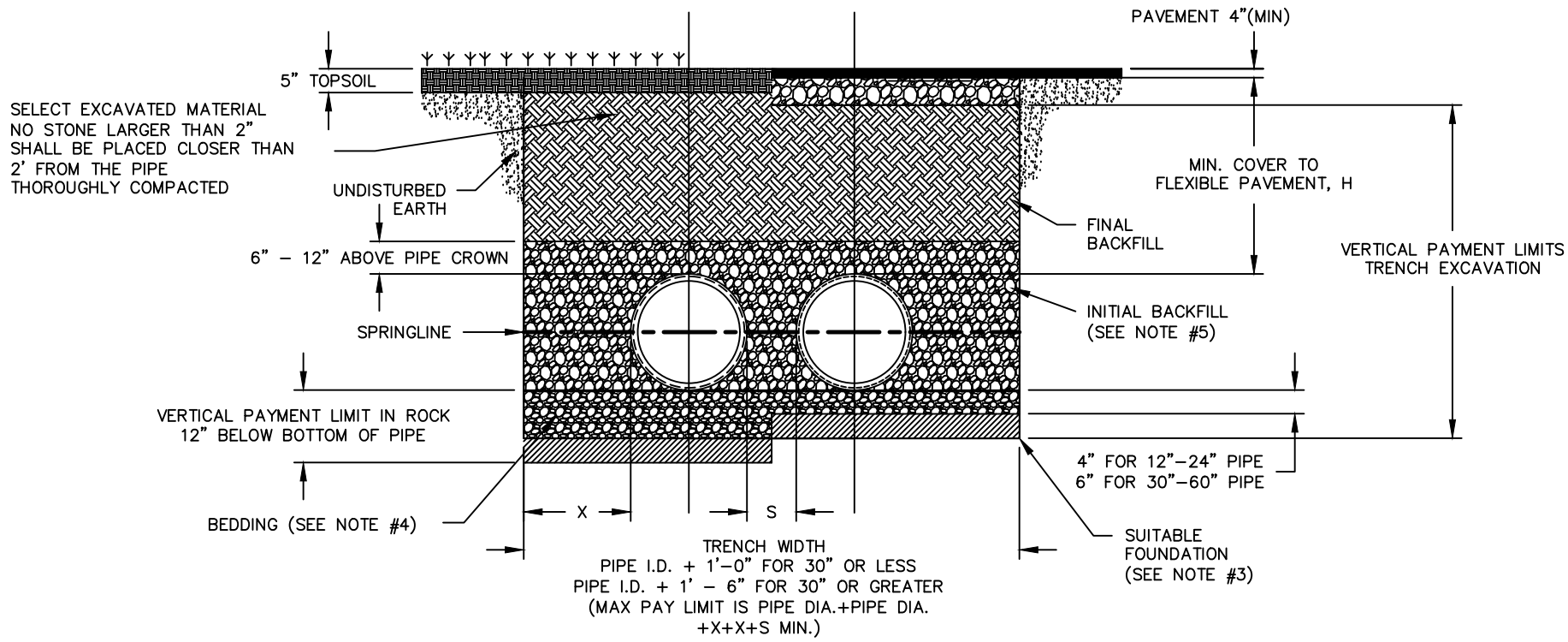


STAGGERED PIPE JOINT  
PIPE INSTALLATION DETAIL

- NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION
  2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
  3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER, AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
  4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS 1 (FORM 816 M.02.05). THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100MM) FOR 4"-24" (100MM-600MM); 6" (150MM) FOR 30"-60" (750MM-900MM). WHEN GROUND WATER IS ENCOUNTERED  $\frac{1}{2}$ " CRUSHED STONE IS REQUIRED FOR BEDDING TO SPRING LINE OF PIPE. (SILTY OR CLAYEY GRAVEL, GRAVEL/SAND/SILT OR GRAVEL AND CLAY MIXTURES; SILTY OR CLAYEY SANDS, SAND/CLAY OR CLAY/SILT MIXTURES) FOR BEDDING/BACKFILL IS NOT ALLOWED UNDER PAVEMENT.
  5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS 1, 2 OR 3 (Form 816 M.02.05) IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. (SILTY OR CLAYEY GRAVEL, GRAVEL/SAND/SILT OR GRAVEL AND CLAY MIXTURES; SILTY OR CLAYEY SANDS, SAND/CLAY OR CLAY/SILT MIXTURES) FOR BEDDING/BACKFILL IS NOT ALLOWED UNDER PAVEMENT.
  6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT.



N-12 HP STORM TRENCH  
INSTALLATION DETAIL (PARALLEL)

NOT TO SCALE

MINIMUM RECOMMENDED COVER  
BASED ON LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-20	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"



\* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

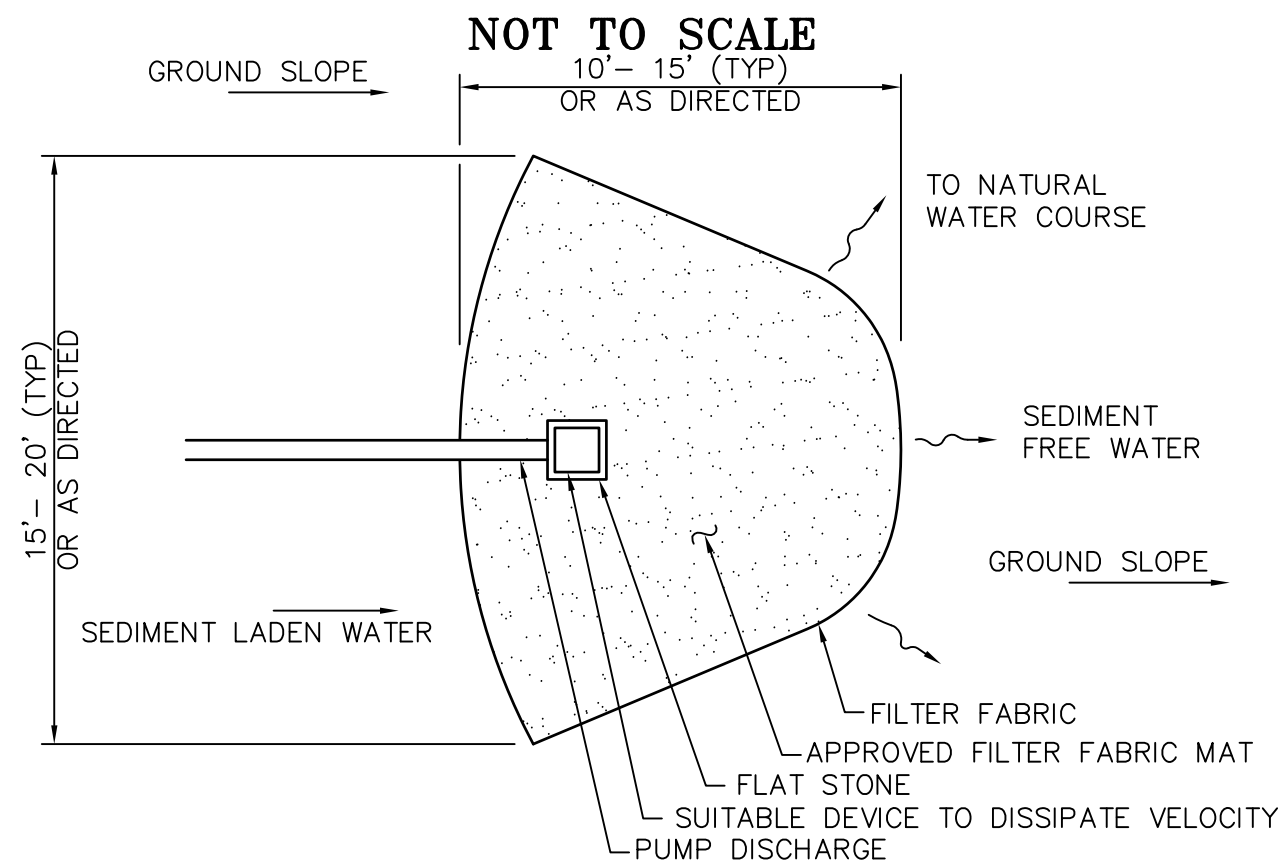
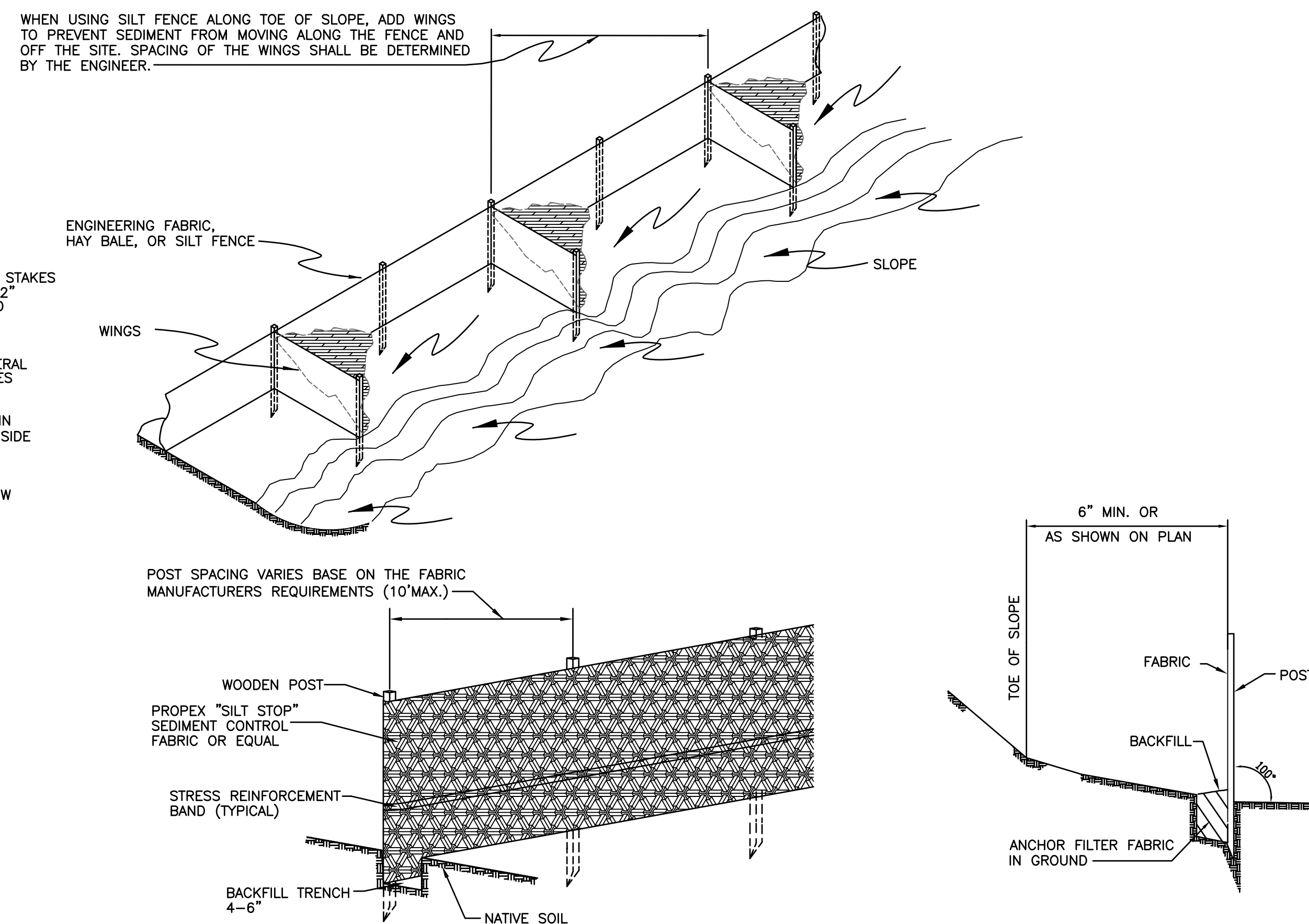
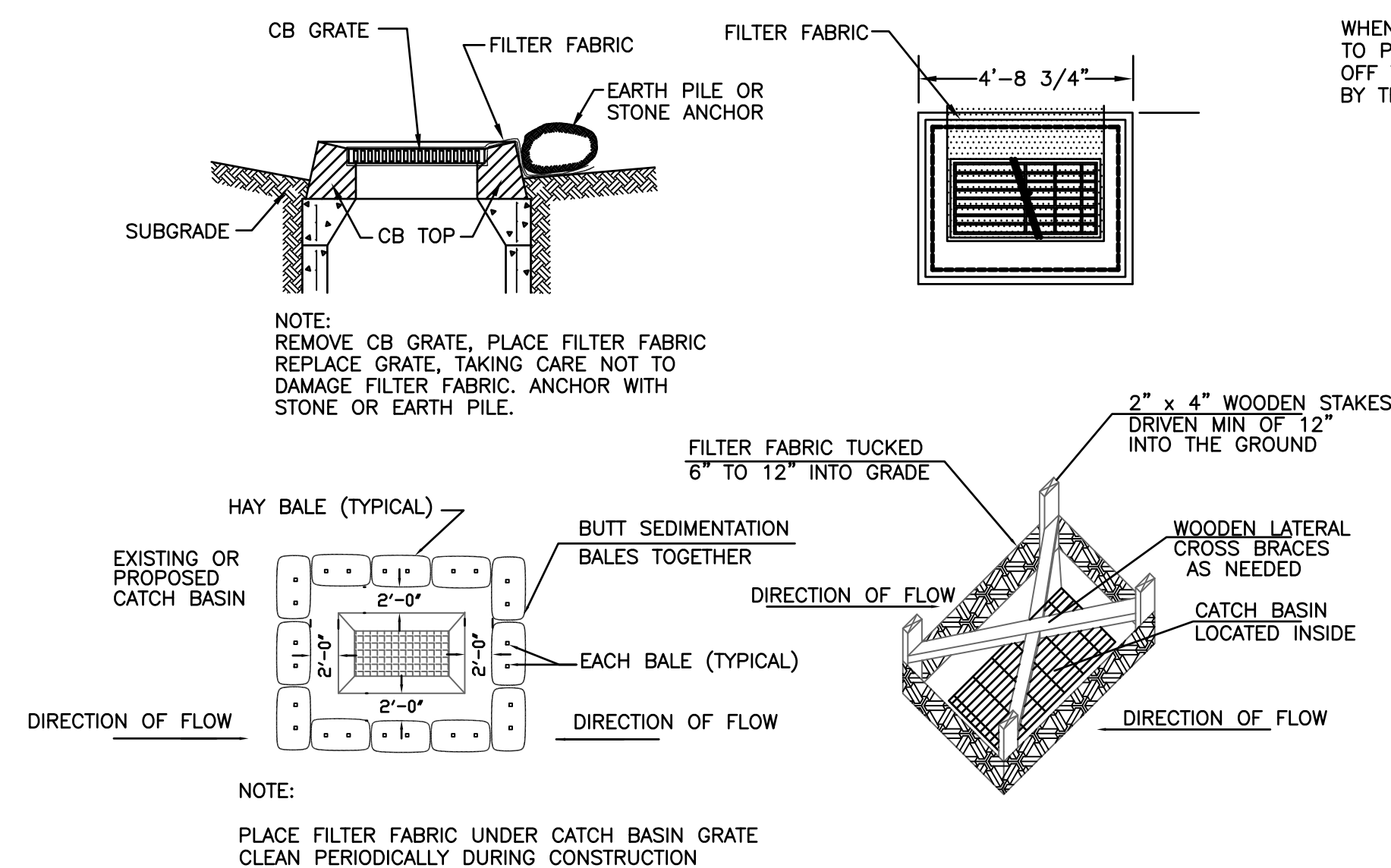
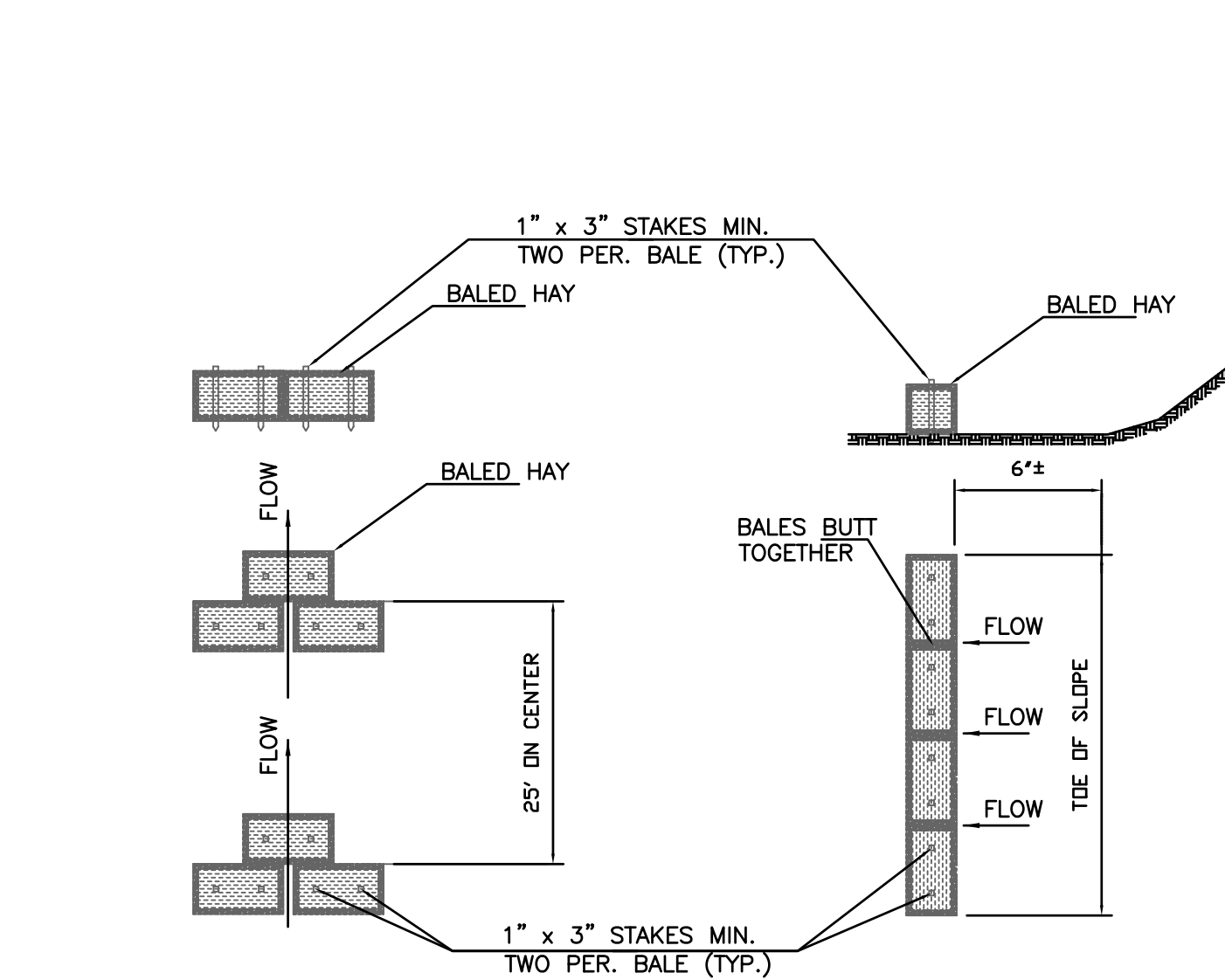
RECOMMENDED  
MINIMUM SPACING

PIPE DIAM.	MIN. "X"	MIN. "S" *
12"	8"	12"
15"	8"	12"
18"	9"	12"
24"	10"	12"
30"	18"	15"
36"	18"	18"
42"	18"	21"
48"	18"	24"
54"	18"	27"
60"	18"	30"

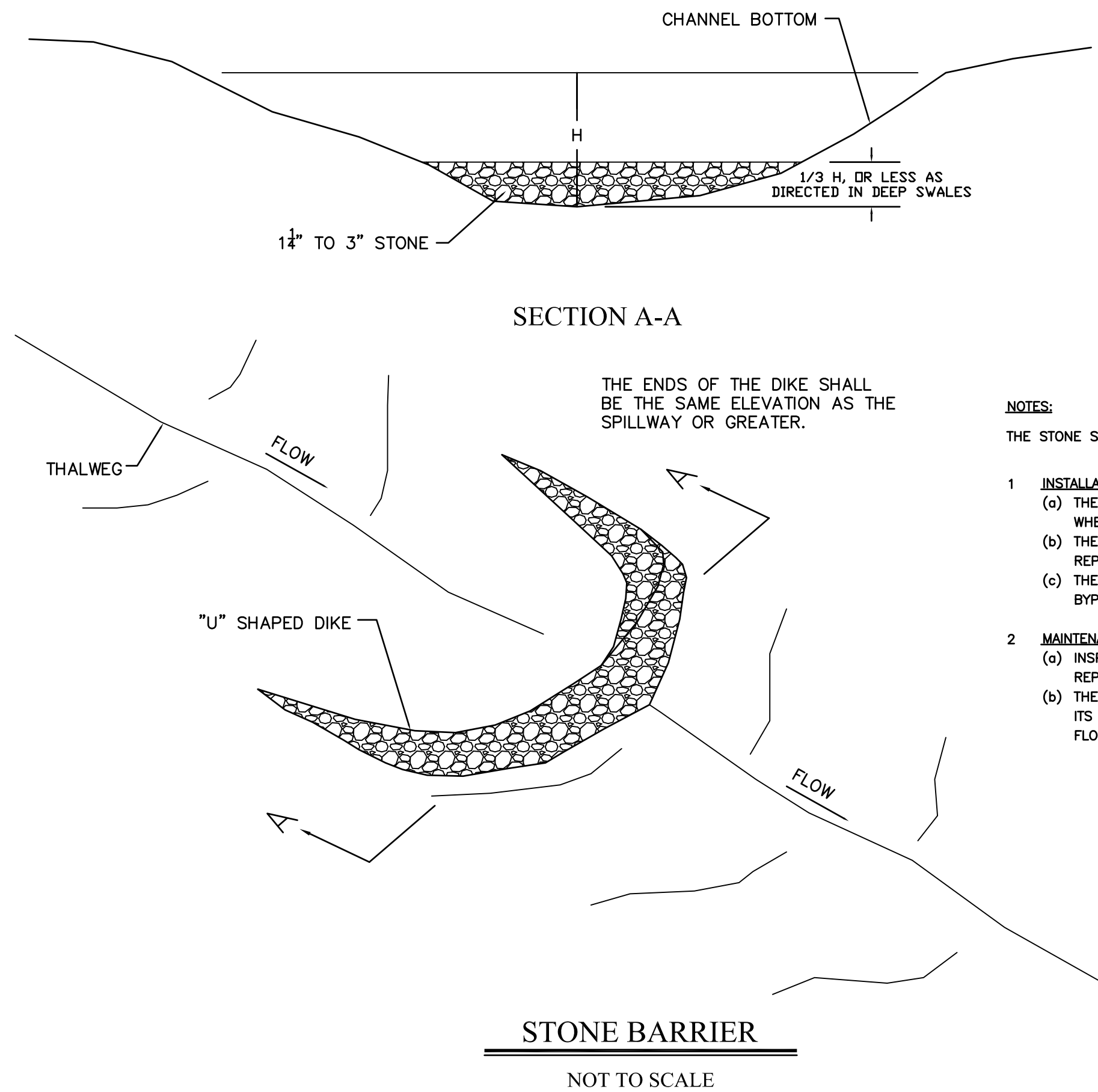
\* MINIMUM SPACING ("S")  
MEASURED FROM OUTSIDE DIAMETER  
TO OUTSIDE DIAMETER

\*\* MAXIMUM SPACING ("X")  
PIPE I.D. + 1'-0" FOR 30" OR LESS  
PIPE I.D. + 1'-6" FOR 30" OR GREATER

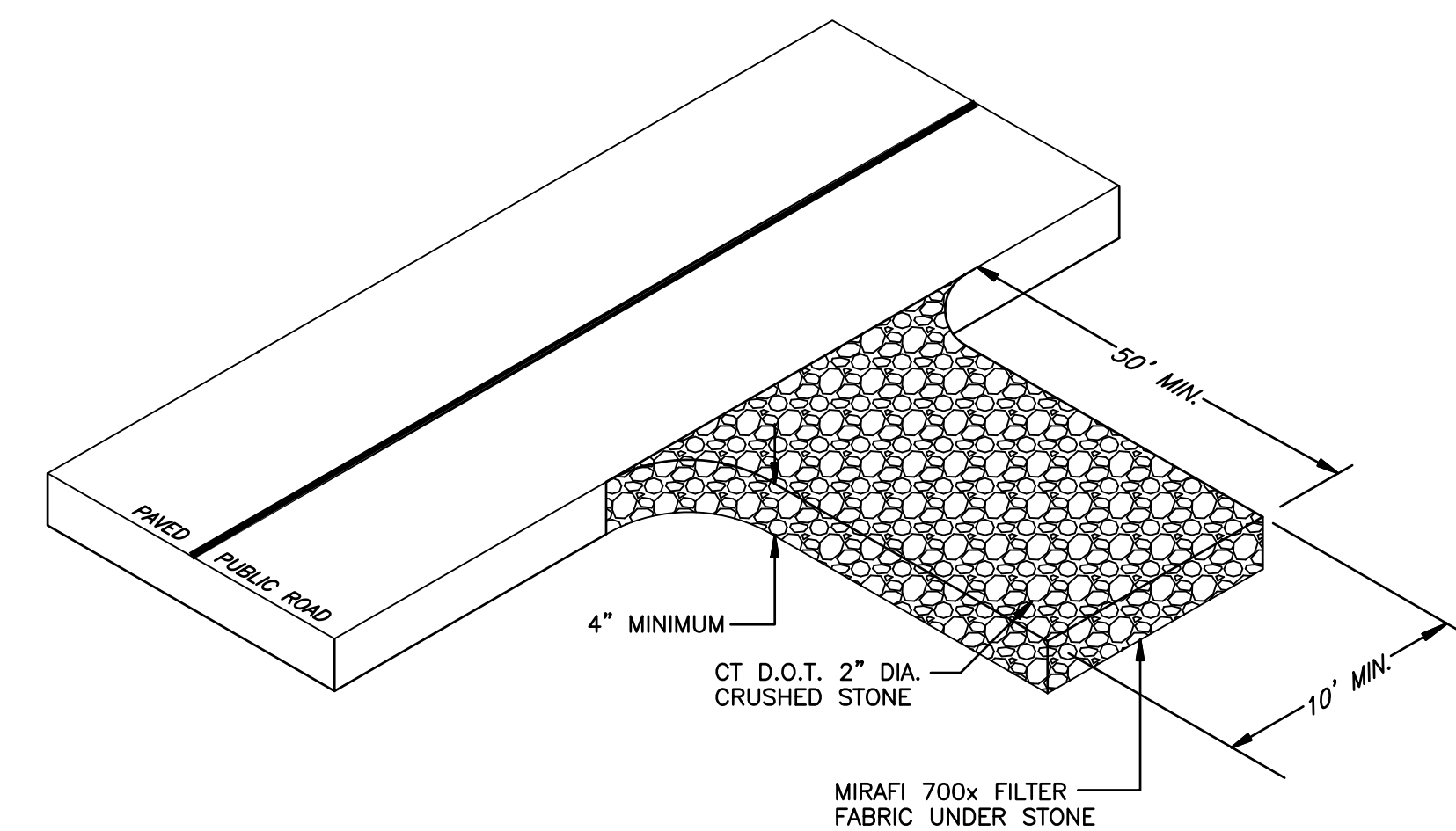
NO.	REVISIONS	BY	DATE	DES BY:	DATE:	SUBMITTED BY:	DATE:		TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING		PROJECT TITLE:  SPRUCEWOOD DRAINAGE PROJECT	DRAWING TITLE:  REPAIR EXISTING STORM DRAINAGE THROUGH RIGHT OF WAY DETAILS	PROJECT NO.  153-WTN-001-2023
				DRN BY:		APPROVED BY:	DATE:						FILE NO.
				CHK BY:	SCALE:  N.T.S.								DRAWING NO.  3
				APPD BY:	ENGINEER:								SHEET NO.  3 of 3



**PUMP DISCHARGE SEDIMENT TRAP**  
NOT TO SCALE

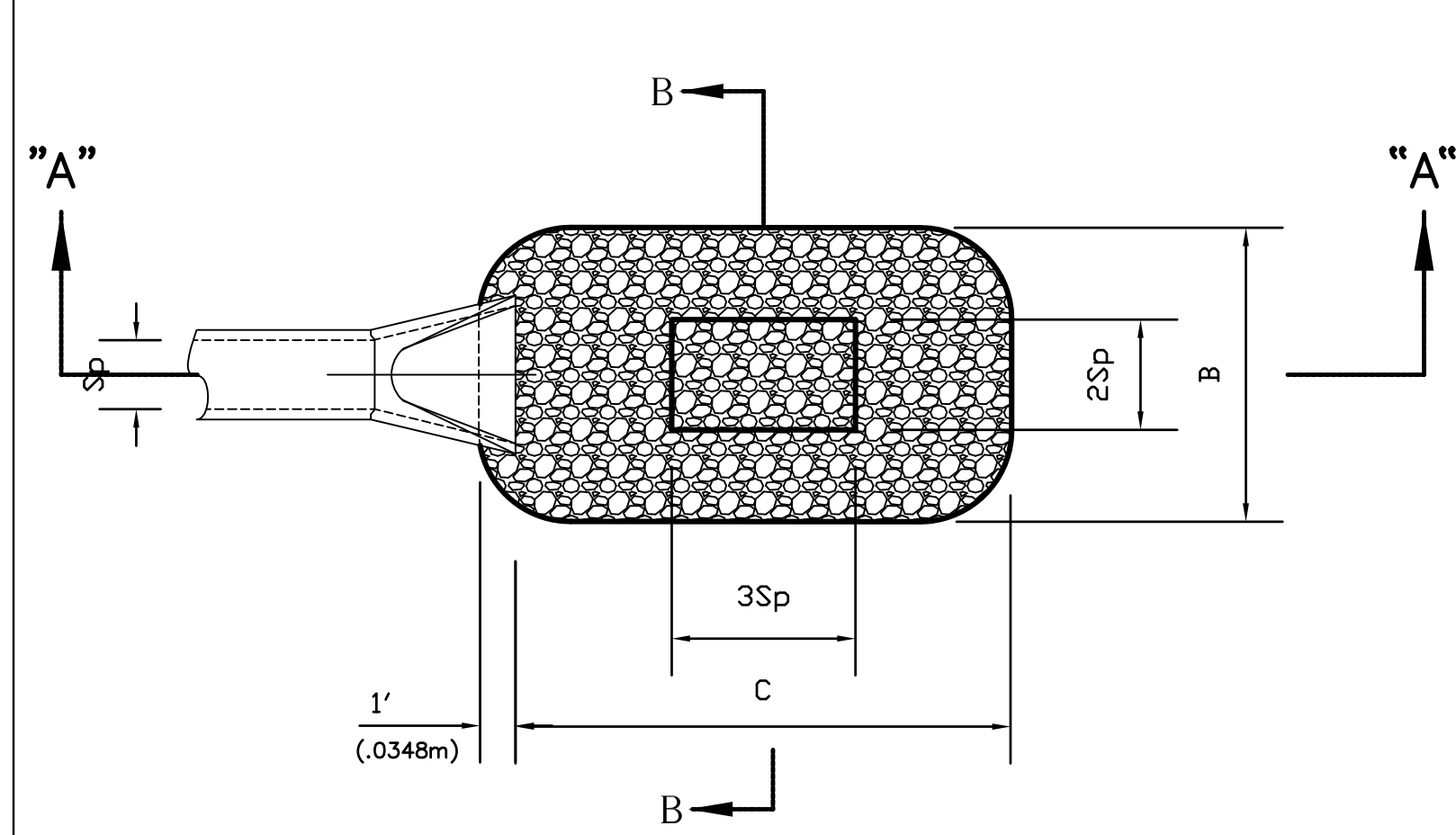


- NOTES:**  
THE STONE SHALL MEET ASTM C-33 SIZE NO. 2 OR 3 (3" OR 2 1/2")
- 1. INSTALLATION REQUIREMENTS**
    - (a) THE CONTRACTOR SHALL CONSTRUCT STONE BARRIER WHERE DIRECTED BY THE ENGINEER
    - (b) THE STONE SHALL BE PILED TO A NATURAL ANGLE OF REPOSE WITH A HEIGHT OF AT LEAST TWO FEET.
    - (c) THE BARRIER SHALL BE CONSTRUCTED SO WATER CANNOT BYPASS THE BARRIER AROUND THE ENDS
  - 2. MAINTENANCE**
    - (a) INSPECTION SHALL BE FREQUENT AND REPAIR OR REPLACEMENT SHALL BE MADE PROMPTLY AS NEEDED.
    - (b) THE BARRIER SHALL BE REMOVED WHEN IT HAS SERVED ITS USEFULNESS SO AS NOT TO BLOCK OR IMPEDE STORM FLOW OR DRAINAGE.

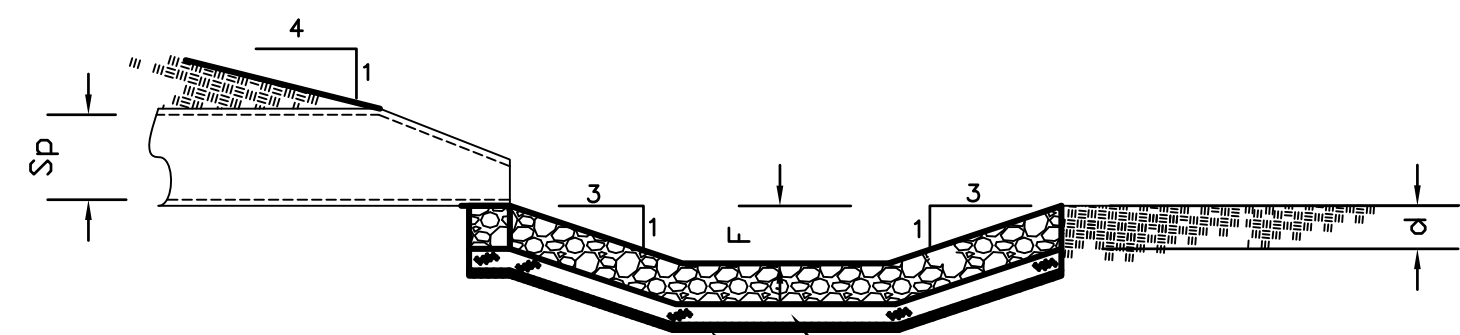


NO.	REVISIONS	BY	DATE	DES BY: J.M.M.	DATE: 3-2-2009		TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING		PROJECT TITLE:  TOWN OF WATERTOWN STANDARD DRAWINGS	DRAWING TITLE:  SEDIMENTATION AND EROSION CONTROL DETAILS	PROJECT NO. <>	
				DRN BY: J.M.M.	FILE NO. <>							
				CHK BY: R.S.	SCALE: N.A.						SUBMITTED BY: DATE:	DRAWING NO. 153WTN-4A
				APPD BY: R.C.	APPROVED BY: DATE:						SHEET NO. 153WTN-4A	

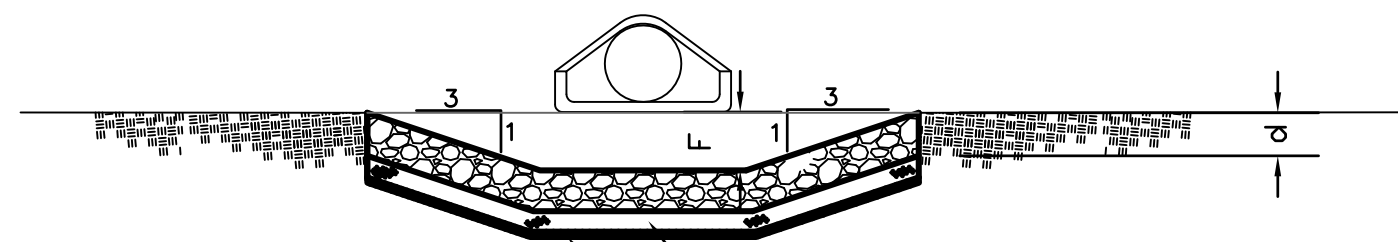




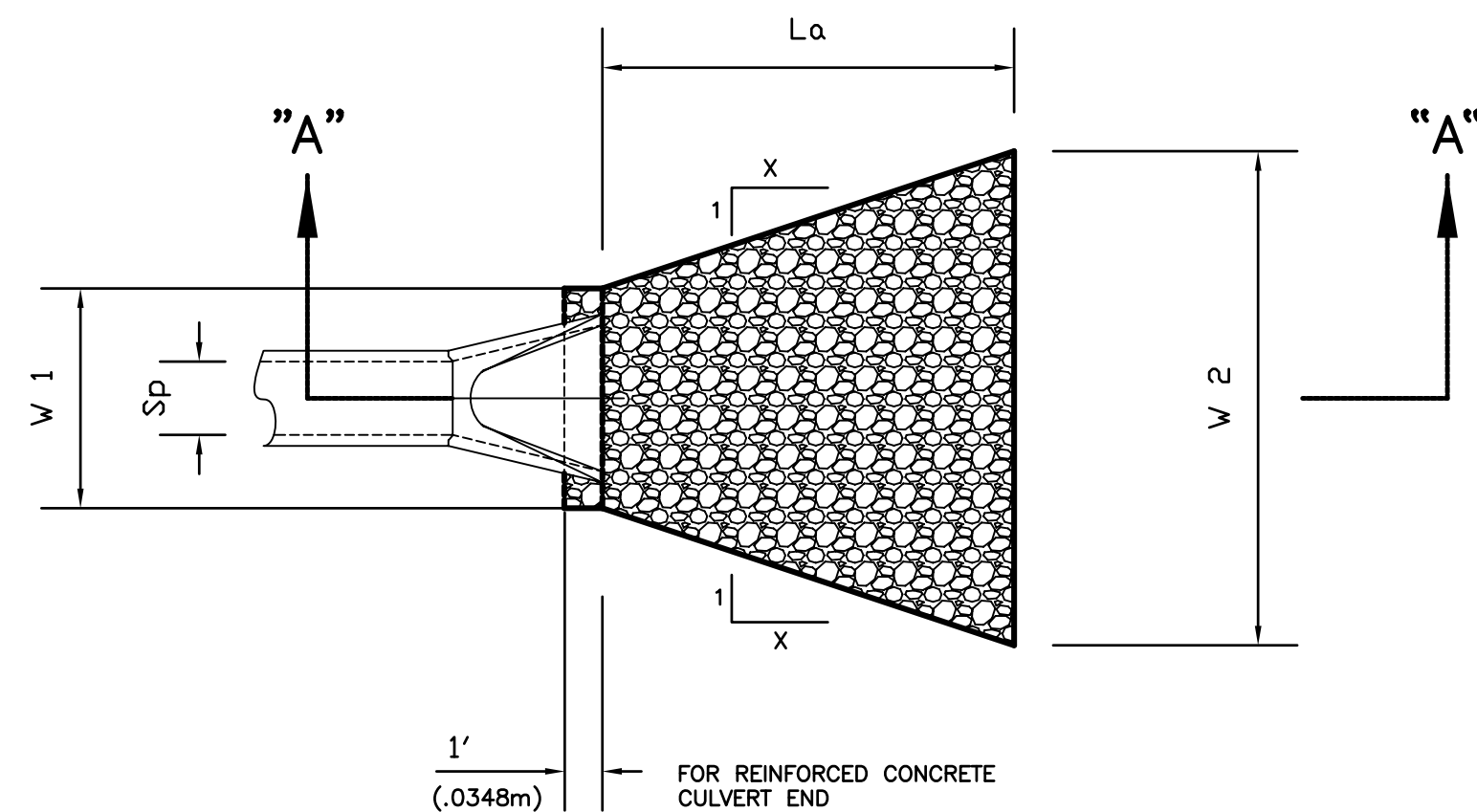
CULVERT PLAN



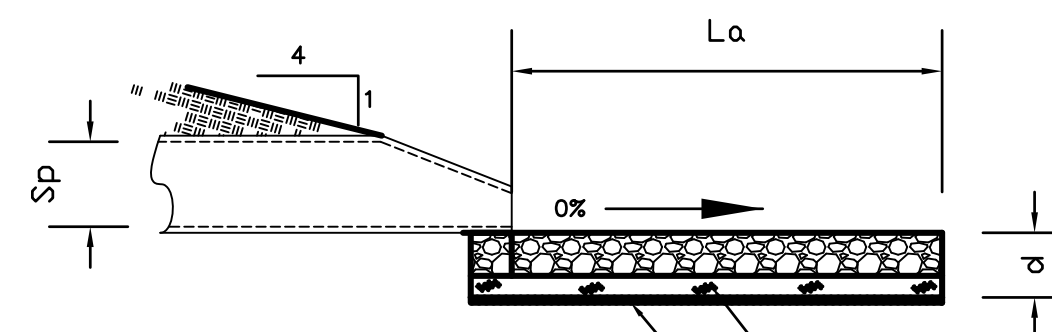
SECTION "A"-"A"



SECTION "B"-"B"



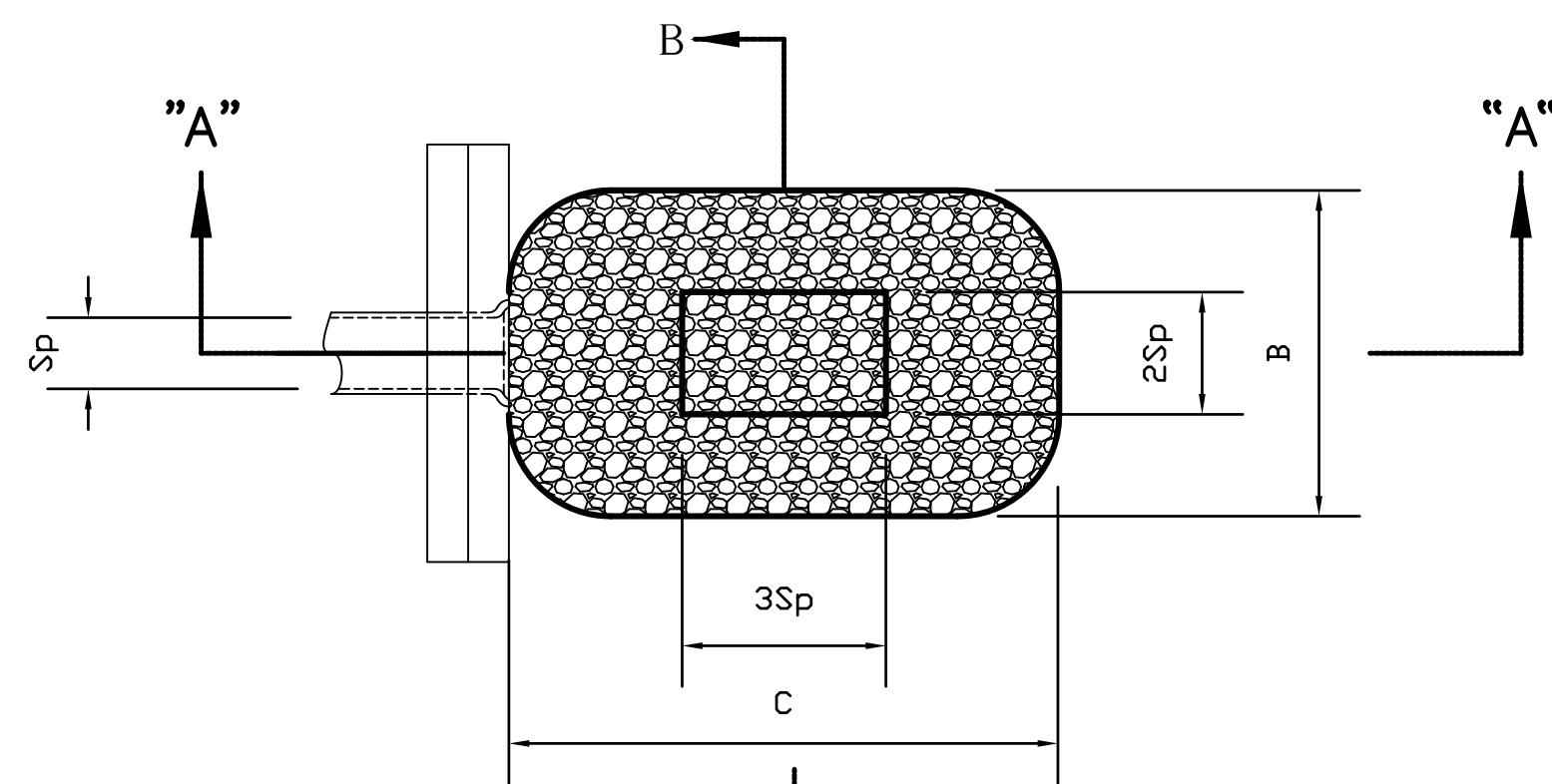
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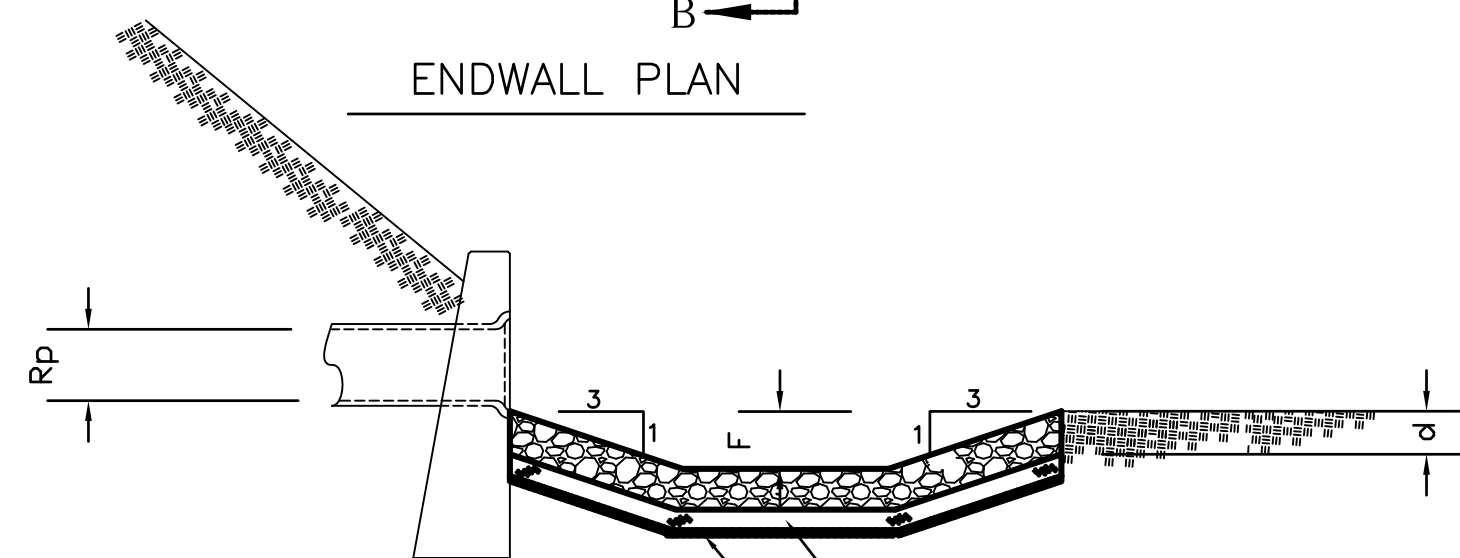
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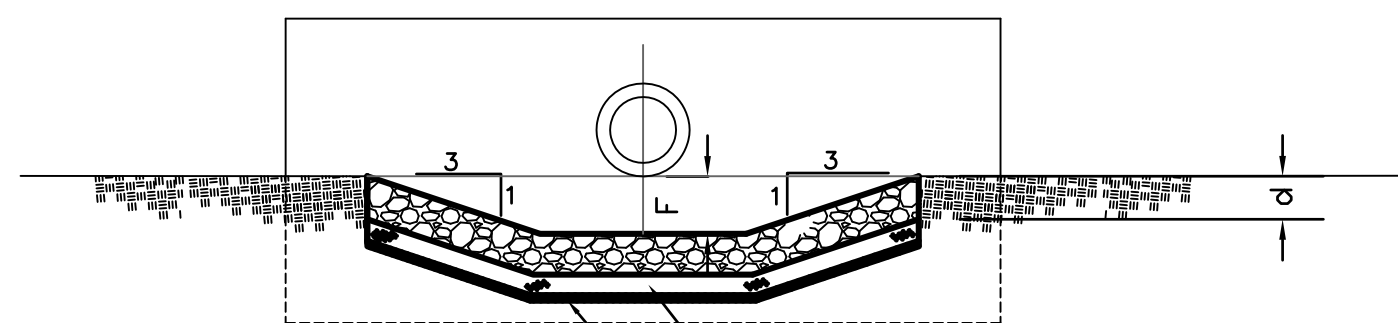
SEE RELATED CHARTS ON TOWN OF WATERTOWN STANDARD DETAIL DRAWINGS 153WTN 4D



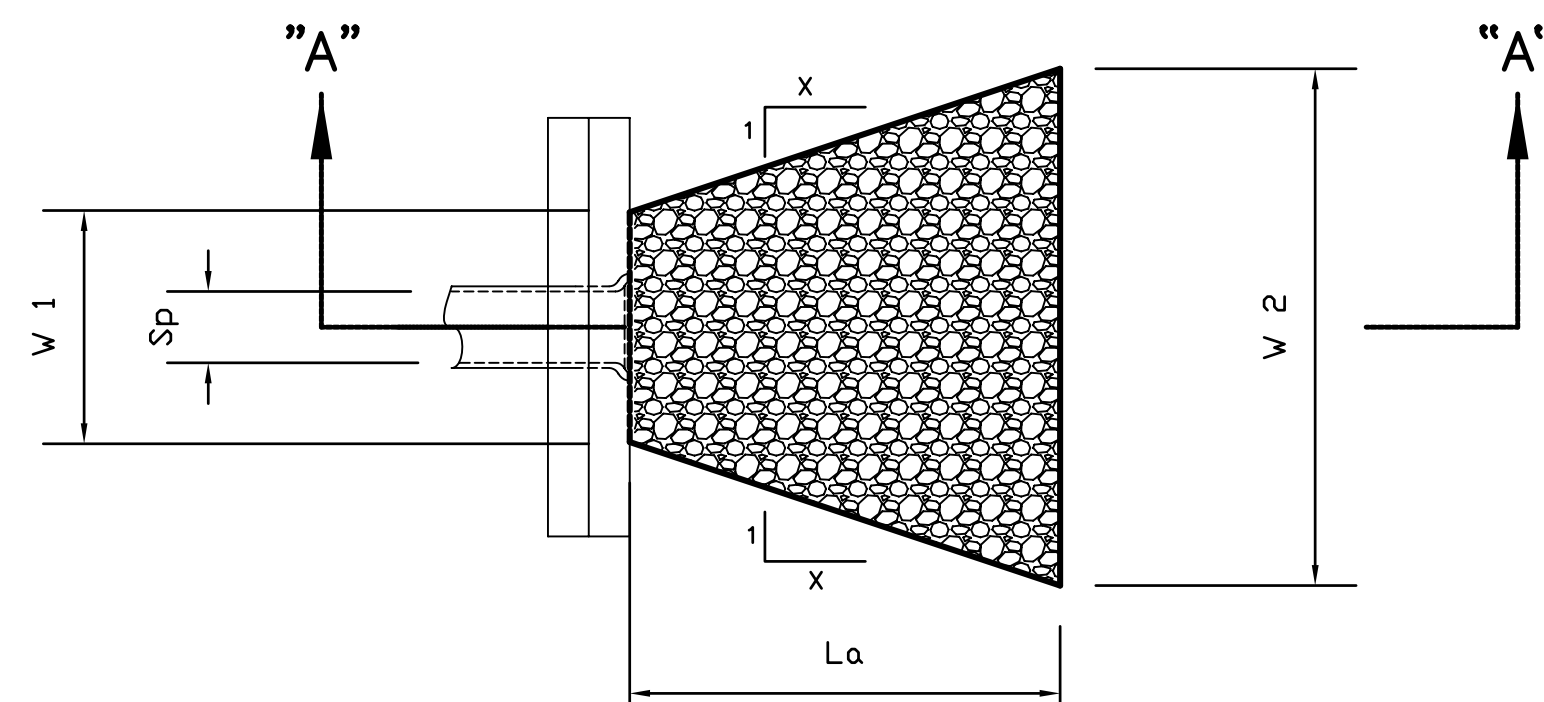
ENDWALL PLAN



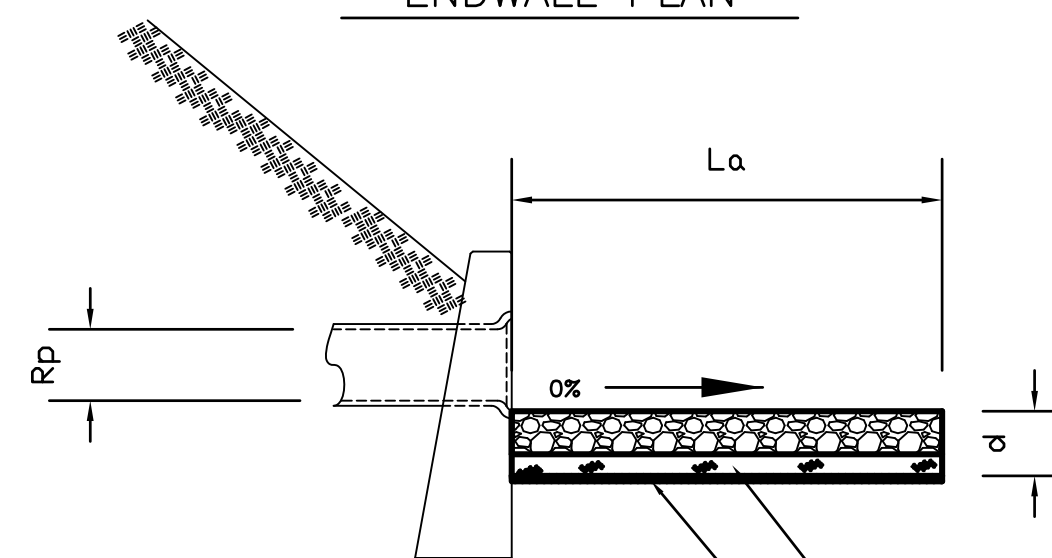
SECTION "A"-"A"



SECTION "B"-"B"



ENDWALL PLAN



ENDWALL SECTION "A"-"A"

### LEDGED

$Sp = \begin{cases} \text{MAX. INSIDE PIPE SPAN (NON CIRCULAR SECTIONS)} \\ \text{INSIDE PIPE DIAMETER (CIRCULAR) SECTIONS} \end{cases}$

$Rp = \begin{cases} \text{MAX. INSIDE PIPE SPAN (NON CIRCULAR SECTIONS)} \\ \text{INSIDE PIPE DIAMETER (CIRCULAR) SECTIONS} \end{cases}$

$La = \begin{cases} \text{LENGTH OF RIP-RAP APRON MEASURED FROM THE END OF} \\ \text{CULVERT END SECTION OR FACE OF ENDWALL.} \end{cases}$

$W1 = \begin{cases} \text{WIDTH OF APRON AT PIPE OUTLET FT (M)} \end{cases}$

$W2 = \begin{cases} \text{WIDTH OF THE OUTLET END OF APRON FT (M)} \end{cases}$

$d = \begin{cases} 12" \text{ (300mm) MODIFIED RIP-RAP} \\ 18" \text{ (450mm) INTERMEDIATE RIP-RAP} \\ 36" \text{ (900mm) STANDARD RIP-RIP} \end{cases}$

	X	W1	W2
TYPE A RIP-RAP APRON	3	3Sp	3Sp + 0.7 La
TYPE B RIP RAP APRON	5	3SP	3SP + 0.4 La

	F	C	B
TYPE 1 RIP-RAP PREFORMED SCOUR HOLE	0.5 Rp	3Sp + 6F	2Sp + 6F
TYPE 2 RIP-RAP PREFORMED SCOUR HOLE	RP	3SP + 6F	2SP + 6F

### PREFORMED SCOUR HOLE

TO BE USED WHERE THERE IS DEFINED CHANNEL DOWNSTREAM OF THE OUTLET

NOT TO SCALE

### RIP-RAP APRON

TO BE USED WHERE THERE IS NO DEFINED CHANNEL DOWNSTREAM OF THE OUTLET

NOT TO SCALE

NO.	REVISIONS	BY	DATE	DES BY: J.M.M.	DATE: 3-2-2009		TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING		PROJECT TITLE:  TOWN OF WATERTOWN STANDARD DRAWINGS	DRAWING TITLE:  SEDIMENTATION AND EROSION CONTROL DETAILS	PROJECT NO. <>	
				DRN BY: J.M.M.							FILE NO. <>	
				CHK BY: R.S.	SCALE: N.A.						SUBMITTED BY: DATE:	DRAWING NO. 153WTN-4B
				APPD BY: R.C.							APPROVED BY: DATE:	SHEET NO. 153WTN-4B





EROSION CONTROL NOTES

GENERAL PRINCIPLES

THE FOLLOWING GENERAL PRINCIPLES SHALL BE MAINTAIN AS EFFECTIVE MEANS OF MINIMIZING EROSION AND SEDIMENTATION DURING SITE DEVELOPMENT PERIOD.

REMOVAL OF VEGETATION, DEGRADING, AND OTHER GROUND DISTURBANCE SHALL BE PERFORMED IN A METHOD SUCH THAT EROSION IS MINIMIZED.

GRADING PLANES SHALL PRESERVE NATURAL FEATURES WHEREVER POSSIBLE AND INSURE CONFORMITY WITH TOPOGRAPHY SO AS TO MINIMIZE THE POTENTIAL FOR EROSION AND ADEQUATELY HANDLE THE VOLUME AND VELOCITY OF SURFACE WATER RUNOFF.

WHENEVER FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED WHEREVER INDICATED ON THE PLANS.

DISTURBED AREAS SHALL BE STABILIZED AS QUICKLY AS POSSIBLE.

TEMPORARY VEGETATION AND /OR MULCHING SHALL BE USED TO PROTECT EXPOSED STRIPPED AREAS WHEN EXPECTED DURATION OF EXPOSURE IS GREATER THAN 30 DAYS.

THE FINAL VEGETATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED AS EARLY AS FEASIBLE DURING THE CONSTRUCTION PHASE.

SEDIMENT IN THE RUNOFF WATER SHALL BE TRAPPED UNTIL THE DISTURBED AREAS ARE STABILIZED BY APPROPRIATE SEDIMENT CONTROL MEASURES.

FINAL GRADING SHALL BE PERFORMED IN A MANNER TO PROVIDE PROPER DRAINAGE AWAY FROM BUILDINGS AND DISPOSE OF THE SURFACE WATER WITHOUT PONDING.

WHERE DRAINAGE SWALES ARE USED TO DIVERT SURFACE WATER, THEY SHALL BE SODDED OR PLANTED.

CONCENTRATION OF SURFACE RUNOFF SHALL ONLY BE PERMITTED BY PIPING AND /OR THROUGH THE USE OF DRAINAGE SWALES OR NATURAL WATERCOURSES.

CUTS AND FILLS

SLOPES CREATED BY CUTS OR FILLS THAT ARE STEPPER THAN 3:1, AND THE VERTICAL HEIGHT EXCEEDS 15 FEET, SHALL BE STABILIZED WITH ENGINEERED SLOPE STABILIZATION OR A BENCH SHALL BE CONSTRUCTED WITH A REVERSE SLOPE OF 5:1 OR FLATTER, AT LEAST 1 FOOT DEEP.

ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATER FROM DAMAGING THE CUT FACE OF EXACTIONS OR THE SLOPING SURFACES OF FILLS.

CUTS AND FILL SHALL NOT ENDANGER ADJOINING PROPERTY

ALL FILLS TO BE COMPACTED TO PROVIDE STABILITY OF MATERIAL AND TO PREVENT UNDESIRABLE SETTLEMENT. THE FILL SHALL BE SPREAD IN LIFTS NOT TO EXCEED 12" AND SHALL BE COMPACTED BY AN APPROVED METHOD AFTER EACH LIFT IS PLACED.

GRADING SHALL BE PERFORMED IN A MANNER SUCH THAT SURFACE WATER IS NOT DIVERTED ON TO PROPERTY OF AN ADJACENT PROPERTY OWNER.

FILLS SHALL NOT ENCROACH ON NATURAL WATERCOURSES, CHANNELS, REGULATED WETLANDS AREAS, OR REGULATED FLOOD PLAIN AREAS UNLESS PERMITTED BY LICENSE OR PERMIT FROM THE PROPER AUTHORITY.

DUST CONTROL MEASURES SHALL BE IMPLEMENTED DURING CONSTRUCTION ACTIVITIES IF REQUIRED.

SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IMPLEMENTED IN ACCORDANCE WITH THESE PLANS AND THE "2002 CONNECTICUT GUIDELINES FOR SOIL AND SEDIMENT CONTROL".

RESPONSIBILITY FOR THE PLAN

WHENEVER SEDIMENTATION IS CAUSED BY STRIPPING VEGETATION AND/OR GRADING, IT SHALL BE THE RESPONSIBILITY OF THE PERSON, CORPORATION, OR OTHER ENTITY HAVING RESPONSIBILITY TO REMOVE SEDIMENTATION FROM ALL LOWER PROPERTIES, DRAINAGE SYSTEMS AND WATERCOURSES, AND TO REPAIR ANY DAMAGE AT THEIR EXPENSE AS QUICKLY AS POSSIBLE.

MAINTENANCE OF ALL DRAINAGE FACILITIES AND WATERCOURSES WITHIN ANY PROJECT SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER UNTIL THE PROJECT IS ACCEPTED BY THE TOWN OF WATERTOWN. ALL CONTROL MEASURES SHALL BE MAINTAINED IN EFFECTIVE CONDITION THROUGH THE CONSTRUCTION PERIOD. SURFACE INLETS SHALL BE KEPT OPEN AND FREE OF SEDIMENT AND DEBRIS. THE CONTROL MEASURES SHALL BE CHECKED AFTER EVERY MAJOR STORM AND SEDIMENT SHALL BE REMOVED AS REQUIRED.

IT SHALL BE THE RESPONSIBILITY OF ANY PERSON, CORPORATION, OR OTHER ENTITY ENGAGING IN ANY ACT ON OR NEAR ANY STREAM, WATERCOURSE, OR SWALE OR UPON THE FLOOD PLAIN, WETLANDS OR RIGHT-OF-WAY THEREOF TO MAINTAIN AS NEARLY AS POSSIBLE IN ITS PRESENT STATE THAT THE SAME STREAM, WATERCOURSE, SWALE, FLOOD PLAIN, WETLANDS OR RIGHT-OF-WAY FOR THE DURATION OF THE ACTIVITY AND RETURN IT TO ITS ORIGINAL OR EQUAL CONDITION AFTER SUCH ACTIVITY IS COMPLETED.

MAINTENANCE OF ALL DRAINAGE FACILITIES AND WATERCOURSES ORIGINATING AND COMPLETELY ON PRIVATE PROPERTY SHALL BE THE RESPONSIBILITY OF THE DEVELOPER TO THEIR POINT OF OPEN DISCHARGE AT THE PROPERTY LINE OR AT A COMMUNAL WATERCOURSE WITHIN THE PROPERTY.

NO PERSON, CORPORATION, OR ANY ENTITY SHALL BLOCK, IMPEDE THE FLOW OF, ALTER, CONSTRUCT ANY STRUCTURE OR DEPOSIT ANY MATERIAL OR OBJECT OR COMMIT ANY ACT WHICH WILL AFFECT NORMAL OR FLOOD FLOW IN ANY COMMUNAL STREAM OR WATERCOURSE WITHOUT OBTAINING PRIOR APPROVAL FROM THE PROPER AUTHORITY.

AN ADEQUATE RIGHT-OF-WAY AND/OR EASEMENT SHALL BE PROVIDED FOR ALL DRAINAGE FACILITIES AND WATERCOURSES WHICH ARE PROPOSED EITHER FOR ACCEPTANCE BY THE TOWN OF WATERTOWN OR PROVIDED BY OTHER PROPERTY OWNERS FOR THE CONVENIENCE OF THE OWNER/DEVELOPER.

IN CASE OF AN EMERGENCY (SEVERE FLOODING, HEAVY RAINS, ETC.) THE PARTY RESPONSIBLE AND THE TOWN OF WATERTOWN, WETLANDS ENFORCEMENT OFFICER (MOOSA RAFEY) SHALL BE NOTIFIED AT (860) 945-5266.

THE EMERGENCY CONTACT IS THE TOWN OF WATERTOWN, HIGHWAY SUPERINTENDENT (WILLIAM BATTERTON) AT (860) 945-5244

TOPSOIL AND TURF ESTABLISHMENT

PLACING TOPSOIL

THE AREAS ON WHICH TOPSOIL IS TO BE PLACED SHALL BE GRADED TO A REASONABLY TRUE SURFACE. TOPSOIL SHALL THEN BE SPREAD TO THE LINES SHOWN ON THE PLANS. ALL STONES, ROOTS, DEBRIS, SOD, WEEDS AND OTHER UNDESIRABLE MATERIAL SHALL BE REMOVED. AFTER SHAPING AND GRADING, ALL TRUCKS AND OTHER EQUIPMENT SHALL BE EXCLUDED FROM THE TOPSOIL AREA TO PREVENT EXCESSIVE COMPACTION. THE CONTRACTOR SHALL PERFORM SUCH WORK AS REQUIRED TO PROVIDE A FRIABLE SURFACE FOR SEED GERMINATION AND PLANT GROWTH PRIOR TO SEEDING.

SEEDBED PREPARATION

FINE GRADE AND RAKE SURFACE TO REMOVE STONES LAGER THAN TWO INCHES IN DIAMETER. INSTALL THE REQUIRED EROSION CONTROL DEVICES. GRADE STABILIZATION STRUCTURES, SEDIMENT BASIN AND/OR DRAINAGE CHANNELS TO MAINTAIN SEEDED AREAS. APPLY LIMESTONE AT A RATE OF 2 TONS/ACRE OR 10 LBS./1000 SF UNLESS SPECIFIED OTHERWISE ON THE TOPSOIL TEST RESULTS. APPLY 10-10-10 FERTILIZER AT A RATE OF 300 LBS./ACRE OR 77.5 LBS./1000 SF. AT LEAST 50% OF THE NITROGEN SHALL BE FROM ORGANIC SOURCES. WORK LIME AND FERTILIZER INTO SOIL UNIFORMLY TO A DEPTH OF 4" WITH A HARROW OR OTHER SUITABLE EQUIPMENT FOLLOWING THE CONTOUR LINES.

SEED APPLAICATION

APPLY GRASS MIXTURES AT RATES SPECIFIED BY HAND, CYCLONE SEEDER OR HYDROSEEDER. INCREASE SEED MIXTURE BY 10% IF HYDROSEEDER IS USED. LIGHTLY DRAG OR ROLL THE SEEDED SURFACE COVER SEED. SEEDING FOR SELECTED FINE GRASSES SHOULD BE DONE BETWEEN APRIL 1 AND JUNE 1 OR BETWEEN AUGUST 15 AND OCTOBER 15. IF SEEDING CANNOT BE DONE DURING THESE TIMES, REPEAT MULCHING PROCEDURE BELOW UNTIL SEEDING CAN TAKE PLACE OR SEED WITH A QUICK GERMINATING SEED MIXTURE TO STABILIZE SLOPES. A QUICK GERMINATING SEED MIXTURE, (DOMESTIC RYE), CAN BE APPLIED BETWEEN JUNE 15 THROUGH AUGUST 15 AS APPROVED BY THE ENGINEER.

MULCHING

IMMEDIATELY FOLLOWING SEEDING, MULCH THE SEEDED SURFACE WITH STRAW, HAY OR WOOD FIBER AT A RATE OF 1.5 TO 2 TONS/ACRE EXCEPT AS OTHERWISE SPECIFIED ELSEWHERE. MULCHES SHALL BE FREE OF WEEDS AND COARSE MATTER. SPREAD MULCH BY HAND OR MULCH BLOWER. PUNCH MULCH INTO SOIL SURFACE WITH TRACK MACHINE OR DISK HARROW SET STRIGHT-UP. MULCH MATERIAL SHALL BE "TUCKED" APPROXIMATELY 2"-3" INTO THE SOIL SURFACE. CHEMICAL MULCH BINDERS OR NETTING IN COMBINATION WITH THE STRAW, HAY OR WOOD FIBERS, SHALL BE USED WHERE DIFFICULT SLOPES DO NOT ALLOW HARROWNG BY MACHINES.

GRASS SEED MIXTURES

TEMPORARY COVERS	PERMANENT COVERS
PERENNIAL RYEGRASS: 20LBS./ACRE	CREEPING RED FESCUE: 40LBS./ACRE
ANNUAL RYEGRASS: 20LBS./ACRE	CANADA BLUEGRASS: 20LBS./ACRE

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING IS SUGGESTED SEQUENCE OF EVENTS:

- 1.) INSTALL ALL SOIL AND EROSION CONTROL MEASURES AS SHOWN ON THE PLAN.
- 2.) EXCACTION FOR RESTORATION & PARKING AREAS.
- 3.) INSTALL TIMBER FENCE AS SHOWN.
- 4.) INSTALL UTILITY LINES FOR PROPANE TANK, CONSTRUCT CONCRETE PAD, INSTALL TANK & BOLLARDS
- 5.) INSTALL PAVEMENT MILLINGS AND MARK PARKING SPACES, SIGNS FOR HANDICAP PARKING
- 6.) REMOVE GATE, INSTALL NEW FENCING & GATES AS SHOWN
- 7.) INSTALL PAVEMENT ON DRIVEWAY AND PARKING AREAS.
- 8.) PROVIDE PLANTINGS, LOAM AND SEED IN RESTORATION AREAS.
- 9.) EROSION CONTROLS TO REMAÎN IN PLACE UNTIL ENTIRE SITE HAS STABILIZED.

SOIL EROSION CONTROL NARRATIVE

- 1.) THIS PROJECT CONSISTS OF THE CONSTRUCTION OF ADDITIONAL PARKING AREA, RELOCATED PROPANE TANK, NEW GATES AND FENCING TO SEPARATE THE EXISTING DOG POUND ACCESS AND PARKING FROM THE ADJACENT POLICE FIRING RANGE.
- 2.) EXPECTED TOTAL AREA TO BE DISTURBED BY CONSTRUCTION ACTIVITIES = 0.086 ACRES.
- 3.) THERE ARE WETLAND AREAS  
  
ON THE SITE. EROSION AND SEDIMENTATION CONTROLS SHOULD BE IMPLEMENTED SPECIFICALLY TO PROTECT THESE AREAS. THESE MEASURES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND PER THE "2002 CONNECTICUT GUIDELINES FOR SOIL AND SEDIMENT CONTROL."
- 4.) THE PERMITS REQUIRED FOR THIS PROJECT INCLUDE A LOCAL INLAND WETLANDS PERMIT AND A LOCAL ZONING PERMIT.
- 5.) DETAIL FOR THE INSTALLATION OF THE PROPOSED EROSION AND SEDIMENTATION CONTROLS CAN BE FOUND ON THE "SEDIMENTATION AND EROSION DETAIL SHEET" WITHIN THESE PLANS.
- 6.) THE OWNER/CONTRACTOR, THE WATERTOWN HIGHWAY DEPARTMENT, AT 860-945-5244 WILL BE THE PERSON RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF ALL SEDIMENTATION AND EROSION CONTROL MEASURES.
- 7.) NO CHANGES TO THE SITE PLANS ARE PERMITTED UNLESS THEY HAVE BEEN PREVIOUSLY APPROVED BY THE ZONING ENFORCEMENT OFFICER AND THE TOWN ENGINEER OR THE DIRECTOR OF PUBLIC WORKS.

NO.

REVISIONS

BY

DATE

DES BY:

J.M.M.

DATE:

9-8-2017

DRN BY:

J.M.M.

CHK BY:

P.B.

SCALE:

N.A.

SUBMITTED BY:

DATE:

APPROVED BY:

DATE:



TOWN OF WATERTOWN  
DEPARTMENT OF PUBLIC WORKS  
DIVISION OF ENGINEERING



PROJECT TITLE:

TOWN OF WATERTOWN  
TRANSFER STATION  
DOG POUND  
IMPROVEMENTS

DRAWING TITLE:

SEDIMENTATION AND EROSION  
CONTROL NARRATIVE &  
DETAILS

PROJECT NO.

<>

FILE NO.

<>

DRAWING NO.

1

SHEET NO.

1

$$S_p = \begin{cases} \text{MAX. INSIDE PIPE SPAN (NON CIRCULAR SECTIONS} \\ \text{INSIDE PIPE DIAMETER (CIRCULAR) SECTIONS) ft (m)} \end{cases}$$

$$R_p = \begin{cases} \text{MAX. INSIDE PIPE RISE (NON CIRCULAR SECTIONS ft (m))} \end{cases}$$

$$L_a = \begin{cases} \text{LENGTH OF RIP-RAP APRON MEASURED FROM THE END OF} \\ \text{CULVERT END SECTION OR FACE OF ENDWALL. ft (m)} \end{cases}$$

$$d = \begin{cases} 12'' & (300\text{mm}) & \text{MODIFIED RIP-RAP} \\ 18'' & (450\text{mm}) & \text{INTERMEDIATE RIP-RAP} \\ 36'' & (900\text{mm}) & \text{STANDARD RIP-RIP} \end{cases}$$

$$Q = \left\{ \begin{array}{l} \text{PIPE (DISGN) DISCHARGE, cfs (cms)} \end{array} \right.$$

$$TW = \left\{ \begin{array}{l} \text{TAILWATER DEPTH, ft (m)} \end{array} \right.$$

$$W_1 = \left\{ \begin{array}{l} \text{WIDTH OF APRON AT PIPE OUTLET ft (m)} \end{array} \right.$$

$$W_2 = \left\{ \begin{array}{l} \text{WIDTH OF THE OUTLET END OF APRON ft (m)} \end{array} \right.$$

ALLOWABLE OUTLET VELOCITIES FOR TYPE A AND B RIP-RAP APRONS	
OUTLET VELOCITY fps (mps)	RIP- RAP SPECIFICATION
0-8 (0-2.44)	MODIFIED
8-10 (2.44-3.05)	INTERMEDIATE
10-14 (3.05-4.27)	STANDARD

TYPE A RIP- RAP APRON (MINIMUM TAILWATER CONDITION) TW <0.5 R<sub>2</sub>

$$(L_a = \frac{3.26(Q-0.142)}{S_p^{1.5}} + 3.05) \quad L_A = \frac{1.80(Q-5)}{S_p^{1.5}} + 10$$

TYPE B RIP- RAP APRON (MAXIMUM TAILWATER CONDITION)  $TW \geq 0.5 R_p$

$$(L_A = \frac{5.44(Q-0.142)}{S_p^{1.5}} + 3.05) \quad L_A = \frac{3.0(Q-5)}{S_p^{1.5}} + 10$$

TYPE A RIP- RAP APRON (MINIMUM TAILWATER CONDITION)

$$W_1 = 3S_p \text{ (MIN.)}$$

$$W_2 = 3S_p + 0.7L_a \text{ FOR } TW < 0.5R_p$$

TYPE B RIP- RAP APRON (MAXIMUM TAILWATER CONDITION)

$$W_1 = 3S_P \text{ (MIN.)}$$

$$W_2 = 3S_P + 0.4L_A \text{ FOR } TW \geq 0.5R_P$$

d <sub>50</sub> = MEDIAN STONE SIZE REQUIRED FOR TYP 1 AND 2 PREFORMED SCOUR HOLE	
MODIFIED	d < 0.42ft (0.13m)
INTERMEDIATE	0.42ft (0.13m) < d <sub>50</sub> < 0.67ft (0.20m)
STANDARD	0.67ft (0.20m) < d <sub>50</sub> < 1.25ft (0.38m)
RIP- RAP SPECIFICATION	1.25ft (0.38m) < d <sub>50</sub>

### EMPIRICAL PREFORMED SCOUR HOLE EQUATIONS:

TYPE 1: SCOUR HOLE DEPRESSION = ONE-HALF PIPE RISE, ft (m)

$$d_{50} = (0.0125 \text{ } R_p^2 / TW)(Q / R_p^{2.5})^{1.333} \quad (d_{50} = (0.0276 \text{ } R_p^2 / TW)(Q / R_p^{2.5})^{1.333})$$

TYPE 2: SCOUR HOLE DEPRESSION = FULL PIPE RISE, FT (M)

$$d_{50} = (0.0082 \text{ } R_P^2 / TW)(Q / R_P^{2.5})^{1.333} \quad (d_{50} = (0.081 \text{ } R_P^2 / TW)(Q / R_P^{2.5})^{1.333})$$

RIP-RAP PREFORMED SCOUR HOLE							
PIPE DIA. (Sp)	B	C	F = 0.5 SP	2Sp	3Sp	d	
60" (1500mm)	25' (7.620mm)	30' (9.144mm)	2.50' (762mm)	10' (3.048mm)	15' (4.572mm)		DEPTH
52" (1350mm)	23' (7.101mm)	27' (8.229mm)	2.25' (685mm)	9.0' (2.743mm)	13.5' (4.114mm)		
48" (1200mm)	20' (6.096mm)	24' (7.315mm)	2.0' (6096mm)	8.0' (2.488mm)	12' (3.657mm)		
42" (1050mm)	18' (5.486mm)	21' (6.400mm)	1.75' (5334mm)	7.0' (2.133mm)	10.5' (3.200mm)		OF RIP-RAP
36" (900mm)	15' (4.572mm)	18' (5.464mm)	1.50' (4572mm)	6.0' (1.828mm)	9.0' (2.743mm)		
30" (750mm)	13' (3.962mm)	15' (4.572mm)	1.25' (3810mm)	5.0' (1.524mm)	7.5' (2.286mm)		
24" (600mm)	10' (3.048mm)	12' (3.657mm)	1.0' (3048mm)	4.0' (1.219mm)	6.0' (1.828mm)		DEPENDS ON
18" (525mm)	8' (2.488mm)	9' (2.743mm)	0.75' (2286mm)	3.0' (9144mm)	4.5' (1.375mm)		
15" (450mm)	6' (1.828mm)	8' (2.488mm)	0.62' (1905mm)	2.6' (7924mm)	3.9' (1.188mm)		
12" (375mm)	5' (1.524mm)	6' (1.828mm)	.050' (1524mm)	2.0' (6096mm)	3.0' (9144mm)		RIP-RAP TYPE

RIP-RAP PREFORMED SCOUR HOLE							
PIPE DIA. (Sp)	B	C	F = SP	2Sp	3Sp	d	
60" (1500mm)	40' (12.192mm)	45' (13.716mm)	5.0' (1.524mm)	10' (3.048mm)	15' (4.572mm)		DEPTH
52" (1350mm)	36' (10.972mm)	41' (12.496mm)	4.5' (1.371mm)	9.0' (2.743mm)	13.5' (4.114mm)		
48" (1200mm)	32' (9.753mm)	36' (10.972mm)	4.0' (1.219mm)	8.0' (2.488mm)	12' (3.657mm)		
42" (1050mm)	28' (8.534mm)	32' (9.753mm)	3.5' (1.066mm)	7.0' (2.133mm)	10.5' (3.200mm)		
36" (900mm)	24' (7.315mm)	27' (8.229mm)	3.0' (9144mm)	6.0' (1.828mm)	9.0' (2.743mm)		OF RIP-RAP
30" (750mm)	20' (6.096mm)	23' (7.010mm)	2.5' (7620mm)	5.0' (1.524mm)	7.5' (2.286mm)		DEPENDS ON
24" (600mm)	16' (4.876mm)	18' (5.486mm)	2.0' (6096mm)	4.0' (1.219mm)	6.0' (1.828mm)		
18" (525mm)	12' (3.657mm)	14' (4.267mm)	1.5' (4572mm)	3.0' (9144mm)	4.5' (1.375mm)		
15" (450mm)	10' (3.048mm)	11' (3.352mm)	1.3' (3962mm)	2.6' (7924mm)	3.9' (1.188mm)		
12" (375mm)	8' (2.488mm)	9' (2.743mm)	1.0' (3048mm)	2.0' (6096mm)	3.0' (9144mm)		RIP-RAP TYPE

[illegible][illegible]

NO.	REVISIONS				BY	DATE	DES BY:	J.M.M.	DATE:	3-2-2009			TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING		PROJECT TITLE:  TOWN OF WATERTOWN STANDARD DRAWINGS	DRAWING TITLE:  SEDIMENTATION AND EROSION CONTROL CHARTS	PROJECT NO.	<>
						DRN BY:	J.M.M.			FILE NO.	<>							
						CHK BY:	R.S.	SCALE:	N.A.	SUBMITTED BY:	DATE:						DRAWING NO.	153WTN-4D
						APPD BY:	R.C.			APPROVED BY:	DATE:						SHEET NO.	153WTN-4D



N-12 HP STORM TRENCH  
INSTALLATION DETAIL ROADWAY OR IN LANDSCAPED OR GRASS AREAS

NOTES:

1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION

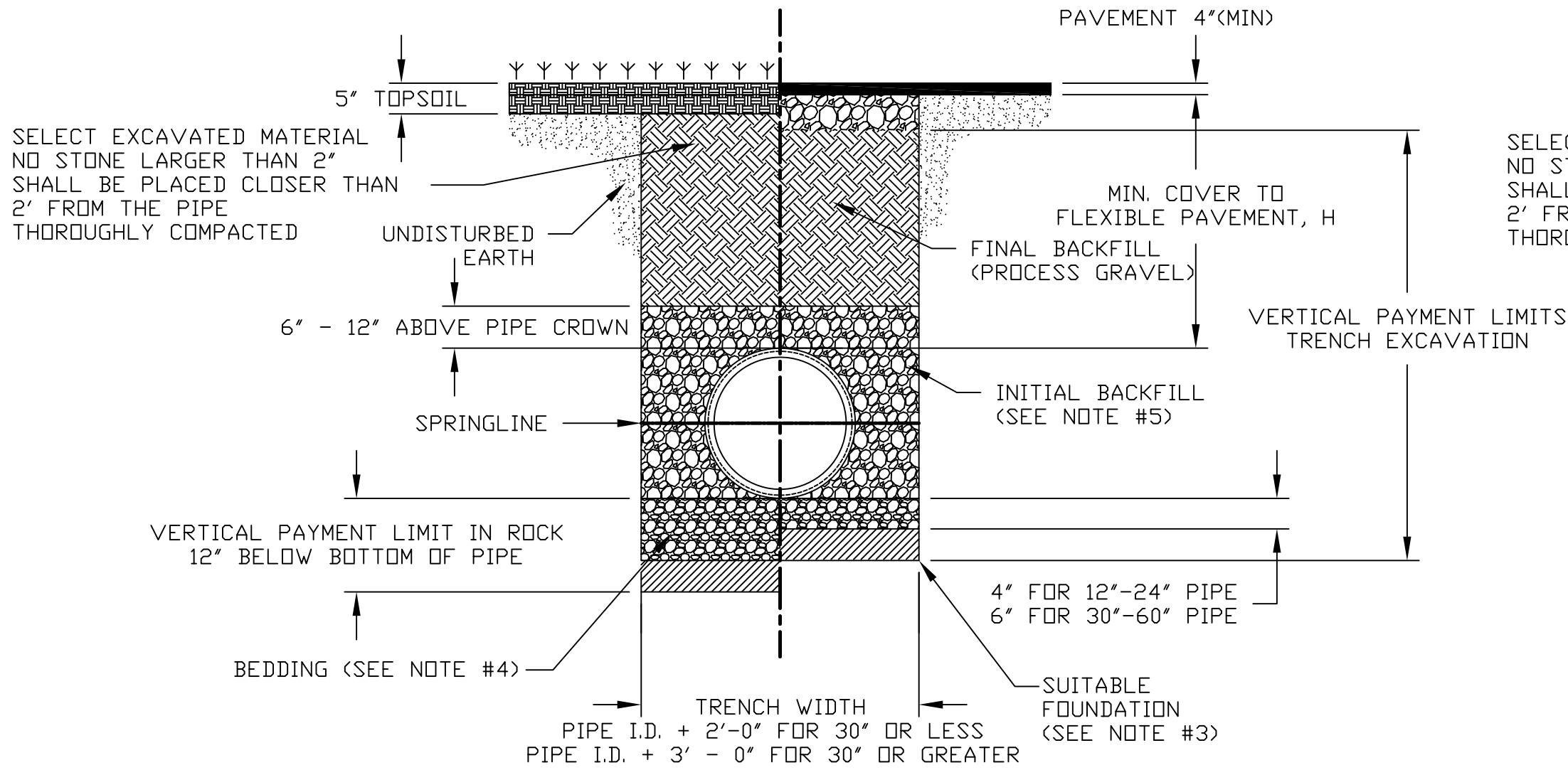
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

3. **FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

4. **BEDDING:** SUITABLE MATERIAL SHALL BE CLASS I (FORM 816 M.02.05). THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100MM) FOR 4"-24" (100MM-600MM); 6" (150MM) FOR 30"-60" (750MM-900MM). WHEN GROUND WATER IS ENCOUNTERED  $\frac{3}{4}$ " CRUSHED STONE IS REQUIRED FOR BEDDING TO SPRING LINE OF PIPE, (SILTY OR CLAYEY GRAVEL, GRAVEL/SAND/SILT OR GRAVEL AND CLAY MIXTURES; SILTY OR CLAYEY SANDS, SAND/CLAY OR CLAY/SILT MIXTURES) FOR BEDDING/BACKFILL IS NOT ALLOWED UNDER PAVEMENT.

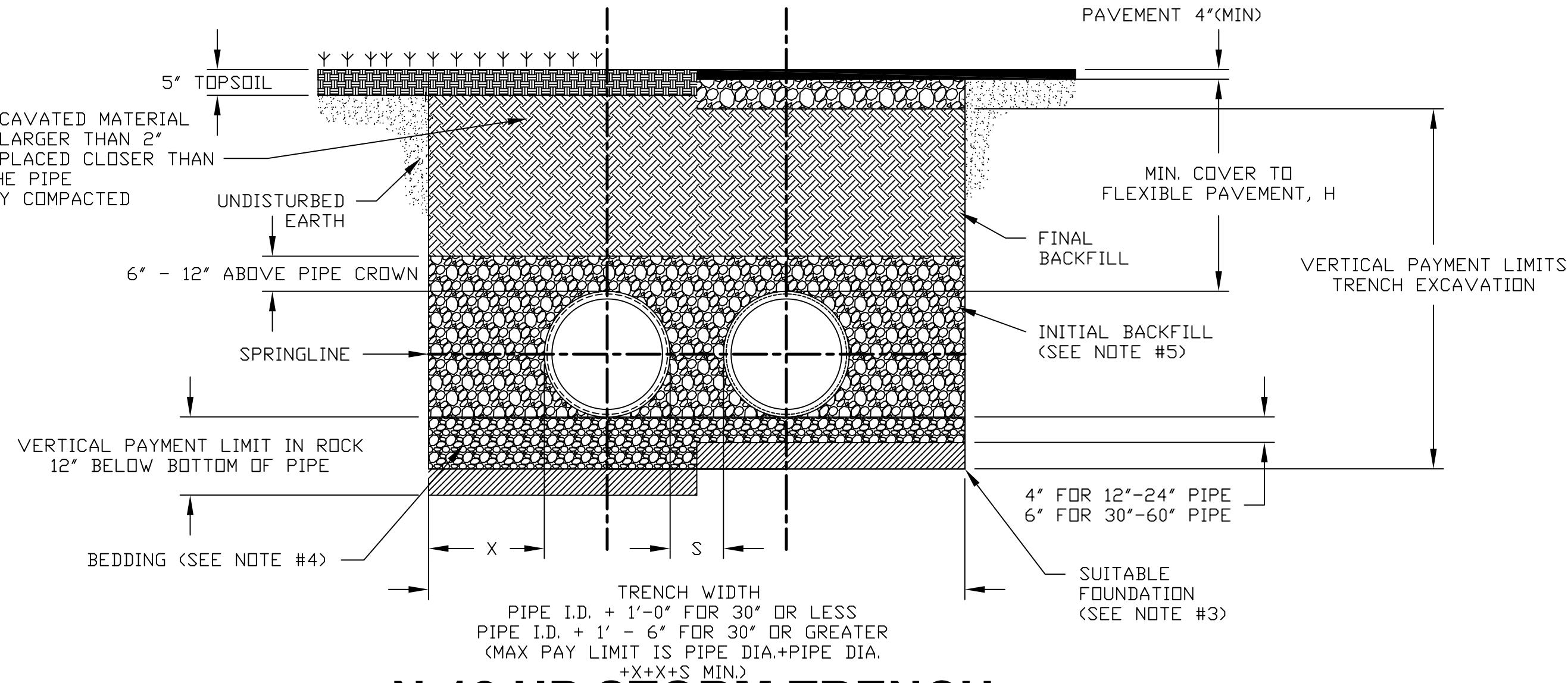
5. **INITIAL BACKFILL:** SUITABLE MATERIAL SHALL BE CLASS I, 2 OR 3 (Form 816 M.02.05) IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. (SILTY OR CLAYEY GRAVEL, GRAVEL/SAND/SILT OR GRAVEL AND CLAY MIXTURES; SILTY OR CLAYEY SANDS, SAND/CLAY OR CLAY/SILT MIXTURES) FOR BEDDING/BACKFILL IS NOT ALLOWED UNDER PAVEMENT.

6. **MINIMUM COVER:** MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT.



N-12 HP STORM TRENCH  
INSTALLATION DETAIL (STANDARD)

NOT TO SCALE



N-12 HP STORM TRENCH  
INSTALLATION DETAIL (PARALLEL)

NOT TO SCALE

NOTES:

1. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.

SOIL CLASSIFICATIONS ARE PER THE LATEST VERSION (FORM 816) ARE NOT APPROPRIATE BACKFILL MATERIALS.

2. **FOUNDATION:** WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

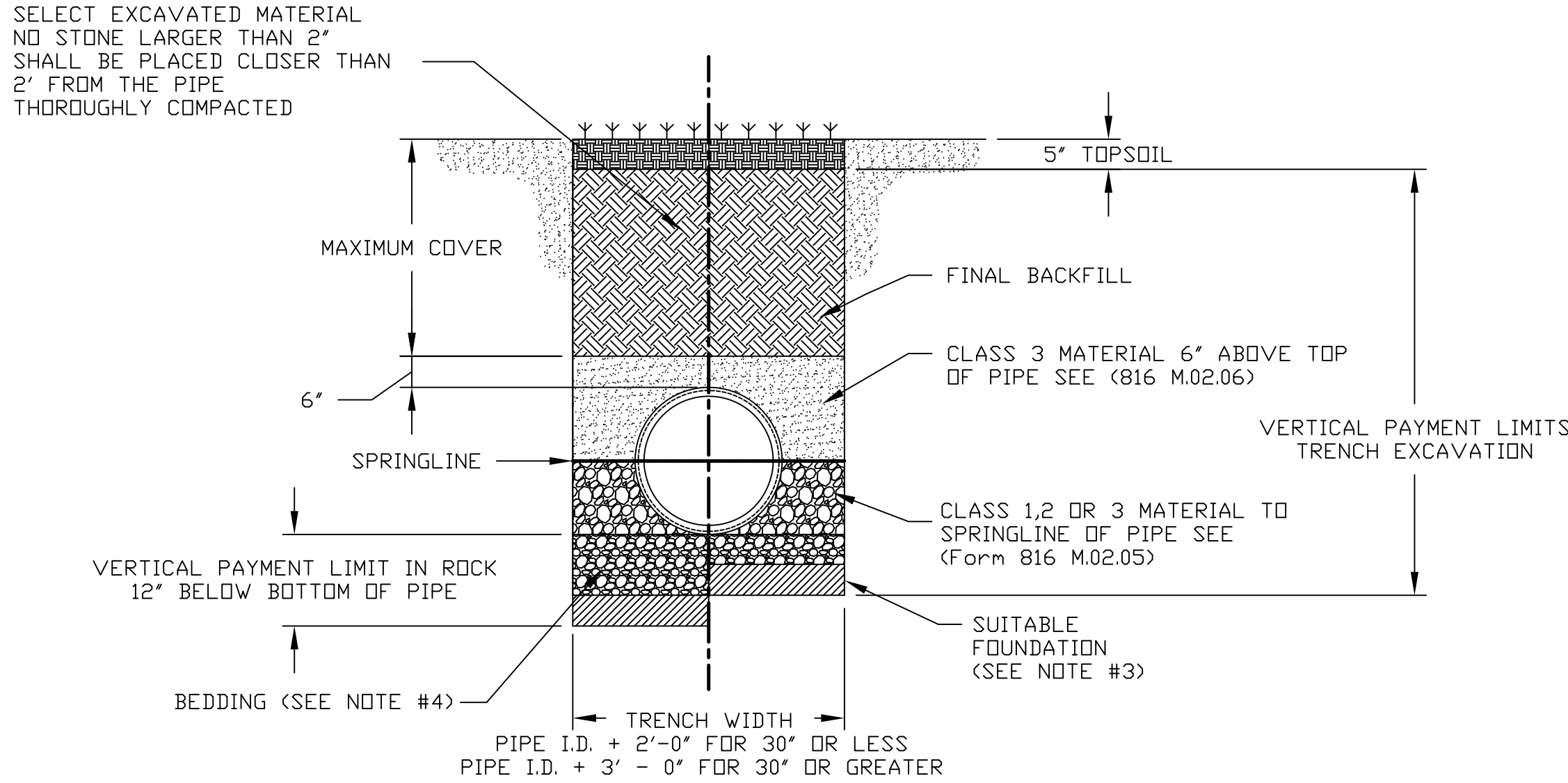
3. **BEDDING:** SUITABLE MATERIAL SHALL BE CLASS I. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).

4. **BACKFILL:** FOR PIPES OUTSIDE OF PAVEMENT CLASS 1,2 OR 3 (FORM 816 M.02.05) MATERIAL TO BE USED FOR BACKFILL UP TO THE SPRING LINE OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, CLASS I MATERIAL MUST BE COMPACTED IN 6" (200mm) LIFTS TO 95% STANDARD PROCTOR DENSITY.

5. **MINIMUM COVER:** MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS IS 12" (300mm) FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION.

6. SELECT NATIVE CLEAN BACKFILL SHALL BE WELL PLACED, MODERATELY COMPACTED (85% SPD) WITH NO FOREIGN DEBRIS INCLUDING ROCKS, LARGE CLUMPS ORGANIC MATERIAL, FROZEN MATERIAL OR (SILTY OR CLAYEY GRAVEL, GRAVEL/SAND/SILT OR GRAVEL AND CLAY MIXTURES; SILTY OR CLAYEY SANDS, SAND/CLAY OR CLAY/SILT MIXTURES).

7. N-12 HP ALTERNATE STORM TRENCH DETAIL MUST BE APPROVED BY DESIGN ENGINEER. DETAIL DOES NOT SUPERSEDE ADS STANDARD DETAIL STD-108.



N-12 HP STORM TRENCH  
INSTALLATION DETAIL (ALTERNATE)

NOT TO SCALE

MINIMUM RECOMMENDED COVER  
BASED ON LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION	
	H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

\* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

RECOMMENDED  
MINIMUM SPACING

PIPE DIAM.	MIN. "X"	MIN. "S" +
12"	8"	12"
15"	8"	12"
18"	9"	12"
24"	10"	12"
30"	18"	15"
36"	18"	18"
42"	18"	21"
48"	18"	24"
54"	18"	27"
60"	18"	30"

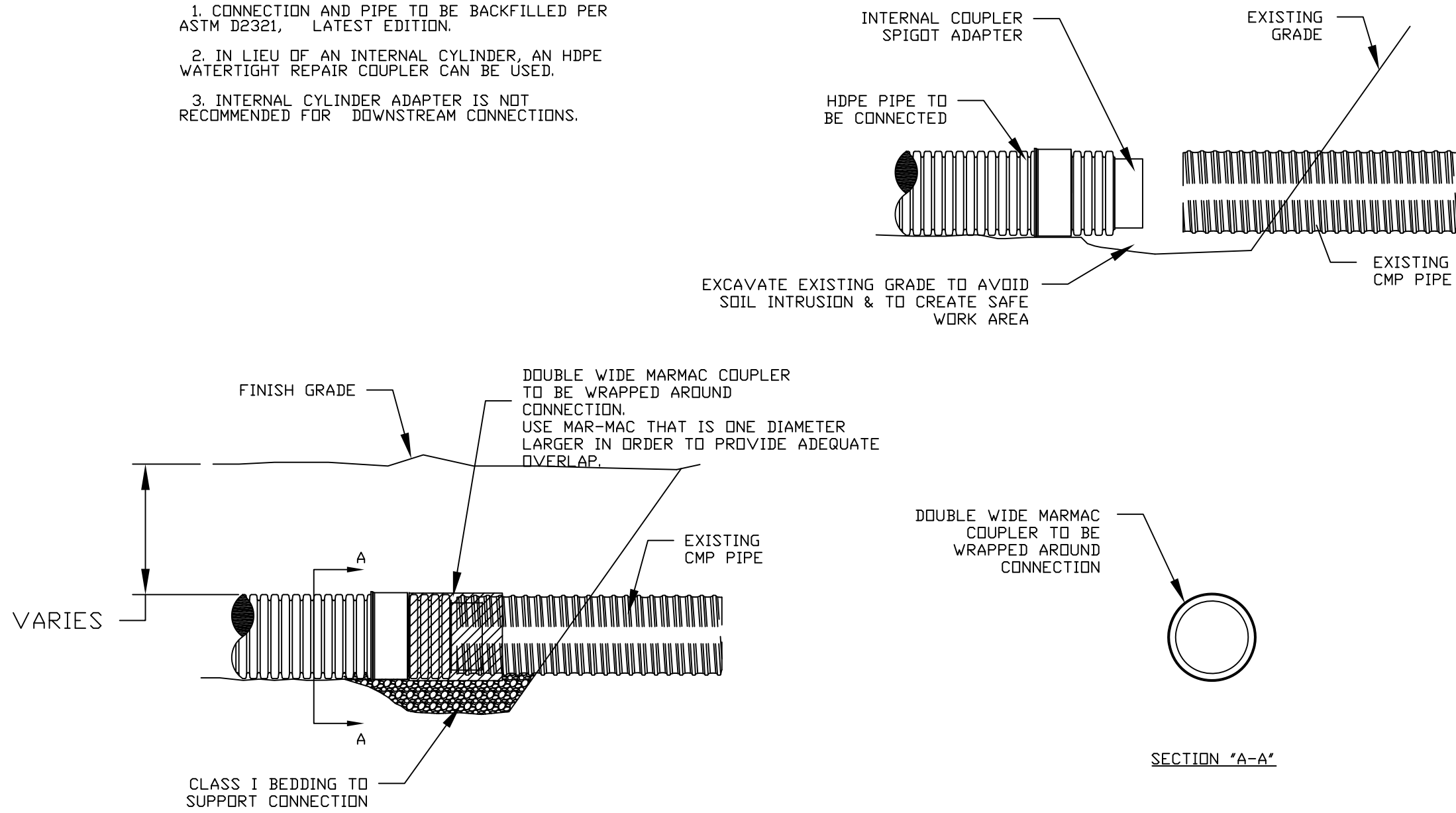
\* MINIMUM SPACING ("S") MEASURED FROM OUTSIDE DIAMETER TO OUTSIDE DIAMETER

\*\* MAXIMUM SPACING ("X") PIPE I.D. + 1'-0" FOR 30" OR LESS PIPE I.D. + 1' - 6" FOR 30" OR GREATER

NO.	REVISIONS	BY	DATE	DES BY:	DATE:	SUBMITTED BY:	DATE:	TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING	PROJECT TITLE:	DRAWING TITLE:	PROJECT NO.
				DRN BY:		APPROVED BY:	DATE:		TOWN OF WATERTOWN STANDARD DETAIL DRAWINGS	STANDARD ADS TRENCH DETAILS	FILE NO.
				CHK BY:	SCALE:						DRAWING NO. 153WTN-9A
				APPD BY:		ENGINEER:					SHEET NO. 153WTN-9A

NOTES:

1. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321, LATEST EDITION.
2. IN LIEU OF AN INTERNAL CYLINDER, AN HDPE WATERTIGHT REPAIR COUPLER CAN BE USED.
3. INTERNAL CYLINDER ADAPTER IS NOT RECOMMENDED FOR DOWNSTREAM CONNECTIONS.

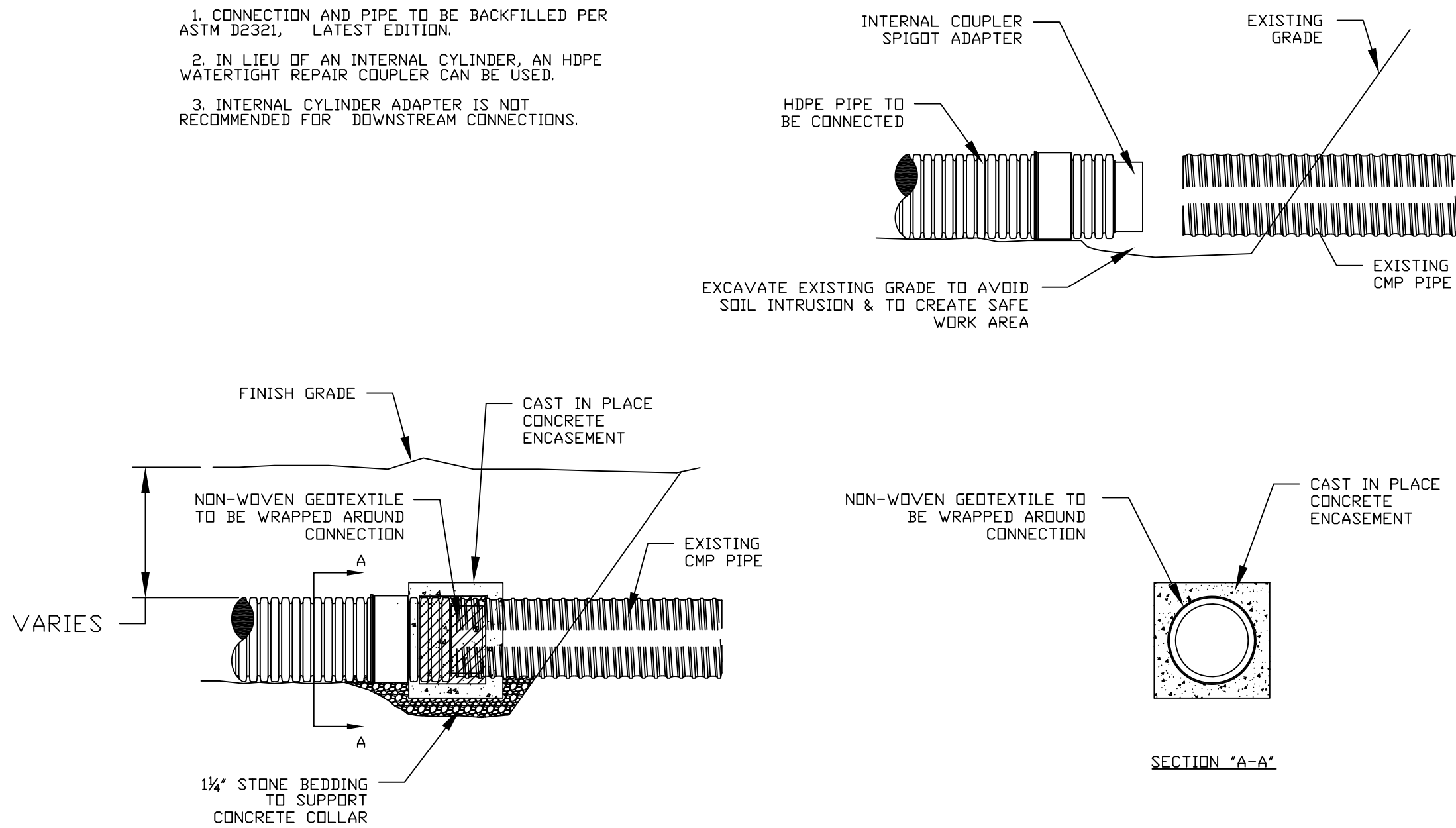


NOTE:

1. CL I BEDDING IS 1½" STONE.
2. CL II IS ¾" SAND/GRAVEL < 10% PASSING 200 SIEVE.
3. CL III IS ¾" SAND/GRAVEL > 10% PASSING 200 SIEVE.

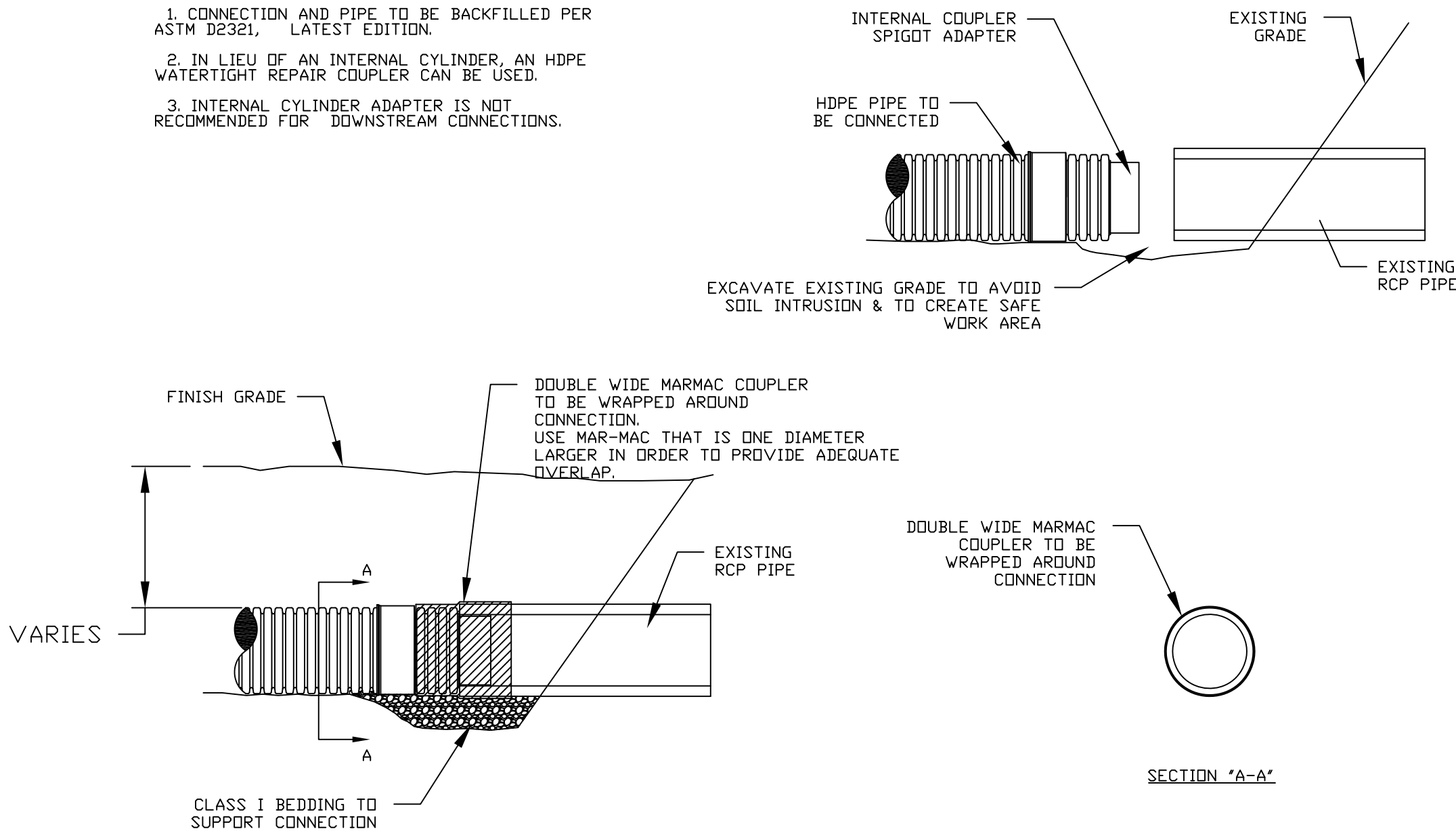
NOTES:

1. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321, LATEST EDITION.
2. IN LIEU OF AN INTERNAL CYLINDER, AN HDPE WATERTIGHT REPAIR COUPLER CAN BE USED.
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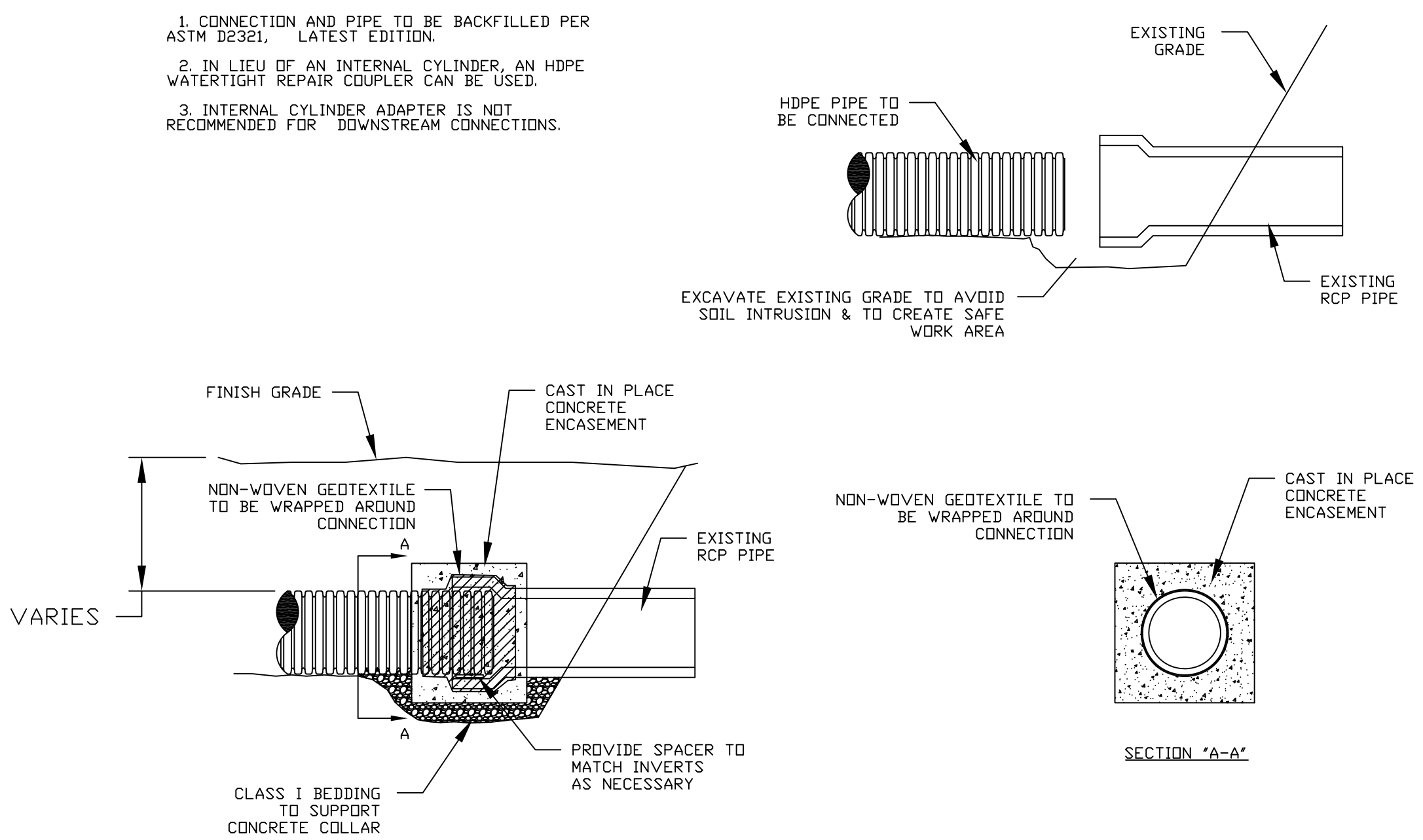
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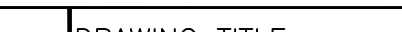
1. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321, LATEST EDITION.
2. IN LIEU OF AN INTERNAL CYLINDER, AN HDPE WATERTIGHT REPAIR COUPLER CAN BE USED.
3. INTERNAL CYLINDER ADAPTER IS NOT RECOMMENDED FOR DOWNSTREAM CONNECTIONS.

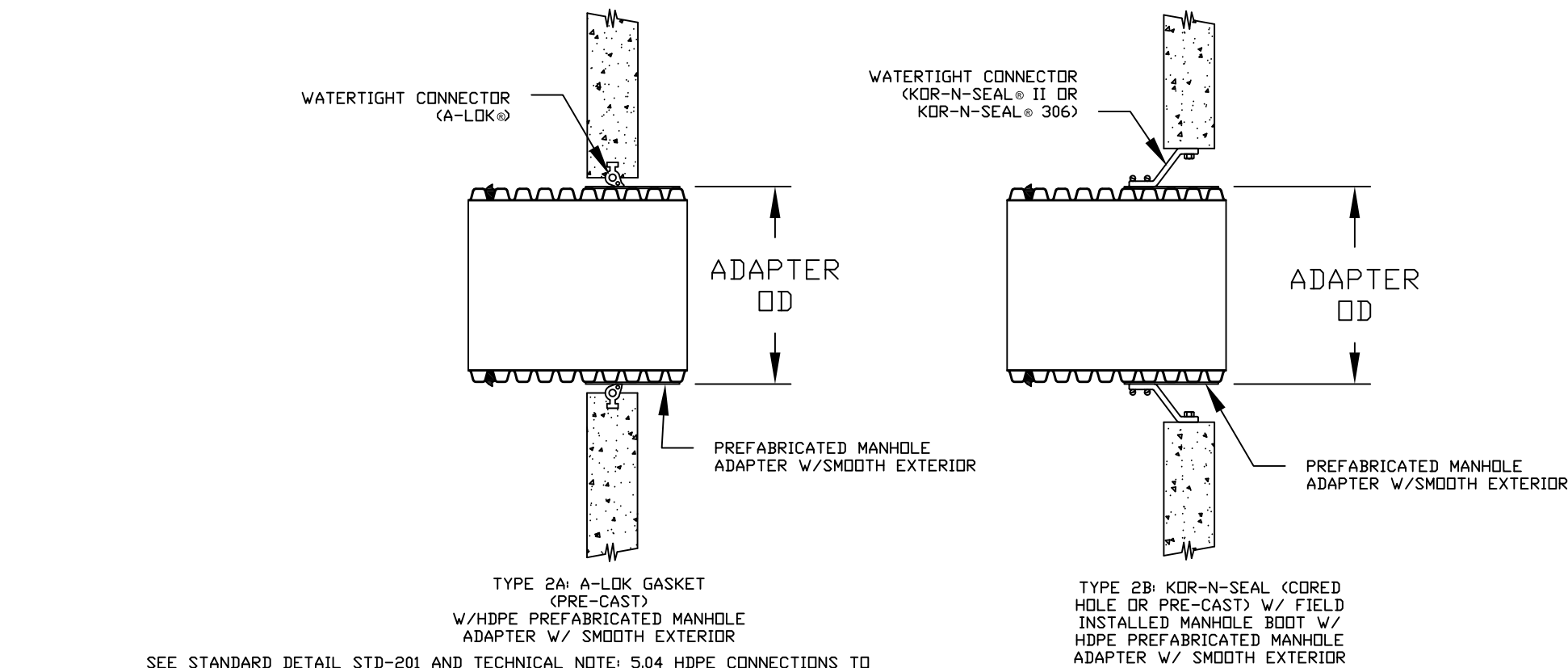


NOTES:

1. CONNECTION AND PIPE TO BE BACKFILLED PER ASTM D2321, LATEST EDITION.
2. IN LIEU OF AN INTERNAL CYLINDER, AN HDPE WATERTIGHT REPAIR COUPLER CAN BE USED.
3. INTERNAL CYLINDER ADAPTER IS NOT RECOMMENDED FOR DOWNSTREAM CONNECTIONS.



NO.	REVISIONS	BY	DATE	DES BY:	DATE:	SUBMITTED BY:	DATE:		TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING		PROJECT TITLE:	DRAWING TITLE:	PROJECT NO.					
				DRN BY:		APPROVED BY:								DATE:				
				CHK BY:		ENGINEER: _____												
				APPD BY:														
				SCALE:							FILE NO.							
												DRAWING NO. 153WTN-9B						
												SHEET NO. 153WTN-9B						



SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	ADAPTER OD (IN)	PRODUCT CODES	KDR-N-SEAL**	A-LDK RING**
(IN)	A-PROFILE	H-PROFILE	SERIES I OR II	SERIES 306
12	14.73	14.45	1222AN CUSTOM	S106-20WS S306-22
15	17.98	18.05	1522AN CUSTOM	S106-20WS S306-22
18	21.71	22.0	1822AN CUSTOM	S306-26 S306-26
24	28.52	28.9	2422AN CUSTOM	S306-32 S306-32
30	35.92	36.0	3022AN CUSTOM	S306-40 S306-40
36	42.06	42.15	3622AN CUSTOM	S306-46 S306-46
42	48.54	48.72	4222AN CUSTOM	S306-52L S306-52L
48	54.53	55.75	4822AN CUSTOM	S306-58L S306-58L
54	N/A	61.75	N/A CUSTOM	S306-64L N/A
60	67.3	68.05	6022AN CUSTOM	S306-72 N/A

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

\*\* THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

KDR-N-SEAL is a registered trademark of NPC, Inc. (www.npc.com)

A-LDK is a registered trademark of A-LDK Products, Inc. (www.alok.com)

PIPE SIZE (IN)	ADAPTER OD (IN)		PRODUCT CODES		KDR-N-SEAL**		A-LDK RING**	
	A-PROFILE	H-PROFILE	A-PROFILE	H-PROFILE	SERIES I OR II	SERIES 306	A-PROFILE	H-PROFILE
12	14.73	14.45	1222AN	CUSTOM	S106-20BWS	N/A	480	475
15	17.98	18.05	1522AN	CUSTOM	S106-20WS	S306-22	580	580
18	21.71	22.0	1822AN	CUSTOM	S306-26	S306-26	710	710
24	28.52	28.9	2422AN	CUSTOM	S306-32	S306-32	915	930
30	35.92	36.0	3022AN	CUSTOM	S306-40	S306-40	1160	1180
36	42.06	42.15	3622AN	CUSTOM	S306-46	S306-46	1350	1360
42	48.54	48.72	4222AN	CUSTOM	S306-52L	S306-52L	1560	1570
48	54.53	55.75	4822AN	CUSTOM	S306-58L	S306-58L	1745	1790
54	N/A	61.75	N/A	CUSTOM	S306-64L	N/A	1940	1940
60	67.3	68.05	6022AN	CUSTOM	S306-72	N/A	2160	2170

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

\*\* THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

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SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

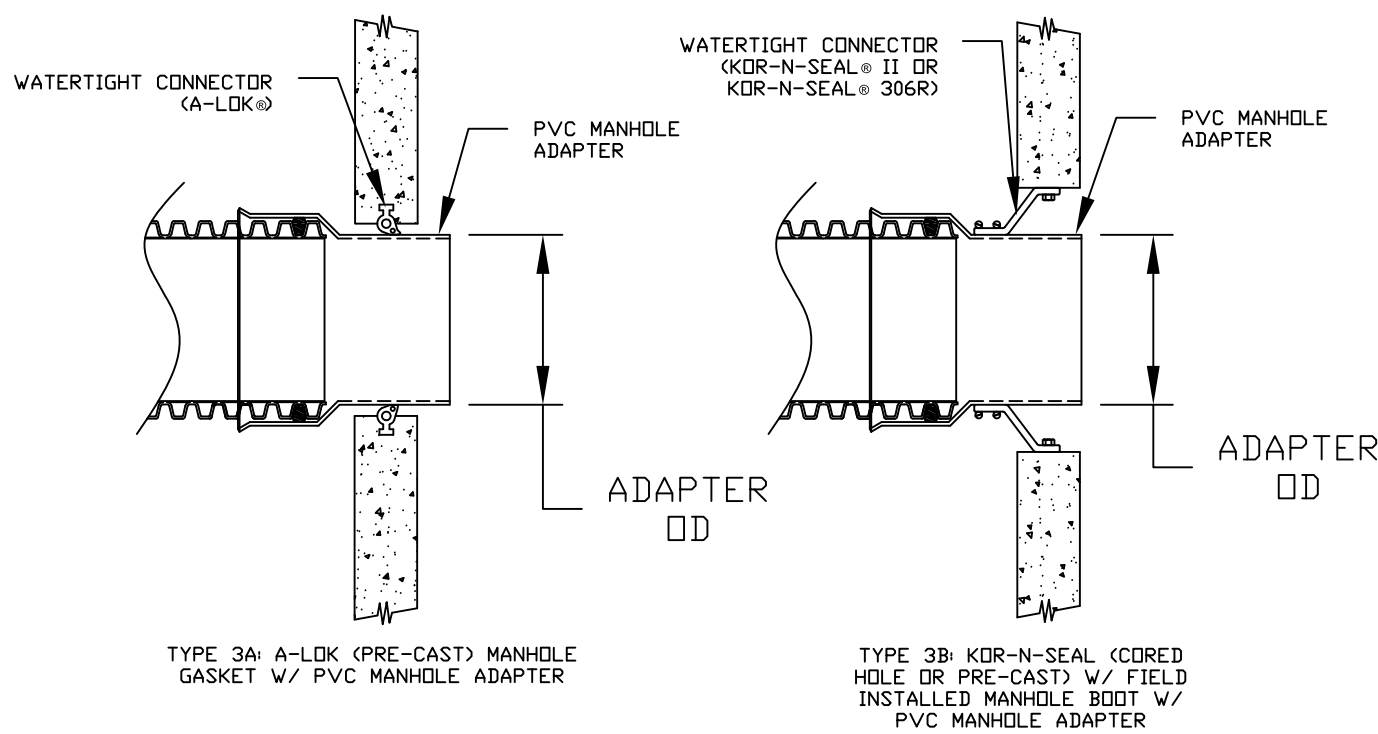
PIPE SIZE (IN)	PIPE OD (IN)		Z-LDK** RING	
	A-PROFILE	H-PROFILE	A-PROFILE	H-PROFILE
12	14.5	14.2	8016	8016
15	17.6	17.8	8019	8019
18	21.2	21.5	8022	8023
24	27.8	28.4	8029	8031
30	35.1	35.5	8039	8039
36	41.1	41.4	8045	8045

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

\*\* THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

Z-LDK is a registered trademark of A-LDK Products, Inc. (www.alok.com)



REFER TO STANDARD DETAIL STD-201, INSTALLATION RECOMMENDATIONS ARE ALSO SPECIFIED IN TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES

PIPE SIZE (IN)	ADAPTER OD	HANCOR PRODUCT CODES	KDR-N-SEAL*** SERIES I OR II		A-LDK RING*** SERIES 306
12	12.5	1268AG	S106-16AWP	N/A	410
15	15.3	1568AG	S106-20BWS	N/A	490
18	18.7	1868AG	S206-24A	S306-22	610
24	24.8	2468AG	S206-28	S306-28	800

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

\*\* THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

KDR-N-SEAL is a registered trademark of NPC, Inc. (www.npc.com)

A-LDK is a registered trademark of A-LDK Products, Inc. (www.alok.com)

SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.

PIPE SIZE (IN)	PIPE OD (IN)	NPC ADAPTER**	KDR-N-SEAL**
(IN)	A-PROFILE	H-PROFILE	SERIES I OR II
12	14.5	14.2	CGA-12
15	17.6	17.8	CGA-15
18	21.2	21.5	CGA-18
24	27.8	28.4	CGA-24
30	35.1	35.5	CGA-30
36	41.1	41.4	CGA-36
42	47.7	48.0	CGA-42
48	53.6	54.0	CGA-48
54	60.0	60.5	N/A
60	66.3	67.0	CGA-60

S106-20BWS  
 S106-20WS  
 S306-24L  
 S306-32  
 S306-40  
 S306-44L  
 S306-52L  
 S306-58L  
 S306-64L  
 S306-72  
 N/A

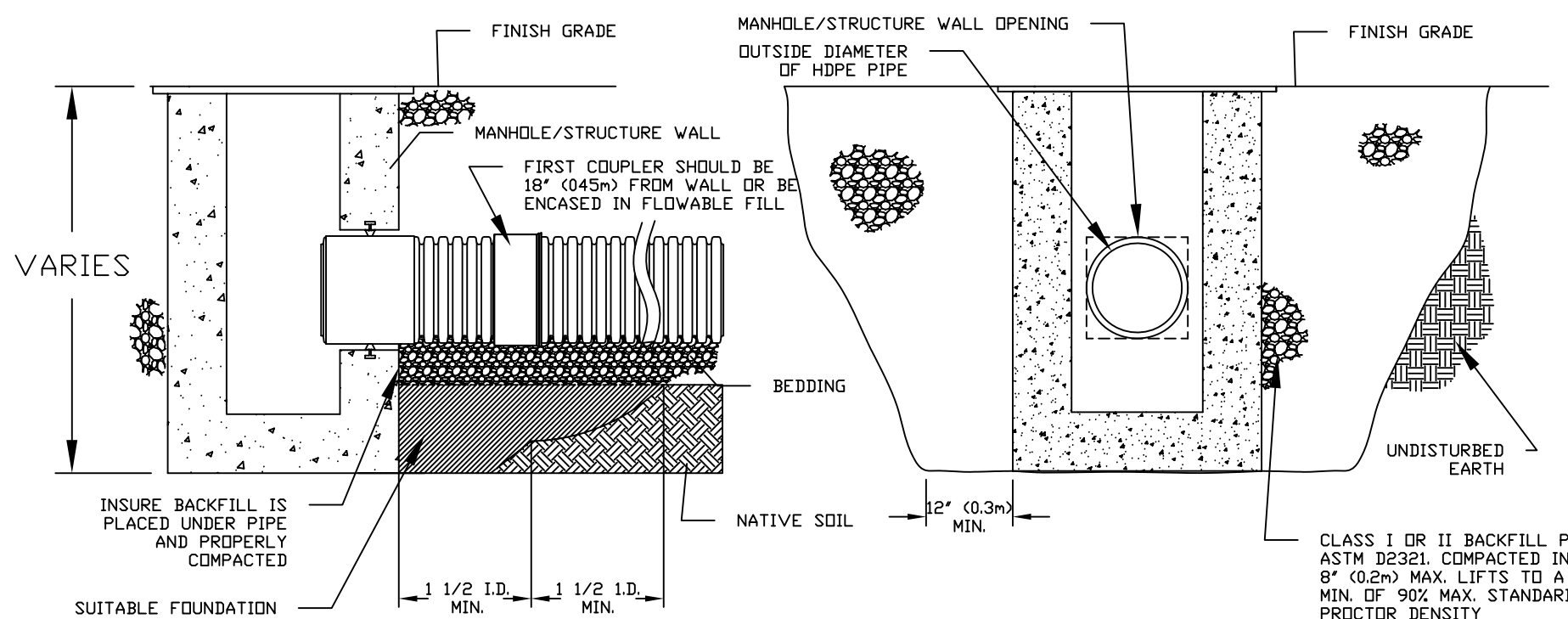
\*\* 12-24" DIAMETER ASSEMBLIES ARE RATED WATERTIGHT. 30-60" DIAMETER ASSEMBLIES SHALL BE WATER SOIL-TIGHT.

NOTES:

PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

\*\* THIRD PARTY - CODES AS SUPPLIED BY MANUFACTURER

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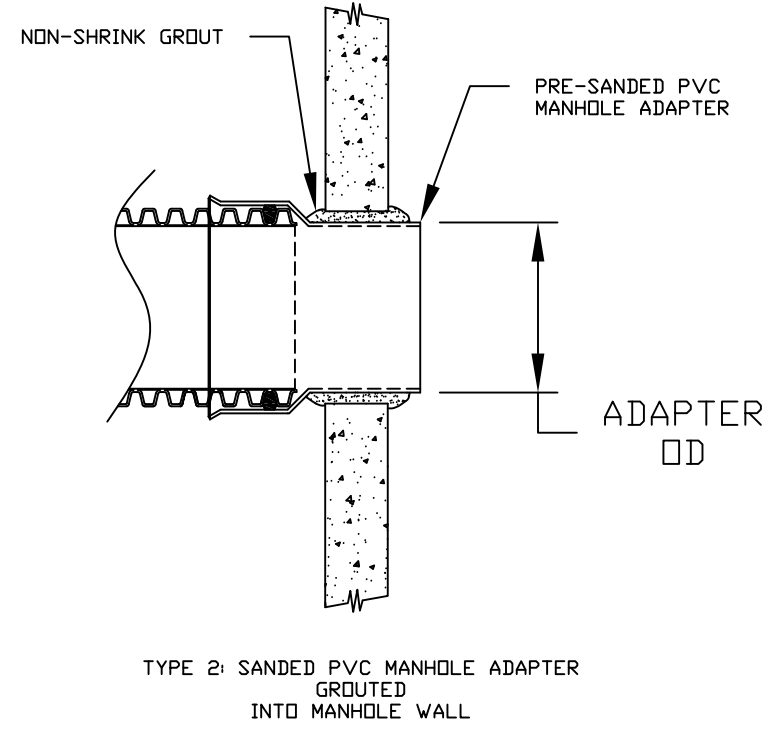
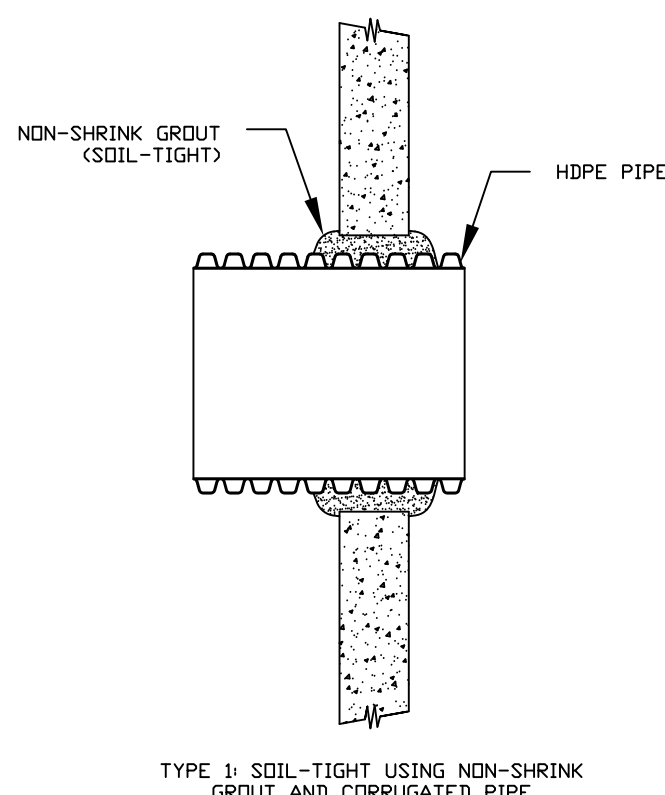
NOTES:

1. MAXIMUM INSERTION ANGLE SHALL NOT EXCEED REQUIREMENTS AS SPECIFIED BY THE MANUFACTURER.

2. SEE STANDARD DETAILS STD-202 (A-B) THROUGH STD-204 (A-E) FOR STRUCTURE CONNECTIONS, PRODUCT INFORMATION AND DIMENSIONAL PIPE DATA. INSTALLATION RECOMMENDATIONS ARE ALSO SPECIFIED IN TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES.

3. PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.


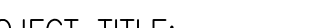
SEE STANDARD DETAIL STD-201 AND TECHNICAL NOTE 5.04 HDPE CONNECTIONS TO MANHOLES AND STRUCTURES FOR INSTALLATION RECOMMENDATIONS.



PIPE SIZE (IN)	ADAPTER OD (IN)	HANDCUT	PRODUCT CODES
12	12.5	1277AG	
15	15.3	1577AG	
18	18.7	1877AG	
24	24.8	2477AG	
30	32.0	3077AG	

\*\* FOR USE WITH A PROFILE PIPE ONLY \*\*

\*\*PERFORMANCE HIGHLY DEPENDENT ON INSTALLATION. CONTRACTOR MUST INSURE MANHOLE GASKET IS UNIFORMLY SEATED AROUND STRUCTURE ADAPTER. EXTRA PRECAUTIONS MUST BE TAKEN TO PREVENT DIFFERENTIAL SETTLEMENT BETWEEN THE PIPE AND MANHOLE.

NO.	REVISIONS	BY	DATE	DES BY:	DATE:	SUBMITTED BY:	DATE:		TOWN OF WATERTOWN DEPARTMENT OF PUBLIC WORKS DIVISION OF ENGINEERING		PROJECT TITLE:  TOWN OF WATERTOWN STANDARD DETAIL DRAWINGS	DRAWING TITLE:  STANDARD ADS MANHOLE/STRUCTURE CONNECTIONS	PROJECT NO.
				DRN BY:		APPROVED BY:	DATE:						FILE NO.
				CHK BY:	SCALE:								DRAWING NO.
				APPD BY:		ENGINEER:							SHEET NO.
													153WTN-9C
													153WTN-9C