Appendix D – Coordinate System Setup

Background

San Francisco International Airport employs a local coordinate system, SFO-B. The SFO-B coordinate system, both horizontally and vertically, is defined by Record of Survey #2925 (Vol. 43 of LLS Maps, Pages 44-45, San Mateo County Records). SFO-B establishes the horizontal axis (x-axis) as the centerline of Runway 10L-28R. Axes (x and y) are parallel and perpendicular to the centerlines of this runway. Vertical (z coordinates) coordinates shall be based on the North American Vertical Datum of 1988 (NAVD88). The origin of SFO-B is located 180 feet left of the threshold of Runway 10L on center.

Setup

Models and drawings submitted to the Airport shall reference the SFO-B coordinate system (x, y, and z coordinates). The following files are available to coordinate the origin of the project files with the SFO-B coordinate system:

1. SFO Base Map (.dwg file)
2. Adjacent Control Points (.dwg file)
3. SFO-B Origin Marker (.rfa and .dwg files)

The SFO Base Map includes the SFO-B Origin Marker and functions as the overall site plan of SFO's buildings. The original design axes of the terminal buildings in the map serve as references for existing gridlines.

The Adjacent Control Points file from the SFO Chief Surveyor includes the latest horizontal and vertical location of control points closest to the project. It is important to request the latest file at the start of each project, because the SFO Chief Surveyor regularly updates the locations of the control points.

The SFO-B Origin Marker is a 3D symbol to locate the SFO-B coordinate system origin (x, y, and z coordinates) and identify the SFO-B North orientation uniformly in all project models.

Any vertical reference other than NAVD88 (e.g. NGVD29) shall be specified to the SFO Chief Surveyor when requesting the latest version of the Adjacent Control Points file, if required for regulatory purposes.

The following steps outline the prerequisites of the proper project coordinate system setup:

1. Request the latest version of the SFO Base Map and the SFO-B Origin Marker from the SFO BIM Integration Team.
2. Request the latest version of the Adjacent Control Points file from the SFO Chief Surveyor (through SFO PM) for the project's work area.
3. Coordinate the survey of the project's work area based on the Adjacent Control Points file. Coordination should include:
    a. Existing building footprints
    b. Tie-in points
    c. Vertical elevations of exiting adjacent floors
    d. Existing adjacent or tie-in grid lines
4. Review the survey results with the SFO Chief Surveyor.
5. Update the project BIM authoring tool's coordinate system based on the survey. **Figures 01 and 02** illustrate this step.

Documentation

All design discipline and trade partner models shall include the correctly positioned SFO-B Origin Marker. The project-specific process of coordinate system alignment between design disciplines and trade partners must be documented in the project's BIM Execution Plan. The process of coordinating with other active, adjacent SFO projects must be documented in the project's BIM Execution Plan as well, if applicable. The documentation must include the date of when the SFO Base Map and the Adjacent Control Points files were received.

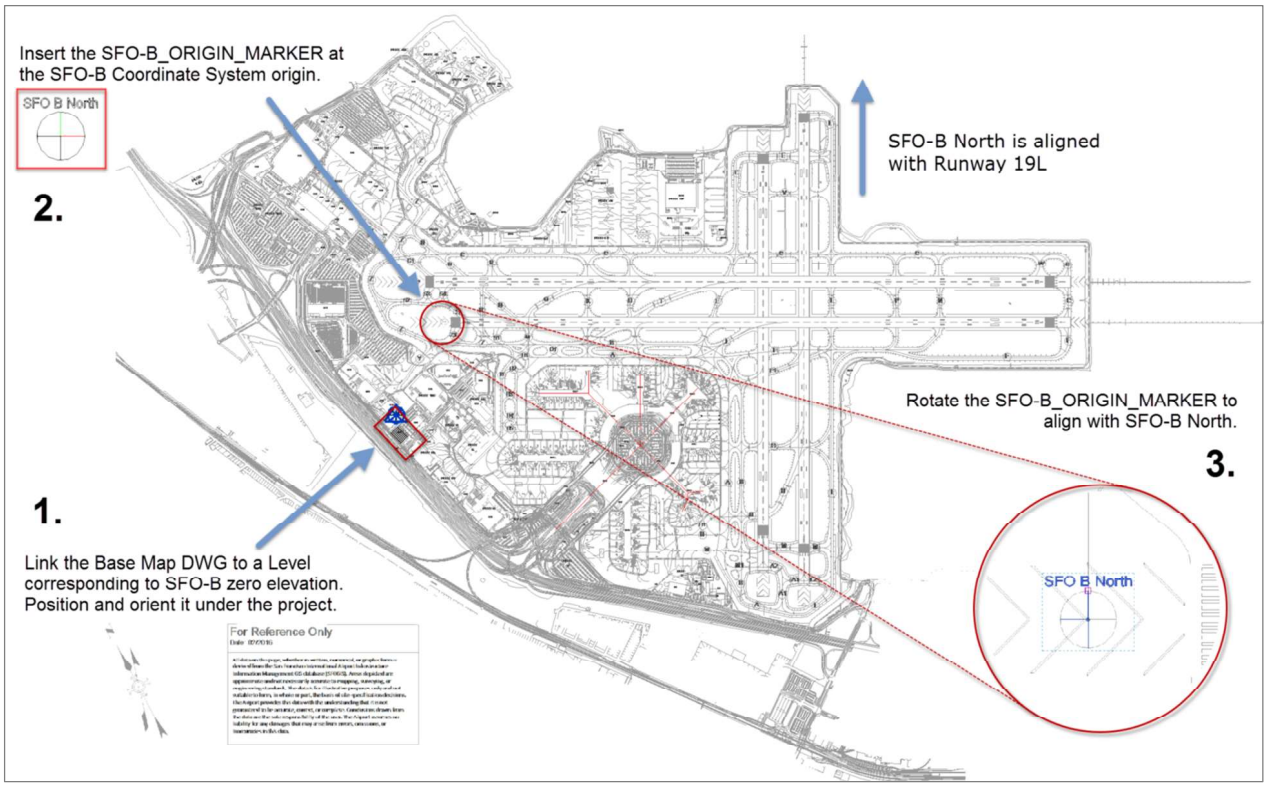

Figure 01. Link the Base Map and insert the SFO-B Origin Marker

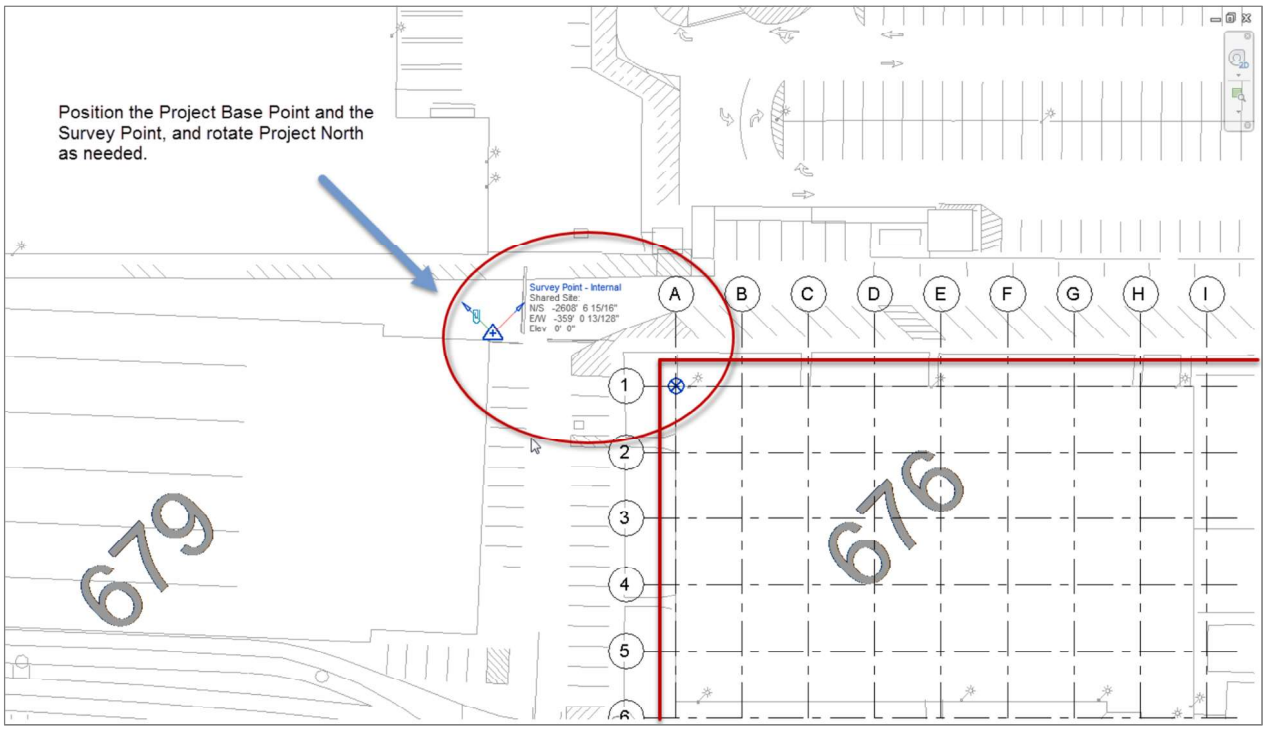

Figure 02. Update the coordinate system as needed