

California Institute of Technology

# GENERAL CONSTRUCTION GUIDE



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## PURPOSE

The California Institute of Technology (Caltech) is committed to complying with all applicable laws and regulations concerning construction activities on campus. The purpose of the [Caltech General Construction Guide](#) is to reduce incidents that may cause personal injury, property damage, and/or liability losses due to construction work of Caltech-owned buildings and facilities.

## RESPONSIBILITIES

### STOP WORK AUTHORITY

- All identified parties have the authority to stop work when a perceived imminent hazard is detected.

### GENERAL CONTRACTORS AND SUB-CONTRACTORS

- Have on-site and implement a site-specific Safety Plan/Code of Safe Practices and written IIPP for each site/job prior to commencing work, see [Cal/OSHA Pocket Guide for the Construction Industry](#).
- Establish the necessary safety precautions needed to perform work without endangering Caltech personnel and/or property.
- Follow Caltech's Contractors Responsibility for Safe Performance ([Appendix A](#)) and the General Work Requirements as outlined in the [Cal OSHA Pocket Guide for the Construction Industry](#).  
Note: This extends to Contractor employees and Sub-Contractor employees.
- Adhere to the condition that any contract or sub-contract issued must contain a requirement for all Contractors to utilize the most updated regulatory requirements governing the type of work being performed.

### Campus Building Inspector

- Attend pre-construction meetings where necessary.
- Discuss Caltech's inspection parameters.
- Evaluate plans and specifications to ensure conformance with Caltech Design Guidelines & California Building Code.
- Conduct QC/QA inspections to inspect standards of building structures and materials.
- Issue correction notice where structures and materials do not comply with Caltech's Design Guidelines or project documents.
- Attend close-out meetings of construction projects.
- Review specific construction projects that require competent person(s) for high risk activities.

### CALTECH PROJECT MANAGERS

- Prior to the commencement of work, ensure that Contractors have a site-specific Safety Plan/Code of Safe Practices, an IIPP, and employee training records.
- Set-up a pre-construction meeting between the General Contractor and EHS with him/her present.
- Ensure that required documentation listed in [Appendix A](#) is readily available for regulatory review.

### ENVIRONMENT, HEALTH, AND SAFETY (EH&S)

- Meet with the general contractor at the start of each project at the pre-construction meeting.
- Present Caltech site-specific safety policies and jobsite requirements. See [Appendix A](#).
- Provide the Caltech Project Manager technical assistance and subject matter expertise as needed.
- Assist Campus Construction Inspector with on-site audits.

## **HAZARDOUS WASTE MANIFESTS**

A [Caltech EHS representative](#) trained in DOT regulations and Hazardous Waste Manifests must review and sign any Hazardous Waste Manifests prior to the removal of any hazardous waste from a job site. Manifest review is to be scheduled in advance to ensure availability of the appropriate EHS representative.

## **EMERGENCIES AND INJURIES**

Emergencies and/or injuries requiring medical attention that occur on a construction site must be immediately reported to Campus Security at Caltech extension 5000 (Caltech landline phones) or by calling (626) 395-5000. The process for reporting incidents and injuries are outline in the following link: <http://safety.caltech.edu/incident-and-injury-reporting>.

## APPENDIX A: Contractors Responsibility for Safe Performance

Construction employers must comply with Cal/OSHA regulations outlined in California Code of Regulations, Title 8, Chapter 4: Subchapter 4 ([Construction Safety Orders](#)).

The Information below summarizes the core requirements of Cal/OSHA construction safety orders.

1. General Contractors are required to have the following documents on site.  
[Construction Guide for Employers \(ca.gov\)](#)
  - a. Injury and Illness Prevention Program (IIPP)
  - b. All Cal/OSHA Required Permits and Certifications
  - c. Heat Illness Prevention Program
  - d. Fall Protection Plan (if applicable)
  - e. Safety Data Sheets (SDS)
  
2. On Site Hazard Warning and Postings
  - a. Cal/OSHA Poster
  - b. Code of Safe Practices
  - c. Emergency Phone Numbers
  - d. Hazard Warning Signs
  - e. Operating Rules for Forklifts (if applicable)
  
3. Written Safety Programs (if applicable, must comply with Caltech-specific programs)
  - a. [Respiratory Protection Program, for work sites where respirators are used](#)
  - b. [Lock-Out Tag-Out \(LOTO\) Program](#)
  - c. [Hot Work Permit](#)
  - d. [Confined Space Program](#)
  
4. Tailgate Documentation
  - a. Primary Contractor
  - b. Sub-Contractor

## APENDIX B: Caltech Environmental Requirements

Contractors and Sub-Contractors are required to comply with Caltech's [Hazardous Waste Management Program](#) for all projects that take place within Caltech property. This appendix references applicable parts of the Hazardous Waste Management Program that relates to construction projects. This appendix is to serve as a general guide. Please contact the [Environmental, Health, and Safety Office](#) for specific project inquiries.

### Construction Generated Regulated Waste

#### Applicable Regulations

- Federal Hazardous Waste - Title 40 –Subpart 261 (Identification and Listing of Hazardous Waste)
  - [Electronic Code of Federal Regulations \(eCFR\)](#).
- Federal RCRA laws requiring generators of hazardous waste comply with EPA requirements under
  - [Title 40 of the Code of Federal Regulations, Part 262](#).
- [Toxic Substances Control Act \(TSCA\)](#). Federal law also enacted a special set of laws regarding substances that had long term effects on both human and environmental health. TSCA requires that we properly identify sources of:
  - Poly Chlorinated Biphenyls (PCBs)
  - Asbestos
  - Lead
  - Radon
- The State of California has enacted additional laws that further regulate hazardous wastes beyond the Federal requirements.
  - California Hazardous Waste
    - [Title 22, Division 4.5](#) – Environmental Health Standards for the Management of Hazardous Waste
  - California Universal Waste Rule (E-waste)
    - [Title 22, Division 4.5, Chapter 23, and § 66273.1](#)

#### Hazardous Waste Identification and Management

Waste generated during the various phases of construction must be identified and disposed of through the appropriate channels as described by the [Resource Conservation and Recovery Act \(RCRA\)](#). RCRA regulations were developed by the Environmental Protection Agency (EPA) to function as a standard framework for the management of hazardous and non-hazardous solid waste.

Construction related waste is determined to be hazardous if it is specifically listed as a known hazardous waste by the Environmental Protection Agency (EPA), as described in [40 CFR 261](#). Waste material(s) that are not specifically listed by the EPA may still be considered hazardous waste if it exhibits specific characteristics such as: Ignitability, Corrosivity, Reactivity, and Toxicity. Follow the provided link for a more detailed explanation of specific waste characteristics [40 CFR 261.20](#).

Contractors are required to use only [Caltech Approved Hazardous Waste Disposal Sites](#).

In addition to the RCRA, Federal law also enacted a special set of laws regarding substances that had long term effects on both human and environmental health. These laws are described under the [Toxic Substances Control Act \(TSCA\)](#). TSCA is applicable to construction related projects due to the type of waste material that might be removed as part of renovations or demolitions:

- Poly Chlorinated Biphenyls (PCBs) – common in older light fixture ballasts and electrical transformers
- Asbestos – found in construction building material and insulation prior to the EPA phase out in 1989

- Lead – commonly found in older paint, ceramics, and pipe/pipe welding materials.
  - NOTE: Any contract or sub-contract issued must contain a requirement for all Contractors to utilize the most updated regulatory requirements as these regulations do change based on the latest EPA assessments.

### California Specific Hazardous Waste

The State of California has enacted additional laws that further regulate hazardous waste beyond the Federal requirements [CCR Division 4.5](#). Wastes such as used motor oil or those materials which cause widespread aquatic environmental damage are treated as hazardous waste for State purposes.

Disposal of Electronic waste (E-waste) is also regulated in the State of California, [22 CCR 66273.1](#). E-waste is often generated as part of renovation projects. E-waste should not be disposed as general waste and instead directed to specialized vendors who can manage the waste with accordance to state regulations. Commonly generated construction E-waste includes: light fixtures, light bulbs, ballasts, and associated switches.

### Asbestos Related Projects

- The EHS Office can assist Project Managers in determining whether asbestos-containing materials (ACMs) are present before the removal of any building or insulation materials.
  - a. A Certified Asbestos Consultant (CAC) must be appointed for projects relating to Class I or Class II abatement projects [Title 8 Section 1529](#).
  - b. Provide sample analytics report to the EHS Office to ensure proper management of any possible ACM related to D&C projects.
  - c. Notify and provide the EHS Office with documentation relating to the submission filing of SCAQMD [Rule 1403 Procedure 5 plans](#).

### Lead Related Projects

- The EHS Office can assist Project Managers in determining whether lead is present before its removal.
  - a. A lead inspector/assessor certified by the California Department of Public Health (CDPH) must be used to perform lead inspections, collect samples, and interpret laboratory analytical results.
  - b. Only CDPH-certified lead supervisors and workers may be used for removal of any lead-containing materials (LCMs).

### Nano Particulate Work Site

- The EHS Office can assist Project Managers in determining whether Nano particles are present before the start of construction related work.
  - a. Laboratory space that actively used carbon Nano particulates are to be assessed prior to start of work.

### Project Dust Control

- A [Dust Control Plan](#) shall be provided to the Project Manager prior to work start and adhered to by the Contractor. Additionally, Contractors must submit a Dust Control Plan to the South Coast Air Quality Management District (SCAQMD) for large-scale operations prior to work start. “Large scale” is defined as earth moving throughput volume of 5,000 cubic yards or more of material three (3) or more times during a 365-day time period.

### Storm Water Pollution Prevention Plans

- A [Storm Water Pollution Prevention Plan](#) shall be provided to the Project Manager prior to work start and adhered to by the Contractor. If more than one acre of land is disturbed, the Contractor must submit a Storm Water Pollution Prevention Plan to the California State Water Resources Control Board (SWRCB).



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## CALTECH APPROVED HAZARDOUS WASTE DISPOSAL SITES

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### HAZARDOUS WASTE

#### CLEAN HARBORS

Buttonwillow Facility  
2500 Lokern Road, McKittrick, CA 93251  
661-762-6200

Wilmington Facility  
1737 Denni Street, Wilmington, CA 90744  
310-835-9998

#### VEOLIA ENVIRONMENTAL SERVICES

107 S. Motor Avenue  
Azusa, CA 91702  
626-334-5117

#### CROSBY & OVERTON

1610 W. 17<sup>TH</sup> Street  
Long Beach, CA 90813  
562-432-5445

#### STERICYCLE ENGLEWOOD

425 Isis Avenue  
Inglewood, CA 90301  
323-776-6233

### ASBESTOS

#### WASTE MANAGEMENT AZUSA

1211 W. Gladstone Street  
Azusa, CA 91702  
626-334-0719

### COMBINED TSCA AND RCRA WASTE

#### WASTE MANAGEMENT KETTLEMAN

35251 Skyline Road  
Kettleman City, CA 93239  
559-386-9711

REVISED 05/04/2021

FOR MORE INFORMATION, PLEASE CONTACT THE CALTECH EHS OFFICE

[safety@caltech.edu](mailto:safety@caltech.edu) or 626-395-6727

## APPENDIX C: Caltech Specific Requirements

Contractors are responsible for adhering to the following rules while engaged in activities on Caltech property. Violations of Caltech safety rules and/or applicable federal, state, or local (municipal) ordinances may result in a temporary job shut down. Note: This extends to Contractor employees and Sub-Contractor employees.

- a) Caltech has a [Hot Work Permit Program](#) in place that is to be adhered to, including staging of appropriate fire safety equipment. Any procedures that produce sparks and/or heat require a Caltech Hot Work Permit to be issued by the Project Manager, Caltech Building Inspector, or an alternate individual designated by the Caltech Design and Construction Department Senior Director prior to work start. All contractors shall follow Caltech's standard division one document in conjunction with the guidance below.
- b) Shutting off fire sprinkler valves, smoke or heat detectors, and/or fire alarm systems is forbidden without prior notification and written authorization by responsible Design and Construction Project Manager.
- c) Not properly covering the above should be noted
- d) Contractors shall consult with the Project Manager before working on or around high-voltage electrical lines or substations.
- e) Contractor employees shall not operate any Caltech equipment or tools unless the employee has been authorized to do so in writing by Caltech.
- f) Contractors will be responsible for following proper Caltech procedures in the event of an injury, fire, or other emergency on the job.
  - a. In case of emergency call extension 5000 from any campus landline. If using a mobile phone, call (626) 395-5000.
  - b. Immediately alert the Design and Construction Project Manager/Site Supervisor in case of any incidents or injury.
- g) Contractors must ensure that Zero VOC and No Odor Paints are used on any campus projects.
- h) Disposal of non-hazardous construction debris must comply with the City of Pasadena Municipal Code, Chapter 8.62, Ordinance No. 6917 "[Construction & Recycling Ordinance](#)."
- i) All vehicles must be kept under the control of the Contractor at all times when on Caltech property.
- j) Contractors who furnish their own industrial carts must follow Caltech's Rules of the Road and adhere to access routes identified on the Cart Access Map:

### RULES OF THE ROAD

- Speed **LIMIT** 5 mph
- Pedestrians and bicycles have the right of way
- Don't honk unless necessary to avoid an accident
- Do not travel along Olive Walk & San Pasqual Walk between the hours of 11:30 a. m. – 1:30 p.m. Monday - Friday.
- Do not drive on the grass or off paved paths
- Do not travel on the city streets, except in a designated cross walk



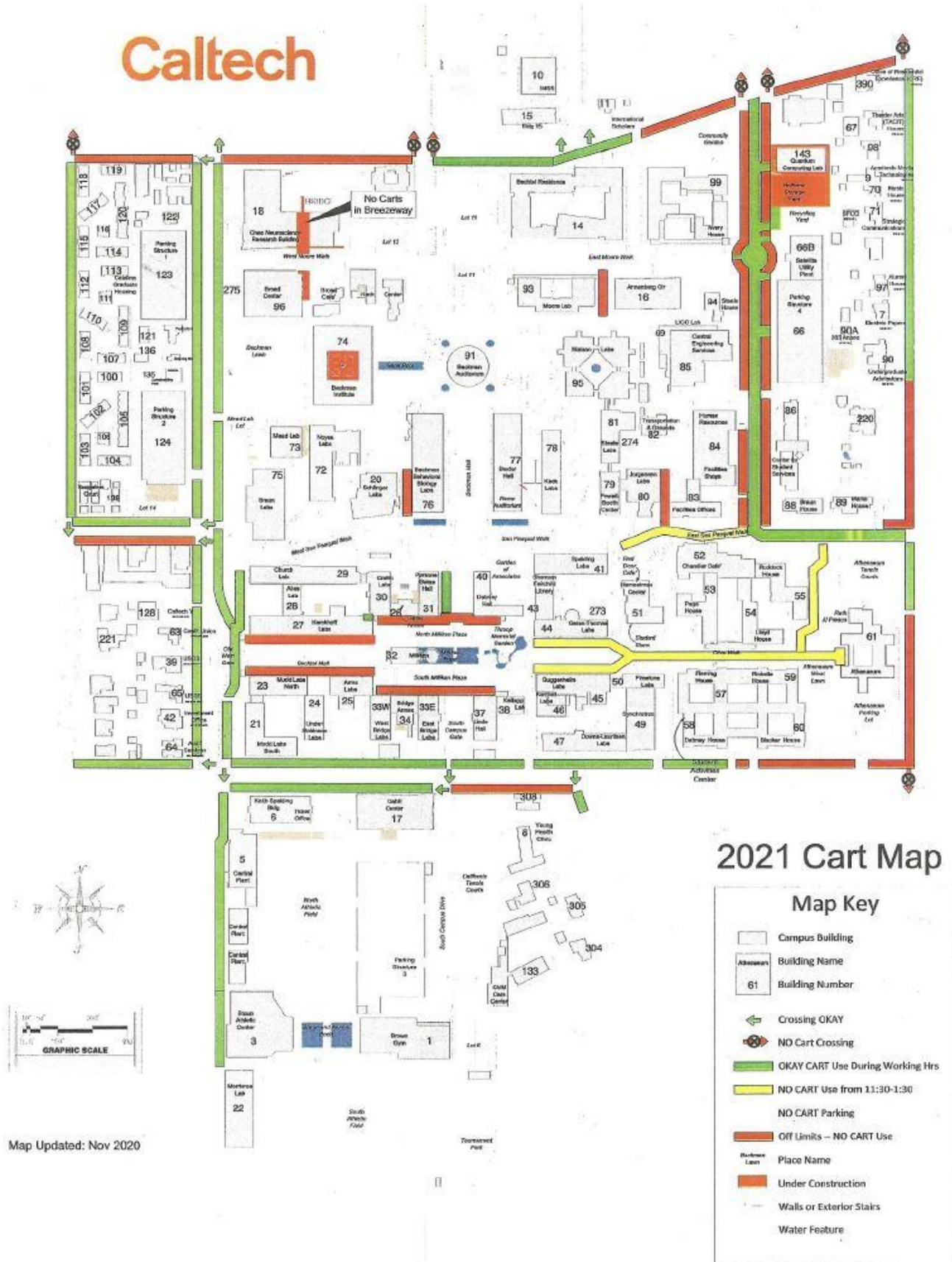
### PARKING

- Do not block building entrances
- Do not park in locations shown on map:
- Park in designated "cart parking" spaces whenever possible
- Do not leave keys in an unattended parked cart

### IN CASE OF ACCIDENT

- Notify your supervisor immediately
- Inspect both the cart and object that was struck for damage
- Notify Security immediately at ext. 5000

# Caltech



Map Updated: Nov 2020