LID-SPECIFIC DESIGN REQUIREMENTS

ONCE A LID PROJECT HAS BEEN IDENTIFIED, THERE ARE GENERAL SITE-SPECIFIC CONSIDERATIONS THAT NEED TO BE INVESTIGATED. ALL LANL PROJECTS ARE REQUIRED TO USE THE PERMITS REQUIREMENTS- IDENTIFICATION (PR-ID) AND THE EXCAVATION/ FILL/ SOIL DISTURBANCE PERMIT REQUEST (EX-ID) PROCESSES TO IDENTIFY PROJECT ISSUES AND REQUIREMENTS.

FUNCTION IN LANL STORM WATER SYSTEM

UNDERSTANDING THE FUNCTION OF THE GREEN INFRASTRUCTURE (GI) FEATURE IS BASIC TO GI DESIGN. THE GI POTENTIAL ROLE AND FUNCTION RELATIVE TO THE OVERALL STORM WATER SYSTEM/ LID HELPS CLARIFY THE CRITICAL CONSIDERATIONS THAT NEED TO BE ADDRESSED IN THE SPECIFIC DESIGN.

- HOW LARGE IS THE CAPTURE AREA THAT CONTRIBUTES STORM WATER TO THIS GI LOCATION?
- ARE SURFACE SLOPE AND GRADIENT CONTROLS NEEDED?
- IS IT POSSIBLE TO SPREAD AND REDUCE THE POLLUTANT CONCENTRATION OF STORM WATER?
- IS IT POSSIBLE TO INFILTRATE THE STORM WATER WITHIN THE GI FEATURE?
- HOW WILL THE VEGETATED COMPONENT OF GI WORK IN THIS PROJECT?

GENERAL DESIGN REQUIREMENTS:

LANL PROJECTS SHOULD INCORPORATE THESE GENERAL DESIGN REQUIREMENTS FOR LID AND GI COMPONENTS.

RUNOFF

- IDENTIFY DRAINAGE AREAS FOR EACH CONTROL MEASURE TO BE DESIGNED.
- CALCULATE FLOW-RATES, VOLUMES, AND VELOCITIES TO SUPPORT SIZING OF LID FEATURES.

  -COMPLY WITH THE REQUIREMENTS IDENTIFIED IN LANL ENGINEERING STANDARDS MANUAL (ESM), CHAPTER 3 (CIVIL).

  -IDENTIFY THE APPROPRIATE STORM EVENT (E.G., PRE- DEVELOPMENT HYDROLOGY, WATER QUALITY STORM, ETC.) FOR DESIGN USE.

- CALCULATE CHANNEL FLOW VELOCITY AND SHEAR STRESS FOR LID CONTROL DESIGN AND MATERIAL SELECTION (E.G., ROCK SIZING, TURF REINFORCEMENT MAT, ETC).
- LID FEATURES SHALL BE DESIGNED TO INFILTRATE/ DISCHARGE PONDED STORM WATER WITHIN 96 HOURS.

SLOPES

UNDERSTANDING THE SLOPES AND GRADIENTS SURROUNDING AND WITHIN THE PROJECT AREA AFFECTS SELECTION OF STRATEGIES THAT ARE THE BEST SUITED TO THE SPECIFIC SITUATION.

- FLATTER SLOPES ARE BETTER LOCATIONS FOR STRATEGIES THAT STORE OR INFILTRATE STORM WATER.
- STEEPER SLOPES MOST OFTEN REQUIRE FLOW AND ENERGY DISSIPATION AS MAJOR COMPONENTS OF THE DESIGN TO HELP PREVENT SOIL MIGRATION AND EROSION.
- SLOPES SHOULD BE STABILIZED WITH APPROPRIATE EROSION CONTROL MEASURES (E.G., HYDRO- MULCH, TURF REINFORCEMENT MAT, ROCK, ETC.) BASED ON SLOPE STEEPNESS AND SITE CONDITIONS.

LID-SPECIFIC DESIGN REQUIREMENTS CONTINUED:

SOILS

SOILS INFORMATION IS IMPORTANT IN DETERMINING INFILTRATION AND STRUCTURAL DESIGN OPTIONS FOR LID/ GI. TESTING WILL BE DETERMINED ON A CASE BY CASE BASIS BY EPC-CP.

- PERFORM SOILS PERCOLATION FIELD TESTS PER ASTM D 3385 OR OTHER TEST METHOD APPROVED BY EPC-CP.

  -OPTIMAL INFILTRATION RATE IS >0.5 INCHES/HOUR.

- CHECK FOR ERODIBILITY TO EVALUATE NEEDS FOR FLOW ENERGY DISSIPATION AND SEDIMENTATION POTENTIAL AND/ OR EROSION.
- EVALUATE THE NEED FOR SOIL AMENDMENTS TO SUPPORT VEGETATION GROWTH.
- SOIL COMPACTION:

  -TO PREVENT OVER COMPACTION, MINIMIZE USE OF HEAVY EQUIPMENT ON SOILS TO BE USED FOR INFILTRATION.

  -FOR AREAS INTENDED TO INFILTRATE STORM WATER FLOWS, NATIVE SOILS SHALL NOT BE COMPACTED ANY GREATER THAN 85% MAXIMUM DRY DENSITY.

  -SOIL BENEATH STRUCTURAL COMPONENTS (E.G., FOOTINGS, CONCRETE WALLS, ETC.) SHALL BE COMPACTED TO 90% OR GREATER DRY DENSITY.

VEGETATION

INCLUDING AND ESTABLISHING VEGETATION IS AN IMPORTANT FUNCTIONAL COMPONENT OF LID/ GI.

- DISTURBED AREAS SHALL BE STABILIZED WITH PERENNIAL VEGETATION.
- VEGETATION SHOULD BE DROUGHT TOLERANT AND ABLE TO WITHSTAND PERIODIC INUNDATION.

UTILITIES

IN MORE DEVELOPED AREAS OF LANL, LOCATIONS FOR GI ARE OFTEN UTILITY CORRIDORS. INVESTIGATING UTILITIES FOR ALIGNMENT AND BURY DEPTH IS AN IMPORTANT PART OF BASIC SITE ANALYSIS.

- OBTAIN MAPPING OF EXISTING AND ABANDONED UTILITIES WITHIN THE PROJECT AREA AS EARLY AS POSSIBLE DURING THE PROJECT PLANNING AND DESIGN PHASE.
- OBTAIN INFORMATION FROM LANL INFRASTRUCTURE AND UTILITIES GROUPS REGARDING ALIGNMENTS, BURY DEPTHS AND LIMITATIONS FOR ACTIVITIES SUCH AS GRADE MODIFICATIONS AND RUNOFF INFILTRATION CONSIDERATIONS.
- POTHOLING WILL BE NECESSARY TO CONFIRM LOCATION AND DEPTH OF BURIED UTILITIES.

ACCESS

LID AND GI IMPROVEMENTS NEED TO INCLUDE SECURITY AND ACCESS REQUIREMENTS.

- IDENTIFY SECURITY AND SAFETY ACCESS REQUIREMENTS AT THE EARLIEST STAGES OF PROJECT PLANNING.
- PROVIDE ACCESS FOR MAINTENANCE.

00% REVIEW
NOT FOR CONSTRUCTION

NO	DATE	CLASS REV	DC	DESCRIPTION	DWN	DSGN	CHKD	SUB	APP
				REVISIONS PER [DCF] [DRN] [FCR]					
0				INITIAL ISSUE FOR [DCF-XYZ]					

ENGINEERING STANDARDS

CIVIL
LOW IMPACT DEVELOPMENT
SPECIFIC DESIGN REQUIREMENTS

TA-XX BLDG XXXX

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2 OF 16

D.C.: UNCLASSIFIED | REVIEWER: DONALD YARDMAN | DATE:

PROJECT ID: CHAPTER 3
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