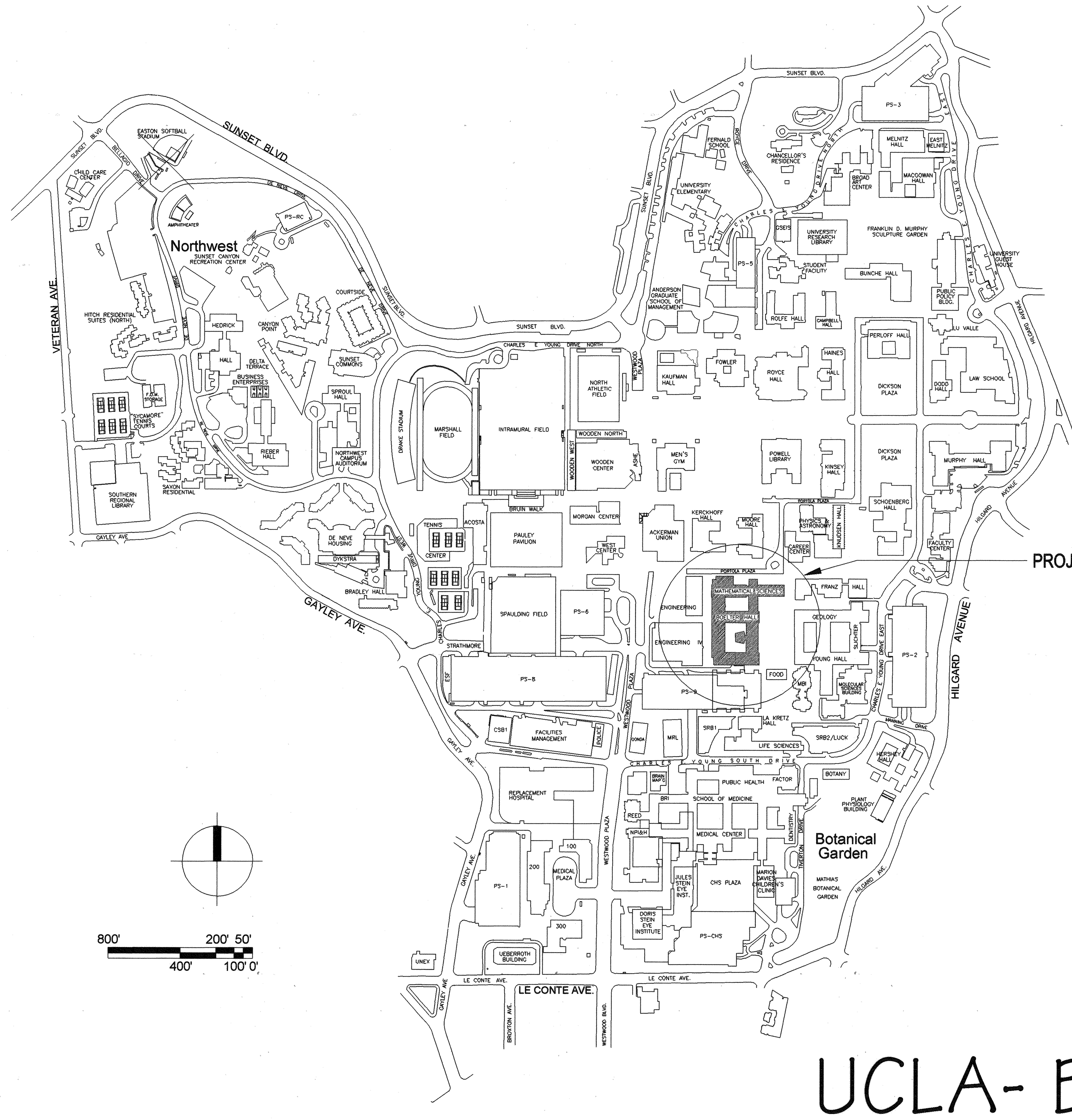

CAMPUS MAP

DRAWING INDEX

SHEET 1 LEGEND, MAP & GENERAL NOTES
SHEET 2 1000 LEVEL WET STANDPIPE & UNDERGROUND
SHEET 3 2000 LEVEL WET STANDPIPE- BOELTER HALL
SHEET 4 3000 LEVEL WET STANDPIPE- MATH SCIENCES
SHEET 5 4000 LEVEL WSP- MATH SCIENCES & BOELTER HALL
SHEET 6 5000 LEVEL WSP - MATH SCIENCES
SHEET 7 9000 LEVEL WET STANDPIPE & REMOTE SPRINKLERS
SHEET 8 ISOMETRIC RISER DIAGRAM
SHEET 9 HANGERS & BRACING DETAILS & CALCULATIONS
SHEET 10 BOELTER HALL 1000 LEVEL FIRE SPRINKLER PLAN
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SHEET 14 BOELTER HALL 5000 LEVEL FIRE SPRINKLER PLAN
SHEET 15 BOELTER HALL 6000 LEVEL FIRE SPRINKLER PLAN
SHEET 16 BOELTER HALL 7000 LEVEL FIRE SPRINKLER PLAN
SHEET 17 BOELTER HALL 8000 LEVEL FIRE SPRINKLER PLAN
SHEET 18 BOELTER HALL 9000 LEVEL FIRE SPRINKLER PLAN
SHEET 19 MATH SCIENCE 1000 LEVEL FIRE SPRINKLER PLAN
SHEET 20 MATH SCIENCE 2000 LEVEL FIRE SPRINKLER PLAN
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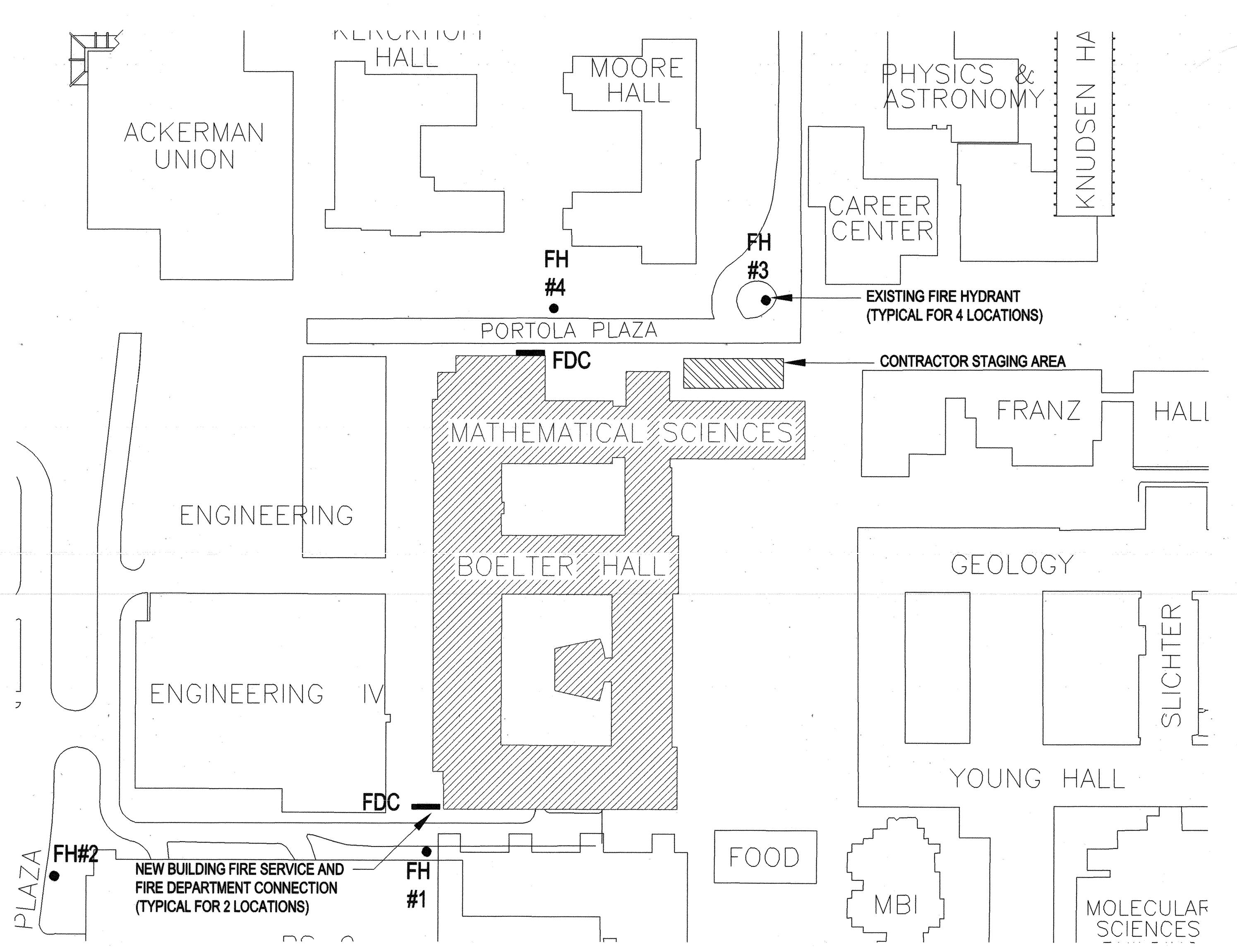
SHEET 22 MATH SCIENCE 5000 LEVEL FIRE SPRINKLER PLAN
SHEET 23 MATH SCIENCE 6000 LEVEL FIRE SPRINKLER PLAN
SHEET 24 MATH SCIENCE 7000 LEVEL FIRE SPRINKLER PLAN
SHEET 25 MATH SCIENCE 8000 LEVEL FIRE SPRINKLER PLAN
SHEET 26 MATH SCIENCE 9000 LEVEL FIRE SPRINKLER PLAN

GENERAL NOTES

1. THE INSTALLATION OF AN AUTOMATIC WET PIPE SPRINKLER SYSTEM SHALL PROVIDE FULL COVERAGE OF ALL AREAS OF THE BUILDING IN ACCORDANCE WITH THE UNIFORM FIRE CODE 1999 EDITION, NFPA 13 1999 EDITION- STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS.
2. SUPPORT AND SEISMIC BRACING SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 13 1999 EDITION, SECTION 6-4.5.
3. ALL EXISTING DRY STANDPIPE HOSE GATE VALVES ON ALL RISERS AND ROOF MANIFOLDS SHALL BE REMOVED AND REPLACED WITH NEW WET TYPE ANGLE HOSE VALVES AS SPECIFIED.
4. PROCEDURE TO CONVERT THE DRY STANDPIPE SYSTEMS SHALL BE AS FOLLOWS:
   a. REPLACE EXISTING HOSE GATE VALVES PER ITEM 3 ABOVE .
   b. VERIFY GASKETED PLUGS ARE INSTALLED AT FDC(S)
   c. PERFORM AIR PRESSURE TEST ON EXISTING DRY STANDPIPE SYSTEMS AT 25 PSI MINIMUM TO DETERMINE IF THE SYSTEM LEAKS.
   d. INSTALL NEW UNDERGROUND SUPPLIES, INCLUDING NEW FIRE DEPARTMENT CONNECTIONS, AND BULK MAIN PIPING THROUGHOUT BUILDING.
   e. MAKE NEW VALVED CONNECTIONS TO EXISTING DRY STANDPIPES AND DISCONNECT FROM EXISTING FIRE DEPARTMENT CONNECTIONS. CONVERSION OF EACH STANDPIPE SHALL NOT RENDER THE STANDPIPE INOPERATIVE (I.E. WITHOUT AN FDC) FOR AN EXTENDED PERIOD.
   f. PERFORM HYDROSTATIC PRESSURE TEST AT 200 PSI FOR 2 HOURS OF ENTIRE WET STANDPIPE SYSTEM.
   g. PERFORM FLUSHING OF NEWLY CONVERTED WET STANDPIPES BY FLUSHING AT TOPMOST VALVES.
5. ALL SHUT DOWNS OF CAMPUS UTILITIES SHALL BE DONE BY UNIVERSITY FACILITIES PERSONNEL.
6. SUPPORT AND SEISMIC BRACING OF EXISTING STANDPIPE AND SPRINKLER PIPING SHALL BE UPGRADED TO APPLICABLE PRESENT CODE REQUIREMENTS AS NECESSARY.
7. ALL ACCESS OPENINGS IN WALLS, PARTITIONS AND CEILINGS CREATED BY THE REMOVAL OF EXISTING PIPING OR INSTALLATION OF NEW PIPING SHALL BE PATCHED AND PAINTED BY THE CONTRACTOR. PATCH SHALL MATCH THE ADJACENT AREA AS TO METHOD, FIRE RATING, MATERIAL, COLOR AND TEXTURE.
8. ALL NEW PIPING SHALL BE INSTALLED CONCEALED WITHIN EXISTING OR NEW WALLS, CEILINGS, FURRED SPACES, OR SOFFITS UNLESS APPROVED BY UNIVERSITY'S REPRESENTATIVE. ALL EXPOSED EXTERIOR AND INTERIOR PIPING, FITTINGS, VALVES AND DEVICES SHALL BE PAINTED AS DESCRIBED IN THE SPECIFICATIONS.
9. ALL EXISTING FIRE ALARM SYSTEMS SHALL BE MAINTAINED OPERATIONAL AT ALL TIMES DURING THE ALTERATION. CONNECTION IN EXISTING SYSTEMS SHALL BE COORDINATED WITH THE UNIVERSITY.
10. APPROVED FIRE STOPPING MATERIALS, ASSEMBLIES AND INSTALLATION SHALL BE USED AT ALL PENETRATIONS THROUGH FIRE RATED FLOORS, WALLS, PARTITIONS AND BARRIERS.
11. ALL PIPES CROSSING BUILDING SEISMIC JOINTS SHALL BE WITH APPROVED TYPE DESIGN , JOINTS AND ANCHORS. CONTRACTOR SHALL VERIFY LOCATION AND TYPE OF EXISTING BUILDING JOINTS.
12. ALL VALVES, CONTROLS, GAUGES AND DEVICES SHALL BE READILY ACCESSIBLE, EXPOSED OR CONCEALED BEHIND ACCESS PANELS OR DOORS AS APPROVED BY THE UNIVERSITY REPRESENTATIVE.
13. ALL TEMPORARY ACCESS OPENINGS MADE BY THE CONTRACTOR FOR OBSERVATION OR INSTALLATION SHALL BE PROMPTLY COVERED EACH DAY WITH UNIVERSITY APPROVED MATERIALS.
14. ALL SYSTEM CONTROL OR SHUT-OFF VALVES SHALL BE EQUIPPED WITH A TAMPER SWITCH WHICH SHALL BE CONNECTED INTO THE BUILDING'S EXISTING FIRE ALARM SYSTEM. REFER TO SPECIFICATIONS FOR REQUIRED WORK AND PROGRAMMING SYSTEM.

UCLA- BOELTER HALL FIRE SPRINKLER SYSTEM

FIRE SPRINKLER & WET STANDPIPE SHOP DRAWINGS



PROJECT SITE PLAN
NOT TO SCALE

BUILDING INFORMATION

BOELTER HALL (ENGINEERING II & III)

Building Address:	580 Portola Plaza
Engineering II Construction Date:	1959
Engineering III Construction Date:	1961
Combined Gross Area:	364,100 sf.
Combinded Covered Unenclosed:	33,700 sf.
Combined Assignable:	234,280 sf.
Number of Floors:	9
Construction Type:	Type 1 (F.R.)
Occupancy:	B
Existing Fire Protection Systems:	Class I - Dry standpipe system with 2 1/2" hose valves in each stairwell. Each riser has its own fire department connection; risers are not interconnected. Class II - Wet standpipe system with 1 1/2" hose valves are located throughout the building.

MATHEMATICAL SCIENCES

Building Address:	520 Portola Plaza
Original Building Construction Date:	1957 (Number of Floors 5)
Additional Construction Date:	1968 (Number of Floors 9)
Combined Gross Area:	224,100 sf.
Combined Covered Unenclosed:	3,800 sf.
Combined Assignable:	127,040 sf.
Construction Type:	Type 1 (F.R.)
Occupancy:	B
Existing Fire Protection Systems:	Class I - Dry standpipe system with 2 1/2" hose valves in each stairwell. Each riser has its own fire department connection; risers are not interconnected. Automatic wet pipe sprinkler systems on floors 1, 2 and 3 only. Class II - Wet standpipe system with 1 1/2" hose are located throughout the building.

LEGEND

SYMBOL	DESCRIPTION
— — — (E) — — —	EXISTING PIPING
	NEW PIPING
DSP	DRY STANDPIPE
FS	FIRE SPRINKLER PIPING
D	DRAIN
OS+Y	OUTSIDE SCREW/YOKE VALVE
BFV	BUTTERFLY VALVE
RCV	RISER CONTROL VALVE
SOV	SHUT-OFF VALVE
HGV	HOSE GATE VALVE
OR POC	POINT OF CONNECTION
OR	EXISTING FIRE SPRINKLER RISER
BH 1 5" — BUILDING NAME; STAIR & RISER NUMBER; RISER SIZE	SYMBOL FOR EXISTING RISER
	METRAFLEX "FIRELOOP" SEISMIC ASSEMBLY
	BUTTERFLY VALVE W/ TAMPER SWITCH
	4-WAY SWAY BRACE
	2-WAY SWAY BRACE
	PIPE HANGER
	GROOVED PIPE COUPLING
####	HYDRAULIC CALCULATION REFERENCE NODE
#	REFERENCE TO NOTE
	RECESSED PENDENT SPRINKLER HEAD
	UPRIGHT SPRINKLER HEAD
[0'-0"]	PIPE ELEVATION
(8'-0")	CEILING ELEVATION

FLOW TEST INFORMATION

TWO FLOW TESTS FOR THIS PROJECT WERE CONDUCTED ON SEPTEMBER 8, 2004 BETWEEN 6 AND 7 AM. THE FIRST FLOW TEST UTILIZED THE FIRE HYDRANT ON THE NORTH SIDE OF PARKING STRUCTURE 9 AND THE SOUTH WEST CORNER OF BOELTER HALL AS THE FLOW HYDRANT (IDENTIFIED AS #1 ON THE MAP ON THIS SHEET). THE STATIC AND RESIDUAL PRESSURES WERE RECORDED FROM A GAUGE PLACED ON THE HYDRANT (#2) LOCATED ON WESTWOOD PLAZA AT THE NORTH WEST CORNER OF PARKING STRUCTURE #9. THE RESULTS OF THAT FLOW TEST ARE AS FOLLOWS:

1. STATIC PRESSURE: 158 PSI
2. RESIDUAL PRESSURE: 140 PSI
3. HYDRANT OUTLET DIAMETER: 2 1/2" (SMOOTH BORE NOZZLE)
4. PITOT PRESSURE: 73 PSI
5. FLOW: 1,594 GPM

THE SECOND FLOW TEST UTILIZED THE FIRE HYDRANT (#3) IN THE "TURNAROUND" ON PORTOLA PLAZA. THE STATIC AND RESIDUAL PRESSURES WERE RECORDED FROM A GAUGE PLACED ON THE HYDRANT (#4) LOCATED ACROSS FROM MATH SCIENCE BUILDING. THE RESULTS OF THAT FLOW TEST ARE AS FOLLOWS:

1. STATIC PRESSURE: 145 PSI
2. RESIDUAL PRESSURE: 120 PSI
3. HYDRANT OUTLET DIAMETER: 2 1/2" (SMOOTH BORE NOZZLE)
4. PITOT PRESSURE: 70 PSI
5. FLOW: 1,561 GPM

MATH SCIENCES - BUILDING NO. 38A
520 PORTOLA PLAZA

SECONDARY WATER SUPPLY LOCATED AT SOUTH-WEST CORNER OF BOELTER HALL
580 PORTOLA PLAZA

COMBINED FIRE SPRINKLER STANDPIPE FIRE DEPARTMENT CONNECTION PRESSURE REQUIRED: 145 PSI

BOELTER HALL - BUILDING NO. 38B
580 PORTOLA PLAZA

SECONDARY WATER SUPPLY LOCATED AT NORTH SIDE OF MATH SCIENCES
520 PORTOLA PLAZA

COMBINED FIRE SPRINKLER STANDPIPE FIRE DEPARTMENT CONNECTION PRESSURE REQUIRED: 155 PSI

CAMPUS FACILITIES EMERGENCY TROUBLE CALL:
310-825-9236 (24 HOUR HOTLINE)
OR DIAL 59236 FROM A CAMPUS PHONE

POLICE OR MEDICAL EMERGENCY CALL 911

BUILDING IDENTIFICATION SIGNS
24"H x 30"W x 1/4" THICK PLASTIC RED FACED WITH WHITE LETTERS MOUNTED ON 1/8" THICK ALUMINUM PLATE ATTACHED TO BUILDING WALL ABOVE OR ADJACENT TO EACH FIRE DEPARTMENT CONNECTION. SIGN AND INSTALLATION SHALL MATCH CAMPUS STANDARD AND BE APPROVED BY THE UNIVERSITY REPRESENTATIVE.

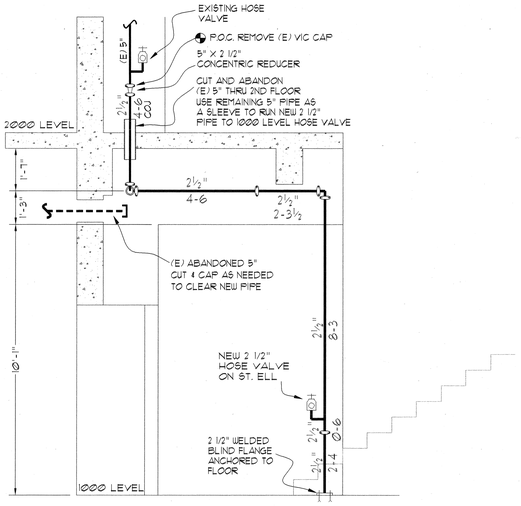
AS BUILT
UCLA PROJECT NO. 946237.01

AUTOMATIC FIRE PROTECTION PLAN

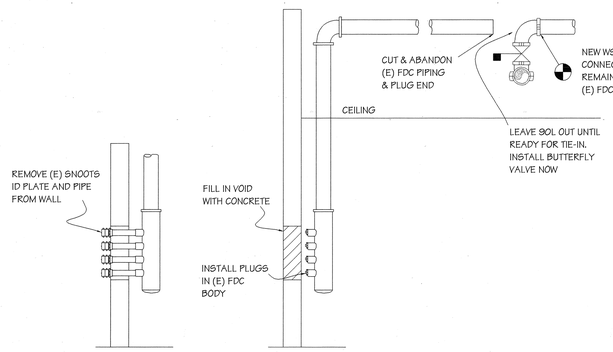
UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM
PROJECT INFO, NOTES & LEGEND

OWNER UCLA	BLDG. BHMS	DATE 10/2/04
	STORY	DRAWN BY RDB
CONTRACTOR DIRECT	SCALE NONE	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION, 130 E. SANTA CLARA ST., ARCADIA, CA 91006, LICENSE C-16-275562 PHONE (626) 445-3414	SHEET NO. 1 OF 26

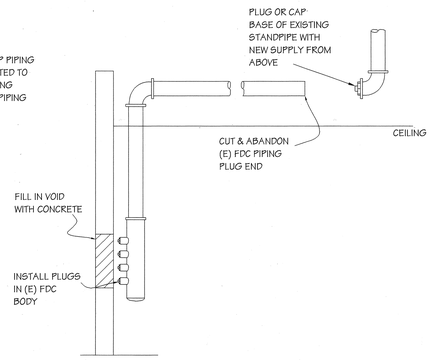
0083 G-2



SECTION 3



TYPICAL DETAIL OF EXIST. FDC



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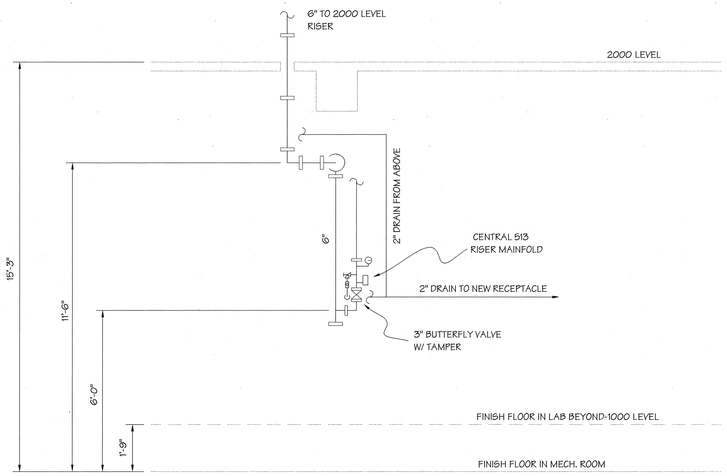
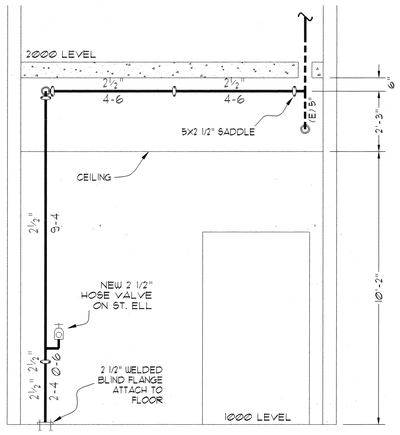


DETAIL OF MECHANICAL ROOM RISER



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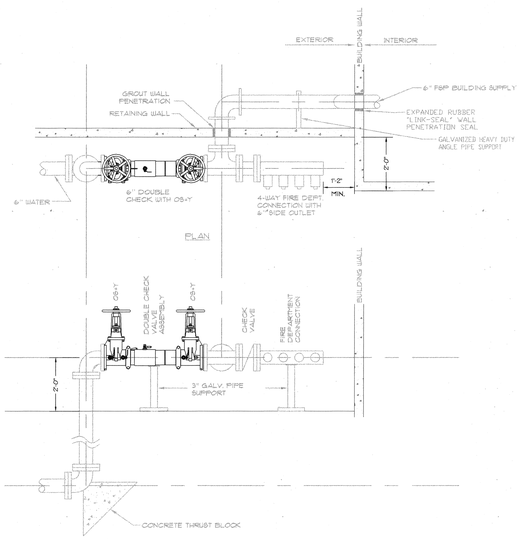
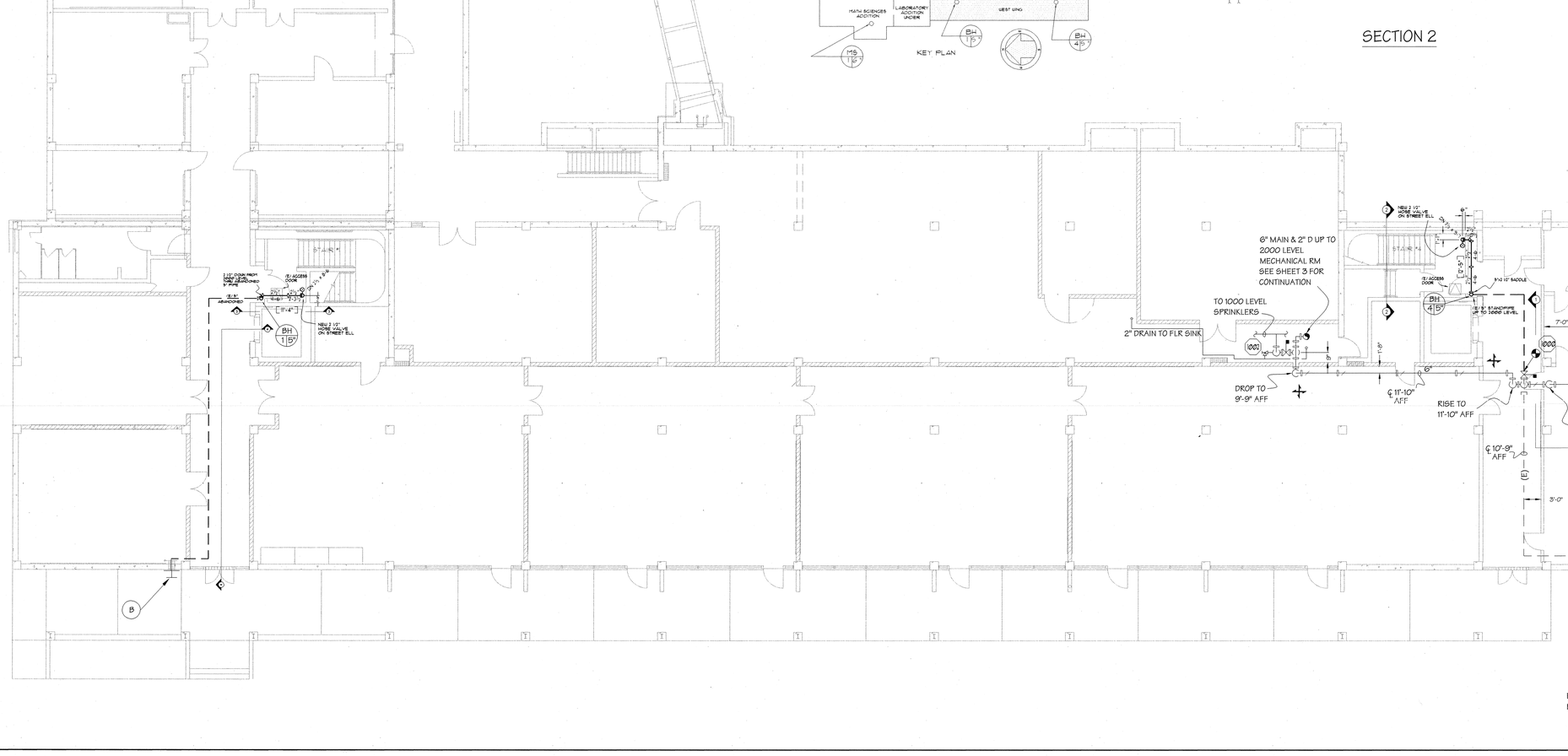


BOELTER HALL PIPING DETAIL A



(A) REMOVE EXISTING FIRE DEPARTMENT CONNECTION FOR BH #4 PER DETAIL 1.

(B) REMOVE EXISTING FIRE DEPARTMENT CONNECTION FOR BH #1 PER DETAIL 2.

(C) NEW 6" AMES 200(A) DOUBLE CHECK BACKFLOW ASSEMBLY AND 4-WAY FIRE DEPARTMENT CONNECTION. SEE DETAIL A.

(D) BUILDING IDENTIFICATION SIGN AND ALARM BELL MOUNTED ON WALL AT 8'-0" ABOVE GRADE. SEE SHEET 1 FOR SIGN DETAILS.

(E) POINT OF CONNECTION TO EXISTING 8" WATER MAIN WITH D.I. TEE.

AS BUILT

UCLA PROJECT NO. 946237.01

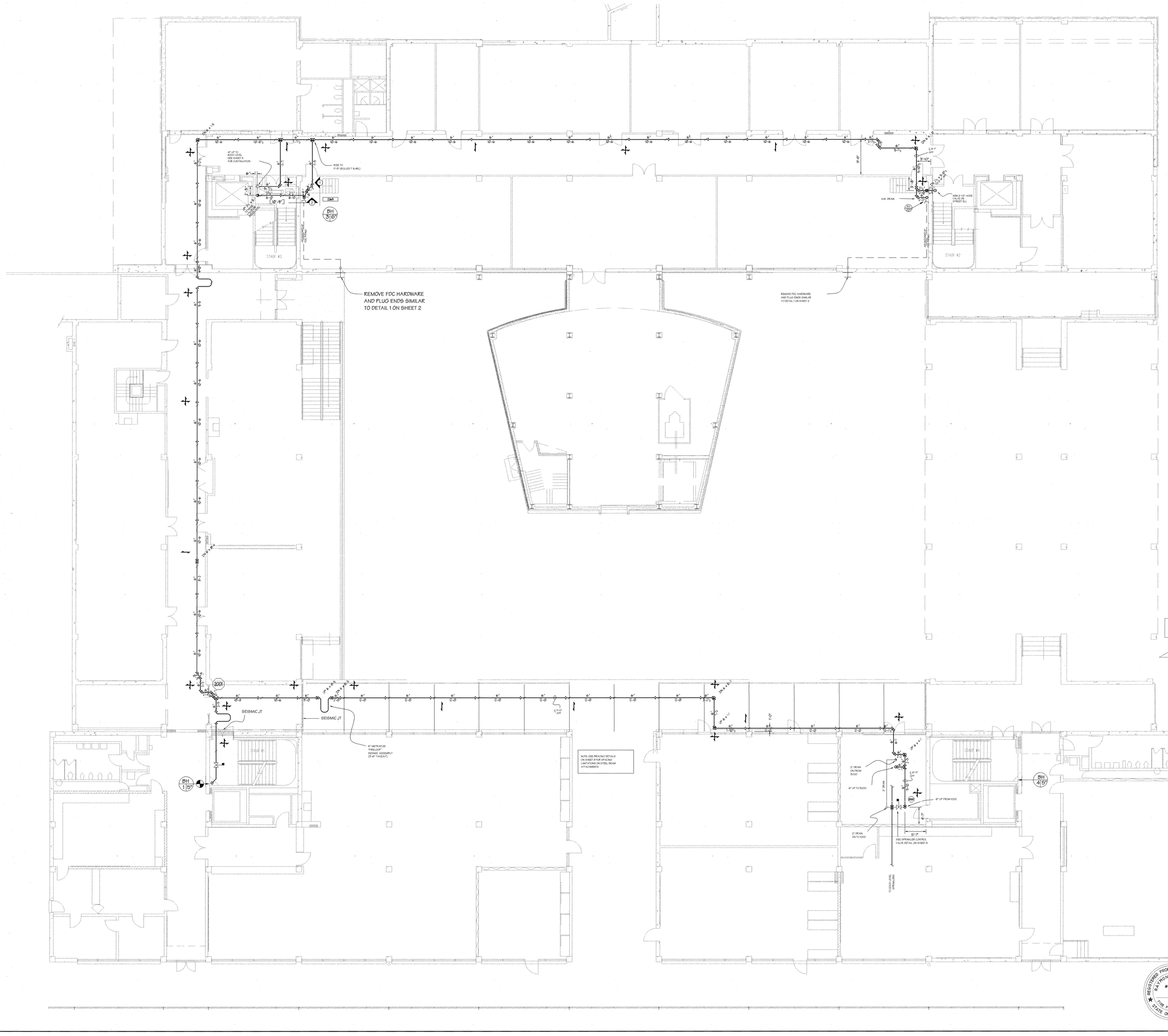
AUTOMATIC FIRE PROTECTION PLAN

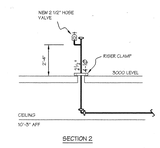
UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM

1000 LEVEL WET STANDPIPE & UNDERGROUND

OWNER	UCLA	BLDG. BH	DATE 10/2/04
CONTRACTOR	DIRECT	STORY 1000	DRAWN BY ROB
		SCALE AS NOTED	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION 130 SANTA CLARA ST. ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414		SHEET NO. 2 OF 26

0083 G-2





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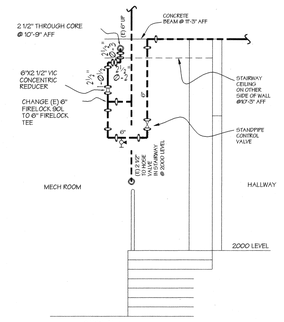
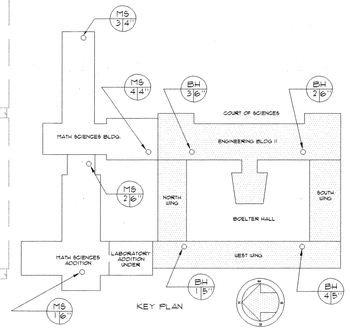


SECTION 1



KEY PLAN

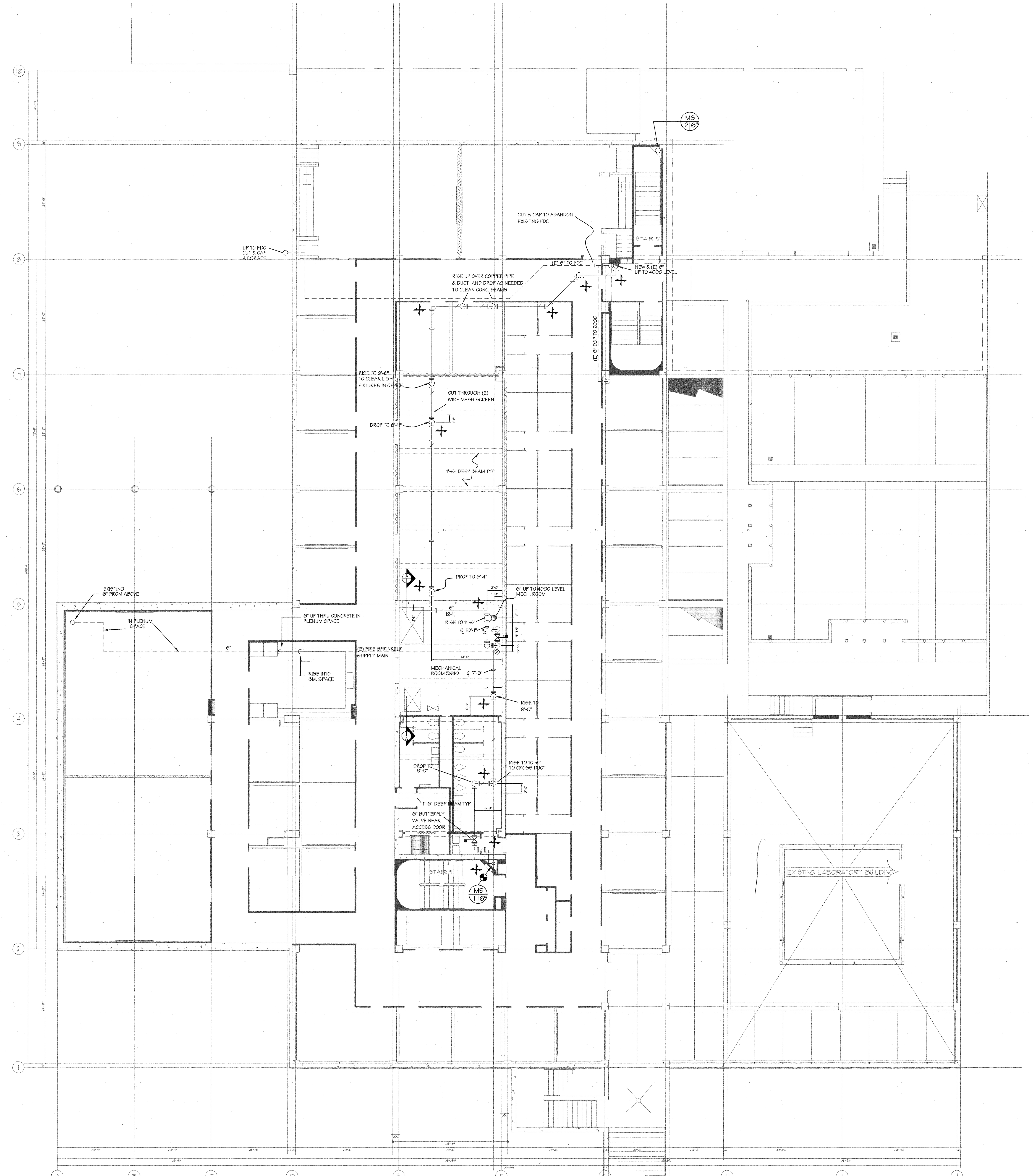
AS BUILT

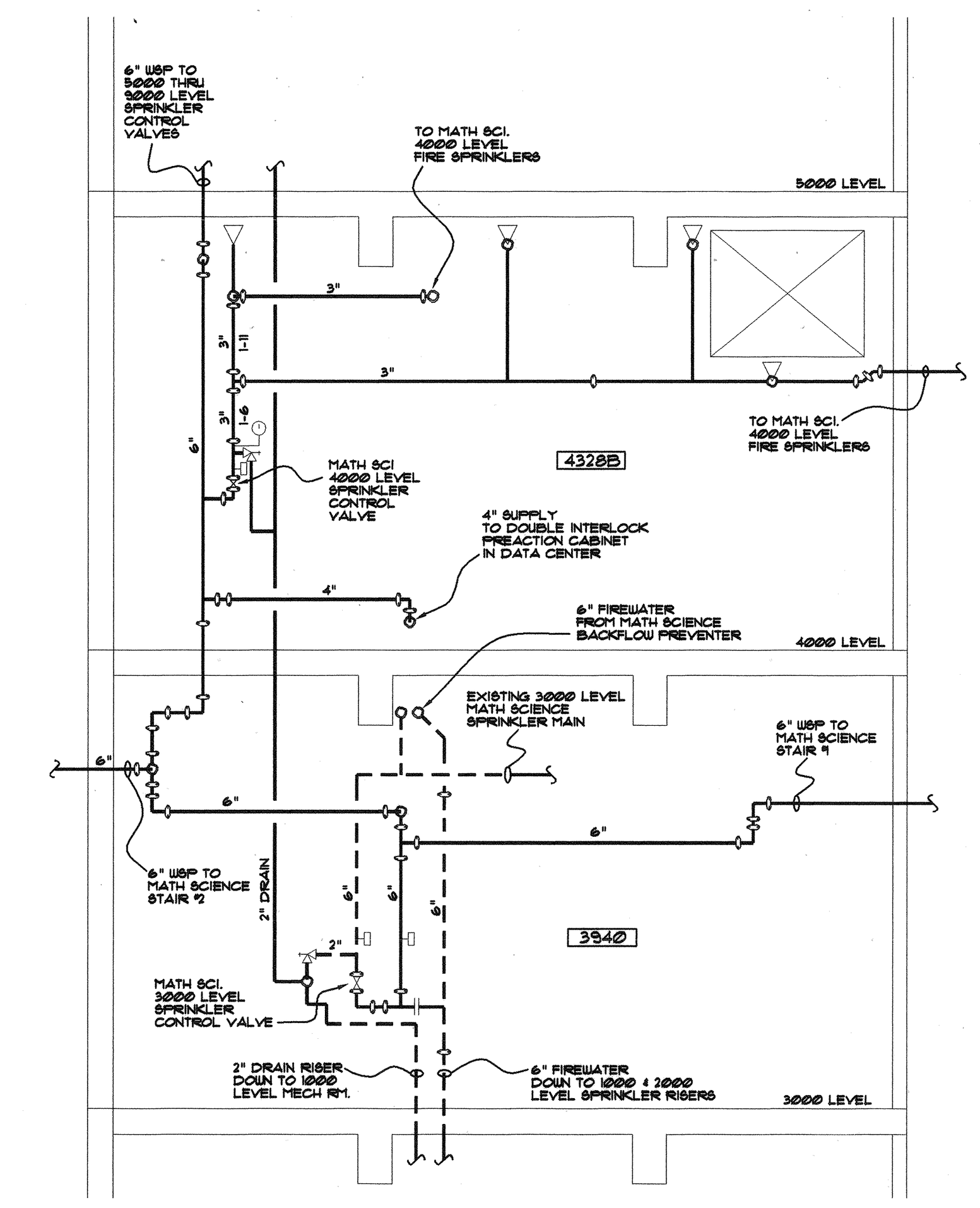
UCLA PROJECT NO. 946237.01

REGISTERED PROFESSIONAL ENGINEER RAYMOND R. LINK #670 FIRE PROTECTION STATE OF CALIFORNIA

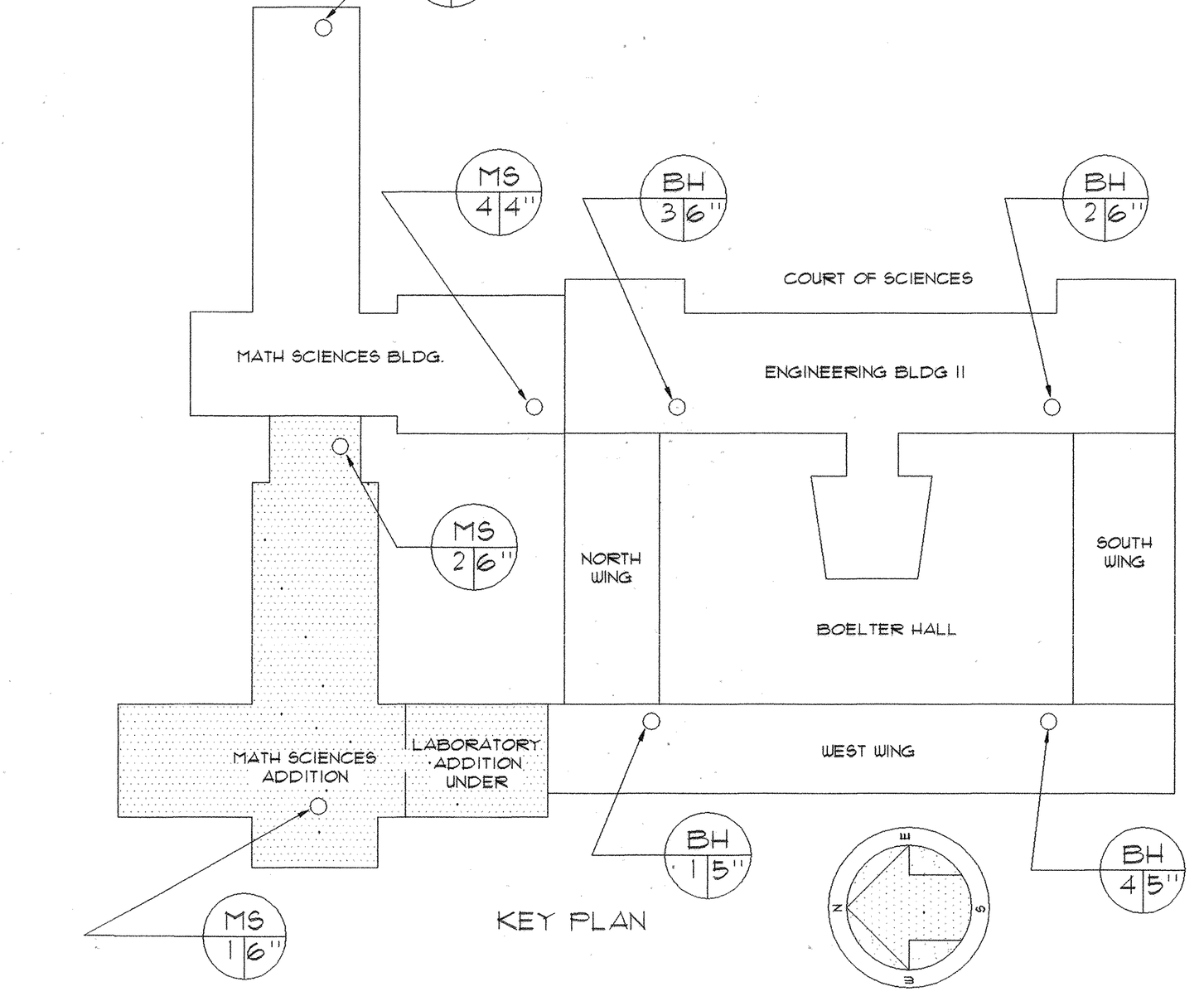
AUTOMATIC FIRE PROTECTION PLAN		
UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM		
2000 LEVEL WET STANDPIPE- BOELTER HALL		
OWNER UCLA	BLDG: BH	DATE: 10/2/04
CONTRACTOR DIRECT	STORY: 2000	DRAWN BY: RSB
	SCALE: AS NOTED	APPROVED BY:
JOB NO. 04-11	LINK-NILSEN CORPORATION 130 E. SANTA CLARA ST. ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414	SHEET NO. 3 OF 26

0083 G-2





SECTION A-A



KEY PLAN

AS BUILT

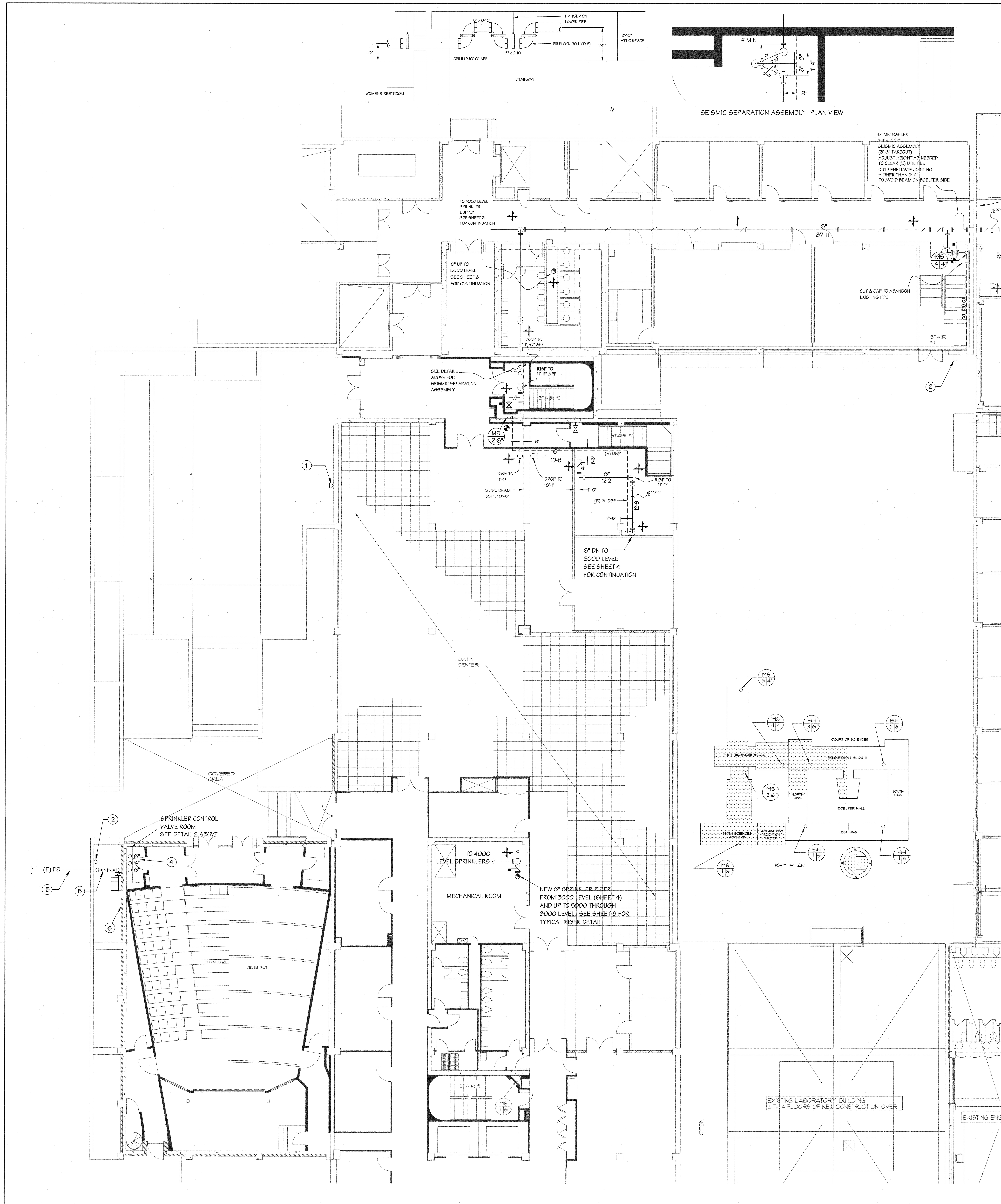
UCLA PROJECT NO. 946237.01

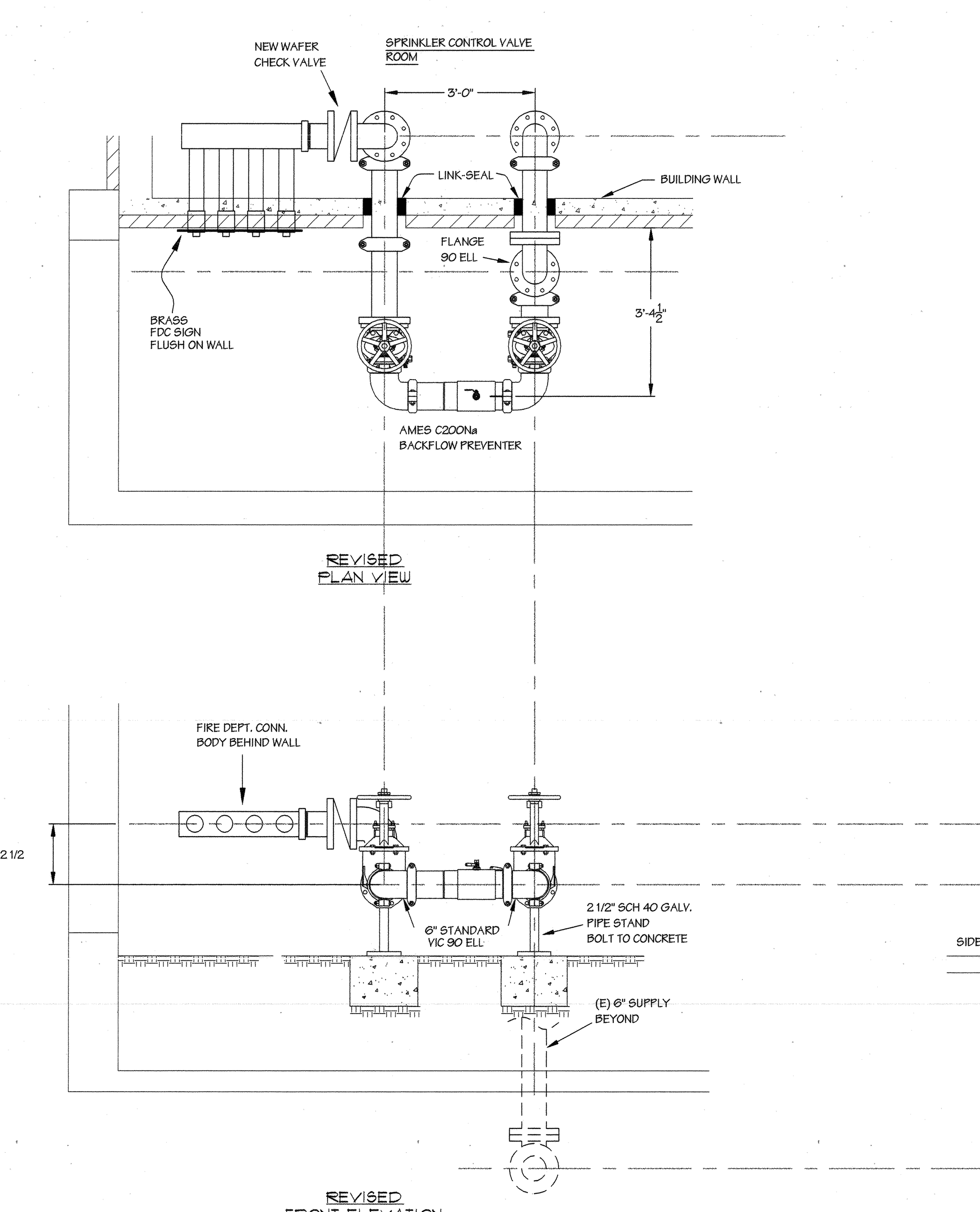
AUTOMATIC FIRE PROTECTION PLAN

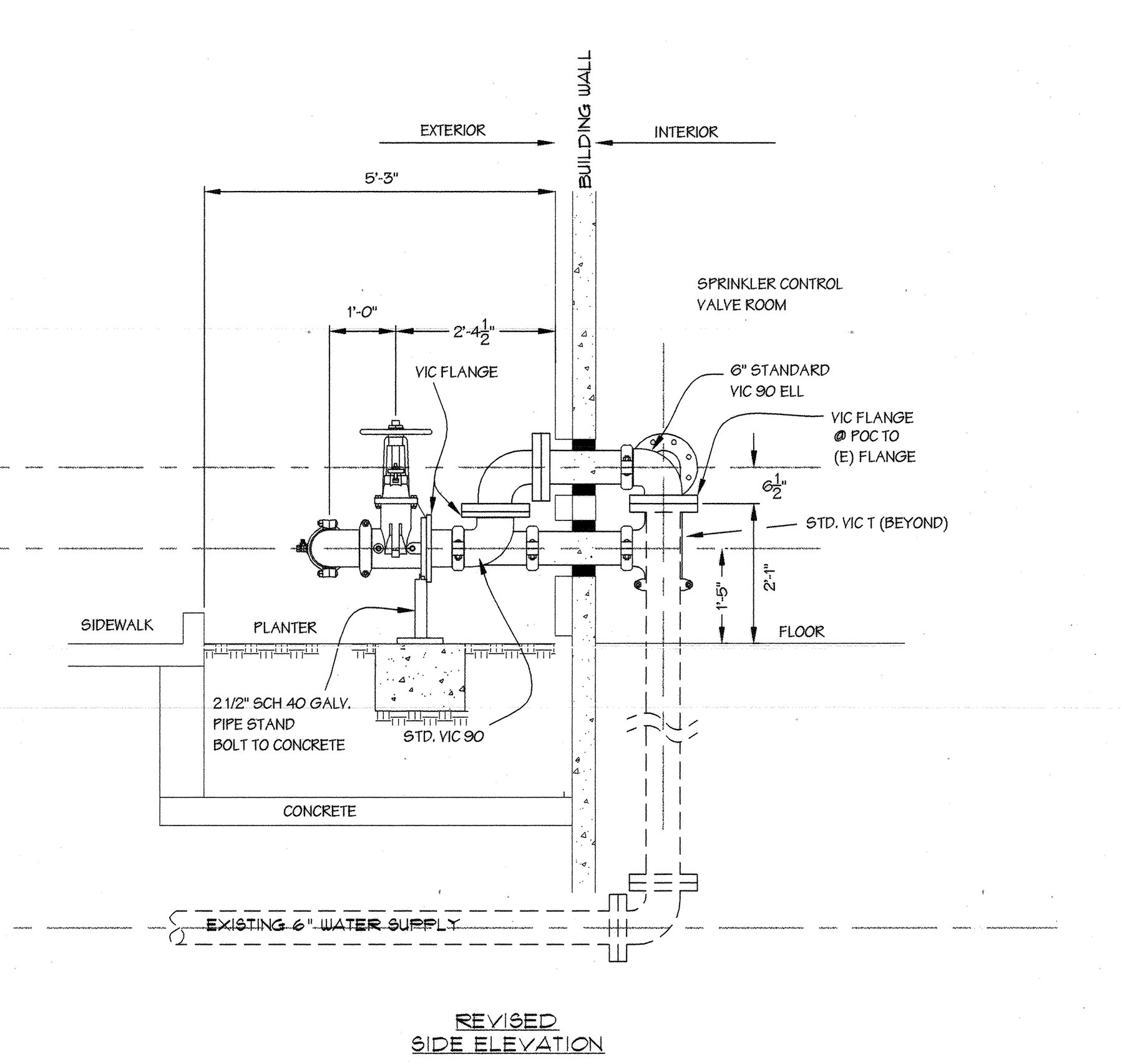
UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM
3000 LEVEL WET STANDPIPE- MATH SCIENCES

OWNER UCLA	BLDG. BH	DATE 10/2/04
CONTRACTOR DIRECT	STORY 3000	DRAWN BY RDB
	SCALE 1/8" = 1'-0"	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION 130 E. SANTA CLARA ST., ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414	SHEET NO. 4 OF 26

0083 G-2







NOTES

1. REMOVE EXISTING 6" X 4-WAY BOTTOM OUTLET FIRE DEPARTMENT CONNECTION FOR MS #2. CAP/PLUG PIPING IN CEILING BELOW.
2. REMOVE EXISTING VERTICAL 2-WAY FIRE DEPARTMENT CONNECTION FOR MS #4. CAP/PLUG PIPING BELOW.
3. EXISTING 6" FIRE SPRINKLER SERVICE MAIN
4. EXISTING 6" FIRE SPRINKLER RISER - SEE DETAIL 2 THIS DRAWING.
5. NEW AMES 200 N(a) DOUBLE CHECK BACKFLOW ASSEMBLY WITH 4-WAY FIRE DEPARTMENT CONNECTION. SEE DETAIL 1 ON THIS DRAWING.
6. BUILDING IDENTIFICATION SIGN AND ALARM BELL MOUNTED ON WALL AT 8'-0" ABOVE GRADE.

MATH SCIENCES PIPING DETAIL SCALE: 1/2" = 1'-0"

DETAIL 1

AS BUILT

UCLA PROJECT NO. 946237.01

REGISTERED PROFESSIONAL ENGINEER RAYMOND R. LINK #670 FIRE PROTECTION STATE OF CALIFORNIA

AUTOMATIC FIRE PROTECTION PLAN			
UCLA BOELTER HALL FIRE SPRINKLER SYSTEM 4000 LEVEL WET STANDPIPE & UNDERGROUND			
OWNER UCLA		BLDG. BH/MS	DATE 10/2/04
		STORY 4000	DRAWN BY RDB
CONTRACTOR DIRECT		SCALE 1/8"=1'-0"	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION 130 E. SANTA CLARA ST., ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414		SHEET NO. 5 OF 26

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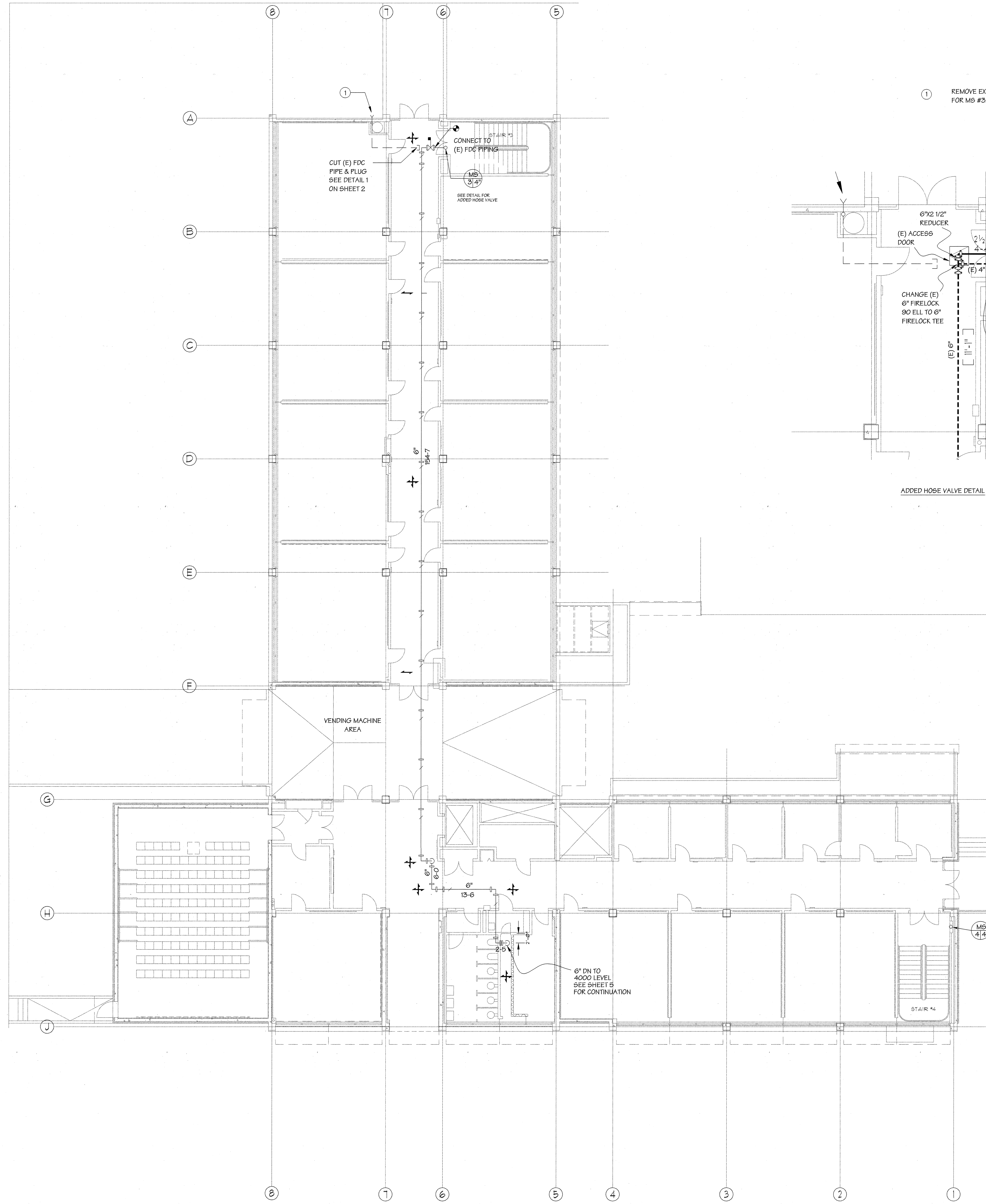
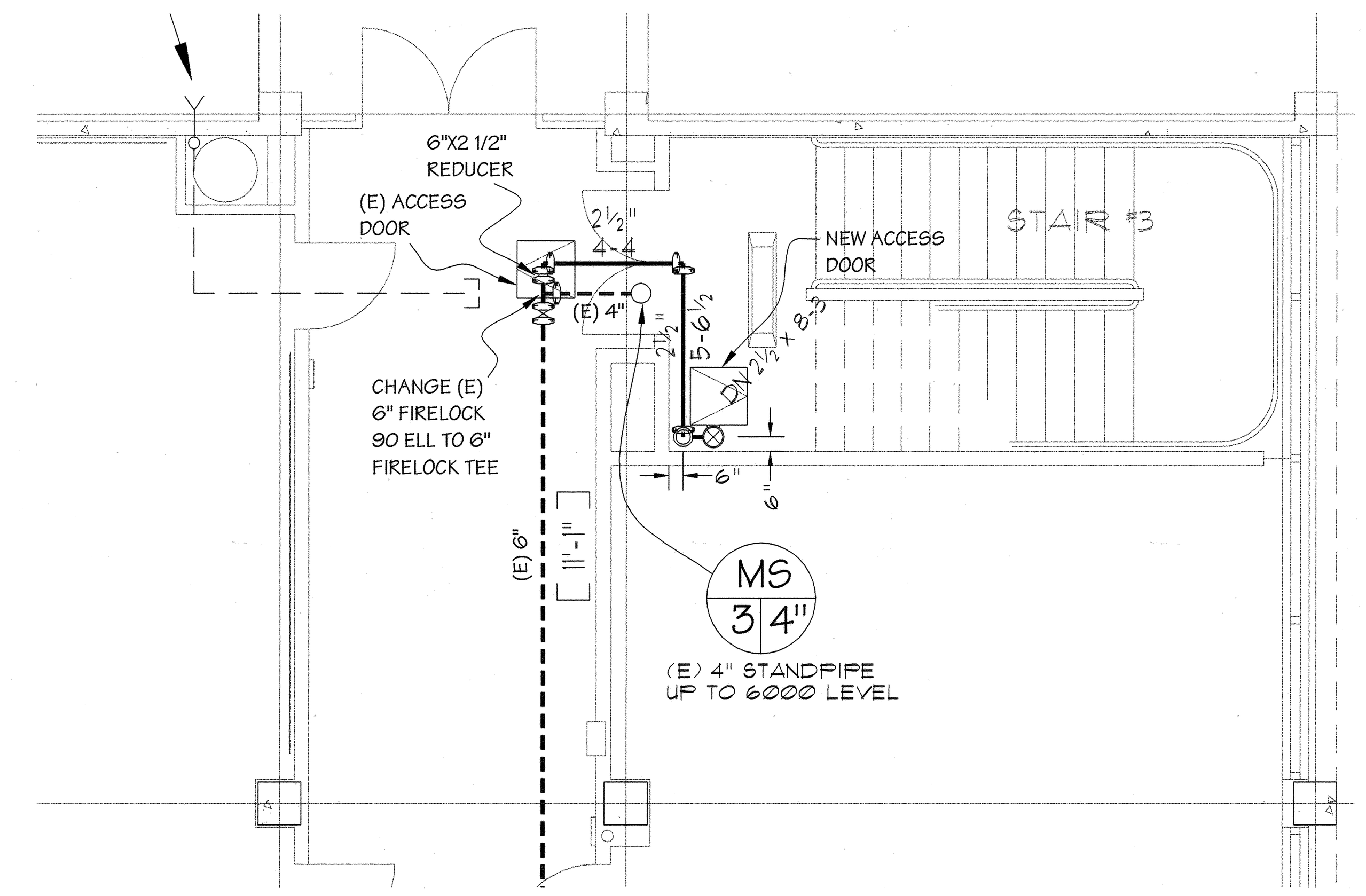
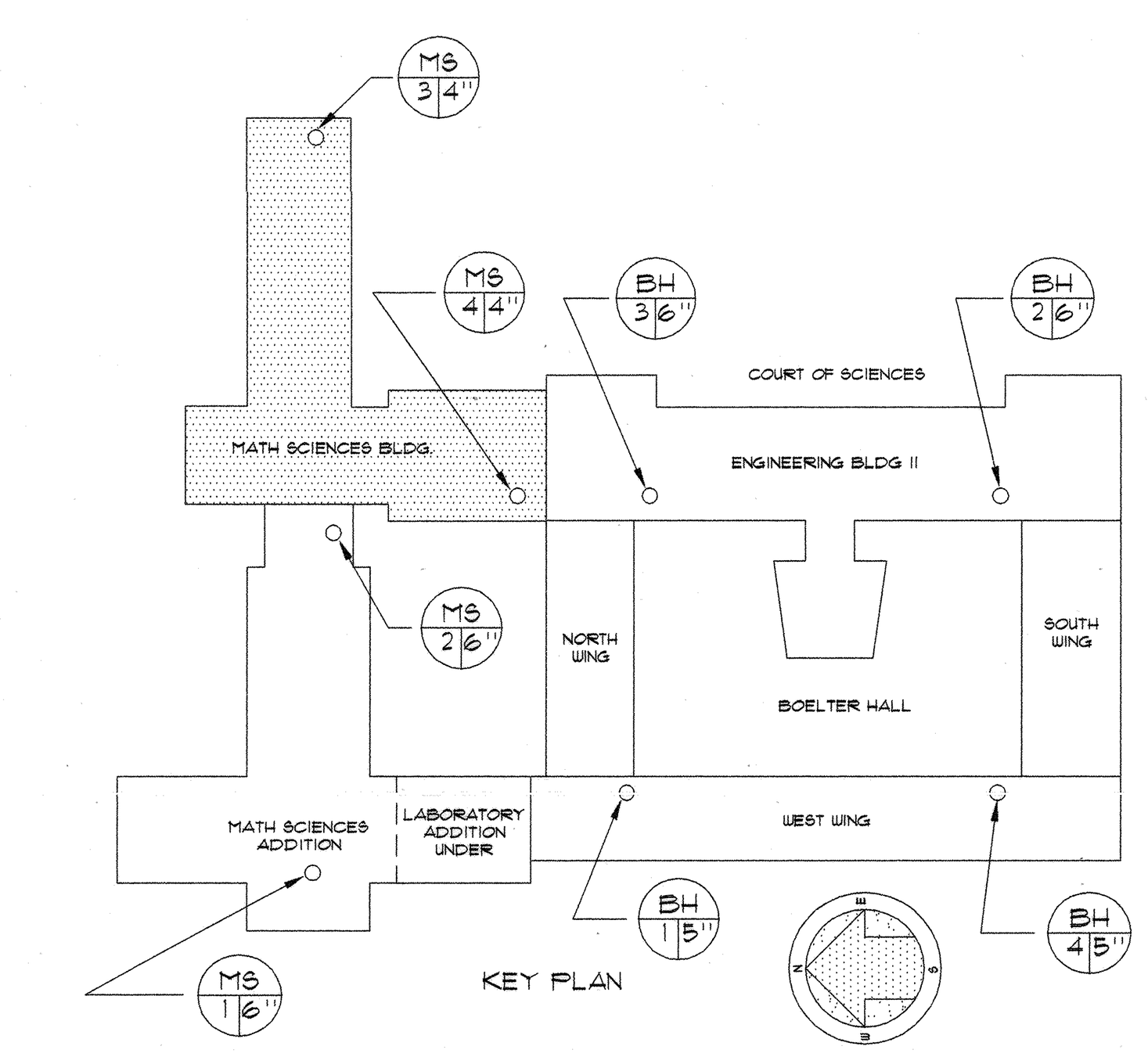


① REMOVE EXISTING 2-WAY FIRE DEPARTMENT CONNECTION FOR MS #3. CAP/PLUG PIPING AT FDC.



ADDED HOSE VALVE DETAIL



KEY PLAN

AS BUILT

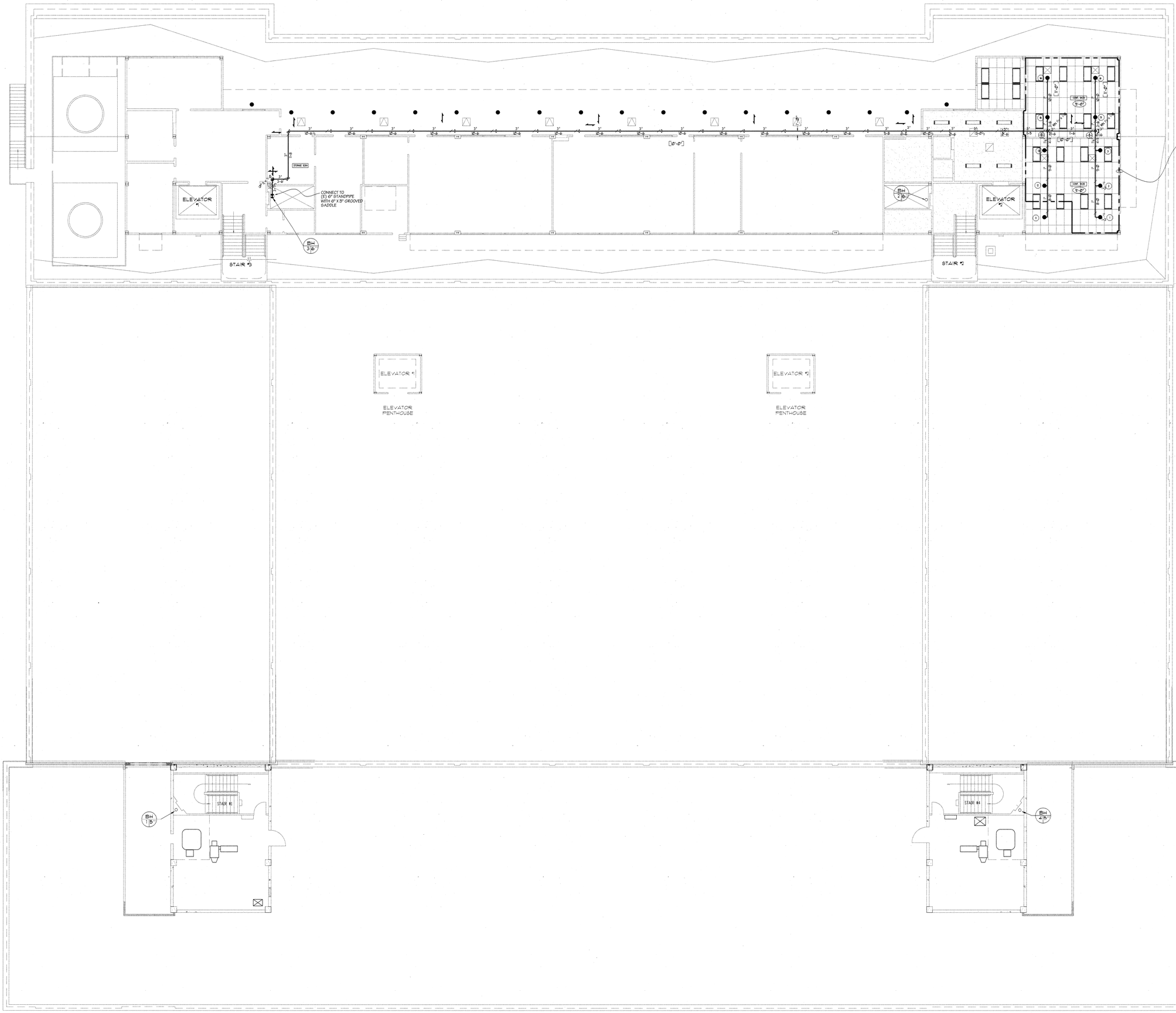
UCLA PROJECT NO. 946237.01

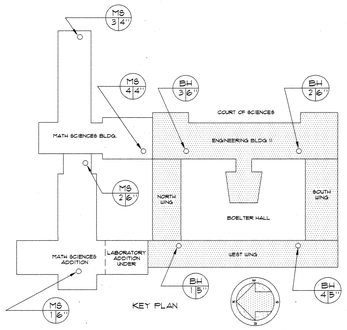
REGISTERED PROFESSIONAL ENGINEER · RAYMOND R. LINK · #670 · FIRE PROTECTION · STATE OF CALIFORNIA

AUTOMATIC FIRE PROTECTION PLAN		
UCLA BOELTER HALL FIRE SPRINKLER SYSTEM 5000 LEVEL WET STANDPIPE MATH SCIENCES		
OWNER UCLA	BLDG. MS	DATE 10/2/04
CONTRACTOR DIRECT	STORY 5000	DRAWN BY RDB
	SCALE 1/8"=1'-0"	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION 130 E. SANTA CLARA ST., ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414	SHEET NO. 6 OF 26

0083 G-2

NOTE: COMPLETE SPRINKLER SYSTEM DRAWINGS TO BE SUBMITTED IN THE FUTURE. THIS DRAWING IS PROVIDED TO SHOW THE MOST HYDRAULICALLY DEMANDING REMOTE AREA TO VERIFY ADEQUATE WATER SUPPLY AND PIPE SIZING FOR EACH LEVEL OF SPRINKLER SYSTEM.





NOTE: THIS SHEET IS FOR RECORD ONLY. FOR AS-BUILT INSTALLATION AT THIS LEVEL SEE SHEET 18.

AS BUILT

UCLA PROJECT NO. 846237.01

REGISTERED PROFESSIONAL ENGINEER RAYMOND R. LINK #670 FIRE PROTECTION STATE OF CALIFORNIA

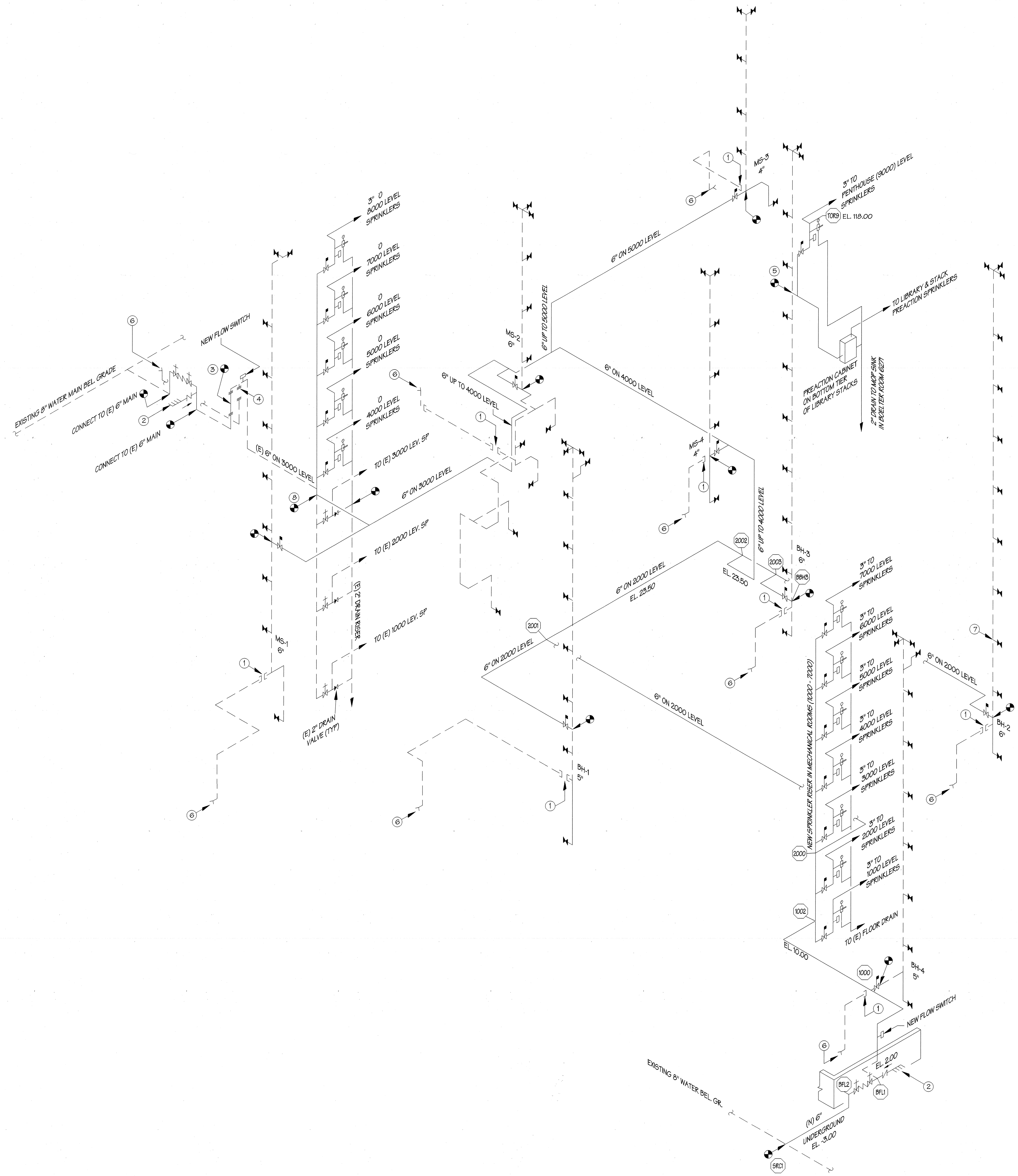
AUTOMATIC FIRE PROTECTION PLAN

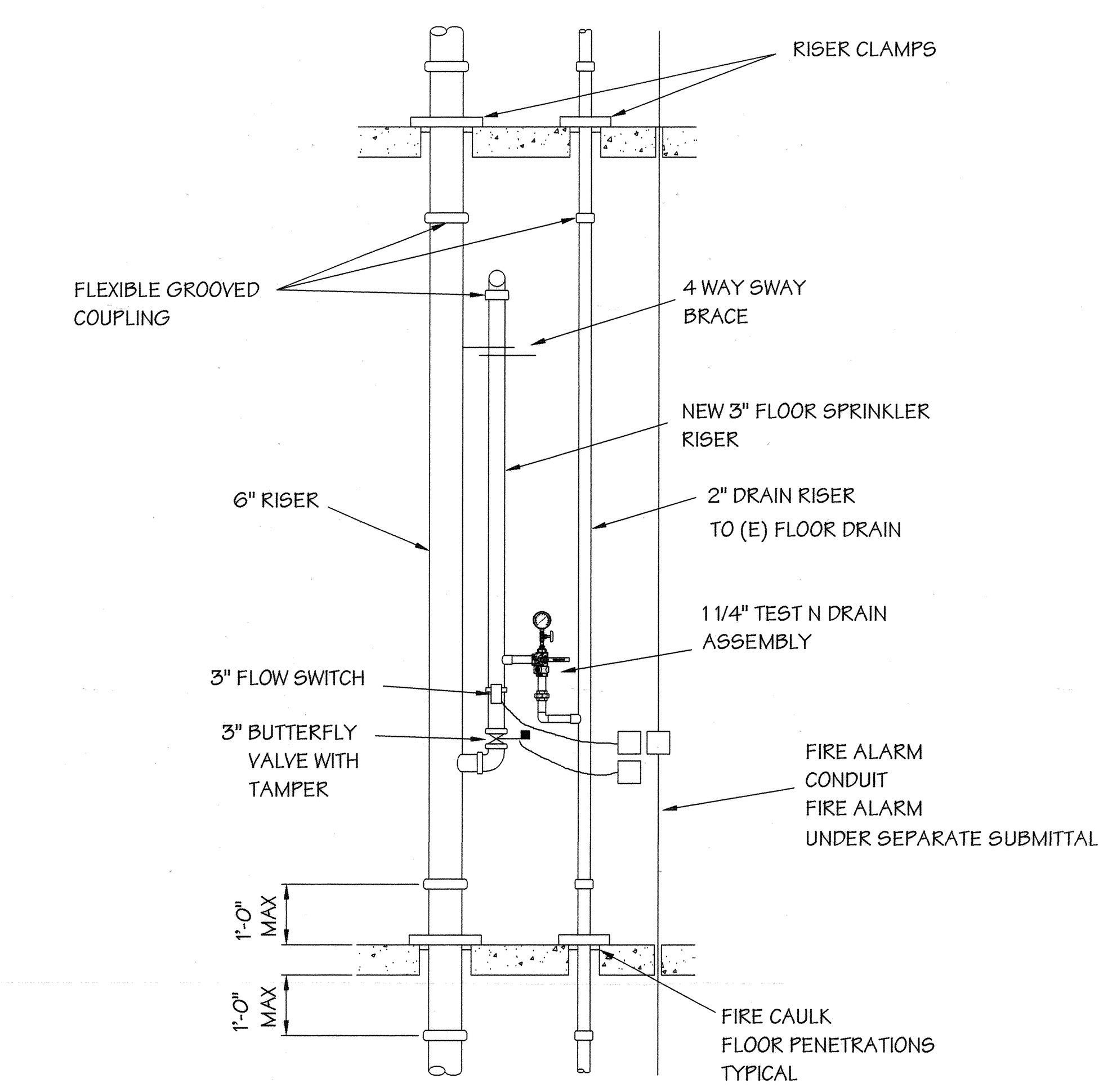
UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM

9000 LEVEL WET STANDPIPE & PARTIAL SPRINKLER

OWNER: UCLA	BLDG: BH	DATE: 10/2/04
	STORY: 9000	DRAWN BY: RDB
CONTRACTOR: DIRECT	SCALE: 1/8"=1'-0"	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION 1067 E. SANTA CRUZ ST. ARCADIA, CA. 91006 LICENSE C-16-275562 PHONE (626) 445-3414	SHEET NO. 7 OF 26

0083 G-2





SPRINKLER RISER ASSEMBLY DETAIL (TYPICAL)

CONSTRUCTION NOTES:

1. CAP AND OR PLUG EXISTING CONNECTION TO RISER
2. NEW 6" DOUBLE CHECK BACKFLOW PREVENTER AND 4-WAY X 6" FIRE DEPARTMENT CONNECTION
3. REMOVE EXISTING OS&Y VALVE AND ALARM VALVE AND INSTALL NEW FLANGED SPOOL.
4. REMOVE EXISTING CHECK VALVE AND INSTALL BLIND FLANGES
5. CONNECT TO EXISTING RISER FOR SUPPLY TO 9000 LEVEL SPRINKLERS AND LIBRARY PREACTION SYSTEM
6. REMOVE EXISTING FIRE DEPARTMENT CONNECTION & ANY EXPOSED PIPING PATCH HOLES IN WALLS OR FLOORS WITH LIKE MATERIAL
7. REMOVE EXISTING HOSE GATE VALVE AND REPLACE WITH NEW WET TYPE HOSE VALVES.
8. CONNECT TO EXISTING 6" FIRE SPRINKLER RISER IN MECH. ROOM 3940 AND EXTEND AS SHOWN

LEGEND:

- EXISTING PIPE
- NEW PIPE
- NEW WET TYPE 2 1/2" HOSE VALVE
- NEW OS&Y VALVE W/ TAMPER SWITCH
- NEW BUTTERFLY VALVE W/ TAMPER SWITCH
- NEW TEST N DRAIN ASSEMBLY W/ GAUGE
- NEW WATERFLOW SWITCH
- EXISTING SYSTEM DRAIN VALVE

AS BUILT

UCLA PROJECT NO. 946237.01

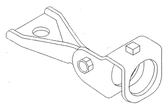
REGISTERED PROFESSIONAL ENGINEER RAYMOND R. LINK #670 FIRE PROTECTION STATE OF CALIFORNIA

AUTOMATIC FIRE PROTECTION PLAN

UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM
ISOMETRIC SCHEMATIC DIAGRAM

OWNER UCLA		BLDG. BHMS	DATE 10/2/04
CONTRACTOR DIRECT		STORY	DRAWN BY RDB
		SCALE NONE	APPROVED BY
JOB NO. 04-11	LINK-NILSEN CORPORATION 130 E. SANTA CLARA ST., ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414		SHEET NO. 8 OF 26

0083 G-2

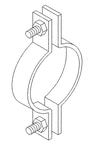


SWIVEL SWAY BRACE FITTING – AFCON #077

Size Range – 1 &1–1/4 inch bracing pipe.
Material – Carbon Steel
Approvals – Underwriters' Laboratories listed.
Finish – Plain

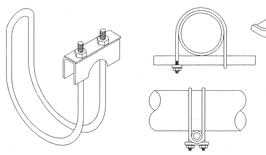
SWIVEL SWAY BRACE FITTING – AFCON #078

Size Range – 1 &1–1/4 inch bracing pipe.
Material – Carbon Steel
Approvals – Underwriters' Laboratories listed.
Finish – Plain

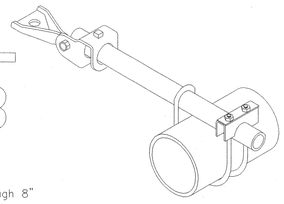


PIPE CLAMP FOR SWAY BRACING – AFCON #410

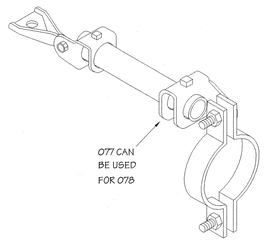
Size Range – 4 inch thru 8 inch
Material – Carbon Steel
Approvals – Underwriters' Laboratories listed.
Finish – Plain



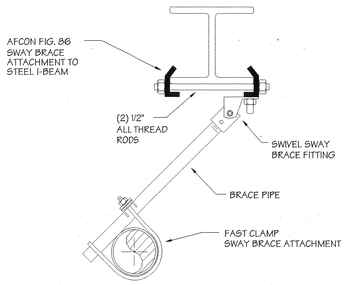
SWAY BRACE ATTACHMENT – AFCON #001
Size Range – Pipe to be braced: 1" though 8"
– 1" and 1 1/4" bracing pipe
Material – Carbon Steel
Approvals – Underwriters' Laboratories listed.
Finish – Plain

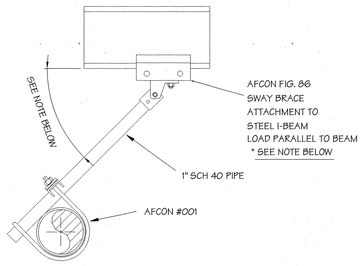


TYPICAL LATERAL BRACE



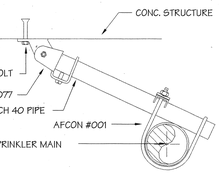
TYPICAL LONGITUDINAL BRACE

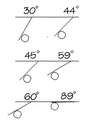




NOTE: PER CALCS BELOW, WHEN USING THE AFCON FIG. 86
TO ATTACH TO A STEEL BEAM, IF THE LOAD IS PARALELL TO
THE LENGTH OF THE BEAM, AS SHOWN ABOVE,
THE MAXIMUM SPACING OF BRACES FOR 6" SCH 40 PIPE IS AS FOLLOWS :

39'-11" IF BRACE ANGLE IS 30 DEG. TO 44 DEG. FROM VERTICAL (LATERAL OR LONGITUDINAL BRACE)
56'-5" IF BRACE ANGLE IS 45 DEG. TO 59 DEG. FROM VERTICAL (LONGITUDINAL BRACE ONLY)
69'-1" IF BRACE ANGLE IS 60 DEG. TO 89 DEG. FROM VERTICAL (LONGITUDINAL BRACE ONLY)

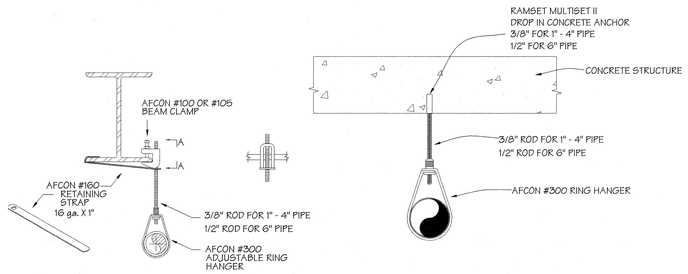




BRACING DETAILS

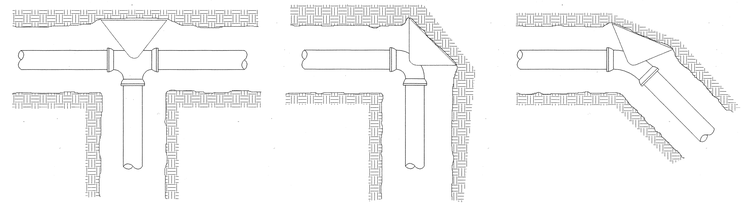
ADJUSTABLE RING HANGER

Size Range – 1" thru 6" inch pipe.
Material – Steel, Mil. Galvanized to G-90 speci-
Approvals – Underwriters' Laboratories Listed and Factory Mutual Engineering approved. Conforms to Federal Specifications WW-H-171E, type 10, and Manufacturers Standardization Society SP-69, type 10.



TYPICAL HANGER DETAILS

SCALE: N.T.S.



THRUST BLOCK BEARING AREA			
PIPE SIZE	CONDITION		
	A	B	C
4"	2	2	2
6"	4	5	3
8"	6	8	5
10"	9	13	7

1. VALUES SHOWN ARE BASED ON A WATER PRESSURE OF 225 PSI.
2. VALUES SHOWN ARE BASED ON SOIL TYPE WITH 2000 PSF. THE VALUES IN THE TABLE ABOVE SHOULD BE MULTIPLIED BY THE FOLLWING FACTORS FOR OTHER SOIL CONDITIONS:
   SOFT CLAY = 4
   SAND = 2
   SAND AND GRAVEL = 1.33
   SHALE = .4

THRUST BLOCK DETAIL

SCALE: N.T.S.

UNDERGROUND NOTES:

1. PROVIDE MINIMUM 30" DEPTH OF BURY.
2. MATERIAL TO BE USED:
   UNDERGROUND PIPING - DUCTILE IRON PIPE, AWWA C151, AWWA C150, PRESSURE CLASS 350
   UNDERGROUND FITTINGS - MECHANICAL JOINT AND PLAIN END FITTINGS AWWA C110, CLASS 250, AND MECHANICAL JOINT RESTRAINTS
3. ALL UNDERGROUND PIPING SHALL BE FLUSHED BEFORE CONNECTION IS MADE TO EXISTING FIRE SPRINKLER RISERS.
4. ALL WORK TO BE DONE IN ACCORDANCE WITH NFPA13 1999 SECTION 5-14.4

Seismic Bracing Calculations

Sheet _____ of _____

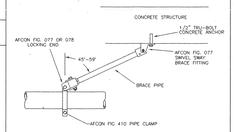
Project: UCLA - BOELTER HALL
Address: 520 & 580 PORTOLA PLAZA

Brace Information		Seismic Brace Attachments	
Length of brace	7'-0" MAX.	Structure attachment fitting or tension-only system: Make:	AFCON
Diameter of brace	1"	Model:	077
Type of brace	SCH. 40	Listed load rating	2015
Angle of brace	45° TO 59°	Adjusted load rating per 6-4.5.10	1425
Least radius of gyration *	0.42	Sway brace (pipe attachment) fitting: Make:	AFCON
L/R value *	200	Model:	077 OR 078 & 410
Maximum horizontal load	2,500	Listed load rating	2015
		Adjusted load rating per 6-4.5.10	1425

Fastener Information

Orientationof connecting surface	B
Fastener:	
Type	EXPANSION SHIELD
Diameter	1/2"
Length	3 1/4" EMBEDMENT
Maximum load	1782

Seismic Brace Assembly Detail



Brace identification ____

☐ Lateral brace ■ Longitudinal brace

Sprinkler System Load Calculation

Diameter	Type	Length (ft)	Total (ft)	1/2 Weight per ft	1/2 Total Weight
6"	SCH. 40	80'	80'	15.85 lb/ft	1268 lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
			Total 1/2 weight of water-filled pipe		1268 lb

* Excludes tension-only bracing system

Seismic Bracing Calculations

Sheet _____ of _____

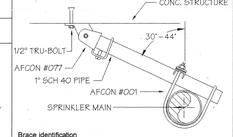
Project: UCLA - BOELTER HALL
Address: 520 & 580 PORTOLA PLAZA

Brace Information		Seismic Brace Attachments	
Length of brace	10'-6"	Structure attachment fitting or tension-only system: Make:	AFCON
Diameter of brace	1"	Model:	077
Type of brace	SCH. 40	Listed load rating	2015
Angle of brace	30° - 44°	Adjusted load rating per 6-4.5.10	1007.5
Least radius of gyration *	.42	Sway brace (pipe attachment) fitting: Make:	AFCON
L/R value *	300	Model:	001
Maximum horizontal load	786	Listed load rating	2015
		Adjusted load rating per 6-4.5.10	1007.5

Fastener Information

Orientationof connecting surface	A
Fastener:	
Type	TRU-BOLT
Diameter	1/2"
Embedment	3 1/4"
Maximum load	923

Seismic Brace Assembly Detail



Brace identification ____

■ Lateral brace ☐ Longitudinal brace

Sprinkler System Load Calculation

Diameter	Type	Length (ft)	Total (ft)	1/2 Weight per ft	1/2 Total Weight
6"	SCH. 40	40'-0"	40	15.85 lb/ft	634
				lb/ft	
				lb/ft	
				lb/ft	
				lb/ft	
				lb/ft	
			Total 1/2 weight of water-filled pipe		634

* Excludes tension-only bracing system

Seismic Bracing Calculations

Sheet _____ of _____

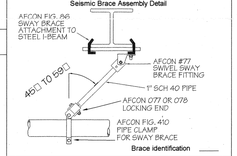
Project: UCLA - BOELTER HALL
Address: 520 & 580 PORTOLA PLAZA

Brace Information		Seismic Brace Attachments	
Length of brace	7'-0" MAX.	Structure attachment fitting or tension-only system: Make:	AFCON
Diameter of brace	1"	Model:	AFCON 086
Type of brace	SCH. 40	Listed load rating	2015
Angle of brace	45° TO 59°	Adjusted load rating per 6-4.5.10	1425
Least radius of gyration *	0.42	Sway brace (pipe attachment) fitting: Make:	AFCON
L/R value *	200	Model:	077 OR 078 & 410
Maximum horizontal load	2,500	Listed load rating	2015
		Adjusted load rating per 6-4.5.10	1425

Fastener Information

Orientationof connecting surface	B
Fastener:	
Type	STEEL BOLT
Diameter	1/2"
Length	N/A
Maximum load	2050

Seismic Brace Assembly Detail



Brace identification ____

☐ Lateral brace ■ Longitudinal brace

Sprinkler System Load Calculation

Diameter	Type	Length (ft)	Total (ft)	1/2 Weight per ft	1/2 Total Weight
6"	SCH. 40	80'	80'	15.85 lb/ft	1268 lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
				lb/ft	lb
			Total 1/2 weight of water-filled pipe		1268 lb

* Excludes tension-only bracing system

Seismic Bracing Calculations

Sheet _____ of _____

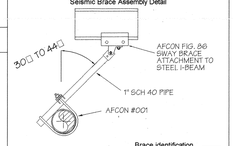
Project: UCLA - BOELTER HALL
Address: 520 & 580 PORTOLA PLAZA

Brace Information		Seismic Brace Attachments	
Length of brace	10'-6"	Structure attachment fitting or tension-only system: Make:	AFCON
Diameter of brace	1"	Model:	077 & 086
Type of brace	SCH. 40	Listed load rating	1265
Angle of brace	30° - 44°	Adjusted load rating per 6-4.5.10	633
Least radius of gyration *	.42	Sway brace (pipe attachment) fitting: Make:	AFCON
L/R value *	300	Model:	001
Maximum horizontal load	786	Listed load rating	2015
		Adjusted load rating per 6-4.5.10	1007.5

Fastener Information

Orientationof connecting surface	A
Fastener:	
Type	STEEL BOLT
Diameter	1/2"
Embedment	N/A
Maximum load	1600

Seismic Brace Assembly Detail



Brace identification ____

■ Lateral brace ☐ Longitudinal brace

Sprinkler System Load Calculation

Diameter	Type	Length (ft)	Total (ft)	1/2 Weight per ft	1/2 Total Weight
6"	SCH. 40	39'-11"	39'-11"	15.85 lb/ft	633
				lb/ft	
				lb/ft	
				lb/ft	
				lb/ft	
				lb/ft	
			Total 1/2 weight of water-filled pipe		633

* Excludes tension-only bracing system

SWAY BRACING CALCULATIONS FOR 6" MAIN

AS BUILT

UCLA PROJECT NO. 946237.01

REGISTERED PROFESSIONAL ENGINEER RAYMOND R. LINK #670 FIRE PROTECTION STATE OF CALIFORNIA

AUTOMATIC FIRE PROTECTION PLAN

UCLA - BOELTER HALL FIRE SPRINKLER SYSTEM
HANGERS, BRACING & SUPPORT DETAILS & CALCS

OWNER	UCLA	BLDG. RHMS	DATE 10/2/04
		STORY	DRAWN BY RDB
CONTRACTOR	DIRECT	SCALE NONE	APPROVED BY
JOB NO.	04-11	LINK-NILSEN CORPORATION 130 N. SANTA CLARA ST. ARCADIA, CA 91006 LICENSE C-16-275562 PHONE (626) 445-3414	SHEET NO. 9 OF 26

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