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Dear Red Bank CPC members:

Thank you to all who participated in the Red Bank Corridor Community Partners Committee (CPC), Tuesday, May 22, 2012 at the Madisonville Recreation Center. This document provides a brief synopsis of what ODOT sees as the key outcomes of that meeting (meeting minutes are being prepared separately). The following is a list of points and issues discussed at the meeting and associated action items and assignments for both ODOT and the Red Bank Corridor CPC representatives.

Speed Limits

There was significant discussion about the current and future speed limit along the Red Bank Corridor. There is disagreement in what is posted along the corridor as well as what the appropriate speed limit should be for design and posting. CPC representatives stated they want the current and future speed limit along the roadway to be 35 mph. City and ODOT representatives said that the documented speed limit is currently 45 mph between I-71 and Brotherton, although one sign along the corridor incorrectly says the limit is 35 mph.

- ODOT is providing a brief explanation on how speed limits are determined within City limits (attached).
- The City of Cincinnati will conduct a speed study to determine the proper posted speed limit and have the corridor posted accordingly.
- URS has provided cross sections depicting the differences between 35 mph and 45 mph as well as design differences that are associated with (attached).
- ODOT will currently proceed with development with speeds as listed in the original project scope and will adjust as needed.

Traffic Modeling

Questions were raised about the travel demand forecast modeling and what assumptions or inputs to the model are used to generate trips and distribution of traffic volumes. Items mentioned were inclusion of 2005 as a baseline, the location of TIF districts, upcoming development of Madisonville Square and other areas such as the Medpace campus, how current and future land uses are accounted for, and the impact the recession and gas prices has had on travel demand. CPC representatives asked if someone could explain modeling to the group.

- OKI has supplied a one-page synopsis of travel demand modeling and a more detailed explanation of the travel demand model and how it functions (attached).
- URS noted that the model predicts a shift in traffic volumes from the east-west routes through Madisonville (Bramble, Madison, Wooster and Plainville) to the relocated SR-32 and the Red Bank Corridor when relocated SR-32 is operational.
- Volumes increase on Red Bank Expressway/Road while they decrease on Madison. The southbound left turns at the Madison Red Bank Intersection also decrease.
- URS noted that traffic volumes from the Medpace Development have been incorporated in the assumed traffic volumes for the intersection at Madison and Red Bank.
- Bob Igoe inquired if traffic volumes from the proposed Madison Square Development have been included in the model.

Eastern Corridor Implementation Partners

Hamilton County Transportation Improvement District • Clermont County Transportation Improvement District • City of Cincinnati
Ohio-Kentucky-Indiana Regional Council of Governments • Southwest Ohio Regional Transit Authority • Ohio Department of Transportation

The Eastern Corridor Program is administered by the Ohio Department of Transportation in cooperation with the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA) and the Eastern Corridor Implementation Partners.

- Craig Rozen, with assistance from Bob Igoe, is requested to provide additional information about the Madison Square Development. This information should include projected employment figures and trip generation numbers for opening day and any long-term forecasts.
- Bob Igoe is requested to provide the boundaries of the TIF District and projected associated development relating to increased traffic.

Economic Impact

Bob Igoe inquired if the City intended to conduct Economic Impact Studies or land use plans for the project area. ODOT will not be providing these studies as they are not a component of the State or Federal planning or environmental processes and the Department has no authority over local land use regulations, policy or market incentives.

- Bob Igoe will coordinate with the City and Hamilton County TID to determine if additional Economic Impact Studies will be performed for the study area and who will fund and manage these studies.

Design Concepts

Several Design Concepts were presented by URS to begin the discussion of what could be feasible to provide roadway connections and the number of required lanes to handle projected traffic and turning movements. This was the first step in a process designed to include the CPC members in the decision making process for developing a workable solution to the goals of the project, and was not intended to be a presentation of alternatives to be voted on for advancement. Any concept would provide improved accommodations for pedestrians and bicyclists from the existing conditions. Additionally, while improvements to the local roadway network (i.e. "Old" Red Bank) are part of planned improvements to the overall roadway network, they were not shown at this time in the various Concepts. The Concepts were initially focused on the accommodation of the forecasted mainline Red Bank, Duck Creek, Erie, and Madison traffic volumes.

The first Concept presented was a "conventional at-grade intersection." It was explained that this would likely require dual left turn lanes on Red Bank at Madison and Duck Creek, with four (4) through lanes in each direction on Red Bank at Madison and three (3) through lanes at its intersection with Duck Creek. Additionally, there will likely be an additional through lane added beyond the intersections throughout the corridor to accommodate the forecasted increase in volumes that must pass through a conventional signalized intersection system.

An at-grade continuous flow intersection Concept at Madison was also presented. It should be noted that this type of intersection, while considered in earlier planning phases, is currently not considered an effective means to address the forecasted traffic volumes at this intersection. The footprint is very large, it may require the closure of side streets or driveways in close proximity, and has an unusual pedestrian crossing process.

Also presented for the Madison and Red Bank Intersection was a three lane at-grade round-about. It was explained that there are no three lane roundabouts operating within the State and that further traffic analysis was needed to evaluate if this Concept could function satisfactorily with the forecast traffic volumes. Also, due to its size, measures would have to be taken to allow pedestrians to safely walk cross the round-about which would require stopping traffic and compromising the continuous traffic flow. CPC representatives said that this was expected and acceptable. It was also noted that there are large left turn movements from south bound Red Bank to east bound Madison and west bound Madison to south bound Red Bank. Therefore, a two (2) lane round-about with separated right turn lanes is not anticipated to accommodate the forecasted intersection movements more effectively than the three lane configuration shown.

A second grade-separated Concept for Red Bank was shown that was a tight collector-distributor type facility. It was discussed that this could be moved tighter to Red Bank, and even shifted to the east or west, but was a concept worth considering. It was also pointed out that the intersections with Madison and with Duck Creek could be standard intersections or possibly bow tie roundabouts. There was little discussion except to point out the location of the creek on the east side.

An additional Concept was shown by the consultant to illustrate potential connection of Duck Creek directly to Madison Road at a four-way intersection at the existing Medpace Way intersection. These Concepts are anticipated to accommodate all required turning movements at the system involving Duck Creek, Madison and Red Bank.

However, in an effort to show the required connections, the Concept drawings showed an impact to both the John P. Parker Elementary School and the Children's Home of Cincinnati. It was clear that these impacts are unacceptable to the community and any alternative to the system of intersections will need to ensure that any impacts at these facilities are minimal.

- ODOT will not advance this Concept for further consideration, understanding that the potential impacts to the adjacent John P. Parker Elementary School and Children's Home of Cincinnati will be minimized.
- Potential impacts to existing businesses located in close proximity to Madison and Red Bank (Rally's, UDF, Quick Lube) were not a large concern for CAC representatives.
- The at-grade round-about Concept seems to be preferred by the Madisonville Community representatives.
- Bob Igoe will work with the CAC to determine the preference on a grade-separated facility. There were statements made both in favor of and against grade separation by different members representing the CAC.
- CPC representatives said that grade-separated options may be considered if the following two requirements were met:
 - Measures are taken to ensure that a grade-separated facility would not create a perceived division between the Oakley and Madisonville communities
 - Measures are taken to control the travel speed along Red Bank road, ensuring that it does not become a "raceway."
- There was some discussion that a grade-separated "bow-tie" facility at Madison and Red Bank may be a desirable conceptual solution worth further consideration. URS will look into the feasibility of this configuration and present at the next CPC meeting.

A grade-separated intersection Concept was shown for the Erie/Brotherton/Red Bank intersection as well as a conventional expansion of the existing grade-separated intersection. Like the conventional intersection upgrade at Madison, additional through lanes are needed on Red Bank to handle the project traffic volumes with this configuration. As the meeting was running late, there was little discussion related to the proposed reconfiguration of this intersection.

- Further coordination with Fairfax is needed prior to refining the grade-separated Concept. ODOT will contact Fairfax representatives to discuss further.

Context Sensitive Design

There was confusion about the role of Context Sensitive Design (CSD) in the development of alternatives. URS had developed concepts intended to improve pedestrian access, minimize impacts to existing business in the Madisonville area, and to meet the forecasted traffic demands. Specific urban design elements have not been developed at this time but will be imported once feasible alternatives for roadway configuration and capacity are reviewed and recommended for continued development. The CAC felt that the points that they brought up in their meeting with ODOT in February 2012 were misunderstood and that these should be revisited before further concepts are developed.

- All Concepts presented at the May 22 meeting were for discussion purposes only, to ensure that an open dialogue remained between the CPC and the project team.
- A key component discussed by URS was the potential width of Red Bank, i.e. number of lanes. The various intersection concepts each have an associated design of a roadway to connect the intersections. URS further explained that this is part of the "context." Some options will require a possible eight-lane roadway, while others may require only a five-lane roadway, much like what exists today. Since the corridor is limited by the existing building/offices, creek, railroad, and electric power lines, it is important to consider the width of the road and its fit within the corridor, especially if other amenities are desired, like side paths, tree lawns, and sidewalks.

- A matrix is being developed by ODOT for use in future decision-making to include the important context sensitive elements relative to design standards and the goals presented by the CAC. This matrix will not be the only tool used for development of future concepts or decision-making on future alternatives, but will be one tool that aids our assessment.
- After consultation with ODOT's Office of Roadway Engineering Services, URS will design for 11-foot wide traffic lanes where appropriate and will consider the inclusion of landscaped medians where feasible as well as a shared-use path throughout the corridor.
- ODOT's Office of Environmental Services provided the following regarding CSD:

Context Sensitive Design (CSD) involves a collaborative, interdisciplinary approach in which citizens and agencies are part of the design team for a specific project. Key aspects of CSS include:

- *Provide a safe, financially feasible and implementable solution that meets the projects purpose and need.*
- *Provide a process that is open, honest and ensures continuous communication with stakeholders and provides meaningful opportunities for stakeholders to shape outcomes.*
- *Provide a flexible approach to design that preserves and enhances natural and community resources and adds a lasting value to the community.*

Again, thank you for your participation in this process. We hope to keep the lines of communication open in order to move the Red Bank Corridor project forward in a way that best meets the transportation needs of the region within the context of your community. Please note that assignments have been made to CPC members. The requested information should be sent to Keith Smith, P.E, ODOT Project Manager by August 30, 2012.

If you should have any questions, feel free to contact me at your convenience.

Respectfully,

A handwritten signature in blue ink, appearing to read "Keith Smith P.E.", with a stylized flourish at the end.

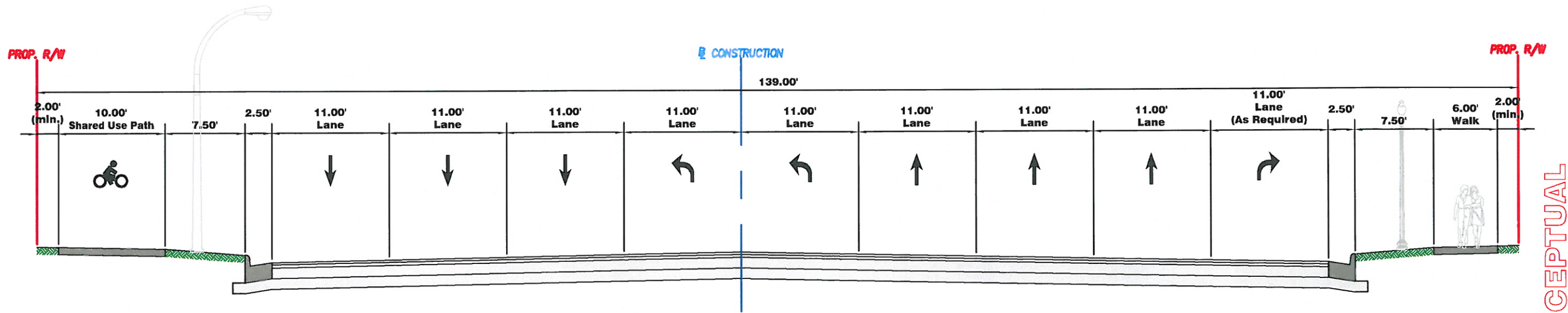
Keith Smith, P.E.
513-932-6590
Keith.Smith@dot.state.oh.us

Proposed Typical Sections

35/45 mph Design Criteria Narrative

Per the Ohio Department of Transportation Location and Design Manual - Volume One, Roadway Design Section 104.2, "Design speeds of 50 mph and higher are considered high speed and design speeds less than 50 mph are considered low speed. There is no differential in roadway design criteria (lane widths, shoulder widths, and roadside design elements) between a 35- and a 45-mph design speed. 11-foot wide travel lanes are permissible on all arterial, collector and local streets with a design speed of less than 50-mph. The attached Exhibits depict the proposed typical sections

I:\Projects\Red Bank Road\Roadway\Sheets\Boulevard Typical Sections.dwg User: Mike_Woodring Jun 18, 2012 -- 11:28am



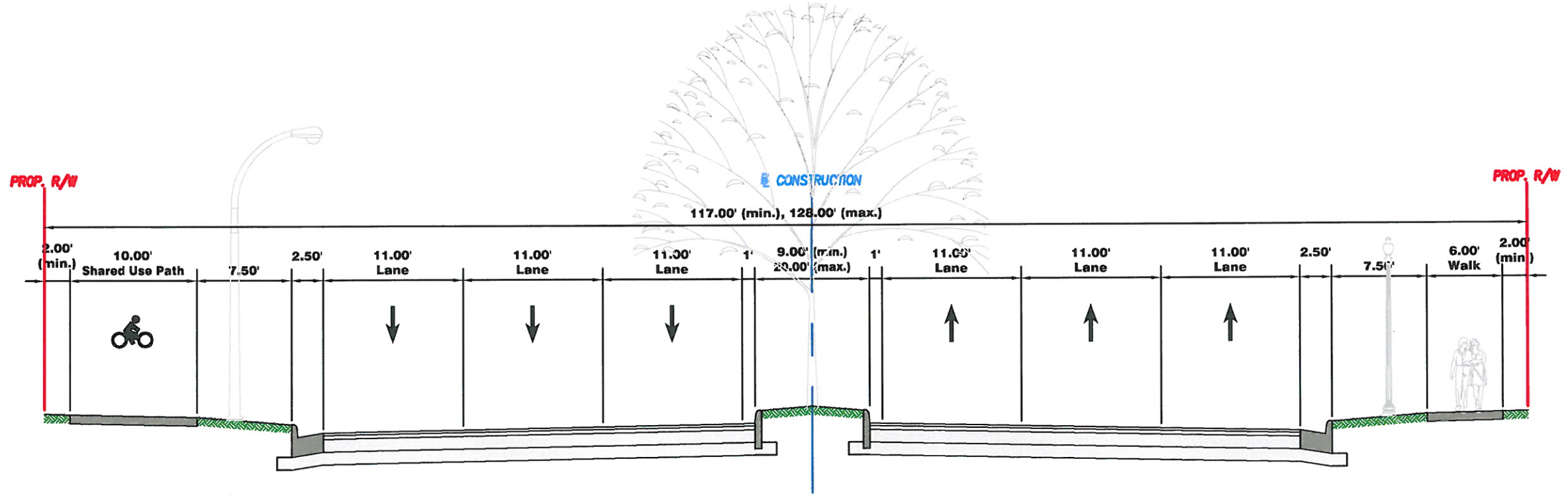
Proposed Typical Section - Standard Intersection
Madison Road, Brotherton Road

CONCEPTUAL

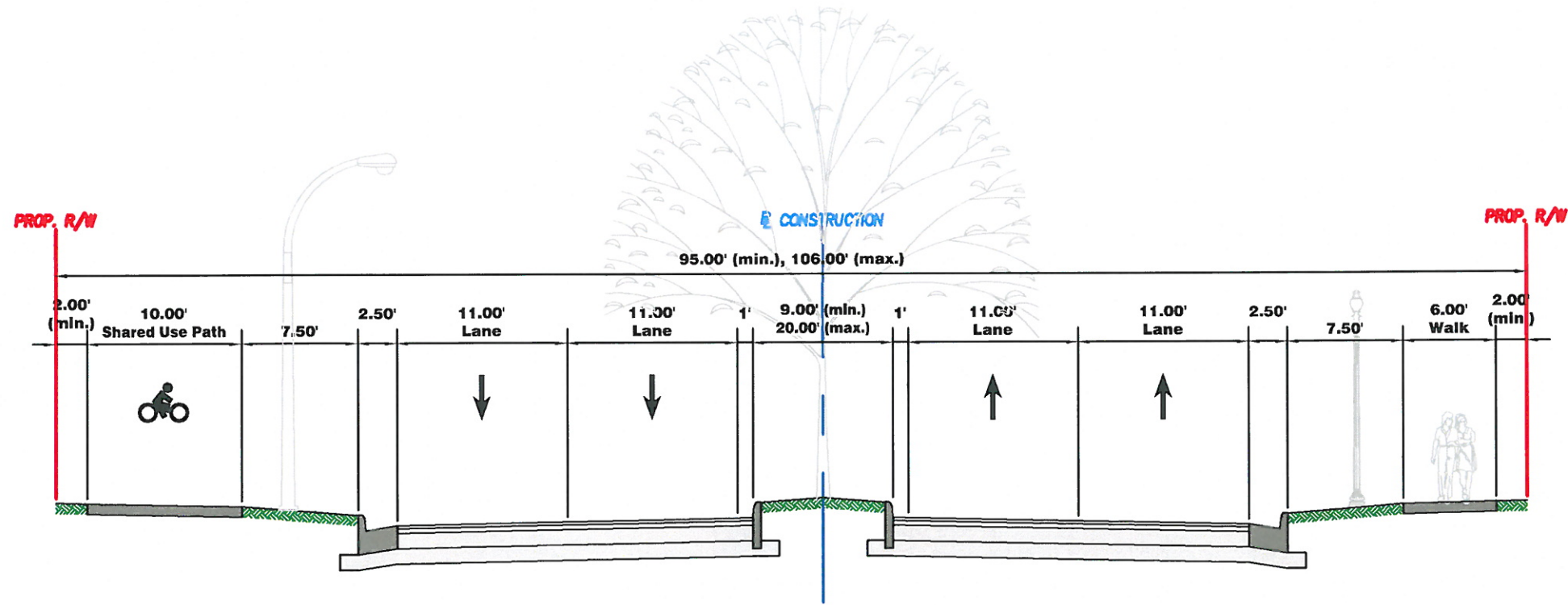


RED BANK ROAD
JUNE 2012

EXHIBIT
Proposed Typical Sections
35/45 mph Design Criteria



Proposed Typical Section - 6 Lane Boulevard



Proposed Typical Section - 4 Lane Boulevard

CONCEPTUAL



RED BANK ROAD
JUNE 2012

EXHIBIT
Proposed Typical Sections
35/45 mph Design Criteria

Overview of the OKI Travel Demand Model

The model is a set of mathematical relationships used to represent human behavior in making travel choices

Models are developed to replicate current conditions then applied to future scenarios.

The use of travel models are required to analyze transportation conditions when using federal transportation dollars.

Models allow us to quantify performance measures such as VMT, VHT and emissions and compare alternatives.

Key model inputs are demographic estimates, highway networks and transit networks and model parameters

Demographic: HH, POP, EMP for discrete areas we call Transportation Analysis Zones (TAZ's)

Highway Network is an abstraction of the actual roadway system

Transit Network is a representation of the transit (bus) system. (Location and frequency of service)

4 step (sequential) Process

Trip Generation – How many trips?

Trip Distribution – Where will they go?

Mode Choice – What mode will be taken?

Assignment – What path will they take?

The OKI is continually being refined and represents the state of the practice.

As the MPO, OKI is the sole provider of the travel model in this area. OKI has a very talented and dedicated staff of 3 full time professionals dedicated to the maintenance and development of the travel model.

OKI Travel Model Version 7.6

Introduction

The travel demand model translates land use patterns and socioeconomic characteristics of the population into estimates of travel magnitude, travel flow patterns and patronage on the various modes comprising the transportation system. The model provides a systematic way to analyze the immensely complex structure of urban development and travel. The OKI/MVRPC Travel Demand Model was developed for such purposes. The model was so designed that the accuracy of the results are suitable for system planning at a regional level. The intended use of the model is to provide regional level travel information to assist the development of regional transportation plans, major corridor analyses and air quality conformity analyses.

OKI / MVRPC Travel Demand Model is a traditional four-phase sequential model: trip generation, trip distribution, modal choice and assignment. The model is a trip-based model. The travel demand model estimates travel magnitude and travel flow patterns based on socioeconomic characteristics/distribution of the population, and transportation system characteristics. The model takes the socioeconomic data by traffic analysis zone, a highway network and a transit network as inputs. The trip generation phase estimates the trips produced and attracted by traffic analysis zone. The trip distribution phase estimates the total zone-to-zone trip interchanges. The modal choice phase estimates the zone-to-zone trip interchanges by transportation mode. Finally the assignment phase estimates the traffic volume in each highway link and ridership on each transit route.

The OKI/MVRPC Travel Demand Model encompasses the combined planning regions under the jurisdictions of the Ohio-Kentucky-Indiana Regional Council of Governments and the Miami Valley Regional Planning Commission. The combined region includes Hamilton, Clermont, Warren, Butler, Montgomery, Greene and Miami counties in the state of Ohio, as well as Boone, Kenton and Campbell in the state of Kentucky and Dearborn in the state of Indiana.

The model was calibrated in 2001 using OKI's trip survey data (household trip survey, transit on-board trip survey and external station trip survey) collected during years 1995-1997. The model was validated using 1993- 1997 traffic counts and 1995 observed transit ridership. In year 2003, the model was validated using the 1996-2001 traffic counts and 2000 transit ridership data. In 2004 the trip generation model and trip distribution model for MVRPC portion was recalibrated using MVRPC's 2002 household trip survey data. In 2006 the model was converted to CUBE Voyager platform except the transit related portion (Transit network building, transit path, modal choice model and transit assignment) which remains in TRANPLAN / FORTRAN platform. In 2007 the model was validated using 1998-2006 traffic counts and 2005 transit ridership data. The model is currently undergoing updates to convert transit elements to the more advanced Cube Voyager platform. In addition, traffic count data, household survey data, and transit survey data have been collected for the next update of the model base year to 2010."

System Overview

Model Components

The OKI/MVRPC Regional Travel Demand model is based upon the conventional trip-based four-step modeling approach, complemented with a sub-model to forecast trips at two regionally important trip generators, the Cincinnati/Northern Kentucky (CVG) airport and the King's Island amusement park. Broadly, the main model components fall within the following five categories:

- Trip Generation - the process of estimating the number of person trip productions and attractions in each traffic analysis zone (TAZ).
- Trip Distribution - the process of creating joined person trips, (i.e., OD trips), by linking trip productions and attractions across the combined region.
- Modal Choice - the process of estimating the number of person trips using a particular mode for each OD interchange.
- CVG Airport and Paramount King's Island Sub-model.
- Trip Assignment - the process of accumulating auto and transit trips onto specific highway and transit facilities in the region.
- Capacity and speed feedback to trip distribution and modal choice phases

The model considers the following nine trip purposes:

- Home-Based Work (HBW)
- Home-Based University (HBU)
- Home-Based School (HBSC)
- Home-Based Other (HBO)
- Non Home-Based (NHB)
- External-Internal (EI)
- External-External (EE)
- Truck
- Taxi

Model Area: OKI region (Cincinnati metropolitan area including Butler, Clermont, Hamilton and Warren Counties in Ohio; Boone, Campbell and Kenton Counties in Kentucky; and Dearborn County in Indiana) and MVRPC region (Dayton metropolitan area including Greene, Miami and Montgomery Counties in Ohio).

Area Covered: 2,300 square miles with 1.92 million people, 781 thousand households and 970 thousand employees (for 2005) in OKI region and 1,300 square miles with 795 thousand people, 327 thousand households and 446 thousand employees (for year 2005) in MVRPC region.

Traffic Analysis Zones (TAZ): 2,425 zones with 1,608 (1-1,608) in OKI region and 817 (1,609 – 2,425) in MVRPC region.

External Stations: 106 stations with 63 (2,426-2,488) in OKI region and 43 (2,489 – 2,531) in MVRPC region.

Model Methodology

- OKI travel demand model is a traditional four-phase sequential [TG (trip generation), TD (trip distribution), MC (modal choice) and assignment] trip based model.
- Household classification models, trip rates and regression equations are used in trip generation phase.
- Gravity models and Fratar factoring models are used in trip distribution phase.
- Nested logit models are used in modal choice phase
- All-or-nothing assignment procedure is used in transit assignment.
- Muticlass capacity restrained assignment procedure (equilibrium assignment algorithm) is used in highway assignment
- Capacity and speed feedback to trip distribution and modal choice phases

Trip Generation Phase

- The model estimates trips by trip purposes in TG, TD and MC phases. Trip purposes include HBW (home-based work), HBU (home-based university), HBO (home-based other), HBSC transit (home-based school transit), NHB (non-home-based), TRUCK (truck), EI (external-internal), EE (external-external).
- The model estimates person trips for HBW, HBU, HBO, HBSC transit, NHB purposes in TG, TD and MC phases.
- The model estimates vehicle trips for Truck, EE and EI purposes in TG and TD phases.
- The model estimates daily trips in TG. For HBW, HBU, HBO and NHB, the trips are split into two groups: peak and off peak before TD/MC applications.
- Household classification models (trip rates that vary by household segment applied at the zonal level) are developed to estimate daily person trip productions for HBW, HBU, HBO and HBSC-transit purposes. Households are segmented by household size, labor force size and auto ownership.
- Linear regression equations are developed to estimate daily person trip attraction for HBW, HBU, HBO and HBSC-transit purposes. The independent variables used in the equations are employment or university/school enrollment.
- HBO add-on trip attractions are estimated for zones with special generators (shopping, recreational, airports). Separate model are used to estimate trip to / from CVG Airport and PKI Amusement Park.
- Additional equations are used for uncommon generators, such as shopping mall and recreational areas.
- The trip rate models are developed to estimate daily person trip origins and destinations for NHB purpose with home-based trip attraction as the independent variable.
- Regression equations are developed to estimate the daily external-internal vehicle trip ends at internal zone in TG. The variables used in the equations are household and employment. Different equations are development for zones with different

proximity to the external cordon line. Adjustments are made to HBW, HBO and NHB trip production and attractions to avoid double-counting these EI trips.

- Daily external - external vehicle trips at external stations are estimated using traffic counts.
- Daily external - internal vehicle trip ends at external stations are estimated using traffic counts
- Productions and attractions are balanced at the super-regional (i.e. OKI and MVRPC) level for all trip purposes.

Trip Distribution Phase

- For trip distribution, Gravity models are developed for HBW, HBU, HBO, NHB, and EI trips.
- Separate Gravity models are developed for peak and off-peak periods for HBW, HBU, HBO and NHB. Logsum utility measures from modal choice models are used as impedance in Gravity models.
- One Gravity model is developed for daily EI trips. Highway off-peak travel time is used as impedance measure in this model. (Toledo approach for EI trips is used.)
- Base year (1995) truck trip tables are developed externally using modified truck models from FHWA's "Quick Response Freight Manual" and traffic counts. Base year daily zone-to-zone trip tables are first estimated for single-unit and multiple-unit truck separately. The daily trip tables are then split into eight truck trip tables: AM peak period single-unit, midday period single-unit, PM peak period single-unit, night period single-unit, AM peak period multiple-unit, midday period multiple-unit, PM peak period multiple-unit, night period multiple-unit.
- Fratar growth factoring models are developed for Taxi, TRUCK, EE and HBSC transit trips.

Modal Choice Phase

- The nested logit model is adopted for modal choice models.
- There are three levels of choice in the hierarchy of the nested structure. At the top is the choice of auto or transit mode. On the auto side, the second level is the choice of drive-alone (DA) or shared ride and the third level is the choice of number of persons in the shared ride mode (SR2 and SR3). On the transit side, the second level is the choice of transit service type (local bus, express bus, inter city bus, light rail, or commuter rail) and the third level is the choice of access mode to transit (walk, park & ride, or kiss & ride).
- The utility is a function of in-vehicle time (driving/riding), out-vehicle time (waiting/transfer/walking), travel cost (auto operating cost/parking cost/transit fare). The peak highway and transit networks are used to skim impedance for peak trip tables, and off-peak networks for off-peak trip tables.
- Modal split is performed for HBW, HBU, HBO and NHB and trips are split into drive-alone auto, two-person shared ride auto, more than two- person shared ride auto, local bus with walk access, local bus with park & ride, local bus with kiss & ride, express bus with walk access, express bus with park & ride, express bus with kiss & ride, light rail with walk access, light rail with park & ride, light rail with kiss & ride, commuter rail with walk access, commuter rail with park & ride, commuter rail with kiss & ride. The light and commuter rail, are not available in the base year. Nevertheless the model is capable of including these modes as part of a future year

alternative analysis package. Separate models are developed for peak and off-peak periods.

- The transit rider market is segmented. For HBW, there are 4 segments: 0 cars, cars<workers, cars=workers and cars>workers. For HBO there are also 4 segments: 0 cars, 1 car, 2 cars, and 2+ cars.
- The OKI/MVRPC models were estimated using OKI data and calibrated to base year modal shares for the entire combined region.

CVG Airport and PKI Amusement Park Trips

- The CVG Airport and King's Island (PKI) sub-model performs growth factoring and mode split separate from the other trip purposes and particularly for trips that start or end at either of these locations.
- A base year (1995) person trip tables are developed for CVG and PKI trips
- Fratar models are applied to factor the trip tables to represent the analysis year.
- CVG and PKI trips are removed from regional internal and external trip tables to avoid double-counting these trips.
- Modal choice models are applied to split into auto (park), auto (dropped-off), rental car, taxi, limo, courtesy hotel van, airport shuttle, local bus and premium bus for CVG trips and auto, local transit and premium transit for PKI trips.
- Adjustments are made to the regional trip tables to avoid double-counting these trips.
- The CVG and PKI trip tables are assembled into the highway and transit trip tables just prior to assignment.

Highway Assignment Phase

- The vehicle trip tables are developed for 4 time periods of the day: AM peak (6:30am-9:00am), Midday (9:00am - 3:00pm), PM peak (3:00pm to 6:30pm) and Night (6:30pm – 6:30 am). After mode choice, the peak and off-peak person trip tables are combined into single, daily trip tables and then split into four periods in preparation for highway assignment. This time of day split is based on diurnal factors derived from the 1995 household travel data. For each period, 5 vehicle trip tables are developed for five modes: Drive-alone auto, Share-ride2 auto, Share-ride3 auto, Single-unit truck and Multiple-unit truck. The vehicle trip tables are in origin/destination format. These 20 vehicle trip tables are assigned to the highway networks separately: AM peak periods trips to AM peak period highway network, midday period trips to midday highway network, PM peak period trips to PM peak highway network; and night period trips to midday highway network. Five vehicle classes are maintained in highway assignment:
- The user-equilibrium multi-class highway assignment is used for each of the four periods
- A weighted travel time and distance is used as the measure to determine the minimum path for trip assignment.
- For calculating loaded highway speeds, five speed-volume relationship equations are developed for five roadway groups: (1) freeways, ramp-controlled expressways, (2)

expressways with intersections, freeway-to-freeway ramps, on-ramps, rural arterials, (3) arterial with four-way stops, (4) urban major roads, off-ramps, and (5) minor roads.

- The loaded speeds and per lane capacities from the assignment phase are fed back to trip distribution and modal choice phases. The model uses the method of successive averages, applied to the assigned AM period traffic volumes of all feedback loops, to calculate average assigned traffic volumes. The average assigned AM peak period are used to calculate peak hour volume / capacity ratios and truck%, in turn they are used to re-calculate the peak speeds and capacities to be fed back. Convergence is achieved when the AM period highway volumes and vehicle trip tables from the previous and current iterations are reasonably similar.
- The model has the capability to restrict LOV (Low Occupancy Vehicle) access to HOV (High Occupancy Vehicle) lanes.

Transit Assignment Phase

- 12 transit trip tables are developed for 12 transit modes (4 transit service types x 3 access modes). The transit trip tables include all transit trips forecasted by the regional mode choice model, as well as all transit trips forecasted by the CVG and PKI sub-model.
- Transit trip tables are developed for peak and off-peak period in production/attraction format. 24 tables are assigned to the transit networks separately: peak trips to AM peak network and off-peak trips to midday network.
- All or nothing assignment procedure is adopted.
- Travel time (riding time, waiting time, access (walk or driving)) is used as the measure to determine the minimum path for trip assignment.

Others

- The post model processing programs produce summary tables of vehicle mile of travel, vehicle hour of travel, person hour of travel, congestion measures, highway construction/right of way/maintenance cost, transit capital/right of way /operation and maintenance cost, user cost, accident, fuel consumption and emission; highway assignment and transit assignment validation data summaries; summary table for trip data summary and phase by phase trip data; Environmental Justice data summaries, STREAM data summaries, subarea analysis data files; elected link analysis data,.
- EPA's MOVES model is used for emission calculation.
- TRANPLAN / VOYAGER modules (travel demand forecasting software developed by Citilabs) and FORTRAN programs are used. The model includes more than 200 programs/scripts in 26 steps. The model is operated in Citilabs' CUBE mode.

Year 2005 Trip Statistics from Model

Trip Rates: 9.29 person trips household for OKI region and 10.35 person trips per household
Person Trips: 10,435,548 (7,257,955 for OKI region and 3,387,514 for MVRPC region) for year 2005.

Vehicle Trips: 7,739,556 (5,357,443 for OKI region and 2,568,007 for MVRPC region) for 2005.

Vehicle Miles of Travel: 70,731,840 (50,745,516 for OKI region and 19,986,316 for MVRPC region).

Vehicle Hours of Travel: 1,775,929 (1,270,895 for OKI region and 505,034 for MVRPC region).

Trip Length: 21.7 minutes / 12.1 miles for HBW, 13.2 minutes / 7 mile for HBO and 10.2 minutes / 5.8 miles for NHB in OKI region. 14 minutes / 8.8 miles for HBW, 8.5 minutes / 4.8 miles for HBO and 8.8 minutes / 5.2 miles for NHB in MVRPC region.