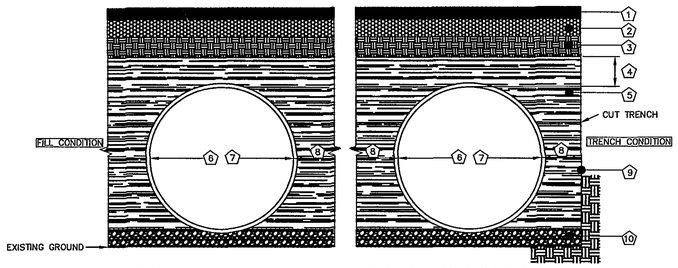
BACKFILL GUIDELINES ⚠



1. RIGID OR FLEXIBLE PAVEMENT
2. GRANULAR ROAD BASE
3. NORMAL ROADWAY EMBANKMENT FILL PLACED IN 8" LIFTS AND COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T-99.

H20/H25 LIVE LOAD

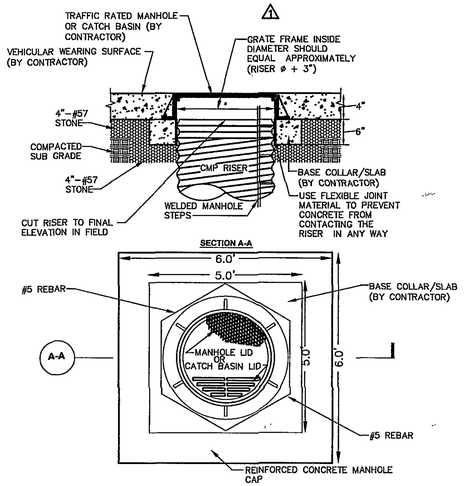
4. 12" MIN. FOR DIAMETERS THROUGH 96" 18" MIN. FOR DIAMETERS FROM 102" AND UP
5. CRUSHED STONE ANGULAR FILL SUCH AS #8, #57 OR APPROVED EQUAL. (COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T-99.
6. 12"ø THRU 84"ø 2 2/3" X 1/2" CSP, GAGE PER AASHTO SECTION 12
7. 54"ø THRU 144"ø 3" X 1" OR 5" X 1" CSP GAGE PER AASHTO SECTION 12
8. STANDARD SPACING IN TABLE, SPECIAL SPACING IS SUBJECT TO APPROVAL BY CONTECH

SPACING CHART PER AISI AND NCSPA GUIDELINES	
DIAMETER	REQUIRED SPACING
UP TO 24"	12in.
24"-72"	1/2 PIPE DIA
72" AND UP	36in.

9. CONTECH C40 NON-WOVEN GEOTEXTILE AS REQUIRED TO PREVENT SOIL MIGRATION
10. RELATIVELY LOOSE GRANULAR BEDDING, ROUGHLY SHAPED TO FIT BOTTOM OF PIPE, 4" TO 6" IN DEPTH. (#57 OR #8 OR OTHER SUITABLE GRANULAR)

⚠ STORMWATER DETENTION INSTALLATION
NTS

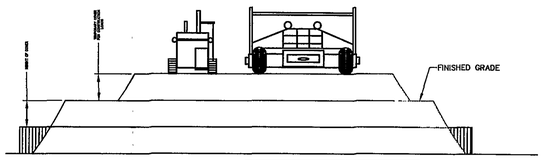
MANHOLE COVER GUIDELINES ⚠



NOTES:
1. THE CONCRETE CAP SHALL BE SIZED AND DESIGNED BY OTHERS SO THAT THE LOADS ARE TRANSMITTED TO THE SOIL, AND NOT THE RISER.
2. THE CONCRETE CAP SHALL BE SIZED TO PROVIDE AN ADEQUATE BOTTOM AREA BASED ON THE ALLOWABLE BEARING CAPACITY OF THE SOIL.
3. THE FLEXIBLE JOINT MATERIAL (RECYCLED VINYL OR EQ.) TO BE STIFF ENOUGH SO THAT THE CONCRETE CAN NEVER ENGAGE WITH THE RISER CORRUGATIONS.

⚠ STORMWATER DETENTION MANHOLE RISER
NTS

CONSTRUCTION LOAD GUIDELINES ⚠

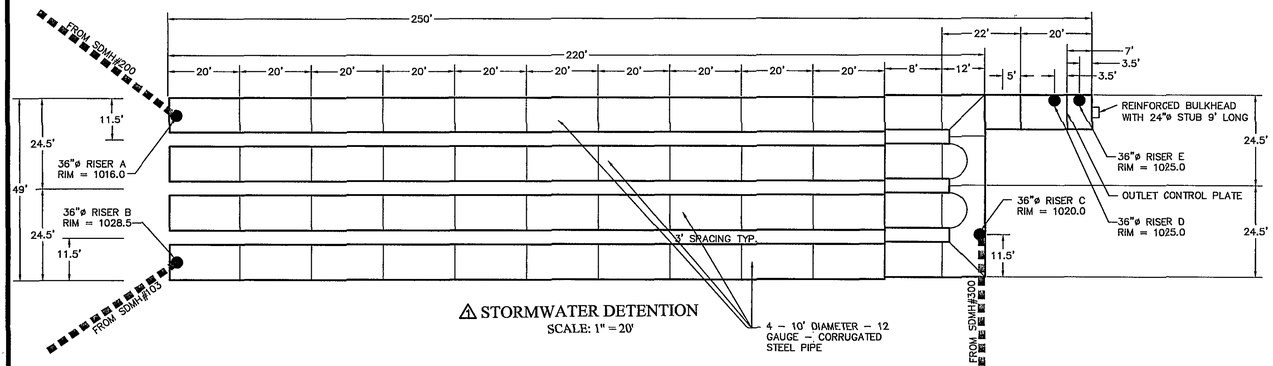


CONSTRUCTION LOADS:
FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

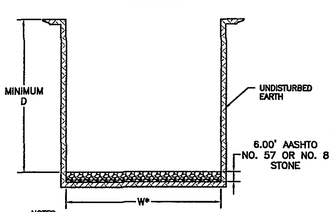
*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

⚠ STORMWATER DETENTION INSTALLATION
NTS



⚠ STORMWATER DETENTION
SCALE: 1" = 20'

(1.) TRENCH AND BEDDING PREPARATION FOR UNIT ⚠

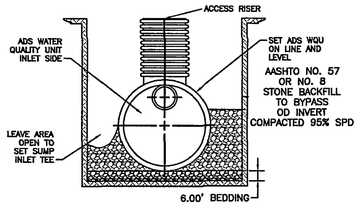


NOTES:
1. AVOID EXCESSIVE GROUND WATER IN THE TRENCH DE-WATER AS NECESSARY.
2. PROVIDE SHEETING OR SHORING AS REQUIRED.
3. MAXIMUM COVER HEIGHT MEASURED FROM THE TOP OF THE UNIT TO FINAL GRADE SHALL NOT EXCEED 8 FEET.

ADS UNIT SIZE	MINIMUM D	MINIMUM W*
36"	4.5'	6.5'
42"	5.0'	7.0'
48"	5.5'	7.5'
60"	7.5'	8.5'

* TRENCH WIDTH DOES NOT ACCOUNT FOR BY-PASS PIPE, THIS ESTIMATE IS FOR THE MAIN UNIT ONLY

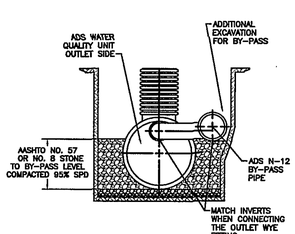
(2.) PLACING UNIT AND INITIAL BACKFILL ⚠



1. UTILIZE CARE WHEN LOWERING UNIT INTO THE TRENCH. HANDLE USING NYLON SLINGS AND TWO PICK POINTS.
2. PLACE BACKFILL AROUND THE UNIT IN UNIFORM 8"-12" LIFTS, COMPACTED TO 95% SPD.
3. WHEN THE UNIT CONSISTS OF 2 SECTIONS, PLACE THE DOWNSTREAM SECTION FIRST. PROPERLY LUBE THE BELL AND SPIGOT. CONNECT AND HOME THE REMAINING SECTIONS.

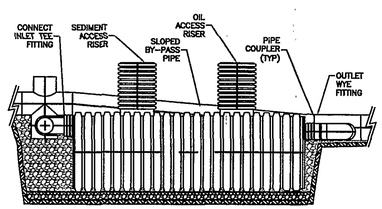
⚠ WATER QUALITY UNIT INSTALLATION
NTS

(3.) CONNECTING THE BYPASS (OUTLET END) ⚠



1. START ON THE DOWNSTREAM END BY CONNECTING THE OUTLET FITTING: BE SURE TO MATCH INVERTS OF UNIT OUTLET AND BYPASS PIPE.
2. BY-PASS FITTINGS CAN BE CONNECTED USING THE SAME COUPLERS AS THE MAIN STORM SEWER PIPE. COUPLERS MAY BE SPLIT COUPLERS, IN-LINE BELL COUPLERS, SNAP COUPLERS, BELL-BELL COUPLERS OR WELDED COUPLERS

(4.) CONNECTING THE BY-PASS (INLET END) ⚠

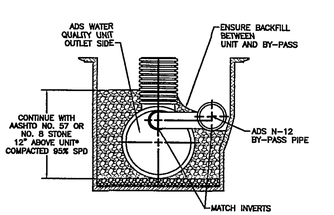


1. CONTINUE CONNECTING THE BY-PASS PIPE TO THE UPSTREAM END OF THE UNIT.
2. FINISH THE BY-PASS CONNECTION TO THE UNIT BY CONNECTING THE INLET TEE FITTING

NOTE:
PLEASE CONSULT WITH YOUR ADS REPRESENTATIVE ON THE AMOUNT OF FALL FROM THE BY-PASS INLET INVERT TO THE BY-PASS OUTLET INVERT

⚠ WATER QUALITY UNIT INSTALLATION
NTS

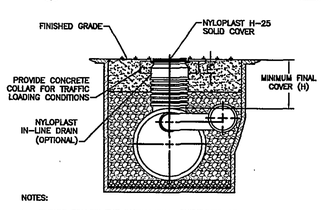
(5.) BACKFILL AROUND THE UNIT AND BY-PASS ⚠



1. CONTINUE BACKFILL WITH AASHTO NO. 57 OR NO. 8 STONE TO 12" ABOVE WATER QUALITY UNIT.
2. FILL UNIT WITH WATER TO THE TOP OF THE SEDIMENT WEIR PLATE ONCE BACKFILL IS PLACED AND COMPACTED 12" ABOVE THE UNIT.

* FOR 60" UNITS CONTINUE BACKFILL WITH AASHTO NO 57 OR NO 8 STONE TO 24" ABOVE WATER QUALITY UNIT

(6.) FINAL COVER AND RISER EXTENSIONS ⚠



NOTES:
1. PLEASE FOLLOW THE INSTALLATION GUIDELINES OF ADS PRODUCT NOTE 3.115 WHEN INSTALLING ADS N-12 PIPE ON THE BY-PASS CONNECTION OR IN OTHER DRAINAGE APPLICATIONS ON THE SITE.
2. ALL RISER EXTENTIONS TO GRADE SHOULD BE COORDINATED THROUGH YOUR ADS REPRESENTATIVE.

FOR NON-TRAFFIC LOADING: H = 12" COVER FOR 36", 42", AND 48" UNITS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF BITUMINOUS PAVEMENT OR TOP OF RIGID PAVEMENT. H = 24" COVER FOR 60" PIPE.

FOR TRAFFIC LOADING H = 24" COVER FOR 36", 42", 48", AND 60" MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF BITUMINOUS PAVEMENT OR TOP OF RIGID PAVEMENT.

⚠ WATER QUALITY UNIT INSTALLATION
NTS

102 Albemarle Ave
Roanoke, Virginia
24013
www.lmwpc.com
ph: 540.345.0675
fax: 540.342.4456
lmweng@lmw.roacoxmail.com
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NEW STORE SITE: R-391
VINTON MAGISTERIAL DISTRICT
ROANOKE, VIRGINIA

NO.	DATE	DESCRIPTION	BY
4	06/10/07	PER COUNT & VDOT COMMENTS	CHW
1	02/27/07	PER KROGER COMMENTS	MCP

STORMWATER MANAGEMENT DETAILS

COMMONWEALTH OF VIRGINIA
RICHARD C. WHITE
No. 020021
7-23-07
PROFESSIONAL ENGINEER

Designed By	RCW
Drawn By	CHW
Checked By	RCW
Approved By	RCW
Submitted By	RCW
Drawing	3155aCover
Date	11/20/06
Scale	NONE
Commission No.	3155a
Sheet	22 of 22