

**NOTES:**

1. NO TREES OR FENCES ALLOWED WITHIN THE ROAD R/W OR UTILITY EASEMENT EXCEPT WHERE REQUIRED BY CITY, COUNTY, OR OTHER GOVERNMENT ORDINANCE.
2. ALL TREES SHALL BE CLEARED AND SHOULDERS GRADED WITHIN 6" OF FINAL GRADE (INCLUDING UTILITY EASEMENT) PRIOR TO THE INSTALLATION OF ANY UTILITIES.
3. UTILITY PLACEMENT SHALL REMAIN CONSISTENT FROM BACK OF CURB THROUGHOUT THE PROJECT REGARDLESS OF ANY INCONSISTENCIES IN ROAD CONSTRUCTION. EXAMPLES: STORM SEWERS, CULVERTS, CUL-DE-SACS, ETC...(EXCEPT CATV).
4. AFTER VERIFICATION OF FINAL GRADE, UTILITIES SHOULD BE INSTALLED AS FOLLOWS: WATER, ELECTRIC, GAS, TELEPHONE, AND CABLE TELEVISION.
5. TOTAL CLEARED AND GRADED WIDTH TO BE 60' MINIMUM.
6. PROPERTY CORNER REFERENCE SHALL BE PLACED ON CURB AND GUTTER AND ON 10' OFFSET STAKE.
7. UTILITY EASEMENT SHALL BE SHOWN AND RECORDED WITH THE FINAL PLAT.
8. WATER METER BOXES SHALL BE LOCATED 6' BACK OF R/W. SEWER SERVICES SHALL BE STUBBED OUT 10' BACK OF R/W.
9. WATER LATERALS SHALL BE MARKED WITH A BLUE "W" ON CURB AS SOON AS POSSIBLE AFTER CURB HAS BEEN INSTALLED. SEWER LATERALS SHALL BE MARKED WITH A GREEN "X" ON CURB.
10. DEPTH REQUIREMENTS INDICATE MINIMUM DEPTH AT TIME OF INSTALLATION BELOW CURB LINE.
11. THIS STANDARD MAY BE COMBINED WITH JOINT USE STANDARD.
12. CATV PEDESTALS, TELEPHONE PEDESTALS, TRANSFORMERS, AND WATER METERS SHALL BE PLACED IN 5' UTILITY EASEMENT.
13. UTILITIES SHALL BE LOCATED WITHIN PLUS/MINUS 6" OF PLAN LOCATION.



**HENRY COUNTY WATER & SEWERAGE AUTHORITY**

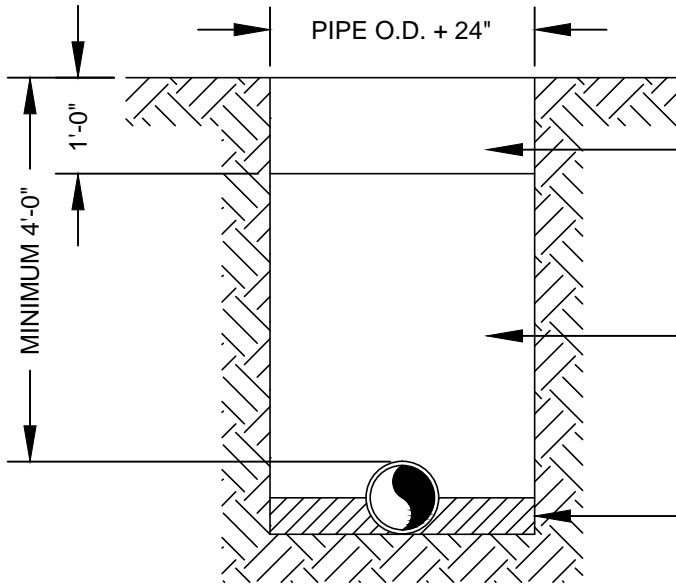
**RESIDENTIAL UTILITY PLACEMENT  
FOR ROAD WITH 50' RIGHT-OF-WAY**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W01**



SELECT EARTH BACKFILL PLACED IN 6" LIFTS AND COMPACTED TO 100 PERCENT STANDARD PROCTOR, ASTM D698.

SELECT EARTH BACKFILL PLACED IN 6" LIFTS AND COMPACTED TO MINIMUM 90 PERCENT STANDARD PROCTOR, ASTM D698.

FLAT BOTTOM TRENCH (I.E. UNDISTURBED EARTH) WITH SELECT EARTH BACKFILL LIGHTLY CONSOLIDATED TO CENTERLINE OF PIPE.

**NOTES:**

1. DUCTILE IRON PIPE FOR WATER MAINS SHALL BE BEDDED IN ACCORDANCE WITH ANSI/AWWA C150/A21.50 AND ANSI/AWWA C151/A21.51, TYPE 2 LAYING CONDITION.
2. MINIMUM DEPTH OF COVER SHALL BE 4'-0" UNLESS OTHERWISE APPROVED BY HCWSA.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

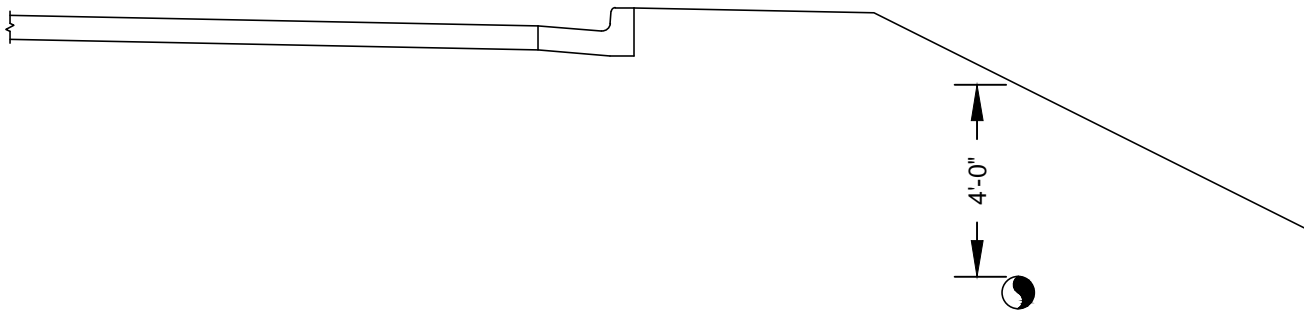
**WATER LINE  
TRENCH DETAIL**

REVISED: 01/01/2012

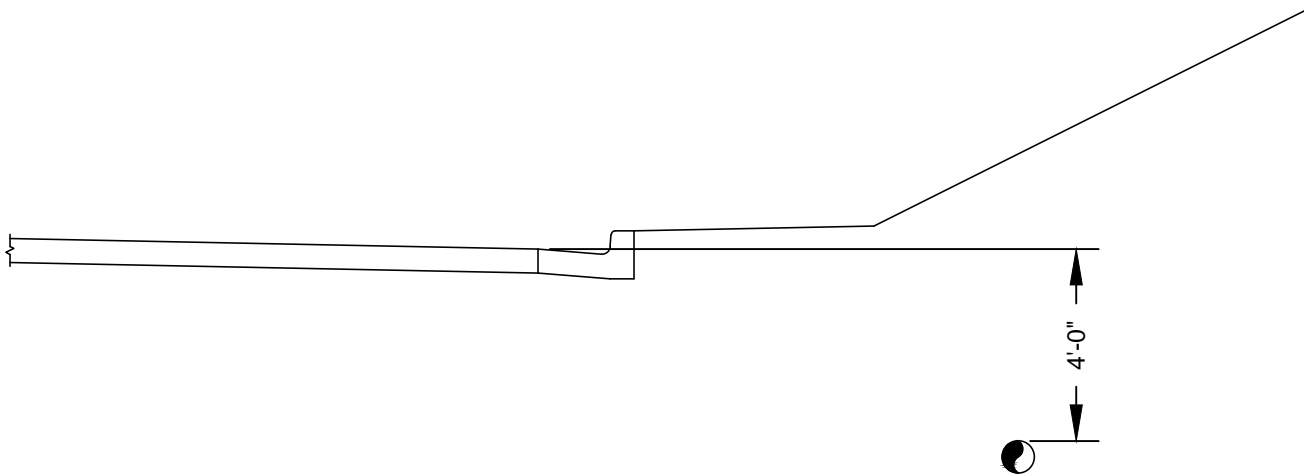
SCALE: N.T.S.

DETAIL NO.

**W02**



PIPE DEPTH WITH DECLINING GRADE  
AT EDGE OF PAVEMENT



PIPE DEPTH WITH INCREASING GRADE  
AT EDGE OF PAVEMENT

NOTES:

1. WATER MAINS SHALL HAVE A MINIMUM DEPTH OF COVER OF 48-INCHES UNLESS OTHERWISE APPROVED BY HCWSA.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

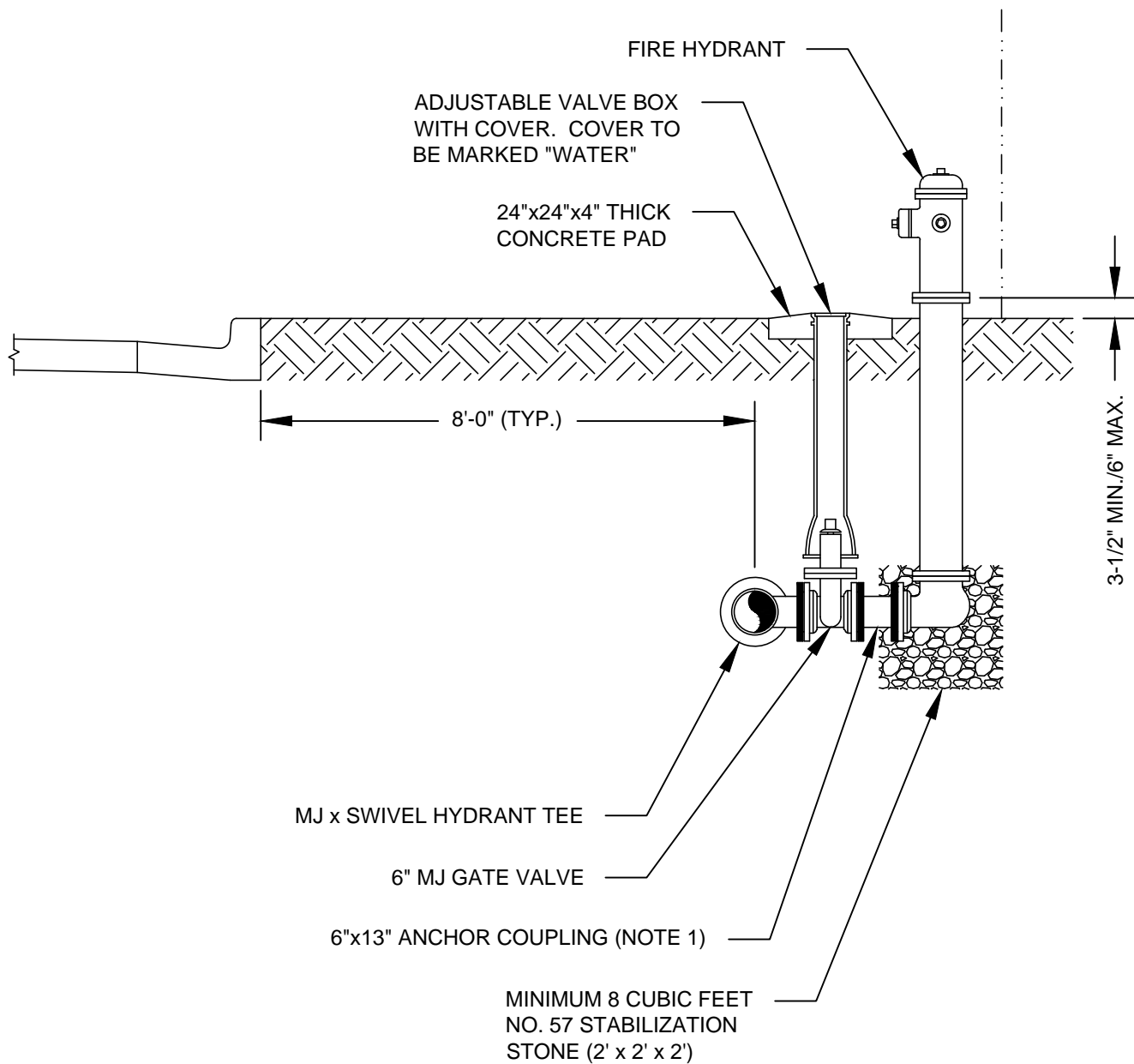
**PIPE DEPTH AT  
EDGE OF PAVEMENT**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W03**



**NOTES:**

1. LONGER ANCHOR COUPLINGS MAY BE USED WHEN REQUIRED. IF ANCHOR COUPLINGS ARE NOT USED, VALVE SHALL BE RODDED TO THE TEE AND HYDRANT SHALL BE RODDED TO THE VALVE USING A MINIMUM OF TWO (2) 3/4" STAINLESS STEEL THREADED RODS ON EACH CONNECTION.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

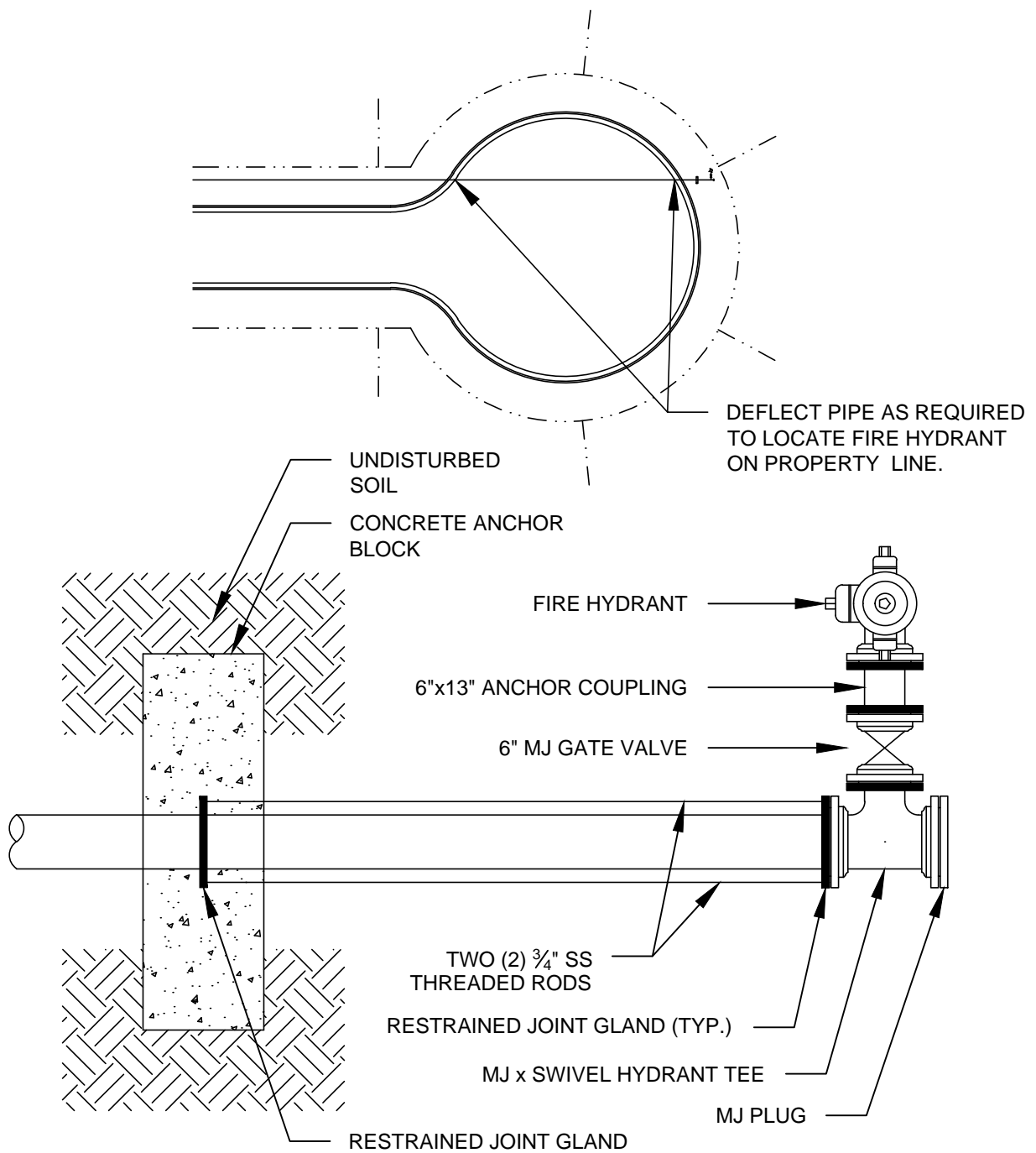
**TYPICAL FIRE HYDRANT ASSEMBLY**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W04**



**NOTES:**

1. ALL FITTINGS AND VALVES AND THE FIRST 4 JOINTS OF PIPE FROM THE FIRE HYDRANT SHALL BE RESTRAINED.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

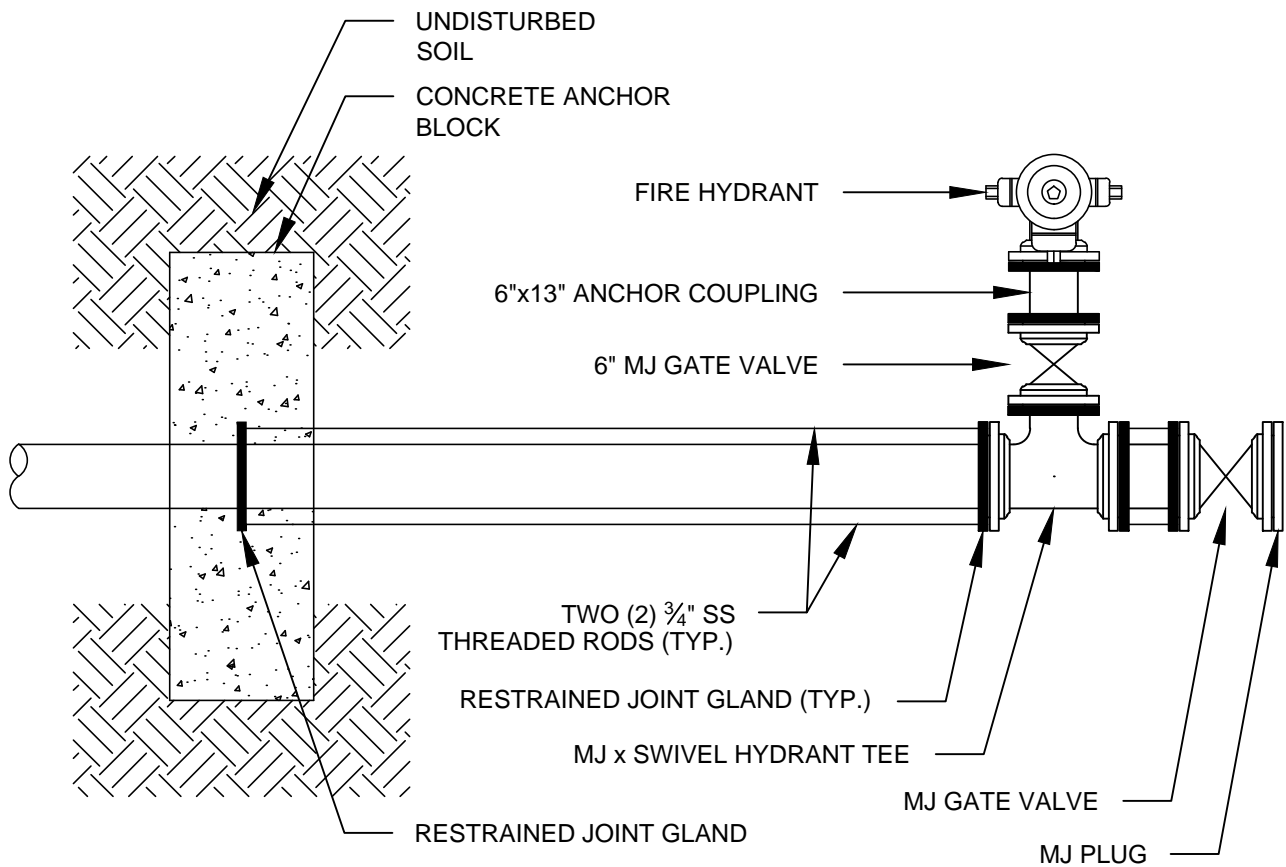
**FIRE HYDRANT IN  
CUL-DE-SAC**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W05**



NOTES:

1. ALL FITTINGS AND VALVES AND THE FIRST 4 JOINTS OF PIPE FROM THE FIRE HYDRANT SHALL BE RESTRAINED.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

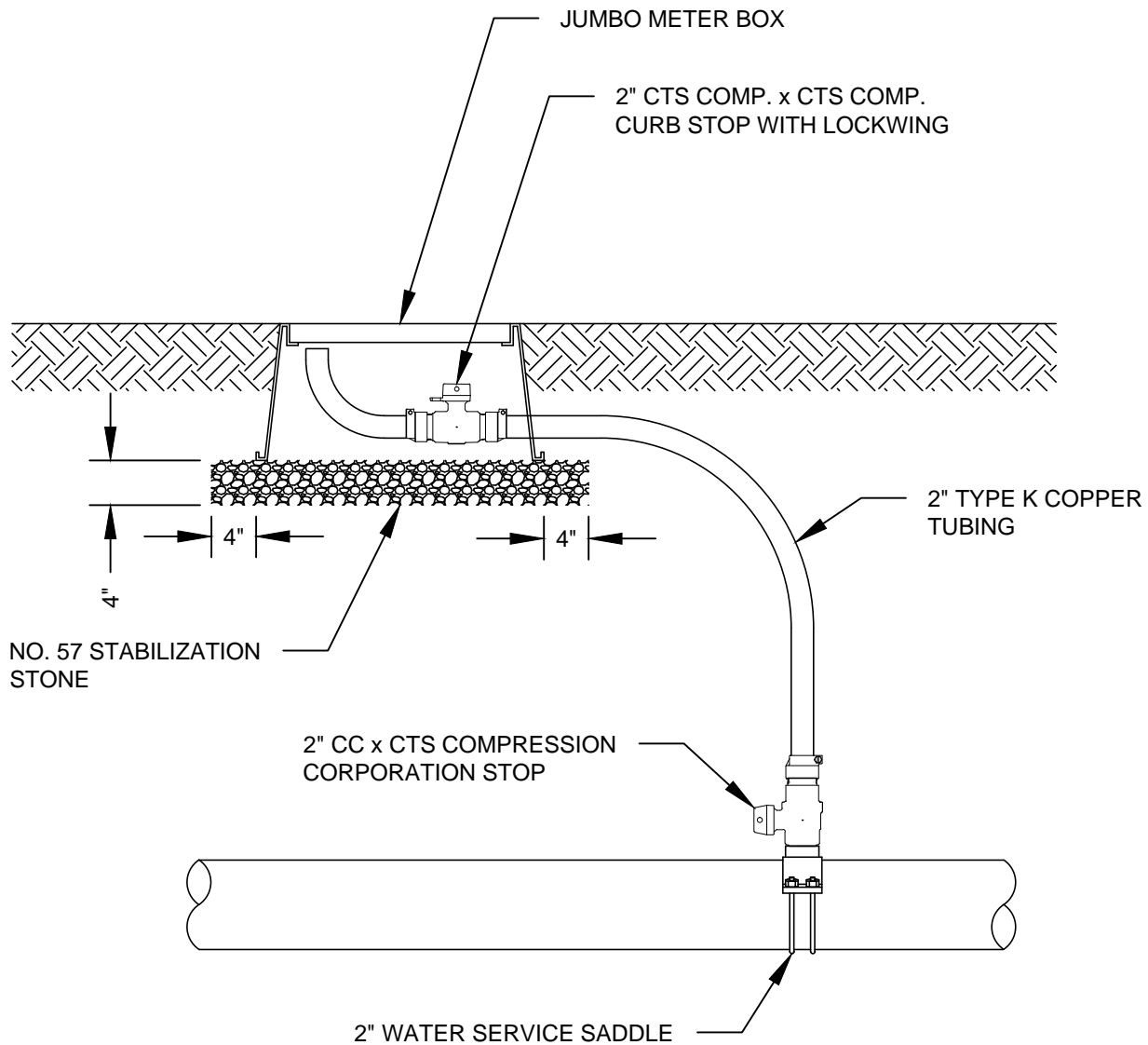
**FIRE HYDRANT AT  
DEAD END**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W06**



HENRY COUNTY WATER & SEWERAGE AUTHORITY



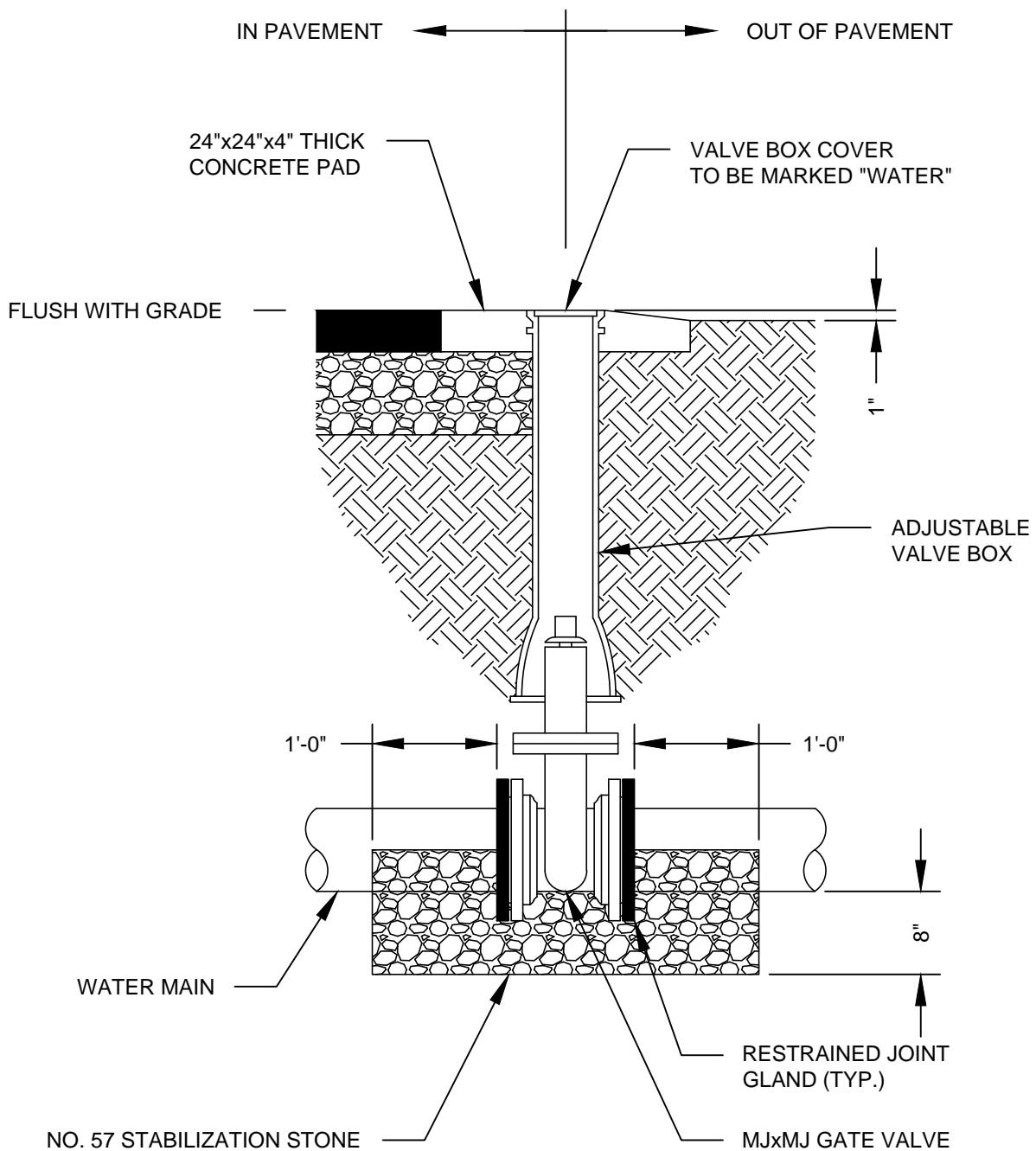
**WATER LINE BLOW-OFF**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W07**



HENRY COUNTY WATER & SEWERAGE AUTHORITY

# WATER LINE ISOLATION VALVE

REVISED: 01/01/2012

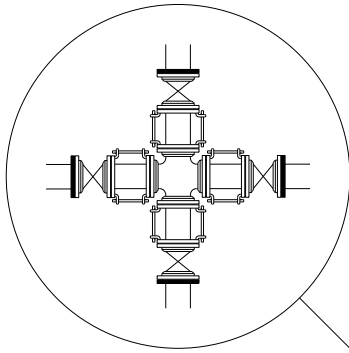
SCALE: N.T.S.

DETAIL NO.

**W08**



**TYPICAL VALVE CONFIGURATION**



50' RIGHT-OF-WAY (TYP.)

5'-0" (TYP.)

FIRE HYDRANT (TYP.)

WATER LINE  
8'-0" BEHIND BACK  
OF CURB (TYP.)

**NOTES:**

1. WHERE EXISTING STRUCTURES EXIST AND INTERFERE WITH THE ROUTE OF THE WATER LINE, THE WATER LINE SHALL BE ROUTED AROUND THE STRUCTURE BY PIPE JOINT DEFLECTION OR, WHERE NECESSARY, WITH MAXIMUM 45° BENDS.
2. VALVES AT CROSS CONNECTIONS SHALL BE RODDED TO THE FITTING USING A MINIMUM OF TWO 3/4" STAINLESS STEEL THREADED RODS. THE MJ FLANGE ON THE OPPOSITE SIDE OF THE FITTING SHALL BE RESTRAINED USING A RESTRAINED JOINT GLAND.



**HENRY COUNTY WATER & SEWERAGE AUTHORITY**

**WATER LINE  
INTERSECTION**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W09**

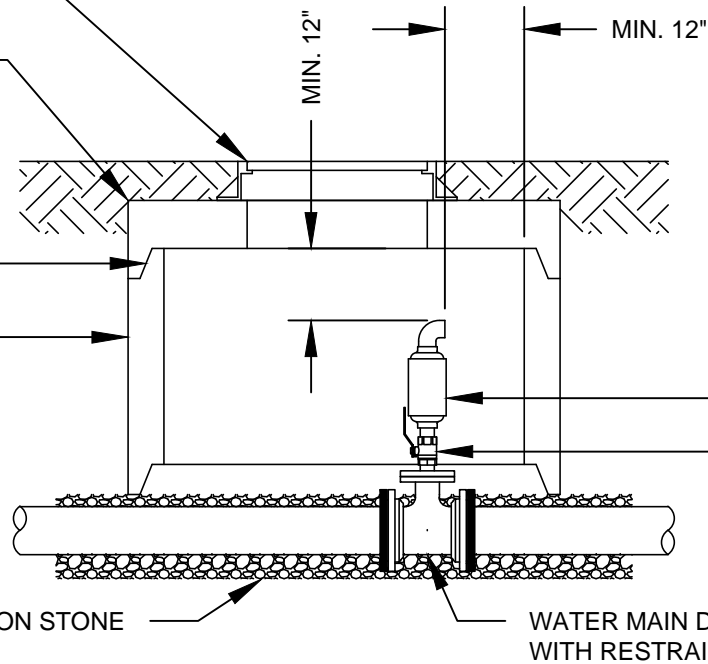
30" MANHOLE FRAME  
AND VENTED COVER

60" HS-20 LOAD RATED  
PRECAST FLAT TOP

PREFORMED BUTYL  
JOINT SEAL

60" PRECAST  
MANHOLE SECTION

#57 STABILIZATION STONE



HENRY COUNTY WATER & SEWERAGE AUTHORITY



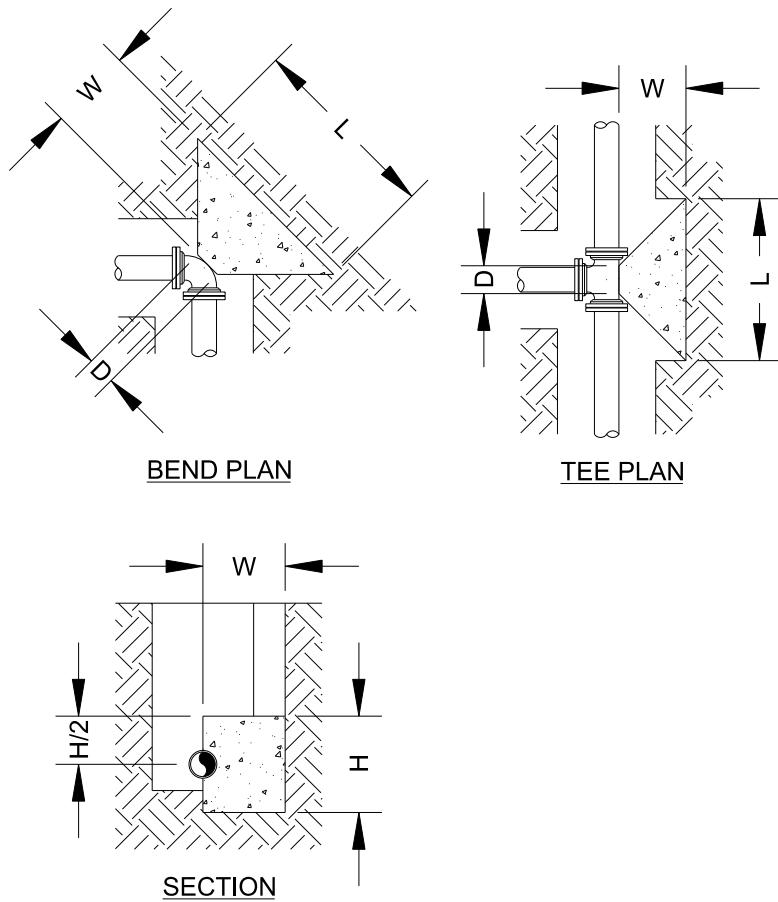
# WATER MAIN COMBINATION AIR/VACUUM VALVE

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

W10



TEES						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD <sup>3</sup> )	THRUST (LBF)
4	0'-6"	2'-4"	1'-2"	0'-11"	0.06	4,072
6	0'-8"	3'-4"	1'-8"	1'-4"	0.16	8,413
8	0'-9"	4'-5"	2'-3"	1'-10"	0.39	14,473
10	0'-11"	5'-5"	2'-9"	2'-3"	0.73	21,773
12	1'-1"	6'-5"	3'-3"	2'-8"	1.20	30,791
90° BENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD <sup>3</sup> )	THRUST (LBF)
4	0'-5"	2'-9"	1'-5"	1'-2"	0.10	5,758
6	0'-8"	4'-0"	2'-0"	1'-8"	0.29	11,898
8	0'-9"	5'-3"	2'-8"	2'-3"	0.67	20,468
10	0'-11"	6'-5"	3'-3"	2'-9"	1.21	30,792
12	1'-1"	8'-7"	3'-10"	3'-3"	2.00	43,545
45° BENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD <sup>3</sup> )	THRUST (LBF)
4	0'-4"	2'-0"	1'-0"	0'-10"	0.04	3,116
6	0'-7"	2'-11"	1'-6"	1'-2"	0.11	6,439
8	0'-8"	3'-10"	1'-11"	1'-7"	0.25	11,077
10	0'-11"	4'-9"	2'-5"	1'-11"	0.49	16,664
12	1'-1"	6'-7"	2'-10"	2'-3"	0.79	23,566
22½° BENDS						
PIPE DIA. (IN)	D DIM.	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD <sup>3</sup> )	THRUST (LBF)
4	0'-5"	1'-5"	0'-9"	0'-6"	0.01	1,589
6	0'-7"	2'-1"	1'-1"	0'-9"	0.04	3,283
8	0'-9"	2'-9"	1'-5"	1'-0"	0.09	5,647
10	0'-10"	3'-4"	1'-8"	1'-3"	0.16	8,495
12	1'-0"	4'-0"	2'-0"	1'-6"	0.28	12,014

**NOTES:**

- THRUST BLOCK DIMENSIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA.

WORKING PRESSURE = 150 PSI  
 SOIL BEARING CAPACITY = 1,500 PSF  
 SAFETY FACTOR = 1.5

THESE ARE THE MINIMUM DESIGN CRITERIA. IF ACTUAL WORKING PRESSURE IS GREATER THAN 150 PSI OR IF ACTUAL SOIL BEARING CAPACITY IS LESS THAN 1,500 PSF, DIMENSIONS SHALL BE RECALCULATED.

- THRUST BLOCK CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
- THRUST BLOCK SHALL BEAR AGAINST UNDISTURBED SOIL.
- A MINIMUM 10 MIL PLASTIC SHEET SHALL BE PLACED BETWEEN CONCRETE AND PIPE.
- ALL BOLTS SHALL REMAIN ACCESSIBLE. DO NOT COVER WITH CONCRETE.



**HENRY COUNTY WATER & SEWERAGE AUTHORITY**

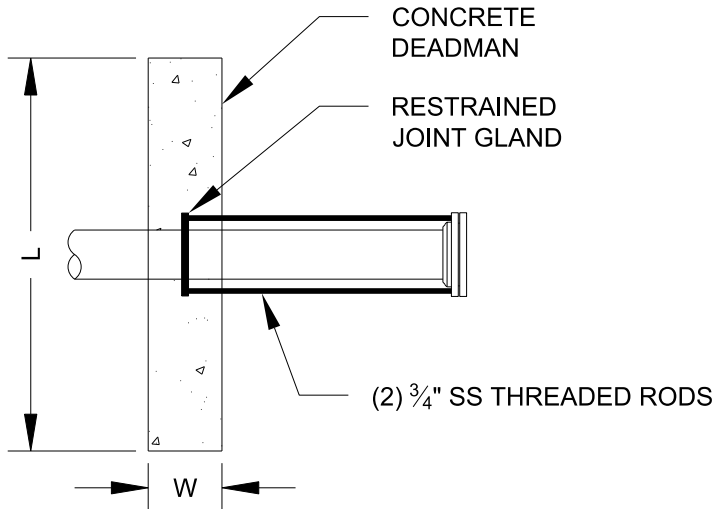
**THRUST BLOCK**

REVISED: 01/01/2012

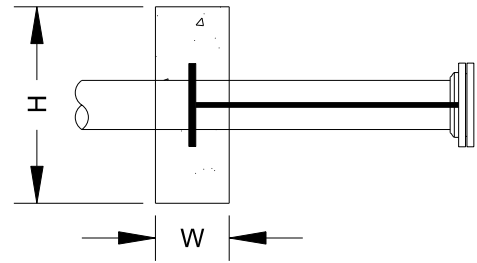
SCALE: N.T.S.

DETAIL NO.

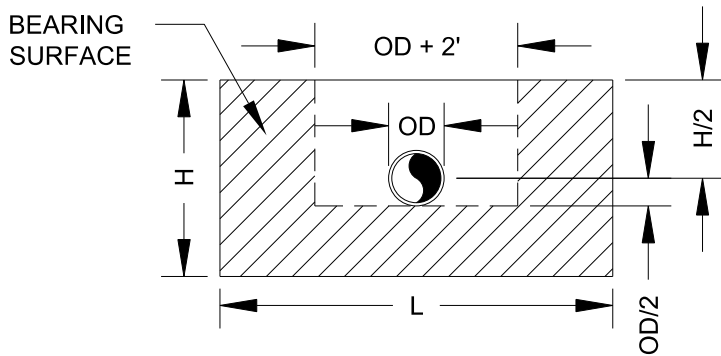
**W11**



PLAN



SECTION



DEADMAN DIMENSION					
PIPE DIA. (IN)	L DIM.	H DIM.	W DIM.	CONC. VOLUME (YD <sup>3</sup> )	THRUST (LBF)
4	3'-0"	1'-7"	1'-0"	0.18	4,072
6	4'-3"	2'-1"	1'-0"	0.33	8,413
8	5'-4"	2'-8"	1'-0"	0.53	14,473
10	6'-0"	3'-6"	1'-0"	0.78	21,773
12	7'-1"	4'-0"	1'-0"	1.05	30,791

**NOTES:**

- DEADMAN DIMENSIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA.

WORKING PRESSURE = 150 PSI  
 SOIL BEARING CAPACITY = 1,500 PSF  
 SAFETY FACTOR = 1.5

THESE ARE THE MINIMUM DESIGN CRITERIA. IF ACTUAL WORKING PRESSURE IS GREATER THAN 150 PSI OR IF ACTUAL SOIL BEARING CAPACITY IS LESS THAN 1,500 PSF, DIMENSIONS SHALL BE RECALCULATED.

- DEADMAN CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
- DEADMAN SHALL BEAR AGAINST UNDISTURBED SOIL.
- A MINIMUM 10 MIL PLASTIC SHEET SHALL BE PLACED BETWEEN CONCRETE AND PIPE.
- ALL BOLTS SHALL REMAIN ACCESSIBLE. DO NOT COVER WITH CONCRETE.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

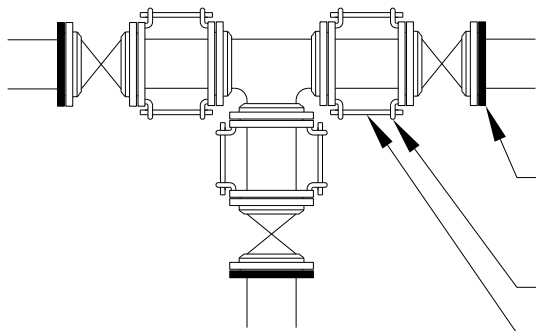
CONCRETE DEADMAN

REVISED: 01/01/2012

SCALE: N.T.S.

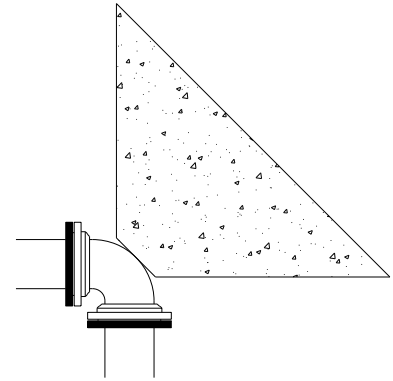
DETAIL NO.

W12

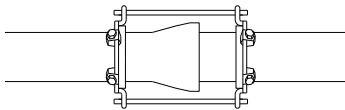


FITTING WITH TIE-RODS AND RESTRAINED JOINT GLANDS

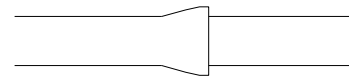
RESTRAINED JOINT GLAND (TYP.)  
 90° EYE-BOLT (TYP.)  
 3/4" THREADED ROD (TYP.)



FITTING WITH RESTRAINED JOINT GLAND AND THRUST BLOCK



TIE-RODS FROM RESTRAINED JOINT GLAND TO RESTRAINED JOINT GLAND



PUSH-ON JOINT WITH RESTRAINED JOINT GASKET

PIPE DIA. (IN)	ROD SIZE (IN)	# OF RODS
6	3/4"	2
8	3/4"	4
10	3/4"	4
12	3/4"	4
14	3/4"	4
16	3/4"	6

TIE-ROD CHART

NOTES:

1. RESTRAINED JOINT LENGTHS SHALL BE CALCULATED BY THE DESIGN ENGINEER. CALCULATIONS SHALL BE SUBMITTED TO HCWSA.
2. THREADED ROD SHALL BE MINIMUM TYPE 304 STAINLESS STEEL AND SHALL HAVE A MINIMUM YIELD STRENGTH OF 50,000 PSI.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

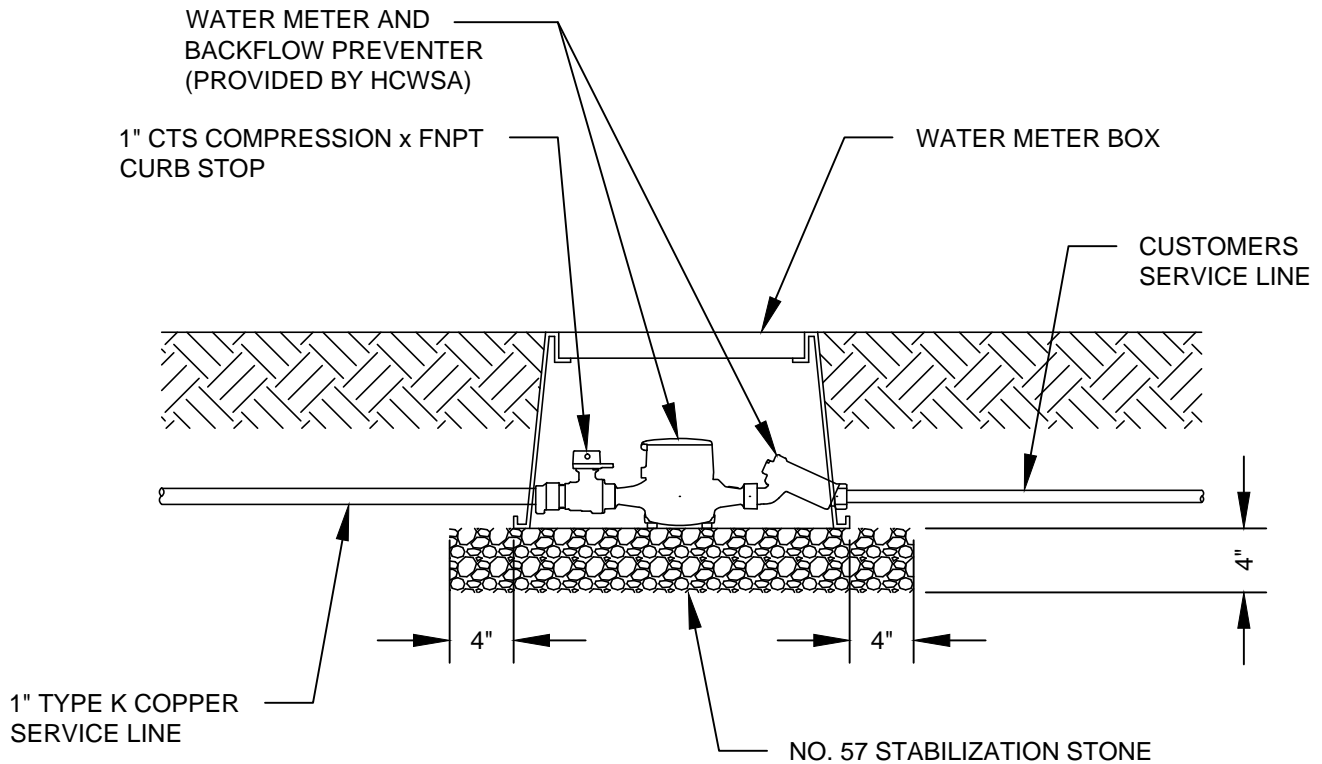
THRUST RESTRAINT

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W13**



**NOTES:**

1. HCWSA WILL PROVIDE RESIDENTIAL WATER METERS AND BACKFLOW PREVENTERS. ALL OTHER APPURTENANCES SHALL BE PROVIDED BY THE DEVELOPER AND/OR CONTRACTOR.
2. WATER METER BOX LIDS SHALL HAVE 2-INCH DIAMETER HOLE OFFSET FOR TOUCH READ INSTALLATION.
3. EACH SERVICE SHALL BE MARKED WITH A "W" SAW CUT INTO TOP OF CURB AND PAINTED BLUE.
4. INSERT A 4-FOOT LONG PIECE OF 1" PVC PIPE THROUGH THE HOLE IN THE METER BOX LID TO MARK THE METER LOCATION. PAINT PVC PIPE BLUE.
5. NO PERMANENT STRUCTURES SHALL BE LOCATED WITHIN 5 FEET OF WATER SERVICE.
6. TYPICAL INSTALLATION MAY BE MODIFIED AT DISCRETION OF HCWSA.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

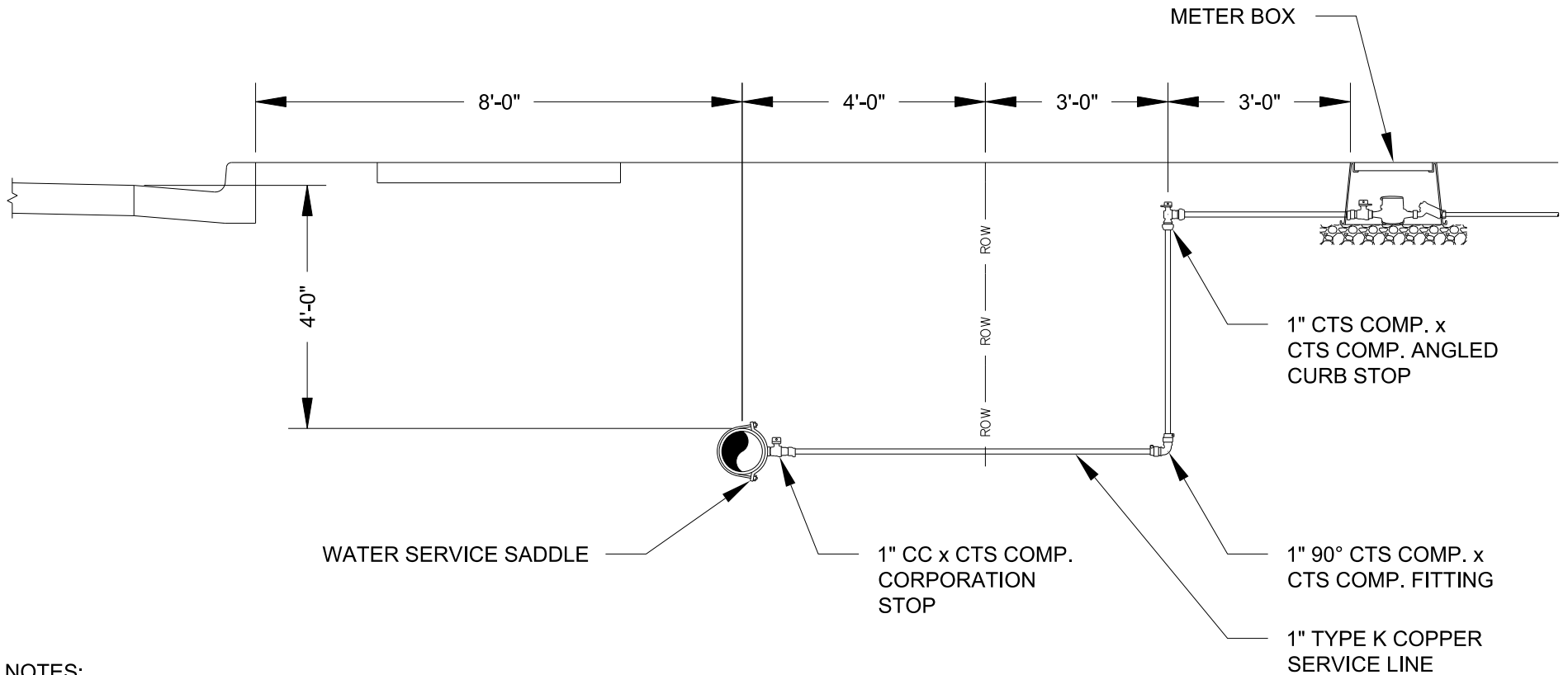
**RESIDENTIAL WATER  
METER DETAIL**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W14**



**NOTES:**

1. EACH SERVICE SHALL BE MARKED WITH A "W" SAW CUT INTO TOP OF CURB AND PAINTED BLUE.
2. INSERT A 4-FOOT LONG PIECE OF 1" PVC PIPE THROUGH THE HOLE IN THE METER BOX LID TO MARK THE METER LOCATION. PAINT PVC PIPE BLUE.
3. NO PERMANENT STRUCTURES SHALL BE ALLOWED WITHIN 5 FEET OF WATER SERVICE.
4. TYPICAL INSTALLATION MAY BE MODIFIED AT THE DISCRETION OF HCWSA.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

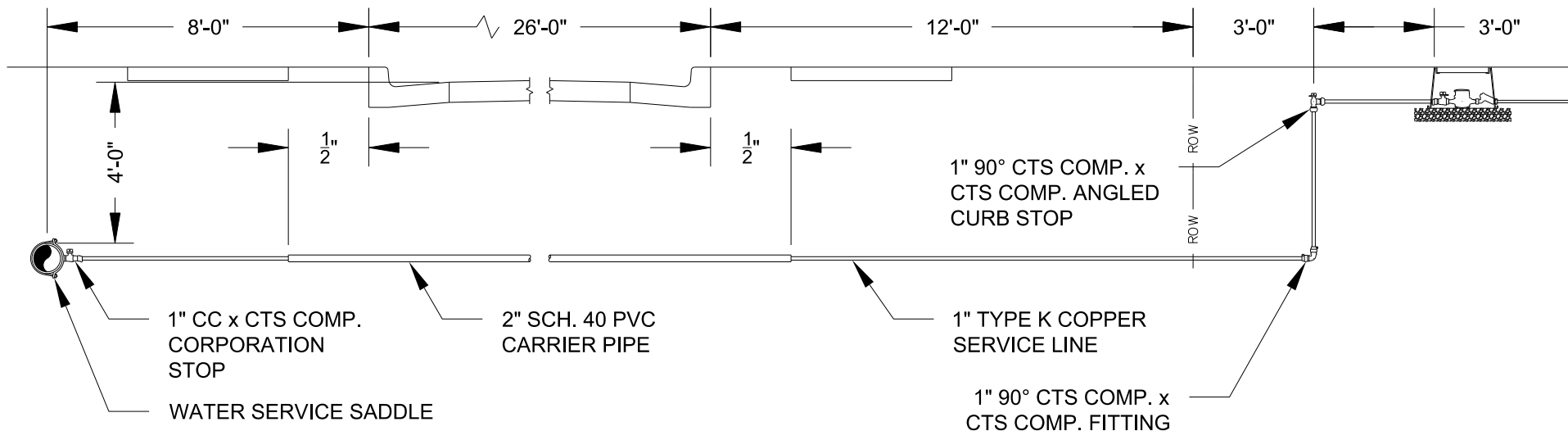
# SHORT SIDE RESIDENTIAL SERVICE DETAIL

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

## W15



**NOTES:**

1. EACH SERVICE SHALL BE MARKED WITH A "W" SAW CUT INTO TOP OF CURB AND PAINTED BLUE.
2. INSERT A 4-FOOT LONG PIECE OF 1" PVC PIPE THROUGH THE HOLE IN THE METER BOX LID TO MARK THE METER LOCATION. PAINT PVC PIPE BLUE.
3. NO PERMANENT STRUCTURE SHALL BE ALLOWED WITHIN 5 FEET OF WATER SERVICE.
4. TYPICAL INSTALLATION MAY BE MODIFIED AT THE DISCRETION OF HCWSA.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

# LONG SIDE RESIDENTIAL SERVICE DETAIL

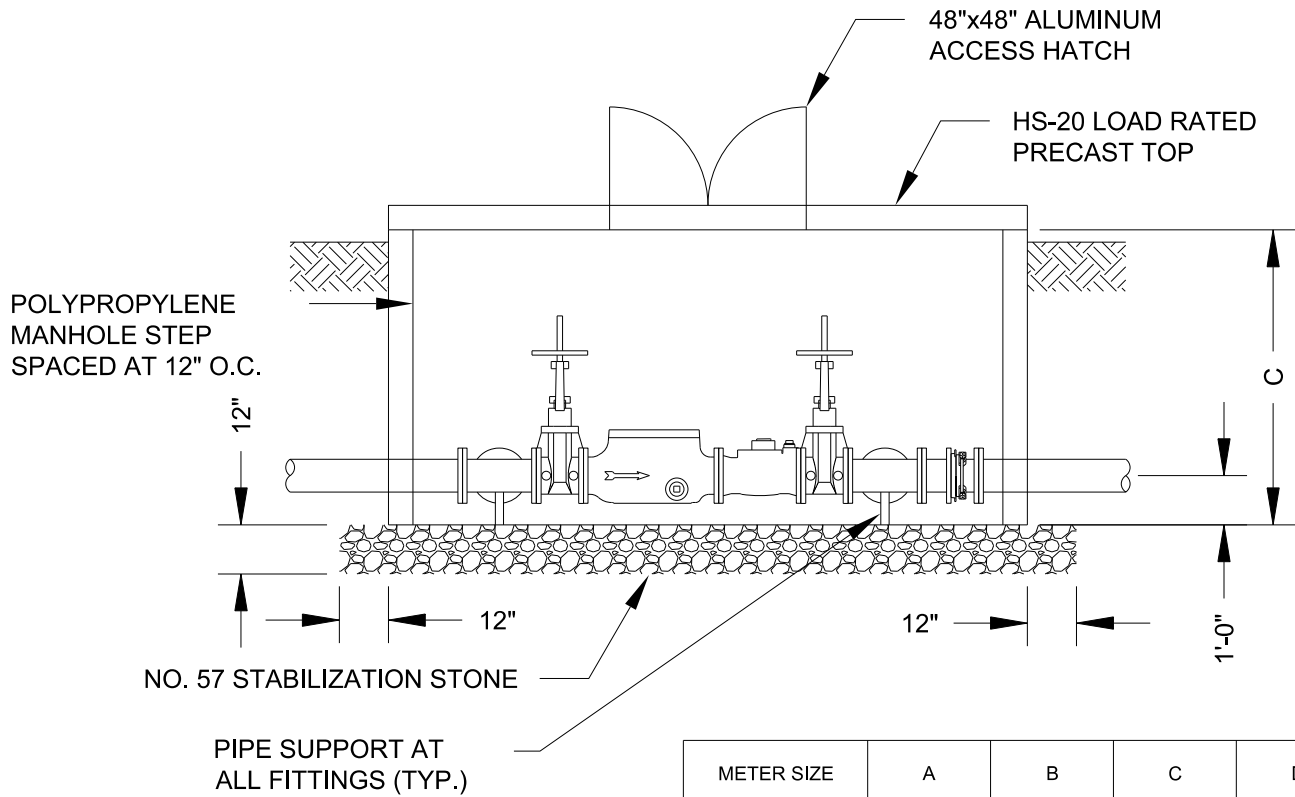
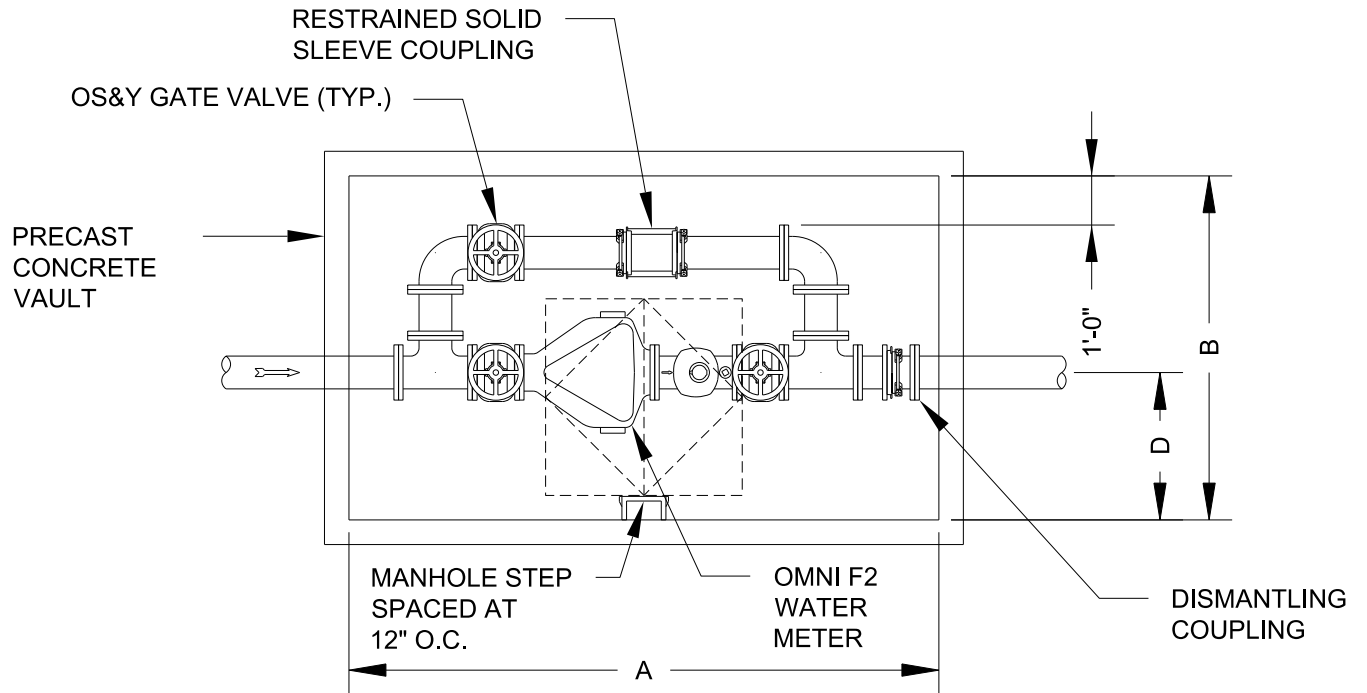
REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

## W16





METER SIZE	A	B	C	D
4"	12'-0"	6'-0"	6'-0"	2'-0"
6"	12'-0"	6'-0"	6'-0"	2'-0"
8"	12'-0"	7'-0"	6'-0"	3'-0"



HENRY COUNTY WATER & SEWERAGE AUTHORITY

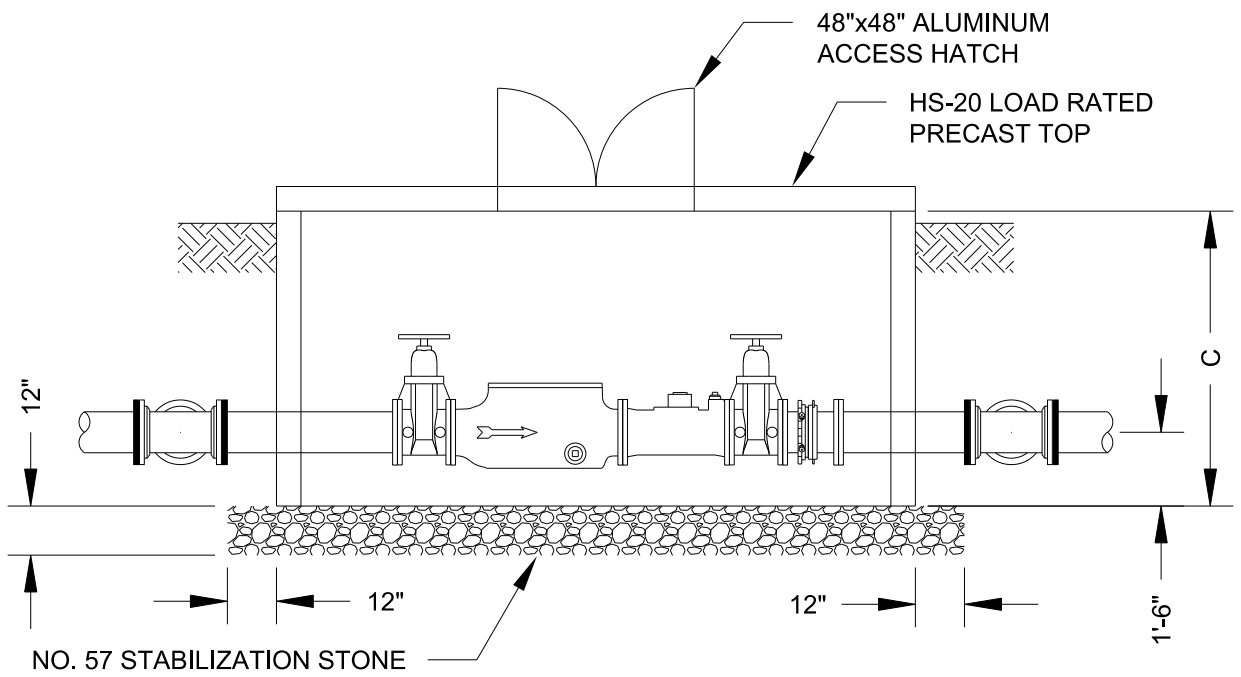
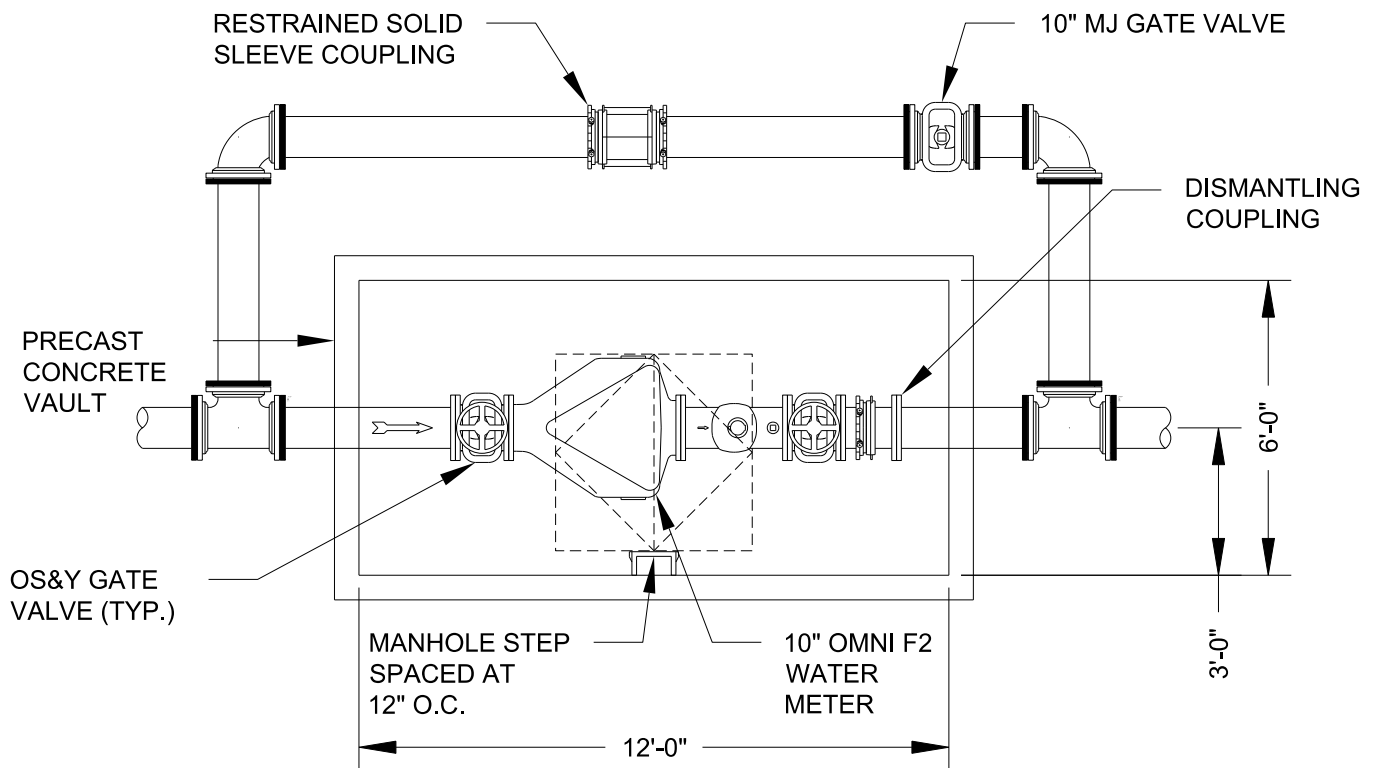
# 4", 6", AND 8" OMNI F2 FIRELINE METER

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

## W17



**NOTES:**

1. ALL BURIED VALVES AND FITTINGS SHALL HAVE MJ FLANGES AND SHALL BE RESTRAINED WITH RESTRAINED JOINT GLANDS.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

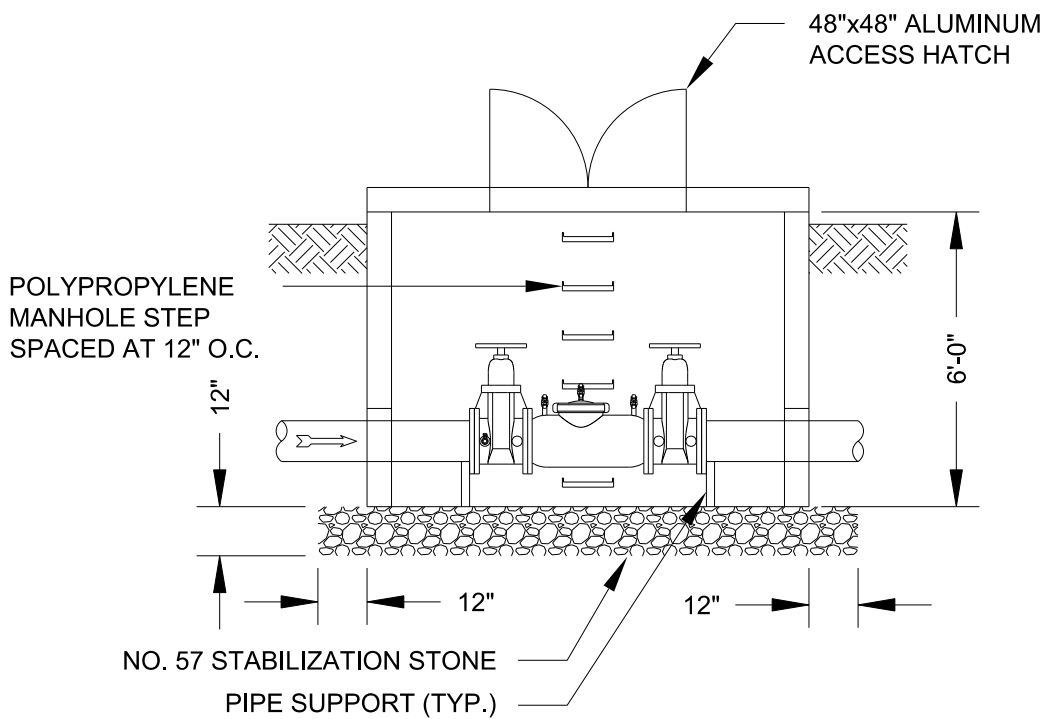
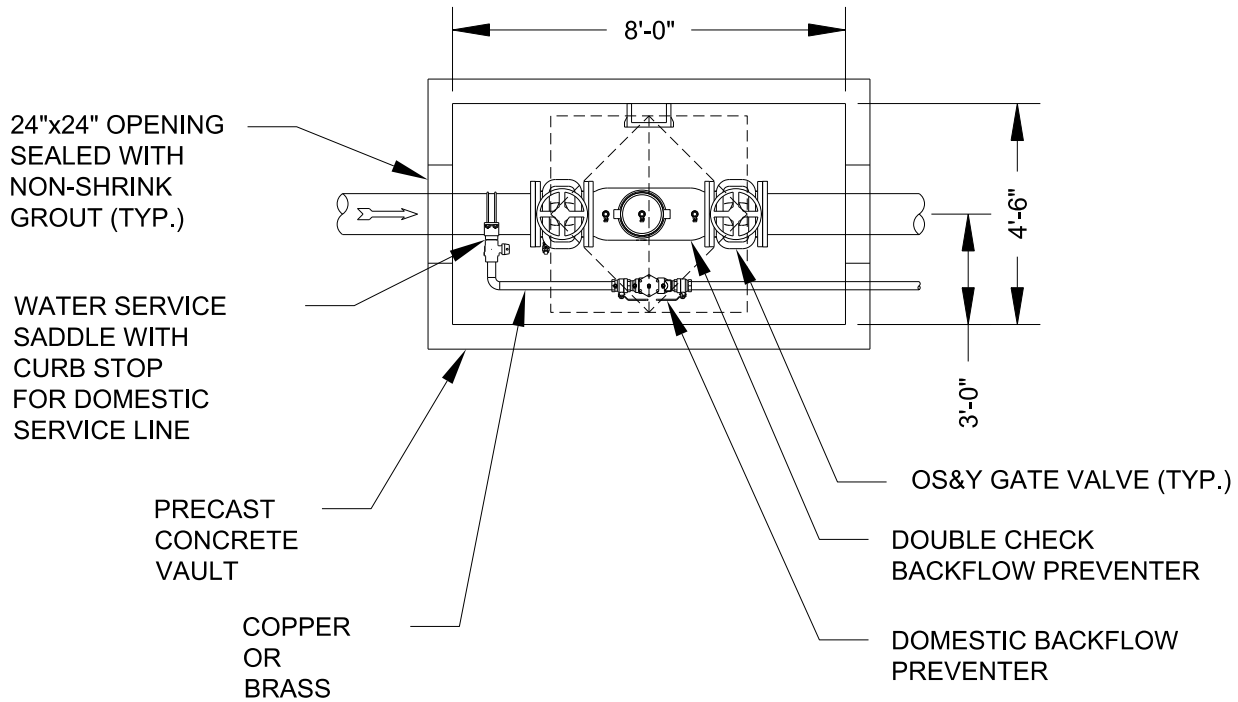
**10" OMNI F2 COMPACT  
FIRELINE METER**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W18**



HENRY COUNTY WATER & SEWERAGE AUTHORITY

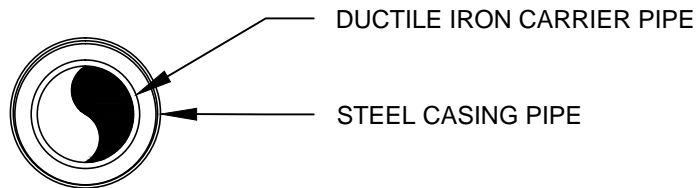
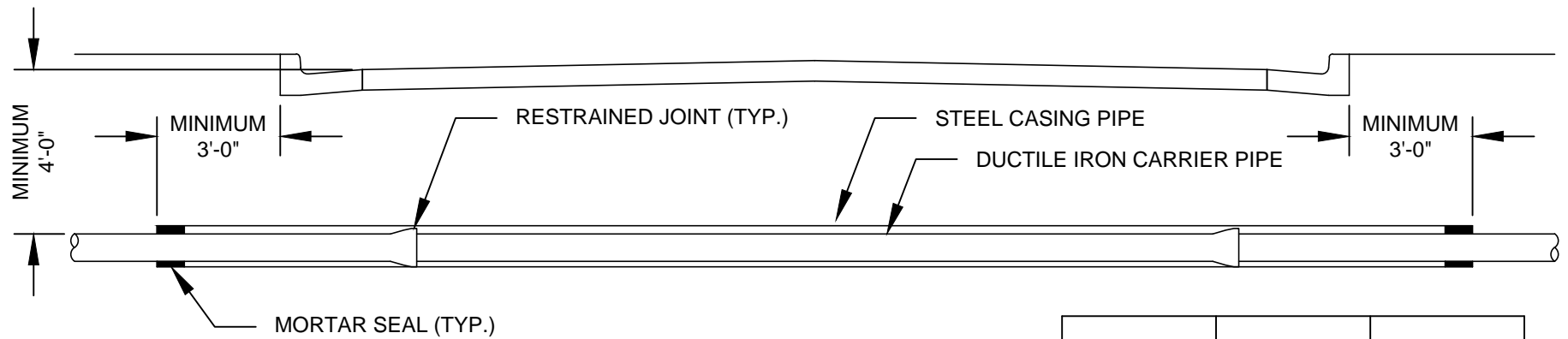
**COMMERCIAL  
BACKFLOW PREVENTER  
(4" AND LARGER)**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W19**



CARRIER PIPE NOMINAL DIAMETER (IN)	CASING PIPE NOMINAL DIAMETER (IN)	CASING PIPE THICKNESS (IN)
8	12	0.2500
10	16	0.2500
12	18	0.3130
16	24	0.3750

**NOTES:**

1. JOINTS INSIDE CASING PIPE SHALL BE RESTRAINED.
2. ENDS OF CASING PIPE SHALL BE SEALED WITH CEMENT MORTAR.
3. ALL COUNTY ROAD CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH HENRY COUNTY DOT STANDARDS AND PERMIT REQUIREMENTS.
4. ALL STATE HIGHWAY CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH GEORGIA DOT STANDARDS AND PERMIT REQUIREMENTS.
5. ALL RAILROAD CROSSINGS SHALL BE INSTALLED IN ACCORDANCE WITH AMERICAN RAILWAY ENGINEERING ASSOCIATION REGULATIONS AND IN ACCORDANCE WITH PERMIT REQUIREMENTS.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

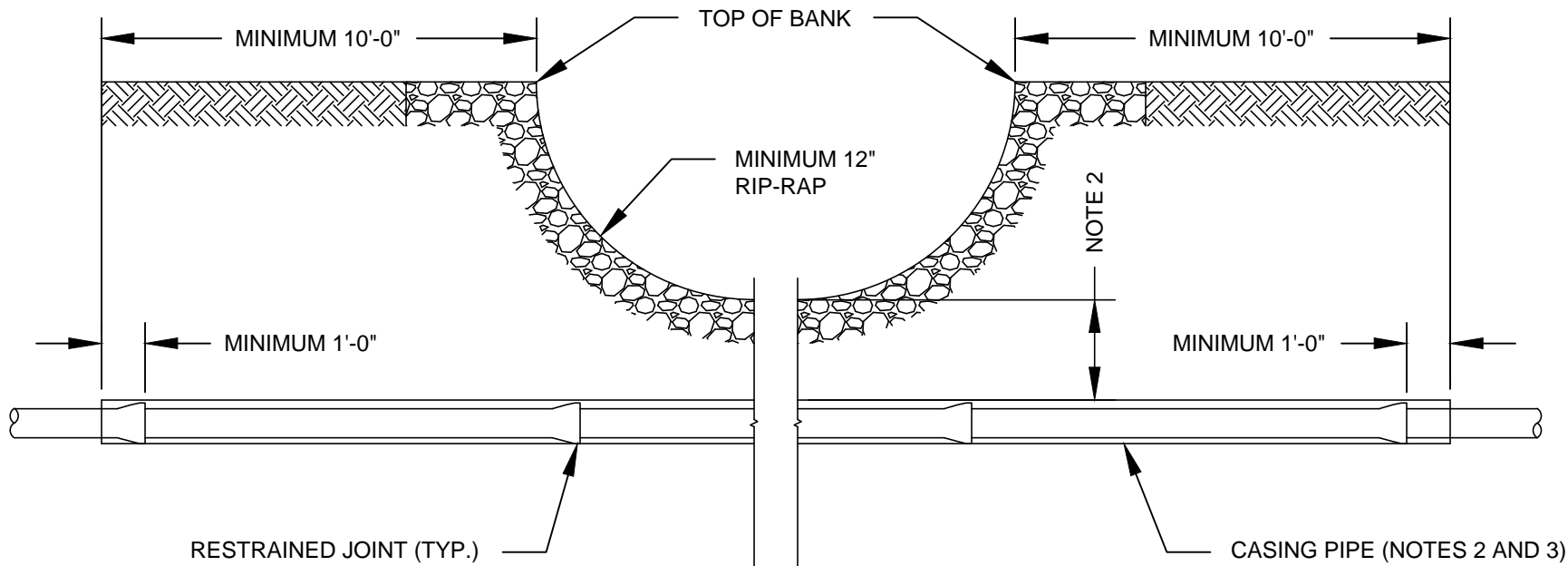
# TYPICAL JACK AND BORE DETAIL

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W20**



**NOTES:**

1. PIPE USED FOR CREEK CROSSINGS SHALL BE DUCTILE IRON PIPE. JOINTS SHALL BE RESTRAINED FOR A MINIMUM OF 20 FEET BEYOND TOP OF BANK ON EACH SIDE OF CREEK.
2. CASING PIPE IS REQUIRED WHEN DEPTH OF COVER IS LESS THAN 3 FEET.
3. REFER TO DETAIL W20 FOR CASING DIAMETER.
4. PLACE STONE RIP-RAP APPROXIMATELY 5 FEET UPSTREAM AND 5 FEET DOWNSTREAM FROM CENTERLINE OF PIPE ALONG CREEK BED.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

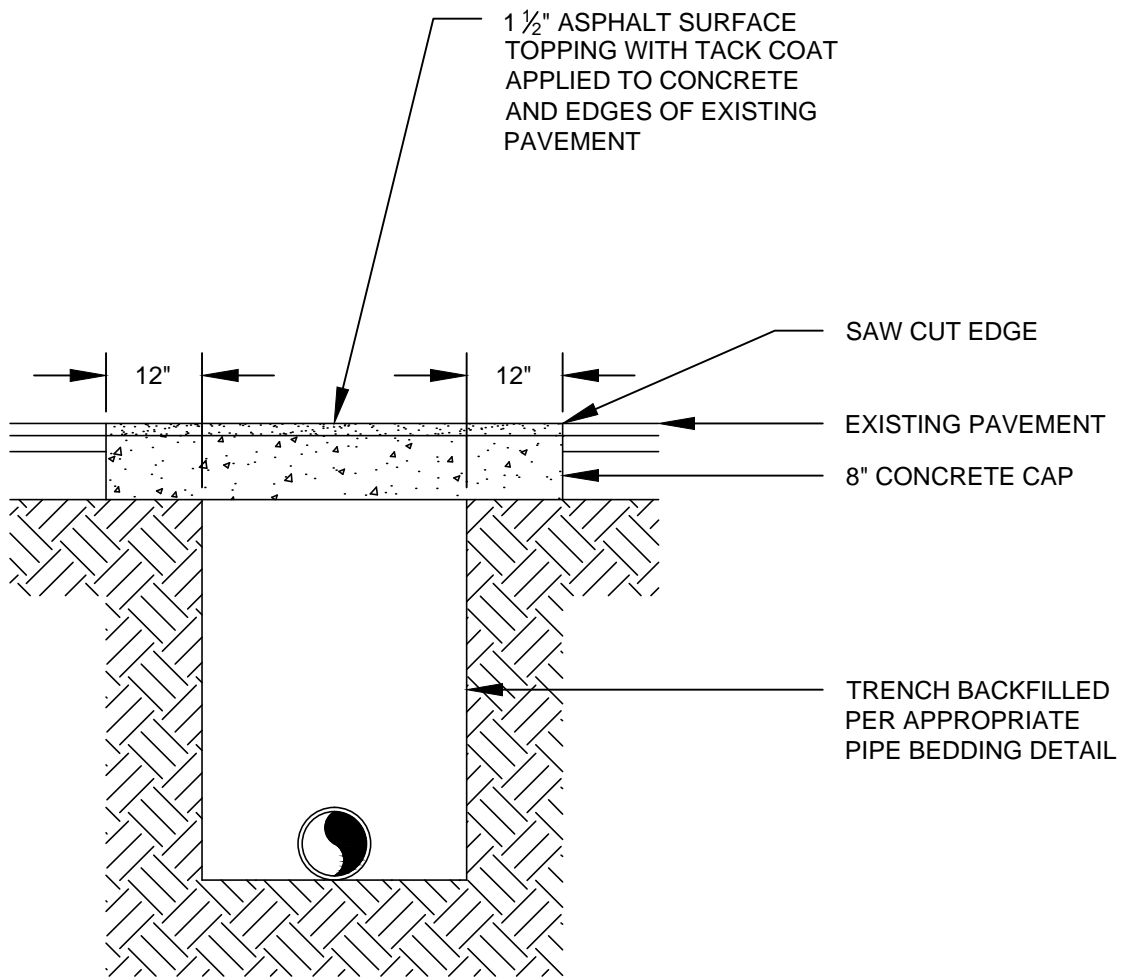
**CREEK CROSSING**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W21**



**NOTES:**

1. THIS DETAIL IS THE MINIMUM PAVEMENT REPAIR REQUIREMENT. HENRY COUNTY DOT OR GEORGIA DOT PAVEMENT REPAIR DETAILS SHALL SUPERCEDE THIS DETAIL AND SHALL BE USED WHERE APPLICABLE.
2. CONCRETE FOR CONCRETE CAP SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2,500 PSI @ 28 DAYS.



HENRY COUNTY WATER & SEWERAGE AUTHORITY

**PAVEMENT REPAIR**

REVISED: 01/01/2012

SCALE: N.T.S.

DETAIL NO.

**W22**