

# PROCESS IMPROVEMENT PROJECT

## North Region Milestone 224 Requirements

Identifying Project Right of Way & Utility Conflict Maps to Right of Way



Final Report  
May 2018



Prepared by



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A hybrid Lean Six Sigma (L6S) and Value Analysis (VA) process improvement study, sponsored by Caltrans North Region (NR) and facilitated by Value Management Strategies, Inc. (VMS), was conducted for Caltrans' Milestone 224 (M224) Maps to Right of Way Engineering (RWE), Identifying Project Right of Way (ROW) and Utility Conflict Maps to Right of Way process. The study was conducted in two workshops held in Marysville, CA, March 20-21 and April 10-12, 2018. This *Process Improvement Study Summary* provides an overview of the NR project, study methods, and results.

## BACKGROUND

Caltrans North Region Division of Project Development's (NRPD's) current policy, dated 8/22/13, on delivering maps to RWE needs to be revised to assure delivery of all requirements, a higher level of quality, more efficient process, and streamlined project delivery for all stakeholders. The Department needs to find ways to be more efficient and meet legislative goals of saving at least \$100 million annually. Refining the M224 Maps to RWE process is just one of many possible solutions to improve the delivery efficiency and hence reduce support costs to a project.

Typical issues regarding M224 include: late or incomplete submittals, technical deficiencies, unclear requirements, not all requirements are included in the submittal as expected, not all requirements are available to provide a complete submittal, changes take place later in the process from internal and external influences creating unnecessary rework, etc.

The current policy on delivering ROW requirements was set in place to improve on timely and quality deliverables. Development of and buy-in to a more accurate and adhered to policy is needed.

## STUDY OBJECTIVES

This process improvement study aimed to improve collaboration and project delivery by reducing delivery time and cost, and better communicating project risk by enhancing the ROW and utility identification process in North Region. Study objectives included collaboratively developing a clear ROW mapping and utility identification process for North Region, including an agreed-upon process map, list of deliverables, and list of action items needed to implement the new process. A multi-functional team comprised of representatives from the Divisions of Project Development, Right of Way, Surveys/RWE, Division of Engineering Services (DES) Structures Design, Program/Project Management, Construction, and Environmental was convened in March and April 2018 to meet the study objectives identified above.

## STUDY METHODS

Several techniques and activities were used to develop a better understanding of North Region's methods and challenges to achieving M224 and ensuring utility needs are included in ROW. The first of two workshops was held in March 2018 to analyze the 'current state' of the North Region Maps to RWE process. The team developed a preliminary process map, reflecting the current way M224 is achieved, and analyzed its strengths and weaknesses. The germane issues identified at that time were:

- Changes to project scope and schedule resulting in rework
- Additional or late pot holing and conflict maps not being complete early enough to provide pertinent information
- Inconsistent coordination with Surveys, RWE, Right of Way, GIS, Design, and Project Managers
- Multiple approaches to managing the Pre-M224 Meeting
- Variability with how Project Managers define M224 being met

The team then developed a list of preliminary recommendations to resolve these issues. The second workshop, held in April 2018, included the development of a single comprehensive process map that integrated 16 consolidated recommendations identified by the team and development of an initial implementation action plan.

## **STUDY RESULTS**

As noted above, the results of this process improvement workshop include a refined, multi-function process map depicting a streamlined method to reach M224 and deliver maps to RWE. Detailed recommendations and their associated implementation activities were also developed. Below is a summary of the recommendations by phase.

An implementation meeting was held with project sponsors on May 15, 2018, which resulted in acceptance of all recommendations for implementation.

### **K Phase**

Recommended refinements to the K Phase include fully implementing an updated version of the District 2 (D2) piloted Project Initiation Document (PID) process throughout North Region. Doing so aims to convene the Project Development Team (PDT) early, finalize the scope at 30% PID, identify functional resource needs and risks at 60% PID, and maintain the same team members throughout the entire project for continuity. Other changes include creating an M224 delivery plan and soliciting facility maps in the K Phase to create the Utility Master File.

Combined, the benefits of implementing these recommendations will improve collaboration, eliminate conflicts and most rework throughout subsequent phases, reduce costs, better communicate risks, and more accurately define scope, schedule, resources, and cost, resulting in fewer project change requests, PDT rework, and allocation extensions.

### **0 & 9 Phases**

The 0 and 9 Phases process refinements include requesting that utility companies start developing relocation plans prior to PA&ED, opening 0 Phase immediately after California Transportation Commission (CTC) approval when possible (and 9 Phase early when appropriate), working earlier in the 0 Phase with select functional groups, closely managing the M224 delivery plan process throughout PA&ED, refining the coordination process with utility companies, and funding utility company efforts to provide relocation plans and utility easement requirements. The implementation of these recommendations will reduce risks of revisions and rework associated with scope, schedule,

and budget, increase time for the environmental process and acquisition of ROW, and ultimately allow M224 to be met prior to PA&ED. Note, a critical element of the team’s proposal is that the North Region consider M224 met when ROW requirements are received by RWE, concurrence from functional units is received, and all internal and external requirements are identified (not when the Pre-M224 Memo is signed or when M224 is placed into schedule).

### 1 & 2 Phases

Suggested revisions to the 1 and 2 Phases include opening 2 Phase earlier during 0 Phase, using M265 to mark when the last ROW map is received, and beginning delivery of appraisal maps in a phased basis. The implementation of these recommendations will provide milestones for measurement, allow for proper charging and early appraisals with ROW starting work sooner, and help with future estimating.

### 3 & 4 Phases

Refining the project close-out process is recommended for the 3 and 4 Phase. Specifically, the team recommends developing quality georeferenced CAD as-builts and survey data, populating GIS with authoritative data (require as part of 270 or 295), and holding Encroachment Permits and Traffic Electric to the same standards. Further, adequate resources should be assigned in the PID phase to complete these activities. These refinements will provide better data in the K Phase on the next project in the same vicinity.

### Miscellaneous

Other recommendations not tied directly to any phase include establishing District-specific Utility Engineering Workgroups (UEWs) or identifying Design Engineers as utility subject matter experts (SMEs), ensuring knowledge transfer by utilizing the uniform filing system and ensuring handoffs are happening when staff turnover, and using the reporting code section of Staff Central to collect data to develop workload standards and measure impacts of proposed changes. Reduced redundancy, rework, and travel expenses; and increased coordination, collaboration, and efficiency with resources are some of the advantages for these recommendations.

The new process map and associated recommendations, along with preliminary action plans for each, can be found in the *Study Results* section of this report.

## TEAM MEMBERS

### L6S/VA Study Team

Name	Organization	Title
Dan Adams	Caltrans – DES	DES Structures Design
Jalwat Ahmad	Caltrans – Design	Design Sr.
Winder Bajwa	Caltrans – D3 PPM	Project Manager
Fermin Barriga	Caltrans – UEW	Utility Engineer

<b>Name</b>	<b>Organization</b>	<b>Title</b>
Mike Bartlett	Caltrans – D3 Environmental	Environmental Sr.
Douglas Bortz	Caltrans – D3 Right of Way	Sr. Right of Way Agent
Clint Burkenpas	Caltrans – D2 PPM	Project Manager
Ben Hargrove	Caltrans – NR Construction	Sr. TE (OOC)
Matt Herbert	Caltrans – D3	Senior Transportation Surveyor
Anand Maganti	Caltrans – Design	Design Sr.
Tauni Melvin	Caltrans – Right of Way	Right of Way Ut/RR Sr.
Marla Miles	Caltrans – Right of Way	Right of Way Ut Sr.
Tiaira Moering	Caltrans – HQ Right of Way	HQ Right of Way Ut/RR
Aaron Ott	Caltrans – D3	NRGIS Sr.
Jacob Pace	Caltrans – D3	Right of Way Engineer, Sr.
Dan Rechs	Caltrans – D3	OE Range D
Ashley Carson	Value Management Strategies, Inc.	Facilitator

### **Key Project Contacts**

<b>Name</b>	<b>Organization</b>	<b>Title</b>
Amarjeet Benipal	Caltrans – D3	District Director
John Ballantyne	Caltrans	Chief, North Region Right of Way
Karl Dreher	Caltrans	Chief, North Region Project Development
Barbara Reenan	Caltrans – D3	Engineering Manager
Kevin Espinoza	Caltrans	Engineering Services Branch Chief, North Region Project Development
Carlos Portillo	Caltrans – NR Environmental	North Region Division Chief
Ginger Congi	Caltrans – NR	Sup. Transportation Surveyor
Tom Brannon	Caltrans – D3 PPM	Sup. TE
Perry Mayer	Caltrans – HQ Construction	Senior TE
Brian Selving	Caltrans	Surveys/RWE

RECOMMENDATIONS & IMPLEMENTATION PLANS

Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
<b>K PHASE</b>							
1) Fully implement a refined D2 Project Initiation Document (PID) process throughout North Region	<ul style="list-style-type: none"> <li>Hold multi-functional effort to scope the project at PID and gain Executive Management approval</li> <li>Refinement: Research and compile existing historic project-related data (survey, ROW, utilities, etc.) between 0-30% and develop preliminary alignments at 30%</li> <li>Hold full Project Development Team (PDT) Meeting to finalize scope at 30% meeting, hold 60% PDT Meeting with proposed schedule and risks</li> <li>Determine at 60% of PID the resource level to use per project</li> <li>At 60% of PID, define all functional unit deliverables, and their schedule(s)</li> <li>At 90%, circulate Draft PID (formalize throughout North Region)</li> <li>Work to maintain PDT team members throughout entire project (ensure PPM, Right of Way, RWE, Surveys, Design, Traffic (Electrical, Operations, Safety, etc.), Hydraulics, Environmental, DES, Construction, and Maintenance are included and resourced)</li> </ul>	<ul style="list-style-type: none"> <li>Eliminates most rework throughout all subsequent phases</li> <li>Well defined scope, schedule, resources, and cost, resulting in fewer project change requests</li> <li>Increased team continuity ensures commitment to scope, cost, schedule, etc.</li> </ul>	<ul style="list-style-type: none"> <li>Requires early involvement of full PDT, which may result in resistance</li> <li>Will be less effective if inconsistently applied</li> <li>May require additional resources in K Phase</li> </ul>	<ul style="list-style-type: none"> <li>Refine D2 programs and tools to be inclusive of D1 and D3</li> <li>Training and process roll out throughout other districts</li> <li><b>Ensure management agrees with scope at 30%</b></li> </ul>	<p><b>Decision Authority:</b> District Management</p> <p><b>Lead:</b> Planning</p> <p><b>Involved:</b> All other functional units</p>	<ul style="list-style-type: none"> <li>Start July 2018</li> </ul>	<ul style="list-style-type: none"> <li>Quantity of project change requests for all phases</li> <li>Survey to PDT members about process efficacy and satisfaction</li> </ul>

Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
2) Assess and document project-specific needs, steps, and deliverables necessary to achieve M224 for each project with PDT in K Phase	<ul style="list-style-type: none"> <li>• During PID development, assess and document project-specific needs, steps, and deliverables necessary to achieve M224 with PDT (finalize at 60% PID)</li> <li>• This “M224 Plan” would include all project-specific documents and deliverables related to every functional area, including number and type of parcels, utilities, railroad, and other physical information regarding utilities, such as field inspection as-builts, permit review, etc.</li> <li>• Plan would also identify check points at which to update the plan</li> <li>• Sets clearer team expectations which improves accountability with all functional units for developing quality products by managing expectations in the M224 planning meetings, ensuring early communication and education, and ultimately planning to be successful</li> <li>• Identify M224 deliverable timelines prior to 0 Phase, review and update M224 Plan throughout design</li> <li>• Ensure consistency throughout North Region</li> </ul>	<ul style="list-style-type: none"> <li>• Improved delivery</li> <li>• Reduced cost and rework</li> <li>• Sets clear expectations</li> </ul>	<ul style="list-style-type: none"> <li>• None apparent</li> </ul>	<ul style="list-style-type: none"> <li>• Refresher on M224 process needs to be developed and circulated to make everyone aware of the purpose of M224</li> <li>• Review, revise, and reissue M224 Memo</li> </ul>	<p><b>Decision Authority:</b> Region Management</p> <p><b>Lead:</b> Region Management</p> <p><b>Involved:</b> Division Chiefs</p>	<ul style="list-style-type: none"> <li>• Draft July 31, 2018</li> <li>• Finalize September 15, 2018</li> </ul>	<ul style="list-style-type: none"> <li>• Number of Days between M225 and M265</li> <li>• Quantity of projects using M265</li> <li>• Survey to PDT members about process efficacy and satisfaction</li> </ul>
3) Have Planning or UEW request facility maps from Right of Way in K Phase	<ul style="list-style-type: none"> <li>• Right of Way will request Facility Maps from Utility Companies at 30% PID with the intent to receive maps before 0 Phase</li> <li>• Upon receipt, UEW or Design SMEs should create Utility Master File upon receipt of facility maps</li> </ul>	<ul style="list-style-type: none"> <li>• Identify potential conflicts early</li> <li>• More accurate RWE data sheets</li> <li>• Design to avoid utilities</li> <li>• More accurate pot holing</li> </ul>	<ul style="list-style-type: none"> <li>• Adds cost to K Phase (transfer from 0 Phase) – perceived disadvantage</li> </ul>	<ul style="list-style-type: none"> <li>• Incorporate into revised PID process roll out</li> </ul>	<p><b>Decision Authority:</b> District Planning Deputies</p> <p><b>Lead:</b> Planning or UEW</p> <p><b>Involved:</b> Right of Way</p>	<ul style="list-style-type: none"> <li>• Start July 2018</li> </ul>	<ul style="list-style-type: none"> <li>• Quantity of projects with facility maps before 0 Phase</li> </ul>

Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
<b>0 &amp; 9 PHASES</b>							
4) Make standard practice the use of Early Conflict Map Memos, signed by Deputies, requesting Utility Companies start developing relocation plans prior to PA&ED	<ul style="list-style-type: none"> <li>Per Right of Way Manual Chapter 13.02.02.02, obtain Memo when the design is set, preferred alternative has been selected*, Environmental has confirmed there are no issues in meeting PA&amp;ED, funding is available for potential wasted work costs</li> <li>*If there is only one build alternative, then this can happen at 60% PA&amp;ED; if there are multiple build alternatives, then it would occur at 90% PA&amp;ED.</li> </ul>	<ul style="list-style-type: none"> <li>Easement needs and relocation plans are provided earlier</li> <li>Mitigation for risk of having too short of a schedule for utility relocations</li> <li>Cannot achieve M224 in the 0 Phase without this</li> <li>Facilitates utility relocation prior to construction</li> </ul>	<ul style="list-style-type: none"> <li>100% state funded</li> <li>Potential to have requested information from Utility Company too early, resulting in wasted work charges and/or potential to damage CT's reputation with Utilities</li> </ul>	<ul style="list-style-type: none"> <li>Develop Deputy Directive to standardize practice throughout North Region</li> </ul>	<p><b>Decision Authority:</b> Region Right of Way</p> <p><b>Lead:</b> Region Right of Way</p> <p><b>Involved:</b> Design, Environmental, Program/Project Management</p>	<ul style="list-style-type: none"> <li>Draft July 31, 2018</li> <li>Finalize September 15, 2018</li> </ul>	<ul style="list-style-type: none"> <li>Quantity of projects with utility easement requirements delivered prior to PA&amp;ED</li> </ul>
5) Request opening of 0 and 9 Phases (if needed) immediately after CTC approval	<ul style="list-style-type: none"> <li>Make standard practice</li> <li>Start preliminary engineering immediately (Surveys, RWE, ESRs, Utilities, etc.)</li> <li>Open 9 Phase when appropriate to begin pot holing, title reports, railroad service contracts, etc.</li> <li>Program 9 Phase capital for long-lead projects</li> </ul>	<ul style="list-style-type: none"> <li>Increases time for environmental process</li> <li>Avoids funding lags or work delays</li> <li>Allows early surveys and other preliminary design work</li> </ul>	<ul style="list-style-type: none"> <li>May not allow sufficient time to match people on board (POB) with workload</li> <li>May not be consistent with CTC direction</li> </ul>	<ul style="list-style-type: none"> <li>Hold discussions with CTC and HQ Programming</li> </ul>	<p><b>Decision Authority:</b> HQ Programming</p> <p><b>Lead:</b> District Single Focal Points</p> <p><b>Involved:</b> PDT</p>	<ul style="list-style-type: none"> <li>June 2019</li> </ul>	<ul style="list-style-type: none"> <li>Quantity of projects meeting M224 as scheduled and meeting preliminary design/functional deliverables by 10% PA&amp;ED</li> </ul>

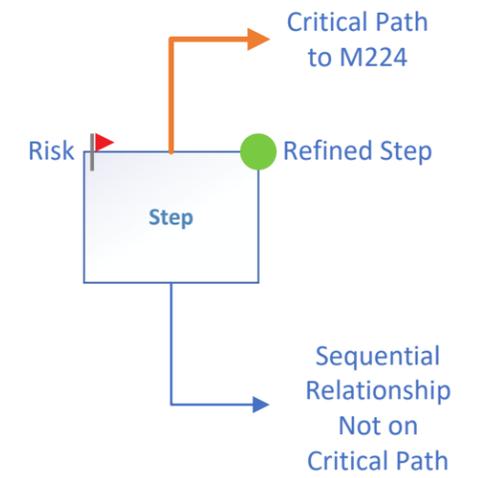
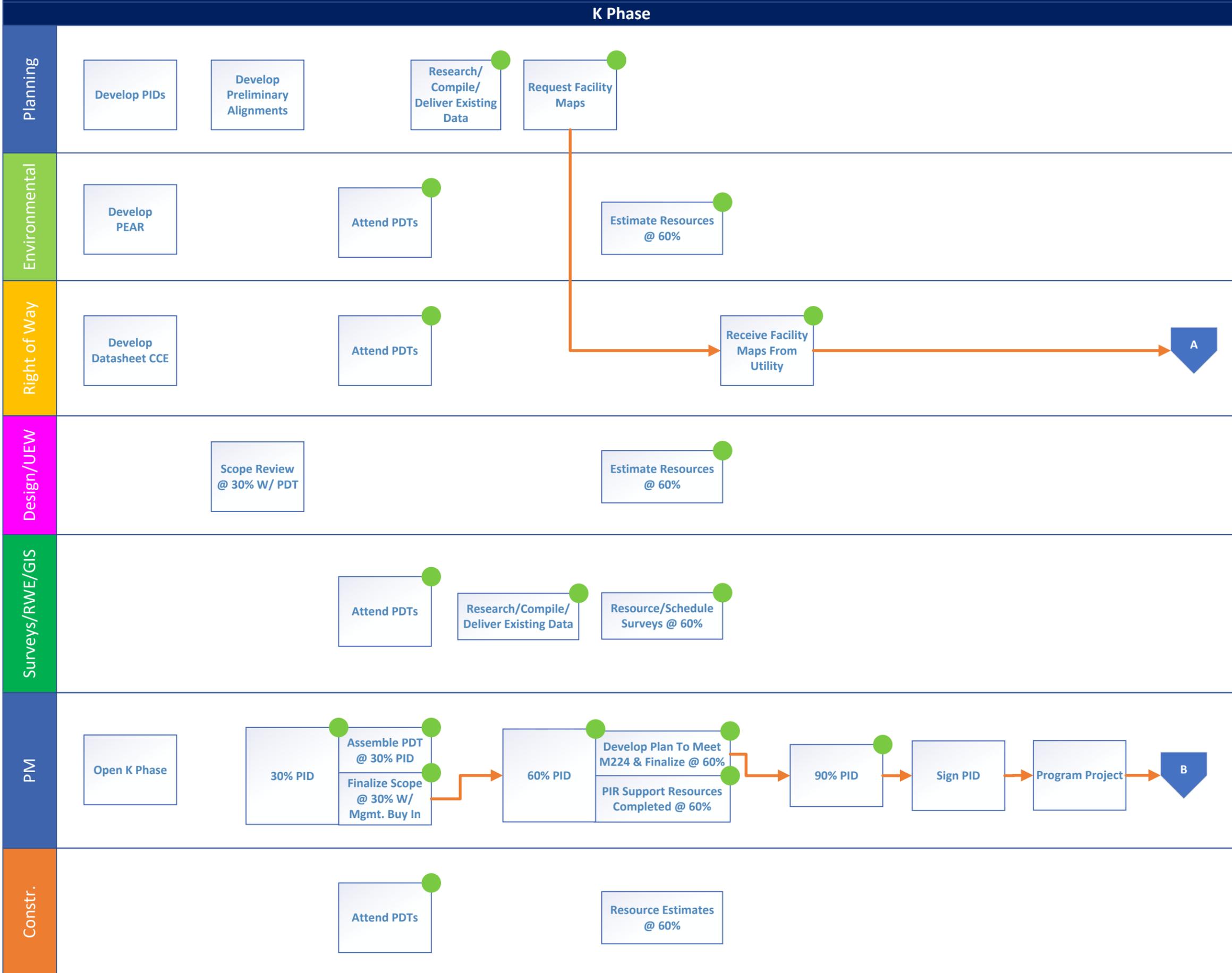
Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
6) Work with select functional groups to start work earlier in O Phase to achieve M224 before PA&ED	<ul style="list-style-type: none"> <li>• Move Task 185 workload for anticipated preferred alternative, deliverables, and resources into Task 160, including the following functions: Design, Hydraulics, Traffic Electrical, Structures, Utilities, Landscape, Materials/Geotechnical, Maintenance, Construction, etc.</li> <li>• Increase PA&amp;ED resources and time accordingly</li> <li>• Ensure Traffic Electrical provides defined location of foundations on plans (no more schematics)</li> <li>• Hold focus meeting with Surveys to develop early land survey plan on each project (at assignment or just thereafter of design team, resourced at K Phase)</li> <li>• Identify environmental constraints early in PA&amp;ED and receive preliminary layout/vertical profile cross-sections from Design</li> <li>• Begin ordering title reports early</li> <li>• Design and functional units to develop preferred alternative design and finalize right of way and utility requirements</li> <li>• Design/UEW to create pothole plans and create conflict maps for utility companies and submit to right of way early</li> <li>• Revitalize constructability review process at 30% PA&amp;ED with focus on utility conflicts and relocations</li> </ul>	<ul style="list-style-type: none"> <li>• Reduces risk of rework by allowing for more complete design early</li> <li>• Decreases risk of revisions after M224</li> <li>• Increases likelihood of meeting schedule</li> <li>• Enables CT to develop higher quality products, including those provided to utility companies</li> <li>• Allows more time to address issues if they arise</li> <li>• Should lead to fewer contract change orders during construction</li> <li>• Reduces risks associated with scope, schedule, and budget</li> </ul>	<ul style="list-style-type: none"> <li>• Resources may be constrained if scope does change</li> <li>• Project delivery may have constrained schedules in periods of heavy workload</li> <li>• <b>Current workload may delay implementation</b></li> </ul>	<ul style="list-style-type: none"> <li>• Identify needed functional unit deliverables and deliverable schedule at 60% PID meeting</li> <li>• Modify workplans to reflect implementation</li> <li>• Requires identification of and shift of resources and schedules from Task 185 to Task 160</li> <li>• Will require buy-in from all functional units involved</li> <li>• May require additional AE Contracts</li> <li>• Ensure Seniors revise workload planning methods accordingly</li> </ul>	<p><b>Decision Authority:</b> District Management</p> <p><b>Lead:</b> North Region Project Development</p> <p><b>Involved:</b> All project delivery functions</p>	<ul style="list-style-type: none"> <li>• Draft July 31, 2018</li> <li>• Finalize September 15, 2018</li> </ul>	<ul style="list-style-type: none"> <li>• Quantity of projects meeting M224 as scheduled and meeting preliminary design/functional deliverables by 10% PA&amp;ED</li> </ul>

Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
7) Refine coordination process with utility companies	<ul style="list-style-type: none"> <li>• Institute quarterly partnering sessions with utility companies</li> <li>• Hold early meetings with utility companies on large projects to lay the ground work for success</li> <li>• Standardize coordination method with utility companies similar to D3 Utility Coordination Branch (after submission of conflict maps, call within 30 days, within 45 days hold meeting to discuss project and schedule, etc.)</li> <li>• When conflict maps are delivered to utility companies, provide more detail about conflicts and suggested potential resolution</li> <li>• Update environmental constraint mapping at the time utility conflict maps are created and provide to utility companies with the information</li> <li>• Hold preliminary meeting with utility companies so they can understand the scope (kick off)</li> <li>• Request identification of utility easement needs separately from relocation plans, and do so much earlier in the process</li> </ul>	<ul style="list-style-type: none"> <li>• Early receipt of final conflict maps allows for earlier request and identification of easements needs by utility companies; this allows early achievement of M224</li> <li>• Should improve relationship with utility companies</li> <li>• Eliminates likelihood of changes to environmental document</li> <li>• Could result in reduction of resources</li> </ul>	<ul style="list-style-type: none"> <li>• Utility companies may not be willing to adopt CT's process or schedule</li> </ul>	<ul style="list-style-type: none"> <li>• Share D3 Utility Coordination Branch flowchart with D1 and D2 for discussion at staff meetings</li> <li>• Seek input from utility companies on process changes, partnering methods, etc.</li> </ul>	<p><b>Decision Authority:</b> Right of Way Division Chief</p> <p><b>Lead:</b> Right of Way Utilities</p> <p><b>Involved:</b> Right of Way Coordinators and Utility Companies</p>	<ul style="list-style-type: none"> <li>• Start July 2018</li> </ul>	<ul style="list-style-type: none"> <li>• Quantity of projects meeting M224 as scheduled</li> <li>• Annual survey to utility companies on process change</li> </ul>

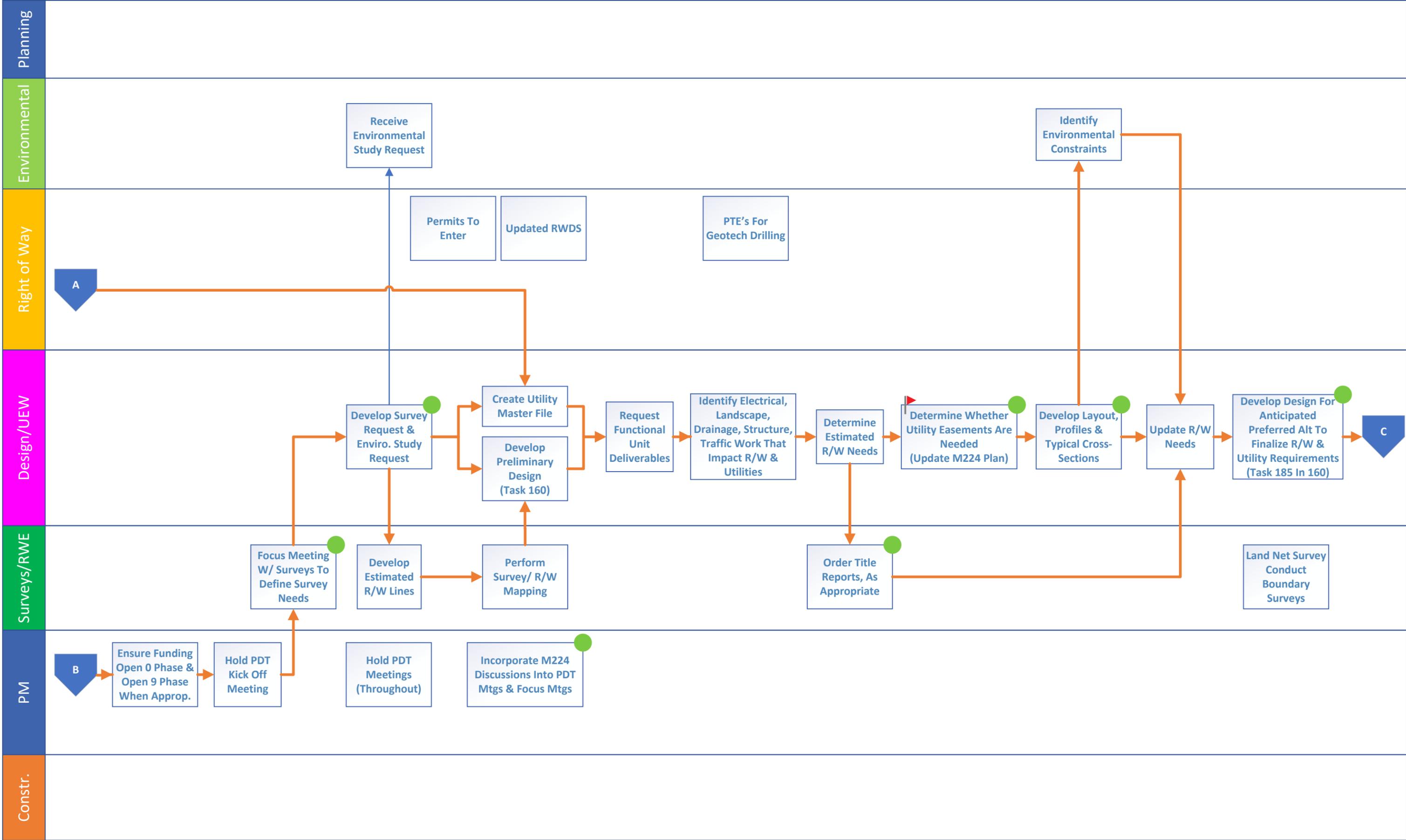
Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
8) Closely manage process throughout PA&ED to achieve M224	<ul style="list-style-type: none"> <li>• Include M224 as a standing line item in PDT meeting agendas</li> <li>• At 10% PA&amp;ED, insert checkpoint to finalize preliminary concept design and limit future scope changes, refine delivery plan for M224</li> <li>• For Pre-Meeting M224, have PM schedule and coordinate region-wide and have Design facilitate</li> <li>• Consider M224 met when: right of way requirements are received by RWE, buy-in from functional units is received, and all internal and external requirements are identified (not when Memo is signed or when M224 is placed into schedule)</li> <li>• However, if external easement requirements are not received prior to PA&amp;ED, then one of two risk mitigation strategies is implemented: <ul style="list-style-type: none"> <li>○ Caltrans Engineer assumes easement needs and acquires ample right of way for the presumed relocation/accommodation</li> <li>○ Caltrans hires Utility Company's consultant to provide utility easement needs (further research needed)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Increases likelihood of achieving actual M224 prior to PA&amp;ED</li> <li>• Ensures adequate time for acquisition of right of way</li> <li>• Reduces rework</li> <li>• Allows for early identification and management of project risks</li> <li>• Should lead to fewer contract change orders during construction</li> <li>• Allows for flexibility and responsiveness</li> </ul>	<ul style="list-style-type: none"> <li>• Externals may resist submitting utility easement needs prior to relocation plans</li> </ul>	<ul style="list-style-type: none"> <li>• Review, revise, and reissue M224 Memo</li> <li>• Educate North Region on M224 process through normally scheduled PDTs</li> <li>• Conduct research and determine best contracting method for utility consultants</li> </ul>	<p><b>Decision Authority:</b> District Management</p> <p><b>Lead:</b> North Region Division of Project Development</p> <p><b>Involved:</b> All project delivery functions</p>	<ul style="list-style-type: none"> <li>• Finalize June 30, 2018</li> </ul>	<ul style="list-style-type: none"> <li>• Quantity of projects meeting M224 as scheduled and meeting preliminary design/functional deliverables by 10% PA&amp;ED</li> </ul>
9) Fund utility company efforts to provide relocation plans and utility easement requirements (e.g., 214 Process)	<ul style="list-style-type: none"> <li>• Similar to funding other outside agencies for reviews, fund utility companies for their participation in utility coordination PDT meetings, prioritizing of CT reviews, and timely development of relocation plans and utility easements, etc.</li> <li>• In lieu of new funding methods, use existing tools for preliminary engineering, for instance, Preliminary Engineering in Support of Environmental Document</li> <li>• Primary companies would be AT&amp;T, PG&amp;E, and other major companies impacted</li> <li>• Review existing billing practices to eliminate any duplicate charging (via overhead charges)</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigates risk of not receiving easements and relocation plans early enough</li> <li>• Allows achievement of M224 before PA&amp;ED</li> </ul>	<ul style="list-style-type: none"> <li>• Resistance from other Districts who do not want to share this practice</li> <li>• Resistance from utility companies due to inconsistent statewide practices if this is not adopted in all Districts</li> </ul>	<ul style="list-style-type: none"> <li>• Gain consensus from utility company leadership and collaboratively develop roll out plan</li> <li>• Requires coordination between CT groups to set priorities and communicate them to utility companies</li> <li>• Need to determine best contracting method, recommend separate contracts per District</li> </ul>	<p><b>Decision Authority:</b> Right of Way Division Chief</p> <p><b>Lead:</b> Right of Way Utilities</p> <p><b>Involved:</b> Right of Way Coordinators and Utility Companies</p>	<ul style="list-style-type: none"> <li>• June 2019</li> </ul>	<ul style="list-style-type: none"> <li>• Quantity of projects meeting M224 as scheduled</li> <li>• Annual survey to utility companies on process change</li> </ul>

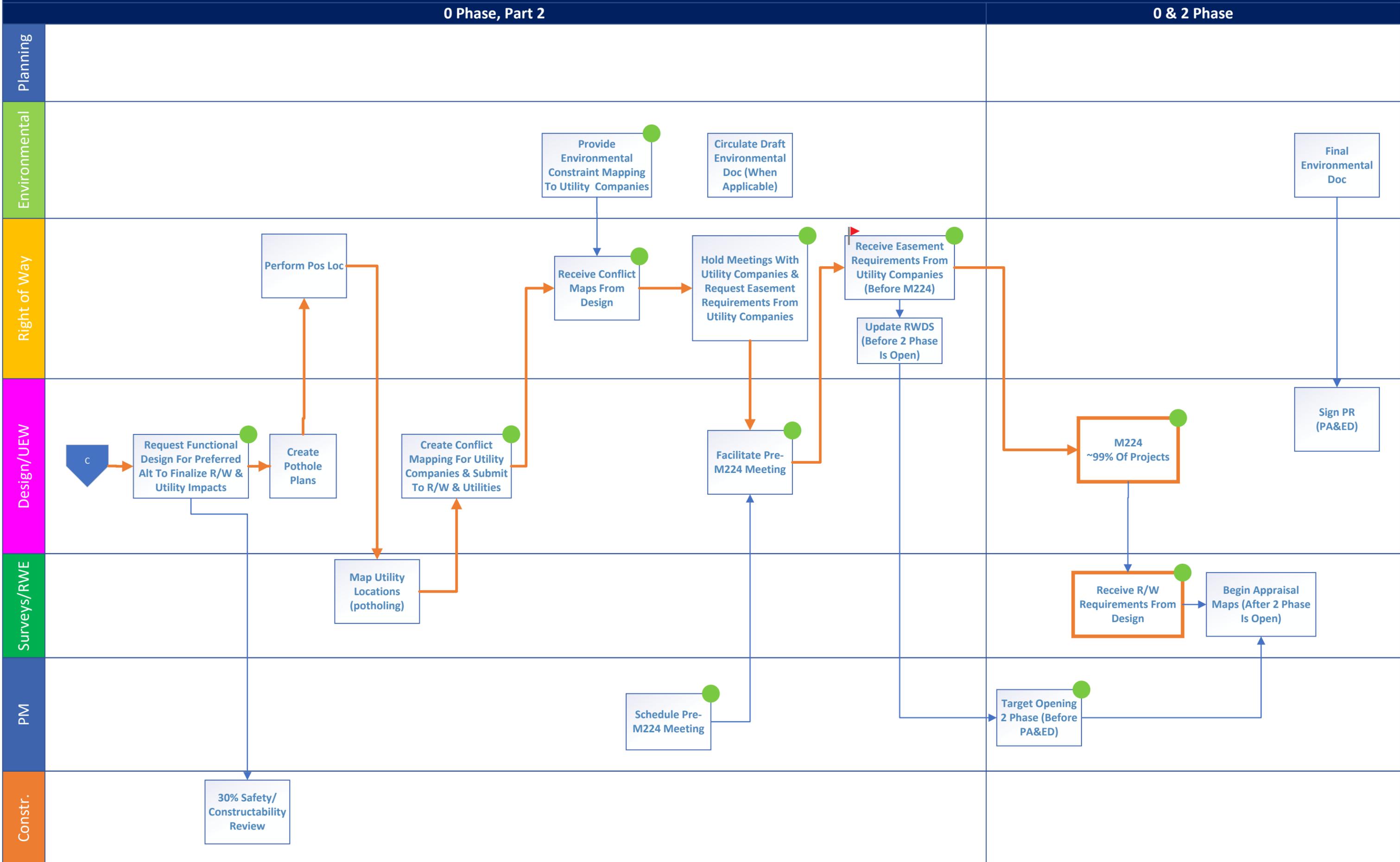
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<b>1 &amp; 2 PHASES</b>							
10) Open 2 Phase earlier during 0 Phase	<ul style="list-style-type: none"> <li>Open at Pre-M224 Meeting to start appraisal mapping earlier and capture utility coordination work</li> </ul>	<ul style="list-style-type: none"> <li>Allows for proper charging</li> <li>Allows for early appraisals</li> </ul>	<ul style="list-style-type: none"> <li>Requires separate CTC allocation approval</li> <li>Not possible for a project that has an Environmental Impact Report (EIR)</li> </ul>	<ul style="list-style-type: none"> <li>Careful monitoring of project schedule to ensure timely CTC vote</li> </ul>	<p><b>Decision Authority:</b> HQ Program/Project Management</p> <p><b>Lead:</b> District Program/Project Management</p> <p><b>Involved:</b> Project Managers</p>	<ul style="list-style-type: none"> <li>June 2019</li> </ul>	<ul style="list-style-type: none"> <li>Quantity of projects with 2 Phase open at time of Pre-224 Meeting</li> <li>Quantity of projects meeting M224 as scheduled</li> </ul>
11) Use M265 to mark when last right of way map is received	<ul style="list-style-type: none"> <li>Use M265 to capture phased work for future estimating needs</li> <li>Program/Project Management will need to add to work plans</li> <li>Right of Way notifies Project Management to include milestone and alert when milestone has been met</li> </ul>	<ul style="list-style-type: none"> <li>Provides milestone for measurement and help with future estimating purposes</li> </ul>	<ul style="list-style-type: none"> <li>None apparent</li> </ul>	<ul style="list-style-type: none"> <li>Notify Project Management to add to work plans</li> </ul>	<p><b>Decision Authority:</b> Program/Project Management</p> <p><b>Lead:</b> Program/Project Management</p> <p><b>Involved:</b> Project Managers and Right of Way Coordinators</p>	<ul style="list-style-type: none"> <li>ASAP</li> </ul>	<ul style="list-style-type: none"> <li>Updated work norms for duration of tasks between M224 and M265 results in more accurate schedule and workload estimates</li> </ul>
12) Begin delivery of appraisal maps in a phased basis	<ul style="list-style-type: none"> <li>Allow delivery of appraisal maps in a phased basis to allow Right of Way to start appraisal work</li> </ul>	<ul style="list-style-type: none"> <li>Right of Way starts work sooner</li> </ul>	<ul style="list-style-type: none"> <li>Could lead to conflict between creating appraisal maps and writing legal descriptions</li> </ul>	<ul style="list-style-type: none"> <li>Start phasing maps</li> </ul>	<p><b>Decision Authority:</b> North Region Deputies of Project Development and Right of Way</p> <p><b>Lead:</b> North Region Deputies of Project Development and Right of Way</p> <p><b>Involved:</b> Right of Way and RWE</p>	<ul style="list-style-type: none"> <li>ASAP</li> </ul>	<ul style="list-style-type: none"> <li>More balanced workload for Right of Way</li> </ul>

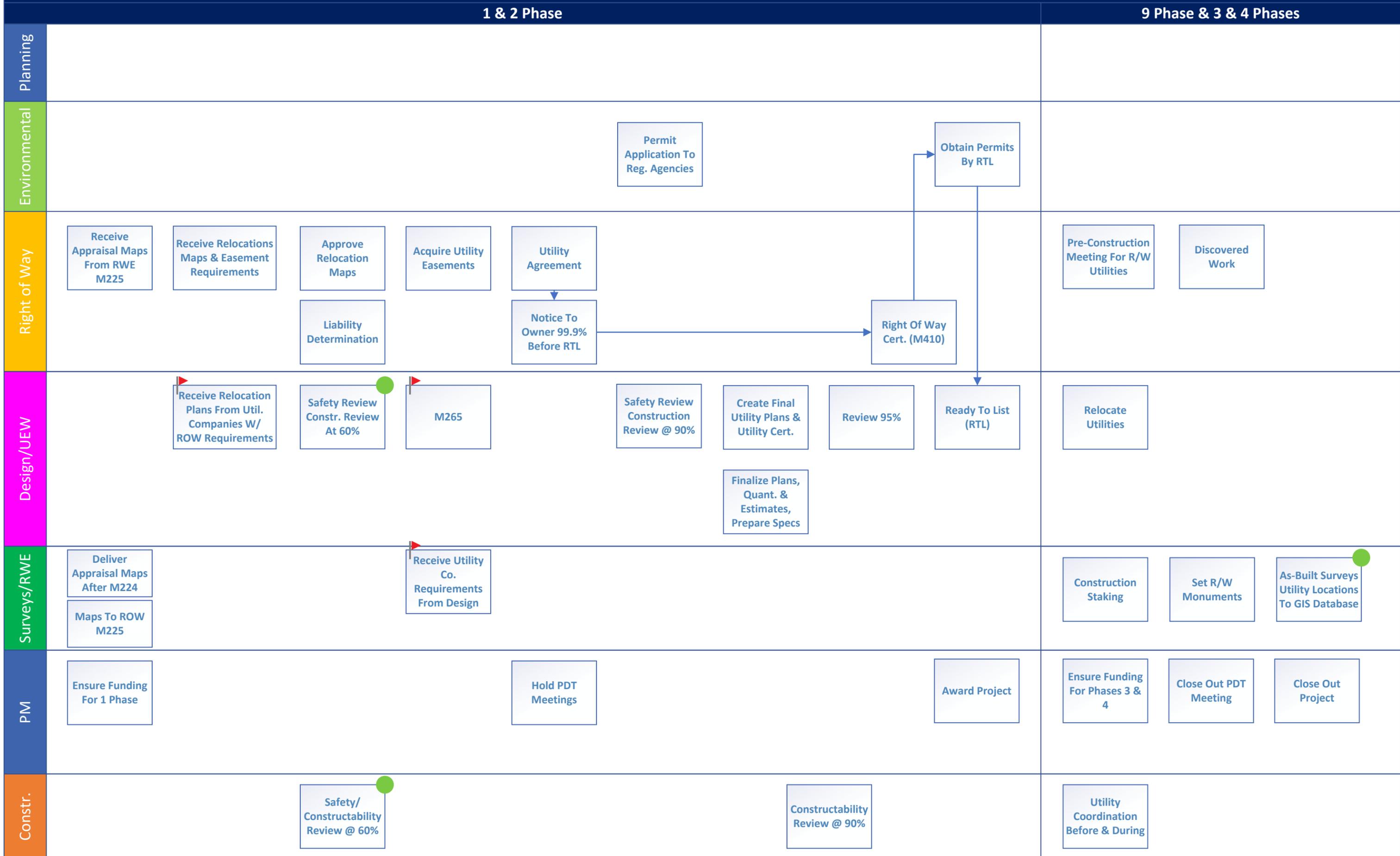
Recommendation	Recommendation Details	Advantages	Disadvantages	Implementation Actions	Responsible (Lead) & Involved Parties	Timeline	Performance Measurement Tools (Metrics)
<b>3 &amp; 4 PHASES</b>							
13) Refine project close-out process	<ul style="list-style-type: none"> <li>Close out projects by developing quality georeferenced CAD as-builts, survey data, and populate GIS with authoritative data (require as part of 270 or 295); hold Encroachment Permits and Traffic Electric to same standards</li> <li>Ensure adequate resources are assigned in the PID phase to complete these activities</li> </ul>	<ul style="list-style-type: none"> <li>Improves K Phase on the next project in adjacent location</li> </ul>	<ul style="list-style-type: none"> <li>Additional resources required</li> <li>Different skillset of current employees</li> </ul>	<ul style="list-style-type: none"> <li>A separate internal team will be established to develop process</li> </ul>	<p><b>Decision Authority:</b> District Management</p> <p><b>Lead:</b> Construction</p> <p><b>Involved:</b> Surveys</p>	<ul style="list-style-type: none"> <li>June 2019</li> </ul>	<ul style="list-style-type: none"> <li>Quality of close-out deliverables</li> </ul>
<b>MISCELLANEOUS</b>							
14) Establish District-specific UEWs or identify Design Engineers as utility SMEs	<ul style="list-style-type: none"> <li>Identify and establish local District UEW expertise in the form of separate units or as utility SMEs</li> </ul>	<ul style="list-style-type: none"> <li>Ease of coordination and collaboration</li> <li>More efficient use of resources</li> <li>Less travel expenses</li> </ul>	<ul style="list-style-type: none"> <li>Need to create a new specialized function in some Districts</li> </ul>	<ul style="list-style-type: none"> <li>Create new design group or identify specific SMEs for each District</li> <li>Provide focused training</li> <li>Include in quarterly meetings</li> </ul>	<p><b>Decision Authority:</b> North Region Division of Project Development</p> <p><b>Lead:</b> North Region Division of Project Development</p> <p><b>Involved:</b> District Directors, District Design Manager</p>	<ul style="list-style-type: none"> <li>Start July 2018</li> </ul>	<ul style="list-style-type: none"> <li>Reduced resource requirements starting in 0 Phase</li> <li>Improved quality of UEW deliverables throughout all phases</li> </ul>
15) Ensure knowledge transfer by utilizing the uniform filing system and ensure handoffs are happening when staff turnover	<ul style="list-style-type: none"> <li>Require filing system consistency is being utilized for both hard copies and electronic files to ensure all information is captured and accessible</li> <li>Make good transition practices standard practice, such as holding a transition meeting, when any turnover or handoffs occur</li> <li>Supervisors should develop transition plans prior to an individual leaving</li> </ul>	<ul style="list-style-type: none"> <li>Ease of coordination</li> <li>Reduced redundancy and rework (and associated delays)</li> </ul>	<ul style="list-style-type: none"> <li>None apparent</li> </ul>	<ul style="list-style-type: none"> <li>Circulate requirements to First Line Supervisors</li> <li>Reiterate at Quarterly Design Forum</li> </ul>	<p><b>Decision Authority:</b> North Region Division of Project Development</p> <p><b>Lead:</b> Design Managers and First Line Supervisors</p> <p><b>Involved:</b> N/A</p>	<ul style="list-style-type: none"> <li>Start July 2018</li> </ul>	<ul style="list-style-type: none"> <li>Percentage of projects utilizing filing system</li> </ul>
16) Use reporting code section of Staff Central to collect data to develop workload standards for some groups	<ul style="list-style-type: none"> <li>In lieu of resourcing to Levels 6-7, use reporting codes to collect time charging data to define workload norms for specific tasks, such as land net maps, appraisal maps, right of way maps, deeds, and records of survey</li> </ul>	<ul style="list-style-type: none"> <li>Aids in resource estimation and justification</li> </ul>	<ul style="list-style-type: none"> <li>Minor increase in time to complete timesheets</li> </ul>	<ul style="list-style-type: none"> <li>Develop uniform reporting code and definitions</li> <li>Gain buy-in from Supervisor level to implement</li> </ul>	<p><b>Decision Authority:</b> Office Chiefs</p> <p><b>Lead:</b> First Line Supervisors</p> <p><b>Involved:</b> Staff</p>	<ul style="list-style-type: none"> <li>Start July 2018</li> </ul>	<ul style="list-style-type: none"> <li>Updated work norms result in more accurate workload estimates</li> </ul>



0 Phase, Part 1







# APPENDICES

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**M224 Maps to Right of Way Engineering**  
**Identifying Project Right of Way & Utility Conflict Maps to Right of Way**  
**Process Improvement Charter**  
*Revised 2/22/2018*

**Background**

Caltrans North Region Division of Project Development's (NRPD's) current policy, dated 8/22/13, on delivering maps to Right of Way Engineering needs to be revised to assure a higher level of quality, more efficient process, and streamlined project delivery for all stakeholders. The Department needs to find ways to be more efficient and meet legislative goals of saving at least \$100 million annually. Refining the Maps to Right of Way Engineering process is just one of many possible solutions to improve our delivery efficiency and hence reduce support costs to a project. The current policy on delivering right of way requirements was set in place to improve on timely and quality deliverables. All aspects of the current process as defined is not followed. Development of and buy-in to a more accurate and adhered to policy is needed.

This project will review Milestone 224 (M224), Date District sends Right of Way Requirements to Right of Way Engineering. Finish task: 185.25, Start task: 220.15. Reference: Workplan Standards Guide, Release 11.2, Appendix H.

**Purpose**

The purpose of this project is to improve project delivery by reducing delivery time, cost, and project risk by enhancing the ROW and utility identification process in North Region.

**Current Situation**

Typical issues regarding M224 include: Late or incomplete submittals, technical deficiencies, unclear requirements, not all requirements are included in the submittal as expected, not all requirements are available to provide a complete submittal, changes take place later in the process from internal and external influences and creates unnecessary re-work, etc.

**Desired Outcomes & Goals**

This process study aims to develop a clear right of way mapping and utility identification process for North Region, including an agreed-upon process map, list of deliverables, and list of action items needed to implement the new process.

The process improvement project will develop a refined, efficient, documented process developed in partnership among Project Development, Right of Way, Surveys/Right of Way Engineering, DES Structures Design, Program/Project Management, Construction, Environmental.

The revised process should provide:

- Clearly defined deliverables
- Improved quality of deliverables
- Better tracking of deliverables

M224 Maps to Right of Way Engineering  
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- Ability to identify, quantify, and manage risks
- Buy-off and agreement from appropriate parties
- Ability to be consistently applied yet is flexible enough to account for each project's uniqueness
- Understanding when delivery should be met by identifying the right window for delivery
- Reduced support costs by reducing re-work
- Meets all groups' regulatory requirements
- Clearly defines roles and responsibilities
- Sets the tone for proactive collaboration and joint problem solving

### **Available Information**

There are numerous resources that the team can review and use during the development of a revised process:

#### **Circulated for Review**

1. Memo "Focus PDT Meeting Prior to Submittal of Maps to Right of Way Engineering (M224)", August 22, 2013
2. PDPM
  - Chapter 14 – Preparation of Project Plans
  - Chapter 17 – Encroachments and Utilities
3. North Region Utility Policy & Flow Chart, 2000
4. Managing Deliverables Team, Prepare Mapping for Final R/W Requirements, Issues & Solutions list
5. Utility Coordination White Paper, July 5, 2017
6. Contract Administration Process Evaluation (CAPE) on Utilities

#### **Available as Reference Material**

7. Workplan Standards Guide (WSG), Release 11.2
  - WSP, WSG, PRSM Milestones (Excel)
8. R/W Manual
  - Chapter 7 – Appraisals
  - Chapter 8 – Acquisition
  - Chapter 13 – Utilities
9. 23 CFR 635.309 and CTC Requirements (Tiara Moering to provide)
10. Project Development Workflow Task Manual, Version 2.0, Project Phase and WBS Level 5 & 6 Flow Charts (poster)

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**Roles & Responsibilities**

Project Sponsors

Karl Dreher, Chief, North Region Project Development  
John Ballantyne, Chief, North Region Right of Way

Project Sponsor Responsibilities

- Provide overall project leadership.
- Define scope.
- Communicate corporate issues and priorities.
- Provide final review of deliverables.
- Participate in Briefings and Decision Meetings and provide direction on recommendations.
- Champion the recommended changes.
- Settle elevated issues.

Project Coordinator & Division Value Analysis Coordinator (DVAC)

Barbara Reenan  
Kevin Espinoza

Project Coordinator & DVAC

- Provide project coordination and logistics support.
- Advise Sponsors, Team, and Facilitator as needed.

Technical Committee (“Team”)

Right of Way:

Marla Miles  
Tauni Melvin  
Doug Bortz  
Tiaira Moering (HQ)

Design/UEW:

Dan Rechs  
Jalwat Ahmad  
Fermin Barriga  
Steve Heryford

Surveys/RWE:

Jacob Pace  
Aaron Ott  
Matt Herbert  
Brian Selving

Technical Committee (“Team”) Responsibilities

- Primary workshop participants.
- Develop process maps.
- Identify risks and alternatives to mitigate them.
- Define/refine roles and responsibilities of all groups.
- Generate and develop recommendations for change.
- Conduct related research as needed.
- Integrate feedback on deliverables from Project Sponsors and reviewers.
- Advocate proposed recommendations.
- Use L6S concepts to streamline process.

M224 Maps to Right of Way Engineering  
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Project Management:  
 D2 PM – Clint Burkenpas

Environmental  
 Mike Bartlett

Construction  
 Ben Hargrove  
*TBD – HQ Contract Administration Process  
 Evaluation (CAPE)*

DES Structures Design  
 Dan Adams

**Decision Process**

Decisions will be made by consensus of the members who are present, in person or via teleconference, at each meeting. Consensus is defined as all parties in agreement after each committee member has expressed his/her opinion or position. If consensus cannot be reached, Sponsors will be alerted to make a final determination.

Decision Process Steps

- Step 1 – Frame the Topic
- Step 2 – Open Discussion
- Step 3 – Identify Underlying Concerns
- Step 4 – Collaboratively Modify the Proposal
- Step 5 – Assess the Degree of Support
- Step 6 – Finalize Decision –or– Circle Back to Step 1 or 3

**Work Plan**

Activity	Participants	Duration	Timeline
Pre-Meeting with Sponsor	Sponsors Facilitator	1 hr	12/13/2017
<ul style="list-style-type: none"> <li>• Discussion Points:               <ul style="list-style-type: none"> <li>○ Discuss purpose, intent, and goals</li> <li>○ Discuss role and responsibilities</li> <li>○ Discuss schedule and framework</li> <li>○ Discuss Technical Committee Formation</li> </ul> </li> <li>• Review and edit draft charter following meeting</li> </ul>			

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<b>Activity</b>	<b>Participants</b>	<b>Duration</b>	<b>Timeline</b>
Pre-Workshop Information Gathering <ul style="list-style-type: none"> <li>• Collect and Circulate Available Information               <ul style="list-style-type: none"> <li>○ See list above</li> </ul> </li> </ul>	Designated POCs & Facilitator	TBD	Feb-Mar 2018
Workshop 1 <ul style="list-style-type: none"> <li>• Review collected information</li> <li>• Analyze ‘current state’ (develop present date process map, review strengths, weaknesses, risks)</li> <li>• Develop preliminary list of recommendations for change</li> <li>• Sponsor debrief</li> </ul>	Team & Facilitator	3 Days	Mar 20-22 2018
Workshop 2 <ul style="list-style-type: none"> <li>• Review Workshop 1 results</li> <li>• Develop new process map for what ‘ought’ to be based on recommendations and team input</li> <li>• Discuss roles, responsibilities, needs of ‘future state’</li> <li>• Refine recommendations to reflect ‘future state’ process map and develop Action Plan</li> <li>• Sponsor debrief</li> </ul>	Team & Facilitator	3 days	Apr 10-12 2018
Preliminary Report <ul style="list-style-type: none"> <li>• Process Map(s), Roles &amp; Responsibilities</li> <li>• Action Plan</li> </ul>	Sponsors, Team & Facilitator		Mid-Apr 2018
Review / Edit	Sponsors, Team & Facilitator		Late Apr 2018
Final Report	Team, Facilitator		Early May 2018

**M224 Maps to Right of Way Engineering**  
**Identifying Project Right of Way & Utility Conflict Maps to Right of Way**  
**Process Improvement**  
**Workshop 1 Agenda**  
**March 20-22, 2018**

**Day 1 – March 20, 2018**

<b>Time</b>	<b>Activity</b>	<b>Lead</b>
<b>8:30</b>	<b>Kick Off</b>	AC
8:30	<ul style="list-style-type: none"> <li>• Introductions</li> </ul>	
9:00	<ul style="list-style-type: none"> <li>• “A word from our sponsors”</li> </ul>	Sponsors
9:15	<ul style="list-style-type: none"> <li>• Project Background &amp; Goals               <ul style="list-style-type: none"> <li>○ Where we are</li> <li>○ Where we want to go</li> </ul> </li> </ul>	
<b>9:30</b>	<b>Understand</b>	AC
	<ul style="list-style-type: none"> <li>• Workshop Agenda &amp; Process Overview</li> <li>• Reiterate goals and outcomes</li> <li>• Review collected information – key takeaways discussion</li> <li>• Develop “current state” process map, flagging issue points</li> </ul>	AC
<b>11:30</b>	<b>Lunch</b>	
	<ul style="list-style-type: none"> <li>• Finalize map, if needed</li> </ul>	AC
<b>12:30</b>	<b>Analyze</b>	
	<ul style="list-style-type: none"> <li>• Conduct SWOT on “current state” process map</li> <li>• Distill to identify most significant issues</li> </ul>	
<b>4:30</b>	Review agenda for Day 2 and adjourn	

**Day 2 – March 21, 2018**

<b>Time</b>	<b>Activity</b>	<b>Lead</b>
<b>8:30</b>	Agenda Review, Team Check In	AC
<b>9:00</b>	<b>Recommend</b>	
	<ul style="list-style-type: none"> <li>• Brainstorm ideas based on prioritized issues on ways to improve the process, deliverables, etc.</li> </ul>	
<b>11:30</b>	<b>Lunch</b>	
<b>12:30</b>	<ul style="list-style-type: none"> <li>• Evaluate ideas, develop preliminary short list</li> <li>• Prep for Sponsor Debrief</li> </ul>	AC
<b>3:30</b>	<b>Sponsor Debrief</b>	
<b>4:30</b>	Review next Steps & Adjourn	

**M224 Maps to Right of Way Engineering**  
**Identifying Project Right of Way & Utility Conflict Maps to Right of Way**  
**Process Improvement**  
**Workshop 2 Agenda**  
**April 10-12, 2018**

**Day 1 – April 10, 2018**

<b>Time</b>	<b>Activity</b>	<b>Lead</b>
<b>8:30</b>	<b>Kick Off</b>	
8:30	<ul style="list-style-type: none"> <li>• Quick Introductions &amp; Team Check In</li> </ul>	AC
9:00	<ul style="list-style-type: none"> <li>• “A word from our sponsors”</li> </ul>	Sponsors
9:15	<ul style="list-style-type: none"> <li>• Agenda Review, Process Overview</li> </ul>	AC
<b>9:30</b>	<b>Plan</b>	AC
	<ul style="list-style-type: none"> <li>• Review “current state” process map &amp; preliminary recommendations for change               <ul style="list-style-type: none"> <li>○ Draw Critical Path Line in “current” process map</li> <li>○ Group Recommendations</li> </ul> </li> <li>• Develop “future state” process map</li> </ul>	AC
<b>11:30</b>	<b>Lunch</b>	
<b>12:30</b>	<ul style="list-style-type: none"> <li>• Continue with map development</li> </ul>	AC
<b>4:30</b>	Review agenda for Day 2 and adjourn	

**Day 2 – April 11, 2018**

<b>Time</b>	<b>Activity</b>	<b>Lead</b>
<b>8:30</b>	Agenda Review, Team Check In	AC
<b>9:00</b>	<ul style="list-style-type: none"> <li>• Finalize “future state” map               <ul style="list-style-type: none"> <li>○ Develop summary of key changes</li> </ul> </li> </ul>	
<b>11:30</b>	<b>Lunch</b>	
<b>12:30</b>	<ul style="list-style-type: none"> <li>• Develop Action Plans               <ul style="list-style-type: none"> <li>○ Based on the “future state” map, review key changes and develop implementation action plan</li> <li>○ Consider what needs to happen to implement the new process successfully for sustainable change</li> <li>○ Identify specific changes from “current” to “future” state</li> </ul> </li> </ul>	
<b>4:30</b>	Review next Steps & Adjourn	

**Day 3 – April 12, 2018**

<b>Time</b>	<b>Activity</b>	<b>Lead</b>
<b>8:30</b>	Agenda Review, Team Check In	AC
<b>9:00</b>	<ul style="list-style-type: none"> <li>• Identify Roles &amp; Responsibilities               <ul style="list-style-type: none"> <li>○ For each group, identify R&amp;R that correspond to the “future state” process map</li> </ul> </li> </ul>	
<b>11:30</b>	<b>Lunch</b>	
<b>12:30</b>	<ul style="list-style-type: none"> <li>• Finalize R&amp;R</li> </ul>	
<b>2:30</b>	Prepare for sponsor debrief	
<b>3:30</b>	<b>Sponsor Debrief</b>	
<b>4:30</b>	Review Next Steps, Adjourn	

## MEETING ATTENDANCE

3/20	3/21	4/10	4/11	4/12	NAME	POSITION / RANK	ORGANIZATION	PHONE	EMAIL
x					Dan Adams	DES Structures Design	Caltrans		dan.t.adams@dot.ca.gov
x	x	x	x	x	Jalwat Ahmad	Design Sr.	Caltrans - Design	530 741 4360	jalwat.ahmad@dot.ca.gov
x	x	x	x	x	Winder Bajwa	Project Manager	Caltrans - D3	530 741 4462	winder.bajwa@dot.ca.gov
x	x			x	John Ballantyne	Chief	Caltrans - NR R/W		john.ballantyne@dot.ca.gov
x	x	x	x	x	Fermin Barriga	Utility Engineering	Caltrans - UEW	530 941 5506	fermin.barriga@dot.ca.gov
x	x	x	x	x	Mike Bartlett	Env Senior	Caltrans - D3	530 635 3430	mike.bartlett@dot.ca.gov
				x	Amarjeet Benipal	District Director	Caltrans - D3		
		x	x	x	Douglas Bortz	Sr. RW Agent	Caltrans - D3	530 741 4419	douglas.m.bortz@dot.ca.gov
				x	Tom Brannon	Sup. TE	Caltrans - D3 PPM	916 826 6052	Tom.Brannon@dot.ca.gov
x	x	x	x	x	Clint Burkenpas	Project Manager	Caltrans - D2	530 225 2455	clint.burkenpas@dot.ca.gov
				x	Ginger Congi	Sup. Transportation Surveyor	Caltrans - NR	530 949 4194	ginger.congi@dot.ca.gov
x	x			x	Karl Dreher	Chief	Caltrans - NR Project Development		karl.dreher@dot.ca.gov
x	x				Kevin Espinoza	NRPD Engineering Serv.	Caltrans - D3	530 741 5499	kevin.espinoza@dot.ca.gov
x	x	x	x	x	Ben Hargrove	Sr. TE (OOC)	Caltrans - NR Construction	530 218 4831	ben.hargrove@dot.ca.gov
x	x	x	x	x	Matt Herbert	Senior Transportation Surveyor	Caltrans - D3	530 741 7104	matthew.herbert@dot.ca.gov
x	x	x	x	x	Anand Maganti	Design Sr.	Caltrans - Design	530 741 4462	anand.maganti@dot.ca.gov
x					Perry Mayer	Senior TE	Caltrans - HQ Construction	227 7013	perry.mayer@dot.ca.gov
x	x	x	x	x	Tauni Melvin	R/W Ut/RR Sr.	Caltrans - R/W	707 441 5846	tauni.melvin@dot.ca.gov

3/20	3/21	4/10	4/11	4/12	NAME	POSITION / RANK	ORGANIZATION	PHONE	EMAIL
x	x	x	x	x	Marla Miles	R/W Ut Sr.	Caltrans - R/W	530 741 5137	marla.miles@dot.ca.gov
x	x	x	x	x	Tiara Moering	HQ ROW Ut/RR	Caltrans - R/W	916 654 5017	tiara.moering@dot.ca.gov
x	x	x	x	x	Aaron Ott	NRGIS Sr.	Caltrans - D3	530 741 7378	aaron.ott@dot.ca.gov
x	x	x	x	x	Jacob Pace	Right of Way Engineer, Sr.	Caltrans - D3	530 741 7262	jacob.pace@dot.ca.gov
				x	Carlos Portillo	NR Division Chief	Caltrans - NR Environmental	530 682 5382	carlos.portillo@dot.ca.gov
x	x	x	x	x	Dan Rechs	OE Range D	Caltrans - D3	530 741 5449	daniel.rechs@dot.ca.gov
x	x			x	Barbara Reenan	Engineering Manager	Caltrans - D3		barbara.reenan@dot.ca.gov
x					Brian Selving	Surveys/RWE	Caltrans		brian.selving@dot.ca.gov
x	x	x	x	x	Ashley Carson	Facilitator	Value Management Strategies, Inc.	760 741 1155 ext. 6	ashley@vms-inc.com