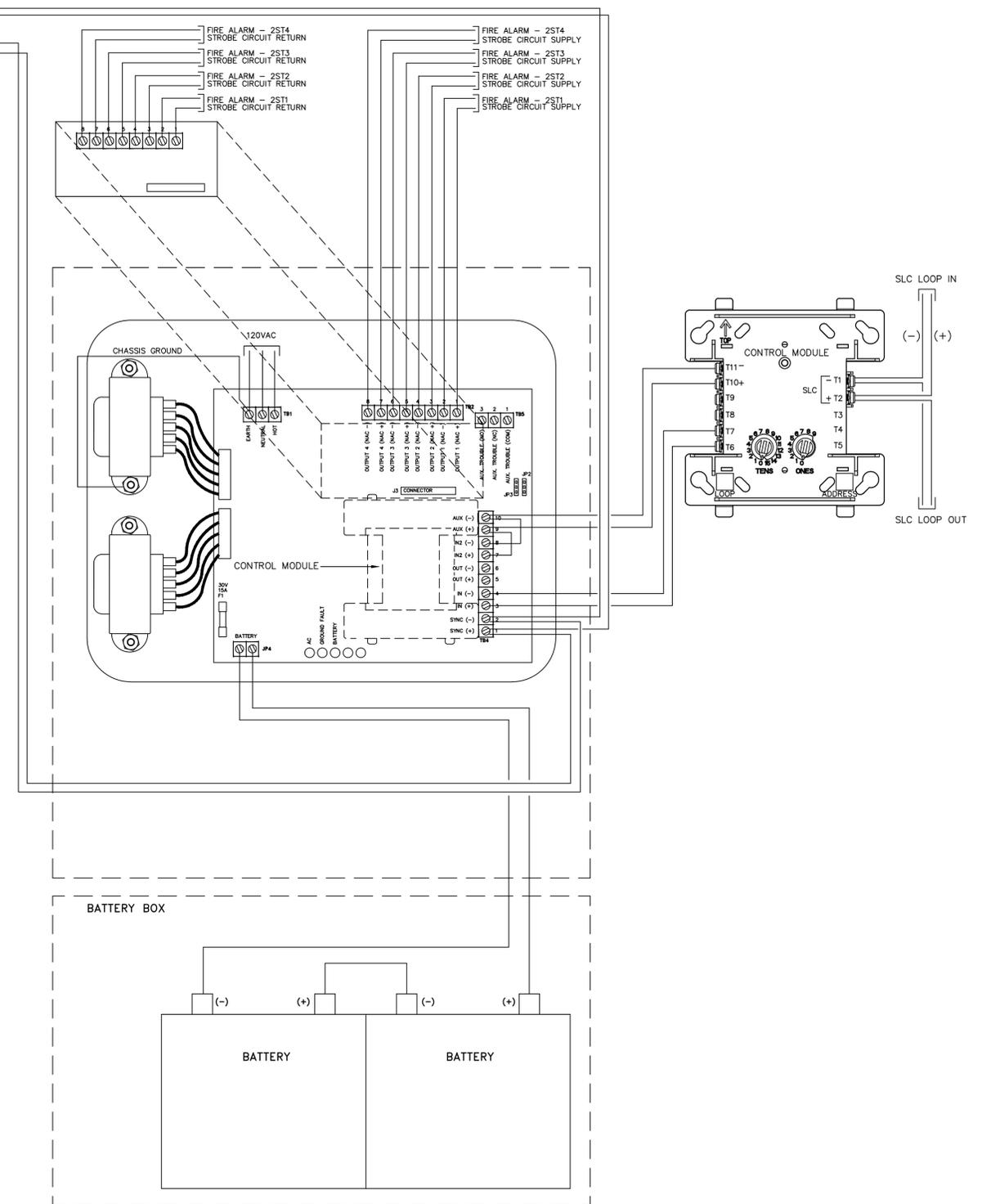


WIRING DIAGRAM (RPS #1)

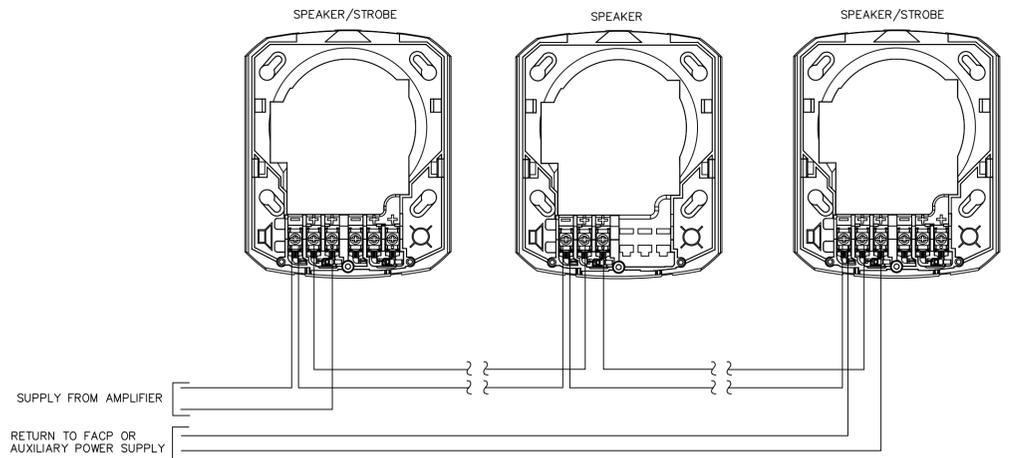


WIRING DIAGRAM (RPS #2)

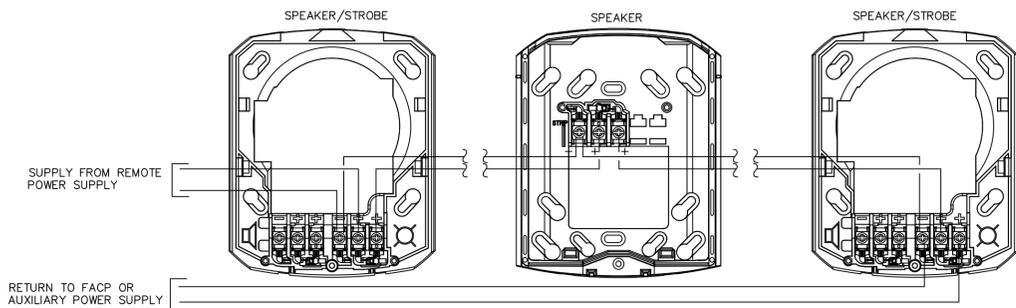
<p><b>MUDRY &amp; ASSOCIATES</b> Fire Protection Engineering, Consulting and Design 12752 Valley View Street, Suite D Garden Grove, California 92845 (714) 373-5741 Fax (714) 373-5781 e-mail: fpe@mudry.us</p>	DATE	SYM	REVISION	BY	A/PD	<p><b>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</b> DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA</p>	<p>APPROVALS</p> <p>Chief, Facilities Engineering &amp; Asset Mgmt. Office DAN CROWLEY <i>Daniel Crowley</i> 4/14/11</p> <p>Project Requestor/Customer DAN CROWLEY <i>Daniel Crowley</i> 4/14/11</p> <p>Facilities Project Manager GEMMA FLORES <i>Gemma Flores</i> 4/14/11</p> <p>Chief, Office of Protective Services JOHN ZELLNER <i>John Zellner</i> 4/14/11</p> <p>Chief - Safety, Health and Environmental Office DAN MULLEN <i>Dan Mullen</i> 4/14/11</p> <p>SPRC Chief Information Officer KEN NORLIN <i>Ken Norlin</i> 4/14/11</p>	DATE
	<p>DRAWING TITLE FIRE ALARM POWER SUPPLY WIRING DIAGRAMS</p> <p>PROJECT TITLE FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL</p>						<p>DATE STRTD 11/04/10 DATE PRNTD 03/14/11</p> <p>DRAWN BY HMO TRADE SH. No. EDM-1703</p> <p>SCALE AS INDICATED</p> <p>FILE NAME FA3.4 SHEET No. 183 of 193</p>	



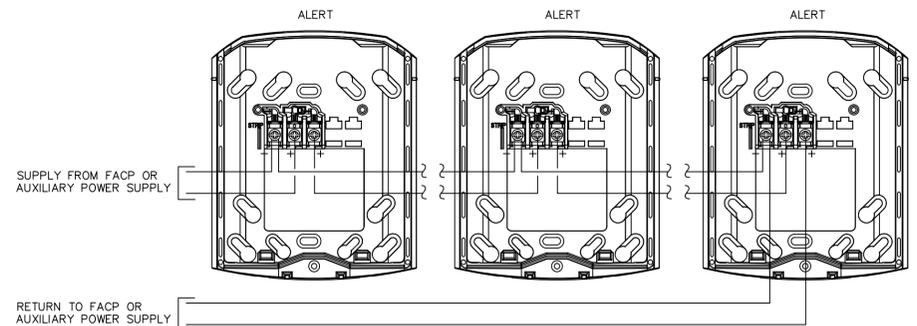




TYPICAL SYSTEM CIRCUIT WIRING CONNECTIONS



TYPICAL SYSTEM CIRCUIT WIRING CONNECTIONS



(FUTURE) MASS NOTIFICATION SIGNAL STROBE CIRCUIT WIRING CONNECTIONS

<p><b>MUDRY &amp; ASSOCIATES</b> Fire Protection Engineering, Consulting and Design 12752 Valley View Street, Suite D Garden Grove, California 92845 (714) 373-5741 Fax (714) 373-5781 e-mail: fpe@mudry.us</p>	DATE	SYM	REVISION	BY	A/PD	<p>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA</p>	<p>APPROVALS</p> <p>Chief, Facilities Engineering &amp; Asset Mgmt. Office DAN CROWLEY <i>Daniel Crowley</i> 4/14/11 Project Requestor/Customer DAN CROWLEY <i>Daniel Crowley</i> 4/14/11 Facilities Project Manager GENA FLORES <i>Gen Flores</i> 4/14/11 Chief, Office of Protective Services JOHN ZELLNER <i>John Zellner</i> 4/14/11 Chief - Safety, Health and Environmental Office DAN MULLEN <i>Dan Mullen</i> 4/14/11 SPIC Chief Information Officer KEN NORLIN <i>Ken Norlin</i> 4/14/11</p>	DATE	
	DRAWING TITLE						DATE STRTD	DATE PRNTD	
	PROJECT TITLE						11/04/10	03/14/11	
	FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL						DRAWN BY	EDM-1703	
						SCALE	AS INDICATED	TRACE SH. No.	
						FILE NAME	FA4.2 SHEET No. 186 of 193		

**FIRE SPRINKLER SYSTEM NOTES:**

- THE SPRINKLER SYSTEM DESIGN AND INSTALLATION SHALL BE IN ACCORDANCE WITH NASA STD 8719.11 REV. A, NFPA 13 2007, NFPA 101 2009, AND UFGS DIVISION 21, SECTION 13 00.00 40.
- ALL DEVICES AND EQUIPMENT SHALL BE UL LISTED OR FM APPROVED.
- AUTOMATIC SPRINKLER PROTECTION SHALL BE PROVIDED THROUGHOUT THE BUILDING.
- DESIGN WATER SUPPLY INFORMATION:  
 STATIC PRESSURE: 100 PSI  
 RESIDUAL PRESSURE: 95 PSI  
 FLOW AT RESIDUAL PRESSURE: 3,500 GPM
- THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED USING THE FOLLOWING CRITERIA:  

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD GROUP I
SYSTEM TYPE:	WET PIPE
DESIGN METHOD:	AREA DENSITY
SPRINKLER:	QUICK RESPONSE
TEMPERATURE RATING:	INTERMEDIATE
DESIGN DENSITY:	0.15 GPM/SQ.FT. (6.1 LPM/M <sup>2</sup> )
DESIGN AREA:	1500 SQ.FT. (139 M <sup>2</sup> )
OUTSIDE HOSE STREAM:	250 GPM (946 LPM)

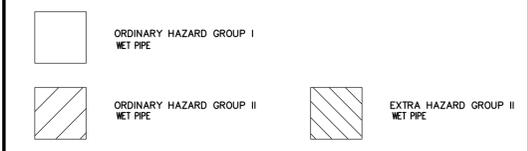
  

OCCUPANCY CLASSIFICATION:	ORDINARY HAZARD GROUP II
SYSTEM TYPE:	WET PIPE
DESIGN METHOD:	AREA DENSITY
SPRINKLER:	QUICK RESPONSE
TEMPERATURE RATING:	INTERMEDIATE
DESIGN DENSITY:	0.20 GPM/SQ.FT. (8.2 LPM/M <sup>2</sup> )
DESIGN AREA:	1500 SQ.FT. (139 M <sup>2</sup> )
OUTSIDE HOSE STREAM:	250 GPM (946 LPM)

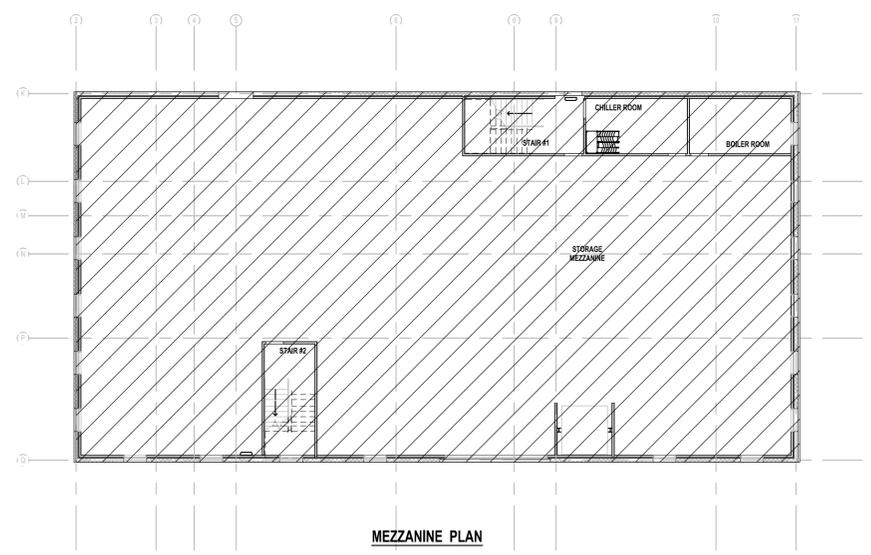
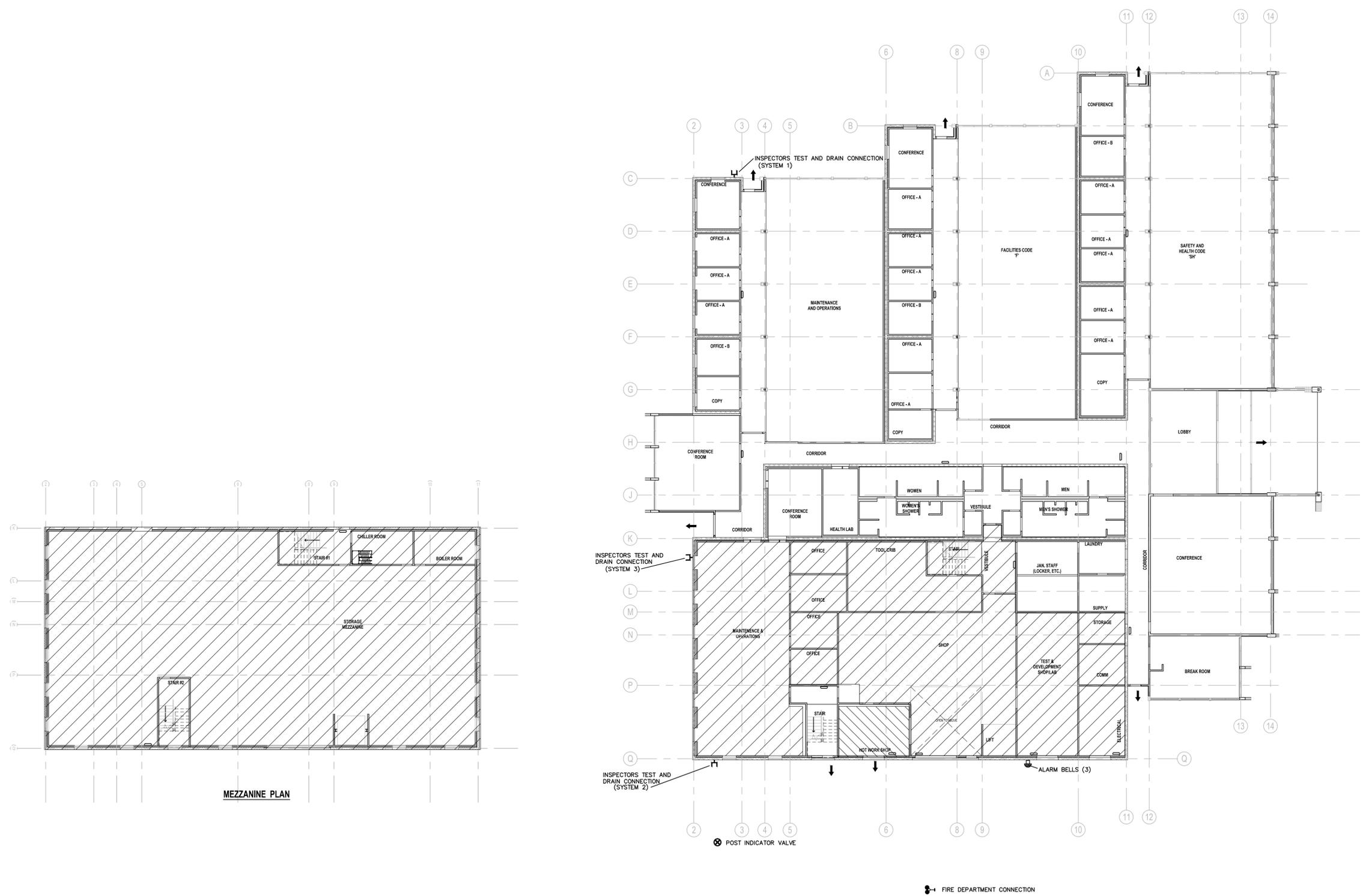
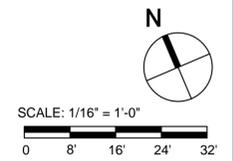
OCCUPANCY CLASSIFICATION:	EXTRA HAZARD GROUP II
SYSTEM TYPE:	WET PIPE
DESIGN METHOD:	AREA DENSITY
SPRINKLER:	STANDARD RESPONSE
TEMPERATURE RATING:	INTERMEDIATE
DESIGN DENSITY:	0.40 GPM/SQ.FT. (16.3 LPM/M <sup>2</sup> )
DESIGN AREA:	2500 SQ.FT. (232 M <sup>2</sup> )
OUTSIDE HOSE STREAM:	500 GPM (1893 LPM)
- PIPING SHALL BE PROVIDED WITH SEISMIC PROTECTION (SWAY BRACING) IN ACCORDANCE WITH NFPA 13.
- SPRINKLER PIPING SHALL COMPLY WITH NFPA 13, EXCEPT THAT PLASTIC AND COPPER PIPING SHALL NOT BE PERMITTED. ALL PIPING SHALL BE SCHEDULE 40 STEEL PIPING. PIPING AND FITTINGS LOCATED OUTSIDE THE BUILDING, SHALL BE HOT DIPPED GALVANIZED (ZINC) COATED.
- ALL SPRINKLER PIPING IN FINISHED AREAS SHALL BE CONCEALED FROM VIEW.
- WHERE APPLICABLE, LOCATE SPRINKLERS IN APPROXIMATE CENTER OF CEILING TILE.
- THE SPRINKLER DESIGN IS CONCEPTUAL. THE CONTRACTOR SHALL DESIGN AND INSTALL THE SYSTEM IN ACCORDANCE WITH THE APPLICABLE CODES, MANUFACTURER'S RECOMMENDATIONS AND EQUIPMENT LISTINGS.
- ALL PENETRATIONS THROUGH FIRE RATED WALLS SHALL BE FIRE STOPPED ACCORDINGLY.

**SPRINKLER DESIGN CRITERIA LEGEND**



**SYMBOL LEGEND**

- ALARM BELL
- INSPECTOR'S TEST AND DRAIN CONNECTION
- FIRE EXTINGUISHER
- EXITING ROUTE OF TRAVEL
- FIRE DEPARTMENT CONNECTION
- AUTOMATIC FIRE SPRINKLER SYSTEM RISER
- AUTOMATIC FIRE SPRINKLER (PENDENT)
- AUTOMATIC FIRE SPRINKLER (UPRIGHT)
- POST INDICATOR VALVE

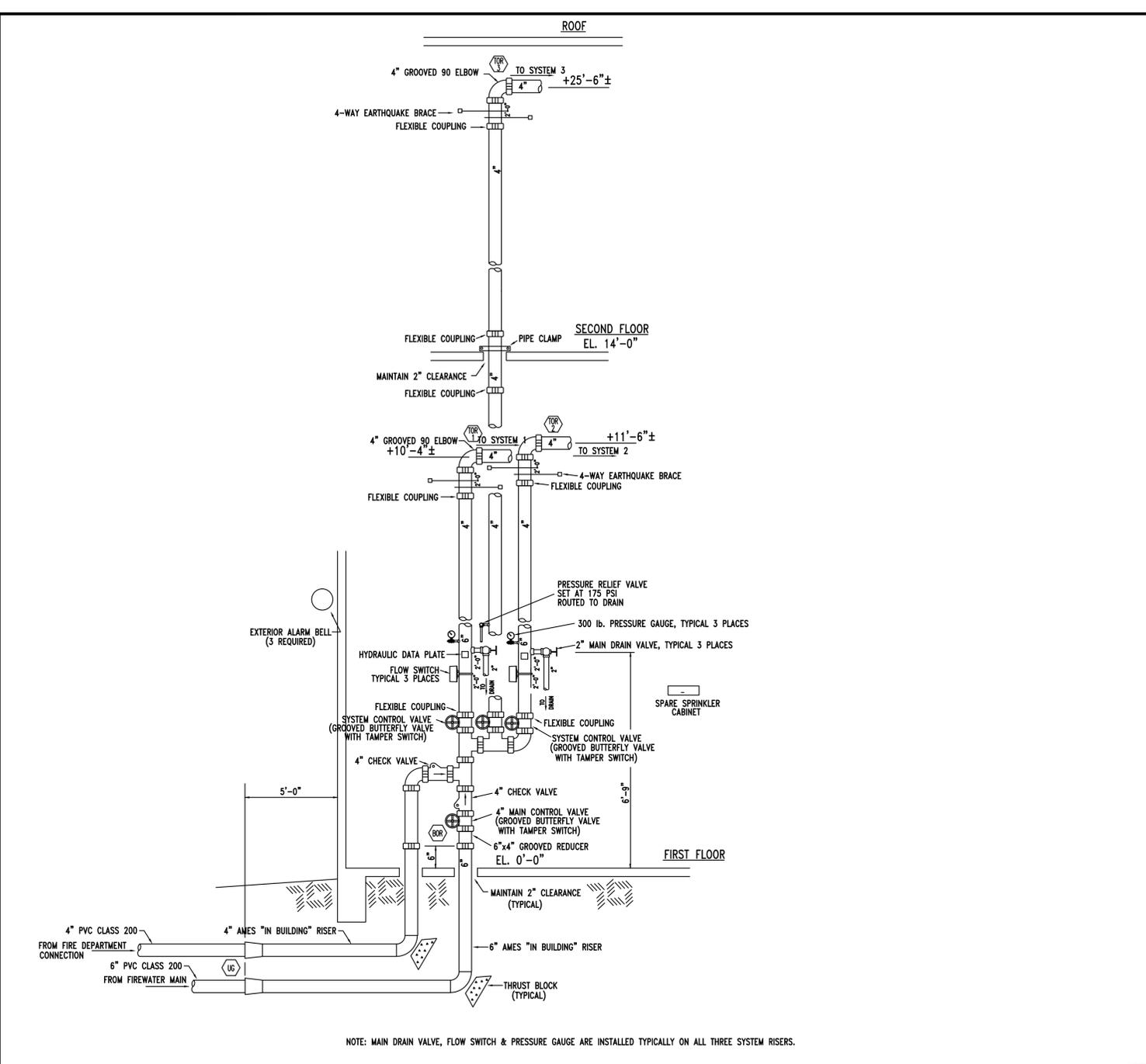


**MUDRY & ASSOCIATES**  
 Fire Protection Engineering, Consulting and Design  
 12752 Valley View Street, Suite D  
 Garden Grove, California 92845  
 (714) 373-5741 Fax (714) 373-5781 e-mail: fpe@mudry.us

DATE	SYM	REVISION	BY	A/PD

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA	APPROVALS Chief, Facilities Engineering & Asset Mgmt. Office DAN CROWLEY <i>Daniel Crowley</i> 4/14/11 Project Inspector/Customer DAN CROWLEY <i>Daniel Crowley</i> 4/14/11 Facilities Project Manager GEMMA FLORES <i>Gemma Flores</i> 4/14/11 Chief, Office of Protective Services JOHN ZELMER <i>John Zeller</i> 4/14/11 Chief - Safety, Health and Environmental Office DAN MULLEN <i>Dan Mullen</i> 4/14/11 SFRIC Chief Information Officer KEN NORLIN <i>Ken Norlin</i> 4/14/11	DATE DATE STRTD: 11/04/10 DATE PRNTD: 03/14/11
	DRAWING TITLE FIRE PROTECTION PLAN	PROJECT TITLE FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL
SCALE: AS INDICATED FILE NAME: FS1.0	SHEET No. 187 of 193	1

PRIOR TO THE COMMENCEMENT OF WORK THE CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS AND JOB SITE CONDITIONS. MUDRY & ASSOCIATES IS NOT RESPONSIBLE FOR CORRECTING ANY DISCREPANCIES BETWEEN THE DRAWINGS, SPECIFICATIONS NFPA CODES, BUILDING CODES, AND FIELD CONDITIONS. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL APPLICABLE CODES AND REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND HOLDING HARMLESS MUDRY & ASSOCIATES, THE ARCHITECT AND THE OWNER OF ANY LIABILITY RESULTING FROM HIS WORK. THE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF MUDRY & ASSOCIATES AND THEIR CLIENT AND SHALL NOT BE USED OR REPRODUCED (IN WHOLE OR PART) ON ANY OTHER WORK OTHER THAN THE DESIGNATED PROJECT WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CONTRACTOR ALONE.



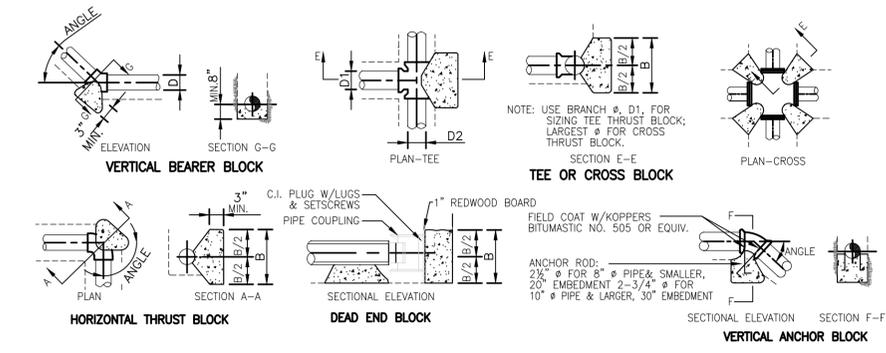
FIRE SPRINKLER RISER DETAIL

SCALE: NONE 3

**THRUST BLOCK SCHEDULE**  
225 PSI MAXIMUM HYDROSTATIC PRESSURE

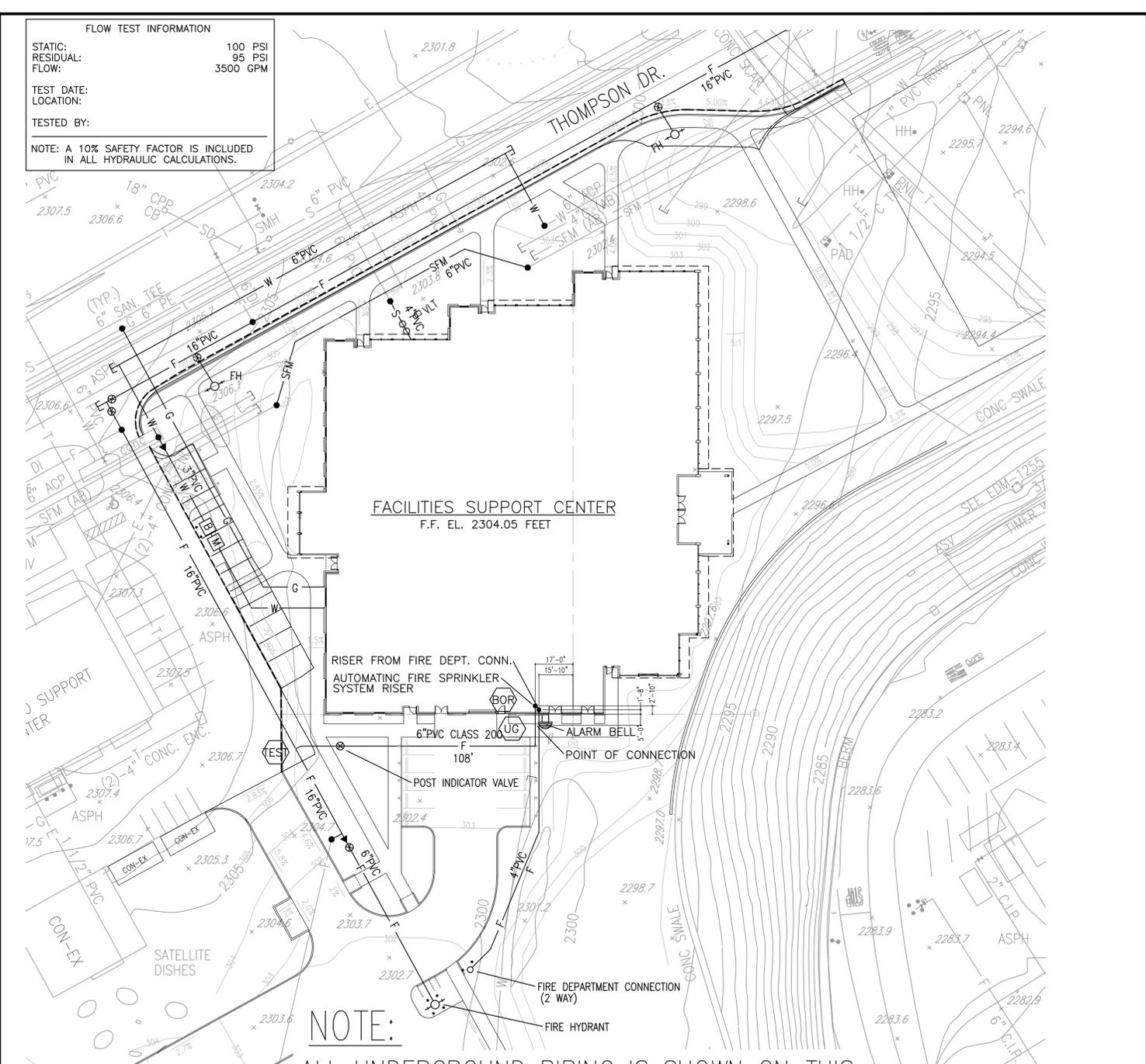
MAIN SIZE (IN)	MINIMUM BEARING AREA IN SQUARE FEET				TEE OR DEAD END EACH WAY	CROSS	VERT. ANCHOR BLOCK MINIMUM CUBIC FEET		
	11 1/4'	22 1/2'	45'	90'			11 1/4'	22 1/2'	45'
4	1	1	3	4	3	2	4	8	15
6	2	3	5	9	7	4	9	17	35
8	3	5	9	15	12	6	13	30	58
10	4	7	14	25	18	9	23	46	91
12	5	10	20	35	26	13	34	66	130

- NOTES:
1. PROVIDE CONCRETE THRUST BLOCK AT ALL PRESSURE PIPE FITTINGS THAT ARE 4" DIAMETER AND LARGER.
  2. USE 2000 PSI CONCRETE.
  3. VERTICAL BEARER BLOCK SIZE MAY BE 1/2 THE AREA SHOWN FOR HORIZONTAL BEARER BLOCKS.
  4. BLOCK SIZES BASED UPON 1000 psf AND 2000 psf ALLOWABLE HORIZONTAL AND VERTICAL BEARING RESPECTIVELY.
  5. FULLY RESTRAINED JOINTS PER PIPE MANUFACTURER'S RECOMMENDATIONS MAY BE USED IN LIEU OF THRUST BLOCKS ON DUCTILE IRON PIPE ONLY.



TYPICAL THRUST BLOCKS FOR PRESSURE WATER PIPELINES

SCALE: NONE 2



**FLOW TEST INFORMATION**

STATIC: 100 PSI  
 RESIDUAL: 95 PSI  
 FLOW: 3500 GPM

TEST DATE:  
 LOCATION:  
 TESTED BY:

NOTE: A 10% SAFETY FACTOR IS INCLUDED IN ALL HYDRAULIC CALCULATIONS.

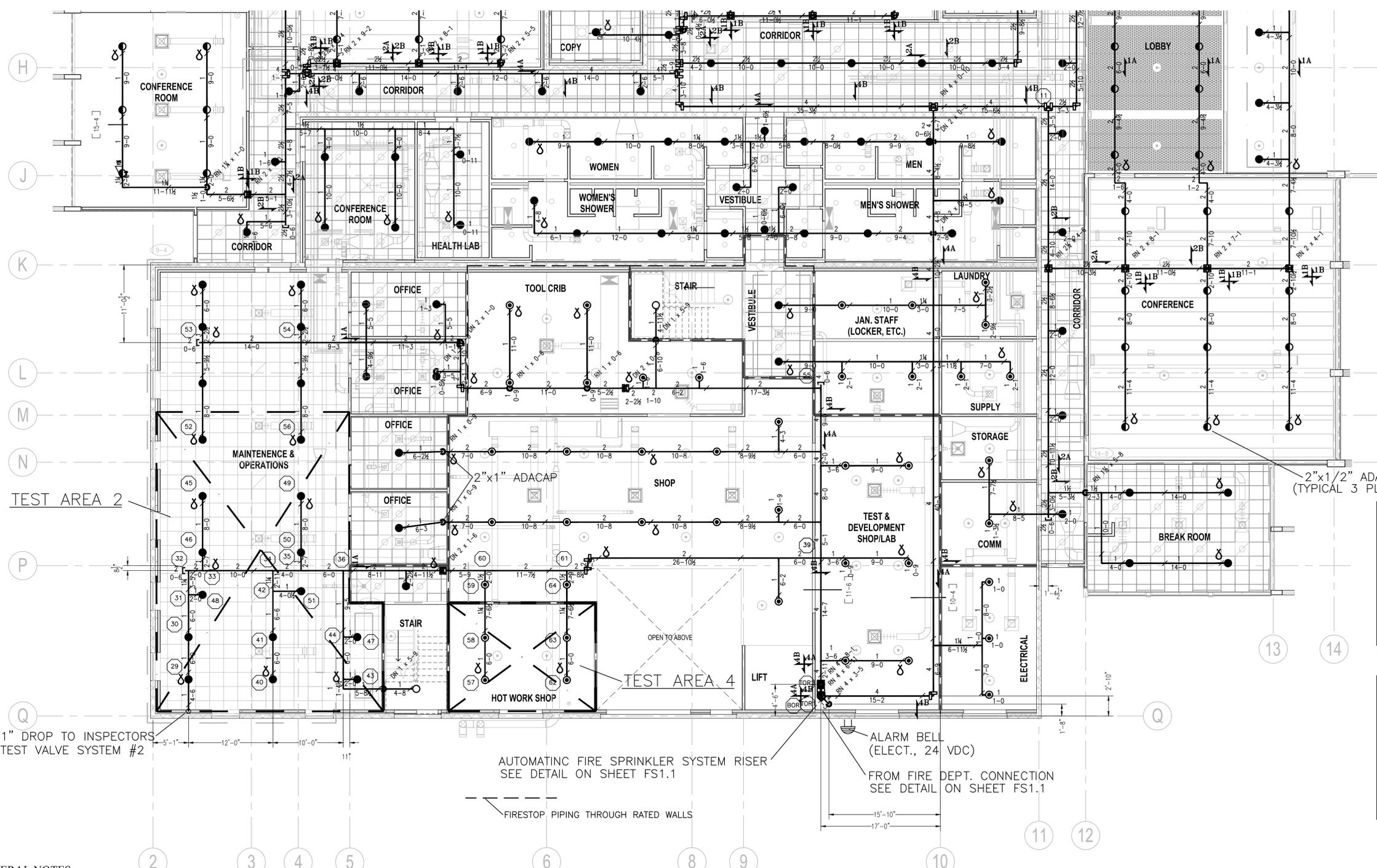
NOTE:  
 ALL UNDERGROUND PIPING IS SHOWN ON THIS PLAN FOR HYDRAULIC REFERENCE ONLY.  
 FOR INSTALLATION DETAILS SEE CIVIL DRAWINGS.

SCALE: 1/32" = 1'-0"  
 0 16' 32' 48' 64'

	<b>MUDRY &amp; ASSOCIATES</b> Fire Protection Engineering, Consulting and Design 12752 Valley View Street, Suite D Garden Grove, California 92845 (714) 373-5741 Fax (714) 373-5781 e-mail: fpe@mudry.us	DATE: _____ SYM: _____ REVISION: _____ BY: _____ A/PD: _____	<b>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</b> DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA	<b>APPROVALS</b> Chief, Facilities Engineering & Asset Mgmt. Office: Dan Crowley (4/14/11) Project Inspector/Assistant: Dan Crowley (4/14/11) Facilities Project Manager: Genia Flores (4/14/11) Chief, Office of Protective Services: John Zeller (4/14/11) Chief - Safety, Health and Environmental Office: Dan Mullen (4/14/11) SFRIC Chief Information Officer: Ken Norlin (4/14/11)	DATE: 11/04/10 DATE PRINTED: 03/14/11 DRAWN BY: RJM SCALE: AS INDICATED FILE NAME: FS1.1	DATE: _____ DATE PRINTED: _____ DRAWN BY: _____ SCALE: _____ FILE NAME: _____
	PROJECT TITLE: FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL		DATE: _____ DATE PRINTED: _____ DRAWN BY: _____ SCALE: _____ FILE NAME: _____		DATE: _____ DATE PRINTED: _____ DRAWN BY: _____ SCALE: _____ FILE NAME: _____	

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

PRIOR TO THE COMMENCEMENT OF WORK THE CONTRACTOR SHALL REVIEW ALL PROJECT DOCUMENTS AND JOB SITE CONDITIONS. MUDRY & ASSOCIATES IS NOT RESPONSIBLE FOR CORRECTING ANY DISCREPANCIES BETWEEN THE DRAWINGS, SPECIFICATIONS NFPA CODES, BUILDING CODES, AND FIELD CONDITIONS. NOR IS MUDRY & ASSOCIATES RESPONSIBLE FOR ANY ADDITIONAL COSTS ASSOCIATED WITH SUCH DISCREPANCIES. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR OBTAINING ALL APPLICABLE CODES AND REGULATIONS FROM THE AUTHORITIES HAVING JURISDICTION AND HOLDING MUDRY & ASSOCIATES, THE ARCHITECT AND THE OWNER OF ANY LIABILITY RESULTING FROM HIS WORK. THE DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF MUDRY & ASSOCIATES AND SHALL NOT BE USED OR REPRODUCED (IN WHOLE OR IN PART) ON ANY OTHER WORK WITHOUT THE EXPRESS WRITTEN CONSENT OF THE CONTRACTOR ALONE.



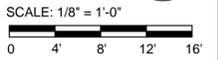
This system as shown on \_\_\_\_\_ company  
 print No. \_\_\_\_\_ dated 2-1-2011  
 for **FACILITIES SUPPORT CENTER**  
 at **DRYDEN FLIGHT RESEARCH CENTER** contract No. \_\_\_\_\_  
 is designed to discharge at a rate of .20 gpm/sq.ft.  
 (L/min/m<sup>2</sup>) of floor area over a max. area of 1500  
 ft<sup>2</sup> (m<sup>2</sup>) when supplied with water at a rate of 257.93  
 gpm (L/min) at 54.331 psi (bar) at the base of the riser.  
 Hose stream allowance of 250 gpm (L/min)  
 is included in the above calculation.  
 Number of sprinklers calculated 14  
 Occupancy classification ORDINARY HAZARD GROUP II  
 Commodity classification N/A  
 Maximum storage height 12

**SYSTEM 2 NAMEPLATE**

This system as shown on \_\_\_\_\_ company  
 print No. \_\_\_\_\_ dated 2-1-2011  
 for **FACILITIES SUPPORT CENTER**  
 at **DRYDEN FLIGHT RESEARCH CENTER** contract No. \_\_\_\_\_  
 is designed to discharge at a rate of .40 gpm/sq.ft.  
 (L/min/m<sup>2</sup>) of floor area over a max. area of 315  
 ft<sup>2</sup> (m<sup>2</sup>) when supplied with water at a rate of 161.52  
 gpm (L/min) at 83.739 psi (bar) at the base of the riser.  
 Hose stream allowance of 500 gpm (L/min)  
 is included in the above calculation.  
 Number of sprinklers calculated 4  
 Occupancy classification EXTRA HAZARD GROUP II  
 Commodity classification N/A  
 Maximum storage height 12

**HOT WORK SHOP NAMEPLATE**

SPRINKLER SCHEDULE & LEGEND											
SYMBOL	SPRINKLER DESCRIPTION	SIN	THREAD SIZE	TEMP.	K-FACTOR	TRIM	FINISH	SYSTEM	SYSTEM	SYSTEM	TOTAL
●	VIKING "MICROFAST" CONCEALED PEND. ON 1" DROP	VK462	1/2"	155°	5.6	CONC.	WHITE	102	27	---	129
○	VIKING "MICROFAST" UPRIGHT ON 1/2" OUTLET	VK300	1/2"	200°	5.6	---	BRASS	---	2	78	80
○	VIKING "MICROFAST" UPRIGHT ON 1" SPRIG	VK300	1/2"	200°	5.6	---	BRASS	13	29	---	42
●	VIKING "MICROFAST" CONCEALED PEND. ON 1" DROP	VK462	1/2"	155°	5.6	CONC.	WHITE	125	---	---	125
								TOTAL PER SYSTEM=	240	58	78
								TOTAL REQUIRED THIS PROJECT=	376		



**GENERAL NOTES**

SCOPE OF WORK IS TO PROVIDE SPRINKLERS NEW OFFICE AND SHOP FACILITY.  
 POINT OF CONNECTION TO BE 5'-0" OUTSIDE OF BUILDING LINE.  
 ALL DESIGN, FABRICATION AND INSTALLATION PER NFPA #13, 2007 EDITION.  
 ALL CONTROL VALVES AND DRAIN VALVES SHALL HAVE A SIGN AFFIXED FOR IDENTIFICATION.  
 ALL 2" AND LARGER LINES SHALL BE SCHEDULE 40 WITH GROOVED ENDS AND MECHANICAL FITTINGS. COUPLINGS SHALL BE RIGID TYPE, UNLESS OTHERWISE NOTED.  
 ALL THREADED PIPING SHALL BE SCHEDULE 40 WITH CUT THREADS AND CLASS 125 CAST IRON FITTINGS.  
 THE FIRE SPRINKLER SYSTEM SHALL BE MONITORED BY THE FIRE ALARM SYSTEM.  
 A SPARE SPRINKLER CABINET SHALL BE INSTALLED NEAR THE RISER WITH THE QUANTITY OF SPARE SPRINKLERS REQUIRED BY NFPA 13, SECTION 6.2.9  
 ALL DEVICES AND COMPONENTS TO BE EITHER LISTED BY A NATIONALLY RECOGNIZED TESTING LABORATORY FOR FIRE PROTECTION SERVICE OR APPROVED BY THE AUTHORITY HAVING JURISDICTION.  
 A HYDROSTATIC TEST SHALL BE PERFORMED FOR ALL SYSTEM PIPING AT NOT LESS THEN 200 PSI FOR TWO HOURS, OR 50 PSI ABOVE STATIC PRESSURE IN EXCESS OF 150 PSI FOR TWO HOURS, AND WITNESSED BY A NASA FIRE PROTECTION ENGINEER.  
 FIRE SPRINKLER FLOW ALARM BELL WILL BE INSTALLED ON THE ADDRESS SIDE OF THE BUILDING AND WILL BE EQUIPPED WITH THE PROPER SIGNAGE IDENTIFYING THE ALARM BELL.

**BUILDING DESIGN INFORMATION:**  
 -Governing Building Code=2007 CBC  
 -Building Occupancy= A-3, B, F-1, S  
 -Construction Type= TYPE II-FR  
 -Building Height= TWO STORY  
 -Building Area= 29,700 SQ.FT. FIRST LEVEL  
 6,900 SQ.FT. SECOND LEVEL  
 36,600 SQ.FT. TOTAL  
 -Governing Fire Code= NFPA 13, 2007

**DESIGN CRITERIA - OFFICE AREAS**  
 -Classification of Occupancy= ORDINARY HAZARD GR II  
 -Design Density= .15 GPM/SQ.FT.  
 -Design Area= 1500 SQ.FT.  
 -Construction Type= UNOBSTRUCTED  
 -Deflector Distance= 1" TO 12" BELOW CEILINGS  
 -Head Spacing= 130 SQ.FT. MAXIMUM

**DESIGN CRITERIA - SHOP & SERVICE AREAS**  
 -Classification of Occupancy= ORDINARY HAZARD GR II  
 -Design Density= .20 GPM/SQ.FT.  
 -Design Area= 1500 SQ.FT.  
 -Construction Type= UNOBSTRUCTED  
 -Deflector Distance= 1" TO 12" BELOW CEILINGS  
 -Head Spacing= 130 SQ.FT. MAXIMUM

**DESIGN CRITERIA - HOT WORK SHOP**  
 -Classification of Occupancy= EXTRA HAZARD GR II  
 -Design Density= .40 GPM/SQ.FT.  
 -Design Area= 2500 SQ.FT.  
 -Construction Type= OBSTRUCTED  
 -Deflector Distance= 1" TO 6" BELOW FRAMING MEMBERS  
 -Head Spacing= 130 SQ.FT. MAXIMUM

  
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 Fax (714) 373-5781 e-mail: fpe@mudry.us

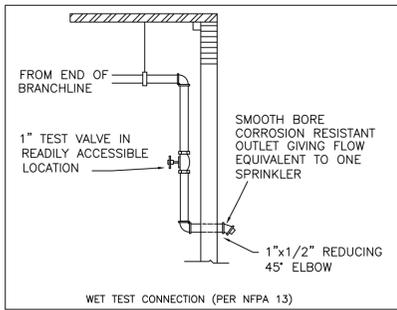
DATE	SYM	REVISION	BY	A/PD

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**  
 DRYDEN FLIGHT RESEARCH CENTER  
 EDWARDS, CA  
 DRAWING TITLE  
**FIRE SPRINKLER PLAN  
 FIRST FLOOR - SOUTH**  
 PROJECT TITLE  
**FACILITIES SUPPORT CENTER BUILDING  
 100% FINAL DESIGN SUBMITTAL**

APPROVALS		DATE
Chief, Facilities Engineering & Asset Mgmt. Office DAN CROWLEY	<i>[Signature]</i>	4/14/11
Project Inspector/Coordinator DAN CROWLEY	<i>[Signature]</i>	4/14/11
Facilities Project Manager GENAIA FLORES	<i>[Signature]</i>	4/14/11
Chief, Office of Protective Services JOHN ZELLNER	<i>[Signature]</i>	4/14/11
Chief - Safety, Health and Environmental Office DAN MULLEN	<i>[Signature]</i>	4/14/11
SPRIG Chief Information Officer KEN NORLIN	<i>[Signature]</i>	4/14/11

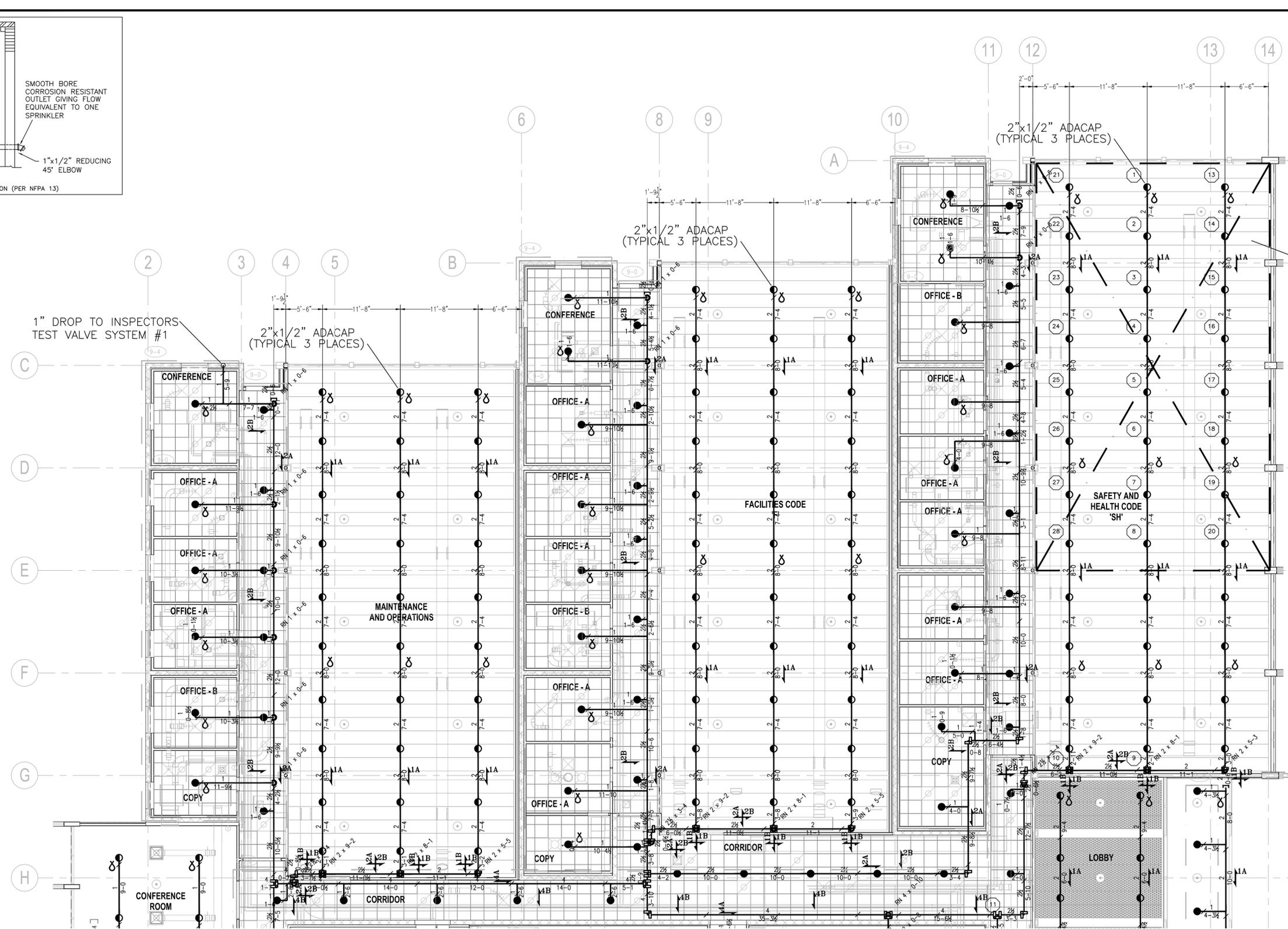
DATE STARTED 11/04/10 DATE PRINTED 03/14/11  
 DRAWN BY RJM TRADE SH. No. EDM-1703  
 SCALE AS INDICATED  
 FILE NAME FS2 SHEET No 189 of 193

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This system as shown on \_\_\_\_\_ company print No. \_\_\_\_\_ dated 2-1-2011 for FACILITIES SUPPORT CENTER at DRYDEN FLIGHT RESEARCH CENTER contract No. \_\_\_\_\_ is designed to discharge at a rate of 15 gpm/sq.ft. (L/min/m<sup>2</sup>) of floor area over a max. area of 1950 ft<sup>2</sup> (m<sup>2</sup>) when supplied with water at a rate of 370.52 gpm (L/min) at 75.254 psi (bar) at the base of the riser. Hose stream allowance of 250 gpm (L/min) is included in the above calculation. Number of sprinklers calculated 24. Occupancy classification ORDINARY HAZARD GROUP I. Commodity classification N/A. Maximum storage height 12.

TEST AREA 1 NAMEPLATE

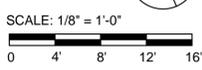


- NOTE:**
1. ALL WALLS ARE FULL HEIGHT, UNLESS OTHERWISE NOTED
  2. ALL SPRINKLER PIPING IS ROUTED 0'-6" BELOW ROOF AND FLOOR DECK FRAMING MEMBERS, UNLESS OTHERWISE NOTED
  3. EXTERIOR OVERHANGS ARE NONCOMBUSTIBLE CONSTRUCTION, SPRINKLER COVERAGE IS OMITTED PER NFPA 13, 2007 SECTION 8.15.7.2

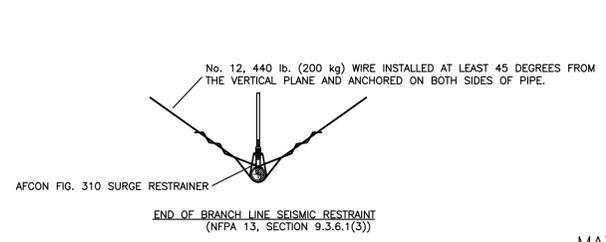
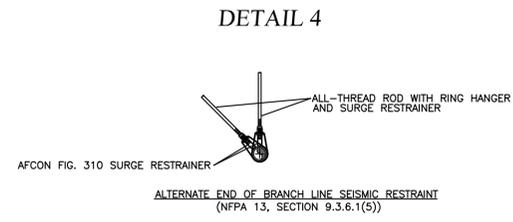
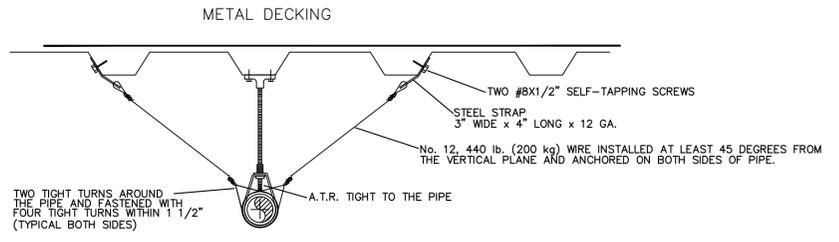
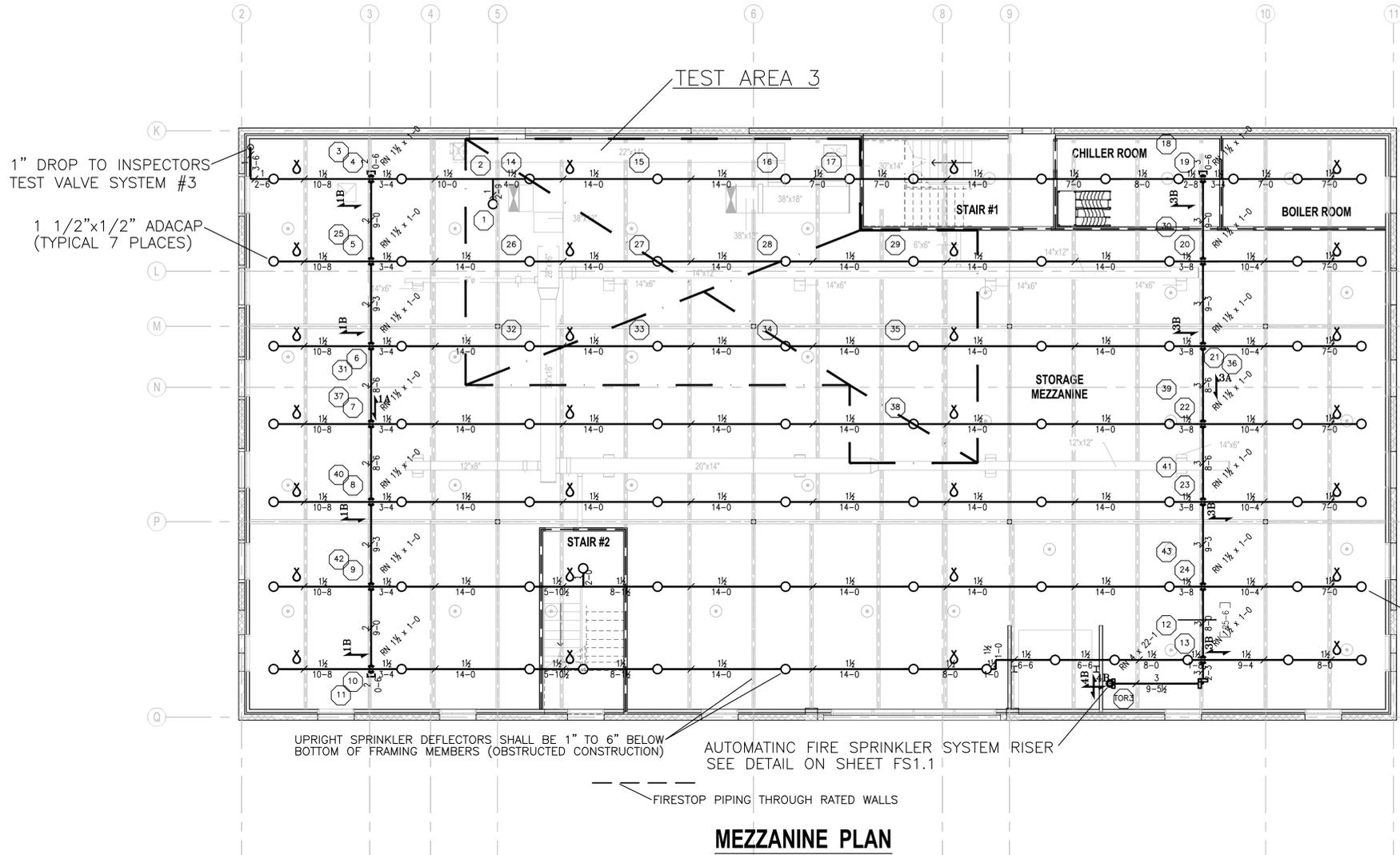
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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION DRYDEN FLIGHT RESEARCH CENTER EDWARDS, CA	APPROVALS Chief, Facilities Engineering & Asset Mgmt. Office DAN CROWLEY Project Inspector/Customer DAN CROWLEY Facilities Project Manager GENAMA FLORES Chief, Office of Protective Services JOHN ZELLNER Chief - Safety, Health and Environmental Office DAN MULLEN SFRIC Chief Information Officer KEN NORLIN	DATE 4/14/11 4/14/11 4/14/11 4/14/11 4/14/11 4/14/11
	DRAWING TITLE FIRE SPRINKLER PLAN FIRST FLOOR - NORTH	PROJECT TITLE FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL

DATE	SYM	REVISION	BY	A/PD



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**MAXIMUM SPACING OF BRANCH LINE RESTRAINTS**  
C<sub>r</sub> = 0.50

PIPE SIZE	SPACING
1"	38'
1 1/4"	40'
1 1/2"	43'
2"	46'

Δ DENOTES LINE RESTRAINT WITH SPLAY WIRE, SURGE RESTRAINER, RING HANGER, HANGER ROD AND BEAM CLAMP ASSEMBLY. FIELD VERIFY WITH INSPECTOR FOR ADDITION OR DELETION OF LINE RESTRAINTS AS REQUIRED BY UNFORESEEN FIELD CONDITIONS.

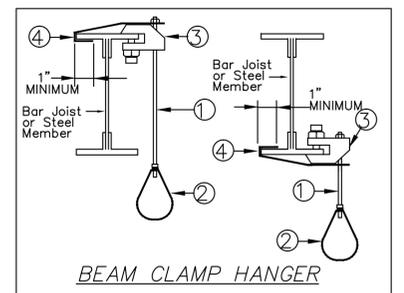
**NOTE:**  
 THE END SPRINKLER ON A BRANCH LINE SHALL BE RESTRAINED AGAINST EXCESSIVE VERTICAL OR LATERAL MOVEMENT (NFPA 13, 9.3.6.3, 2007 EDITION).

UPRIGHT SPRINKLER DEFLECTORS SHALL BE 1" TO 6" BELOW BOTTOM OF FRAMING MEMBERS (OBSTRUCTED CONSTRUCTION)  
 AUTOMATIC FIRE SPRINKLER SYSTEM RISER SEE DETAIL ON SHEET FS1.1  
 FIRESTOP PIPING THROUGH RATED WALLS

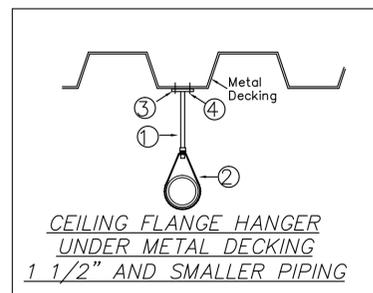
**MEZZANINE PLAN**

This system as shown on \_\_\_\_\_ dated 12-1-2011 company print No. \_\_\_\_\_  
 for **FACILITIES SUPPORT CENTER** at **DRYDEN FLIGHT RESEARCH CENTER** contract No. \_\_\_\_\_  
 is designed to discharge at a rate of 20 gpm/sq.ft. (L/min/m<sup>2</sup>) of floor area over a max. area of 1500 ft<sup>2</sup> (m<sup>2</sup>) when supplied with water at a rate of 391.77 gpm (L/min) at 62.574 psi (bar) at the base of the riser.  
 Hose stream allowance of 250 gpm (L/min) is included in the above calculation.  
 Number of sprinklers calculated 13  
 Occupancy classification ORDINARY HAZARD GROUP II  
 Commodity classification N/A  
 Maximum storage height 12'

**TEST AREA 3 NAMEPLATE**



- ① 3/8" ALL THREAD ROD
- ② RING HANGER, AFCON FIG. 300
- ③ BEAM CLAMP, AFCON FIG. 100
- ④ RETAINING STRAP, AFCON FIG.160

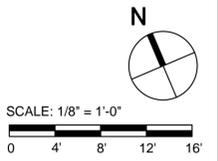


- ① 3/8" ALL THREAD ROD
- ② RING HANGER, AFCON FIG. 300
- ③ CEILING PLATE, AFCON FIG. 610
- ④ SCREW 4-#10 (self tapping)

**NOTE:**  
 1. PROVIDE A PIPE HANGER WITHIN 12" FROM PENDENT SPRINKLERS IN CEILINGS.  
 2. AFCON FIG. 310 SURGE RESTRAINER SHALL BE INSTALLED AT LAST PIPE HANGER ADJACENT TO PENDENT SPRINKLERS IN CEILINGS.

**MAXIMUM HANGER SPACING FOR STEEL PIPE**

PIPE SIZE	HANGER SPACING
1 1/4" & SMALLER	12'-0"
1 1/2" & LARGER	15'-0"

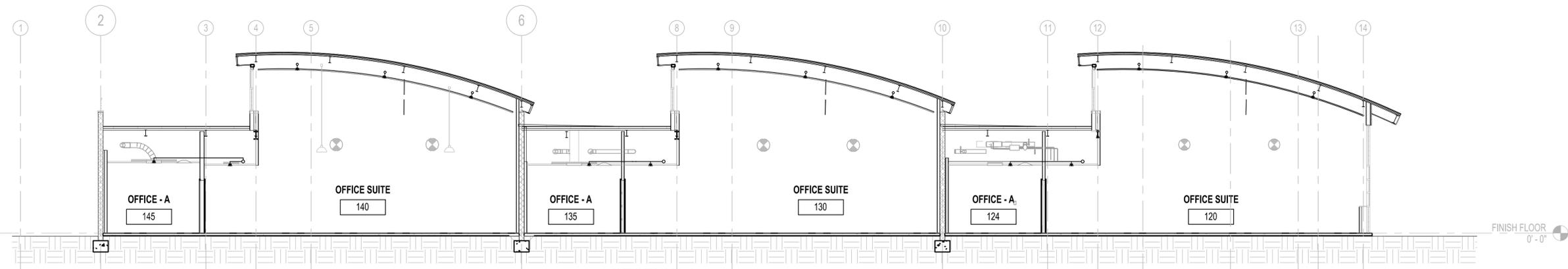


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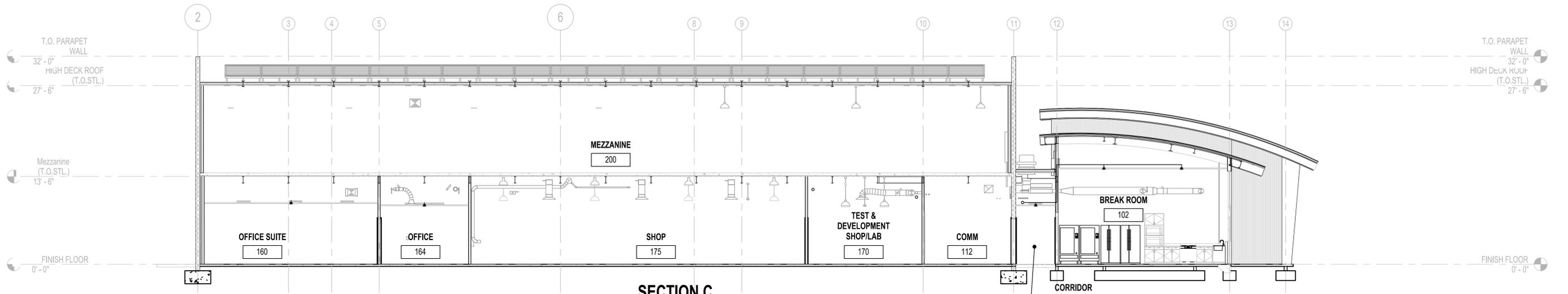
DATE	SYM	REVISION	BY	A/PD

<p> <b>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</b>          DRYDEN FLIGHT RESEARCH CENTER          EDWARDS, CA       </p>	<b>APPROVALS</b> Chief, Facilities Engineering & Asset Mgmt. Office DAN CROWLEY <i>Daniel Crowley</i> 4/14/11 Project Requester/Customer DAN CROWLEY <i>Daniel Crowley</i> 4/14/11 Facilities Project Manager GENAIA FLORES <i>Genai Flores</i> 4/14/11 Chief, Office of Protective Services JOHN ZELLNER <i>John Zellner</i> 4/14/11 Chief - Safety, Health and Environmental Office DAN MULLEN <i>Dan Mullen</i> 4/14/11 SFRIC Chief Information Officer KEN NORLIN <i>Ken Norlin</i> 4/14/11	<b>DATE</b> 4/14/11
	<b>DRAWING TITLE</b> FIRE SPRINKLER PLAN SECOND FLOOR	
<b>PROJECT TITLE</b> FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL		<b>DATE PRINTED</b> 03/14/11
<b>DATE STARTED</b> 11/04/10	<b>DATE PRINTED</b> 03/14/11	<b>DATE</b> 03/14/11
<b>DRAWN BY</b> RJM	<b>SCALE</b> AS INDICATED	<b>TRADE</b> EDM-1703
<b>FILE NAME</b> FS2	<b>SCALE</b> AS INDICATED	<b>TRADE</b> EDM-1703
<b>SHEET No.</b> 191 of 193		<b>SHEET No.</b> 191 of 193

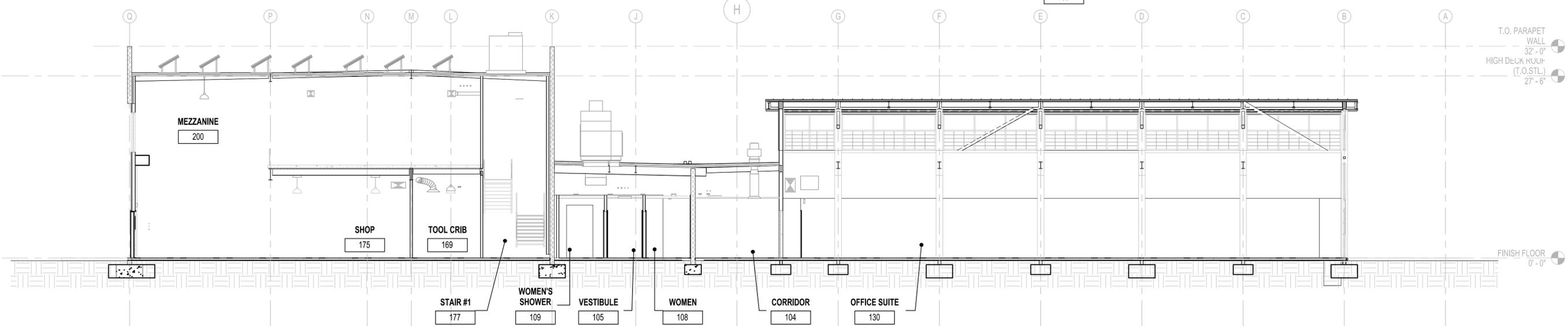
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**SECTION A**



**SECTION C**



**SECTION E**

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DATE	SYM	REVISION	BY	A/PD

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

**DRAWING TITLE**  
 FIRE SPRINKLER PLAN  
 BUILDING SECTIONS

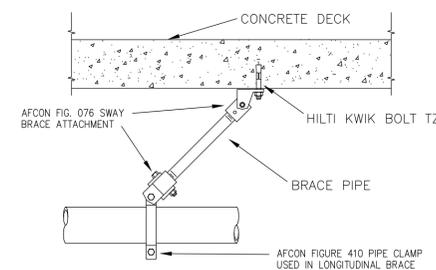
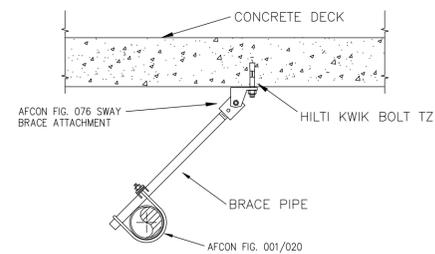
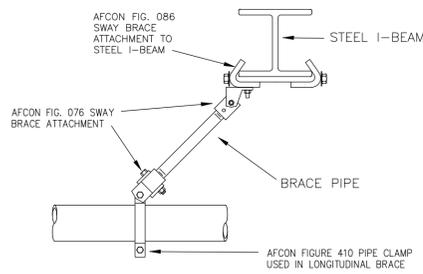
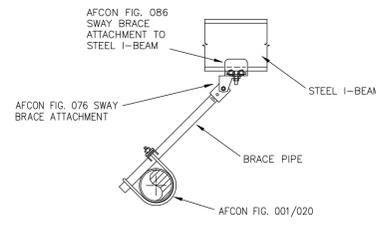
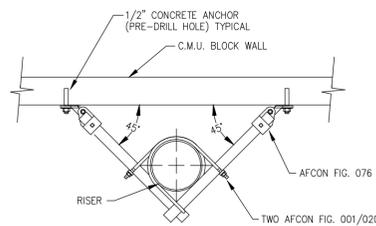
**PROJECT TITLE**  
 FACILITIES SUPPORT CENTER BUILDING  
 100% FINAL DESIGN SUBMITTAL

APPROVALS		DATE
Chief, Facilities Engineering & Asset Mgmt. Office DAN CROWLEY	<i>[Signature]</i>	4/14/11
Project Requestor/Customer DAN CROWLEY	<i>[Signature]</i>	4/14/11
Facilities Project Manager GENA FLORES	<i>[Signature]</i>	4/14/11
Chief, Office of Protective Services JOHN ZELLNER	<i>[Signature]</i>	4/14/11
Chief - Safety, Health and Environmental Office DAN MULLEN	<i>[Signature]</i>	4/14/11
SFRIC Chief Information Officer KEN NORLIN	<i>[Signature]</i>	4/14/11

DATE STRTD	11/04/10	DATE PRINTD	03/14/11
DRAWN BY	RJM	TRACE	EDM-1703
SCALE	AS INDICATED	TRADE	SH. No.
FILE NAME	FS3.0	SHEET No.	192 of 193

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PIPE BRACE SCHEDULE	
PIPE (SCH. 40)	MAXIMUM LENGTH OF BRACE
1-INCH	7 FT. 0 IN.
1 1/4-INCH	13 FT. 6 IN.
1 1/2-INCH	15 FT. 6 IN.
2-INCH	19 FT. 6 IN.



**1 PIPE BRACE SCHEDULE**  
N.T.S.

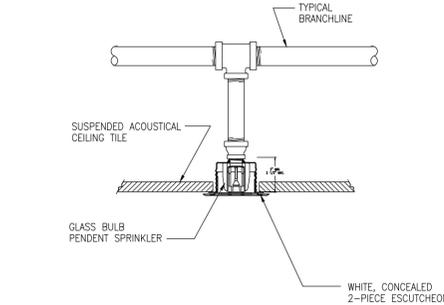
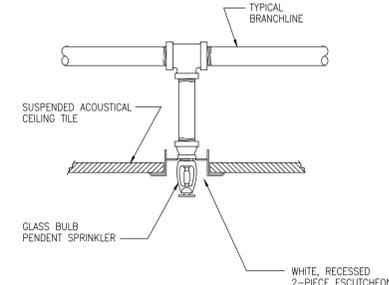
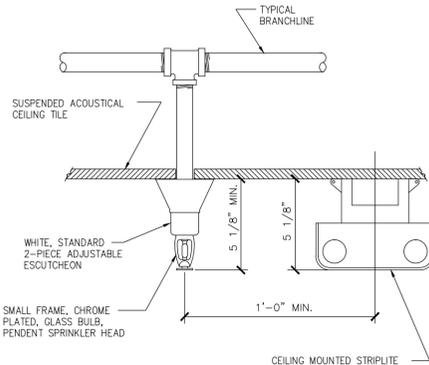
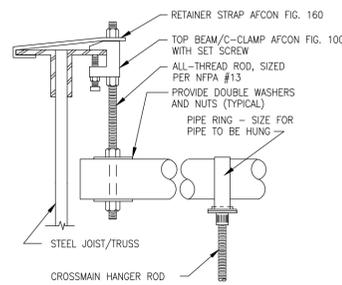
**2 RISER BRACE DETAIL**  
N.T.S.

**3 LATERAL SEISMIC BRACE TO STEEL I-BEAM**  
N.T.S.

**4 LONGITUDINAL SEISMIC BRACE TO STEEL I-BEAM**  
N.T.S.

**5 LATERAL SEISMIC BRACE WITH CONCRETE ANCHOR**  
N.T.S.

**6 LONGITUDINAL SEISMIC BRACE WITH CONCRETE ANCHOR**  
N.T.S.

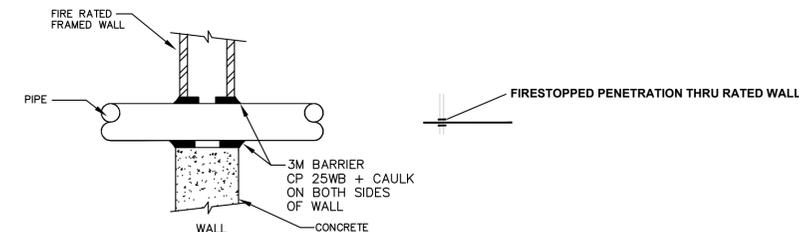


**7 TRAPEZE HANGER DETAIL**  
N.T.S.

**8 SPRINKLER WITH 2-PC. ESCUTCHEON**  
N.T.S.

**9 SPRINKLER WITH RECESSED ESCUTCHEON**  
N.T.S.

**10 CONCEALED SPRINKLER**  
N.T.S.



**SPECIFICATIONS:**  
 PENETRATIONS IN FIRE RESTRICTIVE WALLS, PARTITIONS AND FLOORS WHERE PROTECTED OPENINGS ARE REQUIRED SHALL BE FIRE STOPPED USING APPROVED MATERIALS, SECURELY INSTALLED AND CAPABLE OF MAINTAINING THEIR INTEGRITY AND PREVENTING THE MOVEMENT OF FLAMES AND/OR GASES THROUGH THE VOID SPACES BETWEEN PENETRATING MATERIALS AND WALLS, PARTITIONS AND FLOORS WHEN TESTED IN ACCORDANCE WITH ASTM STANDARD E-814 OR UL STANDARD 1479 (ULC SECTIONS 709.6, 709.7 & 714).

**DESIGNS ARE LISTED BY UNDERWRITER'S LABORATORIES (FIRE RESISTANCE DIRECTORY) AND THE CALIFORNIA STATE FIRE MARSHALL (BUILDING MATERIAL LISTINGS). SPECIFIC DESIGN INFORMATION IS AVAILABLE FROM U.L. CSFM OR THE PRODUCT MANUFACTURER.**

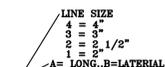
**NOTES:**  
 3M FIRE BARRIER PRODUCTS:  
 CP 25WB  
 CALIFORNIA STATE FIRE MARSHALL LISTING  
 No. 4485-941:100  
 UNINSULATED PIPE:  
 3 HOUR RATING  
 U.L. DESIGN No. CAJ1001 (CONC. WALL OR FLOOR)  
 1, 2, 3 OR 4 HOUR RATING  
 U.L. DESIGN No. WL1002 (STUD WALL)

**FIRESTOP ASSEMBLY FOR PIPE PENETRATIONS USING 3M BARRIER CAULK "CP 25WB"**

**NOTE: SEE SEISMIC BRACE CALCULATION SUBMITTALS FOR EACH PIPE SIZE AND BRACE CONFIGURATION. SEISMIC BRACE LOAD CALCULATIONS ARE FOR "WORST CASE" CONDITION FOR EACH PIPE SIZE. SWAY BRACE DESIGN IS BASED ON A SHORT PERIOD RESPONSE,  $S_s = 0.95$  HORIZONTAL LOAD FACTOR  $C_p = 0.50$**

**DEFINITION:**  
 "ZONE OF INFLUENCE" CONSISTS OF ALL THE AUTOMATIC SPRINKLER PIPING AND RELATED COMPONENTS THAT CONTRIBUTE TO THE SEISMIC LOADS THE SWAY BRACE MUST RESTRAIN. EXAMPLES OF "ZONES OF INFLUENCE" ARE SHOWN IN NFPA 13, 2002, FIG. A.9.3.5.6(e)

**NOTE:**  
 NFPA 13, 2002 DOES NOT REQUIRE THAT THE "ZONE OF INFLUENCE" BE SHOWN ON THE FIRE SPRINKLER PLAN, ONLY THAT THE EXAMPLES SHOWN IN FIG. A.9.3.5.6(e) BE USED AS A GUIDE FOR DETERMINING THE LOADS TO BE INCLUDED IN THE BRACE LOAD CALCULATIONS.



**SWAY BRACE LEGEND**

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	DATE	SYM	REVISION	BY	A/PD		<b>DRAWING TITLE</b> FIRE SPRINKLER DETAILS	<b>PROJECT TITLE</b> FACILITIES SUPPORT CENTER BUILDING 100% FINAL DESIGN SUBMITTAL	DATE STRTD 11/04/10 DATE PRNTD 03/14/11 DRAWN BY RJM SCALE AS INDICATED FILE NAME FS4.0