EXPOSURE "D" DEFINITION AND EXAMPLES

BASED ON ASCE 7-10 AND ASCE 7-16

EXPOSURE D
BASED ON 20°MRH (500°20=10,000ft);
EXPOSURE D APPLIES TO THIS STRUCTURE ONLY IF LOCATED WITHIN
10,000FT OF INITIATION POINT

EXPOSURE D
BASED ON 20°MRH (110°20=2,000ft);
EXPOSURE D APPLIES
ONLY IF WITHIN 2,000FT
OF INITIATION POINT

EXPOSURE D
BASED ON 600FT
DISTANCE FROM
COASTLINE

EXPOSURE C CONDITION;
STRUCTURE IS FARTHER THAN
20°MRH (60°20=1,200ft)
FROM INITIATION POINT AND
EXPOSURE D DOES NOT APPLY

EXPOSURE "C" Zone
(Certain structures may have
EXPOSURE "D" Condition)

PRIMARY EXPOSURE D
CONDITION; ALL STRUCTURES

SECONDARY EXPOSURE D
CONDITION

5000 FT OF SURFACE ROUGHNESS "D"
(ASCE 26.7.3)

INITIATION
POINT (tp)

600 FT
(EXP D)

MRH=500FT

MRH=100FT

MRH=600FT

EXPOSURE D

EXPOSURE D

EXPOSURE D

EXPOSURE D

EXPOSURE D

PRIMARY
EXPOSURE D

SECONDARY
EXPOSURE D

Primary Exposure D: Exposure D shall apply where the ground surface roughness, as defined by Surface Roughness D, prevails in the upwind direction for a distance greater than 5,000 ft (1,524 m) or 20 times the building height, whichever is greater. Exposure D shall not apply when the ground surface roughness immediately upwind of the site is B or C, and the site is within a distance of 600 ft (183 m) or 20 times the building height, whichever is greater, from an Exposure D condition as defined in the previous sentence.

HOW TO DETERMINE IF "EXPOSURE D" APPLIES TO A STRUCTURE

1. CONFIRM SURFACE ROUGHNESS DISTANCE AND THE INITIATION POINT OF EXPOSURE
   ON THE INITIATION POINT (tp) OF EXPOSURE D OCCURS AT THE POINT ON LAND WHERE
   THE GROUND SURFACE ROUGHNESS "D" PREVAILS IN THE UPWIND DIRECTION FOR A DISTANCE OF 5,000 FEET
   MINIMUM.  
   INITIATION POINT (tp) = SURFACE ROUGHNESS "D" + 600FT.

2. DETERMINE DISTANCE OF STRUCTURE FROM THE INITIATION POINT (tp).

3. CONFIRM PRIMARY EXPOSURE D REGION; THE PRIMARY EXPOSURE D CONDITION OCCURS
   (FOR ALL STRUCTURES) FROM THE INITIATION D INITIATION POINT (tp) AT THE DIRECTLY EXPOSED
   COASTLINE AREA, RUNNING INLAND FOR A DISTANCE OF 600 FEET (Secondary = 600 FT).

4. CONFIRM BUILDING-SPECIFIC EXPOSURE D REGION; A SECONDARY EXPOSURE D
   CONDITION MAY OCCUR BASED ON THE STRUCTURE ITSELF, TO DETERMINE THE
   BUILDING-SPECIFIC EXPOSURE D REGION, MULTIPLY THE MEAN ROOF HEIGHT (MRH) OF THE
   STRUCTURE BY 20 (Secondary=MRH*20).  COMPARE Secondary TO THE 600FT.

   IF Secondary < (600ft) THEN EXPOSURE D APPLIES

   IF Secondary > (600ft) THEN EXPOSURE D APPLIES

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