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.
- 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.
- 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

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.

FINAL OCCUPANCY. G.C. SHALL REPAIR AND/OR REPLACE ALL FINISHES

- 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
- 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 PIPING SPRINKLER SIAMESE CONNECTION SPRINKLER HEAD

SPRINKLER DRAWING LIST

APPROXIMATE

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.

APPRX.

NOTE: MAXIMUM DISTANCE BETWEEN SPRINKLER HEADS & WALLS IS 1/3 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 & NPFA 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.
- 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

16. PROVISIONS SHOULD BE MADE TO FACILITATE FLUSHING SYSTEM PIPING BY

- 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

- 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").

CHAPTER 23 SECTION 23.5.

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

SPECIAL INSPECTION SPRINKLER NOTE:

- SPECIAL INSPECTION OF SPRINKLER SYSTEM TO BE PERFORMED IN ACCORDANCE WITH MASSACHUSETTS BUILDING CODE SECTION BC 1704.2 &
- 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 (482 SQ.FT. AREA) NUMBER OF HEADS CALCULATED: 14 K-FACTOR: 5.6

PROTECTION AREA OF SPRINKLER HEADS

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

SPRINKLER SCHEDULE METAL | TEMPERATURE (°F) | RESPONSE SYMBOL COVERAGE K-FACTOR NPT MFG MODEL# NAME **APPROVALS** STANDARD PENDENT STANDARD BRASS 155 5.6 TYC0 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
- D. THE SCHEDULING OF THE SPRINKLER WORK SHALL BE COORDINATED WITH PROPERTY MANAGEMENT, WITH OTHER CONTRACTORS AND WITH THE ENGINEER.
- 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.

- 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

1.02 WORK INCLUDED

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

- 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 B. PIPE JOINTS 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.
- 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
- 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.

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

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

- 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.

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

FIRE THERMAL BULB SMOKE DETECTOR OPEN ACTUATOR CONTROL PANEL STROBE AND HORN RELEASE → PRESSURE SENSOR EXTINGUISHING

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

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

PROJECT	NAME

HYSICAL LOCATION

SPRINKLER GENERAL NOTES, SYMBOLS, **ABBREVIATIONS AND SPECIFICATIONS**

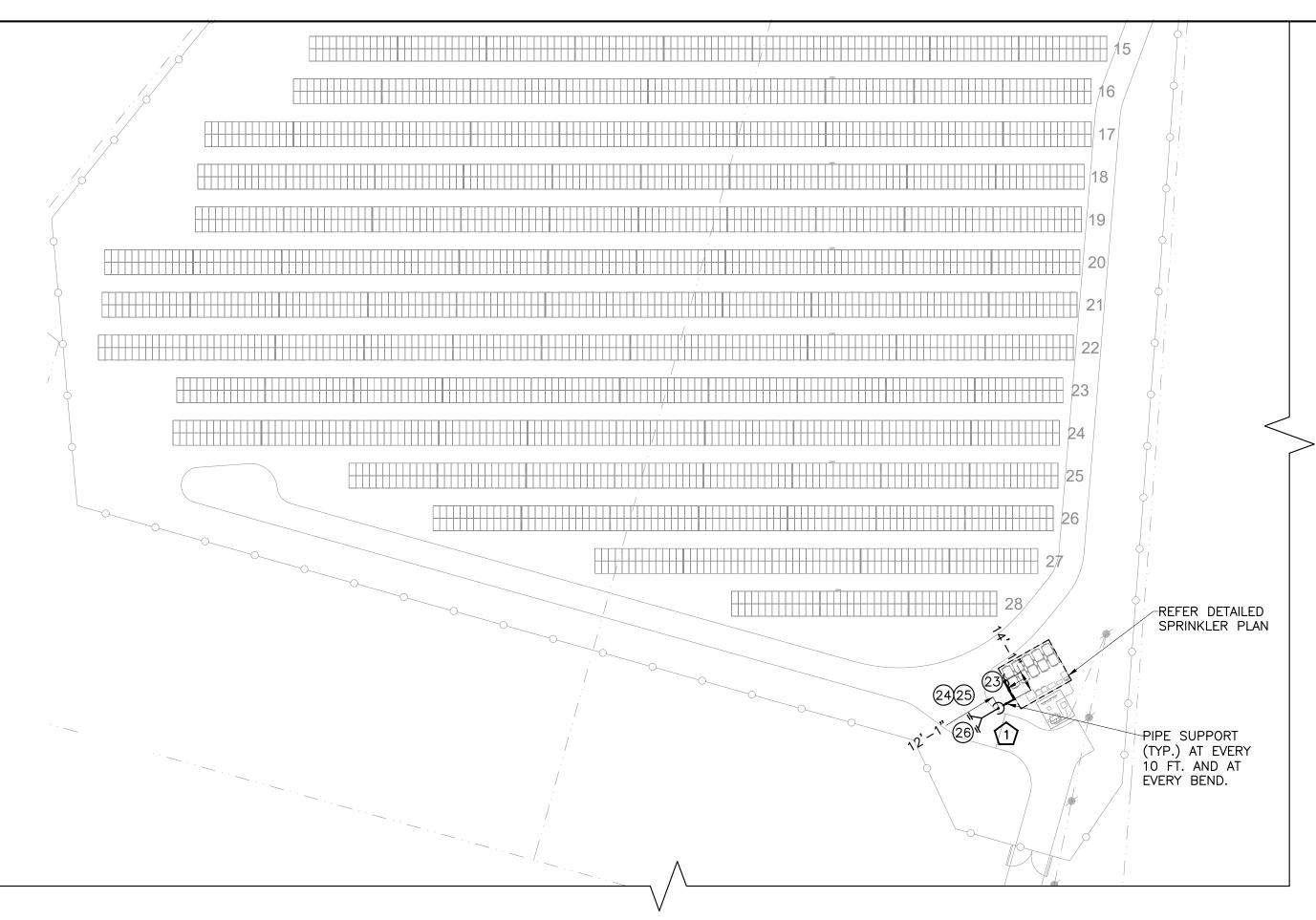
RAPHIC SCALE

PROJECT NO. AS NOTED NYE NYE 01/19/2024 ET NUMBER

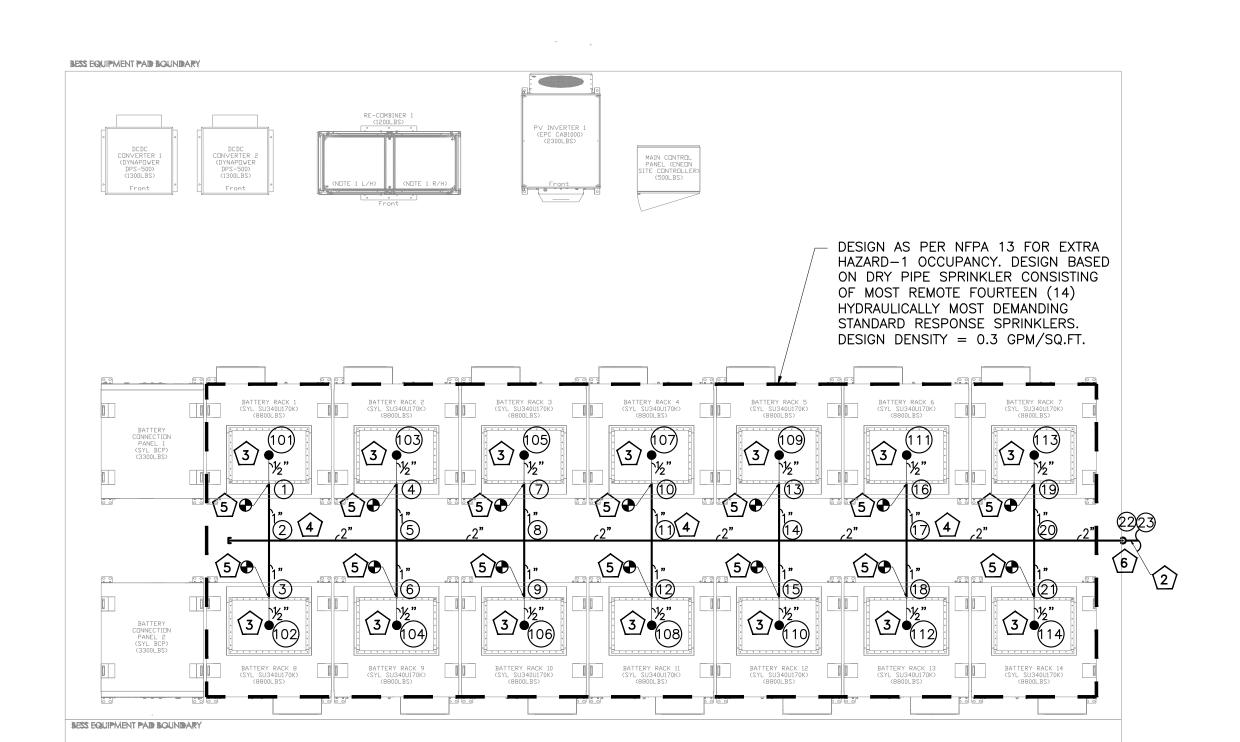
SP-001.00

FIRE DEPARTMENT 28/ SPRINKLER CONNECTION 2½"x2½"x4", 36" AFF.

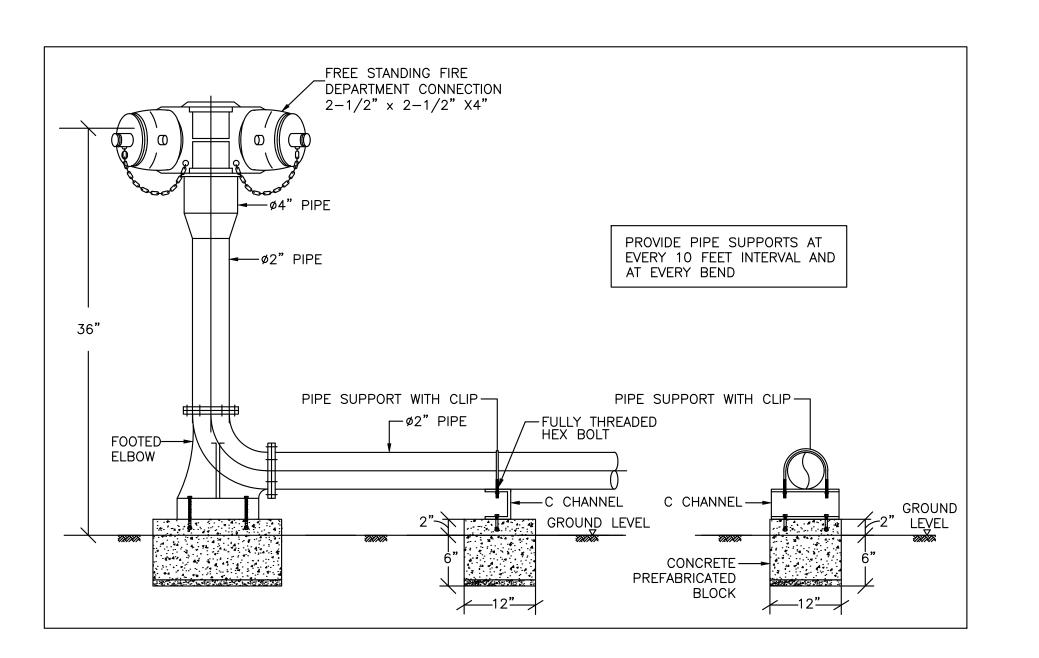
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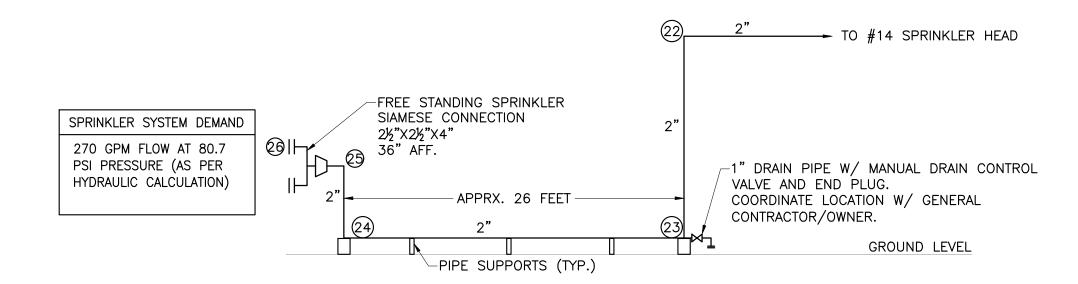
SPRINKLER OVERALL PLAN SCALE: 1/64" = 1'-0"



DETAILED SPRINKLER PLAN SCALE: 1/4" = 1'-0"



FIRE DEPARTMENT CONNECTION DETAIL



SPRINKLER RISER DIAGRAM

HAZARD CLASSIFICATION AND DESIGN DENSITY: AREA: BATTERY CABINET

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

SPRINKLER LEGEND:

- FIRE DEPARTMENT SPRINKLER CONNECTION 2½"x2½"x4", 36" AFF.

 MAINTAIN MINIMUM 10' EXPOSURE CLEARANCE BETWEEN FIRE DEPARTMENT CONNECTION & THE BESS CABINET BODY. MAINTAIN MINIMUM 3' CONNECTION CLEARANCE ON FRONT SIDE OF FIRE DEPARTMENT CONNECTION. (PROVIDE SOLID BRONZE MATERIAL FOR FIRE DEPARTMENT
 - CONNECTION). REFER KEY PLAN ON SHEET SP-001 FOR EXACT LOCATION.
- NEW 2" DRY SPRINKLER PIPE RUNNING ABOVE GROUND. COORDINATE PIPING LAYOUT W/ SOLAR CONSULTANT & OTHER TRADES.
- COORDINATE SPRINKLER LOCATION & PIPING W/ EQUIPMENT CONTRACTOR.
- COORDINATE WITH CABINET MANUFACTURER AND GC FOR SPRINKLER PIPING SUPPORT FROM THE CABINET. PROVIDE ADD ALTERNATE FOR ANY ADDITIONAL PIPING SUPPORTS IF REQUIRED.
- SPRINKLER PIPING AND SPRINKLER HEAD BY CABINET MANUFACTURER. COORDINATE PIPING CONNECTION WITH CABINET MANUFACTURER.
- 2" DRAIN PIPE W/ MANUAL DRAIN CONTROL VALVE INSTALL VERTICALLY (SEE SPRINKLER RISER DIAGRAM FOR DETAILS). COORDINATE LOCATION W/ GENERAL CONTRACTOR/OWNER.

NO. DATE ISSUE DESCRIPTION

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

PROJECT NAME

PHYSICAL LOCATION

SPRINKLER OVERALL PLAN, DETAILED SPRINKLER PLAN & SPRINKLER RISER DIAGRAM

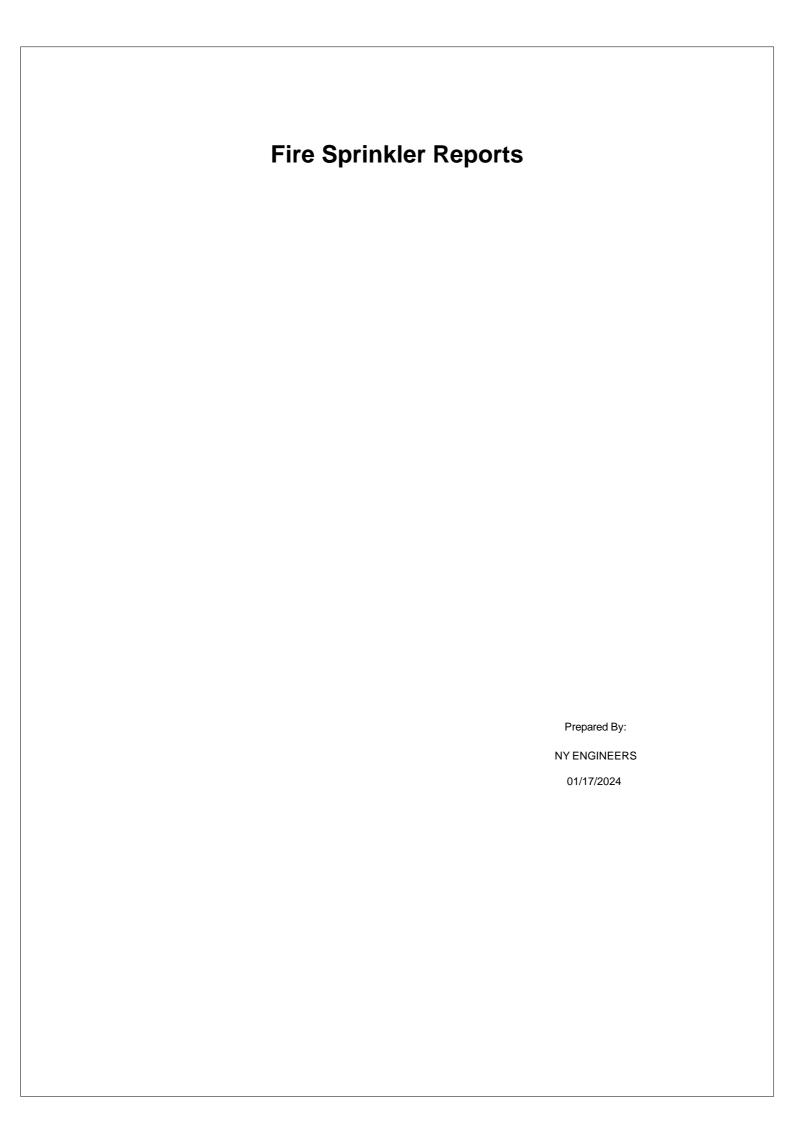
GRAPHIC SCALE

PROJECT NO. AS NOTED NYE NYE

SP-101.00

ET NUMBER

01/19/2024



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:

Contact at Building:

Address Of Building:

Building Owner:

Phone at Building:

City, State Zip Code:

Project Data

Ex. Haz. Gp. 1 Description Of Hazard: Sprinkler System Type: Dry 482 ft² 50 ft² Design Area Of Water Application: Maximum Area Per Sprinkler: Default Sprinkler K-Factor: Default Pipe Material: 5.60 K 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 ftStatic Pressure:0.00 psiTest Flow Rate:0.00 gpmTest Residual Pressure:0.00 psiCalculated System Flow Rate:269.48 gpmCalculated Inflow Residual Pressure:80.68 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: 40

Number Of Active Pipes:39Number Of Inactive Pipes:0Number Of Active Sprinklers:14Number Of Inactive Sprinklers:0

Node Input Data

Node No.	Node Description Branch Description	Area Group Branch Dia. (in)	Sprinkler KFactor (K) Branch Len.	Pressure Estimate (psi) Branch Stnd	Node Elev (ft) Branch Non- Stnd Fittings	Non-Sprinkler Flow (gpm) Branch Sprk
		(111)	(ft)	Fittings	(ft)	KFactor (K)
1	No Discharge	0.000	N/A 0.0	8.89	8.00 0.0	0.00 0.00
2	No Discharge	0.000	N/A 0.0	9.07	8.00 0.0	0.00 0.00
3	No Discharge	0.000	N/A 0.0	8.89	8.00 0.0	0.00 0.00
4	No Discharge	0.000	N/A 0.0	9.14	8.00 0.0	0.00 0.00
5	No Discharge	0.000	N/A 0.0	9.33	8.00 0.0	0.00 0.00
6	No Discharge	0.000	N/A 0.0	9.14	8.00 0.0	0.00 0.00
7	No Discharge	0.000	N/A 0.0	10.06	8.00 0.0	0.00 0.00
8	No Discharge	0.000	N/A 0.0	10.27	8.00 0.0	0.00 0.00
9	No Discharge	0.000	N/A 0.0	10.06	8.00 0.0	0.00 0.00
10	No Discharge	0.000	N/A 0.0	12.08	8.00 0.0	0.00 0.00
11	No Discharge	0.000	N/A 0.0	12.32	8.00 0.0	0.00 0.00
12	No Discharge	0.000	N/A 0.0	12.08	8.00 0.0	0.00 0.00
13	No Discharge	0.000	N/A 0.0	15.74	8.00 0.0	0.00 0.00
14	No Discharge	0.000	N/A 0.0	16.05	8.00 0.0	0.00 0.00
15	No Discharge	0.000	N/A 0.0	15.74	8.00 0.0	0.00
16	No Discharge	0.000	N/A 0.0	21.79	8.00 0.0	0.00 0.00
17	No Discharge	0.000	N/A 0.0	22.21	8.00 0.0	0.00
18	No Discharge	0.000	N/A 0.0	21.79	8.00 0.0	0.00

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)
19	No Discharge	0.000	N/A 0.0	31.34	8.00 0.0	0.00
20	No Discharge	0.000	N/A 0.0	31.92 	8.00 0.0	0.00
21	No Discharge	0.000	N/A 0.0	31.34	8.00 0.0	0.00 0.00
22	No Discharge	0.000	N/A 0.0	45.93	8.00 0.0	0.00
23	No Discharge	0.000	N/A 0.0	56.03	1.00 0.0	0.00 0.00
24	No Discharge	0.000	N/A 0.0	73.68	1.00	0.00 0.00
25	No Discharge	0.000	N/A 0.0	77.45 	2.50 0.0	0.00 0.00
26	No Discharge	0.000	N/A 0.0	80.68	2.50 0.0	0.00 0.00
101	Sprinkler	0.000	5.60 0.0	7.17 	7.00 0.0	0.00 0.00
102	Sprinkler 	0.000	5.60 0.0	7.17 	7.00 0.0	0.00 0.00
103	Sprinkler 	0.000	5.60 0.0	7.37	7.00 0.0	0.00 0.00
104	Sprinkler	0.000	5.60 0.0	7.37	7.00 0.0	0.00 0.00
105	Sprinkler	0.000	5.60 0.0	8.10	7.00 0.0	0.00 0.00
106	Sprinkler	0.000	5.60 0.0	8.10	7.00 0.0	0.00 0.00
107	Sprinkler	0.000	5.60 0.0	9.69	7.00 0.0	0.00 0.00
108	Sprinkler 	0.000	5.60 0.0	9.69	7.00 0.0	0.00 0.00
109	Sprinkler 	0.000	5.60 0.0	12.57	7.00 0.0	0.00 0.00
110	Sprinkler	0.000	5.60 0.0	12.57	7.00 0.0	0.00 0.00

Node Input Data (cont'd)

			Sprinkler	Pressure	Node Elev (ft)	Non-Sprinkler
Node	Node Description	Area Group	KFactor (K)	Estimate (psi)	Branch Non-	Flow (gpm)
No.	Branch Description	Branch Dia.	Branch Len.	Branch Stnd	Stnd Fittings	Branch Sprk
	·	(in)	(ft)	Fittings	(ft)	KFactor (K)
111	Sprinkler		5.60	17.37	7.00	0.00
		0.000	0.0		0.0	0.00
112	Sprinkler		5.60	17.37	7.00	0.00
112		0.000	0.0		0.0	0.00
113	Sprinkler		5.60	24.98	7.00	0.00
		0.000	0.0		0.0	0.00
444	Sprinkler		5.60	24.98	7.00	0.00
114		0.000	0.0		0.0	0.00

Pipe I	nput	Data
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Beg. Node	End. Node	Pipe Description	Nominal Diameter (inch)	Type Group	Fitting Data	Nominal Length (feet)	Fitting Length (feet)	Total Length (feet)	CFactor (gpm/inc h-psi)
101	1	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
1	2	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
102	3	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
3	2	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
2	5	SCHED 40 WET STEEL	2.000	0	2T	5.40	20.00	25.40	120
103	4	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
4	5	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
104	6	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
6	5	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
5	8	SCHED 40 WET STEEL	2.000	0	2T	5.40	20.00	25.40	120
106	9	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
9	8	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
105	7	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
7	8	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
8	11	SCHED 40 WET STEEL	2.000	0	2T	5.40	20.00	25.40	120
107	10	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
10	11	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
108	12	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
12	11	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
11	14	SCHED 40 WET STEEL	2.000	0	2T	5.40	20.00	25.40	120
109	13	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
13	14	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
110	15	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
15	14	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
14	17	SCHED 40 WET STEEL	2.000	0	2T	5.40	20.00	25.40	120
111	16	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
16	17	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120

Pipe Input Data (cont'd)

Beg. Node	End. Node	Pipe Description	Nominal Diameter (inch)	Type Group	Fitting Data	Nominal Length (feet)	Fitting Length (feet)	Total Length (feet)	CFactor (gpm/inc h-psi)
112	18	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
18	17	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
_17	20	SCHED 40 WET STEEL	2.000	0	2T	5.40	20.00	25.40	120
113	19	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
19	20	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
114	21	SCHED 40 WET STEEL	0.500	0	Е	1.20	1.00	2.20	120
_21	20	SCHED 40 WET STEEL	1.000	0		2.40	0.00	2.40	120
_20	22	SCHED 40 WET STEEL	2.000	0	2T	3.80	20.00	23.80	120
_22	23	SCHED 40 WET STEEL	2.000	0	Е	7.00	5.00	12.00	120
_23	24	SCHED 40 WET STEEL	2.000	0	Е	25.00	5.00	30.00	120
_24	25	SCHED 40 WET STEEL	2.000	0	Е	2.50	5.00	7.50	120
25	26	SCHED 40 WET STEEL	2.000	0	Е	0.50	5.00	5.50	120

Overa	11 1400	e Grot	apings out	put Data				
		-	-					
Pipe Se		Pipe	Pipe	Sprinkler Flow	Non-Sprinl		Beg. Node	Imbalance
Beg.	End.	Type	Flow Rate	At Beg. Node	Out (+)	ln (-)	Residual	Flow At Beg.
Node	Node	Group	(gpm)	(gpm)	(gpm)	(gpm)	Pressure (psi)	Node (gpm)
1	101	0	15.00	0.00	0.00	0.00	8.89	0.00000
1	2	0	-15.00					
2	1	0	15.00	0.00	0.00	0.00	9.07	0.00000
2	3	0	15.00					
2	5	0	-30.00					
			00.00					
3	2	0	-15.00	0.00	0.00	0.00	8.89	0.00000
3	102	0	15.00	0.00	0.00	0.00	0.00	0.00000
	102		10.00					
4	103	0	15.21	0.00	0.00	0.00	9.14	0.00000
	5	0	-15.21	0.00	0.00	0.00	5.14	0.00000
4	5	U	-13.21					
_	0	0	20.00	0.00	0.00	0.00	0.00	0.00000
5	2	0	30.00	0.00	0.00	0.00	9.33	0.00000
5	4	0	15.21					
5	6	0	15.21					
5	8	0	-60.41					
	_	•	45.04	0.00	0.00	0.00	0.44	0.0000
6	5	0	-15.21	0.00	0.00	0.00	9.14	0.00000
6	104	0	15.21					
7	105	0	15.93	0.00	0.00	0.00	10.06	0.00000
7	8	0	-15.93					
8	5	0	60.41	0.00	0.00	0.00	10.27	0.00000
8	7	0	15.93					
8	9	0	15.93					
8	11	0	-92.28					
9	8	0	-15.93	0.00	0.00	0.00	10.06	0.00000
9	106	0	15.93					
10	107	0	17.43	0.00	0.00	0.00	12.08	0.00000
10	11	0	-17.43					
11	8	0	92.28	0.00	0.00	0.00	12.32	0.00000
11	10	0	17.43					
11	12	0	17.43					
11	14	0	-127.14					
l —			121111					
12	11	0	-17.43	0.00	0.00	0.00	12.08	0.00000
12	108	0	17.43	0.00	0.00	0.00	12.00	0.00000
	100		17.43					
13	109	0	19.86	0.00	0.00	0.00	15.74	0.00000
13	14	0	-19.86	0.00	0.00	0.00	13.74	0.00000
	14	U	-19.00					
4.4	4.4	0	407 4 4	0.00	0.00	0.00	46.05	0.00000
14	11	0	127.14	0.00	0.00	0.00	16.05	0.00000
14	13	0	19.86					
14	15	0	19.86					
14	17	0	-166.85					
		_	40.00	2.2	0.00	0.00	4	0.00000
15	14	0	-19.86	0.00	0.00	0.00	15.74	0.00000
15	110	0	19.86					
1								

Overall Node	Groupings	Output Data ((cont'd)
			

Pipe Se	gment	Pipe	Pipe	Sprinkler Flow	Non-Sprink	kler Flow	Beg. Node	Imbalance
Beg.	End.	Type	Flow Rate	At Beg. Node	Out (+)	In (-)	Residual	Flow At Beg.
Node	Node	Group	(gpm)	(gpm)	(gpm)	(gpm)	Pressure (psi)	Node (gpm)
16 16	111 17	0	23.34 -23.34	0.00	0.00	0.00	21.79	0.00000
			20.04					
17	14	0	166.85	0.00	0.00	0.00	22.21	0.00000
17	16	0	23.34					
17 17	18 20	0	23.34 -213.52					
			210.02					
18	17	0	-23.34	0.00	0.00	0.00	21.79	0.00000
18	112	0	23.34					
19	113	0	27.99	0.00	0.00	0.00	31.34	0.00000
19	20	0	-27.99					
20	17	0	213.52	0.00	0.00	0.00	31.92	0.00000
20	19	0	27.99	0.00	0.00	0.00	31.32	0.00000
20	21	0	27.99					
20	22	0	-269.49					
21	20	0	-27.99	0.00	0.00	0.00	31.34	0.00000
21	114	0	27.99					
22	20	0	269.49	0.00	0.00	0.00	4E 02	0.00000
22	23	0	-269.49	0.00	0.00	0.00	45.93	0.00000
23	22	0	269.49	0.00	0.00	0.00	56.03	0.00000
23	24	0	-269.49					
24	23	0	269.49	0.00	0.00	0.00	73.68	0.00000
24	25	0	-269.49					
25	24	0	269.49	0.00	0.00	0.00	77.45	0.00000
25	26	0	-269.49	0.00	0.00	0.00	77.40	0.00000
		_						
26	25	0	269.49	0.00	0.00	-269.49	80.68	
101	1	0	-15.00	15.00	0.00	0.00	7.17	0.00000
	_	_						
102	3	0	-15.00	15.00	0.00	0.00	7.17	0.00000
103	4	0	-15.21	15.21	0.00	0.00	7.37	0.00000
404	0	0	45.04	45.04	0.00	0.00	7.07	0.00000
104	6	0	-15.21	15.21	0.00	0.00	7.37	0.00000
105	7	0	-15.93	15.93	0.00	0.00	8.10	
400	0	0	45.00	45.00	0.00	0.00	0.40	
106	9	0	-15.93	15.93	0.00	0.00	8.10	
107	10	0	-17.43	17.43	0.00	0.00	9.69	
108	12	0	-17.43	17.43	0.00	0.00	9.69	
100	12	0	-17.43	17.43	0.00	0.00	9.09	
109	13	0	-19.86	19.86	0.00	0.00	12.57	0.00000
110	15	0	-19.86	19.86	0.00	0.00	12.57	0.00000
110	13	U	-19.00	19.00	0.00	0.00	12.57	0.00000

Overall Node Groupings Output Data (cont'd)

Pipe Se Beg. Node	egment End. Node	Pipe Type Group	Pipe Flow Rate (gpm)	Sprinkler Flow At Beg. Node (gpm)	Non-Sprink Out (+) (gpm)	ler Flow In (-) (gpm)	Beg. Node Residual Pressure (psi)	Imbalance Flow At Beg. Node (gpm)
111	16	0	-23.34	23.34	0.00	0.00	17.37	0.00000
112	18	0	-23.34	23.34	0.00	0.00	17.37	0.00000
113	19	0	-27.99	27.99	0.00	0.00	24.98	0.00000
114	21	0	-27.99	27.99	0.00	0.00	24.98	0.00000

Overall Pipe Output Data

Beg.	Nodal		Spk/Hose	Residual	Nom. Dia.	q (gpm)	F. L./ft	Pipe-Len.	PF-(psi)
End.	KFactor	Elevation	Discharge	Pressure	Inside Dia.	Q (gpm)	(psi/ft)	Fit-Len.	PE-(psi)
Node	(K)	(feet)	(gpm)	(psi)	C-Value	Velocity	Fittings	Tot-Len.	PT-(psi)
	()		(9P)	(10.7)	• • • • • • • • • • • • • • • • • • • •	(fps)	Type-Grp	(ft)	(ро.)
101	5.60	7.00	15.00	7.17	0.50	15.00	0.97455	1.20	2.144
1	0.00	8.00	0.00	8.89	0.622	15.00	E	1.00	-0.433
	SCHEL	O 40 WET S	OTEEL		120	15.84	0	2.20	1.711
1	0.00	8.00	0.00	8.89	1.00	0.00	0.07645	2.40	0.183
2	0.00	8.00	0.00	9.07	1.049	15.00		0.00	0.000
	SCHEL	O 40 WET S	STEEL		120	5.57	0	2.40	0.183
3	0.00	8.00	0.00	8.89	1.00	0.00	0.07645	2.40	0.183
2	0.00	8.00	0.00	9.07	1.049	15.00		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	5.57	0	2.40	0.183
102	5.60	7.00	15.00	7.17	0.50	15.00	0.97455	1.20	2.144
3	0.00	8.00	0.00	8.89	0.622	15.00	Е	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	15.84	0	2.20	1.711
103	5.60	7.00	15.21	7.37	0.50	15.21	0.99943	1.20	2.199
4	0.00	8.00	0.00	9.14	0.622	15.21	E	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	16.05	0	2.20	1.766
2	0.00	8.00	0.00	9.07	2.00	0.00	0.01013	5.40	0.257
5	0.00	8.00	0.00	9.33	2.067	30.00	2T	20.00	0.000
	SCHE	O 40 WET S	STEEL		120	2.87	0	25.40	0.257
4	0.00	8.00	0.00	9.14	1.00	0.00	0.07840	2.40	0.188
5	0.00	8.00	0.00	9.33	1.049	15.21		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	5.64	0	2.40	0.188
6	0.00	8.00	0.00	9.14	1.00	0.00	0.07840	2.40	0.188
5	0.00	8.00	0.00	9.33	1.049	15.21		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	5.64	0	2.40	0.188
104	5.60	7.00	15.21	7.37	0.50	15.21	0.99943	1.20	2.199
6	0.00	8.00	0.00	9.14	0.622	15.21	E	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	16.05	0	2.20	1.766
105	5.60	7.00	15.93	8.10	0.50	15.93	1.08988	1.20	2.398
7	0.00	8.00	0.00	10.06	0.622	15.93	E	1.00	-0.433
		0 40 WET S			120	16.82	0	2.20	1.965
5	0.00	8.00	0.00	9.33	2.00	0.00	0.03700	5.40	0.940
8	0.00	8.00	0.00	10.27	2.067	60.41	2T	20.00	0.000
		0 40 WET S			120	5.78	0	25.40	0.940
7	0.00	8.00	0.00	10.06	1.00	0.00	0.08550	2.40	0.205
8	0.00	8.00	0.00	10.00	1.049	15.93	0.00550	0.00	0.203
		0.00 2 40 WET		10.27	120	5.92	0	2.40	0.205
9	0.00	8.00	0.00	10.06	1.00	0.00	0.08550	2.40	0.205
8	0.00	8.00	0.00	10.27	1.049	15.93		0.00	0.000
	SCHEL	O 40 WET S	DIEEL		120	5.92	0	2.40	0.205

Overall Pipe Output Data (cont'd)

	NIa-l-I		Cp1//11	Desident	Nors Di-	q (gpm)	F. L./ft	Pipe-Len.	DE (==:\
Beg. End.	Nodal KFactor	Elevation	Spk/Hose Discharge	Residual Pressure	Nom. Dia. Inside Dia.	Q (gpm)	(psi/ft)	Fit-Len.	PF-(psi) PE-(psi)
Node	(K)	(feet)	(gpm)	(psi)	C-Value	Velocity	Fittings	Tot-Len.	PT-(psi)
Node	(14)		(gpiii)	(Þ3i)	O value	(fps)	Type-Grp	(ft)	1 1 (p3i)
106	5.60	7.00	15.93	8.10	0.50	15.93	1.08988	1.20	2.398
9	0.00	8.00	0.00	10.06	0.622	15.93	E	1.00	-0.433
	SCHEL	O 40 WET S	DIEEL		120	16.82	0	2.20	1.965
107	5.60	7.00	17.43	9.69	0.50	17.43	1.28636	1.20	2.830
10	0.00	8.00	0.00	12.08	0.622	17.43	E	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	18.40	0	2.20	2.397
8	0.00	8.00	0.00	10.27	2.00	0.00	0.08103	5.40	2.058
11	0.00	8.00	0.00	12.32	2.067	92.28	2T	20.00	0.000
	SCHE	O 40 WET S	STEEL		120	8.82	0	25.40	2.058
10	0.00	8.00	0.00	12.08	1.00	0.00	0.10091	2.40	0.242
11	0.00	8.00	0.00	12.32	1.049	17.43		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	6.47	0	2.40	0.242
12	0.00	8.00	0.00	12.08	1.00	0.00	0.10091	2.40	0.242
11	0.00	8.00	0.00	12.32	1.049	17.43		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	6.47	0	2.40	0.242
108	5.60	7.00	17.43	9.69	0.50	17.43	1.28636	1.20	2.830
12	0.00	8.00	0.00	12.08	0.622	17.43	E	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	18.40	0	2.20	2.397
109	5.60	7.00	19.86	12.57	0.50	19.86	1.63726	1.20	3.602
13	0.00	8.00	0.00	15.74	0.622	19.85	E	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	20.96	0	2.20	3.169
11	0.00	8.00	0.00	12.32	2.00	0.00	0.14660	5.40	3.724
14	0.00	8.00	0.00	16.05	2.067	127.13	2T	20.00	0.000
	SCHE	O 40 WET S	STEEL		120	12.16	0	25.40	3.724
13	0.00	8.00	0.00	15.74	1.00	0.00	0.12844	2.40	0.308
14	0.00	8.00	0.00	16.05	1.049	19.85		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	7.37	0	2.40	0.308
15	0.00	8.00	0.00	15.74	1.00	0.00	0.12844	2.40	0.308
14	0.00	8.00	0.00	16.05	1.049	19.85		0.00	0.000
	SCHE	O 40 WET S	STEEL		120	7.37	0	2.40	0.308
110	5.60	7.00	19.86	12.57	0.50	19.86	1.63726	1.20	3.602
15	0.00	8.00	0.00	15.74	0.622	19.85	E	1.00	-0.433
	SCHE	O 40 WET S	STEEL		120	20.96	0	2.20	3.169
111	5.60	7.00	23.34	17.37	0.50	23.34	2.20757	1.20	4.857
16	0.00	8.00	0.00	21.79	0.622	23.34	E.20707	1.00	-0.433
		0 40 WET S			120	24.64	0	2.20	4.424
14	0.00	8.00	0.00	16.05	2.00	0.00	0.24240	5.40	6.157
17	0.00	8.00	0.00	22.21	2.067	166.84	2T	20.00	0.000
		0 40 WET S			120	15.95	0	25.40	6.157

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)
16 17	0.00 0.00 SCHEI	8.00 8.00 D 40 WET S	0.00 0.00 STEEL	21.79 22.21	1.00 1.049 120	0.00 23.34 8.66	0.17318 0	2.40 0.00 2.40	0.416 0.000 0.416
18 17	0.00 0.00 SCHEI	8.00 8.00 D 40 WET S	0.00 0.00 STEEL	21.79 22.21	1.00 1.049 120	0.00 23.34 8.66	0.17318 0	2.40 0.00 2.40	0.416 0.000 0.416
112 18	5.60 0.00 SCHEI	7.00 8.00 D 40 WET S	23.34 0.00 STEEL	17.37 21.79	0.50 0.622 120	23.34 23.34 24.64	2.20757 E 0	1.20 1.00 2.20	4.857 -0.433 4.424
113 19	5.60 0.00 SCHEI	7.00 8.00 D 40 WET S	27.99 0.00 STEEL	24.98 31.34	0.50 0.622 120	27.99 27.99 29.55	3.08964 E 0	1.20 1.00 2.20	6.797 -0.433 6.364
17 20	0.00 0.00 SCHEI	8.00 8.00 D 40 WET S	0.00 0.00 STEEL	22.21 31.92	2.00 2.067 120	0.00 213.51 20.41	0.38257 2T 0	5.40 20.00 25.40	9.717 0.000 9.717
19 20	0.00 0.00 SCHEI	8.00 8.00 D 40 WET S	0.00 0.00 STEEL	31.34 31.92	1.00 1.049 120	0.00 27.99 10.39	0.24238 0	2.40 0.00 2.40	0.582 0.000 0.582
21 20	0.00 0.00 SCHEI	8.00 8.00 D 40 WET S	0.00 0.00 STEEL	31.34 31.92	1.00 1.049 120	0.00 27.99 10.39	0.24238	2.40 0.00 2.40	0.582 0.000 0.582
114 21	5.60 0.00 SCHEI	7.00 8.00 D 40 WET S	27.99 0.00 STEEL	24.98 31.34	0.50 0.622 120	27.99 27.99 29.55	3.08964 E 0	1.20 1.00 2.20	6.797 -0.433 6.364
20 22	0.00 0.00 SCHEI	8.00 8.00 D 40 WET S	0.00 0.00 STEEL	31.92 45.93	2.00 2.067 120	0.00 269.48 25.77	0.58853 2T 0	3.80 20.00 23.80	14.007 0.000 14.007
22 23	0.00 0.00 SCHEI	8.00 1.00 D 40 WET S	0.00 0.00 STEEL	45.93 56.02	2.00 2.067 120	0.00 269.48 25.77	0.58853 E 0	7.00 5.00 12.00	7.062 3.031 10.093
23 24	0.00 0.00 SCHEI	1.00 1.00 D 40 WET S	0.00 0.00 STEEL	56.02 73.68	2.00 2.067 120	0.00 269.48 25.77	0.58853 E 0	25.00 5.00 30.00	17.656 0.000 17.656
24 25	0.00 0.00 SCHEI	1.00 2.50 D 40 WET S	0.00 0.00 STEEL	73.68 77.44	2.00 2.067 120	0.00 269.48 25.77	0.58853 E 0	2.50 5.00 7.50	4.414 -0.650 3.764
25 26	0.00 0.00 SCHEI	2.50 2.50 O 40 WET S	0.00 0.00 STEEL	77.44 80.68	2.00 2.067 120	0.00 269.48 25.77	0.58853 E 0	0.50 5.00 5.50	3.237 0.000 3.237

Overall Sprinkler Output Data

Flowing Ard Sprinkler Node No.	ea Group Code	Sprinkler KFactor (K)	Sprinkler Elevation (feet)	Residual Pressure (psi)	Flowing Area (ft²)	Flowing Density (gpm/ft²)	Sprinkler Discharge (gpm)
101		5.60	7.00	7.17	50.00	0.300	15.00
Sub Totals For No	n-Group				50.00	0.300	15.00
102		5.60	7.00	7.17	50.00	0.300	15.00
Sub Totals For No	n-Group	0.00	7.00		50.00	0.300	15.00
103		5.60	7.00	7.37	50.00	0.304	15.21
Sub Totals For No	n-Group	5.60	7.00	1.31	50.00	0.304	15.21
	•						
104 Sub Totals For No	n-Group	5.60	7.00	7.37	50.00 50.00	0.304 0.304	15.21 15.21
Sub Totals Fol INC	ni-Group				50.00	0.304	15.21
105		5.60	7.00	8.10	50.00	0.319	15.93
Sub Totals For No	n-Group				50.00	0.319	15.93
106		5.60	7.00	8.10	50.00	0.319	15.93
Sub Totals For No	n-Group				50.00	0.319	15.93
107		5.60	7.00	9.69	50.00	0.349	17.43
Sub Totals For No	n-Group	0.00	7.00	0.00	50.00	0.349	17.43
108		5.60	7.00	9.69	50.00	0.349	17.43
Sub Totals For No	n-Group	5.60	7.00	9.69	50.00	0.349	17.43
	•						
109	0	5.60	7.00	12.57	50.00	0.397	19.86
Sub Totals For No	n-Group				50.00	0.397	19.86
110		5.60	7.00	12.57	50.00	0.397	19.86
Sub Totals For No	n-Group				50.00	0.397	19.86
111		5.60	7.00	17.37	50.00	0.467	23.34
Sub Totals For No	n-Group				50.00	0.467	23.34
112		5.60	7.00	17.37	50.00	0.467	23.34
Sub Totals For No	n-Group	0.00	7.00	11.01	50.00	0.467	23.34
440		F 60	7.00	24.00	E0.00	0.500	27.00
Sub Totals For No	n-Group	5.60	7.00	24.98	50.00 50.00	0.560 0.560	27.99 27.99
Sub Totals For No	.n. Cra	5.60	7.00	24.98	50.00	0.560	27.99
Sub Totals For No	ni-Group				50.00	0.560	27.99
Totals For All Gro	ups				700.00	0.385	269.49

Fire Sprinkler Output Summary

Hydraulically Most Demanding Sprinkler Node

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

Sprinkler Summary

Sprinkler System Type: Dry Specified Area Of Application: 482.00 ft² Adjusted Area Of Application: 626.60 ft² Minimum Desired Density: 0.300 gpm/ft² Application Average Density: 0.559 gpm/ft² Application Adjusted Density (not required by NFPA 13): 0.430 gpm/ft² Application Average Area Per Sprinkler: 34.43 ft² Adjusted Area Per Sprinkler (not required by NFPA 13): 44.76 ft² 269.49 gpm Sprinkler Flow: Average Sprinkler Flow: 19.25 gpm

Flow Velocity And Imbalance Summary

Maximum Flow Velocity (In Pipe 19 - 113)

Allowable Maximum Nodal Pressure Imbalance:

Actual Maximum Nodal Pressure Imbalance:

O.0100 psi
O.0039 psi
O.0005 psi
Octual Maximum Nodal Flow Imbalance:

O.0000 gnm

Actual Maximum Nodal Flow Imbalance: 0.0000 gpm
Actual Average Nodal Flow Imbalance: 0.0000 gpm

Overall Network Summary

Number Of Unique Pipe Sections: 39 Number Of Flowing Sprinklers: 14

Pipe System Water Volume: 14.19 gal

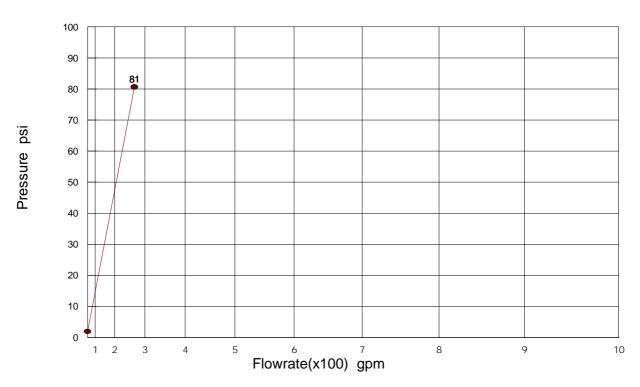
Sprinkler Flow: 269.49 gpm Non-Sprinkler Flow: 0.00 gpm

Minimum Required Residual Pressure At System Inflow

Node: 80.68 psi

Demand Flow At System Inflow Node: 269.48 gpm

Hydraulic Supply/Demand Graph



Demand Curve Data

Calculated Residual Pressure: 80.68 psi Calculated Flow Rate: 269.48 gpm

Pressure Required For First Sprinkler Downstream From Inflow Node To Flow: 1.95 psi