# GRINNELL
## HYDRAULIC DESIGN INFORMATION SHEET

NAME GOULD INC. DATE July 27, 19[illegible]
LOCATION NAPOLEON OHIO
BUILDING _____ SYSTEM NO. 1
CONTRACT NO. [illegible]
CONTRACTOR MAC-KINNON-PARKER INC.
CALCULATED BY JOHN BOWER DRAWING NO. 2 of 2
CONSTRUCTION: ☐ COMBUSTIBLE ☑ NON-COMBUSTIBLE CEILING HEIGHT 27 FT.
OCCUPANCY _____
APPROVING AUTHORITIES FACTORY MUTUAL

**SYSTEM DESIGN**

☑ NFPA. 13: ☐ LT. HAZ. ORD. HAZ. GP. ☐ 1 ☐ 2 ☐ 3 ☐ EX. HAZ.
☐ NFPA 231 ☐ NFPA 231C: FIGURE _____; CURVE _____
☐ OTHER (Specify) _____
☒ SPECIFIC RULING _____ MADE BY _____ DATE _____

AREA OF SPRINKLER OPERATION 2500
DENSITY .15
AREA PER SPRINKLER 120
HOSE ALLOWANCE GPM: INSIDE 250
HOSE ALLOWANCE GPM: OUTSIDE —
RACK SPRINKLER ALLOWANCE _____

**SYSTEM TYPE**
☑ WET ☐ DRY ☐ DELUGE ☐ PRE-ACTION

**SPRINKLER OR NOZZLE**
MAKE Grinnell MODEL F-950
SIZE ½ Orifice K-FACTOR 5.56
TEMPERATURE RATING 212°

**CALCULATION SUMMARY**
GPM REQUIRED 648 PSI REQUIRED 51 AT MAIN (Specify Location)
"C" FACTOR USED: OVERHEAD 120 UNDERGROUND 120

**WATER SUPPLY**

**WATER FLOW TEST**
DATE & TIME _____
STATIC PSI 67
RESIDUAL PSI 48
GPM FLOWING 1240
ELEVATION _____

**PUMP DATA**
RATED CAPACITY _____
AT PSI _____
ELEVATION _____
1400 E. Riverview Ave

**TANK OR RESERVOIR**
CAPACITY _____
ELEVATION _____

**WELL**
PROOF FLOW _____ GPM

LOCATION _____
SOURCE OF INFORMATION _____

**COMMODITY STORAGE**

COMMODITY _____ CLASS _____ LOCATION _____
STORAGE HEIGHT _____ AREA _____ AISLE WIDTH _____
STORAGE METHOD: SOLID PILED _____ % PALLETIZED _____ % RACK _____ %

**RACK**

☐ SINGLE ROW ☐ CONVENTIONAL PALLET ☐ AUTOMATIC STORAGE ☐ ENCAPSULATED
☐ DOUBLE ROW ☐ SLAVE PALLET ☐ SOLID SHELVING ☐ NON-ENCAPSULATED
☐ MULTIPLE ROW ☐ OPEN

**FLUE SPACING IN INCHES**
LONGITUDINAL _____ TRANSVERSE _____

**CLEARANCE FROM TOP OF STORAGE TO CEILING**
_____ FT. _____ IN.

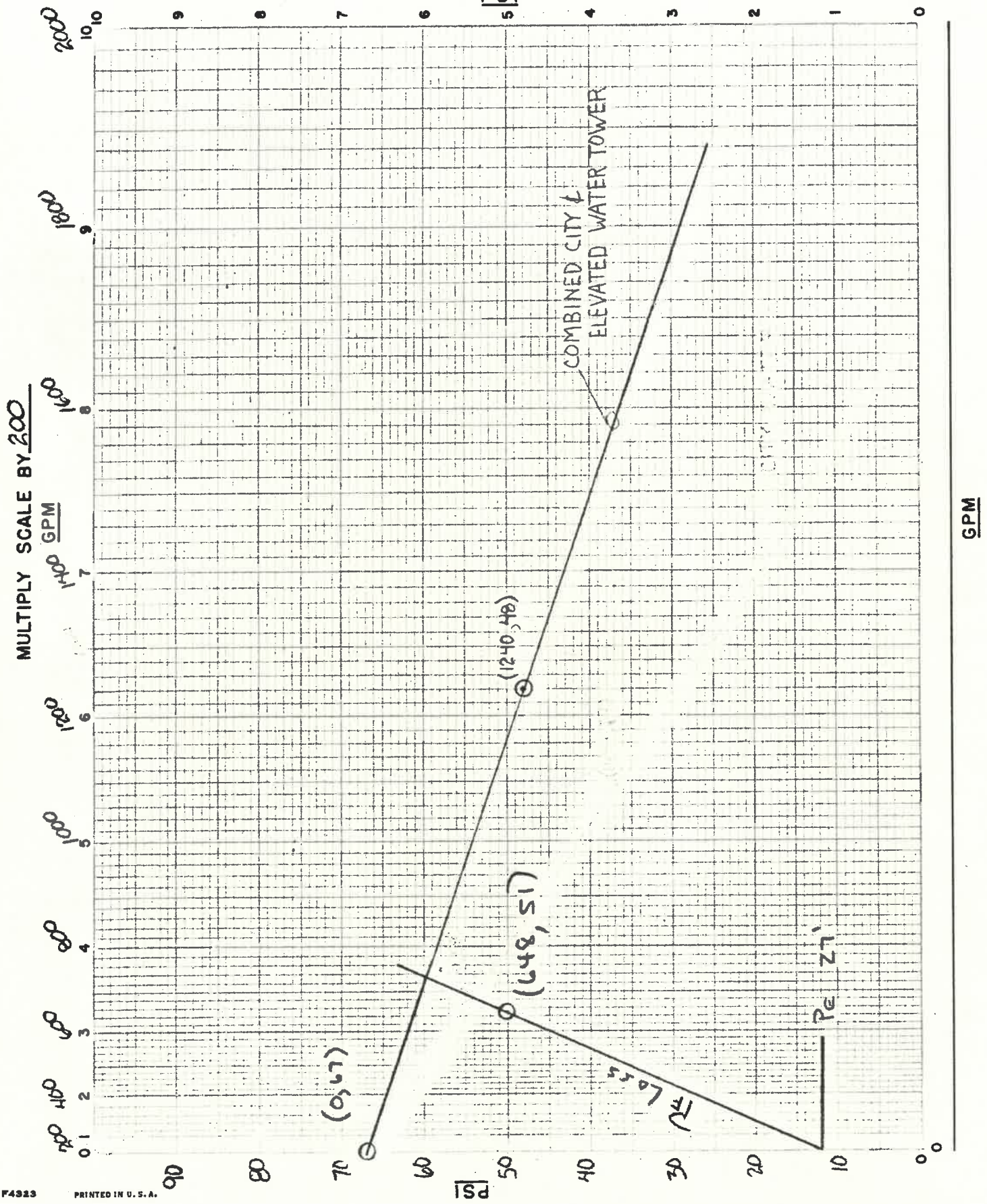
HORIZONTAL BARRIERS PROVIDED _____

GRINNELL
N1.85 GRAPH

CONTRACT NO. _____
NAME: COUNTY INC.
ADDRESS: NAPOLEON OHIO

SHEET NO. 2 OF 5
SYSTEM NO. _____
DATE: July 24 1978

MULTIPLY SCALE BY 10
PSI

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GRINNELL FIRE PROTECTION SYSTEMS CO.,INC

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| K | GPM | TOTAL GPM | PIPE ID | EQUIV FT | PF/L | TOTAL PSI | REF PT | NOTES |
|---|---|---|---|---|---|---|---|---|
| H+W= 120 | | DENSITY= .15 | | | AREA= 2500 | | | |
| CROSS MAIN | | | | | | 10.48 | 0 | |
| 5.56 | .6 | .6 | 1.61 | 10.0 | 0 | 10.48 | 1 | |
| 5.56 | 18.0 | 18.6 | 1.61 | 10.0 | .14 | 10.62 | 2 | |
| 5.56 | 18.1 | 36.8 | 1.61 | 10.0 | .50 | 11.12 | 3 | |
| 5.56 | 18.5 | 55.2 | 1.61 | 187.0 | 19.81 | 30.93 | 4 | 2T = 16 |
| 0 | 0 | 55.2 | 3.26 | 12.0 | .04 | 30.97 | 5 | |
| 0 | 55.3 | 110.6 | 3.26 | 12.0 | .15 | 31.12 | 6 | |
| 0 | 55.4 | 166.0 | 3.26 | 12.0 | .31 | 31.43 | 7 | |
| 0 | 44.9 | 211.0 | 3.26 | 12.0 | .49 | 31.92 | 8 | |
| 0 | 30.1 | 241.1 | 3.26 | 12.0 | .62 | 32.54 | 9 | |
| 0 | 30.4 | 271.5 | 3.26 | 25.0 | 1.62 | 34.16 | 10 | T = 15 |
| CROSS MAIN | | | | | | 10.48 | 0 | |
| 5.56 | 17.4 | 17.4 | 1.61 | 10.0 | .12 | 10.60 | 11 | |
| 5.56 | 18.1 | 35.5 | 1.61 | 10.0 | .47 | 11.07 | 12 | |
| 5.56 | 18.5 | 53.9 | 1.61 | 87.0 | 8.82 | 19.89 | 13 | 2T = 16 |
| 0 | 0 | 53.9 | 3.26 | 12.0 | .04 | 19.93 | 14 | |
| 0 | 54.0 | 108.0 | 3.26 | 12.0 | .14 | 20.07 | 15 | |
| 0 | 54.2 | 162.2 | 3.26 | 12.0 | .30 | 20.37 | 16 | |
| 0 | 24.6 | 186.9 | 3.26 | 12.0 | .39 | 20.76 | 17 | |
| 0 | -30.1 | 156.7 | 3.26 | 12.0 | .28 | 21.04 | 18 | |
| 0 | -30.4 | 126.3 | 3.26 | 12.0 | .19 | 21.23 | 19 | |
| 0 | -32.0 | 94.3 | 3.26 | 12.0 | .11 | 21.34 | 20 | |
| 0 | -31.5 | 62.8 | 3.26 | 12.0 | .05 | 21.39 | 21 | |
| 0 | -31.5 | 31.3 | 3.26 | 12.0 | .01 | 21.40 | 22 | |
| 0 | 0 | 31.3 | 1.61 | 324.0 | 12.00 | 33.40 | 23 | 4T = 32 |
| 0 | 0 | 31.3 | 3.26 | 12.0 | .01 | 33.41 | 24 | |
| 0 | 31.5 | 62.8 | 3.26 | 12.0 | .05 | 33.46 | 25 | |
| 0 | 31.5 | 94.3 | 3.26 | 12.0 | .11 | 33.57 | 26 | |
| 0 | 32.0 | 126.3 | 3.26 | 27.0 | .43 | 34.00 | 27 | T = 15 |
| COMBINED GPM | | 397.8 | | | AVE. PSI | 34.08 | | |
| SPK= 0 | 0 | 397.8 | 4.12 | 66.0 | 2.78 | 36.86 | 28 | E, ALV = 35 |
| ELEVATION | | 397.8 | | 27.0 | 11.69 | 48.55 | | Base of Riser |
| UNDERGROUND | | | | | | | | |
| H+W COEFF. | | | | | | | | |
| 140 | | 397.8 | 6.01 | 97.0 | .49 | 49.04 | | LTE, T = 39 |
| ADDL DEMAND GPM= 250.0 | | | | | | | | |
| 140 | | 647.8 | 8.10 | 525.0 | 1.52 | 50.56 | | T = 35 |

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ENTER NO OF PIPES TO BE CHANGED IN EACH DIRECTION  ?4
ENTER PIPE NOS. TO INCREASE LENGTH  ?17 34 41 45
ENTER PIPE NOS. TO DECREASE LENGTH  ?4 31 38 43
ENTER DISTANCE BETWEEN SPRINKLERS  ?10
ENTER ACCURACY IN PERCENT OF GRID LOSS  ?2

AVE GRID LOSS=   22.37 PSI      POSITION  2


AVE GRID LOSS=   22.70 PSI      POSITION  3


AVE GRID LOSS=   22.98 PSI      POSITION  4


AVE GRID LOSS=   23.21 PSI      POSITION  5


AVE GRID LOSS=   23.35 PSI      POSITION  6


AVE GRID LOSS=   23.42 PSI      POSITION  7


AVE GRID LOSS=   23.42 PSI      POSITION  8


AVE GRID LOSS=   23.33 PSI      POSITION  9

ENTER POSITION DESIRED?7
ENTER ACCURACY IN PERCENT OF GRID LOSS  ?1

AVE GRID LOSS=   23.72 PSI      POSITION  7
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Peaking Proof

| PIPE SIZE | LENGTH OF TRANSFER | FITTINGS | GPM THRU TRANSFER | "PF" THRU TRANSFER | PRI. C.M. REF. PT. | SEC. C. M. REF. PT. | "PF" DIFFERENCE BET. PT. | VARIANCE |
|---|---|---|---|---|---|---|---|---|
| 1.61 | 324 | 4T = 32 | 30.1 | 11.2 | 8 | 17 | 11.2 | 0 |
| 1.61 | ↓ | ↓ | 30.4 | 11.4 | 9 | 18 | 11.5 | .1 |
| 1.61 | | | 32.0 | 12.5 | 26 | 19 | 12.3 | .2 |
| 1.61 | | | 31.5 | 12.1 | 25 | 20 | 12.1 | 0 |
| 1.61 | ↓ | ↓ | 31.5 | 12.1 | 24 | 21 | 12.0 | .1 |

# TRANSFER PROOFS