

Site Utilization Answer Statement

MAP

Reference attached site utilization plans utilized at the Solano project. Phase 1 applies to the underground and early sitework phase. Phases 2 and 3 are provided for information only to demonstrate the typical progression of a site utilization map on a project.

TRAILER SIZING

There were (2) double wide trailers installed onsite. As a rule of thumb, sizing the trailers so that everyone has 100-150 sqft is appropriate.

HP office staff were housed in (1) double wide trailer and had a peak manpower of 10 salaried employees. This equates to approximately 150 sqft per person as the total sqft of the office is 1,536 sqft (64'x24').

The other double wide trailer (64'x24') housed the Owner and a conference room. This trailer housed 2 Owner employees, a desk for the Inspector of Record (IOR), and a few desks for sheriff oversight. Additionally, this trailer provided workspace for other design professionals that frequented the site throughout the project. To save money, HP and the Owner shared this conference room.

PARKING

While the peak craft manpower on the project was around 80, during the underground utility phase there were 40 employees onsite. To accommodate this need, the Sheriff allowed craft employees to park in an adjacent parking lot at the Stanton Facility. This enabled the project to have more space onsite for deliveries, laydown space, and eliminated congestion at the project's only gate. If your team decided to place parking onsite, it should accommodate at least 80 cars.

LAYDOWN SIZE:

During the underground site utility work, the electrician, plumber, and site utility contractor required laydown space. Reference the site utility map indicating the location of this area. Contractors were permitted to setup connexes at this area. This space was used for both material and connexes and was chosen because it was outside of the exterior fence. This meant that the trades could setup trailers and not have to move them for site utility, AC paving, fencing, or other operations. Additionally, as the area was small it required the trade partners to stay organized and not keep material onsite unnecessarily.

TOILETS:

As indicated in California Department of Industry Relations (DIR), California Code of Regulations Title 8, one facility is required per 20 workers of each gender. Because we were projecting about 40 employees on site, we had 3 toilets for males and 1 toilet for females. We carried an extra male toilet onsite to ensure we were always within compliance and if our estimate fluctuated a person or two that we would be ok.

DUMPSTERS:

A combined C&D (construction & demolition) waste dumpster was provided by Hensel Phelps for usage by all trades. A 40CY dumpster was placed near the entrance to the jobsite so that it was easy for the dumpster company to off haul and replace when full. A forklift was used to haul waste around the site and smaller garbage bins and “tippy dumpsters” were filled up and then dumped into the 40CY dumpster near the entrance. These smaller bins and tippy dumpsters were moved around the site on a daily basis and were placed near the work being done. This helped save crews time that would have unnecessarily been spent going back and forth to the 40CY dumpster at the entrance. The project did not have a LEED requirement or spec requirement to separate and recycle debris.

SHADE AREA:

California DIR requires that shade be present on the project site. The installation of the site utilities occurred during the summer and fall months when temperatures regularly rose above 80 degrees Fahrenheit. This is a vital component of HP’s Heat Illness Prevention Plan. As most trades took break at the same time, it was necessary to have enough shade to accommodate at least 40 employees. The shade area was installed adjacent to Buildings A and B so that employees could quickly access the shade if needed.

GROUND CONDITIONS:

While employee parking was offsite, the project site had to accommodate delivery trucks, earthwork equipment, forklifts, foreman trucks with tools, dumpster removal trucks, toilet cleaning trucks, etc. In other words, the site experienced heavy vehicular traffic throughout all phases of construction! To ensure all trades could effectively navigate the site ¾” crushed rock was installed at the main entrance, in front of the trailers, and in the laydown area. This assisted in eliminating the impact of the clay soil present onsite that would have hindered production if not addressed.

SPOILS MANAGEMENT:

In the lower left-hand corner of the site utilization map you’ll see space allocated for spoils management. The site originally had a berm at this location that the earthwork subcontractor leveled out prior to site utility install. Once site utilities and underground utilities at the building pads commenced, excess spoils were planned to be located as indicated on the map. It’s important that land is set aside for spoils at a location that is not impactful to other trades. Once this operation commenced the Sheriff also allowed spoils to be located offsite on the road outside of the fence on the lower right corner of the site utilization map. This assisted in maximizing space onsite and provided a space where material could be stored throughout the project incase it was needed in the future. At the end of the project the earthwork contractor knocked down the material along this road and ensured the soil was leveled out.

Addendum Answer Statement

Reference attached site aerial photos depicting the conditions onsite during this phase.

In the first revision of the response to the SITE – Sewer Line Slopes RFI the Design Team states it is acceptable for some of the sewer lines to have less than 1% slope.

Three days after receiving this response, the Inspector of Record (IOR) “red tags” the job, meaning they will not allow further installation of the sanitary sewer system until plumbing code is met. The Owner sends a stop work notice to the site utility contractor stating that they must immediately stop installing the sanitary sewer system until further notice. The Owner does NOT send a stop work notice to HP, the general contractor, so work other than the sanitary sewer system can proceed.

Two months after receiving the first response to the sewer slope RFI, the design team revises the response to include sewer redesign. The new design adds a sewer lift station that pumps sewage out of a new 20' deep collection well.

Option 1 was not preferred because if the project waited to install site utilities until all SOG work was complete then the project would have experienced a schedule impact due to structural steel installer's inability to start work. The site utility and SOG underground utility work was scheduled to occur concurrently, so prioritizing these items in sequence would result in a delay. While this option may sound superior because work onsite can continue after a short upfront delay (identified as 2 weeks in the problem statement), postponing site utilities to after SOG work will yield a large delay once the project recommences site utility install and prevents the install of steel. Because of the layout of the buildings, there were no effective locations to setup a crane for structural steel and metal building siding install without disrupting other trades. Additionally, there would need to be multiple crane setups to reach all corners of the buildings. Therefore, the steel and building installer decided to utilize large 24,000lbs forklifts. This meant that they needed to be able to efficiently drive around the site. Any underground utility trenches would have completely prevented install of their work. If the project decided to wait to install the underground utilities until after the metal building install, the impact to the project would have also been substantial because that is the time the project reached peak manpower.

Option 2 was not chosen as it would have resulted in delay costs to the Owner that HP would have had to fight hard to get compensated for (due to the lack of official stop work notice for all work onsite). Ultimately the sewer redesign took 2 months, so by deciding not to proceed with this option the project avoided a 2 month delay that it could not recover from and still finish on time and budget. Additionally, because the structural steel was under fabrication at the time, choosing this option would result in added costs for staging the steel offsite or double handling material.

HP proceeded with Option 3, by working on the below grade utilities and SOG preparation work as the design team continued working towards a solution for the sanitary sewer slope. Once HP received the sanitary sewer redesign, we proceeded with installing the site utilities at the same time as the below grade utilities and SOG preparation work. While this did cause more trade traffic on the site during this time, it was critical to complete ALL underground utilities prior to metal building installation. To effectively ensure the safety of the trade partners onsite HP refined the site utilization plan, and closely coordinated work sequencing to ensure trades were not working on top of one another. As a result, none of the trade partners requested time or compensation for inefficiencies due to work resequencing.

While it was difficult for the project to have deep trenches around the building site and at the building pads it was necessary to not completely derail the project schedule.

Early Deliverable and Final Deliverable Grading:

The 10AM deliverable was graded for inclusion of the items listed above as well as any additional items of value not listed above but detailed on the map that improved the effectiveness of site utilization plan. The map was graded for flexibility as the project progresses through the different phases, clarity, organization, and presentation/overall visual appeal. The narrative was graded for the explanation provided for including and positioning each facility. As this was an early deliverable, it was not graded on facility sizing due to project metrics (i.e. the trailer sizing was not graded on projected staffing).

The final deliverable was graded for the inclusion of the items on the map listed above, as well as explanations for facility sizing (i.e. trailer sizing was graded for projected staffing). In addition, this section was graded for the narrative explanation of which option was chosen. You didn't have to choose the same option HP chose (option 3), however you needed to provide a detailed explanation of the option you chose and defend your choice with logic and reason.

September 30th, 2017



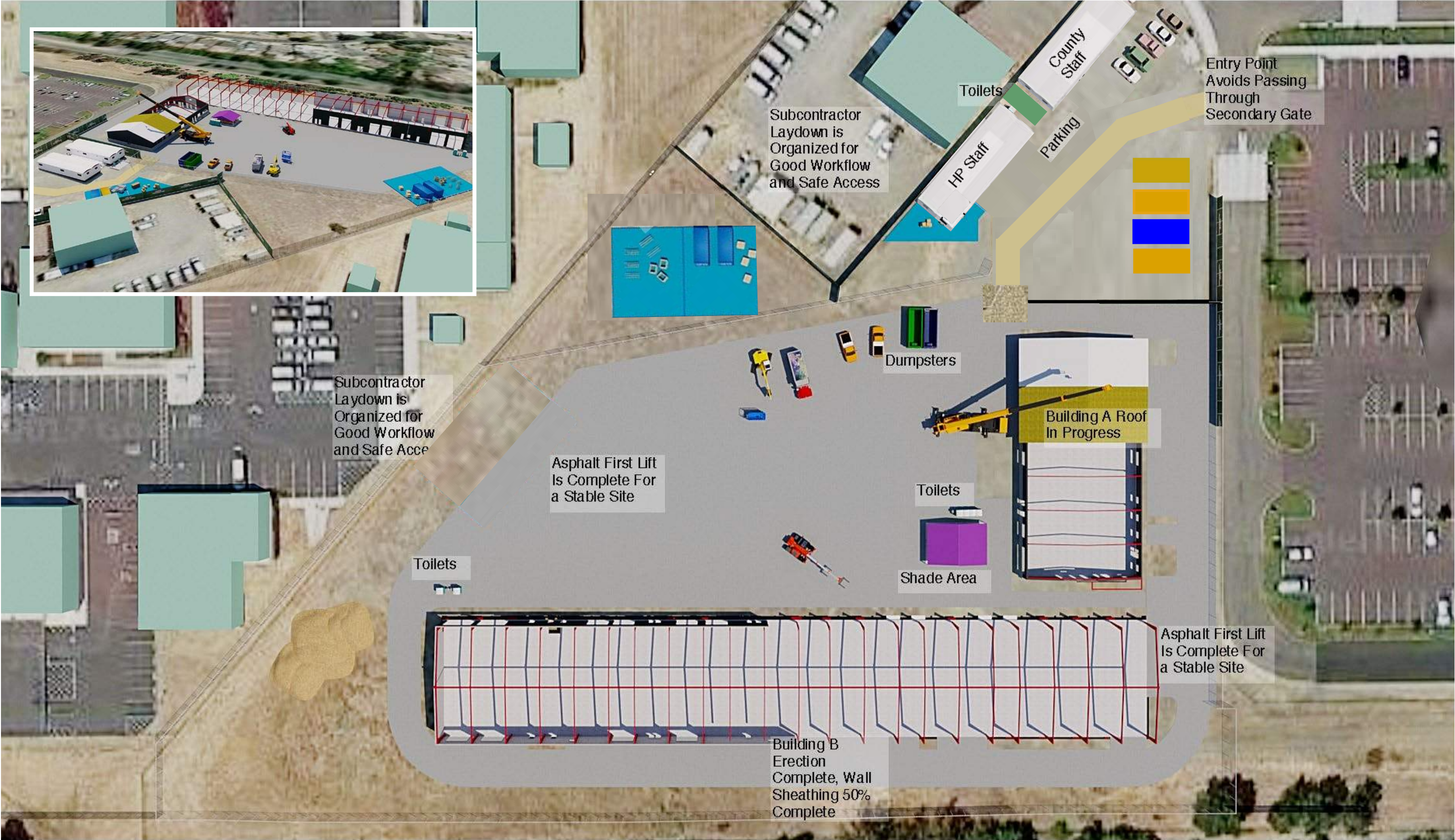
August 26th, 2017

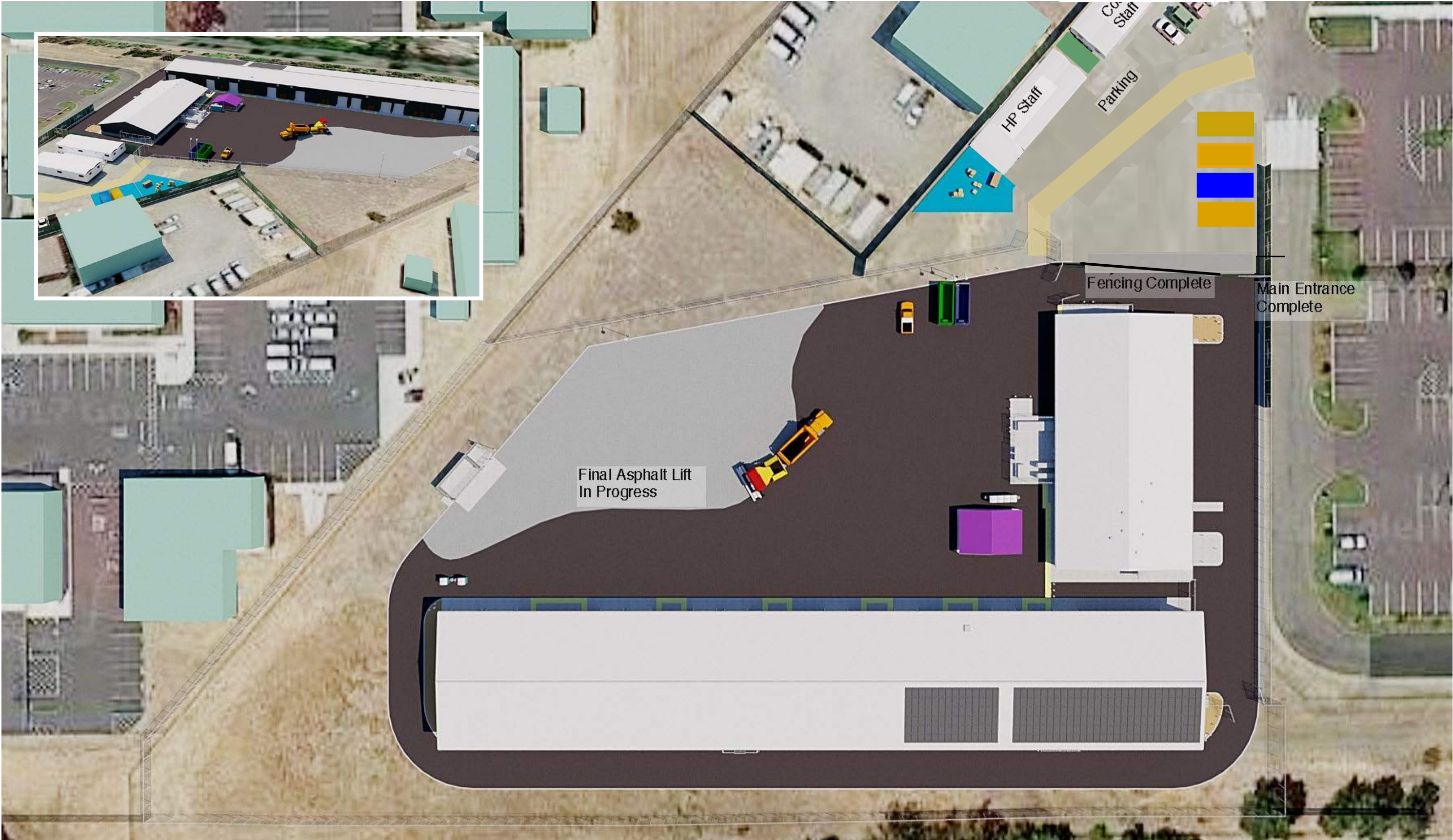


Site Logistics | Phase 1



Site Logistics | Phase 2





This information is provided free of charge by the Department of Industrial Relations from its web site at www.dir.ca.gov. These regulations are for the convenience of the user and no representation or warranty is made that the information is current or accurate. See full disclaimer at http://www.dir.ca.gov/od_pub/disclaimer.html.

Subchapter 4. Construction Safety Orders

Article 3. General

[Return to index](#)

[New query](#)

§1527. Washing Facilities, Food Handling, and Temporary Sleeping Quarters.

[New provisions for employee washing stations in the construction industry take effect February 5, 2003](#)

(a) Washing Facilities.

(1) General. Washing facilities shall be provided as follows: A minimum of one washing station shall be provided for each twenty employees or fraction thereof. Washing stations provided to comply with this requirement shall at all times:

- (A) Be maintained in a clean and sanitary condition;
- (B) Have an adequate supply of water for effective washing;
- (C) Have a readily available supply of soap or other suitable cleansing agent;
- (D) Have a readily available supply of single-use towels or a warm-air blower;
- (E) Be located and arranged so that any time a toilet is used, the user can readily wash; and
- (F) When provided in association with a nonwater carriage toilet facility in accordance with Section 1526(c),
 1. Provide a sign or equivalent method of notice indicating that the water is intended for washing; and
 2. Be located outside of the toilet facility and not attached to it.

Exception to subsection (a)(1)(F)(2.): Where there are less than 5 employees, and only one toilet facility is provided, the required washing facility may be located inside of the toilet facility.

Exception to subsection (a)(1): Mobile crews having readily available transportation to a nearby toilet and washing facility.

(2) Washing facilities for hazardous substances. Where employees are engaging in the application of paints or coatings, or in other operations involving substances which may be harmful to the employees, washing facilities shall be provided in near proximity to the worksite and shall be so equipped as to enable employees to remove such substances. Facilities provided to comply with this requirement shall at all times:

- (A) Be maintained in a clean and sanitary condition;

(B) Have an adequate supply of water sufficient for effective removal of the hazardous substance from skin surfaces; and

(C) Have a readily available supply of soap, and where necessary to effect removal, special cleansing compounds designed specifically for removal of the hazardous substance from skin surfaces; and

(D) Have a readily available supply of single use towels or a warm-air blower.

(3) Showers. When showering is required by the employer or these orders, the shower shall meet the requirements of Section 3366(f).

(b) Food Handling. All food service facilities and operations shall meet the applicable laws, ordinances, and regulations of the jurisdictions in which they are located

(c) Temporary Sleeping Quarters. When temporary sleeping quarters are provided, they shall be heated, ventilated, and lighted and shall meet the applicable laws, ordinances and regulations of the jurisdictions in which they are located.

NOTE

Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

HISTORY

1. New section filed 1-7-75; effective thirtieth day thereafter (Register 75, No. 2).
2. Repealer and new section filed 9-27-85; effective thirtieth day thereafter (Register 85, No. 40).
3. Amendment filed 1-6-2003; operative 2-5-2003 (Register 2003, No. 2).

 [Go Back to Article 3 Table of Contents](#)



Department of Industrial Relations

[Cal/OSHA](#) | [eTools](#) | [Heat Illness Prevention](#) | Preventing and Responding to Heat Illness

[Español](#)



Heat Illness Prevention *etool*

[Home](#) | [Site Map](#) | [In the Real World](#) | [What is Heat Illness?](#) | [What Causes Heat Illness?](#) | [Preventing and Responding to Heat Illness](#) | [Resources](#)

Preventing and Responding to Heat Illness

Elements of Your Written Program and Effective Work Practices

Quick Links

- [Regulations](#)
- [Employer Sample Procedures](#)

SHADE AND OTHER COOLING MEASURES

What is in T8CCR 3395?

T8CCR 3395(b) Definitions state:

- "Shade" means blockage of direct sunlight. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked sunlight. Shade is not adequate when heat in the area of shade defeats the purpose of shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning. Shade may be provided by any natural or artificial means that does not expose employees to unsafe or unhealthy conditions and that does not deter or discourage access or use.

T8CCR 3395(d) Access to shade states:

- (1) Shade shall be present when the temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work area exceeds 80 degrees Fahrenheit, the employer shall have and maintain one or more areas with shade at all times while employees are present that are either open to the air or provided with ventilation or cooling. The amount of shade present shall be at least enough to accommodate the number of employees on recovery or rest periods, so that they can sit in a normal posture fully in the shade without having to be in physical contact with each other. The shade shall be located as close as practicable to the areas where employees are working. Subject to the same specifications, the amount of shade present during meal periods shall be at least enough to accommodate the number of employees on the meal period who remain onsite.

- (2) Shade shall be available when the temperature does not exceed 80 degrees Fahrenheit. When the outdoor temperature in the work area does not exceed 80 degrees Fahrenheit employers shall either provide shade as per subsection (d)(1) or provide timely access to shade upon an employee's request.
- (3) Employees shall be allowed and encouraged to take a preventative cool- down rest in the shade when they feel the need to do so to protect themselves from overheating. Such access to shade shall be permitted at all times. An individual employee who takes a preventative cool-down rest (A) shall be monitored and asked if he or she is experiencing symptoms of heat illness; (B) shall be encouraged to remain in the shade; and (C) shall not be ordered back to work until any signs or symptoms of heat illness have abated, but in no event less than 5 minutes in addition to the time needed to access the shade.
- (4) If an employee exhibits signs or reports symptoms of heat illness while taking a preventative cool-down rest or during a preventative cool-down rest period, the employer shall provide appropriate first aid or emergency response according to subsection (f) of this section.

Exceptions to subsections (d)(1) and (d)(2):

- (1) Where the employer can demonstrate that it is infeasible or unsafe to have a shade structure, or otherwise to have shade present on a continuous basis, the employer may utilize alternative procedures for providing access to shade if the alternative procedures provide equivalent protection.
- (2) Except for employers in the agricultural industry, cooling measures other than shade (e.g., use of misting machines) may be provided in lieu of shade if the employer can demonstrate that these measures are at least as effective as shade in allowing employees to cool.

T8CCR 3395 (i)(1) states the following:

- (i) Heat Illness Prevention Plan. The employer's shall establish, implement, and maintain, an effective heat illness prevention plan. The plan shall be in writing in both English and the language understood by the majority of the employees and shall be made available at the worksite to employees and to representatives of the Division upon request. The Heat Illness Prevention Plan may be included as part of the employer's Illness and Injury Prevention Program required by section 3203, and shall, at a minimum, contain:
 - (1) Procedures for the provision of water and access to shade.

Guidance, Best Practices and Warnings

To prevent heat illness, there must be a balance between heat load on the body (heat produced internally by the body and gained from external sources) and heat released from the body to allow the body to cool.

When to provide shade?

Cal/OSHA requires that when temperature in the workplace exceeds 80 degrees, shade structures must be erected if no other shade is readily available.

Even if temperatures do not exceed 80 degrees, shade must still be available, and it is helpful to have the shade erected if the weather is hot enough that the shade can help employees cool off.

Employers should monitor predicted weather temperatures in advance (for example, by television or radio or on the Internet) to know when the temperature will probably exceed 80 degrees. Employers are expected to know if the temperature is in fact exceeding 80 degrees at the worksite.

Amount of Shade

"Recovery and rest period" refers to the normal breaks. Employers are required to provide enough shade to accommodate all of the employees who are on such a break at any point in time. This does not mean that employers are required to provide enough shade to accommodate all of the employees on the shift at the same time. Employers may, for example, rotate the breaks among employees. They may also erect additional structures on an as-needed basis.

During meal periods, the employer must provide enough shade for all of the employees who choose to remain in the general area of work or in areas designated for recovery and rest periods. Employers may rotate employees in and out of meal periods, like with recovery and rest periods. Employers are not required to provide shade for employees who choose to spend meal periods in their own air-conditioned vehicles. However, employers may not require or pressure employees to eat their lunch in their own vehicles or go off site to eat.

Ways To Provide Cooling

You need to provide shade as required to employees to allow their bodies to cool during breaks (see [Benefits of Rest Breaks](#)), at lunch, or during a preventative cool down rest periods (see [Preventative Cool Down Rest Periods](#)) should one become necessary. Except for employers in Agriculture, you can use one or more Alternative Cooling Measures (in lieu of shade) to provide cooling to your employees, see [Shade and Other Cooling Measures](#). To use these Alternative Cooling Measures you must make sure they are safe to use for the conditions in your workplace and demonstrate that they are at least as effective as shade in allowing employees to cool. Also, during high heat you may need to add one or more Alternative Cooling Measures to prevent heat illness.

No matter how you choose to provide cooling for your employees remember to ensure that:

- Sufficient supplies of potable drinking water are close by
- Individuals are encouraged to frequently drink sufficient amounts of water
- Employees are able to assume comfortable body postures

You also must ensure that the shade is easy for employees to reach and they do not have to encounter any obstacles or hazardous or unreasonably unpleasant conditions while moving towards the shade or resting in the shade.

BEST PRACTICES

Ways to Provide Shade

You can provide cooling from shade by using:

- Pop-ups



- Canopies



- Umbrellas



- Structures that are mechanically ventilated or open to air movement (e.g., semi finished garages or other unfinished structures). If two or more stories are available employees can rest in the lowest floor in the shade.



- Tarpaulins tied to 4 posts
- Lean-tos
- Conex mounted RV canopies
- Full and thick tree canopies that block direct sunlight
- Buildings
- Enclosed areas only if they provide cooling comparable to shade in the open air

Providing Cooling from Shade

- It is a good idea to set up the shade in advance, if at 5:00 p.m. the night before, the temperature is predicted to exceed 80 °F. Or if you want to monitor the temperature during the work hours, perform hourly checks of the temperature at the worksite on the day of work and set up the shade immediately if the temperatures exceeds 80 Degrees.
- Set-up shades such that there will always be room for employees wanting to have rest under the shade and for handling emergency situations during warm or hot weather, high heat and a heat wave.
- Set-up in advance portable umbrellas, canopies, and other portable devices used for providing shade



- Move portable shade areas as close to work areas as possible.
- In situations where trees or other vegetation are used to provide shade, have a designated person evaluate the thickness and shape of the shaded area before assuming that sufficient shadow is being cast to protect employees throughout the shift.
- Have a designated person to point out the daily location of the shade structures to the workers.
- Do not let employees sit directly on the ground as it may add more heat to the body. Instead, provide blankets, chairs, benches, etc.
- 2 weeks in advance (or as many days in advance as possible), go on the internet (www.noaa.gov), call the National Weather Service or check the Weather Channel TV to view the extended weather forecast in order to plan in advance the work schedule. Find out whether high heat is expected and if additional work schedule modifications will be necessary. This type of advance planning should take place all summer long.
- Prior to each workday, have a designated person monitor the weather using www.noaa.gov or a thermometer at the worksite see [Monitor The Weather](#). Based on the weather, make modifications to the work schedule such as stopping work early, rescheduling the job, working at night or during the cooler hours of the day, and increasing the number of water and rest breaks. The designated person can check the temperature every 60 minutes to ensure that once the temperature:

- exceeds 80 degrees Fahrenheit, the shade structures are accessible to the workers.
- indicates an upcoming heat wave, special precautions are taken.
- equals or exceeds 95 degrees Fahrenheit High Heat Procedures are implemented.



WARNING

Shade is adequate only when it completely blocks the direct sunlight and allows the body to cool. In adequate shade people and objects in the shade do not cast shadows in the area of blocked sunlight. Shade is not adequate when it does not allow the body to cool.

Do not provide shade by using:

- Metal storage sheds and other similar out-buildings unless they provide a cooling environment comparable to shade in the open air
- The interior of vehicles. This is because they keep heating up in the sun and do not provide cooling unless the air-conditioning system is continually running and working effectively
- Areas underneath or near equipment (e.g., tractors) or vehicles as they expose employees to other potential hazards



WARNING

Access to shade is effective only when it does not deter or discourage access or use.

Do not have shade located:

- Across a fence or obstacles
- Too far from work area
- Such that employees do not have to cross traffic or waterways to reach the shade
- Near areas with dirty, dusty and unsanitary conditions
- Next to portable toilet facilities or where employees would sit on wet or muddy ground or come in contact with branches, brush, and thorns.

BEST PRACTICES

Other Cooling Measures

For non-agricultural employers, when it is not possible to erect a shade structure, the employer may use alternative procedures for providing access to shade. Before using alternative cooling measures make sure

they are safe to use for the conditions in your workplace and you must demonstrate that they are at least as effective as shade in allowing employees to cool.

Alternative cooling measures include, but are not limited to, cooling employees by:

- Putting them in an air-conditioned environment, if available
- Using misting machines
- Using cooling vests (e.g., commercially available ice vests)
- Using water-cooled garments (e.g., hoods, vests and "long johns"). These require a battery-driven circulating pump, liquid-ice coolant, and a container
- Using battery operated, portable cooling devices or equipment
- Using air cooled garments (e.g., suits or hoods)

About DIR

Who we are

DIR Divisions,
Boards &
Commissions

Contact DIR

Work with Us

Jobs at DIR

Licensing,
registrations,
certifications &
permits

Required Notifications

Public Records
Requests

Learn More

Acceso al
idioma

Frequently
Asked
Questions

Site Map

Back to Top

Disclaimer

Accessibility

Contact Us

Conditions of Use

Privacy Policy

Site Help



Copyright © 2019 State of California