



COUNTY OF LOS ANGELES - DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION - DRAINAGE AND GRADING SECTION
BUILDING PLAN DRAINAGE REVIEW
(SECTION 110.1)

_____ SITE ADDRESS	_____ TR/PM-LOT NO.	_____ OFFICE	_____ BUILDING PERMIT APPLICATION NO.
_____ DESIGN ENGINEER / APPLICANT			(_____)_____ TELEPHONE NO.
_____ OWNER			(_____)_____ TELEPHONE NO.
_____ PLAN CHECKER			_____ ENTRY DATE
_____ REVIEW DATE	_____ PROJECT DESCRIPTION / NAME		

- APPROVED.** Finish Floor shall be _____ inches minimum above the highest natural/finished grade. Comply with additional items checked below. Approval Date: _____.
- PRIOR TO APPROVAL,** resubmit **two (2)** sets of plans with revisions and corrections as circled below. **Return this review sheet and check print for reference.**

A. GENERAL COMMENTS

1. See comments on the returned set of plans. Return both this review sheet and check print with the next submittal.
2. A grading permit is (may be) required. See additional comments. Contact the building official for grading permit requirements.
3. Compliance with Standard Urban Stormwater Mitigation Plan (SUSMP) is (may be) required. See additional comments. See attached SUSMP review sheet.
4. A Storm Water Pollution Prevention Plan (SWPPP) is (may be) required for work disturbing an area of soil one acre or greater. See additional comments / See attached SWPPP review sheet.
5. Compliance with the L.A. County Low Impact Development (LID) Ordinance is (may be) required. See additional comments. See attached LID review sheet.
6. Any work within the public easement requires an excavation/encroachment permit from Construction Division, Permit Section, prior to Building Drainage Approval. Add note 4c below to the plans.
 - a. Obtain approval of road R/W improvements from Land Development, Road Unit, at (626) 458-4921.
 - b. Obtain approval of work impacting a Flood Control District easement from Construction Div, Flood Unit at (626) 458-3127.
 - c. Obtain approval of proposed work from CALTRANS at (213) 897-3631.
7. Please post the address at the site for field review. Stake the location of the proposed structure.

B. PLOT / SITE PLAN

1. Provide a plot/site plan showing the location of all proposed structures, property lines, right-of-way lines, easements, and existing / proposed septic systems.
2. Show location and size of all oak trees on site. If plans show removal of or encroachment into the protected zone of oak trees, obtain and provide copy of an Oak Tree Report and Permit. Add note 4d below to the plans.
3. Show access from lot to public street, show associated access easements. Show bearings, distances and easement description for access easements. Provide copy of easement documents.
4. Add the following note(s) to the plan:
 - a. Provisions shall be made for contributory drainage at all times.
 - b. Owner will maintain drainage devices and keep free of debris.
 - c. An excavation/encroachment permit is required for construction and/or discharge of drainage within public road R/W. (County of Los Angeles Construction Division, Caltrans, City of _____).
 - d. No work is allowed within the protected zone of oak tree without an oak tree report and permit.
5. Elevate the finish floor _____ inches minimum above natural or finished grade, whichever is higher with no wall openings. Show elevation of floors & adjacent grades on the plan and show elevated floor requirements on foundation details & sections.
6. Extend the foundation _____ inches below natural grade.
7. Clarify and label on plans any existing structures and drainage devices onsite and what is proposed.
8. Site is within the Coastal Commission Zone. Obtain and provide copy of Coastal Development Permit (CDP) and integrate all conditions of approval into plans.

DRAINAGE GUIDELINES FOR PREPARATION OF BUILDING PLANS

Building plans are reviewed for compliance with Section 110.1 of the Los Angeles County Building Code (LACBC) and other County ordinances. These laws mandate that a building permit not be issued unless the structure is adequately protected from flood hazard and/or inundation. Furthermore, no structure may impede the flow of a naturally occurring watercourse. The following information is provided to assist the applicant in completing the processing of building plans with respect to drainage.

1. The plan should include pertinent data relating to the site drainage and configuration of the development including:
 - a. Vicinity map with site address and, in remote locations, route and mileage distances from nearest paved street and paved cross street.
 - b. All property lines to scale, or if scale is approximate, give lot line dimensions.
 - c. Location of existing structure(s) and / or easements, if any, and location of proposed structures covered by this permit with dimensions from property line.
 - d. Existing and proposed contours and pertinent elevations including off-site elevations to establish contributory drainage conditions and to show if cut or fill will be required to construct building(s).
 - e. Existing watercourses and drainage paths with arrows, and elevations when needed, to indicate the direction of flow.
 - f. Finished pad and finished floor elevation(s) of proposed structure(s) and the description and location of the applicable benchmark.
 - g. Existing and proposed on-site drainage facilities (paved or unpaved swales, pipes, gutters, down drains, velocity reducers, etc.) and pertinent off-site drainage facilities.
 - h. Show 2 % minimum slope away from proposed structure(s).
2. For minor drainage contributing to the site flowing in a uniform "sheet flow" pattern, a common solution is to elevate the floors a sufficient distance (6 inches minimum) above the finish grade to keep storm waters out of the structure(s).
3. If elevation of the floors is not practical, removal of the sheet flow is required by the construction of adequate drainage devices. Complete details for these devices must be shown on the plans. These drainage devices shall not alter the existing drainage pattern on adjacent properties without the permission of all the affected property owners.
4. If the applicant plans to build adjacent to a watercourse, in a flood plain, or adjacent to any flood hazard, a licensed Civil Engineer must be retained to prepare engineered plans for removing the hazard. A separate hydrology study is generally required to properly evaluate the potential flood hazard as well as size any mitigating drainage facilities.
5. Structures which are proposed within the boundaries of any County adopted floodway and/or in a Federal Emergency Management Agency (FEMA) flood zone must comply with the National Flood Insurance Program. Principal requirements include mandatory purchase of flood insurance as a condition of obtaining loans from a federally supervised lending institution and maintaining the lowest floor elevation for future construction above the 100-year flood level. However, the Federal requirements are typically a minimum and more restrictive County requirements often apply.
6. Approvals may be required from other agencies including but not limited to the U.S. Army Corps of Engineers, California Department of Transportation, and the State Department of Fish and Game. All approvals are required prior to commencing work within the governing agencies rights of way or jurisdiction.
7. If the proposed development unavoidably changes the drainage conditions on adjacent property, off-site improvements and/or drainage acceptance covenant will be required. Covenants must be signed by affected owner(s), notarized, and recorded prior to plan approval.



COUNTY OF LOS ANGELES - DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION - DRAINAGE AND GRADING SECTION

LOW IMPACT DEVELOPMENT REVIEW SHEET

Effective January 1, 2009 all development must comply with the County of Los Angeles Low Impact Development Ordinance, Title 12 – Section 12.84. LID standards are intended to distribute stormwater and urban runoff across developed sites to help reduce adverse water quality impacts and replenish groundwater supplies. All projects must comply with the design requirements of the Los Angeles County LID Manual. The manual is available in the Drainage and Grading Section located at the following link: <http://dpw.lacounty.gov/bsd/publications>. The development falls within one of the following categories:

Residential development of 4 units or less:

- New development, redevelopment, alterations, or additions which alter 50% or more of impervious surfaces. Entire site shall meet LID requirements.

A non-residential development (Commercial, Industrial) or a residential development consisting of 5 or more residential units:

- Development which alters less than 50% of impervious surfaces. Only proposed new development needs to meet LID requirements.
- Development which alters 50% or more of impervious surfaces. Entire site shall meet LID requirements.

1. **Residential development of 4 units or less** must implement a minimum of two LID Best Management Practice (BMP) alternatives as indicated in Chapter 3 of the LID Manual. Plans must show complete construction details, materials, manufacturer, model number, dimensions, location, structures, slopes, construction notes, specifications, cross sections, elevations, and setbacks from property lines needed to construct proposed LID BMPs. BMPs should be designed so as not to adversely impact building foundations, pavement, slope stability, or an adjacent property.

- a. Porous Pavement or other impervious surfaces (at least 50% of pavement on lot shall be porous)
 - Show detail of placement, base, geotextile, subgrade, and soil preparation per manufacturer's specifications. The required soils report must address percolation and manufacturer's recommendations and guidelines.
 - H-20 loading is required for Fire Department access.
 - A minimum of 30" deep impervious liner or edge restraint is required within 5' of public right of way, property lines, and structures unless otherwise recommended by a soils engineer.
 - Provide calculations to determine depth of filter medium and volume to be infiltrated. Calculations should conform to Chapter 4 of the LID Manual. The project geotechnical report must address soil infiltration rates.
- b. Downspout routing
 - Cistern/rain barrel
 - Show location of cistern/rain barrels. Rain barrels should be designed to store 200 gallons and be located such that roof run-off is equally distributed. Rain gutters & downspouts shall be shown on plans.
 - Plans shall show hose bibs or pump systems for discharge and watering of landscaping. (Note: A separate electrical permit is required for pump systems).
 - A plumbing permit is required for backflow prevention devices when the discharge system is tied into a landscaping irrigation system served by a potable water source.
 - H-20 loading is required for underground cisterns located in an area subject to traffic conditions.
 - Rain garden/planter box
 - Surface area of flow through type planter box shall be designed and sized to treat 200 gallons. Planter must have a 18" minimum top soil layer and 12" minimum gravel layer. Design guideline is available upon request.
 - The infiltration type planter box shall be designed to infiltrate 200 gallons over a 36 hour period.
- c. Disconnect impervious surfaces
 - Show driveway or other impervious surface to drain toward pervious landscaped areas. The ratio of impervious to pervious area shall be no less than 2:1. This ratio must be identified on plans for each affected area. A minimum of 90% of the untreated pervious area shall be routed toward vegetated areas or water quality BMPs.
- d. Dry well
 - Show details including the following: location, cross section details, liner materials, subbase, and all manufacturer's specifications and/or recommendations from soils engineer.
 - The required soils report shall address dry well and manufacturer's specification and requirements.
 - The system should be designed to store and infiltrate a minimum of 200 gallons of stormwater within a 36 hour period.
 - Provide calculations to determine the infiltration volume for sizing of well and determine time of infiltration to percolate 200 gallons.
 - A filter or sediment control is required to filter water entering the dry well.

e. Landscaping and landscape irrigation

- Show a minimum of two 15 gallon trees to be planted and maintained. Trees shall be located near impervious surfaces (10 foot maximum distance). One of the trees may be on the drought-tolerant plant list as required under the County's Green Building Ordinance. In Very High Fire Hazard Severity Zones, applicant should verify compliance with Fire Department's requirements.
- Install Smart Irrigation Controllers. These controllers use sensors or weather information to manage watering times and frequency. Show type of controls, sensors, sprinkler valves and heads. Include manufacturer name and model number.

f. Green Roof

- Show area of green roof on site plan.
- Structural calculations for design of green roof will be required at time of building plan submittal.
- Fire Department approval will be required as part of building plan check.

2. **Non-residential Developments (Commercial or Industrial) or a residential development consisting of 5 or more residential units** must comply with the following: 1) the excess volume (the difference in the volume of runoff between undeveloped and post-developed condition using the water quality design storm event) shall be infiltrated at the lot level, and 2) the runoff from the water quality design storm event (Qpm) shall be infiltrated or treated. If excess volume can not be infiltrated due to geotechnical or technical feasibility as indicated in the Chapter 4 of the County's LID Manual; onsite storage or other water conservation requirements must be implemented.

Plans must show complete construction details, materials, manufacturer, model number, dimensions, location, structures, slopes, construction notes, specifications, cross sections, elevations, and setbacks from property lines needed to construct proposed LID BMPs. BMPs should be designed as not to adversely impact building foundations, pavement, slope stability, or an adjacent property.

Hydrology Calculations to determine the increase in volume due to development is required. For smaller sites, the County's TC Calculator may be used for determining Pre- and Post construction volumes. See Chapter 4 of County's LID Manual.

- a. A sub-drain system is required for all infiltration basins. Subdrain system shall discharge to an approved location and must be shown on site drainage or grading plans. Calculations for sizing of the infiltration basins are required. Basins must percolate in 36 hours. Infiltration rates for percolation should be included in the geotechnical/geological report for the project.
- b. A development of property that is 1 acre or greater in area discharging into a natural (non-engineered) drainage system shall provide an analysis showing hydromodification impacts on downstream properties. Impacts include changes in downstream drainage characteristics resulting in increased flooding, erosion, and/or sedimentation. See "Hydromodification Requirements" in Chapter 3 of the LID Standards Manual for details.

3. All infiltration basins, dry wells, or planters must comply with the following setbacks:

Infiltration Facility Setbacks*	
<u>Setback from</u>	<u>Distance in feet</u>
Property lines & Public Right of Way	5'
Any Foundation	15' or within a 1:1 plane drawn up from the bottom of foundation
Face of any slope	H/2, 5' minimum (H is height of slope)*
Seasonal high ground water	10'
Water wells	100'

*Unless otherwise recommended by a Soils Engineer and approved by Geotechnical and Materials Engineering Division.
 Note: Infiltration is not allowed in areas where pollutant mobilization is a documented concern, or where undisturbed soil infiltration rates are less than 0.5 inches per hour, or where infiltration could cause adverse impacts to biological resources.

4. A recorded covenant indicating that the owner of the subject development is aware and agrees to maintain the LID features of this project is required. The covenant shall be recorded in the office of the Los Angeles County Registrar-Recorder/County Clerk and shall include a diagram of the site indicating the location and type of each LID feature incorporated into the development. Prior to recordation, a copy of the covenant and all related material shall be provided to the plan checker for review and approval. A copy of the LID maintenance covenant is attached.

ADDITIONAL CORRECTIONS: _____

RECORDING REQUESTED BY
AND MAIL TO:

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
BUILDING AND SAFETY DIVISION
900 S. FREMONT AVENUE, 3RD FLOOR
ALHAMBRA, CA 91803-1331

Space above this line is for Recorder's use

**COVENANT AND AGREEMENT REGARDING THE MAINTENANCE OF LOW IMPACT
DEVELOPMENT (LID) FEATURES**

The undersigned, _____ ("Owner"), hereby certifies that it owns the real property described as follows ("Subject Property"), located in the County of Los Angeles, State of California:

LEGAL DESCRIPTION

ASSESSOR'S ID # _____ TRACT NO. _____ LOT NO. _____

ADDRESS: _____

Owner is aware of the requirements of Chapter 12.84 of Title 12-Environmental Protection, of the Los Angeles County Code relating to LID standards. In accordance with said Chapter 12.84, the following LID features have been installed on the Subject Property:

- | | |
|---|---|
| <input type="checkbox"/> Porous pavement | <input type="checkbox"/> Dry Well |
| <input type="checkbox"/> Cistern/rain barrel | <input type="checkbox"/> Storage containers |
| <input type="checkbox"/> Rain garden/planter box | <input type="checkbox"/> Landscaping and landscape irrigation |
| <input type="checkbox"/> Disconnect impervious surfaces | <input type="checkbox"/> Green roof |
| <input type="checkbox"/> Other _____ | |
| _____ | |
| _____ | |

The location & type of each LID feature installed on the Subject Property is identified on the site diagram attached hereto as Exhibit 1.

Owner hereby covenants and agrees to maintain the above-described LID features in a good and operable condition at all times, and in accordance with the LID Maintenance Guidelines, attached hereto as Exhibit 2.

Owner further covenants and agrees that the above-described LID features shall not be removed from the Subject Property unless and until they have been replaced with other LID features in accordance with Chapter 12.84 of the Los Angeles County Code.

Owner further covenants and agrees that if Owner hereafter sells the Subject Property, Owner shall provide printed educational materials to the buyer regarding the LID features that are located on the Subject Property, including the type(s) and location(s) of all such features, and instructions for properly maintaining all such features.

Owner makes this Covenant and Agreement on behalf of itself and its successors and assigns. This Covenant and Agreement shall run with the Subject Property and shall be binding upon Owner, future owners, and their heirs, successors and assignees, and shall continue in effect until the release of this Covenant and Agreement by the County of Los Angeles, in its sole discretion.

Owner(s):

By: _____ Date: _____

By: _____ Date: _____

(PLEASE ATTACH NOTARY)

REFERENCE

PLAN CHECK NO.: _____ DISTRICT OFFICE NO.: _____