

**LOCATION MAP**



**BUILDINGS SUMMARY:**

- ADMINISTRATION BUILDING:	BUILDING AREA: 3,020 SF
	CONSTRUCTION TYPE: V-B SPRINKLERED
	MAX ALLOWABLE HEIGHT: +28'-0"
	OCCUPANCY: B
- MAINTENANCE BUILDING:	BUILDING AREA: 2,737 SF (INTERIOR)
	1,266 SF (COVERED EXT.)
	4,003 (TOTAL)
	CONSTRUCTION TYPE: V-B SPRINKLERED
	MAX ALLOWABLE HEIGHT: +32'-3"
	OCCUPANCY: F-1
- DEWATERING BUILDING:	BUILDING AREA: 3,461 SF
	CONSTRUCTION TYPE: V-B SPRINKLERED
	MAX ALLOWABLE HEIGHT: +29'-6"
	OCCUPANCY: F-2
- ELECTRICAL BUILDING:	BUILDING AREA: 4,600 SF
	CONSTRUCTION TYPE: V-B SPRINKLERED
	MAX ALLOWABLE HEIGHT: +28'-9"
	OCCUPANCY: F-1
- CHEMICAL STORAGE:	BUILDING AREA: 852 SF
	CONSTRUCTION TYPE: V-B SPRINKLERED
	OCCUPANCY: H-4

**SCOPE OF WORK:**

INSTALL NEW AUTOMATIC WET FIRE SPRINKLER SYSTEMS IN THE PROPOSED BUILDINGS. THE SYSTEMS ARE TO BE DESIGNED AND INSTALLED IN COMPLETE ACCORDANCE WITH THE PROVISIONS OF THE 2010 EDITION OF NFPA 13, THE SAN LUIS OBISPO COUNTY FIRE DEPARTMENT, AND IN ACCORDANCE WITH THE DESIGN REQUIREMENTS FOR LIGHT & ORDINARY HAZARD SYSTEMS. THE INDIVIDUAL BUILDING FIRE SPRINKLER SYSTEMS ARE TO BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING:

LIGHT HAZARD: - ADMINISTRATION BUILDING.

ORDINARY HAZARD GROUP 2: - ELECTRICAL BUILDING.  
- MAINTENANCE BUILDING.  
- FACILITY CHEMICAL BUILDING.  
- DE-WATERIN BUILDING.

**APPLICABLE CODES**

TITLE 24 CCR, PART 2 - 2010 CALIFORNIA BUILDING CODE, VOL. 1 & 2 (CBC) (2009 IBC, AS AMENDED BY CA).  
TITLE 24 CCR, PART 9 - 2010 CALIFORNIA FIRE CODE (CFC), (2009 IFC, AS AMENDED BY CA)  
TITLE 24 CCR, PART 12 - 2010 CALIFORNIA REFERENCE STANDARDS (PARTIAL LIST):  
2010 NFPA 13, INSTALLATION OF FIRE SPRINKLER SYSTEMS  
2010 NFPA 72, NATIONAL FIRE ALARM CODE (CA AMENDED)  
THE SAN LUIS OBISPO COUNTY FIRE DEPARTMENT

**SHEET INDEX**

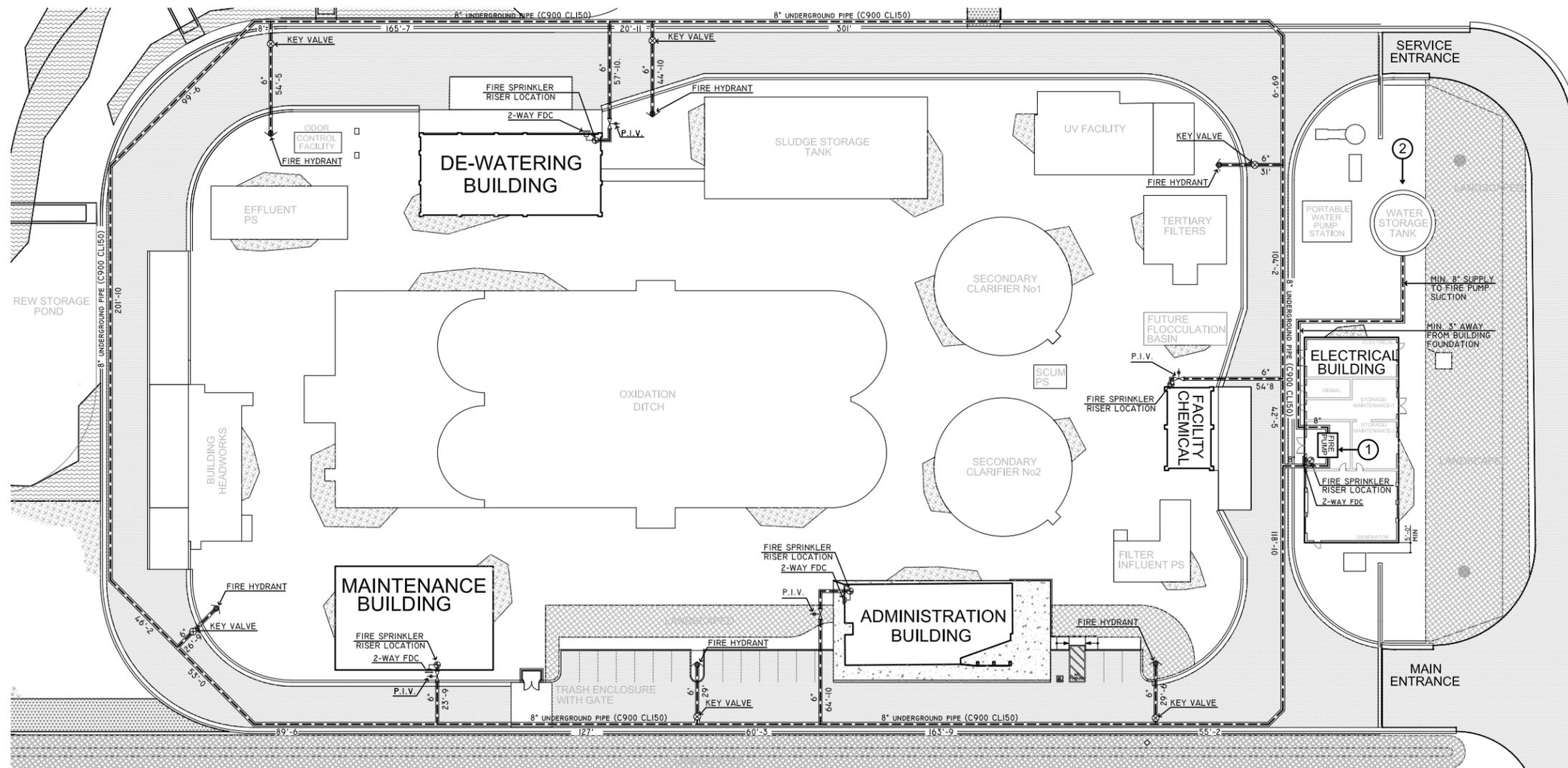
05AF00	GENERAL NOTES AND SITE PLAN
05AF01	ADMINISTRATION BUILDING - FIRE SPRINKLER SYSTEM PLAN
05AF02	ADMINISTRATION BUILDING - BUILDING SECTIONS AND RISER DETAIL
05AF03	TYPICAL WOOD DETAILS
06AF01	MAINTENANCE BUILDING - FIRE SPRINKLER SYSTEM PLAN
06AF02	MAINTENANCE BUILDING - BUILDING SECTIONS AND RISER DETAIL
06AF03	TYPICAL METAL DETAILS
32AF01	CHEMICAL FACILITY - FIRE SPRINKLER PLAN
32AF02	CHEMICAL FACILITY - BUILDING SECTION AND RISER DETAIL
51AF01	DEWATERING BUILDING - FIRE SPRINKLER PLAN
51AF02	DEWATERING BUILDING - BUILDING SECTION AND RISER DETAIL
70AF01	ELECTRICAL BUILDING - FIRE SPRINKLER PLAN
70AF02	ELECTRICAL BUILDING - BUILDING SECTION AND RISER DETAIL

**GENERAL NOTES:**

- THIS FIRE SPRINKLER SYSTEM SHALL BE DESIGNED AND INSTALLED PER THE REQUIREMENT OF NFPA 13, 2010 EDITION.
- IT IS THE RESPONSIBILITY OF THE ON-SITE SUPERVISOR TO MAINTAIN THE INTEGRITY OF THE SPRINKLER SYSTEM.
- THE SPRINKLER CONTRACTOR WILL PROVIDE THE OWNER WITH THE NECESSARY INSTRUCTION MANUALS FOR THE UPKEEP OF THE SYSTEM.
- ONLY NEW SPRINKLERS SHALL BE EMPLOYED IN THE INSTALLATION OF THE SPRINKLER SYSTEM.
- THE SYSTEM SHALL ONLY EMPLOY THE USE OF U.L. LISTED MATERIALS AND DEVICES.
- A SET OF APPROVED PLANS SHALL BE MAINTAINED AT ALL TIMES ON THE JOB SITE.
- AN APPOINTMENT SHALL BE MADE A MINIMUM OF TWO (2) WORKING DAYS IN ADVANCE WITH THE APPROPRIATE FIRE PREVENTION OFFICE FOR ALL INSPECTIONS AND TEST.
- ALL SYSTEM PIPING SHALL BE HYDROSTATICALLY TESTED AT 200 PSI FOR TWO HOURS, OR AT 50 PSI ABOVE THE SYSTEM OPERATING PRESSURE, WHICHEVER IS GREATER.
- ALL TAMPER SWITCHES SHALL BE CONNECTED TO AN APPROVED CENTRAL STATION SUPERVISION COMPANY.
- ALL VALVES SHALL HAVE A PERMANENTLY AFFIXED SIGN INDICATING ITS FUNCTION.
- AUTOMATIC SPRINKLER SYSTEM SHALL BE SUPERVISED BY AN APPROVED, PROPRIETARY OR REMOTE STATION SERVICE OR A LOCAL ALARM WHICH WILL GIVE AN AUDIBLE SIGNAL AT A CONSTANTLY ATTENDED LOCATION.
- ANY PORTION OF THIS SPRINKLER SYSTEM WHICH IS EXPOSED TO FREEZING SHALL BE ADEQUATELY PROTECTED AGAINST THIS EXPOSURE.
- A STOCK OF SIX (6) SPARE SPRINKLERS OF EACH STYLE, TYPE, AND TEMPERATURE RATING, ALONG WITH A SPRINKLER WRENCH, SHALL BE LOCATED AT THE MAIN RISER.
- ALL LOW POINTS IN THE SYSTEM TO BE PROVIDED WITH AUXILIARY DRAIN.
- FERROUS PIPING, WELDED OR SEAMLESS STEEL, ANSI/ASTM A-53 WITH WELDING PERFORMED BY A CERTIFIED WELDER.
- PIPES 1-1/2 INCH OR SMALLER TO BE SCHEDULE 40 STEEL PIPE WITH THREADED FITTINGS.
- PIPES 2 INCH OR LARGER TO BE SCHEDULE #10 STEEL PIPE WITH GRVD ENDS.
- ALL THREADED FITTINGS TO BE CLASS 125 C.I. AND ALL GROOVED FITTINGS AND COUPLING TO BE VICTALIC OR EQUAL.
- ALL PIPE DIMENSIONS ARE CENTER TO CENTER.
- SPRINKLER HEADS AND PIPING LOCATIONS MAY VARY FROM ROOM TO ROOM DUE TO FIELD CONDITIONS.
- OVERHEAD PIPING SHALL NOT BE COVERED OR CONNECTED UNTIL A HYDROSTATIC TEST HAS BEEN COMPLETED.
- ROUGH AND FINAL INSPECTION ARE REQUIRED ON ALL SYSTEMS.
- ALL UNDERGROUND MAINS AND LEAD-IN CONNECTIONS SHALL BE FLUSHED AS INDICATED IN NFPA 13 AND NFPA 24. PRIOR TO CONNECTION TO THE OVERHEAD PIPING. THE FLUSHING SHALL CONTINUE UNTIL THE WATER IS CLEAR. FLUSHING SHOULD BE PERFORMED AT THE TIME OF HYDROSTATIC TEST.
- FIRE DEPARTMENT CONNECTIONS SHALL BE VISIBLE, ACCESSIBLE, HAVE NPT FEMALE OUTLETS & PROTECTIVE CAPS, AND AN APPROVED CHECK VALVE IN THE MAIN LINE (AS CLOSE TO THE FDC AS POSSIBLE).
- A METAL CALCULATION PLATE INDICATING THE HIGHEST RESIDUAL PRESSURE REQUIRED FOR THE SYSTEM OPERATION SHALL BE PERMANENTLY ATTACHED TO THE RISER.
- PROVIDE FIRESTOPPING AT ALL PENETRATIONS OF RATED CONSTRUCTION.

**ADDITIONAL INFO:**

- NFPA RATED FIRE PUMP RATED AT 750 GPM AT 80 PSI WITH A MAXIMUM 100 PSI CHURN PRESSURE.
- FIRE PROTECTION WATER STORAGE TANK 72,000 GALLONS, MIN. DEDICATED FOR FIRE PROTECTION.



**SITE PLAN**

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

UNDERGROUND SUPPLY AND PUMP SHOWN FOR REFERENCE ONLY. SEE CIVIL WATER UTILITY PLANS FOR INSTALLATION DRAWINGS.

DESIGNED	J.C.		
DRAWN	F.M.		
CHECKED	J.C.		
DATE	SEPTEMBER 2013		
REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED J.C.  
DRAWN F.M.  
CHECKED J.C.  
DATE SEPTEMBER 2013

**COLLINGS & ASSOCIATES**  
Fire Protection Engineering  
260 Main Street, Suite 241, Ventura, Ca 93003  
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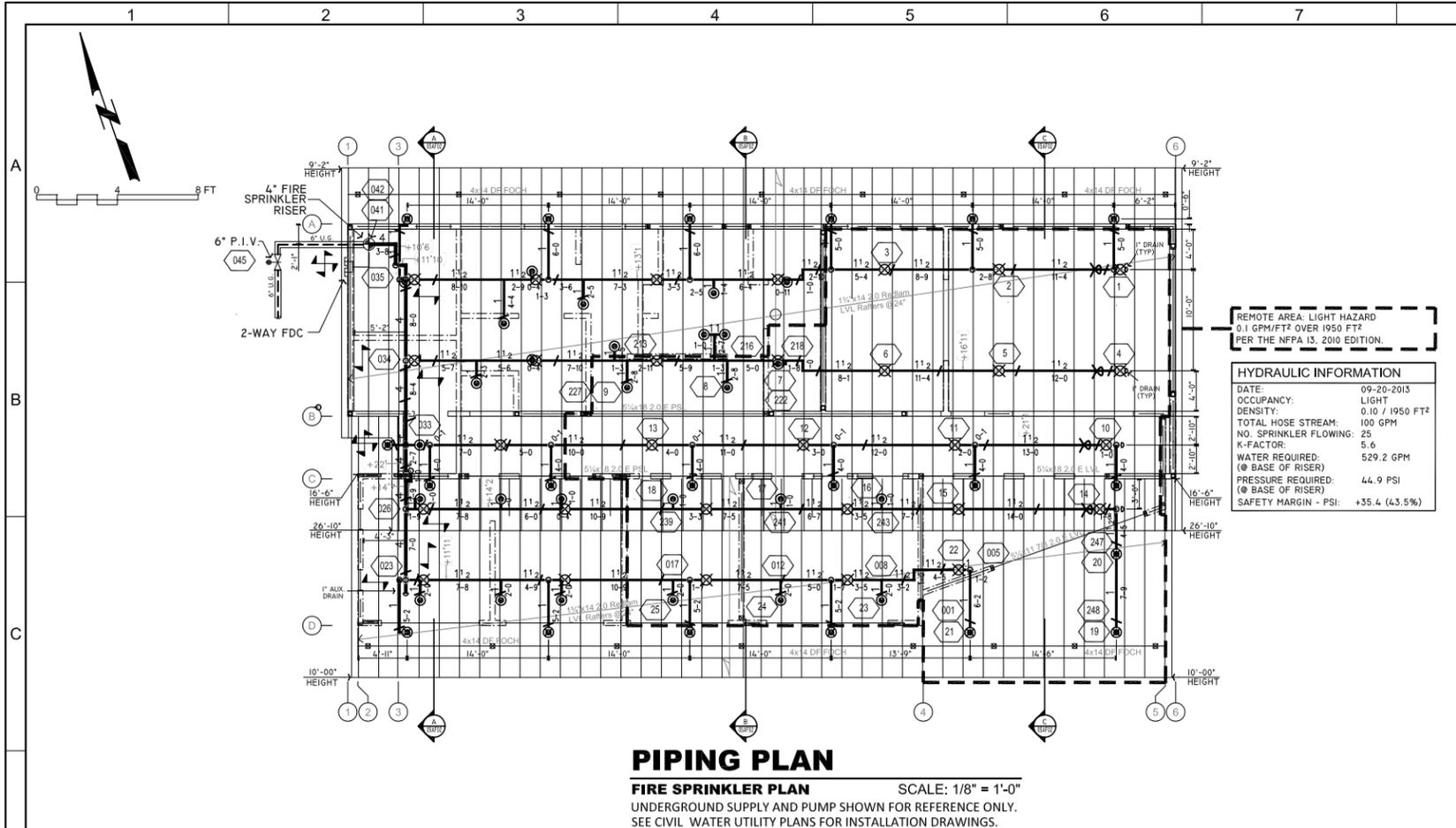
**carollo**

**SAN LUIS OBISPO COUNTY**

SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
FIRE SPRINKLER PLAN SYSTEM  
SITE PLAN & GENERAL NOTES

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 8930A.11  
DRAWING NO. 05AF00  
SHEET NO. XXX OF XXX



REMOTE AREA: LIGHT HAZARD  
0.1 GPM/FT<sup>2</sup> OVER 1950 FT<sup>2</sup>  
PER THE NFPA 13, 2010 EDITION.

HYDRAULIC INFORMATION  
DATE: 09-20-2013  
OCCUPANCY: LIGHT  
DENSITY: 0.10 / 1950 FT<sup>2</sup>  
TOTAL HOSE STREAM: 100 GPM  
NO. SPRINKLER FLOWING: 25  
K-FACTOR: 5.6  
WATER REQUIRED: 529.2 GPM  
(@ BASE OF RISER)  
PRESSURE REQUIRED: 44.9 PSI  
(@ BASE OF RISER)  
SAFETY MARGIN - PSI: +35.4 (43.5%)

**SEISMIC BRACING NOTES**

- SWAY BRACES SHALL BE DESIGN AND INSTALLED IN COMPLIANCE WITH NFPA 13, 2010 EDITION. CALCULATION BASED ON ZONE OF INFLUENCE. (SEE DETAIL SHEET FOR SEISMIC BRACING CALCULATION)
- LATERAL BRACE SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.5.3.9)
- LATERAL BRACE SHALL NOT APPLY WHERE U-TYPE HOOKS OF THE WRAP-AROUND TYPE OR THOSE U-TYPE HOOKS ARRANGED TO KEEP THE PIPE TIGHT TO THE UNDERSIDE OF THE STRUCTURE ELEMENT SHALL BE PERMITTED TO BE USED TO SATISFY THE REQUIREMENTS FOR LATERAL SWAY BRACE BRACING. PROVIDED THE LEGS ARE BENT OUT AT LEAST 30 DEGREES FROM THE VERTICAL. (SEC. 9.3.5.3.10)
- RESTRAINT OF BRANCH LINES SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.6.5)

**HANGER NOTES**

- 3/8" A.T.R. ROD SHALL BE USED ON PIPES 1 TO 4 INCHES. 1/2" ATR FOR 5, 6 & 8 INCHES PIPE, AND 5/8" ATR FOR 10 & 12 INCHES PIPE.
- THE MAX. UNSUPPORTED LENGTH FROM THE END OF A LINE TO HANGER SHALL BE 36" FOR 1", 48" FOR 1 1/4", 60" FOR 1 1/2" PIPE AND ABOVE.
- THE MAXIMUM HANGER SPACING SHALL BE 12 FT. FOR 1" TO 1 1/4" PIPE, 15 FT. FOR 1 1/2" PIPE AND ABOVE EXCEPT THREADED LIGHT WALL. FOR THREADED LIGHT WALL MAXIMUM SPACING IS 12 FT. FOR PIPE UP TO 3 IN. (UNLESS NOTED OTHERWISE).
- HANGERS ARE REQUIRED ON ARM-OVER EXCEEDING 2 FT. FROM CENTER TO CENTER
- ALL HANGERS SHALL BE IN ACCORDANCE WITH NFPA-13, 2010 EDITION. TABLE 9.2.2.(A). ALL ARM-OVER MORE THAN 2'-0" SHALL HAVE HANGER. IF STATIC PRESSURE EXCEEDS 100 PSI, HANGER IS REQUIRED ON ARM-OVER MORE THAN 1'-0".

**DESIGN CRITERIA:**

WET PIPE SPRINKLER SYSTEM: A SPRINKLER SYSTEM EMPLOYING AUTOMATIC SPRINKLERS ATTACHED TO A PIPING SYSTEM CONTAINING WATER AND CONNECTED TO A WATER SUPPLY SO THAT WATER DISCHARGES IMMEDIATELY FROM SPRINKLERS OPENED BY HEAT FROM A FIRE.

I. REMOTE AREA #: LIGHT HAZARD  
0.10 GPM OVER 1950 SQ.FT. AREA (INCREASED)  
PER FIG. II.2.3.1.1 DENSITY/ AREA CURVES.  
AND II.2.3.2.4 SLOPED CEILING OF THE  
NFPA 13 2010 EDITION.

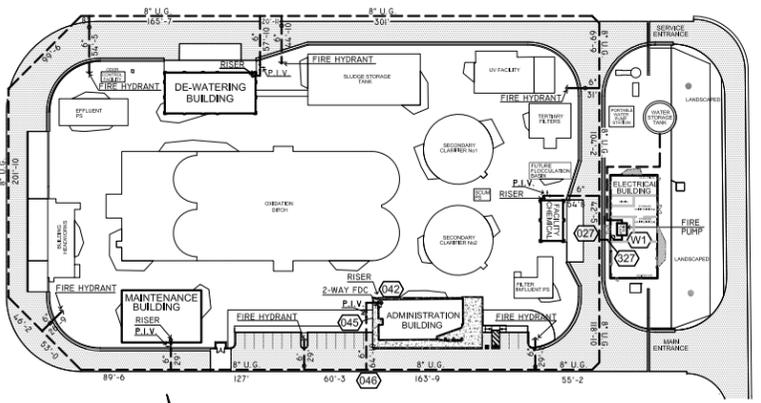
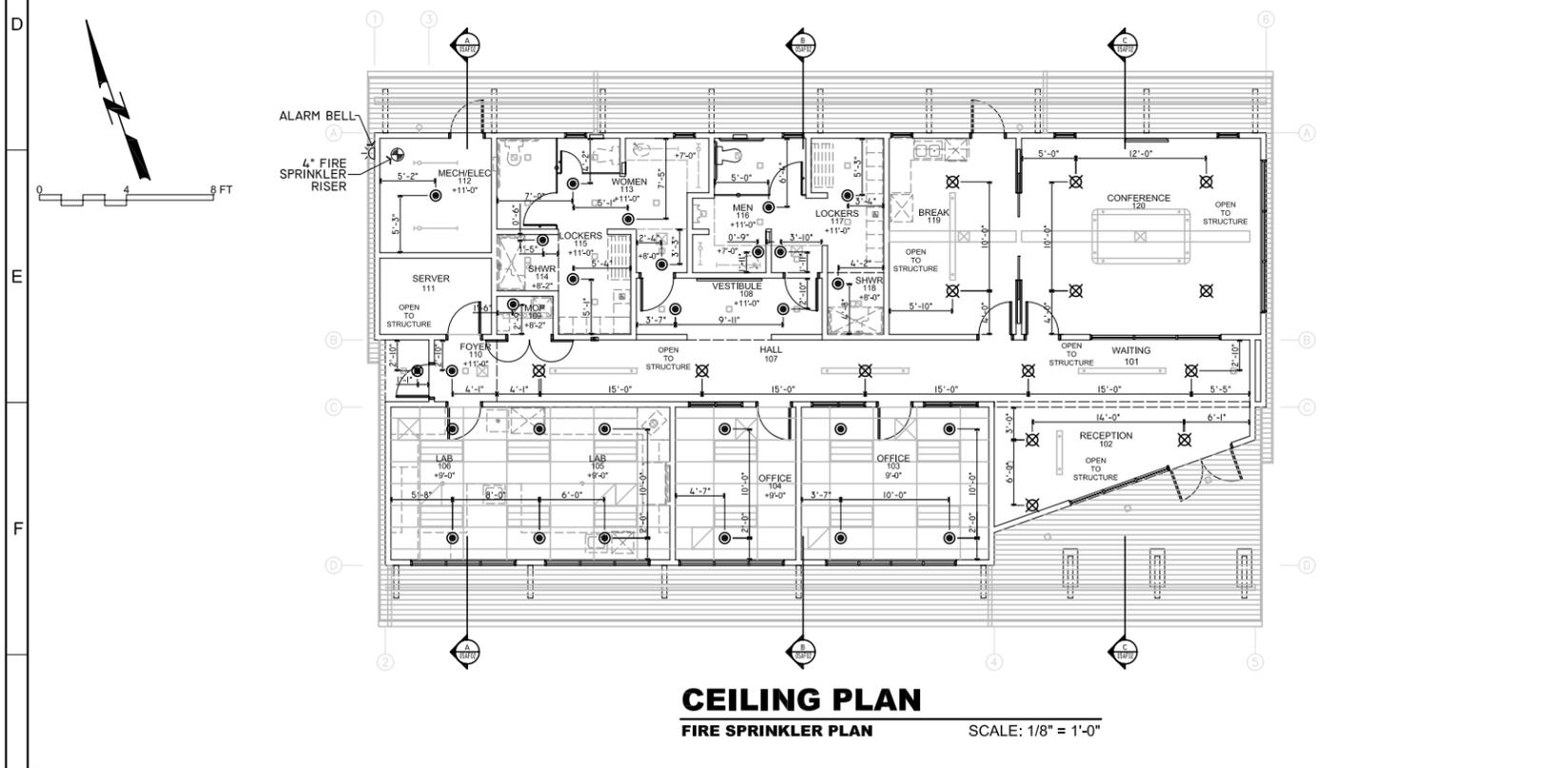
**LEGEND & SYMBOLS**

⊙	PENDENT SPRINKLER HEAD CORROSION RESISTANT 155°
⊙	PENDANT SPRINKLER HEAD 155°
⊗	UPRIGHT SPRINKLER HEAD 155° / 200°
—	NEW SPRINKLER PIPE
○	PIPE UP OR DOWN
⊗	FIRE SPRINKLER RISER
⊕	TYPICAL HANGER LOCATION. SEE 05AF03 FOR DETAILS
⊕	TYPICAL END OF LINE RESTRAINER LOCATION. SEE 05AF03 FOR DETAILS
⊕	LATERAL SWAY BRACE
⊕	LONGITUDINAL SWAY BRACE
⊕	4-WAY EARTHQUAKE BRACE
—	UNDERGROUND PIPE
⊕	HYDRAULIC REFERENCE NODE
⊕	POST INDICATOR VALVE
⊕	SPRINKLER BELL
⊕	FIRE HYDRANT
⊕	KEY VALVE
⊕	FIRE DEPARTMENT CONNECTION (FDC)

- FOR BUILDING INFORMATION AND GENERAL NOTES SEE SHEET 05AF00  
- FOR DETAILS SEE SHEET 05AF03

**SPRINKLER INFO.**

SYM.	MANUFACTURER	SIN	NPT	K	TEMP	DESCRIPTION	QTY.
⊗	RELIABLE MODEL FIFR56 (OR EQUAL)	RA1425	1/2	5.6	155°F / 200°F	Q.R. UPRIGHT SPRINKLER (155°F WHITE FINISHED IN AREAS EXPOSED TO STRUCTURE)	30
⊙	RELIABLE MODEL FIFR56 (OR EQUAL)	RA1414	1/2	5.6	155°F	Q.R. SEMI-RECESSED WHITE PENDENT SPRINKLER	27
⊙	RELIABLE MODEL FIFR56 (OR EQUAL)	RA1414	1/2	5.6	155°F	Q.R. PENDENT SPRINKLER WHITE POLYESTER COATED	20
TOTAL:							77



**KEY PLAN**  
FIRE SPRINKLER PLAN NOT TO SCALE  
UNDERGROUND SUPPLY AND PUMP SHOWN FOR REFERENCE ONLY.  
SEE CIVIL WATER UTILITY PLANS FOR INSTALLATION DRAWINGS.

**NOTES:**

- PIPE IS SHOW AS NEAR AS POSSIBLE. HOWEVER, EXACT LOCATION WITH REGARDS TO THE BUILDING STRUCTURE SHALL BE VERIFIED AND DETERMINED IN THE FIELD PRIOR THE FABRICATION AND INSTALLATION.
- CONTRACTOR TO BE RESPONSIBLE FOR INSTALLING COMPLETE INSTALLATION AND SHALL CONFORM AS-BUILT CONDITIONS PRIOR TO ANY WORK.

REV	DATE	BY	DESCRIPTION
1			
2			

DESIGNED J.C.  
DRAWN F.M.  
CHECKED J.C.  
DATE SEPTEMBER 2013

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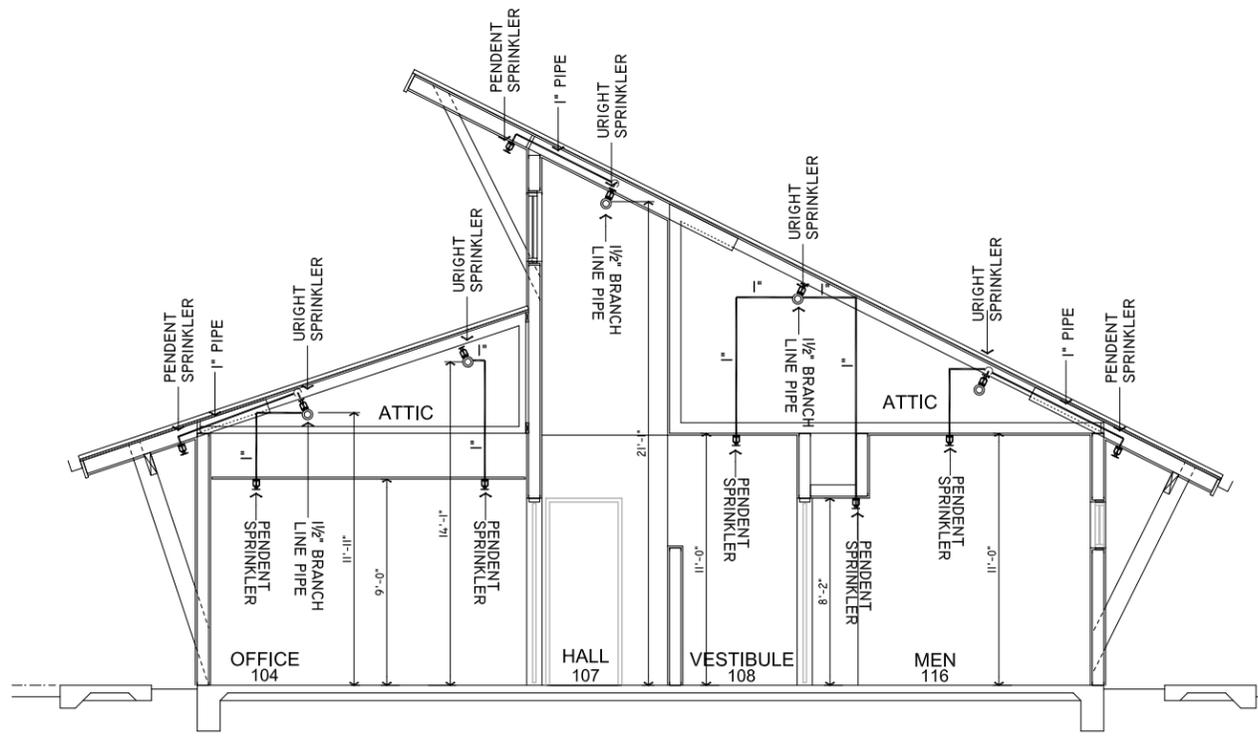
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**SAN LUIS OBISPO COUNTY**

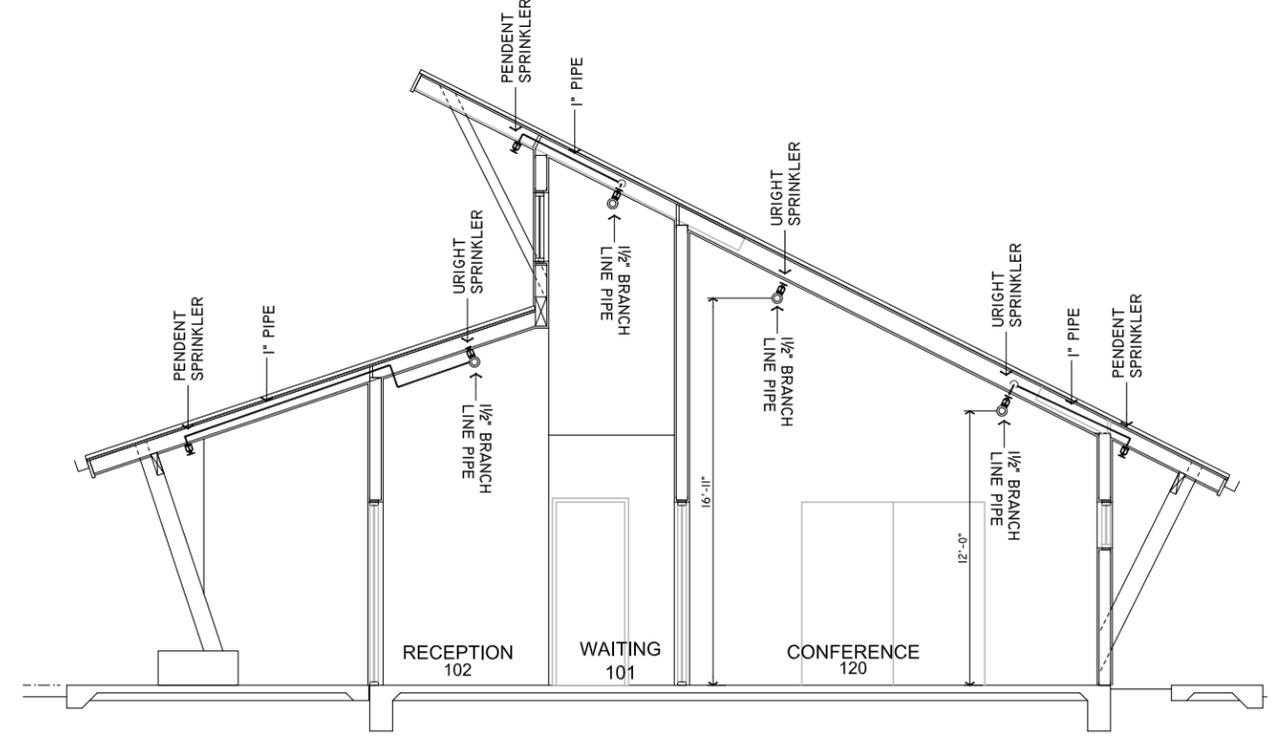
SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
ADMINISTRATION BUILDING  
FIRE SPRINKLER SYSTEM PLAN

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

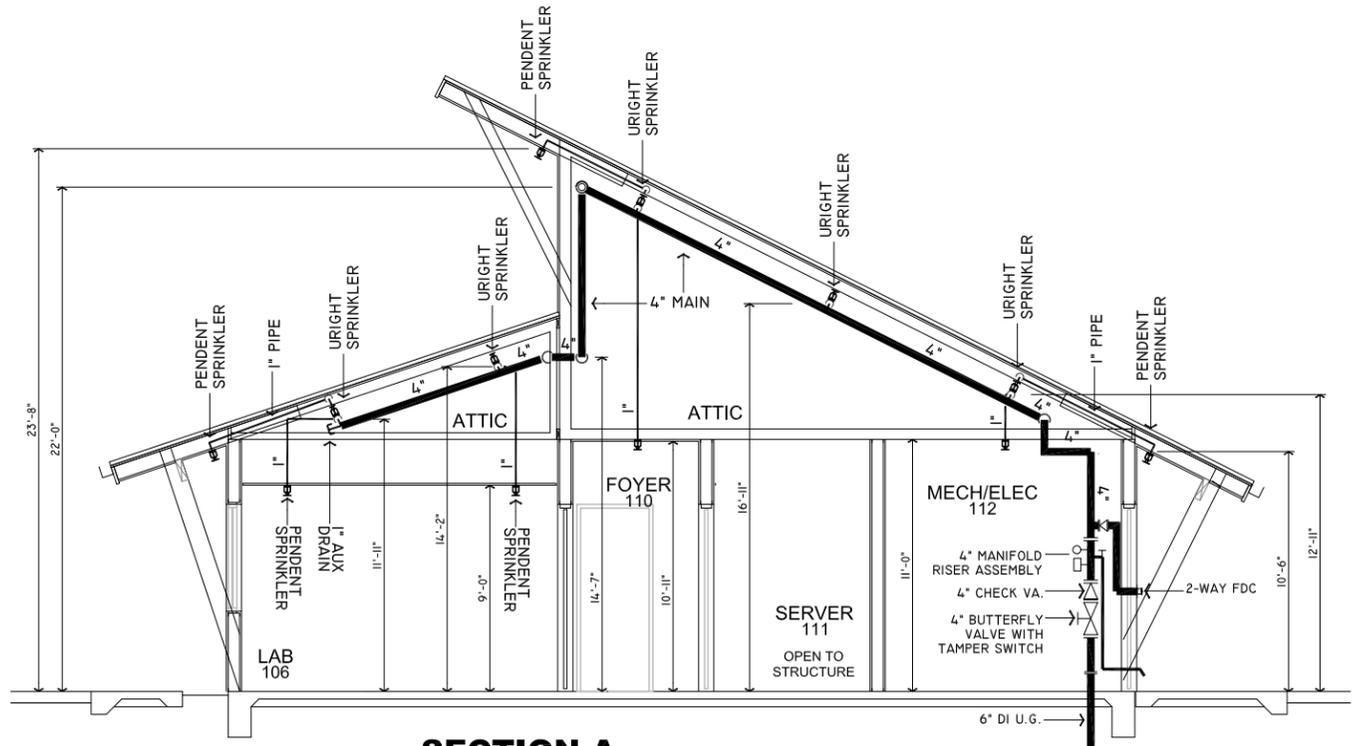
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DRAWING NO. 05AF01  
SHEET NO. XXX OF XXX



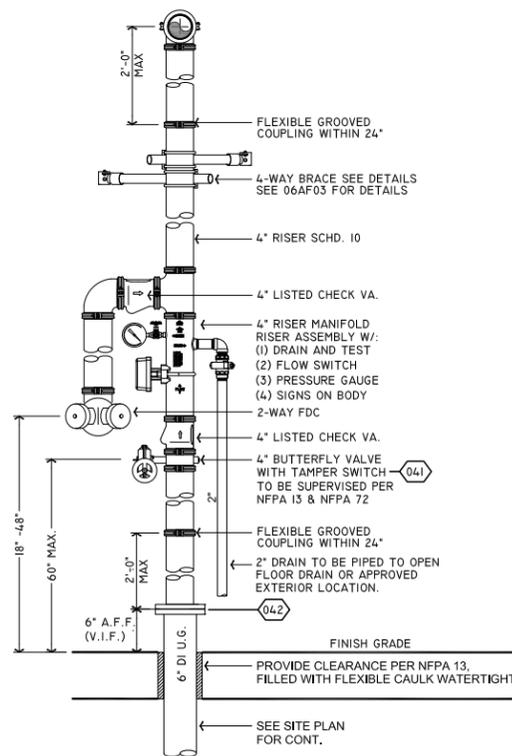
**SECTION B**  
FIRE SPRINKLER PLAN  
SCALE: 1/4" = 1'-0"



**SECTION C**  
FIRE SPRINKLER PLAN  
SCALE: 1/4" = 1'-0"



**SECTION A**  
FIRE SPRINKLER PLAN  
SCALE: 1/4" = 1'-0"



**RISER DETAIL**  
NO TO SCALE

PROJECT ADDRESS ZIP CODE: 93402	
2003 NEHRP SEISMIC DESIGN PROVISION (USGS) MAXIMUM SA: 1.705 (Ss)	
PER TABLE 9.3.5.6.2 OF NFPA 13 SEISMIC COEFFICIENT VALUE: 0.82 (Cp)	
<b>BRACE INFORMATION:</b>	<b>FASTENER INFORMATION:</b>
LENGTH OF BRACE: 7'-0" MAX.	ORIENTATION OF CONNECTING SURFACE: (F) 60°-90°
DIAMETER OF BRACE: 1"	FASTENER: THROUGH BOLT
TYPE OF BRACE: SCH. 40	DIAMETER: 5/8"
ANGLE OF BRACE: 60°-90°	LENGTH (IN WOOD): 2 1/2"
LEAST RADIUS OF GYRATION: 0.421	MAXIMUM LOAD: 550 LBS
L/R VALUE: 200	
MAXIMUM HORIZONTAL LOAD: 1604	
<b>SEISMIC BRACE ATTACHMENT:</b>	<b>SEISMIC BRACE ASSEMBLY DETAIL</b>
<b>STRUCTURE ATTACHMENT FITTING:</b> MAKE: TOLCO MODEL: FIG. 980 LISTED LOAD RATING: 2,765 ADJUSTED LOAD RATING PER 9.3.5.10.3: 2,593	
<b>SWAY BRACE (PIPE ATTACHMENT) FITTING:</b> MAKE: TOLCO MODEL: FIG. 1000 LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1,752	
MAKE: TOLCO MODEL: FIG. 4B (3/4" TO 8") LISTED LOAD RATING: 440 ADJUSTED LOAD RATING PER 9.3.5.10.3: 382	
MAKE: TOLCO MODEL: FIG. 4L (2 1/2" TO 8") LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1,752	
<b>SPRINKLER SYSTEM LOAD CALCULATION [Fpw = CpWp]</b>	
<b>LATERAL BRACE - 12'-0" MAX. O.C.</b>	<b>LONGITUDINAL BRACE - 24'-0" MAX. O.C.</b>
PIPE SIZE   TYPE   LENGTH OF PIPE   WEIGHT PER FT.   CP   TOTAL WEIGHT	PIPE SIZE   TYPE   LENGTH OF PIPE   WEIGHT PER FT.   CP   TOTAL WEIGHT
4   SCHD.10   12 FT.   11.78   0.82   116 LBS	4   SCHD.10   24 FT.   11.78   0.82   232 LBS
1/2   SCHD.40   73 FT.   3.61   0.82   216 LBS	
1   SCHD.40   27 FT.   2.05   0.82   46 LBS	
(9.3.5.6.1 OF NFPA 13) Wp x 0.15: 57 LBS	
(9.3.5.6.1 OF NFPA 13) Wp x 0.15: 35 LBS	
<b>TOTAL LOAD: 435 LBS</b>	<b>TOTAL LOAD: 267 LBS</b>

DESIGNED	J.C.		
DRAWN	F.M.		
CHECKED	J.C.		
DATE	SEPTEMBER 2013		
REV	DATE	BY	DESCRIPTION
1			
2			
3			

SAN LUIS OBISPO COUNTY  
 LOS OSOS WATER RECYCLING FACILITY PROJECT  
 ADMINISTRATION BUILDING  
 BUILDING SECTIONS AND RISER DETAIL

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY  
 JOB NO. 8930A.11  
 DRAWING NO. 05AF02  
 SHEET NO. XXX OF XXX



### HANGER NOTES

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### DESIGN CRITERIA:

WET PIPE SPRINKLER SYSTEM: A SPRINKLER SYSTEM EMPLOYING AUTOMATIC SPRINKLERS ATTACHED TO A PIPING SYSTEM CONTAINING WATER AND CONNECTED TO A WATER SUPPLY SO THAT WATER DISCHARGES IMMEDIATELY FROM SPRINKLERS OPENED BY HEAT FROM A FIRE.

- REMOTE AREA #2: ORDINARY GROUP II  
0.20 GPM OVER 1950 SQ.FT. AREA (INCREASED) PER FIG. II.2.3.1.1 DENSITY/ AREA CURVES. AND II.2.3.2.4 SLOPED CEILING OF THE NFPA 13 2010 EDITION.

USE RELIABLE (OR EQUAL) K-FACTOR OF 8.0  
200°F TEMP. & 3/4" NPT.  
MAXIMUM SPACING 130 SQ.FT. PER HEAD.

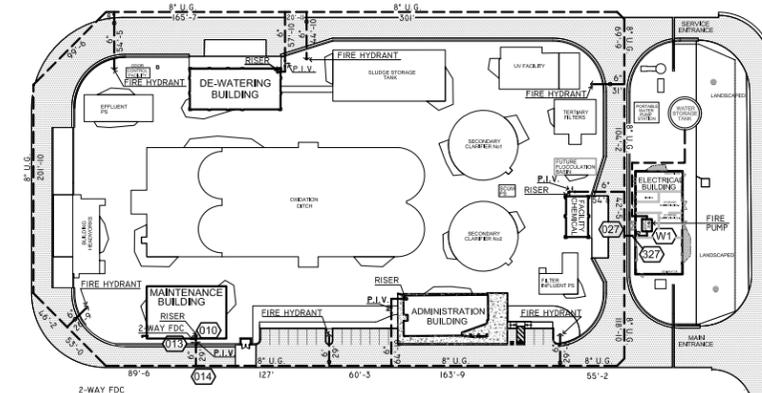
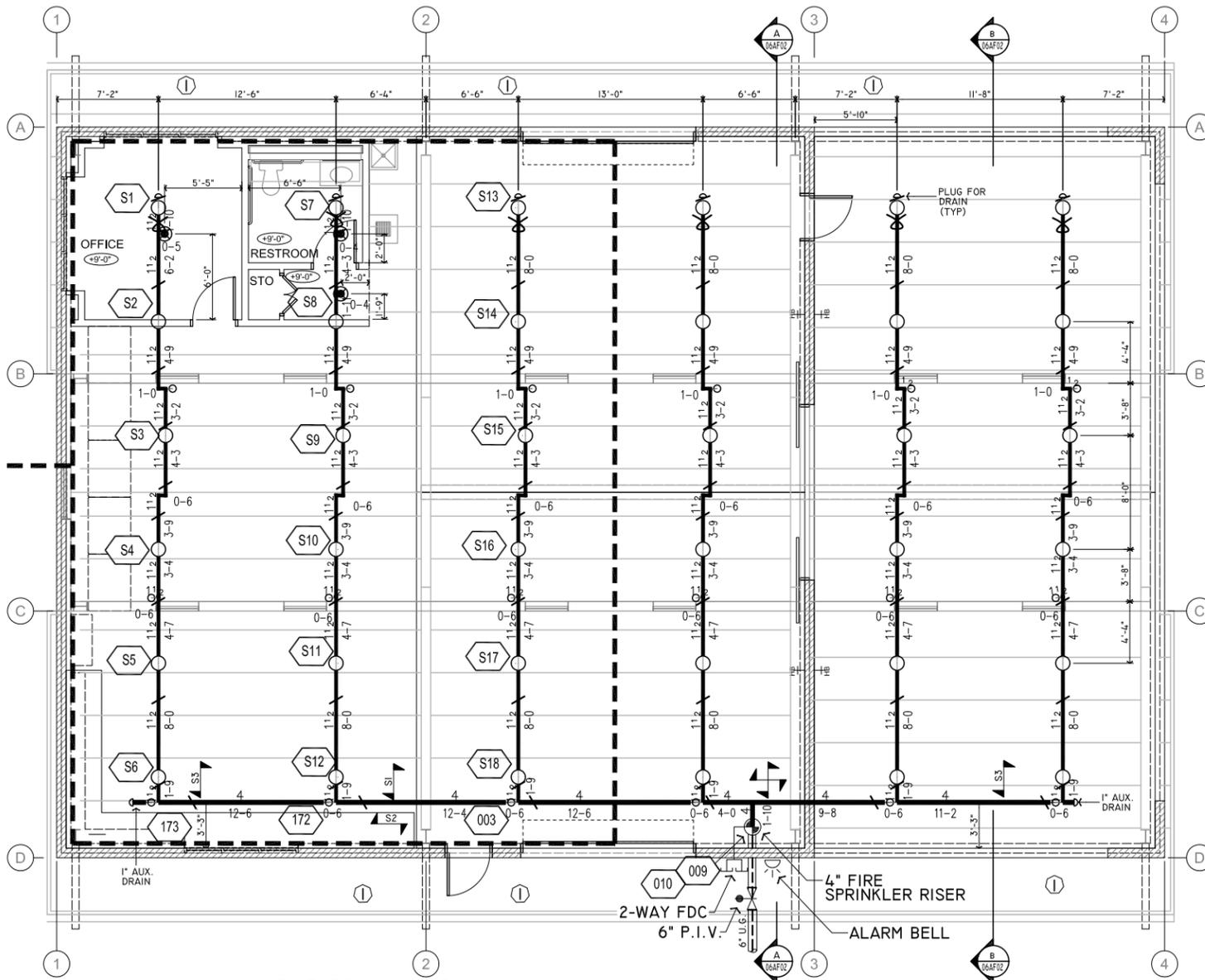
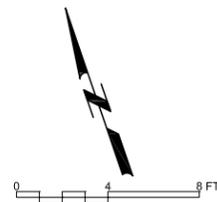
### SPRINKLER INFO.

SYM.	MANUFACTURER	SIN	NPT	K	TEMP	DESCRIPTION	QTY.
○	RELIABLE MODEL FIFR L0 (OR EQUAL)	R3622	3/4"	8.0	200°F	Q.R. UPRIGHT SPRINKLER WHITE POLYESTER COATED	36
⊙	RELIABLE MODEL FIFR56 (OR EQUAL)	RAI414	1/2"	5.6	155°F	Q.R. PENDENT SPRINKLER WHITE POLYESTER COATED	3
<b>TOTAL:</b>							<b>39</b>

### LEGEND & SYMBOLS

○	UPRIGHT SPRINKLER HEAD CORROSION RESISTANT 200°
⊙	PENDENT SPRINKLER HEAD CORROSION RESISTANT 155°
—	NEW SPRINKLER PIPE
○	PIPE UP OR DOWN
⊙	FIRE SPRINKLER RISER
⊙	TYPICAL HANGER LOCATION
⊙	TYPICAL END OF LINE RESTRAINER LOCATION
⊙	LATERAL SWAY BRACE
⊙	LONGITUDINAL SWAY BRACE
⊙	4-WAY EARTHQUAKE BRACE
—	UNDERGROUND PIPE
⊙	HYDRAULIC REFERENCE NODE
⊙	POST INDICATOR VALVE
⊙	SPRINKLER BELL
⊙	FIRE HYDRANT
⊙	KEY VALVE
⊙	FIRE DEPARTMENT CONNECTION (FDC)

-FOR BUILDING INFORMATION AND GENERAL NOTES SEE SHEET 05AF00  
-FOR DETAILS SEE SHEET 06AF03



### KEY PLAN

**FIRE SPRINKLER PLAN** NOT TO SCALE  
UNDERGROUND SUPPLY AND PUMP SHOWN FOR REFERENCE ONLY. SEE CIVIL WATER UTILITY PLANS FOR INSTALLATION DRAWINGS.

REMOTE AREA: ORDINARY GROUP 2  
0.20 GPM/FT<sup>2</sup> OVER 1950 FT<sup>2</sup>, PER NFPA 13, 2010 EDITION.

HYDRAULIC INFORMATION	
DATE:	09-20-2013
OCCUPANCY:	ORDINARY 2
DENSITY:	0.20 / 1950 FT <sup>2</sup>
TOTAL HOSE STREAM:	250 GPM
NO. SPRINKLER FLOWING:	18
K-FACTOR:	8.0
WATER REQUIRED: (@ BASE OF RISER)	551.7 GPM
PRESSURE REQUIRED: (@ BASE OF RISER)	61.1 PSI
SAFETY MARGIN - PSI:	+13.6 (16.3%)

NOTE:  
① SPRINKLERS ARE NOT REQUIRED PER NFPA 13 2010 EDITION, SECTION 8.15.7

PIPING NOTES:  
A) PIPE IS SHOW AS NEAR AS POSSIBLE. HOWEVER, EXACT LOCATION WITH REGARDS TO THE BUILDING STRUCTURE SHALL BE VERIFIED AND DETERMINED IN THE FIELD PRIOR THE FABRICATION AND INSTALLATION.  
B) CONTRACTOR TO BE RESPONSIBLE FOR INSTALLING COMPLETE INSTALLATION AND SHALL CONFORM AS-BUILD CONDITIONS PRIOR TO ANY WORK.

**PIPING PLAN**  
**FIRE SPRINKLER PLAN** SCALE: 3/16" = 1'-0"

REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED  
J.C.  
DRAWN  
F.M.  
CHECKED  
J.C.  
DATE  
SEPTEMBER 2013



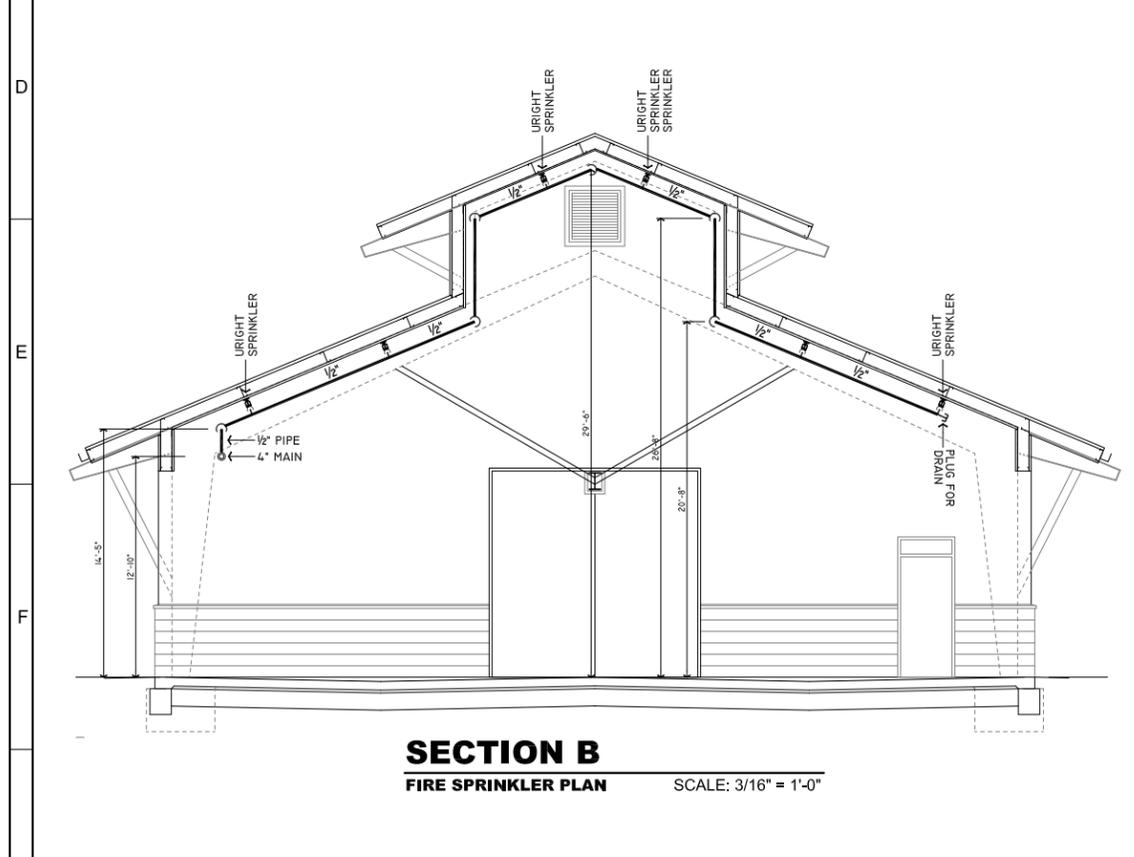
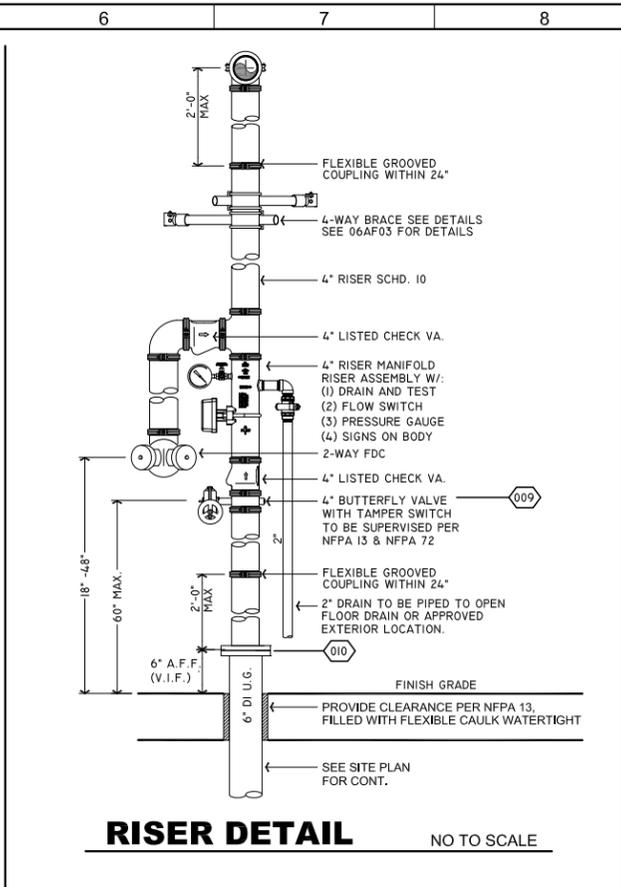
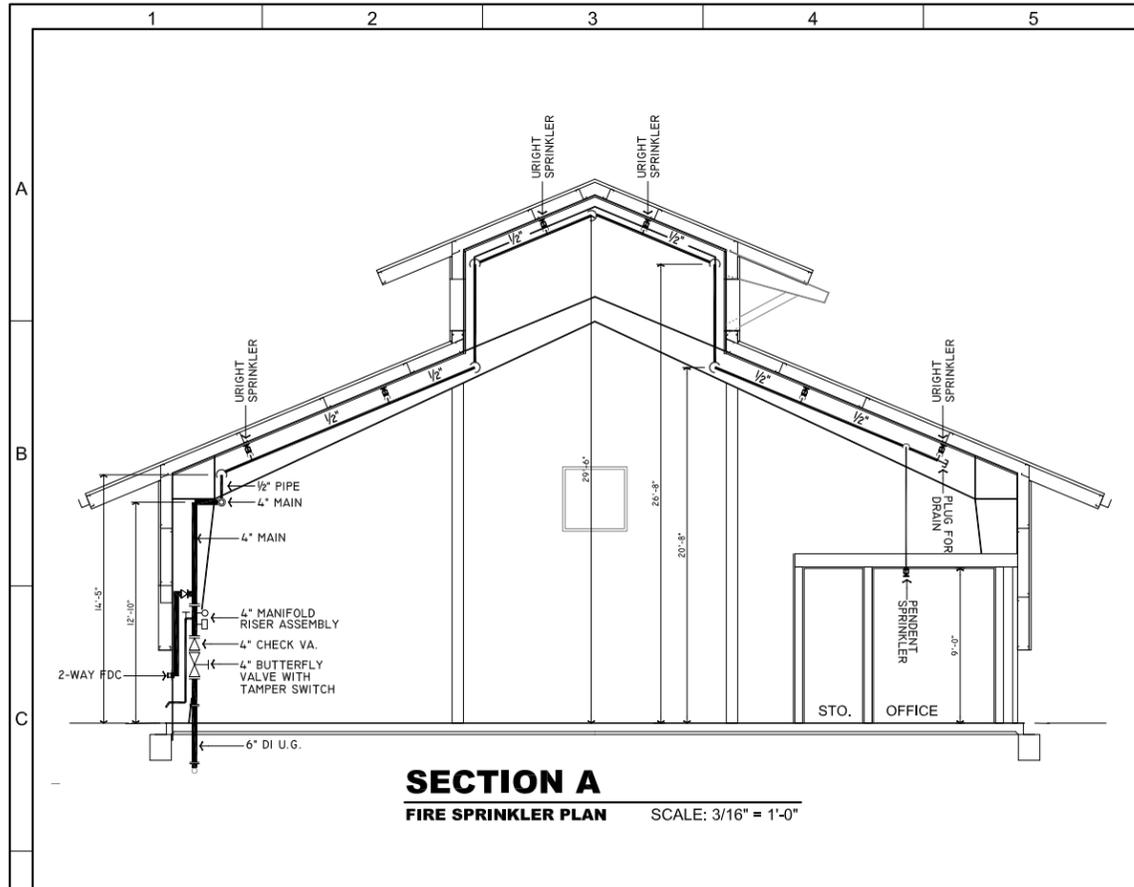
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Fire Protection Engineering  
260 Main Court, Suite 241, Ventura, CA 93003  
Phone: (805) 658-0003 Fax: (805) 658-0044  
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SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
MAINTENANCE BUILDING  
FIRE SPRINKLER SYSTEM PLAN

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

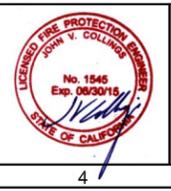
JOB NO.  
8930A.11  
DRAWING NO.  
06AF01  
SHEET NO.  
XXX OF XXX



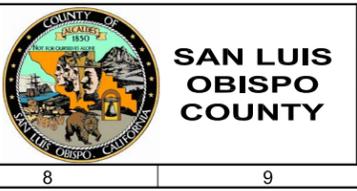
<b>BRACE INFORMATION:</b> LENGTH OF BRACE: LESS THAN 7'-0" DIAMETER OF BRACE: 1" TYPE OF BRACE: SCH. 40 ANGLE OF BRACE: 45°-59° LEAST RADIUS OF GYRATION: .42 L/R VALUE: 200 MAXIMUM HORIZONTAL LOAD: 1310		<b>FASTENER INFORMATION:</b> LATERAL LONGITUDINAL (ACROSS BEAM) (ALONG BEAM) ORIENTATION OF CONNECTING SURFACE: 60° TO 90° FROM VERTICAL FASTENER: TOLCO FIG. 800 TYPE: STEEL ATTACHMENT MANUF. LISTED LOAD: 1,265 2,015 FROM TABLE 9.3.5.10.3 (NFPA 13, 2010) LISTED LOAD DIVIDED BY 1.155 MAXIMUM LOAD: 1095 LBS 1745 LBS									
<b>SEISMIC BRACE ATTACHMENT:</b> STRUCTURE ATTACHMENT FITTING: MAKE: TOLCO MODEL: FIG. 980 LISTED LOAD RATING: 2,765 ADJUSTED LOAD RATING PER 9.3.5.10.3: 2,393 SWAY BRACE (PIPE ATTACHMENT) FITTING: MAKE: TOLCO MODEL: FIG. 1000 LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745 MAKE: TOLCO MODEL: FIG. 4A (4" TO 8") LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745 MAKE: TOLCO MODEL: FIG. 4L (2½" TO 8") LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745		<b>SEISMIC BRACE ASSEMBLY DETAIL</b> 									
<b>SPRINKLER SYSTEM LOAD CALCULATION [Fpw = CpWp]</b>											
<b>LATERAL BRACE - 24'-0" MAX. O.C.</b>		<b>LONGITUDINAL BRACE - 48'-0" MAX. O.C.</b>									
PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT	PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT
4	SCHD.10	24 FT.	11.78	0.82	232 LBS	4	SCHD.10	48 FT.	11.78	0.82	464 LBS
1½	SCHD.40	70 FT.	3.61	0.82	208 LBS						
(9.3.5.6.1 OF NFPA 13) Wp x 0.15:					66 LBS	(9.3.5.6.1 OF NFPA 13) Wp x 0.15:					70 LBS
TOTAL LOAD:					506 LBS	TOTAL LOAD:					534 LBS

<b>BRACE INFORMATION:</b> LENGTH OF BRACE: LESS THAN 7'-0" DIAMETER OF BRACE: 1" TYPE OF BRACE: SCH. 40 ANGLE OF BRACE: 45°-59° LEAST RADIUS OF GYRATION: .42 L/R VALUE: 200 MAXIMUM HORIZONTAL LOAD: 1310		<b>FASTENER INFORMATION:</b> LATERAL LONGITUDINAL (ACROSS BEAM) (ALONG BEAM) ORIENTATION OF CONNECTING SURFACE: (D) 60°-44° FASTENER: TOLCO FIG. 800 TYPE: THROUGH BOLT DIAMETER: 3/8" LENGTH: 2" MAXIMUM LOAD: 1200 LBS									
<b>SEISMIC BRACE ATTACHMENT:</b> STRUCTURE ATTACHMENT FITTING: MAKE: TOLCO MODEL: FIG. 980 LISTED LOAD RATING: 2,765 ADJUSTED LOAD RATING PER 9.3.5.10.3: 2,393 SWAY BRACE (PIPE ATTACHMENT) FITTING: MAKE: TOLCO MODEL: FIG. 1000 LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745 MAKE: TOLCO MODEL: FIG. 4A (4" TO 8") LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745 MAKE: TOLCO MODEL: FIG. 4L (2½" TO 8") LISTED LOAD RATING: 2015 ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745		<b>SEISMIC BRACE ASSEMBLY DETAIL</b> 									
<b>SPRINKLER SYSTEM LOAD CALCULATION [Fpw = CpWp]</b>											
<b>LATERAL BRACE - 24'-0" MAX. O.C.</b>		<b>LONGITUDINAL BRACE - 48'-0" MAX. O.C.</b>									
PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT	PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT
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1½	SCHD.40	70 FT.	3.61	0.82	208 LBS						
(9.3.5.6.1 OF NFPA 13) Wp x 0.15:					66 LBS	(9.3.5.6.1 OF NFPA 13) Wp x 0.15:					70 LBS
TOTAL LOAD:					506 LBS	TOTAL LOAD:					534 LBS

DESIGNED	J.C.
DRAWN	F.M.
CHECKED	J.C.
DATE	SEPTEMBER 2013



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SAN LUIS OBISPO COUNTY  
 LOS OSOS WATER RECYCLING FACILITY PROJECT  
 MAINTENANCE BUILDING  
 BUILDING SECTIONS AND RISER DETAIL

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 8930A.11  
 DRAWING NO. 06AF02  
 SHEET NO. XXX OF XXX

1. FLOOR OR WALL ASSEMBLY -- MIN 4-1/2 IN. (114 MM) THICK REINFORCED LIGHTWEIGHT OR NORMAL WEIGHT (100-150 PCF OR 1600-2400 KG/M3) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS\*. MAX DIAM OF OPENING IS 6 IN. (152 MM). SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.

2. METALLIC SLEEVE -- (OPTIONAL) NOM 6 IN. (152 MM) DIAM (OR SMALLER) SCHEDULE 40 (OR HEAVIER) STEEL SLEEVE CAST OR GROUTED INTO FLOOR OR WALL ASSEMBLY, FLUSH WITH FLOOR OR WALL SURFACES.

3. THROUGH-PENETRANT -- ONE METALLIC PIPE OR CONDUIT TO BE INSTALLED EITHER CONCENTRICALLY OR ECCENTRICALLY WITHIN THE FIRESTOP SYSTEM. THE ANNULAR SPACE BETWEEN PIPE, TUBE OR CONDUIT AND PERIPHERY OF OPENING SHALL BE MIN 0 IN. (0 MM) (POINT CONTACT) TO MAX 5-3/8 IN. (137 MM). PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:

A. STEEL PIPE -- NOM 4 IN. (102 MM) DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE.

B. IRON PIPE -- NOM 4 IN. (102 MM) DIAM (OR SMALLER) CAST OR DUCTILE IRON PIPE.

C. COPPER PIPE -- NOM 4 IN. (102 MM) DIAM (OR SMALLER) REGULAR (OR HEAVIER) COPPER PIPE.

D. COPPER TUBING -- NOM 4 IN. (102 MM) DIAM (OR SMALLER) TYPE L (OR HEAVIER) COPPER TUBING.

E. CONDUIT -- NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL CONDUIT.

F. CONDUIT -- NOM 4 IN. (102 MM) DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING (EMT).

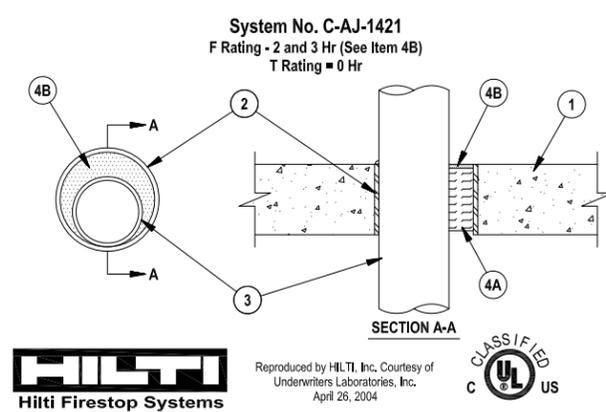
4. FIRESTOP SYSTEM -- THE FIRESTOP SYSTEM SHALL CONSIST OF THE FOLLOWING:

A. PACKING MATERIAL -- MIN 4 IN. (102 MM) THICKNESS OF MIN 4 PCF (64 KG/M3) MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR OR FROM BOTH SURFACES OF WALL AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL.

B. FILL, VOID OR CAVITY MATERIAL\* -- SEALANT -- MIN 1/4 IN. (6 MM) THICKNESS OF FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR OR WITH BOTH SURFACES OF WALL. FOR 3 HR RATED ASSEMBLIES, A MIN 1/4 IN. (6 MM) DIAM BEAD OF FILL MATERIAL SHALL BE APPLIED AT THE CONCRETE/PIPE INTERFACE AT THE POINT CONTACT LOCATION ON THE TOP SURFACE OF FLOOR AND ON BOTH SURFACES OF WALL.

HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- FS-ONE SEALANT OR CP604 SELF-LEVELING FIRESTOP SEALANT. CP604 SHALL BE USED IN FLOOR APPLICATIONS ONLY. WHEN CP604 IS USED, F RATING IS 2 HR.

\*BEARING THE UL CLASSIFICATION MARK



1. FLOOR OR WALL ASSEMBLY -- THE FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES WALL AND PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

A. STUDS -- WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC. STEEL STUDS TO BE MIN 2-1/2 IN. WIDE AND SPACED MAX 24 IN. OC.

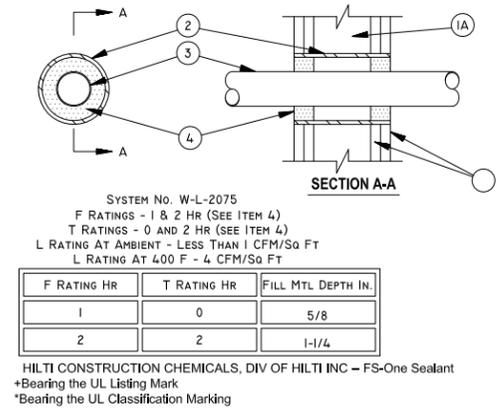
B. GYPSUM BOARD\* -- NOM 5/8 IN. THICK GYPSUM WALLBOARD, AS SPECIFIED IN THE INDIVIDUAL WALL AND PARTITION DESIGN. MAX DIAM OF OPENING IS 4 IN.

2. METALLIC SLEEVE -- (OPTIONAL) -- NOM 4 IN. DIAM (OR SMALLER) SCHEDULE 40 (OR THINNER) STEEL PIPE CAST INTO WALL ASSEMBLY WITH JOINT COMPOUND AND INSTALLED FLUSH WITH WALL SURFACES.

3. ELECTRICAL NONMETALLIC TUBING+ -- NOM 2 IN. DIAM (OR SMALLER) CORRUGATED WALL ELECTRICAL NONMETALLIC TUBING (ENT) CONSTRUCTED OF POLYVINYL CHLORIDE (PVC). TUBING TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY. A NOM ANNULAR SPACE OF 3/4 IN. IS REQUIRED WITHIN THE FIRESTOP SYSTEM.

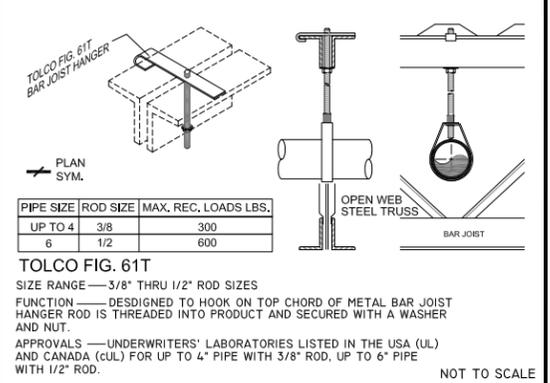
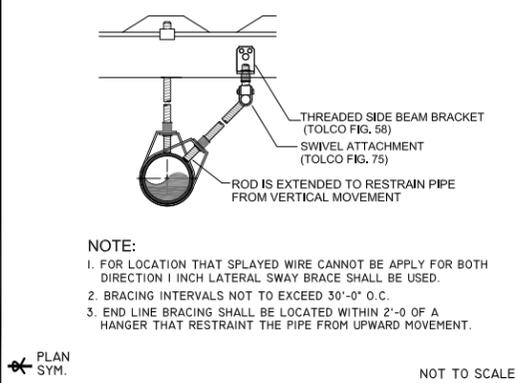
SEE ELECTRICAL NONMETALLIC TUBING (FKHU) CATEGORY IN THE ELECTRICAL CONSTRUCTION MATERIALS DIRECTORY FOR NAMES OF MANUFACTURERS.

4. FILL, VOID OR CAVITY MATERIAL\* -- SEALANT -- INSTALLED SYMMETRICALLY ON BOTH SIDES OF THE WALL. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS EQUAL TO THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. FILL MATERIAL APPLIED WITHIN THE ANNULUS, FLUSH WITH EACH END OF THE STEEL SLEEVE AT THE THICKNESS SHOWN IN THE TABLE BELOW.



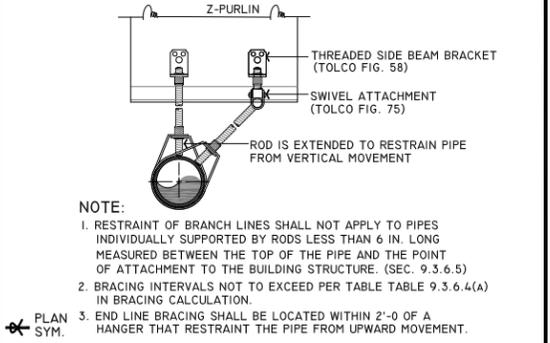
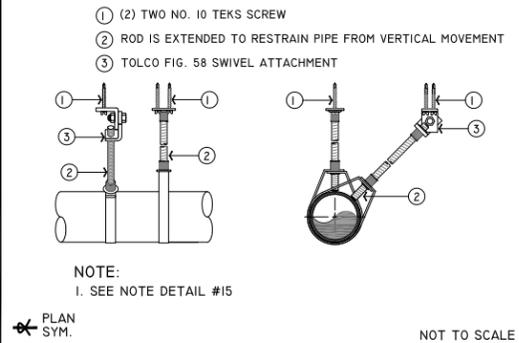
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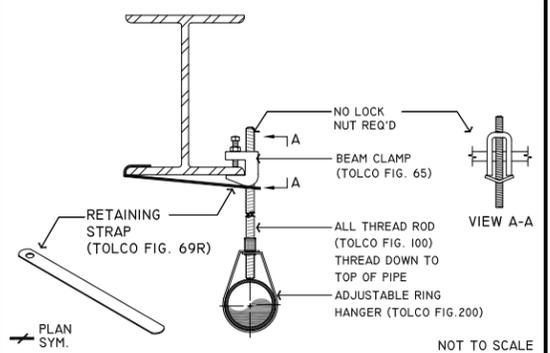
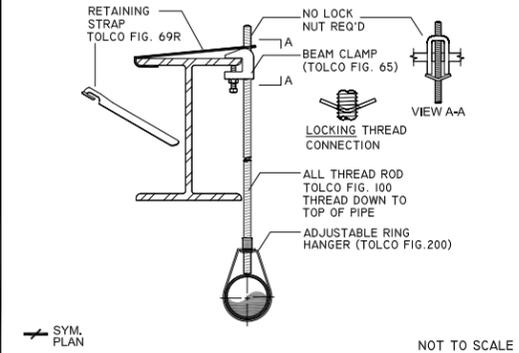
15 PIPE RESTRAINT

14 BAR JOIST HANGER



10 PIPE RESTRAINT (METAL ATTACHMENT)

9 PIPE RESTRAINT (METAL ATTACHMENT)



5 TOP BEAM CLAMP

4 BOTTOM BEAM CLAMP

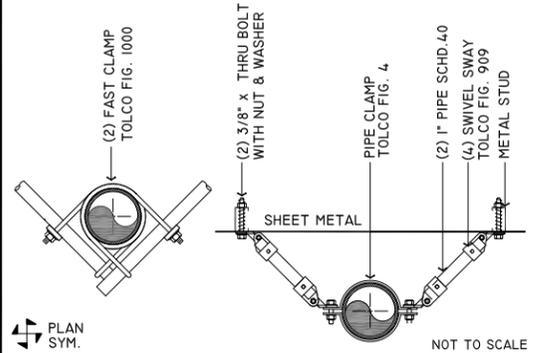
REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED J.C.  
DRAWN F.M.  
CHECKED J.C.  
DATE SEPTEMBER 2013

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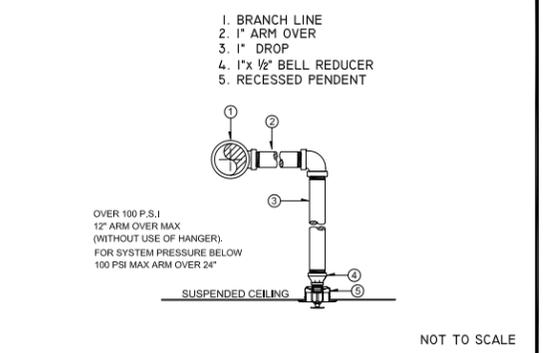
**carollo**

SAN LUIS OBISPO COUNTY



2 4-WAY SWAY BRACE

SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT



1 TYP. PENDENT SPRINKLER

SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT

TYPICAL METAL DETAILS

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 8930A.11  
DRAWING NO. 06AF03  
SHEET NO. XXX OF XXX

**HANGER NOTES**

- 3/8" A.T.R. ROD SHALL BE USED ON PIPES 1 TO 4 INCHES. 1/2" ATR FOR 5, 6 & 8 INCHES PIPE. AND 5/8" ATR FOR 10 & 12 INCHES PIPE.
- THE MAX. UNSUPPORTED LENGTH FROM THE END OF A LINE TO HANGER SHALL BE 36" FOR 1", 48" FOR 1 1/4", 60" FOR 1 1/2" PIPE AND ABOVE.
- THE MAXIMUM HANGER SPACING SHALL BE 12 FT. FOR 1" TO 1 1/4" PIPE, 15 FT. FOR 1 1/2" PIPE AND ABOVE EXCEPT THREADED LIGHT WALL. FOR THREADED LIGHT WALL MAXIMUM SPACING IS 12 FT. FOR PIPE UP TO 3 IN. (UNLESS NOTED OTHERWISE).
- HANGERS ARE REQUIRED ON ARM-OVER EXCEEDING 2 FT. FROM CENTER TO CENTER.
- ALL HANGERS SHALL BE IN ACCORDANCE WITH NFPA-13, 2010 EDITION, TABLE 9.2.2.(A). ALL ARM-OVER MORE THAN 2'-0" SHALL HAVE HANGER. IF STATIC PRESSURE EXCEEDS 100 PSI, HANGER IS REQUIRED ON ARM-OVER MORE THAN 1'-0".

**SEISMIC BRACING NOTES**

- SWAY BRACES SHALL BE DESIGN AND INSTALLED IN COMPLIANCE WITH NFPA 13, 2010 EDITION. CALCULATION BASED ON ZONE OF INFLUENCE. (SEE DETAIL SHEET FOR SEISMIC BRACING CALCULATION)
- LATERAL BRACE SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.5.3.9)
- LATERAL BRACE SHALL NOT APPLY WHERE U-TYPE HOOKS OF THE WRAP-AROUND TYPE OR THOSE U-TYPE HOOKS ARRANGED TO KEEP THE PIPE TIGHT TO THE UNDERSIDE OF THE STRUCTURE ELEMENT SHALL BE PERMITTED TO BE USED TO SATISFY THE REQUIREMENTS FOR LATERAL SWAY BRACE BRACING, PROVIDED THE LEGS ARE BENT OUT AT LEAST 30 DEGREES FROM THE VERTICAL. (SEC. 9.3.5.3.10)
- RESTRAINT OF BRANCH LINES SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.6.5)

**DESIGN CRITERIA:**

WET PIPE SPRINKLER SYSTEM. A SPRINKLER SYSTEM EMPLOYING AUTOMATIC SPRINKLERS ATTACHED TO A PIPING SYSTEM CONTAINING WATER AND CONNECTED TO A WATER SUPPLY SO THAT WATER DISCHARGES IMMEDIATELY FROM SPRINKLERS OPENED BY HEAT FROM A FIRE.

1. REMOVE AREA: ORDINARY GROUP II  
0.20 GPM OVER 842.1 SQ.FT. (TOTAL AREA)  
PER FIG. 11.2.3.1.1 DENSITY/ AREA CURVES.  
NFPA 13 2010 EDITION.

USE RELIABLE (OR EQUAL) K-FACTOR OF 5.6  
200°F TEMP. & 1/2" NPT.  
MAXIMUM SPACING 130 SQ.FT. PER HEAD.

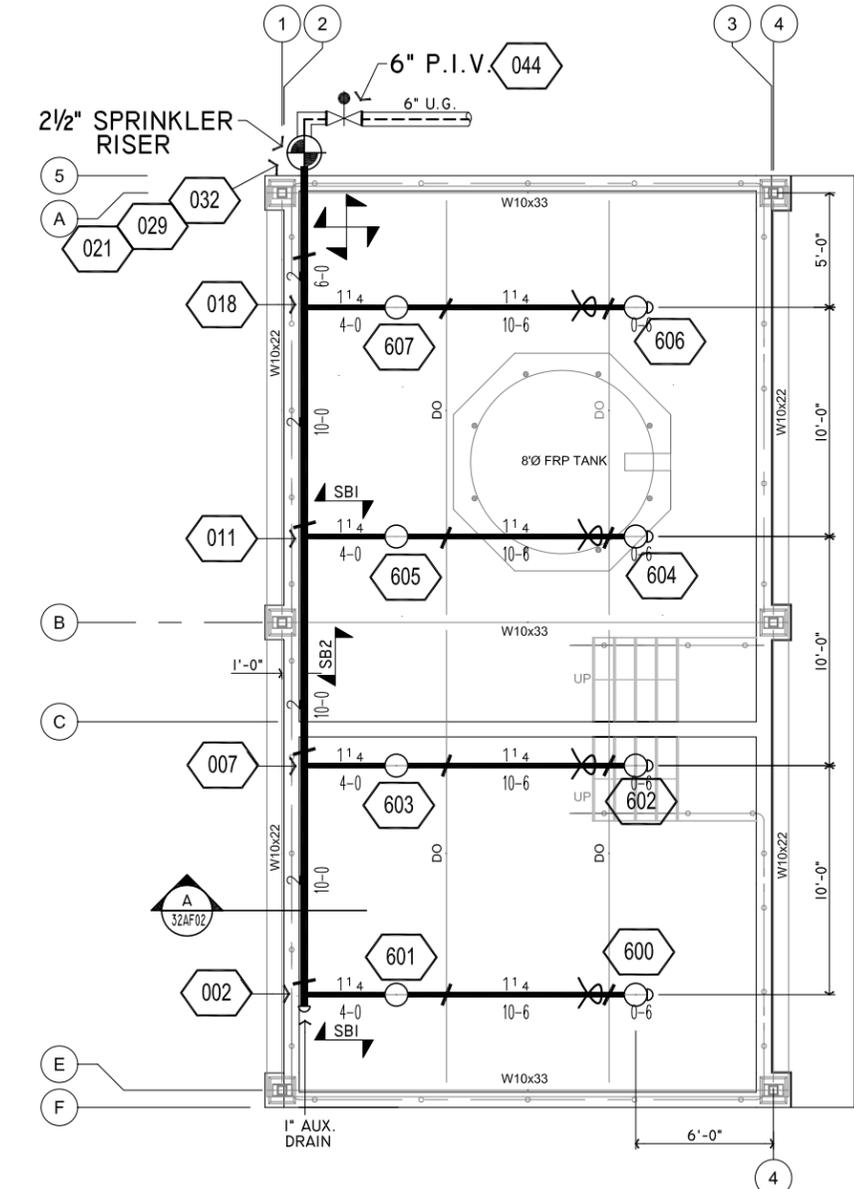
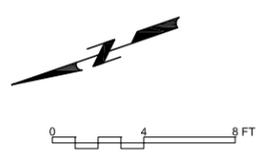
**SPRINKLER INFO.**

SYM.	MANUFACTURER	SIN	NPT	K	TEMP	DESCRIPTION	QTY.
○	RELIABLE MODEL F1FR56 (OR EQUAL)	RAI425	1/2	5.6	200°F	Q.R. UPRIGHT SPRINKLER WHITE POLYESTER COATED	8
<b>TOTAL:</b>							<b>8</b>

**LEGEND & SYMBOLS**

○	UPRIGHT SPRINKLER HEAD CORROSION RESISTANT 200°
—	NEW SPRINKLER PIPE
○	PIPE UP OR DOWN
⊗	FIRE SPRINKLER RISER
⊕	TYPICAL HANGER LOCATION
⊖	TYPICAL END OF LINE RESTRAINER LOCATION
⊗	LATERAL SWAY BRACE
⊕	LONGITUDINAL SWAY BRACE
⊗	4-WAY EARTHQUAKE BRACE
—	UNDERGROUND PIPE
⊗	HYDRAULIC REFERENCE NODE
⊕	POST INDICATOR VALVE
⊗	SPRINKLER BELL
⊕	FIRE HYDRANT
⊗	KEY VALVE

- FOR BUILDING INFORMATION AND GENERAL NOTES SEE SHEET 05AF00  
- FOR DETAILS SEE SHEET 06AF03

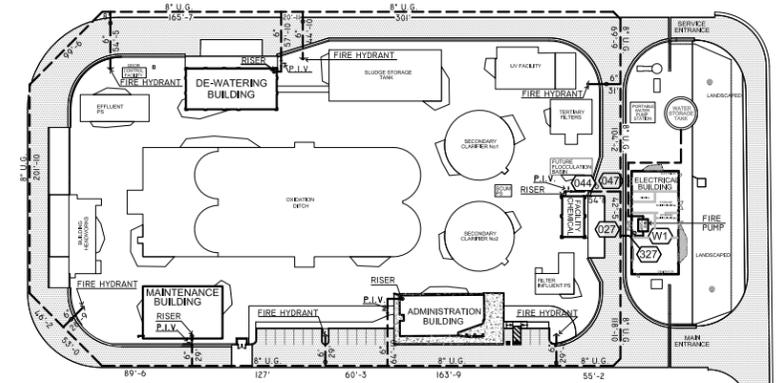


AREA: ORDINARY GROUP 2  
0.20 GPM/FT<sup>2</sup> OVER TOTAL AREA  
842.0 FT<sup>2</sup>, PER NFPA 13, 2010 EDITION.

**HYDRAULIC INFORMATION**

DATE:	09-20-2013
OCCUPANCY:	ORDINARY 2
DENSITY:	0.20 / 842 FT <sup>2</sup>
TOTAL HOSE STREAM:	250 GPM
NO. SPRINKLER FLOWING:	8
K-FACTOR:	5.6
WATER REQUIRED: (@ BASE OF RISER)	214.8 GPM
PRESSURE REQUIRED: (@ BASE OF RISER)	44.4 PSI
SAFETY MARGIN - PSI:	+40.4 (45.8%)

- PIPING NOTES:**
- PIPE IS SHOW AS NEAR AS POSSIBLE. HOWEVER, EXACT LOCATION WITH REGARDS TO THE BUILDING STRUCTURE SHALL BE VERIFIED AND DETERMINED IN THE FIELD PRIOR THE FABRICATION AND INSTALLATION.
  - CONTRACTOR TO BE RESPONSIBLE FOR INSTALLING COMPLETE INSTALLATION AND SHALL CONFORM AS-BUILD CONDITIONS PRIOR TO ANY WORK.

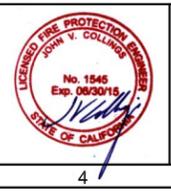


**KEY PLAN**  
**FIRE SPRINKLER PLAN** NOT TO SCALE  
UNDERGROUND SUPPLY AND PUMP SHOWN FOR REFERENCE ONLY.  
SEE CIVIL WATER UTILITY PLANS FOR INSTALLATION DRAWINGS.

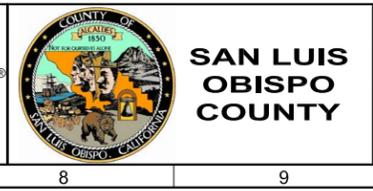
**PIPING PLAN**  
**FIRE SPRINKLER PLAN** SCALE: 1/4" = 1'-0"

REV	DATE	BY	DESCRIPTION
1			
2			

DESIGNED  
J.C.  
DRAWN  
F.M.  
CHECKED  
J.C.  
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SEPTEMBER 2013

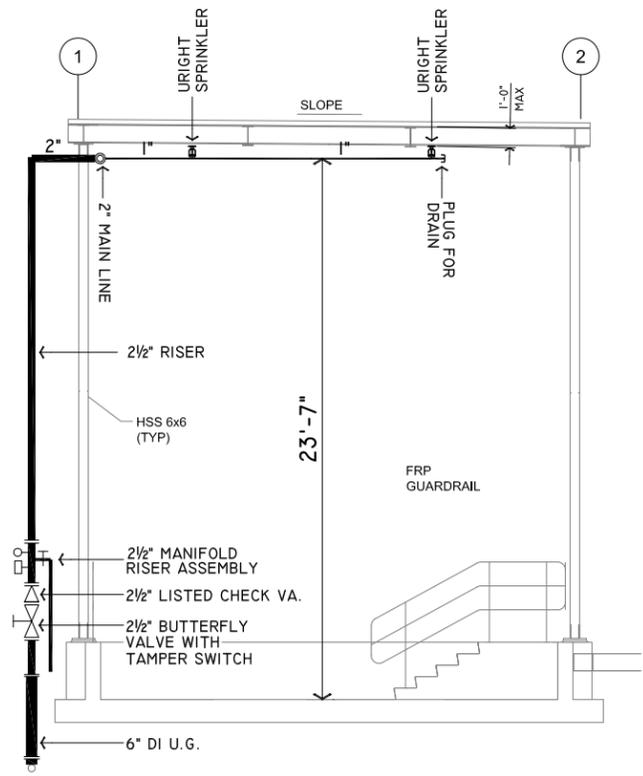


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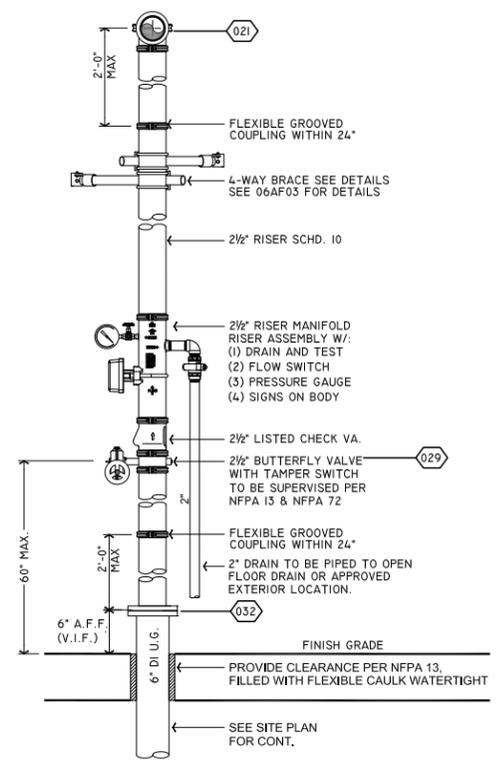


SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
CHEMICAL FACILITY  
**FIRE SPRINKLER SYSTEM PLAN**

VERIFY SCALES	JOB NO. 8930A.11
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. 32AF01
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. XXX OF XXX



**SECTION A**  
**FIRE SPRINKLER PLAN** SCALE: 1/4" = 1'-0"



**RISER DETAIL** NO TO SCALE

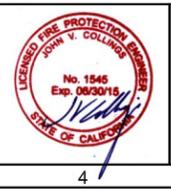
BRACE INFORMATION:		FASTENER INFORMATION:	
LENGTH OF BRACE:	LESS THAN 7'-0"	LATERAL LONGITUDINAL	
DIAMETER OF BRACE:	1"	ORIENTATION OF (ACROSS BEAM) (ALONG BEAM)	
TYPE OF BRACE:	SCH. 40	CONNECTING SURFACE: 60° TO 90° FROM VERTICAL	
ANGLE OF BRACE:	45°-59°	FASTENER: TOLCO FIG. 800	
LEAST RADIUS OF GYRATION:	.42	TYPE: STEEL ATTACHMENT	
L/R VALUE:	.200	MANUF. LISTED LOAD: 1,265   2,015	
MAXIMUM HORIZONTAL LOAD:	1310	FROM TABLE 9.3.5.10.3 (NFPA 13, 2010) LISTED LOAD DIVIDED BY 1.155	
		MAXIMUM LOAD: 1095 LBS   1745 LBS	

SEISMIC BRACE ATTACHMENT:		SEISMIC BRACE ASSEMBLY DETAIL	
STRUCTURE ATTACHMENT FITTING:			
MAKE: TOLCO MODEL: FIG. 980			
LISTED LOAD RATING: 2,765			
ADJUSTED LOAD RATING PER 9.3.5.10.3: 2,393			
SWAY BRACE (PIPE ATTACHMENT) FITTING:			
MAKE: TOLCO MODEL: FIG. 1000			
LISTED LOAD RATING: 2015			
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745			
MAKE: TOLCO MODEL: FIG. 4A (4" TO 8")			
LISTED LOAD RATING: 2015			
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745			
MAKE: TOLCO MODEL: FIG. 4L (2 1/2" TO 8")			
LISTED LOAD RATING: 2015			
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745			
BRACE ID: SBI		BRACE ID: SB2	
<input checked="" type="checkbox"/> LATERAL BRACE		<input checked="" type="checkbox"/> LONGITUDINAL BRACE	

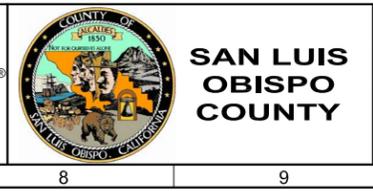
SPRINKLER SYSTEM LOAD CALCULATION [F <sub>pw</sub> = C <sub>p</sub> W <sub>p</sub> ]											
LATERAL BRACE - 24'-0" MAX. O.C.					LONGITUDINAL BRACE - 48'-0" MAX. O.C.						
PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT	PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT
2	SCHD. 40	24 FT.	5.13	0.82	101 LBS	2	SCHD. 40	48 FT.	5.13	0.82	202 LBS
1 1/2	SCHD. 40	35 FT.	2.93	0.82	85 LBS						
(9.3.5.6.1 OF NFPA 13) W <sub>p</sub> x 0.15:					28 LBS	(9.3.5.6.1 OF NFPA 13) W <sub>p</sub> x 0.15:					31 LBS
TOTAL LOAD:					241 LBS	TOTAL LOAD:					233 LBS

REV	DATE	BY	DESCRIPTION
1			
2			

DESIGNED  
 J.C.  
 DRAWN  
 F.M.  
 CHECKED  
 J.C.  
 DATE  
 SEPTEMBER 2013



**COLLINGS & ASSOCIATES**  
 Fire Protection Engineering  
 260 Main Court, Suite 241, Ventura, CA 93003  
 Phone: (805) 658-0003 Fax: (805) 658-0044  
 www.collingsandassociates.com



SAN LUIS OBISPO COUNTY  
 LOS OSOS WATER RECYCLING FACILITY PROJECT  
 CHEMICAL FACILITY  
 BUILDING SECTIONS AND RISER DETAIL

VERIFY SCALES  
 BAR IS ONE INCH ON ORIGINAL DRAWING  
 0 1"  
 IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 8930A.11  
 DRAWING NO. 32AF02  
 SHEET NO. XXX OF XXX

**HANGER NOTES**

- 3/8" A.T.R. ROD SHALL BE USED ON PIPES 1 TO 4 INCHES. 1/2" ATR FOR 5, 6 & 8 INCHES PIPE. AND 5/8" ATR FOR 10 & 12 INCHES PIPE.
- THE MAX. UNSUPPORTED LENGTH FROM THE END OF A LINE TO HANGER SHALL BE 36" FOR 1", 48" FOR 1 1/4", 60" FOR 1 1/2" PIPE AND ABOVE.
- THE MAXIMUM HANGER SPACING SHALL BE 12 FT. FOR 1" TO 1 1/4" PIPE, 15 FT. FOR 1 1/2" PIPE AND ABOVE EXCEPT THREADED LIGHT WALL. FOR THREADED LIGHT WALL MAXIMUM SPACING IS 12 FT. FOR PIPE UP TO 3 IN. (UNLESS NOTED OTHERWISE).
- HANGERS ARE REQUIRED ON ARM-OVER EXCEEDING 2 FT. FROM CENTER TO CENTER.
- ALL HANGERS SHALL BE IN ACCORDANCE WITH NFPA-13, 2010 EDITION, TABLE 9.2.2.(A). ALL ARM-OVER MORE THAN 2'-0" SHALL HAVE HANGER. IF STATIC PRESSURE EXCEEDS 100 PSI, HANGER IS REQUIRED ON ARM-OVER MORE THAN 1'-0".

**SEISMIC BRACING NOTES**

- SWAY BRACES SHALL BE DESIGN AND INSTALLED IN COMPLIANCE WITH NFPA 13, 2010 EDITION. CALCULATION BASED ON ZONE OF INFLUENCE. (SEE DETAIL SHEET FOR SEISMIC BRACING CALCULATION)
- LATERAL BRACE SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.5.3.9)
- LATERAL BRACE SHALL NOT APPLY WHERE U-TYPE HOOKS OF THE WRAP-AROUND TYPE OR THOSE U-TYPE HOOKS ARRANGED TO KEEP THE PIPE TIGHT TO THE UNDERSIDE OF THE STRUCTURE ELEMENT SHALL BE PERMITTED TO BE USED TO SATISFY THE REQUIREMENTS FOR LATERAL SWAY BRACE BRACING, PROVIDED THE LEGS ARE BENT OUT AT LEAST 30 DEGREES FROM THE VERTICAL. (SEC. 9.3.5.3.10)
- RESTRAINT OF BRANCH LINES SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.6.5)

**DESIGN CRITERIA:**

WET PIPE SPRINKLER SYSTEM: A SPRINKLER SYSTEM EMPLOYING AUTOMATIC SPRINKLERS ATTACHED TO A PIPING SYSTEM CONTAINING WATER AND CONNECTED TO A WATER SUPPLY SO THAT WATER DISCHARGES IMMEDIATELY FROM SPRINKLERS OPENED BY HEAT FROM A FIRE.

1. REMOTE AREA: ORDINARY GROUP II  
0.20 GPM OVER 1950 SQ.FT. AREA (INCREASED) PER FIG. II.2.3.1.1 DENSITY/ AREA CURVES. AND II.2.3.2.4 SLOPED CEILING OF THE NFPA 13 2010 EDITION.

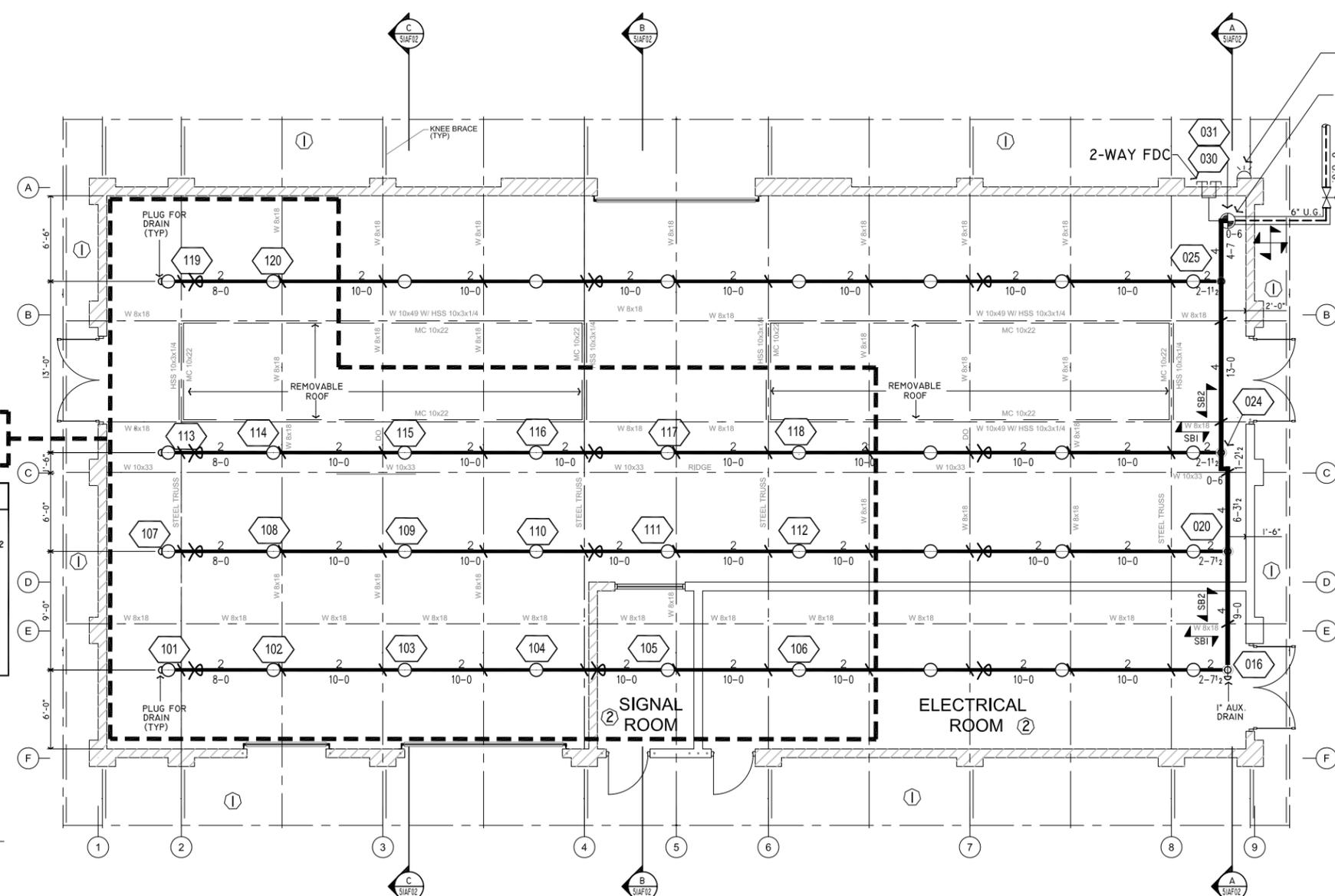
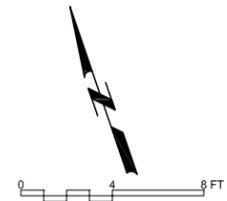
USE RELIABLE (OR EQUAL) K-FACTOR OF 5.6  
200°F TEMP. & 1/2" NPT.  
MAXIMUM SPACING 130 SQ.FT. PER HEAD.

**SPRINKLER INFO.**

SYM.	MANUFACTURER	SIN	NPT	K	TEMP	DESCRIPTION	QTY.
○	RELIABLE MODEL F1FR56 (OR EQUAL)	RAI425	1/2	5.6	200°F	Q.R. UPRIGHT SPRINKLER WHITE POLYESTER COATED	36
<b>TOTAL:</b>							<b>36</b>

**LEGEND & SYMBOLS**

○	UPRIGHT SPRINKLER HEAD CORROSION RESISTANT 200°
—	NEW SPRINKLER PIPE
○	PIPE UP OR DOWN
⊕	FIRE SPRINKLER RISER
⊕	TYPICAL HANGER LOCATION
⊕	TYPICAL END OF LINE RESTRAINER LOCATION
⊕	LATERAL SWAY BRACE
⊕	LONGITUDINAL SWAY BRACE
⊕	4-WAY EARTHQUAKE BRACE
—	UNDERGROUND PIPE
⊕	HYDRAULIC REFERENCE NODE
⊕	POST INDICATOR VALVE
⊕	SPRINKLER BELL
⊕	FIRE HYDRANT
⊕	KEY VALVE
⊕	FIRE DEPARTMENT CONNECTION (FDC)
- FOR BUILDING INFORMATION AND GENERAL NOTES SEE SHEET 05AF00	
- FOR DETAILS SEE SHEET 06AF03	



REMOTE AREA: ORDINARY GROUP 2  
0.20 GPM/FT<sup>2</sup> OVER 1950 FT<sup>2</sup>, PER NFPA 13, 2010 EDITION.

**HYDRAULIC INFORMATION**

DATE:	09-20-2013
OCCUPANCY:	ORDINARY 2
DENSITY:	0.20 / 1950 FT <sup>2</sup>
TOTAL HOSE STREAM:	250 GPM
NO. SPRINKLER FLOWING:	20
K-FACTOR:	5.6
WATER REQUIRED: (@ BASE OF RISER)	573.7 GPM
PRESSURE REQUIRED: (@ BASE OF RISER)	39.5 PSI
SAFETY MARGIN - PSI:	+33.2 (44.1%)

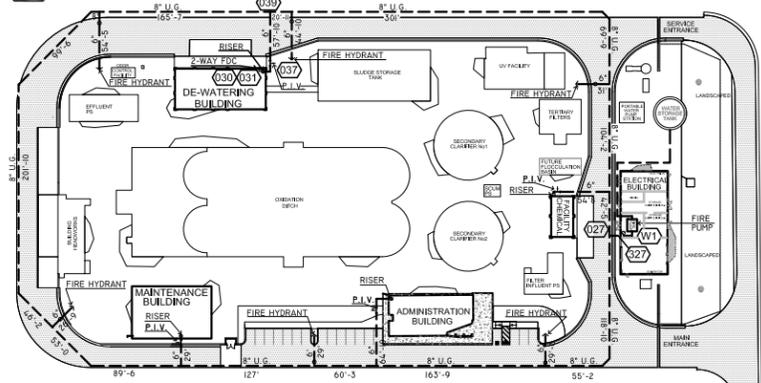
- NOTE:**
- SPRINKLERS ARE NOT REQUIRED PER NFPA 13 2010 EDITION, SECTION 8.15.7
  - SPRINKLERS ARE NOT REQUIRED SEE 01AF03 FOR REFERENCES

**PIPING NOTES:**

A) PIPE IS SHOW AS NEAR AS POSSIBLE. HOWEVER, EXACT LOCATION WITH REGARDS TO THE BUILDING STRUCTURE SHALL BE VERIFIED AND DETERMINED IN THE FIELD PRIOR THE FABRICATION AND INSTALLATION.

B) CONTRACTOR TO BE RESPONSIBLE FOR INSTALLING COMPLETE INSTALLATION AND SHALL CONFORM AS-BUILD CONDITIONS PRIOR TO ANY WORK.

**PIPING PLAN**  
**FIRE SPRINKLER PLAN** SCALE: 3/16" = 1'-0"



**KEY PLAN**  
**FIRE SPRINKLER PLAN** NOT TO SCALE  
UNDERGROUND SUPPLY AND PUMP SHOWN FOR REFERENCE ONLY.  
SEE CIVIL WATER UTILITY PLANS FOR INSTALLATION DRAWINGS.

REV	DATE	BY	DESCRIPTION
1			
2			

DESIGNED  
J.C.  
DRAWN  
F.M.  
CHECKED  
J.C.  
DATE  
SEPTEMBER 2013



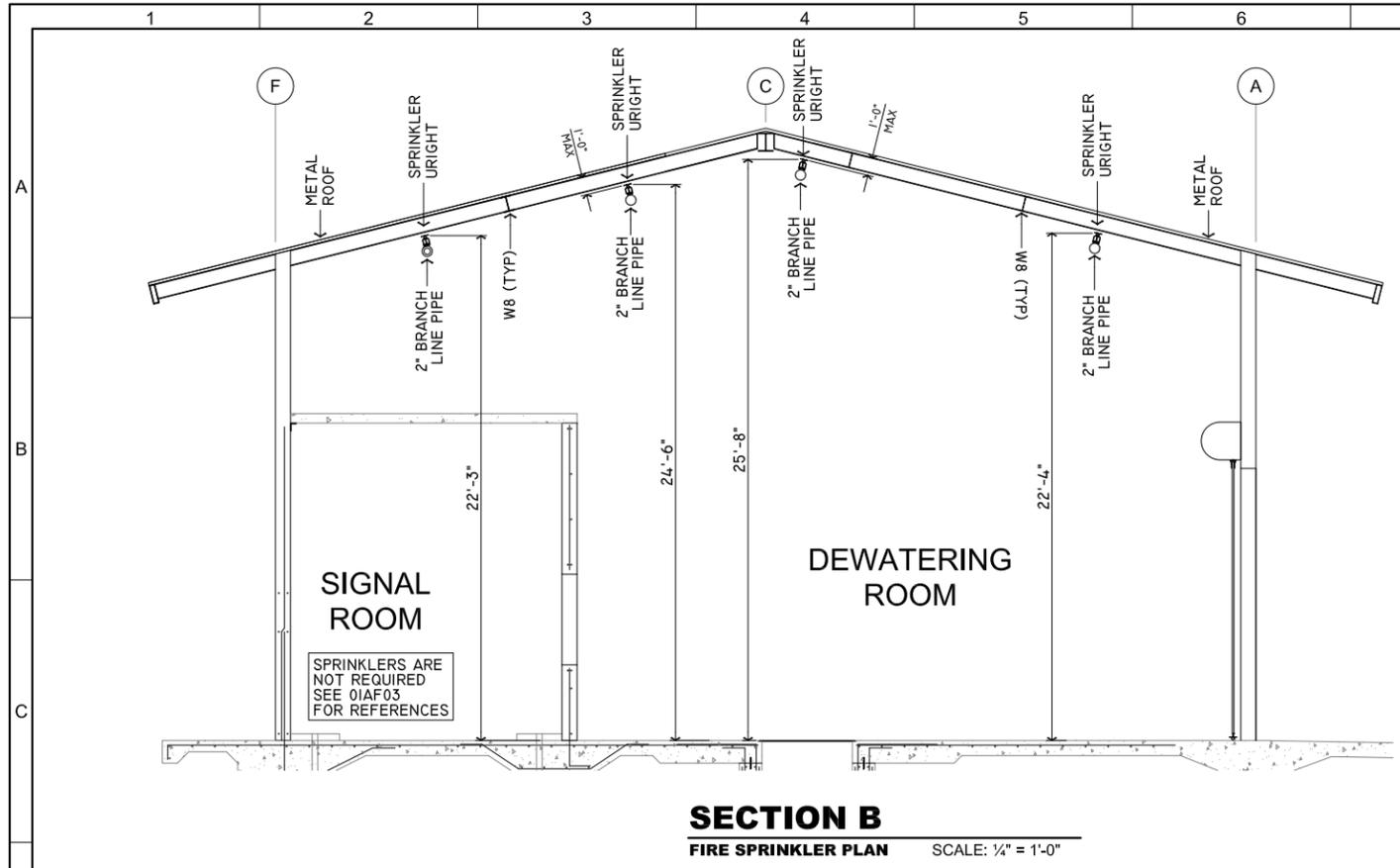
**Collings & Associates**  
Fire Protection Engineering  
260 Main, Suite 241, Ventura, CA 93003  
Phone: (805) 658-0003 Fax: (805) 658-0044  
www.collingsandassociates.com



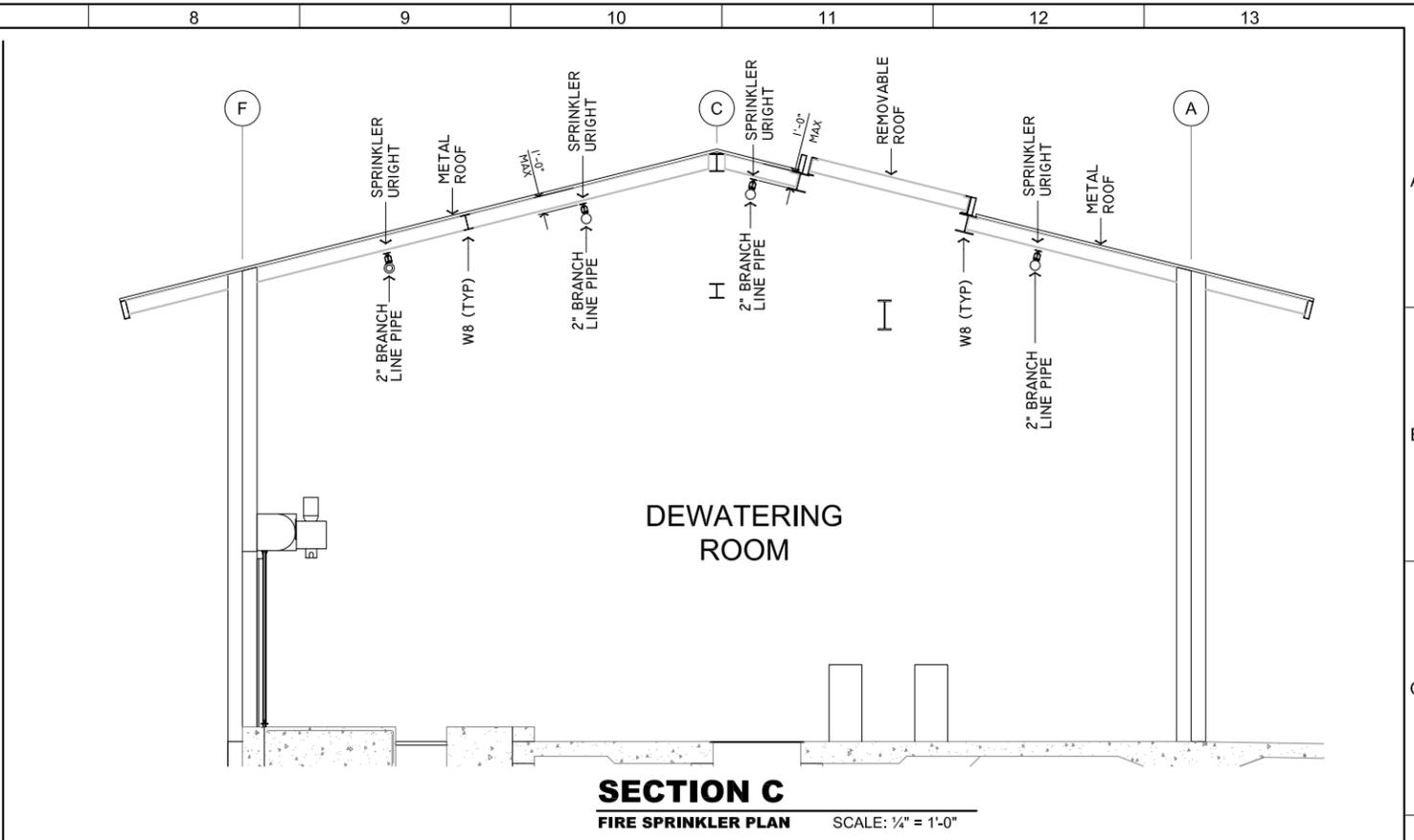
SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
DEWATERING BUILDING  
FIRE SPRINKLER SYSTEM PLAN

VERIFY SCALES  
BAR IS ONE INCH ON ORIGINAL DRAWING  
0 1"  
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

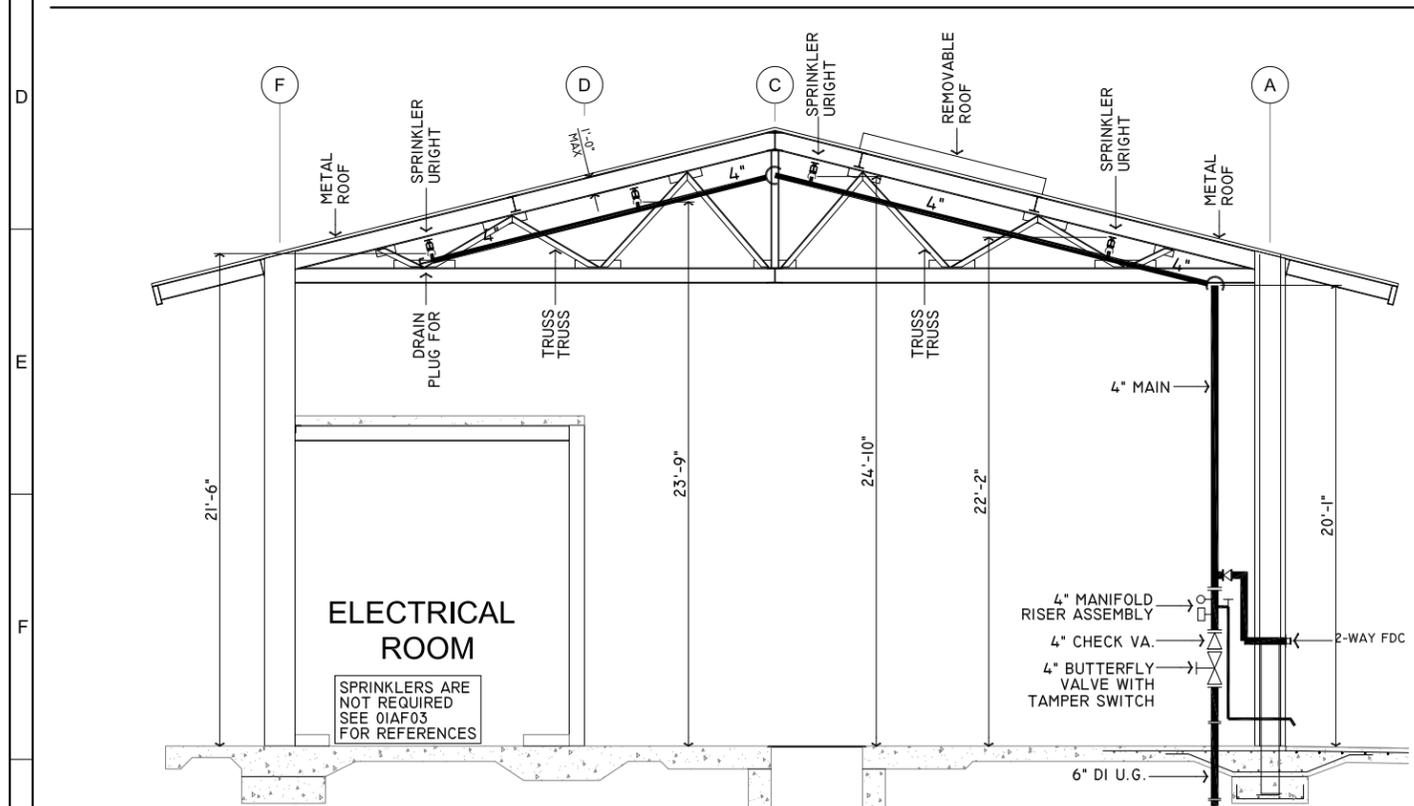
JOB NO.  
8930A.11  
DRAWING NO.  
51AF01  
SHEET NO.  
XXX OF XXX



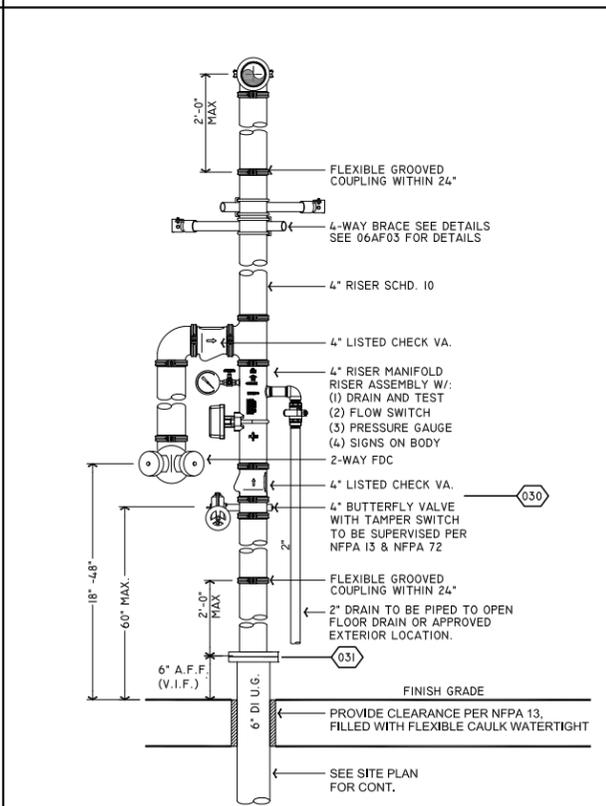
**SECTION B**  
FIRE SPRINKLER PLAN SCALE: 1/4" = 1'-0"



**SECTION C**  
FIRE SPRINKLER PLAN SCALE: 1/4" = 1'-0"



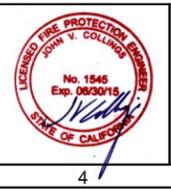
**SECTION A**  
FIRE SPRINKLER PLAN SCALE: 1/4" = 1'-0"



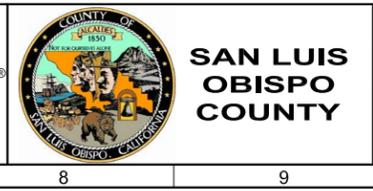
**RISER DETAIL** NO TO SCALE

<b>BRACE INFORMATION:</b>		<b>FASTENER INFORMATION:</b>	
LENGTH OF BRACE:	LESS THAN 7'-0"	<b>LATERAL LONGITUDINAL</b>	
DIAMETER OF BRACE:	1"	ORIENTATION OF (ACROSS BEAM) (ALONG BEAM)	
TYPE OF BRACE:	SCH. 40	CONNECTING SURFACE: 60° TO 90° FROM VERTICAL	
ANGLE OF BRACE:	45°-59°	FASTENER:	STEEL FIG. 800
LEAST RADIUS OF GYRATION:	.42	TYPE:	STEEL ATTACHMENT
L/R VALUE:	.200	MANUF. LISTED LOAD:	1,265 2,015
MAXIMUM HORIZONTAL LOAD:	1310	FROM TABLE 9.3.5.10.3 (NFPA 13, 2010)	LISTED LOAD DIVIDED BY 1.155
		MAXIMUM LOAD:	1095 LBS 1745 LBS
<b>SEISMIC BRACE ATTACHMENT:</b>		<b>SEISMIC BRACE ASSEMBLY DETAIL</b>	
<b>STRUCTURE ATTACHMENT FITTING:</b>			
MAKE: TOLCO MODEL: FIG. 980		TOLCO FIG. 980	
LISTED LOAD RATING: 2,765		TOLCO FIG. 4L "IN-LINE" SWAY BRACE ATTACHMENT	
ADJUSTED LOAD RATING PER 9.3.5.10.3: 2,393		SIZE RANGE - 2 1/2" TO 8"	
<b>SWAY BRACE (PIPE ATTACHMENT) FITTING:</b>		BRACE ID: SB1	
MAKE: TOLCO MODEL: FIG. 1000		<input checked="" type="checkbox"/> LATERAL BRACE	
LISTED LOAD RATING: 2015		BRACE ID: SB2	
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745		<input checked="" type="checkbox"/> LONGITUDINAL BRACE	
MAKE: TOLCO MODEL: FIG. 4A (4" TO 8")			
LISTED LOAD RATING: 2015			
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745			
MAKE: TOLCO MODEL: FIG. 4L (2 1/2" TO 8")			
LISTED LOAD RATING: 2015			
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1745			
<b>SPRINKLER SYSTEM LOAD CALCULATION [Fpw = CpWp]</b>			
<b>LATERAL BRACE - 24'-0" MAX. O.C.</b>			
PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.
4	SCHD.10	24 FT.	11.78
		CP	TOTAL WEIGHT
		0.82	232 LBS
2	SCHD.40	162 FT.	5.13
		CP	TOTAL WEIGHT
		0.82	682 LBS
			(9.3.5.6.1 OF NFPA 13) Wp x 0.15:
			138 LBS
			TOTAL LOAD: 1052 LBS
<b>LONGITUDINAL BRACE - 48'-0" MAX. O.C.</b>			
PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.
4	SCHD.10	48 FT.	11.78
		CP	TOTAL WEIGHT
		0.82	464 LBS
			(9.3.5.6.1 OF NFPA 13) Wp x 0.15:
			70 LBS
			TOTAL LOAD: 534 LBS

DESIGNED	J.C.		
DRAWN	F.M.		
CHECKED	J.C.		
DATE	SEPTEMBER 2013		
REV	DATE	BY	DESCRIPTION
1			
2			
3			



**Collings & Associates**  
Fire Protection Engineering  
260 Main Court, Suite 241, Ventura, CA 93003  
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SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
DEWATERING BUILDING  
BUILDING SECTIONS AND RISER DETAIL

VERIFY SCALES	JOB NO.
BAR IS ONE INCH ON ORIGINAL DRAWING	8930A.11
0 1"	DRAWING NO.
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	51AF02
	SHEET NO.
	XXX OF XXX

**HANGER NOTES**

- 3/8" A.T.R. ROD SHALL BE USED ON PIPES 1 TO 4 INCHES. 1/2" ATR FOR 5, 6 & 8 INCHES PIPE. AND 5/8" ATR FOR 10 & 12 INCHES PIPE.
- THE MAX. UNSUPPORTED LENGTH FROM THE END OF A LINE TO HANGER SHALL BE 36" FOR 1", 48" FOR 1 1/4", 60" FOR 1 1/2" PIPE AND ABOVE.
- THE MAXIMUM HANGER SPACING SHALL BE 12 FT. FOR 1" TO 1 1/4" PIPE. 15 FT. FOR 1 1/2" PIPE AND ABOVE EXCEPT THREADED LIGHT WALL. FOR THREADED LIGHT WALL MAXIMUM SPACING IS 12 FT. FOR PIPE UP TO 3 IN. (UNLESS NOTED OTHERWISE).
- HANGERS ARE REQUIRED ON ARM-OVER EXCEEDING 2 FT. FROM CENTER TO CENTER.
- ALL HANGERS SHALL BE IN ACCORDANCE WITH NFPA-13, 2010 EDITION. TABLE 9.2.2.(A). ALL ARM-OVER MORE THAN 2'-0" SHALL HAVE HANGER. IF STATIC PRESSURE EXCEEDS 100 PSI, HANGER IS REQUIRED ON ARM-OVER MORE THAN 1'-0".

**SEISMIC BRACING NOTES**

- SWAY BRACES SHALL BE DESIGN AND INSTALLED IN COMPLIANCE WITH NFPA 13, 2010 EDITION. CALCULATION BASED ON ZONE OF INFLUENCE. (SEE DETAIL SHEET FOR SEISMIC BRACING CALCULATION)
- LATERAL BRACE SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.5.3.9)
- LATERAL BRACE SHALL NOT APPLY WHERE U-TYPE HOOKS OF THE WRAP-AROUND TYPE OR THOSE U-TYPE HOOKS ARRANGED TO KEEP THE PIPE TIGHT TO THE UNDERSIDE OF THE STRUCTURE ELEMENT SHALL BE PERMITTED TO BE USED TO SATISFY THE REQUIREMENTS FOR LATERAL SWAY BRACE BRACING, PROVIDED THE LEGS ARE BENT OUT AT LEAST 30 DEGREES FROM THE VERTICAL. (SEC. 9.3.5.3.10)
- RESTRAINT OF BRANCH LINES SHALL NOT APPLY TO PIPES INDIVIDUALLY SUPPORTED BY RODS LESS THAN 6 IN. LONG MEASURED BETWEEN THE TOP OF THE PIPE AND THE POINT OF ATTACHMENT TO THE BUILDING STRUCTURE. (SEC. 9.3.6.5)

**DESIGN CRITERIA:**

WET PIPE SPRINKLER SYSTEM. A SPRINKLER SYSTEM EMPLOYING AUTOMATIC SPRINKLERS ATTACHED TO A PIPING SYSTEM CONTAINING WATER AND CONNECTED TO A WATER SUPPLY SO THAT WATER DISCHARGES IMMEDIATELY FROM SPRINKLERS OPENED BY HEAT FROM A FIRE.

1. REMOTE AREA: ORDINARY GROUP II  
0.20 GPM OVER 1485 SQ.FT. (TOTAL AREA)  
PER FIG. 11.2.3.1.1 DENSITY/ AREA CURVES.  
NFPA 13 2010 EDITION.

USE RELIABLE (OR EQUAL) K-FACTOR OF 5.6  
200°F TEMP. & 1/2" NPT.  
MAXIMUM SPACING 130 SQ.FT. PER HEAD.

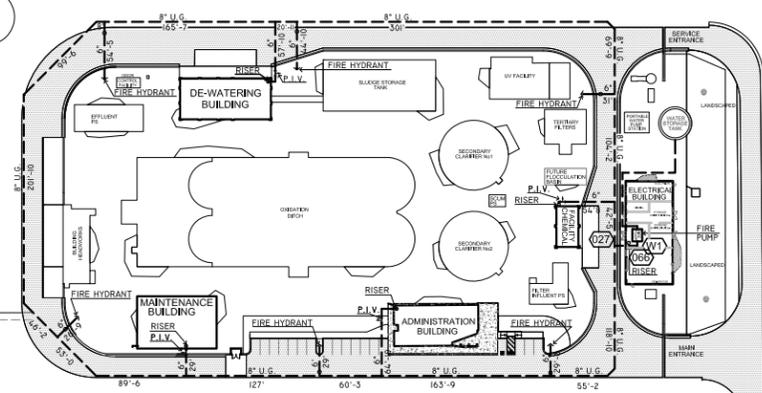
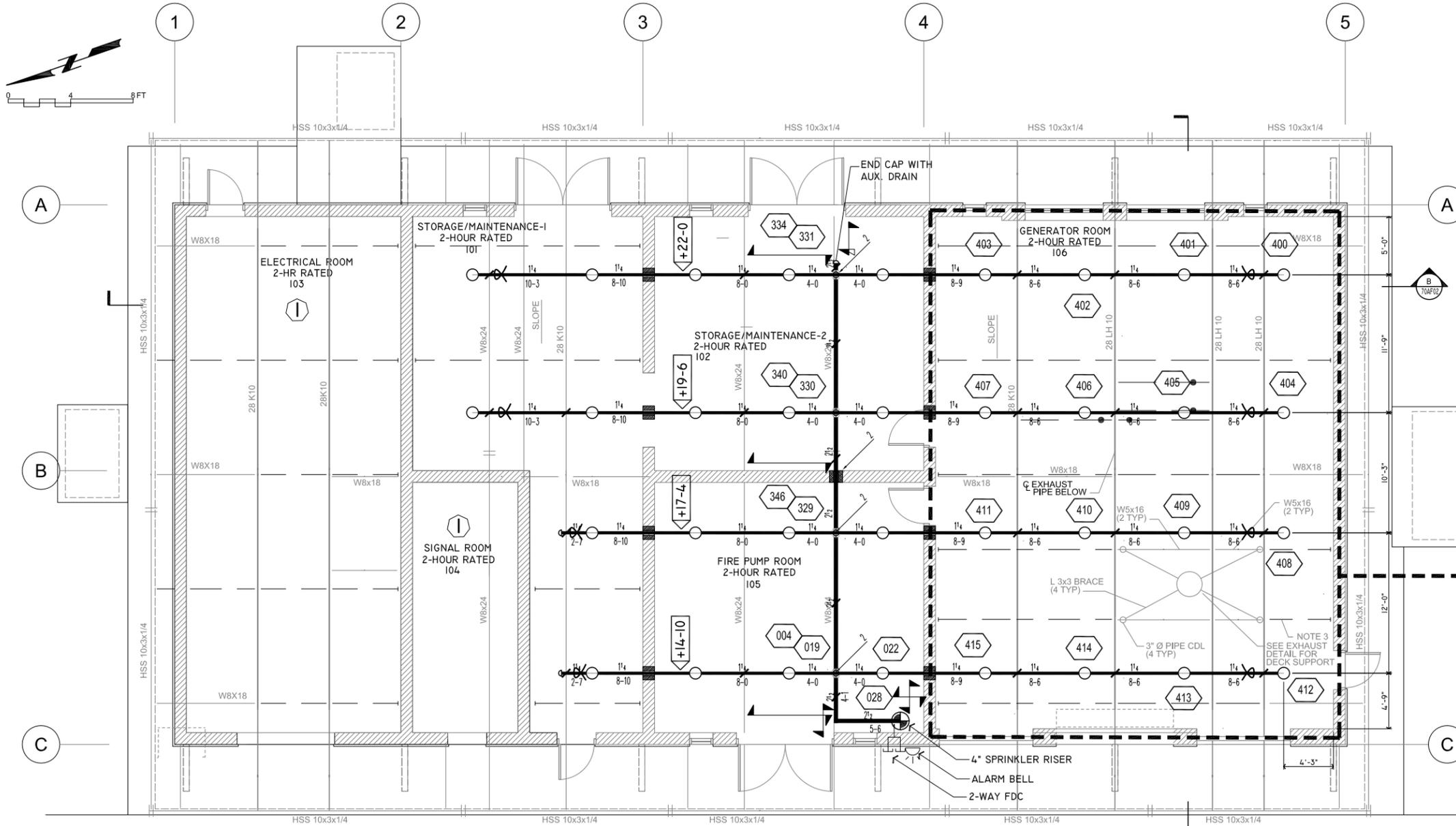
**SPRINKLER INFO.**

SYM.	MANUFACTURER	SIN	NPT	K	TEMP	DESCRIPTION	QTY.
○	RELIABLE MODEL F1R56 (OR EQUAL)	RAI425	1/2	5.6	200°F	Q.R. UPRIGHT SPRINKLER WHITE POLYESTER COATED	34
<b>TOTAL:</b>							<b>34</b>

**LEGEND & SYMBOLS**

- UPRIGHT SPRINKLER HEAD CORROSION RESISTANT 200°
- NEW SPRINKLER PIPE
- PIPE UP OR DOWN
- ⊕ FIRE SPRINKLER RISER
- ⊕ TYPICAL HANGER LOCATION
- ⊕ TYPICAL END OF LINE RESTRAINER LOCATION
- ⊕ LATERAL SWAY BRACE
- ⊕ LONGITUDINAL SWAY BRACE
- ⊕ 4-WAY EARTHQUAKE BRACE
- UNDERGROUND PIPE
- ⊕ HYDRAULIC REFERENCE NODE
- ⊕ POST INDICATOR VALVE
- ⊕ SPRINKLER BELL
- ⊕ FIRE HYDRANT
- ⊕ KEY VALVE
- ⊕ FIRE DEPARTMENT CONNECTION (FDC)

- FOR BUILDING INFORMATION AND GENERAL NOTES SEE SHEET 05AF00  
- FOR DETAILS SEE SHEET 06AF03



**KEY PLAN**  
**FIRE SPRINKLER PLAN** NOT TO SCALE  
UNDERGROUND SUPPLY AND PUMP SHOWN FOR REFERENCE ONLY.  
SEE CIVIL WATER UTILITY PLANS FOR INSTALLATION DRAWINGS.

REMOTE AREA: ORDINARY GROUP 2  
0.20 GPM/FT<sup>2</sup> OVER 1485 FT<sup>2</sup>. (TOTAL ROOM) PER NFPA 13, 2010 EDITION.

**HYDRAULIC INFORMATION**

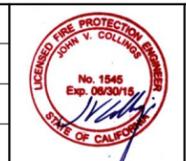
DATE:	09-20-2013
OCCUPANCY:	ORDINARY 2
DENSITY:	0.20 / 1485 FT <sup>2</sup>
TOTAL HOSE STREAM:	250 GPM
NO. SPRINKLER FLOWING:	16
K-FACTOR:	5.6
WATER REQUIRED: (@ BASE OF RISER)	452.3 GPM
PRESSURE REQUIRED: (@ BASE OF RISER)	67.9 PSI
SAFETY MARGIN - PSI:	+9.1 (10.6%)

- PIPING NOTES:**
- PIPE IS SHOWN AS NEAR AS POSSIBLE. HOWEVER, EXACT LOCATION WITH REGARDS TO THE BUILDING STRUCTURE SHALL BE VERIFIED AND DETERMINED IN THE FIELD PRIOR THE FABRICATION AND INSTALLATION.
  - CONTRACTOR TO BE RESPONSIBLE FOR INSTALLING COMPLETE INSTALLATION AND SHALL CONFORM AS-BUILD CONDITIONS PRIOR TO ANY WORK.

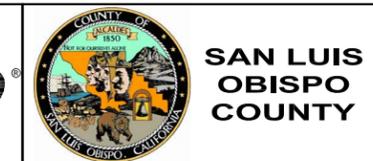
**NOTE:**  
① SPRINKLERS ARE NOT REQUIRED SEE 01AF03 FOR REFERENCES

**PIPING PLAN**  
**FIRE SPRINKLER PLAN** SCALE: 3/16" = 1'-0"

REV	DATE	BY	DESCRIPTION
1			
2			
3			

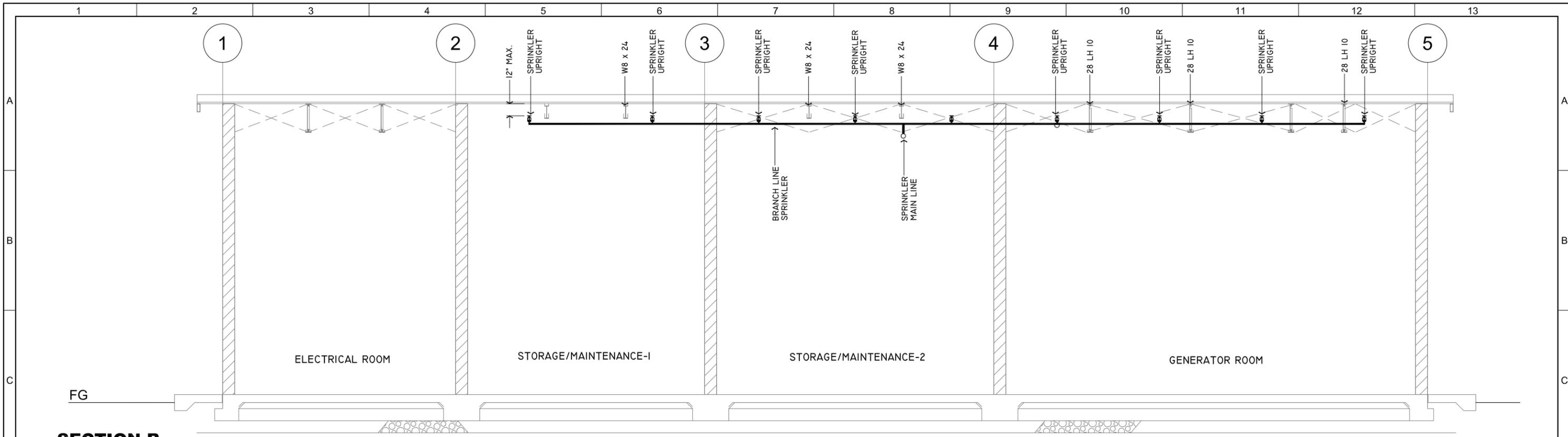


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Phone: (805) 658-0003 Fax: (805) 658-0044  
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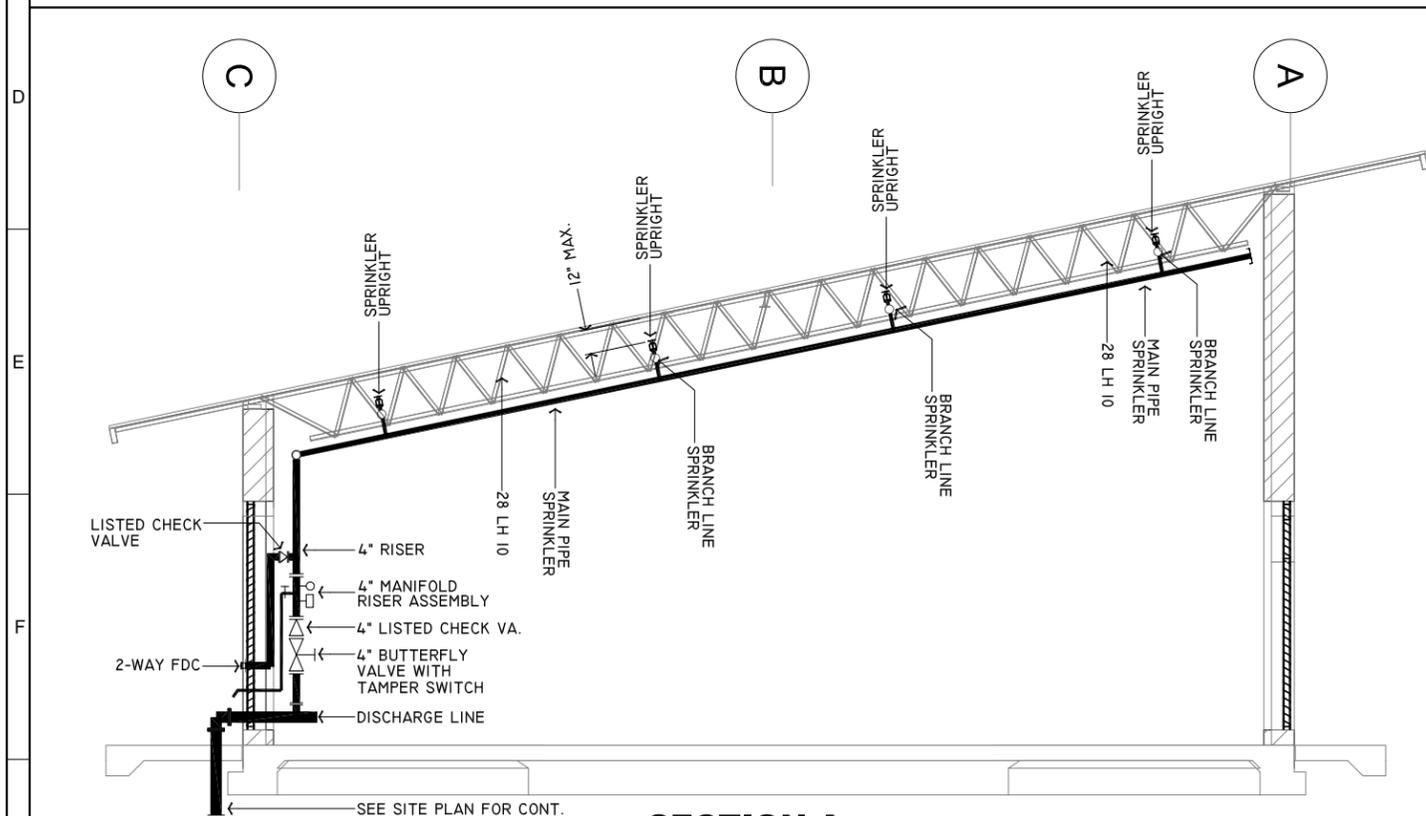
SAN LUIS OBISPO COUNTY  
LOS OSOS WATER RECYCLING FACILITY PROJECT  
ELECTRICAL BUILDING  
FIRE SPRINKLER SYSTEM PLAN

VERIFY SCALES	JOB NO. 8930A.11
BAR IS ONE INCH ON ORIGINAL DRAWING	DRAWING NO. 70AF01
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY	SHEET NO. XXX OF XXX



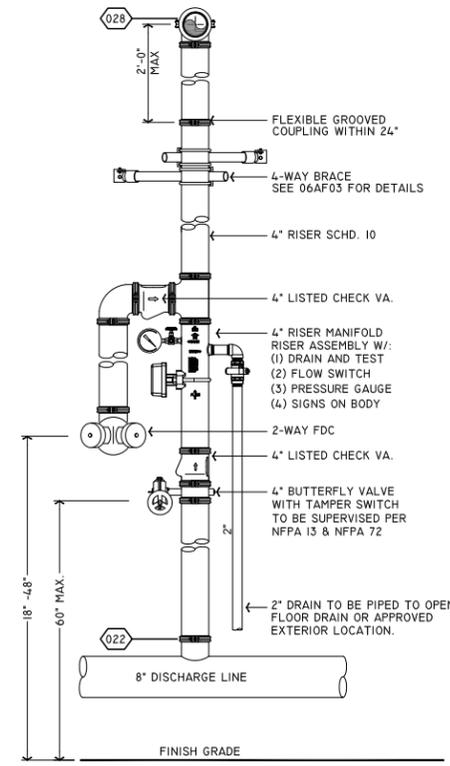
**SECTION B**  
FIRE SPRINKLER PLAN

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



**SECTION A**  
FIRE SPRINKLER PLAN

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



**RISER DETAIL**

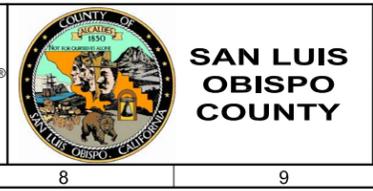
NO TO SCALE

BRACE INFORMATION:		FASTENER INFORMATION:																																																																																										
LENGTH OF BRACE:	LESS THAN 7'-0"	LATERAL LONGITUDINAL (ACROSS BEAM) (ALONG BEAM)																																																																																										
DIAMETER OF BRACE:	1"	ORIENTATION OF CONNECTING SURFACE: 60° TO 90° FROM VERTICAL																																																																																										
TYPE OF BRACE:	SCH. 40	FASTENER:	TOLCO FIG. 800																																																																																									
ANGLE OF BRACE:	45°-59°	TYPE:	STEEL ATTACHMENT																																																																																									
LEAST RADIUS OF GYRATION:	.42	MANUF. LISTED LOAD:	1,265 2,015																																																																																									
L/R VALUE:	.200	FROM TABLE 9.3.5.10.3 (NFPA 13, 2010)	LISTED LOAD DIVIDED BY 1.155																																																																																									
MAXIMUM HORIZONTAL LOAD:	1310	MAXIMUM LOAD:	1095 LBS 1745 LBS																																																																																									
SEISMIC BRACE ATTACHMENT:		SEISMIC BRACE ASSEMBLY DETAIL																																																																																										
STRUCTURE ATTACHMENT FITTING:																																																																																												
MAKE: TOLCO MODEL: FIG. 980		TOLCO FIG. 980																																																																																										
LISTED LOAD RATING: 2,765		TOLCO FIG. 4L "IN-LINE" SWAY BRACE ATTACHMENT																																																																																										
ADJUSTED LOAD RATING PER 9.3.5.10.3: 2,393		SIZE RANGE - 2 1/2" TO 8"																																																																																										
SWAY BRACE (PIPE ATTACHMENT) FITTING:		BRACE ID: SB1																																																																																										
MAKE: TOLCO MODEL: FIG. 1000		<input checked="" type="checkbox"/> LATERAL BRACE																																																																																										
LISTED LOAD RATING: 2,015		BRACE ID: SB2																																																																																										
ADJUSTED LOAD RATING PER 9.3.5.10.3: 1,745		<input checked="" type="checkbox"/> LONGITUDINAL BRACE																																																																																										
MAKE: TOLCO MODEL: FIG. 4A (4" TO 8")		<table border="1"> <thead> <tr> <th colspan="5">SPRINKLER SYSTEM LOAD CALCULATION [Fpw = CpWp]</th> </tr> <tr> <th colspan="5">LATERAL BRACE - 24'-0" MAX. O.C.</th> <th colspan="5">LONGITUDINAL BRACE - 48'-0" MAX. O.C.</th> </tr> <tr> <th>PIPE SIZE</th> <th>TYPE</th> <th>LENGTH OF PIPE</th> <th>WEIGHT PER FT.</th> <th>CP</th> <th>PIPE SIZE</th> <th>TYPE</th> <th>LENGTH OF PIPE</th> <th>WEIGHT PER FT.</th> <th>CP</th> <th>TOTAL WEIGHT</th> </tr> </thead> <tbody> <tr> <td>2 1/2"</td> <td>SCHD.10</td> <td>24 FT.</td> <td>5.89</td> <td>0.82</td> <td>2 1/2"</td> <td>SCHD.10</td> <td>48 FT.</td> <td>5.89</td> <td>0.82</td> <td>232 LBS</td> </tr> <tr> <td>2"</td> <td>SCHD.40</td> <td>2 FT.</td> <td>5.13</td> <td>0.82</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1 1/4"</td> <td>SCHD.40</td> <td>142 FT.</td> <td>2.93</td> <td>0.82</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="5">(9.3.5.6.1 OF NFPA 13) WP x 0.15:</td> <td colspan="5">(9.3.5.6.1 OF NFPA 13) WP x 0.15:</td> </tr> <tr> <td colspan="5">70 LBS</td> <td colspan="5">35 LBS</td> </tr> <tr> <td colspan="5">TOTAL LOAD: 536 LBS</td> <td colspan="5">TOTAL LOAD: 267 LBS</td> </tr> </tbody> </table>		SPRINKLER SYSTEM LOAD CALCULATION [Fpw = CpWp]					LATERAL BRACE - 24'-0" MAX. O.C.					LONGITUDINAL BRACE - 48'-0" MAX. O.C.					PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	PIPE SIZE	TYPE	LENGTH OF PIPE	WEIGHT PER FT.	CP	TOTAL WEIGHT	2 1/2"	SCHD.10	24 FT.	5.89	0.82	2 1/2"	SCHD.10	48 FT.	5.89	0.82	232 LBS	2"	SCHD.40	2 FT.	5.13	0.82							1 1/4"	SCHD.40	142 FT.	2.93	0.82							(9.3.5.6.1 OF NFPA 13) WP x 0.15:					(9.3.5.6.1 OF NFPA 13) WP x 0.15:					70 LBS					35 LBS					TOTAL LOAD: 536 LBS					TOTAL LOAD: 267 LBS				
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REV	DATE	BY	DESCRIPTION
1			
2			
3			

DESIGNED J.C.  
DRAWN F.M.  
CHECKED J.C.  
DATE SEPTEMBER 2013

**COLLINGS & ASSOCIATES**  
Fire Protection Engineering  
260 Main Street, Suite 241, Ventura, CA 93003  
Phone: (805) 658-0003 Fax: (805) 658-0044  
www.collingsandassociates.com



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ELECTRICAL BUILDING  
BUILDING SECTIONS AND RISER DETAIL

VERIFY SCALES  
JOB NO. 8930A.11  
DRAWING NO. 70AF02  
SHEET NO. XXX OF XXX