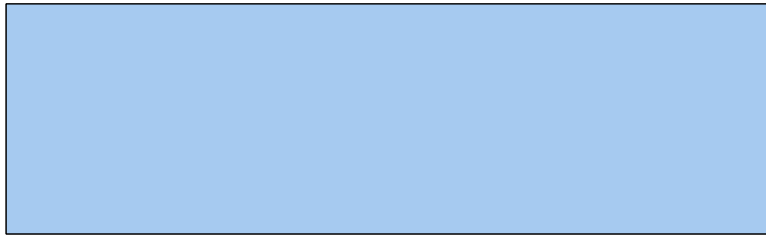


H-BAIT BENDEL Fire Sprinkler Reports

for



Prepared By:

Eng. B.Tarantul

16.07.2018



General Project Data Report (Inputs may have changed)

General Data

| | | | |
|----------------------|-----------------|-----------------------|--------------------|
| Project Title: | H-BAIT BENDEL | Project File Name: | H-BAIT BENDEL..fiw |
| Designed By: | Eng. B.Tarantul | Date: | 16.07.2018 |
| 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: | Light Hazard | Sprinkler System Type: | Wet |
| Design Area Of Water Application: | 1010 ft ² | Maximum Area Per Sprinkler: | 169 ft ² |
| Default Sprinkler K-Factor: | 5.60 K | Default Pipe Material: | SCHED 10 WET STEEL |
| Inside Hose Stream Allowance: | 50.00 gpm | Outside Hose Stream Allowance: | 50.00 gpm |
| In Rack Sprinkler Allowance: | 0.00 gpm | | |
| Sprinkler Specifications | | | |
| Make: | TYCO | Model: | Q.R. |
| Size: | 1/2 | Temperature Rating: | 155 F |

Water Supply Test Data

| | | | |
|------------------------------|------------|--------------------------------------|-----------|
| Source Of Information: | | Date Of Test: | |
| Test Hydrant ID: | | | |
| 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: | 233.15 gpm | Calculated Inflow Residual Pressure: | 21.50 psi |

Calculation Project Data

| | | | |
|--------------------------------|-----------|--------------------------------|--------------------------|
| Calculation Mode: | Demand | | |
| HMD Minimum Residual Pressure: | 15.00 psi | Minimum Desired Flow Density: | 0.10 gpm/ft ² |
| Number Of Active Nodes: | 14 | | |
| Number Of Active Pipes: | 13 | Number Of Inactive Pipes: | 0 |
| Number Of Active Sprinklers: | 8 | Number Of Inactive Sprinklers: | 0 |



Fire Sprinkler Input Data

Node Input Data (Inputs may have changed)

| 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 | Sprinkler ---- | ---- 0.000 | 11.40 0.0 | 19.46 ---- | 0.00 0.0 | 0.00 0.00 |
| 2 | No Discharge ---- | ---- 0.000 | N/A 0.0 | 18.91 ---- | 0.00 0.0 | 0.00 0.00 |
| 3 | No Discharge ---- | ---- 0.000 | N/A 0.0 | 18.60 ---- | 0.00 0.0 | 0.00 0.00 |
| 4 | No Discharge ---- | ---- 0.000 | N/A 0.0 | 18.39 ---- | 0.00 0.0 | 0.00 0.00 |
| 5 | No Discharge ---- | ---- 0.000 | N/A 0.0 | 17.71 ---- | 0.00 0.0 | 0.00 0.00 |
| 6 | No Discharge ---- | ---- 0.000 | N/A 0.0 | 17.69 ---- | 0.00 0.0 | 0.00 0.00 |
| 11 | Sprinkler ---- | ---- 0.000 | 11.10 0.0 | 20.44 ---- | 0.00 0.0 | 0.00 0.00 |
| 12 | No Discharge ---- | ---- 0.000 | N/A 0.0 | 21.50 ---- | 0.00 0.0 | 0.00 0.00 |
| 50 | Sprinkler ---- | ---- 0.000 | 5.60 0.0 | 15.83 ---- | 0.00 0.0 | 0.00 0.00 |
| 51 | Sprinkler ---- | ---- 0.000 | 5.60 0.0 | 15.18 ---- | 0.00 0.0 | 0.00 0.00 |
| 52 | Sprinkler ---- | ---- 0.000 | 5.60 0.0 | 15.00 ---- | 0.00 0.0 | 0.00 0.00 |
| 60 | Sprinkler ---- | ---- 0.000 | 5.60 0.0 | 16.36 ---- | 0.00 0.0 | 0.00 0.00 |
| 61 | Sprinkler ---- | ---- 0.000 | 5.60 0.0 | 15.69 ---- | 0.00 0.0 | 0.00 0.00 |
| 62 | Sprinkler ---- | ---- 0.000 | 5.60 0.0 | 15.51 ---- | 0.00 0.0 | 0.00 0.00 |



Fire Sprinkler Input Data

Pipe Input Data (Inputs may have changed)

| 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) |
|-----------|-----------|--------------------|-------------------------|------------|--------------|-----------------------|-----------------------|---------------------|------------------------|
| 1 | 2 | SCHED 40 WET STEEL | 4.000 | 0 | E | 80.00 | 10.00 | 90.00 | 120 |
| 11 | 1 | SCHED 40 WET STEEL | 4.000 | 0 | 3E2G2 C | 10.00 | 78.00 | 88.00 | 120 |
| 2 | 3 | SCHED 40 WET STEEL | 4.000 | 0 | EBC | 5.00 | 44.00 | 49.00 | 120 |
| 3 | 4 | SCHED 10 WET STEEL | 4.000 | 0 | ET | 7.00 | 39.00 | 46.00 | 120 |
| 4 | 5 | SCHED 10 WET STEEL | 4.000 | 0 | T | 119.00 | 26.00 | 145.00 | 120 |
| 5 | 50 | SCHED 10 WET STEEL | 1.500 | 0 | T | 5.90 | 10.00 | 15.90 | 120 |
| 5 | 6 | SCHED 10 WET STEEL | 4.000 | 0 | | 14.30 | 0.00 | 14.30 | 120 |
| 6 | 60 | SCHED 10 WET STEEL | 1.500 | 0 | E | 5.90 | 5.00 | 10.90 | 120 |
| 12 | 11 | SCHED 40 WET STEEL | 4.000 | 0 | T | 40.00 | 20.00 | 60.00 | 120 |
| 50 | 51 | SCHED 10 WET STEEL | 1.500 | 0 | | 11.80 | 0.00 | 11.80 | 120 |
| 51 | 52 | SCHED 10 WET STEEL | 1.500 | 0 | | 11.80 | 0.00 | 11.80 | 120 |
| 60 | 61 | SCHED 10 WET STEEL | 1.500 | 0 | | 11.80 | 0.00 | 11.80 | 120 |
| 61 | 62 | SCHED 10 WET STEEL | 1.500 | 0 | | 11.80 | 0.00 | 11.80 | 120 |



Fire Sprinkler Output Data

Group Peak Node Groupings Output Data (Inputs may have changed)

| Pipe Segment | | Pipe | Pipe | Sprinkler Flow | Non-Sprinkler Flow | | Beg. Node | Imbalance |
|--------------|-----------|------------|-----------------|--------------------|--------------------|--------------|-------------------------|-------------------------|
| Beg. Node | End. Node | Type Group | Flow Rate (gpm) | At Beg. Node (gpm) | Out (+) (gpm) | In (-) (gpm) | Residual Pressure (psi) | Flow At Beg. Node (gpm) |
| 1 | 2 | 0 | 132.67 | 50.29 | 0.00 | 0.00 | 19.46 | 0.00067 |
| 1 | 11 | 0 | -182.96 | | | | | |
| 2 | 1 | 0 | -132.67 | 0.00 | 0.00 | 0.00 | 18.91 | 0.00000 |
| 2 | 3 | 0 | 132.67 | | | | | |
| 3 | 2 | 0 | -132.67 | 0.00 | 0.00 | 0.00 | 18.60 | 0.00000 |
| 3 | 4 | 0 | 132.67 | | | | | |
| 4 | 3 | 0 | -132.67 | 0.00 | 0.00 | 0.00 | 18.39 | -0.00001 |
| 4 | 5 | 0 | 132.67 | | | | | |
| 5 | 4 | 0 | -132.67 | 0.00 | 0.00 | 0.00 | 17.71 | 0.00001 |
| 5 | 50 | 0 | 65.79 | | | | | |
| 5 | 6 | 0 | 66.88 | | | | | |
| 6 | 5 | 0 | -66.88 | 0.00 | 0.00 | 0.00 | 17.69 | -0.00001 |
| 6 | 60 | 0 | 66.88 | | | | | |
| 11 | 1 | 0 | 182.96 | 50.19 | 0.00 | 0.00 | 20.44 | 0.00080 |
| 11 | 12 | 0 | -233.15 | | | | | |
| 12 | 11 | 0 | 233.15 | 0.00 | 0.00 | -233.15 | 21.50 | |
| 50 | 5 | 0 | -65.79 | 22.28 | 0.00 | 0.00 | 15.83 | 0.00011 |
| 50 | 51 | 0 | 43.51 | | | | | |
| 51 | 50 | 0 | -43.51 | 21.82 | 0.00 | 0.00 | 15.18 | 0.00001 |
| 51 | 52 | 0 | 21.69 | | | | | |
| 52 | 51 | 0 | -21.69 | 21.69 | 0.00 | 0.00 | 15.00 | 0.00011 |
| 60 | 6 | 0 | -66.88 | 22.65 | 0.00 | 0.00 | 16.36 | 0.00013 |
| 60 | 61 | 0 | 44.23 | | | | | |
| 61 | 60 | 0 | -44.23 | 22.18 | 0.00 | 0.00 | 15.69 | 0.00009 |
| 61 | 62 | 0 | 22.05 | | | | | |
| 62 | 61 | 0 | -22.05 | 22.05 | 0.00 | 0.00 | 15.51 | 0.00007 |



Fire Sprinkler Output Data

Group Peak Pipe Output Data (Inputs may have changed)

| 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) |
|----------------|--------------------|------------------|--------------------------|-------------------------|-------------------------------|--------------------------------|-------------------------------------|----------------------------------|----------------------------|
| 1 | 11.40 | 0.00 | 50.29 | 19.46 | 4.00 | 0.00 | 0.00617 | 80.00 | 0.555 |
| 2 | 0.00 | 0.00 | 0.00 | 18.91 | 4.026 | 132.67 | E | 10.00 | 0.000 |
| | SCHED 40 WET STEEL | | | | 120 | 3.34 | 0 | 90.00 | 0.555 |
| 2 | 0.00 | 0.00 | 0.00 | 18.91 | 4.00 | 0.00 | 0.00617 | 5.00 | 0.302 |
| 3 | 0.00 | 0.00 | 0.00 | 18.60 | 4.026 | 132.67 | EBC | 44.00 | 0.000 |
| | SCHED 40 WET STEEL | | | | 120 | 3.34 | 0 | 49.00 | 0.302 |
| 3 | 0.00 | 0.00 | 0.00 | 18.60 | 4.00 | 0.00 | 0.00469 | 7.00 | 0.216 |
| 4 | 0.00 | 0.00 | 0.00 | 18.39 | 4.260 | 132.67 | ET | 39.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 2.99 | 0 | 46.00 | 0.216 |
| 4 | 0.00 | 0.00 | 0.00 | 18.39 | 4.00 | 0.00 | 0.00469 | 119.00 | 0.680 |
| 5 | 0.00 | 0.00 | 0.00 | 17.71 | 4.260 | 132.67 | T | 26.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 2.99 | 0 | 145.00 | 0.680 |
| 5 | 0.00 | 0.00 | 0.00 | 17.71 | 1.50 | 22.28 | 0.11822 | 5.90 | 1.880 |
| 50 | 5.60 | 0.00 | 22.28 | 15.83 | 1.682 | 65.79 | T | 10.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 9.50 | 0 | 15.90 | 1.880 |
| 5 | 0.00 | 0.00 | 0.00 | 17.71 | 4.00 | 0.00 | 0.00132 | 14.30 | 0.019 |
| 6 | 0.00 | 0.00 | 0.00 | 17.69 | 4.260 | 66.88 | ---- | 0.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 1.51 | 0 | 14.30 | 0.019 |
| 6 | 0.00 | 0.00 | 0.00 | 17.69 | 1.50 | 22.65 | 0.12190 | 5.90 | 1.329 |
| 60 | 5.60 | 0.00 | 22.65 | 16.36 | 1.682 | 66.88 | E | 5.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 9.66 | 0 | 10.90 | 1.329 |
| 11 | 11.10 | 0.00 | 50.19 | 20.44 | 4.00 | 50.29 | 0.01118 | 10.00 | 0.984 |
| 1 | 11.40 | 0.00 | 50.29 | 19.46 | 4.026 | 182.96 | 3E2G2C | 78.00 | 0.000 |
| | SCHED 40 WET STEEL | | | | 120 | 4.61 | 0 | 88.00 | 0.984 |
| 12 | 0.00 | 0.00 | 0.00 | 21.50 | 4.00 | 0.00 | 0.01751 | 40.00 | 1.051 |
| 11 | 11.10 | 0.00 | 50.19 | 20.44 | 4.026 | 233.15 | T | 20.00 | 0.000 |
| | SCHED 40 WET STEEL | | | | 120 | 5.88 | 0 | 60.00 | 1.051 |
| 50 | 5.60 | 0.00 | 22.28 | 15.83 | 1.50 | 21.82 | 0.05501 | 11.80 | 0.649 |
| 51 | 5.60 | 0.00 | 21.82 | 15.18 | 1.682 | 43.51 | ---- | 0.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 6.28 | 0 | 11.80 | 0.649 |
| 51 | 5.60 | 0.00 | 21.82 | 15.18 | 1.50 | 21.69 | 0.01517 | 11.80 | 0.179 |
| 52 | 5.60 | 0.00 | 21.69 | 15.00 | 1.682 | 21.69 | ---- | 0.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 3.13 | 0 | 11.80 | 0.179 |
| 60 | 5.60 | 0.00 | 22.65 | 16.36 | 1.50 | 22.18 | 0.05672 | 11.80 | 0.669 |
| 61 | 5.60 | 0.00 | 22.18 | 15.69 | 1.682 | 44.23 | ---- | 0.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 6.39 | 0 | 11.80 | 0.669 |
| 61 | 5.60 | 0.00 | 22.18 | 15.69 | 1.50 | 22.05 | 0.01565 | 11.80 | 0.185 |
| 62 | 5.60 | 0.00 | 22.05 | 15.51 | 1.682 | 22.05 | ---- | 0.00 | 0.000 |
| | SCHED 10 WET STEEL | | | | 120 | 3.18 | 0 | 11.80 | 0.185 |



Fire Sprinkler Output Data

Group Peak Sprinkler Output Data (Inputs may have changed)

| 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) |
|----------------------------------|--------------------|--------------------------|----------------------------------|-------------------------------|------------------------------------|--|---------------------------------|
| 1 | | 11.40 | 0.00 | 19.46 | 169.00 | 0.298 | 50.29 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.298 | 50.29 |
| 11 | | 11.10 | 0.00 | 20.44 | 169.00 | 0.297 | 50.19 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.297 | 50.19 |
| 50 | | 5.60 | 0.00 | 15.83 | 169.00 | 0.132 | 22.28 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.132 | 22.28 |
| 51 | | 5.60 | 0.00 | 15.18 | 169.00 | 0.129 | 21.82 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.129 | 21.82 |
| 52 | | 5.60 | 0.00 | 15.00 | 169.00 | 0.128 | 21.69 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.128 | 21.69 |
| 60 | | 5.60 | 0.00 | 16.36 | 169.00 | 0.134 | 22.65 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.134 | 22.65 |
| 61 | | 5.60 | 0.00 | 15.69 | 169.00 | 0.131 | 22.18 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.131 | 22.18 |
| 62 | | 5.60 | 0.00 | 15.51 | 169.00 | 0.130 | 22.05 |
| Sub Totals For Non-Group | | | | | 169.00 | 0.130 | 22.05 |
| Totals For All Groups | | | | | 1352.00 | 0.172 | 233.15 |



Fire Sprinkler Output Summary (Inputs may have changed)

Hydraulically Most Demanding Sprinkler Node

| | |
|-------------------------------|-----------|
| HMD Sprinkler Node Number: | 52 |
| HMD Actual Residual Pressure: | 15.00 psi |
| HMD Actual GPM: | 21.69 gpm |

Sprinkler Summary

| | |
|---|---------------------------|
| Sprinkler System Type: | Wet |
| Specified Area Of Application: | 1010.00 ft ² |
| Minimum Desired Density: | 0.100 gpm/ft ² |
| Application Average Density: | 0.231 gpm/ft ² |
| Application Average Area Per Sprinkler: | 126.25 ft ² |
| Sprinkler Flow: | 233.15 gpm |
| Average Sprinkler Flow: | 29.14 gpm |

Flow Velocity And Imbalance Summary

| | |
|--|-------------|
| Maximum Flow Velocity (In Pipe 6 - 60) | 9.66 ft/sec |
| Maximum Velocity Pressure (In Pipe 6 - 60) | 0.63 psi |
| Allowable Maximum Nodal Pressure Imbalance: | 0.0001 psi |
| Actual Maximum Nodal Pressure Imbalance: | 0.0001 psi |
| Actual Average Nodal Pressure Imbalance: | 0.0000 psi |
| Actual Maximum Nodal Flow Imbalance: | 0.0008 gpm |
| Actual Average Nodal Flow Imbalance: | 0.0001 gpm |

Overall Network Summary

| | |
|---|------------|
| Number Of Unique Pipe Sections: | 13 |
| Number Of Flowing Sprinklers: | 8 |
| Pipe System Water Volume: | 199.97 gal |
| Sprinkler Flow: | 233.15 gpm |
| Non-Sprinkler Flow: | 0.00 gpm |
| Minimum Required Residual Pressure At System Inflow Node: | 21.50 psi |
| Demand Flow At System Inflow Node: | 233.15 gpm |