TRANSPORTATION

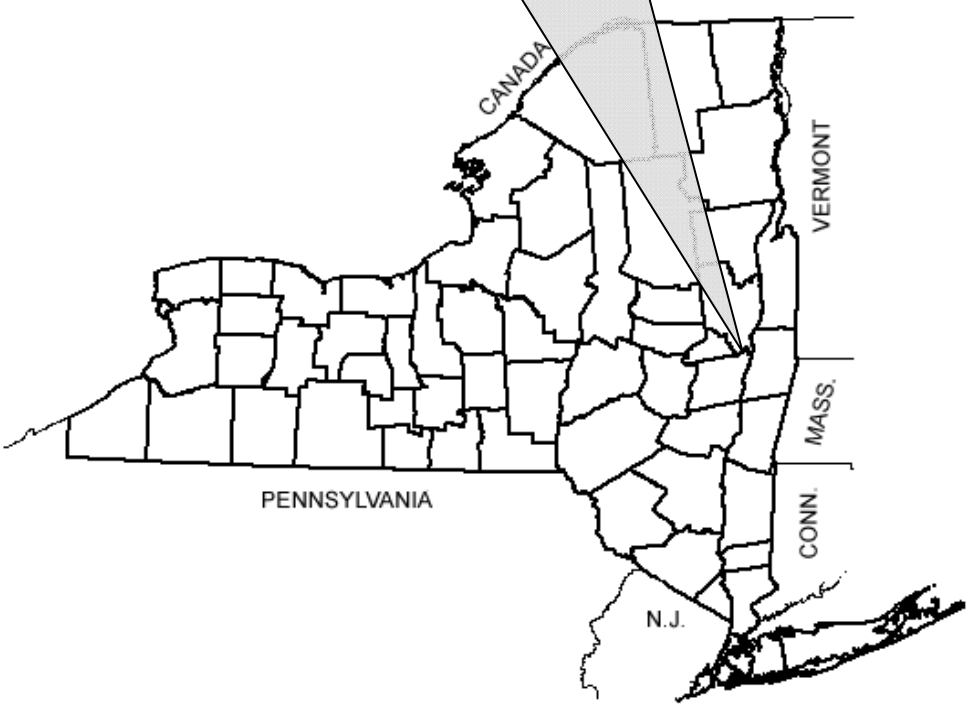
PROJECT REPORT

DRAFT DESIGN REPORT / ENVIRONMENTAL IMPACT STATEMENT

Appendix N – Groundwater Assessment Report

January 2014

Highway Project
P.I.N. 1721.51
BINs: 1033141 / 1033142
Interstate 87 (I-87) Exit 4 Access Improvements
Albany County



U.S. Department of Transportation Federal Highway Administration

NEW YORK STATE DEPARTMENT OF TRANSPORTATION
ANDREW M. CUOMO, Governor JOAN MCDONALD, Commissioner

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1.0 PROJECT DESCRIPTION

The proposed project involves access improvements between I-87, Wolf Road, and the Albany International Airport. The project study area includes: I-87, between Sand Creek Road and Exit 5 (RM 87I 1108 2029); Wolf Road (known as Old Wolf Road), between the Exit 4 SB Exit Ramp and Albany-Shaker Road; Wolf Road, between Albany-Shaker Road and Cerone Commercial Drive; and Albany-Shaker Road, between Wolf Road and Meeting House Road. A total of approximately 8.0 miles of existent roadway within the Town of Colonie, Albany County are included in the project study area.

Two alternatives to address the project objectives for the Interstate 87 (I-87) Exit 4 Access Improvement project have been developed: the Diamond Alternative and the Flyover Alternative. The Diamond Alternative includes the addition of approximately 3.39 lane miles of new ramps (diamond interchange) and a connector road. The Exit 4 northbound exit ramp, northbound entrance ramp, southbound exit ramp, and southbound entrance ramp and the C-D road, between Exit 5 southbound entrance ramp and Exit 4 southbound exit ramp, will be removed. All other lane miles (18.45) identified within the Project Study Area for this alternative are associated with existent roads. The Flyover Alternative has been identified as the Preferred Alternative and will include the addition of approximately 1.27 miles of new ramps to complement the existent Exit 4 Interchange. The Exit 4 southbound exit ramp and southbound entrance ramp and the C-D road, between Exit 5 southbound entrance ramp and Exit 4 southbound exit ramp, will be removed. All other lane miles (13.81) identified within the Project Study Area for this alternative are associated with existent roads. The increases in impervious area are due to the proposed interstate ramps, traffic lanes on I-87 and local road and pedestrian and bicycle accommodations within the project limits. A project location map is included as Figure 1.

2.0 REGULATORY REQUIREMENTS

The U.S. Environmental Protection Agency (USEPA) has determined that the Schenectady-Niskayuna Aquifer System, under-lying portions of Albany, Saratoga, and Schenectady Counties, New York, is the sole or principal source of drinking water for Ballston (Lake), Burnt Hills, Charlton, Glenville, Niskayuna, Rexford, Rotterdam, Schenectady and Scotia; if this aquifer were to be contaminated, a significant hazard to public health would result. The Interstate 87 Exit 4 Access Improvement project corridor overlies portions of the Schenectady-Niskayuna Aquifer System. The construction of additional through-traffic lanes classifies this project for the Federal Sole Source Aquifer Section 1424(e) review by the FHWA and the USEPA pursuant to Executive Order 12372. The NYSDOT Environmental Procedures Manual Section 4.4 outlines the factors that should be discussed in a Groundwater Assessment Report to comply with the federal requirements. The New York State Department of Environmental Conservation (NYSDEC) also has classified areas underlying portions of the project corridor as Principal Aquifers; therefore, a review of potential impacts on the aquifers as a result of this proposed project is required.

This report contains a discussion of the aquifer's physical and chemical hydrological properties, aquifer susceptibility to contamination, and land use of the project area. A first-order analysis (Toler Analysis) of the effects of de-icing salts on groundwater quality was used to provide a conservative indicator of aquifer impacts as a result of roadway-related chemicals applied to the new roadway surfaces.

3.0 PHYSICAL PROPERTIES OF THE AQUIFER

The USEPA has determined that the Schenectady/Niskayuna Aquifer System underlies portions of Albany, Saratoga, and Schenectady Counties and is the sole or principle source of drinking water for several communities. The project area, for this project, is located in the southeastern most portion of this aquifer system. The Aquifer system consists of a complex series of discontinuous coarse sand and gravel deposits and is underlain by glacial till. An extensive sand unit separates the coarse gravel unit from till in much of the well field area. The southern half of the project area is situated over a portion of an Unconfined High-yield (>100 gallons/minute) Principal Aquifer and an Unconfined Mid-yield (10 to 100 gallons/minute) Principal Aquifer. Mid-yield unconfined aquifers consist of sand and gravel with a saturated zone generally less than 10 feet thick, but can be thicker in the presence of silty sand and gravel that are less permeable. High yield unconfined aquifers consist of sand and gravel of high transmissivity and with a saturated thickness greater than 10 feet. Aquifer maps and geologic maps prepared for this project are provided in Appendix A.

3.1 TOPOGRAPHY AND SURFACE WATER BODIES

In general, the terrain of the PSA is predominantly low lying and flat, with rolling hills to the northwest. Elevation ranges from approximately 300 feet above mean sea level (AMSL) at the PSA's southeasterly extents to 280 feet AMSL to the PSA's northwesterly extents. Natural topographical features have been altered in this area due to past construction of I-87 and adjacent commercialism.

The project area is situated within the Shaker Creek drainage basin, which is part of the larger Mohawk River watershed. The Mohawk River watershed is approximately 1,655,680 acres (670,030 hectares) in size. Shaker Creek and two of its tributaries (#1 and #2) and five (5) tributaries to Ann Lee Pond (#3 through #7) exist within the project area (Reference Figure 2). All of the surface waters are identified as NYSDEC Class C water bodies.

Shaker Creek is a perennial Relatively Permanent Water (RPW) that flows northwesterly through the project area, then northerly beyond the PSA, eventually outletting to the Mohawk River (a TNW). Unnamed tributaries #1 and #2 to Shaker Creek are seasonal RPWs that flow northwest through the project area to Shaker Creek, eventually outletting to the Mohawk River. Unnamed tributary #1 to Shaker Creek is located at the southwestern end of the project area; unnamed tributary #2 to Shaker Creek is located at the northeast end of the project area. Unnamed tributaries #3, 4 and 6 to Ann Lee Pond are perennial RPWs that flow northwest through the project area to Ann Lee Pond. These tributaries are present within roughly the central portion of the project corridor. Unnamed tributaries #5 and #7 to Ann Lee Pond are seasonal RPWs that also flow northwest through the project area to Ann Lee Pond. Additionally, 52 wetlands were identified within the project area and are hydrologically connected to the streams referenced above.

In general, the majority of stormwater drainage within and immediately adjacent to the project corridor is conveyed via overland flow and discharged into Shaker Creek and its tributaries.

3.2 HYDROGEOLOGY

The Schenectady-Niskayuna Aquifer System is approximately 20 miles long and underlies approximately 30 square miles in the lowermost part of the Mohawk River drainage basin. The width of the aquifer is approximately one-half mile at its western edges and over five miles at its widest point. Aquifer recharge occurs from: precipitation directly on the land; by seepage from the tributary streams flowing across the aquifer; by subsurface flow from the till on the sides of the valley; and by seepage from bedrock and deposits of low permeability underlying the aquifer. According to the Albany County Soil Survey, average annual precipitation in this area is approximately 36 inches. Ground water levels closely reflect the level of the Mohawk River. Within the flood plain, depth to water is generally less than 30 feet, but at higher elevations may be as much as 70 feet. Springs discharge at the base of some slopes. The water table extends up into the till and bedrock adjacent to the aquifer, water levels are generally less than 25 feet below land surface but may be as deep as 50 feet in places adjacent to small down cut stream valleys

(http://www.epa.gov/region02/water/aquifer/schen/schenect.htm). Exhibit 1 in Appendix A depicts the location of the aquifer boundary relative to the project study area.

3.3 Soils

The character of the soils in the project corridor influences the quantity and rate of recharge to the groundwater in the aquifer system.

The Soil Survey of Albany County, New York (USDA, 1981) indicates that the soils within the PSA are composed of Colonie loamy fine sand (CoA, CoB, CoC), Elnora loamy fine sand (EnA, EnB), Granby loamy fine sand (Gr), Stafford loamy fine sand (St), Udipsamments, smoothed (Ud), Unadilla silt loam (UnB), Udipsamments-Urban Land complex (Uf), and Urban land (Ur, Us) soils (Figure 3).

Table 3.3 Soil Characteristics

Soil Series		Slopes	Drainage	Location	Permeability (K*sat*) Saturated hydraulic conductivity	Erosion Hazard	Depth to Water Table
Unadilla silt loam	UnB	3-8%	Well drained	Lake Plains	Moderately High to High	Moderate	>80”
Urban land	Ur, Us,	0-8%	Well drained	Does Not Apply	Very High	Not Rated	>80”
Udipsamments, smoothed	Ud	0-45%	Well drained	Does Not Apply	Very High	Not Rated	>80”
Udipsamments-Urban Land complex	Uf	0-8%	Somewhat excessively drained	Does Not Apply	Very High	Slight	>80”
Elnora loamy fine sand	EnA	0-3%	Moderately well drained	Beach ridges and deltas	High	Slight	18” to 24”
	EnB	3-8%	Moderately well drained	Beach ridges and deltas	High	Moderate	18” to 24”
Stafford loamy fine sand	St	0-3%	Somewhat poorly drained	Beach ridges and deltas	High to Very High	Slight	6” to 8”
Granby loamy fine sand	Gr	0-2%	Very poorly drained	Depressions	High to Very High	Slight	About 0”
Colonie fine sand	CoA	0-3%	Well-drained	Beach ridges and deltas	High to Very High	Slight	>80”
	CoB	3-8%	Well-drained	Beach ridges and deltas	High to Very High	Moderate	>80”
	CoC	8-15%	Somewhat excessively drained	Beach ridges and deltas	High to Very High	Severe	>80”

3.4 GEOLOGY

A surficial geology map prepared for this project is provided in Appendix A. The PSA is predominately covered by Dunes (d); the northern most portion of the PSA (along much of Albany Shaker Road, north of I-87) is mapped as Lacustrine Sand (ls). Dunes are described as fine to medium sands, well sorted, stratified, non-calcareous, unconsolidated, generally wind reworked lake sediment, permeable, well drained, thickness variable 3 – 33 feet. Lacustrine sand is characterized as sand deposits associated with large bodies of water, generally near-shore deposit or near a sand source, well sorted, stratified, generally quartz sand, thickness variable 6-66 feet.

The entire PSA is underlain with Normanskill Shale, bedrock in the Trenton Group consisting of medium to dark gray, silty, micaceous, pyritic shales, with occasional thin interbeds of siltstone, calcareous mudstone and fine grained sandstone. The unit is intensely folder and well cleaved. It includes conglomerate of various kinds and sizes of rock derived from emplacement of thrust blocks of Austin Glen greywacke into Snake Hill mud. A bedrock geology map prepared for this project is provided in Appendix A. Bedrock outcrops were not observed in the project area.

Bedrock underlying the Mohawk Valley, in the Schenectady area, consists of alternating layers of shale and siltstone.

4.0 HYDROGEOLOGICAL PROPERTIES OF THE AQUIFER

A portion of the aquifer recharge zone and stream flow source zone for the Niskayuna well field lies within the Town of Colonie. Based on review of available mapping, it has been determined that the study area for this project is south of these areas, and as such, will not contribute to contamination of the Niskayuna well field.

Based on input from the Environmental Services division of the Albany County Health Department, there are not any public water supply wells located within approximately 656 feet (200 meters) of the PSA. Furthermore, the local area is served by public water within the Latham Water District, which draws water from the Mohawk River to prepare drinking water. As a result, no further discussion is required regarding the effects of the proposed project on drinking water wells. The Toler Analysis performed for this project focuses on direct contamination to the aquifer, rather than individual wells.

5.0 CHEMICAL PROPERTIES OF THE AQUIFER

The Albany County Health Department was contacted to obtain water quality data of the public water supply wells in close proximity to the project site (approximately within 650 feet around the limits of work). There are no public water supply wells in close proximity to the work; therefore, related data is not available. Federal USGS well information is provided in the Environmental Data Resources (EDR) Report that was obtained in support of the Hazardous Waste and Contaminated Materials effort for this project. A copy of this report is included in Appendix D of the Hazardous Waste and Contaminated Materials Report. However, water quality data for federal USGS wells within close proximity of the project is listed as Not Reported.

6.0 AQUIFER SUSCEPTIBILITY

A detailed quantification of contaminant fate and transport to the bedrock aquifer is beyond the scope of this aquifer study; however, a conservative first-order calculation (Toler Analysis) of commonly used deicing chemicals (specifically chloride from rock-salt) can be used to estimate a potential worst-case impact to an aquifer. Chloride is used as a tracer chemical because it is a highly soluble component of rock salt. By the nature of the Toler Analysis, all additional chloride added to the road surface as a result of this project will be shown to increase the chloride concentration in the underlying aquifer. This process assumes that the underlying aquifer does not contain a thick confining layer and is highly susceptible to surficial contamination, which is consistent with conditions at this location. The southerly portion of the PSA, south of Albany Shaker Road, overlies mapped NYSDEC aquifers that are unconfined. Additionally, EPA reports that the Schenectady/Niskayuna Sole Source Aquifer system is highly vulnerable to contamination (http://www.epa.gov/region02/water/aquifer/schen/schenect.htm: Section III Susceptibility to Contamination) as a result of a nonconfining layer of "exceptionally permeable coarse sand and gravel deposits (http://www.epa.gov/region02/water/aquifer/schen/schenect.htm: Section I. Introduction, Subsection C. Area of Consideration.

7.0 GROUNDWATER IMPACT ANALYSIS

The purpose of a groundwater impact analysis is to determine if this project will significantly impact the Sole Source Aquifer as a result of the addition of new impervious surfaces. As impervious pavements are added to the aquifer recharge area, additional deicing chemicals will be applied to the roadway. The user capacity will also rise, increasing the potential pollutant load deposited in the recharge area. The primary contaminants added as a result of additional roadway pavements are deicing chemicals and regional deposition from atmospheric emissions from vehicles, power plants, and industrial boilers "upwind" of the area. These contaminants are deposited on roadways and enter the hydrologic system in the form of stormwater during precipitation events. A percentage of the stormwater runoff infiltrates through the soil resulting in the potential for contaminants to be introduced to the hydrologic system. A discussion of the potential quantity of contaminants introduced to the hydrologic system is discussed in the following sections.

7.1 PRE-CONSTRUCTION – EXISTING DRAINAGE PATTERNS

The critical component of drainage within the existing project area is roadway pavement. The overall PSA consists of approximately 245 acres. It includes approximately two (2) miles (3.2 kilometers) of I-87, beginning approximately 300-feet northeast of the Sand Creek Road flyover and ending at I-87, where it crosses Watervliet Shaker Road (Figure 1). Also included in the PSA are all of the On- and Off-ramps associated with this portion of the I-87 corridor, as well as portions of the surrounding land areas and adjacent local roads, including: an area of land between I-87 southbound and Albany Shaker Road near the northwest portion of the project corridor; all of the infield area within the I-87 project corridor between I-87 southbound and northbound lanes; and Albany Shaker Road, Old Wolf Road, and Wolf Road. The project study area is depicted on Figure 1. The land use along the Northway is primarily residential and commercial. Land use along the local roadways consists of a mix of agriculture, residential, commercial, airport and light industrial. The majority of stormwater collected both within and adjacent to the project limits is conveyed via overland flow and discharges to Shaker Creek and its tributaries.

7.2 POST-CONSTRUCTION

7.2.1 Proposed Stormwater Management

Post-construction land use will be similar to pre-construction conditions, with the exception of the proposed new roadway associated with each of the alternative. The Diamond Alternative involves the replacement of the existing Exit 4 ramps through construction of a full-access, grade separated diamond interchanged, which will connect to Wolf Road and Albany-Shaker Road via a new connector road. Key elements include: construction of the new connector road between Wolf Road and Albany-Shaker Road; new Exit 4 interchange ramps to connect I-87 to the connector road; construction of a new bridge to carry the connector road over I-87 northbound and southbound; reconstruction of 3,900 feet of I-87 northbound at the new interchange; pavement widening for additional travel lanes, turn lanes and medians on Wolf Road and Albany-Shaker Road; a new intersection on Albany-Shaker Road at the connector road; and replacement of existing Exit 5 southbound entrance ramp with a new direct ramp connection from Watervliet-Shaker Road to I-87 southbound. Under the Diamond Alternative approximately 3.39 lane miles would be added to the PSA. The Exit 4 northbound exit ramp, northbound entrance ramp, southbound exit ramp, and southbound entrance ramp and the C-D road, between Exit 5 southbound entrance ramp and Exit 4 southbound exit ramp, will be removed. Project Plans are included in Appendix B; however, this alternative has been dismissed from further consideration and will not be evaluated in this document.

The Flyover Alternative includes the construction of new Exit 4 ramps to replace and/or complement the existing Exit 4 interchange ramps. Key elements of this alternative include: construction of a new flyover ramp to connect I-87 northbound to Albany-Shaker Road; a new ramp to connect I-87 southbound to Albany-Shaker Road; a new ramp to connect Albany-Shaker Road to I-87 southbound; a new intersection on Albany-Shaker Road at the flyover ramp; construction of new bridges to carry the I-87 northbound to Albany-Shaker Road flyover ramp over I-87 northbound and southbound; pavement widening for additional travel lanes, turn lanes and medians on Wolf Road and Albany-Shaker Road; pavement widening to create an auxiliary

lane between the existing Exit 4 northbound entrance ramp and Exit 5 northbound exit ramp; and replacement of the existing Exit 5 southbound entrance ramp with a new direct ramp connection from Watervliet–Shaker Road to I-87 southbound. The Exit 4 southbound exit ramp and southbound entrance ramp and the C-D road, between Exit 5 southbound entrance ramp and Exit 4 southbound exit ramp, will be removed. Project Plans are included in Appendix B.

Construction of the project requires cut and fill. The proposed improvements will predominately require fill; however, some cut is required along existing roadways. Under the Diamond Alternative, the connector road is proposed for a currently undeveloped area; work associated with the connector will require fill. Similarly, work associated with the new Exit 4 Ramps under the Flyover Alternative will also require fill, with the exception of the intersection with Albany Shaker Road, which will require some cut.

This project is considered to be a re-development project and will be designed in accordance with the criteria presented in the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001), NYS Standards for Erosion and Sediment Control, Chapter 9: Redevelopment Projects of the Stormwater Management Design Manual (August 2010), Appendix B of Chapter 8 of the NYSDOT Highway Design Manual, NYSDOT Design Requirements and Guidance for SPDES General Permit (dated October 22, 2009). The proposed disturbance and increase in impervious area on this project will result in the need to construct various stormwater quality and quantity management features. The increase in impervious area are directly related to adding the proposed ramps, traffic lanes on I-87 and the local road system and pedestrian and bicycle accommodations within the project limits.

Stormwater practices will be refined as the project design phase progresses; however, they are anticipated to be comprised primarily of extended detention basins and dry swales.

7.2.2 Effect of Post-Construction Stormwater Management on Groundwater

Using the general methodology, know as the Toler Analysis, established in the December 1973 USGS publication Effect of Deicing Chemicals on Surface and Groundwater, authored by Larry G. Toler, a conservative estimate for the increase in chloride concentration in groundwater wells can be developed. The Toler Analysis is a conservative method to estimate chloride concentration increases in an analyzed well or well-field. The methodology presented in the Toler Analysis assumes that all chloride applied to the roadway will enter an aquifer and is diluted by the volume of water removed from the well or well-field per year. Consideration is not given to soil filtration/absorption, further aquifer vertical and horizontal dilution, or the presence of aquicludes/aquitards which can protect underlying aquifers.

The basic Toler equation for estimating chloride concentrations in wells is as follows:

$$C = (T \times M/P)\ K \times 10^6$$

C = Average annual chloride concentration in ppm

T = Annual salt application rate (tons/lane-mile/year)

M = Highway pavement area (lane miles)

P = Well pumping rate (tons/year)

K = 0.607 (chloride weight fraction)

A Toler Analysis was completed to determine the effect of increased chloride ion concentrations to the aquifer and in Shaker Creek derived due to the application of deicing salt on the new connector road. Since no wells were identified within 500 feet of the project study area, the Toler Analysis as it applies to surface waters was applied to determine the general potential for impact on the aquifer. This method appeared appropriate since the analysis for surface water assumes that all the salt spread in a given period of time is diluted by all runoff and all salt enters the stream through groundwater recharge carried in natural groundwater discharge; therefore, it can be expected that a certain amount, if not all, of the chloride could remain in the aquifer unless otherwise withdrawn from a well or discharged to a stream in groundwater. The analysis identified a 0.084 mg/l (ppm) increase in the chloride ion concentration levels in Shaker Creek as derived from roadway runoff within a drainage area of approximately 0.7 square miles (431-

acres). The existing chloride ion concentration values and the values resulting from the Toler Analysis are expressed in milligrams per liter (mg/l) or parts per million (ppm), this is a way of expressing highly diluted concentrations of substances in a liquid, such as groundwater. In other words, parts per million or ppm means out of a million, just as percent means out of a hundred. One ppm is equivalent to 1 milligram of a substance per liter of water (mg/l). The drainage area begins on the east side of the I-87 corridor, and includes the area west to Ann Lee Pond, where Shaker Creek flows northward under Meeting House Road to the Mohawk River. The background chloride ion concentration of the Mohawk River was estimated to be 50.200 mg/l (ppm) in 2011. This estimate was based on chloride ion concentrations measured in 1953 and 1974, which were 16 and 28 mg/l (ppm), respectively; as a result, chloride concentration levels increased by 0.600 mg/l every year for a period of 20-years. Assuming the trend remains consistent, the current chloride ion concentrations in the Mohawk River would be around 50.200 mg/l (ppm) (i.e.0.6 mg/ltr increase over the 37-year period from 1974 to 2011 plus the 28 mg/l concentration measured in 1974).

Two (2) build alternatives (Flyover and Diamond) were proposed for this project; however, since the Diamond Alternative has been dismissed from further consideration, the Toler Analysis has been performed to estimate the worst-case chloride concentrations associated with the Flyover Alternative, which has been identified as the Preferred Alternative. Within the PSA, there is currently an estimated 18.45 lane miles. Under the Flyover Alternative approximately 1.27 lane miles would be added to the PSA. The chloride ion concentration levels were calculated for existent lane miles (18.45) within the PSA; the concentration of chloride ions in runoff from the existent lane miles in the PSA was calculated at 1.197 mg/l (ppm). Chloride ion concentrations in runoff from the added lanes proposed under the Flyover Alternative were calculated at approximately 0.084 mg/l (ppm). This amount added to the estimated 2011 background concentration of the Mohawk River (50.200 ppm), results in 50.284 mg/l (ppm). A concentration of 50.284 ppm is well below the current Federal and State Health Standard of 250 ppm. Furthermore, it is important to note that, the Toler Analysis for surface waters does not account for runoff that does not reach the receiving water body. Therefore, even though the increase in the chloride ion concentration levels in the Mohawk River is insignificant at 0.084 mg/l, the result might actually be significantly less when considering proposed stormwater

quality measures. Additionally, since the portion of the town in the PSA is served by the Latham Water District, which prepares drinking water from the Mohawk River, the minor increase in chloride concentrations would not be of concern, relative to the drinking water supply.

7.2.3 Vehicle Pollutant Characteristics

A variety of pollutants are deposited into the surrounding environment by passing motorists. Fuel emissions, lubricants, and wearing surfaces in vehicles are known to contribute lead, zinc, iron, copper, cadmium, chromium, nickel, manganese, and bromide into the environment. These contaminants typically precipitate onto the roadways and roadsides as vehicles travel through. In general these contaminants are not highly soluble. Accumulation of these contaminants may occur in the soils along the roadway and in the planned dry swales and detention basins.

7.3 CONSTRUCTION PHASE STORMWATER POLLUTION PREVENTION

As standard protocol, construction activities will take place on the site with the goal to minimize the release of chemicals, petroleum, construction debris, and waste. At a minimum, construction debris and waste will be collected and containerized at the end of each work day, and at the end of each week.

The construction contractor for the project will be responsible to coordinate with other contractors to provide adequate disposal containers for the project waste. Disposal containers should consist of labeled dumpsters, roll-offs, or other properly sized containers. Segregation and recycling of paper, cardboard, metals, and other recyclable debris is recommended.

Containers utilized for general refuse shall be covered with a waterproof lid to prevent stormwater from entering the container. Petroleum bulk storage tanks brought to the site shall meet the minimum secondary containment and spill containment requirements of NYSDEC, National Fire Protection Administration (NFPA), and Underwriters Laboratories (UL).

A list of Best Management Practices (BMP) recommended to be implemented at the construction site to minimize pollution release, as applicable for the planned site activities, is provided below:

- Sediment and Erosion Control
- Construction Waste Management
- Liquid Waste Management
- Maintaining Storm Drains
- Spill Response and Prevention
- Materials Storage
- Runoff Control by Minimizing Clearing
- Stabilize Drainage Ways
- Water Conservation
- Manage Stockpiled Materials
- Street Sweeping
- Vehicle and Equipment Cleaning
- Vehicle Maintenance and Fueling
- Residual Concrete and Pavement Disposal
- Liquid Waste Management
- Pesticide, Fertilizer, and Detergent Management

8.0 CONCLUSIONS

Approximately 1.27 miles of new lanes are proposed to be constructed under the Flyover Alternative. The new lane miles are associated with the proposed ramps. The proposed new lane miles for the Flyover Alternative are less than half as much as the Diamond Alternative, which contributed to the dismissal of the Diamond Alternative as a feasible alternative.

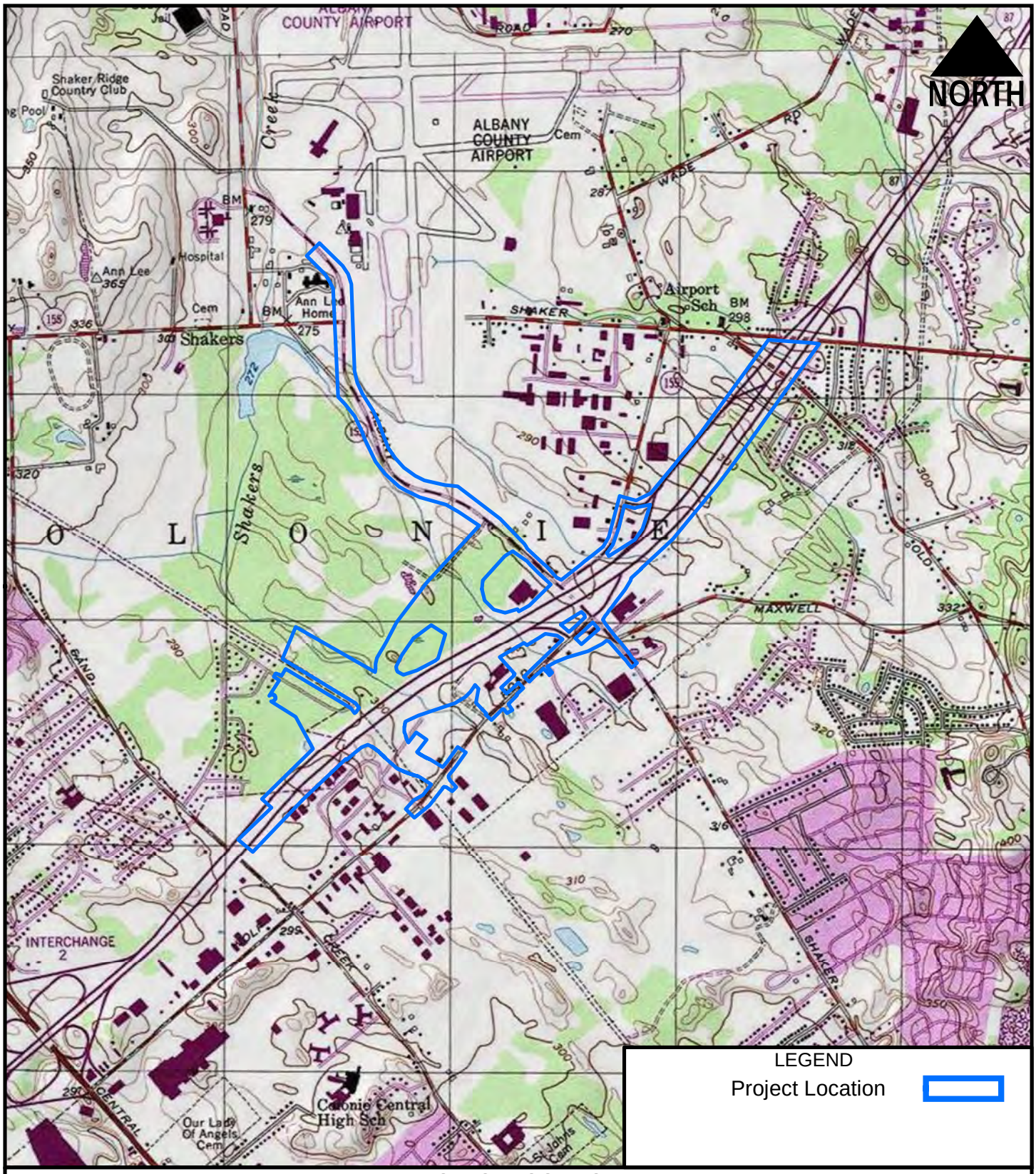
The Toler Analysis method was used to estimate the potential worst-case chloride concentrations to impact an aquifer underlying the salt application/recharge area. The Toler method is considered to be a very conservative and "worst case" estimate for this project location because the aquifer would also receive a large volume of recharge from areas that are not affected by roadway deicing materials or contaminants, and this recharge would further dilute chloride or highway-related contaminants that did reach the aquifer.

Based on the additional lane miles, chloride concentration increase in an aquifer directly below the salt application/recharge area was calculated to be 0.084 ppm. Applying the 0.084 ppm calculated chloride increase to the existing concentration of 50.200 ppm results in a 50.284 ppm concentration to the receiving water body. Based on this analysis the chloride concentrations would not exceed the Maximum Contaminant Level (MCL) of 250 ppm. The actual increase in the chloride ion concentration levels in the Mohawk River would actually be less when considering the proposed stormwater quality measures.

This Groundwater Assessment did not identify sources of contamination that would impact the underlying Sole Source Aquifer at levels exceeding MCLs as a result of this project. The calculated chloride loading to the aquifer demonstrated that an increase of chloride may occur but not at concentrations which are expected to exceed the MCL, even when several factors that are anticipated to lower the chloride concentration were not applied. Based on this analysis short-term and long-term roadway runoff from the new lanes and impervious surface associated with pedestrian and bicyclist accommodations do not appear to be a threat to the aquifer.

FIGURE 1

PROJECT LOCATION MAP



LEGEND

Project Location

PROJECT LOCATION MAP
ALBANY, NY QUADRANGLE

SHUMAKER
Consulting Engineering & Land Surveying, P.C.

INTERSTATE 87 EXIT 4
ACCESS IMPROVEMENTS
PIN 1721.51
TOWN OF COLONIE
ALBANY COUNTY, NY

FIGURE NO.1

1" = 2,000'

FIGURE 2

MAPPED WATER RESOURCES

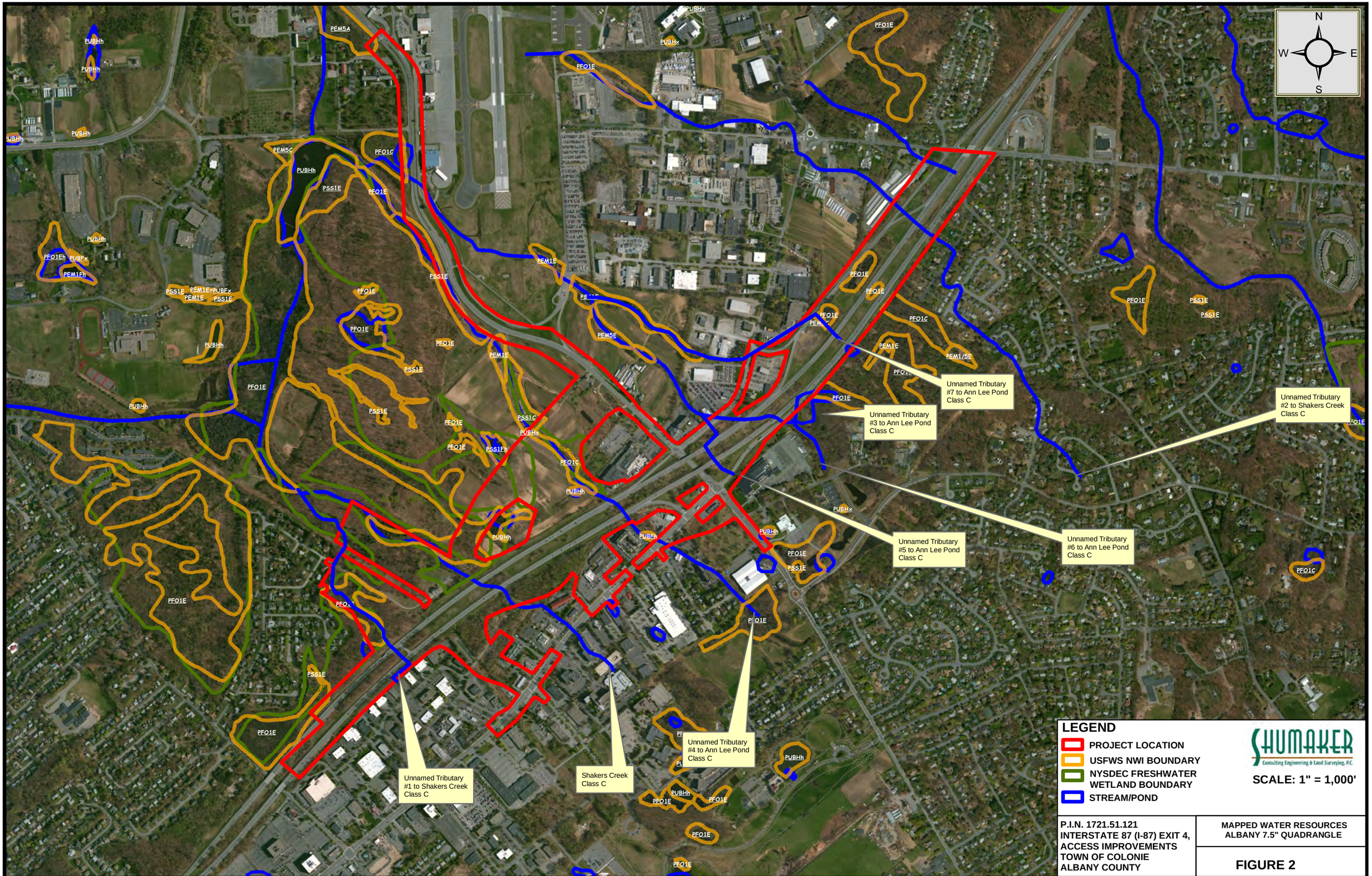


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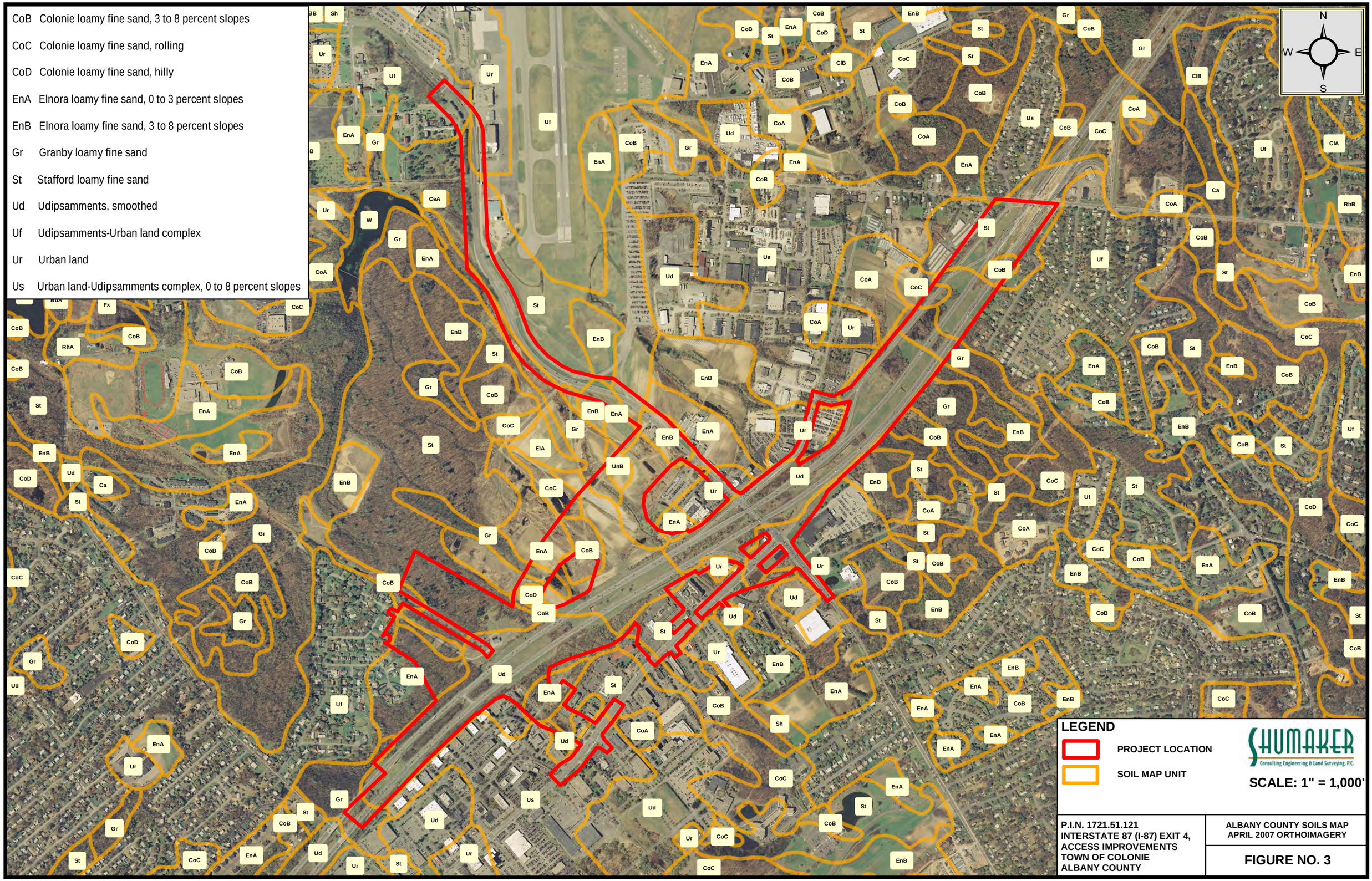
FIGURE 3

SOILS



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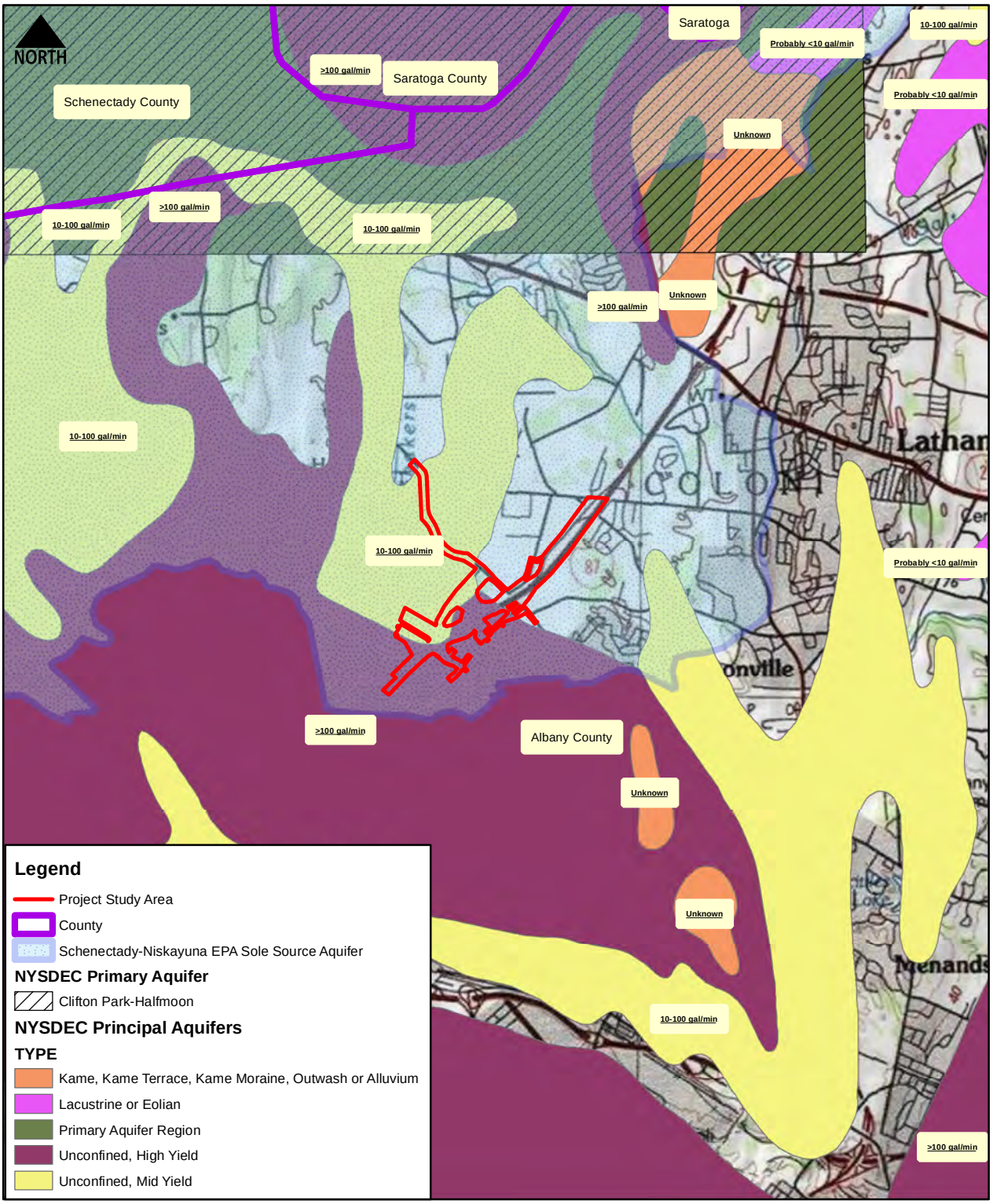
APPENDIX A

AQUIFER AND GEOLOGIC MAPS



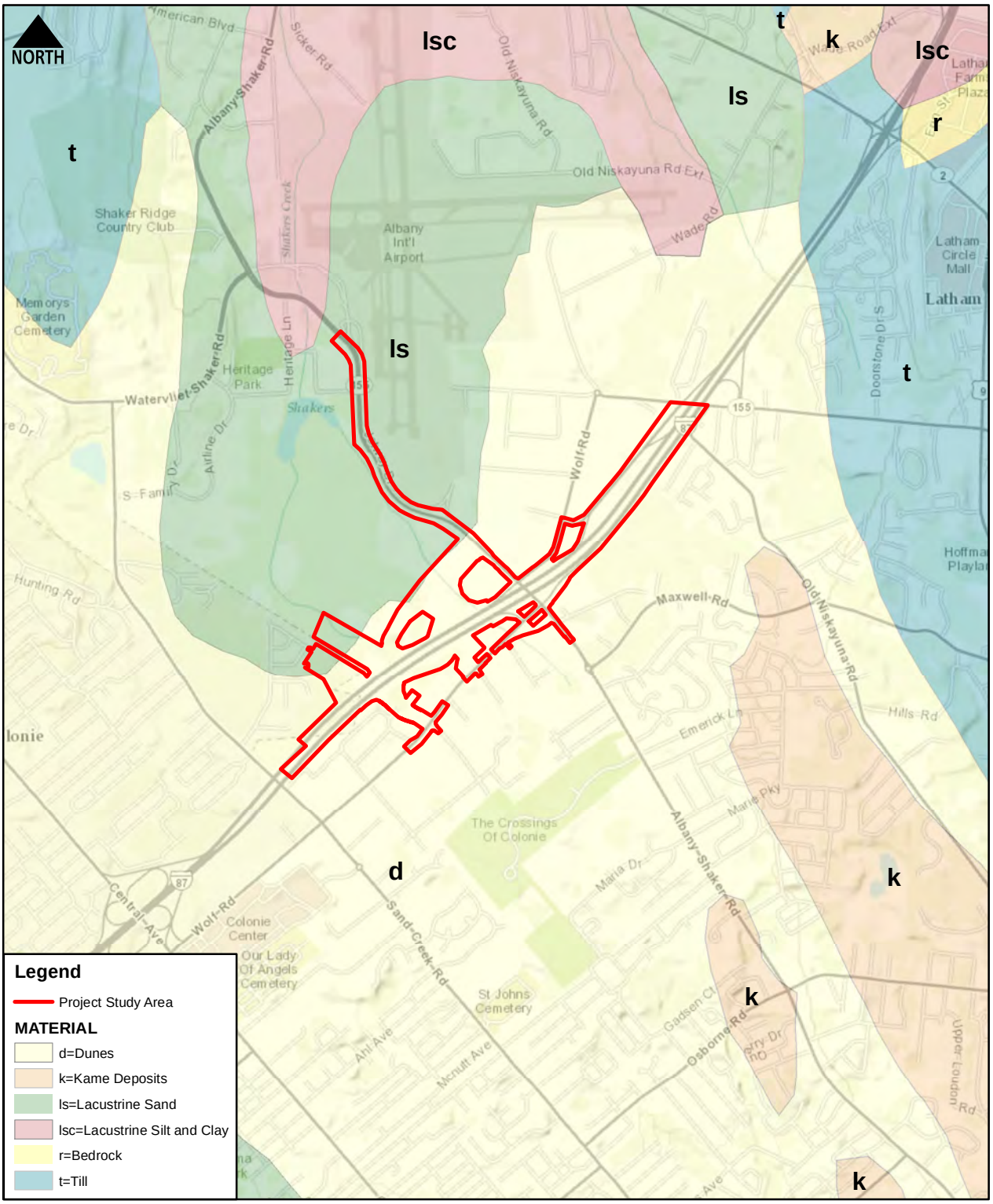
Aquifer Map

SHUMAKER
Consulting Engineering & Land Surveying, P.C.

EXHIBIT 1

NOT TO SCALE

INTERSTATE 87 EXIT 4
ACCESS IMPROVEMENTS
PIN 1721.51
TOWN OF COLONIE
ALBANY COUNTY, NY



Hudson Mohawk Surficial Geology Map

SHUMAKER
Consulting Engineering & Land Surveying, P.C.

Exhibit 2	1:36,000

INTERSTATE 87 EXIT 4
ACCESS IMPROVEMENTS
PIN 1721.51
TOWN OF COLONIE
ALBANY COUNTY, NY

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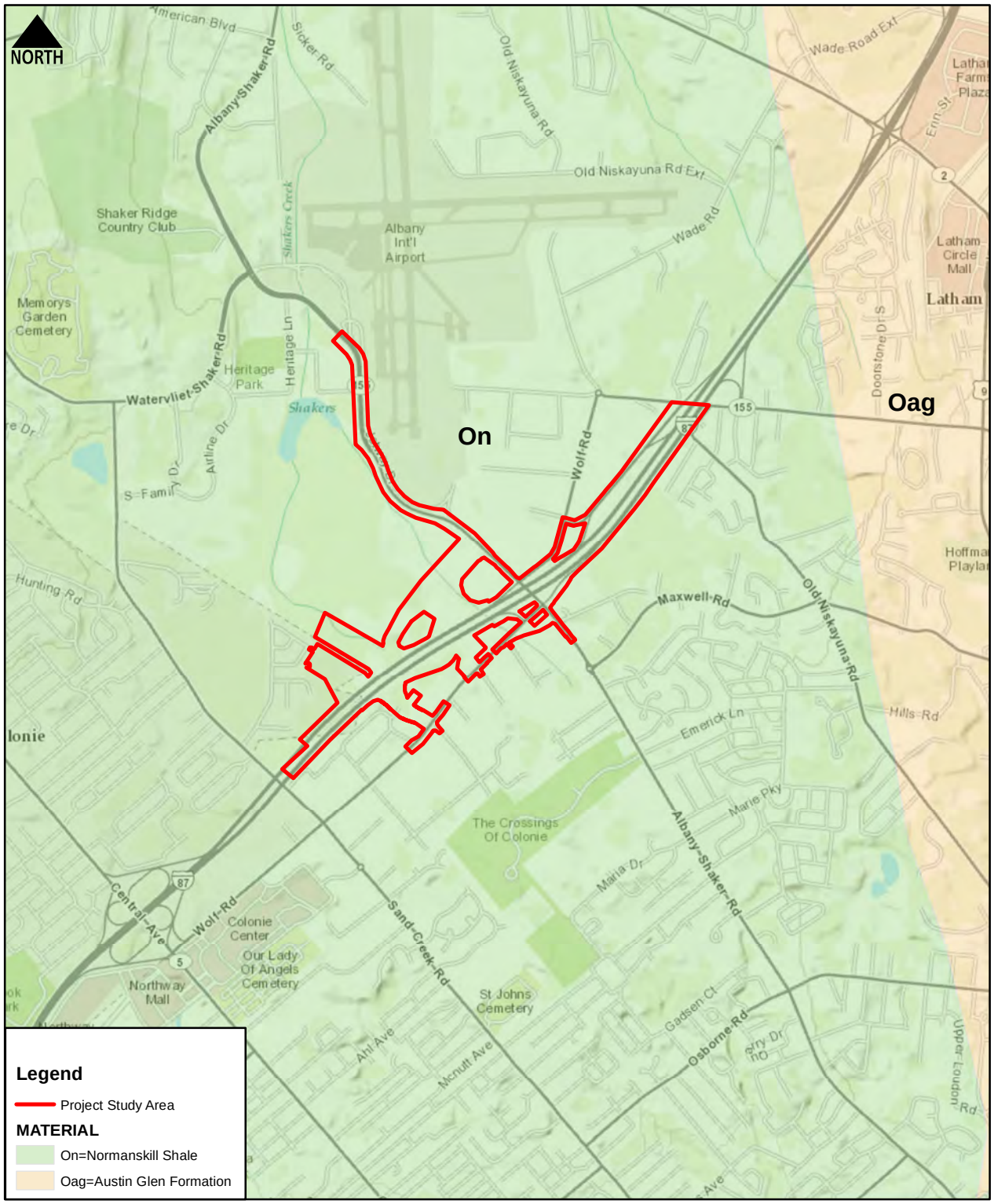

Hudson Mohawk Bedrock Geology Map

SHUMAKER
Consulting Engineering & Land Surveying, P.C.

Exhibit 3	1:36,000

INTERSTATE 87 EXIT 4
ACCESS IMPROVEMENTS
PIN 1721.51
TOWN OF COLONIE
ALBANY COUNTY, NY

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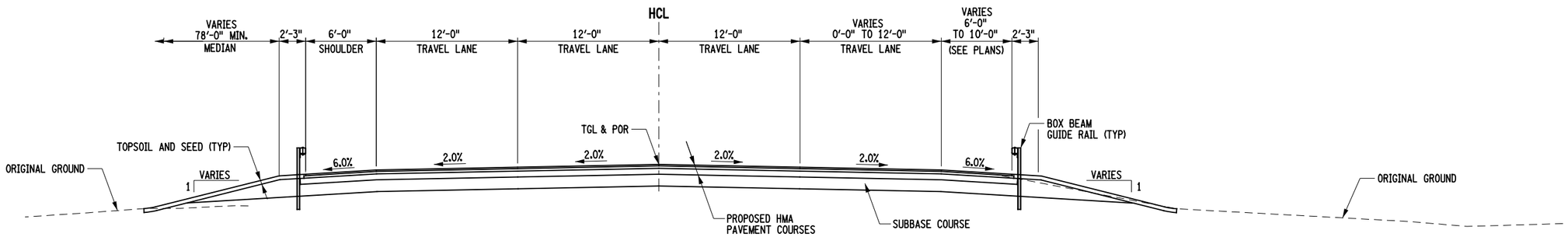
APPENDIX B

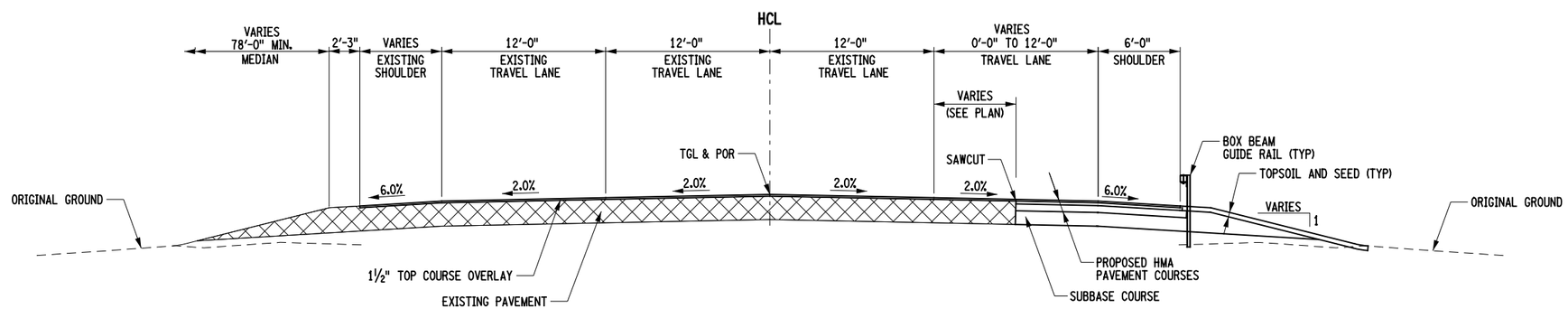
ALTERNATIVE PLAN SHEETS

Diamond Alternative



I-87 NORTHBOUND - FULL DEPTH RECONSTRUCTION

NTS



I-87 NORTHBOUND - BOX WIDENING AND OVERLAY

NTS

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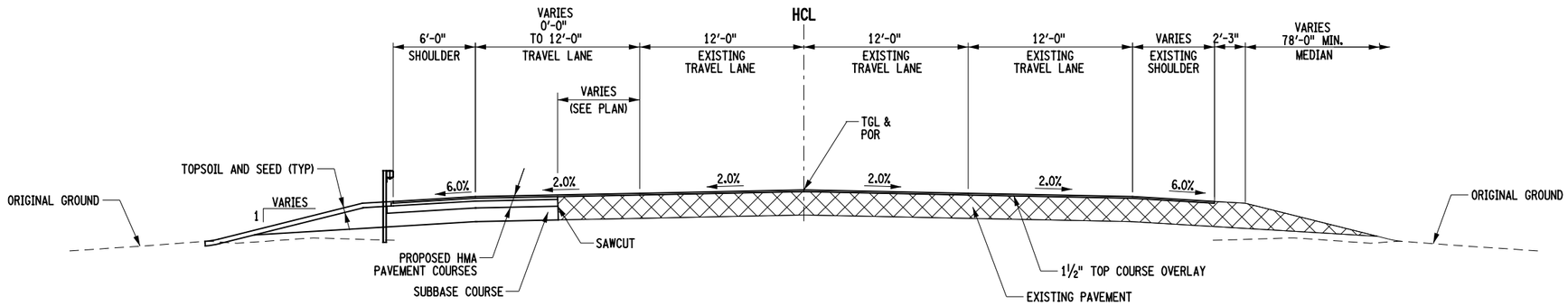
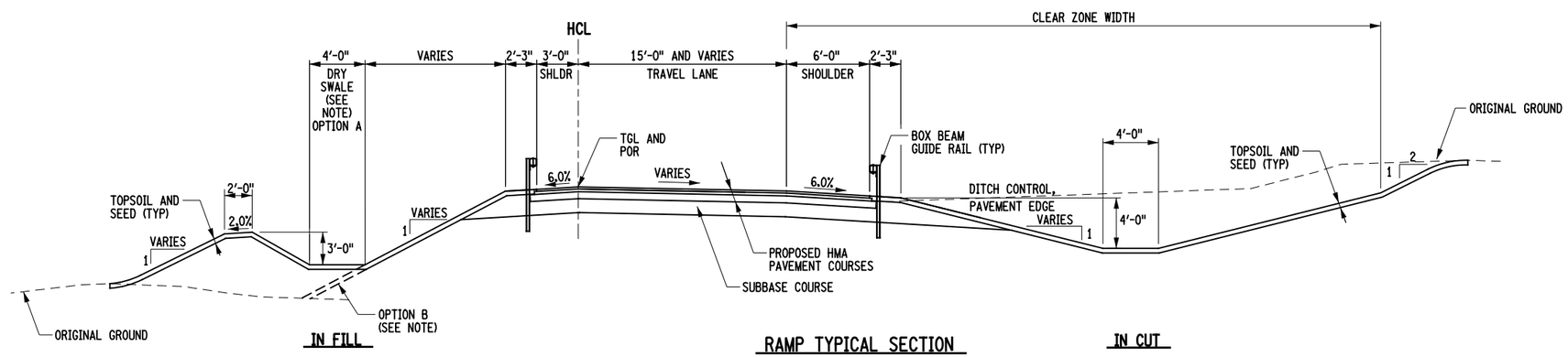


I-87 SOUTHBOUND - BOX WIDENING AND OVERLAY

NTS

(IN DIRECTION OF STATIONING, AGAINST DIRECTION OF TRAFFIC)



RAMP TYPICAL SECTION

NTS

NOTE:
SEE PLANS FOR DRY SWALE LOCATIONS. WHEN DRY SWALE IS PRESENT CONSTRUCT OPTION A, OTHERWISE USE OPTION B.

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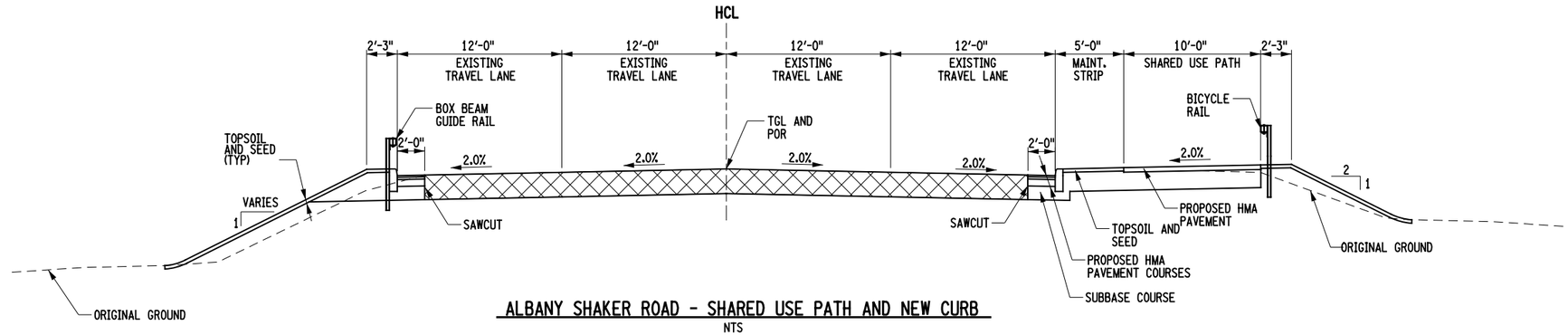
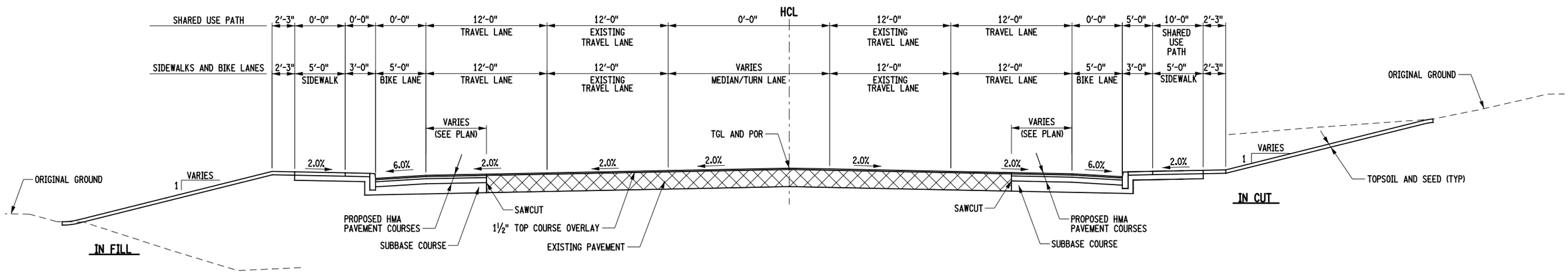


ALBANY SHAKER ROAD - SHARED USE PATH AND NEW CURB

NTS



ALBANY SHAKER ROAD - BOX WIDENING AND OVERLAY (SHARED USE PATH AND BIKE LANES SHOWN)

NTS

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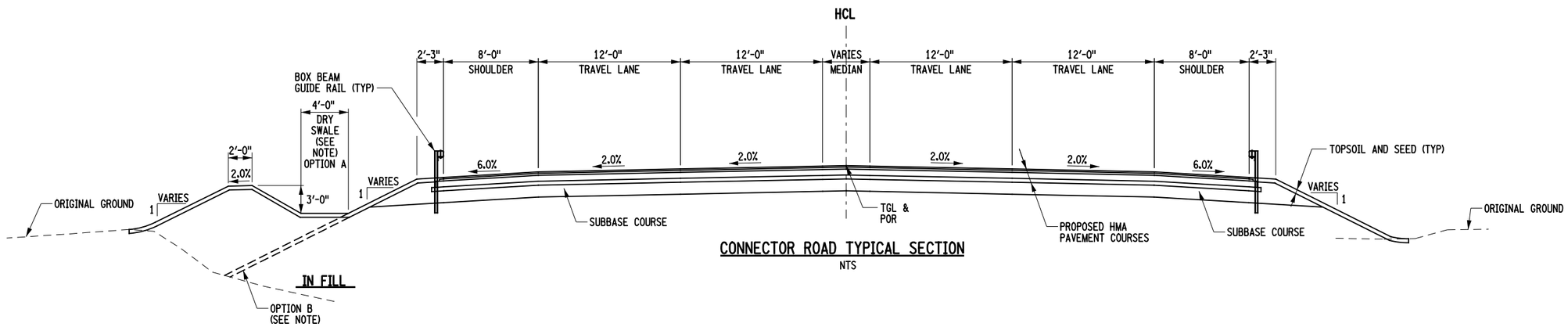

CONNECTOR ROAD TYPICAL SECTION

NTS

NOTE:
SEE PLANS FOR DRY SWALE LOCATIONS. WHEN DRY SWALE IS PRESENT CONSTRUCT OPTION A, OTHERWISE USE OPTION B.

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DOCUMENT NAME: 172151_cph_diamond_typ_04.dgn

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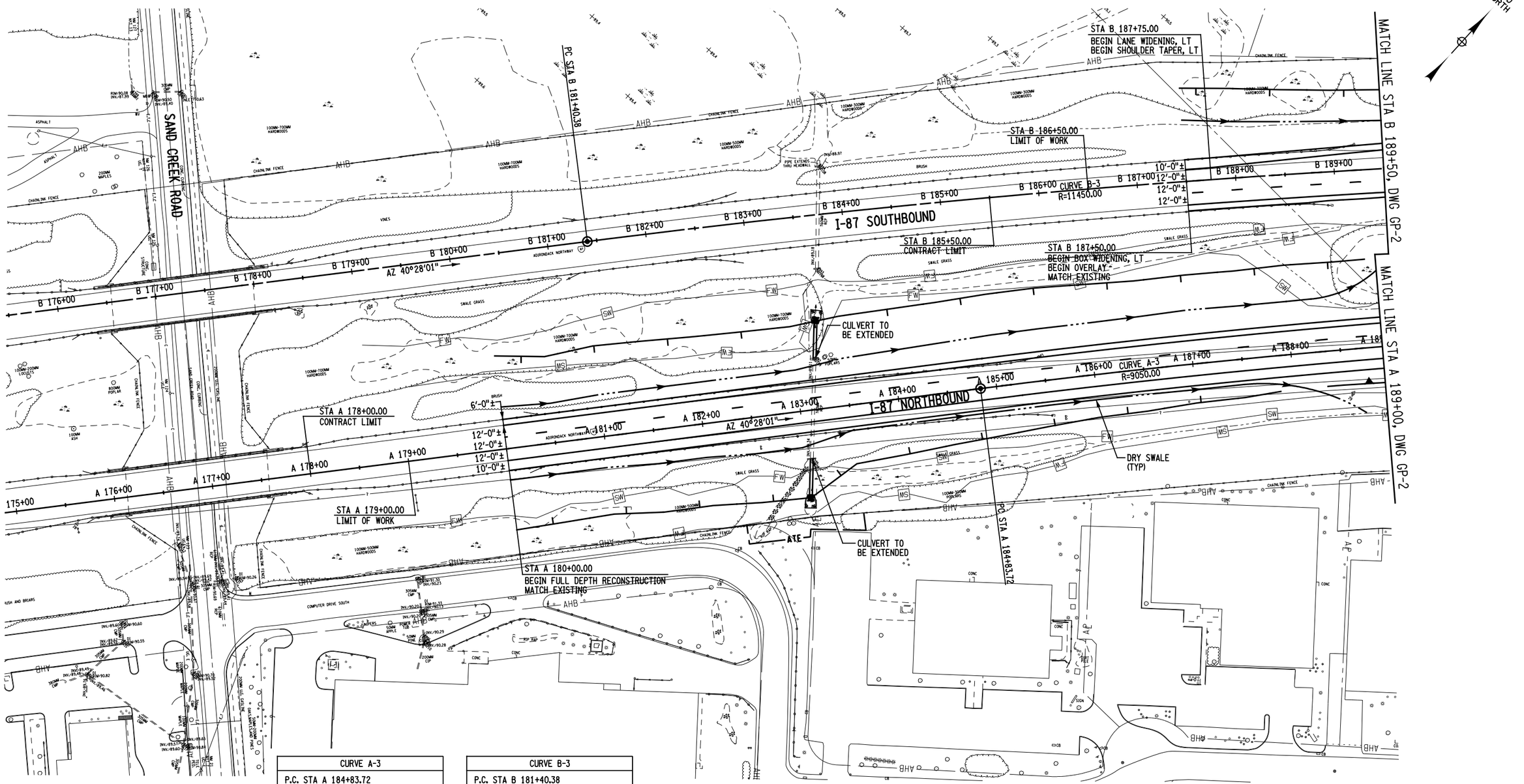

CURVE A-3	
P.C. STA A 184+83.72	
P.I. STA A 200+29.29	
P.T. STA A 215+45.32	
Δ= 19°22'59.06" R = 9050.00	E = 131.03 L = 3061.60 T = 1545.57
AHEAD TANGENT = 59°51'00.09" BACK TANGENT = 40°28'01.02"	

CURVE B-3	
P.C. STA B 181+40.38	
P.I. STA B 200+95.83	
P.T. STA B 220+13.90	
Δ= 19°22'59.06" R = 11450.00	E = 165.78 L = 3873.52 T = 1955.44
AHEAD TANGENT = 59°51'00.09" BACK TANGENT = 40°28'01.02"	

50 0 50 FT
SCALE

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-1
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_01.dgn

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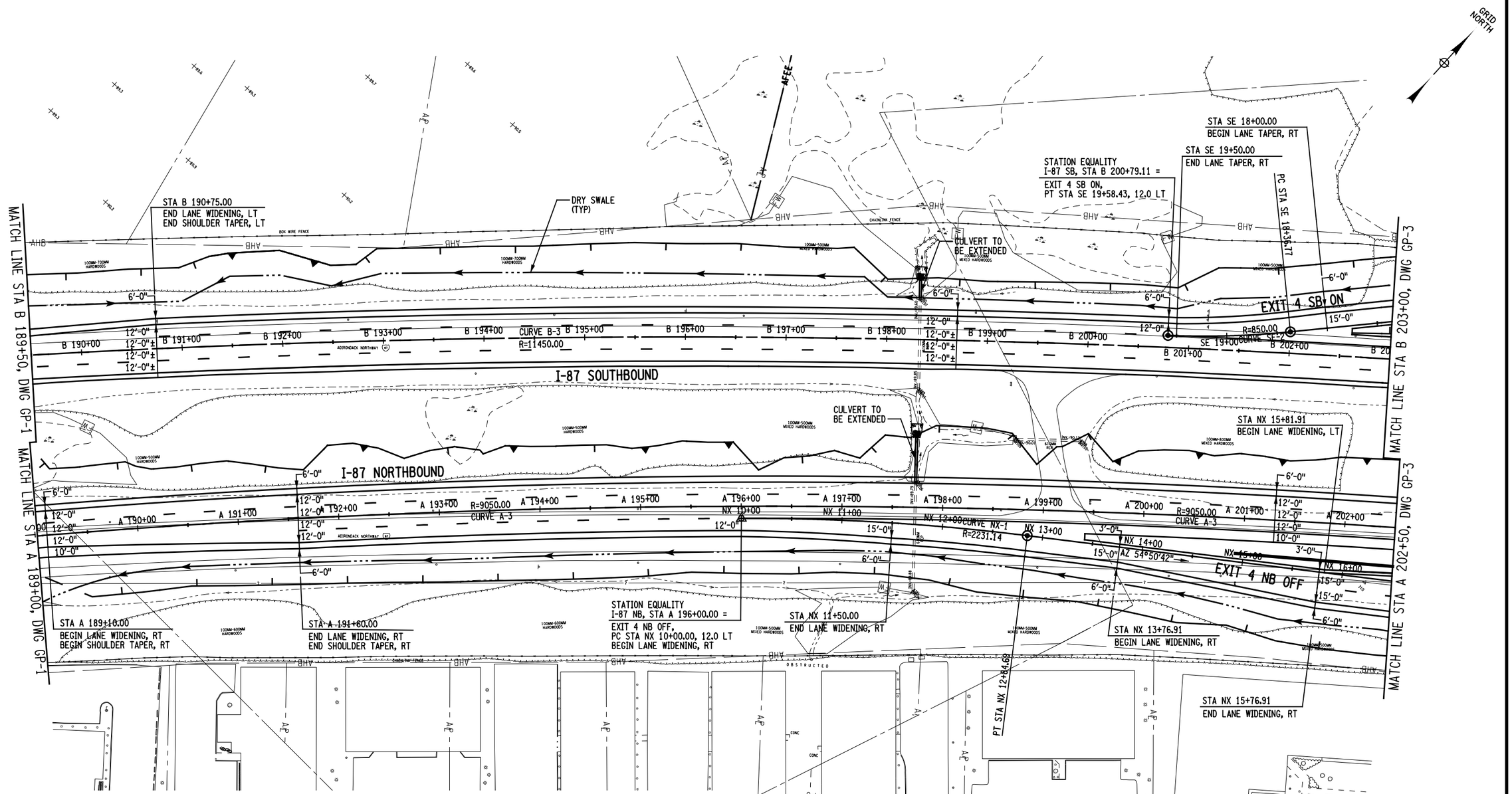

CURVE A-3	
P.C. STA A 184+83.72	
P.I. STA A 200+29.29	
P.T. STA A 215+45.32	
Δ= 19°22'59.06" R = 9050.00	E = 131.03 L = 3061.60 T = 1545.57
AHEAD TANGENT = 59°51'00.09"	
BACK TANGENT = 40°28'01.02"	

CURVE B-3	
P.C. STA B 181+40.38	
P.I. STA B 200+95.83	
P.T. STA B 220+13.90	
Δ= 19°22'59.06" R = 11450.00	E = 165.78 L = 3873.52 T = 1955.44
AHEAD TANGENT = 59°51'00.09"	
BACK TANGENT = 40°28'01.02"	

CURVE SE-2	
P.C. STA SE 18+36.77	
P.I. STA SE 18+97.71	
P.T. STA SE 19+58.43	
Δ= 08°12'01.69" R = 850.00	E = 2.18 L = 121.66 T = 60.93
AHEAD TANGENT = 230°10'05.39"	
BACK TANGENT = 221°58'03.70"	

CURVE NX-1	
P.C. STA NX 10+00.00	
P.I. STA NX 11+42.54	
P.T. STA NX 12+84.69	
Δ= 07°18'39.29" R = 2231.14	E = 4.55 L = 284.69 T = 142.54
AHEAD TANGENT = 54°50'42.20"	
BACK TANGENT = 47°32'02.91"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

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GENERAL PLAN
DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372
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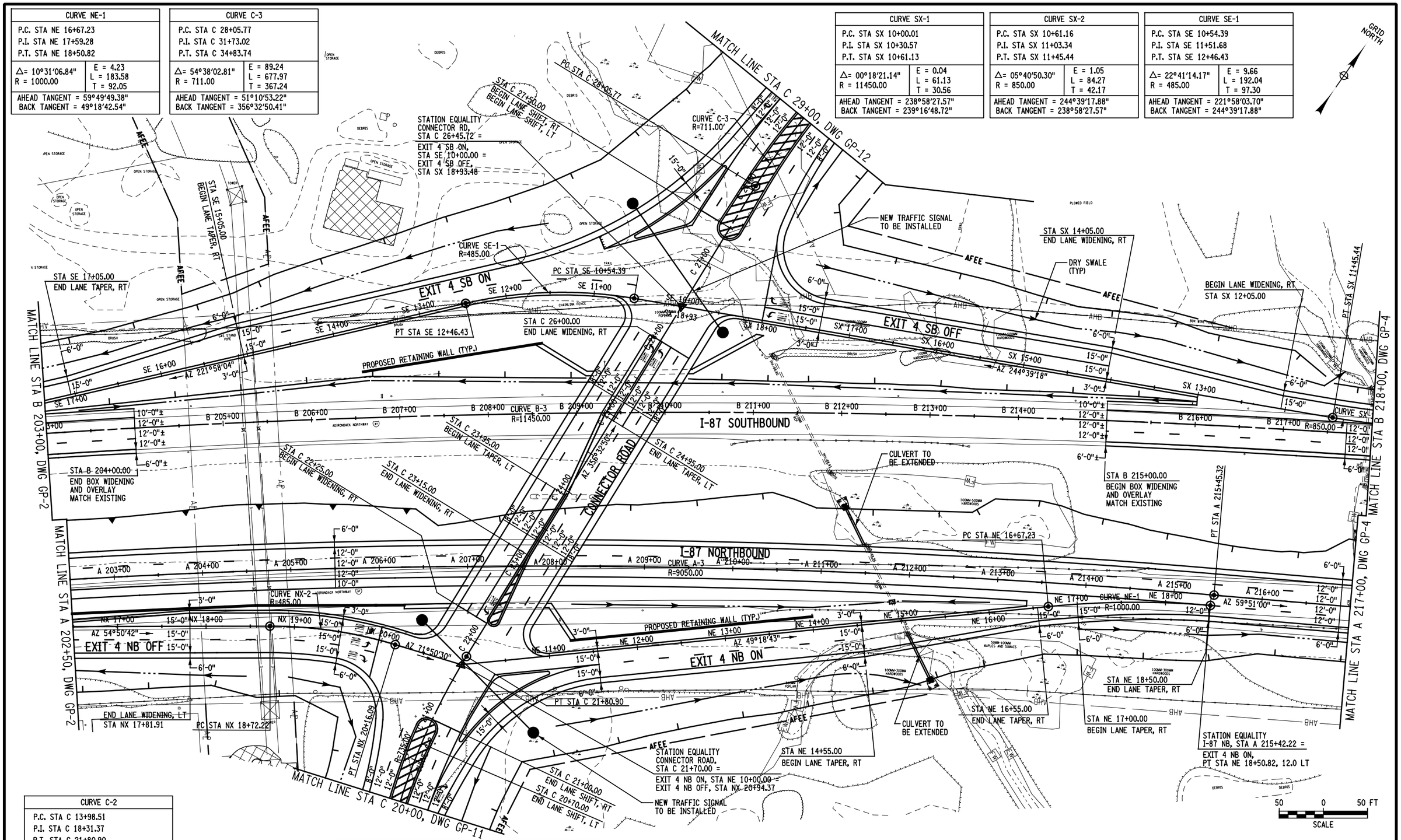
CURVE NE-1	
P.C. STA NE 16+67.23 P.I. STA NE 17+59.28 P.T. STA NE 18+50.82	
Δ= 10°31'06.84" R = 1000.00	E = 4.23 L = 183.58 T = 92.05
AHEAD TANGENT = 59°49'49.38" BACK TANGENT = 49°18'42.54"	

CURVE C-3	
P.C. STA C 28+05.77 P.I. STA C 31+73.02 P.T. STA C 34+83.74	
Δ= 54°38'02.81" R = 711.00	E = 89.24 L = 677.97 T = 367.24
AHEAD TANGENT = 51°10'53.22" BACK TANGENT = 356°32'50.41"	

CURVE SX-1	
P.C. STA SX 10+00.01 P.I. STA SX 10+30.57 P.T. STA SX 10+61.13	
Δ= 00°18'21.14" R = 11450.00	E = 0.04 L = 61.13 T = 30.56
AHEAD TANGENT = 238°58'27.57" BACK TANGENT = 239°16'48.72"	

CURVE SX-2	
P.C. STA SX 10+61.16 P.I. STA SX 11+03.34 P.T. STA SX 11+45.44	
Δ= 05°40'50.30" R = 850.00	E = 1.05 L = 84.27 T = 42.17
AHEAD TANGENT = 244°39'17.88" BACK TANGENT = 238°58'27.57"	

CURVE SE-1	
P.C. STA SE 10+54.39 P.I. STA SE 11+51.68 P.T. STA SE 12+46.43	
Δ= 22°41'14.17" R = 485.00	E = 9.66 L = 192.04 T = 97.30
AHEAD TANGENT = 221°58'03.70" BACK TANGENT = 244°39'17.88"	



CURVE C-2	
P.C. STA C 13+98.51 P.I. STA C 18+31.37 P.T. STA C 21+80.90	
Δ= 60°59'26.52" R = 735.00	E = 117.99 L = 782.40 T = 432.87
AHEAD TANGENT = 356°32'50.41" BACK TANGENT = 295°33'23.89"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-3
SHEET NO.

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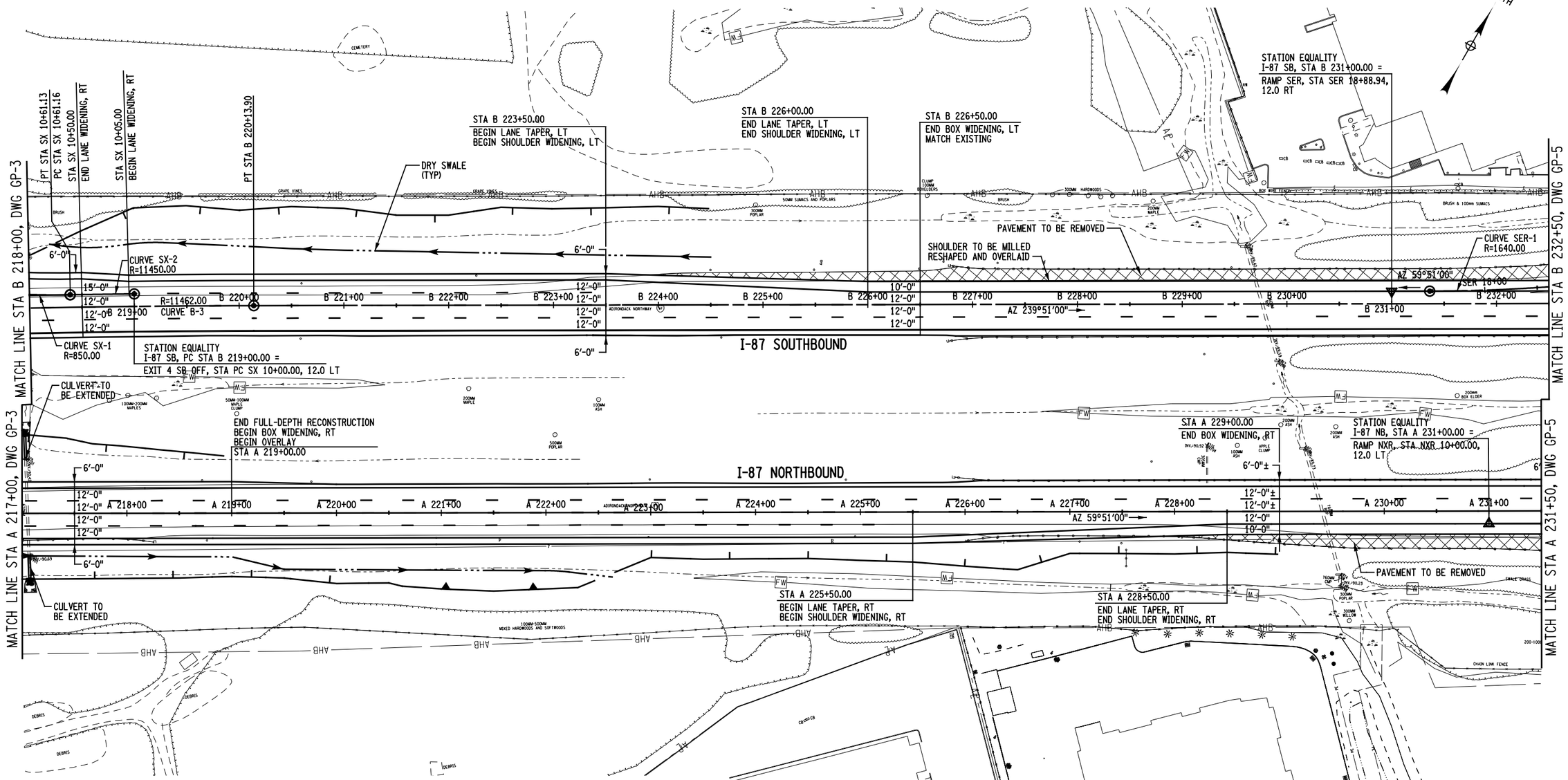

CURVE SX-1	
P.C. STA SX 10+00.01 P.I. STA SX 10+30.57 P.T. STA SX 10+61.13	
Δ= 00°18'21.14" R = 11450.00	E = 0.04 L = 61.13 T = 30.56
AHEAD TANGENT = 238°58'27.57" BACK TANGENT = 239°16'48.72"	

CURVE SX-2	
P.C. STA SX 10+61.16 P.I. STA SX 11+03.34 P.T. STA SX 11+45.44	
Δ= 05°40'50.30" R = 850.00	E = 1.05 L = 84.27 T = 42.17
AHEAD TANGENT = 244°39'17.88" BACK TANGENT = 238°58'27.57"	

CURVE B-3	
P.C. STA B 181+40.38 P.I. STA B 200+95.83 P.T. STA B 220+13.90	
Δ= 19°22'59.06" R = 11450.00	E = 165.78 L = 3873.52 T = 1955.44
AHEAD TANGENT = 59°51'00.09" BACK TANGENT = 40°28'01.02"	

CURVE SER-1	
P.C. STA SER 15+81.04 P.I. STA SER 17+17.14 P.T. STA SER 18+52.63	
Δ= 09°29'18.44" R = 1640.00	E = 5.64 L = 271.59 T = 136.11
AHEAD TANGENT = 239°51'00.09" BACK TANGENT = 230°21'41.65"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372

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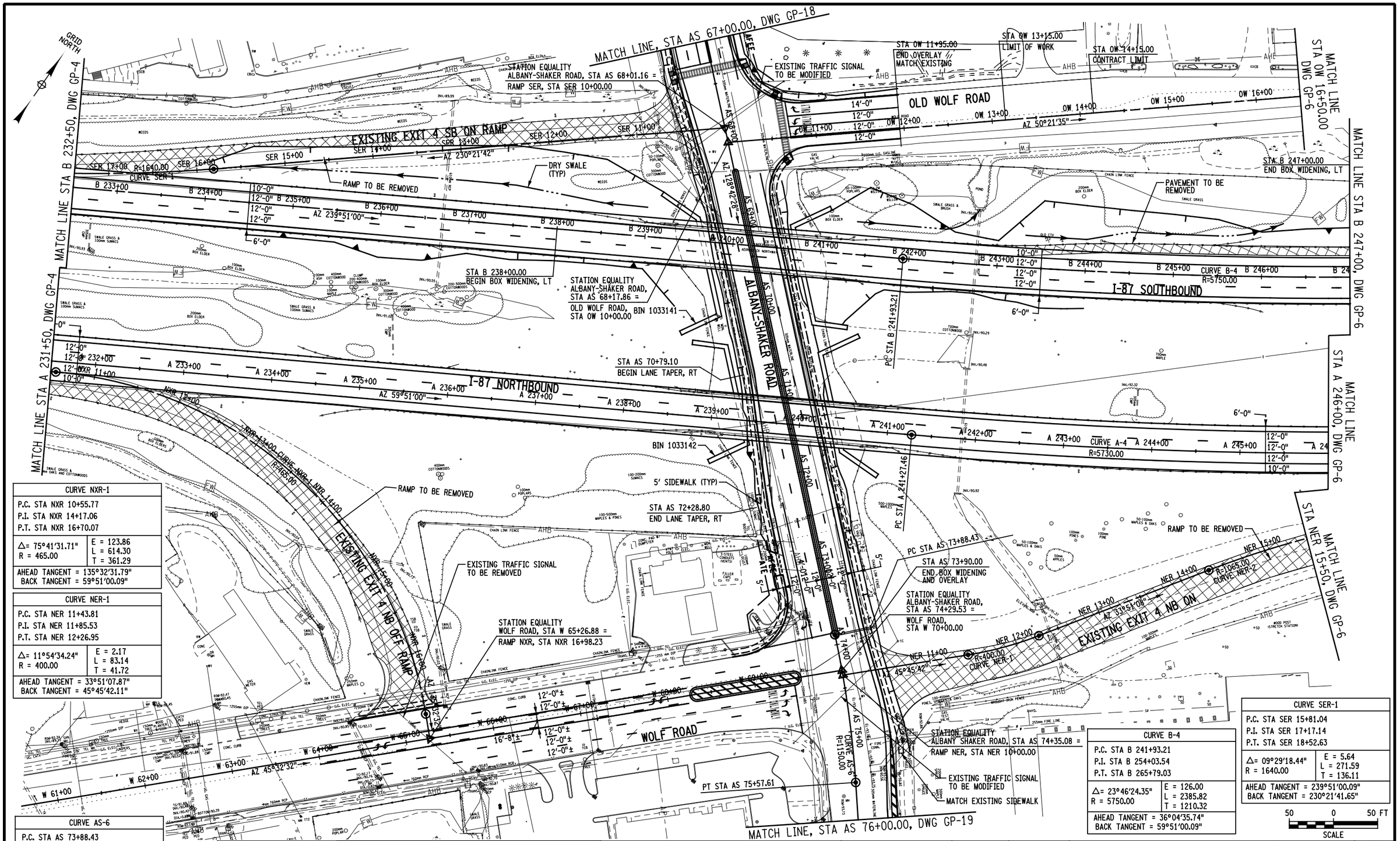

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-5
SHEET NO.

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CURVE B-4	
P.C. STA B 241+93.21	
P.I. STA B 254+03.54	
P.T. STA B 265+79.03	
Δ= 23°46'24.35" R = 5750.00	E = 126.00 L = 2385.82 T = 1210.32
AHEAD TANGENT = 36°04'35.74" BACK TANGENT = 59°51'00.09"	

CURVE OW-1	
P.C. STA OW 17+23.24	
P.I. STA OW 19+16.78	
P.T. STA OW 20+97.71	
Δ= 35°41'57.90" R = 601.00	E = 30.39 L = 374.47 T = 193.54
AHEAD TANGENT = 14°39'36.90" BACK TANGENT = 50°21'34.80"	

CURVE FR-1	
P.C. STA FR 40+01.39	
P.I. STA FR 41+97.82	
P.T. STA FR 43+51.56	
Δ= 64°43'15.90" R = 310.00	E = 57.00 L = 350.17 T = 196.43
AHEAD TANGENT = 284°39'36.90" BACK TANGENT = 219°56'21.00"	

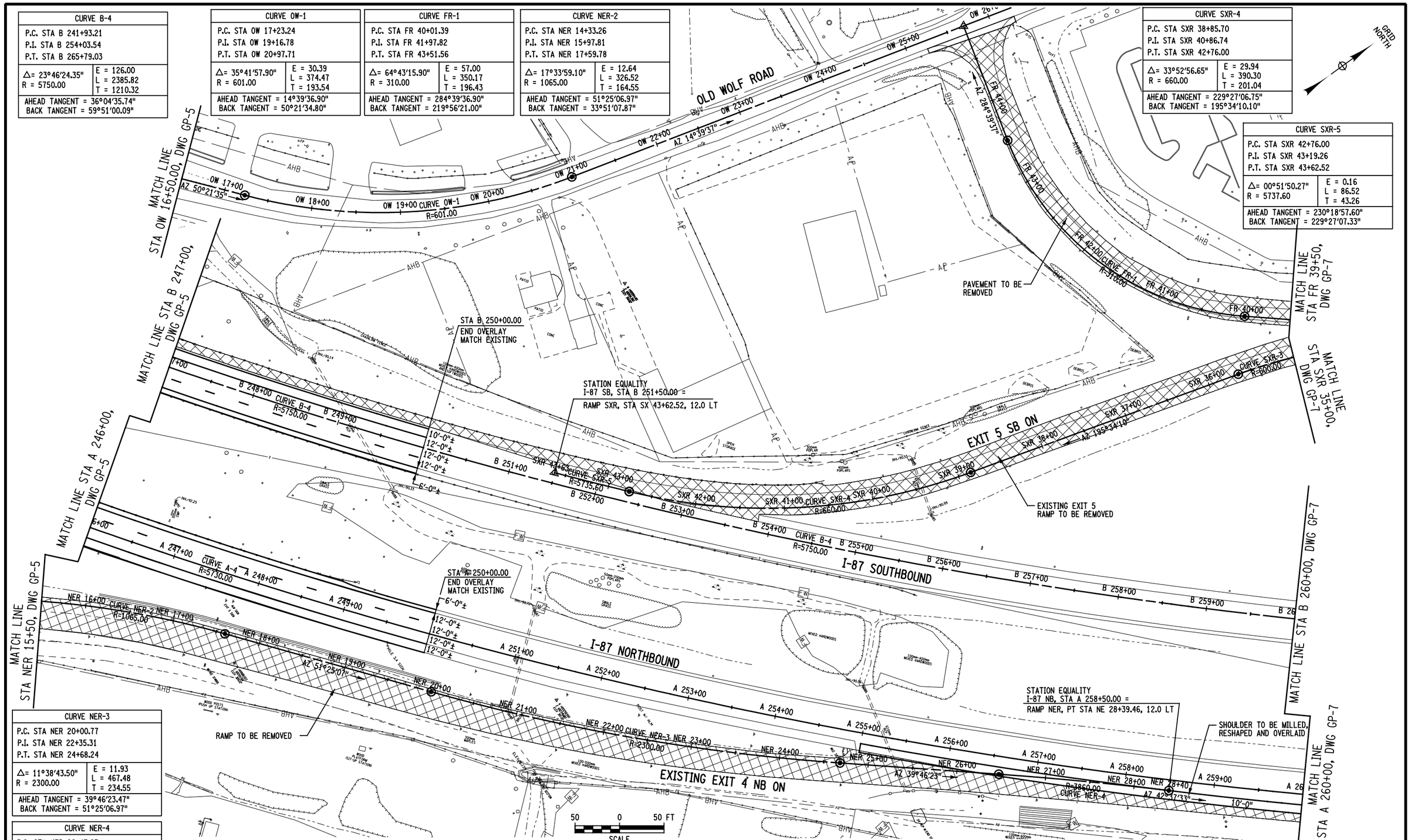
CURVE NER-2	
P.C. STA NER 14+33.26	
P.I. STA NER 15+97.81	
P.T. STA NER 17+59.78	
Δ= 17°33'59.10" R = 1065.00	E = 12.64 L = 326.52 T = 164.55
AHEAD TANGENT = 51°25'06.97" BACK TANGENT = 33°51'07.87"	

CURVE SXR-4	
P.C. STA SXR 38+85.70	
P.I. STA SXR 40+86.74	
P.T. STA SXR 42+76.00	
Δ= 33°52'56.65" R = 660.00	E = 29.94 L = 390.30 T = 201.04
AHEAD TANGENT = 229°27'06.75" BACK TANGENT = 195°34'10.10"	

CURVE SXR-5	
P.C. STA SXR 42+76.00	
P.I. STA SXR 43+19.26	
P.T. STA SXR 43+62.52	
Δ= 00°51'50.27" R = 5737.60	E = 0.16 L = 86.52 T = 43.26
AHEAD TANGENT = 230°18'57.60" BACK TANGENT = 229°27'07.33"	

CURVE NER-3	
P.C. STA NER 20+00.77	
P.I. STA NER 22+35.31	
P.T. STA NER 24+68.24	
Δ= 11°38'43.50" R = 2300.00	E = 11.93 L = 467.48 T = 234.55
AHEAD TANGENT = 39°46'23.47" BACK TANGENT = 51°25'06.97"	

CURVE NER-4	
P.C. STA NER 26+47.27	
P.I. STA NER 27+43.38	
P.T. STA NER 28+39.46	
Δ= 02°51'09.85" R = 3860.00	E = 1.20 L = 192.19 T = 96.11
AHEAD TANGENT = 42°37'33.32" BACK TANGENT = 39°46'23.47"	



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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372

DRAWING NO. GP-6
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_06.dgn

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DATE/TIME = 10/23/2013
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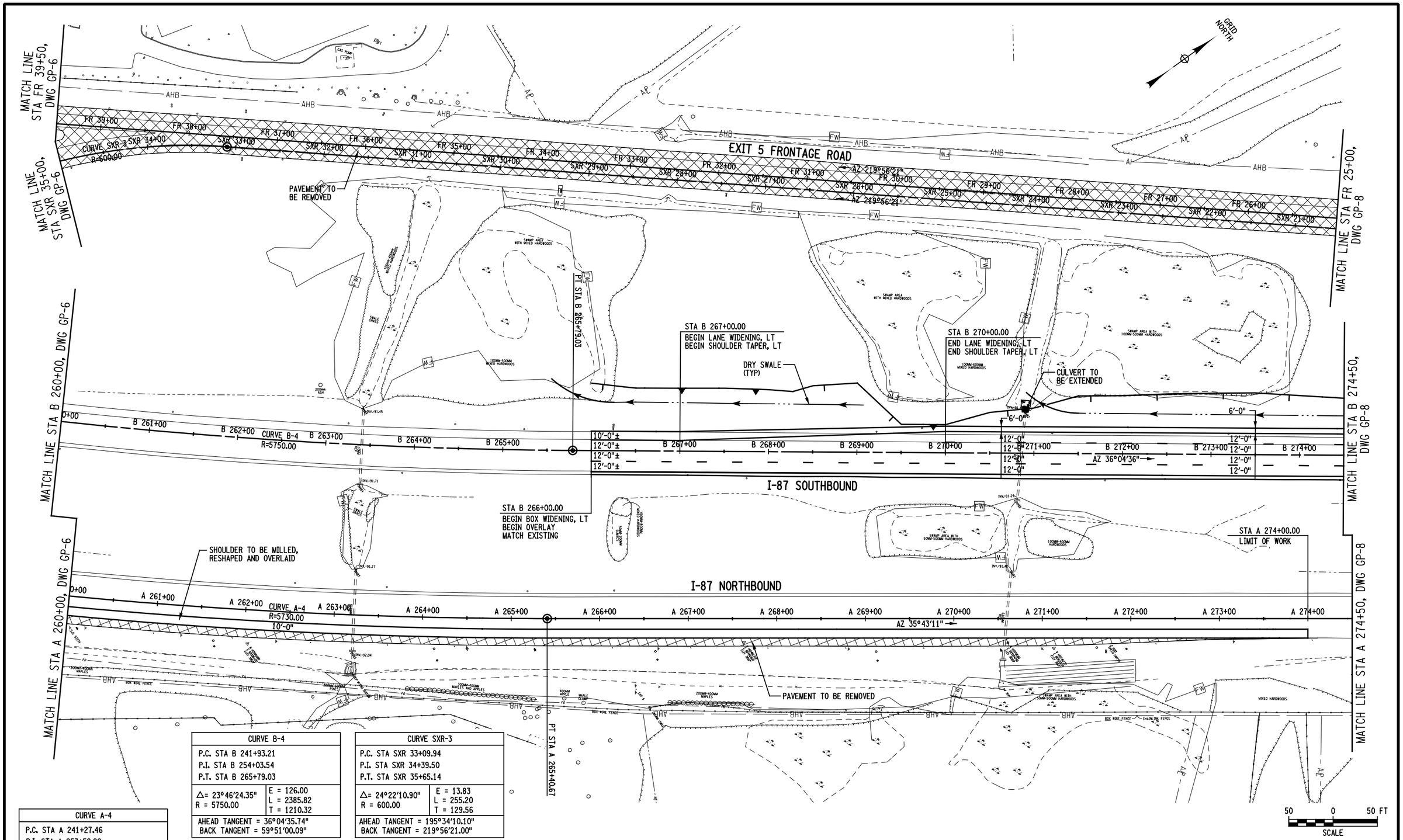

CURVE B-4	
P.C. STA B 241+93.21	
P.I. STA B 254+03.54	
P.T. STA B 265+79.03	
Δ= 23°46'24.35" R = 5750.00	E = 126.00 L = 2385.82 T = 1210.32
AHEAD TANGENT = 36°04'35.74" BACK TANGENT = 59°51'00.09"	

CURVE SXR-3	
P.C. STA SXR 33+09.94	
P.I. STA SXR 34+39.50	
P.T. STA SXR 35+65.14	
Δ= 24°22'10.90" R = 600.00	E = 13.83 L = 255.20 T = 129.56
AHEAD TANGENT = 195°34'10.10" BACK TANGENT = 219°56'21.00"	

CURVE A-4	
P.C. STA A 241+27.46	
P.I. STA A 253+52.22	
P.T. STA A 265+40.67	
Δ= 24°07'49.37" R = 5730.00	E = 129.43 L = 2413.22 T = 1224.76
AHEAD TANGENT = 35°43'10.72" BACK TANGENT = 59°51'00.09"	

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DIAMOND ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-7
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_07.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

FILE NAME = U:\9456\mstn\Preliminary Design Alternatives\Diamond\172151_cph_diamond_gnp_07.dgn
DATE/TIME = 10/23/2013
USER = 4066

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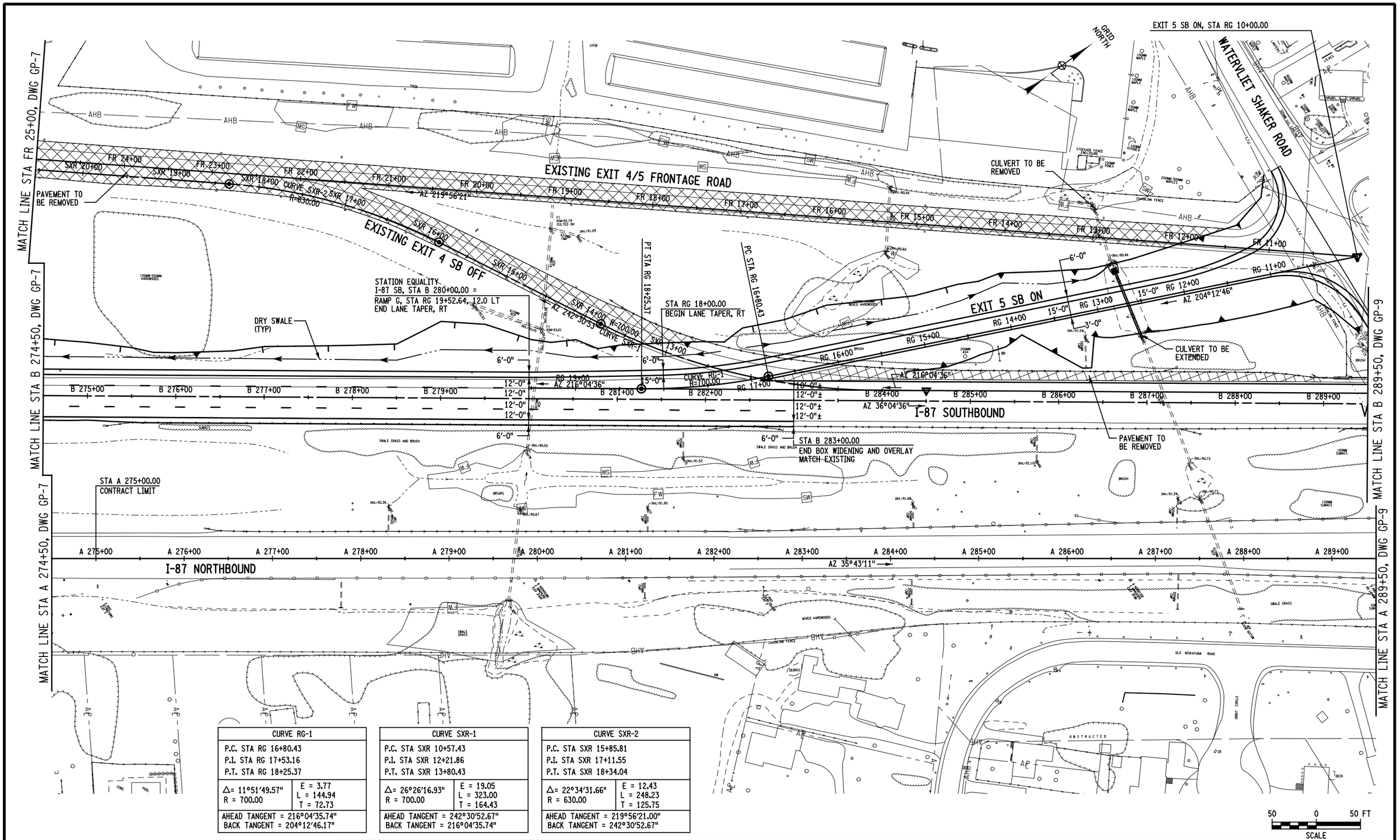

CURVE RG-1	
P.C. STA RG 16+80.43 P.I. STA RG 17+53.16 P.T. STA RG 18+25.37	
Δ= 11°51'49.57" R = 700.00	E = 3.77 L = 144.94 T = 72.73
AHEAD TANGENT = 216°04'35.74" BACK TANGENT = 204°12'46.17"	

CURVE SXR-1	
P.C. STA SXR 10+57.43 P.I. STA SXR 12+21.86 P.T. STA SXR 13+80.43	
Δ= 26°26'16.93" R = 700.00	E = 19.05 L = 323.00 T = 164.43
AHEAD TANGENT = 242°30'52.67" BACK TANGENT = 216°04'35.74"	

CURVE SXR-2	
P.C. STA SXR 15+85.81 P.I. STA SXR 17+11.55 P.T. STA SXR 18+34.04	
Δ= 22°34'31.66" R = 630.00	E = 12.43 L = 248.23 T = 125.75
AHEAD TANGENT = 219°56'21.00" BACK TANGENT = 242°30'52.67"	

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CONTRACT NUMBER D010372

DRAWING NO. GP-8
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_08.dgn

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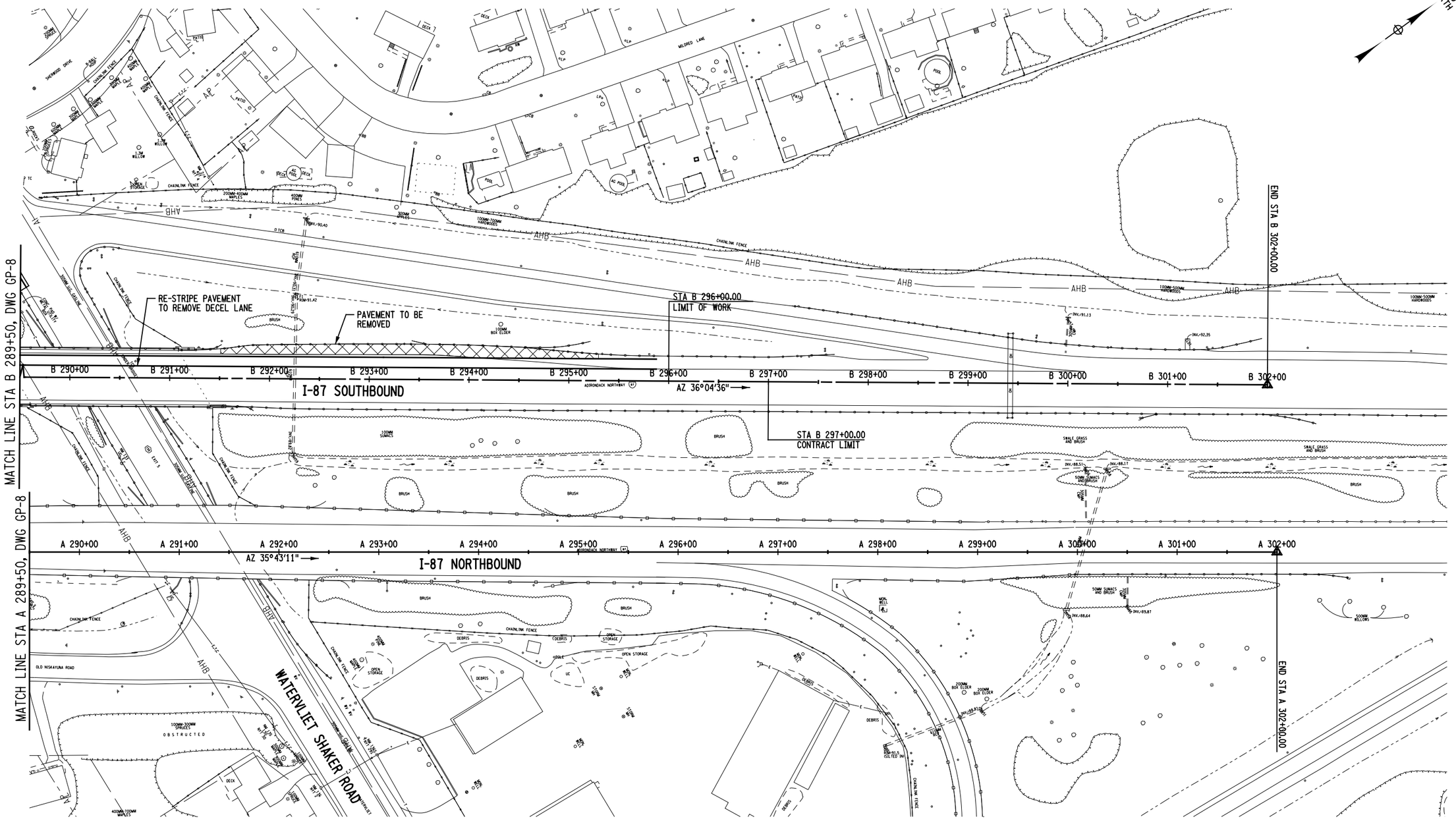

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CONTRACT NUMBER D010372

DRAWING NO. GP-9
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_09.dgn

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DATE/TIME = 10/23/2013
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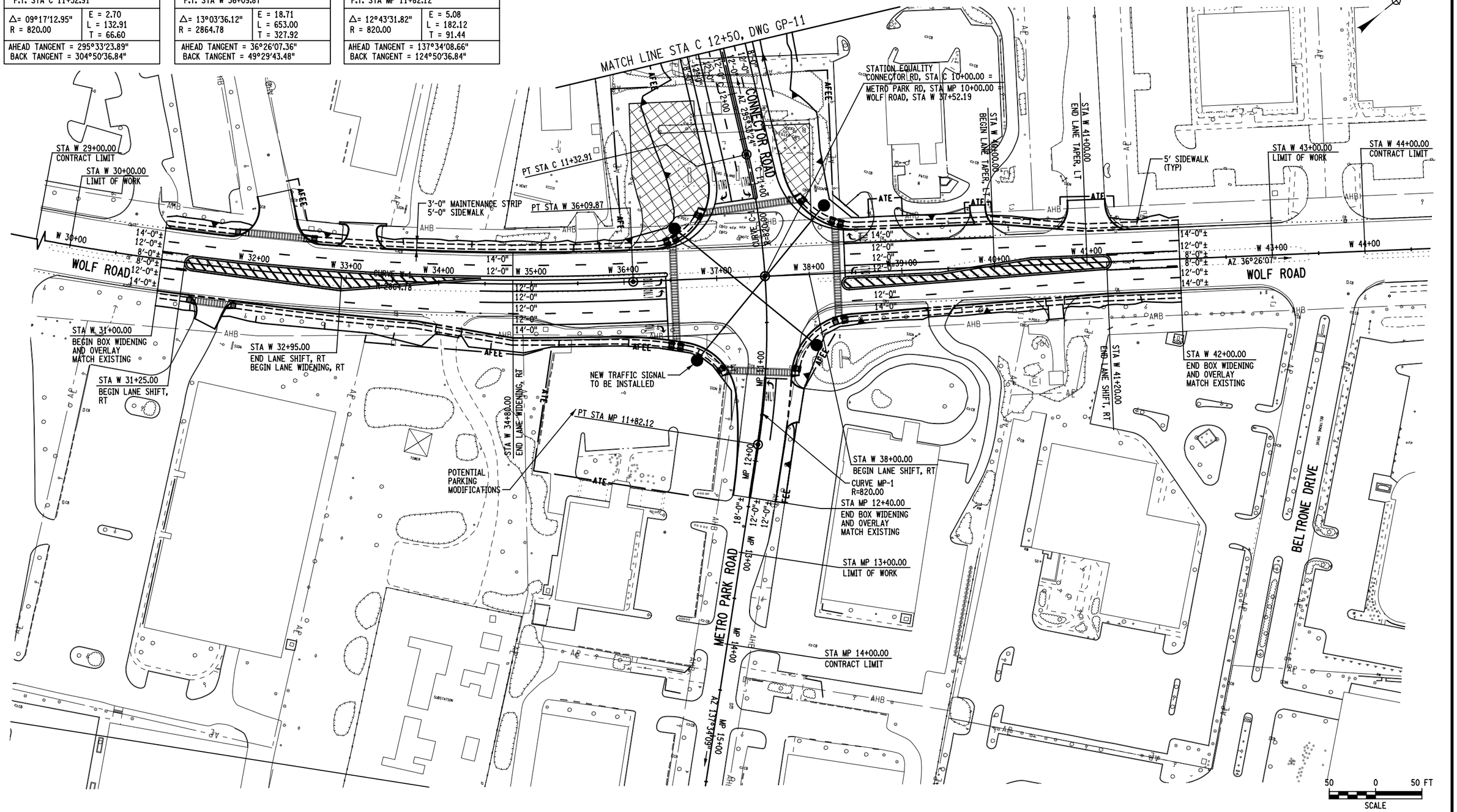
CURVE C-1	
P.C. STA C 10+00.00	
P.I. STA C 10+66.60	
P.T. STA C 11+32.91	
Δ= 09°17'12.95" R = 820.00	E = 2.70 L = 132.91 T = 66.60
AHEAD TANGENT = 295°33'23.89" BACK TANGENT = 304°50'36.84"	

CURVE W-1	
P.C. STA W 29+56.87	
P.I. STA W 32+84.79	
P.T. STA W 36+09.87	
Δ= 13°03'36.12" R = 2864.78	E = 18.71 L = 653.00 T = 327.92
AHEAD TANGENT = 36°26'07.36" BACK TANGENT = 49°29'43.48"	

CURVE MP-1	
P.C. STA MP 10+00.00	
P.I. STA MP 10+91.44	
P.T. STA MP 11+82.12	
Δ= 12°43'31.82" R = 820.00	E = 5.08 L = 182.12 T = 91.44
AHEAD TANGENT = 137°34'08.66" BACK TANGENT = 124°50'36.84"	



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CONTRACT NUMBER D010372
DRAWING NO. GP-10
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_10.dgn

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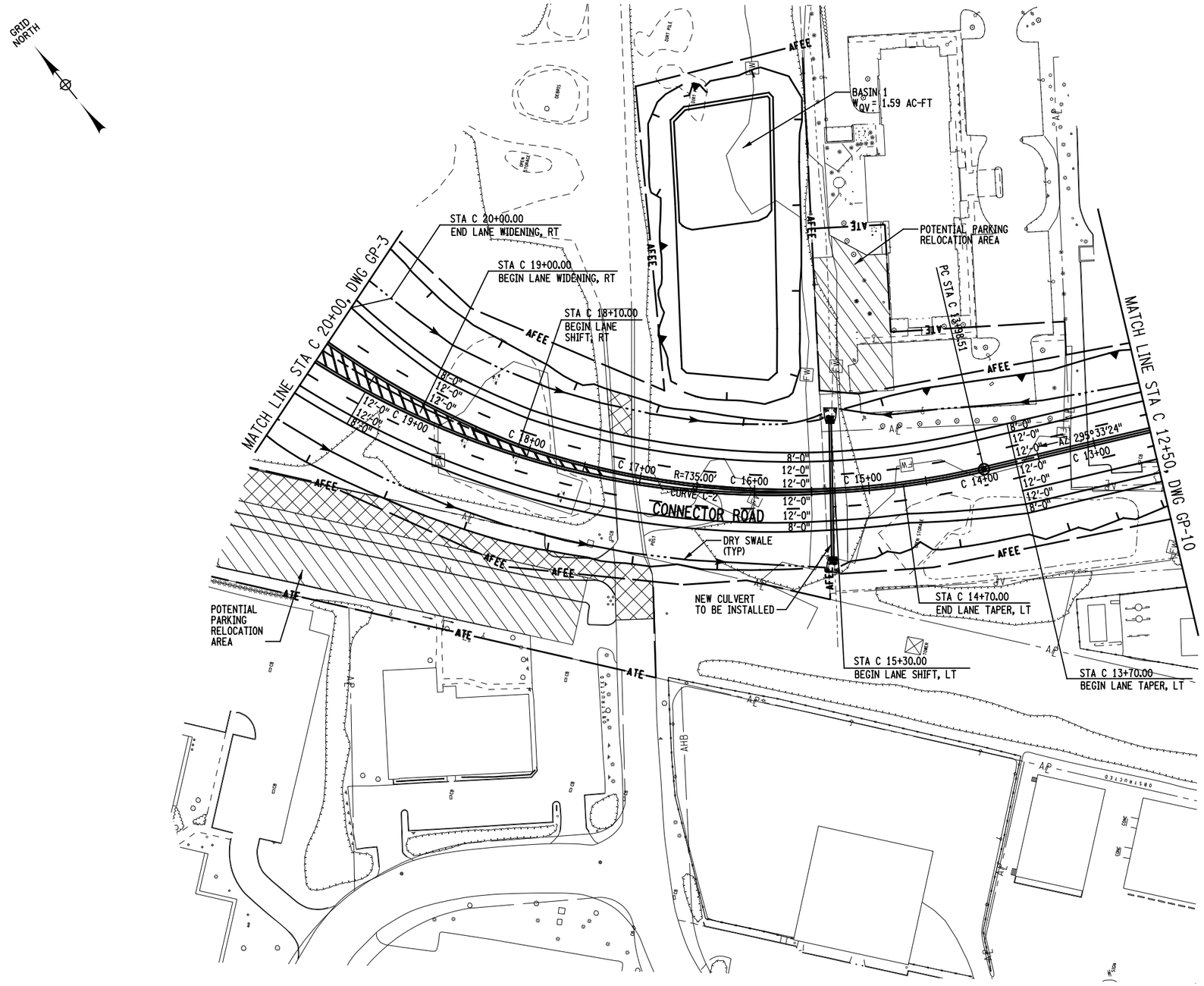

CURVE C-2	
P.C. STA C 13+98.51 P.I. STA C 18+31.37 P.T. STA C 21+80.90	
Δ= 60°59'26.52" R = 735.00	E = 117.99 L = 782.40 T = 432.87
AHEAD TANGENT = 356°32'50.41" BACK TANGENT = 295°33'23.89"	

50 0 50 FT
SCALE

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CONTRACT NUMBER D010372
DRAWING NO. GP-11
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_11.dgn

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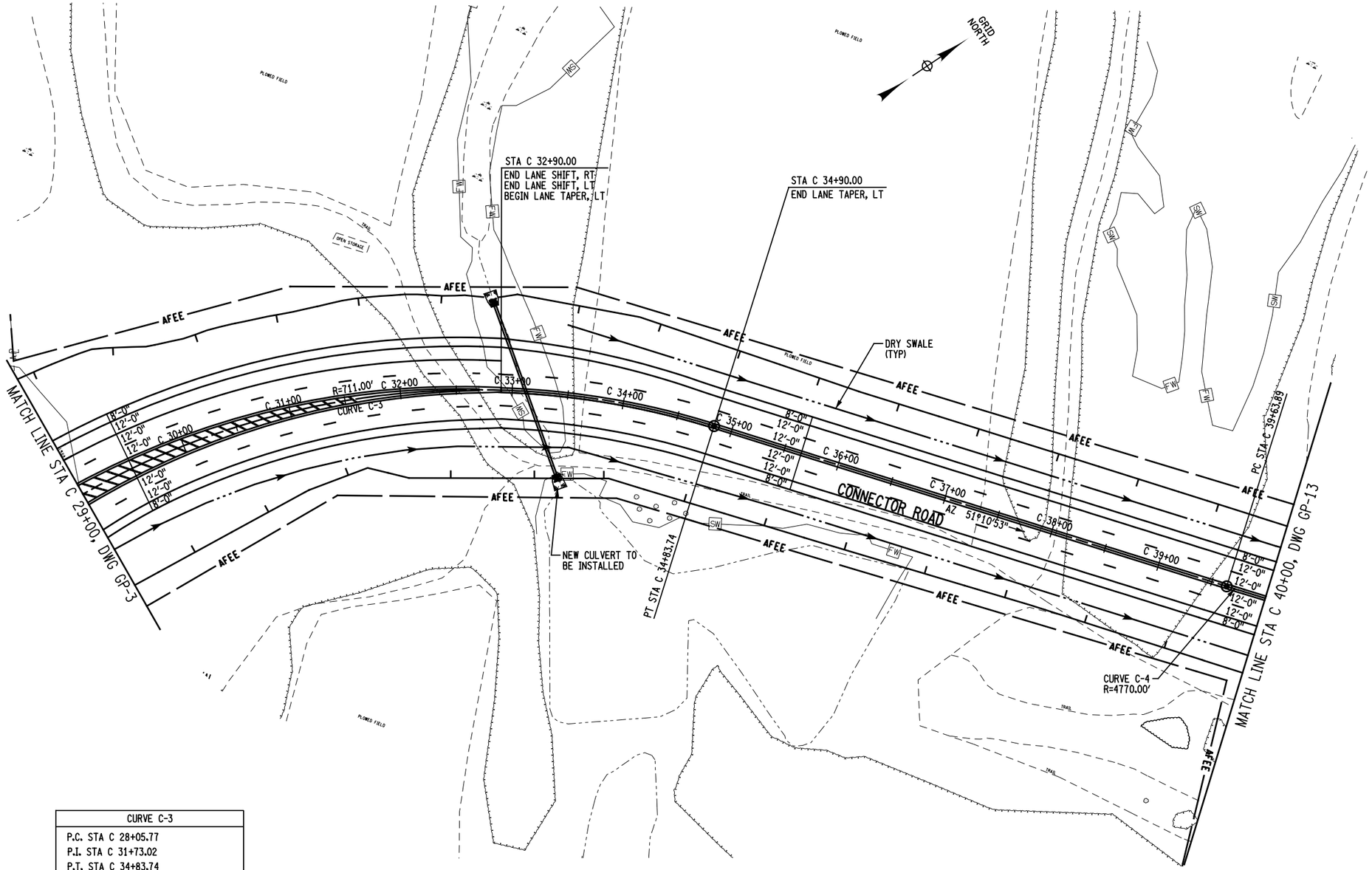

CURVE C-3	
P.C. STA C 28+05.77 P.I. STA C 31+73.02 P.T. STA C 34+83.74	
Δ= 54°38'02.81" R = 711.00	E = 89.24 L = 677.97 T = 367.24
AHEAD TANGENT = 51°10'53.22" BACK TANGENT = 356°32'50.41"	

50 0 50 FT
SCALE

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
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CONTRACT NUMBER D010372

DRAWING NO. GP-12
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_12.dgn

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DATE/TIME = 10/23/2013
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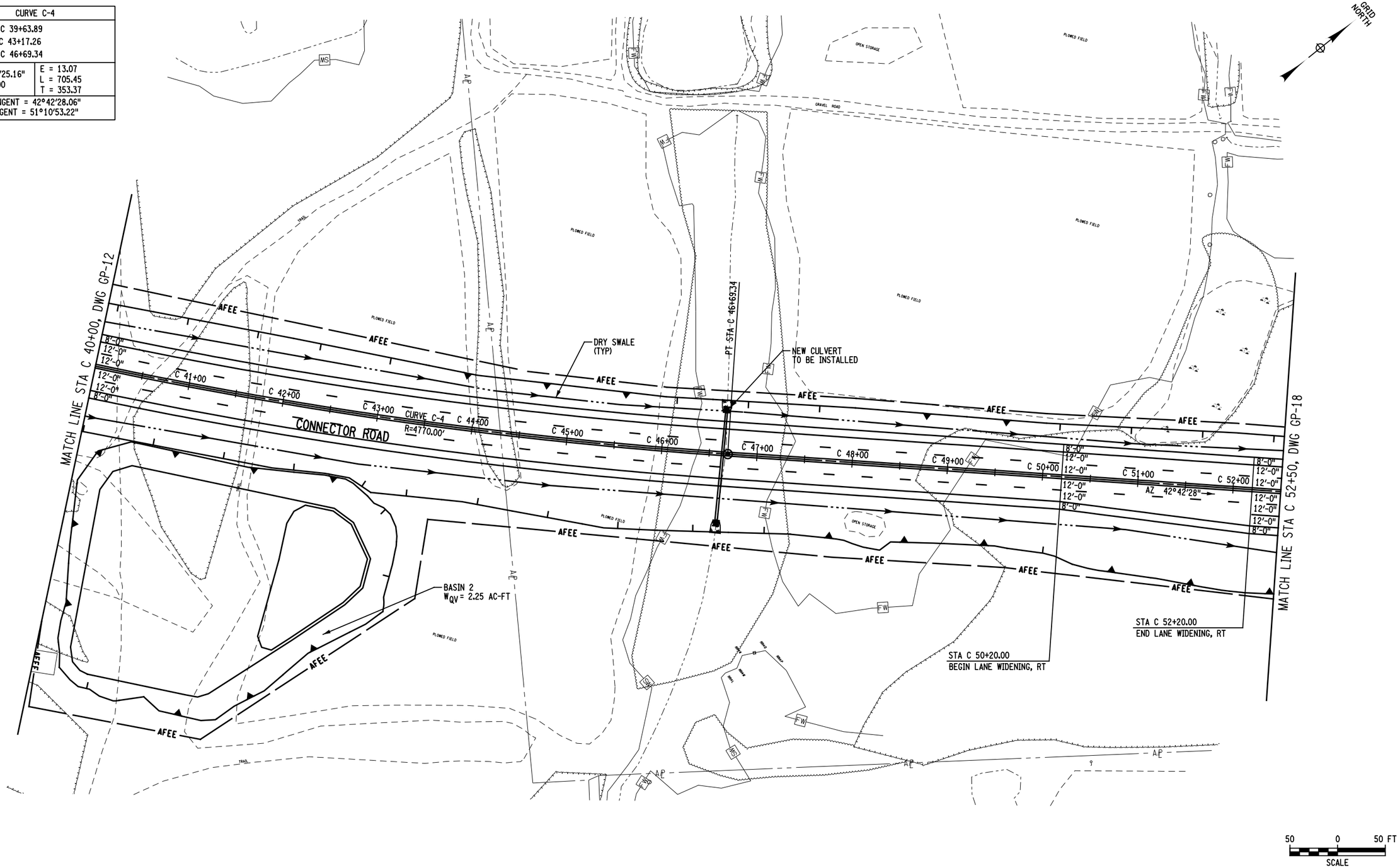
CURVE C-4	
P.C. STA C 39+63.89 P.I. STA C 43+17.26 P.T. STA C 46+69.34	
Δ= 08°28'25.16" R = 4770.00	E = 13.07 L = 705.45 T = 353.37
AHEAD TANGENT = 42°42'28.06" BACK TANGENT = 51°10'53.22"	



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DOCUMENT NAME: 172151_cph_diamond_gnp_13.dgn					NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

CONTRACT NUMBER D010372
DRAWING NO. GP-13
SHEET NO.

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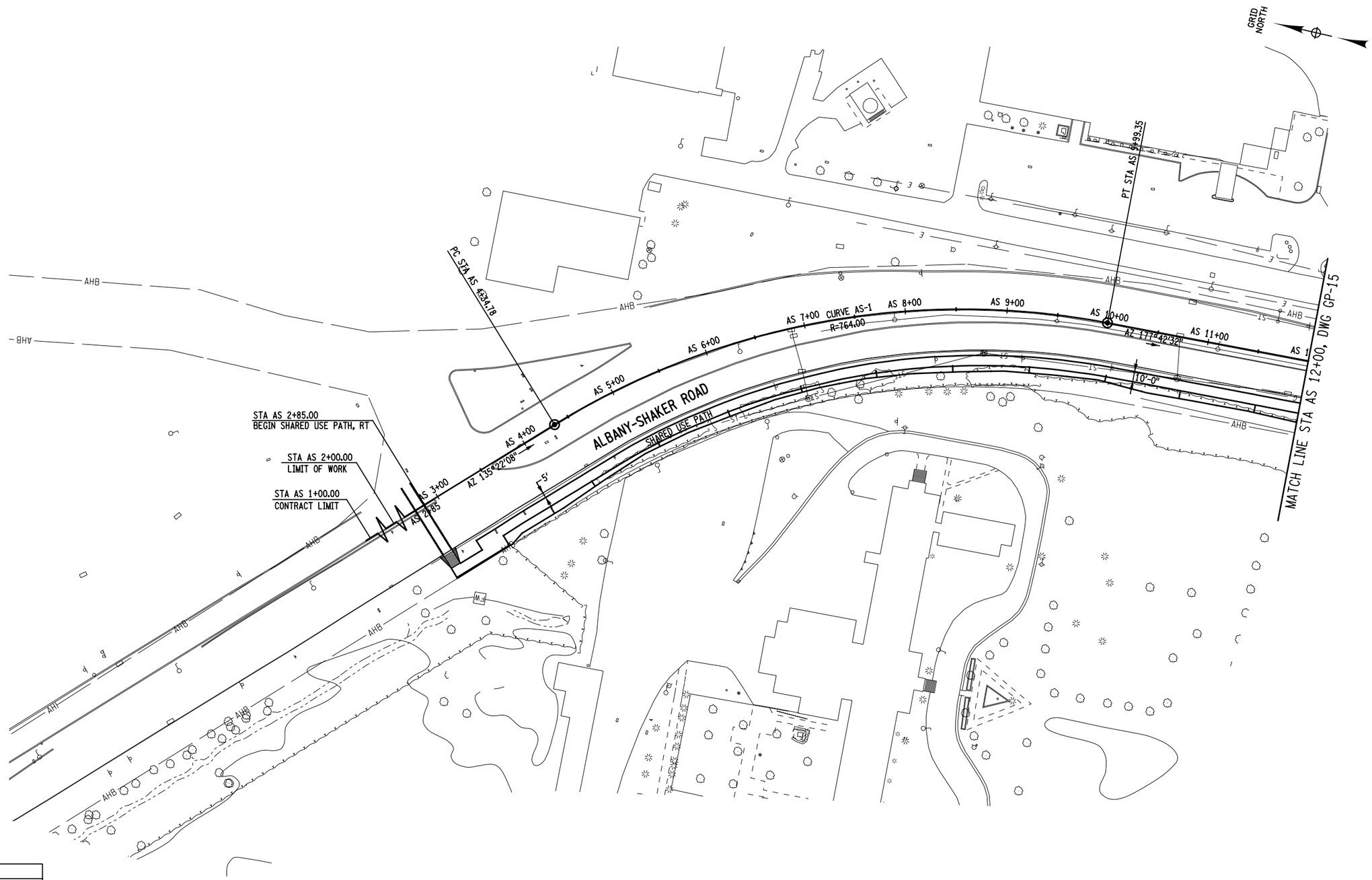

CURVE AS-1	
P.C. STA AS 4+34.78	
P.I. STA AS 7+30.65	
P.T. STA AS 9+99.35	
Δ= 42°20'23.90" R = 764.00	E = 55.29 L = 564.57 T = 295.88
AHEAD TANGENT = 177°42'32.22" BACK TANGENT = 135°22'08.31"	

50 0 50 FT
SCALE

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CONTRACT NUMBER D010372
DRAWING NO. GP-14
SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_14.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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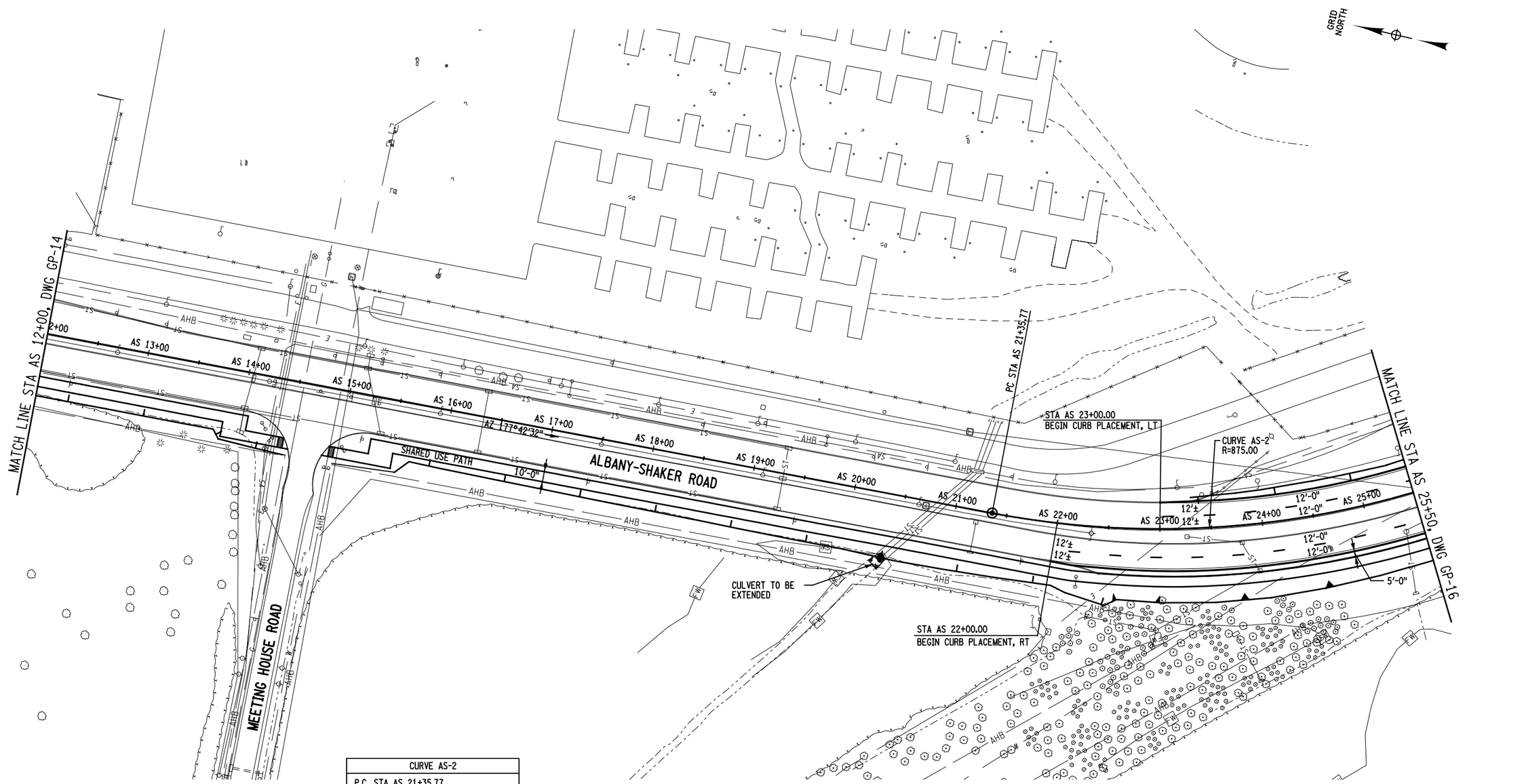

CURVE AS-2	
P.C. STA AS 21+35.77 P.I. STA AS 23+88.70 P.T. STA AS 26+28.20	
Δ= 32°14'39.90" R = 875.00	E = 35.82 L = 492.42 T = 252.92
AHEAD TANGENT = 145°27'52.32" BACK TANGENT = 177°42'32.22"	

50 0 50 FT
SCALE

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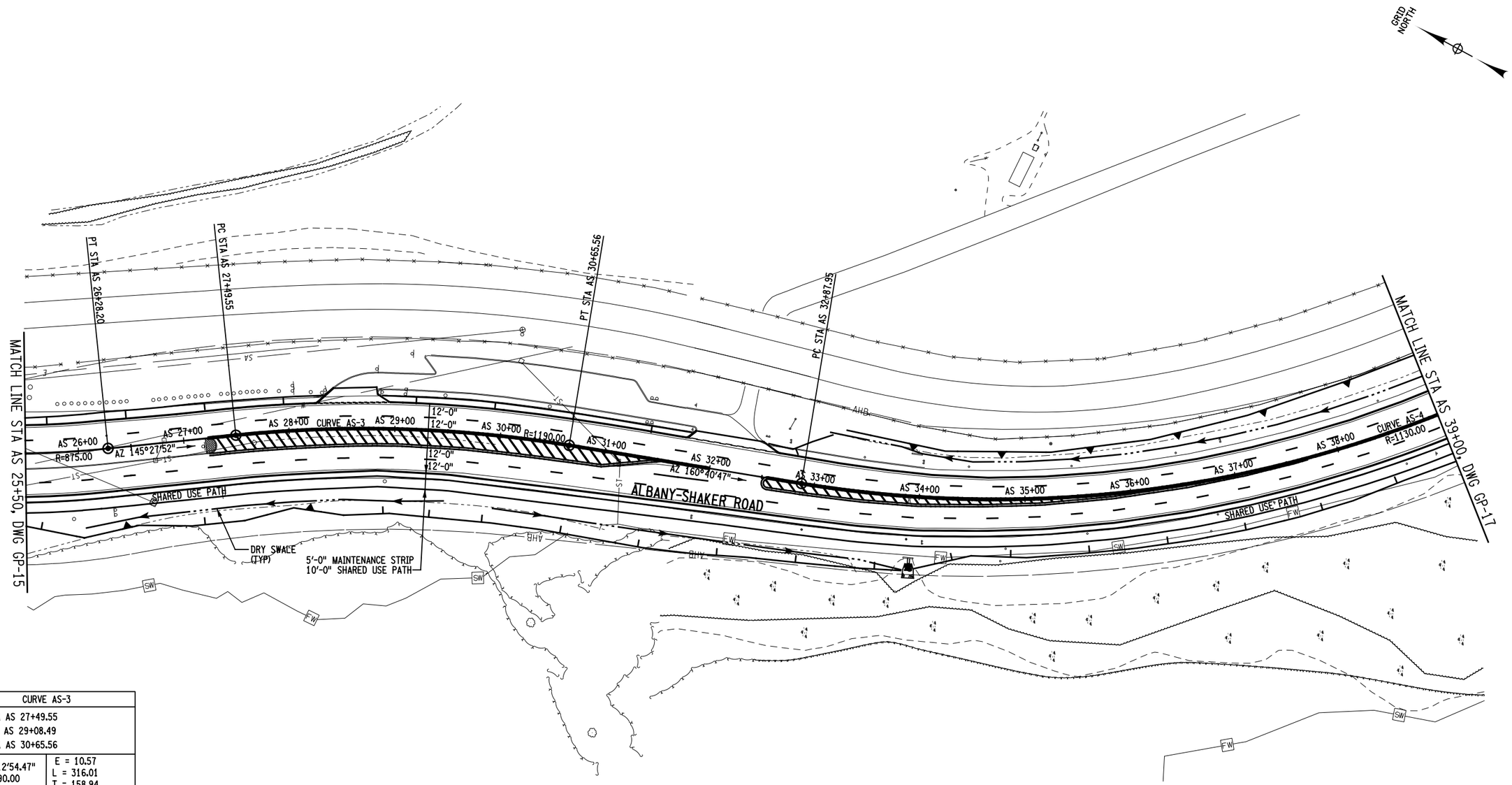

CURVE AS-3	
P.C. STA AS 27+49.55 P.I. STA AS 29+08.49 P.T. STA AS 30+65.56	
Δ= 15°12'54.47" R = 1190.00	E = 10.57 L = 316.01 T = 158.94
AHEAD TANGENT = 160°40'46.79" BACK TANGENT = 145°27'52.32"	

CURVE AS-4	
P.C. STA AS 32+87.95 P.I. STA AS 38+80.57 P.T. STA AS 43+79.55	
Δ= 55°20'55.97" R = 1130.00	E = 145.97 L = 1091.60 T = 592.62
AHEAD TANGENT = 105°19'50.81" BACK TANGENT = 160°40'46.79"	

50 0 50 FT
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SHEET NO.

DOCUMENT NAME: 172151_cph_diamond_gnp_16.dgn

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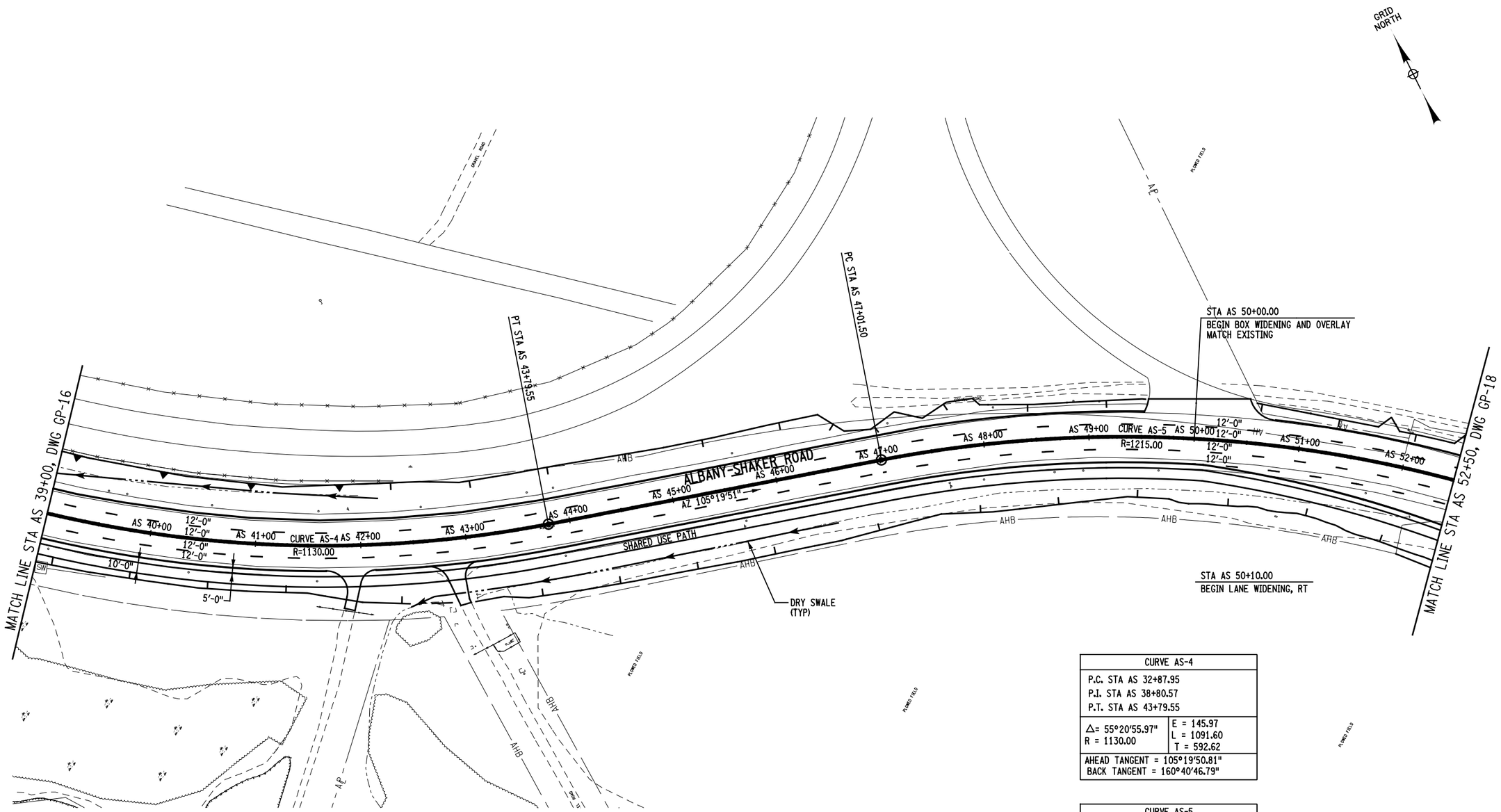

CURVE AS-4	
P.C. STA AS 32+87.95 P.I. STA AS 38+80.57 P.T. STA AS 43+79.55	
Δ= 55°20'55.97" R = 1130.00	E = 145.97 L = 1091.60 T = 592.62
AHEAD TANGENT = 105°19'50.81" BACK TANGENT = 160°40'46.79"	

CURVE AS-5	
P.C. STA AS 47+01.50 P.I. STA AS 49+97.43 P.T. STA AS 52+82.05	
Δ= 27°22'37.24" R = 1215.00	E = 35.52 L = 580.55 T = 295.93
AHEAD TANGENT = 132°42'28.05" BACK TANGENT = 105°19'50.81"	

50 0 50 FT
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DOCUMENT NAME: 172151_cph_diamond_gnp_17.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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JOB MANAGER
DESIGN SUPERVISOR

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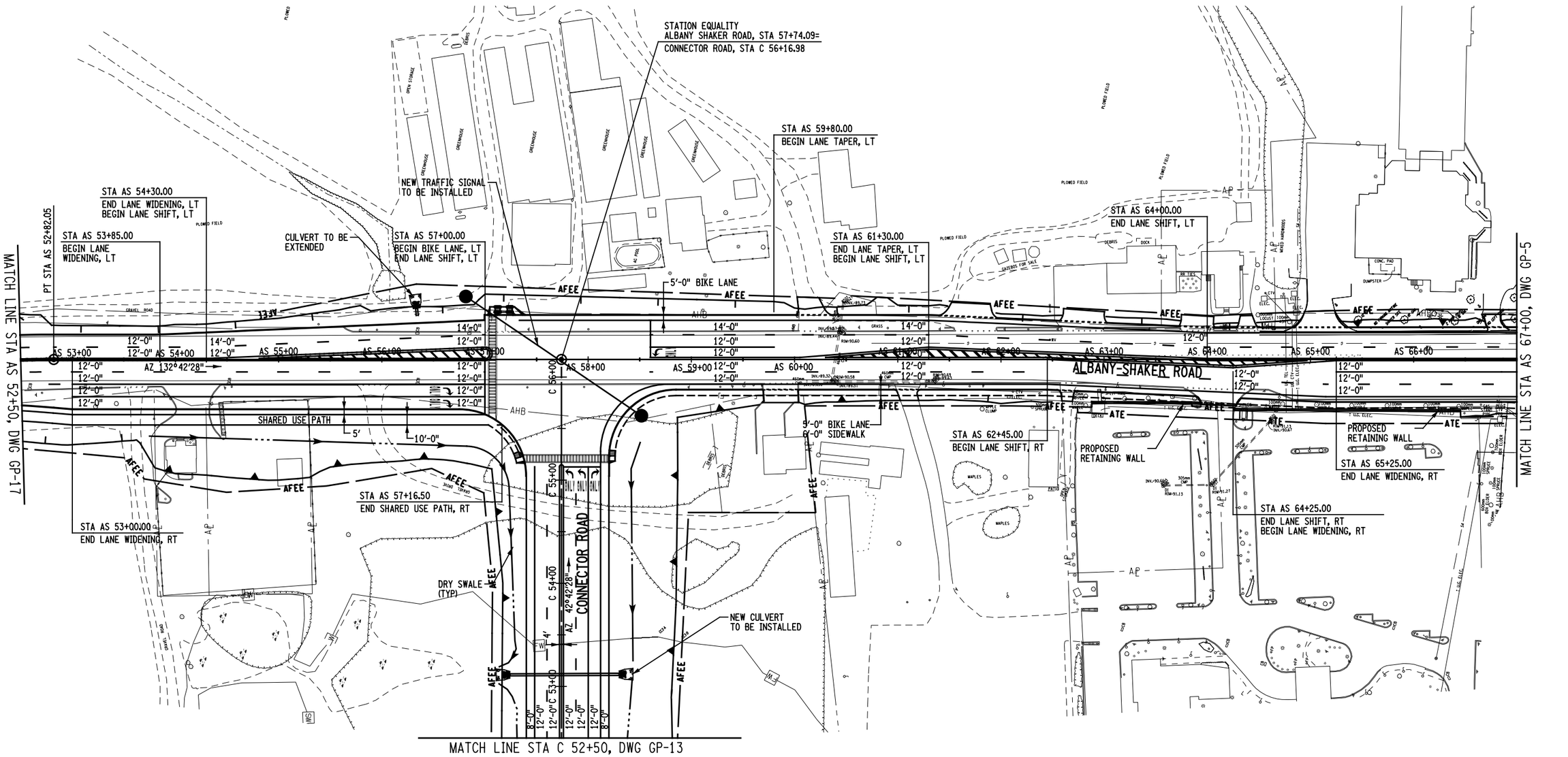

THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE DRAWING CONTENTS ARE NOT AN APPROVED FINAL CONSTRUCTION CONTRACT DOCUMENT.	INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS INTERSTATE 87 (SH NO. 57-17) ALBANY SHAKER ROAD (NYS RTE 155) WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155) COUNTY: ALBANY	PIN 1721.51 DEIS DATE 10/13	BRIDGES BIN 1033141 BIN 1033142	CULVERTS	ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED GENERAL PLAN DIAMOND ALTERNATIVE	CONTRACT NUMBER D010372 DRAWING NO. GP-18 SHEET NO.
DOCUMENT NAME: 172151_cph_diamond_gnp_18.dgn						NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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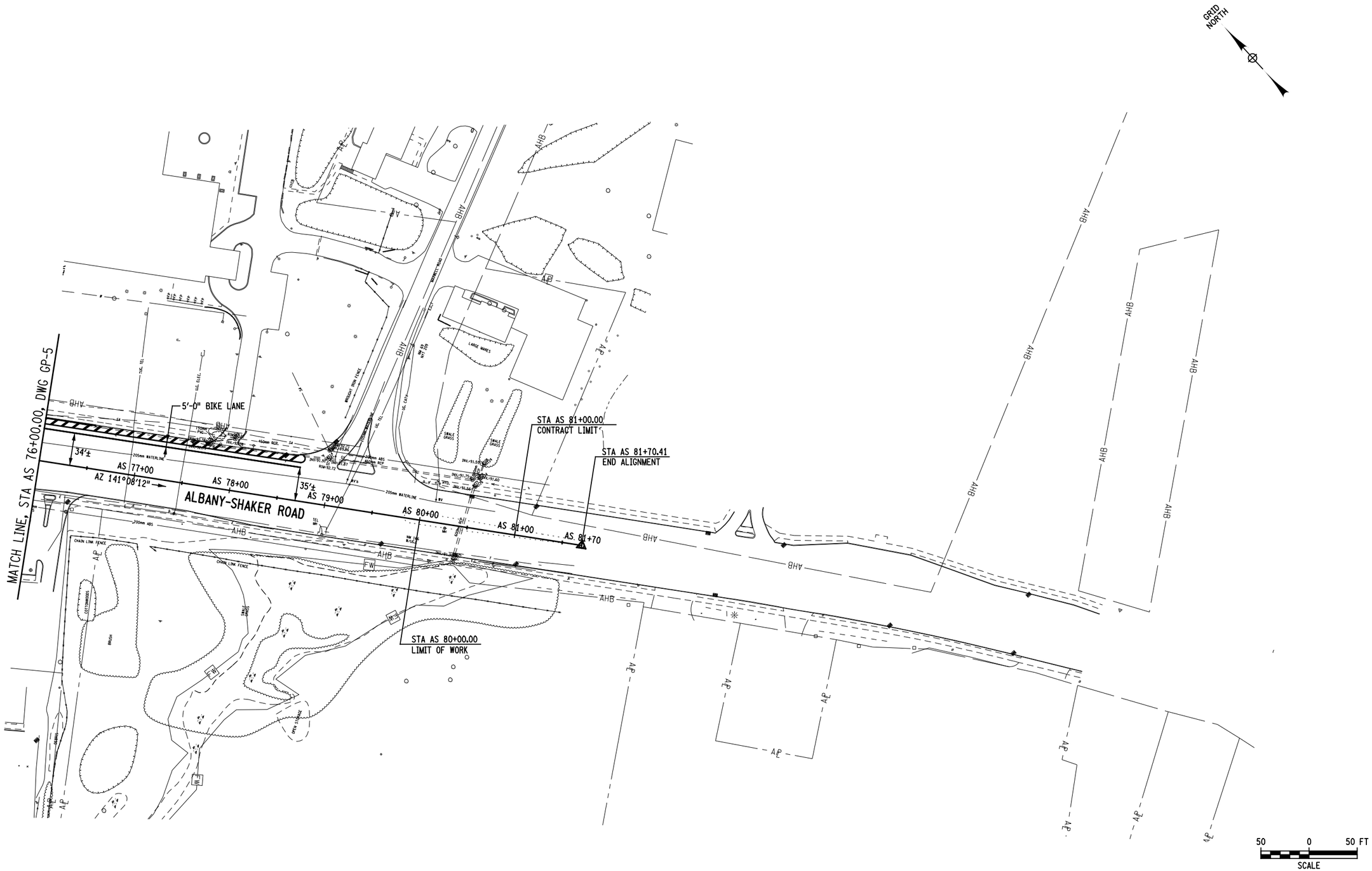

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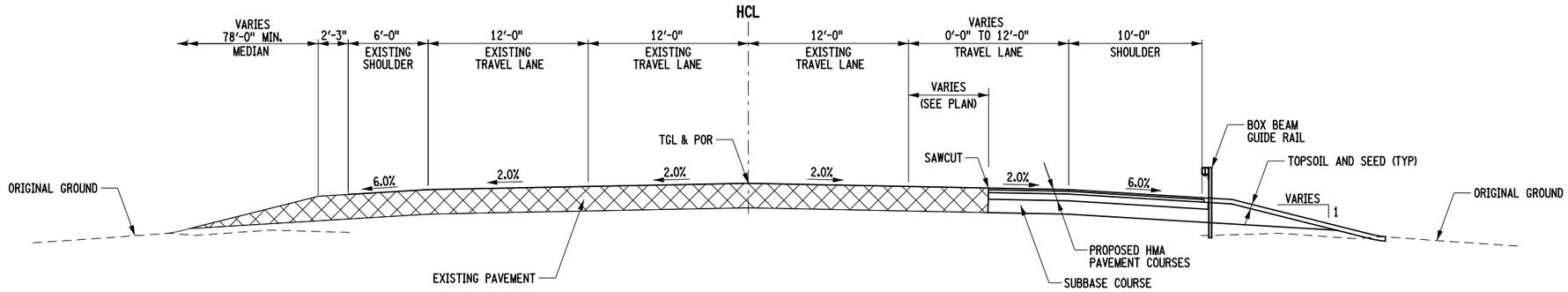
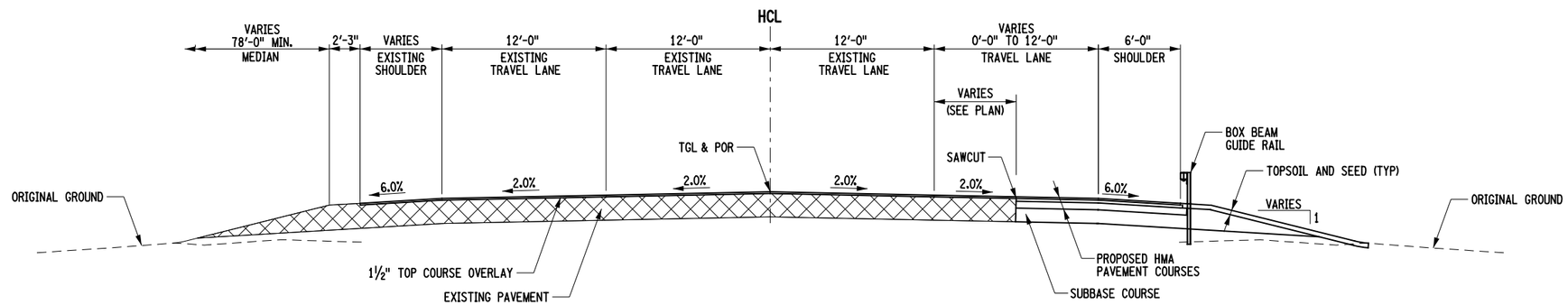
Flyover Alternative



I-87 NORTHBOUND - BOX WIDENING

NTS



I-87 NORTHBOUND - BOX WIDENING AND OVERLAY

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DOCUMENT NAME: 172151_cph_flyover_typ_01.dgn						NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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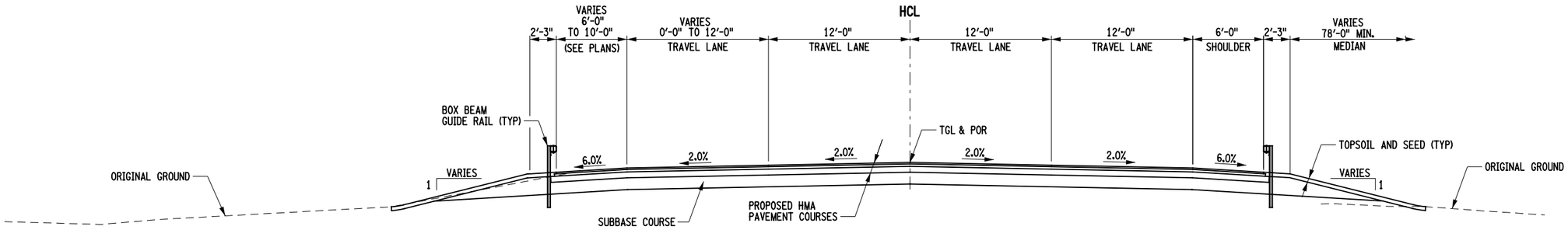
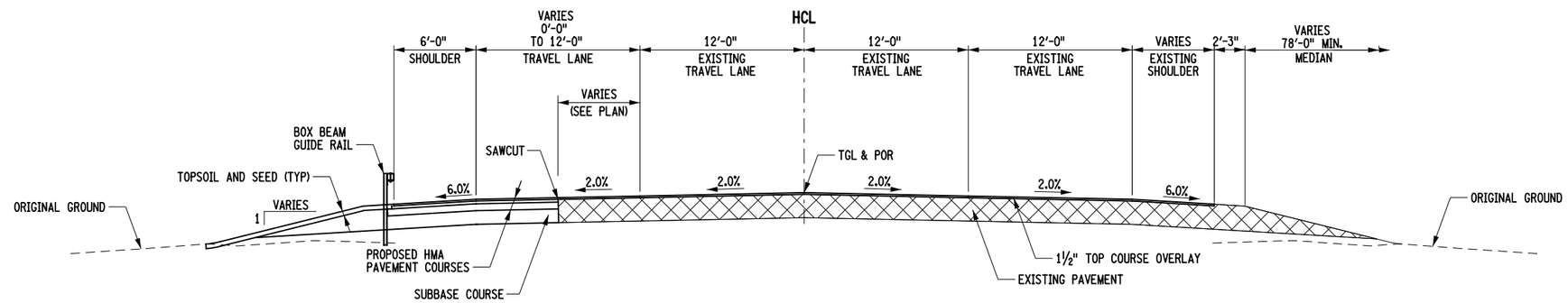


I-87 SOUTHBOUND - FULL DEPTH RECONSTRUCTION

NTS

(IN DIRECTION OF STATIONING, AGAINST DIRECTION OF TRAFFIC)



I-87 SOUTHBOUND - BOX WIDENING AND OVERLAY

NTS

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DOCUMENT NAME: 172151_cph_flyover_typ_02.dgn						NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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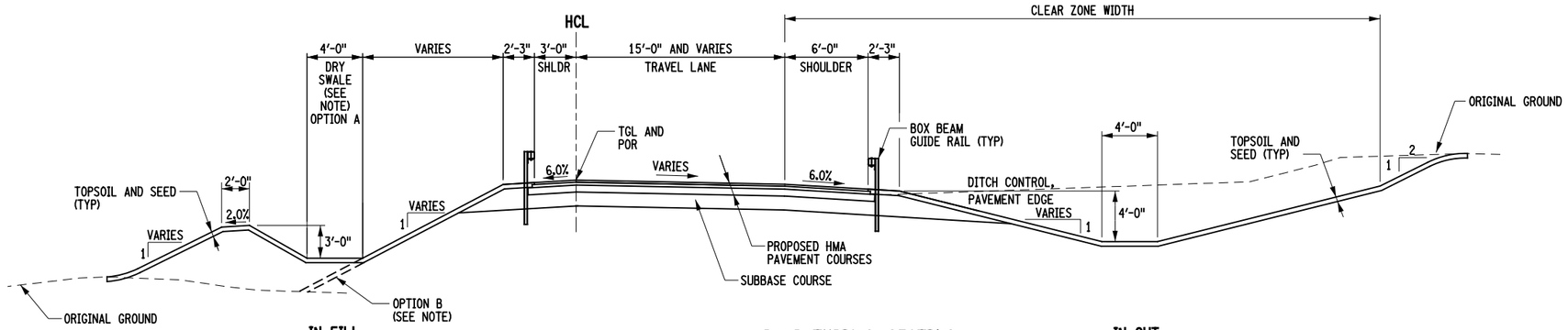
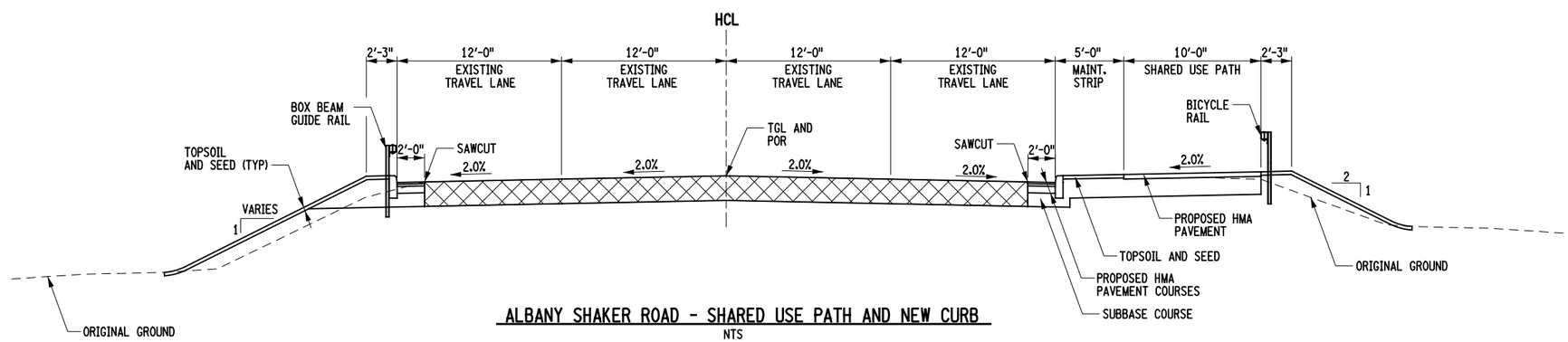


RAMP TYPICAL SECTION

NTS

NOTE:
SEE PLANS FOR DRY SWALE LOCATIONS. WHEN DRY SWALE IS PRESENT CONSTRUCT OPTION A, OTHERWISE USE OPTION B.



ALBANY SHAKER ROAD - SHARED USE PATH AND NEW CURB

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DOCUMENT NAME: 172151_cph_flyover_typ_03.dgn

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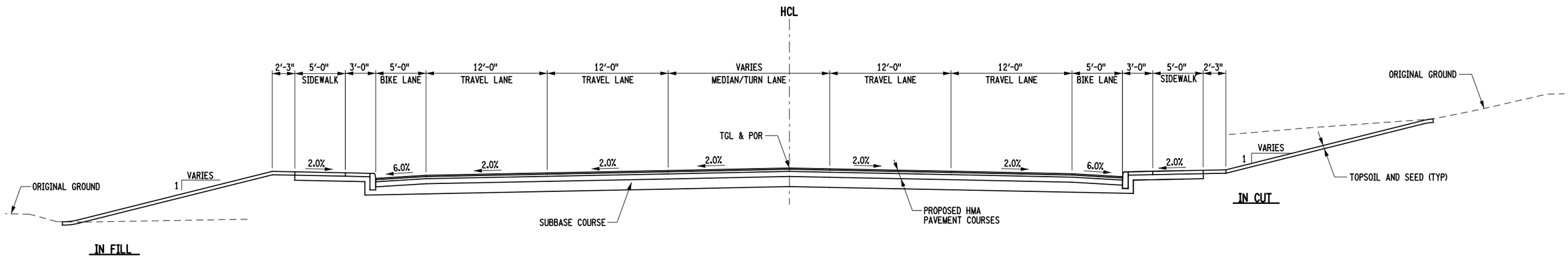
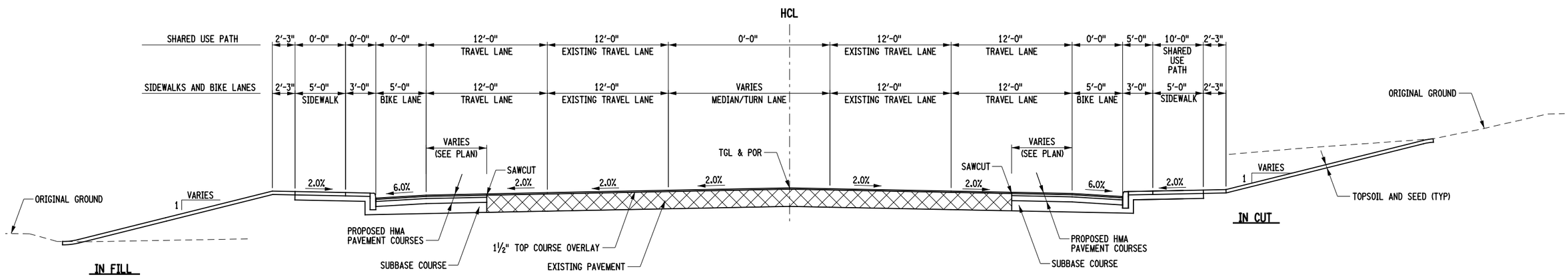


ALBANY SHAKER ROAD - FULL DEPTH RECONSTRUCTION
(BIKE LANES SHOWN)
NTS



ALBANY SHAKER ROAD - BOX WIDENING AND OVERLAY
(SHARED USE PATH AND BIKE LANES SHOWN)
NTS

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DOCUMENT NAME: 172151_cph_flyover_typ_04.dgn						NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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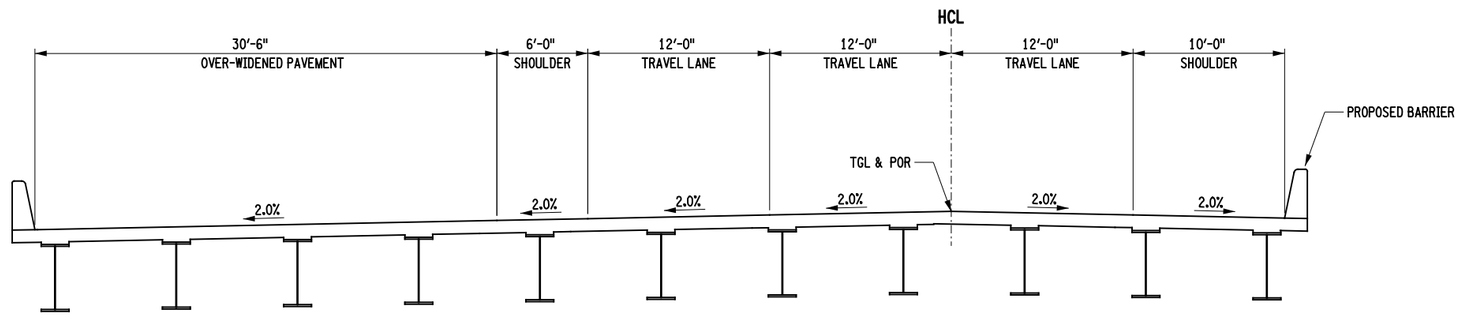
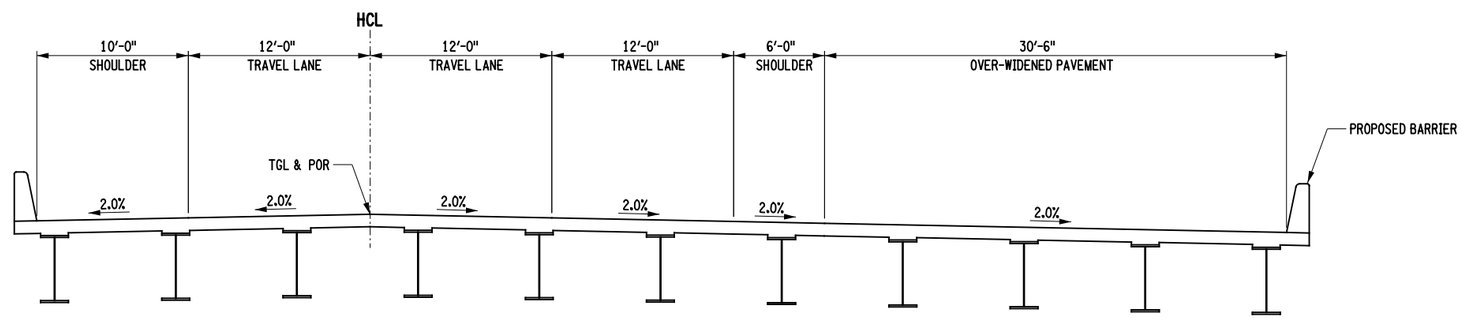


I-87 NORTHBOUND OVER ALBANY-SHAKER ROAD

NTS



I-87 SOUTHBOUND OVER ALBANY-SHAKER ROAD

NTS

(IN DIRECTION OF STATIONING, AGAINST DIRECTION OF TRAFFIC)

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DOCUMENT NAME: 172151_cph_flyover_typ_05.dgn						NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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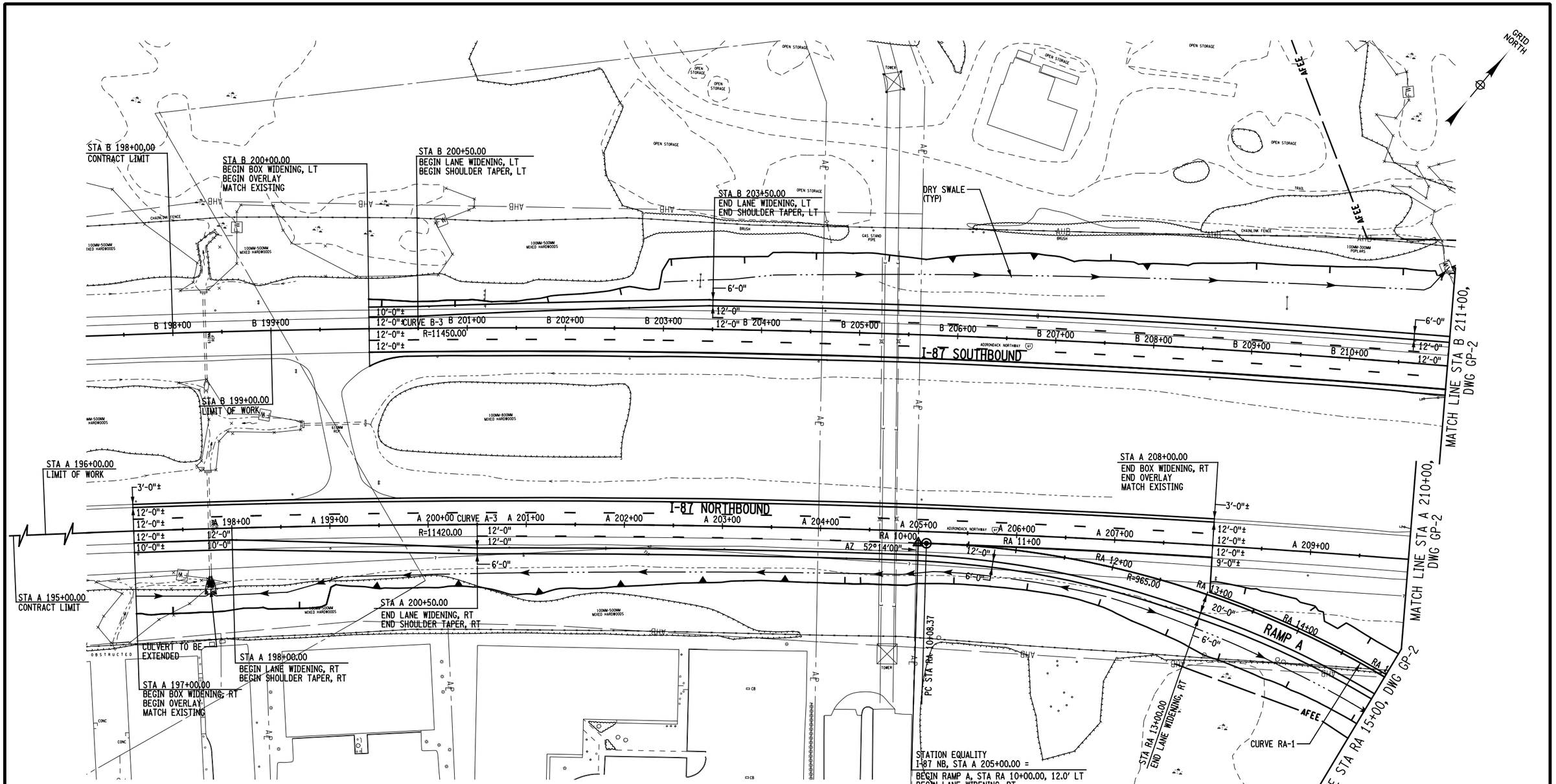

CURVE RA-1	
P.C. STA RA 10+08.37	
P.I. STA RA 13+00.67	
P.T. STA RA 15+76.02	
Δ= 33°42'13.60" R = 965.00	E = 43.30 L = 567.65 T = 292.30
AHEAD TANGENT = 85°56'14.04" BACK TANGENT = 52°14'00.44"	

CURVE A-3	
P.C. STA A 180+86.71	
P.I. STA A 200+37.03	
P.T. STA A 219+50.08	
Δ= 19°22'59.06" R = 11420.00	E = 165.34 L = 3863.37 T = 1950.32
AHEAD TANGENT = 59°51'00.09" BACK TANGENT = 40°28'01.02"	

CURVE B-3	
P.C. STA B 181+40.38	
P.I. STA B 200+95.83	
P.T. STA B 220+13.90	
Δ= 19°22'59.06" R = 11450.00	E = 165.78 L = 3873.52 T = 1955.44
AHEAD TANGENT = 59°51'00.09" BACK TANGENT = 40°28'01.02"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-1
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_01.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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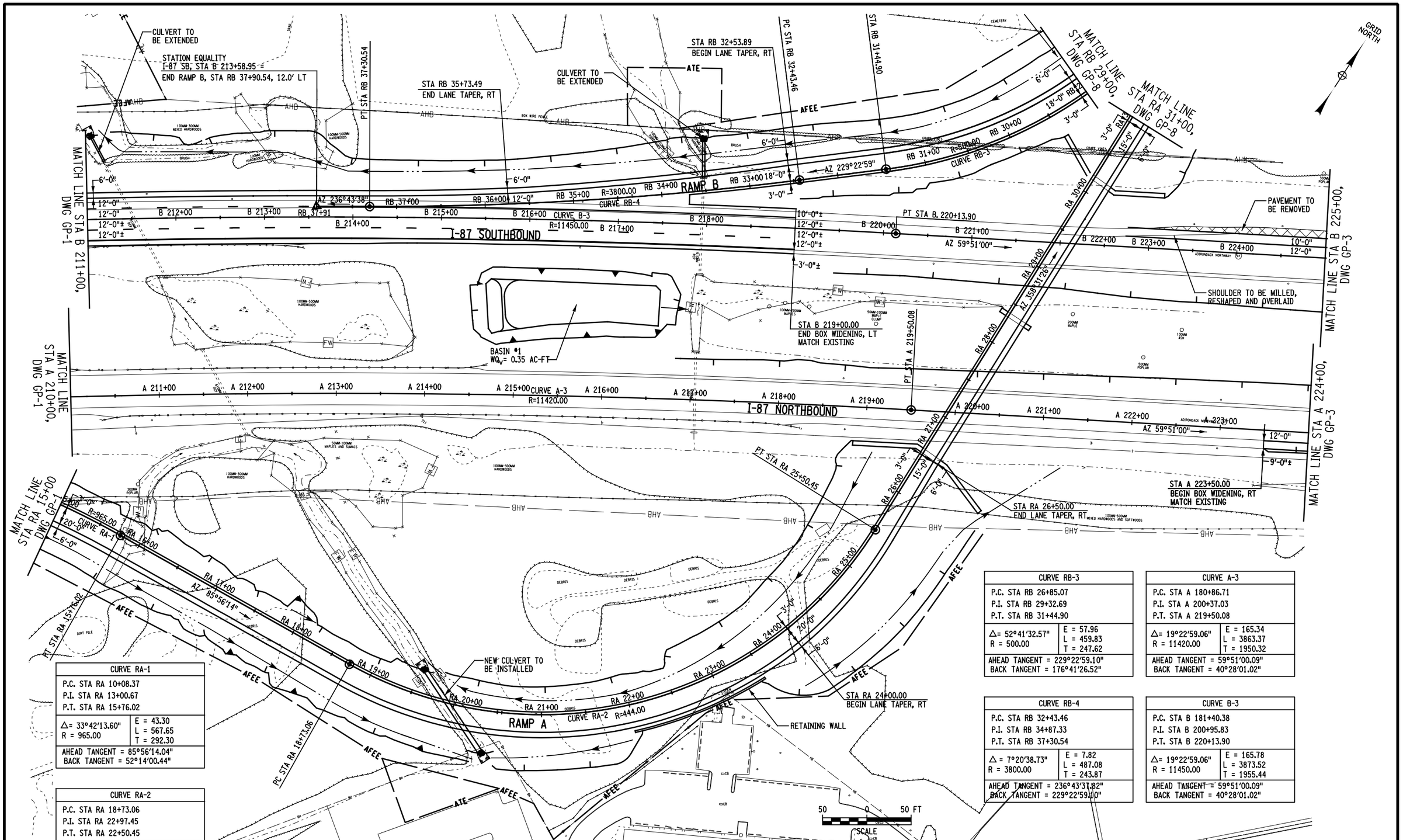

CURVE RA-1	
P.C. STA RA 10+08.37	
P.I. STA RA 13+00.67	
P.T. STA RA 15+76.02	
Δ= 33°42'13.60"	E = 43.30
R = 965.00	L = 567.65
	T = 292.30
AHEAD TANGENT = 85°56'14.04"	
BACK TANGENT = 52°14'00.44"	

CURVE RA-2	
P.C. STA RA 18+73.06	
P.I. STA RA 22+97.45	
P.T. STA RA 22+50.45	
Δ= 87°24'48.35"	E = 170.20
R = 444.00	L = 677.39
	T = 424.40
AHEAD TANGENT = 358°31'25.70"	
BACK TANGENT = 85°56'14.04"	

CURVE RB-3	
P.C. STA RB 26+85.07	
P.I. STA RB 29+32.69	
P.T. STA RB 31+44.90	
Δ= 52°41'32.57"	E = 57.96
R = 500.00	L = 459.83
	T = 247.62
AHEAD TANGENT = 229°22'59.10"	
BACK TANGENT = 176°41'26.52"	

CURVE A-3	
P.C. STA A 180+86.71	
P.I. STA A 200+37.03	
P.T. STA A 219+50.08	
Δ= 19°22'59.06"	E = 165.34
R = 11420.00	L = 3863.37
	T = 1950.32
AHEAD TANGENT = 59°51'00.09"	
BACK TANGENT = 40°28'01.02"	

CURVE RB-4	
P.C. STA RB 32+43.46	
P.I. STA RB 34+87.33	
P.T. STA RB 37+30.54	
Δ= 7°20'38.73"	E = 7.82
R = 3800.00	L = 487.08
	T = 243.87
AHEAD TANGENT = 236°43'37.82"	
BACK TANGENT = 229°22'59.10"	

CURVE B-3	
P.C. STA B 181+40.38	
P.I. STA B 200+95.83	
P.T. STA B 220+13.90	
Δ= 19°22'59.06"	E = 165.78
R = 11450.00	L = 3873.52
	T = 1955.44
AHEAD TANGENT = 59°51'00.09"	
BACK TANGENT = 40°28'01.02"	

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COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
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BIN 1033142

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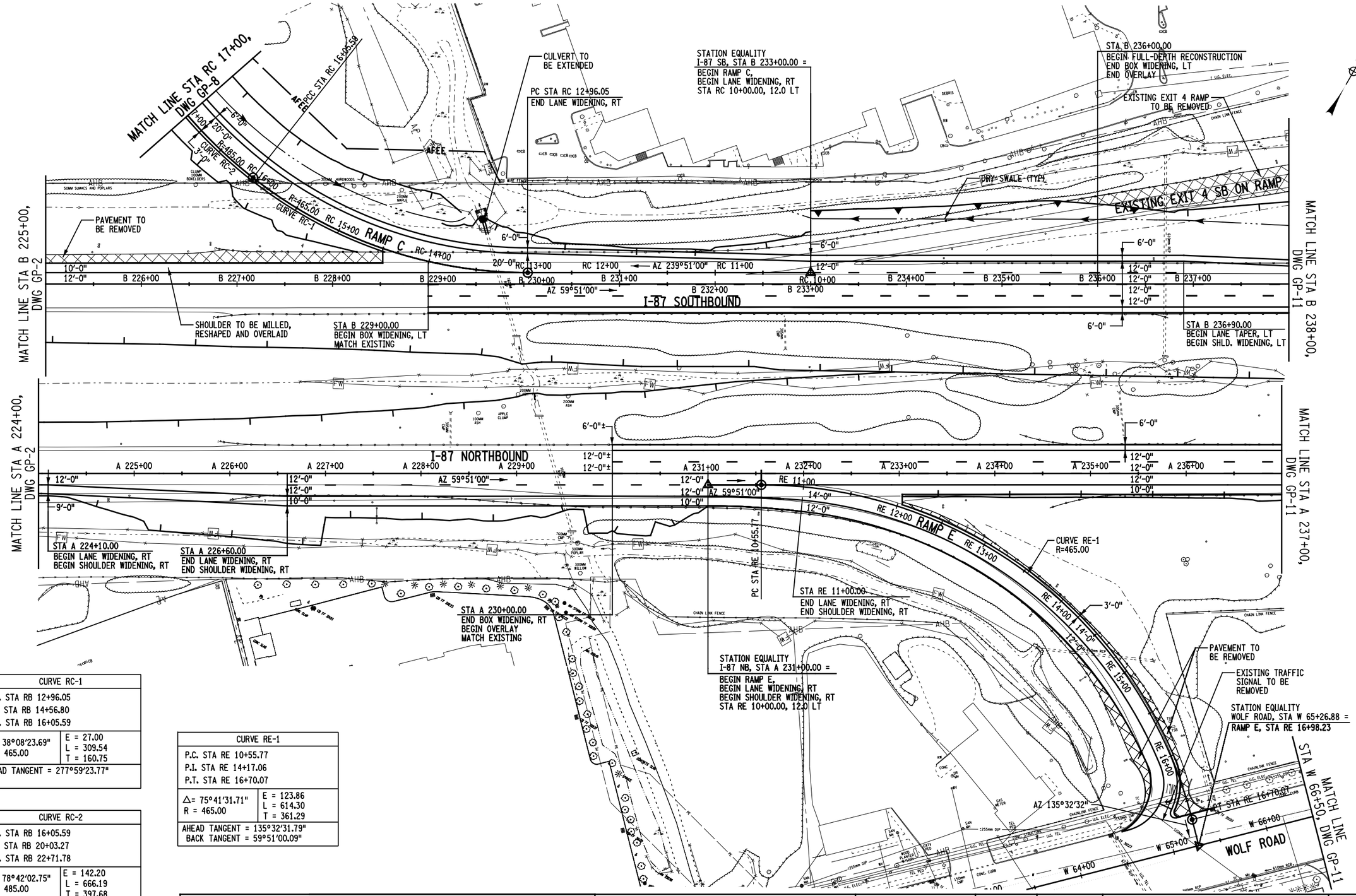

CURVE RC-1	
P.C. STA RB 12+96.05 P.I. STA RB 14+56.80 P.T. STA RB 16+05.59	
Δ= 38°08'23.69" R = 465.00	E = 27.00 L = 309.54 T = 160.75
AHEAD TANGENT = 277°59'23.77"	

CURVE RC-2	
P.C. STA RB 16+05.59 P.I. STA RB 20+03.27 P.T. STA RB 22+71.78	
Δ= 78°42'02.75" R = 485.00	E = 142.20 L = 666.19 T = 397.68
AHEAD TANGENT = 356°41'26.52" BACK TANGENT = 277°59'23.77"	

CURVE RE-1	
P.C. STA RE 10+55.77 P.I. STA RE 14+17.06 P.T. STA RE 16+70.07	
Δ= 75°41'31.71" R = 465.00	E = 123.86 L = 614.30 T = 361.29
AHEAD TANGENT = 135°32'31.79" BACK TANGENT = 59°51'00.09"	

50 0 50 FT
SCALE

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INTERSTATE 87 (SH NO. 57-17)
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PIN 1721.51
DEIS DATE 10/13

BRIDGES
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SHEET NO.

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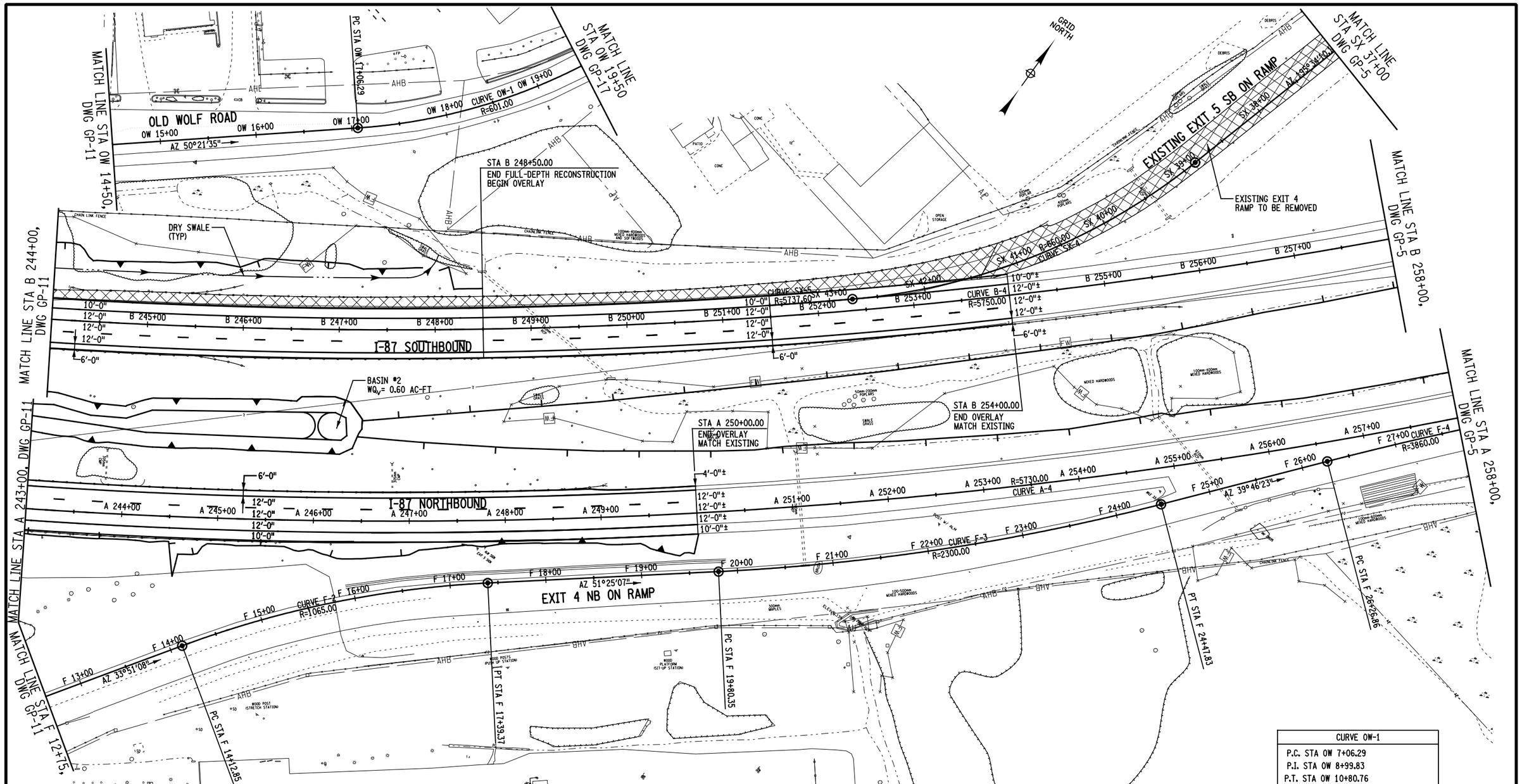

CURVE OW-1	
P.C. STA OW 7+06.29	
P.I. STA OW 8+99.83	
P.T. STA OW 10+80.76	
Δ= 35°41'57.90" R = 601.00	E = 30.39 L = 374.47 T = 193.54
AHEAD TANGENT = 14°39'36.90"	
BACK TANGENT = 50°21'34.80"	

CURVE B-4	
P.C. STA B 241+93.21	
P.I. STA B 254+03.54	
P.T. STA B 265+79.03	
Δ= 23°46'24.35" R = 5750.00	E = 126.00 L = 2385.82 T = 1210.32
AHEAD TANGENT = 36°04'35.74"	
BACK TANGENT = 59°51'00.09"	

CURVE F-2	
P.C. STA F 4+12.85	
P.I. STA F 5+77.40	
P.T. STA F 7+39.37	
Δ= 17°33'59.10" R = 1065.00	E = 12.64 L = 326.52 T = 164.55
AHEAD TANGENT = 51°25'06.97"	
BACK TANGENT = 33°51'07.87"	

CURVE F-3	
P.C. STA F 9+80.35	
P.I. STA F 12+14.90	
P.T. STA F 14+47.83	
Δ= 11°38'43.50" R = 2300.00	E = 11.93 L = 467.48 T = 234.55
AHEAD TANGENT = 39°46'23.47"	
BACK TANGENT = 51°25'06.97"	

CURVE F-4	
P.C. STA F 16+26.86	
P.I. STA F 17+22.97	
P.T. STA F 18+19.04	
Δ= 02°51'09.85" R = 3860.00	E = 1.20 L = 192.19 T = 96.11
AHEAD TANGENT = 42°37'33.32"	
BACK TANGENT = 39°46'23.47"	

CURVE SX-4	
P.C. STA SX 28+85.70	
P.I. STA SX 30+86.74	
P.T. STA SX 32+76.00	
Δ= 33°52'56.65" R = 660.00	E = 29.94 L = 390.30 T = 201.04
AHEAD TANGENT = 229°27'06.75"	
BACK TANGENT = 195°34'10.10"	

CURVE SX-5	
P.C. STA SX 32+76.00	
P.I. STA SX 33+19.26	
P.T. STA SX 33+62.52	
Δ= 00°51'50.27" R = 5737.60	E = 0.16 L = 86.52 T = 43.26
AHEAD TANGENT = 230°18'57.60"	
BACK TANGENT = 229°27'07.33"	

CURVE A-4	
P.C. STA A 241+27.46	
P.I. STA A 253+52.23	
P.T. STA A 265+40.68	
Δ= 24°07'49.37" R = 5730.00	E = 129.43 L = 2413.22 T = 1224.76
AHEAD TANGENT = 35°43'10.72"	
BACK TANGENT = 59°51'00.09"	

50 0 50 FT
SCALE

THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
THE DRAWING CONTENTS ARE NOT AN APPROVED FINAL CONSTRUCTION CONTRACT DOCUMENT.

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-4
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_04.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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CHECKED BY
DESIGNED BY
JOB MANAGER
DESIGN SUPERVISOR

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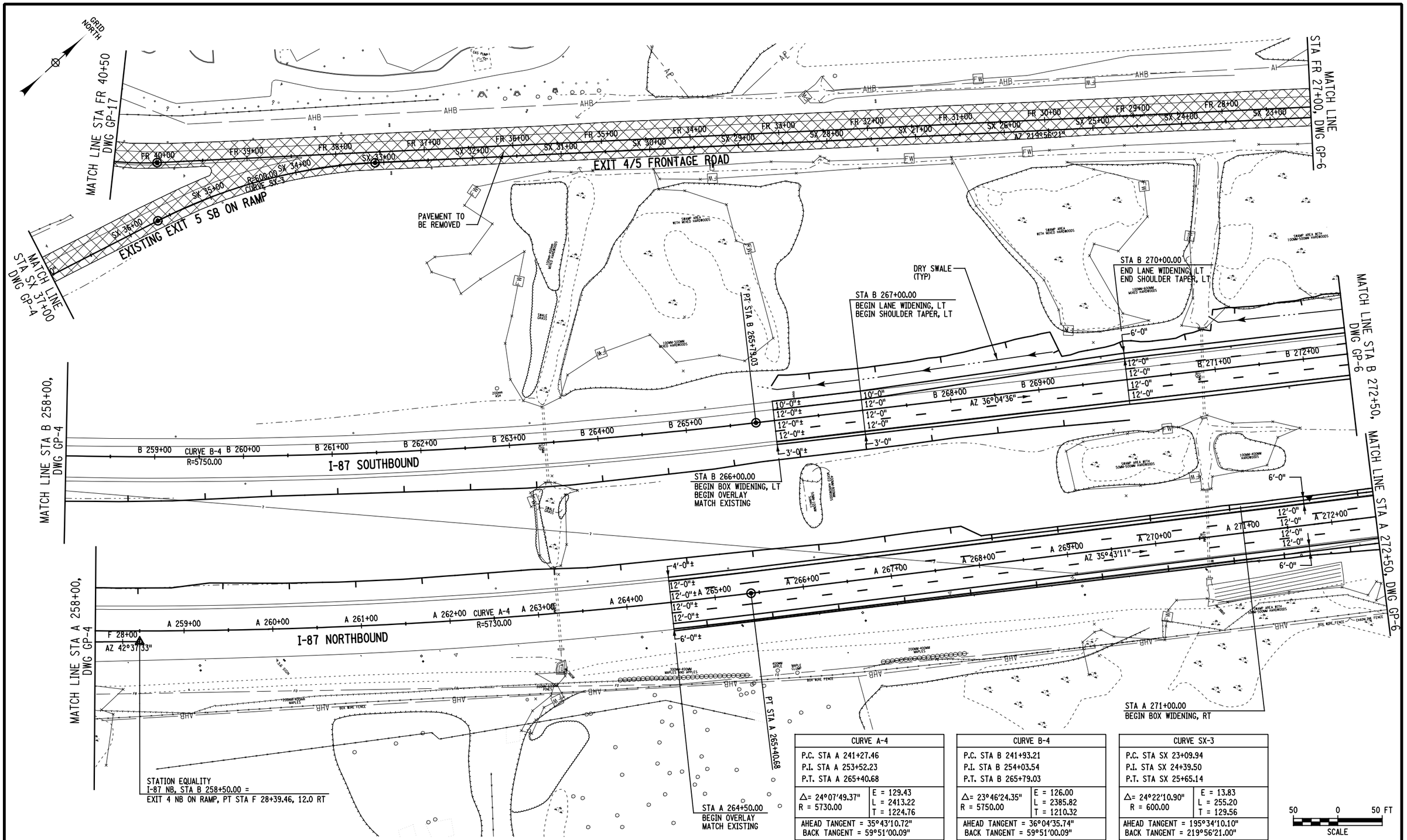

CURVE A-4	
P.C. STA A 241+27.46	
P.I. STA A 253+52.23	
P.T. STA A 265+40.68	
Δ= 24°07'49.37"	E = 129.43
R = 5730.00	L = 2413.22
	T = 1224.76
AHEAD TANGENT = 35°43'10.72"	
BACK TANGENT = 59°51'00.09"	

CURVE B-4	
P.C. STA B 241+93.21	
P.I. STA B 254+03.54	
P.T. STA B 265+79.03	
Δ= 23°46'24.35"	E = 126.00
R = 5750.00	L = 2385.82
	T = 1210.32
AHEAD TANGENT = 36°04'35.74"	
BACK TANGENT = 59°51'00.09"	

CURVE SX-3	
P.C. STA SX 23+09.94	
P.I. STA SX 24+39.50	
P.T. STA SX 25+65.14	
Δ= 24°22'10.90"	E = 13.83
R = 600.00	L = 255.20
	T = 129.56
AHEAD TANGENT = 195°34'10.10"	
BACK TANGENT = 219°56'21.00"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372

DRAWING NO. GP-5
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_05.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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DESIGNED BY
JOB MANAGER
DESIGN SUPERVISOR

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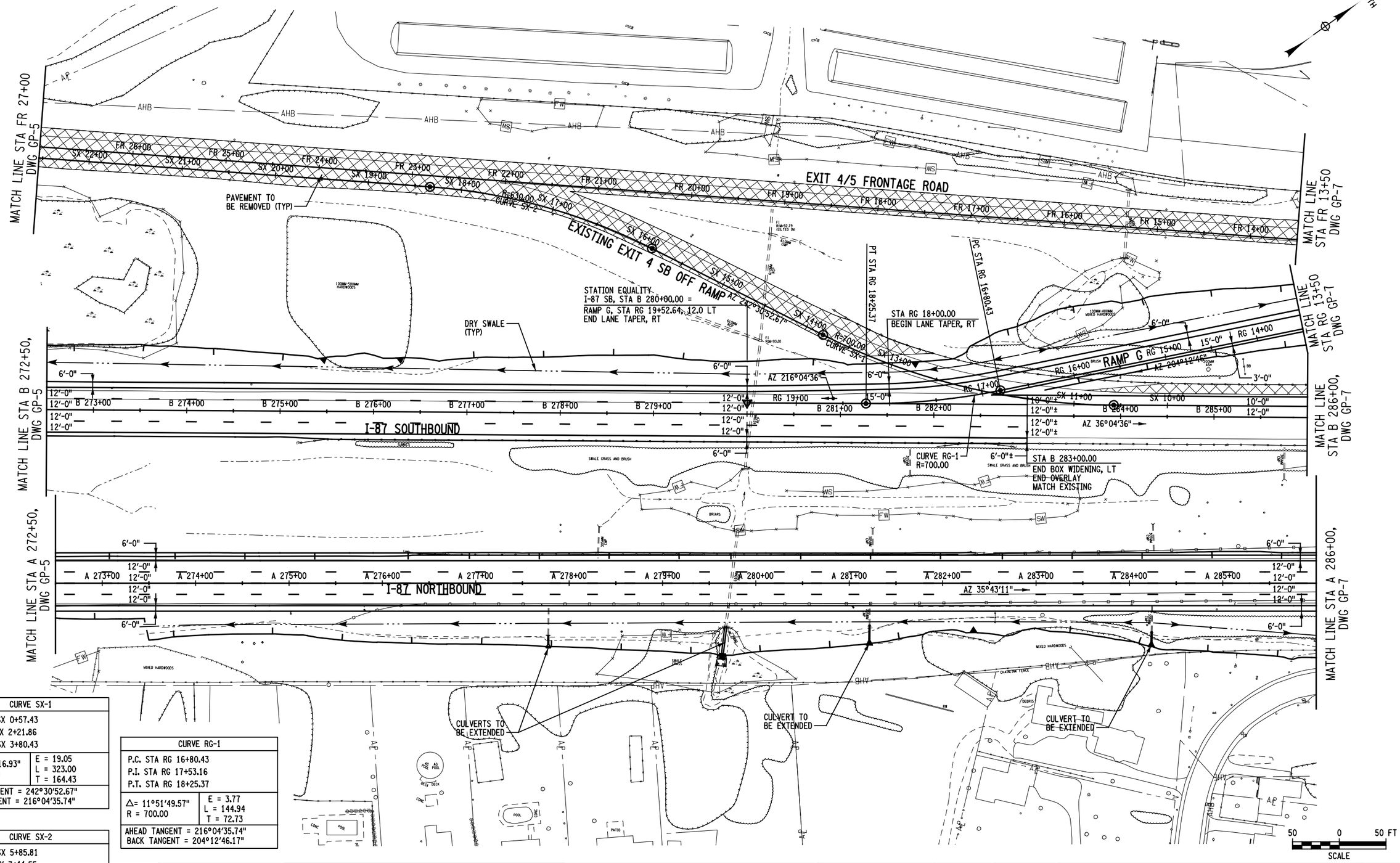

CURVE SX-1	
P.C. STA SX 0+57.43	
P.I. STA SX 2+21.86	
P.T. STA SX 3+80.43	
Δ= 26°26'16.93"	E = 19.05
R = 700.00	L = 323.00
	T = 164.43
AHEAD TANGENT = 242°30'52.67"	
BACK TANGENT = 216°04'35.74"	

CURVE SX-2	
P.C. STA SX 5+85.81	
P.I. STA SX 7+11.55	
P.T. STA SX 8+34.04	
Δ= 22°34'31.66"	E = 12.43
R = 630.00	L = 248.23
	T = 125.75
AHEAD TANGENT = 219°56'21.00"	
BACK TANGENT = 242°30'52.67"	

CURVE RG-1	
P.C. STA RG 16+80.43	
P.I. STA RG 17+53.16	
P.T. STA RG 18+25.37	
Δ= 11°51'49.57"	E = 3.77
R = 700.00	L = 144.94
	T = 72.73
AHEAD TANGENT = 216°04'35.74"	
BACK TANGENT = 204°12'46.17"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-6
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_06.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

DESIGN SUPERVISOR ____ JOB MANAGER ____ DESIGNED BY ____ ESTIMATED BY ____ DRAFTED BY ____ CHECKED BY ____ CHECKED BY ____

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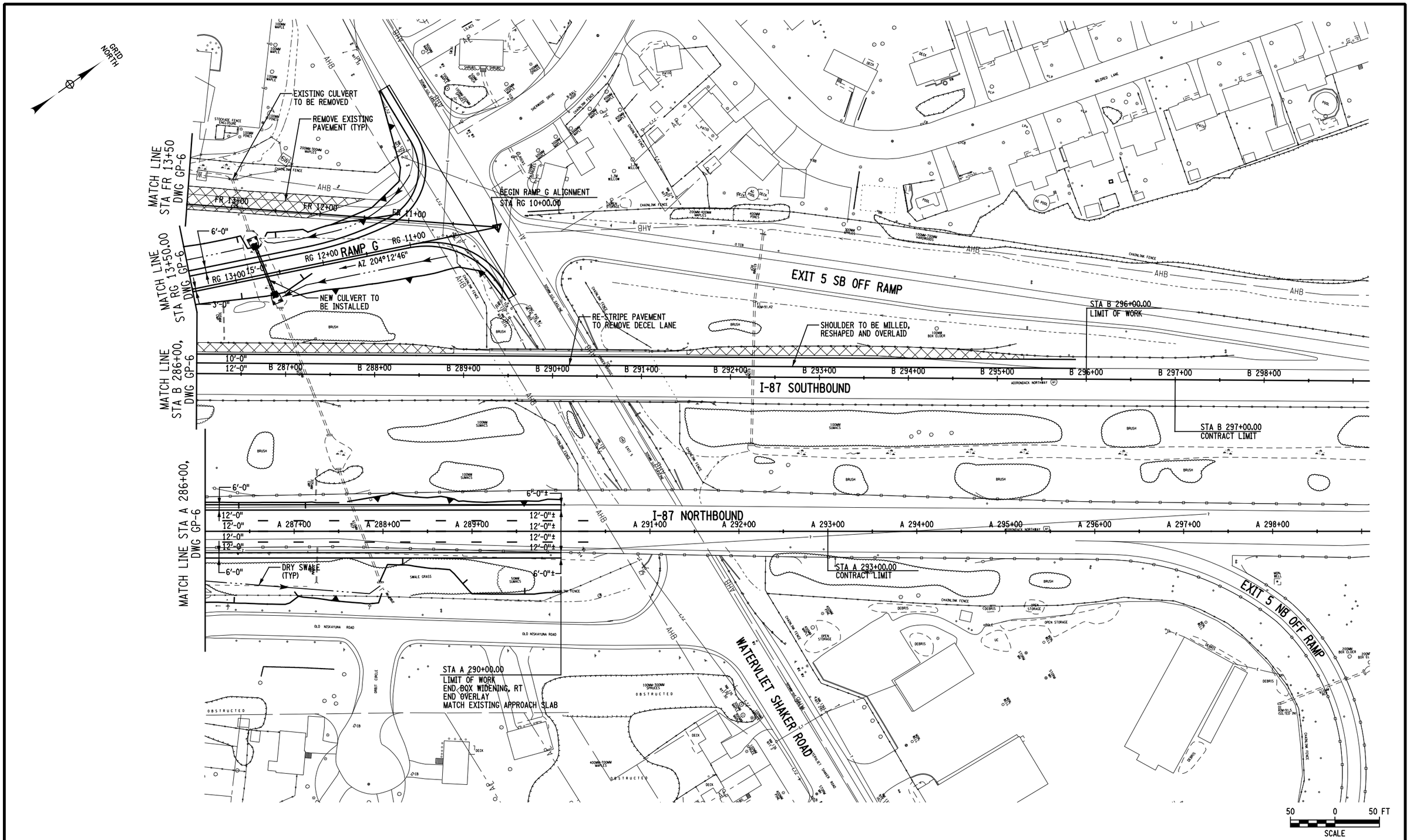

THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY. THE DRAWING CONTENTS ARE NOT AN APPROVED FINAL CONSTRUCTION CONTRACT DOCUMENT.	INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS INTERSTATE 87 (SH NO. 57-17) ALBANY SHAKER ROAD (NYS RTE 155) WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155) COUNTY: ALBANY	PIN 1721.51 DEIS DATE 10/13	BRIDGES BIN 1033141 BIN 1033142	CULVERTS	ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED GENERAL PLAN FLYOVER ALTERNATIVE	CONTRACT NUMBER D010372 DRAWING NO. GP-7 SHEET NO.
DOCUMENT NAME: 172151_cph_flyover_gnp_07.dgn						NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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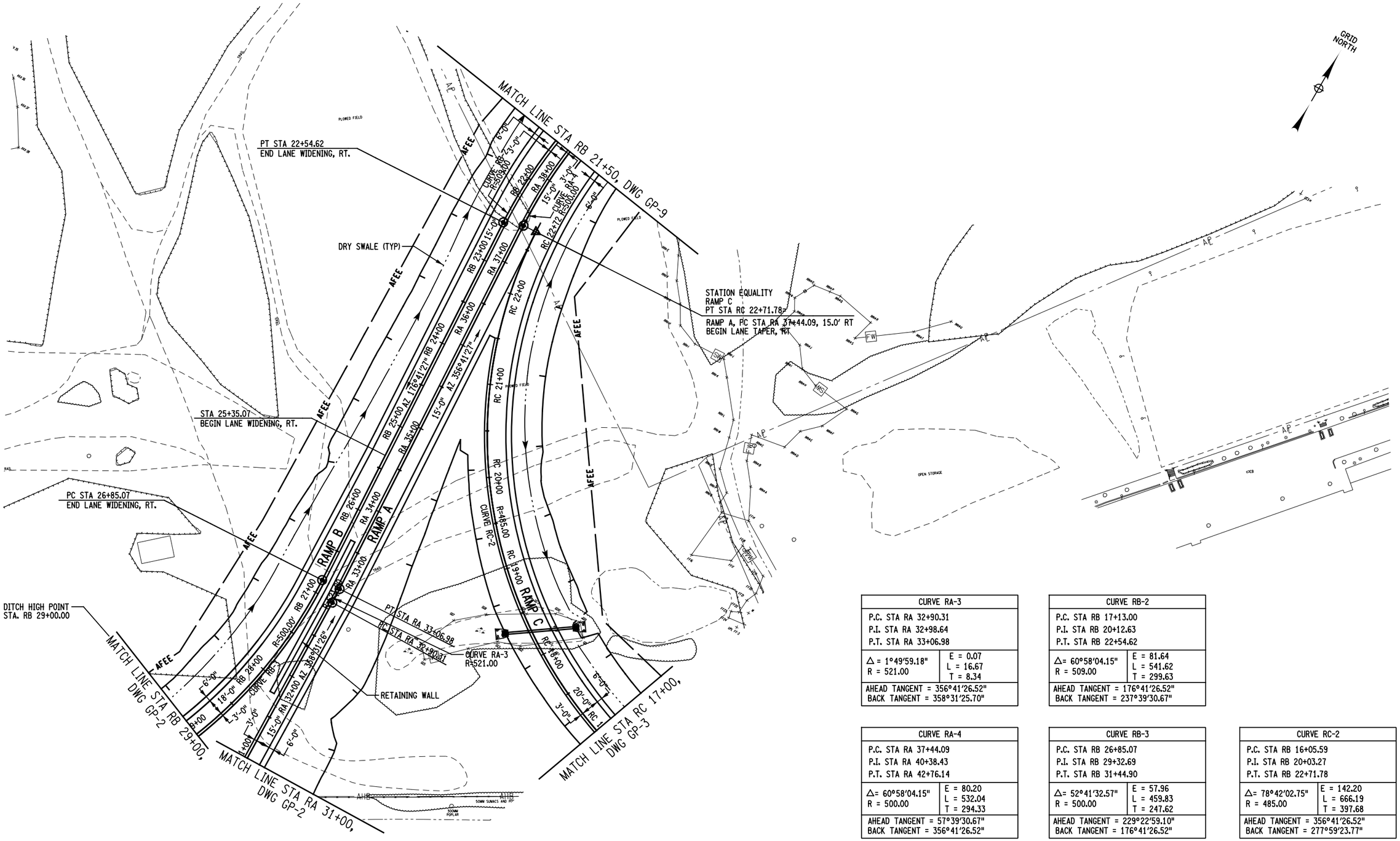
DESIGN SUPERVISOR ____ JOB MANAGER ____ DESIGNED BY ____ CHECKED BY ____ DRAFTED BY ____ CHECKED BY ____ ESTIMATED BY ____



CURVE RA-3	
P.C. STA RA 32+90.31	
P.I. STA RA 32+98.64	
P.T. STA RA 33+06.98	
Δ= 1°49'59.18"	E = 0.07
R = 521.00	L = 16.67
	T = 8.34
AHEAD TANGENT = 356°41'26.52"	
BACK TANGENT = 358°31'25.70"	

CURVE RB-2	
P.C. STA RB 17+13.00	
P.I. STA RB 20+12.63	
P.T. STA RB 22+54.62	
Δ= 60°58'04.15"	E = 81.64
R = 509.00	L = 541.62
	T = 299.63
AHEAD TANGENT = 176°41'26.52"	
BACK TANGENT = 237°39'30.67"	

CURVE RA-4	
P.C. STA RA 37+44.09	
P.I. STA RA 40+38.43	
P.T. STA RA 42+76.14	
Δ= 60°58'04.15"	E = 80.20
R = 500.00	L = 532.04
	T = 294.33
AHEAD TANGENT = 57°39'30.67"	
BACK TANGENT = 356°41'26.52"	

CURVE RB-3	
P.C. STA RB 26+85.07	
P.I. STA RB 29+32.69	
P.T. STA RB 31+44.90	
Δ= 52°41'32.57"	E = 57.96
R = 500.00	L = 459.83
	T = 247.62
AHEAD TANGENT = 229°22'59.10"	
BACK TANGENT = 176°41'26.52"	

CURVE RC-2	
P.C. STA RB 16+05.59	
P.I. STA RB 20+03.27	
P.T. STA RB 22+71.78	
Δ= 78°42'02.75"	E = 142.20
R = 485.00	L = 666.19
	T = 397.68
AHEAD TANGENT = 356°41'26.52"	
BACK TANGENT = 277°59'23.77"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-8
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_08.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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DESIGNED BY
JOB MANAGER
DESIGN SUPERVISOR

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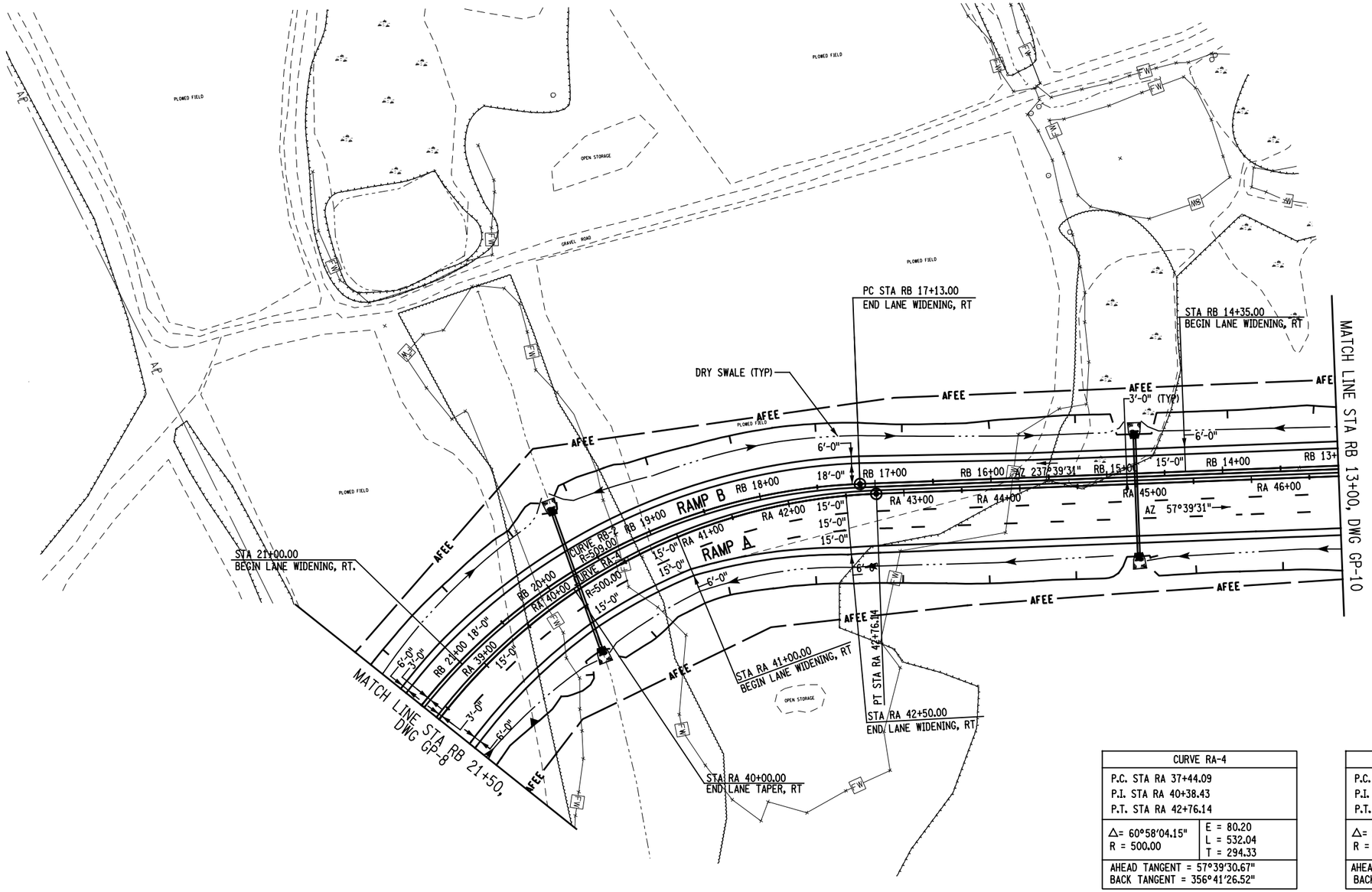

CURVE RA-4	
P.C. STA RA 37+44.09 P.I. STA RA 40+38.43 P.T. STA RA 42+76.14	
Δ= 60°58'04.15" R = 500.00	E = 80.20 L = 532.04 T = 294.33
AHEAD TANGENT = 57°39'30.67" BACK TANGENT = 356°41'26.52"	

CURVE RB-2	
P.C. STA RB 17+13.00 P.I. STA RB 20+12.63 P.T. STA RB 22+54.62	
Δ= 60°58'04.15" R = 509.00	E = 81.64 L = 541.62 T = 299.63
AHEAD TANGENT = 176°41'26.52" BACK TANGENT = 237°39'30.67"	

50 0 50 FT
SCALE

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-9
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_09.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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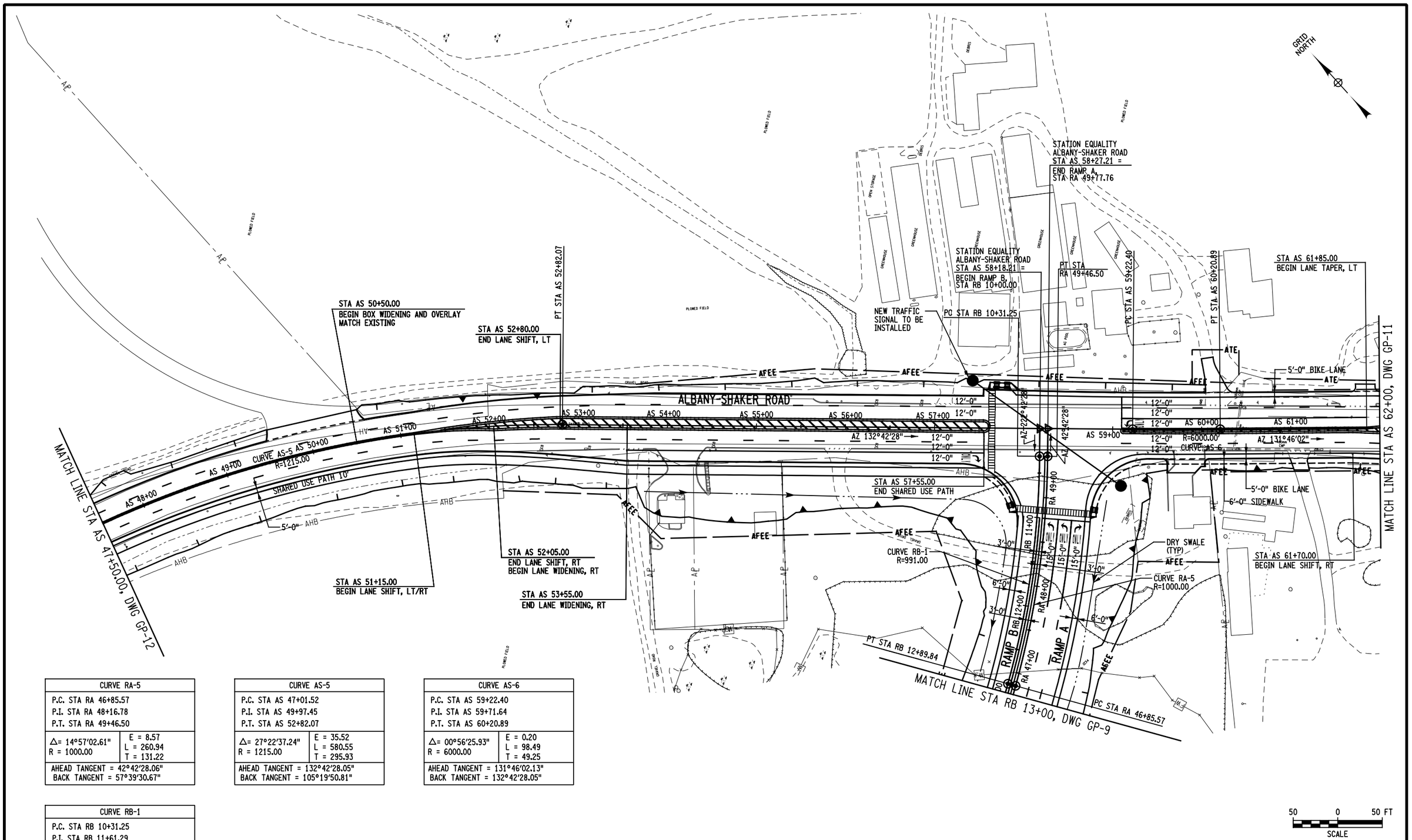

CURVE RA-5	
P.C. STA RA 46+85.57 P.I. STA RA 48+16.78 P.T. STA RA 49+46.50	
Δ= 14°57'02.61" R = 1000.00	E = 8.57 L = 260.94 T = 131.22
AHEAD TANGENT = 42°42'28.06" BACK TANGENT = 57°39'30.67"	

CURVE AS-5	
P.C. STA AS 47+01.52 P.I. STA AS 49+97.45 P.T. STA AS 52+82.07	
Δ= 27°22'37.24" R = 1215.00	E = 35.52 L = 580.55 T = 295.93
AHEAD TANGENT = 132°42'28.05" BACK TANGENT = 105°19'50.81"	

CURVE AS-6	
P.C. STA AS 59+22.40 P.I. STA AS 59+71.64 P.T. STA AS 60+20.89	
Δ= 00°56'25.93" R = 6000.00	E = 0.20 L = 98.49 T = 49.25
AHEAD TANGENT = 131°46'02.13" BACK TANGENT = 132°42'28.05"	

CURVE RB-1	
P.C. STA RB 10+31.25 P.I. STA RB 11+61.29 P.T. STA RB 12+89.84	
Δ= 14°57'02.61" R = 991.00	E = 8.49 L = 258.59 T = 130.03
AHEAD TANGENT = 237°39'30.67" BACK TANGENT = 222°42'28.06"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE
10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER
D010372

DRAWING NO. GP-10
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_10.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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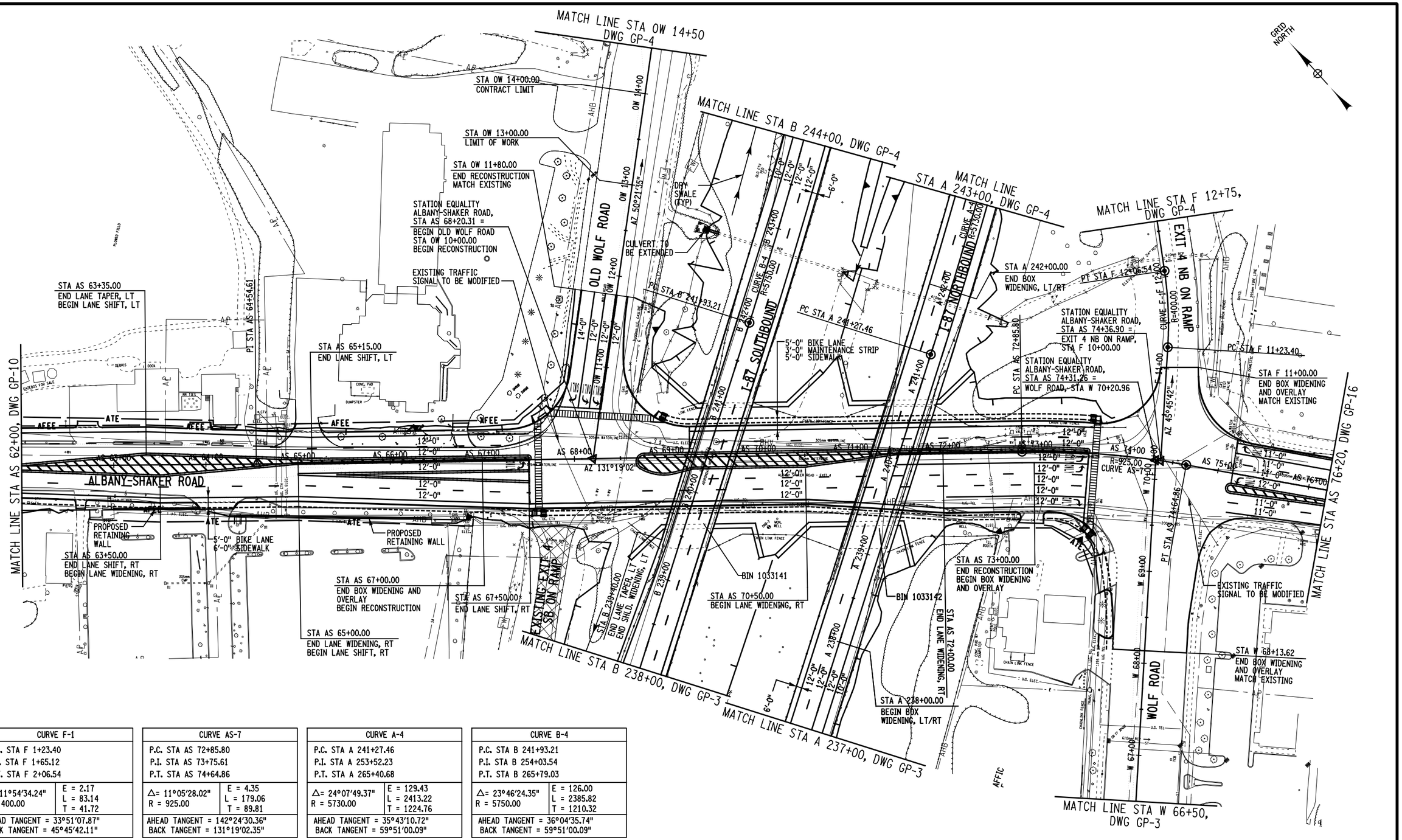

CURVE F-1	
P.C. STA F 1+23.40	
P.I. STA F 1+65.12	
P.T. STA F 2+06.54	
Δ= 11°54'34.24" R = 400.00	E = 2.17 L = 83.14 T = 41.72
AHEAD TANGENT = 33°51'07.87" BACK TANGENT = 45°45'42.11"	

CURVE AS-7	
P.C. STA AS 72+85.80	
P.I. STA AS 73+75.61	
P.T. STA AS 74+64.86	
Δ= 11°05'28.02" R = 925.00	E = 4.35 L = 179.06 T = 89.81
AHEAD TANGENT = 142°24'30.36" BACK TANGENT = 131°19'02.35"	

CURVE A-4	
P.C. STA A 241+27.46	
P.I. STA A 253+52.23	
P.T. STA A 265+40.68	
Δ= 24°07'49.37" R = 5730.00	E = 129.43 L = 2413.22 T = 1224.76
AHEAD TANGENT = 35°43'10.72" BACK TANGENT = 59°51'00.09"	

CURVE B-4	
P.C. STA B 241+93.21	
P.I. STA B 254+03.54	
P.T. STA B 265+79.03	
Δ= 23°46'24.35" R = 5750.00	E = 126.00 L = 2385.82 T = 1210.32
AHEAD TANGENT = 36°04'35.74" BACK TANGENT = 59°51'00.09"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

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GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372

DRAWING NO. GP-11
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_11.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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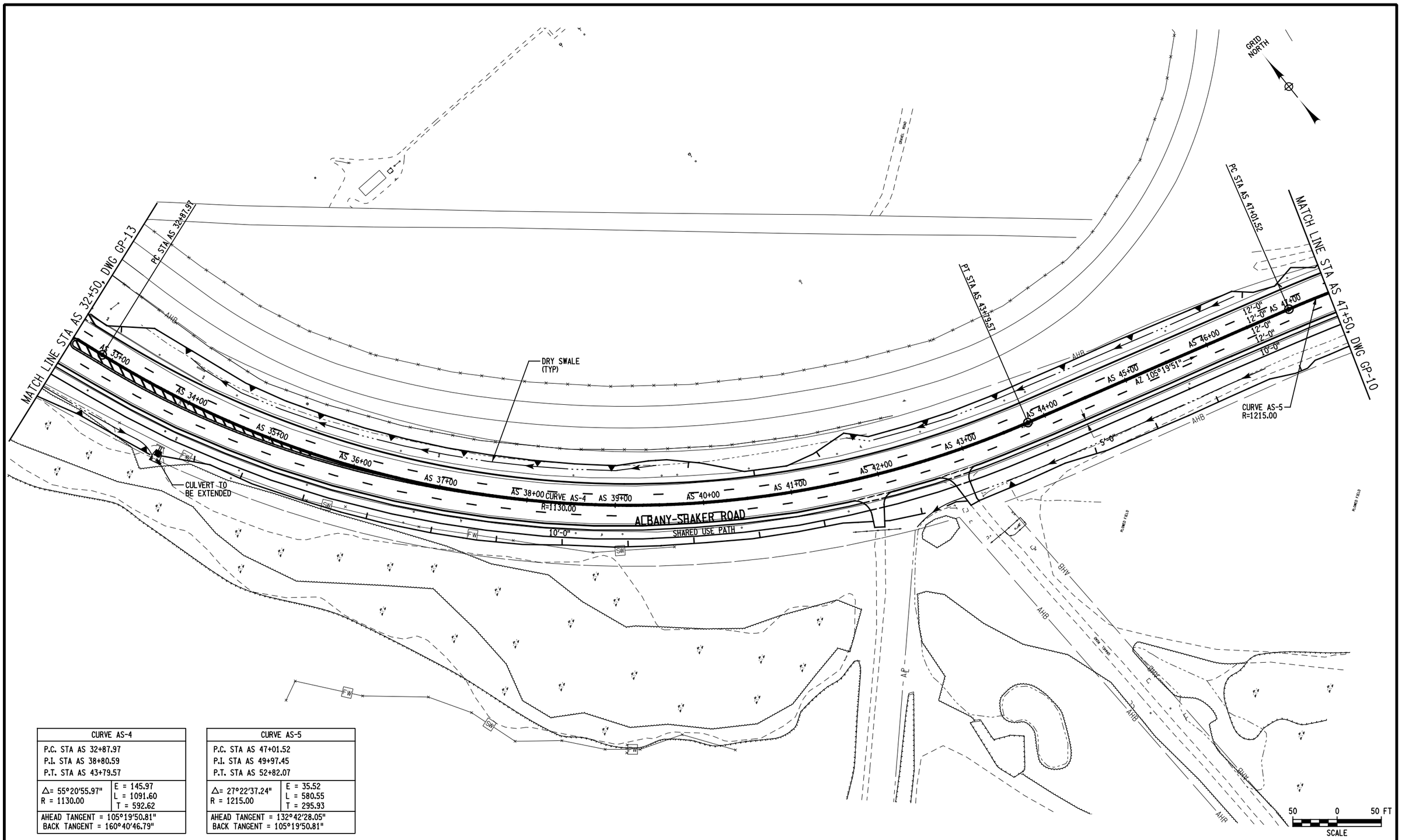

CURVE AS-4	
P.C. STA AS 32+87.97 P.I. STA AS 38+80.59 P.T. STA AS 43+79.57	
Δ= 55°20'55.97" R = 1130.00	E = 145.97 L = 1091.60 T = 592.62
AHEAD TANGENT = 105°19'50.81" BACK TANGENT = 160°40'46.79"	

CURVE AS-5	
P.C. STA AS 47+01.52 P.I. STA AS 49+97.45 P.T. STA AS 52+82.07	
Δ= 27°22'37.24" R = 1215.00	E = 35.52 L = 580.55 T = 295.93
AHEAD TANGENT = 132°42'28.05" BACK TANGENT = 105°19'50.81"	

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
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BIN 1033142

CULVERTS

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GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372

DRAWING NO. GP-12
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_12.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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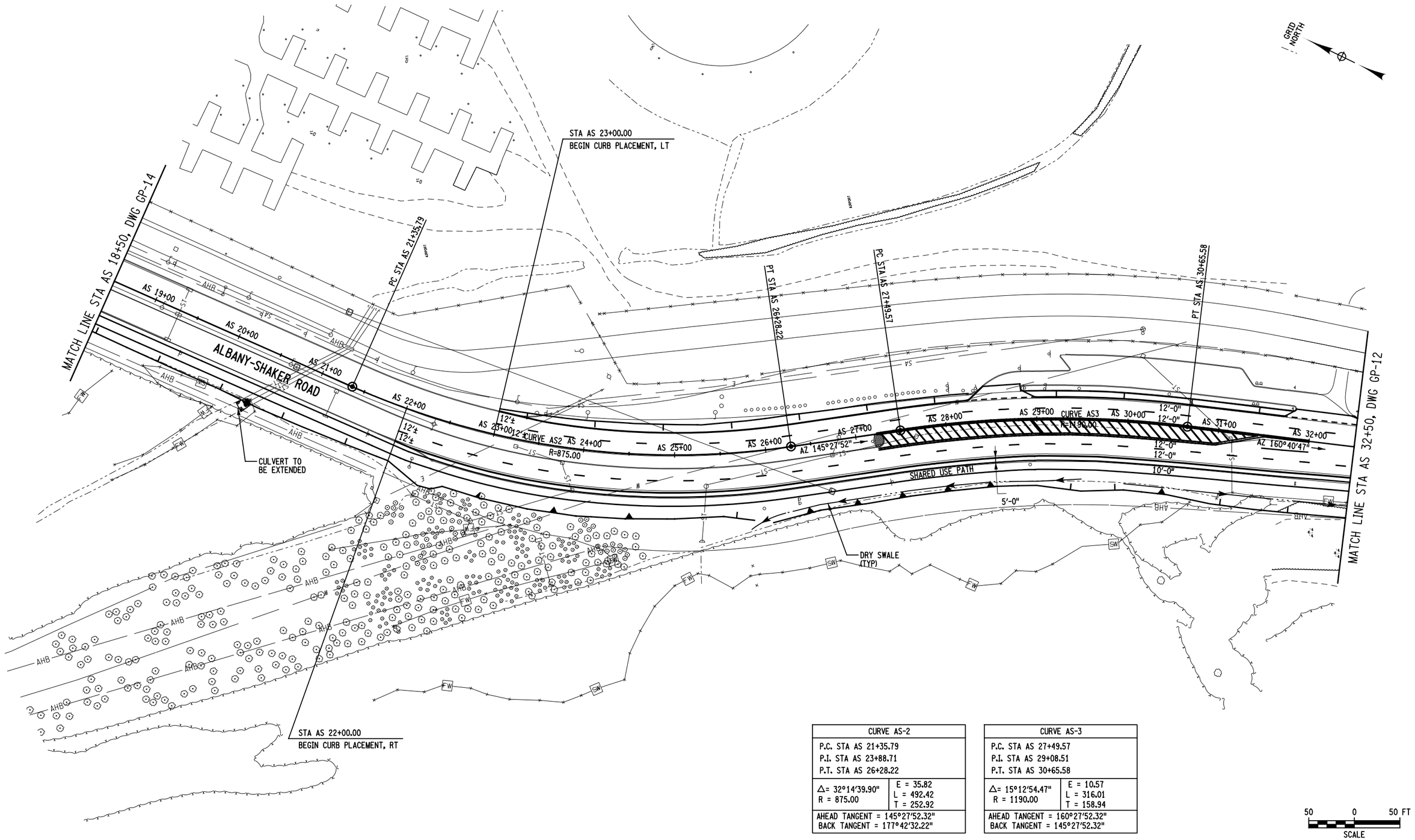

CURVE AS-2	
P.C. STA AS 21+35.79 P.I. STA AS 23+88.71 P.T. STA AS 26+28.22	
Δ= 32°14'39.90" R = 875.00	E = 35.82 L = 492.42 T = 252.92
AHEAD TANGENT = 145°27'52.32" BACK TANGENT = 177°42'32.22"	

CURVE AS-3	
P.C. STA AS 27+49.57 P.I. STA AS 29+08.51 P.T. STA AS 30+65.58	
Δ= 15°12'54.47" R = 1190.00	E = 10.57 L = 316.01 T = 158.94
AHEAD TANGENT = 160°27'52.32" BACK TANGENT = 145°27'52.32"	

50 0 50 FT
SCALE

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INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-13
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_13.dgn

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DESIGN SUPERVISOR

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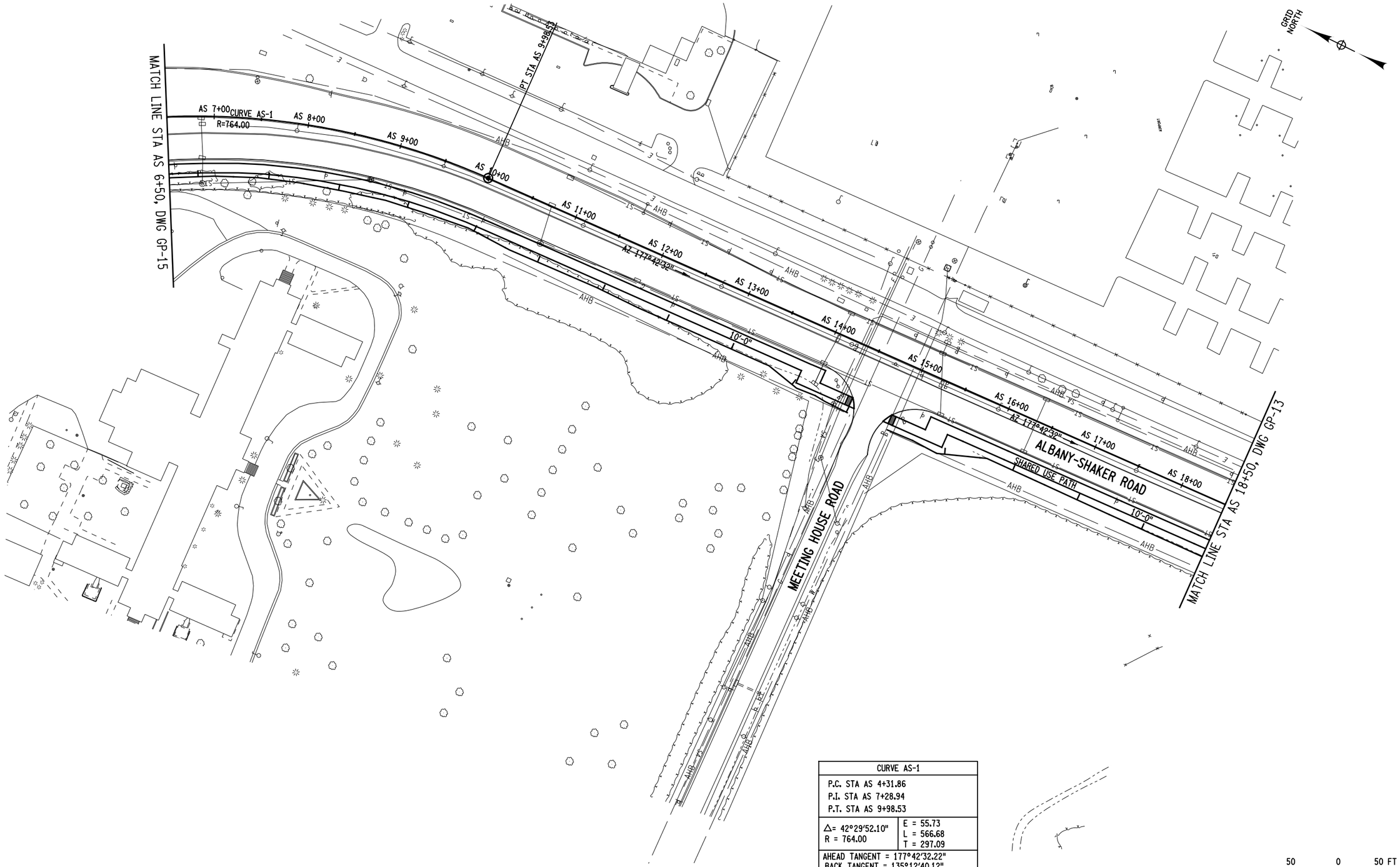

CURVE AS-1	
P.C. STA AS 4+31.86 P.I. STA AS 7+28.94 P.T. STA AS 9+98.53	
Δ= 42°29'52.10" R = 764.00	E = 55.73 L = 566.68 T = 297.09
AHEAD TANGENT = 177°42'32.22" BACK TANGENT = 135°12'40.12"	

50 0 50 FT
SCALE

THIS DRAWING IS PROVIDED FOR INFORMATIONAL PURPOSES ONLY.
THE DRAWING CONTENTS ARE NOT AN APPROVED FINAL CONSTRUCTION CONTRACT DOCUMENT.

INTERSTATE 87 (I-87) EXIT 3 / 4 ACCESS IMPROVEMENTS
INTERSTATE 87 (SH NO. 57-17)
ALBANY SHAKER ROAD (NYS RTE 155)
WOLF ROAD (SH NO. 69-1) OLD WOLF ROAD (NYS RTE 155)
COUNTY: ALBANY

PIN 1721.51
DEIS DATE 10/13

BRIDGES
BIN 1033141
BIN 1033142

CULVERTS

ALL DIMENSIONS IN ft UNLESS OTHERWISE NOTED

GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-14
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_14.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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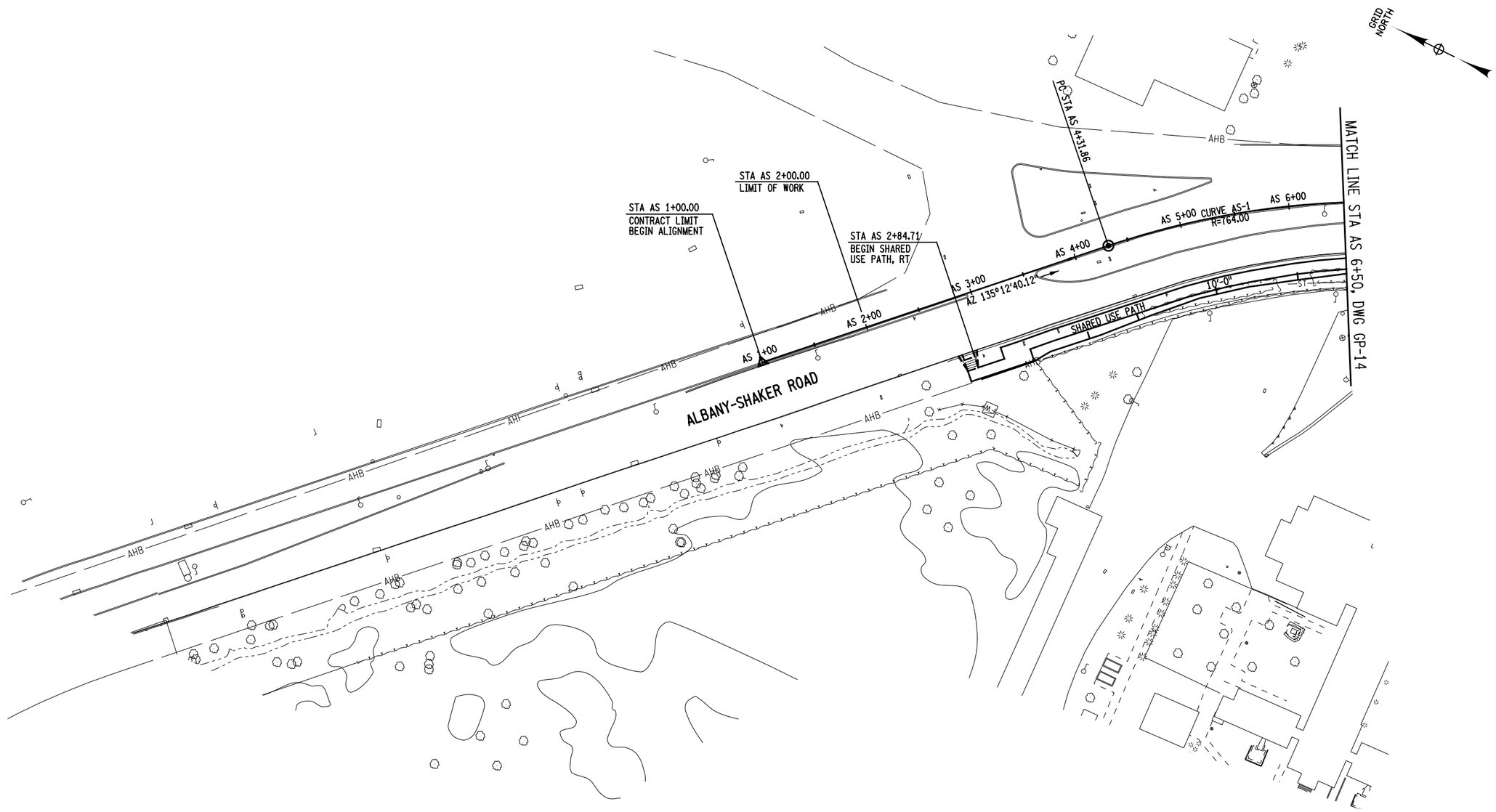
DATE/TIME =10/23/2013
USER =4066

DESIGN SUPERVISOR ____ JOB MANAGER ____ DESIGNED BY ____ DRAFTED BY ____ ESTIMATED BY ____ CHECKED BY ____ CHECKED BY ____



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GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372
DRAWING NO. GP-15
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_15.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

CHECKED BY
DRAFTED BY
ESTIMATED BY
CHECKED BY
DESIGNED BY
JOB MANAGER
DESIGN SUPERVISOR

FILE NAME =u094560\mstn\Preliminary Design Alternatives\Flyover\172151_cph_flyover_gnp_15.dgn
DATE/TIME =10/23/2013
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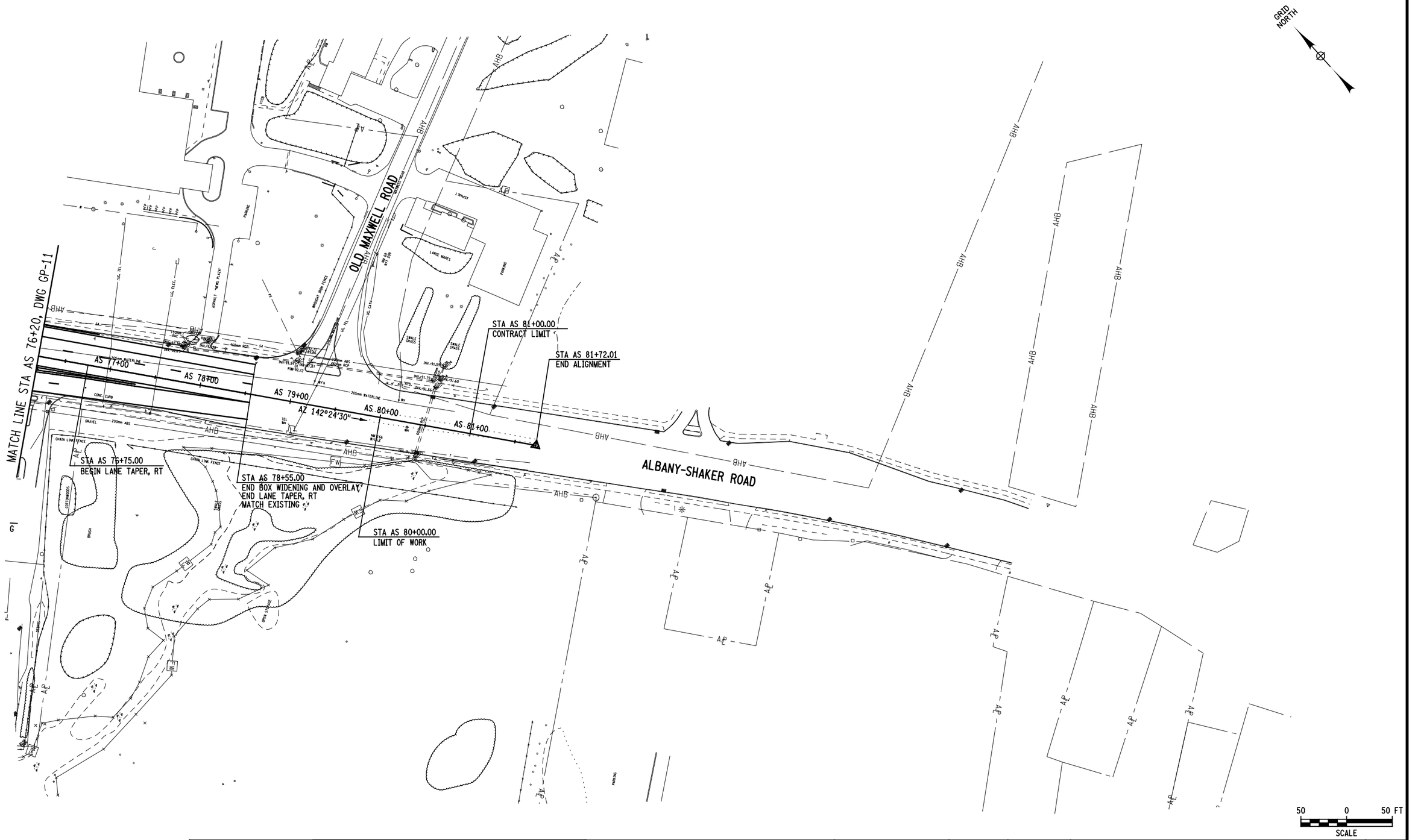

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PIN 1721.51
DEIS DATE 10/13

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CULVERTS

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GENERAL PLAN
FLYOVER ALTERNATIVE

CONTRACT NUMBER D010372

DRAWING NO. GP-16
SHEET NO.

DOCUMENT NAME: 172151_cph_flyover_gnp_16.dgn

NEW YORK STATE DEPARTMENT OF TRANSPORTATION REGION 1

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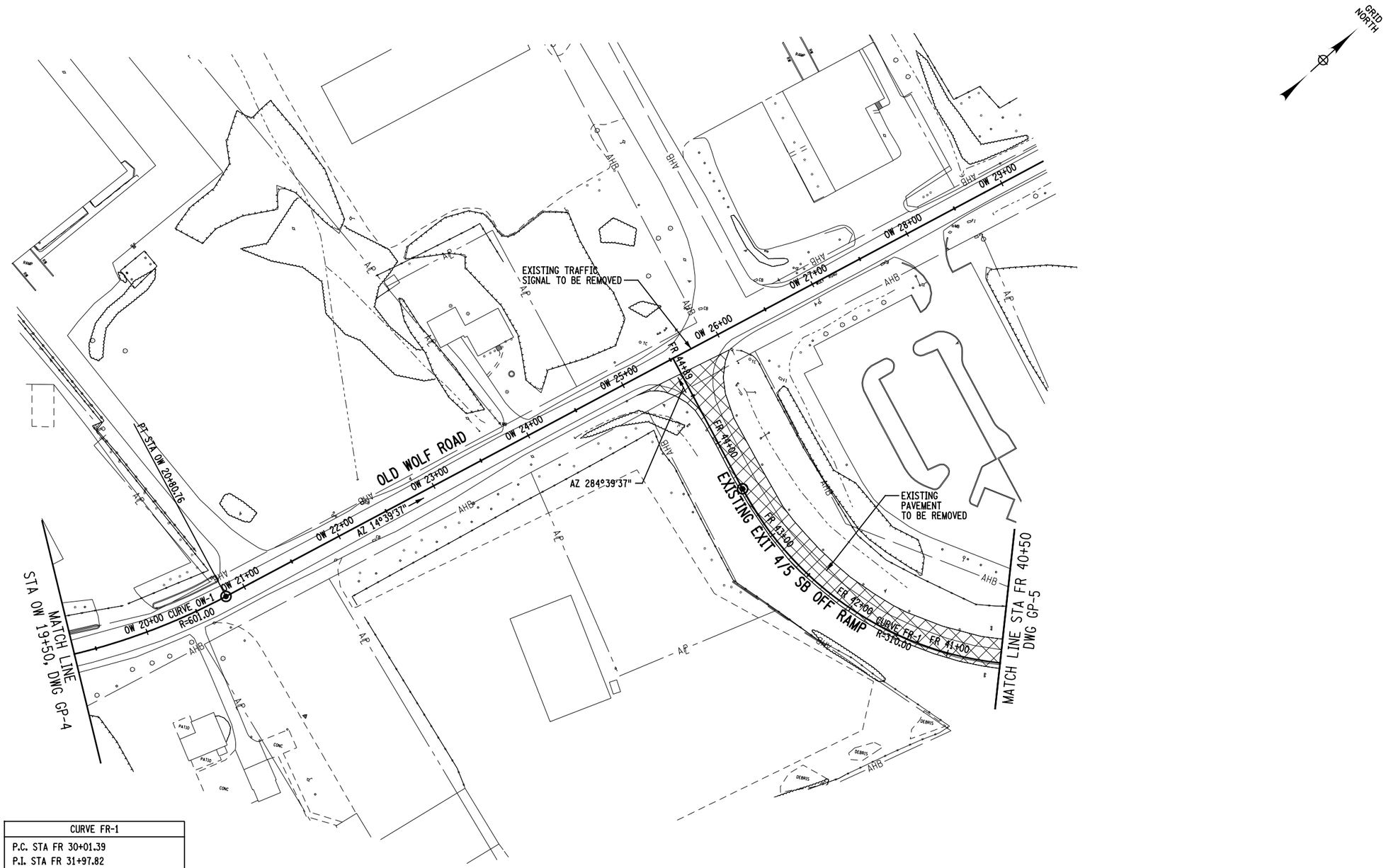
CHECKED BY
DESIGNED BY
JOB MANAGER
DESIGN SUPERVISOR

FILE NAME =L:\094560\mstn\Preliminary Design Alternatives\Flyover\172151_cph_flyover_gnp_16.dgn
DATE/TIME =10/23/2013
USER =4066



CURVE OW-1	
P.C. STA OW 7+06.29 P.I. STA OW 8+99.83 P.T. STA OW 10+80.76	
Δ= 35°41'57.90" R = 601.00	E = 30.39 L = 374.47 T = 193.54
AHEAD TANGENT = 14°39'36.90" BACK TANGENT = 50°21'34.80"	

CURVE FR-1	
P.C. STA FR 30+01.39 P.I. STA FR 31+97.82 P.T. STA FR 33+51.56	
Δ= 64°43'15.90" R = 310.00	E = 57.00 L = 350.17 T = 196.43
AHEAD TANGENT = 284°39'36.90" BACK TANGENT = 219°56'21.00"	

50 0 50 FT
SCALE

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DATE/TIME =10/23/2013
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DESIGN SUPERVISOR ____ JOB MANAGER ____ DESIGNED BY ____ DRAFTED BY ____ ESTIMATED BY ____ CHECKED BY ____ CHECKED BY ____