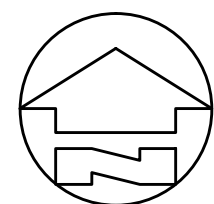
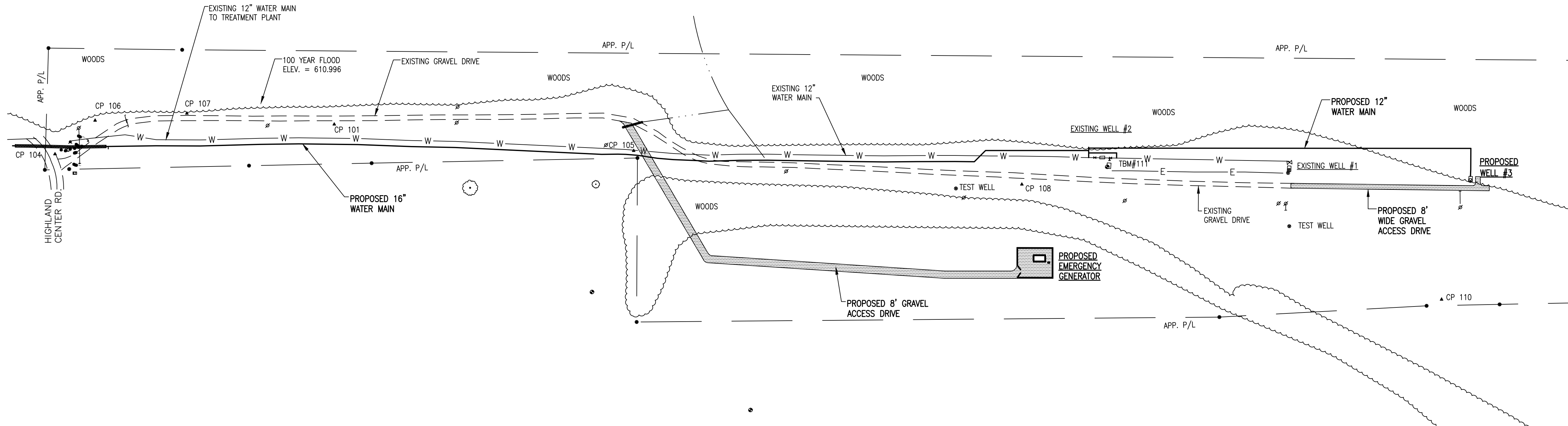


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WELLFIELD - SURVEY CONTROL

SCALE: 1" = 100'-0"

THIS RECORD DOCUMENT HAS BEEN PREPARED BASED ON INFORMATION PROVIDED BY THE CONSTRUCTION CONTRACTOR. GRW ENGINEERS, INC. HAS ATTEMPTED TO VERIFY THE ACCURACY AND/OR COMPLETENESS OF THIS INFORMATION BUT SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE INCORPORATED HEREIN AS A RESULT.

GRW
ENGINEERS - ARCHITECTS - PLANNERS
www.grwinc.com

ENGINEER/ARCHITECT: ALEX L. WHITE
CONSTRUCTION COMPANY: BRACKNEY, INC.
DATE: AUGUST 2013

RESTRAINED JOINT CALCULATIONS

| 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 | 90° BEND | 45° BEND | 22 1/2° BEND | 11 1/4° BEND | DEADENDS | |
| HORIZ. BEND | 28 | 46 | 27 | 11 | 10 | 10 | 12": 51' | |
| VERT. BEND | — | — | — | 31-UPPER 10-LOWER | 15-UPPER 10-LOWER | 10-UPPER 10-LOWER | | |

| 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 | 39 | 58 | 91 | 50 | 21 | 10 | 10 | 12": 97' |
| VERT. BEND | — | — | — | — | 58-UPPER 19-LOWER | 28-UPPER 10-LOWER | 14-UPPER 10-LOWER | |

| LENGTH IN FT. TO BE REST. ON EACH SIDE OF FITTING FOR 16" D.I. W/ POLY WRAP | | | | | | | | | |
|---|-------------------|------------------|-------------------|-------------------|----------|----------------------|----------------------|----------------------|-----------|
| TYPE OF BEND | TEE W/ 16" BRANCH | TEE W/ 8" BRANCH | TEE W/ 12" BRANCH | TEE W/ 16" BRANCH | 90° BEND | 45° BEND | 22 1/2° BEND | 11 1/4° BEND | DEADENDS |
| HORIZ. BEND | 54 | 87 | 148 | 209 | 68 | 28 | 14 | 10 | 20": 218' |
| VERT. BEND | — | — | — | — | — | 91-UPPER 25-LOWER | 44-UPPER 12-LOWER | 22-UPPER 10-LOWER | |

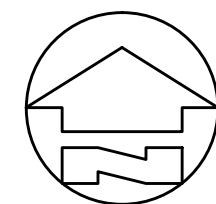
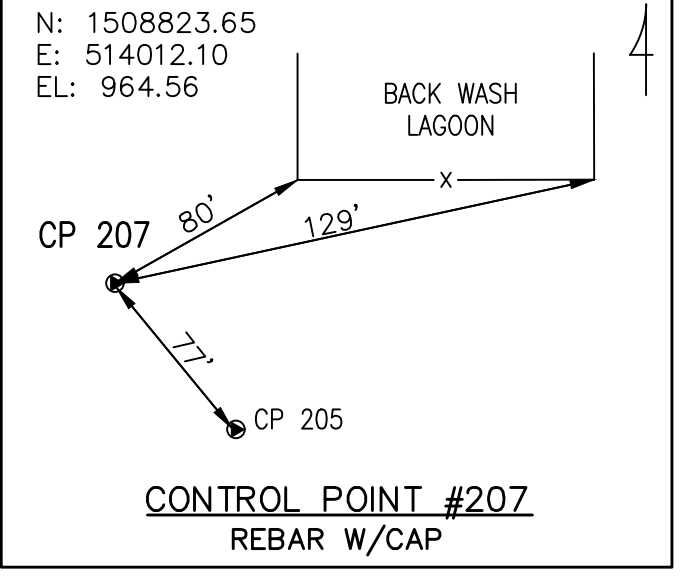
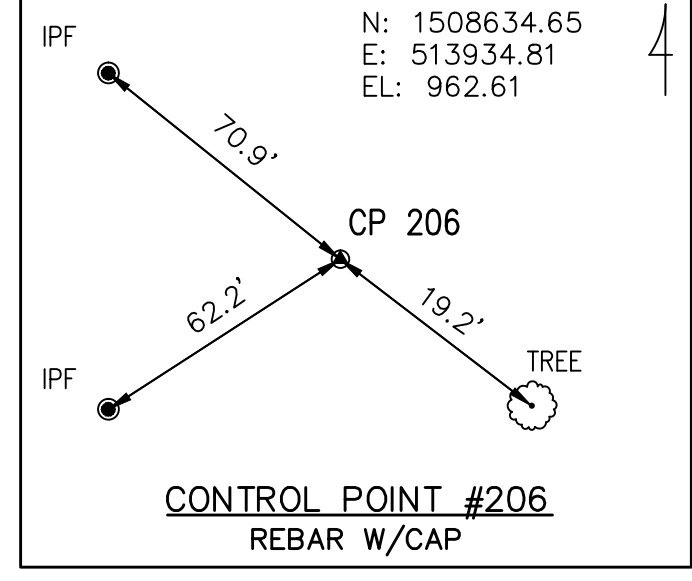
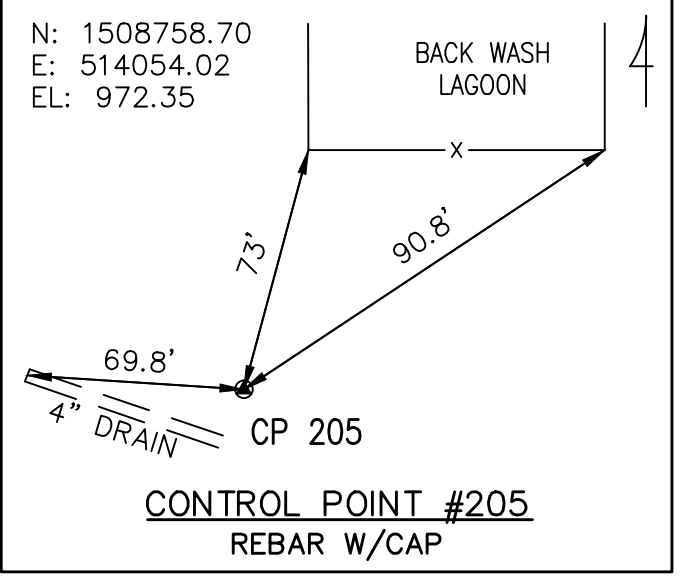
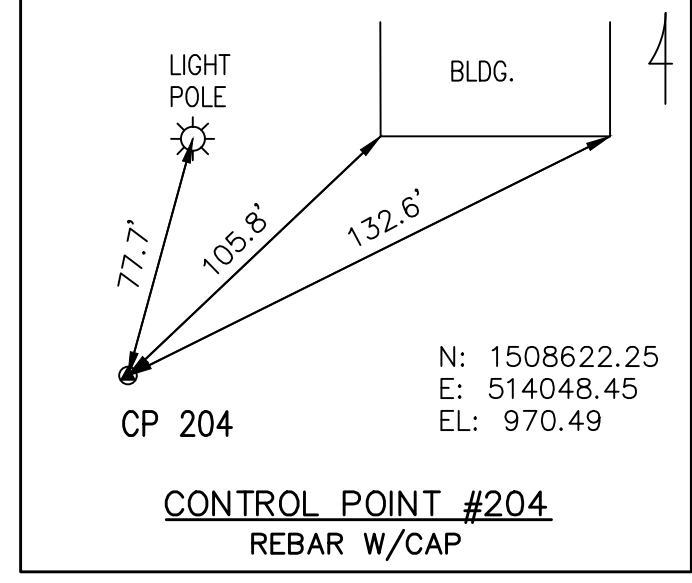
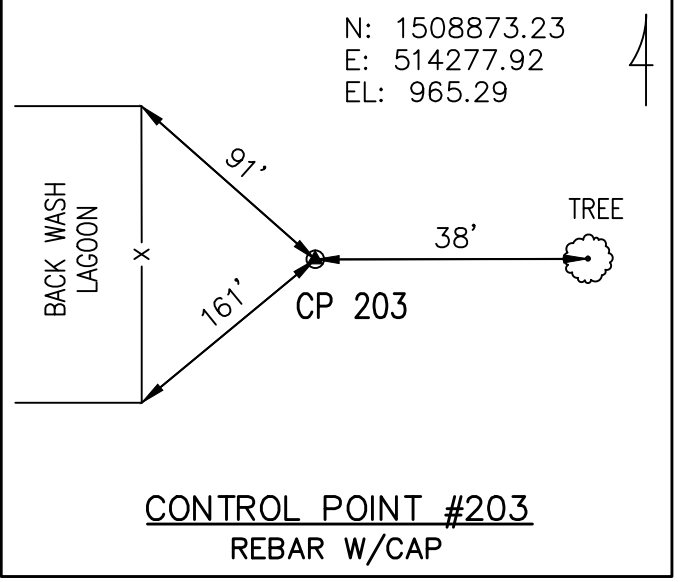
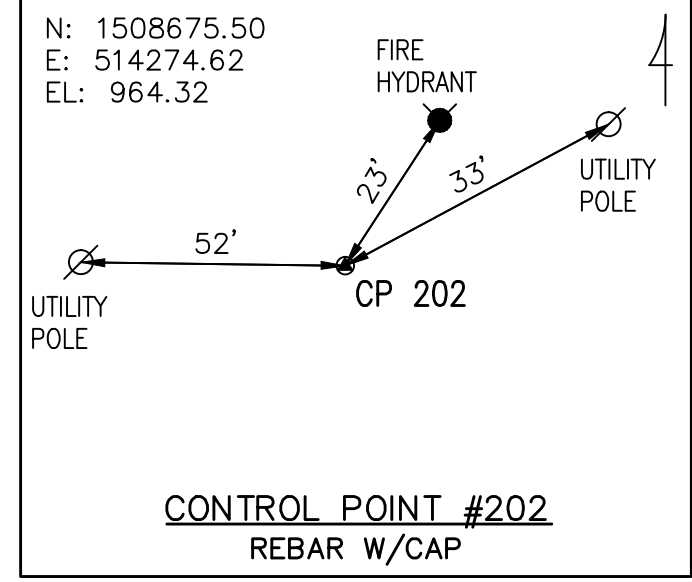
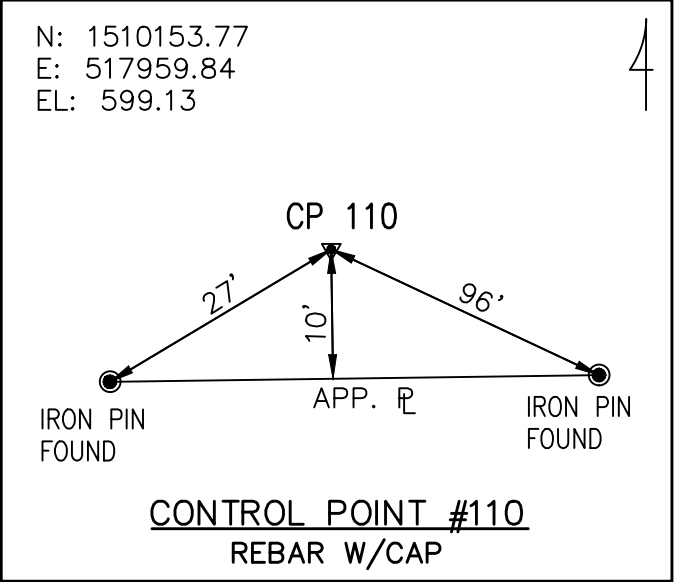
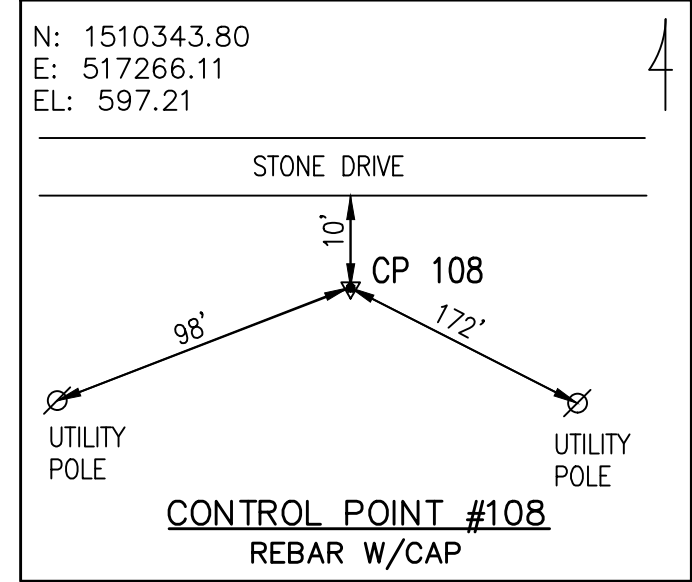
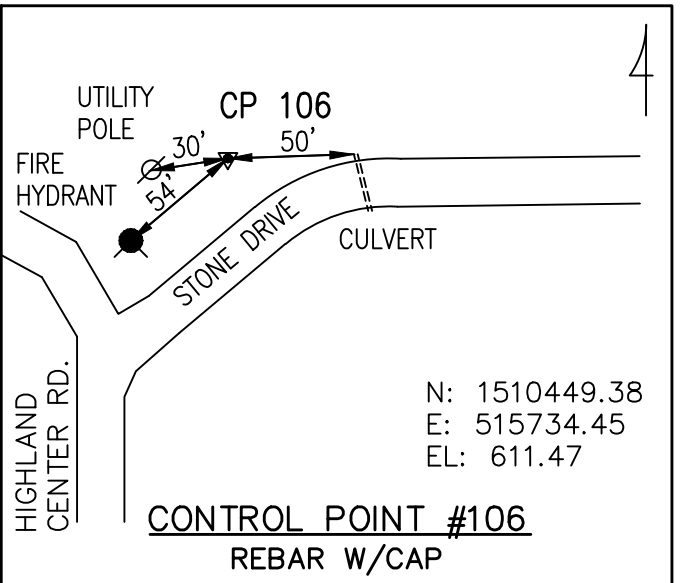
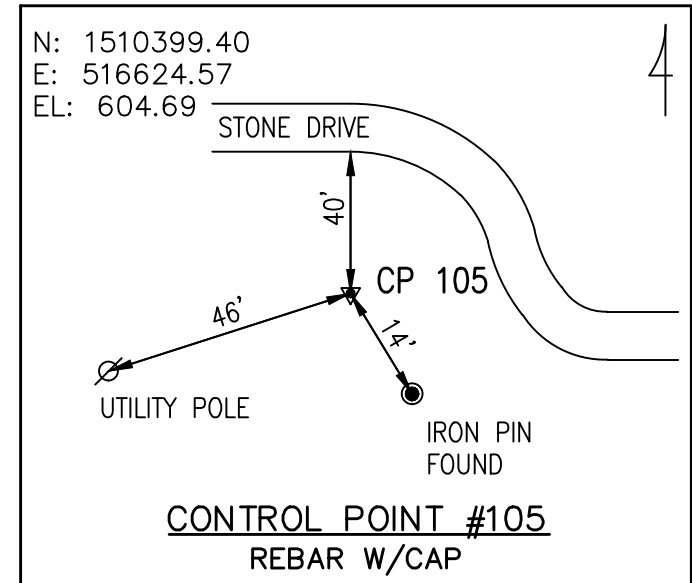
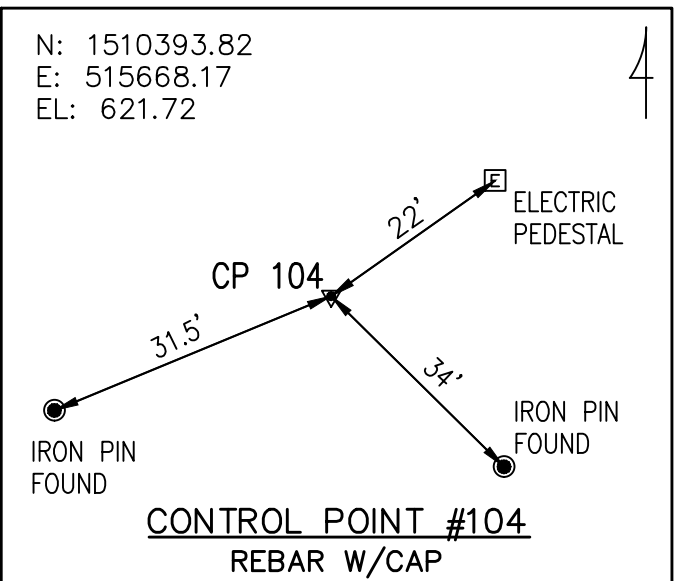
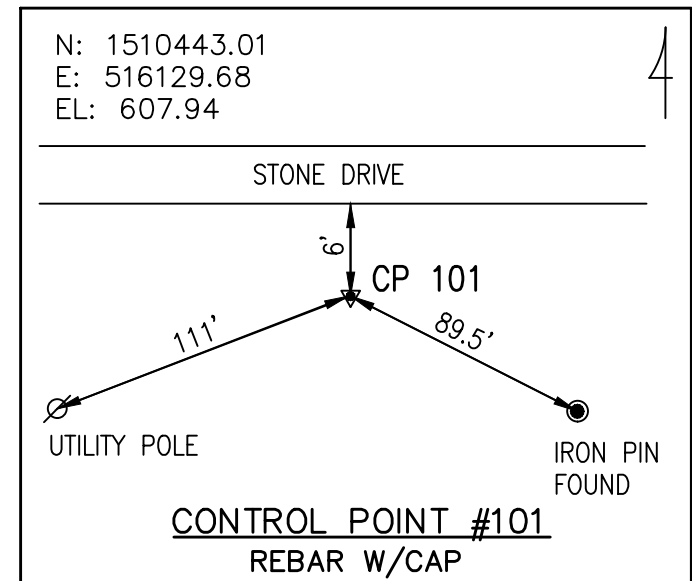
| LENGTH IN FT. TO BE REST. ON EACH SIDE OF FITTING FOR 20" D.I. W/ POLY WRAP | | | | | | | | |
|---|-------------------|-------------------|-------------------|----------|----------|-----------------------|----------------------|----------------------|
| TYPE OF BEND | TEE W/ 12" BRANCH | TEE W/ 16" BRANCH | TEE W/ 20" BRANCH | 90° BEND | 45° BEND | 22 1/2° BEND | 11 1/4° BEND | DEADENDS |
| HORIZ. BEND | 136 | 196 | 256 | 82 | 34 | 17 | 10 | 20": 265' |
| VERT. BEND | — | — | — | — | — | 110-UPPER 30-LOWER | 53-UPPER 15-LOWER | 27-UPPER 10-LOWER |

RESTRAINED JOINT NOTES

- CONTRACTOR SHALL INSTALL RJDI FITTINGS FOR ALL VERTICAL BENDS. FOR HORIZONTAL BENDS, CONTRACTOR MAY INSTALL EITHER CONCRETE THRUST BLOCKING OR THRUST RESTRAINT SYSTEMS. UNLESS NOTED OTHERWISE.
- RESTRAINED LENGTHS WERE CALCULATED ASSUMING A 2.0 FACTOR OF SAFETY, TYPE 3 TRENCH CONDITIONS, "CL" SOIL CLASSIFICATION, AND 150 PSI HYDROSTATIC TEST PRESSURES.
- ALL WATER MAIN APPURTENANCES WITHIN RJDI LIMITS MUST BE RESTRAINED AT EACH JOINT.
- FOR REDUCERS THE FOLLOWING SHALL BE RESTRAINED ON THE LARGER SIZE:
20"x12" REDUCER = 166'
12"x8" REDUCER = 52'


I.B.M. #1: FINISHED FLOOR OF EXISTING PLANT BUILDING AT MAIN ENTRY DOOR (EL. 972.490 NAVD 88)

I.B.M. #111: SOUTHWEST CORNER OF CONCRETE SLAB AT WELL NO. 2 (EL. 601.700 NAVD 88, 602.304 NGVD 29)



WTP SITE - SURVEY CONTROL

SCALE: 1" = 40'-0"

| | | | | | | | | | | | | | | | | |
|---|--|--|--|-------------------------|-------------|--|--|-------------------------|--|-------|------|---|-------------------------|---------------|--------------------|-----------|
| SURVEY CONTROL | | | | CLIENT CONTRACT NO. G-4 | | | | GRW PROJECT NO. 3235-04 | | | | | | | | |
| HOOSIER HILLS REGIONAL WATER DISTRICT DIVISION "G" SYSTEM IMPROVEMENTS | | | | | | | | | | | | DRAWING SCALE CHECK: <div><div></div></div> THIS MARK SHOULD MEASURE EXACTLY 1" WHEN PLOTTED | | | | |
| | | | | | | | | | | | | ALL RIGHTS RESERVED: THIS DOCUMENT IS THE PROPERTY OF GRW ENGINEERS, INC. AND SHALL NOT BE REPRODUCED IN WHOLE OR IN PART OR USED FOR CONSTRUCTION OF OTHER THAN THIS SPECIFIC PROJECT WITHOUT WRITTEN PERMISSION OF GRW ENGINEERS, INC. | | | | |
|  GRW Engineers, Inc. Engineers, Architects, Planners LEIGHTON LOUISVILLE NASHVILLE INDIANAPOLIS PORT MITCHELL KNOXVILLE ARLINGTON | | | | | | | | | | | | DESIGNED: CJF | DATE: AUGUST 2013 | | | |
| | | | | | | | | | | | | | | DRAWN: GCR | SCALE: AS SHOWN | |
| | | | | 1. | AS-BUILTS | | | | | 08-13 | JEC | | | | REVIEWED: DRC | SHEET NO. |
| | | | | NO. | DESCRIPTION | | | | | | DATE | BY | | | | |
| | | | | REVISIONS | | | | | | | | | | | | G-02 |
| | | | | | | | | | | | | | | | | |