PROJECT SCOPE

1 THE SCOPE OF THIS PROJECT INCLUDES THE COMPLETE CONSTRUCTION OF THE FOLLOWING FIRE PROTECTION SYSTEMS, DESIGNED TO PROTECT THE NEW TWO (2) STORY EXPANSION OF AN EXISTING EDUCATION BUILDING.

2 THE CONSTRUCTION OF ONE (1) NEW WET-PIPE FIRE SPRINKLER SYSTEM. THE NEW FIRE SPRINKLER SYSTEM CONTROL VALVES SHALL BE LOCATED IN THE EXISTING FIRE SPRINKLER RISER ROOM AND SERVE THE FIRST AND SECOND LEVEL EXPANSION. EACH FLOOR OF THE EXPANSION THAT THIS SYSTEM SERVES IS APPROXIMATELY 10,000 SQFT.

3 THE EXISTING MANUAL WET CLASS 1 STANDPIPE SYSTEM WITH ONE (1) STANDPIPE IN EACH STAIR ENCLOSURE (TWO (2) EXISTING FOR THIS BUILDING) SHALL BE EXTENDED TO THE BUIDING EXPANSION AND PROVIDE ONE (1) NEW STANDPIPE IN THE NEW STAIR ENCLOSURE. THE HOSE VALVE CONNECTIONS SHALL BE PROVIDED AT EACH MAIN LANDING WITHIN THE STAIR ENCLOSURE (2 NEW HOSE VALVES).

CONTRACTOR REQUIREMENTS

1 THE FIRE SPRINKLER SUBCONTRACTOR IS RESPONSIBLE FOR ALL CUTTING, SEALING, PATCHING, AND PAINTING REQUIRED FOR INSTALLATION OF THE SPRINKLER SYSTEM. ALL PENETRATIONS OF RATED ASSEMBLIES SHALL BE FIRE STOPPED WITH AN APPROVED MATERIAL AS PRESCRIBED IN THE APLICABLE CODES AND STANDARDS.

2 THE FIRE SPRINKLER SUBCONTRACTOR SHALL BE LICENSED AS REQUIRED BY THE STATE AND LOCAL AHJ FOR THE DESIGN AND INSTALLATION OF AUTOMATIC SPRINKLER SYSTEMS.

3 ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS AS REQUIRED BY THE STATE AND LOCAL AHJ.

4 THE FIRE SPRINKLER CONTRACTOR SHALL PREPARE A SHOP DRAWING SUBMITTAL AND EQUIPMENT CUTSHEET PACKAGE SUBMITTAL, AND SUBMIT TO THE ENGINEER AND AUTHORITY HAVING JURISDICTION, FOR APPROVAL. APPROVAL OF SHOP DRAWINGS AND EQUIPMENT SHALL BE OBTAINED PRIOR TO STARTING WORK.

5 SPRINKLER CONTRACTOR IS RESPONSIBLE TO COORDINATE AND ADJUST SPRINKLER HEADS AND PIPING TO ACCOUNT FOR ELECTRICAL, MECHANICAL, STRUCTURE AND ALL OTHER TRADES AT NO ADDITIONAL COST.

6 CONTRACTOR SHALL PROVIDE OWNER WITH TEST CERTIFICATES, CARE & MAINTENANCE BOOK, SPARE HEAD CABINET WITH SPRINKLERS, AND REQUIRED SPRINKLER WRENCHES IN ACCORDANCE WITH NFPA 13.

7 DELIVERY OF ALL MATERIALS AND EQUIPMENT TO THE JOB SITE SHALL BE SCHEDULED TO ASSURE COMPLIANCE WITH THE PREDETERMINED CONSTRUCTION SCHEDULE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR STORAGE AND HANDLING ALL MATERIALS AND EQUIPMENT ON THE JOB SITE, INCLUDING FURNISHING OF ANY STORAGE FACILITIES OR STRUCTURE REQUIRED.

8 THE FIRE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR INDICATING APPROACH FOR PROTECTION AGAINST SEISMIC ACTIVITY INCLUDING THE TYPES AND LOCATIONS OF BRACING, PIPE RESTRAINTS, FLEXIBLE COUPLINGS AND CLEARANCES. THE FIRE SPRINKLER CONTRACTOR SHALL ALSO PROVIDE CALCULATIONS FOR THE LOADS ON BRACING SYSTEMS.

GENERAL REQUIREMENTS

1 DESIGN AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS: 2018 NORTH CAROLINA BUILDING CODE, 2018 NORTH CAROLINA FIRE CODE, NFPA 13 STANDARD FOR THE INSTALLATION OF FIRE SPRINKLER SYSTEMS (2013), NFPA 14 STANDARD FOR THE INSTALLATION OF STANDPIPE AND HOSE SYSTEMS (2013), NFPA 25 STANDARD FOR THE INSPECTION, TESTING, AND MAINTENANCE OF WATER-BASED FIRE PROTECTION SYSTEMS (2011), NFPA 70 NATIONAL ELECTRICAL CODE (2014), NFPA 72 NATIONAL FIRE ALARM AND SIGNALING CODE (2013), AND ALL LOCAL AHJ REQUIREMENTS.

2 NO CHANGES TO THE "FP" SHEETS BY THE SPRINKLER SUBCONTRACTOR ARE ALLOWED EXCEPT FOR ADDING SHOP DRAWING INFORMATION. ALL REQUIRED REVISIONS TO THE "FP" SHEETS (OTHER THAN MINOR REVISIONS FOR THE PURPOSE OF COORDINATION) AND ANY ABNORMAL CONDITIONS THAT WOULD RESULT IN NON-COMPLIANCE SHALL BE SUBMITTED IN WRITING AND SHALL BE APPROVED BY PERFORMANCE BASED FIRE PROTECTION ENGINEERING, PLLC AND THE AHJ.

3 THE FIRE SPRINKLER SYSTEMS IN THIS BUILDING SHALL BE MONITORED BY A CENTRAL STATION SIGNALING SYSTEM FURNISHED AND INSTALLED BY THE FIRE ALARM CONTRACTOR. ALL TAMPER SWITCHES AND WATER FLOW INDICATORS SHALL BE INSTALLED BY THE SPRINKLER CONTRACTOR AND WIRED TO THE CENTRAL STATION SIGNALING SYSTEM BY THE ALARM CONTRACTOR.

4 ALL PIPE LENGTHS SHOWN ARE CENTER TO CENTER DIMENSIONS.

5 ALL INSPECTOR'S TEST CONNECTIONS AND LOW POINT DRAINS SHALL BE IN ACCORDANCE WITH NFPA 13 AND SHALL BE DISPLAYED ON SHOP DRAWINGS. MOUNT CONTROL VALVES FOR INSPECTOR'S TEST CONNECTION AND LOW POINT DRAINS INSIDE BUILDING AT 5'-0" A.F.F. PIPE DRAIN LINES TO EXTERIOR OF BUILDING. COORDINATE WITH THE ARCHITECT FOR ACCEPTABLE LOCATIONS.

6 SPRINKLERS IN T-BAR CEILING SHALL BE PLACED IN QUARTER POINT OR CENTER OF 2x4 TILE. IN ALL SOFFITED AREAS, SPRINKLER HEADS SHALL BE ALIGNED WITH ADJACENT LIGHTING.

7 SIGNAGE SHALL BE PROVIDED AS REQUIRED, INCLUDING RISER ROOM IDENTIFICATION, FDC, TEST CONNECTIONS AND HYDRAULIC PLACARD.

8 FLOW SWITCH SHALL BE CONNECTED TO AN OUTSIDE ALARM BELL OR OTHER AUDIBLE ALARM DEVICE AT EACH RISER. APPROVED IDENTIFICATION SIGNS SHALL BE PROVIDED ON THE OUTSIDE ALARM BELL "SPRINKLER FIRE ALARM - WHEN ALARM SOUNDS CALL 911 / FIRE DEPARTMENT"

9 REFERENCE THE CIVIL DRAWINGS FOR ADDITIONAL FIRELINE INFORMATION AND ACTUAL LENGTHS OF PIPE. THE LAYOUT SHOWN ON THE CIVIL DRAWINGS WILL SUPERCEDE WHAT IS SHOWN ON THE FIRE PROTECTION SITE PLAN. THE FIRE PROTECTION SITE PLAN IS FOR HYDRAULIC REFERENCE ONLY.

10 THIS AREA IS NOT KNOWN TO HAVE PROBLEMS WITH MICROBIAL INDUCED CORROSION. NO PREVENTATIVE MEASURES ARE DESIGNED INTO THIS SYSTEM.

11 THE FIRE DEPARTMENT CONNECTION (FDC) IS A 5" STORZ TYPE CONNECTION AND IS LOCATED ATTACHED TO THE EXTERIOR OF THE FIRE RISER ROOM.

12 QUICK RESPONSE SPRINKLER HEADS SHALL BE INSTALLED THROUGHOUT (UNLESS OTHERWISE NOTED).

13 THE FIRE SPRINKLER CONTRACTOR IS RESPONSIBLE FOR CONDUCTING A FLOW TEST NO MORE THAN 12 MONTHS PRIOR TO WORKING PLAN SUBMITTAL, SATISFYING THE NFPA 13 23.2.1.1 REQUIREMENT.

14 THE SITE CLASSIFICATION IS "D" RESULTING IN A SEISMIC DESIGN CATEGORY "C." THEREFORE IN ACCORDANCE WITH ASCE 7-10, MECHANICAL AND ELECTRICAL COMPONENTS SHALL MEET THE SEISMIC DESIGN REQUIREMENTS FOR NONSTRUCTURAL MEMBERS.

MATERIAL REQUIREMENTS

1 ALL MATERIALS SHALL BE UL LISTED OR FM APPROVED.

2 ALL INTERIOR PIPE SHALL BE BLACK STEEL: SCHEDULE 10 FOR PIPES 2 1/2" AND LARGER AND SCHEDULE 40 FOR PIPES 2" AND SMALLER.

3 ALL EXTERIOR PIPE (INCLUDING NIPPLES OR SPOOL PIECES EXTENDING THROUGH EXTERIOR WALLS) SHALL BE SCHEDULE 40 GALVANIZED STEEL.

4 ALL INTERIOR GROOVED FITTINGS SHALL COME WITH THE FACTORY APPLIED COATING.

5 ALL INTERIOR THREADED FITTINGS SHALL BE CAST IRON, DUCTILE IRON OR MALLEABLE IRON.

6 ALL EXTERIOR FITTINGS SHALL BE GALVANIZED.

7 PROVIDE RIGID COUPLINGS THROUGHOUT, EXCEPT FLEXIBLE COUPLINGS SHALL BE INSTALLED AS FOLLOWS: WITHIN 24 IN. OF THE TOP AND BOTTOM OF ALL RISERS; ON BOTH SIDES OF CONCRETE OR MASONRY WALLS WITHIN 1 FT. OF THE WALL SURFACE; WITHIN 24 IN. OF BUILDING EXPANSION JOINTS; WITHIN 24 IN. OF THE TOP AND BOTTOM OF DROPS TO HOSE LINES, RACK SPRINKLERS, AND MEZZANINES, REGARDLESS OF PIPE SIZE; WITHIN 24 IN. OF THE TOP OF DROPS EXCEEDING 15 FT. IN LENGTH TO PORTIONS OF SYSTEMS SUPPLYING MORE THAN ONE SPRINKLER, REGARDLESS OF PIPE SIZE; ABOVE AND BELOW ANY INTERMEDIATE POINTS OF SUPPORT FOR A RISER OR OTHER VERTICAL PIPE.

8 HANGER LOCATION FOR ALL PIPING SHALL BE IN ACCORDANCE WITH NFPA 13. ALTERNATE UL AND FM HANGER METHODS ARE ACCEPTED AT NO ADDITIONAL COST TO THE OWNER. PROVIDE UL AND FM LITERATURE TO PERFORMANCE BASED FIRE PROTECTION ENGINEERING, PLLC AND THE AHJ FOR REVIEW AND ACCEPTANCE.

TESTING REQUIREMENTS

1 THE FIRE SPRINKLER SYSTEM SHALL BE HYDROSTATICALLY PRESSURE TESTED IN ACCORDANCE WITH NFPA 13.

2 ALL PIPING AND ATTACHED APPURTENANCES SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE HYDROSTATICALLY TESTED AT 200 PSI AND SHALL MAINTAIN THAT PRESSURE WITHOUT LOSS FOR 2 HOURS.

3 LOSS SHALL BE DETERMINED BY A DROP IN GAUGE PRESSURE OR VISUAL LEAKAGE.

4 THE TEST PRESSURE SHALL BE READ FROM A GUAGE LOCATED AT THE LOW POINT OF THE SYSTEM OR PORTION BEING TESTED. THE PRESSURES IN PIPING AT HIGHER ELEVATIONS SHALL BE PERMITTED TO BE LESS THAN 200 PSI WHEN ACCOUNTING FOR ELEVATION LOSSES. SYSTEMS OR PORTIONS OF SYSTEMS THAT CAN BE ISOLATED SHALL BE PERMITTED TO BE TESTED SEPARATELY.

FIRE SPRINKLER LEGEND

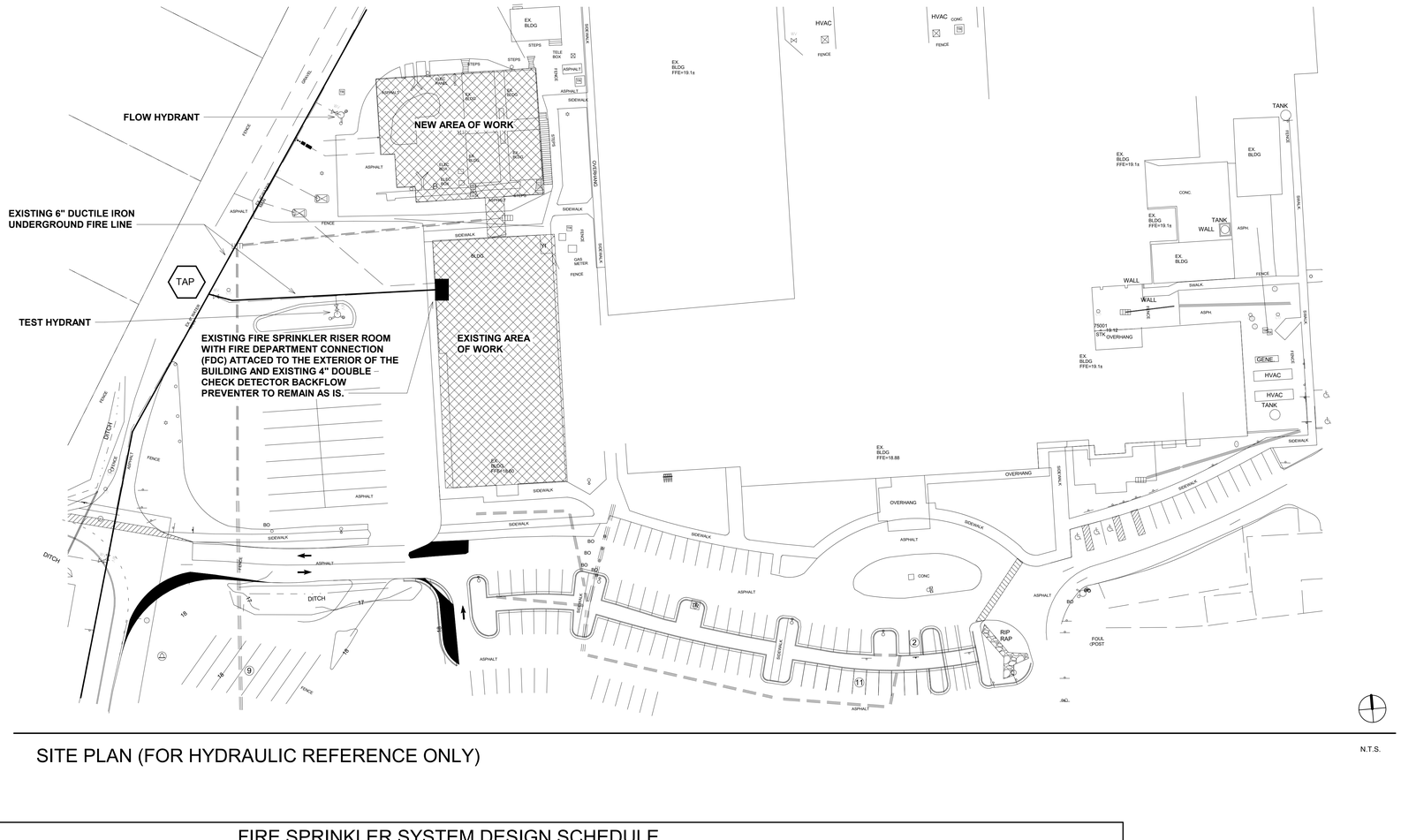
PLAN	PROFILE	DESCRIPTION
		FIRE SPRINKLER HEAD
		TEE
		ELBOW
		ENDCAP
		REDUCER
		BUTTERFLY VALVE
		OS&Y GATE VALVE
		2 1/2" HOSE VALVE
		CHECK VALVE
		FLOOR CONTROL VALVE

ANNOTATION LEGEND

PLAN	DESCRIPTION
X" / X' - X"	PIPE DIAMETER OVER PIPE LENGTH
?	KEY NOTE TAG
XX	HAZARD CLASSIFICATION TAG
	MATCHLINE
	REMOTE AREA

WATER SUPPLY INFORMATION

STATIC PRESSURE	75.00 psi
RESIDUAL PRESSURE	42.00 psi
FLOW	950.00 GPM
FLOW AT 20 PSI	1,240.00 GPM
OUTSIDE HOSE FLOW	0.00 GPM
CONDUCTED BY	BFPE
WITNESSED BY	H2GO PUBLIC UTILITIES
TEST DATE	JANUARY 21, 2020
TEST TIME	4:00PM
LOCATION	114 SCORPION DRIVE
HYDRANT NUMBERS	N/A
HYDRANT ELEVATION	N/A
FIRE PUMP RATING	N/A
STORAGE TANK SIZE	N/A



SITE PLAN (FOR HYDRAULIC REFERENCE ONLY)

FIRE SPRINKLER SYSTEM DESIGN SCHEDULE

AREAS	SYSTEM TYPE	HAZARD CLASSIFICATION	SYMBOL	DENSITY (GPM/SQFT)	DESIGN AREA (SQFT)	HOSE ALLOWANCE (GPM)	DURATION (MIN)	MAX HEAD SPACING (SQFT)	HEAD TYPE	K-FACTOR	POSITION	FINISH	TEMPERATURE (°F)	REMARKS
COMPUTER LABS, CLASSROOMS, CORRIDOR, RESTROOMS, LOBBIES	WET-PIPE	LIGHT HAZARD	LH	0.10	1,500	100	60	225	QUICK RESPONSE STANDARD SPRAY	5.6	UPRIGHT CONCEALED PENDENT	BRASS WHITE POLYESTER	165	*
FOOD LAB, SCIENCE, MECHANICAL, ELECTRICAL, JANITOR	WET-PIPE	ORDINARY HAZARD	OH1	0.15	1,500	250	90	130	QUICK RESPONSE STANDARD SPRAY	5.6	UPRIGHT PENDENT	BRASS WHITE POLYESTER	165	*

a. DESIGN AREA IS PERMITTED TO BE REDUCED FOR QUICK RESPONSE SPRINKLER HEADS IN ACCORDANCE WITH NFPA 13 11.2.3.2.3

SHEET LIST

SHEET NAME	SHEET NUMBER
GENERAL NOTES	FP001
OVERALL FIRST FLOOR FIRE SPRINKLER PLAN	FP101
OVERALL SECOND FLOOR FIRE SPRINKLER PLAN	FP102
FIRST & SECOND FLOOR FIRE SPRINKLER PLAN	FP201
FIRE SPRINKLER DETAILS	FP301

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03-20-2020

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DAVID F. STACY

PROJECT TITLE

NORTH BRUNSWICK HIGH SCHOOL BUILDING AND RENOVATION

114 SCORPION DRIVE N.E.
LELAND, NC 28451

DSP # : 100
DPI SCHOOL # : 1165

SHEET TITLE

GENERAL NOTES

ISSUE BLOCK

Mark	Date	Description
	03.20.20	100% REVIEW SUBMISSION
	01.29.20	EARLY SITE PACKAGE
	10.14.19	NCDPI DD SUBMISSION
	7.30.19	SD PROGRESS DRAWINGS
	7.11.19	NCDPI SD SUBMISSION

PROJECT NO: 2019082.00
DATE: 01.20.2020
SCALE: As indicated
DRAWN BY: AJA PROJ MGR: DFS

FP001

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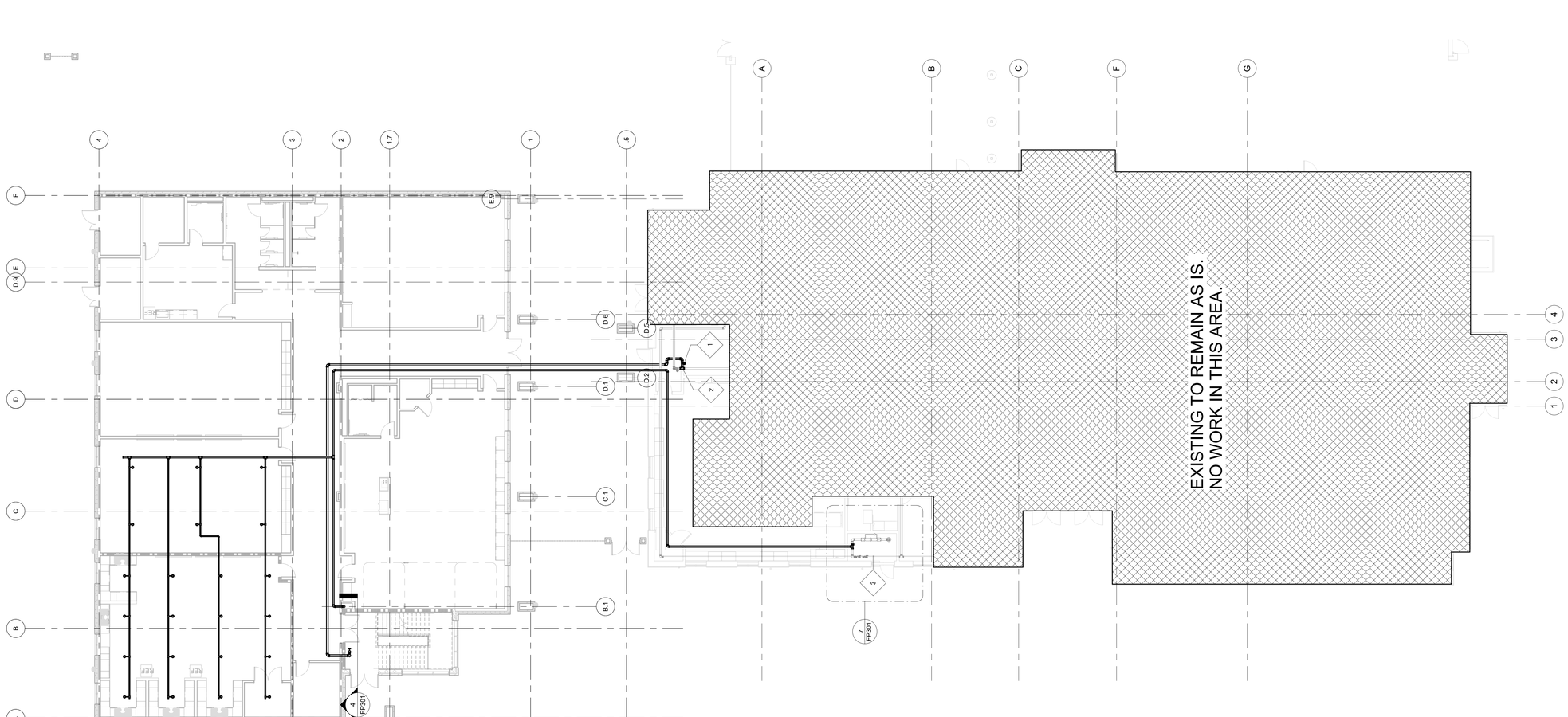
KEYNOTE LEGEND

1 STANDPIPE ISOLATION VALVES SHALL BE SUPERVISED IN THE OPEN POSITION SO THAT CHANGE IN THE NORMAL POSITION OF THE VALVE WILL GENERATE A SUPERVISORY SIGNAL AT THE SUPERVISING STATION.

2 TIE IN POINT TO EXISTING STANDPIPE SYSTEM.

3 EXISTING FIRE SPRINKLER RISER ROOM.



OVERALL FIRST FLOOR FIRE SPRINKLER PLAN
3/32" = 1'-0"

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OVERALL FIRST FLOOR FIRE SPRINKLER PLAN

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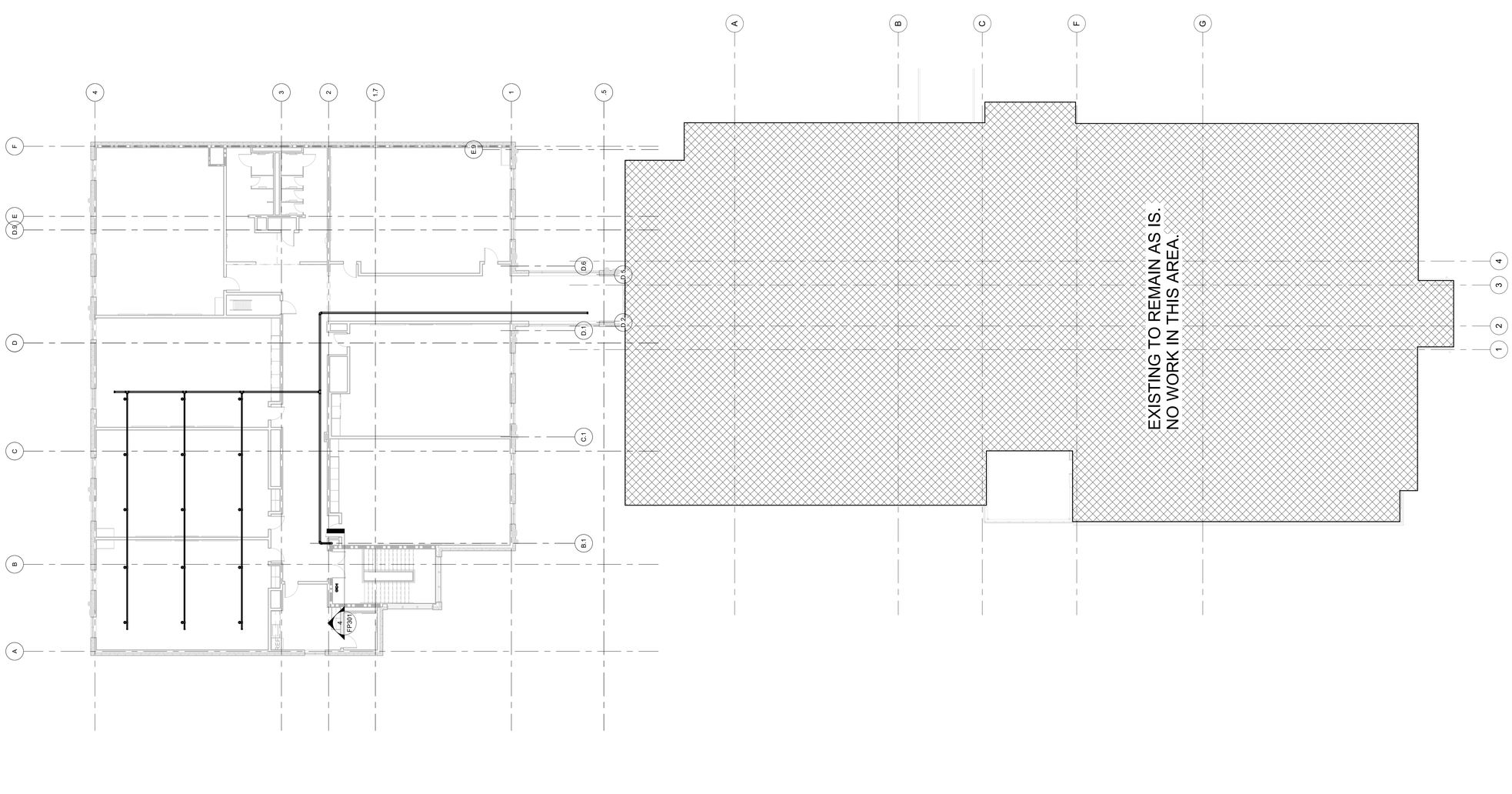

OVERALL SECOND FLOOR FIRE SPRINKLER PLAN
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DSP # : 100
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OVERALL SECOND FLOOR FIRE SPRINKLER PLAN

ISSUE BLOCK

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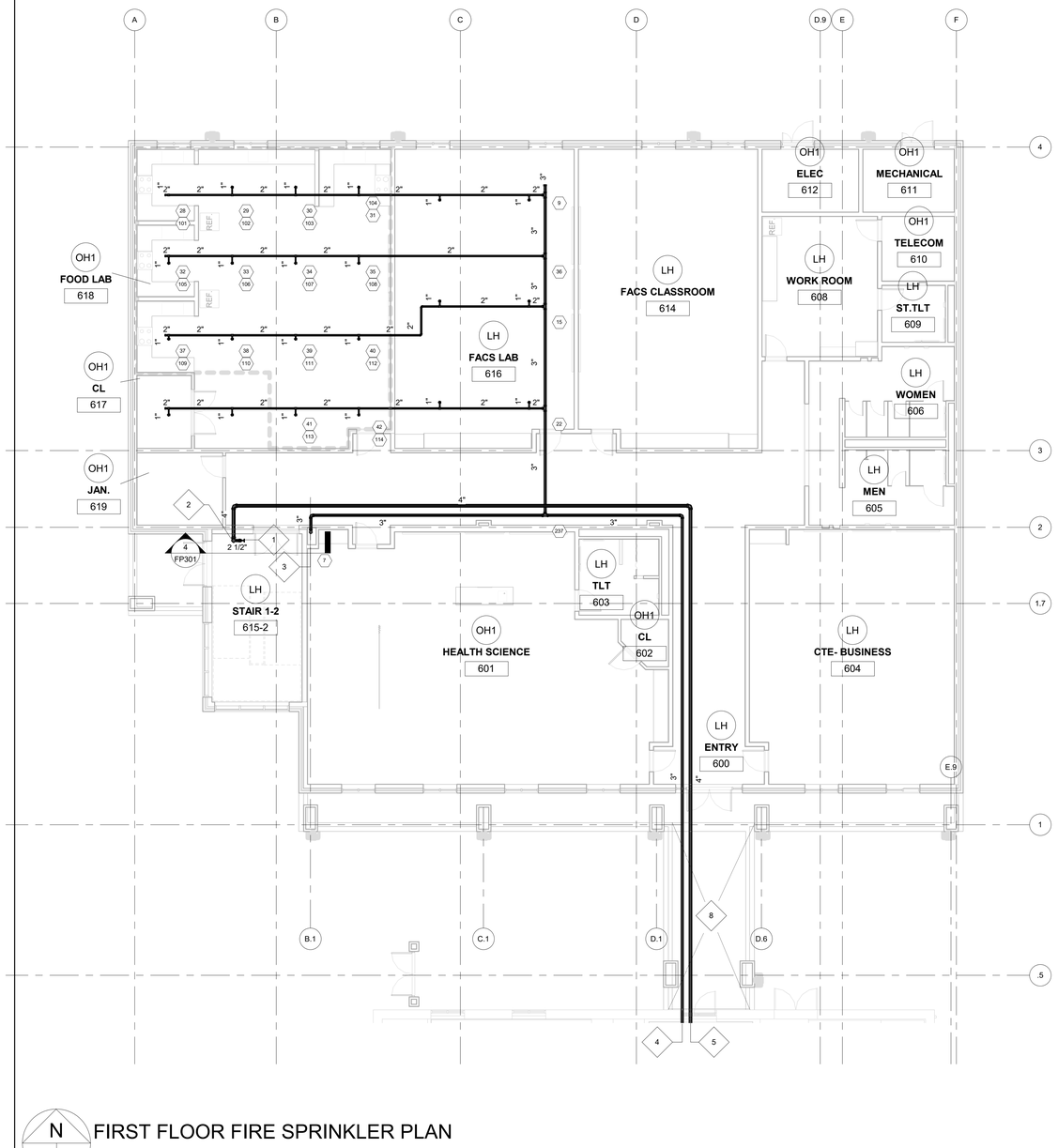
KEYNOTE LEGEND

1. 2 1/2" HOSE CONNECTION.
2. 4" STANDPIPE FEED TO FLOOR ABOVE.
3. FEED TO SPRINKLER SYSTEM ON THE FLOOR ABOVE.
4. FIRE SPRINKLER FEED TO RISER ROOM. SEE OVERALL SHEET FOR CONTINUATION.
5. STANDPIPE FEED TO EXISTING SYSTEM TIE IN POINT. SEE OVERALL SHEET FOR CONTINUATION.
6. FEED FROM FIRE SPRINKLER SYSTEM BELOW.
7. 4" STANDPIPE FEED FROM FLOOR BELOW.
8. SPRINKLERS SHALL BE PERMITTED TO BE OMITTED FROM THE EXTERIOR EXIT CORRIDOR WHERE AT LEAST 50% OPEN AND IS CONSTRUCTED OF ENTIRELY NONCOMBUSTIBLE MATERIALS PER NFPA 13 8.15.7.4.

Hydraulic Information	
Remote Area Name	LEVEL 1 - OH1
Occupancy Classification	Ordinary Hazard Group 1
Density	0.15 GPM
Total Hose Streams	250.00 GPM
Flowing Heads	14 @ 18.00 GPM
K-Factor	5.6
Total Water Required	510.43 GPM
Total Pressure Required	46.64 psi
Base of Riser	510.43 GPM
Base of Riser	46.64 psi
Safety Margin	+17.9 (27.74%)

Hydraulic Information	
Remote Area Name	LEVEL 2 - LH
Occupancy Classification	Light Hazard
Density	0.10 GPM
Total Hose Streams	100.00 GPM
Flowing Heads	10 @ 22.50 GPM
K-Factor	5.6
Total Water Required	330.23 GPM
Total Pressure Required	60.87 psi
Base of Riser	330.23 GPM
Base of Riser	60.87 psi
Safety Margin	+9.46 (13.45%)



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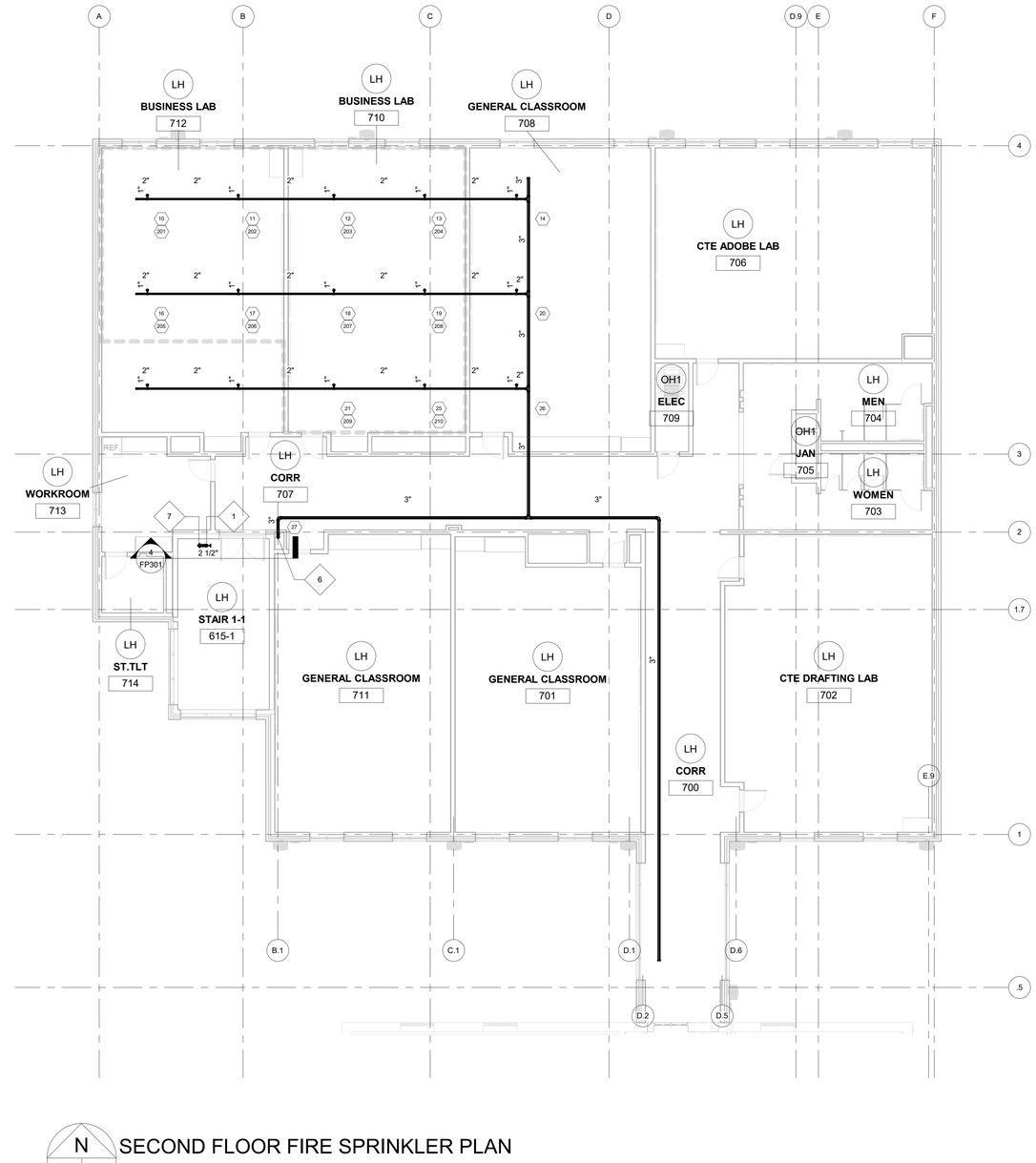
FIRST FLOOR FIRE SPRINKLER PLAN

1/8" = 1'-0"



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SECOND FLOOR FIRE SPRINKLER PLAN

1/8" = 1'-0"

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DPI SCHOOL # : 1165

SHEET TITLE

FIRST & SECOND FLOOR FIRE SPRINKLER PLAN

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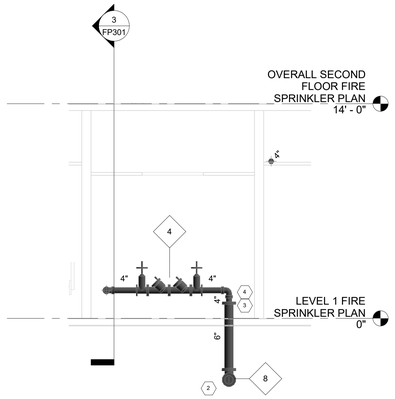
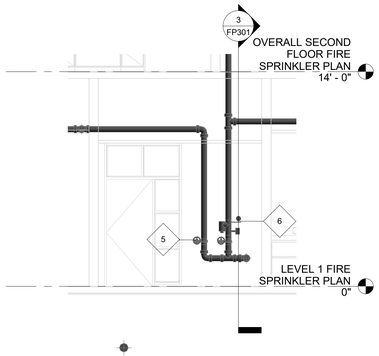
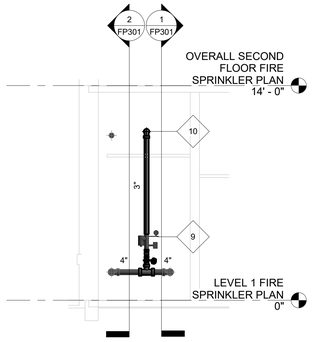


1 EXISTING BACKFLOW PREVENTER
1/4" = 1'-0"



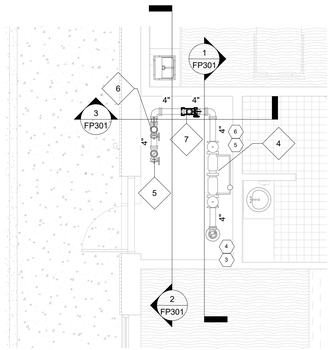
2 EXISTING FIRE SPRINKLER RISERS
1/4" = 1'-0"



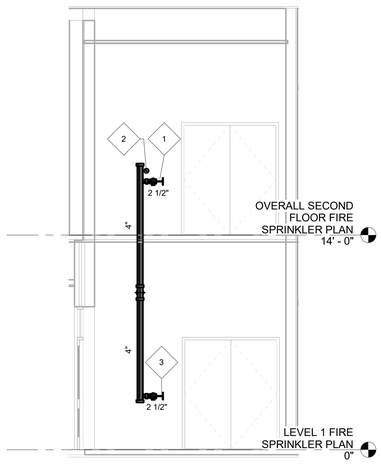
3 NEW FIRE SPRINKLER RISER
1/4" = 1'-0"

KEYNOTE LEGEND

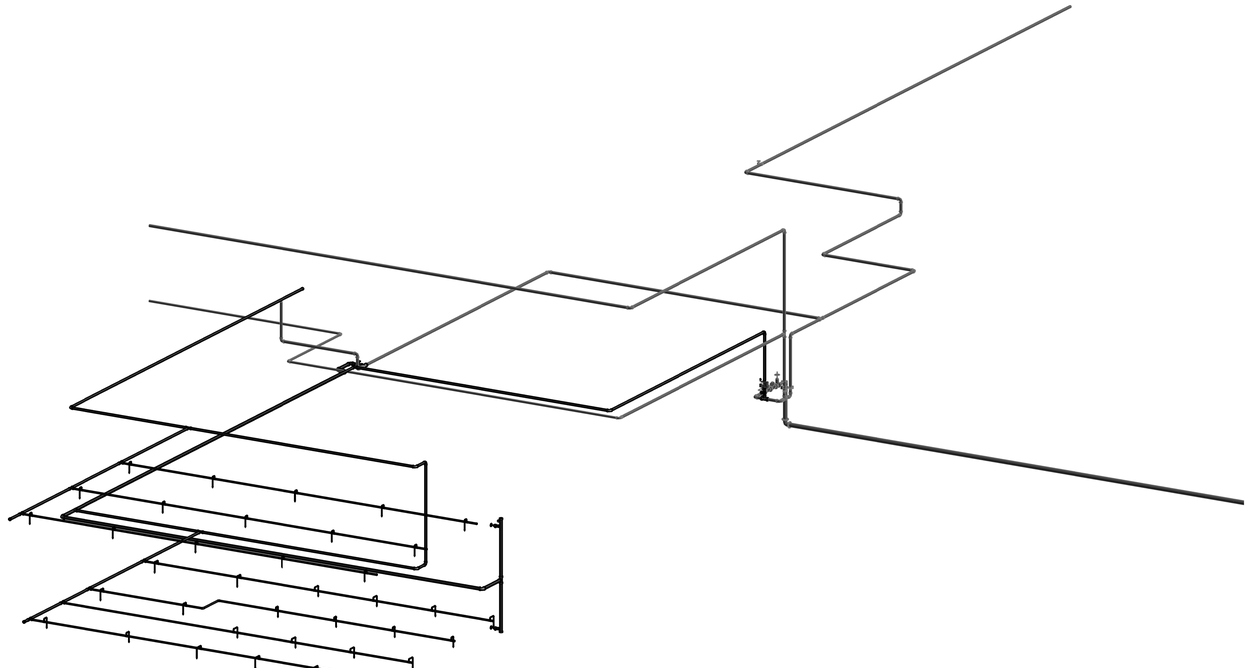
1. 2 1/2" HOSE CONNECTION.
2. PROVIDE 3 1/2" PRESSURE GAUGE WITH BALL VALVE.
3. HOSE CONNECTIONS SHALL BE POSITIONED NOT LESS THAN 3 FEET OR MORE THAN 5 FEET ABOVE THE ADJACENT FLOOR LEVEL.
4. EXISTING 4" BACKFLOW PREVENTER.
5. EXISTING STANDPIPE SYSTEM RISER.
6. EXISTING FIRE SPRINKLER SYSTEM RISER.
7. NEW FIRE SPRINKLER RISER.
8. EXISTING 6" UNDERGROUND FIRE SERVICE MAIN.
9. PROVIDE FLOOR CONTROL VALVE WITH FLOW SWITCH, PRESSURE GAUGE AND INSPECTOR'S TEST AND DRAIN.
10. FEED TO SPRINKLER SYSTEM IN NEW EXPANSION.



N LEVEL 1 FIRE SPRINKLER RISER ROOM
1/4" = 1'-0"



4 NEW STANDPIPE
1/4" = 1'-0"



5 FIRE SPRINKLER ISOMETRIC VIEW

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100% REVIEW SUBMISSION

NOT FOR CONSTRUCTION
NOT FOR PERMITS

FOR REVIEW ONLY
ISSUED: 03.20.2020

NORTH CAROLINA PROFESSIONAL SEAL 046319 ENGINEER DAVID F. STACY
03-20-2020

PERFORMANCE BASED FIRE PROTECTION ENGINEERING, PLLC
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PROJECT TITLE

NORTH BRUNSWICK HIGH SCHOOL BUILDING AND RENOVATION

114 SCORPION DRIVE N.E.
LELAND, NC 28451

DSP # : 100
DPI SCHOOL # : 1165

SHEET TITLE

FIRE SPRINKLER DETAILS

ISSUE BLOCK

Mark	Date	Description
	03.20.20	100% REVIEW SUBMISSION
	01.29.20	EARLY SITE PACKAGE
	10.14.19	NCDPI DD SUBMISSION
	7.30.19	SD PROGRESS DRAWINGS
	7.11.19	NCDPI SD SUBMISSION

PROJECT NO: 2019082.00
DATE: 01.20.2020
SCALE: 1/4" = 1'-0"
DRAWN BY: AJA PROJ MGR: DFS

FP301

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