

# Visualizing High-Speed Rail

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# California High Speed Rail



- The high-speed train represents the state's commitment to environmental responsibility, better mobility and jobs.
- The HSR Authority is collaborating with local, state and federal agency partners to identify solutions that deliver the most public benefit with the least negative impacts.
- HSR will consist of 800 miles of track and 24 stations.
- Kern County is located in the center of the HSR system.

Source: CAHSR Authority website:  
[www.cahighspeedrail.ca.gov](http://www.cahighspeedrail.ca.gov)

# High-Speed Rail in Kern County

- 1 station in Bakersfield, 108 miles of track, 4 bridges, and 9 tunnels
- Two Heavy Maintenance Facility sites are under consideration in Kern
- Federal Railway Administration has mandated the 123 mile Bakersfield-Fresno section to be built first.
- Construction is scheduled to start in 2012.



# Kern Council of Governments

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Kern COG is an association of city and county governments primarily created to address regional transportation issues. Its member agencies include the County of Kern and its 11 incorporated cities including Bakersfield.



As the federally-designated Metropolitan Planning Organization "MPO" and the state-designated Regional Transportation Planning Agency for Kern County.

Kern COG is responsible for developing and updating a variety of transportation plans and for allocating the federal and state funds to implement them.

# Visualizations Required by Law

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Federal law § 450.316 requires;

“(a)(1)(iii) Employing visualization techniques to describe metropolitan transportation plans and TIPs;”

Federal Law § 450.104 Definitions;

“Visualization techniques means methods used ...in the development of transportation plans and programs with the public... in a clear and easily accessible format such as maps, pictures, and/or displays, to promote improved understanding of existing or proposed transportation plans and programs.”

# 3D Modeling and Visualizations

What is it?

A tool for engaging people in decision-making

How does it work?

Using 2-D and 3-D images to describe design ideas, solutions and options

What does it do?

It enhances:

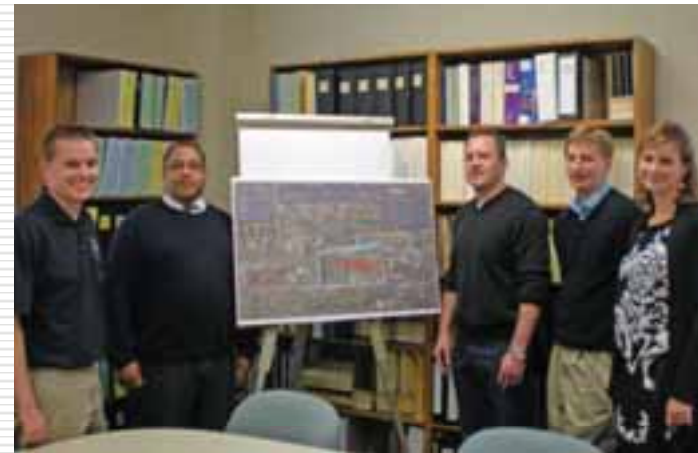
- Communication
- Team building
- Productivity
- Creativity





# Consultant Selection

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**PSOMAS**

Field Data Collection  
GIS Data Collection  
Urban Planner Consultation



Storyboarding  
3D Modeling  
Graphic Design

# Project Goals

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Existing



Proposed



- Communicate effectively
- Reach diverse audience
- Determine feasibility of conceptual design
- Identify potential obstacles
- Manage multiple alignment options and design scenarios
- Identify opportunities to leverage existing investments
- Create momentum for project



# Getting Started: Develop a Storyboard

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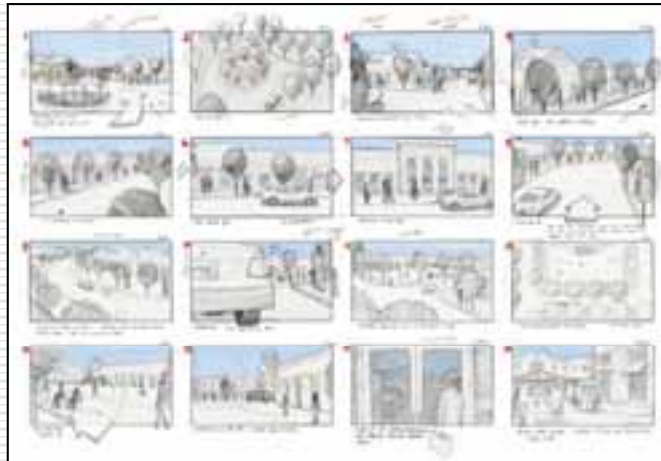


## Background Information Needed:

- What is the "story to be told"?
- What is the area to be modeled?
- Who is the audience?
- What is the final output?
- Audio? Voice over narration?
- How will it be used?
- Level of detail needed?
- Accuracy requirements?
- What GIS data layers are available?

# Getting Started: Develop a Storyboard

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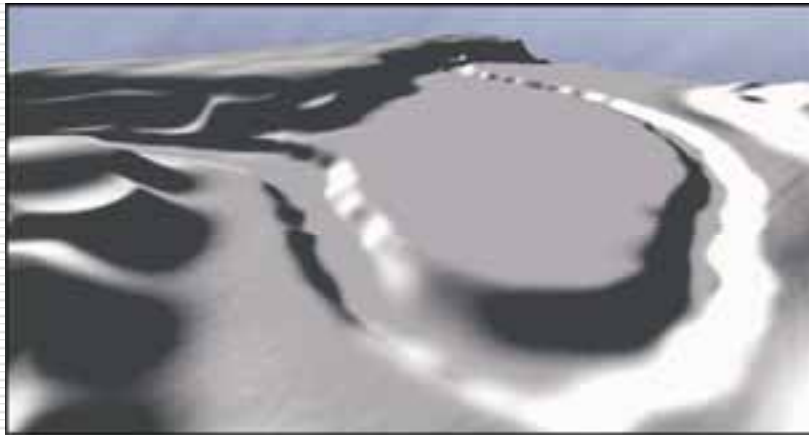


Storyboard should contain:

- Map showing area to be modeled
- Buildings/features to be modeled
- Camera locations
- Flight path and elevation
- Description of movie opening, middle, end
- Physical recognizable landmarks
- Title, credits



# Background GIS Data Collection



1) 3D terrain model created from DEM



2) Satellite photo draped onto 3D terrain



3) add water, textures and land detail



4) real-time environment screen shot

# Field Data Collection

- Pre-plan your visit
  - Create site map and checklist
  - Identify which building faces to be modeled
  - Obtain permission to enter site
  - Assign block number and building number (ie: 001-002)
- Field Conditions
  - Sunday mornings ideal
  - Cloudy days better than full sun
  - 9am – 3pm least shadow
- Taking photos
  - Take photos in consistent order (west to east)
  - “Dead-center” perspective as well as shot from each corner



**Check List**

**Logistics**  
 Take 100m roll of 35mm film (100 ASA) and the Canon camera (no. 100-1000) with 50mm lens. Make sure you have about 1000. Labels: Name of the site, date, time of day.

**Check List**

Number	Description	Done	Remarks
1	Check map of the site and see if it is possible to get to the site from the street.		
2	Check map of the site and see if it is possible to get to the site from the street.		
3	Check map of the site and see if it is possible to get to the site from the street.		
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20	Check map of the site and see if it is possible to get to the site from the street.		

**Building Measurements**

Building Name	Block #	Building #	Height #

# Field Data Collection

Details, details, details:

- Road signs
- Business signs
- Street signs
- Lightpoles
- Canopies
- Benches
- City signs
- Vegetation
- Local newspaper
- Local bumper stickers
- Mass transit





# Conceptual Design

## Conceptual Design from The High-Speed Rail Authority

- Identify actual location of new station and track layout
- How will it integrate with existing Amtrak station?
- Show elevated 60 feet
- Elevation challenges
- Existing train tracks – elevated walkways
- Evaluate parking structures
- Walkability, transportation logistics
- Proposed bus transit station





# Conceptual Design



# Conceptual Design



# Conceptual Design

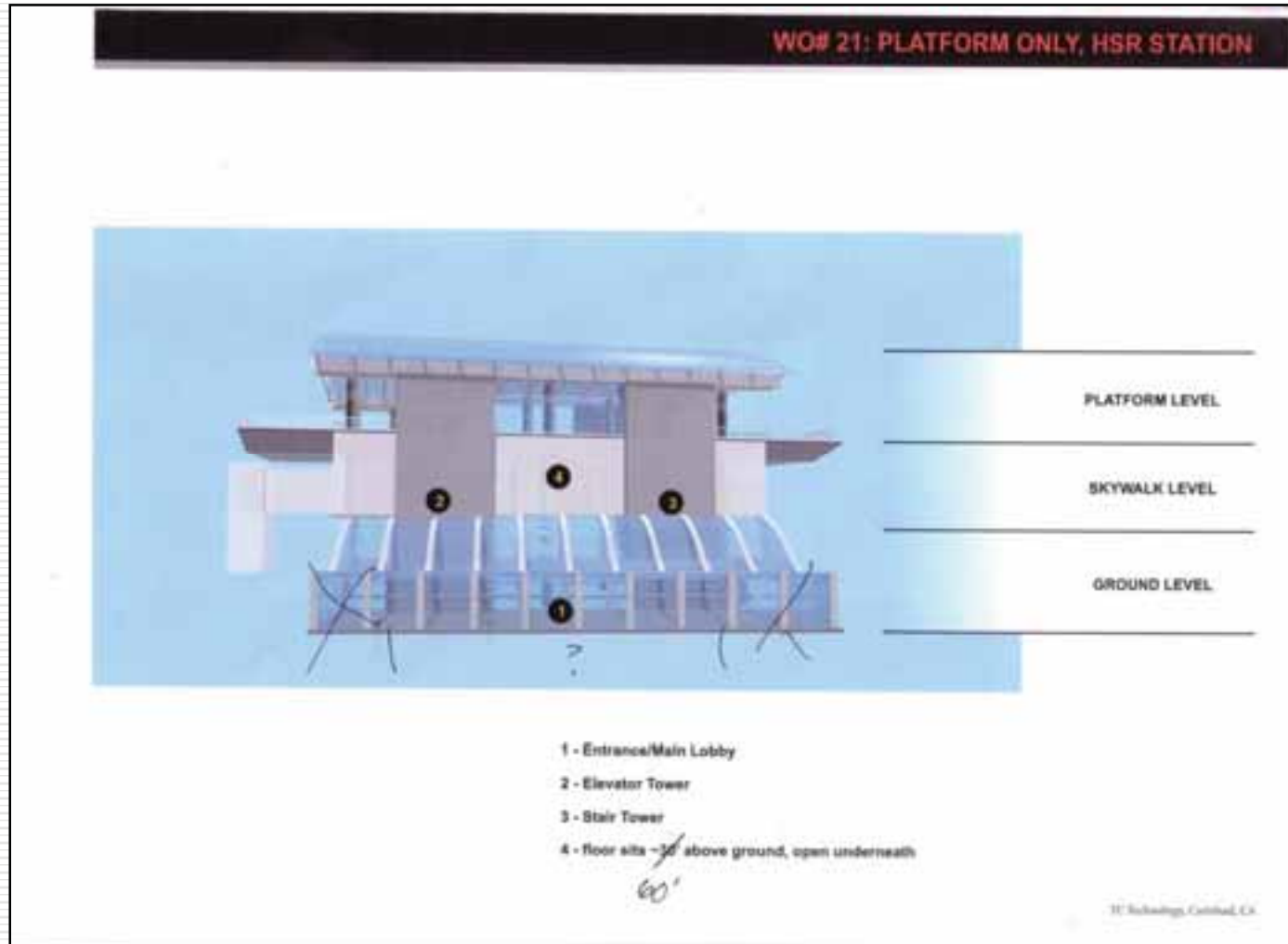
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sidewalk

bus transit

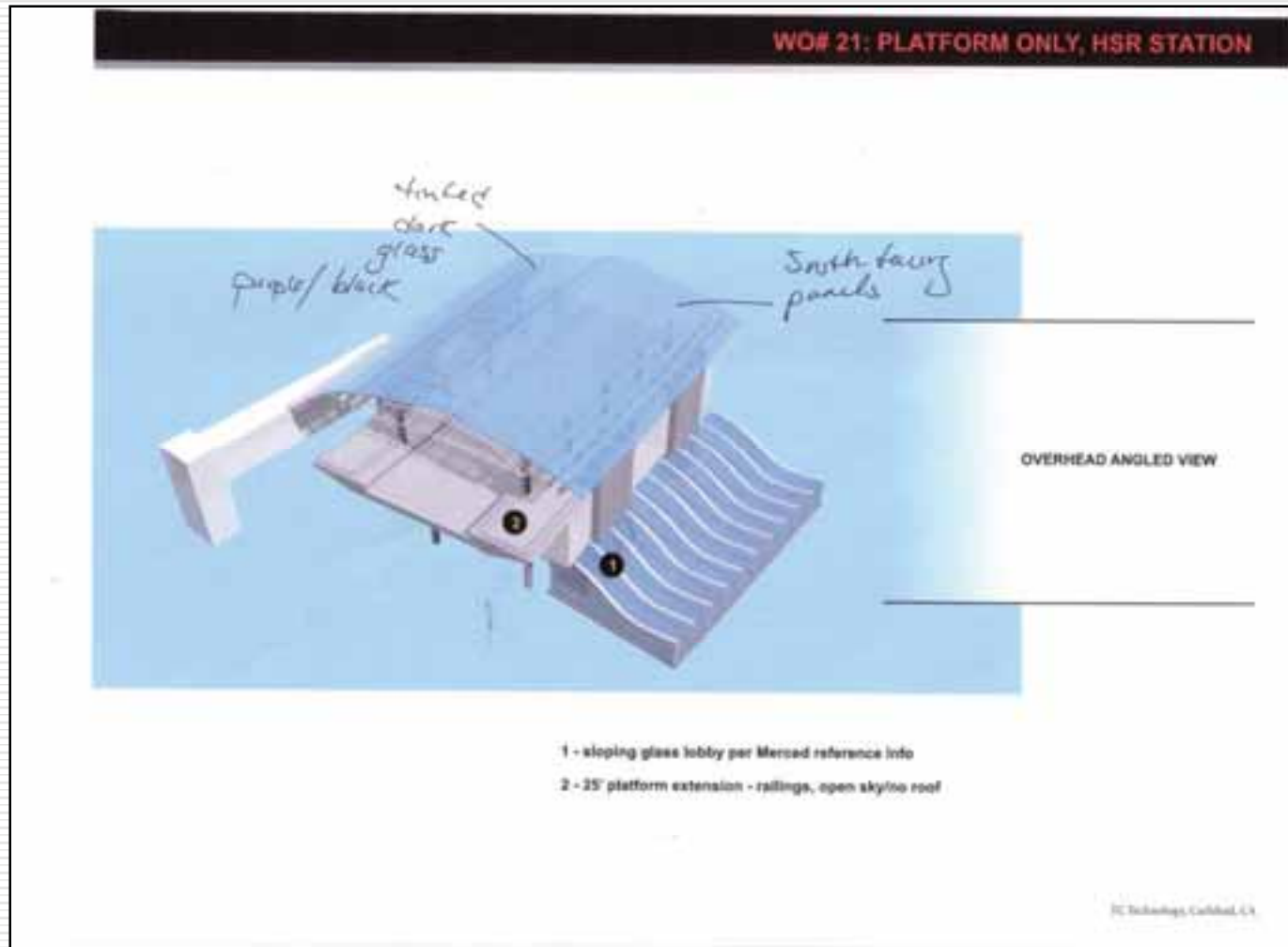
# Conceptual Design



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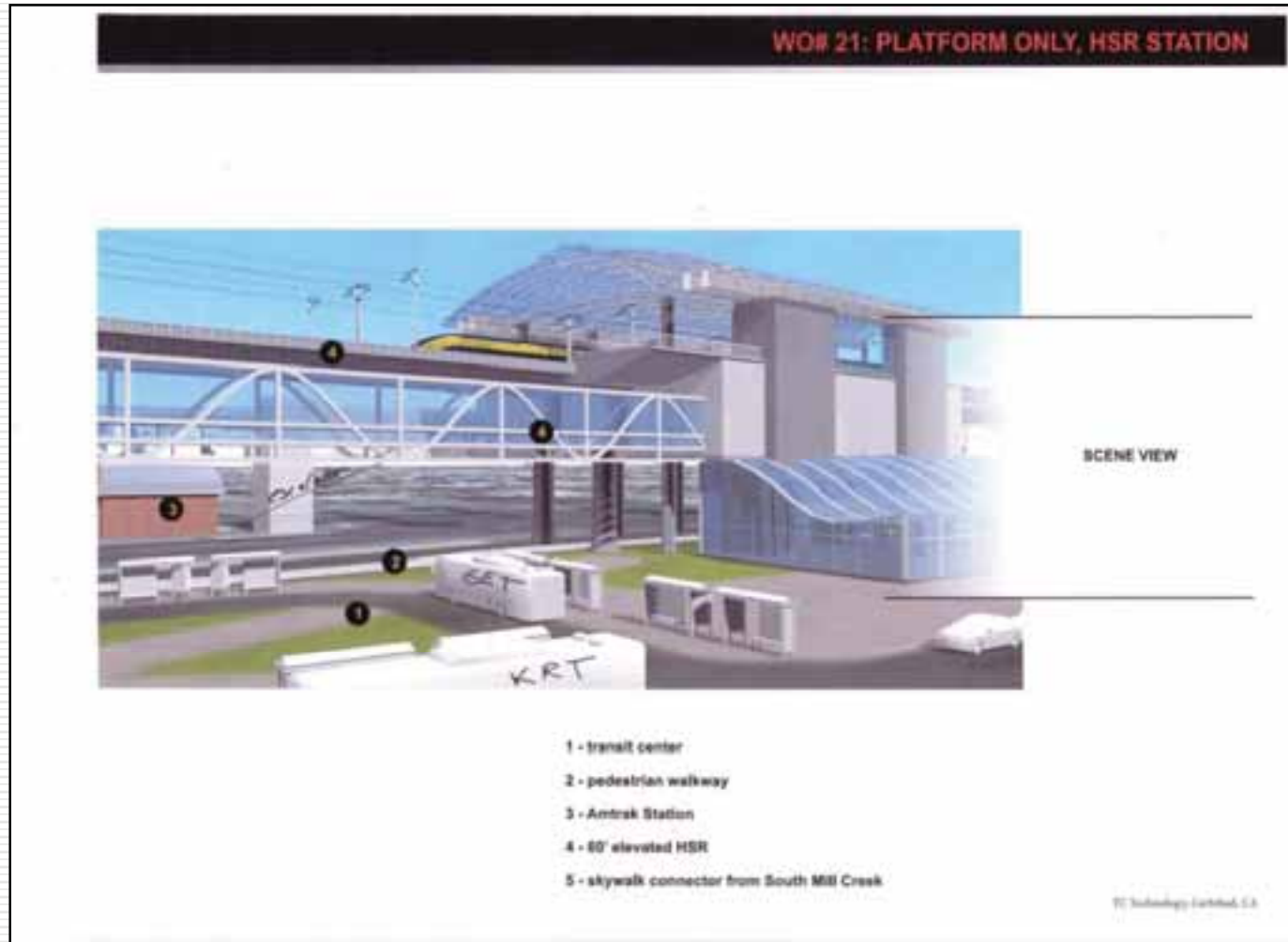


# Conceptual Design





# Conceptual Design



# Draft Deliverable



# Draft Deliverable

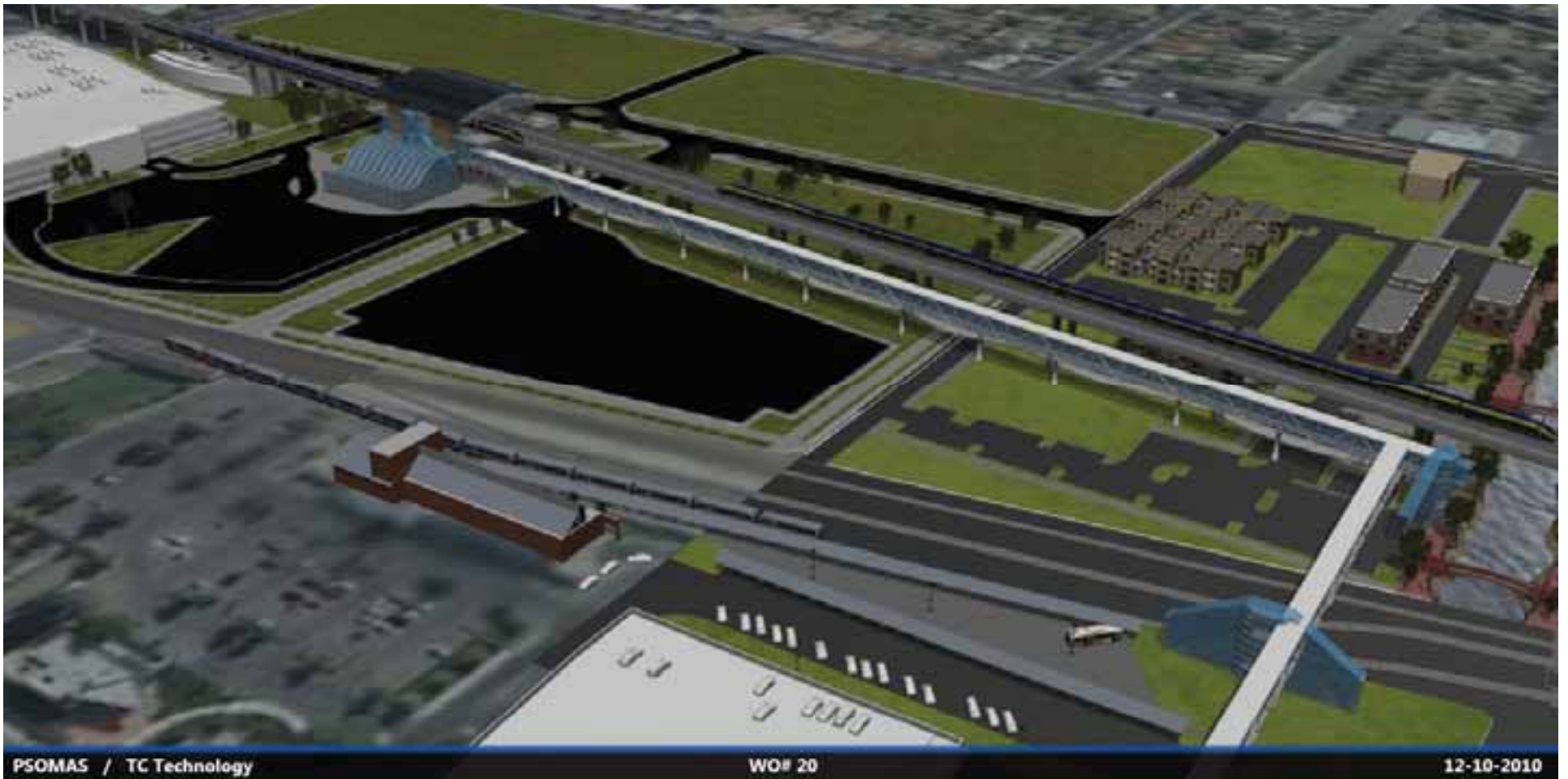
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# Draft Deliverable

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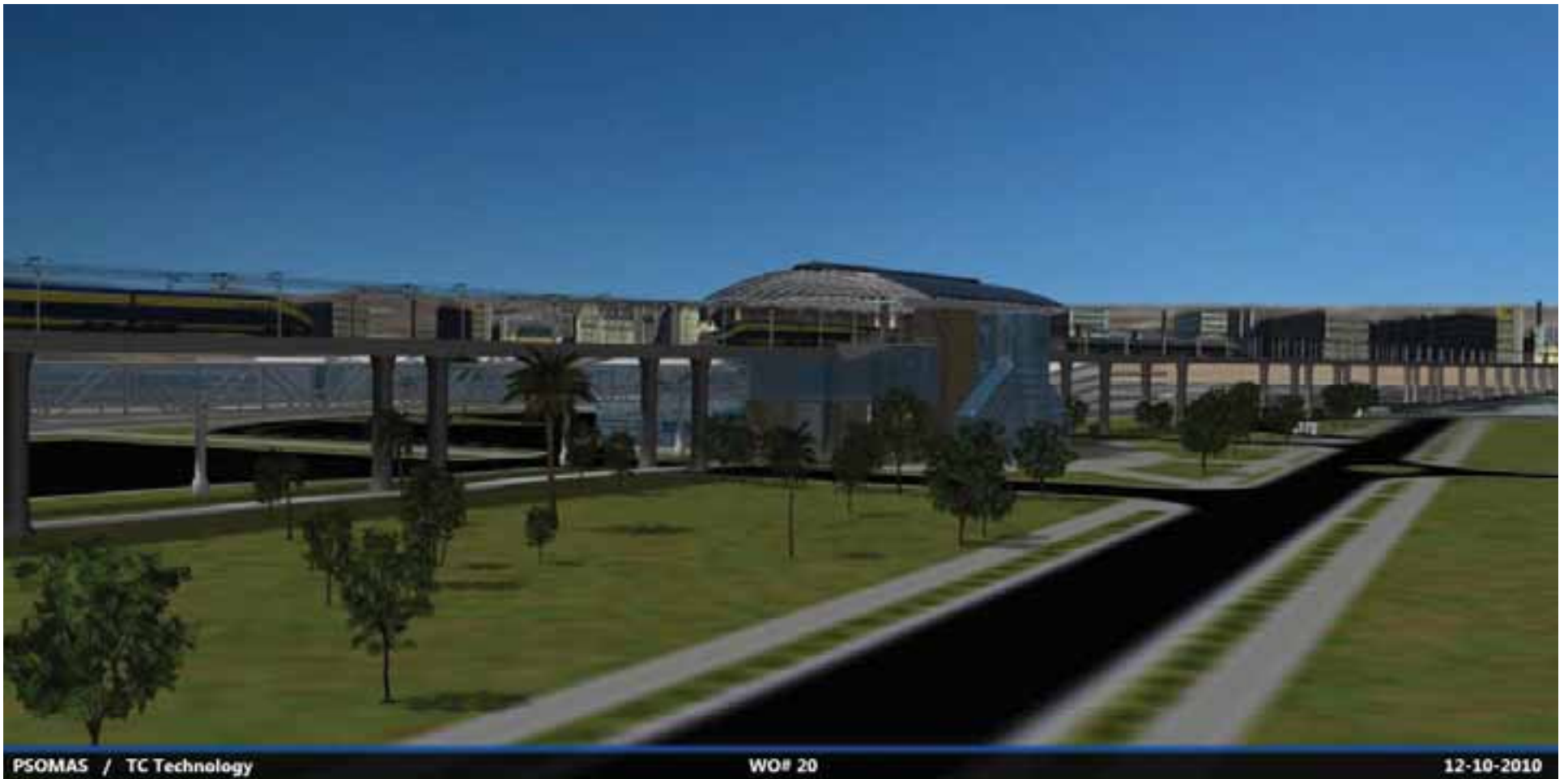
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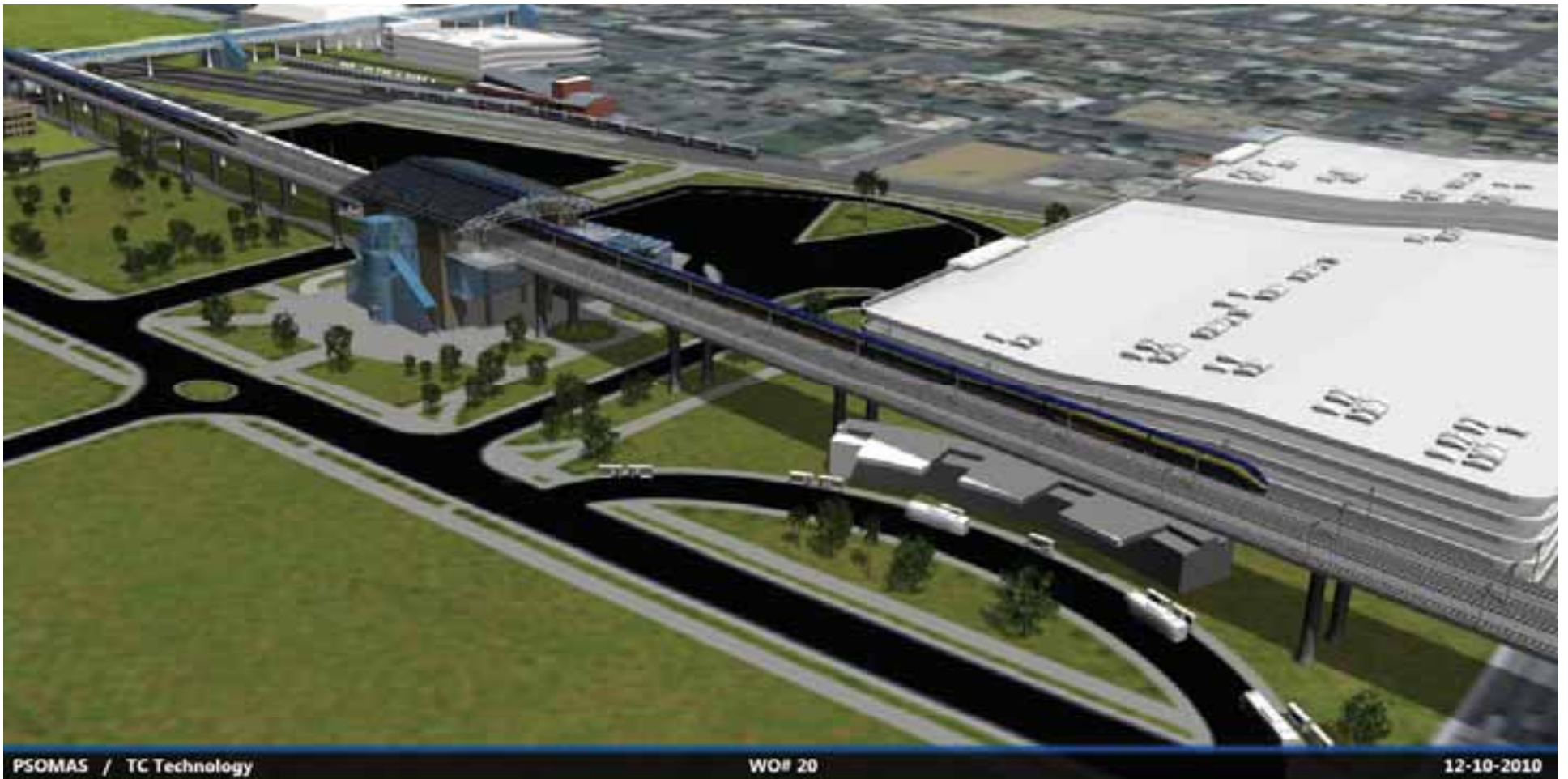
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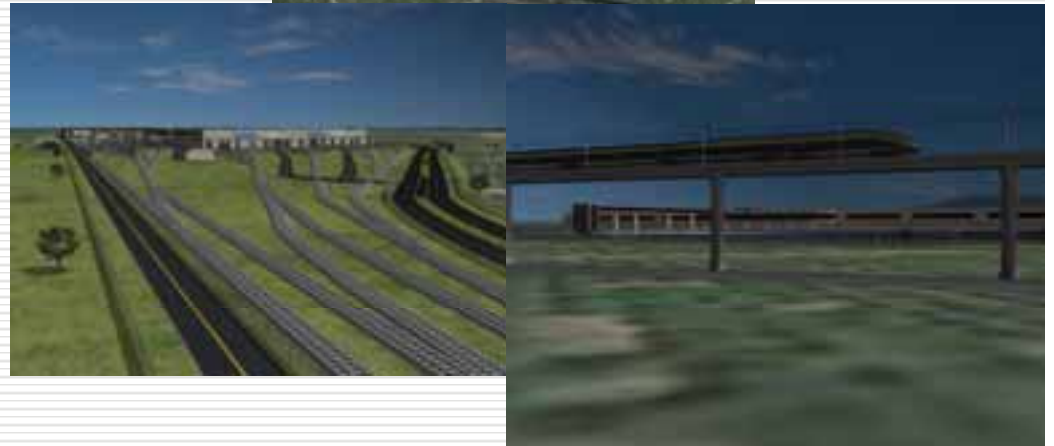
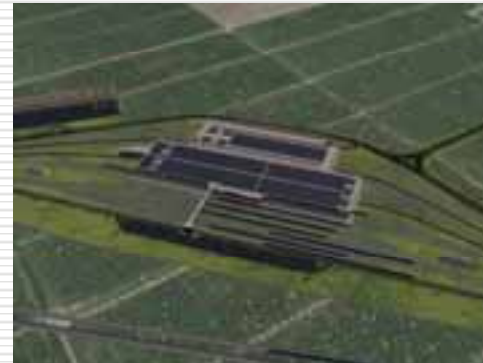
# Draft Deliverable

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# Heavy Maintenance Facility

- Kern County submitted 2 applications to the High-Speed Rail Authority for consideration
- Reviewed design guidelines
- Researched France facility
- Identified parcel(s) which meet spatial requirement
- Researched length of feet required for test track(s)
- Researched logistics on how multiple trains enter/exit for maintenance
- Modeled the interior, building(s) layout, service road entrance



# Upcoming Station Area Planning



*"FHWA would like to commend KCOG for its efforts in furthering a continuous, comprehensive and cooperative transportation planning process... Your efforts with public involvement and visualization techniques... The 3D visualization efforts are impressive."*

*Federal Highway Administration*

*June 18, 2010*



# Questions?

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