ACTT WORKSHOP

Accelerating Construction

U.S. Department of Transportation
Federal Highway Administration

NEVADA DOT

CITY OF LAS VEGAS NEVADA

WHY ACTT?

- ACTT provides a fresh outlook by bringing national experts to your planning table.
- ACTT introduces innovations that have been tested elsewhere.
- ACTT saves time: according to FHWA's ACTT II report, published in March 2005, "most agencies have found ways to slice construction time by 30 percent or more."
- ACTT saves money: ACTT suggestions enabled New Jersey to reduce its budget for the Route 46 bridge project from $10 million to $7.2 million.
- ACTT works for you and your customer!

How do I ACTT?

- Select a corridor: ACTT is most helpful when applied during the project development phase.
- Make a workshop proposal to ACTT team members, and submit a copy of your proposal to the FHWA Division Office. Include details on the project corridor, timeline and goals.
- Hold a pre-workshop meeting with the ACTT management team.
- Select a meeting site, and coordinate workshop details with the FHWA Division Office.
- Host the workshop.
- Draft a report for submittal to FHWA.
- Incorporate ACTT in to project operations.

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

As highway construction continues to cause strain to the National roadway system, both State and Federal transportation agencies are searching for innovative approaches that will minimize disruptions to the traveling public. Accelerated Construction Technology Transfer (ACTT) is a process that helps identify innovative techniques/technologies and reduce construction time, enhance safety and improve quality on major highway projects.

The goal of the Interstate 15 (I-15) corridor ACTT workshop, held March 15-17, 2005, in Las Vegas, Nevada, was to examine potential improvements to a section of the I-15 corridor through central Las Vegas known as PROJECT NEON. The workshop brought together 56 experts from 17 states and Washington, DC – individuals with an extensive knowledge of environmental planning and documentation, complex freeway projects, public outreach, traffic planning and construction.

Interstate 15 is a major north-south route that links Las Vegas to California on the southwest and to Salt Lake City and beyond on the northeast. PROJECT NEON encompasses an urban section of I-15 beginning at the US 95/I-15 interchange (the "Spaghetti Bowl") and extending approximately 2.5 miles south. This section of the I-15 corridor serves the Las Vegas Valley as a primary transportation link through central Las Vegas, serving over 250,000 vehicles per day.

And that number is going to change drastically. In recent years, Las Vegas has been one of the fastest-growing metropolitan area in the United States. That trend is projected to continue through 2030, with an anticipated 60 percent increase in population during that time. Providing transportation solutions that will accommodate this growth is a major challenge facing the Nevada Department of Transportation (NDOT), the Regional Transportation Commission of Southern Nevada (RTC) and other local agencies, making PROJECT NEON a key planning effort for the entire metropolitan area. The primary goals for PROJECT NEON, then, are as follows: 1) meet the short- and long-term transportation needs of the project area; 2) provide improved transportation in response to regional growth; 3) decrease congestion; and 4) enhance mobility.

Because PROJECT NEON is still in the planning stage, this ACTT workshop focused on two key areas: exploring innovations in construction and enhancing the project development process, i.e., environmental planning, alternative selection and public outreach activities. With the above goals in mind, NDOT identified seven skill sets that would benefit most from the ACTT process:

- Environmental Planning.
- Public Involvement.
- Roadway Geometrics.
- Traffic, ITS and Safety.
- Bridge Structures.
- Right-of-Way and Utilities.
- Construction and Innovative Contracting Techniques.

Each skill set team focused on how the ACTT process applied to their area of expertise, while the group as a whole searched for methods and measures to help NDOT achieve its project goals.

As the workshop progressed, each team summarized their thoughts and narrowed them down to a list of priority recommendations. On the final day, each skill set presented their suggestions to the conference attendees. Now that the workshop is complete, NDOT will sift through the various recommendations and decide which ideas should be implemented as part of PROJECT NEON and make it the light for the future it's destined to be.

CHAPTER ONE

Workshop Details

1.1 Opening Session

The workshop began with opening remarks from Mary Martini, District 1 Engineer for NDOT, and Andrew Soderborg, project development engineer for the Federal Highway Administration (FHWA). Following the opening remarks, the participants introduced themselves, and Neil Hawks, director of special programs for the Transportation Research Bureau (TRB), gave the presentation, "Why ACTT, Why Now." Dan McMartin of NDOT and Kim Nokes from Parsons provided a project overview. Dan Sanayi from FHWA and Rick Smith of Washington DOT (WSDOT) were introduced as workshop moderators.

1.2 Workshop Process

Following the opening session, the group participated in an onsite project tour. Buses took attendees along the 2.5-mile I-15 corridor and neighboring streets, stopping at predetermined points along the way. Following the tour, attendees took part in a general work session highlighting the need for innovation. Then the skill set teams broke out to discuss various aspects of the project, intermingling to share thoughts and ask questions. Each group presented their final recommendations on the third day of the workshop.

1.3 Skill Set Goals

Participants in each skill set had an established set of goals that was unique to their subject area.

Environmental Planning: The key goal identified by the environmental team was producing a defensible Environmental Impact Statement (EIS) and Record of Decision (ROD) for PROJECT NEON. The team focused on 1) the process completed to date in the development of the purpose and need for the project, 2) the development of project alternatives, 3) the evaluation of these alternatives, and 4) the documentation process.

Public Involvement: The team reviewed PROJECT NEON's public involvement process to date with the goal of providing input to help the project team implement a successful public involvement program for the remainder of the project. The team emphasized the importance of a proactive program during construction.

Roadway Geometrics: Over the past year, the project team had developed and evaluated a variety of potential roadway alternatives that met PROJECT NEON's purpose and need. The goal of the geometrics team was to review these potential alternatives and identify new or modified options that are suitable for further evaluation by the project team.

Traffic, ITS and Safety: This section of I-15 accommodates over 250,000 vehicles per day. One of PROJECT NEON's key challenges is minimizing the impacts to motorists during construction. The goal of the traffic team was to provide options that could be utilized during construction to minimize the effects to motorists.

Bridge Structures: The alternatives being considered for PROJECT NEON include over 19 new and/or reconstructed bridges. The complexity of these bridge structures ranges from a six-lane viaduct over I-15 with spans of over 200 feet to simple single-span grade separations. The goal of the bridge team was to evaluate 1) complex bridge type selection and 2) the constructability of these bridges.

Right-of-Way and Utilities: PROJECT NEON involves substantial right-of-way (ROW) acquisitions of commercial, industrial, retail and residential properties. The potential alternatives also require relocation of major transmission power lines, sanitary sewers and water distribution facilities as well as coordination with Union Pacific Railroad (UPRR). The goal of the ROW and utilities team was to identify ways to expedite the ROW acquisition and utility relocation process.

Construction and Innovative Contracting Techniques: PROJECT NEON's potential alternatives involve reconstructing over 2.5 miles of I-15 in the busiest section of Las Vegas. A key to successfully delivering the project is planning, programming and administrating the overall construction of the project. The goals of the innovative contracting team were to 1) propose and evaluate options for programming construction, and 2) introduce innovative contracting techniques that would decrease construction time and reduce risk.

CHAPTER TWO

Project Details

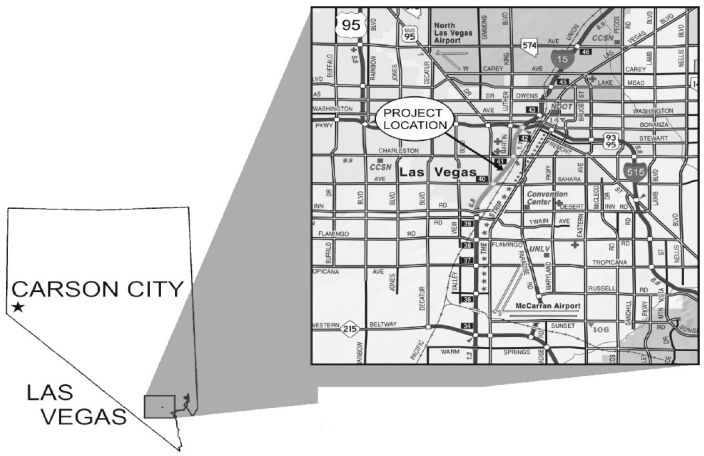
2.1 Corridor Description

The Las Vegas Valley is served by two key freeway facilities – I-15, which runs north and south and connects Las Vegas to California on the southwest and to Salt Lake City on the northeast; and US 95, which runs east and west within the urban center. To complicate matters further, US 95 crosses I-15 at the north end of the project corridor, with the two thoroughfares intersecting just west of downtown Las Vegas. (See Figure 1. Project Location Map.)

The goal of PROJECT NEON is to examine a section of I-15 beginning at the US 95/I-15 interchange (the "Spaghetti Bowl") and extending approximately 2.5 miles south. This section of the I-15 corridor serves the Las Vegas Valley as a primary transportation link through central Las Vegas, serving over 250,000 vehicles per day.

This section of the I-15 corridor is a limited-access urban freeway consisting of a minimum of three through lanes in each direction. In addition, there are various auxiliary lanes that provide access to two service interchanges – Sahara Avenue and Charleston Boulevard – and connect to the I-15/US 95 system interchange. These service interchanges provide access to downtown Las Vegas to the east and to a variety of commercial, retail and residential areas to the west. The system interchange provides access to the east via Interstate 515 (I-515) and to the west via US 95.

Figure 1
Project Location Map



This heavily traveled section of I-15 contains a mix of motorists making interstate and local trips, leading to a high number of lane changes and a high incidence of weaving between entrance and exit ramps. The results are a high level of congestion and a high possibility for accidents. The existing levels of service (LOS) through the area range from D to E. Compounding the situation is the distance between the Charleston Boulevard interchange and the I-15/US 95 system interchange, which is less than one mile – a much shorter distance than the recommended two miles between a system and service interchange. Not surprisingly, this provides insufficient time for motorists to navigate between the two interchanges and degrades overall freeway operations.

And there are local-access issues facing PROJECT NEON as well. Paramount among these is the need to improve local street access from northwest Las Vegas to the resort corridor, commonly called the Strip. The resort corridor, which parallels I-15, is the primary employment center for Las Vegas. As a result, many Strip employees utilize I-15 to get to work, which further degrades freeway operations. Martin Luther King Boulevard (MLK) from the north and Industrial Road from the south are major arterials that motorists could use to access the Strip; however, these streets are separated by I-15 and terminate between Charleston Boulevard and Wyoming Avenue. Options for providing a connection between these two streets were part of previous planning studies and were identified in the ROD for the US 95 Final Environmental

Impact Statement/Section 4(f) Evaluation (January 2000), which approved an alternative for an MLK to Industrial Road connector. This will provide another direct link from northwest Las Vegas to the Strip and should help reduce the number of local trips taking place on I-15.

2.2 PROJECT NEON Goals and Objectives

PROJECT NEON evolved because NDOT's project development leaders recognized the importance of this section of I-15 for local and interstate travelers.

The initial objective of the project team was to ascertain what components should be considered as part of the planning and study process. They identified six factors as being key to 1) addressing freeway and interchange operational deficiency, 2) creating new access to downtown Las Vegas, and 3) providing new local street connections to the resort corridor:

- Reduce freeway congestion by improving the operations between Sahara Avenue and the I-15/US 95 interchange.
- Provide new access to downtown Las Vegas.
- Improve I-15/Charleston Boulevard interchange operations.
- Improve I-15/Sahara Avenue interchange operations.
- Provide a new local street connection to the resort corridor by linking MLK and Industrial Road.
- Improve local street operations and safety by removing the existing at-grade railroad crossing at Oakey Boulevard and Wyoming Avenue.

The first step in developing PROJECT NEON was to establish the purpose and need for the project. This purpose and need statement would be the cornerstone for the development and evaluation of potential alternatives for the project corridor. (See sidebar.) It is being updated as part of the EIS process.

In addition to addressing key roadway components, the project team focused on developing potential alternatives that would control local traffic movements and meet the needs of the local community, including pedestrians and bicyclists. The team also felt it was important to develop alternatives that would reduce the overall impacts to adjacent properties.

With these goals in place, the project team garnered input from the community throughout the planning process, soliciting feedback that would be used as part of project development. The team drew heavily upon the context sensitive solutions (CSS) approach, using a dedicated project office, additional public information meetings, various stakeholder meetings and media releases to solicit community input. The objective of the project team was, and is, to be proactive in seeking feedback from the community.

2.3 Project Background

The need for PROJECT NEON was identified in the planning studies and environmental documents listed below:

- I-15 Freeway Operations Study (June 2002), which identified traffic issues and improvement options within the freeway corridor.
- ROD for the US 95 Final EIS/Section 4(f) Evaluation (January 2000), which approved the MLK to Industrial Road connector.
- I-15/US 95 Interchange Environmental Assessment (March 1994), which identified improvements to the Charleston Boulevard interchange and the addition of a half-diamond interchange at Alta Drive. These improvements are also noted in the I-15/US 95 Interchange Concept Design Report (May 1995).

Purpose and Need

The I-15 corridor serves the Las Vegas Valley as a primary transportation link through central Las Vegas. Significant growth of population in the Las Vegas Valley, approximately 60 percent from 2003 to 2030, will increase traffic volumes and local commuter traffic passing through this corridor. This growth will place significant demand on the I-15 corridor and connections to US 95. The purpose of this project is to meet the short- and long-term transportation needs of the project area, provide improved transportation in response to regional growth, decrease congestion, and enhance mobility. Both existing congestion and projected increases in traffic necessitate the proposed improvements. Improved traffic operations and reduced congestion will improve air quality. Geometric and traffic operation improvements are expected to enhance safety to the traveling public.

I-15 is rapidly approaching maximum capacity for its current configuration. There are operational deficiencies within the existing layout that create friction between traffic, therefore decreasing overall capacity. The combination of increased traffic volumes and friction is expected to create increased congestion, thereby increasing the frequency of accidents and creating a safety concern.

The city of Las Vegas is currently promoting redevelopment of the downtown area adjacent to the corridor, which will attract more traffic into the study area. Due to existing access limitations from I-15 into the redevelopment center, it will be critical to improve access to prevent interchange levels of service failures in future years. In addition, providing a new connection from MLK to Industrial Road would link downtown Las Vegas to the resort corridor and North Las Vegas Valley. The new connection would provide an alternate route for commuter traffic, which in turn would assist in removing commuter traffic from an interstate route. Improving access and alternative routes will provide more efficient freeway operations and increase the viability of downtown Las Vegas and associated economics.

Each of these studies recommended improvements to various stretches of I-15. Recognizing the importance of planning these enhancements in conjunction with potential changes to the rest of the I-15 corridor, NDOT's project development leaders became even more committed to providing feasible alternatives that would not prohibit future expansion of I-15.

As a result, PROJECT NEON was started in mid-2003 with the goal of addressing the regional and local highway needs for the I-15 corridor through a year 2030 planning horizon. In the last year, NDOT, FHWA, the city of Las Vegas and Parsons have worked together to identify and critique possible improvement concepts for the project. This effort culminated in December 2003, when key stakeholders established a consensus reflecting feedback from Technical Advisory Committee (TAC) meetings and an intensive public outreach program.

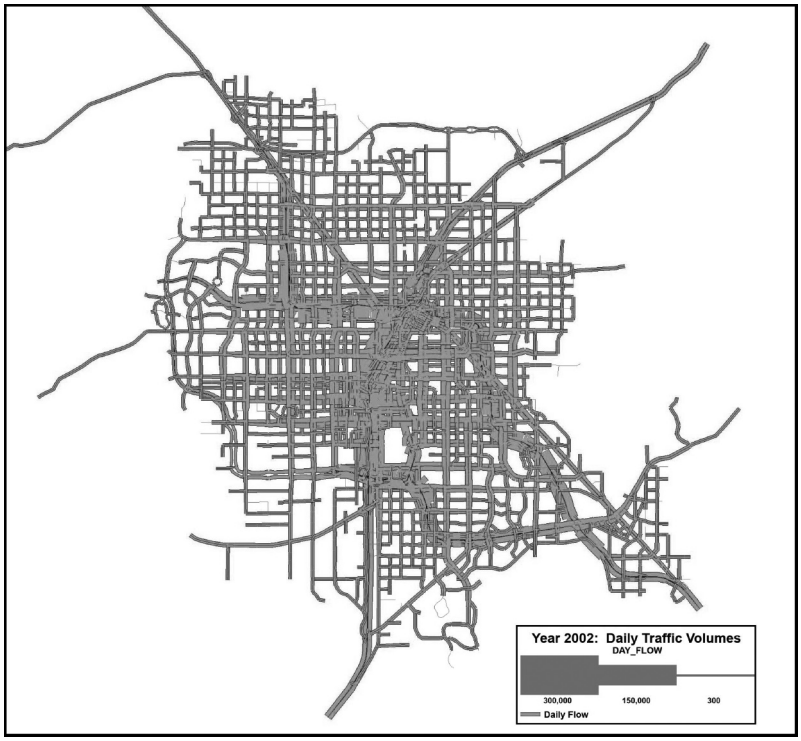
Since December 2003, contact has been made with approximately 350 people by conducting two CSS meetings and two public information meetings. In addition, approximately 400 people have visited, phoned or e-mailed the project office to inquire about the project and to provide feedback. The project team plans on continuing this proactive public involvement process throughout the life of the project.

2.3.1 Project Challenges

Providing transportation solutions that will accommodate the anticipated 60 percent increase in the Las Vegas Valley population from 2003 to 2030 is a major challenge facing NDOT, RTC and other local transportation agencies. The figures below provide a comparison of Las Vegas' transportation network in 2002 and 2030 in light of the projected growth.

Another major challenge facing PROJECT NEON is the escalating real estate prices in Las Vegas. Since the project began in 2003, property values within parts of the corridor have doubled, and they continue to rise at alarming rates. The project team's initial anticipated ROW costs were approximately $100 million; however, escalating real estate prices may substantially increase these costs.

Figure 2
2002 Daily
Traffic Volumes



The vicinity of PROJECT NEON to the city of Las Vegas' downtown redevelopment area provides a setting for potential zoning changes that would benefit the city's redevelopment initiative. Light industrial and commercial areas along the corridor could very well be converted into a mix of high-density residential (condominium high-rise towers) and commercial/retail sites.

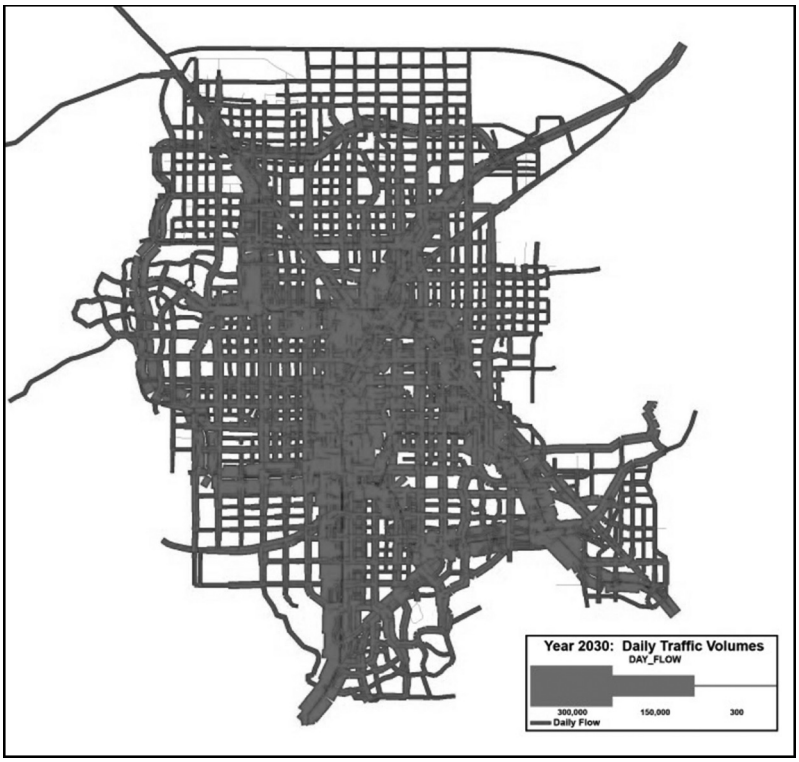


Figure 3
2030 Daily
Traffic Volumes

This expanding redevelopment is actually changing the characteristics of the community as the project unfolds and makes developing viable alternative even more challenging.

Another key challenge for PROJECT NEON is minimizing and mitigating various environmental justice issues associated with the project. The proposed alternatives would relocate a large number of residential and business sites and impact over 800 individuals. Therefore, careful relocation planning is essential to the success of the project. This process is further complicated by the recent increase in real estate prices and the direct impact this has on available affordable housing in the Las Vegas Valley.

Finally, PROJECT NEON costs are expected to exceed $550 million. This constitutes a major portion of the State of Nevada's transportation program and challenges NDOT to find a funding mechanism that allows for the construction of this project while balancing the State's other transportation needs. The challenge for the project team is to evaluate various project phasing plans and propose one that would allow ndot to construct portions of the project and extend the funding timeframe.

2.3.2 Agency Involvement and Coordination

A TAC consisting of NDOT, FHWA, city of Las Vegas, RTC and other key agency personnel was established to provide guidance and direction to the project team throughout the project development process. This committee is responsible for evaluating potential alternatives and recommending the preferred alternative to be presented in the environmental document. This committee meets monthly for a progress update, at which time members are briefed on ongoing alternative development and asked to provide input on this and other project issues.

2.3.3 Project Development Process

In the fall of 2003, the project team held their first public meeting to present the overall project objectives and to invite feedback from the community. The project team then held a workshop with the TAC and other key stakeholders to brainstorm potential solutions. During this workshop, attendees developed a draft purpose and need statement for PROJECT NEON.

Following the initial workshop, the project team developed a wide range of potential alternatives. These options underwent a fatal flaw analysis where factors such as design standards, overall impacts and the ability to meet the project's purpose and need were considered.

After evaluating over 27 combinations of potential alternatives, the design team presented their findings at a second two-day workshop held in December 2003. The objective was to familiarize the TAC and other key stakeholders with potential solutions, receive feedback and narrow the number of potential alternatives to carry forward. The workshop attendees reached consensus on which potential alternatives should be studied further, recognizing that a variety of local street improvements would work in combination with the potential freeway improvements. Therefore, the alternatives were defined as Freeway, MLK and Oakey/Wyoming. They are described in the following section.

The final phase of the alternative process focused on developing the alternatives identified in the second workshop. This phase included an analysis of roadway geometrics, conceptual structure, drainage, utilities, ROW and cost to construct the alternatives. This information was provided to the TAC and other key stakeholders in a draft alternatives design report. The TAC then evaluated the alternatives at a workshop held in July 2004. Each alternative was put through a screening process and evaluated as part of a matrix to identify the option that would be recommended by the TAC as the preferred alternative.

2.3.4 Potential Project Improvements

Based on PROJECT NEON's development process, the following potential alternatives are being studied further:

I-15 Freeway Corridor: Potential improvements to the I-15 corridor focus on reducing existing and future congestion. Based on the alternative concepts currently being studied, a combination of a freeway and collector-distributor (C-D) road system appears to reduce congestion, provide acceptable LOS, enhance safety, and provide necessary access to and from I-15.

New Downtown Las Vegas Access: The proposed freeway alternatives would provide new access from the south to the city's downtown redevelopment area. A half-diamond interchange design concept located at Alta Drive and I-15 was determined to be the most feasible option for providing this new access.

Charleston Boulevard Interchange: Traffic operational analysis indicates that a single point diamond interchange (SPDI) would provide the most efficient operation at this critical intersection. The proposed freeway alternatives would reconstruct the existing interchange with an SPDI, and Charleston Boulevard would be improved to accommodate this new configuration.

Sahara Avenue Interchange: Due to the required freeway expansion, a major portion of the Sahara Avenue interchange would likely require reconstruction. The project team is studying concepts that would improve the overall operation of this intersection and its freeway connections.

MLK and Industrial Road Connection: A wide variety of concepts were considered in the development of the new MLK and Industrial Road connection. Through the development process, the project team determined that a six-lane viaduct crossing over I-15 is the most viable option. Following a review of possible sites for the viaduct crossing, the group determined that I-15 south of Charleston Boulevard should be studied further.

Oakey Boulevard and Wyoming Avenue: During PROJECT NEON's development, team leaders recognized that removing the existing at-grade railroad crossing at Oakey Boulevard and Wyoming Avenue would improve local street traffic operations and safety. Further, they determined that raising the roadway to cross over the Union Pacific track would be the most appropriate solution. Due to the proximity of the MLK and Industrial Road connector, Wyoming Avenue would also be grade separated over Industrial Road.

2.3.5 Environmental Documentation

PROJECT NEON is in the early stages of preparing an EIS to document social, economic, environmental justice and other environmental effects. Because the project corridor is heavily developed, NDOT anticipates little impact to the natural environment. The major concern appears to be addressing environmental justice issues surrounding the project area. The project team is conducting housing and business surveys to help define these impacts, and this will continue as a major part of the EIS.

2.3.6 Value Engineering

Due to the complexity of PROJECT NEON, a week-long value engineering (VE) workshop was held to review the potential alternatives. VE is a program designed to improve project quality, reduce project costs, foster innovation, eliminate unnecessary and costly design elements, and ensure efficient investments. Held in August 2004, the workshop featured representatives from NDOT, the city of Las Vegas, Parsons and the project design team. The group's objective was to evaluate potential roadway geometrics, bridge structures, traffic and construction impacts.

2.4 Project Status

PROJECT NEON's original development timeline was based on completing an environmental assessment and a Finding of No Significant Impacts (FONSI); however, after further study of the project area and alternatives, NDOT's project development leaders recognized the significant environmental justice issues involved. As a result, they recommended proceeding with an EIS. This process kicked off with a scoping meeting held February 23, 2005.

CHAPTER THREE

Skill Set Recommendations

3.1 Environmental Planning

The environmental planning skill set focused on how the environmental process could pave the way for a successful construction project. Since the EIS is in the early stages, the group made the following suggestions for preparing a legally defensible document.

Purpose and Need

- Need more detailed description of no-build condition.
- Need to identify what projects will go forward without this project (city of Las Vegas projects, other freeway projects, etc.).
- Need future traffic counts and draft traffic analysis.
- Need safety data, including statistics on accidents from weaving action.
- Need to determine if redevelopment area access accounts for additional traffic.

Evaluation Criteria

- Need a definition of the criteria applied to the potential alternatives; it appears that some alternatives that do not meet the purpose and need were carried forward.
- Need to eliminate alternatives prior to having a completed purpose and need statement.

Existing Conditions

- Need to identify population, land use and zoning.
- Need to review safety and accident data.
- Need to acknowledge that previous environmental documents are dated.
- Need to include through freight analysis.

The following topics were identified during the workshop as key issues to be addressed during preparation of the EIS. The team discussed ways that the EIS could accommodate construction activities due to early planning.

Noise

- Develop uniform theme for aesthetics of noise walls.
- Create buffer areas, if possible.
- Evaluate material types and other measures (i.e., insulation).
- Create long design life of structures.
- Build early in the construction phase.

Air Quality

- Recognize that new guidance could be issued as a result of the US 95 EIS lawsuit.

Local Circulation and Access

- Evaluate alternative access routes for First Presbyterian Church.
- Accommodate pedestrians and bicyclists.

Land Use

- Discuss zoning requirements for business relocations: special zoning is required for industrial and adult entertainment businesses.
- Commit to early development of a business relocation plan, including coordination with the city of Las Vegas to identify areas with suitable zoning.

Environmental Justice

- Promote community cohesion – include daycares, medical centers and transit providers in the process.
- Coordinate with other NDOT and city of Las Vegas projects, and consider early construction of replacement housing.

Construction Timing

- Recognize that coordination of utility relocations will be key.
- Construct noise walls during the first phase.
- Construct replacement housing, if necessary, as early as possible.

3.2 Public Involvement

The public involvement skill set reviewed the public outreach process to date with the goal of providing input to help the project team implement a successful public involvement program for the remainder of the project. The team emphasized the importance of a proactive program both before and during construction. The skill set developed a detailed list of public outreach techniques that could be utilized as part of PROJECT NEON, noting that NDOT needs to stay abreast of technological advances at all times.

Communication Needs

- Include public information officers (PIOs) in decision making with high-impact project elements.
- Establish a communications budget (4 to 6 percent of total project cost) as part of the congestion mitigation plan.
- Dedicate full-time communications specialists to this project.

The team focused on a grass-roots/communication outreach approach and made recommendations for using newspaper, radio, billboards, newsletters, a project web site, e-mail queues and other techniques accordingly.

Grass Roots Outreach – Create Audience Matrix

- Commuters.
- Residents.
- Businesses.
- Travel and tourism industry.
- Employers (including interstate and local trucking companies).
- Federal, State and local government officials.
- Special interest groups (i.e., pedestrians, cyclists and the homeless).
- Media professionals.

Communications Outreach – Commuters

- Air radio spots during peak drive times.
- Create strategically placed billboards.
- Use variable and dynamic message signs (VMS/DMS) for real-time travel/incident information and construction updates.
- Install Highway Advisory Radio (HAR).
- Use the media for news releases and media advisories.

Communications Outreach – Residents

- Target schools and daycares.
- Publish quarterly newsletters.
- Create a project web site.
- Use direct mailings.

- Utilize cable and government television.
- Distribute door hangers and fliers.
- Consider statement mailers in utility bills.

Communications Outreach – Businesses

- Establish a business advisory group to provide input regarding business and economic implications affecting the project *now*.
- Establish a list of impacted businesses.
  - Use an e-mail queue for project updates.
  - Mail quarterly project newsletters.
  - Invite them to participate in the planning process by attending public information meetings.
  - Address business concerns promptly during construction (i.e., noise, access, closures).

Communications Outreach – Travel and Tourism Industry

Communicate regularly with the following entities, using special events as appropriate:

- Las Vegas Convention Visitors Authority.
- Nevada Tourism Agency.
- Welcome centers.
- Hotel industry.
  - Use room confirmation e-mails to provide project updates.
  - Provide project information on hotel TV broadcasts.
- Car rental industry.
- Bus, taxi and limousine services.

Communications Outreach – Employers

- Partner with regional rideshare agencies to help employers implement onsite transportation programs.
- Encourage carpooling with preferential parking spaces at employers' facilities.
- Coordinate with employer newsletters to provide project updates.
- Provide credible real-time travel information to empower drivers.
- For interstate through-traffic, use ITS tools, the Incident Manager Pager Service and the 511 system to provide real-time traffic and project information.
- For local deliveries, utilize peak drive time radio spots, outreach to businesses providing or receiving deliveries, 511 and trade association publications.

Communications Outreach – Federal, State and Local Government Officials

- Establish an e-mail queue.
- Organize "hard hat" tours once the project begins.
- Participate in town hall meetings.
- Provide personalized project update briefings.

Communications Outreach – Special Interest Groups

- Work with advocacy groups for each of the identified target audiences (pedestrians, cyclists and the homeless) to address their needs and keep them informed.

Communications Outreach – Media Professionals

- Meet periodically with editorial boards.
- E-mail press releases and media advisories to established contacts.
- Establish relationships with traffic reporters.
- Hold press update meetings.
- Involve the media in milestone events.

The team also offered their thoughts on enhancing construction from a public relations standpoint.

Congestion Management Plan
- Remove vehicles from corridor.
- Enhance alternative commute options.
- Consider special events during construction.
- Respond quickly to incidents.
- Improve flow on local area roads.

Reducing Volumes of Traffic during Construction
- Explore alternate routes.
- Coordinate with trucking industry to encourage use of alternate routes.
- Improve local arterials (i.e., turn-lane improvements and signalization).
- Explore use of one lane for carpools and buses.
- Partner with RTC to increase transit during construction period.

Potential Issues
- Minimizing construction noise.
- Educating motorists on how to navigate through the project during various construction phases, ramp closings, etc.
- Keeping traffic moving – use tow trucks to tow stalled/abandoned vehicles.
- Having an emergency management team to address incidents.

3.3 Roadway Geometrics

The roadway geometrics skill set reviewed the I-15 lanes assumed for the PROJECT NEON design and stated that the proposed 5-5 for the south end and the proposed 4-4 for the north end are what should be used.

The team recommended a C-D system over the current hybrid configuration with the following notations:

- A braided C-D could also be considered.
- The current hybrid creates problems:
  - Freeway weaving is an issue.
  - Nine mainline lanes are undesirable.
  - At I-15 southbound and Charleston, there are three on-ramps and four lane additions without adequate spacing.
- If the C-D were built first, it would give full access to the local interchange during construction.
- There would be no "throw away."

The geometrics team addressed the following issues as well:

Roadway Crown: Mainline Freeway Crown vs. Planer Incline
- NDOT does not have a standard for freeways this wide: most states only take four lanes in each crown direction. NDOT needs to address sheet flow drainage and constructability issues.

Northbound to US 95 Ramp Entrance
- Shift the on-ramp north.
- Shift the Sahara ramp tighter.
- Improve ramp separation (US 95 and Sahara).
- Minimize the impact to the Gentlemen's Club.

Charleston Northbound

- Reverse the ramp locations of the Charleston northbound off-ramp and the northbound C-D to reduce single point intersection size.

The I-15 Profile at Charleston

- Crown the freeway.
- Turn the signal heads horizontally.
- Consider SPUI versus tight diamond configuration.
- Consider non-falsework bridge construction.

MLK Boulevard

- Make the MLK bridge dual bridges.
  - Separate columns would allow for optimal placement.
  - Dual structures would minimize spacing requirements.
  - Dual bridges would shorten the bridge depths.
  - The change would reduce the overall height of the flyover.
- Consider two lanes in each direction on the bridge instead of the current three lanes. This would save money without decreasing capacity.
- Make transit signals a priority: the existing signalized intersections limit capacity.
  - Consider queue jumps.
  - Use green-phase extensions.
- Eliminate the I-15 northbound to MLK movement: MLK traffic can get there via the I-15 northbound to Alta ramp.
- Use the existing MLK ramp to provide access from the northbound C-D road to northbound US 95.
  - This solves the capacity problem on the I-15 northbound to US 95 northbound flyover ramp. That ramp is a segmental bridge and cannot be widened.

Oakey and Wyoming

- Straighten the alignment to Oakey.
- Minimize the skew on four bridges (I-15 and C-Ds).
- Maintain continuity on Oakey.
- Consider traffic calming east of Las Vegas Boulevard.

The group also recommended using the existing US 95 southbound to I-15 southbound ramp to connect to the southbound I-15 C-D.

3.4 Traffic, ITS and Safety

The traffic, ITS and safety skill set spent considerable time discussing how PROJECT NEON relates to regional system studies. They determined that a regional freeway system plan, a regional high-occupancy vehicle (HOV) system plan and an inter-modal transit system plan are needed.

Further, the group made several recommendations concerning everything from construction phasing to traffic management and public outreach:

Construction Phasing

- Construct MLK relocation/overpass early to enhance local road network.
- Construct C-D freeway section and utilize it to maintain traffic and allow for closure of mainline I-15.
- Look at incentives for certain key milestones that represent full completion.
- Consider possible parallel multiple contracts.
- Designate a construction program manager (CPM) to coordinate multiple contracts.
- Separate all ITS procurements from construction projects.

ITS/Freeway Management

- Integrate with the regional Freeway and Arterial System of Transportation (FAST) and the regional concept for operating freeways and arterials.
- Utilize work zone ITS during construction. Integrate with FAST.
- Use construction traffic management center (TMC) to operate onsite ITS.
- Use ramp meters.
- Use DMS messages that include information on alternate route travel time for freeways and arterials.
- Install and use HAR – maybe just temporarily.
- Make sure the 511 system has up-to-date project information.
- Have a separate ITS contract with on-call services for both construction maintenance and final installation.

Traffic Incident Management (TIM)

The skill set recommended developing a regional incident management program that includes several elements:

- Quick clearance policy.
- Responder safety.
- Methods for reducing secondary accidents:
  - Use construction freeway service patrol.
  - Contract for quick wrecker service for large trucks.
  - Coordinate with FAST for detours and closures.
  - Coordinate work zone TIM through the traffic control manager.
  - Train construction staff in incident management.

Managing Truck Traffic

- Limit through trucks during construction.
- Coordinate deliveries, off peak.
  - Need models that account for future operating procedures such as ramp metering (micro-scale simulation).
  - Need to coordinate regional freeway and arterial construction activities (Beltway, north I-15, etc.).
  - Need signing plans, both in the final design and through construction.

Local Road Improvements

- Consider signal re-timing, with specific plans just for incidents and others for detours.
- Consider turn-lane improvements.
- Coordinate with other local road projects that might benefit the project corridor.
- Provide limited service patrols on key arterials.
- Provide bus/transit ways on select arterials.

Travel Demand Management

- Use temporary HOV during construction.
- Promote an express bus service.
- Consider employer incentive programs (i.e., preferred parking).
- Look at shifting/staggering work schedules for major employers along the corridor.

Public Outreach

- Assign a public information manager for the project.
- Establish positive interaction with TV and radio.
- Provide detailed education program for tourists (at airports, hotels, etc.).
- Develop and maintain a construction web site.

3.5 Bridge Structures

The bridge structures skill set focused on accelerating the construction of structures, which will require deviation from standard practices for both design and construction, making a systems approach vital to PROJECT NEON's success. The team offered both general structures and materials recommendations as well as site-specific counsel.

Prefabricated Elements/High Performance Materials

- Standardize design.
- Optimize foundation type.
- Use lightweight embankments.
- Use temporary bridge structures.
- Use a precast rigid frame for grade separation.
- Use prefabricated bridge systems and heavy lift equipment for superstructure placement.
- Consider using concrete and/or steel.

Site-Specific Recommendations:

- Build C-D first and use it as a detour for mainline traffic.
- Review Sahara overpass for incorporation into new work.
- Consider the following for the MLK/Industrial North alternative:
  - Maintain a depressed section to lower bridge height.
  - Consider a siphon at the depressed section.
  - Eliminate the ramp from MLK to Grand Central Parkway.
- Provide dedicated through lanes on the elevated viaduct to add capacity and reduce ROW:
  - Build piers in median.
  - Erect prefabricated pier segment.
  - Use segmental superstructure erection.

3.6 Right-of-Way and Utilities

The right-of-way and utilities skill set focused on the areas of acquisition, relocation and utilities and made the following recommendations:

- Leave Gentlemen's Club (Treasure's) alone or rebuild.
- Clean up ROW ownership along MLK.
- Follow up with tenants after residential and commercial survey is complete.
- Reconsider NDOT policy of advance acquisition.
- Provide acquisition incentives/tenant relocation bonuses.
- Acquire easements for utilities to expedite the process.
- Acquire houses or rent apartments in the neighborhood as they become available for use as replacement housing.
- Buy the additional property needed to mitigate acquisitions (e.g., parking for Treasures). Document these mitigations (EIS).
- Get advance corridor for NV Power transmission line relocation.
- Plan for advance relocation of as many utilities as possible.
- Continue the concept of avoidance of utilities.
- Look into wall hydrants for fire suppression and safety.
- Consider level A SUE (Subsurface Utility Engineering) to be used at structure crossings and drainage facilities.
- Coordinate utility betterments with utility companies well ahead of time and include with the contract.
- Combine and consolidate utility relocations.

- Whatever is in the 30 percent should stay in design as it applies to UPRR.
- Keep drainage away from UPRR RPW.
- Make Charleston under UPRR a separate project. It should not be a part of this project.

3.7 Construction and Innovative Contracting

The construction and innovative contracting skill set spent considerable time discussing contract packaging and concluded that a single large contract would be the preferred alternative: it would minimize conflicts and reduce overall construction time and user impacts.

If packaging PROJECT NEON as a single contract isn't possible, NDOT could award several smaller contracts that would allow smaller companies to bid. The team noted that utilities, drainage and demolition could be broken out and performed in advance, providing for quick progress on the project. If a single contract is awarded, staged State funding would be required and there would likely be pressure from local contractors and the Associated General Contractors, or AGC. Bonding capacity issues, along with NDOT's lack of experience in administering large contracts, need to considered when evaluating contract packaging options.

The team also discussed the advantages of design-build, conventional and construction manager at risk delivery:

Conventional Delivery

- Pros
  - Gives more control to NDOT because of their understanding of the process.
  - Offers greater contractor familiarity (both a pro and a con).
  - Provides greater agency control.
  - Provides flexibility for scope changes.
- Cons
  - Uses multiple points of contact, with NDOT in the middle.
  - Increases project duration (vs. design-build).
  - Limits contractor innovation and flexibility.
  - Reduces NDOT's ability to shift the risk to the contractor.
  - Has the potential for contract costs to escalate.

Design-Build

- Pros
  - Provides shortest project duration – design and construction overlap.
  - Maximizes contractor innovation and flexibility.
  - Minimizes agency risk by shifting it to the contractor.
  - Offers greater cost certainty up front.
  - Offers "best value"-based selection of contractor.
  - Provides a single point of contact.
- Cons
  - Requires a shift in focus for agency engineering staff.
  - Requires a culture change for NDOT.
  - Presents staged funding issues for NDOT.
  - Will likely cause local contractor/AGC concern.
  - Brings risks associated with scope changes.

Construction Manager (CM) at Risk

- Pros
  - Offers greater cost certainty: the risk is intermediate.
  - Provides a negotiated guaranteed maximum price (GMP).
  - Provides flexibility to GMP contingency.

    - Puts onus on the CM to complete construction and related elements.
    - Makes the CM responsible for any costs over the GMP.
- Cons
    - Needs more research/research is pending.
    - Has limited highway construction exposure.
    - Requires a culture change for NDOT.
    - Requires NDOT to mediate design versus construction.
    - Shifts the intermediate risk to the contractor.

The team also made several recommendations regarding technical issues:

Administration

- Utilize a dispute review board (DRB).
- Evaluate delegated levels of authority.
- Provide incentives and/disincentives, i.e., time (A+B, A+B+C, project milestones), performance (lane rental, traffic management) and materials (performance-based specs).

Construction Sequence and Phasing

- Construct MLK and C-Ds prior to main line.
- Reduce local/interstate interface.
- Use movable barrier systems to counter flow/shifts.
- Reroute through traffic off project.
- Consider short-term closures of main line and major ramps.
- Utilize work zone ITS and public outreach to minimize traffic in work area and maximize safety.

Technical

- Recycle/reuse existing materials.
    - PCCP/embankments.
    - Sahara flyover.
- Use precast/prefabricated components and self-consolidating concrete.
- Consider contractor quality control, maturity meters and MIT for PCCP.

Finally, the team recommended a cost/risk analysis, including an evaluation of the possible integration of schedules for Las Vegas-area projects, contractor availability and sequencing of design and construction activities.

Conclusions

4.1 Next Steps

NDOT recognizes that several key ideas emerged from the breakout sessions. The agency is evaluating the recommendations from each of the skill sets to determine which strategies are applicable to PROJECT NEON, and they will be implemented accordingly.

CHAPTER FOUR

APPENDIX A

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APPENDIX B

Skill Set Reporting Forms

Environmental Planning

Public Involvement

Roadway Geometrics

Traffic, ITS and Safety

Bridge Structures

Right-of-Way and Utilities

Construction and Innovative Contracting Techniques

Environmental Planning Skill Set Team

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Environmental Planning

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Purpose and need		**Deficiencies:** • Description of no-build lacking. • What projects will go forward without this project, i.e., CLV, freeway, etc. (planned and programmed)? • Future traffic counts. • Draft traffic analysis – CORSIM model shown. • Impacts of entire Las Vegas corridor. • Safety data; accidents from weaving action. • Redevelopment area access – does it account for additional traffic, secondary? • Arterial elements not addressed.
Evaluation criteria		**Deficiencies:** • What criteria was used or applied? Alternatives that do not seem to meet purpose and need carried forward. • Elimination of alternatives prior to having a completed purpose and need statement. • LOS D goal – why? AASHTO requirement.
Description of existing conditions		**Deficiencies:** • Population/land use/zoning. • Safety/accident data. • Previous environmental documents are dated. • Through freight movement analysis.
Noise		**Issues:** • Aesthetics of noise walls (uniform theme). • Buffer areas. • Material type and other measures (i.e., insulation). • Long design life. • Early construction.

Environmental Planning, continued

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
Air quality		**Issues:** • New policy and guidance as a result of US 95 EIS lawsuit.
Local circulation and access		**Issues:** • Alternate access routes for church. • Accommodate pedestrian and bicycles.
Construction timing		**Issues:** • Coordinate utility relocation. • Early construction of noise walls. • Early construction of replacement low-income housing.
Land use		**Issues:** • Zoning for business relocations (special zoning issues – industrial, strip clubs). • Early development of business relocation plan; work with city to identify relocation areas. • Encourage pedestrian and bicycle travel.
Environmental justice		**Issues:** • Community issues – daycares, medical centers, transit routes. • Replacement housing – early construction. Coordination/timing with other projects (city of Las Vegas MLK and Industrial widening).

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Public Involvement

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Hours of operation (construction)	• Who makes decision of what hours of operation will be? Public participation vs. public relations.	• Hold meetings to garner ideas/preferences; have an advisory group; provide options; get opinions from adjacent neighborhoods.
Reduce volumes of traffic during construction period	• Educate trucking industry about alternative routes.	• Notify agencies, neighborhoods, etc. • Inform people on alternative routes. • Convince them of long-term benefits. • Get political counterparts on board from the very beginning; keep them informed. • All politicians are notified of major construction, etc., and informed when the media is. • Changeable message signs on roadways alert commuters about detours, etc.
Partner w/RTC	• Carpool lanes, bus use; residents are from other areas that use buses, etc.	• Appeal to those people and get them to begin using alternative transportation systems versus driving.
Coordinate construction schedule with recurring special events schedule (and nonrecurring)	• Hit milestones at these points to avoid delays. • Inform people about construction who are making hotel reservations/ confirmation notice. • Notify guests before they get here.	• Work with LVCVA in notification process. Utilize airports to notify people of construction zones, including rental car areas and baggage claim. Taxi/limo industry-information brochure?
Real-time traffic reports	Hotline.	• A 511 number; set-up system that includes weekend access. • Will be online within the year. • Educate people about the system. • Press options for specific areas. • Smart traffic center.
Create audience matrix	How, what and when you are going to communicate.	• Communicate all traffic impacts.

Public Involvement, continued

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
Alternative routes	• Utilize Rancho.	• Signal timing, notifications, etc.
Rapid response	• Program to quickly handle accidents in project area.	• Implement program.
Traffic safety	• Develop graphic (i.e., show ramp closure, etc.).	• Develop maps; place on the web site.
Monthly advisory committee	• Meet with agencies, metro, etc.	• Develop list of attendees and place in motion.
Public relations	• Develop positive stories and pitch to media.	• Show how offsite work is not inconveniencing travelers.
Landscaping	• Upfront helps promote good will. • Also look at aesthetics that discourage transient dwellings.	• Use three percent of budget for landscaping.
Trucking	• Two audiences: Local and interstate.	• Make contact.
Technical advances	• Stay aware/up-to-date on the technological communication advances (i.e., On-Star, pagers/text messaging, GPS). • Will provide additional avenue to communicate with travelers.	• Contact industries begin communication.
Communications in congestion mitigation plan	• Make outreach/communications effort part of the plan/budget.	• Place in plan.
Audience matrix	• Identify audience to include in current and future planning, including during construction.	• Develop database.
Tours	• Conduct hardhat project tours for elected officials and identified agencies.	• Identify elected officials and additional personnel.
Partnering	• Identify major employers.	• Partner with major employers throughout the project to garner a positive rapport. Send e-mail updates.
Concerns	• Address concerns (i.e., ingress and egress, noise, etc.).	• Develop plan/method to address concerns.

Public Involvement, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Decision-making	• Establish business advisory board to address questions such as should MLK be built first? • The board will comment on economic implications per the design decision.	• Provides avenue for additional communication (i.e., if MLK is built first, what are the economic implications to the area businesses?).
Carpooling	• Work with businesses to encourage carpooling.	• Help identify incentives/ideas for the businesses and help initiate them • Go onsite and set up a booth to encourage car-pooling/sign them up. • Preferential parking. • Place brochures in taxicabs and limos.
Trucker incentives	• Identify incentives for truckers to use diversion route(s).	• Display total traffic time of using the diversion route versus traveling in the construction zone, thereby showing how much time will be saved.
Homeless representative	• Meet with representative to discuss moving the homeless in the project area.	• Try to avoid the issue of displacing the homeless by meeting with the representative in advance.
Advocacy groups	• Work with pedestrian and bicycle advocacy groups.	• Identify groups and establish contact/stakeholder meeting.
Highway Advisory Radio 1610	• 877-NVRoads – Additional forum to find out about construction areas.	• Advertise the automated system as a means to identify construction areas/road closures, etc.

Roadway Geometrics Skill Set Team

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Roadway Geometrics

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
Tight diamond versus SPUI	• Look into analysis of using a tight diamond versus a SPUI.	• Analyze using refined geometrics, including stop bar location, lost time and all-red phase. • Check signal head location in MUTCD for SPUI.
SPUI bridge depth	• Minimize height by using horizontal versus signal head placement.	
Bridge type	• Consider different bridge types that minimize bridge depth, including falsework requirements.	
Oakey/Wyoming skew alignment	• Eliminate bridge skew. • Maintain continuity of Oakey. • Traffic calming at neighborhood.	• Provides arterial connectivity. • Need to consider traffic calming issues related to the neighborhood near Las Vegas Boulevard.
Sahara flyover	• Maintain existing flyover.	• Try to develop alternatives that would minimize I-15 cross section width, pier impacts and vertical clearance issues at edges of I-15.
Roadway crown	• Crowned mainline versus planer incline. • Drainage – Currently 9-lane section – Most states only take 4 lanes in each crown direction.	• Address sheet flow drainage. • Address constructability with respect to paving issues.
Lane drop/add locations	• Lane drops and add lanes do not meet AASHTO criteria in areas.	• Follow AASHTO guidance.
CORSIM	• Does CORSIM consider the trap lanes/driver navigation challenges in the current design?	• Verify that these base conditions work/do not work.
Current design	• Was there initial design of the following: Fat Freeway, True C-D Concept, Braided Ramp and Frontage Road?	• Follow AASHTO guidance.
Ramp sequencing & alignments	• Look at the current taper configurations/exit angles/gore spacing versus AASHTO standards.	• Follow AASHTO guidance.

Roadway Geometrics, continued

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
I-15 weave issues	• Traffic weaving 3 to 4 times.	• Look at eliminating/reducing the number of required vehicle weaves.
US 95 northbound ramp "C-D ramp"	• Move location north to avoid gentlemen's club and flyover.	• Allows for increased signing distances. • Reduces right-of-way take. • Eliminates need for new/reconstruction of Sahara flyover bridge.
C-D system	• Consider making the project a true C-D system.	• Moves weaving movements onto the C-D roadway and off the mainline. • C-D roadway design speed = 50 mph, allowing for a more flexible design.
MLK on-ramp	• Have MLK on-ramp connect with the Charleston Southbound on-ramp then tie into Mainline.	• Eliminates one of the additional on-ramps in this area.
I-15 southbound @ Charleston	• Look at geometry, 3 on-ramp, 4 add lanes in short section.	• Follow AASHTO guidelines. • See previous comment.
I-15 southbound on ramp @ Rancho	• Look at AASHTO 2-lane on-ramp configuration.	• Follow AASHTO guidelines.
MLK loop on-ramp to southbound US 95	• Eliminate this ramp access, taking this traffic to the proposed MLK/I-15 Southbound on-ramp.	• Eliminates weave on US 95. • Eliminates redundant on-ramps.
Sahara off-ramps	• Combine existing Sahara off-ramps (westbound off and eastbound to Highland off) onto the current eastbound to Highland alignment.	• Add a left-turn movement for this ramp at Sahara. • Coordinate movements with Rancho signal.
I-15 ramps	• Braided Ramps – make skew between two roadways 10 to 15 % where they cross.	• Shortens bridge lengths/decreases bridge depths.
MLK bridge	Make MLK Bridge dual bridges.	• Separate columns allow for optimal placement. • Minimizes spacing requirements. • Shortens bridge depths. • Reduces overall height of flyover. • Only need four-foot shoulder plus shy on bridge with more than one lane.

Roadway Geometrics, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Charleston SPUI	• If transit decides to use corridor, SPUI configuration does not include a through movement, which may be needed.	• This movement, when added to the SPUI configuration, may nullify the SPUI advantages, and looking into the use of a diamond configuration should be considered as it allows for this movement.
MLK lane configuration	• Signals control movement on MLK Bridge. Not going to be able to fill 3 lanes due to signals located at each end of bridge tie-down points.	• The signals at each end of the MLK connector control the amount of traffic on the bridge structure. Not going to be able to fill 3 lanes on the bridge due to this.
Charleston bridge depth	• If Charleston is driving the mainline grade to raise 10 to 12 feet, look into other bridge alternatives.	• Consider bridges that have smaller sections/require less falsework. • A more expensive bridge may be better if it lowers the mainline and savings are made elsewhere if the mainline profile lowers.
SPUI ramps	• Tighten SPUI ramps closer to mainline and move C-D system outside of ramps.	• Shortened stop bar spacing on Charleston. • Decreases signal time loss. • Minimizes open space under bridge. • Increases mainline bridge lengths for sight distance.

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Traffic, ITS and Safety

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
REGIONAL SYSTEM CONSIDERATIONS		
HOV network and inter-corridor connectivity Freight management Traffic planning model need to include metering Transit system (bus, fixed rail) Regional freeway/ arterial management system Regional signing system	Project appears to be focused too heavily on defining pure highway solutions to local problems in a small but significantly important part of the entire region. Although HOV, transit, etc., have been looked at, there is little evidence of defined regional plans or activity programs directed to defining appropriate regional plans.	• Project team members need to determine how this project relates to the regional system. To do that, these same parties need to define a plan for completing and documenting regional system studies for the freeway system, an HOV network and an inter-modal transit plan. • Traffic analysis should use a micro-simulation model that focuses more on the project and not the entire region. • Project team should develop concept signing plan to verify that signing and geometrics are compatible.
CONSTRUCTION PHASING		
Build MLK/Industrial connector and NB C-D roads first	• Construct new roadways while traffic maintained on existing facility, then shift traffic to new roads and continue construction.	• Project team should begin to investigate avenue for contract packaging and construction staging jointly, with opportunities and constraints for handling traffic. It will be especially important to identify any of those elements that can be funded and built relatively quickly to begin operations as a useable segment.

Traffic, ITS and Safety, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
CONSTRUCTION PHASING, continued		
Use contractor incentives to expedite work Consider using multiple contracts in parallel Use construction program manager (CPM)	• Have two sets of contractors competing for common pool of incentives. • Need to consider all nearby city, county and regional projects. Possibly expedite smaller local projects if their early completion will facilitate maintenance of traffic during primary project construction.	• City and county should look over smaller- to moderate-size future projects now on back burner to see if any should be given a higher priority because their early completion would benefit traffic handling during construction.
ITS/FREEWAY MANAGEMENT		
Need regional integration of freeway/ FAST programs Utilize work zone ITS Use HAR & 511 Consider separate ITS contract	• Utilize traffic handling techniques that have proven successful on major freeway reconstruction projects in other urban areas.	
TRAFFIC INCIDENT MANAGEMENT		
Develop a regional incident management system	• Local emergency services need to define a formal plan for response to incidences, both in general and in anticipation of PROJECT NEON.	

Traffic, ITS and Safety, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
TRAFFIC INCIDENT MANAGEMENT, continued		
Expand freeway courtesy patrol		
ARTERIAL IMPROVEMENTS		
Retime signals for construction phase	• Interested parties should work cooperatively to define local alternative routes for traffic that will be affected by construction.	
Consider having arterial service patrols	• New express service during construction might encourage some travelers to shift permanently to transit.	
Express bus service via arterials during construction		
TRAVEL DEMAND MANAGEMENT AND OUTREACH		
Need project public information manager	• The travel forecast procedures being used for the region and project operational analyses should be reviewed and methods revised as appropriate.	
Use TV and radio to fullest extent		
"Cry wolf" – make it sound worse to encourage motorist diversions		
Educate tourists		
Generate employer incentives (e.g., carpools get priority parking)		

Bridge Structures Skill Set Team

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Bridge Structures

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Focus on complex structures	• Oakey/Wyoming, MLK & Sahara interchanges, UPRR grade separation.	• Long span buildout over traffic, subsurface variability (drilled shaft), coordination with stakeholders.
Precast/ prefabricated structures	• Superstructure-steel box/girders, precast segmental concrete, precast deck panels; substructure-precast, segmental piers.	• Standard sections, casting yard.
Optimize foundation type	• Utilize spread footing, where possible.	• Subsurface conditions, lateral loads.
Light weight embankments	• Geofoam, faster construction, addresses settlement issues.	• Protection from hydrocarbons, buoyancy issues and material consolidation issues.
Temporary bridge structures	• Use for phasing and maintenance of traffic.	• Coordinate with traffic flow, standardized and reusable structure. Spread footings for temporary foundations.
Build C-D first, use as detour for mainline traffic	• Over build to accommodate temporary condition.	• Coordination with traffic control. Potential for increased right-of-way takes. Temporary restricted land widths. • Casting yard/ transportation to site, future widening, joint sealing. Limited to less than 300 feet in length.
Precast rigid frame for grade separation	• Place structure under roadway to save time and cost where roadway skews are great (i.e., braided ramps).	• Roadway alignment coordination, heavy lift systems.
Save Sahara overpass	• Raise bridges to meet vertical clearance.	• Transport to site/staging area.
Prefabricated bridge systems	• Construct entire superstructure offsite. Launching, heavy lift, SPMT.	• Reliance on out-of-state fabrication.
High performance materials	• Concrete and steel; to improve durability and economy.	• Saves right-of-way; raises flyovers.

Bridge Structures, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Dedicated through lanes on viaduct	• Build elevated viaduct in median, reduces weaving, reduces right-of-way take, increases capacity; build piers in median, erect prefabricated pier segment, segmental superstructure erection, adds capacity, reduces right-of-way, eliminates weaving.	• Top-down construction, raises height of flyovers.
MLK/Industrial North	• Maintain depressed section to lower bridge height, consider siphon at depressed section, and eliminate ramp from MLK to Grand Central Parkway.	• Requires siphon maintenance, eliminates connection from MLK to Charleston.

Right-of-Way and Utilities Skill Set Team

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Right-of-Way and Utilities

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
Utility franchise agreements	• UPRR still owns part of local roadways (MLK) (Underlying fee property owner). • Utility franchise agreements through UPRR? • Utilities have to show compensable interest for utilities in the right-of-way.	
Clean up right-of-way ownership	• Transfer ownership from UPRR to NDOT/CLV to clear up ownership/ utility issues in the area.	Pro – Makes it easier for future agreements. Con – May take a long time to make right-of-way transfer. Con – Not necessary for project to go forward.
Need permit from UPRR on overpass facilities	• UPRR has to approve of all crossings of UPRR (bridges, utilities, etc.). From the point that the 30% is submitted, UPRR needs less than one year to review and approve.	Whatever is in the 30% has to stay in design, as it applies to the UPRR. Otherwise, the review process has to start over. Identify construction easements early on. Need structure cost for Oakey/Wyoming for 5% cost agreement with UPRR. 30% – 30-45 day review time. 60% – 30-45 day review time. 90% – 30-45 day review time. Typically submittal of legal descriptions hold up the agreement process. Review and submission of agreement – 60 to 90 days.
Get advance corridor for NV Power transmission line relocation	• Free up right-of-way corridor. Get NV Power to relocate OH transmission lines before project begins.	Pro – Free up utility conflicts and coordination during construction. Con – No money yet. Con – Design constraints.
Leave Gentlemen's Club (Treasure's) alone	• Eliminate impact to Club to save cost of buying them out. $35 million roughly to buy them out. Add retaining walls, do partial take, and reconstruct so that the entire building does not have to go away.	Pro – Right-of-way cost savings. Pro – Parking may be made available from other surplus parcels. Con – Geometrics design may not work out. Con – Parking may not meet city compliance.

Right-of-Way and Utilities, continued

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
Continue concept of avoidance of utilities	• Continue to avoid utility relocations, namely: MPU storm drain, sprint line at Palace Station, large diameter water and gas lines, petroleum lines in UPRR right-of-way, etc.	• Need criteria for which utilities are critical to avoid and which ones are easier to relocate.
Follow up with tenants after residential and commercial survey is complete	• After survey is completed, develop a right-of-way relocation plan. • Make sure tenants are aware this is still preliminary. Do not want people to up and move. • Do not want people to up and move.	Pro – Informing the public, good public relations. Con – "Inverse Condemnation" – Sometimes talking to tenants can backfire and owners have assumed that since we have talked to tenants, we are condemning the property.
Acquire houses or rent apartments in the neighborhood as they become available for use as replacement housing	• Acquiring replacement housing can be addressed in the environmental document as mitigation, if needed. Displacees are not required to move into these.	Pro – Provides options, can reduce right-of-way costs.
Buy additional property needed to mitigate acquisitions, e.g., parking	• Mitigation can be addressed in the environmental document.	Pro – Provides options; can reduce right-of-way costs.
Facilities shown in the 30% should stay in design, as it applies to UPRR	• UPRR permit process has to start over if the nature of the design as it relates to the UPRR changes.	Pro – Move along critical path in respect to UPRR permits. Con – Intangibles affect design.
Reconsideration of NDOT policy of advance acquisition	• Recommend using more advance acquisition, hardship and protective purchases. • Funding needs to be made available.	Pro – Tenants/owners wanting to get bought out now because of hardships can be purchased now since they will not rebuild or add onto their property. Pro – Cheaper to purchase now versus later. Con – Coming up with the money (funding) now.
Advanced relocation of as many utilities as possible	• Get corridors open such that as many relocations can be done before the contract begins, or done with advanced contracts.	

Right-of-Way and Utilities, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Look into wall hydrants for fire suppression, etc.	• Where there are soundwalls and retaining walls implement hydrants that can be used for safety, fire suppression, etc.	Pro – Public safety advantage; e.g., accidents involving tanker trucks, hazardous materials, etc. Con – Cost issue; where would funding come from?
Charleston under UPRR should be a separate project. It should not be a part of this project	• There seems to be little advantage to including the Charleston crossing at UPRR.	• Charleston widening across UPRR would cause great delays to UPRR lines.
Acquisition incentives/ tenant relocation bonuses	• Based on fair market value plus 10%. Florida uses acquisition incentives based on a schedule. • It implements a time-dependent offer. • Could also do relocation incentives. • If tenants are out in a certain amount of time, there is extra money available. Virginia has used tenant relocation bonuses.	Pro – Time savings. Con – Probably not any less or more cost.
Acquire the easements for utilities to expedite the process	• Many states acquire the easements for the utilities to expedite the projects (NJ, VA, NC, FL).	Pro – Expedite process, time savings. Con – Change in procedure.
Water and sewer relocation in the highway contract		• Already standard in Nevada.
Run conduit for overhead signs/ lighting back to meter pole such that the utility company can access	• Make sure that service points are coordinated such that power is available and meters and power boxes are accessible to utility companies.	• Utility companies have standards in place for their required maintenance.
Level A SUE (Subsurface Utility Engineering) to be used at structure crossings, drainage facilities	Level B SUE (horizontal location) is being implemented in the project. Level A (vertical and horizontal) is recommended for all crossings of existing utilities.	• Currently planned for the project.

Right-of-Way and Utilities, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Coordinate utility betterments well ahead of time	• Include utility betterments well ahead of time and incorporate into plans and relocations.	• Requires advance coordination and extra agreements between NDOT and utility companies.
Look into combining and consolidating utility relocations	• Where there are multiple parallel utilities, it is recommended to consolidate the utilities in one larger-size pipe or multi-duct facility to make the relocation simpler and more cost effective.	• Up to utility company if they want to consolidate their lines. Sometimes separate lines serve different purposes.

Construction and Innovative Contracting Techniques Skill Set Team

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Construction and Innovative Contracting Techniques

IDEA (Short Name)	IDEA (Detailed Description)	Implementation Details (Barriers, Skill Set Coordination, etc.)
Single contract (preferred)	• Construct the project under a single contract to minimize conflicts and reduce overall time of construction required. • Contract administration would be minimized and staging issues would be resolved.	• Staged State funding would be required, but it could be regulated through separate NTPs and milestones. • Pressure from local contractors and AGC would be expected. • RFQs could be requested to determine interest from contractors to insure competition.
Multiple contracts	• Procure the project with several contracts that would allow for early progress and smaller bids. • Smaller, DBE and specialty companies would be allowed to bid as prime contractors. • Utilities, drainage and demolition could be broken out and performed in advance.	• Higher costs would be expected, along with more administrative costs and numerous contractor conflicts. • Most likely would require the longest time frame to do the job.
Consider design build	• Let the contract for the design and construction under a single bid. • Minimized risk with shortest time line and greater cost certainty. • Flexible approach that encourages contractor innovation. • Offers the agency a single point of contact.	• NDOT engineering staff required earlier in project. • Staged State funding would be required • Pressure from local contractors and AGC expected. • NDOT culture shift required.
Conventional design and construction bid	• Design and build the project using conventional separate contracts. • Provides agency and contractor familiarity, plus a higher flexibility for scope changes within either phase.	• Longer project duration required; limits contractor flexibility/ innovation. Decreases agency ability to put responsibility on contractor. Potential increase in escalation of contract issues.
Consider construction manager at risk	• Centralize construction management effort through a single prime contractor.	
Dispute resolution board	• Proven effective in quickly resolving issues in a cost-efficient process.	
Partnering	• Beneficial in providing a pro-active solution to pending issues.	

Construction and Innovative Contracting Techniques, continued

IDEA [Short Name]	IDEA [Detailed Description]	Implementation Details [Barriers, Skill Set Coordination, etc.]
Levels of authority	• Evaluation of at what level the decisions regarding the contract should be made.	
Incentives	• Cost incentives/disincentives will provide for a higher quality project that is more likely to be delivered in a timely manner (time-A+B, A+B+C, performance and materials).	

TECHNICAL ISSUES

Construction phasing	• Minimize traffic within the work areas while providing for as large of work area as possible. • Minimize additional traffic on side roads. • Consider counter flow traffic, movable barriers.	• Higher cost, complex movements, safety. Increased public awareness and offsite improvements required.
No construction phasing	• Elimination of traffic on I-15 would provide for quickest construction method. • Eliminates problems associated with staging areas and material storage.	• Existing capacity demand may not be met by alternative routes. • Side road improvements would be required that would offset the cost savings. • Negative public connotations.
Material utilization	• Utilize materials onsite to reduce cost and minimize construction traffic.	• Cost may not be reduced; higher level of construction noise and dust.
Structure type	• Use self-consolidating concrete.	
High performance concrete	• Use precast/prestressed elements to minimize onsite construction duration.	
Inspection testing methods	• Minimize element size, earlier concrete strength.	
Dedicated traffic lanes	• Maturity meters and contractor QC should be considered for means of reducing cost and improving testing quality.	

ACTT SKILL SETS

Innovative Financing. The team's primary goals are to align potential financing options with project goals; match anticipated cash flow with project management; and provide options for managing competing priorities for existing resources.

ROW/Utilities/Railroad Coordination. The ROW group's primary role is to ensure that ROW, utilities and railroad work comply with state laws and procedures. They must also consider the numbers and types of businesses and residences impacted by a project and evaluate the ready availability of additional right-of-way.

Geotechnical/Materials/Accelerated Testing. The geotechnical team explores subsurface conditions to determine their impact on the project; pursues options for expediting materials acceptance and contractor payment; and evaluates the use of innovative materials in accordance with project performance goals and objectives.

Traffic Engineering/Safety/ITS. The traffic engineering team strives to enhance safety; improve traffic management; and explore technologies, including ITS systems, that will communicate real-time construction information to the public.

Structures (Bridges, Retaining Walls, Culverts, Miscellaneous). The structures skill set focuses on accelerating the construction of structures. Their task is to identify the most accommodating types of structures and materials that will meet design requirements and minimize adverse project impacts.

Innovative Contracting. The innovative contracting group explores state-of-the art contracting practices and strives to match them with the specific needs of the project.

Roadway/Geometric Design. The roadway team evaluates proposed geometrics and identifies the most accommodating product with the minimum number of adverse impacts.

Long Life Pavements/Maintenance. The maintenance skill set identifies pavement performance goals and objectives and explores future maintenance issues for the project corridor, including winter service, traffic operations and preventative maintenance.

Construction (Techniques, Automation and Constructability). The construction crew explores techniques that will encourage the contractor to deliver a quality product within a specific timeframe while maintaining traffic.

Environment. The environment team ensures that the scope of work and construction activities reflect local environmental concerns. Their goal is to provide the most accommodating and cost effective product while minimizing natural and socio-economic impacts.

Public Relations. The public relations skill set discusses ways to partner with local entities and effectively inform both local communities and the traveling public about the project before, during and after construction. Their role is to put a positive spin on the project.

Background of ACTT

ACTT is a process that brings together public- and private-sector experts from across the country in a setting that encourages flexibility and innovation. The goal is to recommend technologies that will accelerate construction time while reducing user delay and community disruption. This necessitates a thorough examination of all facets of a highway corridor with the objective of improving safety and cost effectiveness while minimizing adverse impacts to the traveling public.

The ACTT concept was originated by the Transportation Research Board (TRB) in conjunction with FHWA and the Technology Implementation Group (TIG) of the American Association of State Highway and Transportation Officials (AASHTO). Following the completion of two pilot workshops, one in Indiana and one in Pennsylvania, the originating task force, A5T60, passed the concept off to FHWA and TIG to continue the effort. They have done so by coordinating a series of ACTT workshops around the country, with several more pending in 2005 and 2006.

More information on the ACTT program is available online at:

http://www.fhwa.dot.gov/construction/accelerated/index.htm.

FHWA-IF-05-036 Nevada