Appendix 3.11-B
Airport Obstructions

3.11-B Airport Obstructions

3.11-B.1 Introduction

Under the California Environmental Quality Act (CEQA) Guidelines, Appendix G (Cal. Code. of Regs., Tit. 14, Ch. 3, Sections 15000-15837, App. G) the following significance criterion applies to the California High-Speed Rail Project:

> For a project located within an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

Safety hazards can include the development of land uses that are incompatible with airport operations, the exposure of noise-sensitive receivers to noise levels in excess of established thresholds, or the imposition of airspace obstacles that represent hazards to aviation, and subsequently to people on the ground in areas exposed to aircraft overflight. The purpose of this memo is to evaluate whether the California High-Speed Rail (CSHR) alignment alternatives impinge upon the imaginary airspace surfaces for any of the five public or public-use airports described below, thus constituting a potential impact under CEQA.

Five public or public-use airports are located in the project area. These airports are described in greater detail below.

3.11-B.2 Fresno-Chandler Executive Airport

Fresno-Chandler Executive Airport (FCH) is a general aviation facility owned and operated by the City of Fresno. The airport is located approximately 1.5 miles from downtown Fresno and approximately 0.87 mile from the BNSF Alternative. The airport operates one 3,630-foot runway (Runway 12/30) and averages approximately 68 operations daily. The airport elevation is 279 feet above mean sea level (MSL).

3.11-B.3 Hanford Municipal Airport

Hanford Municipal Airport (HJO) is a general aviation facility owned and operated by the City of Hanford. The airport is located approximately 2 miles from downtown Hanford and approximately 1.78 miles from the BNSF Alternative. The airport operates one 5,175-foot-long runway (Runway 14/32) and averages approximately 78 operations daily. The airport elevation is 249 feet MSL.

3.11-B.4 Corcoran Airport

Corcoran Airport (CRO) is a privately owned, publicly accessible general-aviation facility. The airport is located approximately 2 miles from downtown Corcoran and approximately 1.68 miles from the BNSF Alternative. The airport operates one 3,800-foot-long runway, Runway 13/31, and averages approximately 107 operations per week. The airport elevation is 247 feet MSL.

3.11-B.5 Wasco-Kern County Airport

Wasco-Kern County Airport (L19) is a general -aviation facility owned and operated by Kern County. The airport is located approximately 2 miles from downtown Wasco and approximately 1 mile from the BNSF Alternative. The airport operates one 3,380-foot-long runway, Runway 12/30, and averages approximately 27 operations per day. The airport elevation is 313 feet MSL.

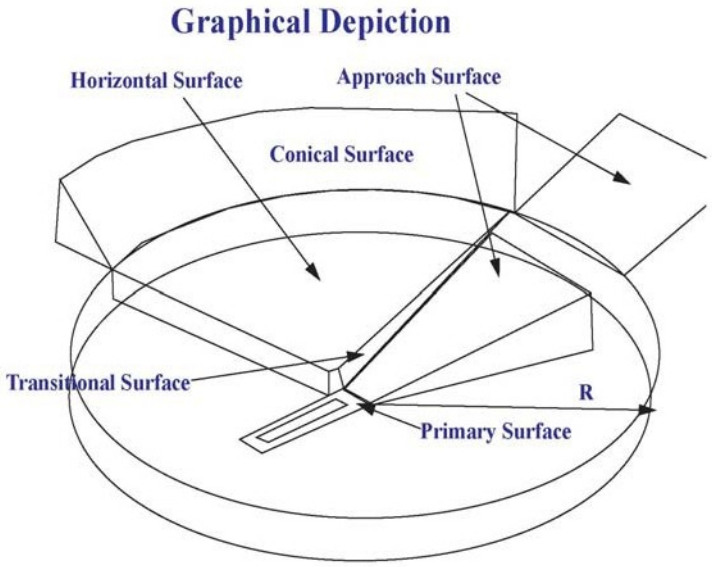
3.11-B.6 Shafter-Minter Field

Shafter-Minter Field (MIT) is a general-aviation facility owned and operated by the Minter Field Airport District, an independent special district organized under state law. The airport is located approximately 4 miles from downtown Shafter and approximately 1.40 miles from the BNSF Alternative. The airport operates two runways, a 4,501-foot-long runway, Runway 12/30, and a 2,970-foot-long runway, Runway 17/35, and averages approximately 123 operations a day. The airport elevation is 425 feet MSL.

3.11-B.7 Imaginary Surfaces

For purposes of identifying airspace obstacles for airports, the most commonly identified imaginary surfaces include those surfaces for civil aviation facilities defined under 14 CFR Part 77 (Part 77 surfaces) and Terminal Instrument Procedure surfaces (TERPS).

Under Part 77 standards for determining obstructions to airspace, an existing object, including a mobile object, would be an obstruction to air navigation if it penetrates the surface of a takeoff and landing area of an airport or any imaginary surface established for the airport (14 CFR Part 77.24.). Imaginary surfaces for civil airports fall into five standard categories: primary, approach, transitional, horizontal, and conical. The size and shape of these surfaces can vary based on runway category and type of operating procedures available or planned for that runway. Examples of these surfaces are shown on Figure 3.11-B-1.



Source: National Oceanic and Atmospheric Administration

Figure 3.11-B-1
Part 77 Airspace Surfaces

TERPS are instrument approach and departure procedures for both civilian and military airports. TERPS imaginary surfaces are used to help develop instrument procedures and conduct obstacle analysis for instrument operations.

3.11-B.8 Analysis

This analysis considers the potential for hazards arising from portions of the CHSR alternative alignments obstructing Part 77 airspace surfaces. Three of the five public airports evaluated have published instrument procedures that indicate that TERPS surface obstacle penetration has been previously evaluated. For purposes of this analysis, data pertaining to the TERPS surfaces for these airports were not readily available. Therefore, no analysis of these surfaces was completed.

For purposes of evaluating Part 77 surfaces, airspace plans for each of the five airports were obtained from the latest versions of their respective Airport Land Use Compatibility Plans (ALUCPs). These airspace plans were georeferenced using ArcGIS 9.3 and overlaid with GIS shape files representing the CHSR alignment alternatives for the purpose of identifying their location relative to each airport's Part 77 surfaces.

3.11-B.9 Results

3.11-B.9.1 Fresno-Chandler Downtown Airport

The BNSF Alternative falls within the southeastern edge of the traffic pattern zone for FCH. The traffic pattern zone represents those areas within the Part 77 defined horizontal surface for the airport. The horizontal surface begins 150 feet above the airport elevation of 279 feet above MSL, at 429 feet MSL. The average elevation of the BNSF Alternative in this area is approximately 365 feet MSL, approximately 64 feet below the airport's horizontal surface. The BNSF Alternative does not penetrate the airport's Part 77 airspace surfaces.

3.11-B.9.2 Hanford Municipal Airport

The BNSF Alternative passes through areas beneath Part 77 airspace surfaces for the Hanford Municipal Airport. From just north of Grangeville Avenue to just south of State Route 198 and again just south of Houston Avenue to an area equidistant to Iona and Idaho avenues, the alignment passes beneath the conical surface for the airport. The conical surface commences at the edge of the horizontal surface at 399 feet MSL, 150 feet above the airport elevation of 249 feet MSL, and proceeds upward and outward at a slope of 20:1 until reaching an elevation of 599 feet MSL. The portion of the alignment that passes beneath the northern portion of the airport's conical surface has an elevation that ranges from between approximately 265 and 291 feet MSL, approximately 134 to 108 feet below the lowest edge of the airport's conical surface. Similarly, the portion of the alignment that passes beneath the southern portion of the airport's conical surface has an elevation that ranges from between 248 and 245 MSL, approximately 151 to 154 feet below the lowest edge of the airport's conical surface.

A portion of the alignments, located between an area just south of State Route 198 and just south of Houston Avenue, passes beneath the airport's horizontal surface. The horizontal surface lies at an elevation of 399 feet MSL, approximately 150 feet above the airport elevation, 249 feet MSL. The portion of the alignments that passes through this area averages approximately 290 feet MSL, 109 feet beneath the airport's horizontal surface. No portion of the BNSF Alternative penetrates the airport's Part 77 airspace surfaces.

3.11-B.9.3 Corcoran Airport

The BNSF Alternative passes below the eastern edge of the conical surface for Corcoran Airport. The conical surface commences at the outer edge of the airport's horizontal surface at an elevation of 247 feet MSL, 150 feet above the airport elevation, 197 feet MSL, and commences upward and outward at a slope of 20:1 to an elevation of 547 feet MSL. Within this area, the average elevation of the BNSF Alternative is approximately 251 feet above sea level,

approximately 296 feet below this portion of the conical surface. No portion of the BNSF Alternative penetrates the airport's Part 77 airspace surfaces.

3.11-B.9.4 Wasco Airport

Both the BNSF Alternative and the Wasco-Shafter Bypass Alternative pass beneath various parts of the conical surface for the airport. The conical surface commences at the outer edge of the airport's horizontal surface at an elevation of 463 feet MSL, 150 feet above the airport elevation, 313 feet MSL, and commences upward and outward at a slope of 20:1 to an elevation of 653 feet MSL. The BNSF Alternative crosses beneath the outer edge of the conical surface at an elevation of approximately 325 feet MSL, approximately 328 feet below the conical surface edge. The alignment proceeds southward, passing beneath the lowest edge of the conical surface near McComb Road at an elevation of approximately 339 feet MSL, approximately 64 feet below the conical surface for the airport.

The Wasco-Shafter Bypass Alternative passes beneath the northern edge of the airport's conical surface at an elevation of approximately 377 feet MSL, approximately 276 feet below the conical surface. The Wasco-Shafter Bypass Alternative passes from beneath the airport's conical surface just north of State Route 46, at an elevation of approximately 355 feet MSL, approximately 298 feet beneath the airport's conical surface. No portion of the BNSF Alternative or the Wasco-Shafter Bypass Alternative penetrates the airport's Part 77 airspace surfaces.

3.11-B.9.5 Shafter-Minter Field

Neither the BNSF Alternative nor the Wasco-Shafter Bypass Alternative is located in areas within or beneath Part 77 airspace surfaces for Shafter-Minter Field. Therefore, neither alignment penetrates the airport's Part 77 airspace surfaces.

URS

Memorandum

Date: January 19, 2012

To: Tom Baily

From: Howard Klein

Subject: **CA High-Speed Rail, Assessment of Salyer Farms Airport**

Per your request, we assessed the proposed High-Speed Rail Alignment "C2" in the vicinity of Corcoran, CA in relation to Salyer Farms Airport. We also reviewed a report by Tartaglia Engineering, dated October 7, 2011 that also examined this issue. The findings of our assessment reveal that the proposed C2 rail alignment would not present an obstruction to any airspace surface associated with Salyer Farms Airport.

The two following drawings depict the results of our examination. The first drawing depicts the C2 alignment in relation to the north end of the Salyer Farms Airport runway. A visual approach surface is shown in relation to the rail alignment. The drawing indicates that the approach surface is substantially higher (a clearance of 71 feet) than the rail alignment where it passes beneath the approach surface.

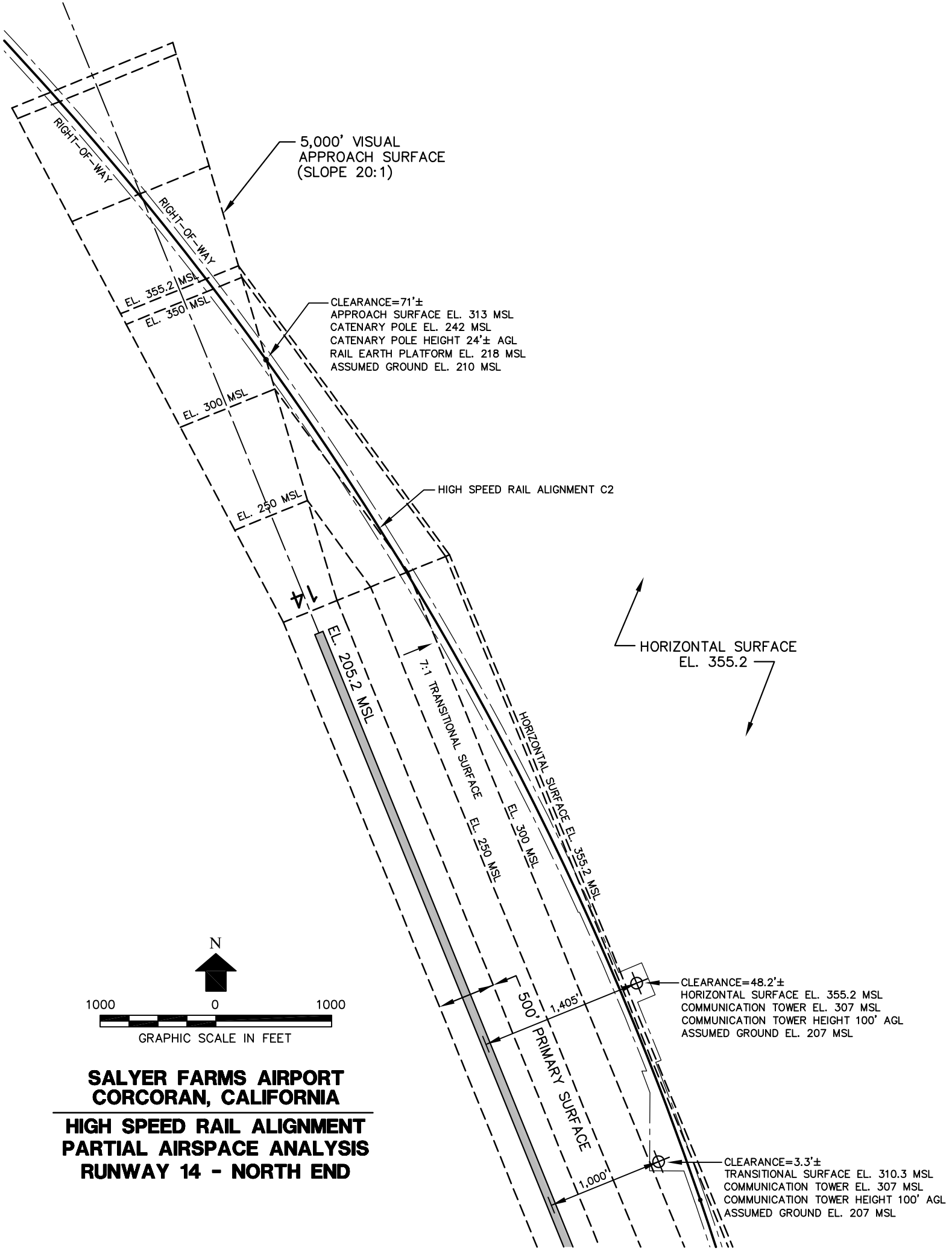
The drawing also partially depicts the transitional and horizontal surface along the east side of the airport in relation to the proposed rail alignment. The two communication towers proposed in this area are beneath the transitional and horizontal surface. However, we would note two items of caution in regard to the towers. First, we do not know the exact tower locations. Therefore, we made assumptions regarding the towers' location within the depicted land envelope. The more northern tower would be located in an area that falls beneath the horizontal surface. There is substantial clearance (approximately 48 feet) between this tower and the horizontal surface.

The second item of caution relates to the southern tower which is located beneath the transitional surface. We assumed the tower would be located toward the western point of the land envelope. At that location, the clearance between the tower and the transitional surface is only 3 feet. If the tower is located farther east the amount of clearance will increase. Nonetheless at the assumed location the tower remains clear of the transitional surface.

Finally, the second drawing depicts a non-precision approach to Runway 32 at the south end of the runway. We looked for, but did not find any FAA information regarding a non-precision GPS approach to this runway end although the Tartaglia Report refers to one being available. A private approach procedure may have been developed for this runway end. The Tartaglia report also refers to the existence of approach lighting to Runway 32.

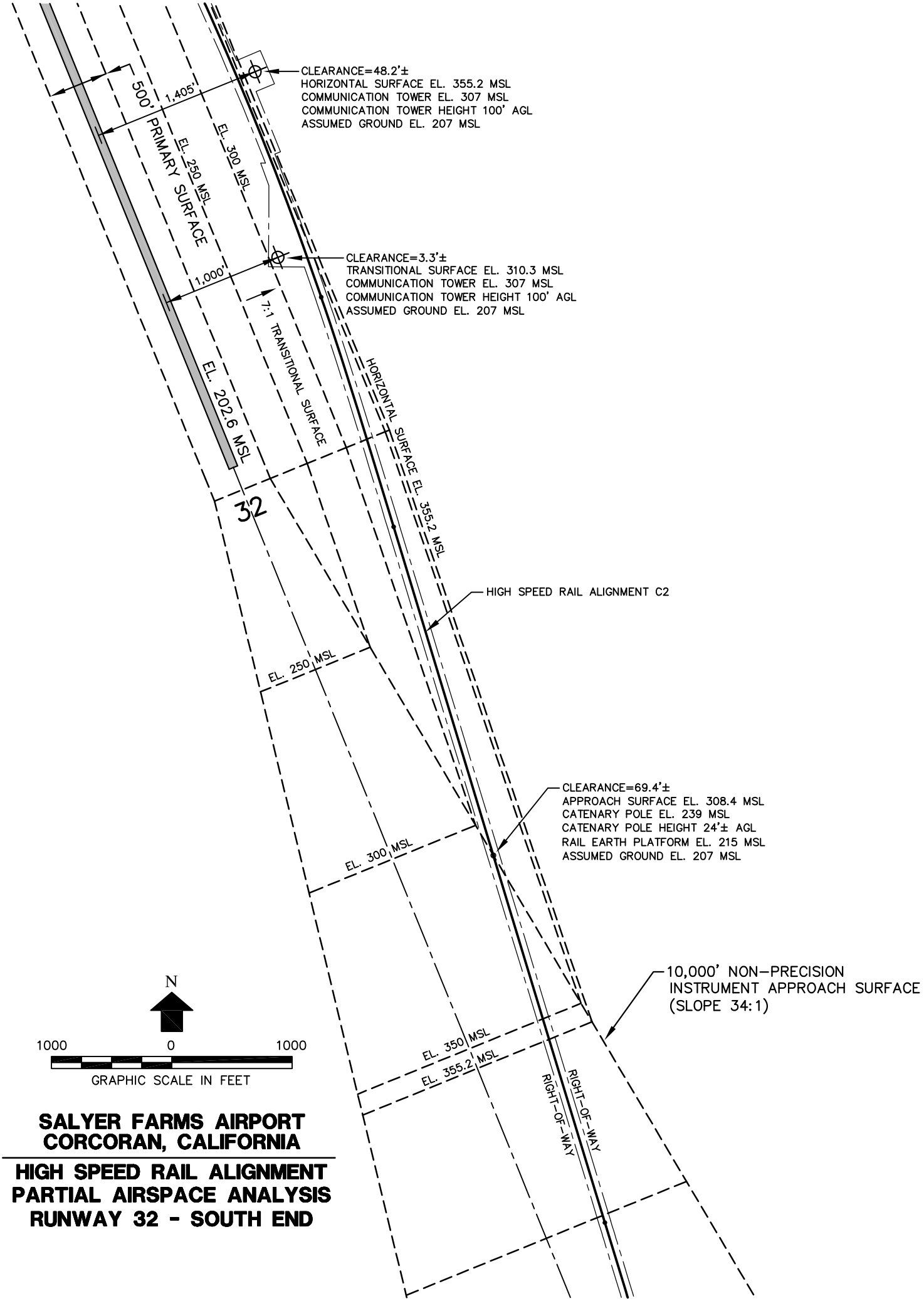
Therefore, in the interest of presenting the most critical surfaces we have shown a non-precision rather than a visual approach to Runway 32. The drawing indicates that even with a non-precision approach there will be approximately 69 feet of clearance at the point where the approach surface passes over the C2 rail alignment. Therefore, the proposed rail alignment will not present an obstruction to the Runway 32 approach.

In conclusion, on the basis of the provided C2 rail alignment and airport data presented in the Tartaglia Engineering report, the rail alignment would not present an obstruction to any Part 77 airspace surface associated with Salyer Farms Airport.



SALYER FARMS AIRPORT
CORCORAN, CALIFORNIA

HIGH SPEED RAIL ALIGNMENT
PARTIAL AIRSPACE ANALYSIS
RUNWAY 14 - NORTH END



SALYER FARMS AIRPORT
CORCORAN, CALIFORNIA

HIGH SPEED RAIL ALIGNMENT
PARTIAL AIRSPACE ANALYSIS
RUNWAY 32 - SOUTH END