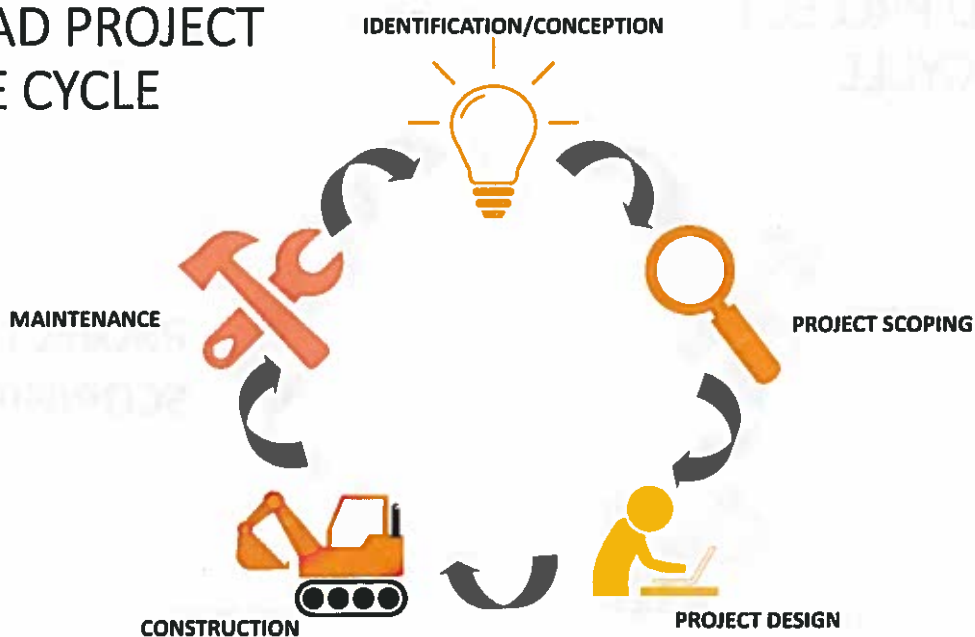


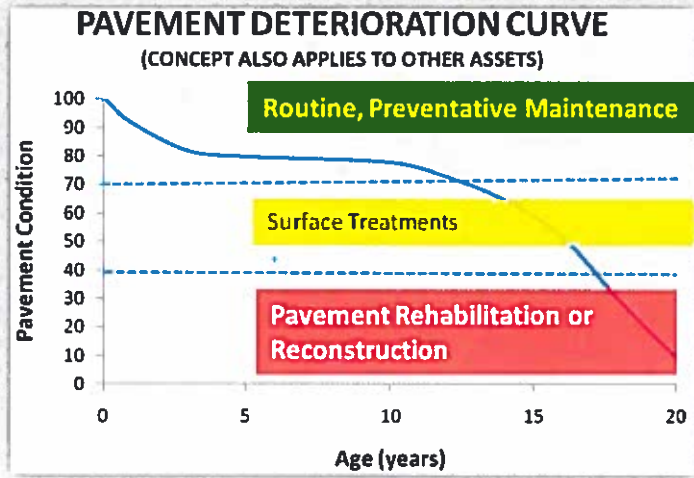
PRESENTATION TO THE HOUSE
TRANSPORTATION COMMITTEE
April 16, 2019



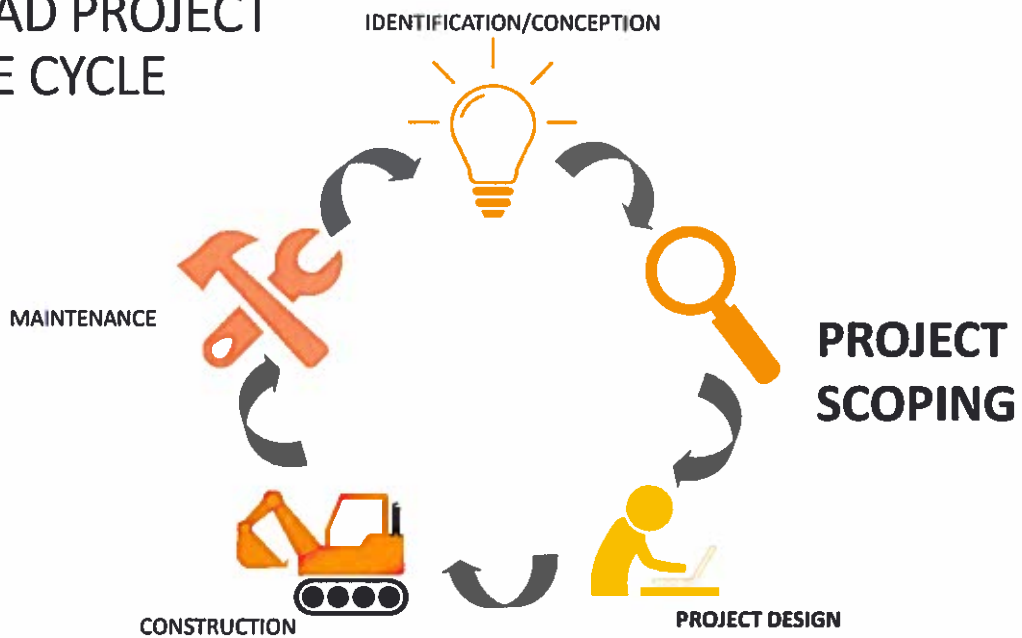
ROAD PROJECT
LIFE CYCLE



FACTORS CONSIDERED IN THE DESIGN OF A ROAD



ROAD PROJECT LIFE CYCLE



ROAD DESIGN FACTORS – CRITERIA



Design Standards

- Federal
- State
- Local



Funding Sources

- Budget Amount
- Timing Stipulations
- Grant Requirements

ROAD DESIGN FACTORS – SURROUNDINGS



Stakeholder Concerns



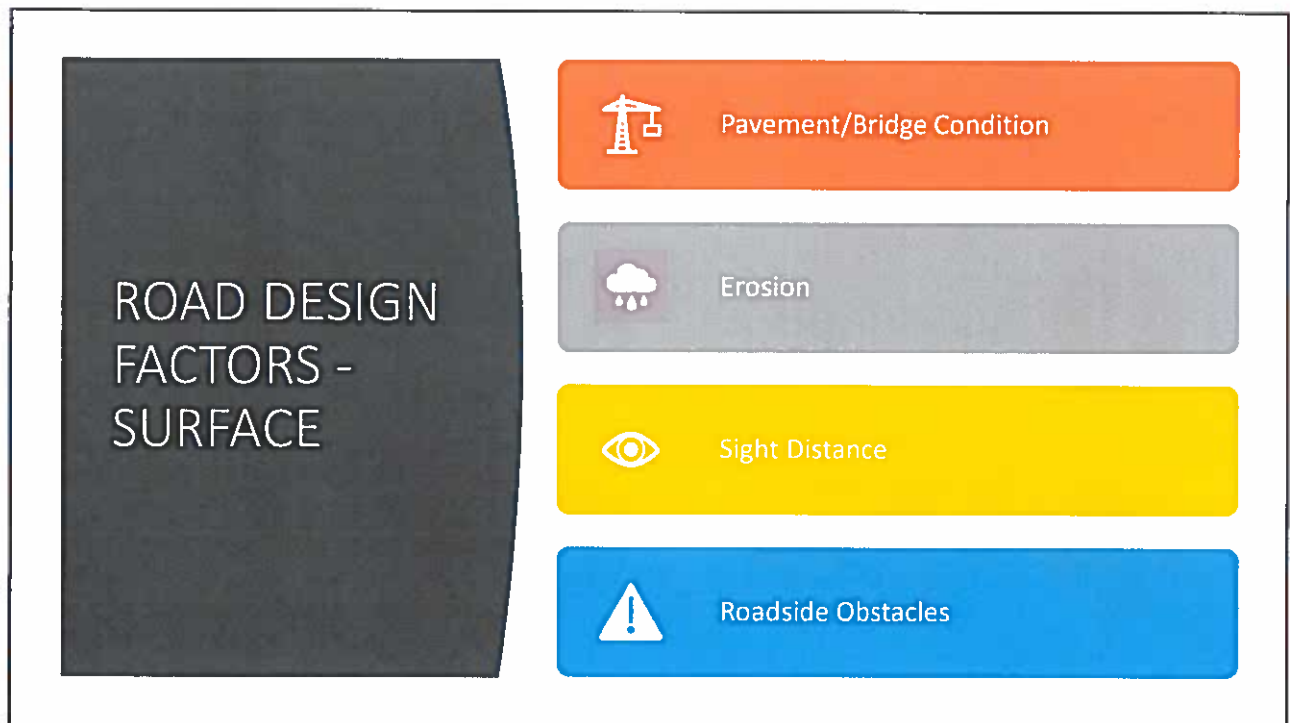
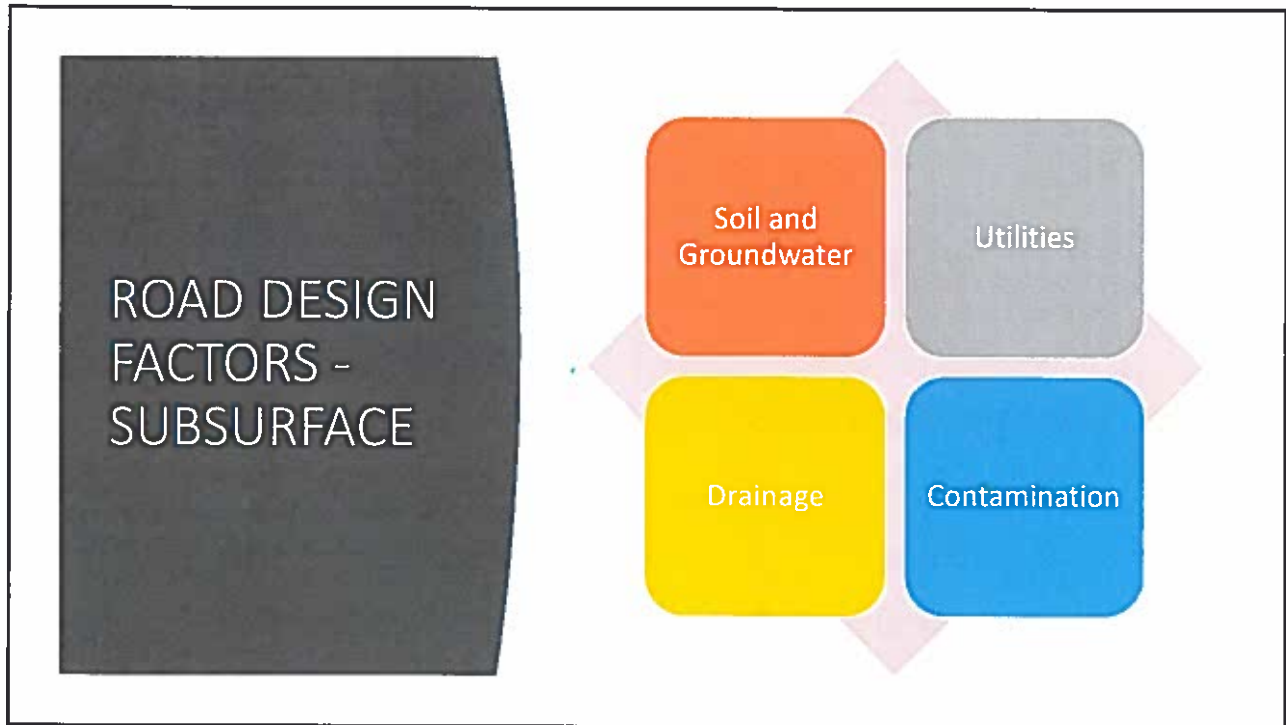
Coordination with Nearby Projects

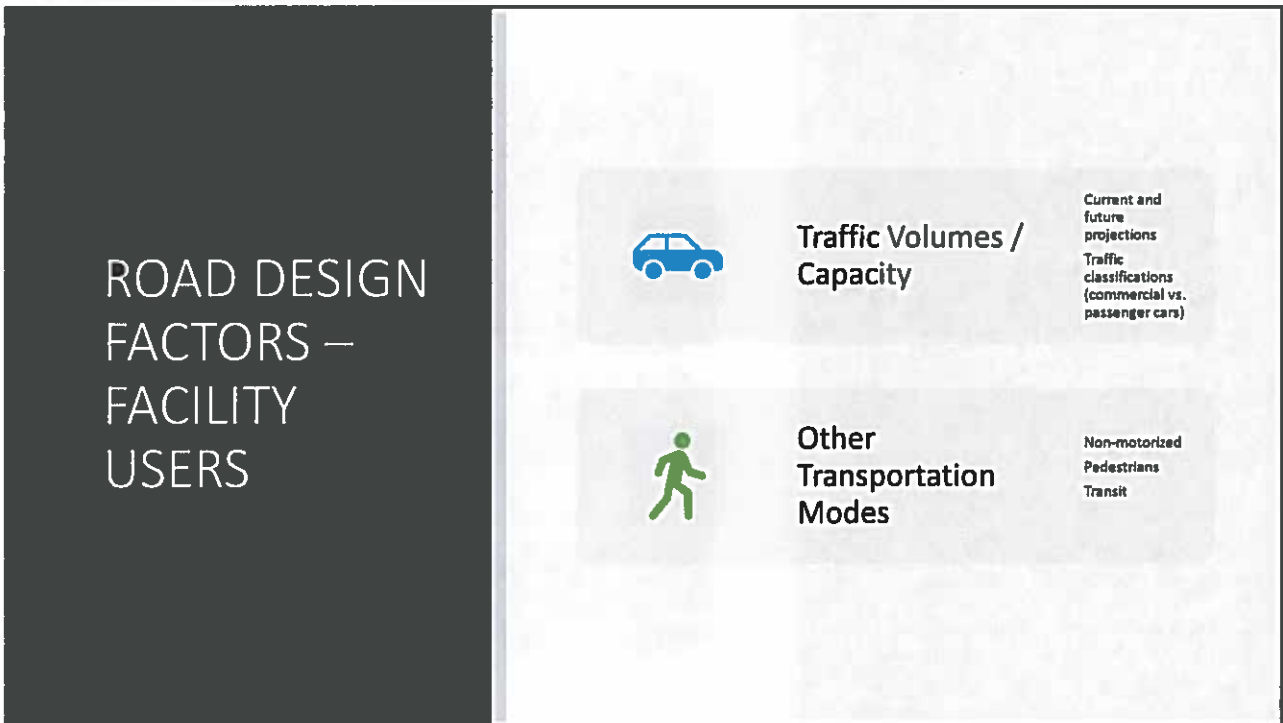


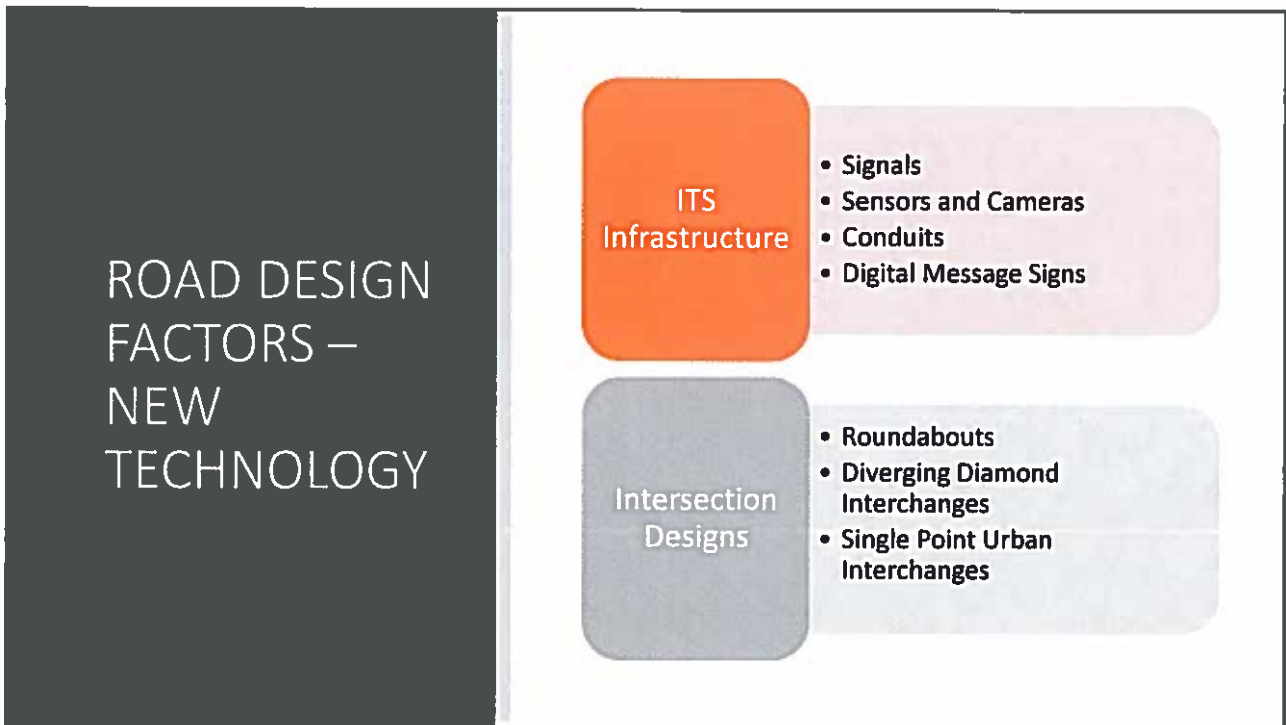
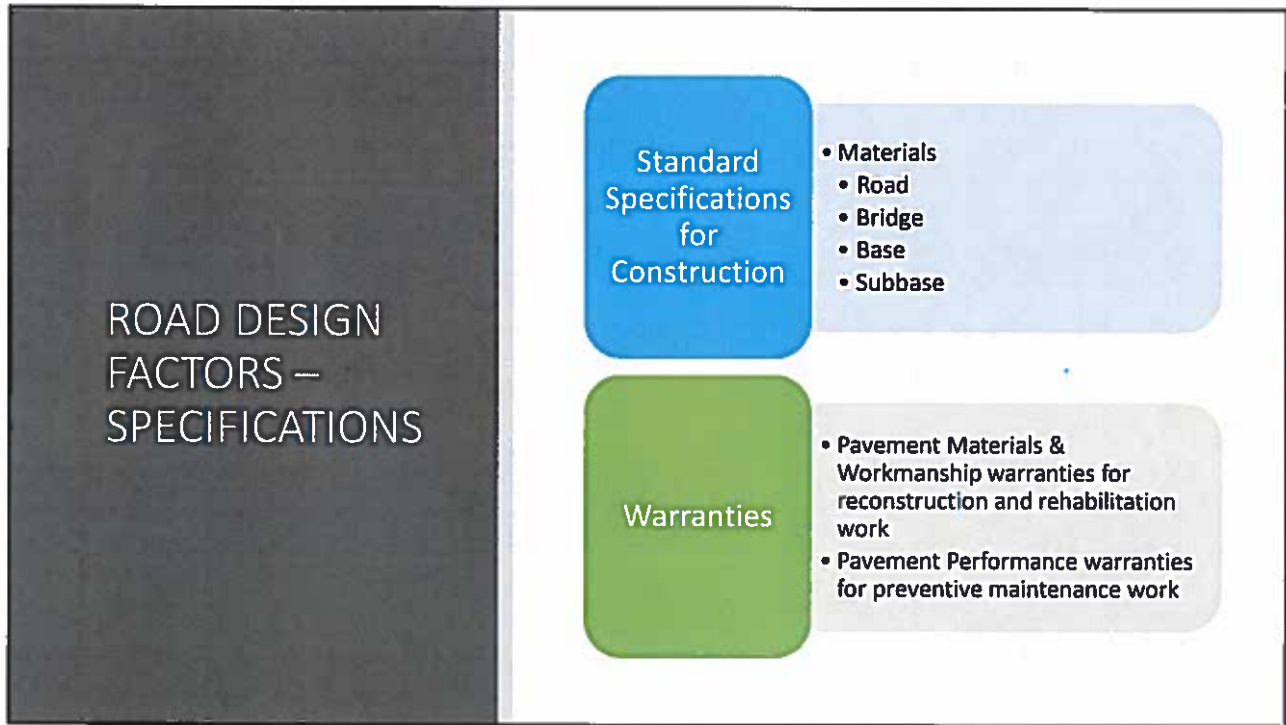
- ### Environmental Impacts
- Wetlands
 - Historical contamination concerns
 - endangered species
 - noise

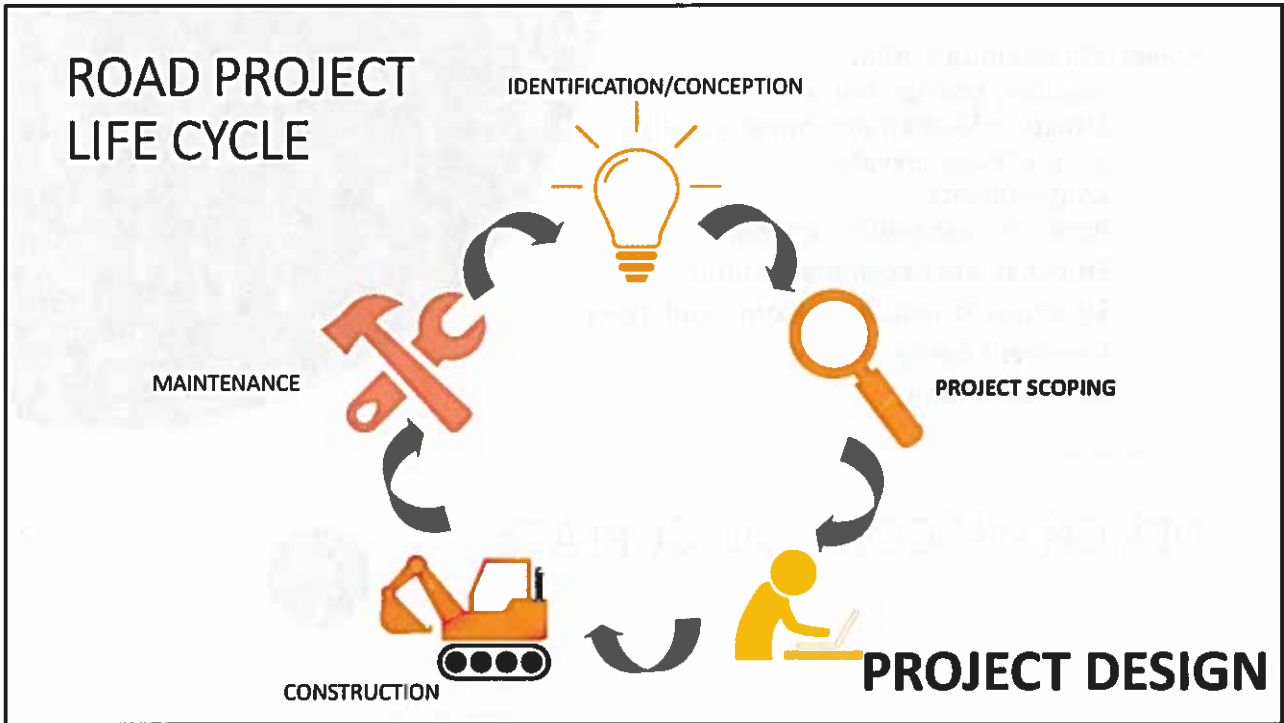


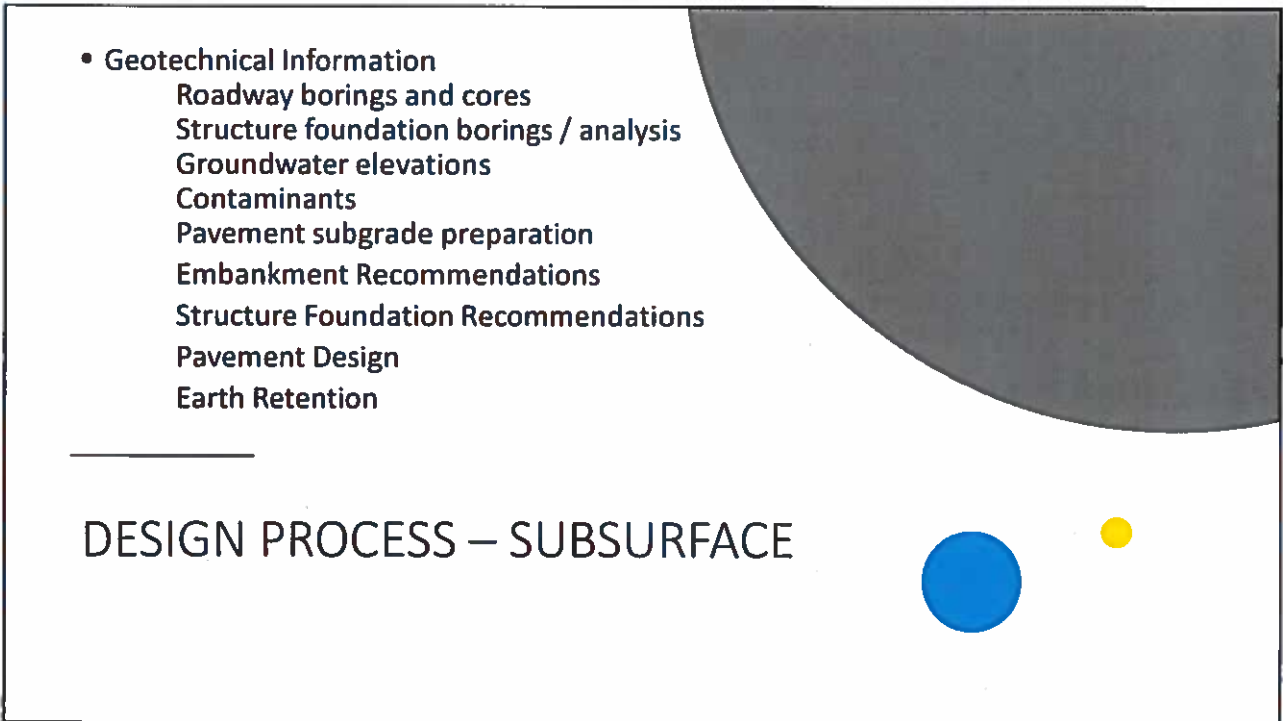
Right of Way Availability











DESIGN
PROCESS –
SIZE AND
LOCATION

Roadway Geometric Layout

- Number of Lanes
- Clear Zones
- Superelevation
- Drainage (enclosed vs open ditch)

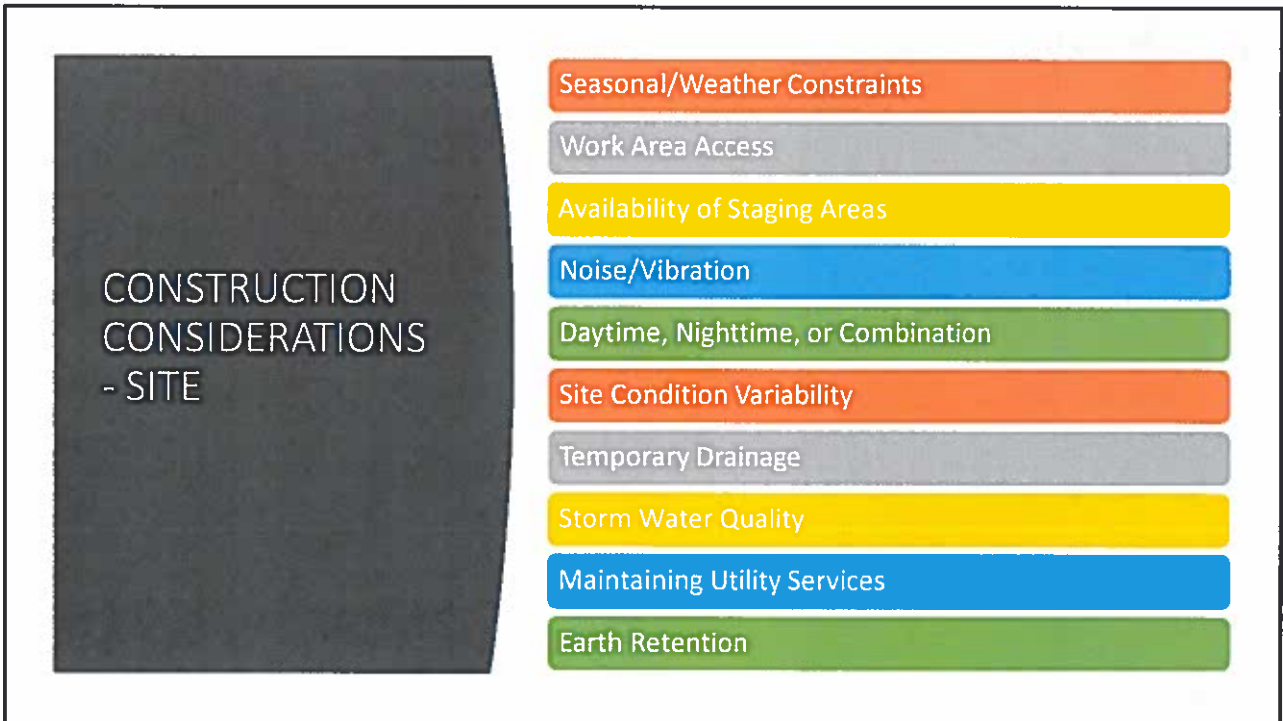
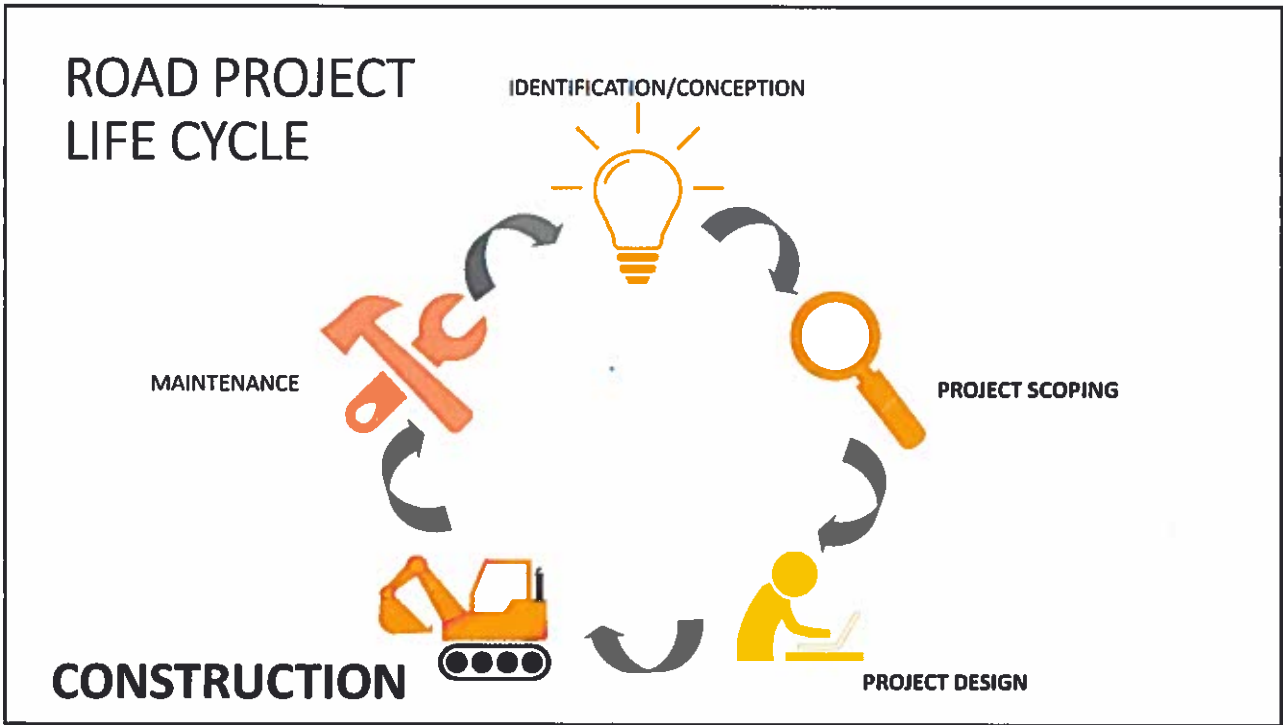
Profiles and Elevations

- Clearances
 - Bridges
 - Waterways
- Sight Distance

Bridge Studies

DESIGN
PROCESS –
CONTRACT
DOCUMENTS

Plans/Drawings	Specifications	Bidding
<ul style="list-style-type: none"> • Removals, Construction Profiles • Maintenance of Traffic • Traffic (signals, signs, pavement marking) • Structures • Landscaping and Restoration 	<ul style="list-style-type: none"> • Standard Specifications • Special Provisions (Staging and Site Specific) • Progress Schedule 	<ul style="list-style-type: none"> • Quantities • Advertisement • Contract Award



CONSTRUCTION CONSIDERATIONS – WORK ZONE

- Traffic Restrictions
- Safety – Work/Traveling Public
- Business/Residential/Pedestrian/Non-Motorized Access
- Traffic Shifts and Shoulder Use
- Local and Regional Events
- Accommodations for Signs, Signals, Markings, ITS, Lighting
- Vertical and Horizontal Clearances

CONSTRUCTION CONSIDERATIONS – IMPLEMENTATION



Construction Inspection



Testing/Materials
Acceptance/Certifications

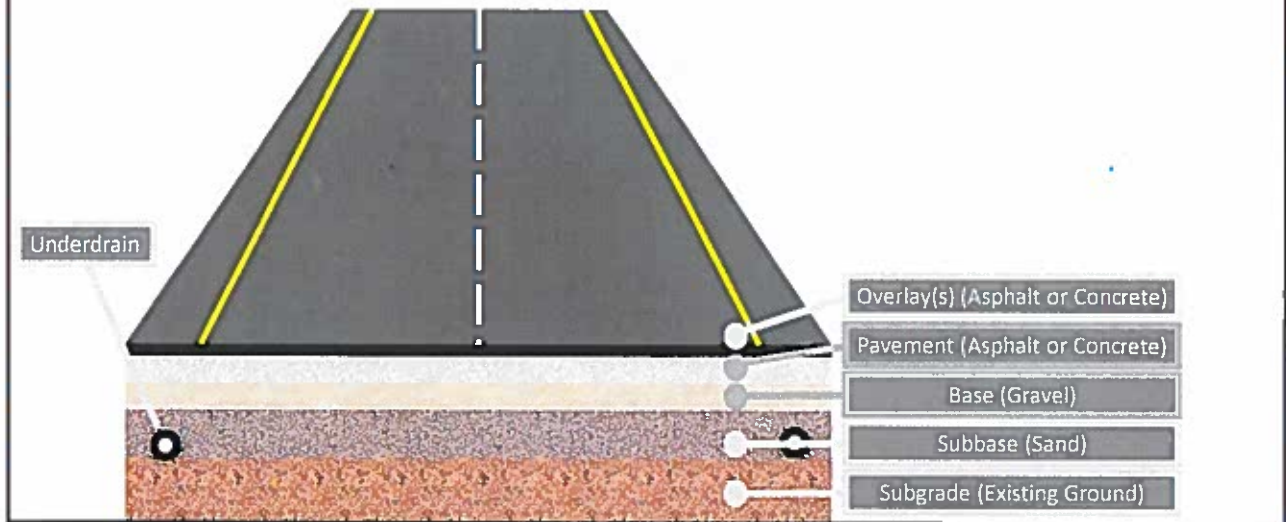


Ride Quality

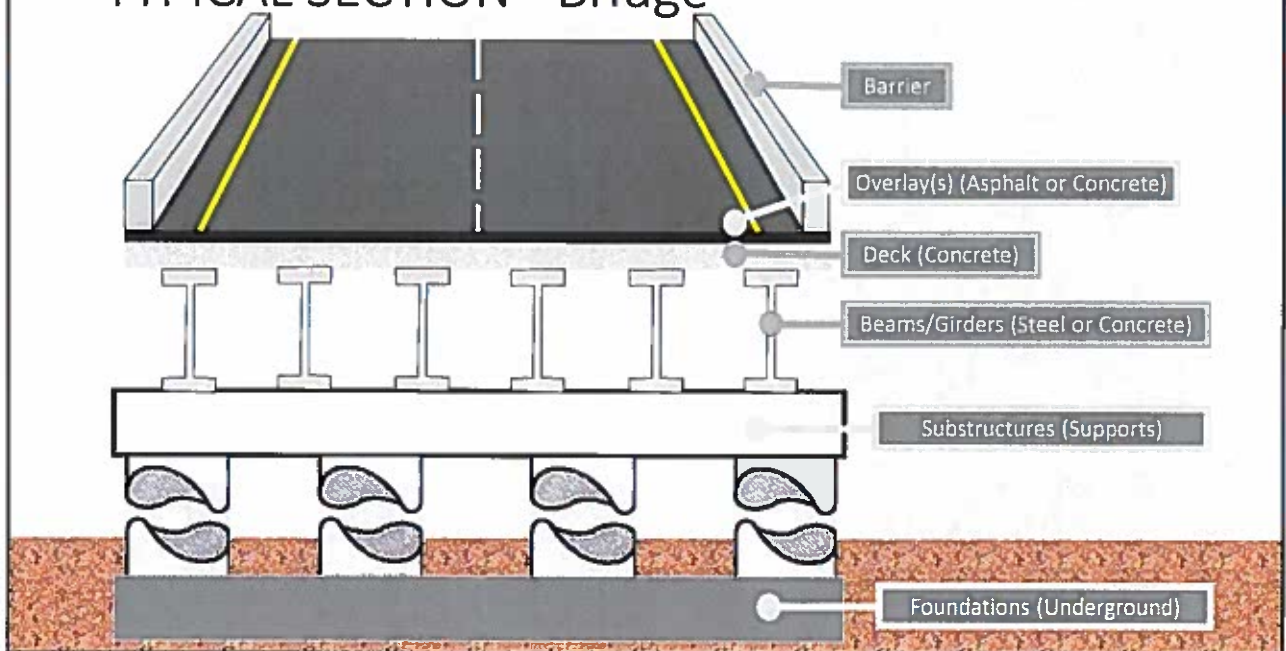


Construction Costs and Budget
Monitoring

TYPICAL SECTION - Road



TYPICAL SECTION - Bridge



- Mobile LiDAR surveys
- 3D modeling
- E-proposal
 - Single pdf
 - 3D model contractual deliverables
- Innovative interchange designs (Diverging Diamond, Single Point Urban Interchange)
- Maximizing through-put of current infrastructure (Flex-Route, ITS)
- Use of Drones

INNOVATIONS
TO IMPROVE
QUALITY,
EFFICIENCY
AND SAFETY

- Automated machine grading/paving (AMG)
- Echelon paving
- E-Construction
- Accelerated construction techniques (bridge slides, pre-fabricated bridge elements)

INNOVATIONS
TO IMPROVE
QUALITY,
EFFICIENCY
AND SAFETY

