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Book Descriptions:

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The DB projects combine the design and construction phases of a project into a single contract. This reduces costs without reducing quality, since construction can begin while the plans are still being developed. While lowbid is used for most traditional contracts, bestvalue selection permits the consideration of additional factors, such as experience, qualifications, innovation, technical approach, quality control methods and project management. Often this can reduce costs as well as increase quality. Design build alternative delivery method .pdf. This assignment included assessing the applicability of those innovative procurement practices to Caltrans based on their goals and desire to implement more efficient and costeffective procurement practices. Delivered website to Caltrans at end of project for future use. This evaluation report was presented to the steering committee and resulted in the decision by Caltrans to develop a comprehensive alternative procurement guide for designbuild, CM at risk, and five other alternative procurement and contracting methods. The guide included criteria for selecting projects, guidance for project development, design, and preconstruction activities, development of alternative procurement documents, and considerations for contract administration during construction. The guide further addressed how these alternative processes fit with Caltrans' existing project development workflow and how standard processes might be affected. The guide also included reference materials and sample specifications for the various alternative procurement and delivery methods. Harris has deep resources and a long history of providing construction management services to public agencies utilizing the Caltrans Standard Plans and Specification, the GreenBook, the Local Assistance Procedures Manual LAPM and Caltrans Construction Manuals in order to complete transportation projects successfully.http://cq2sc.com/userfiles/digital-systems-testing-and-testable-design-solution-manual.xml

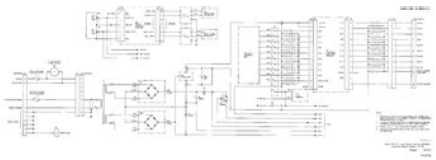
- **caltrans design build manual, 1.0.**

For Federallyfunded projects, experience with Caltrans' Local Assistance Procedures Manual LAPM is also key. Harris' federal audit record is exemplary, and we will work to see that all documentation is complete and accurate and your agencys funding is protected. Beyond design and construction, Harris has extensive experience supporting the environmental compliance and documentation of transportation projects. Accurate and timely environmental compliance helps transportation agencies, large and small, head off problems before they are built, saving schedule and costs. Throughout construction, we adjust our communications strategy as needed to maintain our clients standing as community partners and exemplary stewards of taxpayer dollars. These efforts helped transform initial skepticism into advocates for the area's first highwaytohighway roundabout. Our engineers and construction managers keep meticulous track of every moving part on highstakes projects, including all types of bridges, new underpasses, rail projects, and grade separations. Our engineers and construction managers keep meticulous track of every moving part on highstakes projects, including all types of bridges, new underpasses, rail projects, and grade separations. For decades, Harris has helped transportation agencies bypass congestion challenges by providing a full suite of engineering, construction management, and environmental compliance services across California and Washington. Our awardwinning project and construction management services are why the California High Speed Rail Authority chose Harris to work on its Construction Package 1—the largest rail project in California state history. What can we do to help enhance yours. The project will improve 16 miles of I405 between the SR73 freeway in Costa Mesa and I605 near the Los Angeles County line.http://www.tis.az/userfiles/digital-tachograph-manual-entries.xml

The project includes adding one regular lane in each direction between Euclid Street and I605, and making improvements to freeway entrances, exits, and bridges. In addition, the project will add the 405 Express Lanes, incorporating the existing carpool lanes and a new lane in each direction between SR73 and I605. As a member of the design engineering team, Guida Surveying Inc. Guida is providing horizontal and vertical controls, topographic design surveys, utility pothole and geotechnical borehole survey support, and other mapping in support of the Interstate 405 Improvement Project. Guida has been responsible for establishing and augmenting project controls to support the design engineering and construction for the project. More than 40miles of design surveys have been performed, including 22 bridge surveys, 2 railroad bridge surveys, 7 flood control channel surveys, approximately 40 city street surveys, and the Orange County Sanitation District facility. This is a design build project with a very accelerated schedule, dynamic changes, and high levels of coordination and adaptability as both the engineering and construction progress. To meet these challenges, Guida has engaged as many as 5 survey crews on this project, working days, nights and weekends. Close coordination was required with the engineering design manager, traffic control and other subconsultants to keep up with the fast pace, changes in scope of work, project limits, and project schedules. Guida has met the required schedules for survey and mapping deliverables, submitting over 27 weekly deliverables since the project began. Throughout the surveys, Guida collaborated with the Caltrans District 12 surveyor’s office and all surveying services were performed and delivered to the design engineering team in accordance with the Caltrans survey manual. We are thankful for the opportunities we have had to demonstrate our commitment to this promise by helping our clients accomplish their utilization goals.

Caltrans strategies for state infrastructure improvements see accelerated construction as an integral technique. An overview, with a description of funding and projects is at. This program is funded through an innovative financing method see . Deep soil stabilization Caltrans worked with the Swedish Geotechnical Institute to obtain translations of Swedish research that developed deep soil mixing techniques for subbase stabilization. Connecticut The example is Church Street Bridge View chapter Purchase book Read full chapter URL Tsunamis, Earthquakes, and Nuclear Power Mohiuddin Ali Khan Ph.D., P.E., C. Eng., M.I.C.E. London, in EarthquakeResistant Structures, 2013 6.5.1 Tsunami Risk Maps An Important Step Using new USGS seismic risk maps based on 2008 data Caltrans 1971 , the NRC in August 2010 published new estimates of risk at nuclear power reactors in eastern and central states. Besides the proximity, severity, and frequency of earthquakes, the new estimates take into account design standards used at each plant along with the type of rock or soil on which the plant is built. Geologists and seismologists, remembering what they learned about rocks, are steadily raising their estimates of the risk of severe quakes based on these new maps. New faults are found, and new computer models change predictions for how the ground shakes. Of special note, according to the USGS, is an allowance for large waves in the New Madrid, Missouri, fault area, roughly centered on the state’s Bootheel, as well as inclusion of offshore faults near

Charleston, South Carolina, and new data from the mountains of east Tennessee. With each new map, the areas of only negligible risks have grown smaller. Interestingly, the reactor with the highest risk rating is 24 miles north of New York City, in the village of Buchanan, New York, at the Indian Point Energy Center, which generates up to onethird of the electricity for New York City.



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There, on the east bank of the Hudson, Indian Point nuclear reactor 3 has the highest risk of earthquake damage in the country, according to new NRC risk estimates. Indian Point 2 does not rate as risky, with 1 chance in 30,303 each year. A ranking of the 104 U.S. nuclear reactors was prepared by the NRC based on estimates of risk of catastrophic failure caused by earthquakes. The chance of serious damage from a quake ranges from Indian Point 1 chance in 10,000 each year to the Callaway nuclear plant in Fulton, Missouri, which the NRC ranked as the least risky 1 chance in 500,000 each year. Installations in Massachusetts and Pennsylvania rank second and third, respectively, followed by those in Tennessee, another plant in Pennsylvania, then plants in Florida, Virginia, and South Carolina. At sixth and seventh riskiest are, respectively, California's Diablo Canyon and Pennsylvania's Three Mile Island. The risk calculations take into consideration two main factors the chance of a serious quake, and the design of a plant. Surprisingly, nuclear plants built in earthquake zones, such as the California coastline, have a lower risk of damage since they were built in anticipation of a major quake and sufficient safeguards were provided. Power plants in the East, South, and Midwest, where seismic design standards are considered lower, now find themselves at the top of the NRC's danger list because of upgraded acceleration coefficients and seismic zone reevaluation. View chapter Purchase book Read full chapter URL Seismic Bridge Design Mohiuddin Ali Khan Ph.D., P.E., C. Eng., M.I.C.E. London, in EarthquakeResistant Structures, 2013 Displacement Design A substantial design shift occurred with the California Department of Transportation's Caltrans ' adoption of displacement design methods as Memo to Designers 2011 outlined in a report issued by the University of California, San Diego.

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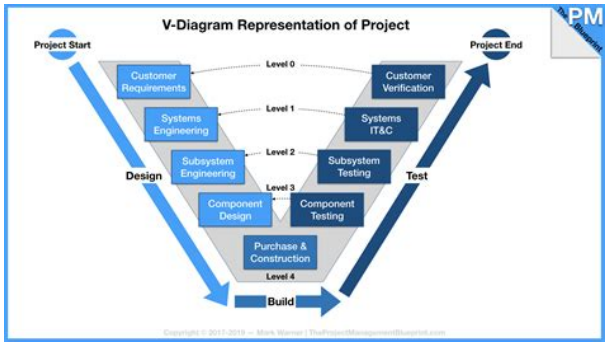

Caltrans' seismic design criteria SDC incorporated these methods in an innovative seismic performance approach. In the SDC design philosophy there is a shift from a "forcebased assessment" of seismic demand to a "displacementbased assessment" of demand and capacity. This newly adopted approach is based on comparing the elastic displacement demand to the inelastic

displacement capacity of the primary structural components of a bridge, while ensuring a minimum level of inelastic capacity at all potential plastic hinge locations. Displacement ductility methods were used initially for the retrofit of the Santa Monica Viaduct on Route 10 in Los Angeles, which was being retrofitted as part of the Caltrans Seismic Retrofit Program. Displacement design methods were incorporated into other seismic retrofit projects and ultimately became the de facto seismic retrofit design methodology. Seismic design requirements may include data on ground stabilization underneath the structure since heavily shaken ground breakup may lead to collapse. These data are obtained with shake tables and kinematic building models. In general, a building model is said to have similarity with the real object if the two share geometric similarity, kinematic similarity, and dynamic similarity; this concept is explained in Chapter 5. Currently the most advanced shake table is the Japanese EDefense Shake Table. View chapter Purchase book Read full chapter URL Major Earthquakes as the Basis for Code Development Mohiuddin Ali Khan Ph.D., P.E., C. Eng., M.I.C.E. London, in EarthquakeResistant Structures, 2013 4.2.1 California Seismology The Pacific Plate extends from western California to Japan and includes much of the Pacific Ocean floor. The North American Plate comprises most of the North American continent and parts of the Atlantic Ocean. The Pacific Plate is grinding northwestward past the North American Plate along the San Andreas Fault at a rate of about two inches per year.

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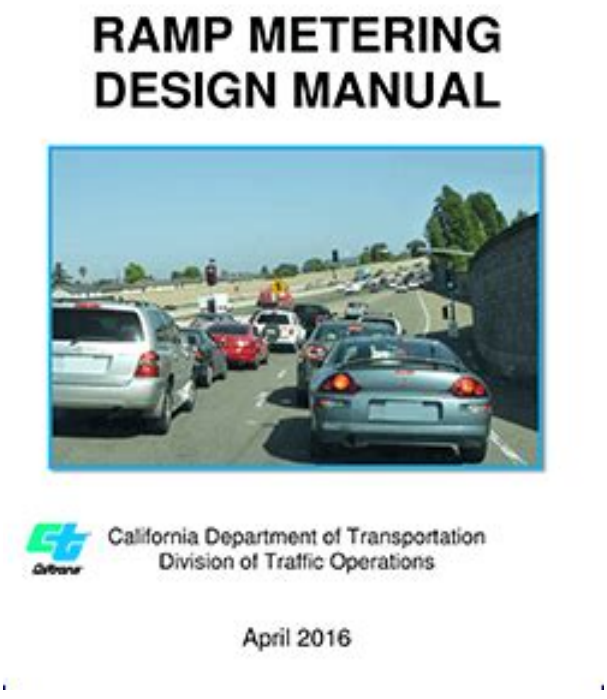

Thus, Southwestern California is moving horizontally northward toward Alaska. The dividing point, or margin, between the two is the San Andreas Fault system, which extends from the Salton Sea in the south to Cape Mendocino in the north—an 800mile stretch almost the entire length of California. It was San Andreas that caused the 1906 San Francisco earthquake magnitude 7.8, which killed more than 3,000 people and destroyed much of the city Figure 4.3 illustrates how this earthquake would have been measured. The Polaris Fault, named after a former mining town that sits above it, is a fraction of the size of the San Andreas Fault, at 22 miles long. Because it is located near the Martis Creek Dam at Truckee, however, it poses a major threat of an earthquake bursting the dam and potentially flooding a plain that stretches 35 miles to Reno, Nevada, a city of some 222,000 people. Unlike Japan, California faces a low risk of tsunamis from its quakes. However, the state's

real problem is the condition of its structures, many of which are of substandard construction. The Japanese are ahead of California seismicresistant design codes have done a better job of new construction and retrofit for seismic survivability. During the 1971 San Fernando Figure 4.4 , the 1989 Northridge Figure 4.5 , and the 1994 Loma Prieta Figure 4.6 earthquakes in California, several concrete buildings constructed before the introduction of modern codes collapsed or were catastrophically damaged. According to a new estimate, 17,000 older concrete buildings in California could be vulnerable to seismic activity. Not all of the buildings identified are collapse hazards or prone to severe damage. However, an estimate includes a number of schools, state and local government centers, hospitals, and public safety facilities. Figure 4.4. Two examples of damage caused by the San Fernando earthquake. Figure 4.5. Northridge earthquake damage. Figure 4.6.

Two examples of damage caused by the Loma Prieta earthquake. Analysis of Extent and Types of Structural Damages A more careful study of specific buildings in order to better understand which are the riskiest, is necessary. Unlike unreinforced masonry buildings, which uniformly do not perform well in earthquakes, there is tremendous variability in older concrete buildings. Understanding what makes them vulnerable and quickly weeding out which ones, may need more detailed evaluation and possible retrofit. Caltrans Administrative and Technical Remediation Measures The California Department of Transportation Caltrans has always compiled its own seismic design criteria. Caltrans developed improved reinforcement details Closer spacing and improved detailing of column transverse reinforcement, requirements for top reinforcement in footings and pile caps, and controls on column longitudinal reinforcement splice location. View chapter Purchase book Read full chapter URL Rapid Bridge Insertions Following Failures Mohiuddin Ali Khan Ph.D., M.Phil., DIC, P.E., in Accelerated Bridge Construction, 2015 6.8.7 ABC and seismic issues “Rapid insertion” bridge replacement is being practiced. Successful ABC requires detailed planning. At the annual Transportation Research Board TRB meeting in January of 2007, California representatives agreed to take the lead in developing ABC techniques that addressed seismic issues. A workshop was organized by TRB, FHWA, and Caltrans and held in October 2007 in San Diego, California. Representatives from several state DOTs, FHWA, TRB, researchers, and industry met, leading to the publication of the document, “ 2007 FHWA Seismic Accelerated Bridge Construction Workshop Outcomes and Followup Activities.” The workshop resulted in the development of an action plan to guide future seismic ABC activities. A followup meeting was held at the January 2008 TRB meeting, resulting in the development of three seismic ABCrelated research problem statements.

In California, a Seismic ABC Work Team was created to focus efforts for application by Caltrans. The report also documents the use of precast concrete technology on several projects to reduce working days and traffic impacts. However, to fully implement ABC methods, remaining seismic issues must be resolved, particularly the development and testing of connection details capable of resisting seismic loads and deformations. View chapter Purchase book Read full chapter URL Seismic reliability of deteriorating reinforced concrete RC bridges P. Gardoni, D. Trejo, in Handbook of Seismic Risk Analysis and Management of Civil Infrastructure Systems, 2013 Structural capacity of, and seismic demand on, an example RC bridge subject to deterioration This section gives an example of the effects of deterioration, specifically corrosion although this could include other expansive deterioration mechanisms, on the structural capacity of and the seismic demand on a typical RC bridge. The values of the design variables listed in Table 19.1 are representative of current construction in California. Specifically, Mackie and Stojadinovic 2001 designed the bridge following the Caltrans Bridge Design Specification and Seismic Design Criteria Caltrans 1999 . Source Adapted from Choe et al. 2009. Three variables are assumed to be random the compressive

strength of concrete, f c.Specifically, it was assumed that f c.In addition, the mean shear capacity decays at a faster rate than the mean deformation capacity. Despite the importance of modeling complex bridge lateral boundary conditions and the existence of specific guidelines in the US Caltrans, ATC, MCEER and in Europe Eurocode 82 for the design of pile foundations and abutments, only minor guidance is provided by codes for numerical modeling of the entire coupled soilbridge system. The ultimate abutment load can be assumed to be limited by a maximum static soil passive pressure of 239 kPa.

The idea was to derive relationships that can be potentially used in cases where more accurate data are not available. Six typical RC Californian bridges namely Route 14, LADWP, W180, MGR, Adobe and La Veta and a Greek one TY3 overpass along the Egnatia Highway consisting of boxgirder superstructures, seattype abutments and shallow pile foundations were studied. Given the short spans and relatively high deck stiffness of the particular structures, the embankment mobilization and the inelastic behaviour of the soil material under high shear deformation levels was found to have a significant effect on the response of the bridge under seismic loading. The geometry of the TY3 case studied is illustrated in Fig. 22.2, while indicative distribution of plastic strains in the 3D space are depicted in Figs 22.3 and 22.4 for the transverse and longitudinal direction, respectively. View chapter Purchase book Read full chapter URL Girders R.K. Bharil, in Innovative Bridge Design Handbook, 2016 4.5 Design considerations Depending on the materials and loadings, design considerations vary. Unique bridge design guidelines exist for a wide variety of bridges; however, they should be verified to include concerns of the stakeholders and to comply with the jurisdictions. For large projects, the number of stakeholders and jurisdictions can be large and may have conflicting interests that must be handled carefully. Who owns the bridge now, and who will maintain it. Typically, this is a major factor in deciding which design codes and manuals will be used. The type of funding may impose some additional conditions and design considerations that must be included. For example, if the project funding includes federal funds, the bridge project may require more rigid review and oversight,while purely local funding may allow more leeway on the project design.

For example, a bridge carrying heavy rail traffic over a highway will require the bridge to be designed by AREMA codes AREMA, 2014 and Railroad Grade Separation Guidelines BNSF Railway and Union Pacific Railway, 2007 but also satisfy the state design manuals for highway safety features for pier and abutments located underneath. By continuing you agree to the use of cookies. While the actual stipend provided varies significantly among states and even for projects delivered within a state, there was a statistically significant negative correlation between contract value and percent of stipend 0.483 . Furthermore, a KruskalWallis test revealed a significant difference between the percent of stipend provided for different groups of contract values. Finally, the results of the questionnaire distributed to state DOTs showed that owners benefit by providing stipends because they increase competition, attract more bidders, enhance proposal quality, and receive a good rate of return on investment e.g., higher competition resulting in lower project costs. To ensure these benefits, the results of this study encourage providing stipends for proposals related to projects with high complexity and projects with a high level of design effort. Issued by Division of Construction. GRAY DAVIS. Governor. JEFF MORALES The selection and layout of the bearings shall be The s afety of the traveling public and of those who perform work within the State’s We must begin by first describing workforce planning, and the pivotal role knowledge transfer plays in ensuring thesuccess of Department of Transportation. 1. Specification PTWB01R2 For. Paint, Rapid Dry Waterborne Traffic Line, Determined by working backward through the schedule network logic from the project ’ s end Page 1 of 17 June 2017. Soil Nail Walls. Soil nails are passive reinforcing elements that are installed and grouted in subhorizontal.

While the private sector has overcome similar pressures with building information modeling BIM,

the public sector is working toward its own digital transformation and exploring the opportunities that come with technology in bridge design, construction and asset management. Interested in the value BIM can bring to bridge projects, 15 forwardthinking Departments of Transportation DOTs signed on to participate and along with other experts participating in the project, shared their take on BrIM and what they see as the path to adoption. Datarich constructible models boost design quality with uptodate information and consistent documentation. BrIM allows for accurate prefabrication, justintime material deliveries and project collaboration across disciplines. It's important to note that all not all 3D modeling software solutions are equal to BrIM. BrIM goes beyond basic 3D objects and emphasizes the "I" in the middle, accumulating a high level of detail and data in the model during design and construction so that it is useful throughout the entire lifecycle of the bridge. Regardless of where they are on the path to adoption, most DOTs agree that BrIM is the future and although change is hard, it's worth the effort. Francesca Maier, a principal consultant with Fair Cape Consulting and participant in the Transportation Pooled Fund Project, sees technology adoption as a critical part of attracting talent today and in the future. "Younger engineers have expectations for digital workflows and the industry isn't going to attract and retain those professionals with 2D," said Maier. As an industry, we need to provide them opportunities that consider the advancement of technologies." In that case, that data becomes siloed and the benefit of BrIM is minimized. Once we agree on IFC as the file format for bridges, vendors can create apps with reliable data exchange. It could simplify my work.

' For now, the construction side doesnt really know how to use BIM for bridges, so we will continue to see the same old plan outputs." We need to be consistent so that users know what to expect." For example, it can be used to provide safe routing and permitting for heavy trucks in automated fashion, which will improve the safety of the network and mobility of freight. Utilizing modelbased project management will make communication more transparent and enable collaboration regardless of project types. "I see us making an incremental transition toward modelbased design, gradually improving efficiency and collaboration between project owners and stakeholders," said Kurani. "At Caltrans, we still predominantly follow a traditional designbidbuild process. Contractors are comfortable with our current process, so they aren't pushing us to implement BrIM. Yet, we have to advance technologically and drive the changes that will bring more efficiency, less waste and better outcomes to our projects. Modelbased design allows us to work far more efficiently and do more with the budget that we have." As the model becomes an asbuilt record of the bridge, many think we will see the industry move even further towards collaborative projects. DOTs cant do this in a vacuum. It requires buyin from consultants and contractors. We need the entire industry to embrace BrIM to get the biggest benefit." The previous blog was about the costs and here he lists the three main benefits. What are the costs and benefits. How to get employees motivated How can the fabricator create confidence and trust by open and proactive communication with the client Thanks to the Tekla Structures, Grasshopper and Sofistik workflow. Then dont miss your chance to enter the 2020 Tekla Developer Awards. That is not all; you can also learn and develop your skills with our new Rebar Elearning. The 3D models help everyone onsite to quickly and easily understand formwork requirements.

Calculating accurate quantity takeoffs, creating a constructible 3D model and efficiently managing information in concrete construction projects. A constructible 3D model provides you with a clear picture of the information essential to making decisions related to quantity takeoffs, logistics, and schedules. A 3D model is an accurate source of information that helps you to visualize the structure, save time, prevent mistakes. TELECOMMUNICATIONS Wireless LICENSING PROGRAM.These procedures to license property to Telecommunications Wireless Carriers are a supplement to the Caltrans Right of Way Manual, Airspace Chapter, and are designed to assist District staff in licensing sites for Telecommunications Wireless Facilities and do not supplant the requirements identified in the Department's Airspace Development policies and procedures. PLEASE BE ADVISED the

information in this manual is updated on a regular basis; for the most current information, contact the appropriate department. CALTRANS' MISSION The mission of Caltrans is to Provide the people of California with a safe, efficient and effective intermodal transportation system; Plan, develop, maintain, and manage interregional transportation systems; Assist and guide delivery of local and regional transportation services; Provide leadership for California's transportation future by conducting research and development, and by formulating plans, programs, guidelines and standards; and Be a good steward of its resources. To perform its mission, Caltrans has under its control and management property located throughout the State of California that is used for the safe and effective operation of its transportation systems. Caltrans shall maximize public and private multiple use of property held for transportation purposes, including rights of way, in concert with community needs and good land use planning, when it is deemed safe to do so.

Many of the properties are capable of accommodating a secondary use without interfering with the operation and future expansion of the transportation corridor. This includes making property available for an unmanned telecommunications wireless facility under the terms of a nonexclusive license agreement when the licensing of a site benefits the public and is consistent with the State's transportation programs and needs. MISSION of TELECOMMUNICATIONS WIRELESS LICENSING PROGRAM The purpose of the licensing program is to increase the mobility of voice and data information through an improved telecommunications infrastructure and to provide Caltrans with more efficient communications systems. The mission of the Telecommunications Wireless Licensing Program is to Provide an efficient method to transport data that will improve the public's ability to communicate. Utilize Caltrans'owned assets to satisfy internal needs to establish a high tech network for communications. Generate revenue by licensing the site for a wireless facility when there are no negative impacts to operations. This mission statement is in concert with Executive Order W1891 issued by the Governor in October 1991, mandating that state agencies seek new opportunities to involve the private sector in maximizing the value of its real estate, and is supported by the Federal Highway Administration FHWA, which finds this program to be consistent with the Federal Telecommunications Act of 1996 and the need to develop the future Intelligent Transportation System ITS. A license may be granted for sites identified in the above listed properties when it is found safe, does not interfere with traffic or other transportation uses, and is visually unobtrusive. The Master License Agreement MLA approved by the California Transportation Commission CTC on May 1, 1997 must be executed by any cellular or Personal Communications Services PCS carrier interested in licensing a site.