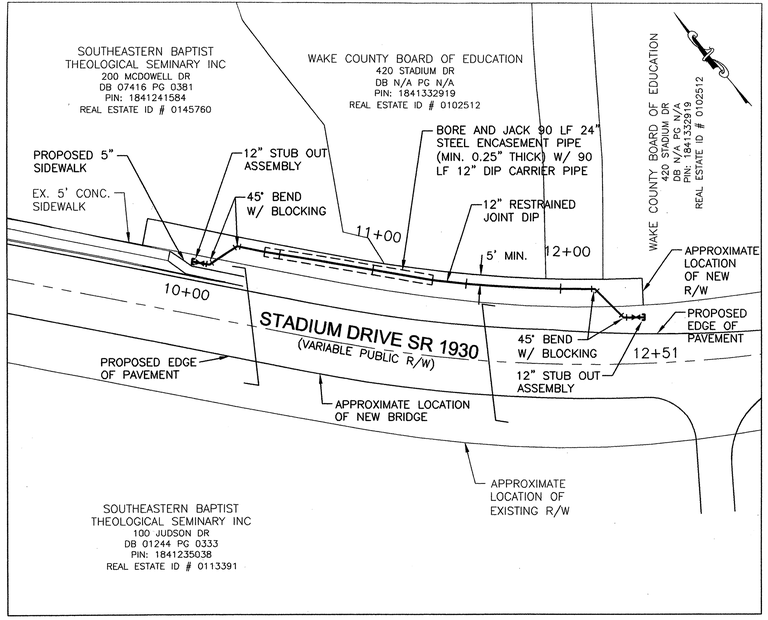
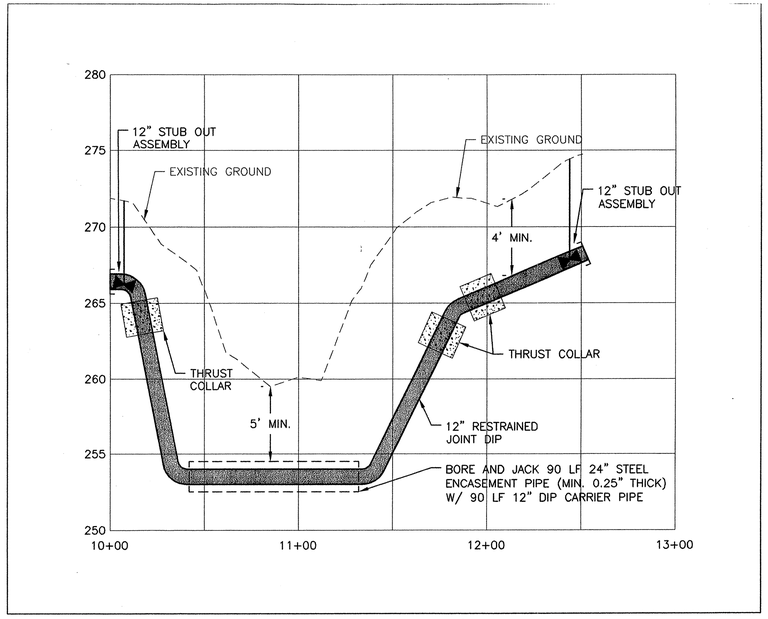


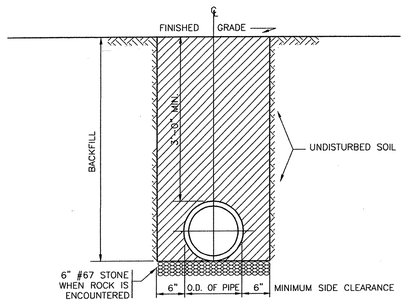

## RICHLAND CREEK CROSSING-PLAN VIEW
SCALE: 1"=40'




## RICHLAND CREEK CROSSING-PROFILE VIEW
N.T.S.

## NOTES:

1. CONSTRUCTION AND MATERIAL SPECIFICATIONS SHALL CONFORM TO THE CITY OF RALEIGH STANDARDS AND SPECIFICATIONS.
2. ALL WORK SHALL BE PERFORMED WITHIN NCDOT RIGHT OF WAY.
3. THE CONTRACTOR SHALL HAVE A COMPLETE SET OF CONTRACT DOCUMENTS AS WELL AS ALL APPROVALS AND EASEMENTS ON THE JOB SITE AT ALL TIMES.
4. THE CONTRACTOR IS RESPONSIBLE FOR ALL LAYOUT WORK REQUIRED TO PROPERLY CONSTRUCT THE WORK.
5. CONTRACTOR SHALL INSTALL, TEST, AND DISINFECT WATER MAINS, PER CITY OF RALEIGH SPECIFICATIONS.
6. EXISTING UTILITIES (ABOVE GROUND AND UNDERGROUND) HAVE NOT BEEN SHOWN FOR CLARITY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCURATELY LOCATE BOTH HORIZONTALLY AND VERTICALLY ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION (ONE CALL CENTER 1-800-632-4949). COST TO REPAIR DAMAGED UTILITIES SHALL BE BORNE BY THE CONTRACTOR.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR THE RECONNECTION OF DISTURBED UTILITY SERVICES ENCOUNTERED WITHIN 8 HOURS OF INTERRUPTED SERVICE. CONTRACTOR SHALL NOTIFY USERS 24 HOURS PRIOR TO POSSIBLE INTERRUPTIONS OF SERVICE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATION OF EXISTING UTILITIES (INCLUDING EXISTING WATER MAINS, PUBLIC OR PRIVATE) IF REQUIRED DURING INSTALLATION OF NEW WORK. THERE WILL BE NO ADDITIONAL OR SEPARATE PAY ITEM FOR THIS WORK.
9. THE CONTRACTOR SHALL RESTORE THE DISTURBED AREA TO THE EXISTING GRADE UNLESS SHOWN OTHERWISE ON THE DRAWINGS.
10. 48" MINIMUM COVER SHALL BE PROVIDED OVER ALL WATER MAINS UNLESS OTHERWISE NOTED.
11. THE CONTRACTOR SHALL PROVIDE THRUST BLOCKING AT BENDS, PLUGS, CAPS, AND TEES PER CITY OF RALEIGH PUBLIC UTILITIES HANDBOOK.
12. NOT ALL FITTINGS ARE SHOWN OR LABELED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL FITTINGS NECESSARY TO COMPLETE THE WORK.




**NOTES:**

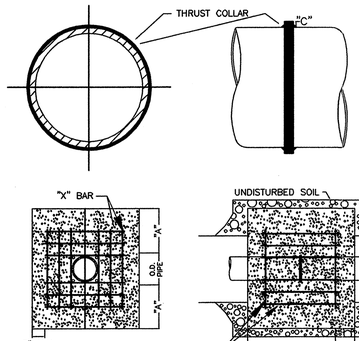
TRENCHES REQUIRING SHORING AND BRACING, DIMENSIONS SHALL BE TAKEN FROM THE INSIDE FACE OF THE SHORING AND BRACING.

1. NO ROCKS OR BOULDERS 4" OR LARGER TO BE USED IN INITIAL BACKFILL.
2. ALL BACKFILL MATERIAL SHALL BE SUITABLE MATERIAL.
3. BACKFILL SHALL BE TAMPED IN 6" LIFTS.
4. ACHIEVE 95% COMPACTION IN BACKFILL.
5. THE CONTRACTORS SHALL CONFORM TO O.S.H.A. REGULATIONS.

## TRENCH BOTTOM DIMENSIONS & BACKFILLING REQUIREMENTS FOR DUCTILE IRON PIPE
N.T.S.

## TYPICAL STUB OUT ASSEMBLY
N.T.S.

NOTES:
1. STUB OUT ASSEMBLY INCLUDES ALL ITEMS EXCEPT MAIN LINE FITTING.
2. ADDITIONAL PIPE AND FITTINGS OTHER THAN SHOWN IN DETAIL MAY BE NEEDED TO COMPLETE STUB OUT ASSEMBLY.




REINFORCING REQUIREMENTS

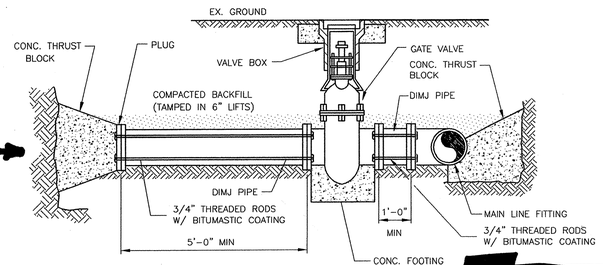
| I.D. PIPE | REBAR SIZE | "X" BAR LENGTH | "X" BAR WEIGHT | "Y" BAR LENGTH | "Y" BAR WEIGHT | NO. REQUIRED |
|---|---|---|---|---|---|---|
| 6" – 36" | #5 | 2'-2"+ O.D. PIPE | 1.043 LBS/FT | 1'-1" | 1.1 LBS. EACH | X-24, Y-12 |

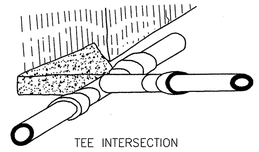
THRUST COLLAR, AND THRUST SCHEDULE

| I.D. PIPE | "A" | "B" | "C"-6"-16", 20"-24", 30"-36", 48" |
|---|---|---|---|
| 6" – 36" | 1'-4" | 1'-7" | 2" 3" 4" |

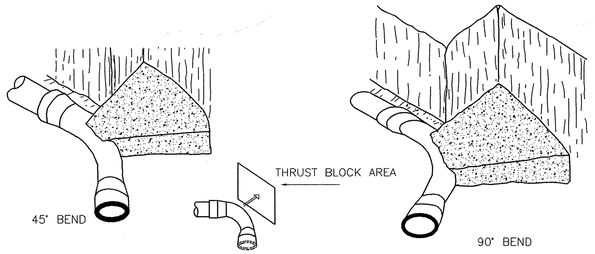
NOTES:
1. CONCRETE SHALL BE 3000 PSI AND TRANSIT MIXED.
2. REINFORCING BARS SHALL BE DEFORMED AND TIED TOGETHER.
3. TRENCH BOTTOM WIDTH IN VICINITY OF THRUST BLOCK INSTALLATION SHALL BE THE MINIMUM WIDTH AS SHOWN.
4. BACKFILL TAMPED IN 6" LIFTS.
5. THRUST COLLAR MUST BE FACTORY WELDED ON BOTH SIDES ALONG BOTH EDGES OF COLLAR AROUND CIRCUMFERENCE.

## THRUST BLOCKING DESIGN DATA
N.T.S.

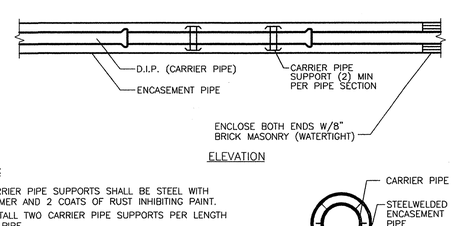




TEE INTERSECTION

**NOTES:**
1. CONCRETE SHALL BE 3000 PSI.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT FITTINGS.
3. TRENCHES SHALL CONFORM TO DETAIL FOR DUTILE IRON PIPE.
4. SEE THRUST BLOCKING DESIGN QUANTITY TABLE FOR AREA OF CONCRETE REQUIRED.
5. ALL BENDS AND INTERSECTIONS SHALL HAVE CONCRETE THRUST BLOCKING.




## TYPICAL THRUST BLOCKING VIEWS
N.T.S.



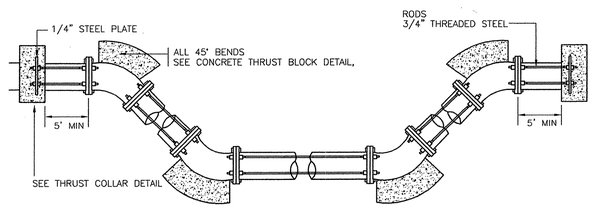

ELEVATION

NOTES:
1. CARRIER PIPE SUPPORTS SHALL BE STEEL WITH PRIMER AND 2 COATS OF RUST INHIBITING PAINT.
2. INSTALL TWO CARRIER PIPE SUPPORTS PER LENGTH OF PIPE.
3. ENCASEMENT PIPE TO EXTEND AS SHOWN ON THE DRAWINGS.
4. THE CARRIER PIPE SHALL BE D.I.P.




SECTION

## TYPICAL BORE & JACK DETAIL
N.T.S.




**ROD REQUIREMENTS**

| SIZE OF 45° BEND | STATIC THRUST IN POUNDS | NUMBER OF RODS REQUIRED |
|---|---|---|
| 10" OR 12" | 17,312 | 4 |

**NOTES:**
1. ONCE INSTALLED AND TIGHT, THE STEEL RODS AND BOLTS SHALL BE COATED WITH 2 COATS OF BITUMINOUS BASE PAINT.
2. CONCRETE SHALL NOT CONTACT BOLTS OR ENDS OF MECHANICAL JOINT BENDS.

## TYPICAL VERTICAL BEND DETAIL
N.T.S.

### REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS

BASED ON TEST PRESSURE OF 200 P.S.I. (ALL AREA IN SQUARE FEET)

| SIZE AND DEGREE OF BEND | STATIC THRUST IN POUNDS | FAMILY, DRY CLAY 4000 LBS/FT Sq. | SOFT CLAY 2000 LBS/FT Sq. | GRAVEL, COARSE SAND 1800 LBS/FT Sq. | DRY CLAY-ALWAYS DRY-3000 LBS/FT Sq. | SAND, COMPACT, FIRM 6000 LBS/FT Sq. | SAND-CLEAN, DRY 4000 LBS/FT Sq. | QUICKSAND, VERY POOR SOIL 1,000 LBS/FT Sq. | ROCK-POOR 10,000 LBS/FT Sq. |
|---|---|---|---|---|---|---|---|---|---|
| 12" | | | | | | | | | |
| 11 1/4° | 4,433 | 2 | 3 | 3 | 1 | 1 | 2 | 5 | 1 |
| 22 1/2° | 8,826 | 3 | 5 | 6 | 2 | 2 | 3 | 9 | 1 |
| 45° | 17,312 | 5 | 9 | 11 | 3 | 3 | 5 | 18 | 2 |
| 90° | 31,983 | 8 | 16 | 19 | 4 | 4 | 8 | 32 | 4 |
| PLUG | 22,619 | 6 | 12 | 14 | 3 | 3 | 6 | 23 | 3 |

**NOTES:**

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

## THRUST BLOCKING DESIGN QUANTITY TABLE
N.T.S.

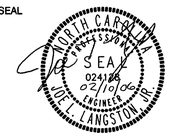
Dewberry & Davis, Inc.
2301 RIEXWOODS DRIVE
SUITE 200
RALEIGH, NC 27607
PHONE: 919.881.9939
FAX: 919.881.9923

SHEET
W-01

WAKE FOREST WATER SYSTEM IMPROVEMENTS

THE CITY OF RALEIGH
ONE EXCHANGE PLAZA, SUITE 620
219 FAYETTEVILLE STREET MALL
RALEIGH, NORTH CAROLINA 27602

SEAL




KEY PLAN

SCALE

| No. | DATE | BY | Description |
|---|---|---|---|
| | | | |

REVISIONS

| | |
|---|---|
| DRAWN BY | MBW |
| DESIGNED BY | MBW |
| CHECKED BY | JLL |
| DATE | 02/10/06 |

TITLE

# RICHLAND CREEK CROSSING PLAN, PROFILE, AND GENERAL DETAILS

PROJECT NO. 10013440

W-01