*Manufacturing Custom Fabricated Structures since 1979*

*Professional In-House Design Staff*

*Tower Delivery Service*

# World Tower

## Company, Inc.

## Classification Overview

Categories:

- Structure Classification
- Exposure Categories
- Topographic Effects
- Geological

VOLUME 1, ISSUE 1

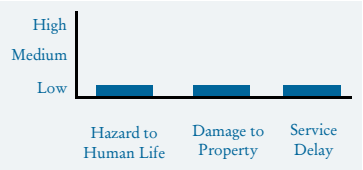
EIA/TIA 222-G

# *Structure Classification*

LOCATION

Located on Page 39 of the ANSI/ TIA-222-G Standard Table 2-1 the three Structural Classifications are:

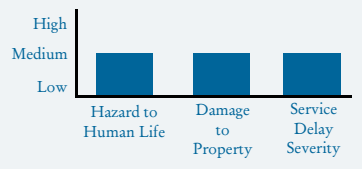
## Class I




This is the least expensive of the three classes. New structures used for services that are optional or where a delay in returning the services would be acceptable such as: residential wireless and conventional 2-way radio communication; television, radio and scanner reception; wireless cable; amateur and CB radio communications.

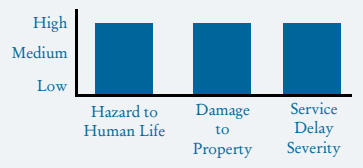
## Class II

(Default) Annex A.2.2




This is the default classification. New structures used for services that may be provided by other means such as: Commercial wireless communications; television and radio broadcasting; cellular, PCS, CATV, and microwave communications.

## Class III




This is the most costly of the different classifications. New structures used primarily for essential communications such as: Civil or national defense; emergency, rescue or disaster operations; military and navigation facilities.

# *Exposure Categories*

LOCATION

Located in Paragraph 2.6.5 of the ANSI/TIA-222-G Standard the three Exposure Categories are:

## Exposure B

Structures located within Urban or Suburban areas. The structure is surrounded, with numerous and closely spaced obstructions the size of a single-family dwelling or larger, in all directions for a distance of at least 2360' or ten times the height of the structure, whichever is greater.

## Exposure C

(Default) Annex A.2.6.5

Structures located in open terrain scattered with obstructions that are less than 30' tall. This exposure includes terrain in hurricane prone regions such as (flat open country, grasslands and shorelines)

## Exposure D

Structure is in flat, unobstructed shoreline exposed to wind flowing over open water. Excluding shorelines in hurricane prone regions. The exposure includes terrain such as inland waterways, lakes, smooth mud flats, salt flats and other similar terrain. The exposure extends inland 660' or ten times the height of the structure, whichever is greater.

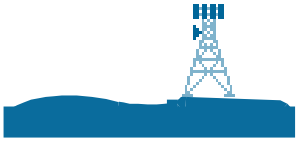
# *Topographic Categories*

LOCATION

Located in Paragraph 2.6.6.2 in the ANSI/TIA-222-G Standards the four Topographical Categories are:

## Category 1

(Default) Annex A.2.6.6



### Flat or Rolling

Terrain that presents no abrupt changes in elevation

## Category 2

### Escarpment

A steep slope or long cliff and separates two relatively level areas of differing elevations

## Category 3

### Hill

A well-defined natural elevation smaller than a mountain

## Category 4

### Ridge

A long narrow chain of hills or mountains

# *Category Reduction*

*Category 2, 3, and 4 can each be reduced to a Category 1 if the following criteria is meet*

## Category 2

This category is unique in that it allows for two ways to reduce the category by applying either the Vertical or Horizontal category reduction method

**Vertical** — If the tower is located on the lower half of the *escarpment* the category can be reduced to Category 1

**Horizontal** — If the tower is located 8 times the height away from the *escarpment* the category can be reduced to Category 1

## Category 3 & 4

These categories only have one way to reduce the category by applying the Vertical category reduction method

**Vertical** — If the tower is located on the lower half of the *Hill / Ridge* the category can be reduced to Category 1

# *Wind Speed-Up Calculation*

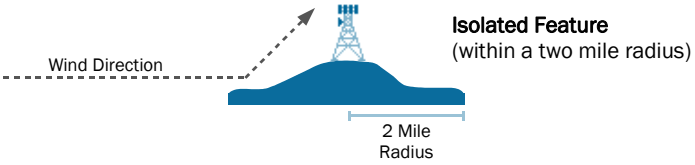
When considering wind speed-up factor the features surrounding the tower are considered. If the site feature is unobstructed by similar features comparable in height for a radius of 2 miles and it protrudes above the average height of the surrounding features by a factor of 2 or more the Wind Speed-Up Factor is applied.

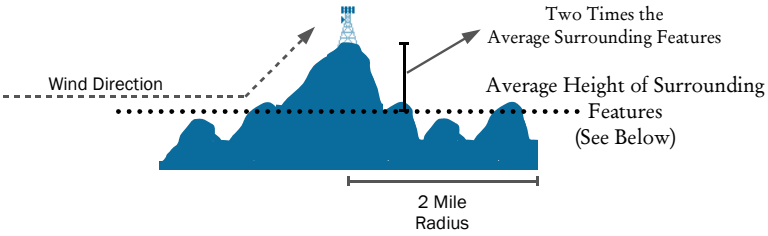
## Category 1

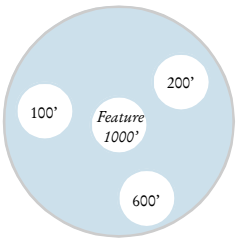
Wind Speed-Up Calculation is **not** required

## Category 2—3—4

Wind Speed-Up Calculation is required if the below is true




**Average Height of Surrounding Features**

(600+200+100)/3 = 300' Avg.

300' x 2 = 600'

# Wind Speed-Up Calculation

## Reduction Based on Slope

The wind speed-up calculations apply if the slope (vertical to horizontal ration) of the feature exceeds 0.10 degrees

## Reduction based on Height

The wind speed-up calculations apply if the height of the feature is equal to or greater than 15' for Exposures C & D and 60' for Exposure B

# Climbing Facilities

**Classification of Climbing and Working Facilities (Table 12-1)**

| User | Class |
|---|---|
| *Authorized (Basic) or Competent (Skilled) Climbers* | *A* |
| *Competent (Skilled) Climbers* | *B* |

**Authorized (Basic) Climber:** an individual with the physical capabilities to climb who may or may not have previous climbing experience but has training in fall protection regulations, the equipment that applies to the field including instruction for their proper use; able to climb designated fixed access routes equipped with safety climb devices.

**Competent (Skilled) Climber: (Default)** an individual with the physical capabilities to climb, has actual climbing experience and training in fall protection regulations including the equipment that applies to the field and who is capable of identifying existing and potential fall hazards; and who has the authority to take prompt corrective action to eliminate those hazards; and who is able to climb safely a structure away from fixed access routes.

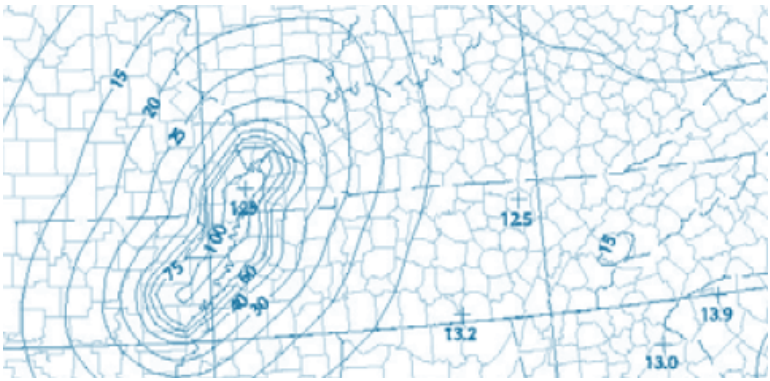
# *Geological Classifications*

## LOCATION

Located in table 2-11 in the ANSI/TIA-222-G Standard the six Geological Classifications are:

## *Geological Class Elimination*

Any Class I structure or any structure that is located in a region where the Earthquake Special Response (ESR) is less than or equal to 1.00 does not require this classification. The ESR is located from Page 242 to Page 259



*The descriptions given are for the upper 100' of the soil for the site location*

## Class A

Hard Rock with 10' or less of soil overburden

## Class B

Competent rock with moderate fracturing and weathering with 10' or less of soil overburden

## Class C

Very dense soil, soft rock or highly fractured and weathered rock. The soil should have profiles over 10' thick with Penetration Resistance greater than 50 and Un-Drained Shear Strength greater than 2.0 ksf

## Class D

(Default) Annex A.2.6.5

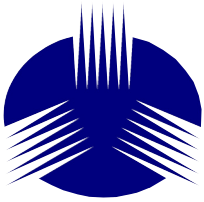
Classified as stiff soil. The soil should have profiles over 10' thick with Penetration Resistance 15— 50 and Un-Drained Shear Strength of 1.0 to 2.0 ksf

## Class E

Classified as weak soil—excluding site class F. The soil should have profiles over 10' thick with Penetration Resistance equal to or greater than 20 and Un-Drained Shear Strength less than .5 ksf plus the Moisture Content of 40%

## Class F

Classified as soils vulnerable to potential failure or collapse under seismic loading. The soil contains peat and/or organic clays over 10' thick, very high plasticity clays over 25' thick, soft/medium clays over 120' thick, liquefiable soils, quick and highly sensitive clays, collapsible weakly cemented soils



**World Tower**
**Company, Inc.**

1213 Compressor Drive
P.O. Box 508
Mayfield, KY 42066

Phone: 270-247-3642
Fax: 270-247-0909
Email: worldtower@worldtower.com