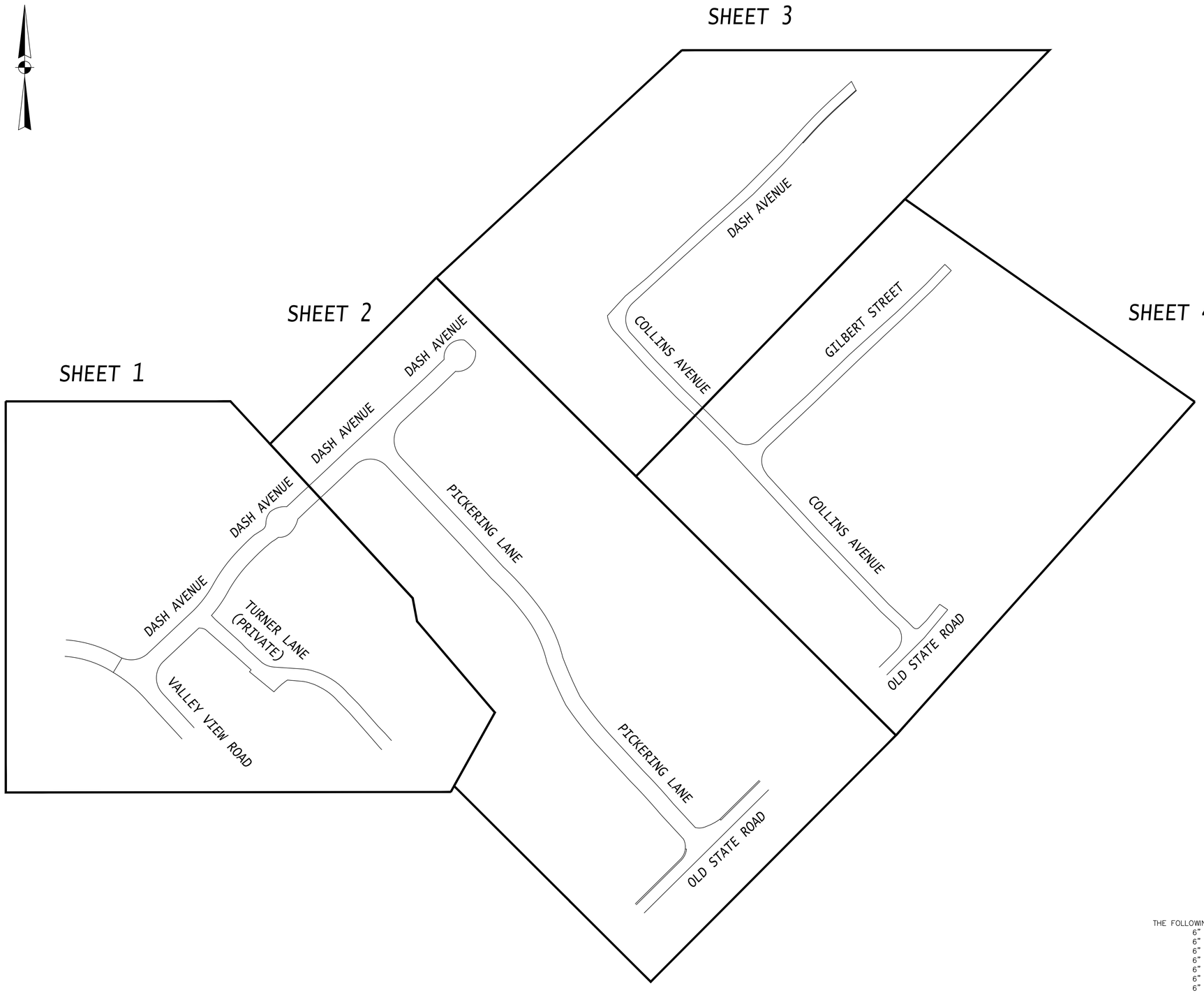
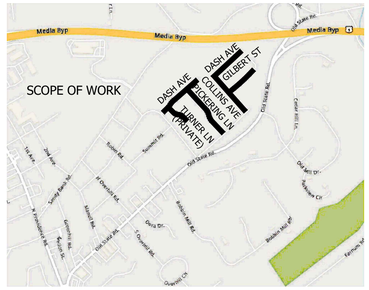




LOCATION MAP

GENERAL NOTES:

1. ALL GATE VALVES ARE TO OPEN LEFT.
2. MAV/CL2 ASSEMBLIES ARE REQUIRED ON ALL WATER MAIN EXTENSIONS. THE EXACT QUANTITY AND LOCATION WILL BE DETERMINED AT THE PROJECT SITE BY THE ASSIGNED AQUA PENNSYLVANIA INSPECTOR.
3. ALL DIRECTIONAL CHANGE FITTINGS REQUIRE RETAINING GLANDS (MEGA-LUG or EQUAL) AND THE PROPER RESTRAINED LENGTH AND OR THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING.
4. ALL PERMANENT BLOW-OFFS ARE TO BE BLOCKED WITH A STEEL RAIL AND THE PROPER RESTRAINED LENGTH AND OR THE PROPER SQUARE FOOTAGE OF CONCRETE BLOCKING.
5. WHEN THE WORKING PRESSURE OF THE MAIN EXCEEDS 80 PSI, PRESSURE REDUCING VALVES ARE REQUIRED ON THE AFFECTED SERVICES. PRESSURE REDUCING VALVES ARE NOT SUPPLIED OR MAINTAINED BY AQUA PENNSYLVANIA, INC
6. ALL THRUST BLOCK VALUES AND RESTRAINED LENGTHS ARE DETERMINED ACCORDING TO THE INTENDED WORKING PRESSURE OF THE PROPOSED MAIN. WHEN PRESSURES ARE IN EXCESS OF 200 PSI, THE ENGINEERING DEPARTMENT WILL PROVIDE SPECIFIC REQUIREMENTS.
7. THIS PLAN WAS PREPARED FROM INFORMATION OBTAINED FROM PLANS PROVIDED BY: API PLANS & FIELD NOTES.

MATERIAL RECORD					
FEET		PIPE (TYPE & CLASS)	QUAN	SIZE	ARTICLE
.		.	.	.	MAV ASSEMBLY
.		.	.	.	BLOW-OFF ASSEMBLY
.		.	.	.	BLOW-OFF ASSEMBLY
.		.	.	.	TEES .
QUAN	SIZE	ARTICLE	.	.	TEES .
.	.	TAP VLV .	.	.	TAP SLV .
.	.	VALVES .	.	.	.
.	.	VALVES .	.	.	.
.	.	VALVES .	.	.	BENDS .
.	.	VALVE BOXES COMPLETE	.	.	BENDS .
.	.	.	.	.	BENDS .
.	.	.	.	.	.
.	.	.	.	.	.
EXCAVATION IN CUBIC YARDS			.	.	.
EARTH: .		ROCK: .	.	.	CONCRETE .
PAVING: .	SF	OTHER: .	.	.	.
STARTED: .			.	.	.
FINISHED: .			.	.	.
WATER ON: .			.	.	.
INSPT BY: .			.	.	.
REMARKS: .					

PENNSYLVANIA LAW REQUIRES 3 WORKING DAYS NOTICE FOR CONSTRUCTION PHASE AND 10 WORKING DAYS IN DESIGN STAGE – STOP CALL
POCS SERIAL NUMBER(S):
20240051158, 20240051165, 20240051176, 20240051187, 20240051196, 20240051205, 20232632249, 20232632740, 20232632901, 20232633567, 20232633697, 20232640361,

THE FOLLOWING MAIN(S) HAVE BEEN ABANDONED:

6" AC	9291-S	N/P
6" AC	9292-S	N/P
6" CI	9290-S	N/P
6" CI	9298-S	N/P
6" CI	9288-S	N/P
6" CI	9287-S	N/P
6" DI	7955-S	G-25980
6" DI	7779-S	G-24998

NO	DATE	REVISION	INTL
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:
DASH AVENUE PROJECT
COVER SHEET
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No: 20007-S	
DATE: 09/14/23	SCALE: NTS	PLATE: F-31	
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437	
APPROVED		COVER	

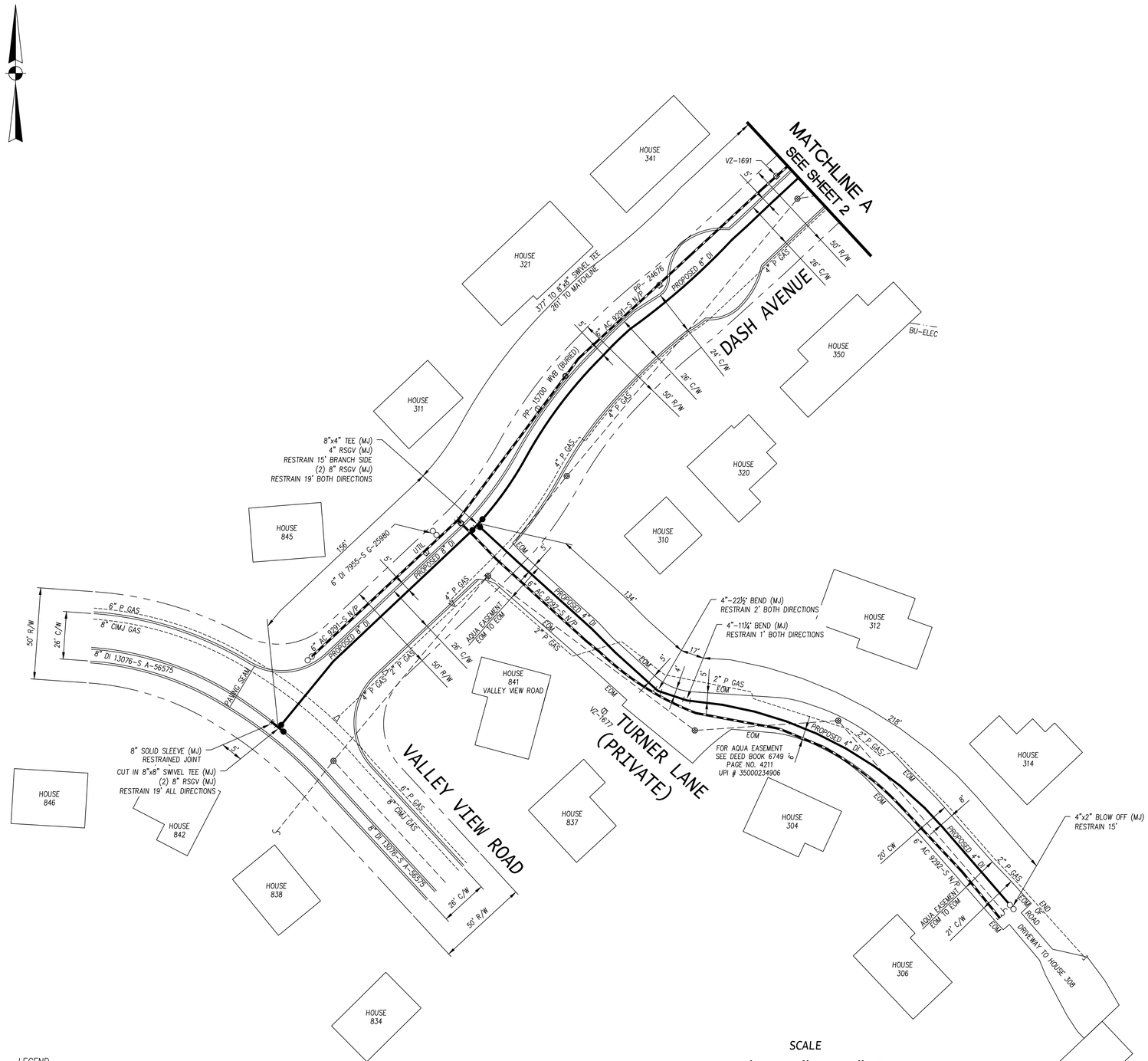
COORDINATE SYSTEM: NAD 1983 (2011) STATE PLANE PENNSYLVANIA SOUTH FIPS 3702 (US FEET)

CM# 27620 WO# 100088561

ALL TIE-INS TO BE BLOCKED AND RESTRAINED

FOR BLOCKING AND RESTRAINING TABLE SEE SHEET 8

PROJECT PRESSURE 100 PSI



LEGEND

= PROPOSED WATER MAIN

= ABANDONED WATER MAIN

= EXISTING WATER MAIN

SCALE

0 30 60 FEET

VERIFY LOCATION OF ALL UTILITIES IN THE FIELD

HALF ROAD MILL & OVERLAY IN TOWNSHIP R-O-W

NO	DATE	REVISION	
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:

DASH AVENUE PROJECT

DASH AVENUE, TURNER LANE (PRIVATE), VALLEY VIEW ROAD
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No: 20007-S
DATE: 09/14/23	SCALE: 1" = 30'	PLATE: F-31
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437
APPROVED		SHEET 1 OF 8

CM# 27620 WO# 100088561

6" DI 7779-S G-24998
6"x2" BLOW OFF (MJ)
RESTRAIN 15'
6"x4" TEE (MJ)
4" RSGV (MJ)
BLK'D W/ 2 SF CONC
CHG TO FIRE LINE
SERVICE # S118241
HOUSE 381
HOUSE 380
HOUSE 371
HOUSE 361
HOUSE 351
DASH AVENUE
VZ-1689
PROPOSED 6" DI
4" P GAS
26' C/W
50' R/W
191'
6" AC 9291-S N/P
VZ-1690
8"x8" SWIVEL TEE (MJ)
(2) 8" RSGV (MJ)
RESTRAIN 19' BOTH 8" SIDES
8"x6" REDUCER (MJ)
RESTRAIN 8' ON 8" DIA SIDE
6" RSGV (MJ)
RESTRAIN 15' 6" SIDE
WVB (BURIED)
BU-VZ
HOUSE 891 PICKERING LANE
HOUSE 881
HOUSE 871
HOUSE 861
HOUSE 851
HOUSE 841
HOUSE 831
HOUSE 448
HOUSE 449
HOUSE 445
HOUSE 821
691'
BT-1688
VZ-1687
VZ-1686
VZ-1685
VZ-1684
BT-1683
VZ-1682
PROPOSED 8" DI
6" CI 9290-S N/P
PICKERING LANE
6'
50' R/W
26' C/W
45' R/W
26' C/W
40' R/W
5'
377' TO 8"x4" TEE
116' TO MATCHLINE
PROPOSED 8" DI
HOUSE 890 PICKERING LN
HOUSE 880
HOUSE 870
HOUSE 860
HOUSE 850
HOUSE 840
HOUSE 830
HOUSE 820
HOUSE 444 OLD STATE ROAD
HOUSE 435
HOUSE 425
HOUSE 434
PP-1078
BU-ELEC
MATCHLINE A
SEE SHEET 1
8"-45° BEND (MJ)
RESTRAIN 4' BOTH DIRECTIONS
8"-45° BEND (MJ)
RESTRAIN 4' BOTH DIRECTIONS
19'
134'
2" P GAS
BT-NO TAG
8"x6" REDUCER (MJ)
RESTRAIN 8' ON 8" DIA SIDE
6"x6" TAP SLEEVE (MJ)
6" RSGV (MJ)
RESTRAINED JOINT
FH 77-28
G-54809
OLD STATE ROAD
35' R/W
19' C/W
18' C/W
6" AC 9295-S N/P
2" P GAS
4" P GAS
15' (REF)
CUT & PLUG
SCALE
0 30 60 FEET

ALL TIE-INS TO BE BLOCKED AND RESTRAINED

FOR BLOCKING AND RESTRAINING TABLE SEE SHEET 8

PROJECT PRESSURE 100 PSI

VERIFY LOCATION OF ALL UTILITIES IN THE FIELD

HALF ROAD MILL & OVERLAY IN TOWNSHIP R-O-W

LEGEND

= PROPOSED WATER MAIN

= ABANDONED WATER MAIN

= EXISTING WATER MAIN

NO	DATE	REVISION	INTL
0	1/29/24	PROPOSED TO CONSTRUCTION	

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

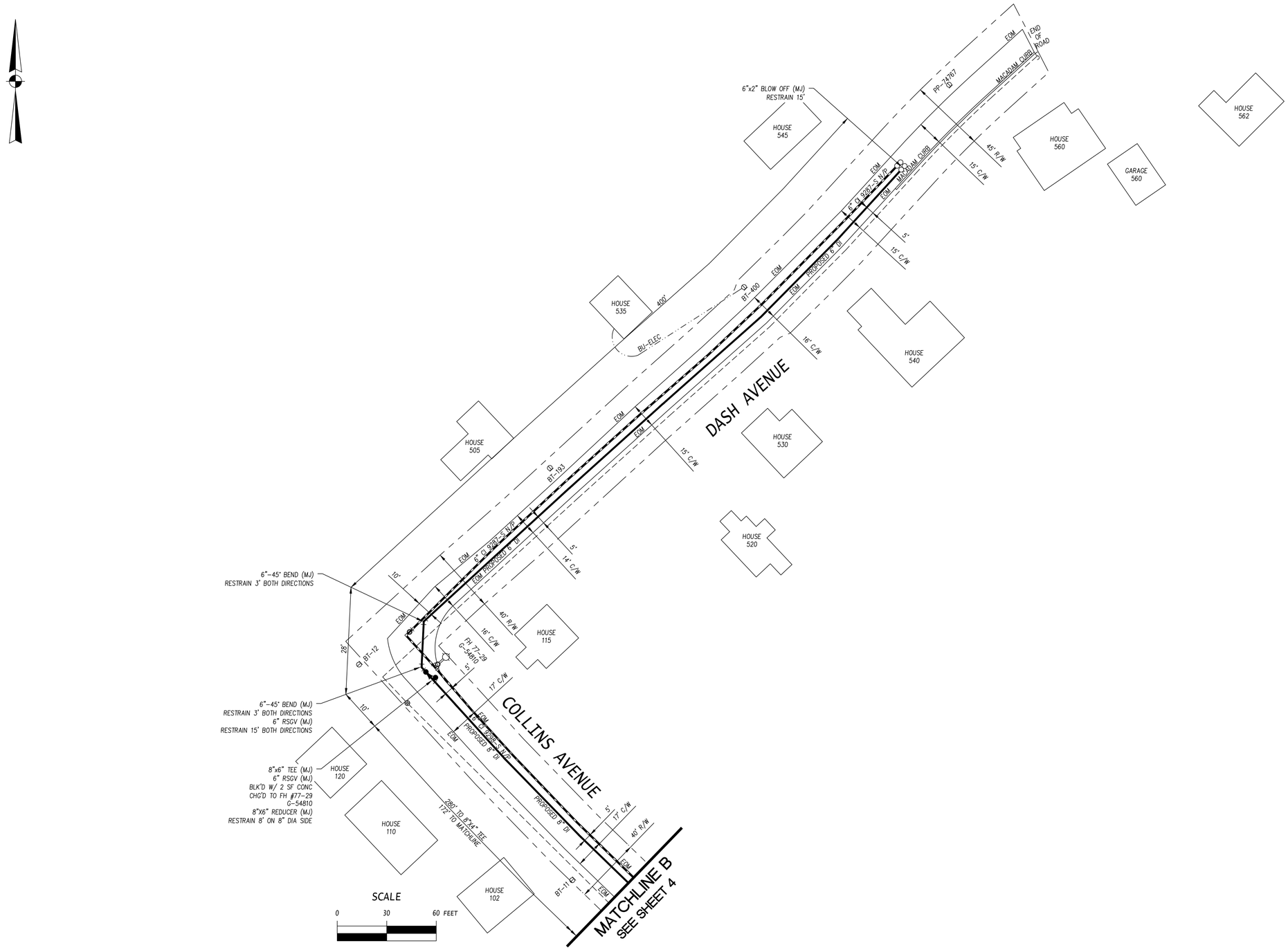
PROJECT PLAN FOR:

DASH AVENUE PROJECT

DASH AVENUE, OLD STATE ROAD, PICKERING LANE
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG		CHK'D BY: BCAD		EXT No:	20007-S
DATE: 09/14/23		SCALE: 1" = 30'		PLATE:	F-31
PROJECT No: 1458.14		ACTIVITY No: 100088561		A - 67437	
APPROVED				SHEET 2 OF 8	

CM# 27620 WO# 100088561



ALL TIE-INS TO BE BLOCKED AND RESTRAINED

FOR BLOCKING AND RESTRAINING TABLE SEE SHEET 8

PROJECT PRESSURE 100 PSI

VERIFY LOCATION OF ALL UTILITIES IN THE FIELD

HALF ROAD MILL & OVERLAY IN TOWNSHIP R-O-W

LEGEND

= PROPOSED WATER MAIN

= ABANDONED WATER MAIN

= EXISTING WATER MAIN

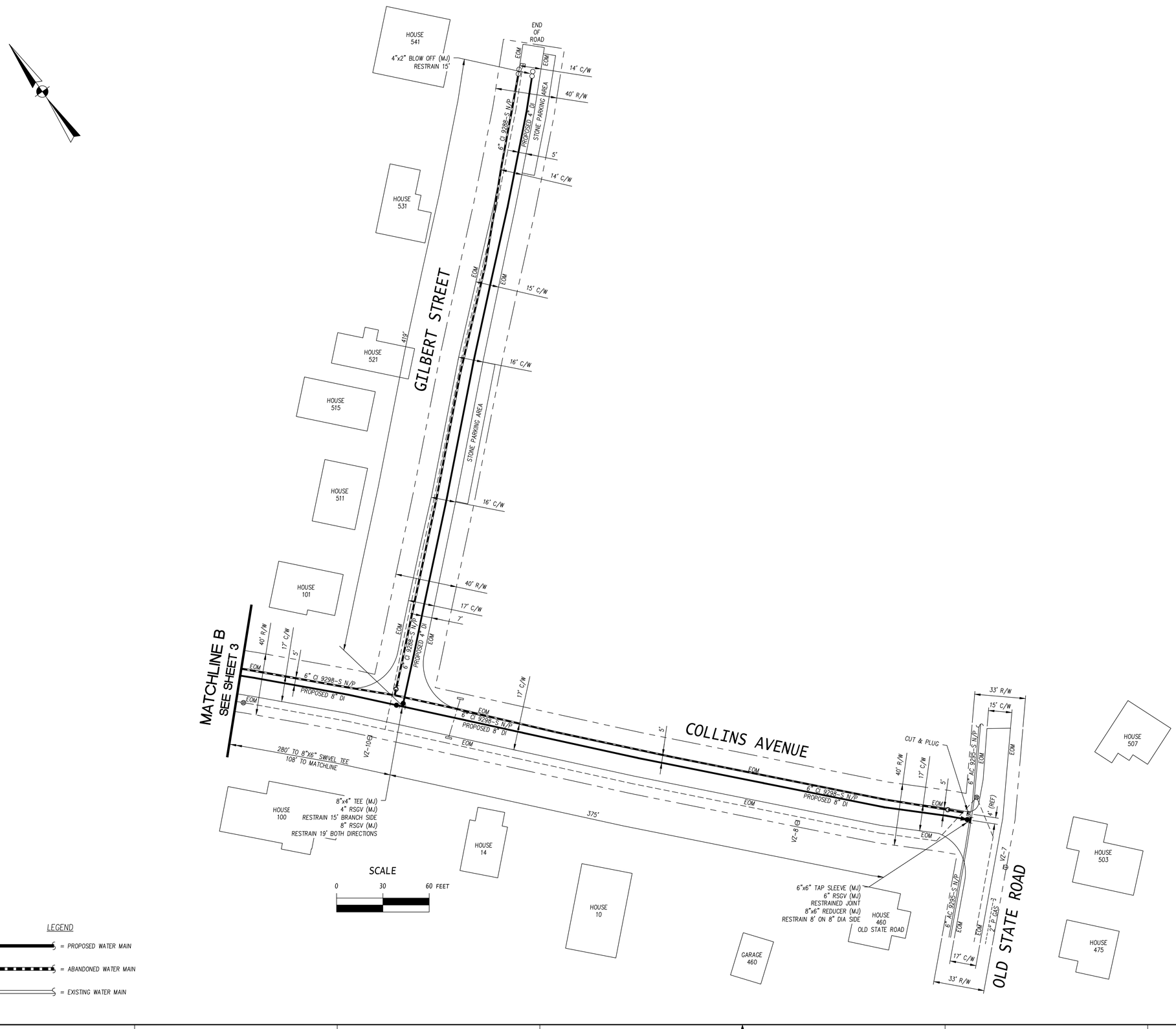
NO	DATE	REVISION	
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:
DASH AVENUE PROJECT
COLLINS AVENUE, DASH AVENUE
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No: 20007-S	
DATE: 09/14/23	SCALE: 1" = 30'	PLATE: F-31	
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437	
APPROVED		SHEET 3 OF 8	

CM# 27620 WO# 100088561



ALL TIE-INS TO BE BLOCKED AND RESTRAINED

FOR BLOCKING AND RESTRAINING TABLE SEE SHEET 8

PROJECT PRESSURE 100 PSI

VERIFY LOCATION OF ALL UTILITIES IN THE FIELD

HALF ROAD MILL & OVERLAY IN TOWNSHIP R-O-W

LEGEND

= PROPOSED WATER MAIN

= ABANDONED WATER MAIN

= EXISTING WATER MAIN

NO	DATE	REVISION	INTL
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:

DASH AVENUE PROJECT

COLLINS AVENUE, GILBERT STREET, OLD STATE ROAD
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No:	20007-S
DATE: 09/14/23	SCALE: 1" = 30'	PLATE:	F-31
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437	
APPROVED		SHEET 4 OF 8	

CM# 27620 WO# 100088561

PATA 103

1. The RIGHT REVERSE CURVE sign shall only be used when lane shifts onto shoulder.
2. When a shadow vehicle is not used, distance E is measured from the end of the taper to the beginning of the work space.

Signs	
	
W20-1	W5-5

Sign Spacing, Channelizing Device Spacing, Buffer Space, and Roll Ahead Space					
Speed	Channelizing Devices Spacing	Sign Spacing		Buffer Space	Roll Ahead Space
		Urban	Rural		
S (MPH)	2S (Feet)	A (Feet)	A (Feet)	E (Feet)	H (Feet)
25	50	100 - 200	500 - 800	155	150
30	60	100 - 200	500 - 800	200	150
35	70	100 - 200	500 - 800	250	150
40	80	350 - 500	500 - 800	305	150
45	90	350 - 500	500 - 800	360	150
50	100	350 - 500	500 - 800	425	250
55	110	350 - 500	500 - 800	495	250

Taper Lengths and Minimum Number Of Channelizing Devices						
Speed	Shifting Taper: 1/2L		Shoulder Taper: 1/3L		50' Per Lane Taper	
S (MPH)	Length (Feet)	Minimum Number Of Devices	Length (Feet)	Minimum Number Of Devices	Length (Feet)	Minimum Number Of Devices
25	65	6	45	6	50	6
30	90	6	60	6	50	6
35	125	6	85	6	50	6
40	160	6	110	6	50	6
45	270	7	180	6	50	6
50	300	7	200	6	50	6
55	330	7	220	6	50	6

PATA 107

1. Flaggers shall be clearly visible to traffic for a minimum distance of E.
2. For operations of 15 minutes or less:

   a) The ROAD WORK, ONE LANE ROAD, and FLAGGER SYMBOL signs are not required.

   b) All channelizing devices may be eliminated if a shadow vehicle is present and the operation does not proceed against normal traffic flow.
3. When a shadow vehicle is not used, distance E is measured from the end of the taper to the beginning of the work space.

Signs		
		
W20-1	W20-4	W20-7

Sign Spacing, Channelizing Device Spacing, Buffer Space, and Roll Ahead Space					
Speed	Channelizing Devices Spacing	Sign Spacing		Buffer Space	Roll Ahead Space
		Urban	Rural		
S (MPH)	2S (Feet)	A (Feet)	A (Feet)	E (Feet)	H (Feet)
25	50	100 - 200	500 - 800	155	150
30	60	100 - 200	500 - 800	200	150
35	70	100 - 200	500 - 800	250	150
40	80	350 - 500	500 - 800	305	150
45	90	350 - 500	500 - 800	360	150
50	100	350 - 500	500 - 800	425	250
55	110	350 - 500	500 - 800	495	250

Taper Lengths and Minimum Number Of Channelizing Devices			
Speed	50' Per Lane Taper		
S (MPH)	Length (Feet)	Minimum Number Of Devices	
25	50	6	
30	50	6	
35	50	6	
40	50	6	
45	50	6	
50	50	6	
55	50	6	

PATA 109 (A Through L)

1. PATA 109 drawings show work spaces on roads that approach and depart T-intersections with through-roads. Single-flagger or multi-flagger intersection control is illustrated for intersections with three types of permanent control:

   a) One-Way Stop

   b) All-Way Stop

   c) Traffic Signal
2. Flaggers shall be clearly visible to traffic for a minimum distance of E.
3. For operations of 15 minutes or less:

   a) The ROAD WORK, ONE LANE ROAD, and FLAGGER SYMBOL signs are not required.

   b) All channelizing devices may be eliminated if a shadow vehicle is present and the operation does not proceed against normal traffic flow.
4. When a shadow vehicle is not used, distance E is measured from the end of the taper to the beginning of the work space.

Signs		
		
W20-1	W20-4	W20-7

Sign Spacing, Channelizing Device Spacing, Buffer Space, and Roll Ahead Space					
Speed	Channelizing Devices Spacing	Sign Spacing		Buffer Space	Roll Ahead Space
		Urban	Rural		
S (MPH)	2S (Feet)	A (Feet)	A (Feet)	E (Feet)	H (Feet)
25	50	100 - 200	500 - 800	155	150
30	60	100 - 200	500 - 800	200	150
35	70	100 - 200	500 - 800	250	150
40	80	350 - 500	500 - 800	305	150
45	90	350 - 500	500 - 800	360	150
50	100	350 - 500	500 - 800	425	250
55	110	350 - 500	500 - 800	495	250

Taper Lengths and Minimum Number Of Channelizing Devices		
Speed	50' Per Lane Taper	
S (MPH)	Length (Feet)	Minimum Number Of Devices
25	50	6
30	50	6
35	50	6
40	50	6
45	50	6
50	50	6
55	50	6

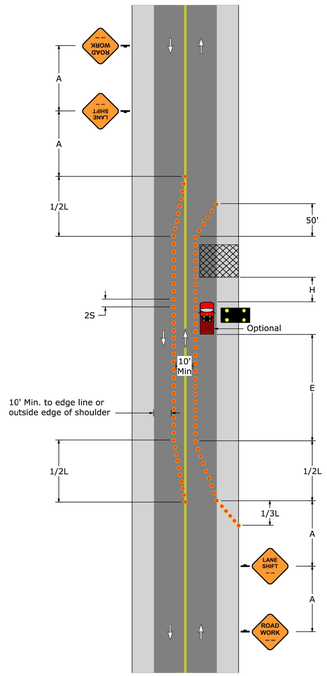
PENNDOT CONSTRUCTION NOTES:

1. TOWNSHIP TO BE NOTIFIED PRIOR TO WORKING NEAR SCHOOL SIGNALS AND SHALL MARK OUT AS REQUIRED.
2. SHOULDER AREAS PRONE TO WASHOUT SHALL BE PAVED.
3. ANY DAMAGE TO TREES OR CUT SLOPES CAUSING THEM TO FAIL SHALL BE THE RESPONSIBILITY OF THE PERMITTEE.
4. MAIN TO BE SLEEVED OR ENCASED WHERE PASSING THROUGH GUARDRAIL.
5. PERMITTEE AND HIS CONTRACTOR ARE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH THE REQUIRED EROSION AND SEDIMENTATION CONTROL MEASURES. APPROPRIATE CONTROLS ARE TO BE IN PLACE PRIOR TO SITE DISTURBANCE, CONTINUALLY MAINTAINED DURING CONSTRUCTION UNTIL REMOVED AND LEFT IN PLACE UNTIL SITE IS STABILIZED.
6. TOWNSHIP TO BE NOTIFIED PRIOR TO WORKING NEAR TRAFFIC SIGNAL LOOPS AND SHALL MARK OUT AS REQUIRED.
7. A BRIDGE OCCUPANCY LICENSE SHALL BE OBTAINED FOR THE STRUCTURE EXCEPT IN EMERGENCY SITUATION.
8. EACH FLAGGER STATION SHALL BE ILLUMINATED AT NIGHT WITH AN OVERHEAD LIGHTING SOURCE HAVING 30,000 TO 40,000 LUMENS MINIMUM OF LIGHT OUTPUT FOR AN AREA OF NOT LESS THAN 7,500 SQUARE FEET. THE LIGHTING SOURCE SHALL HAVE A MINIMUM COLOR TEMPERATURE OF 3,000 DEGREES AND A MAXIMUM OF 4,000 DEGREES. POSITION THE LIGHT SO THE FLAGGERS CAN BE SEEN AND NOT CAUSE EXCESSIVE GLARE TO MOTORIST TRAVELING THROUGH THE WORK ZONE.
9. NOTIFY THE DISTRICT 6-0 REGIONAL TRAFFIC MANAGEMENT CENTER (RTMC) 610-205-6934 FIFTEEN (15) MINUTES IN ADVANCE OF ANY PROPOSED LANE OR SHOULDER RESTRICTION, ROAD CLOSURE, OR ANY OPERATION IMPEDING THE FLOW OF TRAFFIC. NOTIFY THE RTMC WHEN THE ROAD IS RESTORED TO NORMAL OPERATION.
10. SUBMIT A COMPLETED M-937R FORM TO THE DISTRICT HAULING PERMIT OFFICE (610-205-6787) AND THE INSPECTOR-IN-CHARGE TEN WORKING DAYS IN ADVANCE OF ALL TRAFFIC RESTRICTIONS.
11. PROTECT DROP-OFFS ADJACENT TO A TRAVEL LANE IN ACCORDANCE WITH PUBLICATION 408, SECTION 901.3(J).
12. THE WORK MUST BE PERFORMED IN WAY THAT WILL NOT CREATE A HAZARD FOR VEHICLE TRAFFIC OR PEDESTRIAN TRAFFIC.
13. COORDINATE DELIVERY OF EQUIPMENT, MATERIAL TO MINIMIZE INCONVENIENCE TO TRAVELING PUBLIC.
14. REPLACE ALL PAVEMENT MARKINGS WHICH HAD BEEN REMOVED DURING CONSTRUCTION, UNLESS OTHERWISE NOTED.

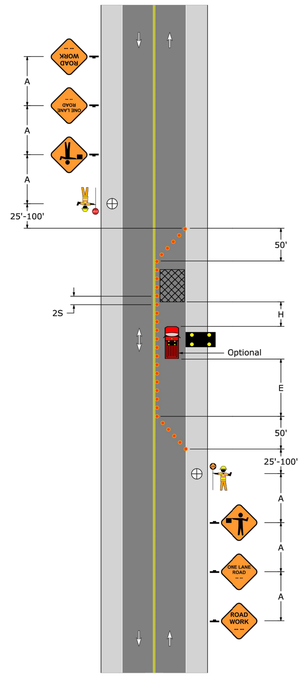
NOTES:

1. ALL SIGNS SHALL BE REFLECTORIZED.
2. ALL FLAGGERS MUST BE IN COMMUNICATION WITH EACH OTHER AND PENNDOT CERTIFIED.
3. EACH FLAGGER SHOULD BE CLEARLY VISIBLE TO THE TRAFFIC WHICH IS BEING CONTROLLED.
4. NOTIFY THE LOCAL MUNICIPALITY WHEN A SIGNALIZED INTERSECTION FALLS WITHIN THE WORK ZONE. DO NOT FLAG A SIGNALIZED INTERSECTION WITHOUT THE MUNICIPALITY PLACING THE SIGNAL ON FLASH.
5. NO OPEN TRENCHES WILL BE PERMITTED AT NIGHT.
6. MAINTAIN ALL ACCESS TO DRIVEWAYS AND SIDE ROADS.
7. NO LANE CLOSURES OR TRAFFIC RESTRICTIONS ON LEGAL HOLIDAYS. AND BETWEEN THE HOURS OF 6:00 AM TO 9:00 AM AND 3:00 PM TO 7:00 PM.
8. NOTIFY LOCAL EMERGENCY UNITS (POLICE, FIRE, MEDICAL, ETC.), LOCAL BUSINESSES, SCHOOL DISTRICT, THE LOCAL MEDIA AND THE REPRESENTATIVE TEN (10) WORKING DAYS IN ADVANCE OF THE START OF WORK.
9. THE CONTRACTOR IS REQUIRED TO SUBMIT A ROAD RESTRICTION FORM TO THE DISTRICT 6-0 PRESS OFFICE ONE WEEK IN ADVANCE OF ANY LANE CLOSURES AND TWO WEEKS IN ADVANCE OF ANY FULL CLOSURES THAT NECESSITATE A DETOUR. THE FORM IS AVAILABLE ONLINE AT penndot.gov/district6/roadrestrictionform OR BY CALLING 610-205-6797.

PATA 103



PATA 107



PATA 109 (A Through L)

Intersection Flagging Options

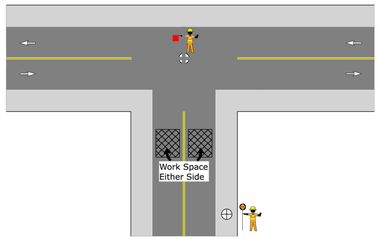


Figure 109-1
One Flagger within Intersection

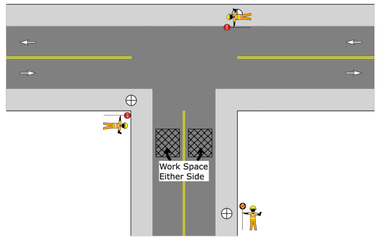


Figure 109-2
Two Flaggers at Intersection

NOTE:
CONTRACTOR TO SELECT APPROPRIATE TRAFFIC CONTROL OPTION (PATA 109-A THROUGH PATA 109-L) BASED ON TYPE OF PERMANENT CONTROL AND FIELD CONDITIONS.

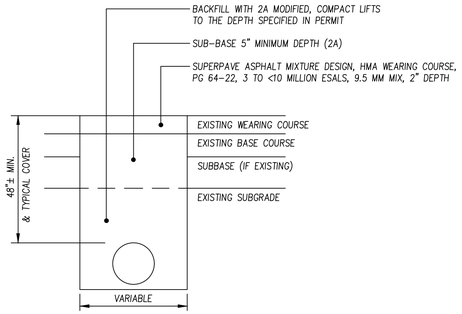
NO	DATE	REVISION	INTL
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:
DASH AVENUE PROJECT
TRAFFIC CONTROL DETAILS
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No:	20007-S
DATE: 09/14/23	SCALE: NTS	PLATE:	F-31
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437	
APPROVED		SHEET 5 OF 8	

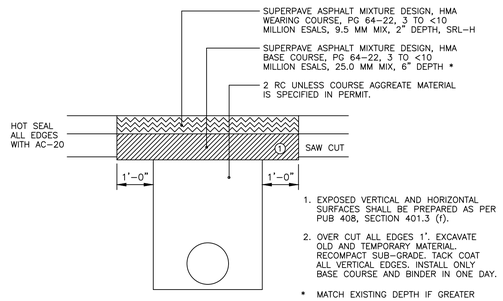
CM# 27620 WO# 100088561



TEMPORARY RESTORATION

FOR TOWNSHIP & BOROUGH ROADS

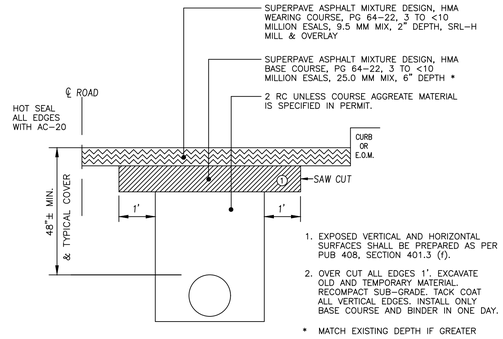
N T S



FLEXIBLE PAVEMENT RESTORATION

UPPER PROVIDENCE TWP.

N.T.S.



FLEXIBLE PAVEMENT RESTORATION

UPPER PROVIDENCE TWP.

N.T.S.

0	1/29/24	PROPOSED TO CONSTRUCTION	AH
NO	DATE	REVISION	INTL

AQUA PENNSYLVANIA, INCORPORATED

762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:

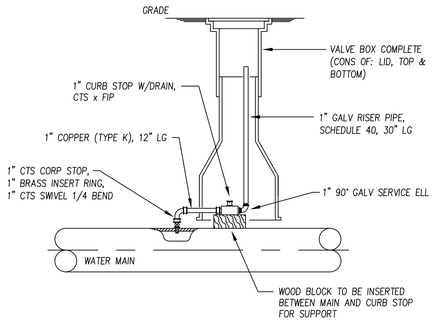
DASH AVENUE PROJECT

ROAD RESTORATION DETAILS

UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

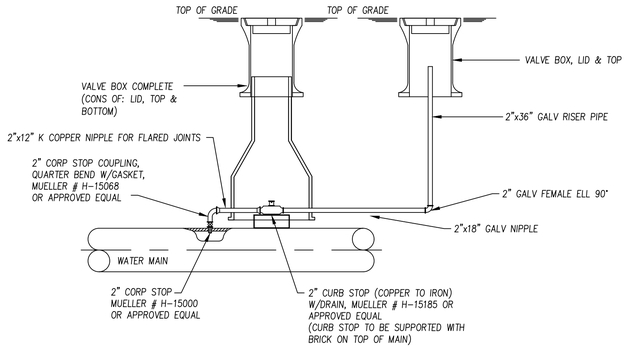
DRAWN BY: RCG	CHK'D BY: BCAD	EXT No: 20007-S
DATE: 09/14/23	SCALE: NTS	PLATE: F-31
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437
APPROVED		SHEET 6 OF 8

CM# 27620 WO# 100088561



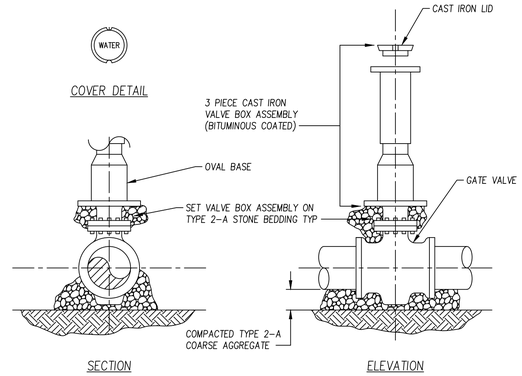
STANDARD 1" MAV & CL2 ASSEMBLY

NTS



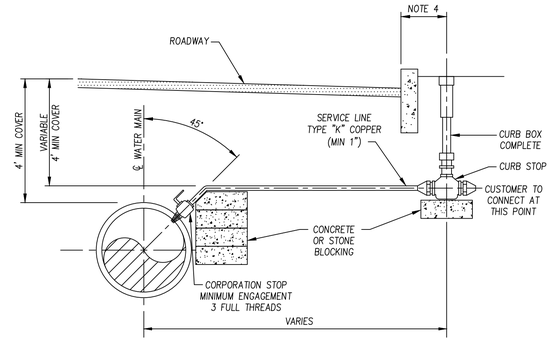
STANDARD 2" MAV & CL2 ASSEMBLY

NTS



STANDARD GATE VALVE AND VALVE BOX ASSEMBLY DETAIL

NTS

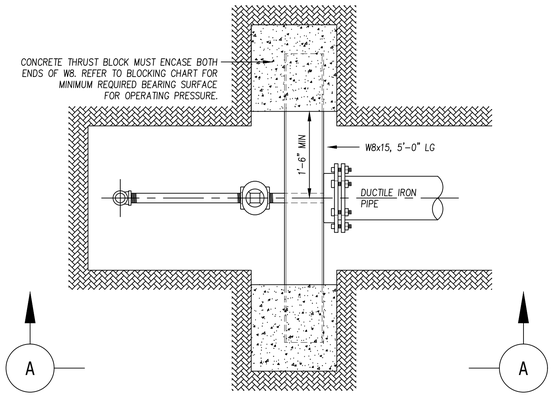


NOTES:

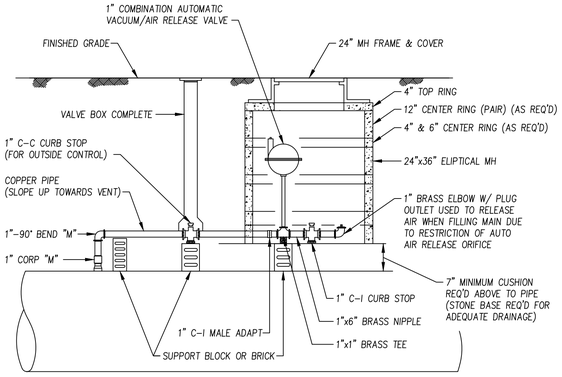
1. FOR STANDARD 1" CONNECTION, PROVIDE A TAPPED COUPLING WITH THREADED INSERT OR DOUBLE-STRAPPED SADDLE CLAMP.
2. DO NOT PLACE CURB STOP IN PAVED AREAS.
3. ALL SERVICE CONNECTIONS SHALL BE LOCATED AT THE MIDPOINT BETWEEN SIDE LOT LINES OR AS DIRECTED BY A AQUA PA FIELD REPRESENTATIVE.
4. WHERE SIDEWALK PARALLELS ROADWAY, THE CURB BOX SHALL BE PLACED BETWEEN THE CURB AND SIDEWALK. ALL OTHER LOCATIONS, CURB BOX TO BE PLACED AS DIRECTED BY A AQUA PA FIELD REPRESENTATIVE.

STANDARD SERVICE CONNECTION

NTS

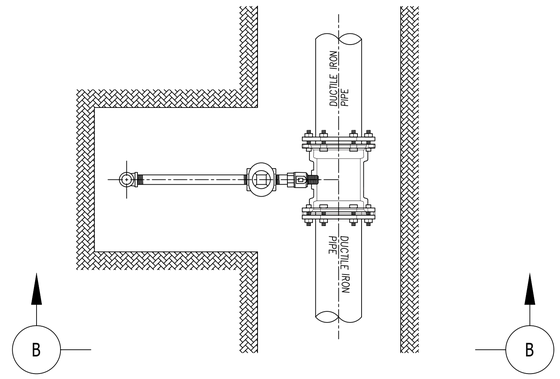


PLAN VIEW

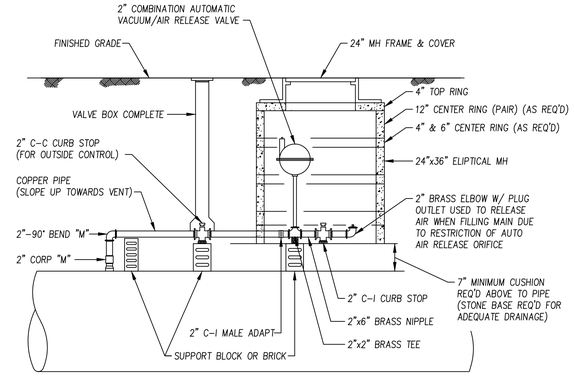


STANDARD 1" AUTOMATIC AIR VENT

NTS

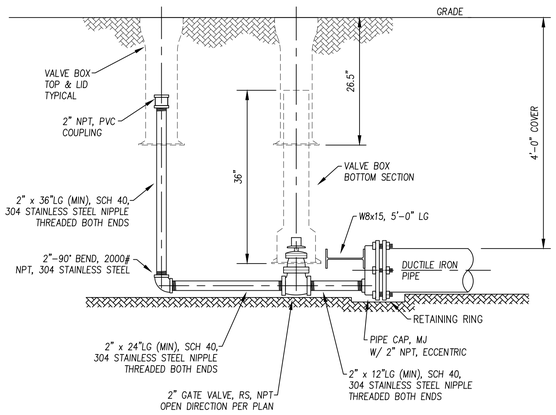


PLAN VIEW



STANDARD 2" AUTOMATIC AIR VENT

NTS



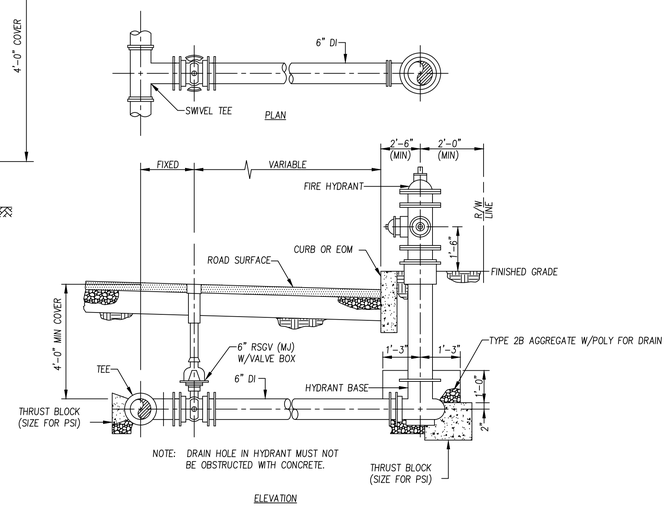
SECTION A

NOTES:

1. W8 MEMBER MUST MAKE FULL CONTACT WITH CAP OR PLUG, AND MUST BE SUPPORTED TO PROVIDE 1" MINIMUM VERTICAL CLEARANCE FROM STAINLESS STEEL PIPE.
2. CONCRETE THRUST BLOCKS MUST BE POURED AGAINST UNDISTURBED SOIL. NO EXCAVATION IS PERMITTED DOWNSTREAM OF BLOCKING, CONSULT WITH THE ENGINEERING DEPT OF AQUA PA FOR MINIMUM PERMITTED DISTANCE.
3. ALL MALE PIPE THREADS ARE TO BE COATED WITH 1/2" WIDE PTFE (TEFLON) THREAD SEAL TAPE, MIL SPEC T27730A, 4 TO 6 WRAPS PER JOINT.

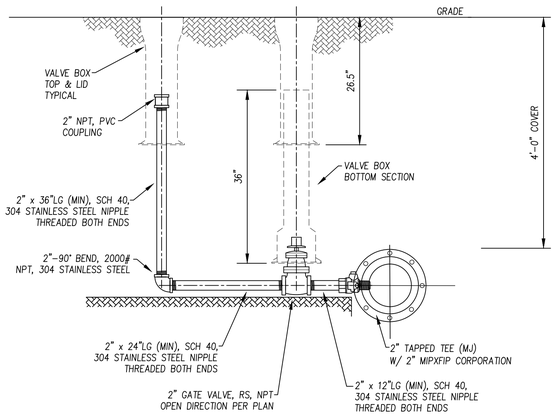
STANDARD 2" BLOW OFF

NTS



FIRE HYDRANT DETAIL

NTS



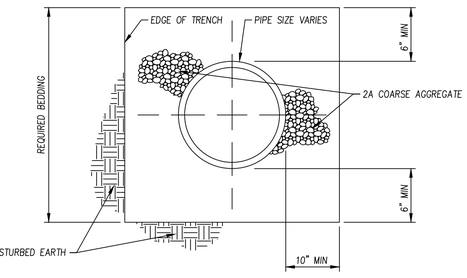
SECTION B

NOTES:

1. ALL MALE PIPE THREADS ARE TO BE COATED WITH 1/2" WIDE PTFE (TEFLON) THREAD SEAL TAPE, MIL SPEC T27730A, 4 TO 6 WRAPS PER JOINT.

2" TAPPED TEE W/ 2" BLOW OFF

NTS



STANDARD PIPE BEDDING DETAIL

NTS

NO	DATE	REVISION	INTL
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:

DASH AVENUE PROJECT

MISCELLANEOUS DETAILS

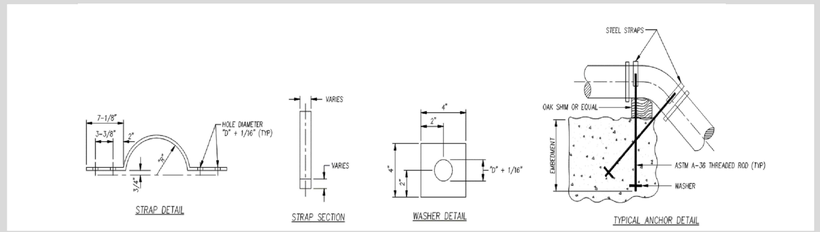
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No: 20007-S	
DATE: 09/14/23	SCALE: NTS	PLATE: F-31	
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437	
APPROVED		SHEET 7 OF 8	

CM# 27620 | WO# 100088561

MINIMUM CONCRETE VOLUMES AND STEEL STRAP SIZES REQUIRED FOR BLOCKING 6", 8", 12" AND 16" VERTICAL BENDS

DETAILS (NTS)



KEY	PIPE DIAMETER (INCH)	PRESSURE (PSI)	BEND ANGLE (DEGREE)	CONCRETE REQUIRED (CU YD)	STEEL STRAP SIZE	"R" STRAP RADIUS	ANCHOR BOLT DIAMETER "D" AND NUMBER REQUIRED PER STRAP	EMBEDMENT LENGTH
A	6	0-100	ALL	1.0	1/4" x 2 1/2"	3 5/8"	(2) 3/4"	24"
A-1	6	101-200	ALL	2.5	1/4" x 2 1/2"	3 5/8"	* (2) 1"	36"
B	8	0-100	ALL	2.0	3/8" x 3"	4 3/4"	* (2) 1"	36"
B-1	8	101-200	45	3.0	3/8" x 3"	4 3/4"	* (2) 1"	36"
B-2	8	101-200	90	4.0	3/8" x 3"	4 3/4"	(4) 1"	36"
C	12	0-100	ALL	4.5	1/2" x 3"	6 3/4"	(4) 1"	36"
C-1	12	101-200	45	6.0	(2) 1/2" x 3"	6 3/4"	(4) 1"	36"
C-2	12	101-200	90	8.5	(2) 1/2" x 3"	6 3/4"	(4) 1"	36"
D	16	0-100	ALL	10.0	5/8" x 4"	8 3/4"	(4) 1 1/4"	48"
D-1	16	101-200	45	11.0	(2) 5/8" x 4"	8 3/4"	(4) 1 1/4"	48"
D-2	16	101-200	90	15.0	(2) 5/8" x 4"	8 3/4"	(4) 1 1/4"	48"

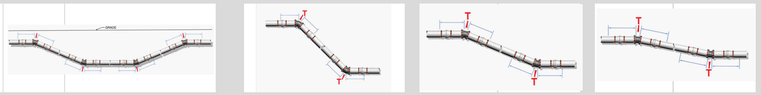
NOTES:
1. ALL STEEL SHALL CONFORM TO ASTM A-36
2. (2) STRAPS ARE REQUIRED, EACH WITH (4)-1" DIAMETER ANCHOR BOLTS FOR CASES C-1 AND C-2
3. REFER TO AQUA DRAWING E-4453 FOR USE AS PIPE AND VALVE CLAMP
4. CONTACT ENGINEERING DEPARTMENT FOR DESIGN ON PRESSURE EXCEEDING 200 PSI OR IF PIPE SIZE IS LARGER THAN 12"
5. COAT ALL EXPOSED METAL WITH 12 MILS OF ROSKOTE.
6. BOLT LENGTH WILL EQUAL "EMBEDMENT LENGTH" +SHIM +1/2" OD OF PIPE +3-1/2".

* - WHERE (2) 1" DIAMETER BOLTS ARE REQUIRED (4) 3/4" DIAMETER BOLTS MAY BE USED

VERTICAL BLOCKING TABLE

MINIMUM RESTRAINT LENGTH FOR VERTICAL FITTINGS

PROFILE VIEW (NTS)



3.5' MIN COVER / COMPACTED	1.5:1 SAFTEY FACTOR /EBBA		VERTICAL 45 BEND		VERTICAL 22 1/2 BEND		VERTICAL 11 1/4 BEND	
Backfill	DIA. (INCH)	MATERIAL	100 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT	100 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT	100 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT
2A Modify (GW)	6"	DIP	7'	14'	4'	7'	2'	4'
Sand (SW)	6"	Poly Wrapped DIP	20'	40'	10'	19'	5'	10'
Sand (SW)	6"	PVC	11'	22'	6'	11'	3'	6'
2A Modify (GW)	8"	DIP	9'	18'	5'	9'	3'	5'
Sand (SW)	8"	Poly Wrapped DIP	26'	52'	13	25'	7'	13'
Sand (SW)	8"	PVC	14'	28'	7'	14'	4'	7'
2A Modify (GW)	12"	DIP	13'	25'	6'	12'	3'	6'
Sand (SW)	12"	Poly Wrapped DIP	37'	73'	18'	35'	9'	18'
Sand (SW)	12"	PVC	20'	40'	10'	20'	5'	10'
2A Modify (GW)	16"	DIP	17	33	8	16	4	8
Sand (SW)	16"	Poly Wrapped DIP	47	94	23	45	12	23
Sand (SW)	16"	PVC	26	52	13	25	7	13

NOTES:
1. IMAGES ARE DI FITTINGS WITH PVC PIPE FOR CLARITY OF THE FITTING. IMAGES INCLUDE MECHANICAL RESTRAINT SYSTEM. PREFERRED METHOD IS THE USE OF (SURE/STOP FIELD LOK) RESTRAINING GASKET AT PUSH ON JOINTS AND APPROPRIATE MEGALUG RESTRAINTS AT MECHANICAL JOINTS (MJ).
2. RESTRAINED JOINT METHOD IS INTENDED TO BE USED ON NEW PIPE ONLY (NOT RETROFITTED TO EXISTING PIPE TO REMAIN). WHERE RESTRAINT AT CONNECTIONS TO EXISTING PIPE IS REQUIRED, USE VERTICAL STRAPPING METHOD.
3. FOR PRESSURES OVER 200 PSI AND DEPTHS OF COVER LESS THAN 3.5 FT. PLEASE CONTACT ENGINEERING DEPARTMENT FOR REQUIRED RESTRAINED LENGTH IF NOT OTHERWISE SPECIFIED.

VERTICAL RESTRAINED JOINT TABLE

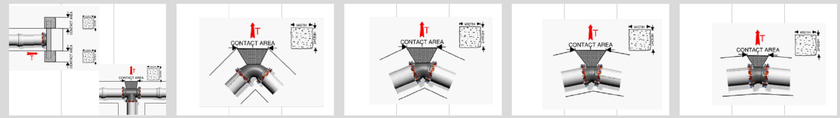
MINIMUM THRUST BLOCK AREAS REQUIRED (SQUARE FEET (SF) OF CONTACT SURFACE AREA ALONG TRENCH WALL)

HORIZONTAL FITTINGS PLAN VIEW (NTS)

$$bh_{tee} = \frac{s_f PA}{s_b}$$

$$bh_{bend} = \frac{s_f 2PA\sin(\theta/2)}{s_b}$$

$$A = \frac{\pi}{4}D^2$$



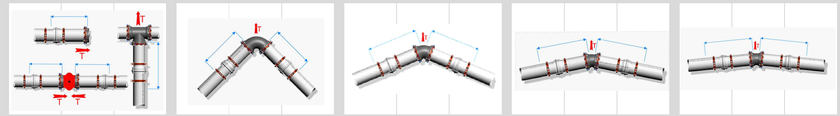
4' COVER	1.5:1 SAFTEY FACTOR		DEAD-END / C&P / BO / HYD/TEE			HORIZ 90 BEND			HORIZ 45 BEND			HORIZ 22 1/2 BEND			HORIZ 11 1/4 BEND			
Backfill	DIA. (INCH)	MATERIAL	100	150	200	100	150	200	100	150	200	100	150	200	100	150	200	PSI
2A Modify/Sand(GW)	6	DIP/PVC/POLYWRAP	2	3	4	3	4	6	2	2	3	1	1	2	1	1	1	SF
2A Modify/Sand(GW)	8	DIP/PVC/POLYWRAP	4	6	8	5	8	11	3	4	6	1	2	3	1	1	1	SF
2A Modify/Sand(GW)	12	DIP/PVC/POLYWRAP	8	13	17	12	18	24	6	10	13	3	5	7	2	2	3	SF
2A Modify/Sand(GW)	16	DIP/PVC/POLYWRAP	15	23	30	21	32	43	12	17	23	6	9	12	3	4	6	SF
2A Modify/Sand(GW)	20	DIP/PVC/POLYWRAP	24	35	47	33	50	67	18	27	36	9	14	18	5	7	9	SF
2A Modify/Sand(GW)	24	DIP/PVC/POLYWRAP	34	51	68	48	72	96	26	39	52	13	20	26	7	10	13	SF
2A Modify/Sand(GW)	30	DIP/PVC/POLYWRAP	53	80	106	75	112	150	41	61	81	21	31	41	10	16	21	SF

NOTES:
1. IMAGES ARE DI FITTINGS WITH PVC PIPE FOR CLARITY OF THE FITTING.
2. CONTACT ENGINEERING DEPARTMENT FOR PRESSURES ABOVE 200 PSI

HORIZONTAL BLOCKING TABLE

MINIMUM RESTRAINT LENGTH FOR HORIZONTAL FITTINGS

HORIZONTAL PLAN VIEW (NTS)



4' COVER / COMPACTED 1.5:1 SAFTEY FACTOR /EBBA			INLINE VALVE/BLOW OFF/TEE BRANCH			HORIZ 90 BEND			HORIZ 45 BEND			HORIZ 22 1/2 BEND			HORIZ 11 1/4 BEND		
Backfill	DIA. (INCH)	MATERIAL	100 PSI/LF RESTRAINT	150 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT	100 PSI/LF RESTRAINT	150 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT	100 PSI/LF RESTRAINT	150 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT	100 PSI/LF RESTRAINT	150 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT	100 PSI/LF RESTRAINT	150 PSI/LF RESTRAINT	200 PSI/LF RESTRAINT
2A Modify (GW)	6"	DIP	15'	22'	29'	7'	10'	13'	3'	4'	6'	2'	2'	3'	1'	1'	2'
Sand (SW)	6"	Poly Wrapped DIP	42'	63'	84'	9'	13'	17'	4'	6'	8'	2'	3'	4'	1'	2'	2'
Sand (SW)	6"	PVC	23'	34'	46'	8'	11'	15'	3'	5'	6'	2'	3'	3'	1'	2'	2'
2A Modify (GW)	8"	DIP	19'	29'	38'	8'	12'	16'	4'	5'	7'	2'	3'	4'	1'	2'	2'
Sand (SW)	8"	Poly Wrapped DIP	55'	82'	110'	12'	17'	23'	5'	7'	10'	3'	4'	5'	2'	2'	3'
Sand (SW)	8"	PVC	30'	45'	60'	10'	15'	19'	4'	6'	8'	2'	3'	4'	1'	2'	2'
2A Modify (GW)	12"	DIP	27'	40'	54'	12'	17'	23'	5'	7'	10'	3'	4'	5'	2'	2'	3'
Sand (SW)	12"	Poly Wrapped DIP	78'	117'	156'	16'	24'	31'	7'	10'	13'	4'	5'	7'	2'	3'	4'
Sand (SW)	12"	PVC	43'	64'	85'	14'	20'	27'	6'	9'	12'	3'	4'	6'	2'	2'	3'
2A Modify (GW)	16"	DIP	35'	52'	69'	15'	22'	29'	6'	9'	12'	3'	5'	6'	2'	3'	3'
Sand (SW)	16"	Poly Wrapped DIP	101'	151'	201'	20'	30'	40'	9'	13'	17'	4'	6'	8'	2'	3'	4'
Sand (SW)	16"	PVC	55'	83'	110'	17'	26'	34'	8'	11'	15'	4'	6'	7'	2'	3'	4'
2A Modify (GW)	20"	DIP	42'	63'	84'	18'	26'	35'	8'	11'	15'	4'	6'	7'	2'	3'	4'
Sand (SW)	20"	Poly Wrapped DIP	122'	183'	244'	24'	36'	48'	10'	15'	20'	5'	8'	10'	3'	4'	5'
Sand (SW)	20"	PVC	67'	101'	134'	21'	31'	41'	9'	13'	17'	5'	7'	9'	3'	4'	5'
2A Modify (GW)	24"	DIP	50'	74'	99'	21'	31'	41'	9'	13'	17'	4'	6'	8'	2'	3'	4'
Sand (SW)	24"	Poly Wrapped DIP	144'	215'	287'	28'	42'	55'	12'	18'	23'	6'	9'	11'	3'	5'	6'
Sand (SW)	24"	PVC	79'	118'	157'	24'	36'	48'	10'	15'	20'	5'	8'	10'	3'	4'	5'
2A Modify (GW)	30"	DIP	60'	89'	119'	24'	36'	48'	10'	15'	20'	5'	8'	10'	3'	4'	5'
Sand (SW)	30"	Poly Wrapped DIP	173'	260'	346'	33'	49'	65'	14'	21'	27'	7'	10'	13'	4'	5'	7'
Sand (SW)	30"	PVC	95'	142'	189'	29'	43'	57'	12'	18'	24'	6'	9'	12'	3'	5'	6'

NOTES:
1. IMAGES ARE DI FITTINGS WITH PVC PIPE FOR CLARITY OF THE FITTING. IMAGES INCLUDE MECHANICAL RESTRAINT SYSTEM. PREFERRED METHOD IS THE USE OF (SURE/STOP FIELD LOK) RESTRAINING GASKET AT PUSH ON JOINTS AND APPROPRIATE MEGALUG RESTRAINTS AT MECHANICAL JOINTS (MJ).
2. RESTRAINED JOINT METHOD IS INTENDED TO BE USED ON NEW PIPE ONLY (NOT RETROFITTED TO EXISTING PIPE TO REMAIN). WHERE RESTRAINT AT CONNECTIONS TO EXISTING PIPE IS REQUIRED, USE BLOCKING METHOD.
3. FOR PRESSURES OVER 200 PSI AND DEPTHS OF COVER LESS THAN 4 FT. PLEASE CONTACT ENGINEERING DEPARTMENT FOR REQUIRED RESTRAINED LENGTH IF NOT OTHERWISE SPECIFIED.

HORIZONTAL RESTRAINED JOINT TABLE

NO	DATE	REVISION	INTL
0	1/29/24	PROPOSED TO CONSTRUCTION	AH

AQUA PENNSYLVANIA, INCORPORATED
762 LANCASTER AVENUE, BRYN MAWR, PA., 19010

PROJECT PLAN FOR:
DASH AVENUE PROJECT
BLOCKING & RESTRAINING TABLES
UPPER PROVIDENCE TOWNSHIP, DELAWARE COUNTY

DRAWN BY: RCG	CHK'D BY: BCAD	EXT No: 20007-S	
DATE: 09/14/23	SCALE: NTS	PLATE: F-31	
PROJECT No: 1458.14	ACTIVITY No: 100088561	A - 67437	
APPROVED		SHEET 8 OF 8	

CM# 27620 WO# 100088561