Final Report
April 2017

TRI-STATE AIRPORT ACCESS ROAD STUDY

Prepared For:

KYOVA
KENTUCKY • OHIO • WEST VIRGINIA
INTERSTATE PLANNING COMMISSION

Prepared By:

Kimley»Horn

Tri-State Airport
Access Road Study

Prepared for:

KYOVA Interstate Planning Commission

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1 Introduction

The Huntington Tri-State Airport (HTS or "the Airport") is a key link to the global transportation network for both people and freight. It is also a vital economic driver for the Tri-State region and particularly to the communities of Huntington, Ashland and Ironton.

To improve the reliability and efficiency of service at the Airport, and prevent costly operational shut-downs, the KYOVA Interstate Planning Commission (KYOVA) is working with the Tri-State Airport Authority (owner and operator of the Airport) to identify a road improvement program that will enhance roadway safety and allow public, passenger and cargo access to be maintained during times when the existing Airport Road becomes blocked or closed due to natural or manmade events. This report will describe the airport environs, the need for improved/sustainable roadway access, various alternatives for providing that access, and a recommended roadway development strategy.

1.1 Study Process

The overarching goal of this project is to ensure that access to the Airport is maintained in the most efficient and safe manner so that the public and business air transportation needs of the region are not adversely affected. To identify the needs and concerns of the Airport operators, tenants and regional stakeholders, a project steering committee was established that included representatives from:

- KYOVA
- Tri-State Airport
- Federal Highway Administration (FHWA)
- West Virginia Department of Transportation (WVDOT)
- West Virginia Development Office (WVDO)
- Huntington Area Development Council (HADCO)
- Wayne County EDA
- Lawrence County Economic Development Association
- Ashland Alliance

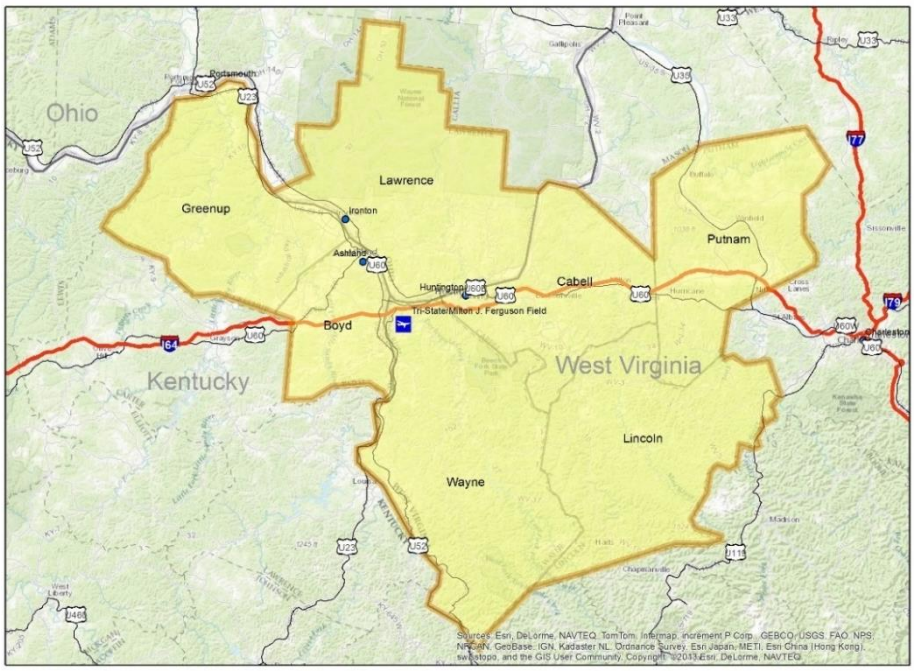
The steering committee provided insight on local and regional transportation needs; business climate and development activities; roadway design standards and programmatic requirements; and funding opportunities. Building upon this information, and previous Airport planning and design projects, the study team developed a variety of preliminary roadway concepts that were narrowed to the seven alternatives presented in **Section 4** of this report. These alternatives were further evaluated through a matrix of criteria, with input from the steering committee, to identify the preferred roadway solution. The study team then developed a preliminary design plan for the preferred alternative consistent with

WVDOT's 2014 *Design Directives* and current *Design Manuals.* The results of this study will be used to program the needed roadway improvements into the region's Metropolitan Transportation Plan (MTP) and form the basis for the future detailed roadway design.

1.2 Project Location

With a population of over 364,900[1] persons, the Huntington-Ashland-Ironton Metropolitan Statistical Area (MSA) is the largest MSA in West Virginia. As depicted in **Figure 1**, the MSA includes seven counties within West Virginia, Kentucky and Ohio. Nestled in the center of this MSA, near the industrial business centers and the urban populations of Huntington, West Virginia, Ashland, Kentucky and Ironton, Ohio is the Huntington Tri-State Airport. The Airport is located in Wayne County nine miles west of Huntington and is accessible from Interstate 64, West Virginia Route 75 and US Route 52. The City of Huntington is the second largest city in West Virginia in terms of population. According to a 2009 study[2] prepared by KYOVA, approximately 491,000 people reside within a one-hour drive time of the Airport and over 1.3 million people are within two hours. As depicted in **Figure 2**, this represents the general market area of the Airport.

Figure 1 – Huntington-Ashland-Ironton, WV-KY-OH Metropolitan Statistical (MSA)

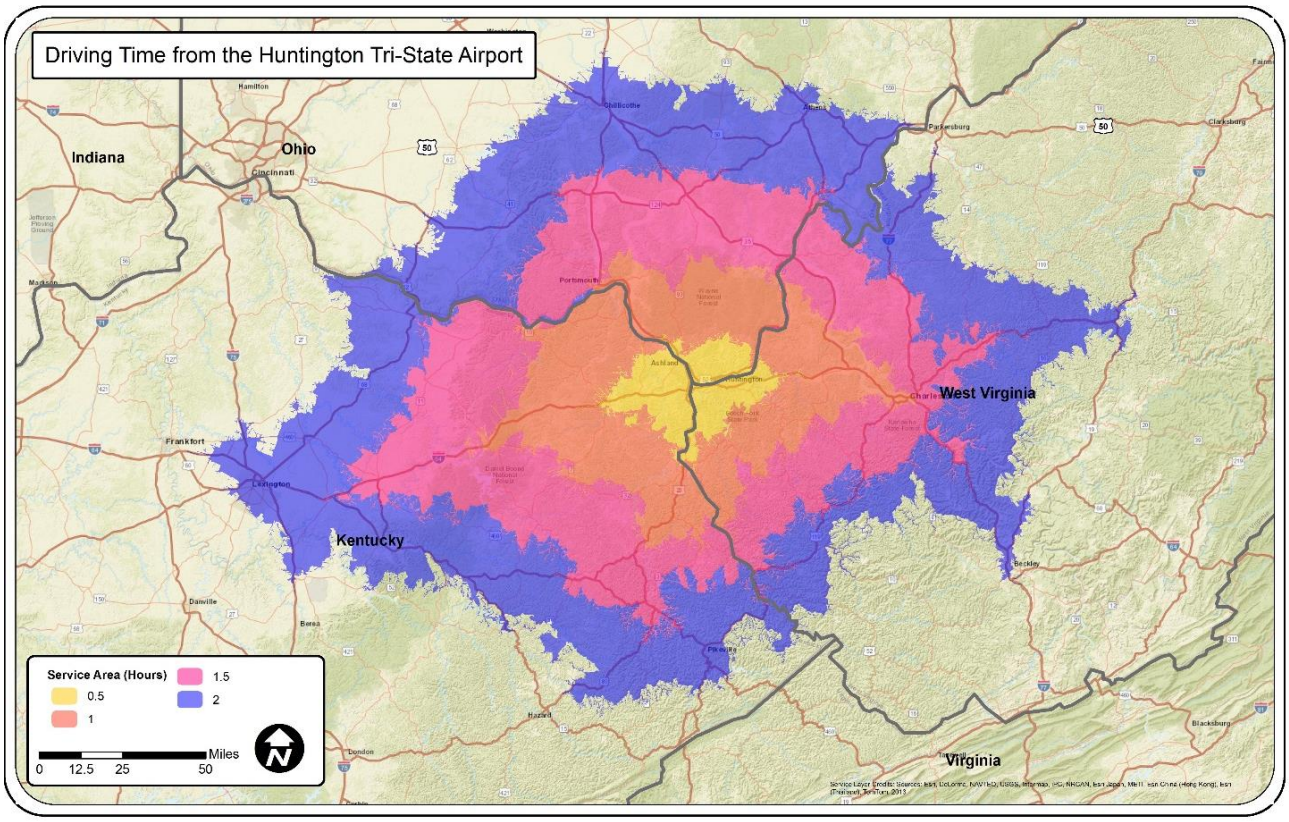


Source: Google Maps

[1] U.S. Census Bureau, Census 2010, http://www.census.gov/population/www/cen2010/cph-t/cph-t-5.html

[2] "Huntington Intermodal Transportation Planning Study", KYOVA Interstate Planning Commission, 2009

Figure 2 – Tri-State Airport Service Area



Source: "Huntington Intermodal Transportation Planning Study", KYOVA Interstate Planning Commission, 2009

1.3 Airport Background

Sited on 1,154 acres of property, the Tri-State Airport provides a variety of public facilities and services, connects the region to the global passenger and freight transportation networks, and plays a significant role in the nation's air transportation system. The airport serves scheduled passenger, cargo, general aviation (recreational, business and corporate aircraft), military and emergency response aviation activities. Opened in 1952, the airport has undergone numerous airfield and passenger facility improvements with substantial investment by the Federal Aviation Administration (over $62 million since 1982) and the West Virginia Department of Transportation Aeronautics Commission. Commercial passenger service started in 1961 and as of 2015 the Tri-State Airport serves approximately 25% of the total passengers enplaned in West Virginia out of the seven commercial service airports in the state. This is second in passenger activity to only Yeager Airport in the state's capital of Charleston that enplanes approximately 65% of the annual passengers.[3] Passenger service at Tri-State Airport is provided by American and Allegiant Airlines and according to the Federal Aviation Administration (FAA), passenger volumes are up 5.6% from 2014, whereas Yeager Airport experienced a 6.8% decline from

[3] FAA Terminal Area Forecasts, 2015, http://taf.faa.gov/

2014.[4] According to the FAA Terminal Area Forecast, the passenger activity at Tri-State Airport is projected to increase 10.7% by 2026 to approximately 113,760 annual enplanements compared to the 102,800 in 2015.[5]

As a gateway for business and personal travelers, air freight, tourism, and the U.S. Postal Service, the Airport is a major transportation asset and economic driver within the region. The 2006 *Economic Impact Study* by Marshall University demonstrated that the Tri-State Airport supported over 800 jobs and had an annual economic value of approximately $50 million to the Tri-State region (including $3.5 million in direct state and local tax revenue). This was calculated prior to Allegiant Airlines providing service at the Airport which began in 2006. The economic impact of the Airport has undoubtedly increased since then.

The Tri-State region annually attracts thousands of visitors for business and pleasure. Major employers such as Marshall University, multiple area hospitals, Marathon Oil, CSX, Toyota, and other businesses use the Airport for their medical specialists, managers, employees and potential employees to access the region. Tourist activities including special events on the river, railroad, and at the Convention Center, attract visitors from across the nation.

The Tri-State Airport provides international connectivity to the region which is a critical link in supporting the three Foreign Trade Zones (FTZs) located within the Airport's service area. These included the Point Industrial Park located in Lawrence County, the Greenup Boyd Riverport Site which is located Greenup County, and the Charleston Ordinance Center located in Charleston. Air service provided by the Airport also supports emerging business opportunities at Kinetic Park which is a 95-acre technology park being developed in Huntington to accommodate commercial businesses, technology corporations and startups. Amazon recently developed a new customer service center in Kinetic Park.

FedEx has been operating at the Tri-State Airport since the early 1980s and provides mainline east coast service (i.e. operated directly by FedEx rather than through regional alliances or subsidiaries) with flights five days per week. In addition to small package delivery, they are also the only overnight heavyweight express shipper (i.e. over 150 lbs.) in the region and they are also contracted to handle United States Postal Service (USPS) mail. FedEx is the dedicated carrier for Norfolk-Southern Railroad and also operates a small-package ground shipping facility on Airport property along Airport Road. Due to expanding service demands, FedEx recently upsized the aircraft servicing the Airport from the Boeing 727 to the Boeing 757 and there are talks about possibly upgrading again within the next few years to

[4] FAA Air Carrier Activity Information System (ACAIS) for CY2015, http://www.faa.gov/airports/planning_capacity/passenger_allcargo_stats/passenger/

[5] Tri-State Airport Passenger Statistics, http://www.tristateairport.com/about-us/statistics/

meet growing volume demands. As FedEx looks at facility consolidation and restructuring in the northeast United States, it appears that Tri-State Airport would experience increased cargo volumes and air traffic from such a plan. National projections for the three states indicate air freight to grow up to 6 times its weight by 2035 and almost 8 times its value, with the largest growth being in West Virginia.[6]

In addition to the commercial passenger and air cargo services provided, the Airport also accommodates the needs of General Aviation users. General Aviation (GA) includes a wide variety of activities such as personal/recreational flying, flight training, sightseeing, aerial patrol, aerial spraying, filming and photography, utility/construction support, electronic news gathering, law enforcement, aerial ambulance, and corporate flying. GA aircraft range from single- and multi-engine piston aircraft to corporate jets and helicopters.

2 Existing and Future Conditions

Public use of the Airport, and access to its facilities, are influenced by several factors including terrain and existing roadway infrastructure, existing land uses and environs, ongoing development, local and regional transportation plans, and planned airport improvements.

2.1 Terrain

As with much of West Virginia, the terrain surrounding the Airport is characterized by steep grades and dense vegetation. Roadways tend to follow natural terrain contours until they must be cut into the hill sides or bridged across streams or valleys. Development capitalizes on any available flat ground or must also be cut into the terrain. The Airport and all its facilities sit on top of a flattened ridgeline at an approximate elevation of 820 feet above mean sea level (MSL). Airport Road, which extends approximately 1.7 miles from US 52 to the Airport passenger terminal, rises approximately 240 feet in the last half-mile from near the FedEx Ground facility to the passenger terminal. The steepest gradient along that section of road is 8.9% which occurs along the curve near and just east of the entrance to the FedEx Ground facility.

[6] Federal Highway Administration Freight Analysis Framework (FHWA FAF3) http://faf.ornl.gov/fafweb/Extraction0.aspx

Figure 3 – Airport Access Road Terrain

Source: Pictometry Online and Kimley-Horn and Associates

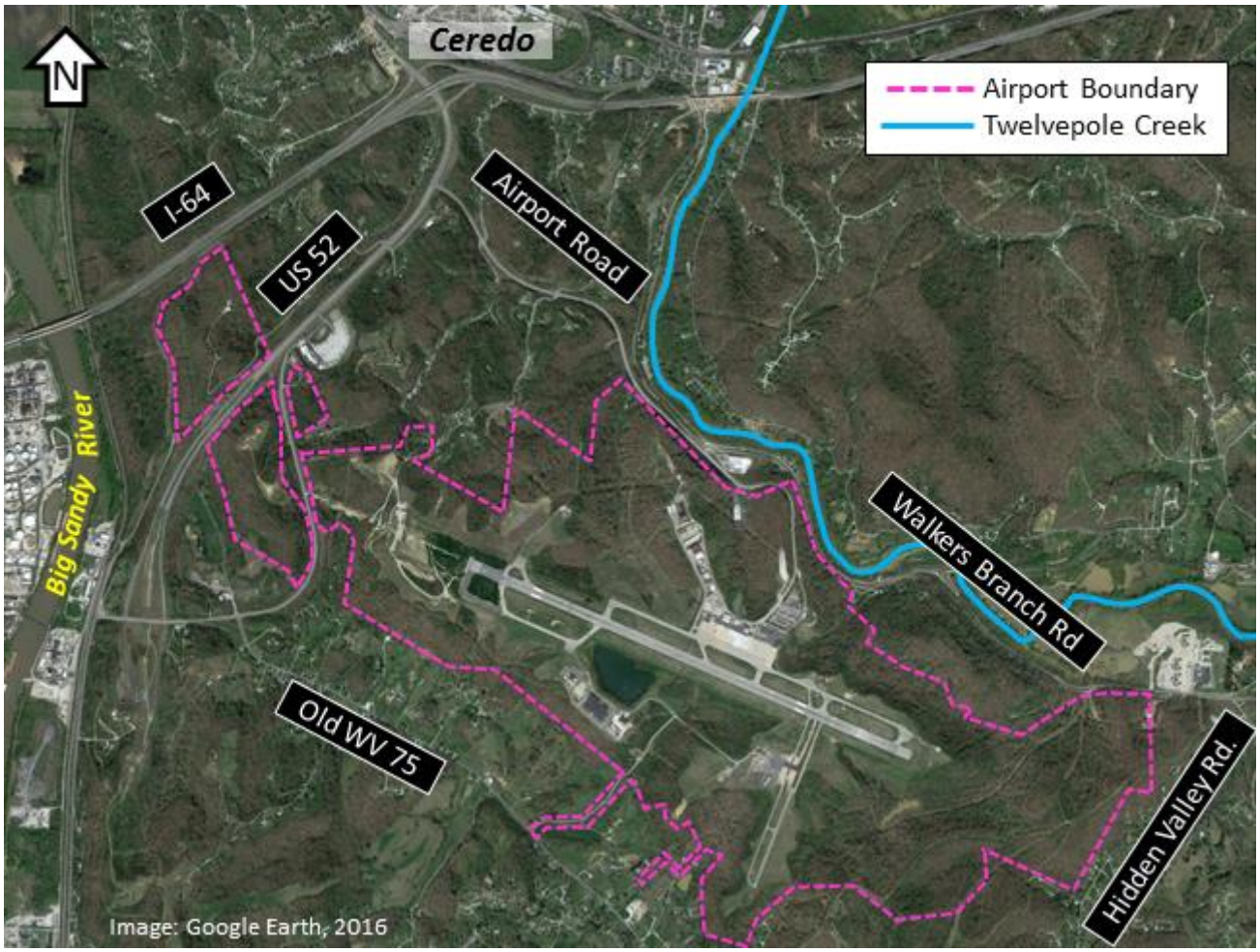
2.2 Area Land Use

The Airport is essentially bounded by Airport Road and Walkers Branch Road to the north, WV Route 75 to the south, US 52 and Old US 52 to the west, and Hidden Valley Road/Lake View Drive to the east. As depicted in **Figure 4**, the area is mostly undeveloped with rural residential properties located along those major roads to the south and east. Due to the steep terrain along the north side of the Airport, Airport Road provides access to scattered residential properties through a handful of direct driveways and feeder roads including Broad Hollow Road, Crescent Drive, and Cole Branch Road. There is one commercial development adjacent to the railroad crossing at Airport Road and Walkers Branch, near the FedEx Ground facility (which is on Airport property).

Wayne County has not established specific zoning regulations or use restrictions except for development within floodplains. The Federal Emergency Management Administration (FEMA) indicates the closest floodplain to the Airport and Airport Road is associated with Twelvepole Creek and the limits of which remain north and east of the Norfolk-Southern Railroad line with a base flood elevation of 531

feet MSL.[7] According to the Wayne County Assessor's Office, the Tri-State Airport is surrounded by unincorporated area with the exception of the Town of Ceredo near the intersection of Airport Road and WV Route 75/US Route 52.[8]

Figure 4 – Airport Environs



Prepared by: Kimley-Horn and Associates

2.3 Local and Regional Development

According to West Virginia University's *2016 West Virginia Economic Outlook*, the economic health of the state has been struggling since 2012 due in large part to the downturn of the coal and natural gas industries. This has manifested into decreased construction activity, higher unemployment, less

[7] FEMA Flood Map Service Center, FIRM Panels 50499C0015C, 50499C0060C, accessed 8/24/16, https://msc.fema.gov/portal/search#searchresultsanchor

[8] Tri-State Airport Master Plan Study, CHA, Inc., 2014

commercial investment, and reduced state tax revenues and operating budgets. While this situation is projected to gradually improve in the coming years, major development within the region is anticipated to remain slow.

Several agencies and organizations within the region, including some of those on the steering committee, are working to reverse those trends and are promoting development opportunities to a wide audience of business and market sectors. Two regional commercial/industrial sites that have recently been developed and are the focus of much of this promotion include the Heartland Intermodal Gateway (aka. Prichard Intermodal Facility) and Kinetic Park. Heartland Intermodal Gateway is located approximately 14 miles south of the Airport along US 52 and provides industrial and warehouse development space with direct maritime, rail and roadway intermodal connections. Kinetic Park is high-tech business park located approximately 12 miles northeast of the Airport along I-64. The site accommodates numerous businesses, including an Amazon service center, multiple hotels and a variety of supporting services. With the July 2016 opening of a 106-room Fairfield Inn, the park is almost entirely leased. Maintaining efficient and reliable access between these facilities and the Tri-State Airport will be mutually beneficial and of importance to the public and business communities at large.

Based on input from the steering committee, the following local development projects are underway and are within 3 miles of the Airport. Access between these developments and the Airport are also of importance to the traveling public and local businesses.

- New visitor's center being developed near the I-64/US 52 interchange
- New hotel being developed near the I-64/US 52 interchange
- Expansion of the Veteran's Affairs Hospital located on Spring Valley Drive

2.4 Local and Regional Transportation Plans

US 52 is considered a *major arterial*[9] roadway providing regional mobility and linking the industrial communities along the Ohio and Big Sandy Rivers such as Huntington, Ironton, Coal Grove and Prichard/Heartland Intermodal Gateway. The 2040 KYOVA Metropolitan Transportation Plan (MTP) identified several recommended improvements to widen US 52 from Kermit, WV to Ceredo, WV to support this function. Within this and other KYOVA and WVDOT planning studies, US 52 is positioned is a freight corridor for the movement of goods throughout the region. This corridor is designated as part of the proposed I-73/I-74. With FedEx ground and air freight facilities located at the Airport, maintaining reliable, efficient and safe access between US 52 and the Airport is essential.

[9] 2040 Metropolitan Transportation Plan, KYOVA, 2013

The 2040 KYOVA MTP also identified several other recommended roadway projects to improve multimodal connectivity to the Airport. These include:

- A new 2-lane connector between US 52 and the north side of the Airport (Project WR15). This project is envisioned to provide an alternate entry point to better serve intermodal freight connections and help separate commercial traffic from passenger traffic.
- Widening of Docks Creek Road/CR8 (Project WR10) and Darling Lane (Project WR11) to provide better access between US 52 and the commercial facilities on the south side of the Airport.
- Widening of Walkers Branch Road (Project WR14) and Goodwill Road (Project WR16) from I64 in Ceredo to Spring Valley Drive just east of the Airport. This is intended to relieve congestion along Walkers Branch Road and provide improved multimodal connectivity and alternate access routes to the Airport.

The KYOVA 2016-2019 Transportation Improvement Program (TIP) identified 12 projects for US 52 within Wayne County including several resurfacing and widening improvements.[10] The widenings are programmed for construction in 2020 or beyond.

The 2008 KYOVA Freight Planning Study focused on improving goods movements in a cost-efficient, time-sensitive and reliable way. It stressed the importance of freight mobility and strengthening the relations between transportation and economic development. It also described the importance of improving the "last mile" connection to other modes.[11] This last mile concept is directly relevant to maintaining access between the FedEx air freight facilities and the other modes of transportation within the region.

The West Virginia Public Port Authority Statewide Strategic Port Master Plan (Parsons Brinkerhoff, April 2012) identified the Huntington-Prichard area as a strategic focal point for potential commercial/industrial site development due to its broad base of logistics and transportation assets (e.g. two Class I railroads, the M70 Marine Highway, the Tri-State Airport and the Heartland Intermodal Gateway). The plan specifically noted the Tri-State Airport as a key site. This plan also recommended the widening of US 52 between Prichard and the Airport to accommodate truck traffic, reduce congestion, and enhance safety for all vehicles using US 52. The report noted bottlenecks occurring on US 52 at Airport Road due to the intermingling of FedEx and airport passenger traffic.

[10] Transportation Improvement Program FY 2016-2019, KYOVA, April 2015, http://www.kyovaipc.org/KYOVA-2016_2019_TIP_FINAL.pdf

[11] 2040 Metropolitan Transportation Plan, KYOVA, 2013

The 2040 Ashland Area Metropolitan Transportation Plan[12] includes the objective of "Providing efficient truck routes that would relieve congestion, improve mobility and access to intermodal operations and facilities while promoting safe and efficient movement of freight via the highways, airport and rail system." Promotion of this objective would come in the form of supporting the maintenance and improvement of airports within the region.

2.5 Airport Development Plans

The Tri-State Airport Authority's mission is to:

> "plan, operate, maintain, develop and promote a premier air transportation facility in the best interest of the citizens of the Tri-State Region. We shall strive to provide and improve commercial air service and other aeronautical and related services essential to the economic develop and vitality of the community; and to be the preferred airport both business and leisure travelers"[13]

As mentioned previously, the Authority has continually been improving its facilities to safely and efficiently serve the traveling public and move goods and merchandise. These improvements have been supported by the FAA, WVDOT, and the partnering communities and organizations of the Tri-State Airport Authority as listed below:

- City of Huntington
- City of Ashland
- City of Kenova
- Town of Ceredo
- Village of Barboursville
- Cabell County Commission
- Wayne County Commission
- Lawrence County Commission
- Lawrence County Economic Development Commission
- Boyd County Fiscal Court
- Huntington Regional Chamber of Commerce
- Huntington Area Development Council
- Ashland Alliance
- Northeast Industrial Authority
- Scioto County Economic Development Corporation.

With a focus on meeting the commercial air transportation needs and operational requirements of the passenger and cargo airlines, the primary runway was extended to its current length in 2010. Just prior

[12] Ashland Area MPO 2040 Metropolitan Transportation Plan, FIVCO Area Development District, July 2013

[13] Tri-State Airport Master Plan Study, Executive Summary, CHA Consulting, March 2014

to that, to ensure long-term financial sustainability of the Airport, a smaller crosswind runway was closed and converted to a taxiway thereby freeing up an approximate 95 acres of prepared land on the south side of the Airport for commercial development. These 95 acres are envisioned to accommodate a mix of aviation, non-aviation, commercial and light industrial type businesses. As of 2016, the Authority is working with the WVDOT, the City of Huntington, and Cabell and Wayne Counties to extend utilities to the site. This site, and the Airport in general, are being marketing through various channels as the Tri-State Aeroplex.[14]

In 2009, KYOVA in conjunction with the Airport Authority, the Tri-State Chamber Coalition, and WVDOT prepared an Intermodal Transportation Planning Study for HTS.[15] This study evaluated the regional needs and provided recommendations on the development of an intermodal facility at the Airport. The Study relied heavily on stakeholder and public participation. This study found that there were deficiencies in the ability of HTS to provide adequate public parking, ADA compliant and passenger friendly pedestrian access to the terminal, and multi-modal access to Downtown Huntington. These in turn adversely impact the utility of the Airport and the economic competitiveness of the region. The resultant near-term recommendations included developing an auxiliary paved public parking lot where the current un-paved overflow lot is. Due to the extreme slopes surrounding the terminal area, it became apparent that a structured intermodal facility/public parking garage located in the current paved parking lot, with improved vehicular and pedestrian circulation, was the only solution to meet the Airport's long-term needs, goals and objectives.

The Airport Authority completed a Master Plan Update in 2014 that presents a long-term development strategy for the various functional areas of the Tri-State Airport. The plan was developed with the help of a steering committee that included the FAA, KYOVA, WVDOT, the airlines, county planning departments, tenants, service providers, and regional economic development organizations. The general public was invited to committee meetings and presentations at multiple points during the study process. To meet the anticipated growth in passenger enplanements (up to 2.5% average annual growth rate through 2030) and the changing needs of the airline business models (i.e. low-cost carriers, route consolidation, upscaling aircraft size), recommended improvements focused heavily on the terminal area, automobile access and parking, south side commercial development and aeronautical support facilities. More specifically the Master Plan identified the following deficiencies and needs:

- Rehabilitation and expansion of the passenger terminal building. Multiple interior rehabilitation and mechanical system replacements have been performed over the last few years. Expansion

[14] Tri-State Airport website, accessed 8/26/16, http://www.tristateairport.com/tri-state-aeroplex

[15] Huntington Intermodal Transportation Planning Study, KYOVA, October 2009, http://www.kyovaipc.org/default.php

and reconfiguration is still needed to accommodate passenger volumes, provide jet-bridge aircraft loading, and provide additional apron space for the aircraft to meet FAA standards.

- Additional public, employee, and rental car parking needed to accommodate passenger volumes. Recommendations are consistent with 2009 KYOVA intermodal study including a paved auxiliary lot, structured parking garage that connects via walkways to the passenger terminal, pedestrian improvements, commercial vehicle and curbside circulation improvements, and expanded rental car facilities.
- Additional roadway access to the terminal area to accommodate passenger volumes, reduce congestion, separate tenant and freight traffic from passenger vehicle traffic, and centralize public parking within the "loop road" to reduce pedestrian crossing of an active roadway (i.e. Airport Road).
- Develop an intermodal facility in conjunction with the parking garage and terminal expansion to provide improved passenger processing and amenities, accommodation of bus/shuttle/taxi/transportation network carrier connections, and expanded leasable commercial/office space.
- Relocation of general aviation facilities (e.g. aircraft storage hangars and associated service providers) to the south side of the Airport (i.e. South Side) to segregate commercial and personal aircraft type activities and provide expansion space for commercial development and support facilities on north side of the Airport nearer the terminal.
- Airfield improvements including improved taxiway geometry and grading to meet FAA standards.

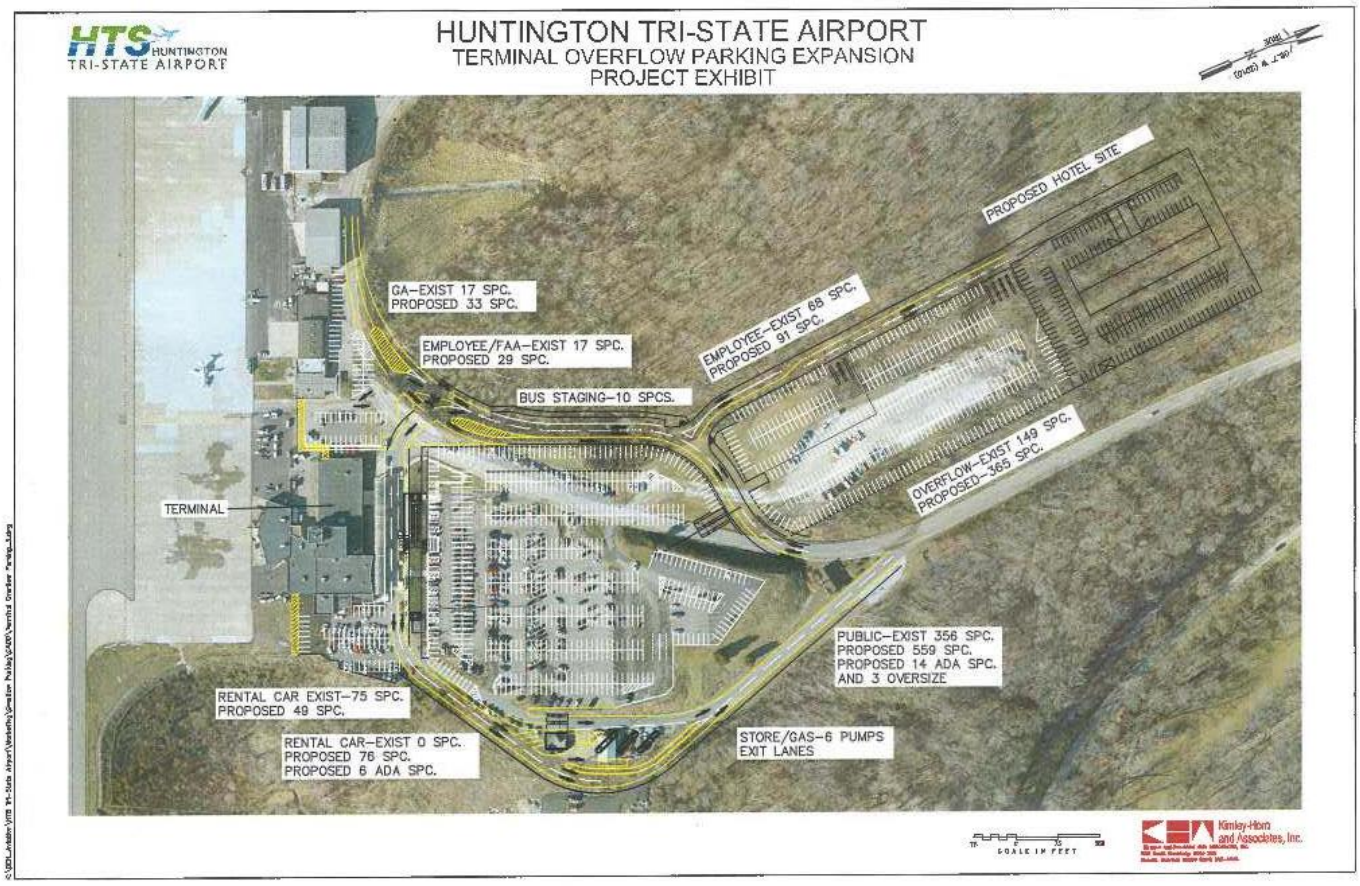
These improvements were depicted on the official Airport Layout Plan (ALP) that was approved by the FAA at the end of the master planning process in 2014. Approval of the ALP indicates that the FAA has determined the plan to be consistent with the safety and design standard requirements of the agency. While such an approval does not obligate federal funding support, it does allow any eligible elements of those recommended improvements to compete/apply for federal funding support under the Airport Improvement Program (AIP) or Passenger Facility Charge (PFC) Program. Eligible projects seeking federal funding must also comply with the requirements of the National Environmental Policy Act (NEPA). The executive summary of the 2014 Master Plan is provided in **Appendix A**. It should be noted that these improvements are also reflected in the KYOVA 2040 MTP.

While these planning efforts have consistently identified needed improvements in public automobile access, circulation and parking at the Airport, the implementation of those improvements has been slowed due to available funding. With much of the terminal building, commercial apron and roadway infrastructure having been built in the 1950s and 1960s, maintenance and repair of those facilities have consumed much of the Airport's available budget. In 2016, there were active rehabilitation projects in the terminal and apron, and multiple repair projects on the "loop road" and the "western hangar road."

To advance the needed parking, intermodal and roadway projects, KYOVA and the Authority pursued grant funding from the Transportation Investment Generating Economic Recovery (TIGER) and Transportation Community and System Preservation (TCSP) programs in 2011, 2012 and 2014. Unfortunately, these pursuits were not successful as other transportation projects in the region were deemed higher priority. As the need for these Airport improvements continue to grow, commensurate with increasing passenger and cargo activity, it is likely the Authority will continue pursuing these and other funding opportunities to further the planning, design and eventual construction of those needed facilities.

One such effort to better define these projects and build upon the previous facility planning, was a 2015 preliminary engineering concept for a parking lot expansion that included public, rental car and employee spaces along with a partially realigned access/loop road. This concept is depicted in **Figure 5**.

Figure 5 – Preliminary Parking Expansion Concept (2015)



Source: Kimley-Horn and Associates, June 2016

2.6 Existing Airport Access Roadway Characteristics

Airport Road (also known as Tri-State Airport Access Road and County Highway 32) extends approximately 1.7 miles from US 52 to a point near the Airport passenger terminal. It also provides access to residences, business, and intersects with local collector roads Broad Hollow Road, Crescent Drive, Cole Branch Road, and Walkers Branch Road. This is a state maintained roadway until its terminus near the west end of the passenger terminal. At this point, there is an intersection where vehicles can turn right onto the Airport maintained "west hangar road" or turn left onto the Airport maintained "loop road." The paved and overflow parking lots are accessed directly from Airport Road. The west hangar road is bi-directional and serves the general aviation facilities, several aircraft storage hangars, the FedEx Air Freight facility, the Airport fuel farm, various Airport maintenance and equipment storage buildings, and an FAA radio transmitter facility. The loop road is one-way only and passes the terminal curbside where personal and commercial vehicles pick-up and drop-off passengers. It then circulates to the existing rental car ready-return lot and service facilities before connecting back with Airport Road where vehicles can either exit the Airport or return to parking or the terminal curbside. These roadways are depicted in **Figure 6**.

Airport Road is a 2-lane undivided shoulder roadway typical section with a dedicated right turn lane at the US 52 intersection and climbing lane in the steep grade portion of the roadway approaching the airport. It has a posted speed limit of 45 miles per hour. There are posted 30 mph, 35 mph, and 40 mph Speed Advisory signs at horizontal curves along the alignment. The roadway profile grade approaching the airport approaches a maximum grade of 8.9%. The roadway traverses mountainous terrain with steep fill slopes (2:1 or steeper) and near vertical rock cut sections. Steel guardrail is provided along the steep fill sections. A "Falling Rock" warning sign is located along the corridor and there is a maintenance history of rock slides and temporary road closes due to slides. While field survey was not available the existing lane width is generally 9'-10' wide with approximately 2' of paved shoulders along portions of the alignment. As depicted in **Figure 7**, the shoulders are mostly unpaved on the steep section between the FedEx Ground facility and the Airport parking lots.

Figure 6 – Existing Airport Access Roadway

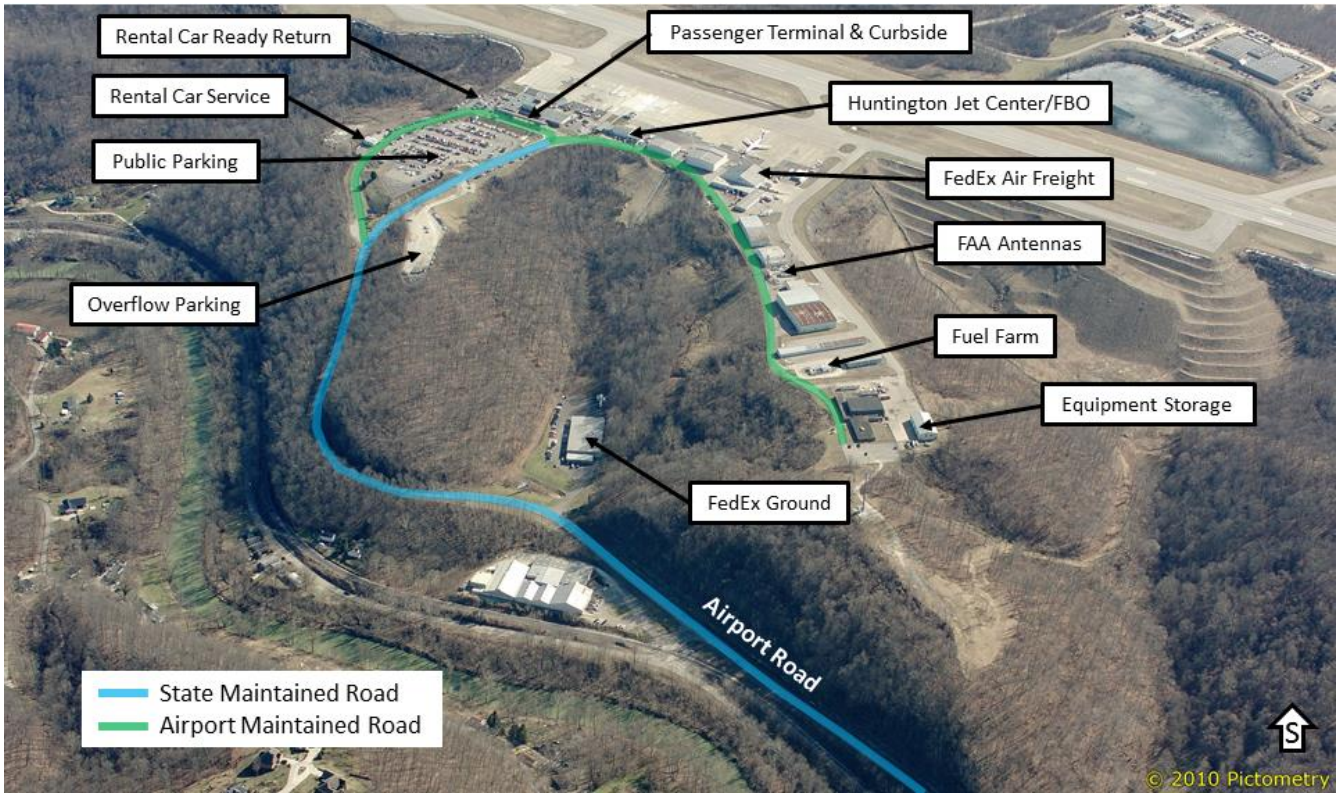
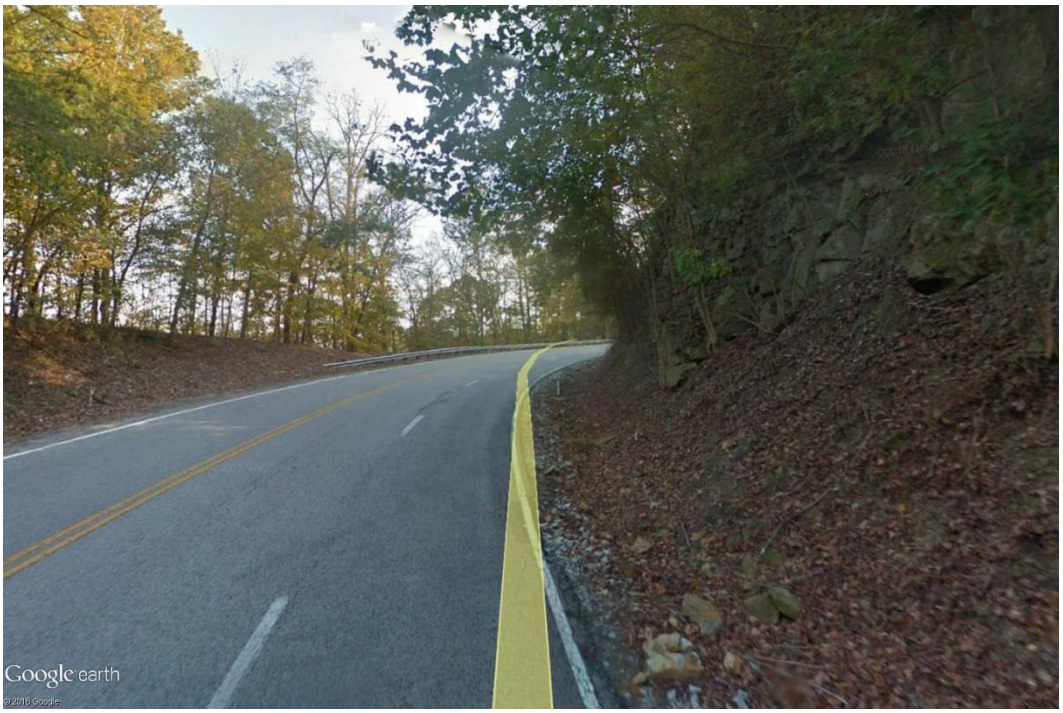


Figure 7 – Airport Road (east of FedEx Ground heading uphill to the Airport)



2.7 Existing Roadway Traffic

Twenty four-hour traffic count data was obtained for a seven-day period in July 2016 at several stations along Airport Road from US 52 to the passenger terminal. The summer months represent the peak travel season at HTS with other peaks occurring during holidays. The traffic data indicates an annual average daily traffic (AADT) volume of approximately 3,300 vehicles circulating to, and through, the terminal area roadways.

2.8 Environmental Overview

As an airport that receives federal funding support, any development on Tri-State Airport property must adhere to the requirements of NEPA regardless of how the project is funded. The FAA, Federal Highway Administration (FHWA), and WVDOT all have different environmental review and approval processes that will need to be coordinated for any future roadway, parking or intermodal facility development projects. **Table 1** provides a brief review of the known environmental resources and conditions that exist on and near the Airport – particularly in the vicinity of Airport Road. The list of environmental topics is consistent with guidance contained in FAA Order 5050.4B *NEPA Implementing Instructions for Airport Projects* and FAA Advisory Circular 1050.1F *Environmental Impacts Policies and Procedures* and may not be applicable to all agencies. It should be noted that as of August 2016 the Authority is underway with a programmatic Environmental Assessment to evaluate the potential impact of several near-term improvement projects recommended in the 2014 Master Plan. That study will provide a more detailed evaluation of resources in the area, and further field investigation may still be needed to confirm limits or status of those resources relevant to any development recommendations that may arise from this Access Road Study.

Table 1 – Preliminary Environmental Resource Inventory

Environmental Resource	Status
Air Quality	According to the US Environmental Protection Agency (EPA) Green Book, Wayne County is in attainment for most criteria pollutants. This considers the recent revocation of the 1-hour (1979) and 8-hour (1997) ozone standards and the revised 2006 2.5-micron particulate matter standard. Wayne County is a maintenance area for the 1997 2.5-micron particulate matter standard. However, a determination of insignificance was established for on-road mobile sources, meaning the area is not subject to transportation conformity analysis. https://www3.epa.gov/airquality/greenbook/

Noise	The 2003 Airport Master Plan found no significant impact to surrounding land uses caused by aircraft noise generated at the Airport. No new noise analysis has been performed since and land uses surrounding the Airport have not significantly changed. The nearest places of worship, hospital (Veterans Affairs Medical Center), and schools are located along Spring Valley Drive to the east of the Airport. If FHWA funding or approval becomes needed for any proposed roadway improvements, adherence to 23 CFR Part 772 noise evaluation requirements for Type I, II or III projects would be required.
Coastal Resources	West Virginia does not participate in the National Coastal Zone Management Program and due to its location has little ability to impact coastal resources. https://coast.noaa.gov/czm/mystate/
Section 4(f) and 6(f) Properties	There are no known publicly owned parks, recreation areas, or wildlife refuges of national, state or local significance within the vicinity of the Airport. Camp Mad Anthony Wayne, maintained by the Greater Huntington Park and Recreation District is located ±2 miles east of the Airport along Spring Valley Road. The Beech Fork Lake Wildlife Management Area is located ±8 miles to the southeast of the Airport, east of WV Route 175.
Prime Farmlands	According to the U.S. Natural Resource Conservation Service (NRCS) Web Soil Survey, much of the Airport property and the Airport Road corridor are not classified as prime farmland. There are, however, pockets of farmland of "statewide importance" and "local importance" along the low-lying areas in this vicinity. Areas classified as "prime farmland" exist along Route 75 to the south, and north of Twelvepole Creek. Based on local observations, none of the areas along Airport Road or on Airport property are in active crop production. http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm
Biotic Resources and Endangered Species	According to West Virginia Department of Natural Resources (DNR) there are 17 Federally Endangered and 7 Federally Threatened species known to exist in West Virginia. According to the U.S. Fish and Wildlife Service (FWS) Wayne County has limited known habitat potential to accommodate Federally listed terrestrial species. The Ohio River, which borders Wayne County to the north, does have the potential to accommodate Federally listed aquatic species. All forested areas in the state are also considered potential summer habitat for the listed Indiana and northern long-eared bats. There are also numerous rare and state listed endangered and threatened species that are tracked by the state's Wildlife Diversity Program. Further agency coordination and field investigation would be needed to evaluate the potential for any of these species to exist within

	proximity to the Airport. https://www.fws.gov/endangered/, https://www.fws.gov/westvirginiafieldoffice/speciesinfo.html, http://www.wvdnr.gov/Wildlife/RareSpecList.shtm
Floodplains	According to the Federal Emergency Management Administration (FEMA), the closest floodplain to the Airport and Airport Road is associated with Twelvepole Creek and those limits remain north and east of the Norfolk-Southern Railroad line with a base flood elevation of 531 feet MSL. https://msc.fema.gov/portal/search
Hazardous Materials	According to the U.S. Environmental Protection Agency (USEPA) Envirofacts website, there are multiple facilities or sites in the vicinity of the Airport that could contain hazardous material concerns as indicated by their listing in the Resource Conservation and Recovery Act (RCRA) database. These include sites along Airport Road, along the west hangar road, the National Guard facility on the south side of the Airport, and the hazardous materials storage facilities on the Airport itself (i.e. lubricants, solvents and deicers). Further investigation would be needed to confirm the current status of these sites and the potential for future development to disturb any areas of contamination. https://www3.epa.gov/enviro/
Wetlands and Waters of the US	According to the U.S. Fish and Wildlife Service (FWS) Wetland Inventory, surface waters are known to exit north of the Airport (Twelvepole Creek), east of the Airport (Walkers Branch and other unnamed tributaries), and south of the Airport (Dock Creek and Miller Creek). Two unnamed tributaries to Twelvepole Creek also cross under Airport Road at approximately Broad Hollow Road and Cole Branch Road. Isolated pockets of wetlands may also exist along these tributaries. Further field investigation would be required to confirm. https://www.fws.gov/wetlands/Data/Mapper.html
Environmental Justice	Tri-State Airport is located in census tract #204. According to the US Census Bureau 2014 Population Estimates, tract 204 has an approximate minority population of 3.0% compared to Wayne County at 2.2% and the state of West Virginia at 7.3%. The percentage of families below the poverty level in tract 204 is 13.0% compared to the county at 15.7% and the state at 13.1%. https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml
Water Quality	National Pollutant Discharge Elimination System (NPDES) permits are required for all point-source stormwater runoff from industrial activities including those related to aircraft activity at an airport. According to the WV Department of Environmental Protection (DEP) the ongoing operation of Tri-State Airport is covered under the Multi-Sector General WV/NPDES

	Water Pollution Control Permit for Stormwater Discharges Associated with Industrial Activity (WV0111457). Prior to 2009, the Airport maintained an individual NPDES permit for ongoing activities (WVG610051). http://www.dep.wv.gov/WWE/Programs/stormwater/Pages/sw_home.aspx
Cultural and Historic Resources	Previous environmental investigations have not identified any resources on Airport property. Due to its age and previous use, the old Armory/RJ Corman building was noted as an item for further review. Further coordination with the State Historic Preservation Office would be needed
Wild and Scenic Rivers	According to the National Wild and Scenic Rivers System, only 10 miles of the Bluestone River in West Virginia are designated as wild and scenic. The Bluestone River is located in Mercer County, WV which is over 100 miles to the southeast of the Airport. https://www.rivers.gov/west-virginia.php

Sources: Various online databases and previous reports, Kimley-Horn, September 2016

3 Purpose and Need

The Huntington Tri-State Airport is the second busiest commercial service airport in West Virginia and contributes over $50 million of economic impact to the region annually. Passenger and cargo traffic have been increasing and are projected to continue increasing over the foreseeable (i.e. approximate 10-year planning horizon). There are deficiencies in the existing Airport infrastructure including vehicular access and circulation to the public passenger terminal and commercial facilities on the north side of the Airport. Improving the roadway network will allow the Airport to function reliably and efficiently, thereby sustaining its contribution to the region and local communities as well as enhancing safety and customer service for the traveling public.

Based on previous planning studies, the evaluation of existing conditions, and stakeholder and steering committee input, a *purpose and need statement* for improving roadway access to the Airport was prepared to guide future project development efforts, including design and environmental approval/permitting activities. The purpose and need statement explains why an expenditure of public funds is warranted and provides the foundation for the development and evaluation of reasonable improvement options.

> **The purpose of the proposed project is to improve automobile access, safety and circulation at the Tri-State Airport.**

The following needs have been identified:

Improve Access – Airport Road is the only access to the passenger terminal, cargo facilities, commercial businesses and support facilities at the Airport. Much of the roadway abuts a steep face that was cut

into the terrain and there have been incidences when rock or tree falls or vehicular accidents have blocked access to and from the Airport. According to Airport personnel, debris in the roadway has been occurring more often in the past few years, with increasing driver complaints. During events like these, passenger travel and cargo shipments can experience costly delays that not only impact the Tri-State Airport and local businesses, but also impact downstream receiving facilities. A secondary access route would minimize the potential for disruption of passenger travel and cargo shipments thereby enhancing the reliability and resiliency of the public airport facilities.

Improve Safety – The existing single access roadway is used by a mix of personal and commercial vehicles including FedEx cargo and fuel delivery tractor-trailer trucks. Passenger traffic arriving at the Airport is usually preoccupied with finding parking, navigating the curbside drop-off, checking luggage, getting through security and not missing their flight. The larger commercial vehicles have less maneuverability and are typically operating on a tight delivery schedule as well. A secondary access road would allow for the segregation of passenger cars from the cargo type vehicles that need access to the facilities along the west hangar road. This would reduce the potential for incidents or collision between these differing user groups and vehicle types.

Additionally, if the roadway grades were reduced below the existing 8.9%, the margin of operational safety, particularly for the tractor-trailer vehicles on the down-hill lanes during inclement weather, would also be enhanced. This is especially relevant for FedEx vehicles traveling from the air-freight facilities to the ground-freight facilities which must navigate a 90-degree left-hand turn immediately following a descending curve along the steepest section of Airport Road. Airport staff have noted multiple instances where cargo trucks have slid off the roadway going downhill in the winter and several instances where they were unable to drive uphill. These most commonly occurred during the early morning prior to treatment of the roads and have resulted in freight delays, vehicle damage, and additional operating costs.

The existing two-way airport access road separates the main public parking lot and the unpaved overflow parking lot (which is proposed to be expanded and paved to accommodate passenger and employee parking needs). Due to the terrain constraints, this condition will likely remain as it highly infeasible that all needed surface parking could be accommodated within the loop road. This means that when the overflow lot is use, even with shuttle service provided, some level of pedestrian traffic will still be crossing Airport Road to access the terminal. Reducing commercial traffic along this section of roadway would enhance pedestrian safety.

Improve Circulation – In 2016, the peak periods of passenger airline activity occurred during the summer months and included the arrival and departure of two Allegiant flights and one American Airlines flight (6 flights total) between the hours of 10:00am and 12:30pm on Sundays and Thursdays. Assuming an 80% passenger load factor, this could result in over 550 passengers passing through the

Airport during those times. The vast majority of passengers at HTS rely on personal vehicles and rental cars as other mode options are currently limited. This peak passenger volume places a large number of vehicles on the loop road and Airport Road over a short time span. The loading and unloading of passengers along the current terminal curbfront can result in congestion that backs up to the parking lot entrances which can further impede commercial traffic heading to the facilities along west hangar road. Additional access, combined with the reconfiguration of portions of Airport Road and the public parking lots would help alleviate this peak period congestion and improve customer service.

4 Alternatives and Screening Process

During the first steering committee meeting, several overarching access themes were discussed including existing Airport and roadway infrastructure, the possibility of secondary connections to US 52, circulation between the north and south sides of the Airport, previous planning and ongoing development efforts, and terrain and funding challenges. From this meeting, it became evident that improving access to the Airport should focus, at this time, on extending Airport Road and developing a second connection between Airport Road and the terminal area, essentially creating a bi-directional loop that would provide route options and flexibility in managing traffic and separation of vehicle types. The possibility of creating a connection from Walkers Branch Road, east of the terminal area, was deemed infeasible due to the physical and usage characteristics of Walkers Branch Road and that circulation through the terminal area from the east would introduce an inefficient counter-flow situation.

4.1 Alignment Alternatives

Following the first steering committee meeting, and with additional KYOVA and Airport Authority coordination, seven access road alignment alternatives were developed. These alternatives were developed in accordance with the November 2014 West Virginia Department of Transportation Division of Highways Design Directives (DD) and the 2011 AASHTO Policy on Geometric Design of Highways and Streets. Each alternative was designed as a rural collector following DD-601. A 40 mph design speed was used with anticipated posted speed of 35 mph. The proposed typical section for each alignment alternative is a 3-lane shoulder section with two 12’ southbound lanes (upgrade), one 12’ northbound lane (downgrade), and 8’ shoulders on either side of the road. Beyond the shoulders, a standard 6’ wide ditch with a 4:1 foreslope was used where ditches were needed, and the section tied into the existing ground at 2:1 rate in cut sections and a 3:1 rate in fill sections.

Two of these alignments connect with Airport Road adjacent to the west side of the FedEx Ground facility, near the railroad crossing to Walkers Branch Road. The location of these connections is dictated by the elevation of the rail crossing which limits any alteration to the vertical alignment of Airport Road

in this area. The other five alternatives connect with Airport Road at a private driveway just east of Cole Branch Road. Based on terrain and the elevation difference between Airport Road and the terminal area, this is the next most practical location to connect with Airport Road. These five alternatives would, however, require the acquisition of approximately 14.5 acres of land directly adjacent to the Airport boundary and the relocation of three residences. This acreage estimate may vary pending any future field survey and confirmation of Airport and adjacent property boundaries.

The seven alternative alignments are presented in **Figures 8-14**. The opinions of probable cost for these alternatives are presented in **Table 2**. Please note these costs represent preliminary order-of-magnitude estimates for comparative purposes. Future engineering design will result in a refined and more accurate cost estimate for the preferred alignment.

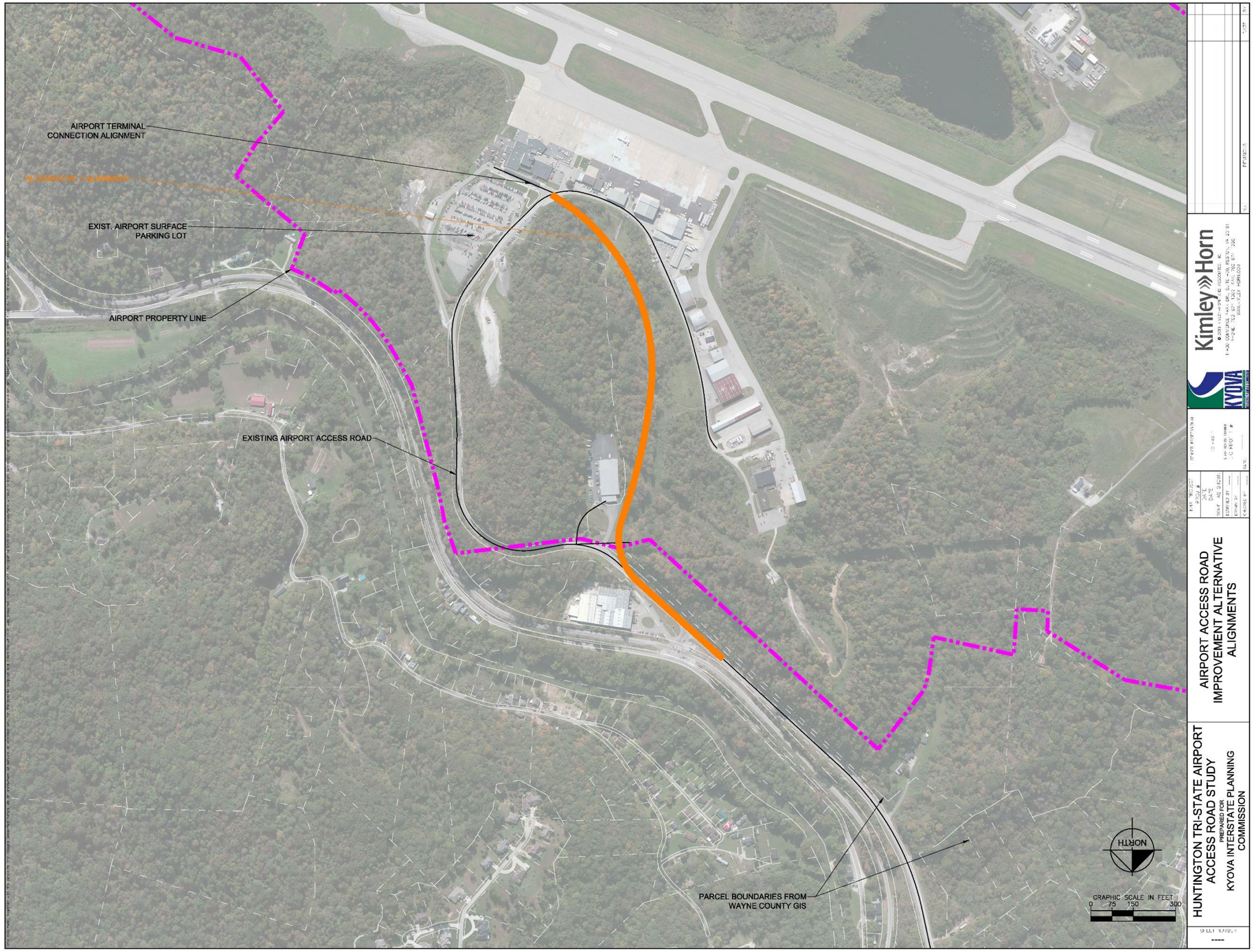


Figure 8 – Alternative Alignment #1

Description: New 3-lane roadway beginning with minor vertical alignment improvements of Airport Road near the railroad crossing to Walkers Branch Road, extending along the west side of the FedEx Ground facility, following general terrain with additional stabilization, and connecting back with Airport Road at an improved intersection at the west end of the terminal curbside and the west hangar road. Includes improvements to the intersection/entrance to the FedEx Ground facility.	
Length:	3,010 lf
Max Grade:	10.0%
Estimated Roadway Development Cost:	$19.4M
Property/ROW Acquisition:	none
Opportunity for Additional Development Space:	0.5 ac at ±$1.8M

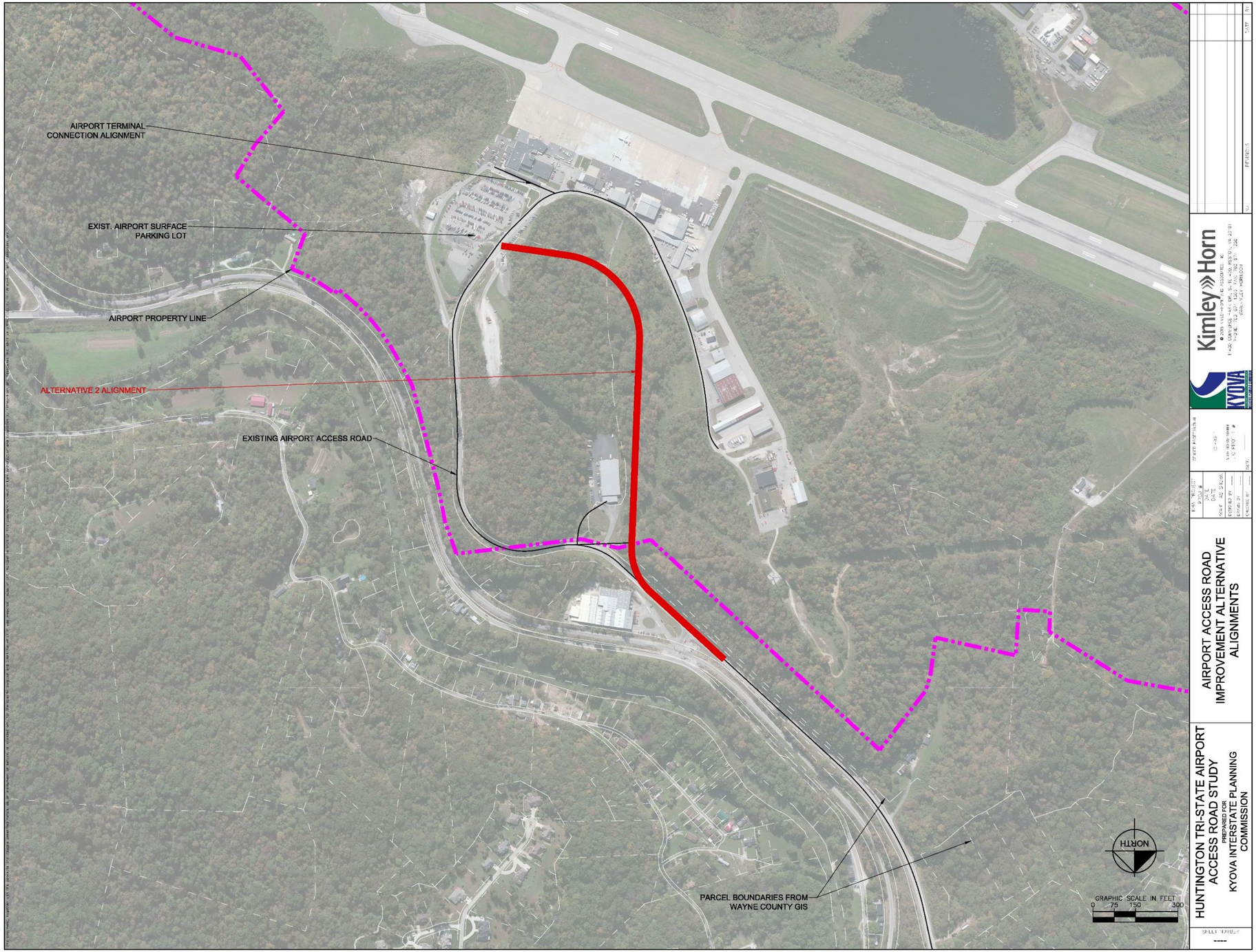


Figure 9 – Alternative Alignment #2

Description: New 3-lane roadway beginning with minor vertical alignment improvements of Airport Road near the railroad crossing to Walkers Branch Road, extending along the west side of the FedEx Ground facility, following general terrain with additional stabilization, and connecting back with Airport Road at a new intersection near the entrances to the main and overflow parking lots. This includes improvements to the intersection/entrance to the FedEx Ground facility.

This is essentially the same as Alternative #1 but connects with Airport Road at a lower elevation near the parking lots. Reconfiguration of the existing parking lot entrances would likely be needed and the intersection would be developed to align with, or support, future development of a parking garage/intermodal facility within the main parking lot.

Length:	2,993 lf
Max Grade:	9.9%
Estimated Roadway Development Cost:	$23.9M
Property/ROW Acquisition:	none
Opportunity for Additional Development Space:	0.5 ac at ±$1.8M

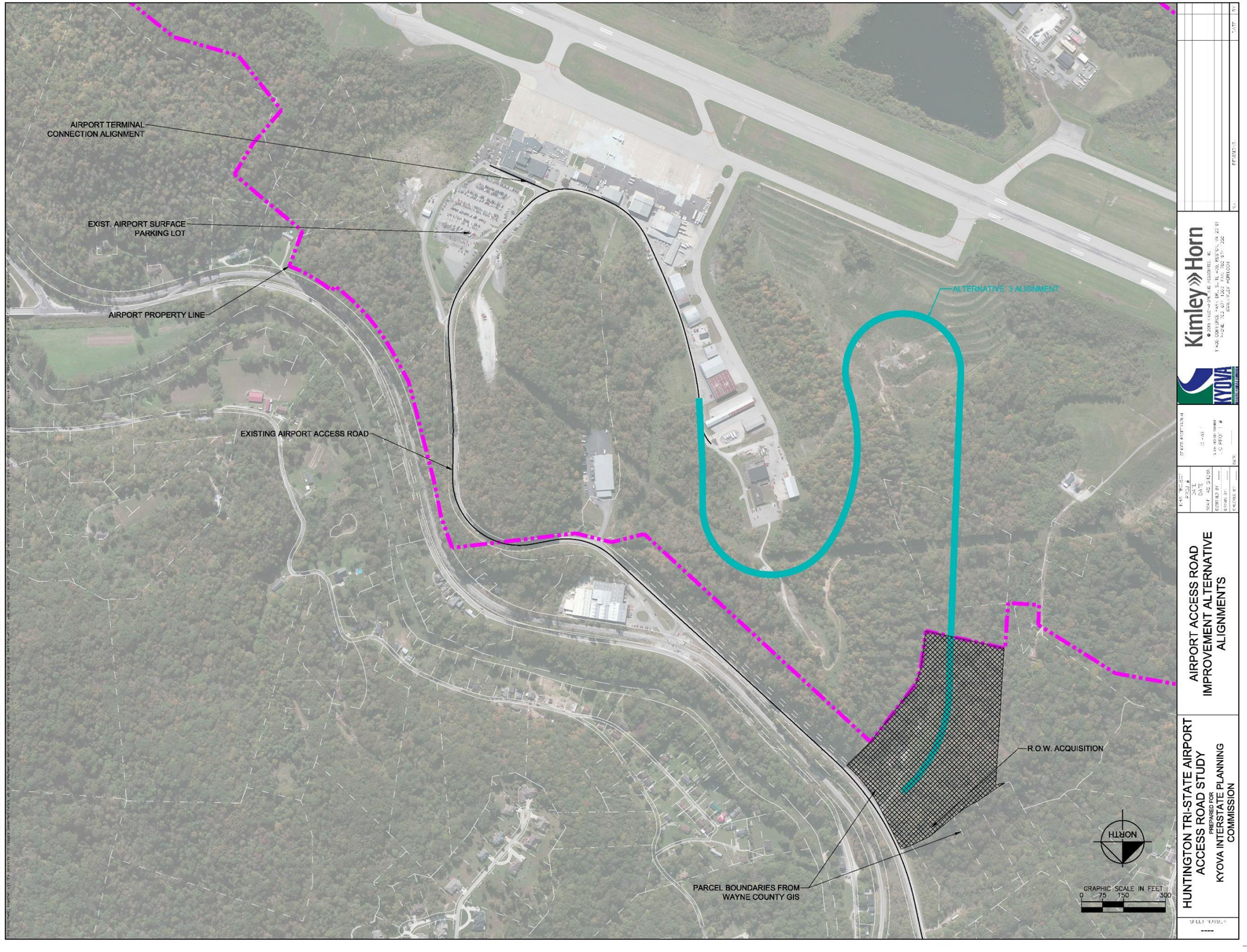


Figure 10 – Alternative Alignment #3

Description: This is essentially the concept depicted in the Airport Master Plan and Airport Layout Plan. It is a new 3-lane roadway beginning at a new T-intersection with Airport Road at a private drive just east of Cole Branch Road. To meet the elevation of the west hangar road, over 5,900 feet of roadway would be needed to maintain an acceptable gradient which results in long, tightly-curved road. Straightening the alignment would require moving the connection with Airport Road substantially to the west thus requiring significant right-of-way acquisition, tremendous amounts of terrain cut, and spanning numerous valleys/depressions.

For these reasons, this alternative is considered infeasible.

Length:	5,982 lf
Max Grade:	TBD
Estimated Roadway Development Cost:	$55.5M plus upgrade of the west hangar road
Property/ROW Acquisition:	±14.5 ac plus 3 residential relocations
Opportunity for Additional Development Space:	4.0 ac at $20.9M

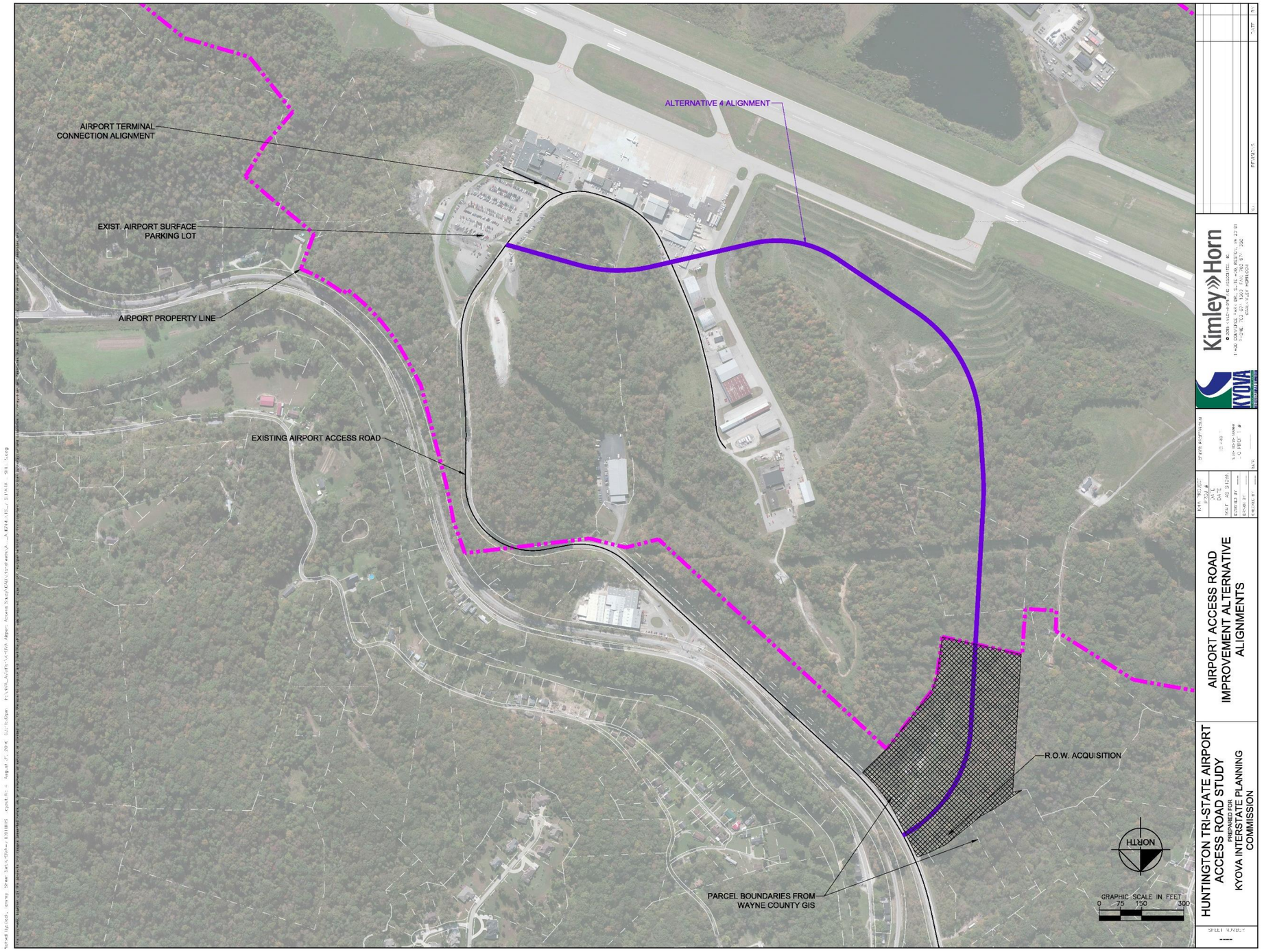


Figure 11 – Alternative Alignment #4

Description: This alignment began with the investigation of connecting into the west hangar road closer to the FedEx Air Freight facilities. As with Alternative #3, there is insufficient distance to meet the existing roadway elevation. Plus, the new roadway would bi-sect Taxiway F that provides access to several general aviation hangars. As depicted, this alternative then evolved into a cut-and-cover tunnel beneath Taxiway F and the west hangar road and then connecting back into Airport Road near the parking lot entrances (same as Alternative #2).	
Length:	5,540 lf
Max Grade:	6.3%
Estimated Roadway Development Cost:	$63.7M
Property/ROW Acquisition:	±14.5 ac plus 3 residential relocations
Opportunity for Additional Development Space:	±10.0 ac at ±$49.8M

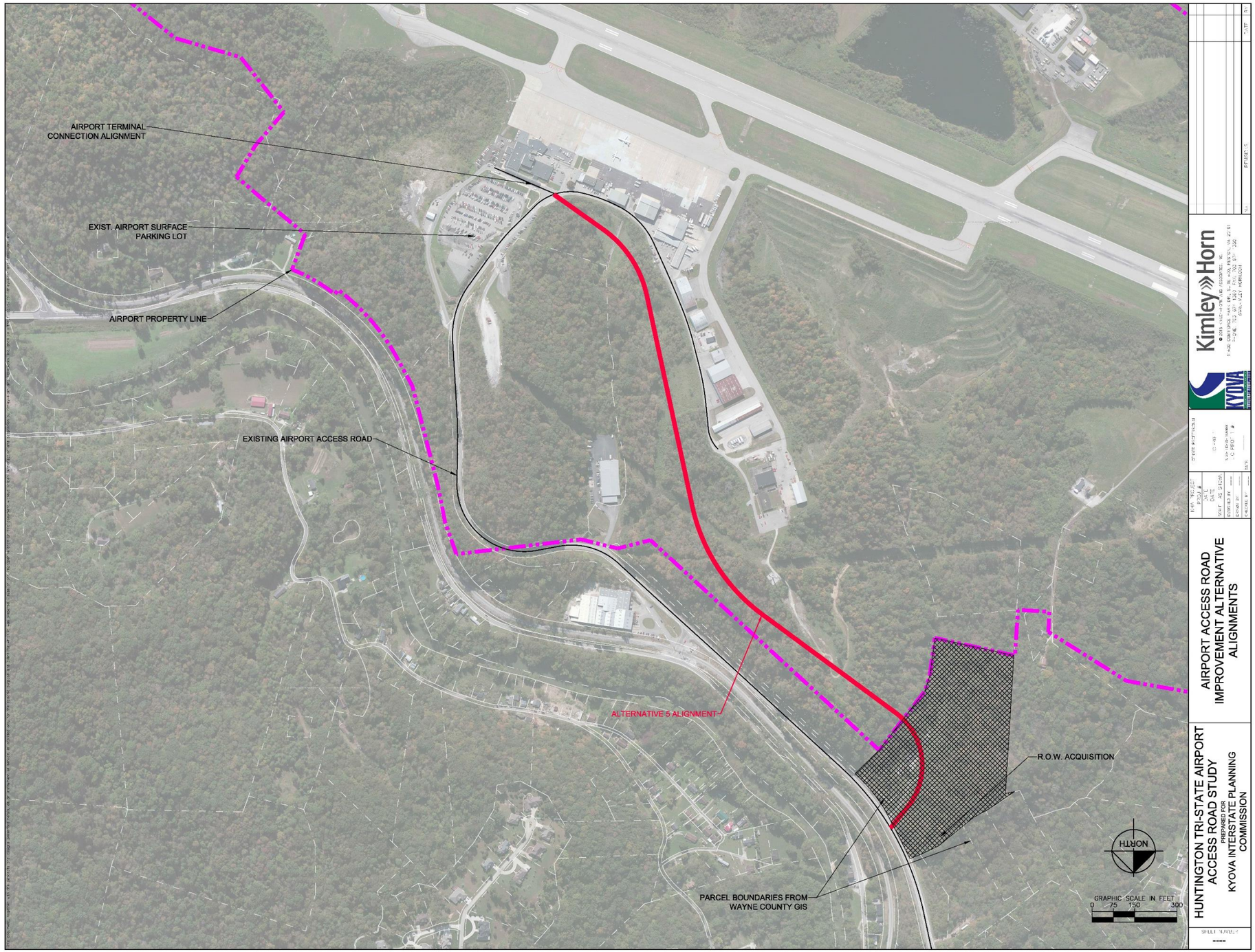


Figure 12 – Alternative Alignment #5

Description: New 2-lane roadway beginning at a new T-intersection with Airport Road at a private drive just east of Cole Branch Road. The roadway then climbs the terrain, with additional stabilization, parallel to Airport Road and then parallel to, but lower than, the west hangar road. As depicted, the alignment ends with an improved intersection at the west end of the terminal curbside and the west hangar road (same as Alternative #1) however the alignment could just as easily end with a new intersection near the parking lot entrances (same as Alternatives #2 and #4). The ancillary benefit of this alignment is that additional commercial development space along Airport Road could be developed and the material excavated for that space could be used as fill for stabilizing the remainder of the new roadway.

Length:	4,350 lf
Max Grade:	7.0%
Estimated Roadway Development Cost:	$61.1M
Property/ROW Acquisition:	±14.5 ac plus 3 residential relocations
Opportunity for Additional Development Space:	5.0 ac at ±$64.0M

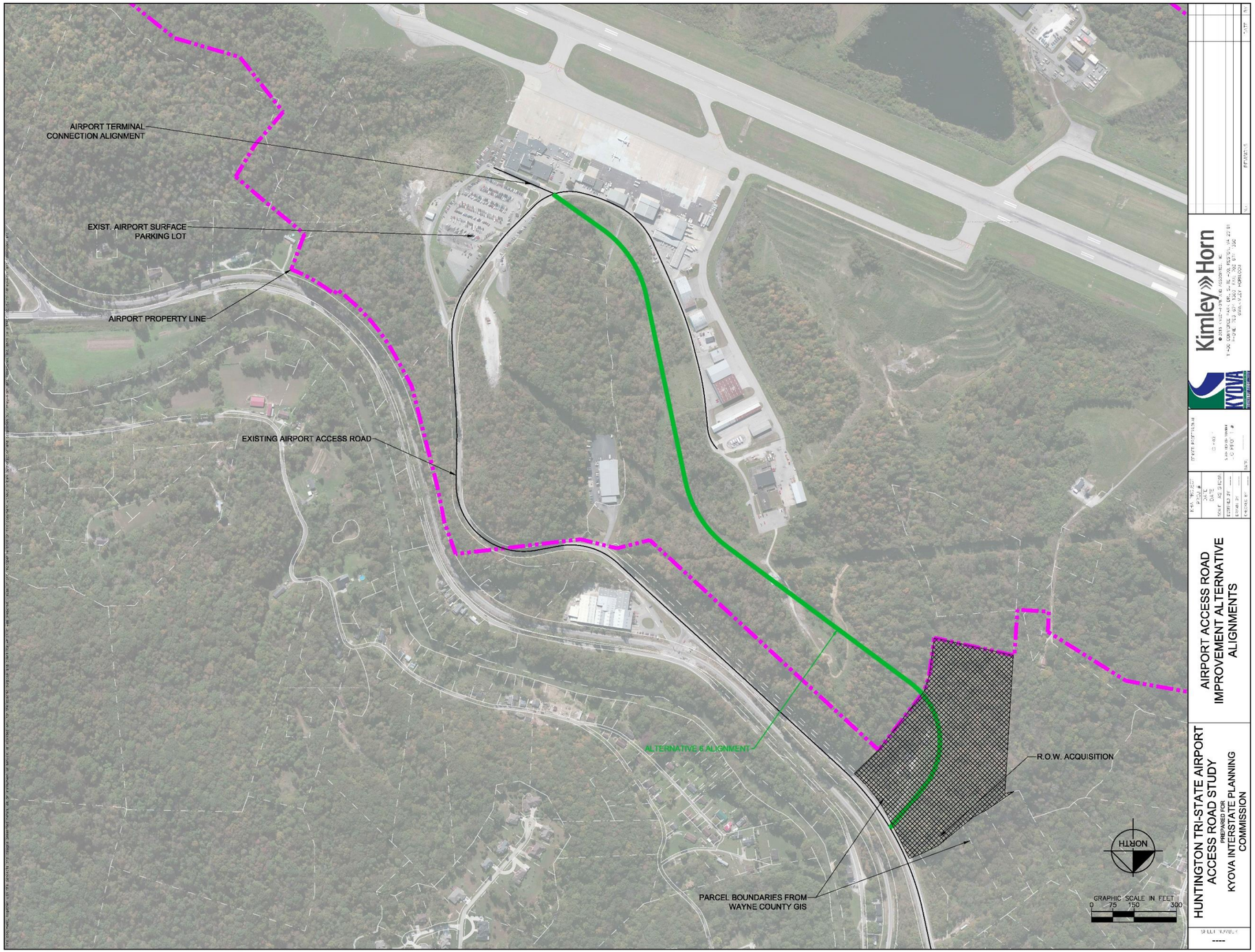


Figure 13 – Alternative Alignment #6

Description: This is essentially the same as Alternative #5 but offset further from Airport Road to provide additional development space.

This alternative includes a 2-lane roadway beginning at a new T-intersection with Airport Road at a private drive just east of Cole Branch Road. The roadway then climbs the terrain, with additional stabilization, parallel to Airport Road and then parallel to, but lower than, the west hangar road. As depicted, the alignment ends with an improved intersection at the west end of the terminal curbside and the west hangar road however the alignment could easily end with a new intersection near the parking lot entrances (same as Alternative #5). The ancillary benefit of this alignment is that additional commercial development space along Airport Road could be developed and the excavated material could be used as fill for stabilizing the remainder of the new roadway.

Length:	4,450 lf
Max Grade:	7.0%
Estimated Roadway Development Cost:	$70.4M
Property/ROW Acquisition:	±14.5 ac plus 3 residential relocations
Opportunity for Additional Development Space:	10.0 ac at ±$94.3M

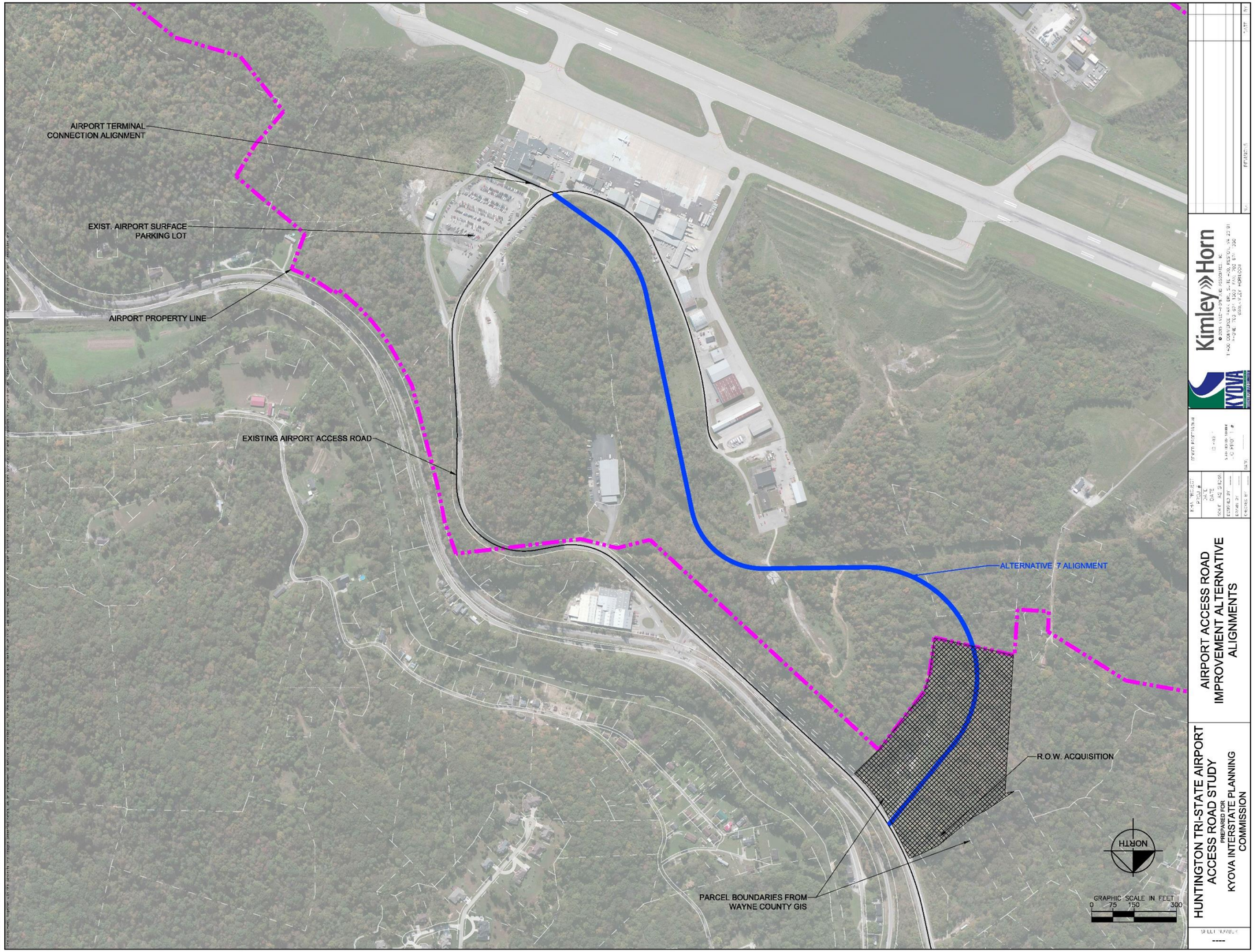


Figure 14 – Alternative Alignment #7

Description: This is similar to Alternatives #5 and #6 but the roadway along the terrain further from Airport Road to provide additional development space.

This alternative includes a 2-lane roadway beginning at a new T-intersection with Airport Road at a private drive just east of Cole Branch Road. The roadway then climbs the terrain, with additional stabilization, to a point where it can turn parallel to, but lower than, the west hangar road. As depicted, the alignment ends with an improved intersection at the west end of the terminal curbside and the west hangar road however the alignment could just as easily end with a new intersection near the parking lot entrances (same as Alternatives #5 and #6). The ancillary benefit of this alignment is that additional commercial development space along Airport Road could be developed and the excavated material could be used as fill for stabilizing the remainder of the new roadway.

Length:	5,020 lf
Max Grade:	7.0%
Estimated Roadway Development Cost:	$100.3M
Property/ROW Acquisition:	±14.5 ac plus 3 residential relocations
Opportunity for Additional Development Space:	22 ac at ±$73.8M

Table 2 – Opinion of Probable Cost for Alignment Alternatives

	Unit	Unit Cost	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6	Alternative 7
ROADWAY									
Roadway Construction									
Pavement	SY	$90	$ 1,090,000	$ 1,080,000	$ 2,160,000	$ 2,000,000	$ 1,040,000	$ 1,080,000	$ 1,210,000
Excavation for Road	CY	$75	$ 4,300,000	$ 8,200,000	$ 7,500,000	$ 14,400,000	$ 34,700,000	$ 42,500,000	$ 23,100,000
Borrow	CY	$50	$ 6,000,000	$ 5,400,000	$ 24,500,000	$ 20,000,000	$ 1,900,000	$ -	$ 38,100,000
Tunnel	LF	$3,000	$ -	$ -	$ -	$ 3,000,000	$ -	$ -	$ -
Retaining Wall	SF	$92	$ 750,000	$ 320,000	$ -	$ -	$ -	$ -	$ -
Drainage	%	8	$ 1,000,000	$ 1,200,000	$ 2,800,000	$ 3,200,000	$ 3,100,000	$ 3,500,000	$ 5,000,000
Misc. Construction	%	20	$ 2,400,000	$ 3,000,000	$ 6,900,000	$ 7,900,000	$ 7,600,000	$ 8,800,000	$ 12,500,000
Roadway Construction Subtotal			**$ 15,540,000**	**$ 19,200,000**	**$ 43,860,000**	**$ 50,500,000**	**$ 48,340,000**	**$ 55,880,000**	**$ 79,910,000**
Non-Construction Roadway Costs									
Utility Relocation	%	5	$ 600,000	$ 750,000	$ 1,710,000	$ 1,970,000	$ 1,880,000	$ 2,180,000	$ 3,120,000
R.O.W. Acquisition	ACRE	65000	$ -	$ -	$ 910,000	$ 910,000	$ 910,000	$ 910,000	$ 910,000
Engineering	%	16	$ 2,000,000	$ 2,400,000	$ 5,500,000	$ 6,300,000	$ 6,100,000	$ 7,000,000	$ 10,000,000
Contingency	%	10	$ 1,200,000	$ 1,500,000	$ 3,500,000	$ 4,000,000	$ 3,800,000	$ 4,400,000	$ 6,300,000
Non-Construction Roadway Costs Subtotal			**$ 3,800,000**	**$ 4,650,000**	**$ 11,620,000**	**$ 13,180,000**	**$ 12,690,000**	**$ 14,490,000**	**$ 20,330,000**
TOTAL ROADWAY COST			**$ 19,400,000**	**$ 23,900,000**	**$ 55,500,000**	**$ 63,700,000**	**$ 61,100,000**	**$ 70,400,000**	**$ 100,300,000**
ADDITIONAL DEVELOPABLE LAND	ACRE	-	0.5 ACRES	0.5 ACRES	4 ACRES	10 ACRES	5 ACRES	10 ACRES	22 ACRES
Add'tl Development Construction Costs									
Excavation for Development	CY	$75	$ 3,600,000	$ 3,600,000	$ 7,100,000	$ 7,100,000	$ 44,200,000	$ 65,200,000	$ 48,200,000
Borrow	CY	$50	$ (2,400,000)	$ (2,400,000)	$ 7,300,000	$ 27,300,000	$ -	$ -	$ 2,900,000
Drainage	%	4	$ 50,000	$ 50,000	$ 580,000	$ 1,380,000	$ 1,770,000	$ 2,610,000	$ 2,040,000
Misc. Construction	%	20	$ 300,000	$ 300,000	$ 2,900,000	$ 6,900,000	$ 8,900,000	$ 13,100,000	$ 10,200,000
Add'tl Development Construction Costs Subtotal			**$ 1,550,000**	**$ 1,550,000**	**$ 17,880,000**	**$ 42,680,000**	**$ 54,870,000**	**$ 80,910,000**	**$ 63,340,000**
Add'tl Development Non-Construction Costs									
Utility Relocation	%	2.5	$ 30,000	$ 30,000	$ 360,000	$ 860,000	$ 1,110,000	$ 1,630,000	$ 1,280,000
Engineering	%	8	$ 100,000	$ 100,000	$ 1,150,000	$ 2,750,000	$ 3,540,000	$ 5,220,000	$ 4,080,000
Contingency	%	10	$ 120,000	$ 120,000	$ 1,440,000	$ 3,440,000	$ 4,420,000	$ 6,520,000	$ 5,100,000
Add'tl Development Non-Construction Costs Subtotal			**$ 250,000**	**$ 250,000**	**$ 2,950,000**	**$ 7,050,000**	**$ 9,070,000**	**$ 13,370,000**	**$ 10,460,000**
TOTAL ADDITONAL DEVELOPMENT COST			**$ 1,800,000**	**$ 1,800,000**	**$ 20,900,000**	**$ 49,800,000**	**$ 64,000,000**	**$ 94,300,000**	**$ 73,800,000**
Cost per Acre of Additional Developable Land			$ 3,600,000	$ 3,600,000	$ 5,225,000	$ 4,980,000	$ 12,800,000	$ 9,430,000	$ 3,354,545
Additional Development Cost as Percentage of Roadway Cost			19%	15%	9%	8%	21%	13%	3%
COMBINED TOTAL COST			**$ 21,200,000**	**$ 25,700,000**	**$ 76,400,000**	**$ 113,500,000**	**$ 125,100,000**	**$ 164,700,000**	**$ 174,100,000**

Notes:

1. Cost opinion is based on preliminary concept design and is subject to change
2. Percentage (%) unit is calculated as a percentage of the Construction Subtotal
3. Pavement section assumed to be of 2" surface course, 4" intermediate course, 6" base course, and 8" subbase
4. Excavation and borrow quantities derived from Civil 3D models and 10% swell factor for excavated rock
5. Excavation quantities assumed to be all rock, excavated at a 1:1 slope
6. Negative borrow number indicates excess additional development cut used for roadway borrow
6. Tunnel cost from 2016 RS Means Heavy Construction Cost Data Book information for 20' Tunnel bore
7. Unit costs for Pavement, Excavation, Borrow, and Retaining Wall derived from West Virginia DOT 2015 Average Unit Bid Prices

Kimley-Horn and Associates, Inc. 7/14/2016

4.2 Evaluation and Preferred Alignment

These alternatives represent two distinct strategies for improving roadway access to the Airport's passenger and freight facilities. Alternatives #1 and #2, which both originate near the FedEx Ground facility, have a markedly lower development cost and require less earthwork than the alternatives that originate at the private drive. They also do not require the acquisition of any residential property. Unfortunately, these two alternatives do not improve the roadway gradient over existing conditions. The existing Airport Road has a maximum grade of 8.9% where Alternatives #1 and #2 would be approximately 10%. While a 10% grade is the maximum allowable for these roads with a design speed of 40 miles per hour, per the 2014 WVDOT Design Directives, this is of particular concern for freight vehicles that are already experiencing difficulties on the existing roadway.

Alternative #3 was an attempt to tie the access road extension into the existing North Hangar Road. The terrain and elevation change render this alternative impractical due to its length and the associated need to substantially improve and upgrade the existing North Hangar Road to accommodate the anticipated traffic and provide adequate separation from the buildings.

Alternatives #4 through #7 could achieve max grades or 7% or less, which is an improvement over existing conditions. While more costly, these four alternatives have the ancillary benefit of enabling the development of additional developable space within what is currently steep and unusable Airport property. This additional space could become commercially leasable property generating additional revenue for the Airport and further enhancing the economic vitality of the region. Such space, located in proximity to the public passenger terminal, is considered to hold strong value as it would likely be attractive for a variety of higher-traffic uses such as retail and lodging.

Based on the goals and objectives expressed by KYOVA, the Airport Authority, and the various stakeholders, ten evaluation criteria were defined to help compare the alternatives on their varied strengths and merits. This includes a cursory estimate of each alternative's benefit-cost ratio as determined from WVDOT's template analysis spreadsheet (refer to **Appendix B**). KYOVA, the Airport Authority and the consultant team independently ranked the alternatives on their ability to meet or support each of the criterion. The ranking values range from 1 equaling poor to 5 equaling excellent. The alternative with the highest resultant point value is considered the preferred alternative. The criteria and alternative rankings are presented in **Table 3.**

Based on this evaluation, Alternatives #1 and #2 score notably higher than the other alternatives. The main difference between the two is where the roadway connects into the terminal area which will need to be precisely determined during future design. With only 0.5 scoring points separating the two, these will be essentially considered the same preferred alignment.

Table 3 – Evaluation Criteria and Comparison of Alternatives

Evaluation Criteria	Alternatives						
	1	2	3	4	5	6	7
Road Gradient Max grade of new roadway is less than existing roadway (8.9%) thereby enhancing safety and efficiency for tractor-trailer vehicles	2.5 (10%)	2.5 (9.9%)	3 (<9%)	5 (6.3%)	4 (7%)	4 (7%)	4 (7%)
Community Disruption Residential relocations needed to provide roadway right-of-way	5 (none)	5 (none)	2 (three)	2 (three)	2 (three)	2 (three)	2 (three)
Roadway Development Cost Estimated total program cost for the roadway including design, permitting, property/ROW acquisition, construction, and construction services.	5 ($19.4M)	5 ($23.9M)	2.5 ($55.5M)	2 ($63.7M)	2 ($61.1M)	1.5 ($70.4M)	1 ($100.3M)
Constructability Relative ease of construction with standard methods. Tunnels and retaining walls increase complexity	3 (wall)	3 (wall)	2.5 (curves, terrain)	2.5 (tunnel)	4	4	4
Operation and Maintenance Cost Relative ongoing costs of routine maintenance and operation of the pavements and utility systems. (i.e. The more roadway, the more cost.)	4.5 (3010 lf)	4.5 (2993 lf)	1 (5982 lf)	1 (5540 lf)	2.5 (4350 lf)	2.5 (4450 lf)	1.5 (5020 lf)
Integration with Other Airport Improvements Compatibility with, or ability to support, planned airport improvements such as terminal curbfront, public parking (surface & garage), and intermodal center.	4	4.5	2.5	3	3	3	3
Potential Environmental Factors Alternatives with larger areas of land disturbance and longer improvements to streams/drainage channels have higher potential for impact	4.5	4.5	2.5	2.5	2	2	2

Source: Combined rankings by Kimley-Horn, KYOVA, and Airport Authority, August 2016

Table 3 – Evaluation Criteria and Comparison of Alternatives (Continued)

Evaluation Criteria	Alternatives						
	1	2	3	4	5	6	7
Resultant Development Area The amount of land that, due to the alignment of the roadway, becomes available for commercial or airport use development	1.5 (0.5 ac)	1.5 (0.5 ac)	2.5 (±4 ac)*	4 (10 ac)	3 (5 ac)	4 (10 ac)	5 (22 ac)
Development Area Site Prep Cost Estimated cost to prepare resultant development area with shovel ready sites (i.e. grading, drainage and utility relocations (cost per acre)	4.5 ($3.6M)	4.5 ($3.6M)	3 ($5.2M)*	3 ($5.0M)	1 ($12.8)	1.5 ($9.4M)	5 ($3.4M)
Cursory Benefit-Cost Ratio Comparative indication of return of investment	5 (1.7)	5 (1.4)	5 (1.5)	2 (0.9)	2 (0.8)	1 (0.5)	1 (0.7)
Total	**39.5**	**40**	**26.5**	**27**	**25.5**	**25.5**	**28.5**

Source: Combined rankings by Kimley-Horn, KYOVA, and Airport Authority, August 2016

4.3 Recommendation

The results of this evaluation were shared with the steering committee and no concerns or dissent were expressed. A second steering committee meeting was held in October 2016 to confirm the preferred alternative and agree on the recommendation to move forward into conceptual design. Summary notes from that meeting are provided in **Appendix C**. During the meeting, it was reasserted that public and employee parking needs, and the need for expanded rental car facilities to meet passenger demand at the Airport, are growing priorities. In response to that, it was agreed that the loop road/parking lot improvement concept presented in **Figure 5** should be blended with the preferred alignment of the access road extension into a comprehensive improvement program. The loop road realignment and public parking improvements would be pursued as first-phase projects that would enable the subsequent development of the access road extension by providing fill material (from grading of the hill for the paved overflow lot), relocating existing utilities along Airport Road, and establishing the intersection point between the relocated loop road and preferred access road extension.

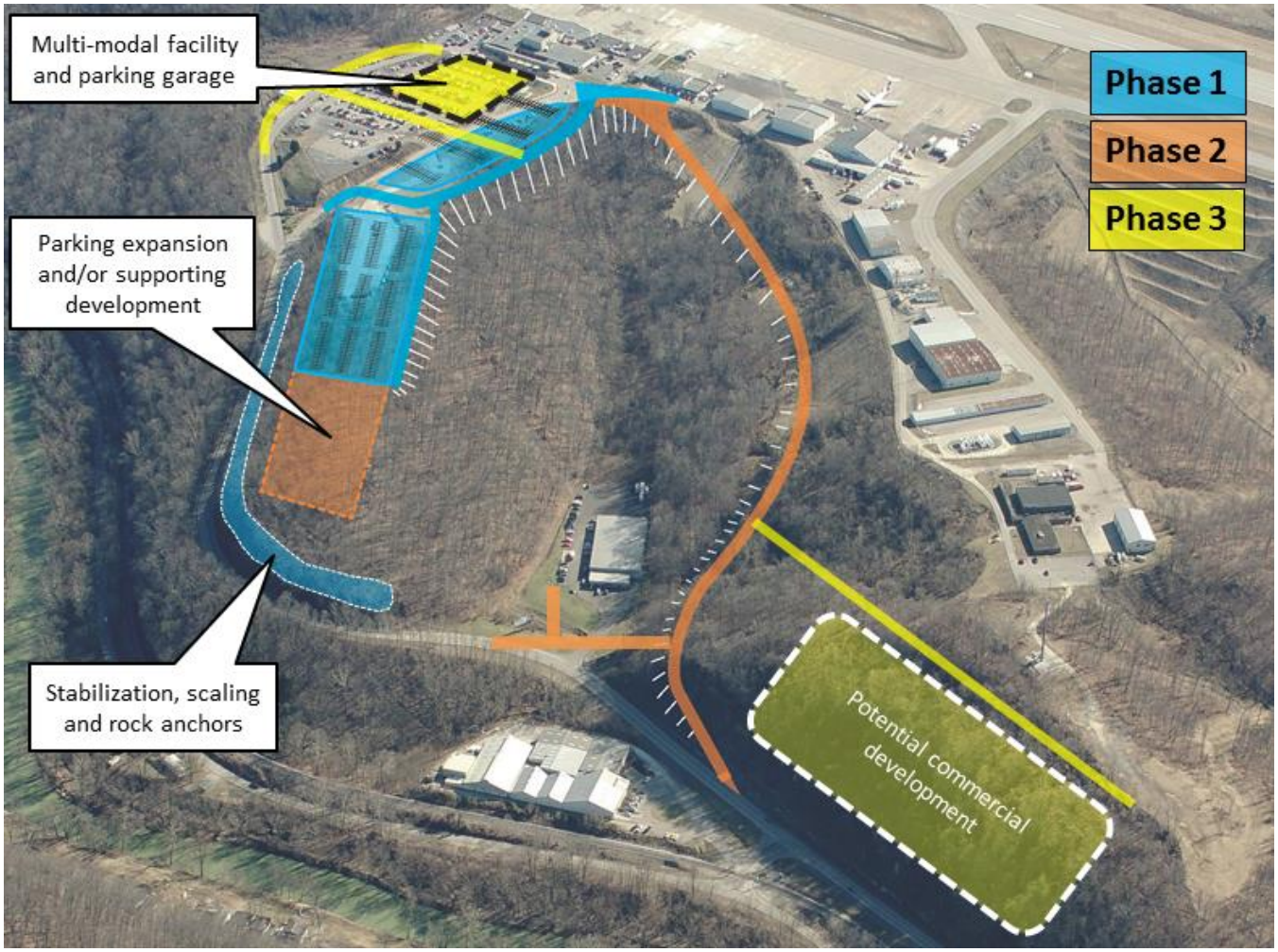
Other recommendations that arose from this coordination include:

- Providing consideration for a future connection to the extended access road, through the potential airport development area along Airport Road west of the FedEx Ground facility. This would be similar to the development areas depicted in alignment Alternatives #5 and #6, but the road connection would not necessarily extend through the private property located further to the west.
- Reducing the potential of rockslide and treefall along the steep eastern segment of Airport Road through grading, stabilization, scaling or rock anchors. This would be accomplished in concert with initial grading of the hill for the loop road realignment, overflow/employee parking lot and rental car facilities.
- Providing consideration for the development of a future multi-modal parking garage, located in the main parking lot, and associated curbside and roadway improvements.

This combined development program is consistent with the recommendations of the 2014 Airport Master Plan and depicted in **Figure 15**. Development phasing would generally entail:

- **Phase 1** – realign loop road and expand main parking lot, pave overflow/employee/rental car lot, stabilize hill face along Airport Road, and establish intersection of future access road extension.
- **Phase 2** – extend access road, improve intersection/access to FedEx Ground, and expand overflow parking lot as needed
- **Phase 3** – development multi-modal facility and parking garage in main parking lot, curbfront and eastern loop road improvements, and potential spur road to support commercial development west of the FedEx Ground facility.

Figure 15 – Recommended Improvement Program

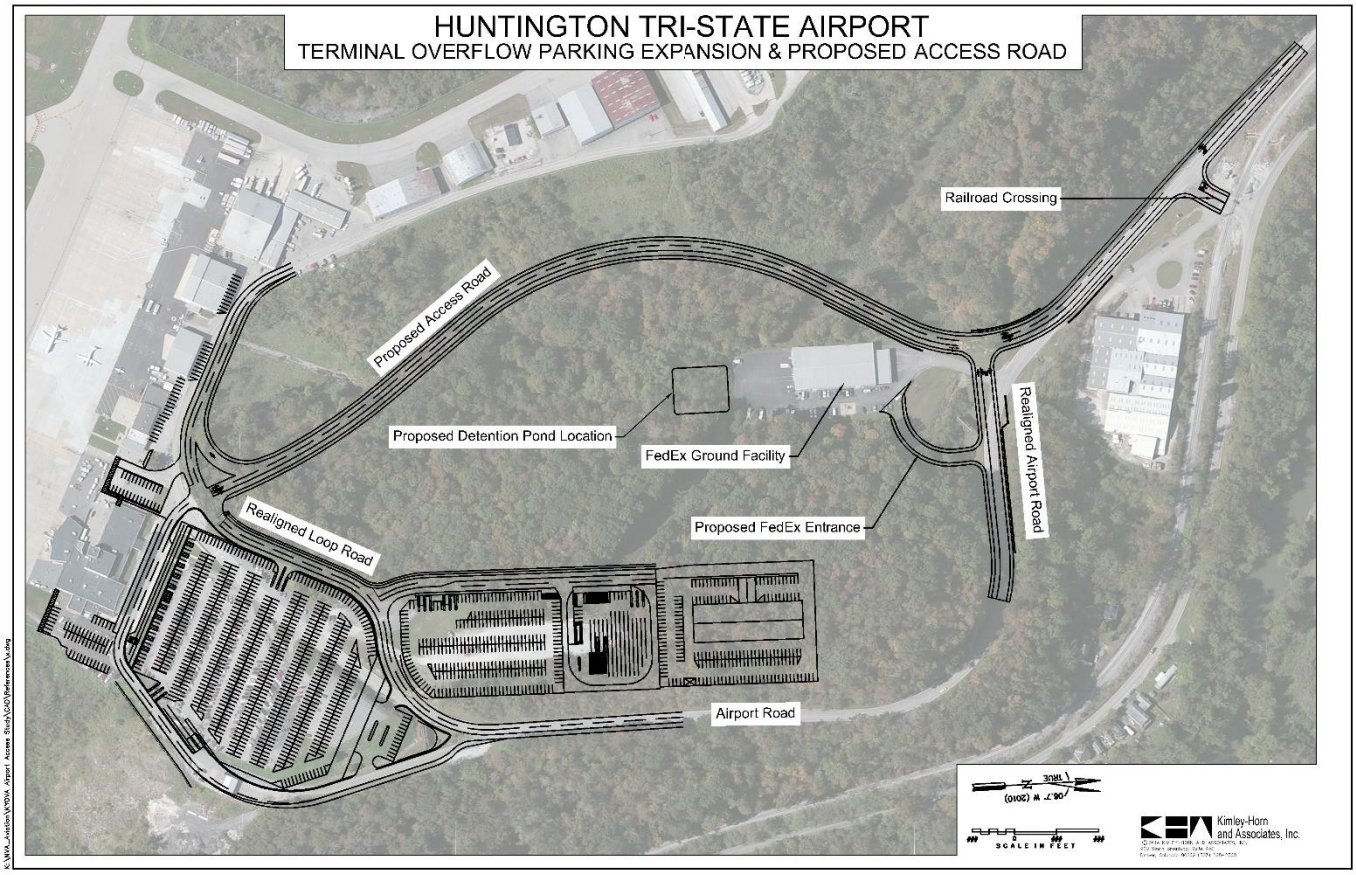


Source: Kimley-Horn and Associates, February 2017

5 Preliminary Design of Recommended Development Concept

The previous loop road/parking expansion concept (i.e. Phase 1) and the preferred access road extension (i.e. Phase 2) were modified to better tie into each other through a conceptual engineering exercise. The combination of these two components are considered the recommended development concept for which a plan view is presented in **Figure 16**. The Phase 3 development area is considered to be a long-term improvement and initially will only be used as a source of fill material to construct the access road extension.

Figure 16 – Recommended Development Concept (Phases 1 and 2)



Source: Kimley-Horn and Associates, February 2017

5.1 Previous Loop Road and Parking Expansion Concept (Phase 1)

Previous development of the loop road/parking expansion concept included an initial evaluation of needed earthwork and grading, utility relocation/extension, and pavement and marking. The early site planning and conceptual engineering was, for the most part, compatible with the preferred access road alignment, however, adjustments in the geometry, estimated grading and quantities of earthwork had to be made to accommodate the required geometry and gradient of the access road extension. This

refined Phase 1 site grading became the base from which preliminary design of the access road extension was developed.

Phase 1 includes three distinct sequential elements – realignment of the loop road, expansion of the main public parking lot, and development of the overflow parking lot area. Preliminary opinions of probable cost for the refined Phase 1 elements are summarized in **Table 4** with additional detail provided in **Appendix D**.

Table 4 – Preliminary Opinions of Probable Cost (Phase 1)

Element	Construction ($)	Design & Construction Admin. ($)	Total ($)
Loop Road	5,625,600	1,125,100	6,750,700
Main Parking Lot	4,142,600	828,500	4,971,100
Overflow Lot Area	2,034,700	406,900	2,441,600
TOTAL	**11,802,900**	**2,360,500**	**14,163,400**

Prepared by Kimley-Horn, Feb. 2017

5.2 Access Road Extension (Phase 2)

Conceptual planning for the access road extension included development of horizontal alignments, vertical alignments, and typical roadway cross sections. Development of these items included evaluation of construction limits, cross sections, potential utility conflicts, potential major drainage structures, proposed retaining walls, and environmentally sensitive areas within project limits. These conceptual plans can be found in **Appendix E**.

5.2.1 Design Criteria and Constraints

The recommended concept was developed in accordance with the latest revisions to the November 2014 West Virginia Department of Transportation Division of Highways Design Directives (DD) and the 2011 AASHTO Policy on Geometric Design of Highways and Streets. The Design Directives referenced during development of the recommended concept include DD-304 (Railroad-Highway Grade Crossings), DD-403 (Guide for Design in Cut Sections through Bedrock), DD-404 (Typical Fill Bench and Berm Design), and DD-601 (Geometric Design Criteria for Rural Highways). A functional classification of Rural Collector was selected for the proposed access road with a 40 mph design speed (posted 35 mph).

The recommended concept is under many of the same constraints as the seven initial alignment alternatives, and the inclusion of the loop road/parking expansion concept introduced a few more. The most impactful constraints on the design of the recommended concept include:

- The elevation of Airport Road at the railroad crossing that connects Airport Road and Walkers Branch Road could not be raised more than a few inches.
- The maximum allowable grade of 10% along the proposed access road.

- The realigned loop road and parking expansion concept moves the tie-in point of the proposed access road further north into the valley than alignment alternative 1, shortening the distance over which a 200' elevation difference could be achieved.
- The grade of the proposed access road should be relatively flat at the intersection with the realigned loop road in front of the terminal to provide acceptable grading of the intersection.
- Due to uncertain soil and bedrock conditions, limits of cut and fill were kept a minimum of 50' away from the existing Airport Road on the northwest side of the proposed access road.
- Uncertain soil and bedrock conditions also limited the cut and fill slopes that could be used. The bedrock was assumed to be the weakest kind shown in DD-403, soft shale, and cut sections were limited to a maximum of 40 vertical feet between benches.
- The southbound right turn at the intersection of the proposed access road and realigned loop road must have a large enough radius to accommodate a Type B design vehicle (SU-40 and occasionally a WB-62)
- Given the length of the alignment at maximum grade, horizontal curves at the absolute minimum radii were avoided where possible to reduce the chance of a slow-moving truck slipping down the cross slope in wet or snowy conditions.
- Cutting into the rock slope immediately adjacent to the existing Airport Road was avoided, as it would be nearly impossible to construct without risking rocks falling on to the existing road.
- Retaining walls would be necessary to prevent the limits of disturbance from impacting other properties.

5.2.2 Horizontal Alignment

The proposed horizontal alignments were designed based on DD-601 and AASHTO 2011. Radii were established based on a maximum superelevation of 8% for a 40 mph design speed using AASHTO's Design Superelevation Table 3-8.

Proposed Access Road

The alignment begins at the intersection of the realigned loop road and the terminal access road on the south, starting on the same bearing as the terminal access road at that intersection, and ties into the existing Airport Road on the north approximately 400' north of the railroad crossing. Radii of 1394', 735', and 338' were used for horizontal curves for the proposed Airport Access Road. Curves were located far enough apart to provide adequate superelevation runoff lengths. The 338' radius chosen for the horizontal curve near the FedEx facility is slightly shorter than the minimum allowable radius for a 40 mph design speed, but it does exceed the minimum allowable radius for the proposed 35 mph posted speed. The smaller horizontal curve was used at this location to limit the extent of necessary rock cuts into the large hill to the west of the FedEx Ground facility.

The southbound right turn from the proposed access road on to the realigned loop road is designed as a three-centered curve with outer radii of 400' and an inner radius of 100' along the inside edge of pavement.

Realigned Airport Road

The realigned Airport Road ties into the existing horizontal curve (370' radius) east of the FedEx Ground facility, stopping the horizontal curve a bit further upstation of the existing PT, tying into the proposed access road at a 90° angle.

Railroad Crossing

The proposed railroad crossing alignment closely follows the existing alignment to avoid impacting the existing rail crossing, consisting of two short tangent sections connected by a 370' radius horizontal curve.

Proposed FedEx Entrance

The proposed new entrance to the Fed Ex Ground facility begins parallel to the curb at the front of the building on a bearing east out of the existing parking lot. There is one horizontal curve on the alignment with a radius of 125'. The proposed FedEx Ground entrance ties into the realigned Airport Road approximately 250' east of the intersection of the realigned Airport Road and the proposed access road.

5.2.3 Vertical Alignment

Vertical alignments were based on DD-601 and AASHTO 2011, using a design speed of 40 mph. The maximum grade, per DD-601, is 10% for all profiles.

Proposed Access Road

Along the proposed access road, the minimum allowable K value is 44 for crest curves and 64 for sag curves per DD-601. The proposed access road profile ties into the intersection of the realigned loop road and the terminal access road at the same grade as the terminal access road, -5.0%. The first curve on the proposed access road profile is a 219.52' crest curve that takes the grade from -5.0% to -10.0%. The -10.0% grade continues for 1907.18'. The second curve is a 626.50' sag curve that takes the grade from -10.0% to -0.2%. The -0.2% grade continues for 35.74' before introducing a 30.96' crest curve that brings the grade down to the existing grade of -0.90%.

Realigned Airport Road

The realigned Airport Road ties into the existing -8.2% grade on the south end and introduces a 399.54' sag curve at STA. 305+24.84 that brings the grade to -2.0%. The -2.0% grade continues for 99.18', where a 72' crest curve brings the grade down to -8.0%, which matches the cross slope of the proposed access road at the intersection. The grade on Airport Road in front of the FedEx facility transitions from the existing grade of approximately -8% to approximately -2%. Reducing the roadway grade in this area will aid the truck operations entering the FedEx Ground facility.

Railroad Crossing

The proposed profile for the railroad crossing begins at a -3.24% grade, matching the cross slope of the proposed access road at the intersection, and then breaks off at -5.66% to tie into the existing grade just before the railroad.

Proposed FedEx Entrance

The proposed FedEx Ground entrance utilized a 20 mph design speed. The profile ties into the existing 0.0% grade in the parking lot in front of the building and transitions up to a 6.4% grade with a 108.38' sag curve. The 6.4% grade continues for 153.43' before transitioning to the realigned Airport Road cross slope of 2.0% with a 30.64' crest vertical curve.

5.2.4 Typical Cross Sections

Typical cross sections are based on DD-601 and existing conditions. The typical cross section of the proposed access road and the realigned Airport Road is two 12' southbound (upgrade) lanes and one 12' northbound (downgrade) lane with 8' paved shoulders on either side of the road. The road is crowned at the centerline. The cross slope is 2% on tangent sections and will follow AASHTO Table 3-8 superelevation rates on curves. Shoulders will be a minimum of 6% grade in tangent sections and will observe a 4% breakover in superelevated sections. Guardrail will be installed at the back of shoulder as required.

Rock cuts for all new alignments were designed based on DD-403 for Type IV rock. In cut sections along the west side of the road, a 4' wide ditch is used with a 6' wide foreslope at 4:1, a 5' wide backslope at 1:1, and a 10' bench behind the backslope. Behind this bench are a series of 40' 1:1 vertical cuts and 10' benches, which alternate until the existing grade has been reached. Fill sections were designed based on recommendations from previous HTS airport geotechnical reports and consist of 30' 2:1 vertical fills and 12' benches, which alternate until existing grade has been reached.

These rock cuts and fill sections are only an assumed design cross section based upon observations of the existing terrain. Approximation of an ultimate design based on better geotechnical information and the limits of disturbance they produce are subject to change upon further engineering.

5.2.5 Retaining Walls

At this conceptual stage of the design, it is likely that four separate retaining walls will be necessary for the construction of the recommended concept. Three of these walls are needed to prevent impacts to surrounding buildings and properties, and one is needed to prevent a rock cut that would be extremely difficult to safely construct. All walls are assumed to be MSE retaining walls for the purposes of this design and opinion of probable cost, but this is subject to change after further engineering.

Proposed Access Road – Right Side, from Approx. STA. 117+00 to STA. 119+25

This retaining wall has been proposed to prevent fill slopes from impacting the adjacent FedEx Ground facility. This wall reaches a maximum height of approximately 30' and has a face of approximately 4,000 square feet.

Proposed Access Road – Left Side, from Approx. STA. 120+40 to STA. 122+30

This retaining wall has been proposed to prevent a rock cut in a location that would be difficult to construct. This section is very close to the existing Airport Road, and significant cuts through this section could endanger motorists and businesses further down the slope. This retaining wall reaches a maximum height of approximately 26' and has a face of 2,800 square feet.

Proposed Access Road – Right Side, from Approx. STA. 122+70 to STA. 124+10

This retaining wall has been proposed to prevent fill slopes from impacting the parking lot to the north of the existing Airport Road. The wall reaches a maximum height of approximately 10' and has a face of approximately 930 square feet.

Realigned Airport Road – Right Side, from Approx. STA. 306+00 to STA. 309+90

This retaining wall has been proposed to prevent fill slopes from impacting properties to the north of the realigned Airport Road. The wall reaches a maximum height of approximately 16' and has a face of approximately 3,200 square feet.

5.2.6 Intersection Improvements

Realigned Loop Road, Terminal Access Road, and Proposed Access Road

The intersection of the realigned Loop Road, the Terminal Access Road, and the proposed access road is proposed to be a stop-controlled intersection that allows left, right, and through turning movements for the southbound, eastbound, and westbound legs. The southbound leg (the proposed access road) has a combined through-left turn lane, a through lane, and a right turn lane with a corner island that allows trucks and construction equipment to make the turn on to the westbound Airport Road. This corner island will either need to be painted or constructed with mountable curb to allow emergency vehicles to access the airfield gate at around STA. 206+50 on the realigned loop road. The eastbound leg has one lane that will allow through, right, and left turn movements. The westbound leg will have a through-right turn lane and a left turn lane.

Realigned Airport Road and Proposed Access Road

The intersection of the realigned Airport Road and the proposed access road is a stop-controlled 3 leg T intersection with no pedestrian accommodations on any leg. The westbound leg (realigned Airport Road) has separate right and left turn lanes and Ts into the proposed access road at a 90-degree angle. The southbound leg has a through and a through-left turn lane. The northbound leg has a single through-right turn lane.

Proposed Access Road and Railroad Crossing

The intersection of the proposed access road and the railroad crossing is a T intersection that has been improved from existing conditions by widening the existing Airport Road to a three-lane section. This intersection will have stop control on the minor leg and free-flow on the major leg. The minor leg (the railroad crossing) has a single shared right and left turn lane. The northbound leg has a through lane and a dedicated left-turn lane. The construction of a dedicated left-turn lane will mitigate heavy queuing of left-turn traffic impeding through traffic headed for the Airport, especially when a train is crossing the road.

5.2.7 Access Management

Two existing intersections are impacted by the recommended concept. The existing entrance on the railroad crossing will be raised slightly, affecting grading, but should not be a major impact to the site.

The existing FedEx Ground entrance will be demolished and replaced with a new entrance approximately 175' east of its current location. Depending on the outcome of proposed slope treatments on the hill to the east of this entrance, this relocation may lead to a reduction in sight distance for vehicles turning left out of the FedEx entrance and will need to be studied further. This sight distance problem would be further address by the future T intersection at the proposed access road and the realigned Airport Road, which may slow drivers down as they approach that intersection and the FedEx Ground entrance.

5.2.8 Drainage

The roadway drainage will be handled with a combination of roadside ditches and culverts during the final design stage of the project. This drainage collection system has not yet been sized. The existing culvert under Airport Road near the FedEx Ground facility is undersized and there is a documented history of flooding in this area. This culvert will be improved as part of the final design. Two existing open drainage channels flow into the site of the recommended concept, one near STA. 105+00 and one near STA. 119+00. These channels will need to be modified to either flow into a proposed roadside ditch or into a storm pipe under the proposed roadway. The drainage channel at STA. 119+00 needs to be addressed as it has a history of slope failures.

A potential Best Management Practice (BMP) stormwater structure location has been identified in the natural drainage upstream of the FedEx Ground facility. The BMP can be sized to accommodate the proposed roadway as well as the other proposed improvements such as the loop road and additional parking areas. The recommended concept creates approximately 3.9 new acres of impervious surface that could be treated by a pond in the location shown on the plans while an additional 1.4 new acres of impervious surface would drain elsewhere.

5.2.9 Utility Impacts

A preliminary utility layout has been developed for the Parking Lot Expansion, including overhead lighting, storm pipes, sanitary sewer pipes, water, gas, communications, and power lines. This conceptual utility plan can be seen in **Appendix F**. Three of these utility lines will be affected by the proposed access road:

- The proposed underground electric line must be designed with future intersection grades in mind to avoid impacts during construction.
- The proposed overheard electric connection at the far north end of the site is subject to relocation and would require coordination with the utility provider during design and construction of the proposed access road.
- The storm drain outfall on the northwest slope of the Parking Lot Expansion site may be extended or abandoned after design of the proposed access road slopes has been completed.

There is less information about utilities along the proposed access road as there is no survey of underground utilities at this part of the airport property. The power line that serves the Airport and the FedEx Ground facility runs over the proposed access road, and a minimum of 4 power poles will

need to be relocated. There is a fire hydrant adjacent to the existing FedEx entrance that will be impacted by the proposed access road and will need to be relocated. Further survey will be needed to determine if this project impacts any additional underground electric, communications, water, sanitary sewer, or gas lines.

5.2.10 Environmental Impacts

The proposed access road will create 5.3 acres of new impervious surface along the mountainside and the grading for cut and fill slopes will require clearing over 23 acres of forest. A review of available GIS records did not reveal any environmentally sensitive or historically important areas within the project limits. As this project is on airport property, and the Airport receives funding assistance from the Federal Aviation Administration (FAA), environmental evaluation and FAA approval in accordance with the National Environmental Policy Act (NEPA) will be required prior to construction. As of early 2017, the Airport Authority is in the process of preparing a NEPA programmatic Environmental Assessment covering several proposed airport improvement projects including this recommended concept.

5.2.11 Right-of-Way Considerations and Requirements

The recommended concept will require easements to be constructed between WVDOT and the Airport Authority for both the proposed access road and portions of the realigned loop road. The current WVDOT Right-of-Way (ROW) extends along Airport Road, through airport property, to an approximate point near the existing main parking lot entrance. Since the change in ROW affects airport property, coordination with the FAA will be required including a fair market valuation of the easement property and revisions to the FAA approved Airport Layout Plan (ALP) and Airport Property Map.

5.2.12 Opinion of Probable Cost

Planning-level cost opinions were performed on the proposed engineering and construction of the access road extension. This cost analysis is based on preliminary conceptual layouts and field review of the project area, and is subject to change. A summary of the opinion of probable cost is listed below, and a full opinion of probable cost detailing quantities, unit costs, and contingencies can be found in **Appendix D.**

Table 5 – Preliminary Opinions of Probable Cost (Phase 2)

Element	Budget ($)
Access Road Extension	
Earthwork and Paving	17,447,980
Drainage and Stormwater Management	2,094,640
Utilities	1,008,680
General Construction	3,923,430
Construction Contingency (20%)	4,894,940
Design and Construction Admin. (20%)	5,873,930
TOTAL	**35,243,600**

Prepared by Kimley-Horn, Feb. 2017

6 Implementation Plan

Pursuit of the recommended development concept will need to occur in stages to capitalize on available funding and effectively advance the projects through to construction. While pursuing this as a single design-build project may be attractive in theory, funding availability and the various agency approval and procurement requirements dictate that a traditional design-bid-build approach will be the most appropriate means of implementation. This method will provide flexibility for both the Airport Authority and agencies to implement fiscally manageable phases of the recommended concept and address unforeseen needs or changing priorities that might arise in the future.

6.1 Implementation Process

Following this planning study, development of the recommended concept will generally begin with the environmental approval and engineering design of the proposed facilities. This will include coordination and approval from the FAA, FHWA and WVDOT for both the NEPA required environmental evaluation and the alteration/expansion of the WVDOT ROW through airport property. Detailed geotechnical investigation and boundary/ROW survey will also be needed. A design engineer will need to be secured through a qualifications-based selection process. Engineering design to the 35% completion level will be needed to secure the agencies environmental approvals. Designs to the 75% level will be of sufficient detail to prepare reasonably accurate cost estimates to program construction funds. Engineering design will be completed and construction documents will likely be prepared for sequentially phased bid packages as follows:

- Phase 1 Site preparation including earthwork and utilities
- Loop road realignment
- Overflow parking lot area including employee lot and access road to rental car facility site
- Main public parking lot expansion/reconfiguration
- Phase 2 Site preparation including earthwork and utilities
- Access road extension

Having these separate construction document packages complete and ready for bidding (i.e. “on the shelf”) will allow the Authority to expediently act when funding becomes available. Once the overflow parking lot site has been prepared, the Airport Authority would most likely pursue the design and construction of the planned rental car storage and service area as a separate project. With consideration of project phasing and agency requirements, a general implementation flow chart is provided in **Figure 17**.

Figure 17 – Implementation Process

6.2 Potential Funding Sources

Funding for the recommended concept will likely come from a combination of sources. Each source may only be applicable for specific phases or components of the recommended improvements. Further agency coordination will be needed to confirm funding eligibility and available amounts but, applicable funding sources appear to include:

- **KYOVA Suballocated Funds** – could provide up to 80% funding for eligible project elements through the Surface Transportation Block Grant (STBG) program suballocated federal funds from the West Virginia Department of Highways (WVDOH). This is anticipated to be available for the design and construction of the public components of the recommended improvement concept. Funding under this program is awarded on a competitive basis.
- **FAA Airport Improvement Program (AIP)** – could provide up to 90% funding for eligible project elements including portions of the airport access/loop, the access roadway to the overflow parking and rental car facilities, and any non-revenue producing portions of public parking lots.
- **FAA Passenger Facility Charge (PFC) Program** – could provide the 10% matching funds to an AIP funded project/grant or up to 100% funding for AIP eligible project components if AIP funding is not available.
- **West Virginia Division of Aviation –** could provide up to 5% matching funds to an AIP funded project or grant.
- **Rental Car Customer Facility Charge (CFC) Program** – this is a rental car user fee collected by the rental car companies on behalf of the Airport Authority that is dedicated for use on rental car facility improvements including vehicle storage, parking, service areas and access to those facilities.
- **Tri-State Airport Authority** – airport revenues would be used to cover any grant ineligible project elements or unmatched share.
- **West Virginia DOT Industrial Access Road Fund** – this program could provide funds for public access improvements to new or expanding industries. Awards are based on qualified industrial investment and number of jobs retained or anticipated that can be associated with the project. Awards are limited to $150,000 per year per County in matched funds and $400,000 for unmatched funds. HTS has received grants from this program for access to facilities on the south side of the airfield.
- **Other Local Grants** – other local economic development or public facility funding may be available for specific elements of the recommended concepts. Potential sources included local municipalities, the surrounding counties, economic development agencies, and boards of tourism, etc.

6.3 Preliminary Funding Strategy

Based on the previously described opinions of probable cost and potential funding sources, there are two primary funding strategies for development of the recommended concept. One strategy assumes that FAA AIP funds would be available and the other accounts for no AIP funding. Error! Reference s ource not found. provides a summary of these two strategies. Assumptions incorporated into these strategies include:

- Engineering design cost is estimated at 3.5% of construction cost and funding eligibility accounts for pro-rata shares of eligible construction costs
- Approximately 50% of the overflow parking lot area is for public use, 17% for employees, and 33% for rental car
- Improvements to the loop road are AIP/PFC eligible
- The access road extension will not be AIP/PFC eligible
- Revenue producing public parking and employee parking are not AIP/PFC eligible
- The access road through the overflow lot area to the rental car facilities is AIP/PFC eligible
- FAA AIP and KYOVA suballocated funds cannot be comingled on a specific project. Future agency coordination may result in shared responsibility due to differing funding limits (i.e. 80% for KYOVA and 90% for AIP).
- Development of the planned rental car facility infrastructure is not included. That will be a separate project.
- Some funding from FedEx Ground may be available for improvements to their access connection

As calculated, if AIP funds were to become available for the loop road relocation, West Virginia Division of Aviation funds would also become available and the amount of KYOVA funding could be decreased. Based on the ROW assumptions, the PFC eligible share would also decrease but the amount of funds required from the Airport Authority would increase. These strategies, and funding percentages, will be refined throughout the subsequent design and agency coordination process.

Table 6 – Preliminary Funding Strategies for the Recommended Concept

	Funding Source							
No AIP Funds	KYOVA	AIP	WVDOA	PFC	CFC	HTS	Other	Total
Civil Site Design (Phases 1 & 2)	80.0%	0.0%	0.0%	2.7%	0.3%	16.9%	0.0%	100%
	1,152,833	-	-	39,379	4,748	244,081	-	**1,441,041**
Phase 1 Construction								
Loop Road	80%	0%	0%	20.0%	0%	0%	0%	100.0%
	5,243,059	-	-	1,310,765	-	-	-	**6,553,824**
Main Parking	80%	0%	0%	0%	0%	20%	0%	100%
	3,860,903	-	-	-	-	965,226	-	**4,826,129**
Overflow Parking Area	80%	0%	0%	0%	7%	13%	0%	100%
	1,896,340	-	-	-	158,028	316,057	-	**2,370,426**
Phase 2 Construction								
Access Road	80%	0%	0%	0%	0%	18%	2%	100%
	27,372,560	-	-	-	-	6,158,826	684,314	**34,215,701**
TOTAL Program Cost	**39,525,696**	**-**	**-**	**1,350,144**	**162,776**	**7,684,190**	**684,314**	**49,407,120**

	Funding Source							
With AIP Funds	KYOVA	AIP	WVDOA	PFC	CFC	HTS	Other	Total
Civil Site Design (Phases 1 & 2)	72.7%	8.2%	0.5%	0.5%	0.3%	17.8%	0.0%	100%
	1,047,822	118,138	6,563	6,563	4,748	257,208	-	**1,441,041**
Phase 1 Construction								
Loop Road	27%	60%	3%	3%	0%	7%	0%	100%
	1,747,686	3,932,294	218,461	218,461	-	436,922	-	**6,553,824**
Main Parking	80%	0%	0%	0%	0%	20%	0%	100%
	3,860,903	-	-	-	-	965,226	-	**4,826,129**
Overflow Parking Area	80%	0%	0%	0%	7%	13%	0%	100%
	1,896,340	-	-	-	158,028	316,057	-	**2,370,426**
Phase 2 Construction								
Access Road	80%	0%	0%	0%	0%	0%	0%	0%
	27,372,560	-	-	-	-	6,158,826	684,314	**34,215,701**
TOTAL Program Cost	**35,925,312**	**4,050,432**	**225,024**	**225,024**	**162,776**	**8,134,238**	**684,314**	**49,407,120**
Difference	*(3,600,384)*	*4,050,432*	*225,024*	*(1,125,120)*	*0*	*450,048*	*0*	*0*

Source: Kimley-Horn & Associates, Feb. 2017, includes rounding

7 Summary of Findings

It is evident that improvement of the roadway access, circulation and parking facilities at the Tri-State Airport have been evaluated and pursued for several years. With increasing levels of passenger and air-cargo activity, combined with aging roadway infrastructure, these improvements are becoming more critical to maintaining acceptable levels of service and supporting the travel and economic development needs of the multi-state region. The following provides a summary of this study's findings:

- The Airport is key link to the global transportation network for both people and freight. It is also a vital economic driver for the Tri-State region and particularly to the communities of Huntington, Ashland and Ironton.
- Due to the constrained hilltop location of the Airport, public access, circulation and parking have been challenged in meeting passenger needs due to lack of adequate space.
- Needed improvements were identified in a 2009 KYOVA intermodal study and the 2014 Airport master plan that included expanded public parking, realigned loop road and an extended primary access road.
- Extended primary road access is needed to separate public and commercial traffic, reduce congestion near the parking entrance and terminal curbside, and provide additional circulation should portions of the road become blocked due to incident, rockslide or treefall.
- Due to increased passenger activity, airline flight schedules and aging roadway and parking infrastructure, the need for these improvements is becoming more critical to maintain operational resiliency and an acceptable level of customer service and safety.
- After evaluating numerous alternative roadway alignments, with consideration of topography, cost, operational requirements and environmental considerations, a preferred alignment has been identified.
    - Approx. 3,000 linear feet of new 3-lane roadway beginning near the intersection of Airport Road and Walkers Branch Road
    - Climbing the hill along the west side of the FedEx Ground facility and connecting into the terminal loop road near the public parking lot with a new 3- or 4-way intersection (depending on final design)
- To address the public parking demand, the Airport was concurrently preparing conceptual plans for a parking lot expansion that included realignment of the terminal loop road.
    - Loop road realigned to provide more public parking inside the loop and improve parking lot entrances
    - Paved overflow and employee parking lot, and relocated rental car facility, outside of the loop road
    - Hillside stabilization to reduce the potential of treefall and rockslide onto Airport Road

- The preferred access road alignment and loop road/parking plans have been blended together resulting in a cohesive, phased implementation plan for meeting the access, circulation and safety needs of the airport well into the future.
- This recommended development concept is consistent with the 2014 Airport Master Plan and FAA approved Airport Layout Plan.
- Implementation of the recommended concept will need to be pursued in phases and with multiple construction packages to capitalize on funding availability.
- Funding will likely come from multiple sources including KYOVA and the FHWA, airport generated user fees and revenues, and possibly the FAA and West Virginia Division of Aviation.