

THE FOLLOWING IS FOR THE  
CTDOT MS4 DESIGN MEP WORKSHEET

**THIS EXAMPLE SHOULD BE USED ALONG WITH THE MS4 INSTRUCTIONS  
AS AN ILLUSTRATION OF HOW TO CALCULATE THE MS4 WORKSHEET  
FOR A SIMPLE DISCONNECTION USING SITE AREA.**

**SECTION 2 - EXISTING CONDITIONS / PRE-CONSTRUCTION:**

EC1 (Total Project Area) = 89,840 s.f. = 2.06 ac.

Total Pavement (existing) = 35,510 s.f. = 0.81 ac.  
Total Pavement Disconnected via Natural Dispersion  
(existing) = 8,150 s.f. = 0.19 ac.

EC2 (Directly Connected Impervious Area (DCIA))  
= total pavement - pavement disconnected  
= 0.81 - 0.19 = 0.62 ac.

% DCIA = EC2 / EC1 = 0.62 / 2.06 = 0.30 = 30%  
(is less than 40%, therefore use full WQV)

**SECTION 3 - DESIGNED CONDITIONS / POST-CONSTRUCTION:**

Additional Pavement = 6,180 s.f. = 0.14 ac.  
Additional Pavement Disconnected via Natural Dispersion  
= 4,170 s.f. = 0.096 ac.

**WATER QUALITY CALCULATIONS:**

DC1 (WQV goal)  
I = (existing pvmt. + additional pvmt.) / (total project area EC1)  
= (0.81 + 0.14) / 2.06 = 0.46 (46% proposed impervious)

R = 0.05 + 0.009(I) = 0.05 + 0.009(46) = 0.46

DC1 WQV goal = 1"(R)(A) / 12 = 1"(0.46)(2.06) / 12 = 0.079 ac-ft

WQV retained / WQV treated  
= (existing disconnect + proposed disconnect) x 1" rainfall x 1ft./12in.  
= (0.19 + 0.096) x 1" of rainfall x 1ft./12in.  
= 0.024 ac-ft

If 50 ft. of sheetflow is available, the WQV for the contributing area will be considered to be retained and treated. Divide the calculated WQV equally between the two. Therefore,

DC2 = 0.5 x WQV retained = 0.5 x 0.024 = 0.012 ac-ft

DC3 = 0.5 x WQV treated = 0.5 x 0.024 = 0.012 ac-ft

DC4 (total WQV) = DC2 + DC3 = 0.012 + 0.012 = 0.024 ac-ft

**PROJECT NARRATIVE**

Description: The project is located on a rural roadway with portions curbed and uncurbed. The roadside embankments vary from 2:1 to 4:1 with widths of the embankments greater than 50 ft. There is an adjacent wetland located on the northeast side of the project area.

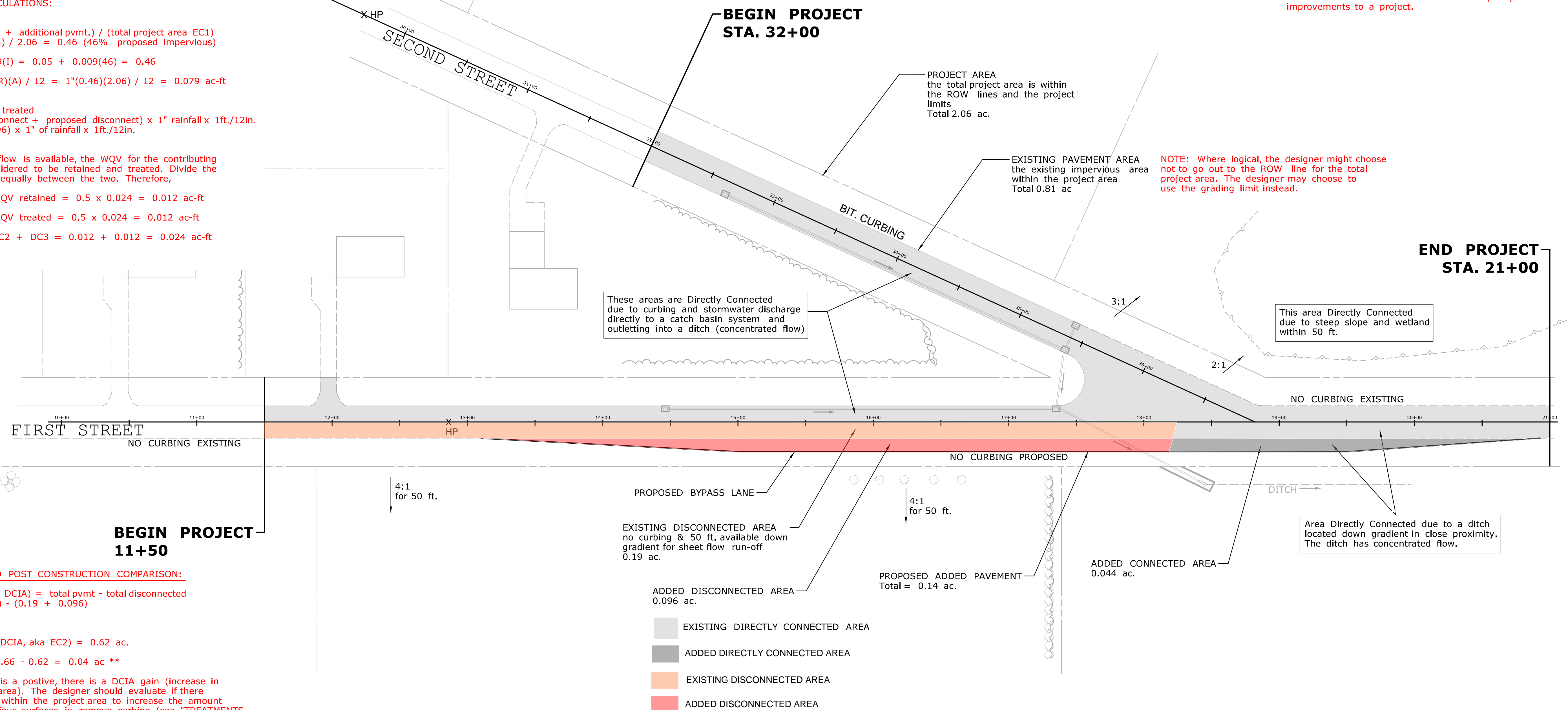
Purpose and Need: Improvements to the intersection are needed due to multiple rear-end collisions from vehicles waiting to make a left turn from First Street onto Second Street. The proposed improvement is a widened shoulder for a bypass lane.

**TREATMENTS AND IMPROVEMENTS**

Stormwater treatments and improvements should always be considered for a project.

- remove curbing
- create water quality swales
- infiltration basins
- infiltration trenches
- (see one-pagers for additional information)

Designers should refer to the 2004 Stormwater Quality Manual for additional information on water quality improvements to a project.



**SECTION 3 - PRE AND POST CONSTRUCTION COMPARISON:**

DC5 (post-construction DCIA) = total pvmt - total disconnected  
= (0.81 + 0.14) - (0.19 + 0.096)  
= 0.95 - 0.286  
= 0.66 ac.

DC6 (pre-construction DCIA, aka EC2) = 0.62 ac.

DC7 (DC5 - DC6) = 0.66 - 0.62 = 0.04 ac \*\*

\*\*Note: If DC7 value is a positive, there is a DCIA gain (increase in impervious connected area). The designer should evaluate if there are locations available within the project area to increase the amount of disconnected impervious surfaces, ie. remove curbing (see "TREATMENTS AND IMPROVEMENTS")

DESIGNER/DRAFTER:		CHECKED BY:		SIGNATURE/BLOCK:		PROJECT TITLE:		TOWN:		PROJECT NO.	
THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.		SCALE IN FEET		OFFICE OF ENGINEERING		MS4 PROJECT		-		1	
Plotted Date: 5/31/2019		SCALE 1"=40'		DEPARTMENT OF TRANSPORTATION				EXAMPLE 1		DRAWING NO.	
								NATURAL DISPERSION		SHEET NO.	
REV.	DATE	REVISION DESCRIPTION	SHEET NO.								

**CTDOT MS4 Project Design  
Maximum Extent Practicable (MEP) Worksheet**

<b>Section 1: Project Information</b>	<b>Project #:</b>	
	<b>Title:</b>	
	<b>Location:</b>	

**Section 2: Existing Conditions**

EC1	Total Project Area		acres		
EC2	Pre-construction Directly Connected Impervious Area (DCIA):		acres	%	
EC3	Soil Infiltration Potential	Data Source: <input type="checkbox"/> Existing Report / Soils Map <input type="checkbox"/> Field Verified	<input type="checkbox"/> Good/Fair	<input type="checkbox"/> Poor	<input type="checkbox"/> Mixed
EC4	Depth to Maximum Groundwater	<input type="checkbox"/> TBD	to	ft below grade	
EC5	Depth to Bedrock	<input type="checkbox"/> TBD	to	ft below grade	
EC6	Aquifer Protection Area? (from PPDF)		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
EC7	MS4 Priority Area? (from PPDF)		<input type="checkbox"/> Yes (See Below)	<input type="checkbox"/> No	
<i>Check All That Apply</i> <input type="checkbox"/> Urbanized Area <input type="checkbox"/> DCIA >11% <input type="checkbox"/> Impaired Waterbody (See Below)					
<i>Select All Impairments That Apply</i>					
EC8	Contamination known or suspected to be present? (From Environmental Compliance)		<input type="checkbox"/> Yes	<input type="checkbox"/> No	
EC9	Adjoining DOT ROW beyond project limits available for stormwater quality management		acres		

**Section 3: Designed Conditions**

Water Quality Calculations			30% Design	60% Design	90% Design	FDP
DC1	WQV retention design goal	Full 1/2"-WQV	ac-ft <input type="checkbox"/> TBD	ac-ft	ac-ft	ac-ft
DC2	WQV goal <b>retained</b> (refer to page 2)		ac-ft	ac-ft	ac-ft	ac-ft
DC3	WQV goal <b>treated</b> (refer to page 2)		ac-ft	ac-ft	ac-ft	ac-ft
DC4	Total WQV <i>retained and treated</i>		ac-ft	ac-ft	ac-ft	ac-ft
DC5	Post-construction DCIA(acres)		ac. <input type="checkbox"/> TBD	ac.	ac.	ac.
DC6	Pre-construction DCIA (refer to EC2 above)		ac.	ac.	ac.	ac.
DC7	Change in DCIA from pre- to post-construction <i>Can be positive (DCIA gained) or negative (DCIA lost)</i>		ac. <input type="checkbox"/> TBD	ac.	ac.	ac.
Date completed						
Completed by (initials)						
Reviewed by (initials)						

Notes:

**Section 4: Stormwater BMP Selection Summary**

<b>Design Phase</b> <input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90% <input type="checkbox"/> FDP	<b>WQV Retained (ac-ft)</b>	<b>WQV Treated (ac-ft)</b>	<b>Site Constraints</b>
<b>Disconnection</b>			
No curb / natural dispersion			
Vegetative filter strip			
Other			
<b>Conveyance &amp; Disconnection</b>			
Grass channel	<del>                    </del>		
Water quality swale (dry)			
Other			
<b>Infiltration / Retention</b>			
Infiltration basin			
Infiltration trench			
Underground infiltration system			
Dry well			
Other			
<b>Treatment</b>			
Wet basin / wetland system	<del>                    </del>		
Extended dry detention basin	<del>                    </del>		
Hydrodynamic-oil/grit sys.	<del>                    </del>		
Bioretention with underdrain	<del>                    </del>		
Other	<del>                    </del>		
<b>TOTAL</b>			
<b>Notes:</b>			

Worksheet users should refer to the *CT DOT MS4 Project Design MEP Worksheet Instructions*. Refer to the 2004 CT Stormwater Quality Manual for more information on BMP criteria and limitations.