LD-269
Rev. 3-83

PROJECT:	Tinsley Charter	Structure 12	(2) 18 " RCP (S)
COUNTY:	Prince George		

Plan Sheet No.: _ Designer: C. THOMPSON Sheet: 1 of 1
Rev. Date: 4/8/14 Date: 04/08/14

HYDROLOGICAL DATA:
D.A.= 9.66 AC.
C= 0.40
Tc = 26.7 MIN.

STORM INTENSITY:
I 10 = 3.77 IN/HR.
I 25 = IN/HR.
I 50 = IN/HR.
I 100 = 5.23 IN/HR.

ADDITIONAL NOTES:

AHW Controls
100 yr. flood plain elev.
Design AHW depth elev.
Structures elev.

Station: 10+76
ROAD A

freq.	TW elev.
=	
=	
=	
=	

Top of Shoulder elev.= 136.80
C/L Elev.=
Skew= Cover=
Flow →
Inv. In = 133.70 So= 0.50% Inv. out = 133.40
Orig. Gr. El.= _ L= 60.00 Orig. Gr. El.= _

DISCHARGES USED:
Q 2 = CFS
Q 10 = 14.6 CFS
Q 25 = CFS
Q 50 = CFS
Q 100 = 25.3 CFS

RISK ASSESSMENT ADT _____
Detours Available _____ Length _____
Overtopping Stage _____
Flood Plain Management _____
Criteria and Significant Impact _____

CULVERT EVENT	NO	SIZE	TYP	Q	Q/B	INLET CONTROL HW/D	HW	OUTLET CONTROL Ke	dc	(dc+D)/2	ho	H	Lso	HW	CONT. HW ELEV.	OUTLET VELOCITY C.M.	RCP	End Treat.	COMMENTS
10 YR.	2	18	RCP	14.6	7.3	1.05	1.58	0.50	1.0	1.25	1.25	1.10	0.3	2.05	2.05				

HEADWATER COMPUTATIONS

SUMMARY & RECOMMENDATIONS: (2) 18 " RCP (s)
Shoulder Elev. - Headwater Elev. = 1.05 Ft. (10 Yr. Storm)
Design Flood Exceed. Prob. Elev. =
Design Flood Exceed. Prob. Elev. =
Design Flood Exceed. Prob. Elev. =

Outlet Velocity computed on 10 Yr. Storm

LD-269
Rev. 3-83

PROJECT:	Tinsley Charter	Structure 20	(2) 18 " RCP (S)
COUNTY:	Prince George		

Plan Sheet No.: _ Designer: C. THOMPSON Sheet: 1 of 1
Rev. Date: 4/8/14 Date: 04/08/14

HYDROLOGICAL DATA:
D.A.= 7.70 AC.
C= 0.42
Tc = 21.5 MIN.

STORM INTENSITY:
I 10 = 4.35 IN/HR.
I 25 = IN/HR.
I 50 = IN/HR.
I 100 = IN/HR.

ADDITIONAL NOTES:

AHW Controls
100 yr. flood plain elev.
Design AHW depth elev.
Structures elev.

Station: 31+6
TINSLEY BLVD

freq.	TW elev.
=	
=	
=	
=	

Top of curb or Shoulder elev.= 138.30
C/L Elev.=
Skew= Cover=
Flow →
34
Inv. In = 134.46 So= 0.50% Inv. out = 134.10
Orig. Gr. El.= _ L= 70.00 Orig. Gr. El.= _

DISCHARGES USED:
Q 2 = CFS
Q 10 = 14.1 CFS
Q 25 = CFS
Q 50 = CFS
Q 100 = CFS

RISK ASSESSMENT ADT _____
Detours Available _____ Length _____
Overtopping Stage _____
Flood Plain Management _____
Criteria and Significant Impact _____

CULVERT EVENT	NO	SIZE	TYP	Q	Q/B	INLET CONTROL HW/D	HW	OUTLET CONTROL Ke	dc	(dc+D)/2	ho	H	Lso	HW	CONT. HW ELEV.	OUTLET VELOCITY C.M.	RCP	End Treat.	COMMENTS
10 YR.	2	18	RCP	14.1	7.0	1	1.50	0.50	1.0	1.25	1.25	1.00	0.35	1.90	1.90				

HEADWATER COMPUTATIONS

SUMMARY & RECOMMENDATIONS: (2) 18 " RCP (s)
Shoulder Elev. - Headwater Elev. = 1.95 Ft. (10 Yr. Storm)
Design Flood Exceed. Prob. Elev. =
Design Flood Exceed. Prob. Elev. =
Design Flood Exceed. Prob. Elev. =

Outlet Velocity computed on 10 Yr. Storm

1 STORMSEWER CAPACITY CALCULATIONS
NO SCALE

STORM SEWER DESIGN COMPUTATIONS

PROJECT: Tinsley Charter - Sections 6,7 & 8 JOB # 10106
COUNTY: Prince George
DESCRIPTION: Storm Sewer
DATE: 4/8/2014

Storm Frequency 10 year
n = 0.013
* = Manual Input of Data

FROM POINT	PIPE NAME	TO POINT	DRAINAGE AREA (acres)	RUNOFF COEFFICIENT	CA INCRE.	CA ACCUM.	INLET TIME (min)	RAIN-FALL (in/hr)	RUNOFF Q (cfs)	TOP STR (elev)	HEIGHT STR (ft)	INV UPPER (ft)	INV. LOWER (ft)	LENGTH (ft)	SLOPE (ft/ft)	DIA (in)	CAPACITY (cfs)	VELOCITY (ft/s)	FLOW TIME (min)	FLAG
1	2	3	0.93	0.52	0.48	0.48	16.00	5.00	2.4	138.10	3.71	134.39	134.22	34.00	0.0050	15	4.6	1.96	0.29	ok
3	4	5	0.91	0.52	0.47	0.95	16.29	4.96	4.7	138.10	3.98	134.12	133.75	74.00	0.0050	18	7.4	2.68	0.46	ok
7	8	9	1.70	0.45	0.77	0.77	15.20	5.08	3.9	136.90	2.02	134.88	134.71	34.00	0.0050	15	4.6	3.17	0.18	ok
9	10	5	0.54	0.53	0.29	1.05	15.38	5.07	5.3	136.90	2.29	134.61	133.75	172.00	0.0050	18	7.4	3.02	0.95	ok
5	6	END	0.00	0.00	0.00	2.01	16.75	4.87	9.8	136.90	3.25	133.65	133.00	130.00	0.0050	21	11.2	4.07	0.53	ok
15	16	17	1.83	0.53	0.97	1.92	11.50	5.63	10.8	137.40	3.40	134.00	133.83	34.00	0.0050	21	11.2	4.50	0.13	ok
17	18	END	1.12	0.55	0.25	2.17	11.63	5.61	12.2	137.40	3.67	133.73	133.00	145.00	0.0050	24	16.1	3.89	0.62	ok

1 STORMSEWER CAPACITY CALCULATIONS
NO SCALE

Mannings N Value: 0.013 Job #: 10106 Project: Tinsley Charter - Sections 6,7 & 8 Date: 4/8/2014

Initial Water Surface Elevation	Inlet Sta.	Inlet Q	Outfall Invert Elev.	Outlet Water Surf. Elev.	Do	Qo	Lo	Sfo %	Hf	Vo	Ho	Qi	Vi	QiVi	Junction Loss Vi sq. / 2g	Hi	Ang	H delta	Ht	1.30 Ht	0.50 H Ht	Final H	Inlet Water Surf. Elev.	Rim Elev.	Fig. Hi Y/N	Fig. H delta Y/N	Shape Inlet Y/N	Comments 10 year Storm	
135.60	5		133.00	135.60	21"	9.8	130.0	0.38%	0.49	4.07	0.06	4.7	2.68	12.7	0.11	0.04	5	0.01	0.11		0.06	0.55	136.15	136.90	y	y	y	OK	-0.75 Ft.
136.15	3	2.35	133.75	136.15	18"	4.7	74.0	0.20%	0.15	2.68	0.03	2.4	1.96	4.7	0.06	0.02	90	0.04	0.09	0.12	0.05	0.20	136.35	138.10	y	y	y	OK	-1.75 Ft.
136.35	1	2.41	134.22	136.35	15"	2.4	34.0	0.14%	0.05	1.96	0.01								0.01	0.02	0.01	0.05	136.40	138.10	y	y	y	OK	-1.70 Ft.
135.60	5		133.00	135.60	21"	9.8	130.0	0.38%	0.49	4.07	0.06	5.3	3.02	16.1	0.14	0.05	80	0.09	0.21		0.10	0.60	136.20	136.90	y	y	y	OK	-0.70 Ft.
136.20	9	1.45	133.75	136.20	18"	5.3	172.0	0.26%	0.44	3.02	0.04	2.4	3.17	7.6	0.16	0.05	85	0.11	0.20	0.26	0.10	0.54	136.74	136.90	y	y	y	OK	-0.16 Ft.
136.74	7	3.89	134.71	136.74	15"	3.9	34.0	0.36%	0.12	3.17	0.04								0.04	0.05	0.02	0.14	136.88	136.90	y	y	y	OK	-0.02 Ft.
136.00	17	3.46	133.00	136.00	24"	12.2	145.0	0.29%	0.42	3.89	0.06	4.7	4.50	21.3	0.31	0.11			0.17	0.22	0.11	0.53	136.53	137.40	y	y	y	OK	-0.87 Ft.
136.53	15	5.46	133.83	136.53	21"	10.8	34.0	0.47%	0.16	4.50	0.08	2.4							0.08	0.10	0.05	0.21	136.74	137.40	y	y	y	OK	-0.66 Ft.

2 STORMSEWER HYDRAULIC GRADELINE CALCULATIONS
NO SCALE

THIS AREA INTENTIONALLY LEFT BLANK. RESERVED FOR FUTURE INLET SIZING CALCULATIONS

5 INLET SIZING CALCULATIONS
NO SCALE

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QUALITY ASSURANCE : STUART LITTLE
PROJECT MANAGER : CHRIS THOMPSON
PROJECT NO. : 10106
SCALE : AS SHOWN

COMMONWEALTH OF VIRGINIA
Stuart G. Little
Lic. No. 39974
04/7/14
PROFESSIONAL ENGINEER

DATE : APRIL 7, 2014

REVISION BLOCK

DATE	DESCRIPTION
-	-

MWC DEVELOPMENT, LLC
P.O. BOX 694
PRINCE GEORGE, VA 23875
CONTACT: KRIS CUTLER

TINSLEY CHARTER SUBDIVISION - SECTIONS 6, 7 AND 8

STORM SEWER CALCULATIONS

SHEET NO.
C11.1