

Field Staff Skills Training

Grading and Drainage

1



Grading and Drainage

- Grading and Drainage can be defined as the reshaping of the land surface between points in the landscape. The main purpose of grading is to properly drain the site, to steer water away from structures, and to prevent flooding.



2



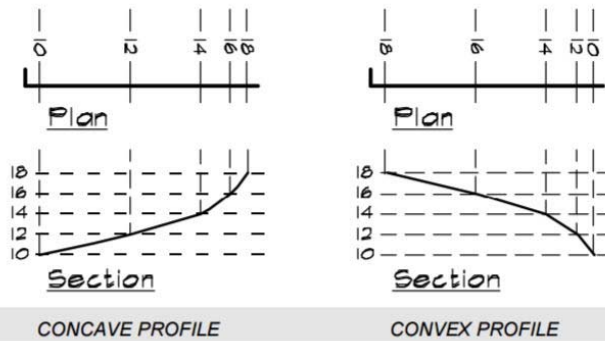


Grading and Drainage Plans

- Contour lines are a method of depicting grade/slope on a two-dimensional plan
- Contour Lines on a plan connect points of the same elevation

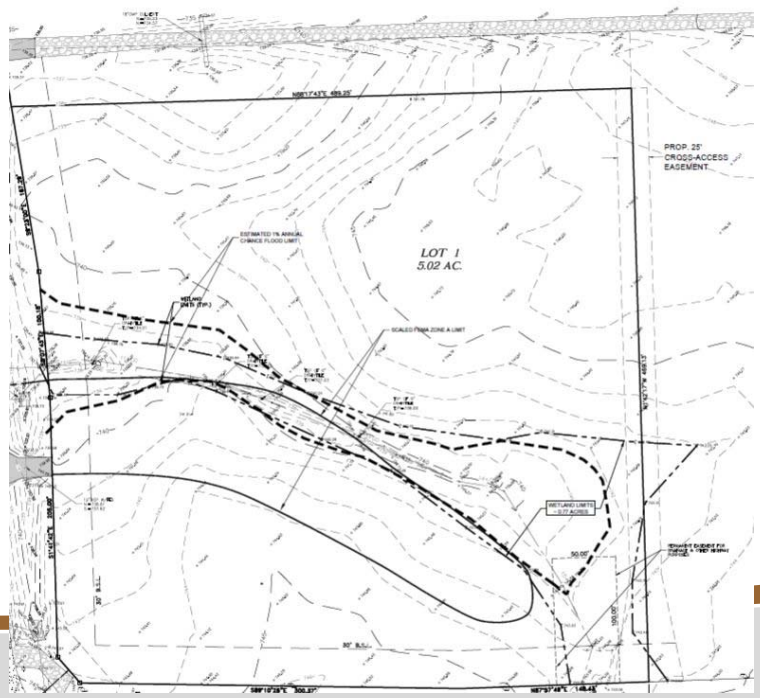
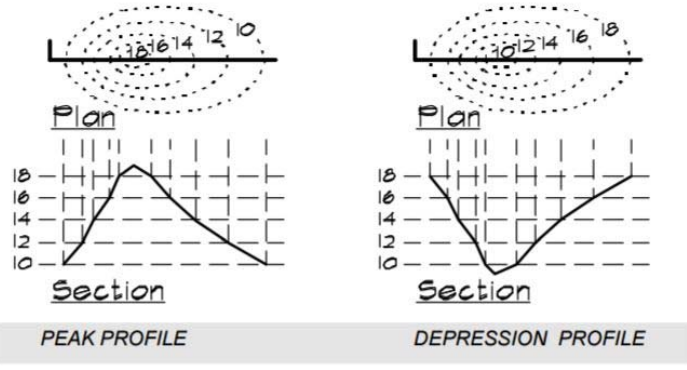


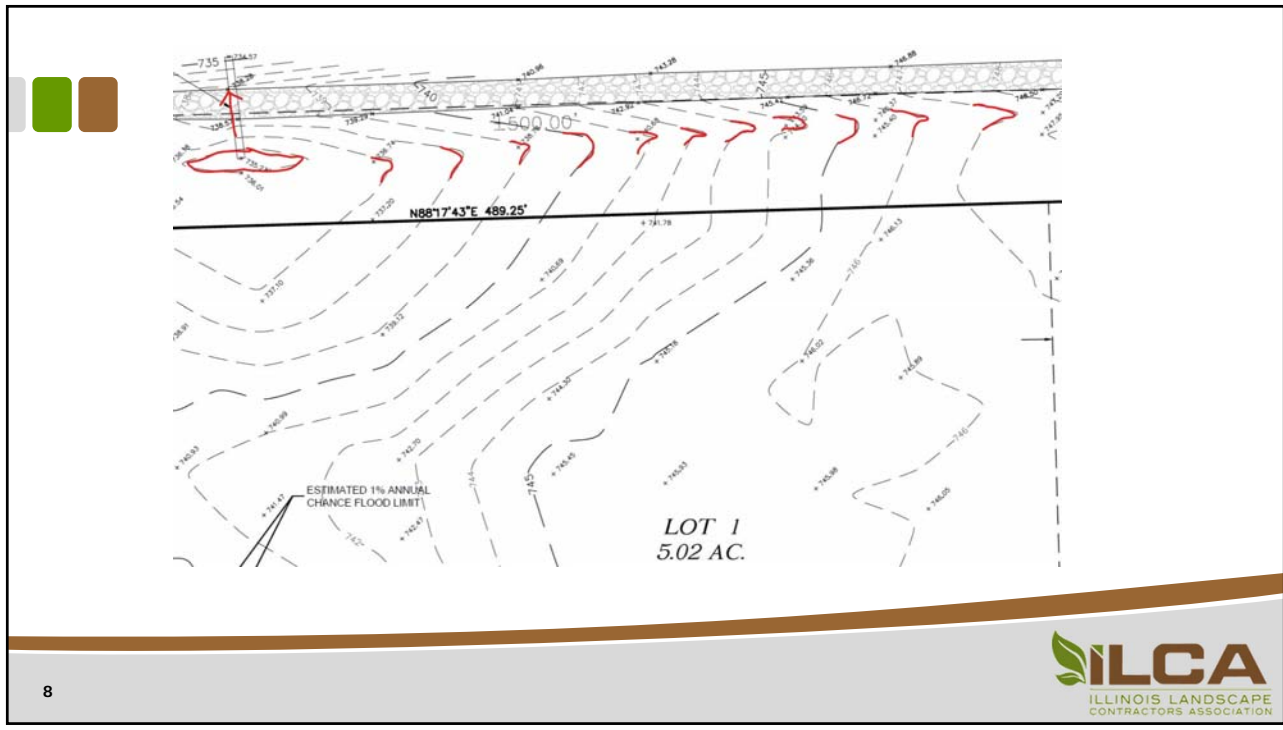
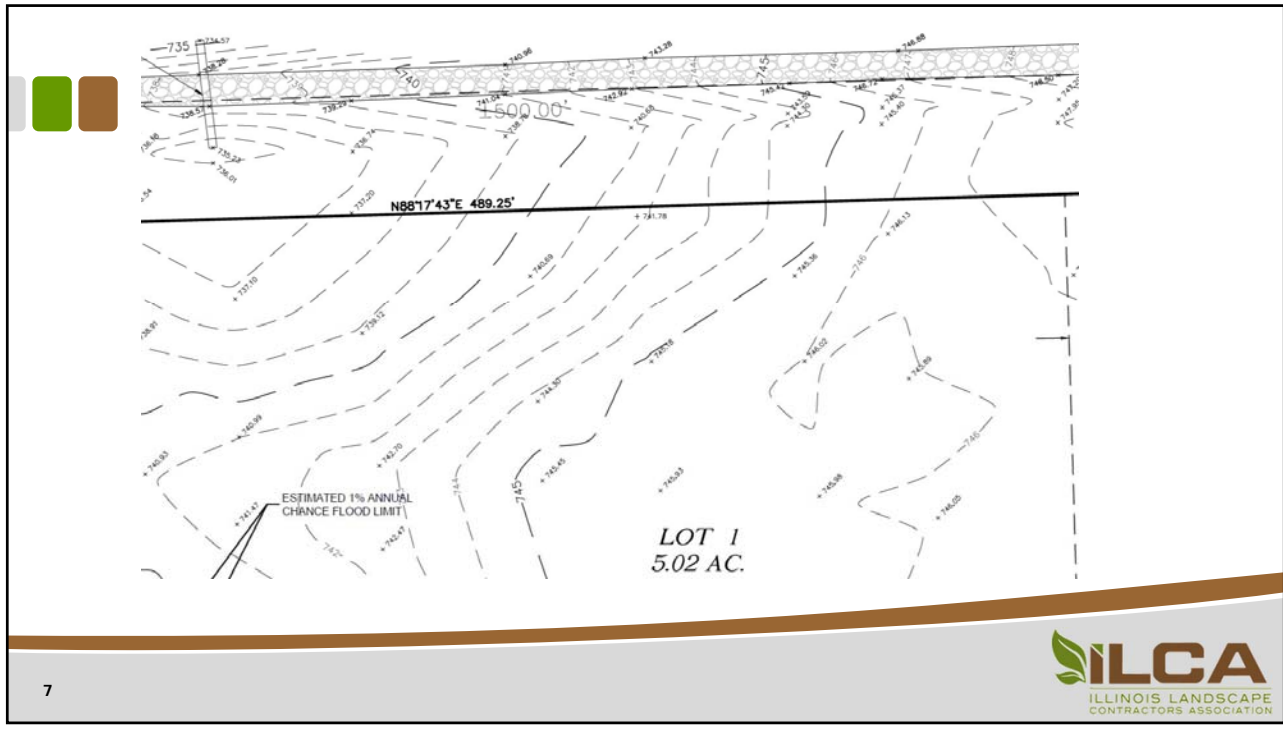
Cross Sections

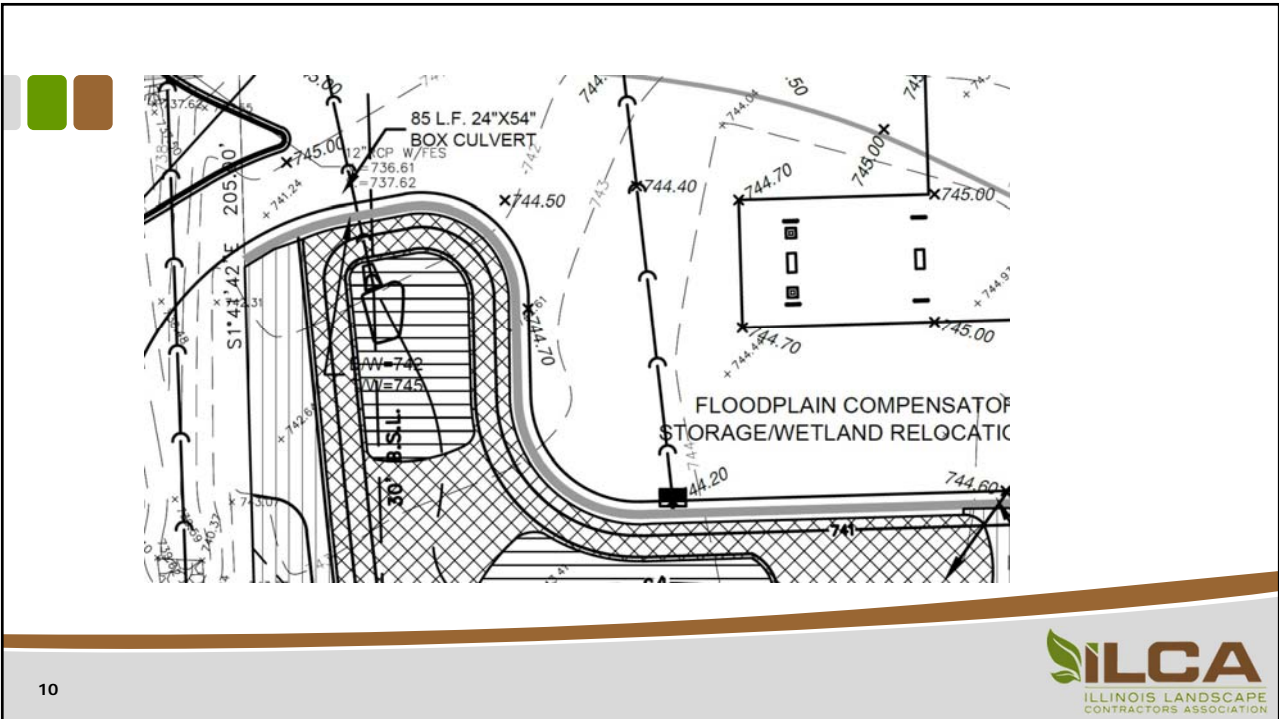
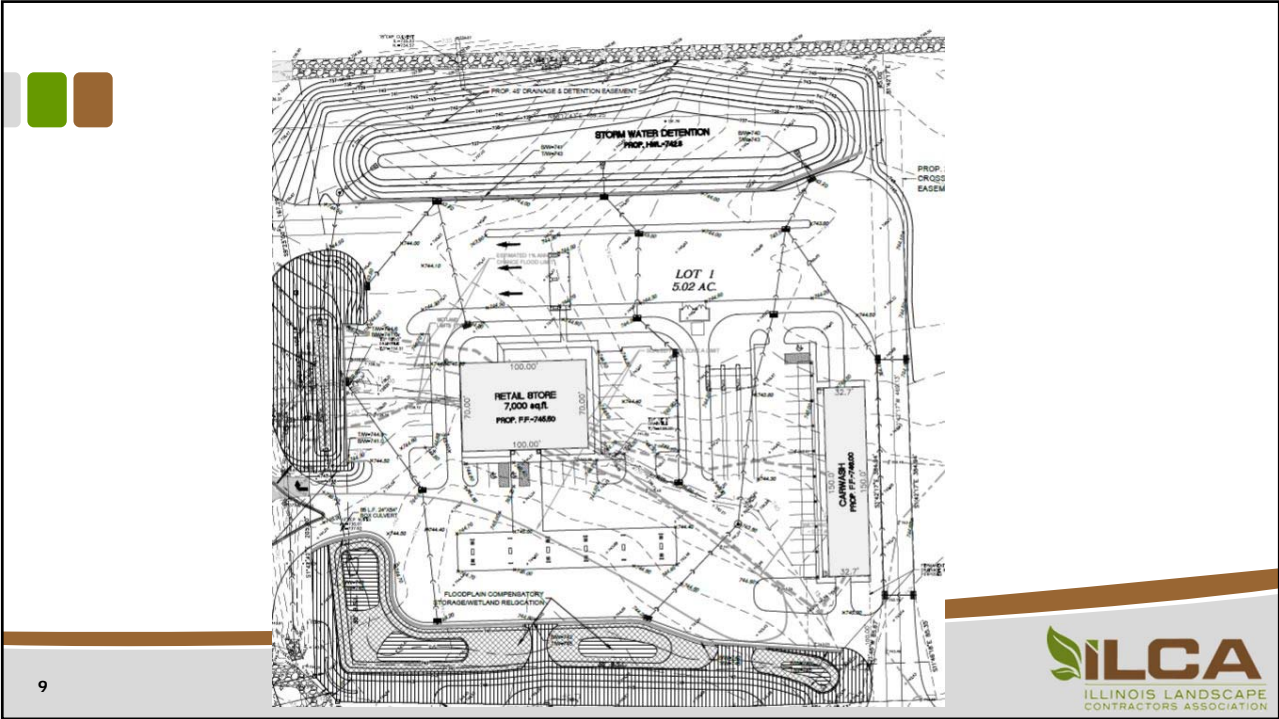




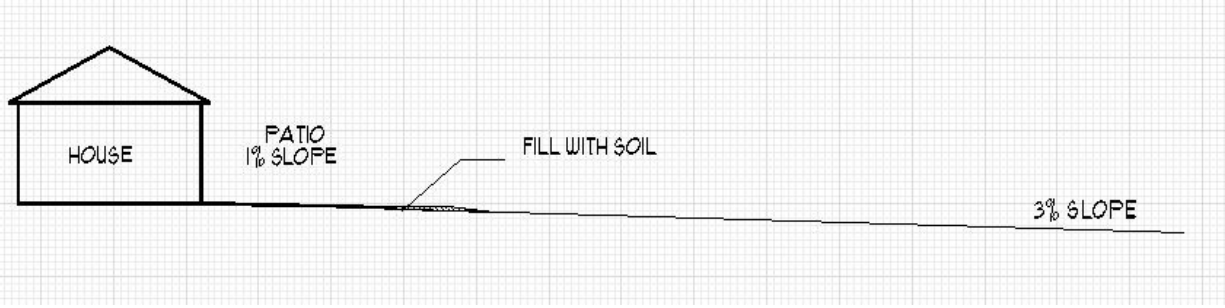
Cross Sections





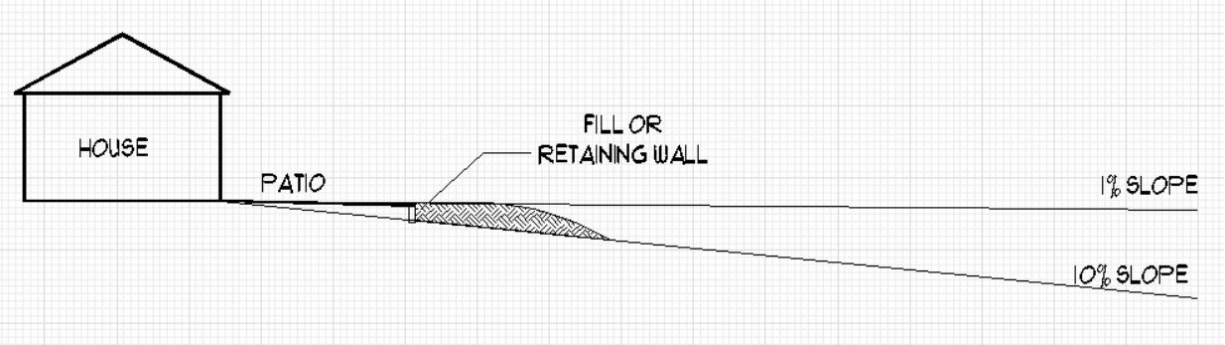


3% Slope – A perfect world



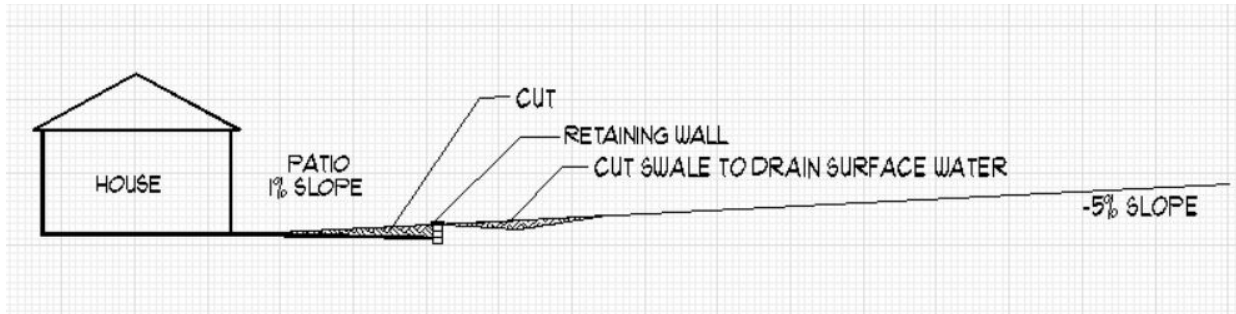
11

10% Slope – Wall or Fill?



12

-5% Slope – Wall and Haul



13

Necessary Skills for life in the field, and the LIC Exam

- Measure and record specific points on a plan using an architect's/engineers scale.
- Transfer measured points from the plan to the work area.
- Transfer grade levels to the points using an laser level.
- Grade the area between the elevation points.



14



Architect's Scale

- An **architect's scale** is a specialized ruler designed to facilitate the drafting and measuring of architectural drawings. Because the scale of such drawings are often smaller than life-size, an architect's scale features multiple units of length and proportional length increments.



15



Engineer's Ruler (10ths)

- The engineer's ruler is divided into 10^{ths} and 100^{ths} of a foot. This allows measurements to be expressed in decimal form rather than fractional.
- Examples
 - 1'-6" = 1.5' (6/12 = .5)
 - 5'-3" = 5.25' (3/12 = .25)

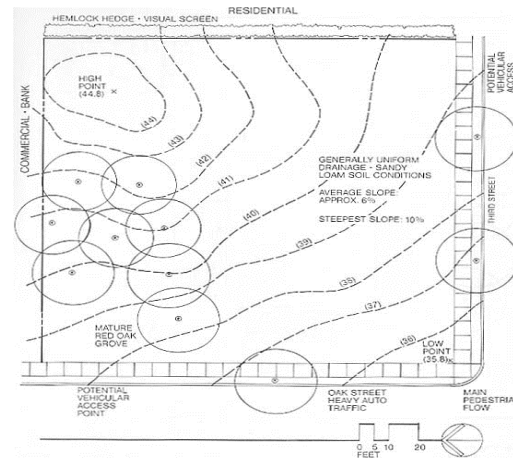


16



Grading and Drainage Procedure

- Evaluate the plan and measure location of specific elevation points within the plan.
- Locate and install the catch basin at the proper grade level (low point).
- Establish grade points from the plan into the test area, mark with flags.
- Create a swale between the points, and contour the sand to match the grading plan.
- Safely handle tools while completing the task.

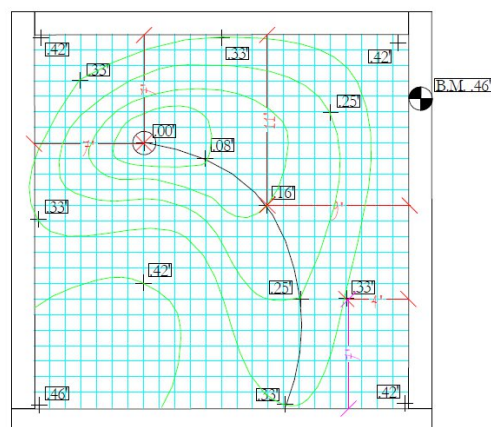


17



Scaling and Recording Grade Points

- Locate scale factor on the drainage plan.
- Measure points on the plan using the corresponding scale indicated on the plan.
- Record measurements.
- Transfer measured points from the plan to the work area, insert flags at each point.



Scale = 1 1/2" = 1'

18



Setting Grade Point Elevations

- Check plan for height of benchmark (.46').
- Use provided straight edge to project the benchmark across the test box.
- Hold the engineer's ruler at the benchmark grade (.46'), and measure down at each grade point flag and drain.
- Cut or fill sand level to proper grade as indicated on the grading plan.
- Finish grade test area to smoothly blend sand between grade points.



19



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20