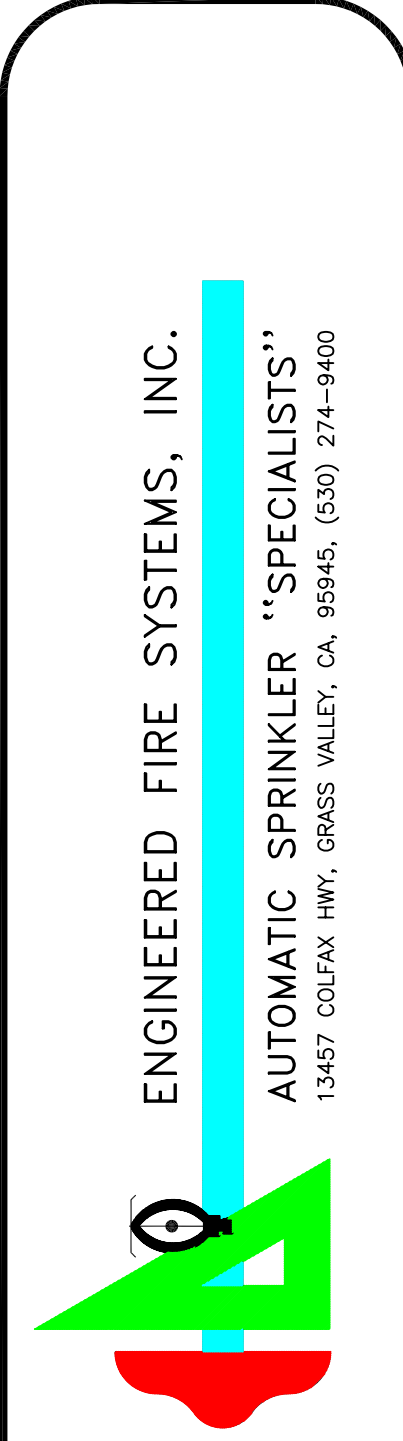


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ENGINEERED FIRE SYSTEMS, INC.
 AUTOMATIC SPRINKLER "SPECIALISTS"
 13457 COLLEEN HWY. GRASS VALLEY, CA 95945 (530) 274-9400

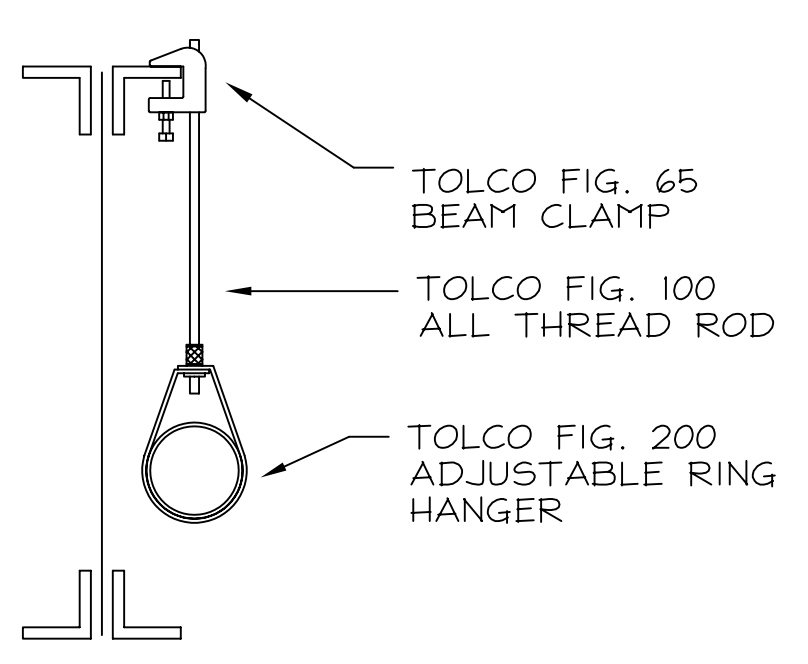
NEW WAREHOUSES
 GENERAL & HIGH PILED STORAGE

DRAWN
H. MORGADO
DATE
05-03-05
SCALE
1/8" = 1'-0"
FILE NUMBER
10112
SHEET
FP-1
1 OF 3 SHEETS

SYMBOL LEGEND

- SEE HEAD LEGEND FOR ADDITIONAL INFO
- 1 1/2" Upright Sprinkler
 - ELO-231 Upright Sprinkler
 - Sidewall Sprinkler
 - Sprinkler Branchline
 - Sprinkler Main
 - Change in Pipe Elevation
 - System Riser
 - Branchline Hanger Location
See Hanger Detail for Additional Info
 - Hydraulic Reference Point
 - Grooved Coupling
 - Grooved Cap
 - Threaded Cap
 - Eccentric Reducer
 - Centerline / Property Line
 - Auxiliary Drain
 - Electric Bell

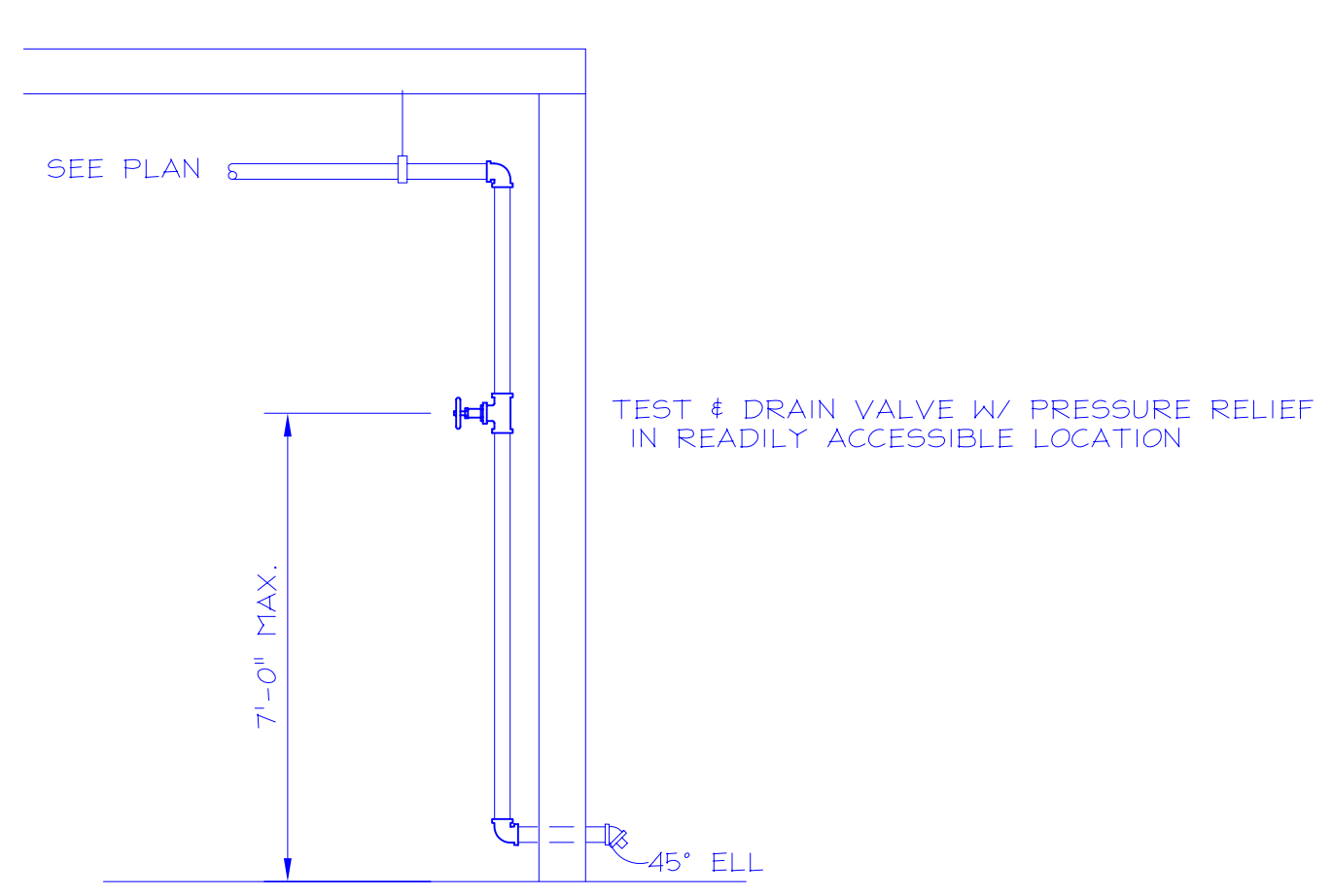
HANGER DETAILS



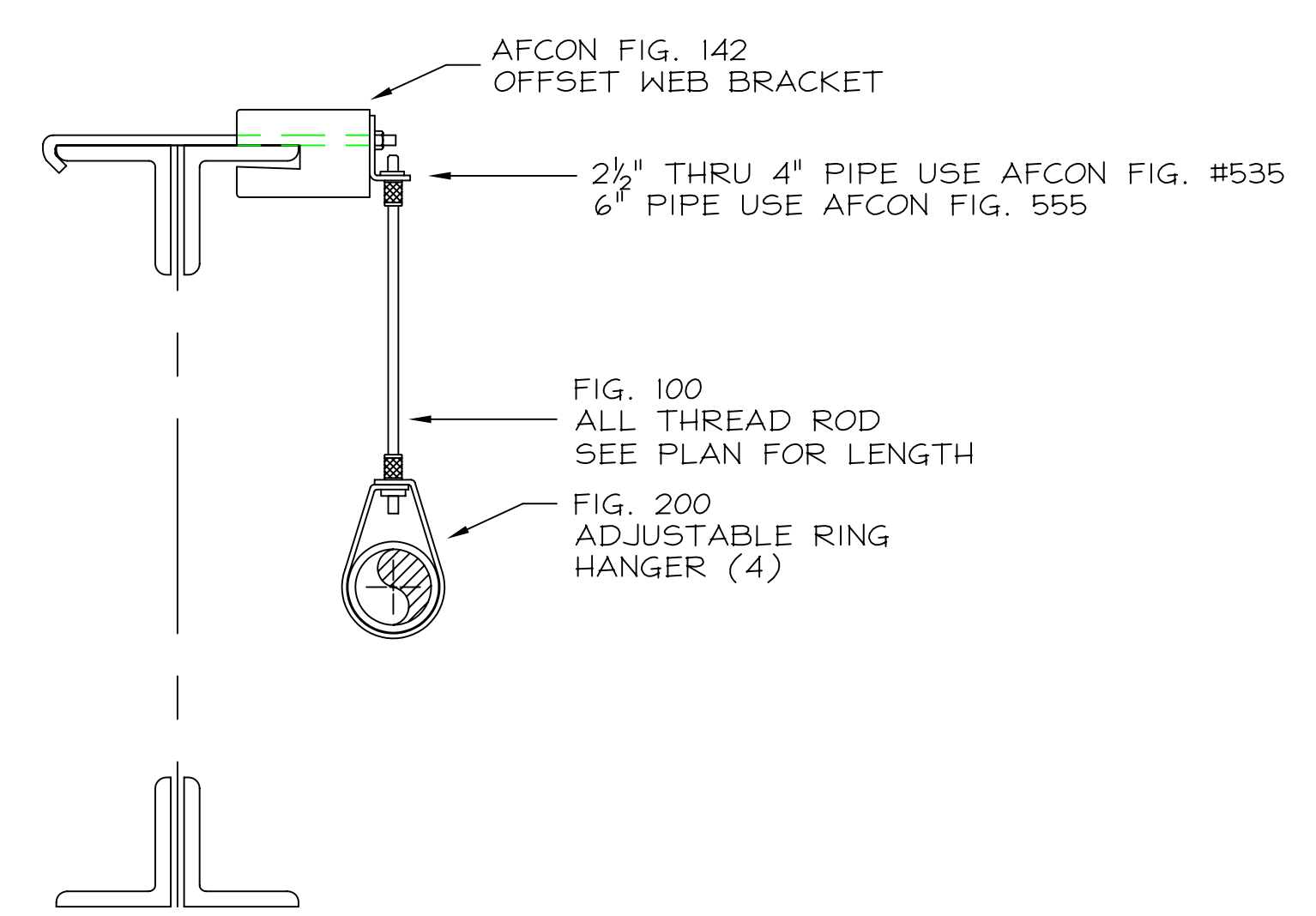
HANGER #1
TOP BEAM CLAMP, ROD & RING

NOMINAL PIPE SIZE (in.)	MAXIMUM DISTANCE BETWEEN HANGERS									
	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0	15-0
THREADED LIGHTWALL STEEL PIPE	N/A	N/A	N/A	12-0	12-0	12-0	12-0	N/A	N/A	N/A

NOMINAL PIPE SIZE (in.)	HANGER ROD SIZES									
	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	3-1/2"	4"	5"
STEEL PIPE EXCEPT THREADED LIGHTWALL	N/A	1/2"	1/2"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/2"
THREADED LIGHTWALL STEEL PIPE	N/A	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	N/A



TYPICAL INSPECTOR TEST DETAIL
NOT TO SCALE



HANGER #2 (x)
OFFSET WEB BRACKET, ROD, AND RING
INSTALL WITHIN 6" OF PANEL POINT

HEAD LEGEND

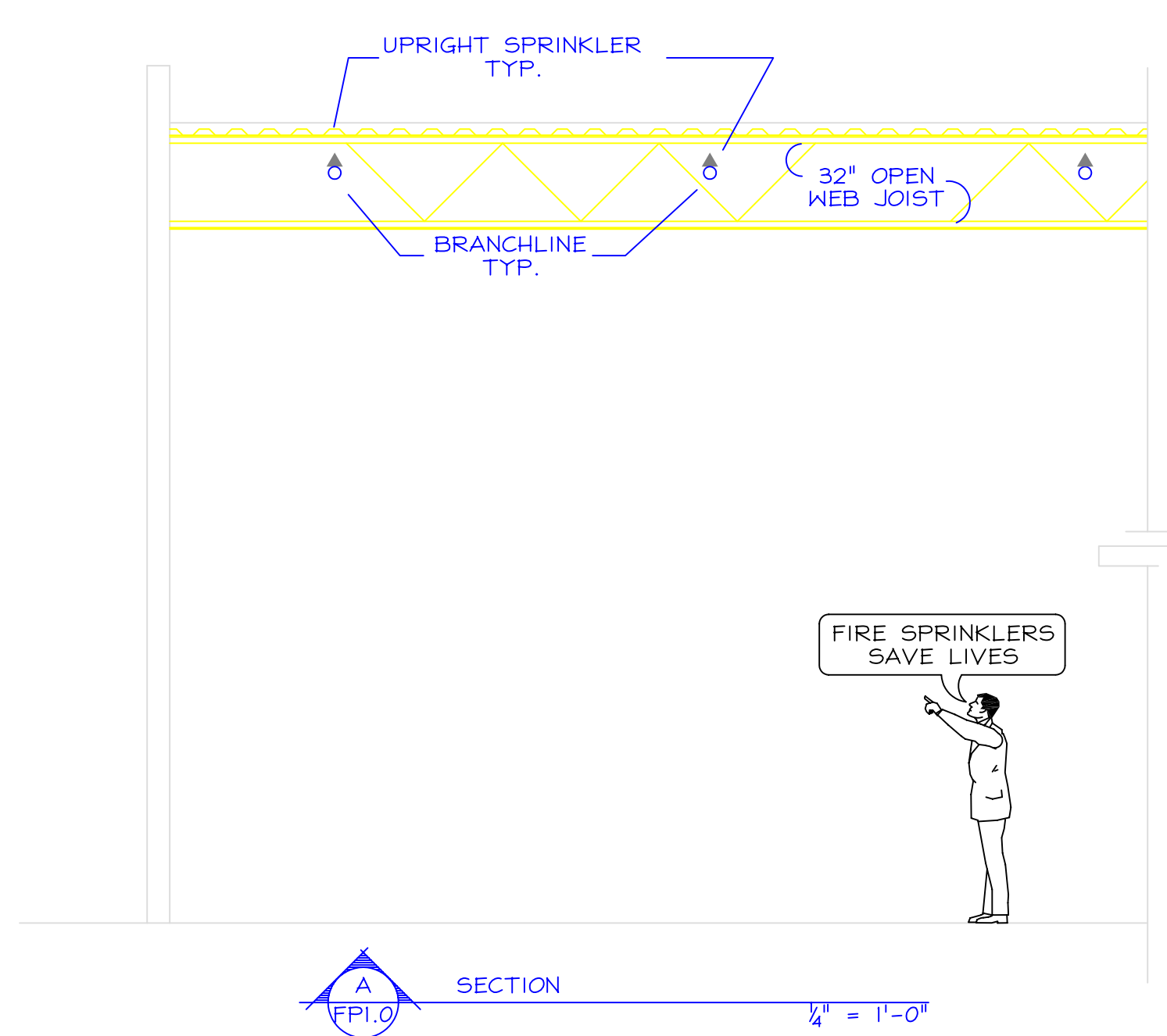
- HEAD COUNTS ARE PROJECT TOTALS - SEE INDIVIDUAL PLANS FOR BUILDING TOTALS
- 541 TYCO ELO-231 UPRIGHT SIN# TY5111
286' .70" ORIFICE 3/4" NPT K=11.2
 - 334 TYCO TY-B UPRIGHT SIN# TY4151
200' 1 1/2" ORIFICE 3/4" NPT K=8.0
 - 12 TYCO TY-B SIDEWALL SIN# TY3351
155' 1/2" ORIFICE 1/2" NPT K=5.6

GENERAL NOTES

- The system design and installation shall comply with NFPA 13-2002 and the requirements of the Authority Having Jurisdiction.
- System hydraulic design is for:
 - Building #1 - Storage - Class I-IV to 18' - Density .42/2000
 - Building #2 - Storage - Class I-IV to 18' - Density .42/2000
 - Based on building #1 calculations
 - Building #3 - Storage - Class I-IV to 18' - Density .42/2000
 - Based on building #1 calculations
 - Building #4 - Storage - Class I-IV to 18' - Density .42/2000
 - Building #6 - Ordinary Hazard II - Density .20/1500
 - Building #7 - Ordinary Hazard II - Density .20/1500
- A placard containing the system hydraulic requirements will be mounted in the riser room.
- Water Supply Information:
 - City Water Supply:
 - Static 58 psi
 - Residual 52 psi
 - Flow 1278 gpm
- All piping shall be as follows:
 - All grooved piping to be Eddyflow or equal.
 - All threaded piping to be Eddythread or equal.
- Fittings shall be class 125 threaded cast iron ASME B16.4.
- All threaded pipe and fittings shall have threads cut to ANSI/ASME standard B1.20.1.
- All pipe welding shall be in compliance with the requirements of AWS B2.1 (standard for building service piping)
- All hanger components and installation shall be in accordance with NFPA 13 section 9.1.
- Electrical wiring and any painting of the pipe that may be required shall be by others.
- All piping is to be hydrostatically tested at 200 psi for a period not less than two hours.
- Flow and Tamper switches to be provided wiring by others.
- The emergency spare head cabinets to be installed, provide additional heads & wrenches as required.
- All grooved couplings are to be rigid with exception of those locations outlined in NFPA 13-2002.

HYDRAULIC DATA PLACARD

HYDRAULIC-SYSTEM	HYDRAULIC-SYSTEM	HYDRAULIC-SYSTEM
This building is protected by a Hydraulically Designed Automatic Sprinkler System.		
Location: BUILDING 1	Location: BUILDING 4	Location: BUILDING 6
No. of Sprinklers: 20	No. of Sprinklers: 23	No. of Sprinklers: 13
Basis of Design		
1. DENSITY: .42 GPM/SQ. FT.	1. DENSITY: .42 GPM/SQ. FT.	1. DENSITY: .20 GPM/SQ. FT.
2. DESIGNED AREA OF DISCHARGE: 2000 SQ.FT.	2. DESIGNED AREA OF DISCHARGE: 2000 SQ.FT.	2. DESIGNED AREA OF DISCHARGE: 1500 SQ.FT.
System Demand		
1. GPM DISCHARGE: 873.9 GPM	1. GPM DISCHARGE: 910.9 GPM	1. GPM DISCHARGE: 336.8 GPM
2. RESIDUAL PRESSURE AT THE BASE OF THE RISER: 41.2 PSI	2. RESIDUAL PRESSURE AT THE BASE OF THE RISER: 40.1 PSI	2. RESIDUAL PRESSURE AT THE BASE OF THE RISER: 45.0 PSI

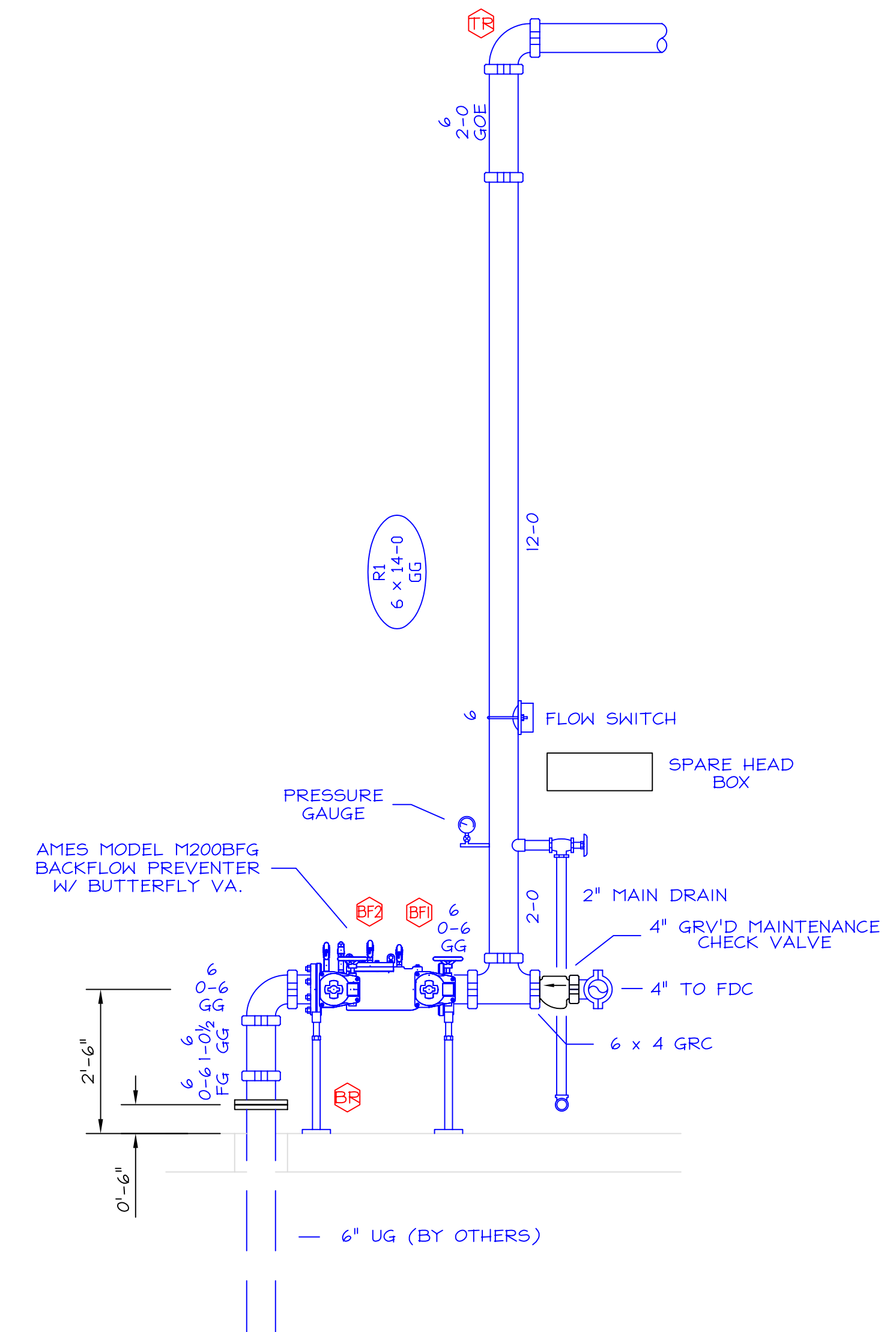


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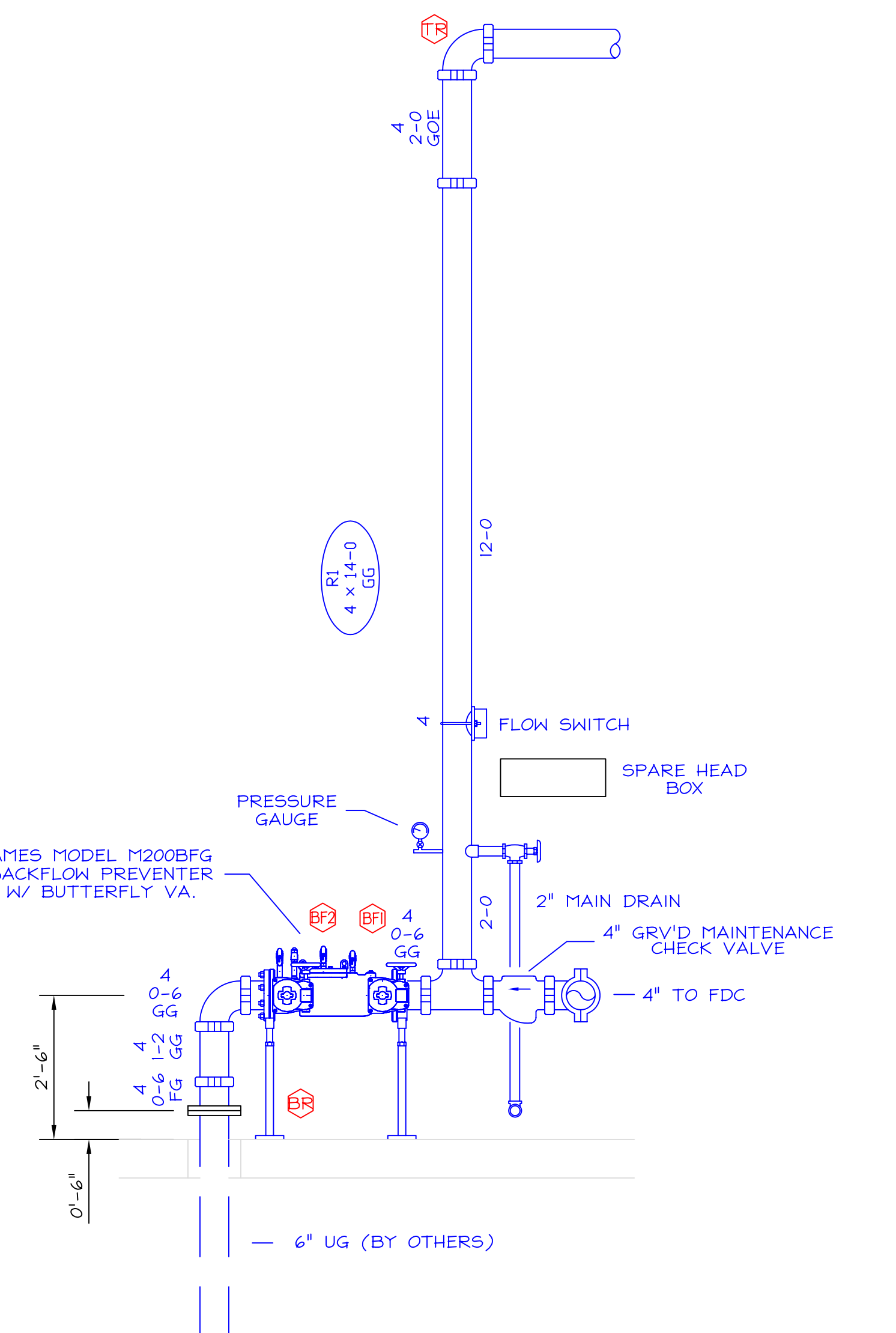
ENGINEERED FIRE SYSTEMS, INC.
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NEW WAREHOUSES
 GENERAL & HIGH PILED STORAGE

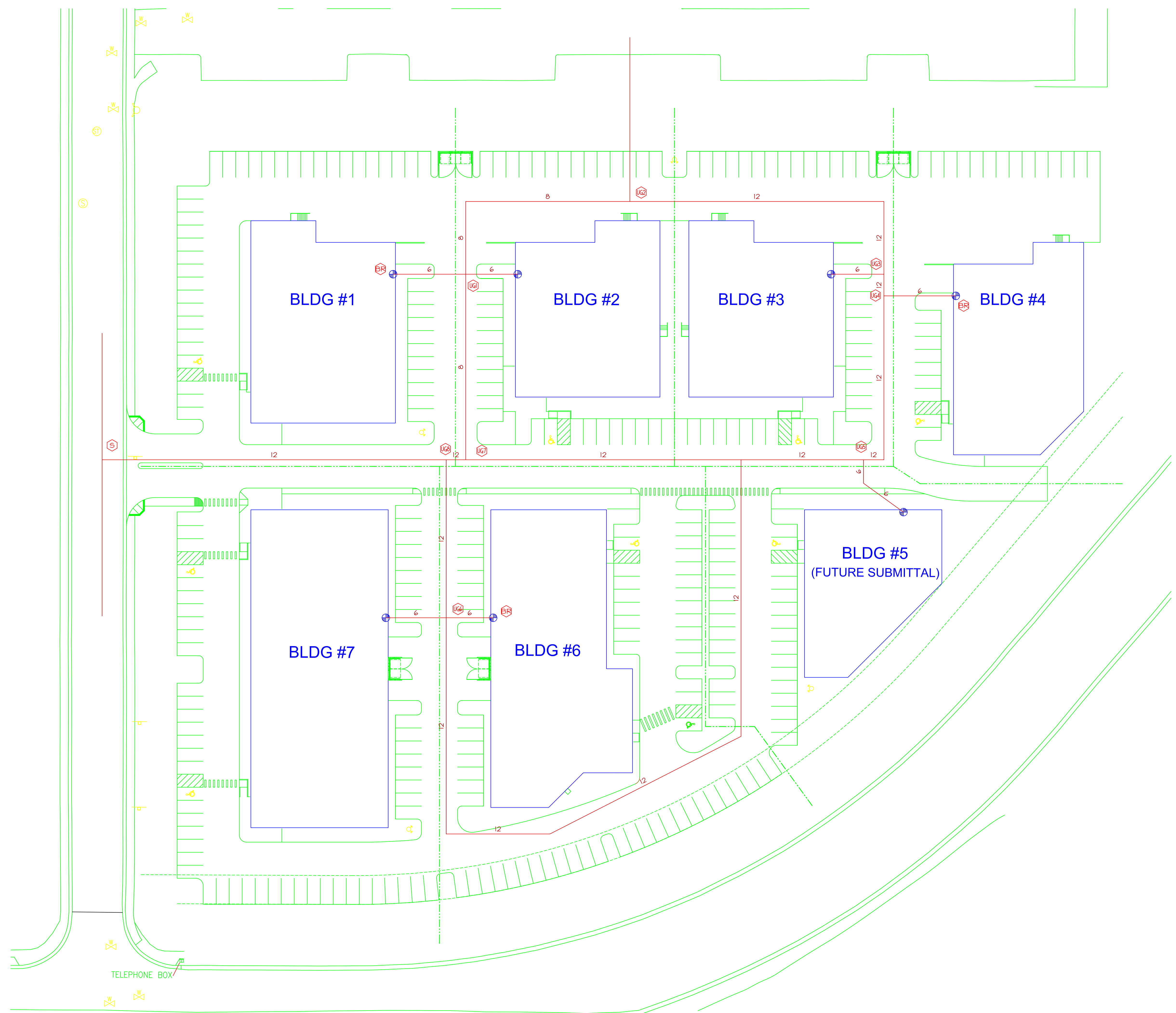
DRAWN	H. MORGADO
DATE	05-03-05
SCALE	1/8" = 1'-0"
FILE NUMBER	10112
SHEET	FP-2
2 OF 3 SHEETS	



RISER DETAIL "A"
 BUILDINGS #1, #2, #3, #4
 NTS



RISER DETAIL "B"
 BUILDINGS #6, #7
 NTS

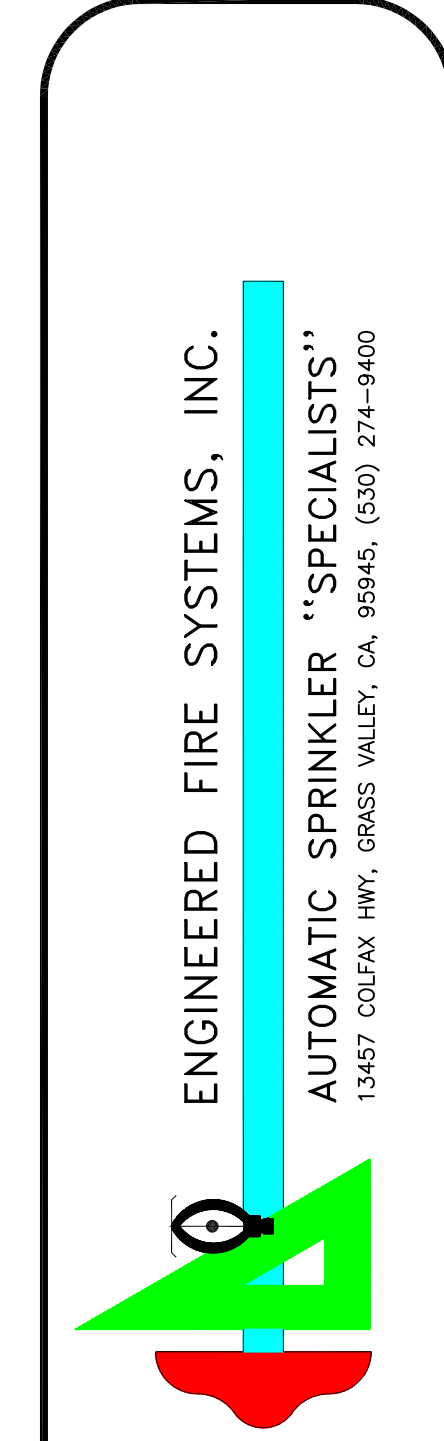


REFERENCE UNDERGROUND PLAN

PLAN IS SHOWN FOR HYDRAULIC REFERENCE ONLY - ALL UNDERGROUND WORK IS BY OTHERS

1" = 30'

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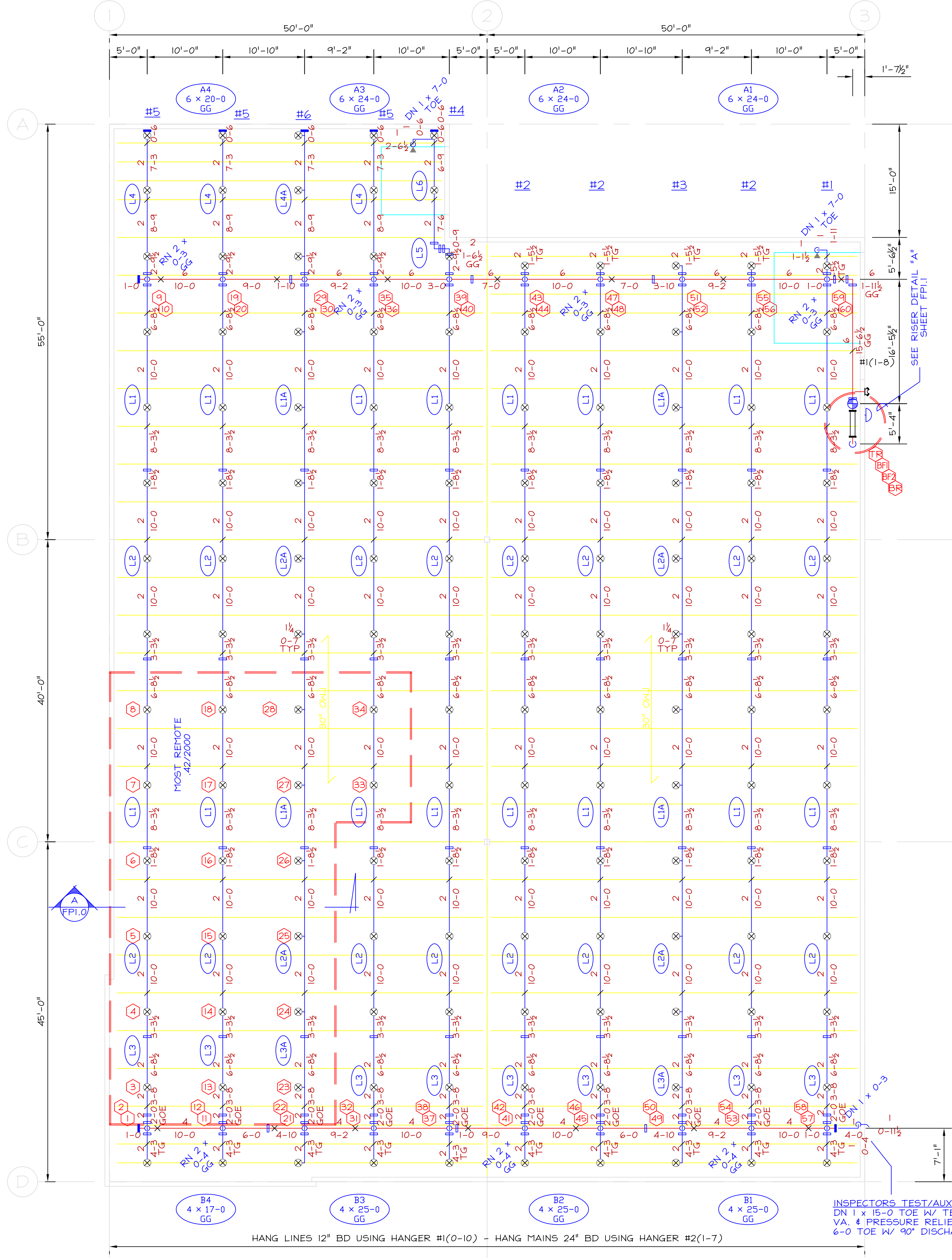


NEW WAREHOUSES
GENERAL & HIGH PILED STORAGE

DRAWN	H. MORGADO
DATE	05-03-05
SCALE	1/8" = 1'-0"
FILE NUMBER	10112
SHEET	FP-3
3 OF 3 SHEETS	

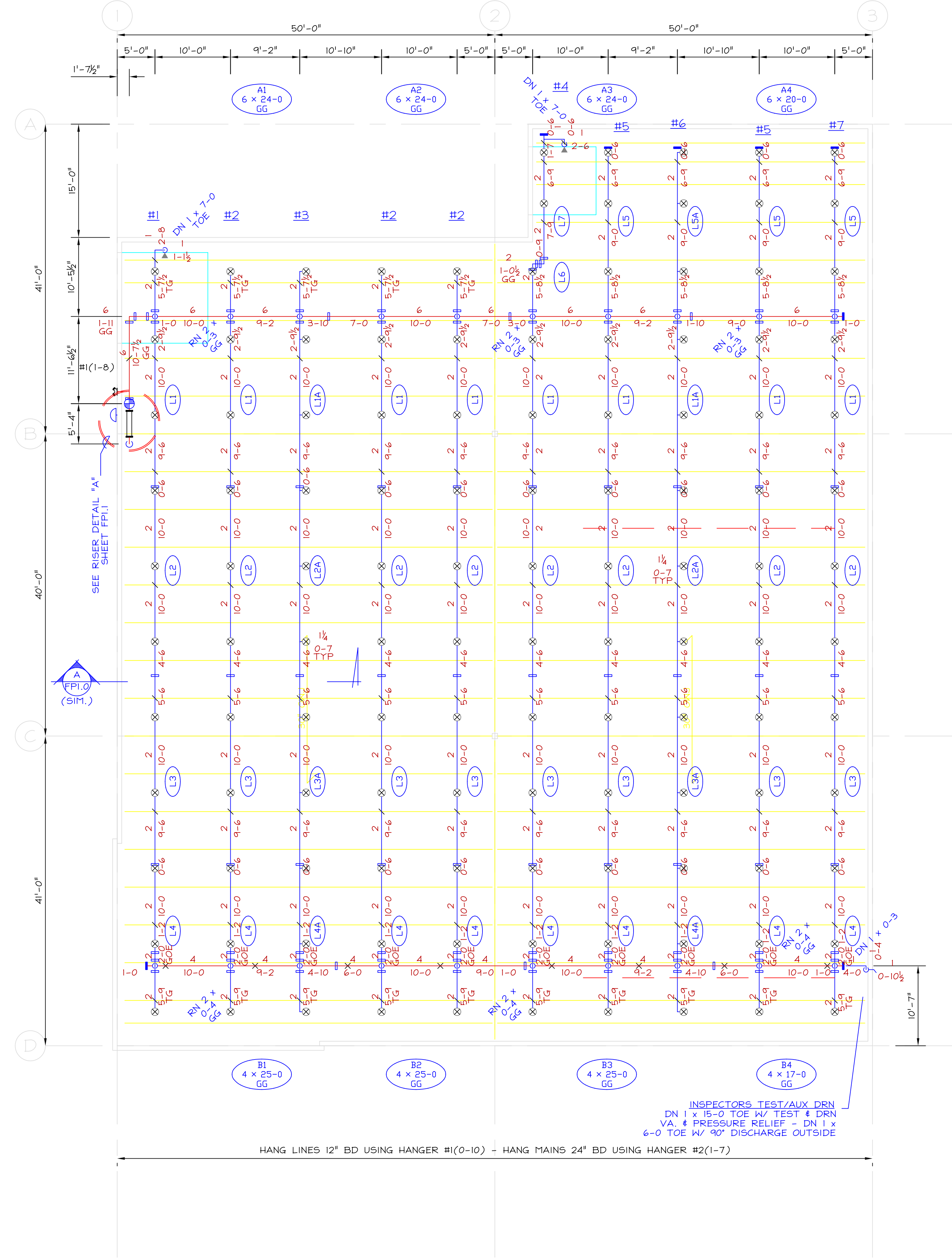
- 140 TYCO ELO-231 UPRIGHT SIN# TY5111
286" .70" ORIFICE 3/4" NPT K=11.2
- 2 TYCO TY-B SIDENALL SIN# TY3351
155" 1/2" ORIFICE 1/2" NPT K=5.6

- 120 TYCO ELO-231 UPRIGHT SIN# TY5111
286" .70" ORIFICE 3/4" NPT K=11.2
- 2 TYCO TY-B SIDENALL SIN# TY3351
155" 1/2" ORIFICE 1/2" NPT K=5.6



BUILDING #1

1/8" = 1'-0"



BUILDING #2

PIPE SIZES ARE BASED ON BUILDING #1 CALCULATIONS

1/8" = 1'-0"