

**NOTE: THE FIRST EXCEL SHEET IS A FLOWCHART TO HELP AID WITH THE POST SELECTION**

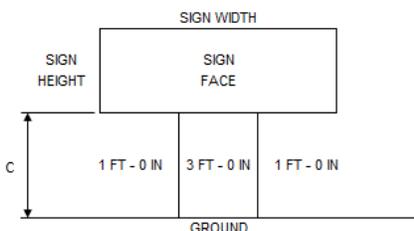
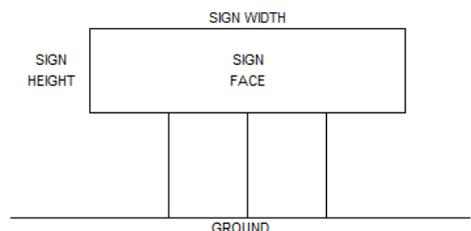
**STEP 1:**

- GO TO THE **WIND PRESSURE** EXCEL SHEET
- FILL OUT INFORMATION IN THE **YELLOW CELLS**
  - FOR MORE INSTRUCTIONS → USE NOTES TO THE RIGHT OF THE SHEET
  - SEE REFERENCES FOR FORMULAS
- A WIND PRESSURE WILL BE AUTOMATICALLY CALCULATED BASED ON THE INPUTS (**BLUE CELLS**)
- A WIND MOMENT WILL BE AUTOMATICALLY CALCULATED BASED ON THE INPUTS (SEE **WIND MOMENT** EXCEL SHEET FOR CALCULATION)

<b>WIND PRESSURE CALCULATION</b>			
	DESIGNED BY: XXX	DATE: XX/XX/20XX	
	CHECKED BY: XXX	DATE: XX/XX/20XX	
<b>REFERENCES:</b>			
1. AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 1ST EDITION, 2015.			
2. ASCE/SEI 7-10 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES, 2010.			
<b>STEP 1: DETERMINE THE MEAN RECURRENCE INTERVAL (REF. 1, TABLE 3.8-1)</b>			
AVERAGE DAILY TRAFFIC	ADT = 10000		
RISK CATEGORY	RC = SIGN		
MEAN RECURRENCE INTERVAL	MRI = 10	YR	(REF. 1, FIG. 3.8-4B)
<b>STEP 2: DETERMINE BASIC WIND SPEED FROM FIGURE LISTED ABOVE</b>			
BASIC WIND SPEED	V = 76	MPH	
<b>STEP 3: CALCULATE DESIGN WIND PRESSURE / FORCE (REF. 1, ART. 3.8.1)</b>			
TERRAIN EXPOSURE CONDITION	EXP = C	(REF. 2, ART. 26.7.2)	CONSTANTS: α = 9.5
HEIGHT ABOVE THE GROUND	z = 30.0	FT	zg = 900 FT
HEIGHT & EXPOSURE FACTOR	Kz = 0.98	(REF. 1, ART. 3.8.4)	
DIRECTIONALITY FACTOR	Kd = 0.85	(REF. 1, TABLE 3.8.5-1)	
GUST EFFECT FACTOR	G = 1.14	(REF. 1, ART. 3.8.6)	
DRAG COEFFICIENT	Cd = 1.12	(REF. 1, TABLE 3.8.7-1)	SIGN PANEL: W = 5 FT
DESIGN WIND PRESSURE	Pz = 15.68	PSF	H = 5 FT
DESIGN WIND FORCE	Pf = 392.11	LB.	RATIO = 1.0

**STEP 2:**

- GO TO THE **U-POST SELECTOR** EXCEL SHEET
- FILL OUT INFORMATION IN THE **YELLOW CELLS**
  - FOR MORE INSTRUCTIONS → USE THE NOTES TO THE RIGHT OF THE SHEET
- IF ANY OF THE U-POST SIZES (SEE **SECTION PROPERTIES** EXCEL SHEET FOR POST PROPERTIES) MEET THE WIND MOMENT REQUIRED, THEN THE SMALLEST POST (MEMBER) DESIGNATION AND NUMBER OF POST WILL POPULATE (NOTE: IT IS COLOR CODED WITH THE SECTION PROPERTIES SHEET)
- POST LENGTHS, WEIGHTS, ETC. WILL BE CALCULATED ON THE SAME SHEET BASED ON THE INPUTS.

<b>U-POST SIGN SELECTOR</b>			
		DESIGNED BY: XXX	DATE: XXXX/20XX
		CHECKED BY: XXX	DATE: XXXX/20XX
<b>SIGN INFORMATION:</b>		<b>ROADWAY SHOULDER INFORMATION:</b>	
SIGN WIDTH	W= 5 FT	SHOULDER WIDTH	SHLD= 12 FT
SIGN HEIGHT	H= 5 FT	SHOULDER SLOPE	S= 0.04 FT/FT
CLEAR HEIGHT	C= 5 FT	GROUND SLOPE	GS= 6 H:V
		MINIMUM DISTANCE	MIN= 6 FT
		GUARDRAIL OR CLEAR ZONE	NO SEE TDOT STD. DWG. T-S-16
		MULTI-DIRECTIONAL BREAKAWAY	NO
<b>MOMENT REQUIRED:</b>		<b>POST LENGTH / WEIGHT CALCULATIONS:</b>	
WIND SPEED	Vwind = 76 MPH	1 POST	2 POST
WIND MOMENT	Mwind = 3000 LB-FT	11.75	12.25
		POST LENGTH =	FT
		POST WEIGHT =	LB.
		35.25	36.75
		<i>ITEM NO.</i>	
		TOTAL POST WEIGHT (SUM OF ABOVE) =	72.00 LB.
		TOTAL NUMBER OF SLIP POST (IF REQUIRED) =	2 EA.
		713-11.01	
		713-11.22	
<b>POST DESIGN:</b>			
NUMBER OF POST =	2	SEE TWO-POST SCHEMATIC FOR POST SPACING	
MEMBER DESIGNATION =	U6		
FACTORED MOMENT =	3023 LB-FT	OK	
<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p style="font-size: x-small; margin: 0;">TWO-POST SCHEMATIC</p>  </div> <div style="text-align: center;"> <p style="font-size: x-small; margin: 0;">THREE-POST SCHEMATIC</p>  </div> </div>			
NOTE: MINIMUM CLEAR HEIGHT OF 5 FT FOR RURAL & 7 FT FOR URBAN / FREEWAY.			

**STEP 3:**

- IF NO U-POST SIZES ARE ADEQUATE FOR THE SIGN BEING DESIGNED, THEN GO TO THE **P-POST SELECTOR** EXCEL SHEET
- FILL OUT INFORMATION IN THE **YELLOW CELLS**
  - FOR MORE INSTRUCTIONS → USE THE NOTES TO THE RIGHT OF THE SHEET
- IF ANY OF THE P-POST SIZES (SEE **SECTION PROPERTIES** EXCEL SHEET FOR POST PROPERTIES) MEET THE WIND MOMENT REQUIRED, THEN THE SMALLEST POST (MEMBER) DESIGNATION, POST SIZE, AND NUMBER OF POST WILL POPULATE (NOTE: IT IS COLOR CODED WITH THE SECTION PROPERTIES SHEET)
- POST LENGTHS, WEIGHTS, ETC. WILL BE CALCULATED ON THE SAME SHEET BASED ON THE INPUTS
- NOTE: AN EQUIVALENT ROUND POST WILL ALSO POPULATE

<b>P-POST SIGN SELECTOR</b>			
		DESIGNED BY: XXX	DATE: XX/XX/20XX
		CHECKED BY: XXX	DATE: XX/XX/20XX
<b>SIGN INFORMATION:</b>		<b>ROADWAY SHOULDER INFORMATION:</b>	
SIGN WIDTH	W= 5 FT	SHOULDER WIDTH	SHLD= 12 FT
SIGN HEIGHT	H= 5 FT	SHOULDER SLOPE	S= 0.04 FT/FT
CLEAR HEIGHT	C= 5 FT	GROUND SLOPE	GS= 6 H:V
		MINIMUM DISTANCE	MIN= 6 FT
		GUARDRAIL OR CLEAR ZONE	NO SEE TDOT STD. DWG. T-S-12
		MULTI-DIRECTIONAL BREAKAWAY	NO
<b>MOMENT REQUIRED:</b>		<b>POST LENGTH / WEIGHT CALCULATIONS:</b>	
WIND SPEED	Vwind = 76 MPH		
WIND MOMENT	Mwind = 3000 LB-FT		
<b>POST DESIGN:</b>			
NUMBER OF POST =	2	SEE TWO-POST SCHEMATIC FOR POST SPACING	
MEMBER DESIGNATION =	P3		
POST SIZE =	2 IN		
GAUGE THICKNESS =	12 GA.		
FACTORED MOMENT =	3750 LB-FT	OK	
<b>EQUIVALENT ROUND POST (ITEM NO. 713-11.03):</b>			
MEMBER DESIGNATION =	R1		
POST SIZE =	2.5 IN		
FACTORED MOMENT =	5655 LB-FT		
<b>TWO-POST SCHEMATIC</b>		<b>THREE-POST SCHEMATIC</b>	
NOTE: MINIMUM CLEAR HEIGHT OF 5 FT FOR RURAL & 7 FT FOR URBAN / FREEWAY.			

**STEP 4:**

- IF NO P-POST SIZES ARE ADEQUATE FOR THE SIGN BEING DESIGNED, THEN GO TO THE **I-BEAM SELECTOR** EXCEL SHEET
- FILL OUT INFORMATION IN THE **YELLOW CELLS**
  - FOR MORE INSTRUCTIONS → USE THE NOTES TO THE RIGHT OF THE SHEET
- IF ANY OF THE I-BEAM SIZES (SEE **SECTION PROPERTIES** EXCEL SHEET FOR POST PROPERTIES) MEET THE WIND MOMENT REQUIRED, THEN THE SMALLEST POST (MEMBER) DESIGNATION, POST SIZE, AND NUMBER OF POST WILL POPULATE (NOTE: IT IS COLOR CODED WITH THE SECTION PROPERTIES SHEET)
- POST LENGTHS, WEIGHTS, ETC. WILL BE CALCULATED ON THE SAME SHEET BASED ON THE INPUTS

I-BEAM SIGN SELECTOR			
		DESIGNED BY: XXX	DATE: XX/XX/20XX
		CHECKED BY: XXX	DATE: XX/XX/20XX
<b>SIGN INFORMATION:</b>		<b>ROADWAY SHOULDER INFORMATION:</b>	
SIGN WIDTH	W= 10 FT	SHOULDER WIDTH	SHLD= 12 FT
SIGN HEIGHT	H= 10 FT	SHOULDER SLOPE	S= 0.04 FT/FT
CLEAR HEIGHT	C = 10 FT	GROUND SLOPE	GS= 6 H:V
		MINIMUM DISTANCE	MIN= 6 FT
<b>MOMENT REQUIRED:</b>		<b>POST LENGTH / WEIGHT CALCULATIONS:</b>	
WIND SPEED	Vwind = 76 MPH		
WIND MOMENT	Mwind = 24000 LB-FT		
<b>POST DESIGN:</b>			
NUMBER OF POST =	2	SEE TWO-POST SCHEMATIC FOR POST SPACING	
MEMBER DESIGNATION =	S5		
POST SIZE =	S5 x 10.0		
FACTORED MOMENT =	30564 LB-FT	OK	
		1 POST	2 POST
		22.00	23.00
		220.00	230.00
			3 POST
			FT
			LB.
		TOTAL POST WEIGHT (SUM OF ABOVE) =	450.00 LB.
		TOTAL STUB WEIGHT =	50.00 LB.
		CLASS "A" CONCRETE =	0.36 CY
		STEEL BAR REINFORCEMENT =	90.12 LB.
			ITEM NO.
			713-04.02
			713-06
			713-01.01
			713-01.02
<b>TWO-POST SCHEMATIC</b>		<b>THREE-POST SCHEMATIC</b>	
NOTE: MINIMUM CLEAR HEIGHT OF 5 FT FOR RURAL & 7 FT FOR URBAN / FREEWAY.			

**STEP 5:**

- IF NO I-BEAM SIZES ARE ADEQUATE FOR THE SIGN BEING DESIGNED, THEN GO TO THE **WF-BEAM SELECTOR** EXCEL SHEET
- FILL OUT INFORMATION IN THE **YELLOW CELLS**
  - FOR MORE INSTRUCTIONS → USE THE NOTES TO THE RIGHT OF THE SHEET
- IF ANY OF THE WF-BEAM SIZES (SEE **SECTION PROPERTIES** EXCEL SHEET FOR POST PROPERTIES) MEET THE WIND MOMENT REQUIRED, THEN THE SMALLEST POST (MEMBER) DESIGNATION, POST SIZE, AND NUMBER OF POST WILL POPULATE (NOTE: IT IS COLOR CODED WITH THE SECTION PROPERTIES SHEET)
- POST LENGTHS, WEIGHTS, ETC. WILL BE CALCULATED ON THE SAME SHEET BASED ON THE INPUTS

<b>WF-BEAM SIGN SELECTOR</b>			
		DESIGNED BY: XXX	DATE: XX/XX/20XX
		CHECKED BY: XXX	DATE: XX/XX/20XX
<b>SIGN INFORMATION:</b>		<b>ROADWAY SHOULDER INFORMATION:</b>	
SIGN WIDTH	W=	15	FT
SIGN HEIGHT	H=	10	FT
CLEAR HEIGHT	C =	5	FT
<b>MOMENT REQUIRED:</b>		<b>POST LENGTH / WEIGHT CALCULATIONS:</b>	
WIND SPEED	Vwind =	76	MPH
WIND MOMENT	Mwind =	25500	LB-FT
<b>POST DESIGN:</b>		1 POST    2 POST    3 POST	
NUMBER OF POST =	2	SEE TWO-POST SCHEMATIC FOR POST SPACING	
MEMBER DESIGNATION =	W1	POST LENGTH =	17.00    18.50    FT
POST SIZE =	W6 x 15	POST WEIGHT =	255.00    277.50    LB.
FACTORED MOMENT =	58320	TOTAL POST WEIGHT (SUM OF ABOVE) =	
	LB-FT <b>OK</b>	532.50    LB. <i>ITEM NO.</i>	
		TOTAL STUB WEIGHT =	
		75.00    LB. <i>713-06</i>	
		CLASS "A" CONCRETE =	
		0.22    CY <i>713-01.01</i>	
		STEEL BAR REINFORCEMENT =	
		60.08    LB. <i>713-01.02</i>	
<p><b>TWO-POST SCHEMATIC</b></p>		<p><b>THREE-POST SCHEMATIC</b></p>	
NOTE: MINIMUM CLEAR HEIGHT OF 5 FT FOR RURAL & 7 FT FOR URBAN / FREEWAY.			