GENERAL NOTES:

1. ALL SPRINKLER WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF N.F.P.A.–13, N.F.P.A.–855 AND ALL LOCAL AUTHORITIES.
2. ALL SPRINKLER WORK SHALL COMPLY WITH FIRE PROTECTION STANDARDS AND REQUIREMENTS.
3. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
4. 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. PORTIONS OF SYSTEMS NORMALLY SUBJECTED TO SYSTEM WORKING PRESSURES IN EXCESS OF 150 PSI SHALL BE TESTED AT A PRESSURE OF 50 PSI IN EXCESS OF SYSTEM WORKING PRESSURE.
5. G.C. SHALL BE RESPONSIBLE FOR ALL FINAL TESTS AND INSPECTIONS OF COMPLETED WORK REQUIRED BY THE PROPERTY MANAGEMENT PRIOR TO OCCUPANCY OF SPACE.
6. ALL SPRINKLER WORK SHALL BE TESTED AND MADE OPERATIONAL PRIOR TO FINAL OCCUPANCY. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES DAMAGED BY DEFECTIVE SPRINKLER WORK AT HIS EXPENSE.
7. ALL BURNING, CUTTING, SOLDERING AND WELDING SHALL BE COORDINATED WITH FIRE SYSTEMS WITH PROPERTY MANAGEMENT, AS REQUIRED.
8. G.C. SHALL BE RESPONSIBLE FOR OBTAINING PERMITS AND APPROVALS REQUIRED BY INSPECTOR AND FIRE MARSHALL.
9. REFER TO CABINET MANUFACTURER DRAWINGS / DOCUMENTS FOR SPRINKLER HEADS, LIGHT SENSORS AND FIRE DETECTION DEVICES.
10. ALL WORK TO BE DONE DURING THE HOURS DESIGNATED BY OWNER/PROPERTY MANAGEMENT.
11. G.C. SHALL COORDINATE ARRANGEMENTS FOR TEMPORARY DISCONNECTIONS AND RECONNECTIONS WITH MANAGEMENT PRIOR TO COMMENCEMENT OF WORK.
12. ALL SERVICE SHUTDOWN SHALL BE BY OWNER / PROPERTY MANAGEMENT MINIMUM OF 48 HOURS NOTICE IS REQUIRED TO THE OWNER / MANAGEMENT OFFICE PRIOR TO SHUT DOWN.
13. UPON COMPLETION OF ALL SPRINKLER WORK, CONTRACTOR SHALL TEST AND INSPECT ENTIRE SPRINKLER SYSTEM. ENTIRE SYSTEM SHALL BE FULLY OPERATIONAL AND APPROVED IN COMPLIANCE WITH ALL AHJ.
14. UPON SUCCESSFUL COMPLETION OF ALL TESTING, CONTRACTOR SHALL PRIME AND PAINT ALL EXPOSED SPRINKLER PIPING. COLOR AND FINISH SHALL BE AS PER G.C/OWNER.
15. CONTRACTOR SHALL COORDINATE WITH OTHER TRADES AND SHALL INSTALL NEW WORK ACCORDINGLY.
16. DRAWING INDICATES SPRINKLER SYSTEM DESIGN ONLY. CONTRACTOR RESPONSIBLE FOR OFFSETS, DROPS AND RISES FOR COORDINATION WITH OTHER TRADES.
17. COMPOSITE DRAWINGS

    CONTRACTOR SHALL BE GIVEN A SEPIA TRANSPARENCIES TO IMPOSE THEIR WORK FOR A COORDINATED ALLOCATION OF SPACE. PROCEDURE SHALL INCLUDE PIPING, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DETAILS. SEPIAS SHALL BE GIVEN TO ALL TRADES WHO WILL DRAW HIS WORK ON DRAWINGS. G.C. SHALL HOLD A COORDINATION MEETING WITH ALL CONTRACTORS TO ELIMINATE INTERFERENCE OR CONFLICTS IN INSTALLING WORK. IF UNABLE TO EACH AGREEMENT ISSUE, G.C. SHALL MAKE BINDING DECISION.

SPRINKLER LEGEND

———————	NEW SPRINKLER UNDERGROUND PIPING
———————	NEW SPRINKLER PIPING
	SPRINKLER SIAMESE CONNECTION
●	SPRINKLER HEAD
APPRX.	APPROXIMATE

SPRINKLER DRAWING LIST

SP–001.00	SPRINKLER GENERAL NOTE, SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS.
SP–101.00	SPRINKLER OVERALL PLAN, DETAILED SPRINKLER PLAN & SPRINKLER RISER DIAGRAM.

DESIGN CRITERIA SUMMARY

HYDRAULIC CALCULATIONS BASED ON THE FOLLOWING:

OCCUPANCY:	EXTRA HAZARD 1
MINIMUM DESIGN DENSITY:	0.30 GPM/SQ. FT.

SPACING BETWEEN SPRINKLER HEADS

EXTRA HAZARD 1: 10' MAX. COVERAGE PER SPRINKLER HEAD

NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS ½ THE DISTANCE BETWEEN HEADS.

SPRINKLER NOTES

1. THE COMPONENTS INSTALLATION, SIZING, SPACING, CLEARANCES, POSITION AND TYPE OF SYSTEMS SHALL CONFIRM TO THE MASSACHUSETTS BUILDING CODE 2015 CHAPTER 9, MASSACHUSETTS FIRE CODE 2015 CHAPTER 9, MASSACHUSETTS FIRE SPRINKLER CODE 2013 / NFPA 13, 2013 AND NFPA 855.
2. ONLY APPROVED MATERIALS SHALL BE USED AS PER NFPA 13 CHAPTER 6 & CHAPTER 10.
3. SPRINKLER SHALL BE PROTECTED AGAINST FREEZING AND INJURY AS PER NFPA 13 CHAPTER 7 SECTION 7.6 & CHAPTER 9 SECTION 9.3.
4. INSPECTION AND TESTS OF SPRINKLERS SHALL BE CONDUCTED AS PER NFPA–13 ACCORDANCE WITH NFPA–25, CHAPTER 27 SECTION 27.1 AND 27.2.
5. THE OCCUPANCY OF THE AREAS TO BE SPRINKLERD IN ACCORDANCE WITH NFPA–13 CHAPTER 5.
6. PIPING, FITTINGS, SPECIFICATIONS, PIPE SCHEDULES, SYSTEM TEST PIPES, PROTECTION AGAINST CORROSION, DAMAGE, VALVES, HANGERS, SPRINKLERS GUARDS AND SHIELDS SHALL BE AS PER MASSACHUSETTS BUILDING CODE CHAPTER 9, MASSACHUSETTS FIRE CODE CHAPTER 9 & NFPA 13, 2013.
7. STOCK OF SPARE SPRINKLERS WILL BE FURNISHED AS PER NFPA 13, 2013 SECTION 6.2.9.
8. SPACING, LOCATION AND POSITION OF SPRINKLER WILL BE AS PER NFPA–13 2013 CHAPTER 8 SECTION 8.5.
9. ALL PIPE PASSING THROUGH WALLS WILL COMPLY WITH MASSACHUSETTS BUILDING CODE 2015 SECTION 714.
10. DISTANCE OF SPRINKLERS FROM HEAT SOURCE SHALL BE IN AS PER NFPA–13 2013 TABLES 8.3.2.5.
11. ALL VALVES SHALL BE IDENTIFIED AS REQUIRED BY NFPA–13 2013 CHAPTER 6 SECTION 6.7.4.
12. DRAINAGE SHALL CONFORM TO NFPA–13 2013 SECTION 8.16.2.
13. A ONE PIECE REDUCING FITTING OF GOOD DESIGN SHOULD BE USED WHEREVER A CHANGE IS MADE IN THE SIZE OF PIPE, AS PER SECTION 6.4.7 OF NFPA–13 2013.
14. DRAIN VALVES AND TEST VALVES SHALL BE APPROVED TYPE AS PER SECTION 6.7.3 OF CHAPTER 6 OF NFPA–13 2013.
15. HANGERS SHOULD BE SUPPORTED BY WROUGHT IRON U TYPE OR APPROVED ADJUSTABLE HANGERS. HANGERS SHALL BE OF THE TYPE APPROVED FOR USE WITH THE PIPE OR TUBE INVOLVED, AS PER NFPA–13 2013 CHAPTER 9, SECTION 9.1.
16. PROVISIONS SHOULD BE MADE TO FACILITATE FLUSHING SYSTEM PIPING BY PROVIDING FLUSHING CONNECTIONS CONSISTING OF A CAPPED NIPPLE 4" LONG ON END OF A CROSS MAIN AS PER SECTION 8.16.3 OF NFPA–13 2013.
17. SPRINKLER SHALL BE AN APPROVED TYPE AS PER SECTION 6.2 OF NFPA–13 2013.
18. TEMPERATURE RATING SHALL COMPLY WITH SECTION 8.3.2 OF CHAPTER 8 OF NFPA–13 2013.
19. 18" MINIMUM CLEARANCE TO BELOW SPRINKLER DEFLECTOR AS PER CHAPTER 8 SECTION 8.5.6. OF NFPA–13 2013.
20. SPACING AND LOCATION OF SPRINKLERS SHALL COMPLY WITH CHAPTER 8 SECTION 8.5 OF NFPA–13 2013.
21. PIPE SCHEDULE SYSTEMS SHALL BE IN ACCORDANCE WITH NFPA–13 2013 CHAPTER 23 SECTION 23.5.
22. HYDRAULICALLY DESIGNED SYSTEMS SHALL BE IN ACCORDANCE WITH NFPA–13 2013 CHAPTER 23 SECTION 23.3 AND 23.4.
23. MINIMUM BRANCH PIPE SIZE TO BE ONE INCH (1").
24. THIS APPLICATION IS MADE ONLY FOR WORK INDICATED ON THE SPECIFICATION SHEET. ALL OTHER MATTERS SHOWN ARE NOT TO BE RELIED UPON OR TO BE CONSIDERED AS EITHER BEING APPROVED OR IN ACCORDANCE WITH APPLICABLE CODES.

SPECIAL INSPECTION SPRINKLER NOTE:

1. SPECIAL INSPECTION OF SPRINKLER SYSTEM TO BE PERFORMED IN ACCORDANCE WITH MASSACHUSETTS BUILDING CODE SECTION BC 1704.2 & 1704.3
2. FINAL INSPECTION IN ACCORDANCE WITH MASSACHUSETTS BUILDING CODE 2015 BC 110.3.10 AND AUTHORITY HAVING JURISDICTION.

HYDRAULIC CALCULATION SUMMARY

HYDRAULIC CALCULATIONS FOR COMMERCIAL AREA BASED ON NFPA 13–2013 SECTION 11.2.3 FOLLOWING :

OCCUPANCY:	EXTRA HAZARD 1
MINIMUM DESIGN DENSITY:	0.30 GPM/SQ. FT.
DESIGN AREA OF APPLICATION:	AS PER NFPA 13
HYDRAULICALLY REMOTEST AREA	(161 SQ.FT. AREA)
NUMBER OF HEADS CALCULATED:	6
K–FACTOR:	5.6

PROTECTION AREA OF SPRINKLER HEADS

EXTRA HAZARD 1 : 100 SQ. FT. MAX PER SPRINKLER HEAD

SPRINKLER SCHEDULE

SYMBOL	NAME	COVERAGE	METAL	TEMPERATURE (°F)	RESPONSE	K–FACTOR	NPT	MFG	MODEL#	APPROVALS
●	PENDENT	STANDARD	BRASS	155	STANDARD	5.6	½"	TYCO	TY325	cULus

SPRINKLER SPECIFICATIONS

PART 1 – GENERAL

1.01 REQUIREMENTS

A. THE SPRINKLER CONTRACTOR SHALL BE A LICENSED, AUTHORIZED INSTALLER OF SPRINKLER SYSTEMS AND SHALL HAVE HAD A MINIMUM OF FIVE YEARS EXPERIENCE IN THE INSTALLATION OF SPRINKLER SYSTEMS IN THE STATE OF MASSACHUSETTS.

B. BEFORE SUBMITTING HIS BID, THE SPRINKLER CONTRACTOR SHALL VISIT THE SITE AND SHALL FULLY FAMILIARIZE HIMSELF WITH, AND BECOME FAMILIAR WITH THE DIFFICULTIES THAT WILL ATTEND THE EXECUTION OF THIS WORK. CONTRACTOR SHALL PERFORM THIS PRIOR TO SUBMITTING HIS PROPOSAL. SUBMISSION OF A PROPOSAL WILL BE CONSTRUED AS EVIDENCE THAT SUCH AN EXAMINATION HAS BEEN MADE, AND LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OR MATERIALS REQUIRED BECAUSE OF DIFFICULTIES ENCOUNTERED WHICH COULD HAVE BEEN FORESEEN HAD SUCH AN EXAMINATION BEEN MADE.

C. UPON REVIEW OF THE DRAWINGS AND SPECIFICATIONS, PRIOR TO SUBMITTING HIS PROPOSAL, THE SPRINKLER CONTRACTOR SHALL INFORM TO G.C. OF ANY DISCREPANCIES OR REQUEST CLARIFICATION IN WRITING, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE SPRINKLER SYSTEM INSTALLATION. LATER CLAIMS WILL NOT BE RECOGNIZED FOR EXTRA LABOR, EQUIPMENT OF MATERIALS SHOULD SUCH PROCEDURE NOT BE FOLLOWED.

D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH PROPERTY MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.

E. NECESSARY SHUT–DOWNS OF BASE BUILDING SPRINKLER SYSTEM MUST BE COORDINATED WITH PROPERTY MANAGEMENT. SHUT–DOWNS OF BASE SYSTEMS SHALL TAKE PLACE AFTER OR BEFORE NORMAL BUSINESS HOURS AND SHALL BE CONSIDERED OVERTIME WORK. THE CONTRACTOR MUST GIVE PROPERTY MANAGEMENT AND FIRE DEPARTMENT 48 HOURS NOTICE PRIOR TO SHUT–DOWN OF SPRINKLER, OR OTHER SYSTEMS.

1.02 WORK INCLUDED

A. WORK SHALL INCLUDE ALL SPRINKLER WORK FURNISHED AND INSTALLED AS INDICATED ON THE PLANS AND AS SPECIFIED HEREIN.

1. ALL WORK SHALL COMPLY WITH REQUIREMENTS OF THE MASSACHUSETTS BUILDING CODE, NFPA–13, STATE FIRE DEPARTMENT AND OWNERS INSURANCE RATING ORGANIZATION.
2. THESE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL LOCATION OF WORK. SCALED DIMENSIONS SHALL NOT BE USED. ANY DIMENSIONS NOT SHOWN SHALL BE OBTAINED FROM FIELD MEASUREMENTS.

1.03 SHOP DRAWINGS AND SUBMITTALS

A. THE SPRINKLER SYSTEM SHALL BE HYDRAULICALLY DESIGNED. CONTRACTOR SHALL SUBMIT CALCULATIONS WITH SHOP DRAWINGS. CALCULATIONS SHALL BE PERFORMED IN ACCORDANCE WITH REQUIREMENTS OF NFPA #13, AND MASSACHUSETTS BUILDING CODE.

1.04 BUILDING DEPARTMENT FILING, PERMITS AND CERTIFICATES

A. THE SPRINKLER CONTRACTOR SHALL FILE ALL REQUIRED DRAWINGS AND HYDRAULIC CALCULATIONS WITH THE BUILDING DEPARTMENT AND BE RESPONSIBLE FOR OBTAINING FINAL APPROVAL.

B. ARRANGE FOR INSPECTION AND TESTS OF ANY AND ALL PARTS OF THE WORK AS REQUIRED BY AUTHORITIES HAVING JURISDICTION AND PAY ALL CHARGES FOR SAME.

PART 2 – MATERIALS

2.01 GENERAL

A. THE SPRINKLER SYSTEM SHALL BE COMPLETE WITH ALL PIPE, FITTINGS, VALVES, DRAINAGE SYSTEM AND VALVES, HANGERS AND SUPPORTS. ALSO, MISCELLANEOUS WORK ITEMS, SUCH AS, SIGNS AS REQUIRED, VALVE TAGS, ETC., AND ALL OTHER RELATED EQUIPMENT, APPARATUS AND MATERIAL ITEMS NECESSARY FOR COMPLETE, APPROVED TYPE SYSTEM, READY FOR FUTURE EXTENSION.

B. ALL PIPE, FITTINGS, HANGERS, SUPPORTS, SPRINKLER HEADS, ETC., SHALL CONFORM TO THE MASSACHUSETTS BUILDING CODE AND NATIONAL FIRE PROTECTION ASSOCIATION'S REQUIREMENTS AS TO TYPES OF MATERIALS, ARRANGEMENT, SIZES AND INSTALLATION. PIPING PENETRATING FIRE RATED PARTITIONS SHALL HAVE OPENING SEALED WITH U.L. APPROVED FIREPROOF SEALANT.

2.02 SPRINKLER PIPING

A. ALL SPRINKLER PIPING SHALL BE SCHEDULE 40 IN ACCORDANCE WITH NFPA–13. PIPE SHALL BE UL/FM APPROVED.

B. STEEL PIPE SHALL BE BETHLEHEM STEEL CO., ALLIED TUBE, BERGER INDUSTRIES OR APPROVED.

C. PIPE OR TUBE USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS SPECIFIED IN TABLE 6.3.1.1 OF NFPA 13–2013.

D. FITTINGS USED IN SPRINKLER SYSTEMS SHALL BE OF THE MATERIALS LISTED IN TABLE 6.4.1 OF NFPA 13–2013. FITTING SHALL BE UL/FM APPROVED.

E. NONMETALLIC PIPES & FITTINGS USED IN MULTIPURPOSE PIPING SYSTEMS NOT EQUIPPED WITH A FIRE DEPARTMENT CONNECTION SHALL BE DESIGNED TO WITHSTAND A WORKING PRESSURE OF NOT LESS THAN 130 PSI AT 120 °F.

2.03 CUTTING AND PATCHING

1. DO ALL CUTTING AND CORE DRILLING NECESSARY FOR THE INSTALLATION OF SPRINKLER WORK. ACCURATELY LAYOUT WORK FOR WHICH CUTTING IS REQUIRED. PATCH AND RESTORE ANY DAMAGE WORK TO LIKE NEW CONDITION.
2. FOR REPLACEMENT OF THE WORK REMOVED, MATCH EXISTING IN NATURE, CONSTRUCTION AND FINISH.
3. MAINTAIN THE PREMISES FREE FROM ACCUMULATION OF WASTE MATERIAL OR RUBBISH COVERED BY THE WORK, REMOVE ALL SURPLUS MATERIALS, TOOLS ETC. AND LEAVE PREMISES CLEAN.

2.04 FIRE STOPPING

INSTALLATION SHALL BE IN STRICT ACCORDANCE WITH THE MANUFACTURERS PUBLISHED DIRECTIONS AND PER FIRE TESTED DESIGNS THAT HAVE BEEN ACCEPTED BY THE APPROPRIATE CODE AUTHORITY HAVING JURISDICTION.

2.05 PHASING

PHASING SHALL BE COORDINATED BETWEEN THE SPRINKLER CONTRACTOR AND GENERAL CONTRACTOR. SPRINKLER INSTALLATION SHALL BE PHASED IN A MANNER WHICH WILL ALLOW FULL OCCUPANCY OF THE EXISTING FACILITY WHILE THE INSTALLATION IS IN PROGRESS.

2.06 ALTERNATES/SUBSTITUTIONS

CONTRACTOR SHALL STATE IN THEIR PROPOSAL ANY CONTRACTOR PROPOSED SUBSTITUTIONS OF THE MATERIALS OR METHODS OF INSTALLATION FROM THAT SPECIFIED. THESE ALTERATIONS SHALL BE LISTED ON THE PROPOSAL AS CONTRACTOR ALTERNATIVE.

2.07 LEAK DAMAGE

THE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE DURING THE INSTALLATION AND TESTING PERIODS OF THE SPRINKLER SYSTEM FOR ANY LOSS OR DAMAGE TO THE WORK OF OTHERS, TO THE PROPERTY, IT'S CONTENTS ETC. CAUSED BY LEAKS IN THE EQUIPMENT. BY UNPLUGGED OR DISCONNECTED PIPES, FITTINGS ETC. OR BY OVERFLOW, AND SHALL PAY FOR THE NECESSARY REPLACEMENTS OR REPAIRS TO THE WORK OF OTHERS, DAMAGED BY SUCH LEAKAGE.

2.08 INSERTS, HANGERS, ETC.

F. ALL SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED AND SHALL COMPLY WITH THE STANDARDS FOR THE NATIONAL FIRE PROTECTION ASSOCIATION FOR THE INSTALLATION OF SPRINKLER SYSTEMS AND AS REQUIRED BY THE MASSACHUSETTS BUILDING CODE.

G. HANGERS AND THEIR COMPONENTS SHALL BE FERROUS. HANGERS SHALL BE ADJUSTABLE FLAT IRON TYPE OF CLEVIS TYPE.

H. SPRINKLER PIPING OR HANGERS SHALL NOT BE USED TO SUPPORT NON–SYSTEM COMPONENTS.

I. SPRINKLER PIPING SHALL BE SUBSTANTIALLY SUPPORTED FROM THE CABINET STRUCTURE WHICH MUST SUPPORT THE ADDED LOAD OF THE WATER–FILLED PIPE PLUS A MINIMUM OF 250 LBS. APPLIED AT THE POINT OF HANGING. CONTRACTOR SHALL SUBMIT DETAIL OF SUPPORT FOR REVIEW AND APPROVAL.

J. SPRINKLER PIPING SHALL BE SUPPORTED INDEPENDENTLY OF THE CABINET STRUCTURE. ALTERNATIVELY ADD ADDITIONAL SUPPORT IF REQUIRED.

K. MAXIMUM DISTANCE BETWEEN PIPE SUPPORTS SHALL NOT EXCEED 12 FT. FOR 1 AND 1–1/4" SIZES NOR 15' FOR SIZES 1–1/2" AND LARGER.

L. EXPANSION SHIELDS FOR SUPPORTING PIPES UNDER CONCRETE CONSTRUCTION MAYBE USED IN A HORIZONTAL POSITION IN THE SIDES OF BEAMS. IN CONCRETE HAVING GRAVEL OR CRUSHED STONE AGGREGATE, EXPANSION SHIELDS MAY BE USED IN THE VERTICAL POSITION TO SUPPORT PIPES 4" OR LESS IN DIAMETER.

2.09 ESCUTCHEONS

PROVIDE ESCUTCHEONS ON ALL EXPOSED PIPING PASSING THROUGH WALLS, PARTITIONS, FLOORS. ESCUTCHEON SHALL BE HELD IN PLACE BY INTERNAL TENSION OR SET SCREW.

2.10 AS–BUILT DRAWINGS

PREPARE AND SUBMIT "AS BUILT" DRAWINGS AT THE COMPLETION OF THE PROJECT.

2.11 SPRINKLER HEADS

A. SPRINKLERS SHALL BE RATED FOR ORDINARY TEMPERATURES (155 DEG. F) EXCEPT AS REQUIRED NEAR HEATERS OR LOCATIONS WHERE ELEVATED TEMPERATURES MAY NORMALLY BE EXPECTED OR AS OTHERWISE INDICATED ON THE CONTRACT DRAWINGS.

B. SPRINKLER HEADS SHALL BE AS PER CABINET MANUFACTURER OR UL AND FM APPROVED.

PART 3 – EXECUTION

3.01 GUARANTEE

A. GUARANTEE FOR A PERIOD OF ONE (1) YEAR FORM THE DATE OF ACCEPTANCE BY THE OWNER, ALL MATERIALS, APPARATUS AND WORKMANSHIP WHETHER FURNISHED BY HIMSELF OR BY HIS SUBCONTRACTORS AND HE SHALL REPLACE OR REPAIR IN A MANNER APPROVED BY THE PROPERTY MANAGEMENT, WITHOUT COST TO THE OWNER, ANY PART OR PARTS OF THE WORK WHICH MAY PROVE DEFECTIVE OR UNSATISFACTORY WITH IN THE PERIOD OF THE GUARANTEE.

3.02 INSTALLATION

A. PIPING

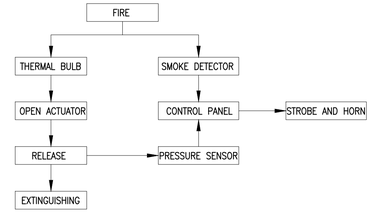
1. INSTALL PIPING AS SHOWN ON THE CONTRACT DRAWINGS AND STRAIGHT AND DIRECT AS POSSIBLE, FORMING RIGHT ANGLES OR PARALLEL LINES WITH WALLS, NEATLY SPACED, WITH RISERS PLUMB AND TRUE.
2. SPRINKLER PIPING SHALL BE INSTALLED SO THAT THE SYSTEM CAN BE DRAINED.
3. PIPE SHALL BE REMOVED BY REAMING.
4. BEFORE INSTALLING PIPE, THOROUGHLY CLEAN THE INSIDE FREE OF CUTTING AND FOREIGN MATTER. CUT ALL PIPE SQUARE AND SMOOTH AND MAKE UP ALL JOINTS TO REQUIRED LIMITS.

B. PIPE JOINTS

1. THREADED JOINTS SHALL BE MADE UP OF TIGHT USING PIPE JOINT TEFLON COMPOUND OR TAPE, APPLIED ON THE MALE THREADS ONLY.

FIRE NARRATIVE

DURING A FIRE EVENT, CONNECT THE WATER HOSE TO AN EXTERNAL FIRE DEPARTMENT CONNECTION PROVIDED BY THE END USER. WATER WILL IMMEDIATELY FLOW INTO THE ENTIRE DRY PIPE SYSTEM. ONLY OVERHEATED CABINET NOZZLE WITH TEMPERATURE BULB SHALL BE ACTIVATED AND SPRAYING WATER TO EXTINGUISH FIRE; (THE OUTDOOR WATER PIPE, SOURCE AND CONTROL SYSTEM SHOULD BE DONE BY OTHERS). WATER WILL CONTINUE TO FLOW THROUGH THE OPEN NOZZLE HEAD UNTIL THE ENTIRE CABINET IS FLOODED.



FIRE DETECTION AND EXTINGUISH GENERAL FLOW DIAGRAM

NO.	DATE	ISSUE DESCRIPTION

NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE
49674, MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

PROJECT NAME

PHYSICAL LOCATION

DRAWING TITLE

SPRINKLER GENERAL NOTES, SYMBOLS, ABBREVIATIONS AND SPECIFICATIONS

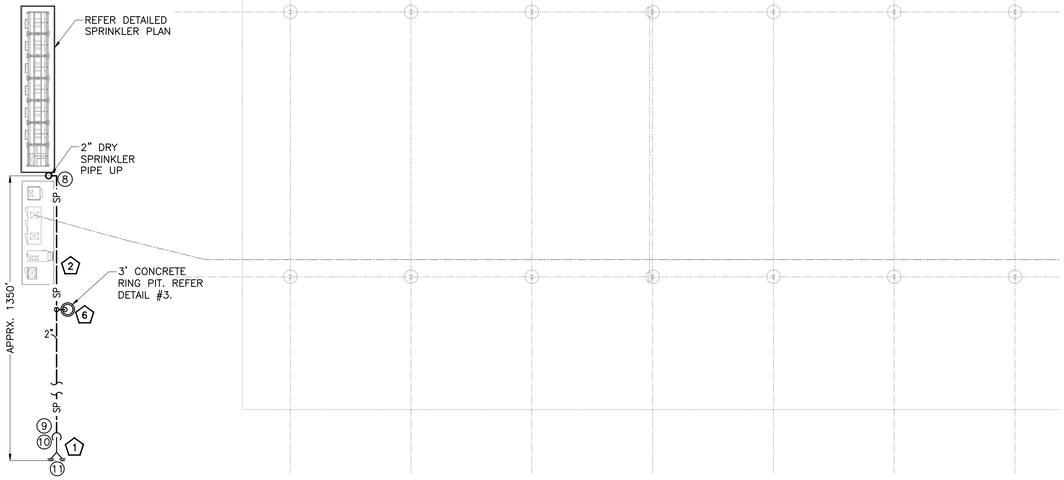
GRAPHIC SCALE

SEAL

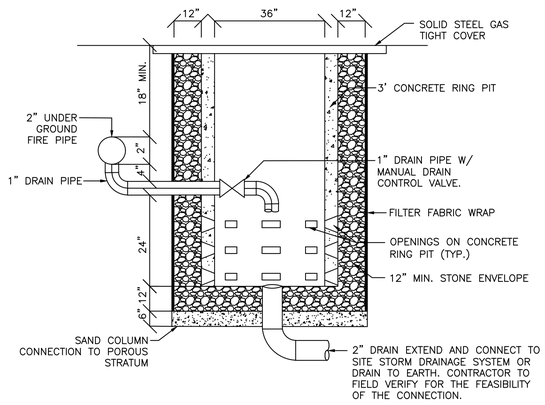
PROJECT NO.	-
SCALE	AS NOTED
DRAWN BY	NYE
CHECKED BY	NYE
DATE	01/19/2024
SHEET NUMBER	SP-001.00

Note:

Dwg File:



1 SPRINKLER OVERALL PLAN
SCALE: 1/16" = 1'-0"



3 CONCRETE RING PIT CROSS SECTION DETAILS
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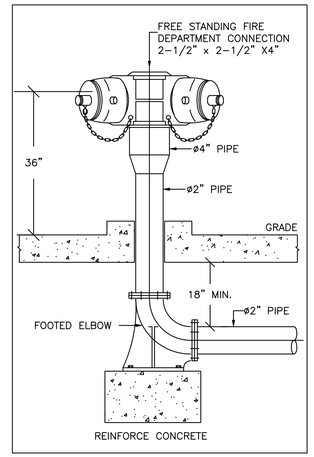
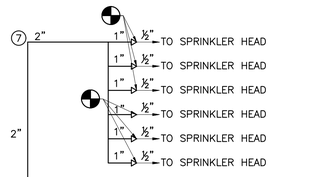
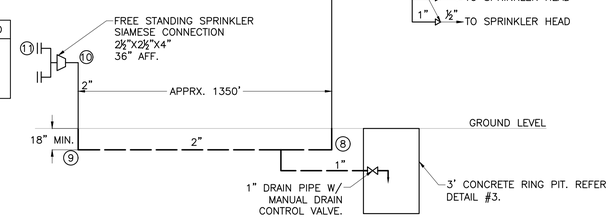


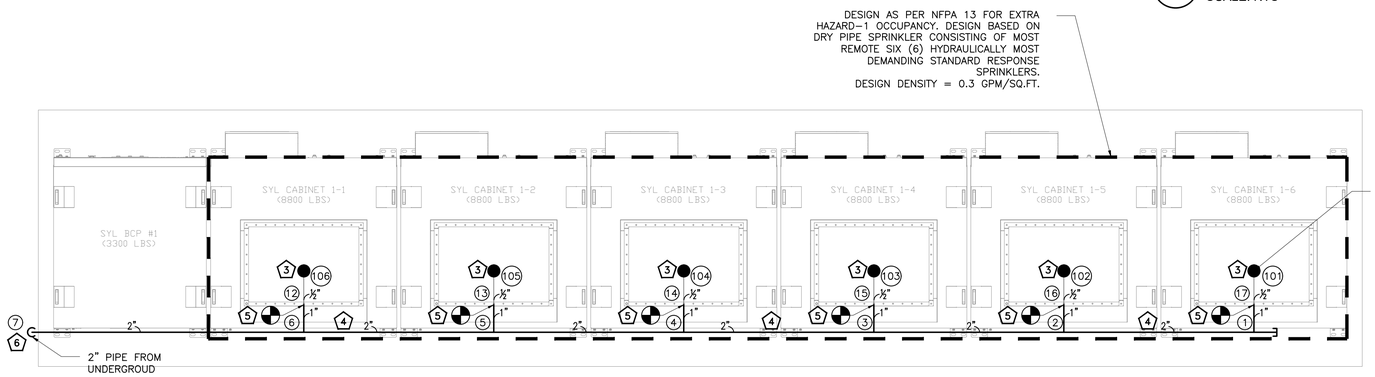
4 FIRE DEPARTMENT CONNECTION DETAIL
SCALE: NTS



SPRINKLER SYSTEM DEMAND
93.6 GPM FLOW AT 130.9 PSI PRESSURE (AS PER HYDRAULIC CALCULATION)



5 SPRINKLER RISER DIAGRAM
SCALE: NTS



2 DETAILED SPRINKLER PLAN
SCALE: 1/2" = 1'-0"

SPRINKLER LEGEND:

1. FIRE DEPARTMENT SPRINKLER CONNECTION 2½"x2½"x4", 36" AFF. (PROVIDE SOLID BRONZE MATERIAL FOR FIRE DEPARTMENT CONNECTION). REFER KEY PLAN ON SHEET SP-001 FOR EXACT LOCATION.
2. NEW 2" DRY SPRINKLER PIPE RUNNING UNDERGROUND. COORDINATE PIPING LAYOUT W/ SOLAR CONSULTANT.
3. COORDINATE SPRINKLER LOCATION & PIPING W/ EQUIPMENT CONTRACTOR.
4. COORDINATE WITH CABINET MANUFACTURER AND CC FOR SPRINKLER PIPING SUPPORT FROM THE CABINET. PROVIDE ADD ALTERNATE FOR ANY ADDITIONAL PIPING SUPPORTS IF REQUIRED.
5. SPRINKLER PIPING AND SPRINKLER HEAD BY CABINET MANUFACTURER. COORDINATE PIPING CONNECTION WITH CABINET MANUFACTURER.
6. 1" DRAIN PIPE W/ MANUAL DRAIN CONTROL VALVE INSTALL VERTICALLY. REFER DETAIL #3.

HAZARD CLASSIFICATION AND DESIGN DENSITY: AREA : BATTERY CABINET
OCCUPANCY: EXTRA HAZARDS I MINIMUM DESIGN DENSITY: 0.30 GPM/SQ. FT.

NO.	DATE	ISSUE DESCRIPTION

NY ENGINEERS
NEARBY ENGINEERS
382 NE 191ST STREET SUITE
49674, MIAMI, FL 33179
PH-914.257.3455
WWW.NY-ENGINEERS.COM

PROJECT NAME

PHYSICAL LOCATION

DRAWING TITLE
SPRINKLER OVERALL PLAN , DETAILED SPRINKLER PLAN & SPRINKLER RISER DIAGRAM

GRAPHIC SCALE

SEAL

PROJECT NO.	-
SCALE	AS NOTED
DRAWN BY	NYE
CHECKED BY	NYE
DATE	01/19/2024
SHEET NUMBER	SP-101.00

Node:
Dwg File:

Fire Sprinkler Reports

Prepared By:

NY ENGINEERS

12/06/2023

General Project Data Report

General Data

Project Title:		Project File Name:	
Designed By:		Date:	
Code Reference:		Approving Agency:	
Client Name:		Phone:	
Address:		City, State Zip Code:	
Company Name:		Representative:	
Company Address:		City And State:	
Phone:			
Building Name:		Building Owner:	
Contact at Building:		Phone at Building:	
Address Of Building:		City, State Zip Code:	

Project Data

Description Of Hazard:	Ex. Haz. Gp. 1		Sprinkler System Type:	Dry	
Design Area Of Water Application:	161	ft²	Maximum Area Per Sprinkler:	50	ft²
Default Sprinkler K-Factor:	5.60	K	Default Pipe Material:	SCHED 40 WET STEEL	
Inside Hose Stream Allowance:	0.00	gpm	Outside Hose Stream Allowance:	0.00	gpm
In Rack Sprinkler Allowance:	0.00	gpm			

Sprinkler Specifications

Make:	TYCO	Model:	TY325
Size:	0.50	Temperature Rating:	155 F

Water Supply Test Data

Source Of Information:					
Test Hydrant ID:			Date Of Test:		
Hydrant Elevation:	0	ft	Static Pressure:	0.00	psi
Test Flow Rate:	0.00	gpm	Test Residual Pressure:	0.00	psi
Calculated System Flow Rate:	93.67	gpm	Calculated Inflow Residual Pressure:	130.91	psi

Calculation Project Data

Calculation Mode:	Demand				
HMD Minimum Residual Pressure:	7.00	psi	Minimum Desired Flow Density:	0.30	gpm/ft²
Number Of Active Nodes:	23				
Number Of Active Pipes:	22		Number Of Inactive Pipes:	0	
Number Of Active Sprinklers:	6		Number Of Inactive Sprinklers:	0	

Fire Sprinkler Input Data

Node Input Data

Node No.	Node Description Branch Description	Area Group Branch Dia. (in)	Sprinkler KFactor (K) Branch Len. (ft)	Pressure Estimate (psi) Branch Stnd Fittings	Node Elev (ft) Branch Non-Stnd Fittings (ft)	Non-Sprinkler Flow (gpm) Branch Sprk KFactor (K)
1	No Discharge ----	---- 0.000	N/A 0.0	7.20 ----	8.00 0.0	0.00 0.00
2	No Discharge ----	---- 0.000	N/A 0.0	7.24 ----	8.00 0.0	0.00 0.00
3	No Discharge ----	---- 0.000	N/A 0.0	7.40 ----	8.00 0.0	0.00 0.00
4	No Discharge ----	---- 0.000	N/A 0.0	7.73 ----	8.00 0.0	0.00 0.00
5	No Discharge ----	---- 0.000	N/A 0.0	8.31 ----	8.00 0.0	0.00 0.00
6	No Discharge ----	---- 0.000	N/A 0.0	9.20 ----	8.00 0.0	0.00 0.00
7	No Discharge ----	---- 0.000	N/A 0.0	10.70 ----	8.00 0.0	0.00 0.00
8	No Discharge ----	---- 0.000	N/A 0.0	17.19 ----	-2.00 0.0	0.00 0.00
9	No Discharge ----	---- 0.000	N/A 0.0	131.75 ----	-2.00 0.0	0.00 0.00
10	No Discharge ----	---- 0.000	N/A 0.0	130.41 ----	3.00 0.0	0.00 0.00
11	No Discharge ----	---- 0.000	N/A 0.0	130.91 ----	3.00 0.0	0.00 0.00
12	No Discharge ----	---- 0.000	N/A 0.0	9.10 ----	8.00 0.0	0.00 0.00
13	No Discharge ----	---- 0.000	N/A 0.0	8.22 ----	8.00 0.0	0.00 0.00
14	No Discharge ----	---- 0.000	N/A 0.0	7.65 ----	8.00 0.0	0.00 0.00
15	No Discharge ----	---- 0.000	N/A 0.0	7.32 ----	8.00 0.0	0.00 0.00
16	No Discharge ----	---- 0.000	N/A 0.0	7.17 ----	8.00 0.0	0.00 0.00
17	No Discharge ----	---- 0.000	N/A 0.0	7.12 ----	8.00 0.0	0.00 0.00
101	Sprinkler ----	---- 0.000	5.60 0.0	7.17 ----	7.00 0.0	0.00 0.00

Fire Sprinkler Input Data

Node Input Data (cont'd)

Node No.	Node Description Branch Description	Area Group Branch Dia. (in)	Sprinkler KFactor (K) Branch Len. (ft)	Pressure Estimate (psi) Branch Stnd Fittings	Node Elev (ft) Branch Non-Stnd Fittings (ft)	Non-Sprinkler Flow (gpm) Branch Sprk KFactor (K)
102	Sprinkler ----	---- 0.000	5.60 0.0	7.22 ----	7.00 0.0	0.00 0.00
103	Sprinkler ----	---- 0.000	5.60 0.0	7.36 ----	7.00 0.0	0.00 0.00
104	Sprinkler ----	---- 0.000	5.60 0.0	7.68 ----	7.00 0.0	0.00 0.00
105	Sprinkler ----	---- 0.000	5.60 0.0	8.22 ----	7.00 0.0	0.00 0.00
106	Sprinkler ----	---- 0.000	5.60 0.0	9.06 ----	7.00 0.0	0.00 0.00

Fire Sprinkler Input Data

Pipe Input Data

Beg. Node	End. Node	Pipe Description	Nominal Diameter (inch)	Type Group	Fitting Data	Nominal Length (feet)	Fitting Length (feet)	Total Length (feet)	CFactor (gpm/inch-psi)
101	17	SCHED 40 WET STEEL	1.000	0	E	3.00	2.00	5.00	120
1	2	SCHED 40 WET STEEL	2.000	0	T	5.40	10.00	15.40	120
102	16	SCHED 40 WET STEEL	1.000	0	E	3.00	2.00	5.00	120
2	3	SCHED 40 WET STEEL	2.000	0	T	5.40	10.00	15.40	120
103	15	SCHED 40 WET STEEL	1.000	0	E	3.00	2.00	5.00	120
3	4	SCHED 40 WET STEEL	2.000	0	T	5.40	10.00	15.40	120
104	14	SCHED 40 WET STEEL	1.000	0	E	3.00	2.00	5.00	120
4	5	SCHED 40 WET STEEL	2.000	0	T	5.40	10.00	15.40	120
105	13	SCHED 40 WET STEEL	1.000	0	E	3.00	2.00	5.00	120
5	6	SCHED 40 WET STEEL	2.000	0	T	5.40	10.00	15.40	120
106	12	SCHED 40 WET STEEL	1.000	0	E	3.00	2.00	5.00	120
6	7	SCHED 40 WET STEEL	2.000	0	T	8.00	10.00	18.00	120
7	8	SCHED 40 WET STEEL	2.000	0	EC	10.00	16.00	26.00	120
8	9	SCHED 40 WET STEEL	2.000	0	5E	1350.00	25.00	1375.00	120
9	10	SCHED 40 WET STEEL	2.000	0	E	5.00	5.00	10.00	120
10	11	SCHED 40 WET STEEL	2.000	0	E	1.00	5.00	6.00	120
17	1	SCHED 40 WET STEEL	1.000	0		1.00	0.00	1.00	120
16	2	SCHED 40 WET STEEL	1.000	0		1.00	0.00	1.00	120
15	3	SCHED 40 WET STEEL	1.000	0		1.00	0.00	1.00	120
14	4	SCHED 40 WET STEEL	1.000	0		1.00	0.00	1.00	120
13	5	SCHED 40 WET STEEL	1.000	0		1.00	0.00	1.00	120
12	6	SCHED 40 WET STEEL	1.000	0		1.00	0.00	1.00	120

Fire Sprinkler Output Data

Overall Node Groupings Output Data

Pipe Segment Beg. Node	Pipe Segment End. Node	Pipe Type Group	Pipe Flow Rate (gpm)	Sprinkler Flow At Beg. Node (gpm)	Non-Sprinkler Flow Out (+) (gpm)	Non-Sprinkler Flow In (-) (gpm)	Beg. Node Residual Pressure (psi)	Imbalance Flow At Beg. Node (gpm)
1	2	0	-15.00	0.00	0.00	0.00	7.20	0.00000
1	17	0	15.00					
2	1	0	15.00	0.00	0.00	0.00	7.24	0.00000
2	3	0	-30.04					
2	16	0	15.04					
3	2	0	30.04	0.00	0.00	0.00	7.40	0.00000
3	4	0	-45.24					
3	15	0	15.20					
4	3	0	45.24	0.00	0.00	0.00	7.73	0.00000
4	5	0	-60.76					
4	14	0	15.52					
5	4	0	60.76	0.00	0.00	0.00	8.31	0.00000
5	6	0	-76.81					
5	13	0	16.06					
6	5	0	76.81	0.00	0.00	0.00	9.20	0.00000
6	7	0	-93.67					
6	12	0	16.86					
7	6	0	93.67	0.00	0.00	0.00	10.70	0.00000
7	8	0	-93.67					
8	7	0	93.67	0.00	0.00	0.00	17.19	0.00000
8	9	0	-93.67					
9	8	0	93.67	0.00	0.00	0.00	131.75	0.00000
9	10	0	-93.67					
10	9	0	93.67	0.00	0.00	0.00	130.41	0.00000
10	11	0	-93.67					
11	10	0	93.67	0.00	0.00	-93.67	130.91	
12	6	0	-16.86	0.00	0.00	0.00	9.10	0.00000
12	106	0	16.86					
13	5	0	-16.06	0.00	0.00	0.00	8.22	0.00000
13	105	0	16.06					
14	4	0	-15.52	0.00	0.00	0.00	7.65	0.00000
14	104	0	15.52					
15	3	0	-15.20	0.00	0.00	0.00	7.32	0.00000
15	103	0	15.20					
16	2	0	-15.04	0.00	0.00	0.00	7.17	0.00000
16	102	0	15.04					
17	1	0	-15.00	0.00	0.00	0.00	7.12	0.00000
17	101	0	15.00					

Fire Sprinkler Output Data

Overall Node Groupings Output Data (cont'd)

Pipe Segment Beg. Node	Pipe Segment End. Node	Pipe Type Group	Pipe Flow Rate (gpm)	Sprinkler Flow At Beg. Node (gpm)	Non-Sprinkler Flow Out (+) (gpm)	Non-Sprinkler Flow In (-) (gpm)	Beg. Node Residual Pressure (psi)	Imbalance Flow At Beg. Node (gpm)
101	17	0	-15.00	15.00	0.00	0.00	7.17	0.00000
102	16	0	-15.04	15.04	0.00	0.00	7.22	0.00000
103	15	0	-15.20	15.20	0.00	0.00	7.36	0.00000
104	14	0	-15.52	15.52	0.00	0.00	7.68	0.00000
105	13	0	-16.06	16.06	0.00	0.00	8.22	0.00000
106	12	0	-16.86	16.86	0.00	0.00	9.06	0.00000

Fire Sprinkler Output Data

Overall Pipe Output Data

Beg. End. Node	Nodal KFactor (K)	Elevation (feet)	Spk/Hose Discharge (gpm)	Residual Pressure (psi)	Nom. Dia. Inside Dia. C-Value	q (gpm) Q (gpm) Velocity (fps)	F. L./ft (psi/ft) Fittings Type-Grp	Pipe-Len. Fit-Len. Tot-Len. (ft)	PF-(psi) PE-(psi) PT-(psi)
17	0.00	8.00	0.00	7.12	1.00	0.00	0.07646	1.00	0.076
1	0.00	8.00	0.00	7.20	1.049	15.00	-----	0.00	0.000
	SCHED 40 WET STEEL				120	5.57	0	1.00	0.076
1	0.00	8.00	0.00	7.20	2.00	0.00	0.00281	5.40	0.043
2	0.00	8.00	0.00	7.24	2.067	15.00	T	10.00	0.000
	SCHED 40 WET STEEL				120	1.43	0	15.40	0.043
16	0.00	8.00	0.00	7.17	1.00	0.00	0.07686	1.00	0.077
2	0.00	8.00	0.00	7.24	1.049	15.04	-----	0.00	0.000
	SCHED 40 WET STEEL				120	5.58	0	1.00	0.077
2	0.00	8.00	0.00	7.24	2.00	0.00	0.01016	5.40	0.156
3	0.00	8.00	0.00	7.40	2.067	30.04	T	10.00	0.000
	SCHED 40 WET STEEL				120	2.87	0	15.40	0.156
15	0.00	8.00	0.00	7.32	1.00	0.00	0.07831	1.00	0.078
3	0.00	8.00	0.00	7.40	1.049	15.20	-----	0.00	0.000
	SCHED 40 WET STEEL				120	5.64	0	1.00	0.078
3	0.00	8.00	0.00	7.40	2.00	0.00	0.02167	5.40	0.334
4	0.00	8.00	0.00	7.73	2.067	45.24	T	10.00	0.000
	SCHED 40 WET STEEL				120	4.33	0	15.40	0.334
14	0.00	8.00	0.00	7.65	1.00	0.00	0.08141	1.00	0.081
4	0.00	8.00	0.00	7.73	1.049	15.52	-----	0.00	0.000
	SCHED 40 WET STEEL				120	5.76	0	1.00	0.081
4	0.00	8.00	0.00	7.73	2.00	0.00	0.03740	5.40	0.576
5	0.00	8.00	0.00	8.31	2.067	60.76	T	10.00	0.000
	SCHED 40 WET STEEL				120	5.81	0	15.40	0.576
13	0.00	8.00	0.00	8.22	1.00	0.00	0.08673	1.00	0.087
5	0.00	8.00	0.00	8.31	1.049	16.06	-----	0.00	0.000
	SCHED 40 WET STEEL				120	5.96	0	1.00	0.087
5	0.00	8.00	0.00	8.31	2.00	0.00	0.05771	5.40	0.889
6	0.00	8.00	0.00	9.20	2.067	76.81	T	10.00	0.000
	SCHED 40 WET STEEL				120	7.34	0	15.40	0.889
12	0.00	8.00	0.00	9.10	1.00	0.00	0.09489	1.00	0.095
6	0.00	8.00	0.00	9.20	1.049	16.86	-----	0.00	0.000
	SCHED 40 WET STEEL				120	6.26	0	1.00	0.095
6	0.00	8.00	0.00	9.20	2.00	0.00	0.08331	8.00	1.500
7	0.00	8.00	0.00	10.70	2.067	93.67	T	10.00	0.000
	SCHED 40 WET STEEL				120	8.96	0	18.00	1.500
7	0.00	8.00	0.00	10.70	2.00	0.00	0.08331	10.00	2.166
8	0.00	-2.00	0.00	17.19	2.067	93.67	EC	16.00	4.330
	SCHED 40 WET STEEL				120	8.96	0	26.00	6.496

Fire Sprinkler Output Data

Overall Pipe Output Data (cont'd)

Beg. End. Node	Nodal KFactor (K)	Elevation (feet)	Spk/Hose Discharge (gpm)	Residual Pressure (psi)	Nom. Dia. Inside Dia. C-Value	q (gpm) Q (gpm) Velocity (fps)	F. L./ft (psi/ft) Fittings Type-Grp	Pipe-Len. Fit-Len. Tot-Len. (ft)	PF-(psi) PE-(psi) PT-(psi)
8	0.00	-2.00	0.00	17.19	2.00	0.00	0.08331	1350.00	114.552
9	0.00	-2.00	0.00	131.75	2.067	93.67	5E	25.00	0.000
	SCHED 40 WET STEEL				120	8.96	0	1375.00	114.552
9	0.00	-2.00	0.00	131.75	2.00	0.00	0.08331	5.00	0.833
10	0.00	3.00	0.00	130.41	2.067	93.67	E	5.00	-2.165
	SCHED 40 WET STEEL				120	8.96	0	10.00	-1.332
10	0.00	3.00	0.00	130.41	2.00	0.00	0.08331	1.00	0.500
11	0.00	3.00	0.00	130.91	2.067	93.67	E	5.00	0.000
	SCHED 40 WET STEEL				120	8.96	0	6.00	0.500
106	5.60	7.00	16.86	9.06	1.00	16.86	0.09489	3.00	0.474
12	0.00	8.00	0.00	9.10	1.049	16.86	E	2.00	-0.433
	SCHED 40 WET STEEL				120	6.26	0	5.00	0.041
105	5.60	7.00	16.06	8.22	1.00	16.06	0.08673	3.00	0.434
13	0.00	8.00	0.00	8.22	1.049	16.06	E	2.00	-0.433
	SCHED 40 WET STEEL				120	5.96	0	5.00	0.001
104	5.60	7.00	15.52	7.68	1.00	15.52	0.08141	3.00	0.407
14	0.00	8.00	0.00	7.65	1.049	15.52	E	2.00	-0.433
	SCHED 40 WET STEEL				120	5.76	0	5.00	-0.026
103	5.60	7.00	15.20	7.36	1.00	15.20	0.07831	3.00	0.392
15	0.00	8.00	0.00	7.32	1.049	15.20	E	2.00	-0.433
	SCHED 40 WET STEEL				120	5.64	0	5.00	-0.041
102	5.60	7.00	15.04	7.22	1.00	15.04	0.07686	3.00	0.384
16	0.00	8.00	0.00	7.17	1.049	15.04	E	2.00	-0.433
	SCHED 40 WET STEEL				120	5.58	0	5.00	-0.049
101	5.60	7.00	15.00	7.17	1.00	15.00	0.07646	3.00	0.382
17	0.00	8.00	0.00	7.12	1.049	15.00	E	2.00	-0.433
	SCHED 40 WET STEEL				120	5.57	0	5.00	-0.051

Fire Sprinkler Output Data

Overall Sprinkler Output Data

Flowing Sprinkler Node No.	Area Group Code	Sprinkler KFactor (K)	Sprinkler Elevation (feet)	Residual Pressure (psi)	Flowing Area (ft^2)	Flowing Density (gpm/ft^2)	Sprinkler Discharge (gpm)
101		5.60	7.00	7.17	50.00	0.300	15.00
Sub Totals For Non-Group					50.00	0.300	15.00
102		5.60	7.00	7.22	50.00	0.301	15.04
Sub Totals For Non-Group					50.00	0.301	15.04
103		5.60	7.00	7.36	50.00	0.304	15.20
Sub Totals For Non-Group					50.00	0.304	15.20
104		5.60	7.00	7.68	50.00	0.310	15.52
Sub Totals For Non-Group					50.00	0.310	15.52
105		5.60	7.00	8.22	50.00	0.321	16.06
Sub Totals For Non-Group					50.00	0.321	16.06
106		5.60	7.00	9.06	50.00	0.337	16.86
Sub Totals For Non-Group					50.00	0.337	16.86
Totals For All Groups					300.00	0.312	93.67

Fire Sprinkler Output Summary

Hydraulically Most Demanding Sprinkler Node

HMD Sprinkler Node Number:	101	
HMD Actual Residual Pressure:	7.17	psi
HMD Actual GPM:	15.00	gpm

Sprinkler Summary

Sprinkler System Type:	Dry	
Specified Area Of Application:	161.00	ft²
Adjusted Area Of Application:	209.30	ft²
Minimum Desired Density:	0.300	gpm/ft²
Application Average Density:	0.582	gpm/ft²
Application Adjusted Density (not required by NFPA 13):	0.448	gpm/ft²
Application Average Area Per Sprinkler:	26.83	ft²
Adjusted Area Per Sprinkler (not required by NFPA 13):	34.88	ft²
Sprinkler Flow:	93.67	gpm
Average Sprinkler Flow:	15.61	gpm

Flow Velocity And Imbalance Summary

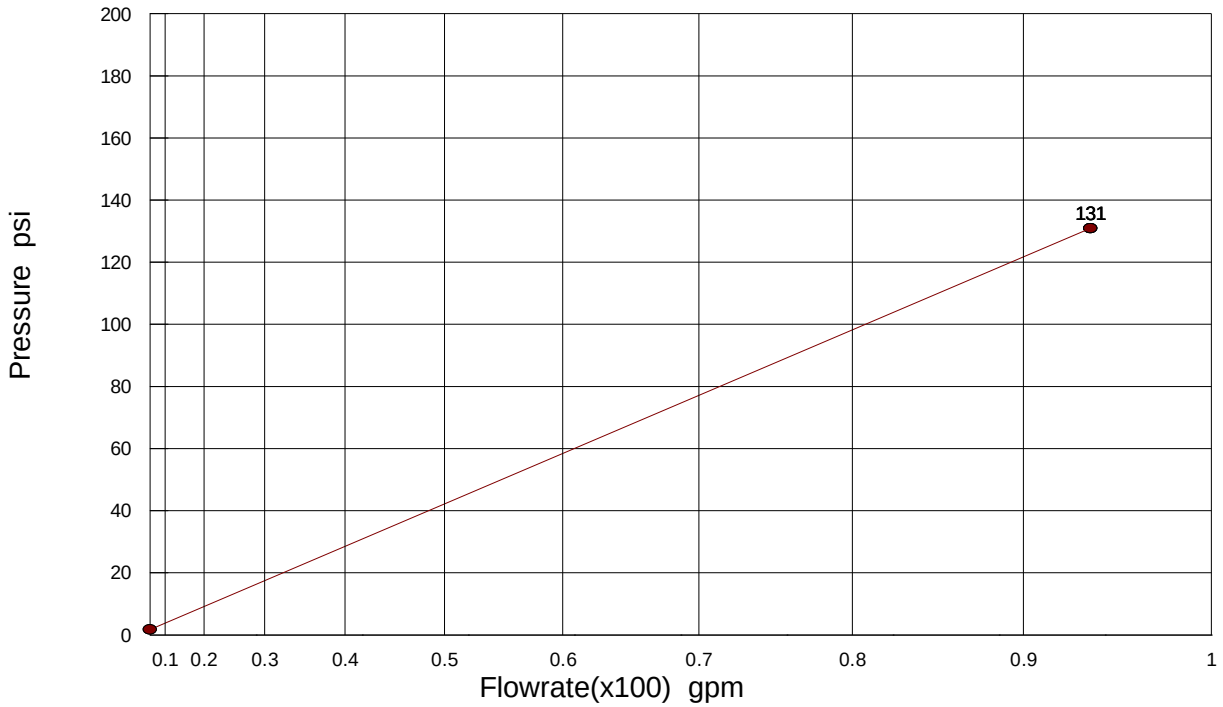
Maximum Flow Velocity (In Pipe 9 - 10)	8.96	ft/sec
Maximum Velocity Pressure (In Pipe 9 - 10)	0.54	psi
Allowable Maximum Nodal Pressure Imbalance:	0.0100	psi
Actual Maximum Nodal Pressure Imbalance:	0.0000	psi
Actual Average Nodal Pressure Imbalance:	0.0000	psi
Actual Maximum Nodal Flow Imbalance:	0.0000	gpm
Actual Average Nodal Flow Imbalance:	0.0000	gpm

Overall Network Summary

Number Of Unique Pipe Sections:	22	
Number Of Flowing Sprinklers:	6	
Pipe System Water Volume:	245.30	gal
Sprinkler Flow:	93.67	gpm
Non-Sprinkler Flow:	0.00	gpm
Minimum Required Residual Pressure At System Inflow Node:	130.91	psi
Demand Flow At System Inflow Node:	93.67	gpm

Fire Sprinkler Output Data

Hydraulic Supply/Demand Graph



Demand Curve Data

Calculated Residual Pressure: 130.91 psi
Calculated Flow Rate: 93.67 gpm
Pressure Required For First Sprinkler Downstream From Inflow Node To Flow: 1.73 psi