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LEGEND

- W — EXIST. WATER MAIN
— R/W — RIGHT-OF-WAY
— X — FENCE
[Hatched Box] ASPHALT PAVEMENT
[Solid Box] CONCRETE PAVEMENT
[Line with Dashes] STEEL PIPE ENCASEMENT
[Line with Dashes] DIRECTIONAL DRILL
[Wavy Line] CREEK
[Valve Symbol] VALVE AND BOX
[Fire Hydrant Symbol] FIRE HYDRANT
[Water Meter Symbol] WATER METER
R.JDI RESTRAINED JOINT DUCTILE IRON
G.R. GRAVEL DRIVEWAY
ASPH ASPHALT DRIVEWAY
[Pump Station Symbol] PUMPING STATION
[Tank Symbol] WATER STORAGE TANK
[Service Pole Symbol] SERVICE POLE
[Reducer Symbol] REDUCER
APP R APP L
[Existing Fire Hydrant Symbol] EXISTING FIRE HYDRANT

GENERAL NOTES:

1. WATER MAIN SHALL BE INSTALLED WITH A MINIMUM OF 48" OF COVER, UNLESS OTHERWISE NOTED.
2. CONTRACTOR IS RESPONSIBLE FOR INVESTIGATION WORK TO DETERMINE IF DEFLECTION OF THE WATER MAIN WILL BE REQUIRED TO GUARANTEE AN 18" MINIMUM VERTICAL SEPARATION OR A 10' MINIMUM HORIZONTAL SEPARATION BETWEEN STORM SEWER LINES, SANITARY SEWER LINES AND THE PROPOSED WATER MAIN. PRIOR TO ANY COMPROMISE OF THESE REQUIREMENTS, WRITTEN APPROVAL SHALL BE OBTAINED FROM THE ENGINEER AND OWNER.
3. ALL FITTINGS NOTED AN "R.JDI" SHALL BE RESTRAINED JOINT DUCTILE IRON BENDS WITH RESTRAINED PIPE LENGTHS IDENTIFIED THIS SHEET. THOSE FITTINGS NOTED AS "R.JDI" SHALL EITHER BE RESTRAINED AS IDENTIFIED THIS SHEET OR BLOCKED WITH CONCRETE PER DETAILS SHEET.
4. TO MINIMIZE STRESS TO TREE SPECIMENS IN THE AREA OF CONSTRUCTION, THE WATER TRENCH SHOULD BE OPEN FOR A MINIMUM AMOUNT OF TIME AND THE ROOTS ON THE TRENCH SIDE OF THE TREE SHALL BE SEVERED IN A CLEAN CUT MANNER. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO AVOID TOTAL REMOVAL OF TREES BY DEFLECTING PIPE IF POSSIBLE.
5. THE UTILITIES AND THEIR LOCATION SHOWN ON PLANS ARE APPROXIMATE. CONTRACTOR SHALL VERIFY ALL UTILITIES IN THE FIELD AND NOTIFY ALL UTILITY COMPANIES PRIOR TO INSTALLATION.
6. CONTRACTOR SHALL NOTIFY RESPECTIVE UTILITY COMPANIES AT LEAST FOUR DAYS PRIOR TO INSTALLATION OF WATER MAIN. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS INCURRED SUPPORTING POLES.
7. CONTRACTOR SHALL CLEAN STREETS OF CONSTRUCTION DEBRIS DAILY TO THE SATISFACTION OF THE RIPLEY COUNTY ENGINEER, OWNER AND ENGINEER. CONTRACTOR SHALL FURTHER ENSURE THAT AT LEAST ONE LANE OF TRAFFIC IS OPEN AT ALL TIMES DURING CONSTRUCTION ALONG ROADWAYS UNLESS THE CONTRACTOR HAS WRITTEN APPROVAL AND AN APPROVED TRAFFIC MAINTENANCE PLAN FROM RIPLEY COUNTY. CONTRACTOR SHALL NOT AT ANY TIME CLOSE ANY LANE OF A STATE HIGHWAY.
8. FULL DEPTH, COMPACTED GRANULAR BACKFILL IS REQUIRED PER HHRWD STANDARDS WHEN CENTERLINE OF WATER MAIN TRENCH IS WITHIN 5 FT. OF THE EDGE OF PAVEMENT FOR ROADWAYS ALONG THE WATER MAIN ROUTE.
9. CONTRACTOR SHALL REMOVE AND REPLACE ALL DRIVEWAY CULVERTS AFFECTED BY WATER MAIN CONSTRUCTION WITH NEW CMP DRIVEWAY CULVERT PIPING. CONTRACTOR SHALL ALSO PROVIDE STATE, CITY, AND/OR COUNTY APPROVED END SECTIONS ON EACH REPLACED CULVERT. THE CONTRACTOR SHALL OBTAIN THE ACTUAL INVERT ELEVATIONS OF EACH CULVERT TO BE REMOVED AND SUPPLY ELEVATION TO THE R.P.R. THE CONTRACTOR SHALL THEN PLACE THE NEW DRIVEWAY CULVERT AS CLOSE AS POSSIBLE TO THE FORMER INVERT ELEVATIONS AND PROVIDE POSITIVE DRAINAGE OF THE RECONSTRUCTED DITCH LINE.
10. THE OWNER HAS OBTAINED THE IDEM, INDOT, RIPLEY COUNTY & IDNR PERMITS. THE CONTRACTOR IS RESPONSIBLE FOR ALL OTHER PERMITS NECESSARY TO COMPLETE THE PROJECT, INCLUDING ALL TRAFFIC CONTROL PERMITS.

GENERAL NOTES:

11. THE DRAWINGS DEPICT SOME AREAS OF WATER MAIN INSTALLATION TO BE INSTALLED USING HDPE PIPE VIA DIRECTIONALLY DRILLING METHODS. THE OWNER & ENGINEER RESERVES THE RIGHT TO ADD OR SUBTRACT AREAS ALONG ALL WATER MAIN ROUTES TO HAVE THE WATER MAIN INSTALLED USING HDPE PIPE VIA DIRECTIONALLY DRILLING METHODS. THESE AREAS MAY INCLUDE UNDER DRIVEWAYS, FRONT YARDS, UTILITY CONGESTION AREAS, CREEKS, ETC.
12. THE CONTRACTOR SHALL REVIEW THE EASEMENT CONDITIONS LIST ON FILE AT THE OWNER'S OFFICE AND ADHERE TO ANY & ALL CONDITIONS.
13. ALL EASEMENTS SHOWN ON THE DRAWINGS HAVE BEEN OR ARE IN THE PROCESS OF BEING ACQUIRED. ALL OTHER AREAS WHERE EASEMENTS ARE NOT SHOWN, THE OWNER IS ATTEMPTING TO ACQUIRE THOSE EASEMENTS. SHOULD THESE EASEMENTS BE OBTAINED PRIOR TO ACTUAL INSTALLATION, THE ENGINEER WILL DIRECT THE CONTRACTOR TO PLACE THE WATER MAIN ON THE EASEMENT. ALL PIPE AND FITTINGS WILL BE PAID FOR AS SET FORTH IN THE UNIT PRICE CONTRACT. NO ADDITIONAL PAYMENT FOR RE-LOCATION OF THE WATER MAIN WILL BE ALLOWED.
14. CONTRACTOR SHALL KEEP ALL EXISTING WATER MAINS IN SERVICE UNLESS NOTED ON PLANS.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COORDINATION WITH CONTRACTOR F-2 FOR THE DELIVERY OF THE PUMP STATIONS, METER AND ALTITUDE VALVE. IT IS ANTICIPATED THAT FROM NOTICE TO PROCEED, DELIVERY OF THESE OWNER SUPPLIED ITEMS WILL BE IN APPROXIMATELY 4 TO 5 MONTHS. CONTRACTOR SHALL SCHEDULE HIS WORK ACCORDINGLY.
16. CONTRACTOR SHALL BE RESPONSIBLE FOR LIFTING OF THE PUMP STATIONS, METER AND ALTITUDE VALVE FROM THE DELIVERY TRUCK ON THE SAME DAY THE ITEM IS DELIVERED TO EACH SITE. CONTRACTOR IS ALSO RESPONSIBLE TO SET EACH ITEM WITH THE APPROPRIATE ANCHORS, AS SHOWN ON THE DRAWINGS.

RECORD DRAWING

This drawing has been revised from the original contract drawings to show minor/major changes made during construction. This drawing is not warranted to be complete and accurate in all respects.

GRW Engineers, Inc.

Date: 5/2004 By: MSB

LENGTH IN FT. TO BE REST. ON EACH SIDE OF FITTING FOR 12" PVC PIPE

TYPE OF BEND	TEE W/ 6" BRANCH	TEE W/ 8" BRANCH	TEE W/ 12" BRANCH	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	DEADENDS
HORIZ. BEND	10	29	71	49	20	10	10	12": 97'
VERT. BEND	—	—	—	—	57—UPPER 24—LOWER	28—UPPER 12—LOWER	14—UPPER 10—LOWER	—

RESTRAINED JOINT NOTES

1. CONTRACTOR SHALL INSTALL R.JDI FITTINGS FOR ALL VERTICAL BENDS. FOR HORIZONTAL BENDS, CONTRACTOR MAY INSTALL EITHER CONCRETE THRUST BLOCKING OR THRUST RESTRAINT SYSTEMS. UNLESS NOTED OTHERWISE.
2. RESTRAINED LENGTHS WERE CALCULATED ASSUMING A 2.0 FACTOR OF SAFETY, TYPE 3 TRENCH CONDITIONS, "CL" SOIL CLASSIFICATION, AND 150 PSI HYDROSTATIC TEST PRESSURES.
3. ALL WATER MAIN APPURTENANCES WITHIN R.JDI LIMITS MUST BE RESTRAINED AT EACH JOINT.
4. FOR REDUCERS THE FOLLOWING SHALL BE RESTRAINED ON THE LARGER SIZE:
12"x8" REDUCER = 51'
12"x6" REDUCER = 70'
8"x6" REDUCER = 28'
5. SEE ENGINEER FOR SIZE NOT LISTED

LENGTH IN FT. TO BE REST. ON EACH SIDE OF FITTING FOR 8" PVC PIPE

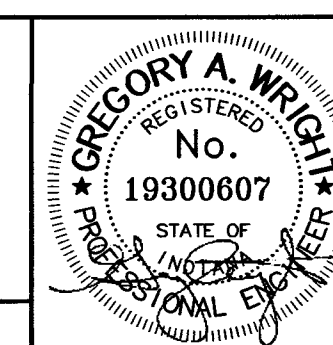
TYPE OF BEND	TEE W/ 6" BRANCH	TEE W/ 8" BRANCH	TEE W/ 12" BRANCH	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	DEADENDS
HORIZ. BEND	18	42	—	34	14	10	10	8": 67'
VERT. BEND	—	—	—	—	40—UPPER 17—LOWER	19—UPPER 10—LOWER	10—UPPER 10—LOWER	—

LENGTH IN FT. TO BE REST. ON EACH SIDE OF FITTING FOR 6" PVC PIPE

TYPE OF BEND	TEE W/ 4" BRANCH	TEE W/ 6" BRANCH	TEE W/ 12" BRANCH	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	DEADENDS
HORIZ. BEND	10	26	—	26	11	10	10	6": 51'
VERT. BEND	—	—	—	—	30—UPPER 13—LOWER	15—UPPER 10—LOWER	10—UPPER 10—LOWER	—

RESTRAINED JOINT CALCULATIONS

HOOSIER HILLS REGIONAL
WATER DISTRICT
DIVISION "F" WATERWORKS SYSTEM IMPROVEMENTS
CONTRACT F-1
DRAWING INDEX



DRAWN: GCR
FILE NAME: SHEET499
CHECKED: AS NOTED
APPROVED: SHEET NO. 499
DATE: JULY 2002
SCALE: AS NOTED

NO.	DESCRIPTION	DATE	BY
1	AS BUILT REVISIONS	5/2004	MSB
REVISIONS			

GRW PROJECT NO. 2743-04