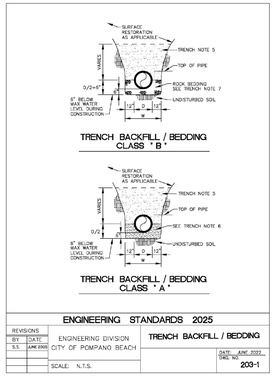
DRC
PZ25-12000020
11/05/2025

203-1-Trench-Backfill-Bedding-Class-A-B.jpg (JPEG Image, 1700 × 2... https://cdn.pompanobeachfl.gov/city/pages/engineering/sanitary-standa...



TRENCH BACKFILL / BEDDING CLASS "B"

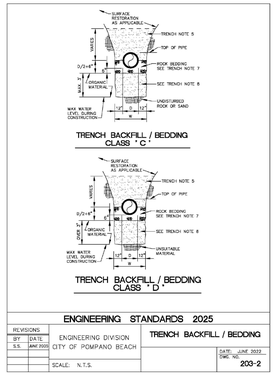
TRENCH BACKFILL / BEDDING CLASS "A"

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	TRENCH BACKFILL / BEDDING
S.S.	JUNE 2022		DATE: JUNE 2022
		SCALE: N.T.S.	DWG. NO. 203-1

1 of 1 3/23/2025, 7:04 AM

203-2-Trench-Backfill-Bedding-Class-C-D.jpg (JPEG Image, 1700 × 2... https://cdn.pompanobeachfl.gov/city/pages/engineering/sanitary-standa...



TRENCH BACKFILL / BEDDING CLASS "C"

TRENCH BACKFILL / BEDDING CLASS "D"

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	TRENCH BACKFILL / BEDDING
			DATE: JUNE 2022
		SCALE: N.T.S.	DWG. NO. 203-2

1 of 1 3/23/2025, 7:04 AM

203-3-Trench-Backfill-Bedding-Notes.jpg (JPEG Image, 1700 × 2200 p... https://cdn.pompanobeachfl.gov/city/pages/engineering/sanitary-standa...

1. OUTLINE OF TRENCH EXCAVATION IS FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL TRENCH WIDTH AND SHAPE WILL VARY WITH SOIL CONDITIONS. TRENCH EXCAVATION SHALL BE IN ACCORDANCE WITH THE "FLORIDA TRENCH SAFETY ACT" AND OSHA TRENCH SAFETY STANDARDS.
2. TYPICAL TRENCH BACKFILL/BEDDING FOR WATER MAIN AND FORCE MAIN INSTALLATIONS SHALL BE CLASS "A" AS SHOWN IN DETAIL.
3. TYPICAL TRENCH BACKFILL/BEDDING FOR GRAVITY SEWER INSTALLATION SHALL BE CLASS "B" AS SHOWN IN DETAIL.
4. TRENCH BACKFILL/BEDDING CLASS "C" AND CLASS "D" SHALL BE USED FOR PIPE INSTALLATIONS WHERE UNSTABLE TRENCH MATERIALS ARE ENCOUNTERED.
5. TRENCH ZONE BACKFILL SHALL BE MATERIAL TYPE 1 OR TYPES A THRU H, OR ANY MIXTURE THEREOF, WHERE SURFACE RESTORATION TYPE "I" IS APPLICABLE, TRENCH ZONE BACKFILL SHALL BE PLACED IN 12" LIFTS, COMPACTED TO 93% OF THE MATERIAL'S MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557 (AASHTO T-180). WHERE SURFACE RESTORATION TYPES "F", "G", AND "H" ARE APPLICABLE, TRENCH BACKFILL SHALL BE PLACED IN 8" LIFTS COMPACTED TO 98% OF THE MATERIAL'S DENSITY AS DETERMINED BY ASTM D-698 (AASHTO T-99).
6. BEDDING MATERIAL FOR TYPICAL WATER MAIN AND FORCE MAIN INSTALLATION SHALL BE TYPE C. BEDDING SHALL BE COMPACTED TO 95% OF THE MATERIAL'S MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557 (AASHTO T-180).
7. BEDDING MATERIAL FOR TYPICAL GRAVITY SEWER INSTALLATION AND ANY INSTALLATION WHERE UNSUITABLE TRENCH BOTTOM CONDITIONS ARE FOUND SHALL BE TYPE E. BEDDING SHALL BE PLACED IN LIFTS NOT TO EXCEED 8" AND COMPACTED TO 95% OF THE MATERIAL'S MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557 (AASHTO T-180).
8. UNSUITABLE MATERIAL SHALL BE REMOVED TO UNDISTURBED ROCK OR SAND OR TO DEPTH AS SPECIFIED BY ENGINEER. BACKFILL MATERIAL SHALL BE TYPE C. BACKFILL SHALL BE PLACED IN 8" LIFTS COMPACTED TO 95% OF THE MATERIAL'S MAXIMUM DENSITY AS DETERMINED BY ASTM D-1557 AASHTO T-180).

TRENCH BACKFILL / BEDDING NOTES

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	TRENCH BACKFILL / BEDDING
			DATE: JUNE 2022
		SCALE: N.T.S.	DWG. NO. 203-3

1 of 1 3/23/2025, 7:05 AM

203-4-Trench-Backfill-Bedding-Notes.jpg (JPEG Image, 1700 × 2200 p... https://cdn.pompanobeachfl.gov/city/pages/engineering/sanitary-standa...

9. BEDDING TYPES – THE FOLLOWING TYPES OF SUITABLE MATERIALS ARE DESIGNATED AND DEFINED AS FOLLOWING:

TYPE A: CRUSHED LIMEROCK OR SAND WITH 100 PERCENT PASSING A 1 INCH SIEVE AND A SANC EQUIVALENT VALUE NOT LESS THAN 50.

TYPE B: CRUSHED LIMEROCK OR SAND WITH 100 PERCENT PASSING A 1/2 INCH SIEVE AND A SANC EQUIVALENT VALUE NOT LESS THAN 50.

TYPE C: SAND WITH 100 PERCENT PASSING A 3/8 INCH SIEVE, AT LEAST 95 PERCENT PASSING A NUMBER 4 SIEVE, AND A SANC EQUIVALENT VALUE NOT LESS THAN 30.

TYPE D: CRUSHED LIMEROCK WITH 100 PERCENT PASSING A 1 INCH SIEVE AND NOT MORE THAN 10 PERCENT A NUMBER 4 SIEVE.

TYPE E: CRUSHED LIMEROCK OR SAND WITH 100 PERCENT PASSING A 3/4 INCH SIEVE AND NOT MORE THAN 10 PERCENT PASSING A NUMBER 4 SIEVE.

TYPE F: CRUSHED LIMEROCK MEETING THE FOLLOWING GRADATION REQUIREMENTS.

SIEVE SIZE	PERCENTAGE PASSING
2 INCH	100
1-1/2 INCH	90-100
3/4 INCH	20-55
3/8 INCH	0-15
NO. 200	0-3

TRENCH BACKFILL / BEDDING NOTES

ENGINEERING STANDARDS 2025

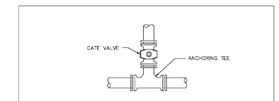
REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	TRENCH BACKFILL / BEDDING
			DATE: JUNE 2022
		SCALE: N.T.S.	DWG. NO. 203-4

1 of 1 3/23/2025, 7:05 AM

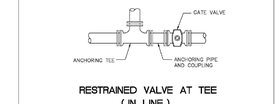
GENERAL WATER SYSTEM NOTES

1. ALL APPLICABLE PERMITS MUST BE OBTAINED PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. ALL APPLICABLE FEES AND CHARGES MUST BE PAID PRIOR TO COMMENCEMENT OF CONSTRUCTION.
3. THE LOCATION OF EXISTING UTILITIES AS SHOWN ON APPROVED PLANS ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR. APPROVAL OF DEVELOPMENT PLANS BY THE CITY IN NO WAY IMPLIES VERIFICATION OF THE ACCURACY OF THOSE PLANS OR FEATURES DEPICTED THEREON. ANY DISCREPANCY IN, OR VARIATION FROM, THE APPROVED PLANS IS TO BE BROUGHT TO THE ATTENTION OF THE UTILITY ENGINEER AND THE ENGINEER OF RECORD.
4. THE CONTRACTOR SHALL BE RESPONSIBLE AT ALL TIMES THROUGHOUT THE DURATION OF THE CONSTRUCTION FOR THE PROTECTION OF EXISTING AND NEWLY INSTALLED UTILITIES AND IMPROVEMENTS FROM DAMAGE, DISRUPTION OF SERVICE, OR DESTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TAKING SUCH MEASURES AS NECESSARY TO PROTECT THE HEALTH, SAFETY AND WELFARE OF THOSE PERSONS HAVING ACCESS TO THE WORK SITE.
5. THE CONTRACTOR SHALL INFORM THE BCWWS ENGINEERING DEPARTMENT AND THE ENGINEER OF RECORD AT LEAST 48 HOURS IN ADVANCE OF COMMENCING CONSTRUCTION.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING LOCATIONS OF ALL UTILITIES, AND NOTIFICATION OF SUNSHINE ONE CALL (1-800-432-4770), 48 HOURS IN ADVANCE OF CONSTRUCTION.
7. THE CONTRACTOR SHALL INFORM THE ENGINEER OF RECORD AND THE BCWWS ENGINEERING DEPARTMENT IN WRITING A MINIMUM OF 48 HOURS IN ADVANCE OF THE FOLLOWING:
   - WET CONNECTION
   - PRESSURE TEST
   - FILLING/FLUSHING
   - CHLORINATION
   - BACTERIOLOGICAL SAMPLES
8. A PRE-CONSTRUCTION MEETING IS TO BE HELD PRIOR TO CONSTRUCTION & SHALL BE ATTENDED BY THE CONTRACTOR, RECORD ENGINEER, BCWWS AND OTHER INTERESTED PARTIES PRIOR TO ISSUANCE OF A CONSTRUCTION PERMIT.
9. THE ENGINEER RECORD AND UTILITY INSPECTOR SHALL BE NOTIFIED 48 HOURS IN ADVANCE OF ALL ACTIVITIES THAT REQUIRE THEIR INSPECTION.
10. CONSTRUCTION SHALL BE CARRIED OUT IN STRICT COMPLIANCE WITH THE STANDARDS ACCEPTED BY BC WWS.
11. THE CONTRACTOR SHALL MAINTAIN A CURRENT APPROVED SET OF CONSTRUCTION PLANS ON SITE. THE PLANS ARE TO BE MADE AVAILABLE TO THE UTILITY INSPECTOR UPON REQUEST.
12. THE RECORD ENGINEER WILL CARRY OUT INSPECTIONS OF WORK. THE UTILITY INSPECTORS WILL INFORM THE CONTRACTOR WHEN TO BACKFILL THE WORK AND WILL WITNESS PRESSURE, BACTERIOLOGICAL, AND INFILTRATION/EXFILTRATION TESTS AS REQUIRED PER THE BCWWS.
13. THE FOLLOWING DOCUMENTS ARE TO BE ON FILE AT BC WATER & WASTEWATER SERVICES PRIOR TO THE CONNECTION OF THE FIRST WATER METER:
    A. CERTIFIED "AS-BUILT" PLANS APPROVED BY THE BC WWS.
    B. LETTERS OF ACCEPTANCE FROM:
       BROWARD COUNTY PUBLIC HEALTH UNIT
       DEPARTMENT OF NATURAL RESOURCE PROTECTION
    C. CERTIFICATION BY ENGINEER OF RECORD
    D. DEDICATION OF ALL UTILITY EASEMENTS THAT ARE SHOWN ON THE APPROVED PLANS.
    E. AS-BUILT MYLAR AND/OR SIGNED AND SEALED COPIES OF AS-BUILTS CERTIFIED BY A PROFESSIONAL ENGINEER OR A LAND SURVEYOR REGISTERED IN THE STATE OF FLORIDA. AS REQUESTED BY BCWWS.
    F. FINAL INSPECTION VERIFICATION BY THE BCWWS.
15. NO DEVIATION FROM THE APPROVED PLANS SHALL BE PERMITTED WITHOUT THE WRITTEN CONSENT OF THE ENGINEER OF RECORD AND THE BCWWS.
16. ALL DENSITY TESTS SHALL BE TAKEN BY A CERTIFIED TESTING LABORATORY. TESTS SHALL BE CONDUCTED UNDER THE DIRECTION OF THE ENGINEER OF RECORD AND THE BCWWS INSPECTOR.

111-1-Restrained-Valve-at-Tee.jpg (JPEG Image, 1700 × 2200 pixels) ... https://cdn.pompanobeachfl.gov/city/pages/engineering/potable-water-s...



RESTRAINED VALVE AT TEE (BRANCH)



RESTRAINED VALVE AT TEE (IN LINE)

USE MEGALUGS AT ALL PIPE JOINTS

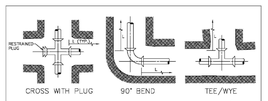
ALL D.I.P. TO BE PAINTED BLUE ON THE TOP HALF OF PIPE.

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED VALVE AT TEE
S.S.	JUNE 2022		DATE: MAY 2022
		SCALE: N.T.S.	DWG. NO. 111-1

1 of 1 3/23/2025, 7:13 AM

118-1-Restrained-Joint-Information-Details.jpg (JPEG Image, 1700 × 2... https://cdn.pompanobeachfl.gov/city/pages/engineering/potable-water-s...



GENERAL NOTES:

1. VALVES IN TABLE ARE BASED ON 4" OF COVER, 150 PSI INTERNAL PRESSURE, FOR FORCE MAINS, 150 PSI RUSS WATER LINES, ANSI/AWWA C600 & C700,ASTM 50 LAYING CONDITION 3, ASTM D2487 SAND-SILT SP SOIL TYPE, AND SAFETY FACTOR OF 2.0. RESTRAINED LENGTHS WERE COMPUTED PER DIPRA "THRUST RESTRAINT DESIGN FOR DUCTILE IRON PIPE" AND "TYTO PIPE THRUST RESTRAINT DESIGN SOFTWARE FOR DIPRA".
2. CONFIRM THE EXACT LENGTH OF RESTRAINING REQUIRED FOR REDUCERS, PIPE ENCASED IN POLYETHYLENE AND ENCROACHING RESTRAINED LENGTHS WITH THE DESIGN ENGINEER.
3. THE CONTRACTOR IS RESPONSIBLE FOR PROPER INSTALLATION OF THE RESTRAINED JOINTS TO PREVENT MOVEMENT OF THE PIPE & FITTINGS.
4. IN THE EVENT OF A CONFLICT BETWEEN RESTRAINED LENGTHS SHOWN ON THIS TABLE AND RESTRAINED LENGTHS SHOWN ON THE DRAWINGS, THE LONGEST RESTRAINED LENGTH SHALL BE USED.

RESTRAINED JOINT INFORMATION

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED JOINT INFORMATION
			DATE: MAY 2022
		SCALE: N.T.S.	DWG. NO. 118-1

1 of 1 3/23/2025, 7:14 AM

118-2-Restrained-Joint-Information.jpg (JPEG Image, 1700 × 2200 pixe... https://cdn.pompanobeachfl.gov/city/pages/engineering/potable-water-s...

PVC HORIZONTAL BENDS AND VERTICAL UP BENDS

PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH *	BENDS 90°	45°	22.5°	11.25°	UNKNOWN DISTANCE IN FEET FROM FITTING – EACH WAY(S) BENDS NOT SHOWN ON DRAWINGS
6		26	11	6	3	53
8		33	14	7	4	68
12		48	19	10	5	99

PVC VERTICAL DOWN BEND

PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH *	BENDS 90°	45°	22.5°	11.25°	UNKNOWN DISTANCE IN FEET FROM FITTING – EACH WAY(S)
6		26	11	6	3	
8		33	14	7	4	
12		48	19	10	5	

DIP HORIZONTAL BENDS AND VERTICAL UP BENDS

PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH *	BENDS 90°	45°	22.5°	11.25°	UNKNOWN DISTANCE IN FEET FROM FITTING – EACH WAY(S) BENDS NOT SHOWN ON DRAWINGS
6"	68	28	14	7	144	
12"	119	49	24	12	258	
24"	258	107	51	25		

DIP VERTICAL DOWN BEND

PIPE SIZE (IN.)	RESTRAINED JOINT LENGTH *	BENDS 90°	45°	22.5°	11.25°
6"	144	60	29	14	
12"	258	107	51	25	

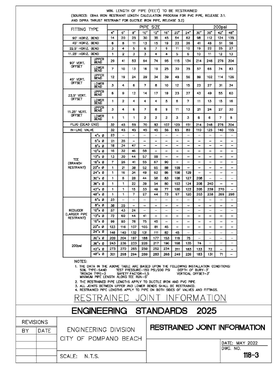
RESTRAINED JOINT INFORMATION

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED JOINT INFORMATION
			DATE: MAY 2022
		SCALE: N.T.S.	DWG. NO. 118-2

1 of 1 3/23/2025, 7:14 AM

118-3-Restrained-Joint-Information.jpg (JPEG Image, 1700 × 2200 pixe... https://cdn.pompanobeachfl.gov/city/pages/engineering/potable-water-s...

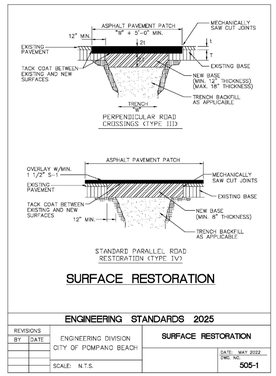


ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	RESTRAINED JOINT INFORMATION
			DATE: MAY 2022
		SCALE: N.T.S.	DWG. NO. 118-3

1 of 1 3/23/2025, 7:14 AM

505-1-Surface-Restoration.jpg (JPEG Image, 1700 × 2200 pixels) — Sc... https://cdn.pompanobeachfl.gov/city/pages/engineering/reuse-standard/...



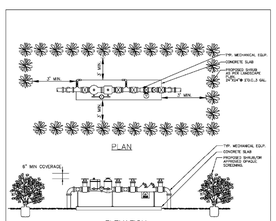
SURFACE RESTORATION

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	SURFACE RESTORATION
			DATE: MAY 2022
		SCALE: N.T.S.	DWG. NO. 505-1

1 of 1 3/23/2025, 7:20 AM

315-1-Typical-Screen-For-Utilities.jpg (JPEG Image, 1700 × 2200 pixe... https://cdn.pompanobeachfl.gov/city/pages/engineering/misc-standard/...



TYPICAL SCREEN FOR UTILITIES

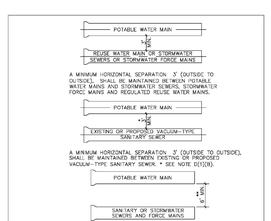
NOTES:
PLEASE NOTE THAT AS PER CITY ORDINANCE(S) 50.02(C)(4) (A) AND 100.30(C), STREET TREES SHALL NOT BE PLACED ON TOP OF OR 5' OF EITHIER SIDE OF ANY CITY OWNED UTILITY INFRASTRUCTURE. ALSO, PLEASE NOTE THAT NO TREES SHRUBBERY OR OBSTRUCTION SHALL BE PLACED WITHIN A 3' RADIUS OF A CITY OWNED LATERAL CLEANOUT OR WATER & OR RELISE METER.

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	TYPICAL SCREEN FOR UTILITIES
N/A	APPLICABLE		APPROVED BY:
		SCALE: N.T.S.	DATE: MAY 2022 DWG. NO. 315-1

1 of 1 8/20/2025, 8:23 AM

121-1-Min.Horizontal-Separation-for-Potable-Water.jpg (JPEG Image, ... https://cdn.pompanobeachfl.gov/city/pages/engineering/potable-water-s...



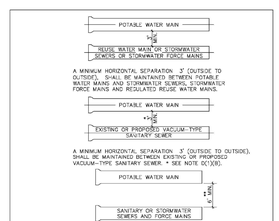
MINIMUM HORIZONTAL SEPARATION REQUIREMENTS FOR POTABLE WATER, REUSE, STORMWATER AND SEWER LINES

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	MIN. HORIZONTAL SEPARATION FOR POTABLE WATER
S.S.	01/12		DATE: JUN. 2022
		SCALE: N.T.S.	DWG. NO. 121-1

1 of 1 3/23/2025, 7:15 AM

209-1-Min.-Horizontal-Separation-for-Sewer.jpg (JPEG Image, 1700 × ... https://cdn.pompanobeachfl.gov/city/pages/engineering/sanitary-standa...



MINIMUM HORIZONTAL SEPARATION REQUIREMENTS FOR POTABLE WATER, REUSE, STORMWATER AND SEWER LINES

ENGINEERING STANDARDS 2025

REVISIONS BY	DATE	ENGINEERING DIVISION CITY OF POMPANO BEACH	MIN. HORIZONTAL SEPARATION FOR SANITARY SEWER
S.S.	01/26/12		DATE: JUNE 2022
		SCALE: N.T.S.	DWG. NO. 209-1

1 of 1 3/23/2025, 7:06 AM

Howard E Jablon

Digitally signed by Howard E Jablon
Date: 2025.09.05 05:23:25 -04'00'

HOWARD JABLON LICENSE No. 47514 STATE OF FLORIDA PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY HOWARD E JABLON ON THE DATE ADJACENT TO THE SEAL.

PRINTED COPIES OF THIS DOCUMENT ARE NOT CONSIDERED SIGNED AND SEALED AND THE SIGNATURE MUST BE VERIFIED ON ANY ELECTRONIC COPIES.

SCALE: NA
DRAWN BY: HEJ
CHECKED BY: IJ
APPROVED BY: HEJ

REVISIONS DATE	COMMENTS	REVISIONS DATE	COMMENTS
08/25/25	ADD DETAILS PER CITY SP RAI #1		

AJ HYDRO ENGINEERING, INC.
5932 NW 73RD COURT
PARKLAND, FL 33067
TEL (954) 347-3397
AJHYDRO@BELLSOUTH.NET

PROJECT:

ATLANTICO

TITLE:

GENERAL WATER & SEWER DETAILS & NOTES

SEAL:

HOWARD JABLON, PE #47514

DATE: 05/04/25

DRAWING NO. 25-0110

SHEET NO. WS2 OF 5