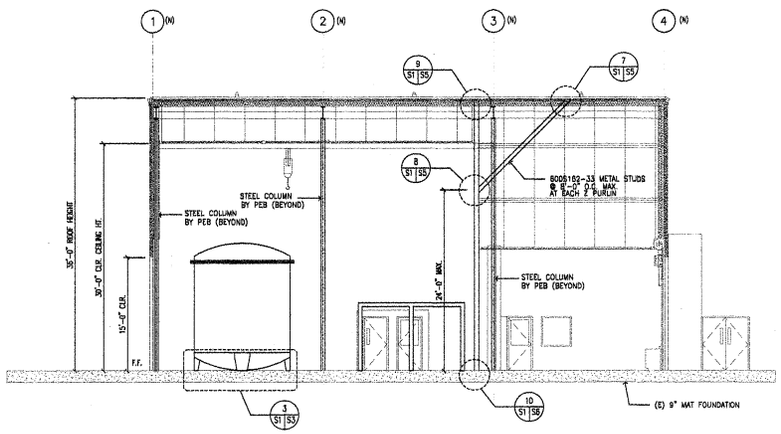
06/03/11 AS BUILT

Foundation changes



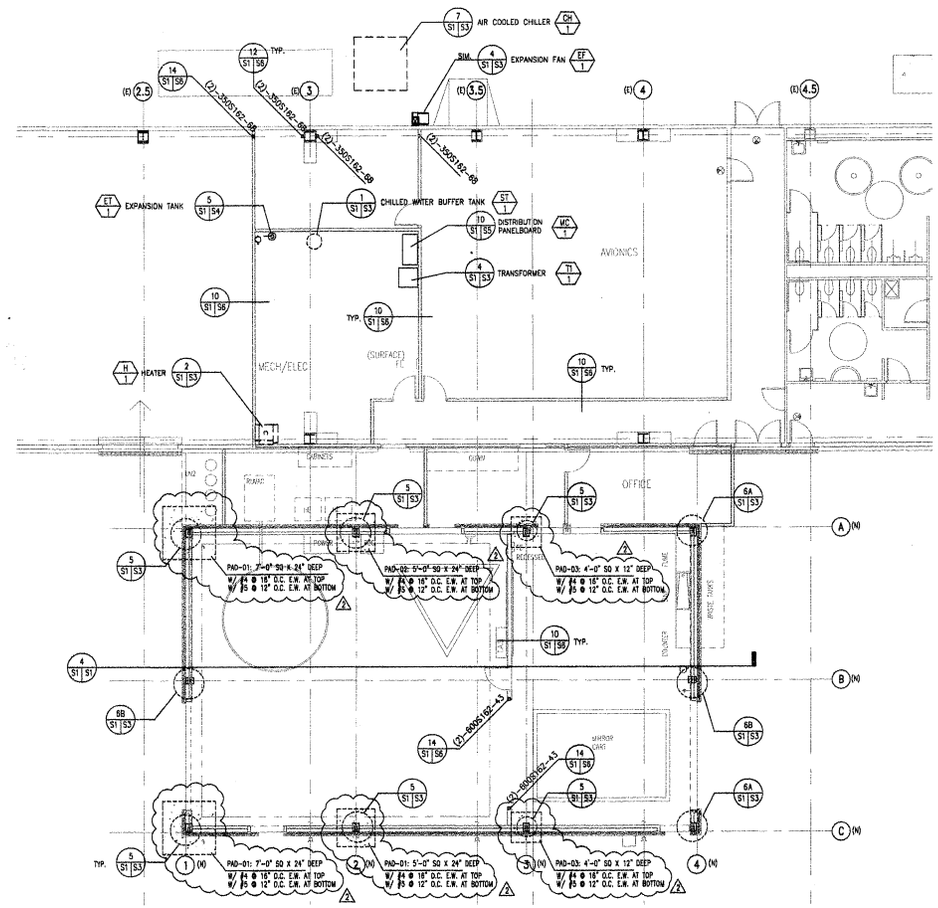
FRAMING PLAN AT 1-HOUR RATED CEILING

SCALE: 1/8" = 1'-0" (3 | S1 | S1)



SECTION

SCALE: 1/8" = 1'-0" (4 | S1 | S1)



PLAN NOTES:
1. CONTRACTOR SHALL VERIFY (E) 12" THICK MAT FOUNDATION.
2. CONTRACTOR SHALL ACCURATELY LOCATE ALL EXISTING REINFORCING BY X-RAY OR EQUIVALENT METHODS. NO REBAR SHALL BE CUT DURING INSTALLATION OF ANCHOR BOLTS. ALL EXPENSES RELATED TO REPAIR OF CUT REBAR OR TENDONS SHALL BE ENTIRELY AT THE EXPENSE OF THE CONTRACTOR.
3. CONTRACTOR SHALL VERIFY LOCATIONS OF MECHANICAL UNITS WITH/ MECH./ELEC. DRAWINGS.

FOUNDATION PLAN

SCALE: 1/8" = 1'-0" (1 | S1 | S1)

DATE	SYM	REVISION	BY	A'PD
7/2/09	1	Pointdale Comments Amendment		
2/12/10	2	Plan Check Corrections		

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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
KEY PLAN, PLAN VIEW, SECTION AND DETAILS

PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Inspector	
Safety Office	
Telecom	

DRAWN BY	KZ	DATE STRTD	4-18-08
W.O. #	2008-612	DATE FIN'D	4-14-09
PLOT SCALE		DRAWG. SH. No.	EDM-1685
CAD FILE NAME		S1	

SHEET No. 13 of 60

S1 REV

SPECIAL INSPECTION PROGRAM AND STRUCTURAL TEST

1. THIS SECTION APPLIES TO THE STRUCTURAL PORTIONS OF THE PROJECT REQUIRING SPECIAL INSPECTION. THE SPECIAL INSPECTOR'S DUTIES ARE AS DESCRIBED IN CBC 1701.1 AND CBC 1704.4. COPIES OF TEST RESULTS AND FINAL REPORTS SHALL BE FURNISHED TO THE ENGINEER IN ADDITION TO OTHER NORMAL DISTRIBUTIONS WITHIN ONE WEEK OF THE TEST OR INSPECTION.

2. ALL TEST AND INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT TESTING AND INSPECTION AGENCY EMPLOYED BY THE OWNER OR THE ENGINEER OR THE ARCHITECT AND NOT THE CONTRACTOR PER CBC SECTION 106.3.5. JOB SITE VISITS BY THE STRUCTURAL ENGINEER DO NOT CONSTITUTE A SPECIAL INSPECTION.
(NOTE: FOUNDATIONS INSPECTIONS LISTED BELOW SHALL BE PROVIDED BY THE GEOTECHNICAL ENGINEER).

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE TEST AND INSPECTION FIRM WITH A SCHEDULE TO FACILITATE THE PROPER COORDINATION OF WORK.

4. IN ADDITION TO THE REQUIRED INSPECTIONS, THE FOLLOWING CHECKED ITEMS WILL REQUIRE SPECIAL INSPECTION IN ACCORDANCE WITH SECTION 1704.5 OF THE CALIFORNIA BUILDING CODE.

ITEM	REQ'D. IF CHECKED	REMARKS
GRADING AND SOILS COMPLIANCE PRIOR TO FOUNDATION INSPECTION SEE FOUNDATION THIS SHEET.	●	TO BE PROVIDED BY THE GEOTECHNICAL ENGINEER OR DEPUTY INSPECTOR
DURING THE TAKING OF TEST SPECIMENS AND PLACING OF ALL REINFORCED CONCRETE, WITH THE EXCEPTION OF FOUNDATION CONCRETE WHEN THE STRUCTURAL DESIGN STRENGTH IS NO GREATER THAN F'C = 2500 PSI. U.N.O.	●	MECH. PAD DOES NOT REQUIRE SPECIAL INSPECTION
DURING PLACING OF AND STRESSING OF PT TENDONS		
ALL STRUCTURAL FIELD WELDING, INCLUDING WELDING OF STRUCTURAL STEEL, REINFORCING STEEL, AND STEEL DECKING.		
INSTALLATION AND TIGHTENING OPERATIONS FOR ALL HIGH-STRENGTH FRICTION BOLTING (A325F) AND (A490F). INSTALLATION AND TIGHTENING OPERATIONS FOR HIGH-STRENGTH ANCHOR BOLTS.		
DURING INSTALLATION OF EPOXY AND/OR EXPANSION ANCHORS.	●	
DURING THE PLACEMENT OF AND TAKING OF TEXT SPECIMENS FOR ALL MASONRY UNLESS SPECIFICALLY INDICATED AS NOT REQUIRING SPECIAL INSPECTION.	●	
DURING PLACING OF REINFORCING STEEL.		
ANCHOR BOLTS IN CONCRETE AND/OR MASONRY.	●	

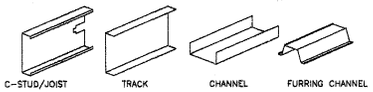
5. APPROVED FABRICATORS: (MUST SUBMIT CERTIFICATE OF COMPLIANCE) FOR ALL OFFSITE FABRICATION SUCH AS STRUCTURAL STEEL ETC.

6. ALL STRUCTURAL CONCRETE SHALL BE TESTED IN ACCORDANCE WITH CBC SECTION 1905.6. RESULTS OF TESTS SHALL BE SUBMITTED BY THE TESTING AGENCY TO THE ENGINEER FOR REVIEW. WHERE STRENGTH TEST RESULTS INDICATE A STRENGTH LOWER THAN THE SPECIFIED COMPRESSIVE STRENGTH, FURTHER INVESTIGATION SHALL BE MADE PER CBC SECTION 1905.6.4 AT THE EXPENSE OF THE CONTRACTOR.

LIGHT GAUGE COLD FORMED STEEL

1.0 DESCRIPTION

1.1 ALL MEMBER DESIGNATIONS HAVE BEEN PER ICBO REPORT #ER4943P BY STEEL STUD MANUFACTURERS ASSOCIATION (SSMA), AS ILLUSTRATED AS FOLLOWS :



C-STUD/JOIST S-SECTIONS | TRACK T-SECTIONS | CHANNEL U-SECTIONS | FURRING CHANNEL F-SECTIONS

i.e.
SECTION : 350S162-54
350: MEMBER DEPTH (3.5" = 350 X 1/100 INCHES)
S: STYLE (S = STUD OR JOIST SECTION)
162: FLANGE WIDTH (1 5/8" = 1.625 IN = 162 X 1/100 INCHES)
54: MATERIAL THICKNESS (0.054 IN = 54 MIL)

1.3 DESIGN SHOWN IN THIS SET OF DRAWINGS HAS BEEN DONE PER DIVISION VII OF CHAPTER 22 OF CALIFORNIA BUILDING CODE, 2007.

1.4 SCOPE OF WORK: PROVIDE METAL STUDS AND/OR JOISTS AND ACCESSORIES AS INDICATED ON THE DRAWINGS, AS SPECIFIED HEREIN, AND AS NEEDED FOR A COMPLETE AND PROPER INSTALLATION.

1.5 RELATED WORK SPECIFIED ELSEWHERE.

2.0 QUALITY ASSURANCE

2.1 INSPECTION AND QUALITY CONTROL

A. CONTRACTOR SHALL PROVIDE EFFECTIVE FULL TIME QUALITY CONTROL OVER ALL FABRICATION AND ERECTION ACTIVITIES.

B. AS REQUIRED BY THE BUILDING OFFICIAL, OWNER'S TESTING AGENCY MAY INSPECT THE MAINTENANCE OF A QUALITY CONTROL PROGRAM INCLUDING SPOT CHECKING WELDMENTS AND WELDING PROCEDURES ACCORDANCE WITH A.W.S STANDARDS.

C. STEEL FRAMING MANUFACTURER SHALL PROVIDE A QUALIFIED REPRESENTATIVE FOR PERIODIC ON-SITE REVIEW OF FABRICATION AND INSTALLATION IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.

D. INSPECTION BY OWNER'S TESTING AGENCY IS NOT INTENDED TO BE COMPREHENSIVE OR COMPLETE.
FULL RESPONSIBILITY FOR QUALITY CONTROL SHALL REMAIN WITH CONTRACTOR.

E. USE ADEQUATE NUMBERS OF SKILLED WORKMEN WHO ARE THOROUGHLY TRAINED AND EXPERIENCED IN THE NECESSARY CRAFTS AND WHO ARE COMPLETELY FAMILIAR THE SPECIFIED REQUIREMENTS AND THE METHODS NEEDED FOR PROPER PERFORMANCE OF THE WORK OF THIS SECTION.

2.2 STANDARDS

A. WORK SHALL MEET THE REQUIREMENTS OF THE FOLLOWING STANDARDS.

1. AMERICAN IRON AND STEEL INSTITUTE (A.I.S.I.) SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS, LATEST EDITION.

2. AMERICAN WELDING SOCIETY (A.W.S.): STRUCTURAL WELDING CODE - SHEET STEEL, LATEST EDITION.

3. AMERICAN SOCIETY FOR TESTING AND MATERIALS (A.S.T.M.)

4. AMERICAN INSTITUTE OF STEEL CONSTRUCTION (A.I.S.C.) MANUAL OF STEEL CONSTRUCTION, 13TH EDITION.

5. CALIFORNIA BUILDING CODE (C.B.C.) - 2007 EDITION

6. ALL PERTINENT FEDERAL, STATE AND LOCAL CODES.

B. THE MOST STRINGENT REQUIREMENTS SHALL GOVERN IN CONFLICTS BETWEEN SPECIFIED CODES AND STANDARDS.

3.0 SUBMITTALS

NONE

4.0 PRODUCT HANDLING

4.1 DELIVERY AND STORAGE

PROTECT METAL FRAMING UNITS FROM RUSTING AND DAMAGE. DELIVER TO PROJECT SITE IN MANUFACTURER'S UNOPENED CONTAINERS OR BUNDLES, FULL IDENTIFIED WITH NAME, BRAND, TYPE AND GRADE STORE OFF GROUND IN A DRY VENTILATED SPACE OR PROTECT WITH SUITABLE WATERPROOF COVERINGS.

5.0 MANUFACTURERS

5.1 ALL FRAMING MEMBERS SHALL BE MANUFACTURED AND SUPPLIED OF THE SAME TYPE AND SIZE AS SHOWN ON THE PLANS, OR PRE-APPROVED EQUIVALENT MEMBERS.

6.0 MATERIALS

6.1 PAINTED MATERIALS

A. ALL PAINTED 54 MIL OR HEAVIER MATERIALS SHALL BE FORMED FROM STEEL THAT CORRESPONDS TO THE REQUIREMENTS OF ASTM A-570 GRADE 50 OR ASTM A-607 GRADE 50, WITH A MINIMUM YIELD OF 50,000 PSI.

B. ALL PAINTED 43 MIL OR MATERIALS SHALL BE FORMED FROM STEEL THAT CORRESPONDS TO THE REQUIREMENTS OF ASTM A-611, GRADE C, OR ASTM A-570, GRADE C, WITH MINIMUM YIELD OF 33,000 PSI.

C. ALL PAINTED MATERIAL AND ACCESSORIES SHALL BE PRIMED WITH RUST INHIBITIVE PAINT MEETING THE PERFORMANCE REQUIREMENTS OF TT-P-636C.

6.2 GALVANIZED MATERIAL

A. ALL GALVANIZED 54 MIL OR HEAVIER MATERIALS SHALL BE FORMED STEEL WITH A MINIMUM YIELD OF 50,000 PSI. & ULTIMATE OF 65,000 PSI.

B. ALL GALVANIZED 43 MIL AND LIGHTER MATERIALS SHALL BE FORMED STEEL WITH A MINIMUM YIELD OF 33,000 PSI. & ULTIMATE OF 45,000 PSI.

C. ALL GALVANIZED MATERIALS SHALL BE FORMED FROM STEEL HAVING A G-60 GALVANIZED COATING MEETING THE REQUIREMENTS OF ASTM A-525.

6.3 ALL LIGHT GAGE BASE MATERIAL SHALL HAVE THE MINIMUM THICKNESS AS INDICATED BELOW:

97 MIL - 0.0966"	33 MIL - 0.0329"
68 MIL - 0.0677"	27 MIL - 0.0269"
54 MIL - 0.0538"	18 MIL - 0.0179"
43 MIL - 0.0428"	

6.4 ALL WELDING RODS ARE TO CONFORM TO THE FOLLOWING:
FOR WELDING 43 MIL AND LIGHTER MEMBERS - E60XX
FOR WELDING 54 MIL AND HEAVIER MEMBERS - E70XX
ALL WELDING TO BE PERFORMED BY CERTIFIED LIGHT GAGE WELDERS. ALL WELDS SHALL BE TOUCHED-UP WITH A ZINC-RICH PAINT FOR GALVANIZED MATERIALS OR SHALL BE COVERED WITH SHALL BE COVERED WITH THE COMPATIBLE PAINT FOR PAINTED MEMBER.

6.5 U.N.O., ALL SCREWS SHALL BE PER GRABER OR COMPASS INTERNATIONAL OR EQUAL, AND ALL 0.100" DIAMETER PINS SHALL BE PER ERICO TOOLS & FASTENERS OR EQUAL. REFER TO TYPICAL DETAILS FOR POINT STYLE, EDGE DISTANCE, AND SPACING REQUIREMENTS.

FOUNDATION

2

1. THE SOILS BEARING PRESSURE = 1,500 p.s.f.
2. ALL FILL MATERIAL IS TO BE APPROVED BY THE SOILS ENGINEER OR DEPUTY INSPECTOR AND APPROVED BY A QUALIFIED SOILS ENGINEER OR DEPUTY INSPECTOR TO ENSURE COMPLIANCE W/ THE REQUIREMENTS.
3. SIDE OF FOUNDATION MAY BE POURED AGAINST STABLE EARTH UNLESS SHOWN OR NOTED OTHERWISE.
4. CONTRACTOR SHALL PROVIDE TEMPORARY AND PERMANENT DEWATERING FOR EITHER SURFACE WATER, GROUND WATER OR SEEPAGE WATER.
5. CONTRACTOR SHALL PROTECT ALL UTILITY LINES, ETC. ENCOUNTERED DURING EXCAVATIONS AND BACKFILLING.
6. CONTRACTOR SHALL PROVIDE AND INSTALL ALL CRIBBING SHEATHING AND SHORING REQUIRED TO SAFELY RETAIN THE EARTH BANK.
7. FOOTING BACKFILL AND UTILITY TRENCH BACKFILL SHALL BE PROPERLY COMPACTED.
8. CONTRACTOR SHALL BRACE OR PROTECT FROM LATERAL LOADS FOR THE PIT AND RETAINING WALLS UNTILL ATTACHING SLABS ARE COMPLETELY IN PLACE AND HAVE ATTAINED FULL STRENGTH.

AQX ENGINEERING INC.
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DATE	SYM	REVISION	BY	A'PD
7/2/09	1	Paimdale Comments Amendment		
2/12/10	2	Plan Check Corrections		

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

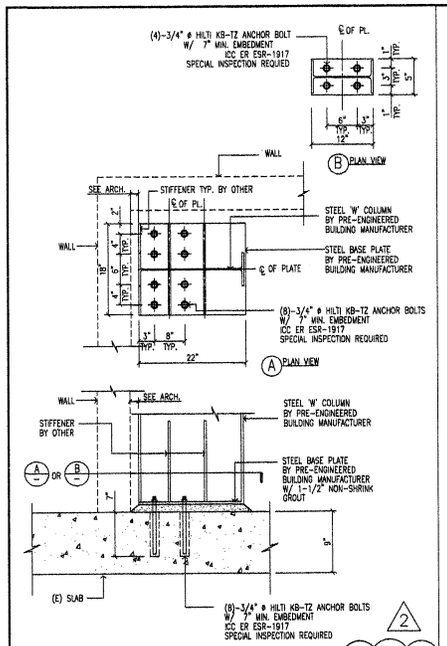
DRAWING TITLE
GENERAL NOTES

PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703
100% FINAL DESIGN

APPROVALS	DATE
Chief, Facilities Engineering & Asset Mgmt. Office	
Project Manager	
Security Office	
Project Requestor	
Safety Office	
Telecom	

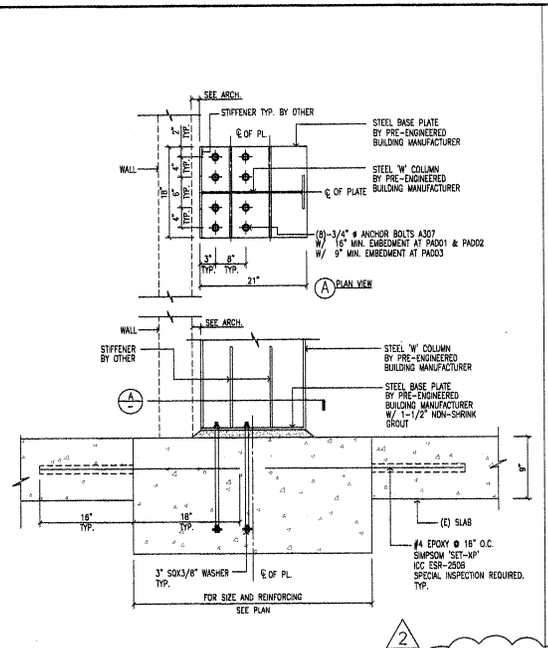
DRAWN BY	KZ	DATE STRTD	4-18-09
W.O. #	2009-612	DATE PRNTD	4-14-09
PLOT SCALE / CAD FILE NAME	TRACE SH. No. SN2	EDM-1685	
		SHEET No. 12 of 40	

S2 REV



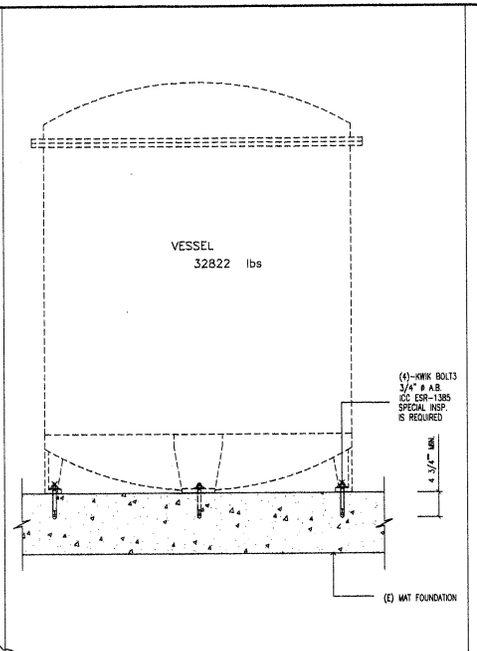
(N) STEEL COLUMN TO (E) MAT

SCALE: NONE | 6 | S1 S3



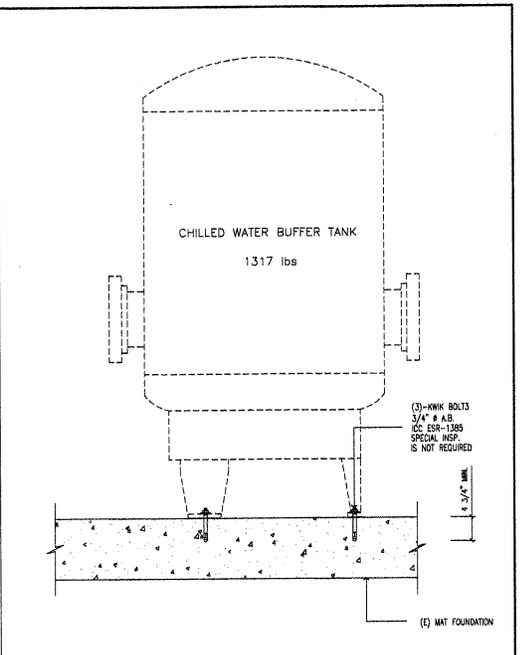
(N) STEEL COLUMN TO (E) MAT

SCALE: NONE | 5 | S1 S3



ANCHORAGE FOR VESSEL

SCALE: NONE | 3 | S1 S3



ANCHORAGE FOR CHILLED WATER BUFFER TANK

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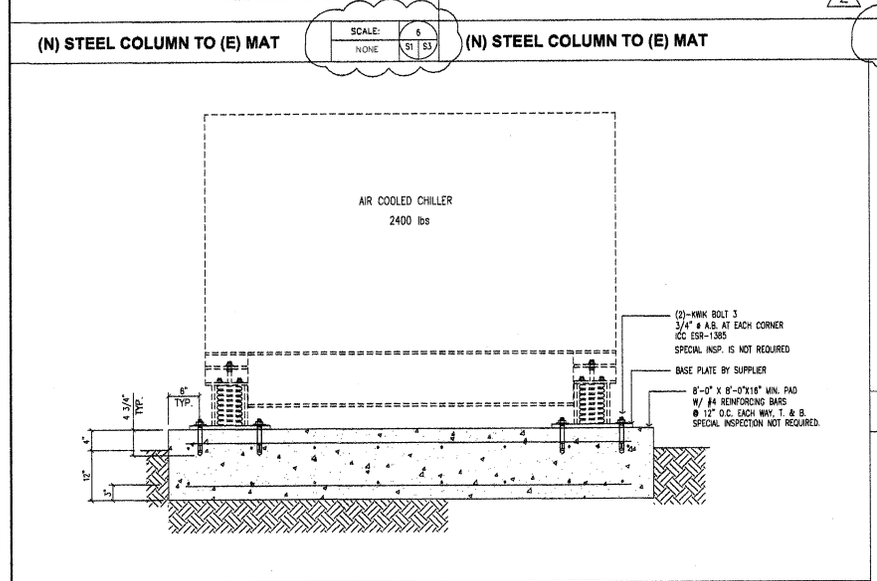
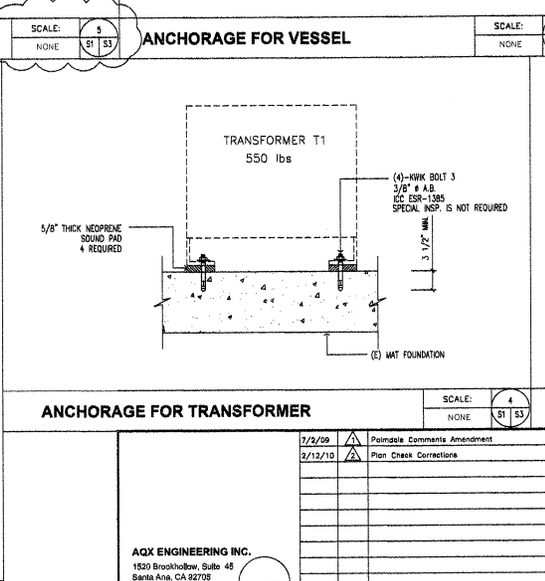


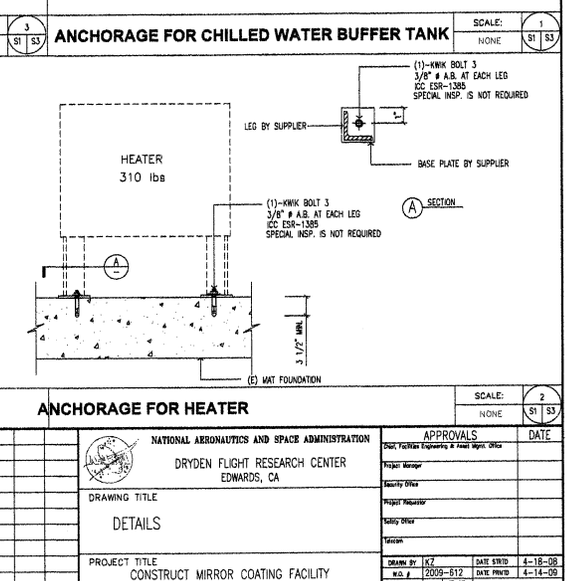
CHILLER PAD

SCALE: NONE | 7 | S1 S3



ANCHORAGE FOR TRANSFORMER

SCALE: NONE | 4 | S1 S3



ANCHORAGE FOR HEATER

SCALE: NONE | 2 | S1 S3

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7/2/09	1	Paimdale Comments Amendment		
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
DRYDEN FLIGHT RESEARCH CENTER
EDWARDS, CA

DRAWING TITLE
DETAILS

PROJECT TITLE
CONSTRUCT MIRROR COATING FACILITY
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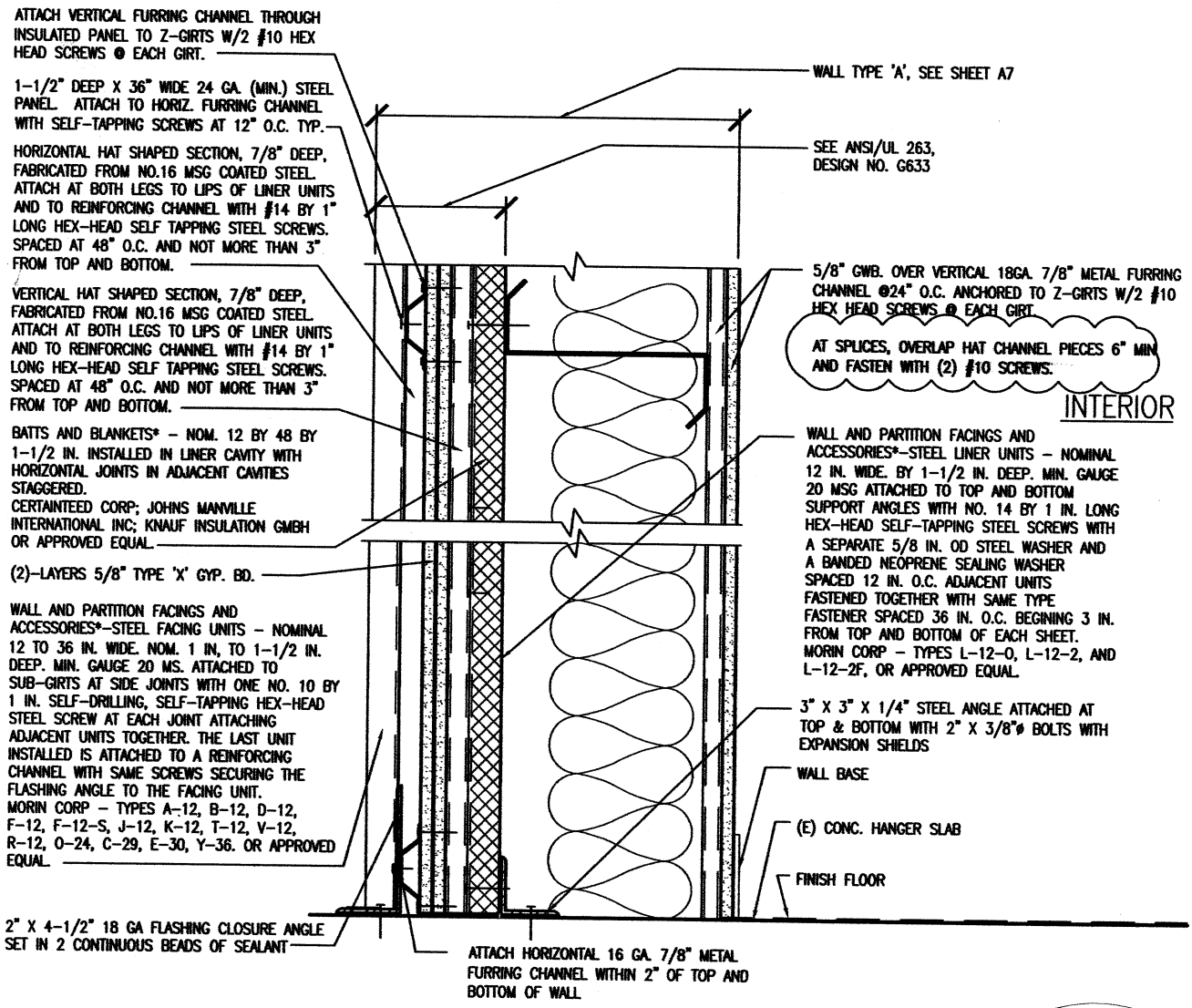
Telecom	

DRAWN BY	KZ	DATE STRTD	4-18-08
W.O. #	2009-612	DATE PRN'D	4-14-09
PLOT SCALE / CAD FILE NAME	TRADE SH. No. S3	EDM-1685	
		SHEET No. 15 of 40	

S3 REV

WALL TYPE A revision



SECTION VIEW AND SILL - SCALE 1 1/2" = 1'-0"

LICENSED ARCHITECT
JOHN BRUCE CAMINO
C23740
Signature
10/31/11
Renewal Date
STATE OF CALIFORNIA

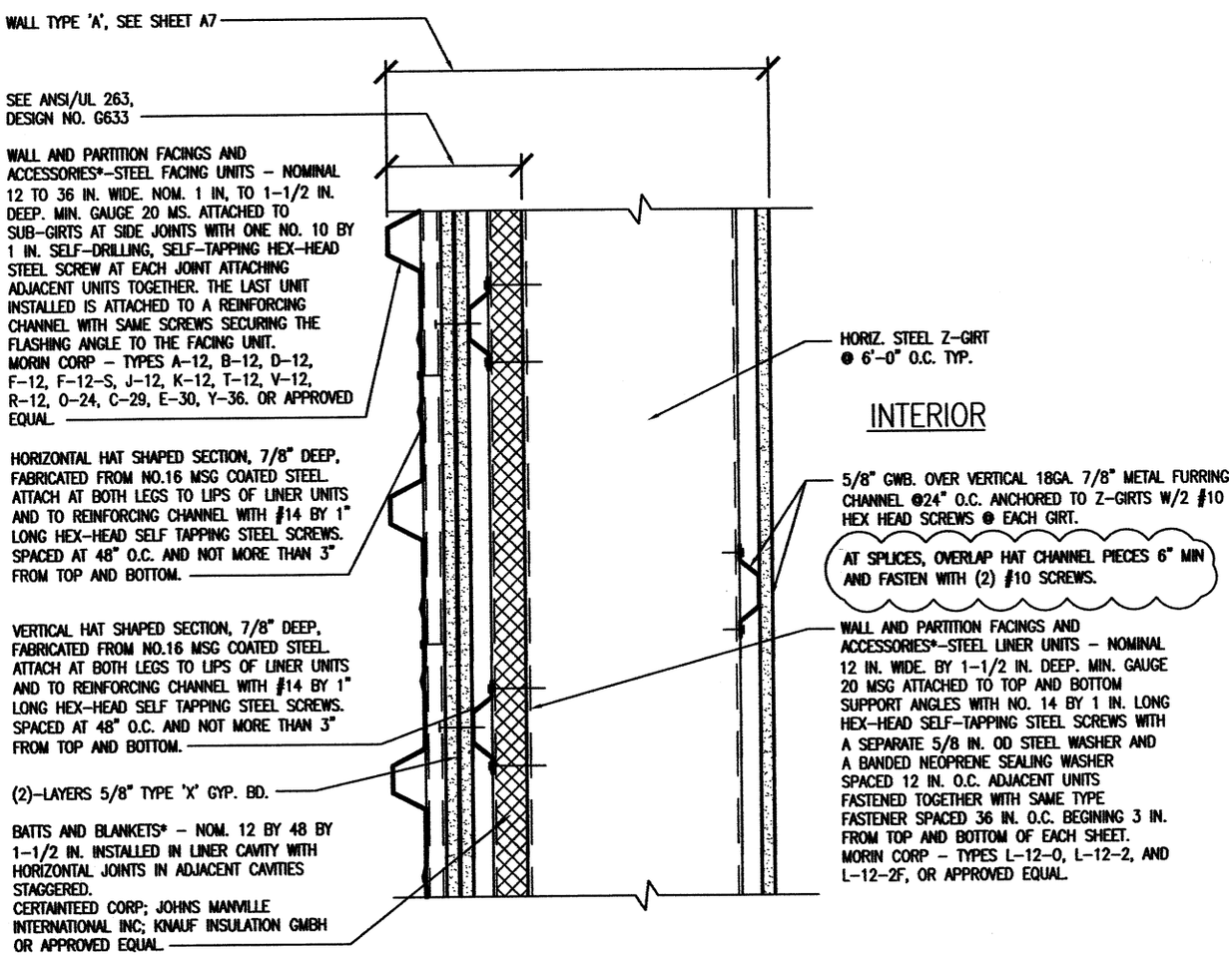
DEVELOPMENT ONE, INC.
1611 East Fourth Street, Suite 250
Santa Ana, California 92701
J.Bruce Camino, Architect, AIA, NCARB
(714) 689-0298
(714) 648-0197 FAX

PROJECT TITLE:

CONSTRUCT MIRROR COATING FACILITY
PEB WALL ASSEMBLY DETAIL

SCALE: 1 1/2" = 1'-0"
DATE: 09/01/10
ORIG. SHT: A6

SK-1 OF 2



PLAN VIEW - SCALE 1 1/2" = 1'-0"

DEVELOPMENT ONE, INC.
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(714) 689-0298
(714) 648-0197 FAX

PROJECT TITLE:

CONSTRUCT MIRROR COATING FACILITY
PEB WALL ASSEMBLY DETAIL

SCALE: 1 1/2" = 1'-0"
DATE: 09/01/10
ORIG. SHT: A6

SK-2 OF 2

PANEL PMC — 120/208 VOLT 3PH, 4W — 225 AMP COPPER BUS

LOCATION: Mechanical Room #106

MOUNTING: Surface

MAIN C.B: 225 AMPS

LOAD: 111 AMP 40 KVA

CK #	LOAD (VA) LINE A	LOAD (VA) LINE B	LOAD (VA) LINE C	LOAD DESCRIPTION	OUTLETS MIS	OUTLETS RC	OUTLETS CO	OUTLETS LT	C.B. P	C.B. TRP	BUS ABC	C.B. TRP	C.B. P	OUTLETS LT	OUTLETS CO	OUTLETS RC	OUTLETS MIS	LOAD DESCRIPTION	LOAD (VA) LINE A	LOAD (VA) LINE B	LOAD (VA) LINE C	CK #
1	1080			Mechanical Rm. Recep.		6			1	20	A	20	1	18				Rms. #103,104,105,106,107	1400			2
3		900		Punp,Gown, Mirrior Coat.,Strip.		5			1	20	B	20	1	5				Mirror Coating #101		880		4
5			1080	Punp,Gown, Mirrior Coat.,Strip.		6			1	20	C	20	1	6				Mirror Coating #101			1056	6
7	900			Punp,Gown, Mirrior Coat.,Strip.		5			1	20	A	20	1	5				Mirror Coating #101	880			8
9		1260		Corr.,Office,Gown,Mirror Strip.		7			1	20	B	20	1	10				Mirror Stripping #102		1120		10
11			1080	Corr.,Office,Gown,Mirror Strip.		6			1	20	C	30	1					CWP-1			1660	12
13	1080			Mirror Coating, Stripping		6			1	20	A	30	1					CWP-2	1660			14
15		720		Mirror Coating, Stripping		4			1	20	B	20	1					EF-2		860		16
17			720	Mirror Coating, Stripping		4			1	20	C	20	1					DDC Controller			500	18
19	1660			Motorized Doors					1	30	A	20	1					Air Comp Control Panel	500			20
21		1660		Motorized Doors					1	30	B	20	1					Air Dryer		500		22
23			1660	Motorized Doors					1	30	C	30	1					CP-1			1660	24
25	500			Fire Smoke Dampers	5				1	20	A	20	1					DDC Controller	200			26
27		500		Fire Smoke Dampers	5				1	20	B	20	1					Avionic Recep.		1080		28
29			793	FC-1					3	20	C							Space				30
31	793			------					--	---	A							Space				32
33		793		------					--	---	B							Space				34
35			864	SP-1					1	20	C							Space				36
37	1260			Recep.-Avionics		7			1	20	A	20	3					Instant. Water Heater	1800			38
39				Space							B	---	---					------		1800		40
41				Space							C	---	-					------			1800	42
	7273	5833	6197	SUBTOTALS														SUBTOTALS:	6440	6240	6676	
																		LINE TOTALS:	13713	12073	12873	
																		LCL ADDER:	519	500	264	
																		TOTAL VA/PHASE:	14232	12573	13137	
																		LINE AMPS:	119	105	109	

NOTES:

1

1

REGISTERED PROFESSIONAL ENGINEER
KURT KAISER
No. E015151
Exp. 6-30-10
ELECTRICAL
STATE OF CALIFORNIA

DCGA
DONN C. GILMORE & ASSOCIATES, INC.
Consulting Mechanical and Electrical Engineers
4051 E. La Palma Ave., Ste. A
Anaheim, CA 92807
Ph.: 714.630.4291
Fax: 714.630.4805

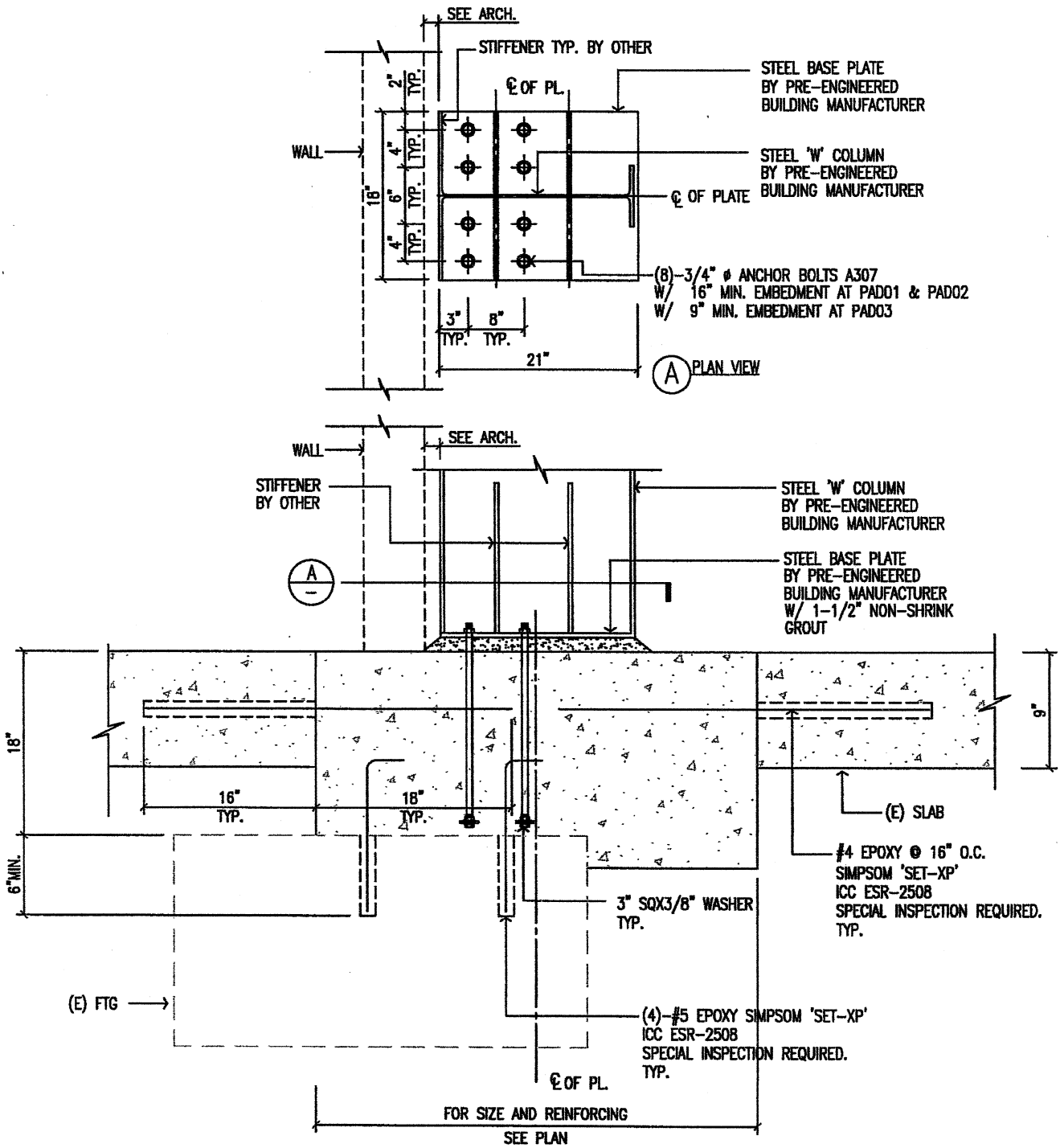
PROJECT
CONSTRUCT MIRROR COATING FACILITY
DAOF BUILDING 703

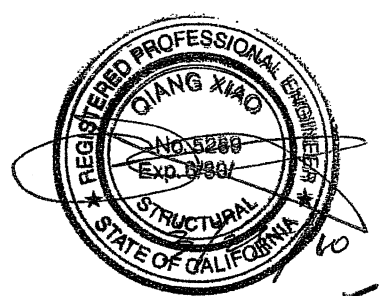
TITLE
PANEL SCHEDULE

RFI No.	SCALE	DATE
24	N.T.S	6-4-10

CHECKED BY	JOB No.	SHEET No. REF.
K.K.	8039	E8

DESIGNED BY	DRAWN BY	SHEET No.
K.K.	WAS	ESK-2


SEE ARCH.
STIFFENER TYP. BY OTHER
℄ OF PL.
STEEL BASE PLATE
BY PRE-ENGINEERED
BUILDING MANUFACTURER
WALL
STEEL 'W' COLUMN
BY PRE-ENGINEERED
BUILDING MANUFACTURER
℄ OF PLATE
2" TYP.
4" TYP.
6" TYP.
4" TYP.
18"
(8)-3/4" ø ANCHOR BOLTS A307
W/ 16" MIN. EMBEDMENT AT PAD01 & PAD02
W/ 9" MIN. EMBEDMENT AT PAD03
3" TYP.
8" TYP.
21"
A PLAN VIEW
WALL
SEE ARCH.
STIFFENER
BY OTHER
STEEL 'W' COLUMN
BY PRE-ENGINEERED
BUILDING MANUFACTURER
A
STEEL BASE PLATE
BY PRE-ENGINEERED
BUILDING MANUFACTURER
W/ 1-1/2" NON-SHRINK
GROUT
18"
9"
16" TYP.
18" TYP.
(E) SLAB
6"MIN.
#4 EPOXY @ 16" O.C.
SIMPSOM 'SET-XP'
ICC ESR-2508
SPECIAL INSPECTION REQUIRED.
TYP.
3" SQX3/8" WASHER
TYP.
(E) FTG
(4)-#5 EPOXY SIMPSOM 'SET-XP'
ICC ESR-2508
SPECIAL INSPECTION REQUIRED.
TYP.
℄ OF PL.
FOR SIZE AND REINFORCING
SEE PLAN


REGISTERED PROFESSIONAL ENGINEER
QIANG XIAO
No. 5280
Exp. 6/30/
STRUCTURAL
STATE OF CALIFORNIA

FND1 REV

APPROVED

CITY OF PALMDALE - BUILDING AND SAFETY

No changes are to be made unless authorized by the Building Official. Stamping of these plans and supporting documents shall not be held as authorization to violate any building codes of the City, or State. Plans are not checked for ADA requirements.

By: Doug Harter Date: 1-18-11

Approved Plans Shall be on Job Site for Inspection.

THE FOLLOWING PORTIONS OF THESE PLANS AND DOCUMENTS ARE APPROVED.

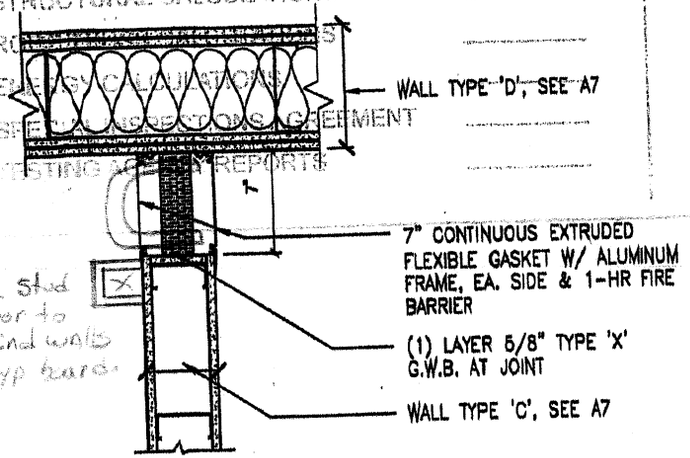
BUILDING ☒
ELECTRICAL ☐
PLUMBING ☐
MECHANICAL ☐

THE FOLLOWING PLANS SHALL BE MAINTAINED ON THE JOB SITE DURING ALL INSPECTIONS.

☐ PLANNING ☐ ENGR.
☐ FIRE ☐ HEALTH
☐ INDUSTRIAL WASTE ☐

ATTACHED DOCUMENTS

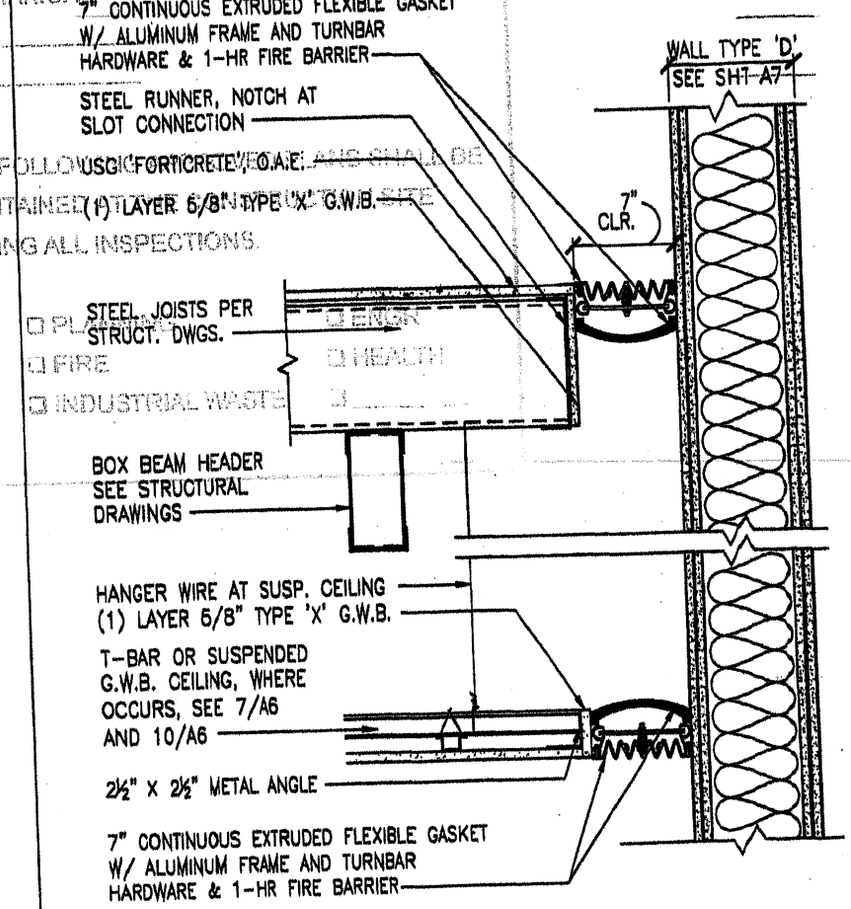
STRUCTURAL CALCULATIONS
ROOF TRUSS
ENERGY CALCULATIONS
SPECIAL INSPECTIONS AGREEMENT
SOIL TESTING & GEOLOGY REPORTS



2½" 20ga. stud wall, floor to ceiling @ end walls with 5/8 gyp board

EXPANSION JOINT CONNECTION

SCALE: 1 1/2"=1'-0" | 12 | A1 | A8



CEILING TO WALL ASSEMBLY

SCALE: 1 1/2"=1'-0" | 9 | A4 | A8

B9-00575