

Last Saved By: lodzinski, 11/8/2017 4:45:00 PM G:\DE\Clients\WaterWalk\075356 Morrisville, NC\4.0 Disciplines\Civil\Cadd\Cad\075356-C600-DET.dwg Plotted By: lodzinski, Jake Plotted: January 17, 2018, 2:51:49 PM

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 48" PIPE

GENERAL NOTES:  
 USE 4000 PSI MINIMUM COMPRESSIVE STRENGTH CONCRETE.  
 FABRICATE, ASSEMBLE AND DESIGN PRECAST MANHOLE COMPONENTS ACCORDANCE WITH AASHTO M199.  
 ASSEMBLE RISER AND GRADE RINGS WITH THE STEPS SPACED 12" FROM THE TOP TO THE BOTTOM OF THE MANHOLE.  
 WHERE THE MANHOLE IS EXPOSED TO ROAD TRAFFIC, CONSTRUCT THE TOP OF THE MANHOLE FLUSH WITH THE GROUND AND A MINIMUM OF 9" ABOVE THE GROUND AT OTHER LOCATIONS.  
 LIMIT DEPTH OF FILL TO 30'-0" FROM FINISH GRADE TO TOP OF BOTTOM SLAB.  
 THE MIN. SLAB THICKNESS 'T' IS THE DIMENSION OF THE THINNEST PORTION OF THE TOP/BOTTOM SLAB.  
 \* TOP MAT OF REINFORCEMENT MAY BE NEGLECTED IF TOP SLAB HAS A DISTINGUISHABLE TOP AND BOTTOM.

D	W	T	As
INTERNAL DIAMETER (FT.)	MIN. WALL THICKNESS (IN.)	MIN. TOP/BOTTOM SLAB THICKNESS (IN.)	MIN. CIRCUMFERENTIAL AREA OF STEEL PER VERTICAL FT. (SQ. IN.)
4	4	6	0.12
5	5	8	0.15
6	6	8	0.18

ALTERNATE CONE SECTION

TYPICAL MANHOLE SECTION

FLAT TOP SLAB

FRAME AND GRATES	STD. NO.
TRAFFIC BEARING	840.37
NONTRAFFIC BEARING:	
840.32	840.32
840.24	840.24
840.20	840.20
840.33	840.33

GRADED INLET OPTION

MANHOLE OPTION

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 48" PIPE

SHEET 1 OF 1  
840.52

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR CONCRETE GRADED DROP INLET TYPE 'B' 12" THRU 36" PIPE

GENERAL NOTES:  
 USE CLASS "B" CONCRETE THROUGHOUT.  
 PROVIDE ALL GRADED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.  
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.  
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.  
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.  
 CONSTRUCT WITH PIPE GROUNTS MATCHING.  
 MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.  
 USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24 (SHOWN), 840.20, 840.29, AND 840.33.  
 SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.  
 CHAMFER ALL EXPOSED CORNERS 1".  
 DRAWING NOT TO SCALE.

PLAN

SECTION X-X

SECTION Y-Y

DETAIL (APRON SUPPORT NOTCH)

DITCH GRADE

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE GRADED DROP INLET

PIPE	SPAN	WIDTH	HEIGHT	CU YD YARDS OF CONCRETE IN BOX			DEDUCTIONS FOR ONE PIPE		
				BOTTOM SLAB	H PER FT. HT.	H MIN. TOTAL	TOTAL	C.S.	R.O.
12"	3'-8"	2'-0"	2'-6"	0.362	0.247	0.597	0.958	0.020	0.032
15"	3'-8"	2'-0"	2'-9"	0.362	0.247	0.659	1.021	0.023	0.036
18"	3'-8"	2'-0"	3'-0"	0.362	0.247	0.720	1.082	0.033	0.049
24"	3'-8"	2'-0"	3'-6"	0.362	0.247	0.865	1.227	0.039	0.085
30"	3'-8"	2'-0"	4'-0"	0.362	0.247	0.989	1.350	0.082	0.127
36"	3'-8"	2'-0"	4'-6"	0.362	0.247	1.112	1.474	0.132	0.178

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ENGLISH STANDARD DRAWING FOR CONCRETE GRADED DROP INLET TYPE 'B' 12" THRU 36" PIPE

SHEET 1 OF 1  
840.18

MORRISVILLE PROJECT # : 17-11000001 FILE # : 17-0001-S/C

Town of Morrisville  
 APPROVED FOR CONSTRUCTION

Signature: *[Signature]* Date: 5/23/18  
 Town of Morrisville, Town Engineer

Engineering: *[Signature]* Date: 5/23/18  
 Planning: *[Signature]* Date: 5/23/18  
 Other (specify): *[Signature]* Date: 5/23/18

Signature: *[Signature]* Date: 5/23/18  
 Town of Cary Utilities, Water and Sewer

Engineering Inspection Services must be contacted (919) 463-6907 at a minimum 24 hours prior to the commencement of any construction activities.

SHEET NO.  
**C802**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATES FOR USE WITH STD. DWG.S 840.14 AND 840.15

SECTION G-G

PLAN OF GRATING CAST IRON

PLAN OF FRAME CAST IRON

SECTION E-E

SECTION F-F

SECTION H-H

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR DROP INLET FRAME AND GRATES FOR USE WITH STD. DWG.S 840.14 AND 840.15

SHEET 1 OF 1  
840.16

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR PRECAST MANHOLE 4', 5' AND 6' DIAMETER 12" THRU 48" PIPE

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ENGLISH STANDARD DRAWING FOR CONCRETE GRADED DROP INLET TYPE 'B' 12" THRU 36" PIPE

SHEET 1 OF 1  
840.18

PROJECT No: 075356  
 DATE: 01/24/17  
 DES: JG  
 DR: JL  
 CKD: TR

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 Suite 300  
 Charlotte, NC 28226  
 704.525.6284  
 FAX: 704.525.8529

**WOOLPERT**  
 ARCHITECTURE ENGINEERING GEOTECHNICAL

**SITE IMPROVEMENT PLANS**  
**WATERWALK MORRISVILLE**  
 1012 & 1016 LOWER SHILOH WAY  
 MORRISVILLE, NORTH CAROLINA

**DRAINAGE DETAILS**

REVISION

DATE

No.

01/18/18 REVISED FOR FINAL APPROVAL