# ENVIRONMENTAL ASSESSMENT

## PROPOSED INTERCHANGE AT 96TH STREET AND KEYSTONE PARKWAY

## Hamilton and Marion Counties, Indiana

## Des. # 0901562

## City of Carmel

*February 2012*

RW ARMSTRONG™

FEDERAL HIGHWAY ADMINISTRATION
FINDING OF NO SIGNIFICANT IMPACT
For
96th & Keystone Avenue Interchange (Des. No. 0901562)
Hamilton County, Indiana

The environmental document was released for public review and comment by public notices dated October 11 and October 18, 2011, and a Public Hearing was held on October 26, 2011. This project provides for construction of a grade separated interchange at 96th and Keystone Avenue, to reduce congestion and crashes.

The project will require approximately 14.4 acres of permanent right-of-way, and approximately 0.63 acre of temporary right-of-way. There are no residential relocations, but there are four business relocations. As with all such projects, there will be temporary impacts to businesses, during construction, but FHWA believes there will be an overall benefit to both business and the local community if the construction schedule is accelerate. If the project is to be accelerated, the Indianapolis Metropolitan Planning Organization (IMPO) 2035 Transportation Plan and 2012-2015 Transportation Improvement Program will need to be amended to reflect the updated schedule. There will be an additional opportunity for public comment during the amendment process in accordance with the IMPO Public Participation Plan. There are no impacts to wetlands or 4(f) protected resources.

The FHWA has determined that this project, as identified in the Environmental Assessment, will have no significant impact on the natural and human environment. This Finding of No Significant Impact (FONSI) is based on the environmental assessment and Public Hearing transcript that have been independently evaluated by the FHWA and determined to adequately and accurately discuss the environmental issues and impacts of the proposed project. These documents provide sufficient evidence and analysis for determining that an environmental impact statement is not required. The FHWA takes full responsibility for the accuracy, scope and content of these documents.

March 5, 2012

Date

for Robert F. Tally, Jr., P.E.
Division Administrator

*Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Ave. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

FHWA-Indiana Environmental Document

# CATEGORICAL EXCLUSION / ENVIRONMENTAL ASSESSMENT FORM

GENERAL PROJECT INFORMATION

| | |
|---|---|
| Road No./County: | Keystone Avenue and 96th Street / Hamilton and Marion Counties |
| Designation Number: | 0901562 |
| Project Description/Termini: | The south-north leg of the proposed project would extend along Keystone Avenue from a point approximately 400 ft. north of the northern I-465 ramp terminals to 99th Street. The west-east leg of the proposed project would extend from approximately 594 ft. west of Haverstick Road to approximately 300 ft. east of Priority Way West Drive. |

After completing this form, I conclude that this project qualifies for the following type of Categorical Exclusion (FHWA must review/approve if Level 4 CE):

| | |
|---|---|
| | Categorical Exclusion, Level 2 – The proposed action meets the criteria for Categorical Exclusion Manual Level 2 - table 1, CE Level Thresholds. Required Signatories: ESM (Environmental Scoping Manager). |
| | Categorical Exclusion, Level 3 – The proposed action meets the criteria for Categorical Exclusion Manual Level 3 - table 1, CE Level Thresholds. Required Signatories: ESM, ES (Environmental Services). |
| | Categorical Exclusion, Level 4 – The proposed action meets the criteria for Categorical Exclusion Manual Level 4 - table 1, CE Level Thresholds. Required Signatories: ESM, ES, FHWA. |
| X | Environmental Assessment (EA) – EAs require a separate FONSI. Additional research and documentation is necessary to determine the effects on the environment. Required Signatories: ES, FHWA. |

Note: For documents prepared by or for Environmental Services, it is not necessary for the ESM of the district in which the project is located to release for public involvement or sign for approval.

Approval _____ _____ _____ 3-2-12
ESM Signature Date ES Signature Date

Jay DuMontelle 3-5-2012
JAY DUMONTELLE
FHWA Signature Date

Release for Public Involvement _____ 09/28/11
ESM Initials Date

_____ 9-15-11
ES Initials Date

Certification of Public Involvement Mary Wright 11/28/11
EXAMINER Manager, Public Hearings Signature Date

Note: Do not approve until after Section 106 public involvement and all other environmental requirements have been satisfied.

Reviewer Signature _____ Date 9-15-11

Name and organization of CE/EA Preparer: Chad E. Costa / RW Armstrong

# Part I - PUBLIC INVOLVEMENT

Every Federal action requires some level of public involvement, providing for early and continuous opportunities throughout the project development process. **The level of public involvement should be commensurate with the proposed action.**

Discuss what public involvement activities (legal notices, letters to affected property owners and residents, meetings, special purpose meetings, newspaper articles, etc.) have occurred for this project.

Remarks:

Public Hearing:

In accordance with the current INDOT Public Involvement Procedures (April 1, 2009) approved by the Federal Highway Administration (FHWA), the project meets the thresholds requiring that an opportunity for public hearing be offered. Specifically, the opportunity for a public hearing is required as the project requires substantial amounts of right-of-way (more than 0.5 acre) and changes the layout or functions of connecting roadways. To that end, the FHWA determined that a public hearing was warranted for the proposed project due to the affect it will have on traffic patterns. As such, a public hearing was convened in the Council Chambers of Carmel City Hall at 5:30 PM on Wednesday October 26, 2011. Notice of the public hearing was published in the October 11, 2011 and October 18, 2011 editions of the Indianapolis Star (Appendix G.1). Ninety-three people signed in to the hearing, which started with an informal session at 5:30 PM and provided attendees an opportunity to view project displays, plans, drive through animations and the environmental document. Comments from the public were accepted through November 10, 2011. A summation of the comments received at the hearing and within the 15-day period following the hearing is included in Appendix G.3. A copy of the hearing transcript, in its entirety, is maintained in the project file.

Section 106:

An opportunity for the public to comment on the Section 106 determination of effect issued by the Indiana Department of Transportation (INDOT), on behalf of the FHWA, was advertised in the local news media. A public notice was advertised in the Indianapolis Star on November 16, 2009 (Appendix D.2-1 to D.2-2) with a 30-day comment period expiring on December 21, 2009. No dissenting comments were received regarding the "No Historic Properties Affected" determination.

The historical reports supporting the "No Historic Properties Affected" finding that were developed as part of this project were made available for public inspection at the office of the City of Carmel Engineer and the office of the project consultant, RW Armstrong.

| **Public Controversy on Environmental Grounds** | **Yes** | **No** |
|---|---|---|
| Will the project involve substantial controversy concerning community and/or natural resource impacts? | X | |

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

Remarks:

As a result of the October 26, 2011 public hearing, numerous spoken and written comments were received from business owners and residents in the project area objecting to the project based on the grounds it would change the access to community businesses or eliminate them altogether. Additionally, petitions received from over 130 individuals objecting to the project were submitted along with the formal comments of one person. Signatories of the petition represent various business owners, their employees or investors, as well as some apparent residents. Objections presented in the petition included:

- The short and long term economic impacts that would be suffered by local businesses
- The City of Carmel has ignored concerns of business owners
- The City of Carmel's lack of funding for the project
- Concern over the roundabouts ability to carry a high and diverse volume vehicles
- Concern over reconstructing the section of Keystone Avenue that INDOT just upgraded as part of their interchange modification project (I-465 / Keystone Avenue)

Following the public hearing coordination occurred with INDOT and FHWA to address the controversy generated by the business owners and residents in the project area. In response to commenters at the public hearing, the FHWA elevated the level of environmental documentation to an Environmental Assessment. Additionally, in response to concerns regarding changes in access to businesses in the southeast quadrant of the interchange, the reconstruction of Threel Road (see Proposed Improvements Section) was moved up from the planned future improvements and is to be included in the immediate project. Reconstructing Threel Road will provide front side access to the businesses in the southeast quadrant that front Keystone Avenue, but also provides a circulatory route for car carrier traffic. It is worth noting that INDOT recently completed improvements (December 2011) along Keystone Avenue as part of the I-465 / Keystone Avenue interchange modification project. These improvements extended primarily to 96th Street, but also included the addition of a designated right turn lane between 96th Street and 98th Street. These improvements included the addition of dual designated right turn lanes from northbound Keystone Avenue to eastbound 96th Street. However, the addition of the dual right turn lanes decreased the turning radius at the Threel Road and 96th Street intersection such that it is currently not sized for semi-trailers / car carriers. As such, these types of vehicles are no longer able to use Threel Road as part of their circulatory route and must use Aronson Drive as their sole entrance / exit point. With the project's reconstruction of Threel Road, such vehicles will again be able to use the road to enter / exit the area without having to travel through the parking lots of adjacent businesses, providing a benefit to the local traffic circulating through the southeast quadrant.

Finally, INDOT and FHWA are of the position that while the project will likely have a temporary effect on some local businesses, accelerating the scheduling of the project from the out years of 2026-2035, as currently planned in the Indianapolis Metropolitan Planning Organization's 2035 Long-Range Transportation Plan (LRTP), will provide an overall benefit to the community by improving an existing intersection that is operationally deficient.

| | Yes | No |
|---|---|---|
| Opportunity for a Public Hearing Required | X | |

# Part II - General Project Identification, Description, and Design Information

Sponsor of the Project: City of Carmel INDOT District: Greenfield
Local Name of the Facility: 96th Street / Keystone Parkway

Funding Source: [X*] Federal [X] State [ ] Local [ ] Private
** - While it is anticipated that Federal money may be acquired for some portion of the project, to-date, there has been no allocation of Federal money.*

## PURPOSE AND NEED:

*Describe the problem that the project will address.*

The purpose and need for the improvements is evidenced by several safety and operational deficiencies at the intersection. Therefore, the basic element of the purpose and need is to enhance user mobility and reduce commuter travel times and accidents along the 96th Street and Keystone Parkway corridors.

The intersection is currently operating at a level of service (LOS) F. Moreover, as illustrated in Table 1 below the LOS at the existing intersection in the design year (2031) will fail in every approach. When compared to the criteria established in Chapter 53 of the 2010 Indiana Design Manual (IDM) for these classifications of roadways (Table 2), it is apparent the LOS at the intersection is substandard. This deficient LOS is a prime contributor to the existing delays experienced at the intersection, which is approximately 3.5 minutes per vehicle. Typical delay times associated with the respective LOS, as per the Highway Capacity Manual 2000 published by the Transportation Research Board, is shown in Table 3 below. If unaddressed, delays at the intersection will increase.

**Table 1 – Projected LOS Operations (Keystone Parkway and 96th Street Signalized)**

| Approach | 2031 LOS[1] | |
|---|---|---|
| | AM | PM |
| Keystone Ave. NB Approach | F | E |
| Keystone Ave. SB Approach | F | F |
| 96th St. EB Approach | F | F |
| 96th St. WB Approach | F | F |
| Overall Intersection | F | F |

1 - LOS results based on HCS, Sidra, and/or CORSIM analyses

**Table 2 – LOS Criteria for Signalized Intersections[1]**

| Facility | Functional Classification | LOS[2] | |
|---|---|---|---|
| | | Desirable | Min. |
| Keystone Ave. | Urban Arterial (4 or More Lanes) | C | D |
| 96th St. | Urban Collector | C | D |

1 – Criteria as defined in Chapter 53 of the 2010 Indiana Design Manual

2 – LOS element for a "built-up" area type

**Table 3 – LOS Association to Delay Times (Signalized Intersections)**

| LOS | Delay (sec / vehicle) |
|---|---|
| A | ≤ 10 |
| B | > 10-20 |
| C | > 20-35 |
| D | > 35-55 |
| E | > 55-80 |
| F | > 80 |

In addition to delays, the intersection is a safety concern as evidenced in Table 4 below, which provides a summary of the accidents reported to the Carmel Police Department over the course of a five year period (2005-2010).

**Table 4 – Accident Summary Within the Project Limits (2005 – 2010)[1]**

| Year | PD[2] | PI[2] | Fatality | Total |
|---|---|---|---|---|
| 2005 (half yr.) | 40.5 | 3.5 | 0 | 44 |
| 2006 | 89 | 8 | 0 | 97 |
| 2007 | 77 | 8 | 0 | 85 |
| 2008 | 78 | 6 | 0 | 84 |
| 2009[3] | 50 | 7 | 0 | 57 |
| 2010 (half yr.)[3] | 44 | 2 | 1 | 47 |
| **TOTAL** | **378.5** | **34.5** | **1** | **414** |
| **AVG** | **75.7** | **6.9** | **0.2** | **82.8** |

1 - Source of Accident Data was the Carmel Police Department
2 - PD = Accidents involving property damage, PI = accidents involving personal injury
3 – Reduction in accidents is in part due to traffic diversion for the I-465 / Keystone Avenue Interchange Modification project.

## PROJECT DESCRIPTION (PREFERRED ALTERNATIVE):

County: Hamilton and Marion
Municipality: Carmel

Limits of Proposed Work: The proposed project involves the construction of a new interchange at the existing at-grade intersection of Keystone Parkway and 96th Street. The south-north leg of the proposed project would extend along Keystone Parkway from the southern I-465 ramp terminals to 99th Street. The west-east leg of the proposed project would extend from approximately 594 ft. (0.1 mile) west of Haverstick Road to approximately 300 ft. east of Priority Way West Drive. The estimated length of the proposed project along Keystone Parkway is 4,900 ft. (0.93 mile) and 3,850 ft. (0.73 mile) along 96th Street. Additionally, the project proposes four connector roads, a north-south connector road extending approximately 1,400 ft. (0.27 mile) between 96th Street and 98th Street, a 550 ft. (0.1 mile) connector north of Priority Way West Drive to the north-south connector road, an east-west connector that extends approximately 935 ft. (0.18 mile) between Aronson Drive and Priority Way West Drive and a 528 ft. (0.1 mile) connector road between Haver Way and Whitley Drive. Approximately 1,056 ft. (0.2 mile) of Threel Road would also be reconstructed as part of the project. The total estimated project length is 2.5 miles.

Total Work Length / Area: 2.5 / 49 **Mile**(s) / Acre(s)

| | Yes[1] | No |
|---|---|---|
| Is an Interchange Modification Study / Interchange Justification Study (IMS/IJS) required? | | X |
| If yes, when did the FHWA grant a conditional approval for this project? | Date: | |

[1]*If an IMS or IJS is required; a copy of the approved CE/EA document must be submitted to the FHWA with a request for final approval of the IMS/IJS.*

*In the Remarks box below, describe in detail the scope of work for the project, including the preferred alternative. Include a discussion of logical termini. Discuss any major issues for the project and how the project will improve safety or roadway deficiencies if these are issues.*

Project Location:

The proposed project is located in south-central Hamilton County and north-central Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps, plans and ground level photographs are included in Appendix B of this document.

Existing Conditions:

The existing at-grade signalized intersection of 96th Street and Keystone Parkway is located in an area predominated by urbanized land uses, such as various commercial establishments and residences. Automotive dealers, restaurants and small office parks align both 96th Street and Keystone Parkway throughout the project area. West of the Haverstick Road and 96th Street intersection and north of the Keystone Parkway and 98th Street intersection the land use transitions to residential. INDOT recently completed (December 2011) improvements along Keystone Parkway as part of the I-465 / Keystone Avenue interchange modification. The improvements extended primarily between the southern ramp terminals and 96th Street, but also extended a designated right turn lane from 96th Street to 98th Street.

Keystone Avenue (designated as avenue in Marion County) is functionally classified as an urban arterial roadway and is not on the National Highway System (NHS). Approaching the 96th Street intersection form the south (northbound traffic), the typical section of Keystone Avenue consists of five 12 ft. travel lanes that are bordered by a 10 ft. outside shoulder. At the 96th Street intersection, the outside travel lane expands to include an additional 12 ft. lane, which becomes dual designated right turn lanes; a 12 ft. designated left turn lane is also provided for a total of seven lanes at the intersection. Leaving the 96th Street intersection, southbound Keystone Avenue consists of four 12 ft. through lanes bordered by a 10 ft. outside shoulder. The two inside lanes continue as through lanes through the I-465 interchange, while the outside two lanes become a collector-distributor ramp to eastbound I-465. Additionally, approximately 390 ft. south of 96th Street the pavement widens by another 12 ft. to provide a 12 ft. ramp to westbound I-465. Northbound and southbound Keystone Avenue is separated by a flush concrete median varying from 15-22.5 ft. in width with a 2.5 ft. barrier wall.

North of 96th Street, which is the county line between Hamilton and Marion Counties, Keystone Avenue changes to Keystone Parkway as it continues north eventually terminating at US 31 approximately five miles north of the intersection. Although changing from an “Avenue” to “Parkway,” the functional classification of Keystone Parkway is maintained as an urban arterial. The City of Carmel owns and is responsible for maintaining this section of Keystone Parkway, which includes the intersection with 96th Street. Herein, the section of Keystone within the project limits will be referred to as “Keystone Parkway.” The typical section of Keystone Parkway as it approaches the 96th Street intersection (southbound traffic) is comprised of two 12 ft. through lanes with an 8 ft. paved outside shoulder. Designated 12 ft. left and right turn lanes are present at Keystone Parkway’s intersection with 96th Street and 98th Street. North on Keystone Parkway, leaving the 96th Street intersection, four 12 ft. travel lanes are maintained until the 98th Street intersection where the outside lane drops as a designated right turn lane. A 12 ft. designated left turn lane is also provided at the 98th Street intersection. Continuing northward, it is at a point approximately 213 ft. north of 99th Street where the inside lane merges into the center lane reducing the section to two lanes of traffic. Northbound and southbound traffic along Keystone Parkway is separated by a 20 ft. grassy median

Drainage along Keystone Parkway is conveyed via side ditches. The inside lanes of Keystone Parkway drain into stormwater inlets located in the median. The posted speed limit along Keystone Parkway is 45 mph.

96th Street is functionally classified as an urban arterial roadway and is not on the NHS. The west and east legs of 96th Street typically consist of two 12 ft. travel lanes in each direction with a 2.6 ft. curb and gutter. Approaching the Keystone Parkway intersection from the west, a 12 ft. designated left turn lane is provided. Additionally, at the intersection, the outside travel lane becomes a shared through / right turn lane. West of Whitley Drive, 96th Street is reduced to a two lane section (one 12 ft. lane in each direction). Along the east leg of 96th Street, a 16 ft. two way left turn lane (TWLTL) is present between Threel Road and Enterprise Drive. At its intersection with Keystone Parkway, the TWLTL transitions to a 12 ft. designated left turn lane for westbound 96th Street to southbound Keystone Parkway traffic. In addition, the inside through lane becomes a shared through / left turn lane, while the outside through lane converts to a shared through / right turn lane. A designated 12 ft. left turn lane is also provided at the Priority Way West Drive intersection for both eastbound and westbound traffic. Drainage along 96th Street is conveyed via side ditches and subsurface stormwater structures. The posted speed limit along 96th Street is 35 mph.

Threel Road is not a functionally classified roadway, but rather a privately owned street. It consists of two lanes (unmarked) with a pavement width of 22 ft. (11 ft. lanes are assumed) and no defined shoulder or curb. The vertical alignment is generally level while the horizontal alignment is tangent until its approach to 96th Street where its alignment becomes curvilinear. There is no posted speed limit, but it is known to be 30 miles per hour (mph). Threel Road is a

frontage road to Keystone Parkway providing front side access to a variety of businesses aligning Keystone Parkway, such as Bob Evans, Ruths Chris and Tom Wood Nissan. Prior to INDOTs reconstruction of Keystone Parkway between I-465 and 96th Street, it also contributed to a local circulatory route for car carrier traffic. However, as discussed in the **Public Controversy on Environmental Grounds** section, this is no longer the case. However, it maintains an access point to 96th Street immediately east of the Keystone Parkway intersection.

Haver Way is functionally classified as a local street and comprised of two unmarked lanes with a pavement width of approximately 30 ft. (15 ft. lanes are assumed) and a 2 ft. gutter. The vertical alignment is generally level and the horizontal alignment is tangent. There is no posted speed limit, but it is known to be 30 mph.

Whitley Drive is functionally classified as a local street and comprised of two unmarked lanes with a pavement width of 20 ft. (10 ft. lanes are assumed) and no defined shoulder or curb, with the exception of the 6 in. curb that is present at commercial drive access points. The vertical alignment is generally level and the horizontal alignment is tangent. The posted speed limit along this section of Whitley Drive is 30 mph.

Day Drive is functionally classified as a local street that provides access to several residences north of 96th Street. Its typical section is comprised of two unmarked lanes with a pavement width of 20 ft. (10 ft. lanes are assumed) and no defined shoulder or curb, with the exception of the 6 in. curb that is present at commercial drive access points. The vertical alignment is generally level and the horizontal alignment is tangent. There is not posted speed limit along this section of Day Drive. A 4 ft. sidewalk is present along a portion of the west side of Day Drive. The sidewalk starts at a point approximately 50 ft. north of 96th Street and terminates after about 200 ft.

Proposed Improvements:

The project will be constructed in two parts. First, will be the immediate project, which will construct those elements of the project necessary to improve the operations at the intersection of 96th Street and Keystone Parkway and maintain access and traffic circulation patterns to businesses in the area. The second part includes the future planned improvements, which are necessary to address regional mobility needs by the design year (2031), but due to fiscal constraints are unable to be constructed at the same time as the immediate project. The immediate project combined with the future planned improvements is needed to provide a sufficient LOS at intersections along 96th Street through the design year (2031). The first phase, or immediate project, is anticipated to be completed by June 2014 and is intended to provide free flowing traffic conditions along Keystone Parkway, which will benefit vehicles using the facility as part of detour routes for adjacent highway projects. The construction of the future planned improvements is expected to occur as early as 2016 or possibly as late as 2030. Its schedule is entirely determined by the obligation of additional funding from Federal, state or local revenue sources. To that end, it may be necessary to re-evaluate the environmental impacts associated with this project through an amendment to this Environmental Assessment prior to the construction of those elements included as part of the future planned improvements. The need for re-evaluating the environmental impacts will depend on the number of years that pass between the approval of this document and the construction of the full build out section, whether significant changes in the affected landscape have occurred, as well as whether significant changes in policy have taken place. It should be noted that while this section discusses separately the immediate project and future planned improvements in detail, the remainder of this document addresses the impacts of the entire project on the social and natural environment. Plan sheets and typical cross sections are included in Appendix B.3 (immediate project) and B.4 (future planned improvements).

*Immediate Project:*

The immediate project would construct an interchange at the existing at-grade intersection elevating the grade of Keystone Parkway over 96th Street. Through the interchange, 96th Street traffic would be controlled by a multi-lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements at the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Parkway and vice versa. Keystone Parkway would be comprised of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic, although a 12 ft. slip ramp lane would be provided beginning at approximately the gore of the southwest ramp and continuing south to access the eastbound and westbound ramps to I-465. The outside lanes of Keystone Parkway would be bordered by 10 ft. paved shoulders. Northbound and southbound traffic would be separated by a 20 ft. paved median with a 2.5 ft. barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange that connect the teardrop roundabout on 96th Street to Keystone Parkway. The diagonal ramps vary from one 16 ft. lane to two or three 11 ft. lanes with a 10 ft. paved outside shoulder. In superelevated sections, a 7 ft. inside shoulder (4 ft. paved) would be provided in addition to the 10 ft. paved outside shoulder.

Exiting northbound Keystone Avenue onto eastbound 96th Street, the two outermost lanes of the southeast ramp transition

to two 12 ft. lanes, one of which drops as a designated right turn at Aronson Drive and the other continuing through Aronson Drive and tying into an existing lane that drops as a designated right turn lane at Priority Way West Drive.

As demonstrated in Table 5 below, separating the grades of 96th Street and Keystone Parkway through the incorporation of a teardrop roundabout interchange will increase the overall operations at the intersection to an acceptable LOS B, reducing the delay from 3.5 minutes per vehicle to 0.9 minute per vehicle.

**Table 5 – LOS Operations (Keystone Parkway and 96th Street Teardrop Roundabout)**

| Approach | 2031 LOS* | |
|---|---|---|
| | AM | PM |
| Keystone NB Approach | A | A |
| Keystone SB Approach | C | C |
| 96th Street EB Approach | A | A |
| 96th Street WB Approach | D | D |
| Overall Intersection | B | B |

*LOS results based on HCS, Sidra, and/or CORSIM analyses

Additionally, as part of the immediate project, the existing signal and median crossover at the 98th Street and Keystone Parkway intersection would be removed, thus restricting left turns in all directions as well as through movements along 98th Street. The partial closure of this intersection was a condition of the agreement with INDOT relinquishing Keystone Parkway to the City of Carmel.

The west leg of 96th Street would be comprised of four 12 ft. travel lanes (two eastbound and two westbound) bordered by 2.8 ft. curb and gutter. A 16 ft. TWLTL would be installed that transitions to a striped median of varying width approaching Haverstick Road to the west and a raised concrete median nearing Haver Way to the east (at the entrance to Burger King). Work along this leg of 96th Street would extend to a point approximately 561 ft. (0.1 mile) west of Whitley Drive. West of this point, 96th Street would taper back to a two 12 ft. lane cross section until the future planned improvements are able to be constructed. The Haverstick Road intersection would remain unchanged as part of the immediate project. The existing Haver Way intersection would be permanently closed. To restore local access to properties affected along Haver Way, a 434 ft. (0.1 mile) connector road would be constructed between Haver Way and Whitley Drive. The connector road, which would be located approximately 630 ft. south of 96th Street, would consist of two 11 ft. travel lanes bordered by a 2.8 ft. curb and gutter. Haver Way will be maintained as a two lane roadway with 15 ft. travel lanes and a 2 ft. gutter. From 96th Street, traffic will use Whitley Drive and the proposed connector road to access businesses along Haver Way. Whitley Drive will remain a two lane road with 10 ft. travel lanes and 2.8 ft. curb and gutters. However, from its intersection with 96th Street to a point approximately 120 ft. to the south, it will be necessary to reconstruct Whitley Drive to provide a 10 ft. shared through / left-turn lane and a 10 ft. designated right-turn lane. Southbound Whitley Drive will remain a single 10 ft. travel lane. In addition, minor approach work will be required to Day Drive from its intersection with 96th Street to a point approximately 146 ft. north. In this section, Day Drive would be reconstructed to consist of two 10 ft. travel lanes bordered by a 2.8 ft. curb and gutter (west side only). Additionally, the 4 ft. sidewalk along the west side of Day Drive would be reconstructed and separated from the road by a 5 ft. (minimum) grass utility strip.

East of the proposed interchange, 96th Street would typically consist of four 12 ft. travel lanes (two eastbound and two westbound) bordered by a 2.8 ft. concrete curb and gutter. The eastbound and westbound travel lanes would be separated by a 16 ft. TWLTL that transitions to a raised concrete median to the west of Aronson Drive. Work along this leg of 96th Street would extend to a point approximately 750 ft. (0.14 mile) east of Aronson Drive.

The Aronson Drive intersection will be converted to a partial right-in / right-out intersection with left turns still allowed to westbound 96th Street traffic. To complete this conversion, approach work to the intersection will be necessary approximately 155 ft. north and 420 ft. south of the intersection. The south leg of Aronson Drive will be reconstructed to consist of two 12 ft. lanes with 2.8 ft. curb and gutter, one serving as the northbound right turn lane and the other serving as the southbound receiving lane. The north leg of Aronson Drive would consist of two lanes of varying widths, one serving as the southbound right turn lane and the other serving as the northbound receiving lane. The immediate project also proposes the construction of an east-west connector paralleling the south side of 96th Street between Aronson Drive and Priority Way West Drive (an estimated length of 0.18 mile). This connector is referred to as the Aronson-Priority

connector road. The Aronson-Priority connector would consist of two 12 ft. travel lanes bordered by a 2.8 ft. concrete curb and gutter. The Aronson-Priority connector is intended to collect traffic affected by the left turn restriction at 96th Street and redirect it to the Priority Way West Drive intersection. Work along Priority Way West Drive as part of the immediate project would be limited to the construction of the southbound lanes from 96th Street to the Aronson-Priority connector road.

North of 96th Street at Enterprise Drive a new north-south connector road is proposed that terminates at 98th Street. This new connector is referred to as the Enterprise connector. The intent of the Enterprise connector is to provide an alternate route for traffic affected by the partial closure at 98th Street to and from the Keystone Parkway interchange. The new Enterprise connector would consist of two 12 ft. travel lanes bordered by a 2.8 ft. concrete curb and gutter. Near the 96th Street intersection, the southbound section widens to provide a 12 ft. designated right turn lane and 12 ft. designated left turn lane. A 5 ft. sidewalk adjacent to the curb is also proposed along the west side of this connector road. The sidewalk intends to provide a connection between the pedestrian walkways along 98th Street and the 10 ft. multi-use path along 96th Street that is proposed as part of this project (discussed below). The total length of the Enterprise connector is approximately 0.27 mile.

As part of the immediate project, access to 96th Street from Threel Road will be permanently closed. Although it should be noted that the existing access to the businesses that align Threel Road from Aronson Drive will be retained from Aronson Drive. In addition, to restore the front side access to the businesses and maintain traffic circulation for the restaurants and auto dealers in the southeast quadrant of the intersection, Threel Road will be reconstructed. Rather than connecting to 96th Street, reconstructed Threel Road will extend from Aronson Drive to Harper Road; a distance of approximately 1,120 ft. (0.2 mile). Threel Road would be reconstructed to consist of two 11 ft. travel lanes with 2.8 ft. curb and gutter.

It should also be noted that a 10 ft. multi-use path is proposed along the north side of 96th Street. As part of the immediate project, the multi-use path would extend from the Enterprise connector at 96th Street to Day Drive. Through the proposed interchange, the multi-use path will cross the northwest ramp, travel beneath the Keystone Avenue bridges and cross the northeast ramp. All roadway crossings by the multi-use path will be at-grade. All crossings will also be in compliance with the requirements of the Americans with Disabilities Act (ADA).

*Future Planned Improvements:*

Following the completion of the immediate project and when funds are made available, the remainder of the proposed project will be constructed. The future planned improvements include improvements to the Haverstick Road / 96th Street intersection and the Priority Way West Drive / 96th Street intersection.

The existing two way stop intersection of Haverstick Road and 96th Street will be improved to consist of a multi-lane roundabout. The limits of the improvements would extend along 96th Street approximately 475 ft. (0.1 mile) to the east and 594 ft. (0.1 mile) to the west of Haverstick Road, overlapping with a portion of the immediate project. Along Haverstick Road, the limits extend approximately 254 ft. to the south (not including 100 ft. of incidental construction) and 256 ft. to the north of 96th Street. The intersection would be shifted about 26 ft. to the west of its existing alignment to minimize impacts to the business in the northeast quadrant. Haverstick Road would be reconstructed to typically consist of two 10 ft. travel lanes with 2.8 ft. curb and gutter. Nearing the proposed roundabout, the northbound and southbound travel lanes would be separated by splitter islands. West of Haverstick Road, 96th Street reduces to a two 12 ft. lane cross section as it transitions back to its existing section. East of Haverstick Road, 96th Street would be widened to comprise of four 12 ft. travel lanes (two eastbound and two westbound) bordered by 2.8 ft. curb and gutter. A 16 ft. TWLTL would be installed that transitions to a raised median of varying width approaching the Haverstick Road roundabout. Furthermore, the 10 ft. multi-use path partially constructed in the immediate project would continue along the north side of 96th Street and would encircle the Haverstick Road roundabout.

Additionally, the existing signalized intersection of Priority Way West Drive and 96th Street will be improved to consist of a multi-lane roundabout. The limits of the improvements would extend along 96th Street approximately 300 ft. to the east and 315 ft. to the west of Priority Way West Drive, overlapping with a portion of immediate project. Along Priority Way West Drive, the limits of improvement would extend approximately 445 ft. south (0.1 mile) and 618 ft. (0.12 mile) north of 96th Street. The north leg of the Priority Way West Drive work would involve the construction of a new connector road to the Enterprise connector road built as part of the immediate project. This is necessary as the Enterprise Drive intersection at 96th Street begins to fail around 2020. Therefore, the function of this connector will be to better assist the local access flow between 96th Street and 98th Street. The previously constructed section of the Enterprise connector road to the south of the junction will be severed and return to a private drive. The Priority Way West Drive connector would consist of two

12 ft. lanes with a 2.8 ft. curb and gutter. Approaching the 96th Street intersection, the southbound lane of the connector would widen to provide a 12 ft. designated right turn lane and 12 ft. left turn lane. The south leg of Priority Way West Drive would be reconstructed to consist of two 12 ft. southbound receiving lanes and three 12 ft. northbound travel lanes (left turn, shared left turn / through and designated right turn). Nearing the proposed roundabout, the northbound and southbound lanes would be separated by splitter islands. East and west of Priority Way West Drive, 96th Street would be reconstructed to consist of four 12 ft. travel lanes (two in each direction) with 2.8 ft. curb and gutter. The eastbound and westbound lanes would be separated by raised concrete median in both directions of the roundabout, but would transition to a striped median nearing the eastern terminus. Furthermore, the 10 ft. multi-use path partially constructed in the immediate project would continue along the north side of 96th Street from Enterprise Drive and would encircle the Priority Way West Drive roundabout.

Project Summary of Costs and Impacts:

As previously mentioned and discussed above, the overall project will be phased to construct the immediate project and the future planned improvements. Altogether, this project will require approximately 14.4 acres of permanent and 0.63 acre of temporary right-of-way to complete the overall project. Although it should be noted the immediate project provides the minimum desirable condition that will relieve congestion at the 96th Street and Keystone Avenue intersection. To complete the immediate project, it is expected that approximately 11.1 acres of permanent and 0.62 acre of temporary right-of-way will be required. This should be perceived as the minimum amount of right-of-way that will be immediately required. The immediate project does not, however, provide an acceptable LOS at intersections along 96th Street east and west of Keystone Avenue through the design year (2031). As such, it will be necessary to complete the future planned improvements project, which improves the intersection of 96th Street with Haverstick Road and also Priority Way West Drive. To complete the future planned improvements, the remaining 3.3 acres of permanent and 0.01 acre of temporary right-of-way would be acquired. At the present, it is anticipated that four commercial establishments and an abandoned gas station would be displaced by the project. All five of the proposed displacements would occur as part of the immediate project.

The total construction cost for the overall project is an estimated $45,100,000 (2011 dollars) and does not include the cost of additional right-of-way. The immediate project, which is estimated to cost $38.6 million (construction and utility relocation), is anticipated for construction in the Fall of 2012. However, it should be noted that the project is not identified as occurring in the Indianapolis Metropolitan Planning Organization's (IMPO) 2035 LRTP until their third funding period (2026-2035) (Appendix H.1-3). Although, as identified in the IMPOs 2012-2015 Indianapolis Regional Transportation Improvement Program (IRTIP) (Appendix H.1-12 and H.1-13), the City of Carmel is presently identified as funding the preliminary engineering and right-of-way phases with local funds in anticipation of accelerating the schedule while following the appropriate Federal processes. Additional obligated funding sources that would cover the projects construction cost have not been identified to-date. The City of Carmel is pursuing funding from state allocations and various FHWA grants. Negotiations are underway with INDOT on funding for the project as it partially resides within INDOTs limited access right-of-way south of 96th Street. Additionally, the project is located within the regional mobility network currently affected by several adjacent INDOT projects. If and when Federal grants are obligated to the project, they will be at 80% with a local match of 20% and may be used to supplement other funds the project receives. If the project is awarded a Federal grant, the City will likely seek reimbursement for allowable right-of-way costs, if local dollars are expended on that phase of the project development prior to receipt of the grant(s). Once funding sources for the construction of the project are obtained, the IRTIP and the State Transportation Improvement Program (STIP) will require amending to reflect changes relating to the fiscal standing of the project and scheduling. Additionally, this information will need to be amended into the 2035 LRTP in February 2012, at the earliest. If funding beyond the already obligated local funds is not secured for the project, it may be necessary to place the project on hold until a funding source is identified. Should this occur, it is anticipated that congestion at the intersection will worsen if INDOT closes portions of US 31 as part of their project to reconstruct the highway between I-465 and SR 38. It is the intent of the City to construct the immediate project before the closure of US 31 occurs, but also after the Allisonville Road and I-465 interchange project, which is scheduled for construction in 2012, is substantially complete in 2013.

In terms of impacts to the social and natural environment, the proposed project would not impact any jurisdictional wetlands or waterways. Sensitive residential noise receivers identified north of 98th Street would experience an increase in levels that approach or exceed the FHWA Noise Abatement Criteria (NAC). However, the increase in noise levels is comparable to those experienced under the 2031 No Build scenario. Additional social impacts resulting from the proposed project include the alteration in traffic patterns due to the partial closure of existing intersections or inclusion of raised medians that affect access to businesses along 96th Street. However, the project is anticipated to improve air quality as it will relieve congestion and delay time at a heavily traveled intersection.

Interchange Justification:

Although the project does not require a formal Interchange Justification (IJ), the FHWA required concept level design and operations information for the project to be included in the Interchange Modification Study (IMS) that was prepared for the I-465 and Keystone Avenue interchange modifications. This was required due to the close proximity of the proposed interchange with an interchange on the interstate system; prompting FHWAs need to provide conceptual approval prior to the approval of the environmental document. The conceptual information for the proposed project was submitted along with the IMS that was prepared by INDOT for the I-465 and Keystone Avenue interchange, which was approved by the FHWA on August 17, 2010. With FHWAs approval of the I-465 and Keystone Avenue IMS conceptual approval of the 96th Street and Keystone Parkway interchange was also granted.

## OTHER ALTERNATIVES CONSIDERED:

*Describe all discarded alternatives, including the Do-Nothing Alternative and an explanation of why each discarded alternative was not selected.*

The Do-Nothing Alternative

The "Do Nothing" alternative was considered for the proposed project. This alternative proposed utilization of the existing intersection with no expenditure of capital funds or improvement. However, the "Do Nothing" alternative would not have addressed the overall purpose and need of the project, which is to alleviate congestion at a substandard intersection. Therefore, for the stated reasons, the "Do Nothing" alternative was not determined to be feasible or prudent and was eliminated from further consideration.

Reconstruct Intersection as a Signalized Intersection

This alternative involved the reconstruction of the existing intersection to lengthen turn lanes along all four approaches, but would have maintained the signal control. This alternative was not determined to be feasible or prudent as it would have neglected the basic criteria of the purpose and need, which is to improve operations and safety at the intersection. As illustrated in the **LOS Operations (Keystone Avenue and 96th Street Signalized)** table contained within the **Purpose and Need** section of this document, a signalized intersection would result in operational failure along all four approaches at the intersection. For this reason, this alternative was not considered further.

Traffic System Management (TSM)

TSM was another alternative evaluated, but was determined to be impractical as a viable improvement to the intersection. The TSM alternative commonly includes options such as traffic signal timing optimization, inclusion of high occupancy vehicle (HOV) lanes or reversible lanes, changes in access control and restriction of certain turn movements. TSM solutions are low cost ways of reducing traffic congestion and improving traffic flow, but are generally applied to existing highway system in large urban areas where they have the potential for substantial effects. However in the case of the proposed project, while the TSM alternative may have provided some improvement to the flow of traffic at adjacent signalized intersections it would not have addressed the current deficiencies in traffic operations (i.e. delays and safety) at the 96th Street and Keystone Avenue intersection. Reducing the delay, and improving the LOS and safety at this intersection are the core components of the purpose and need for the improvements. For the reasons stated, the TSM alternative was not considered further.

Tight Diamond Interchange

A tight diamond interchange was considered as a potential alternative to address the deficient operations at the existing intersection. This alternative would also have carried Keystone Parkway over 96th Street, but would have added two more traffic signals to the 96th Street facility. Rather than having one signal at the intersection of 96th Street and Keystone Parkway, a signal would be required at each ramp terminal on the east and west sides of Keystone Parkway. Traffic signals would have been retained at the intersections of Aronson Drive and 96th Street and Priority Way West Drive and 96th Street. However, in order to handle the traffic queues on 96th Street resulting from the retention of these two signals, the signals at the ramp terminals needed to be separated such that additional buildings in three of the four quadrants would have potentially become relocations. Specifically, in addition to the five relocations discussed in this document the following buildings would have potentially been acquired by the project, the Penske Chevrolet service garage in the northeast quadrant, Butler Suzuki in the southwest quadrant and Bob Evans in the southeast quadrant. Furthermore, the spacing required between the ramp terminal signals would have required the realignment of the Haver Way access point such that it

would have encroached upon the Burger King located immediately west of the existing access point to 96th Street. The nine relocations associated with this alternative made it undesirable as it had more direct impacts to adjacent businesses. Therefore it was dismissed from further consideration as a solution to the underlying problems at the existing intersection.

Single Point Urban Interchange (SPUI)

A SPUI was also considered as a potential alternative for the proposed project. This alternative proposed channeling all left turn movements exiting from northbound and southbound Keystone Parkway and all left turn and through movements on the cross street (96th Street) through a single traffic signal located beneath the Keystone Parkway bridge. As a result of bringing all four ramps to a single point beneath Keystone Parkway, a larger bridge would have been required. Right turns on to and off of Keystone Parkway would have occurred via diverging ramps that precede the signal. The traffic signals at Aronson Drive and Priority Way West Drive would have been retained. However, unlike the tight diamond alternative, the SPUI's use of a single traffic signal at the 96th Street and Keystone off/on ramps intersection allowed for greater separation of traffic and improved traffic flow. The LOS analysis completed for the SPUI showed that the configuration would have operated at an acceptable level in the design year (2031). However, in order to maintain an acceptable traffic queue at the Keystone Parkway signal, it would have been necessary to eliminate left turns from Aronson Drive onto 96th Street; left turns onto Aronson from eastbound and westbound 96th Street would have been allowed. As with the proposed improvement, traffic on the south leg of Aronson Drive intending to turn left onto 96th Street would have been required to use the Aronson-Priority connector road and entered 96th Street from the Priority Way West Drive and 96th Street intersection. Additionally, the required geometric footprint of the northeast ramp would have eliminated the ability of northbound Keystone Parkway traffic to maneuver a right turn at 98th Street. Furthermore, due to its proximity to the interchange ramps, access to Haver Way would have been affected by the necessary construction of a raised median along 96th Street between Haver Way and the Keystone Parkway signal. As such, westbound 96th Street traffic intending to turn left onto Haver Way would have been (as with the proposed improvement) required to utilize Whitley Drive and the Haver-Whitley connector road. This change in access would have converted Haver Way and 96th Street into a right-in / right-out intersection. As with the proposed alternative, the SPUI would have required five relocations, including both gas stations at the intersection of 96th Street and Keystone Parkway. The inclusion of a larger bridge to carry Keystone Parkway over 96th Street would have increased the overall cost of the project. Although comparable to the proposed improvements in terms of changes in access and number of relocations, the escalation in the cost of the project associated with the larger bridge and the City's desire to maintain the system continuity between the improvements at this intersection and other roundabout interchanges in close proximity made the SPUI an less desirable alternative. Therefore, it was dismissed from further consideration as an alternative.

**The Do Nothing Alternative is not feasible, prudent or practicable because** (*Mark all that apply* ):

| | |
|---|---|
| It would not correct existing capacity deficiencies; | X |
| It would not correct existing safety hazards; | X |
| It would not correct the existing roadway geometric deficiencies: | |
| It would not correct existing deteriorated conditions and maintenance problems, or | |
| It would result in serious impacts to the motoring public and general welfare of the economy. | X |
| Other (Describe) | |

## ROADWAY CHARACTER:

**Keystone Prkwy. (North of 96th St.):**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Functional Classification: | **Principal Arterial** | | | | | | |
| Current ADT: | **45,035** | VPD 20(11) | | Design Year ADT: | **57,636** | VPD 20(31) | |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **4,975** | Trucks (%): | **4** |
| Designed Speed (mph): | **55** | Legal Speed (mph): | **45** | | | | |

| | **Existing** | **Proposed** |
|---|---|---|
| Number of Lanes: | **5-7** | **5-8** |
| Type of Lanes: | **(5) - Thru** | **(6) - Thru** |

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| | **(2) - Lft. / Rt. Turn** | | **(2) - Rt. Turn / Thru (@ 98th St.) (1) - Slip Ramp** | |
| Pavement Width: | **60-84** | ft. | **60-96** | ft. |
| Shoulder Width: | **8 (outside) Varies (inside)** | ft. | **8-10 (outside) 10 (inside)** | ft. |
| Median Width: | **18 (grass)** | ft. | **22.5 (Concrete Barrier / Median) 16 (grass north of 98th St.)** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Keystone Ave. (South of 96th St.):**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Principal Arterial** | | | | | |
| Current ADT: | **82,368** | VPD 20(11) | | Design Year ADT: | **105,222** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **8,129** | Trucks (%): **5** |
| Designed Speed (mph): | **55** | Legal Speed (mph): | **45** | | | |

| | **Existing** | | **Proposed** | |
|---|---|---|---|---|
| Number of Lanes: | **7-10** | | **5** | |
| Type of Lanes: | **(5) – Thru (2) – Rt. Turn (3) – Lft. Turn** | | **(5) - Thru** | |
| Pavement Width: | **84-120** | ft. | **78-80** | ft. |
| Shoulder Width: | **5-8 (outside) Varies (inside)** | ft. | **8-10 (outside) 10 (inside)** | ft. |
| Median Width: | **Varies** | ft. | **22.5 (Concrete Barrier / Median)** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**96th St. (East of Keystone Ave. / Prkwy.):**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Urban Collector** | | | | | |
| Current ADT: | **36,454** | VPD 20(11) | | Design Year ADT: | **46,319** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **3,820** | Trucks (%): **7** |
| Designed Speed (mph): | **35 (20 @ RABs*)** | Legal Speed (mph): | **35** | | | |

| | **Existing** | | **Proposed** | |
|---|---|---|---|---|
| Number of Lanes: | **4-5** | | **4-6** | |
| Type of Lanes: | **(4)- Thru (1) - Lft. Turn / TWLTL**** | | **(4) - Thru (2) - Rt. Turn (1) – TWLTL**** | |
| Pavement Width: | **48-60** | ft. | **48 - 72** | ft. |
| Shoulder Width: | **2.6 (curb / gutter)** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **2.8 (@ Keystone** | ft. | **16 (TWLTL**) and** | ft. |

| | | | | |
|---|---|---|---|---|
| | **Ave)** | | **Varying (Raised Median)** | |
| Sidewalk Width: | **N/A** | ft. | **10 (Multi-Use Path on North Side)** | ft. |

Setting: [X] Urban [ ] Suburban [ ] Rural
Topography: [X] Level [ ] Rolling [ ] Hilly

** - RABs = roundabouts*
*** - TWLTL = Two Way Left Turn Lane*

**96th St. (West of Keystone Ave. / Prkwy.):**

Functional Classification: **Urban Collector**
Current ADT: **15,588** VPD 20(11) Design Year ADT: **18,828** VPD 20(31)
Current Year DHV: **N/A** Trucks (%): **N/A** Design Year DHV: **1,174** Trucks (%): **2**
Designed Speed (mph): **35 (20 @ RABs*)** Legal Speed (mph): **35**

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **2-5** | | **5** | |
| Type of Lanes: | **(2-4) – Thru**<br>**(1) – Lft. Turn**<br>**(1) – Rt. Turn** | | **(4) – Thru**<br>**(1) - TWLTL** | |
| Pavement Width: | **24-60** | ft. | **48** | ft. |
| Shoulder Width: | **2.6 (curb / gutter)** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **16 (TWLTL**) and Varying (Raised Median)** | ft. |
| Sidewalk Width: | **N/A** | ft. | **10 (Multi-Use Path)** | ft. |

Setting: [X] Urban [ ] Suburban [ ] Rural
Topography: [X] Level [ ] Rolling [ ] Hilly

** - RABs = roundabouts*

**Aronson Dr. (North of 96th St.):**

Functional Classification: **N/A**
Current ADT: **1,782** VPD 20(11) Design Year ADT: **2,170** VPD 20(31)
Current Year DHV: **N/A** Trucks (%): **N/A** Design Year DHV: **217** Trucks (%): **3**
Designed Speed (mph): **35** Legal Speed (mph): **Not Posted**

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **3** | | **2** | |
| Type of Lanes: | **(1) - Thru**<br>**(1) - Shared Rt. Turn / Thru**<br>**(1) - Lft. Turn** | | **(1) – Rt. Turn**<br>**(1) – NB Receiving** | |
| Pavement Width: | **36** | ft. | **Varies** | ft. |
| Shoulder Width: | **0.6 (Curb)** | ft. | **2.8 (curb / gutter)** | ft. |

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Aronson Dr. (South of 96th St.):**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | |
| Current ADT: | **3,255** | VPD 20(11) | | Design Year ADT: | **2,740** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **274** | Trucks (%): **0** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **Not Posted** | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **2** | | **2** | |
| Type of Lanes: | **(2) – Thru** | | **(1) – Rt. Turn**<br>**(1) – SB Receiving** | |
| Pavement Width: | **30** | ft. | **24** | ft. |
| Shoulder Width: | **0.6 (Curb)** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Enterprise Drive:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Private Drive** | | | | | |
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | **1,380** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **138** | Trucks (%): **1** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **Not Posted** | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **N/A** | | **2-3** | |
| Type of Lanes: | **N/A** | | **(1) – Thru**<br>**(1) –Rt. Turn**<br>**(1) – Lft. Turn** | |
| Pavement Width: | **N/A** | ft. | **24-36** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **5** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Priority Way West Dr. (North of 96th St.) – Connector Road:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Private Drive** | | | | | |
| Current ADT: | **371** | VPD 20(11) | | Design Year ADT: | **640** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **64** | Trucks (%): **1** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **Not Posted** | | | |

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **N/A** | | **2-3** | |
| Type of Lanes: | **N/A** | | **(1) – Thru**<br>**(1) – Shared Thru / Lft. Turn**<br>**(1) – Rt. Turn** | |
| Pavement Width: | **N/A** | ft. | **24-36** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **Splitter Islands with Varying Widths** | ft. |
| Sidewalk Width: | **N/A** | ft. | **5** | ft. |

| | | | |
|---|---|---|---|
| Setting: | [X] Urban | [ ] Suburban | [ ] Rural |
| Topography: | [X] Level | [ ] Rolling | [ ] Hilly |

**Priority Way West Dr. (South of 96th St.):**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | | |
| Current ADT: | **5,902** | VPD 20(11) | | Design Year ADT: | **8,260** | VPD 20(31) | |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **826** | Trucks (%): | **1** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **Not Posted** | | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **3** | | **5** | |
| Type of Lanes: | **(1) – Thru**<br>**(1) – Rt. Turn**<br>**(1) – Lft. Turn** | | **(3) – Thru**<br>**(1) – Thru / Rt. Turn**<br>**(1) – Rt. Turn** | |
| Pavement Width: | **40** | ft. | **60** | ft. |
| Shoulder Width: | **2.5 (curb / gutter)** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **10 (grass)** | ft. | **Splitter Islands with Varying Widths** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | |
|---|---|---|---|
| Setting: | [X] Urban | [ ] Suburban | [ ] Rural |
| Topography: | [X] Level | [ ] Rolling | [ ] Hilly |

**Haverstick Road (North of 96th Street):**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | | |
| Current ADT: | **824** | VPD 20(11) | | Design Year ADT: | **2,430** | VPD 20(31) | |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **243** | Trucks (%): | **0** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **25** | | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **2** | | **2** | |
| Type of Lanes: | **(2) – Thru** | | **(2) – Thru** | |
| Pavement Width: | **20** | ft. | **20** | ft. |
| Shoulder Width: | **2 (Earthen)** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |

# *Indiana Department of Transportation*

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|---|---|---|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Haverstick Road (South of 96th Street):**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | | |
| Current ADT: | **103** | VPD 20(11) | | Design Year ADT: | **180** | VPD 20(31) | |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **18** | Trucks (%): | **0** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **25** | | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **2** | | **2** | |
| Type of Lanes: | **(2) - Thru** | | **(2) - Thru** | |
| Pavement Width: | **20** | ft. | **20** | ft. |
| Shoulder Width: | **2 (Earthen)** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**East – West Connector Road:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | | |
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | **1,230** | VPD 20(31) | |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **123** | Trucks (%): | **2** |
| Designed Speed (mph): | **35** | Legal Speed (mph): | **N/A** | | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **N/A** | | **2** | |
| Type of Lanes: | **N/A** | | **(2) – Thru** | |
| Pavement Width: | **N/A** | ft. | **24** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Haver Way:**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | | |
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | **N/A** | VPD 20(31) | |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **N/A** | Trucks (%): | **N/A** |
| Designed Speed (mph): | **25** | Legal Speed (mph): | **N/A** | | | | |

| | Existing | Proposed |
|---|---|---|
| Number of Lanes: | **2** | **2** |
| Type of Lanes: | **(2) – Thru** | **(2) – Thru** |

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| | | | | |
|---|---|---|---|---|
| Pavement Width: | **30** | ft. | **30** | ft. |
| Shoulder Width: | **2 (gutter)** | ft. | **2 (gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Day Drive:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | |
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | **N/A** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **N/A** | Trucks (%): **N/A** |
| Designed Speed (mph): | **25** | Legal Speed (mph): | **Not Posted** | | | |

| | **Existing** | | **Proposed** | |
|---|---|---|---|---|
| Number of Lanes: | **2** | | **2** | |
| Type of Lanes: | **(2) – Thru** | | **(2) – Thru** | |
| Pavement Width: | **20** | ft. | **20** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **4** | ft. | **4** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Whitley Drive:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | |
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | **N/A** | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | **N/A** | Trucks (%): **N/A** |
| Designed Speed (mph): | **25** | Legal Speed (mph): | **Not Posted** | | | |

| | **Existing** | | **Proposed** | |
|---|---|---|---|---|
| Number of Lanes: | **2** | | **2** | |
| Type of Lanes: | **(2) - Thru** | | **(1) – Thru**<br>**(1) – Thru / Left Turn**<br>**(1) – Right Turn** | |
| Pavement Width: | **20** | ft. | **33** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.7 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Haver Way – Whitley Drive Connector Road:**

| | | | | | | |
|---|---|---|---|---|---|---|
| Functional Classification: | **Local Street** | | | | | |
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | | Trucks (%): |
| Designed Speed (mph): | **25** | Legal Speed (mph): | **N/A** | | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **N/A** | | **2** | |
| Type of Lanes: | **N/A** | | **(2) - Thru** | |
| Pavement Width: | **N/A** | ft. | **22** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

**Threel Road:**

Functional Classification: **Local Street**

| | | | | | |
|---|---|---|---|---|---|
| Current ADT: | **N/A** | VPD 20(11) | | Design Year ADT: | VPD 20(31) |
| Current Year DHV: | **N/A** | Trucks (%): | **N/A** | Design Year DHV: | Trucks (%): |
| Designed Speed (mph): | | Legal Speed (mph): | **N/A** | | |

| | Existing | | Proposed | |
|---|---|---|---|---|
| Number of Lanes: | **2** | | **2** | |
| Type of Lanes: | **(2) - Thru** | | **(2) - Thru** | |
| Pavement Width: | **22** | ft. | **22** | ft. |
| Shoulder Width: | **N/A** | ft. | **2.8 (curb / gutter)** | ft. |
| Median Width: | **N/A** | ft. | **N/A** | ft. |
| Sidewalk Width: | **N/A** | ft. | **N/A** | ft. |

| | | | | | | |
|---|---|---|---|---|---|---|
| Setting: | X | Urban | | Suburban | | Rural |
| Topography: | X | Level | | Rolling | | Hilly |

*If the proposed action has multiple roadways, this section should be filled out for each roadway.*

## DESIGN CRITERIA FOR BRIDGES:

Structure Number(s): N/A Sufficiency Rating: N/A

*Northbound Keystone Avenue over 96th Street:*

Structure Number(s): **N/A** Sufficiency Rating: **N/A**

| | Existing | | Proposed | |
|---|---|---|---|---|
| Bridge Type: | **N/A** | | **Continuous Composite Precast Concrete Bulb-Tee Beam Bridge** | |
| Number of Spans: | **N/A** | | **2** | |
| Weight Restrictions: | **N/A** | ton | **36** | ton |
| Height Restrictions: | **N/A** | ft. | **16.5 (96th St. elevation)** | ft. |
| Curb to Curb Width: | **N/A** | ft. | **55 / 10.5** | ft. / in. |
| Outside to Outside Width: | **N/A** | ft. | **58 / 10.5** | ft. / in. |
| Shoulder Width: | **N/A** | ft. | **10** | ft. |
| Length of Channel Work: | **N/A** | ft. | **N/A** | ft. |

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

*Southbound Keystone Avenue over 96th Street:*

Structure Number(s): N/A Sufficiency Rating: N/A

| | Existing | | Proposed | |
|---|---|---|---|---|
| Bridge Type: | **N/A** | | **Continuous Composite Precast Concrete Bulb-Tee Beam Bridge** | |
| Number of Spans: | **N/A** | | **2 (100 ft. each)** | |
| Weight Restrictions: | **N/A** | ton | **36** | ton |
| Height Restrictions: | **N/A** | ft. | **16.5 (96th St. elevation)** | ft. |
| Curb to Curb Width: | **N/A** | ft. | **55 / 10.5** | ft. / in. |
| Outside to Outside Width: | **N/A** | ft. | **Varies from 58 / 6 to 64 / 0.25** | ft. / in. |
| Shoulder Width: | **N/A** | ft. | **10** | ft. |
| Length of Channel Work: | **N/A** | ft. | **N/A** | ft. |

*Describe bridges and structures; provide specific location information for small structures.*

Remarks: As part of the immediate project, Keystone Avenue would be elevated over 96th Street via twin continuous composite precast concrete bulb-tee bridges with mechanically stabilized earth (MSE) abutments (Appendix B.1-7 and B.3-10). Keystone Avenue in the area of the proposed bridge would consist of five 12 ft. travel lanes (three northbound and two southbound) with 10 ft. inside and outside shoulders. The Southbound Bridge has a gore area as the ramp to I-465 begins to taper. As such, the width of the Southbound Bridge varies. On the bridge, the superstructure will have a 1 in. open joint separating the twin structures. The deck of each bridge will consist of 2% cross slopes and no superelevation or superelevation transitions near the bridge. Concrete bridge railing (type FT) will be constructed at each coping to accommodate the large amount of truck traffic, and will be a total of 1.4 ft. wide. MSE walls will be constructed to retain the roadway fill and backfill at each end bent. Both structures will be constructed on a horizontal tangent alignment at a $10^0$ skew to the right.

Additionally, a hydraulic analysis of the project area identified drainage issues north of the Aronson-Priority connector road to 96th Street. As a result, a 12 ft. x 4 ft. box culvert will be required between Aronson Drive and Priority Way West Drive to provide a conveyance for stormwater drainage. The culvert will extend approximately 70 ft. south of the Aronson-Priority connector road along a narrow tree line. The proposed culvert will connect to an existing 18 in. pipe that will carry the drainage south away from the project area and outlet to the drainage ditch along the north side of I-465.

A 360 ft. 12 ft. x 4 ft. box culvert will also be required along the Priority Way West Drive connector road where a small drainage ditch is longitudinally impacted. The structure will convey runoff from adjacent businesses to the existing drainage structure that carries stormwater south beneath 96th Street.

| | Yes | No | N/A |
|---|---|---|---|
| Will the structure be rehabilitated or replaced as part of the project? | | X | |

*If the proposed action has multiple bridges or small structures, this section should be filled out for each structure.*

## MAINTENANCE OF TRAFFIC (MOT) DURING CONSTRUCTION:

| | Yes | No |
|---|---|---|
| Is a temporary bridge proposed? | | X |
| Is a temporary roadway proposed? | | X |
| Will the project involve the use of a detour or require a ramp closure? (describe in remarks) | X | |
| Provisions will be made for access by local traffic and so posted. | X | |

## *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

| | | |
|---|---|---|
| Provisions will be made for through-traffic dependent businesses. | X | |
| Provisions will be made to accommodate any local special events or festivals. | | X |
| Will the proposed MOT substantially change the environmental consequences of the action? | | X |
| Is there substantial controversy associated with the proposed method for MOT? | X | |

*(Note – Although no "substantial" controversy surrounding the proposed MOT has been received to-date, it is possible given the magnitude of the project that controversial comments on the MOT will be received following the public hearing. The check of "Yes" here acknowledges the likely controversy that will follow the public involvement phase.)*

Remarks:

During construction of the immediate project, traffic will be maintained through the project area using a three phased maintenance of traffic (MOT) plan. The MOT plan essentially entails constructing one side or half at a time while maintain traffic operations on the other side or half. The phased construction approach will require temporary retaining walls and/or sheet piling to be built to allow construction of the twin bridges over 96th Street and their approaches. Night time construction is necessary to allow for short term road closures. Following the completion of the immediate project, two additional phases (Phases 4 and 5) will be necessary to construct the remaining elements associated with the future planned improvements. This includes the Haverstick Road and Priority Way West Drive roundabouts and the Priority Way West Drive connector.

The first two phases of the MOT plan focuses on first constructing the proposed southbound lanes of Keystone Parkway and the proposed westbound lanes of 96th Street, as well as the ancillary access roads. During construction of the southbound lanes, Keystone Parkway traffic will be maintained on the existing northbound lanes while 96th Street traffic will be maintained on the existing eastbound lanes. In the third phase, Keystone Parkway traffic will be shifted into the constructed southbound lanes to maintain traffic while the northbound lanes undergo construction. Likewise, 96th Street traffic will be placed into the constructed westbound lanes to maintain traffic while the eastbound lanes are constructed.

A detailed summary of each phase of the MOT plan follows below. However, a table summarizing the proposed phased construction, impacts to Keystone Parkway and 96th Street, and resulting conditions is included in Appendix B.5.

Phase 1:

During Phase 1 construction, southbound Keystone Parkway and westbound 96th Street will be closed. All traffic will be diverted onto northbound Keystone Parkway and eastbound 96th Street. Traffic flow between the northbound Keystone Parkway lanes and eastbound 96th Street lanes will remain controlled by a signal. Specifically, this phase of the construction sequencing will entail the following:

- Construction of median crossovers ahead of and beyond the project limits for Keystone Parkway
- Addition of temporary pavement along northbound Keystone Parkway and eastbound 96th Street where needed
- Installation of any culvert and pipe structures along northbound Keystone Parkway to provide positive drainage for construction of the new roadway
- Construction of the connector road between Haver Way and Whitley Drive
- Construction of the Enterprise connector road between 96th Street and the 98th Street
- Construction of the Aronson-Priority connector road between Aronson Drive and Priority Way West Drive
- Reconstruction of the Whitley Drive approach to 96th Street

Impacts resulting from Phase 1 construction include the closure of the Threel Road access point to 96th Street. Access to the businesses that are fronted by existing Threel Road would remain via Aronson Drive (behind the affected businesses). Additionally, access to Enterprise Drive will be restricted while the north-south connector road is constructed; access to the local businesses will remain unaffected.

Phase 2:

As part of Phase 2 of the MOT plan all traffic on southbound Keystone Parkway will cross over to the side of the northbound lanes. North of 96th Street the arrangement of the northbound lanes will be temporarily re-configured to consist of two southbound lanes that convert to a shared through / right turn lane and a designated left turn lane at 96th Street, and one northbound through lane. South of the 96th Street intersection the lane arrangement will be one southbound through lane and three northbound lanes, two of which convert to a designated left turn lane (opposes the designated left turn lane of southbound traffic) and a designated right turn lane at 96th Street. Traffic along 96th Street during this phase of construction will cross over to the side of the eastbound lanes. The lane arrangement of 96th Street will be re-configured to consist of one eastbound shared through / right turn lane, one westbound shared through / right turn lane and a shared left turn lane. Temporary pavement will be laid on the south side of 96th Street to accommodate the shifted lanes. The intersections of 96th Street with Keystone Parkway, Aronson Drive and Priority Way West Drive (during

construction of Enterprise Drive) will remain controlled by temporary traffic signals over the operational lanes. Phase 2 construction will include the following elements:

- Construction of the southbound Keystone Avenue lanes from the southern limits to the northern limits
- Construction of the southbound Keystone Avenue bridge over 96th Street
- Construction of the slip ramp (Ramp "SR") that, upon completion of the southbound lanes, will provide access from southbound Keystone Avenue to I-465
- Partial construction of the dual southwest ramps (Ramps "SWR" and "SWR-1")
- Construction of the northwest ramp (Ramp "NWR")
- Partial construction of the dual southeast ramps (Ramps "SER" and "SER-1")
- Partial construction of the northeast ramp (Ramp "NER")
- Reconstruction of Threel Road from Aronson Drive to Harper Road
- Construction of the westbound 96th Street lanes from approximately 103 ft. west of Whitley Dr. to roughly 300 ft. east of Priority Way West Drive (except for the section roughly between the western and eastern ramps – see Phase 2a)
- Reconstruction of the Day Drive approach to 96th Street
- Reconstruction of the south leg of Aronson Drive from roughly the intersection with the Aronson-Priority connector road to 96th Street

Impacts resulting from Phase 2 construction would include the removal of the existing Keystone Parkway and 98th Street signal, prohibiting left turning movements. Traffic west of Keystone Parkway wanting to turn north on Keystone Parkway from 98th Street will need to be diverted along Haverstick Road south to 96th Street or north to 99th Street / Westfield Boulevard / 106th Street. Likewise, traffic east of Keystone Parkway wanting to turn south on Keystone Parkway from 98th Street will need to be rerouted along the Enterprise connector south to 96th Street or to Lakeshore Drive and north to 106th Street. Along 96th Street, access to the both legs of Aronson Drive will be temporarily closed. Traffic attempting to access Aronson Drive will be detoured to either Enterprise Drive or Priority Way West Drive / Aronson-Priority connector road. West of Keystone Parkway, the Haver Way access point to 96th Street will be permanently closed. Traffic attempting to access Haver Way will be diverted to Whitley Drive / the Whitely Drive-Haver Way connector road. Additionally, access to Day Drive will be restricted while approach work is occurring. However, Day Drive will remain open due to the lack of any other point of ingress/egress.

Phase 2a:

This phase of construction will commence immediately following the substantial completion of the southbound Keystone Parkway lanes. As part of this phase the signal controlling traffic at 96th Street and Keystone Parkway will be removed, which will restrict movements between the two roadways. During this critical point in the construction sequencing, the northbound lanes utilized during the construction of Phases 1 and 2 will be abandoned and the remaining section of westbound 96th Street will be built.

Phase 3:

During Phase 3 construction, northbound Keystone Parkway and eastbound 96th Street will be closed. All traffic will be diverted onto southbound Keystone and westbound 96th Street. Specifically, this phase of the construction sequencing will entail the following:

- Construction of the northbound Keystone Parkway lanes from the southern limits to the northern limits
- Construction of the northbound Keystone Parkway bridge over 96th Street
- Complete construction of the dual southwest ramps (Ramps "SWR" and "SWR-1")
- Complete construction of the dual southeast ramps (Ramps "SER" and "SER-1")
- Complete construction of the northeast ramp (Ramp "NER")
- Construction of the eastbound 96th Street lanes from approximately 103 ft. west of Whitley Drive to roughly 300 ft. east of Priority Way West Drive

Phase 3 of the MOT plan involves shifting the two way traffic on the northbound lane side over to the constructed southbound lane side. The southbound lane side of Keystone Parkway will consist of one

through lane in each direction. For this phase, a temporary traffic signal will be constructed on the west side of Keystone Parkway at the ramps constructed as part of Phase 2. During this phase, six of the eight possible turning movements will be allowed with the only restrictions applying to northbound Keystone Parkway to westbound 96th Street and eastbound 96th Street to northbound Keystone Parkway. Along 96th Street, traffic will operate on the westbound lanes while the eastbound lanes are constructed. The lane configuration of 96th Street west of Keystone Parkway will consist of one eastbound shared through / right turn lane, one westbound shared through / right turn lane and a shared left turn lane. East of Keystone Parkway, lanes will be arranged to consist of one eastbound shared through / right turn / left turn lane and one westbound shared through / right turn / left turn lane. The intersection of 96th Street and Aronson Drive will continue to be controlled by a temporary traffic signal over the operational lanes. Access to Whitley Drive will be restricted, but will remain open to local occupants during construction due to the lack of any other point of ingress/egress.

Phase 4:

Phase 4 of construction is not anticipated to begin until after the interim project is complete (Phases 1, 2 and 3). During this phase, the following construction elements will occur:

- Construction of the westbound 96th Street lanes from a point roughly 103 ft. west of the Whitley Drive and 96th Street intersection to a point approximately 594 ft. west of Haverstick Road
- Construction of the westbound 96th Street lanes from a point roughly 315 ft. west of the Priority Way West Drive to a point approximately 300 ft. east of Priority Way West Drive
- Construction of the north leg of Haverstick Road
- Construction of the Priority Way West Drive spur connector (north leg)

Impacts resulting from this phase of construction include the temporary closure of Haverstick Road north of 96th Street. Traffic attempting to utilize this section of Haverstick will be detoured along Westfield Boulevard / 99th Street.

Phase 5:

The final phase of construction will involve the following elements:

- Construction of the eastbound 96th Street lanes from a point roughly 103 ft. west of the Whitley Drive and 96th Street intersection to a point approximately 594 ft. west of Haverstick Road
- Construction of the eastbound 96th Street lanes from a point roughly 315 ft. west of the Priority Way West Drive to a point approximately 300 ft. east of Priority Way West Drive
- Construction of the south leg of Haverstick Road
- Construction of the south leg of Priority Way West Drive

Impacts resulting from this phase of construction include the restricted access to Haverstick Road south of 96th Street and the temporary closing of Priority Way West Drive access south of 96th Street. Haverstick Road will remain open to local occupants due to the lack of any other points of ingress/egress. Traffic attempting to access Priority Way West Drive south of 96th Street will be detoured along Aronson Drive or Lakeshore Drive.

Local Detour:

In addition to maintaining traffic through the project area, a local detour will be established that utilizes 106th Street, Westfield Boulevard, 82nd Street and Hazel Dell Parkway / Allisonville Road. The distance of the detour if utilizing 106th Street, Westfield Boulevard and 86th Street is approximately 5.9 miles. If traveling to the east and using 106th Street, Hazel Dell Parkway / Allisonville Road and 82nd Street, the anticipated length of the detour is approximately 9.4 miles.

## ESTIMATED PROJECT COST AND SCHEDULE:

Engineering: $ 3.5 (Immediate and Future) Right-of-Way: $ 8.6 (Immediate) 3.1 (Future) 11.7 (Total) Construction: $ 38.7 (Immediate) 6.9 (Future) 45.1 (Total)

Anticipated Start Date of Construction: September 2012

**Notes:*

- *Costs are provided in millions of dollars.*
- *Construction cost also includes mobilization / demobilization, maintenance of traffic and utility relocations.*
- *Cost estimate for construction was based on the existing year (2011) unit prices and not inflated to the actual years of construction for the interim and full build out projects.*

Date project incorporated into STIP May 26, 2011

If in an MPO area, location of project in TIP Page 14 which was incorporated by reference into the STIP on May 26, 2011 .

## RIGHT OF WAY:

| | Amount (acres) | |
|---|---|---|
| Land Use Impacts | Permanent | Temporary |
| Residential | 0.5 | 0.01 |
| Commercial | 12.8 | 0.62 |
| Agricultural | 0.00 | 0.00 |
| Forest | 0.8 | 0.00 |
| Wetlands | 0.00 | 0.00 |
| Other: Institutional (Church) | 0.3 | 0.00 |
| Other: | | |
| Other: | | |
| TOTAL | **14.4** | **0.63** |

Remarks: To complete the proposed project (immediate project and future planned improvements) approximately 14.4 acres of permanent right-of-way from 48 parcels will be required (Appendix B.1-9). It should be noted the amount of permanent right-of-way includes approximately 1.9 acres of excess land that is to be acquired from commercial properties. The City of Carmel will retain ownership of this excess property until such time it is donated or auctioned to a new owner. In addition, approximately 0.63 acre of temporary right-of-way will be required for drive construction and yard grading. Temporary right-of-way will revert to the original owners upon completion of construction. As illustrated in the above table and on the illustration included as Appendix B.1-9, the land use of the right-of-way to be acquired is primarily commercial in nature. The estimated 15 acres of total right-of-way (permanent and temporary) to complete the proposed project will be acquired from residential properties in the southwest quadrant of Haverstick Road and 96th Street and along 98th Street (0.51 acre), an urban forested tract (0.8 acre) and the Lighthouse Tabernacle Church (0.3 acre), which is in the southwest quadrant of 98th Street and Keystone Parkway. The remaining 13.42 acres necessary for the project will be acquired from commercial properties, which will result in the displacement of four active businesses.

The proposed right-of-way along Keystone Parkway and the interchange ramps will be full limited access. Points of access to Keystone Parkway within the project limits will be restricted to an at-grade intersection at 98th Street (right turn in and out only) and the proposed interchange at 96th Street. The existing limited access right-of-way along Keystone Parkway varies from a minimum of 174 ft. (87 ft. either side of the centerline) to a maximum of 222 ft. (111 ft. either side of the centerline) and will be expanded to a maximum of 420 ft. (200

left and 220 ft. right of the centerline).

Along 96th Street, the existing right-of-way extends from a minimum of 80 ft. (40 ft. either side of the centerline) to a maximum of 125 ft. (75 ft. left and 50 ft. right of the centerline). The project will require expanding the right-of-way along 96th Street from a minimum of 90 ft. (45 ft. either side of centerline) to a maximum width of 150 ft. (75 ft. either side of the centerline).

Haverstick Road has an existing right-of-way width that varies from a minimum of 33 ft. (17 ft. left and 16 right of the centerline) to a maximum of 90 ft. (45 ft. either side of the centerline). As a result of the project, the right-of way will be expanded to a maximum of 116 ft. (85 ft. left and 31 ft. right of the centerline).

Whitley Drive and Day Drive have an existing right-of-way width of 50 ft. (25 ft. either side of the centerline). The proposed project will not require the expansion of the permanent right-of-way along either roadway.

Threel Road is a privately owned road that is maintained by County Line Owners Association. As such, in order to return Threel Road into the private road network, the acquisition of a strip of right-of-way that ranges up to a maximum of 62 ft. (36 ft. left and 26 ft. right of the centerline) is required.

The south legs of Aronson Drive and Priority Way West Drive have an existing typical right-of-way width of approximately 70 ft. (35 ft. either side of the centerline). North of 96th Street, neither Aronson Drive nor Priority Way West Drive have recorded right-of-way limits. The project will not affect the right-of-way along the south leg of Aronson Drive. However, along the north leg the proposed right-of-way will be expanded to a total maximum width of 85 ft. The right-of-way along Priority Way West Drive will be widened to a width of 105 ft. (50 ft. left and 55 ft. right of the centerline).

Similar to the north legs of Aronson Drive and Priority Way West Drive, Enterprise Drive does not have recorded right-of-way within the project limits. As part of the project, a strip of permanent right-of-way will be acquired between 96th Street and 98th Street to accommodate the proposed Enterprise connector road. This strip of right-of-way will vary in width from 50 ft. to 77 ft. in total width.

The Enterprise connector road, the Aronson-Priority connector road, the Whitley Drive-Haver Way connector road, the Priority Way West Drive spur connector (north leg) and a portion of the Threel Road extension will require the acquisition of all new right-of-way as there is either no existing facility to improve upon or the existing facilities to be utilized are privately owned.

# Part III – Identification and Evaluation of Impacts of the Proposed Action

## SECTION A – ECOLOGICAL RESOURCES

| | Presence | | Impacts | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| **Streams, Rivers, Watercourses & Jurisdictional Ditches** | | X | | |
| State Wild, Scenic or Recreational River | | X | | |

Remarks: The Federal Wild and Scenic Rivers listing, State Natural Scenic and Recreational Rivers listing and the Outstanding Rivers List for Indiana were researched to determine possible presence of protected waterways in the project area. No listed waterways were identified within or adjacent to the project area. Additionally, the National Wetland Inventory (NWI) Map (Appendix B.1-4) and the USGS Quadrangle Map (Appendix B.1-2) were reviewed to determine whether any perennial or intermittent streams occurred in the project area. No such waterways were identified.

However, during a field investigation occurring on September 22, 2009 three unnamed tributaries traced to Carmel Creek were identified. These tributaries, referred to as Tributary 1, 2 and 3, are illustrated on aerial mapping included as Appendix F.1-9. As Carmel Creek connects with the White River, a navigable waterway, the three unnamed tributaries were recommended to the US Army Corps of Engineers (USACE), Louisville District as "waters of the US." The Wetland Determination and "Waters of the US" Report prepared for the project (Appendix F.1) was submitted to the USACE on December 22, 2009. On December 30, 2009, the USACE issued their jurisdictional determination for the project (Appendix F.2). In their determination, the USACE stated that the three unnamed tributaries were not "waters of the US" as they were constructed on upland soils and did not receive or divert any "waters of the US," and lacked an Ordinary High Water Mark (OHWM). The absence of an OHWM also excludes the tributaries from being classified as a "water of the State." As such, the tributaries were determined not to be jurisdictional streams as originally identified and will not be subjected to the permitting requirements of Section 404 and 401 of the Clean Water Act.

The USFWS noted in their correspondence dated September 23, 2009 that the riparian areas of the identified streams were limited to grass and shrub-like species (Appendix C.4-1 to C.4-3). They recommended the use of a three-sided, open-arch or embedded culvert where active channels are to be crossed. The IDNR recommended in their correspondence dated December 1, 2009 that disturbed streambanks with slopes 3:1 or steeper should be seeded and protected with erosion control blankets or protected by appropriate structural armament (Appendix C.4-5). These measures will be considered in the design phase of the proposed project, but are unlikely to be implemented due to the fact that the project (specifically, the Enterprise connector) longitudinally crosses Tributaries 1 and 2. As such, drainage facilitated by these features will likely be conveyed beneath the roadway via a box culvert or a stormwater trunk line. It will be necessary to enclose approximately 360 ft. of Tributary 1 and approximately 320 ft. of Tributary 2 within the project limits.

| | Presence | | Impacts | |
|---|---|---|---|---|
| **Other Surface Waters** | Yes | No | Yes | No |
| Reservoirs | | X | | |
| Lakes | | X | | |
| Farm Ponds | | X | | |
| Detention Basins | X | | X | |
| Storm Water Management Facilities | X | | X | |
| Other: | | X | | |

Remarks: The National Wetland Inventory (NWI) Map (Appendix B.1-4), the USGS Quadrangle Map (Appendix B.1-2) and the Soil Survey Map (Appendix F.1-10) were reviewed for the presence of surface waters that may be impacted by the proposed project. The results of this review identified a detention pond, approximately 1.1 acres in size, east of Keystone Parkway and south of 98th Street. This surface water feature serves as a stormwater management facility to the business park it's located within in addition to receiving some roadside

drainage from Keystone Parkway and 98th Street. A second detention pond, approximately 0.5 acre in size, was noted west of Day Drive and north of 96th Street. This surface water feature primarily functions as a stormwater management facility for businesses along the north side of 96th Street, but also receives drainage from residences north of its location. A field investigation was conducted by RW Armstrong on August 25, 2009 to verify the results of the secondary source review. The two previously noted detention ponds were field verified as being adjacent to the project area and primarily serving as a stormwater management facility for the businesses in the project area. However, it was determined each one of these surface water features would be generally unaffected by the proposed action. According to a Hydraulic Design Analysis completed for the project in June 2010, the only surface water that is likely to receive drainage from the project is the detention pond south of 98th Street. Improvements are required to the existing small cross structure that conveys drainage collected along 98th Street under Keystone Parkway and to the detention pond. However, the replacement of this cross structure is not expected to increase the flow of drainage above the existing conditions. As such, impacts to surface waters in and adjacent to the project area are not expected to be substantial.

| | Presence | | Impacts | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| **Wetlands** | | X | | |

Total wetland area: 0.0 acre(s) Total wetland area impacted: 0.0 acre(s)
(If a determination has not been made for non-isolated/isolated wetlands, fill in the total wetland area impacted above.)

| Wetland No. | Classification | Total Size (Acres) | Impacted Acres | Comments |
|---|---|---|---|---|
| N/A | | | | |
| | | | | |

| | Documentation | | ES Approval Dates |
|---|---|---|---|
| **Wetlands** | Yes | No | |
| Wetland Determination | | X | |
| Wetland Delineation Report | | X | |
| USACE Isolated Waters Determination | | X | |
| Mitigation Plan | | X | |

| | Individual Wetland Finding | |
|---|---|---|
| **Improvements that will not result in any wetland impacts are not practicable because such avoidance would result in (Mark all that apply and explain):** | Yes | No |
| Substantial adverse impacts to adjacent homes, business or other improved properties; | | |
| Substantially increased project costs; | | |
| Unique engineering, traffic, maintenance, or safety problems; | | |
| Substantial adverse social, economic, or environmental impacts, or | | |
| The project not meeting the identified needs. | | |

*Measures to avoid, minimize and mitigate wetland impacts need to be discussed in the remarks section*

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

Remarks: The National Wetland Inventory Map (NWI) and the Indiana GIS Atlas were reviewed for the presence of potential wetlands in the project area (Appendix B.1-4). To confirm this information a field investigation was conducted by RW Armstrong on September 22, 2009 and a Wetland Determination and "Waters of the US" Report completed. No wetlands were identified within or adjacent to the project area as a result of this investigation. The USACE, Louisville District concurred with this determination on December 30, 2009 (Appendix F.2-1). The Wetland Determination and "Waters of the US" Report is included as Appendix F.1.

| | Presence | | Impacts | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| **Terrestrial Habitat** | X | | X | |

*Use the remarks table to identify each type of habitat and the acres impacted (i.e. forested, grassland, farmland, lawn, etc).*

Remarks: The proposed project would impact nearly 15 acres of land, beyond the existing right-of-way limits. The land use composition of the area to be acquired is consistent with a built urban environment comprising of a mix of residential, commercial and institutional (church / school) parcels. Of the 15 acres to be acquired for the proposed project, approximately 14.2 acres (95%) will be from the aforementioned land use types. The remaining 0.8 acre (5%) would be acquired from a single forested tract in the northwest quadrant of the 96th Street and Haverstick Road intersection. Photographs of this tract in relationship to the intersection are provided in Appendix B.2-21. The dominant vegetative specie in this forested area, which totals approximately 3.2 acres, is red maple. The proposed project would reduce the size of this parcel to approximately 2.4 acres, a reduction of about 25%. While this may appear to be a detrimental impact to the urban forest core, it should be noted that there are other larger forested tracts near the project area. Specifically this includes a 16 acre urban forest block east of Keystone Parkway and north of I-465 and an 18 acre urban forest block south of 96th Street and west of Haverstick Road. The presence of these larger forested blocks, which can be seen on the aerial photograph of the project area (Appendix B.1-3), lessens to an extent the severity of removing 0.8 acre of forest from a 3.2 acre tract. To this end, the project will not have a substantial effect to terrestrial habitat.

As illustrated through the ground level photographs (Appendix B.2) and aerial photographs (Attachment B.1), the land use within and near the project limits are mainly residential, commercial, and institutional. Ground cover within the limits of the proposed right-of-way is generally asphalt, concrete, green space, and landscaping. The green space within the project area consists of mowed lawns and ornamental landscaping. This type of habitat is not typically of high quality. No wildlife was observed during field investigations, but it can be presumed that species commonly found in urban environments, such as squirrel, raccoon, opossum and songbirds use the project area for habitat.

The US Fish and Wildlife Service (USFWS) and the Indiana Department of Natural Resources (IDNR) were contacted as part of early coordination efforts. Neither agency provided notification of any sensitive terrestrial habitat areas that would be affected by the project and offered no objections to the proposal. Correspondence to this effect is included in Appendix C.2, C.4 and C.6.

*If there are high incidences of animal movements observed in the project area, or if bridges and other areas appear to be the sole corridor for animal movement, consideration of utilizing wildlife crossings should be taken.*

| **Karst** | Yes | No |
|---|---|---|
| Is the proposed project located within or adjacent to the potential Karst Area of Indiana? | | X |
| Are karst features located within or adjacent to the footprint of the proposed project? | | X |
| If yes, will the project impact any of these karst features? | | |

*Use the remarks table to identify any karst features within the project area. (Karst investigation must comply with the Karst MOU, dated October 13, 1993)*

Remarks: The proposed project does not occur within the Potential Karst Area of Indiana, as defined in the Memorandum of Understanding (MOU), dated October 13, 1993 between the INDOT, the IDNR, the IDEM and the USFWS (Appendix K.1-2). Additionally, no potential karst features were identified within the project area during field investigations.

| | Presence | | Impacts | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| **Threatened or Endangered Species** | | | | |
| Within the known range of any federal species? | X | | | X |
| Any critical habitat identified within project area? | | X | | |
| Federal species found in project area (based upon informal consultation)? | | X | | |
| State species found in project area (based upon consultation with IDNR)? | | X | | |
| Is Section 7 formal consultation required for this action? | | X | | |

Remarks: The proposed project is within the range of the Federally endangered Indiana bat (*Myotis sodalis*). However, this species has not been reported in the vicinity of the project area. To confirm this information the USFWS, Bloomington Field Office, was contacted on May 22, 2009 as part of early coordination and again on August 31, 2009 as part of a re-coordination effort. In both their May 27, 2009 and September 23, 2009 responses, Appendix C.2-1 and C.4-1, respectively, the USFWS did not identify any endangered, threatened, or rare species as occurring within the project area. No further consultation under Section 7 of the Endangered Species Act of 1973, as amended, is required for this project.

The bald eagle (*Haliaeetus leucocephalus*) was removed from the federal threatened and endangered species list on August 8, 2007. The project is within the range of the bald eagle, but it has not been reported in the project area. However, the bald eagle will continue to be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act, which prohibit the take or disturbance of nesting eagles.

The IDNR indicated in correspondence dated July 20, 2009 and December 1, 2009 (Appendix C.2-3 and C.4-4) that the Natural Heritage Program did not identify any plant or animal species listed as state or federally threatened, endangered, or rare within the vicinity of the project.

## SECTION B – OTHER RESOURCES

| | Presence | | Impacts | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| **Drinking Water Resources** | | | | |
| Sole Source Aquifer (SSA) | | X | | |
| Is the Project in the St. Joseph Aquifer System? | | X | | |
| Is the FHWA/EPA SSA MOU Applicable? | | X | | |
| Initial Groundwater Assessment Required? | | X | | |
| Detailed Groundwater Assessment Required? | | X | | |
| Source Water Protection Area(s) | | X | | |
| Public Water System(s) | X | | | X |
| Residential Well(s) | | X | | |
| Wellhead Protection Area | | X | | |

Remarks: The project is not located within the legally designated St. Joseph Aquifer System, the known sole source aquifer in the state of Indiana (Appendix K.1-1). Additionally, the IDEM Groundwater Section was contacted on September 2, 2009 to determine if the proposed project is located in a wellhead protection area. On September 3, 2009, the IDEM responded that the project is not located within a wellhead protection area (Appendix C.4-11). Two water utilities, Carmel Water and Veolia Water, provide the water supply to businesses and residences in the project area. These utilities will likely experience temporary interruptions resulting in minor interferences with services to consumers. As the proposed project advances further in the design phase, water utilities will be coordinated with to identify potential conflicts and reduce impacts associated with the relocation of their facilities. Therefore, drinking water resources would not be substantially impaired by the proposed project.

| | Presence | | Impacts | |
|---|---|---|---|---|
| | **Yes** | **No** | **Yes** | **No** |
| **Flood Plains** | | | | |
| Longitudinal Encroachment | | X | | |
| Transverse Encroachment | | X | | |
| Is the project located in a FEMA designated floodplain? | | X | | |
| Homes located in floodplain within 1000' up/downstream from project. | | X | | |

*Discuss impacts according to classification system described in the "Procedural Manual for Preparing Environmental Studies".*

Remarks: The project does not encroach upon the HUD Special Flood Hazard Area. Furthermore, the project is not located in a regulatory floodplain as determined from available FEMA flood plain maps (Appendix B.1-5).

Formal approval by the IDNR under the regulatory programs administered by the Division of Water for the placement of fill in the designated floodway is not required for this project.

| | Presence | | Impacts | |
|---|---|---|---|---|
| | **Yes** | **No** | **Yes** | **No** |
| **Farmland** | | | | |
| Agricultural Lands | | X | | |
| Prime Farmland (per NRCS) | | X | | |

| | Yes | No |
|---|---|---|
| NRCS Form AD-1006/CPA-106 scored ≥ 160? | | X |

*Provide the NRCS Form AD-1006/CPA-106 score and state whether there is a significant loss of farmland as a result of the project in the remarks section. See CE Manual for guidance to determine which NRCS form is appropriate for your project.*

Remarks: None of the land within the project limits meets the definition of farmland under the Farmland Protection and Policy Act (FPPA). The Natural Resources Conservation Service confirmed this in their correspondence of May 27, 2009 (Appendix C.2-2) and again on September 16, 2009 (Appendix C.4-4) as a result of re-coordination efforts. Therefore, the requirements of the FPPA do not apply to this project. No alternatives, other than those previously evaluated in this document will be considered without a re-evaluation of the project's potential impacts on prime farmland.

## SECTION C – CULTURAL RESOURCES

| | Category | Type | INDOT Approval Dates |
|---|---|---|---|
| Minor Projects PA Clearance | | | |

**Eligible and/or Listed Resource Present**

| Results of Research | Yes | No |
|---|---|---|
| Archaeology | | X |
| History/Architecture | | X |
| NRHP Buildings/Site(s) | | X |
| NRHP District(s) | | X |
| NRHP Bridge(s) | | X |

| Project Effect | Yes | Not Applicable | SHPO/ES/FHWA Approval Dates |
|---|---|---|---|
| No Historic Properties Affected | X | | **SHPO (11/18/09 and 8/2/10)<br>ES / FHWA (11/13/09 and 7/8/10)** |
| No Adverse Effect | | X | |
| Adverse Effect | | X | |

**Documentation Prepared**

| Documentation | Yes | Not Applicable | SHPO/ES/FHWA Approval Dates |
|---|---|---|---|
| Historic Properties Short Report | | X | |
| Historic Property Report | X | | **SHPO (10/5/09 and 8/2/10)<br>ES / FHWA (9/28/09 and 7/8/10)** |
| Archaeological Records Check/ Review | X | | **SHPO (08/27/09 and 6/29/10)<br>ES / FHWA (8/17/09, 6/9/10, 6/22/11 and 12/7/11)** |
| Archaeological Phase Ia Survey Report | | X | |
| Archaeological Phase Ic Survey Report | | X | |
| Archaeological Phase II Investigation Report | | X | |
| Archaeological Phase III Data Recovery | | X | |
| APE, Eligibility and Effect Determination | X | | **SHPO (11/18/09 and 8/2/10)<br>ES / FHWA (11/13/09, 7/8/106/22/11 and 12/7/11)** |
| 800.11 Documentation | X | | **SHPO (11/18/09 and 8/2/10)<br>ES / FHWA (11/13/09 and 7/8/10)** |
| Memorandum of Agreement | | X | |

*Describe all efforts to document cultural resources, including a detailed summary of the Section 106 process, using the categories outlined in the remarks box. The completion of the Section 106 process requires that a Legal Notice be published in local newspapers. Please indicate the publication date, name of paper(s) and the comment period deadline. Likewise include any further Section 106 work which must be completed at a later date, such as mitigation or deep trenching.*

Remarks:

**Coordination with Consulting Parties:** Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertaking on historic properties. In accordance with 36 CFR 800.2(c), consulting parties were invited to participate in efforts to identify historic properties potentially affected by the undertaking, assess its effects, and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. Those agencies/organizations that either accepted the invitation or are recognized consulting parties are identified in bold print.

- Hamilton County Engineer
- Marion County Engineer
- Indianapolis Metropolitan Planning Organization (IMPO)
- **Indiana Landmarks, Central Regional Office (*formerly referred to as Historic Landmarks Foundation of Indiana*)**
- Carmel Clay Historical Society
- Hamilton County Historical Society / Hamilton County Museum of History
- Indianapolis Historic Preservation Commission
- Hamilton County Historian
- Marion County Historian
- Marion County Historical Society
- Indiana Historical Bureau
- Indiana Historical Society
- **City of Carmel**
- **Indiana State Historic Preservation Officer (SHPO)**
- **INDOT, Cultural Resources Office (CRO)**
- **INDOT, Greenfield District**

**Determination of Area of Potential Effect (APE):** Weintraut & Associates, Inc., qualified professionals meeting the *Secretary of Interior's Professional Qualification Standards*, defined the APE. The APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist, as defined by 36 CFR Section 800.16 (d). The APE was drawn to encompass properties on both sides of the undertaking, including properties with a viewshed of the project location (Appendix D.1-23 and D.1-24).

The APE was modified in May 2010 to account for modifications in the proposed project. Those modifications included the addition of a connector road between Whitley Drive and Haver Way and the inclusion of a drainage structure on the south side of the Aronson-Priority connector road between Aronson Drive and Priority Way West Drive. The revised APE is illustrated on the maps included as Appendix D.3-10 and D.3-11.

The APE was again modified in December 2011 to account for a minor modification associated with the proposed project. Specifically, the modification included extending the southern terminus approximately 1,070 ft. south of what was originally proposed to provide the necessary tie-in points to the newly constructed I-465 ramps and from 96th Street to southbound Keystone Parkway (via a slip lane). The second revision to the APE is illustrated in the coordination supplied to the INDOT-CRO on December 6, 2011 (Appendix D.4-5 to D.4-10). Due to the limited scope of the supplemental work, the revised APE was drawn to encompass the previously disturbed areas of the existing I-465 / Keystone Avenue interchange. At the request of the INDOT-CRO, the amended APE was furnished to the SHPO on December 9, 2011 for informational purposes.

**Archaeology:** An archaeological records check was completed for the project area by Pioneer Consulting Services, Inc. on August 17, 2009. Results of the investigation indicated that given the disturbed nature of the project area the potential for encountering archaeological deposits is unlikely. No further archaeological assessment was determined to be necessary (Appendix D.1-55 to D.1-57). The INDOT-CRO agreed with this recommendation on August 17, 2009 (Appendix D.1-58). Concurrence from the SHPO in this assessment followed on August 27, 2009 (Appendix D.1-46 to D.1-47).

As a result of modifications to the proposed project, Pioneer Consulting Services, Inc. completed an amendment to the archaeological records check on June 8, 2010 (Appendix D.3-25 to D.3-26). The results of this additional investigation did not identify any archaeological resources warranting further investigation. Following concurrence from the INDOT-CRO on June 9, 2010 (Appendix D.3-27), the amended report was submitted to the SHPO. The SHPO agreed with the findings of the supplemental archaeological investigation

on June 29, 2010 (Appendix D.3-21).

**Historic Properties:** Staff of Weintraut & Associates walked all pertinent and adjacent streets in the APE, viewed all the properties in the APE, and photographed and recorded survey notes about all properties greater than fifty years of age determined to have enough integrity to merit a contributing rating. Surveyed properties are illustrated on maps included as Appendix D.1-23 and D.1-24. Historians evaluated individual properties for architectural and contextual integrity and historical significance. Those resources that did not meet at least one of the National Register of Historic Places (NRHP) criteria and/or did not retain integrity were recommended to be ineligible for listing in the NRHP during this evaluation process.

In conducting research, the historians examined primary and secondary resources. Documentary research for the project included a review of county histories, maps, county historical atlases, and online resources. Additional resources reviewed included the NRHP, the Indiana Register of Historic Sites and Structures (SR), the Indiana Historic Sites and Structures Survey Forms (IHSSI), the 1992 *Hamilton County Interim Report*, the 1999 *Washington Township, Marion County Interim Report*, and the Indiana State Historic Architectural and Archaeological Research Database (SHAARD).

Weintraut & Associates identified and evaluated three properties within the APE that were more than fifty years old and retained enough integrity to be considered contributing. One of these properties was identified in the 1992 *Hamilton County Interim Report*. However, most buildings within the APE either lacked integrity or were constructed after 1960 and include modern housing and commercial buildings. Appropriately, Weintraut & Associates prepared a Historic Properties Report (HPR) for the project that documented the absence of properties either listed or eligible for inclusion on the NRHP. The Executive Summary of the HPR is included as Appendix D.1-53. The HPR was submitted to the INDOT-CRO, for review and concurrence on September 21, 2009. The INDOT-CRO approved the HPR on September 28, 2009 (Appendix D.1-54). On September 29, 2009, the HPR was submitted to the SHPO and other consulting parties for a 30 day review. The SHPO concurred with the findings of the HPR on October 5, 2009 (Appendix D.1-48). No other comments were received from the other consulting parties within the allotted period.

**Findings:** The documentation supporting the determination of "No Historic Properties Affected" as per 36 CFR 800.11(d) was submitted to the INDOT-CRO on November 9, 2009. On November 13, 2009 the INDOT-CRO, acting on behalf of the FHWA, approved the APE and eligibility determination and issued a finding of "No Historic Properties Affected" for the project (Appendix D.1-1). The "No Historic Properties Affected" finding and supporting 800.11(d) documentation was provided to the SHPO and other consulting parties for a 30-day review on November 16, 2009. On November 18, 2009 the SHPO concurred with the determination (Appendix D.1-50). No other comments were received from the identified consulting parties within the allotted period.

Following the conclusion of the Section 106 process, modifications were made to the project to include new elements beyond the APE. Appropriately, the APE was expanded and contributing properties within the new areas surveyed for historical significance by Weintraut & Associates. One additional contributing property was identified within the expanded areas of the APE (Appendix D.3-10 and D.3-11). In May 2010, an amendment to the HPR was completed documenting the findings, which recommended that this property was not eligible for inclusion in the NRHP (Appendix D.3-28 to D.3-29). The INDOT-CRO, on behalf of the FHWA, approved the HPR amendment on July 8, 2010 along with the re-issuance of the "No Historic Properties Affected" finding (Appendix D.3-1). With concurrence from INDOT-CRO, the amended HPR and the re-issued finding of effect were distributed to consulting parties on July 9, 2010. On August 2, 2010 the SHPO concurred in the findings (Appendix D.3-22). No other comments were received from the identified consulting parties.

On June 17, 2011, INDOT-CRO was coordinated with to address further modifications to the proposed design. These modifications included the elimination of a roundabout at the intersection of 96th Street and Aronson Drive and the re-alignment of the Enterprise connector along Enterprise Drive rather than Priority Way West Drive. In addition, a new connector road was added north of the Priority Way West Drive roundabout that connected to the re-aligned Enterprise connector road. On June 22, 2011, INDOT-CRO determined re-opening the Section 106 process was not warranted as the changes were minor in scope and all modifications occurred within the previously established APE and addressed by two previous archaeological records checks (Appendix D.4).

INDOT-CRO was again consulted on December 6, 2011 as a result a minor modification associated with the

proposed project. Specifically, the modification included extending the southern terminus approximately 1,070 ft. south of what was originally proposed to provide the necessary tie-in points to the newly constructed I-465 ramps and from 96th Street to southbound Keystone Parkway (via a slip lane). This change in the scope of the project extended the southern project terminus beyond the previously evaluated APE, warranting the additional coordination with INDOT-CRO. As a result of this supplemental coordination, INDOT-CRO determined there were no aboveground structures within the expanded APE as the modifications are within the I-465 / Keystone Parkway interchange. As such, no modifications to the HPR were determined necessary. With respect to archaeological resources, the INDOT-CRO determined the area of modification was within previously disturbed soils and has been evaluated as part of previous surveys (Appendix D.4-5 to D.4-10). Therefore no further archaeological assessments were necessary. At the request of the INDOT-CRO, an informational letter was furnished to the SHPO on December 9, 2011 notifying them of the modifications to the project scope and APE, as well as the additional coordination with the INDOT-CRO.

**Public Involvement:** In accordance with 36 CFR 800.2(d), 800.3(e), and 800.6(a)(4), the views of the public were sought regarding the project's finding of "No Historic Properties Affected." A public notice was placed in the November 16, 2009 edition of the Indianapolis Star with an established deadline of December 21, 2009 to provide comments on the "No Historic Properties Affected" determination made by the INDOT, on behalf of the FHWA. The public notice and a copy of the publisher's proof of publications are included as Appendix D.2-1 to D.2-2.

As there was no disagreement with the "No Historic Properties Affected" finding after the 30-day consultation and public comment period, the responsibilities of the FHWA under Section 106 were fulfilled. It should be noted that through coordination with INDOT-CRO it was determined unnecessary to re-publish the issuance of the "No Historic Properties Affected" finding following the July 9, 2010 distribution of amendments to the HPR and effects finding.

## SECTION D – SECTION 4(f) RESOURCES/ SECTION 6(f) RESOURCES

**Section 4(f) Involvement**

| | Presence | | Use | | |
|---|---|---|---|---|---|
| | Yes | No | Yes | No | FHWA / ES Approval/dates |
| **Parks & Other Recreational Land** | | | | | |
| Publicly owned park | | X | | | |
| Publicly owned recreation area | | X | | | |
| Other (school, state/national forest, bikeway, etc.) | | X | | | |
| Programmatic Section 4(f) | | X | | | |
| Individual Section 4(f) Evaluation | | X | | | |
| "De minimis" Impact | | X | | | |

| | Presence | | Use | | |
|---|---|---|---|---|---|
| | Yes | No | Yes | No | FHWA / ES Approval/dates |
| **Wildlife & Waterfowl Refuges** | | | | | |
| National Wildlife Refuge | | X | | | |
| State Fish & Wildlife Area – recreation or refuge areas only | | X | | | |
| Programmatic Section 4(f) | | X | | | |
| Individual Section 4(f) Evaluation | | X | | | |
| "De minimis" Impact | | X | | | |

| **Historic Properties** | Yes | No | Yes | No | FHWA / ES approval/dates |
|---|---|---|---|---|---|
| Sites eligible and/or listed on the NRHP | | X | | | |
| Programmatic Section 4(f) | | X | | | |
| Individual Section 4(f) Evaluation | | X | | | |
| "De minimis" Impact | | X | | | |

*Discuss Programmatic Section 4 (f) and De minimis Section 4(f) impacts in the remarks section below. Individual Section 4(f) documentation must be separate Draft and Final documents. For further discussions on Programmatic, De minimis and Individual Section 4(f) documents please refer to the "Procedural Manual for the Preparation of Environmental Studies". Discuss proposed alternatives that satisfy the requirements of Section 4(f).*

Remarks:

Section 4(f) of the US Department of Transportation Act of 1966 prohibits US Department of Transportation funded projects from using land from certain properties unless no feasible or prudent alternative exists. Section 4(f) properties are any publicly owned land from a public park, recreation area, wildlife and waterfowl refuge of national, state or local significance as determined by the Federal, state or local officials with jurisdiction thereof, properties listed or determined eligible for inclusion in the NRHP and archaeological sites that warrant preservation in place. As discussed in the Cultural Resources Section above, there were no structural or archaeological properties discovered within the limits of the project that were either listed or eligible for inclusion in the NRHP. The SHPO concurred in this assessment on November 18, 2009 and August 2, 2010. With respect to public parks, recreation areas and wildlife and waterfowl refuges, a review was undertaken of the publicly accessible geographic information systems (GIS) maintained by Hamilton County (http://gis.hamiltoncounty.in.gov/FlexViewer/Index.html) and the City of Indianapolis (http://gispv01.indygov.org/prod/generalviewer/viewer.htm) to determine if any such resources were present in the project area. This level of review did not reveal the presence of Section 4(f) properties within the project area. This was also confirmed during investigations that occurred on May 6, 2009.

It should be noted that the Lighthouse Tabernacle Church, which is located in the southwest quadrant of 98th Street and Keystone Parkway, has on its property an outdoor playground area and basketball court south of the main building. These recreational areas are fenced and signed to warn against trespassing. According to church staff contacted in February 2011, the outdoor recreational facilities are typically restricted to parish functions for insurance reasons. Although the project avoids any permanent or temporary acquisition from the delineated recreational areas, it does permanently acquire approximately 0.2 acre of property from the church. However, as the church restricts the use of the property it is not considered to be a public resource and therefore not protected under Section 4(f) of the US Department of Transportation Act.

| **Section 6(f) Involvement** | **Presence** | | **Use** | |
|---|---|---|---|---|
| | **Yes** | **No** | **Yes** | **No** |
| **Section 6(f) Property** | | X | | |

*Discuss proposed alternatives that satisfy the requirements of Section 6(f). Discuss any Section 6(f) involvement.*

Remarks:

As mentioned in the Section 4(f) discussion above, no public recreational sites were identified in the general project area. As such, there are no properties that could qualify for Land and Water Conservation Funds (LWCF). This was confirmed during field investigations that occurred on May 6, 2009. Furthermore, the online County listing of Land and Water Conservation Fund grants (www.nps.gov/lwcf/) administered by the National Park Service to the State of Indiana was reviewed in August 2011. The results of this review identified nine LWCF grants awarded to six separate recreational facilities in Hamilton County and 19 LWCF grants awarded to 12 separate recreational facilities in Marion County. However, none of the recreational facilities in either Hamilton County or Marion County are located within the limits of the proposed project. Also, the National Park Service was contacted as part of the early coordination efforts, but did not return a response. Therefore, the project will not impact any properties acquired by or improved with LWCF grants.

## SECTION E – Air Quality

**Air Quality**

| **Conformity Status of the Project** | **Yes** | **No** |
|---|---|---|
| Is the project in an air quality non-attainment or maintenance area? | X | |
| If YES, then: | | |
| Is the project in the most current MPO TIP? | X | |

# *Indiana Department of Transportation*

| County | Hamilton / Marion | Route | Keystone Prkwy. / 96th St. | Des. No. | 0901562 | Project No. | 0901562 |
|---|---|---|---|---|---|---|---|

| | | |
|---|---|---|
| Is the project exempt from conformity? | | X |
| If the project is NOT exempt from conformity, then: | | |
| Is the project in the Transportation Plan (TP)? | X | |
| Is a hot spot analysis required (CO/PM)? | | X |
| Is an MSAT level 1a Analysis required? | | X |
| Is an MSAT level 1b Analysis required? | X | |
| Is an MSAT level 2 Analysis required? | | X |
| Is an MSAT level 3 Analysis required? | | X |
| Is an MSAT level 4 Analysis required? | | X |
| Is an MSAT level 5 Analysis required? | | X |

Remarks:

Hamilton and Marion Counties are both designated as a maintenance areas for 8-hour ozone ($O_3$) and areas of nonattainment for fine particulate matter with a diameter of 2.5 microns or less ($PM_{2.5}$) (USEPA July 2009).

The project is included in the IMPOs 2035 RTP (Appendix H.1-2 and H.1-3), which serves as the long range planning document for the IMPO. On April 11, 2011, the FHWA found the 2035 LRTP demonstrated conformity to all applicable air quality requirements. With this finding, FHWA also concurred with the air conformity demonstration for 8-hour $O_3$ and $PM_{2.5}$. The project was also moved from the 2009-2012 IRTIP to the 2012-2015 IRTIP on July 29, 2011. The INDOT incorporated the IMPO's 2012-2015 IRTIP by reference in the fiscal year (FY) 2012-2015 State Transportation Improvement Program (STIP) on May 26, 2011 (Appendix H.1-10). The FHWA approved the STIP and referenced IRTIP on July 11, 2011 (Appendix H.1-7 to H.1-9).

Hot Spot Analysis:

Based on the Indiana carbon monoxide (CO) Screening Criteria, this project does not meet the criteria requiring a CO project level analysis and will not produce a projected violation of the CO standards (35 ppm over a 1-hour or 9 ppm over an 8-hour period). Therefore a hot spot analysis for CO is not necessary.

Likewise, a $PM_{2.5}$ hot spot analysis is not required as the project is not considered to be a project of air quality concern. The total number of diesel trucks at the intersection is anticipated to remain constant through the design year (2031) regardless of whether the project is constructed. Furthermore, the total number of diesel trucks at the intersection is not substantial (less than 10,000 per day).

Mobile Source Air Toxics (MSAT):
This project is of a type qualifying as a categorical exclusion (Group 1) under 23 CFR 771.117(d), or exempt under the Clean Air Act conformity rule under 40 CFR 93.116, and as such, a Mobile Source Air Toxics analysis is not required.

This project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that would cause an increase in emissions relative to the no-build alternative. As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special MSAT concerns. Consequently, this effort is exempt from quantitative analysis for MSATs.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. Even after accounting for a 64% increase in VMT, FHWA predicts MSATs will decline in the range of 57- 87% from 2000 to 2020, based on regulations now in effect. This will both reduce the background level of MSATs as well as the possibility of even minor MSAT emissions from this project.

## SECTION F - NOISE

| **Noise** | **Yes** | **No** |
|---|---|---|
| Is a noise analysis required in accordance with FHWA regulations and INDOT's noise policy? | X | |

| | **No** | **Yes/ Date** |
|---|---|---|
| **ES Approval of Noise Analysis** | | March 8, 2011<br>January 3, 2012 (Amendment) |

Remarks:

Traffic Noise

As the proposed project includes the construction of a new interchange, this project is considered to be a Type 1 project. Therefore, in accordance with 23 CFR 772 and the INDOT Traffic Noise Analysis Procedure (2011), this action requires a formal noise analysis. The required analysis was completed using FHWAs accepted model for forecasting changes in noise levels associated with highway projects, *Traffic Noise Model, Version 2.5* (TNM). TNM models were computed for the existing scenario (2009), the Build scenario in the design year (2031) and the No Build scenario in the design year (2031). The TNM models and noise analysis report were determined to be technically sufficient by INDOT Environmental Services section on February 11, 2010 and March 8, 2011, respectively (Appendix I.3-1 and I.3-2). An amendment to the noise analysis was prepared in December 2011 that addressed changes in Federal and state noise analysis and abatement procedures and minor modifications made to the proposed design of the project. A copy of the entire noise analysis report and the appropriate amendment is included as Appendix I.1 and I.2, respectively. The following discussion focuses on the results of the noise analysis amendment as it is the most current documentation on the effects of the project on the ambient noise environment.

Noise Impacts:

A total of 119 receptors were evaluated as part of the noise impact analysis. Included in the list of 119 receptors were eight Category F land uses and one receptor identified as a relocation at the time of the March 2011 noise analysis. This resulted in a reduction in the number of receptors re-evaluated for impacts to 110. Of the 110 receptors assessed for noise impacts, 74 were classified as Category B land uses, 13 were Category C land use activities and 19 were determined to be a Category E land use activity. A description of the different land use types as defined in the INDOT Traffic Noise Analysis Procedure (2011), as per Title 23 CFR 772, is provided in Table 1 of the noise analysis amendment (Appendix I.2-4). It should be noted that half of the evaluated receptors were located in residential subdivisions located north of 98th Street.

An impact to an identified receiver occurred if any one of the following criteria were met:

- Predicted decibel (dBA) levels approached or exceeded (within 1 dBA) the Noise Abatement Criteria
- Predicted dBA levels substantially exceeded (greater than 15 dBA) the existing levels

The analysis found that design year (2031) noise levels for the build alternative would impact a total of 26 receptors, 23 of which are Category B land uses and three are Category E land uses. These 26 receptors were determined to be impacted as noise emissions under the build alternative were found to approach or exceed FHWAs Noise Abatement Criteria (NAC). There were no modeled receptors that were predicted to have an increase of 15 dBA or more over the existing conditions. It should also be noted that noise levels at the impacted receptors were comparable (within 1-4 dBA) between the Build, No-Build and existing scenarios. Additionally, the majority of the impacted residential receptors associated with the Build scenario (15) were also impacted by the existing and No Build scenarios in that noise levels approached or exceeded the NAC.

Noise Abatement:

Five barriers were evaluated north of the interchange as part of the March 2011 noise analysis. The common noise areas associated with each barrier included Lighthouse Tabernacle Church, Lakewood Gardens Subdivision on the west and east sides of Keystone Parkway, Brooks Bend Subdivision and Shadybrook Subdivision. The results of the original analysis found that the Lighthouse Tabernacle Church and Brooks Bend Subdivision barriers did not meet the criteria of feasibleness under the previous noise policy. The remaining three barriers that were evaluated, Lakewood Gardens Subdivision (on the west side of Keystone Parkway), Lakewood Gardens Subdivision (on the east side of Keystone Parkway) and Shadybrook Subdivision, were found to be feasible, but did not meet the cost effectiveness criteria to be considered a reasonable form of mitigation.

Following the changes in the State's noise analysis procedures, resulting from the FHWAs June 2010 release of its revised noise analysis and abatement guidance, it was determined necessary to re-evaluate the considered barriers against the current criteria of feasibleness and reasonableness. The following summarizes the results of the barrier re-evaluation.

In all instances, the presence of the 99th Street / Keystone Parkway and the 98th Street / Keystone Parkway intersections prevented the extension of the analyzed barriers the recommended distance of four times the distance from the end receptor to the barrier (USDOT, FHWA, Highway Traffic Noise: Analysis and Abatement Guidance, Appendix C: Highway Traffic Noise Abatement Measures, June 2010). As such, effective shielding of the impacted receptors near the south and north ends of the barriers, in addition to several non-impacted receptors is not possible. To that end, these access points presented an engineering constraint that will allow noise to spill around the ends of each barrier and not fully shield the receptors they would be designed to protect. Additionally, the presence of barriers so close to existing access points presents potential safety issues associated with the line of sight to and from the intersections. Therefore, all five barriers are unable to satisfy the criteria of engineering feasibility and were dismissed from further consideration as a form of abatement.

Even if the evaluated walls were determined feasible, they still would not have met the cost effectiveness criteria of $25,000 per benefitted receiver. This was demonstrated in the March 2011 analysis.

The use of other abatement measures including traffic management, alteration of vertical and horizontal alignments, acquisition of property for buffer zones are not considered to be reasonable measures for noise mitigation, due to the potential detrimental effects to the local environment and the overall cost prohibitive and potentially disruptive nature to the cohesion of the local community. The insulation of the Lighthouse Tabernacle Church is not necessary as the interior noise levels do not exceed the NAC identified level of 52 dBA for Category D land uses. The exterior noise levels at the remaining Category D receptors do not approach or exceed the NAC. Therefore, it is unlikely that there would be an impact to interior noise levels.

Construction Noise:

The identified receivers will be affected by the noise generated from power-operated equipment utilized during construction. This equipment will be operated intermittently and will produce noise in the range of 70-98 dBA. To minimize these impacts, construction equipment should be operated in compliance with all applicable local ordinances and regulations pertaining to construction noise. Also, restricting construction activities to daytime working hours may help minimize construction noise impacts during nighttime hours.

## SECTION G – COMMUNITY IMPACTS

| **Regional, Community & Neighborhood Factors** | **Yes** | **No** |
|---|---|---|
| Will the proposed action comply with the local/regional development patterns for the area? | X | |
| Will the proposed action result in substantial impacts to community cohesion? | | X |
| Will the proposed action result in substantial impacts to local tax base or property values? | | X |
| Will construction activities impact community events (festivals, fairs, etc.)? | | X |

Remarks:

Social Effects

Temporary: Inconveniences associated with construction such as increased travel times, possible utility interruptions, vehicular operating costs, construction noise, and fugitive dust are anticipated.

Permanent: As proposed, the 98th Street and Keystone Parkway intersection will be restricted to right turns only. This partial closure of the 98th Street and Keystone Parkway intersection will result in an alteration of traffic patterns requiring vehicles heading in certain directions to seek alternative routes. Table 6 assigns an estimated length that would be added to a user's trip, as well as the traffic volume that would be affected by the partial closure. It is important to note that the re-routed volumes presented below do not represent the total volume of traffic at the intersection, but rather only those vehicles that would be affected by the restrictions and thus required to find an alternative route to reach their destination.

**Table 6 – Impact Summary Resulting from Partial Closure of the 98th Street / Keystone Parkway Intersection**

| Affected Movement | AM Peak Volume Re-routed (DHV)** | PM Peak Volume Re-routed (DHV)** | Facilities Used to Re-route | Total Distance of Altered Route (Miles)* |
|---|---|---|---|---|
| *98th St. West Leg* | | | | |
| EB 98th St. to NB Keystone Ave. | 5 | 29 | Haverstick Rd. / 96th St. / Keystone Ave. | 1.1 |
| EB 98th St. thru Keystone Ave. | 14 | 35 | Haverstick Rd. / 96th St. / Enterprise Dr. | 1.6 |
| **Total Re-routed** | **19** | **64** | | |
| *98th St. East Leg* | | | | |
| WB 98th St. to SB Keystone Ave. | 74 | 99 | Enterprise Dr. / 96th St. | 0.6 |
| WB 98th St. thru Keystone Ave. | 27 | 37 | Enterprise Dr. / 96th St. / Haverstick Rd. / 98th St. | 1.4 |
| **Total Re-routed** | **101** | **136** | | |
| *Keystone Ave. South Leg* | | | | |
| NB Keystone Ave. to WB 98th St. | 8 | 32 | 96th St. / Haverstick Rd. / 98th St. | 0.8 |
| **Total Re-routed** | **8** | **32** | | |
| *Keystone Ave. North Leg* | | | | |
| SB Keystone Ave. to EB 98th St. | 45 | 44 | Keystone Ave. / 96th St. / Enterprise Dr. | 1.1 |
| **Total Re-routed** | **45** | **44** | | |

* - Total distance to re-route is measured from the point at which the restriction occurs and returns to the same point. Actual distance may be reduced depending on a user's destination.
** - Peak volumes of re-routed vehicles are provided for the design year (2031).

Positive effects resulting from the project would include alleviation of delays and accidents, which can attribute to user stress, at an already congested intersection. Furthermore, the proposed 10 ft. multi-use path along the north side of 96th Street will provide an opportunistic contribution to the promotion of wellness in providing an avenue for pedestrian mobility through the project area.

Economic Effects (taxes)

Temporary: Difficulties in accessing businesses during construction may prevent prospective consumers from utilizing businesses within the project area. This inconvenience may result in a temporary loss of revenue that is anticipated to be restored upon completion of the project.

Permanent: Loss of property tax base due to right-of-way acquisition and change in access. However, these changes should not have a substantial impact to the local tax base or property values.

As a result of the project, the way in which consumers access certain businesses will be affected. This change will be evident in several areas along 96th Street, but not along Keystone Parkway as there are no existing access points from I-465 to 96th Street and 96th Street to 98th Street. One such area is west of Keystone Parkway where the Haver Way / 96th Street access point will be removed. This change will affect how "would be" consumers traveling westbound access businesses aligning Haver Way. This alteration would add an additional 0.4 mile (0.8 mile round trip) to the trip using the route of Whitley Drive and the Haver Way – Whitley Drive connector road. Additionally, eastbound vehicles will be unable to make a left turn into the Tom Wood Ford dealership. These vehicles will be required to use the roundabout beneath Keystone Parkway to return to the drive of the dealership. As a result, an additional 0.3 mile would be added to the trip. Likewise, vehicles leaving the dealership will be unable to turn left onto eastbound 96th Street. These vehicles will be required to travel westbound on 96th Street and use the Haverstick Road roundabout to return to eastbound 96th Street. This movement will add approximately 0.4 mile to the trip. The businesses in this area (west of Keystone Parkway) that are most likely to be reliant on "drive by" consumers and affected by the changes in access are the Burger King and Tom Wood Ford. These two businesses may experience a decrease in "drive by" business as a result of the slightly increased travel times. The other business along Haver Way either don't have the existing visibility to 96th Street or Keystone Parkway that is necessary to attract "drive by" consumers, are located in a visible spot but don't have direct access, as is the case for some businesses that front Keystone Parkway and are only accessible from Haver Way, or already use Whitley Drive as their main road of access to their business, such as the Dreyer-Reinbold dealership. Access to all other businesses on 96th Street west of Keystone Parkway should be unaffected as the project includes a TWLTL east of the Haverstick Road roundabout to near Haver Way.

East of Keystone Parkway on 96th Street, access to businesses on Aronson Drive would be affected as a result of the proposed partial right-in / right-out intersection with 96th Street. The partial restriction of left turning and thru movements at this intersection will affect eastbound 96th Street traffic wanting to enter north Aronson Drive, southbound Aronson Drive traffic wanting to enter eastbound 96th Street or continue south on Aronson Drive (thru traffic) and northbound Aronson Drive traffic wanting to enter westbound 96th Street or continue north on Aronson Drive (thru traffic). This alteration in traffic access will add anywhere from 0.3 mile to 0.5 mile to the re-routing of any traffic attempting to make one of the mentioned intended movements. The only permitted left turn movement at this intersection will be westbound 96th Street to southbound Aronson Drive. In this area (east of Keystone Parkway), the Penske Chevy dealership is likely to be the main business that experiences a decrease in potential "drive by"' consumers due to the slightly increased travel times resulting from the changes in access to the business. Access to all other businesses on 96th Street east of Keystone Parkway that rely on "drive by" consumers should be unaffected as the project includes a TWLTL east of Aronson Drive intersection to Enterprise Drive.

**Indirect and Cumulative Impacts**

| | Yes | No |
|---|---|---|
| Will the proposed action result in substantial indirect or cumulative impacts? | | X |

Remarks:

Impacts resulting from a project that are not directly associated with the project, but rather secondary in nature or as a result of a continuing trend in development pattern, are commonly referred to as indirect and cumulative. The Council on Environmental Quality (CEQ) definition of indirect impacts, under NEPA, 40 CFR Section 1508.8, are impacts:

> *"…caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems."*

As defined under NEPA in the CEQ regulations, 40 CFR Section 1508.7, a cumulative impact is:

*"..the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."*

The proposed project will construct a new interchange at an existing at-grade intersection in the built urban sections of the City of Carmel and the City of Indianapolis. The project is located within a landscape that is dominated by characteristics of an urban environment. Indirect impacts in the project area were considered for land use, secondary growth, and induced growth.

The land use in all four quadrants of the proposed interchange site is comprised of mixed-use businesses with residential subdivisions more prominent in the areas north, east and west of the intersection. It is reasonable to assume that a change in the land use type around the proposed interchange is unlikely to occur in the future provided the land is already zoned for commercial use by the City of Carmel and the City of Indianapolis. This is a limiting factor in the possibility for induced growth resulting from the construction of the proposed interchange.

Indirect impacts commonly associated with interchange projects are the loss of natural habitat, increased water pollution from parking lot runoff and loss of plant and animal diversity due to the opportunity provided for secondary commercial or residential developments. Such indirect impacts in the case of the proposed interchange site are to an extent diminished due to already present businesses, parking lots and infrastructure (i.e. roads, utilities and drainage structures) and lack of quality waterways and significant natural systems that provide habitat to various plant and animal species other than those typically found in urban environments. It is possible the estimated 16 acre urban forested tract east of Keystone Parkway and north of I-465 (southeast of the proposed interchange) could be developed in the foreseeable future. However, since this tract is already zoned for commercial use by the City of Indianapolis, any development that may occur is not likely to be growth resulting from constructing the proposed interchange. Travel patterns may be expected to change as the community has other alternatives in which to navigate around the area and avoiding traffic congestion at other locations. Indirect impacts associated with travel pattern changes may include increased air quality concerns further away from the immediate area of the project.

Although the proposed project is not expected to contribute to induced growth in the immediate area, the community will benefit from the improvements to an operationally deficient intersection. Improvements to this intersection are currently identified in the IMPOs 2035 LRTP as occurring in the third funding period (2026-2035). Accelerating the needed improvements to an earlier time period should only accent the benefit the community will receive.

**Public Facilities & Services**

Will the proposed action result in substantial impacts on health and educational facilities, public utilities, fire, police, emergency services, religious institutions, public transportation or pedestrian and bicycle facilities? Discuss the maintenance of traffic, and how that will affect public facilities and services.

| Yes | No |
|---|---|
| | X |

Remarks:

There are no bike routes or trails within the project area that would be impacted by the project. The project will include a 10 ft. multi-use path along the north side of 96th Street where there are currently no sidewalks. This improvement will benefit pedestrian mobility through the project area.

The proposed project will have temporary inconveniences commonly associated with construction such as noise, fugitive dust, increased travel delay, and utility disruptions. However, the maintenance of traffic plan (Appendix B.3) proposes phased construction, allowing traffic continued access along Keystone Parkway and 96th Street. While travel time will likely be affected on a short term basis as a result of construction, access through the project area will be maintained for public transportation or emergency service vehicles. In advance of construction, the City of Carmel, or their agent, will be responsible for coordinating with the appropriate officials the schedule and duration of any closures or construction activities that may affect the response times of relevant emergency service providers in Marion and Hamilton Counties. This will allow for emergency responders to adjust their routes, if need be, to ensure the effects on response times are marginal.

Following completion of the proposed interchange, response times are likely to improve due to the free flowing condition along Keystone Parkway.

Upon completion of the project, access from Keystone Parkway to two churches located on 98th Street, Lighthouse Tabernacle Christian Academy and the Hope Christian and Missionary Alliance Church, will be affected. As a result of the change in access at 98th Street, removal of the existing signal and addition of a median barrier, two of the three arriving movements and two of the three departing movements to/from these institutions would be affected. Those movements include, northbound Keystone Parkway to westbound 98th Street, westbound 98th Street through (from the east leg of the intersection), eastbound 98th Street through (from the west leg of the intersection) and westbound 98th Street to northbound Keystone Parkway. Instead, affected vehicles intending to access either of these institutions will be required to use a combination of 96th Street, Haverstick Road and the Enterprise connector road to re-connect with the pre-project routes. The two traffic movements associated with the churches that would remain are southbound Keystone Parkway to westbound 98th Street and eastbound 98th Street to southbound Keystone Parkway. According to Table 6, above, the removal of these movements would affect a minimal number of vehicles, 54 vph in the AM peak hour and 133 vph in the PM peak hour. The majority of this traffic accounts for commuters and residents that either work or live in the area surrounding the 98th Street and Keystone Parkway intersection, but could also extend to include parishioners of one or both of these churches. Furthermore, the longest distance any of these movements would have to travel in an effort to re-route and re-establish traffic patterns is 1.6 miles. While the removal of these turning movements will be an inconvenience, the largely local traffic affected by the change should quickly adapt to the new patterns.

| **Environmental Justice (EJ)** (Presidential EO 12898) | **Yes** | **No** |
|---|---|---|
| During the development of the project were EJ issues identified? | | X |
| Are any EJ populations located within the project area? | X | |
| Will the project result in adversely high or disproportionate impacts to the EJ population? | | X |

Remarks:

Under Title VI, this project is required to ensure that no person on the grounds of race, color, or natural origin, is excluded from participation in, denied the benefits of, or subjected to discrimination under this activity. Under Executive Order (EO) 12898, this project must identify and address, as appropriate, disproportionately high and adverse human or environmental effects on any known minority populations and low-income populations.

To assess the data and determine the presence of environmental justice populations the following criteria was applied per the Indiana Categorical Exclusion Manual (March 2011). Affected communities that are more than 50% minority or low income were automatically designated as environmental justice populations. All other affected communities were designated an environmental justice population if the low income or minority population was 25% higher than the minority / low income population in the community of comparison (COC). In the case of this analysis, the affected community (AC) consisted of two block groups in Hamilton County and two block groups in Marion County. Due to the geopolitical, social and economic connections that portions of the affected Marion County block groups have to the City of Carmel, both the City of Indianapolis and the City of Carmel were used as the COC for the analysis. This level of comparison also extended to the affected Hamilton County block groups. A reference increment of 25% was calculated over each COC population to establish a threshold used to assess the presence of environmental justice populations. Environmental justice populations were presumed to be present if the AC values exceeded the threshold. As illustrated in Table 7, the analysis revealed two low-income populations within the project area.

| Table 7 – Environmental Justice Analysis Summary[1] | | | | | | |
|---|---|---|---|---|---|---|
| Population Analysis Categories | Affected Communities | | | | Community of Comparisons | |
| | Hamilton County | | Marion County | | | |
| | Block Group 1, Tract 1111.01 | Block Group 1, Tract 1111.02 | Block Group 2, Tract 3202.03 | Block Group 2, Tract 3202.04 | City of Carmel | City of Indianapolis |
| Minority (%)[2] | 6.7% | 6.4% | 3.6% | 3.3% | 8.7% | 32.3% |
| 125% of COC | -- | -- | -- | -- | 10.9% | 40.3% |
| Minority Pop. | No | No | No | No | -- | -- |
| | | | | | | |
| Low-Income (%) | 1.7% | 1.1% | 3.3% | 4.9% | 2.5% | 11.8% |
| 125% of COC | -- | -- | -- | -- | 3.2% | 14.7% |
| Low-Income Pop. | No | No | Yes | Yes | -- | -- |
| | | | | | | |
| No. of Res. Relocations | 0 | 0 | 0 | 0 | -- | -- |
| No. of Comm. Relocations | 1 | 0 | 2 | 2 | -- | -- |

1 – Analysis based on 2000 US Census Data
2 - % Minority is based on the aggregate total for blocks directly affected by the proposed interchange and does not represent the composition of the entire block group.

While it is typically the procedure to evaluate affected communities to the block group level, the location of this project in relation to the geopolitical boundary of Marion and Hamilton Counties and the physical barrier of I-465 warranted specific block level analysis in an effort to identify environmental justice populations that may be affected by the proposed project. This only applied to the minority population analysis as block level information for the poverty (low-income) data set is not available. For the low-income analysis, data was evaluated to the block group level.

Minority Populations:

As detailed in the environmental justice analysis tables in Appendix J.3, one census block in Hamilton County, Block 1029 (of Census Tract 1111.02), exceeds the COC reference increment by more than 25%. Although the percent of minorities, when aggregated with the other affected blocks in this block group, is well below the established 25% reference increment of both COCs (see Table 7), individually this block should be considered an environmental justice population. While not directly in the project area, Block 1029, like the majority of the assessed blocks, will be indirectly affected by the change in access resulting from the proposed project. To that end, Block 1029 will not be disproportionately affected by the project as non-environmental justice populations in the project area will be affected to the same extent by the changes in access and travel patterns.

Low-Income Populations:

Both affected Marion County block groups included in the analysis, Block Group 2 of Census Tract 3202.03 and Block Group 2 of Census Tract 3202.04, exceed the 25% reference increment when compared to the City of Carmel. It should be noted that when compared to the City of Indianapolis, both block groups are well below the 25% reference increment. However, a portion of each block group extends to the north side of I-465, which is for the most part socially and economically connected to the City of Carmel. As such a comparison to both the City of Indianapolis and the City of Carmel were made.

Block Group 2 of Census Tract 3202.03 is bordered by Westfield Boulevard to the west, 96th Street to the north, Keystone Parkway / I-465 / Haverstick Road to the east and 91st Street to the south (Appendix J.2-6). Block Group 2 of Census Tract 3202.04 is bordered by 96th Street to the north, Westfield Boulevard / 91st Street / Haverstick Road to the west, 86th Street to the south and River Road / White River to the east (Appendix J.2-7). As a whole, both block groups have sociological connections to Nora, the City of Indianapolis or the City of Carmel. A more detailed description of each block group is provided below.

*Tract 3202.03, Block Group 2:*
As evidenced in the environmental justice analysis tables included as Appendix J.3-3 and mapping (Appendix J.2-1 and J.2-6), the affected blocks within the project area (Blocks 2000, 2001 and 2002) account for roughly 55 people, or one fifth, of the recorded 272 persons within the overall block group. This would mean that a majority of the resident population in this block group reside on the south side of I-465, while the remaining composition within the affected blocks, aside from the aforementioned residents, are businesses. As noted in Table 7 above, two businesses from this block group will require relocation. These businesses, which are located in the southwest quadrant of the proposed interchange and between Haver Way and Keystone Parkway, are a Chase Bank and Marathon Gas Station. Approximately 3.3 acres of right-of-way (permanent and temporary) will be acquired from this block group, 0.44 acres of which would be from residential properties in the southwest quadrant of 96th Street and Haverstick Road.

*Tract 3202.04, Block Group 2*:
As evidenced in the environmental justice analysis tables included as Appendix J.3-3 and mapping (Appendix J.2-1 and J.2-7), the affected blocks within the project area (Blocks 2008, 2009, 2010, 2011 and 2021) account for roughly 30 people, or one and one half percent, of the recorded 2,195 persons within the overall block group. This would mean that a majority of the resident population in this block group reside on either the south side of I-465 or further east on 96th Street beyond the project limits, while the remaining composition within the affected blocks, aside from the aforementioned residents, are businesses. As noted in Table 7, above, two businesses that share a single building will require relocation. These businesses, which are located in the southeast quadrant of the proposed interchange and along the east side of Threel Road, are a BP Gas Station and a McDonald's restaurant. Approximately 5.9 acres of right-of-way (permanent and temporary) will be acquired from this block group, none of which would be from residential properties.

*Analysis Summary:*
As noted in Table 7 above, the proposed project will not result in the relocation of any residential properties within the identified low-income populations. Impacts to the affected residential sections of the low-income block groups are comparable to those to be experienced by the other block groups in the project area with respect to temporary inconveniences associated with construction and permanent alterations in traffic patterns. More importantly, the identified low-income populations within the project area will benefit from the improvements to an operationally deficient interchange and from the inclusion of a multi-use path along 96th Street, which enhances pedestrian activity and community cohesiveness. Therefore, the anticipated negative impacts associated with construction and changes in access / traffic patterns do not outweigh the benefits discussed.

It should also be noted that if Federal funding is used for the project, the City and their right-of-way representative will comply with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of1970 as amended, and work with the owners of the relocated businesses to ensure an adequate relocation site specific to the service it provides is identified prior to closing its existing location.

| **Relocation of People, Businesses or Farms:** | **Yes** | **No** |
|---|---|---|
| Will the proposed action result in the relocation people, businesses or farms? | X | |
| Is a Business Information Survey (BIS) required? | | X |
| Is a Conceptual Stage Relocation Study (CSRS) required? | | X |

Number of relocations: Residences: 0 Businesses: 4 Farms: 0 Other: 1

*If a BIS or CSRS is required, discuss the results in the Remarks section.*

Remarks:

At the present, it is anticipated that four active commercial structures and one abandoned gas station would require relocation to accommodate the proposed project. A description of each is provided in the Table 8 below and is also represented on the aerial photograph included as Appendix B.1-7 and B.1-8.

**Table 8 – Displacement Descriptions**

| No.* | Address | Description |
|---|---|---|
| 1 | 3301 E. 96th Street | BP Gas Station |
| 2 | 3301 E. 96th Street | McDonald's |
| 3 | 3202 E. 96th Street | Vacated Circle K Gas Station |
| 4 | 9505 Haver Way | Chase Bank |
| 5 | 3131 E. 96th Street | Marathon Gas Station |

** - No. corresponds with aerial photograph on Appendix B.1-4.*

In accordance with the INDOT Categorical Exclusion Manual (2011), a Business Information Survey (BIS) is not necessary as fewer than 10 businesses will require relocation. For the same reason, a Conceptual Stage Relocation Study (CSRS) is not required.

It should be noted, however, that the acquisition and relocation of the above businesses will be conducted in accordance with 49 CFR 24 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of1970 as amended should Federal funds be obligated to the project. Relocation resources are available to all residential and business relocatees without discrimination. No person displaced by this project will be required to move from a displaced dwelling unless comparable replacement housing is available to that person.

A displaced business or non-profit organization will receive assistance in locating a replacement site and certain related moving expenses. Under certain circumstances, expenses may be paid through a fixed payment in lieu of moving and related expenses. Displaced commercial occupants can choose to be reimbursed for moving expenses based on actual expenses or based on an amount that does not exceed the lower of two detailed bids prepared by independent, qualified moving firms.

A commercial displacement may also qualify for reimbursement for loss of personal property, relocation searching expenses, and reestablishment expenses. A relocation agent will assist the commercial displaced in determining their eligibility for additional reimbursements on a case-by-case basis.

## SECTION H – HAZARDOUS MATERIALS & REGULATED SUBSTANCES

| | Documentation Yes | Documentation No |
|---|---|---|
| Red Flag Investigation | X | |
| Hazardous Materials Site Assessment Form | X | |
| Phase I Initial Site Assessment (ISA) | X | |
| Phase II Preliminary Site Investigation(PSI) | X | |
| Design/Specifications for Remediation required? | | X |

| | No | Yes/ Date |
|---|---|---|
| **ES Review of Investigations** | | N/A – LPA project |

Include a summary of findings for each investigation.

Remarks:

**Red Flag Investigation:**

A Red Flag Investigation was conducted in May 2009 to identify areas of concern (Red Flags) within the study area (Appendix E.1). The Red Flag Investigation included a review of the Indiana GIS Atlas developed by the Indiana Geological Survey in conjunction with INDOT, as well as publicly available records maintained by IDEM. The Red Flag Investigation identified 11 underground storage tank (UST) sites, four of which were leaking UST (LUST) sites. Additionally, six industrial waste sites were identified within the project area. Due to the highly commercialized nature of the project area and the number of industrial waste sites and UST / LUST sites, the Red Flag Investigation recommended a Phase I Environmental Site Assessment (ESA) be

completed for the proposed project. Additionally, a Hazardous Materials Site Visit Form was completed for the project area and is included as Appendix E.4.

**Phase I ESA:**

In October 2009 RW Armstrong completed a Phase I ESA in accordance with ASTM E 1527-05. The ESA included a site inspection, interviews of key individuals and a review of historical and government records. The Phase I ESA is maintained in the project file, but excerpts from the report are located in Appendix E.2. The results of the Phase I ESA identified four sites that were recommended for further investigation due to their current condition, distance from the area of proposed activity and potential to be impacted by proposed construction. Those sites advanced to a Phase II ESA included:

**Baxter's Marathon #2092**, 3131 East 96th Street, Indianapolis, Indiana, active UST, active LUST, historic Service Station
**Circle K #2283** (formerly Keystone Shell a.k.a. West Shell A&C Carmel), 3202 East 96th Street, Indianapolis, Indiana, historic UST, active and discontinued LUST, RCRA-Non Generator
**BP Facility #25980** (formerly **Amoco Service Station #10110**), 3301 East 96th Street, Indianapolis, Indiana, active UST, No Further Action (NFA) LUST, CESQG
**Keystone Parkway and 96th Street Intersection**, Indianapolis, Indiana, Spill Site

**Phase II ESA:**

On November 10-11, 2009, RW Armstrong, with the assistance of Vertical Task, Inc., collected soil and groundwater (where obtainable) samples from three of the four sites identified in the Phase I ESA. Sampling from the fourth site, the Keystone Parkway and 96th Street intersection, was unobtainable within the islands of the intersection due to the road layout and the positioning of the right-of-way islands. In addition, the high traffic conditions compromised the safety of the workers. For this site, the borings taken within the right-of-way along the adjacent properties were relied upon for indications of contamination which may have migrated away from the intersection during the known spill incidents. The Phase II ESA was completed in January 2010 and is maintained in the project file, but excerpts from the report are located in Appendix E.3.

The results of the Phase II ESA revealed no evidence of contamination levels exceeding the Indiana Department of Environmental Management (IDEM) Risk Integrated System of Closure (RISC) Residential Default Closure Levels or Industrial Default Closure Levels within the borings investigated. However, according to the Keystone Parkway and 96th Street, Phase I, ESA, October 2009 some parcels contain known contamination. The health and safety plan to be prepared prior to construction should disclose past contamination associated with each site.

## SECTION I – PERMITS CHECKLIST

| | Required | Not Required |
|---|---|---|
| **Army Corps of Engineers (404/Section10 Permit)** | | |
| Individual Permit (IP) | | X |
| Nationwide Permit (NWP) | | X |
| Regional General Permit (RGP) | | X |
| Pre-Construction Notification (PCN) | | X |
| Other | | X |
| Wetland Mitigation required | | X |
| **IDEM** | | |
| Section 401 WQC | | X |
| Isolated Wetlands determination | | X |
| Rule 5 | X | |
| Other | | X |
| Wetland Mitigation required | | X |
| Stream Mitigation required | | X |
| **IDNR** | | |

| | | |
|---|---|---|
| Construction in a Floodway | | X |
| Navigable Waterway Permit | | X |
| Lake Preservation Permit | | X |
| Other | | X |
| Mitigation Required | | X |
| **US Coast Guard Section 9 Bridge Permit** | | X |
| **Others (Please discuss in the Remarks section below)** | X | |

Remarks: It is the responsibility of the City of Carmel or their agent to obtain the required permits for this project. Once the permits are obtained they must be submitted to the INDOT Contracts Division prior to the construction of the project. The following permits will be required for the proposed project:

A Rule 5 Permit will be required as greater than one acre of land would be disturbed. This permit will be obtained from IDEM prior to the initiation of construction.

The Federal Aviation Administration's (FAA) Form 7460-1 (Notice of Proposed Construction or Alteration) will require filling if any equipment or permanent structures exceed a height of 167 ft., which would breach the 100:1 approach slope ratio from the Indianapolis Metropolitan Airport.

State From 41769 (R5 / 3-00) Right-of-Way Permit will be required from the INDOT to construct the portion of the project along either side of Keystone Parkway, which is state right-of-way.

A Construction within Right-of-Way Permit will be required from the City of Indianapolis to construct the portion of the project located on the south side of 96th Street east and west of Keystone Parkway.

A Section 404 Permit will not be required from the USACE, Louisville District as no "waters of the US would be affected by the proposed project.

Section 401 Water Quality Certification will not be required from IDEM as no "waters of the State" or "waters of the US" would be affected by the proposed project.

## SECTION J- ENVIRONMENTAL COMMITMENTS

*Information below must be included on Commitments Summary Form*. List all commitments, indicating which are firm and which are optional.

Remarks: The following mitigation measures are firm and will be included in the final construction specifications.

1. Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion. (IDNR, Division of Water letter dated September 1, 2010 and USFWS letter dated September 23, 2009)

2. Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized. (IDNR, Division of Water letter dated September 1, 2010 and USFWS letter dated September 23, 2009)

3. Seed and protect all disturbed streambanks and slopes that are 3:1 or steeper with erosion control blankets or use structural armament; seed and apply mulch on all other disturbed areas. (IDNR, Division of Water letter dated September 1, 2010 and USFWS letter dated September 23, 2009)

4. No open burning of construction wastes will be permitted without proper variance from IDEM. (IDEM letter dated September 2, 2009)

5. Fugitive dust must be controlled by proper wetting, chemical stabilizers, or wind barriers. Dirt tracked onto paved roads from unpaved areas should be minimized. (IDEM letter dated September 2, 2009)

6. All solid wastes generated by the project, or removed from the project site, need to be taken to a properly permitted solid waste processing or disposal facility. (IDEM letter dated September 2, 2009)

7. Any contaminated soils encountered during construction will be reported to the IDEM, Office of Land Quality and may be subjected to special disposal requirements. (IDEM letter dated September 2, 2009)

8. All facilities to be demolished or renovated (except residential buildings that have four or fewer dwelling units and which will not be used for commercial purposes) must be inspected by an Indiana-licensed asbestos inspector prior to the commencement of any renovation or demolition activities. If regulated asbestos containing material that may become airborne is found, any subsequent demolitions, renovation, or asbestos removal activities must be performed in accordance with the proper notification and emission control equipment. All demolition projects will be reported to the Office of Air Management at least 10 day prior to demolition using State Form 44593 (1-91). (IDEM letter dated September 2, 2009)

9. The Indianapolis Metropolitan Airport is approximately 16,777 ft. northeast of the project area. If any equipment or permanent structures utilized for this project penetrate a 100:1 approach slope from the airport Federal Aviation Administration Form 7460-1 (Notice of proposed construction or alteration) must be filed. (INDOT Office of Aviation letter dated September 11, 2009)

10. If permanent or temporary right of way amounts change, the Office of Environmental Services (OES) should be contacted immediately. (Standard commitment per OES)

11. If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations. (IDNR, Division of Historic Preservation and Archaeology letter dated August 2, 2010)

12. Tree clearing activities will be limited to the maximum extent possible. (USFWS letter dated September 23, 2009)

13. Artificial bank stabilization will be minimized to the maximum extent possible and use bioengineering methods wherever feasible (USFWS letter dated September 23, 2009)

14. Where riprap is utilized for bank stabilization, it will extend below low-water elevation to provide aquatic habitat. (USFWS letter dated September 23, 2009)

15. Channel work and vegetation clearing will be restricted to the minimum necessary for the installation of cross structures. (USFWS letter dated September 23, 2009)

16. In advance of construction, the City of Carmel, or their agent, will be responsible for coordinating with the appropriate officials the schedule and duration of any closures or construction activities that may affect the response times of relevant emergency service providers in Marion and Hamilton Counties.

The following mitigation measures will be considered further during the design phase of the project.

1. Post DO NOT DISTURB signs at the construction zone boundaries and do not clear trees or understory vegetation outside the boundaries. (USFWS letter dated September 23, 2009)

2. Where possible culverts should span the active stream channel and should be either embedded or a 3-sided or open-arch form (USFWS letter dated September 23, 2009)

3. If an open-bottomed culvert is used in a stream with good, existing aquatic substrate (gravel, cobbles and boulders), the existing substrate should be left undisturbed. (USFWS letter dated September 23, 2009)

## SECTION K- EARLY COORDINATION

*Please list the date coordination was sent and all agencies that were contacted as a part of the development of this Environmental Study. Also, include the date of their response or indicate that no response was received.*

Remarks: Early coordination was initiated on May 22, 2009 with applicable federal, state, and local agencies (Appendix C.1). Additionally, re-coordination packets were sent to each agency on August 31, 2009 to address the inclusion of roundabouts at Haverstick Road, Aronson Dr. and Priority Way West Drive, as well as the addition of the Enterprise and Aronson-Priority connector roads and again on June 3, 2010 to address the Haver Way – Whitley Drive connector road, the reconstruction of Threel Road and the shifted roundabouts. Copies of the re-coordination packets are included as Appendix C.3 and C.5, respectively. Review comments from those agencies that returned a reply have been incorporated into this study, as appropriate. The agencies contacted and the date on which they replied is identified below.

| AGENCY | RESPONSE RECEIVED |
|---|---|
| USFWS, Bloomington Field Office | May 27, 2009<br>September 23, 2009<br>June 8, 2010 |
| USACE, Louisville District | |
| NRCS | May 27, 2009<br>September 16, 2009 |
| National Park Service, Midwest Regional Office | No Response |
| US Department of Housing & Urban Development | No Response |
| FHWA | No Response |
| IDNR, Division of Water | July 20, 2009<br>December 1, 2009<br>June 15, 2010<br>September 1, 2010 |
| IDEM | September 2, 2009 |
| IDEM, Groundwater Section | September 3, 2009 |
| Indiana Department of Transportation | -- |
| Greenfield District | No Response |
| Aeronautics Section | June 9, 2009<br>September 11, 2009 |
| Indiana Geological Survey | June 1, 2009<br>September 10, 2009 |
| Indianapolis Metropolitan Planning Organization | No Response |
| Hamilton County Engineer | No Response |
| Marion County Engineer | No Response |
| Hamilton County Drainage Board | September 2, 2009 |
| Marion County Storm Water Management District | June 10, 2010 |

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# Appendix A

INDOT Supporting Documentation

# Appendix A.1

# CE Threshold Chart

## Categorical Exclusion Level Thresholds

| | Level 1 | Level 2 | Level 3 | Level 4 |
|---|---|---|---|---|
| **Relocations** | None | ≤ 2 | > 2 | > 10 |
| **Right of way[1]** | < 0.5 acres | < 10 acres | ≥ 10 acres | ≥ 10 acres |
| **Length of added through lane** | None | < 1 miles | ≥ 1 mile | ≥ 1 mile |
| **Permanent Traffic pattern alteration** | None | None | Yes | Yes |
| **New alignment** | None | None | < 1 mile | ≥ 1 mile[2] |
| **Wetlands** | < 0.1 acres | < 1 acre | < 1 acre | ≥ 1 acre |
| **Stream Impacts*** | ≤ 300 linear feet of stream impacts, no work beyond 75 feet from pavement | > 300 linear feet impacts, or work beyond 75 feet from pavement | N/A | N/A |
| **Section 4(f)*** | None | None | None | Any impacts |
| **Section 6(f)** | None | None | Any impacts | Any impacts |
| **Section 106** | "No Historic Properties Affected" or falls within guidelines of Minor Projects PA | "No Adverse Effect" or "Adverse Effect" | N/A | If ACHP involved |
| **Noise Analysis Required** | No | No | Yes[3] | Yes[3] |
| **Threatened/Endangered Species*** | "Not likely to Adversely Affect", or Falls within Guidelines of USFWS 9/8/93 Programmatic Response | N/A | N/A | "Likely to Adversely Affect"[4] |
| **Sole Source Aquifer Groundwater Assessment** | Detailed Assessment Not Required | Detailed Assessment Not Required | Detailed Assessment Not Required | Detailed Assessment Required |
| **Approval Level**<br>• **ESM[5]**<br>• **ES[6]**<br>• **FHWA** | Yes | Yes | Yes<br>Yes | Yes<br>Yes<br>Yes |

*These thresholds have changed from the March 2009 Manual.
[1]Permanent and/or temporary right of way.
[2]If the length of the new alignment is equal to or greater than one mile, contact the FHWA's Air Quality/Environmental Specialist.
[3]In accordance with INDOT's Noise Policy.
[4]If the project is considered Likely to Adversely Affect Threatened and/or Endangered Species, INDOT and the FHWA should be consulted to determine whether a higher class of document is warranted.
[5]Environmental Scoping Manager
[6]Environmental Services

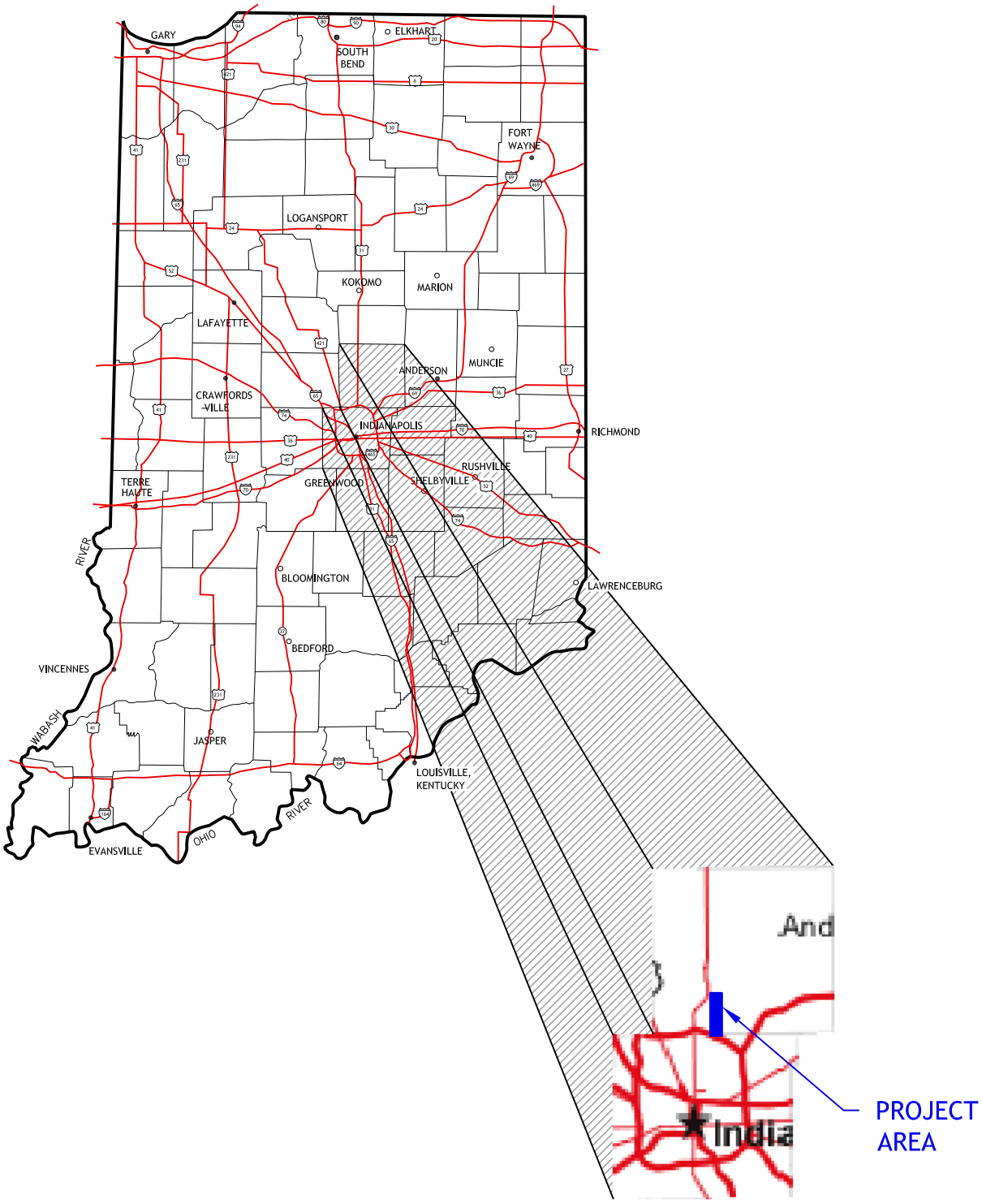
*Note - While the project meets the criteria to be considered a Level 3 Categorical Exclusion, the FHWA has determined to elevate the document to an Environmental Assessment in response to public comment.*

# Appendix B

Graphics

# Appendix B.1

# Maps of Project Area




96th AND KEYSTONE

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# LOCATION MAP

AUGUST 2009

B.1-1

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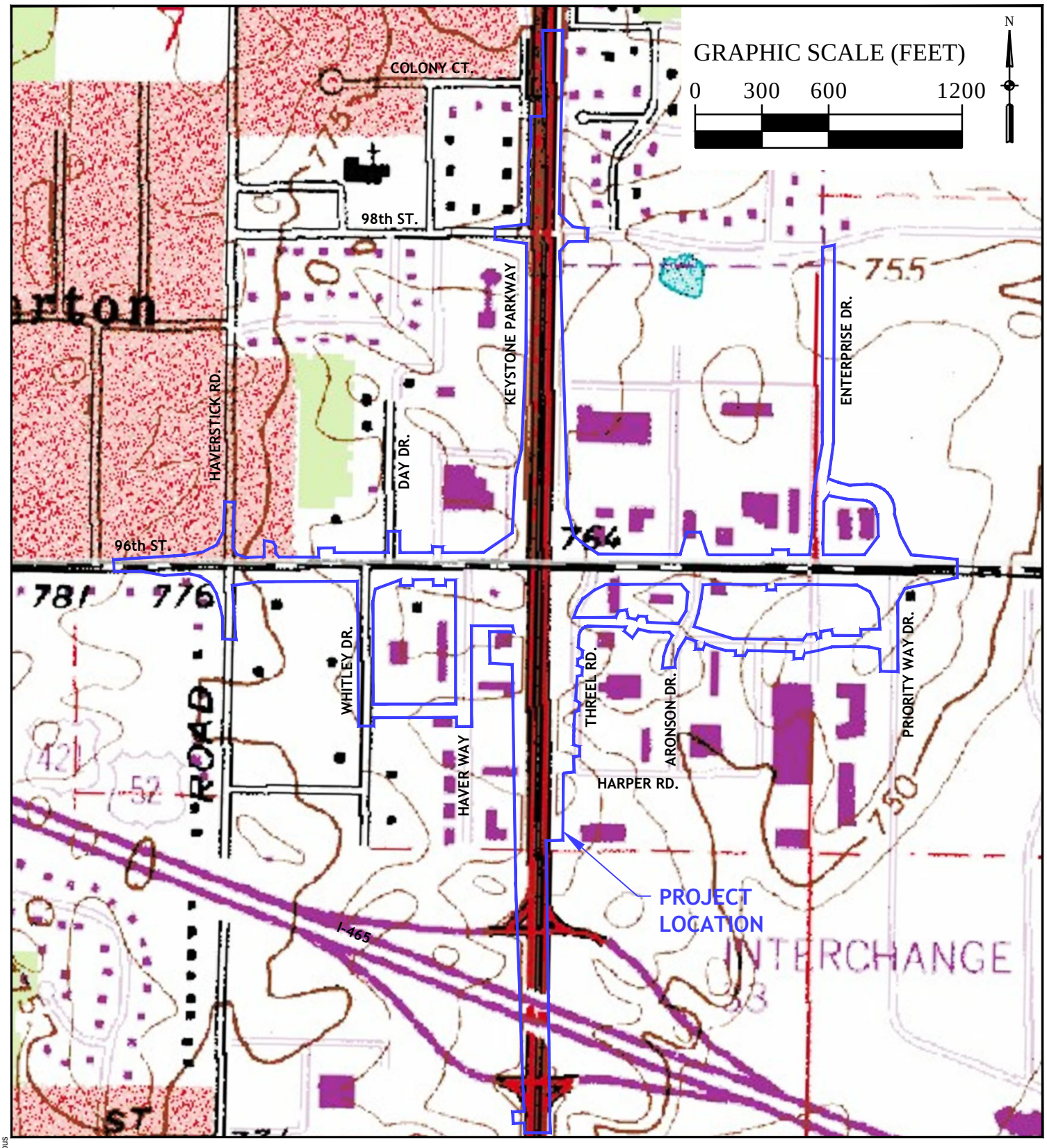


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Modified / By:

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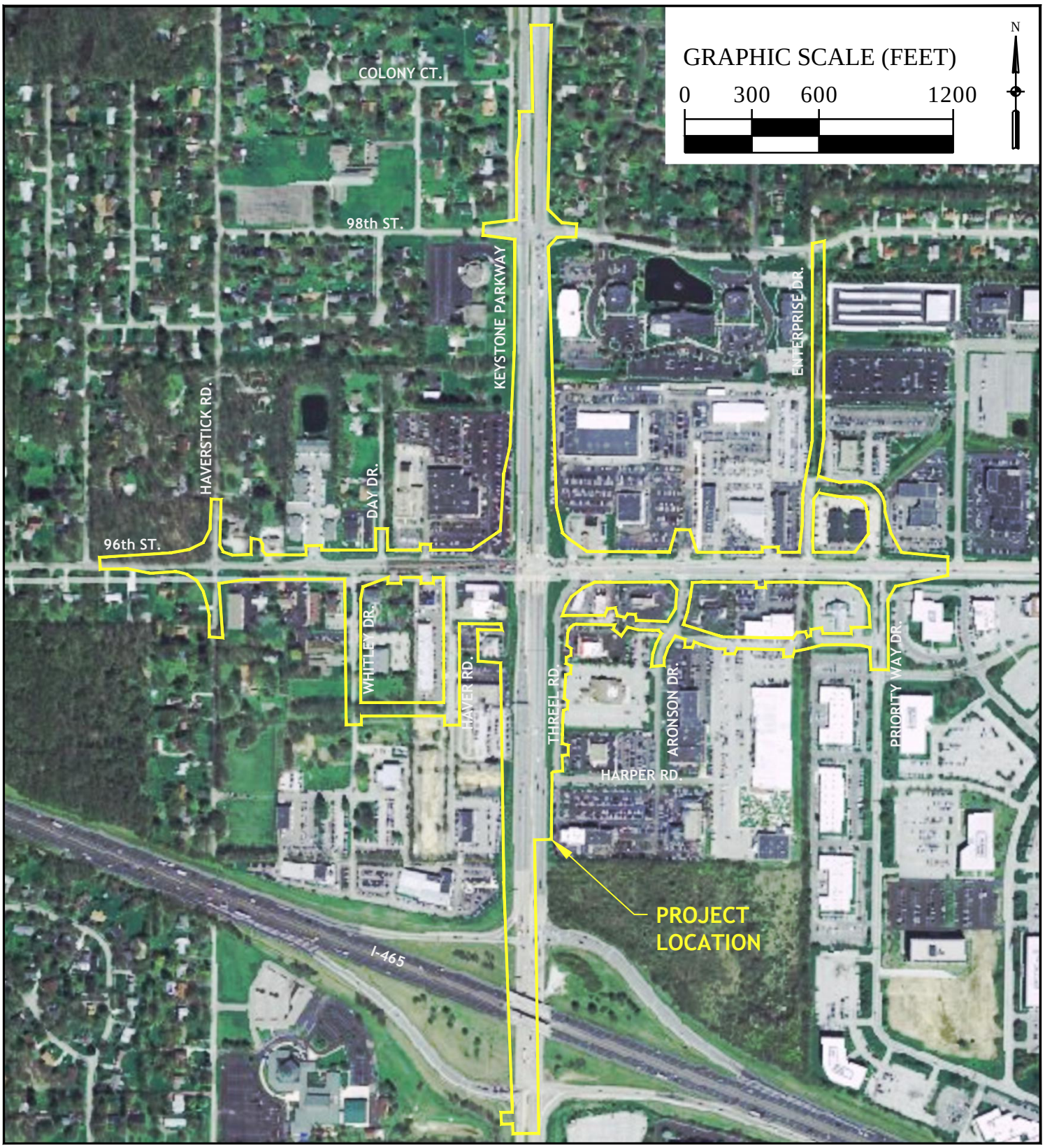
USGS 7.5 MINUTE QUADRANGLE MAP - FISHERS, IN

# USGS QUAD MAP

B.1-2

AUGUST 2009 - REV APRIL 2010 - REV JULY 2011 - REV DECEMBER 2011

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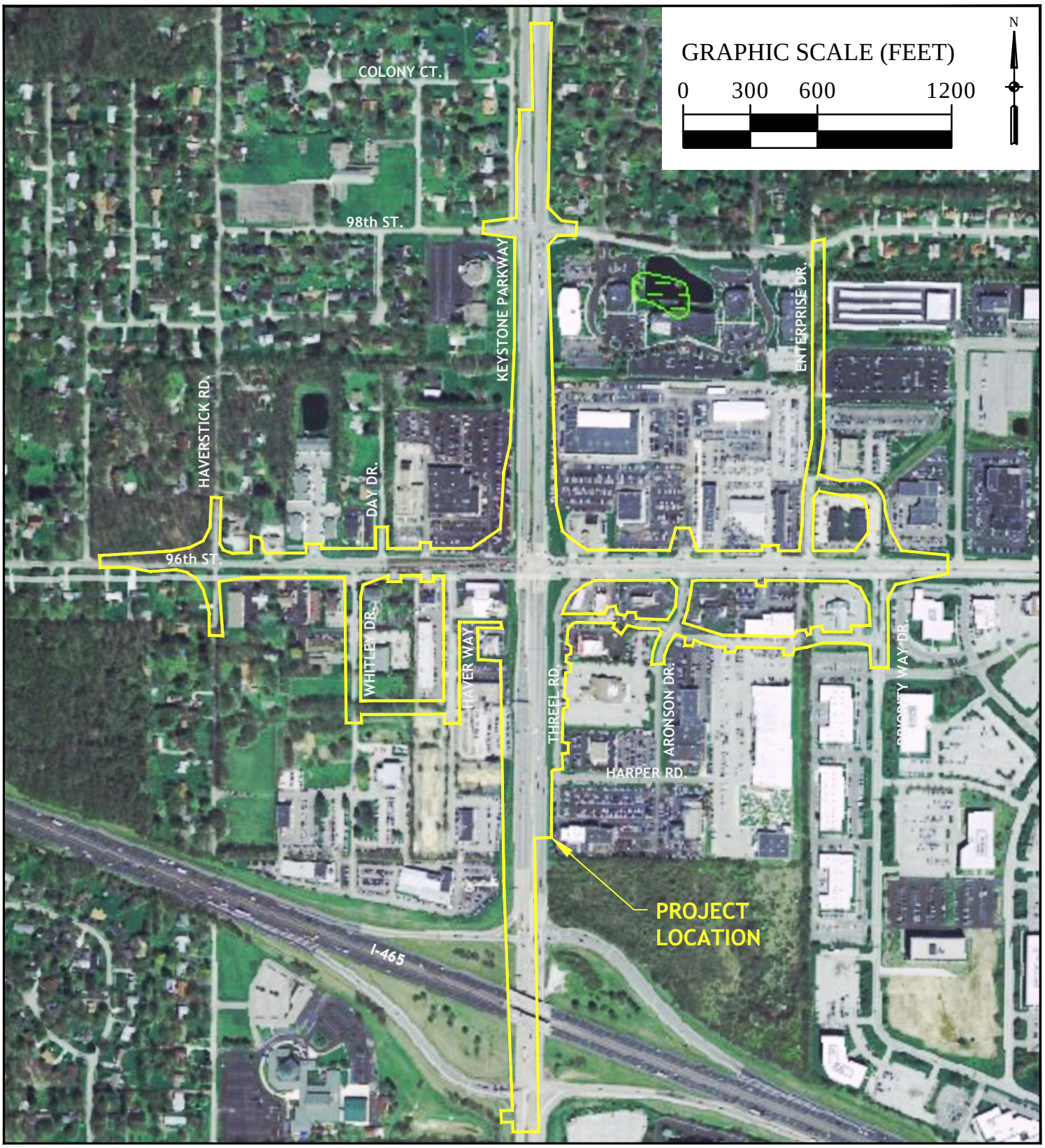
EXISTING TOPOGRAPHIC SURVEY

# AERIAL MAP

B.1-3

AUGUST 2009 - REV APRIL 2010 - REV JULY 2011 - REV DECEMBER 2011

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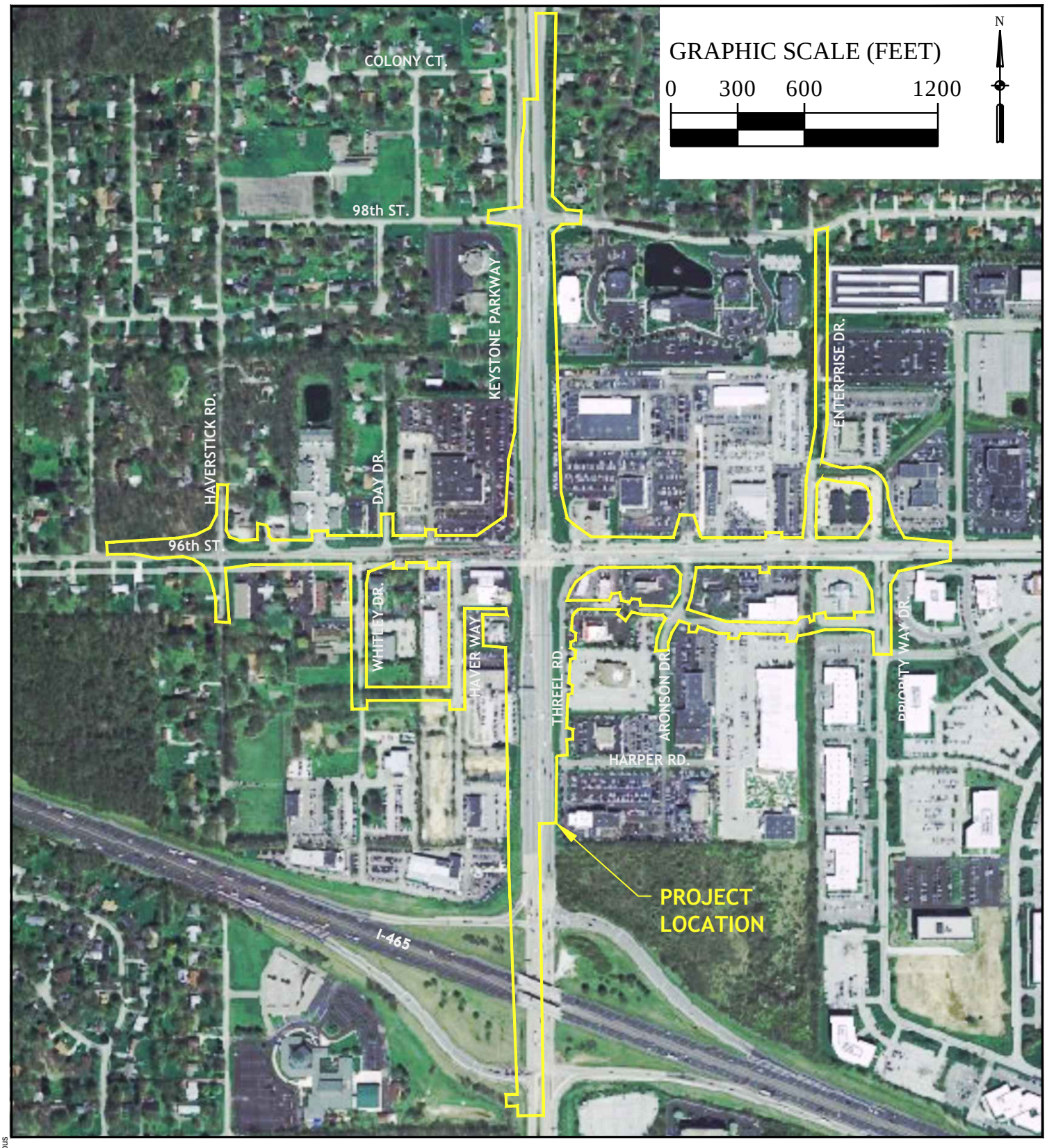
96TH AND KEYSTONE

2007 AERIAL PHOTOGRAPHY - USFWS

# NATIONAL WETLAND INVENTORY MAP

B.1-4

AUGUST 2009 - REV APRIL 2010 - REV JULY 2011 - REV DECEMBER 2011

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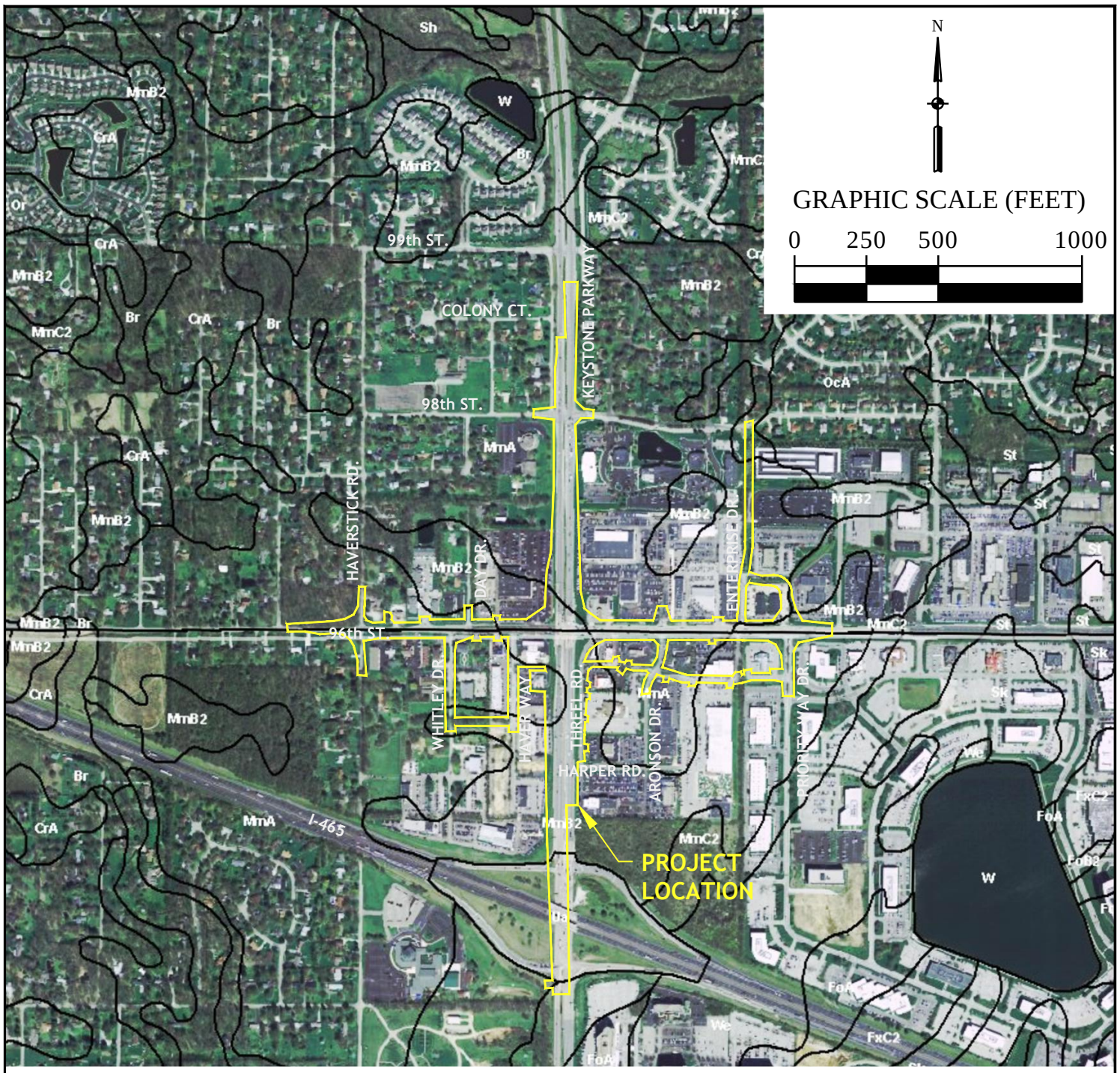
96TH AND KEYSTONE

FLOOD INSURANCE RATE MAP - MARION CO, IN
#10857C0236F/#18097C0061B

# FEMA FLOOD MAP

B.1-5

AUGUST 2009 - REV APRIL 2010 - REV JULY 2011 - REV DECEMBER 2011




| MAP UNIT | MAP UNIT NAME | DRAINAGE RATING | HYDRIC |
|---|---|---|---|
| MmA | Miami Silt Loam, 0 to 2 Percent Slopes | Moderately Well Drained | No |
| MmB2 | Miami Silt Loam, 2 to 6 Percent Slopes, Eroded | Moderately Well Drained | No |
| CrA | Crosby Silt Loam, 0 to 3 Percent Slopes | Somewhat Poorly Drained | No |
| OcA | Okley Silt Loam, 0 to 2 Percent Slopes | Well Drained | No |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96TH AND KEYSTONE

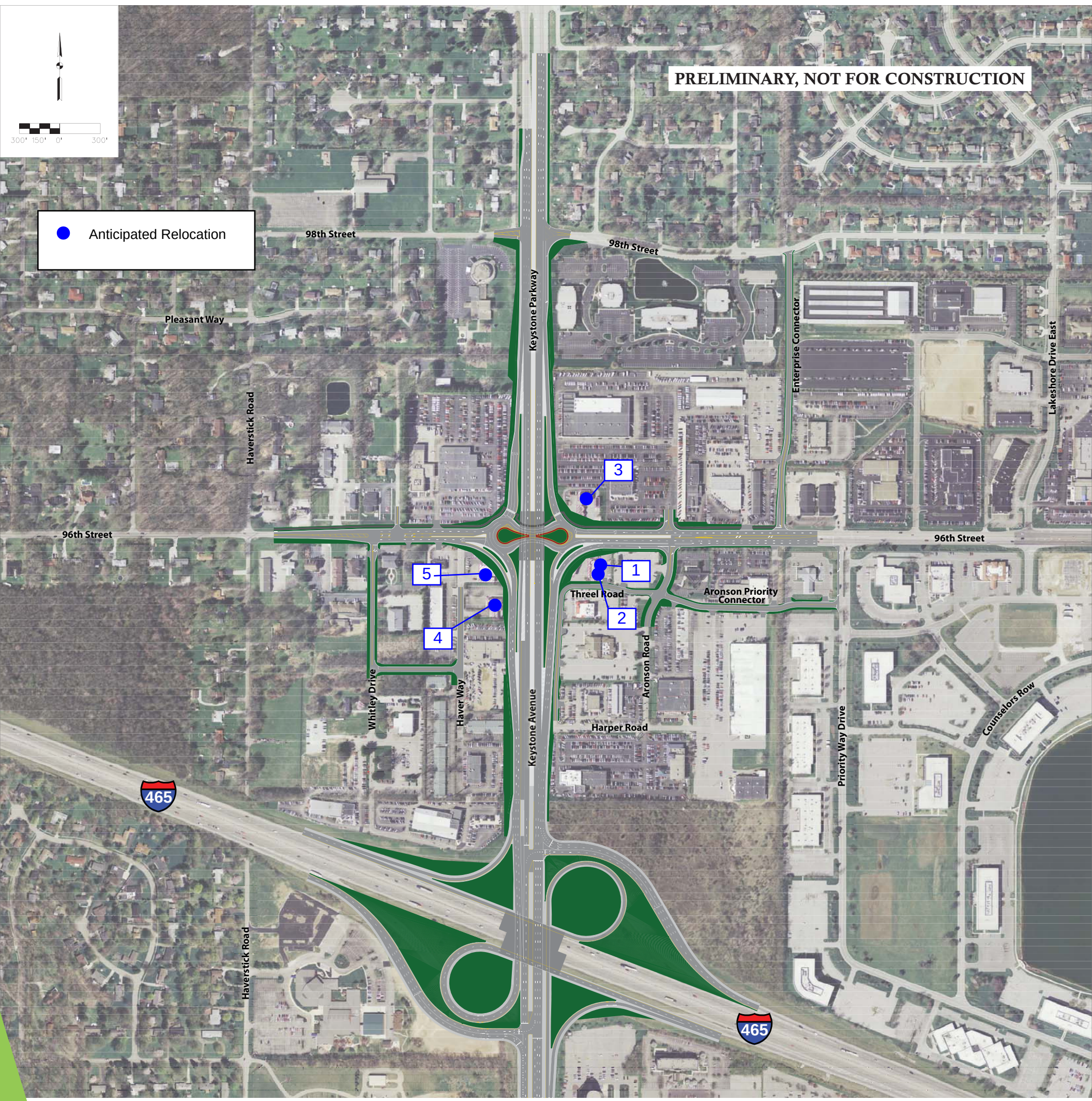
2007 AERIAL PHOTOGRAPHY - NRCS

# SOIL SURVEY GEOGRAPHIC MAP

AUGUST 2009 - REV APRIL 2010 - REV JUY 2011 - REV DECEMBER 2011



File Name: P:\Transportation\20075030 Keystone Parkway\60 Environmental\20 EarlyCoordination\DEC 2011\SOIL-MAP.dwg - SOIL
Modified / By: December 13, 2011 2:58:31 PM / cmabus

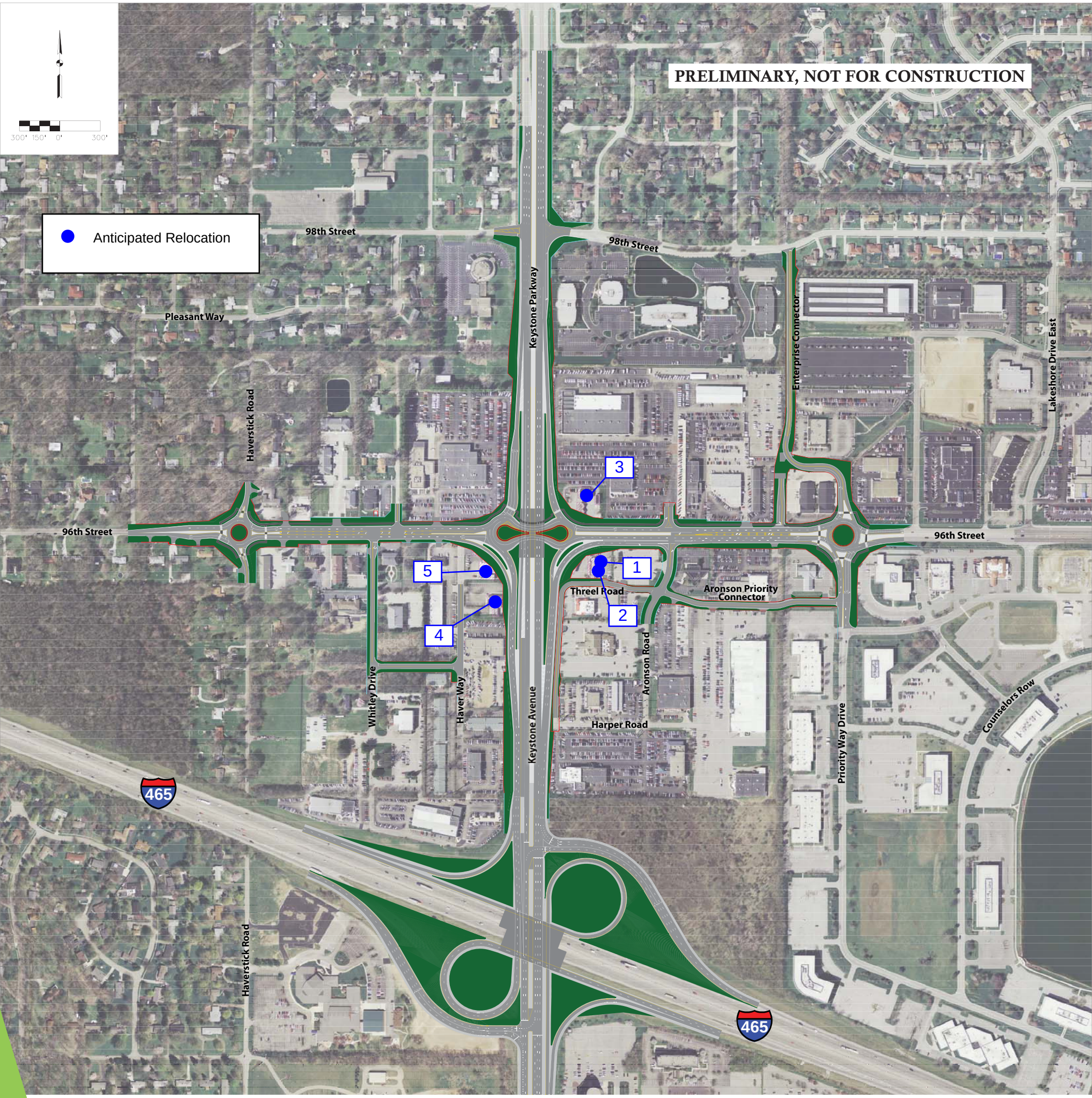



# PROPOSED PROJECT

96th Street & Keystone Parkway Interchange

DISPLAY MATERIALS

DECEMBER 28, 2011

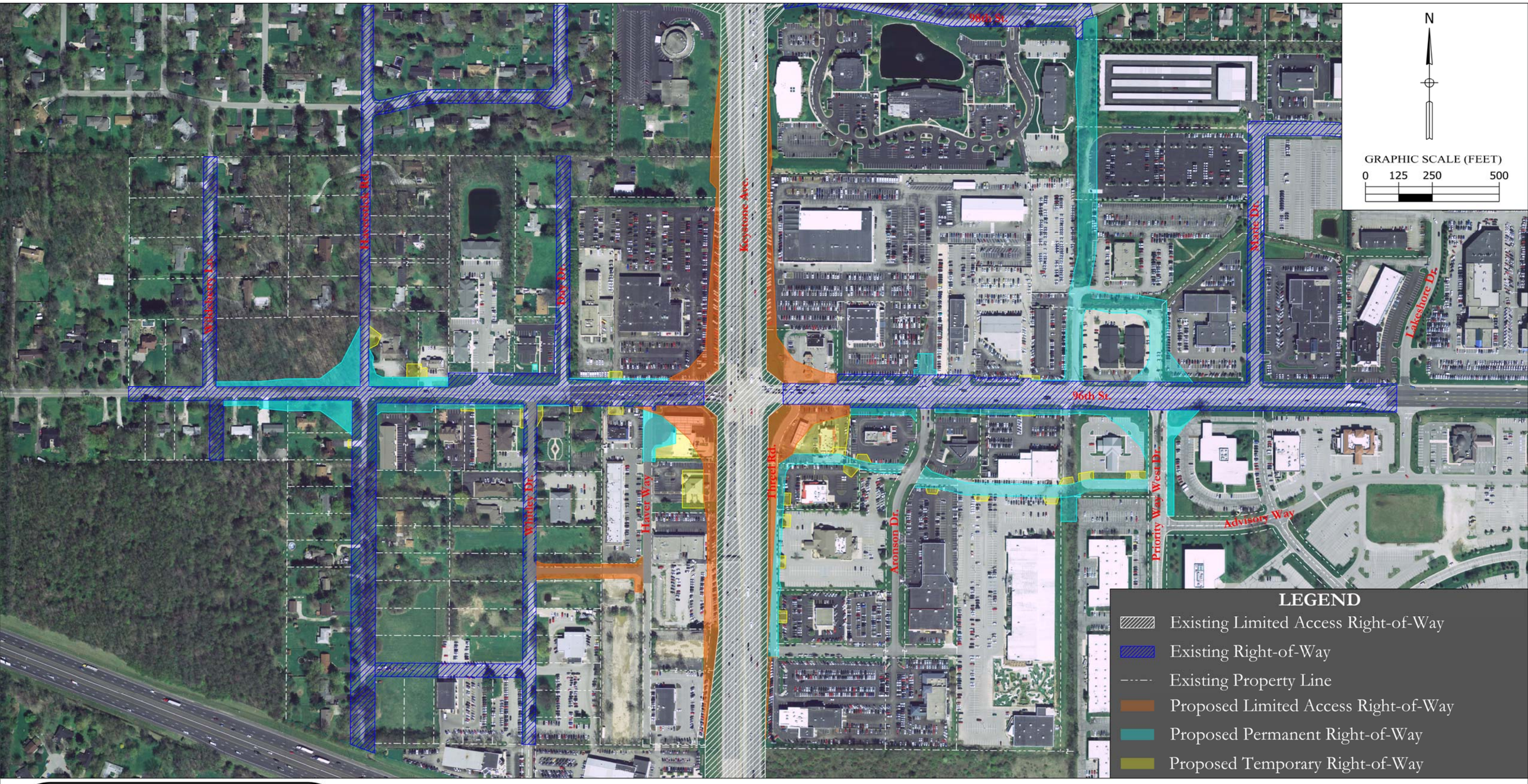



# FUTURE IMPROVEMENTS

96th Street & Keystone Parkway Interchange

DISPLAY MATERIALS

DECEMBER 28, 2011

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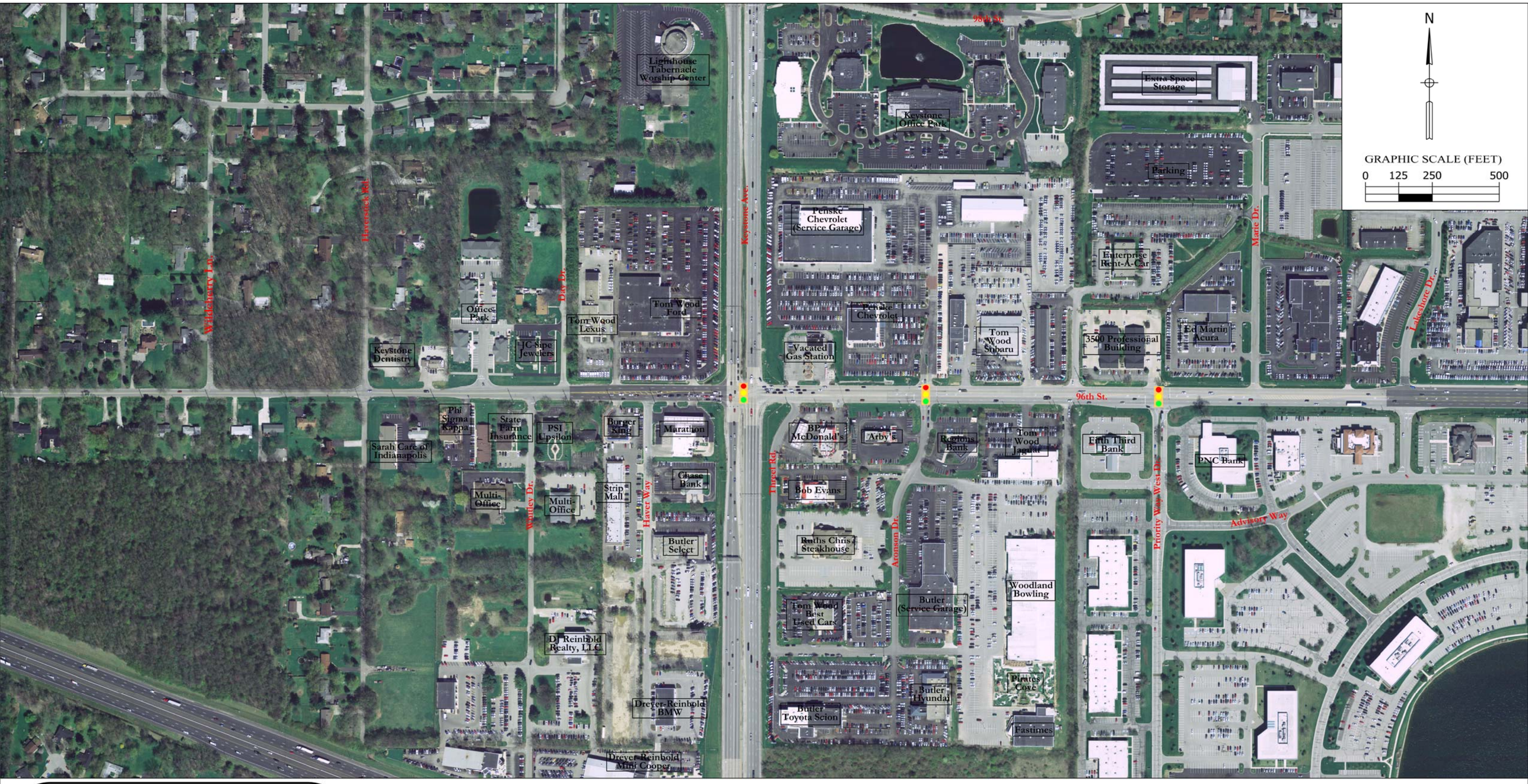
CITY OF CARMEL

96TH STREET & KEYSTONE PARKWAY INTERCHANGE (DES. NO. 0901562)

# PRELIMINARY RIGHT-OF-WAY REQUIREMENTS

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96TH STREET & KEYSTONE PARKWAY INTERCHANGE (DES. NO. 0901562)

# EXISTING CONDITIONS

# Appendix B.2

# Photographs of Project Area

**Photograph 1**

View looking south along Keystone Avenue from the 96th Street intersection.

**Photograph 2**

View looking north along Keystone Avenue from the 96th Street intersection.

**Photograph 3**

View looking west along 96th Street through the Keystone Avenue intersection.

**Photograph 4**

View looking east along 96th Street through the Keystone Avenue intersection.

**Photograph 5**

Former gas station located in the northeast quadrant of the Keystone Avenue and 96th Street intersection.

**Photograph 6**

Land use in the southeast quadrant of the Keystone Avenue and 96th Street intersection.

**Photograph 7**

Land use in the northwest quadrant of the Keystone Avenue and 96th Street intersection.

**Photograph 8**

Land use in the southwest quadrant of the Keystone Avenue and 96th Street intersection.

**Photograph 9**

Typical side ditches along Keystone Avenue.

**Photograph 10**

View looking west along 96th Street from a point east of the Priority Way West Drive intersection.

**Photograph 11**

View looking north along Priority Way West Drive through the 96th Street intersection.

**Photograph 12**

View looking north along Enterprise Drive Street from 96th Street.

**Photograph 13**

View looking west along 96th Street from the Aronson Drive intersection.

**Photograph 14**

View looking east along 96th Street from the Aronson Drive intersection.

**Photograph 15**

View looking south along Aronson Drive through the 96th Street intersection.

**Photograph 16**

View looking north along Aronson Drive through the 96th Street intersection.

**Photograph 17**

Typical land use along the east leg of 96th Street.

**Photograph 18**

View looking west along a side ditch that borders 96th Street.

**Photograph 19**

View looking east along 96th Street from the Haver Way intersection.

**Photograph 20**

View looking south along Day Drive through the 96th Street intersection.

**Photograph 21**

View looking north along Whitley Drive through the 96th Street intersection.

**Photograph 22**

View looking east along 96th Street from the Haverstick Road intersection.

**Photograph 23**

Typical land use along the west leg of 96th Street.

**Photograph 24**

Typical land use along the west leg of 96th Street.

**Photograph 25**

Typical side ditches along the west leg of 96th Street.

**Photograph 26**

View looking north along Keystone Avenue from a point north of the northern I-465 ramp terminal.

**Photograph 27**

Typical land use along the south leg of Keystone Avenue.

**Photograph 28**

Typical land use along the south leg of Keystone Avenue.

**Photograph 29**

View looking south along Keystone Avenue from the 98th Street intersection.

**Photograph 30**

View looking north along Keystone Avenue from the 98th Street intersection.

**Photograph 31**

View looking west along 98th Street through the Keystone Avenue intersection.

**Photograph 32**

View looking east along 98th Street through the Keystone Avenue intersection.

**Photograph 33**

View looking south along Keystone Avenue from the 99th Street intersection.

**Photograph 34**

View looking west along proposed route of the east-west connector from Priority Way West Drive.

**Photograph 35**

View looking north along Priority Way West Drive from the proposed east-west connector.

**Photograph 36**

View looking east along proposed route of the east-west connector from Aronson Drive.

**Photograph 37**

View looking north along Aronson Drive from the proposed east-west connector.

**Photograph 38**

View looking north along the route of the proposed north-south connector from 96th Street.

**Photograph 39**

View looking south along the route of the proposed north-south connector from the north bank of an ephemeral stream.

**Photograph 40**

Looking west along an ephemeral stream toward the proposed crossing of the north-south connector.

**Photograph 41**

Looking east along an ephemeral stream toward the proposed crossing of the north-south connector.

**Photograph 42**

Looking west along an ephemeral stream from near the proposed crossing of the north-south connector.

**Photograph 43**

Looking north along the proposed route of the north-south connector from the south bank of an ephemeral stream.

**Photograph 44**

Looking east along the proposed route of the north-south connector from the western most horizontal curve.

**Photograph 45**

Looking north along the proposed route of the north-south connector from the western most horizontal curve.

**Photograph 46**

Looking south along an ephemeral stream located near 98th Street.

**Photograph 47**

Looking south along the proposed route of the north-south connector toward the northern most ephemeral stream.

**Photograph 48**

Looking south along the proposed route of the north-south connector from 98th Street.

**Photograph 49**

Looking west along 98th Street from the proposed intersection with the north-south connector.

**Photograph 50**

Looking east along 98th Street from the proposed intersection with the north-south connector.

**Photograph 51**

Land use in the southwest quadrant of 98th Street and the north-south connector.

**Photograph 52**

View looking west across Aronson Drive along the proposed route of Threel Road.

**Photograph 53**

View looking east from Threel Road along its proposed route to Aronson Drive.

**Photograph 54**

Looking north along existing Threel Road toward 96th Street from the point in the previous picture.

**Photograph 55**

Looking south along Threel Road from the point in the previous picture.

**Photograph 56**

Looking south along Haver Way from 96th Street.

**Photograph 57**

Looking north along Haver Way toward 96th Street and the proposed location of a cul-de-sac.

**Photograph 58**

View looking west from Haver Way along the proposed route of the Haver-Whitley connector road.

**Photograph 59**

View looking east from Whitley Drive along the proposed route of the Haver-Whitley connector road.

**Photograph 60**

View looking north along Whitley Drive from the proposed Haver-Whitley connector road.

**Photograph 61**

View looking north along Haverstick Road from 96th Street.

**Photograph 62**

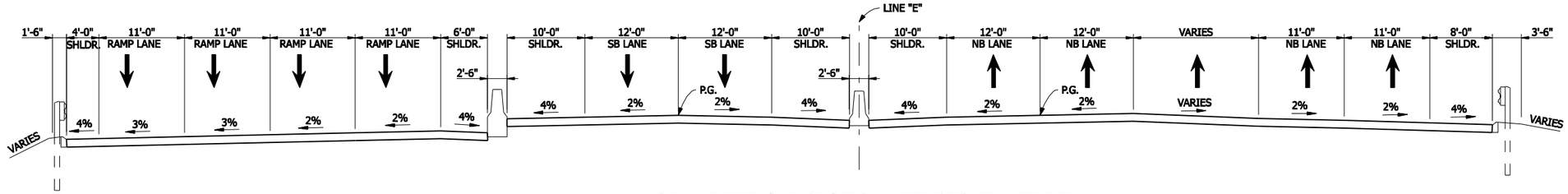
View looking west along 96th Street from a point east of the Haverstick Road intersection.

**Photograph 63**

Forested tract located in the northwest quadrant of the 96th Street and Haverstick Road intersection.

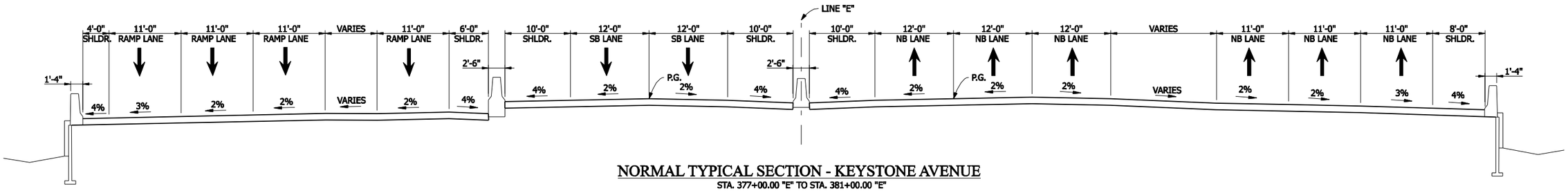
# Appendix B.3

## Plans – Immediate Project



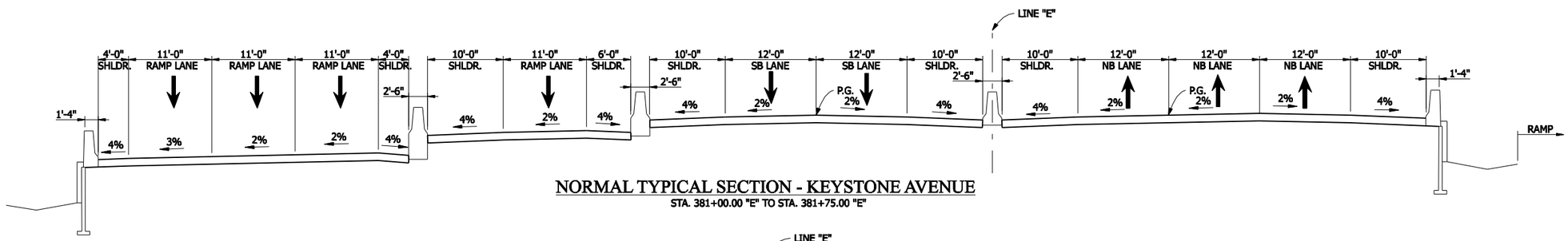

NORMAL TYPICAL SECTION - KEYSTONE AVENUE

STA. 374+50.00 "E" TO STA. 377+00.00 "E"



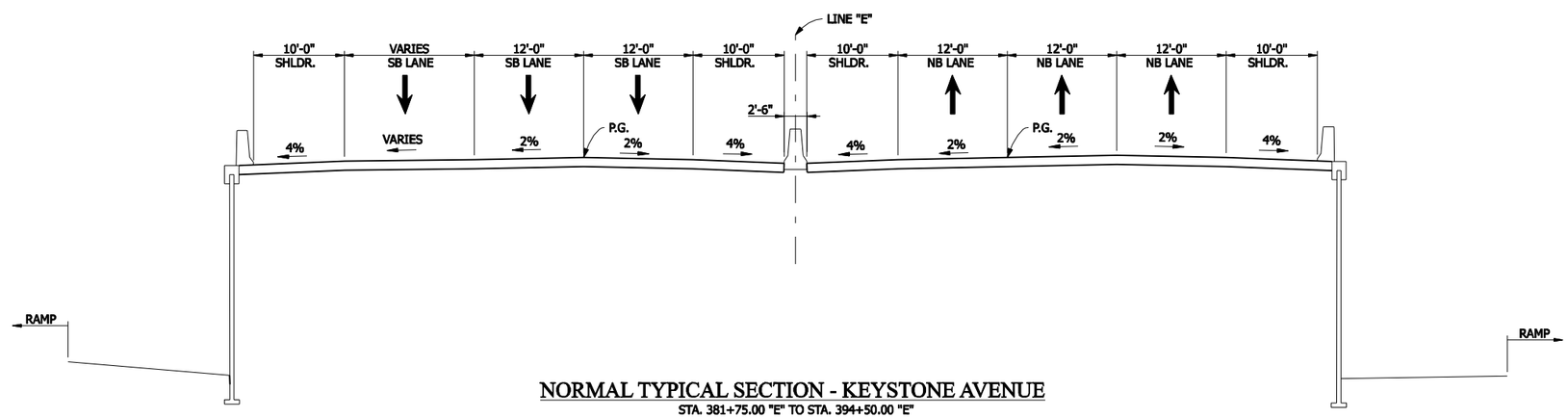

NORMAL TYPICAL SECTION - KEYSTONE AVENUE

STA. 377+00.00 "E" TO STA. 381+00.00 "E"




NORMAL TYPICAL SECTION - KEYSTONE AVENUE

STA. 381+00.00 "E" TO STA. 381+75.00 "E"




NORMAL TYPICAL SECTION - KEYSTONE AVENUE

STA. 381+75.00 "E" TO STA. 394+50.00 "E"

| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/8" = 1'-0" / VERTICAL SCALE |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS KEYSTONE AVENUE - LINE "E" | SURVEY BOOK |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD |

| | |
|---|---|
| BRIDGE FILE | TBD |
| DESIGNATION | 0901562 |
| SHEET | . of . |
| PROJECT | 0901562 |

By: THansen

Plotted on 7/15/2011 at 05:10 PM

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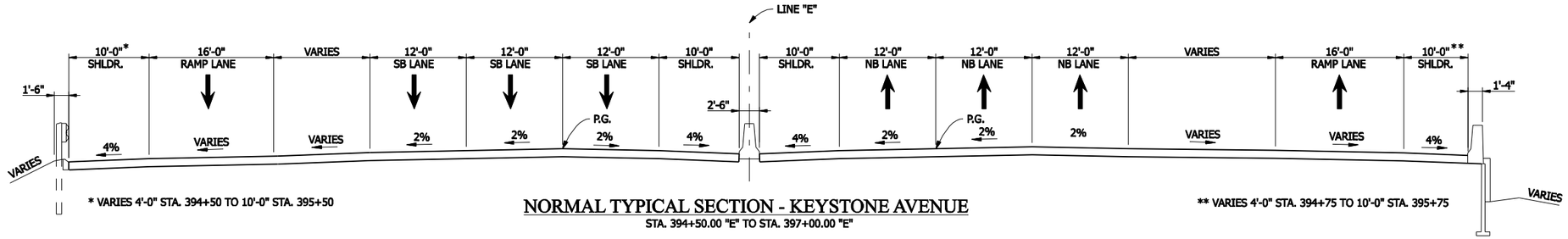
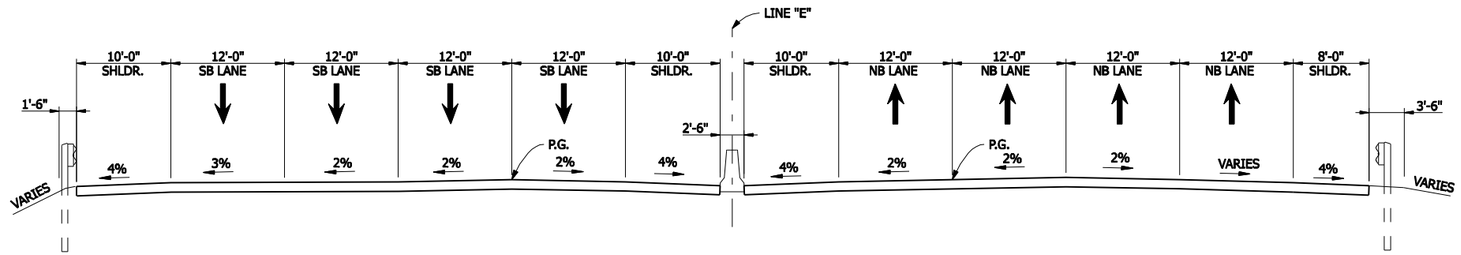



* VARIES 4'-0" STA. 394+50 TO 10'-0" STA. 395+50

## NORMAL TYPICAL SECTION - KEYSTONE AVENUE

STA. 394+50.00 "E" TO STA. 397+00.00 "E"

** VARIES 4'-0" STA. 394+75 TO 10'-0" STA. 395+75

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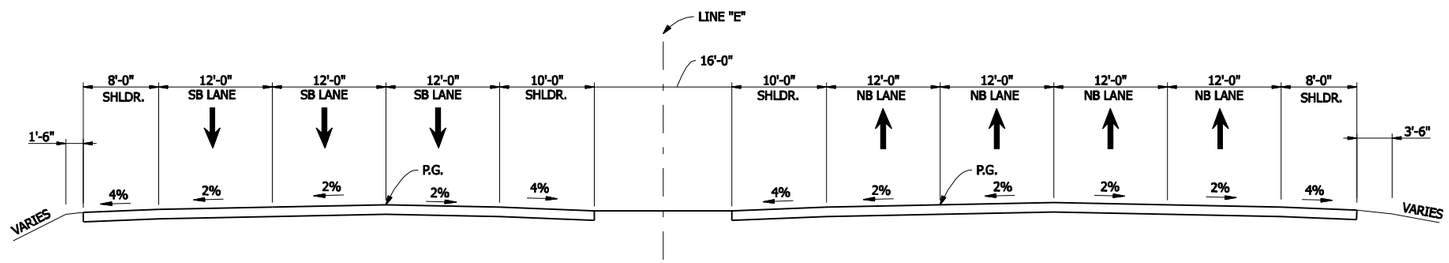
STA. 397+00.00 "E" TO STA. 405+00.00 "E"

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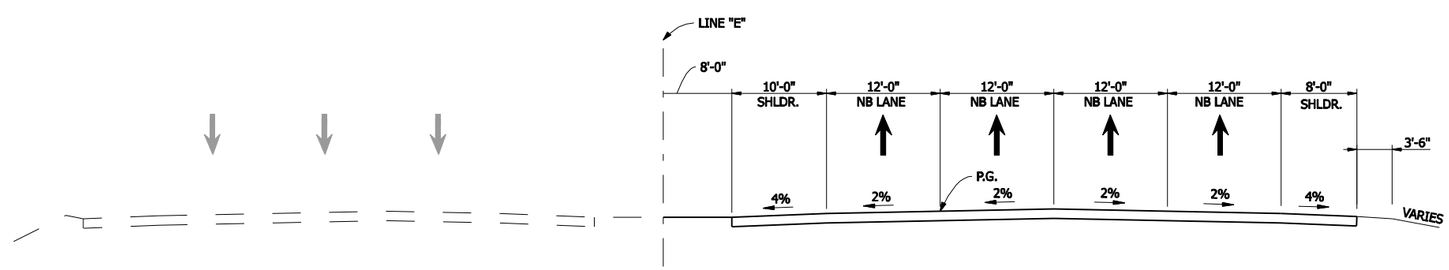
STA. 405+00.00 "E" TO STA. 407+00.00 "E"




## NORMAL TYPICAL SECTION - KEYSTONE AVENUE

STA. 407+00.00 "E" TO END LINE "E"

By: Thiessen

Plotted on 7/15/2011 at 05:10 PM

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| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/8" = 1'-0" / VERTICAL SCALE |
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| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD |

| BRIDGE FILE | SHEET |
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| TBD | . of . |
| DESIGNATION | PROJECT |
| 0901562 | 0901562 |

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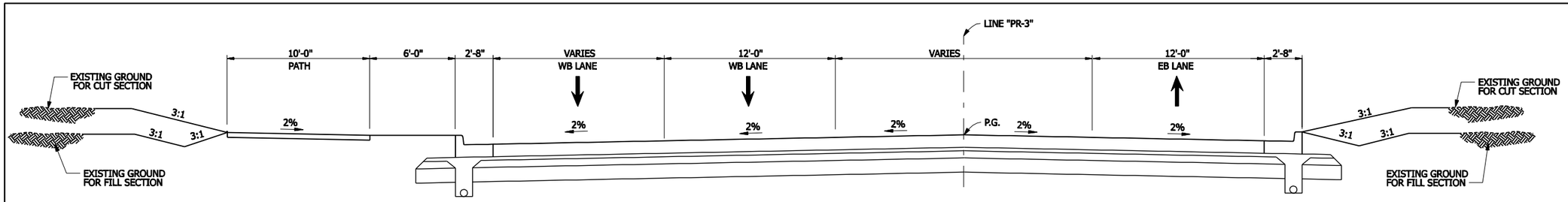


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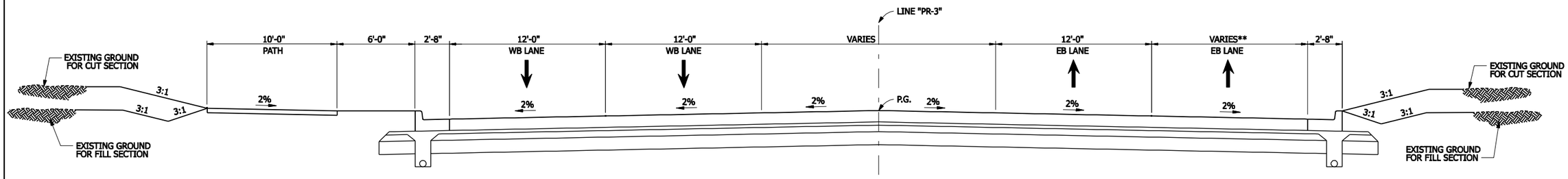
BEGIN LINE "PR-3" TO STA. 10+00.00 "PR-3"

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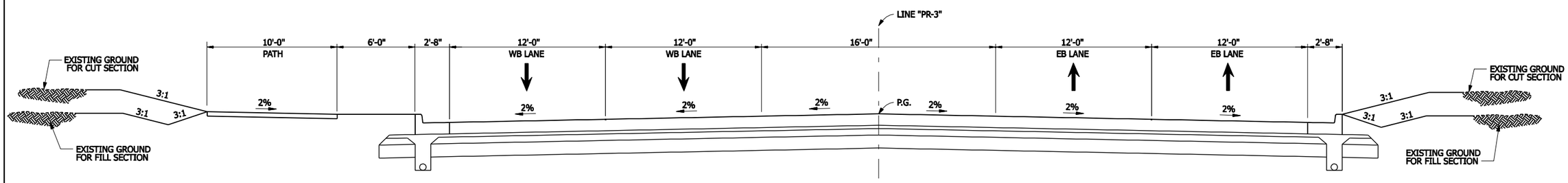
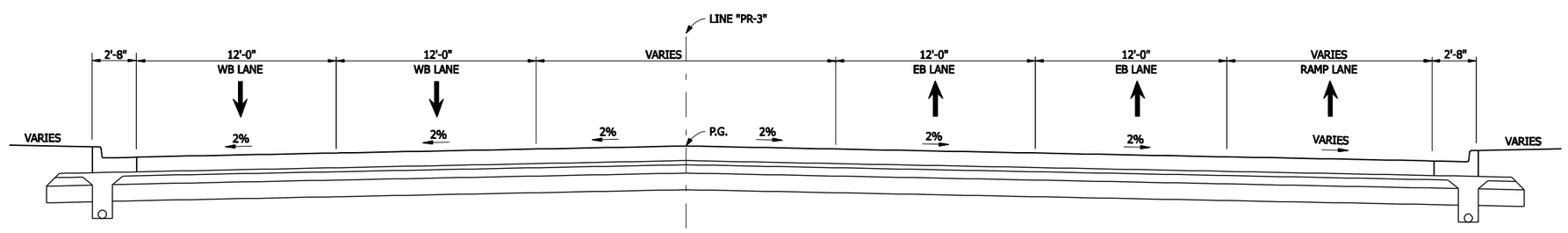



## NORMAL TYPICAL SECTION - 96th STREET

STA. 11+00.00 "PR-3" TO STA. 15+62.37 "PR-3"




## NORMAL TYPICAL SECTION - 96th STREET

STA. 15+62.37 "PR-3" TO STA. 17+72.36 "PR-3"

By: Thiessen

Plotted on 7/15/2011 at 05:10 PM

| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" / VERTICAL SCALE |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS 96th STREET - LINE "3" | SURVEY BOOK |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD |

| BRIDGE FILE | SHEET |
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| TBD | . of . |
| DESIGNATION | PROJECT |
| 0901562 | 0901562 |

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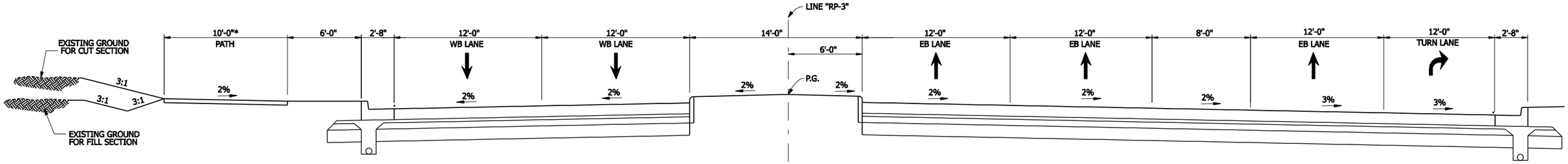


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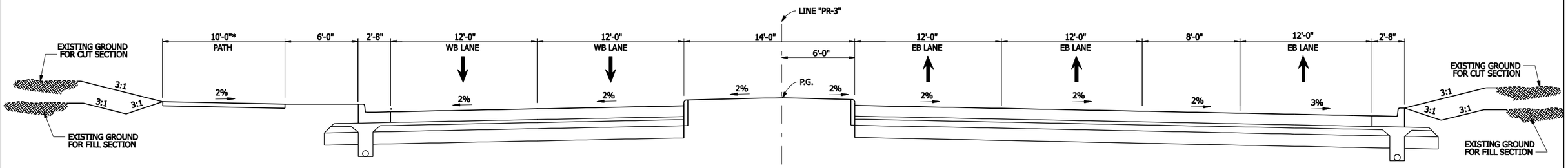
STA. 22+11.86 "PR-3" TO STA. 26+68.30 "PR-3"

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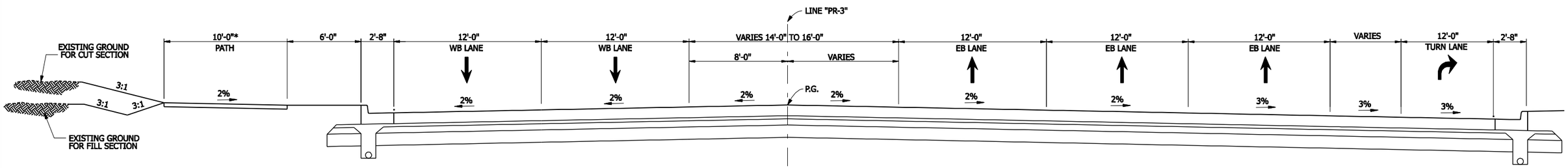
STA. 26+90.00 "PR-3" TO STA. 28+50.00 "PR-3"

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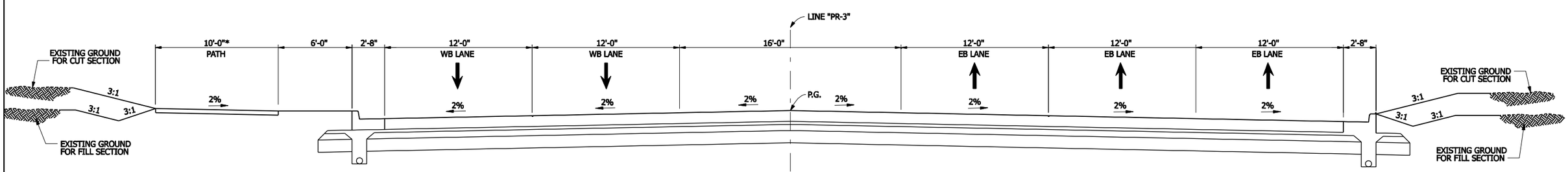


## NORMAL TYPICAL SECTION - 96th STREET

STA. 29+50.00 "PR-3" TO END LINE "PR-3"

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| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
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| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 090156 |

By: Thiessen

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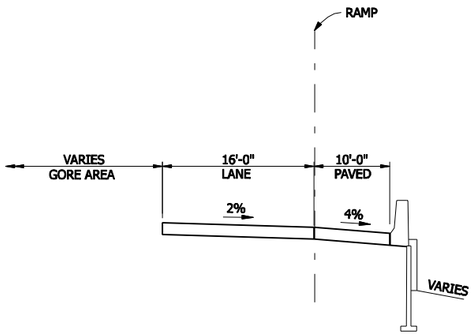


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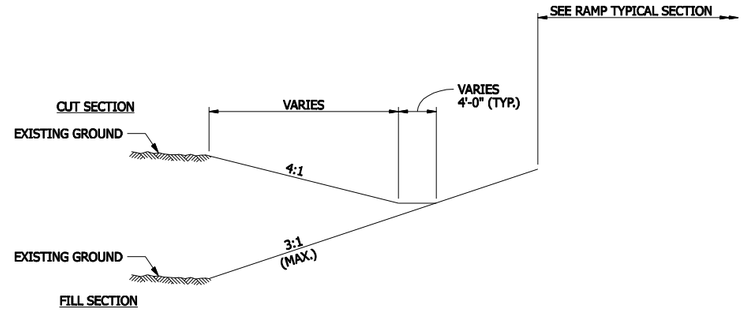
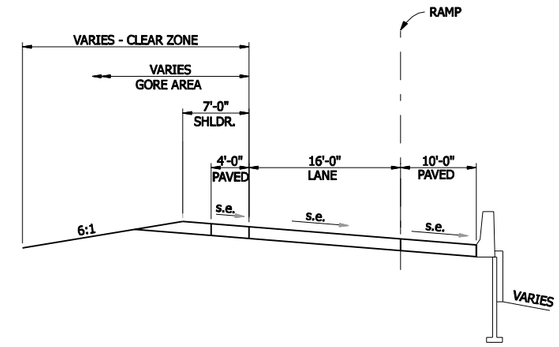
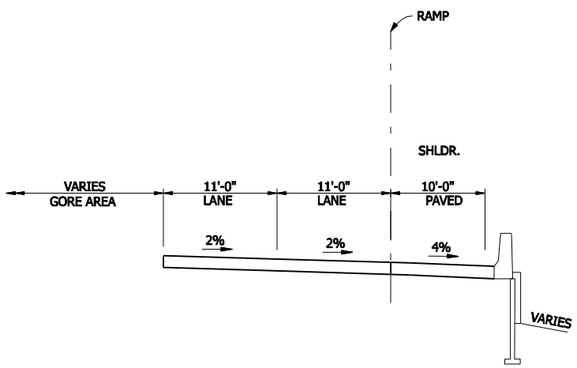


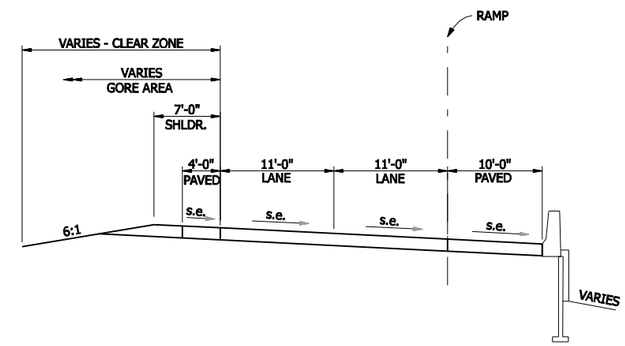

TYPICAL RAMP GRADING



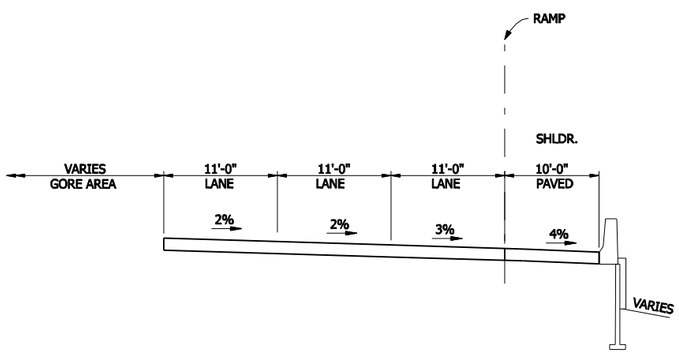

SUPERELEVATED TYPICAL RAMP SECTION



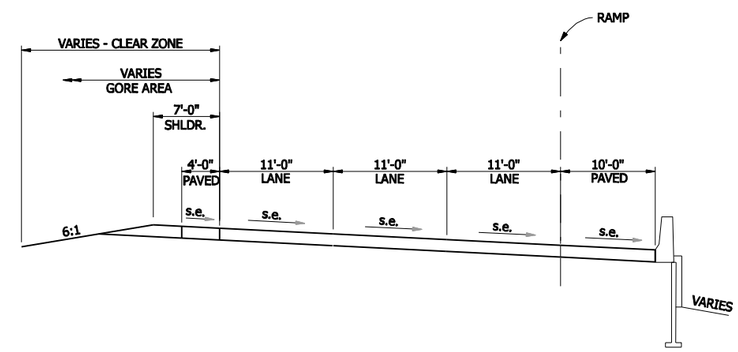

NORMAL TYPICAL DOUBLE LANE RAMP SECTION




SUPERELEVATED TYPICAL DOUBLE RAMP SECTION




NORMAL TYPICAL TRIPLE LANE RAMP SECTION




SUPERELEVATED TYPICAL TRIPLE LANE RAMP SECTION

By: Thiessen

Plotted on 7/15/2011 at 05:10 PM

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|---|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/8" = 1'-0" | BRIDGE FILE TBD |
| | | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS SINGLE AND DUAL LANE RAMP | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD | PROJECT 090156 |

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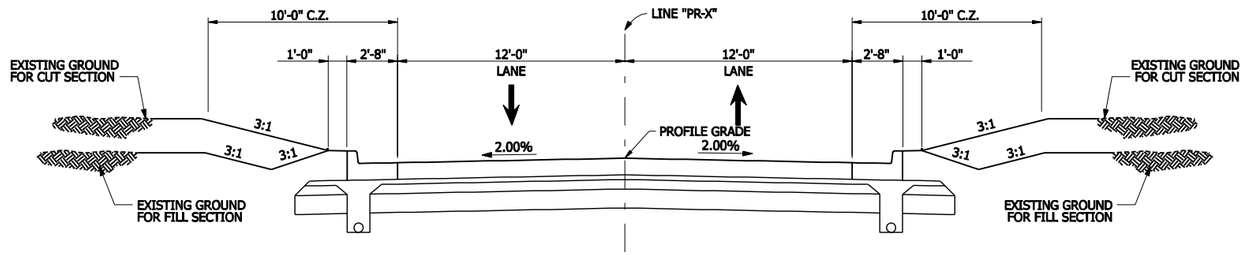
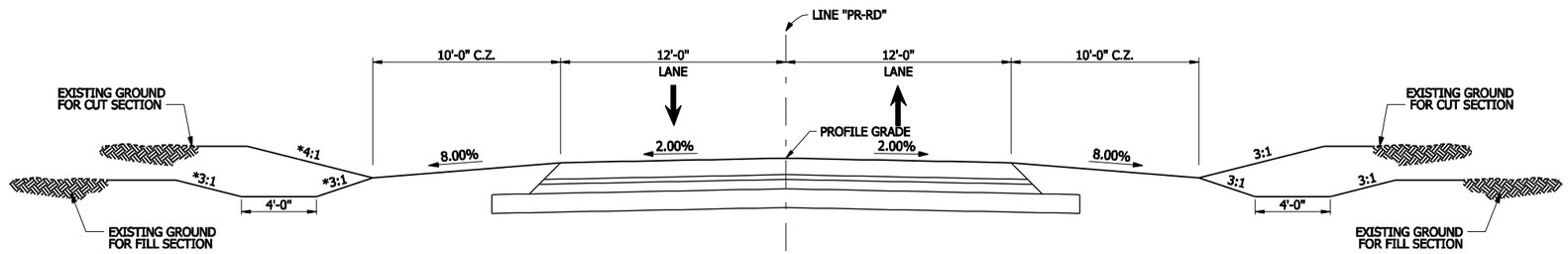


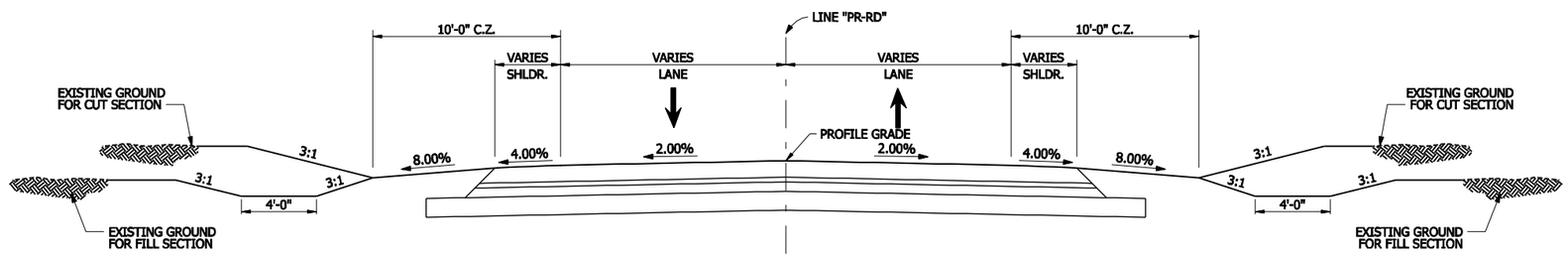

## NORMAL TYPICAL SECTION - ARONSON DRIVE

STA. 15+31.39 LINE "PR-X" TO STA. 19+50.15 LINE "PR-X"




## NORMAL TYPICAL SECTION - 98th STREET

STATION 13+00 LINE "PR-RD" TO STA. 14+12.00 LINE "PR-RD"

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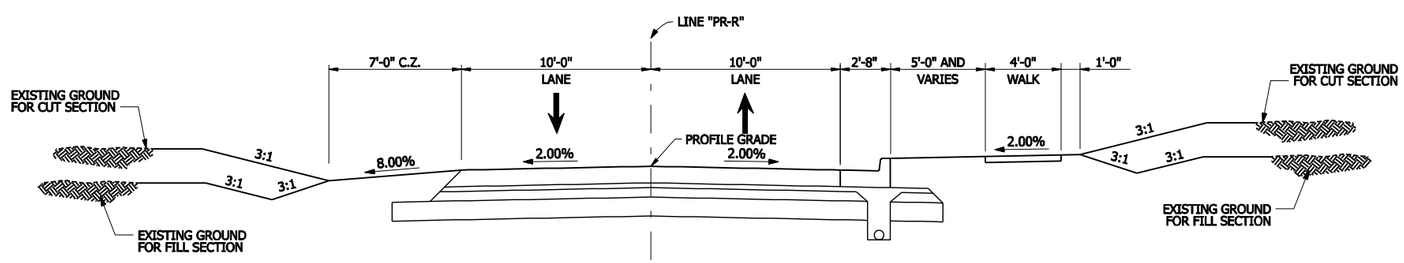
STATION 14+12.00 LINE "PR-RD" TO END LINE "PR-RD"




## NORMAL TYPICAL SECTION - DAY DRIVE

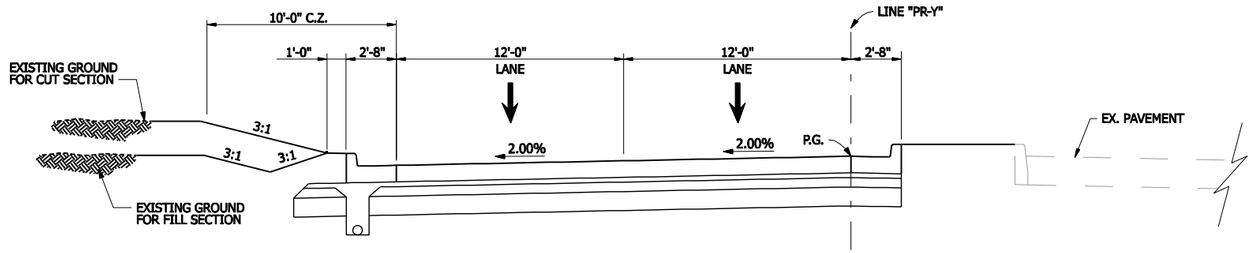
BEGIN LINE "PR-R" TO END LINE "PR-R"

| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" / VERTICAL SCALE |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS SIDE ROADS | SURVEY BOOK |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD |

| | |
|---|---|
| BRIDGE FILE | TBD |
| DESIGNATION | 0901562 |
| SHEET | . of . |
| PROJECT | 090156 |

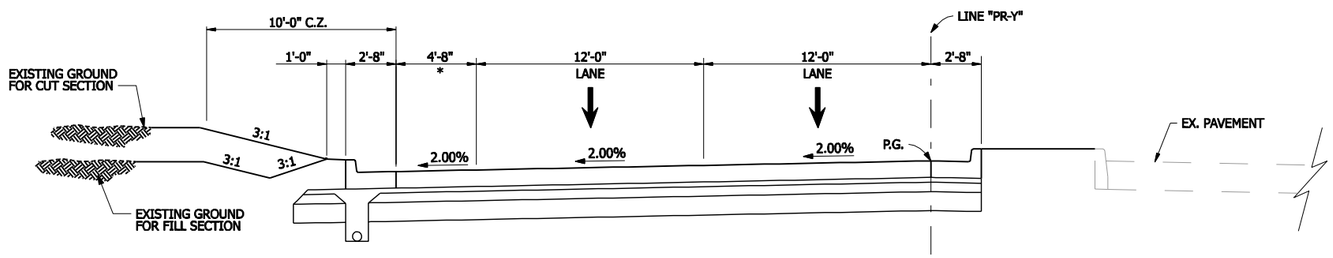
Model: R-TYP_SIDEROADS Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\20 singles\R-TYP.dgn

Plotted on 7/15/2011 at 05:10 PM By: THansen




NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

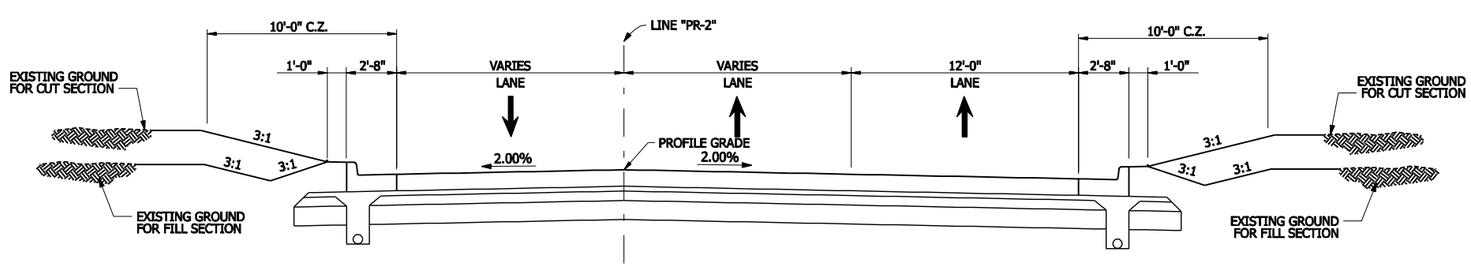
STA. 8+74.60 LINE "PR-Y" TO STA. 9+49.16 LINE "PR-Y"




NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

STA. 9+49.16 LINE "PR-Y" TO STA. 10+95.82 LINE "PR-Y"

* VARIES 0'-0" TO 4'-8"
STA. 9+49.16 LINE "PR-Y" TO STA. 9+82.31 LINE "PR-Y"




NORMAL TYPICAL SECTION - ARONSON DRIVE

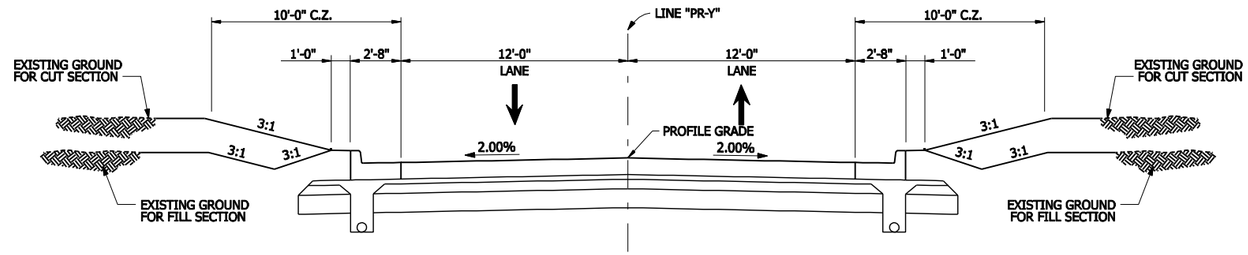
STA. 8+50.00 LINE "PR-2" TO STA. 9+68.25 LINE "PR-2"

By: Thiessen

Plotted on 7/15/2011 at 05:10 PM

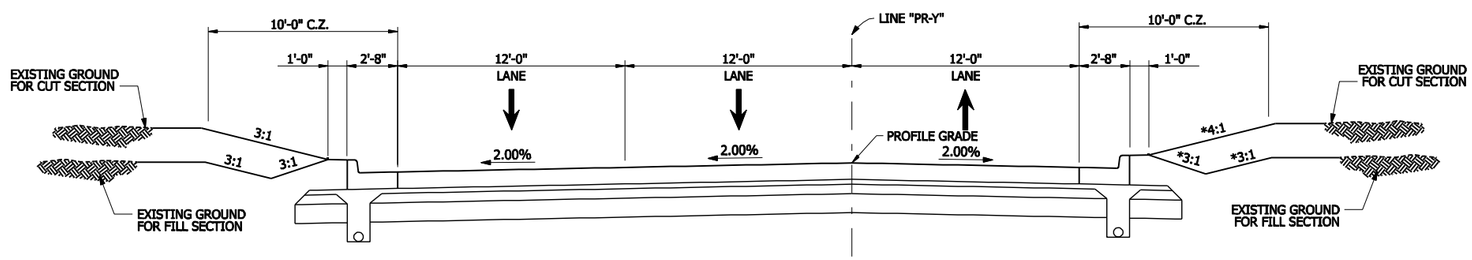
| | | | | | |
|---|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS SIDE ROADS | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD | PROJECT 090156 |

Model: R-TYP_SIDEROADS @Swing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\20 singles\R-TYP.dgn




## NORMAL TYPICAL SECTION - ENTERPRISE DRIVE

STA. 10+14.36 LINE "PR-5" TO STA. 22+50.00 LINE "PR-5"




## NORMAL TYPICAL SECTION - ENTERPRISE DRIVE

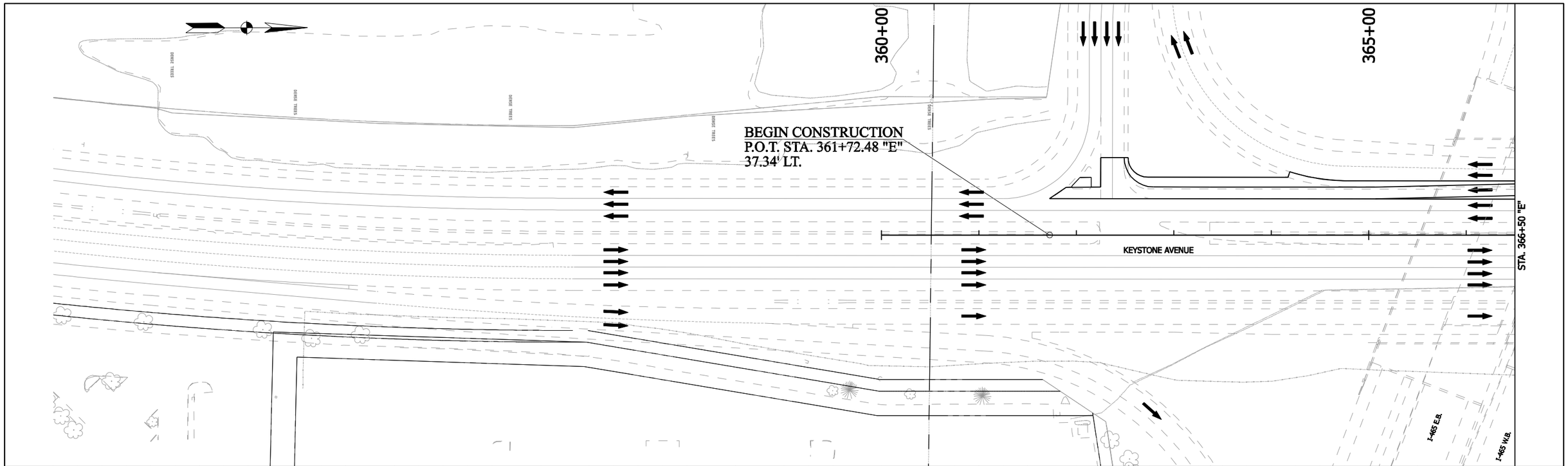
STA. 22+50.00 LINE "PR-5" TO STA. 24+02.17 LINE "PR-5"

By: Thiemann

Plotted on 7/15/2011 at 05:10 PM

| | | | | | |
|---|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS SIDE ROADS | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD | PROJECT 090156 |

Model: R-TYP_SIDEROADS Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\20 singles\R-TYP.dgn




**EARTHWORK SUMMARY TABLE**

| LINE | CUT (CYS) | FILL+15% (CYS) |
|---|---|---|
| "E" | XXXX | XXXX |
| "PR-3" | XXXX | XXXX |
| "SER" | XXXX | XXXX |
| "SER-1" | XXXX | XXXX |
| "SWR" | XXXX | XXXX |
| "SWR-1" | XXXX | XXXX |
| "SR" | XXXX | XXXX |
| "NER" | XXXX | XXXX |
| "NWR" | XXXX | XXXX |
| TOTAL= | XXXX | XXXX |
| DEDUCT | | |
| STRUCTURE BACKFILL FOR MSE | | -(XXXX) |
| ADJUSTED TOTAL= | XXXX | XXXX |
| NET(BORROW)= | XXXX | XXXX |

800 790 780 770 760 750 740 730 720

360+00 361+00 362+00 363+00 364+00 365+00 366+00

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

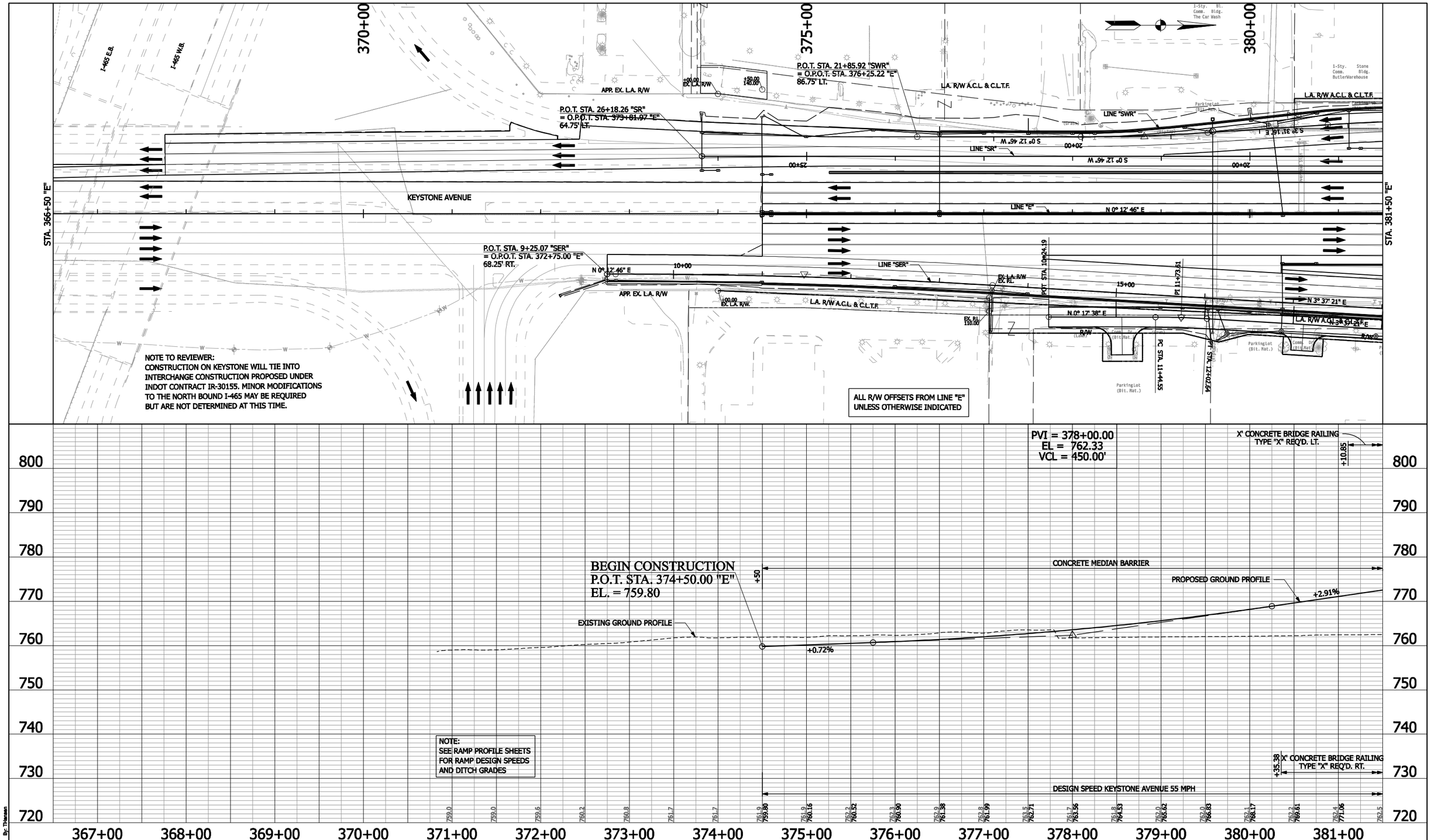
INDIANA
DEPARTMENT OF TRANSPORTATION

PLAN & PROFILE
KEYSTONE AVENUE - LINE "E"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | 11 of 77 |
| CONTRACT | PROJECT |
| TBD | 0901562 |



By: Thiemann
Plotted on 1/11/2012 at 07:52 AM
Model: R-PNP-E0 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-E.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

INDIANA
DEPARTMENT OF TRANSPORTATION

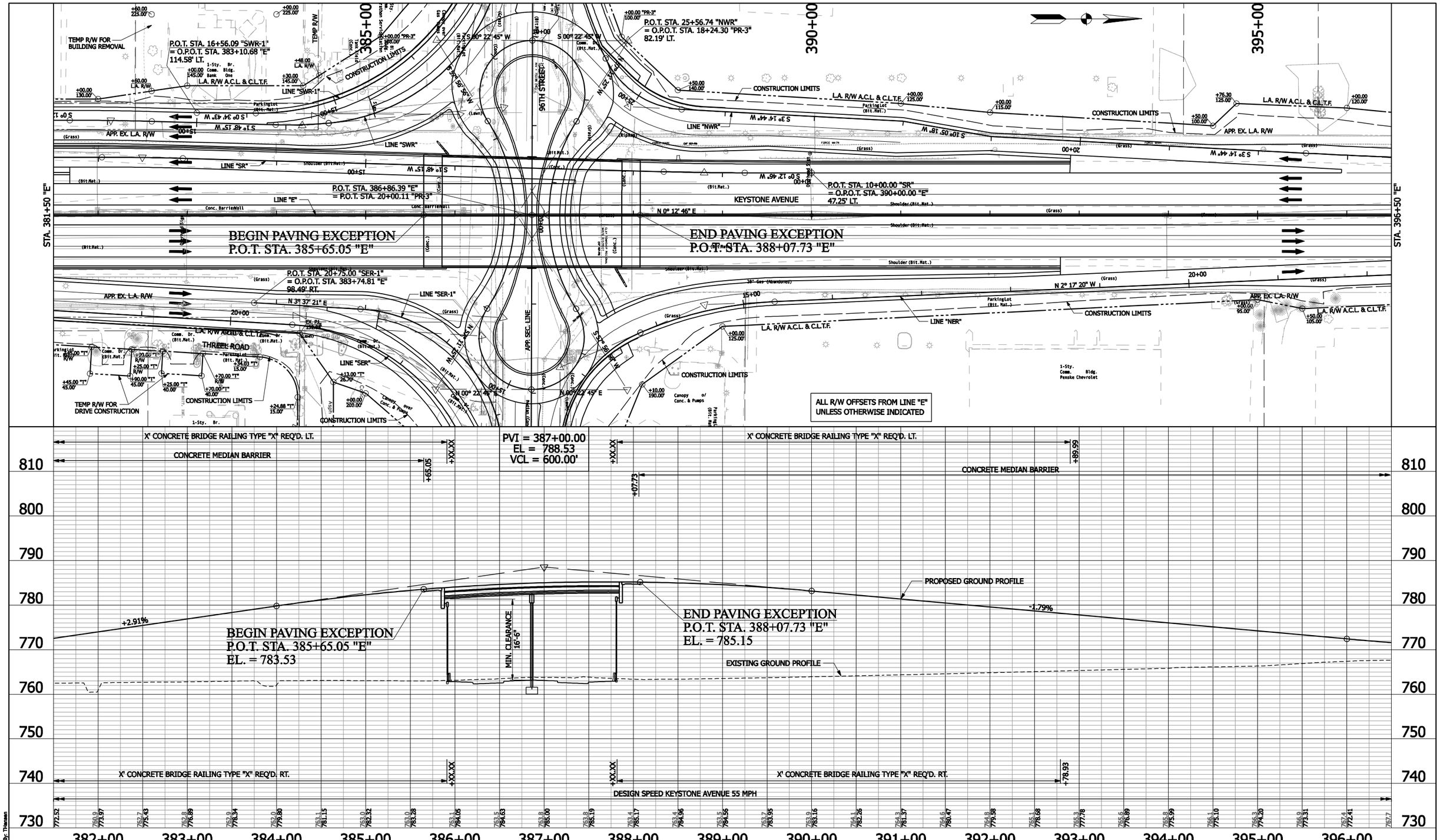
PLAN & PROFILE
KEYSTONE AVENUE - LINE "E"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | 12 of 77 |
| CONTRACT | PROJECT |
| TBD | 0901 |

By: Thiessen

Plotted on 1/11/2012 at 07:52 AM

Model: R-PNP-E1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-E.dgn

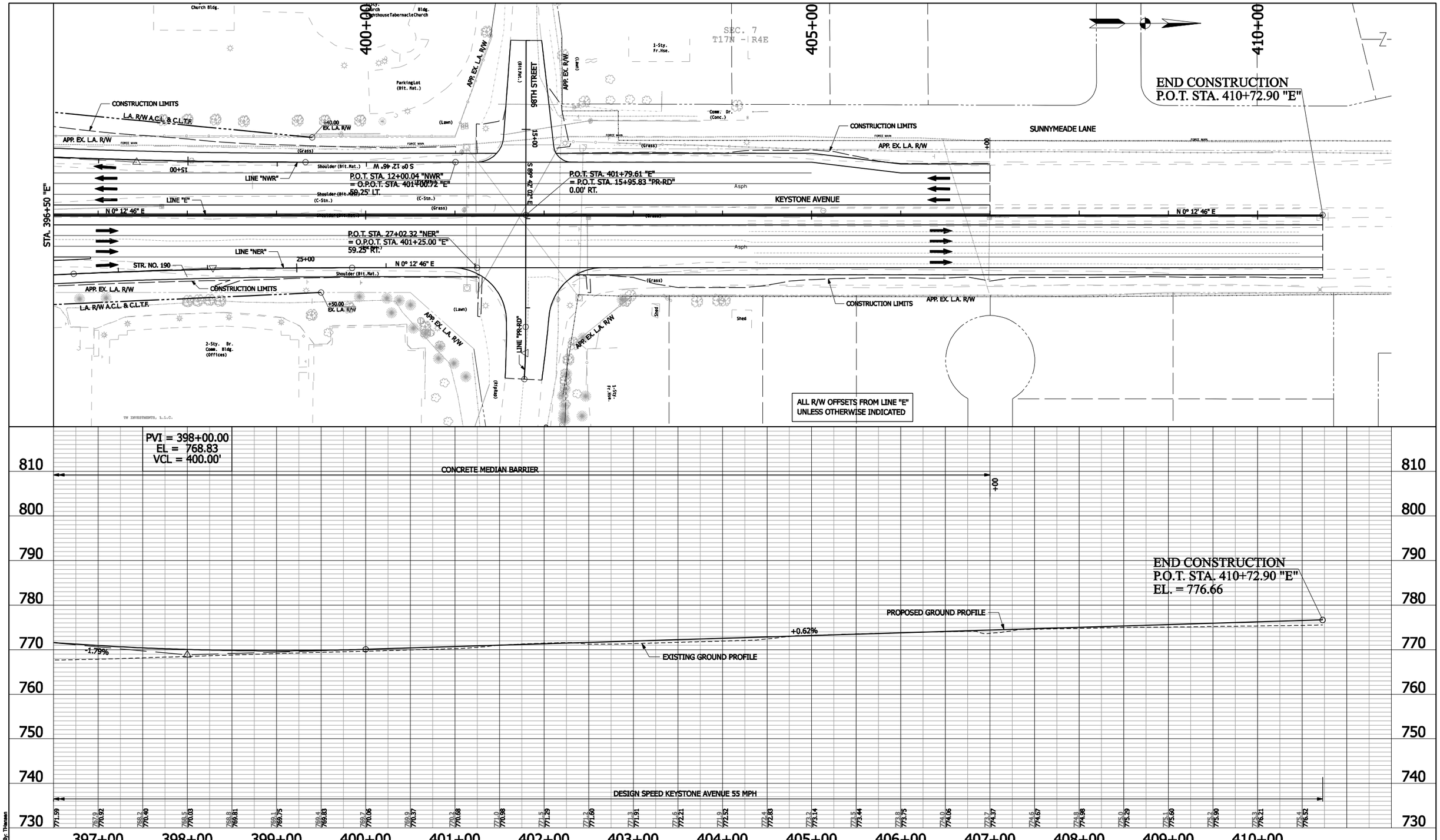



| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE KEYSTONE AVENUE - LINE "E" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 0901 |

By: Thiessen

Plotted on 7/15/2011 at 05:12 PM

Model: R-PNP-E2 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 baseset\R-PNP-E.dgn

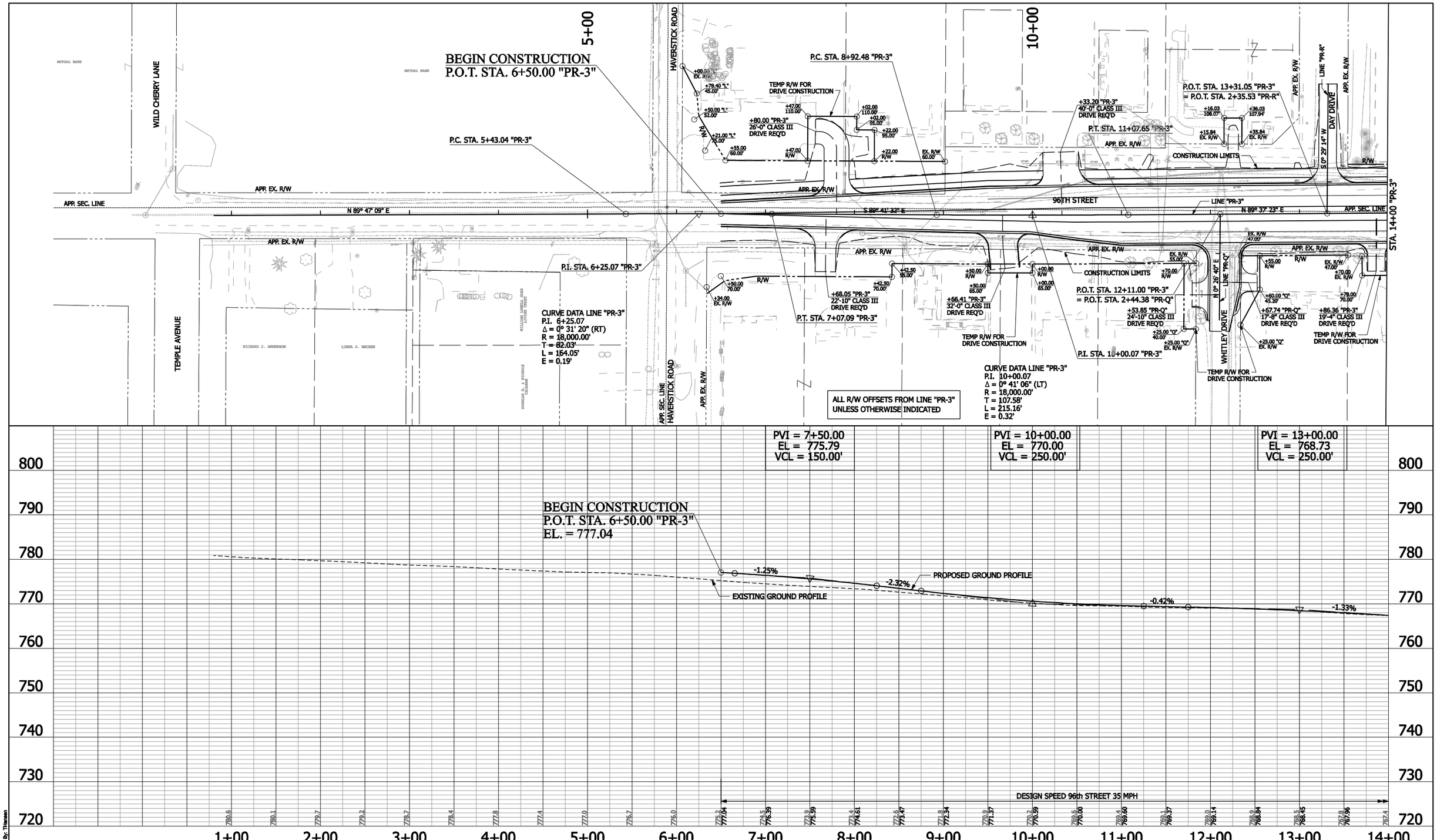



| | | | | |
|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE KEYSTONE AVENUE - LINE "E" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 090 |

By: Thiessen

Plotted on 7/15/2011 at 05:13 PM

Model: R-PNP-E3 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-E.dgn



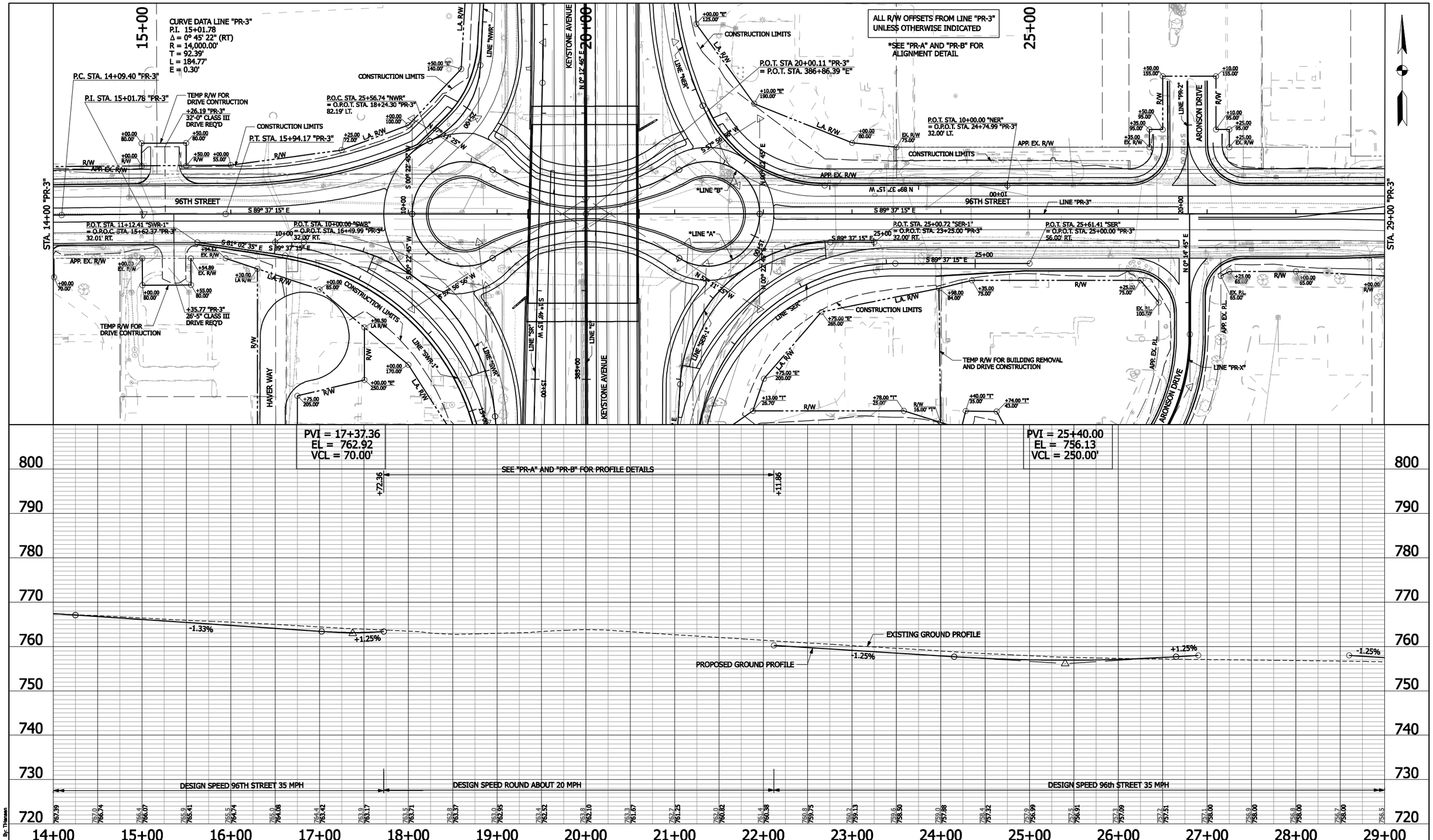

| | |
|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE 96th STREET - LINE "PR-3" |
| CHECKED: SEB CHECKED: KJR | |

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 090 |



Model: R-PNP-31 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-3.dgn

Posted on 7/15/2011 at 05:14 PM By: Thiessen




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

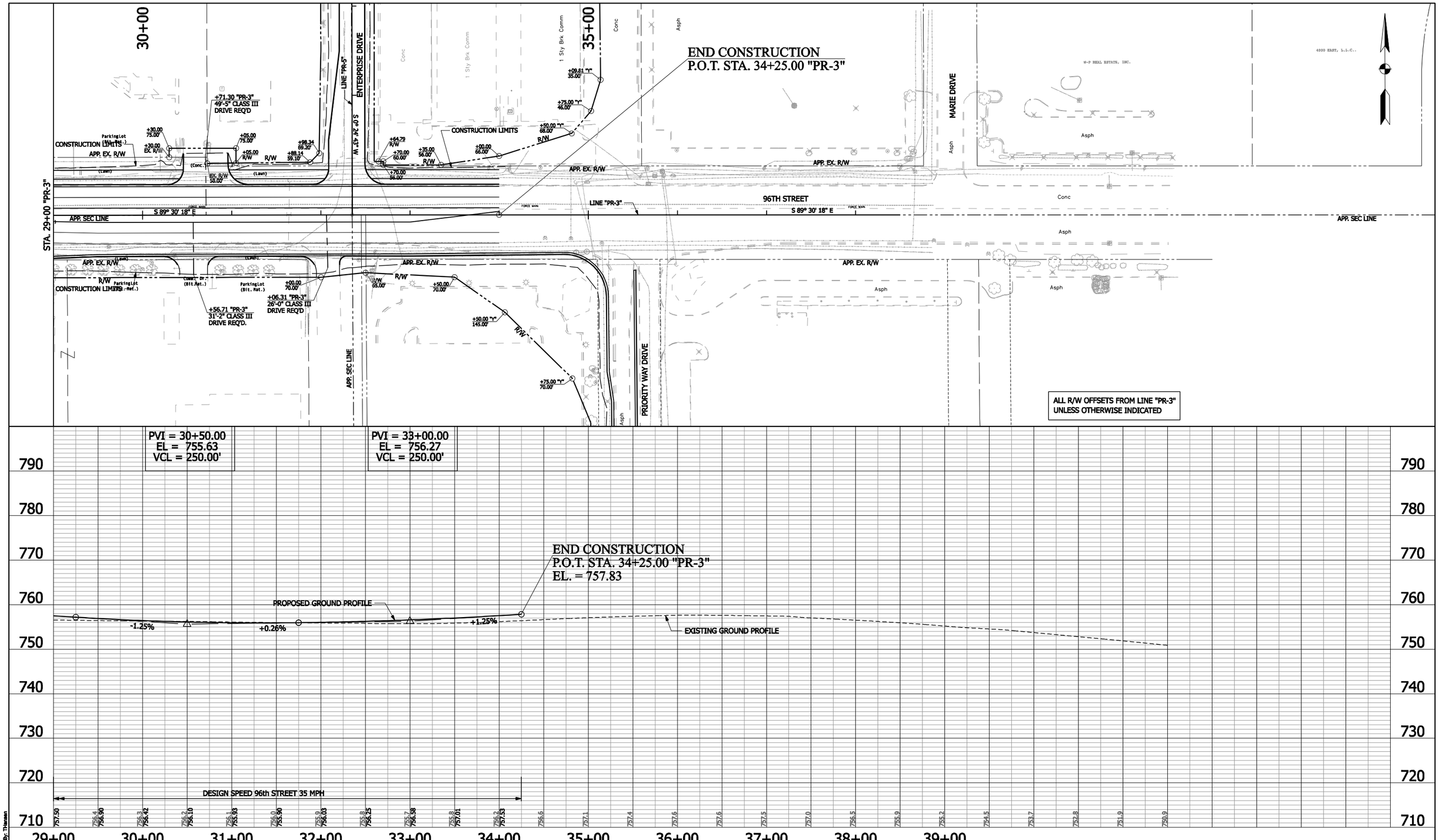
PLAN & PROFILE
96th STREET - LINE "PR-3"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901 |

By: Thiessen

Plotted on 7/15/2011 at 05:14 PM

Model: R-PNP-32 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-3.dgn

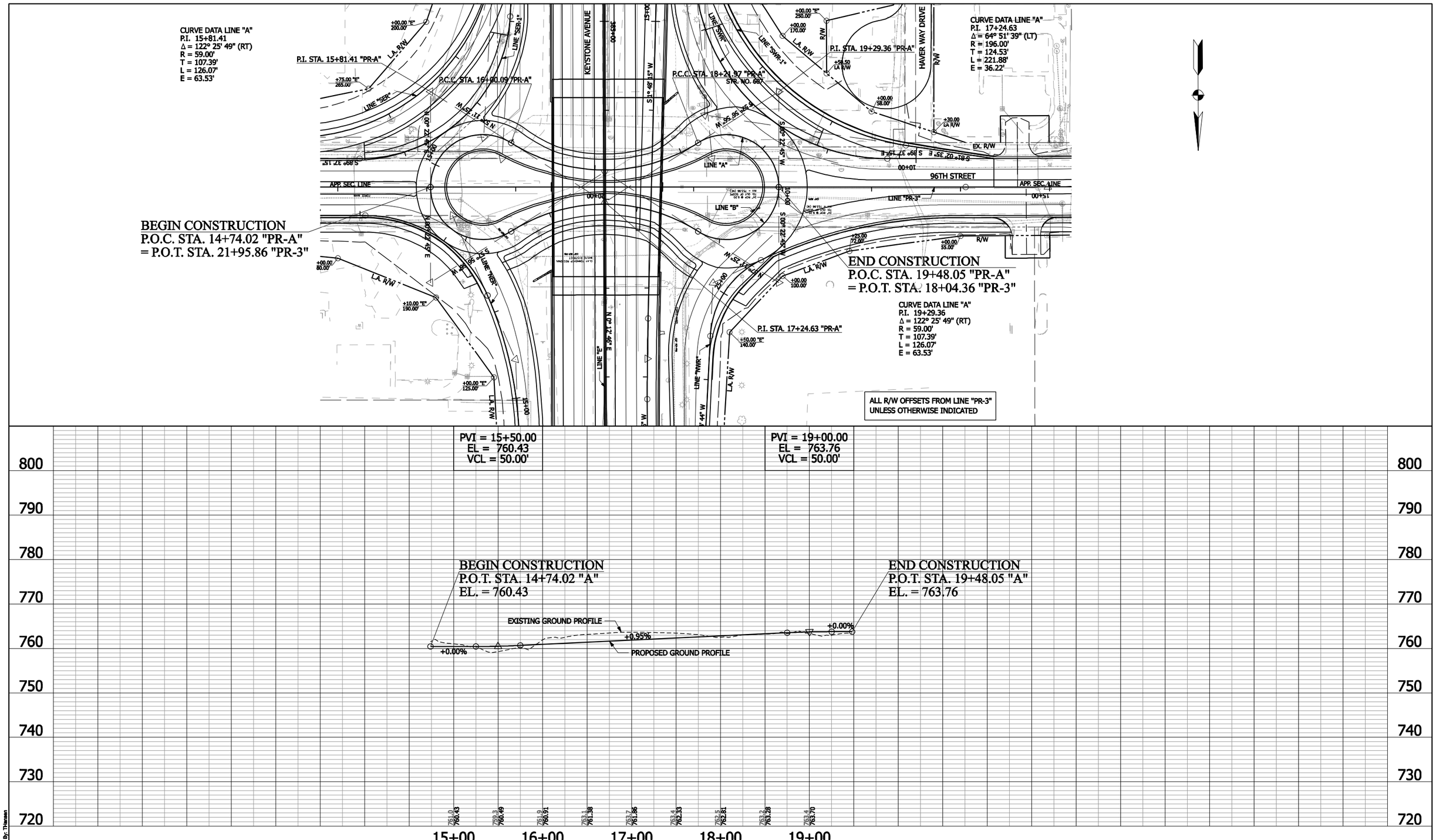



| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE 96th STREET - LINE "PR-3" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 090 |

By: Thiesen

Posted on 7/15/2011 at 05:15 PM

Model: R-PNP-33 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-3.dgn




| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE E.B. TEAR DROP ROUND ABOUT - LINE "A" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 0901 |

By: Thiessen

Posted on 7/15/2011 at 05:16 PM

Model: R-PNP-A1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-A.dgn

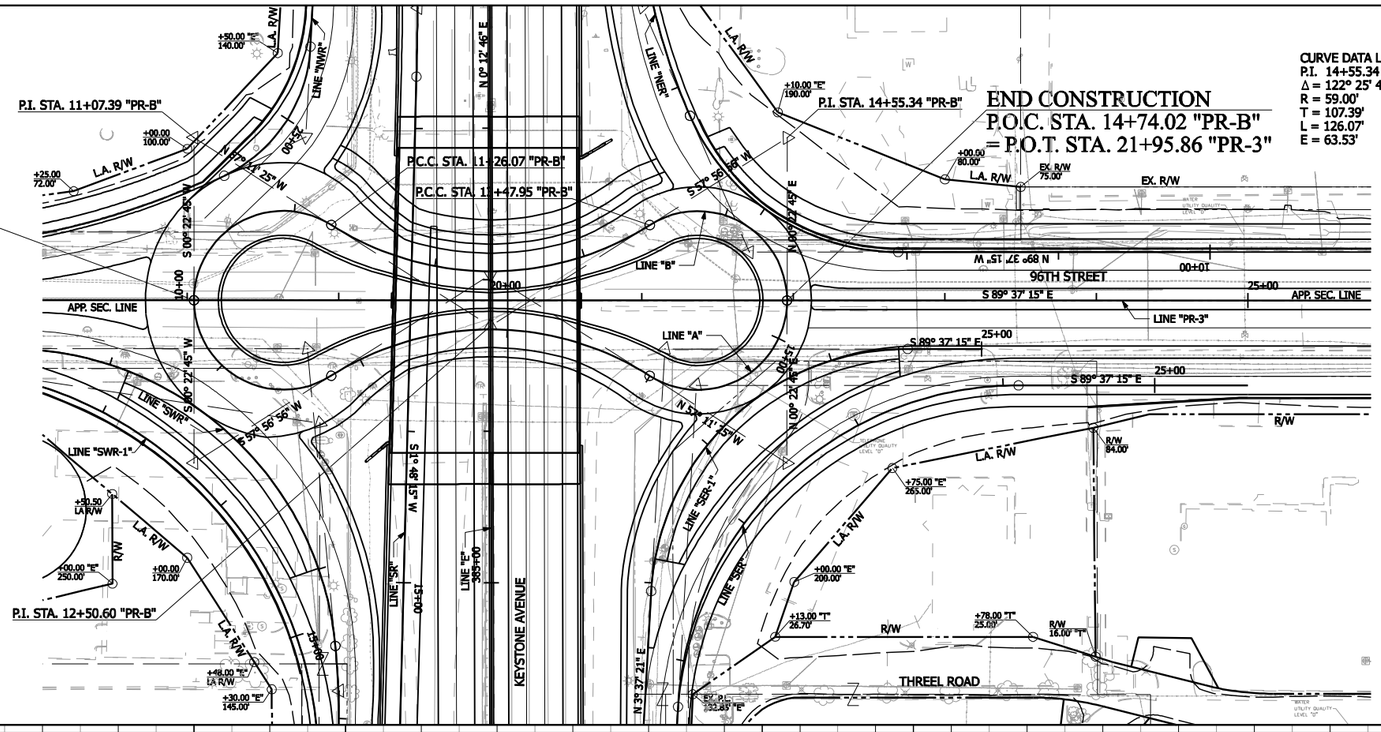
CURVE DATA LINE "B"
P.I. 11+07.39
Δ = 122° 25' 49" (RT)
R = 59.00'
T = 107.39'
L = 126.07'
E = 63.53'

BEGIN CONSTRUCTION
P.O.C. STA. 10+00.00 "B"
= P.O.T. STA. 18+04.36 "PR-3"

CURVE DATA LINE "B"
P.I. 12+50.60
Δ = 64° 51' 39" (LT)
R = 196.00'
T = 124.53'
L = 221.88'
E = 36.22'

CURVE DATA LINE "B"
P.I. 14+55.34
Δ = 122° 25' 49" (RT)
R = 59.00'
T = 107.39'
L = 126.07'
E = 63.53'

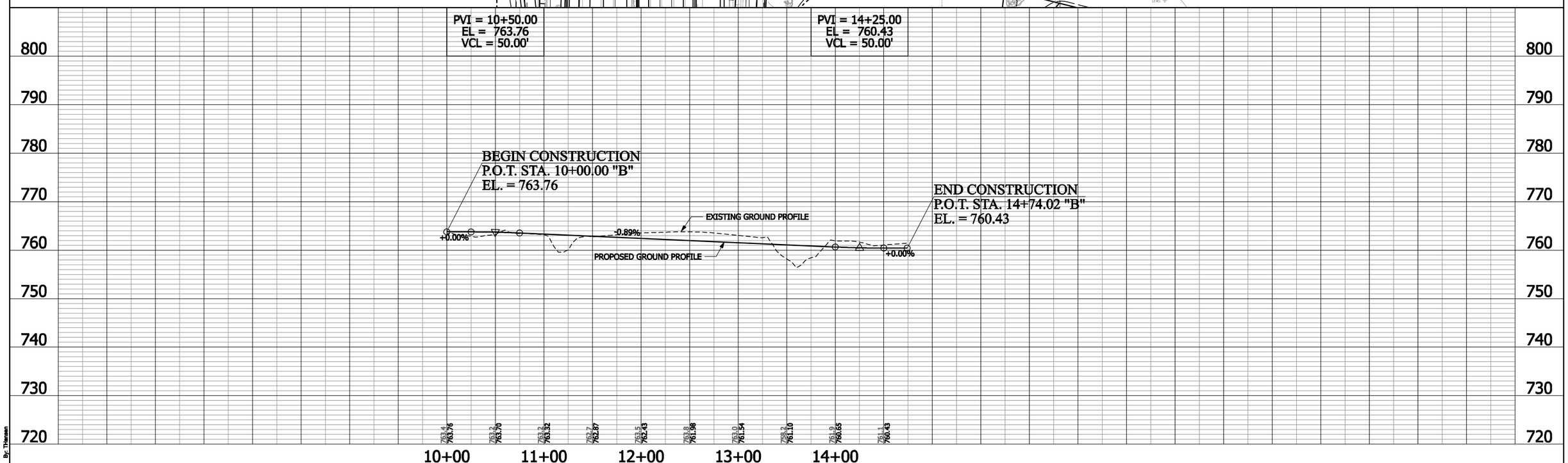
END CONSTRUCTION
P.O.C. STA. 14+74.02 "PR-B"
= P.O.T. STA. 21+95.86 "PR-3"




ALL R/W OFFSETS FROM LINE "PR-3"
UNLESS OTHERWISE INDICATED

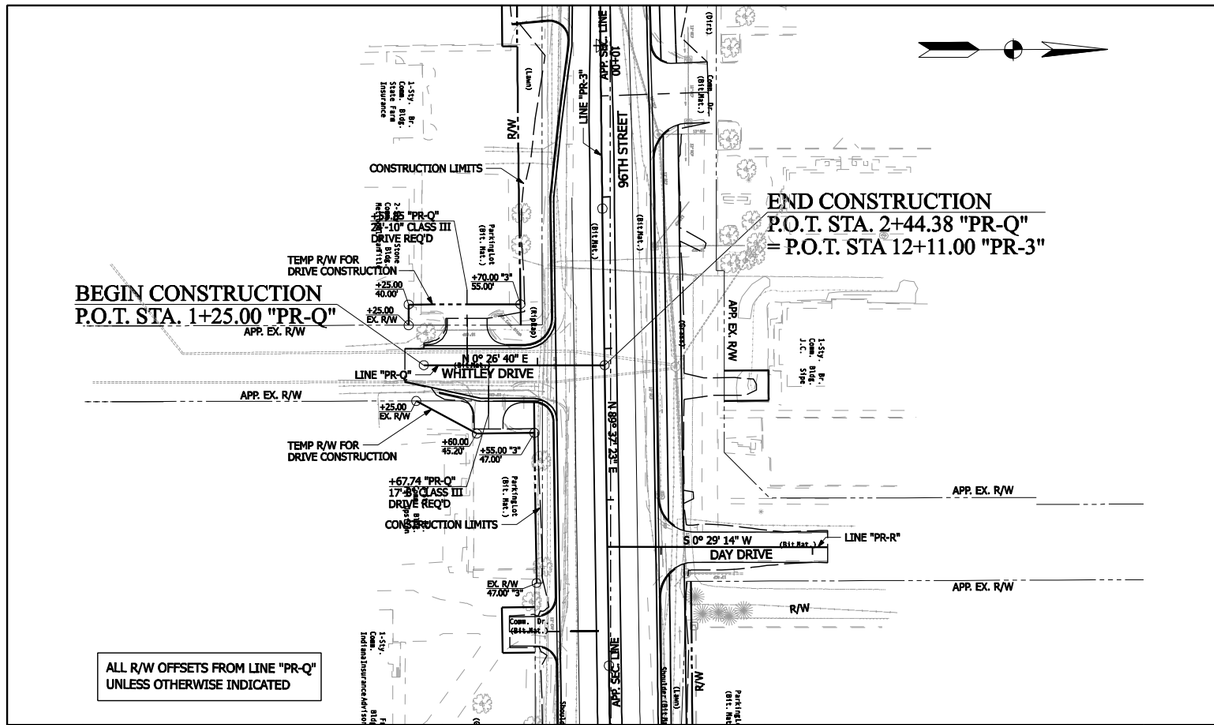
PVI = 10+50.00
EL = 763.76
VCL = 50.00'

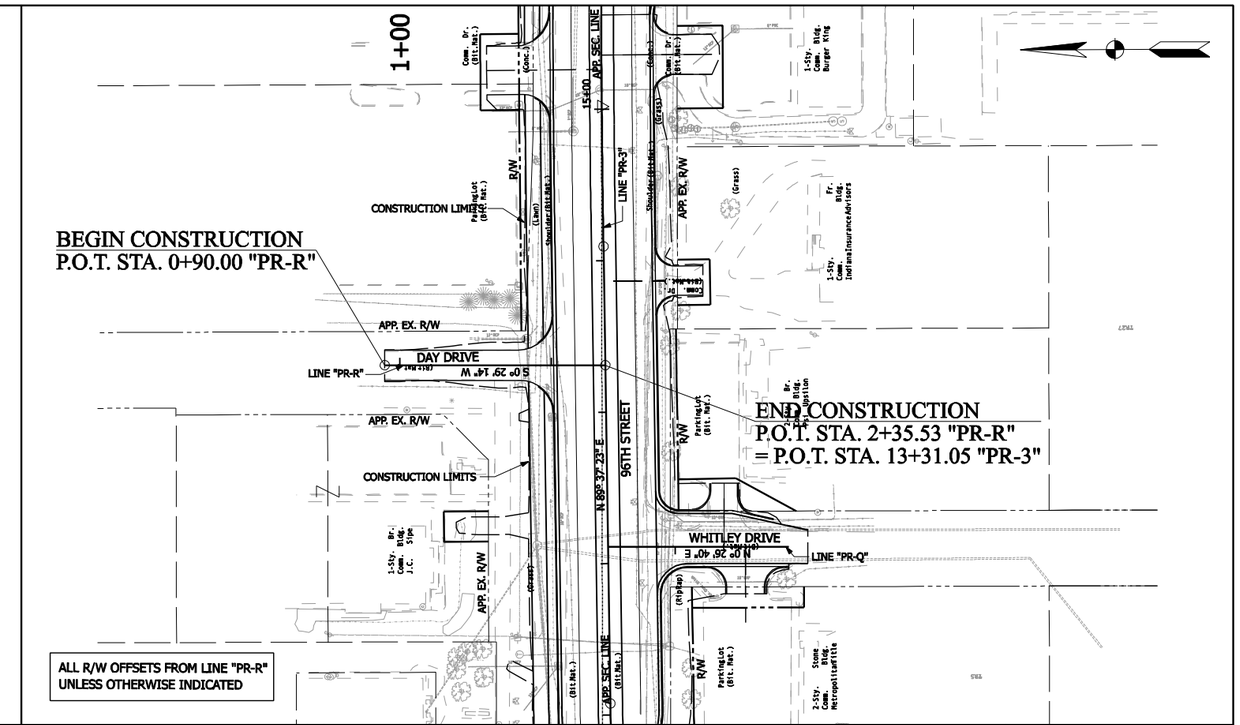
PVI = 14+25.00
EL = 760.43
VCL = 50.00'

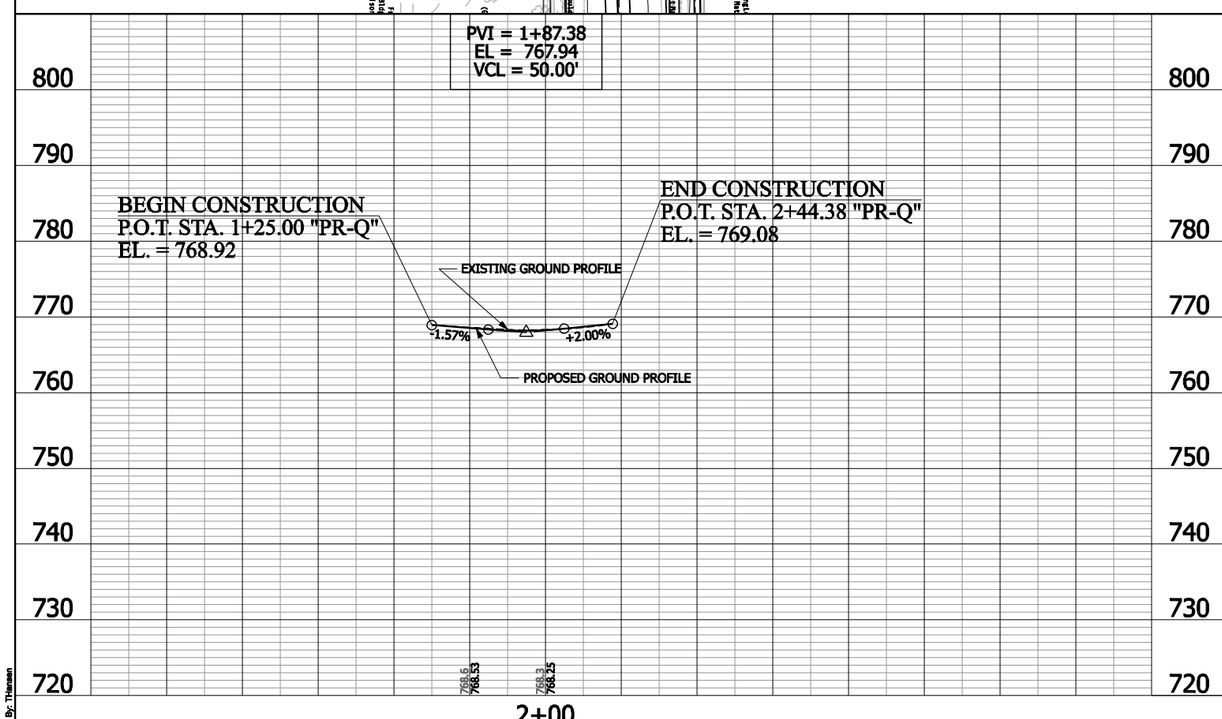


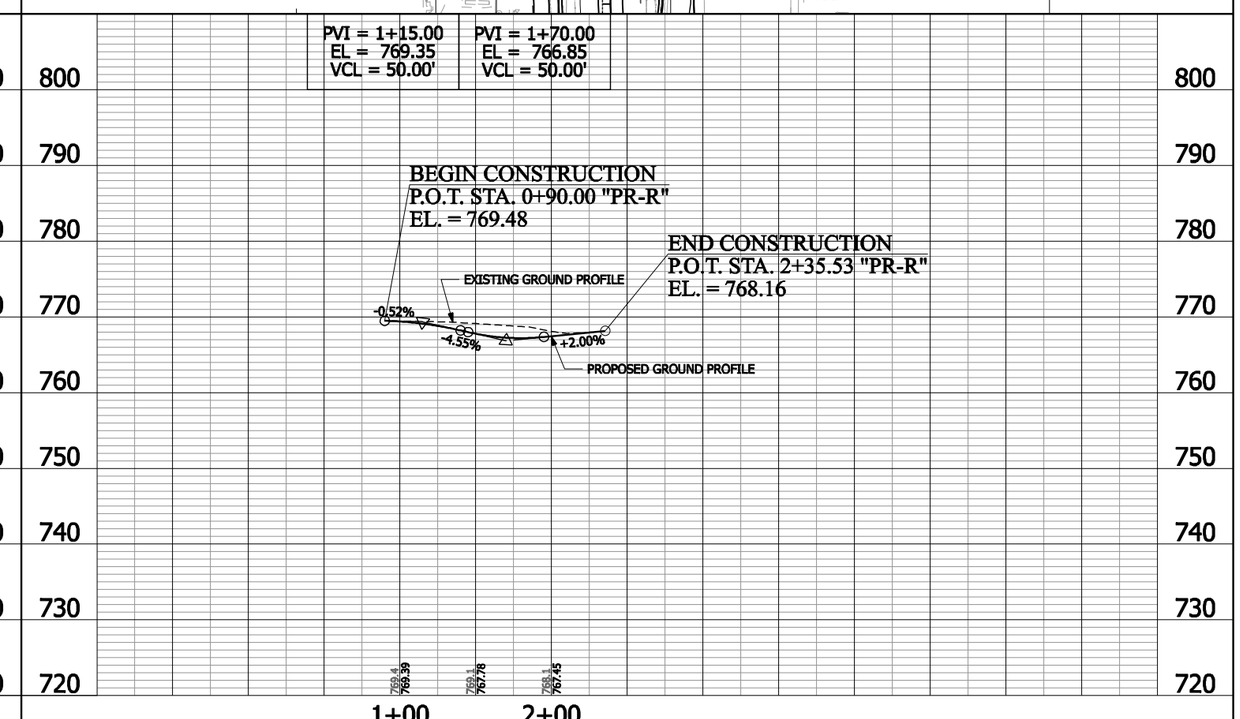

| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE W.B. TEAR DROP ROUND ABOUT - LINE "B" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 0901 |

By: Thiesen
Plotted on 7/15/2011 at 05:16 PM
Model: R-PNP-B1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-B.dgn



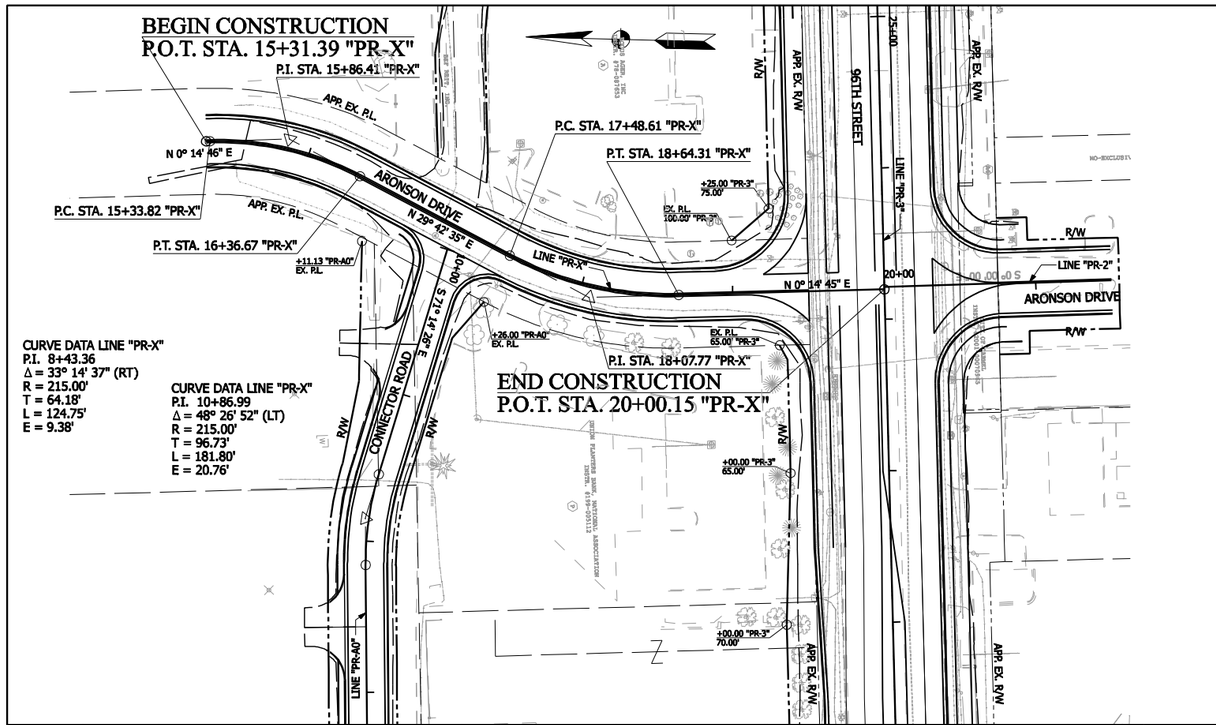



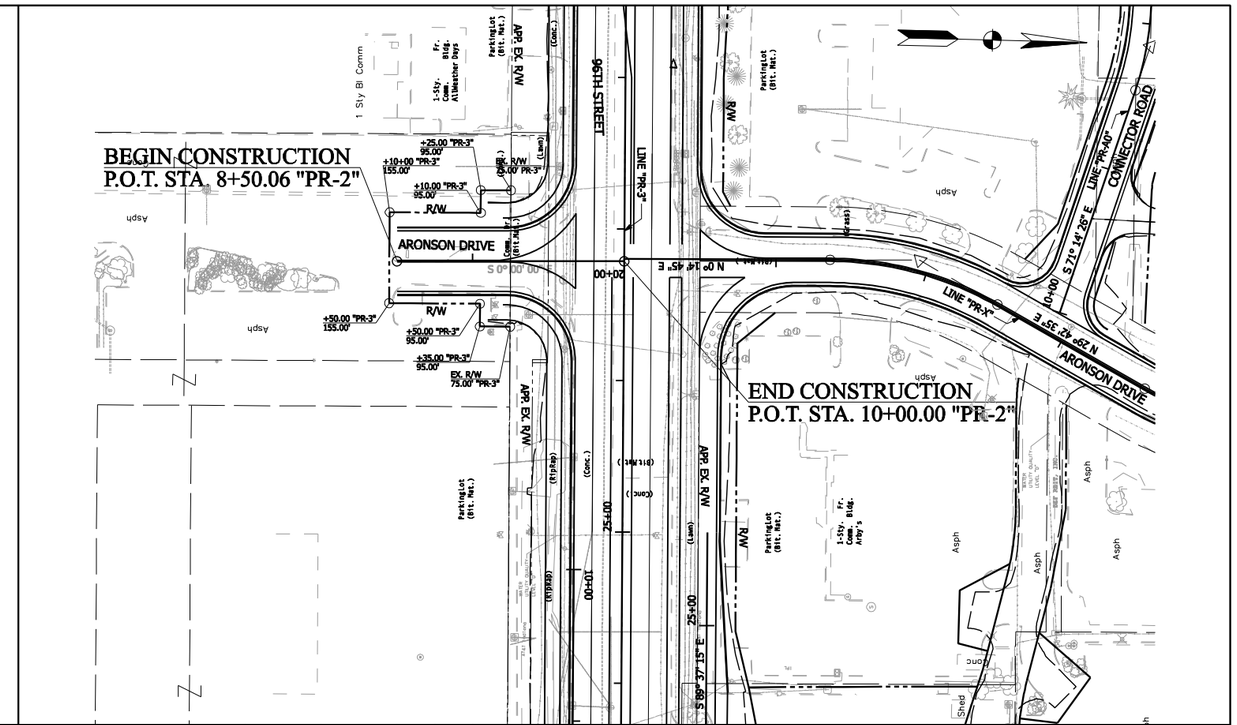

By: Thiessen

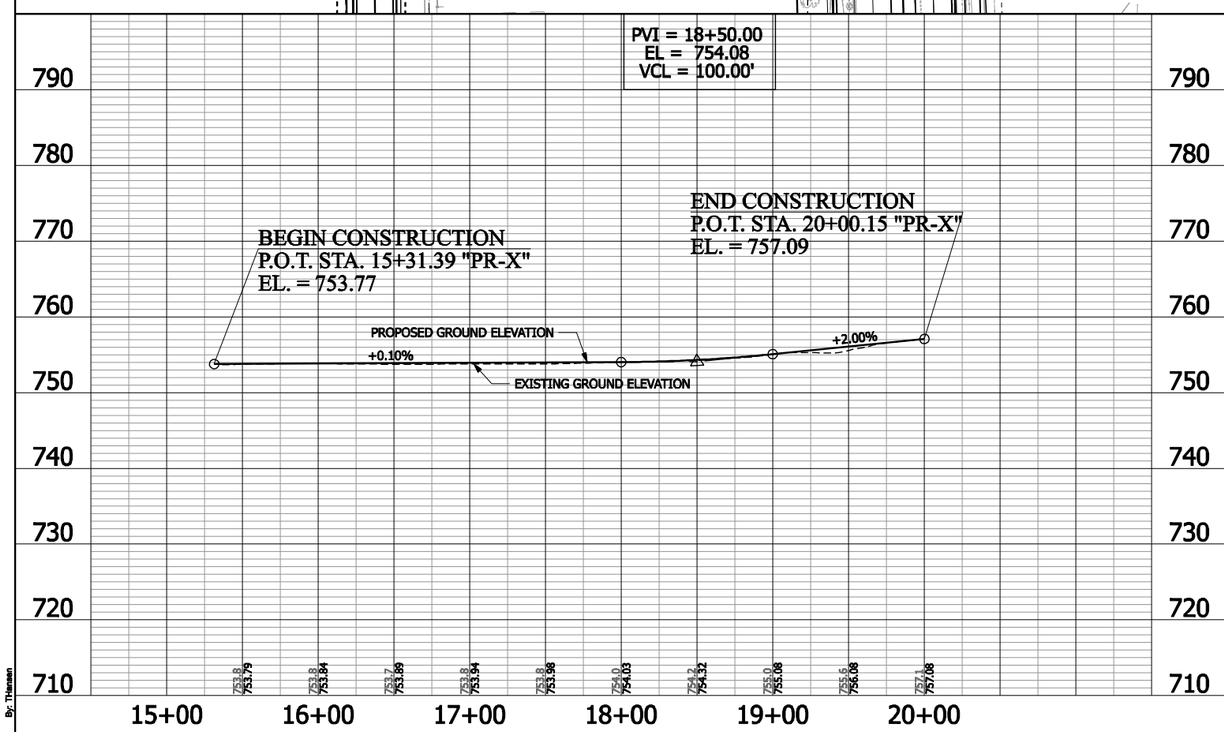
Posted on 7/15/2011 at 05:18 PM

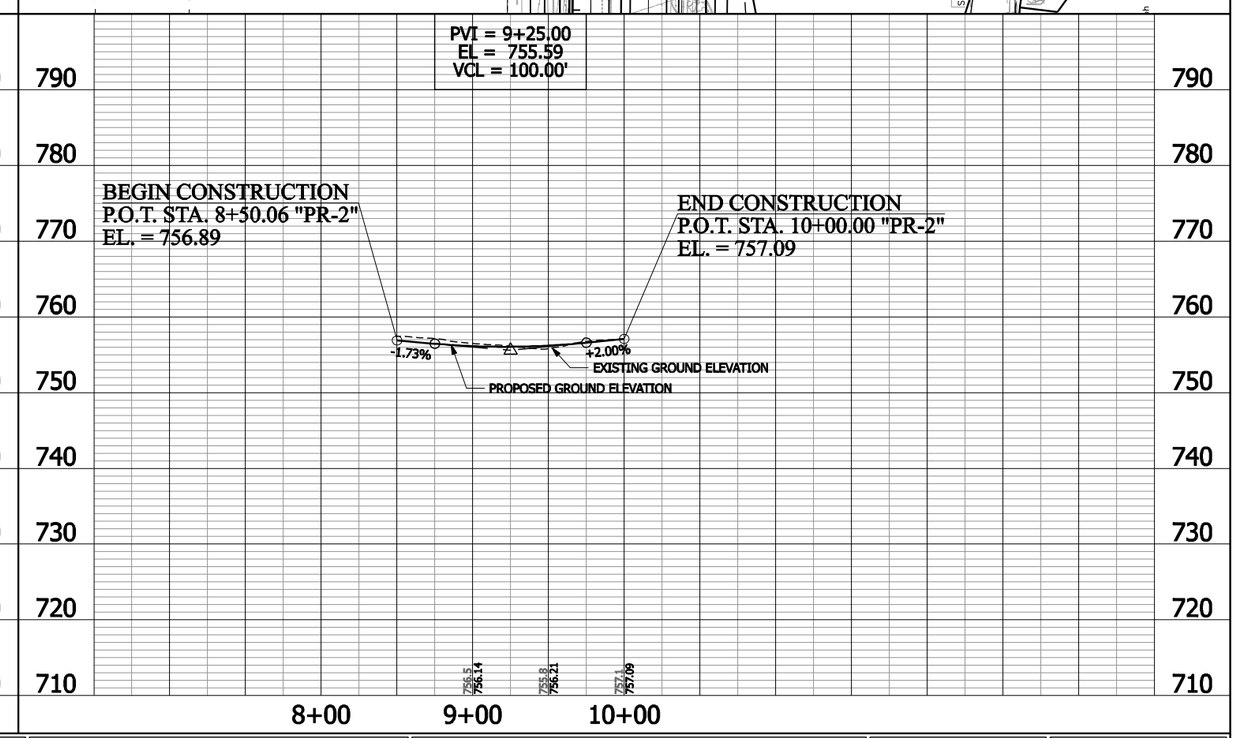
| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE WHITLEY DRIVE - LINE "PR-Q" DAY DRIVE - LINE "PR-R" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 090 |

Model: R-PNP-Q1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-Q.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

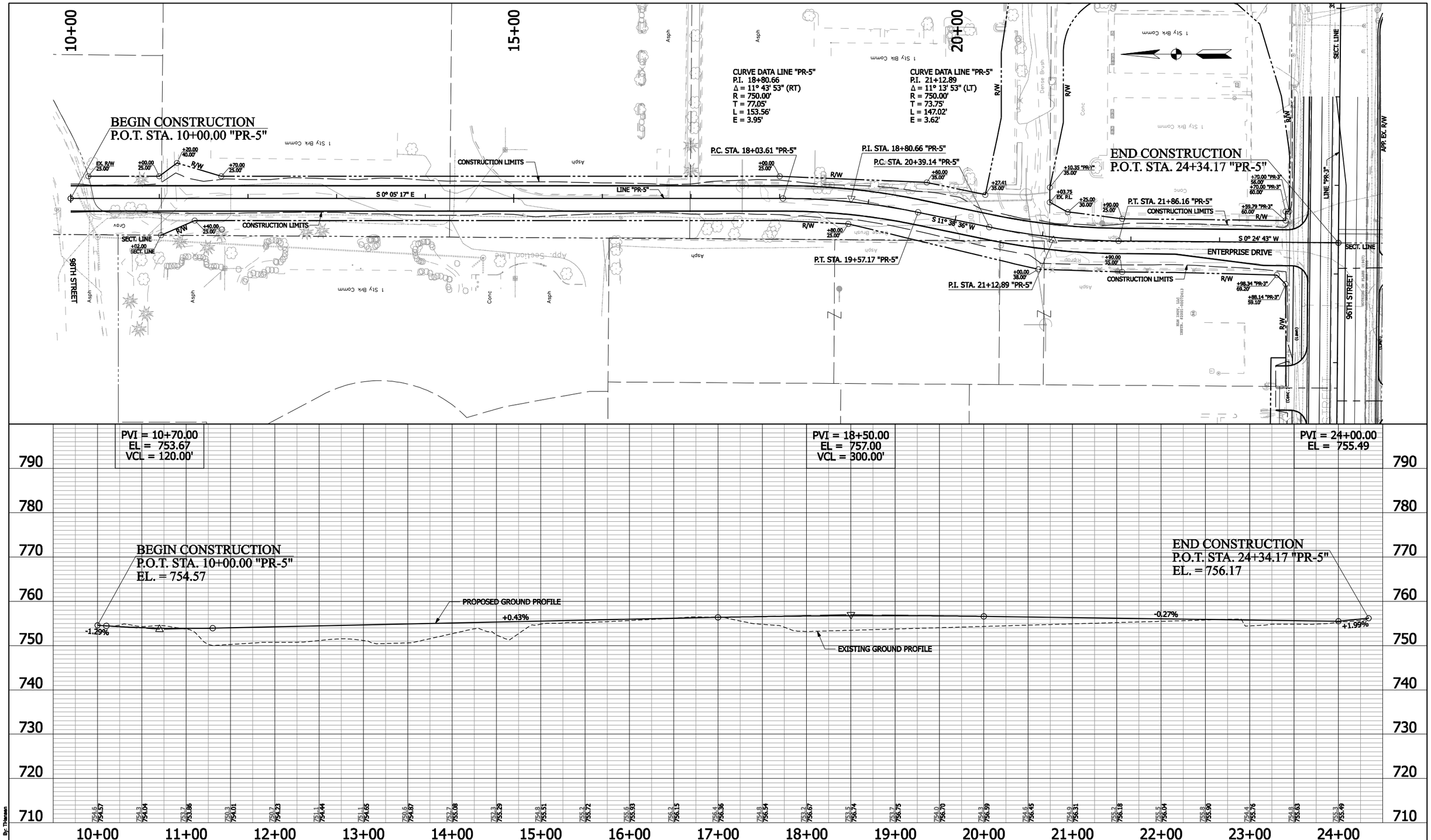
PLAN & PROFILE
ARONSON DRIVE - LINE "PR-X"
ARONSON DRIVE - LINE "PR-2"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 090 |

By: Thiesen

Posted on 7/15/2011 at 05:19 PM

Model: R-PNP-X1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-X.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

PLAN & PROFILE
ENTERPRISE DRIVE - LINE "PR-5"

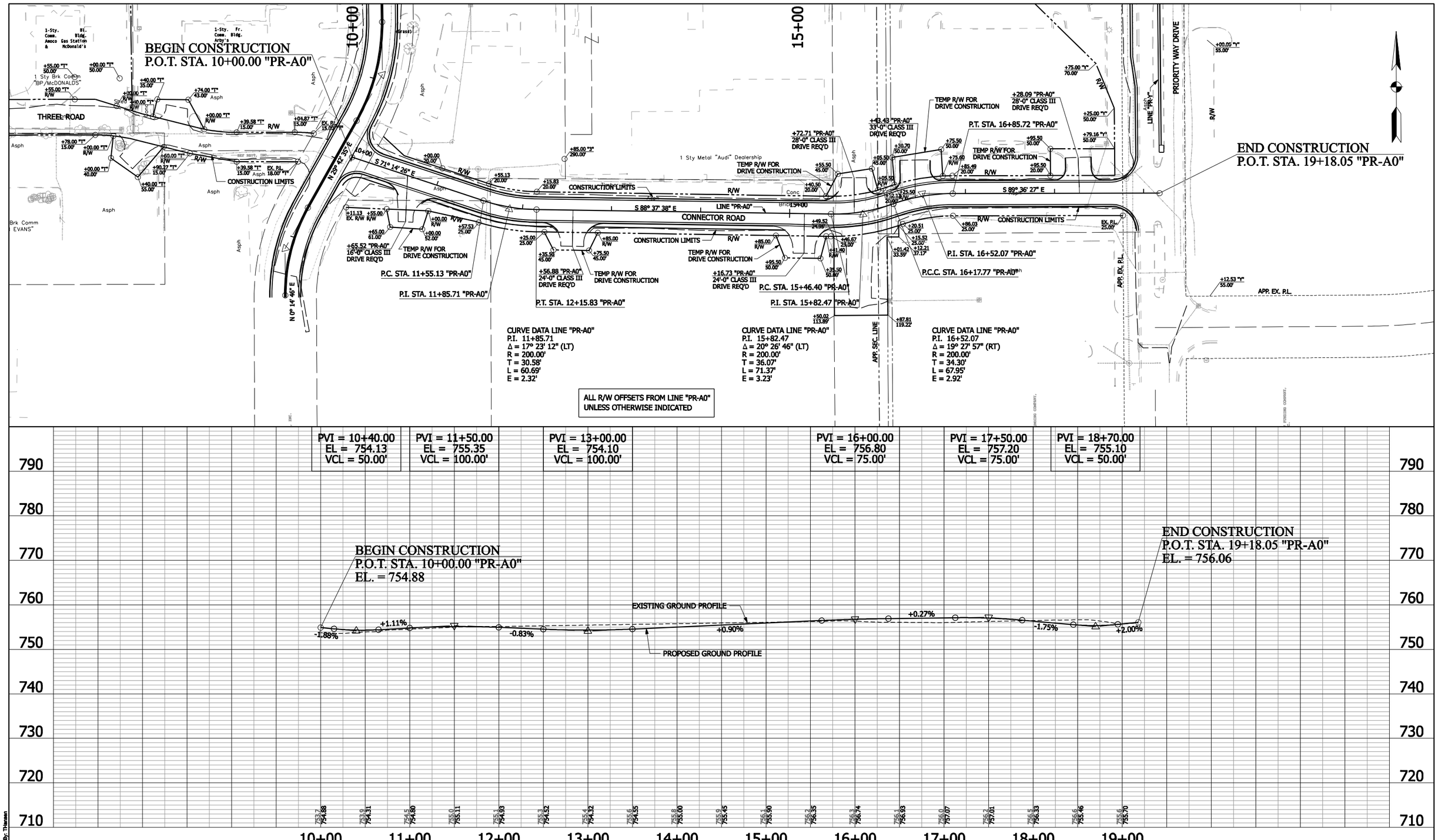
| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901 |



By: Thiessen

Posted on 7/15/2011 at 05:20 PM

Model: R-PNP-51 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\301 interim\10 basesets\R-PNP-5.dgn




| | |
|---|---|
| RECOMMENDED FOR APPROVAL | DESIGN ENGINEER DATE |
| DESIGNED: KJR | DRAWN: TPH |
| CHECKED: SEB | CHECKED: KJR |

CITY OF CARMEL

PLAN & PROFILE
CONNECTOR ROAD - LINE "A0"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901 |

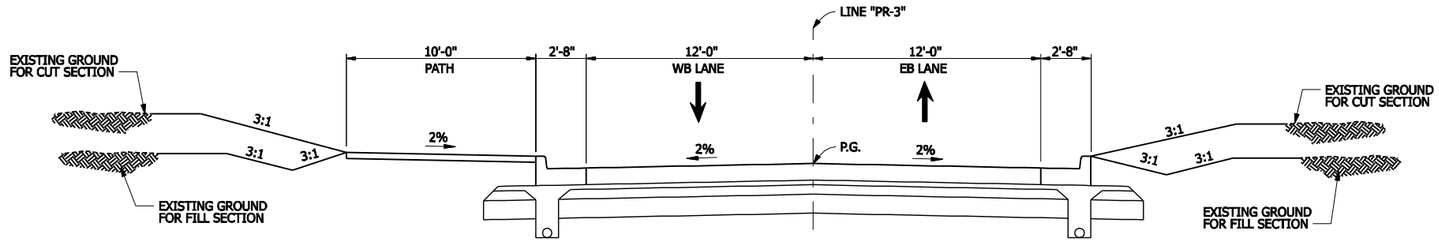
By: Thiessen

Posted on 7/15/2011 at 05:39 PM

Model: R-PNP-A0 Drawing: P:\Transportation\20075030 Keystone Parkway\30 SheetDrawings\301 Interim\10 BaseSets\R-PNP-A0.dgn

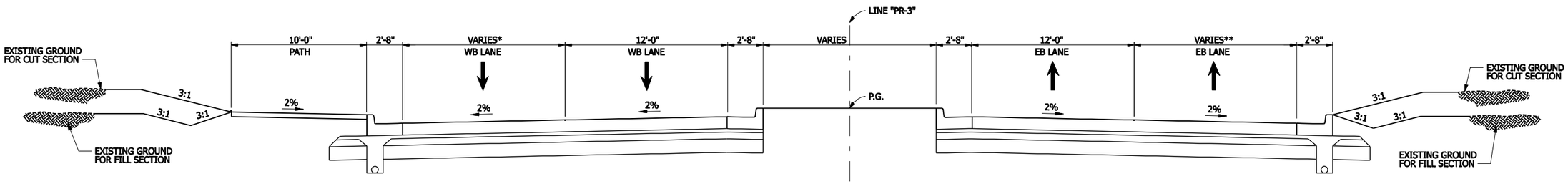
# Appendix B.4

## Plans – Future Planned Improvements



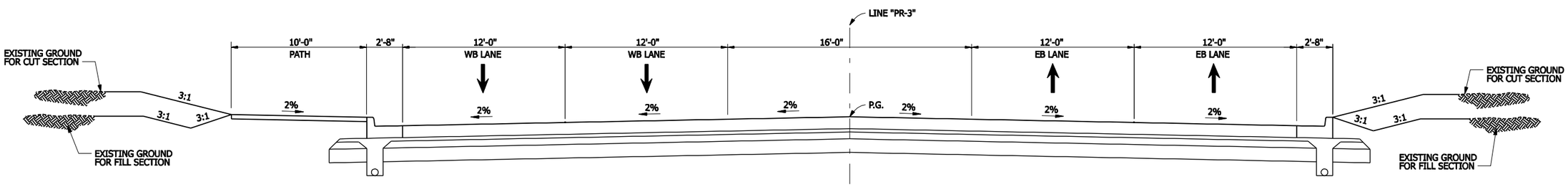

## NORMAL TYPICAL SECTION - 96th STREET

BEGIN LINE "PR-3" TO STA. 2+00.00 "PR-3"




## NORMAL TYPICAL SECTION - 96th STREET

STA. 2+00.00 "PR-3" TO STA. 7+50.00 "PR-3"




## NORMAL TYPICAL SECTION - 96th STREET

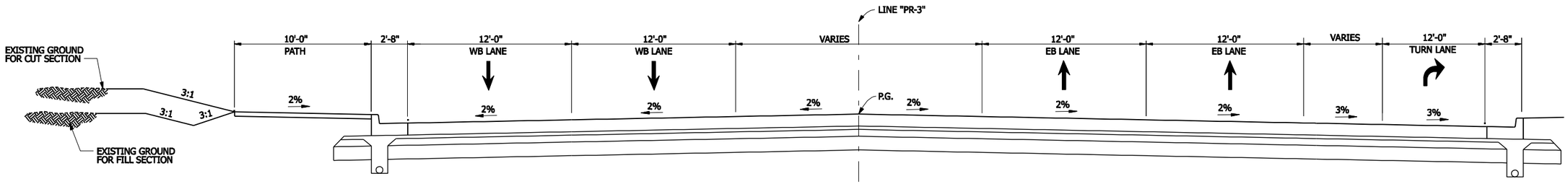
STA. 7+50.00 "PR-3" TO STA. 11+00.00 "PR-3"

By: Thiessen

Plotted on 7/15/2011 at 05:22 PM

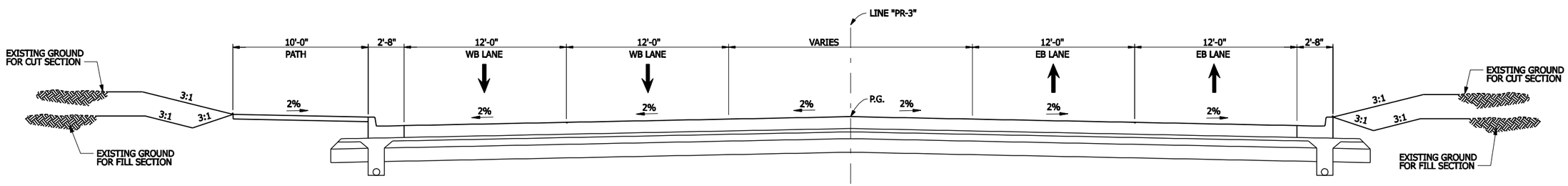
| | | | | | |
|---|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS 96th STREET - LINE "3" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

Model: R-TYP_96th 01 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 Full Build-out\20 Singles\R-TYP.dgn




## NORMAL TYPICAL SECTION - 96th STREET

STA. 33+00.00 "PR-3" TO STA. 35+00.00 "PR-3"




## NORMAL TYPICAL SECTION - 96th STREET

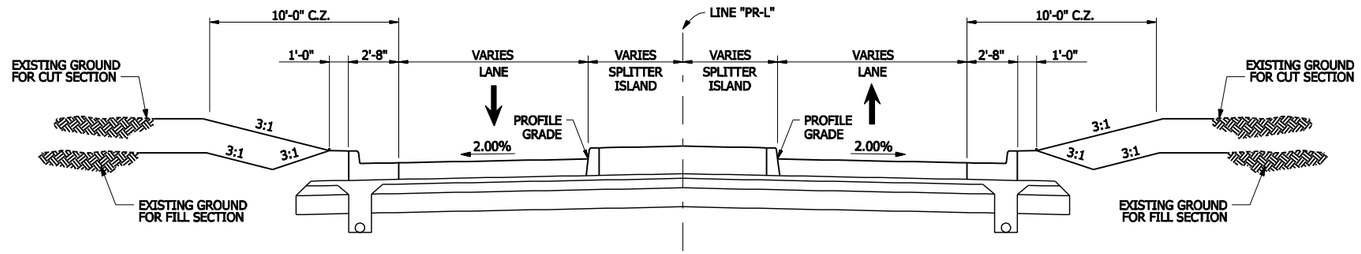
STA. 36+00.00 "PR-3" TO END LINE "PR-3"

By: Thiessen

Plotted on 7/15/2011 at 05:22 PM

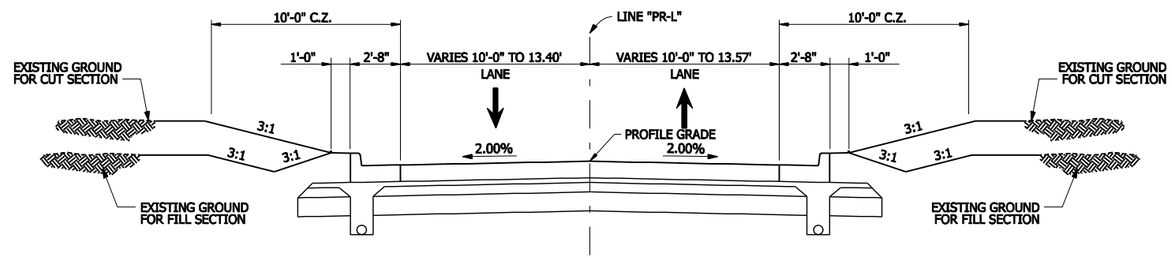
| | | | | | |
|---|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS 96th STREET - LINE "3" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

Model: R-TYP_96th 002 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 Full Build-out\20 Singles\R-TYP.dgn



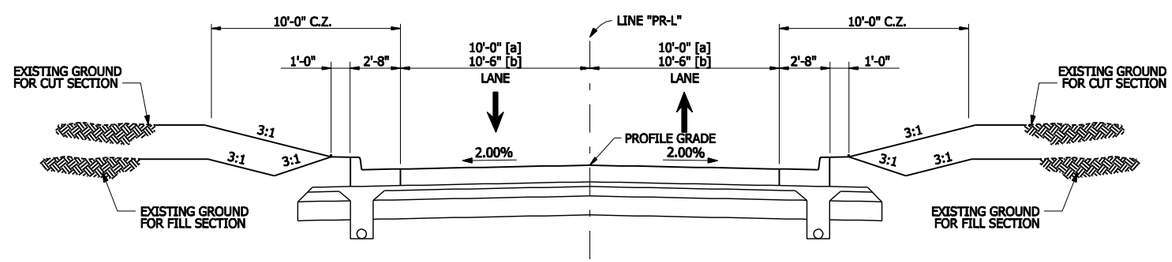

## NORMAL TYPICAL SECTION - HAVERSTICK ROAD

STA. 11+80.66 LINE "PR-L" TO STA. 12+40.13 LINE "PR-L"
STA. 13+88.40 LINE "PR-L" TO STA. 14+47.56 LINE "PR-L"



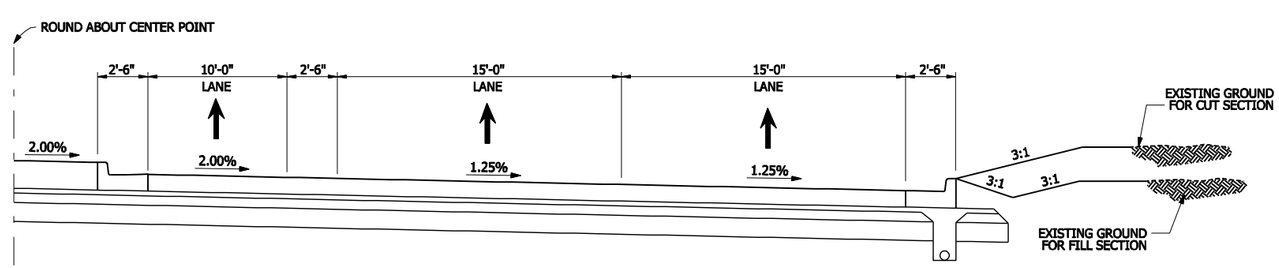

## NORMAL TYPICAL SECTION - HAVERSTICK ROAD

STA. 11+20 LINE "PR-L" TO STA. 11+49.38 LINE "PR-L"
STA. 14+47.56 LINE "PR-L" TO STA. 14+74.38 LINE "PR-L"




## NORMAL TYPICAL SECTION - HAVERSTICK ROAD

STA. 11+20 LINE "PR-L" TO STA. 11+49.38 LINE "PR-L" [a]
STA. 14+74.38 LINE "PR-L" TO STA. 15+20.00 LINE "PR-L" [b]



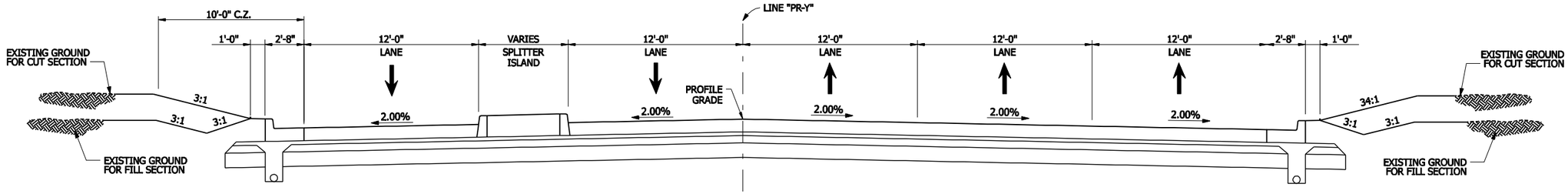

## NORMAL TYPICAL SECTION - ROUND ABOUT

| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR / DRAWN: TPH | TYPICAL SECTIONS SIDE ROADS & ROUND ABOUT | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB / CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

By: Thiessen

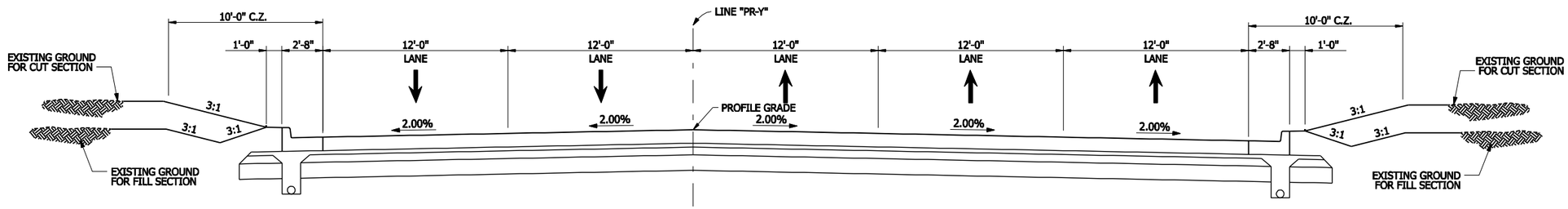
Plotted on 7/15/2011 at 05:22 PM

Model: R-TYP_SIDEROADS @drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 Full Build-out\20 Singles\R-TYP.dgn




NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

STA. 9+55.35 LINE "PR-Y" TO STA. 9+93.48 LINE "PR-Y"



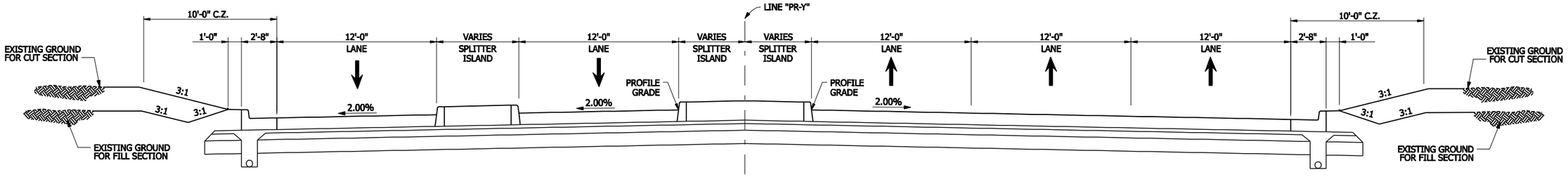

NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

STA. 8+50.00 LINE "PR-Y" TO STA. 9+55.35 LINE "PR-Y"

Posted on 7/15/2011 at 06:22 PM By: Thiessen

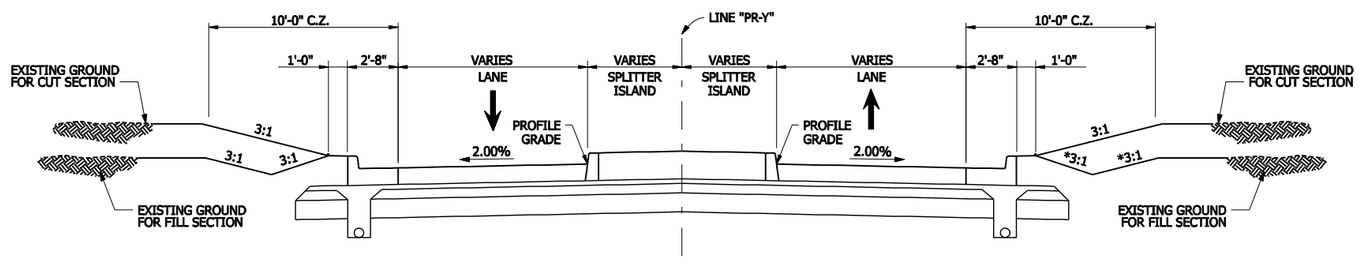
| | | | | | |
|---|---|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR | DRAWN: TPH | TYPICAL SECTIONS SIDE ROADS | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB | CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

Model: R-TYP_SIDEROADS Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 Full Build-out\20 Singles\R-TYP.dgn



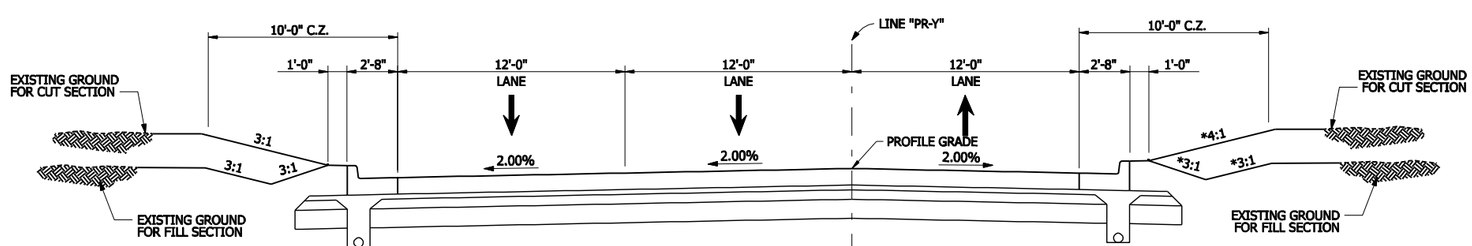

## NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

STA. 9+93.48 LINE "PR-Y" TO STA. 10+61.53 LINE "PR-Y"




## NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

STA. 12+49.73 LINE "PR-Y" TO 13+63.48 LINE "PR-Y"




## NORMAL TYPICAL SECTION - PRIORITY WAY DRIVE

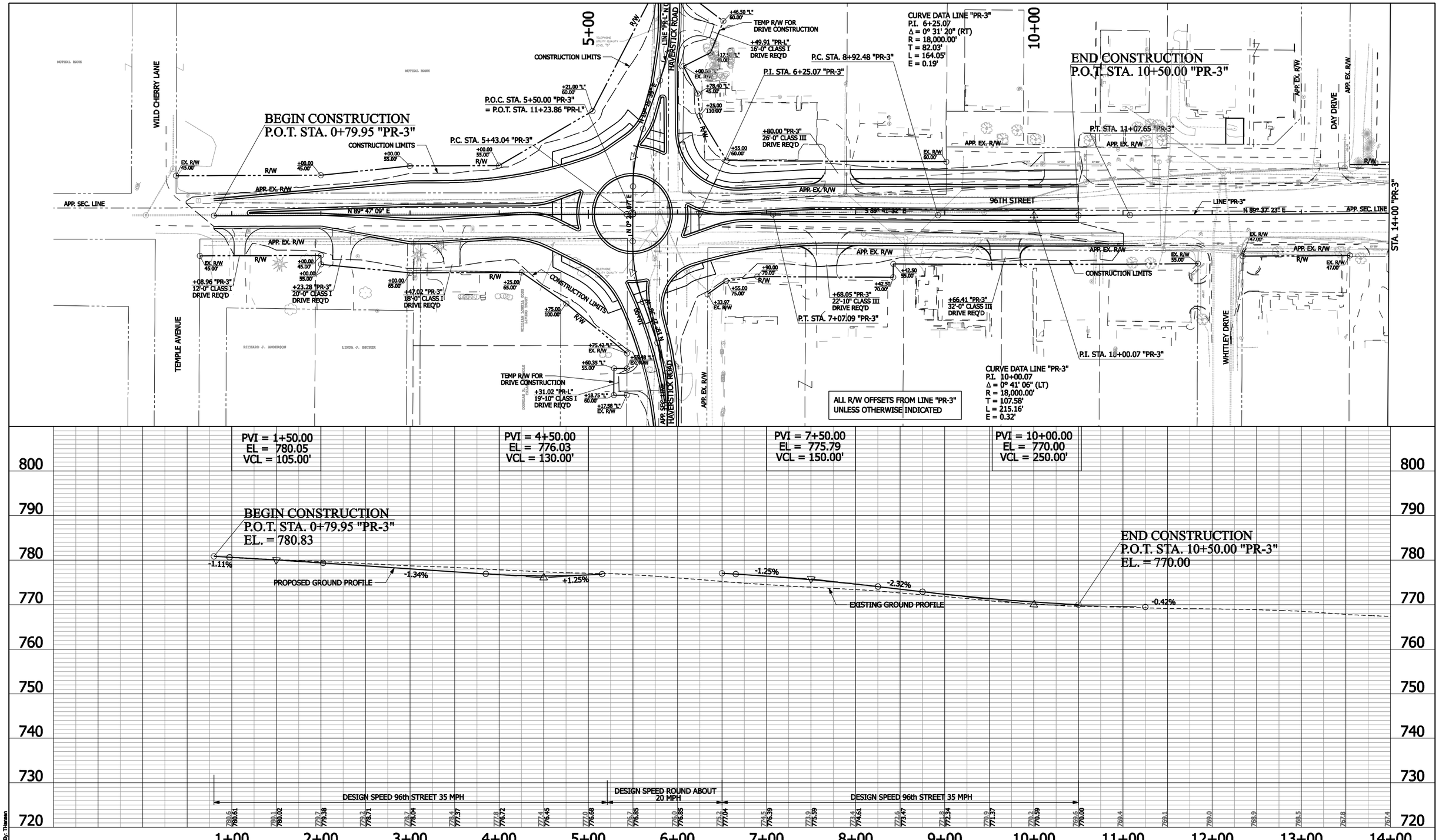
STA. 13+63.48 LINE "PR-Y" TO END LINE "PR-Y"

By: Thiessen

Plotted on 7/15/2011 at 05:22 PM

| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1/4" = 1'-0" | BRIDGE FILE TBD |
| | | VERTICAL SCALE | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | TYPICAL SECTIONS SIDE ROADS | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

Model: R-TYP_SIDEROADS Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 Full Build-out\20 Singles\R-TYP.dgn

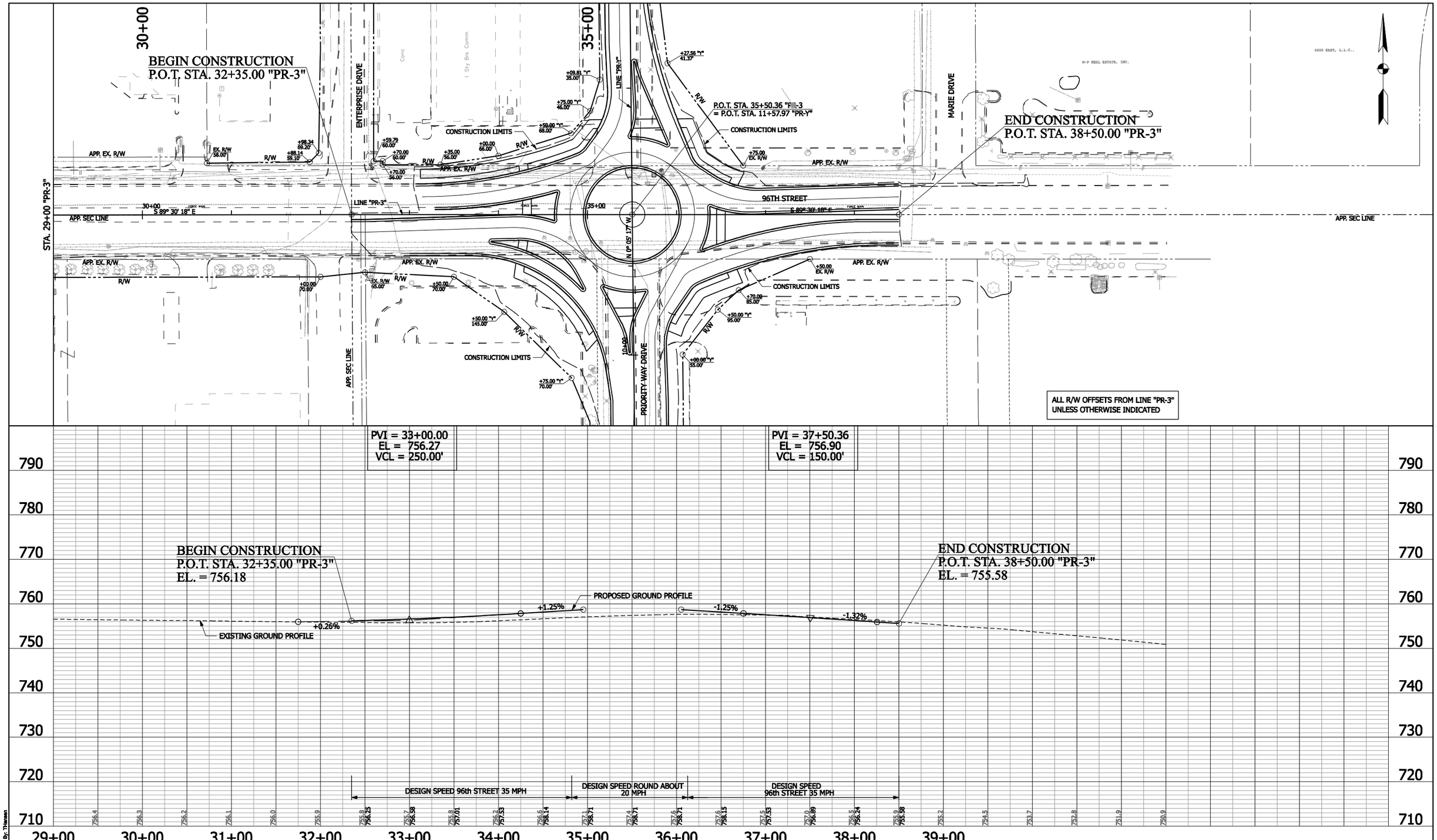



| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE 96th STREET - LINE "PR-3" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

By: Thiesen

Posted on 7/15/2011 at 05:23 PM

Model: R-PNP-31 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 baseset\R-PNP-3.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

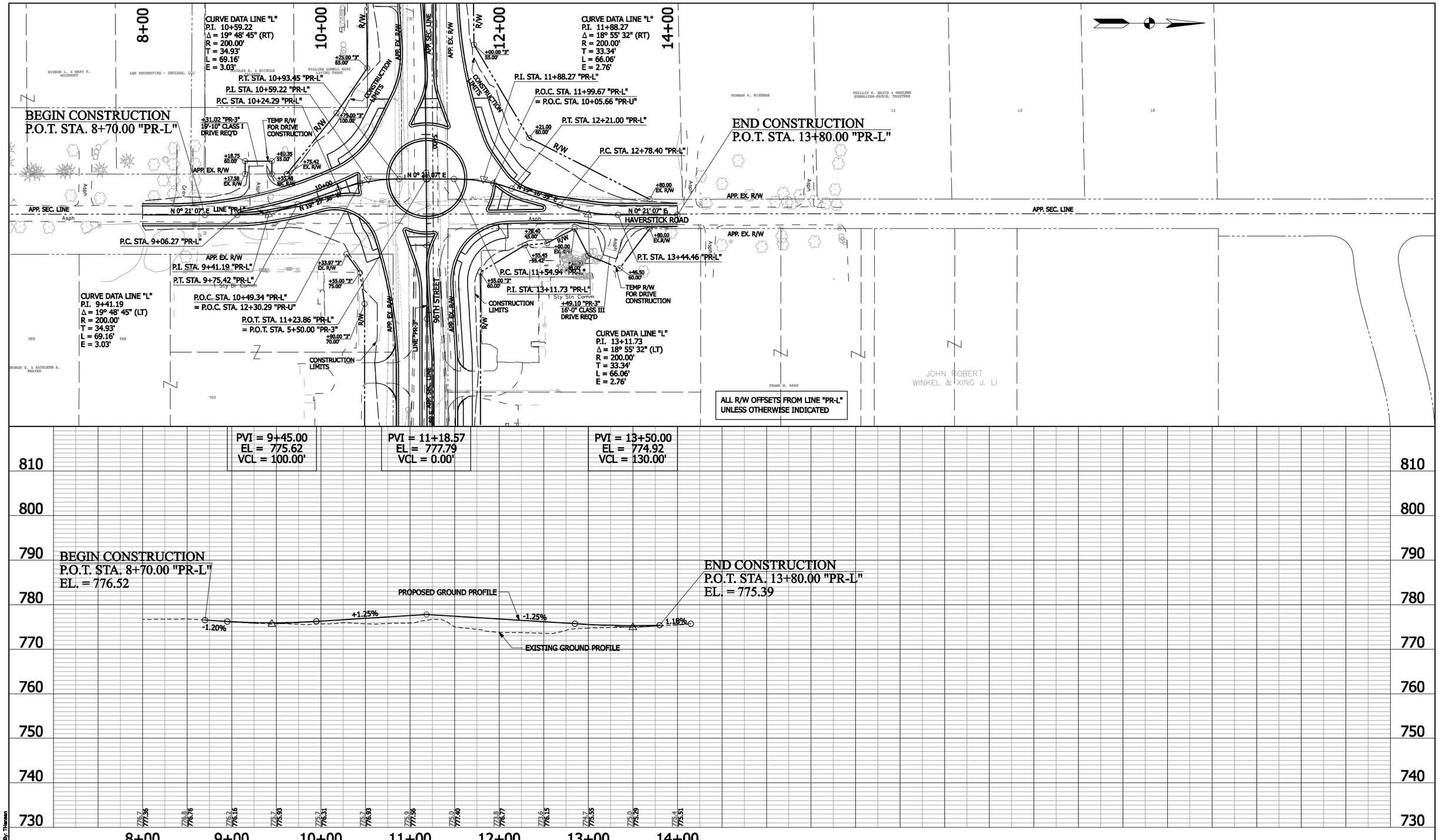
PLAN & PROFILE
96th STREET - LINE "PR-3"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901562 |

By: Thiessen

Posted on 7/15/2011 at 05:24 PM

Model: R-PNP-33 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 baseset\R-PNP-3.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

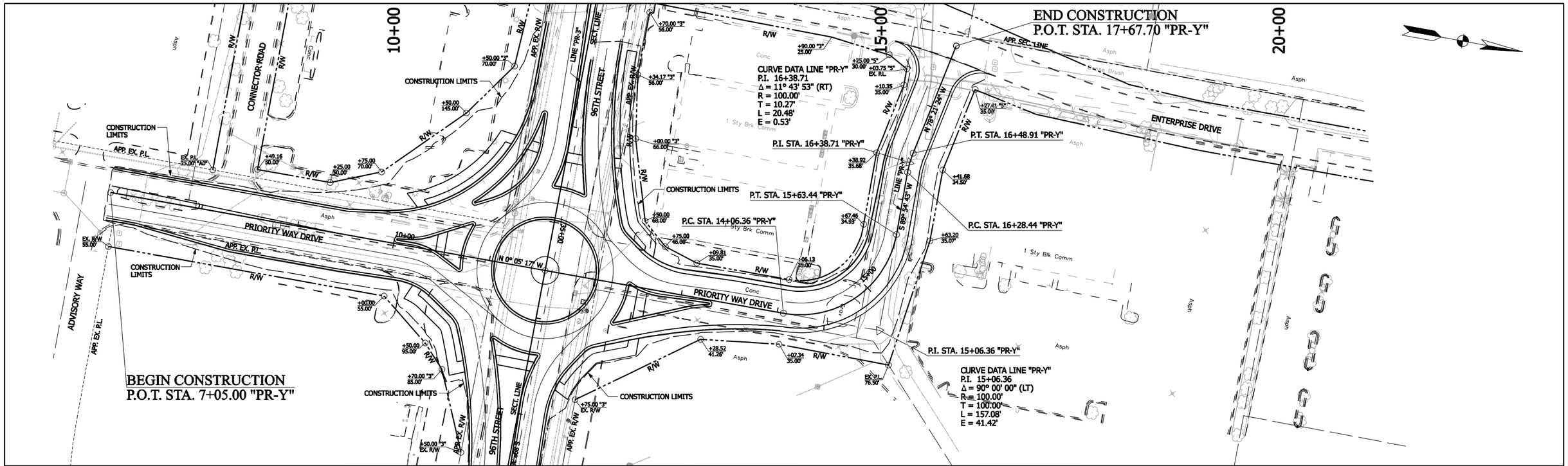
PLAN & PROFILE
HAVERSTICK ROAD - LINE "PR-L"

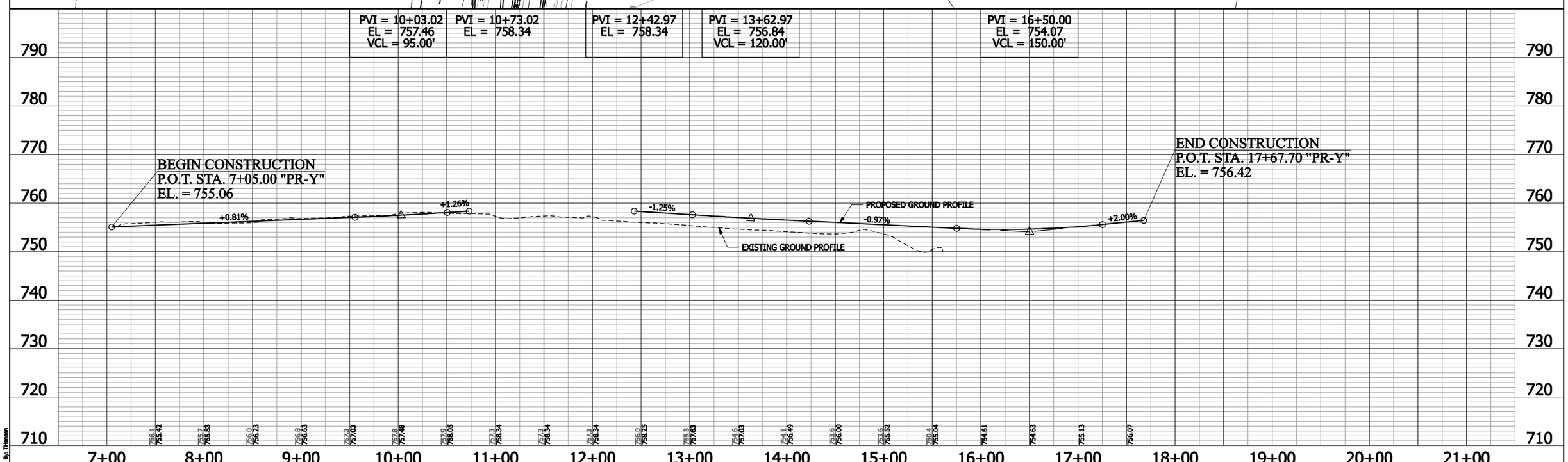
| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901562 |

By: Thiessen

Posted on 7/15/2011 at 06:25 PM

Model: R-PNP-L1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 basesets\R-PNP-L.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

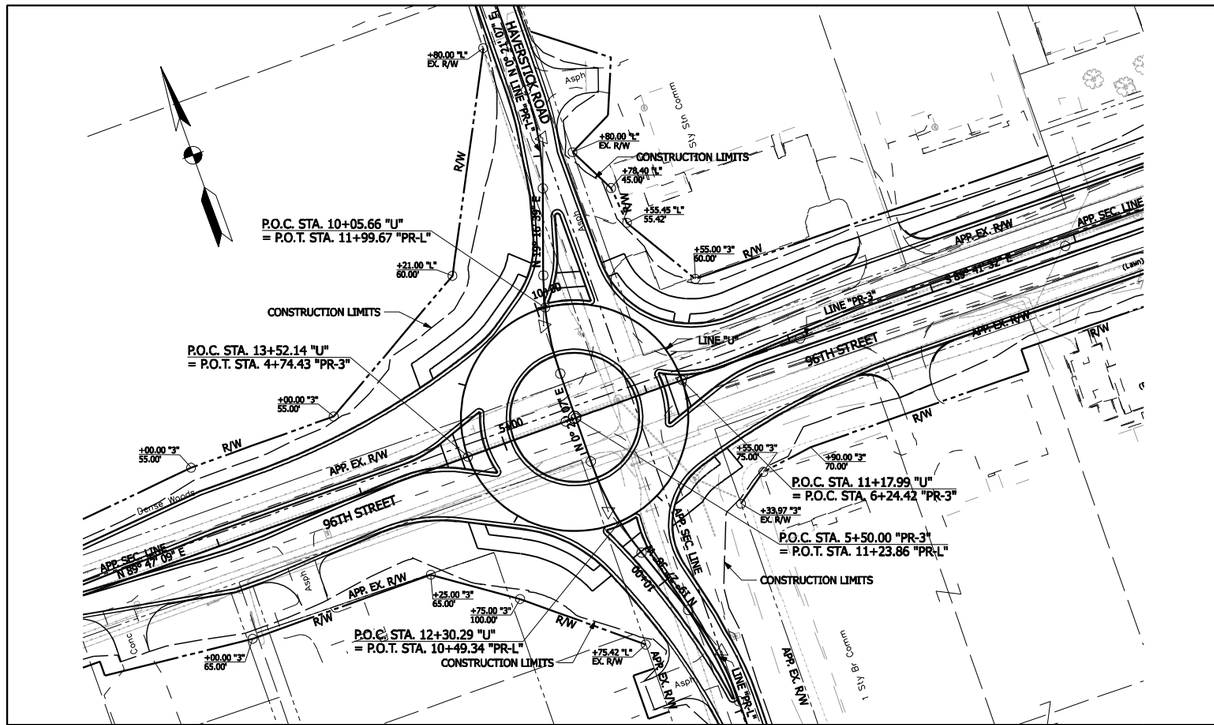
PLAN & PROFILE
PRIORITY WAY DRIVE - LINE "PR-Y"

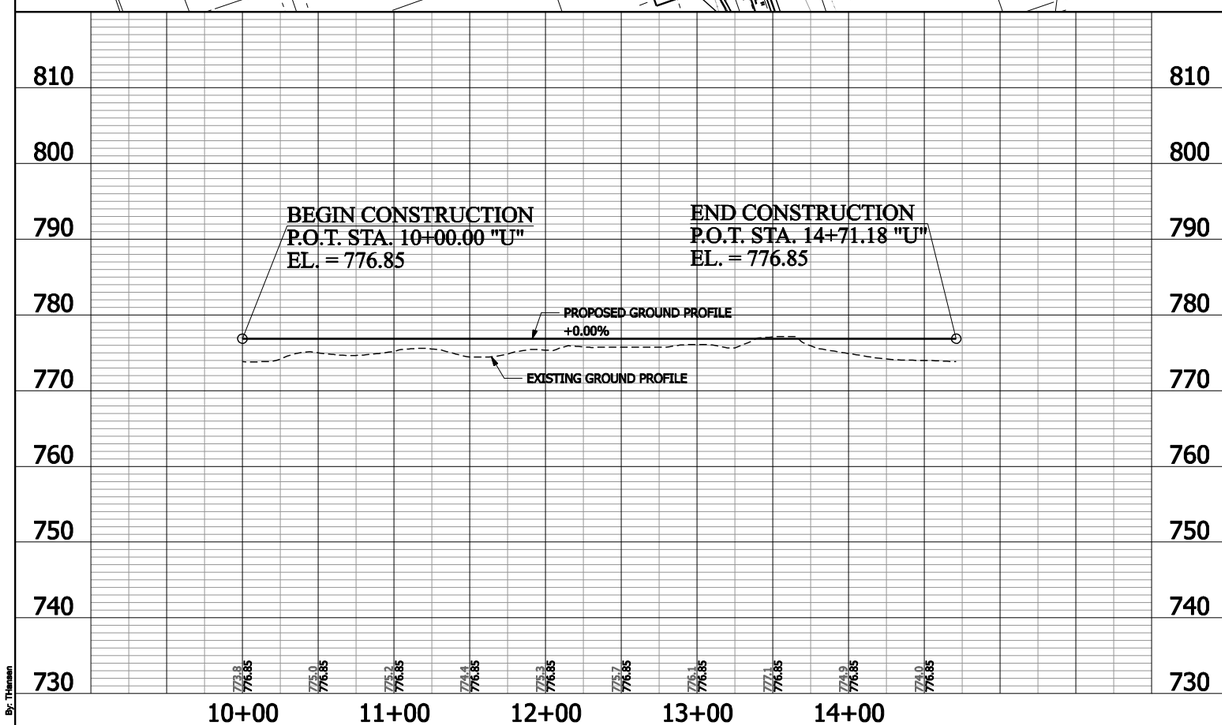
| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901562 |

By: Thiessen

Plotted on 7/15/2011 at 05:26 PM

Model: R-PNP-Y1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 basesets\R-PNP-Y.dgn



By: Thiessen

Posted on 7/15/2011 at 05:27 PM

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

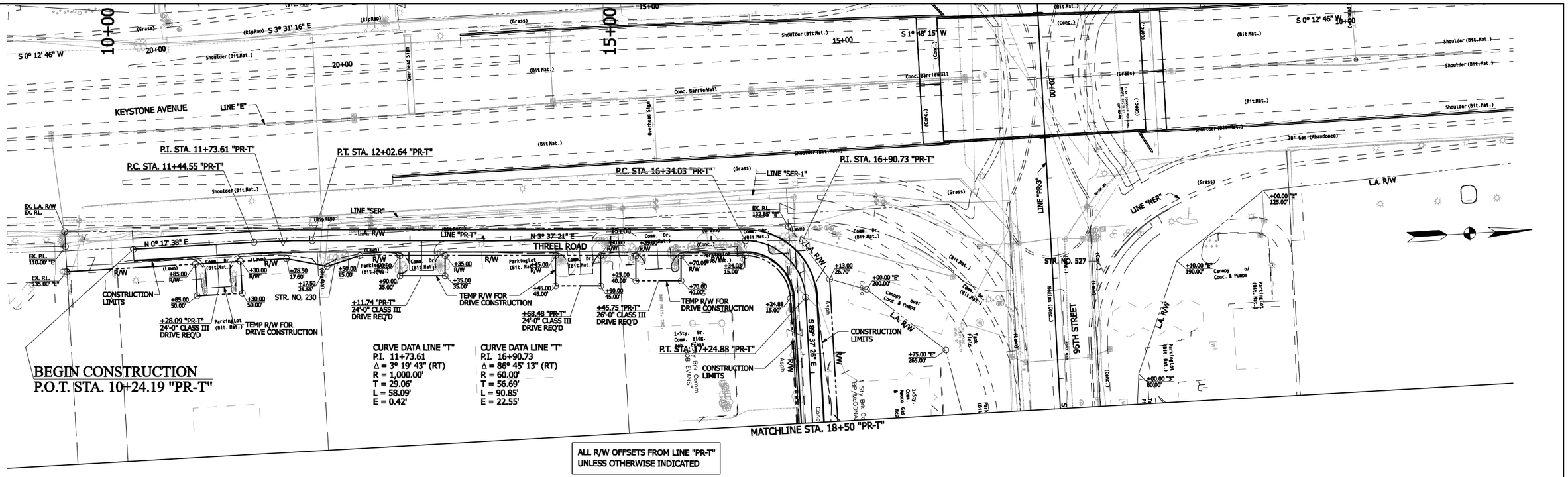
CHECKED: SEB CHECKED: KJR

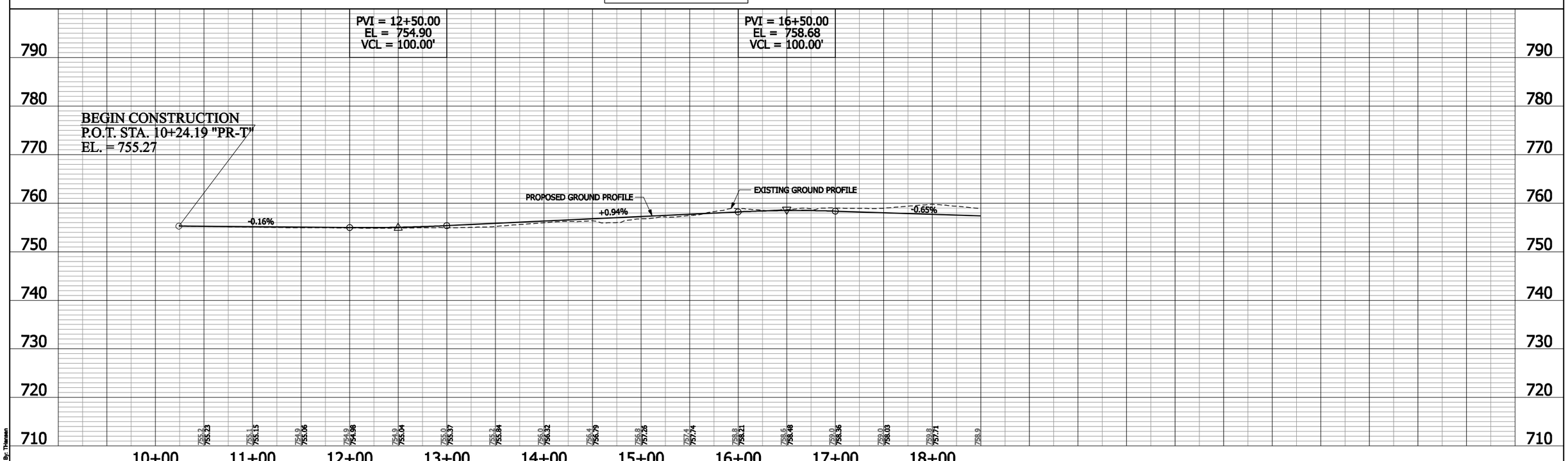
CITY OF CARMEL

PLAN & PROFILE
ROUND ABOUT - LINE "U"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901562 |

Model: R-PNP-U1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 basesets\R-PNP-U.dgn



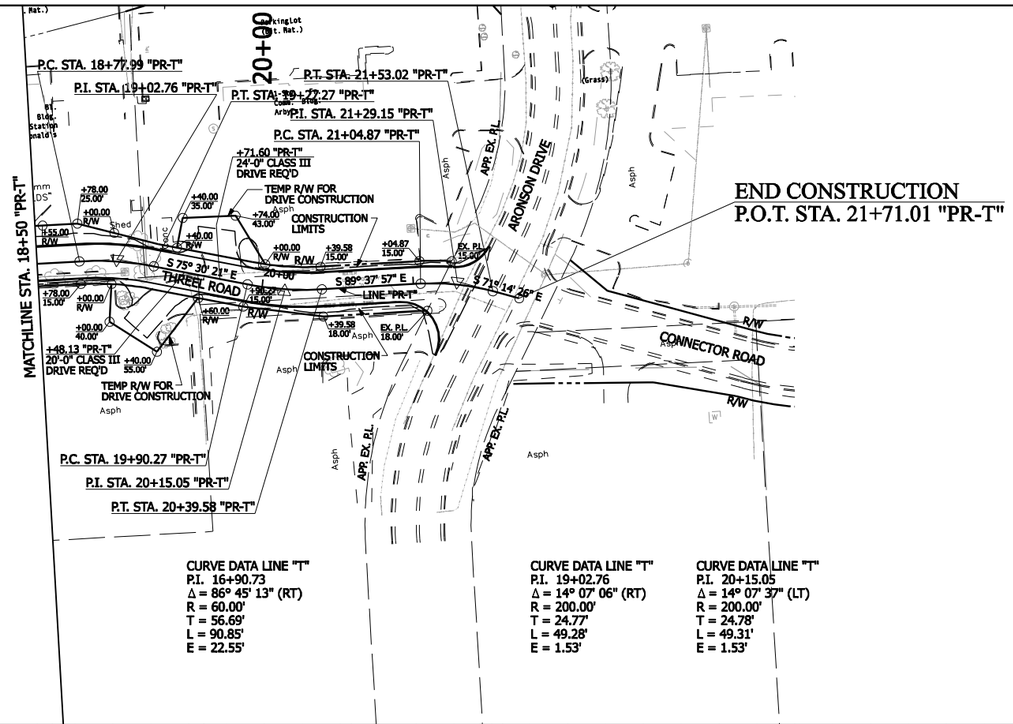




| | | | |
|---|---|---|---|
| RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE | CITY OF CARMEL | HORIZONTAL SCALE 1" = 50' | BRIDGE FILE TBD |
| | | VERTICAL SCALE 1" = 10' | DESIGNATION 0901562 |
| DESIGNED: KJR DRAWN: TPH | PLAN & PROFILE THREEL ROAD - LINE "PR-T" | SURVEY BOOK | SHEET . of . |
| CHECKED: SEB CHECKED: KJR | | CONTRACT TBD | PROJECT 0901562 |

By: Thiessen

Posted on 7/15/2011 at 06:28 PM

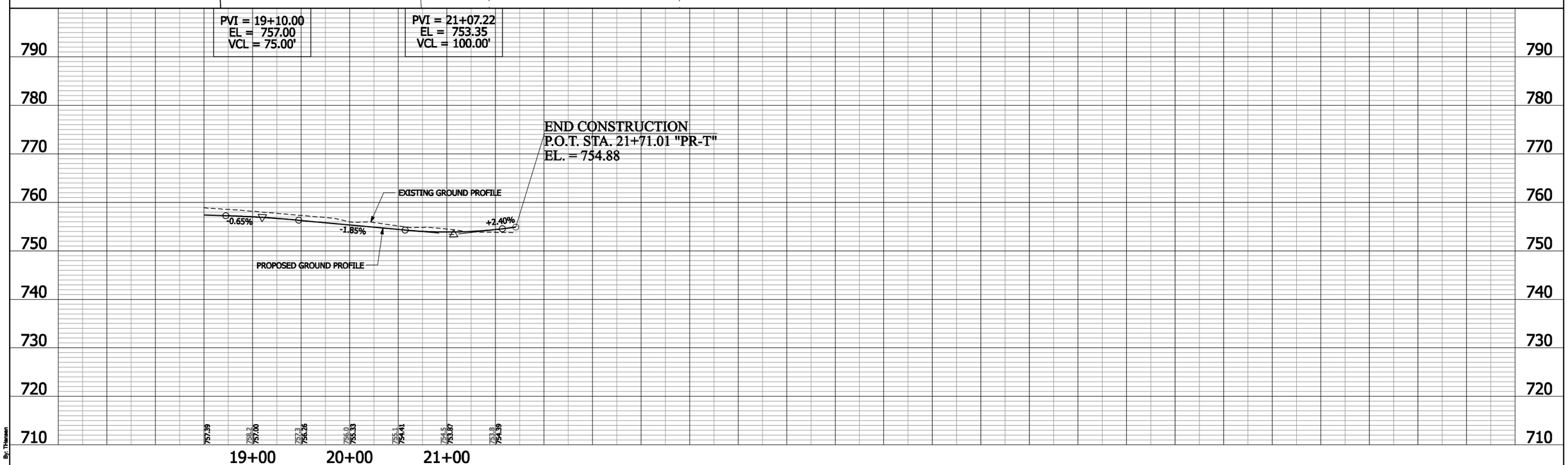
Model: R-PNP-T1 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 baseset\R-PNP-T.dgn




CURVE DATA LINE "T"
P.I. 16+90.73
Δ = 86° 45' 13" (RT)
R = 60.00'
T = 56.69'
L = 90.85'
E = 22.55'

CURVE DATA LINE "T"
P.I. 19+02.76
Δ = 14° 07' 06" (RT)
R = 200.00'
T = 24.77'
L = 49.28'
E = 1.53'

CURVE DATA LINE "T"
P.I. 20+15.05
Δ = 14° 07' 37" (LT)
R = 200.00'
T = 24.78'
L = 49.31'
E = 1.53'




| | |
|---|---|
| RECOMMENDED FOR APPROVAL | DESIGN ENGINEER DATE |
| DESIGNED: KJR | DRAWN: TPH |
| CHECKED: SEB | CHECKED: KJR |

CITY OF CARMEL

PLAN & PROFILE
THREEL ROAD - LINE "PR-T"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | . of . |
| CONTRACT | PROJECT |
| TBD | 0901562 |

By: Thiessen

Posted on 7/15/2011 at 05:29 PM

Model: R-PNP-T2 Drawing: p:\transportation\20075030 keystone parkway\30 sheetdrawings\302 full build-out\10 baseset\R-PNP-T.dgn

Appendix B.5

MOT Summary

**96TH STREET AND KEYSTONE PARKWAY INTERCHANGE (DES. NO. 0901562)**
**CONCEPTUAL MAINTENANCE OF TRAFFIC SUMMARY**

| Project | Construction Phase | Affected Road | Construction Summary | Impact Summary | Circumstance |
|---|---|---|---|---|---|
| Immediate | Phase 1 | Keystone Prkwy. | • Construct median crossovers<br>• Temp. widening of NB lanes<br>• Installation of culverts / pipes | • SB lanes closed | • SB traffic temporarily diverted to NB lanes |
| | | 96th St. | • Temp. widening of EB lanes<br>• Construct east-west connector<br>• Construct Whitley Dr. - Haver Way connector<br>• Construct north-south connector<br>• Partially construct Threel Rd. from the east-west connector<br>• Construct Whitley Dr. approach | • Threel Rd. access to 96th St. permanently closed<br>• Restricted access to Enterprise Dr. (temporary) | • Access to businesses on Threel Rd. from Aronson<br>• Access to businesses on Enterprise Dr. unaffected |
| | Phase 2 | Keystone Prkwy. | • Construct SB lanes<br>• Construct SB bridge<br>• Construct slip ramp (Ramp "SR") for SB traffic to I-465<br>• Partially construct dual southwest ramps (Ramps "SWR" and "SWR-1")<br>• Partially construct northwest ramp (Ramp "NWR")<br>• Partially construct dual southeast ramps (Ramps "SER" and "SER-1")<br>• Partially construct northeast ramp (Ramp "NER") | • SB traffic to use median crossovers<br>• Signal at 98th St. permanently removed; restricts left turns | • Signal maintained with operational side of 96th St.<br>• Permanent re-routing of left turning traffic at 98th St. |
| | | 96th St. | • Construct WB lanes<br>• Construct the north and south legs of Aronson Dr.<br>• Construct Day Dr. approach<br>• Remove Haver Way access point<br>• Construct Threel Rd. between Aronson Dr. and Harper | • No work on WB lanes between west and east ramps (see Phase 2a)<br>• Aronson Dr. temporarily closed<br>• Restricted access to Day Dr. (temporary)<br>• Haver Way access to 96th St. permanently closed | • Signal maintained with operational side of Keystone Prkwy.<br>• Aronson Dr. traffic detoured to Enterprise Dr. or Priority Way W. Dr.<br>• Day Dr. to remain open to local access due to no other ingress/egress<br>• Haver Way traffic re-routed to Whitley Dr. / Haver-Whitley connector |
| | Phase 2a | Keystone Prkwy. | • NB lanes abandoned | • Traffic signal at 96th St. removed | • Traffic shifted to constructed SB lanes |
| | | 96th St. | • Construct WB lanes between the west and east ramps | • Traffic signal at Keystone Prkwy. removed | • Prohibited movements (only the northwest ramp is operational) |
| | Phase 3 | Keystone Prkwy. | • Construct NB lanes<br>• Construct NB bridge<br>• Complete dual southwest ramps (Ramps "SWR" and "SWR-1")<br>• Complete northwest ramp (Ramp "NWR")<br>• Complete dual southeast ramps (Ramps "SER" and "SER-1")<br>• Complete northeast ramp (Ramp "NER") | • NB traffic to utilize median crossovers<br>• NB Keystone Prkwy. to WB 96th St. movement restricted (temporary) | • Traffic shifted to constructed SB lanes<br>• Traffic affected by restricted movements to use local detour (82nd St. / Westfield Blvd. / 106th St. / Allisonville Rd.) |
| | | 96th St. | • Construct EB lanes | • EB 96th St. to NB Keystone Prkwy. movement restricted (temporary) | • Traffic affected by restricted movements to use local detour (82nd St. / Westfield Blvd. / 106th St. / Allisonville Rd.) |
| Future Planned Improvements | Phase 4 | Keystone Prkwy. | • No further work | • Fully operational interchange | • N/A |
| | | 96th St. | • Construct the WB lanes from Whitley Dr. to west of Haverstick Rd.<br>• Construct the north leg of Haverstick Rd.<br>• Construct the Priority Way West Dr. spur connector (north leg) | • Haverstick Rd. north of 96th St. closed (temporarily)<br>• 96th St. traffic shifted to EB lanes at Haverstick Rd. and Priority Way West Drive | • Traffic attempting to access Haverstick Rd. north of 96th St. detoured along Westfield Blvd. / 99th St. |
| | Phase 5 | Keystone Prkwy. | • No further work | • Fully operational interchange | • N/A |
| | | 96th St. | • Construct EB lanes from Whitley Dr. to west of Haverstick Rd.<br>• Construct south leg of Haverstick Rd.<br>• Construct south leg of Priority Way West Dr. | • Restricted access to south leg of Haverstick Rd.<br>• 96th St. traffic shifted to WB lanes at Haverstick Rd. and Priority Way West Drive | • Haverstick Rd. to remain open to local access due to no other ingress/egress<br>• Aronson Dr. and Lakeshore Dr. utilized for detouring south Priority Way Way West Dr. traffic |

# Appendix C

Early Coordination

Appendix C.1

May 22, 2009 Early Coordination Letter

and Distribution

May 22, 2009

Regional Environmental Coordinator
National Park Service
Midwest Regional Office
601 Riverfront Drive
Omaha, Nebraska 68102

Re: Keystone Avenue and 96th Street
Carmel, Indiana

Dear Sir or Madam:

The City of Carmel desires to advance the preliminary design and environmental evaluations for the referenced project in Hamilton and Marion Counties. The proposed improvements, including the need for completion of the project, are described in more detail herein. This letter is written to describe the proposed project and to seek your comments regarding those resources under your jurisdiction as early coordination. Your cooperation in this endeavor is appreciated.

**PROJECT LOCATION**

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps and ground level photographs are attached. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from Haverstick Road to Priority Way Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street for a total project length of 7,383 ft. (1.4 miles).

**EXISTING CONDITIONS**

The existing at-grade signalized intersection of 96th Street and Keystone Avenue is located in an area predominated by urbanized land uses, such as various commercial establishments and residences. Automotive dealers, restaurants and small office parks align both 96th Street and Keystone Avenue throughout the project area. West of the Haverstick Road and 96th Street intersection and north of the Keystone Avenue and 98th Street intersection the land use transitions to residential.

The typical section of Keystone Avenue as it approaches the 96th Street intersection (southbound traffic) is comprised of two through lanes with a paved outside shoulder. Designated left and right turn lanes are present at the intersection. Designated left and right turn lanes are also provided at the 99th Street and the 98th Street intersections. Continuing southbound on Keystone Avenue, past the 96th Street intersection, two through lanes are provided. Approaching the I-465 interchange, the pavement width expands to provide a designated right turn lane and dual left turn lanes.

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rwArmstrong.com

Entering the 96th Street intersection form the south (northbound traffic), the typical section of Keystone Avenue consists of four travel lanes bordered by a paved outside shoulder. At the 96th Street intersection, the outside travel lane drops to a designated right turn lane. Additionally, a designated left turn lane is provided. Continuing north on Keystone Avenue away from the 96th Street intersection, three travel lanes are maintained until a point north of 99th Street where the inside lane merges into the center lane providing two lanes of traffic. Designated left and right turn lanes are present at the 98th Street intersection and the 99th Street intersection. However, it should be noted that the City of Carmel, under a separate project, is presently constructing interchanges along Keystone Avenue at 106th Street and 126th Street. As part of the 106th Street interchange, the median access to 99th Street will be removed.

Northbound and southbound traffic along the north leg is separated by a grassy median, while along the south leg, northbound and southbound traffic is divided by a paved median with a barrier wall. Drainage along both legs of Keystone Avenue is conveyed via side ditches. The inside lanes of Keystone Avenue drain into stormwater inlets located in the median. The posted speed limit along Keystone Avenue is 45 mph.

The west and east legs of 96th Street consists of two travel lanes in each direction with curb and gutter. Approaching the Keystone Avenue intersection from the west, a designated left turn lane is provided. Additionally, at the intersection, the outside travel lane becomes a shared through / right turn lane. West of Whitley Drive, 96th Street is reduced to a two lane section (one lane in each direction). Along the east leg of 96th Street, a two way left turn lane is present between Threel Road and Enterprise Drive. At its intersection with Keystone Avenue, the two way left turn lane transitions to a designated left turn lane for westbound 96th Street. Moreover, the inside through lane becomes a shared through / left turn lane, while the outside through lane converts to a shared through / right turn lane. A designated left turn lane is also provided at the Priority Way intersection for both eastbound and westbound traffic. Drainage along 96th Street is conveyed via side ditches. The posted speed limit along 96th Street is 35 mph.

The National Wetland Inventory (NWI) map and the Indiana GIS Atlas administered by the Indiana Geological Survey were reviewed for the presence of potential jurisdictional wetlands in the project area (NWI Map Attached). The NWI map and the GIS Atlas failed to identify any wetlands within or directly adjacent to the project area. Furthermore, a field investigation occurred on May 6, 2009 to identify potential wetland areas and jurisdictional waterways in the project area. While no waterways were observed, a potential wetland area was noted in the northwest quadrant of the Haverstick Road and 96th Street intersection. It is likely this area will be avoided by the project as Haverstick Road is the anticipated terminus for the west leg of 96th Street.

During the field investigations numerous utilities were noted throughout the project area. Those utilities included aerial cables and underground facilities that align both sides of 96th Street. Observed utilities along Keystone Avenue included aerial electrical distribution lines that align the west side of the road. Furthermore, low mast lighting is present along both sides of Keystone Avenue at the 96th Street and 98th Street intersections.

## PROJECT NEED AND PURPOSE

The proposed project is intended to reduce congestion at the intersection, improving its overall operational level of efficiency, and improve the overall safety. The intersection is currently operating at a level of service (LOS) F. If left unchanged, the intersection will continue to operate at a deficient LOS in the design year (2031).

## PROPOSED IMPROVEMENTS

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. Keystone Avenue would be comprised of three through lanes for

northbound traffic and two through lanes for southbound traffic. The outside lanes of Keystone Avenue would be bordered by paved shoulders with curb and gutter on the outside edge. Northbound and southbound traffic would be separated by a paved median with a barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange and would connect with the teardrop roundabout.

Exiting the interchange on the east leg of 96th Street (eastbound traffic), three travel lanes would be provided in addition to a designated right turn lane that continues to Aronson Drive. At the Aronson Drive intersection, a designated left turn lane would also be provided. Continuing east of Aronson Drive, the outside through lane would drop to a designated right turn lane at Priority Way Drive. Entering the interchange along the east leg (westbound traffic), 96th Street would be comprised of two travel lanes bordered by curb and gutter. Designated left turn lanes would be provided at the Priority Way Drive and Aronson Drive intersections. Additionally at these intersections, the outside through lane would become a shared through / right turn lane. Exiting and entering the interchange on the west leg, 96th Street would be comprised of two through lanes in each direction bordered by curb and gutter. A two way left turn lane would be included between Harver Way and Whitley Drive. West of Whitley Drive, 96th Street would reduce to a two lane section. In addition to the modifications in intersection control at the Keystone Avenue and 96th Street intersection, the existing signal and median at 98th Street would be removed, restricting left turns in all directions. The partial closure of this intersection was a condition of the agreement with the INDOT relinquishing Keystone Avenue to the City of Carmel. Completion of this project would improve the capacity of the intersection to a LOS B in the design year (2031).

As the design of the project advances the right-of-way will be identified. At the present, it is anticipated that three commercial establishments would require relocation, the gas stations in the southwest and southeast quadrants and the former gas station in the northeast quadrant. The project is anticipated for construction in 2011.

**EARLY COORDINATION**

As part of our early coordination effort for the proposed project, please study the enclosed information and provide a written evaluation of the potential impacts upon resources that are under your jurisdiction. It is requested, that you return a reply within 30-days of receipt of this packet. If no reply has been received within 30-days, it would be indicated in the environmental document, which is to be prepared for the referenced project, that your agency has no comment on the project.

Your cooperation in expediting the development of the referenced project is appreciated. If you have any questions, or if we can be of any further assistance, please do not hesitate to contact this office.

Very truly yours,

RW ARMSTRONG

Chad E. Costa
Senior Environmental Planner

cc: File #20075030

## Early Coordination Agencies
## 96th Street & Keystone Avenue in Carmel

Mr. Scott Pruitt, Field Supervisor
U.S. Fish and Wildlife Service
Bloomington Field Office
620 South Walker Street
Bloomington, IN 47403-2121

Ms. Jane Hardisty
State Conservationist
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indianapolis, IN 46278

Ms. Nancy Hasenmueller, Head
Environmental Geology Section
Indiana Geological Survey
611 North Walnut Grove
Bloomington, IN 47405

Manager
Aeronautics Section
Intermodal Transportation Division
Indiana Department of Transportation
Room N808, IGC North
100 North Senate Avenue
Indianapolis, IN 46204

Regional Environmental Coordinator
National Park Service
Midwest Regional Office
601 Riverfront Drive
Omaha, Nebraska 68102

Mr. Robert Tally Jr., P.E., Administrator
Indiana Division
Federal Highway Administration
Room 254, Federal Office Building
575 North Pennsylvania Street
Indianapolis, IN 46204
ATTN: Mr. Larry Heil

Ms. Christie Stanifer,
Environmental Coordinator
Indiana Department of Natural Resources
Division of Water, Environmental Unit
Room W264, IGC South
402 West Washington Street
Indianapolis, Indiana 46204

Field Environmental Officer
Chicago Regional Office
US Department of Housing & Urban Development
Metcalf Fed. Bldg.
77 W. Jackson Blvd. Room 2401
Chicago, IL 60604

Mr. Thomas W. Easterly, Commissioner
Office of Planning and Assessment
In Dept. Environmental Management
(Electronic Submittal)

Chief, Groundwater Section
Indiana Department of Environmental
Management
(Wellhead Protection Proximity Request Form)

Chief, Environmental Resources
Department of the Army
Louisville District, Corps of Engineers
ATTN: CEPMP-P-E
PO Box 59
Louisville, Kentucky 40201-0059

Mr. Nathan Knies
Environmental Scoping Manager
Indiana Department of Transportation
Greenfield District
32 S. Broadway St.
Greenfield, Indiana 46140

Ms. Lori Miser, Executive Director
Indianapolis Metropolitan Planning Organization
Department of Metropolitan Development
200 E. Washington St., Suite 1922
Indianapolis, IN 46204

Mr. Michael McBride, P.E.
City Engineer
City of Carmel
One Civic Square
Carmel, IN 46032

Mr. James Neal, P.E.
Hamilton County Engineer
1700 S. 10th Street
Noblesville, IN 46060

Mr. Long Nguyen, P.E.
Marion County Engineer
1200 Madison Avenue
Indianapolis, IN 46225

# Appendix C.2

## Agency Responses to May 22, 2009 Early Coordination

# United States Department of the Interior
## Fish and Wildlife Service

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

May 27, 2009

Mr. Chad E. Costa
RW Armstrong
Union Station
300 S. Meridian Street
Indianapolis, IN 46225

Project No: Keystone Avenue and 96th Street improvements
County(ies): Hamilton

Dear Mr. Costa:

This responds to your letter dated May 22, 2009, requesting our comments on the aforementioned project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, and the U. S. Fish and Wildlife Service's Mitigation Policy.

Based on a review of the information you provided, the U.S. Fish and Wildlife Service has no objections to the project as currently proposed. This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, should new information arise pertaining to project plans or a revised species list be published, it will be necessary for the Federal agency to reinitiate consultation.

We appreciate the opportunity to comment at this early stage of project planning. If project plans change such that fish and wildlife habitat may be affected, please recoordinate with our office as soon as possible. If you have any questions about our recommendations, please call (812)334-4261.

Sincerely yours,

Michael S. Litwin

Scott E. Pruitt,
Field Supervisor

**United States Department of Agriculture**

NRCS

Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278

May 27, 2009

Chad E. Costa
Sr. Environmental Planner
R.W. Armstrong & Associates
Union Station
300 S. Meridian St.
Indianapolis, IN 46225-1193

Dear Mr. Costa:

The proposed project to make intersection improvements at Keystone Avenue and 96th Street in the City of Carmel, Hamilton County, Indiana, as stated in your letter dated May 22, 2009, will not cause a conversion of prime farmland.

If you need additional information, please contact Lisa Bolton at (317) 290-3200, extension 342.

Sincerely,

**ACTING FOR**

Roger Bult

JANE E. HARDISTY
State Conservationist

*Helping People Help the Land*

An Equal Opportunity Provider and Employer

**THIS IS NOT A PERMIT**

**State of Indiana**
**DEPARTMENT OF NATURAL RESOURCES**
**Division of Water**

# Early Coordination/Environmental Assessment

**DNR #:** ER-14069 **Request Received:** May 26, 2009

**Requestor:** RW Armstrong
Chad E Costa
300 s Meridian st
Indianapolis, IN 46225

**Project:** Keystone Ave. and 96th St intersection improvements, Carmel

**County/Site info:** Marion - Hamilton

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

**Regulatory Assessment:** Formal approval by the Department of Natural Resources under the regulatory programs administered by the Division of Water is not required for this project.

**Natural Heritage Database:** The Natural Heritage Program's data have been checked.
To date, no plant or animal species listed as state or federally threatened, endangered, or rare have been reported to occur in the project vicinity.

**Fish & Wildlife Comments:** Fish, wildlife, and botanical resource losses as a result of this project can be minimized through implementation of the following measures.
Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion.
Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized.
Seed and protect all disturbed streambanks and slopes that are 3:1 or steeper with erosion control blankets (follow manufacturer's recommendations for selection and installation) or use an appropriate structural armament; seed and apply mulch on all other disturbed areas.

**Contact Staff:** Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife
Our agency appreciates this opportunity to be of service. Please do not hesitate to contact the above staff member at (317) 232-4160 or 1-877-928-3755 (toll free) if we can be of further assistance.

**Date:** July 20, 2009

J. Matthew Buffington
Environmental Supervisor
Division of Fish and Wildlife

**Questionnaire for the Indiana Department of Transportation, Office of Aviation**

**Project No:** _____ **Des/Bridge No:** _____

**Project Description:**

Keystone Ave. and 96th Street
Carmel, IN

**Requested By:**

RW Armstrong

**Are there any existing or proposed airports within or near the project limits?** Yes

**If yes, describe any potential conflicts with air traffic during or after the construction of the project.**

This project should have no impact on airspace or air navigation. However, Indianapolis Metropolitan Airport is a public-use airport and is located approximately 18,000 feet East of the proposed project site.

**This information was furnished by:**

**Name:** Justin Klump
**Title:** Project Manager – INDOT Office of Aviation
**Date:** 06/09/2009

Project No. N/A Des. No. N/A

Project Description: Interchange at 96th Street and Keystone Avenue, Hamilton & Marion Counties

Name of Organization requesting early coordination:

RW Armstrong

**QUESTIONNAIRE FOR THE INDIANA GEOLOGICAL SURVEY**

1) Do unusual and/or problem ( ) geographic, ( ) geological, ( ) geophysical, or ( ) topographic features exist within the project limits? Describe:
none

2) Have existing or potential mineral resources been identified in this area? Describe:
none

3) Are there any active or abandoned mineral resources extraction sites located nearby? Describe: none

This information was furnished by:

Name: Robin Rupp Title: Geologist
Address: 611 North Walnut Grove Bloomington, IN 47405
Phone: 812-855-7428 Date: June 1, 2009

Appendix C.3

August 31, 2009 Re-Coordination Letter

And Distribution List

August 31, 2009

{SEE ATTACHED LIST}

Re: Des. No. 0901562
Keystone Avenue and 96th Street Interchange
Carmel, Indiana

Dear Sir or Madam:

The City of Carmel desires to advance the preliminary design and environmental evaluations for the referenced project in Hamilton and Marion Counties. Early Coordination with your agency was initiated on May 22, 2009. However, the scope of the project has changed such that re-coordination is necessary. The proposed improvements, as modified, are described in more detail herein. This letter is written to describe the proposed project and to seek your comments regarding those resources under your jurisdiction as part of the re-coordination effort. Your cooperation in this endeavor is appreciated.

## PROJECT LOCATION

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps and ground level photographs are attached. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from approximately 150 ft. west of Haverstick Road to approximately 250 ft. east of Priority Way West Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street. Additionally, the project proposes two connector roads, a north-south connector road extending approximately 1,584 ft. (0.3 mile) between 96th Street and 98th Street, and an east-west connector that extends approximately 935 ft. (0.18 mile) between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

## EXISTING CONDITIONS

The existing at-grade signalized intersection of 96th Street and Keystone Avenue is located in an area predominated by urbanized land uses, such as various commercial establishments and residences. Automotive dealers, restaurants and small office parks align both 96th Street and Keystone Avenue throughout the project area. West of the Haverstick Road and 96th Street intersection and north of the Keystone Avenue and 98th Street intersection the land use transitions to residential.

Union Station / 300 S. Meridian St. / Indianapolis, IN 46225
PH 317.786.0461 // TF 800.321.6959 // FX 317.788.0957
rwArmstrong.com

The typical section of Keystone Avenue as it approaches the 96th Street intersection (southbound traffic) is comprised of two through lanes with a paved outside shoulder. Designated left and right turn lanes are present at the intersection. Designated left and right turn lanes are also provided at the 98th Street intersection. Continuing southbound on Keystone Avenue, past the 96th Street intersection, two through lanes are provided. Approaching the I-465 interchange, the pavement width expands to provide a designated right turn lane and dual left turn lanes.

Entering the 96th Street intersection form the south (northbound traffic), the typical section of Keystone Avenue consists of four travel lanes bordered by a paved outside shoulder. At the 96th Street intersection, the outside travel lane drops to a designated right turn lane. Additionally, a designated left turn lane is provided. Continuing north on Keystone Avenue away from the 96th Street intersection, three travel lanes are maintained until a point north of 99th Street where the inside lane merges into the center lane providing two lanes of traffic. Designated left and right turn lanes are present at the 98th Street intersection.

Northbound and southbound traffic along the north leg is separated by a grassy median, while along the south leg, northbound and southbound traffic is divided by a paved median with a barrier wall. Drainage along both legs of Keystone Avenue is conveyed via side ditches. The inside lanes of Keystone Avenue drain into stormwater inlets located in the median. The posted speed limit along Keystone Avenue is 45 mph.

The west and east legs of 96th Street consist of two travel lanes in each direction with curb and gutter. Approaching the Keystone Avenue intersection from the west, a designated left turn lane is provided. Additionally, at the intersection, the outside travel lane becomes a shared through / right turn lane. West of Whitley Drive, 96th Street is reduced to a two lane section (one lane in each direction). Along the east leg of 96th Street, a two way left turn lane is present between Threel Road and Enterprise Drive. At its intersection with Keystone Avenue, the two way left turn lane transitions to a designated left turn lane for westbound 96th Street. Moreover, the inside through lane becomes a shared through / left turn lane, while the outside through lane converts to a shared through / right turn lane. A designated left turn lane is also provided at the Priority Way West Drive intersection for both eastbound and westbound traffic. Drainage along 96th Street is conveyed via side ditches. The posted speed limit along 96th Street is 35 mph.

The National Wetland Inventory (NWI) map and the Indiana GIS Atlas administered by the Indiana Geological Survey were reviewed for the presence of potential jurisdictional wetlands in the project area (NWI Map Attached). The NWI map and the GIS Atlas failed to identify any wetlands within or directly adjacent to the project area. A field investigation occurring on August 25, 2009 identified an unnamed ephemeral ditch north of the 96th Street and Priority Way West Drive intersection that would be traversed by the north-south connector. Additionally, on July 5, 2009 another ephemeral stream that transitions into a perennial stream was observed near the intersection of 98th Street with the proposed north-south connector. A suspected wetland area in the northwest quadrant of 96th Street and Haverstick Road was identified in our previous coordination. Since that time, this area has been subjected to a preliminary evaluation. This evaluation identified the dominant tree species

to be red maple and walnut with an herbaceous layer dominated (over 90%) by winter creeper, an upland species. Furthermore, there was no surface hydrology present. To that end, this area is unlikely to contain a wetland. No other waterways or wetlands were identified within the project area.

During the field investigations numerous utilities were noted throughout the project area. Those utilities included aerial cables and underground facilities that align both sides of 96th Street. Observed utilities along Keystone Avenue included aerial electrical distribution lines that align the west side of the road. Furthermore, low mast lighting is present along both sides of Keystone Avenue at the 96th Street and 98th Street intersections.

**PROJECT NEED AND PURPOSE**

The proposed project is intended to reduce congestion at the intersection, improving its overall operational level of efficiency, and improve the overall safety. The intersection is currently operating at a level of service (LOS) F. If left unchanged, the intersection will continue to operate at a deficient LOS in the design year (2031). Completion of this project would improve the capacity of the intersection to a LOS B in the design year (2031).

**PROPOSED IMPROVEMENTS**

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. Keystone Avenue would be comprised of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic. The outside lanes of Keystone Avenue would be bordered by paved shoulders with curb and gutter on the outside edge. Northbound and southbound traffic would be separated by a paved median with a barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange and would connect with the teardrop roundabout. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project, restricting left turns in all directions. The partial closure of this intersection was a condition of the agreement with the Indiana Department of Transportation (INDOT) relinquishing Keystone Avenue to the City of Carmel.

The west leg of 96th Street would be comprised of four 12 ft. travel lanes (two eastbound and two westbound) bordered by curb and gutter. A two way left turn lane would be provided between Haverstick Road and Haver Way. The Haverstick Road and 96th Street intersection, which is currently controlled via four way stop, would be modified to include a single lane roundabout. Approach work to the proposed roundabout will be necessary north and south of the intersection. West of Haverstick Road, 96th Street would be reduced to a two lane cross section. Haver Way would require a slight realignment, approximately 55 ft., to the west to provide the appropriate clearance from the western ramps to Keystone Avenue.

East of the proposed interchange, 96th Street would typically consist of four 12 ft. travel lanes (two eastbound and two westbound) bordered by concrete curb and gutter. Multi-lane roundabouts are proposed at 96th Street's intersection with Aronson Drive and Priority Way West Drive, which are currently controlled by traffic signals. The eastbound and westbound travel lanes would be separated by a raised concrete median between the eastern ramps to Keystone Avenue and Aronson Drive and a two way left turn lane between Aronson Drive and Priority Way West Drive. Exiting northbound Keystone Avenue onto eastbound 96th Street, an additional lane is provided on the outside that will drop as a right turn at Aronson Drive. The eastbound section of 96th Street between Keystone Avenue and Aronson Drive would also consist of an additional lane to the inside that will drop at Aronson Drive for northbound traffic at the commercial drive entrance. A designated right turn lane will also be provided at Priority Way West Drive. The project continues approximately 250 ft. east of Priority Way West Drive, where proposed 96th Street will tie in with the existing section. At Aronson Drive, approach work to the proposed roundabout will be necessary north and south of the intersection. Likewise, improvements are necessary to the south approach of Priority Way West Drive.

North of 96th Street at Priority Way West Drive a new north-south connector road is proposed that terminates at 98th Street. The new north-south connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The total length of the north-south connector is approximately 0.3 mile. The intent of the north-south connector is to provide an alternate route to the Keystone Avenue interchange for traffic affected by the partial closure at 98th Street.

The project also proposes an east-west connector paralleling the south side of 96th Street between Aronson Drive and Priority Way West Drive (an estimated length of 0.18 mile). The east-west connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The east-west connector would accommodate left turning traffic onto 96th Street from commercial sources to the south. Without the east-west connector and using the roundabout at Aronson Drive would not provide sufficient gaps in traffic flow to allow a northbound to westbound movement. Therefore, traffic would be redirected along the east-west connector to the Priority Way West Drive roundabout.

Additional permanent right-of-way will be required for the completion of this project. Preliminary estimates indicate that approximately 22.15 acres of right-of-way will be required. As the design of the project advances the right-of-way will be refined further. At the present, it is anticipated that three commercial establishments would require relocation, the gas stations in the southwest and southeast quadrants and the former gas station in the northeast quadrant. The project is anticipated for construction in 2011.

## EARLY COORDINATION

As part of our early coordination effort for the proposed project, please study the enclosed information and provide a written evaluation of the potential impacts upon resources that are under your jurisdiction. It is requested, that you return a reply within 30-days of receipt of this packet. If

no reply has been received within 30-days, it would be indicated in the environmental document, which is to be prepared for the referenced project, that your agency has no comment on the project.

Your cooperation in expediting the development of the referenced project is appreciated. If you have any questions, or if we can be of any further assistance, please do not hesitate to contact this office.

Very truly yours,

RW ARMSTRONG

Chad E. Costa
Senior Environmental Planner

cc: File #20075030

**Agencies Receiving Early Coordination:**

Mr. Scott Pruitt, Field Supervisor
U.S. Fish and Wildlife Service
Bloomington Field Office
620 South Walker Street
Bloomington, IN 47403-2121

Ms. Jane Hardisty
State Conservationist
Natural Resources Conservation Service
6013 Lakeside Boulevard
Indianapolis, IN 46278

Ms. Nancy Hasenmueller, Head
Environmental Geology Section
Indiana Geological Survey
611 North Walnut Grove
Bloomington, IN 47405

Manager
Aeronautics Section
Intermodal Transportation Division
Indiana Department of Transportation
Room N808, IGC North
100 North Senate Avenue
Indianapolis, IN 46204

Regional Environmental Coordinator
National Park Service
Midwest Regional Office
601 Riverfront Drive
Omaha, Nebraska 68102

Mr. Robert Tally Jr., P.E., Administrator
Indiana Division
Federal Highway Administration
Room 254, Federal Office Building
575 North Pennsylvania Street
Indianapolis, IN 46204
ATTN: Mr. Larry Heil

Ms. Christie Stanifer,
Environmental Coordinator
Indiana Department of Natural Resources
Division of Water, Environmental Unit
Room W264, IGC South
402 West Washington Street
Indianapolis, Indiana 46204

Field Environmental Officer
Chicago Regional Office
US Department of Housing & Urban Development
Metcalf Fed. Bldg.
77 W. Jackson Blvd. Room 2401
Chicago, IL 60604

Mr. Thomas W. Easterly, Commissioner
Office of Planning and Assessment
In Dept. Environmental Management

Chief, Groundwater Section
Indiana Department of Environmental
Management

Chief, Environmental Resources
Department of the Army
Louisville District, Corps of Engineers
ATTN: CEPMP-P-E
PO Box 59
Louisville, Kentucky 40201-0059

Mr. Nathan Knies
Environmental Scoping Manager
Indiana Department of Transportation
Greenfield District
32 S. Broadway St.
Greenfield, Indiana 46140

Ms. Lori Miser, Executive Director
Indianapolis Metropolitan Planning Organization
Department of Metropolitan Development
200 E. Washington St., Suite 1922
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Mr. Michael McBride, P.E.
City Engineer
City of Carmel
One Civic Square
Carmel, IN 46032

Mr. James Neal, P.E.
Hamilton County Engineer
1700 S. 10th Street
Noblesville, IN 46060

Mr. Long Nguyen, P.E.
Marion County Engineer
1200 Madison Avenue
Indianapolis, IN 46225

Hamilton County Drainage Board
One Hamilton County Square, Suite 188
Noblesville, IN 46060

Marion County Drainage Board
200 E. Washington Street
Indianapolis, IN 46204

# Appendix C.4

## Agency Responses to August 31, 2009 Re-Coordination

# United States Department of the Interior
## Fish and Wildlife Service

Bloomington Field Office (ES)
620 South Walker Street
Bloomington, IN 47403-2121
Phone: (812) 334-4261 Fax: (812) 334-4273

September 23, 2009

Mr. Chad Costa
RW Armstrong
300 South Meridian
Indianapolis, Indiana 46225

Des. No.: 0901562
Road(s): Keystone Avenue and 96th and 98th Streets
Waterway(s): two drainage ditches/ephemeral streams
Work Type: road rehabilitation
County(ies): Hamilton and Marion

Dear Mr. Costa:

This responds to your letter dated August 31, 2009 requesting U.S. Fish and Wildlife Service (FWS) comments on the aforementioned project.

These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et. seq.) and are consistent with the intent of the National Environmental Policy Act of 1969, the Endangered Species Act of 1973, as amended, and the U. S. Fish and Wildlife Service's Mitigation Policy.

According to information you provided our office, the proposed project includes an interchange at Keystone Avenue over 96th Street, improvements to the intersection of 98th and Keystone Avenue, a new north-south connector road between 96th and 98th Streets, and an east-west connector road between Priority Way Drive and Aronson Drive. Preliminary estimates indicate that approximately 22 acres of permanent right-of-way will be required. Recent field investigations identified two unnamed ephemeral streams that will potentially be impacted by the project, particularly the north-south connector road. The riparian areas of these streams appear to be limited to grass and shrub-like species. Land use in the area is primarily commercial. No channel relocations are proposed; however, it appears that some sort of structure may be necessary to cross the more southern ephemeral stream.

ENDANGERED SPECIES

The proposed project is within the range of the federally endangered Indiana bat (*Myotis sodalis*). Habitat for the Indiana bat is very limited within the project area and we concur that the proposed project is not likely to adversely affect this listed species.

This precludes the need for further consultation on this project as required under Section 7 of the Endangered Species Act of 1973, as amended. However, should new information arise pertaining to project plans or a revised species list be published, it will be necessary for the Federal agency to reinitiate consultation.

RECOMMENDATIONS

The proposed plans may include the placement of a culvert or other structure along the project corridor. Where possible, culverts should span the active stream channel, and, ideally, should be either embedded or a 3-sided or open-arch form. This will allow the natural streambed to be maintained (or formed in some cases). Where practicable, they should be installed on an essentially flat slope. If an open-bottomed culvert is used in a stream with good, existing aquatic substrate (gravel, cobbles and boulders), the existing substrate should be left undisturbed.

Based on a review of the plans you provided, we recommend the following additional mitigation measures be included in the final project plans to minimize adverse impacts on fish and wildlife resources:

1. Post DO NOT DISTURB signs at the construction zone boundaries and do not clear trees or understory vegetation outside the boundaries.

2. Restrict channel work and vegetation clearing to the minimum necessary for installation of the crossing structure.

3. Minimize the extent of artificial bank stabilization and use bioengineering methods wherever feasible.

4. If riprap is utilized for bank stabilization, extend it below low-water elevation to provide aquatic habitat.

4. Implement temporary erosion and siltation control devices such as placement of riprap check dams in drainage ways and ditches, installation of silt fences, covering exposed areas with erosion control materials, and grading slopes to retain runoff in basins.

5. Re-vegetate all disturbed soil areas immediately upon project completion, using native trees and shrubs in the riparian zone wherever feasible.

6. Limit any tree-clearing activities as much as possible.

A permit under Section 404 of the Clean Water Act may be needed for the proposed project. Our recommendations to the U.S. Army Corps of engineers for permit conditions would be consistent with our comments here.

We appreciate the opportunity to comment at this early stage of project planning. If project plans change such that fish and wildlife habitat may be affected, please re-coordinate with our office as soon as possible. If you have any questions about our recommendations, please call Robin McWilliams Munson at (812) 334-4261 (Ext. 1207).

Sincerely yours,

Scott E. Pruitt
Field Supervisor

cc: Federal Highway Administration, Indianapolis, IN
Christie Stanifer, Indiana Division of Fish and Wildlife, Indianapolis, IN

ES: RMunson/332-4261/Keystone Av. And 96th St. interchange and improvements- revised design Sept. 2009 /September 23, 2009

**United States Department of Agriculture**

NRCS

Natural Resources Conservation Service
6013 Lakeside Blvd.
Indianapolis, IN 46278

September 16, 2009

Chad E. Costa
Sr. Environmental Planner
R.W. Armstrong & Associates
Union Station
300 S. Meridian St.
Indianapolis, IN 46225-1193

Dear Mr. Costa:

The proposed project to make intersection improvements at Keystone Avenue and 96th Street in the City of Carmel, Hamilton County, Indiana, as stated in your letter dated August 31, 2009, will not cause a conversion of prime farmland.

If you need additional information, please contact Lisa Bolton at (317) 290-3200, extension 342.

Sincerely,

Jane E. Hardisty

JANE E. HARDISTY
State Conservationist

**THIS IS NOT A PERMIT**

**State of Indiana**
**DEPARTMENT OF NATURAL RESOURCES**
**Division of Water**

# Early Coordination/Environmental Assessment

**DNR #:** ER-14069-1 **Request Received:** September 1, 2009

**Requestor:** RW Armstrong
Chad E Costa
300 s Meridian st
Indianapolis, IN 46225

**Project:** Keystone Ave. and 96th St interchange improvements, Carmel, Des# 0901562

**County/Site info:** Marion - Hamilton

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

**Regulatory Assessment:** Formal approval by the Department of Natural Resources under the regulatory programs administered by the Division of Water is not required for this project.

**Natural Heritage Database:** The Natural Heritage Program's data have been checked.
To date, no plant or animal species listed as state or federally threatened, endangered, or rare have been reported to occur in the project vicinity.

**Fish & Wildlife Comments:** Fish, wildlife, and botanical resource losses as a result of this project can be minimized through implementation of the following measures.
Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion.
Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized.
Seed and protect all disturbed streambanks and slopes that are 3:1 or steeper with erosion control blankets (follow manufacturer's recommendations for selection and installation) or use an appropriate structural armament; seed and apply mulch on all other disturbed areas.

**Contact Staff:** Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife
Our agency appreciates this opportunity to be of service. Please do not hesitate to contact the above staff member at (317) 232-4160 or 1-877-928-3755 (toll free) if we can be of further assistance.

**Date:** December 1, 2009

J. Matthew Buffington
Environmental Supervisor
Division of Fish and Wildlife

# Indiana Department of Environmental Management

*We make Indiana a cleaner, healthier place to live.*

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis , Indiana 46206

(317) 232-8603
800) 451-6027
www.IN.gov/idem

City of Carmel
Mike McBride, P.E.
One Civic Square
Carmel, IN 46032

RW Armstrong
Chad E. Costa
300 S. Meridian Street
Indianapolis, IN 46225

Wednesday, September 02, 2009

Dear Grant Administrator or Other Finance Approval Authority:

RE: The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. Additionally, the project proposes a new north-south connector road between 96th Street and 98th Street, and an east-west connector road between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

The Indiana Department of Environmental Management (IDEM) is aware that many local government or not-for-profit entities are seeking grant monies, a bond issuance, or another public funding mechanism to cover some portion of the cost of a public works, infrastructure, or community development project. IDEM also is aware that in order to be eligible for such funding assistance, applicants are required to first evaluate the potential impacts that their particular project may have on the environment. In order to assist applicants seeking such financial assistance and to ensure that such projects do not have an adverse impact on the environment, IDEM has prepared the following list of environmental issues that each applicant must consider in order to minimize environmental impacts in compliance with all relevant state laws.

IDEM recommends that each applicant consider the following issues when moving forward with their project. IDEM also requests that, in addition to submitting the information requested above, each applicant also sign the attached certification, attesting to the fact that they have read the letter in its entirety, agree to abide by the recommendations of the letter, and to apply for any permits required from IDEM for the completion of their project.

IDEM recommends that any person(s) intending to complete a public works, infrastructure, or community development project using any public funding consider each of the following applicable recommendations and requirements:

## WATER AND BIOTIC QUALITY

1. Section 404 of the Clean Water Act requires that you obtain a permit from the U.S. Army Corps of Engineers (USACE) before

discharging dredged or fill materials into any wetlands or other waters, such as rivers, lakes, streams, and ditches. Other activities regulated include the relocation, channelization, widening, or other such alteration of a stream, and the mechanical clearing (use of heavy construction equipment) of wetlands. Thus, as a project owner or sponsor, it is your responsibility to ensure that no wetlands are disturbed without the proper permit. Although you may initially refer to the U.S. Fish and Wildlife Service National Wetland Inventory maps as a means of identifying potential areas of concern, please be mindful that those maps do not depict jurisdictional wetlands regulated by the USACE or the Department of Environmental Management. A valid jurisdictional wetlands determination can only be made by the USACE, using the 1987 Wetland Delineation Manual.

USACE recommends that you have a consultant check to determine whether your project will abut, or lie within, a wetland area. To view a list of consultants that have requested to be included on a list posted by the USACE on their Web site, see USACE Permits and Public Notices (http://www.lrl.usace.army.mil/orf /default.asp) and then click on "Information" from the menu on the right-hand side of that page. Their "Consultant List" is the fourth entry down on the "Information" page. Please note that the USACE posts all consultants that request to appear on the list, and that inclusion of any particular consultant on the list does not represent an endorsement of that consultant by the USACE, or by IDEM.

Much of northern Indiana (Newton, Lake, Porter, LaPorte, St. Joseph, Elkhart, LaGrange, Steuben, and Dekalb counties; large portions of Jasper, Starke, Marshall, Noble, Allen, and Adams counties; and lesser portions of Benton, White, Pulaski, Kosciusko, and Wells counties) is served by the USACE District Office in Detroit (313-226-6812). The central and southern portions of the state (large portions of Benton, White, Pulaski, Kosciosko, and Wells counties; smaller portions of Jasper, Starke, Marshall , Noble, Allen, and Adams counties; and all other Indiana counties located in north-central, central, and southern Indiana ) are served by the USACE Louisville District Office (502-315-6733).

Additional information on contacting these U.S. Army Corps of Engineers (USACE) District Offices, government agencies with jurisdiction over wetlands, and other water quality issues, can be found at http://www.in.gov/idem/4396.htm. IDEM recommends that impacts to wetlands and other water resources be avoided to the fullest extent.

2. In the event a Section 404 wetlands permit is required from the USACE, you also must obtain a Section 401 Water Quality Certification from the IDEM Office of Water Quality. To learn more about the water quality certification program, visit: http://www.in.gov/idem/4384.htm.

3. If the USACE determines that a wetland or other body of water is isolated and not subject to Clean Water Act regulation, it is still regulated by the state of Indiana . A state isolated wetland permit from IDEM's Office of Water Quality is required for any activity that results in the discharge of dredged or fill materials into isolated wetlands. To learn more about isolated wetlands, contact the Office of Water Quality at 317-233-8488.

4. If your project will impact more than 0.5 acres of wetland, stream relocation, or other large-scale alterations to bodies of water such as the creation of a dam or a water diversion, you should seek additional input from the Office of Water Quality, Wetlands staff at 317-233-8488.

5. Work within the one-hundred year floodway of a given body of water is regulated by the Department of Natural Resources, Division of Water. Contact this agency at 317-232-4160 for further information.

6. The physical disturbance of the stream and riparian vegetation, especially large trees overhanging any affected water bodies should be limited to only that which is absolutely necessary to complete the project. The shade provided by the large overhanging trees helps maintain proper stream temperatures and dissolved oxygen for aquatic life.

7. For projects involving construction activity (which includes clearing, grading, excavation and other land disturbing activities) that result in the disturbance of one (1), or more, acres of total land area, contact the Office of Water Quality – Watershed Planning Branch (317/233-1864) regarding the need for of a Rule 5 Storm Water Runoff Permit. Visit the following Web page
   - http://www.in.gov/idem/4902.htm

   To obtain, and operate under, a Rule 5 permit you will first need to develop a Construction Plan (http://www.in.gov/idem/4917.htm#constreq), and as described in 327 IAC 15-5-6.5 (http://www.in.gov/legislative/iac/T03270/A00150 [PDF], pages 16 through 19). Before you may apply for a Rule 5 Permit, or begin construction, you must submit your Construction Plan to your county Soil and Water Conservation District (SWCD) (http://www.in.gov/isda/soil/contacts/map.html).

   Upon receipt of the construction plan, personnel of the SWCD or the Indiana Department of Environmental Management will review the plan to determine if it meets the requirements of 327 IAC 15-5. Plans that are deemed deficient will require re-submittal. If the plan is sufficient you will be notified and instructed to submit the verification to IDEM as part of the Rule 5 Notice of Intent (NOI) submittal. Once construction begins, staff of the SWCD or Indiana Department of Environmental Management will perform inspections of activities at the site for compliance with the regulation.

   Please be mindful that approximately 149 Municipal Separate Storm Sewer System (MS4) areas are now being established by various local governmental entities throughout the state as part of the implementation of Phase II federal storm water requirements. All of these MS4 areas will eventually take responsibility for Construction Plan review, inspection, and enforcement. As these MS4 areas obtain program approval from IDEM, they will be added to a list of MS4 areas posted on the IDEM Website at: http://www.in.gov/idem/4900.htm.

If your project is located in an IDEM-approved MS4 area, please contact the local MS4 program about meeting their storm water requirements. Once the MS4 approves the plan, the NOI can be submitted to IDEM.

Regardless of the size of your project, or which agency you work with to meet storm water requirements, IDEM recommends that appropriate structures and techniques be utilized both during the construction phase, and after completion of the project, to minimize the impacts associated with storm water runoff. The use of appropriate planning and site development and appropriate storm water quality measures are recommended to prevent soil from leaving the construction site during active land disturbance and for post construction water quality concerns. Information and assistance regarding storm water related to construction activities are available from the Soil and Water Conservation District (SWCD) offices in each county or from IDEM.

8. For projects involving impacts to fish and botanical resources, contact the Department of Natural Resources - Division of Fish and Wildlife (317-232-4080) for additional project input.

9. For projects involving water main construction, water main extensions, and new public water supplies, contact the Office of Water Quality - Drinking Water Branch (317-308-3299) regarding the need for permits.

10. For projects involving effluent discharges to waters of the State of Indiana , contact the Office of Water Quality - Permits Branch (317-233-0468) regarding the need for a National Pollutant Discharge Elimination System (NPDES) permit.

11. For projects involving the construction of wastewater facilities and sewer lines, contact the Office of Water Quality - Permits Branch (317-232-8675) regarding the need for permits.

# AIR QUALITY

The above-noted project (see page 1) should be designed to minimize any impact on ambient air quality in, or near, the project area. The project must comply with all federal and state air pollution regulations. Consideration should be given to the following:

1. Regarding open burning, and disposing of organic debris generated by land clearing activities; some types of open burning are allowed under specific conditions (http://www.in.gov/idem/4148.htm). You also can seek an open burning variance from IDEM.

   IDEM generally recommends that you take vegetative wastes to a registered yard waste composting facility or that the waste be chipped or shredded with composting on-site. You must register with IDEM if more than 2,000 pounds is to be composted; contact 317-232-0066). The finished compost can then be used as a mulch or soil amendment. You also may bury any vegetative wastes (such as leaves, twigs, branches, limbs, tree trunks and stumps) on-site, although burying large quantities of such material can lead to subsidence problems.

2. Reasonable precautions must be taken to minimize fugitive dust emissions from construction and demolition activities. For example, wetting the area with water, constructing wind barriers, or treating dusty areas with chemical stabilizers (such as calcium chloride or several other commercial products). Dirt tracked onto paved roads from unpaved areas should be minimized.

   If construction or demolition is conducted in a wooded area where blackbirds have roosted or abandoned buildings or building sections in which pigeons or bats have roosted for three to five years, precautionary measures should be taken to avoid an outbreak of histoplasmosis. This disease is caused by the fungus Histoplasma capsulatum, which stems from bird or bat droppings that have accumulated in one area for three to five years. The spores from this fungus become airborne when the area is disturbed and can cause infections over an entire community downwind of the site. The area should be wetted down prior to cleanup or demolition of the project site. For more detailed information on histoplasmosis prevention and control, please contact the Acute Disease Control Division of the Indiana State Department of Health at 317-233-7272.

3. The U.S. EPA and the U.S. Surgeon General recommend that people not have long-term exposure to radon at levels above 4 pCi/L. For a county-by-county map of predicted radon levels in Indiana , visit http://www.in.gov/idem/4267.htm.

   The U.S. EPA further recommends that all homes and apartments (within three stories of ground level) be tested for radon. If in-home radon levels are determined to be 4 pCi/L or higher, then U.S. EPA recommends a follow-up test. If the second test confirms that radon levels are 4 pCi/L or higher, then U.S. EPA recommends the installation of radon-reduction measures. For a list of qualified radon testers and radon mitigation (or reduction) specialists, visit http://www.in.gov/isdh/regsvcs/radhealth/pdfs/radon_testers_mitigators_list.pdf. Also, is recommended that radon reduction measures be built into all new homes, particularly in areas like Indiana that have moderate to high predicted radon levels.

   To learn more about radon, radon risks, and ways to reduce exposure, visit http://www.in.gov/isdh/regsvcs/radhealth/radon.htm, http://www.in.gov/idem/4145.htm, or http://www.epa.gov/radon/index.html.

4. With respect to asbestos removal, all facilities slated for renovation or demolition (except residential buildings that have four (4) or fewer dwelling units and which will not be used for commercial purposes) must be inspected by an Indiana-licensed asbestos inspector prior to the commencement of any renovation or demolition activities. If regulated asbestos-containing material (RACM) that may become airborne is found, any subsequent demolition, renovation, or asbestos removal activities must be performed in accordance with the proper notification and emission control requirements.

   If no asbestos is found where a renovation activity will occur, or if the renovation involves removal of less than 260 linear feet of

RACM off of pipes, less than 160 square feet of RACM off of other facility components, or less than 35 cubic feet of RACM off of all facility components, the owner or operator of the project does not need to notify IDEM before beginning the renovation activity.

For questions on asbestos demolition and renovation activities, you can also call IDEM's Lead/Asbestos section at 1-888-574-8150.

In all cases where a demolition activity will occur (even if no asbestos is found), the owner or operator must still notify IDEM 10 working days prior to the demolition, using the form found at www.in.gov/icpr/webfile/formsdiv/44593.pdf.

Anyone submitting a renovation/demolition notification form will be billed a notification fee based upon the amount of friable asbestos containing material to be removed or demolished. Projects that involve the removal of more than 2,600 linear feet of friable asbestos containing materials on pipes, or 1,600 square feet or 400 cubic feet of friable asbestos containing material on other facility components, will be billed a fee of $150 per project; projects below these amounts will be billed a fee of $50 per project. Billings will occur on a quarterly basis.

For more information about IDEM policy regarding asbestos removal and disposal, visit: http://www.in.gov/idem/4983.htm.

5. With respect to lead-based paint removal, IDEM encourages all efforts to minimize human exposure to lead-based paint chips and dust. IDEM is particularly concerned that young children exposed to lead can suffer from learning disabilities. Although lead-based paint abatement efforts are not mandatory, any abatement that is conducted within housing built before January 1, 1978 , or a child-occupied facility is required to comply with all lead-based paint work practice standards, licensing and notification requirements. For more information about lead-based paint removal, visit http://www.in.gov/idem/permits/guide/waste/leadabatement.html.

6. Ensure that asphalt paving plants are permitted and operate properly. The use of cutback asphalt, or asphalt emulsion containing more than seven percent (7%) oil distillate, is prohibited during the months of April through October. See 326 IAC 8-5-2 , Asphalt Paving Rule (http://www.ai.org/legislative/iac/T03260/A00080.PDF).

7. If your project involves the construction of a new source of air emissions or the modification of an existing source of air emissions or air pollution control equipment, it will need to be reviewed by the IDEM Office of Air Quality (OAQ). A registration or permit may be required under 326 IAC 2 ( www.ai.org/legislative/iac/t03260/a00020.pdf.). New sources that use or emit hazardous air pollutants may be subject to Section 112 of the Clean Air Act and corresponding state air regulations governing hazardous air pollutants.

8. For more information on air permits, visit http://www.in.gov/idem/4223.htm, or to initiate the IDEM air permitting process, please contact the Office of Air Quality Permit Reviewer of the Day at (317) 233-0178 or oamprod at idem.in.gov.

## LAND QUALITY

In order to maintain compliance with all applicable laws regarding contamination and/or proper waste disposal, IDEM recommends that:

1. If the site is found to contain any areas used to dispose of solid or hazardous waste, you need to contact the Office of Land Quality (OLQ) at 317-308-3103.

2. All solid wastes generated by the project, or removed from the project site, need to be taken to a properly permitted solid waste processing or disposal facility. For more information, visit http://www.in.gov/idem/4998.htm.

3. If any contaminated soils are discovered during this project, they may be subject to disposal as hazardous waste. Please contact the OLQ at 317-308-3103 to obtain information on proper disposal procedures.

4. If Polychlorinated Biphenyls (PCBs) are found at this site, please contact the Industrial Waste Section of OLQ at 317-308-3103 for information regarding management of any PCB wastes from this site.

5. If there are any asbestos disposal issues related to this site, please contact the Industrial Waste Section of OLQ at 317-308-3103 for information regarding the management of asbestos wastes. (Asbestos removal is addressed above, under Air Quality.)

6. If the project involves the installation or removal of an underground storage tank, or involves contamination from an underground storage tank, you must contact the IDEM Underground Storage Tank program at 317-308-3039 ( http://www.in.gov/idem/4999.htm).

## FINAL REMARKS

Should the applicant need to obtain any environmental permits in association with this proposed project, please be mindful that IC 13-15-8 requires that they notify all adjoining property owners and/or occupants within ten days of your submittal of each permit application. Applicants seeking multiple permits, may still meet the notification requirement with a single notice if all required permit applications are submitted with the same ten day period.

Please note that this letter does not constitutes a permit, license, endorsement, or any other form of approval on the part of either the Indiana Department of Environmental Management or any other Indiana state agency.

Should you have any questions relating to the content or recommendations of this letter, or if you have additional questions about whether a more complete environmental review of your project should be conducted, please feel free to contact Michael Sullivan at (317) 233-3835, msullivan@idem.in.gov.

Sincerely,

Thomas W. Easterly
Commissioner

---

## Signature(s) of the Applicant

I acknowledge that I am seeking grant monies, a bond issuance, or other public funding mechanism to cover some portion of the cost of the public works, infrastructure, or community development project as described herein, which I am working (possibly with others) to complete.

## Project Description

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. Additionally, the project proposes a new north-south connector road between 96th Street and 98th Street, and an east-west connector road between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

With my signature, I do hereby affirm that I have read the letter from the Indiana Department of Environmental Management that appears directly above. In addition, I understand that in order to complete the project in which I am interested, with a minimum impact to the environment, I must consider all the issues addressed in the aforementioned letter, and further, that I must obtain any required permits.

Dated Signature of the Public Owner Contact/Responsible Elected Official _____

Mike McBride, P.E.

Dated Signature of the Project Planner/Consultant Contact Person _____

Chad E. Costa

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**
*We Protect Hoosiers and Our Environment.*

*Mitchell E. Daniels Jr.*
**Governor**

*Thomas W. Easterly*
**Commissioner**

100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
Toll Free (800) 451-6027
**www.idem.IN.gov**

September 3, 2009

Chad Costa
RW Armstrong
Union Station
300 South Meridian Street
Indianapolis, Indiana 46225

RE: Wellhead Protection Area Proximity Determination
96th Street And Keystone Avenue, Marion And Hamilton Counties

Upon review of the above referenced site, it has been determined that the site **is not** located within a Wellhead Protection Area.

This information is accurate to the best of our knowledge. However, there are in some cases, a few factors that could impact the accuracy of this determination. For example, some Wellhead Protection Area Delineations have not been submitted or may not have been approved by this office. In these cases, we use a 3,000 foot fixed radius buffer to make the proximity determination. To find the status of a Public Water Supply System's Wellhead Protection Area Delineation, please visit our tracking database at http://www.in.gov/idem/4289.htm.

If you have any additional questions, please feel free to contact me at the address above or at (317) 308-3388.

Sincerely,

James Sullivan, Chief
Ground Water Section
Drinking Water Branch
Office of Water Quality

JS:gml



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**Questionnaire for the Indiana Department of Transportation, Office of Aviation**

**Project No:** _____ **Des/Bridge No:** 0901562

**Project Description:**

Keystone avenue and 96th street interchange, Carmel, IN

**Requested By:**

RW Armstrong

**Are there any existing or proposed airports within or near the project limits?** YES

**If yes, describe any potential conflicts with air traffic during or after the construction of the project.**

The Indianapolis Metropolitan Airport is located approximately 16,777' feet North East of the proposed project site. If any equipment or permanent structures utilized for this project penetrate a 100:1 approach slope from the airport FAA form 7460-1 (Notice of proposed construction or alteration) must be filed. For assistance contact Marcus Dial, INDOT Office Of Aviation, 317-232-1494.

**This information was furnished by:**

**Name:** Adam Fackler

**Title:** Chief Airport Inspector – INDOT Office of Aviation

**Date:** September 11th 2009

Project No. _____ Des. No. 0901562

Project Description: Interchange at 96th Street and Keystone Avenue, Hamilton & Marion Counties

Name of Organization requesting early coordination:

RW Armstrong

**QUESTIONNAIRE FOR THE INDIANA GEOLOGICAL SURVEY**

1) Do unusual and/or problem ( ) geographic, ( ) geological, ( ) geophysical, or ( ) topographic features exist within the project limits? Describe:
none

2) Have existing or potential mineral resources been identified in this area? Describe:
none

3) Are there any active or abandoned mineral resources extraction sites located nearby? Describe: none

This information was furnished by:

Name: Robin Rupp Title: Geologist
Address: 611 North Walnut Grove Bloomington, IN 47405
Phone: 812-855-7428 Date: September 10, 2009

SURVEYOR'S OFFICE

# Hamilton County

*Kenton C. Ward, CFM*
*Surveyor of Hamilton County*
*Phone (317) 776-8495*
*Fax (317) 776-9628*

*Suite 188*
*One Hamilton County Square*
*Noblesville, Indiana 46060-2230*

September 2, 2009

RW Armstrong
ATTN: Chad Costa
300 South Meridian Street
Indianapolis, IN 46225
VIA E-MAIL: ccosta@rwa.com

**RE: Des. No. 0901562**
**Keystone Avenue and 96th Street Interchange**

Dear Mr. Costa:

We have reviewed the Early Coordination submittal to the Hamilton County Drainage Board on September 1, 2009, for this project and have the following comments:

1. The proposed project falls in the incorporated area and MS4 jurisdiction of the City of Carmel.
2. The proposed project DOES NOT fall in a Carmel Wellhead Protection Zone.
3. The proposed project does not fall in a Hamilton County Regulated Drain Watershed.
4. No Hamilton County Regulated Drains fall within the Right of Way of this proposed project.

Should you have any questions, I can be reached at 317-776-8495.

Sincerely,

Greg Hoyes

Greg Hoyes, AC, CFM, CPESC
Plan Reviewer

# Appendix C.5

## June 3, 2010 Re-Coordination Letter and Distribution List

RWARMSTRONG™

June 3, 2010

{SEE ATTACHED LIST}

Re: Des. No. 0901562
Keystone Avenue and 96th Street Interchange
Carmel, Indiana

Dear Sir or Madam:

The City of Carmel desires to advance the preliminary design and environmental evaluations for the referenced project in Hamilton and Marion Counties. Early Coordination with your agency was initiated on May 22, 2009 and re-coordination occurred on August 31, 2009 to address changes in the proposed design. The scope of the project has again been modified such that re-coordination is necessary. This letter is written to describe the proposed modifications to the project and to seek your comments regarding those resources under your jurisdiction as part of the re-coordination effort. Your cooperation in this endeavor is appreciated.

**PROJECT LOCATION**

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps and ground level photographs of the additional areas are attached. The total length of the proposed project has been lengthened to approximately 2.2 miles, an increase of 0.3 mile from what was indicated in previous coordination. A breakdown of the project elements and the current length compared to the previously coordinated length is provided in the table below.

| LENGTHS OF PROJECT ELEMENTS | | |
|---|---|---|
| **Section** | **Previous Length (miles)** | **Revised/Current Length (mi.)** |
| 96th Street | 0.56 | 0.73 |
| Keystone Avenue | 0.83 | 0.69 |
| North-South Connector Road | 0.3 | 0.3 |
| East-West Connector Road | 0.18 | 0.18 |
| Threel Road | Not Included | 0.2 |
| Haver Way / Whitley Dr. Connector Road | Not Included | 0.1 |
| Total Project Length | 1.87 | 2.2 |

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## EXISTING CONDITIONS

The additional area consists of urbanized land uses, primarily commercial establishments such as automotive dealers, restaurants and small office parks, which align Threel Road, Haver Way and Whitley Drive. This type of land use is consistent with descriptions in previous coordination efforts of the entire project area.

Threel Road is functionally classified as a local street and is an unmarked two lane road with a pavement width of 22 ft. and no defined shoulder or curb. The vertical alignment is generally level while the horizontal alignment is tangent until its approach to 96th Street where its alignment becomes curvilinear. There is no posted speed limit, but it is known to be 30 miles per hour (mph).

Haver Way is functionally classified as a local street and comprised of two unmarked lanes with a pavement width of 30 ft. and a 2 ft. gutter. The vertical alignment is generally level and the horizontal alignment is tangent. There is no posted speed limit, but it is known to be 30 mph.

Whitley Drive is functionally classified as a local street and comprised of two unmarked lanes with a pavement width of 20 ft. and no defined shoulder or curb, with the exception of the 6 in. curb that is present at commercial drive access points. The vertical alignment is generally level and the horizontal alignment is tangent. The posted speed limit along this section of Whitley Drive is 30 mph.

The National Wetland Inventory (NWI) map and the Indiana GIS Atlas administered by the Indiana Geological Survey were reviewed for the presence of potential jurisdictional wetlands that may fall within the project area as a result of the modifications. The NWI map and the GIS Atlas failed to identify any wetlands within or directly adjacent to the project area. Furthermore, a field investigation occurred on April 28, 2010 to confirm the information obtained from NWI map. The drainage ditch identified in previous coordination and determined by the US Army Corps of Engineers to be a non-jurisdictional waterway would be affected by both the Threel Road reconstruction and the Haver Way and Whitley Drive connector road.

During the field investigation numerous utilities were noted throughout the area. Those utilities included an aerial cable facility between Haver Way and Whitley Drive and underground electrical facilities aligning Haver Way and Threel Road that lead to low mast lighting in the area. Underground water and sewer lines are also present in the area.

## PROPOSED MODIFICATIONS

As originally proposed, roundabouts proposed for Haverstick Road and Aronson Drive were to be constructed at essentially the center of their intersection with 96th Street. However, both roundabouts have been shifted for differing reasons. The proposed Aronson Drive roundabout has been shifted approximately 100 ft. to the east to better accommodate weaving movements from the Keystone Avenue interchange. The proposed Haverstick Road roundabout has been shifted approximately 45 ft. to the west to minimize impacts to businesses in the northeast and southeast quadrants of the intersection.

As illustrated on the attached aerial photograph, a 434 ft. (0.1 mile) connector road is now proposed between Haver Way and Whitley Drive. The connector road, which would be located approximately 630 ft. south of 96th Street, will consist of two 11 ft. travel lanes bordered by a 2 ft.-8 in. curb and gutter. Haver Way will be maintained as a two 15 ft. lane roadway with a 2 ft. gutter. However, the access from Haver Way to 96th Street will be closed and a cul-de-sac constructed at that location. From 96th Street, traffic will use Whitley Road and the proposed connector road to access businesses along Haver Way. Whitley Drive will remain a two lane road with 10 ft. travel lanes and 2 ft.-8 in. curb and gutters. At its intersection with 96th Street, northbound Whitley Drive will be reconstructed to provide a 10 ft. shared through / left-turn lane and a 10 ft. designated right-turn lane, southbound will remain a single 10 ft. travel lane.

As originally proposed, Threel Road, which is essentially a frontage road to Keystone Avenue that has an access point to 96th Street immediately east of the intersection, would have been removed. Threel Road provides front side access to a variety of businesses aligning Keystone Avenue, such as Bob Evans, Ruths Chris and Tom Wood Nissan. In an interest to preserve this front side access, Threel Road will be reconstructed to extend from Aronson Drive to Harper Road; a distance of approximately 1,120 ft. (0.2 mile). The access point to 96th Street from Threel Road would be removed, but would be re-established along a new route to Aronson Drive. Threel Road would be reconstructed to consist of two 11 ft. travel lanes with 2 ft.-8 in. curb and gutter.

Additionally, a hydraulic analysis of the project area identified drainage issues north of the east-west connector road to 96th Street. As a result, a 12 ft. x 4 ft. box culvert will be required between Aronson Drive and Priority Way West Drive to provide a conveyance for stormwater drainage. The culvert will extend approximately 70 ft. south of the east-west connector road along a narrow tree line. The proposed culvert will connect to an existing 18 in. pipe that will carry the drainage south away from the project area.

By including these design modifications into the overall project, approximately 1,554 ft. (0.3 mile) would be added to the total project length. The resulting total estimated project length is 11,456 ft. (2.2 miles).

Approximately 0.55 acre of additional permanent right-of-way would be required to construct the connector road. Furthermore, approximately 0.33 acre of permanent and 0.12 acre of temporary right-of-way would be required for the reconstruction of Threel Road. Altogether, approximately 0.88 acre of additional permanent and 0.12 acre of temporary right-of-way would be required. However, the total project right-of-way has been reduced from 22.15 acres to 14.2 acres permanent and 1.17 acres of temporary right-of-way.

As originally proposed and coordinated with your agency, three relocations were thought to be necessary for the completion of the project. As a result of advancement of the design and proposed modifications, seven commercial relocations are anticipated. The location of these anticipated relocations is identified on the attached aerial photograph.

**EARLY COORDINATION**

As part of our early coordination effort for the proposed project, please study the enclosed information and provide a written evaluation of the potential impacts upon resources that are under your jurisdiction. It is requested, that you return a reply within 30-days of receipt of this packet. If no reply has been received within 30-days, it would be indicated in the environmental document, which is to be prepared for the referenced project, that your agency has no comment on the project.

Your cooperation in expediting the development of the referenced project is appreciated. If you have any questions, or if we can be of any further assistance, please do not hesitate to contact this office.

Very truly yours,

RW ARMSTRONG

Chad E. Costa
Senior Environmental Planner

cc: File #20075030

Agencies Receiving Re-Coordination Packet:

Mr. Scott Pruitt, Field Supervisor
U.S. Fish and Wildlife Service
Bloomington Field Office
620 South Walker Street
Bloomington, IN 47403-2121

Mr. Robert Tally Jr., P.E., Administrator
Indiana Division
Federal Highway Administration
Room 254, Federal Office Building
575 North Pennsylvania Street
Indianapolis, IN 46204
ATTN: Mr. Larry Heil

Ms. Christie Stanifer,
Environmental Coordinator
Indiana Department of Natural Resources
Division of Water, Environmental Unit
Room W264, IGC South
402 West Washington Street
Indianapolis, Indiana 46204

Chief, Environmental Resources
Department of the Army
Louisville District, Corps of Engineers
ATTN: CEPMP-P-E
PO Box 59
Louisville, Kentucky 40201-0059

Mr. Nathan Knies
Environmental Scoping Manager
Indiana Department of Transportation
Greenfield District
32 S. Broadway St.
Greenfield, Indiana 46140

Ms. Lori Miser, Executive Director
Indianapolis Metropolitan Planning Organization
Department of Metropolitan Development
200 E. Washington St., Suite 1922
Indianapolis, IN 46204

Mr. Michael McBride, P.E.
City Engineer
City of Carmel
One Civic Square
Carmel, IN 46032

Mr. James Neal, P.E.
Hamilton County Engineer
1700 S. 10th Street
Noblesville, IN 46060

Mr. Long Nguyen, P.E.
Marion County Engineer
1200 Madison Avenue
Indianapolis, IN 46225

# Appendix C.6

## Agency Responses to June 3, 2010 Re-Coordination

## Chad Costa

**From:** Robin_McWilliams@fws.gov
**Sent:** Tuesday, June 08, 2010 4:08 PM
**To:** Chad Costa
**Subject:** Des. No. 0901562 Keystone Av. and 96th Street Interchange

Dear Mr. Costa,

I have reviewed your most recent letter (dated June 3, 2010) pertaining to the above-mentioned project. Based on the proposed modifications, our comments provided in our earlier correspondence (dated September 23, 2009) are still applicable and we have no further recommendations. If you need a more formal response letter or a copy of our previous letter, please let me know. Thank you for the opportunity to review the proposed modifications.

Sincerely,

Robin McWilliams-Munson

**Work Schedule: M,T,W 7:45- 4:15**
U.S. Fish and Wildlife Service
620 South Walker Street
Bloomington, Indiana 47403
812-334-4261 x. 1207
812-334-4273 fax

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

**DNR** Indiana Department of Natural Resources

Environmental Unit
Christie Stanifer, Environmental Coordinator
402 West Washington Street, W273
Indianapolis, IN 46204-2781

June 15, 2010

RW Armstrong and Associates Incorporated
Chad E. Costa, Senior Environmental Planner
Union Station 300 South Meridian Street
Indianapolis, IN 46225-1193

**RE: Keystone Ave. and 96th St. interchange improvements, Carmel, Des #0901562; Hamilton and Marion Counties**
**CTS-ER-14069-2**

Dear Mr. Costa:

This is a standard informational letter in response to your request for an Environmental Review, which was received on June 4, 2010 for the above referenced project. We would like you to know that the review is in process and a formal response will be forthcoming. Please refer to the above ER # on all future correspondence regarding this project.

The following information is for future reference. You may or may not have included additional copies of the review, but this is a standard form response (no need to contact me regarding this letter):

**Future submittals:**
If your submittal is more than 20 pages, we request two (2) entire copies (including cover letter) of your submittal to expedite the review.
**** No need to submit an additional copy for this review if you did not send 2 copies.**

**Note regarding SHPO reviews:**
**If your current submittal did not include a copy for the State Historic Preservation Officer (SHPO) and noted as such, and the project requires a review from SHPO, then please send a copy directly to SHPO.** On future submittals, please include a separate copy of the submittal (with a note that it is for SHPO) if you want a copy forwarded to the SHPO. SHPO will respond to the submittal in a separate letter. Or, if a copy of the submittal was sent to SHPO separately, please indicate that in your submittal.

If you have any questions, please contact me at (317) 232-4080 or via email at cstanifer@dnr.in.gov.

Sincerely,

Christie L. Stanifer

Christie L. Stanifer
Environmental Coordinator
Division of Fish and Wildlife

**THIS IS NOT A PERMIT**

**State of Indiana**
**DEPARTMENT OF NATURAL RESOURCES**
**Division of Water**

# Early Coordination/Environmental Assessment

**DNR #:** ER-14069-2 **Request Received:** June 4, 2010

**Requestor:** R W Armstrong and Associates Inc
Chad E Costa
Union Station, 300 South Meridian Street
Indianapolis, IN 46225-1193

**Project:** Keystone Ave. and 96th St interchange improvements, Carmel, Des# 0901562

**County/Site info:** Marion - Hamilton

The Indiana Department of Natural Resources has reviewed the above referenced project per your request. Our agency offers the following comments for your information and in accordance with the National Environmental Policy Act of 1969.

**Regulatory Assessment:** Formal approval by the Department of Natural Resources under the regulatory programs administered by the Division of Water is not required for this project.

**Natural Heritage Database:** The Natural Heritage Program's data have been checked.
To date, no plant or animal species listed as state or federally threatened, endangered, or rare have been reported to occur in the project vicinity.

**Fish & Wildlife Comments:** Fish, wildlife, and botanical resource losses as a result of this project can be minimized through implementation of the following measures.
Revegetate all bare and disturbed areas with a mixture of grasses (excluding all varieties of tall fescue), legumes, and native shrub and hardwood tree species as soon as possible upon completion.
Appropriately designed measures for controlling erosion and sediment must be implemented to prevent sediment from entering the stream or leaving the construction site; maintain these measures until construction is complete and all disturbed areas are stabilized.
Seed and protect all disturbed streambanks and slopes that are 3:1 or steeper with erosion control blankets (follow manufacturer's recommendations for installation); seed and apply mulch on all other disturbed areas.
Plant five trees, at least 2 inches in diameter-at-breast height, for each tree which is removed that is ten inches or greater in diameter-at-breast height.

**Contact Staff:** Christie L. Stanifer, Environ. Coordinator, Fish & Wildlife
Our agency appreciates this opportunity to be of service. Please do not hesitate to contact the above staff member at (317) 232-4160 or 1-877-928-3755 (toll free) if we can be of further assistance.

**Date:** September 1, 2010

J. Matthew Buffington
Environmental Supervisor
Division of Fish and Wildlife

## Chad Costa

**From:** Oakley, John [JOAKLEY@indy.gov]
**Sent:** Thursday, June 10, 2010 12:17 PM
**To:** Chad Costa
**Cc:** mmcbride@carmel.in.gov; Krack III, George
**Subject:** Design No. 0901562, Keystone and 96th Street Interchange

Chad – Received your letter regarding this project.

For future reference, with respect to contacting the Marion County Drainage Board for information, please note that such an entity does not exist. As provided by IC 36-3-4-23, the Board of Public Works is the successor to what was the county drainage board. In addition, as provided by IC 8-1.5-5, the Marion County Storm Water Management District handles storm water functions for the Board and Department of Public Works. Please direct inquiries to the Storm Water Management District at the 1200 Madison Avenue address you used to contact me. This will ensure a timely response.

With respect to your inquiry, there are no established regulated drains in the project limits that you provided with your letter. It should also be noted that improvements planned outside of the road limits under the jurisdiction of Carmel/Hamilton County would be subject to compliance with the Indianapolis Stormwater Design and Construction Specifications Manual. In addition, as a non-City of Indianapolis capital improvement project, permits may be required from the City of Indianapolis Department of Code Enforcement. It would be advisable to contact that office.

Regarding the hydraulic report, is this available in electronic format? If so, can you email me a copy? If it is a large file, is there an FTP site where it may be downloaded from? Let me know. Thanks.

# Appendix D

Section 106 Consultation

# Appendix D.1

# Effects Finding

**INDIANA DEPARTMENT OF TRANSPORTATION'S**
**SECTION 4(F) COMPLIANCE REQUIREMENTS (for historic properties) AND**
**SECTION 106 FINDINGS AND DETERMINATIONS**
**AREA OF POTENTIAL EFFECT**
**ELIGIBILITY DETERMINATIONS**
**EFFECT FINDING**
**Keystone Avenue at 96th Street Interchange Improvement**
**Washington Township, Marion County, Indiana and**
**Clay Township, Hamilton County, Indiana**
**DES. NO.: 0901562**
**FEDERAL PROJECT NO.: Pending**

**AREA OF POTENTIAL EFFECT**
**(Pursuant to 36 CFR Section 800.4(a)(1))**
The Area of Potential Effects (APE) was drawn relatively narrowly to encompass properties on all sides of the undertaking and with a viewshed of it. (See APE Map in Appendix C.)

**ELIGIBILITY DETERMINATIONS**
**(Pursuant to 36 CFR 800.4(c)(2))**
The APE contains no resources either listed in or considered eligible for listing in the National Register of Historic Places.

**EFFECT FINDING**
(Pursuant to 36 CFR 800.4(d)(1))
There are no properties listed or eligible for listing in the National Register of Historic Places. Therefore, INDOT, acting on FHWA's behalf, has determined a "No Historic Properties Affected" finding is appropriate for this undertaking.

**SECTION 4(F) COMPLIANCE REQUIREMENTS (for historic properties)**
This undertaking will not convert property from any Section 4(f) historic property to a transportation use; INDOT, acting on FHWA's behalf, has determined the appropriate Section 106 finding is "No Historic Properties Affected"; therefore no Section 4(f) evaluation is required. **INDOT respectfully requests the Indiana State Historic Preservation Officer provide written concurrence with the Section 106 determination of "No Historic Properties Affected."**

Consulting parties will be provided a copy of INDOT's, acting on FHWA's behalf, findings and determinations in accordance with INDOT and FHWA's Section 106 procedures. Comments will be accepted for 30-days upon receipt of the findings.

Nov 13, 2009

Staffan Peterson for FHWA
Administrator
INDOT Cultural Resources

Approved Date

**Federal Highway Administration/INDOT**
**Documentation of Section 106 Findings of**
**No Historic Properties Affected**
**Submitted to the State Historic PRESERVATION OFFICER**
**PURSUANT TO 36 CFR Section 800.4(d)(1)**
**Keystone Avenue at 96th Street Interchange Improvement**
**Washington Township, Marion County, Indiana and**
**Clay Township, Hamilton County, Indiana**
**DES. NO.: 0901562**
**FEDERAL PROJECT NO.: Pending**

## DESCRIPTION OF THE UNDERTAKING

The Indiana Department of Transportation (INDOT), with the Federal Highway Administration (FHWA) providing funding for the project and thereby acting as the lead federal agency in this Section 106 Undertaking.

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. Keystone Avenue would be comprised of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic. The outside lanes of Keystone Avenue would be bordered by paved shoulders with curb and gutter on the outside edge. Northbound and southbound traffic would be separated by a paved median with a barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange and would connect with the teardrop roundabout. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project, restricting left turns in all directions. The partial closure of this intersection was a condition of the agreement with the INDOT relinquishing Keystone Avenue to the City of Carmel.

The west leg of 96th Street would be comprised of four 12 ft. travel lanes (two eastbound and two westbound) bordered by curb and gutter. A two way left turn lane would be provided between Haverstick Road and Haver Way. The Haverstick Road and 96th Street intersection, which is currently controlled via four way stop, would be modified to include a single lane roundabout. Approach work to the proposed roundabout will be necessary north and south of the intersection. West of Haverstick Road, 96th Street would be reduced to a two lane cross section. Haver Way would require a slight realignment, approximately 55 ft., to the west to provide the appropriate clearance from the western ramps to Keystone Avenue.

East of the proposed interchange, 96th Street would typically consist of four 12 ft. travel lanes (two eastbound and two westbound) bordered by concrete curb and gutter. Multi-lane roundabouts are proposed at 96th Street's intersection with Aronson Drive and Priority Way West Drive, which are currently controlled by traffic signals. The eastbound and westbound travel lanes would be separated by a raised concrete median between the eastern ramps to Keystone Avenue and Aronson Drive and a two way left turn lane between Aronson Drive and Priority Way West Drive. Exiting northbound Keystone Avenue onto eastbound 96th Street, an additional lane is provided on the outside that will drop as a right turn at Aronson Drive. The eastbound section of 96th Street between Keystone Avenue and Aronson Drive would also consist of an additional lane to the inside that will drop at Aronson Drive for northbound traffic at the commercial drive entrance. A designated right turn lane will also be provided at Priority Way West Drive. The project continues approximately 250 ft. east of Priority Way West Drive, where it is proposed 96th Street will tie in with the existing section. At Aronson Drive, approach work to the proposed roundabout will be necessary north and south of the intersection. Likewise, improvements are necessary to the south approach of Priority Way West Drive.

North of 96th Street at Priority Way West Drive a new north-south connector road is proposed that terminates at 98th Street. The new north-south connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The total length of the north-south connector is approximately 0.3 mile. The intent of the north-south connector is to provide an alternate route to the Keystone Avenue interchange for traffic affected by the partial closure at 98th Street.

The project also proposes an east-west connector paralleling the south side of 96th Street between Aronson Drive and Priority Way West Drive (an estimated length of 0.18 mile). The east-west connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The east-west connector would accommodate left turning traffic onto 96th Street from commercial sources to the south. Without the east-west connector and using the roundabout at Aronson Drive would not provide sufficient gaps in traffic flow to allow a northbound to westbound movement. Therefore, traffic would be redirected along the east-west connector to the Priority Way West Drive roundabout. (See Plans in Appendix E)

*Area of Potential Effects (APE):* The APE is the "geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties. The area of potential effects is influenced by the scale and nature of an undertaking…" (36 CFR 800.16(d)).

The APE has been drawn relatively narrowly, encompassing properties on both sides of and/or within a viewshed of the undertaking, and take into consideration varying geographical conditions such as open spaces and the height and density of surrounding buildings, all of which affect visibility of the undertaking. (See Map in Appendix C)

## EFFORTS TO IDENTIFY HISTORIC PROPERTIES

Weintraut & Associates, Inc. initiated identification efforts for aboveground historic resources by examining primary and secondary resources. Documentary research for the project included a review of county histories, maps, county historical atlases, and on-line resources. In order to identify aboveground resources, historians examined the *Hamilton County Interim Report: Indiana Historic Sites and Structures Inventory* (IHSSI); they found one property in the APE listed therein, and obtained the property card from the Division of Historic Preservation & Archaeology (DHPA) for research and field review. Historians also reviewed the *Washington Township, Marion County Interim Report: Indiana Historic Sites and Structures Inventory* (IHSSI), the Indiana Register of Historic Sites and Structures (SR), the State Historic Architectural and Archaeological Research Database (SHAARD) and the National Register of Historic Places (NR) for listed resources.

On May 27, August 17 and August 27, 2009, Weintraut & Associates, Inc. surveyed in the APE, viewed all the properties in the APE, and photographed and recorded survey notes about all properties more than fifty years of age. During the site visits and documentary research, the historians evaluated the area for historic districts, looking for concentrations of architecturally similar dwellings, contiguous collections of buildings and/or properties indicating a connection based on a historic theme (in this case related to agriculture, transportation, and urban development) within the context of local history. Those resources that did not meet at least one of the NR criteria and/or did not retain integrity were not recommended eligible for listing in the NR during this evaluation process. (See Appendix D for photographs.) The historians prepared a Historic Property Report (Weintraut & Associates, September 2009) that recommended no properties eligible for listing in the National Register of Historic Places. (See Appendix G, Report Summary.)

An archaeological literature review (Pioneer Consulting Services Inc., August 17, 2009) stated, "Given that the project area has been previously disturbed by road, business and residential

construction… it is my recommendation that the project be allowed to proceed without additional archeological assessment." (See Appendix G.) This report was transmitted to the State Historic Preservation Officer on August 19, 2009.

On August 27, 2009, SHPO issued a letter in response to the Archeology Report stating "based upon the submitted information and the documentation available to the staff at the Indiana SHPO, we have not identified any currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places within the proposed project area." (See Appendix E for SHPO Correspondence.)

On August 31, 2009, RW Armstrong, Inc., initiated consultation by sending an early coordination packet and an invitation to join in consultation to the following entities: Indiana State Historic Preservation Officer (SHPO), Indiana Department of Transportation Cultural Resources Section (INDOT), Federal Highway Administration (FHWA), Hamilton County Engineer, Marion County Engineer, Indianapolis Metropolitan Planning Organization, Central Regional Office of the Historic Landmarks Foundation of Indiana, Caramel Clay Historical Society, Hamilton County Historical Society/Hamilton County Museum of History, Indianapolis Historic Preservation Commission, Hamilton County Historian, Marion County Historian, Marion County Historical Society, Indiana Historical Bureau, Indiana Historical Society, and the Civil Engineer of the City of Caramel. (See List of Consulting Parties in Appendix A)

On September 29, 2009, the Historic Property Report was sent to the following potential consulting parties: Indiana State Historic Preservation Officer (SHPO), Indiana Department of Transportation Cultural Resources Section (INDOT), Federal Highway Administration (FHWA), Marion County Engineer, Indianapolis Metropolitan Planning Organization, Central Regional Office of the Historic Landmarks Foundation of Indiana, Caramel Clay Historical Society, Hamilton County Historical Society/Hamilton County Museum of History, Hamilton County Historian, Marion County Historian, Marion County Historical Society, Indiana Historical Society, and the Civil Engineer of the City of Caramel. (See list of Consulting Parties in Appendix A)

On October 5, 2009, SHPO issued a letter in response to the HPR stating "based upon the documentation available to the staff of the Indiana SHPO, we have not identified any historic buildings, structures, districts or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects." (See Appendix E for SHPO Correspondence.)

No other comments were received.

**BASIS FOR FINDING**

A recommendation of no historic properties affected is appropriate because there are no properties eligible or listed in the National Register within the APE of the project.

Indiana Department of Transportation, acting in behalf of the FHWA, has issued a finding of No Historic Properties Affected. (See Appendix B for FHWA's Findings and Determinations)

**APPENDIX**

**A – Consulting Parties**

**B – APE, Eligibility, and Effects Finding**

**C - Maps**

**D – Photographs**

**E – Plans**

**F – Correspondence**

**G – Report Summaries**

# Appendix A

Consulting Parties

**Keystone Avenue & 96th Street Interchange**
**Potential Consulting Parties**

Recognized:

Mr. Larry Heil
Indiana Division
Federal Highway Administration
Room 254, Federal Office Building
575 North Pennsylvania Street
Indianapolis, IN 46204

Mr. Robert E. Carter Jr.
State Historic Preservation Officer
Indiana Department of Natural Resources
Division of Historic Preservation and Archaeology
402 W. Washington Street, Room W274
Indianapolis, IN 46204
ATTN: Dr. James A. Glass, Division Director

Mr. Staffan Peterson, Administrator
Cultural Resources Section
Office of Environmental Services
Indiana Department of Transportation
100 North Senate Avenue, Room N642
Indianapolis, Indiana 46204

Mr. Nathan Knies
Environmental Scoping Manager
Indiana Department of Transportation
Greenfield District
32 S. Broadway St.
Greenfield, Indiana 46140

Mr. Michael McBride, P.E.
City Engineer
City of Carmel
One Civic Square
Carmel, IN 46032

Invited:

Mr. James Neal, P.E.
Hamilton County Engineer
1700 S. 10th Street
Noblesville, IN 46060

Mr. Long Nguyen, P.E.
Marion County Engineer
1200 Madison Avenue
Indianapolis, IN 46225

Ms. Lori Miser, Executive Director
Indianapolis Metropolitan Planning Organization
Department of Metropolitan Development
200 E. Washington St., Suite 1922
Indianapolis, IN 46204

Historic Landmarks Foundation of Indiana, Central Regional Office
Charles J. Kuhn House
340 West Michigan Street
Indianapolis, IN 46202

Thomas Rumer, President/Historian
Carmel Clay Historical Society
211 First Street SW
Carmel, IN 46032

Diana Nevitt, Director
Hamilton County Historical Society/Hamilton County Museum of History
P. O. Box 397
Noblesville, IN 46061

David Baker, Administrator
Indianapolis Historic Preservation Commission
200 East Washington Street
Indianapolis, IN 46204

David Heighway
Hamilton County Historian
17 S. 9th St.
Noblesville, IN 46060

Dr. David G. Vanderstel
Marion County Historian
4415 Broadway
Indianapolis, IN 46205

Ms. Carol Hall, President
Marion County Historical Society
P.O. Box 2223
Indianapolis, IN 46206

Ms. Pamela Bennett
Indiana Historical Bureau
140 N. Senate Ave., Room 408
Indianapolis, IN 46204-2296

Mr. John Herbst
Indiana Historical Society
450 W. Ohio Street
Indianapolis, IN 46202

August 31, 2009

Mr. Long Nguyen, P.E.
Marion County Engineer
1200 Madison Avenue
Indianapolis, IN 46225

Re: Des. No. 0901562
Keystone Avenue and 96th Street Interchange
Carmel, Indiana

Dear Mr. Nguyen:

The City of Carmel desires to advance the preliminary design and environmental evaluations for the referenced project in Hamilton and Marion Counties. Early Coordination with your agency was initiated on May 22, 2009. However, the scope of the project has changed such that re-coordination is necessary. The proposed improvements, as modified, are described in more detail herein. This letter is written to describe the proposed project and to seek your comments regarding those resources under your jurisdiction as part of the re-coordination effort. Your cooperation in this endeavor is appreciated.

## PROJECT LOCATION

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps and ground level photographs are attached. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from approximately 150 ft. west of Haverstick Road to approximately 250 ft. east of Priority Way West Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street. Additionally, the project proposes two connector roads, a north-south connector road extending approximately 1,584 ft. (0.3 mile) between 96th Street and 98th Street, and an east-west connector that extends approximately 935 ft. (0.18 mile) between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

## EXISTING CONDITIONS

The existing at-grade signalized intersection of 96th Street and Keystone Avenue is located in an area predominated by urbanized land uses, such as various commercial establishments and residences. Automotive dealers, restaurants and small office parks align both 96th Street and Keystone Avenue

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rwArmstrong.com

throughout the project area. West of the Haverstick Road and 96th Street intersection and north of the Keystone Avenue and 98th Street intersection the land use transitions to residential.

The typical section of Keystone Avenue as it approaches the 96th Street intersection (southbound traffic) is comprised of two through lanes with a paved outside shoulder. Designated left and right turn lanes are present at the intersection. Designated left and right turn lanes are also provided at the 98th Street intersection. Continuing southbound on Keystone Avenue, past the 96th Street intersection, two through lanes are provided. Approaching the I-465 interchange, the pavement width expands to provide a designated right turn lane and dual left turn lanes.

Entering the 96th Street intersection form the south (northbound traffic), the typical section of Keystone Avenue consists of four travel lanes bordered by a paved outside shoulder. At the 96th Street intersection, the outside travel lane drops to a designated right turn lane. Additionally, a designated left turn lane is provided. Continuing north on Keystone Avenue away from the 96th Street intersection, three travel lanes are maintained until a point north of 99th Street where the inside lane merges into the center lane providing two lanes of traffic. Designated left and right turn lanes are present at the 98th Street intersection.

Northbound and southbound traffic along the north leg is separated by a grassy median, while along the south leg, northbound and southbound traffic is divided by a paved median with a barrier wall. Drainage along both legs of Keystone Avenue is conveyed via side ditches. The inside lanes of Keystone Avenue drain into stormwater inlets located in the median. The posted speed limit along Keystone Avenue is 45 mph.

The west and east legs of 96th Street consist of two travel lanes in each direction with curb and gutter. Approaching the Keystone Avenue intersection from the west, a designated left turn lane is provided. Additionally, at the intersection, the outside travel lane becomes a shared through / right turn lane. West of Whitley Drive, 96th Street is reduced to a two lane section (one lane in each direction). Along the east leg of 96th Street, a two way left turn lane is present between Threel Road and Enterprise Drive. At its intersection with Keystone Avenue, the two way left turn lane transitions to a designated left turn lane for westbound 96th Street. Moreover, the inside through lane becomes a shared through / left turn lane, while the outside through lane converts to a shared through / right turn lane. A designated left turn lane is also provided at the Priority Way West Drive intersection for both eastbound and westbound traffic. Drainage along 96th Street is conveyed via side ditches. The posted speed limit along 96th Street is 35 mph.

The National Wetland Inventory (NWI) map and the Indiana GIS Atlas administered by the Indiana Geological Survey were reviewed for the presence of potential jurisdictional wetlands in the project area (NWI Map Attached). The NWI map and the GIS Atlas failed to identify any wetlands within or directly adjacent to the project area. A field investigation occurring on August 25, 2009 identified an unnamed ephemeral ditch north of the 96th Street and Priority Way West Drive intersection that would be traversed by the north-south connector. Additionally, on July 5, 2009 another ephemeral stream that transitions into a perennial stream was observed near the intersection of 98th Street with the proposed north-south connector. A suspected wetland area in the northwest quadrant of 96th

Street and Haverstick Road was identified in our previous coordination. Since that time, this area has been subjected to a preliminary evaluation. This evaluation identified the dominant tree species to be red maple and walnut with an herbaceous layer dominated (over 90%) by winter creeper, an upland species. Furthermore, there was no surface hydrology present. To that end, this area is unlikely to contain a wetland. No other waterways or wetlands were identified within the project area.

During the field investigations numerous utilities were noted throughout the project area. Those utilities included aerial cables and underground facilities that align both sides of 96th Street. Observed utilities along Keystone Avenue included aerial electrical distribution lines that align the west side of the road. Furthermore, low mast lighting is present along both sides of Keystone Avenue at the 96th Street and 98th Street intersections.

**PROJECT NEED AND PURPOSE**

The proposed project is intended to reduce congestion at the intersection, improving its overall operational level of efficiency, and improve the overall safety. The intersection is currently operating at a level of service (LOS) F. If left unchanged, the intersection will continue to operate at a deficient LOS in the design year (2031). Completion of this project would improve the capacity of the intersection to a LOS B in the design year (2031).

**PROPOSED IMPROVEMENTS**

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. Keystone Avenue would be comprised of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic. The outside lanes of Keystone Avenue would be bordered by paved shoulders with curb and gutter on the outside edge. Northbound and southbound traffic would be separated by a paved median with a barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange and would connect with the teardrop roundabout. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project, restricting left turns in all directions. The partial closure of this intersection was a condition of the agreement with the Indiana Department of Transportation (INDOT) relinquishing Keystone Avenue to the City of Carmel.

The west leg of 96th Street would be comprised of four 12 ft. travel lanes (two eastbound and two westbound) bordered by curb and gutter. A two way left turn lane would be provided between Haverstick Road and Haver Way. The Haverstick Road and 96th Street intersection, which is currently controlled via four way stop, would be modified to include a single lane roundabout. Approach work to the proposed roundabout will be necessary north and south of the intersection. West of Haverstick Road, 96th Street would be reduced to a two lane cross section. Haver Way

would require a slight realignment, approximately 55 ft., to the west to provide the appropriate clearance from the western ramps to Keystone Avenue.

East of the proposed interchange, 96th Street would typically consist of four 12 ft. travel lanes (two eastbound and two westbound) bordered by concrete curb and gutter. Multi-lane roundabouts are proposed at 96th Street's intersection with Aronson Drive and Priority Way West Drive, which are currently controlled by traffic signals. The eastbound and westbound travel lanes would be separated by a raised concrete median between the eastern ramps to Keystone Avenue and Aronson Drive and a two way left turn lane between Aronson Drive and Priority Way West Drive. Exiting northbound Keystone Avenue onto eastbound 96th Street, an additional lane is provided on the outside that will drop as a right turn at Aronson Drive. The eastbound section of 96th Street between Keystone Avenue and Aronson Drive would also consist of an additional lane to the inside that will drop at Aronson Drive for northbound traffic at the commercial drive entrance. A designated right turn lane will also be provided at Priority Way West Drive. The project continues approximately 250 ft. east of Priority Way West Drive, where proposed 96th Street will tie in with the existing section. At Aronson Drive, approach work to the proposed roundabout will be necessary north and south of the intersection. Likewise, improvements are necessary to the south approach of Priority Way West Drive.

North of 96th Street at Priority Way West Drive a new north-south connector road is proposed that terminates at 98th Street. The new north-south connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The total length of the north-south connector is approximately 0.3 mile. The intent of the north-south connector is to provide an alternate route to the Keystone Avenue interchange for traffic affected by the partial closure at 98th Street.

The project also proposes an east-west connector paralleling the south side of 96th Street between Aronson Drive and Priority Way West Drive (an estimated length of 0.18 mile). The east-west connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The east-west connector would accommodate left turning traffic onto 96th Street from commercial sources to the south. Without the east-west connector and using the roundabout at Aronson Drive would not provide sufficient gaps in traffic flow to allow a northbound to westbound movement. Therefore, traffic would be redirected along the east-west connector to the Priority Way West Drive roundabout.

Additional permanent right-of-way will be required for the completion of this project. Preliminary estimates indicate that approximately 22.15 acres of right-of-way will be required. As the design of the project advances the right-of-way will be refined further. At the present, it is anticipated that three commercial establishments would require relocation, the gas stations in the southwest and southeast quadrants and the former gas station in the northeast quadrant. The project is anticipated for construction in 2011.

**EARLY COORDINATION**

As part of our early coordination effort for the proposed project, please study the enclosed information and provide a written evaluation of the potential impacts upon resources that are under your jurisdiction. It is requested, that you return a reply within 30-days of receipt of this packet. If no reply has been received within 30-days, it would be indicated in the environmental document, which is to be prepared for the referenced project, that your agency has no comment on the project.

Your cooperation in expediting the development of the referenced project is appreciated. If you have any questions, or if we can be of any further assistance, please do not hesitate to contact this office.

Very truly yours,

RW ARMSTRONG

Chad E. Costa
Senior Environmental Planner

cc: File #20075030

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology•402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646•Fax 317-232-0693 · dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

October 5, 2009

Chad E. Costa
Senior Environmental Planner
RW Armstrong & Associates
Union Station
300 S. Meridian St.
Indianapolis, Indiana 46225

Federal Agency: Federal Highway Administration

Re: Historic property report (Weintraut, 9/09) regarding Keystone Avenue and 96th Street Interchange using Transportation Investment Generating Economic Recovery grant (Designation # 0901562; DHPA #7057)

Dear Mr. Costa:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), 36 C.F.R. Part 800, and the "Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation, the Indiana State Historic Preservation Officer regarding the implementation of the Federal Aid Highway Program in the State of Indiana," the staff of the Indiana State Historic Preservation Officer has conducted an analysis of the materials dated September 29, 2009 and received on September 30, 2009, for the above indicated project in Marion and Hamilton Counties, Indiana.

Thank you for submitting the requested materials. We are not aware of any parties who have not been invited to participate in the consultation who should be invited.

Based upon the documentation available to the staff of the Indiana SHPO, we have not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects. As was previously stated, we have not identified any currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places within the proposed project area. However, this identification is subject to the project activities remaining within areas disturbed by previous construction.

If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

At this time, it would be appropriate for the Indiana Department of Transportation ("INDOT"), on behalf of the FHWA, to analyze the information that has been gathered from the Indiana SHPO, the general public, and any other consulting parties and make the necessary determinations and findings. Please refer to the following comments for guidance:

1) If the INDOT believes that a determination of "no historic properties affected" accurately reflects its assessment, then it shall provide documentation of its finding as set forth in 36 C.F.R. § 800.11 to the Indiana SHPO, notify all consulting parties, and make the documentation available for public inspection (36 C.F.R. §§ 800.4[d][1] and 800.2[d][2]).

2) If, on the other hand, the INDOT finds that an historic property may be affected, then it shall notify the Indiana SHPO, the public and all consulting parties of its finding and seek views on effects in

accordance with 36 C.F.R. §§ 800.4(d)(2) and 800.2(d)(2). Thereafter, the INDOT may proceed to apply the criteria of adverse effect and determine whether the project will result in a "no adverse effect" or an "adverse effect" in accordance with 36 C.F.R. § 800.5.

Please be advised that prior to INDOT approving and issuing a finding, the 36 C.F.R. § 800.11 documentation must be submitted to INDOT for review and comment.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Shawn Niemi at (317) 234-6705 or sniemi@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #7057.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:ALJ:SEN:sen

cc: Staffan Peterson, Indiana Department of Transportation
emc: Dr. Linda Weintraut, Weintraut & Associates, Inc.

**Consulting Party Response:**

**Des. No. 0901562**
**Keystone Avenue and 96th Street Interchange**
**Marion and Hamilton Counties**

You are hereby invited to be a consulting party. As a consulting party you will participate in consulting to identify and evaluate historic properties, assess effects, and resolve any adverse effects. Please complete and return this postcard. Check if you "**do**" or "**do not**" wish to be a consulting party. Thank you.

I do _____ do not ✓ wish to be a consulting party to participate in the section 106 process for the above referenced project.

Name: Indianapolis Historic Preservation Commission

Organization: " "

Address: 200 E. Washington St., Ste. 1801, Indianapolis, IN 46204

Telephone: 317.327.4406

D.1-17

**Consulting Party Response:**

**Des. No. 0901562**
**Keystone Avenue and 96th Street Interchange**
**Marion and Hamilton Counties**

You are hereby invited to be a consulting party. As a consulting party you will participate in consulting to identify and evaluate historic properties, assess effects, and resolve any adverse effects. Please complete and return this postcard. Check if you "**do**" or "**do not**" wish to be a consulting party. Thank you.

I do _____ do not X wish to be a consulting party to participate in the section 106 process for the above referenced project.

Name: JIM NEAL

Organization: HAMILTON COUNTY HWY DEPT.

Address: 1700 S. 10th St.
NOBLESVILLE, IN 46060

Telephone: 317-773-2770

**Consulting Party Response:**

**Des. No. 0901562**
**Keystone Avenue and 96th Street Interchange**
**Marion and Hamilton Counties**

You are hereby invited to be a consulting party. As a consulting party you will participate in consulting to identify and evaluate historic properties, assess effects, and resolve any adverse effects. Please complete and return this postcard. Check if you "**do**" or "**do not**" wish to be a consulting party. Thank you.

I do _____ do not _X_ wish to be a consulting party to participate in the section 106 process for the above referenced project.

Name: PAMELA BENNETT

Organization: INDIANA HISTORICAL BUREAU

Address: _____

_____

Telephone: _____

# Appendix B

APE, Eligibility, and Effects Finding

**INDIANA DEPARTMENT OF TRANSPORTATION'S**
**SECTION 4(F) COMPLIANCE REQUIREMENTS (for historic properties) AND**
**SECTION 106 FINDINGS AND DETERMINATIONS**
**AREA OF POTENTIAL EFFECT**
**ELIGIBILITY DETERMINATIONS**
**EFFECT FINDING**
**Keystone Avenue at 96th Street Interchange Improvement**
**Washington Township, Marion County, Indiana and**
**Clay Township, Hamilton County, Indiana**
**DES. NO.: 0901562**
**FEDERAL PROJECT NO.: Pending**

**AREA OF POTENTIAL EFFECT**
**(Pursuant to 36 CFR Section 800.4(a)(1))**
The Area of Potential Effects (APE) was drawn relatively narrowly to encompass properties on all sides of the undertaking and with a viewshed of it. (See APE Map in Appendix C.)

**ELIGIBILITY DETERMINATIONS**
**(Pursuant to 36 CFR 800.4(c)(2))**
The APE contains no resources either listed in or considered eligible for listing in the National Register of Historic Places.

**EFFECT FINDING**
(Pursuant to 36 CFR 800.4(d)(1))
There are no properties listed or eligible for listing in the National Register of Historic Places. Therefore, INDOT, acting on FHWA's behalf, has determined a "No Historic Properties Affected" finding is appropriate for this undertaking.

**SECTION 4(F) COMPLIANCE REQUIREMENTS (for historic properties)**
This undertaking will not convert property from any Section 4(f) historic property to a transportation use; INDOT, acting on FHWA's behalf, has determined the appropriate Section 106 finding is "No Historic Properties Affected"; therefore no Section 4(f) evaluation is required. **INDOT respectfully requests the Indiana State Historic Preservation Officer provide written concurrence with the Section 106 determination of "No Historic Properties Affected."**

Consulting parties will be provided a copy of INDOT's, acting on FHWA's behalf, findings and determinations in accordance with INDOT and FHWA's Section 106 procedures. Comments will be accepted for 30-days upon receipt of the findings.

Nov 13, 2009

Staffan Peterson for FHWA
Administrator
INDOT Cultural Resources

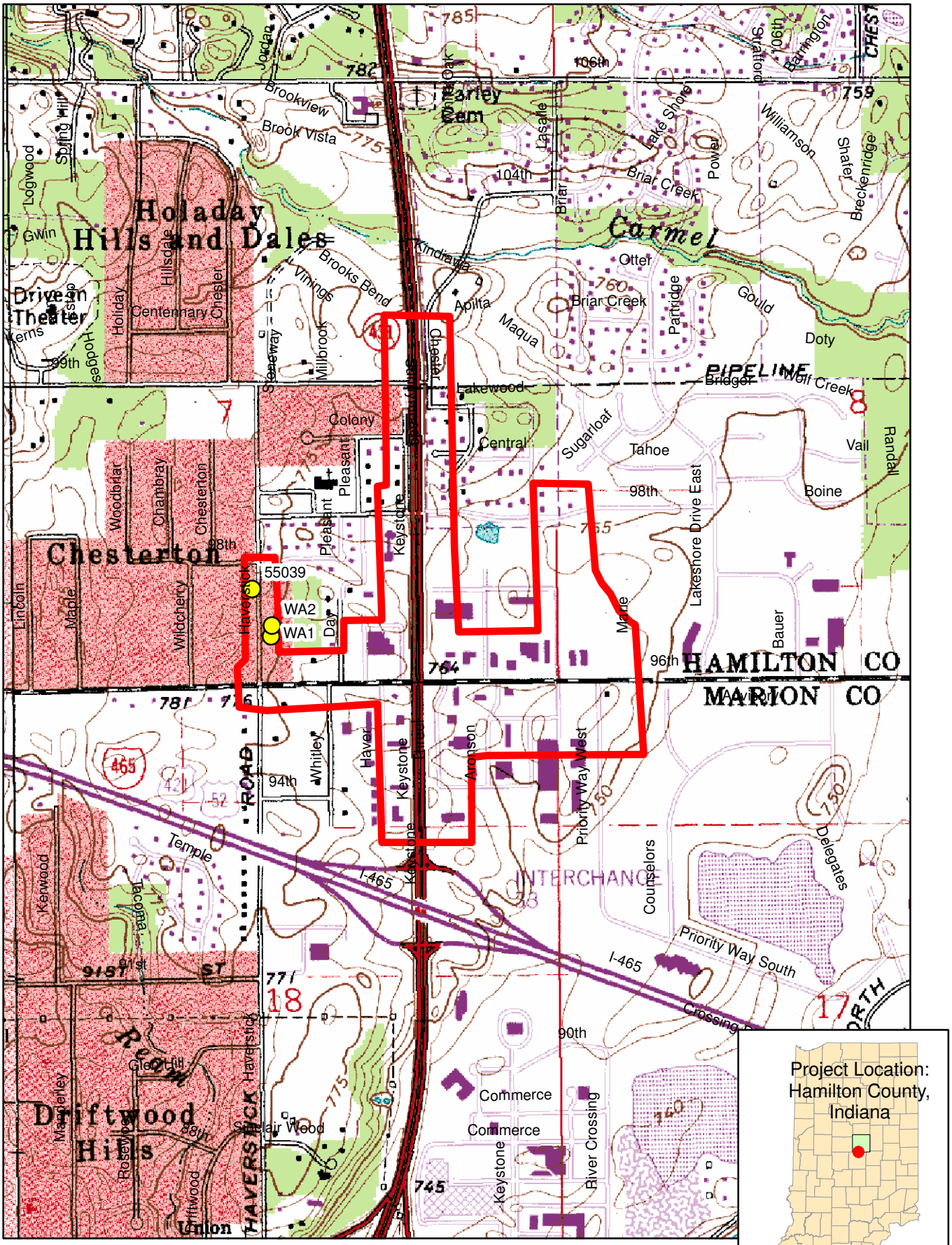
Approved Date

# Appendix C

Maps

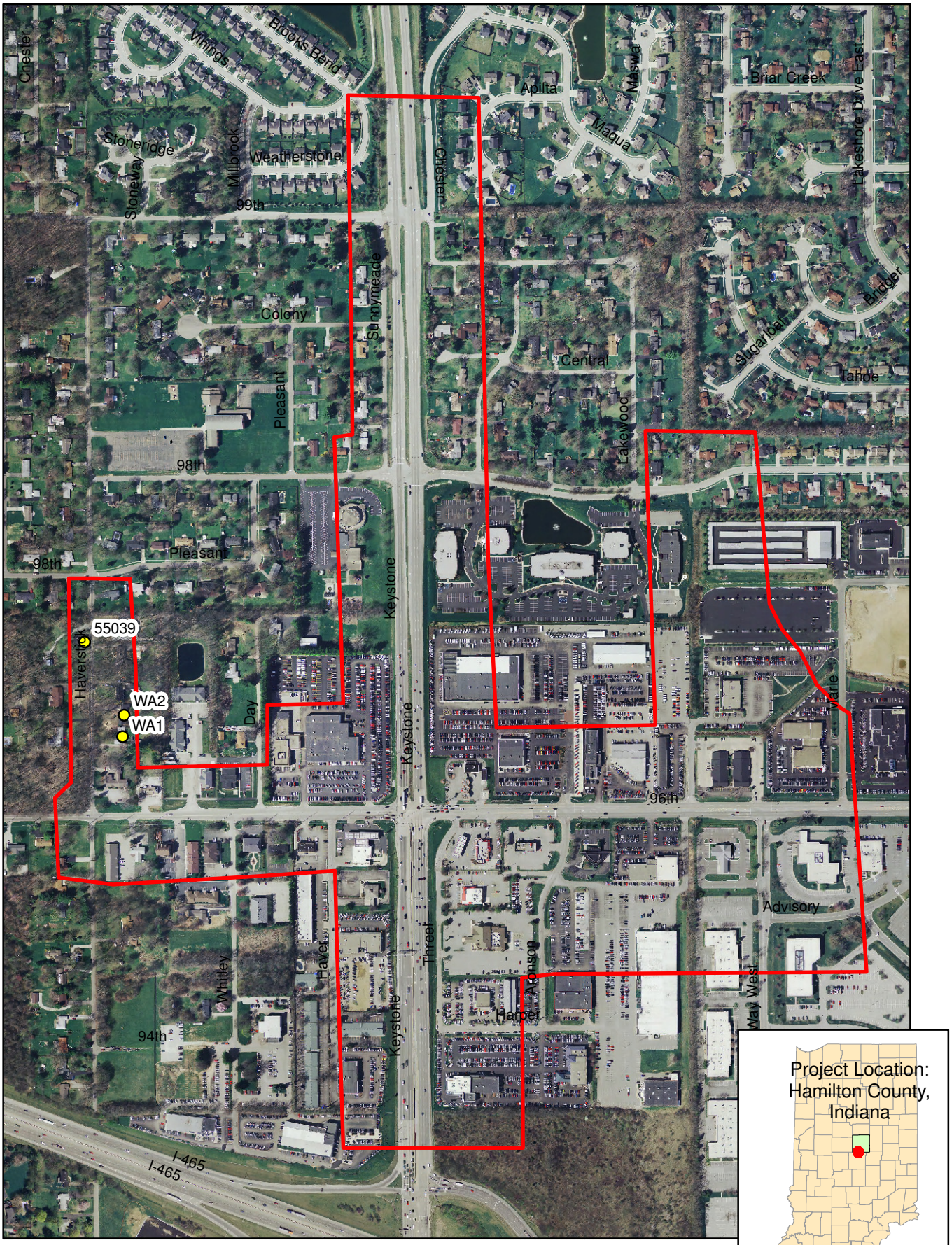
Keystone Parkway at 96th Street Interchange
DES No. 0901562
Portion of the USGS 7.5'series, Indiana topographic quadrangle (1:24,000)

Sept. 11, 2009



# Keystone Parkway at 96th Street Interchange
DES No. 0901562
2005 Aerial Photo

Sept. 14, 2009




0 375 750 1,500 Feet

Contributing Properties

APE

# Appendix D

Photographs

2502 (Across from, also on) Pleasant Way.JPG

2502 Pleasant Way.JPG

2825 96th St. 2.JPG

2825 96th St. 3.JPG

2825 96th St..JPG

2850 96th St.JPG

9616 Day Drive 2.JPG

9616 Day Drive 3.JPG

9616 Day Drive.JPG

9639 Haverstick - S end of W elevation.JPG

9639 Haverstick -N end of W elevation.JPG

9639 Haverstick S elevation.JPG

9639 Haverstick W elevation 2.JPG

9639 Haverstick W elevation.JPG

9639 Haverstick.JPG

963_ Day Drive 2.JPG

963_ Day Drive 3.JPG

963_ Day Drive viewshed east.JPG

963_ Day Drive.JPG

9650 Haverstick.JPG

9659 Haverstick N elevation windows and roofline.JPG

9659 Haverstick N end of W elevation.JPG

9659 Haverstick S end of W elevation.JPG

9659 Haverstick W elevation.JPG

9659 Haverstick.JPG

9680 Haverstick - 1.JPG

9680 Haverstick - 2.JPG

9680 Haverstick - 3.JPG

9680 Haverstick - 4.JPG

96th and Haverstick looking N.JPG

96th and Haverstick looking E.JPG

96th and Haverstick looking SE.JPG

96th and Haverstick looking W.JPG

96th and Keystone looking  NE.JPG

96th and Keystone looking N.JPG

96th and Keystone looking NW.JPG

96th and Keystone looking S.JPG

96th and Keystone looking SE.JPG

96th and Keystone looking W.JPG

96th and Priority Way Drive looking E.JPG

96th and Priority Way Drive looking N.JPG

96th and Priority Way Drive looking NE.JPG

96th and Priority Way Drive looking S.JPG

96th and Priority Way Drive looking SE.JPG

96th and Priority Way Drive looking SW b.JPG

96th and Priority Way Drive looking W.JPG

9780 Haverstick.JPG

9802 Haverstick - 2.JPG

9802 Haverstick.JPG

9818 Haverstick.JPG

9822 Haverstick.JPG

9842 Haverstick.JPG

9850 Pleasant Way.JPG

98th and Keystone looking E.JPG

98th and Keystone looking NE.JPG

98th and Keystone looking NW.JPG

98th and Keystone looking S.JPG

98th and Keystone looking SE.JPG

98th and Keystone looking SW.JPG

98th and Keystone looking W.JPG

98th Street E of Keystone looking E.JPG

98th Street E of Keystone looking N.JPG

98th Street E of Keystone looking NW.JPG

98th Street E of Keystone looking S.JPG

98th Street E of Keystone looking SE 1 of 2.JPG

98th Street E of Keystone looking SE 2 of 2.JPG

98th Street E of Keystone looking SW.JPG

98th Street E of Keystone looking W.JPG

99th and Keystone E.JPG

99th and Keystone looking SE.JPG

99th and Keystone looking W on 99th.JPG

99th and Keystone N.JPG

99th and Keystone NE.JPG

Colony Ct. and Sunny Meade Ln looking N.JPG

Colony Ct. and Sunny Meade Ln looking S.JPG

E from Haverstick at property on NE corner Haverstick anc 96th.JPG

Keystone N of 465 looking  S.JPG

Keystone N of 465 looking  W.JPG

Keystone N of 465 looking N.JPG

Keystone N of 465 looking NE.JPG

Keystone N of 465 looking NW.JPG

Modern_96th St. S side bt Day and Haverstick 2.JPG

Modern_96th St. S side bt Day and Haverstick.JPG

N on E side Haverstick from 96th St..JPG

N on W side Haverstick from 96th St..JPG

NC_9624 Day Drive 2.JPG

NC_9624 Day Drive.JPG

NC_9628 Day Drive.JPG

NC_9650 Haverstick 1990s addition 2.JPG

NC_9650 Haverstick 1990s addition.JPG

NC_9650 Haverstick 2.JPG

NC_9650 Haverstick 4.JPG

NC_9650 Haverstick.JPG

NC_9650 Haverstick3.JPG

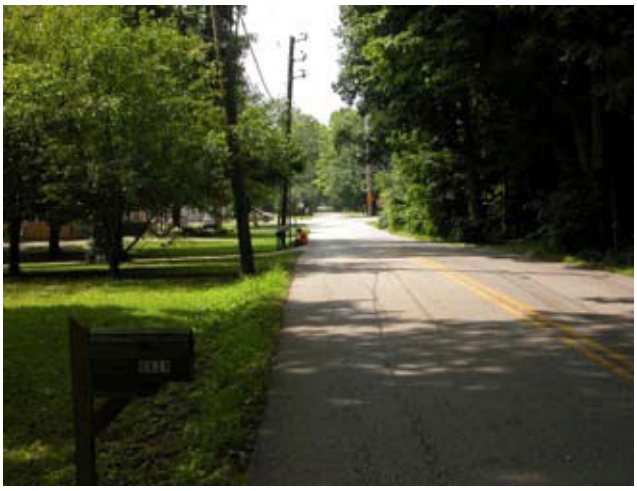
NC_9661 Haverstick.JPG

Pleasant Way and Colony Ct. looking E wide.JPG

Pleasant Way and Colony Ct. looking E zoom.JPG

Pleasant Way and Colony Ct. looking NE.JPG

Pleasant Way and Colony Ct. looking NW.JPG



S on Haverstick from 9659 Haverstick.JPG

S on Haverstick from property at NE corner Haverstick and 96th.JPG

# Appendix E

Plans

Note - The project area depicted here has since been modified. Please refer to Appendix B.1 for the current project area. Although adjustments to the project have been made, it does not affect the identification or impacts to any regulated resources identified in this technical report.
N
GRAPHIC SCALE (FEET)
0 50 100 200
Keystone Ave. South Bound
Keystone Ave. North Bound
96th St.
West Bound

# Appendix F

Correspondence

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

DNR Indiana Department of Natural Resources

Division of Historic Preservation & Archaeology•402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646•Fax 317-232-0693 · dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

August 27, 2009

Chad E. Costa
Senior Environmental Planner
RW Armstrong
Union Station
300 S. Meridian Street
Indianapolis, Indiana 46225

Federal Agency: Federal Highway Administration

Re: Archaeological records check (Zoll, 7/17/09) regarding Keystone Avenue and 96th Street Interchange using Transportation Investment Generating Economic Recovery grant (Designation #0901562; DHPA #7057)

Dear Mr. Costa:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), 36 C.F.R. Part 800, and the "Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation, the Indiana State Historic Preservation Officer regarding the implementation of the Federal Aid Highway Program in the State of Indiana," the staff of the Indiana State Historic Preservation Officer has conducted an analysis of the materials dated August 19, 2009 and received on August 20, 2009, for the above indicated project in Marion and Hamilton counties, Indiana.

Thank you for notifying our office of the proposed project. At this time, a complete analysis of the project is not possible. Please provide the following information to facilitate the identification and analysis of buildings and structures in the area of potential effects:

- Literature Review
- Historic Context
- Research Methodology
- Property Descriptions
- National Register of Historic Places eligibility evaluations and recommendations

For further guidance on the indicated information, please refer to Appendix AA of INDOT's Indiana Cultural Resources Manual (http://www.in.gov/indot/7287.htm). Please keep in mind that additional information may be requested in the future.

For questions regarding INDOT's Indiana Cultural Resources Manual, please contact Staffan Peterson at (317) 232-5161 or stpeterson@indot.IN.gov.

Based upon the submitted information and the documentation available to the staff of the Indiana SHPO, we have not identified any currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places within the proposed project area. However, this identification is subject to the project activities remaining within areas disturbed by previous construction.

If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004 may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Shawn Niemi at (317) 234-6705 or sniemi@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #7057.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:SEN:ALJ:aj

cc: Staffan Peterson, Administrator, Indiana Department of Transportation
emc: Mitch Zoll, Pioneer Consulting Services, Inc.

DNR Indiana Department of Natural Resources

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

Division of Historic Preservation & Archaeology•402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646•Fax 317-232-0693 · dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

October 5, 2009

Chad E. Costa
Senior Environmental Planner
RW Armstrong & Associates
Union Station
300 S. Meridian St.
Indianapolis, Indiana 46225

Federal Agency: Federal Highway Administration

Re: Historic property report (Weintraut, 9/09) regarding Keystone Avenue and 96th Street Interchange using Transportation Investment Generating Economic Recovery grant (Designation # 0901562; DHPA #7057)

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At this time, it would be appropriate for the Indiana Department of Transportation ("INDOT"), on behalf of the FHWA, to analyze the information that has been gathered from the Indiana SHPO, the general public, and any other consulting parties and make the necessary determinations and findings. Please refer to the following comments for guidance:

1) If the INDOT believes that a determination of "no historic properties affected" accurately reflects its assessment, then it shall provide documentation of its finding as set forth in 36 C.F.R. § 800.11 to the Indiana SHPO, notify all consulting parties, and make the documentation available for public inspection (36 C.F.R. §§ 800.4[d][1] and 800.2[d][2]).

2) If, on the other hand, the INDOT finds that an historic property may be affected, then it shall notify the Indiana SHPO, the public and all consulting parties of its finding and seek views on effects in

accordance with 36 C.F.R. §§ 800.4(d)(2) and 800.2(d)(2). Thereafter, the INDOT may proceed to apply the criteria of adverse effect and determine whether the project will result in a "no adverse effect" or an "adverse effect" in accordance with 36 C.F.R., § 800.5.

Please be advised that prior to INDOT approving and issuing a finding, the 36 C.F.R., § 800.11 documentation must be submitted to INDOT for review and comment.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004, may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Shawn Niemi at (317) 234-6705 or sniemi@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #7057.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:ALJ:SEN:sen

cc: Staffan Peterson, Indiana Department of Transportation
emc: Dr. Linda Weintraut, Weintraut & Associates, Inc.

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

**Indiana Department of Natural Resources**

Division of Historic Preservation & Archaeology•402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646•Fax 317-232-0693 · dhpa@dnr.IN.gov

November 18, 2009

Staffan Peterson, Administrator
Cultural Resources Section
Office of Environmental Services
Indiana Department of Transportation
100 North Senate Avenue, Room N642
Indianapolis, Indiana 46204

Federal Agency: Federal Highway Administration ("FHWA")

Re: Notification of the Indiana Department of Transportation's finding of "no historic properties affected", on behalf of the Federal Highway Administration regarding the Keystone Avenue and 96th Street Interchange using Transportation Investment Generating Economic Recovery grant (Designation # 0901562; DHPA # 7057)

Dear Mr. Peterson:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), 36 C.F.R. Part 800, and the "Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation, the Indiana State Historic Preservation Officer regarding the implementation of the Federal Aid Highway Program in the State of Indiana," the staff of the Indiana State Historic Preservation Officer has conducted an analysis of the materials dated November 16, 2009 and received on November 17, 2009, for the above indicated project in Marion and Hamilton counties, Indiana.

As previously indicated, we have not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects. As was also previously stated, we have not identified any currently known archaeological resources listed in or eligible for the National Register of Historic Places within the proposed project area. However, this identification is subject to the project activities remaining within areas disturbed by previous construction.

Therefore, we concur with the INDOT's November 13, 2009 finding, on behalf of the FHWA, that there are no historic buildings, structures, districts, objects, or archaeological resources within the area of potential effects that will be affected by the above indicated project.

If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

If you have questions about archaeological issues please contact Amy Johnson at (317) 232-6982 or ajohnson@dnr.IN.gov. If you have questions about buildings or structures please contact Shawn Niemi at (317) 234-6705 or sniemi@dnr.IN.gov.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:SEN:ALJ:aj

cc: Chad Costa, RW Armstrong

# Appendix G

Report Summaries

# Historic Property Report
## Keystone Avenue at 96th Street Interchange Improvement
## DES No.: 0901562
## Federal Project No.: pending

**In Washington Township, Marion County, Indiana and**
**Clay Township, Hamilton County, Indiana**

Prepared for
**Federal Highway Administration/**
**Indiana Department of Transportation**

Prepared by


WEINTRAUT & ASSOCIATES, INC.
Principal Investigator: Dr. Linda Weintraut
Authors: Kristen Getzin, Bethany L. Natali, M.A.
PO Box 5034
Zionsville, Indiana
(317) 733-9770
(Linda@weintrautinc.com)


**September 2009**

## Executive Summary: Keystone Avenue at 96th Street Interchange Improvement Washington Township, Marion County and Clay Township, Hamilton County

The City of Carmel desires to improve the overall operational level of efficiency, and the overall safety of this intersection by: elevating Keystone Avenue over 96th Street, with traffic controlled on 96th Street through a two lane roundabout. The proposed project extends from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street along Keystone Avenue, and from approximately 150 ft. west of Haverstick Road to approximately 250 ft. east of Priority Way West Drive along 96th Street.

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa.

The project will include widening of the road, and incorporation of two new connector roads which would provide access to Keystone from partially closed roads. The project will also require the permanent acquisition of approximately 22.15 acres of additional right-of-way.

The Area of Potential Effects (APE) has been drawn to include properties on all sides of the undertaking. (See map of APE in Appendix 2.)

A historian who meets or exceeds the Secretary of the Interior's Professional Standards for Section 106 work identified and evaluated historic properties within the APE for this project. Historic properties were identified and evaluated in accordance with Section 106, National Historic Preservation Act (NHPA) of 1966, as amended, and CFR Part 800 (Revised January 2001), Final Rule on Revision of Current Regulations, December 12, 2000, and incorporating amendments effective August 5, 2004.

As part of the identification and evaluation efforts for the Section 106 study of the undertaking, historians identified three properties greater than fifty years of age in the project area. Of the identified properties, all three are considered contributing resources. There are no properties currently listed in the National Register of Historic Places (NR) within the APE, and one property was listed in the 1992 *Hamilton County Interim Report*. Historians are recommending no above-ground resources as eligible for listing in the NR.

## Chad Costa

**From:** Carpenter, Patrick A <PACarpenter@indot.IN.gov>
**Sent:** Monday, September 28, 2009 9:48 AM
**To:** Linda Weintraut; Chad Costa
**Cc:** Kennedy, Mary; Knies, Nathan; Lawrence, Ben
**Subject:** INDOT-CRS Review-HPR for Keystone Avenue and 96th St., Marion and Hamilton County (Des.#0901562)

INDOT-CRS has reviewed the Historic Property Report (HPR) for the above referenced project. The HPR is clear and well-written. Please proceed to distribute the HPR to SHPO and consulting parties.

Do no hesitate to contact me if you have any questions.

Thank you,

Patrick Carpenter
Historian, Cultural Resources Section
Indiana Department of Transportation
100 N Senate Ave., IGCN-Rm. N-642
Indianapolis, IN 46204-2216
317-233-2061

# Archaeological Records Check
# 96th Street and Keystone Avenue Improvements
# Hamilton and Marion Counties, Indiana

*Prepared for:*
RW Armstrong
Union Station
300 South Meridian Street
Indianapolis, Indiana 46225

*prepared by:*
Mitchell Zoll

Mitchell K. Zoll
*Principal Investigator*

Pioneer Consulting Services, Inc.
2620 West Kilgore Avenue
Muncie Indiana 47304
(765) 284-0459
mzoll2@gmail.com
*final*
August 17, 2009

PCS Project # 09FR54

## Introduction

In response to a request from RW Armstrong, an archaeological records review has been completed for a proposed intersection improvement project, located in Washington Township, Marion County, and Delaware Township, Hamilton County, Indiana (Figure 1). The proposed project is located in the northern half of the NW ¼ of Section 18, Township 17N, Range 4E in Marion County and in the southern half of the SE ¼ of section 7, Township 17N, Range 4E in Hamilton County, as shown on the USGS 7.5' Fishers, Indiana Quadrangle (Figure 2).

The proposed project involves constructing improvements to the intersection of Keystone Avenue and 96th Street in Marion and Hamilton Counties. Land within the project area is presently paved road and grass. Approximately 1 acres of previously disturbed land will be required for this project.

The records check used site records, maps and materials on file at the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology to locate, identify and evaluate the known and expected archaeological resources within the project area. The records search was conducted to evaluate the potential impact of the project upon archaeological resources.

## Physiographic Setting and Historical Background

### Setting

The project area is within the general physiographic unit known as the New Castle Till Plains, an area of till plains of low relief crossed by many tunnel-valleys (Gray 2000). Surface deposits in the area are within the Cartersburg Till, members of the Trafalgar Formation (Wayne 1966: 26) and in the bedrock physiographic unit known as the Scottsburg Lowland (Schneider 1966: 54). The closest chert sources to the project area include local gravel cherts and Fall Creek chert that outcrops in southern Hamilton County (Cantin 2008: 19). The topography of Marion and Hamilton Counties was affected by the advance and retreat of the Illinois and Wisconsin glaciers (Schneider 1966: 54). The project area is in the West Fork White River above Morris Street Gage watershed, as shown on the Indiana Department of Natural Resources Hydrologic basins map. Specific soils in the project area are shown in Table 1. The presettlement vegetation of the area was predominantly Beech-Maple forest (Petty and Jackson 1966:280). Climate, the main determinate of plant and animal life, has varied in Marion County since the retreat of the glaciers from Indiana about 12,000 years ago.

**Table 1: Soil Within the Project Area (NRCS 2009)**

| Soil | Topography | Slope | Erosion | Drainage |
|---|---|---|---|---|
| Miami Silt Loam (MmA) | Till Plains | 0-2% | - | Moderately Well Drained |
| Miami Silt Loam (MmB2) | Till Plains | 2-6% | Eroded | Moderately Well Drained |

| Table 2: Historic Structures within Project Area (Davis 1989) | | |
|---|---|---|
| **Inventory #** | **Type** | **Period** |
| 55004 | Farm, Cherry Tree Road: House Bungalow | c.1910 |
| 55005 | J. Newcomb Farm, Cherry Tree Road; Houses: hall-and-parlor | c. 1830 |
| 55006 | Myers Farm, Cherry Tree Road; House: American four-square | 1928 |
| 55007 | Hunt House, Gray Road; Colonial Revival | c. 1910 |

## Conclusions/Recommendations

Given that the project area has been previously disturbed by road, business and residential construction as shown in Figure 3, it my recommendation that the project be allowed to proceed without additional archaeological assessment. In the unlikely event that subsurface archaeological deposits are encountered during construction, the project must be halted and the Indiana Department of Transportation, Cultural Resources Section, and the Indiana Department of Natural Resources, Division of Historic Preservation and Archaeology contacted for an evaluation before the project resumes.

## Chad Costa

**From:** Greenlee, Rachael <rgreenlee@indot.IN.gov>
**Sent:** Monday, August 17, 2009 9:21 AM
**To:** Chad Costa
**Cc:** mzoll2@gmail.com; Miller, Shaun; Peterson, Staffan (INDOT); Brudis, Karie
**Subject:** Des. #0901562, Keystone Ave. and 96th St. Intersection Improvements, Marion and Hamilton Counties

Dear Mr. Costa,

Thank you for providing the archaeological report for the above referenced project. The report was reviewed by INDOT Cultural Resources personnel who meet the Secretary of the Interior's Professional Qualification Standards as per CFR Part 61. It is our opinion that the report is acceptable, and we concur with the evaluations and recommendations made by Zoll (2009). However, before submitting the report to SHPO, please correct the following:

- On page 1, Cantin 2005 is cited, but Cantin 2008 is listed in the "References Consulted" section. In addition, Anonymous 1968 is cited on page 6, but Andreas 1968 is listed, and Davis 1989 is cited, but not listed at all.
- On page 1, please list the soil association for the project area.
- Please reference Figure 3 in either the introduction or conclusion section of the report.

Once these minor revisions have been made, please submit one copy of the archaeology report to SHPO for review and concurrence. In addition, we ask that a copy of the SHPO submittal letter be sent to INDOT, CRS care of Shaun Miller at smiller@indot.in.gov during the time of submission. If there are any questions or concerns regarding this project, please let me know.

Thank you,

Rachael Greenlee
Archaeologist, Cultural Resources Section
Office of Environmental Services
Indiana Department of Transportation
100 N. Senate Ave. Room N642
Indianapolis, IN 46204
317-234-1900
rgreenlee@indot.in.gov

Appendix D.2

Public Notice and Proof of Publication

**Public Notice**

The City of Carmel desires to advance the preliminary design and environmental evaluations for a roundabout interchange at the existing at-grade intersection of Keystone Avenue and 96th Street (Des. No. 0901562). The proposed project is pursuing a Transportation Investment Generating Economic Recovery (TIGER) grant, a funding program authorized by the American Recovery and Reinvestment Act. The funds are administered by the Federal Highway Administration (FHWA).

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from approximately 150 ft. west of Haverstick Road to approximately 250 ft. east of Priority Way West Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street. Additionally, the project proposes two connector roads, a north-south connector road extending approximately 1,584 ft. (0.3 mile) between 96th Street and 98th Street, and an east-west connector that extends approximately 935 ft. (0.18 mile) between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. The project also proposes at-grade roundabout intersections with 96th Street at Haverstick Road, Aronson Drive and Priority Way West Drive. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project. As a result, the 98th Street and Keystone Avenue intersection would be partially closed, restricting left turns in all directions. Traffic affected by this partial closure will use Haverstick Road or the proposed north-south connector road that will be constructed east of Keystone Avenue. The proposed east-west connector will parallel the south side of 96th Street between Aronson Drive and Priority Way West Drive and will alleviate predicted congestion at the Aronson Road roundabout.

Additional permanent right-of-way will be required for the completion of this project. Preliminary estimates indicate that approximately 22.15 acres of right-of-way will be required. The project is anticipated for construction in 2011.

The Indiana Department of Transportation (INDOT), acting on the FHWA's behalf, has found no properties within the Area of Potential Effect (APE) that are listed on or eligible for inclusion on the National Register of Historic Places (NRHP). Additionally, as a result of the archaeological investigations, no sites that could qualify for inclusion on the NRHP were located. The INDOT issued a "No Historic Properties Affected" finding for this project, on behalf of the FHWA, on November 13, 2009.

In accordance with the National Historic Preservation Act, the views of the public are being sought regarding the effect of the proposed project on the historic elements as per 36 CFR 800.2(d), 800.3(e) and 800.6(a)(4). Pursuant to 36 CFR 800.6(a) (4), the documentation specified in 36 CFR 800.11(d) which serves as the basis for the "No Historic Properties Affected" finding is available for public inspection at the City of Carmel's Engineer's Office located at One Civic Square, Carmel, Indiana 46032 and at the address listed below. The views of the public on this finding are being sought.

Comments should be submitted to the following address no later than December 21, 2009.

Mr. Chad E. Costa
Senior Environmental Planner
RW Armstrong
300 S. Meridian St.
Indianapolis, IN 46225
Phone: (317) 493-3722
Fax: (317) 788-0957
ccosta@rwa.com

# INDIANAPOLIS NEWSPAPERS INC. Receipt No:

## PAYMENT RECEIPT & AD COPY Ad Number: 5570867 System Acct: 1750

Customer: R W ARMSTRONG & ASSOC INC Phone: 3177860461 Account No: 80004
300 S MERIDIAN ST
INDIANAPOLIS, IN 46225

Class: 0; LEGAL

Start Date: 11/18/2009 End Date: 11/24/2009 Times Ordered: 8 Total Price: $73.78 Net Price: $73.78

Amount Paid: 0 Payment Method: CC

Check No: F; Credit Card:

Dates: 11/18/2009 11/18/2009 11/19/2009 11/20/2009 11/21/2009 11/22/2009 11/23/2009 11/24/2009

Printed By: C137 Date Printed: 11/16/2009

Public Notice

The City of Carmel desires to advance the preliminary design and environmental evaluations for a roundabout interchange at the existing at-grade intersection of Keystone Avenue and 96th Street (Des. No. 0901562). The proposed project is pursuing a Transportation Investment Generating Economic Recovery (TIGER) grant, a funding program authorized by the American Recovery and Reinvestment Act. The funds are administered by the Federal Highway Administration (FHWA).

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from approximately 150 ft. west of Haverstick Road to approximately 250 ft. east of Priority Way West Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street. Additionally, the project proposes two connector roads, a north-south connector road extending approximately 1,584 ft. (0.3 mile) between 96th Street and 98th Street, and an east-west connector that extends approximately 935 ft. (0.18 mile) between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. The project also proposes at-grade roundabout intersections with 96th Street at Haverstick Road, Aronson Drive and Priority Way West Drive. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project. As a result, the 98th Street and Keystone Avenue intersection would be partially closed, restricting left turns in all directions. Traffic affected by this partial closure will use Haverstick Road or the proposed north-south connector road that will be constructed east of Keystone Avenue. The proposed east-west connector will parallel the south side of 96th Street between Aronson Drive and Priority Way West Drive and will alleviate predicted congestion at the Aronson Road roundabout.

Additional permanent right-of-way will be required for the completion of this project. Preliminary estimates indicate that approximately 22.15 acres of right-of-way will be required. The project is anticipated for construction in 2011.

The Indiana Department of Transportation (INDOT), acting on the FHWA's behalf, has found no properties within the Area of Potential Effect (APE) that are listed on or eligible for inclusion on the National Register of Historic Places (NRHP). Additionally, as a result of the archaeological investigations, no sites that could qualify for inclusion on the NRHP were located. The INDOT issued a "No Historic Properties Affected" finding for this project, on behalf of the FHWA, on November 13, 2009.

In accordance with the National Historic Preservation Act, the views of the public are being sought regarding the effect of the proposed project on the historic elements as per 36 CFR 800.2(d), 800.3(e) and 800.6(a)(4). Pursuant to 36 CFR 800.6(a) (4), the documentation specified in 36 CFR 800.11(d) which serves as the basis for the "No Historic Properties Affected" finding is available for public inspection at the City of Carmel's Engineer's Office located at One Civic Square, Carmel, Indiana 46032 and at the address listed below. The views of the public on this finding are being sought.

Comments should be submitted to the following address no later than December 21, 2009.

Mr. Chad E. Costa
Senior Environmental Planner
RW Armstrong
300 S. Meridian St.
Indianapolis, IN 46225
Phone: (317) 493-3722
Fax: (317) 788-0957
costa@rwa.com

(S - 11/18/09 - 5570867)

# Appendix D.3

# Addendum to Effects Finding

**FEDERAL HIGHWAY ADMINISTRATION'S**
**SECTION 4(f) COMPLIANCE REQUIREMENTS (for historic properties) AND**
**SECTION 106 FINDINGS AND DETERMINATIONS**
**AREA OF POTENTIAL EFFECTS**
**ELIGIBILITY DETERMINATIONS**
**EFFECT FINDING**
**KEYSTONE AVENUE AT 96TH STREET INTERCHANGE IMPROVEMENT ADDITIONAL INFORMATION**
**WASHINGTON TOWNSHIP, CITY OF INDIANAPOLIS, MARION COUNTY, INDIANA**
**AND**
**CLAY TOWNSHIP. CITY OF CARMEL, HAMILTON COUNTY, INDIANA**
**DES. NO.: 0901562**
**FEDERAL PROJECT NO.: PENDING**

**AREA OF POTENTIAL EFFECT**
**(Pursuant to 36 CFR Section 800.4(a)(1))**
The APE has been drawn relatively narrowly, encompassing properties on both sides of and/or within a view of the undertaking, and taking into consideration varying geographical conditions such as open spaces and the height and density of surrounding buildings. (See Appendix B - Maps.)

**ELIGIBILITY DETERMINATIONS**
There are no properties listed in or eligible for listing in the National Register of Historic Places within the APE.

**EFFECT FINDING**
INDOT, acting on FHWA's behalf, has determined a No Historic Properties Affected finding is appropriate for this undertaking.

Consulting parties will be provided a copy of INDOT's, acting on FHWA's behalf, findings and determinations in accordance with INDOT and FHWA's Section 106 procedures. Comments will be accepted for 30-days upon receipt of the findings.

This undertaking will not convert property from any Section 4(f) historic property to a transportation use; the INDOT, acting on FHWA's behalf, has determined the appropriate Section 106 finding is "No Historic Properties Affected"; therefore no Section 4(f) evaluation is required. **INDOT respectfully requests the Indiana State Historic Preservation Officer (IN SHPO) provide written concurrence with the Section 106 determination of "No Historic Properties Affected"**

Staffan Peterson for FHWA
Administrator
INDOT Cultural Resources

2/8/10

Approved Date

**Federal Highway Administration/INDOT**
**Documentation of Section 106 Findings of**
**No Historic Properties Affected**
**Submitted to the State Historic PRESERVATION OFFICER**
**PURSUANT TO 36 CFR Section 800.4(d)(1)**
**Keystone Avenue at 96th Street Interchange Improvement, Additional Information**
**Washington Township, Marion County, Indiana and**
**Clay Township, Hamilton County, Indiana**
**DES. NO.: 0901562**
**FEDERAL PROJECT NO.: Pending**

**DESCRIPTION OF THE UNDERTAKING**

The Indiana Department of Transportation (INDOT), with the Federal Highway Administration (FHWA) is providing funding for the project and thereby acting as the lead federal agency in this Section 106 Undertaking.

This additional information serves to supplement information previously submitted for the proposed project located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships.

| LENGTHS OF PROJECT ELEMENTS | | |
|---|---|---|
| **Section** | **Previous Length (miles)** | **Revised/Current Length (mi.)** |
| 96th Street | 0.56 | 0.73 |
| Keystone Avenue | 0.83 | 0.69 |
| North-South Connector Road | 0.3 | 0.3 |
| East-West Connector Road | 0.18 | 0.18 |
| Threel Road | Not Included | 0.2 |
| Haver Way / Whitley Dr. Connector Road | Not Included | 0.1 |
| Total Project Length | 1.87 | 2.2 |

**EXISTING CONDITIONS**

The additional area consists of urbanized land uses, primarily commercial establishments such as automotive dealers, restaurants and small office parks, which align Threel Road, Haver Way and Whitley Drive. This type of land use is consistent with descriptions in previous coordination efforts of the entire project area.

Threel Road is functionally classified as a local street and is an unmarked two lane road with a pavement width of 22 ft. and no defined shoulder or curb. The vertical alignment is generally level while the horizontal alignment is tangent until its approach to 96th Street where its alignment becomes curvilinear. There is no posted speed limit, but it is known to be 30 miles per hour (mph).

Haver Way is functionally classified as a local street and comprised of two unmarked lanes with a pavement width of 30 ft. and a 2 ft. gutter. The vertical alignment is generally level and the horizontal alignment is tangent. There is no posted speed limit, but it is known to be 30 mph.

Whitley Drive is functionally classified as a local street and comprised of two unmarked lanes with a pavement width of 20 ft. and no defined should or curb, with the exception of the 6 in. curb that is present at commercial drive access points. The vertical alignment is generally level and the

horizontal alignment is tangent. The posted speed limit along this section of Whitley Drive is 30 mph.

**PROPOSED MODIFICATIONS**

As originally proposed, roundabouts proposed for Haverstick Road and Aronson Drive were to be constructed at essentially the center of their intersection with 96th Street. However, both roundabouts have been shifted for differing reasons. The proposed Aronson Drive roundabout has been shifted approximately 100 ft. to the east to better accommodate weaving movements from the Keystone Avenue interchange. The proposed Haverstick Road roundabout has been shifted approximately 45 ft. to the west to minimize impacts to businesses in the northeast and southeast quadrants of the intersection. (See Appendix D, Plans.)

A 434 ft. (0.1 mile) connector road is proposed between Haver Way and Whitley Drive. The connector road, which would be located approximately 630 ft. south of 96th Street, will consist of two 11 ft. travel lanes bordered by a 2 ft.-8 in. curb and gutter. Haver Way will be maintained as a two 15 ft. lane roadway with a 2 ft. gutter. However, the access from Haver Way to 96th Street will be closed and a cul-de-sac constructed at that location. From 96th Street, traffic will use Whitley Road and the proposed connector road to access businesses along Haver Way. Whitley Drive will remain a two lane road with 10 ft. travel lanes and 2 ft.-8 in. curb and gutters. At its intersection with 96th Street, northbound Whitley Drive will be reconstructed to provide a 10 ft. shared through / left-turn lane and a 10 ft. designated right-turn lane, southbound will remain a single 10 ft. travel lane.

As originally proposed, Threel Road, which is essentially a frontage road to Keystone Avenue that has an access point to 96th Street immediately east of the intersection, would have been removed. Threel Road provides front side access to a variety of businesses aligning Keystone Avenue, such as Bob Evans, Ruths Chris and Tom Wood Nissan. In an interest to preserve this front side access, Threel Road will be reconstructed to extend from Aronson Drive to Harper Road; a distance of approximately 1,120 ft. (0.2 mile). The access point to 96th Street from Threel Road would be removed, but would be re-established along a new route to Aronson Drive. Threel Road would be reconstructed to consist of two 11 ft. travel lanes with 2 ft.-8 in. curb and gutter.

By including these design modifications into the overall project, approximately 1,554 ft. (0.3 mile) would be added to the total project length. The resulting total estimated project length is 11,456 ft. (2.2 miles).

Approximately 0.55 acre of additional permanent right-of-way would be required to construct the connector road. Furthermore, approximately 0.33 acre of permanent and 0.12 acre of temporary right-of-way would be required for the reconstruction of Threel Road. Altogether, approximately 0.88 acre of additional permanent and 0.12 acre of temporary right-of-way would be required. However, the total project right-of-way has been reduced from 22.15 acres to 14.05 acres permanent and 1.16 acres of temporary right-of-way.

Additionally, a hydraulic analysis of the project area identified drainage issues north of the east-west connector road to 96th Street. As a result, a 12 ft. x 4 ft. box culvert will be required between Aronson Drive and Priority Way West Drive to provide a conveyance for stormwater drainage. The culvert will extend approximately 70 ft. south of the east-west connector road along a narrow tree line. The proposed culvert will connect to an existing 18 in. pipe that will carry the drainage south away from the project area.

As originally proposed and coordinated with agency, three relocations were thought to be necessary for the completion of the project. As a result of advancement of the design and proposed modifications, seven commercial relocations are anticipated. The location of these anticipated relocations is identified on the attached aerial photograph.

The Area of Potential Effects (APE) has been drawn to encompass properties on all sides of the undertaking. (See APE Map in Appendix B.)

## EFFORTS TO IDENTIFY HISTORIC PROPERTIES

Weintraut & Associates, Inc. initiated identification efforts for the additional work by examining primary and secondary resources. Documentary research for the project included a review of county histories, maps, county historical atlases, and on-line resources. In order to identify aboveground resources, historians examined the *Hamilton County Interim Report: Indiana Historic Sites and Structures Inventory* (IHSSI); they found one property in the APE listed therein, and obtained the property card from the Division of Historic Preservation & Archaeology (DHPA) for research and field review. Historians also reviewed the *Washington Township, Marion County Interim Report: Indiana Historic Sites and Structures Inventory* (IHSSI), the Indiana Register of Historic Sites and Structures (SR), the State Historic Architectural and Archaeological Research Database (SHAARD) and the National Register of Historic Places (NR) for listed resources.

In February 2010, Weintraut & Associates, Inc. surveyed additional properties in the APE. and photographed and recorded survey notes about all properties more than fifty years of age. During the site visits and documentary research, the historians evaluated the area for historic districts, looking for concentrations of architecturally similar dwellings, contiguous collections of buildings and/or properties indicating a connection based on a historic theme (in this case related to agriculture, transportation, and urban development) within the context of local history. Those resources that did not meet at least one of the NR criteria and/or did not retain integrity were not recommended eligible for listing in the NR during this evaluation process. (See Appendix C for photographs.)

The historians prepared an Additional Information, Historic Property Report (Weintraut & Associates, May 2010) that recommended no properties eligible for listing in the National Register of Historic Places. (See Appendix F, Report Summary.)

An archaeological literature review (Pioneer Consulting Services Inc., June 8, 2010) stated, “the project area has been previously disturbed by road and business construction… it was recommended that the project be allowed to proceed without additional archeological assessment.” (See Appendix F, Report Summary.)

The archaeological records check was transmitted to the SHPO on June 9, 2010. The SHPO concurred with the recommendations on June 29, 2010. Due to the limited number of contributing resources within the adjusted APE and with the concurrence of the INDOT Cultural Resources Section the addendum to the Historic Property Report was submitted along with the 800.11(d) documentation to SHPO and those consulting parties responding affirmatively to the invitation to participate in 2009. (See Appendix E, Correspondence.)

## BASIS FOR FINDING

A recommendation of No Historic Properties Affected is appropriate because there are no properties eligible or listed in the National Register within the APE of the project.

The INDOT, acting on behalf of the FHWA, has issued a finding of No Historic Properties Affected.

# APPENDIX A. List of Consulting Parties

**Keystone Avenue & 96th Street Interchange**
**Potential Consulting Parties**

Recognized:

Mr. Larry Heil
Indiana Division
Federal Highway Administration
Room 254, Federal Office Building
575 North Pennsylvania Street
Indianapolis, IN 46204

Mr. Robert E. Carter Jr.
State Historic Preservation Officer
Indiana Department of Natural Resources
Division of Historic Preservation and Archaeology
402 W. Washington Street, Room W274
Indianapolis, IN 46204
ATTN: Dr. James A. Glass, Division Director

Mr. Staffan Peterson, Administrator
Cultural Resources Section
Office of Environmental Services
Indiana Department of Transportation
100 North Senate Avenue, Room N642
Indianapolis, Indiana 46204

Mr. Nathan Knies
Environmental Scoping Manager
Indiana Department of Transportation
Greenfield District
32 S. Broadway St.
Greenfield, Indiana 46140

Mr. Michael McBride, P.E.
City Engineer
City of Carmel
One Civic Square
Carmel, IN 46032

Invited:

Mr. James Neal, P.E.
Hamilton County Engineer
1700 S. 10th Street
Noblesville, IN 46060

Mr. Long Nguyen, P.E.
Marion County Engineer
1200 Madison Avenue
Indianapolis, IN 46225

Ms. Lori Miser, Executive Director
Indianapolis Metropolitan Planning Organization
Department of Metropolitan Development
200 E. Washington St., Suite 1922
Indianapolis, IN 46204

Historic Landmarks Foundation of Indiana, Central Regional Office
Charles J. Kuhn House
340 West Michigan Street
Indianapolis, IN 46202

Thomas Rumer, President/Historian
Carmel Clay Historical Society
211 First Street SW
Carmel, IN 46032

Diana Nevitt, Director
Hamilton County Historical Society/Hamilton County Museum of History
P. O. Box 397
Noblesville, IN 46061

David Baker, Administrator
Indianapolis Historic Preservation Commission
200 East Washington Street
Indianapolis, IN 46204

David Heighway
Hamilton County Historian
17 S. 9th St.
Noblesville, IN 46060

Dr. David G. Vanderstel
Marion County Historian
4415 Broadway
Indianapolis, IN  46205

Ms. Carol Hall, President
Marion County Historical Society
P.O. Box 2223
Indianapolis, IN 46206

Ms. Pamela Bennett
Indiana Historical Bureau
140 N. Senate Ave., Room 408
Indianapolis, IN 46204-2296

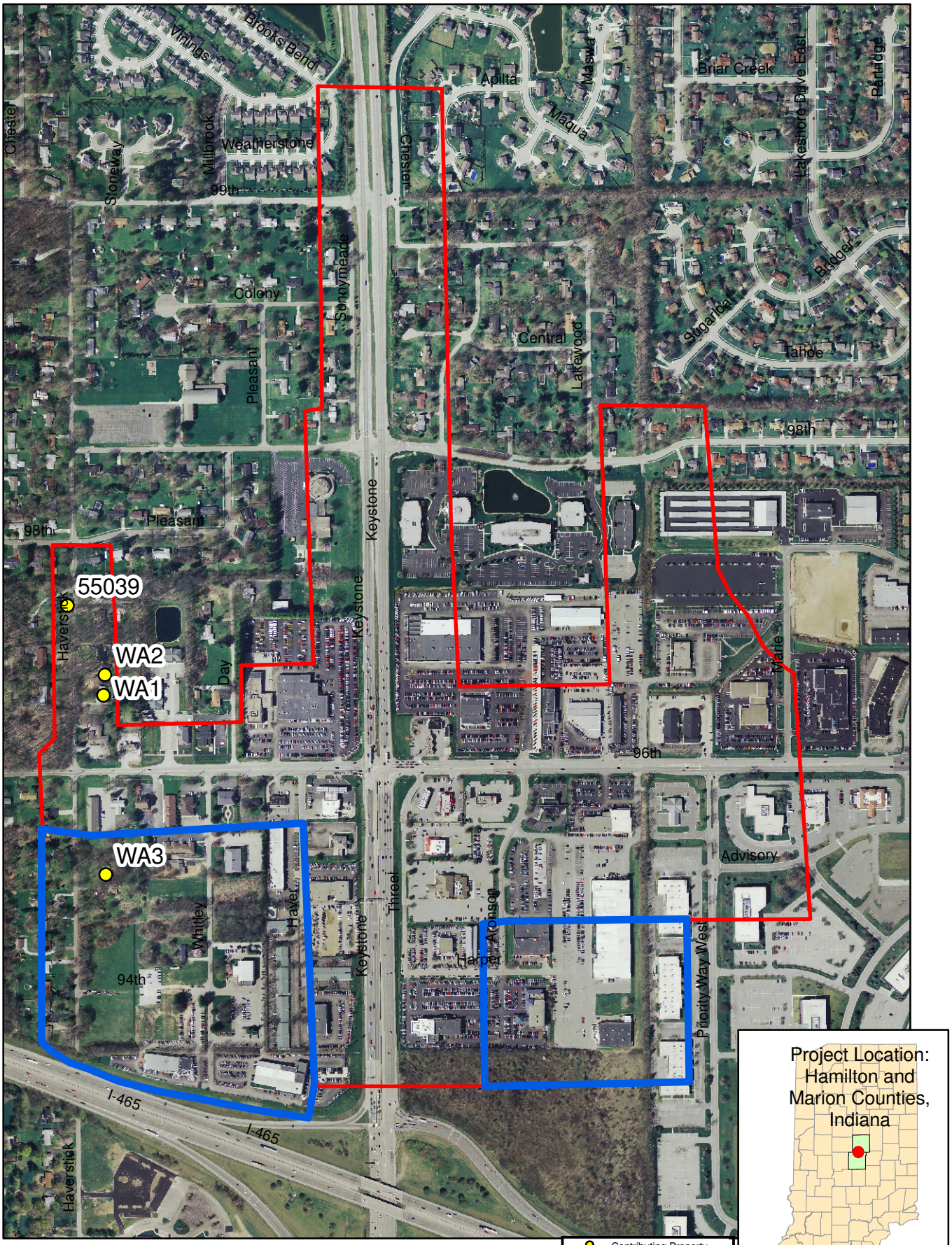
Mr. John Herbst
Indiana Historical Society
450 W. Ohio Street
Indianapolis, IN 46202

# APPENDIX B. Maps

Keystone Parkway at 96th Interchange: Additional Information
DES No. 0901562
2005 Aerial Photo

N

May, 2010



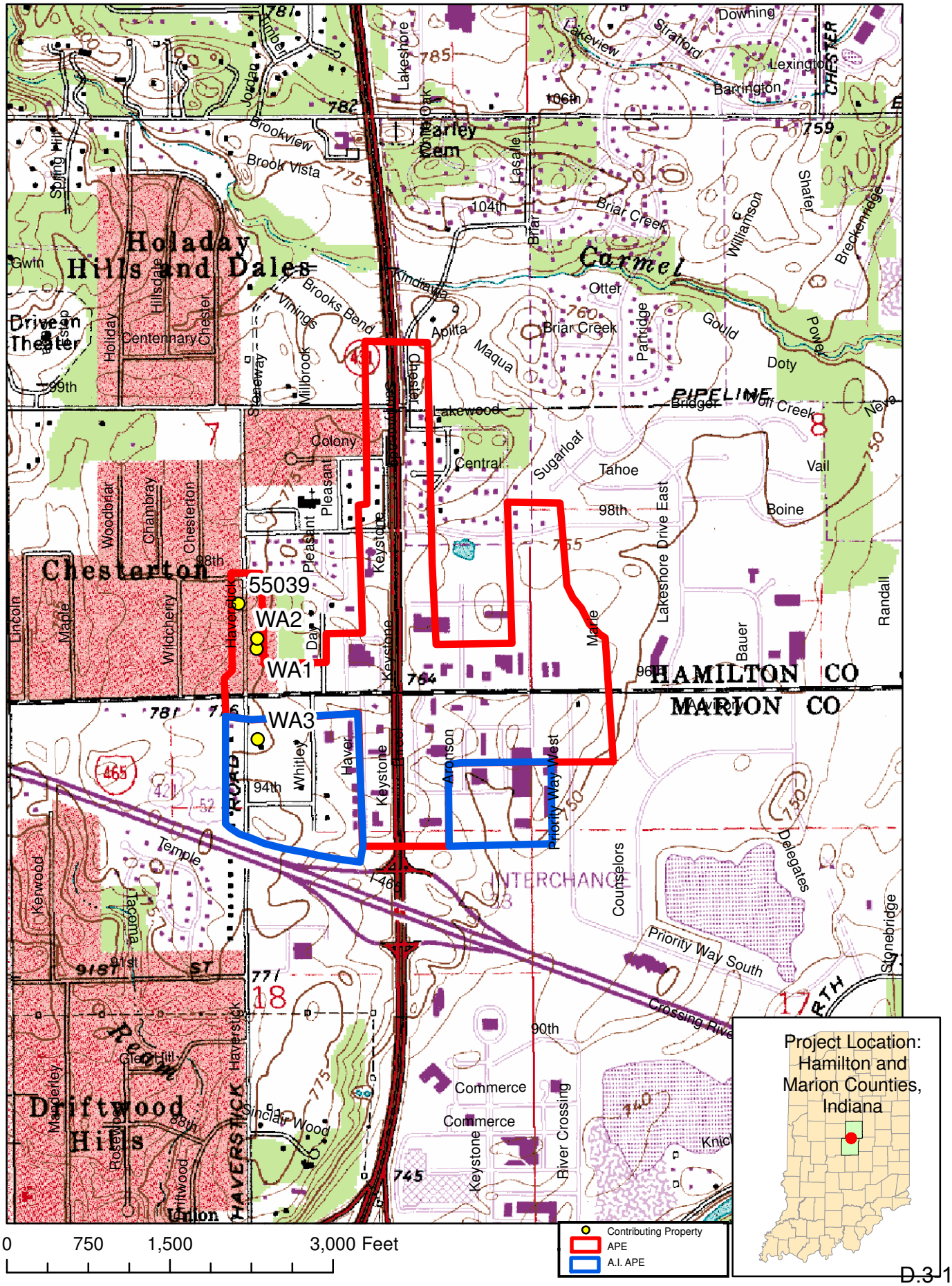

0 370 740 1,480 Feet



Note: Information shown on this map is not warranted for accuracy or merchantability. GIS data used to create this map are from the best known sources existing at this time.However, experience shows that many national datasets are not all inclusive. Use of this map should be limited to planning, and should not replace field review or background checks with other sources. It is intended to serve as an aid in graphic representation only. This map does not represent a legal document.

Keystone Parkway at 96th Interchange: Additional Information
DES No. 0901562
Portion of the USGS 7.5'series, Indiana topographic quadrangle (1:24,000)

May, 2010






Note: Information shown on this map is not warranted for accuracy or merchantability. GIS data used to create this map are from the best known sources existing at this time.However, experience shows that many national datasets are not all inclusive. Use of this map should be limited to planning, and should not replace field review or background checks with other sources. It is intended to serve as an aid in graphic representation only. This map does not represent a legal document.

# APPENDIX C. Photographs

9501 Haverstick, view of carport.jpg

9501 Haverstick, view of detached garage.jpg

9501 Haverstick, view of facade and garage.jpg

9501 Haverstick, view of facade and N elevation.jpg

9501 Haverstick, view of facade and S elevation.jpg

9501 Haverstick, view of facade windows.jpg

9501 Haverstick, view of facade.jpg

9501 Haverstick, view of front entrance and picture window.jpg

9501 Haverstick, view of lot from SE.jpg

9512 Haverstick.jpg

9514 Haverstick, view 2.jpg

9514 Haverstick.jpg

9516 Haverstick.jpg

9516 Whitley.jpg

Scape view to E of S side of 96th Street from Haverstick.jpg

Scape view to N of 96th Street and Haver.jpg

Scape view to N of 96th Street and Haverstick.jpg

Scape view to N of 96th Street and Whitley.jpg

Scape view to SSE on Haver from 96th Street.jpg

Scape view to SSE on Haver.jpg

Scape view to SSE on Haverstick from 96th Street.jpg

Scape view to SSE on Whitley from 96th Street.jpg

Scape view to SSE on Whitley.jpg

Scape view to SSW on Haver from 96th Street.jpg

Scape view to SSW on Haverstick from 96th Street.jpg

Scape view to SSW on Whitley from 96th Street.jpg

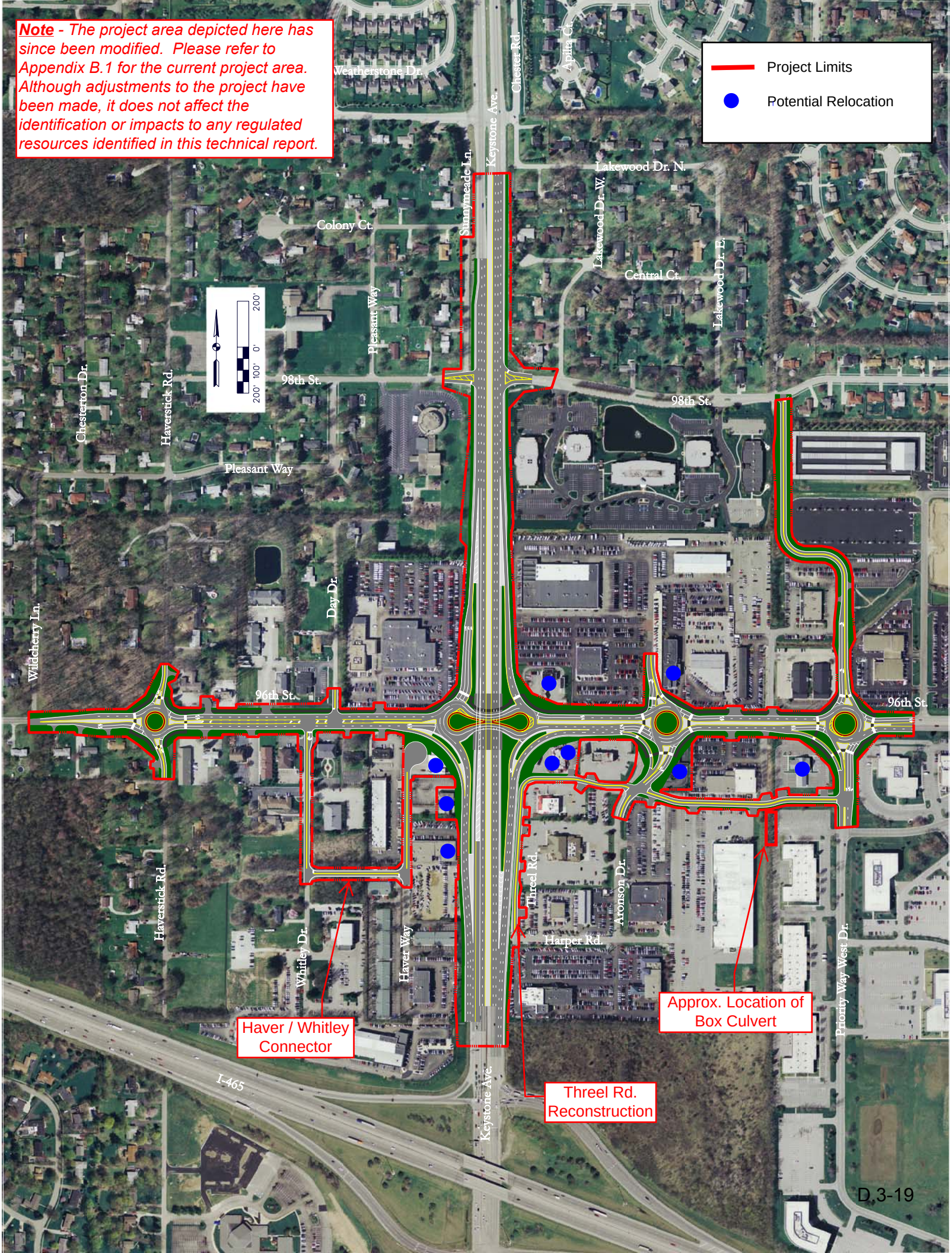
Scape view to SSW on Whitley.jpg

Scape view to SW on Haver.jpg

View of 94th Street derelict right of way.jpg

View of BMW dealership at S end of Haver.jpg

# APPENDIX D. Plans


Note - The project area depicted here has since been modified. Please refer to Appendix B.1 for the current project area. Although adjustments to the project have been made, it does not affect the identification or impacts to any regulated resources identified in this technical report.
Project Limits
Potential Relocation
Weatherstone Dr.
Chester Rd.
Apilin Ct.
Keystone Ave.
Sunnymeade Ln.
Lakewood Dr. N.
Lakewood Dr. W.
Lakewood Dr. E.
Colony Ct.
Central Ct.
Pleasant Way
98th St.
Chesterton Dr.
Haverstick Rd.
Pleasant Way
Day Dr.
Wildcherry Ln.
96th St.
Haverstick Rd.
Whitley Dr.
Haver Way
Threel Rd.
Harper Rd.
Aronson Dr.
Priority Way West Dr.
I-465
Haver / Whitley Connector
Approx. Location of Box Culvert
Threel Rd. Reconstruction
200' 100' 0' 200'

# APPENDIX E. Correspondence and Meeting Minutes

DNR Indiana Department of Natural Resources

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

Division of Historic Preservation & Archaeology•402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646•Fax 317-232-0693 · dhpa@dnr.IN.gov

HISTORIC PRESERVATION AND ARCHAEOLOGY

June 29, 2010

Chad E. Costa
R.W. Armstrong & Associates
Union Station
300 South Meridian Street
Indianapolis, Indiana 46225-1193

Federal Agency: Federal Highway Administration

Re: Archaeological Records Check (Zoll & Zoll, 6/08/10) regarding the Keystone Avenue and 96th Street Interchange using Transportation Investment Generating Economic Recovery grant (Designation #0901562; DHPA #7057)

Dear Mr. Costa:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), 36 C.F.R. Part 800, and the "Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation, the Indiana State Historic Preservation Officer regarding the implementation of the Federal Aid Highway Program in the State of Indiana," the staff of the Indiana State Historic Preservation Officer has conducted an analysis of the materials dated June 9, 2010 and received on June 9, 2010 for the above indicated project in Marion and Hamilton Counties, Indiana.

In regard to archaeological resources, based upon the submitted information and the documentation available to the staff of the Indiana SHPO, we have not identified any currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places within the three proposed additions to the project area. However, in regard to page 7 of the Archaeological Records Check, it should be noted that there are eleven archaeological sites (12-H-0068, 12-H-0069, 12-H-0110, 12-H-0111, 12-H-0112, 12-H-0825, 12-Ma-0037, 12-Ma-0083, 12-Ma-0209, 12-Ma-0244, 12-Ma-0386) within one mile of the three proposed additions to the project area.

If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

The above comments are strictly in regards to archaeological resources, since no information was provided about buildings and structures.

*A copy of the revised 36 C.F.R. Part 800 that went into effect on August 5, 2004 may be found on the Internet at www.achp.gov for your reference.* If you have questions about archaeological issues please contact Wade T. Tharp at (317) 232-1650 or wtharp1@dnr.IN.gov. If you have questions about buildings or structures please contact Toni L. Giffin at (317) 233-9636 or tgiffin@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #7057.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:TLG:WTT:wt

cc: Staffan Peterson, Administrator, Indiana Department of Transportation
emc: Chad Costa, RW Armstrong & Associates

DNR Indiana Department of Natural Resources

Mitchell E. Daniels, Jr., Governor
Robert E. Carter, Jr., Director

Division of Historic Preservation & Archaeology • 402 W. Washington Street, W274 · Indianapolis, IN 46204-2739
Phone 317-232-1646 • Fax 317-232-0693 · dhpa@dnr.IN.gov

August 2, 2010

Chad Costa
R.W. Armstrong & Associates
300 South Meridian Street
Indianapolis, Indiana 46225-1193

Federal Agency: Federal Highway Administration ("FHWA")

Re: Amended Historic Property Report (Quigg, 5/10) and notification of INDOT's conclusion that 2009 finding of "no historic properties affected" on behalf of the FHWA still applies to the Keystone Avenue and 96th Street Interchange using Transportation Investment Generating Economic Recovery grant (Designation #0901562; DHPA #7057)

Dear Mr. Costa:

Pursuant to Section 106 of the National Historic Preservation Act (16 U.S.C. § 470f), 36 C.F.R. Part 800, and the "Programmatic Agreement among the Federal Highway Administration, the Indiana Department of Transportation, the Advisory Council on Historic Preservation, the Indiana State Historic Preservation Officer regarding the implementation of the Federal Aid Highway Program in the State of Indiana," the staff of the Indiana State Historic Preservation Officer has conducted an analysis of the materials dated July 9, 2010, and received on July 12, 2010, for the above indicated project in Marion and Hamilton Counties, Indiana.

As we previously stated in our letter dated June 29, 2010, in regard to archaeological resources, based upon the submitted information and the documentation available to the staff of the Indiana SHPO, we have not identified any currently known archaeological resources listed in or eligible for inclusion in the National Register of Historic Places within the three proposed additions to the project area.

If any archaeological artifacts or human remains are uncovered during construction, demolition, or earthmoving activities, state law (Indiana Code 14-21-1-27 and 29) requires that the discovery must be reported to the Department of Natural Resources within two (2) business days. In that event, please call (317) 232-1646. Be advised that adherence to Indiana Code 14-21-1-27 and 29 does not obviate the need to adhere to applicable federal statutes and regulations.

In regard to buildings and structures, we concur with Weintraut and Associates assessment that the house at 9501 Haverstick Road is not eligible for inclusion in the National Register of Historic Places.

Therefore, based upon the documentation available to the staff of the Indiana SHPO, we have not identified any historic buildings, structures, districts, or objects listed in or eligible for inclusion in the National Register of Historic Places within the probable area of potential effects.

We agree with your assessment that INDOT's July 8, 2010 conclusion that the 2009 finding of "no historic properties affected" still applies.

If you have questions about archaeological issues please contact Wade T. Tharp at (317) 232-1650 or wtharp1@dnr.IN.gov. If you have questions about buildings or structures please contact Toni Lynn Giffin at (317) 233-9636 or tgiffin@dnr.IN.gov. Additionally, in all future correspondence regarding the above indicated project, please refer to DHPA #7057.

Very truly yours,

James A. Glass, Ph.D.
Deputy State Historic Preservation Officer

JAG:TLG:WTT:wt

cc: Staffan Peterson, Indiana Department of Transportation
emc: Chad Costa, RW Armstrong

# APPENDIX F. Report Summaries

# Archaeological Records Check
# 96th and Keystone Avenue Improvements
# Des. No. 0901562
# Madison and Hamilton Counties, Indiana

*Prepared for:*
RW Armstrong
Union Station
300 South Meridian Street
Indianapolis, Indiana 46225

*prepared by:*
Kevin M. Zoll
and
Mitch Zoll

Mitchell K. Zoll
*Principal Investigator*

Pioneer Consulting Services, Inc.
2620 West Kilgore Avenue
Muncie Indiana 47304
(765) 284-0459
mzoll2@gmail.com

June 8, 2010

PCS Project # 10RC3

## Management Summary

An archaeological records check completed for planned improvements to Keystone Avenue, 96th Street, Haver Way, Whitley Drive and Threel Road determined that no previously recorded archaeological sites exist within the project area and that the project area has been previously disturbed by road and commercial construction. It was recommended that the project be allowed to proceed without additional archaeological assessment.

## Introduction

In response to a request from RW Armstrong, an archaeological records review has been completed for a proposed intersection improvement project, located in Washington Township, Marion County, and Delaware Township, Hamilton County, Indiana (Figure 1). The proposed project is located in the northern half of the NW ¼ of Section 18, Township 17N, Range 4E in Marion County and in the southern half of the SE ¼ of section 7, Township 17N, Range 4E in Hamilton County, as shown on the USGS 7.5' Fishers, Indiana Quadrangle (Figure 2).

The proposed project, an addition to a previous project (09RC19), involves the addition of several new components that fall outside the area included in the previous project. These additions include a 434 ft. connector road between Haver Way and Whitley Drive. The connector road would be located approximately 630 ft. south of 96th Street. Furthermore, Threel Road, which is essentially a frontage road to Keystone Avenue with an access point to 96th Street immediately east of the intersection, will be reconstructed in order to maintain front side access to the adjacent businesses that align Keystone Avenue. The total length of the reconstruction would be approximately 1120 ft. The access point to 96th street from Threel Road would be removed, but would be re-established along a new route to Aronson Drive. Additionally, a hydraulic analysis of the project area identified drainage issues north of the east-west connector road to 96th Street. As a result, a 12 ft. by 4 ft. box culvert will be required between Aronson Drive and Priority Way West Drive to provide a conveyance for stormwater drainage. The culvert will extend approximately 70 ft. south of the east-west connector road. The proposed culvert will connect to an existing 18 inch pipe that will carry the drainage south away from the project area.

Approximately 0.55 acres of additional permanent right-of-way would be required to construct the connector road. Furthermore, approximately 0.33 acres of permanent and 0.12 acres of temporary right-of-way would be required for the reconstruction of Threel Road. A total of approximately 0.88 acres of permanent and 0.12 acres of temporary right-of-way would be required. However, the total project right-of-way has been reduced from 22.15 acres to 14.2 acres of permanent and 1.17 acres of temporary right-of-way. By including these design modifications to the overall project, approximately 1554 ft. would be added to the tatal project length. The resulting total estimated project length is 11,456 ft.

## Chad Costa

**From:** Miller, Shaun <smiller@indot.IN.gov>
**Sent:** Wednesday, June 09, 2010 8:54 AM
**To:** Chad Costa
**Cc:** 'Mitchell K. Zoll'
**Subject:** RE: Des. 0901562 - 96th Street & Keystone Avenue

Chad,

Good morning. Thank you for the submission of the above referenced archaeological report. The report was reviewed by INDOT Cultural Resources personnel who meet the Secretary of the Interior's Professional Qualification Standards as per 36 CFR Part 61. It is our opinion that the report is acceptable, and we concur with the evaluations and recommendations made by Zoll and Zoll (June 8, 2010). Please submit one copy of the archaeology report to SHPO for review and concurrence. In addition, we ask that a copy of the SHPO submittal letter be sent to INDOT, CRS care of Shaun Miller at smiller@indot.in.gov during the time of submission. If there are any questions or concerns regarding this project, please let me know.

Best regards,

Shaun Miller
Senior Archaeological Supervisor
INDOT, Office of Environmental Services
100 North Senate Avenue, Room 642
Indianapolis, In 46204
(317)233-6795

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Tuesday, June 08, 2010 9:59 PM
**To:** Miller, Shaun
**Subject:** Des. 0901562 - 96th Street & Keystone Avenue

Shaun,

I have a favor to ask of you. Pioneer completed an amendment for the referenced project a couple of months ago and I thought I had submitted it to you for review, but discovered that I overlooked it. However, that wasn't all bad since there was an additional project component recently added. It is all covered in the attached amendment. If you could complete an expedited review of this document it would be greatly appreciated. The City is applying for a TIGER II grant in August and a major component in determining whether a project receives the grant or not is the status of the NEPA document. We are very close to having a CE-4 released for PI, but just need to tie up this amendment.

Please let me know if you have any questions or comments. Thanks again for your assistance!

Chad

**Chad E. Costa**
**Senior Environmental Planner**

RW ARMSTRONG

# Historic Property Report
## *Additional Information*

**Keystone Avenue at 96th Street**
**Interchange Improvement Additional Information**
**DES No.: 0901562**
**Federal Project No.: Pending**
**In Washington Township, City of Indianapolis,**
**Marion County, Indiana and**
**Clay Township, City of Carmel,**
**Hamilton County, Indiana**

Prepared for
**Federal Highway Administration/**
**Indiana Department of Transportation**

Prepared by
WEINTRAUT & ASSOCIATES, INC.
Principal Investigator: Dr. Linda Weintraut
Author: Gary F. Quigg
P.O. Box 5034
Zionsville, Indiana 46077
(317) 733-9770
Linda@weintrautinc.com

**May 2010**

## Executive Summary:
## Keystone Avenue at 96th Street Interchange Improvement Additional Information In Washington Township, City of Indianapolis, Marion County, Indiana and Clay Township, City of Carmel, Hamilton County, Indiana

This report provides additional information to the Historic Property Report for the Keystone Avenue at 96th Street Interchange Improvement (Weintraut & Associates, September 2009).

The Indiana Department of Transportation (INDOT) is proposing to slightly change the proposed construction of the Keystone Avenue and 96th Street Interchange Improvement Project. This change, for which this report was created, will shift the Haverstick Road and Aronson Drive roundabouts away from the center of the roadway. Additionally a 434 ft. (0.1 mile) connector road is proposed between Haver Way and Whitley Drive, Threel Road will be reconstructed to extend from Aronson Drive to Harper Road, and a new box culvert will be required between Aronson Drive and Priority Way West Drive

The Area of Potential Effects (APE) has been drawn to encompass properties on all sides of the undertaking. (See APE Map in Appendix 2.)

Project historians who meet or exceed the Secretary of Interior's standards for Section 106 work identified and evaluated historic properties within the APE for this project. Historic properties were identified and evaluated in accordance with Section 106, National Historic Preservation Act (NHPA) of 1966, as amended, and CFR Part 800 (Revised 2009), Final Rule on Revision of Current Regulations, December 12, 2000, and incorporating amendments effective August 5, 2004.

One property greater than fifty years of age was identified and evaluated for this additional information project, and the historians are recommending this property as Contributing. The historians are recommending no aboveground resources as eligible for listing in the National Register of Historic Places (NR). There are no properties currently listed on the NR within the APE.

## Chad Costa

**From:** Carpenter, Patrick A <PACarpenter@indot.IN.gov>
**Sent:** Thursday, July 08, 2010 2:33 PM
**To:** Chad Costa; Linda Weintraut
**Cc:** Knies, Nathan; Kennedy, Mary; Peterson, Staffan (INDOT)
**Subject:** RE: Des. No. 0901562 - 96th St. and Keystone Ave, Addendum to HPR and Effect Finding
**Attachments:** SignedFindingKeystoneat96thSt(Des.#0901562).pdf

Please find attached the signed finding of "no historic properties affected" for the above referenced project. You can proceed to distribute the finding and 800.11 documentation to SHPO and consulting parties.

Do not hesitate to contact me if you have any questions.

Thank you,

Patrick Carpenter
Historian, Cultural Resources Section
Indiana Department of Transportation
100 N Senate Ave., IGCN-Rm. N-642
Indianapolis, IN 46204-2216
317-233-2061

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Wednesday, June 30, 2010 5:11 PM
**To:** Carpenter, Patrick A
**Cc:** Linda Weintraut
**Subject:** Des. No. 0901562 - 96th St. and Keystone Ave, Addendum to HPR and Effect Finding

Patrick,

Please find attached for your review and approval the addendum to the Historic Property Report and the updated "No Historic Properties Affected" document that have been prepared for the referenced project.

Please return any comments to me at your earliest convenience. Thanks!

Chad

**Chad E. Costa**
**Senior Environmental Planner**

RW ARMSTRONG

Appendix D.4

Supplemental Coordination with INDOT – Cultural Resources Office

(June 2011 and December 2011)

## Chad Costa

**From:** Carpenter, Patrick A <PACarpenter@indot.IN.gov>
**Sent:** Wednesday, June 22, 2011 2:23 PM
**To:** Chad Costa
**Cc:** Miller, Shaun (INDOT); Kennedy, Mary
**Subject:** RE: Des 0901562 - 96th and Keystone Interchange

Chad,

We have reviewed our project files and have determined that INDOT's July 8, 2010 finding of "no historic properties affected" is still valid because the described changes occur within the previously established APE and two archaeological reviews concluded that there are no known archaeological sites within the proposed project area. Furthermore, the realignment of Enterprise Drive occurs in previously disturbed soils as evident in aerial images. Because the changes to the project are so minor and do not affect new properties or result in an adverse effect, there is no need to reopen Section 106 or coordinate with consulting parties or SHPO. This record of INDOT's, CRO evaluation and response should be noted in the CE.

Please let us know if you have any questions.

Thank you,

Patrick Carpenter
Senior Environmental Manager
Cultural Resources Office, Environmental Services
Indiana Department of Transportation
100 N Senate Ave., IGCN-Rm. N-642
Indianapolis, IN 46204-2216
317-233-2061

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Friday, June 17, 2011 12:21 PM
**To:** Miller, Shaun (INDOT)
**Cc:** Kennedy, Mary
**Subject:** RE: Des 0901562 - 96th and Keystone Interchange

The CE has not been approved yet. We still fall within the APE that Linda Weintraut established (see attached).

---

**From:** Miller, Shaun (INDOT) [mailto:smiller@indot.IN.gov]
**Sent:** Friday, June 17, 2011 11:58 AM
**To:** Chad Costa; Kennedy, Mary
**Subject:** FW: Des 0901562 - 96th and Keystone Interchange

Chad,

I've forwarded this to Mary because we will also need a response regarding above ground resources and effect finding. Is this an AI to a signed CE or has the CE not yet been approved? We will provide Section 106 guidance to you within 5 business days.

Thank you,

Shaun Miller
INDOT, Cultural Resources Office
Archaeological Team Leader
(317)233-6795
smiller@indot.in.gov

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Friday, June 17, 2011 10:29 AM
**To:** Miller, Shaun (INDOT)
**Cc:** Mitch Zoll
**Subject:** Des 0901562 - 96th and Keystone Interchange

Shaun,

An old project has resurrected and there are some slight changes in the plans that I want to coordinate through you and see if an amendment to the archaeological records check is necessary. Attached is a map from Pioneer Consulting Services archaeological records check amendment dated June 8, 2010 that shows the previous project footprint in blue; I've added to this map the new area in green. I've also attached an aerial illustrating the currently proposed layout. The alignment of the North-South connector road at its "S" curve has been shifted to the south side of the Enterprise building. Also, while not specifically shown on the map, there is a component of the project that involves pavement work between the Enterprise Drive / 96th St. intersection and the northern most curve of the North-South connector road.

I would appreciate it if you could review this information and return comments at your earliest convenience. Please don't hesitate to contact me with any questions. Thank you in advance for your assistance.

Chad

**Chad E. Costa**
Senior Environmental Planner

RWARMSTRONG

300 S. Meridian St., Indianapolis, IN 46225

**DIR** +1.317.493.3722 // **TF** +1.800.321.6959 x722
**MOB** +1. 317.694.7657 // **FAX** +1.317.788.0957
ccosta@rwa.com // rwArmstrong.com

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**Please consider the environment before printing this message.**

Previous Alignment
Enterprise Dr.
connection
200' 100' 0' 200'

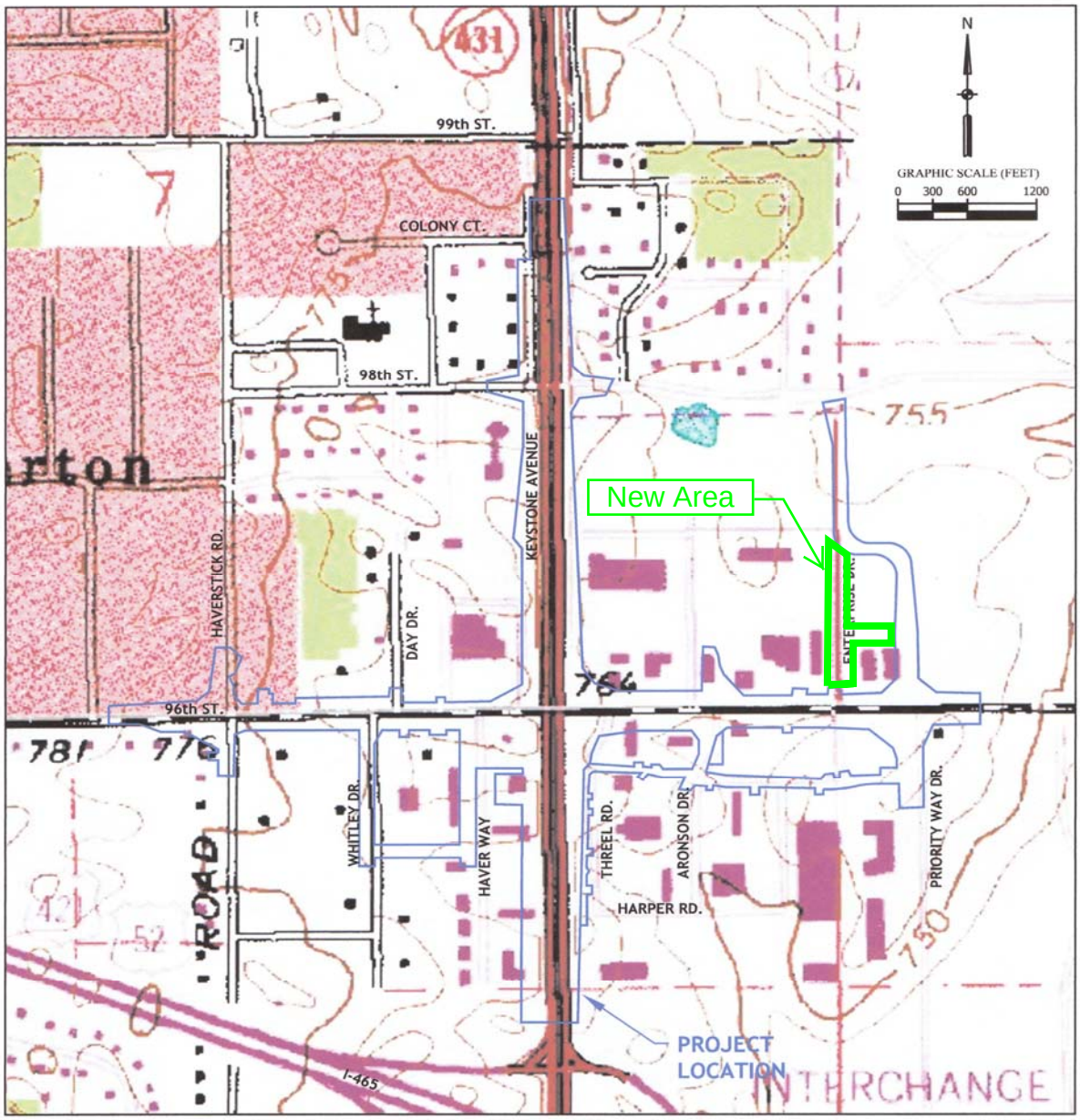


**Figure 2**

RW ARMSTRONG

Union Station / 300 S. Meridian St.
Indianapolis, IN 46225
PH 317.786.0461 // FX 317.788.0957
rwArmstrong.com

96TH AND KEYSTONE

USGS 7.5 MINUTE QUADRANGLE MAP - FISHERS, IN

USGS QUAD MAP

AUGUST 2009 - REV APRIL 2010

Figure 2. The project area shown on the USGS 7.5' Fishers, Indiana Quadrangle.

## Chad Costa

**From:** Carpenter, Patrick A <PACarpenter@indot.IN.gov>
**Sent:** Wednesday, December 07, 2011 4:04 PM
**To:** Chad Costa
**Cc:** Lawson, Aaron C.; David Henkel; Kicinski, Greg; Stone, Jewell
**Subject:** RE: Des. No. 0901562 - 96th Street and Keystone Parkway

Chad,

INDOT's Cultural Resource Office has reviewed the information concerning the project modification. In the expanded APE for the modification, there are no above ground structures as it occurs within the I-465 and Keystone interchange. So no additional above-ground survey is necessary. For archaeology, the modification area is previously disturbed and has been covered in previous surveys for the I-465 and Keystone project and no additional archaeology survey is required.

We have consulted with FHWA to determine how we should address Section 106 concerning the project modification based on this information. Please provide an information letter to the SHPO explaining the modification and summarize the revaluation coordination—no above ground structures in modification area-no archaeology-disturbed and previous studies per the above paragraph. The letter should indicate that the previous Section 106 finding is still valid and that the letter is for informational purposes only, we do not expect a response letter. Please include this letter in the CE AI.

Do not hesitate to contact me if you have any questions.

Thanks,

Patrick Carpenter
Senior Environmental Manager
Cultural Resources Office, Environmental Services
Indiana Department of Transportation
100 N Senate Ave., IGCN-Rm. N-642
Indianapolis, IN 46204-2216
317-233-2061

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Tuesday, December 06, 2011 12:25 PM
**To:** Kennedy, Mary; Miller, Shaun (INDOT); Lawrence, Ben
**Cc:** Lawson, Aaron C.; Henkel, Dave; mmcbride@carmel.in.gov; Steven Fleming; Kicinski, Greg; Stone, Jewell
**Subject:** Des. No. 0901562 - 96th Street and Keystone Parkway

Mary, Shaun and Ben,

There has been a modification made to the proposed design of the referenced project that warrants further consultation with your respective offices. In INDOTs advancement of the re-constructed I-465 / Keystone Parkway interchange ahead of the 96th Street / Keystone Parkway interchange project, and in the absence of an identified funding source (for the 96th / Keystone project), it was made apparent that the 96th / Keystone project tie-in points to I-465 were not provided. As such, the project must extend its southern terminus approximately 1,070 ft. south of what is included in the draft CE (see attached plan sheets / aerial). This work is required to provide the necessary tie-in points to the newly constructed I-465 ramps and from 96th Street to southbound Keystone Parkway (via a slip lane). All of the proposed

work to complete the required tie-in to the I-465 ramps and back to southbound Keystone Parkway will be completed within the disturbed soils of the existing 465 / Keystone interchange right-of-way. However, this area does extend beyond the surveyed limits included in the Draft CE and the Area of Potential Effect (APE) evaluated as part of Section 106 consultation. There should be no changes to drainage within this area with the exception of the possible need to relocate some stormwater inlets. Although at the time conceptual, it should be noted that the tie-in work to I-465 was included in the information and displays presented at the October 26, 2011 public hearing.

Mary, would you review this information and let me know what, if any, coordination is required for Section 106 compliance. I have included a map from the May 2010 revised HPR showing the APE that was surveyed and the proposed modification to the APE. There are no additional aboveground structures within the proposed modified APE. Therefore, there should be no need for additional cultural surveys.

Shaun, would you please confirm that no further archaeological investigations are necessary given that we are staying within disturbed soils as well as existing right-of-way that has been previously investigated.

Ben, would you please confirm that no further coordination with the resource agencies is required for this change in project scope. The CE will be modified to account for the design change, but the overall impacts should be unchanged.

Please let me know if you required any further information in your assessment of this information. Thank you for your assistance in this matter.

Chad

**Chad E. Costa**
Senior Environmental Planner

RWARMSTRONG

300 S. Meridian St., Indianapolis, IN 46225

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ccosta@rwa.com // rwArmstrong.com

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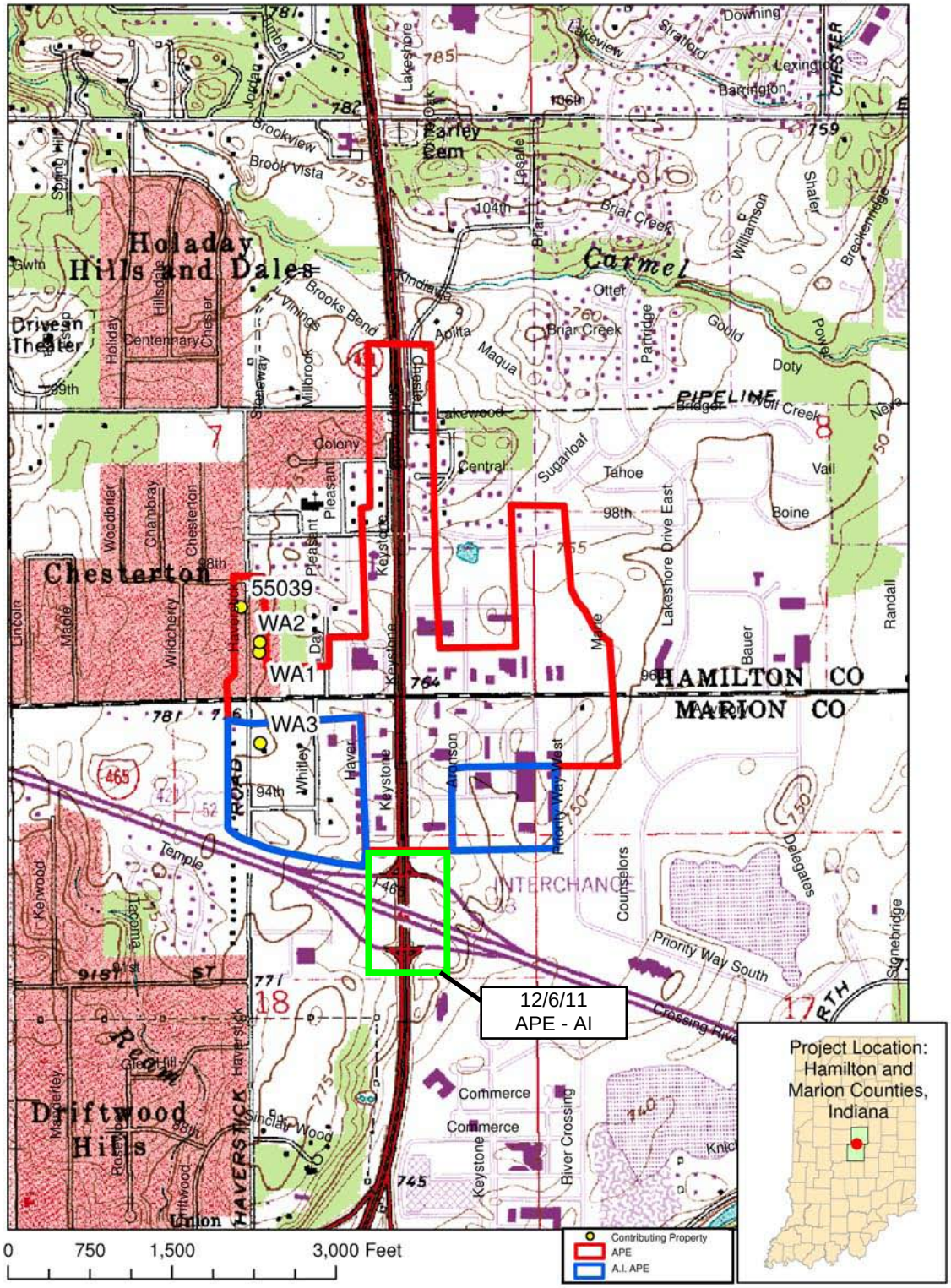
**Please consider the environment before printing this message.**

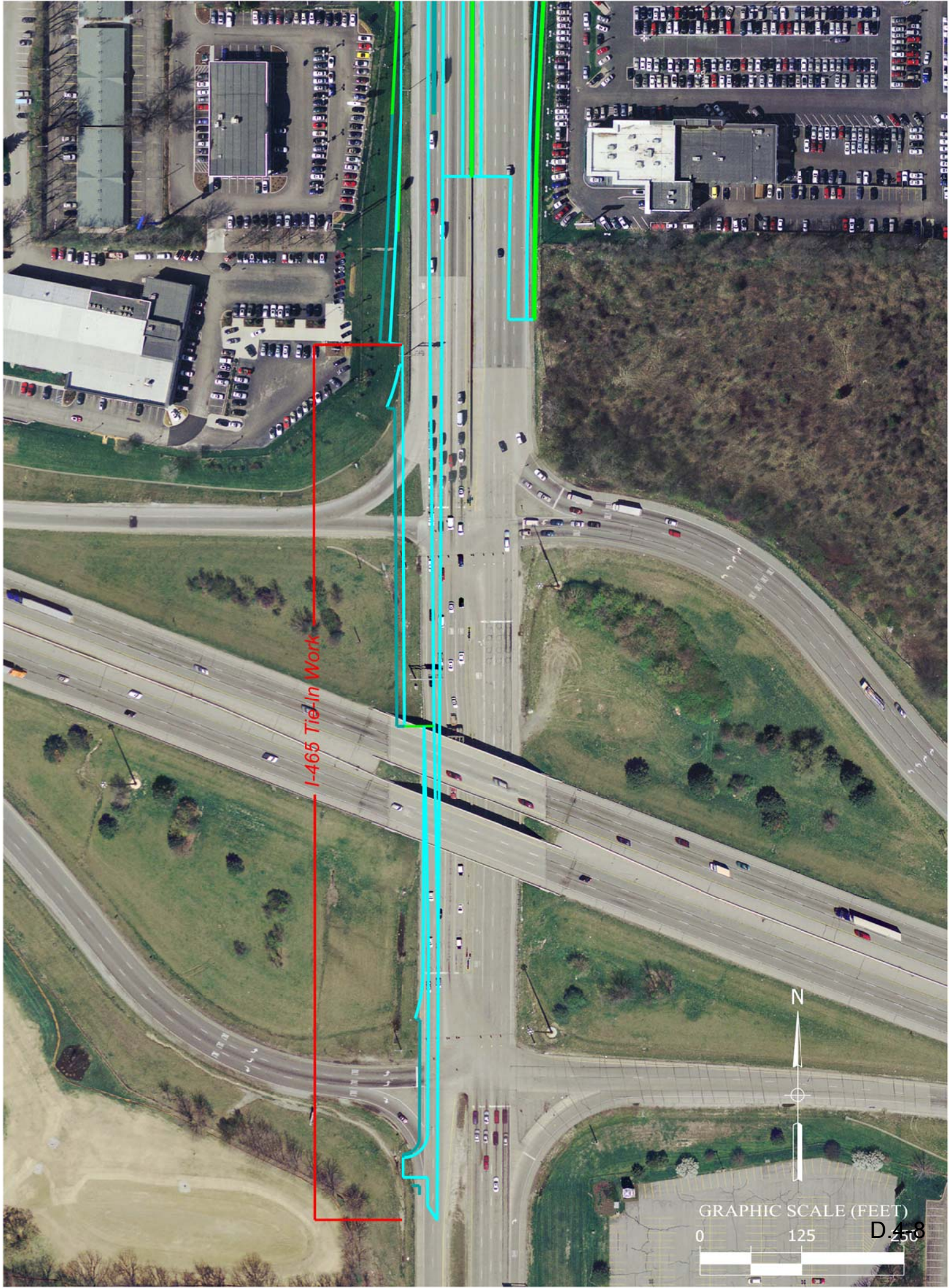
Keystone Parkway at 96th Interchange: Additional Information
DES No. 0901562
Portion of the USGS 7.5'series, Indiana topographic quadrangle (1:24,000)

N

May, 2010




Note: Information shown on this map is not warranted for accuracy or merchantability. GIS data used to create this map are from the best known sources existing at this time.However, experience shows that many national datasets are not all inclusive. Use of this map should be limited to planning, and should not replace field review or background checks with other sources. It is intended to serve as an aid in graphic representation only. This map does not represent a legal document.


I-465 Tie-In Work
N
GRAPHIC SCALE (FEET)
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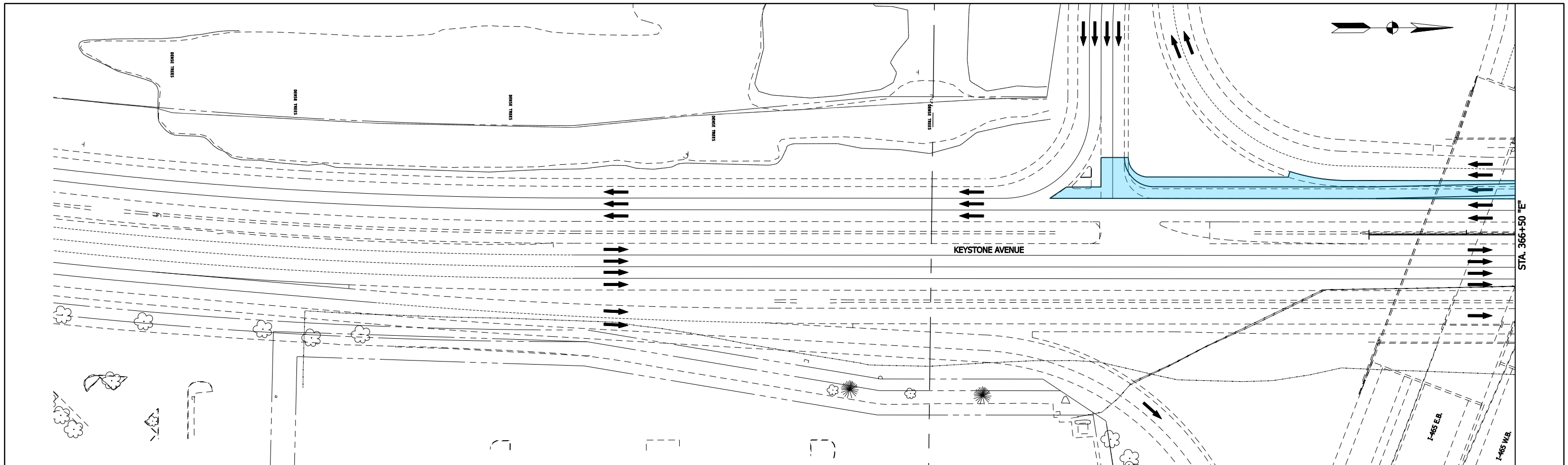
125
250

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760
750
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730
720

| EARTHWORK SUMMARY TABLE | | |
|---|---|---|
| LINE | CUT (CYS) | FILL+15% (CYS) |
| "E" | XXXX | XXXX |
| "PR-3" | XXXX | XXXX |
| "SER" | XXXX | XXXX |
| "SER-1" | XXXX | XXXX |
| "SWR" | XXXX | XXXX |
| "SWR-1" | XXXX | XXXX |
| "SR" | XXXX | XXXX |
| "NER" | XXXX | XXXX |
| "NWR" | XXXX | XXXX |
| TOTAL= | XXXX | XXXX |
| DEDUCT | | |
| STRUCTURE BACKFILL FOR MSE | | -(XXXX) |
| ADJUSTED TOTAL= | XXXX | XXXX |
| NET(BORROW)= | XXXX | XXXX |

RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

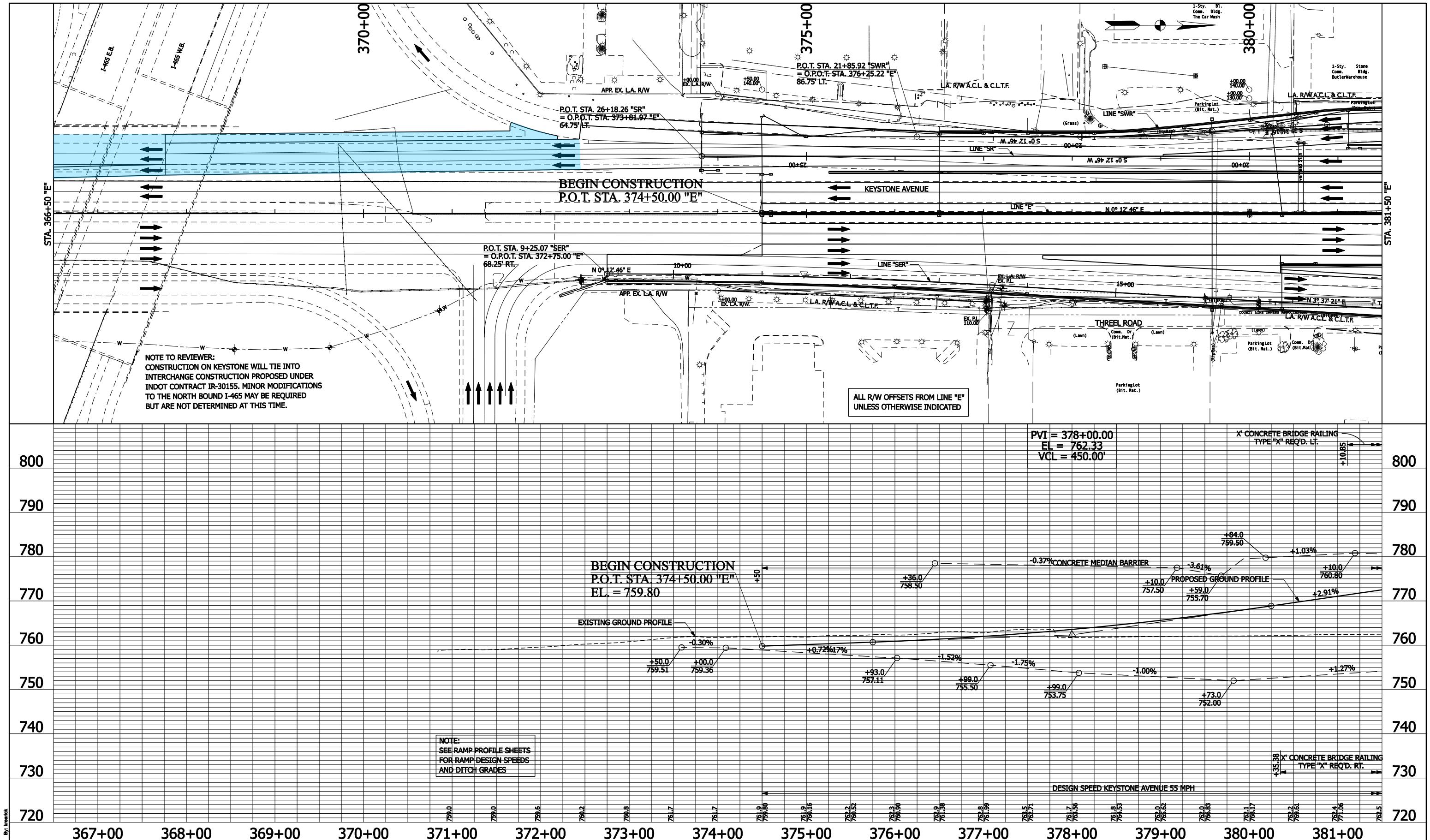
CITY OF CARMEL

PLAN & PROFILE
KEYSTONE AVENUE - LINE "E"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | 12 of 45 |
| CONTRACT | PROJECT |
| TBD | 0901562 |

By: kwestick
Plotted on 12/5/2011 at 04:28 PM

Model: R-PNP-E0 Drawing: P:\Transportation\20075030 Keystone Parkway\30 SheetDrawings\301 Interim\10 BaseSets\R-PNP-E.dgn




RECOMMENDED FOR APPROVAL _____ DESIGN ENGINEER DATE

DESIGNED: KJR DRAWN: TPH

CHECKED: SEB CHECKED: KJR

CITY OF CARMEL

PLAN & PROFILE
KEYSTONE AVENUE - LINE "E"

| HORIZONTAL SCALE | BRIDGE FILE |
|---|---|
| 1" = 50' | TBD |
| VERTICAL SCALE | DESIGNATION |
| 1" = 10' | 0901562 |
| SURVEY BOOK | SHEET |
| | 12 of 45 |
| CONTRACT | PROJECT |
| TBD | 0901562 |

By: lwestrick
Plotted on 12/5/2011 at 04:27 PM
Model: R-PNP-E1 Drawing: P:\Transportation\20075030 Keystone Parkway\30 SheetDrawings\301 Interim\10 BaseSets\R-PNP-E.dgn

# Appendix E

Red Flag and Hazardous Materials

# Appendix E.1

# Red Flag Investigation

# Red Flag Investigation

**DATE:** May 13, 2009

**TO:** File

**FROM:** Chad E. Costa
RW Armstrong
300 South Meridian Street
Indianapolis, IN
ccosta@rwa.com

**RE:** Red Flag Investigation
Keystone Avenue and 96th Street Interchange
Carmel, Hamilton and Marion Counties, Indiana

---

A Red Flag Investigation was conducted for the proposed interchange at Keystone Avenue and 96th Street. The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps and ground level photographs are attached hereto. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from Haverstick Road to Priority Way Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street for a total project length of 7,383 ft. (1.4 miles). The IndianaMap, supported by the Indiana Geological Survey, was used to obtain the following information in conjunction with other sources where identified. The IndianaMap website was accessed on March 13, 2009.

## Infrastructure

These layers of the IndianaMap were accessed within a ½ mile radius of this project.

| | | |
|---|---|---|
| Other road projects | Airports | Cemeteries |
| Hospitals | Railroads | Recreational Facilities |
| Religious Facilities | Schools | Trails |
| Pipelines | | |

The Lighthouse Tabernacle Church and the Hope Church of the Christian and Missionary Alliance are located along 98th Street west of Keystone Avenue. The Lighthouse Tabernacle Church is also identified as a school according to the IndianaMap. Neither institution should be adversely affected by the proposed project. However, the removal of the median access at the 98th Street intersection will potentially affect the ability to access each. Additionally, a 20 inch natural gas line owned by Citizens Gas crosses Keystone Avenue near the northern ramp terminals of the I-465 and Keystone Avenue interchange and continues north paralleling the west side of Keystone Avenue.

**Water Resources**
These layers of the IndianaMap were accessed within a ½ mile radius of this project.

| | | |
|---|---|---|
| Canal Routes-Historic | Canal Structures-Historic | Wetland Lines |
| Floodplain-DFIRM | Rivers & Lakes | Wetlands |
| Wetland Points | Lakes-Impaired | Streams-Impaired |
| Outstanding Rivers | Cave Entrance Density | Karst Springs |
| Sinkhole Areas & Sinking-Stream Basins | | |

The floodplain of the West Fork White River is located to the east of the project area, but will not be impacted by the proposed project. Additionally, two detention ponds, classified by the IndianaMap as wetlands, are located within the project area, but also will not be affected by the proposed project.

**Mining/Mineral Exploration**
These layers of the IndianaMap were accessed within a ½ mile radius of this project.

| | | |
|---|---|---|
| Industrial Mineral Site | Petroleum Fields | Sand & Gravel Pits-Abandoned |
| Quarries-Abandoned | Mines-Surface | Mines-Underground |
| Mine Lands-Abandoned | Petroleum Wells | |

The Trenton Oil Field is located to the northeast and southeast of the project area and should not impact the project area. No other resources associated with this category were identified within or adjacent to the project area.

**Ecological Information**
The Indiana Natural Heritage Data Center website was accessed for Hamilton and Marion Counties. The information presented on the website is included in this survey; however the county-wide list does not accurately reflect potential impacts for our project site. Further coordination with the U.S. Department of Interior, Fish & Wildlife Service will occur to verify potential impacts in the area of this project.

**Cultural Resources**
There are no properties listed on the National Register of Historic Places (NRHP) within the project area. A historic survey of the project area will be completed to determine if any properties are eligible for inclusion on the NRHP.

**Hazardous Materials Concerns**
These layers of the IndianaMap were accessed within a ½ mile radius of this project.

| | | |
|---|---|---|
| Confined Feeding Operation | Construction Demo Waste | Industrial Waste Sites |
| Leaking USTs | Open Dump Sites | NPDES Pipe Locations |
| NPDES Facilities | Corrective Action Sites | Restricted Waste Sites |
| Septage Waste Sites | Solid Waste Sites | Superfund Sites |
| Tire Waste Sites | USTs | Voluntary Remediation Prog. |

Brownfields Waste Transfer Stations Waste Treat./Storage Disp.
Institutional Control Sites

The review of these layers of IndianaMap produced several industrial waste, underground storage tanks (USTs) and leaking USTs (LUSTs) sites within or adjacent to the project area. More detailed information pertaining is provided below.

Industrial Waste Sites:
Review of the IndianaMap identified six industrial waste sites that have been classified as such due to their generator status under the Resource Conservation and Recovery Act (RCRA). The following five (5) sites are classified as Conditionally Exempt Small Quantity Generators, which means they produce less than 220 lbs. of hazardous waste per month:

- Tom Wood Volvo (3475 East 96th Street)
- Ed Martin Pontiac (3800 East 96th Street)
- World Wide Motors of Indianapolis (3900 East 96th Street)
- Weise Ford (3130 East 96th Street)
- Butler Toyota (3232 Harper Road)

The last identified industrial waste site, Penske Chevrolet (3210 East 96th Street), is classified as a Small Quantity Generator. Small Quantity Generators produce less than 2,200 lbs of hazardous waste per month, but more than 220 lbs.

USTs:
Eight (8) UST sites were identified by IndianaMap as occurring within or adjacent to the project area. In addition to these eight sites, when cross referenced with the UST Report maintained by the Indiana Department of Environmental Management (IDEM) (updated January 2009), three more sites were identified for a total of 11 UST sites occurring within or adjacent to the project area. The details of the sites according to IndianaMap and the IDEM UST Report are provided in the following table.

| UST SITES | | | | | | |
|---|---|---|---|---|---|---|
| Site Name / Owner | | Address | # of Tanks | Size (Gal.) | Content(s) | Status |
| *IndianaMap Sites* | | | | | | |
| 1 | 99th Street Lift Station (Clay Twnshp. Reg. Waste Dist.) | 99th St. and Keystone Ave. | 1 | 500 | Diesel Fuel | Active |
| 2 | Dan Young Chevrolet Honda | 9600 N. Keystone Ave. | 8 | 550 | Oil, "Other" | Permanently Out of Service |
| 3 | Weise Ford | 3130 E. 96th St. | 3 | 2-1,000<br>1-3,000 | Used Oil<br>Gasoline | Permanently Out of Service |
| 4 | Carmel Nissan | 3300 E. 96th St. | 2 | 550 | Used Oil, "Other" | Permanently Out of Service |
| 5 | Tom Wood Jaguar– Volvo | 3473 E. 96th St. | 3 | 1-550<br>2-550 | Gasoline<br>Used Oil | Permanently Out of Service |
| 6 | Ed Martin Acura Pontiac GMC | 3800 E. 96th St. | 2 | 1,000 | Used Oil, "Other" | Permanently Out of Service |
| 6 | Ed Martin Acura Pontiac GMC | 3800 E. 96th St. | 1 | 8,000 | Gasoline | Active |
| 7 | Midwest Hospital Supply Co. | 9727 Bauer Dr. | 2 | 500 | Diesel Fuel | Permanently Out of Service |

| | | | | | | |
|---|---|---|---|---|---|---|
| 8 | Dan Young Motors | 4140 E. 96th St. | 2 | 10,000<br>1,000 | Gasoline<br>Used Oil | Permanently Out of Service |
| *Not Identified on IndianaMap* | | | | | | |
| 9 | Amoco Ss 10110 | 3301 E. 96th St. | 3 | 10,000 | Gasoline | Active |
| 9 | Amoco Ss 10110 | 3301 E. 96th St. | 5 | 4-10,000<br>1-550 | Diesel, Gasoline<br>Used Oil | Permanently Out of Service |
| 10 | Circle K #2283 | 3202 E. 96th St. | 4 | 2-10,000<br>1-12,000<br>1-1,000 | Gasoline<br>Gasoline<br>Oil | Permanently Out of Service |
| 11 | Marathon Oil Baxter's | 3131 E. 96th St. | 9 | 2-6,000<br>1-8,000<br>1-1,000<br>3-10,000<br>1-1,000<br>1-550 | Unknown<br>Unknown<br>Unknown<br>Gasoline<br>Used Oil<br>Used Oil | Permanently Out of Service |
| 11 | Marathon Oil Baxter's | 3131 E. 96th St. | 4 | 3-12,000<br>1-8,000 | Gasoline<br>Gasoline | Active |

Of the 11 UST sites identified either within or adjacent to the project area, four our LUST sites according to IndianaMap. Supplemental information regarding the media affected and status of the site was obtained from the LUST Report maintained by IDEM (updated May 2009). The following table provides specific information regarding each site.

| LUST SITES | | | | |
|---|---|---|---|---|
| | **Site Name / Owner** | **Address** | **Affected Media** | **Status** |
| 8 | Dan Young Motors | 4140 E. 96th St. | Soil | No Further Action |
| 9 | Amoco Ss 10110 | 3301 E. 96th St. | Soil & Groundwater | No Further Action |
| 10 | Circle K #2283 | 3202 E. 96th St. | Soil | Active Remediation |
| 11 | Marathon Oil Baxter's | 3131 E. 96th St. | Soil | No Further Action |

**Recommendations**

Due to the highly commercialized nature of the project area and the number of industrial waste, UST and LUST sites located throughout the corridor, additional investigations to determine the extent / presence of hazardous materials is recommended. Such investigations may include a Phase I Initial Site Assessment or Phase II Preliminary Site Investigation. Furthermore, coordination will occur to ensure federal and state endangered, threatened, or rare species are appropriately handled. The project will also undergo a Section 106 review in accordance with 36 CFR 800 to identify historic properties within the area of potential effect and determine the effects, if any, to each property.

Chad E. Costa
Senior Environmental Planner
RW Armstrong

**RED FLAG SURVEY**
**LEGEND**

Counties

Mine Lands - Abandoned
- Aban. Mine Land (AML)
- Bond Forfeiture
- Lost Surety
- No Data

Quarries - Abandoned

Sand & Gravel Pits - Abandoned

Industrial Mineral Sites (Active 2001)

Airports (NTAD)

Airports - Public (INDOT)

Brownfields

Cemeteries

Confined Feeding Operations

Construction Demolition Waste

Corrective Action Sites

Petroleum Wells
- Abandoned Gas Storage
- Gas
- Gas Storage
- Oil
- Other

Hospitals (HAZUS)

Karst Springs

Canal Structures - Historic

Industrial Waste Sites

Institutional Control Sites

Leaking UG Storage Tanks

NPDES Facilities

NPDES Pipe Locations

Open Dump Waste Sites

Recreational Facilities

Religious Facilities

Restricted Waste Sites

Schools (HAZUS)

Septage Waste Sites

Solid Waste Landfills

Superfund Sites

Tire Waste Sites

Underground Storage Tanks

Voluntary Remediation Program

Waste Transfer Stations

Waste Treatment Storage Disposal

Wetland Points

Canal Routes - Historic

Streams - Impaired (IDEM)

Interstates (TIGER)

Rivers - Outstanding (NRC)

Pipelines (IGS)
- Crude Oil
- Natural Gas
- Refined Products

Railroads (1:100,000)

Roads (TeleAtlas- labeled)

Trails
- Open
- Under Development
- Planned

Wetland Lines

Cave Entrance Density
Number of Entrances/ sq. km
- 0 - 1
- 2 - 5
- 6 - 10
- 11 - 15

Floodplains - DFIRM

Rivers (NHD)

Lakes (NHD)

Lakes - Impaired (IDEM)

Petroleum Fields
- Gas
- Oil
- Oil/gas

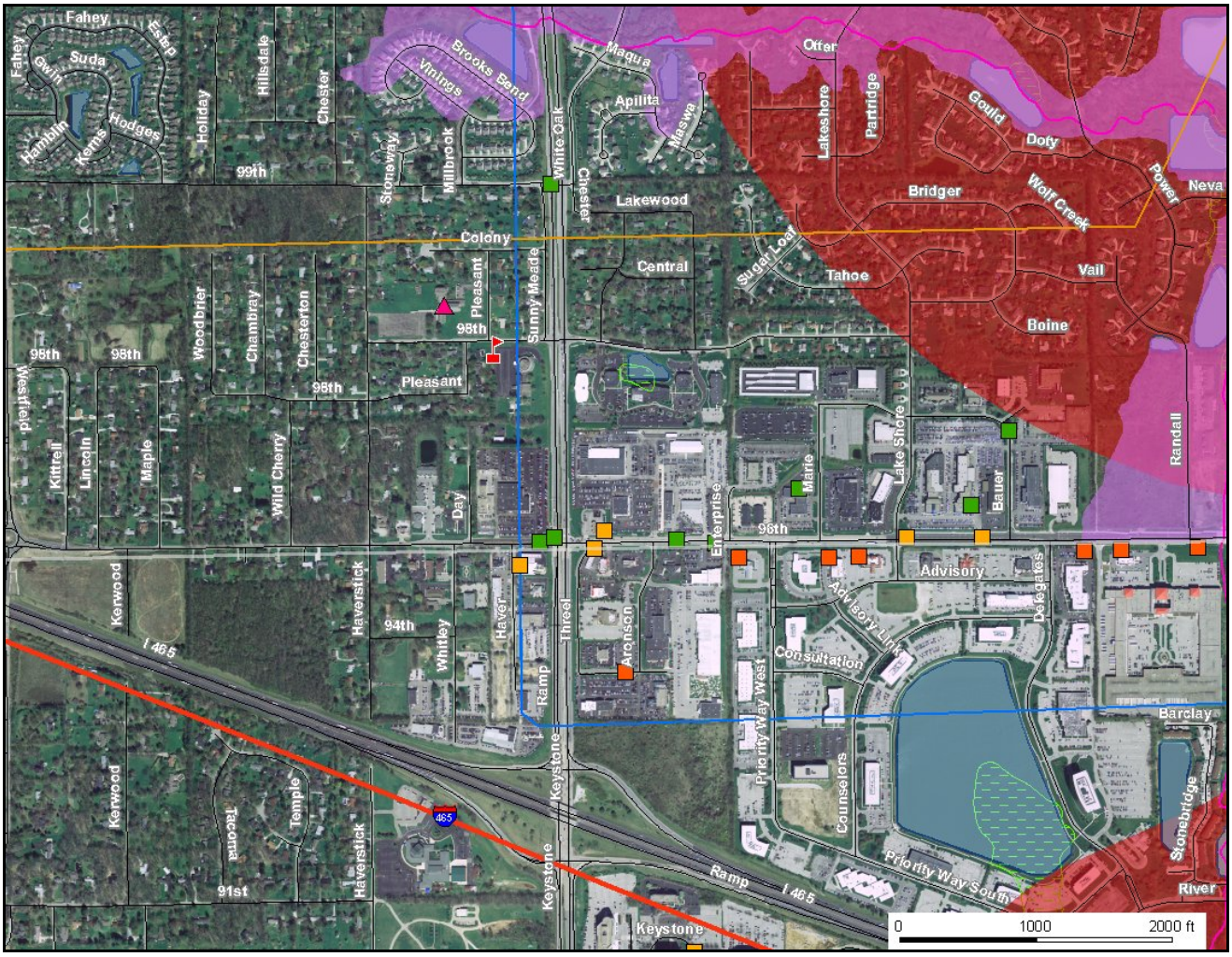
Sinkhole Areas and Sinking-Stream Basins
- Sinkhole Area
- Sinking Stream Basin

Mines - Surface

Mines - Underground

Wetlands

State


Fahey
Estep
Suda
Gwin
Hambin
Kerns
Hodges
Holiday
Hillsdale
Chester
99th
Stoneway
Millbrook
Brooks Bend
Vintings
Maqua
Apilita
Maswa
White Oak
Chester
Lakewood
Colony
Central
Sunny Meade
Pleasant
98th
Woodbrier
Chambray
Chesterton
Westfield
Kittrell
Lincoln
Maple
Wild Cherry
Day
Haver
Haverstick
Kerwood
94th
Whitley
I 465
Ramp
Threet
Keystone
Tacoma
Temple
91st
Aronson
Enterprise
Marie
96th
Priority Way West
Consultation
Advisory Link
Advisory
Delegates
Counselors
Lake Shore
Bauer
Barclay
Priority Way South
Stonebridge
River
Randall
Lakeshore
Partridge
Otter
Gould
Doty
Bridger
Wolf Creek
Power
Neva
Sugar Loaf
Tahoe
Vail
Boine
0
1000
2000 ft

# Appendix E.2

# Phase I ESA (Excerpts)

## Phase I, Environmental Site Assessment

# Proposed Intersection Improvement

# Keystone Avenue and 96th Street

## Des. Number 0901562

## Marion and Hamilton Counties, Indiana

## City of Carmel

**October 2009**
**RWA Project No. 20075030.80**

RW ARMSTRONG™
Inspiration to reality.

## Executive Summary

RW Armstrong has completed this Phase I Environmental Site Assessment (ESA) of the Keystone Avenue and 96th Street Intersection Improvement Project (project) in Marion and Hamilton Counties, Indiana. The research area includes 96th Street from just east of Priority Way West Drive to Haverstick Road, Keystone Avenue from just north of I-465 to just north of 99th Street, a northward extension of Priority Way West Drive from 96th Street to 98th Street, and an east/west connector south of 96th Street from Priority Way West Drive to Aronson Drive. RW Armstrong completed this ESA in accordance with ASTM E 1527-05. The ESA included a site inspection, interviews of key individuals, and a review of historical and government records. The attached report provides details of the site assessment.

The areas of investigation were determined in accordance with the scope of the project as currently proposed. A map showing the project vicinity is in Appendix A, Maps. If the scope of this project changes, additional investigations may be warranted.

According to the government records search performed by Environmental Data Resources, Inc., (EDR) and search performed by RW Armstrong, the project research area includes:

- six RCRA-Conditionally Exempt Small Quantity Generators (CESQG)
- eleven Underground Storage Tank (UST) sites
- three Leaking Underground Storage Tank (LUST) sites
- eight Manifest sites
- seven Facility Index System/Facility Registry System (FINDS) sites

Section 4.0 of this report provides the specific details of these findings, Appendix A, Maps for the project limits and Recognized Environmental Conditions (REC) locations, and Appendix C for a copy of the EDR Report.

Based on current condition of the sites and distance from the area of proposed activity, it is possible that the following sites, which contain RECs, may be impacted by the proposed construction. As such these sites should be further investigated to determine the condition of the subsurface environment.

Recognized Environmental Conditions:

**Site B - Baxter's Marathon #2092**, 3131 East 96th Street, Indianapolis, Indiana, active UST, active LUST, historic Service Station

**Site C - Circle K #2283** (formerly Keystone Shell a.k.a. West Shell A&C Carmel), 3202 East 96th Street, Indianapolis, Indiana, historic UST, active and discontinued LUST, RCRA-Non Generator

**Site D - BP Facility #25980** (formerly **Amoco Service Station #10110**), 3301 East 96th Street, Indianapolis, Indiana, active UST, No Further Action (NFA) LUST, CESQG

**Keystone Avenue and 96th Street Intersection**, Indianapolis, Indiana, Spill Site

This ESA revealed evidence of RECs currently adjacent to project research area. RW Armstrong recommends further environmental investigations for sites and facilities listed within the project area. The details of the further investigation are listed in Section 9.0 of this document.

This executive summary is provided as a convenience and should not be considered as a substitute for technical documentation provided in the report.

## 9.0 Conclusions and Recommendations

RW Armstrong has completed this Phase I ESA of the Keystone Avenue and 96th Street Intersection Improvement project. The assessment was performed in accordance with the scope and limitations of ASTM E 1527-05. Exceptions to, and limitations of this practice are described in Section 1.4. We have the specific qualifications based on education, training, and experience to assess this project of the nature, history and setting of the subject properties. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40CFR Part 312. This Phase I ESA revealed evidence of the following RECs.

**Recognized Environmental Conditions**

**Baxter's Marathon #2092**
3131 East 96th Street
Indianapolis, Indiana
Active UST, active LUST, historic Service Station

This property contains four active USTs. This activity may impact the project area. Six to eight borings placed along the north and east property boundaries, within the right-of-way should be sampled and tested for TPH, BTEX, MTBE and naphthalene. These borings should be advanced at least 20 feet below ground level, to groundwater, or to refusal.

**Circle K #2283** (formerly Keystone Shell a.k.a. West Shell A&C Carmel)
3202 East 96th Street
Indianapolis, Indiana
Historic UST, active and discontinued LUST, RCRA-Non Generator

The USTs at this facility were removed in 2007, however there is a medium priority LUST incident currently active. This incident may have affected the soil or groundwater within the right-of-way along Keystone Avenue and 96th Street. Six to eight borings placed along the south and west property boundaries, within the right-of-way should be sampled and tested for TPH, BTEX, MTBE and naphthalene. These borings should be advanced at least 20 feet below ground level, to groundwater, or to refusal.

**BP Facility #25980** (formerly **Amoco Service Station #10110**)
3301 East 96th Street
Indianapolis, Indiana
Active UST, NFA LUST, CESQG

This facility has a history of LUST incidents, and contains active USTs. The contamination from this incident may have affected the right-of-way along Keystone Avenue and 96th Street. Six to eight borings placed along the north and west property boundaries, within the right-of-way should be sampled and tested for TPH, BTEX, MTBE and naphthalene. These borings should be advanced at least 20 feet below ground level, to groundwater, or to refusal.

**Keystone Avenue and 96th Street Intersection**
Indianapolis, Indiana
Spill Site

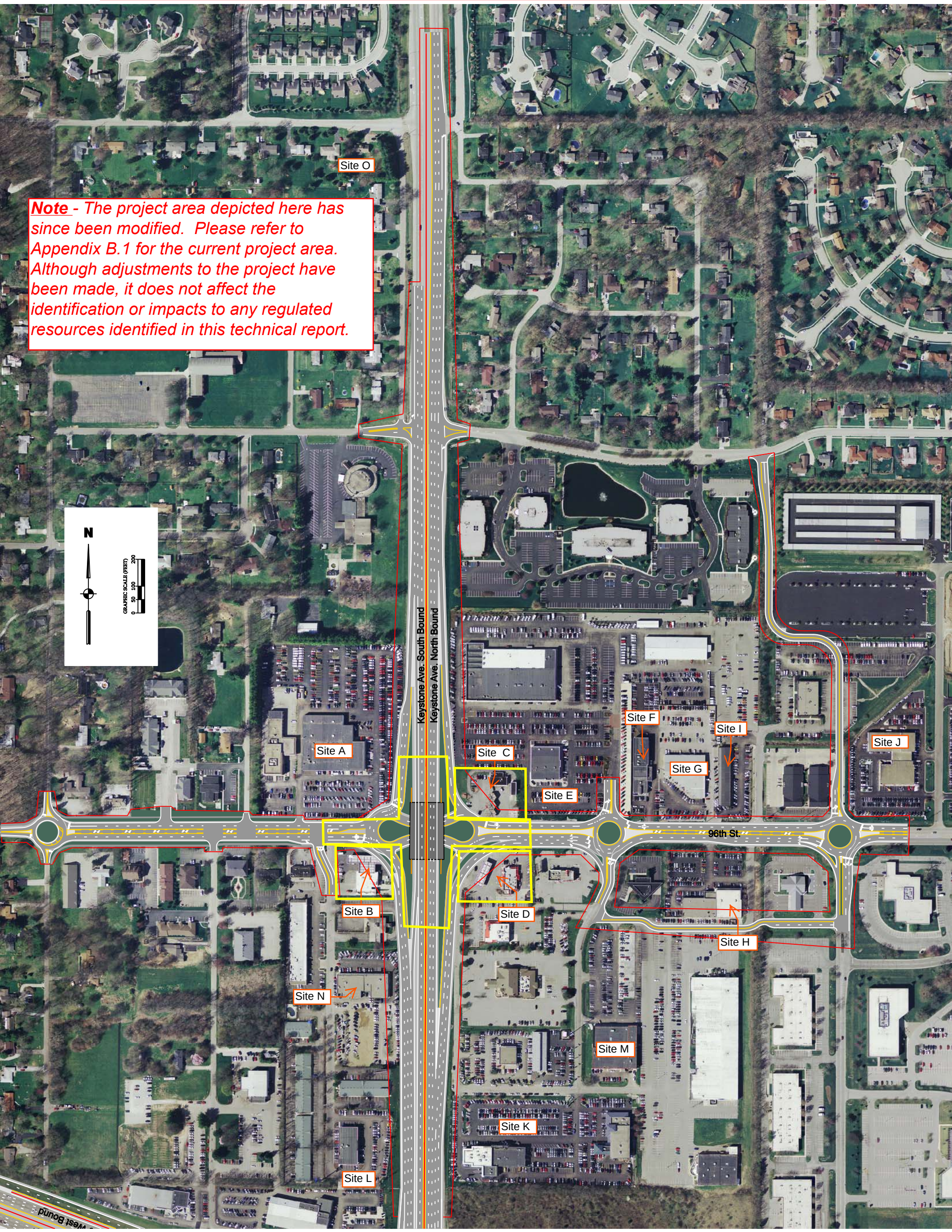
The intersection of Keystone Avenue and 96th Street was the location of three recorded spills in 1986. According to multiple interviews, there are many car crashes at this location each week. Due to the high number of crashes and the high probability of contamination during a wreck, further investigation of the intersection is warranted. Eight to ten borings should be placed along the right-of-way at this intersection. These borings should be sampled and tested for TPH, BTEX, MTBE and naphthalene; the borings should be advanced at least 20 feet below ground level, to groundwater, or to refusal.

## 10.0 References

The following is a list of the references used during this investigation.

Aerial Photographs
Aerial Photographs, 1936, 1941, 1956, 1962, 1972, and 1974
hppt://www.co.hamilton.in.us/gis/start.html
IndianaMap, various layers
http://129.79.145.7/arcims/statewide_mxd/index.html
Assessor's Office Files – Hamilton County and Marion County, visited 2/25/09
Brownfields Program Sites – IDEM listed updated 9/30/08
CERCLIS database – USEPA, list updated 12/8/08
City Directory – Haines, Polk, Robertson, viewed at Marion County Historic Library, viewed 2/23/09
Envirofacts Data Warehouse – US EPA, databases updated as various intervals, website accessed 2/12/09
ERNS – National Response Center, United States Coast Guard, database updated daily, website accessed 2/12/09
FINDS database – US EPA, list updated 10/31/08
LUST database – IDEM, list updated 9/30/08
IN MANIFEST database – IDEM, list updated 12/28/07
National Priority List – US EPA, listed updated 11/19/08
RCRAInfo – US EPA, list updated 12/8/08
SHWS database – IDEM, list updated 9/18/07
SPILLS database – IDEM, list updated 9/30/08
Custom Soil Resource Report - 2006, from Soil Data Mart, National Resources Conservation Service (NRCS), U.S. Department of Agriculture (USDA), accessed 2/26/09
UST database – IDEM, list updated 9/30/08
VCP database – IDEM, list updated 6/17/08

# Keystone Avenue and 96th Street
# Phase I, ESA
## Project Location, Site Identification, and REC Locations




Site Identification

- Recognized Environmental Condition (REC)

Site A - Tom Wood Ford
**Site B - Baxter's Marathon**
**Site C - Circle K #2283**
**Site D - BP Facility**
Site E - Penske Chevrolet
Site F - Tom Wood Subaru
Site G - Tom Wood Pre-Owned Vehicles
Site H - Tom Wood Porsche & Audi
Site I - Carmel Motorsports
Site J - Ed Martin Acura/Pontiac/GMC
Site K - Butler Toyota
Site L - Dryer & Reinbold BMW
Site M - Tom Wood Nissan
Site N - Enterprise
Site O - 99th Street Lift Station

Appendix E.3

Phase II ESA (Excerpts)

## Phase II, Environmental Site Assessment

# Proposed Intersection Improvement

# Keystone Avenue and 96th Street

## Des. Number 0901562

## Marion and Hamilton Counties, Indiana

## City of Carmel

January 2010
RWA Project No. 20075030.80

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Inspiration to reality.

## Executive Summary

RW Armstrong has completed this Phase II Environmental Site Assessment (ESA) of the Keystone Avenue and 96th Street Intersection Improvement Project (project) in Marion and Hamilton Counties, Indiana. The research area includes four properties (Baxter's Marathon #2092, Circle K #2283, BP Facility #25980, and the intersection of Keystone Ave and 96th Street) located along the proposed project area. RW Armstrong completed this Phase II ESA in accordance with ASTM International E 1903-97.

The areas of investigation were determined in accordance with the scope of the project as currently proposed, the findings of the Phase I, ESA, October, 2009, and publically available environmental studies from the sites. A map showing the project vicinity and properties investigated is in Appendix A. If the scope of this project changes, additional investigations may be warranted.

The Phase II ESA was conducted to determine if subsurface conditions at the four properties have been impacted by operations at the sites or if previously know contamination had shifted position as compared to previous studies. The sites are as follows:

**Site B - Baxter's Marathon #2092**, 3131 East 96th Street, Indianapolis, Indiana, active UST, active LUST, historic Service Station. There was no measurable amount of any of the chemicals of concern (COCs) found within the four soil samples taken at this site, no further investigations are warranted at this time.

**Site C - Circle K #2283** (formerly **Keystone Shell,** a.k.a. **West Shell A&C Carmel**), 3202 East 96th Street, Indianapolis, Indiana, historic UST, active and discontinued LUST, RCRA-Non Generator. There was a measureable amount of Total Petroleum Hydrocarbons (TPH) Diesel Range Organics (DHO) and High End Organics (ERO) found in one of the five soil samples taken; however those levels did not exceed the IDEM RISC Residential or Industrial Closure Limits. There were no measureable quantities of COCs found in the water sample taken at this site, no further investigations are warranted at this time.

**Site D - BP Facility #25980** (formerly **Amoco Service Station #10110**), 3301 East 96th Street, Indianapolis, Indiana, active UST, No Further Action (NFA) LUST, RCRA CESQG**.** There were no measureable amounts of any of the COCs found in the three soil samples taken at this site, no further investigations are warranted at this time.

**Keystone Avenue and 96th Street Intersection**, Indianapolis, Indiana, Spill Site. This site was inaccessible to the drilling rigs, no soil or groundwater samples were taken at this site, additional investigations are not warranted at this time due to the safety concerns of the site.

This Phase II ESA revealed no evidence of contamination levels exceeding the Indiana Department of Environmental Management (IDEM) Risk Integrated System of Closure (RISC) Residential Default Closure Levels or Industrial Default Closure Levels within the borings investigated. However, according to the Keystone Avenue and 96th Street, Phase I, ESA, October 2009 some parcels contain known contamination. The environmental reports outlining this contamination, publically available through the IDEM Virtual File

Cabinet, should be reviewed to observe the contamination found in previous investigations conducted by others. The health and safety plan to be prepared prior to construction should disclose past contamination associated with each site. This report reflects only the areas investigated and does not conclusively determine the absence of contamination within a property.

This executive summary is provided as a convenience and should not be considered as a substitute for technical documentation provided in the report.

DRO, ERO, and GRO using US EPA Method 8015 and BTEX/MtBE using US EPA Method 8260. Groundwater analytical results were compared to the IDEM RISC residential default closure levels and industrial closure levels. A copy of the laboratory analytical results is included in Appendix B.

# 4.0 Evaluation

## 4.1 Site B, Baxter's Marathon #2092 Site

### 4.1.1 Soil Sampling Results

On November 11, 2009 Vertical Task mobilized to the property location to advance soil borings B-B1 through B-B4. Soil sampling procedures are summarized in Section 3.0. The soil analytical results have been summarized and included in Appendix B. A site map indicating the location of the borings is included in Appendix A. The laboratory analytical results of soil samples B-B1 through B-B4 did not reveal any TPH – DRO, ERO, GRO, or BTEX/MtBE.

### 4.1.2 Groundwater Sampling Results

Upon completion of soil borings B-B1 through B-B4, attempts were made to obtain a groundwater sample. However, due to the low static water table level, no sample could be obtained.

### 4.1.3 Conclusions and Recommendations

Soil borings B-B1 through B-B4 were advanced at Site B, Baxter's Marathon #2092 to determine if residual contamination could have migrated to the area of this project. Soil samples B-B1 through B-B4 did not contain any of the COCs above regulatory limits set by the IDEM RISC program. However, due to the current and historic activities at this site, it remains possible that COCs may be found in other areas of this property. The probability of encountering contamination during construction is low. RW Armstrong recommends the health and safety plan for construction purposes include this information.

## 4.2 Site C, Circle K #2283 Site

### 4.2.1 Soil Sampling Results

On November 10, 2009 Vertical Task mobilized to the property location to advance soil borings B-C1 through B-C5. Soil sampling procedures are summarized in Section 3.0. The soil analytical results have been summarized and included in Appendix B. A site map indicating the location of the borings is included in Appendix A.

The laboratory analytical results of soil samples B-C2 through B-C5 did not reveal any TPH – DRO, ERO, GRO, or BTEX/MtBE. Soil sample B-C1 contained levels of TPH – DRO and ERO; however these levels did not exceed the IDEM RISC residential default closure levels or industrial closure levels.

### 4.2.2 Groundwater Sampling Results

Upon completion of soil borings B-C1 through B-C5, attempts were made to obtain a groundwater sample. Groundwater sampling procedures are summarized in Section 3.0. A groundwater sample was obtained from B-C4. The analytical results have been summarized in Appendix B. A site map, including the location of B-C4, is included in Appendix A.

The laboratory analytical results of groundwater sample B-C4 did not reveal any TPH – DRO, ERO, GRO, or BTEX/MtBE.

#### 4.2.3 Conclusions and Recommendations

Soil borings B-C1 through B-C5 were advanced at Site C, Circle K #2283 Site to determine if residual contamination could have migrated to the area of the public right-of-way. There was known contamination surrounding the old tank field, and there had been no investigation within any of the surrounding public right-of-way areas. Soil samples B-C1 through B-C5 did not contain any of the COCs above regulatory limits set by the IDEM RISC program. These soil samples reflect the condition of the subsurface at the location of these borings.

According to files available on the IDEM Virtual File Cabinet website and the Phase I, ESA, October 2009, this parcel does contain elevated levels of TPH-GRO and DRO within the soil and groundwater around the old tank field. Continued sampling and monitoring is being conducted by the responsible parties to evaluate the status of the contamination. Due to the historical activities at this location and the known COCs present in the soil and groundwater, contamination may be found within the parcel during construction activities. RW Armstrong recommends the health and safety plan for construction purposes include this information.

### 4.3 Site D, BP Facility #25980 Site

#### 4.3.1 Soil Sampling Results

On November 10, 2009 Vertical Task mobilized to the property location to advance soil borings B-D1 through B-D3. These locations were chosen since there had not been any investigation within the public right-of-way during previous environmental investigations conducted at this site. Soil sampling procedures are summarized in Section 3.0. The soil analytical results have been summarized and included in Appendix B. A site map indicating the location of the borings is included in Appendix A. The laboratory analytical results of soil samples B-D1 through B-D3 did not reveal any TPH – DRO, ERO, GRO, or BTEX/MtBE.

#### 4.3.2 Groundwater Sampling Results

Upon completion of soil borings B-D1 through B-D3, attempts were made to obtain a groundwater sample. However, due to the low static water table level, no sample could be obtained.

#### 4.3.3 Conclusions and Recommendations

Soil borings B-D1 through B-D3 were advanced at Site D, BP Facility #25980 to determine if residual contamination could have migrated to the area of this project. Soil samples B-D1 through B-D3 did not contain any of the COCs above regulatory limits set by the IDEM RISC program. However, due to the previously documented soil and groundwater contamination and the unknown details of the natural attenuation, RW Armstrong recommends the health and safety plan for construction purposes include information concerning the potential for contamination at this site.

### 4.4 Intersection of Keystone Avenue and 96th Street

#### 4.4.1 Soil Sampling Results

On November 10, 2009 Vertical Task, LLC arrived at the intersection of Keystone Avenue and 96th Street, Indianapolis, Indiana with the intent of advancing borings within the area of the intersection. However, soil sampling was unobtainable within the islands of the intersection due to the road layout and the positioning of the right-of-way islands. There was no space within the intersection for the track-mounted Geoprobe® direct-push sampling rig. In addition, due to the very high traffic conditions, the safety of the workers would be compromised.

The samples taken within the right-of-way along the adjoining properties should indicate contamination which may have migrated away from the intersection during the known spill incidents, boring B-B1 through B-B4, B-C1 through B-C5, and B-D1 through B-D3. As documented in the proceeding sections, there was no contamination found in any of the soil or groundwater samples exceeding the IDEM RISC Industrial or Residential Default Closure Limits. See the map included in Appendix A for the location of the borings surrounding the intersection.

### 4.2.4 Groundwater Sampling Results

As a result of the abandonment of the soil sampling, there were also no groundwater samples taken at this location.

### 4.2.5 Conclusions and Recommendations

Due to safety concerns and the lack of space for the track-mounted Geoprobe® direct-push sampling rig, there were no soil or groundwater samples taken from within the islands of the intersection. There were samples taken along the perimeter of the intersection within the right-of-way of the adjoining properties. Therefore, the subsurface environmental condition of the soil and groundwater of this site remains unknown. RW Armstrong recommends the health and safety plan for construction purposes include this information.

## 5.0 Exclusions

This report identifies the environmental conditions of the sites at the time of this investigation. RW Armstrong is not responsible for the identification of environmental liabilities or concerns outside of the scope of work described in this report.

File Name: P:\Transportation\20075030 Keystone Parkway\60 Environmental\BXTRS-MAP.dwg - Baxters
Modified / By: December 15, 2009 2:51:52 PM / mparker

RW ARMSTRONG
Union Station / 300 S. Meridian St.
Indianapolis, IN 46225
PH 317.786.0461 // FX 317.788.0957
rwArmstrong.com

KEYSTONE AVE AND 96th ST - INTERSTATE IMPROVEMENTS

BORINGS COMPLETED ON NOVEMBER 11, 2009

# SITE B - BAXTERS MARATHON

DECEMBER 2009

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KEYSTONE AVE AND 96th ST - INTERSTATE IMPROVEMENTS

BORINGS COMPLETED ON NOVEMBER 10, 2009

# SITE C - CIRCLE K #2283

DECEMBER 2009



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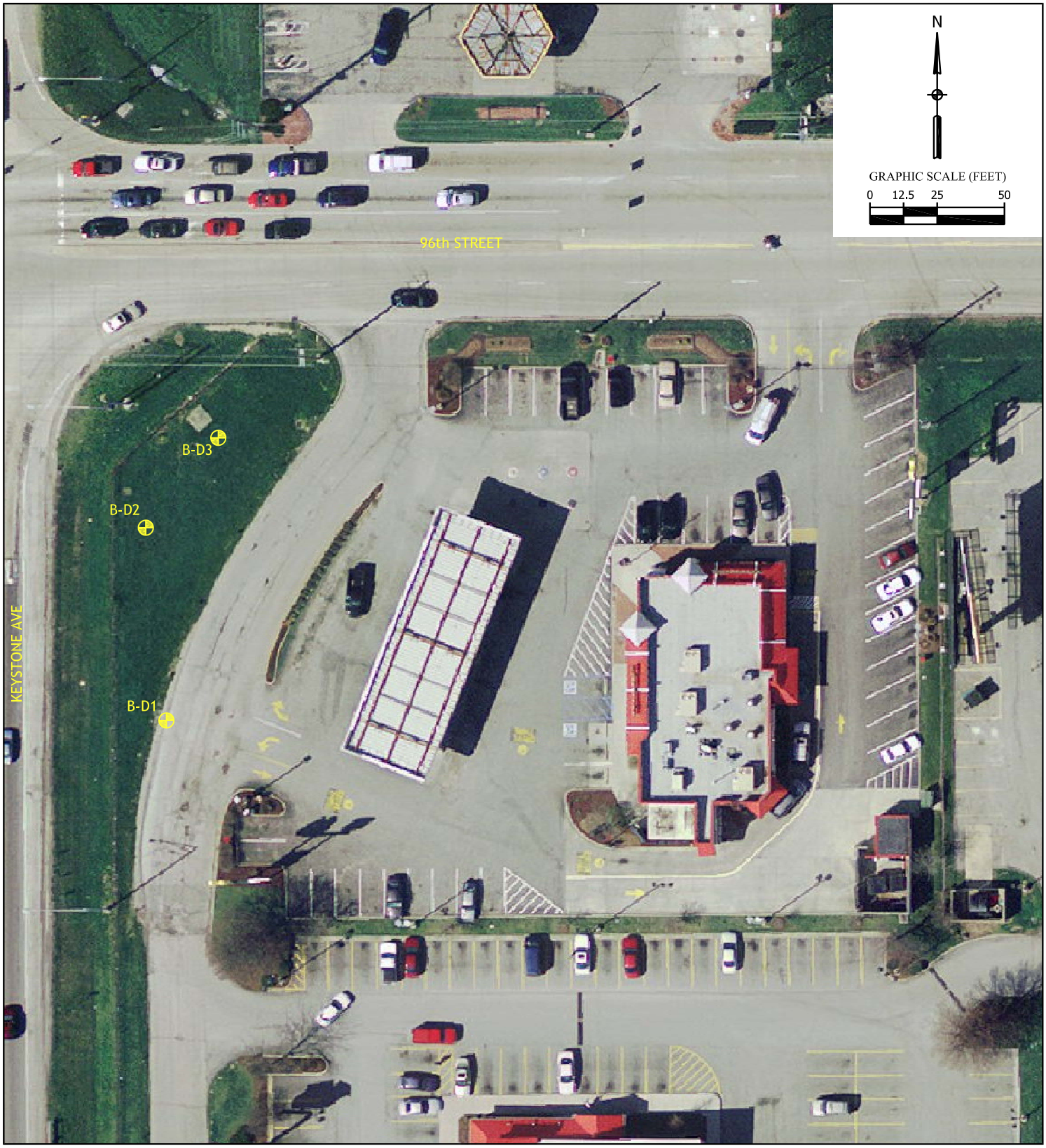


File Name: P:\Transportation\20075030 Keystone Parkway\60 Environmental\BP-MAP.dwg - BP Facility
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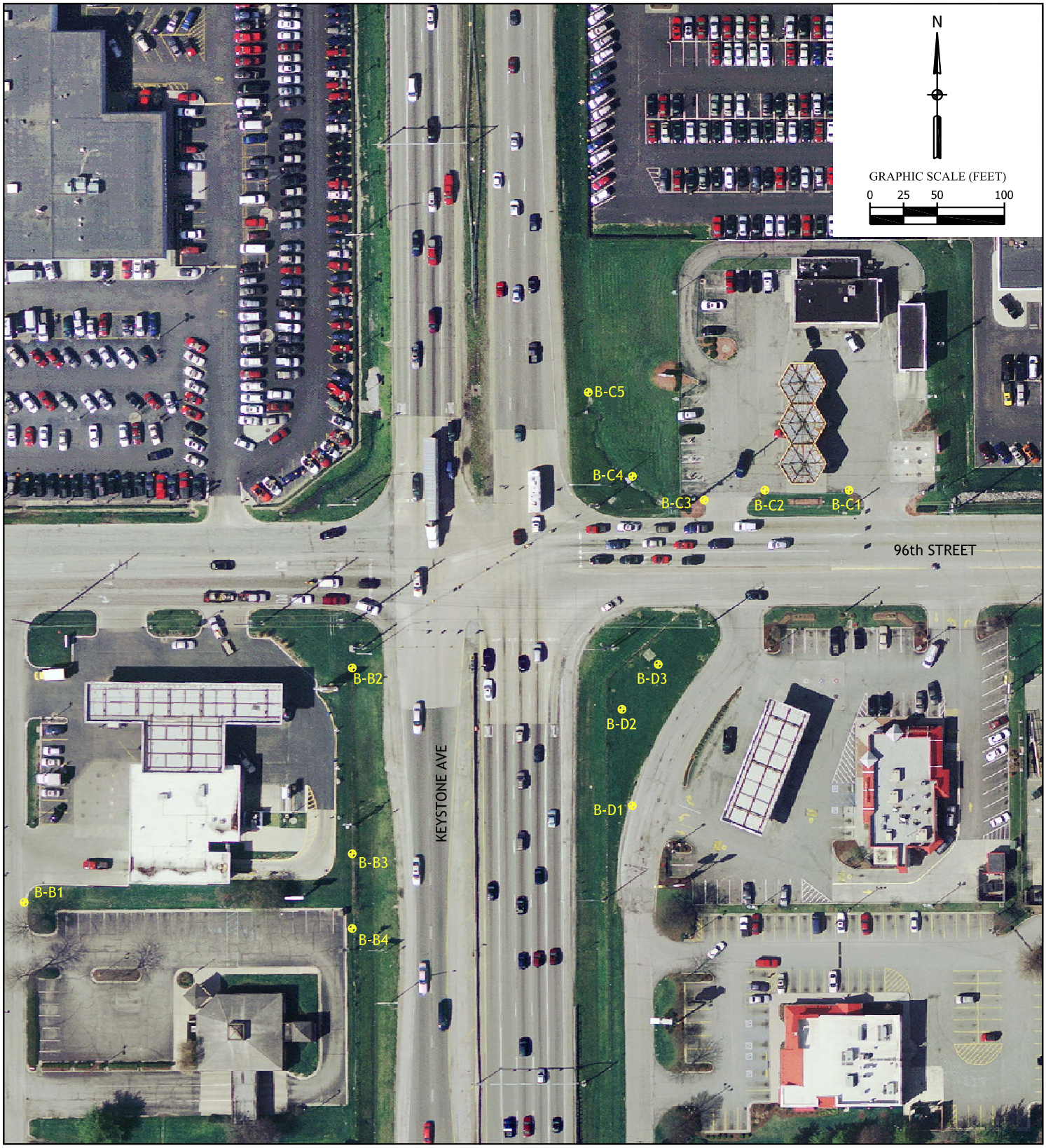
KEYSTONE AVE AND 96th ST - INTERSTATE IMPROVEMENTS

BORINGS COMPLETED ON NOVEMBER 10, 2009

# SITE D - BP FACILITY #25980

DECEMBER 2009

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KEYSTONE AVE AND 96th ST - INTERSTATE IMPROVEMENTS

BORINGS COMPLETED ON NOVEMBER 10, 2009

# INTERSECTION MAP

DECEMBER 2009



File Name: P:\Transportation\20075030 Keystone Parkway\60 Environmental\INTRS-MAP.dwg - Intersection
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# Baxter's Marathon #2092

| Boring | Depth | % Moisture | TPH DRO (mg/kg) | TPH ERO (mg/kg) | TPH DRO (mg/kg) | Benzene (ug/kg) | Ethylbenzene (ug/kg) | Methyl-thert-butyl ether (ug/kg) | Naphthatlene (ug/kg) | Toluene (ug/kg) | Xylene (Total) (ug/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-1 | 17.5 - 20' | 5.1% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-2 | 7.5 - 10' | 15.2% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-3 | 7.5 - 10' | 17.2% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-4 | 12.5 - 15' | 5.6% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Laboratory Detection Limit | | | 10.6 | 10.6 | 1.1 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 10.6 |
| IDEM RISC Residential Limit (1) | | | 100 | 100 | 100 | 34.0 | 13,000 | 180 | 700 | 12,000 | 170,000 |
| IDEM RISC Industrial Limit (2) | | | 100 | 100 | 100 | 350 | 160,000 | 3,200 | 170,000 | 96,000 | 170,000 |

# BP Facility #25980

| Boring | Depth | % Moisture | TPH DRO (mg/kg) | TPH ERO (mg/kg) | TPH DRO (mg/kg) | Benzene (ug/kg) | Ethylbenzene (ug/kg) | Methyl-thert-butyl ether (ug/kg) | Naphthatlene (ug/kg) | Toluene (ug/kg) | Xylene (Total) (ug/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-1 | 17.5 - 20' | 7.4% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-2 | 17.5 - 20' | 4.5% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-3 | 17.5 - 20' | 5.7% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Laboratory Detection Limit | | | 10.6 | 10.6 | 1.1 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 10.6 |
| IDEM RISC Residential Limit (1) | | | 100 | 100 | 100 | 34.0 | 13,000 | 180 | 700 | 12,000 | 170,000 |
| IDEM RISC Industrial Limit (2) | | | 100 | 100 | 100 | 350 | 160,000 | 3,200 | 170,000 | 96,000 | 170,000 |

(1) IDEM RISC Techinical Guide, Appendix 1 (January 31, 2006 Update) Residential Default Closure Level
(2) IDEM RISC Techinical Guide, Appendix 1 (January 31, 2009 Update) Industrial Default Closure Level

# Circle K #2283

| Boring | Depth | % Moisture | TPH DRO (mg/kg) | TPH ERO (mg/kg) | TPH DRO (mg/kg) | Benzene (ug/kg) | Ethylbenzene (ug/kg) | Methyl-thert-butyl ether (ug/kg) | Naphthatlene (ug/kg) | Toluene (ug/kg) | Xylene (Total) (ug/kg) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| B-1 | 17.5 - 20' | 6.0% | 21.0 | 22.6 | ND | ND | ND | ND | ND | ND | ND |
| B-2 | 7.5 - 10' | 15.1% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-3 | 0 - 2.5' | 10.2% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-4 | 0 - 2.5' | 19.3% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| B-5 | 12.5 - 15' | 9.0% | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Laboratory Detection Limit | | | 10.6 | 10.6 | 1.1 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 10.6 |
| IDEM RISC Residential Limit (1) | | | 100 | 100 | 100 | 34.0 | 13,000 | 180 | 700 | 12,000 | 170,000 |
| IDEM RISC Industrial Limit (2) | | | 100 | 100 | 100 | 350 | 160,000 | 3,200 | 170,000 | 96,000 | 170,000 |

# Circle K #2283

| Boring | TPH DRO (mg/L) | TPH ERO (mg/L) | TPH GRO (ug/L) | Benzene (ug/L) | Ethylbenzene (ug/L) | Methyl-thert-butyl ether (ug/L) | Naphthatlene (ug/L) | Toluene (ug/L) | Xylene (Total) (ug/L) |
|---|---|---|---|---|---|---|---|---|---|
| B-4 | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| Laboratory Detection Limit | 0.14 | 0.14 | 200 | 5 | 5.0 | 4.0 | 5.0 | 5.0 | 10.0 |
| IDEM RISC Residential Limit (1) | 100 | 100 | 100 | 5.5 | 700 | 40 | 8.3 | 1,000 | 10,000 |
| IDEM RISC Industrial Limit (1) | 100 | 100 | 100 | 52 | 10,000 | 720 | 2,000 | 8,200 | 20,000 |

(1) IDEM RISC Techinical Guide - Appendix 1 (January 31, 2006 Update)

# Appendix E.4

# Hazardous Materials Site Visit Form

# HAZARDOUS MATERIALS SITE VISIT FORM

Des # 0901562 Project # n/a
Road # Keystone Avenue & 96th Street Type of Road Project Intersection Improvement
Description of area (either general location or exact location of parcel) The project area consists of a corridor extending from just north of the intersection of Keystone Avenue and I-465 (Marion County) northward along the existing Keystone Avenue to its intersection with 99th Street (Hamilton County). In addition, the corridor extends along 96th Street, from its intersection with Marle Drive westward to its intersection with Wild Cherry Lane.
Person completing this Field Check Angela Kattmann

1. **Has a Red Flag Investigation been completed?** X Yes □ No

Notes: Due to the highly commercialized nature of the project area, the industrial waste sites, UST, and LUST sites located throughout the corridor, additional investigations were recommended to determine the extent/presence of hazardous materials.

2. **Right-of-Way Requirements:**
   □ No New ROW X Strip ROW □ Minor Take X Whole Parcel Take □ Information Not Available

Notes: There will be right-of-way necessary along the project corridor, including some whole parcel takes.

3. **Land Use History and Development:** (Industrial, Light Industry, Commercial, Agricultural, Residential, Other – also, indicate source of data: visual inspection, aerial photos, U.S.G.S. topo maps, etc.)

Setting (rural or urban): Urban

Current Land Uses: There are filling stations, auto repair facilities, restaurants, offices, and various car sale lots.

Previous Land Uses: The area has been developed since the 1970's. It has included gas stations and car lots since that time.

Adjacent Land Uses: The area is urban, including retail facilities, offices, and restaurants.

Describe any structures on the property: There are many structures located on the various parcel included in the project corridor. These include, gas stations, offices, restaurants,

4. **Visual Inspection:**

| | Property | Adjoining Property | | Property | Adjoining Property |
|---|---|---|---|---|---|
| **Storage Structures:** | | | **Evidence of Contamination:** | | |
| Underground Tanks | X | | Junkyard | | |
| Surface Tanks | X | | Auto Graveyard | | |
| Transformers | X | | Surface Staining | | |
| Sumps | | X | Oil Sheen | | |
| Ponds/Lagoons | | X | Odors | | |
| Drums | X | | Vegetation Damage | | |

| | | | | | |
|---|---|---|---|---|---|
| Basins | _____ | __X___ | Dumps | _____ | _____ |
| Landfills | _____ | __X___ | Fill Dirt Evidence | _____ | _____ |
| Other | _____ | __X___ | Vent pipes or fill pipes | _____ | _____ |
| | | | Other | _____ | _____ |

Underground Storage Tanks were observed at Tom Wood Ford, Baxter's Marathon, Circle K #2283, BP Facility #25980, Penske Chevrolet, Tom Wood Pre-Owned Vehicles, Tom Wood Porsche & Audi, Ed Martin Acura/Pontiac/GMC Truck, Butler Toyota, and the Lift Station at 99th Street and Keystone Avenue.

Surface tanks were observed at Penske Chevrolet, Tom Wood Porsche & Audi, and Ed Martin Acura/Pontiac/GMC Truck

Transformers were observed, but all exhibited the "No PCBs" placard.

Drums were observed at Tom Wood Ford, Carmel Motorsports, Butler Toyota,

5. **Is a Phase I, Initial Site Assessment required?** X Yes □ No

(Write additional notes on back)

# Appendix F

Water Resources

# Appendix F.1

# Wetland Determination and “Waters of the US” Report

**Wetland Determination and "Waters of the US" Report**
**96th Street and Keystone Avenue Interchange**
**Carmel, Indiana**
**INDOT Des. No. 0901562**
**Federal Agency: Federal Highway Administration**

## Introduction:

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street. Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. Keystone Avenue would be comprised of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic. The outside lanes of Keystone Avenue would be bordered by paved shoulders with curb and gutter on the outside edge. Northbound and southbound traffic would be separated by a paved median with a barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange and would connect with the teardrop roundabout. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project, restricting left turns in all directions. The partial closure of this intersection was a condition of the agreement with the Indiana Department of Transportation (INDOT) relinquishing Keystone Avenue to the City of Carmel.

The west leg of 96th Street would be comprised of four 12 ft. travel lanes (two eastbound and two westbound) bordered by curb and gutter. A two way left turn lane would be provided between Haverstick Road and Haver Way. The Haverstick Road and 96th Street intersection, which is currently controlled via four way stop, would be modified to include a single lane roundabout. Approach work to the proposed roundabout will be necessary north and south of the intersection. West of Haverstick Road, 96th Street would be reduced to a two lane cross section. Haver Way would require a slight realignment, approximately 55 ft., to the west to provide the appropriate clearance from the western ramps to Keystone Avenue.

East of the proposed interchange, 96th Street would typically consist of four 12 ft. travel lanes (two eastbound and two westbound) bordered by concrete curb and gutter. Multi-lane roundabouts are proposed at 96th Street's intersection with Aronson Drive and Priority Way West Drive, which are currently controlled by traffic signals. The eastbound and westbound travel lanes would be separated by a raised concrete median between the eastern ramps to Keystone Avenue and Aronson Drive and a two way left turn lane between Aronson Drive and Priority Way West Drive. Exiting northbound Keystone Avenue onto eastbound 96th Street, an additional lane is provided on the outside that will drop as a right turn at Aronson Drive. The eastbound section of 96th Street between Keystone Avenue and Aronson Drive would also consist of an additional lane to the inside that will drop at Aronson Drive for northbound traffic at the commercial drive entrance. A designated right turn lane will also be provided at Priority Way West Drive. The project continues approximately 250 ft. east of Priority Way West Drive, where proposed 96th Street will tie in with the existing section. At Aronson Drive, approach work to the proposed roundabout will be necessary north and south of the intersection. Likewise, improvements are necessary to the south approach of Priority Way West Drive.

North of 96th Street at Priority Way West Drive a new north-south connector road is proposed that terminates at 98th Street. The new north-south connector would consist of two 12 ft. travel

lanes bordered by a concrete curb and gutter. The total length of the north-south connector is approximately 0.3 mile. The intent of the north-south connector is to provide an alternate route to the Keystone Avenue interchange for traffic affected by the partial closure at 98th Street.

The project also proposes an east-west connector paralleling the south side of 96th Street between Aronson Drive and Priority Way West Drive (an estimated length of 0.18 mile). The east-west connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The east-west connector would accommodate left turning traffic onto 96th Street from commercial sources to the south. Without the east-west connector and using the roundabout at Aronson Drive would not provide sufficient gaps in traffic flow to allow a northbound to westbound movement. Therefore, traffic would be redirected along the east-west connector to the Priority Way West Drive roundabout.

Additional permanent right-of-way will be required for the completion of this project. Preliminary estimates indicate that approximately 22.15 acres of right-of-way will be required. As the design of the project advances the right-of-way will be refined further. At the present, it is anticipated that three commercial establishments would require relocation, the gas stations in the southwest and southeast quadrants and the former gas station in the northeast quadrant. The project is anticipated for construction in 2011.

The proposed project is intended to reduce congestion at the intersection, improving its overall operational level of efficiency, and improve the overall safety. The intersection is currently operating at a level of service (LOS) F. If left unchanged, the intersection will continue to operate at a deficient LOS in the design year (2031). Completion of this project would improve the capacity of the intersection to a LOS B in the design year (2031).

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. Project location maps and ground level photographs are attached. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from approximately 150 ft. west of Haverstick Road to approximately 250 ft. east of Priority Way West Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street. Additionally, the project proposes two connector roads, a north-south connector road extending approximately 1,584 ft. (0.3 mile) between 96th Street and 98th Street, and an east-west connector that extends approximately 935 ft. (0.18 mile) between Aronson Drive and Priority Way West Drive. The total estimated project length is 9,902 ft. (1.9 miles).

## Existing Data:

### 7.5 Minute USGS Quadrangle Map

The Fishers, Indiana USGS 7.5 Minute Quadrangle Map was reviewed to determine the topography of the project area and drainage patterns within the project area (attached). No USGS labeled streams were found within the project area. A blue line stream, Carmel Creek, is located to the north and east of the project area.

National Wetland Inventory Map and the Indiana GIS Atlas

The National Wetland Inventory (NWI) map and the Indiana GIS Atlas administered by the Indiana Geological Survey were reviewed for the presence of potential jurisdictional wetlands in the project area (NWI Map Attached). The NWI map and the GIS Atlas failed to identify any wetlands within or directly adjacent to the project area.

County Soil Survey

The Natural Resources Conservation Service Web Soil Survey 2.1 was reviewed to determine soil classification and drainage features within the project area (soil map attached). Miami Silt Loam (MmA, MmB2), Crosby Silt Loam (CrA), and Okley Silt Loam (OcA) soils were identified on the Soil Survey Map as the predominant mapped soil types within the project area. None of the present soil types are listed as hydric in Hamilton County.

Flood Insurance Rate Map

The Flood Insurance Rate Map was reviewed for the project area (attached). The project does not lie within any defined floodplains.

## Methodology:

The project area was analyzed using methods outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Y-81-1) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (September 2008). These manuals require wetland boundaries to be delineated using a 3-parameter approach: hydrophytic vegetation, hydric soils, and wetland hydrology.

Hydrophytic Vegetation

This criterion is met by a dominance of visually sampled wetland plant species (for areas less than five acres). The indicator status of plant species is based on the estimated probabilities of that species occurring in wetland conditions. The indicator status categories are defined as follows.

1. Obligate wetland plants (OBL) almost always occur (estimated probability >99%) in a wetland under natural conditions.
2. Facultative wetland plants (FACW) usually occur in wetlands (estimated probability 67-99%), but occasionally are found in non-wetlands.
3. Facultative plants (FAC) are equally likely to occur in wetland or non-wetland areas (estimated probability 34-66%)
4. Facultative upland plants (FACU) usually occur in non-wetlands (estimated probability 67-99%), but occasionally are found in wetlands (estimated probability 1-33%).
5. Obligate upland plants (UPL) almost always occur (estimated probability >99%) in non-wetlands under natural conditions.

Plants defined as OBL, FACW and FAC are considered wetland species. The percentage of the dominant wetland species in each vegetation layer determined the hydrophytic status of the

plant community. If greater than 50 percent of the dominant plants are in the categories OBL, FACW, or FAC, the area is considered to have wetland vegetation.

Hydric Soils

This criterion is met with the presence of soils flooded for a long duration or very long duration during the growing season, all histosols (organic soils) except folists (organic soils formed from fallen foliage) and somewhat poorly drained to poorly drained soils with a water table between the surface and 12.00 inches below the soil surface depending upon soil permeability. Anaerobic conditions created by repeated or prolonged saturation or flooding result in permanent changes in soil color and chemistry, which are used to determine the presence of hydric soils. Field indicators include color, mottling, gleying and sufidic odor.

Wetland Hydrology

This criterion is often to most difficult to determine. Typically, the presence of water for a week or more during the growing season creates anaerobic conditions. Anaerobic conditions lead to the prevalence of wetland vegetation. Hydrology is controlled by such factors as rainfall patterns, local geology and topography, soil type, local water table, and drainage. Primary indicators of wetland hydrology include surface water, high water table, saturation, water marks, sediment deposits, drift deposits, algal mat or crust, iron deposits, inundation visible on aerial imagery, sparsely vegetated concave surface, water-stained leaves, aquatic fauna, true aquatic plants, hydrogen sulfide odor, oxidized rhizospheres on living roots, presence of reduced iron, recent iron reduction in tilled soils, thin much surface, and gauge or well data. Secondary indicators include surface soil cracks, drainage patterns dry-season water table, crayfish burrows, saturation visible on aerial imagery, stunted or stressed plants, geomorphic position and the FAC-Neutral Test. A single primary indicator or two secondary indicators are necessary to determine the presence of wetland hydrology.

Utilization of Criteria

All three criteria must be present for a site to be considered a regulated wetland. Individual sites are field inspected to document vegetative communities present, their numbers and their locations. Wetland indicator status categories are then assigned to each plant species based on a regional list published by the U.S. Fish and Wildlife Service.

Soils on each site are analyzed to determine whether they meet the hydric criteria. In the absence of groundwater, this analysis is performed by looking for acceptable indicators that suggest the soil is saturated flooded, or ponded for a duration long enough to support anaerobic conditions near the surface. Soil color is an indicator of Hydric conditions: glyed soils, soil with a matrix chroma of two or less with mottles, or a matrix chroma of one without mottles are typical indicators of hydric soils.

Hydrology is evaluated by looking for the presence of indicators of wetland hydrology outline in the *1987 Manual* and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region* (September 2008). These indicators were identified in

the Wetland Hydrology section of this report. A single primary indicator or two secondary indicators are necessary to determine the presence of wetland hydrology.

## Field Reconnaissance:

RWA conducted a field investigation on September 22, 2009 to determine the presence of wetlands, "waters of the US" and waters of the State within the project area. No data points were taken since the project lacked the presence of any indicators of wetland criteria. Ground level and aerial photographs are attached.

Wetlands

One potential area was identified during the early project stages. This area was fully investigated in the field. This evaluation identified the dominant tree species to be red maple and walnut with an herbaceous layer dominated (over 90%) by winter creeper, an upland species. Furthermore, there was no surface hydrology present. No indicators of hydrophytic vegetation, wetland hydrology, or hydric soils were present.

Other Potential "Waters of the US"

Unnamed Tributary 1 is located in the eastern portion of the project area. An Ordinary High Water Mark (OHWM) and defined bed and bank were field identified and listed in Table 1. A Primary Headwater Habitat Evaluation (HHEI) was performed on this stream (data sheet attached) with a score of 23. This feature is a Modified Class I ephemeral drainage serving as stormwater conveyance, and eventually discharges into Carmel Creek, which is a tributary of the White River.

Unnamed Tributary 2 is located in the northeaster portion of the project area. An OHWM and defined bed and bank were field identified and listed in Table 1. A HHEI was performed on this stream (data sheet attached) with a score of 13. This feature is a Modified Class I ephemeral drainage serving as stormwater conveyance and eventually discharges into Carmel Creek, which is a tributary of the White River.

Unnamed Tributary 3 crosses Keystone Avenue south of 96th Street. An OHWM and defined bed and bank were field identified and listed in Table 1. A HHEI was performed on this stream (data sheet attached) with a score of 18. This feature is a Modified Class I ephemeral drainage serving as stormwater conveyance, and eventually discharges into Carmel Creek, which is a tributary of the White River.

It is our opinion that these tributaries will be determined to be "waters of the US" within the project limits.

## Conclusions:

This field reconnaissance evaluated the proposed interchange at the intersection of 96th Street and Keystone Avenue for the presence of "waters of the US". Field observations revealed three

stream features but no existing wetlands within the project area. Therefore, the impacts to "waters of the US" should be permitted in accordance with Sections 401 and 404 of the Clean Water Act. Please note that the final determination of jurisdictional waters is ultimately made by the U.S. Army Corps of Engineers. This report is our best judgment based on the guidelines set forth by the USACE.

**Table 1: Stream Summary**

| Stream Name | Photos | Lat/Long | OHWM Width (feet) | OHWM Depth (feet) | USGS Blue-line? | Riffles/ Pools? | Quality | Likely Water of U.S.? |
|---|---|---|---|---|---|---|---|---|
| Trib. 1 | 1 and 2 | 39°55'40.20" N 86°06'24.17" W | 3.5 | 1.5 | N | N | Poor | Y |
| Trib. 2 | 3 and 4 | 39°55'45.36" N 86°06'28.18" W | 1.5 | 0.8 | N | N | Poor | Y |
| Trib. 3 | 5 and 6 | 39°55'29.66" N 86°06'44.66" W | 2 | 0.75 | N | N | Poor | Y |

**Photo 1: Looking west, upstream**

**Photo 2: Looking east, downstream**

**Photo 3: Looking south, upstream**

**Photo 4: Looking north, downstream**

**Photo 5: Looking north, upstream**

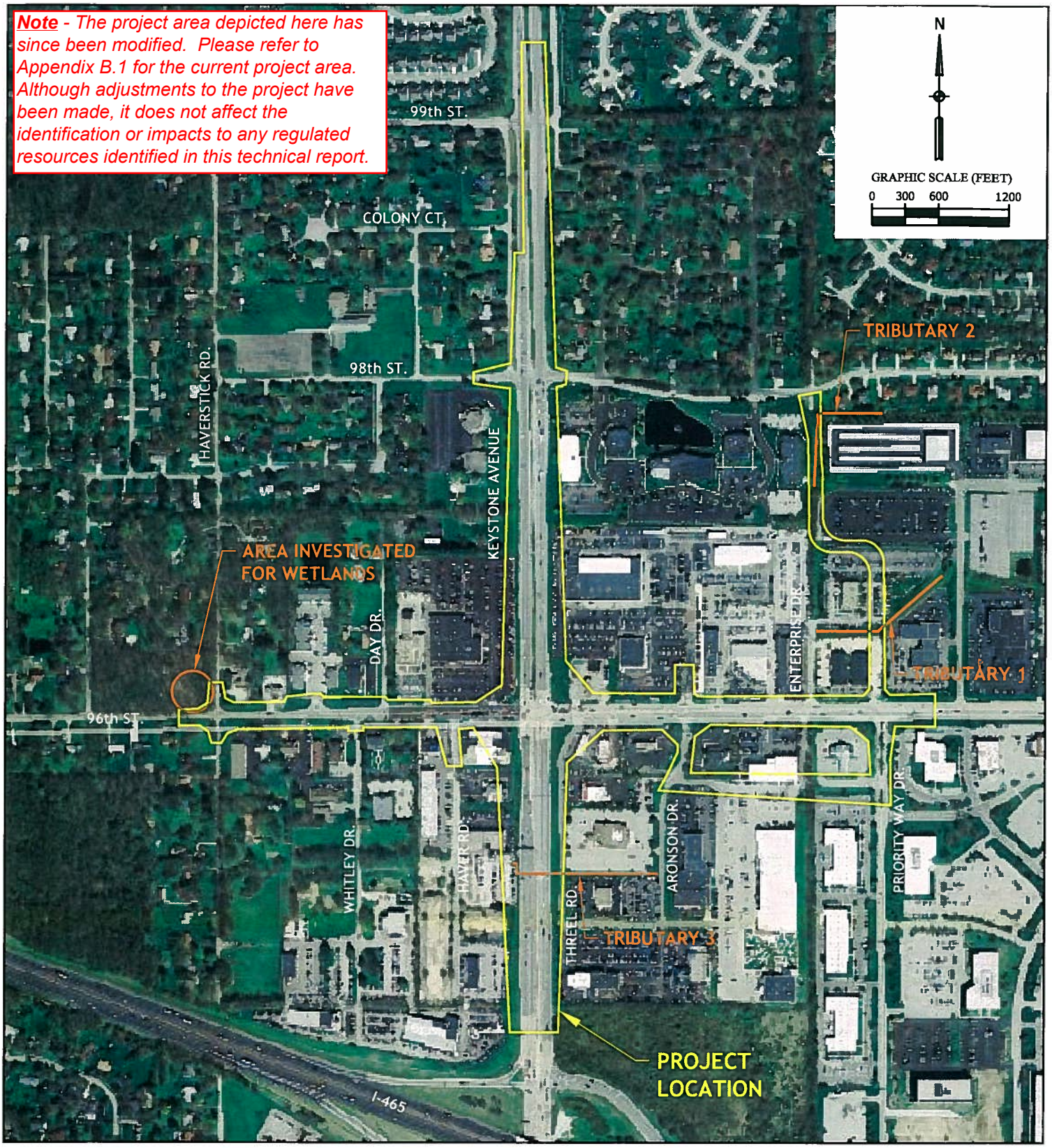
**Photo 6: Looking south, downstream**

## NOTE:

**IN AN EFFORT TO AVOID DUPLICATION IN THE ENVIRONMENTAL DOCUMENT, THE FOLLOWING MAPS HAVE BEEN REMOVED FROM THIS TECHNICAL REPORT:**

- ***STATE / COUNTY LOCATION MAP***
- ***USGS QUADRANGLE MAP***
- ***NWI MAP***
- ***NRCS SOIL SURVEY MAP***
- ***FEMA FLOOD MAP***
- ***AERIAL PHOTOGRAPH***

**PLEASE REFER TO APPENDIX B.1 FOR CURRENT VERSIONS OF THIS MAPPING**




File Name: P:\Transportation\20075030 Keystone Parkway\60 Environmental\20 EarlyCoordination\AERL-STREM-MAP.dwg - Aerial
Modified / By: December 18, 2009 11:34:53 AM / mparker

RWARMSTRONG
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rwArmstrong.com

96TH AND KEYSTONE

EXISTING TOPOGRAPHIC SURVEY

# AERIAL MAP

NOVEMBER 2009

# Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 23

SITE NAME/LOCATION: 96th Street and Keystone Avenue Interchange

SITE NUMBER: Stream 1 RIVER BASIN: Upper White DRAINAGE AREA (mi²):

LENGTH OF STREAM REACH (ft): 200 LAT. LONG. RIVER CODE RIVER MILE

DATE: 09/22/09 SCORER: SRD COMMENTS: HUC11: 05120201090

**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

**1. SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

| TYPE | | PERCENT | TYPE | | PERCENT |
|---|---|---|---|---|---|
| ☐ | BLDR SLABS [16 pts] | 0% | ☑ | SILT [3 pt] | 60% |
| ☐ | BOULDER (>256 mm) [16 pts] | 0% | ☑ | LEAF PACK/WOODY DEBRIS [3 pts] | 40% |
| ☐ | BEDROCK [16 pt] | 0% | ☐ | FINE DETRITUS [3 pts] | 0% |
| ☐ | COBBLE (65-256 mm) [12 pts] | 0% | ☐ | CLAY or HARDPAN [0 pt] | 0% |
| ☐ | GRAVEL (2-64 mm) [9 pts] | 0% | ☐ | MUCK [0 pts] | 0% |
| ☐ | SAND (<2 mm) [6 pts] | 0% | ☐ | ARTIFICIAL [3 pts] | 0% |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0.00% (A) Substrate Percentage Check: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6 TOTAL NUMBER OF SUBSTRATE TYPES: 2

**HHEI Metric Points**

Substrate Max = 40: 8

A + B

**2. Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

**3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☑ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☐ ≤ 1.0 m (<=3' 3") [5 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 1.00

Bankfull Width Max=30: 15

**This information must also be completed**

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ☆NOTE: River Left (L) and Right (R) as looking downstream☆

| RIPARIAN WIDTH (Per Bank) L | R | | FLOODPLAIN QUALITY (Most Predominant per Bank) L | R | | L | R | |
|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | Wide >10m | ☐ | ☐ | Mature Forest, Wetland | ☐ | ☐ | Conservation Tillage |
| ☐ | ☐ | Moderate 5-10m | ☐ | ☐ | Immature Forest, Shrub or Old Field | ☑ | ☑ | Urban or Industrial |
| ☐ | ☐ | Narrow <5m | ☐ | ☐ | Residential, Park, New Field | ☐ | ☐ | Open Pasture, Row Crop |
| ☑ | ☑ | None | ☐ | ☐ | Fenced Pasture | ☐ | ☐ | Mining or Construction |

COMMENTS:

**FLOW REGIME** *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☑ Dry channel, no water (Ephemeral)

COMMENTS:

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

**STREAM GRADIENT ESTIMATE**

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

**QHEI PERFORMED?** - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Fishers NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Hamilton Township / City: Carmel

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: 0.00

Photograph Information: 1 upstream, 1 downstream

Elevated Turbidity? (Y/N): N Canopy (% open): 50%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

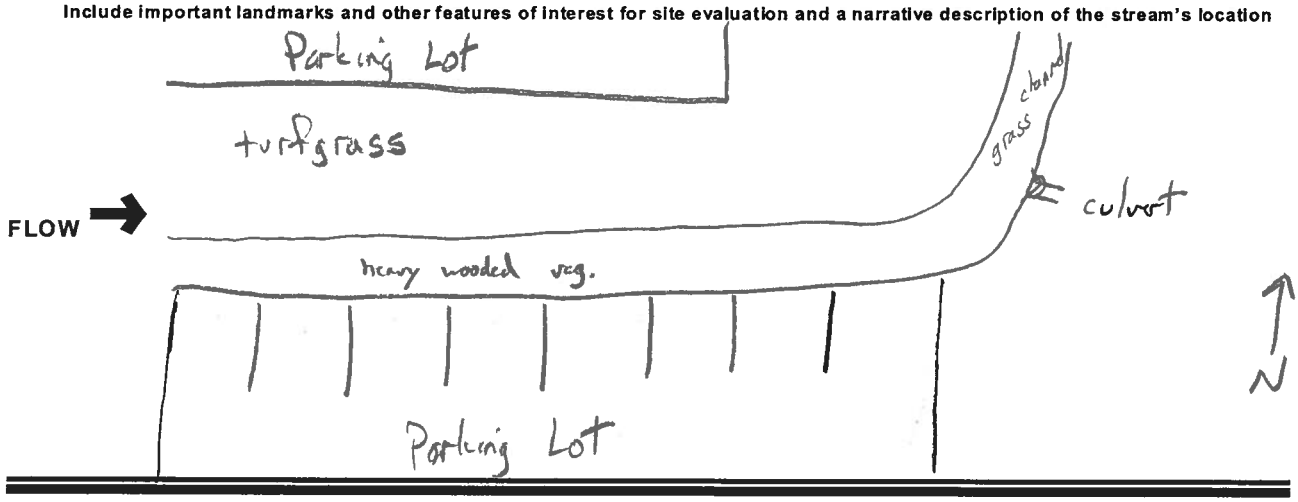
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

**Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location**



# OhioEPA Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) : 13**

SITE NAME/LOCATION: 96th Street and Keystone Avenue Interchange

SITE NUMBER: Stream 2 RIVER BASIN: Upper White DRAINAGE AREA (mi²):

LENGTH OF STREAM REACH (ft): 200 LAT. LONG. RIVER CODE RIVER MILE

DATE: 09/22/09 SCORER: SRD COMMENTS: HUC11: 05120201090

**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

**1. SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

| TYPE | | PERCENT | TYPE | | PERCENT |
|---|---|---|---|---|---|
| ☐ | BLDR SLABS [16 pts] | 0% | ☐ | SILT [3 pt] | 60% |
| ☐ | BOULDER (>256 mm) [16 pts] | 0% | ☑ | LEAF PACK/WOODY DEBRIS [3 pts] | 40% |
| ☐ | BEDROCK [16 pt] | 0% | ☐ | FINE DETRITUS [3 pts] | 0% |
| ☐ | COBBLE (65-256 mm) [12 pts] | 0% | ☐ | CLAY or HARDPAN [0 pt] | 0% |
| ☐ | GRAVEL (2-64 mm) [9 pts] | 0% | ☐ | MUCK [0 pts] | 0% |
| ☐ | SAND (<2 mm) [6 pts] | 0% | ☐ | ARTIFICIAL [3 pts] | 0% |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0.00% (A) Total Percentage Cells: 100% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6 TOTAL NUMBER OF SUBSTRATE TYPES: 2

**HHEI Metric Points**

Substrate Max = 40: 8

A + B

**2. Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

**3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (<=3' 3") [5 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 0.50

Bankfull Width Max=30: 5

**This information must also be completed**

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ☆NOTE: River Left (L) and Right (R) as looking downstream☆

| RIPARIAN WIDTH (Per Bank) L | R | | FLOODPLAIN QUALITY (Most Predominant per Bank) L | R | | L | R | |
|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | Wide >10m | ☐ | ☐ | Mature Forest, Wetland | ☐ | ☐ | Conservation Tillage |
| ☐ | ☐ | Moderate 5-10m | ☐ | ☐ | Immature Forest, Shrub or Old Field | ☑ | ☑ | Urban or Industrial |
| ☑ | ☑ | Narrow <5m | ☐ | ☐ | Residential, Park, New Field | ☐ | ☐ | Open Pasture, Row Crop |
| ☐ | ☐ | None | ☐ | ☐ | Fenced Pasture | ☐ | ☐ | Mining or Construction |

COMMENTS:

**FLOW REGIME** *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☑ Dry channel, no water (Ephemeral)

COMMENTS:

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

**STREAM GRADIENT ESTIMATE**

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

**QHEI PERFORMED?** - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Fishers NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Hamilton Township / City: Carmel

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: 0.00

Photograph Information: 1 upstream, 1 downstream

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

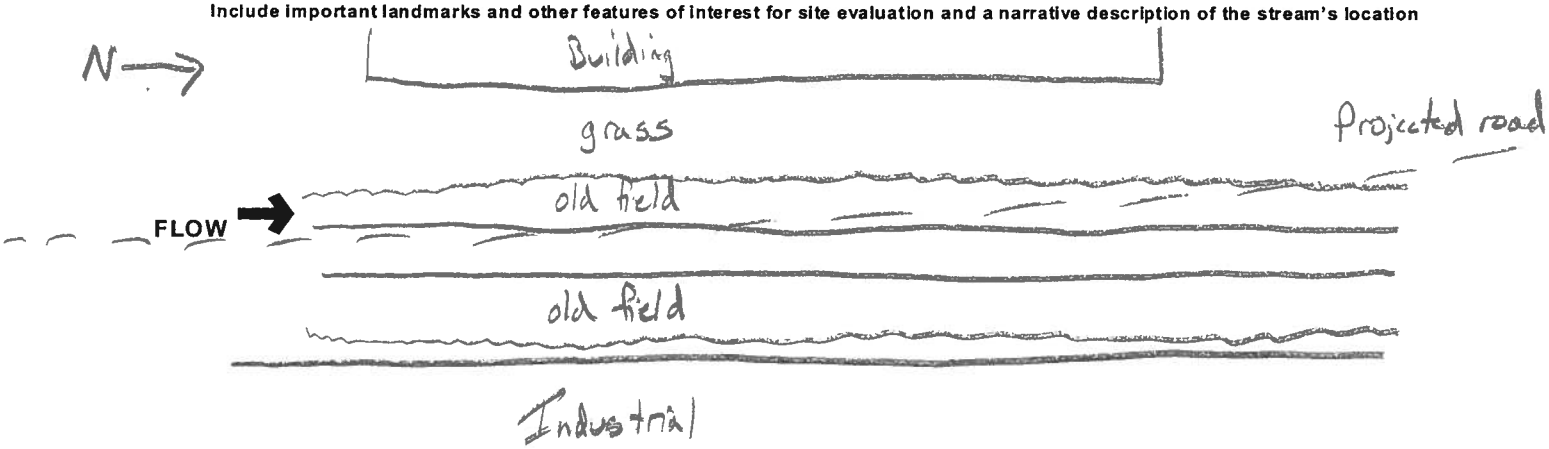
Fish Observed? (Y/N) Y Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

**Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location**



# Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 18

SITE NAME/LOCATION: 96th Street and Keystone Avenue Interchange

SITE NUMBER: Stream 3R1 RIVER BASIN: Upper White DRAINAGE AREA (mi²):

LENGTH OF STREAM REACH (ft): 200 LAT.: LONG.: RIVER CODE: RIVER MILE:

DATE: 09/22/09 SCORER: SRD COMMENTS: HUC11: 05120201090

**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

**1. SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

| TYPE | | PERCENT | TYPE | | PERCENT |
|---|---|---|---|---|---|
| ☐ | BLDR SLABS [16 pts] | 0% | ☑ | SILT [3 pt] | 60% |
| ☐ | BOULDER (>256 mm) [16 pts] | 0% | ☑ | LEAF PACK/WOODY DEBRIS [3 pts] | 40% |
| ☐ | BEDROCK [16 pt] | 0% | ☐ | FINE DETRITUS [3 pts] | 0% |
| ☐ | COBBLE (65-256 mm) [12 pts] | 0% | ☐ | CLAY or HARDPAN [0 pt] | 0% |
| ☐ | GRAVEL (2-64 mm) [9 pts] | 0% | ☐ | MUCK [0 pts] | 0% |
| ☐ | SAND (<2 mm) [6 pts] | 0% | ☐ | ARTIFICIAL [3 pts] | 0% |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0.00% (A) Substrate Percentage Check: 100% (B)

**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES:** 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

**HHEI Metric Points**

**Substrate Max = 40**: 8

**A + B**

**2. Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☑ < 5 cm [5 pts]
- ☐ NO WATER OR MOIST CHANNEL [0 pts]

**COMMENTS** **MAXIMUM POOL DEPTH (centimeters):**

**Pool Depth Max = 30**: 5

**3. BANK FULL WIDTH (Measured as the average of 3-4 measurements)** **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (<=3' 3") [5 pts]

**COMMENTS** **AVERAGE BANKFULL WIDTH (meters):** 0.50

**Bankfull Width Max=30**: 5

**This information must also be completed**

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ☆NOTE: River Left (L) and Right (R) as looking downstream☆

| RIPARIAN WIDTH (Per Bank) L | R | | FLOODPLAIN QUALITY (Most Predominant per Bank) L | R | | L | R | |
|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | Wide >10m | ☐ | ☐ | Mature Forest, Wetland | ☐ | ☐ | Conservation Tillage |
| ☐ | ☐ | Moderate 5-10m | ☐ | ☐ | Immature Forest, Shrub or Old Field | ☑ | ☑ | Urban or Industrial |
| ☐ | ☐ | Narrow <5m | ☐ | ☐ | Residential, Park, New Field | ☐ | ☐ | Open Pasture, Row Crop |
| ☑ | ☑ | None | ☐ | ☐ | Fenced Pasture | ☐ | ☐ | Mining or Construction |

COMMENTS

**FLOW REGIME** *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☑ Dry channel, no water (Ephemeral)

COMMENTS

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

**STREAM GRADIENT ESTIMATE**

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

**QHEI PERFORMED?** - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Fishers NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Hamilton Township / City: Carmel

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: 0.00

Photograph Information: 1 upstream, 1 downstream

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

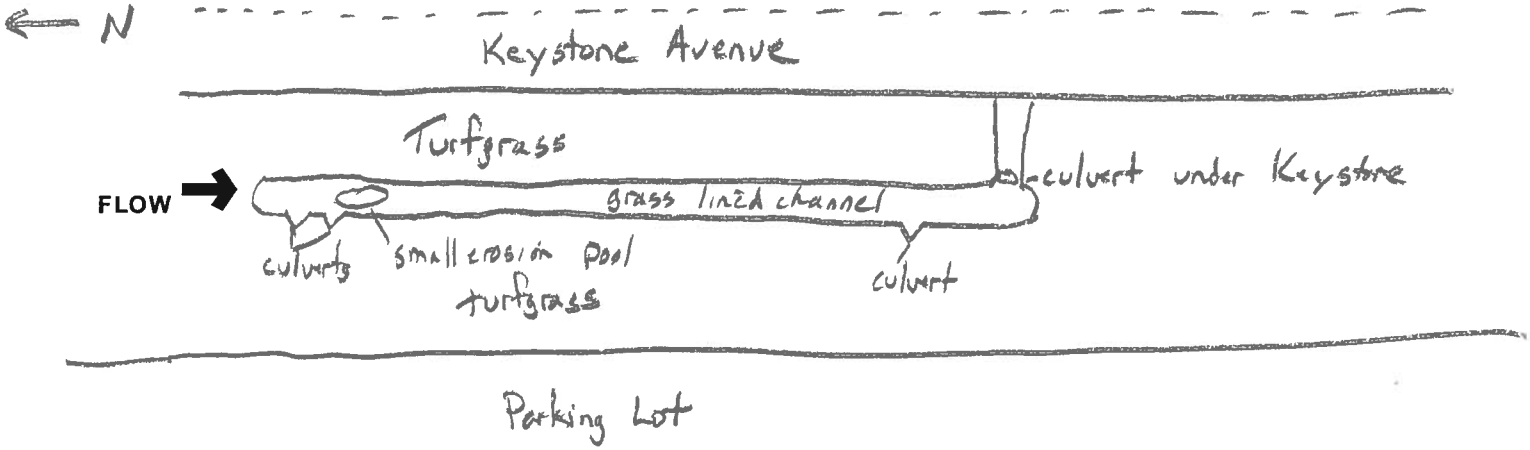
Fish Observed? (Y/N) Y Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) N Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

**Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location**



# Primary Headwater Habitat Evaluation Form

**HHEI Score (sum of metrics 1, 2, 3) :** 9

SITE NAME/LOCATION: 96th Street and Keystone Avenue Interchange

SITE NUMBER: Stream 3R2 RIVER BASIN: Upper White DRAINAGE AREA (mi²):

LENGTH OF STREAM REACH (ft): 200 LAT. LONG. RIVER CODE RIVER MILE

DATE: 09/22/09 SCORER: SRD COMMENTS: HUC11: 05120201090

**NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions**

**STREAM CHANNEL MODIFICATIONS:** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☑ RECENT OR NO RECOVERY

**1. SUBSTRATE (Estimate percent of every type of substrate present.** Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

| TYPE | | PERCENT | TYPE | | PERCENT |
|---|---|---|---|---|---|
| ☐ | BLDR SLABS [16 pts] | 0% | ☑ | SILT [3 pt] | 0% |
| ☐ | BOULDER (>256 mm) [16 pts] | 0% | ☐ | LEAF PACK/WOODY DEBRIS [3 pts] | 0% |
| ☐ | BEDROCK [16 pt] | 0% | ☐ | FINE DETRITUS [3 pts] | 0% |
| ☐ | COBBLE (65-256 mm) [12 pts] | 0% | ☐ | CLAY or HARDPAN [0 pt] | 0% |
| ☐ | GRAVEL (2-64 mm) [9 pts] | 0% | ☐ | MUCK [0 pts] | 0% |
| ☐ | SAND (<2 mm) [6 pts] | 0% | ☐ | ARTIFICIAL [3 pts] | 0% |

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0.00% (A) Substrate Percentage Check: 0% (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 TOTAL NUMBER OF SUBSTRATE TYPES: 1

**HHEI Metric Points**

Substrate Max = 40: 4

A + B

**2. Maximum Pool Depth** ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: MAXIMUM POOL DEPTH (centimeters):

Pool Depth Max = 30: 0

**3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (<=3' 3") [5 pts]

COMMENTS: AVERAGE BANKFULL WIDTH (meters): 1.00

Bankfull Width Max=30: 5

**This information must also be completed**

**RIPARIAN ZONE AND FLOODPLAIN QUALITY** ☆NOTE: River Left (L) and Right (R) as looking downstream☆

| RIPARIAN WIDTH (Per Bank) L | R | | FLOODPLAIN QUALITY (Most Predominant per Bank) L | R | | L | R | |
|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | Wide >10m | ☐ | ☐ | Mature Forest, Wetland | ☐ | ☐ | Conservation Tillage |
| ☐ | ☐ | Moderate 5-10m | ☐ | ☐ | Immature Forest, Shrub or Old Field | ☑ | ☑ | Urban or Industrial |
| ☐ | ☐ | Narrow <5m | ☐ | ☐ | Residential, Park, New Field | ☐ | ☐ | Open Pasture, Row Crop |
| ☑ | ☑ | None | ☐ | ☐ | Fenced Pasture | ☐ | ☐ | Mining or Construction |

COMMENTS:

**FLOW REGIME** *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☐ Moist Channel, isolated pools, no flow (Intermittent)
- ☑ Dry channel, no water (Ephemeral)

COMMENTS:

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

**STREAM GRADIENT ESTIMATE**

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):**

**QHEI PERFORMED?** - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name: _____ Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USGS Quadrangle Name: Fishers NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: Hamilton Township / City: Carmel

**MISCELLANEOUS**

Base Flow Conditions? (Y/N): Y Date of last precipitation: _____ Quantity: 0.00

Photograph Information: _____

Elevated Turbidity? (Y/N): N Canopy (% open): 100%

Were samples collected for water chemistry? (Y/N): N (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) Y If not, please explain: _____

Additional comments/description of pollution impacts: _____

**BIOTIC EVALUATION**

Performed? (Y/N): N (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

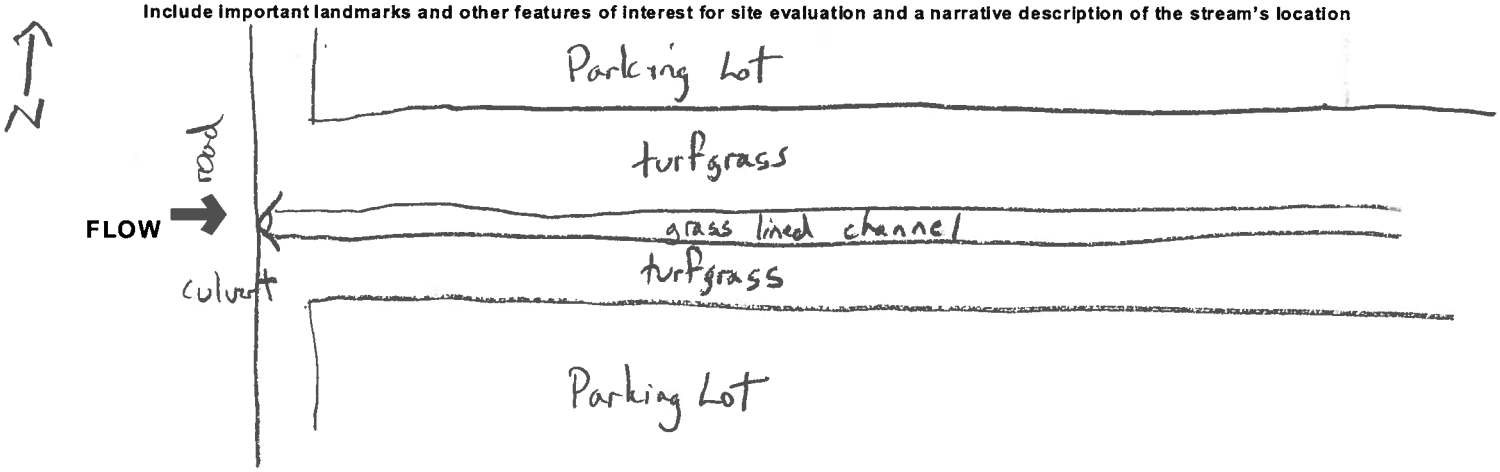
Fish Observed? (Y/N) N Voucher? (Y/N) N Salamanders Observed? (Y/N) N Voucher? (Y/N) N

Frogs or Tadpoles Observed? (Y/N) N Voucher? (Y/N) Y Aquatic Macroinvertebrates Observed? (Y/N) N Voucher? (Y/N) N

Comments Regarding Biology: _____

**DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):**

**Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location**



# Appendix F.2

# US Army Corps of Engineers Concurrence

**DEPARTMENT OF THE ARMY**
**U.S. ARMY ENGINEER DISTRICT, LOUISVILLE**
**CORPS OF ENGINEERS**
**INDIANAPOLIS REGULATORY OFFICE**
**9799 BILLINGS ROAD**
**INDIANAPOLIS, INDIANA 46216-1055**
**http://www.lrl.usace.army.mil**

December 30, 2009

Operations Division
Regulatory Branch (North)
ID No. LRL-2009-1372-sam

Mr. Chad Costa
RW Armstrong
300 South Meridian Street
Indianapolis, IN 46225

Dear Mr. Costa:

This is in regard to your letter of December 22, 2009, requesting jurisdictional determination on three upland drainage features located within the project area located at the intersection of 96th Street and Keystone Avenue in Marion and Hamilton Counties, Indiana.

The U.S. Army Corps of Engineers exercises regulatory authority under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344) for certain activities in "waters of the United States (U.S.)". These waters include all waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce.

Based on a review of the submitted information, we have determined that Drainage Features 1, 2, and 3 were constructed in the upland, did not receive or divert any "waters of the United States," and lack an Ordinary High Water Mark (OHWM). These features do not appear to be used or be susceptible to use in interstate or foreign commerce. As such, these features are not considered to be "waters of the U.S;" therefore, a Department of Army permit would not be required for placement of fill into these features.

This letter contains an approved jurisdictional determination (JD) for your site. If you object to this JD, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this JD you must submit a completed RFA form to the Lakes and Rivers Division Office at the following address:

Ms. Pauline D. Thorndike, Appeal Review Officer
US Army Engineer Division, Cincinnati
Attn: CELRD-PD-R
550 Main Street, Room 10032
Cincinnati, OH 45202-3222
(513) 684-6212

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by March 1, 2010.

This jurisdictional determination is valid for a period of five years from the date of this letter unless new information warrants revision of the determination before the expiration date. However, this determination does not relieve you of the responsibility to comply with applicable state law.

It is not necessary to submit an RFA form to the Division office if you do not object to the JD in this letter.

If you have any questions concerning this matter please contact me at the above address or by calling 317-532-4226. Any correspondence should reference our assigned Identification Number LRL-2009-1372-sam.

Sincerely,

Scott A. Matthews
Project Manager
Indianapolis Regulatory Office

Enclosure

Copy Furnished: IDEM (Sanders)

# Appendix G

Public Involvement

Appendix G.1

Copy of Legal Notice

**LEGAL NOTICE**
**OF**
**PUBLIC HEARING**

RW Armstrong, acting as the agent for the City of Carmel, will hold a public hearing on Wednesday, October 26, 2011. The hearing will be held at 5:30 PM at the Carmel City Council Chambers, which is located on the second floor of City Hall at One Civic Square, Carmel Indiana. The public is welcome to attend an informal session where individuals will be able to review project displays, design plans and the environmental document prepared for the project and ask the Project Team questions. The informal session will begin at 5:30 PM with a formal presentation starting at 6:00 PM.

The purpose of the public hearing is to offer all interested persons an opportunity to comment on the environmental document and preliminary design plans prepared for the proposed interchange at the intersection of 96th Street and Keystone Parkway (Des. No. 0901562). This project is located in south-central Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Along Keystone Parkway, the proposed project would extend from the southern I-465 ramp signal to 99th Street for an estimated length of 0.95 mile. Improvements along 96th Street would extend from west of Whitley Drive to east of Aronson Drive for an estimated length of 0.5 mile. Improvements or changes in access to 98th Street, Haver Way, Day Drive, Whitley Drive, Threel Road and Aronson Drive are included as part of the project. To assist in the circulation of traffic resulting from the changes in access, three new local connector roads are included as part of the project. These new roads include a 0.27 mile north-south connector road extending between 96th Street and 98th Street (on the east side of Keystone Parkway), a 0.18 mile east-west connector on the south side of 96th Street that extends between Aronson Drive and Priority Way West Drive and a 0.1 mile connector road between Haver Way and Whitley Drive (on the south side of 96th Street). The total estimated project length is 2.0 miles. Future planned improvements including the reconstruction of 96th Street from west of Whitley Drive to west of Haverstick Road and from east of Aronson Drive to east of Priority Way West Drive will also be discussed at the hearing. These future planned improvements will increase the total length of the project to approximately 2.7 miles.

The proposed project will remove the existing traffic signal at the intersection and construct a multi-lane teardrop roundabout interchange separating the grades of 96th Street and Keystone Parkway. Keystone Parkway, which is proposed to travel over the 96th Street grade, would be reconstructed to consist of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic, although a 12 ft. slip ramp would be provided to access the ramps to I-465. Northbound and southbound traffic would be separated by a 20 ft. paved median with a 2.5 ft. barrier wall. This will result in the removal of the existing traffic signal at 98th Street and partial closure of the intersection. Diagonal ramps are proposed in all four quadrants of the interchange that connect the teardrop roundabout on 96th Street to Keystone Parkway. 96th Street will be reconstructed to typically consist of two 12 ft. through lanes in each direction. Eastbound and westbound 96th Street will be separated by a 16 ft. two way left turn lane that extends from Whitley Drive to west of Haver Way and from east of Enterprise Drive to Aronson Drive. The project also includes the construction of a 10 ft. multi-use path along the north side of 96th Street between Day Drive and Enterprise Drive. The future planned improvements to 96th Street would continue the described typical section of 96th Street west of Havestick Road and east of Priority Way West Drive including roundabouts at the intersections of these crossroads. To construct the project and future planned improvements, approximately 16 acres of permanent and 0.6 acre of temporary right-of-way will be required. It is anticipated that four businesses and an abandoned gas station would be displaced by the project. Additionally, there are no jurisdictional wetlands or waterways impacted by the project.

A maintenance of traffic (MOT) plan has been developed for managing traffic during construction that will involve the construction of one side of Keystone Parkway and 96th Street while the other side maintains two way traffic operations. As part of the MOT plan it will be necessary to temporarily restrict certain traffic movements during the various phases of construction. The MOT plan will be discussed at the hearing. The estimated cost to construct the project is $37.6 million (2011), while the future planned improvements will cost an additional estimated $7.5 million. The total estimated cost of the project and

future planned improvements is $45.1 million and does not include the cost of additional right-of-way. The project is anticipated to begin in September 2012 with the future planned improvements not expected to commence until sometime between 2016 and 2030.

The public hearing will feature a formal presentation to explain the project proposal and future improvements in greater detail. A public statement session will be offered after the presentation. All comments collected before, during and for a period of two (2) weeks after the hearing will be evaluated and addressed.

The Environmental Document and Preliminary Design Plans are available for public viewing at the following locations:

1. RW Armstrong, 300 S. Meridian Street, Indianapolis, IN 46225, Phone (317) 786-0461

2. Carmel City Engineer's Office, One Civic Square, Carmel, IN 46032, Phone (317) 571-2441

This notice is published in compliance with Title 23, Code of Federal Regulations, Section 771.111(h) entitled "Early Coordination, Public Involvement and Project Development", and the Indiana Public Involvement/Public Hearing Procedures for Federal-Aid Project Development approved by the Federal Highway Administration, U.S. Department of Transportation on April 1, 2009.

In accordance with the "Americans With Disabilities Act", if you have a disability for which RW Armstrong needs to provide accommodations, please contact Chad Costa of RW Armstrong by October 21, 2011.

Chad E. Costa
Senior Environmental Planner
RW Armstrong & Associates
Phone: (317) 493-3722
Fax: (317) 788-0957
Email: ccosta@rwa.com

Prescribed by State Board of Accounts

**80004-5872013**

General Form No. 99P (Rev. 2009A)
Federal ID# 35-2061385

R W ARMSTRONG & ASSOC INC

MARION COUNTY, INDIANA

To: INDIANAPOLIS NEWSPAPERS
307 N PENNSYLVANIA ST - PO BOX 145
INDIANAPOLIS, IN 46206-0145

# PUBLISHER'S CLAIM

LINE COUNT

**LEGAL NOTICE OF PUBLIC HEARING**

RW Armstrong is conducting the project for the restrict certain traffic movements during the various phases of construction. The MOT plan will be discussed at the hearing. The estimated cost to construct the project is $37.6 million (2011), while the future planned improvements will cost an additional estimated $7.5 million. The total estimated cost of the project and future planned improvements is $45.1 million and does not include the cost of additional right-of-way. The project is anticipated to begin in September 2012 with the future planned improvements not expected to commence until sometime between 2016 and 2030.

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Chad E. Costa
Senior Environmental Planner
RW Armstrong & Associates
Phone: (317) 493-3722
Fax: (317) 788-0957
Email: ccosta@rwa.com

(S - 10/11/11, 10/18/11 - 5872013)

Must not exceed two actual lines, neither of which shall
an four solid lines of the type in which the body of the
t is set). - number of equivalent lines _____
f lines _____
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CHARGES

columns wide equals 328.0 equivalent lines at .685 $ 224.72

for notices containing rule and figure work (50 per cent unt) _____

proofs of publication ($1.00 for each proof in excess of two) .00

OUNT OF CLAIM $ 224.72

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visions and penalties of IC 5-11-10-1, I hereby certify that the foregoing account is
e amount claimed is legally due, after allowing all just credits, and that no part of the same

I also certify that the printed matter attached hereto is a true copy, of the same column width and type size, which was duly published in said paper 2 times. The dates of publication being between the dates of:

**10/11/2011** and **10/18/2011**

Additionally, the statement checked below is true and correct:

___ Newspaper does not have a Web site.
✓ Newspaper has a Web site and this public notice was posted on the same day as it was published in the newspaper
___ Newspaper has a Web site, but due to a technical problem or error, public notice was posted on _____
___ Newspaper has a Web site but refuses to post the public notice.

Kerry Dodson

DATE: 10/18/2011

Title: Clerk

Appendix G.2

Public Hearing Presentation

# PUBLIC HEARING

## 96th Street & Keystone Parkway Proposed Interchange

*Wednesday, October 26, 2011*

*5:30 PM Open House*

*6:00 PM Public Hearing*

*Carmel City Hall – Council Chambers*

## 96th Street & Keystone Parkway Interchange

**WELCOME:**

- **Formal Public Hearing Presentation**
- **Public Comment Session**
- **Informal Question and Answer Session in the Project Display Area with Project Engineers and Project Officials**

## 96th Street & Keystone Parkway Interchange

**NOTICE OF PUBLIC HEARING:**

- Legal Notice of Public Hearing was Advertised in the *Indianapolis Star* on October 11, 2011 and October 18, 2011
- A Copy of the Legal Notice was Mailed to Property Owners Adjacent to the Project Area
- Announcement of the Public Hearing Posted to the City of Carmel's Website



## 96th Street & Keystone Parkway Interchange

**PRESENTATION AGENDA:**

- Introduction of Project Team
- Hearing Comment Process
- Project Scope
- Hearing Purpose
- Overview of Environmental Document
- Review of Project Design
- Overview of the Land Acquisition Process
- Transportation Planning Requirement

## 96th Street & Keystone Parkway Interchange

**PROJECT TEAM:**

- Introduction of Project Team
- Introduction of INDOT / FHWA Officials in Attendance
- Recognition of Elected Officials Present



## 96th Street & Keystone Parkway Interchange

**HOW TO SUBMIT A PUBLIC COMMENT:**

- On-Site Tonight
  - Statement Made During the Public Comment Session
  - Oral Comment to Court Reporter
  - Complete Comment Sheet and Leave in Comment Box
- After the Hearing
  - Mail or Fax Comments to RW Armstrong
  - E-Mail Comments to RW Armstrong (Response will be Returned Confirming Receipt of Your Comment)
  - Comment Deadline: NOVEMBER 10, 2011
- Comments will be Reviewed, Evaluated and Given Full Consideration During the Decision Making Process

## 96th Street & Keystone Parkway Interchange

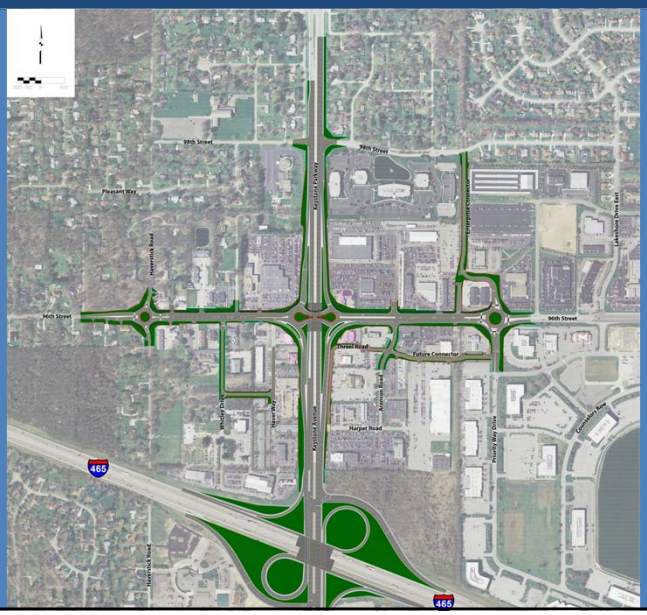
**PROJECT SCOPE:**

- "The Project" – The Essential Elements of the Required Improvements to Gain Free Flowing Traffic Conditions Along Keystone Parkway and Provide Local Access
  - Completion by 2014 (Keystone Complete by 2013)
  - Funding
- "Future Planned Improvements" or "Cumulative Project" – The Improvements that are not Immediately Necessary, but are Critical to the Overall Operational Success of the Cumulative Project Area
  - Improvements Anticipated Between 2016 and 2030



## 96th Street & Keystone Parkway Interchange

## 96th Street & Keystone Parkway Interchange




9

## 96th Street & Keystone Parkway Interchange

**PUBLIC HEARING:**

- Conducted as a Requirement of the National Environmental Policy Act (NEPA)
  - Requires the Evaluation of Environmental Impacts of the Cumulative Project to the Natural and Social Environments
  - Requires the Opportunity for the Public to be Involved and Comment in the Decision Making Process
  - Impacts are Described in the Environmental Document Prepared for the Project
  - Environmental Document was Released for Public Involvement on September 15, 2011

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## 96th Street & Keystone Parkway Interchange

**ENVIRONMENTAL DOCUMENT:**

- Processed as a Level 4 Categorical Exclusion
  - No Substantial Environmental Impacts Associated with the Cumulative Project
- Establishes the Purpose and Need for the Proposed Improvement
- Evaluate a Number of Possible Alternatives Including a "Do Nothing" Alternative as a Baseline for Comparison
- Solicit Public Comment on the Environmental Document and Preliminary Design Plans
- Solicit, Address and Fully Consider Public Comments as Part of the Decision Making Process



## 96th Street & Keystone Parkway Interchange

**DOCUMENT VIEWING LOCATIONS:**

- Carmel City Engineer's Office, One Civic Square, Carmel, Indiana – (317) 571-2441
- RW Armstrong, 300 South Meridian Street, Indianapolis, Indiana – (317) 786-0461

## 96th Street & Keystone Parkway Interchange

**PROJECT STAKEHOLDERS:**

- City of Carmel
- Indiana Department of Transportation
- Federal Highway Administration
- Indianapolis Metropolitan Planning Organization
- City of Indianapolis
- Elected Officials
- Community
  - Concerned Residents and Citizens
  - Business Owners
  - Commuters



## 96th Street & Keystone Parkway Interchange

**ELEMENTS OF THE ENVIRONMENTAL DOCUMENT:**

- Relocations
- Hazardous Materials
- Threatened & Endangered Species
- Historic & Archaeological
- Community Impacts
  - Traffic Pattern Alterations
- Floodplains
- Farmland
- Wetlands & Waterways
- Noise
- Air Quality

# 96th Street & Keystone Parkway Interchange

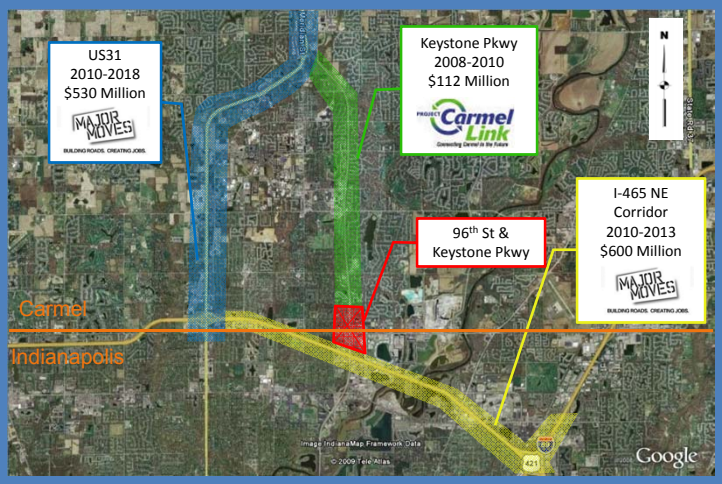
## ENVIRONMENTAL IMPACTS:

- Noise Analysis Completed
  - Existing Conditions
  - Cumulative Project in the Design Year (2031)
  - 2031 No Build Scenario
- 118 Receptors were Analyzed within 500 Feet of the Proposed Roadway, 26 were Determined to be Impacted
- Most Receptors Also Impacted by the No Build Scenario
- Five Noise Barriers were Evaluated North of the Interchange, but were Determined not to be Feasible or Reasonable
  - Majority of First Row Receptors won't Experience at Least a 7 Decibel Noise Reduction
  - Exceeded $25,000 Per Benefitted Receptor (INDOT Threshold)



# 96th Street & Keystone Parkway Interchange

## REGIONAL PROJECT OVERVIEW



## 96th Street & Keystone Parkway Interchange

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## 96th Street & Keystone Parkway Interchange

**PURPOSE AND NEED:**

- Deficient Traffic Operations (Capacity Issues)
- Safety Concerns (Accident Rates)
- System Continuity

18

# 96th Street & Keystone Parkway Interchange

## TRAFFIC VOLUMES:

| Proposed Interchange Volumes [1] | | | | |
|---|---|---|---|---|
| Approach | Daily (Average Daily Traffic) | | Peak Hour (Design Hour Volume) | |
| | 2011 | 2031 | 2011 | 2031 |
| Keystone Prkwy. [1] | 81,121 vpd | 103,759 vpd | 6,355 vph | 8,129 vph |
| 96th St. [2] | 40,945 vpd | 52,371 vpd | 2,986 vph | 3,820 vph |

1 - Includes 5% Trucks
2 - Includes 7% Trucks



# 96th Street & Keystone Parkway Interchange

## DEFICIENT TRAFFIC OPERATIONS:

| LOS Criteria for Signalized Intersections[1] | | | |
|---|---|---|---|
| Approach | Functional Classification | LOS[2] | |
| | | Desirable | Min. |
| Keystone Prkwy. | Urban Arterial[3] | C | D |
| 96th St. | Urban Collector | C | D |

1 Criteria as Defined in Chapter 53 of the 2010 Indiana Design Manual
2 LOS Element for a "Built-Up" Area Type
3 Four or More Lanes

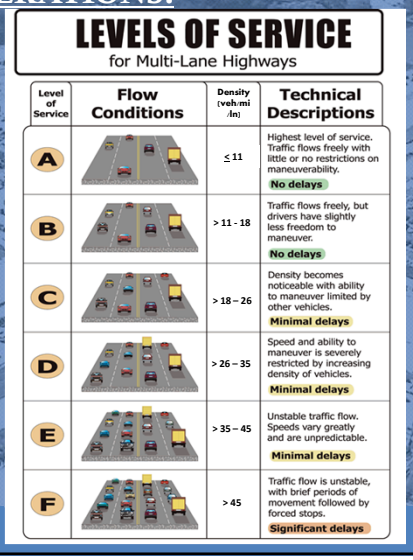
| Keystone & 96th (Signalized) | | |
|---|---|---|
| Approach | 2031 LOS[1] | |
| | AM | PM |
| Keystone NB | F | E |
| Keystone SB | F | F |
| 96th St. EB | F | F |
| 96th St. WB | F | F |
| OVERALL | F | F |

1 LOS (Level of Service) results based on Sidra and HCS analyses with post I-465 improvements included.

# 96th Street & Keystone Parkway Interchange

## DEFICIENT TRAFFIC OPERATIONS:

| LOS Association to Delay Times (Signalized Intersections) | |
|---|---|
| LOS | Delay (sec / vehicle) |
| A | ≤ 10 |
| B | > 10 – 20 |
| C | > 20 – 35 |
| D | > 35 – 55 |
| E | >55 – 80 |
| F | > 80 |






# 96th Street & Keystone Parkway Interchange

## SAFETY PROBLEMS:

| Accident Summary Within the Project Limits (2005 – 2010) | | | | |
|---|---|---|---|---|
| Year | PD | PI | Fatality | Total |
| 2005 (Half) | 40.5 | 3.5 | 0 | 44 |
| 2006 | 89 | 8 | 0 | 97 |
| 2007 | 77 | 8 | 0 | 85 |
| 2008 | 78 | 6 | 0 | 84 |
| 2009 | 50 | 7 | 0 | 57 |
| 2010 (Half) | 44 | 2 | 1 | 47 |
| **Total** | **378.5** | **34.5** | **1** | **414** |
| **Average** | **75.7** | **6.9** | **0.2** | **82.8** |

## 96th Street & Keystone Parkway Interchange

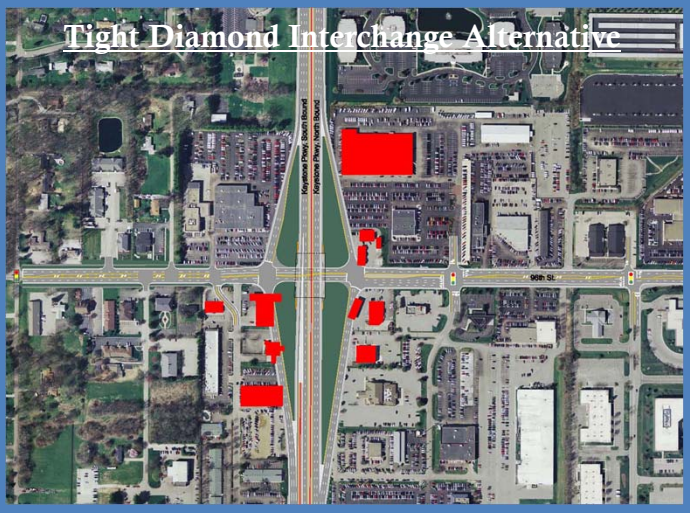
**ALTERNATIVES:**

- "Do Nothing"
  - Does Not Address Congestion or Safety Issues Associated with the Intersection
- Reconstruct Intersection as a Signalized Intersection
  - Minimal Short Term Benefit, but Fails in the Long Term
- Traffic System Management (Signal Timing Upgrades)
  - May Improve Operations at Adjacent Intersections, but Does Not Address Capacity or Safety Issues at this Intersection
- Grade Separation (Interchange)
  - Four Types Investigated



## 96th Street & Keystone Parkway Interchange

**Tight Diamond Interchange Alternative**



# 96th Street & Keystone Parkway Interchange

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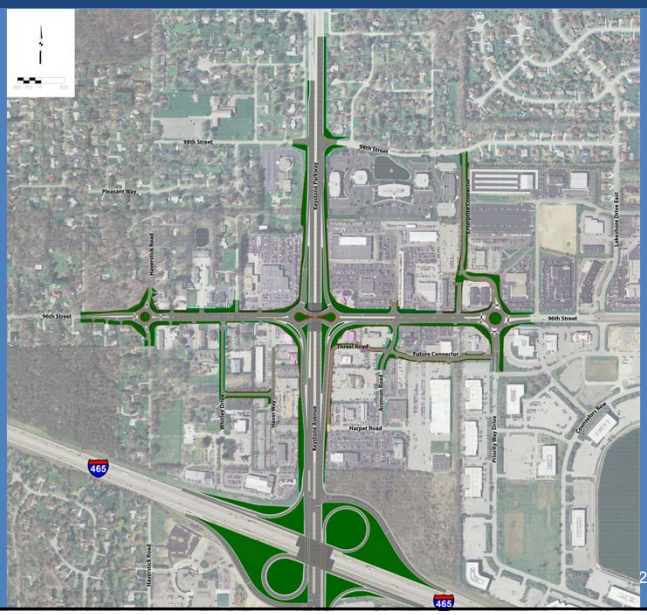
# 96th Street & Keystone Parkway Interchange

26

# 96th Street & Keystone Parkway Interchange






# 96th Street & Keystone Parkway Interchange

# 96th Street & Keystone Parkway Interchange

## IMPROVED TRAFFIC OPERATIONS:

| KEYSTONE & 96TH AS ROUNDABOUT | | |
|---|---|---|
| APPROACH | 2031 LOS* | |
| | AM | PM |
| KEYSTONE NB | A | A |
| KEYSTONE SB | C | C |
| 96th EB | A | A |
| 96th WB | D | D |
| OVERALL | B | B |

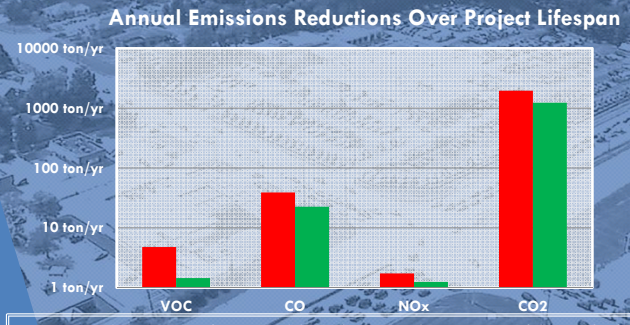
| KEYSTONE & 96TH SIGNALIZED | | |
|---|---|---|
| APPROACH | 2031 LOS* | |
| | AM | PM |
| KEYSTONE NB | F | E |
| KEYSTONE SB | F | F |
| 96th EB | F | F |
| 96th WB | F | F |
| OVERALL | F | F |

* LOS (Level of Service) results based on Sidra and HCS analyses with post I-465 improvements included.



# 96th Street & Keystone Parkway Interchange

## IMPROVED SUSTAINABILITY:

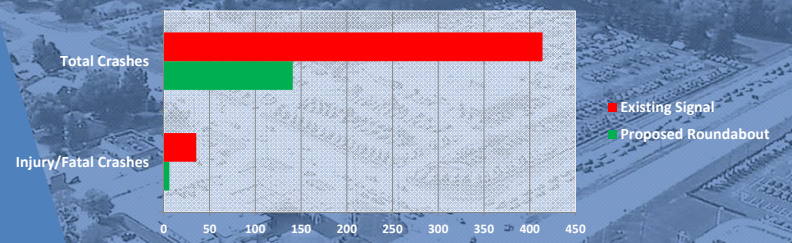



- Roundabout Design would Reduce Carbon Monoxide Emissions 42%*.
- Roundabout Design would Reduce Nitrous Oxide Emissions 29%*.
- Roundabout Design would Reduce Volatile Organic Compound Emissions 71%*.
- Roundabout Design would Reduce Carbon Dioxide Emissions 37%**.

*Results based on analysis with Mobile 6.2 software.
** Results based on studies by the Insurance Institute for Highway Safety in conjunction with Mobile 6.2 software.

# 96th Street & Keystone Parkway Interchange

## IMPROVED SAFETY:




- 40% reduction in total crashes at US roundabouts.
- 80% reduction in injury related crashes at US roundabouts.
- 50% reduction in total crashes due to grade separation.
- Analysis shows a reduction of more than 275 crashes over 5 years.

* Crash reduction projections based on information from the National Highway Insurance Institute (June, 2008).
** Existing crash data based on information from the Carmel Police Department for the years 2005-2010.

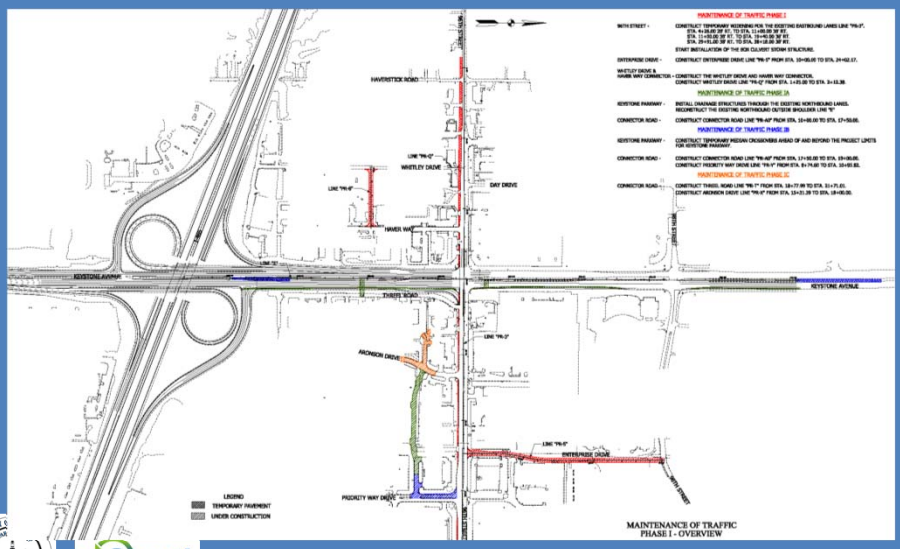


# 96th Street & Keystone Parkway Interchange

## PROJECT MAINTENANCE OF TRAFFIC (MOT):

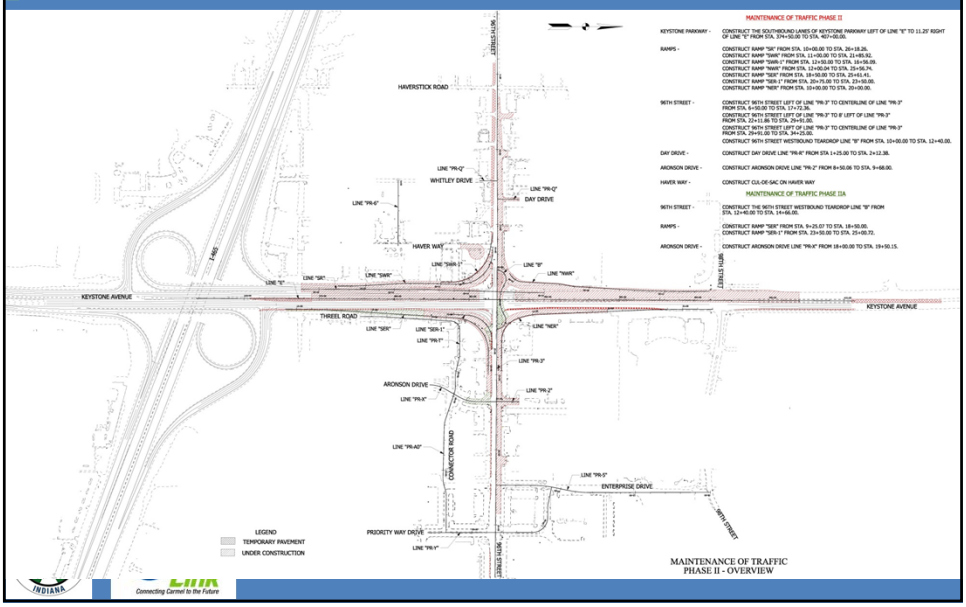
- Three Phased Approach to Construct Project
- Approach is to Construct One Side of Keystone Parkway and 96th Street While Maintaining Two Way Operations on the Opposite Side
- Night Time Construction Necessary to Allow for Short Term Road Closures
- Establish a Local Detour
  - East: 106th Street, Hazel Dell Parkway, Allisonville Road and 82nd Street ~ 9.4. Miles
  - West: 106th Street, Westfield Boulevard and 86th Street ~ 5.9 Miles

# 96th Street & Keystone Parkway Interchange

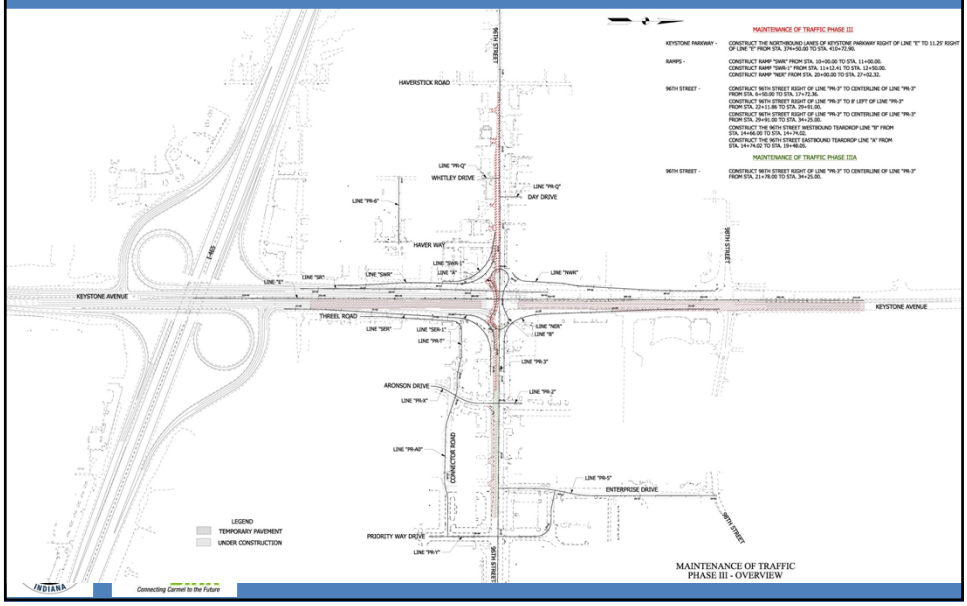





# 96th Street & Keystone Parkway Interchange



# 96th Street & Keystone Parkway Interchange




# 96th Street & Keystone Parkway Interchange

**PROJECT CONSTRUCTION SCHEDULE:**

- Immediate Project
  - ~ Phase 1 – August thru December (2012)
  - ~ Phase 2 – January thru June (2013)
  - ~ Phase 3 – July (2013) thru June (2014)
    Keystone Parkway Complete by December (2013)
- Future Planned Improvements
  - ~ To be Included in the City's 20 Year Thoroughfare Plan

## 96th Street & Keystone Parkway Interchange

**RIGHT-OF-WAY REQUIREMENTS:**

| Land Use | Immediate Project (Acres) | Future Planned Improvements (Acres) | Total (Acres) |
|---|---|---|---|
| Residential | 0.1 | 0.2 | 0.3 |
| Commercial | 12.2 | 2.3 | 14.5 |
| Forest | 0 | 0.8 | 0.8 |
| Church | 0.3 | 0 | 0.3 |
| Total Permanent R/W | 12.6 | 3.3 | **15.9** |
| Total Temporary R/W | 0.5 | 0.1 | **0.6** |
| Total R/W | 13.1 | 3.4 | 16.5 |

- Displacement of Four Businesses and One Former Gas Station



## 96th Street & Keystone Parkway Interchange

**AFFECTED UTILITIES:**

- Coordination Currently Ongoing with the Following Utilities Regarding Potential Conflicts
  - *Citizens Water*
  - *City of Indianapolis*
  - *IPL*
  - *Comcast Cable*
  - *Time Warner*
  - *Vectren Noblesville*
  - *Carmel Water*
  - *Clay Township Regional Waste*
  - *Citizens Gas*
  - *Brighthouse Networks*
  - *Fiber Tech*
  - *AT&T Indiana*
  - *AT&T LS*

# 96th Street & Keystone Parkway Interchange

## CUMULATIVE PROJECT COST:

| Immediate Project | Estimated Cost ($ Millions) |
|---|---|
| Construction[1] | $37.6 |
| Right-of-Way | $12.9 |
| **Total** | **$50.5** |
| **Future Planned Improvements** | **Estimated Cost ($ Millions)** |
| Construction[1] | $7.5 |
| Right-of-Way | $3.2 |
| **Total** | **$10.7** |

1 – Construction Includes Mobilization, Demobilization, Maintenance of Traffic and Utility Relocations



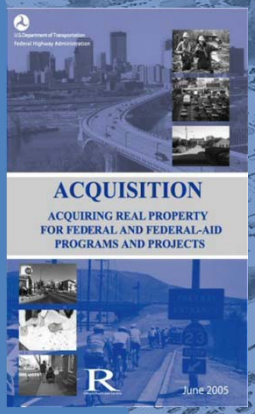
# 96th Street & Keystone Parkway Interchange

## PROJECT SCHEDULE:

- Public Hearing – October 26, 2011
- Completion of the Environmental Document – December 2011
- Real Estate Acquisition Begins – December 2011
- Completion of the Design Phase – May 2012
- Two Year Construction Schedule is Anticipated Beginning in August 2012

# 96th Street & Keystone Parkway Interchange

## REAL ESTATE ACQUISITION PROCESS:

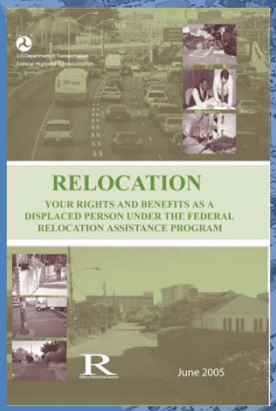



- How Land is Purchased
  - Explains the Process of Buying Property Needed for Highway Projects
  - The Proposed Project Requires Approximately 16.5 Acres of New Right-of-Way from 48 Parcels



# 96th Street & Keystone Parkway Interchange

## REAL ESTATE ACQUISITION PROCESS:




- Relocation Entitlement Program
  - Explains the Process Associated with Relocating
  - The Proposed Project Involves the Displacement of Four Businesses and a Vacant Gas Station

## 96th Street & Keystone Parkway Interchange

**REAL ESTATE ACQUISITION PROCESS:**

- "Uniform Act of 1970"
  - All Federal, State and Local Governments Must Comply
  - Requires Just Compensation
- Acquisition Process
  - Appraisals
  - Review Appraisals
  - Negotiations



## 96th Street & Keystone Parkway Interchange

**REAL ESTATE ACQUISITION PROCESS:**

- Amount of Compensation cannot be Less than Fair Market Value
- Partial Acquisition
  - The City will State Amount to be Paid for Acquisition
  - Separate Amount will be Stated for Damages to the Portion Retained by the Property Owner
  - If Remainder has Little or No Value, the City will Consider Purchasing

## 96th Street & Keystone Parkway Interchange

**REAL ESTATE ACQUISITION PROCESS:**

- Agreement
  - When Agreement is Reached, the Owner will be Asked to Sign an Acceptance of Offer and Deed of Transfer
- No Agreement
  - Mediation
  - Condemnation



## 96th Street & Keystone Parkway Interchange

**LONG RANGE PLANNING OF PROJECT:**

- Project is Currently Programmed in the Third Funding Period (2026-2035) of the Indianapolis Metropolitan Planning Organizations *2035 Regional Transportation Plan*
- The City is Advancing Preliminary Engineering and Right-of-Way Engineering in an Effort to Accelerate the Project
- If Construction Funding is Identified Earlier the *2035 Regional Transportation Plan* and *2012-2015 Transportation Improvement Program* will be Updated as Early as February 2012 to Reflect the Revised Timeline

## 96th Street & Keystone Parkway Interchange

**PUBLIC COMMENT REMINDERS:**

- Mail to Chad Costa at RW Armstrong, 300 South Meridian Street, Indianapolis, Indiana 46225
- Fax to (317) 788-0957
- E-Mail to ccosta@rwa.com
- Please Ensure that Comments are Postmarked No Later Than Thursday, November 10, 2011
- All Comments will be Reviewed, Evaluated and Given Full Consideration During the Decision Making Process



## 96th Street & Keystone Parkway Interchange

**THANK YOU FOR YOUR ATTENTIVENESS!**

# Appendix G.3

# Response to Public Hearing Comments

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| Robert Butler, Larry Griggers, Rob Butler, Ryan Craig, Kimberly Harper, Reda Mossa-Basha, Paula J. Schaefer, David Reed, Gary Ball, Bill McGarvey, John Reddington, Ruth Hayes, Peggy Cseresznyes, Jim Doty, Bryan Puckett, Anthony Wishart | Current and proposed construction has / will burden(ed) business. | While the project will likely have a temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Robert Butler, Larry Griggers, Ryan Craig, Peggy Cseresznyes | Concerned about the removal of the Threel Road access point to 96th Street. | Due to the proximity of the existing Threel Road / 96th Street intersection to the new interchange, restriction of Threel Road access is necessary in order to maintain safety. |
| Robert Butler, Reda Mossa-Basha, Larry Griggers, Rob Butler | Concerned about the loss of both gas stations at the 96th Street and Keystone Avenue intersection. | There are at least three gas stations within 2.5 miles of the 96th Street and Keystone Parkway intersection. Additionally, opportunities exist for redevelopment of gas station parcels in the project area. |
| Robert Butler, Larry Griggers, Russ Wurster | Concerned about the inadequate drainage south of 96th Street and the drainage ditches that overflow. | As part of the project development process a detailed hydraulic analysis has been completed and is currently being refined to ensure proper drainage of the area. |
| Robert Butler, Ryan Craig | Concerned about the ability of 82 ft. car transporters to traverse the roundabout. | As part of the project development process a detailed turn path analysis was completed indicating the legal maximum length of semi-truck / trailer will be able to traverse the roundabout. |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| Robert Butler, Larry Griggers, Rob Butler, Garry Ball, Paula J. Schaefer, Bill McGarvey, John Reddington, Ruth Hayes, Jim Doty, Russ Wurster, Bryan Puckett, Anthony Wishart | Supports waiting to see how the current construction affects traffic at the existing 96th Street and Keystone Parkway. intersection before advancing the interchange project. | A traffic analysis performed as part of the project development process indicates the configuration of the intersection after completion of the current construction will not provide acceptable traffic operation. |
| Larry Griggers | Concerned about the loss of parking spaces in the front of businesses. | The parking spaces on the east side of Keystone will only be impacted by the future Threel Road improvement. That future improvement will not be constructed without approval of the owners of the parcels adjacent to Threel Road. |
| Larry Griggers, Rob Butler, Russ Wurster, Bryan Puckett | Concerned about the removal of the traffic signal at Aronson Drive and restriction of access. | The traffic analysis performed for the project indicated the signal removal and northbound left turn restriction at Aronson Drive are required due to safety concerns resulting from the proximity of the Aronson Drive intersection to the proposed interchange. |
| Larry Griggers, The Honorable Dan Burton (US House of Representatives), The Honorable Todd Rokita (US House of Representatives), Rob Butler | Supports the notion of having a feasibility study completed to confirm the need for the project. | The interchange study document containing the roundabout interchange configuration was coordinated with the Federal Highway Administration and the Indiana Department of Transportation. |
| Larry Griggers, The Honorable Dan Burton (US House of Representatives), The Honorable Todd Rokita (US House of Representatives), Bill McGarvey, John Reddington | Supports the idea of completing an economic analysis of affected businesses in the project area. | While the project will likely have a temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long- |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | | Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Larry Griggers | Requests an audience with elected officials to provide input on project design and operations during construction. | Comment noted. |
| Rob Butler | Concerned with damages to business on Haver Way resulting from loss of parking spaces for inventoried vehicles. | The project footprint minimizes the amount of acquisition while providing acceptable drainage and traffic flow. Additionally, as part of the right-of-way appraisal and purchasing process, the loss of parking spaces or display rows, if unable to be replaced or reconfigured, will be accounted for in the negotiated compensation price for the acquired parcel. |
| Rob Butler | IMPO list of the 50 worst intersections does not include the 96th Street and Keystone Parkway intersection. | The project is a combination of traffic safety and traffic mobility improvements. At the time of our analysis, the most recent available study (State Farm 2001) indicated the 96th Street and Keystone Parkway intersection was the fourth worst in the State. |
| Rob Butler | Concerned with scheduling in relationship to other projects in the region. | The current project schedule allows for the completion of the Keystone Parkway portion of the project by the end of 2013 to accommodate traffic maintenance needs associated with the forthcoming US 31 project. |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | | |
| Ryan Craig | Concerned with the loss of delivery vehicle access to businesses. | The project will retain rear entry access for delivery vehicles to businesses in the southeast quadrant via Aronson Drive. |
| Ralph W. Grant | The 98th Street and Keystone Parkway needs to be redesigned to provide northbound access to Keystone Parkway. | Safety concerns related to the proximity of the intersection to the interchange ramps requires median access restrictions at 98th Street. |
| Kimberly Scheerer, Larry Griggers, Rob Butler, Paula Schaefer, George Weaver | Opposed to a three lane roundabout at Keystone Parkway due to operational concerns associated with traffic mix and volume. | Traffic simulation and analysis has indicated that intersection operations at 96th Street and Keystone Parkway will improve and pre-construction traffic queues will be reduced with the new configuration. |
| Reda Mossa-Basha | Concerned about the environmental problems associated with the gas station sites. | Phase I and II Environmental Site Assessments were conducted within the project area. Prior to the Phase II ESA, businesses were notified of the intended drilling operations. Soil and groundwater samples were taken from select locations around the perimeter of the subject properties, which included both gas stations. Samples were not taken "in the middle" of the subject gas stations as significant data on both is available with the Indiana Department of Environmental Management. |
| Paula J. Schaefer | Concerned with possible utility disruptions | Utility coordination is being performed for |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | adjacent to business during construction. | the project in accordance with Indiana code requirements to identify utility conflicts and mitigate them prior to construction. The goal of this effort is to minimize utility disruptions during construction. |
| Paula J. Schaefer, Lynda L. Feiwell, Bill McGarvey, Rob Butler, Ruth Hayes, Jim Doty | Objects to project due to the fiscal ramifications of reconstruction required due to the project not being built at the same time as the I-465 / Keystone Avenue interchange. | Projects are constructed as funding becomes available. At the time INDOT initiated construction of the I-465 / Keystone Avenue interchange, funding was not available to construct the 96th Street interchange. |
| Larry Griggers, John Reddington | Concerned with the overall visibility of and access to the southeast quadrant of the interchange. | Access will be configured via Aronson Drive. This is similar to other commercial route corridors in the vicinity of the project (i.e. SR 37 and US 31). The Keystone Parkway overpass is necessary in order to minimize impacts to businesses along 96th Street while providing acceptable operations. |
| Larry Griggers | Concerned with the grade of Keystone Avenue in front of his business (Ruths Chris). | Keystone Avenue will be raised approximately 8 ft. above its existing grade via the construction of a retaining wall to accommodate the approach to the overpass. Impacts from the loss of visibility are considered during the right-of-way negotiation process. |
| Larry Griggers, Peggy Cseresznyes | Concerned about the potential loss of the | Ruths Chris' double pole sign is proposed |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | double pole sign fronting the business (Ruths Chris) and the need for additional signing along 96th Street and adjacent connector roads. | to remain in-place per the current design plans. Any alterations needed to this sign and any other needed signage will be considered during the right-of-way negotiation process. |
| Larry Griggers | Interested in knowing whether Carmel and INDOT already have all the approvals needed to condemn, take and encroach upon the properties in Indianapolis (south side of 96th Street). | Necessary approvals for land acquisition will be obtained prior to the purchasing of right-of-way. |
| Larry Griggers | The loss of the Threel Road entrance to business (Ruths Chris) will require enhancements to the Aronson Drive access points to serve as primary gateway. | No work along Aronson Drive south of the proposed Aronson – Priority Way connector is anticipated. As such, the two existing access points into Ruths Chris will be maintained. The potential to modify the existing access points on Aronson Drive will be considered during the right-of-way negotiation process. |
| Larry Griggers | Compensation for the potentially lost parking spaces in front of business (Ruths Chris) has not been discussed with the property owner. | In the future build scenario, the reconstruction of Threel Road could potentially result in a net loss of nine parking spaces in front of Ruths Chris. However, Threel Road will not be reconstructed unless favored by the affected businesses. In the immediate project, the impact to parking spaces is in the process of being determined based on design requirements. In either case, lost parking spaces that are not able to be |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | | restored elsewhere on the property will be considered in the right-of-way negotiation process.<br><br>Contact with business owners regarding compensation for such issues has not taken place due to Federal Highway Administration requirements that the NEPA process first concludes. |
| Larry Griggers, John Reddington, Ruth Hayes, Bryan Puckett | Concerned with the lack of coordination with local residents and business owners during the advancement of the project. | The standard INDOT and FHWA public involvement procedures were adhered to as part of this project. |
| Larry Griggers | Interested in knowing whether an environmental assessment has been completed for the project. | On December 19, 2011, the FHWA and INDOT reviewed comments received as a result of the public involvement process. In response to this request, the FHWA opined they would process the environmental document prepared for the project as an EA / FONSI rather than a Categorical Exclusion. |
| Mark A. Williams | Interested in ensuring that the Whitley Drive / 96th Street intersection design is able to handle the mix and volume of traffic that would use it. | The section of Whitley Drive between 96th Street and the Haver – Whitley connector road will be designed to provide proper roadway width and turning radii for the mix of traffic that would use it. |
| Diane M. Burrell | Concerned about speeds and possible installation of speed bumps on Whitley Drive. | Speed bumps are typically independently studied by the responsible local agency (in this case, the City of Indianapolis) prior to |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | | installation. These studies are usually based on post construction speeds and volumes. Therefore, at this time no speed bumps are proposed as part of this project. |
| Rob Butler, Anthony Wishart | The loss of the Haver Way access point to 96th Street leaves Whitley Drive as the primary entrance to businesses along Haver Way resulting in a loss of access to the business. | Due to the proximity of the existing Haver Way / 96th Street intersection to the new interchange, restriction of Haver Way access is necessary in order to maintain safety. |
| Rob Butler | Concerned about Butler Select's loss of main display row facing Keystone Avenue. | As part of the right-of-way appraisal and purchasing process, the loss of parking spaces or display rows, if unable to be replaced or reconfigured, will be accounted for in the negotiated compensation price for the acquired parcel. |
| Rob Butler | Concerned about loss of visibility from Keystone Avenue to Butler Select (west side of Keystone Avenue) and Butler Hyundai (east side of Keystone Avenue) | As part of the right-of-way appraisal and purchasing process, the loss of visibility will be accounted for in the negotiated compensation price for the acquired parcels. |
| Rob Butler | Aronson Drive is not set up to handle the volume of traffic that would ensue if it became the only entrance to businesses along it. | The project will maintain local access to the businesses in the southeast quadrant through maintaining Aronson Drive, but also by reconstructing Threel Road. It should be noted that with the recent improvements to Keystone Avenue as part of INDOT's I-465 / Keystone Parkway interchange modification project, semi- |

| COMMENTER | NATURE OF COMMENT | RESPONSE |
|---|---|---|
| | | trailers / car carriers are no longer able to use Threel Road as part of their circulatory route due to an insufficient turning radius. With the project's reconstruction of Threel Road, such vehicles will again be able to use the road to enter / exit the area without having to travel through business parking lots. |
| Rob Butler | Does not feel the Aronson – Priority Way connector going through the bowling alley parking lot is reasonable as it is not known by motorists and the cost to re-educate customers is implausible. | The project will affect traffic patterns and change access points throughout the area. The Aronson – Priority Way connector utilizes an existing private drive at the north end of the parking lot (not through it) and will maintain two access drives to it. As is commonly the case, with time, motorists will adapt to the changes in access that will result from the project. The potential for the inclusion of signage for businesses in the area to re-familiarize motorists will be considered in the right-of-way negotiation process. |
| Ruth Hayes | All design options should be considered in a non-biased manner. Particularly, a single point urban interchange option should be discussed in terms of merits and disadvantages. | The SPUI was evaluated during the interchange alternatives analysis. The interchange roundabout option was selected as it provided the most favorable combination of operations and system continuity with other roundabout interchanges in close proximity. |
| Paula Schaefer | Expressed concern over the potential loss | The Keystone Parkway overpass is |

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| | of business due to decreased visibility to businesses fronting Keystone Avenue. | necessary in order to minimize impacts to businesses along 96th Street while providing acceptable operations. Impacts from the loss of visibility are considered during the right-of-way negotiation process. |
| Russ Wurster | Opposes bringing a road (Aronson – Priority Way) connector through the bowling alley parking lot to alleviate the closing of all other exits or entrances. This change would cause drastic interruption for accessibility to our customers and would create safety hazards within the bowling alley parking lot. | The Aronson – Priority Way connector is required to ensure proper access for traffic flow to/from the businesses in the southeast quadrant of the interchange. The connector will run along the northern boundary of the bowling alley parking lot. |
| Bryan Puckett | Concerned over the changes to the general access points to the bowling alley / karting center. | The project maintains the access point to 96th Street from the northeast corner of the bowling alley parking lot. Although the access point to 96th Street at Threel Road will be removed, a new 96th Street access point will be provided at Priority Way via the proposed Aronson – Priority Way connector. |
| George Weaver | Concerned about the potential for nighttime construction noise. | The construction contractor will be required to adhere to the noise ordinance enforced by the City of Carmel and the City of Indianapolis. Deviation from either ordinance would require approval of the variance from the appropriate municipality. |

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| George Weaver | Concerned that no bicycle right-of-way is included in the project plan. | The project does include a 10 ft. multi-use path along the north side of 96th Street within the project area. Also, a sidewalk will abut the curb of the north-south connector road between 96th Street and 98th Street. |

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| Mike Bowman | The Environmental Document cannot be approved because it was not prepared in accordance with the required procedures and does not demonstrate that the Project is eligible for a categorical exclusion. | The Environmental Document was reviewed by the INDOT Environmental Services section prior to its release for public involvement. Had the document not complied with current INDOT and FHWA procedures, it would not have been released to the public. Prior to the release of the document the INDOT and FHWA were consulted regarding the level of environmental documentation necessary for the project. In response to comments received at the October 26, 2011 hearing, the FHWA has determined they will process the document as an Environmental Assessment. |
| Mike Bowman | The Environmental Document's reliance on 2000 U.S. Census data does not comply with the requirement to use "good information" in the EJ analysis. 2010 U.S. Census data has been available since May 2011 -- long before the Environmental Document was issued for review. | While the 2010 US Census data is mostly available, it still lacks information critical to evaluating low income populations. As such, INDOT has continued the use of the 2000 census data as its source for population analyses. INDOT and FHWA were consulted on December 19, 2011 regarding the need to update the census data. It was determined there was no need to update the data since it is unlikely this area has substantially changed since the 2000 census.<br><br>Even if substantial changes to the population profile have occurred, the overall benefit of improving an |

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| | | operationally deficient intersection offsets any temporary impacts that would result during construction. |
| Mike Bowman | The EJ analysis in the Environmental Document compares the minority and low-income population in Census Tract 3202.03 -- the portions of the project area located in Indianapolis, between I-465 and 96th Street -- to the rest of Indianapolis. Here, the community of comparison should be Carmel, for all the affected census blocks. | The environmental justice analysis has been revised to include a comparison of the affected blocks in each county (Marion and Hamilton) to the communities of Carmel and Indianapolis. |
| Mike Bowman | The disparate impact analysis in the Environmental Document does not comply with the procedural requirements for XX (*sic.*) reasons. First, it analyzes the impact only on Census Tract 1111.01 Block 1029. | At the time of the analysis, Census Tract 1111.01, Block 1029 was the only environmental justice population identified as part of the analysis. After the modifications to the analysis discussed in the above response, two additional low income populations in Marion County were identified (Census Tract 3202.03 Block Group 2 and Census Tract 3202.04 Block Group 2) when compared to the City of Carmel. Even with these changes in the analysis, the completion of the project will provide an overall benefit to the community by improving an intersection that is operationally deficient and presents safety concerns. The benefits that will result from this project are accentuated by the fact the schedule is being moved up |

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| | | from the currently shown out years (2026-2035) of the Indianapolis Metropolitan Planning Organization's (IMPO) 2035 Regional Transportation Plan. |
| Mike Bowman | Second, the analysis compares the impacts on the population in Block 1029 to the impacts on other populations in the project area. The impacts on the EJ populations in the project area should be compared to the impacts on the non-EJ population in the rest of Carmel. | The intent of the environmental justice analysis is to first analyze for the presence of minority or low income populations and then determine if any identified populations are disproportionately affected when compared to other non-environmental justice population blocks impacted by the project. |
| Mike Bowman | Third, the disparate impact analysis should identify the type and number of displaced businesses, the type and number of displaced employees, and the availability of substitutes for displaced businesses, and for each identify the income, race, ethnicity, and national origin or primary language. (Procedures Manual, pp. 70-71.) | This information is required in an environmental justice analysis if impacts to minority and low income populations may be of significant concern. Impacts to the environmental justice populations identified will not be significant. Rather, there will be an overall benefit to the community by improving a deficient intersection. |
| Mike Bowman | Last, the analysis must be fully documented. The EJ analysis in the Environmental Document states that the EJ population "will not be disproportionately affected by the project as non-environmental justice populations will be affected to the same extent." Conclusory statements such as this do not satisfy the | The intent of the environmental justice (EJ) analysis is to ensure that minority or low-income populations are not disproportionately affected when compared to non-EJ populations present in the project area. In other words, project decisions don't overtly result in detrimental impacts only to EJ populations, |

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| | analysis and documentation necessary to justify a categorical exclusion. | but rather the benefits or impacts from a project are proportionately distributed with the non-EJ populations in the project area. Therefore, the conclusions made in the environmental document are consistent with the requirements of the INDOT and FHWA in performing an EJ analysis. |
| Mike Bowman | The Environmental Document identifies five businesses that will be relocated by the Project because the structures must be torn down. It does not, however, discuss whether the businesses own or lease the properties, the size and number of employees of each business, available relocation sites, or the likelihood of such relocation. Nor does it discuss any contacts made by the City or preparer regarding measures or coordination to reduce business impacts. | This information is contained in the environmental document when there are significant relocations (more than 10), which triggers the need for a BIS and CSRS. Individual property owners' needs will be addressed in the right-of-way appraisal / acquisition process. |
| Mike Bowman | The relocation analysis does not identify or discuss at all two businesses that the preparer anticipates will be relocated by the Project. In a document submitted to the State Historic Preservation Office pursuant to 36 C.F.R. Section 800(4)(d)(1) and attached as an exhibit to the Categorical Exclusion, it states that "As originally proposed and coordinated with agency, three relocations were thought to be necessary for the completion of the project. As a result of advancement of the design | At the time of this coordination with the SHPO the anticipated additional relocations were required due to the inclusion of a shifted roundabout at Aronson Drive and changes to the southwest ramps of the interchange and the turn lane at Priority Way West Drive. However, as the project advanced (subsequent to this coordination) modifications were able to be made to the design that reduced the right-of-way and eliminated the need for a total take of most |

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| | and proposed modifications, seven commercial relocations are anticipated." The relocation analysis in the Environmental Document must be revised to reflect the additional anticipated relocations. | of these businesses.<br><br>Furthermore, it should be noted that relocations are only required to be identified to the extent they are known at the time of environmental document approval. |
| Mike Bowman | The relocation analysis does not comply with the procedural requirements because it does not discuss the relocation impacts of alternatives to the Project, including the "do nothing" alternative. In particular, the Environmental Document does not discuss all the alternatives that were evaluated by the City, including the alternative to construct a "tight diamond" interchange for this intersection. The Environmental Document, including the relocation analysis, must be revised to include evaluations of all alternatives. | While other alternatives may have been considered early in the development process, the interchange roundabout option was selected as it provided the most favorable combination of operations and system continuity with other roundabout interchanges in close proximity.<br><br>Nonetheless, the Other Alternatives Considered section was updated to discuss the other interchange configurations that were considered and the reason for their dismissal. |
| Mike Bowman | The Project is one of four projects to improve traffic in Carmel and Northeast Indianapolis. The other projects are INDOT's I-465 Northeast Corridor Project (which included the almost-complete replacement of theI-465 and Keystone Parkway interchange), the City of Carmel's recently-completed expansion of Keystone Parkway between 96th Street and 146th Street and construction of | While each of these projects is of regional importance, they each maintain independent utility and are able to stand alone. As such, only the known relocations for the proposed project are required to be considered when determining the need for a BIS. In the case of the proposed project, the threshold for BIS is not met. Therefore, a BIS was not prepared. |

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| | roundabout interchanges at all intersections, and INDOT's pending conversion of US-31 to a throughway. The impacts of all four projects are cumulative. Combined, these projects result in far more than 10 relocations due to the acquisition of right-of ways. Thus, the preparation of the Environmental Document should have included a BIS. | |
| Mike Bowman | A BIS is required if there will be more than 10 relocations, but a BIS should be performed whenever a particular community will be adversely impacted by business relocations, for example by relocation of all the gas stations and convenience stores in the community. (CE Manual, p. 83). The City should perform a BIS, and the relocation analysis should discuss the impact of relocating both gas stations/convenience stores. | The thresholds for completing a BIS, according to the INDOT *Procedural Manual for Preparing Environmental Documents* (2008 Version), is if there will be more than 10 relocations, or 25% of the structures in the town if there are fewer than 10 structures. Furthermore, the INDOT CE Manual (March 2011) indicates that a BIS can be performed even though the 25% threshold is not met if at least one of the businesses to be relocated is a major employer relative to the size of the community. The project is expected to result in the relocation of only four active businesses. Neither gas station / convenience store is considered to be a major employer for the community. Therefore, the completion of a BIS is not required. This was concurred in by the FHWA and INDOT on December 19, 2011. |

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| | | The need for a BIS aside, it should be noted that there are at least five major supermarkets (two Marsh's, two Kroger's and a Target) and three gas stations within a three mile radius of the project that provides sufficient opportunity for the community to re-establish social connections if they solely rely on the two gas stations for their fueling / grocery needs. |
| Mike Bowman | The business relocation analysis incorrectly focuses solely on the taking of structures. The categorical exclusion procedures under NEPA and Indiana law require a broader analysis, including businesses that will be forced to relocate due to significant impacts by the Project. Under Indiana law "[a] taking in eminent domain, by the modern and prevailing view, includes substantial interference with private property which destroys or impairs one's free use and enjoyment of the property or one's rights and interest in the property." Among other things, the closure or alteration of an access road that makes access to a business difficult or inconvenient is the same as "taking" the property. Taking a business property by inverse condemnation is a relocation of the business. | The determination of properties that will require condemnation will be addressed in the right-of-way phase of the project development. While there may be some inconveniences associated with additional travel time due to changes in access, access to all properties in the project area will be provided. Motorist adaptability to the resulting changes in access could be improved by utilization of wayfinding signs. If during the right-of-way process there are properties that are determined to require relocation due to certain impairments resulting from the project, an amendment to the environmental document may be necessary. |

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| Mike Bowman | Butler Toyota will lose its access to Threel Road, which will cause all traffic and patrons coming to Butler Toyota to have to use Aronson Drive. The business depends upon daily deliveries by 82-foot long car carriers, which will not be able to navigate the tear-drop roundabout. Flooding caused by the I-465 interchange project will get worse. Butler Toyota believes that the impacts of the Project will shut down, or at least significantly impact, its business. | The project will maintain local access to the businesses in the southeast quadrant through maintaining Aronson Drive, but also by reconstructing Threel Road as part of the immediate project. It should be noted that with the recent improvements to Keystone Avenue as part of INDOT's I-465 / Keystone Parkway interchange modification project, semi-trailers / car carriers are no longer able to use Threel Road as part of their circulatory route due to an insufficient turning radius. With the project's reconstruction of Threel Road, such vehicles will again be able to use the road to enter / exit the area without having to travel through the parking lots of adjacent businesses. |
| Mike Bowman | Rupert & Schaefer, P.C. will lose clients and prospective clients because the construction of the Project will make access difficult. | While the project will likely have a temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. It should also be noted that with the inclusion of a two way left turn lane in the section of 96th Street, access to Rupert & Schaefer will be unchanged. |
| Mike Bowman | FamilyCare Chiropractic has suffered a | While the project will likely have a |

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| | 40% drop in business as a result of the construction of the I-465 interchange and the roundabout at 96th & Westfield. | temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Mike Bowman | Woodland Bowl, Inc. and Fastimes Karting, LLC will be losing two access points under the proposed plans. In addition, not only is their current accessibility being greatly restricted, but the proposed project also has a public road running directly through Woodland Bowl's parking lot. The interference with Woodland Bowl's access points and the road running through their parking lot constitutes an actual taking; however, this was not listed as a "relocation" or taking in the Environmental Document. This will also cause congestion and safety issues in Woodland Bowl's parking lot. The area already is poorly drained and will be adversely impacted by the failure to include detention in the drainage plans for the Project. Woodland Bowl anticipates further layoffs for its 80 employees and believes the issues described above, plus the added stress caused by congestion and inaccessibility during construction of the Project, threaten the survival of the | The Aronson – Priority Way connector is required to ensure proper access for traffic flow to/from the businesses in the southeast quadrant of the interchange. The connector will run along the northern boundary of the bowling alley parking lot.<br><br>The project maintains the access point to 96th Street from the northeast corner of the bowling alley parking lot. Although the access point to 96th Street at Threel Road will be removed, a new 96th Street access point will be provided at Priority Way via the proposed Aronson – Priority Way connector.<br><br>Hydraulic modeling has been completed for the project and coordinated with the appropriate local authorities in the City of Indianapolis and the City of Carmel. All drainage structures will be sized accordingly. |

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| | company. | |
| Mike Bowman | MA Keystone, LLC, owner of the Keystone Way Shopping Center located at 9444 to 9450 Haver Way, Indianapolis, Indiana, will loose (*sic.*) its only main access to 96th Street pursuant to the proposed project plans. After the proposed project is complete, the only access to the Shopping Center will be via a connector between Whitley Drive and Haver Way, one block west of the shopping center. None of MA Keystones tenants will be able to survive if the Project blocks 96th Street access, as is planned. About an additional 41 jobs will be lost, in addition to tax dollars. | While the Haver Way access point to 96th Street will be closed, the Haver-Whitley Connector Road restores access to this shopping center while taking into consideration the safety needs along 96th Street to eliminate access points that are too close to interchange ramps.<br><br>It should also be noted the project will likely have a temporary effect on some local businesses. However, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Mike Bowman | Ruth's Chris Steak House will lose its main access road, Threel Road. This will cause multiple issues for Ruth Chris, including (1) having to create a new rear entrance that will have to be modified, beautified and re-signed; (2) undertaking costly marketing efforts to ensure that patrons know how to get to Ruth Chris and do not choose another dining option due to the loss of the main access road to Ruth's Chris; (3) business will be lost because customers will not be able to turn left from | The project will reconstruct Threel Road as part of the immediate project in order to restore the local circulation pattern in the southeast quadrant of the interchange. The design of the project allows traffic to turn left onto Aronson Drive from 96th Street. Leaving Ruth's Chris, patrons wanting to turn left onto 96th Street from Aronson Drive will be required to use the connector road between Aronson Drive and Priority Way West Drive. These changes are not expected to result in a significant delay in |

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| | 96th Street to get to Ruth's Chris and will not be able to turn left onto 96th Street when leaving; (4) business will be lost due to the lack of visibility on the elevated Keystone Parkway and the unaesthetic appearance from the restuarant (*sic*.); (5) the large sign in front of the restaurant will be removed for the right-of-way (an actual taking) and will be very expensive to replace; (6) business will be lost due to the loss of 11 parking spaces; and (7) the tear-drop roundabouts will cause delivery truck delays to the restaurant. | which patrons or delivery trucks arrive or leave the business.<br><br>Damages resulting from changes in access, loss of parking spaces and the need for re-signing entrance ways or new wayfinding signs will be negotiated during the right-of-way phase of the project. This compensation will likely be provided as a cost to cure. |
| Mike Bowman | Penske Chevrolet has 110 employees and annual taxes of about $145,000 for property taxes and $500,000 for payroll taxes. Penske has struggled for the past three years during construction of the Keystone expansion and I-465 interchange projects. The Project will eliminate its frontage and visibility on Keystone, which is very important to Penske's business. Penske also relies on daily deliveries by car carriers that will not be able to navigate the roundabouts. Penske is at the break-even point and questions its ability to survive the Project. There are a lot of other dealers in the metropolitan area for the brands represented at 96th and Keystone. | While the project will likely have a temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection.<br><br>Damages resulting from changes in access, reduction in visibility, loss of parking spaces and re-signing will be negotiated during the right-of-way phase of the project. This compensation will likely be provided as a cost to cure. |
| Mike Bowman | Penske Honda operates on very low | While the project will likely have a |

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| | margins and relies on volume to survive -- 150 service visitors per day and 30-40 sales visitors per day. It has $12 million in annual sales and pays about $500,000 per year in payroll taxes. Penske Honda will be hurt if volumes fall due to construction of the Project. | temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Mike Bowman | Dreyer-Reinbold BMW/Mini's business will be significantly impacted by the Project. It relies on 435 service visits per day and provides loaners for service customers. The Project will make the business hard to access and hard to find for its service customers and potential buyers. | While the Haver Way access point to 96th Street will be closed, the Haver-Whitley Connector Road restores access to Dreyer-Reinbold while taking into consideration the safety needs along 96th Street to eliminate access points that are too close to interchange ramps. Additionally, Dreyer-Reinbold currently has a wayfinding sign at the Whitley Drive and 96th Street intersection. Combined with the proposed Haver-Whitley Connector Road, circulation patterns to this business will be maintained. |
| Mike Bowman | The Project also will require Dreyer-Reinbold to make numerous trips to the closest gas station – which will be in Nora after the two stations at 96th and Keystone are displaced – during rush hour to fill loaners for service customers, which will be very inconvenient and costly. | There are at least three gas stations within 2.5 miles of the 96th Street and Keystone Parkway intersection. Additionally, opportunities exist for redevelopment of gas station parcels in the project area. |
| Mike Bowman | Dreyer-Reinbold, Penske Chevrolet and Butler Toyota rely on deliveries by car | As part of the project development process a detailed turn path analysis was completed |

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| | carriers that will not be able to navigate the roundabouts. | indicating the legal maximum length of semi-truck / trailer will be able to traverse the roundabout. |
| Mike Bowman | Ball Investments, LLC has lost business (in the dental practice) and tenants as a result of the construction of the 96th and Westfield roundabout and the I-465 interchange. | While the project will likely have a temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Mike Bowman | County Line Realty Association has 13 landowners with 19 businesses located on the southeast corner of 96th and Keystone. The closing of Threel Road from 96th Street will be devastating to the business center: car carriers would not be able to get in or out, and there would be a loss of business, customers, employees and revenues to the members of the association. | The project will maintain local access to the businesses in the southeast quadrant through maintaining Aronson Drive, but also by reconstructing Threel Road. It should be noted that with the recent improvements to Keystone Avenue as part of INDOT's I-465 / Keystone Parkway interchange modification project, semi-trailers / car carriers are no longer able to use Threel Road as part of their circulatory route due to an insufficient turning radius. With the project's reconstruction of Threel Road, such vehicles will again be able to use the road to enter / exit the area without having to travel through the parking lots of adjacent businesses. |
| Mike Bowman | The relocation analysis also fails to evaluate whether any businesses will be | All right-of-way purchased for the project will be done so in accordance with the |

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| | left with "uneconomical remnants" after the City takes portions of their property for the Project and whether any businesses will become "displaced persons." The relocation analysis should include a discussion of Ruth's Chris and any other business that will have a portion of its real or personal property taken, to determine whether they will be left with an "uneconomical remnant" or will become "displaced persons." | Uniform Act. This will require appraisal of the affected parcels by qualified personnel. At the time of the appraisal, consideration will be given to identifying "uneconomical remnants." However, the right-of-way process is unable to start until the NEPA process is completed. |
| Mike Bowman | The relocation analysis must – but does not – evaluate where all the potentially displaced businesses will be able to relocate. | In accordance with the Uniform Act, displaced businesses will be offered fair market value compensation to relocate to a comparable area. This will include referrals to replacement properties, help in filing payment claims and other necessary assistance to help the displaced relocate. Identification of potential relocation sites is not within the scope of an environmental document that does not meet the thresholds for completing a CSRS, but will be addressed in the right-of-way phase of the project development process. |
| Mike Bowman | The Environmental Document should evaluate the economic impacts of the Project on all businesses in the area, including the businesses described above. Given the severity of the impacts to many of the businesses, it is reasonably | The FHWA and INDOT were consulted on December 19, 2011 regarding the need to expand on the sections of the document dealing with displaced businesses. In that consultation it was concluded that the project does not meet the established |

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| | foreseeable that the Project will cause more than 10 relocations. FHWA and INDOT should require the City to perform a BIS and/or a CSRS and to provide an analysis of the relocations and economic impacts of the Project consistent with the letter and intent of NEPA and the categorical exclusion procedures. | thresholds triggering the need for a BIS or CSRS. Furthermore, it was concluded that economic impacts occurring as a result of the project should be temporary. Following the completion of the project, economic vitality in the project area is expected to return. |
| Mike Bowman | The Environmental Document does not comply with the requirements to evaluate cumulative and indirect impacts on the community. This Project does not simply add capacity in an already fully-developed area. It eliminates access to 96th Street, relocates the only gasoline station/convenience stores in the community, and will effectively destroy or relocate several significant employers. It will also cause drainage problems in an area that already suffers flooding caused by the I-465 and Keystone Parkway interchange, and will disrupt access and business for businesses that have been disrupted by the I-465 interchange project, the 96th and Westfield project, and the Keystone expansion project for several years. | The FHWA and INDOT were consulted on December 19, 2011 regarding the need to expand on the sections of the document dealing indirect and cumulative impacts. In that consultation it was concluded that while the project is currently in the out years of the IMPO's Regional Transportation Plan (2026-2035), accelerating the project's completion will result in a cumulative benefit to the community by improving a key regional intersection that is failing operationally and will continue to worsen. This failure will be magnified by the temporary closure of nearby US 31 for reconstruction as diverted traffic will likely add further congestion to the 96th Street and Keystone Parkway intersection. |
| Mike Bowman | The Environmental Document does not adequately address the Project's impact on the inadequate drainage issue described by | Hydraulic modeling has been completed for the project and coordinated with the appropriate local authorities in the City of |

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| | several business owners in the southeast corner of 96th Street and Keystone. Ultimately, it is impossible for the public to fully evaluate the drainage issues because the drainage calculations, worksheets and model output are not attached to or summarized in the Environmental Document. FHWA and INDOT should require the City to perform and document a proper stormwater drainage analysis. | Indianapolis and the City of Carmel. All drainage structures will be sized accordingly. |
| Mike Bowman | Under 23 C.F.R. § 771.117 and INDOT procedures, a categorical exclusion is only appropriate where there will not be a "relocation of significant numbers of people." If businesses will be displaced, the relocation analysis must include a discussion of the size and number of employees. (Procedures Manual, p. 64.) The Environmental Document ignores the number of "people" who will be displaced by the relocation of the businesses described above. An analysis of all people to be relocated due to the proposed project will demonstrate that the Project is not eligible for a categorical exclusion because it will result in the relocation of a significant number of people. | The FHWA and INDOT were consulted on December 19, 2011 regarding the need to expand on the sections of the document dealing with displaced people. In that consultation it was concluded that while the project may result in temporary inconveniences, such as the loss of business, due to the anticipated two years of construction, its completion will result in a cumulative benefit to the community by improving a key regional intersection that is failing operationally and will continue worsen. |
| Mike Bowman | FHWA and INDOT should require the City to provide a detailed and documented | FHWA and INDOT were consulted on December 19, 2011 regarding the need for |

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| | evaluation of all economic impacts of the Project. As discussed above, a proper analysis of the business and employment impacts foreseeably caused by the Project will preclude the use of a categorical exclusion. | a detailed economic analysis. Through this coordination it was determined that while the project will likely have a temporary effect on some local businesses, the project will result in an overall benefit to the community by accelerating from the outer years of the IMPO's 2035 Long-Range Transportation Plan (2026-2035) needed improvements to an operationally deficient intersection. |
| Mike Bowman | The Project will impact three ditches that drain into Carmel Creek, which drains into the White River. On December 22, 2009, the City's environmental consultant conducted a jurisdictional determination and determined that the three ditches are "waters of the United States." According to the Environmental Document, on December 30, 2009 (one week later -- including the Christmas holiday and the day before New Years Eve) the Corps of Engineers determined that the ditches are not "waters of the United States" because, among other reasons, they were constructed in upland soils and lack an ordinary high water mark ("OHWM"). This is not the current standard for identifying "waters of the United States." "…the correct test is whether the ditch has a significant nexus to a traditionally navigable water, such as the White River, | This comment is beyond the scope of the environmental document as the Federal agency that determines whether a jurisdictional "waters of the US" is present is the Corps of Engineers, not the FHWA or the City of Carmel.<br><br>The three water features identified during the September 22, 2009 (not December 22, 2009) field visit were assessed based upon the current criteria established by the US Army Corps of Engineers. Recommendations on the jurisdictional nature of each ditch were forwarded to the Corps of Engineers on December 22, 2009. The Corps of Engineers opined the ditches were constructed in upland soils, lacked an OHWM and did not appear to be used or susceptible to use in interstate or foreign commerce. The fact that they did not possess an OHWM meant that, under the |

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|---|---|---|
| | such that the ditch, alone or with similarly situated ditches, could significantly affect the chemical, physical and biological integrity of the navigable water. There is zero indication in the Environmental Document that the Corps of Engineers considered the significant nexus test over the Christmas holidays in 2009. | Clean Water Act, these water features are not to be considered "waters of the US" as they do not meet the requirements to be considered a tributary of either a Traditional Navigable Waterway (TNW) or a Relatively Permanent Waterway (RPW) that is itself a tributary to a TNW. In order to be a jurisdictional tributary, a water feature must exhibit an OHWM. Additionally, as roadside ditches excavated wholly in and draining only uplands, and not carrying a relatively permanent flow of water, the three water features are not considered tributaries of a downstream TNW.<br><br>The Corps of Engineers applies the significant nexus test referenced in the comment to those water features which exhibit the presence of a reliable OHWM with a channel defined by bed and banks. These were lacking in the three water features identified within the project boundaries. |
| Mike Bowman | The Phase I [Environmental Site Assessment] conducted by the City indicates that a Phase II subsurface investigation must be performed, but the Phase II subsurface investigation conducted by the City reports that samples were collected only on the existing right- | Samples taken around the perimeter of each site with recognized environmental conditions as part of the Phase II ESA were done so in general conformance with ASTM standards. Upon acquisition, each gas station will be closed in accordance with state UST closure requirements. This |

| COMMENTER | SUMMARY OF COMMENT | RESPONSE |
|---|---|---|
| | of-way between the gas station properties and the street. This is not sufficient to satisfy the requirement to indentify (*sic.*) potential sources of contamination. FHWA and INDOT should require the City to seek access to the properties to conduct a proper subsurface investigation and to document the results in the Environmental Document and, if the potential environmental, social and economic impacts are significant, should deny the categorical exclusion. | will include additional samples taken at the wall of and beneath the tanks. Any groundwater encountered would also be sampled. Any contaminated soil would be removed and transported to a licensed landfill for disposal. Therefore, it is not anticipated that contamination will pose a threat to the surrounding community. |
| Mike Bowman | The Environmental Document does not provide any indication whether the roundabout design accounts for car carriers. The radius of the turn may be too short. Car carriers navigating the roundabout likely will take up both lanes, even if the radius is not too short. This effect will be exacerbated by the internal opposite turn under the bridge. If car carriers cannot navigate the roundabout, several businesses will be destroyed. On the other hand, if the radius of roundabout must be increased to accommodate car carriers, additional businesses may be displaced to provide right-of-way for the Project. | As part of the project development process a detailed turn path analysis was completed indicating the legal maximum length of semi-truck / trailer will be able to traverse the roundabout. |
| Mike Bowman | The Environmental Document should but does not discuss the truck traffic, the effect | Keystone Parkway and 96th Street are not on the National Highway System. |

| COMMENTER | SUMMARY OF COMMENT | RESPONSE |
|---|---|---|
| | of truck traffic on the capacity of the roundabout, or the effect of truck traffic on safety in the roundabout, in general. The roundabout will cause similar problems for emergency vehicles, which also should be discussed in the Environmental Document. | Therefore, the majority of the traffic is local with some regional connection to the surrounding communities of Indianapolis, Fishers, Westfield and Noblesville. As such, traffic, including the truck traffic, is likely to be familiar with the location of businesses in the area and adjust to the modifications made in access. |
| Mike Bowman | At other roundabouts, travelers on the roundabout can see traffic approaching the roundabout, and vice versa, because the roundabout is above Keystone. At 96th and Keystone, approaching traffic will be all but invisible until both vehicles are about to enter the same segment of the roundabout, because the bridge supports will block vision. In addition, the shadow effect under the bridge will make it difficult to see vehicles under the bridge and may cause monetary blinding to drivers when exiting the underpass. The Environmental Document should but does not identify the line-of-sight for each segment and approach of the roundabout, and the effect on speed, congestion and traffic safety. | The project is being designed in accordance with the Indiana Design Manual. All reasonable attempts are made in the development of the proposed design to meet the required intersection sight distances. In those instances where the ISD can't be met for an underlying reason, a design exception will be sought. |
| Mike Bowman | FHWA and INDOT should require the City to prepare and document a proper evaluation of safety concerns caused by the Project and compare them to alternatives. | The interchange roundabout option was selected as it provided the most favorable combination of operations and system continuity with other roundabout |

| COMMENTER | SUMMARY OF COMMENT | RESPONSE |
|---|---|---|
| | Such an evaluation will show that a "tight-diamond" interchange will be safer than the roundabout, particularly with respect to car carriers and other truck traffic. | interchanges in close proximity. Several factors were considered in determining the interchange configuration including safety and operational service. |
| Mike Bowman | At a minimum, the statute [Home Rule Act] does not allow the City of Carmel to take land in the City of Indianapolis -- including all the right-of-ways south of 96th Street identified in the Environmental Document -- unless Indianapolis voluntarily enters into an interlocal agreement to do so. The Environmental Document does not indicate whether the City of Carmel has even discussed an interlocal agreement with the City of Indianapolis, much less whether the City of Indianapolis would agree to allow Carmel to displace or destroy so many Indianapolis businesses. FHWA and INDOT should not approve the categorical exclusion unless Indianapolis agrees to participate in the Project. | Necessary approvals for land acquisition will be obtained prior to the purchasing of right-of-way. This is not a NEPA concern. |
| Mike Bowman | The Project does not qualify for a categorical exclusion. FHWA and INDOT should require the City to perform a full EA/EIS, and should not allow the Project to go forward unless there is a FONSI. | On December 19, 2011, the FHWA and INDOT reviewed comments received as a result of the public involvement process. In response to this request, the FHWA opined they would process the environmental document prepared for the project as an EA / FONSI rather than a Categorical Exclusion. |

# Appendix H

Air Quality

# Appendix H.1

## Project Inclusion in the IMPO 2035 Regional Transportation Plan / 2012-2015 Indianapolis Regional Transportation Improvement Program and the State Transportation Improvement Program

# Indianapolis Metropolitan Planning Area 2035 Long-Range Transportation Plan – Volume 1

INDY CONNECT

CENTRAL INDIANA'S TRANSPORTATION INITIATIVE

*prepared for*

**Indianapolis Metropolitan Planning Organization**

*prepared by*

**Cambridge Systematics, Inc.**

*with*

HNTB

Approved by:

**Indianapolis Regional Transportation Council, February 16, 2011**
**Madison County Council of Governments, March 25, 2011**
**United States Department of Transportation, April 11, 2011**

| MPO ID # | Sponsor | Facility | Location | Project Description | Funding Period | | | Cost Estimate (YOE) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PE | RW | CN | PE | RW | CN | Total |
| 2210 | Carmel | 131st St. | Keystone Ave. to Hazel Dell Parkway | Widen to 4 lanes divided | 1 | 1 | 2 | $2,402,000 | $3,603,000 | $14,280,000 | **$20,285,000** |
| 2213 | Carmel | Towne Rd. | 96th St. to 116th St. | Widen to 4 lanes divided | 1 | 1 | 2 | $2,257,880 | $3,386,820 | $13,423,200 | **$19,067,900** |
| 2216 | Carmel | 96th St. | Haverstick Dr. to Priority Way West Dr. | Widen 4 to 6 lanes divided, with intersection improvements and multi-use paths | 1 | 1 | 2 | $600,500 | $2,402,000 | $14,994,000 | **$17,996,500** |
| 2217 | Carmel | 96th St. | Priority Way West Dr to White River Bridge | Widen 4 to 6 lanes divided | 2 | 2 | 2 | $5,140,800 | $12,852,000 | $25,704,000 | **$43,696,800** |
| 6101 | DPW | 10th St. | Raceway Rd. to Tomahawk Tr. | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $876,730 | $1,801,500 | $12,994,800 | **$15,673,030** |
| 6102 | DPW | 79th St. | Fall Creek Rd. to Sunnyside Rd. | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $648,012 | $1,006,198 | $10,759,980 | **$12,414,189** |
| 6104 | DPW | Georgetown Rd. | 86th St. to 62nd St. | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $1,231,025 | $3,122,600 | $20,706,000 | **$25,059,625** |
| 6107 | DPW | 21st St. | Post Rd. to Mitthoeffer Rd. | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $756,630 | $1,026,855 | $6,783,000 | **$8,566,485** |
| 6108 | DPW | 56th St. | Guion Rd. to Kessler Blvd. | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $709,791 | $1,152,960 | $7,568,400 | **$9,431,151** |
| 6109 | DPW | 56th St. | Raceway Rd. to Dandy Trail Rd. | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $895,946 | $2,041,700 | $16,707,600 | **$19,645,246** |
| 6110 | DPW | 56th St. | Dandy Trail Rd. to I-465 | Widen 2 to 4 lanes divided | 1 | 1 | 2 | $425,154 | $912,760 | $6,140,400 | **$7,478,314** |
| 6117 | DPW | Dandy Trail Rd. | Crawfordsville Rd. to 34th St. | Widen 2 to 4 lanes | 1 | 1 | 2 | $243,803 | $667,756 | $11,138,400 | **$12,049,959** |
| 6122 | DPW | Southport Rd. | Bluff Rd. to Meridian Rd. (SR 135) | Widen 2 to 4 lane divided | 1 | 1 | 2 | $769,841 | $1,068,890 | $7,282,800 | **$9,121,531** |
| 6123 | DPW | Southport Rd. | Meridian St. (SR 135) to East St. (US 31) | Widen 2 to 4 lane divided | 1 | 1 | 2 | $620,917 | $595,696 | $3,855,600 | **$5,072,213** |
| 6149 | DPW | Payne Rd. | 79th St to 71st St | New 2 lane on 4 lane divided ROW | 1 | 1 | 2 | $384,320 | $697,781 | $2,713,200 | **$3,795,301** |
| 6156 | DPW | Zionsville Rd. | 96th St. to 86th St. | Widen 2 lanes to 4 lanes divided | 1 | 1 | 2 | $463,586 | $986,021 | $6,568,800 | **$8,018,407** |
| 5201 | Greenwood | (E-W Corridor) Worthsville Rd. | I-65 to US 31 | Widen 2 lane to 4 lane divided | 1 | 1 | 2 | $1,681,400 | $1,201,000 | $25,704,000 | **$28,586,400** |
| 2105 | Hamilton County | 206th St. | Hague Rd/Carrigan Rd to SR 19 | Widen 2 lanes to 4 lanes | 1 | 1 | 2 | $780,650 | $1,801,500 | $9,996,000 | **$12,578,150** |
| 2110 | Hamilton County | 146th St. (Phase II) | Ditch Rd. to Towne Rd. | Widen 2 lanes to 4 lanes | 1 | 1 | 2 | $840,700 | $2,041,700 | $10,746,031 | **$13,628,431** |

| MPO ID # | Sponsor | Facility | Location | Project Description | Funding Period | | | Cost Estimate (YOE) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | PE | RW | CN | PE | RW | CN | Total |
| 4203 | Avon | CR 100 S (Morris St.) | Ronald Reagan Pkwy to SR 267 | Widen 2 lane to 4 lane boulevard | 3 | 3 | 3 | $1,855,620 | $5,490,000 | $30,927,000 | **$38,272,620** |
| 4303 | Brownsburg | CR 625 E / Witham Rd. | W. Northfield Dr. to CR 800 N | New alignment and new bridge over I-74 | 3 | 3 | 3 | $814,716 | $1,006,500 | $11,638,800 | **$13,460,016** |
| 2211 | Carmel | 96th St. | Intersection with Keystone Ave. | New Interchange/ Grade-Separated Roundabout | 3 | 3 | 3 | $7,320,000 | $20,130,000 | $54,900,000 | **$82,350,000** |
| 2214 | Carmel | Spring Mill Rd. | 96th St. to 116th St. | Widen 2 to 4 lanes divided | 3 | 3 | 3 | $3,660,000 | $5,490,000 | $18,300,000 | **$27,450,000** |
| 2215 | Carmel | 131st St. | Hazel Dell Parkway to River Ave. | Widen 2 to 4 lanes divided | 3 | 3 | 3 | $2,470,500 | $3,705,750 | $12,352,500 | **$18,528,750** |
| 6106 | DPW | Township Line Rd. | 79th St. to 71st St. (WestLane Rd.) | New roadway, 4 lane divided | 3 | 3 | 3 | $512,400 | $1,251,720 | $9,424,500 | **$11,188,620** |
| 6111 | DPW | 79th St. | Georgetown Rd. to Michigan Rd. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $1,024,800 | $2,196,000 | $12,169,500 | **$15,390,300** |
| 6112 | DPW | 79th St. | Michigan Rd. to Township Line Rd. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $1,079,700 | $1,756,800 | $9,699,000 | **$12,535,500** |
| 6114 | DPW | Bluff Rd. | West St. to Troy Ave. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $774,090 | $938,790 | $7,759,200 | **$9,472,080** |
| 6115 | DPW | Cooper Rd. | Michigan Rd. to 62nd St. | New 2 lane road on 4 lane divided ROW | 3 | 3 | 3 | $448,350 | $1,409,100 | $7,823,250 | **$9,680,700** |
| 6116 | DPW | County Line Rd. | SR 37 to Morgantown Rd. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $732,000 | $640,500 | $3,568,500 | **$4,941,000** |
| 6118 | DPW | Girls School Rd. | Rockville Rd. to 21st St. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $1,921,500 | $3,294,000 | $20,496,000 | **$25,711,500** |
| 6124 | DPW | Thompson Rd. | High School Rd. to Mann Rd. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $1,352,370 | $2,196,000 | $13,176,000 | **$16,724,370** |
| 6125 | DPW | Township Line Rd. | 96th St. to 79th St. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $1,332,240 | $3,294,000 | $21,594,000 | **$26,220,240** |
| 6126 | DPW | 71st St. | Georgetown Rd. to Michigan Rd. | Widen 2 lane to 4 lane divided | 3 | 3 | 3 | $2,415,600 | $3,477,000 | $20,862,000 | **$26,754,600** |
| 6131 | DPW | Allisonville Rd. | 96th St. to 86th St. | Widen 4 lane divided to 6 lane divided | 3 | 3 | 3 | $1,180,350 | $2,196,000 | $17,202,000 | **$20,578,350** |

# Indianapolis Metropolitan Planning Area
# 2035 Long-Range Transportation Plan

## Volume II

# Air Quality
# Conformity Determination Report
# (CDR)

**Ozone Attainment Maintenance Area**

Boone, Hamilton, Hancock, Hendricks, Johnson, Madison, Marion, Morgan, and Shelby Counties

**Particulate Matter 2.5 Nonattainment Area**

Hamilton, Hendricks, Johnson, Marion, and Morgan Counties

*Indianapolis Metropolitan Planning Organization*
*Madison County Council of Governments*
*Indiana Department of Transportation*

*prepared by:*

**Indianapolis Metropolitan Planning Organization**
200 East Washington Street, Suite 1922
Indianapolis, Indiana 46204

Approved by:

**Indianapolis Regional Transportation Council, February 16, 2011**
**Madison County Council of Governments, March 25, 2011**
**United States Department of Transportation, April 11, 2011**

The following tables show the emissions budgets and forecasts for the model years 2010, 2015, 2025, and 2035 for ozone and particulate matter. Ozone emissions for year 2020 are also shown and compared to the 2020 ozone budget[3].

| Ozone | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Pollutant | 2010 | | 2015 | | 2020 | | 2025 | | 2035 | |
| | Budget | Estimated | Budget | Forecast | Budget | Forecast | Budget | Forecast | Budget | Forecast |
| VOC (tons/day) | 54.32 (2006 budget) | **41.72** | 54.32 (2006 budget) | **29.81** | 29.52 (2020 budget) | **24.87** | 29.52 (2020 budget) | **24.39** | 29.52 (2020 budget) | **26.94** |
| NOx (tons/day) | 106.19 (2006 budget) | **81.30** | 106.19 (2006 budget) | **48.54** | 35.69 (2020 budget) | **32.99** | 35.69 (2020 budget) | **28.40** | 35.69 (2020 budget) | **26.93** |

| PM 2.5 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Pollutant | 2010 | | 2015 | | 2025 | | 2035 | |
| | Budget | Estimated | Budget | Forecast | Budget | Forecast | Budget | Forecast |
| PM 2.5 (tons/year) | 518.43 (2009 standard) | **390.71** | 518.43 (2009 standard) | **289.67** | 518.43 (2009 standard) | **260.54** | 518.43 (2009 standard) | **279.92** |
| NOx (tons/year) | 28537.23 (2009 standard) | **20,255.10** | 28537.23 (2009 standard) | **12,249.66** | 28537.23 (2009 standard) | **7,245.74** | 28537.23 (2009 standard) | **6,950.22** |

# 4 CONCLUSION

The modeling and analysis with respect to both Ozone and Particulate Matter 2.5 demonstrates that implementation of the 2035 Long Range Transportation Plan and 2012-2015 Indianapolis Regional Transportation Improvement Program will attain emissions levels of regulated pollutants (VOC and NOx) and their precursors in future years within the prescribed budgets and therefore conforms to federal air quality requirements.

Additional air quality conformity documentation will be provided on the MPO's website at: http://www.indympo.org/Plans/Regional/Pages/home.aspx

# 5 INTERAGENCY CONSULTATION GROUP

[3] 40 CFR 93.118(b)

Air Quality Conformity Process for the area has taken place since October 2008. The following agencies and individuals have been instrumental in reviewing the processes and procedures used to demonstrate Air Quality Conformity.

**Federal Highway Administration**
Larry Heil

**Federal Transit Administration Region 5**
Reggie Arkell

**Indiana Dept. of Environmental Management- Office of Air Quality**
Shawn Seals, Brian Callahan

**U.S. Environmental Protection Agency Region 5**
Patricia Morris

**Indianapolis Public Transportation Corporation / IndyGo**
Mike Terry

Staff members representing the jurisdictions within or partially within the 5-County nonattainment area are:

**Indiana Department of Transportation**
Roy Nunnally, Steve Smith, Randy Walter, Jay Mitchell, Frank Baukert, Laurence Brown

**Indianapolis MPO**
Philip Roth, Steve Cunningham, Andy Swenson, Stephanie Belch, Tom Beck, Erika Hinshaw, Catherine Kostyn.

**Madison County Council of Governments (Anderson MPO)**
Jerold Bridges, Bruce Burnett, Peter Mitchell

**Indianapolis Office of Sustainability**
Karen Haley

**City of Indianapolis**
Monica Dick

# 6 APPROVAL TIMELINE

In order to be eligible for conformity finding by the U.S. Department of Transportation, approval of the 2035 LRTP and Air Quality Conformity Analysis will first be required from the both Metropolitan Planning Organizations within or overlapping the Ozone attainment maintenance area and PM 2.5 nonattainment

U.S. Department
of Transportation

**Federal Transit Administration**
Region V
200 West Adams St., Suite 320
Chicago, IL 60606-5253

**Federal Highway Administration**
Indiana Division
575 N. Pennsylvania St., Rm 254
Indianapolis, IN 46204-1576

July 11, 2011

Mr. Michael Cline, Commissioner
Indiana Department of Transportation
100 North Senate Avenue
Indianapolis, IN 46204

Dear Commissioner. Cline:

On June 20, 2011, the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) received the Indiana Department of Transportation's (INDOT's) FY 2012-2015 Statewide Transportation Improvement Program (STIP). The INDOT is proposing to incorporate the following Metropolitan Planning Organizations' (MPOs') Transportation Improvement Programs (TIPs) into the new STIP:

| Metropolitan Planning Organization | TIP COVERAGE |
|---|---|
| Madison County Council of Governments * | 2012-2015 |
| Bloomington/Monroe County Metropolitan Planning Organization | 2010-2013 |
| Columbus Area Metropolitan Planning Commission | 2012-2016** |
| Evansville Metropolitan Planning Commission * | 2010-2013 |
| Northeastern Indiana Regional Coordinating Council * | 2012-2015 |
| Indianapolis Metropolitan Planning Organization * | 2012-2015 |
| Kokomo-Howard County Governmental Coordinating Council | 2011-2014 |
| Area Plan Commission of Tippecanoe County | 2012-2015 |
| Kentuckiana Regional Planning and Development Agency * | 2011-2015 |
| Delaware-Muncie Metropolitan Plan Commission * | 2012-2015 |
| Northwestern Indiana Regional Planning Commission * | 2009-2013 |
| Michiana Area Council of Governments * | 2012-2015 |
| West Central Indiana Economic Development District * | 2012-2015 |
| Ohio-Kentucky-Indiana Regional Council of Governments * | 2012-2015 |

* *FHWA-FTA conformity findings have been issued for these TIPs per 40 CFR 93*

** *FY 2016 projects shown in the Columbus Area's TIP are beyond the timeframe of the FY 2012-2015 STIP and therefore are not included.*

Air quality conformity has been found to be acceptable and funding targets used for financial constraint were reviewed in advance of the STIP being submitted for approval. The federal agencies appreciate the opportunity to have this advanced review. In the area of public involvement, INDOT continued to use its web-site to be a primary method to collect public comments on the STIP. INDOT continues to receive more comments than in previous years. These comments are being summarized and included in the final STIP document.

This year, INDOT also approved many of the MPOs' TIPs on the same State fiscal years as the STIP. This helps to communicate fiscal constraint and helps to manage public expectations. However, new TIPs for the Bloomington Monroe County Metropolitan Planning Organization and the Northwest Indiana Regional Planning Commission areas have recently been adopted by their respective policy boards. These are not yet included in the FY 2012-2015 STIP. INDOT is reminded to take action on these documents within a reasonable time.

As you know, FHWA and FTA are both required to certify the State is in substantial compliance with all federal planning requirements when taking action to approve a STIP document. The last time the STIP document was approved, the federal agencies conditionally approved the FY 2010-2013 STIP document pending a corrective action. That corrective action was for effective planning procedures and agreements between the MPOs, transit operators, and the INDOT offices to clearly identify how key planning tasks are to be coordinated and completed, and who internally at INDOT is responsible for these activities.

INDOT provided a status of its efforts to update its planning procedures. However, FHWA notified INDOT on March 10, 2011 that steps taken to date were incomplete and the corrective action would remain until the following final documents are provided:

- New State/MPO/Transit Planning Agreements;
- INDOT's "MPO Manual" or handbook that describes how key products (i.e. Metropolitan Transportation Plans, Transportation Improvement Programs, Annual Listings of Obligated Projects, etc.) are developed in cooperation with INDOT, and which identifies with whom these documents are prepared and when they will be approved by the State;
- Revisions to the Local Public Agencies Manual to address the role of MPOs in the LPA project development process.

Until final procedures are completed, FHWA and FTA are conditionally approving the FY 2012-2015 STIP with this pending corrective action. Please contact Joyce Newland, Planning Program Manager, at 317-226-5353/ joyce.newland@dot.gov, to schedule a meeting no later

than the end of this month to discuss the timeline of the remaining corrective actions.

Sincerely,

Robert F. Tally Jr., P.E.
Division Administrator

cc: transmitted by e-mail
Marisol Simón, FTA Region 5
Robert Zier, INDOT
Jim Stark, INDOT

**INDIANA DEPARTMENT OF TRANSPORTATION**
*Driving Indiana's Economic Growth*

100 North Senate Avenue
Room N955
Indianapolis, Indiana 46204

PHONE: (317) 232-5650

**Mitchell E. Daniels, Jr., Governor**
**Michael B. Cline, Commissioner**

May 26, 2011

Ms. Lori Miser, Executive Director
Indianapolis Metropolitan Planning Organization
City-County Building, Room 1922
200 East Washington Street
Indianapolis, Indiana 46204

SUBJECT: FY 2012-2015 Transportation Improvement Program for the Indianapolis Metropolitan Planning Area

Dear Ms. Miser,

The Indiana Department of Transportation has completed its review of the FY 2012-2015 Indianapolis Regional Transportation Improvement Program (IRTIP) for the Indianapolis Metropolitan Planning Area. State and locally initiated transportation projects were reviewed for accuracy and compliance under the Safe, Accountable, Flexible, Efficient Transportation Equity Act, a Legacy for Users (SAFETEA-LU) and the Clean r Act Amendments of 1990.

It is my pleasure to inform you that on behalf of Governor Mitchell E. Daniels, Jr., I approve the FY 2012-2015 Indianapolis Regional Transportation Improvement Program (IRTIP). This document will serve as support for the local and INDOT projects in your area and will be included by reference in the FY 2012-2015 State Transportation Improvement Program (STIP).

Sincerely,

Michael B. Cline
Commissioner

Cc: Robert Zier
James Stark
Larry Heil, FHWA
Reginald Arkell, FTA
Brandye Hendrickson
Audra Blasdel
Steve Smith
Larry Buckel
Justin Sergent
Jeanette Wilson
file

Last Amended: August 17, 2011

# 2012-2015 INDIANAPOLIS REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM AND AMENDMENTS

Prepared by the Indianapolis Metropolitan Planning Organization

www.indympo.org.

# TABLE 1: AMENDED
# Group 1 Urban Surface Transportation Program (STP) Projects
(updated 8/17/11)

# Fiscal Year 2012

***Projects in bold are considered regionally significant for air quality purposes.***

| Des. No. | Recipient | Road/Trail Name | Work Description / Phase | Project Length (mi.) | First Added to IRTIP | Total Project Cost | Federal Funds | | Local Matching Funds | $ Estimate to Complete Project |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | STP | Other | | |
| **BRIDGE PROJECTS** | | | | | | | | | | |
| 0810490 | Hancock Co. | CR 200 N | County Bridge No. 59, bridge replacement; CN/CN INS | n/a | Aug-08 | $ 3,200,000 | $ 2,560,000 | $ - | $ 640,000 | n/a |
| 0900011 | Indianapolis DPW | Emerson Ave. | Over Massachusetts Ave. & CSX railroad, bridge rehabilitation; CN/CN INS | n/a | Aug-08 | $ 6,525,000 | $ 5,220,000 | $ - | $ 1,305,000 | n/a |
| **PEDESTRIAN & BICYCLE PROJECTS** | | | | | | | | | | |
| 0810328 | Brooklyn | White Lick Creek | Pedestrian bridge; ROW | n/a | Aug-08 | $ 38,000 | $ 30,400 | $ - | $ 7,600 | n/a |
| 0810328 | Brooklyn | White Lick Creek | Pedestrian bridge; CN | n/a | Aug-08 | $ 810,000 | $ 648,000 | $ - | $ 162,000 | n/a |
| 0810329 | Cicero | Morse Reservoir | Pedestrian walkway over causeway; CN/CN INS | 0.36 | Aug-08 | $ 2,538,175 | $ 2,030,540 | $ - | $ 507,635 | n/a |
| 1172509 | Franklin | SR 44 | Sidewalk & Trail from Jim Black Rd. to Westview Dr.; pedestrian enhancement; PE | n/a | Aug-11 | $ 1,100,000 | $ - | $ - | $ 1,100,000 | n/a |
| 0810326 | Hamilton Co. | Monon Trail | Pedestrian bridge over 146th St.; CN/CN INS | n/a | Aug-08 | $ 3,120,000 | $ 2,496,000 | $ - | $ 624,000 | n/a |
| 0401188 | Indianapolis DPR | White River South Greenway | Trail, pedestrian enhancement using STP & TE funds; CN | n/a | Pre-07 | $ 2,090,651 | $ 458,953 | $1,213,568 | $ 418,130 | n/a |
| **ROAD & HIGHWAY PROJECTS** | | | | | | | | | | |
| 0810322 | Beech Grove | Main St. | Emerson Ave. to 13th, road reconstruction; CN/CN INS | 0.77 | Aug-08 | $ 5,820,150 | $ 4,656,120 | $ - | $ 1,164,030 | n/a |
| **0710288** | **Boone & Hendricks Co.** | **Ronald Reagan Pkwy** | **From Hendricks CR 600N to I-65 in Boone Co., new 4 lane roadway on new alignment; PE** | **6.87** | **Nov-09** | **$ 3,400,000** | **$ -** | **$ -** | **$ 3,400,000** | **$ 40,575,144** |
| **1006551** | **Brownsburg** | **W. Northfield Dr.** | **Phase 1: East entrance at Brownsburg Station west to US 136, road widening, 2-4 lanes; CN/CN INS** | **1.07** | **Aug-08** | **$ 5,000,000** | **$ 4,000,000** | **$ -** | **$ 1,000,000** | **n/a** |
| **0200705** | **Brownsburg** | **E. Northfield Dr.** | **From 56th St. southeast to US 136, existing roadway capacity improvement; CN/CN INS** | **1.61** | **Aug-11** | **$ 6,000,000** | **$ 4,800,000** | **$ -** | **$ 1,200,000** | **n/a** |
| **0901562** | **Carmel** | **96th St.** | **At Keystone Ave., interchange safety and capacity enhancements; PE** | **n/a** | **Feb-10** | **$ 3,400,000** | **$ -** | **$ -** | **$ 3,400,000** | **$ 78,000,000** |
| **0901562** | **Carmel** | **96th St.** | **At Keystone Ave., interchange safety and capacity enhancements; ROW** | **n/a** | **Feb-10** | **$ 23,000,000** | **$ -** | **$ -** | **$23,000,000** | |
| 0200757 | Franklin | Main St. | Phase 1: Jefferson to 120; N of Graham Rd. road rehab; CN/CN INS (including 1172345 for $412,500 of locally funded "z items") | 0.4 | Pre-07 | $ 4,212,500 | $ 3,040,000 | $ - | $ 1,172,500 | n/a |
| 0200757 | Franklin | Main St. | Phase 2: from 120' N of Graham Rd. to US 31, road rehab.; CN/CN INS | 1.35 | Pre-07 | $ 4,400,000 | $ 3,520,000 | $ - | $ 880,000 | n/a |
| 0900012 | Hancock Co. | CR 600 W | At County Road 300 North, intersection improvement; CN/CN INS | n/a | Nov-09 | $ 2,910,075 | $ 2,328,060 | $ - | $ 582,015 | n/a |
| **0600364** | **Indianapolis DPW** | **Emerson Ave.** | **Shelbyville Rd. to I-65, road widening, 2-4 lanes; CN/CN INS** | **1.9** | **Aug-08** | **$ 11,500,000** | **$ 9,200,000** | **$ -** | **$ 2,300,000** | **n/a** |
| **0810498** | **Indianapolis DPW** | **Georgetown Rd.** | **56th Street to 62nd Street, roadway widening, 2-4 lanes; CN/CN INS** | **1.02** | **Aug-08** | **$ 7,000,000** | **$ 5,600,000** | **$ -** | **$ 1,400,000** | **n/a** |
| 0810323 | Indianapolis DPW | Edgewood Ave. | At McFarland Rd., intersection improvement, new signal; CN/CN INS | n/a | Aug-08 | $ 736,350 | $ 589,080 | $ - | $ 147,270 | n/a |
| 0810324 | Indianapolis DPW | Edgewood Ave. | At Gray Rd., intersection improvement, new signal; CN/CN INS | n/a | Aug-08 | $ 898,650 | $ 718,920 | $ - | $ 179,730 | n/a |
| 0810516 | Johnson Co. | CR 144 | At Whiteland Road, intersection improvement; CN/CN INS | n/a | Aug-08 | $ 1,500,000 | $ 1,200,000 | $ - | $ 300,000 | n/a |
| **0400146** | **Plainfield** | **NE Perimeter Pkwy** | **Township Line Rd. to Dan Jones Rd. to US 40, roadway widening; CN & CN INS* (including bridge replacements 0400987 & 0400988 on Township Line Rd. over Clarks Creek)** | n/a | **Pre-07** | **$ 8,779,290** | **$ 7,023,432** | **$ -** | **$ 1,755,858** | **n/a** |
| 0090100 | Southport | Anniston Dr. | Walnut St. to McFarland Rd., road rehabilitation; CN | 0.38 | Pre-07 | $ 1,050,000 | $ 840,000 | $ - | $ 210,000 | n/a |
| 1172450 | Speedway | 10th St. | Main St. to Little Eagle Creek, realignment, roadway reconstruction/rehabilitation, $5 mil. state STP funds; CN/CN INS | 0.5 | May-11 | $ 11,500,000 | $ 3,500,000 | $5,000,000 | $ 3,000,000 | n/a |
| **STATE-FUNDED STP PROJECTS** (not part of MPO's Group 1 STP allocation) | | | | | | | | | | |
| 1005481 | Indianapolis DPW | University Blvd. | Near Blackford St. in IUPUI Campus; new road construction; CN | 0.1 | May-11 | $ 800,000 | $ 800,000 | $ - | $ - | n/a |
| | | | | | **FY 2012 TOTAL** | **$120,915,666** | **$64,768,965** | **$6,213,568** | **$49,933,133** | **$ 118,575,144** |

***Project Phase Abbreviations: PE - Preliminary Engineering ROW - Right of Way Acquisition CN - Construction CN INS - Construction Inspection***

| | LPA | DES # | Road/Trail | Location/Description | Project Type | Phase | Phase Fiscal Year | Funding | Total Amount | Fed % | Federal $ | Loc % | Local $ | IRTIP ACTION TAKEN | Revised Table # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CURRENT | Indianapolis DPW | 1173166 | | | | | | | | | | | | Add CN & CN INS to FY 2012 | 6 |
| NEW | | | Castleton | Signal upgrade at various intersections | Intersection or Intersection Groups | CN & CN INS | FY 2012 | HSIP | $ 638,110 | 90% | $ 574,299 | 10% | $ 63,811 | | |
| CURRENT | Indianapolis DPW | 1173167 | | | | | | | | | | | | Add CN & CN INS to FY 2012 | 6 |
| NEW | | | Various | Pedestrian crossing upgrades in Indianapolis | Pedestrian Enhancement | CN & CN INS | FY 2012 | HSIP | $ 310,200 | 90% | $ 279,180 | 10% | $ 31,020 | | |
| CURRENT | Indianapolis DPW | 1173168 | | | | | | | | | | | | Add CN & CN INS to FY 2012 | 6 |
| NEW | | | Various | Push button pedestrian signals at various locations on 42nd, 46th & 49th Sts. | Pedestrian Enhancement | CN & CN INS | FY 2012 | HSIP | $ 114,224 | 90% | $ 102,802 | 10% | $ 11,422 | | |
| CURRENT | Whitestown | 1173288 | | | | | | | | | | | | Add PE to FY 2012 | 6 |
| NEW | | | Various | Sign inventory and replacement | Other | PE | FY 2012 | HSIP | $ 48,700 | 90% | $ 43,830 | 10% | $ 4,870 | | |
| CURRENT | Whitestown | 1173288 | | | | | | | | | | | | Add CN & CN INS to FY 2012 | 6 |
| NEW | | | Various | Sign inventory and replacement | Other | CN & CN INS | FY 2012 | HSIP | $ 51,300 | 90% | $ 46,170 | 10% | $ 5,130 | | |
| | **6/27/2011** | | | | | | | | | | | | | | |
| CURRENT | Hamilton Co. | 1006061 | 206th St. | At Overdorf Rd. | Intersection or Intersection Groups | CN & CN INS | FY 2012 | HSIP | $ 803,500 | 90% | $ 723,150 | 10% | $ 80,350 | Reduce CN/CN INS funding and transfer to ROW | 6 |
| NEW | | | | | | | | | $ 763,500 | 90% | $ 687,150 | 10% | $ 76,350 | | |
| CURRENT | Hamilton Co. | 1006061 | | | | | | | | | | | | Add ROW phase, funded with HSIP transferred from CN/CN INS phase | 6 |
| NEW | | | 206th St. | At Overdorf Rd. | Intersection or Intersection Groups | ROW | FY 2012 | HSIP | $ 40,000 | 90% | $ 36,000 | 10% | $ 4,000 | | |
| | **7/29/2011** | | | | | | | | | | | | | | |
| CURRENT | Carmel | 0901562 | 96th St. | At Keystone Ave., interchange, safety & capacity enhancements | Intersection or Intersection Groups | PE | FY 2012 | Other | $ 3,400,000 | 0% | $ - | 100% | $ 3,400,000 | Move PE from '09-'12 TIP to '12-'15 TIP | 1 |
| NEW | | | | | | | | | | | | | | | |
| CURRENT | Carmel | 0901562 | 96th St. | At Keystone Ave., interchange, safety & capacity enhancements | Intersection or Intersection Groups | ROW | FY 2012 | Other | $ 23,000,000 | 0% | $ - | 100% | $ 23,000,000 | Move ROW from '09-'12 TIP to '12-'15 TIP | 1 |
| NEW | | | | | | | | | | | | | | | |
| | **8/1/2011** | | | | | | | | | | | | | | |
| CURRENT | Greenwood | 1006041 | Various | Systematic sign inventory and replacement | Other | CN | FY 2011 | HSIP | $ 360,000 | 90% | $ 324,000 | 10% | $ 36,000 | Move CN from FY 2011 to FY 2012, reduce funds & transfer to PE | 6 |
| NEW | | | | | | | FY 2012 | | $ 200,000 | 90% | $ 180,000 | 10% | $ 20,000 | | |
| CURRENT | Greenwood | 1006041 | | | | | | | | | | | | Add PE to FY 2012 with funds transferred from CN | 6 |
| NEW | | | Various | Systematic sign inventory and replacement | Other | PE | FY 2012 | HSIP | $ 160,000 | 90% | $ 144,000 | 10% | $ 16,000 | | |

# Appendix I

Noise Analysis

# Appendix I.1

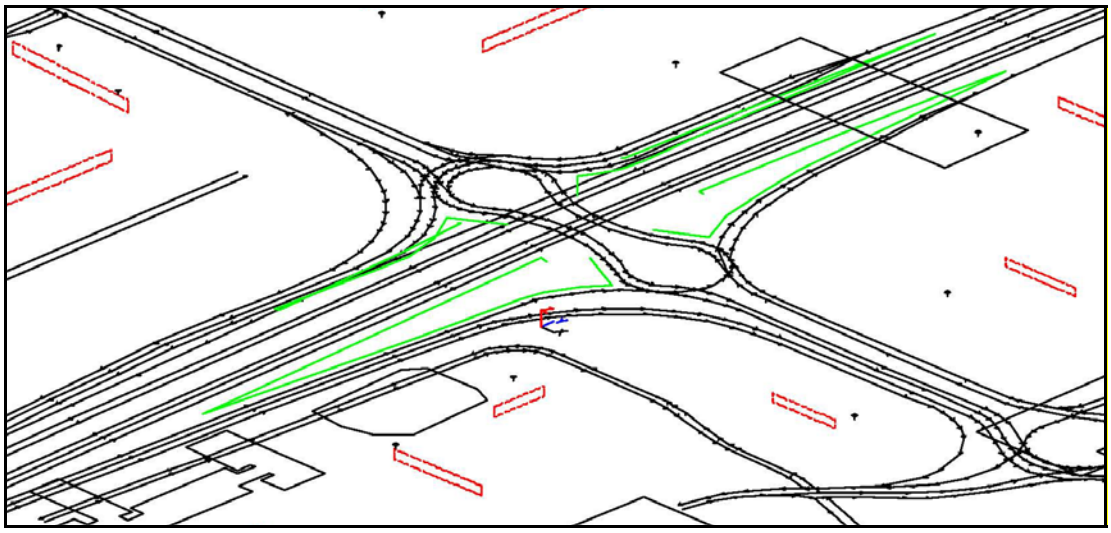
# Noise Analysis Report

# NOISE ANALYSIS REPORT

## 96TH STREET AND KEYSTONE AVENUE PROPOSED INTERCHANGE

## City of Carmel
## Hamilton and Marion Counties, Indiana

## Des. # 0901562



*Prepared for the:*
*City of Carmel*

*March 2011*

RW ARMSTRONG™

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# EXECUTIVE SUMMARY

This analysis was developed to determine the traffic noise levels and potential traffic noise impacts associated with the proposed interchange at the intersection of 96th Street and Keystone Avenue in Carmel, Hamilton and Marion Counties, Indiana. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from Haverstick Road to Priority Way West Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street for a total project length of 7,383 ft. (1.4 miles).

The proposed project is considered a Type I project as it involves the construction of an interchange at an existing at-grade intersection. As such, the completion of a noise analysis is required.

In accordance with 23 CFR Part 772 – *Procedures for Abatement of Highway Noise and Construction Noise* and the Indiana Department of Transportation (INDOT) Traffic Noise Policy (February 2007), existing and future year noise levels were predicted using the Federal Highway Administration (FHWA) *Traffic Noise Model (TNM) Program Version 2.5*.

The analysis found that design year (2031) noise levels for the build alternative would impact a total of 26 receptors, 23 of which are Category B land uses and three are Category C land uses. These 26 receptors were determined to be impacted as noise emissions under the build alternative were found to approach or exceed FHWAs Noise Abatement Criteria (NAC). No receptor modeled was predicted to have an increase in noise by 15 dBA or more over the existing conditions.

Five barriers were evaluated for feasibleness and reasonableness in the residential areas north of the interchange. More specifically, barriers were considered in the area between Keystone Avenue and the following subdivisions / institutions:

- Lighthouse Tabernacle Church
- Lakewood Gardens (west side of Keystone Avenue)
- Lakewood Gardens (east side of Keystone Avenue)
- Brooks Bend
- Shadybrook

The results of the barrier analysis determined that the barriers associated with the Lighthouse Tabernacle Church and Brooks Bend Subdivision were not feasible as a majority of the first row receptors (50% + 1) were unable to attain at least a 7 dBA reduction in noise from its insertion. Therefore, these two barriers were not advanced for further consideration. However, the insertion of barriers adjacent to the Shadybrook Subdivision, Lakewood Gardens Subdivision (west side of Keystone Avenue) and Lakewood Gardens Subdivision (east side of Keystone Avenue) were determined to be feasible, but not reasonable as an acceptable cost per benefitted receptor could not be attained. Therefore, these three barriers were also dismissed from further consideration. No further investigation of traffic noise impacts or mitigation is recommended for the proposed new interchange project.

# 1.0 INTRODUCTION

## 1.1 Purpose of the Analysis

The purpose of this noise analysis is to identify, discuss and assess existing and future traffic noise levels associated with the proposed interchange at 96th Street and Keystone Avenue. The analysis was performed in accordance with the current Indiana Department of Transportation (INDOT) Traffic Noise Policy (February 2007).

This action is a Type I Project as it includes the construction of an interchange, which will substantially change the horizontal and vertical alignment of the affected roadways. As such, a formal noise analysis was performed using the Federal Highway Administration's (FHWA), *Traffic Noise Modeling (TNM) version 2.5*. *TNM 2.5* was utilized to generate the worst-case set of decibel A-weighted (dBA) levels to identify potential impacts along the proposed facility and consider potential mitigation strategies for impacted receptors.

## 1.2 Project Description

The proposed project is located in southwestern Hamilton County and northwestern Marion County and the southern portion of the City of Carmel. Specifically, the project is located in Sections 7, 8, 17 and 18, Township 17 North, Range 4 East of Clay and Washington Townships as shown on the attached 7.5 minute Fishers USGS quadrangle map. The south-north leg of the proposed project would extend along Keystone Avenue from a point north of the northern I-465 ramp terminals to a point approximately 380 ft. north of 99th Street. The west-east leg of the proposed project would extend from Haverstick Road to Priority Way Drive. The estimated length of the proposed project along Keystone Avenue is 4,422 ft. (0.83 mile) and 2,961 ft. (0.56 mile) along 96th Street for a total project length of 7,383 ft. (1.4 miles).

### 1.2.1 Existing Conditions:

The existing at-grade signalized intersection of 96th Street and Keystone Avenue is located in an area predominated by urbanized land uses, such as various commercial establishments and residences. Automotive dealers, restaurants and small office parks align both 96th Street and Keystone Avenue throughout the project area. West of the Haverstick Road and 96th Street intersection and north of the Keystone Avenue and 98th Street intersection the land use transitions to residential.

The typical section of Keystone Avenue as it approaches the 96th Street intersection (southbound traffic) is comprised of two through lanes with a paved outside shoulder. Designated left and right turn lanes are present at the intersection. Designated left and right turn lanes are also provided at the 99th Street and the 98th Street intersections. Continuing southbound on Keystone Avenue, past the 96th Street intersection, two through lanes are provided. Approaching the I-465 interchange, the pavement width expands to provide a designated right turn lane and dual left turn lanes.

Entering the 96th Street intersection form the south (northbound traffic), the typical section of Keystone Avenue consists of four travel lanes bordered by a paved outside shoulder. At the 96th Street intersection, the outside travel lane drops to a designated

right turn lane. Additionally, a designated left turn lane is provided. Continuing north on Keystone Avenue away from the 96th Street intersection, three travel lanes are maintained until a point north of 99th Street where the inside lane merges into the center lane providing two lanes of traffic. Designated left and right turn lanes are present at the 98th Street intersection and the 99th Street intersection. However, it should be noted that the City of Carmel, under a separate project, is presently constructing interchanges along Keystone Avenue at 106th Street and 126th Street. As part of the 106th Street interchange, the median access to 99th Street will be removed.

Northbound and southbound traffic along the north leg is separated by a grassy median, while along the south leg, northbound and southbound traffic is divided by a paved median with a barrier wall. Drainage along both legs of Keystone Avenue is conveyed via side ditches. The inside lanes of Keystone Avenue drain into stormwater inlets located in the median. The posted speed limit along Keystone Avenue is 45 mph.

The west and east legs of 96th Street consists of two travel lanes in each direction with curb and gutter. Approaching the Keystone Avenue intersection from the west, a designated left turn lane is provided. Additionally, at the intersection, the outside travel lane becomes a shared through / right turn lane. West of Whitley Drive, 96th Street is reduced to a two lane section (one lane in each direction). Along the east leg of 96th Street, a two way left turn lane is present between Threel Road and Enterprise Drive. At its intersection with Keystone Avenue, the two way left turn lane transitions to a designated left turn lane for westbound 96th Street. Moreover, the inside through lane becomes a shared through / left turn lane, while the outside through lane converts to a shared through / right turn lane. A designated left turn lane is also provided at the Priority Way intersection for both eastbound and westbound traffic. Drainage along 96th Street is conveyed via side ditches. The posted speed limit along 96th Street is 35 mph.

### 1.2.2 Proposed Improvements:

The project proposes an interchange at the existing at-grade intersection that would elevate the grade of Keystone Avenue over 96th Street (Appendix A.3). Through the interchange, 96th Street traffic would be controlled by a two lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Avenue and vice versa. Keystone Avenue would be comprised of three 12 ft. through lanes for northbound traffic and two 12 ft. through lanes for southbound traffic. The outside lanes of Keystone Avenue would be bordered by paved shoulders with curb and gutter on the outside edge. Northbound and southbound traffic would be separated by a paved median with a barrier wall. Diagonal ramps are proposed in all four quadrants of the interchange and would connect with the teardrop roundabout. Additionally, the existing signal and median at the 98th Street and Keystone Avenue intersection would be removed as part of the project, restricting left turns in all directions. The partial closure of this intersection was a condition of the agreement with the Indiana Department of Transportation (INDOT) relinquishing Keystone Avenue to the City of Carmel.

The west leg of 96th Street would be comprised of four 12 ft. travel lanes (two eastbound and two westbound) bordered by curb and gutter. A raised median would be installed between the interchange and Haverstick Road. The Haverstick Road and 96th Street intersection, which is currently controlled via four way stop, would be modified to include a single lane roundabout. Approach work to the proposed roundabout will be necessary

north and south of the intersection. West of Haverstick Road, 96th Street would be reduced to a two 12 ft. lane cross section. Haver Way would require a slight realignment, approximately 55 ft., to the west to provide the appropriate clearance from the western ramps to Keystone Avenue.

East of the proposed interchange, 96th Street would typically consist of four 12 ft. travel lanes (two eastbound and two westbound) bordered by concrete curb and gutter. Multi-lane roundabouts are proposed at 96th Street's intersection with Aronson Drive and Priority Way West Drive, which are currently controlled by traffic signals. The eastbound and westbound travel lanes would be separated by a raised concrete median between the eastern ramps to Keystone Avenue and Priority Way West Drive. Exiting northbound Keystone Avenue onto eastbound 96th Street, an additional lane is provided on the outside that will drop as a right turn at Aronson Drive. The eastbound section of 96th Street between Keystone Avenue and Aronson Drive would also consist of an additional lane to the inside that will drop at Aronson Drive for northbound traffic at the commercial drive entrance. A designated right turn lane will also be provided at Priority Way West Drive. The project continues approximately 250 ft. east of Priority Way West Drive, where proposed 96th Street will tie in with the existing section. At Aronson Drive, approach work to the proposed roundabout will be necessary north and south of the intersection. Likewise, improvements are necessary to the south approach of Priority Way West Drive.

North of 96th Street at Priority Way West Drive a new north-south connector road is proposed that terminates at 98th Street. The new north-south connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The total length of the north-south connector is approximately 0.3 mile. The intent of the north-south connector is to provide an alternate route to the Keystone Avenue interchange for traffic affected by the partial closure at 98th Street.

The project also proposes an east-west connector paralleling the south side of 96th Street between Aronson Drive and Priority Way West Drive (an estimated length of 0.18 mile). The east-west connector would consist of two 12 ft. travel lanes bordered by a concrete curb and gutter. The east-west connector would accommodate left turning traffic onto 96th Street from commercial sources to the south. Without the east-west connector and using the roundabout at Aronson Drive would not provide sufficient gaps in traffic flow to allow a northbound to westbound movement. Therefore, traffic would be redirected along the east-west connector to the Priority Way West Drive roundabout.

## 2.0 METHODOLOGY AND ASSUMPTIONS

The noise analysis is developed as part of the National Environmental Policy Act (NEPA) environmental documentation for the project. In accordance with 23 Code of Federal Regulations (CFR) Part 772- Procedures for Abatement of Highway Noise and Construction Noise and the INDOT Traffic Noise Policy (February 2007) existing and future year traffic noise levels were predicted using the Federal Highway Administration's (FHWA), *Traffic Noise Modeling (TNM) Version 2.5* software.

## 2.1 Traffic Volumes

This model utilized the 2009 design hourly volume (DHV) traffic to generate the existing noise levels at each receptor. Estimated traffic data used in this analysis were developed as part of a traffic analysis completed by RW Armstrong. Ground counts along the affected roadways were collected in January-February 2008 and in June 2009. Traffic volumes for the design year (2031) were projected using a 1.5% growth rate and are illustrated in the following table.

**TABLE 2-1 DESIGN YEAR (2031) TRAFFIC PROJECTIONS**

| Road | Segment | | PM Peak Volumes | | % Truck |
|---|---|---|---|---|---|
| | Begin | End | 2009 (DHV)* | 2031 (DHV)* | |
| EB 96th St. | to the west | Haverstick Rd. | 428 | 641 | 2 |
| EB 96th St. | Haverstick Rd. | Keystone Ave. | 468 | 616 | 2 |
| EB 96th St. | Keystone Ave. | Aronson Dr. | 1,608 | 2,248 | 7 |
| EB 96th St. | Aronson Dr. | Priority Way W. | 1,632 | 2,317 | 7 |
| EB 96th St. | Priority Way W. | to the east | 1,522 | 2,068 | 7 |
| WB 96th St. | to the east | Priority Way W. | 987 | 1,161 | 7 |
| WB 96th St. | Priority Way W. | Aronson Dr. | 1,230 | 1,679 | 7 |
| WB 96th St. | Aronson Dr. | Keystone Ave. | 1,303 | 1,572 | 7 |
| WB 96th St. | Keystone Ave. | Haverstick Rd. | 468 | 693 | 2 |
| WB 96th St. | Haverstick Rd. | to the west | 448 | 596 | 2 |
| NB Keystone Ave. | I-465 | 96th St. | 3,410 | 4,487 | 5 |
| NB Keystone Ave. | 96th St. | 98th St. | 1,976 | 2,599 | 4 |
| NB Keystone Ave. | 98th St. | to the north | 1,989 | 2,618 | 4 |
| SB Keystone Ave. | to the north | 98th St. | 1,743 | 2,075 | 4 |
| SB Keystone Ave. | 98th St. | 96th St. | 1,806 | 2,376 | 4 |
| SB Keystone Ave. | 96th St. | I-465 | 2,769 | 3,644 | 5 |
| NB Haverstick Rd. | to the south | 96th St. | 8 | 12 | 0 |
| NB Haverstick Rd. | 96th St. | to the north | 50 | 137 | 0 |
| SB Haverstick Rd. | to the north | 96th St. | 30 | 106 | 0 |
| SB Haverstick Rd. | 96th St. | to the south | 2 | 6 | 0 |
| NB Aronson Dr. | to the south | 96th St. | 188 | 105 | 3 |
| NB Aronson Dr. | 96th St. | to the north | 49 | 67 | 3 |
| SB Aronson Dr. | to the north | 96th St. | 87 | 150 | 3 |
| SB Aronson Dr. | 96th St. | to the south | 128 | 169 | 3 |
| NB Priority Way W. | to the south | 96th St. | 345 | 522 | 1 |
| NB Priority Way W. | 96th St. | 98th St. | -- | 116 | 1 |
| SB Priority Way W. | 98th St. | 96th St. | -- | 167 | 1 |
| SB Priority Way W. | 96th St. | to the south | 228 | 304 | 1 |
| EB East-West Con. | Aronson Rd. | Priority Way W. | -- | 123 | 2 |
| WB East-West Con. | Priority Way W. | Aronson Rd. | -- | 0 | 0 |
| EB 98th St. | Haverstick Rd. | Keystone Ave. | 74 | 35 | 0 |
| EB 98th St. | Keystone Ave. | Priority Way W. | 88 | 39 | 0 |
| EB 98th St. | Priority Way W. | to the east | 88 | 118 | 0 |
| WB 98th St. | to the east | Priority Way W. | 155 | 195 | 0 |
| WB 98th St. | Priority Way W. | Keystone Ave. | 155 | 59 | 0 |
| WB 98th St. | Keystone Ave. | Haverstick Rd. | 65 | 17 | 0 |

* - DHV = Design Hourly Volume

## 2.2 Model Assumptions

The following assumptions were incorporated into the analysis for this project:

- The modeling of noise impacts was completed using PM peak design hourly traffic (DHV) volumes as they are the higher volumes of traffic. Existing and design year volumes were developed by RW Armstrong. Traffic volumes were provided for automobiles with a percentage of trucks.
- Through traffic was assumed to be evenly split in each modeled lane; varying between two and three in both directions of Keystone Avenue and two in each direction along 96th Street.
- Traffic volumes were assigned to the appropriate TNM vehicle classifications. For the purposes of this analysis, automobiles and heavy trucks were assumed to be the appropriate vehicle classifications. Assignments were not made to the medium truck, motorcycle or bus classifications.
- Although not included as part of the proposed improvements, Haverstick Road north to 98th Street and 98th Street from Haverstick Road to east of the proposed north-south connector road were included in the model due to the alterations in traffic patterns that would result from the change in access at Keystone Avenue and 98th Street.
- Constant vehicle speeds of 35 miles per hour (mph) and 55 mph were assumed for both automobiles and heavy trucks along 96th Street and Keystone Avenue, respectively. Ramp speeds varied between 50-55 mph. A constant speed of 20 mph was assumed for 98th Street, while Haverstick Road and Aronson Drive were assigned a constant speed of 35 mph. Priority Way West Drive was given a constant speed of 30 mph.

## 2.3 Model Validation

For this analysis a Larson Davis Class 1 Integrating Sound Level Meter (SLM) / Analyzer 831 was used to obtain field measurements from three receptors. The field measurements were taken on November 5, 2009 for a duration of 15 minutes as close to the peak hour volume (PHV) as possible, which was defined as 4:45-5:45 PM. The SLM was calibrated to 94 dBA and 114 dBA using the appropriate calibrator for this model. During the sampling time, field counts of traffic were taken and atmospheric conditions were noted. To obtain the modeled predictions, the traffic counts and atmospheric conditions obtained from the field were inputted into *TNM 2.5* and run. It should be noted that the traffic counts obtained during the 15 minute sampling period were multiplied by a factor of four to represent a full hour in the model. The field measurement data sheets are provided as Appendix D.1, but the results when compared to the *TNM 2.5* outputs are provided in the table below. As the model was validated, existing levels for the remaining receptors were obtained through development of a baseline model.

| TABLE 2-2 TNM 2.5 MODEL VALIDATION | | | | | |
|---|---|---|---|---|---|
| Receptor No. | Description | Field Measurement* | Modeled Prediction* | Difference | Validated?** |
| 1 | Residence at 2701 E. 96th St. | 60.2 | 58.2 | 2 | Yes |
| 39 | Residence at 2522 Sunnymeade Ln. | 53.4 | 51.0 | 2.4 | Yes |
| 72 | Residence at 3417 98th St. | 64.5 | 65.2 | 0.7 | Yes |

** - All sound levels are reported in dBA Leq.*
*** - Receptors were considered validated if the modeled prediction was ± 3 dBA of the field measurement.*

# 3.0 IMPACT ANALYSIS

## 3.1 Location and Description of Receptors

In accordance with the INDOT Traffic Noise Policy (February 2007), potential receptors were identified within 500 ft. of the proposed edge of pavement. A total of 118 receptors were evaluated as part of the noise impact analysis. Of the 118 receptors identified and analyzed, 78 are classified as Category B land uses; the remaining 40 receptors are Category C land uses. It should be noted that half of the evaluated receptors are located in residential subdivisions located north of 98th Street. Table 3-1 below illustrates the distribution of receptors in these subdivisions.

| TABLE 3-1 RECEPTOR DISTRIBUTION | | |
|---|---|---|
| **Subdivision** | **Receptor No.'s** | **Total Receptors** |
| Lakewood Gardens (East Side of Keystone Ave.) | 39-58, 115-16 | 22 |
| Lakewood Gardens (West Side of Keystone Ave.) | 68-78, 80-82, 86-88, 91, 109-112 | 22 |
| Brooks Bend | 63-67, 113, 117-118 | 8 |
| Chesterton | 89-90 | 2 |
| Shadybrook | 59, 60, 61, 62, 114 | 5 |

A more detailed description of each receptor modeled is provided in Appendix B.1.

## 3.2 Noise Abatement Criteria (NAC)

Whether predicted noise levels approach or exceed the NAC at a potential receptor is determined by the NAC land use category in which it is classified. The INDOT Traffic Noise Policy developed from Title 23, CFR 772, identifies four NAC exterior land use categories, A, B, C, D and one interior land use category, E. A description of each NAC category is listed in Table 3-2 below.

| TABLE 3-2 FHWA NAC LAND USES | | |
|---|---|---|
| **Category** | **NAC** | **Description** |
| A | 57 dBA (Exterior) | Land uses are areas on which serenity and quiet are of extraordinary significance and serve an important public need. The preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 dBA (Exterior) | Land uses are comprised of picnic areas, parks, recreational areas, playground, active sports areas, residences, hotels, motels, schools, hospitals, churches and libraries. |
| C | 72 dBA (Exterior) | Land uses are primarily developed land, properties, or activities not included in Categories A or B. |
| D | No NAC | Land uses are undeveloped lands, such as agricultural fields. |
| E | 52 dBA (Interior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums where no outside activity occurs. |

For this study Category B, Category C and Category E land uses were identified within the project area.

As defined in the INDOT Traffic Noise Policy (February 2007), a traffic noise impact is based on the following criteria:

- Predicted dBA levels approach or exceed (within 1 dBA the Noise Abatement Criteria (NAC), or
- Predicted dBA levels substantially exceed (greater than 15 dBA) the existing levels.

### 3.3 Description of Noise Impacts

The results of the impact assessment identified impacted receptors primarily to the north of 98th Street on either side of Keystone Avenue. These impacted receptors were mainly first row receptors, but also included some second row receptors as well. These impacted receptors generally occur in an area north of the proposed interchange where it would tie into the existing section of Keystone Avenue (Appendix B), which suggests that the project will not contribute to increases in noise levels. Rather, the proposed improvements are consistent with the projected noise levels associated with the existing and No Build scenarios. Furthermore, there were no receptors identified that would be substantially impacted by the project, that is having an increase of 15 dBA or greater above the existing conditions.

Of the 118 receptors analyzed for the project, a total of 26 were determined to be impacted by the proposed project. Twenty-three of the 26 impacted receptors were Category B land uses (residential, recreational or public non-profit) and three were Category C land uses. However, it should be noted that 16 of the 23 impacted Category B receptors were also impacted by the existing and No Build scenarios (Appendix B). Moreover, the variance in sound levels for the three cases at the 23 impacted Category B receptors ranged from 1-4

dBA. A perceivable change in noise is not noticed until there is an increase / decrease of at least 3 dBA. With respect to impacts to the Category C receptors, two of the three impacted receptors are also impacted by the existing and No Build scenarios. Furthermore, the existing and No Build scenarios would introduce two impacted Category C receptors with the No Build scenario that are otherwise not affected by the Build scenario. The change in sound levels at impacted Category C receptors ranged from 1-4 dBA, an unperceivable alteration in sound levels. Therefore, it can be stated that none of the receptors analyzed as part of the impact assessment will be substantially impacted beyond the predicted noise levels of the existing conditions or No Build scenario.

# 4.0 NOISE ABATEMENT

Consideration of measures to mitigate or abate traffic noise impacts must be afforded if impacted receptors have been identified in the analysis area. In order for abatement to be seriously considered and implemented into the project it must undergo scrutiny to determine if it is both feasible and reasonable to construct. The definition of reasonable and feasible is grounded in the INDOT Traffic Noise Policy (February 2007), but is summarized below.

Noise abatement is **feasible** if it meets all of the following conditions:

- Engineering considerations to determine if a particular form of abatement can actually have an effect on the traffic noise levels at a receptor. These considerations include topography, drainage, safety, access control and right-of-way.
- If a majority (50% + 1) of the first row receptors experience a 7 dBA reduction in the design year.

The **reasonableness** of noise abatement is based on a measurement of cost effectiveness and views of impacted receptors:

*Cost Effectiveness:*

- The estimated cost of constructing a noise barrier does not exceed $25,000 per benefited receptor. In those cases where a majority of the development (50% + 1) was in place prior to construction of the highway, a barrier is considered cost-effective if the estimated cost does not exceed $30,000 per benefited receptor. No barrier wall taller than 20 feet will be considered as cost effective.

*Views of the Impacted and/or Benefited Receptors:*

- A majority (50% + 1) of the impacted or benefited receptors must affirm support for the prescribed mitigation.

## 4.1 Traffic Noise Barriers

To reduce noise impacts resulting from Keystone Avenue, five barriers were evaluated in five areas north of the proposed interchange. These areas include the Lighthouse Tabernacle Church, Lakewood Gardens Subdivision on the east and west side of Keystone Avenue, Brooks Bend Subdivision and Shadybrook Subdivision. Each barrier was weighted against the criteria of feasibility and reasonableness discussed in Section 4.0 of this report. A detailed discussion of each barrier follows.

Lighthouse Tabernacle Church Barrier

A barrier approximately 715 ft. in length and 20 ft. high was inserted to evaluate the effectiveness of shielding Receptors 83 and 84 from noise propagating from Keystone Avenue (Appendix C.1). The length of the barrier was limited to the north by the 98th Street intersection with Keystone Avenue and to the south by the property line of an adjacent business, Tom Wood Ford (Receptor 103). Due to the location of the adjacent business, the recommended distance to extend the barrier of four times the distance from the end receptor to the barrier, specified in the INDOT Traffic Noise Policy (February 2007), could not be attained. The distance from Receptor 84 to the inserted barrier is approximately 130 ft., which means to meet the recommended length the barrier would need to extend an additional 520 ft. However, the property line of the adjacent business limits the length of the considered barrier to about 320 ft., or 2.5 times the distance between the barrier and the end receptor.

With the insertion of a barrier at this location, noise at Receptor 84 was reduced by about 10 dBA while Receptor 83 experienced only a 4 dBA reduction in noise. As a majority of the first row receptors did not receive at least a 7 dBA reduction in noise levels, this barrier was not considered feasible and was dismissed from further consideration.

Lakewood Gardens Barrier – West Side of Keystone Avenue

A barrier approximately 1,021 ft. in length and a height varying from 8-18 ft. was inserted to evaluate the effectiveness of shielding impacted receptors in the portion of the Lakewood Gardens Subdivision that aligns the west side of Keystone Avenue (Appendix C.2). Those receptors included seven first row receptors, Receptors 68, 70, 72, 75, 77, 109 and 110. The length of the inserted barrier was limited to the north by the intersection of 99th Street and Keystone Avenue and to the south by 98th Street and Keystone Avenue intersection. The presence of both of these intersections prevented the extension of the analyzed barrier the recommended distance of four times the distance from the end receptor to the barrier. As such effective shielding of one end receptor (Receptor 68) was not possible. In addition to the aforementioned seven receptors, 10 non-impacted receptors were included in the analysis of this barrier to determine if they were benefited by its insertion. That is, they received a reduction of 5 dBA or more as a result of the barrier.

A barrier included at this location resulted in a majority of the first row receptors being able to achieve a 7 dBA reduction and was therefore considered to be feasible. The insertion of this barrier would benefit (provide an insertion loss of at least 5 dBA) 11 receptors in this area, seven of which are impacted by the project. To construct this barrier, it would cost an estimated $471,120.00, or $42,829.00 per benefitted receptor. As this cost per benefited receptor exceeds the INDOT threshold of $25,000 per benefited receptor, this barrier was not determined to be reasonable and was dismissed from further consideration.

Lakewood Gardens Barrier – East Side of Keystone Avenue

A barrier approximately 1,025 ft. in length and a height varying from 12-18 ft. was inserted to evaluate the effectiveness of shielding impacted receptors in the portion of the Lakewood Gardens Subdivision that aligns the east side of Keystone Avenue (Appendix C.3). Those receptors included seven first row receptors, Receptors 46, 48, 49, 52, 55, 56 and 116, as well as two second row receptors, Receptors 54 and 115. The length of the inserted barrier

was limited to the north by the intersection of 99th Street and Keystone Avenue and to the south by the 98th Street and Keystone Avenue intersection. The presence of both of these intersections prevented the extension of the analyzed barrier the recommended distance of four times the distance from the end receptor to the barrier. As such effective shielding of the end receptors (Receptors 56 to the north and Receptor 46 to the south) was not possible. In addition to the aforementioned nine receptors, 12 non-impacted receptors were included in the analysis of this barrier to determine if they were benefited by its insertion. That is, they received a reduction of 5 dBA or more as a result of the barrier.

A majority of the first row receptors at this location did receive at least a 7dBA reduction making the barrier a feasible option in mitigating noise propagating from Keystone Avenue. The insertion of this barrier would benefit (provide an insertion loss of at least 5 dBA) 10 receptors in this area, eight of which are impacted by the project. To construct this barrier, it would cost an estimated $461,230.00, or $46,123.00 per benefitted receptor. As this cost per benefited receptor exceeds the INDOT threshold of $25,000 per benefited receptor, this barrier was not determined to be reasonable and was dismissed from further consideration.

Brooks Bend Barrier

A barrier approximately 757 ft. in length and 20 ft. high was inserted to evaluate the effectiveness of shielding impacted receptors in the Brooks Bend Subdivision from noise propagating from Keystone Avenue (Appendix C.4). Those receptors included two first row receptors, Receptors 63, 65, as well as one second row receptor, Receptor 113. The length of the barrier was limited to the south by the 99th Street and Keystone Avenue intersection and to the north by the analysis area. The presence of this intersection prevented the extension of the analyzed barrier the recommended distance of four times the distance from the end receptor to the barrier. As such effective shielding of one receptor near the south end of the barrier (Receptors 65) was not possible. To the north, the barrier was extended beyond the analysis area to provide the recommended length past the end receptor.

With the insertion of a barrier at this location, noise at Receptor 63 was reduced by about 9 dBA while Receptor 65 (the other first row receptor) experienced only a 6 dBA reduction in noise. As a majority of the first row receptors did not receive at least a 7 dBA reduction in noise levels, this barrier was not considered feasible and was dismissed from further consideration.

Shadybrook Barrier

A barrier approximately 769 ft. in length and a height varying from 12-18 ft. was inserted to evaluate the effectiveness of shielding impacted receptors in the Shadybrook Subdivision from noise propagating from Keystone Avenue (Appendix C.5). Those receptors included two first row receptors, Receptors 60 and 61. No second row receptors were determined to be impacted by the project. The length of the barrier was limited to the south by the 99th Street and Keystone Avenue intersection and to the north by the analysis area. The presence of this intersection prevented the extension of the analyzed barrier the recommended distance of four times the distance from the end receptor to the barrier. As such effective shielding of the receptor near the south end of the barrier, Receptor 60, was not possible. To the north, the barrier was extended beyond the analysis area to provide the recommended length past the end receptor. In addition to the aforementioned two receptors, five non-impacted receptors were included in the analysis of this barrier to determine if they

were benefited by its insertion. That is, they received a reduction of 5 dBA or more as a result of the barrier.

A majority of the first row receptors at this location did receive at least a 7dBA reduction making the barrier a feasible option in mitigating noise propagating from Keystone Avenue. The insertion of this barrier would benefit (provide an insertion loss of at least 5 dBA) five receptors in this area including the three impacted ones. To construct this barrier, it would cost an estimated $321,717.00, or $64,343.40 per benefitted receptor. As this cost per benefited receptor exceeds the INDOT threshold of $25,000 per benefited receptor, this barrier was not determined to be reasonable and was dismissed from further consideration.

Barrier Analysis Summary

In summary, as illustrated in Table 4-1 below, five barriers were evaluated as a way to attenuate noise propagating from Keystone Avenue traffic. These barriers were evaluated against the criteria of feasibleness and reasonableness that is defined in the INDOT Traffic Noise Policy (February 2007) and discussed in Section 4.0 of this report. The results of this analysis identified three feasible barriers; however, they were not determined to be reasonable. Therefore, the insertion of barriers as an effective way to mitigate noise on this project is not recommended for further consideration.

**TABLE 4-1 BARRIER ANALYSIS SUMMARY**

| Name | No. Benefited Receptors | Length (ft.) | Height (ft.) | Est. Cost* | Feasible? | Reasonable? |
|---|---|---|---|---|---|---|
| Lighthouse Tabernacle Barrier | -- | 715 | 20 | $428,869 | No | -- |
| Lakewood Gardens (West) Barrier | 11 | 1,021 | 8-18 | $471,120 | Yes | No |
| Lakewood Gardens (East) Barrier | 10 | 1,025 | 12-18 | $461,230 | Yes | No |
| Brooks Bend Barrier | -- | 757 | 20 | $454,309 | No | -- |
| Shadybrook Barrier | 5 | 627 | 12-18 | $321,717 | Yes | No |

* - Cost is determined at a rate of $30/ft$^2$.

### 4.2 Traffic Management Measures (Truck Restrictions)

Projections indicate that in the design year (2031) truck traffic will comprise of approximately 2% to 7% of the vehicle mix on 96th Street, west to east, respectively. Along Keystone Avenue, truck traffic in the design year (2031) will comprise of 4% to 5% of the vehicle mix north and south of the intersection, respectively. The high number of businesses along 96th Street east of Keystone Avenue coupled with the proximity of the intersection to the I-465 interchange accounts for the majority of the truck volume in the project area. Restricting trucks from using either Keystone Avenue or 96th Street would result in a diversion of traffic to other local roads, which may have additional affects to the natural and social environment not to mention the businesses within the project area. Therefore, this measure is not considered to be a reasonable strategy for mitigating traffic noise impacts resulting from this project.

### 4.3 Alteration of Vertical and Horizontal Alignments

Alteration to the horizontal and vertical alignments is considered, in some instances, as an effective measure to lessen noise impacts. Specifically, this would apply to geometric areas

in a roadway that would normally contribute to increased noise levels, such as where vehicles adjust speeds to compensate for inclines or declines in the grade, or the presence of horizontal curves. The need for this project is to reduce travel delays and improve operational safety at the intersection. In order to accomplish this, the grades of 96th Street and Keystone Avenue will require separation, which will require the inclusion of new ramps in all four quadrants to connect the separated roadways. The ramps will introduce an area of acceleration / deceleration; this is unavoidable. However, the channeling of traffic through a roundabout rather than a signalized intersection or ramp terminal will improve noise levels that would otherwise be present from the stopping and starting generated from vehicles at traffic signals. Comparably, Keystone Avenue, which would be elevated over 96th Street, will provide a continuous flow of traffic completely eliminating the noise that would be generated from the starting and stopping events at a signal controlled intersection. Therefore, this measure is not considered to be a reasonable strategy for mitigating traffic noise impacts associated with the proposed project.

### 4.4 Acquisition of Property (Buffer Zones)

The acquisition of a buffer zone to provide an area of natural attenuation would result in expanding the proposed right-of-way ultimately acquiring the residences receiving the noise impacts. Additionally, acquisition of the impacted residences would result in unnecessary community disruption that would otherwise be avoided. As such, the acquisition of property as a method for mitigating traffic noise impacts is considered to be unreasonable.

### 4.5 Insulation of Public Buildings or Non-Profit Institutional Structures

Federal–Aid highway funds can be used for noise insulation of public or non-profit institutional structures for noise abatement. The insulation of the structure could reduce noise impacts. Noise insulation, sealed double-paned windows, and air-conditioning can be used effectively for noise mitigation. The interior noise level of the structure can be determined using the exterior noise levels with the noise reduction based on the building type and window condition. The noise reduction amount is determined using the building noise reduction factor table provided in the Federal Highway Traffic Noise Analysis and Abatement Policy and Guidance (1995) (Appendix E.1). FHWA's guidance when determining the amount of noise reduction factors in interior spaces, is that the windows shall be considered open unless there is firm knowledge that they are kept closed most of the time.

One impacted non-profit institution is located within the limits of the study area, Lighthouse Tabernacle Church located at 2599 E. 98th Street. The church serves as a worship center for approximately 200 families. The building has two distinct sections each with masonry constructed walls that vary in height from one to two stories. According to church staff contacted in February 2011, the facility at one time included the operation of a pre-school and elementary school, but has since stopped that function. Currently the use of the facility is primarily focused on the interior of the structure for Sunday worship services / school and Bible Studies held on Wednesday evenings. The facility also hosts other annually scheduled events such as Vacation Bible School. The facility consists of an outdoor playground and basketball court on the south side of the building. For insurance reasons the outdoor recreational facilities are typically restricted to parish functions. Three exterior receptors were placed on the church property, one at each of the following locations, the playground, the basketball court and on the north side of the building near the entrance to the worship area. The receptors at the playground and worship center entrance were impacted by the proposed project.

RW Armstrong contacted Lighthouse Tabernacle Church in February 2011 to determine the type of windows installed and how often they are typically open during the year. Staff from the church indicated that the church windows are single-paned and can be opened from the bottom. Although able to be opened, the air conditioning is used during the warm periods of the spring, summer and fall. As such, opening of the windows is discouraged. The church keeps the windows closed to allow the air conditioning to cool and maintain comfort level within the building.

The predicted noise level for the two impacted receptors at the church is 69 dBA. To determine the estimated noise level for the interior space of the building, RW Armstrong used the *TNM 2.5* predicted 69 dBA for the exterior receptors in the 3031 build model and applied the building noise reduction factor from the FHWA Traffic Noise Analysis and Abatement Policy and Guidance (Appendix E). For a masonry building with single glazed windows the noise reduction due to the structure is 25 dBA. The predicted NAC for the interior of the structure would therefore be 44 dBA. This level is below the identified NAC level of 52 dBA for the interior of Category E lands. As such, the interior of the building is not impacted and noise abatement insulation for the interior of the church is not considered reasonable.

## 5.0 CONSTRUCTION NOISE

The identified receptors will be affected by the noise generated from power-operated equipment utilized during construction. This equipment will be operated intermittently and will produce noise in the range of 70-98 dBA. To minimize these impacts, construction equipment should be operated in compliance with all applicable local ordinances and regulations pertaining to construction noise. Also, restricting construction activities to daytime working hours may help minimize construction noise impacts during nighttime hours.

## 6.0 CONCLUSION

This analysis was completed in accordance with INDOT's Traffic Noise Policy (February 2007). The analysis identified a total of 26 impacted receptors out of 118 receptors evaluated. Twenty-three of the impacted receptors were Category B land uses while the remaining three were Category C land uses. Mitigation for the Category C impacts was not considered as businesses usually do not prefer barriers as it obscures visibility of their services from nearby roads. All of the Category B impacts were located near the 98th Street intersection and continued north into the residential subdivisions of Lakewood Gardens (west side of Keystone Avenue), Lakewood Gardens (east side of Keystone Avenue), Brooks Bend and Shadybrook, as wells as at the Lighthouse Tabernacle Church. To mitigate the predicted impacts barrier abatement was considered in each of these areas.

Barrier abatement for the Lighthouse Tabernacle Church and the Brooks Bend Subdivision were not determined to be feasible as a majority (50% + 1) of the first row receptors in either area were unable to attain at least a 7 dBA reduction in noise levels. Therefore, the insertion of barriers at these locations is not recommended for further consideration.

Although determined feasible, barrier abatement at the Shadybrook Subdivision, Lakewood Gardens (west side of Keystone Avenue) and Lakewood Gardens (east side of Keystone Avenue) was not considered to be reasonable as the cost exceeded $25,000 per benefitted

receptor. Therefore, the insertion of barriers at these locations is also not recommended for further consideration.

The use of other abatement measures including traffic management, alteration of vertical and horizontal alignments, acquisition of property for buffer zones are not considered to be reasonable measures for noise mitigation, due to the potential detrimental effects to the local environment and the overall cost prohibitive and potentially disruptive nature to the cohesion of the local community. The insulation of the Lighthouse Tabernacle Church is not necessary as the interior noise levels do not exceed the NAC identified level of 52 dBA for Category E land uses.

## 7.0 REFERENCES

Environmental Protection Agency Publication EPAPB 206717, December 1971, *Noise from Construction Equipment and Operations.*

Federal Highway Program Manual, Volume 7, Section 3, August 9, 1982.

23 CFR 772, *Procedures for Abatement of Highway Traffic Noise and Construction Noise.*

FHWA Policy Memorandum, *Highway Traffic Noise Analysis and Abatement – Policy and Guidance,* June 12, 1995.

Federal Highway Administration, *Federal Lands Highway Project Development and Design Manual*, February 8, 2008.

INDOT Traffic Noise Policy, February 2007.

Indiana University Orthophotography – Aerial photographs

## 8.0 DEFINITIONS

| | |
|---|---|
| dBA | (decibel, A-weighted) A unit for describing the sound pressure level, weighted to the approximate range of response to the human ear. |
| Leq | The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period. |
| Type I Project | A proposed Federal-aid highway project for the construction of a highway on new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment or increases the number of through-traffic lanes. |
| DHV | The Design Hourly Volume (DHV) is the standard for estimating the peak traffic loads during the day for design. It is based on the 30$^{th}$ highest Peak Hourly Volume (PHV) of the year. |
| PHV | The peak hour volume is the highest hourly volume that occurs in a given day. |

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# Appendix A

Graphics

Appendix A.1

Maps of Project Area

## NOTE:

**IN AN EFFORT TO AVOID DUPLICATION IN THE ENVIRONMENTAL DOCUMENT, THE FOLLOWING MAPS HAVE BEEN REMOVED FROM THIS TECHNICAL REPORT:**

- ***STATE / COUNTY LOCATION MAP***
- ***USGS QUADRANGLE MAP***
- ***AERIAL PHOTOGRAPH***

**PLEASE REFER TO APPENDIX B.1 FOR CURRENT VERSIONS OF THIS MAPPING**

# Appendix A.2

## Photographs of Typical Receptors in Study Area

**PHOTO 1**

Looking north along Lakewood Drive West from 98th Street at representative receptors in the Lakewood Gardens Subdivision (east side of Keystone Avenue).

**PHOTO 2**

Looking north along Lakewood Drive East from 98th Street at representative receptors in the Lakewood Gardens Subdivision (east side of Keystone Avenue).

**PHOTO 3**

Looking northeast toward representative receptors aligning Pleasant Way from Haverstick Road.

**PHOTO 4**

Looking north at representative receptors aligning Haverstick Road from the Pleasant Way intersection.

**PHOTO 5**

Looking northeast at representative receptors aligning the east side of Haverstick Road south of Pleasant Way.

**PHOTO 6**

Looking southeast at representative receptors aligning the south side of 98th Street east of Haverstick Road.

**PHOTO 7**

Looking north at representative receptors aligning Colony Court in Lakewood Gardens (west side of Keystone Avenue)

**PHOTO 8**

Looking east at the Hope Christian Missionary Alliance Church (Receptor 79).

**PHOTO 9**

Looking southwest at the Lighthouse Tabernacle Church (Receptor 83) from the intersection of 98th Street and Keystone Avenue.

**PHOTO 10**

Looking southeast at a playground associated with the Lighthouse Tabernacle Church (Receptor 84).

**PHOTO 11**

Looking east along Weatherstone Driver at representative receptors in the Brooks Bend Subdivision.

**PHOTO 12**

Looking south along Apilta Court at representative receptors in the Shadybrook Subdivision.

**PHOTO 13**

Representative commercial receptors along 98th Street east of Keystone Avenue.

**PHOTO 14**

Looking west at representative commercial receptors aligning the north side of 96th Street east of Keystone Avenue.

**PHOTO 15**

Looking southeast at representative commercial receptors aligning Threel Road on the east side of Keystone Avenue. Receptors 27 and 19 are shown here.

**PHOTO 16**

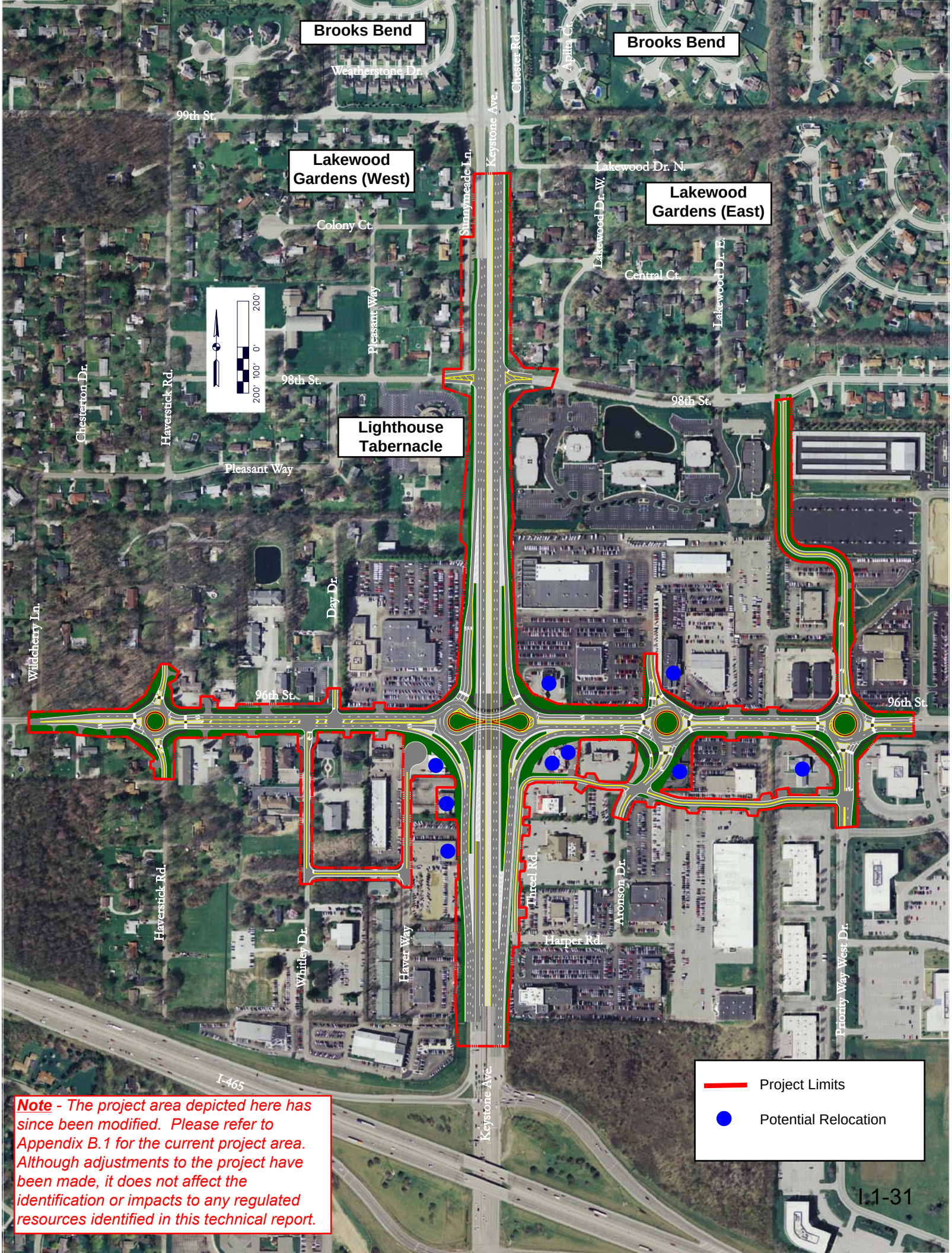
Looking west at representative commercial receptors aligning the north side of 96th Street west of Keystone Avenue.

**PHOTO 17**

Looking southwest from 96th Street at representative commercial receptors aligning Haver Way.

Appendix A.3

Plans




***Note*** *- The project area depicted here has since been modified. Please refer to Appendix B.1 for the current project area. Although adjustments to the project have been made, it does not affect the identification or impacts to any regulated resources identified in this technical report.*

# Appendix B

Noise Impact Summary

| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 1 | Residence - 2701 E. 96th St. | 60 | 61 | 60 | 0 | -1 | B | 67 | No |
| 2 | Commercial - 2711 E. 96th St. | 65 | 66 | 64 | -1 | -2 | C | 72 | No |
| 3 | Residence - 9518 Haverstick Rd. | 57 | 59 | 58 | 1 | -1 | B | 67 | No |
| 4 | JHS Investments, LLC | 61 | 62 | 62 | 1 | 0 | C | 72 | No |
| 5 | PSI Upsilon Foundation, Inc. | 63 | 65 | 65 | 2 | 0 | C | 72 | No |
| 6 | Indiana State Association of Life Underwriters, Inc. | 63 | 64 | 65 | 2 | 1 | C | 72 | No |
| 7 | Residence - 9512 Haverstick Rd. | 55 | 56 | 56 | 1 | 0 | B | 67 | No |
| 8 | Residence - 9501 Haverstick Rd. | 56 | 57 | 57 | 1 | 0 | B | 67 | No |
| 9 | Commercial - 9550 Whitley Dr. | 59 | 61 | 62 | 3 | 1 | C | 72 | No |
| 10 | BNKLL Enterprises, LLC | 59 | 60 | 62 | 3 | 2 | C | 72 | No |
| 11 | Ball Investments, LLC | 62 | 63 | 64 | 2 | 1 | C | 72 | No |
| 12* | Chase Bank | -- | -- | -- | -- | -- | -- | -- | -- |
| 13* | Suzuki (car dealership) | -- | -- | -- | -- | -- | -- | -- | -- |
| 14 | DJ Reinbold Realty, LLC - 9405 Whitley Dr. | 62 | 63 | 64 | 2 | 1 | C | 72 | No |
| 15 | Dreyer & Reinbold BMW (car dealership) | 68 | 69 | 70 | 2 | 1 | C | 72 | No |
| 16 | Dreyer & Reinbold Mini Cooper (car dealership) | 69 | 70 | 72 | 3 | 2 | C | 72 | Yes |
| 17 | Butler Toyota (car dealership) | 72 | 73 | 73 | 1 | 0 | C | 72 | Yes |
| 18 | Nissan (car dealership) | 68 | 69 | 68 | 0 | -1 | C | 72 | No |
| 19 | Ruths Chris Restaurant | 69 | 70 | 68 | -1 | -2 | C | 72 | No |
| 20 | Woodland Bowling Alley | 63 | 63 | 61 | -2 | -2 | C | 72 | No |
| 21 | Professional Building (9449 Priority Way West Dr.) | 57 | 57 | 55 | -2 | -2 | C | 72 | No |
| 22 | National City Bank | 67 | 67 | 64 | -3 | -3 | C | 72 | No |
| 23 | Fifth Third Bank | 69 | 69 | 66 | -3 | -3 | C | 72 | No |
| 24 | Tom Wood Jaguar (car dealership) | 69 | 70 | 69 | 0 | -1 | C | 72 | No |
| 25* | Regions Bank | -- | -- | -- | -- | -- | -- | -- | -- |
| 26 | Arby's | 71 | 72 | 69 | -2 | -3 | C | 72 | No |
| 27 | Bob Evans Restaurant | 70 | 71 | 69 | -1 | -2 | C | 72 | No |
| 28 | Penske Chevrolet (car dealership) | 69 | 71 | 67 | -2 | -4 | C | 72 | No |
| 29 | Tom Wood Ford (3300 E. 96th St.) | 69 | 70 | 68 | -1 | -2 | C | 72 | No |
| 30 | 3500 Professional Building (3510 & 3520 E. 96th St.) | 70 | 70 | 70 | 0 | 0 | C | 72 | No |

| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 31 | Acura (car dealership) | 67 | 67 | 64 | -3 | -3 | C | 72 | No |
| 32 | Enterprise Car Rental | 61 | 62 | 61 | 0 | -1 | C | 72 | No |
| 33 | Penske Chevrolet (service garage) | 71 | 72 | 68 | -3 | -4 | C | 72 | No |
| 34 | Enterprise Car Rental (service garage) | 61 | 62 | 61 | 0 | -1 | C | 72 | No |
| 35 | Keystone Office Park - Building #1 | 73 | 74 | 74 | 1 | 0 | C | 72 | Yes |
| 36 | Keystone Office Park - Building #2 | 65 | 66 | 64 | -1 | -2 | C | 72 | No |
| 37 | Keystone Office Park - Building #3 | 58 | 59 | 58 | 0 | -1 | C | 72 | No |
| 38 | Keystone Offic Park - Building #4 | 57 | 58 | 59 | 2 | 1 | C | 72 | No |
| 39 | Residence at 3417 E. 98th St. | 57 | 58 | 59 | 2 | 1 | B | 67 | No |
| 40 | Residence at 3445 E.98th St. | 53 | 54 | 54 | 1 | 0 | B | 67 | No |
| 41 | Residence at 3424 E. 98th St. | 54 | 55 | 55 | 1 | 0 | B | 67 | No |
| 42 | Residence at 3410 E. 98th St. | 55 | 56 | 56 | 1 | 0 | B | 67 | No |
| 43 | Residence at 9801 E. Lakewood Dr. | 57 | 58 | 57 | 0 | -1 | B | 67 | No |
| 44 | Residence at 2824 E. 98th St. | 58 | 59 | 58 | 0 | -1 | B | 67 | No |
| 45 | Residence at 2802 E. 98th St. | 62 | 63 | 62 | 0 | -1 | B | 67 | No |
| 46 | Residence at 9802 W. Lakewood Dr. | 69 | 70 | 69 | 0 | -1 | B | 67 | Yes |
| 47 | Residence at 9803 W. Lakewood Dr. | 63 | 64 | 64 | 1 | 0 | B | 67 | No |
| 48 | Residence at 9812 W. Lakewood Dr. | 70 | 71 | 72 | 2 | 1 | B | 67 | Yes |
| 49 | Residence at 9816 W. Lakewood Dr. | 66 | 67 | 68 | 2 | 1 | B | 67 | Yes |
| 50 | Residence at 9825 W. Lakewood Dr. | 61 | 62 | 62 | 1 | 0 | B | 67 | No |
| 51 | Residence at 9855 W. Lakewood Dr. | 59 | 60 | 60 | 1 | 0 | B | 67 | No |
| 52 | Residence at 2702 Central Ct. | 72 | 73 | 73 | 1 | 0 | B | 67 | Yes |
| 53 | Residence at 9860 W. Lakewood Dr. | 61 | 62 | 63 | 2 | 1 | B | 67 | No |
| 54 | Residence at 2705 N. Lakewood Dr. | 63 | 64 | 66 | 3 | 2 | B | 67 | Yes |
| 55 | Residence at 2703 N. Lakewood Dr. | 71 | 72 | 72 | 1 | 0 | B | 67 | Yes |
| 56 | Residence at 2704 N. Lakewood Dr. | 67 | 68 | 69 | 2 | 1 | B | 67 | Yes |
| 57 | Residence at 2706 N. Lakewood Dr. | 61 | 62 | 64 | 3 | 2 | B | 67 | No |
| 58 | Residence at 2820 N. Lakewood Dr. | 57 | 58 | 59 | 2 | 1 | B | 67 | No |
| 59 | Residence at 3030 Apilita Ct. | 61 | 62 | 64 | 3 | 2 | B | 67 | No |
| 60 | Residence at 3034 Apilita Ct. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 61 | Residence at 3038 Apilita Ct. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 62 | Residence at 3037 Apilita Ct. | 58 | 59 | 60 | 2 | 1 | B | 67 | No |
| 63 | Residence at 2994 Weatherstone Dr. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 64 | Residence at 2978 Weatherstone Dr. | 58 | 59 | 62 | 4 | 3 | B | 67 | No |
| 65 | Residence at 2993 Weatherstone Dr. | 66 | 67 | 69 | 3 | 2 | B | 67 | Yes |

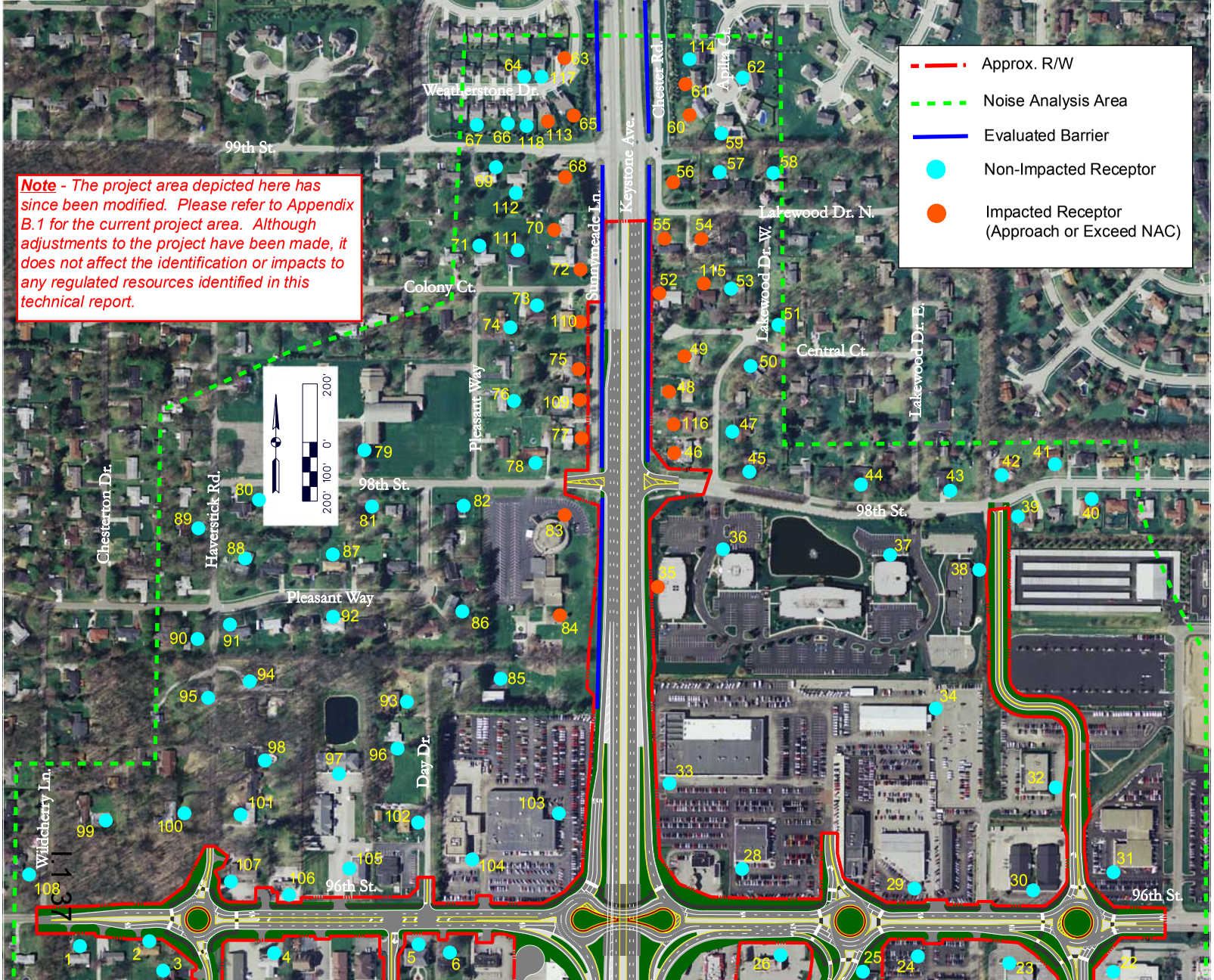
| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 66 | Residence at 2969 Weatherstone Dr. | 57 | 58 | 61 | 4 | 3 | B | 67 | No |
| 67 | Residence at 2953 Weatherstone Dr. | 55 | 56 | 59 | 4 | 3 | B | 67 | No |
| 68 | Residence at 2527 E. 99th St. | 64 | 65 | 68 | 4 | 3 | B | 67 | Yes |
| 69 | Residence at 2521 E. 99th St. | 57 | 58 | 61 | 4 | 3 | B | 67 | No |
| 70 | Residence at 9874 Sunny Meade Ln. | 63 | 64 | 66 | 3 | 2 | B | 67 | Yes |
| 71 | Residence at 2516 Colony Ct. | 57 | 58 | 61 | 4 | 3 | B | 67 | No |
| 72 | Residence at 2522 Colony Ct. | 68 | 69 | 71 | 3 | 2 | B | 67 | Yes |
| 73 | Residence at 2525 Colony Ct. | 62 | 63 | 65 | 3 | 2 | B | 67 | No |
| 74 | Residence at 9855 Pleasant Way | 60 | 61 | 64 | 4 | 3 | B | 67 | No |
| 75 | Residence at 9860 Sunny Meade Ln. | 69 | 69 | 70 | 1 | 1 | B | 67 | Yes |
| 76 | Residence at 9811 Pleasant Way | 61 | 62 | 64 | 3 | 2 | B | 67 | No |
| 77 | Residence at 9802 Sunny Meade Ln. | 69 | 70 | 71 | 2 | 1 | B | 67 | Yes |
| 78 | Residence at 2570 E. 98th St. | 63 | 64 | 65 | 2 | 1 | B | 67 | No |
| 79 | Hope Christian Church | 56 | 57 | 57 | 1 | 0 | B | 67 | No |
| 80 | Residence at 2509 E. 98th St. | 53 | 54 | 53 | 0 | -1 | B | 67 | No |
| 81 | Residence at 2533 E. 98th St. | 55 | 56 | 56 | 1 | 0 | B | 67 | No |
| 82 | Residence at 9765 Pleasant Way | 60 | 61 | 62 | 2 | 1 | B | 67 | No |
| 83 | Lighthouse Tabernacle Worship Center (north parking lot) | 67 | 68 | 69 | 2 | 1 | B | 67 | Yes |
| 84 | Lighthouse Tabernacle Worship Center (south playground) | 66 | 67 | 69 | 3 | 2 | B | 67 | Yes |
| 85 | Lighthouse Tabernacle Worship Center (west basketball court) | 62 | 63 | 63 | 1 | 0 | B | 67 | No |
| 86 | Residence at 2559 Pleasant Way | 60 | 61 | 62 | 2 | 1 | B | 67 | No |
| 87 | Residence at 2526 Pleasant Way | 53 | 55 | 55 | 2 | 0 | B | 67 | No |
| 88 | Residence at 2502 Pleasant Way | 53 | 55 | 56 | 3 | 1 | B | 67 | No |
| 89 | Residence at 9832 Haverstick Rd. | 53 | 56 | 57 | 4 | 1 | B | 67 | No |
| 90 | Residence at 9780 Haverstick Rd. | 54 | 56 | 57 | 3 | 1 | B | 67 | No |
| 91 | Residence at 2503 Pleasant Way | 55 | 58 | 59 | 4 | 1 | B | 67 | No |

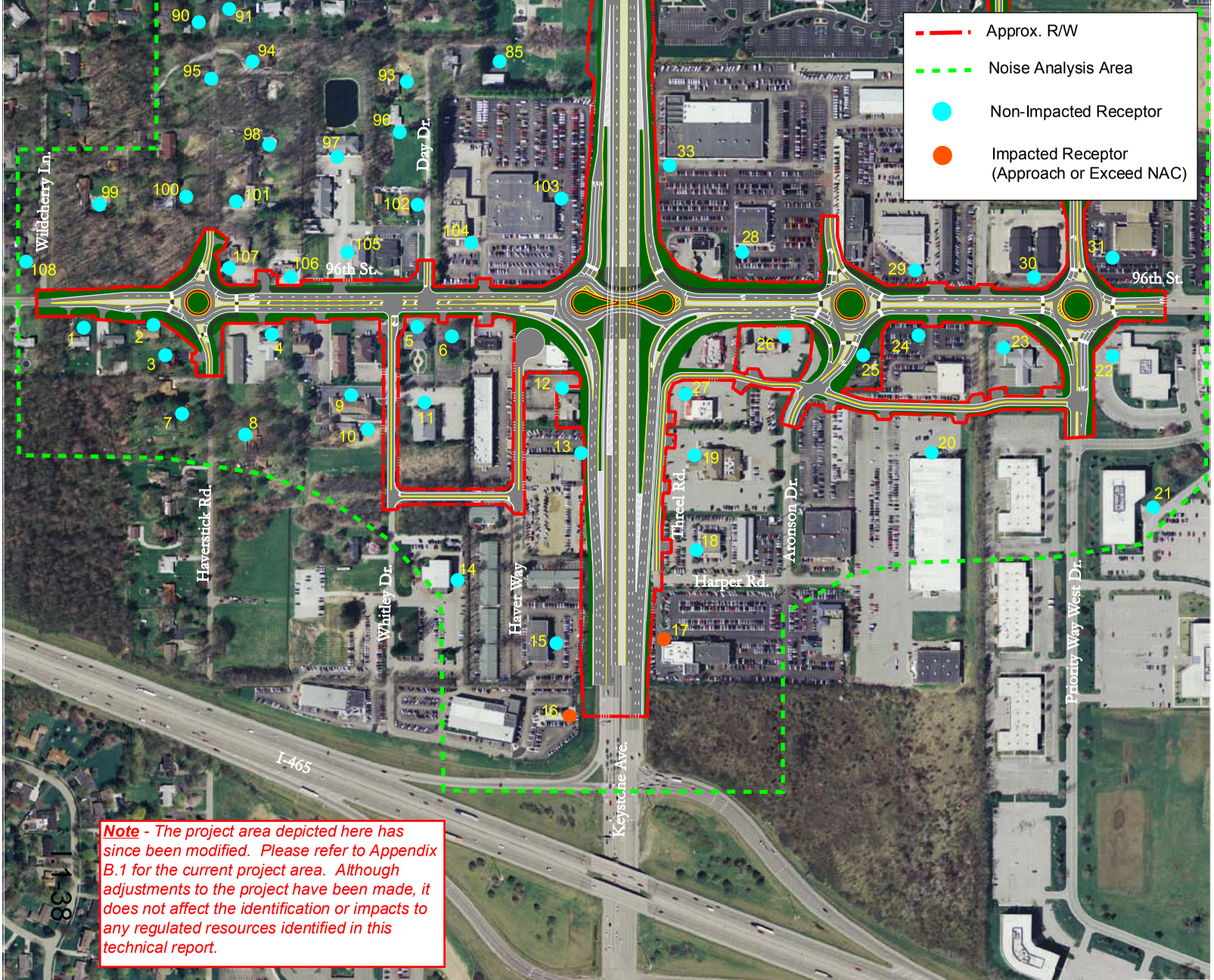
| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 92 | Residence at 2527 Pleasant Way | 54 | 56 | 56 | 2 | 0 | B | 67 | No |
| 93 | Residence at 9628 Day Dr. | 60 | 61 | 61 | 1 | 0 | B | 67 | No |
| 94 | Residence at 9783 Haverstick Rd. | 54 | 56 | 56 | 2 | 0 | B | 67 | No |
| 95 | Residence at 9680 Haverstick Rd. | 58 | 62 | 63 | 5 | 1 | B | 67 | No |
| 96 | Residence at 9624 Day Dr. | 60 | 62 | 61 | 1 | -1 | B | 67 | No |
| 97 | Commercial - 2920 E. 96th St. | 58 | 60 | 59 | 1 | -1 | C | 72 | No |
| 98 | Residence at 9661 Haverstick Rd. | 56 | 58 | 57 | 1 | -1 | B | 67 | No |
| 99 | Residence at 9603 Wild Cherry Ln. | 53 | 54 | 54 | 1 | 0 | B | 67 | No |
| 100 | Residence at 9650 Haverstick Rd. | 55 | 57 | 57 | 2 | 0 | B | 67 | No |
| 101 | Residence at 9639 Haverstick Rd. | 56 | 58 | 58 | 2 | 0 | B | 67 | No |
| 102 | Residence at 9616 Day Dr. | 62 | 63 | 63 | 1 | 0 | B | 67 | No |
| 103 | Tom Wood Ford (car dealership) | 69 | 70 | 68 | -1 | -2 | C | 72 | No |
| 104 | Tom Wood Lexus (car dealership) | 65 | 66 | 65 | 0 | -1 | C | 72 | No |
| 105 | Commercial - 2930 E. 96th St. | 60 | 61 | 62 | 2 | 1 | C | 72 | No |
| 106 | Commercial - 2850 E. 96th St. | 62 | 64 | 64 | 2 | 0 | C | 72 | No |
| 107 | Commercial 2828 E. 96th St. | 62 | 64 | 62 | 0 | -2 | C | 72 | No |
| 108 | Residence at 9602 Wild Cherry Ln. | 56 | 57 | 55 | -1 | -2 | B | 67 | No |
| 109 | Residence at 9840 Sunny Meade Ln. | 69 | 70 | 71 | 2 | 1 | B | 67 | Yes |
| 110 | Residence at 9868 Sunny Meade Ln. | 68 | 69 | 70 | 2 | 1 | B | 67 | Yes |
| 111 | Residence at 2520 Colony Ct. | 59 | 60 | 63 | 4 | 3 | B | 67 | No |
| 112 | Residence at 2523 E. 99th St. | 59 | 60 | 63 | 4 | 3 | B | 67 | No |
| 113 | Residence at 2985 Weatherstone Dr. | 62 | 63 | 66 | 4 | 3 | B | 67 | Yes |
| 114 | Residence at 3042 Apilita Ct. | 63 | 64 | 65 | 2 | 1 | B | 67 | No |
| 115 | Residence at 2704 Central Ct. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 116 | Residence at 9806 Lakewood Dr. | 68 | 69 | 69 | 1 | 0 | B | 67 | Yes |
| 117 | Residence at 2986 Weatherstone Dr. | 60 | 61 | 64 | 4 | 3 | B | 67 | No |
| 118 | Residence at 2977 Weatherstone Dr. | 60 | 61 | 64 | 4 | 3 | B | 67 | No |
| **Total Category B Land Use Impacts** | | | | | | | | | **23** |
| **Total Category C Land Use Impacts** | | | | | | | | | **3** |
| **Total No. of Impacted Receivers** | | | | | | | | | **26** |

All sound levels are reported in dBA Leq

***RED*** *- indicates receptors impacted by the proposed project*

- indicates receptors that are impacted by the existing / No Build scenarios


Approx. R/W
Noise Analysis Area
Evaluated Barrier
Non-Impacted Receptor
Impacted Receptor (Approach or Exceed NAC)
Note - The project area depicted here has since been modified. Please refer to Appendix B.1 for the current project area. Although adjustments to the project have been made, it does not affect the identification or impacts to any regulated resources identified in this technical report.
99th St.
Weatherstone Dr.
Keystone Ave.
Chester Rd.
Appia Ct.
Lakewood Dr. N.
Lakewood Dr. W.
Lakewood Dr. E.
Central Ct.
Colony Ct.
Sunnymeade Ln.
Pleasant Way
98th St.
Chesterton Dr.
Haverstick Rd.
Day Dr.
Wildcherry Ln.
96th St.
200' 100' 0' 200'



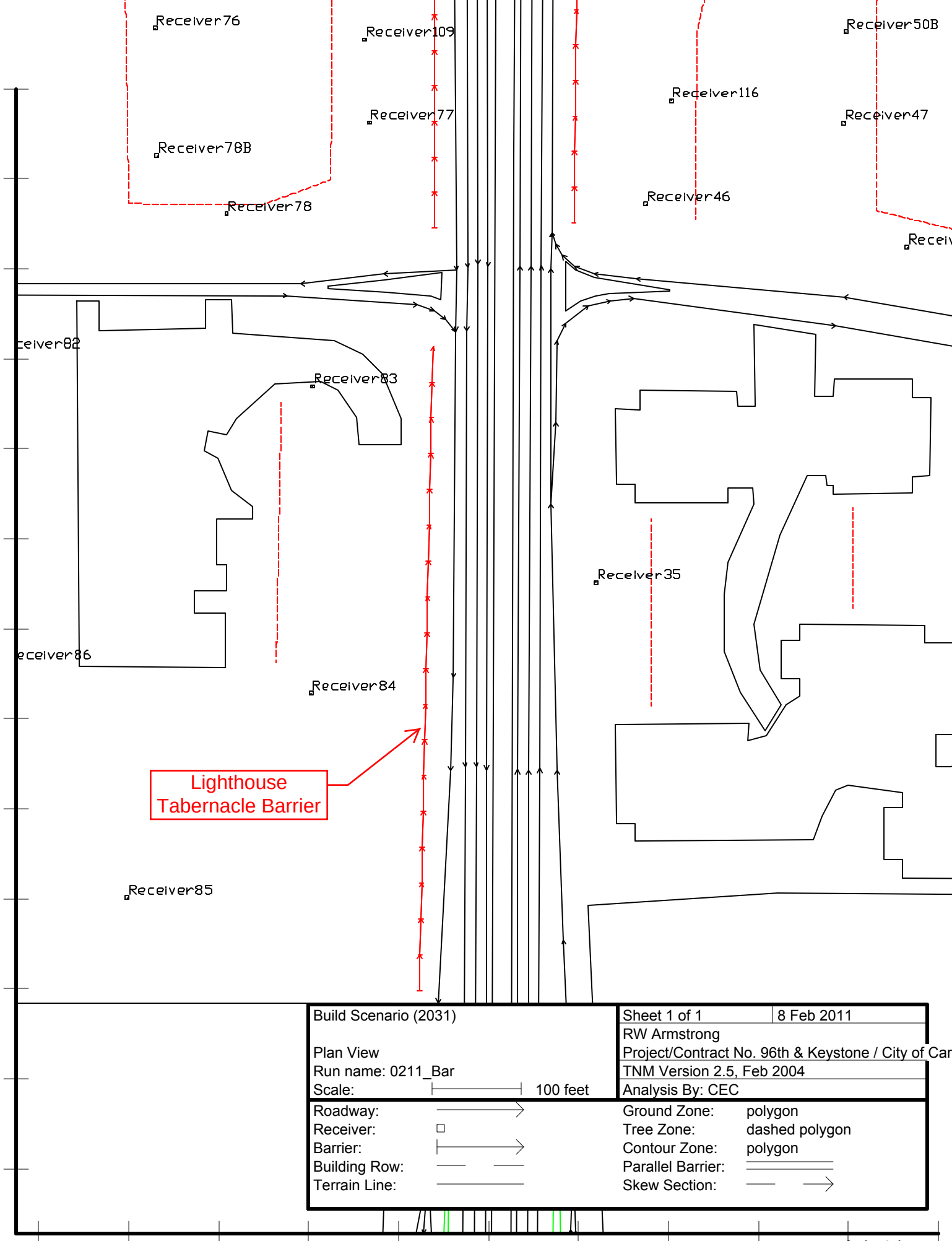

***Note*** *- The project area depicted here has since been modified. Please refer to Appendix B.1 for the current project area. Although adjustments to the project have been made, it does not affect the identification or impacts to any regulated resources identified in this technical report.*

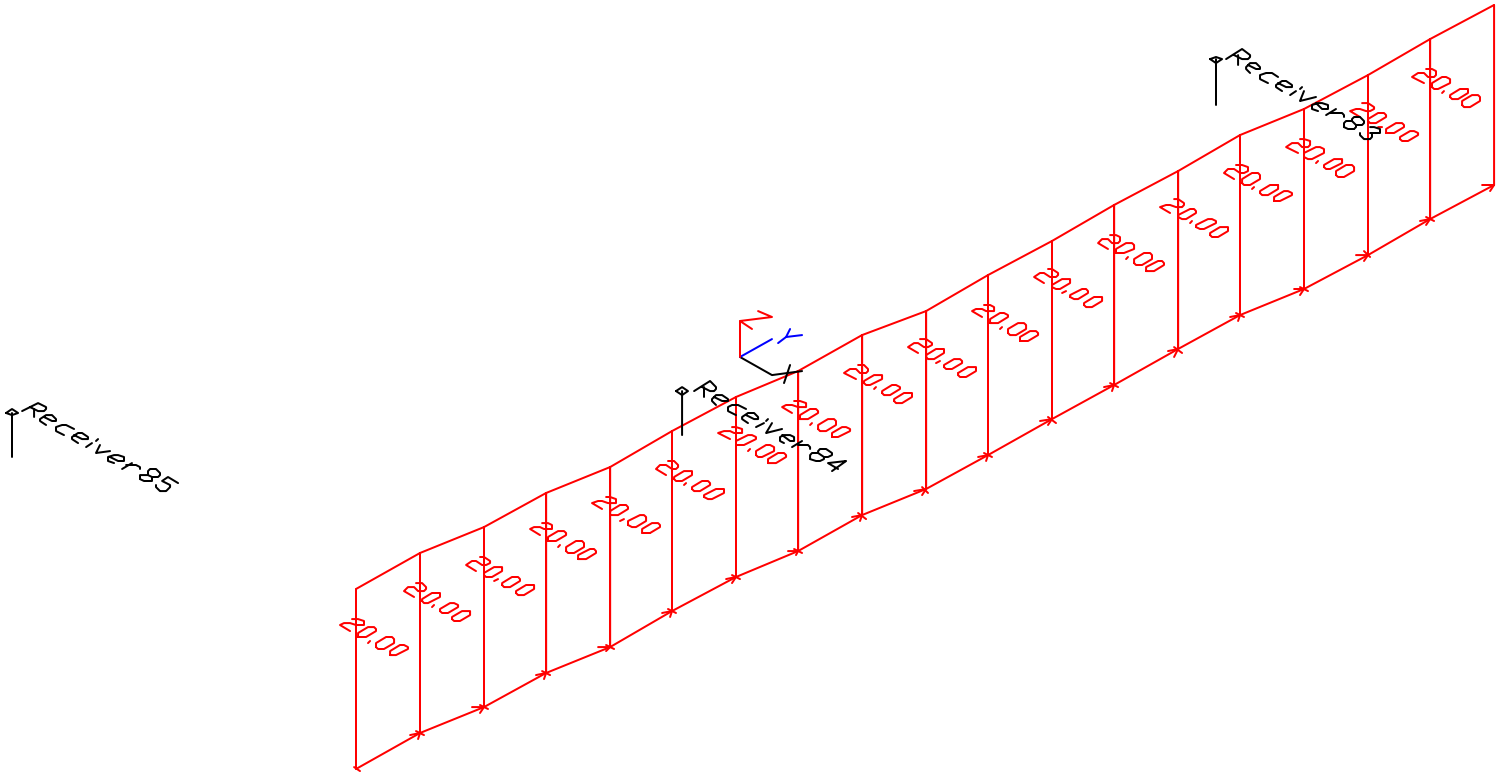
# Appendix C

Barrier Analysis Results

Appendix C.1

Lighthouse Tabernacle Church Barrier


Receiver76
Receiver109
Receiver50B
Receiver116
Receiver77
Receiver47
Receiver78B
Receiver46
Receiver78
Receiver83
Receiver35
Receiver84
Lighthouse
Tabernacle Barrier
Receiver85
Build Scenario (2031)
Plan View
Run name: 0211_Bar
Scale:
100 feet
Sheet 1 of 1
8 Feb 2011
RW Armstrong
Project/Contract No. 96th & Keystone / City of Car
TNM Version 2.5, Feb 2004
Analysis By: CEC
Roadway:
Receiver:
Barrier:
Building Row:
Terrain Line:
Ground Zone: polygon
Tree Zone: dashed polygon
Contour Zone: polygon
Parallel Barrier:
Skew Section:
202700
202800
202900
203000
203100
203200
203300
203400
203500
203600




| | | |
|---|---|---|
| Build Scenario (2031) | Sheet 1 of 1 | 8 Feb 2011 |
| | RW Armstrong | |
| Barrier View-LighthouseTab_20ft | Project/Contract No. 96th & Keystone / City of Car | |
| Run name: 0211_Bar | TNM Version 2.5, Feb 2004 | |
| Scale: <DNA - due to perspective> | Analysis By: CEC | |

| | | | |
|---|---|---|---|
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

8 February 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Build Scenario (2031)
BARRIER DESIGN: LighthouseTab_20ft
ATMOSPHERICS: 68 deg F, 50% RH

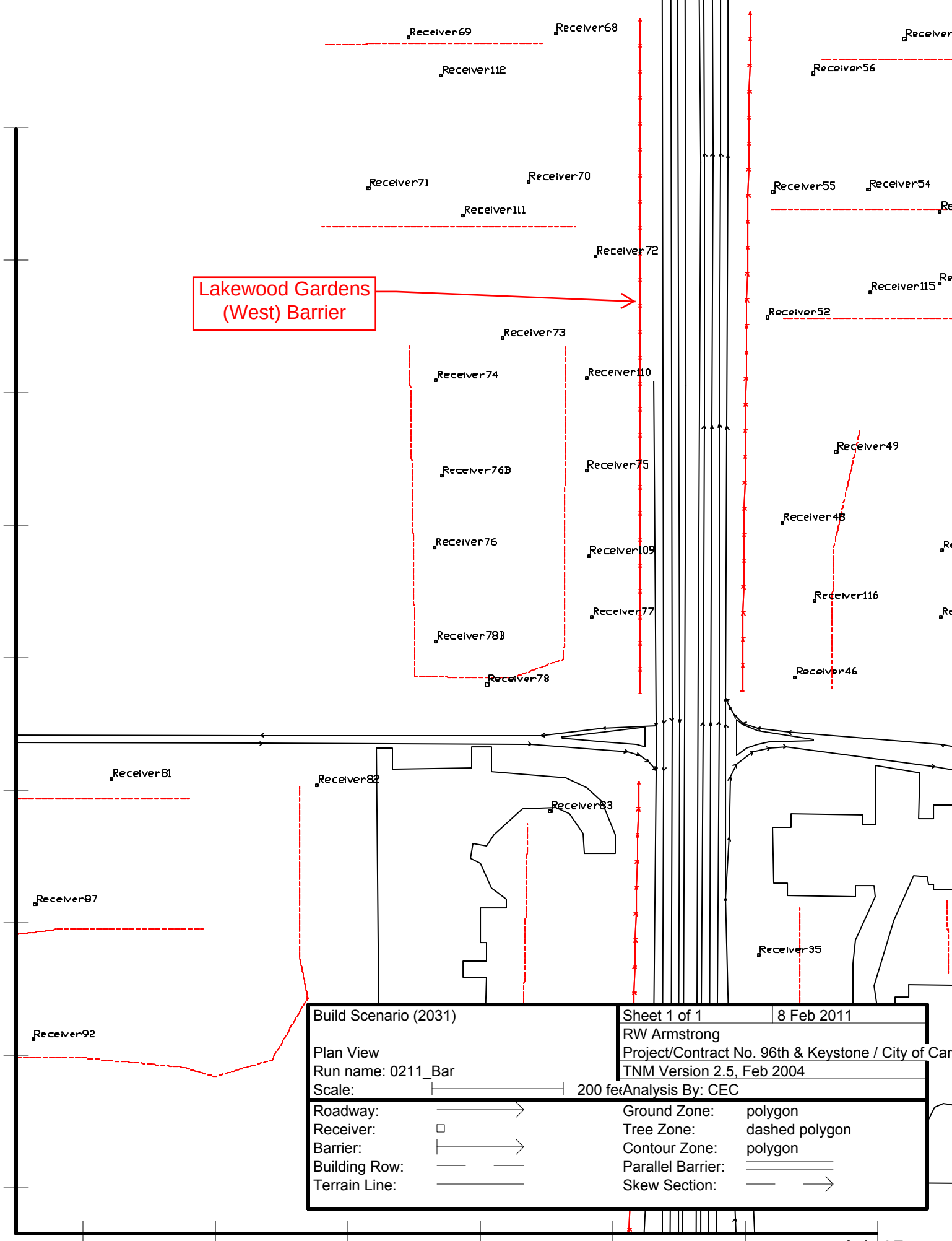
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

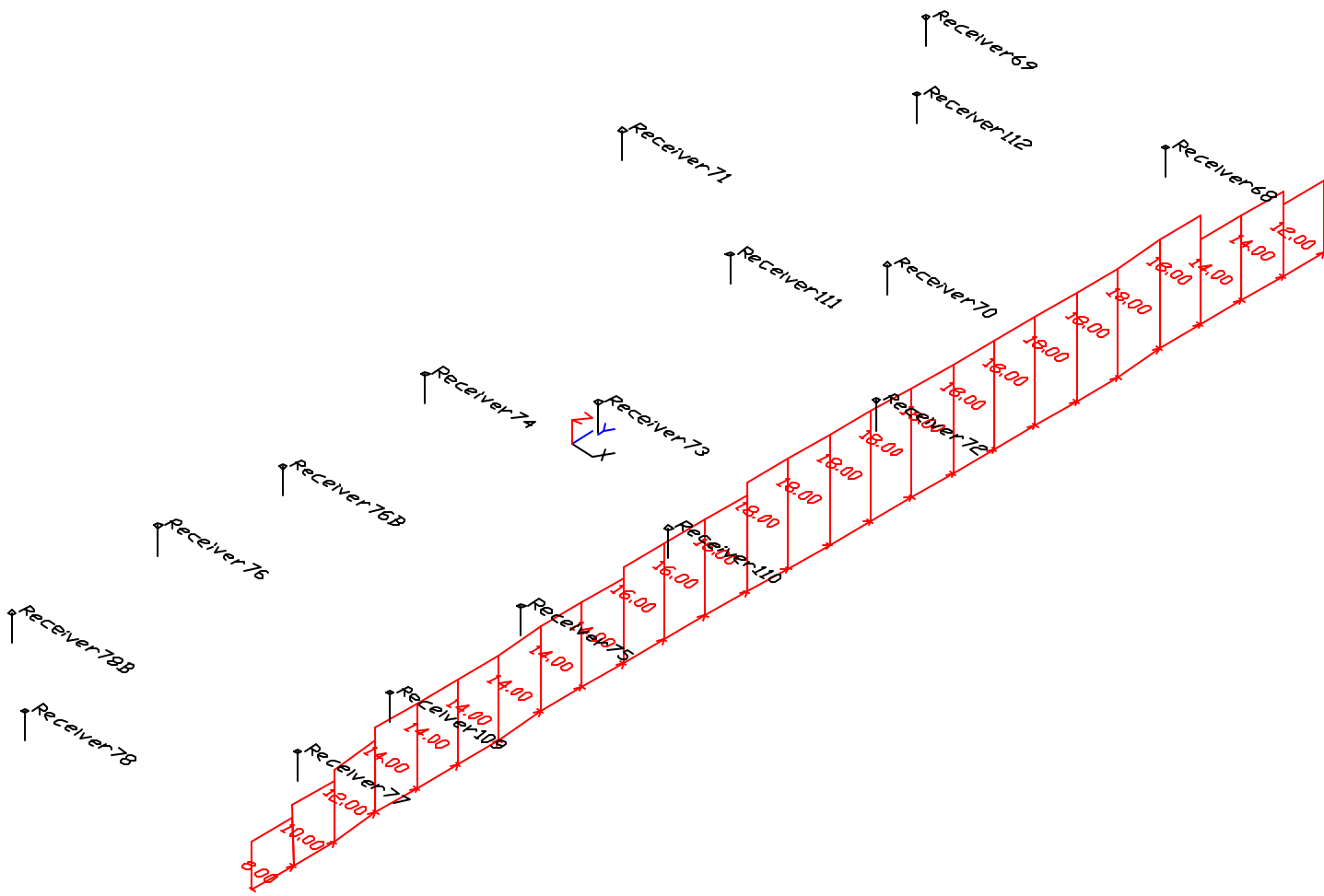
| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver85 | 89 | 1 | 0.0 | 62.5 | 66 | 62.5 | 15 | ---- | 59.5 | 3.0 | 5 | -2.0 |
| Receiver84 | 88 | 1 | 0.0 | 68.6 | 66 | 68.6 | 15 | Snd Lvl | 58.8 | 9.8 | 5 | 4.8 |
| Receiver83 | 87 | 1 | 0.0 | 68.9 | 66 | 68.9 | 15 | Snd Lvl | 64.9 | 4.0 | 5 | -1.0 |

| Dwelling Units | # DUs | Noise Reduction Min | Avg | Max |
|---|---|---|---|---|
| | | dB | dB | dB |
| All Selected | 3 | 3.0 | 5.6 | 9.8 |
| All Impacted | 2 | 4.0 | 6.9 | 9.8 |
| All that meet NR Goal | 1 | 9.8 | 9.8 | 9.8 |

Appendix C.2

Lakewood Gardens (West) Barrier


Receiver69
Receiver68
Receiver112
Receiver56
Receiver71
Receiver70
Receiver111
Receiver55
Receiver54
Receiver72
Lakewood Gardens
(West) Barrier
Receiver115
Receiver52
Receiver73
Receiver74
Receiver110
Receiver49
Receiver76B
Receiver75
Receiver48
Receiver76
Receiver109
Receiver116
Receiver77
Receiver78B
Receiver78
Receiver46
Receiver81
Receiver82
Receiver83
Receiver97
Receiver35
Receiver92
Build Scenario (2031)
Plan View
Run name: 0211_Bar
Scale:
200 fe
Sheet 1 of 1
8 Feb 2011
RW Armstrong
Project/Contract No. 96th & Keystone / City of Car
TNM Version 2.5, Feb 2004
Analysis By: CEC
Roadway:
Receiver:
Barrier:
Building Row:
Terrain Line:
Ground Zone: polygon
Tree Zone: dashed polygon
Contour Zone: polygon
Parallel Barrier:
Skew Section:
202200
202400
202600
202800
203000
203200
203400




| | | |
|---|---|---|
| Build Scenario (2031) | Sheet 1 of 1 | 8 Feb 2011 |
| | RW Armstrong | |
| Barrier View-LakewoodWest_7dBA | Project/Contract No. 96th & Keystone / City of Car | |
| Run name: 0211_Bar | TNM Version 2.5, Feb 2004 | |
| Scale: <DNA - due to perspective> | Analysis By: CEC | |

| | | | |
|---|---|---|---|
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

8 February 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Build Scenario (2031)
BARRIER DESIGN: LakewoodWest_7dBA
ATMOSPHERICS: 68 deg F, 50% RH

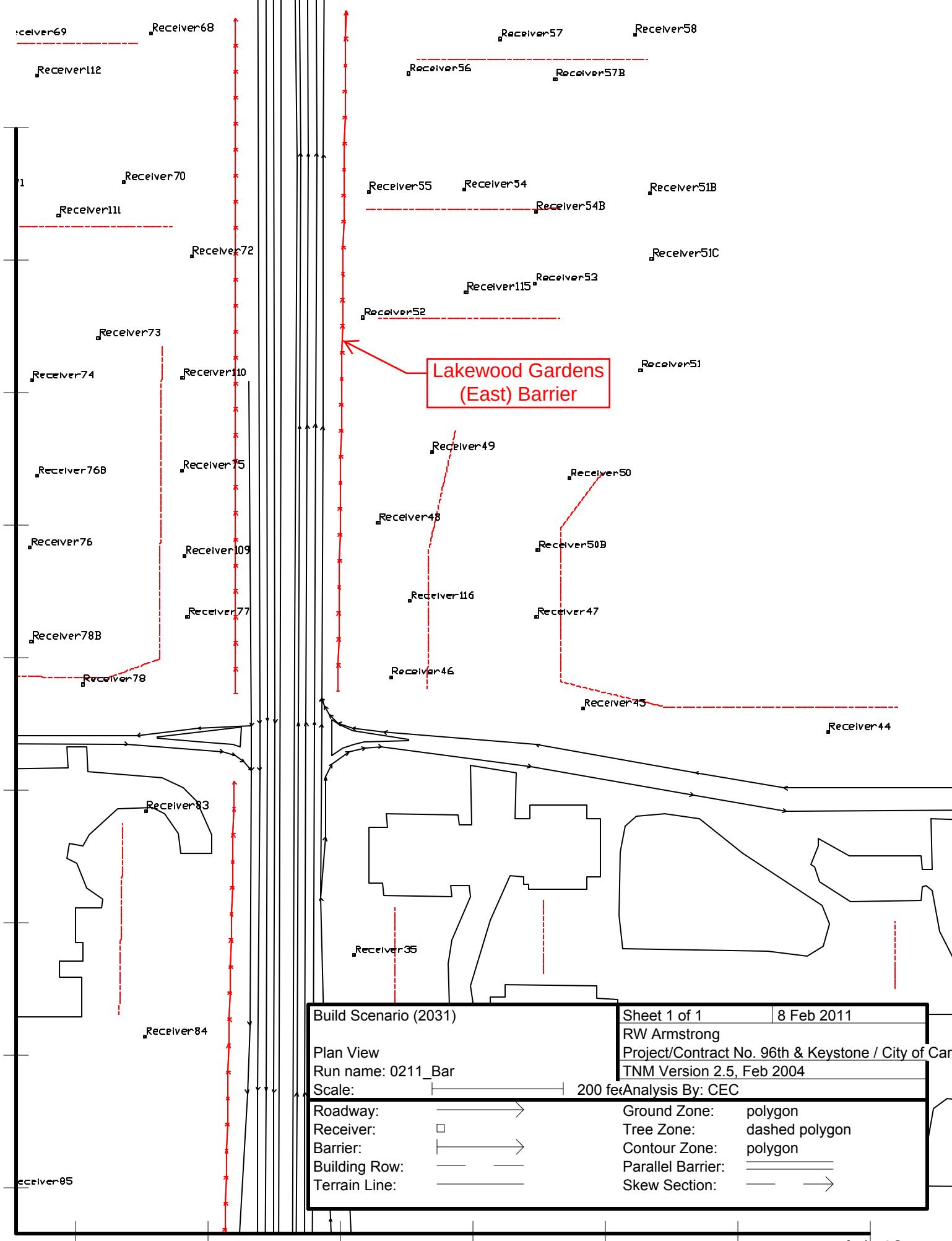
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

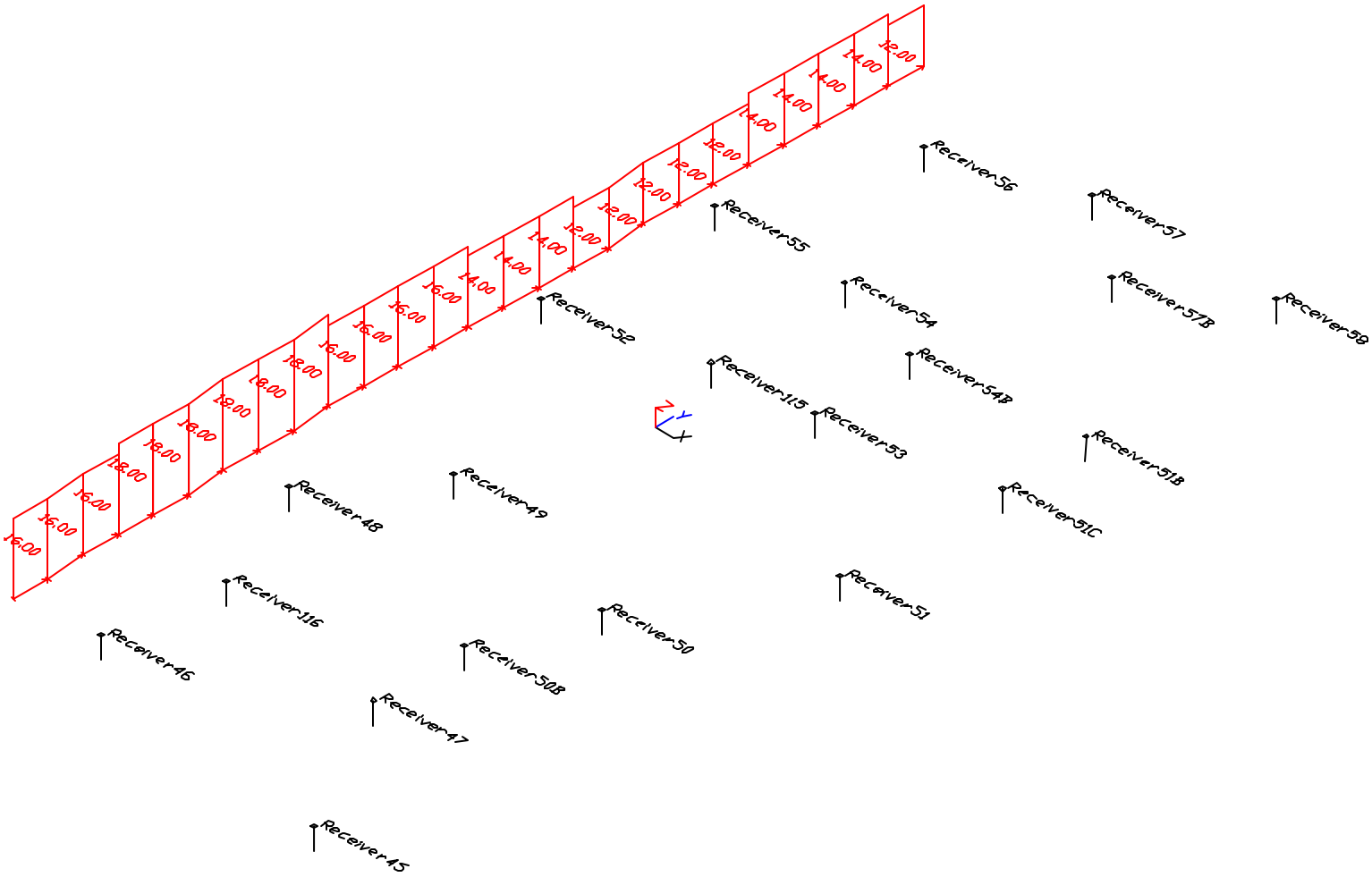
| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver78 | 82 | 1 | 0.0 | 65.1 | 66 | 65.1 | 15 | ---- | 63.5 | 1.6 | 5 | -3.4 |
| Receiver77 | 81 | 1 | 0.0 | 71.0 | 66 | 71.0 | 15 | Snd Lvl | 64.0 | 7.0 | 5 | 2.0 |
| Receiver78B | 143 | 1 | 0.0 | 64.0 | 66 | 64.0 | 15 | ---- | 61.3 | 2.7 | 5 | -2.3 |
| Receiver109 | 113 | 1 | 0.0 | 70.3 | 66 | 70.3 | 15 | Snd Lvl | 61.8 | 8.5 | 5 | 3.5 |
| Receiver76 | 80 | 1 | 0.0 | 63.7 | 66 | 63.7 | 15 | ---- | 59.6 | 4.1 | 5 | -0.9 |
| Receiver76B | 144 | 1 | 0.0 | 63.7 | 66 | 63.7 | 15 | ---- | 58.6 | 5.1 | 5 | 0.1 |
| Receiver75 | 79 | 1 | 0.0 | 69.9 | 66 | 69.9 | 15 | Snd Lvl | 60.1 | 9.8 | 5 | 4.8 |
| Receiver110 | 115 | 1 | 0.0 | 69.3 | 66 | 69.3 | 15 | Snd Lvl | 58.8 | 10.5 | 5 | 5.5 |
| Receiver74 | 78 | 1 | 0.0 | 63.3 | 66 | 63.3 | 15 | ---- | 57.6 | 5.7 | 5 | 0.7 |
| Receiver73 | 77 | 1 | 0.0 | 65.2 | 66 | 65.2 | 15 | ---- | 58.0 | 7.2 | 5 | 2.2 |
| Receiver72 | 76 | 1 | 0.0 | 70.6 | 66 | 70.6 | 15 | Snd Lvl | 59.2 | 11.4 | 5 | 6.4 |
| Receiver70 | 74 | 1 | 0.0 | 66.3 | 66 | 66.3 | 15 | Snd Lvl | 59.3 | 7.0 | 5 | 2.0 |
| Receiver111 | 116 | 1 | 0.0 | 62.9 | 66 | 62.9 | 15 | ---- | 57.1 | 5.8 | 5 | 0.8 |
| Receiver71 | 75 | 1 | 0.0 | 60.8 | 66 | 60.8 | 15 | ---- | 56.1 | 4.7 | 5 | -0.3 |
| Receiver112 | 117 | 1 | 0.0 | 62.6 | 66 | 62.6 | 15 | ---- | 58.6 | 4.0 | 5 | -1.0 |
| Receiver68 | 72 | 1 | 0.0 | 67.9 | 66 | 67.9 | 15 | Snd Lvl | 64.9 | 3.0 | 5 | -2.0 |
| Receiver69 | 73 | 1 | 0.0 | 61.2 | 66 | 61.2 | 15 | ---- | 61.1 | 0.1 | 5 | -4.9 |

| Dwelling Units | # DUs | Noise Reduction Min | Avg | Max |
|---|---|---|---|---|
| | | dB | dB | dB |
| All Selected | 17 | 0.1 | 5.8 | 11.4 |
| All Impacted | 7 | 3.0 | 8.2 | 11.4 |
| All that meet NR Goal | 10 | 5.1 | 7.8 | 11.4 |

Appendix C.3

Lakewood Gardens (East) Barrier


Receiver69
Receiver68
Receiver57
Receiver58
Receiver112
Receiver56
Receiver57B
Receiver70
Receiver55
Receiver54
Receiver51B
Receiver111
Receiver54B
Receiver72
Receiver51C
Receiver53
Receiver115
Receiver52
Receiver73
Lakewood Gardens
(East) Barrier
Receiver51
Receiver74
Receiver110
Receiver49
Receiver76B
Receiver75
Receiver50
Receiver48
Receiver76
Receiver109
Receiver50B
Receiver116
Receiver77
Receiver47
Receiver78B
Receiver46
Receiver78
Receiver45
Receiver44
Receiver83
Receiver35
Receiver84
Receiver85
Build Scenario (2031)
Plan View
Run name: 0211_Bar
Scale:
200 fe
Sheet 1 of 1
8 Feb 2011
RW Armstrong
Project/Contract No. 96th & Keystone / City of Car
TNM Version 2.5, Feb 2004
Analysis By: CEC
Roadway:
Receiver:
Barrier:
Building Row:
Terrain Line:
Ground Zone: polygon
Tree Zone: dashed polygon
Contour Zone: polygon
Parallel Barrier:
Skew Section:
202800
203000
203200
203400
203600
203800
204000




| | | | |
|---|---|---|---|
| Build Scenario (2031) | | Sheet 1 of 1 | 8 Feb 2011 |
| | | RW Armstrong | |
| Barrier View-LakewoodEast_7dBA | | Project/Contract No. 96th & Keystone / City of Car | |
| Run name: 0211_Bar | | TNM Version 2.5, Feb 2004 | |
| Scale: <DNA - due to perspective> | | Analysis By: CEC | |
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

8 February 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Build Scenario (2031)
BARRIER DESIGN: LakewoodEast_7dBA
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver50B | 142 | 1 | 0.0 | 63.0 | 66 | 63.0 | 15 | ---- | 59.6 | 3.4 | 5 | -1.6 |
| Receiver47 | 51 | 1 | 0.0 | 63.3 | 66 | 63.3 | 15 | ---- | 60.7 | 2.6 | 5 | -2.4 |
| Receiver45 | 49 | 1 | 0.0 | 61.5 | 66 | 61.5 | 15 | ---- | 60.2 | 1.3 | 5 | -3.7 |
| Receiver46 | 50 | 1 | 0.0 | 68.4 | 66 | 68.4 | 15 | Snd Lvl | 65.7 | 2.7 | 5 | -2.3 |
| Receiver116 | 121 | 1 | 0.0 | 69.0 | 66 | 69.0 | 15 | Snd Lvl | 62.4 | 6.6 | 5 | 1.6 |
| Receiver48 | 52 | 1 | 0.0 | 71.5 | 66 | 71.5 | 15 | Snd Lvl | 60.6 | 10.9 | 5 | 5.9 |
| Receiver50 | 54 | 1 | 0.0 | 61.7 | 66 | 61.7 | 15 | ---- | 58.2 | 3.5 | 5 | -1.5 |
| Receiver49 | 53 | 1 | 0.0 | 67.4 | 66 | 67.4 | 15 | Snd Lvl | 59.7 | 7.7 | 5 | 2.7 |
| Receiver51 | 55 | 1 | 0.0 | 59.2 | 66 | 59.2 | 15 | ---- | 56.2 | 3.0 | 5 | -2.0 |
| Receiver51C | 141 | 1 | 0.0 | 59.3 | 66 | 59.3 | 15 | ---- | 56.4 | 2.9 | 5 | -2.1 |
| Receiver53 | 57 | 1 | 0.0 | 62.2 | 66 | 62.2 | 15 | ---- | 57.2 | 5.0 | 5 | 0.0 |
| Receiver115 | 120 | 1 | 0.0 | 65.5 | 66 | 65.5 | 15 | ---- | 58.8 | 6.7 | 5 | 1.7 |
| Receiver52 | 56 | 1 | 0.0 | 72.4 | 66 | 72.4 | 15 | Snd Lvl | 60.1 | 12.3 | 5 | 7.3 |
| Receiver55 | 59 | 1 | 0.0 | 71.7 | 66 | 71.7 | 15 | Snd Lvl | 60.5 | 11.2 | 5 | 6.2 |
| Receiver54 | 58 | 1 | 0.0 | 65.1 | 66 | 65.1 | 15 | ---- | 59.3 | 5.8 | 5 | 0.8 |
| Receiver54B | 146 | 1 | 0.0 | 61.5 | 66 | 61.5 | 15 | ---- | 56.6 | 4.9 | 5 | -0.1 |
| Receiver51B | 140 | 1 | 0.0 | 59.1 | 66 | 59.1 | 15 | ---- | 56.3 | 2.8 | 5 | -2.2 |
| Receiver58 | 62 | 1 | 0.0 | 58.2 | 66 | 58.2 | 15 | ---- | 56.1 | 2.1 | 5 | -2.9 |
| Receiver57B | 139 | 1 | 0.0 | 60.6 | 66 | 60.6 | 15 | ---- | 57.7 | 2.9 | 5 | -2.1 |
| Receiver57 | 61 | 1 | 0.0 | 63.5 | 66 | 63.5 | 15 | ---- | 60.7 | 2.8 | 5 | -2.2 |
| Receiver56 | 60 | 1 | 0.0 | 68.9 | 66 | 68.9 | 15 | Snd Lvl | 63.3 | 5.6 | 5 | 0.6 |

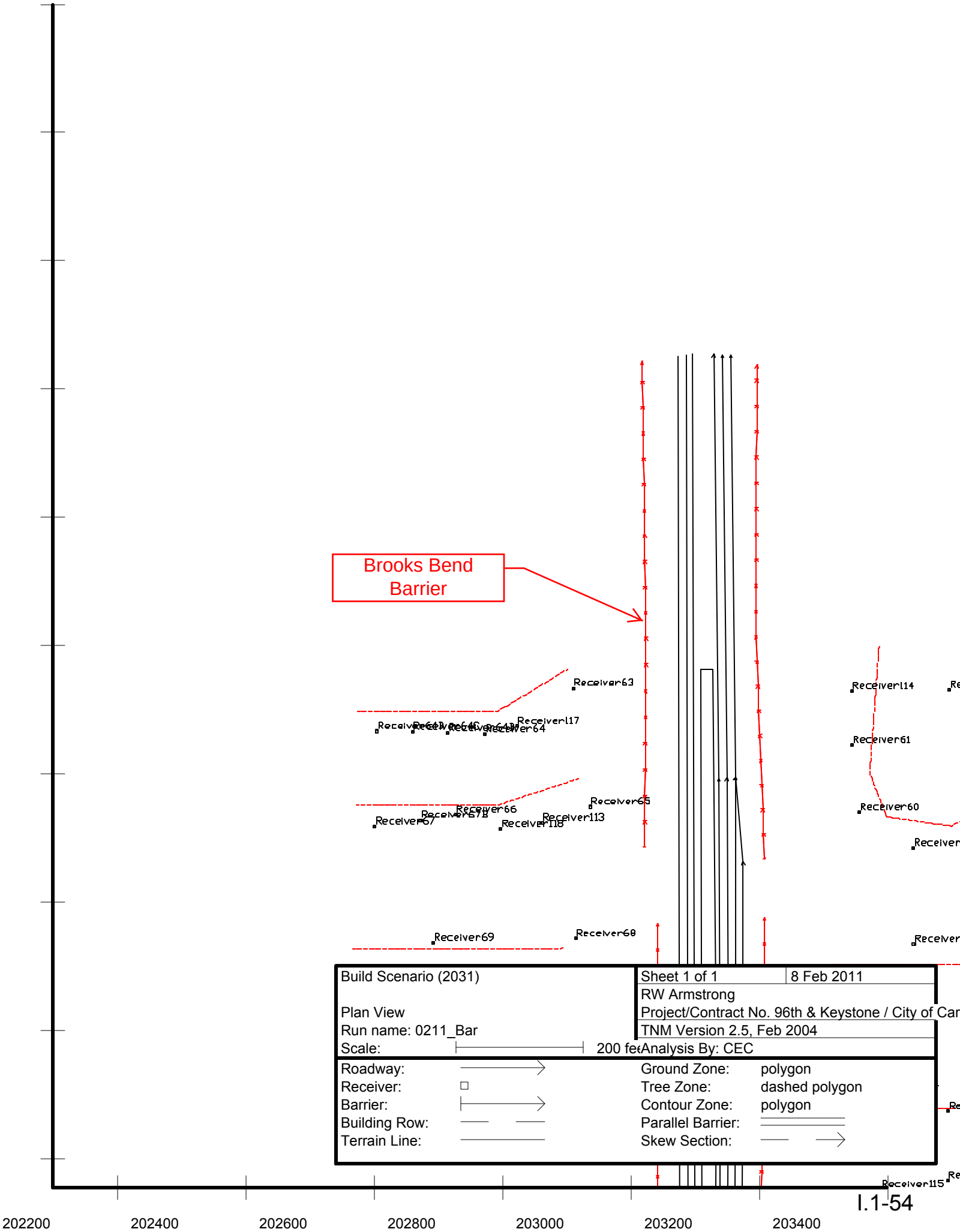
| Dwelling Units | # DUs | Noise Reduction Min | Avg | Max |
|---|---|---|---|---|

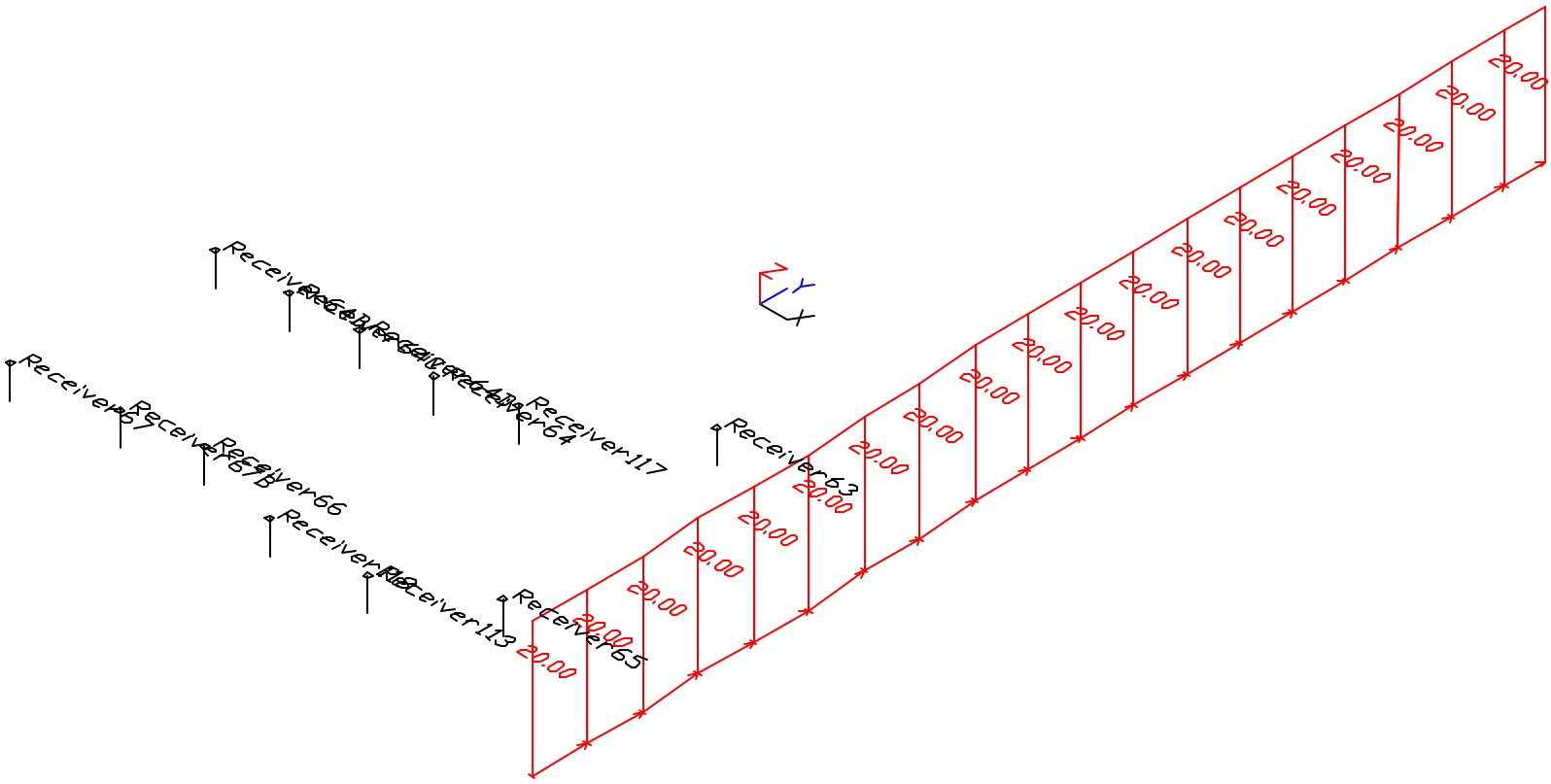
**RESULTS: SOUND LEVELS** **96th & Keystone / City of Carmel**

| | | | dB | dB | dB | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All Selected | | 21 | 1.3 | 5.1 | 12.3 | | | | | | | |
| All Impacted | | 7 | 2.7 | 8.1 | 12.3 | | | | | | | |
| All that meet NR Goal | | 9 | 5.0 | 8.0 | 12.3 | | | | | | | |

Appendix C.4

Brooks Bend Barrier


Brooks Bend Barrier
Receiver63
Receiver117
Receiver64
Receiver114
Receiver61
Receiver65
Receiver66
Receiver113
Receiver67
Receiver118
Receiver60
Receiver69
Receiver68
Receiver115
Build Scenario (2031)
Plan View
Run name: 0211_Bar
Scale:
200 fe
Sheet 1 of 1
8 Feb 2011
RW Armstrong
Project/Contract No. 96th & Keystone / City of Car
TNM Version 2.5, Feb 2004
Analysis By: CEC
Roadway:
Receiver:
Barrier:
Building Row:
Terrain Line:
Ground Zone: polygon
Tree Zone: dashed polygon
Contour Zone: polygon
Parallel Barrier:
Skew Section:
202200
202400
202600
202800
203000
203200
203400




| | | |
|---|---|---|
| Build Scenario (2031) | Sheet 1 of 1 | 8 Feb 2011 |
| | RW Armstrong | |
| Barrier View-BrooksBend_20ft | Project/Contract No. 96th & Keystone / City of Car | |
| Run name: 0211_Bar | TNM Version 2.5, Feb 2004 | |
| Scale: <DNA - due to perspective> | Analysis By: CEC | |

| | | | |
|---|---|---|---|
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

8 February 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Build Scenario (2031)
BARRIER DESIGN: BrooksBend_20ft
ATMOSPHERICS: 68 deg F, 50% RH

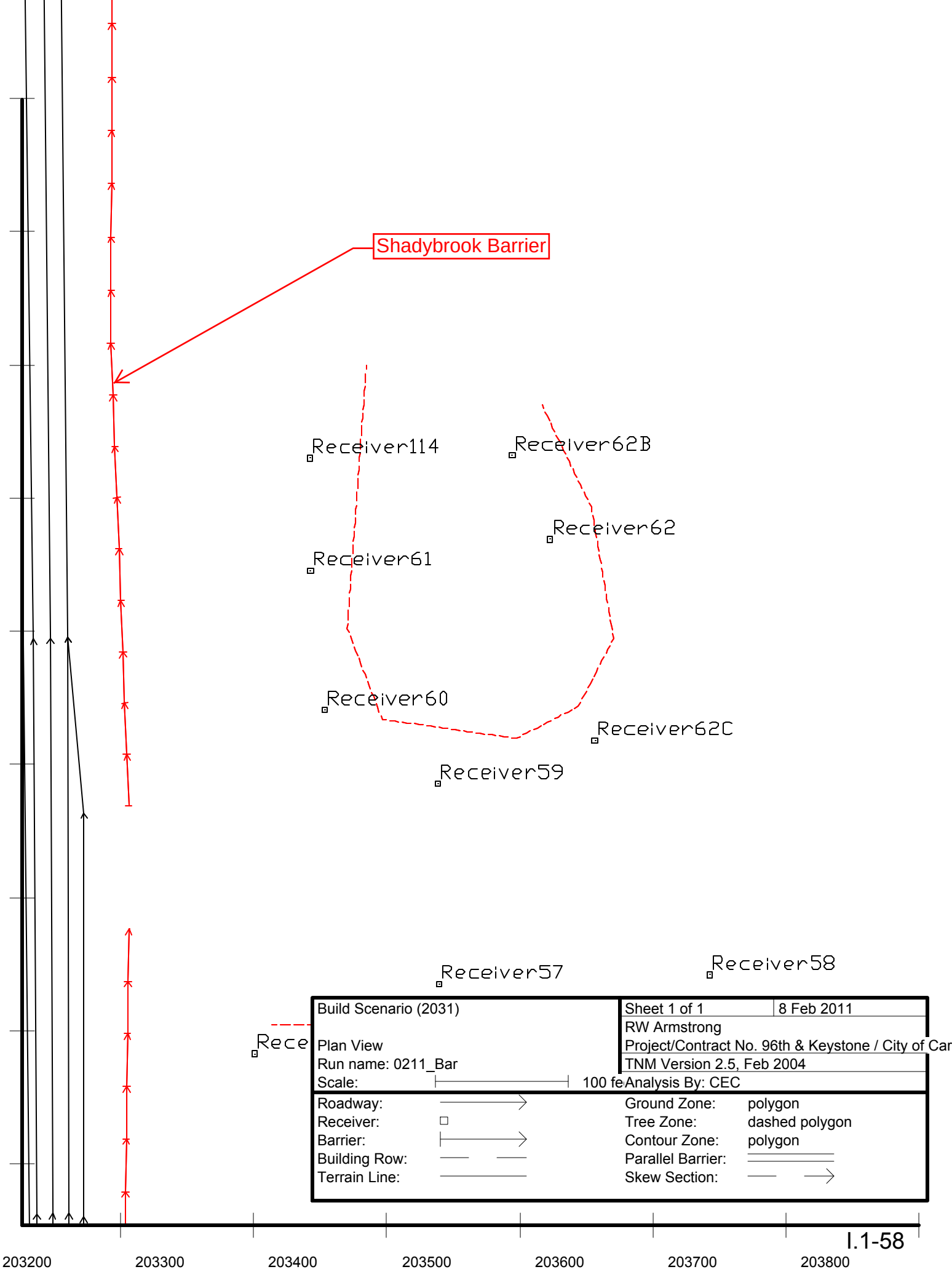
Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

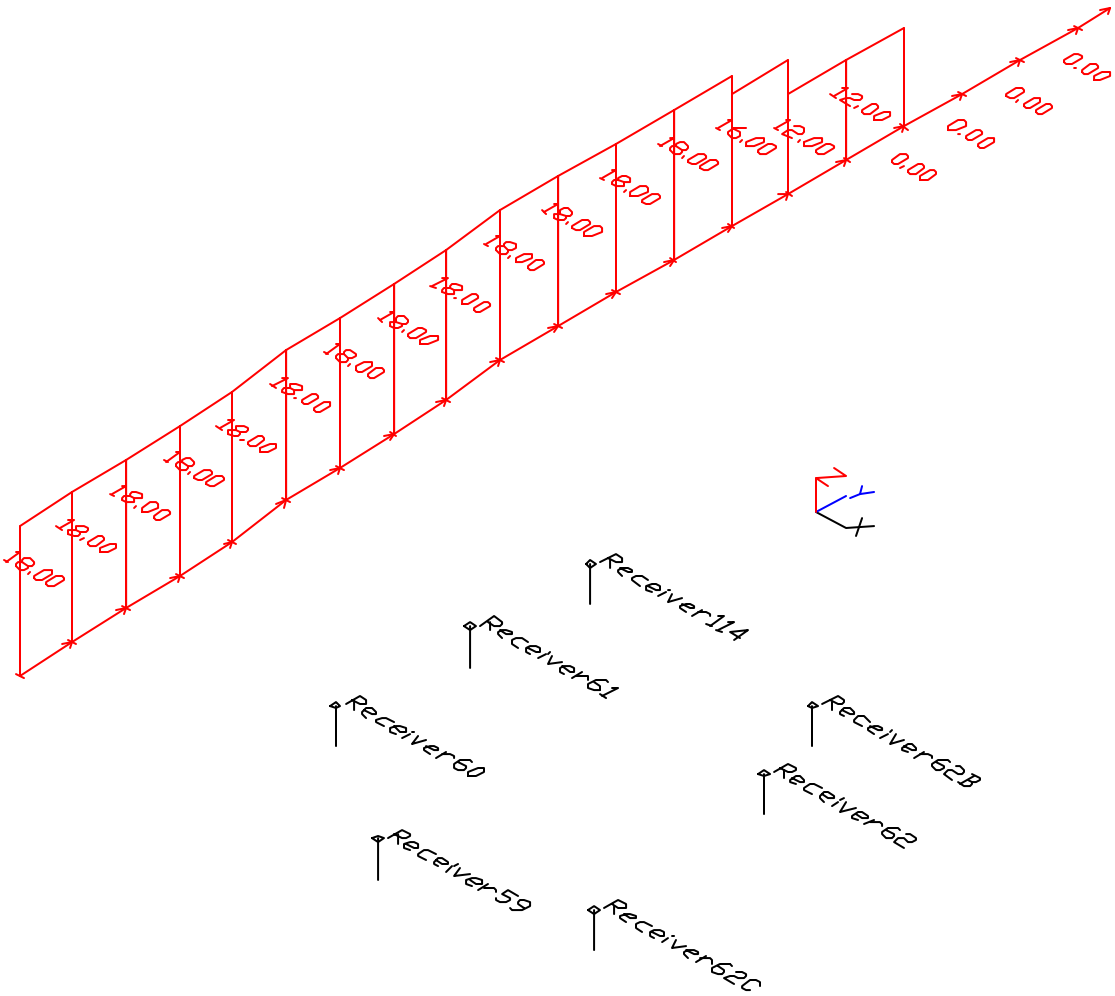
| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver65 | 70 | 1 | 0.0 | 69.0 | 66 | 69.0 | 15 | Snd Lvl | 63.3 | 5.7 | 5 | 0.7 |
| Receiver113 | 118 | 1 | 0.0 | 65.8 | 66 | 65.8 | 15 | ---- | 62.4 | 3.4 | 5 | -1.6 |
| Receiver118 | 129 | 1 | 0.0 | 63.8 | 66 | 63.8 | 15 | ---- | 61.4 | 2.4 | 5 | -2.6 |
| Receiver66 | 126 | 1 | 0.0 | 61.6 | 66 | 61.6 | 15 | ---- | 60.4 | 1.2 | 5 | -3.8 |
| Receiver67B | 135 | 1 | 0.0 | 60.7 | 66 | 60.7 | 15 | ---- | 59.4 | 1.3 | 5 | -3.7 |
| Receiver67 | 127 | 1 | 0.0 | 59.4 | 66 | 59.4 | 15 | ---- | 57.9 | 1.5 | 5 | -3.5 |
| Receiver64B | 132 | 1 | 0.0 | 58.8 | 66 | 58.8 | 15 | ---- | 56.4 | 2.4 | 5 | -2.6 |
| Receiver64C | 133 | 1 | 0.0 | 60.0 | 66 | 60.0 | 15 | ---- | 56.6 | 3.4 | 5 | -1.6 |
| Receiver64D | 134 | 1 | 0.0 | 61.4 | 66 | 61.4 | 15 | ---- | 57.7 | 3.7 | 5 | -1.3 |
| Receiver64 | 69 | 1 | 0.0 | 62.9 | 66 | 62.9 | 15 | ---- | 59.1 | 3.8 | 5 | -1.2 |
| Receiver117 | 124 | 1 | 0.0 | 64.5 | 66 | 64.5 | 15 | ---- | 58.6 | 5.9 | 5 | 0.9 |
| Receiver63 | 68 | 1 | 0.0 | 67.8 | 66 | 67.8 | 15 | Snd Lvl | 58.6 | 9.2 | 5 | 4.2 |

| Dwelling Units | # DUs | Noise Reduction Min | Avg | Max |
|---|---|---|---|---|
| | | dB | dB | dB |
| All Selected | 12 | 1.2 | 3.7 | 9.2 |
| All Impacted | 2 | 5.7 | 7.5 | 9.2 |
| All that meet NR Goal | 3 | 5.7 | 6.9 | 9.2 |

Appendix C.5

Shadybrook Barrier


Shadybrook Barrier
Receiver114
Receiver62B
Receiver62
Receiver61
Receiver60
Receiver62C
Receiver59
Receiver57
Receiver58
Build Scenario (2031)
Plan View
Run name: 0211_Bar
Scale:
100 fe
Sheet 1 of 1
8 Feb 2011
RW Armstrong
Project/Contract No. 96th & Keystone / City of Car
TNM Version 2.5, Feb 2004
Analysis By: CEC
Roadway:
Receiver:
Barrier:
Building Row:
Terrain Line:
Ground Zone: polygon
Tree Zone: dashed polygon
Contour Zone: polygon
Parallel Barrier:
Skew Section:
203200
203300
203400
203500
203600
203700
203800




| | | |
|---|---|---|
| Build Scenario (2031) | Sheet 1 of 1 | 8 Feb 2011 |
| | RW Armstrong | |
| Barrier View-Shadybrook_7dBA | Project/Contract No. 96th & Keystone / City of Car | |
| Run name: 0211_Bar | TNM Version 2.5, Feb 2004 | |
| Scale: <DNA - due to perspective> | Analysis By: CEC | |

| | | | |
|---|---|---|---|
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

8 February 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Build Scenario (2031)
BARRIER DESIGN: Shadybrook_7dBA
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Noise Reduction Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver62B | 137 | 1 | 0.0 | 60.6 | 66 | 60.6 | 15 | ---- | 55.5 | 5.1 | 5 | 0.1 |
| Receiver62 | 66 | 1 | 0.0 | 60.7 | 66 | 60.7 | 15 | ---- | 56.2 | 4.5 | 5 | -0.5 |
| Receiver62C | 138 | 1 | 0.0 | 60.1 | 66 | 60.1 | 15 | ---- | 57.5 | 2.6 | 5 | -2.4 |
| Receiver59 | 63 | 1 | 0.0 | 63.6 | 66 | 63.6 | 15 | ---- | 60.9 | 2.7 | 5 | -2.3 |
| Receiver60 | 64 | 1 | 0.0 | 66.8 | 66 | 66.8 | 15 | Snd Lvl | 62.3 | 4.5 | 5 | -0.5 |
| Receiver61 | 65 | 1 | 0.0 | 66.7 | 66 | 66.7 | 15 | Snd Lvl | 59.7 | 7.0 | 5 | 2.0 |
| Receiver114 | 119 | 1 | 0.0 | 65.9 | 66 | 65.9 | 15 | ---- | 58.0 | 7.9 | 5 | 2.9 |

| Dwelling Units | # DUs | Noise Reduction Min | Avg | Max |
|---|---|---|---|---|
| | | dB | dB | dB |
| All Selected | 7 | 2.6 | 4.9 | 7.9 |
| All Impacted | 2 | 4.5 | 5.8 | 7.0 |
| All that meet NR Goal | 3 | 5.1 | 6.7 | 7.9 |

# Appendix D

Model Validation

Appendix D.1

Field Measurement Data Sheets

**NOISE ANALYSIS**
**FIELD MEASUREMENT DATA SHEETS**

## Project Data

**Des. No.:** 0901562

**Description:** Proposed Interchange – 96th Street / Keystone Avenue

**Project Location (City / County):** Carmel / Hamilton County

## Receiver Data

**Receiver #:** 1

**Land Use Category (A, B, C or D):** B

**Receiver Description (Location / Address):** 2701 E. 96th Street

## Environmental Conditions

**Weather (Sunny, Cloudy, etc.):** Cool / Sunny

**Temperature ($^0$F):** 52

**Relative Humidity (%):** 40

## Sample Data

**Date:** 11/5/09

**Start Time:** 4:53 PM

**End Time:** 5:08 PM

**dBA Reading:** 60.2

**Special Notes (Unanticipated Events):**
Plane overhead, traffic backup on 96th

West of Haverstick to Keystone

**Site Sketch / Aerial:**

## Traffic Data

**Posted Speed (mph):** 35 **Ambient Speed (mph):** 35

| | Road 1: N/A | | Road 2: W. 96th St. | |
|---|---|---|---|---|
| | NB | SB | EB | WB |
| **Auto** | | | 161 | 119 |
| **Light Trucks** | | | | 1 |
| **Heavy Trucks (more than 2 axels)** | | | 2 | |
| **Motorcycles** | | | | 1 |

**NOISE ANALYSIS**
**FIELD MEASUREMENT DATA SHEETS**

## Project Data

**Des. No.:** 0901562

**Description:** Proposed Interchange – 96th Street / Keystone Avenue

**Project Location (City / County):** Carmel / Hamilton County

## Receiver Data

**Receiver #:** 72

**Land Use Category (A, B, C or D):** B

**Receiver Description (Location / Address):** 2522 Sunnymeade Ln.

## Environmental Conditions

**Weather (Sunny, Cloudy, etc.):** Cool / Sunny

**Temperature ($^0$F):** 52

**Relative Humidity (%):** 40

## Sample Data

**Date:** 11/5/09

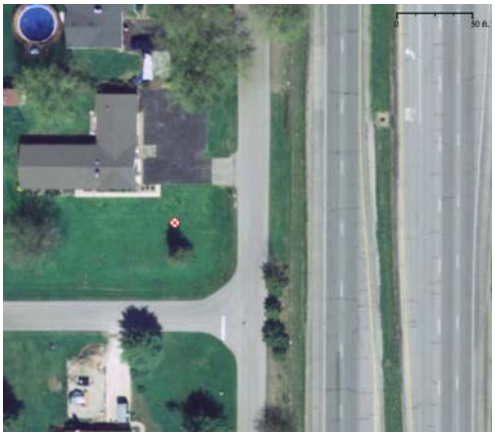
**Start Time:** 5:25 PM

**End Time:** 5:40 PM

**dBA Reading:** 64.5

**Special Notes (Unanticipated Events):**
Dog barking, children playing, plane overhead

**Site Sketch / Aerial:**



## Traffic Data

**Posted Speed (mph):** 50 **Ambient Speed (mph):** 50

| | Road 1: Keystone | | Road 2: N/A | |
|---|---|---|---|---|
| | NB | SB | EB | WB |
| **Auto** | 495 | 349 | | |
| **Light Trucks** | 1 | 5 | | |
| **Heavy Trucks (more than 2 axels)** | | 2 | | |

**NOISE ANALYSIS**
**FIELD MEASUREMENT DATA SHEETS**

## Project Data

**Des. No.:** 0901562

**Description:** Proposed Interchange – 96th Street / Keystone Avenue

**Project Location (City / County):** Carmel / Hamilton County

## Receiver Data

**Receiver #:** 39

**Land Use Category (A, B, C or D):** B

**Receiver Description (Location / Address):** 3417 98th Street

## Environmental Conditions

**Weather (Sunny, Cloudy, etc.):** Cool / Dusk

**Temperature ($^0$F):** 52

**Relative Humidity (%):** 40

## Sample Data

**Date:** 11/5/09

**Start Time:** 5:50 PM

**End Time:** 6:05 PM

**dBA Reading:** 53.4

**Special Notes (Unanticipated Events):**

**Site Sketch / Aerial:**

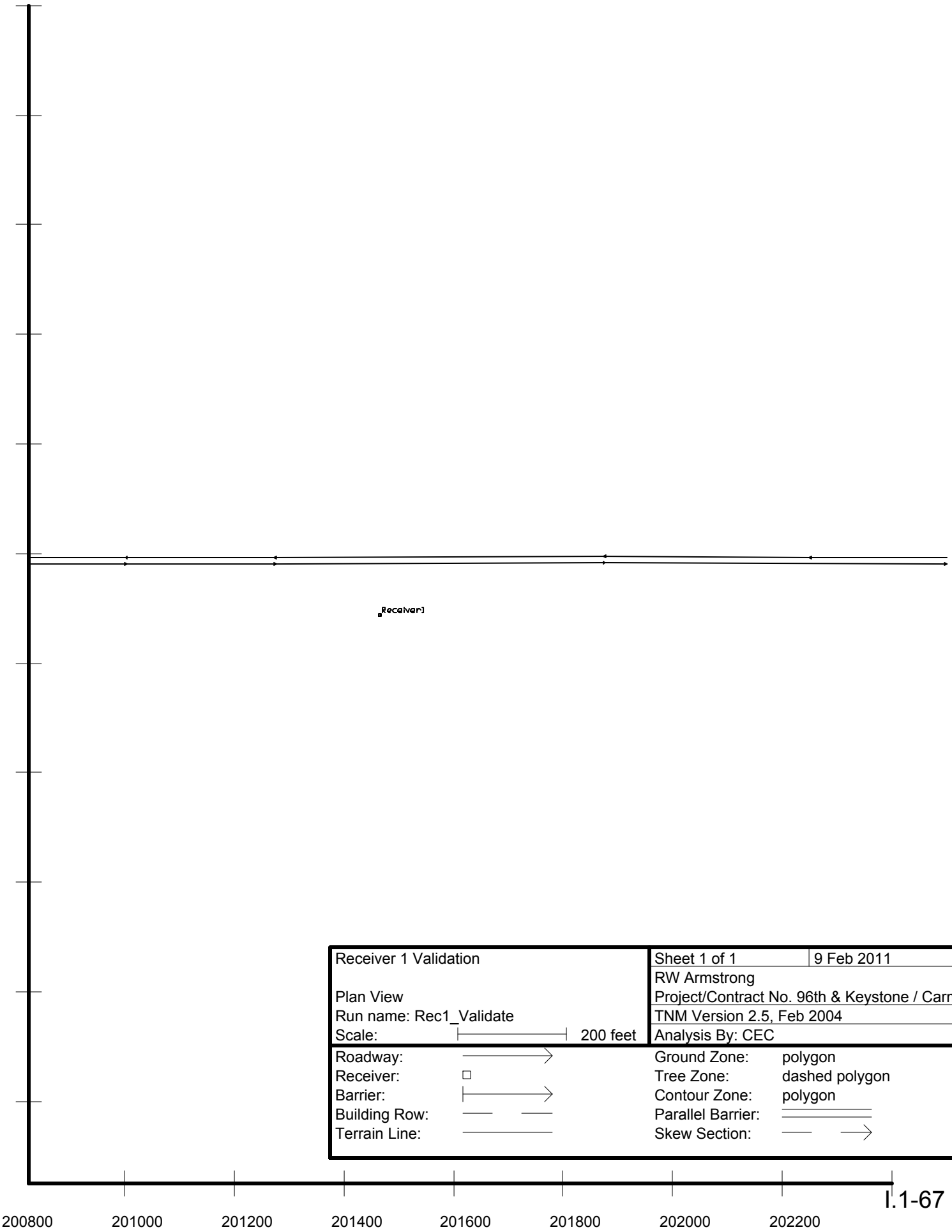
## Traffic Data

**Posted Speed (mph):** 25 **Ambient Speed (mph):** 30

| | Road 1: N/A | | Road 2: 98th St. | |
|---|---|---|---|---|
| | NB | SB | EB | WB |
| **Auto** | | | 14 | 7 |
| **Light Trucks** | | | | |
| **Heavy Trucks (more than 2 axels)** | | | | |
| **Motorcycles** | | | | 1 |

Appendix D.2

*TNM 2.5* Results of Sampled Receptors




| | | | |
|---|---|---|---|
| Receiver 1 Validation | | Sheet 1 of 1 | 9 Feb 2011 |
| | | RW Armstrong | |
| Plan View | | Project/Contract No. 96th & Keystone / Carmel | |
| Run name: Rec1_Validate | | TNM Version 2.5, Feb 2004 | |
| Scale: | 200 feet | Analysis By: CEC | |
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

9 February 2011
TNM 2.5
Calculated with TNM 2.5

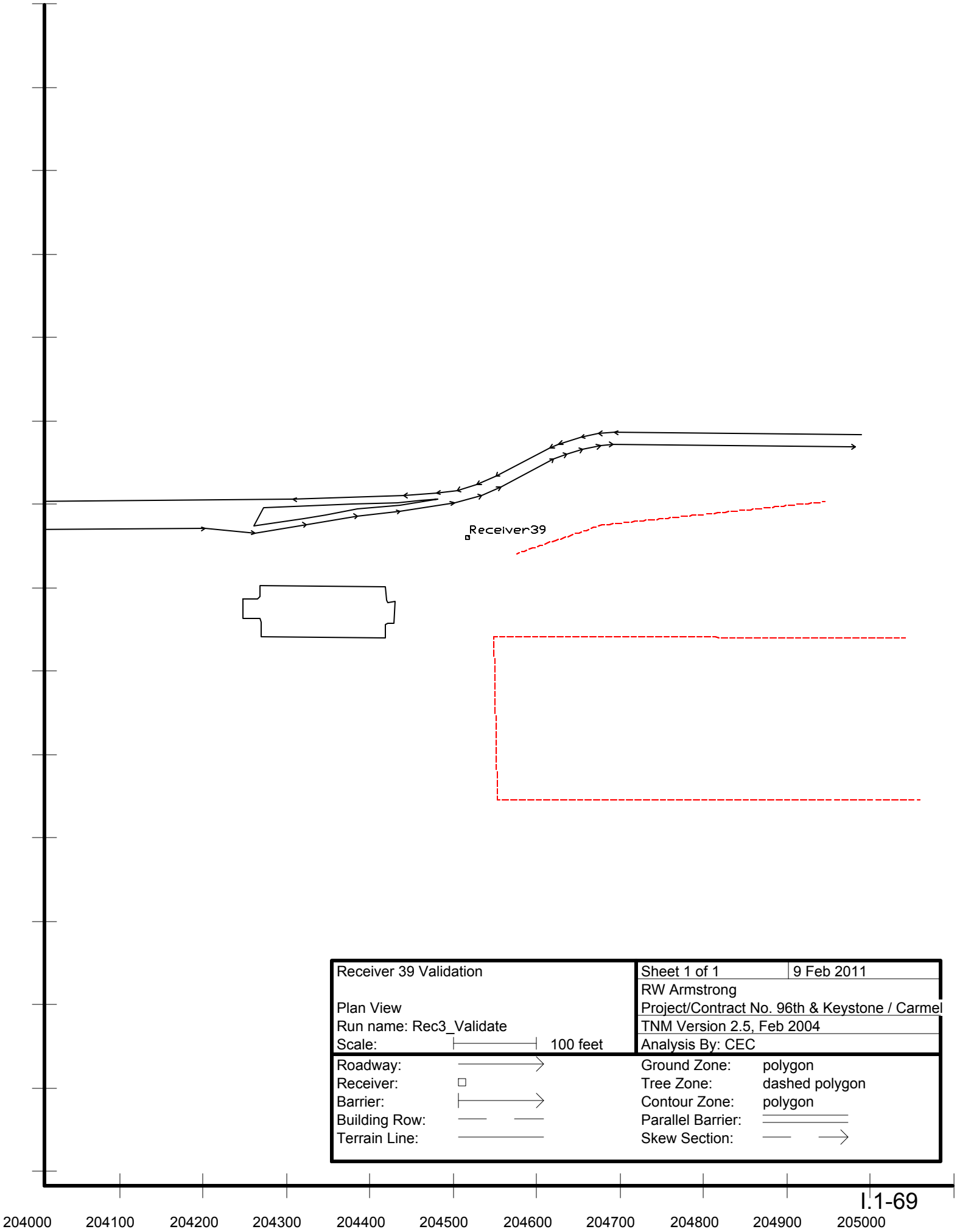
RESULTS: SOUND LEVELS

PROJECT/CONTRACT: 96th & Keystone / Carmel
RUN: Receiver 1 Validation
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 52 deg F, 40% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Noise Reduction Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver1 | 1 | 1 | 0.0 | 58.2 | 66 | 58.2 | 15 | ---- | 58.2 | 0.0 | 5 | -5.0 |

| Dwelling Units | # DUs | Noise Reduction Min dB | Avg dB | Max dB |
|---|---|---|---|---|
| All Selected | 1 | 0.0 | 0.0 | 0.0 |
| All Impacted | 0 | 0.0 | 0.0 | 0.0 |
| All that meet NR Goal | 0 | 0.0 | 0.0 | 0.0 |




| | | | |
|---|---|---|---|
| Receiver 39 Validation | | Sheet 1 of 1 | 9 Feb 2011 |
| | | RW Armstrong | |
| Plan View | | Project/Contract No. 96th & Keystone / Carmel | |
| Run name: Rec3_Validate | | TNM Version 2.5, Feb 2004 | |
| Scale: | 100 feet | Analysis By: CEC | |
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RESULTS: SOUND LEVELS

96th & Keystone / Carmel

RW Armstrong

CEC

9 February 2011

TNM 2.5

Calculated with TNM 2.5

RESULTS: SOUND LEVELS

PROJECT/CONTRACT: 96th & Keystone / Carmel

RUN: Receiver 39 Validation

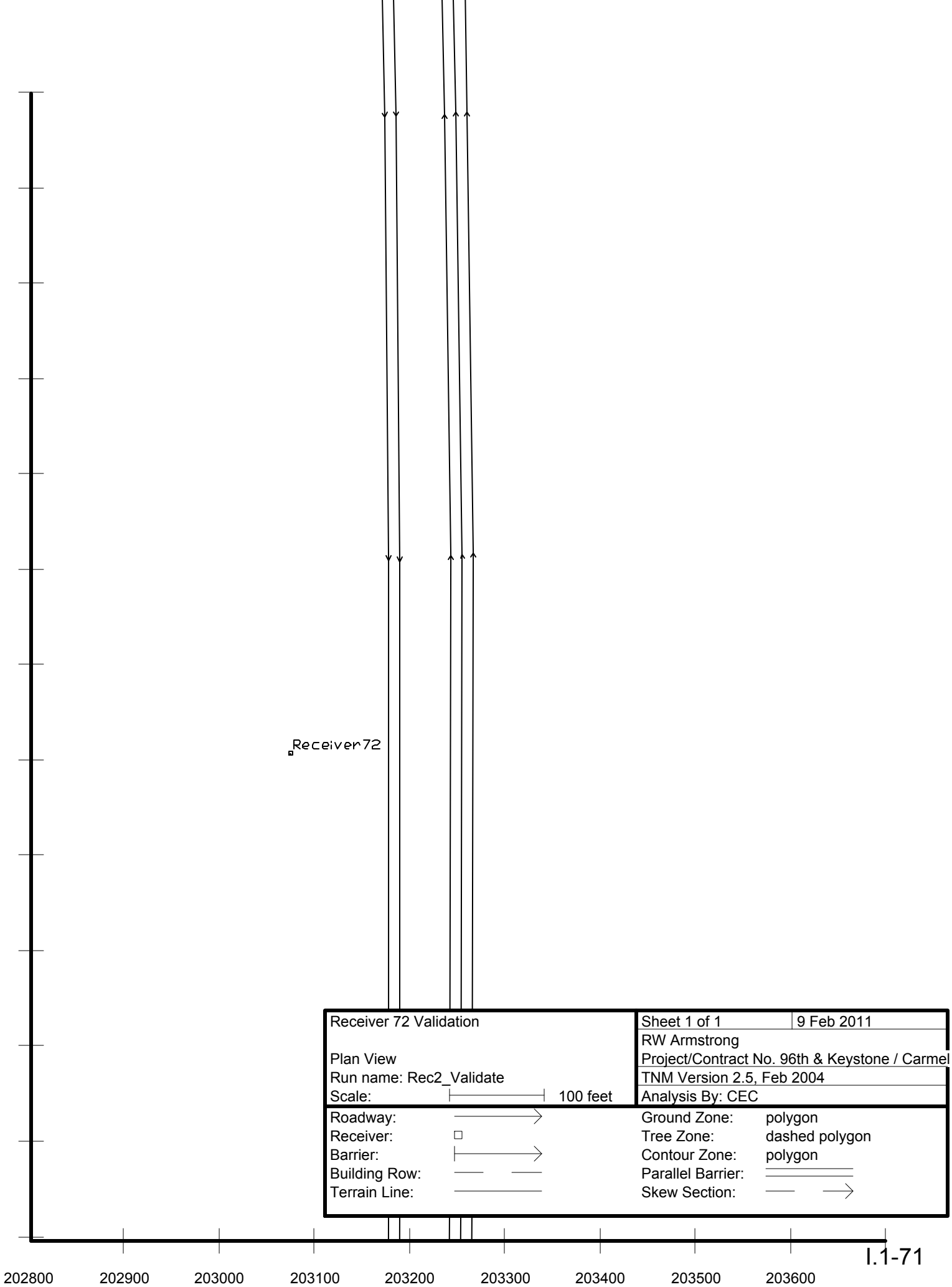
BARRIER DESIGN: INPUT HEIGHTS

ATMOSPHERICS: 52 deg F, 40% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver39 | 1 | 1 | 0.0 | 51.0 | 66 | 51.0 | 15 | ---- | 51.0 | 0.0 | 5 | -5.0 |

| Dwelling Units | # DUs | Noise Reduction Min dB | Avg dB | Max dB |
|---|---|---|---|---|
| All Selected | 1 | 0.0 | 0.0 | 0.0 |
| All Impacted | 0 | 0.0 | 0.0 | 0.0 |
| All that meet NR Goal | 0 | 0.0 | 0.0 | 0.0 |




| | |
|---|---|
| Receiver 72 Validation | Sheet 1 of 1 — 9 Feb 2011 |
| | RW Armstrong |
| Plan View | Project/Contract No. 96th & Keystone / Carmel |
| Run name: Rec2_Validate | TNM Version 2.5, Feb 2004 |
| Scale: 100 feet | Analysis By: CEC |

| | | | |
|---|---|---|---|
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RESULTS: SOUND LEVELS

96th & Keystone / Carmel

RW Armstrong
CEC

9 February 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 96th & Keystone / Carmel
RUN: Receiver 72 Validation
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 52 deg F, 40% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Noise Reduction Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver72 | 1 | 1 | 0.0 | 65.2 | 66 | 65.2 | 15 | ---- | 65.2 | 0.0 | 5 | -5.0 |

| Dwelling Units | # DUs | Noise Reduction Min dB | Avg dB | Max dB |
|---|---|---|---|---|
| All Selected | 1 | 0.0 | 0.0 | 0.0 |
| All Impacted | 0 | 0.0 | 0.0 | 0.0 |
| All that meet NR Goal | 0 | 0.0 | 0.0 | 0.0 |

# Appendix E

Regulatory Guidance

Paragraph 772.9b(1) also requires noise analysis for undeveloped lands for which development is "planned, designed, and programmed." The terms "... planned, designed, and programmed ..." mean that: 1) a definite commitment has been made to develop the property in question, and 2) there is also official knowledge (such as through a public agency) that such development has been "planned, designed, and programmed." A definite commitment means that a developer has shown a definite interest to develop the land within a reasonable period of time and has reached a point where he can no longer practically change his plans.

The exact date for determining when undeveloped land is "... planned, designed, and programmed ..." for development is not specified in 23 CFR 772. Each SHA and accompanying FHWA Division Office should establish a mutually acceptable specific date that is appropriate for the development process in their respective State. One specific date that has evolved is the date of issuance of a building permit. Other dates used by States include the date of final approval of the development plan and the date of recording of the plat plan. Any of these dates are in conformance with FHWA policy.

**772.11:** **NOISE ABATEMENT**

**a. In determining and abating traffic noise impacts, primary consideration is to be given to exterior areas. Abatement will usually be necessary only where frequent human use occurs and a lowered noise level would be of benefit.**

**b. In those situations where there are no exterior activities to be affected by the traffic noise, or where the exterior activities are far from or physically shielded from the roadway in a manner that prevents an impact on exterior activities, the interior criterion shall be used as the basis of determining noise impacts.**

In most situations, if the exterior area can be protected, the interior will also be protected. The selection of the exterior area where "frequent human use occurs" is very important. This requires a site visit to determine whether people are using the entire exterior area or only a small portion, like a patio or porch. Some States choose the right-of-way line (a point farthest away from a house) to be on the conservative side when doing the noise impact analysis. Interior use applies mostly to hospitals and schools.

Interior noise level predictions may be computed by subtracting from the predicted exterior levels the noise reduction factors for the building in question. If field measurements of these noise reduction factors are obtained or the factors are calculated from detailed acoustical analyses, the measured or calculated reduction factors should be used. In the absence of such calculations or field measurements, the noise reduction factors may be obtained from the following table:

**Table 7: Building Noise Reduction Factors**
Noise Reduction Due to Exterior of the

| Building Type | Window Condition | Structure |
|---|---|---|
| All | Open | 10 dB |
| Light Frame | Ordinary Sash (closed) | 20 dB |
| | Storm Windows | 25 dB |
| Masonry | Single Glazed | 25 dB |
| Masonry | Double Glazed | 35 dB |

**NOTE**: The windows shall be considered open unless there is firm knowledge that the windows are in fact kept closed almost every day of the year.

# Appendix I.2

# Noise Analysis Amendment

DATE: December 27, 2011

TO: Ben Lawrence, Manager, Environmental Policy Office, INDOT

FROM: Chad Costa, Senior Environmental Planner, RW Armstrong

RE: Des. No. 0901562, 96th Street and Keystone Avenue Interchange
Hamilton and Marion Counties, Indiana
Amendment to the March 2011 Noise Analysis

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# NOISE ANALYSIS AMENDMENT

## 1.0 Amendment Intent

This memorandum serves as an amendment to the noise analysis prepared for the referenced project in March 2011 and determined to be technically sufficient by INDOT Environmental Services section on March 8, 2011. The amendment to the original analysis was determined necessary for the following reasons:

- Address recent changes to both Federal and state noise policies.
- Update the analysis to reflect minor modifications in the project design.

*Changes to the Applicable Policies:*

Prior to the approval of the original analysis, the Federal Highway Administration (FHWA) released its final rule on highway traffic noise analysis procedures titled, *Highway Traffic Noise: Analysis and Abatement Guidance (June 2010, Revised January 2011)*. With the issuance of this guidance, the FHWA provided each state one year to update their respective state traffic noise policy to be in compliance with the Federal guidelines. The Indiana Department of Transportation (INDOT) released their updated policy on July 1, 2011 titled, *Indiana Department of Transportation Traffic Noise Analysis Procedures (2011)*. With the issuance of INDOT's new procedures, all Type I projects anticipated to receive environmental clearance after July 13, 2011 are required to comply with the current policy. As such, the original noise analysis requires minor adjustments to conform to this policy. This amendment intends to accomplish this need.

It should be noted that the model validation completed as part of the initial noise analysis remains accurate for this amendment. No further validation of the model is necessary.

*Modifications in the Project Design:*

Several changes in the project design have occurred that warrant an update to the analysis model. Although minor in nature, these revisions to the proposed design were seen as having the potential to affect the propagation of noise between the proposed roadways and the receptors. Therefore, the traffic noise model was updated to reflect these design changes. The specific changes in the proposed design included shifting the alignment of the S-curve in the north-south connector road, between 96th Street and 98th Street, to the south in order to minimize impacts to the Enterprise parking lot. Additionally, the proposed intersection of Aronson Drive and 96th Street was modified from a proposed roundabout to a right-in / right-out with allowable left turn movements for westbound 96th Street to southbound Aronson Drive (no other left turns at this intersection would be allowed). Finally, the Keystone Parkway southbound lane work was extended to the I-465 southern ramp terminal. Extension of the southbound Keystone Parkway lanes to this location was necessary for tying in the proposed slip ramp lane to the I-465 ramps. It was originally thought that space for this tie-in would be provided as part of INDOTs recent upgrade to the I-465 / Keystone Parkway interchange. However, due to the uncertainty in the proposed projects construction timing, the tie-in was unable to be provided. It should be noted that extension of the southbound lanes of Keystone Parkway to the I-465 south ramp terminals did not add any additional receptors to the model. This amendment intends to address changes in results to the original analysis that are associated with the modifications made to the project design. No changes in the TNM model were made as part of this re-evaluation to the horizontal or vertical alignments of Keystone Parkway, only the length of the roadway segments as previously discussed.

It should be noted the traffic volumes used in the March 2011 noise analysis were unchanged in this re-evaluation. Even at the intersection of Aronson Drive / 96th Street where the proposed intersection was modified to a partial right-in / right-out, the diverted traffic was not considered meaningful (less than 50 vehicles per hour) enough to affect the propagation of noise along 96th Street.

## 2.0 Project Overview

The City of Carmel is proposing to construct a roundabout interchange at the existing at-grade intersection of 96th Street and Keystone Parkway. The grade of Keystone Parkway would be elevated over 96th Street. Through the interchange 96th Street traffic would be controlled by a multi-lane teardrop roundabout. The grade separation and usage of a roundabout would eliminate left turn movements from the intersection, reducing the exposure of 96th Street traffic to traffic along Keystone Parkway and vice versa. The proposed project is located in south-central Hamilton County and north-central Marion County and at the southern limits of the City of Carmel.

The project will be constructed in two parts, an immediate project, which includes those components of the overall project that are absolutely necessary to gain free flow conditions on

Keystone Parkway, and the future planned improvements. The future planned improvements are those elements of the overall project that are needed to provide sufficient traffic operations at intersections along 96th Street through the design year (2033), but due to fiscal constraints and regional mobility needs are not able to be completed at this time. The first phase, or immediate project, is anticipated to be completed by Summer 2014 and is intended to provide free flowing traffic conditions along Keystone Parkway, which will benefit vehicles using the facility as part of detour routes for adjacent highway projects. As such, the immediate project includes the construction of the interchange and all connector roads, all work along Keystone Parkway from the southernmost ramp of the I-465 interchange to 99th Street and reconstruction along 96th Street between Whitley Drive and Enterprise Drive. The construction of the future planned improvements is expected to occur as early as 2016 or possibly as late as 2030. Its schedule is entirely determined by the obligation of funding for those improvements from Federal, state or local revenue sources. The future planned improvements include construction of roundabouts at the Haverstick Road / 96th Street and Priority Way West Drive / 96th Street intersections, and the reconstruction of Threel Road. The total estimated length of the overall project is approximately 2.6 miles.

This re-evaluation was performed on the future planned improvements, which included all components of the immediate project as well.

## 3.0 Receptor Identification / Modification

In accordance with the *Indiana Department of Transportation Traffic Noise Analysis Procedures (2011)*, potential receptors were identified within 500 ft. of the proposed edge of pavement. There were no impacted receptors identified at 500 ft., so an adjustment of the analysis area was unnecessary.

Whether predicted noise levels approached or exceeded the Noise Abatement Criteria (NAC) at an identified receptor is determined by the NAC land use category in which it is classified. The *Indiana Department of Transportation Traffic Noise Analysis Procedures (2011)*, developed from Title 23, CFR 772, identifies four exclusively exterior NAC land use categories, A, B, C, and E, one exclusively interior land use category, D, and two categories with no established NAC, F and G. A description of each NAC category is listed in Table 1 below.

| TABLE 1 - FHWA NAC LAND USES | | | |
|---|---|---|---|
| **Activity Category** | **Activity Criteria Leq(h)** | **Evaluation Location** | **Activity Description** |
| A | 57 dBA | Exterior | Land uses on which serenity and quiet are of extraordinary significance and serve an important public need. The preservation of those qualities is essential if the area is to continue to serve its intended purpose. |
| B | 67 dBA | Exterior | Residential |
| C | 67 dBA | Exterior | Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings |
| D | 52 dBA | Interior | Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios |
| E | 72 dBA | Exterior | Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F. |
| F | -- | | Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing |
| G | -- | | Undeveloped lands that are not permitted |

A total of 119 receptors were considered in this noise re-evaluation. This re-evaluation assigned updated land use category activities to each of the 119 receptors that were evaluated based on the changes in policy that were discussed in previous sections. Included in the 119 receptors were eight Category F land uses and one receptor identified as relocation (Receptor 12) at the time of the March 2011 noise analysis. This resulted in a reduction in the number of

receptors re-evaluated for impacts to 110. Of the 110 receptors that were re-assessed for noise impacts, 74 were classified as a Category B land use activity, 13 were Category C land use activities and 19 were determined to be a Category E land use activity. Furthermore, four of the 13 receptors designated as Category C activities were also considered Category D activities warranting consideration of interior noise levels. A more detailed description of each receptor modeled is provided in Appendix B.

As stated above, eight receptors included in the March 2011 noise analysis, Receptors 6 (Indiana State Association of Life Underwriters, Inc.), 10 (BNKLL Enterprises, LLC), 14 (DJ Reinbold Realty, LLC – office), 22 (National City Bank), 23 (Fifth Third Bank), 25 (Regions Bank), 105 (Business at 2930 E. 96th Street) and 106 (Business at 2850 E. 96th Street), were classified as Category F land uses as there are no known areas dedicated for exterior activities. Consequently, Category F land uses have no NAC threshold. As such, predicted ambient noise levels at Receptors 6, 10, 14, 22, 23, 25, 105 and 106 resulting from the preferred alternative were modeled, but did not receive consideration for noise abatement. It should be noted that in the original analysis none of these receptors were audibly impacted by the proposed project, although one, Receptor 25 was anticipated to be relocated as a result of the Aronson Drive roundabout. As the roundabout at Aronson Drive has been removed from the project, Receptor 25 was re-added to the analysis.

Although auto dealerships are not specifically identified as a land use activity category, such operations do involve customer contact in the car lot. For the purposes of this analysis, the operational need for professional interaction and socialization beyond the interior space of the building warranted classifying these types of businesses as having an exterior function. As such, auto dealerships were defined as Category E land uses, which have a NAC of 72 dBA. This applies to Receptors 15, 16, 17, 18, 24, 28, 29, 103 and 104.

Additionally, the placement of some receptors in the TNM model was adjusted to the location in which exterior activities occur. This only applied to receptors associated with businesses. Whereas, in the original analysis receptors may have been placed near the door or sidewalk to a business, this re-evaluation moved such receptors to exterior areas where people frequent. This included picnic tables that may be used by people during their lunch break, benches or patios. Specifically, this affected Receptors 4, 5, 26, 30, 35, 36, 37 and 97.

Only one new receptor was added to this re-evaluation, Sarah Care of Indianapolis (Receptor 119), an adult day care center located in the southeast quadrant of the 96th Street and Haverstick Road intersection. This receptor was considered to be not only a Category C activity, but also a Category D.

## 4.0 Results of the Re-Analysis

The re-evaluation was completed using the FHWA's approved model for predicting noise levels associated with highway projects, *Traffic Noise Model, Version 2.5 (TNM)*. TNM generated noise emission levels for the proposed project, which are reported in decibels (dBA), and compared against the NAC thresholds identified in Table 2 to determine whether a receptor is impacted. As defined in the *Indiana Department of Transportation Traffic Noise Analysis Procedures (2011)*, a traffic noise impact occurs if one of the following criteria is found to be true:

- Predicted dBA levels approach (within 1 dBA) or exceed the NAC identified in Table 2, or
- Predicted dBA levels substantially exceed the existing ambient levels (at least 15 dBA above the existing conditions).

A more detailed discussion on the receptors impacted by the project is discussed below. The location of each receptor in relation to the project is also identified on the illustrations included in Appendix B.

The results of the re-assessment verified that receptors impacted by the project are primarily to the north of 98th Street on either side of Keystone Avenue. These impacted receptors were mainly first row receptors, but also included some second row receptors as well. These impacted receptors generally occur in an area north of the proposed interchange where it would tie into the existing section of Keystone Avenue (Appendix B), which suggests that the project will not contribute to increases in noise levels. Rather, the proposed improvements are consistent with the predicted noise levels associated with the existing and No Build scenarios. Furthermore, there were no receptors identified that would be substantially impacted by the project, that is having an increase of 15 dBA or greater above the existing conditions.

Of the 110 receptors analyzed for the project, a total of 26 were determined to be impacted by the proposed project. Twenty-three of the 26 impacted receptors were Category B land uses (residential) and three were Category E land uses. However, it should be noted that 15 of the 23 Category B receptors impacted by the Build scenario were also impacted by the existing and No Build scenarios (Appendix B) in that noise levels approached or exceeded the NAC. While the overall number of impacted receptors remained the same between the March 2011 analysis and this re-evaluation, the number of receptors impacted by the No Build scenario was reduced by one. Also as was the case in the March 2011 noise analysis, the variance in sound levels between the three cases (Build, No Build and existing) at the 23 impacted Category B receptors ranged from 1-4 dBA. A perceivable change in noise is not noticed until there is an increase / decrease of at least 3 dBA. Therefore, the changes in noise levels that may occur as a result of the project are not expected to be severe.

With respect to impacts to the Category E receptors, two of the three impacted receptors are also impacted by the existing and No Build scenarios. Furthermore, the No Build scenario would impact four Category E receptors that are otherwise not affected by the Build scenario. The change in sound levels at impacted Category E receptors ranged from 1-4 dBA, an unperceivable alteration in sound levels. Therefore, it can be stated that none of the receptors analyzed as part of the re-assessment will be substantially impacted beyond the predicted noise levels of the existing conditions or No Build scenario.

## 5.0 Noise Abatement

Consideration of measures to mitigate or abate traffic noise impacts must be afforded if impacted receptors have been identified in the analysis area. In order for abatement to be seriously considered and implemented into the project it must undergo scrutiny to determine if it is both feasible and reasonable to construct. The definition of reasonable and feasible is identified in the *Indiana Department of Transportation Traffic Noise Analysis Procedures (2011)*, but is summarized below.

Noise abatement is **feasible** if it meets all of the following conditions:

*Engineering Feasibility:*

- Engineering considerations to determine if a particular form of abatement can actually have an effect on the traffic noise levels at a receptor. These considerations include topography, drainage, barrier height, utilities, safety and access / maintenance needs control.

*Acoustic Feasibility:*

- A majority (greater than 50%) of the impacted receptors achieve a 5 dBA reduction in noise.

The **reasonableness** of noise abatement is based on a measured design goal for noise abatement, cost effectiveness and views of impacted receptors:

*Design Goal:*

- A majority of the impacted first row receptors achieve at least a 7 dBA reduction in noise.

*Cost Effectiveness:*

- The estimated cost of constructing a noise barrier does not exceed $25,000 per benefited receptor. In those cases where a majority of the development (more than 50%) was in place prior to construction of the highway, a barrier is considered cost-effective if the estimated cost does not exceed $30,000 per benefited receptor.

*Views of the Impacted and/or Benefited Receptors:*

- A majority (more than 50%) of the impacted or benefited receptors must affirm support for the prescribed mitigation.

Five barriers were evaluated north of the interchange as part of the March 2011 noise analysis. The common noise areas associated with each barrier included Lighthouse Tabernacle Church, Lakewood Gardens Subdivision on the west and east sides of Keystone Parkway, Brooks Bend Subdivision and Shadybrook Subdivision. The results of the original analysis found that the Lighthouse Tabernacle Church and Brooks Bend Subdivision barriers did not meet the criteria of feasibleness under the previous noise policy. The remaining three barriers that were evaluated, Lakewood Gardens Subdivision (on the west side of Keystone Parkway), Lakewood Gardens Subdivision (on the east side of Keystone Parkway) and Shadybrook Subdivision, were found to be feasible, but did not meet the cost effectiveness criteria to be considered a reasonable form of mitigation.

Following the changes in the State's noise analysis procedures, resulting from the FHWAs June 2010 release of revised noise analysis and abatement guidance, it was determined necessary to re-evaluate the considered barriers against the current criteria of feasibleness and reasonableness. The following summarizes the results of the barrier re-evaluation.

In all instances, the presence of the 99th Street / Keystone Parkway and the 98th Street / Keystone Parkway intersections prevented the extension of the analyzed barriers the recommended distance of four times the distance from the end receptor to the barrier (*USDOT, FHWA, Highway Traffic Noise: Analysis and Abatement Guidance, Appendix C: Highway Traffic Noise Abatement Measures, June 2010*). As such, effective shielding of the impacted receptors near the south and north ends of the barriers, in addition to several non-impacted receptors is not possible. To that end, these access points presented an engineering constraint that will allow noise to spill around the ends of each barrier and not fully shield the receptors they would be designed to protect. Additionally, the presence of barriers so close to existing access points presents potential safety issues associated with the line of sight to and from the intersections. Therefore, all five barriers are unable to satisfy the criteria of engineering feasibility and their dismissal as a considered form of abatement was again confirmed.

Even if the evaluated walls were determined feasible, they still would not have met the cost effectiveness criteria of $25,000 per benefitted receiver. This was demonstrated in the previous analysis.

Other methods to attenuate noise, such as restricting truck traffic, alteration of the vertical or horizontal alignment, acquisition of a buffer zone and insulation of public buildings were considered and documented in the March 2011 Noise Analysis Report. However, as noted in that report all were found to be unreasonable or infeasible. For the same reasons, these additional methods of noise abatement were not considered as part of this re-evaluation. It should also be noted that with the FHWA change in guidance, three additional receptors were added to the land activity category requiring consideration for interior noise impacts, Category

D. Those receptors are Receptors 9, 11 and 119; Receptor 83 (Lighthouse Tabernacle Worship Center), the fourth Category D receptor, was discussed in the original analysis. The predicted exterior noise levels at each of the added three Category D receptors do not approach or exceed the NAC. Therefore, it is unlikely that there would be an impact to interior noise levels. As such, no assessment of interior conditions is warranted.

## 6.0 Summary of Noise Impacts

In summary, 110 receptors were re-evaluated for potential impacts as a result of the proposed interchange project at the intersection of 96th Street and Keystone Parkway. Of the 110 receptors that were modeled, 26 were determined to approach or exceed the NAC for the designated land activity categories. The majority of the impacted receptors, 23, occur in residential areas north of the proposed interchange on either side of Keystone Parkway. Noise levels at the impacted receptors were comparable between the Build, No Build and existing scenarios, meaning all were within 1-4 dBA of one another. Additionally, the majority of the impacted residential receptors associated with the Build scenario, 15, were also impacted by the existing and No Build scenarios in that noise levels approached or exceeded the NAC.

Five barriers were re-evaluated as a way to attenuate noise propagating from Keystone Avenue traffic. These barriers were evaluated against the criteria of feasibleness and reasonableness that is defined in the *Indiana Department of Transportation Traffic Noise Analysis Procedures (2011)* and discussed in Section 5.0 of this addendum. The results of this analysis identified all five barriers as not meeting the engineering criteria to be considered feasible. Therefore, the insertion of barriers as an effective way to mitigate noise on this project is still not recommended for further consideration.

## 7.0 Statement of Likelihood

Based on the studies thus far accomplished, the City of Carmel has not identified any locations where noise abatement is likely. Noise abatement at these locations is based upon preliminary design costs and design criteria. Noise abatement has not been found to be feasible based on the lack of access control and potential safety issues associated with the line of sight at the existing access points of 98th Street and 99th Street with Keystone Parkway. A reevaluation of the noise analysis will occur during final design if it has been determined that elements of the preferred alternative, i.e. the horizontal or vertical alignment, have substantially changed. If during final design it has been determined that conditions have changed such that noise abatement is feasible and reasonable, abatement measures might be provided. The final decision on the installation of any abatement measure(s) will be made upon the completion of the project's final design and the public involvement processes.

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USGS Quadrangle Map

Aerial Photograph

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Noise Impact Summary Table

Noise Impact Summary Aerials

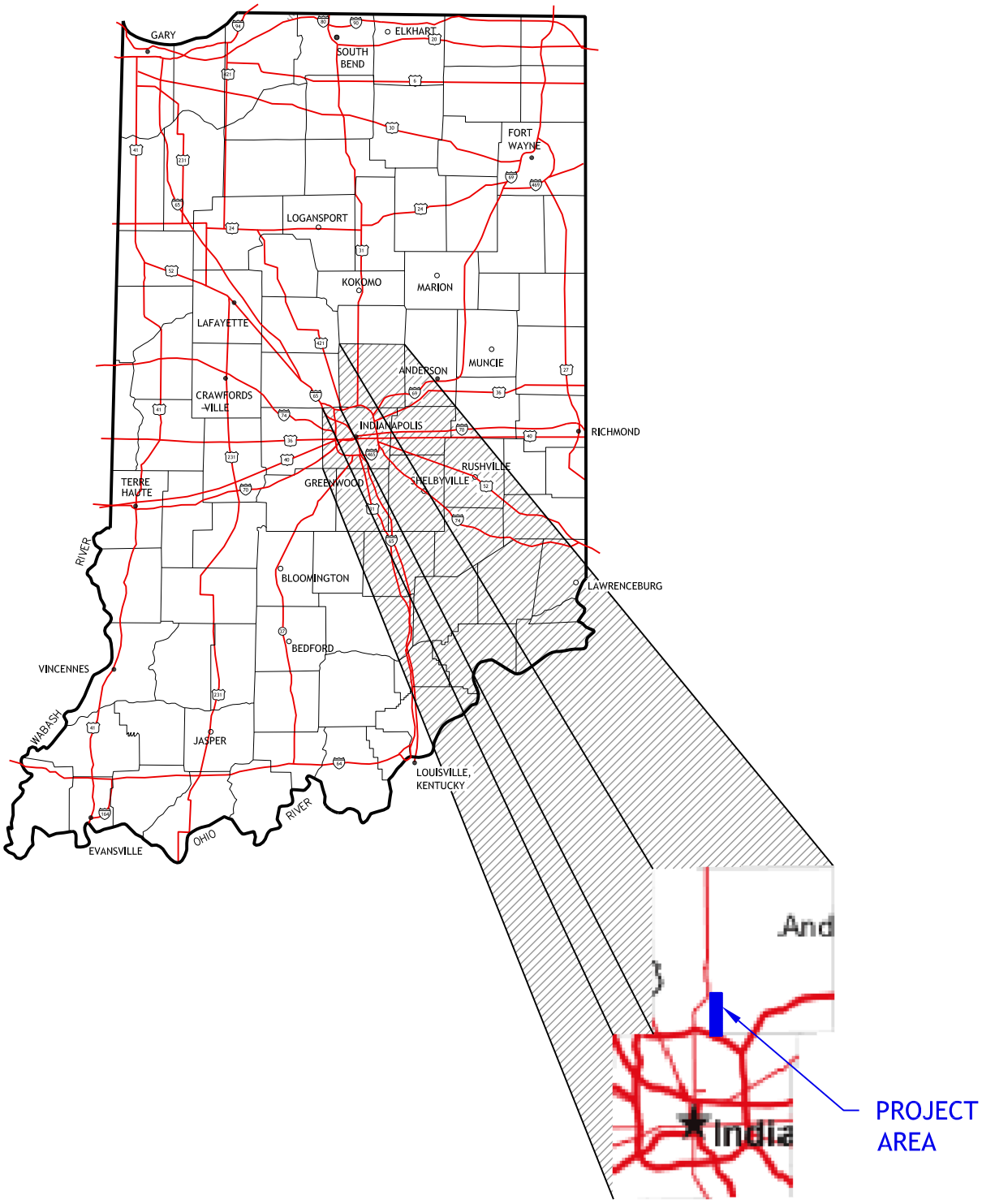
**TNM Files** ..... **C**

Modified Alternative Plan View

Receptor Sound Level Results Table

# Appendix A

Graphics

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File Name:
Modified / By:

RW ARMSTRONG

Union Station / 300 S. Meridian St.
Indianapolis, IN 46225
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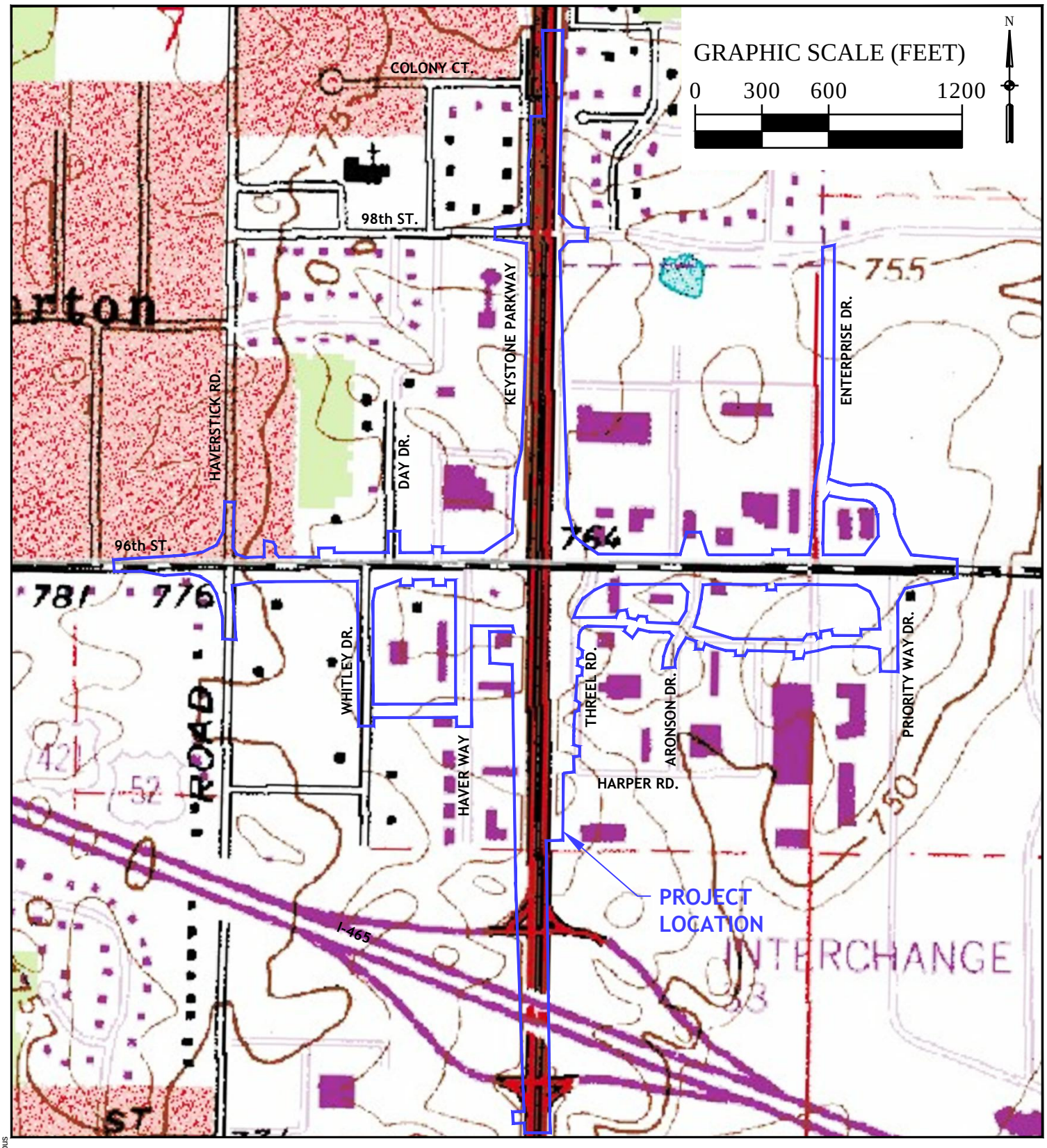
96th AND KEYSTONE

# LOCATION MAP

AUGUST 2009

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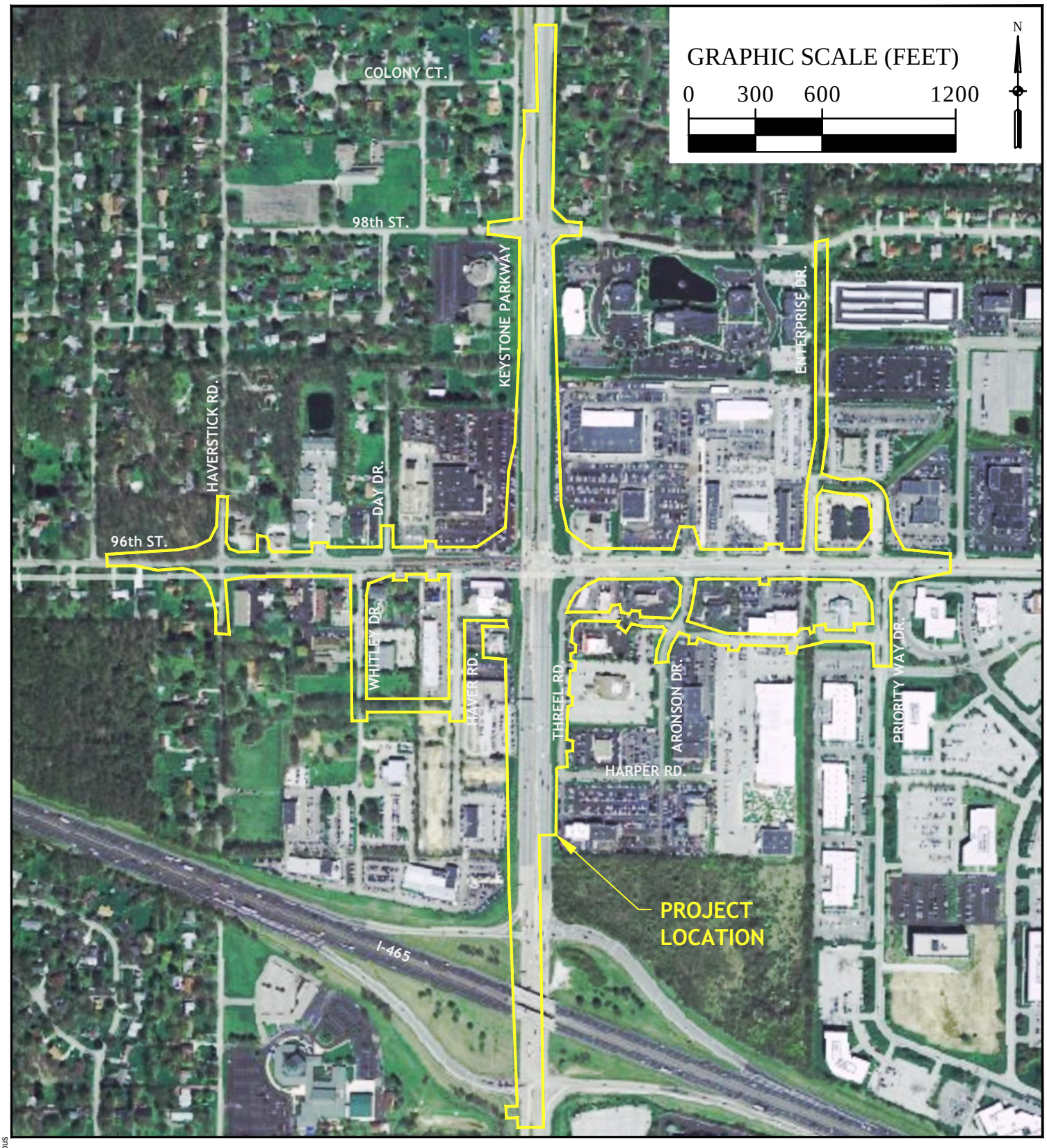
96TH AND KEYSTONE

USGS 7.5 MINUTE QUADRANGLE MAP - FISHERS, IN

# USGS QUAD MAP

AUGUST 2009 - REV APRIL 2010 - REV JULY 2011 - REV DECEMBER 2011

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96TH AND KEYSTONE

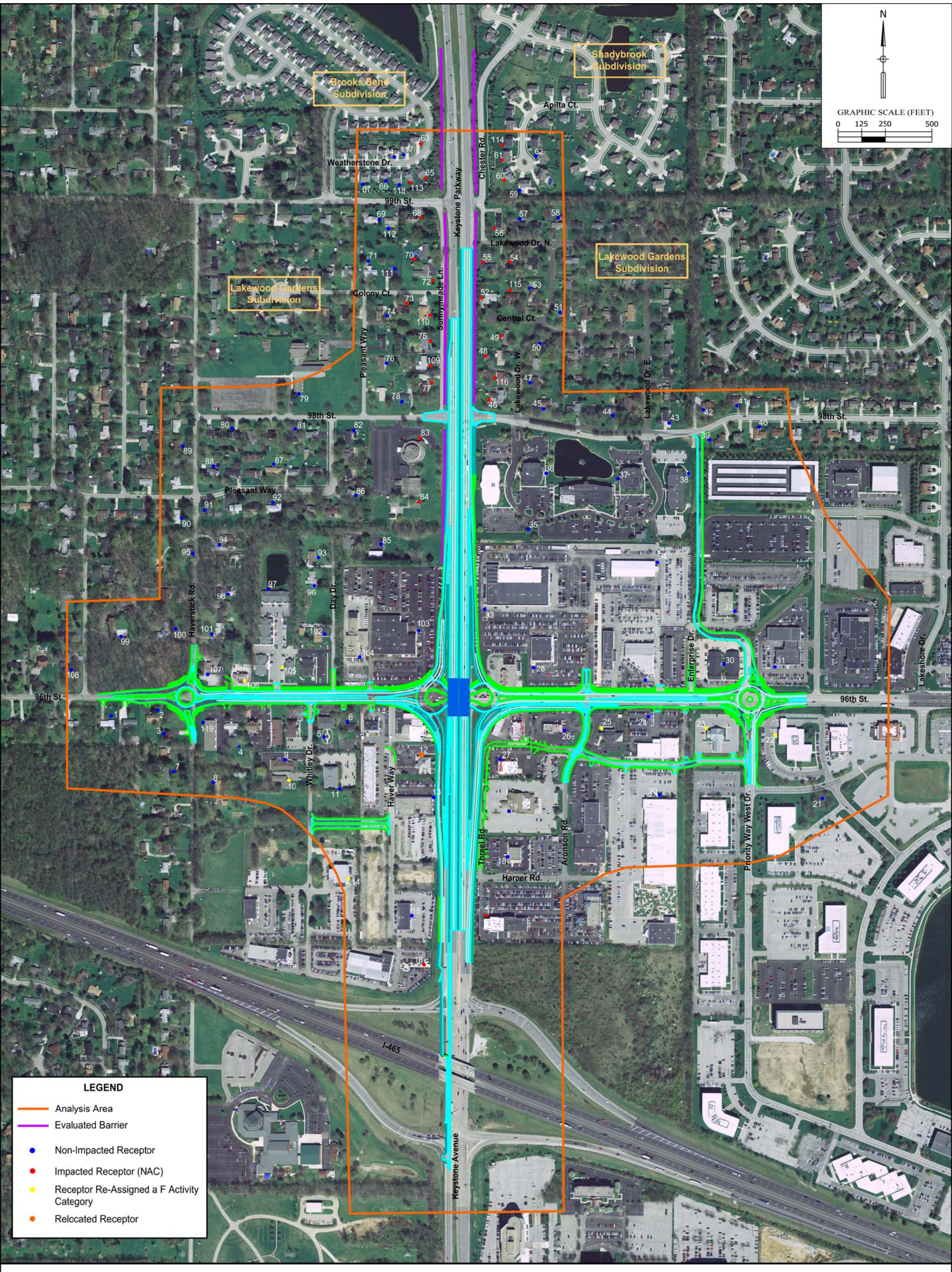
EXISTING TOPOGRAPHIC SURVEY

# AERIAL MAP

AUGUST 2009 - REV APRIL 2010 - REV JULY 2011 - REV DECEMBER 2011

# Appendix B

Noise Impact Summary

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CITY OF CARMEL

DES. NO. 0901562

# 96TH STREET & KEYSTONE PARKWAY INTERCHANGE

DECEMBER 2011

| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 1 | Residence - 2701 E. 96th St. | 60 | 61 | 60 | 0 | -1 | B | 67 | No |
| 2 | Commercial - 2711 E. 96th St. | 65 | 66 | 64 | -1 | -2 | C | 72 | No |
| 3 | Residence - 9518 Haverstick Rd. | 57 | 59 | 58 | 1 | -1 | B | 67 | No |
| 4 | JHS Investments, LLC | 58 | 59 | 59 | 1 | 0 | C | 72 | No |
| 5 | PSI Upsilon Foundation, Inc. | 61 | 63 | 64 | 3 | 1 | C | 72 | No |
| 6 | Indiana State Association of Life Underwriters, Inc. | 63 | 64 | 65 | 2 | 1 | F | -- | N/A |
| 7 | Residence - 9512 Haverstick Rd. | 55 | 56 | 56 | 1 | 0 | B | 67 | No |
| 8 | Residence - 9501 Haverstick Rd. | 56 | 57 | 58 | 2 | 1 | B | 67 | No |
| 9 | Awakening Mind and Body (Massage Therapy and Counseling Practice) | 59 | 61 | 62 | 3 | 1 | C/D | 67/52 | No |
| 10 | BNKLL Enterprises, LLC | 59 | 60 | 62 | 3 | 2 | F | -- | N/A |
| 11 | Christain Medical and Dental Association (Exterior Bench) | 62 | 63 | 64 | 2 | 1 | C/D | 67/52 | No |
| 12* | Chase Bank | -- | -- | -- | -- | -- | -- | -- | -- |
| 13 | Suzuki (car dealership) | 72 | 73 | 75 | 3 | 2 | E | 72 | Yes |
| 14 | DJ Reinbold Realty, LLC (Office) | 62 | 63 | 64 | 2 | 1 | F | -- | N/A |
| 15 | Dreyer & Reinbold BMW (car dealership) | 68 | 69 | 70 | 2 | 1 | C | 72 | No |
| 16 | Dreyer & Reinbold Mini Cooper (car dealership) | 69 | 70 | 72 | 3 | 2 | E | 72 | Yes |
| 17 | Butler Toyota (car dealership) | 72 | 73 | 73 | 1 | 0 | E | 72 | Yes |
| 18 | Nissan (car dealership) | 68 | 69 | 68 | 0 | -1 | E | 72 | No |
| 19 | Ruths Chris Restaurant (Exterior Patio) | 69 | 70 | 68 | -1 | -2 | E | 72 | No |
| 20 | Woodland Bowling Alley | 63 | 63 | 61 | -2 | -2 | C | 67 | No |
| 21 | Peachin Schwartz & Weingardt Accountants (Exterior Picnic Tables) | 59 | 59 | 56 | -3 | -3 | E | 72 | No |
| 22 | National City Bank | 67 | 67 | 64 | -3 | -3 | F | -- | N/A |
| 23 | Fifth Third Bank | 69 | 69 | 66 | | | F | -- | N/A |
| 24 | Tom Wood Jaguar (car dealership) | 69 | 70 | 69 | 0 | -1 | E | 72 | No |
| 25 | Regions Bank | 69 | 70 | 66 | -3 | -4 | F | -- | N/A |
| 26 | Arby's (Exterior Patio) | 69 | 71 | 68 | -1 | -3 | E | 72 | No |
| 27 | Bob Evans Restaurant (Exterior Benches) | 70 | 71 | 69 | -1 | -2 | E | 72 | No |
| 28 | Penske Chevrolet (car dealership) | 69 | 71 | 68 | -2 | -4 | E | 72 | No |
| 29 | Tom Wood Ford (3300 E. 96th St.) | 69 | 70 | 68 | -1 | -2 | E | 72 | No |
| 30 | 3500 Professional Building (Exterior Patio) | 65 | 66 | 65 | 0 | -1 | E | 72 | No |
| 31 | Acura (car dealership) | 67 | 67 | 64 | -3 | -3 | E | 72 | No |

| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 32 | Enterprise Car Rental | 61 | 62 | 60 | -1 | -2 | E | 72 | No |
| 33 | Penske Chevrolet (service garage) | 71 | 72 | 68 | -3 | -4 | E | 72 | No |
| 34 | Enterprise Car Rental (service garage) | 61 | 62 | 61 | 0 | -1 | E | 72 | No |
| 35 | Keystone Office Park - Building #1 (Exterior Picnic Table) | 64 | 65 | 65 | 1 | 0 | E | 72 | No |
| 36 | Keystone Office Park - Building #2 (Exterior Picnic Table) | 61 | 62 | 61 | 0 | -1 | E | 72 | No |
| 37 | Keystone Office Park - Building #3 (Exterior PicnicTable) | 59 | 60 | 59 | 0 | -1 | E | 72 | No |
| 38 | Keystone Offic Park - Building #4 (Exterior Picnic Table) | 57 | 58 | 59 | 2 | 1 | C | 72 | No |
| 39 | Residence at 3417 E. 98th St. | 57 | 58 | 59 | 2 | 1 | B | 67 | No |
| 40 | Residence at 3445 E.98th St. | 53 | 54 | 54 | 1 | 0 | B | 67 | No |
| 41 | Residence at 3424 E. 98th St. | 54 | 55 | 55 | 1 | 0 | B | 67 | No |
| 42 | Residence at 3410 E. 98th St. | 55 | 56 | 56 | 1 | 0 | B | 67 | No |
| 43 | Residence at 9801 E. Lakewood Dr. | 57 | 58 | 57 | 0 | -1 | B | 67 | No |
| 44 | Residence at 2824 E. 98th St. | 58 | 59 | 58 | 0 | -1 | B | 67 | No |
| 45 | Residence at 2802 E. 98th St. | 62 | 63 | 62 | 0 | -1 | B | 67 | No |
| 46 | Residence at 9802 W. Lakewood Dr. | 69 | 70 | 69 | 0 | -1 | B | 67 | Yes |
| 47 | Residence at 9803 W. Lakewood Dr. | 63 | 64 | 64 | 1 | 0 | B | 67 | No |
| 48 | Residence at 9812 W. Lakewood Dr. | 70 | 71 | 72 | 2 | 1 | B | 67 | Yes |
| 49 | Residence at 9816 W. Lakewood Dr. | 66 | 67 | 68 | 2 | 1 | B | 67 | Yes |
| 50 | Residence at 9825 W. Lakewood Dr. | 61 | 62 | 62 | 1 | 0 | B | 67 | No |
| 51 | Residence at 9855 W. Lakewood Dr. | 59 | 60 | 60 | 1 | 0 | B | 67 | No |
| 52 | Residence at 2702 Central Ct. | 72 | 73 | 73 | 1 | 0 | B | 67 | Yes |
| 53 | Residence at 9860 W. Lakewood Dr. | 61 | 62 | 63 | 2 | 1 | B | 67 | No |
| 54 | Residence at 2705 N. Lakewood Dr. | 63 | 64 | 66 | 3 | 2 | B | 67 | Yes |
| 55 | Residence at 2703 N. Lakewood Dr. | 71 | 72 | 72 | 1 | 0 | B | 67 | Yes |
| 56 | Residence at 2704 N. Lakewood Dr. | 67 | 68 | 69 | 2 | 1 | B | 67 | Yes |
| 57 | Residence at 2706 N. Lakewood Dr. | 61 | 62 | 64 | 3 | 2 | B | 67 | No |
| 58 | Residence at 2820 N. Lakewood Dr. | 57 | 58 | 59 | 2 | 1 | B | 67 | No |
| 59 | Residence at 3030 Apilita Ct. | 61 | 62 | 64 | 3 | 2 | B | 67 | No |

| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 60 | Residence at 3034 Apilita Ct. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 61 | Residence at 3038 Apilita Ct. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 62 | Residence at 3037 Apilita Ct. | 58 | 59 | 60 | 2 | 1 | B | 67 | No |
| 63 | Residence at 2994 Weatherstone Dr. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 64 | Residence at 2978 Weatherstone Dr. | 58 | 59 | 62 | 4 | 3 | B | 67 | No |
| 65 | Residence at 2993 Weatherstone Dr. | 66 | 67 | 69 | 3 | 2 | B | 67 | Yes |
| 66 | Residence at 2969 Weatherstone Dr. | 57 | 58 | 61 | 4 | 3 | B | 67 | No |
| 67 | Residence at 2953 Weatherstone Dr. | 55 | 56 | 59 | 4 | 3 | B | 67 | No |
| 68 | Residence at 2527 E. 99th St. | 64 | 65 | 68 | 4 | 3 | B | 67 | Yes |
| 69 | Residence at 2521 E. 99th St. | 57 | 58 | 61 | 4 | 3 | B | 67 | No |
| 70 | Residence at 9874 Sunny Meade Ln. | 63 | 64 | 66 | 3 | 2 | B | 67 | Yes |
| 71 | Residence at 2516 Colony Ct. | 57 | 58 | 61 | 4 | 3 | B | 67 | No |
| 72 | Residence at 2522 Colony Ct. | 68 | 69 | 71 | 3 | 2 | B | 67 | Yes |
| 73 | Residence at 2525 Colony Ct. | 62 | 63 | 65 | 3 | 2 | B | 67 | No |
| 74 | Residence at 9855 Pleasant Way | 60 | 61 | 64 | 4 | 3 | B | 67 | No |
| 75 | Residence at 9860 Sunny Meade Ln. | 69 | 69 | 70 | 1 | 1 | B | 67 | Yes |
| 76 | Residence at 9811 Pleasant Way | 61 | 62 | 64 | 3 | 2 | B | 67 | No |
| 77 | Residence at 9802 Sunny Meade Ln. | 69 | 70 | 71 | 2 | 1 | B | 67 | Yes |
| 78 | Residence at 2570 E. 98th St. | 63 | 64 | 65 | 2 | 1 | B | 67 | No |
| 79 | Hope Christian Church | 56 | 57 | 57 | 1 | 0 | C | 72 | No |
| 80 | Residence at 2509 E. 98th St. | 53 | 54 | 53 | 0 | -1 | B | 67 | No |
| 81 | Residence at 2533 E. 98th St. | 55 | 56 | 56 | 1 | 0 | B | 67 | No |
| 82 | Residence at 9765 Pleasant Way | 60 | 61 | 62 | 2 | 1 | B | 67 | No |
| 83 | Lighthouse Tabernacle Worship Center (north parking lot) | 67 | 68 | 69 | 2 | 1 | C/D | 67 | Yes |
| 84 | Lighthouse Tabernacle Worship Center (south playground) | 66 | 67 | 69 | 3 | 2 | C | 67 | Yes |
| 85 | Lighthouse Tabernacle Worship Center (west basketball court) | 62 | 63 | 63 | 1 | 0 | C | 72 | No |
| 86 | Residence at 2559 Pleasant Way | 60 | 61 | 62 | 2 | 1 | B | 67 | No |
| 87 | Residence at 2526 Pleasant Way | 53 | 55 | 55 | 2 | 0 | B | 67 | No |
| 88 | Residence at 2502 Pleasant Way | 53 | 55 | 56 | 3 | 1 | B | 67 | No |
| 89 | Residence at 9832 Haverstick Rd. | 53 | 56 | 57 | 4 | 1 | B | 67 | No |
| 90 | Residence at 9780 Haverstick Rd. | 54 | 56 | 57 | 3 | 1 | B | 67 | No |
| 91 | Residence at 2503 Pleasant Way | 55 | 58 | 59 | 4 | 1 | B | 67 | No |

| NOSIE IMPACT SUMMARY (All Noise Levels are Reported in dBA $L_{eq}$) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Difference | | | | |
| Receptor | Description | Existing (2009) | No Build (2031) | Build (2031) | Build v. Existing | Build v. No Build | NAC Cat. | NAC $L_{eq}(h)$ | Receptor Impacted |
| 92 | Residence at 2527 Pleasant Way | 54 | 56 | 56 | 2 | 0 | B | 67 | No |
| 93 | Residence at 9628 Day Dr. | 60 | 61 | 61 | 1 | 0 | B | 67 | No |
| 94 | Residence at 9783 Haverstick Rd. | 54 | 56 | 56 | 2 | 0 | B | 67 | No |
| 95 | Residence at 9680 Haverstick Rd. | 58 | 62 | 63 | 5 | 1 | B | 67 | No |
| 96 | Residence at 9624 Day Dr. | 60 | 62 | 61 | 1 | -1 | B | 67 | No |
| 97 | Commercial - 2920 E. 96th St. (exterior patio) | 57 | 58 | 58 | 1 | 0 | C | 72 | No |
| 98 | Residence at 9661 Haverstick Rd. | 56 | 58 | 57 | 1 | -1 | B | 67 | No |
| 99 | Residence at 9603 Wild Cherry Ln. | 53 | 54 | 54 | 1 | 0 | B | 67 | No |
| 100 | Residence at 9650 Haverstick Rd. | 55 | 57 | 57 | 2 | 0 | B | 67 | No |
| 101 | Residence at 9639 Haverstick Rd. | 56 | 58 | 58 | 2 | 0 | B | 67 | No |
| 102 | Residence at 9616 Day Dr. | 62 | 63 | 63 | 1 | 0 | B | 67 | No |
| 103 | Tom Wood Ford (car dealership) | 69 | 70 | 68 | -1 | -2 | C | 72 | No |
| 104 | Tom Wood Lexus (car dealership) | 65 | 66 | 65 | 0 | -1 | C | 72 | No |
| 105 | Commercial - 2930 E. 96th St. | 60 | 61 | 61 | 1 | 0 | F | -- | N/A |
| 106 | Commercial - 2850 E. 96th St. | 62 | 64 | 64 | 2 | 0 | F | -- | N/A |
| 107 | Commercial 2828 E. 96th St. | 62 | 64 | 62 | 0 | -2 | C | 72 | No |
| 108 | Residence at 9602 Wild Cherry Ln. | 56 | 57 | 55 | -1 | -2 | B | 67 | No |
| 109 | Residence at 9840 Sunny Meade Ln. | 69 | 70 | 71 | 2 | 1 | B | 67 | Yes |
| 110 | Residence at 9868 Sunny Meade Ln. | 68 | 69 | 70 | 2 | 1 | B | 67 | Yes |
| 111 | Residence at 2520 Colony Ct. | 59 | 60 | 63 | 4 | 3 | B | 67 | No |
| 112 | Residence at 2523 E. 99th St. | 59 | 60 | 63 | 4 | 3 | B | 67 | No |
| 113 | Residence at 2985 Weatherstone Dr. | 62 | 63 | 66 | 4 | 3 | B | 67 | Yes |
| 114 | Residence at 3042 Apilita Ct. | 63 | 64 | 65 | 2 | 1 | B | 67 | No |
| 115 | Residence at 2704 Central Ct. | 64 | 65 | 66 | 2 | 1 | B | 67 | Yes |
| 116 | Residence at 9806 Lakewood Dr. | 68 | 69 | 69 | 1 | 0 | B | 67 | Yes |
| 117 | Residence at 2986 Weatherstone Dr. | 60 | 61 | 64 | 4 | 3 | B | 67 | No |
| 118 | Residence at 2977 Weatherstone Dr. | 60 | 61 | 64 | 4 | 3 | B | 67 | No |
| 119 | Sarah Care of Indianapolis (Adult Day Care Center) | 61 | 63 | 61 | 0 | -2 | C/D | 67/52 | No |
| **Total Category B Land Use Impacts** | | | | | | | | | **23** |
| **Total Category E Land Use Impacts** | | | | | | | | | **3** |
| **Total No. of Impacted Receivers** | | | | | | | | | **26** |

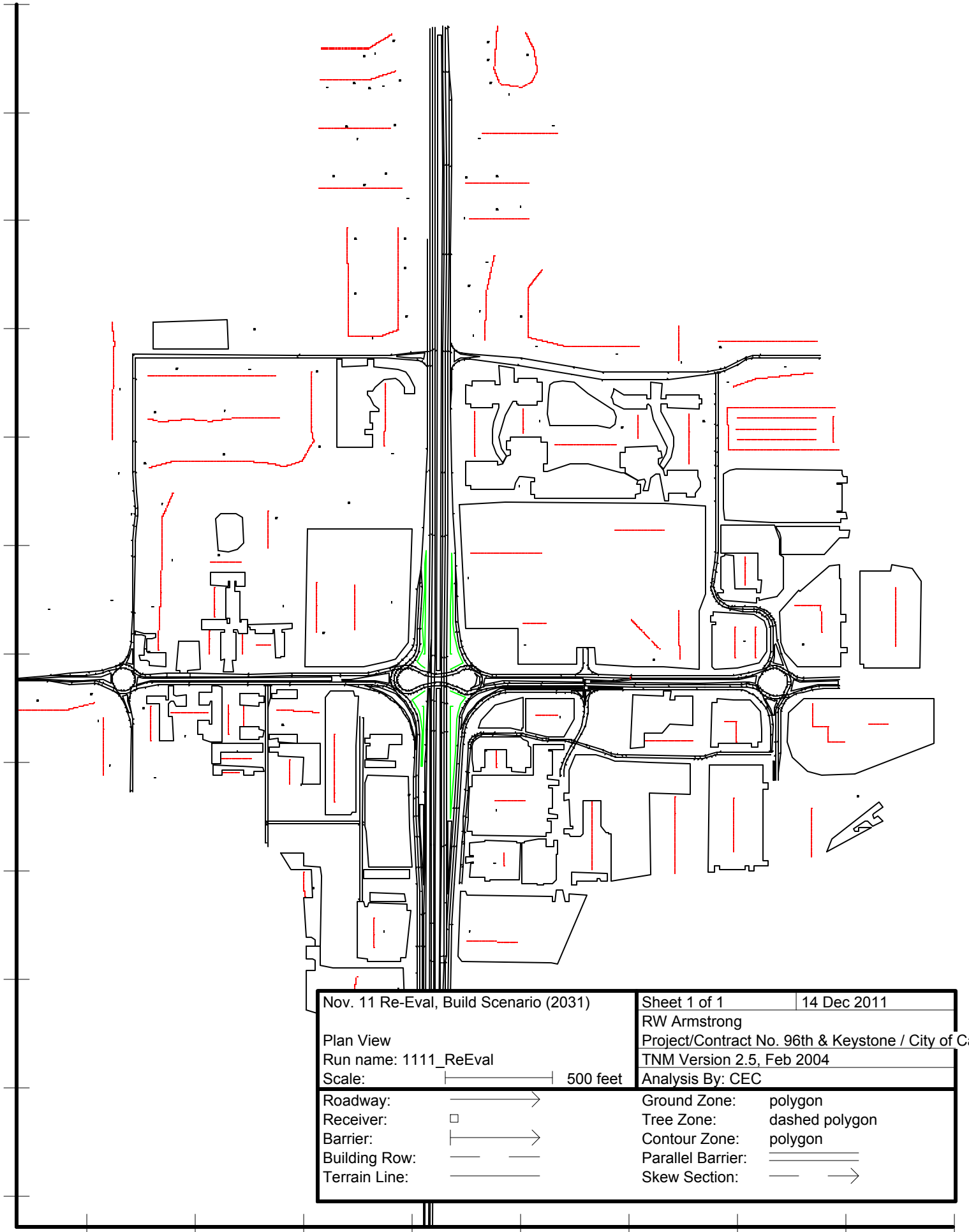
All sound levels are reported in dBA Leq

***RED*** *- indicates receptors impacted by the proposed project*

- indicates receptors that are impacted by the existing / No Build scenarios

# Appendix C

TNM Files




| | |
|---|---|
| Nov. 11 Re-Eval, Build Scenario (2031) | Sheet 1 of 1 — 14 Dec 2011 |
| | RW Armstrong |
| Plan View | Project/Contract No. 96th & Keystone / City of Car |
| Run name: 1111_ReEval | TNM Version 2.5, Feb 2004 |
| Scale: 500 feet | Analysis By: CEC |

| | | | |
|---|---|---|---|
| Roadway: | | Ground Zone: | polygon |
| Receiver: | | Tree Zone: | dashed polygon |
| Barrier: | | Contour Zone: | polygon |
| Building Row: | | Parallel Barrier: | |
| Terrain Line: | | Skew Section: | |

RW Armstrong
CEC

13 December 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Nov. 11 Re-Eval, Build Scenario (2031)
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver1 | 1 | 1 | 0.0 | 59.7 | 66 | 59.7 | 15 | ---- | 59.7 | 0.0 | 5 | -5.0 |
| Receiver2 | 2 | 1 | 0.0 | 63.5 | 71 | 63.5 | 15 | ---- | 63.5 | 0.0 | 5 | -5.0 |
| Receiver3 | 3 | 1 | 0.0 | 57.8 | 66 | 57.8 | 15 | ---- | 57.8 | 0.0 | 5 | -5.0 |
| Receiver4 | 4 | 1 | 0.0 | 59.2 | 71 | 59.2 | 15 | ---- | 59.2 | 0.0 | 5 | -5.0 |
| Receiver5 | 5 | 1 | 0.0 | 64.0 | 71 | 64.0 | 15 | ---- | 64.0 | 0.0 | 5 | -5.0 |
| Receiver7 | 7 | 1 | 0.0 | 56.2 | 66 | 56.2 | 15 | ---- | 56.2 | 0.0 | 5 | -5.0 |
| Receiver8 | 8 | 1 | 0.0 | 57.5 | 66 | 57.5 | 15 | ---- | 57.5 | 0.0 | 5 | -5.0 |
| Receiver9 | 9 | 1 | 0.0 | 61.5 | 71 | 61.5 | 15 | ---- | 61.5 | 0.0 | 5 | -5.0 |
| Receiver11 | 11 | 1 | 0.0 | 64.2 | 71 | 64.2 | 15 | ---- | 64.2 | 0.0 | 5 | -5.0 |
| Receiver14 | 14 | 1 | 0.0 | 64.2 | 71 | 64.2 | 15 | ---- | 64.2 | 0.0 | 5 | -5.0 |
| Receiver15 | 15 | 1 | 0.0 | 70.4 | 71 | 70.4 | 15 | ---- | 70.4 | 0.0 | 5 | -5.0 |
| Receiver16 | 16 | 1 | 0.0 | 72.1 | 71 | 72.1 | 15 | Snd Lvl | 72.1 | 0.0 | 5 | -5.0 |
| Receiver17 | 18 | 1 | 0.0 | 72.8 | 71 | 72.8 | 15 | Snd Lvl | 72.8 | 0.0 | 5 | -5.0 |
| Receiver18 | 19 | 1 | 0.0 | 67.7 | 71 | 67.7 | 15 | ---- | 67.7 | 0.0 | 5 | -5.0 |
| Receiver19 | 20 | 1 | 0.0 | 67.6 | 71 | 67.6 | 15 | ---- | 67.6 | 0.0 | 5 | -5.0 |
| Receiver20 | 21 | 1 | 0.0 | 61.1 | 71 | 61.1 | 15 | ---- | 61.1 | 0.0 | 5 | -5.0 |
| Receiver21 | 23 | 1 | 0.0 | 55.6 | 71 | 55.6 | 15 | ---- | 55.6 | 0.0 | 5 | -5.0 |
| Receiver24 | 26 | 1 | 0.0 | 69.1 | 71 | 69.1 | 15 | ---- | 69.1 | 0.0 | 5 | -5.0 |
| Receiver26 | 28 | 1 | 0.0 | 68.0 | 71 | 68.0 | 15 | ---- | 68.0 | 0.0 | 5 | -5.0 |
| Receiver27 | 29 | 1 | 0.0 | 68.6 | 71 | 68.6 | 15 | ---- | 68.6 | 0.0 | 5 | -5.0 |
| Receiver28 | 31 | 1 | 0.0 | 67.5 | 71 | 67.5 | 15 | ---- | 67.5 | 0.0 | 5 | -5.0 |
| Receiver29 | 32 | 1 | 0.0 | 68.0 | 71 | 68.0 | 15 | ---- | 68.0 | 0.0 | 5 | -5.0 |
| Receiver30 | 33 | 1 | 0.0 | 65.1 | 71 | 65.1 | 15 | ---- | 65.1 | 0.0 | 5 | -5.0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Receiver31 | 34 | 1 | 0.0 | 64.2 | 71 | 64.2 | 15 | ---- | 64.2 | 0.0 | 5 | -5.0 |
| Receiver32 | 35 | 1 | 0.0 | 60.1 | 71 | 60.1 | 15 | ---- | 60.1 | 0.0 | 5 | -5.0 |
| Receiver33 | 36 | 1 | 0.0 | 67.9 | 71 | 67.9 | 15 | ---- | 67.9 | 0.0 | 5 | -5.0 |
| Receiver34 | 37 | 1 | 0.0 | 61.0 | 71 | 61.0 | 15 | ---- | 61.0 | 0.0 | 5 | -5.0 |
| Receiver35 | 38 | 1 | 0.0 | 64.7 | 71 | 64.7 | 15 | ---- | 64.7 | 0.0 | 5 | -5.0 |
| Receiver36 | 39 | 1 | 0.0 | 61.4 | 71 | 61.4 | 15 | ---- | 61.4 | 0.0 | 5 | -5.0 |
| Receiver37 | 40 | 1 | 0.0 | 58.8 | 71 | 58.8 | 15 | ---- | 58.8 | 0.0 | 5 | -5.0 |
| Receiver38 | 42 | 1 | 0.0 | 59.1 | 66 | 59.1 | 15 | ---- | 59.1 | 0.0 | 5 | -5.0 |
| Receiver39 | 43 | 1 | 0.0 | 58.8 | 66 | 58.8 | 15 | ---- | 58.8 | 0.0 | 5 | -5.0 |
| Receiver40 | 44 | 1 | 0.0 | 54.0 | 66 | 54.0 | 15 | ---- | 54.0 | 0.0 | 5 | -5.0 |
| Receiver41 | 45 | 1 | 0.0 | 54.7 | 66 | 54.7 | 15 | ---- | 54.7 | 0.0 | 5 | -5.0 |
| Receiver42 | 46 | 1 | 0.0 | 55.7 | 66 | 55.7 | 15 | ---- | 55.7 | 0.0 | 5 | -5.0 |
| Receiver43 | 47 | 1 | 0.0 | 56.7 | 66 | 56.7 | 15 | ---- | 56.7 | 0.0 | 5 | -5.0 |
| Receiver44 | 48 | 1 | 0.0 | 57.6 | 66 | 57.6 | 15 | ---- | 57.6 | 0.0 | 5 | -5.0 |
| Receiver45 | 49 | 1 | 0.0 | 62.0 | 66 | 62.0 | 15 | ---- | 62.0 | 0.0 | 5 | -5.0 |
| Receiver46 | 50 | 1 | 0.0 | 69.4 | 66 | 69.4 | 15 | Snd Lvl | 69.4 | 0.0 | 5 | -5.0 |
| Receiver47 | 51 | 1 | 0.0 | 63.9 | 66 | 63.9 | 15 | ---- | 63.9 | 0.0 | 5 | -5.0 |
| Receiver48 | 52 | 1 | 0.0 | 71.6 | 66 | 71.6 | 15 | Snd Lvl | 71.6 | 0.0 | 5 | -5.0 |
| Receiver49 | 53 | 1 | 0.0 | 67.7 | 66 | 67.7 | 15 | Snd Lvl | 67.7 | 0.0 | 5 | -5.0 |
| Receiver50 | 54 | 1 | 0.0 | 62.2 | 66 | 62.2 | 15 | ---- | 62.2 | 0.0 | 5 | -5.0 |
| Receiver51 | 55 | 1 | 0.0 | 59.7 | 66 | 59.7 | 15 | ---- | 59.7 | 0.0 | 5 | -5.0 |
| Receiver52 | 56 | 1 | 0.0 | 72.5 | 66 | 72.5 | 15 | Snd Lvl | 72.5 | 0.0 | 5 | -5.0 |
| Receiver53 | 57 | 1 | 0.0 | 62.8 | 66 | 62.8 | 15 | ---- | 62.8 | 0.0 | 5 | -5.0 |
| Receiver54 | 58 | 1 | 0.0 | 65.5 | 66 | 65.5 | 15 | ---- | 65.5 | 0.0 | 5 | -5.0 |
| Receiver55 | 59 | 1 | 0.0 | 71.7 | 66 | 71.7 | 15 | Snd Lvl | 71.7 | 0.0 | 5 | -5.0 |
| Receiver56 | 60 | 1 | 0.0 | 68.7 | 66 | 68.7 | 15 | Snd Lvl | 68.7 | 0.0 | 5 | -5.0 |
| Receiver57 | 61 | 1 | 0.0 | 63.7 | 66 | 63.7 | 15 | ---- | 63.7 | 0.0 | 5 | -5.0 |
| Receiver58 | 62 | 1 | 0.0 | 59.1 | 66 | 59.1 | 15 | ---- | 59.1 | 0.0 | 5 | -5.0 |
| Receiver59 | 63 | 1 | 0.0 | 63.6 | 66 | 63.6 | 15 | ---- | 63.6 | 0.0 | 5 | -5.0 |
| Receiver60 | 64 | 1 | 0.0 | 66.2 | 66 | 66.2 | 15 | Snd Lvl | 66.2 | 0.0 | 5 | -5.0 |
| Receiver61 | 65 | 1 | 0.0 | 66.1 | 66 | 66.1 | 15 | Snd Lvl | 66.1 | 0.0 | 5 | -5.0 |
| Receiver62 | 66 | 1 | 0.0 | 60.4 | 66 | 60.4 | 15 | ---- | 60.4 | 0.0 | 5 | -5.0 |
| Receiver63 | 68 | 1 | 0.0 | 66.2 | 66 | 66.2 | 15 | Snd Lvl | 66.2 | 0.0 | 5 | -5.0 |
| Receiver64 | 69 | 1 | 0.0 | 62.0 | 66 | 62.0 | 15 | ---- | 62.0 | 0.0 | 5 | -5.0 |
| Receiver65 | 70 | 1 | 0.0 | 68.6 | 66 | 68.6 | 15 | Snd Lvl | 68.6 | 0.0 | 5 | -5.0 |
| Receiver66 | 71 | 1 | 0.0 | 61.4 | 66 | 61.4 | 15 | ---- | 61.4 | 0.0 | 5 | -5.0 |
| Receiver67 | 72 | 1 | 0.0 | 59.1 | 66 | 59.1 | 15 | ---- | 59.1 | 0.0 | 5 | -5.0 |
| Receiver68 | 73 | 1 | 0.0 | 67.8 | 66 | 67.8 | 15 | Snd Lvl | 67.8 | 0.0 | 5 | -5.0 |
| Receiver69 | 74 | 1 | 0.0 | 60.7 | 66 | 60.7 | 15 | ---- | 60.7 | 0.0 | 5 | -5.0 |
| Receiver70 | 75 | 1 | 0.0 | 66.2 | 66 | 66.2 | 15 | Snd Lvl | 66.2 | 0.0 | 5 | -5.0 |
| Receiver71 | 76 | 1 | 0.0 | 60.7 | 66 | 60.7 | 15 | ---- | 60.7 | 0.0 | 5 | -5.0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Receiver72 | 77 | 1 | 0.0 | 70.5 | 66 | 70.5 | 15 | Snd Lvl | 70.5 | 0.0 | 5 | -5.0 |
| Receiver73 | 78 | 1 | 0.0 | 65.4 | 66 | 65.4 | 15 | ---- | 65.4 | 0.0 | 5 | -5.0 |
| Receiver74 | 79 | 1 | 0.0 | 63.5 | 66 | 63.5 | 15 | ---- | 63.5 | 0.0 | 5 | -5.0 |
| Receiver75 | 80 | 1 | 0.0 | 70.2 | 66 | 70.2 | 15 | Snd Lvl | 70.2 | 0.0 | 5 | -5.0 |
| Receiver76 | 81 | 1 | 0.0 | 64.0 | 66 | 64.0 | 15 | ---- | 64.0 | 0.0 | 5 | -5.0 |
| Receiver77 | 82 | 1 | 0.0 | 71.1 | 66 | 71.1 | 15 | Snd Lvl | 71.1 | 0.0 | 5 | -5.0 |
| Receiver78 | 83 | 1 | 0.0 | 65.2 | 66 | 65.2 | 15 | ---- | 65.2 | 0.0 | 5 | -5.0 |
| Receiver79 | 84 | 1 | 0.0 | 57.2 | 66 | 57.2 | 15 | ---- | 57.2 | 0.0 | 5 | -5.0 |
| Receiver80 | 85 | 1 | 0.0 | 52.8 | 66 | 52.8 | 15 | ---- | 52.8 | 0.0 | 5 | -5.0 |
| Receiver81 | 86 | 1 | 0.0 | 55.5 | 66 | 55.5 | 15 | ---- | 55.5 | 0.0 | 5 | -5.0 |
| Receiver82 | 87 | 1 | 0.0 | 61.7 | 66 | 61.7 | 15 | ---- | 61.7 | 0.0 | 5 | -5.0 |
| Receiver83 | 88 | 1 | 0.0 | 68.9 | 66 | 68.9 | 15 | Snd Lvl | 68.9 | 0.0 | 5 | -5.0 |
| Receiver84 | 89 | 1 | 0.0 | 68.7 | 66 | 68.7 | 15 | Snd Lvl | 68.7 | 0.0 | 5 | -5.0 |
| Receiver85 | 90 | 1 | 0.0 | 63.4 | 66 | 63.4 | 15 | ---- | 63.4 | 0.0 | 5 | -5.0 |
| Receiver86 | 91 | 1 | 0.0 | 62.2 | 66 | 62.2 | 15 | ---- | 62.2 | 0.0 | 5 | -5.0 |
| Receiver87 | 92 | 1 | 0.0 | 54.8 | 66 | 54.8 | 15 | ---- | 54.8 | 0.0 | 5 | -5.0 |
| Receiver88 | 93 | 1 | 0.0 | 55.6 | 66 | 55.6 | 15 | ---- | 55.6 | 0.0 | 5 | -5.0 |
| Receiver89 | 94 | 1 | 0.0 | 57.0 | 66 | 57.0 | 15 | ---- | 57.0 | 0.0 | 5 | -5.0 |
| Receiver90 | 95 | 1 | 0.0 | 56.9 | 66 | 56.9 | 15 | ---- | 56.9 | 0.0 | 5 | -5.0 |
| Receiver91 | 96 | 1 | 0.0 | 59.0 | 66 | 59.0 | 15 | ---- | 59.0 | 0.0 | 5 | -5.0 |
| Receiver92 | 97 | 1 | 0.0 | 56.1 | 66 | 56.1 | 15 | ---- | 56.1 | 0.0 | 5 | -5.0 |
| Receiver93 | 98 | 1 | 0.0 | 60.7 | 66 | 60.7 | 15 | ---- | 60.7 | 0.0 | 5 | -5.0 |
| Receiver94 | 99 | 1 | 0.0 | 56.4 | 66 | 56.4 | 15 | ---- | 56.4 | 0.0 | 5 | -5.0 |
| Receiver95 | 100 | 1 | 0.0 | 62.5 | 66 | 62.5 | 15 | ---- | 62.5 | 0.0 | 5 | -5.0 |
| Receiver96 | 101 | 1 | 0.0 | 61.3 | 66 | 61.3 | 15 | ---- | 61.3 | 0.0 | 5 | -5.0 |
| Receiver97 | 102 | 1 | 0.0 | 58.3 | 71 | 58.3 | 15 | ---- | 58.3 | 0.0 | 5 | -5.0 |
| Receiver98 | 103 | 1 | 0.0 | 57.2 | 66 | 57.2 | 15 | ---- | 57.2 | 0.0 | 5 | -5.0 |
| Receiver99 | 104 | 1 | 0.0 | 54.1 | 66 | 54.1 | 15 | ---- | 54.1 | 0.0 | 5 | -5.0 |
| Receiver100 | 105 | 1 | 0.0 | 56.6 | 66 | 56.6 | 15 | ---- | 56.6 | 0.0 | 5 | -5.0 |
| Receiver101 | 106 | 1 | 0.0 | 57.6 | 66 | 57.6 | 15 | ---- | 57.6 | 0.0 | 5 | -5.0 |
| Receiver102 | 107 | 1 | 0.0 | 62.6 | 66 | 62.6 | 15 | ---- | 62.6 | 0.0 | 5 | -5.0 |
| Receiver103 | 108 | 1 | 0.0 | 67.8 | 71 | 67.8 | 15 | ---- | 67.8 | 0.0 | 5 | -5.0 |
| Receiver104 | 109 | 1 | 0.0 | 65.2 | 71 | 65.2 | 15 | ---- | 65.2 | 0.0 | 5 | -5.0 |
| Receiver107 | 112 | 1 | 0.0 | 61.8 | 71 | 61.8 | 15 | ---- | 61.8 | 0.0 | 5 | -5.0 |
| Receiver108 | 113 | 1 | 0.0 | 54.7 | 66 | 54.7 | 15 | ---- | 54.7 | 0.0 | 5 | -5.0 |
| Receiver109 | 115 | 1 | 0.0 | 70.7 | 66 | 70.7 | 15 | Snd Lvl | 70.7 | 0.0 | 5 | -5.0 |
| Receiver110 | 116 | 1 | 0.0 | 69.9 | 66 | 69.9 | 15 | Snd Lvl | 69.9 | 0.0 | 5 | -5.0 |
| Receiver111 | 118 | 1 | 0.0 | 63.1 | 66 | 63.1 | 15 | ---- | 63.1 | 0.0 | 5 | -5.0 |
| Receiver112 | 119 | 1 | 0.0 | 62.6 | 66 | 62.6 | 15 | ---- | 62.6 | 0.0 | 5 | -5.0 |
| Receiver113 | 120 | 1 | 0.0 | 65.6 | 66 | 65.6 | 15 | ---- | 65.6 | 0.0 | 5 | -5.0 |
| Receiver114 | 121 | 1 | 0.0 | 65.4 | 66 | 65.4 | 15 | ---- | 65.4 | 0.0 | 5 | -5.0 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Receiver115 | 122 | 1 | 0.0 | 65.9 | 66 | 65.9 | 15 | ---- | 65.9 | 0.0 | 5 | -5.0 |
| Receiver116 | 123 | 1 | 0.0 | 68.8 | 66 | 68.8 | 15 | Snd Lvl | 68.8 | 0.0 | 5 | -5.0 |
| Receiver117 | 124 | 1 | 0.0 | 63.5 | 66 | 63.5 | 15 | ---- | 63.5 | 0.0 | 5 | -5.0 |
| Receiver118 | 125 | 1 | 0.0 | 63.7 | 66 | 63.7 | 15 | ---- | 63.7 | 0.0 | 5 | -5.0 |
| Receiver119 | 127 | 1 | 0.0 | 61.3 | 66 | 61.3 | 15 | ---- | 61.3 | 0.0 | 5 | -5.0 |
| Receiver13 | 129 | 1 | 0.0 | 74.8 | 66 | 74.8 | 15 | Snd Lvl | 74.8 | 0.0 | 5 | -5.0 |
| **Dwelling Units** | | **# DUs** | **Noise Reduction** | | | | | | | | | |
| | | | **Min** | **Avg** | **Max** | | | | | | | |
| | | | **dB** | **dB** | **dB** | | | | | | | |
| All Selected | | 111 | 0.0 | 0.0 | 0.0 | | | | | | | |
| All Impacted | | 23 | 0.0 | 0.0 | 0.0 | | | | | | | |
| All that meet NR Goal | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | |

RW Armstrong
CEC

27 December 2011
TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: 96th & Keystone / City of Carmel
RUN: Nov. 11 Re-Eval, Category F Receptors
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

| Receiver Name | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB |
| Receiver6 | 131 | 1 | 0.0 | 64.5 | 99 | 64.5 | 15 | ---- | 64.5 | 0.0 | 5 | -5.0 |
| Receiver10 | 132 | 1 | 0.0 | 61.6 | 99 | 61.6 | 15 | ---- | 61.6 | 0.0 | 5 | -5.0 |
| Receiver14 | 133 | 1 | 0.0 | 64.2 | 99 | 64.2 | 15 | ---- | 64.2 | 0.0 | 5 | -5.0 |
| Receiver22 | 134 | 1 | 0.0 | 64.0 | 99 | 64.0 | 15 | ---- | 64.0 | 0.0 | 5 | -5.0 |
| Receiver23 | 135 | 1 | 0.0 | 66.4 | 99 | 66.4 | 15 | ---- | 66.4 | 0.0 | 5 | -5.0 |
| Receiver25 | 136 | 1 | 0.0 | 65.8 | 99 | 65.8 | 15 | ---- | 65.8 | 0.0 | 5 | -5.0 |
| Receiver105 | 137 | 1 | 0.0 | 61.4 | 99 | 61.4 | 15 | ---- | 61.4 | 0.0 | 5 | -5.0 |
| Receiver106 | 138 | 1 | 0.0 | 63.8 | 99 | 63.8 | 15 | ---- | 63.8 | 0.0 | 5 | -5.0 |

| Dwelling Units | # DUs | Noise Reduction Min | Avg | Max |
|---|---|---|---|---|
| | | dB | dB | dB |
| All Selected | 8 | 0.0 | 0.0 | 0.0 |
| All Impacted | 0 | 0.0 | 0.0 | 0.0 |
| All that meet NR Goal | 0 | 0.0 | 0.0 | 0.0 |

# Appendix I.3

# INDOT Technical Sufficiency Reviews

## Chad Costa

**From:** Miller, Brandon <BMiller@indot.IN.gov>
**Sent:** Thursday, February 11, 2010 2:57 PM
**To:** Chad Costa
**Cc:** Andrews, Chris
**Subject:** RE: Des. No. 0901562 - 96th Street & Keystone Avenue, Build Scenario

Chad,
I have no comments on either the existing or build scenario. I look forward to reviewing the noise analysis.

Brandon Miller
Air Quality and Noise Specialist
Office of Environmental Services
Indiana Department of Transportation
100 N. Senate Ave. IGC-N Room N642
Phone: 317-232-7977

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Thursday, January 28, 2010 2:48 PM
**To:** Miller, Brandon
**Subject:** Des. No. 0901562 - 96th Street & Keystone Avenue, Build Scenario

Brandon,

Attached for your review are the TNM files of the Build Scenario that has been prepared for the referenced project. I have also attached an aerial of the project with receivers identified. Please let me know if you require any additional information at this time or if you have any comments or questions at your earliest convenience. Thanks.

Chad

**Chad E. Costa**
**Senior Environmental Planner**

RW ARMSTRONG

Union Station / 300 South Meridian Street
Indianapolis, IN 46225
Direct 317.493.3722
Cell 317.694.7657
Main Fax 317.788.0957
ccosta@rwa.com

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## Chad Costa

**From:** Miller, Brandon <BMiller@indot.IN.gov>
**Sent:** Tuesday, March 08, 2011 12:45 PM
**To:** Chad Costa
**Cc:** Waddy, Bret A; David Henkel; Andrews, Chris; mmcbride@carmel.in.gov
**Subject:** RE: Des. No. 0901562

Chad,
The report is technically sufficient based on the 2007 INDOT Traffic Noise Policy. If the environmental document is not approved by July 1, 2011, there will be changes required to meet the new federal regulations and the 2011 INDOT Traffic Noise Policy. If you determine that the environmental document will not be approved before July, please contact me to discuss the changes that will be necessary. Thanks and have a wonderful afternoon.

Brandon Miller
Air Quality and Noise Specialist
Environmental Services - Environmental Policy Office
Indiana Department of Transportation
100 N. Senate Ave. IGC-N Room N642
Phone: 317-232-7977

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Wednesday, March 02, 2011 10:26 AM
**To:** Miller, Brandon
**Cc:** Waddy, Bret A; Henkel, Dave; Andrews, Chris; mmcbride@carmel.in.gov
**Subject:** Des. No. 0901562

Brandon,

Please find attached for your concurrence the revised Noise Analysis Report prepared for the referenced project. The report has been revised to address your comments received on March 1, 2011.

Should you have any further comments or questions, please don't hesitate to contact me. Thank you for your assistance in advancing this project.

Chad

**Chad E. Costa**
Senior Environmental Planner

300 S. Meridian St., Indianapolis, IN 46225

**DIR** +1.317.493.3722 // **TF** +1.800.321.6959 x722
**MOB** +1. 317.694.7657 // **FAX** +1.317.788.0957
ccosta@rwa.com // rwArmstrong.com

## Chad Costa

**From:** Bales, Ronald <rbales@indot.IN.gov>
**Sent:** Tuesday, January 03, 2012 8:55 AM
**To:** Chad Costa
**Cc:** Stone, Jewell; Andrews, Chris; Lawrence, Ben; Bailey, Scott
**Subject:** RE: Des. No. 0901562, 96th and Keystone Interchange - Noise Analysis Amendment

INDOT –Environmental Services has reviewed the noise analysis amendment for the above-referenced project and found it to be technically sufficient. As you are aware, INDOT no longer comments on recommendations provided in noise studies for local agency projects. However, it is our assessment that the study has been completed in accordance with federal guidelines and state policy. Please let us know if there are any questions.

Ron Bales
Senior Environmental Manager
INDOT- Environmental Services
Phone: 317-234-4916
Fax: 317-233-4929

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Tuesday, December 27, 2011 4:34 PM
**To:** Bales, Ronald
**Cc:** Lawrence, Ben; Andrews, Chris; Stone, Jewell; Bailey, Scott
**Subject:** RE: Des. No. 0901562, 96th and Keystone Interchange - Noise Analysis Amendment

Ron,

Per your request, please find attached the revised noise analysis addendum that addresses your comments received today. Let me know if any further revisions are necessary.

Thanks for your assistance in advancing this project.

**Chad E. Costa**
Senior Environmental Planner

300 S. Meridian St., Indianapolis, IN 46225

**DIR** +1.317.493.3722 // **TF** +1.800.321.6959 x722
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**From:** Bales, Ronald [mailto:rbales@indot.IN.gov]
**Sent:** Tuesday, December 27, 2011 12:49 PM
**To:** Chad Costa
**Cc:** Lawrence, Ben; Andrews, Chris; Stone, Jewell; Bailey, Scott; Afzaal, Shahnaz
**Subject:** RE: Des. No. 0901562, 96th and Keystone Interchange - Noise Analysis Amendment

Chad,

INDOT-Environmental Services (ES) has reviewed the noise analysis addendum for Des. No. 0901562, 96th and Keystone Interchange, Marion and Hamilton Counties, IN. INDOT-ES had a couple of minor comments that need to be addressed. Once revisions have been completed, please resubmit to INDOT for review.

Please let us know if you have any questions. Thank you.

Ron Bales
Senior Environmental Manager
INDOT- Environmental Services
Phone: 317-234-4916
Fax: 317-233-4929

---

**From:** Chad Costa [mailto:CCosta@rwa.com]
**Sent:** Wednesday, December 14, 2011 2:34 PM
**To:** Lawrence, Ben
**Cc:** Bales, Ronald
**Subject:** Des. No. 0901562, 96th and Keystone Interchange - Noise Analysis Amendment

Ben,

Please find attached for your review and approval the addendum to the March 2011 noise analysis prepared for the referenced project. This addendum updates the analysis to reflect the current Federal and state noise analysis policies and addresses minor modifications in the project design, which are detailed in the report.

Should you have any questions or comments, please don't hesitate to contact me. Thank you for your assistance in advancing this project.

**Chad E. Costa**
Senior Environmental Planner

300 S. Meridian St., Indianapolis, IN 46225

**DIR** +1.317.493.3722 // **TF** +1.800.321.6959 x722
**MOB** +1. 317.694.7657 // **FAX** +1.317.788.0957
ccosta@rwa.com // rwArmstrong.com

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# Appendix J

Environmental Justice Analysis

# Appendix J.1

# US Census Bureau Data

# Census Data for Tract 1111.01 - Block Group 1 and Carmel (City)

P4. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE [73] - Universe: Total populatio
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

| | Block 1058, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1062, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1063, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1064, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1065, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1066, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1067, Block Group 1, Census Tract 1111.01, Hamilton County, | Block 1088, Block Group 1, Census Tract 1111.01, Hamilton County, | Carmel city, Indiana |
|---|---|---|---|---|---|---|---|---|---|
| Total: | 294 | 45 | 24 | 40 | 0 | 20 | 38 | 0 | 37,733 |
| Hispanic or Latino | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 649 |
| Not Hispanic or Latino: | 286 | 45 | 24 | 39 | 0 | 20 | 38 | 0 | 37,084 |
| Population of one race: | 285 | 45 | 24 | 39 | 0 | 20 | 37 | 0 | 36,767 |
| White alone | 267 | 43 | 24 | 39 | 0 | 20 | 37 | 0 | 34,467 |
| Black or African American alone | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 550 |
| American Indian and Alaska Native alone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Asian alone | 15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1,645 |
| Native Hawaiian and Other Pacific Islander alone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Some other race alone | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| Population of two or more races: | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 317 |
| Population of two races: | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 304 |
| White; Black or African American | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 59 |
| White; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 |
| White; Asian | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| White; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| White; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Black or African American; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Black or African American; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black or African American; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of three races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| White; Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| White; Black or African American; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; Black or African American; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| White; Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| White; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black or African American; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black or African American; Asian;Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American Indian and Alaska Native; Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of four races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Census Data for Tract 1111.01 - Block Group 1 and Carmel (City) (Cont.)

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of five races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of six races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

U.S. Census Bureau Census 2000

# Census Data for Tract 1111.02 - Block Group 1 and Carmel (City)

P4. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE [73] - Universe: Total popul
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Da

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

| | Block 1013, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1025, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1026, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1027, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1028, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1029, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1030, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1031, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1032, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1033, Block Group 1, Census Tract 1111.02, Hamilton County, | Block 1034, Block Group 1, Census Tract 1111.02, Hamilton County, | Carmel city, Indiana |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total: | 310 | 0 | 0 | 14 | 82 | 16 | 13 | 60 | 32 | 24 | 0 | 37,733 |
| Hispanic or Latino | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 649 |
| Not Hispanic or Latino: | 305 | 0 | 0 | 14 | 82 | 16 | 13 | 60 | 32 | 22 | 0 | 37,084 |
| Population of one race: | 297 | 0 | 0 | 14 | 80 | 14 | 13 | 60 | 32 | 22 | 0 | 36,767 |
| White alone | 283 | 0 | 0 | 14 | 78 | 14 | 13 | 60 | 32 | 22 | 0 | 34,467 |
| Black or African American alone | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 550 |
| American Indian and Alaska Native alone | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 45 |
| Asian alone | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1,645 |
| Native Hawaiian and Other Pacific Islander alone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 12 |
| Some other race alone | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 48 |
| Population of two or more races: | 8 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 317 |
| Population of two races: | 8 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 304 |
| White; Black or African American | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 59 |
| White; American Indian and Alaska Native | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 |
| White; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 110 |
| White; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 |
| White; Some other race | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 32 |
| Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Black or African American; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| Black or African American; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black or African American; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of three races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 13 |
| White; Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 |
| White; Black or African American; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; Black or African American; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| White; Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| White; Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| White; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black or African American; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Black or African American; Asian;Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| American Indian and Alaska Native; Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of four races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of five races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Census Data for Tract 1111.02 - Block Group 1 and Carmel (City) (Cont.)

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Population of six races: | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

U.S. Census Bureau Census 200

# Census Data for Tract 1111.01 and 1111.02 - Block Group 1 and Carmel (City)

P87. POVERTY STATUS IN 1999 BY AGE [17] - Universe: Population for whom poverty status is determined
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

| | Carmel city, Indiana | Block Group 1, Census Tract 1111.01, Hamilton County, Indiana | Block Group 1, Census Tract 1111.02, Hamilton County, Indiana |
|---|---|---|---|
| Total: | 37,335 | 3,813 | 1,522 |
| Income in 1999 below poverty level: | 949 | 66 | 17 |
| Under 5 years | 27 | 9 | 0 |
| 5 years | 7 | 0 | 0 |
| 6 to 11 years | 137 | 13 | 0 |
| 12 to 17 years | 137 | 7 | 0 |
| 18 to 64 years | 570 | 37 | 17 |
| 65 to 74 years | 12 | 0 | 0 |
| 75 years and over | 59 | 0 | 0 |
| Income in 1999 at or above poverty level: | 36,386 | 3,747 | 1,505 |
| Under 5 years | 2,951 | 313 | 122 |
| 5 years | 558 | 76 | 7 |
| 6 to 11 years | 4,157 | 498 | 79 |
| 12 to 17 years | 3,456 | 462 | 100 |
| 18 to 64 years | 22,070 | 2,236 | 966 |
| 65 to 74 years | 1,965 | 109 | 137 |
| 75 years and over | 1,229 | 53 | 94 |

U.S. Census Bureau

# Census Data for Tract 3202.03 - Block Group 2 and Indianapolis (City)

P4. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE [73] - Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

| | Block 2000, Block Group 2, Census Tract 3202.03, Marion County, Indiana | Block 2001, Block Group 2, Census Tract 3202.03, Marion County, Indiana | Block 2002, Block Group 2, Census Tract 3202.03, Marion County, Indiana | Indianapolis city (balance), Indiana |
|---|---|---|---|---|
| Total: | 0 | 8 | 47 | 781,870 |
| Hispanic or Latino | 0 | 0 | 0 | 30,636 |
| Not Hispanic or Latino: | 0 | 8 | 47 | 751,234 |
| Population of one race: | 0 | 8 | 47 | 740,426 |
| White alone | 0 | 8 | 45 | 527,675 |
| Black or African American alone | 0 | 0 | 0 | 198,252 |
| American Indian and Alaska Native alone | 0 | 0 | 0 | 1,648 |
| Asian alone | 0 | 0 | 2 | 11,046 |
| Native Hawaiian and Other Pacific Islander alone | 0 | 0 | 0 | 268 |
| Some other race alone | 0 | 0 | 0 | 1,537 |
| Population of two or more races: | 0 | 0 | 0 | 10,808 |
| Population of two races: | 0 | 0 | 0 | 9,919 |
| White; Black or African American | 0 | 0 | 0 | 4,125 |
| White; American Indian and Alaska Native | 0 | 0 | 0 | 1,799 |
| White; Asian | 0 | 0 | 0 | 1,373 |
| White; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 105 |
| White; Some other race | 0 | 0 | 0 | 806 |
| Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 527 |
| Black or African American; Asian | 0 | 0 | 0 | 310 |
| Black or African American; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 58 |
| Black or African American; Some other race | 0 | 0 | 0 | 425 |
| American Indian and Alaska Native; Asian | 0 | 0 | 0 | 49 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 4 |
| American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 30 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 120 |
| Asian; Some other race | 0 | 0 | 0 | 187 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 1 |
| Population of three races: | 0 | 0 | 0 | 799 |
| White; Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 400 |
| White; Black or African American; Asian | 0 | 0 | 0 | 46 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 6 |

# Census Data for Tract 3202.03 - Block Group 2 and Indianapolis (City) (Cont.)

| | | | | |
|---|---|---|---|---|
| White; Black or African American; Some other race | 0 | 0 | 0 | 142 |
| White; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 21 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 4 |
| White; American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 31 |
| White; Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 34 |
| White; Asian; Some other race | 0 | 0 | 0 | 32 |
| White; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 2 |
| Black or African American; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 29 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 2 |
| Some other race | 0 | 0 | 0 | 12 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 22 |
| Black or African American; Asian;Some other race | 0 | 0 | 0 | 13 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 |
| American Indian and Alaska Native; Asian; Some other race | 0 | 0 | 0 | 2 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Population of four races: | 0 | 0 | 0 | 58 |
| Asian | 0 | 0 | 0 | 17 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 17 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 16 |
| Some other race | 0 | 0 | 0 | 3 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 3 |
| Asian; Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 2 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Population of five races: | 0 | 0 | 0 | 19 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 16 |
| Asian; Some other race | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 2 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 |
| Population of six races: | 0 | 0 | 0 | 13 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 13 |

U.S. Census Bureau Census 2000

# Census Data for Tract 3202.04 - Block Group 2 and Indianapolis (City)

P4. HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE [73] - Universe: Total population
Data Set: Census 2000 Summary File 1 (SF 1) 100-Percent Data

NOTE: For information on confidentiality protection, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf1u.htm.

| | Block 2008, Block Group 2, Census Tract 3202.04, Marion County, Indiana | Block 2009, Block Group 2, Census Tract 3202.04, Marion County, Indiana | Block 2010, Block Group 2, Census Tract 3202.04, Marion County, Indiana | Block 2011, Block Group 2, Census Tract 3202.04, Marion County, Indiana | Indianapolis city (balance), Indiana |
|---|---|---|---|---|---|
| Total: | 0 | 0 | 0 | 0 | 781,870 |
| Hispanic or Latino | 0 | 0 | 0 | 0 | 30,636 |
| Not Hispanic or Latino: | 0 | 0 | 0 | 0 | 751,234 |
| Population of one race: | 0 | 0 | 0 | 0 | 740,426 |
| White alone | 0 | 0 | 0 | 0 | 527,675 |
| Black or African American alone | 0 | 0 | 0 | 0 | 198,252 |
| American Indian and Alaska Native alone | 0 | 0 | 0 | 0 | 1,648 |
| Asian alone | 0 | 0 | 0 | 0 | 11,046 |
| Native Hawaiian and Other Pacific Islander alone | 0 | 0 | 0 | 0 | 268 |
| Some other race alone | 0 | 0 | 0 | 0 | 1,537 |
| Population of two or more races: | 0 | 0 | 0 | 0 | 10,808 |
| Population of two races: | 0 | 0 | 0 | 0 | 9,919 |
| White; Black or African American | 0 | 0 | 0 | 0 | 4,125 |
| White; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 1,799 |
| White; Asian | 0 | 0 | 0 | 0 | 1,373 |
| White; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 105 |
| White; Some other race | 0 | 0 | 0 | 0 | 806 |
| Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 527 |
| Black or African American; Asian | 0 | 0 | 0 | 0 | 310 |
| Black or African American; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 58 |
| Black or African American; Some other race | 0 | 0 | 0 | 0 | 425 |
| American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 49 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 4 |
| American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 0 | 30 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 120 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 187 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 1 |
| Population of three races: | 0 | 0 | 0 | 0 | 799 |
| White; Black or African American; American Indian and Alaska Native | 0 | 0 | 0 | 0 | 400 |
| White; Black or African American; Asian | 0 | 0 | 0 | 0 | 46 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 6 |
| White; Black or African American; Some other race | 0 | 0 | 0 | 0 | 142 |
| White; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 21 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 4 |
| White; American Indian and Alaska Native; Some other race | 0 | 0 | 0 | 0 | 31 |
| White; Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 34 |

# Census Data for Tract 3202.04 - Block Group 2 and Indianapolis (City) (Cont.)

| | | | | | |
|---|---|---|---|---|---|
| White; Asian; Some other race | 0 | 0 | 0 | 0 | 32 |
| White; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 2 |
| Black or African American; American Indian and Alaska Native; Asian | 0 | 0 | 0 | 0 | 29 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 2 |
| Some other race | 0 | 0 | 0 | 0 | 12 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 22 |
| Black or African American; Asian;Some other race | 0 | 0 | 0 | 0 | 13 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 |
| American Indian and Alaska Native; Asian; Some other race | 0 | 0 | 0 | 0 | 2 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Population of four races: | 0 | 0 | 0 | 0 | 58 |
| Asian | 0 | 0 | 0 | 0 | 17 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 17 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 16 |
| Some other race | 0 | 0 | 0 | 0 | 3 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 3 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 2 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Population of five races: | 0 | 0 | 0 | 0 | 19 |
| Asian; Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 16 |
| Asian; Some other race | 0 | 0 | 0 | 0 | 1 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 2 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 0 |
| Population of six races: | 0 | 0 | 0 | 0 | 13 |
| Asian; Native Hawaiian and Other Pacific Islander; Some other race | 0 | 0 | 0 | 0 | 13 |

U.S. Census Bureau Census 2000

# Census Data for Tract 3202.03 and 3202.04 - Block Group 2 and Indianapolis (City)

P87. POVERTY STATUS IN 1999 BY AGE [17] - Universe: Population for whom poverty status is determined
Data Set: Census 2000 Summary File 3 (SF 3) - Sample Data

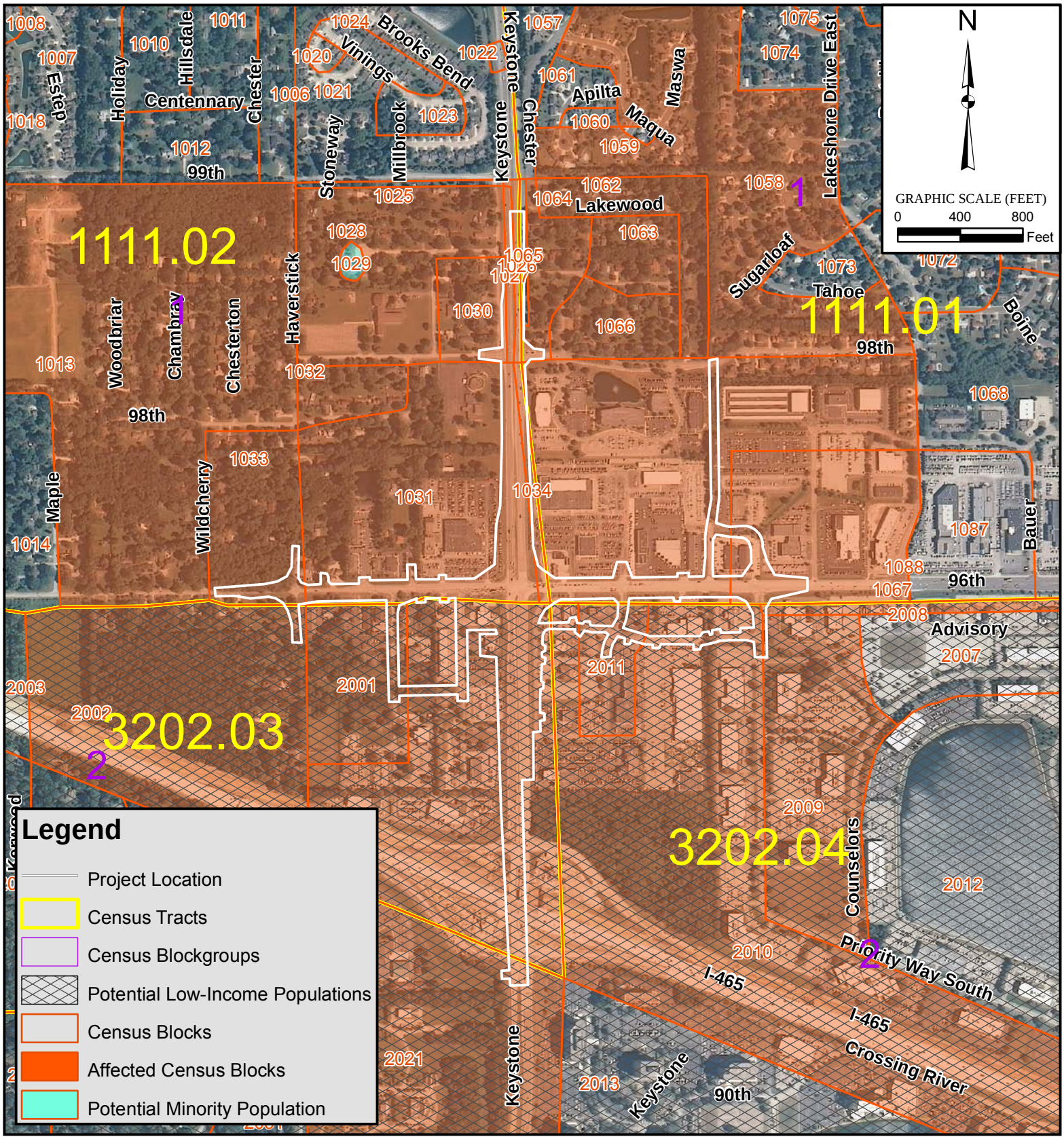
NOTE: Data based on a sample except in P3, P4, H3, and H4. For information on confidentiality protection, sampling error, nonsampling error, definitions, and count corrections see http://factfinder.census.gov/home/en/datanotes/expsf3.htm.

| | **Indianapolis city, Indiana** | **Block Group 2, Census Tract 3202.03, Marion County, Indiana** | **Block Group 2, Census Tract 3202.04, Marion County, Indiana** |
|---|---|---|---|
| Total: | 772,996 | 272 | 2,195 |
| Income in 1999 below poverty level: | 91,163 | 9 | 108 |
| Under 5 years | 10,659 | 0 | 0 |
| 5 years | 1,910 | 0 | 0 |
| 6 to 11 years | 10,985 | 0 | 0 |
| 12 to 17 years | 9,387 | 0 | 0 |
| 18 to 64 years | 51,568 | 0 | 108 |
| 65 to 74 years | 3,607 | 9 | 0 |
| 75 years and over | 3,047 | 0 | 0 |
| Income in 1999 at or above poverty level: | 681,833 | 263 | 2,087 |
| Under 5 years | 46,520 | 14 | 68 |
| 5 years | 8,972 | 6 | 0 |
| 6 to 11 years | 57,148 | 11 | 73 |
| 12 to 17 years | 52,618 | 43 | 56 |
| 18 to 64 years | 440,822 | 163 | 1,751 |
| 65 to 74 years | 41,937 | 0 | 41 |
| 75 years and over | 33,816 | 26 | 98 |

U.S. Census Bureau

Appendix J.2

US Census Bureau Map

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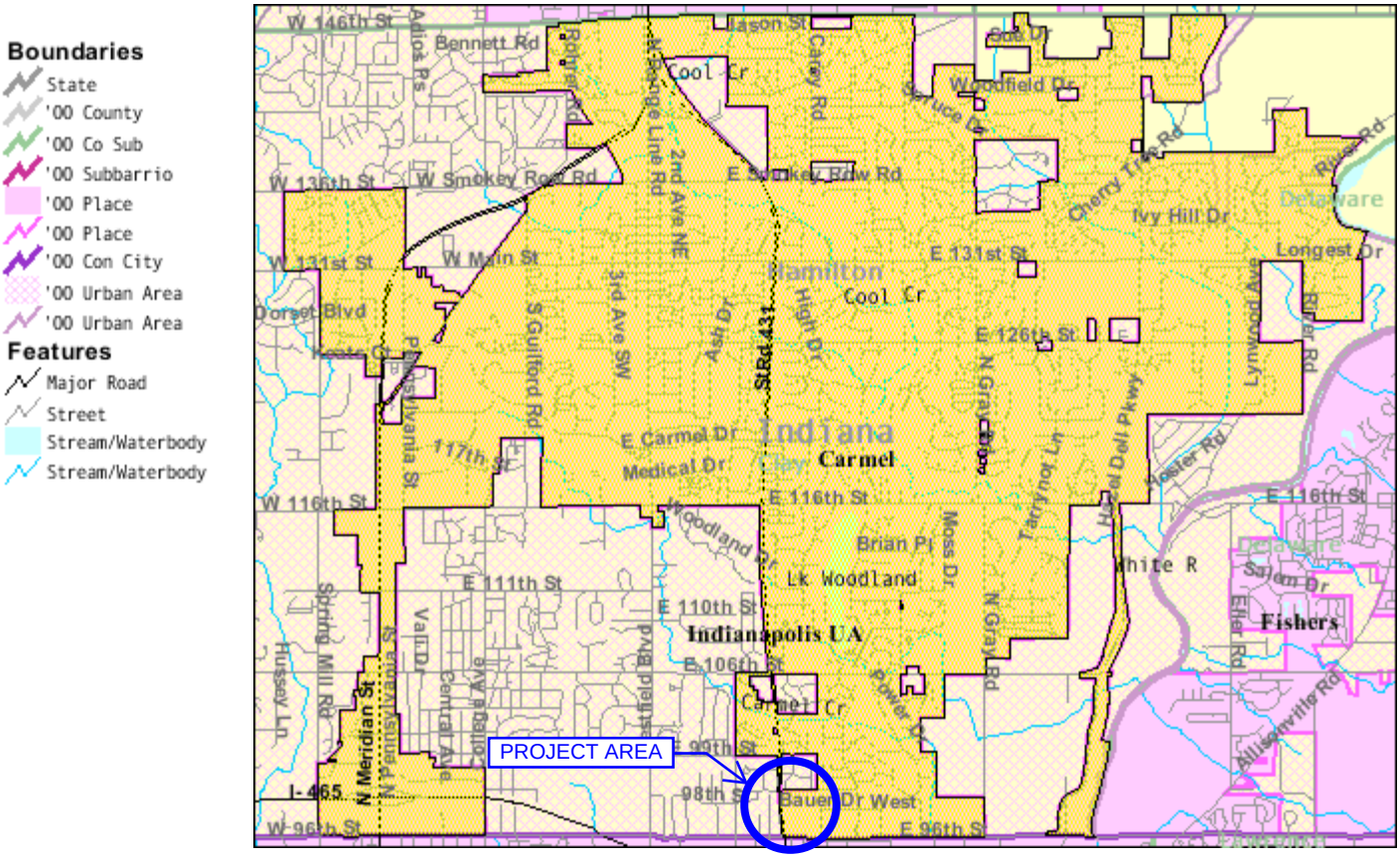
# 96TH STREET & KEYSTONE

## 2000 CENSUS MAP

Carmel city, Indiana

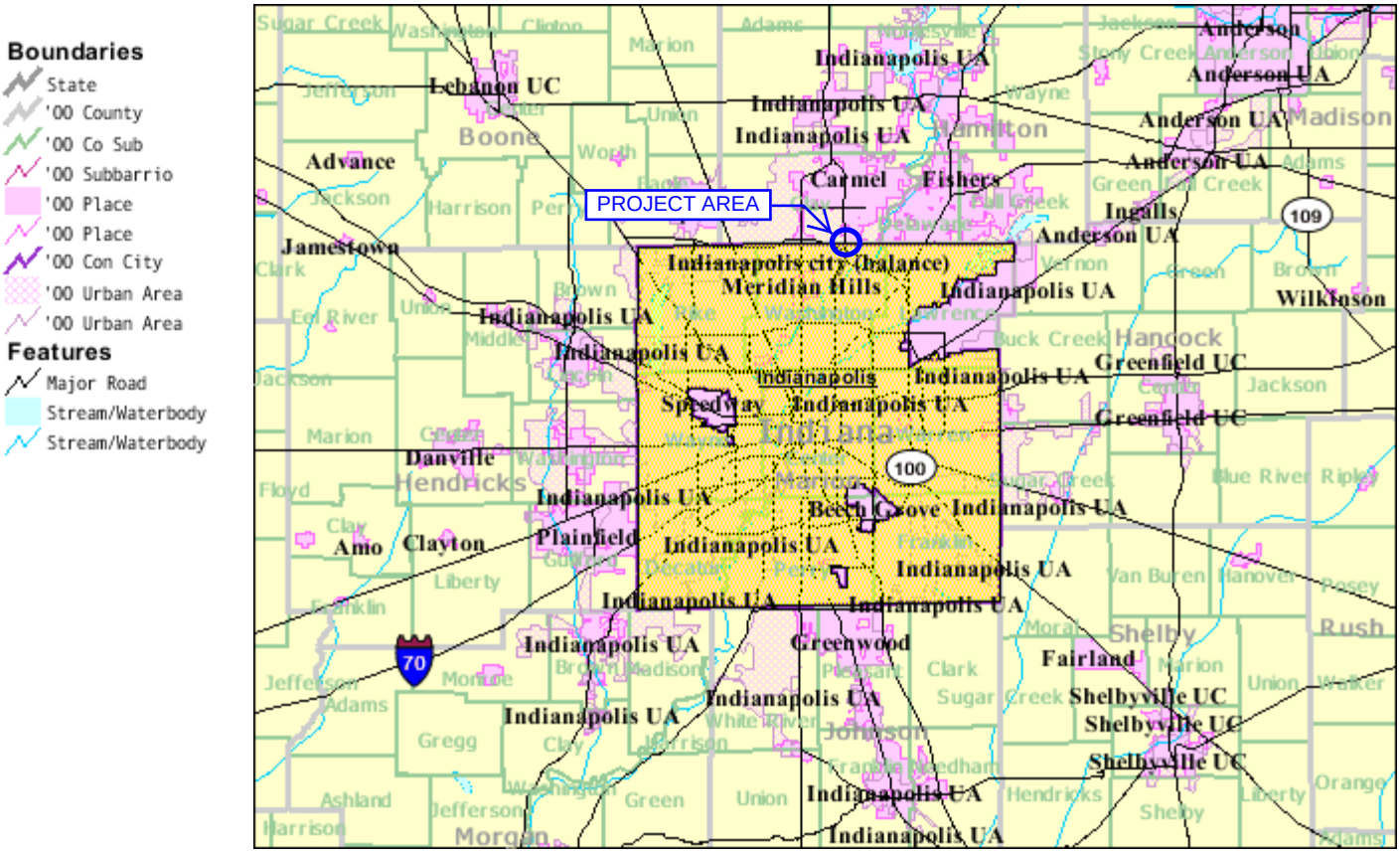



7 miles across

Close

City of Carmel - Hamilton County Community of Comparison

Indianapolis city, Indiana

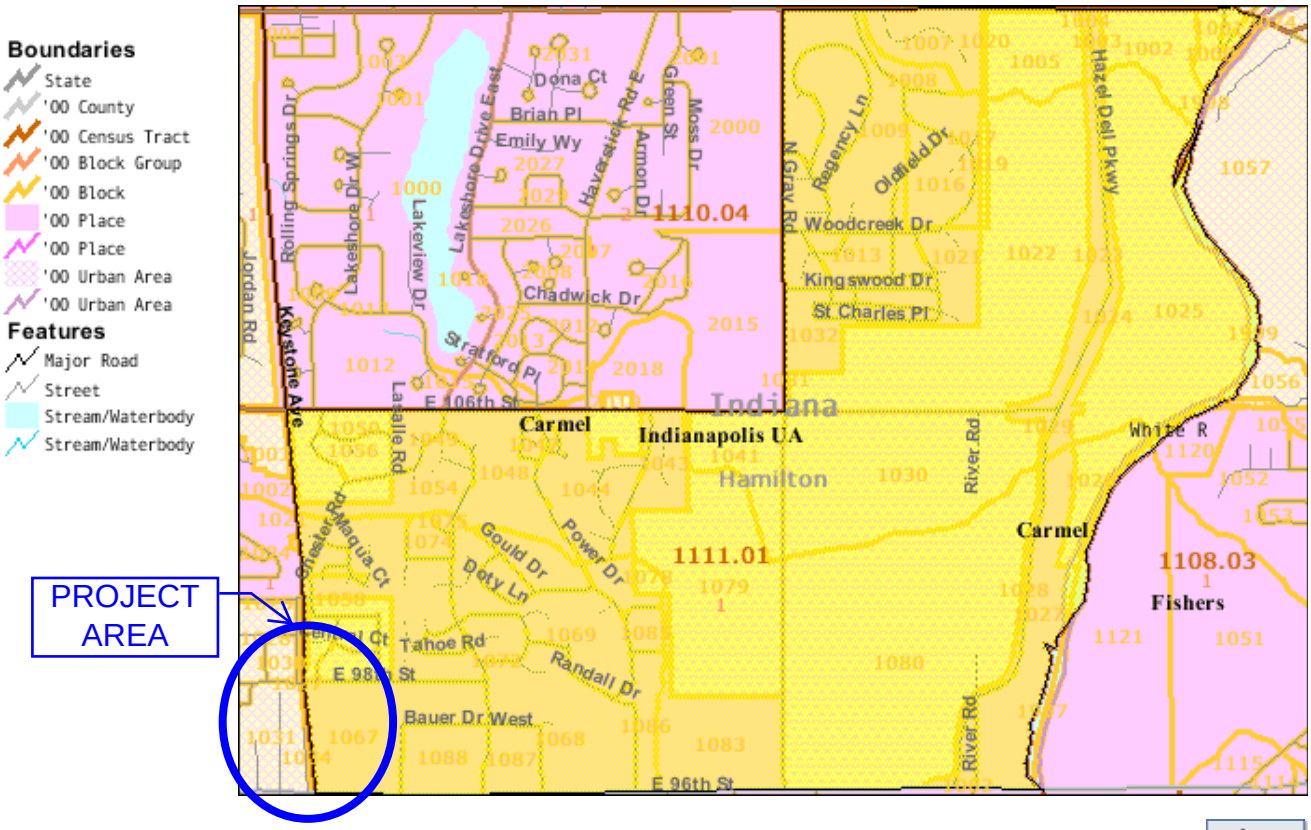



65 miles across

Close

City of Indianapolis - Marion County Community of Comparison

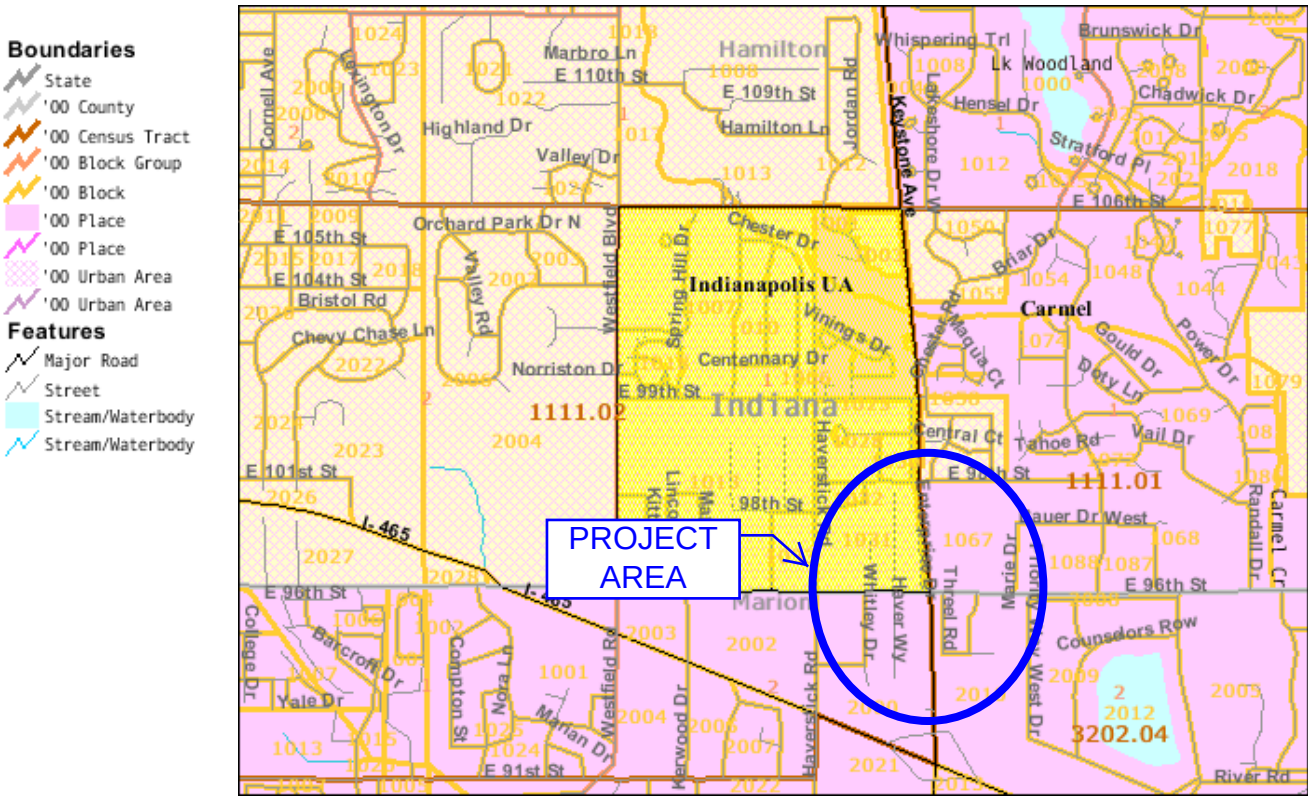
Block Group 1, Census Tract 1111.01, Hamilton County, Indiana




2.8 miles across

Close

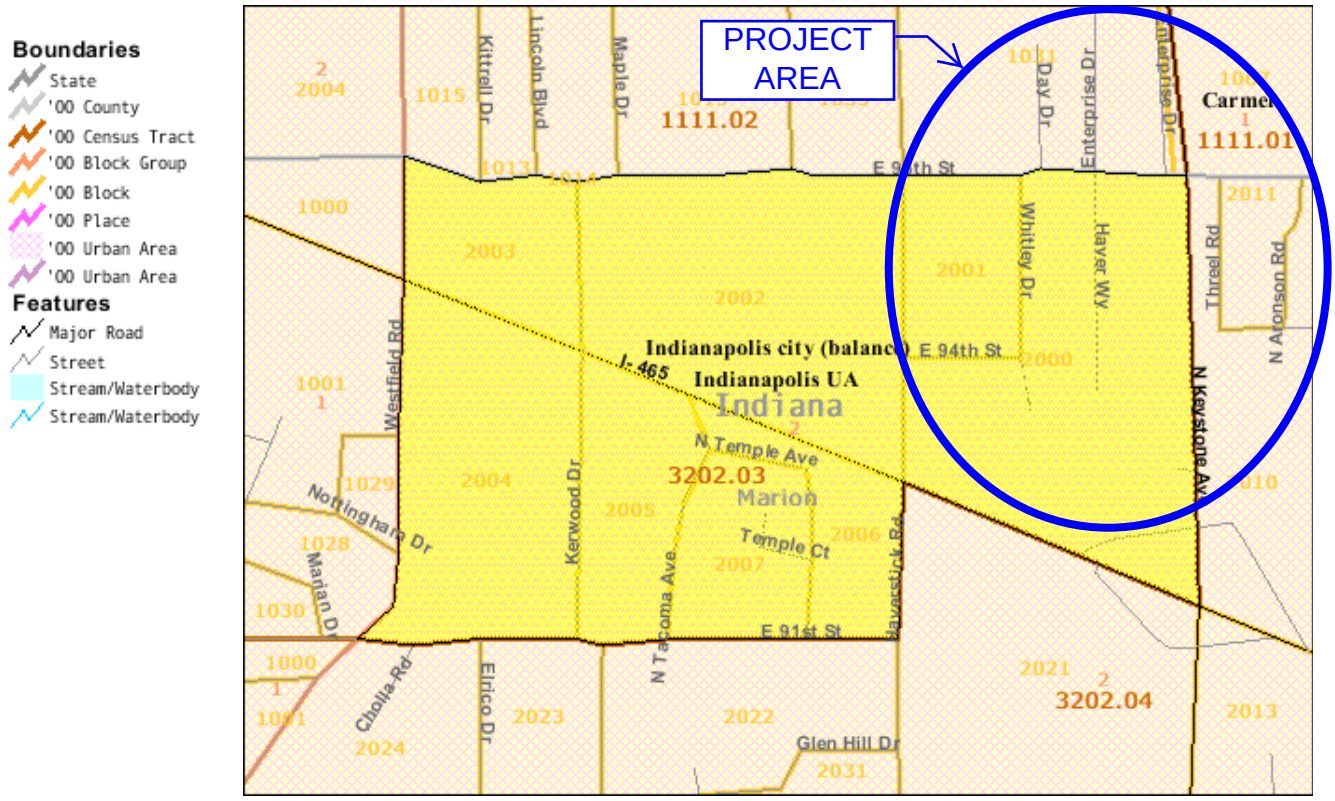
Block Group 1, Census Tract 1111.02, Hamilton County, Indiana




2.8 miles across

Close

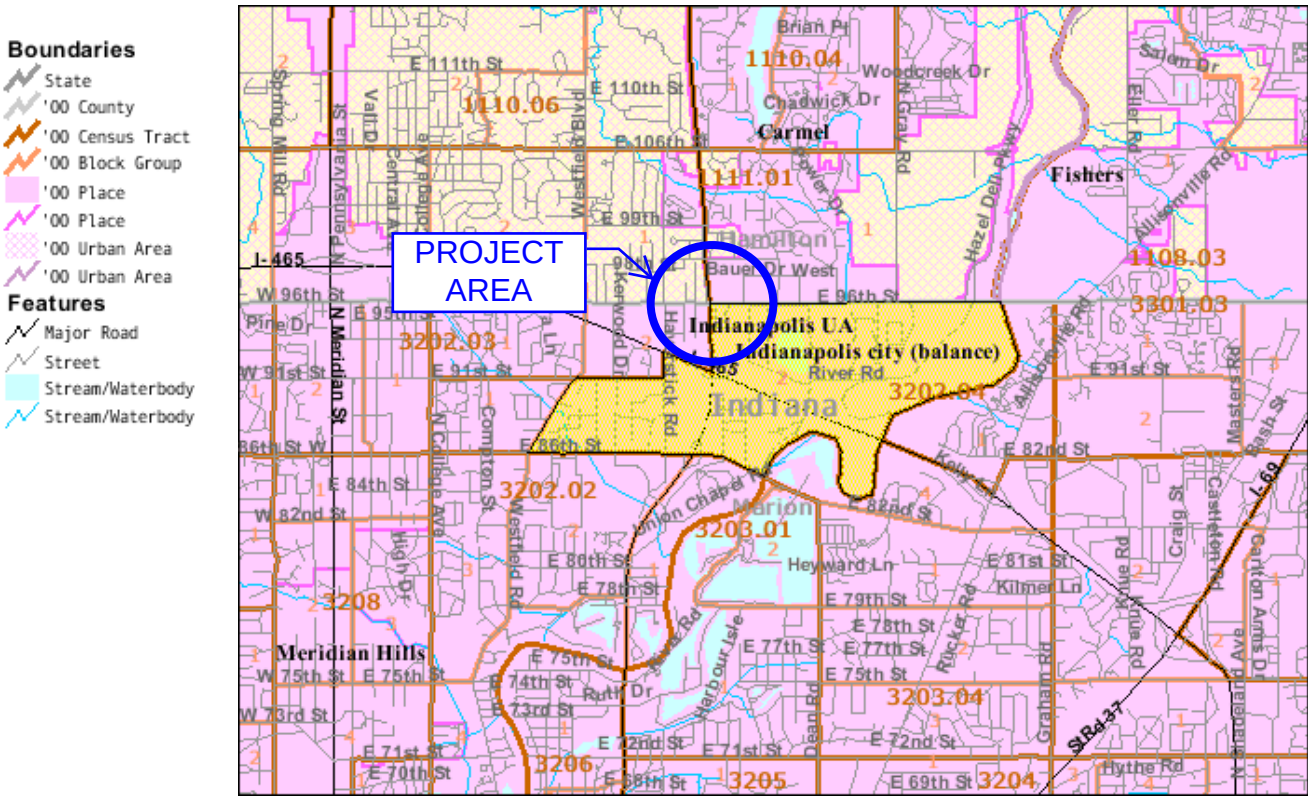
Block Group 2, Census Tract 3202.03, Marion County, Indiana




1.1 mile across

Close

Block Group 2, Census Tract 3202.04, Marion County, Indiana




7 miles across

Close

# Appendix J.3

# Environmental Justice Analysis Tables

# ENVIRONMENTAL JUSTICE ANALYSIS
# (HAMILTON COUNTY)

| ANALYSIS FOR MINORITY POPULATIONS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Hamilton County** | **Affected Community** | | | | | | | | **Community of Comparison** | |
| | Census Tract 1111.01 | | | | | | | | Indianapolis, IN | Carmel, IN |
| | Block Group 1 | | | | | | | | | |
| | Block 1058 | Block 1062 | Block 1063 | Block 1064 | Block 1065 | Block 1066 | Block 1067 | Block 1088 | | |
| Population (Race - Raw Count) | | | | | | | | | | |
| Total Population | 294 | 45 | 24 | 40 | 0 | 20 | 38 | 0 | 791,926 | 37,733 |
| White (Total) | 267 | 43 | 24 | 39 | 0 | 20 | 37 | 0 | 536,496 | 34,467 |
| Non-White (Total) | 27 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 255,430 | 3,266 |
| African American | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 199,096 | 550 |
| Hispanic or Latino | 8 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 30,759 | 649 |
| American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,659 | 45 |
| Asian | 15 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 11,167 | 1,645 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 272 | 12 |
| Other | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,555 | 48 |
| Two or More Races | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 10,922 | 317 |
| Population (Race - Percentage) | | | | | | | | | | |
| Total | 100.00% | 100.00% | 100.00% | 100.00% | 0.00% | 100.00% | 100.00% | 0.00% | 100.00% | 100.00% |
| AC (White) | 90.82% | 95.56% | 100.00% | 97.50% | 0.00% | 100.00% | 97.37% | 0.00% | 67.75% | 91.34% |
| AC (Non-White)* | 9.18% | 4.44% | 0.00% | 2.50% | 0.00% | 0.00% | 2.63% | 0.00% | 32.25% | 8.66% |
| AC - Aggregate Total (Non-White)* | 6.72% | | | | | | | | -- | -- |
| COC (Indianapolis) + 25% | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | | |
| COC (Carmel) + 25% | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | | |
| EJ Pop. Present?** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | | |

| ANALYSIS FOR LOW INCOME POPULATIONS | | | |
|---|---|---|---|
| **Hamilton County** | **Affected Community** | **Community of Comparison** | |
| | Census Tract 1111.01 | Indianapolis, IN | Carmel, IN |
| | Block Group 1 | | |
| Population (Poverty - Raw Count) | | | |
| Total Population | 3,813 | 772,996 | 37,335 |
| Income in 1999 Below Poverty Level | 66 | 91,163 | 949 |
| Income in 1999 at or Above Poverty Level | 3,747 | 681,833 | 36,386 |
| Population (Poverty - Percentage) | | | |
| Total | 100.00% | 100.00% | 100.00% |
| AC (Above Poverty) | 98.27% | 88.21% | 97.46% |
| AC (Below Poverty) | **1.73%** | 11.79% | 2.54% |
| COC (Indianapolis) + 25% | **14.74%** | | |
| COC (Carmel) + 25% | **3.18%** | | |
| EJ Pop. Present?** | No | | |

*Source: 2000 US Census*

** -Non-White = African American, Hispanic, American Indiana / Alaska Native, Native Hawaiian / Other Pacific Islander and other races*

*** - Environmental justice population present if the low income or minority population of the affected community (AC) is greater than 125% of the minority or low income population in the Community of Comparison (COC).*

## ENVIRONMENTAL JUSTICE ANALYSIS
## (HAMILTON COUNTY)

| ANALYSIS FOR MINORITY POPULATIONS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hamilton County (Cont.)** | **Affected Community** | | | | | | | | | | | **Community of Comparison** | |
| | Census Tract 1111.02 | | | | | | | | | | | Indianapolis, IN | Carmel, IN |
| | Block Group 1 | | | | | | | | | | | | |
| | Block 1013 | Block 1025 | Block 1026 | Block 1027 | Block 1028 | Block 1029 | Block 1030 | Block 1031 | Block 1032 | Block 1033 | Block 1034 | | |
| Population (Race - Raw Count) | | | | | | | | | | | | | |
| Total Population | 310 | 0 | 0 | 14 | 82 | 16 | 13 | 60 | 32 | 24 | 0 | 791,926 | 37,733 |
| White | 283 | 0 | 0 | 14 | 78 | 14 | 13 | 60 | 32 | 22 | 0 | 536,496 | 34,467 |
| Non-White | 27 | 0 | 0 | 0 | 4 | 2 | 0 | 0 | 0 | 2 | 0 | 255,430 | 3,266 |
| African American | 7 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 199,096 | 550 |
| Hispanic or Latino | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 30,759 | 649 |
| American Indian and Alaska Native | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,659 | 45 |
| Asian | 6 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 11,167 | 1,645 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 272 | 12 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,555 | 48 |
| Two or More Races | 8 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 10,922 | 317 |
| Population (Race - Percentage) | | | | | | | | | | | | | |
| Total | 100.00% | 0.00% | 0.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 100.00% | 0.00% | 100.00% | 100.00% |
| AC (White) | 91.29% | 0.00% | 0.00% | 100.00% | 95.12% | 87.50% | 100.00% | 100.00% | 100.00% | 91.67% | 0.00% | 67.75% | 91.34% |
| AC (Non-White)* | 8.71% | 0.00% | 0.00% | 0.00% | 4.88% | 12.50% | 0.00% | 0.00% | 0.00% | 8.33% | 0.00% | 32.25% | 8.66% |
| AC - Aggregate Total (Non-White)* | 6.35% | | | | | | | | | | | -- | -- |
| COC (Indianapolis) + 25% | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | | |
| COC (Carmel) + 25% | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | | |
| EJ Pop. Present?** | **No** | **No** | **No** | **No** | **No** | **Yes** | **No** | **No** | **No** | **No** | **No** | | |

| ANALYSIS FOR LOW INCOME POPULATIONS | | | |
|---|---|---|---|
| **Hamilton County (Cont.)** | **Affected Community** | **Community of Comparison** | |
| | Census Tract 1111.02 | Indianapolis, IN | Carmel, IN |
| | Block Group 1 | | |
| Population (Poverty - Raw Count) | | | |
| Total Population | 1,522 | 772,996 | 37,335 |
| Income in 1999 Below Poverty Leve | 17 | 91,163 | 949 |
| Income in 1999 at or Above Poverty Level | 1,505 | 681,833 | 36,386 |
| Population (Poverty - Percentage) | | | |
| Total | 100.00% | 100.00% | 100.00% |
| AC (Above Poverty) | 98.88% | 88.21% | 97.46% |
| AC (Below Poverty) | **1.12%** | 11.79% | 2.54% |
| COC (Indianapolis) + 25% | **14.74%** | | |
| COC (Carmel) + 25% | **3.18%** | | |
| EJ Pop. Present?** | No | | |

*Source: 2000 US Census*

** -Non-White = African American, Hispanic, American Indiana / Alaska Native, Native Hawaiian / Other Pacific Islander and other races*

*** - Environmental justice population present if the low income or minority population of the affected community (AC) is greater than 125% of the minority or low income population in the Community of Comparison (COC).*

# ENVIRONMENTAL JUSTICE ANALYSIS
# (MARION COUNTY)

| ANALYSIS FOR MINORITY POPULATIONS | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Marion County | Affected Community | | | | | | | | Community of Comparison | |
| | Census Tract 3202.03 | | | Census Tract 3202.04 | | | | | Indianapolis, IN | Carmel, IN |
| | Block Group 2 | | | Block Group 2 | | | | | | |
| | Block 2000 | Block 2001 | Block 2002 | Block 2008 | Block 2009 | Block 2010 | Block 2011 | Block 2021 | | |
| Population (Race - Raw Count) | | | | | | | | | | |
| Total Population | 0 | 8 | 47 | 0 | 0 | 0 | 0 | 30 | 791,926 | 37,733 |
| White | 0 | 8 | 45 | 0 | 0 | 0 | 0 | 29 | 536,496 | 34,467 |
| Non-White | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 255,430 | 3,266 |
| African American | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 199,096 | 550 |
| Hispanic or Latino | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 30,759 | 649 |
| American Indian and Alaska Native | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,659 | 45 |
| Asian | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 11,167 | 1,645 |
| Native Hawaiian and Other Pacific Islander | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 272 | 12 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,555 | 48 |
| Two or More Races | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 10,922 | 317 |
| Population (Race - Percentage) | | | | | | | | | | |
| Total | 0.00% | 100.00% | 100.00% | 0.00% | 0.00% | 0.00% | 0.00% | 100.00% | 100.00% | 100.00% |
| AC (White) | 0.00% | 100.00% | 95.74% | 0.00% | 0.00% | 0.00% | 0.00% | 96.67% | 67.75% | 91.34% |
| AC (Non-White)* | 0.00% | 0.00% | 4.26% | 0.00% | 0.00% | 0.00% | 0.00% | 3.33% | 32.25% | 8.66% |
| AC - Aggregate Total (Non-White)* | 3.64% | | | 3.33% | | | | | -- | -- |
| COC (Indianapolis) + 25% | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | **40.32%** | | |
| COC (Carmel) + 25% | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | **10.82%** | | |
| EJ Pop. Present?** | No | No | No | No | No | No | No | No | | |

| ANALYSIS FOR LOW INCOME POPULATIONS | | | | |
|---|---|---|---|---|
| Marion County | Affected Community | | Community of Comparison | |
| | Census Tract 3202.03 | Census Tract 3202.04 | Indianapolis, IN | Carmel, IN |
| | Block Group 2 | Block Group 2 | | |
| Population (Poverty - Raw Count) | | | | |
| Total Population | 272 | 2,195 | 772,996 | 37,335 |
| Income in 1999 Below Poverty Level | 9 | 108 | 91,163 | 949 |
| Income in 1999 at or Above Poverty Level | 263 | 2,087 | 681,833 | 36,386 |
| Population (Poverty - Percentage) | | | | |
| Total | 100.00% | 100.00% | 100.00% | 100.00% |
| AC (Above Poverty) | 96.69% | 95.08% | 88.21% | 97.46% |
| AC (Below Poverty) | **3.31%** | **4.92%** | 11.79% | 2.54% |
| COC (Indianapolis) + 25% | **14.74%** | **14.74%** | | |
| COC (Carmel) + 25% | **3.18%** | **3.18%** | | |
| EJ Pop. Present?** | Yes | Yes | | |

*Source: 2000 US Census*

** -Non-White = African American, Hispanic, American Indiana / Alaska Native, Native Hawaiian / Other Pacific Islander and other races*

*** - Environmental justice population present if the low income or minority population of the affected community (AC) is greater than 125% of the minority or low income population in the Community of Comparison (COC).*

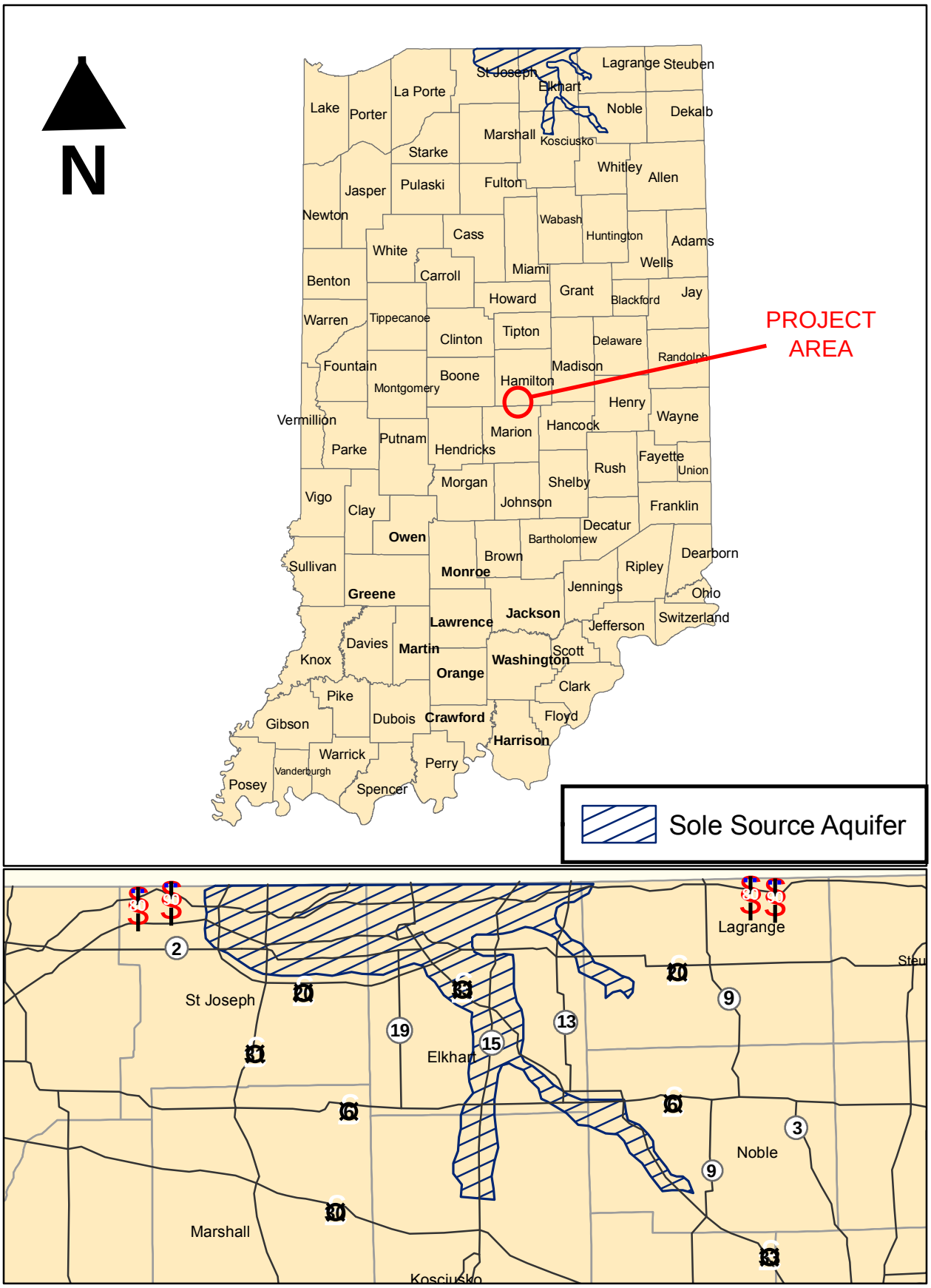
# Appendix K

Miscellaneous Maps

Appendix K.1

Sole Source Aquifer Map

Potential Karst Features Map


N
St Joseph
Elkhart
Lagrange
Steuben
Lake
Porter
La Porte
Noble
Dekalb
Marshall
Kosciusko
Starke
Whitley
Allen
Jasper
Pulaski
Fulton
Newton
Wabash
Huntington
Adams
Cass
White
Wells
Miami
Carroll
Benton
Howard
Grant
Blackford
Jay
Warren
Tippecanoe
Clinton
Tipton
Delaware
Randolph
Madison
Fountain
Boone
Hamilton
Montgomery
Henry
Wayne
Vermillion
Hancock
Marion
Putnam
Parke
Hendricks
Fayette
Union
Rush
Morgan
Shelby
Vigo
Johnson
Franklin
Clay
Decatur
Owen
Bartholomew
Brown
Dearborn
Sullivan
Monroe
Ripley
Jennings
Ohio
Greene
Jackson
Switzerland
Lawrence
Jefferson
Davies
Martin
Scott
Knox
Washington
Orange
Clark
Pike
Gibson
Dubois
Crawford
Floyd
Harrison
Warrick
Perry
Vanderburgh
Posey
Spencer
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Steuben
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Dekalb
Marshall
Kosciusko
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Potential Karst Features Region