

# SWAY BRACE CALCULATIONS

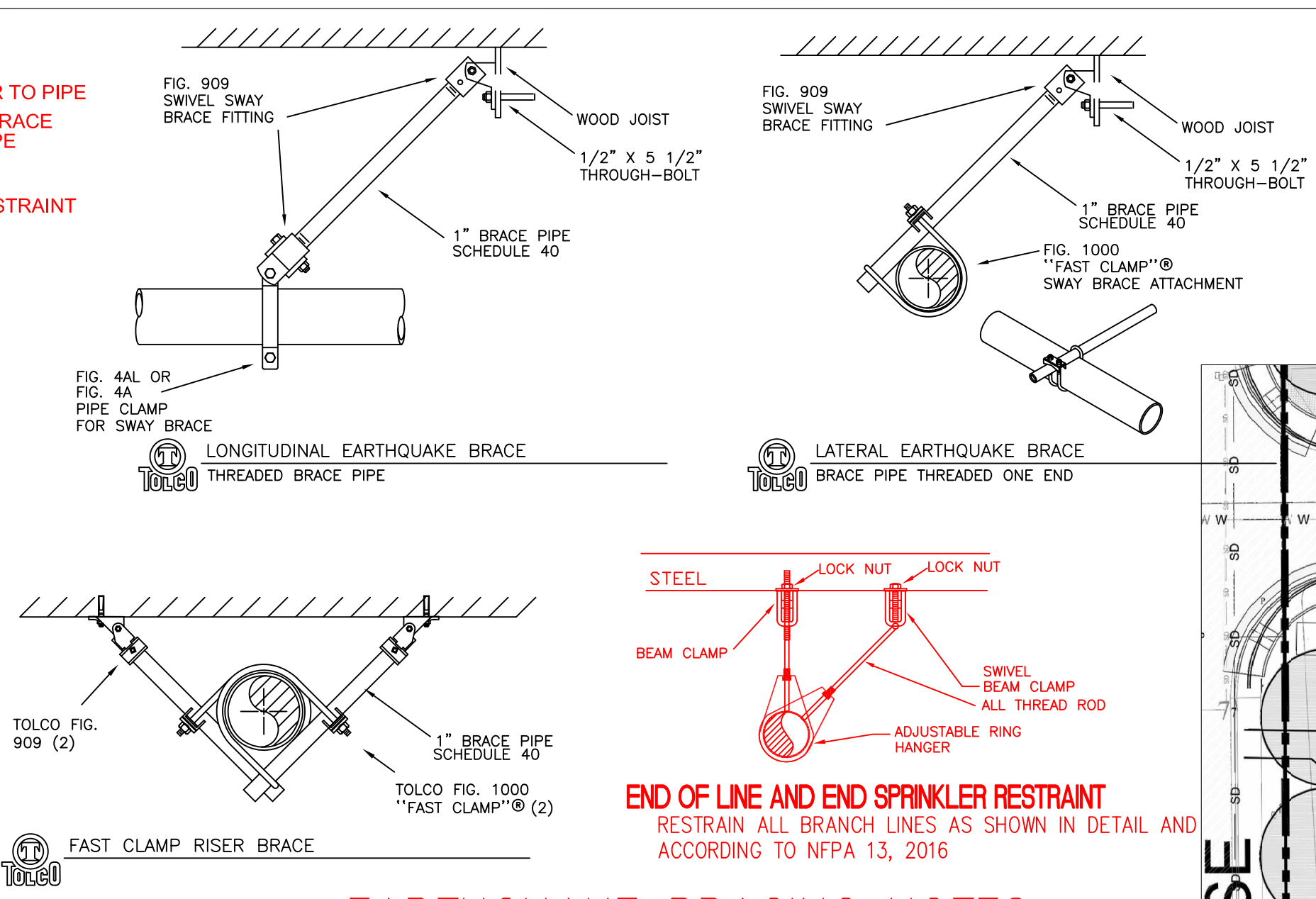
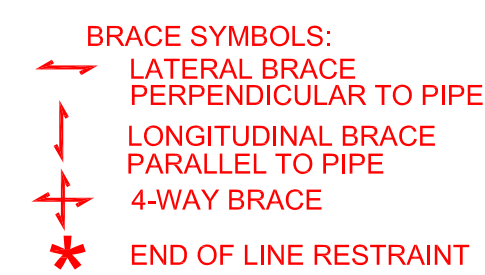
SWAY BRACE FASTENERS BASED ON ZONE ANALYSIS  
PER N.F.P.A #13 SEC. 9.3.5

MAXIMUM BRACE SPACING : 40/80  
BRACE ANGLE TO BE ° C \* (60° - 90°)

WORSER CASE LOAD IS FOR LATERAL BRACES  
LONGITUDINAL LOAD = 348.35 LBS.  
FASTENER TYP. FOR ALL BRACES

SPRINKLER SYSTEM LOAD CALCULATION FOR LATERAL BRACES

DIAMETER	PIPE TYPE	PIPE TOTAL LENGTH WORSE CASE	WT. PER FT.	Wp	HALF WEIGHT
1"	SCH. 40	9.0 FT	2.05	0.60	11.07 LBS
1-1/4"	SCH. 40	0.0 FT	2.93	0.60	0.0 LBS
1-1/2"	SCH. 10	230.0 FT	3.04	0.60	419.52 LBS
2"	SCH. 10	0.0 FT	4.22	0.60	0.0 LBS
4"	SCH. 10	40.0 FT	11.78	0.60	282.72 LBS
TOTAL HALF WEIGHT WITHIN "WORSE CASE ZONE OF INFLUENCE"					713.31 LBS.
LOAD WITHIN "WORSE CASE ZONE OF INFLUENCE" - (Fp x 1.15)					820.31 LBS.
MAXIMUM ALLOWABLE LOAD WITHIN "WORSE CASE ZONE OF INFLUENCE"					2050 LBS.
FASTENER TO BE: FIG. 086 SWAY BRACE FITTING (AS SHOWN ON DETAIL)					



Reviewed for Fire Code Compliance  
By David Drake  
Building Permit No. F-21-0116  
Date of Approval 11/3/2021

Approval of submitted plans is not an approval of omissions or oversight by this office or noncompliance with any applicable regulations of local government. The contractor is responsible for making sure that the building complies with all applicable building codes and regulations of the local government.

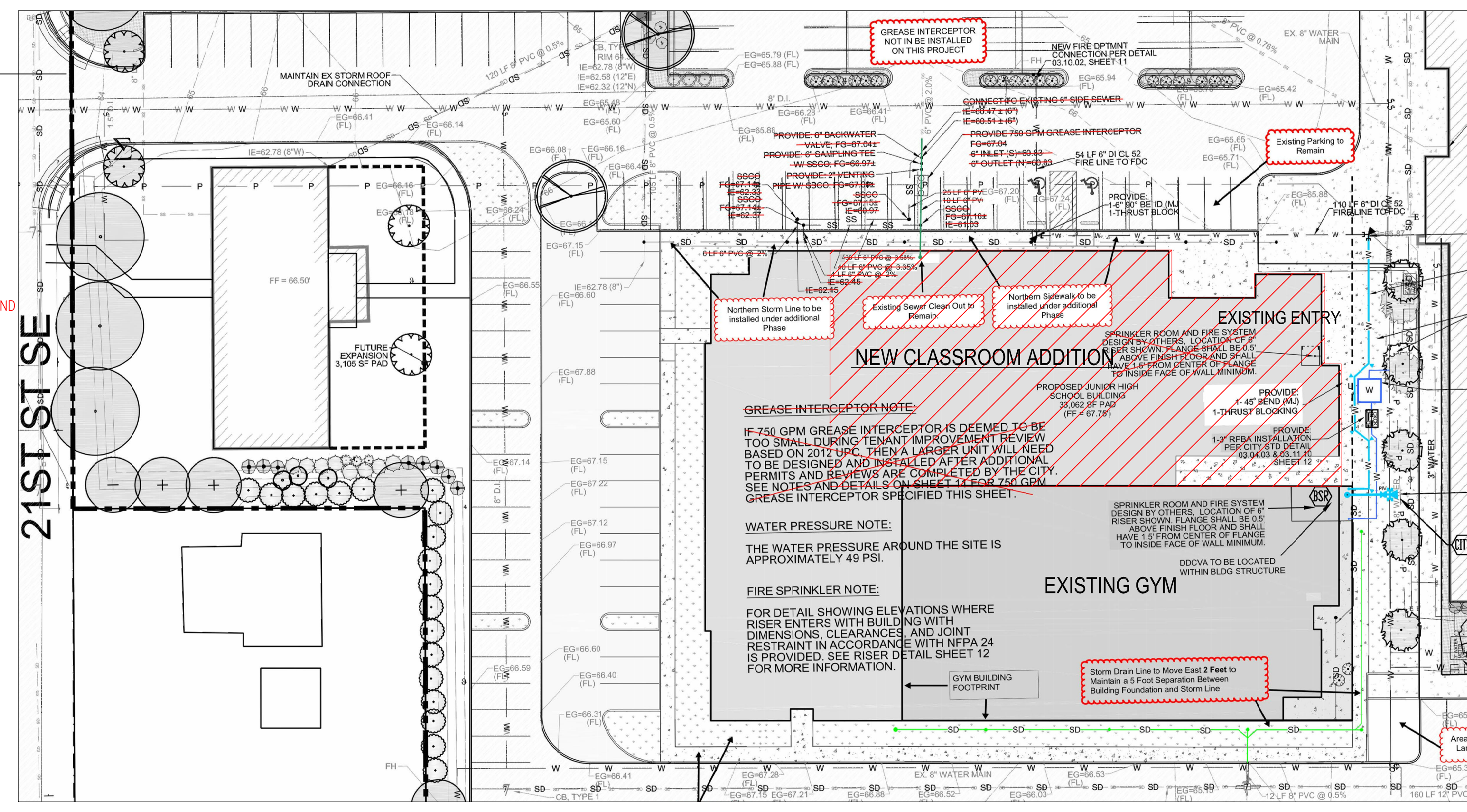
THE APPROVED CONSTRUCTION PLANS AND ALL ENGINEERING MUST BE POSTED ON THE JOB AT ALL INSPECTIONS IN A VISIBLE AND READILY ACCESSIBLE LOCATION.

## SCOPE OF WORK:

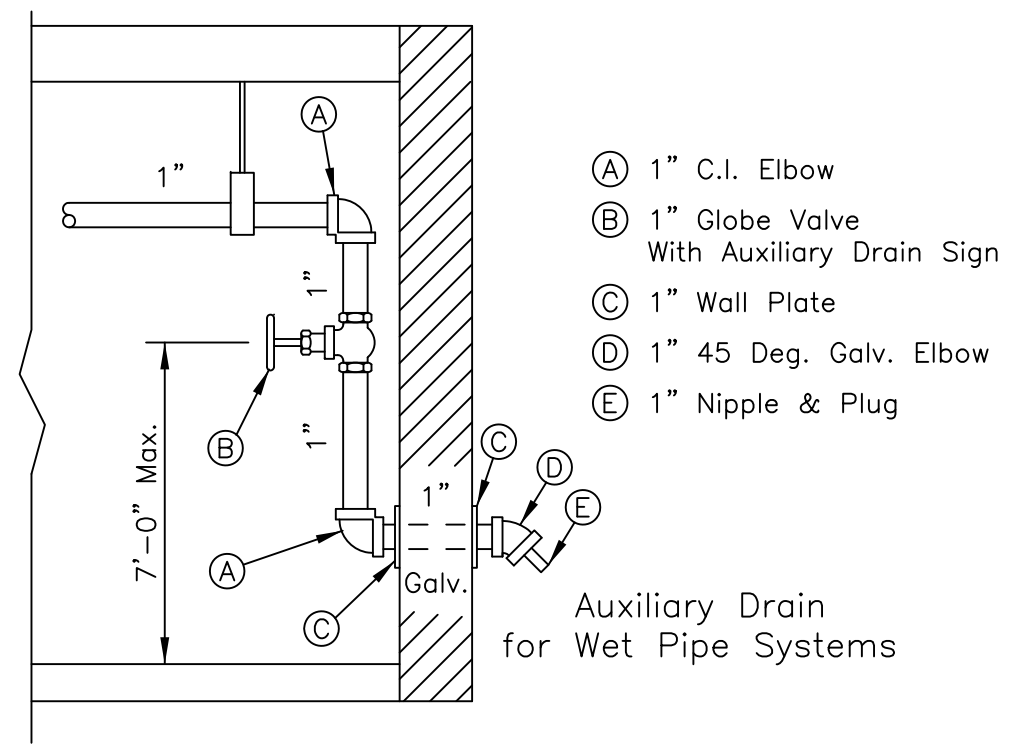
- COLUMBIA FIRE INC. SCOPE OF WORK IS TO INSTALL A NEW WATER BASED SPRINKLER SYSTEM IN THE NEW ADDITION TO COMPLY WITH NFPA #13-2016
- DESIGN TO BE AS FOLLOWS: GYMNASIUM AREA IS LIGHT HAZARD, 225 SQ.FT. MAX SPACING, CALCULATED TO PROVIDE .10 GPM OVER 1646.30 SQ.FT.
- PLAN SUBMITTAL TO THE CITY OF PUYALLUP FOR APPROVAL.
- MATERIALS PER NFPA #13-2016 EDITION STANDARDS.
- TESTING PER NFPA #13-2016 EDITION AND THE CITY OF PUYALLUP.

## GENERAL NOTES:

- ALL MATERIAL AND EQUIPMENT TO BE NEW AND UL OR FM LISTED APPROVED.
- PIPE LENGTHS ARE SHOWN AS CUT LENGTHS FOR FABRICATION.
- PIPE HANGERS AND METHOD OF HANGING TO BE IN ACCORDANCE WITH NFPA #13-2016 EDITION.
- PIPING SHALL BE IN ACCORDANCE WITH NFPA #13-2016 EDITION.
- JOINING OF PIPE/FITTINGS (THREADED AND WELDED) SHALL BE IN ACCORDANCE WITH NFPA #13-2016 EDITION.
- OWNER TO PROVIDE ADEQUATE HEAT TO PREVENT WATER IN PIPES FROM FREEZING IN AREAS PROTECTED BY A WET PIPE SPRINKLER SYSTEM.
- STRUCTURAL ADEQUACY OF THE BUILDING TO SUPPORT THE SPRINKLER PIPING IS THE RESPONSIBILITY OF THE OWNER AND/OR HIS STRUCTURAL.
- ALL FIRE ALARMS, WIRING, MONITORING AND BEAM PENETRATION ARE TO BE INSTALLED BY OTHERS. RESPONSIBILITY OF THE OWNER AND/OR HIS STRUCTURAL.
- ALL NEW PIPE 1" ARMOVERS TO BE BLACK SCHEDULE 40 THREADED WITH DUCTILE IRON THREADED FITTINGS. ALL NEW 1 1/2" BRANCH LINES AND 4" & LARGER MAIN PIPE TO BE BLACK SCHEDULE 10 PIPE WITH WELDED OUTLETS AND GROOVED COUPLINGS.



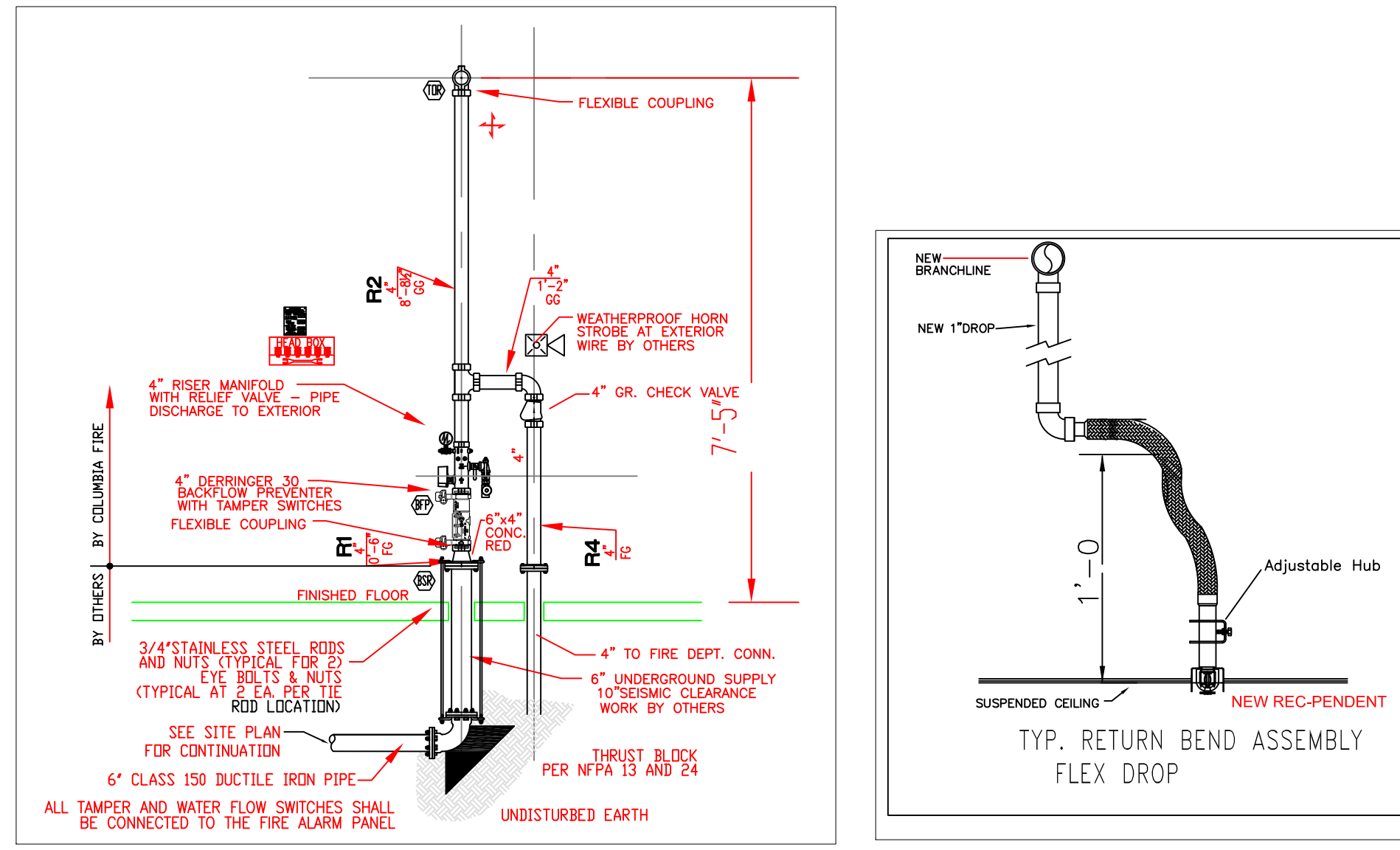
SITE PLAN  
SCALE 1" = 40'-0"



LOW POINT DRAIN  
SCALE: NONE

## EARTHQUAKE BRACING NOTES:

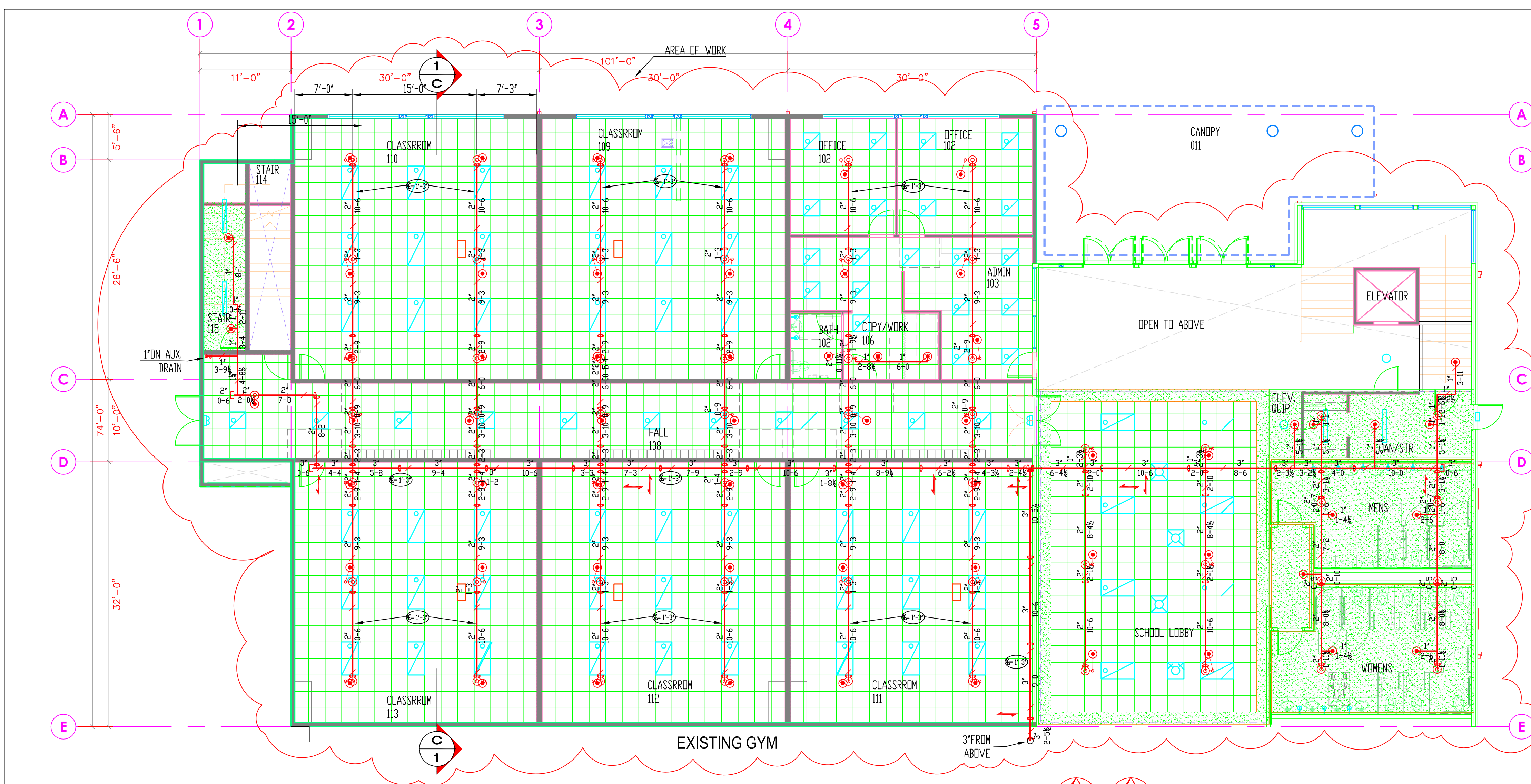
- INSTALL FLEXIBLE COUPLINGS AND ADHERE TO CLEARANCES AROUND PIPE AS PER NFPA 13, 2016, CHAPTER 9.
- ALL RISERS OVER 3 FEET IN LENGTH SHALL REQUIRE A FLEXIBLE COUPLING REGARDLESS OF SIZE. IF, 3 FEET TO 7 FEET IN LENGTH, ONE FLEXIBLE COUPLING IS ADEQUATE. IF OVER 7 FEET IN LENGTH, A FLEXIBLE COUPLING SHALL BE LOCATED WITHIN 24" OF THE TOP AND BOTTOM OF ALL RISERS, REGARDLESS OF SIZE.
- WHEN DROPPING TO A MEZZANINE, A FLEXIBLE COUPLING IS REQUIRED WITHIN 24" OF THE TOP AND BOTTOM OF EACH DROP, REGARDLESS OF SIZE.
- RESTRAIN BRANCH LINES ACCORDING TO NFPA 13, 2016.
- SWAY BRACING TO BE INSTALLED IN ACCORDANCE WITH NFPA 13, 2016.



EXISTING RISER SECTION C  
SCALE 1/8" = 1'-0"

BUILDING SECTION C - C  
SCALE 1/8" = 1'-0"

BUILDING SECTION B - B  
SCALE 1/8" = 1'-0"



FIRST FLOOR SPRINKLER PIPING PLAN  
FINISHED FLOOR ELEVATION = 0'-0"

### FIRE PROTECTION NOTES

GENERAL DESCRIPTION:  
- SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED AND CALCULATED BASED ON THE FOLLOWING CRITERIA:

HAZARD CLASS	DESCRIPTION	HYDRAULIC DESIGN DENSITY	MAX SPACING PER SPRINKLER	HOSE ALLOWANCE
LIGHT	GYMNASIUM, OFFICES, CLASSROOMS, CORRIDORS, RESTROOMS, ETC.	0.10 GPM/SQ. FT. OVER THE MOST REMOTE 1500 SQ. FT.	225 SQ. FT.	100 GPM
ORD. HAZ. GP 1	MECHANICAL AND ELEC. ROOMS, ETC.	0.15 GPM/SQ. FT. OVER THE MOST REMOTE 1500 SQ. FT.	130 SQ. FT.	250 GPM
ORDINARY GROUP 2	GENERAL STORAGE, ETC.	0.20 GPM/SQ. FT. OVER THE MOST REMOTE 1500 SQ. FT.	130 SQ. FT.	250 GPM

NOTES:  
1. INCREASE REMOTE AREA 30% FOR AREAS WITH SLOPED CEILINGS.  
2. DECREASE REMOTE AREA PER NFPA 13:11.2.3.2.3.1 AS ALLOWED.  
3. ROOM DESIGN METHOD - CALCULATE THE LARGEST ROOM THAT PRODUCES THE GREATEST DEMAND.

WASHINGTON STATE  
CERTIFICATE OF COMPETENCY  
FIRE PROTECTION SPRINKLER SYSTEMS

**Steve Adamson**  
4265-0691-C Level 3  
Columbia Fire, Inc.  
COLUMF1952MG

*Steve Adamson*  
Signature Expires 12/31/21

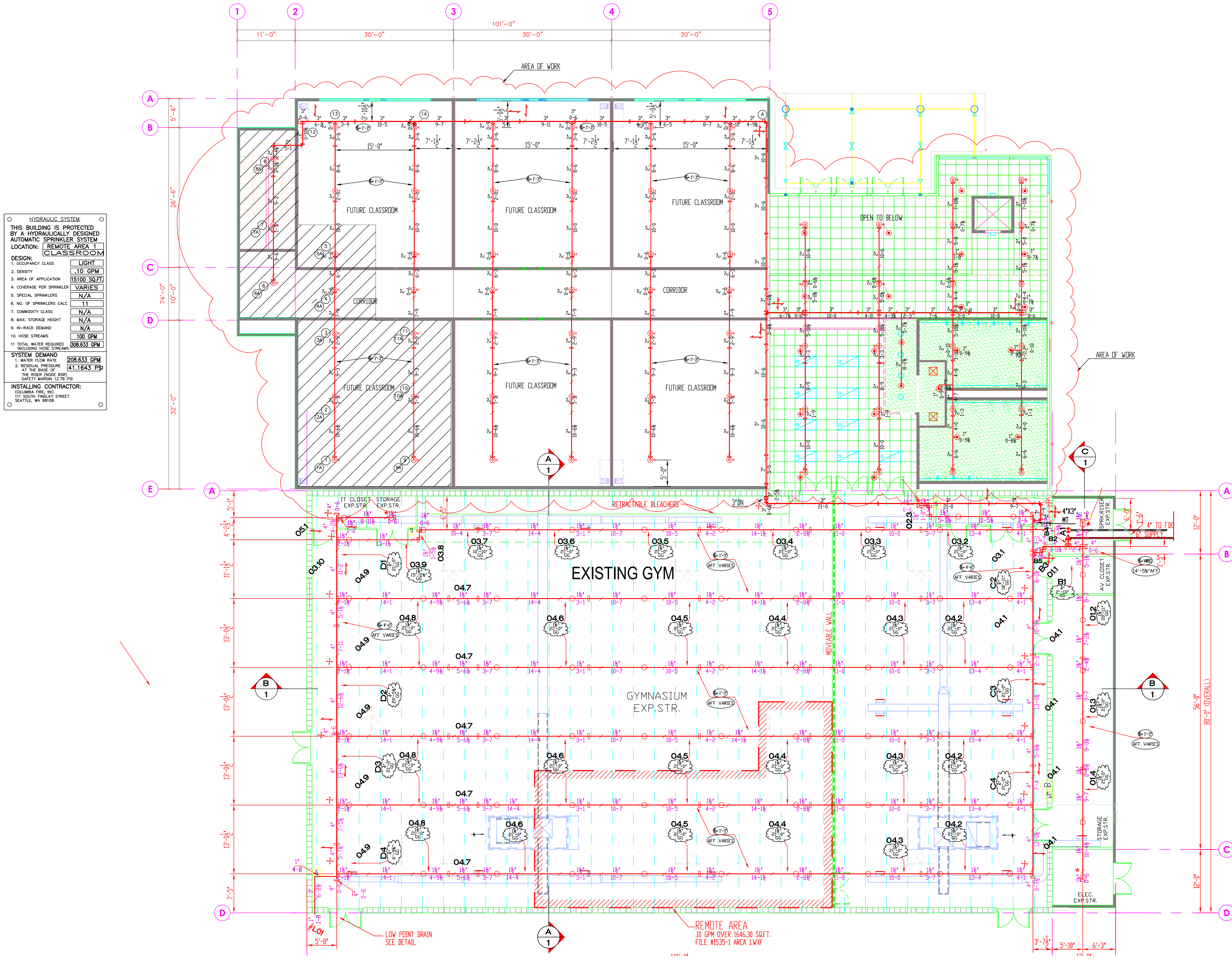
DRAWING SYMBOLS		REVISIONS		HYDRAULIC DESIGN INFO.		SPRINKLER HEAD LEGEND		CERTIFICATE OF COMPETENCY								
▲ ALARM VALVE RISER	⊕ FLEXIBLE GROOVED COUPLING	XX - WELDED PIPE TAG	DATE	BY	DESCRIPTION	SPRINKLER TYPE	SINH	MFG	MODEL	SYMBOL	K-FACTOR	THREAD	TEMP	FINISH	CANOPY	QTY
△ FLOW SWITCH RISER	⊕ RIGID GROOVED COUPLING	(X) - BRANCH LINE NUMBER				UPRIGHT	VK300	VIKING	MICROFAST	⊕	5.6	1/2"	155°	BRASS	N/A	57
◆ DRY PIPE RISER	⊕ THREADED PIPE COUPLING	1 - PIPE SIZE & LENGTH				PENDENT OR	VK302	VIKING	MICROFAST	⊕	5.6	1/2"	155°	CHROME	N/A	6
⊕ DELUGE/P.A. RISER	⊕ CONTROL VALVE	(8-10) - PIPE SIZE & LENGTH (CUT)				EC PENDENT OR	VK534	VIKING	EC	⊕	11.2	3/4"	155°	CHROME	N/A	56
⊕ FIRE DEPARTMENT CONNECTION	⊕ CHECK VALVE	(8-10) - PIPE SIZE & LENGTH (CUT)														
⊕ WATER MOTOR GONG	⊕ PIPE HANGER (SEE DETAIL)	⊕ HYDRAULIC NODE														
⊕ ELECTRIC BELL	⊕ SEISMIC BRACE (SEE DETAIL)	⊕ ELEVATION DATUM														
		⊕ CENTERLINE OF PIPE TO DECK														

**Columbia Fire**  
SPRINKLER SYSTEM SERVICE & REPAIR  
WA CL# COLUMF1952MG  
111 South Findlay Street  
Seattle, WA 98108  
(206) 232-8569

PROJECT: **CASCADE CHRISTIAN SCHOOL GYM- REV**  
815 21ST STREET SE  
PUYALLUP, WASHINGTON 98372

CONTRACT WITH: **ABSHER CONSTRUCTION**  
1001 SHAD RD.  
PUYALLUP, WA 98371

DESIGNER: **CORRY HELLA**  
DATE: 10/13/2021  
SCALE: 1/8"=1'-0"  
HAZARD: LIGHT  
A/E: City of Puyallup  
JOB #: 1901322  
SHEET #: FP1 OF 2



**HYDRAULIC SYSTEM**  
 THIS BUILDING IS PROTECTED BY A HYDRAULICALLY DESIGNED AUTOMATIC SPRINKLER SYSTEM

**LOCATION: REMOTE AREA 1 CLASSROOM**

**DESIGN:** LIGHT

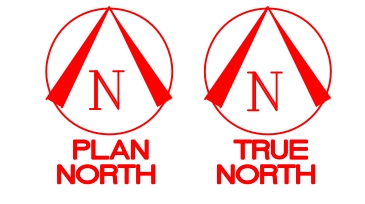
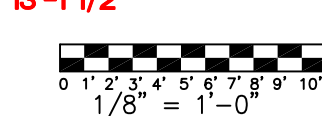
1. OCCUPANCY CLASS: LIGHT  
 2. DENSITY: 10 GPM  
 3. AREA OF APPLICATION: 15100 SQ.FT.  
 4. COVERAGE PER SPRINKLER: VARIES  
 5. SPECIAL SPRINKLERS: N/A  
 6. NO. OF SPRINKLERS CALC: 11  
 7. COMMODITY CLASS: N/A  
 8. MAX. STORAGE HEIGHT: N/A  
 9. IN-RACK DEMAND: N/A  
 10. HOSE STREAMS: 100 GPM  
 11. TOTAL WATER REQUIRED INCLUDING HOSE STREAMS: 908.633 GPM

**SYSTEM DEMAND**  
 1. WATER FLOW RATE: 208.633 GPM  
 2. RESIDUAL PRESSURE AT THE BASE OF THE RISER (NODE 888): 211.1643 PSI

**INSTALLING CONTRACTOR:**  
 COLUMBIA FIRE, INC.  
 111 SOUTH FINDLAY STREET  
 SEATTLE, WA 98108

**SECOND FLOOR SPRINKLER PIPING PLAN**  
 FINISHED FLOOR ELEVATION - 13'-1 1/2"

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



**DRAWING SYMBOLS**

▲ - ALARM VALVE RISER	⊕ - FLEXIBLE GROOVED COUPLING	⊗ - WELDED PIPE TAG
△ - FLOW SWITCH RISER	⊖ - RIGID GROOVED COUPLING	⊗ - BRANCH LINE NUMBER
◆ - DRY PIPE RISER	⊖ - THREADED PIPE COUPLING	⊖ - PIPE SIZE & LENGTH (CUT)
⊖ - DELUGE/PA RISER	⊖ - CONTROL VALVE	⊖ - PIPE SIZE & LENGTH (CUT)
⊖ - FIRE DEPARTMENT CONNECTION	⊖ - CHECK VALVE	⊖ - HYDRAULIC NODE
⊖ - WATER MOTOR GONG	⊖ - PIPE HANGER (SEE DETAIL)	⊖ - ELEVATION DATUM
⊖ - ELECTRIC BELL	⊖ - SEISMIC BRACE (SEE DETAIL)	⊖ - CENTERLINE OF PIPE TO DECK

**REVISIONS**

NO.	DATE	BY	DESCRIPTION

**HYDRAULIC DESIGN INFO.**

THE SYSTEM IS (CHECK ONE)	THE SYSTEM IS NOT (CHECK ONE)
<input checked="" type="checkbox"/> FLOW TEST	<input type="checkbox"/> FLOW TEST
STATIC: 47 psi	
RESIDUAL: 20 psi	
GPM FLOWING: 2000 gpm	
DATE & TIME: ?	
- SYSTEM DESIGN -	
REMOTE AREA: 1500	
DENSITY: .10	
MAX AREA/HEAD: 225	
K-FACTOR: 5.6	

**SPRINKLER HEAD LEGEND**

SPRINKLER TYPE	SINH	MFG	MODEL	SYMBOL	K-FACTOR	THREAD	TEMP	FINISH	CANOPY	QTY
UPRIGHT	VK300	VIKING	MICROFAST	⊖	45	1/2"	155°	BRASS	NA	77
PENDENT QR	VK302	VIKING	MICROFAST	⊖	5.6	1/2"	155°	CHROME	NA	0
EC PENDENT QR	VK534	VIKING	EC	⊖	11.2	3/4"	155°	CHROME	NA	79

**CERTIFICATE OF COMPETENCY**

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