APPENDIX 5   INSTRUCTIONS FOR GEO-REFERENCING

GENERAL

Because of the importance of tying the model to an actual, physical point in space so they can be referenced properly during construction and for other purposes, ALL models created for VA must be correctly geo-referenced.

DEFINITIONS

Site Origin Point - The permanent, physical, USGS[1] Survey Marker's geographic survey point

Project Base Point - The coordinate system in the model space

PROCEDURES

1. The project civil engineer and/or licensed surveyor will identify, or establish, a permanent local campus or project site USGS Survey Marker (**Site Origin Point)** no further than 1.5 miles from the new building before Conceptual Design begins.

Site Origin and 3D Text in Model

2. Civil work always refers to the State Plane coordinates of the Project Survey Marker (**Site Origin Point**). There will be a Point-of-Origin object placed in the model(s) at this point with adjacent 3D text calling out the civil coordinates.

3. The Civil Engineer will establish the correct Northings, Eastings, Elevation, and Angle to Project North from the **Site Origin Point** relative to the **Project Base Point** which must be correctly applied to **all** discipline/trade models and Design and Construction Coordination files so that the **Project Base Point** is exactly aligned to the civil survey marker **Site Origin Point**. This will assure that multiple buildings will all align with the site and each other.

Project Base Point Reference

4. The relationship of the ***Site Origin Point coordinates and True North*** to the ***Project Base Point and Project North*** are jointly determined by the civil engineer and architect. This allows the location of the building on the site to adjust without changing the model survey alignments.
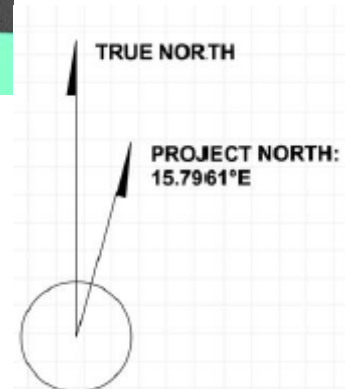
Illustration of True North/Project North

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[1] United States Geological Survey = USGS

5. The Architects Engineers and designers will include a 3d Marker in all design models with text hat state the distance (X,Y,Z) to the southwest column grid at top of slab.

6. All construction/shop/fabrication models will include a 3D Marker in all design models with text that states the distance (X,Y,Z) to the southwest column grid at top of slab.
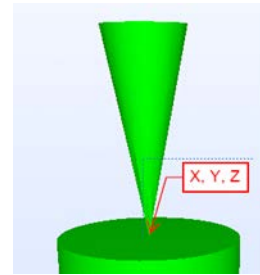

Illustration of 3D Marker

Modeling[2] - When starting to model a new project, make the **Project Base Point** visible on the initial Main Level plan view. Set and pin the structural column grid intersection (typically A-1) to *precisely* align the location of the **Project Base Point** with the **Site Origin Point**. The Northings, Eastings, Elevation, and Project North must be entered into the Identity Data parameters for this structural grid intersection, and a second Identity Data parameter should be set up at (0,0,0). The (0,0,0) parameter should be used when exporting IFC files, so that the IFC files have the Project Base Point, at (0,0,0) when checked in model viewing software.

Project North and True North must be accurate and easily identifiable in all models and on all plan view drawing deliverables. The Model Manager must set the location of the models so that the civil model is at actual elevation, and the building models align and the X and Y coordinates of the **Site Origin Point** are at (0,0) and the buildings align.

With approval from VA in cases where a USGS Survey Marker cannot be made available, building models must establish the Project Origin (0,0,0) outside of the building so that it can be adjusted later to reference a permanent Survey Marker. The Project Origin must be located at the top of the slab (TOS) and 10' West and 10' South of the southwest corner of the structural column grid intersection (typically A-1). A 3D Marker must be placed in the model at this location (0,0,0). The distance North, West, and Elevation from the Marker (0,0,0) to the column line (10',10',0') must also be shown in 3D text near the marker.
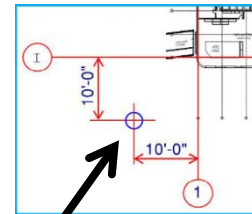
Location of 0,0,0

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[2] These instructions are for Revit use; users of other software should consult with the vendor for instructions to achieve the same result.