

HILLSIDE SAFETY IMPROVEMENT MEASURES AND PROCESS MANUAL

I. PURPOSE

This Hillside Safety Improvement Measures and Process Manual provides guidance for compliance with specific town regulations applicable to building and construction on all land within the **Hillside Development Area**, as designated and defined pursuant to Section 2202 of Article 22 of the Zoning Ordinance of the Town of Paradise Valley, that is, the “Hillside Development Regulations.” This manual does not modify or change any requirements or approval processes required pursuant to the Hillside Development Regulations, but it does supplement the Hillside Development Regulations with specific requirements related to building and construction activities within the Hillside Development Area to ensure construction plans and construction activities on properties within the Hillside Development Area are conducted in a manner that improves safety.

In furtherance of this purpose, the Town Engineer may require a Safety Improvement Plan (“SIP”) (as defined in the Requirements section below) to reduce the negative impacts of construction activities in the Hillside Development Area on the surrounding neighborhoods by mitigating potential civil engineering infrastructure failure; subsurface or hillside seismic refraction damage that may result in future landslides; falling boulders; subsurface or surface erosion; subsurface water erosion created by seismic cracks or fissures; noise; and/or dust.

A Construction Staging Plan (“CSP,” as defined in Requirements section below) is required for all construction activities in Hillside Development Areas.

Safety Measures and Review Process. The Safety Measures and Review Process (as defined herein) consists of a Safety Improvement Plan. The Safety Improvement Plan shall be reviewed prior to Combined Hillside Building Committee Review or Formal Hillside Building Committee Review (as such are defined in the Hillside Development Regulations). The Town may hire outside firms or technical advisors to assist with the Safety Improvement Plan review or may require third party inspections. Unless waived by the Town Manager, the costs associated with such reviews and inspections shall be borne by the applicant.

Construction Staging Plan Requirement and Review Process. The Construction Staging Plan shall be required and reviewed no later than the beginning of the building permit application process. The applicant may wish to submit sooner in the review process, which is deemed acceptable by the Town.

II. DEFINITIONS

- Red indicates new language or terms. Black indicates existing code definitions

CHECKLIST ITEMS	CORRESPONDING DEFINITION/TERM
Boulders	"Boulder(s)" – A rock fragment that has been detached and whose size in its least dimension is 36 inches or as determined by a registered geologist.
Loose Fill or Raw Spill Slope	"Fill" – A deposit of soil, rock, or other materials placed by man. "Raw Spill Slope" – An area created by causing or allowing earth or other material to fall, flow or run down a slope, thereby altering its natural appearance and topography.
Drainageways, Watercourse or Hillside Washes	"Hillside Wash" – A natural watercourse at least two feet deep from the top of bank and measuring at least five feet wide at the top of bank in accordance with the Storm Drainage Design Manual.
Subsurface or Seismic Damage that may result in future landslides/rockslides	"Subsurface or Seismic Damage" – Knowledge of subsurface or seismic damage that may have resulted from adjacent or previous development and should be verified and noted through the seismic refraction survey. "Seismic Refraction Survey" – Unless waived by the Town Manager or designee, all proposed Cuts shall require a seismic refraction survey performed by a registered geologist or registered geotechnical engineer. If the geological report, geotechnical report, or seismic refraction survey indicates fractured or unstable rock, the proposed location of the Building Site (or appurtenances) shall be changed to a stable location unless unstable condition(s) can be mitigated by an engineered design that creates a stable location and complies with the provisions of this Article and

	other Articles of this Zoning Ordinance. The geological report and results of the seismic refraction survey shall be submitted to the Town.
Any blasting associated with construction	All blasting operations must comply with the requirements of Article 5-10-4 of the Town Code.
Applicant	“Applicant” refers to an applicant, a property owner, an owner/builder, architect, developer, engineer or contractor.
Technical Advisory Board (“TAB”)	“Technical Advisory Board” or “TAB” – a group consisting of the Town Engineer, the Town Building Official, and the Hillside Development Administrator.
Registered Professional Engineer	“Registered Professional Engineer” – A registered professional engineer including, but not limited to, a geotechnical engineer, civil engineer, or structural engineer, consistent with the registration requirements of Title 32 of the Arizona Revised Statutes.

III. REQUIREMENTS

A. SAFETY IMPROVEMENT PLAN

Purpose: The Hillside Safety Improvement Plan (or “SIP”) is intended to improve safety at the property and in the surrounding area via technical review of various items. The SIP formalizes unwritten practices and is intended to reduce the negative impacts of construction activities on the surrounding neighborhoods by implementing safety standards and mitigating potential civil engineering infrastructure failure, subsurface or hillside seismic damage that may result in landslides, falling Boulders, subsurface or surface erosion, subsurface water erosion created by seismic cracks or fissures, noise, and dust as applicable.

Process: A Pre-application conference to review the Safety Improvement Plan Checklist will occur with the Town Engineer. The final approved SIP will be submitted to the Town Engineer, and the final approved SIP will be maintained by the Town and kept as a permanent record to ensure consistent administration.

Content: On Hillside exterior remodels, additions or new construction, and projects not eligible for Hillside Chairman review, the Town Engineer may, as applicable, require a Safety Improvement Plan that includes, but is not limited to, the following:

1. Geotechnical Report – The Applicant shall submit a geotechnical report authored by a Registered Professional Engineer that evaluates the area within two hundred feet (200') of the building pad up to the property line and the entire driveway to the access road.

A. This geotechnical report shall include:

- Seismic refraction survey;
- Groundwater occurrences;
- Slope stability report; and,
- Boulder survey, if necessary and as required;

B. These sub-reports shall address the following:

- Indicate and evaluate the location of subterranean fractured or unstable rocks and fissures;
- Indicate and evaluate loose or unstable Fill;
- Indicate and evaluate risk of Boulder movement, if necessary;
- Identify recent geologic events in area, such as (but not limited to) rock slides, mudslides, and earthquakes, and address potential impacts and results to the site;
- Identify presence of groundwater; and
- Other conditions that create hazards to person or property in the vicinity of the building site.

2. Stabilization and Mitigation Plan

A. A Registered Professional Engineer shall provide an engineering design to stabilize the site and mitigate those items identified above, including rock fall, or based upon construction activity (e.g. the plan can illustrate buffer zones and rock catching devices, pinning, netting, etc.).

B. The Town Engineer may require the Applicant to procure an approved third party inspector (e.g. geotechnical engineer) to inspect recommendations in all approved geotech reports and evaluate the stabilization and mitigation plan. Inspection reports shall be provided to the Town.

3. Blasting Plan & Permit

- A.** If blasting is proposed, all blasting requirements identified in Article 5-10-4 of the Town Code must be fulfilled and complied with;
- B.** The Town and/or a third-party inspector must be present at the time of the blast;
- C.** The property owner must provide an umbrella insurance policy or other form of insurance acceptable to the Town Attorney before blasting.

4. Grading and Drainage Plan

- A.** Provide hydrologic study, grading and drainage plan for the property assuming a 100-year storm event per the Storm Drainage Design Manual.
- B.** Town and/or third-party inspector to review grading and drainage construction is consistent with plan.

When deemed necessary, the Town Engineer may hire an outside firm to assist with or review an application, including the Safety Improvement Plan, and may require Applicant to pay for and provide a third-party report or inspection.

Town Engineer may require inspection(s) by a third-party as deemed necessary. Any fees associated with outside review shall be paid by the Applicant at the Town Engineer's discretion.

HILLSIDE INSURANCE REQUIREMENTS

All Hillside development not eligible for a Hillside Chair review shall require the Applicant to provide a continuous project specific liability insurance policy for the duration of construction (from grading to Certificate of Occupancy/Completion) with a minimum limit of \$2 million per occurrence and \$5 million aggregate, and the Town must be named as an additional insured. Appropriate dollar values for insurance shall be the responsibility of the Applicant for the project.

Insurance certificates must be provided to Town annually.

B. CONSTRUCTION STAGING PLAN

The Construction Staging Plan must be provided to the Town no later than at the time of the Building Permit process. An engineering seal is not required. All Town Hillside construction projects and activities will submit a Construction Staging Plan. When deemed necessary, the Town Engineer may hire an outside firm to assist with or review an application, including the Construction Staging Plan. The following elements will be required by the Town in a Construction Staging Plan:

Construction Staging Plan Checklist

- ☐ Location of construction entrances and exits;
- ☐ Location of equipment and material staging and storage;
- ☐ Onsite circulation for construction vehicles and equipment (plan includes on-site and off-site deliveries, employee parking, turn-arounds, etc.) on public and private roads and on private driveways, as applicable;
- ☐ Parking plan for construction vehicles and equipment. Parking plans considerations may include (but are not limited to) no parking within five feet of driveways or mailboxes, parking on only one side of street. Hillside parking must be on the uphill side of a hillside road, as tonnage weight of vehicles and equipment can undermine hillside roads. If an alternate location other than uphill side parking is identified, it must be approved by the Town Engineer;
- ☐ Special temporary traffic control plan as necessary (e.g. for crane);
- ☐ Conveyance of neighborhood traffic, including emergency vehicles;
- ☐ Location and plan regarding any aerial deliveries, as applicable;
- ☐ Trash storage and removal plan;
- ☐ Fencing plans;
- ☐ Location of toilet facilities; and
- ☐ Other items identified by Town based on circumstances of the property or surrounding area.

The Town and/or third-party inspector must review construction site for compliance with the Construction Staging Plan.

IV. PROCESS - HILLSIDE SAFETY IMPROVEMENT PLAN TIMELINE

A. Applicant Submits Pre-application

1. The Safety Improvement Plan review is on a track parallel to the overall Hillside Building Committee (HBC) review.
2. A pre-application meeting between the Town Engineer and Applicant is required to review hillside development regulation requirements, insurance requirements, Safety Improvement Plan requirements, Construction Staging Plan requirements, and any other building items or building requirements:
 - a. Safety Improvement Plan (SIP):
 - The SIP may be submitted with either the Concept Plan Review or the Formal Plan Review.
 - At latest, the SIP must be submitted with the Formal Plan Review. The Applicant may choose to submit the SIP with either the Concept Plan Review or the Formal Plan Review. However, the SIP review **must** be finished and deemed complete by the Town prior to the HBC Formal Review Meeting.
 - The Town Engineer reviews Safety Improvement Plan Checklist with the Applicant to inform them of SIP requirements.
 - b. Construction Staging Plan (CSP):
 - At latest, the Applicant must submit the CSP with building permit application. The Applicant may opt to submit the CSP earlier in the process (e.g. submit the CSP with Concept Plan Review or Formal Plan Review).
 - c. The Town Engineer informs the Applicant that a \$5 million aggregate, \$2 million per occurrence project specific liability insurance policy is required, and Town shall be named as an additional insured on policy.

1. Applicant Submits Concept Plan

1. Applicant submits materials required for the HBC Concept Plan Review in accordance with the Hillside Development Regulations.
2. Applicant may opt to submit the SIP with other Hillside materials at this stage.

2. Staff Reviews Concept Plan Submittal

1. Staff reviews the Concept Plan in accordance with the regulations and prepares the packet for HBC Concept Plan Review.
2. If the Applicant submits the SIP at this stage, staff conducts steps according to the Safety Improvement Plan Review Box.

3. HBC Concept Plan Review Meeting

1. Notice of the HBC Concept Plan Review meeting is given. Notice is sent by Applicant to neighbors within 1,500 feet by mail with affidavit of mailing. Staff give notice to all those on "Notify Me".
2. HBC reviews the Concept Plan in accordance with regulations and provides the Applicant with input and direction.
3. After the HBC Concept Plan Review meeting, the Applicant submits the Formal Plan Review and Safety Improvement Plan. The Town Engineer reviews the SIP requirements.

4. Applicant Submits Formal Plan

1. Applicant submits material required for the Formal Plan Review per the Hillside Development Regulations.
2. If not already submitted, the Applicant must submit the Safety Improvement Plan at this stage. Once submitted, staff follows the steps in the Safety Improvement Plan Review Protocol below.
3. Town Engineer reiterates to the Applicant that the Construction Staging Plan (CSP) is required as part of the building permit application process (but the Applicant may choose to submit CSP prior to building permit application submission).

Safety Improvement Plan Review Protocol

1. Applicant submits 2 copies and a digital version of the Registered Professional Engineer sealed reports comprising the SIP to the Town Engineer.
2. The Town (using members of the Technical Advisory Board and a third-party engineer if deemed appropriate) reviews the Safety Improvement Plan in accordance with Article 5 of the Town Code and cross references it as applicable to the Hillside Development Regulations.
3. Applicant sends a notice of the Safety Improvement Plan availability to neighbors within 1,500 feet of the subject property and provides an affidavit of mailing. Town staff sends notice to "Notify Me" list. Copy of the SIP available at the Town Engineer's office:

- a. The notice shall identify: 1) that a copy of the SIP is available for review at the Town; 2) that comments regarding the proposed SIP must be submitted to the Town within forty-five (45) calendar days from the notice mailing date; and 3) that any comments regarding the SIP must be sealed by a Registered Professional Engineer.
4. At expiration of the forty-five (45) days from the notice mailing date, the Town aggregates comments from neighbors' engineers, comments from Technical Advisory Board, and comments from any Town-hired Registered Professional Engineer(s) and directs the Applicant to address the comments and, if applicable, return a newly sealed SIP.
5. When the newly sealed SIP is returned, the Technical Advisory Board, in conjunction with any Town-hired Registered Professional Engineer(s), reviews and determines whether the updated Safety Improvement Plan adequately address all concerns.
6. The Technical Advisory Board ("TAB") consists of the Town Engineer, Building Official, and Hillside Development Administrator.
7. If concerns are not adequately addressed, the Town returns the SIP to the Applicant. This redline process can continue until the Technical Advisory Board is satisfied.
 - a. If the Applicant feels it is unreasonable and a violation of due process, they may elect to file in a court of law
8. The Town Engineer and/or Technical Advisory Board, in his or their sole discretion, may choose to require the Applicant to address additional concerns, delete elements or maintain the SIP in the presented form (e.g. ignore the sealed engineer comments of neighbor(s) and approve the Applicant's submitted SIP).
 - a. If the Applicant feels it is unreasonable, they can file a court action.
 - b. If the neighbor(s) feel the Safety Improvement Plan is unsatisfactory, they can file an action or pursue private cause of action against the Applicant, if applicable.
 - c. All lawsuits against the Town will likely be tendered to the Applicant and/or Applicant's engineer.
9. The Town Engineer and/or Technical Advisory Board also reserve the right to add or delete checklist requirements based upon new information made available during the review process.
10. When the Town Engineer and/or Technical Advisory Board are satisfied, the Applicant's Registered Professional Engineer sealed reports comprising the SIP and the Formal Hillside Plans are forwarded to the HBC as part of Formal Plan Review. SIP reports are public records that remain the responsibility of the Applicant and have the seal of the Applicant's engineer who would be liable for any failure of the SIP.
11. Town signs/stamps SIP reports where appropriate.

5. HBC Formal Plan Review

1. Notice of the HBC Formal Plan Meeting is given. The Applicant sends notice to neighbors within 1500 feet by mail with affidavit of mailing. Staff provide notice to all those on "Notify Me".
2. HBC reviews the Formal Plan in accordance with the code and takes action on the application (e.g. approve, approve with stipulations, deny, or continue).
3. Once the HBC approves the Formal Plan, the Applicant submits plans for building permit.

6. Building Permit Process

1. Town Engineer and Building Official review elements of Construction Staging Plan with the Applicant and establish requirements to be met as a condition of issuing and maintaining the building permit.
2. Normal building permit process is followed.
3. Town and/or third-party inspector verify that construction site is consistent with the CSP.