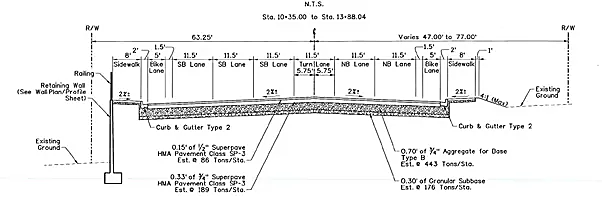
[](https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&ved=0ahUKEwjF59Lu3PPYAhUBmuAKHQs9DzgQjRwIBw&url=https://www.quora.com/Who-can-explain-a-cross-section-of-road-with-a-diagram&psig=AOvVaw1M3osz3tgtTvRiD1ReGAm4&ust=1516990689001987)

7’ – 12”CMP

1. What is the total width of the roadway from shoulder to shoulder?
   1. 97.5’
   2. 84.5’
   3. 86’
   4. 100.5’
2. If the subgrade drain is flowing half full, what is the elevation of the surface of the water? Centerline elevation is 278 ft.
   1. 287’
   2. 269’
   3. 262’
   4. 275’

Following diagram is reference for Questions 3 and 4

2100’ D

A 70⁰

S 30⁰ E

1350’ C

135⁰ 2300’

B

1. The sum of the interior angles in the diagram above is
   1. 0⁰
   2. 90⁰
   3. 180⁰
   4. 360⁰
2. If the coordinates of Point A are N 1025, E 875 what are the coordinates of D?
   1. N 1398.7, E 2934.1
   2. N 1379.8, E 2934.1
   3. N 1389.7, E 2934.1
   4. N1397.8, E 2934.1
3. If A=45⁰ what is cos A B
   1. .7071 sin(A)= a/c cot(A)=b/a
   2. 1/.7071 cos(A)=b/c sec(A)=c/b
   3. 1/.3634 A C tan(A)=a/b csc(A)=c/d
4. If A=55⁰ and side c=21, the length of side a is
   1. 12.05
   2. 12.15
   3. 12.50
   4. 17.20
5. The coordinates of A are N 1024, E 876. Find B
   1. N 1039.8, E 909.3 A S 35⁰ E
   2. N 909.3, E 1039.8 100’
   3. N 903.9, E1039.8 B
   4. None of these
6. When hot asphalt is laid, how soon after spreading should it be rolled?
   1. When it reaches the specified temp
   2. As soon as possible
   3. When the mix can support the weight without deformation
   4. When there is no equipment in front of the roller
7. What is the most likely reason that a top course of asphalt concrete begins to fall apart shortly after it has been laid?
   1. Poor base
   2. To much bitumen
   3. To much stone
   4. To many passes with the roller
8. When 2x-6y=1.4 and 4x+60y=22.0 what is the value of x?
   1. 1.5
   2. 0.5
   3. 2.0
   4. 1.0
9. What characteristics distinguish binder from top course at the mix plant?
   1. Course aggregate & more asphalt
   2. Course aggregate & less asphalt
   3. Computed density
   4. Method od compaction
10. What can be done to reduce permeability of concrete?
    1. Add more air entraining agent
    2. Increase the amount of stone in the mix
    3. More compaction in the subgrade
    4. Coat concrete with a bituminous mix
11. A scarifier is used to
    1. Break up existing pavement close to new grade
    2. Break up sod before stripping
    3. Improve the water carrying quality of the soil
    4. To preserve old pavement for asphalt armor coat
12. The infrared heater on a paver is used to
    1. Soften old asphalt concrete for removal
    2. To promote adherence between old pavement and new bituminous overlay
    3. Bond longitudinal joints
    4. Allow paving in sub zero weather
13. Find the area of the figure below 12’ 6’
    1. 184ft^2 2’
    2. 150ft^2 4’
    3. 144ft^2 10’
    4. 148ft^2 14’
14. A concrete bridge abutment shows sealing cracking or spalling. What is the most practical way to make repairs?
    1. Cover damaged area with steel mesh and coat with bitumen
    2. Close the bridge to all traffic and completely replace abutment
    3. Remove deteriorated concrete to sound material and rebuild
    4. Seal the damaged surface with impervious material and coat with “Shock Crete”
15. A cross section of pavement 24 L.F. wide has a elevation of 706.5, an inside edge elevation of 706.0, and an outside edge elevation of 707.0. What is the pavement cross slope?
    1. ¾”/ L.F.
    2. ¼”/ L.F.
    3. 7/8”/ L.F.
    4. ½”/ L.F.
16. How many cubic yards of concrete are in a 1 ft length of retaining wall having a uniform section as shown at the left? 1’ 6”
    1. 9.1 cy
    2. 11.9 cy 14’
    3. 1.9 cy
    4. 10.0 cy 13” 13”

2’

5’

1. A 21,000-cubic yard fill has a trapezoidal section 15 feet high, and 50 feet wide at the top, with 1 on 2 side slopes. What is the length?
   1. 475.5’
   2. 472.5’
   3. 725.2’
   4. 100.0’
2. Steel mesh is placed 3” below the surface of concrete pavement
   1. To increase the load bearing capacity
   2. To dissipate absorbed heat
   3. To limit frost heave
   4. To prevent cracking
3. Which of the following is used to show dimensions on a drawing?
   1. A dotted line
   2. A light solid line
   3. A dashed line
   4. A heavy solid line
4. The best method for prolonging a survey is called
   1. Leveling
   2. Deflection
   3. Short sighting
   4. Double centering
5. The most practical way to correct excessive moisture in aggregate by
   1. Stock piling
   2. Heating charging shoots
   3. Heating batch scales
   4. Increasing the fine particles in the aggregate
6. A 100’ tape was used to measure a distance which read 250.65’; later investigation proved the actual distance to be 258.80’. What was the true length of the tape?
   1. 102.3’
   2. 103.2’
   3. 102.1’
   4. 101.2’
7. What is meant by the expression “Water to Cement ratio of 5”
   1. 5 gallons of water to one sack of cement
   2. 5 sacks of cement to 1 gallon of water
   3. 5 lbs. of water to 1 pound of cement
   4. 5 lbs. of cement to 1 pound of water
8. What is meant by a 1:2:4 concrete mix?
   1. 1 part stone; 2 parts cement; 4 parts sand
   2. 1 part water; 2 parts cement; 4 parts sand
   3. 1 part cement; 2 parts sand; 4 parts stone
   4. 1 part stone; 2 parts sand; 4 parts cement
9. In ordinate geometry, the formula x^2 +y^2 = 0 represents
   1. A triangle
   2. A circle
   3. A straight line
   4. A parabolic curve
10. Point A has an elevation of 147.30’; Point B has an elevation of 151.30’; the distance between A and B is 20’. What is the distance between contour 148 and 150?
    1. 10’
    2. 15’
    3. 12’
    4. 8’
11. Name the low point of the bottom of a metal pipe
    1. Crown
    2. Foot
    3. Bedding line
    4. Invert
12. The best device used to transfer distances from one sheet to another is
    1. Divider
    2. Scale
    3. Triangles
    4. Level
13. The most accurate means of plotting survey is by
    1. Plus and offsets
    2. Protractor and angles
    3. Scaled proportions
    4. Coordinates
14. How many square feet of roofing will cover the roof of the building in drawing below?
    1. 11537.8ft^2
    2. 11359.2ft^2
    3. 13159.2ft^2 70’
    4. 13519.2ft^2 50’

160’

60’

1. A plan drawn to 1”=50’ scale can be copied at 1”:20’ scale most efficiently by using
   1. T square and triangles
   2. Pantograph
   3. Compass and dividers
   4. Scale and straight edge

1. What is the length of side AC? B
   1. 6.96’
   2. 6.69’ 5’
   3. 4.76’
   4. 9.66’ A 30⁰ 45⁰ C
2. What is angle C to the nearest degree? B
   1. 80⁰
   2. 78⁰ 12’ 15’
   3. 52⁰
   4. 90⁰ A C

7’

1. What is the angle at A to the nearest degree?
   1. 65⁰
   2. 101⁰
   3. 90⁰
   4. 75⁰
2. A circle has a circumference of 31.5’; What is the area of this circle?
   1. 96.78ft^2
   2. 79.96ft^2
   3. 78.96ft^2
   4. 87.69ft^2
3. If concrete has a slump of 4.5” and the specs are 1”-3”, which of the following is true?
   1. More aggregate is needed in the batch
   2. More cement is needed in the batch
   3. The concrete does not contain enough air entraining agent
   4. The concrete has to much water

1977 Exam answers

1. C

2. B

3. D

4. C

5. B

6. D

7. D

8. D

9. A

10. A

11. B

12. D

13. A

14. C

15. D

16. C

17. D

18. C

19. B

20. D

21. B

22. D

23. A

24. B

25. C

26. C

27. B

28. B

29. D

30. A

31. D

32. A

33. B

34. D

35. C

36. B

37. B

38. D