

Deliverables	Design Team PS&E Development Process			Final PS&E Review Process	
	Permitting Submittal Review	Intermediate PS&E Submittal Review(s) (60%)	PS&E Presubmittal Review (90%)	Final PS&E Submittal Review(s) (100%)	Ad Copy
<b>ITS</b>					
<b>Electrical Calculations</b>	<ul style="list-style-type: none"> <li>Identify Design Criteria</li> <li>Identify deficiencies of the existing system and proposed mitigation and impacts to existing system</li> <li>Submit Calculations to Support ITS system , distribution, wattage, mounting height, spacing, service voltage</li> </ul>	<ul style="list-style-type: none"> <li>Calculations to support transformer sizing and transformer overcurrent protection</li> <li>Electrical load and line loss calculations to support breaker, wire and lighting contractor sizing where applicable for each electrical circuit.</li> <li>Service load calculations</li> <li>Load balancing required for 3-phase service.</li> <li>Loop placement calculations completed</li> </ul>	<ul style="list-style-type: none"> <li>Backup data and calculations submitted for review.</li> </ul>		
<b>Design Documentation</b>	<ul style="list-style-type: none"> <li>Speed study data indicating 90<sup>th</sup>, 85<sup>th</sup>, and 10<sup>th</sup> percentile speeds for all approaches.</li> <li>Warrant Analysis</li> <li>Peak hour turning movement counts (am, midday, pm)</li> <li>Phasing analysis to support protected or protected-permitted left turn phasing.</li> <li>Determine ITS needs (CCTV, HAR, Data Station, ramp meter, DMS, ESS)</li> </ul>	<ul style="list-style-type: none"> <li>Documentation of design decisions completed</li> </ul>	<ul style="list-style-type: none"> <li>Justify deviation from standard practices.</li> <li>Complete justification for use of non-standard equipment.</li> <li>Attach catalog cuts and data.</li> </ul>		
<b>Electrical Service</b>		<ul style="list-style-type: none"> <li>Utility Agreement and Utility Relocation Requests Submitted</li> <li>Electrical Service location identified, service agreement request processed.</li> </ul>	<ul style="list-style-type: none"> <li>Service Agreement completed.</li> <li>Utility coordination completed</li> </ul>		
<b>Coordination &amp; Constructability</b>		<ul style="list-style-type: none"> <li>Coordinate with State Bridge Office for attachment to structures.</li> <li>Overhead &amp; underground utility issues and conflicts addressed</li> <li>Identify order of work issues</li> <li>Identify existing electrical systems to be maintained during construction</li> <li>Identify non-standard pole locations</li> </ul>	<ul style="list-style-type: none"> <li>Final VMS and HAR sign locations established and endorsed by sign design,</li> <li>Address order of work issues.</li> <li>Applicable Maintenance and Operations Agreements processed.</li> <li>Coordinate ITS plans with other work on the project</li> <li>Check that responses from 30% and 60% reviews are addressed</li> </ul>		
<b>Temporary ITS Plans</b>		<ul style="list-style-type: none"> <li>Identify temporary ITS needs and complete preliminary layout.</li> </ul>	<ul style="list-style-type: none"> <li>Complete temporary ITS plans.</li> </ul>		
<b>ITS Plans</b>	<ul style="list-style-type: none"> <li>Base ITS Plans showing channelization information</li> <li>Verify as-builts with site investigation</li> </ul>	<ul style="list-style-type: none"> <li>Preliminary CCTV pole, VMS, HAR, ramp meter, ramp meter warning signs, CCTV data station, environmental sensor station, vehicle detection locations, established.</li> <li>Controller, service, conduit and junction box locations shown on plans.</li> <li>Identify method for routing conduit across roadways and structures.</li> </ul>	<ul style="list-style-type: none"> <li>Final CCTV pole, VMS, HAR, ramp meter, ramp meter warning, signs, CCTV data station, environmental sensor station, and vehicle detection locations, established.</li> <li>Communication cable and interface system finalized.</li> <li>Wire notes, wire schedule and construction notes completed.</li> <li>Breaker schedule completed.</li> <li>Complete transformer and panel schedules</li> <li>Complete distribution diagram</li> <li>Include power for signing, and ITS in plans.</li> <li>Conduit fill and junction box capacity calculations</li> <li>ITS notes completed.</li> </ul>		
<b>Pole Schedules and Structural Design</b>		<ul style="list-style-type: none"> <li>Coordinate with State Bridge Office for attachment to structures.</li> <li>ITS locations identified</li> <li>Submit details for mounting conduit, boxes and cabinets to Structures</li> <li>Submit special design foundation to Structures</li> <li>Request soil data and prepare cross-sections for each pole location.</li> <li>Calculate A1 and A2 heights for proposed and future phasing to verify clearances.</li> </ul>	<ul style="list-style-type: none"> <li>ITS foundation designs completed.</li> <li>Complete details to mount conduit, boxes and cabinets to structures</li> <li>Wind load calculations for mast arms completed</li> </ul>		

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Specifications			<ul style="list-style-type: none"> <li>• Obtain approval for use of proprietary items, if applicable.</li> <li>• Complete Regional and General Special Provision run list (include salvaged materials, use of State furnished materials &amp; other commitments by the State.)</li> <li>• Complete project specific specials.</li> <li>• Include state standard details to be used.</li> <li>• Complete provisions for maintaining existing electrical systems</li> </ul>	<ul style="list-style-type: none"> <li>• Obtain approval of special provisions.</li> </ul>	
Estimate			<ul style="list-style-type: none"> <li>• Provide itemized construction cost estimate for each lump sum bid item.</li> </ul>		