

BUTCHER, BOWLING & DIXON

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April 7, 2017

RECEIVED

Dr. Talina R. Matthews, Executive Director
Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615

APR 10 2017
Public Service
Commission

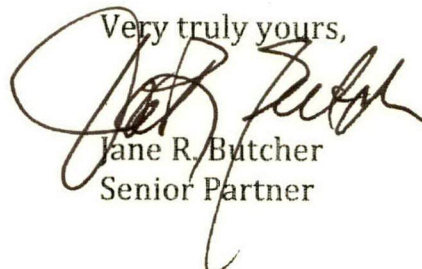
**RE: Minimum Pipe Size Deviation Request
Whitley County Water District No. 1
PSC Case No. 2017-00142
March 28 2017 Notice of Deficiencies**

Dear Dr. Matthews:

Please accept this filing on behalf of the Whitley County Water District to address your Notice of Filing Deficiencies dated March 28, 2017, in the above-referenced case. Attached you will find a copy fo the previously submitted information.

If you should have any questions or concerns with regard to what has been set forth, please do not hesitate to contact my office.

Very truly yours,



Jane R. Butcher
Senior Partner

Cc: WCWD
Ken Taylor

Attachments
JRB/hlc.



Matthew G. Bevin
Governor

Charles G. Snavely
Secretary
Energy and Environment Cabinet

Commonwealth of Kentucky
Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615
Telephone: (502) 564-3940
Fax: (502) 564-3460
psc.ky.gov

Michael J. Schmitt
Chairman

Robert Cicero
Vice Chairman

Daniel E. Logsdon Jr.
Commissioner

March 28, 2017

RECEIVED

Kenneth Taylor
Kenvirons, Inc.
452 Versailles Road
Frankfort, KY 40602

APR 10 2017

Public Service
Commission

Whitley County Water District #1
19 S Highway 25W
Williamsburg, KY 40769

RE: Whitley County Water District #1
Case No. 2017-00142 - Filing Deficiencies

The Commission Staff has reviewed the application in the above case. This filing is rejected for the reasons set forth below.

Filing deficiencies pursuant to:

- (1) 807 KAR 5:001, Section 4(4) - A person shall not file a paper on behalf of another person, or otherwise represent another person, unless the person is an attorney licensed to practice law in Kentucky or an attorney who has complied with SCR 3.030(2). An attorney who is not licensed to practice law in Kentucky shall present evidence of his or her compliance with SCR 3.030(2) if appearing before the commission.

You are requested to submit the information necessary to cure this deficiency within 10 days of the date of this letter.

If you need further assistance, please contact my staff at 502-564-3940.

Sincerely,

Talina R. Mathews
Executive Director

*Mr., Kenneth Taylor
Kenvirons, Inc.
452 Versailles Road
Frankfort, KENTUCKY 40602

*Whitley County Water District #1
19 S Highway 25W
Williamsburg, KY 40769



Kenvirons, Inc.

452 Versailles Road • Frankfort, KY 40601 • Phone: (502) 695-4357 • Fax: (502) 695-4363

Civil & Environmental Engineering and Laboratory Services

March 21, 2017

Dr. Talina R. Mathews, Executive Director
Kentucky Public Service Commission
211 Sower Blvd.
P.O. Box 615
Frankfort, Kentucky 40602-0615

RE: Blackhawk Road Water Line Extension
Whitley County Water District
Williamsburg, KY

Dear Dr. Mathews:

Attached you will find the plans and hydraulic calculations for the above referenced proposed water line extension. As you will see the proposed line size is 2-inch for a distance of approximately 475 feet, which exceeds the Commission's limit of 200 feet. Therefore, we are requesting a variance per 807 KAR 51066 Water Section 10(2)(a) minimum pipe size.

1. Whitley County Water District is proposing to use the 2-inch distribution line instead of a larger line for the following reasons:
 - A. The District does not envision there ever being more than three (3) users on the line and the operating pressure is more than adequate to serve their peak demand.
 - B. There initially may only be one user on the line and the smaller line will provide fresher water.
 - C. The cost is being minimized as 2-inch line is slightly cheaper than 3-inch.

Plans and specifications are also being submitted this date to the Kentucky Division of Water for approval. Should you have any questions please call or e-mail me at KTaylor@Kenvirons.com.

Sincerely,

Kenneth D. Taylor, P.E.
Vice President

Attachments

C: WCWD

WHITLEY COUNTY WATER DISTRICT

19 S HWY 25W
WILLIAMSBURG, KY 40769
606-549-3600
606-549-5795 (FAX)

February 23, 2017

Water Infrastructure Branch
KY Division of Water
300 Sower Blvd
Frankfort, KY 40601

RE: Whitley County Water District
Blackhawk Road and Clyde Strunk Road Water Line Extensions
Whitley County, Kentucky

Dear Sirs:

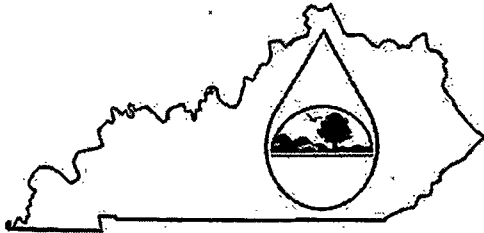
Attached for your review and approval are two sets of plans, Construction Application for Drinking Water Distribution, and a CD containing plans, specifications, and hydraulics for the above referenced project. The documents were prepared by Kenvirons, Inc. and have been reviewed by the Water District. The Water District concurs with their content, will own and operate the facilities once constructed and has the water available to service the project.

If you should have any questions or need additional information, please contact our engineer, Ken Taylor, PE, with Kenvirons, Inc. at 502-695-4357.

Sincerely,



Albert Mahan
Field Superintendent



Commonwealth of Kentucky
 Energy and Environment Cabinet
Division of Water

**Construction Application
 For Drinking Water Distribution**

See the instructions for more information about selected portions of this application.
 Questions on completing this application? Contact the Water Infrastructure Branch at 502/564-3410, by e-mail at WIBEngineering@ky.gov or visit our website at <http://water.ky.gov> for more information.

Information on Project Information

Project Name: Blackhawk Road and Clyde Strunk Road Water Line Extensions

Project County: Whitley Estimated Project Cost: \$ \$20,000

Project Latitude/Longitude (DMS): 36° 47' 58" 84° 07' 33" (Blackhawk Road)

Is this a federally funded project: NO

DWSRF

SPAP

Other: _____

If yes, has an Environmental Information Document been reviewed and approved? n/a

If the project has been submitted to the State Clearinghouse for review, provide the SAI number: n/a

Identify all other funding sources: local

Does the project contain any of the following:

Booster Pump Stations

Water Storage Tanks

Waterlines

Waterline Material	Waterline Size	Linear Feet
pvc	3"	900
pvc	2"	475

Provide a DETAILED description of work to be performed for this project. Attach additional sheets as necessary:

These extensions will make water service available to two residences on Blackhawk Road and three on Clyde Strunk Road which currently do not have access to public water.

Identify how the sanitary wastewater produced as a result of this project will be handled:

- Sanitary Sewer WWTP: _____
 Septic Tank
 Other: _____



Utility Name: Whitley County Water District PWSID: KY1180468
Street Address: 19 S. Highway 25W County: Whitley
City, State, Zip: Williamsburg, KY 40769
Phone #: 606-549-3600 Fax #: 606-549-5795 Email: sandysmith.wc wd@yahoo.com

If another utility will serve any portion of the proposed project, provide the name and PWSID No.

Utility Name: _____ PWSID No. _____

If the utility serving the project purchases water from another utility, provide the name and PWSID No. and purchase contract amount.

Utility Name: Williamsburg PWSID No. KY1180471 Purchase Contract Amount: 5.5 MGMo
Utility Name: Jellico, TN PWSID No. TN0000330 Purchase Contract Amount: 2.7 MGMo
Utility Name: Corbin City Utilities PWSID No. KY1180085 Purchase Contract Amount: 4.5 MGMo

Is the system currently under any type of waterline or sewer sanctions? No

If yes, submit an exception request and attach supporting documentation to justify its approval.



A. Plans and Specifications

Plans and specifications shall comply with **401 KAR 8:100** and "Recommended Standards for Water Works" 2007 Edition (Ten States' Standards). All plans must contain a P.E. seal, signature and date of signature with at least one set having an original seal and signature. Provide detailed plans (no larger than 24" X 36") which must comply with **401 KAR 8:100**. See the instructions for additional details.

B. Design Engineer

Name: Ken Taylor, PE Firm: Kenvirons, Inc.
Street Address: 452 Versailles Road
City, State, Zip: Frankfort, KY 40601
Phone #: 502-695-4357 Fax #: 502-695-4363 Email: ktaylor@kenvirons.com

Design Capacities

Identify the number of new connections and the projected average daily demand: 0 new services

Identify the number of existing residents, and their projected water demand, that may be served as a result of this project:
0 new services

Identify the number of connections in the service area: approximately 4,020

Other Information to be Submitted with the Project

- 1. Provide a copy of the U.S.G.S. 7 1/2 minute topographic map or a detailed vicinity map with the location(s) of the proposed project.
- 2. If the project includes a new or upgraded pump station(s), provide the pump sizing calculations and the proposed pump's characteristics curve along with the efficiency, horsepower and NPSHR data. Also, identify each pump station's locations coordinates (DMS).
- 3. If the project proposes the addition of storage tanks, provide engineering calculations which demonstrates a complete fill and drain cycle every 72 hours. Also, identify each storage tank's location coordinates (DMS).
- 4. Provide engineering calculations or an electronic model demonstrating the availability of 30 psig in the waterline under peak demand conditions.
- 5. Provide engineering calculations or an electronic model that demonstrates if the proposed waterlines are capable of a 2.5 ft/sec flow velocity and show associated residual system pressures.
- 6. Provide a signed letter of acceptance from the utility, which states that the utility has reviewed and approved the plans and specifications and agrees to serve the proposed project upon completion. If another utility will own, operate and maintain any portion of this project provide an acceptance letter from that utility as well.
- 7. If the utility is a purchaser and the project demand is over 10,000 gallons per day or the utility has exceeded 85% of its purchase contract, provide a valid acceptance letter from the seller.
- 8. If the project will provide water service to existing residences, provide the names and addresses of all existing residences to be served by the project, if known.
- 9. If the project is funded by a State Revolving Fund Loan (SRF) provide a completed SRF Plans and Specifications Checklist along with 1 complete printed copy of the project specifications.



Identify the environmental benefit(s) of the project by checking all that apply.

- Construction of new waterlines serving existing residences previously without public water.
- Modifies/upgrades existing waterlines:
 - Inadequately sized waterlines.
 - Leaks, breaks, restrictive flow.
 - Replaces lead, copper or asbestos cement waterlines.
 - Other: _____
- Provides fire protection.
- Replaces tanks/pumps due to age/condition.
- Installation of high efficiency/energy saving pumps.
- Other. Provide a brief description in the space below. _____

Check or money order must be made payable to "Kentucky State Treasurer" for the total amount. Fees do not apply to projects FUNDED by a municipality, water district, or other publicly owned utility.

Project Category: N/A Total Amount: \$ N/A

**LOCATION MAPS, PLAN SHEETS
AND CONSTRUCTION DETAILS**

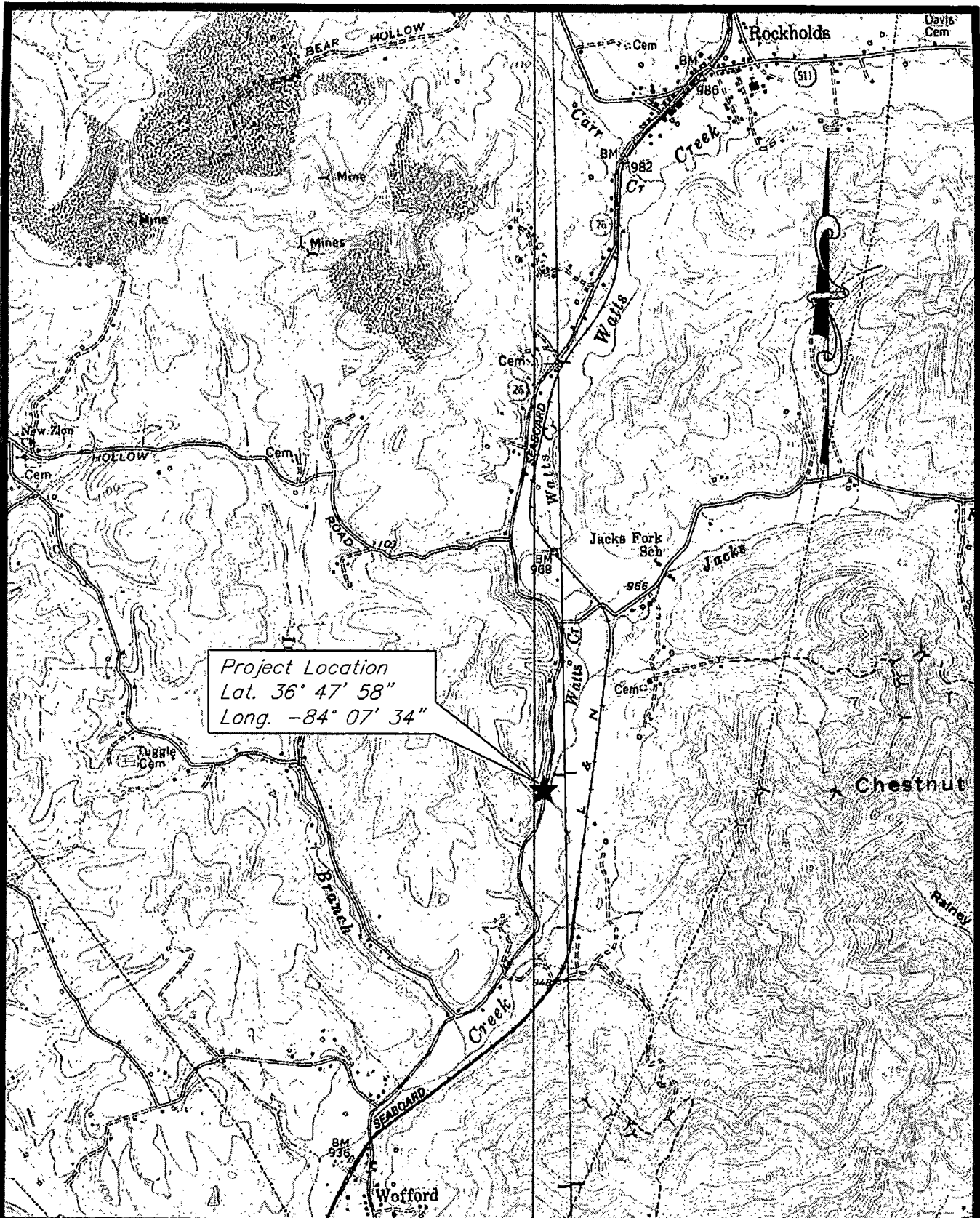
**Blackhawk Road and Clyde Strunk
Road Water Line Extensions
Whitley County, Kentucky**

**Whitley County Water District
19 South US 25 W
Williamsburg, Kentucky 40769**

Project No. 2017024

February 2017



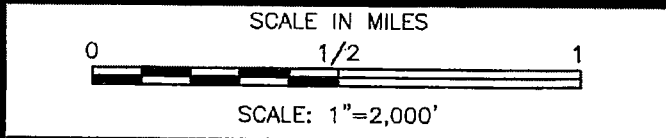



Project Location
 Lat. 36° 47' 58"
 Long. -84° 07' 34"

N:\P\201702A\Plans\Topo - Blackhawk Road.dwg, 2/13/2017 8:46:35 AM, JKP

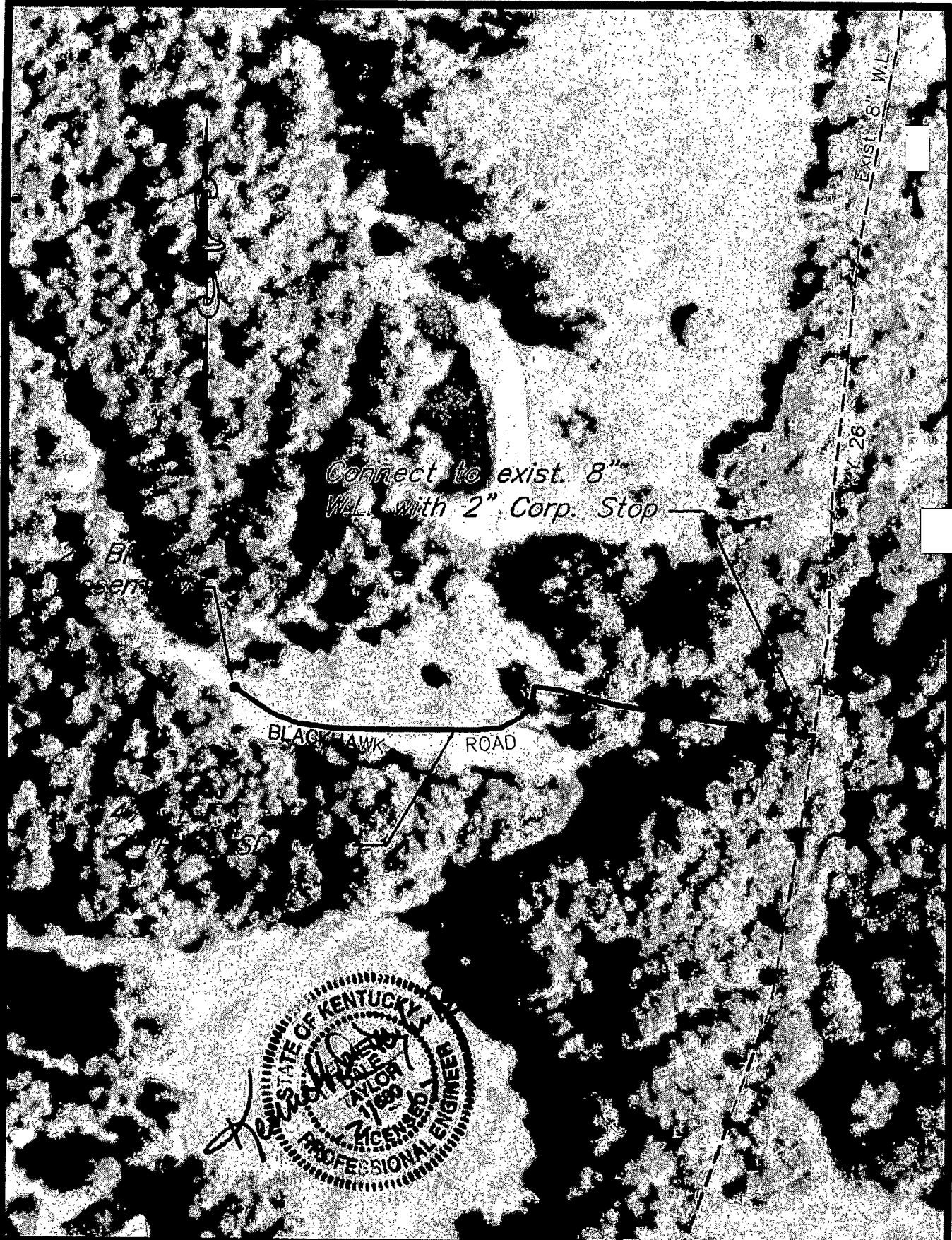
WOFFORD & ROCKHOLDS, KY.
U.S.G.S. QUADRANGLES

WHITLEY COUNTY WATER DISTRICT
BLACKHAWK ROAD W.L. EXTENSIONS
WHITLEY COUNTY, KENTUCKY

KENVIRONS, INC.
 452 VERSAILLES ROAD, FRANKFORT, KENTUCKY
 (502) 895-4357

N:\P\2017024\Plans\03 Blackhawk Road.dwg, 2/13/2017 8:46:25 AM, JKP



Connect to exist. 8"
W.L. with 2" Corp. Stop

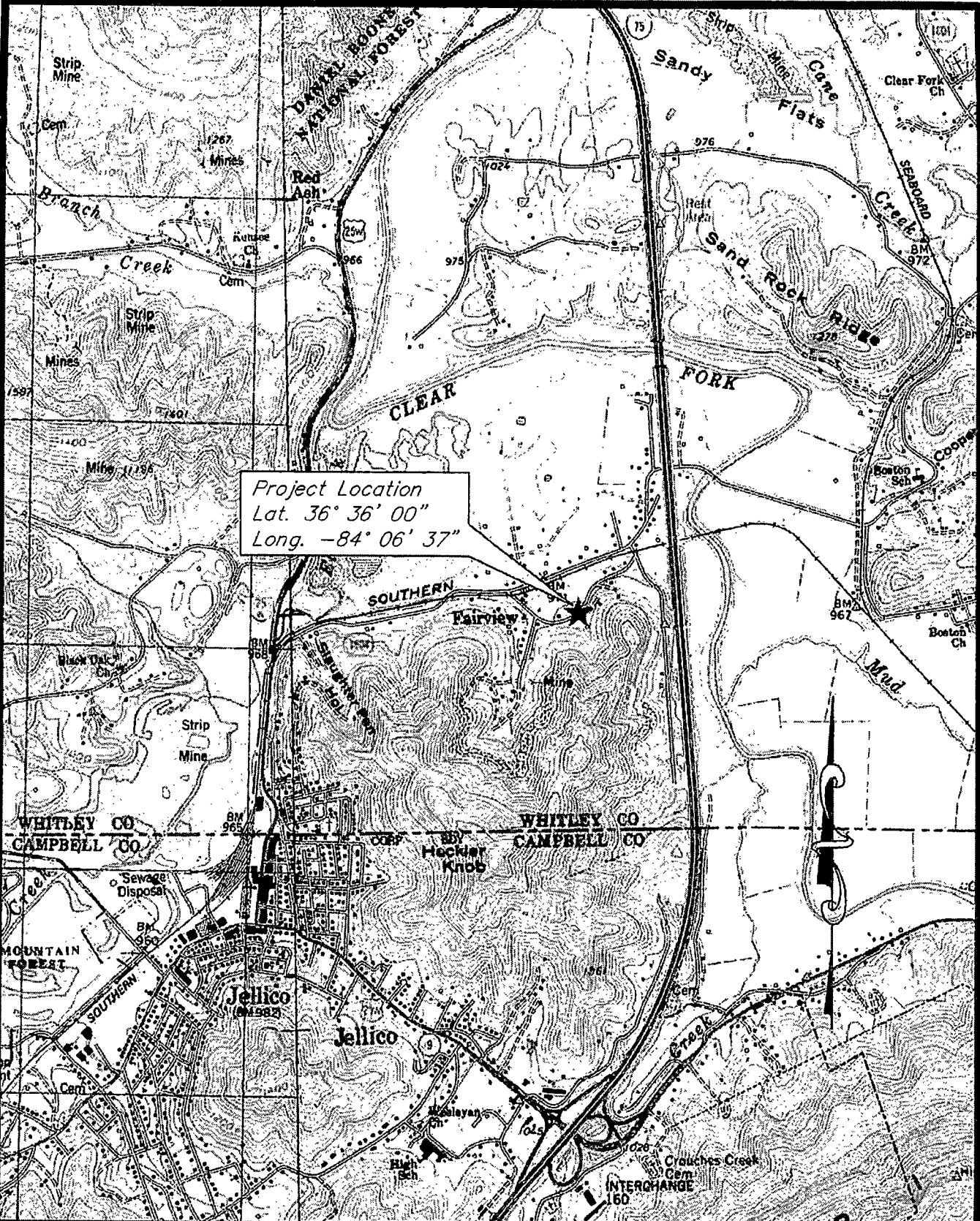
BLACKHAWK ROAD



KENVIRONS, INC.

452 VERSAILLES ROAD, FRANKFORT, KENTUCKY
(502) 695-4357

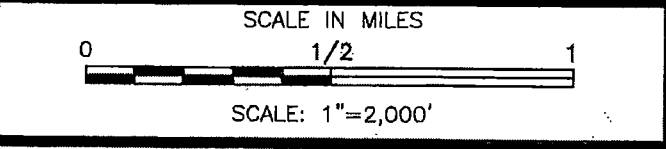
WHITLEY COUNTY WATER DISTRICT
BLACKHAWK ROAD W.L. EXTENSION
WHITLEY COUNTY, KENTUCKY
SCALE: 1"=100'



Project Location
 Lat. 36° 36' 00"
 Long. -84° 06' 37"

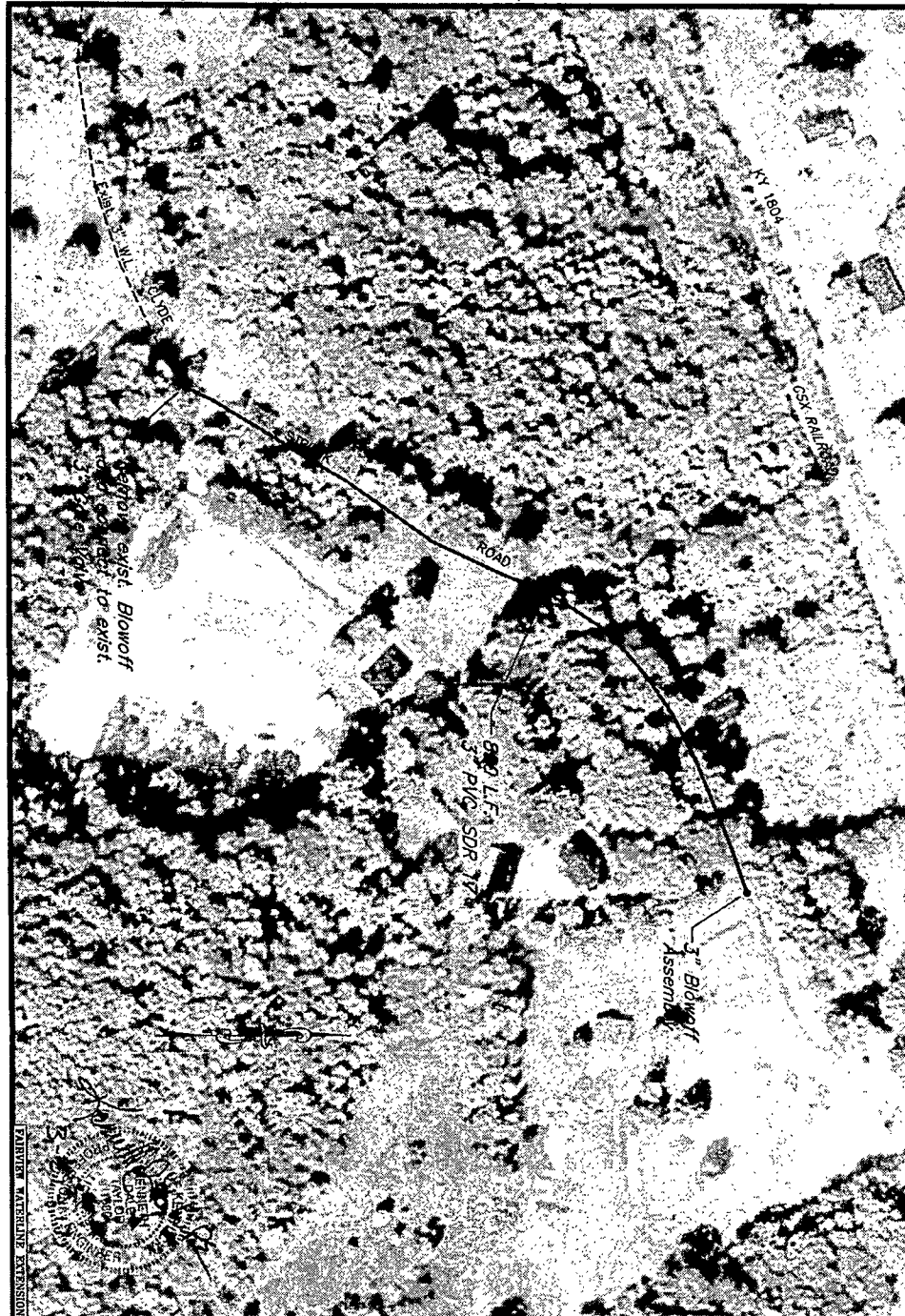
**JELICO WEST & JELICO EAST
 U.S.G.S. QUADRANGLES**

**WHITLEY COUNTY WATER DISTRICT
 FAIRVIEW W.L. EXTENSIONS
 WHITLEY COUNTY, KENTUCKY**



 **KENVIRONS, INC.**
 452 VERSAILLES ROAD, FRANKFORT, KENTUCKY
 (502) 695-4357

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PROPOSED WATERLINE EXTENSIONS

1 of 1
SHEET NO.
201501010

 **KENVIRONS, INC.**
FRANKFORT, KENTUCKY

DRAWN BY: JEP
CHECKED BY: RDT
DATE: JUN-2017
SCALE: 1"=100'
REV:

WHITLEY COUNTY WATER DISTRICT
FAIRVIEW WATERLINE EXTENSIONS
WHITLEY COUNTY, KENTUCKY

Concrete Collar.
4" x 2'-0" x 2'-0" or
4" x 24" diameter.

Grade Line

Notch Valve Box
for Tracer Wire

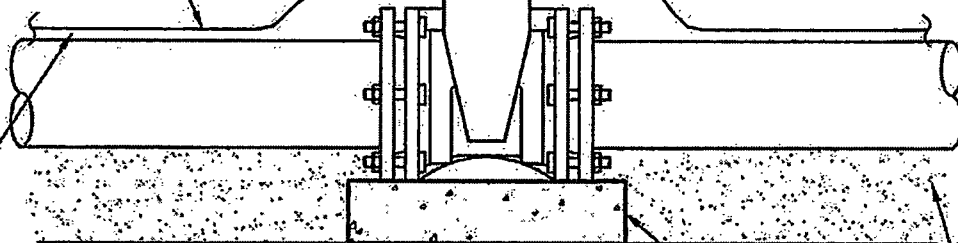
Cast Iron Valve Box
Marked Water

Pipe locating wire when specifically stipulated in the general notes on the drawings. Copper wire No. 12 insulated for underground service. Tracer wire shall be duct taped to top of pipe.

Valve Box Top Section
(adjustable - if more than
30" cover, extend valve
box and valve stem)

Valve Box
Base Section

Gate Valve
(MJ x MJ, Restrained
Joint 2" sq. Operator Nut)



4" Cap Block

Splice tracer wires together as needed with copper split bolt screws. ILSCO LK-8 (or equal). Tape splices with Mastic Tape and Pads. 3M Scotch-Seal 2229 (or equal)

Standard Pipe
Bedding Material

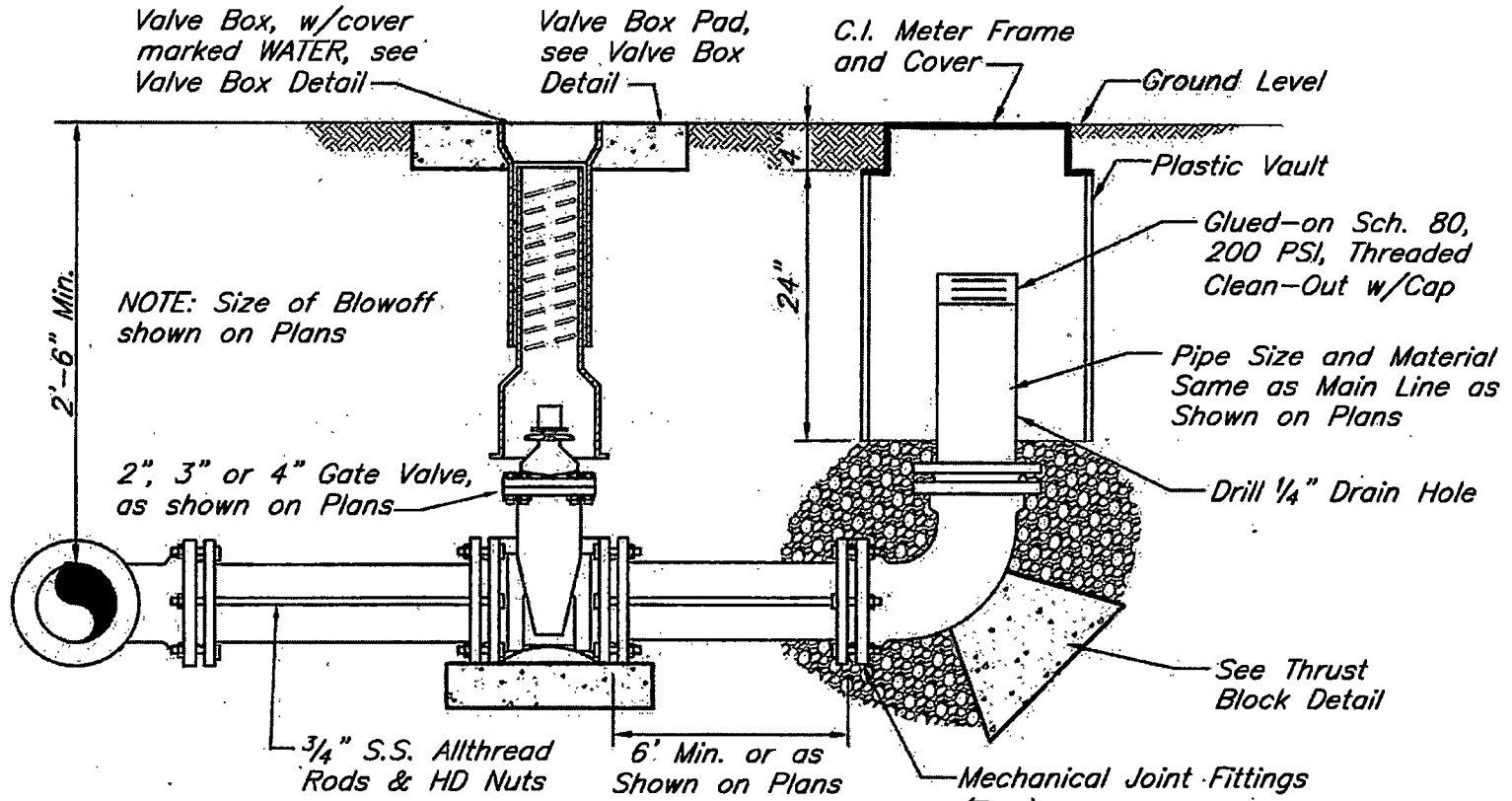
Notes:

1. Concrete to be Class B (KTC Spec. 601)
2. See Specifications For Piping Materials And Piping Joints

VALVE BOX INSTALLATION

July 2015

Scale: 1"=1'-0"

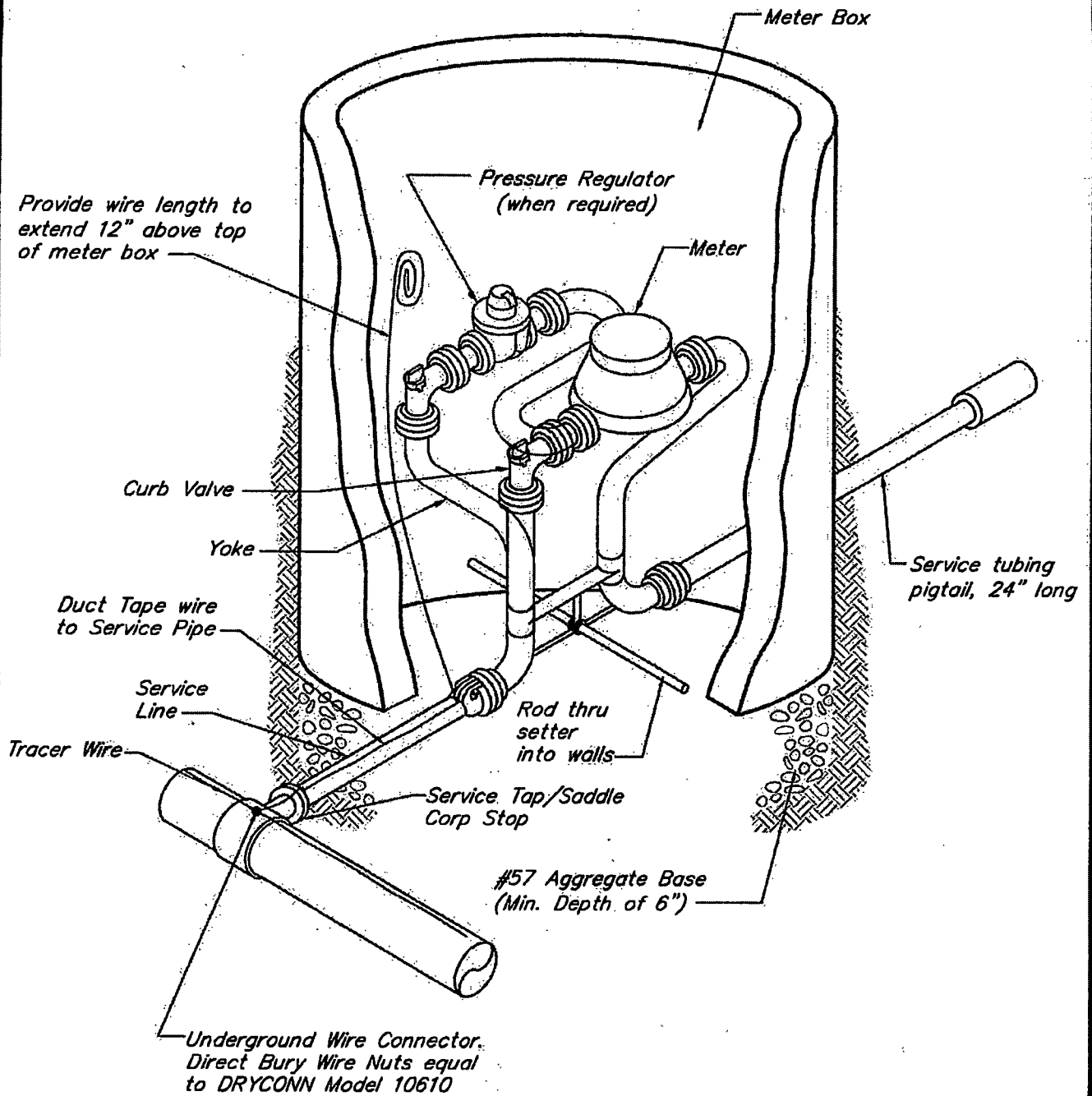


Note: If the Blowoff Assembly is in-line, the assembly shall have all-thread rods threaded to the M.J. Tee and Retainer Glands.

BLOWOFF ASSEMBLY DETAIL

Feb. 2015

Scale: 3/4" = 1'-0"



N:\PIDETAILS\WATERMETER SETTING.dwg, 2/13/2017 11:13:04 AM, JKP

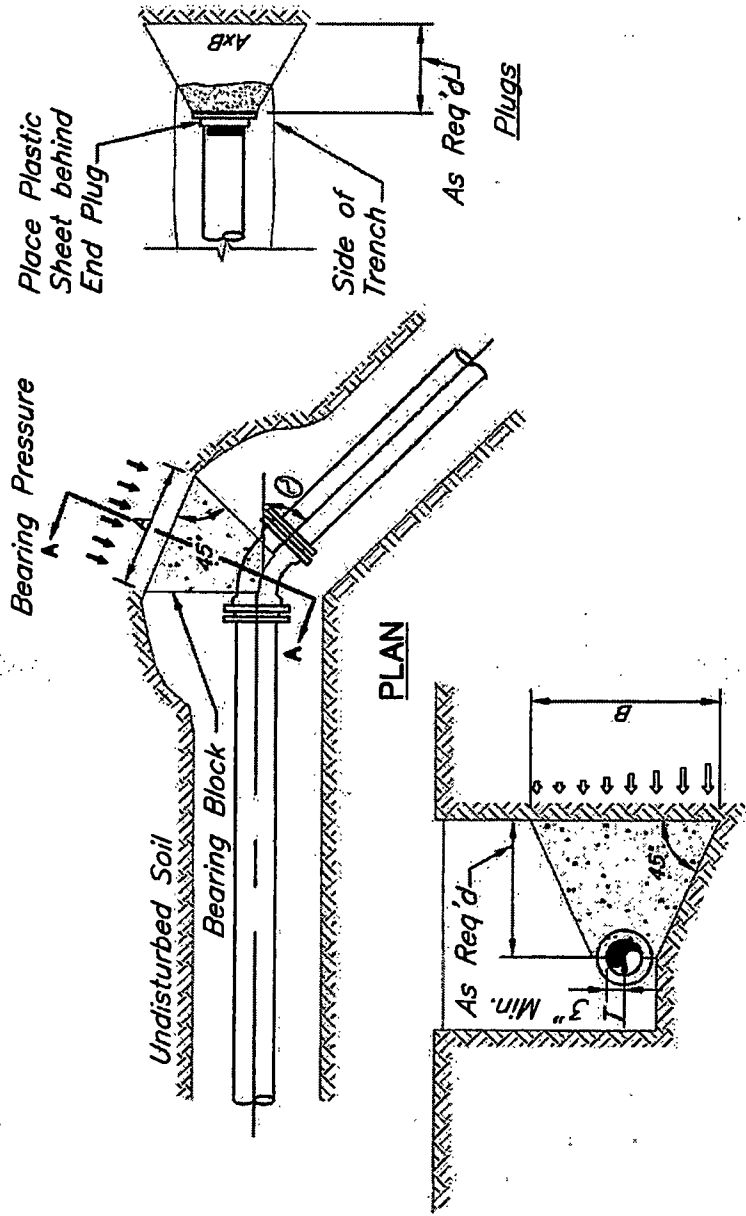
NOTES

1. This drawing typical for meters 1" and smaller (w/std. press reg.)
2. Meter setting shall be placed inside property line as directed by the Engineer.
3. Tracer Wire not required on Meter Settings less than 10 feet from water main.
4. Service tubing pigtail to be incidental to Meter Setting.

METER SETTING

Mar., 2011

N.T.S.



SECTION A-A

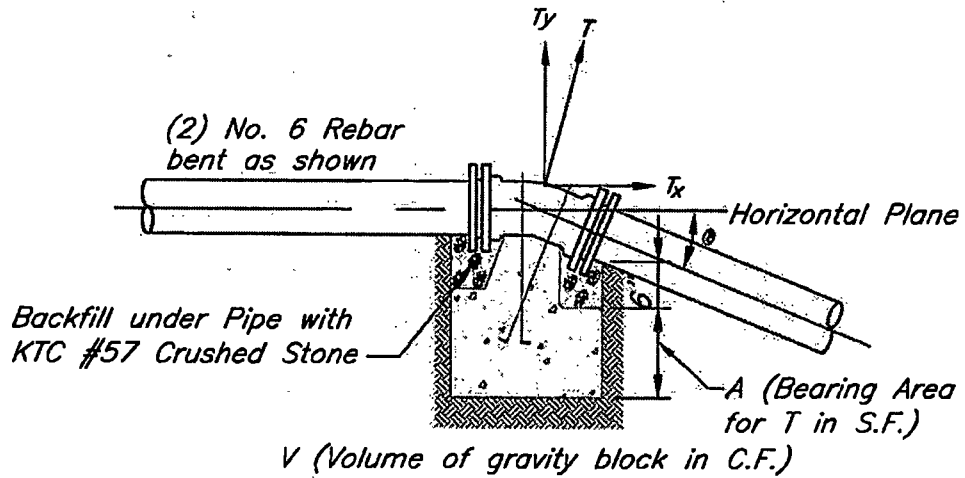
NOTES:

1. Thrust restraint table is based on pipeline pressure of 200 psi and earthbearing capacity of 1500 psf. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the Engineer.
2. On large diameter pipes where space limitations or construction difficulties render concrete thrust blocks not feasible or impractical, a joint restraint system may be used. This restrained joint system must be approved by the Engineer.
3. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
4. Accessibility to fittings and bolts must be maintained.
5. Wrap fittings in plastic prior to placing concrete.

HORIZONTAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND		TEE, DEAD END	
	A	B	A	B	A	B	A	B	A	B
3 & 4	3'-3"	1'-8"	2'-4"	1'-2"	1'-8"	1'-0"	1'-0"	1'-0"	2'-8"	1'-4"
6	4'-8"	2'-4"	3'-5"	1'-8"	2'-6"	1'-3"	1'-6"	1'-0"	3'-10"	2'-0"
8	6'-0"	3'-0"	4'-5"	2'-3"	3'-2"	1'-7"	2'-3"	1'-2"	5'-0"	2'-6"
10	7'-6"	3'-9"	5'-5"	2'-9"	3'-10"	2'-0"	2'-9"	1'-5"	6'-3"	3'-2"
12	8'-10"	4'-5"	6'-6"	3'-3"	4'-8"	2'-4"	3'-4"	1'-8"	7'-5"	3'-9"
14	10'-3"	5'-2"	7'-6"	3'-9"	5'-4"	2'-8"	3'-10"	2'-0"	8'-8"	4'-4"
16	11'-8"	5'-10"	8'-7"	4'-4"	6'-1"	3'-0"	4'-4"	2'-2"	9'-9"	4'-11"
18	13'-0"	6'-6"	9'-7"	4'-9"	6'-10"	3'-5"	4'-10"	2'-5"	11'-0"	5'-6"
20	14'-5"	7'-3"	10'-7"	5'-4"	7'-7"	3'-9"	5'-4"	2'-8"	12'-2"	6'-1"
24	17'-3"	8'-8"	12'-8"	6'-4"	9'-0"	4'-6"	6'-5"	3'-3"	14'-6"	7'-3"

HORIZONTAL THRUST BLOCK
 July, 2015
 Scale: 3/8" = 1'-0"



GRAVITY THRUST BLOCK

NOTES:

1. Thrust restraint table is based on pipeline pressure of 200 psi and earth bearing capacity of 1500psf. During construction, the specific soil type may be evaluated and concrete thrust block size revised at the discretion of the Engineer.
2. On large diameter pipes where space limitations or construction difficulties render concrete thrust blocks not feasible or impractical, a joint restraint system may be used. This restrained joint system must be approved by the Engineer.
3. Concrete shall be 3000 psi minimum conforming to KTC Specifications 601.
4. Accessibility to fittings and bolts must be maintained.
5. Wrap fittings in plastic prior to placing concrete.

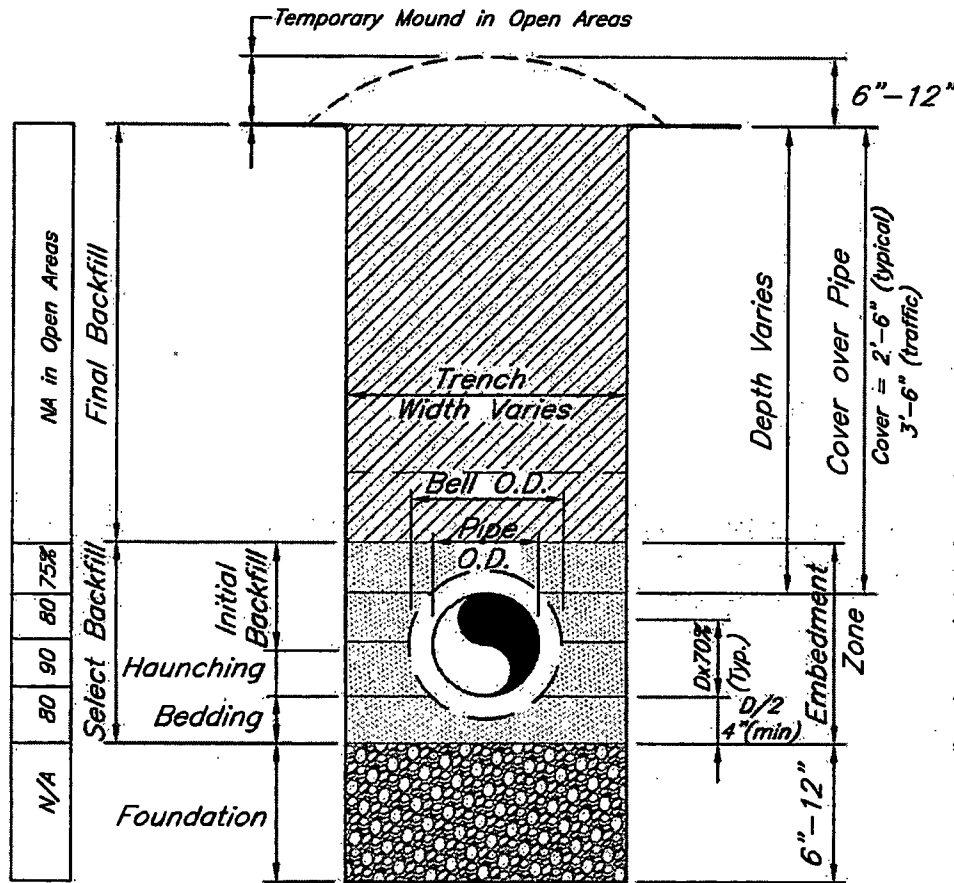
VERTICAL THRUST BLOCK SCHEDULE

PIPE SIZE (INCHES)	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	V	A	V	A	V	A	V	A
3 & 4	29	2	20	1	11	1	6	1
6	64	5	46	2	25	1	13	1
8	114	8	81	4	43	1	23	1
10	174	12	123	5	66	2	35	1
12	248	17	176	8	95	2	50	1
14	337	23	238	10	128	3	67	1
16	439	29	311	13	167	4	88	1
18	555	37	393	16	211	5	111	1
20	685	46	484	20	260	6	137	2
24	985	66	696	29	374	8	197	2

VERTICAL THRUST BLOCK

July, 2015

Scale: 1/2" = 1'-0"



Typically, open areas are final graded, dressed and seeded following two soaking rains...excluding KYTC road ROW's

Unless otherwise specified, material excavated from trench may be used for final backfill provided it is relatively free of large rock (>8"), or mixed with sufficient dirt to minimize voids and settlement, and free of other unsuitable materials... as approved by the Engineer

The Engineer may require selective placement of an extra buffer layer for extremely rocky backfill to prevent migration

Select backfill, lightly compacted (bucket shaping) using suitable on-site material, or dumped sand.

Sand or very select material, hand tamped

Haunching to be carefully placed - Sand or sandy/clay soil. No. 9's may be required if weak foundation is encountered

Bedding to be sand or approved equivalent, (except No. 57's may be required if weak foundation encountered) hand placed and smoothed to uniform grade for support of pipe

In soft, wet, muddy or otherwise yielding foundation conditions, undercutting and replacement with No. 2 Stone and/or Class II channel lining, or equivalent, will be required. Objective is to provide a trench bottom free of large stones, clods, frozen material, etc. which is unyielding.

NOTES: No rocks larger than 1-1/2" allowed in embedment zone.

Typical desired densities in open areas are depicted above in the boxes to the left of the figure. In other laying situations, more stringent selection, placement and compaction will be required.

Trench width should be no wider than necessary for adequate work room and to assure safe working conditions. Nominal outside diameter (O.D.) pipe plus 6" on each side is typically considered minimal.

TRENCH BACKFILL OPEN AREAS - PLASTIC PIPE

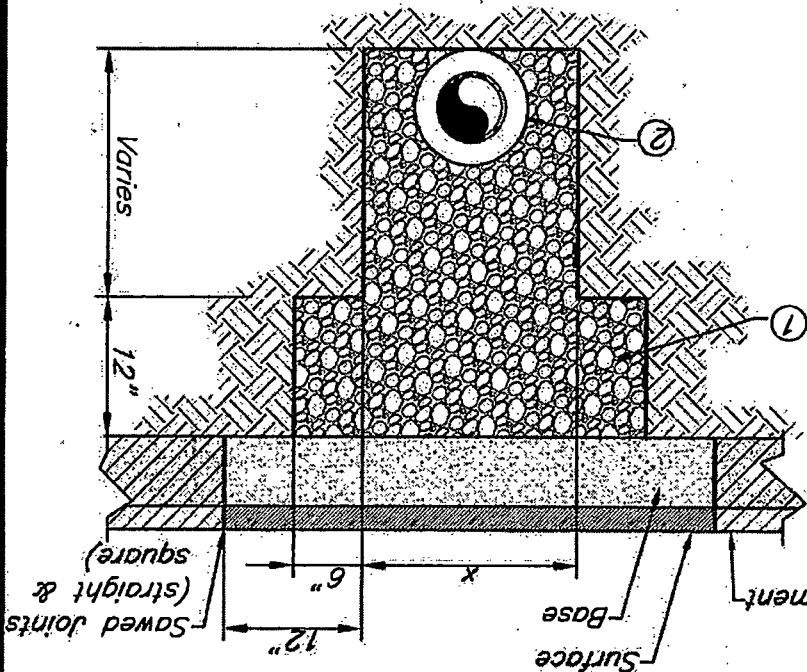
Oct. 2016

Scale: 3/4" = 1'-0"

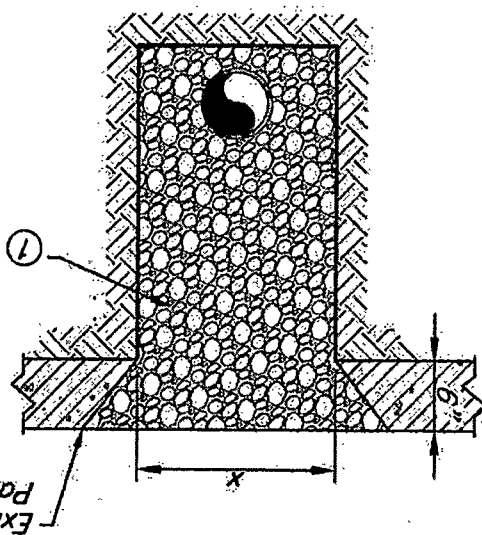
PAVEMENT REPLACEMENT
 Mar. 2011
 Scale: 3/4" = 1'-0"

- NOTES:**
1. The max. allowable distance for dimension "X" shall be calculated as follows: $X = 24" + \text{Pipe Dia.}$
 2. Concrete slab under Bituminous surface to extend 12-inches on each side to trench.
 3. Replace Concrete or Bit. Pavement with new pavement same thickness as existing pavement.
 4. Casing Pipe is not required under private driveways.
 - ① Mechanically tamped #57 crushed stone aggregate in layers not to exceed 6".
 - ② Casing pipe to be 4" in diameter greater than the greatest dimension of the carrier pipe.

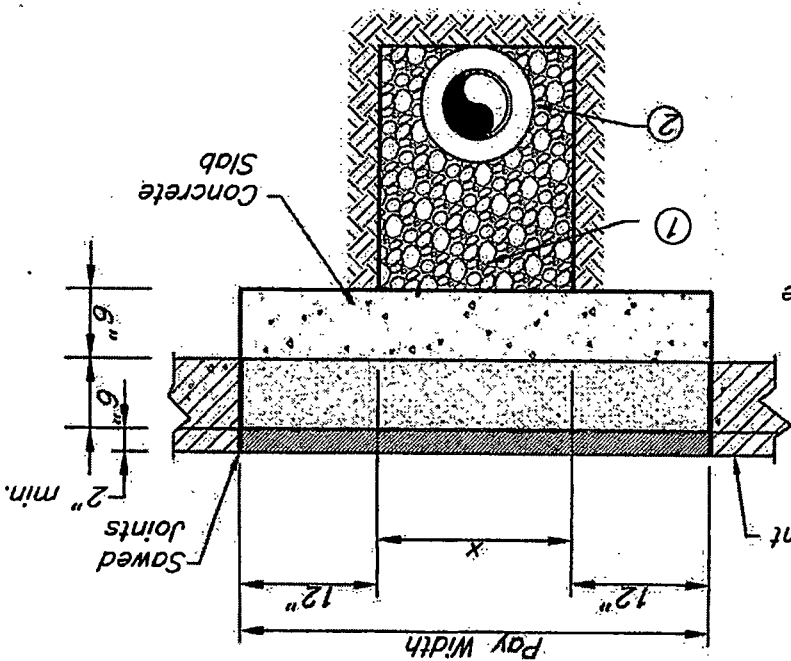
LIGHT DUTY BITUMINOUS



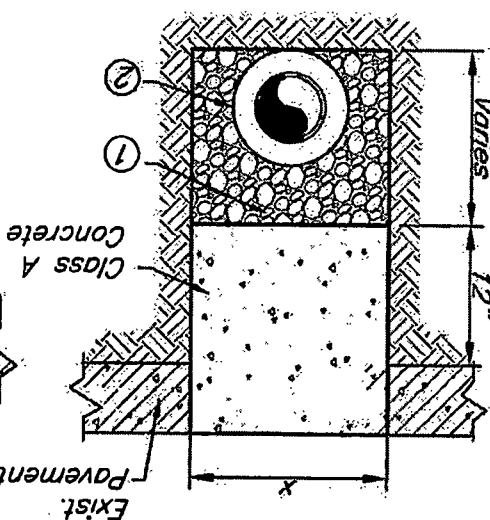
CRUSHED STONE SURFACE

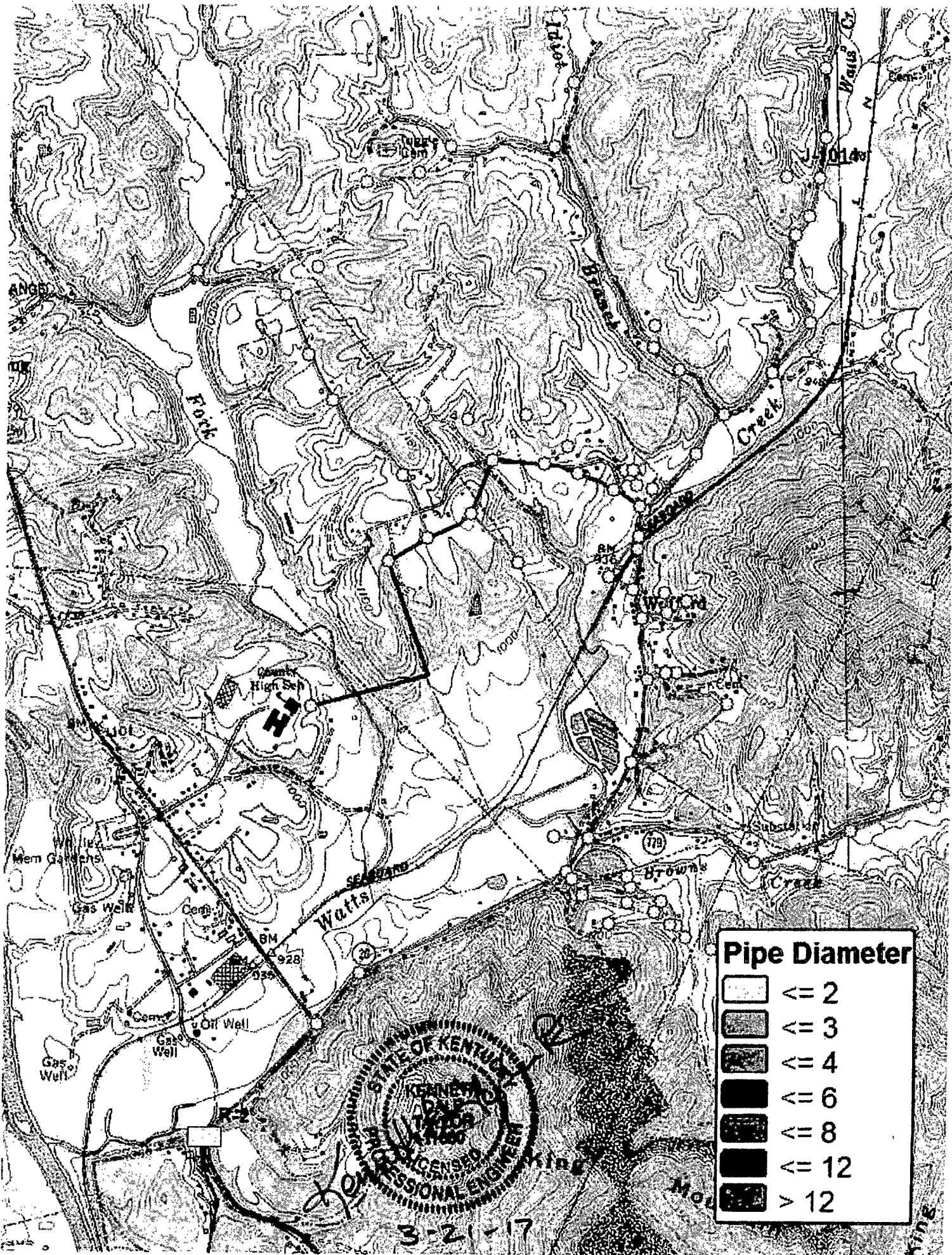


HEAVY DUTY BITUMINOUS SURFACE



CONCRETE PAVEMENT



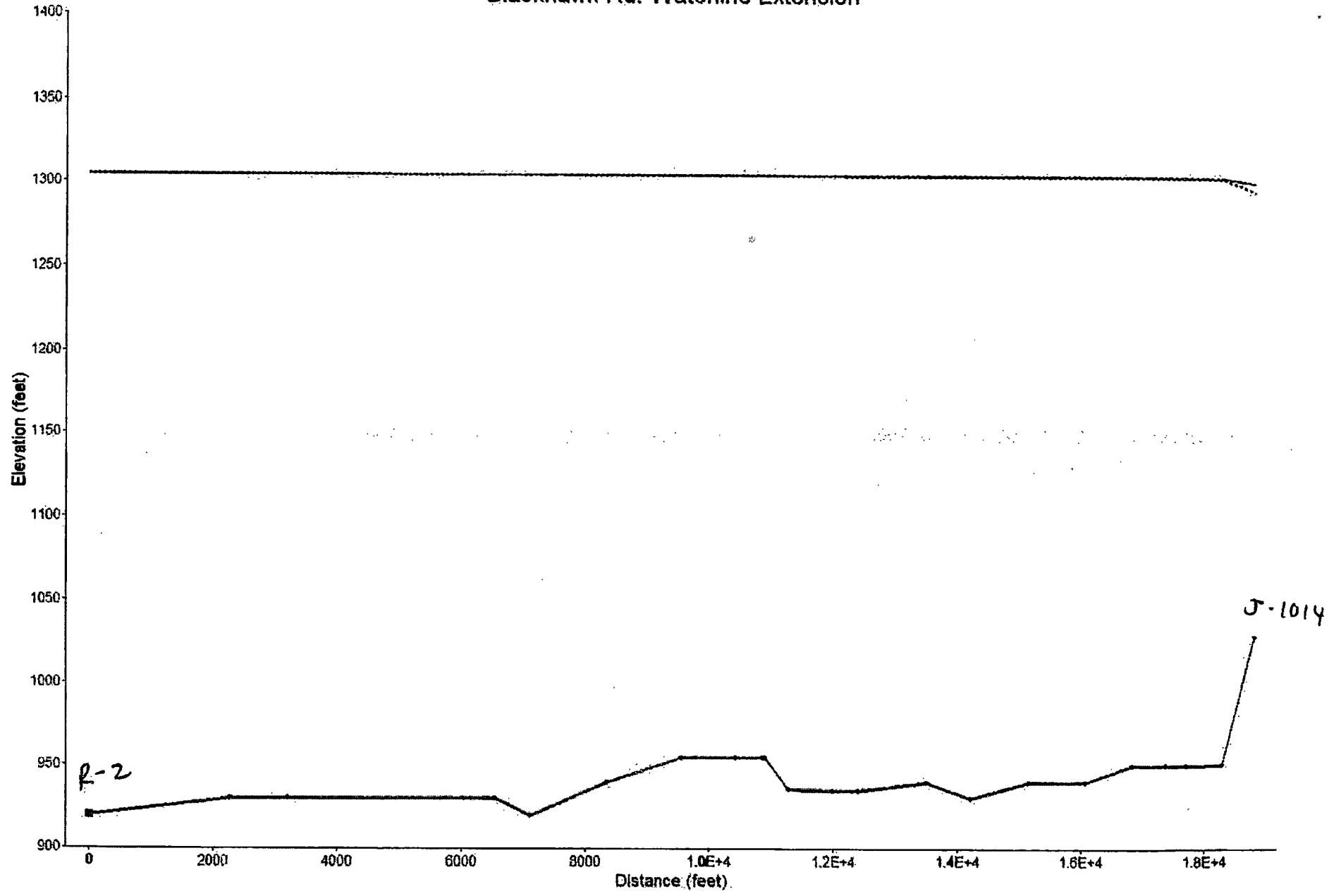


Pipe Diameter	
	≤ 2
	≤ 3
	≤ 4
	≤ 6
	≤ 8
	≤ 12
	> 12

STATE OF KENTUCKY
KENNEDY
DAN
1960
LICENSED PROFESSIONAL ENGINEER

3-21-17

Blackhawk Rd. Waterline Extension



— Pipeline — Case 1 Peak Demand — Case 2 Flushing Demand

CHANGES FOR NEXT SIMULATION (Change Number = 1)

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

RESULTS OBTAINED AFTER 6 TRIALS: ACCURACY = 0.24340E-05

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE #1	NODE #2	FLWSRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/1000 ft/f	HL/1000 ft/f
P-10	J-4	J-5	47.72	0.03	0.00	0.30	0.06	0.06
P-1093	J-1013	J-1014	15.00	3.04	0.00	1.53	5.70	5.70
P-15	J-5	J-10	44.79	0.06	0.00	0.29	0.05	0.05
P-16	J-10	J-11	42.74	0.06	0.00	0.27	0.05	0.05
P-17	J-11	J-12	43.62	0.04	0.00	0.28	0.05	0.05
P-59	J-12	J-661	42.19	0.02	0.00	0.27	0.05	0.05
P-60	J-13	J-14	19.29	0.01	0.00	0.12	0.01	0.01
P-61	J-14	J-15	19.29	0.01	0.00	0.12	0.01	0.01
P-64	J-15	J-16	19.29	0.01	0.00	0.12	0.01	0.01
P-65	J-16	J-17	19.29	0.01	0.00	0.12	0.01	0.01
P-66	J-17	J-18	19.29	0.01	0.00	0.12	0.01	0.01
P-67	J-18	J-60	19.29	0.01	0.00	0.12	0.01	0.01
P-68	J-60	J-63	19.29	0.00	0.00	0.12	0.01	0.01
P-69	J-63	J-1013	19.29	0.01	0.00	0.12	0.01	0.01
P-7	R-2	J-2	51.49	0.15	0.00	0.33	0.07	0.07
P-701	J-661	J-665	42.19	0.00	0.00	0.27	0.05	0.05
P-702	J-663	J-13	40.89	0.02	0.00	0.26	0.04	0.04
P-703	J-662	J-663	40.89	0.03	0.00	0.26	0.04	0.04
P-705	J-665	J-662	41.15	0.02	0.00	0.26	0.04	0.04
P-8	J-2	J-1	51.49	0.06	0.00	0.33	0.07	0.07
P-9	J-1	J-4	51.49	0.22	0.00	0.33	0.07	0.07

FOLLOWING ADDITIONAL PIPES ARE CLOSED :

P-1010	P-1025	P-1030	P-1031	P-1032
P-1081	P-1084	P-3	P-47	P-869
P-874	P-898	P-923	P-989	

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC-ENCY %	USEFUL POWER Hp	INCREMENTL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NESH Avail. ft
Pump-1	251.64	159.60	395.43	235.8	75.00	0.	0.0	0.0	**	**	192.8
Pump-4	227.93	210.66	418.94	208.3	75.00	0.	0.0	0.0	**	**	243.8

FOLLOWING ADDITIONAL PIPES ARE CLOSED :

FOLLOWING ADDITIONAL PIPES ARE CLOSED :

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
J-1		0.00	1304.79	930.00	374.79	162.41

		Blackhawk Rd.	Peak	Demand	
J-10	0.00	1304.48	940.00	364.48	157.94
J-1013	0.00	1304.23	950.50	353.73	153.28
J-1014	15.00	1301.19	1027.90	273.29	118.43
J-11	0.00	1304.42	955.00	349.42	151.42
J-12	0.00	1304.38	955.00	349.38	151.40
J-13	0.00	1304.29	935.00	369.29	160.03
J-14	0.00	1304.29	940.00	364.28	157.86
J-15	0.00	1304.27	930.00	374.27	162.19
J-16	0.00	1304.26	940.00	364.26	157.85
J-17	0.00	1304.25	940.00	364.25	157.84
J-18	0.00	1304.25	950.00	354.25	153.51
J-2	0.00	1304.95	930.00	374.95	162.44
J-4	0.00	1304.57	930.00	374.57	162.31
J-5	0.00	1304.54	920.00	384.54	166.63
J-60	0.00	1304.24	950.00	354.24	153.50
J-63	0.00	1304.24	950.00	354.24	153.50
J-661	0.00	1304.36	955.00	349.36	151.39
J-662	0.26	1304.34	936.00	368.34	159.61
J-663	0.00	1304.31	935.00	369.31	160.03
J-665	0.26	1304.36	955.00	349.36	151.39
R-2	----	1305.00	920.00	385.00	166.83

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-975	225.12	T-3	9.53
J-973	222.96	R-6	13.87
J-974	208.24	J-430	16.99
J-57	204.20	T-1	17.77
J-268	202.93	J-432	26.48

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
RV-1	PRV-1	120.00	ACTIVATED	179.20	120.00	3.12
RV-2	PRV-1	100.00	ACTIVATED	202.93	100.00	3.25
RV-3	PRV-1	86.00	ACTIVATED	143.87	86.00	4.16
RV-4	PRV-1	100.00	ACTIVATED	171.27	100.00	53.43
RV-5	PRV-1	85.00	ACTIVATED	118.04	85.00	9.76

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
R-1	94.25	
R-2	51.49	
R-3	115.99	
R-5	244.84	
R-6	10.07	
R-7	277.91	
R-8	72.89	
T-1	-160.10	
T-2	-126.67	
T-3	-89.53	
T-4	48.04	

NET SYSTEM INFLOW = 915.48

Whitley County Water District



Blackhawk Pt. - Peak Demand

NET SYSTEM OUTFLOW = -378.30
NET SYSTEM DEMAND = 539.17

CHANGES FOR NEXT SIMULATION (Change Number = 2)

JUNCTION DEMANDS CHANGED - PLEASE SEE RESULTS TABLE

RESULTS OBTAINED AFTER 6 TRIALS; ACCURACY = 0.21188E-05

PIPELINE RESULTS

STATUS CODE: XX -CLOSED PIPE CV -CHECK VALVE

PIPE NAME	NODE NUMBERS		FLOWRATE gpm	HEAD LOSS ft	MINOR LOSS ft	LINE VELO. ft/s	HL+ML/ 1000 ft/f	HL/ 1000 ft/f
	#1	#2						
P-10	J-4	J-5	57.72	0.05	0.00	0.37	0.08	0.08
P-1093	J-1013	J-1014	25.00	7.32	0.00	2.55	14.69	14.69
P-15	J-5	J-10	54.79	0.09	0.00	0.35	0.07	0.07
P-16	J-10	J-11	52.31	0.08	0.00	0.33	0.07	0.07
P-17	J-11	J-12	53.62	0.06	0.00	0.34	0.07	0.07
P-59	J-12	J-661	52.15	0.03	0.00	0.33	0.07	0.07
P-60	J-13	J-14	29.29	0.03	0.00	0.19	0.02	0.02
P-61	J-14	J-15	29.29	0.02	0.00	0.19	0.02	0.02
P-64	J-15	J-16	29.29	0.02	0.00	0.19	0.02	0.02
P-65	J-16	J-17	29.29	0.02	0.00	0.19	0.02	0.02
P-66	J-17	J-18	29.29	0.02	0.00	0.19	0.02	0.02
P-67	J-18	J-60	29.29	0.01	0.00	0.19	0.02	0.02
P-68	J-60	J-63	29.29	0.01	0.00	0.19	0.02	0.02
P-69	J-63	J-1013	29.29	0.01	0.00	0.19	0.02	0.02
P-7	R-2	J-2	61.49	0.21	0.00	0.39	0.09	0.09
P-701	J-661	J-665	52.15	0.00	0.00	0.33	0.07	0.07
P-702	J-663	J-13	50.89	0.03	0.00	0.32	0.06	0.06
P-703	J-662	J-663	50.89	0.05	0.00	0.32	0.06	0.06
P-705	J-665	J-662	51.15	0.02	0.00	0.33	0.06	0.06
P-8	J-2	J-1	61.49	0.08	0.00	0.39	0.09	0.09
P-9	J-1	J-4	61.49	0.30	0.00	0.39	0.09	0.09

FOLLOWING ADDITIONAL PIPES ARE CLOSED :

P-1010	P-1025	P-1030	P-1031	P-1032
P-1031	P-1034	P-3	P-47	P-269
P-974	P-295	P-923	P-959	

PUMP/LOSS ELEMENT RESULTS

NAME	FLOWRATE gpm	INLET HEAD ft	OUTLET HEAD ft	PUMP HEAD ft	EFFIC-ENCY %	USEFUL POWER Hp	INCREMENTL COST \$	TOTAL COST \$	#PUMPS PARALLEL	#PUMPS SERIES	NPSH Avail. ft
Pump-1	251.64	159.60	395.43	235.8	75.00	0.	0.0	0.0	**	**	192.6
Pump-4	227.93	210.65	418.94	208.3	75.00	0.	0.0	0.0	**	**	243.2

FOLLOWING ADDITIONAL PIPES ARE CLOSED :

FOLLOWING ADDITIONAL PIPES ARE CLOSED :

NODE RESULTS

NODE NAME	NODE TITLE	EXTERNAL DEMAND gpm	HYDRAULIC GRADE ft	NODE ELEVATION ft	PRESSURE HEAD ft	NODE PRESSURE psi
J-1		0.00	1304.71	930.00	374.71	162.37

Blackhawk Rd. - Flushing Demand

J-10	0.00	1304.27	940.00	364.27	157.85
J-1013	0.00	1303.86	950.50	353.36	153.12
J-1014	25.00	1296.04	1027.90	268.14	116.19
J-11	0.00	1304.19	955.00	349.19	151.31
J-12	0.00	1304.12	955.00	349.12	151.29
J-13	0.00	1304.00	935.00	369.00	159.90
J-14	0.00	1303.97	940.00	363.97	157.72
J-15	0.00	1303.95	930.00	373.95	162.05
J-16	0.00	1303.93	940.00	363.93	157.70
J-17	0.00	1303.91	940.00	363.91	157.70
J-18	0.00	1303.89	950.00	353.89	153.35
J-2	0.00	1304.79	930.00	374.79	162.41
J-4	0.00	1304.40	930.00	374.40	162.24
J-5	0.00	1304.36	920.00	384.36	166.56
J-60	0.00	1303.88	950.00	353.88	153.35
J-63	0.00	1303.87	950.00	353.87	153.35
J-661	0.00	1304.10	955.00	349.10	151.27
J-662	0.26	1304.07	936.00	362.07	159.50
J-663	0.00	1304.02	935.00	369.02	159.91
J-665	0.26	1304.09	955.00	349.09	151.27
R-2	---	1305.00	920.00	385.00	166.83

MAXIMUM AND MINIMUM VALUES

PRESSURES

JUNCTION NUMBER	MAXIMUM PRESSURES psi	JUNCTION NUMBER	MINIMUM PRESSURES psi
J-975	225.12	T-3	9.53
J-973	222.96	R-6	13.87
J-974	208.24	J-430	16.99
J-57	204.20	T-1	17.77
J-288	202.93	J-432	26.48

REGULATING VALVE REPORT

VALVE LABEL	VALVE TYPE	VALVE SETTING psi or gpm	VALVE STATUS	UPSTREAM PRESSURE psi	DOWNSTREAM PRESSURE psi	THROUGH FLOW gpm
RV-1	PRV-1	120.00	ACTIVATED	139.20	120.00	3.12
RV-2	ERV-1	100.00	ACTIVATED	202.93	100.00	3.25
RV-3	PRV-1	86.00	ACTIVATED	143.87	86.00	4.16
RV-4	PRV-1	100.00	ACTIVATED	171.27	100.00	53.43
RV-5	PRV-1	85.00	ACTIVATED	118.04	85.00	9.76

SUMMARY OF INFLOWS AND OUTFLOWS

(+) INFLOWS INTO THE SYSTEM FROM SUPPLY NODES
 (-) OUTFLOWS FROM THE SYSTEM INTO SUPPLY NODES

NODE NAME	FLOWRATE gpm	NODE TITLE
R-1	94.25	
R-2	61.49	
R-3	115.99	
R-5	244.83	
R-6	10.07	
R-7	277.91	
R-8	72.89	
T-1	-160.11	
T-2	-126.67	
T-3	-89.53	
T-4	48.05	

NET SYSTEM INFLOW = 925.48

Whitley County Water District



NET SYSTEM OUTFLOW = -376.31
NET SYSTEM DEMAND = 549.17

***** HYDRAULIC ANALYSIS COMPLETED *****