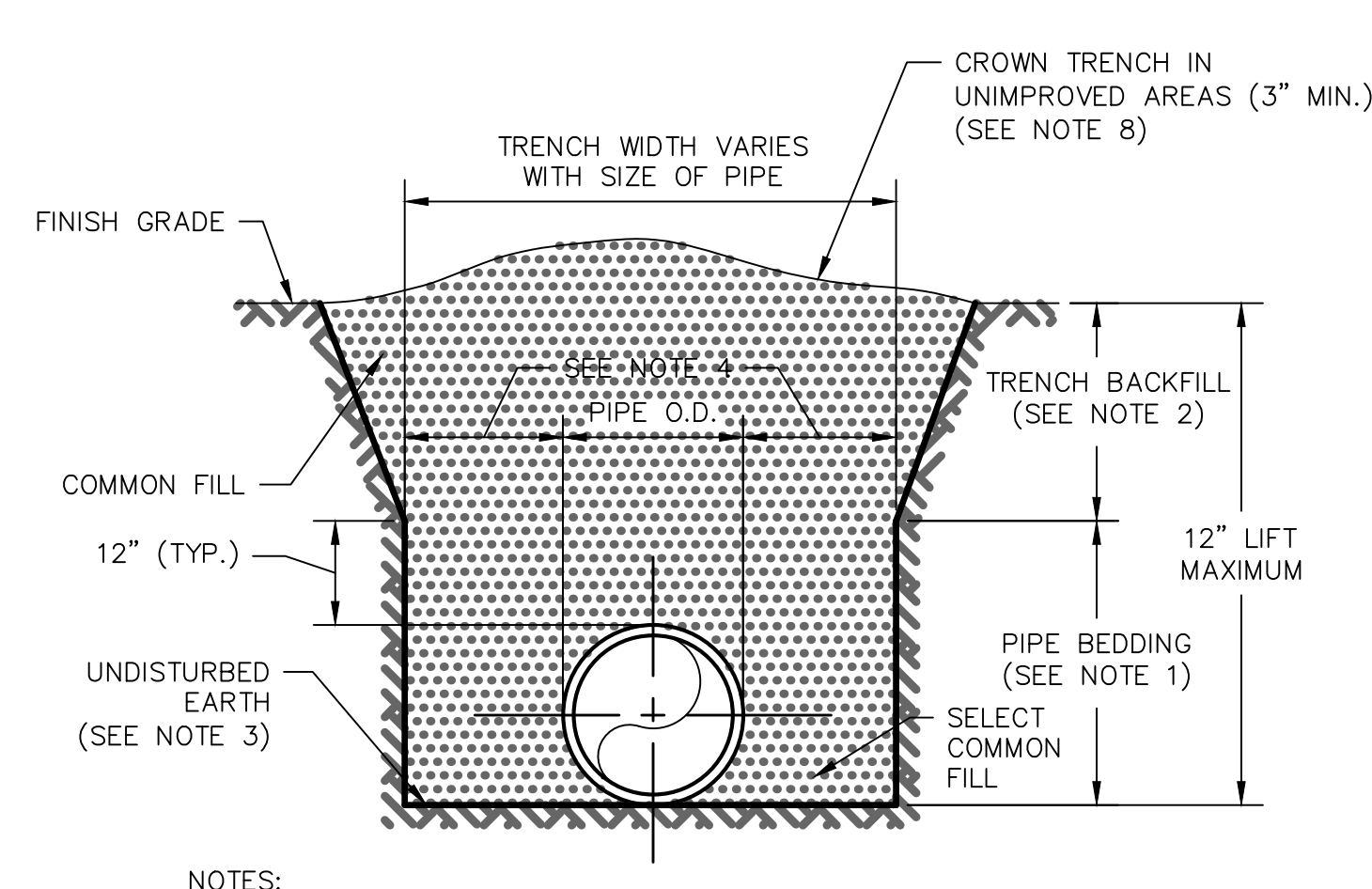


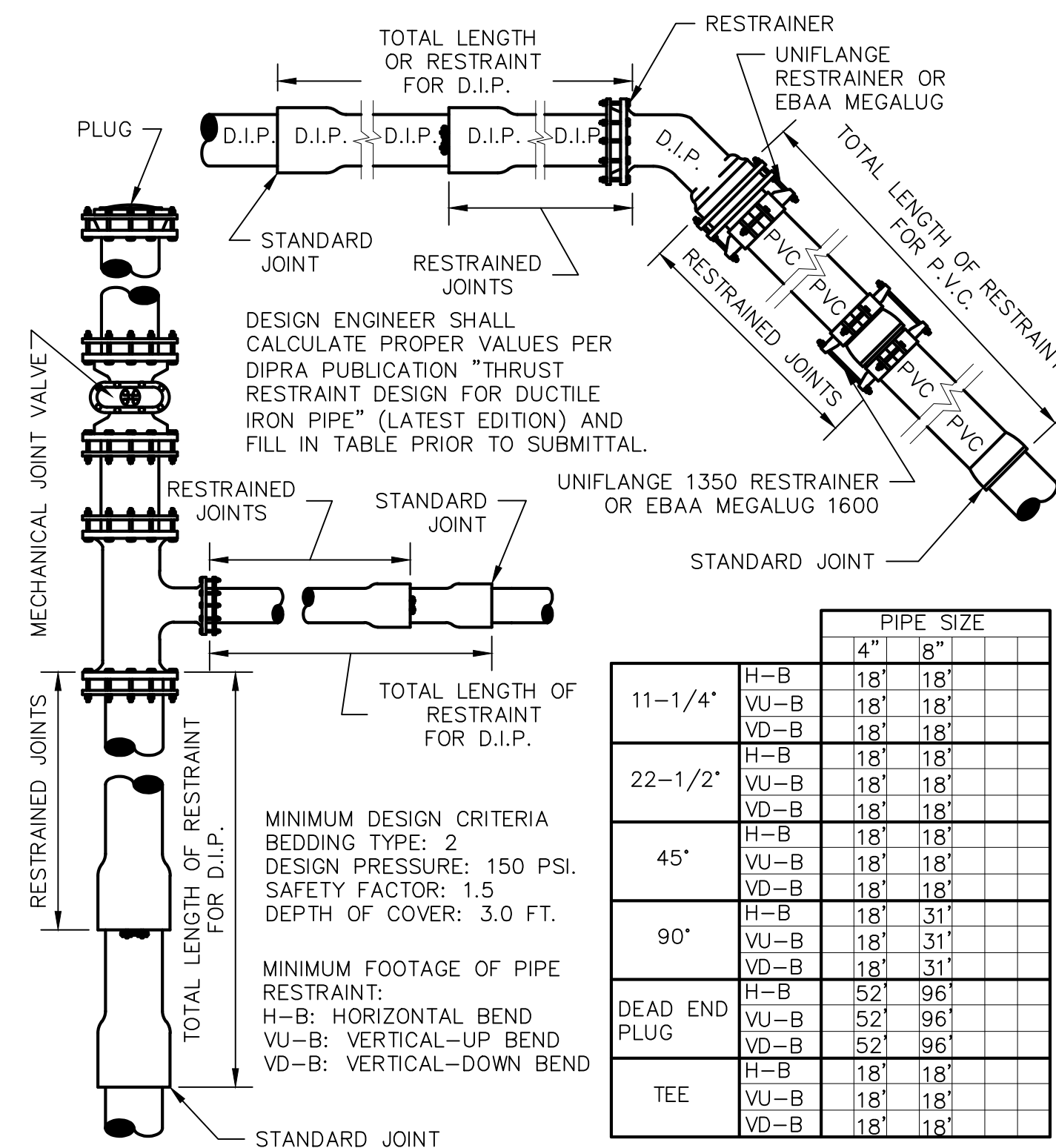
NOTES:

1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 98% OF THE MAXIMUM DENSITY AS PER AASHTO T -180.
2. TRENCH BACK FILL: COMMON FILL COMPACTED TO 98% OF THE MAXIMUM DENSITY AS PER AASHTO T -180. 3. USE OF TYPE "A" BEDDING TO BE DETERMINED IN THE FIELD AS DIRECTED BY THE CITY OF GROVELAND. REQUIRED AS DIRECTED BY THE CITY OF GROVELAND.
4. (*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. SHEETING AND BRACING SHALL BE USED IN ACCORDANCE WITH CURRENT TRENCHING REGULATIONS AND WHERE UNSAFE CONDITIONS.
8. EXISTING GRAVITY SEWERS SHALL UTILIZE TYPE A BEDDING, IF REQUIRED BY THE CITY. BEDDING DEPTH SHALL BE 4" MINIMUM FOR PIPE DIAMETER LESS THAN 15", AND 6" MINIMUM FOR PIPE DIAMETER 16" AND LARGER.
9. DEPTH FOR REMOVAL OF UNSUITABLE MATERIAL SHALL GOVERN DEPTH OF BEDDING ROCK BELOW THE PIPE. CITY AND/OR PROJECT ENGINEER SHALL DETERMINE IN THE FIELD REQUIRED REMOVAL OF UNSUITABLE MATERIAL TO REACH SUITABLE FOUNDATION.



NOTES:

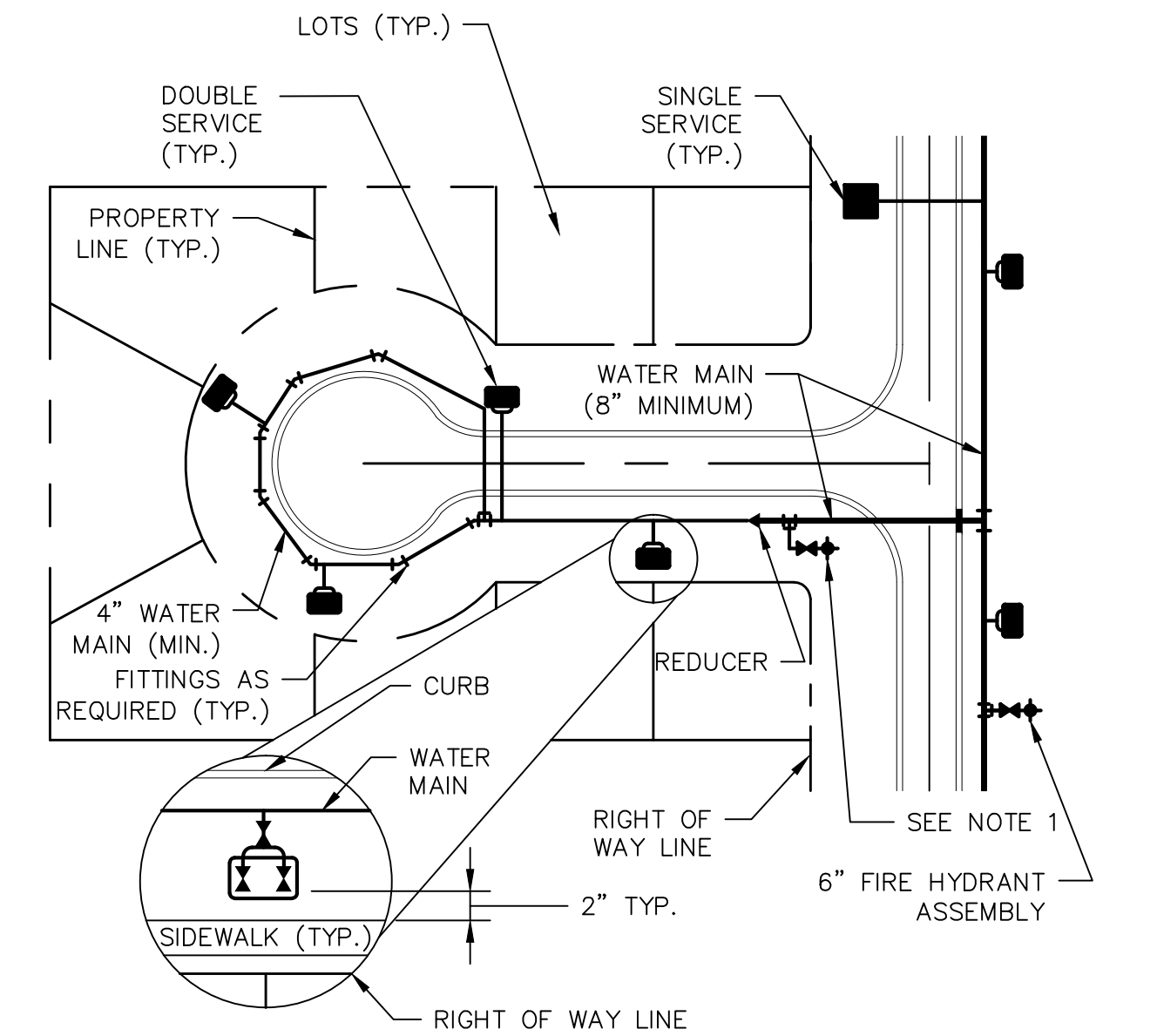
1. PIPE BEDDING: SELECT COMMON FILL COMPACTED TO 98% OF THE MAXIMUM DENSITY AS PER AASHTO T -180.
2. TRENCH BACK FILL: COMMON FILL COMPACTED TO 98% OF THE MAXIMUM DENSITY AS PER AASHTO T -180.
3. PIPE BEDDING UTILIZING SELECT COMMON FILL OR BEDDING ROCK IN ACCORDANCE WITH TYPE A BEDDING AND TRENCHING DETAIL MAY BE REQUIRED AS DIRECTED BY THE CITY OF GROVELAND.
4. (*): 15" MAX. FOR PIPE DIAMETER LESS THAN 24", AND 24" MAX. FOR PIPE DIAMETER 24" AND LARGER.
5. WATER SHALL NOT BE PERMITTED IN THE TRENCH DURING CONSTRUCTION.
6. ALL PIPE TO BE INSTALLED WITH BELL FACING UPSTREAM TO THE DIRECTION OF THE FLOW.
7. SHEETING AND BRACING SHALL BE USED IN ACCORDANCE WITH CURRENT TRENCHING REGULATIONS AND WHERE UNSAFE CONDITIONS.
8. FINAL RESTORATION IN IMPROVED AREAS SHALL BE IN COMPLIANCE WITH ALL APPLICABLE REGULATIONS OF GOVERNING AGENCIES. SURFACE RESTORATION WITHIN THE CITY OF GROVELAND'S RIGHT-OF-WAY SHALL COMPLY WITH REQUIREMENTS OF RIGHT-OF-WAY UTILIZATION REGULATIONS AND ROAD CONSTRUCTION SPECIFICATIONS.



NOTES:

1. FOR LENGTH OF PIPE AND NUMBER OF JOINTS TO BE RESTRAINED SEE TABLE (THIS PAGE).
2. ONLY DUCTILE IRON FITTINGS SHALL BE USED AT JOINTS TO BE RESTRAINED UNLESS OTHERWISE SPECIFIED BY CITY.

RESTRAINED JOINTS	RESTRAINED JOINTS	PIPE SIZE	
		4"	8"
11-1/4'	H-B	18'	18'
	VU-B	18'	18'
	VD-B	18'	18'
22-1/2'	H-B	18'	18'
	VU-B	18'	18'
	VD-B	18'	18'
45'	H-B	18'	18'
	VU-B	18'	18'
	VD-B	18'	18'
90'	H-B	18'	31'
	VU-B	18'	31'
	VD-B	18'	31'
DEAD END PLUG	H-B	52'	96'
	VU-B	52'	96'
	VD-B	52'	96'
TEE	H-B	18'	18'
	VU-B	18'	18'
	VD-B	18'	18'



NOTES:

1. THIS ARRANGEMENT SHALL ONLY BE USED WHERE RIGHT-OF-WAY CONSTRUCTIONS WILL NOT ALLOW INSTALLATION OF A STRAIGHT ASSEMBLY.
2. METER BOX TO BE PROVIDED BY CONTRACTOR.
3. SERVICES BE LOCATED ON LOT LINES.

CITY OF GROVELAND STANDARD DETAILS: GENERAL

CLASS A BEDDING AND TRENCHING DETAIL

DATE: JULY 7, 2008
SCALE: N.T.S.

G-4

CITY OF GROVELAND STANDARD DETAILS: GENERAL

CLASS B BEDDING AND TRENCHING DETAIL

DATE: JULY 7, 2008
SCALE: N.T.S.

G-5

CITY OF GROVELAND STANDARD DETAILS: GENERAL

RESTRAINED JOINTS DETAILS

DATE: JULY 7, 2008
SCALE: N.T.S.

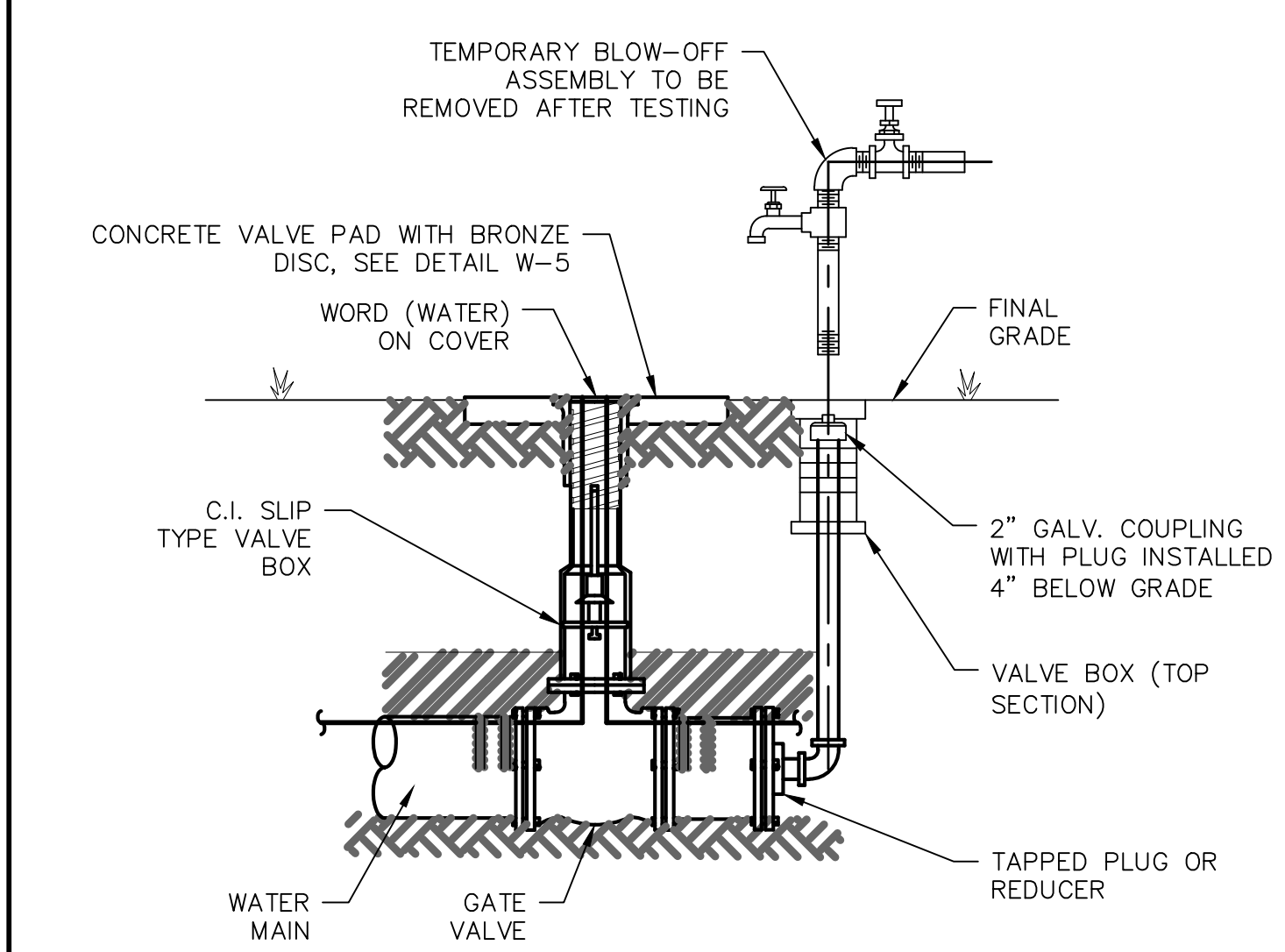
G-7

CITY OF GROVELAND STANDARD DETAILS: WATER

TYPICAL RESIDENTIAL DISTRIBUTION SYSTEM AND SERVICE LAYOUT

DATE: JULY 7, 2008
SCALE: N.T.S.

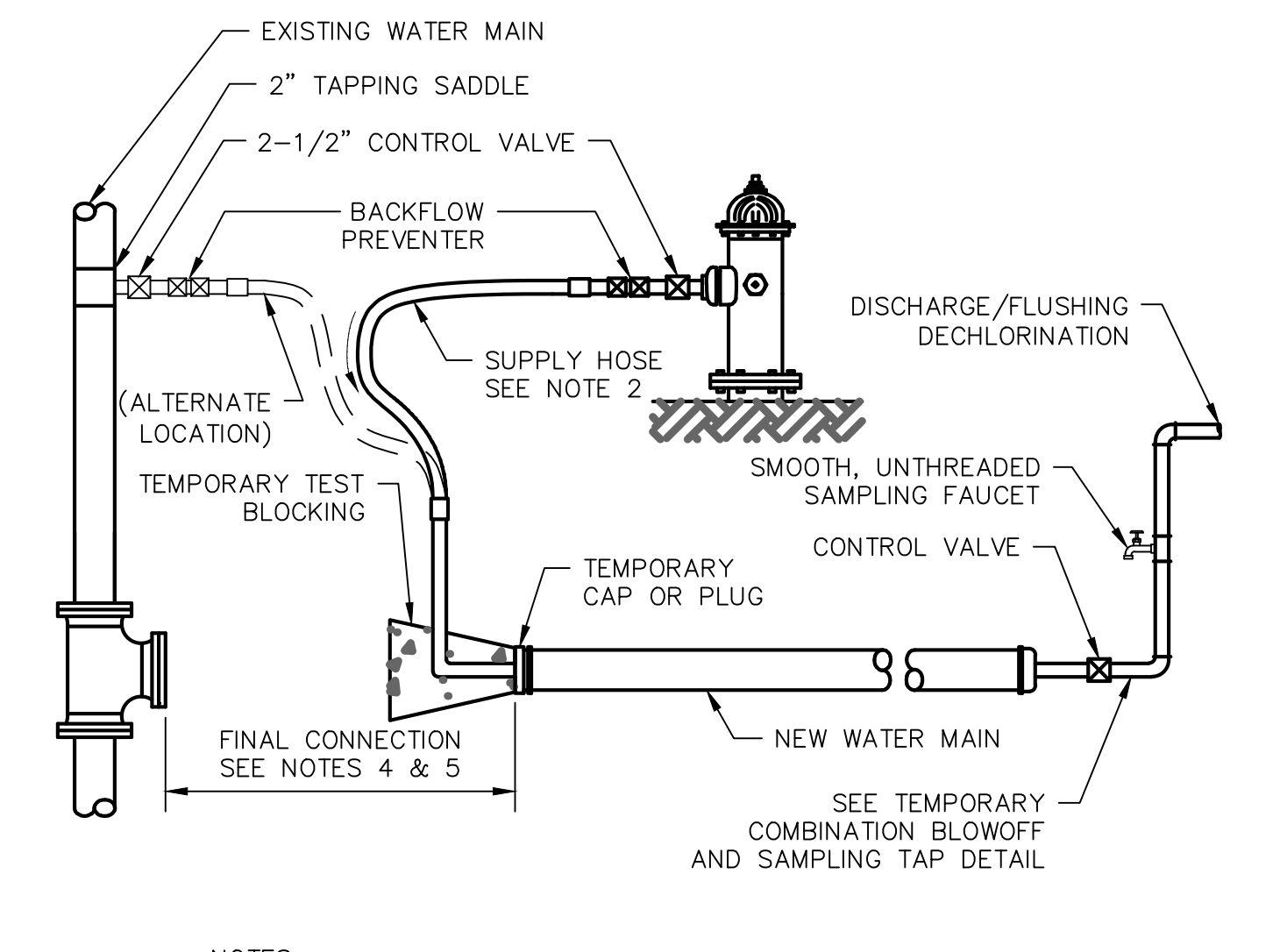
W-10



FOR EITHER PAVED OR NON-PAVED AREAS

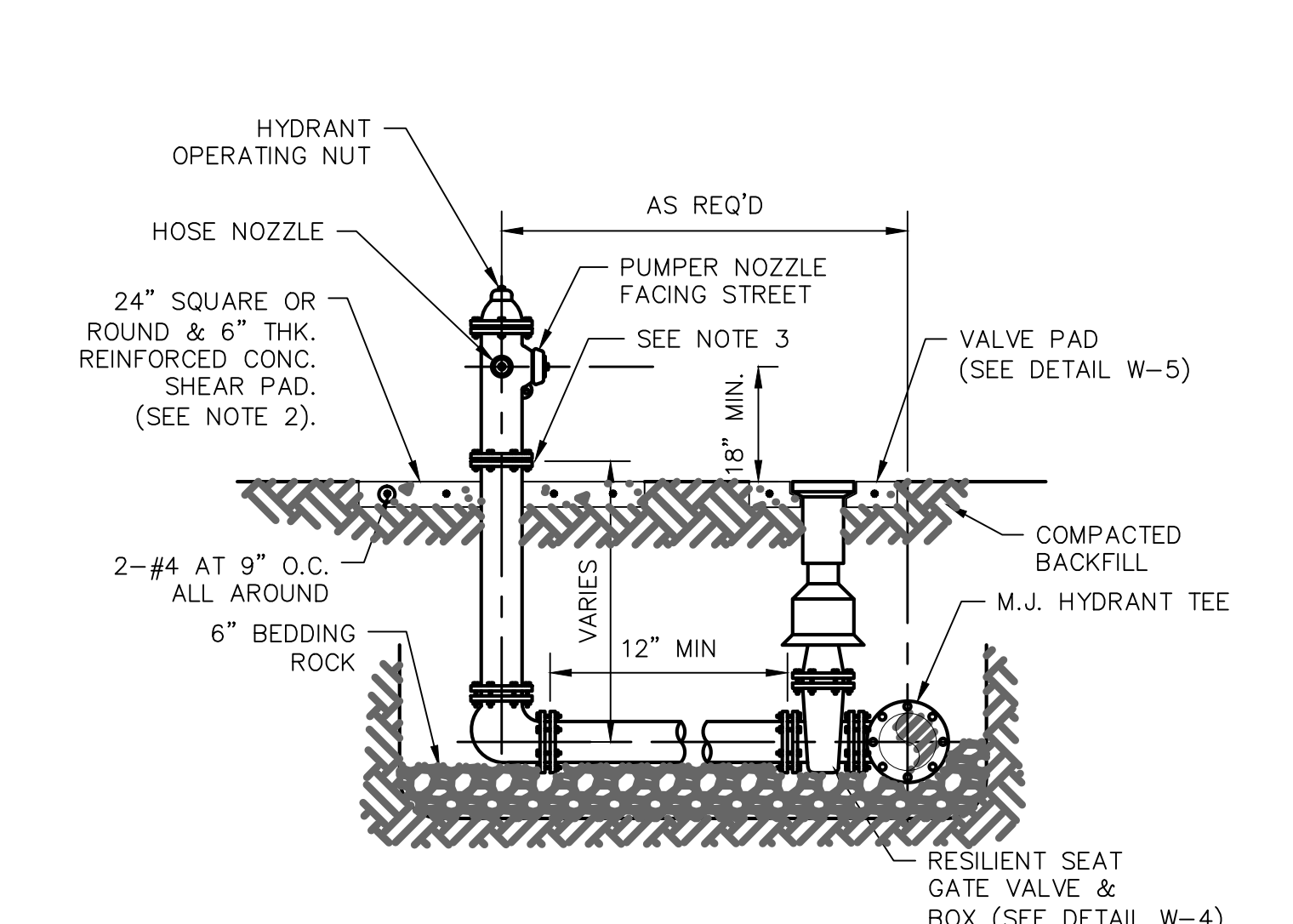
NOTES:

1. MECHANICAL JOINTS/UNDERGROUND PIPING SHALL BE RESTRAINED AS SPECIFIED IN JOINT RESTRAINT TABLE.
2. OPERATING NUT SHALL BE WITHIN 12" OF GRADE. EXTENSION TO BE PROVIDED AS REQUIRED.
3. VALVE EXTENSION SHALL BE MECHANICALLY ATTACHED AND SHALL HAVE A STAINLESS STEEL PIN AT THE VALVE AND SHEAR PIN ONLY AT THE OPERATING NUT.



NOTES:

1. REFERENCE, AWWA C651, FIG.1
2. CLEAN POTABLE WATER HOSE ONLY. SIZE AND NUMBER OF TAPS AND HYDRANT OUTLETS PER TABLE 3 OF AWWA C651. SUPPLY HOSE MUST BE REMOVED DURING THE HYDROSTATIC PRESSURE TEST.
3. THIS DETAIL APPLIES TO PIPES WITH DIAMETERS 4" THROUGH 12". ALL LARGER SIZES MUST BE HANDLED ON A CASE BY CASE BASIS.
4. PIPE FOR FINAL CONNECTION SHALL BE THOROUGHLY CLEANED WITH CHLORINE SOLUTION BY SWABBING PRIOR TO CONNECTION.
5. LENGTH OF FINAL CONNECTION SHALL BE MINIMIZED. CONNECTION SHALL BE VISIBLY INSPECTED UNDER LINE PRESSURE PRIOR TO BACKFILLING.



NOTES:

1. FIRE HYDRANT SHALL BE SUPPLIED WITHOUT A WEEP HOLE, OR WITH A PERMANENTLY PLUGGED WEEP HOLE.
2. THE DEVELOPER MAY INSTALL THE SHEAR PAD RECESSED UP TO 4 INCHES BELOW FINISHED GRADE AND SOD THE RECESSED SECTION.
3. CLEARANCE BETWEEN BOTTOM OF BOLTS AND TOP OF SHEAR PAD SHALL BE 6" MINIMUM.
4. A BLUE REFLECTOR SHALL BE PLACED IN THE CENTER OF THE DRIVING LANE ADJACENT TO THE HYDRANT FOR LOCATION PURPOSES.

CITY OF GROVELAND STANDARD DETAILS: WATER

PERMANENT BLOW-OFF DETAIL

DATE: JULY 7, 2008
SCALE: N.T.S.

W-6

CITY OF GROVELAND STANDARD DETAILS: WATER

TEMPORARY FLUSHING/TESTING DETAIL

DATE: JULY 7, 2008
SCALE: N.T.S.

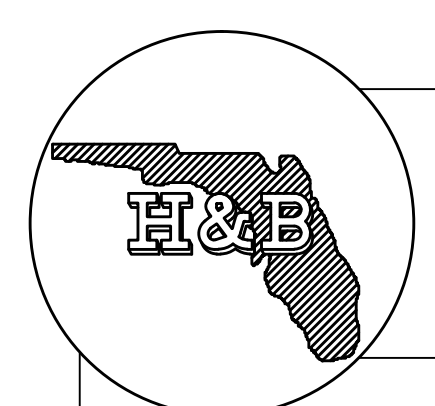
W-7

CITY OF GROVELAND STANDARD DETAILS: WATER

FIRE HYDRANT ASSEMBLY DETAIL

DATE: JULY 7, 2008
SCALE: N.T.S.

W-9A



UTILITY DETAILS

H & B CONSULTING ENGINEERS, INC.
Certificate of Authorization # 4829
P.O. Box 520
218 N. Florida Street - Suite 3
Bushnell, Florida 33513
Phone : (352) 793-2113

Lake Minneola Landings
C.R. 561
Groveland, FL 34711

REVISIONS	
10/15	Added Turn Lanes CR 561A
10/15	Listed lot No's. per Lake Co.
4/16	Lake County comments from 4-11-16

Drawn: WSR Checked: MZB
Date: 06/16 Scale: as shown Sheet 16 Of 18