

## Section 4 – Grading, Drainage and Construction Documentation

### Item Types

There are four item types found on Section 4 of the L.A.R.E.

- Multiple Choice  
-You will select ONE answer.
  - Multiple Response  
-You will be able to select MORE THAN ONE answer. This item type will ask you to "**choose all that apply**" or to "**choose 2**" or "**choose 3**" etc.
  - Drag and Place  
-You will be required to select a project element and **place** the element on a site.
  - Hot Spot  
-You will be required to **select** the most appropriate location by clicking directly on a site or proposed plan.
- 

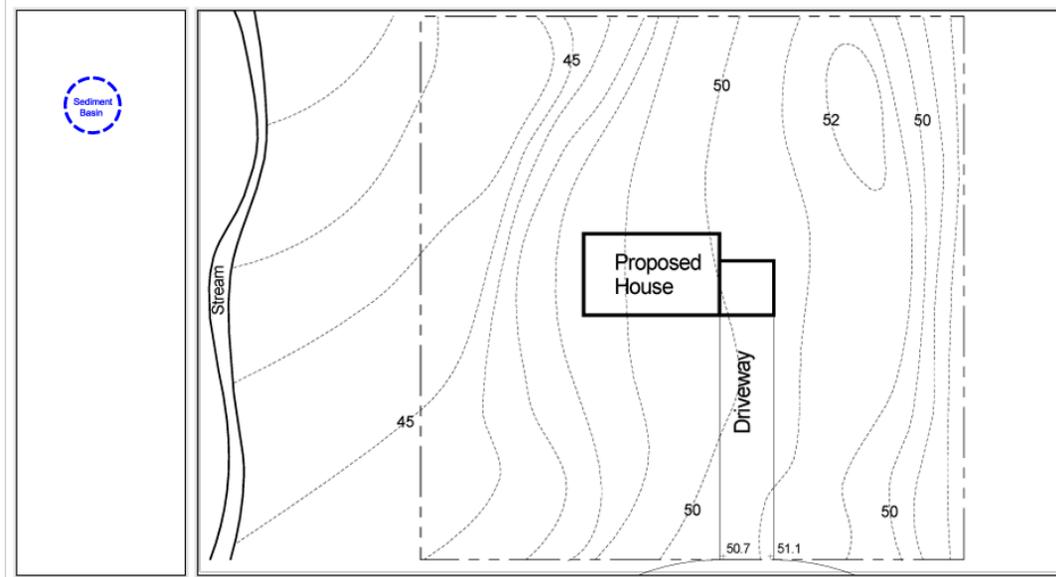
### *Prepare Site Protection and Preservation Plans (e.g. soil, existing features, existing pavements, historic elements, vegetation)*

1. The 100-year flood elevation in a natural stream valley is usually raised by all of the following EXCEPT
  - a. the establishment of a lake or pond in the watershed above
  - b. fill encroachment in the floodplain of the stream
  - c. increases in runoff from the watershed
  - d. channelization of upstream waterways

### *Prepare Erosion and Sediment-Control Plan*

2. Which of the following techniques are used to reduce the velocity of water in a swale?  
*Choose 3 that apply.*
  - a. Increase the roughness of the swale surface
  - b. Plant a dense vegetation cover in the swale
  - c. Increase the slope gradient of the swale
  - d. Undulate the alignment of the swale

3. Determine the best location for a sediment control basin to capture all of the runoff from potential disturbed areas during construction of the proposed house and driveway. *Place the sediment basin in the appropriate location on the site.*



**Prepare Layout and Materials Plan**

4. Which of the following are key factors when determining the accessibility of pedestrian routes? *Choose all that apply.*

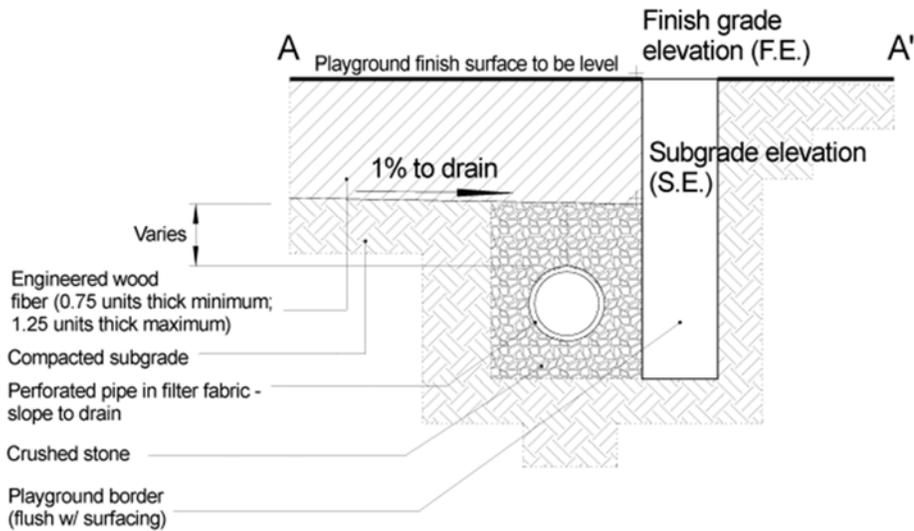
- a. Clear width
- b. Surface texture
- c. Running and cross-slope
- d. Treatment of changes in levels

**Prepare Grading Plan**

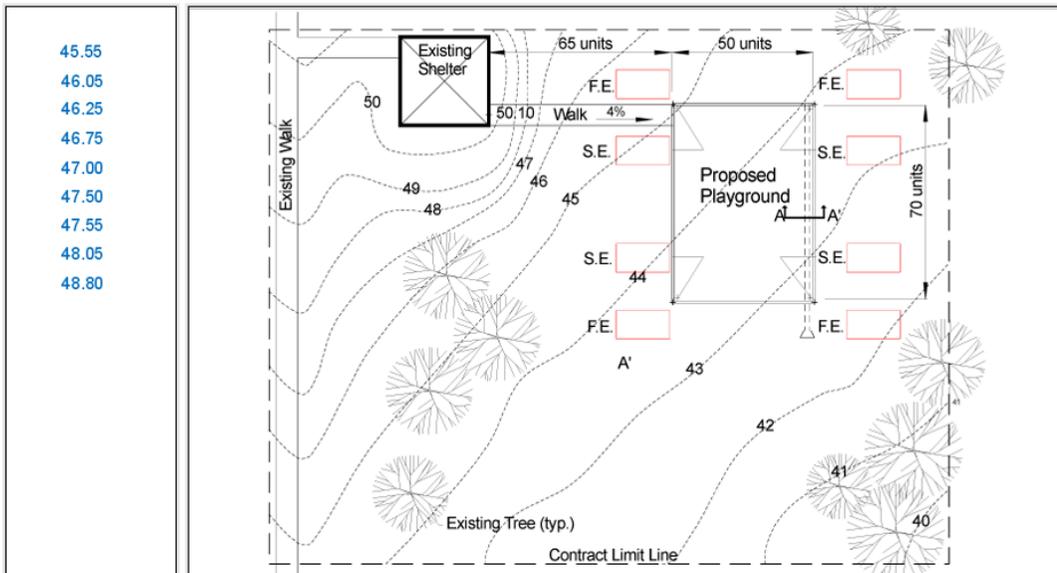
5. Refer to the Exhibit(s). Prepare a grading plan in a park for the proposed playground to match the section provided. The finished surface of the playgrounds must be held level. Place the appropriate spot elevations in the boxes provided on the plan.

Exhibit(s):

**PLAYGROUND SUBDRAIN DETAIL**

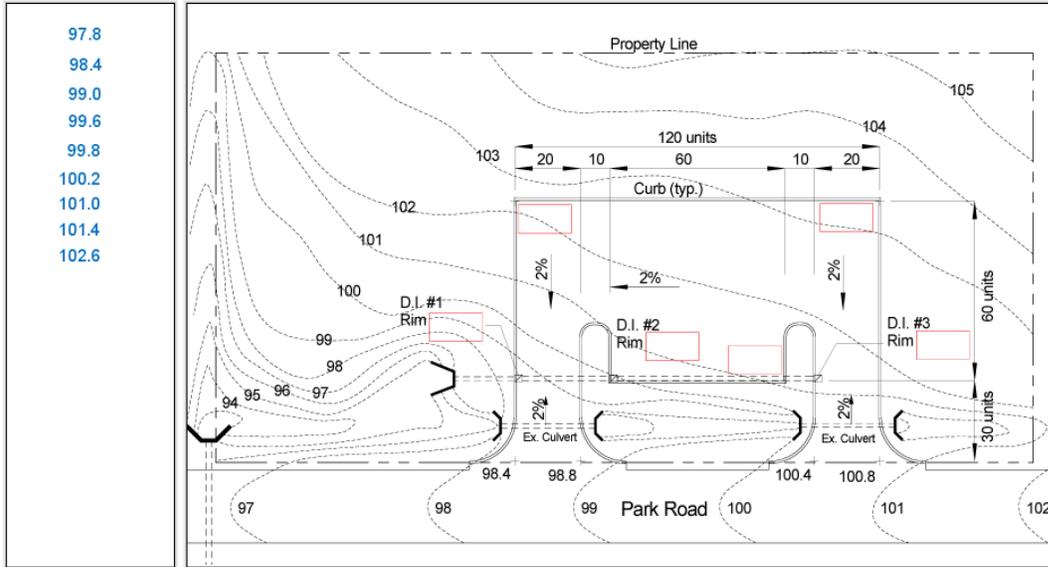


Question:



- 45.55
- 46.05
- 46.25
- 46.75
- 47.00
- 47.50
- 47.55
- 48.05
- 48.80

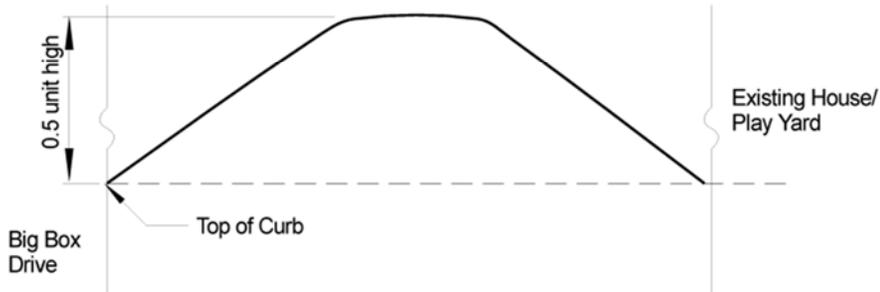
6. Grade the proposed parking lot at the gradients shown on the plan. *Place the appropriate spot elevations in the boxes provided.*



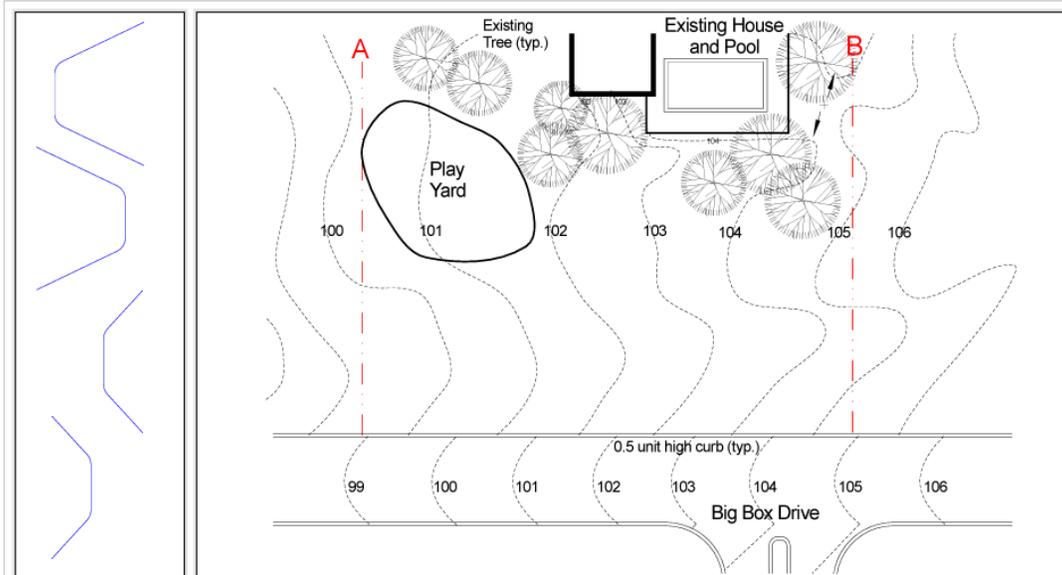
7. Refer to the exhibit(s). Place the appropriate contour(s) on the site plan to create a 0.5 unit high berm along the existing street between A and B.

Exhibit(s):

**BERM SECTION**

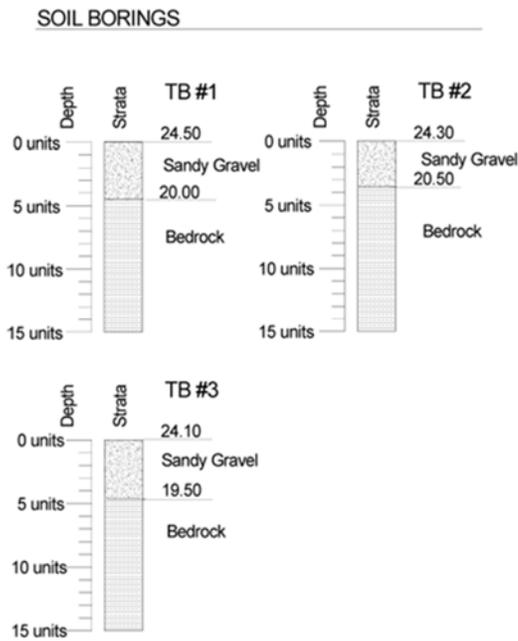


Question:

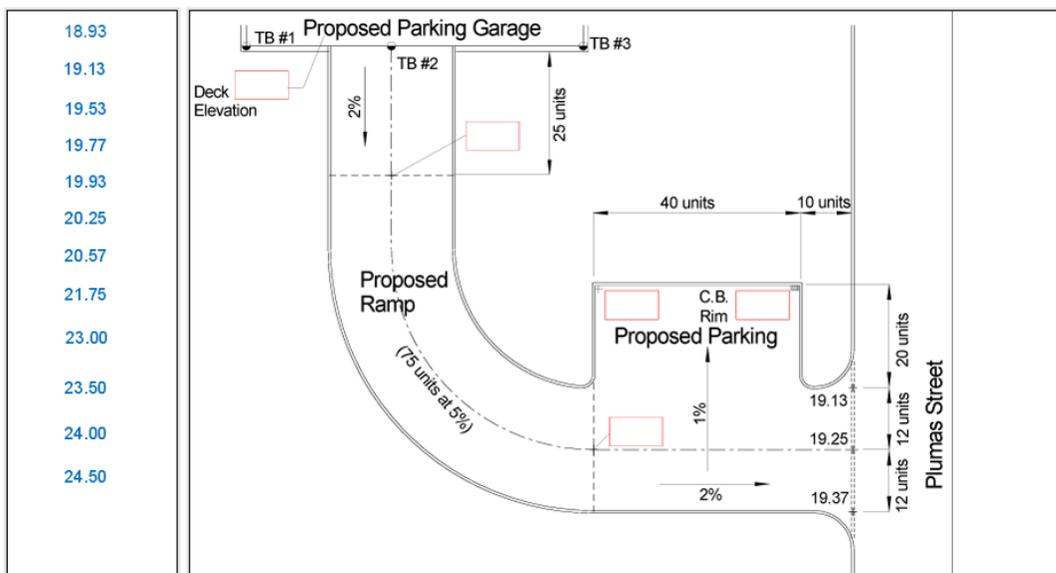


8. Refer to the exhibit(s). Grade the proposed parking garage entry ramp. Parking garage deck elevation must be a minimum of 4 units above bedrock. Place the appropriate spot elevation in the boxes provided.

Exhibit(s):



Question:

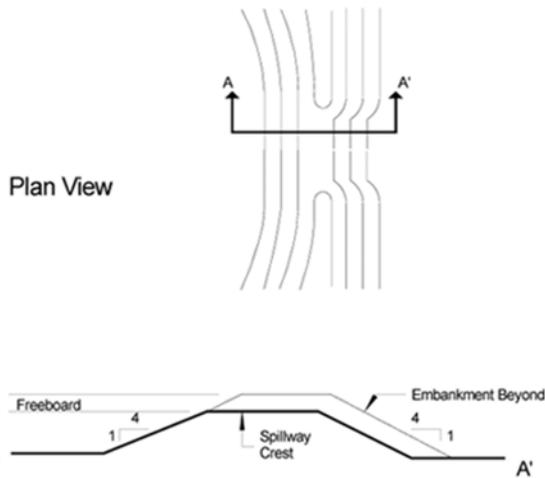


**Prepare Stormwater Management Plan**

9. Refer to the exhibit(s). Utilizing the existing topography, identify the most appropriate location to construct an earthen berm to retain the largest volume of water with the least environmental impact. Construction is not permitted in the existing stream channels. *Select the best location for the earthen dam.*

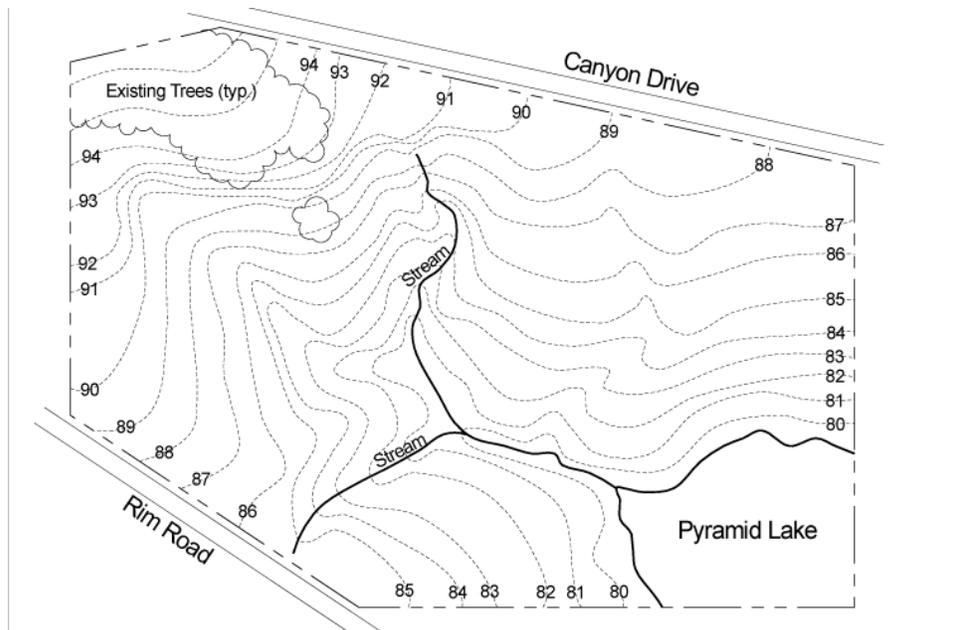
Exhibit(s):

**EARTHEN DAM**



**Section**

Question:

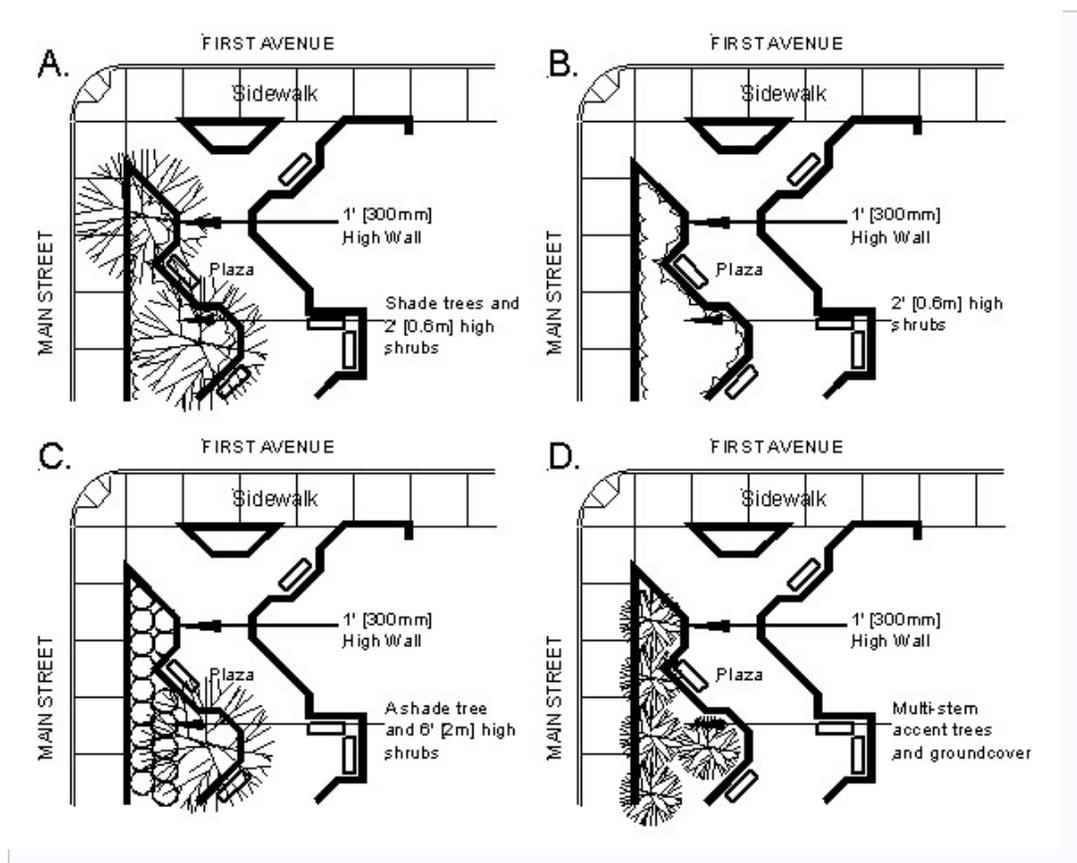


**Prepare Planting Plans**

10. What is the best management practice in terms of conserving water in irrigation design?

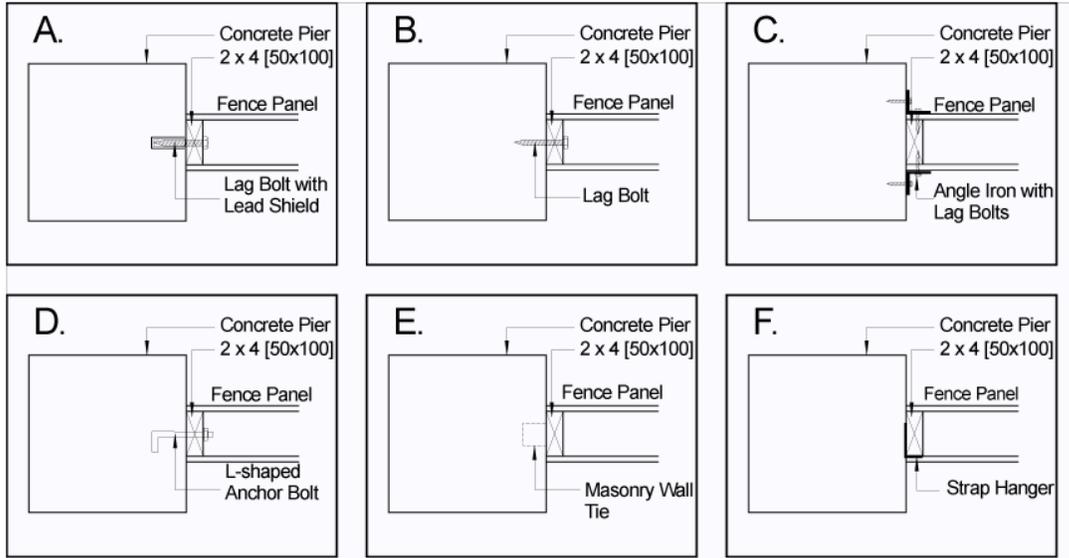
- a. The number of irrigation zones is minimized.
- b. All plantings are irrigated with drip-type emitters.
- c. Plants with similar water requirements are grouped together and irrigated with the same zone and emitter application rate.
- d. Plants are placed in recessed areas so the irrigation can flood irrigate several plants at once.

11. Using the graphic provided, select the planting scheme that provides the most comfort and security for plaza users in a warm climate. *Select the best scheme.*

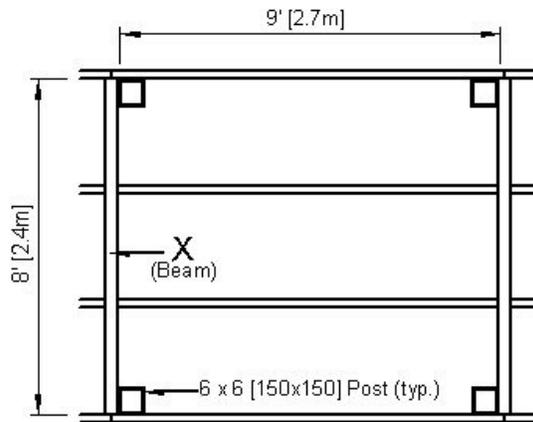


*Prepare Construction Details*

12. Which of the fence connection details is the most appropriate if the pier is built at the same time as the fence? *Select the appropriate detail.*



13.



Boardwalk Framing Plan

Minimum Beam Sizes and Allowable Beam Spans

Spacing Between Beams	4' [1.2m]	6' [1.8m]	8' [2.4m]	10' [3.0m]	12' [3.6m]	
	—	—	—	—	—	Beam Size*
6' [1.8m]	6' [1.8m]	—	—	—	—	4 x 6 [100 x 150]
10' [3.0m]	8' [2.4m]	6' [1.8m]	6' [1.8m]	—	—	4 x 8 [100 x 200]
12' [3.6m]	10' [3.0m]	8' [2.4m]	8' [2.4m]	6' [1.8m]	—	4 x 10 [100 x 250]
12' [3.6m]	12' [3.6m]	10' [3.0m]	10' [3.0m]	8' [2.4m]	—	4 x 12 [100 x 300]
Maximum Distance Between Posts (o.c.)						

Which of the following items is the smallest member for X that will meet structural requirements?

- a. 2x6 [50x150]
- b. 2x8 [50x200]
- c. 2x10 [50x250]
- d. 2x12 [50x300]
- e. 4x4 [100x100]
- f. 4x6 [100x150]
- g. 4x8 [100x200]
- h. 4x10 [100x250]
- i. 4x12 [100x300]

*Prepare General Contract and Bidding Specifications*

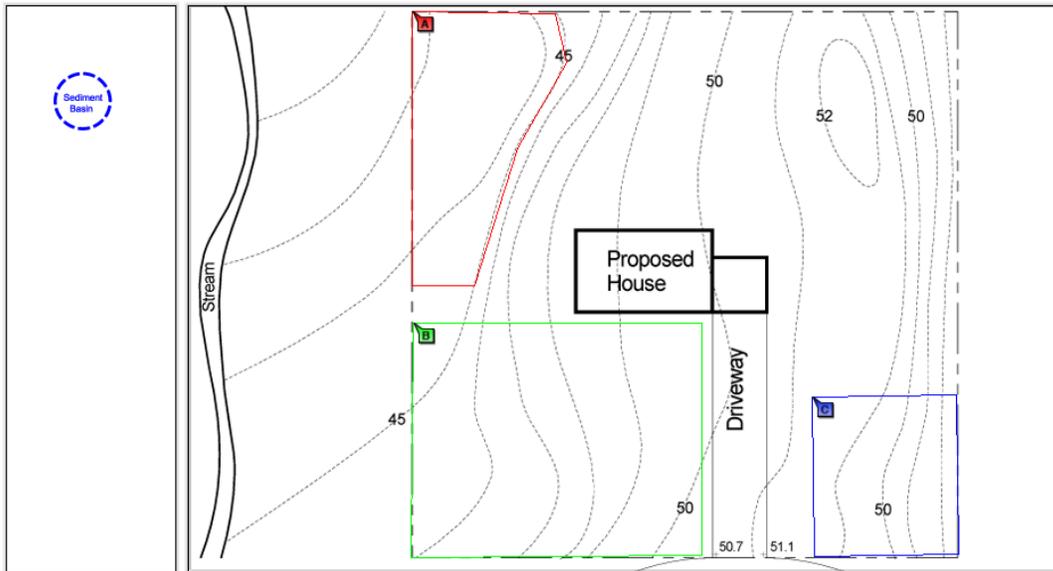
14. Most general conditions would require a contractor who recognizes a deficiency or violation in construction documents to
- a. correct it and proceed as allowed by the contract.
  - b. notify the landscape architect in writing.
  - c. proceed as indicated in the contract documents.
  - d. submit a change order.

*Prepare Technical Specifications*

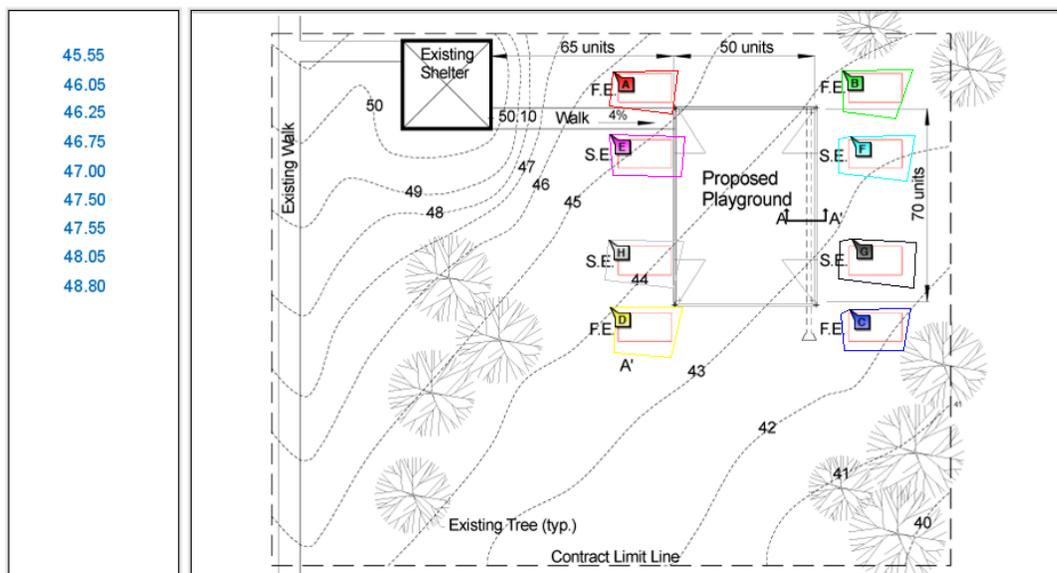
15. What type of specification should be used when only one light fixture meets project requirements?
- a. Performance
  - b. Proprietary
  - c. Descriptive
  - d. Nonrestrictive

**Answer Key:**

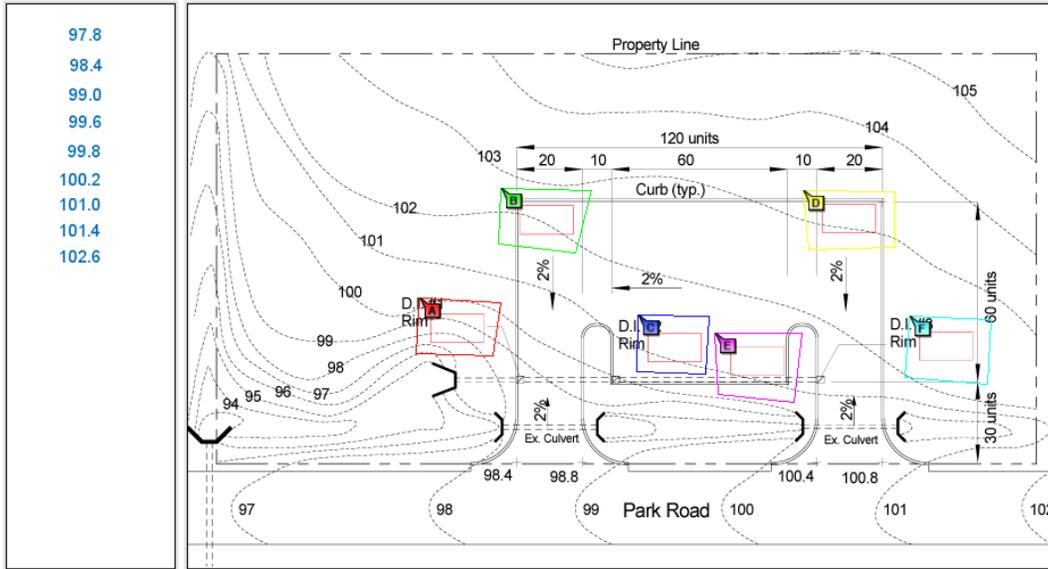
1. A
2. A, B, D
3. A



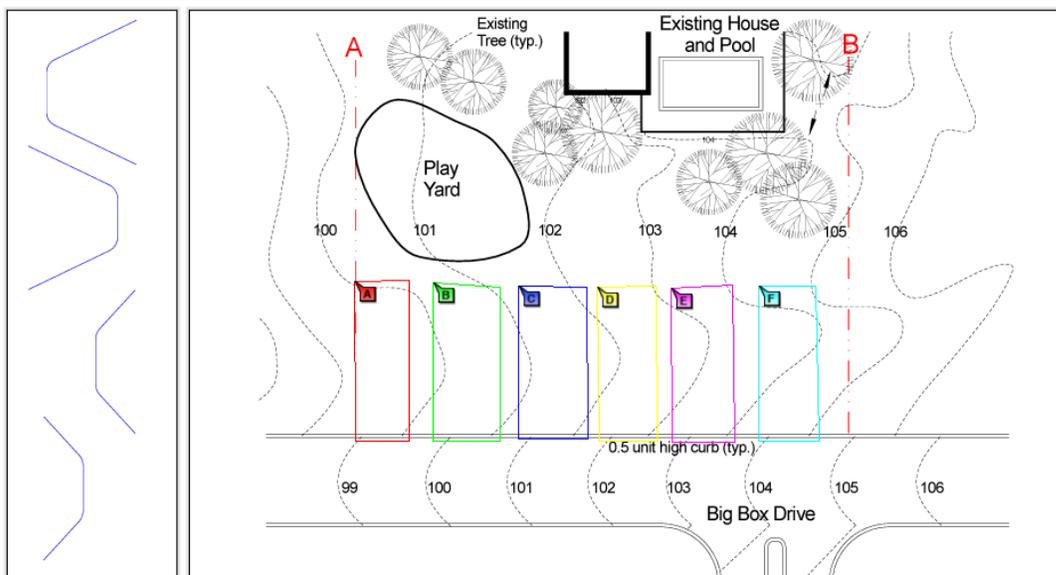
4. A, B, C, D
5. 46.25 – F, G  
46.75 – E, H  
47.50 – A, B, C, D



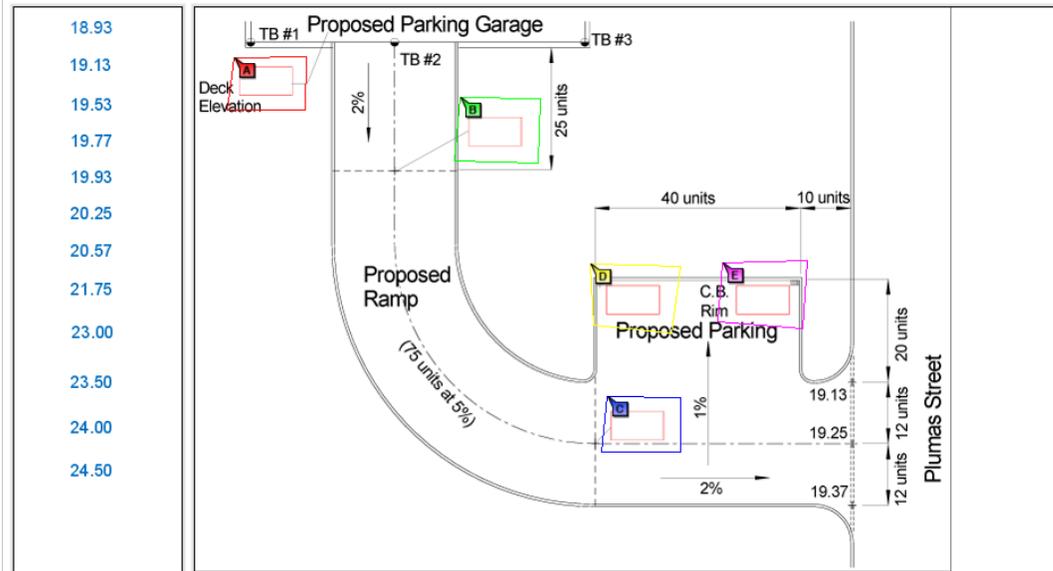
6. 97.8 – A  
 98.4 – C  
 99.0 – B  
 99.6 – E  
 99.8 – F  
 101.4 – D



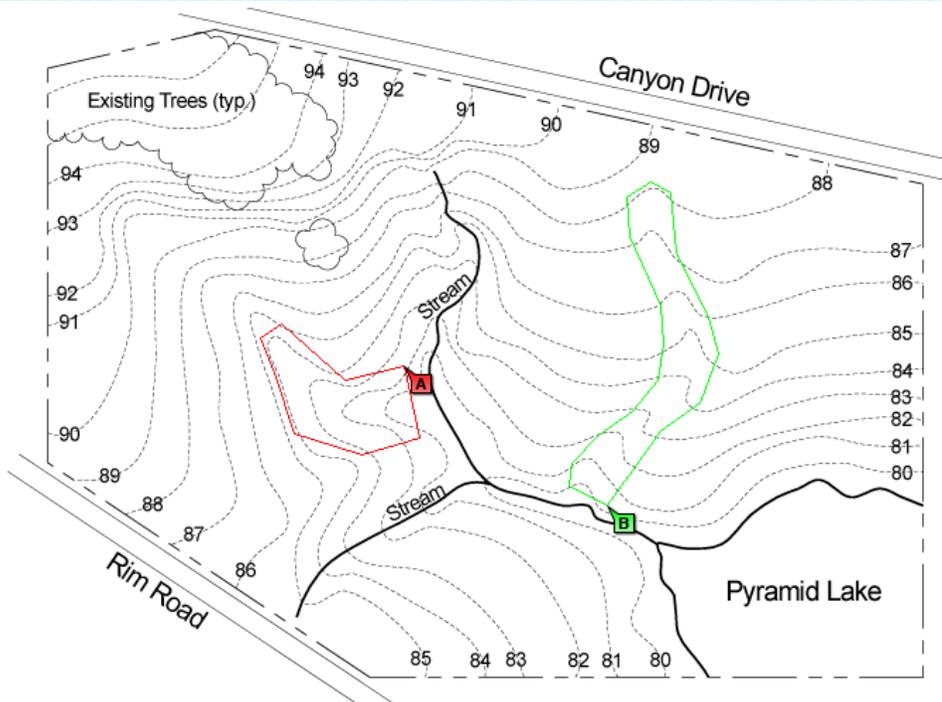
7. Contour (3) – A, B, C, D, E, F



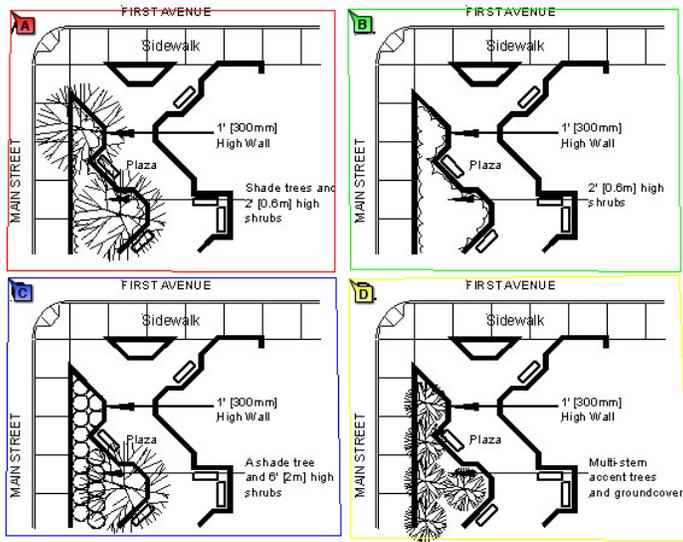
8. 19.13 – E  
 19.93 – D  
 20.25 – C  
 24.00 – B  
 24.50 – A



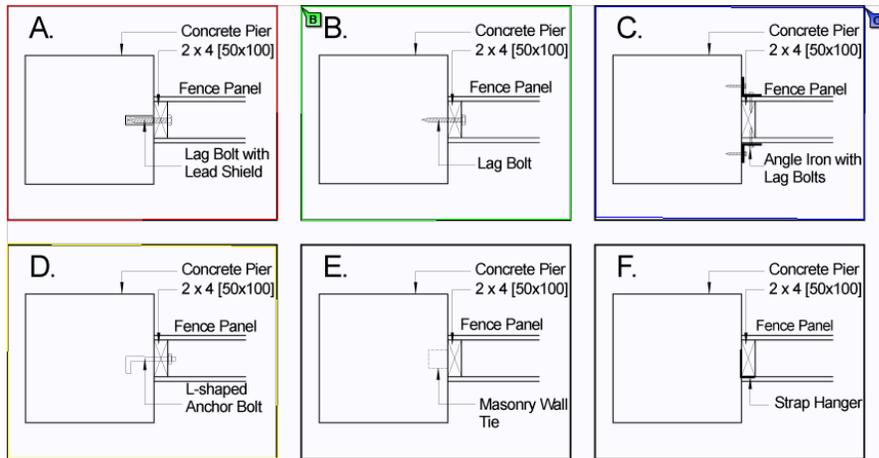
9. A



10. C  
11. A



12. D



13. H  
14. B  
15. B