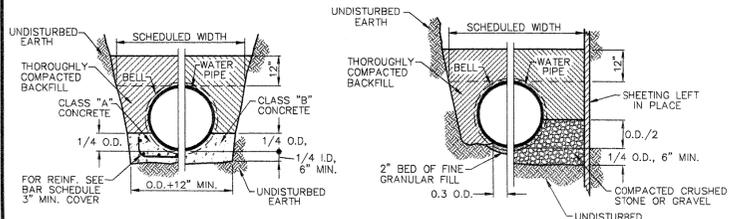


- IF THE ABOVE SCHEDULED TRENCH WIDTHS ARE EXCEEDED, THE CONTRACTOR SHALL USE GREATER STRENGTH PIPE OR INSTALL PIPE IN HIGHER CLASS BEDDING, OR BOTH, AS DIRECTED BY THE ENGINEER, AT NO ADDITIONAL COST TO THE OWNER.
- TRENCH WIDTHS SHALL BE MEASURED AT THE TOP OF THE PIPE.
- ALL TRENCHES AND EXCAVATIONS ARE TO BE GIVEN THE STEEPEST SIDE SLOPE PRACTICABLE.

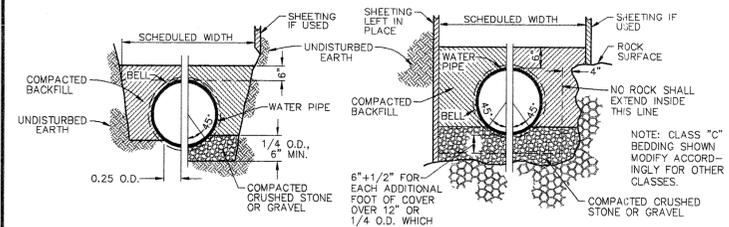


REINF. CONC. CLASS "A" CONC. CRADLE BEDDING NOT TO SCALE

PLAIN CONC. CLASS "A" MOD. FIRST CLASS BEDDING NOT TO SCALE

SHAPED BEDDING CLASS "B" ROCK BELOW TOP OF CRADLE ORDINARY BEDDING NOT TO SCALE

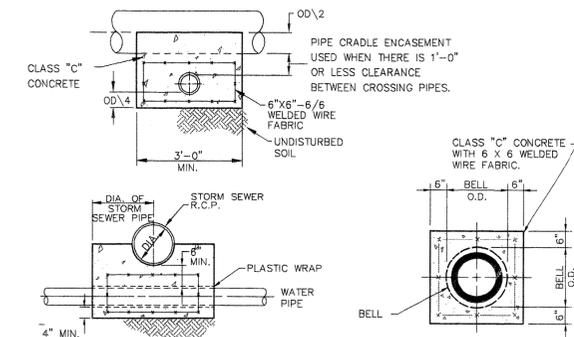
GRANULAR BEDDING CLASS "B" MOD. ROCK ABOVE TOP OF CRADLE ROCK TRENCH NOT TO SCALE



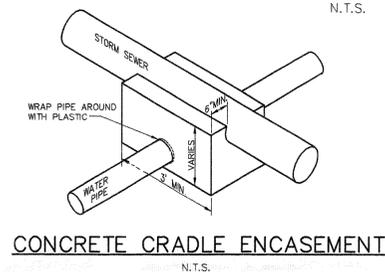
SHAPED BEDDING CLASS "C" ORDINARY BEDDING NOT TO SCALE

GRANULAR BEDDING CLASS "C" MOD. ROCK BELOW TOP OF CRADLE ROCK TRENCH NOT TO SCALE

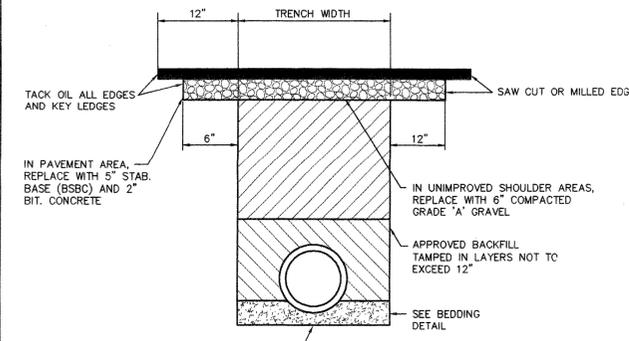
ROCK ABOVE TOP OF CRADLE



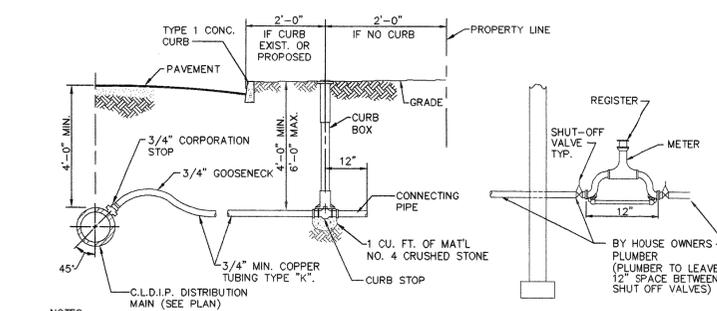
PIPE ENCASED IN CONCRETE N.T.S.



CONCRETE CRADLE ENCASEMENT N.T.S.

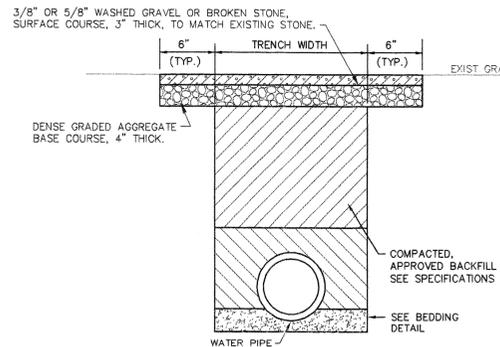


PAVEMENT REPLACEMENT MUNICIPAL ROADS N.T.S.

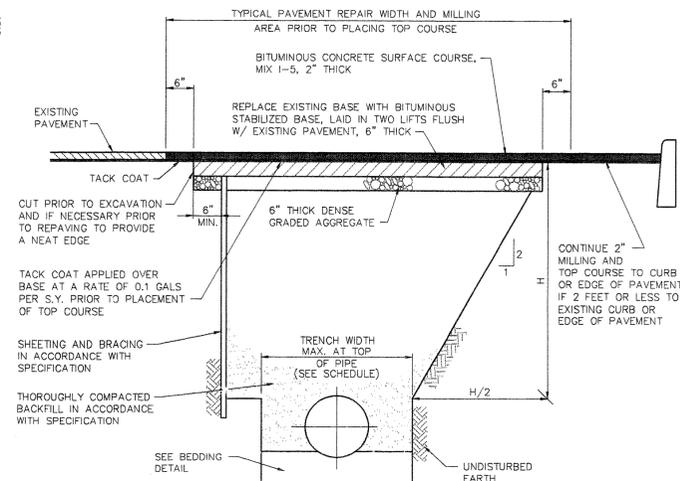


- NOTES:
- SERVICE PIPE TO BE 3/4" MINIMUM COPPER TUBING 160 LB. MUNICIPAL WATER SERVICE TYPE.
 - CORPORATION COCK TO BE 3/4" MUELLER #15000 OR APPROVED EQUAL.
 - CURB STOP TO BE 3/4" TYPE MUELLER MARK II ORISEAL # H15204 OR APPROVED EQUAL.
 - CURB BOXES TO BE MUELLER #G10314 OR APPROVED EQUAL.
 - VIOLATORS WILL BE REQUIRED TO EXPOSE THE WORK FOR INSPECTION BEFORE APPROVAL WILL BE GRANTED.
 - "W" TO BE ETCHED IN CURB FACE IN FRONT OF CURB BOX LOCATION.
 - ALL FITTINGS SHALL BE FLARED END CONNECTION TYPE.

TYPICAL WATER SERVICE HOUSE-CONNECTION INSTALLATION N.T.S.



GRAVEL ROAD RESTORATION DETAIL N.T.S.

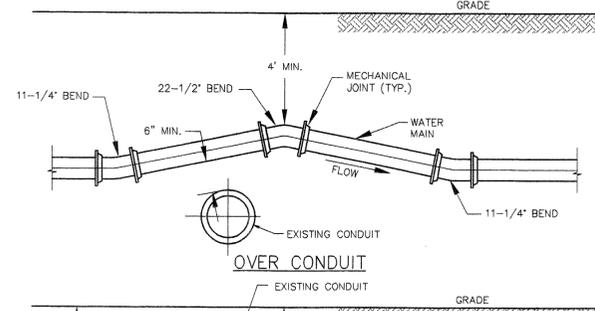


- NOTES:
- ANY SUPERFICIAL SURFACE DAMAGE CAUSED BY THE CONTRACTOR OUTSIDE THE LIMIT SHOWN, SHALL BE PAVED WITH BITUMINOUS CONCRETE SURFACE COURSE MIX 1-5 (MIN. THICKNESS 1.5"). WHEN BASE COURSE OF EXISTING PAVEMENT IS DAMAGED BEYOND LIMIT SHOWN CONTRACTOR SHALL EXCAVATE 6" BEYOND DAMAGED AREA AND REPLACE IT WITH 6" BITUMINOUS STABILIZED BASE COURSE, MIX 1-5, AND 2" BITUMINOUS CONCRETE SURFACE COURSE, MIX 1-2.
 - PAVEMENT REPAIRS MUST BE IN ACCORDANCE WITH APPLICABLE PERMITS.
 - AFTER THE WATER MAIN IS INSTALLED TWO (2) INCHES OF STABILIZED BASE COURSE TO BE REMOVED BY MILLING, AT THE TIME THE FINAL PAVEMENT REPAIRS ARE PERFORMED, AND TO BE REPLACED BY TWO (2) INCHES OF SURFACE COURSE. THE SURFACE COURSE SHALL BE PLACED WHEN DIRECTED BY THE TOWNSHIP ENGINEER.

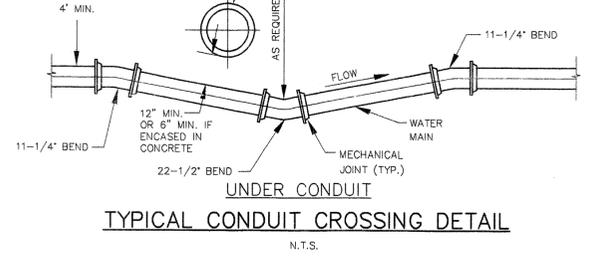
TRENCH AND PAVEMENT REPAIR DETAIL N.T.S.

| TRENCH WIDTH SCHEDULE | |
|---|--|
| DIA. OF PIPE | 8" 10" 12" 14" 15" 16" 18" 20" 21" 24" 27" 30" 33" 36" 42" 48" 54" |
| TRENCH WIDTH | 3'-0" 3'-5" 4'-0" 4'-3" 4'-6" 4'-10" 5'-0" 5'-5" 5'-8" 6'-3" 6'-10" 7'-6" |
| BAR SCHEDULE - REINFORCED CONCRETE CRADLE | |
| LONG BARS | 5 #4 5 #4 8 #4 10 #4 8 #5 7 #5 8 #5 10 #5 11 #7 12 #7 |
| TRANS. BARS | #4 at 12" #4 at 12" #4 at 11" #4 at 9 1/2" #4 at 8" #5 at 10" #5 at 9" #5 at 8 1/2" #5 at 8" #5 at 6 1/2" #5 at 6" |

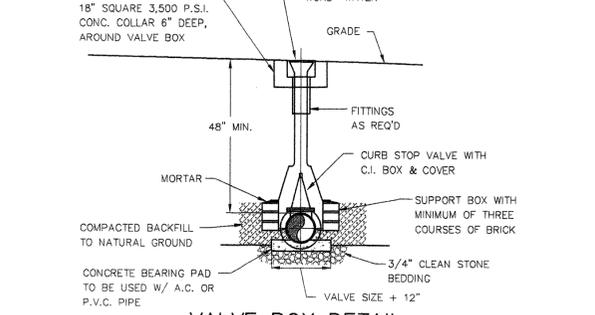
TRENCH NOTES



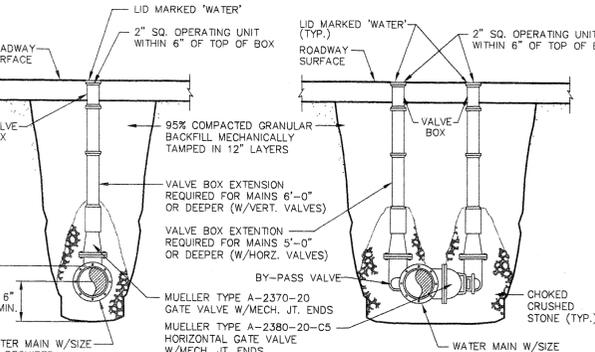
TYPICAL CONDUIT CROSSING DETAIL N.T.S.



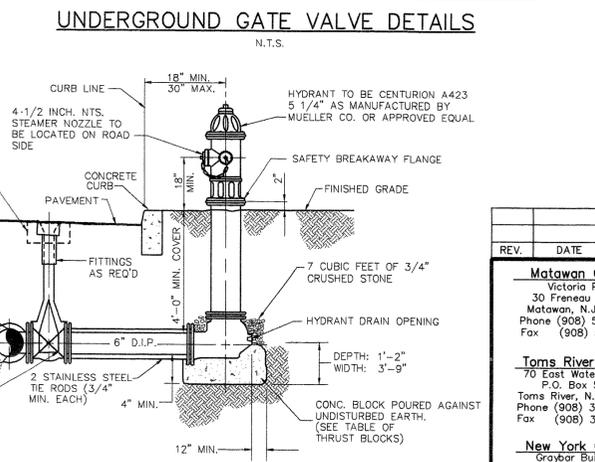
TYPICAL CONDUIT CROSSING DETAIL N.T.S.



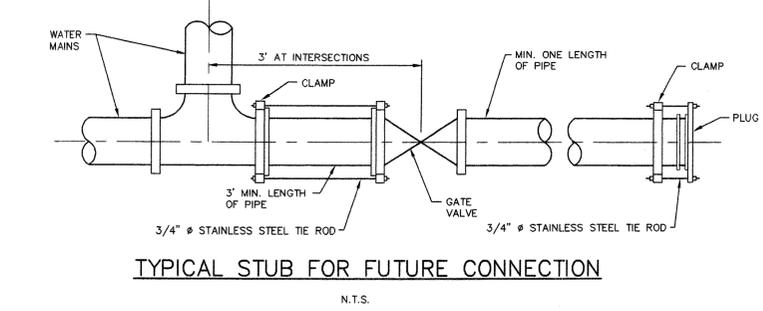
VALVE BOX DETAIL N.T.S.



VALVES 12" DIA. AND UNDER VALVES 14" DIA. AND LARGER N.T.S.



FIRE HYDRANT DETAIL N.T.S.



TYPICAL STUB FOR FUTURE CONNECTION N.T.S.

□ = CONTACT BEARING AREA OF BLOCK WITH EARTH, SQUARE FEET

| DIAMETER (d) OF PIPE | 5"-22 1/2" ELBOW | 23"-45" ELBOW | 46"-90" ELBOW | TEE CONNECTION | 45" WYE | PLUG |
|----------------------|------------------|---------------|---------------|----------------|---------|------|
| 4" | 0.5 | 1.4 | 2.6 | 1.8 | 2.2 | 2.0 |
| 6" | 1.5 | 3.0 | 6.0 | 4.0 | 4.5 | 4.5 |
| 8" | 2.5 | 5.0 | 9.5 | 6.5 | 9.5 | 8.0 |
| 10" | 4.1 | 8.0 | 13.0 | 9.5 | 12.5 | 12.5 |
| 12" | 5.5 | 11.5 | 19.0 | 13.5 | 16.0 | 18.0 |
| 16" | 9.0 | 18.0 | 33.0 | 23.0 | 27.0 | 32.0 |
| 20" | 14.0 | 28.0 | 51.0 | 36.0 | 42.0 | 50.5 |

- NOTES:
- BEARING AREAS ARE BASED ON UNDISTURBED SOIL WITH A BEARING CAPACITY OF 1,000 POUNDS PER SQUARE FOOT; FOR A LESSER SOIL BEARING CAPACITY THESE AREAS SHALL BE INCREASED ACCORDINGLY.
 - ALL CONCRETE THRUST BLOCKS SHALL BE CLASS "B".
 - THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH.
 - NO JOINT SHALL BE COVERED WITH CONCRETE.
 - APPROVED MECHANICAL JOINT RESTRAINTS ARE REQUIRED AT ALL VERTICAL BENDS AND MAY BE USED IN LIEU OF THRUST BLOCKS AT HORIZONTAL BENDS AT THE OPTION OF THE ENGINEER.
 - A BITUMASTIC COATING SHALL BE APPLIED TO ALL BOLTS, NUTS, WASHERS, RODS, THRUST RESTRAINT BOLTS AND ALL UNCOATED HARDWARE.
 - 6 MIL. POLY SHEATHING SHALL BE PLACED BETWEEN FITTINGS AND CONCRETE THRUST BLOCKS.

TABLE OF THRUST BLOCKS

| PIPE SIZE IN INCHES | NUMBER AND SIZE OF RODS REQUIRED AND PIPE LENGTH IN FEET* TO BE RESTRAINED | | | | | | | | |
|---------------------|--|------|-----|---|------|-----|---|------|----|
| | 90° TEE OR DEAD END PLUG | | 45° | | | | | | |
| 4" | No. 2 | 3/4" | 30' | 2 | 3/4" | 10' | 2 | 3/4" | 5' |
| 6" | No. 2 | 3/4" | 40' | 2 | 3/4" | 10' | 2 | 3/4" | 5' |
| 8" | No. 4 | 3/4" | 50' | 2 | 3/4" | 15' | 2 | 3/4" | 5' |
| 10" | No. 4 | 3/4" | 60' | 2 | 3/4" | 20' | 2 | 3/4" | 5' |
| 12" | No. 4 | 7/8" | 70' | 2 | 3/4" | 20' | 2 | 3/4" | 5' |
| 14" | No. 4 | 1" | 80' | 2 | 3/4" | 25' | 2 | 3/4" | 5' |
| 16" | No. 4 | 1" | 80' | 2 | 3/4" | 25' | 2 | 3/4" | 5' |

* LENGTH OF PIPE TO BE RESTRAINED IS FOR EACH SIDE OF BEND

- NOTES:
- USE OF MECHANICAL JOINT RESTRAINTS SHALL PROVIDE A THRUST RESTRAINT SYSTEM EQUIVALENT TO THAT LISTED IN THE TABLE FOR CLAMPS AND RODS.
 - LENGTHS ARE BASED ON THE FOLLOWING CRITERIA - 150 P.S.I. MAXIMUM PRESSURE AND 3'-6" OF COVER. TABLE IS FOR USE WITH C.I. PIPE ONLY. IF TEST CONDITIONS ARE MORE SEVERE OR LARGER PIPES ARE PROPOSED, THEN SPECIAL COMPUTATIONS MUST BE PROVIDED BY LICENSED P.E.

JOINT RESTRAINT SCHEDULE

| LIST OF STANDARD WATER SUPPLY MATERIALS | |
|---|--|
| ANY EXCEPTIONS TO THE MATERIALS LISTED BELOW SHALL BE APPROVED IN WRITING BY THE TOWNSHIP ENGINEER. | |
| HYDRANTS: | MUELLER CENTURION FIRE HYDRANT A423 5 1/4" THREE WAY, 2 HOSE NOZZLES AND 1 PUMPER NOZZLE |
| VALVES: | MUELLER RESILIENT SEAT GATE VALVES, NRS-AWMA C509 |
| CURB STOPS: | MUELLER MARK II ORISEAL #H15204 |
| CORPORATION STOPS: | MUELLER #15000 OR #H15010 OR #H15020 |
| PIPE: | AWMA C150, CEMENT MORTAR LINED, THICKNESS CLASS 52, MIN. |
| TAPPING SLEEVES: | MUELLER #H-615 |
| VALVE BOXES: | MUELLER #A-10364 |
| CURB BOXES: | MUELLER #G-10314 OR H-10336 |

NOTE: ALL UTILITY WORK SHALL BE CONSTRUCTED IN ACCORDANCE WITH CURRENT STANDARDS AND DETAILS OF THE TOWNSHIP OF ALLAMUCHY

| REV. | DATE | DRAWN BY | DESCRIPTION |
|------|------|----------|-------------|
| | | | |

Matawan Office
Victoria Plaza
30 Frenau Avenue
Matawan, N.J. 07747
Phone (908) 583-5900
Fax (908) 583-6619

Toms River Office
70 East Water Street
P.O. Box 5310
Toms River, N.J. 08754
Phone (908) 349-3400
Fax (908) 349-1572

New York Office
Graydon Building
420 Lexington Ave., Suite 233
New York, New York, 10170
Phone (212) 490-2160
Fax (212) 490-2330

**Engineers ■ Planners ■ Surveyors
Landscape Architects**

MASER SOSINSKI & ASSOCIATES, P.A.
Valley Professional Center
59 East Mill Road, Suite 4-201
Long Valley, N.J. 07853 • (908) 676-8400

STANDARD WATER MAIN DETAILS
FOR
TOWNSHIP OF ALLAMUCHY

TOWNSHIP OF ALLAMUCHY COUNTY OF WARREN NEW JERSEY

SCALE: AS NOTED DATE: DEC. 1997 JOB No. ALT-041 SHT. No. 1 of 1

Paul M. Sterbenz
PAUL M. STERBENZ
N.J. P.E. LIC. No. 32549
P.P. LIC. No. 3702

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