CONSTRUCTION PLANS
FOR
WATER SYSTEM IMPROVEMENTS
FOR

HARRIMAN UTILITIES BOARD
HARRIMAN, TENNESSEE

"AS BUILT"

CONTRACT W00-01

PINE RIDGE ROAD
WATER LINE RELOCATION

JULY, 2000

ROBERT G. THREADGILL JR.
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
NO. 012945
STATE OF TENNESSEE

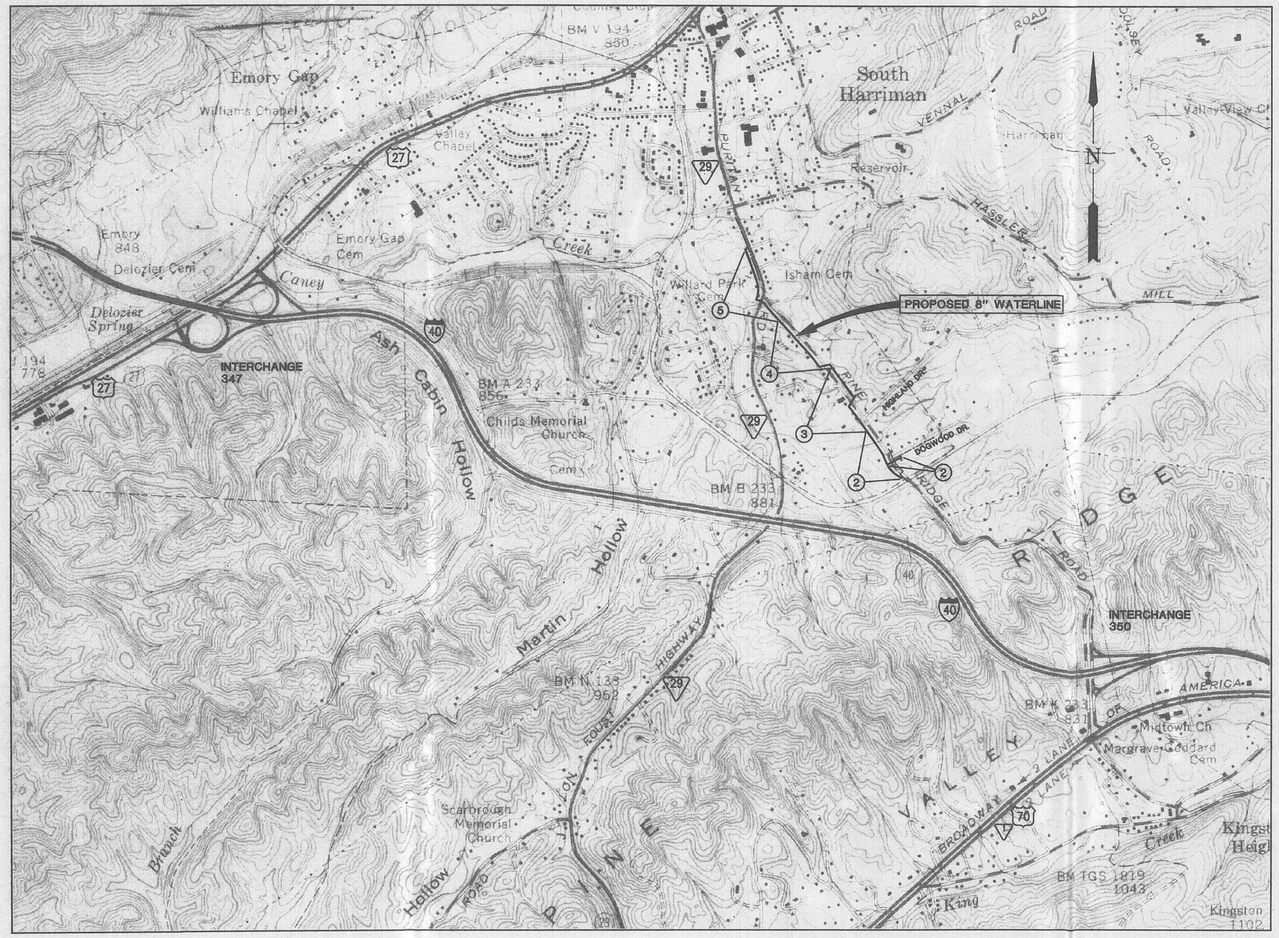
8-3-2000

Accepted By: Robert G. Threadgill
Title: General Manager
For: Harriman Utility Board
Date: August 3, 2000

ELROD · DUNSON, INC.
CONSULTING ENGINEERS
Nashville · Knoxville
Bowling Green, Ky.

PROJECT NO. 0700

SET NO.



PROJECT LOCATION MAP

SCALE: 1"=1000'

TENNESSEE VICINITY MAP

NOT TO SCALE

INDEX OF SHEETS

SHEET	DESCRIPTION
1	LEGEND, INDEX OF SHEETS, VICINITY MAP, PROJECT LOCATION MAP
2	8" D.I. – PINE RIDGE RD. – STA. 0+000 (0+00) TO STA. 0+253 (8+30) 6" D.I. – DOGWOOD DR. – STA. 0+000 (0+00) TO STA. 0+050) (1+64) E.O.L.
3	8" D.I. – PINE RIDGE RD. – STA. 0+253 (8+30) TO STA. 0+578 (18+96)
4	8" D.I. – PINE RIDGE RD. – STA. 0+578 (18+96) TO STA. 0+882 (28+94)
5	8" D.I. – PINE RIDGE RD. – STA. 0+883 (28+97) TO STA. 1+000 (32+81) E.O.L. 8" D.I. – PURITAN RD. (S.R. 29) STA. 0+000 (0+00) TO STA. 0+187 (6+14) E.O.L.
6	STANDARD WATER LINE CONSTRUCTION DETAILS

LEGEND

EXISTING	NEW	
		CASING PIPE
SA MH		SEWER LINE & MANHOLE
6"W		WATER LINE
		WATER LINE VALVE
		PLUG
WM		WATER METER
FP		FIRE HYDRANT
G		GAS LINE
GM		GAS METER
OHE		OVERHEAD ELECTRICAL LINE
P/T		POWER POLE
		HEADWALL OR INLET WALL
		CREEK OR DITCH
		CULVERT PIPE
		FENCE ROW
PL		PROPERTY LINE
		EDGE OF HEAVY FOLIAGE
		TREE
		SHRUB
		SIGN

ROBERT G. THREADGILL, JR.
REGISTERED ENGINEER
AGRICULTURE
COMMERCE
NO. 012646
STATE OF TENNESSEE

Robert G. Threadgill Jr.
8-3-2000

ELROD · DUNSON, INC.
CONSULTING ENGINEERS
NASHVILLE · KNOXVILLE
BOWLING GREEN

CONTRACT W00-01

HARRIMAN, TENNESSEE

LEGEND, INDEX OF SHEETS, VICINITY MAP, PROJECT LOCATION MAP

REVISIONS

DESIGNED: R.G.T.
DRAWN: S.C.G.
CHECKED: R.G.T.
DATE: JULY, 2000
SCALE: AS NOTED
PROJ. NO. 0700

NOTES TO CONTRACTOR

1. ALL EXISTING UNDERGROUND UTILITIES SUCH AS WATER, SEWER, GAS, ELECTRIC, TELEPHONE AND T.V. CABLE MUST BE FIELD LOCATED AND MARKED BY UTILITY COMPANY BEFORE CONSTRUCTION BEGINS.
2. CONTRACTOR SHALL INSTALL NEW WATER METERS WHERE SHOWN ON PLANS. UNUSED WATER METERS SHALL BE REMOVED AND RETURNED TO OWNER AFTER NEW WATER LINE IS IN SERVICE.
3. NEW WATER LINE SHALL BE LAID WITH 0.76m (30") COVER EXCEPT WHERE EXTRA COVER IS SHOWN ON PLANS.
4. CONTRACTOR SHALL CONNECT EXISTING WATER METERS TO NEW WATER LINE AFTER NEW WATER LINE IS IN SERVICE.
5. RAISE OR LOWER TOP OF MANHOLE BY ADDING OR REMOVING GRADE RINGS AND/OR M.H. BARRELS AS REQUIRED.

NEW WATER LINE LOCATION SCHEDULE				
DIMENSION MARK	BASELINE STA. ALONG WEST EDGE OF ROAD		DISTANCE FROM EDGE OF ROAD	
	METRIC	ENGLISH	METRIC	ENGLISH
A	22.0m	72.2'	7.0m	23.0'
B	41.5m	136.2'	11.9m	39.0'
C	61.7m	202.4'	14.9m	48.9'
D	82.9m	272.0'	13.6m	44.6'
E	117.7m	386.2'	7.1m	23.3'
F	123.2m	404.2'	7.7m	25.3'
G	128.6m	421.9'	8.4m	27.6'
H	209.0m	685.7'	8.6m	28.2'
I	214.0m	702.1'	5.5m	18.0'
J	220.8m	724.4'	2.2m	7.2'
K	243.3m	798.2'	2.0m	6.6'

METRIC

ROBERT G. THREADGILL, JR. REGISTERED ENGINEER AGRICULTURE NO. 012845 STATE OF TENNESSEE

8-3-2000

ELROD · DUNSON, INC.
CONSULTING ENGINEERS
NASHVILLE · KNOXVILLE
BOWLING GREEN

CONTRACT W00-01

HARRIMAN, TENNESSEE
8" D.I. – PINE RIDGE RD. – STA. 0+000 (0+00) TO STA. 0+253 (8+30)
6" D.I. – DOGWOOD DR. STA. 0+000 (0+00) TO STA. 0+050 (1+64) E.O.L.

REVISIONS

DESIGNED: R.G.T.
DRAWN: S.C.G.
CHECKED: R.G.T.
DATE: JULY, 2000
SCALE: 1:500
PROJ. NO. 0700

SHEET 2 OF 6

NOTES TO CONTRACTOR

1. ALL EXISTING UNDERGROUND UTILITIES SUCH AS WATER, SEWER, GAS, ELECTRIC, TELEPHONE AND T.V. CABLE MUST BE FIELD LOCATED AND MARKED BY UTILITY COMPANY BEFORE CONSTRUCTION BEGINS.
2. CONTRACTOR SHALL INSTALL NEW WATER METERS WHERE SHOWN ON PLANS. UNUSED WATER METERS SHALL BE REMOVED AND RETURNED TO OWNER AFTER NEW WATER LINE IS IN SERVICE.
3. NEW WATER LINE SHALL BE LAID WITH 0.76m (30") COVER EXCEPT WHERE EXTRA COVER IS SHOWN ON PLANS.
4. CONTRACTOR SHALL CONNECT EXISTING WATER METERS TO NEW WATER LINE AFTER NEW WATER LINE IS IN SERVICE.

NEW WATER LINE LOCATION SCHEDULE				
DIMENSION MARK	BASELINE STA. ALONG WEST EDGE OF ROAD		DISTANCE FROM EDGE OF ROAD	
	METRIC	ENGLISH	METRIC	ENGLISH
A	288.0m	944.9'	2.0m	6.6'
B	329.0m	1079.4'	2.0m	6.6'
C	343.3m	1126.3	1.2m	3.9'
D	395.0m	1295.9'	2.2m	7.2'
E	422.1m	1384.8'	7.4m	24.3'
F	501.3m	1644.7'	7.5m	24.6'
G	558.0m	1830.3'	7.4m	24.3'

METRIC

ROBERT G. THREADGILL, JR. REGISTERED ENGINEER STATE OF TENNESSEE AGRICULTURE COMMERCE NO. 012645

8-3-2000

ELROD·DUNSON, INC.
CONSULTING ENGINEERS
NASHVILLE · KNOXVILLE
BOWLING GREEN

CONTRACT W00-01

HARRIMAN, TENNESSEE

8" D.I. – PINE RIDGE RD. – STA. 0+253 (8+30) TO STA. 0+578 (18+96)

REVISIONS

DESIGNED: R.G.T.
DRAWN: S.C.G.
CHECKED: R.G.T.
DATE: JULY, 2000
SCALE: 1:500
PROJ. NO. 0700

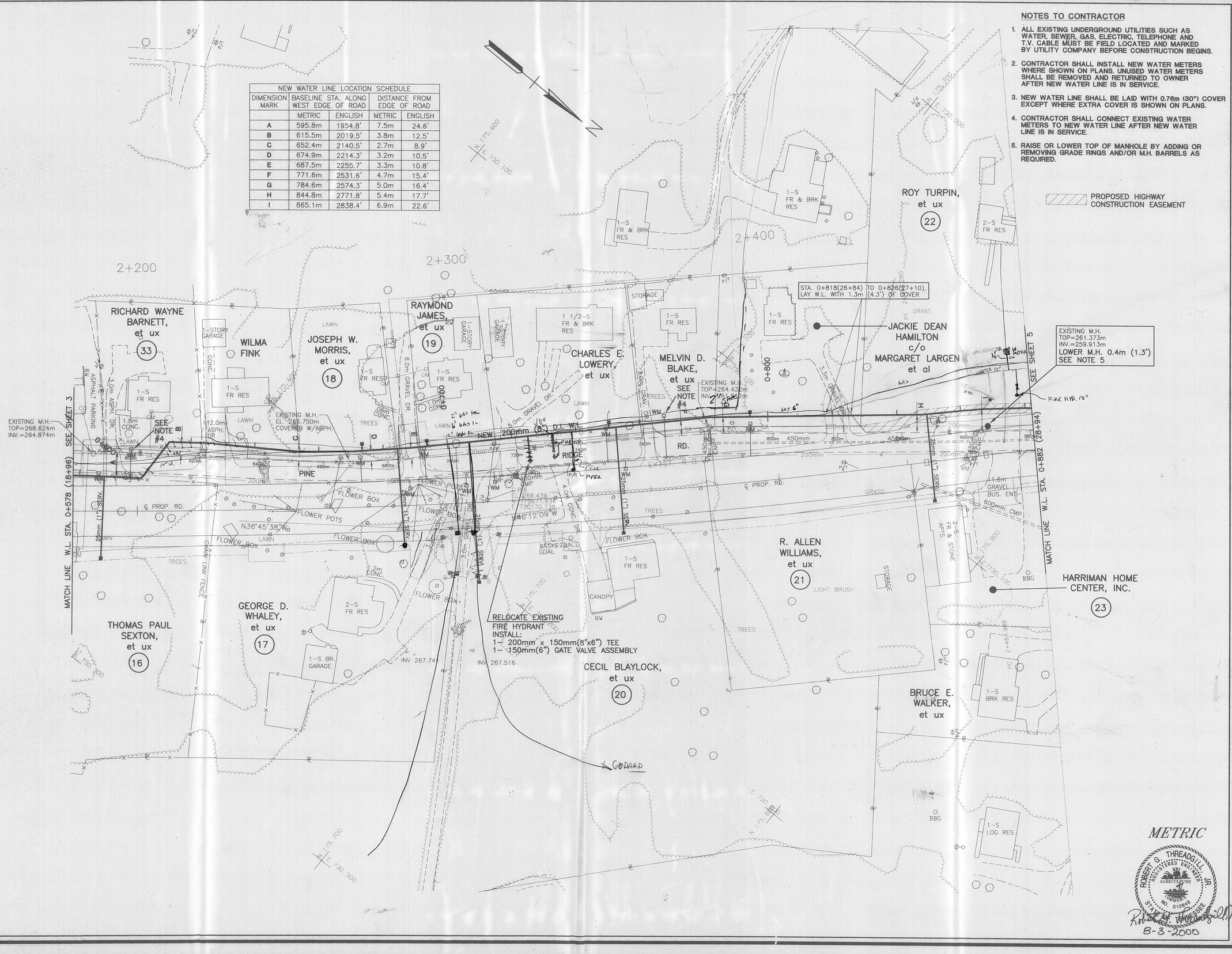
SHEET 3 OF 6

NEW WATER LINE LOCATION SCHEDULE				
DIMENSION MARK	BASELINE STA. ALONG WEST EDGE OF ROAD		DISTANCE FROM EDGE OF ROAD	
	METRIC	ENGLISH	METRIC	ENGLISH
A	595.8m	1954.8'	7.5m	24.6'
B	615.5m	2019.5'	3.8m	12.5'
C	652.4m	2140.5'	2.7m	8.9'
D	674.9m	2214.3'	3.2m	10.5'
E	687.5m	2255.7'	3.3m	10.8'
F	771.6m	2531.6'	4.7m	15.4'
G	784.6m	2574.3'	5.0m	16.4'
H	844.8m	2771.8'	5.4m	17.7'
I	865.1m	2838.4'	6.9m	22.6'

NOTES TO CONTRACTOR

1. ALL EXISTING UNDERGROUND UTILITIES SUCH AS WATER, SEWER, GAS, ELECTRIC, TELEPHONE AND T.V. CABLE MUST BE FIELD LOCATED AND MARKED BY UTILITY COMPANY BEFORE CONSTRUCTION BEGINS.
2. CONTRACTOR SHALL INSTALL NEW WATER METERS WHERE SHOWN ON PLANS. UNUSED WATER METERS SHALL BE REMOVED AND RETURNED TO OWNER AFTER NEW WATER LINE IS IN SERVICE.
3. NEW WATER LINE SHALL BE LAID WITH 0.76m (30") COVER EXCEPT WHERE EXTRA COVER IS SHOWN ON PLANS.
4. CONTRACTOR SHALL CONNECT EXISTING WATER METERS TO NEW WATER LINE AFTER NEW WATER LINE IS IN SERVICE.
5. RAISE OR LOWER TOP OF MANHOLE BY ADDING OR REMOVING GRADE RINGS AND/OR M.H. BARRELS AS REQUIRED.

PROPOSED HIGHWAY CONSTRUCTION EASEMENT



METRIC

ROBERT G. THREADGILL, JR. REGISTERED ENGINEER AGRICULTURE NUMBER 012645 STATE OF TENNESSEE

8-3-2000

ELROD · DUNSON, INC.
CONSULTING ENGINEERS
NASHVILLE · KNOXVILLE
BOWLING GREEN

CONTRACT W00-01

HARRIMAN, TENNESSEE

8" D.I. – PINE RIDGE RD. – STA. 0+578 (18+96) TO STA. 0+882 (28+94)

REVISIONS

DESIGNED: R.G.T.
DRAWN: S.C.G.
CHECKED: R.G.T.
DATE: JULY, 2000
SCALE: 1:500
PROJ. NO. 0700

SHEET 4 OF 6

NOTES TO CONTRACTOR

1. ALL EXISTING UNDERGROUND UTILITIES SUCH AS WATER, SEWER, GAS, ELECTRIC, TELEPHONE AND T.V. CABLE MUST BE FIELD LOCATED AND MARKED BY UTILITY COMPANY BEFORE CONSTRUCTION BEGINS.
2. CONTRACTOR SHALL INSTALL NEW WATER METERS WHERE SHOWN ON PLANS. UNUSED WATER METERS SHALL BE REMOVED AND RETURNED TO OWNER AFTER NEW WATER LINE IS IN SERVICE.
3. NEW WATER LINE SHALL BE LAID WITH 0.76m (30") COVER EXCEPT WHERE EXTRA COVER IS SHOWN ON PLANS.
4. CONTRACTOR SHALL CONNECT EXISTING WATER METERS TO NEW WATER LINE AFTER NEW WATER LINE IS IN SERVICE.
5. RAISE OR LOWER TOP OF MANHOLE BY ADDING OR REMOVING GRADE RINGS AND/OR M.H. BARRELS AS REQUIRED.

PROPOSED HIGHWAY CONSTRUCTION EASEMENT

15mm(6") TAPPING SLEEVE W/150mm (6") G.V. ASSEMBLY
200mm x 150mm(8"x6") REDUCER
200mm x200mm(8"x8") TEE
CUT & PLUG EXISTING 150mm (6") W.L. AFTER NEW 200mm(8")W.L. IS IN SERVICE
200mm(8") GATE VALVE ASSEMBLY

END: W.L. STA. 1+000 (32+81) PINE RIDGE RD. =
BEGIN: W.L. STA. 0+000 (0+00) PURITAN RD. (S.R. 29)
MAKE CONNECTION TO EXISTING 150mm (6") W.L.

"ROAD CROSSING"
INSTALL 32m (105L.F.) OF 356mm (14") STEEL CASING 6.35mm (0.25") THK. WITH 200mm (8") D.I. CARRIER W/RESTRAINED JT. GASKET. INSTALL CASING BY OPEN CUT METHOD. BURY CASING WITH 1m (3.3') COVER

RELOCATE EXISTING
FIRE HYDRANT
INSTALL:
INSTALL:
1– 200mm x 150mm (8"x6") TEE
1– 150mm(6") GATE VALVE ASSEMBLY

EXISTING M.H.
TOP=258.199m
INV.=255.959m
RAISE TOP OF M.H. 1.65m(5.35')
SEE NOTE 5

EXISTING M.H.
TOP=257.489m
INV.=255.249m
RAISE TOP OF M.H. 0.3m(1.0')
SEE NOTE 5

STA. 0+882(28+94) TO 0+892(29+27).
LAY W.L. WITH 1.5m (4.9') OF COVER

END: W.L. STA. 0+187 (6+14) PURITAN RD.
MAKE CONNECTION TO EXIST. 150mm (6") W.L.
INSTALL:
1 – 150mm (6") TAPPING SLEEVE & 150mm (6") GATE VALVE ASSEMBLY
1 – 150mm x200mm (6"x8") INCREASER

RELOCATE EXISTING
FIRE HYDRANT
INSTALL:
INSTALL:
1– 200mm x 150mm (8"x6") TEE
1– 150mm(6") GATE VALVE ASSEMBLY

CUT & PLUG EXIST. 150mm (6") W.L. AFTER NEW 200mm (8") W.L. IS IN SERVICE

If possible, just pick up @ this 10" valve add 90° Bend & cross road here instead.
Contractor didn't plug stub, just closed valve

NEW WATER LINE LOCATION SCHEDULE				
DIMENSION MARK	BASELINE STA. ALONG WEST EDGE OF ROAD		DISTANCE FROM EDGE OF ROAD	
	METRIC	ENGLISH	METRIC	ENGLISH
A	905.5m	2970.8'	7.0m	23.0'
B	948.6m	3112.2'	7.1m	23.3'
C	975.8m	3201.4'	7.4m	24.28'

POC 2+520.000 PINE RIDGE ROAD =
POT 1+192.336 RURITAN ROAD
N 175822.2937
E 730036.2516

METRIC

ROBERT G. THREADGILL, JR. REGISTERED ENGINEER STATE OF TENNESSEE NO. 02645 AGRICULTURE COMMERCE
8-3-2000

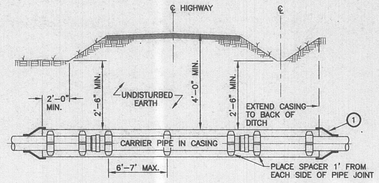
ELROD · DUNSON, INC.
CONSULTING ENGINEERS
NASHVILLE • KNOXVILLE
BOWLING GREEN

CONTRACT W00-01
HARRIMAN, TENNESSEE
8" D.I. – PINE RIDGE RD. – STA. 0+883 (28+97) TO STA. 1+000 (32+81) E.O.L.
6" D.I. – PURITAN RD. (S.R. 29) STA. 0+000 (0+00) TO STA. 0+187 (6+14) E.O.L.

REVISIONS

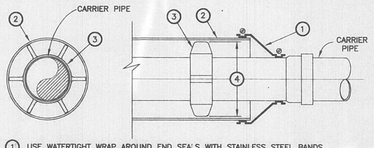
DESIGNED: R.G.T.
DRAWN: S.C.G.
CHECKED: R.G.T.
DATE: JULY, 2000
SCALE: 1:500
PROJ. NO. 0700

SHEET 5 OF 6



TYPICAL DETAIL OF HIGHWAY CROSSING W/CASING AND CARRIER PIPE

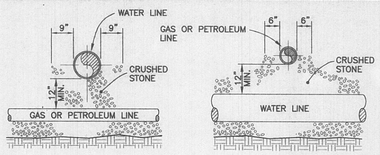
NOT TO SCALE



1. USE WATERTIGHT WRAP AROUND END SEALS WITH STAINLESS STEEL BANDS.
2. SMOOTH WALL STEEL CASING PIPE BITUMINOUS COATING INSIDE & OUT.
3. USE PSI RANGER AZ CASING SPACERS FOR 4" THRU 12" DIA. CARRIER PIPE. USE PSI RANGER GZK CASING SPACERS FOR 14" THRU 24" DIA. CARRIER PIPE.
4. SPACER SKIDS SHALL BE SIZED AND TRIMMED TO MAINTAIN 1/2" MAXIMUM CLEARANCE BETWEEN SKID AND CASING PIPE.
5. RESTRAIN PIPE IN ALL CASING OVER 60 FEET IN LENGTH.

CASING PIPE W/CARRIER PIPE DETAIL

NOT TO SCALE

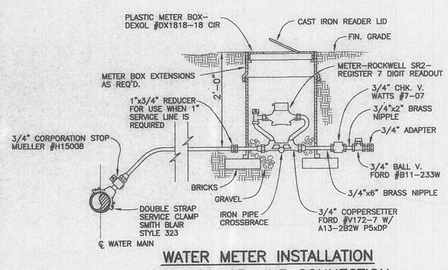


WATER LINE OVER GAS TRANSMISSION LINE

WATER LINE UNDER GAS TRANSMISSION LINE

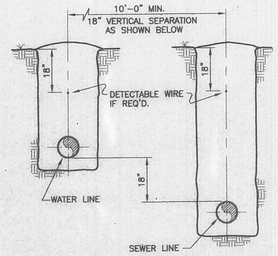
PIPE CROSSING FOR WATER LINE @ GAS MAIN

NOT TO SCALE



WATER METER INSTALLATION AND SERVICE LINE CONNECTION

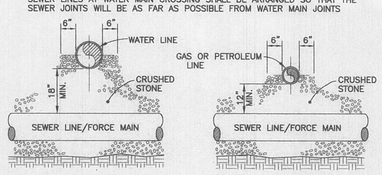
NOT TO SCALE



PIPELINE SEPARATION DETAIL

NOT TO SCALE

NOTE:
SEWER LINES AT WATER MAIN CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE AS FAR AS POSSIBLE FROM WATER MAIN JOINTS



SEWER LINE/FORCE MAIN UNDER WATER LINE

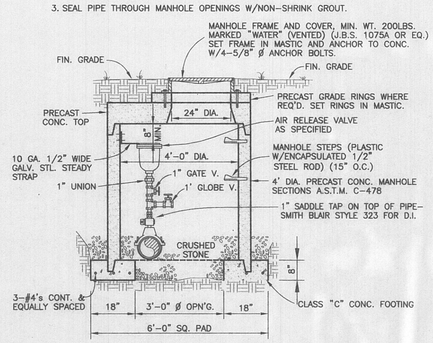
SEWER LINE/FORCE MAIN UNDER GAS TRANSMISSION LINE

PIPE CROSSING FOR SEWER LINE/FORCE MAIN

NOT TO SCALE

NOTES:

1. USE TRAFFIC MANHOLE FRAME & COVER WHEN IN ROADWAY (J.B.S. 1311 OR EQUAL).
2. PIPE GRADE SHALL BE LOWERED, IF REQUIRED, WHEN APPROACHING AIR RELEASE VALVE TO GIVE VERTICAL SPACE FOR AIR RELEASE APPURTENANCES. (SEE SHOP DWGS.)
3. SEAL PIPE THROUGH MANHOLE OPENINGS W/NON-SHRINK GROUT.



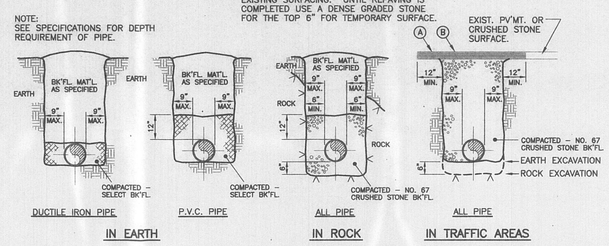
AIR RELEASE/AIR VACUUM VALVE

NOT TO SCALE

(A) CRUSHED STONE SURFACE EQUAL TO EXISTING SURFACE OR 6" MIN.

(B) SUB-BASE & PV'MT. EQUAL OR BETTER THAN EXISTING SURFACING. UNTIL REPAVING IS COMPLETED USE A DENSE GRADED STONE FOR THE TOP 6" FOR TEMPORARY SURFACE.

NOTE:
SEE SPECIFICATIONS FOR DEPTH REQUIREMENT OF PIPE.



STANDARD WATER LINE BEDDING AND BACKFILLING

NOT TO SCALE

90° BEND						
SIZE	18"	12"	10"	8"	6"	4"	2"
A		60	54	48	42	36	30
B		48	42	36	30	22	12
C		44	38	32	26	18	8
D		46	40	34	28	20	12

45° BEND						
SIZE	18"	12"	10"	8"	6"	4"	2"
A		56	50	44	38	32	28
B		42	38	32	26	20	12
C		38	34	28	22	16	8
D		40	36	30	24	18	10

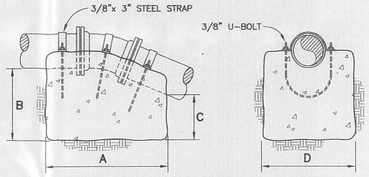
22 1/2° BEND						
SIZE	18"	12"	10"	8"	6"	4"	2"
A		50	44	38	34	30	22
B		34	30	26	22	16	12
C		30	26	22	18	12	8
D		32	28	24	20	14	10

11 1/4° BEND						
SIZE	18"	12"	10"	8"	6"	4"	2"
A		34	30	26	24	22	18
B		26	24	18	16	12	8
C		26	24	18	16	12	8
D		30	26	24	18	12	10

DIMENSIONS ARE IN INCHES

NOTES:

1. POUR CLASS B CONCRETE ANCHOR AGAINST UNDISTURBED EARTH OR ROCK.
2. IF EXACT SIZE PIPE IS NOT SHOWN, USE NEXT LARGER SIZE.

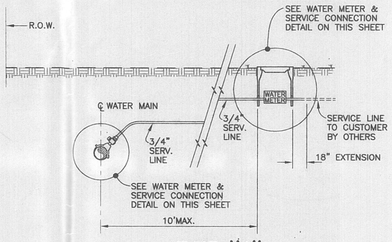


VERTICAL CONCRETE ANCHOR

NOT TO SCALE

SERVICE CONNECTION NOT UNDER ROADWAY LUMP SUM BID ITEM INCLUDES:

1. METER BOX INSTALLATION AND APPURTENANCES
2. WATER MAIN CONNECTION AND APPURTENANCES



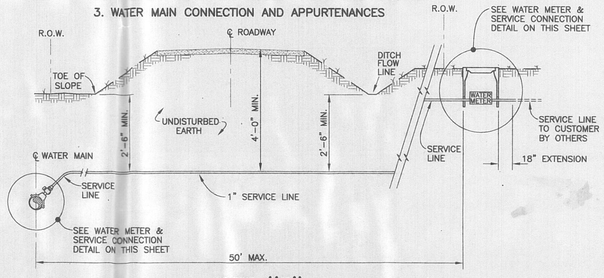
TYPE "A"

SERVICE CONNECTION NOT UNDER ROADWAY

NOT TO SCALE

SERVICE CONNECTION UNDER ROADWAY LUMP SUM BID ITEM INCLUDES:

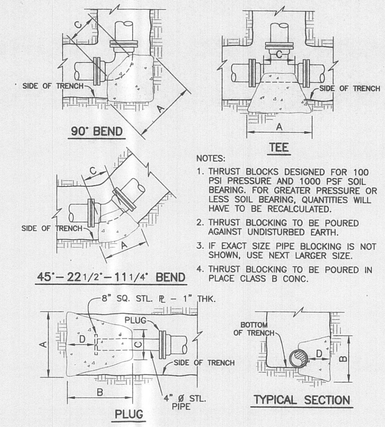
1. METER BOX INSTALLATION AND APPURTENANCES
2. BORE & JACK UNDER ROADWAY NO CASING REQUIRED
3. WATER MAIN CONNECTION AND APPURTENANCES



TYPE "B"

SERVICE CONNECTION UNDER ROADWAY

NOT TO SCALE



NOTES:

1. THRUST BLOCKS DESIGNED FOR 100 PSI PRESSURE AND 1000 PSF SOIL BEARING. FOR GREATER PRESSURE OR LESS SOIL BEARING, QUANTITIES WILL HAVE TO BE RECALCULATED.
2. THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH.
3. IF EXACT SIZE PIPE BLOCKING IS NOT SHOWN, USE NEXT LARGER SIZE.
4. THRUST BLOCKING TO BE POURED IN PLACE CLASS B CONC.

90° BEND						
SIZE	16"	12"	10"	8"	6"	4"	2"
A	64	50	40	33	26	16	16
B	64	50	40	33	24	16	16
C	30	16	15	12	12	9	9
D	32	25	20	16	12	8	9

45° BEND						
SIZE	16"	12"	10"	8"	6"	4"	2"
A	48	37	31	24	18	12	12
B	48	37	31	24	18	12	12
C	18	16	14	12	12	8	8
D	22	18	15	12	9	6	6

22 1/2° BEND						
SIZE	16"	12"	10"	8"	6"	4"	2"
A	34	26	23	18	13	9	9
B	34	26	23	18	13	9	9
C	18	16	14	12	10	8	8
D	16	13	11	9	6	4	4

11 1/4° BEND						
SIZE	16"	12"	10"	8"	6"	4"	2"
A	24	18	16	13	11	9	9
B	24	18	16	13	11	9	9
C	18	16	14	12	10	8	8
D	12	9	8	6	5	4	4

PLUG						
SIZE	16"	12"	10"	8"	6"	4"	2"
A	54	52	43	34	26	26	26
B	54	52	43	34	26	26	26
C	12	12	12	12	12	12	12
D	44	32	22	15	11	11	11

TEE							
SIZE	MAIN	16"	12"	12"	12"	8"-10"	8"-12"	2"-6"
	BRANCH	16"	12"	8"-10"	2"-8"	8"-10"	2"-6"	2"-6"
A		54	52	42	26	43	26	26
B		54	52	43	26	43	26	26
C		30	12	12	12	12	12	12
D		30	26	21	13	21	13	13

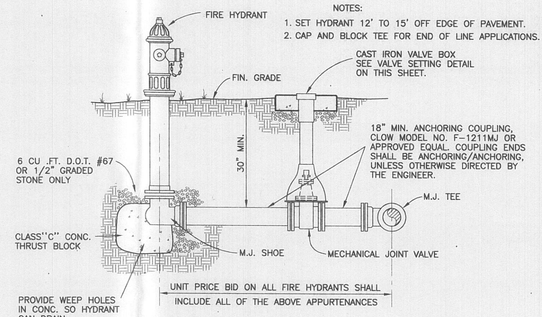
DIMENSIONS ARE IN INCHES

THRUST BLOCKING DETAIL

NOT TO SCALE

NOTES:

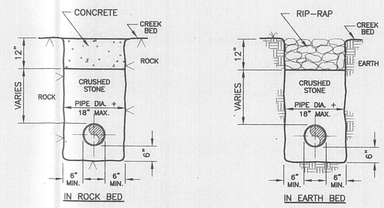
1. SET HYDRANT 12' TO 15' OFF EDGE OF PAVEMENT.
2. CAP AND BLOCK TEE FOR END OF LINE APPLICATIONS.



UNIT PRICE BID ON ALL FIRE HYDRANTS SHALL INCLUDE ALL OF THE ABOVE APPURTENANCES

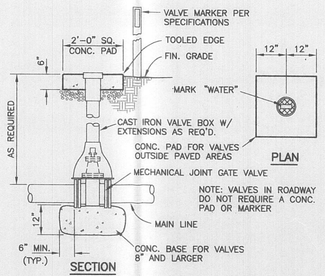
FIRE HYDRANT INSTALLATION

NOT TO SCALE



DITCH CROSSING DETAIL

NOT TO SCALE



GATE VALVE ASSEMBLY DETAIL

NOT TO SCALE

ROBERT G. THREADGILL, JR. REGISTERED ENGINEER AGRICULTURE NO. 012646 STATE OF TENNESSEE

8-3-2000

ELROD·DUNSON, INC.
CONSULTING ENGINEERS
NASHVILLE • KNOXVILLE
BOWLING GREEN

CONTRACT W00-01

HARRIMAN, TENNESSEE
STANDARD WATER LINE CONSTRUCTION DETAILS

REVISIONS

DESIGNED: R.G.T.
DRAWN: S.C.G.
CHECKED: R.G.T.
DATE: JULY, 2000
SCALE: AS NOTED
PROJ. NO. 0700

SHEET 6 OF 6