| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. |
|---|---|---|
| N.C. | B-5180 | PO-1 |
| | | DESCRIPTION |

TIP PROJECT: B-5180

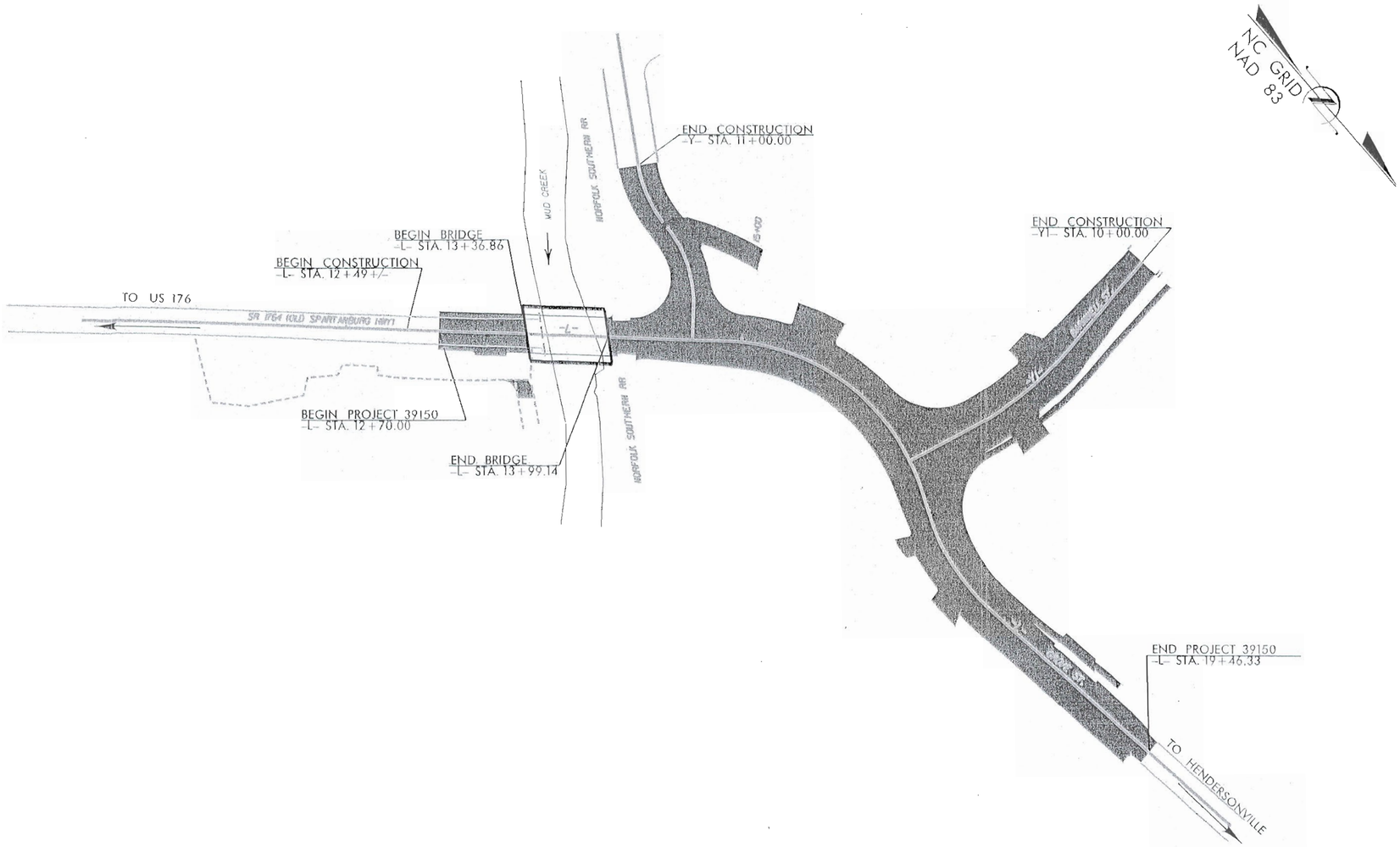
CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# HENDERSON COUNTY

*LOCATION: BRIDGE NO. 205 ON SR 1764 (OLD SPARTANBURG HWY) OVER MUD CREEK*

*TYPE OF WORK: UTILITY CONSTRUCTION*




NORTH CAROLINA PROFESSIONAL SEAL 6282 ENGINEER JIMMY D. WOODIE
11/4/2010

PREPARED BY

LICENSE NUMBER: C-0281

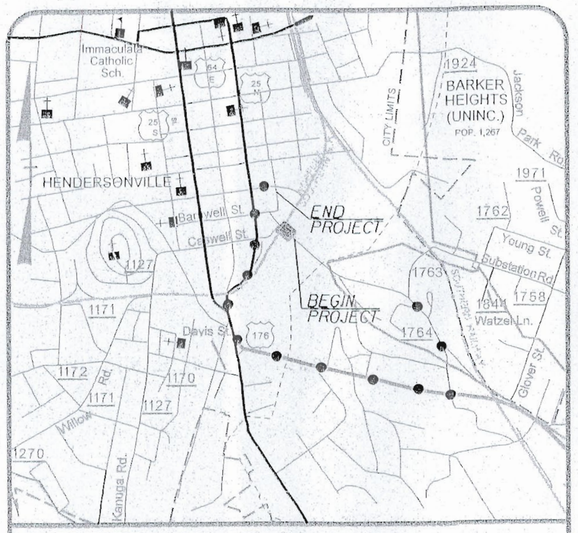
Municipal Services Engineering Company, P.A.

P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 276 MOREHEAD CITY, N.C. 28557 (252) 726-9481

UTILITY DESIGN ENGINEER JIMMY D. WOODIE P.E.

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. |
|---|---|---|
| N.C. | B-5180 | PO-2 |
| | | DESCRIPTION |

TIP PROJECT: B-5180




VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF HENDERSONVILLE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# HENDERSON COUNTY

**LOCATION: BRIDGE NO. 205 ON SR 1764 (OLD SPARTANBURG HWY) OVER MUD CREEK**

**TYPE OF WORK: UTILITY CONSTRUCTION**

## GENERAL NOTES

1. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY FIELD CONDITIONS BE ENCOUNTERED THAT VARY FROM THE INFORMATION PROVIDED IN THE CONTRACT DOCUMENTS.
2. LOCATIONS OF SHOWN UTILITIES ARE APPROXIMATE. CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING EXACT LOCATION AND ELEVATION OF UTILITIES PRIOR TO EXCAVATION FOR THE PIPELINE.
3. BURIED TELEPHONE CABLES (FIBER OPTICS AND CONVENTIONAL) ARE KNOWN TO VARY DUE TO INSTALLATION TECHNIQUES. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR COORDINATING WITH THE UTILITY COMPANY TO DETERMINE SPECIFIC CABLE LOCATIONS. THE ENGINEER MUST BE NOTIFIED OF THE EXACT LOCATIONS AND ELEVATIONS OF THE CABLES WHEN IT APPEARS THAT MODIFICATIONS TO THE PIPELINE ALIGNMENT MAY BE NECESSARY. NOTIFICATION SHALL BE MADE WELL IN ADVANCE OF THE TRENCH EXCAVATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH LOCATING OR REPAIRING BURIED CABLES ALONG THE PIPELINE ROUTE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LOCAL POWER COMPANY ANY ADDITIONAL SUPPORT OF EXISTING POWER POLES AS REQUIRED FOR THE PIPELINE TRENCH EXCAVATION. ALL COSTS OF SUCH WORK SHALL BE PAID BY THE CONTRACTOR.
5. MAINTAIN 24" MINIMUM CLEARANCE BETWEEN ALL EXISTING PIPES CROSSED, UNLESS OTHERWISE NOTED.
6. EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE INSTALLED ACCORDING TO THE CONTRACT DOCUMENTS AND AS DIRECTED BY THE ENGINEER. ALL DEVICES SHALL BE MAINTAINED SUCH THAT THEY FUNCTION AS INTENDED.
7. PROVIDE SEEDING AND MULCHING ON ALL DISTURBED AREAS. THIS SHALL BE DONE WITHIN 15 WORKING DAYS BUT NO MORE THAN 30 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING. PERMANENT GROUNDCOVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR NO MORE THAN 90 CALENDAR DAYS FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT.
8. PROVIDE TEMPORARY LINER (STRAW AND NETTING) FOR ALL DISTURBED DITCHLINES GREATER THAN 5% SLOPE OR AS NOTED ON THE PLANS.
9. THE CONTRACTOR SHALL REMOVE AND REINSTALL ALL FENCE, MAILBOXES, ETC. AS REQUIRED FOR PIPE INSTALLATION. ANY ADDITIONAL FENCE MATERIALS REQUIRED SHALL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
10. PLACED RIP-RAP SHALL HAVE A MINIMUM DEPTH OF 18 INCHES AND SHALL HAVE A LAYER OF SYNTHETIC GEOTEXTILE FILTER FABRIC PLACED BETWEEN THE SOIL AND STONE.
11. REFER TO GENERAL SPECIFICATIONS FOR TESTING OF SEWER LINES AND ALL APPLICABLE PROJECT SPECIFICATIONS.
12. ALL WORK TO COMPLY WITH NCDENR, COUNTY OF HENDERSON, AND TOWN OF HENDERSONVILLE REGULATIONS AND CODES, AND SHALL BE CONSISTANT WITH NCDOT REQUIREMENTS.
13. ALL PAVEMENT REPAIRS SHALL BE DONE IN ACCORDANCE WITH N.C. STANDARD DRAWING NO. 654.01
14. COST OF DESIGN COMPUTATIONS, PLANS AND SPECS FOR EXCAVATION, SHEETING AND SHORING WILL BE INCIDENTAL TO THE COST OF THE PROPOSED 20" ENCASEMENT.

## CONSTRUCTION SEQUENCE

1. CLEAR AREAS NECESSARY TO CONSTRUCT TEMPORARY EROSION DEVICES AROUND THE SITE TO CONTAIN ALL RUNOFF DUE TO CONSTRUCTION.
2. INSTALL ALL EROSION CONTROL DEVICES. ANY DITCHES DISTURBED DURING CONSTRUCTION SHALL BE RETURNED TO EXISTING CONDITION AND SEEDED AND MULCHED AS NECESSARY.
3. COMPLETE CONSTRUCTION AND APPLY PERMANENT SEEDING PER SCHEDULE.
4. MAINTAIN ALL EROSION CONTROL DEVICES UNTIL PERMANENT VEGETATION HAS BEEN ESTABLISHED.
5. APPLY STRAW AND ASPHALT TACK TO ALL SLOPES 3:1 OR GREATER.
6. ANY AND ALL LAND DISTURBED DURING ONE WORK DAY SHALL BE STABILIZED BY THE END OF THAT SAME WORK DAY.

## PLANTING SPECIFICATIONS

### PERMANENT SEEDING SCHEDULE

**SEEDING MIXTURE**

| SPECIES | RATE (LB/ACRE) |
|---|---|
| BLEND OF 3 OR MORE TURF TYPE FESCUES | 250 |

**SEEDING DATES**

AUGUST 20 – OCTOBER 25

AT TIMES OTHER THAN THE ABOVE APPLY TEMPORARY SEEDING, THEN APPLY PERMANENT SEEDING LATER.

**SOIL AMMENDMENTS**

APPLY LIME AND FERTILIZER ACCORDING TO SOIL TEST OR APPLY 3000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 1000 LB/ACRE 10-10-10 FERTILIZER.

**MULCH**

APPLY 4000-5000 LB/ACRE SMALL GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT OR NETTING. USE NETTING ON SLOPES STEEPER THAN 3:1.

**MAINTENANCE**

RESEED, FERTILIZE AND MULCH DAMAGED AREAS IMMEDIATELY.

### TEMPORARY SEEDING SCHEDULE

**SEEDING MIXTURE**

| SPECIES | RATE (LB/ACRE) |
|---|---|
| GERMAN MILLET | 40 |

**SEEDING DATES**

APRIL 15 – AUGUST 5

**SOIL AMMENDMENTS**

APPLY 2000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 750 LB/ACRE 10-10-10 FERTILIZER.

**MULCH**

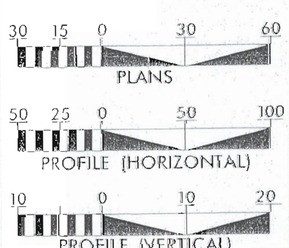
APPLY 4000 LB/ACRE SMALL GRAIN STRAW OR EQUIVALENT COVER OF ANOTHER SUITABLE MULCH. ANCHOR STRAW BY TACKING WITH ASPHALT OR NETTING. USE NETTING ON SLOPES STEEPER THAN 3:1.

**MAINTENANCE**

REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

CONTRACT:

## GRAPHIC SCALES




## INDEX OF SHEETS


| SHEET No. | DESCRIPTION |
|---|---|
| PO-1 | TITLE SHEET |
| PO-2 | GENERAL NOTES |
| PO-3 | PURCHASE ORDER PLAN SHEET |
| PO-4 | PURCHASE ORDER PROFILE SHEET |
| PO-5 | PURCHASE ORDER DETAILS |


## UTILITY OWNERS ON PROJECT

(1.) TOWN OF HENDERSONVILLE (WATER)

NORTH CAROLINA PROFESSIONAL SEAL 026202 ENGINEER JIMMY D. WOODIE

4/20/10


PREPARED BY

LICENSE NUMBER: C-0281

Municipal Services Engineering Company, P.A.

P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393

P.O. BOX 349 BOONE, N.C. 28607 (828) 262-1767

P.O. BOX 276 MOREHEAD CITY, N.C. 28557 (252) 726-9481

UTILITY DESIGN ENGINEER JIMMY D. WOODIE P.E.

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| B-5180 | PO-3 |

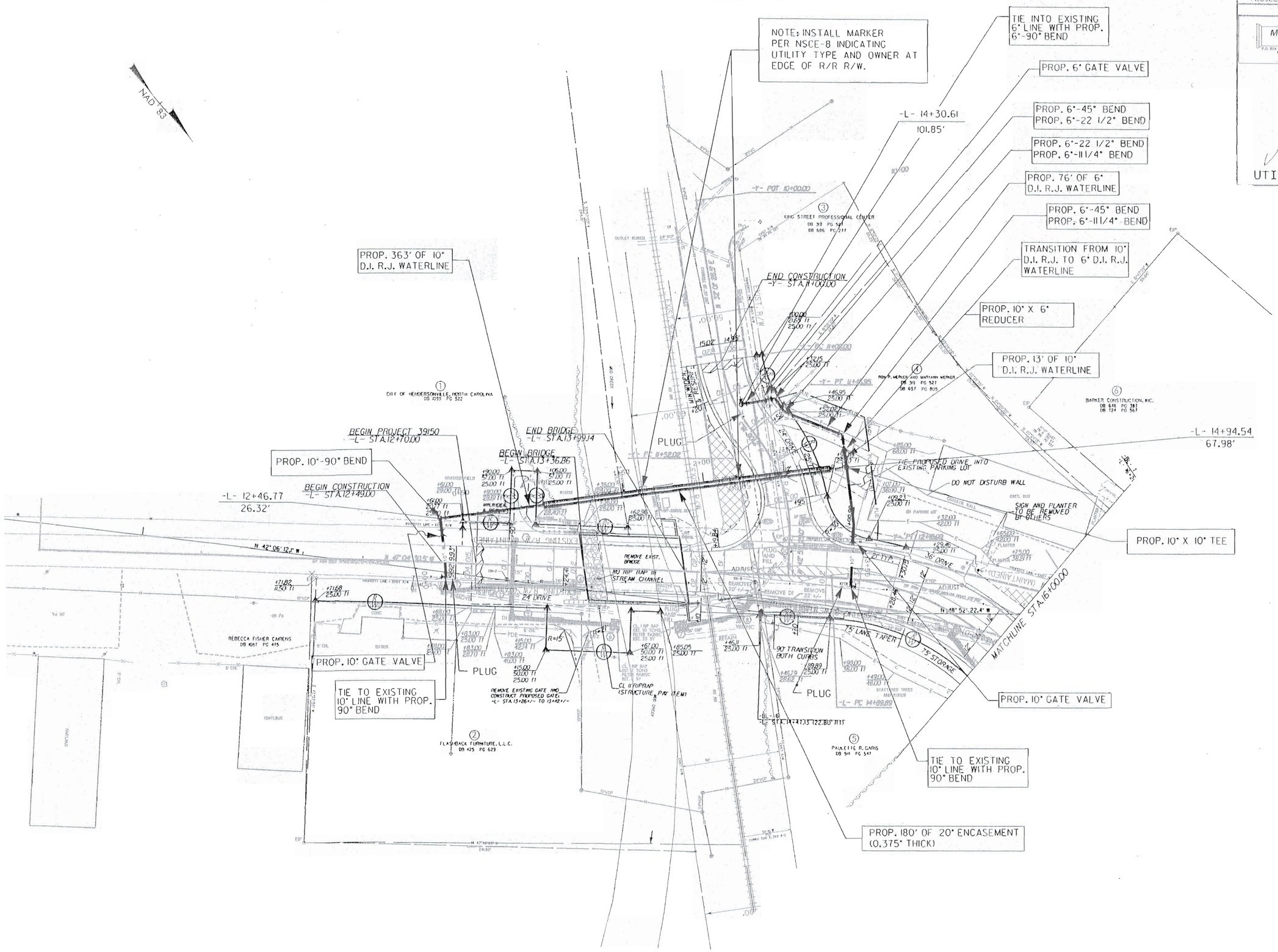
Municipal Services Engineering Company, P.A.

P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 249 BOONE, N.C. 28607 (828) 262-1762
P.O. BOX 216 MOREHEAD CITY, N.C. 28557 (252) 726-9481

NORTH CAROLINA PROFESSIONAL SEAL 4282 ENGINEER JIMMY D. WOODIE

11/4/2010

# UTILITY CONSTRUCTION



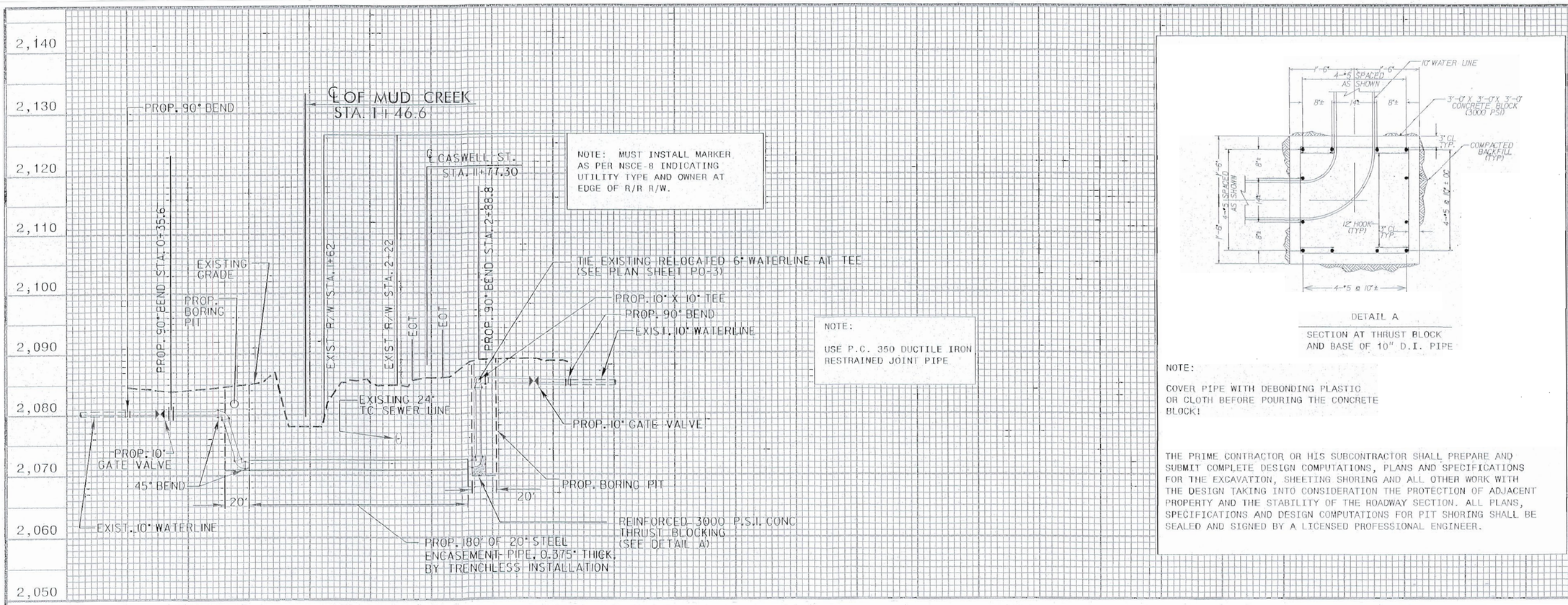
| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| B-5180 | PO-4 |

Municipal Services Engineering Company, P.A.
P.O. BOX 97 GARNER, N.C. 27529 (919) 772-5393
P.O. BOX 346 BOONE, N.C. 28607 (828) 262-1767
P.O. BOX 216 MOREHEAD CITY, N.C. 28557 (252) 726-9481

NORTH CAROLINA PROFESSIONAL SEAL 28281 ENGINEER BRENT B. WOODS
11/4/2010

UTILITY CONSTRUCTION

LICENSE NUMBER: C-0281




NOTE: MUST INSTALL MARKER AS PER NSCE-8 INDICATING UTILITY TYPE AND OWNER AT EDGE OF R/R R/W.

NOTE:

USE P.C. 350 DUCTILE IRON RESTRAINED JOINT PIPE



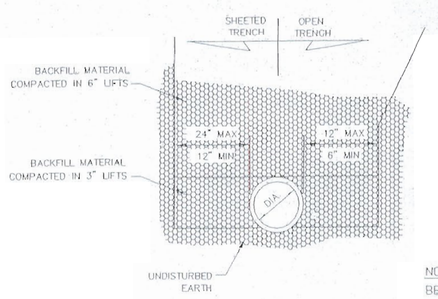

DETAIL A

SECTION AT THRUST BLOCK AND BASE OF 10" D.I. PIPE

NOTE:

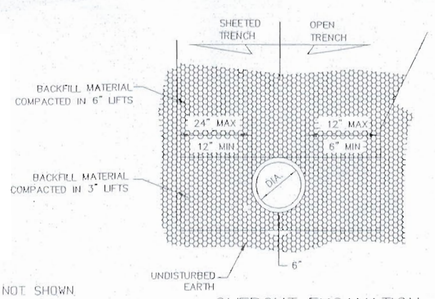
COVER PIPE WITH DEBONDING PLASTIC OR CLOTH BEFORE POURING THE CONCRETE BLOCK!

THE PRIME CONTRACTOR OR HIS SUBCONTRACTOR SHALL PREPARE AND SUBMIT COMPLETE DESIGN COMPUTATIONS, PLANS AND SPECIFICATIONS FOR THE EXCAVATION, SHEETING SHORING AND ALL OTHER WORK WITH THE DESIGN TAKING INTO CONSIDERATION THE PROTECTION OF ADJACENT PROPERTY AND THE STABILITY OF THE ROADWAY SECTION. ALL PLANS, SPECIFICATIONS AND DESIGN COMPUTATIONS FOR PIT SHORING SHALL BE SEALED AND SIGNED BY A LICENSED PROFESSIONAL ENGINEER.

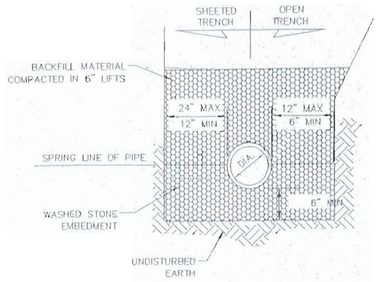



STANDARD EXCAVATION

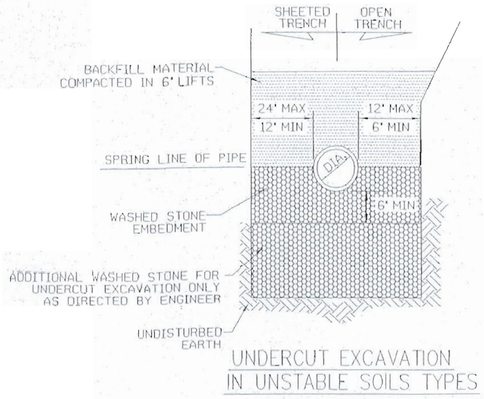
NOTE:
BELL HOLES NOT SHOWN




OVERCUT EXCAVATION




STANDARD EXCAVATION IN WET CONDITIONS




UNDERCUT EXCAVATION IN UNSTABLE SOILS TYPES

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

| NOMINAL PIPE SIZE (INCHES) | TRENCH WIDTH (INCHES) | NOMINAL PIPE SIZE (INCHES) | TRENCH WIDTH (INCHES) |
|---|---|---|---|
| 4 | 28 | 20 | 44 |
| 6 | 30 | 24 | 48 |
| 8 | 32 | 30 | 54 |
| 10 | 34 | 36 | 60 |
| 12 | 36 | 42 | 66 |
| 14 | 38 | 48 | 72 |
| 16 | 40 | 54 | 78 |
| 18 | 42 | | |

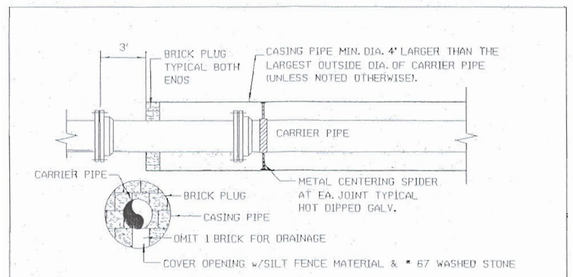
NOTES:

CONSTRUCTION OF TRENCHES SHALL BE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS. CONTRACTOR SHALL BE RESPOSIBLE FOR COMPLIANCE WITH ALL APPLICABLE REGULATIONS.

NO BOULDERS OR STONES IN EXCESS OF 4" IN SIZE SHALL BE USED AS PART OF THE INITIAL BACKFILL.

PIPE BEDDING MATERIAL SHALL BE # 57 WASHED STONE.

TYPICAL TRENCH DETAIL




| PIPE SIZE (IN.) | CASING SIZE (IN.) |
|---|---|
| 10 | 20 |

ENCASEMENT DETAIL

46:12 PM

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| B-5180 | PO-5 |

Municipal Services Engineering Company, P.A.

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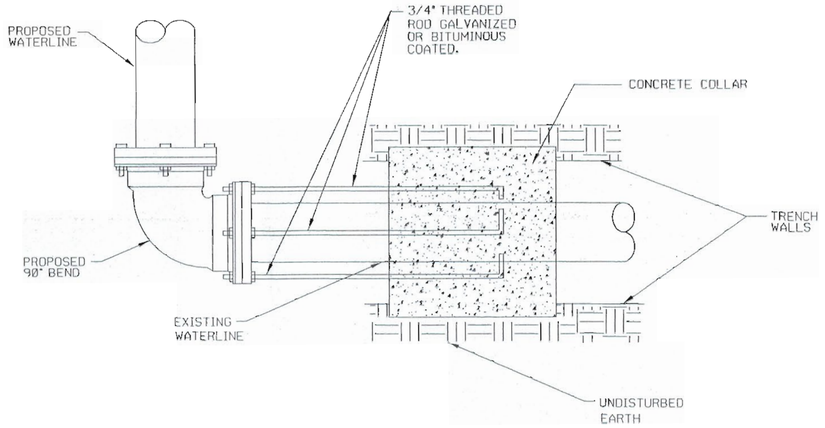
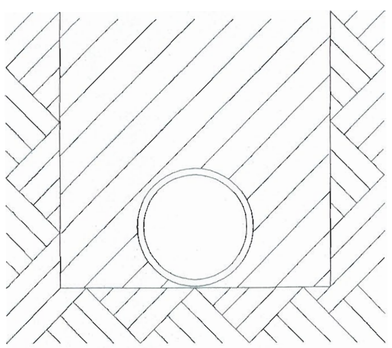
NORTH CAROLINA PROFESSIONAL SEAL 6782 ENGINEER JIMMY D. WOODIE 6/4/2010

UTILITY CONSTRUCTION




DEADMAN INSTALLATION ON EXISTING WATERLINE

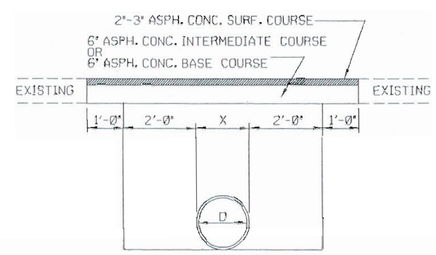
NTS



PIPE BEDDED IN FLAT-BOTTOM TRENCH. TRENCH BACKFILLED IN LOOSE 6 INCH LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL, IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROX. 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

TYPE "2"
(BEDDING FOR D.I. PIPE)

| D | X | W |
|---|---|---|
| 12" | 1'-4" | 7'-4" |
| 15" | 1'-7" | 7'-7" |
| 18" | 1'-10" | 7'-10" |
| 24" | 2'-6" | 8'-6" |
| 30" | 3'-1" | 9'-1" |
| 36" | 3'-8" | 9'-8" |
| 42" | 4'-5" | 10'-5" |
| 48" | 5'-0" | 11'-0" |




PAVEMENT REPAIRS ON ROADS NOT TO BE RESURFACED
(PIPE IS TO BE PLACED UNDER EXISTING PAVEMENT)