

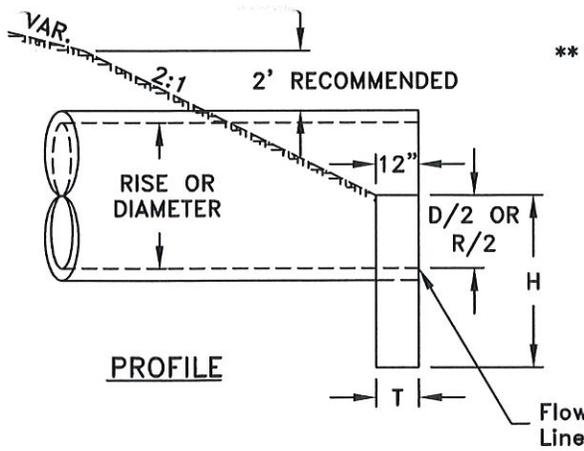
**NOTE:**

ENDS OF EXISTING DRAIN MUST BE FREE OF ANY MATERIAL THAT WILL OBSTRUCT FLOW THROUGH THE DRAIN.

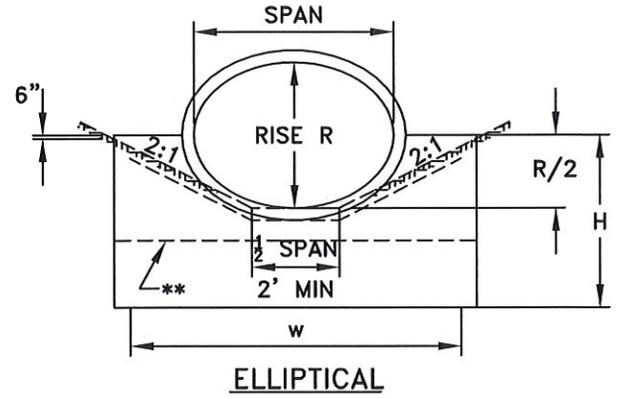
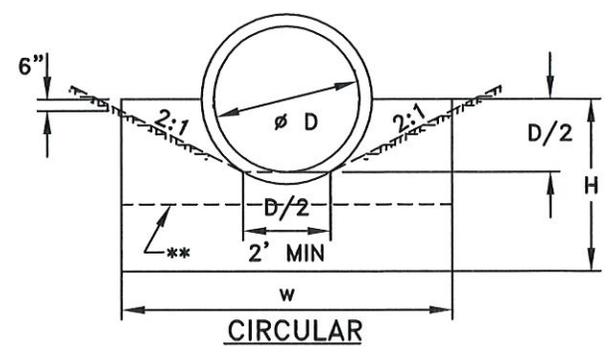
APPROVED 7-13-20  
  
 CITY ENGINEER  
 REVISED: 13 JUL 20

STANDARD DETAIL  
 DRAIN TILE  
 REPLACEMENT

CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING  
 STANDARD  
 CONSTRUCTION DRAWING  
 DWG. BY: ADH .....  
 CHK'D BY: MN .....  
 FILE NUMBER  
 D-1



\*\* TOP SURFACE OF 6" INLET HEADWALL EXTENSION



**NOTE:**

CONCRETE FOR HEADWALLS SHALL BE CLASS QC1.

CIRCULAR					ELLIPTICAL					
D	W	H	T	CONC. CU. YARDS	SPAN	RISE	W	H	T	CONC. CU. YARDS
12"	2'-0"	3'-0"	12"	0.20	—	—	—	—	—	—
15"	2'-6"	3'-2"	12"	0.25	—	—	—	—	—	—
18"	3'-0"	3'-3"	12"	0.31	23"	14"	3'-0"	3'-2"	12"	0.29
21"	3'-6"	3'-4"	12"	0.37	30"	19"	3'-7"	3'-4"	12"	0.35
24"	4'-0"	3'-6"	12"	0.43	34"	22"	3'-11"	3'-5"	12"	0.38
27"	4'-6"	3'-8"	12"	0.49	38"	24"	4'-6"	3'-6"	12"	0.44
30"	5'-0"	3'-9"	12"	0.56	—	—	—	—	—	—
33"	5'-6"	3'-10"	12"	0.62	45"	29"	5'-2"	3'-8"	12"	0.49
36"	6'-0"	4'-0"	12"	0.69	—	—	—	—	—	—
39"	6'-6"	4'-2"	12"	0.77	53"	34"	5'-11"	4'-0"	14"	0.66
42"	7'-0"	4'-3"	12"	0.84	60"	38"	6'-10"	4'-2"	14"	0.82
48"	8'-0"	4'-6"	14"	1.09	68"	43"	8'-0"	4'-4"	16"	1.01
54"	9'-3"	4'-9"	14"	1.32	76"	48"	9'-2"	5'-0"	16"	1.34
60"	10'-6"	5'-6"	16"	1.93	83"	53"	10'-4"	5'-2"	18"	1.65
66"	11'-9"	5'-9"	18"	2.42	91"	58"	11'-6"	5'-5"	18"	1.97
72"	13'-0"	6'-0"	18"	2.77	98"	63"	12'-7"	5'-7"	20"	2.38
78"	14'-3"	6'-3"	20"	3.37	106"	68"	13'-9"	5'-10"	20"	2.69
84"	15'-6"	6'-6"	22"	4.05	113"	72"	14'-9"	6'-0"	22"	3.14
90"	16'-9"	6'-9"	22"	4.51	121"	77"	15'-11"	6'-3"	22"	3.49
96"	18'-0"	7'-0"	24"	5.31	128"	82"	17'-0"	6'-3"	24"	4.04
102"	19'-3"	7'-3"	26"	6.20	136"	87"	18'-2"	6'-8"	24"	4.84
108"	20'-6"	7'-6"	26"	6.78	143"	92"	19'-4"	6'-10"	26"	5.12
114"	21'-9"	7'-9"	28"	7.81	151"	97"	20'-6"	7'-1"	26"	5.42
120"	23'-0"	8'-0"	30"	8.93	166"	106"	22'-7"	7'-5"	28"	6.60
126"	24'-3"	8'-3"	30"	9.57	180"	116"	24'-10"	7'-10"	30"	7.99
132"	25'-6"	8'-6"	32"	10.84	—	—	—	—	—	—
144"	28'-8"	9'-0"	34"	13.00	—	—	—	—	—	—

APPROVED 7-13-20

*Mitch Volaf*

CITY ENGINEER

CRADLE TYPE HEADWALL FOR CONCRETE PIPE (O.D.O.T HW-2.2)

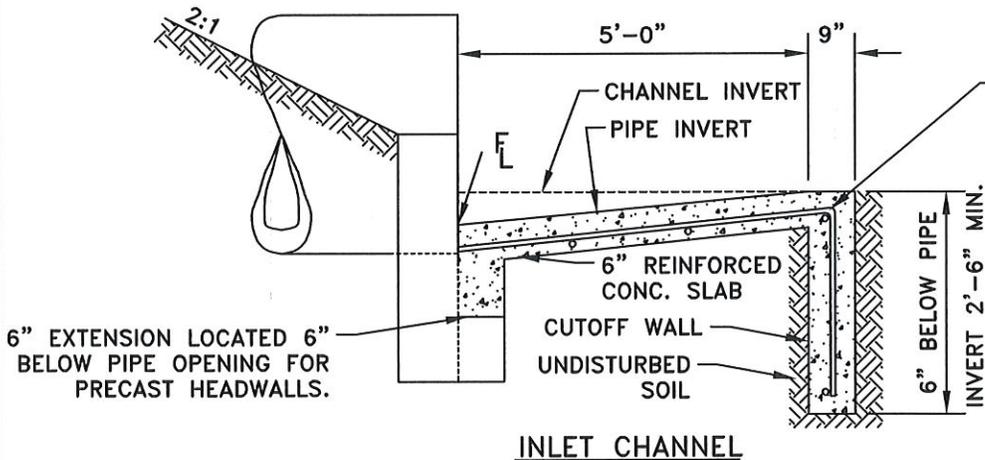
CITY OF LANCASTER, OHIO  
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DRAWING

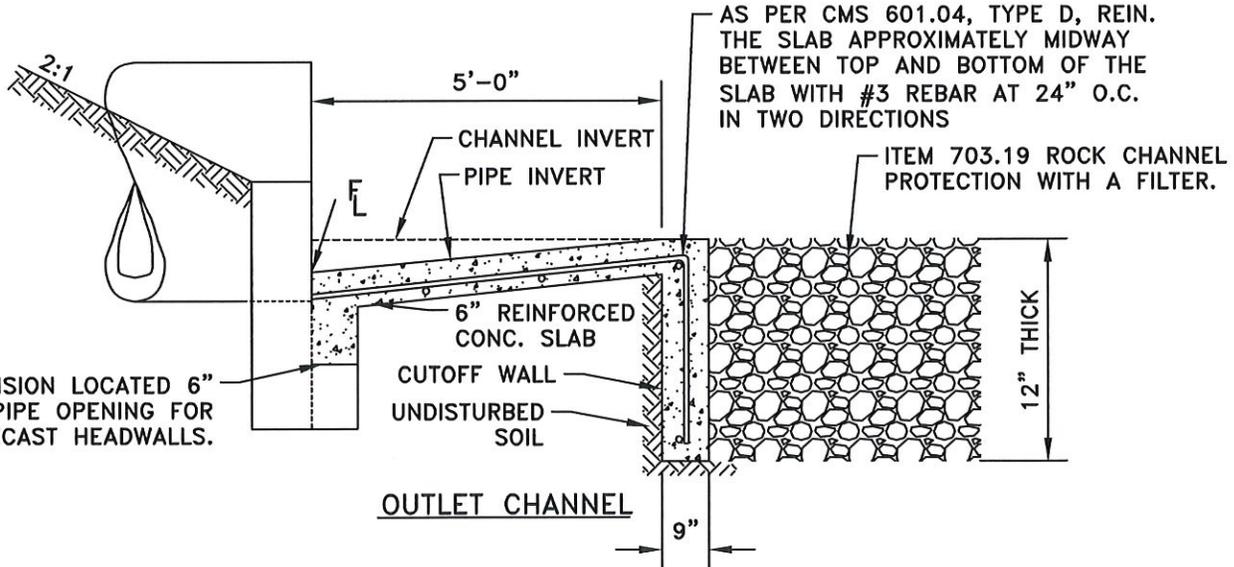
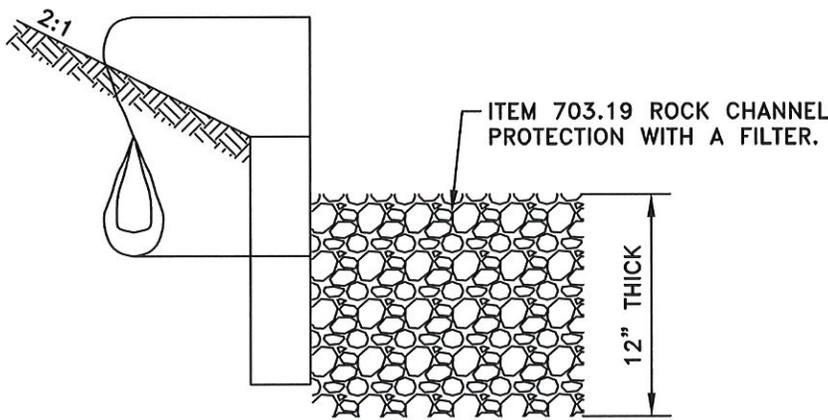
DWG. BY: ADH  
CHK'D BY: MN

FILE NUMBER  
**D-2** SHEET 1 OF 2

REVISED: 13 JUL 20



**INLET CHANNEL**



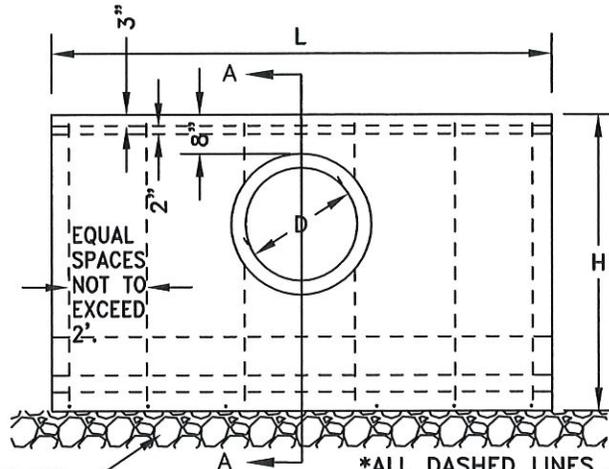
**OUTLET CHANNEL**

**NOTE:**  
 CONCRETE SHALL BE CLASS QC-MISC. AS PER ITEM 499.  
 AN ANALYSIS AND CALCULATION OF THE CULVERT OUTLET VELOCITY SHALL BE DETERMINED FOR THE CITY ENGINEER

APPROVED 7-13-20  
  
 CITY ENGINEER  
 REVISED: 13 JUL 20

CHANNEL PROTECTION FOR HEADWALL (ODOT HW-2.2)

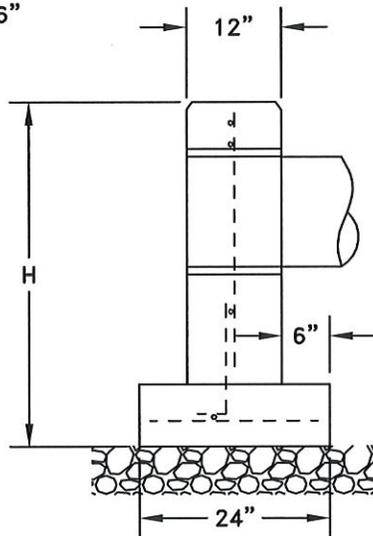
CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING  
 STANDARD CONSTRUCTION DRAWING  
 DWG. BY: ADH  
 CHK'D BY: MN  
 FILE NUMBER D-2 SHEET 2 OF 2



USE 6" BEDDING  
CONFORMING TO CMSL  
901.11 AND EXCEED  
FOOTER DIMENSIONS BY 6"

**ELEVATION**

\*ALL DASHED LINES ARE #5 BARS



**NOTES:**

1. HEADWALL WHERE REQUIRED WILL BE PROVIDED FOR NONSKEWED CULVERTS HAVING A DIA. OR RISE OF 36" OR LESS.
2. CONCRETE SHALL BE CLASS QC1.
3. REINFORCING STEEL BARS SHALL BE #5 BAR.
4. DIMENSIONS AND QUANTITIES ARE SHOWN FOR CIRCULAR SECTIONS ONLY. CALCULATE REINFORCEMENT FOR ELLIPTICAL CONCRETE OR CORRUGATED PIPE IN ACCORDANCE WITH EQUATIONS LISTED BELOW.
5. CHAMFER ALL EXPOSED CORNERS 3/4".
6. FOUNDATION: THE SOIL MUST HAVE A BEARING CAPACITY OF 2600 PSF PRIOR TO PLACING HEADWALL.

DIMENSIONS		
DIAMETER	H	L
8"~15"	6'-0"	8'-4"
18"	6'-0"	8'-4"
21"	6'-0"	11'-0"
24"	6'-0"	11'-0"
30"	7'-0"	13'-8"
36"	7'-0"	16'-4"

$L = \text{CIRCULAR SECTION} = 5D + 4T$   
 $L = \text{ELLIPTICAL OR PIPE~ARCH} = 4R + T + S$   
 $H = \text{CIRCULAR SECTIONS} = D + T + 44"$   
 $H = \text{ELLIPTICAL OR PIPE~ARCH} = R + T + 44"$   
 D = DIAMETER OF PIPE  
 R = RISE OF PIPE  
 S = SPAN OF PIPE  
 T = THICKNESS OF BARREL  
 L = LENGTH OF HEADWALL  
 H = HEIGHT OF HEADWALL

APPROVED 7-13-20  
  
*Mital Nohel*  
CITY ENGINEER

PRECAST  
PIPE HEADWALL  
8" TO 36" DIAMETER

CITY OF LANCASTER, OHIO  
DEPARTMENT OF ENGINEERING

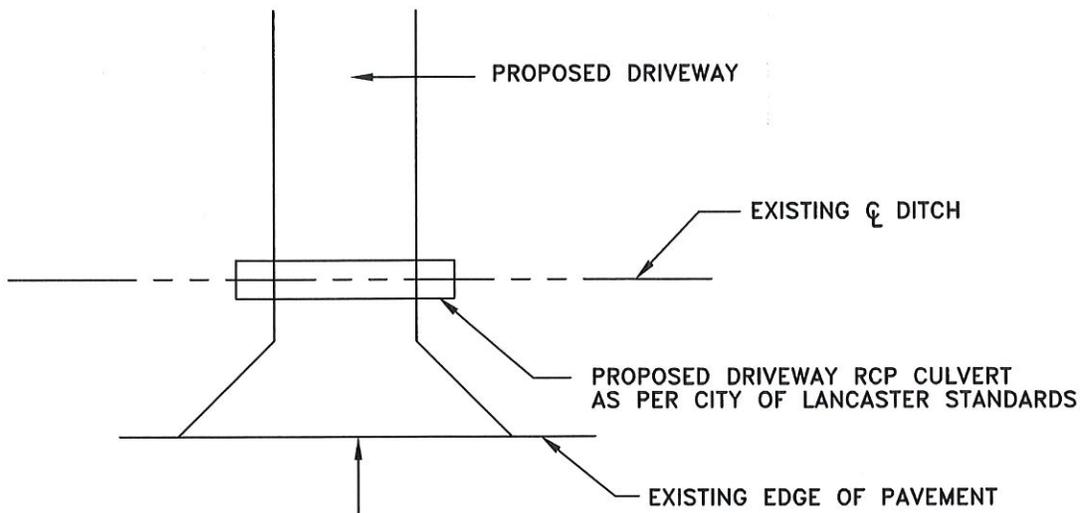
STANDARD  
CONSTRUCTION DRAWING

REVISED: 13 JUL 20

DWG. BY: ADH  
CHK'D BY: MN

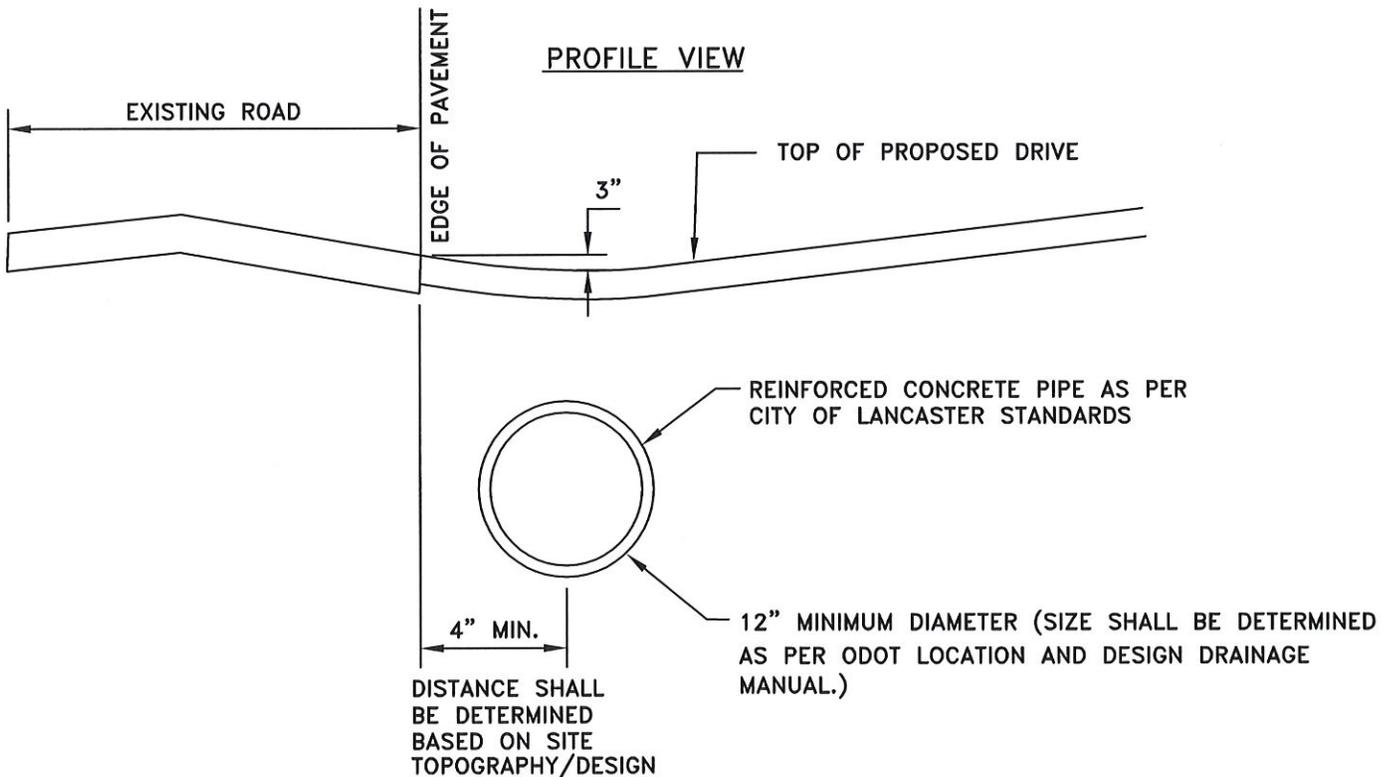
FILE NUMBER  
D-3

PLAN VIEW



SEE CITY OF LANCASTER STANDARD DRAWING  
P-21 (RESIDENTIAL) AND P-23 (COMMERCIAL)

PROFILE VIEW



APPROVED 7-13-20  
*Mitchel Toland*  
CITY ENGINEER

REVISED: 13 JUL 20

DITCH  
CULVERT  
DETAIL

CITY OF LANCASTER, OHIO  
DEPARTMENT OF ENGINEERING

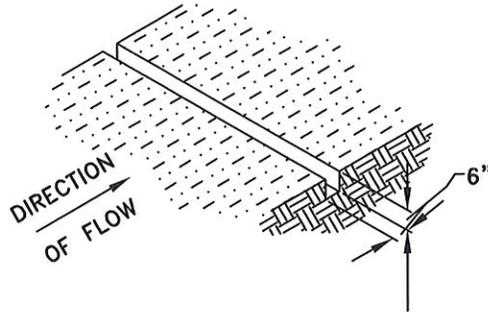
STANDARD  
CONSTRUCTION DRAWING

DWG. BY: .....ADH.....  
CHK'D BY: .....MN.....

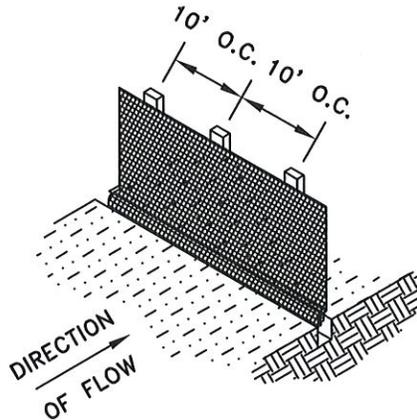
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**D-4**

## SILT FENCE

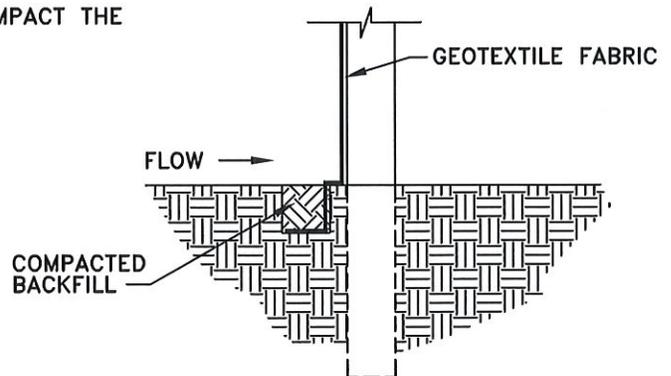
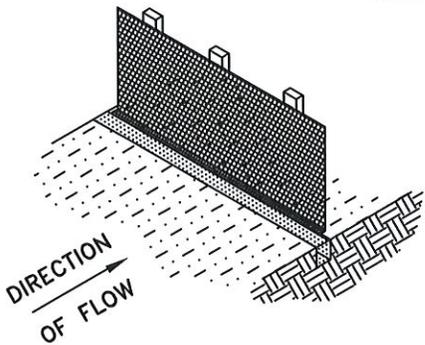
1. EXCAVATE A 6"x6" TRENCH ALONG THE PROPOSED FENCE LINE.



2. PLACE FABRIC AND SUPPORT STAKES AND EXTEND FABRIC INTO THE TRENCH



3. BACKFILL AND COMPACT THE EXCAVATED SOIL



### CONSTRUCTION OF A FILTER BARRIER

- NOTE: 1. SEE ODOT CONSTRUCTION ADMINISTRATION MANUAL OF PROCEDURES ITEM No. SS 832 TEMPORARY SEDIMENT AND EROSION CONTROLS FOR SPECIFICATIONS AND DESIGN CRITERIA.
2. FURNISH 30" WIDE GEOTEXTILE FABRIC WITH SOUND WOOD SUPPORTS WITH MAXIMUM O.C. SPACING OF 10'. USE GEOTEXTILE FABRIC CONFORMING TO ITEM No. 712.09, TYPE C.

SEE D-11, SEDIMENT AND EROSION CONTROL NOTES

APPROVED 7-13-20  
  
 CITY ENGINEER

SEDIMENT CONTROL  
 SILT FENCE  
 (ODOT DM-4.4)

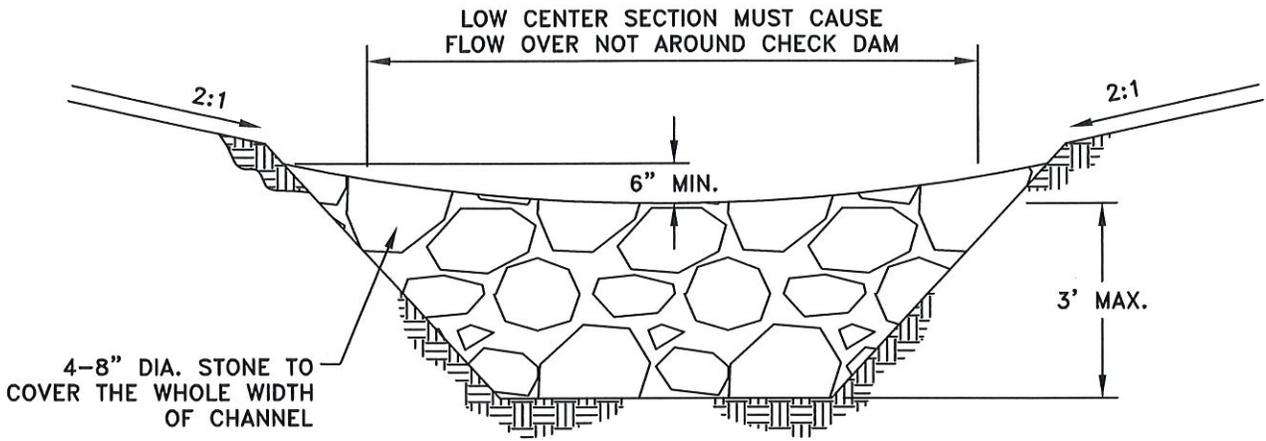
CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING

STANDARD  
 CONSTRUCTION DRAWING

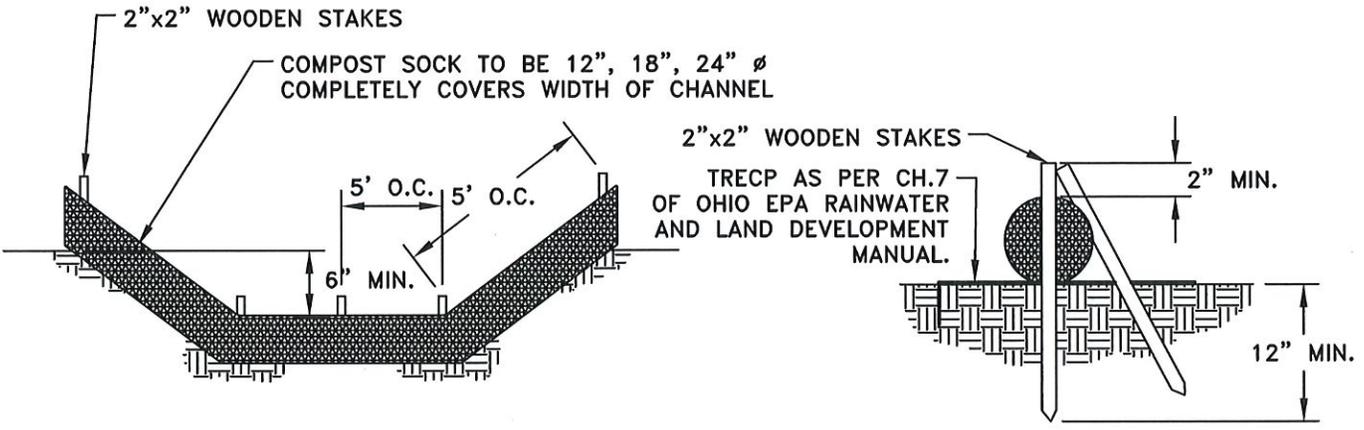
DWG. BY: ADH  
 CHK'D BY: MN

FILE NUMBER  
**D-5**

REVISED: 13 JUL 20



PROPER PLACEMENT OF A ROCK CHECK DAM IN A DRAINAGE WAY

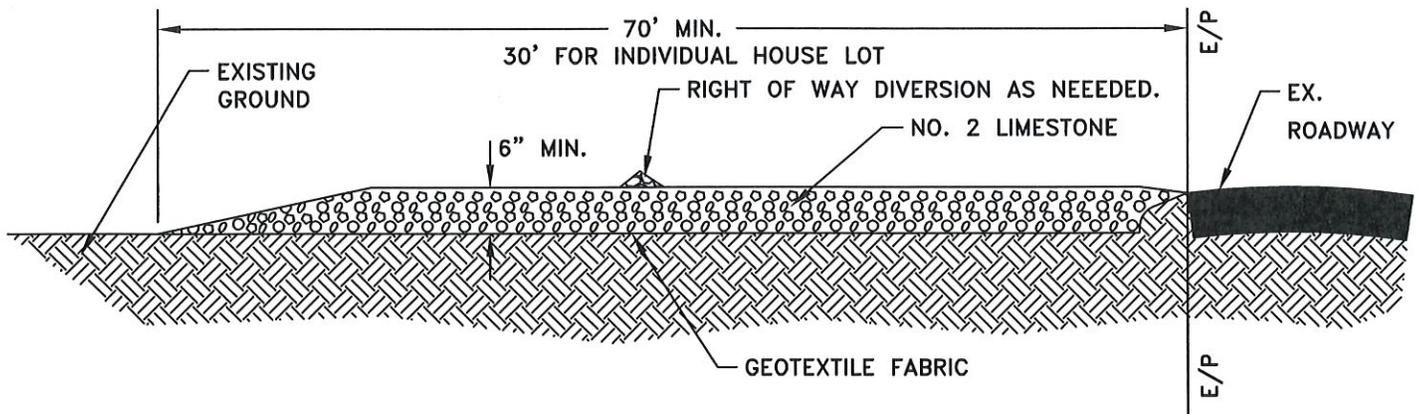


NOTE: COMPOST SOCKS SHALL BE USED WHERE DRAIN AREAS IS LESS THAN 5 ACRES.

PROPER PLACEMENT OF A COMPOST SOCK CHECK DAM IN A DRAINAGE WAY

NOTE: SEE OHIO EPA RAINWATER AND LAND DEVELOPMENT MANUAL CHAPTER 5 FOR SPECIFIC SPECIFICATIONS AND DESIGN CRITERIA.

APPROVED <u>7-13-20</u>  CITY ENGINEER	EROSION CONTROL CHECK DAMS	CITY OF LANCASTER, OHIO DEPARTMENT OF ENGINEERING
REVISED: 13 JUL 20		STANDARD CONSTRUCTION DRAWING DWG. BY: ADH ..... CHK'D BY: MN ..... FILE NUMBER <b>D-6</b>



**CONSTRUCTION SPECIFICATIONS**

**STONE SIZE:** No. 2 (2-1/2" TO 1-1/2") LIMESTONE OR RECYCLED CONCRETE EQUIVALENT

**LENGTH:** AS EFFECTIVE, BUT NOT LESS THAN 70 FEET. 30 FEET WHEN ACCESS TO AN INDIVIDUAL LOT.

**THICKNESS:** NOT LESS THAN 6" FOR RESIDENTIAL LOTS AND NOT LESS THAN 10" FOR COMMERCIAL

**WIDTH:** 14' MINIMUM BUT NOT LESS THAN FULL WIDTH OF ALL POINTS OF INGRESS OR EGRESS

**GEOTEXTILE:** THE FABRIC SHALL BE PLACED ON THE WHOLE PROPOSED AREA BEFORE PLACEMENT OF STONE. IT SHALL CONFORM TO ODOT C&MS 712.09 TYPE B.

**SURFACE WATER:** ALL SURFACE WATER FLOWING TOWARDS CONSTRUCTION ENTRANCE SHALL BE DIVERTED THROUGH AN APPROPRIATE SIZE CULVERT AS NEEDED. IF A CULVERT IS NOT PRACTICAL THEN A MINIMUM SLOPED (5:1) MOUNTABLE BERM CAN BE USED.

**MAINTIENCE:** THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. ADDITIONAL STONE MAY NEED TO BE APPLIED TO PREVENT TRACKING ONTO THE PUBLIC RIGHT-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

**WASHING:** WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO UBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.

REFER TO OHIO EPA RAINWATER AND LAND DEVELOPMENT CHAPTER 7 SOIL STABILIZATION FOR SPECIFICATIONS.

APPROVED 7-13-20  
  
 CITY ENGINEER

**CONSTRUCTION  
 ENTRANCE  
 FOR EROSION AND  
 SEDIMENT CONTROL**

CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING

STANDARD  
 CONSTRUCTION DRAWING

DWG. BY: ADH .....  
 CHK'D BY: MN .....

FILE NUMBER  
**D-7**

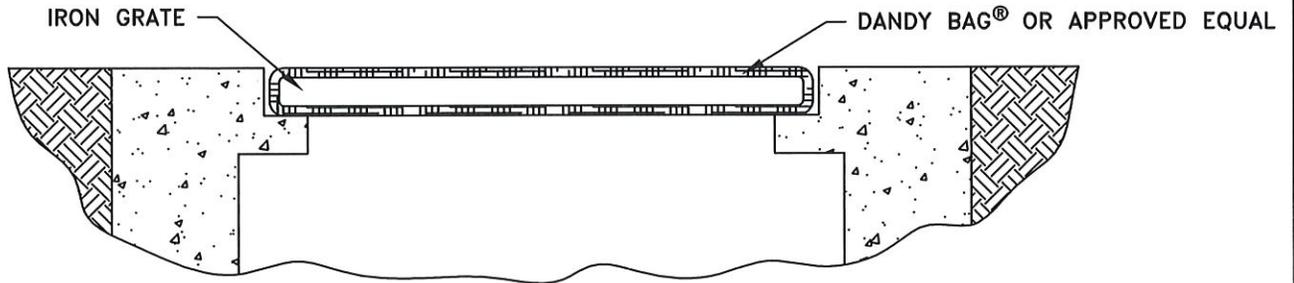
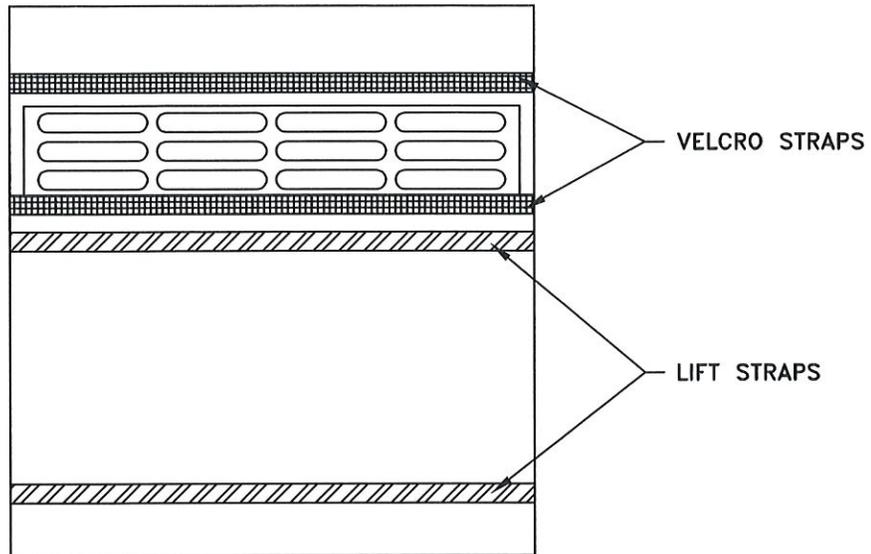
REVISED: 13 JUL 20

DANDY BAG® OR APPROVED EQUAL

NOTE: ALL DANDY BAGS® OR APPROVED EQUAL CAN BE ORDERED WITH AN OPTIONAL OIL ABSORBENT PILLOWS.

INSTALLATION: PLACE THE BAG OVER THE GRATE AS IT STANDS ON IT'S END. TUCK THE ENCLOSURE FLAPS INSIDE OF THE GRATE. USING THE LIFT STRAPS, INSERT THE GRATE INTO THE INLET.

MAINTENANCE: REMOVE ALL SEDIMENT AND DEBRIS FROM THE SURFACE AND VICINITY OF THE BAG AFTER EACH RAINFALL EVENT OR AS DIRECTED BY THE ENGINEER/INSPECTOR



NOTE: THE DANDY BAG® OR APPROVED EQUAL WILL BE MADE FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECS.

HI-FLOW DANDY BAG® (SAFETY ORANGE) OR APPROVED EQUAL

PROPERTY	TEST METHOD	UNITS	TEST RESULTS
GRAB TENSILE STRENGTH	ASTM D 4632	LBS	450 x 300
ELONGATION	ASTM D 4632	%	40 x 25
PUNCTURE STRENGTH	ASTM D 4833	LBS	130
MULLEN BURST STRENGTH	ASTM D 3786	PSI	600
TRAPEZOID TEAR STRENGTH	ASTM D 4533	LBS	165 x 150
% OPEN AREA	COE-22125-86	%	28
APPARENT OPENING SIZE	ASTM D 4751	US STD. SIEVE	30
PERMITTIVITY	ASTM D 4491	SEC.	3.5
PERMEABILITY	ASTM 4491	CM/SEC.	0.25
WATER FLOW RATE	ASTM 4491	GAL/MIN/SQ. FT.	250
ULTRAVIOLET RESISTANCE	ASTM D 4355	%	70

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 CITY ENGINEER

REVISED: 13 JUL 20

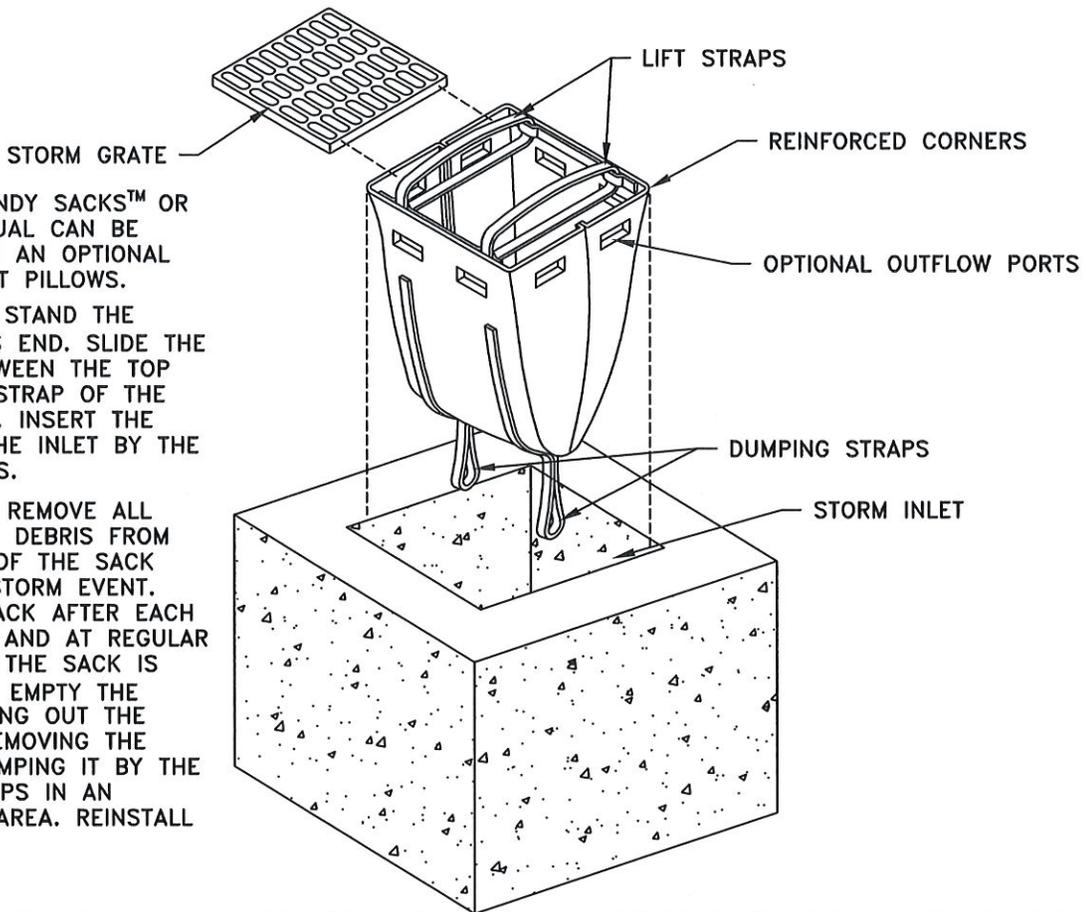
EROSION CONTROL  
 STORM DRAIN INLET  
 PROTECTION

CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING

STANDARD  
 CONSTRUCTION DRAWING

DWG. BY: ...ADH...  
 CHK'D BY: ...MN...  
 FILE NUMBER  
**D-8** SHEET  
 1 OF 4

**DANDY SACK™ OR APPROVED EQUAL**



NOTE: ALL DANDY SACKS™ OR APPROVED EQUAL CAN BE ORDERED WITH AN OPTIONAL OIL ABSORBENT PILLOWS.

INSTALLATION: STAND THE GRATE ON IT'S END. SLIDE THE GRATE IN BETWEEN THE TOP AND BOTTOM STRAP OF THE LIFTING STRAPS. INSERT THE GRATE INTO THE INLET BY THE LIFTING STRAPS.

MAINTENANCE: REMOVE ALL SEDIMENT AND DEBRIS FROM THE VICINITY OF THE SACK AFTER EACH STORM EVENT. CHECK THE SACK AFTER EACH STORM EVENT AND AT REGULAR INTERVALS. IF THE SACK IS OVER 1/3 FULL, EMPTY THE SACK BY LIFTING OUT THE GRATE AND REMOVING THE SACK AND DUMPING IT BY THE DUMPING STRAPS IN AN APPROPRIATE AREA. REINSTALL AS ABOVE.

NOTE: THE DANDY SACK™ OR APPROVED EQUAL WILL BE MADE FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECS.

**HI-FLOW DANDY SACK™ (SAFETY ORANGE) OR APPROVED EQUAL**

PROPERTY	TEST METHOD	UNITS	TEST RESULTS
GRAB TENSILE STRENGTH	ASTM D 4632	LBS	450 x 300
GRAB TENSILE ELONGATION	ASTM D 4632	%	40 x 25
PUNCTURE STRENGTH	ASTM D 4833	LBS	130
MULLEN BURST STRENGTH	ASTM D 3786	PSI	600
TRAPEZOID TEAR STRENGTH	ASTM D 4533	LBS	165 x 150
% OPEN AREA	COE-22125-86	%	28
APPARENT OPENING SIZE	ASTM D 4751	US STD. SIEVE	30
PERMITTIVITY	ASTM D 4491	SEC.	3.5
PERMEABILITY	ASTM 4491	CM/SEC.	0.25
WATER FLOW RATE	ASTM 4491	GAL/MIN/SQ. FT.	250
ULTRAVIOLET RESISTANCE	ASTM D 4355	%	70

APPROVED 7-13-20  
  
 CITY ENGINEER

EROSION CONTROL  
 STORM DRAIN INLET  
 PROTECTION

CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING

STANDARD  
 CONSTRUCTION DRAWING

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 CHK'D BY: .....MN.....

FILE NUMBER  
**D-8** SHEET  
 2 OF 4

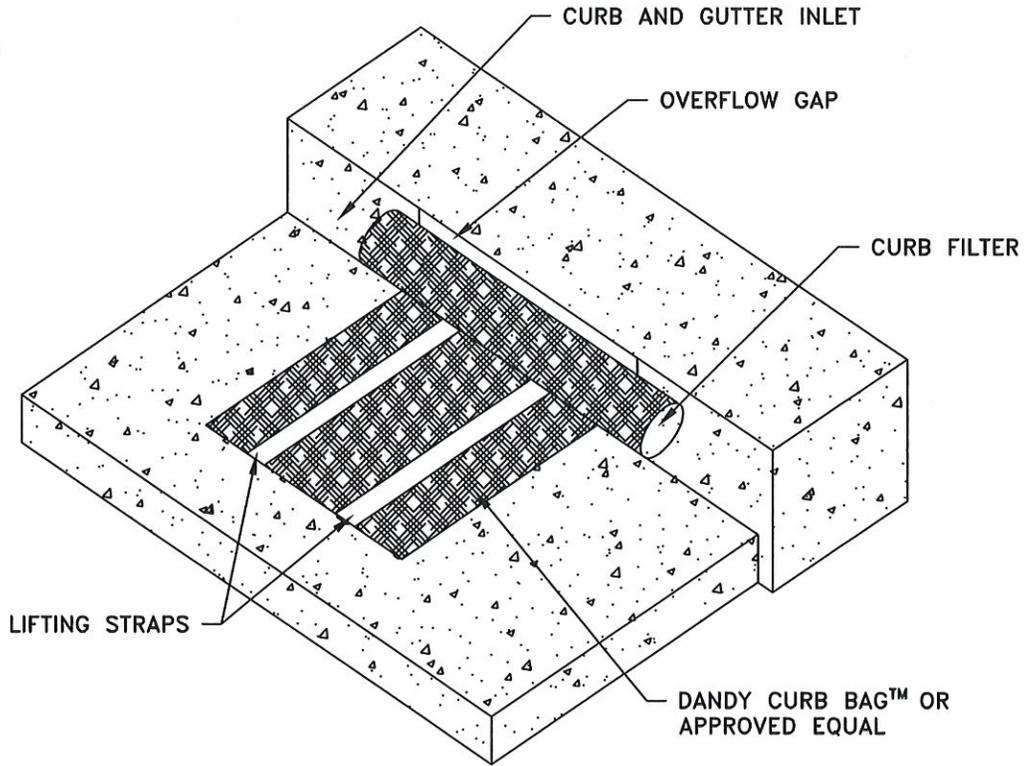
REVISED: 13 JUL 20

DANDY CURB BAG™ OR APPROVED EQUAL

NOTE: ALL DANDY CURB BAGS™ OR APPROVED EQUAL CAN BE ORDERED WITH AN OPTIONAL OIL ABSORBENT PILLOWS.

INSTALLATION: STAND THE GRATE ON IT'S END. TUCK THE ENCLOSURE FLAPS INSIDE OF THE GRATE. USING THE LIFT STRAPS, INSERT THE GRATE STREET SIDE FIRST. LOWER THE BACK EDGE WITH THE CYLINDRICAL TUBE INTO ITS PLACE..

MAINTENANCE: REMOVE ALL SEDIMENT AND DEBRIS FROM SURFACE AND VICINITY OF THE BAG AFTER EACH RAIN EVENT OR DIRECTED AS BY THE ENGINEER.



NOTE: THE DANDY CURB BAG™ OR APPROVED EQUAL WILL BE MADE FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECS.

<u>HI-FLOW DANDY SACK™ (SAFETY ORANGE) OR APPROVED EQUAL</u>			
PROPERTY	TEST METHOD	UNITS	TEST RESULTS
GRAB TENSILE STRENGTH	ASTM D 4632	LBS	450 x 300
GRAB TENSILE ELONGATION	ASTM D 4632	%	40 x 25
PUNCTURE STRENGTH	ASTM D 4833	LBS	130
MULLEN BURST STRENGTH	ASTM D 3786	PSI	600
TRAPEZOID TEAR STRENGTH	ASTM D 4533	LBS	165 x 150
% OPEN AREA	COE-22125-86	%	28
APPARENT OPENING SIZE	ASTM D 4751	US STD. SIEVE	30
PERMITTIVITY	ASTM D 4491	SEC.	3.5
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ULTRAVIOLET RESISTANCE	ASTM D 4355	%	70

APPROVED 7-13-20  
  
 CITY ENGINEER

EROSION CONTROL  
 STORM DRAIN CURB  
 INLET PROTECTION

CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING

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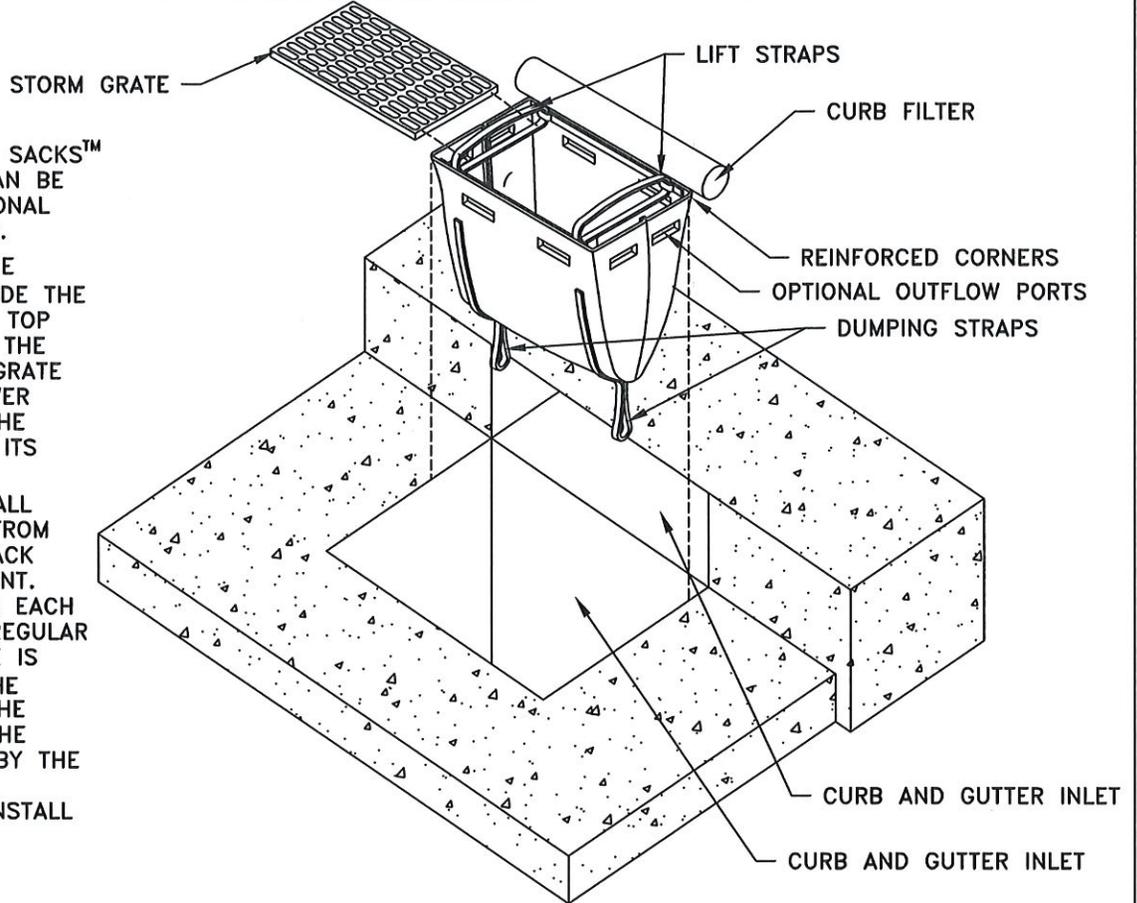
STANDARD  
 CONSTRUCTION DRAWING

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DWG. BY: ...ADH.....	<b>FILE NUMBER</b>
CHK'D BY: ...MN.....	<b>D-8</b> SHEET 3 OF 4

REVISED: 13 JUL 20

**DANDY CURB SACK™ OR APPROVED EQUAL**



NOTE: ALL DANDY CURB SACKS™ OR APPROVED EQUAL CAN BE ORDERED WITH AN OPTIONAL OIL ABSORBENT PILLOWS.

INSTALLATION: STAND THE GRATE ON IT'S END. SLIDE THE GRATE IN BETWEEN THE TOP AND BOTTOM STRAP OF THE LIFTING TRAPS. INSERT GRATE STREET SIDE FIRST. LOWER THE BACK EDGE WITH THE CYLINDRICAL TUBE INTO ITS PLACE.

MAINTENANCE: REMOVE ALL SEDIMENT AND DEBRIS FROM THE VICINITY OF THE SACK AFTER EACH STORM EVENT. CHECK THE SACK AFTER EACH STORM EVENT AND AT REGULAR INTERVALS. IF THE SACK IS OVER 1/3 FULL, EMPTY THE SACK BY LIFTING OUT THE GRATE AND REMOVING THE SACK AND DUMPING IT BY THE DUMPING STRAPS IN AN APPROPRIATE AREA. REINSTALL AS ABOVE.

NOTE: THE DANDY CURB BAG™ OR APPROVED EQUAL WILL BE MADE FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECS.

<b>HI-FLOW DANDY SACK™ (SAFETY ORANGE) OR APPROVED EQUAL</b>			
PROPERTY	TEST METHOD	UNITS	TEST RESULTS
GRAB TENSILE STRENGTH	ASTM D 4632	LBS	450 x 300
GRAB TENSILE ELONGATION	ASTM D 4632	%	40 x 25
PUNCTURE STRENGTH	ASTM D 4833	LBS	130
MULLEN BURST STRENGTH	ASTM D 3786	PSI	600
TRAPEZOID TEAR STRENGTH	ASTM D 4533	LBS	165 x 150
% OPEN AREA	COE-22125-86	%	28
APPARENT OPENING SIZE	ASTM D 4751	US STD. SIEVE	30
PERMITTIVITY	ASTM D 4491	SEC.	3.5
PERMEABILITY	ASTM 4491	CM/SEC.	0.25
WATER FLOW RATE	ASTM 4491	GAL/MIN/SQ. FT.	250
ULTRAVIOLET RESISTANCE	ASTM D 4355	%	70

APPROVED 7-13-20  
  
 CITY ENGINEER

EROSION CONTROL  
 STORM DRAIN CURB  
 INLET PROTECTION

CITY OF LANCASTER, OHIO  
 DEPARTMENT OF ENGINEERING

STANDARD  
 CONSTRUCTION DRAWING

DWG. BY: ..... ADH .....  
 CHK'D BY: ..... MN .....

FILE NUMBER  
**D-8** SHEET  
 4 OF 4

REVISED: 13 JUL 20