SB
469.4
.R62
2006a

The Road to Licensure and Beyond

(INCLUDING UNDERSTANDING THE L.A.R.E. 5TH EDITION)

Council of Landscape Architectural
Registration Boards

and

The Landscape Architectural
Registration Boards Foundation

H.B. Owens Resource Center
School of Environmental Design
Caldwell Hall
University of Georgia

12700 Fair Lakes Circle
Suite 110
Fairfax, Virginia
22033

703.818.1300
703.818.1309 fax
www.clarb.org

The Road to Licensure and Beyond
Sample Graphic Vignette Problems

Please note, this information is located in your handbook in Chapter Twelve.
We have also included it on the CD-ROM for your convenience.

Five sample vignette problems are included in *The Road to Licensure and Beyond* as an additional study tool. You will notice that the same problems printed in the book are also included on *The Road to Licensure and Beyond* CD-ROM. Since the binding of the book limits what you can see for each problem (each exam problem is actually 11" by 17") we recommend briefly reviewing each problem printed in the book and then printing out "real size" copies from the CD-ROM for practicing the problems.

We have formatted one file (named "11by17") to print out as 11" by 17". If you do not have access to a printer that can print 11" by 17", there is a second file (named "letrsize") for you to print out on 8.5" by 11" (letter size) paper and assemble after printing using overlaying crop marks. Chapter Thirteen of the handbook describes the contents of the CD-ROM in greater detail.

On average, you will have approximately one hour to complete each vignette. In the exam, you will be expected to manage your time to complete all of the problems within the given time frame.

In your solutions to the design problems, you will be expected to integrate information from several sources. Each problem includes a problem statement that defines the problem, establishes the site context, and explains what is required of your solution.

The second source of information that you will be required to incorporate into your solutions is the L.A.R.E. Reference Manual. This guide will be sent to you with your pre-exam information. A sample manual (named "refman") is included on the CD-ROM for your use on the sample problems. This manual establishes graphic standards, universal accessibility requirements, zoning requirements and related codes necessary to complete some of the vignette problems. If the L.A.R.E. Reference Manual changes, you will have access to the most recent one on our web site at http://www.clarb.org. Click on the web site address to visit the CLARB web site.

Evaluating Your Sample Solutions

The **Errors** folder contained in the **Problems** folder on the CD-ROM contains five Adobe Acrobat documents with twelve sample solutions and Red-line critiques in each. Compare your solution to the solutions and Red-line critiques. The examples indicate some of the common errors associated with each vignette type. You should review your solution to see if you have omitted the common errors associated with that problem type. Do not be discouraged by the lack of positive comments on the solutions. Remember, the purpose of the Red-line critique is to provide insight into areas for improvement.

If you identify that you have problems with certain item types or if you wish to try additional problems reviewed by CLARB, please refer to the section of your handbook that discusses the Diagnostic Vignette practice problems. This process identifies specific errors that you have made and provides a list of reference books that may be helpful in gaining the knowledge that you lack.

Step by Step Instructions for Using the Practice Problems and Evaluating Your Solutions

1. Read and understand the L.A.R.E. Reference Manual found on the CD-ROM. This manual outlines the codes and graphic conventions that you must follow when completing the examination.
2. Read the section in Chapter Seven on explicit and implicit requirements for the examination.
3. Turn to the first sample problem and do the following:
   a. Read the problem statement carefully.
   b. Highlight explicit instructions given in the problem statement.
   c. Note the implicit requirements needed to solve the problem.
   d. Work out your solution on tracing paper before transferring that solution to the problem sheet.
4. Refer back to Chapter Nine to see how your examination is evaluated.
5. Compare your solution to the sample solutions for each problem found on the CD-ROM to see if you have committed any of the common errors associated with each type of problem.
6. Go on to complete this process for the remainder of the sample problems. It is a good idea to time yourself from this point on to see if you can complete each problem in the required time frame. You should give yourself approximately one hour on average to solve each problem.

Sample Problem 1

PROBLEM STATEMENT:

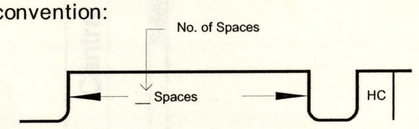
Prepare a circulation design for a new Outpatient Surgery Center [Centre].

CONTEXT:

- Central Avenue is a 2-lane road with a 35 MPH [55 KPH] speed limit.
- 1st Street is a 4-lane collector road with a 45 MPH [70 KPH] speed limit.
- The site is located in an urban setting with a temperate climate.

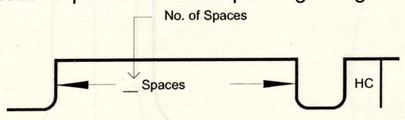
REQUIRED:

- Locate the Outpatient Surgery Center [Centre] using the graphic shown to the right to take advantage of the view to the stream.
- Provide a 2-lane entrance drive. Indicate direction of vehicular circulation with arrows.
- Provide a maximum of two (2) curb cuts to the site which facilitate both ingress and egress.
- Provide one (1) drop-off/turnaround area at the main entry. Indicate direction of vehicular circulation with arrows.
- Provide one (1) pick-up/turnaround area at the discharge location separate from the main entry. Indicate direction of vehicular circulation with arrows.
- The turnarounds must be able to accommodate large vehicles such as ambulances and fire trucks.
- Locate a total of 25 parking spaces to accommodate patients. Indicate parking by using the following graphic convention:



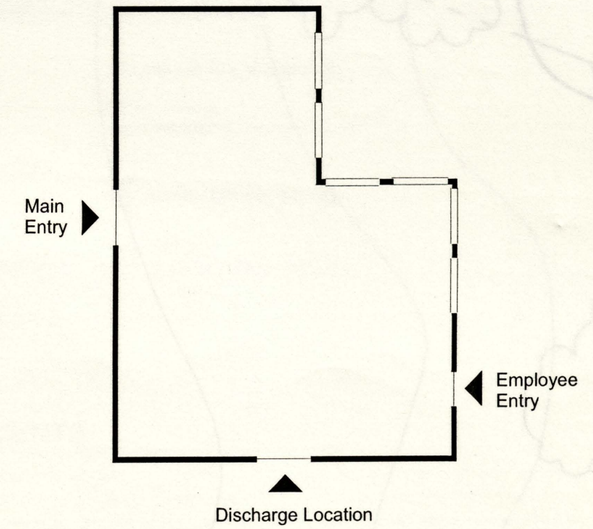
Not to Scale

- The parking lot for the patients should serve both the drop-off/turnaround area at the main entry and the pick-up/turnaround area at the discharge location.
- Locate a separate parking lot with 10 parking spaces to accommodate employees. There are no handicapped spaces required. Indicate parking using the following graphic convention:



Not to Scale

- Provide a pedestrian walk 1) between the patient parking lot and the main entry; 2) between the patient lot and the discharge location and; 3) between the employee parking lot and the employee entry.



OUTPATIENT SURGERY CENTER [CENTRE]

0 40 80

Sample Problem 1

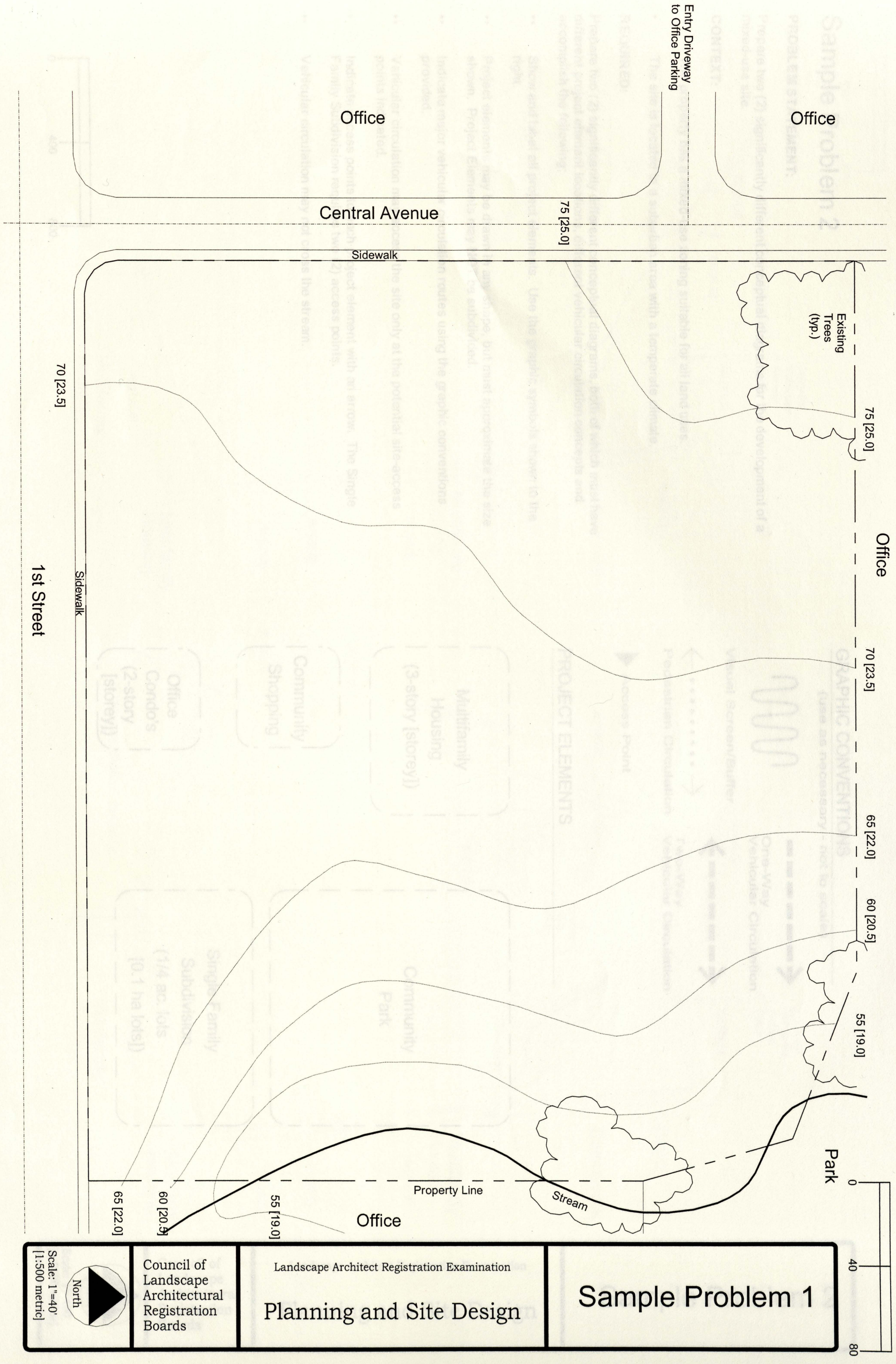
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]


Office
Entry Driveway to Office Parking
Office
Central Avenue
75 [25.0]
Sidewalk
Existing Trees (typ.)
75 [25.0]
Office
70 [23.5]
Sidewalk
70 [23.5]
1st Street
65 [22.0]
60 [20.5]
55 [19.0]
Property Line
Stream
Park
Office
65 [22.0]
60 [20.5]
55 [19.0]
0
40
80
Scale: 1"=40' [1:500 metric]
North
Council of Landscape Architectural Registration Boards
Landscape Architect Registration Examination
Planning and Site Design
Sample Problem 1

Sample Problem 2

PROBLEM STATEMENT:

Prepare two (2) significantly different conceptual diagrams for the development of a mixed-use site.

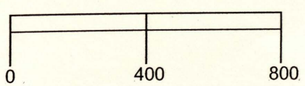
CONTEXT:

- The property has a mixed-use zoning suitable for all land uses.
- The site is located in a suburban area with a temperate climate.

REQUIRED:

Prepare two (2) significantly different conceptual diagrams, both of which must have different project element locations, different vehicular circulation concepts and accomplish the following:

- Show and label all project elements. Use the graphic symbols shown to the right.
- Project elements may be drawn in any shape, but must approximate the size shown. Project Elements may NOT be subdivided.
- Indicate major vehicular circulation routes using the graphic conventions provided.
- Vehicular circulation may access the site only at the potential site-access points indicated.
- Indicate access points to each project element with an arrow. The Single Family Subdivision requires two (2) access points.
- Vehicular circulation may not cross the stream.



GRAPHIC CONVENTIONS

(use as necessary - not to scale)

Visual Screen/Buffer

One-Way Vehicular Circulation

Pedestrian Circulation

Two-Way Vehicular Circulation

Access Point

PROJECT ELEMENTS

Multifamily Housing (3-story [storey])

Community Park

Community Shopping

Single Family Subdivision (1/4 ac. lots [0.1 ha lots])

Office Condo's (2-story [storey])

Sample Problem 2

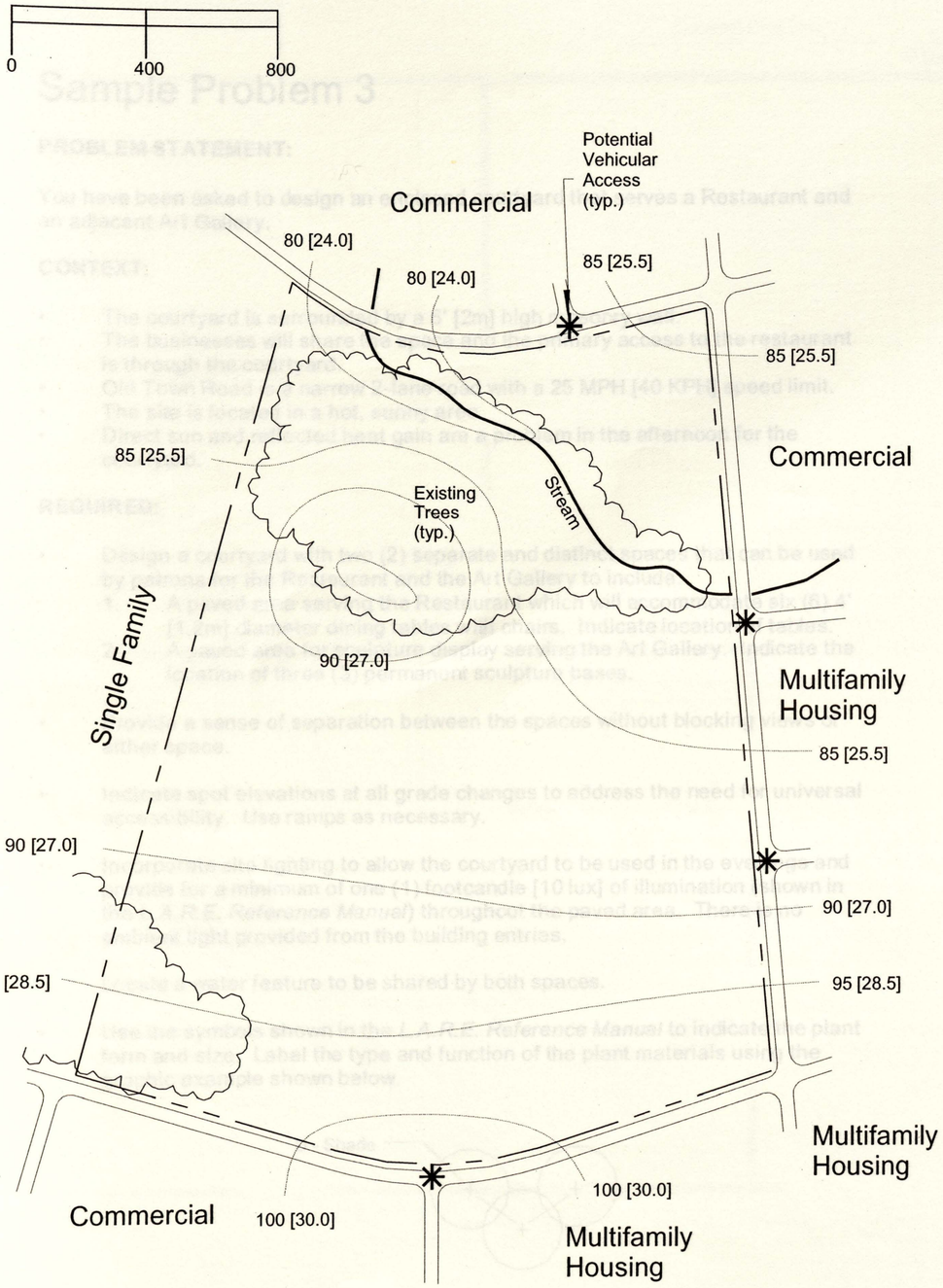
Landscape Architect Registration Examination

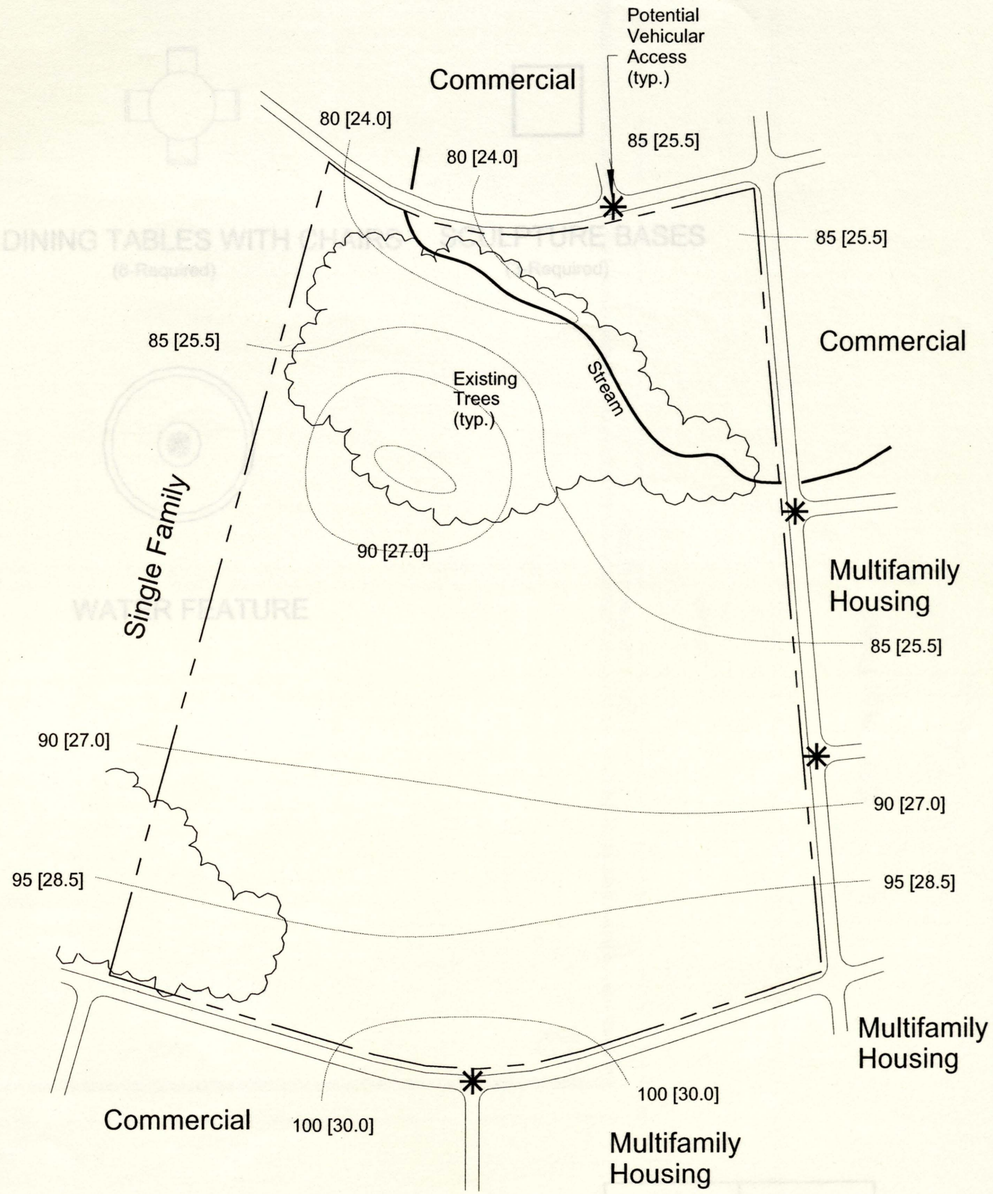
Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]





Sample Problem 2

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]

Sample Problem 3

PROBLEM STATEMENT:

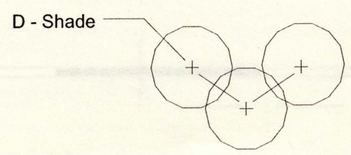
You have been asked to design an enclosed courtyard that serves a Restaurant and an adjacent Art Gallery.

CONTEXT:

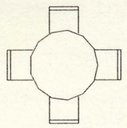
- The courtyard is surrounded by a 6' [2m] high masonry wall.
- The businesses will share the space and the primary access to the restaurant is through the courtyard.
- Old Town Road is a narrow 2-lane road with a 25 MPH [40 KPH] speed limit.
- The site is located in a hot, sunny area.
- Direct sun and reflected heat gain are a problem in the afternoon for the courtyard.

REQUIRED:

- Design a courtyard with two (2) separate and distinct spaces that can be used by patrons for the Restaurant and the Art Gallery to include:
  1. A paved area serving the Restaurant which will accommodate six (6) 4' [1.2m] diameter dining tables with chairs. Indicate location of tables.
  2. A paved area for sculpture display serving the Art Gallery. Indicate the location of three (3) permanent sculpture bases.
- Provide a sense of separation between the spaces without blocking views of either space.
- Indicate spot elevations at all grade changes to address the need for universal accessibility. Use ramps as necessary.
- Incorporate site lighting to allow the courtyard to be used in the evenings and provide for a minimum of one (1) footcandle [10 lux] of illumination (shown in the *L.A.R.E. Reference Manual*) throughout the paved area. There is no ambient light provided from the building entries.
- Locate a water feature to be shared by both spaces.
- Use the symbols shown in the *L.A.R.E. Reference Manual* to indicate the plant form and size. Label the type and function of the plant materials using the graphic example shown below.



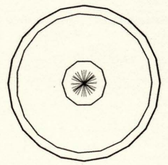
PROJECT ELEMENTS



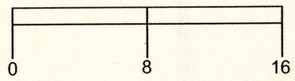
DINING TABLES WITH CHAIRS
(6-Required)



SCULPTURE BASES
(3-Required)



WATER FEATURE



Sample Problem 3

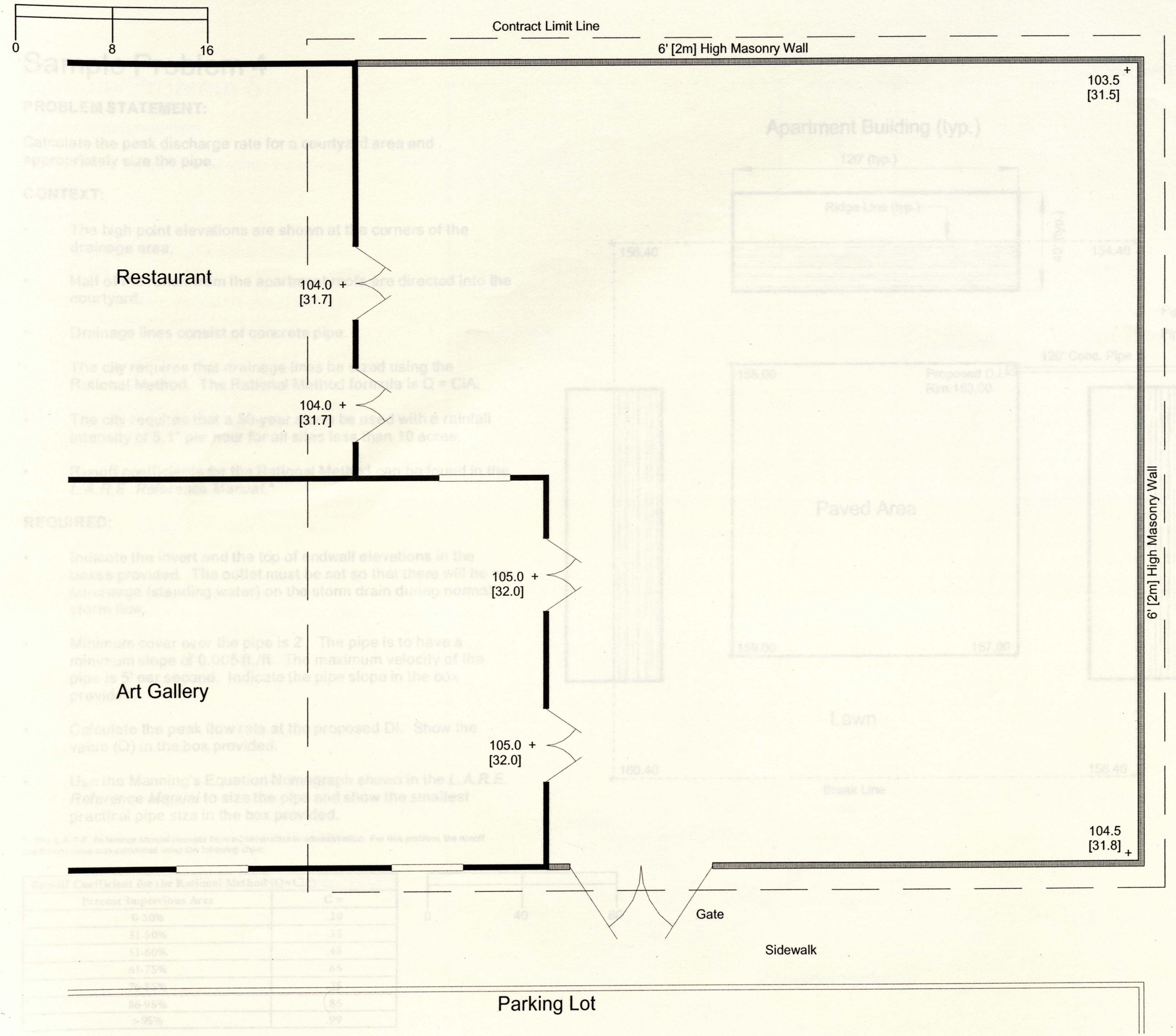
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0"
[1:100 metric]



Sample Problem 3

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0"
[1:100 metric]

Sample Problem 4

PROBLEM STATEMENT:

Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

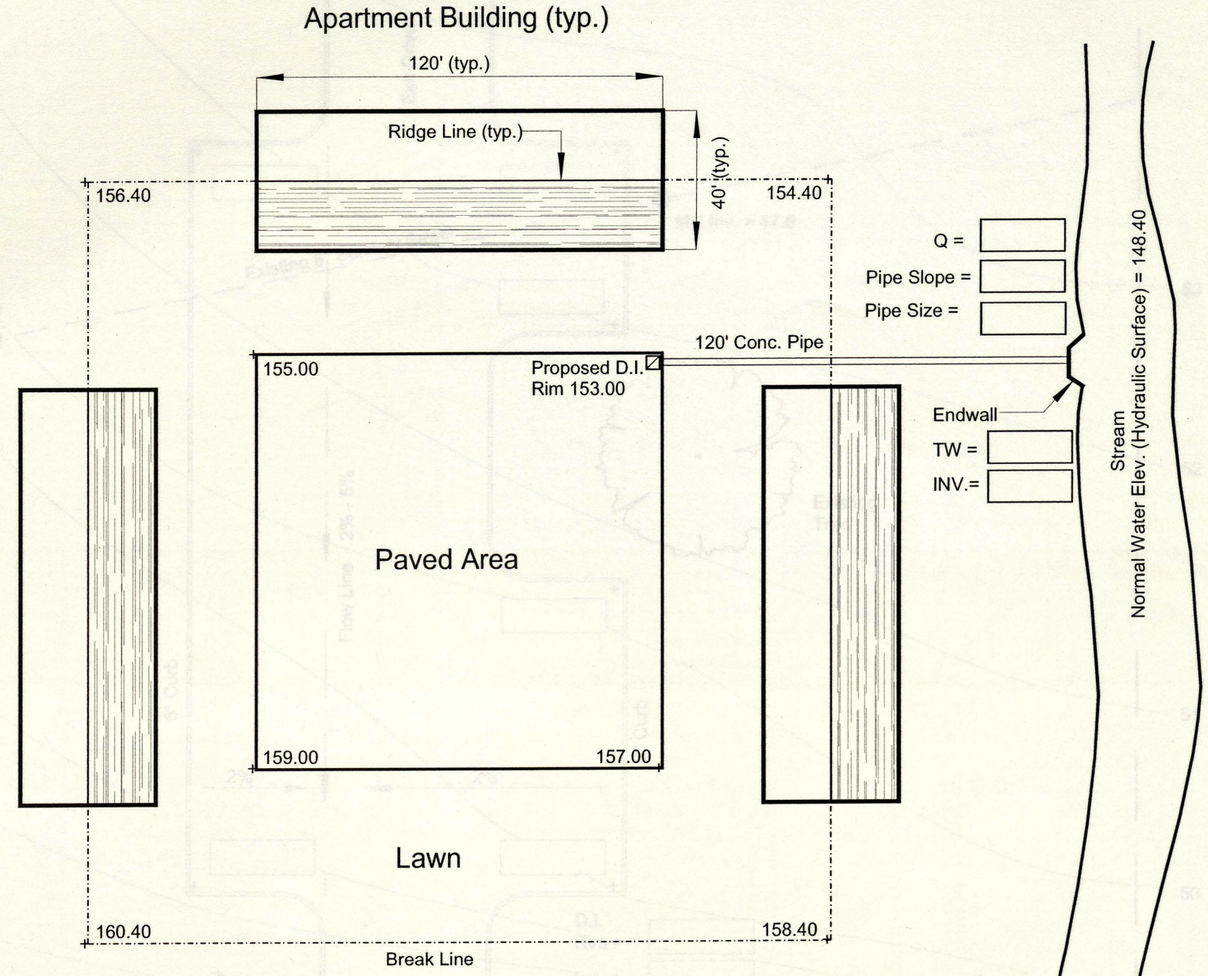
- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.**

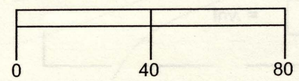
REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.

* - The *L.A.R.E. Reference Manual* changes from administration to administration. For this problem, the runoff coefficient value was calculated using the following chart:

Runoff Coefficient for the Rational Method (Q=CiA)	
Percent Impervious Area	C =
0-30%	.20
31-50%	.35
51-60%	.45
61-75%	.65
76-85%	.75
86-95%	.85
>95%	.99





Sample problem 4

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

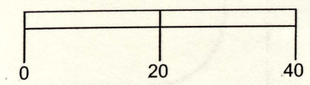
Sample Problem 5

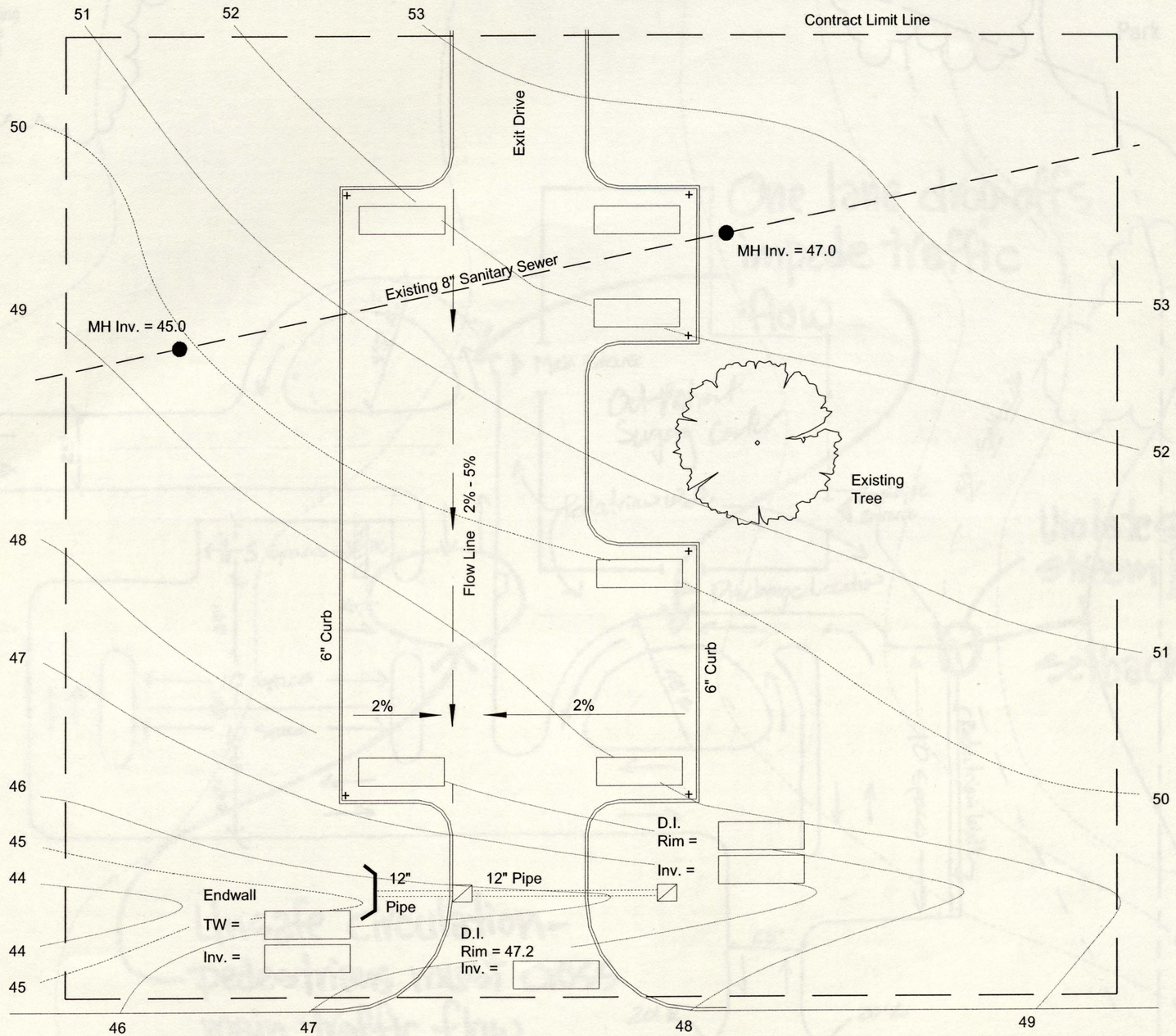
PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.





Sample Problem 5

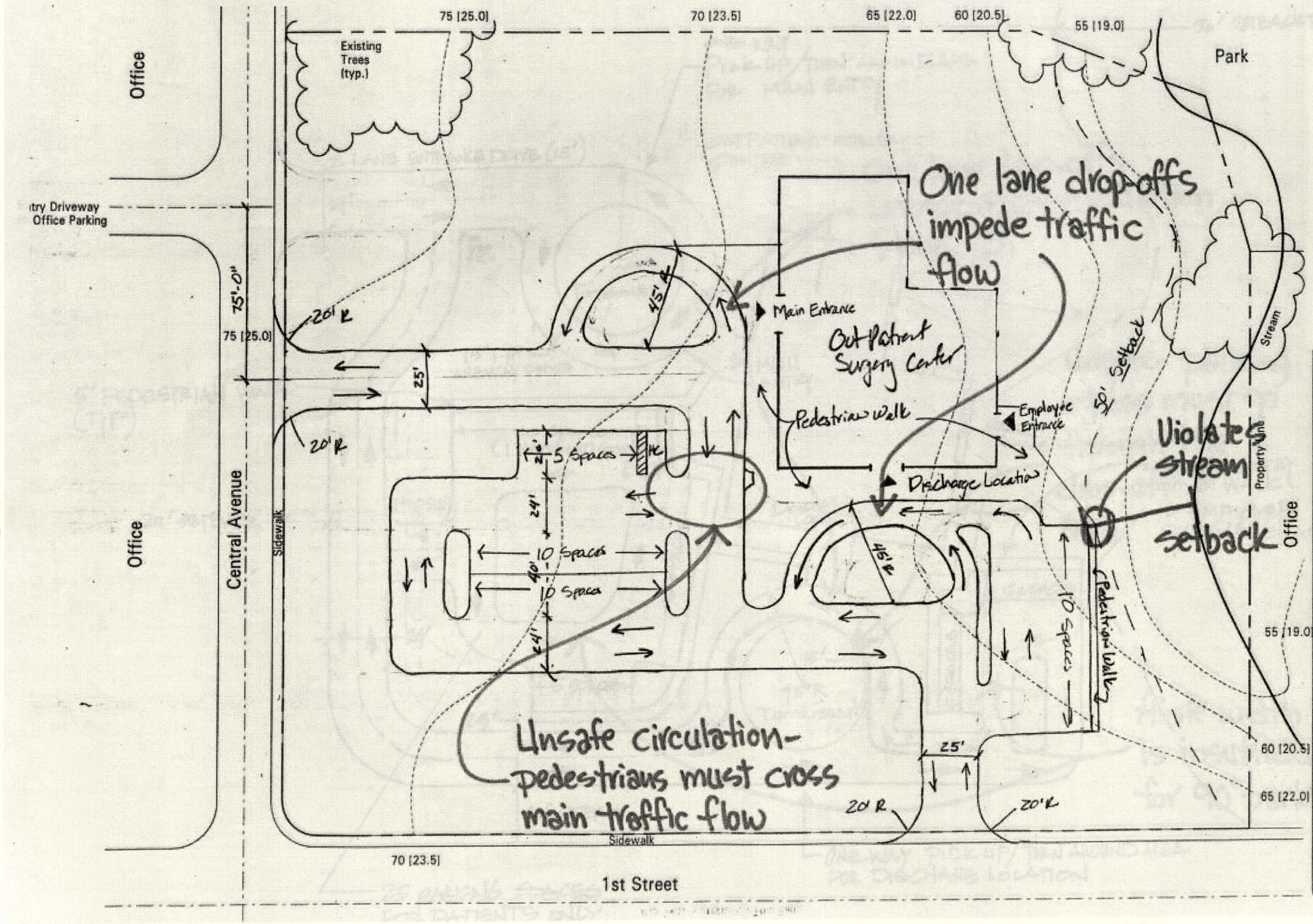
Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=20'



Sample Problem 1
Solution 1 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]

Office

Entry Driveway to Office Parking

75 [25.0]

Existing Trees (typ.)

70 [23.5]

65 [22.0]

60 [20.5]

55 [19.0]

50' SETBACK TO STREAM (T

Park

ONE WAY Pick UP/TURN AROUND ARE FOR MAIN ENTRY

OUTPATIENT SURGERY CENTER

2 LANE ENTRANCE DRIVE (25')

24'

STOP SIGN

+15'R Turnaround

15' TYP ONEWAY DRIVES

MAIN ENTRY

One lane drop-offs impede main circulation flow

GOOD VIEWS TO STREAM (TYP)

Stream

Unsafe- parking egress must go through the drop-off area

EMPLOYEE ENTRY WITH 5' WALK

10 EMPLOYEE PARKING SPACES

5' PEDESTRIAN WALK (TYP)

75 [25.0]

10 Spaces (1 Handicap Space)

5'

STOP SIGN

10 SPACES

DISCHARGE LOCATION

Office

20' SETBACK

Central Avenue

Sidewalk

24'

5 Spaces

5 SPACES

5 SPACES

15'

45'R Turnaround

24'

Aisle width is insufficient for 90° parking

20' SETBACK

Sidewalk

70 [23.5]

55 [19.0]

ONE WAY PICK UP/TURN AROUND AREA FOR DISCHARGE LOCATION

25 PARKING SPACES FOR PATIENTS ONLY

1st Street

Sample Problem 1
Solution 2 of 12

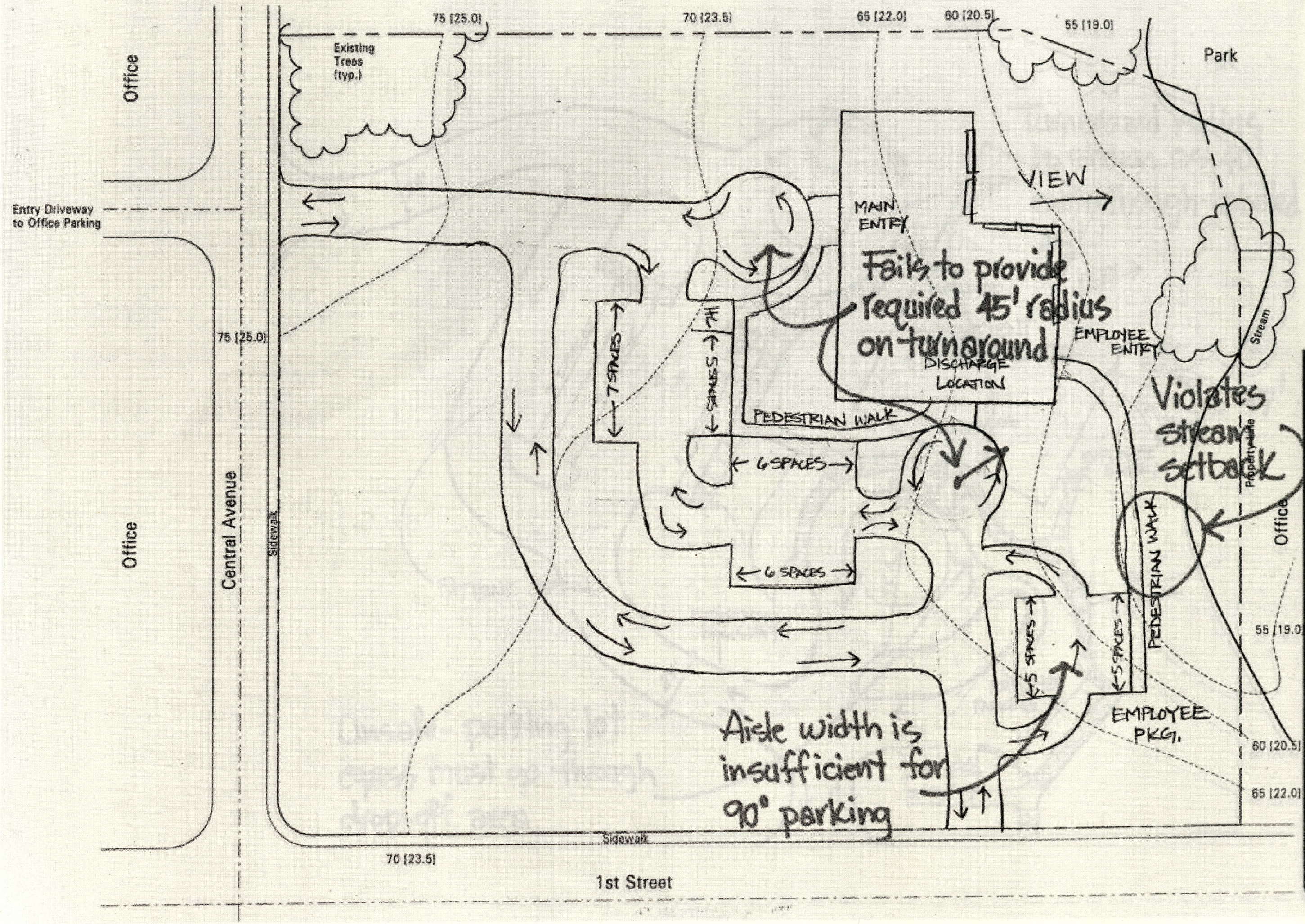
Planning and Site Design

Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]



Sample Problem 1
Solution 3 of 12

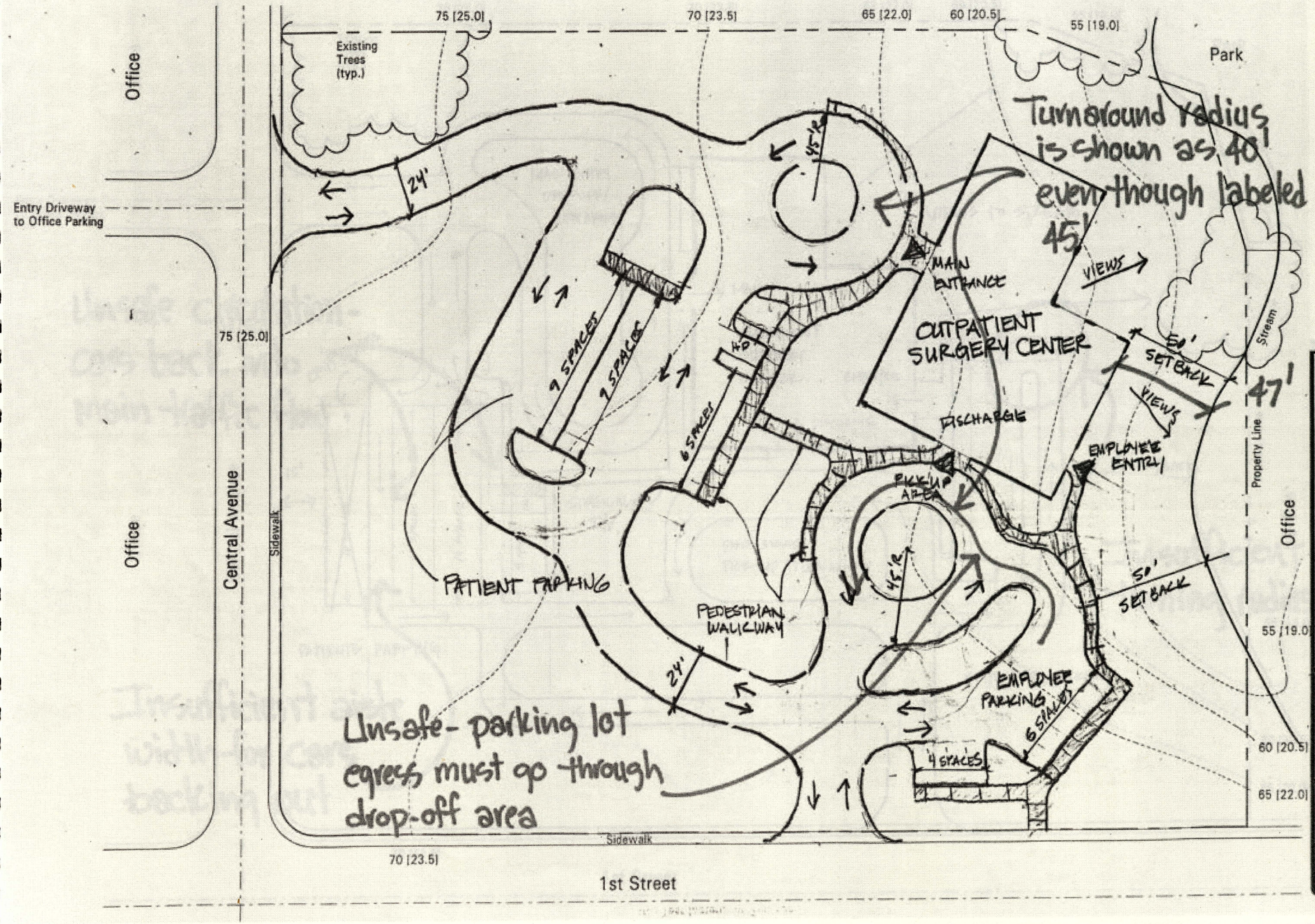
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]



Sample Problem 1
Solution 4 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]

Sample Problem 1
Solution 5 of 12

Planning and Site Design

Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

Office

Existing Trees (typ.)

75 [25.0]

70 [23.5]

65 [22.0]

60 [20.5]

55 [19.0]

Park

Entry Driveway to Office Parking

MAIN ENTRY DROP-OFF/ TURN AROUND

VIEWS TO STREAM

MAIN OUTPATIENT SURGERY CENTER

EMPLOYEE

DISCHARGE

Stream

Property Line

50' SETBACK

Unsafe circulation - cars back into main traffic flow

omit spaces

15'

10 SPACES

10 SPACES

5 SPACES

NO

SIDEWALK TYP.

DISCHARGE PICK-UP / TURN AROUND

15 SPACES

Office

Central Avenue

Sidewalk

PATIENTS PARKING

EMPLOYEE PARKING

Insufficient turning radius

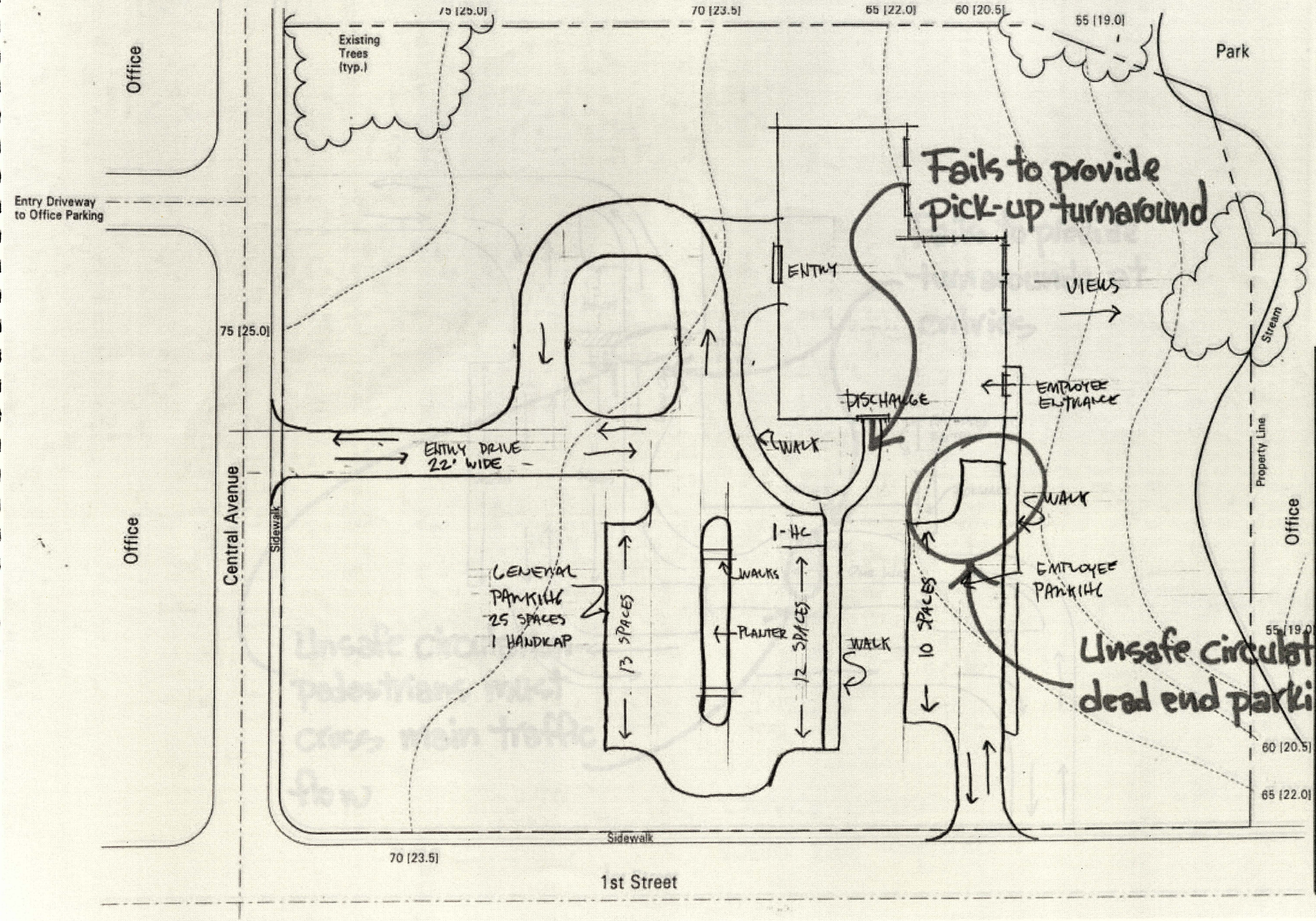
Insufficient aisle width for cars backing out

Sidewalk

70 [23.5]

1st Street

Scale: [1:50



Sample Problem 1
Solution 6 of 12

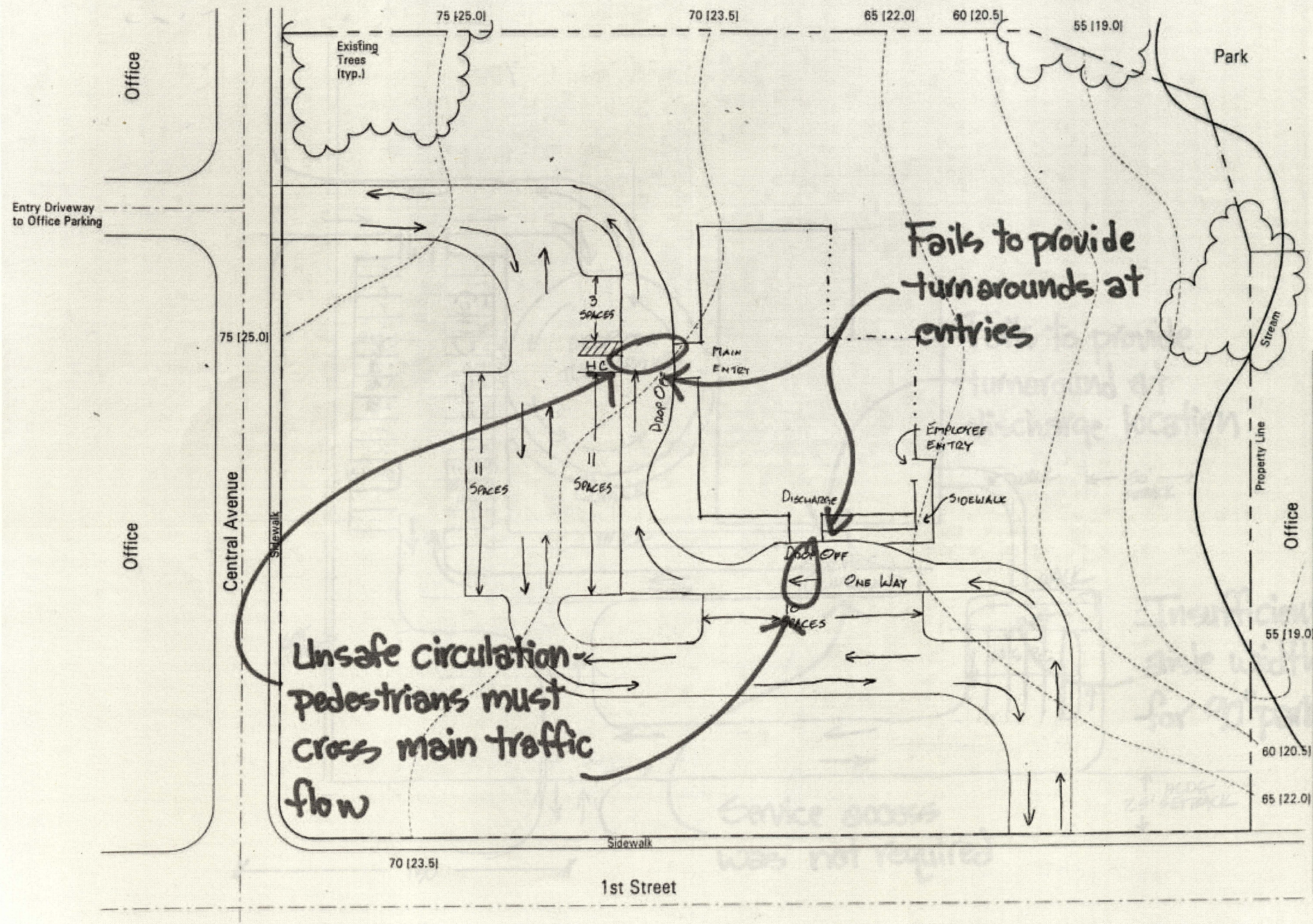
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]



Sample Problem 1
Solution 7 of 12

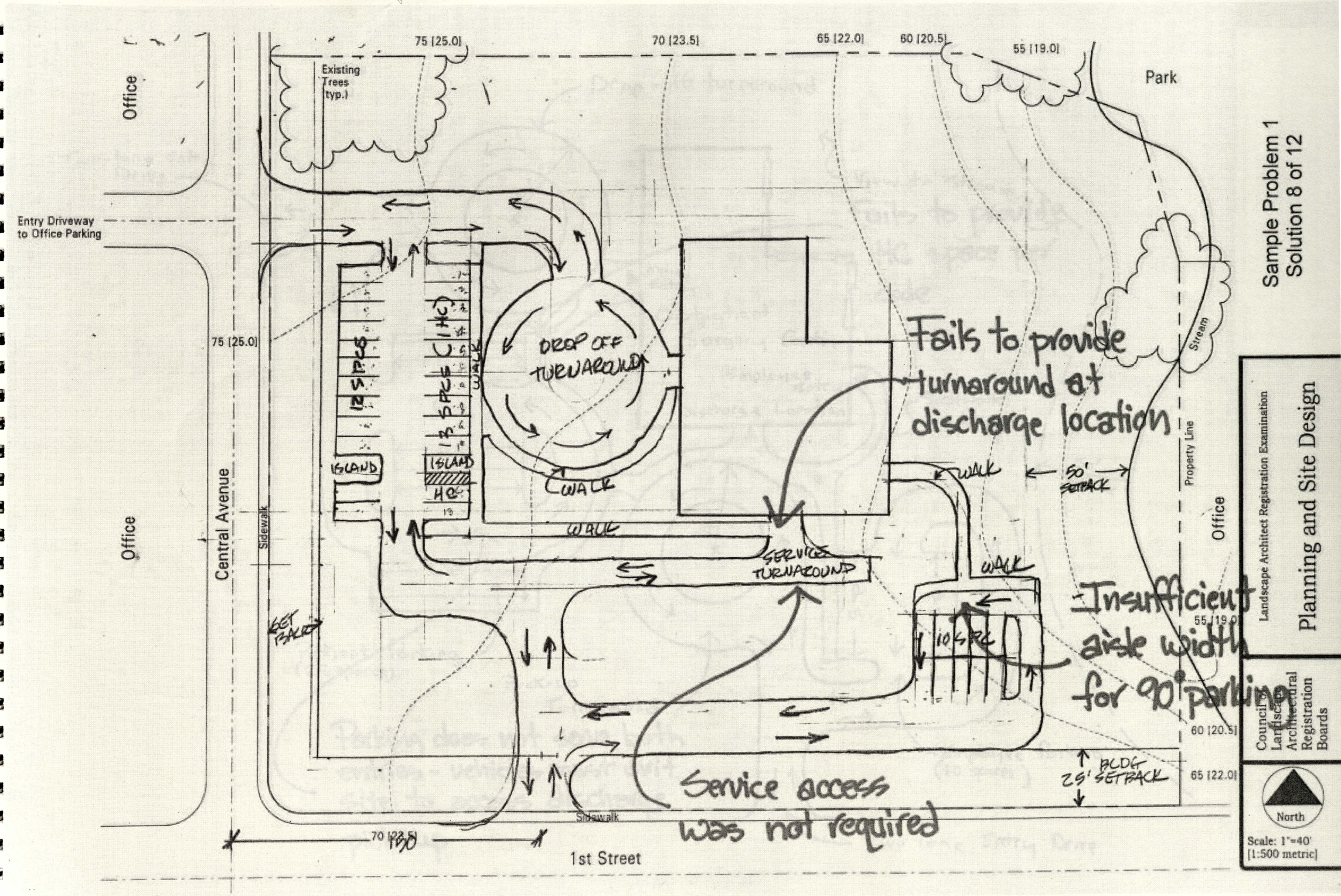
Planning and Site Design

Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'
[1:500 metric]



Office
Entry Driveway to Office Parking
Office
Central Avenue
Sidewalk
75 [25.0]
Existing Trees (typ.)
75 [25.0]
70 [23.5]
65 [22.0]
60 [20.5]
55 [19.0]
Park
Stream
Property Line
Office
55 [19.0]
60 [20.5]
65 [22.0]
70 [23.5]
1st Street
Sidewalk
12 SPCS
13 SPCS (1 HC)
ISLAND
ISLAND
HC
WALK
DROP OFF TURNAROUND
WALK
WALK
SERVICE TURNAROUND
WALK
50' SETBACK
10 SPC
25' BLDG SETBACK
SET BACK
Fails to provide turnaround at discharge location
Insufficient aisle width for 90° parking
Service access was not required
Sample Problem 1
Solution 8 of 12
Landscape Architect Registration Examination
Planning and Site Design
Council of Landscape Architectural Registration Boards
North
Scale: 1"=40'
[1:500 metric]

Sample Problem 1
Solution 9 of 12

Planning and Site Design

Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

Existing Trees (typ.)

Drop-off turnaround

Two-lane Entry Drive

Entry Driveway to Office Parking

Office

Park

View to Stream

Fails to provide HC space per code

Main Entry

Outpatient Surgery Center

Employee Entry

Discharge Location

Sidewalk (typ.)

Stream

50' setback

Property Line

Office

Central Avenue

Office

Sidewalk

6 sp.

6 sp.

7 sp.

45'

5 sp.

5 sp.

Patient Parking (25 spaces)

Pick-up Turnaround

Parking does not serve both entries - vehicles must exit site to access discharge pick-up

Employee Parking (10 spaces)

Two lane Entry Drive

Sidewalk

1st Street

75 [25.0]

70 [23.5]

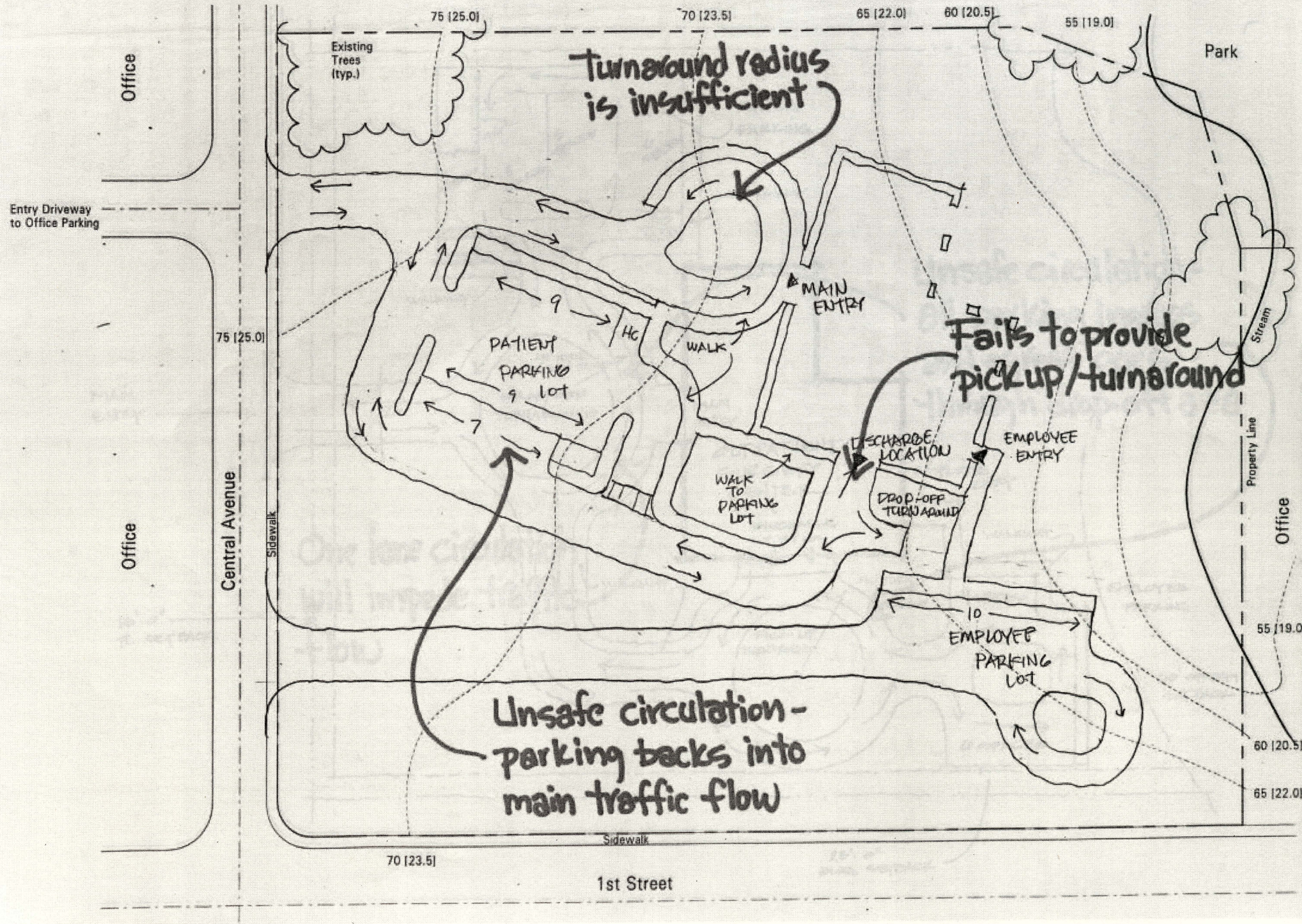
65 [22.0]

60 [20.5]

55 [19.0]

North

Scale: 1"=40' [1:500 metric]



Sample Problem 1
Solution 10 of 12

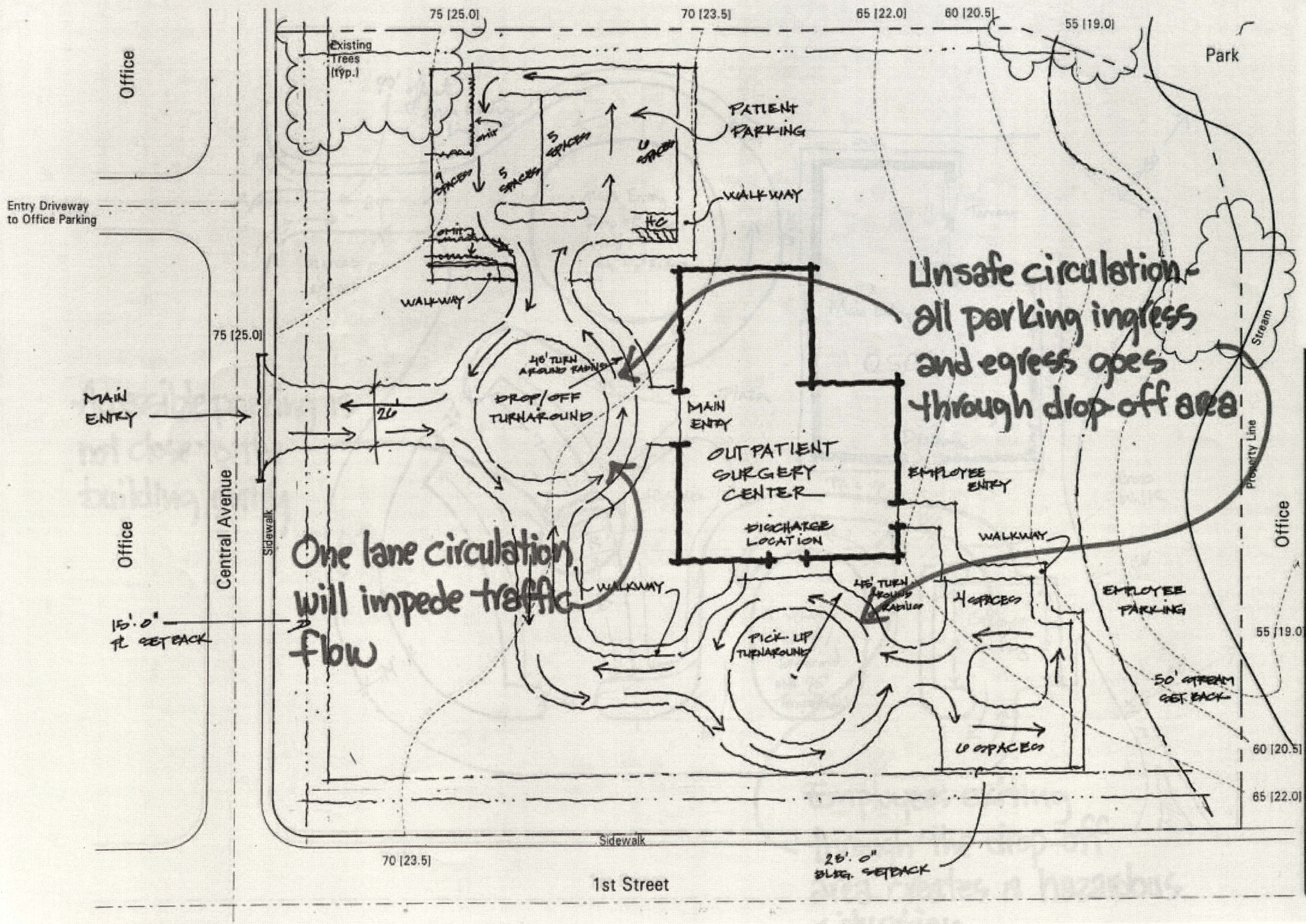
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40' [1:500 metric]

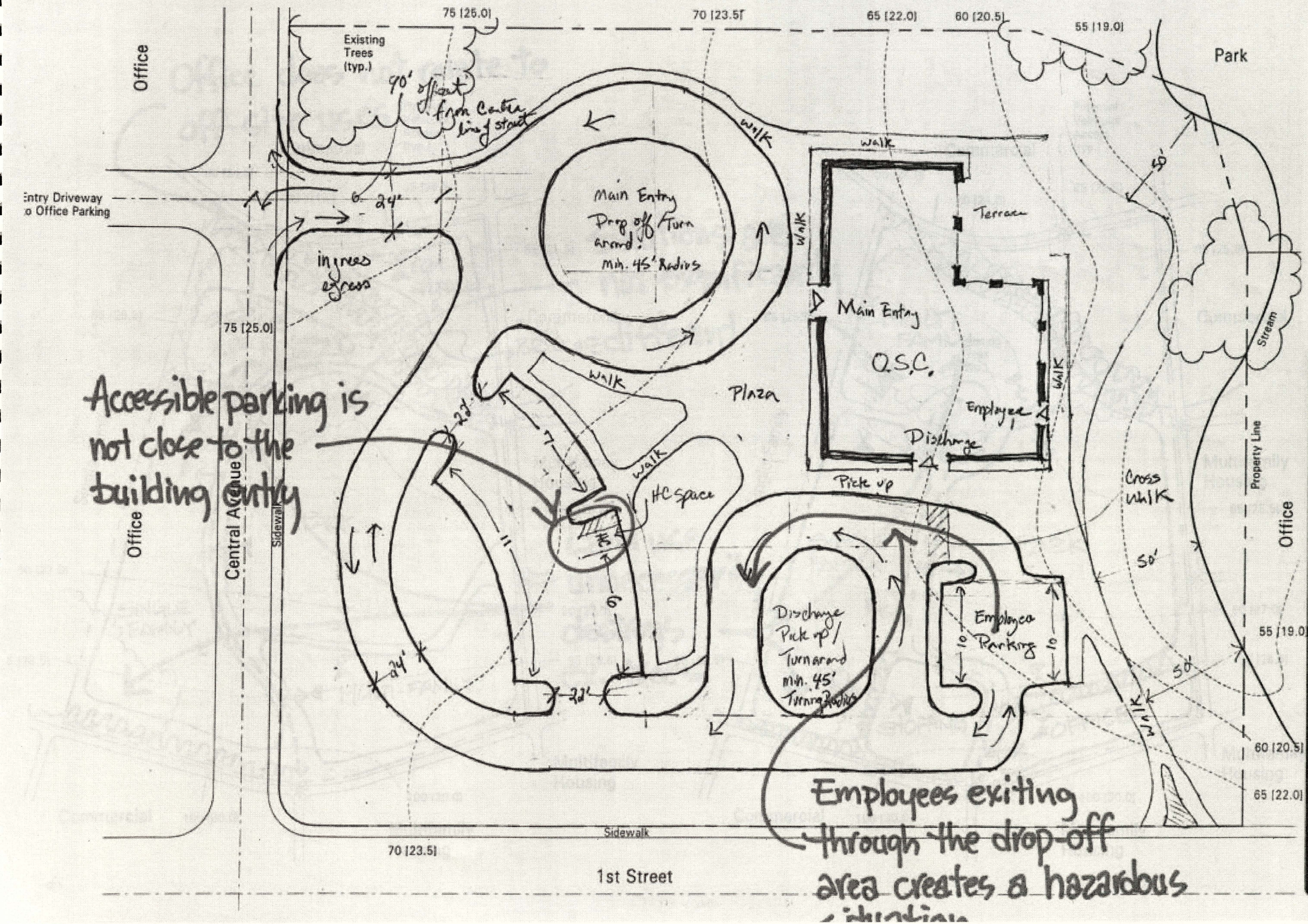


Sample Problem 1
Solution 11 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards



Sample Problem 1
Solution 12 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

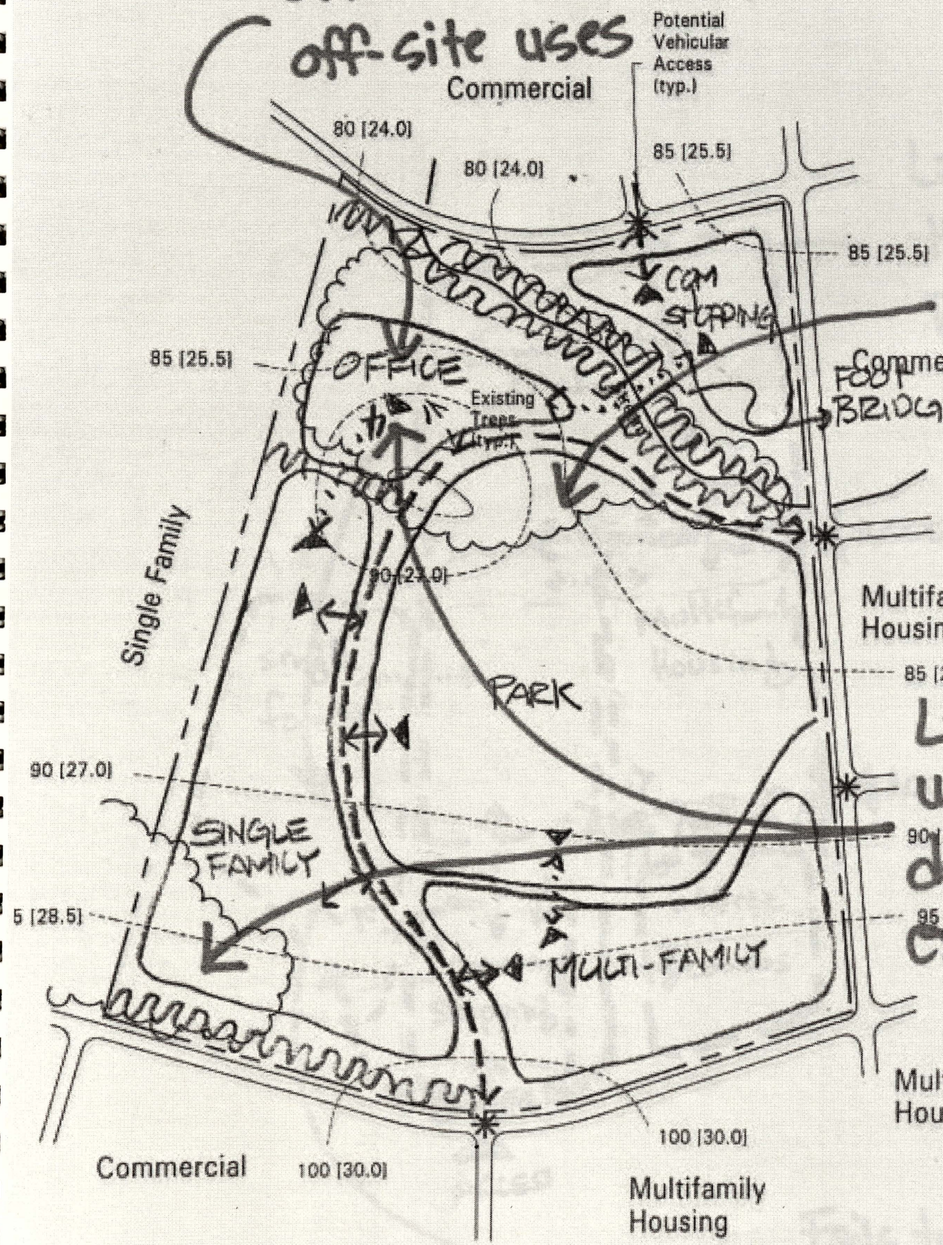
North

Scale: 1"=40' [1:500 metric]

Office does not relate to off-site uses

Solutions are not significantly different

Land use unnecessarily destroys ex. trees





Sample Problem 2
Solution 1 of 12

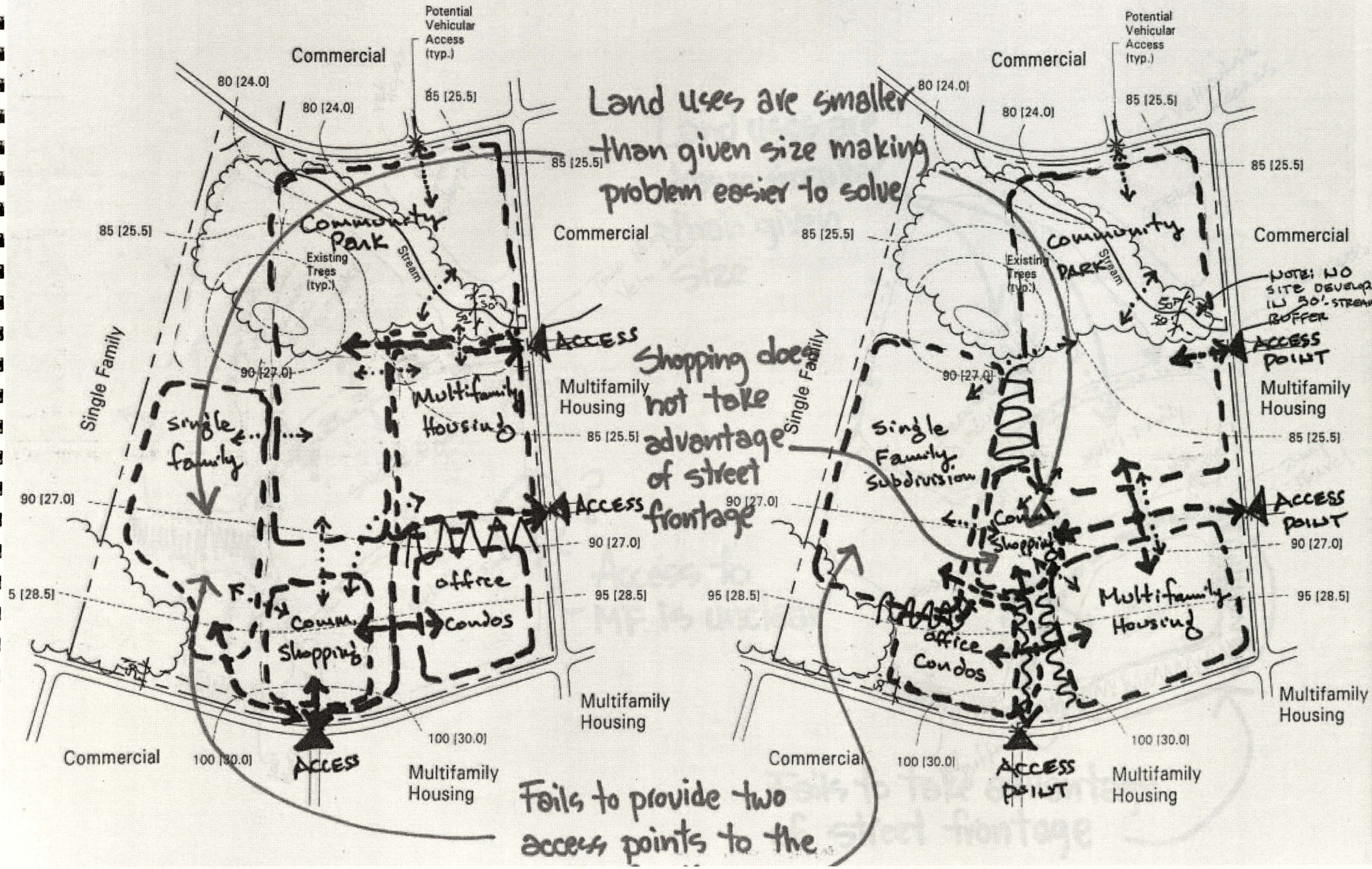
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]

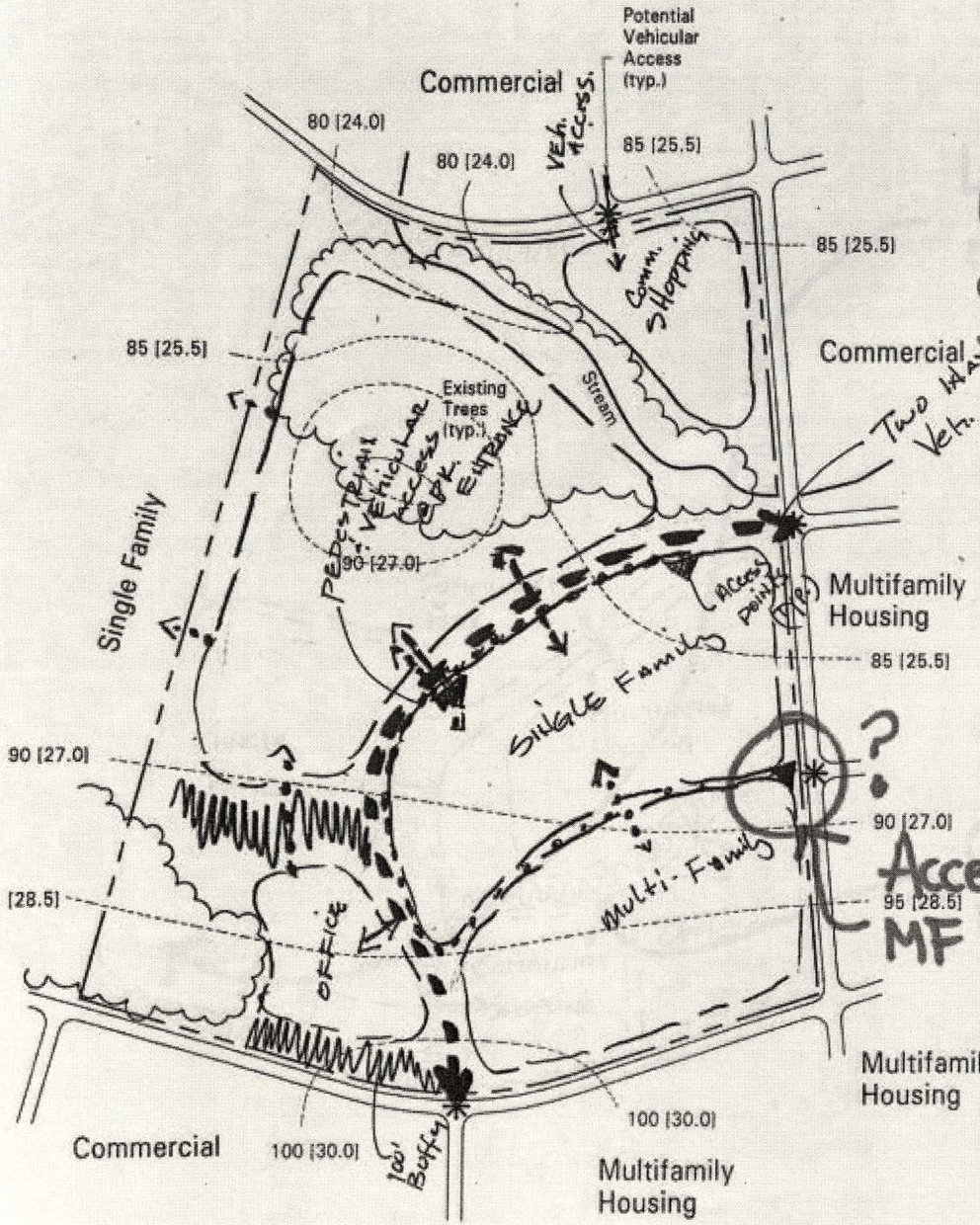


Sample Problem 2
Solution 2 of 12

Landscape Architect Registration Examination

Planning and Site Design

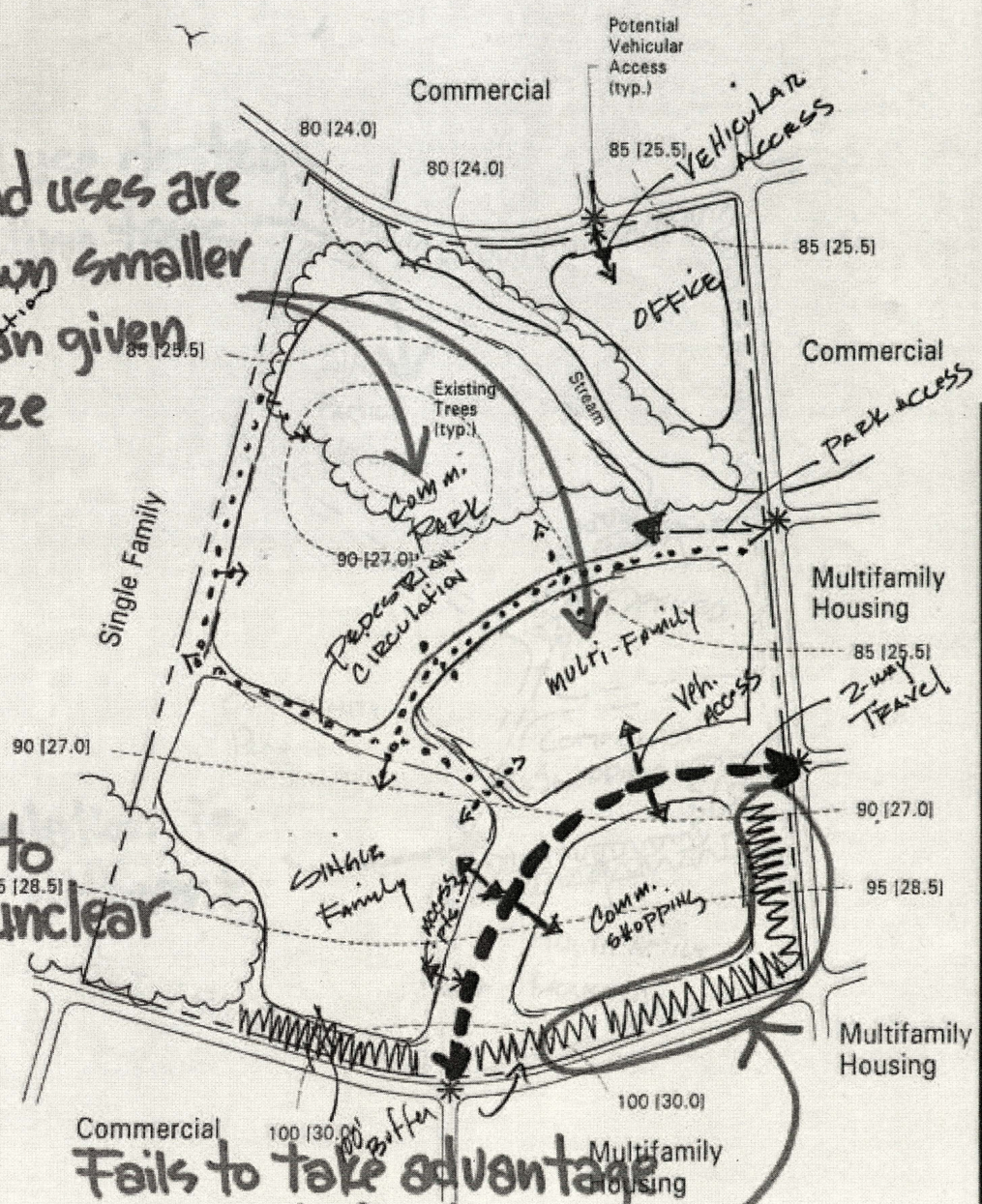
Council of Landscape Architectural Registration Boards



Land uses are drawn smaller than given size

Two way Veh. circulation

Access to MF is unclear



Fails to take advantage of street frontage

Sample Problem 2
Solution 3 of 12

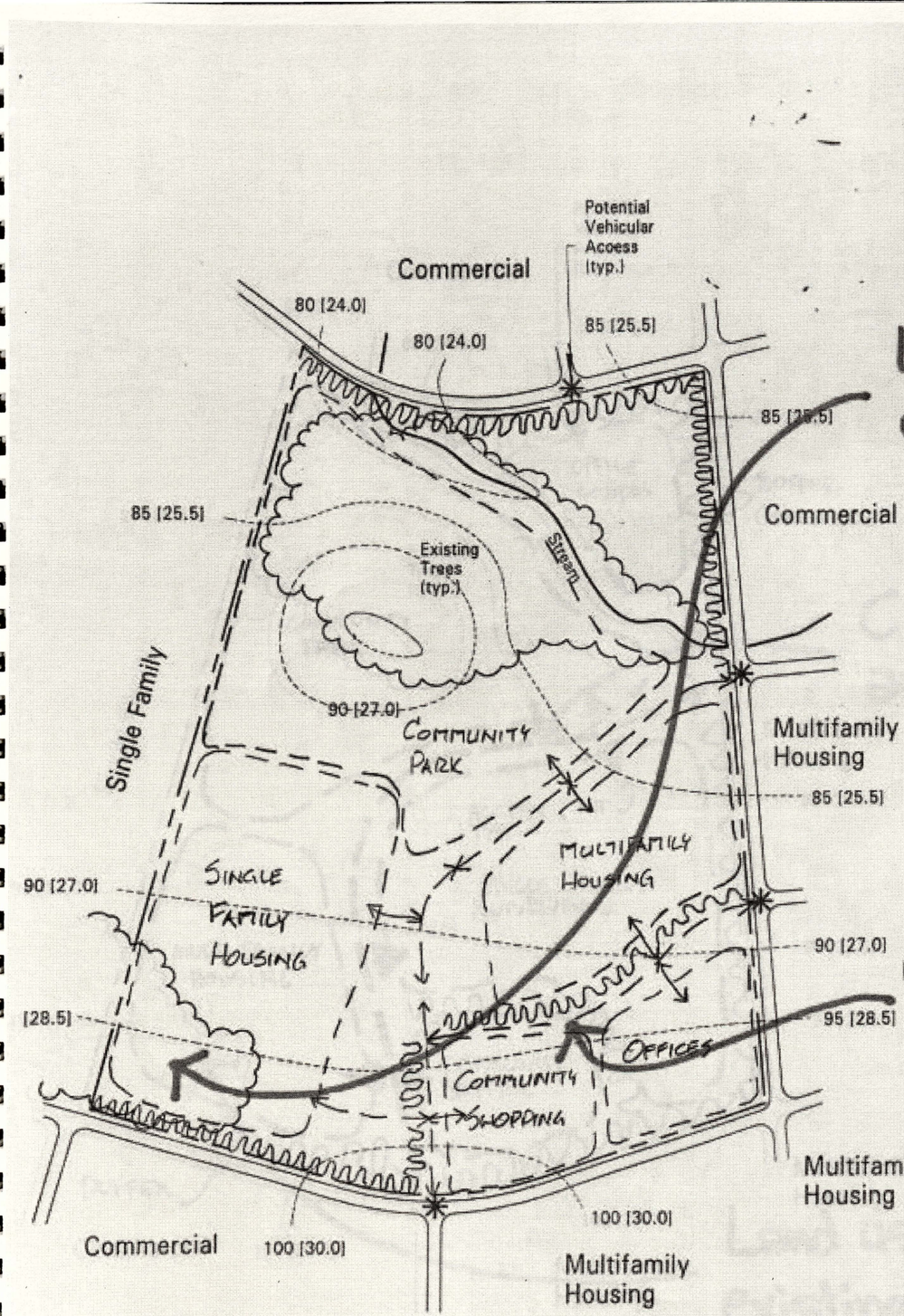
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

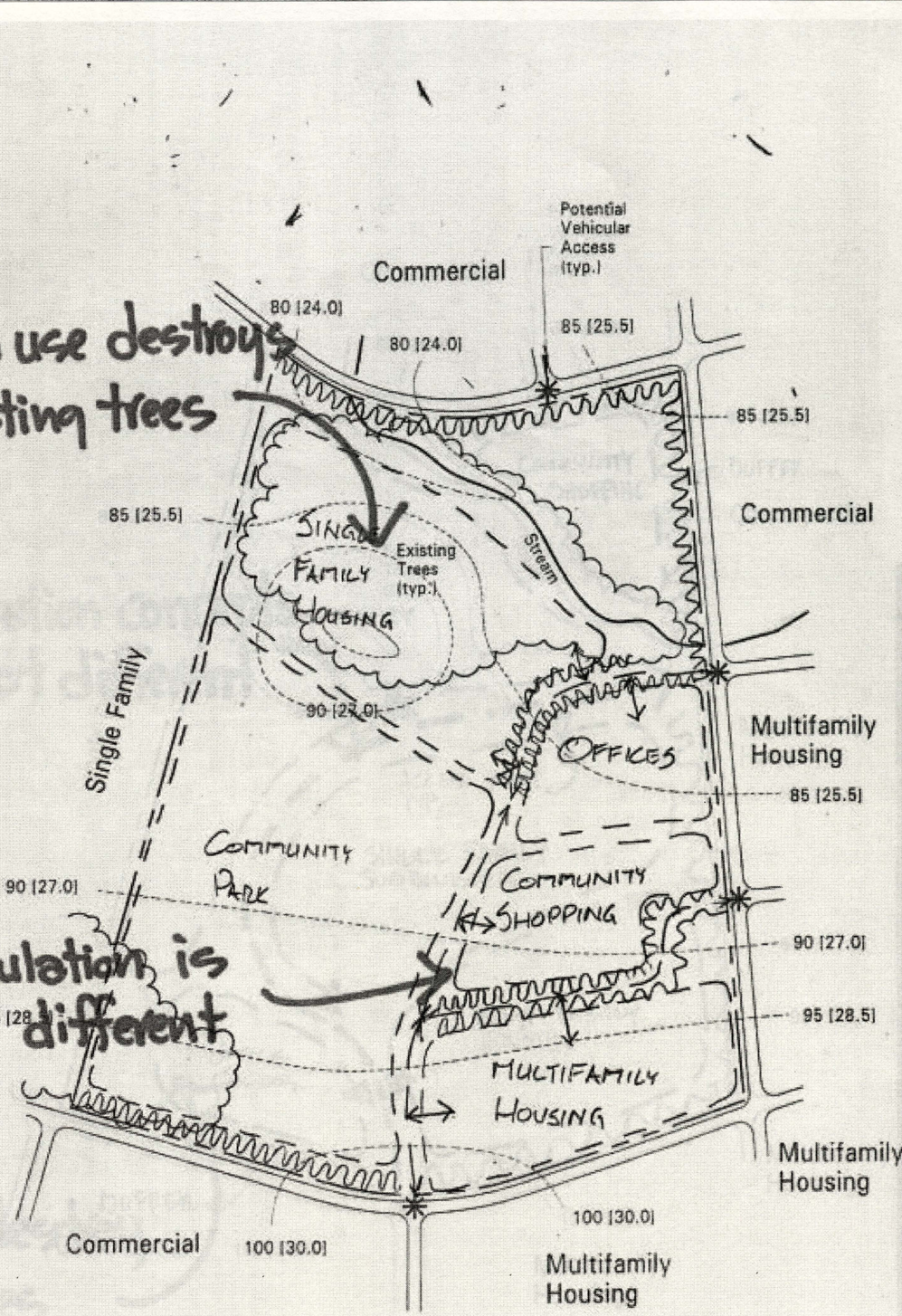
North

Scale: 1"=400' [1:5000 metric]



Land use destroys existing trees

Circulation is not different



Sample Problem 2
Solution 4 of 12

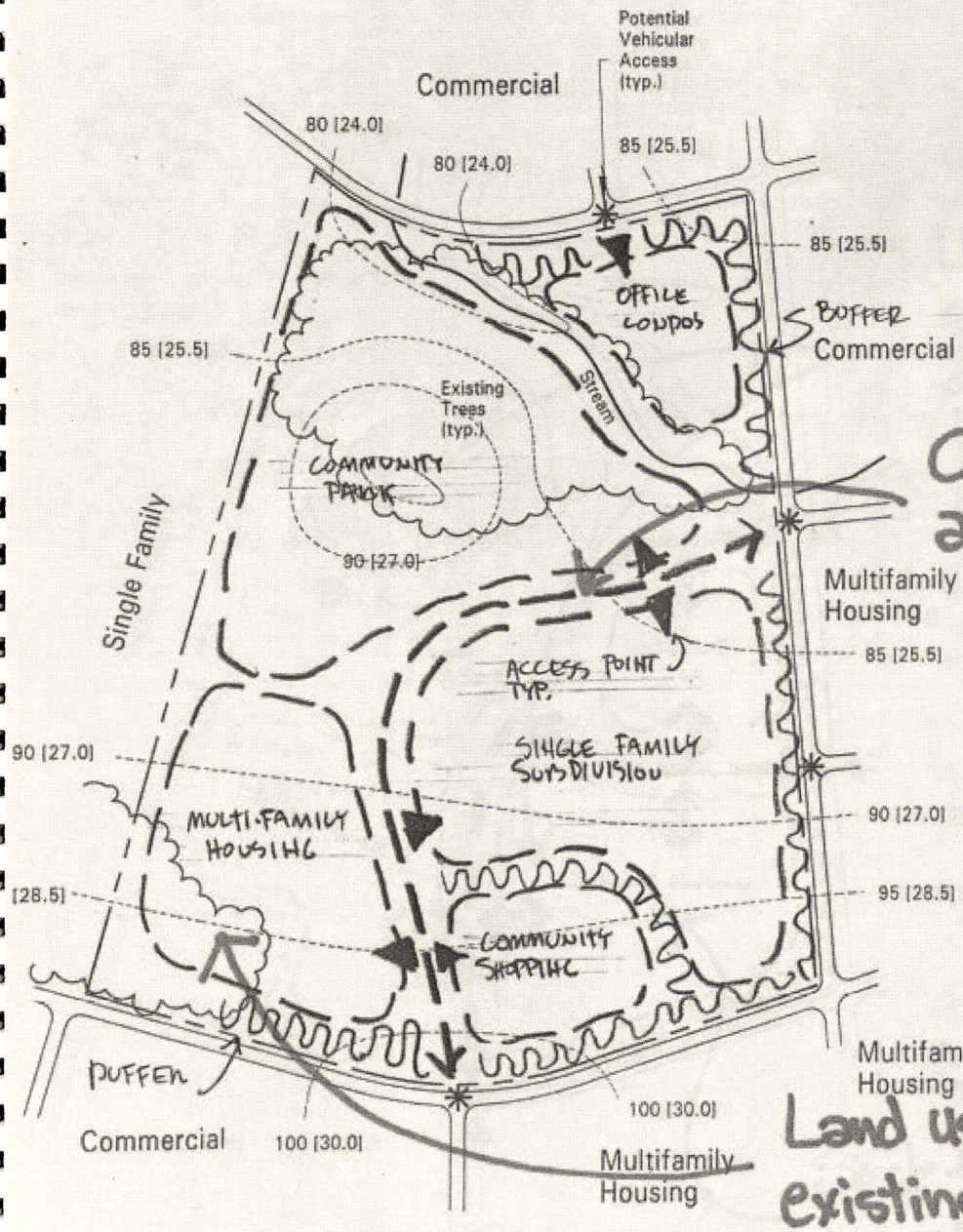
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

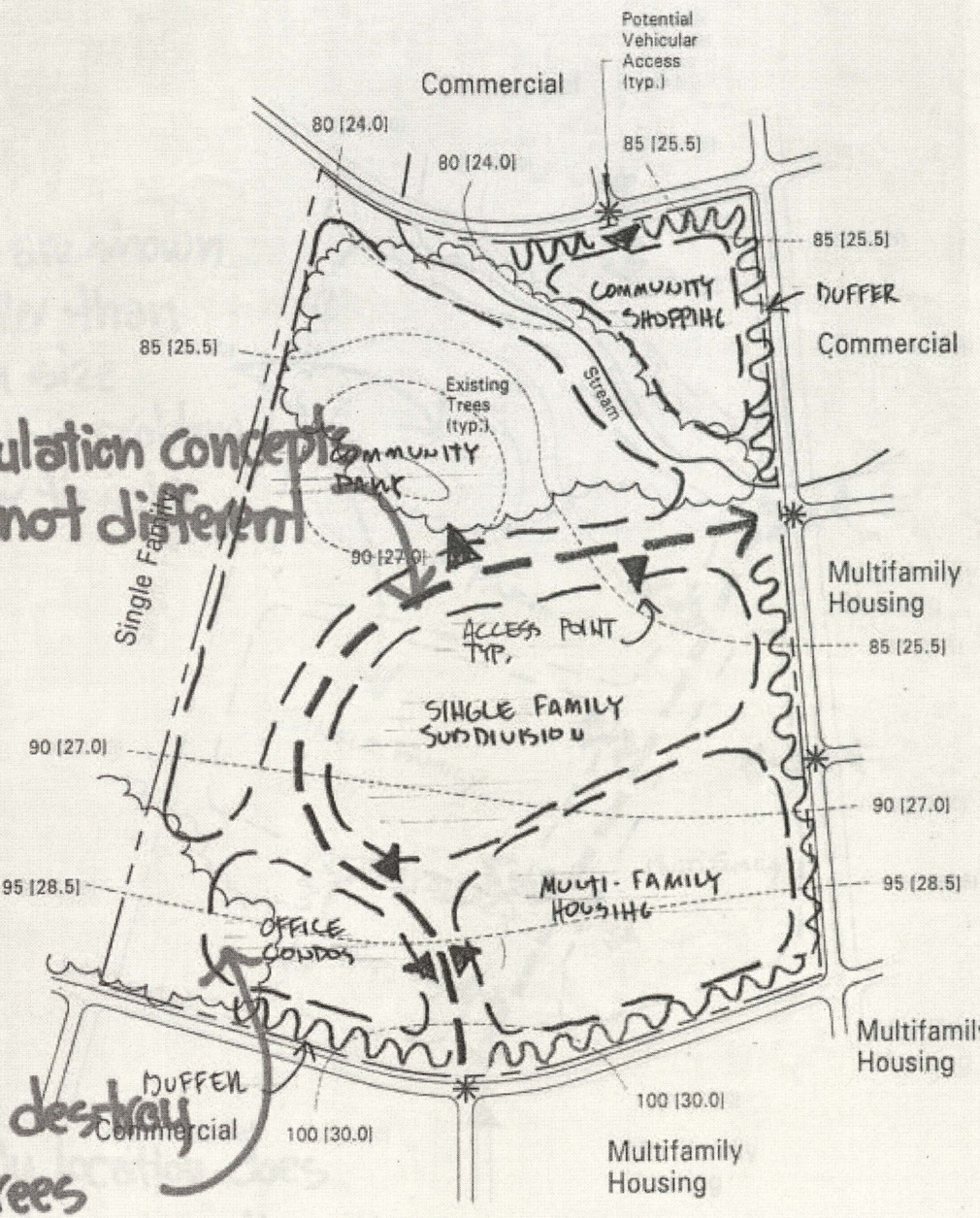
North

Scale: 1"=400' [1:5000 metric]



Circulation concepts are not different

Land uses destroy existing trees



Sample Problem 2
Solution 5 of 12

Planning and Site Design

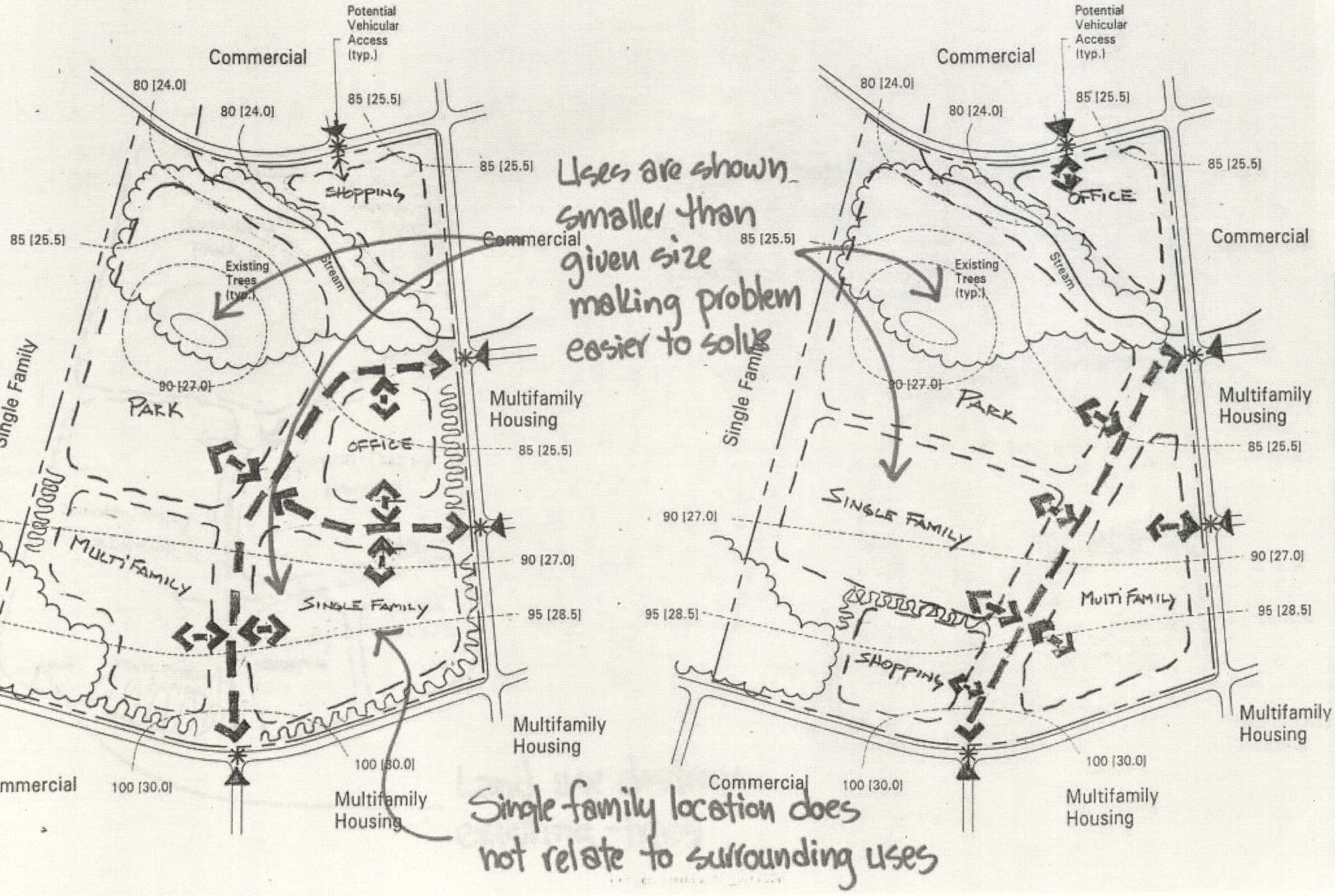
Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400'
[1:5000 metric]

Sample Problem 2
Solution 6 of 12



Uses are shown smaller than given size making problem easier to solve

Single family location does not relate to surrounding uses

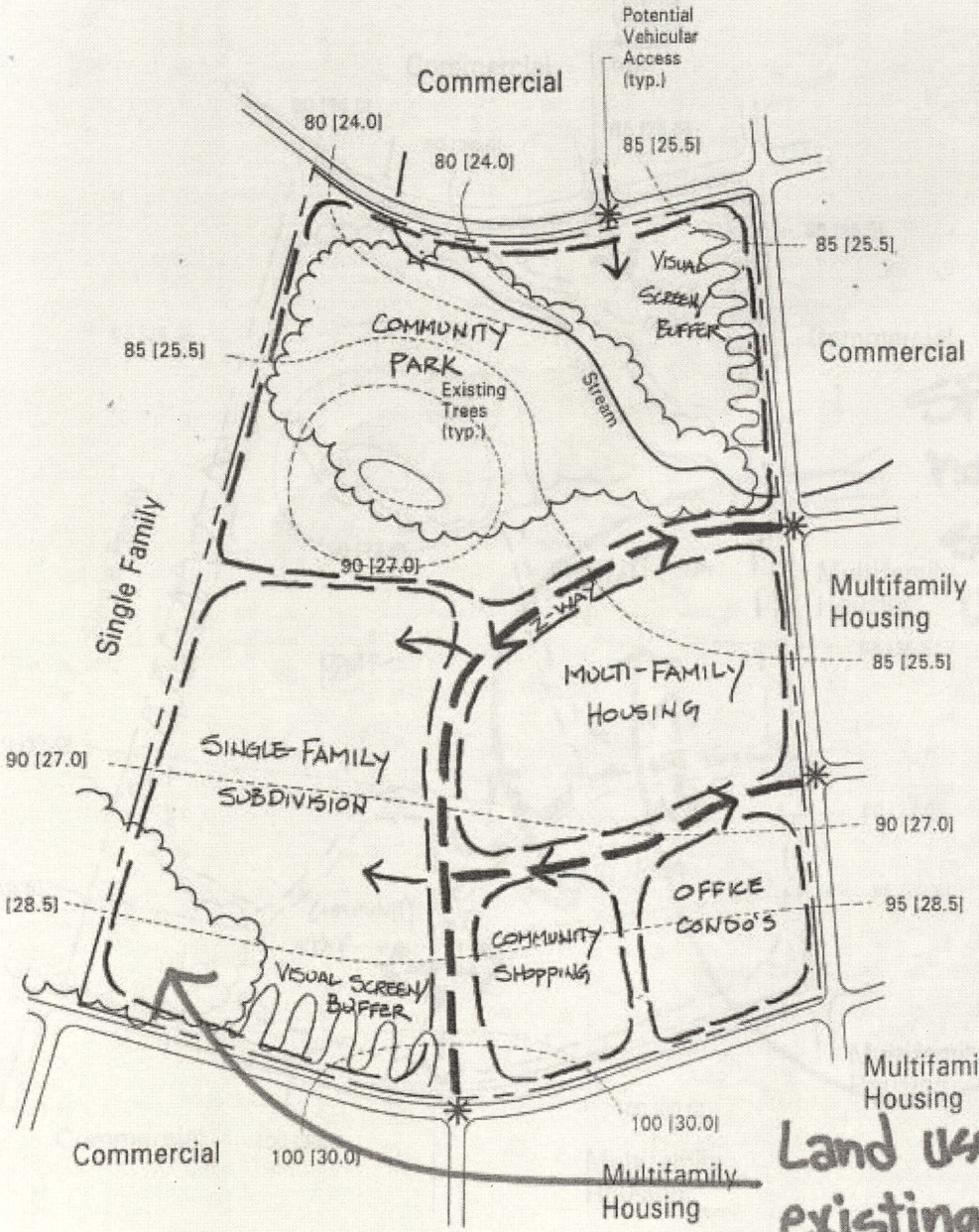
Landscape Architect Registration Examination

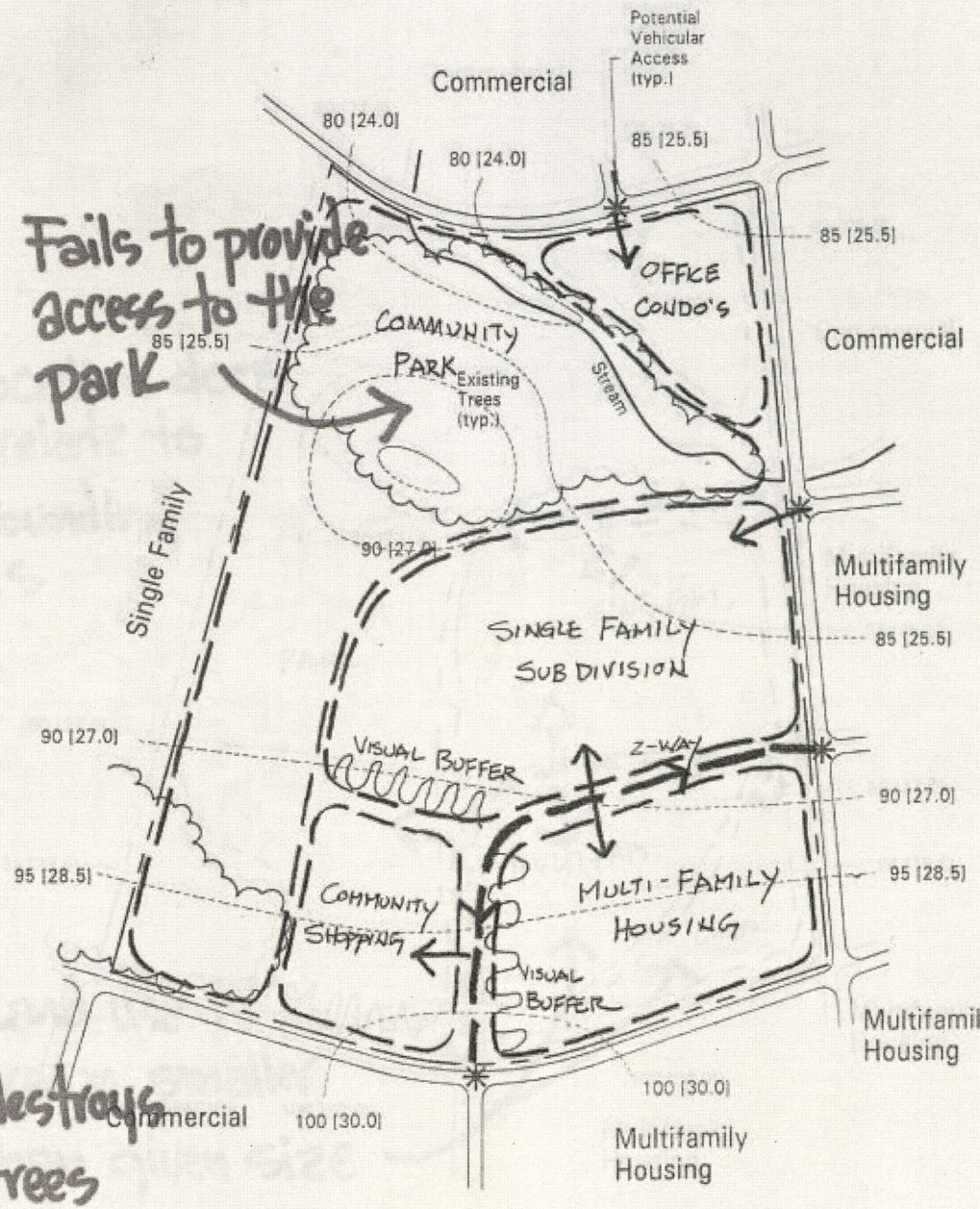
Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]





Sample Problem 2
Solution 7 of 12

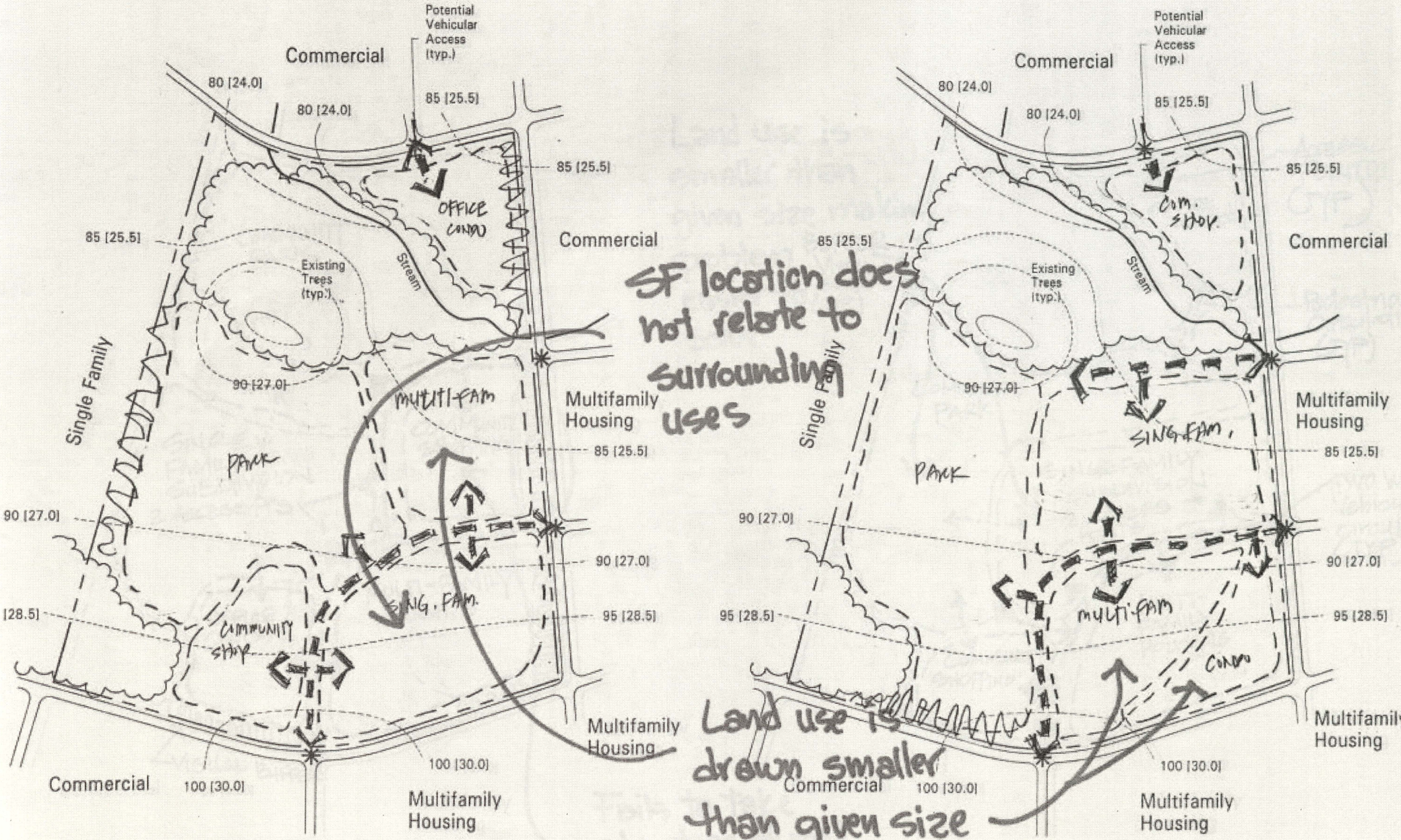
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]



Sample Problem 2
Solution 8 of 12

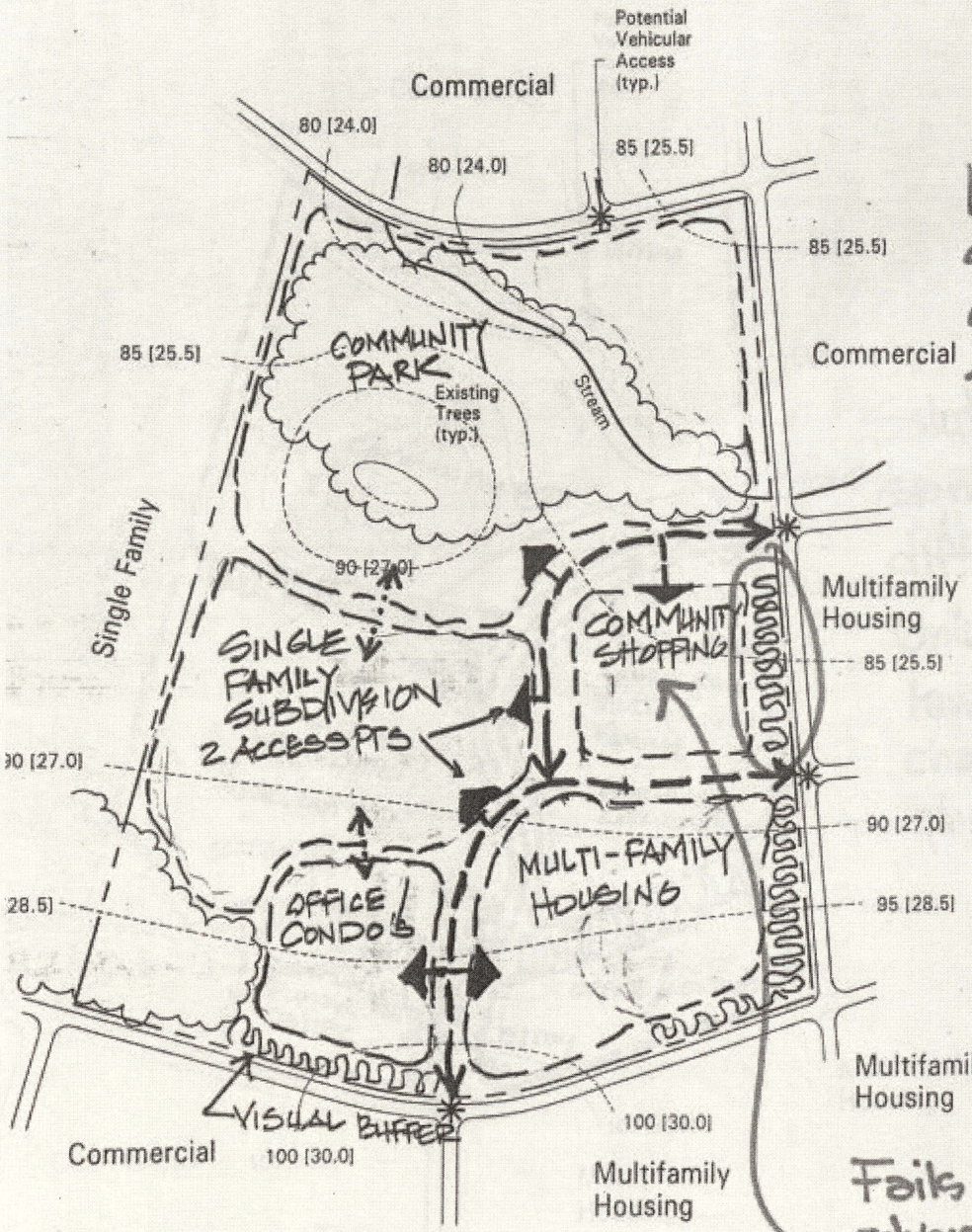
Landscape Architect Registration Examination

Planning and Site Design

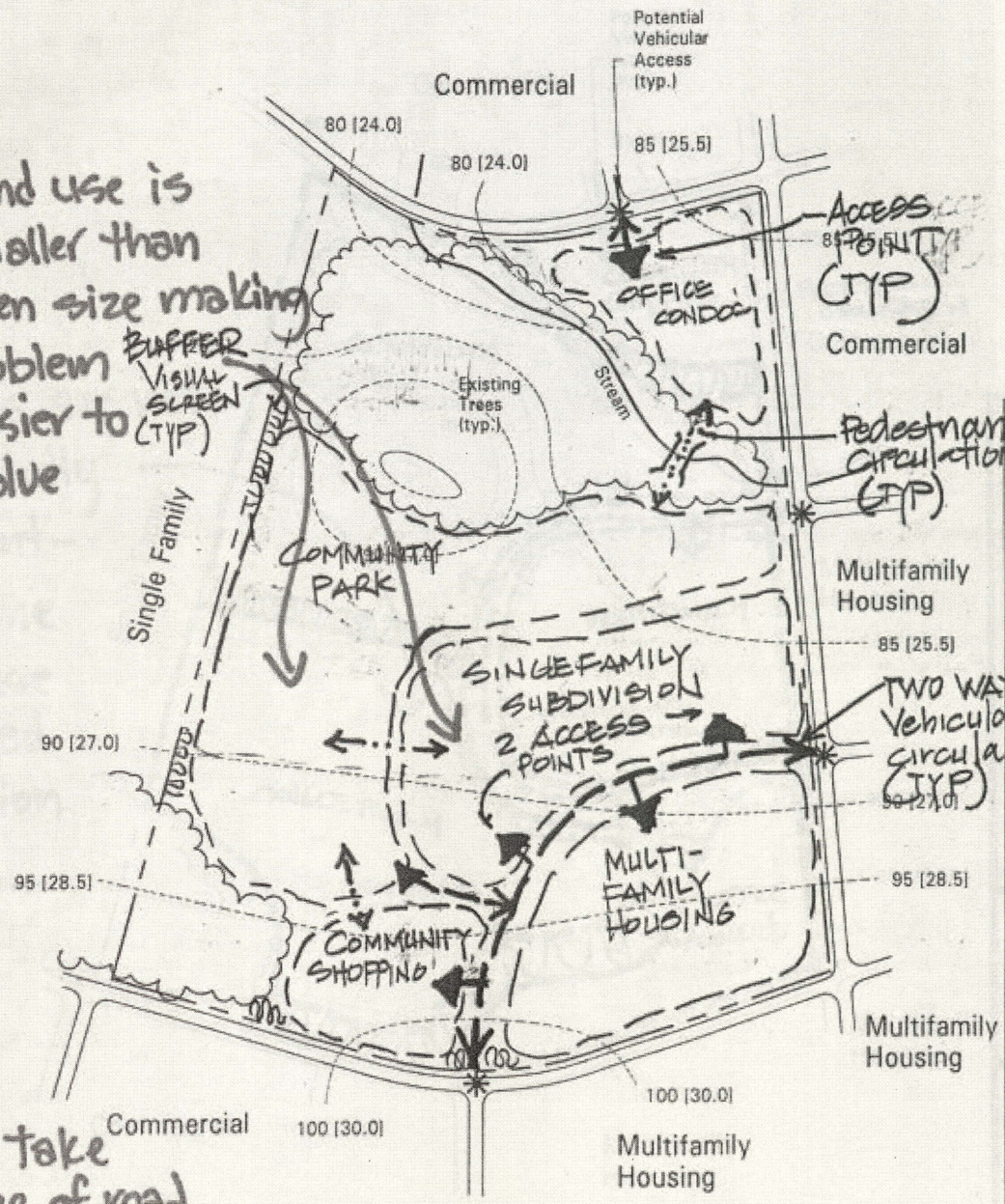
Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]



Land use is smaller than given size making problem easier to solve



Fails to take advantage of road frontage

Planning and Site Design

Landscape Architect Registration Examination

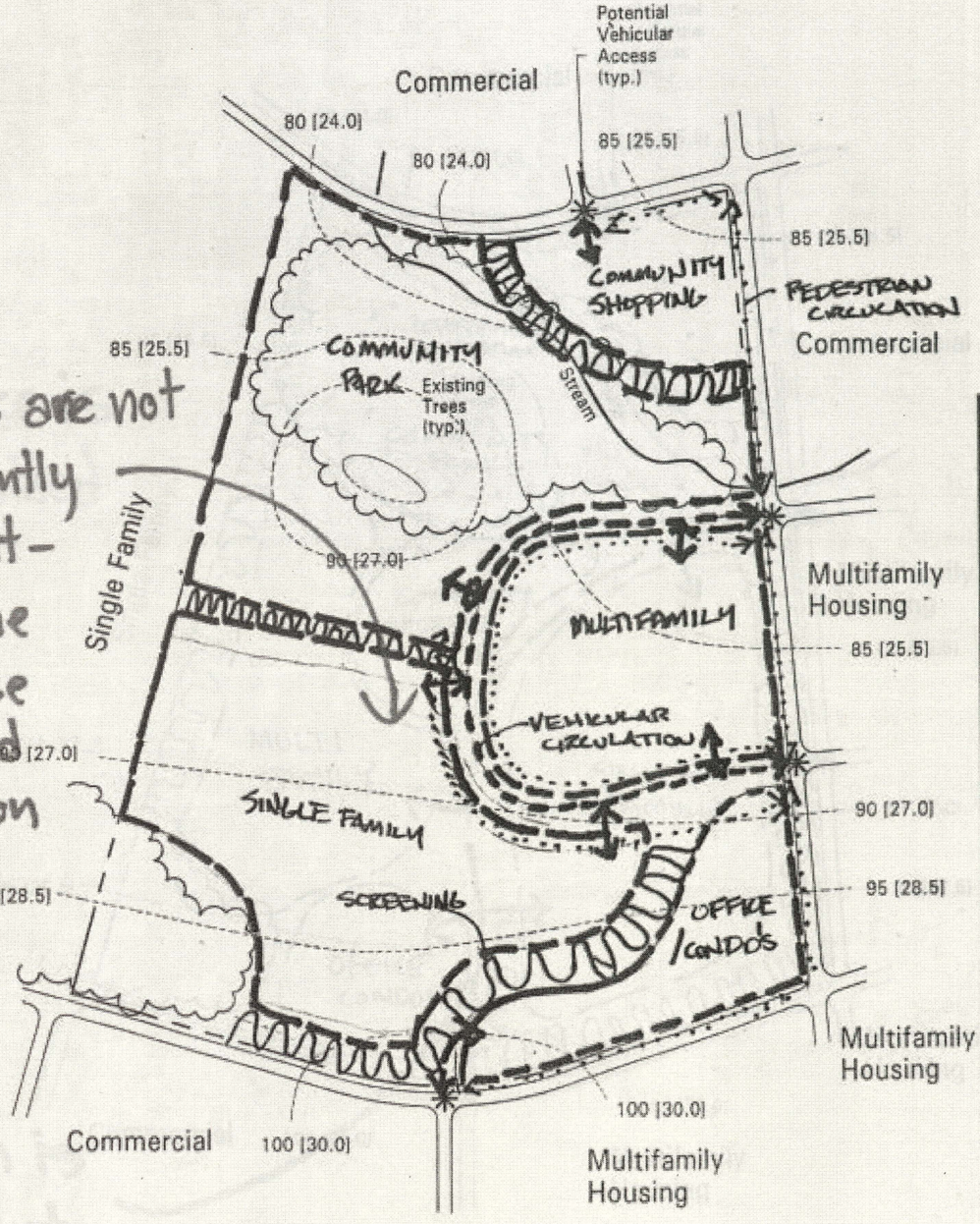
Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]



Solutions are not significantly different - only one land use changed position



Sample Problem 2
Solution 10 of 12

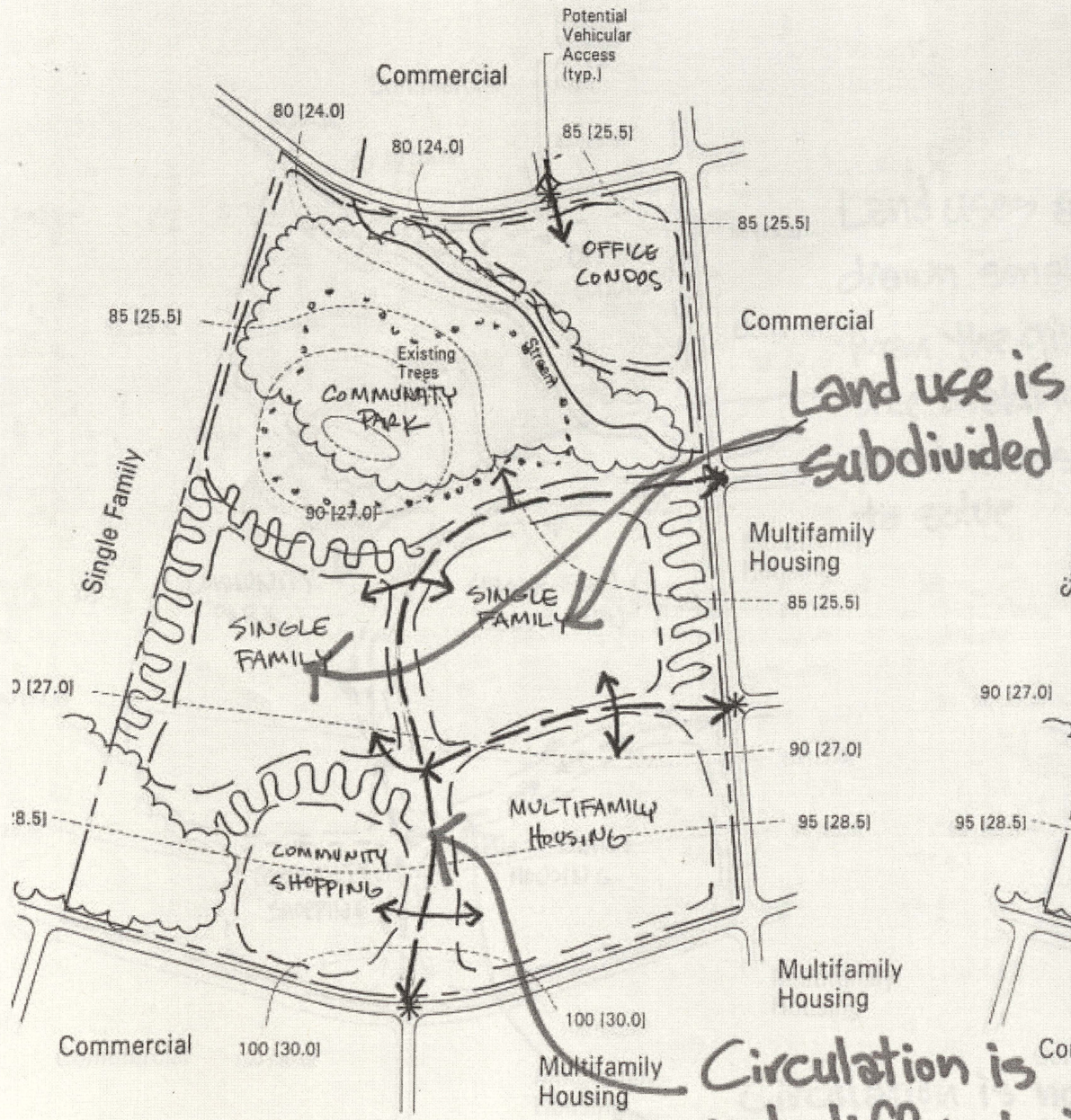
Landscape Architect Registration Examination

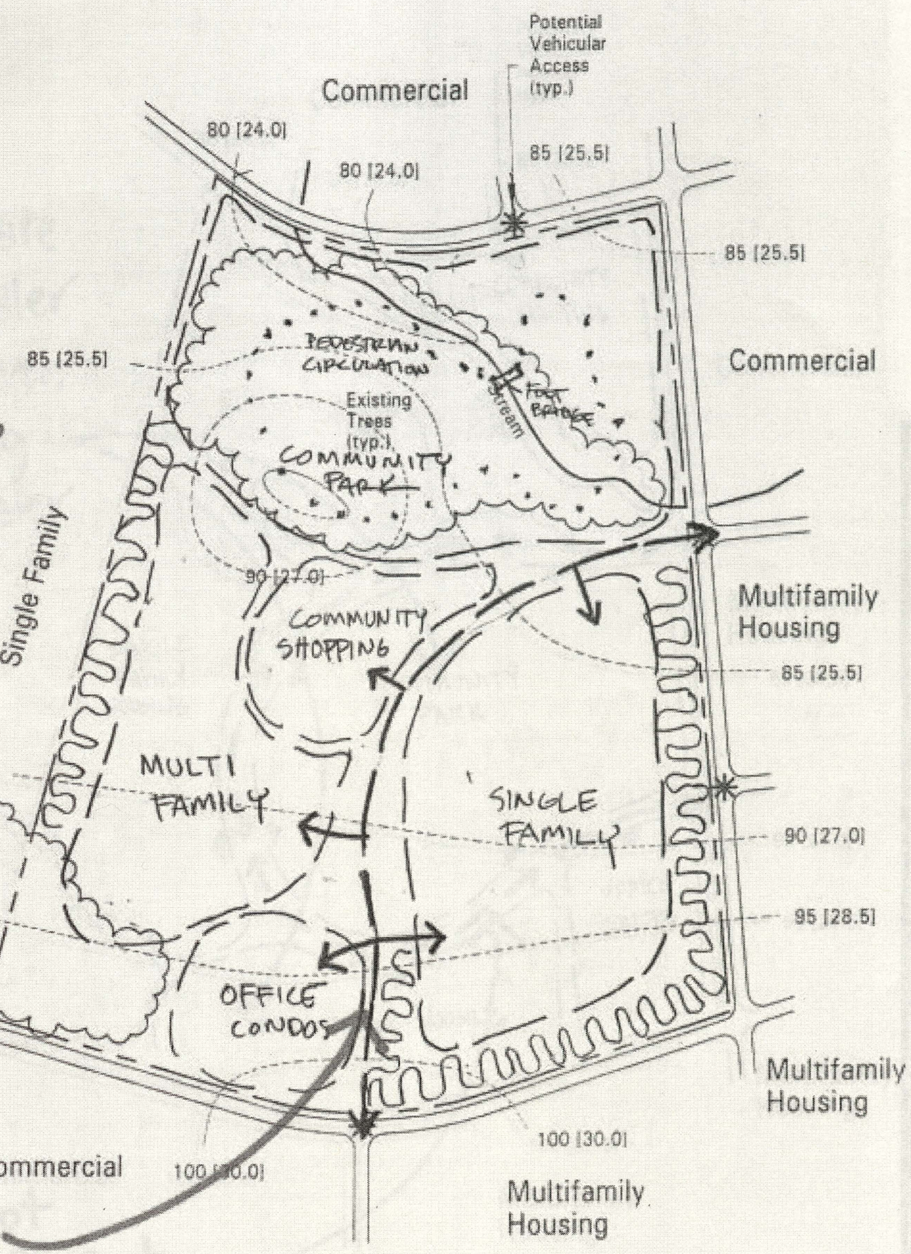
Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]





Sample Problem 2
Solution 11 of 12

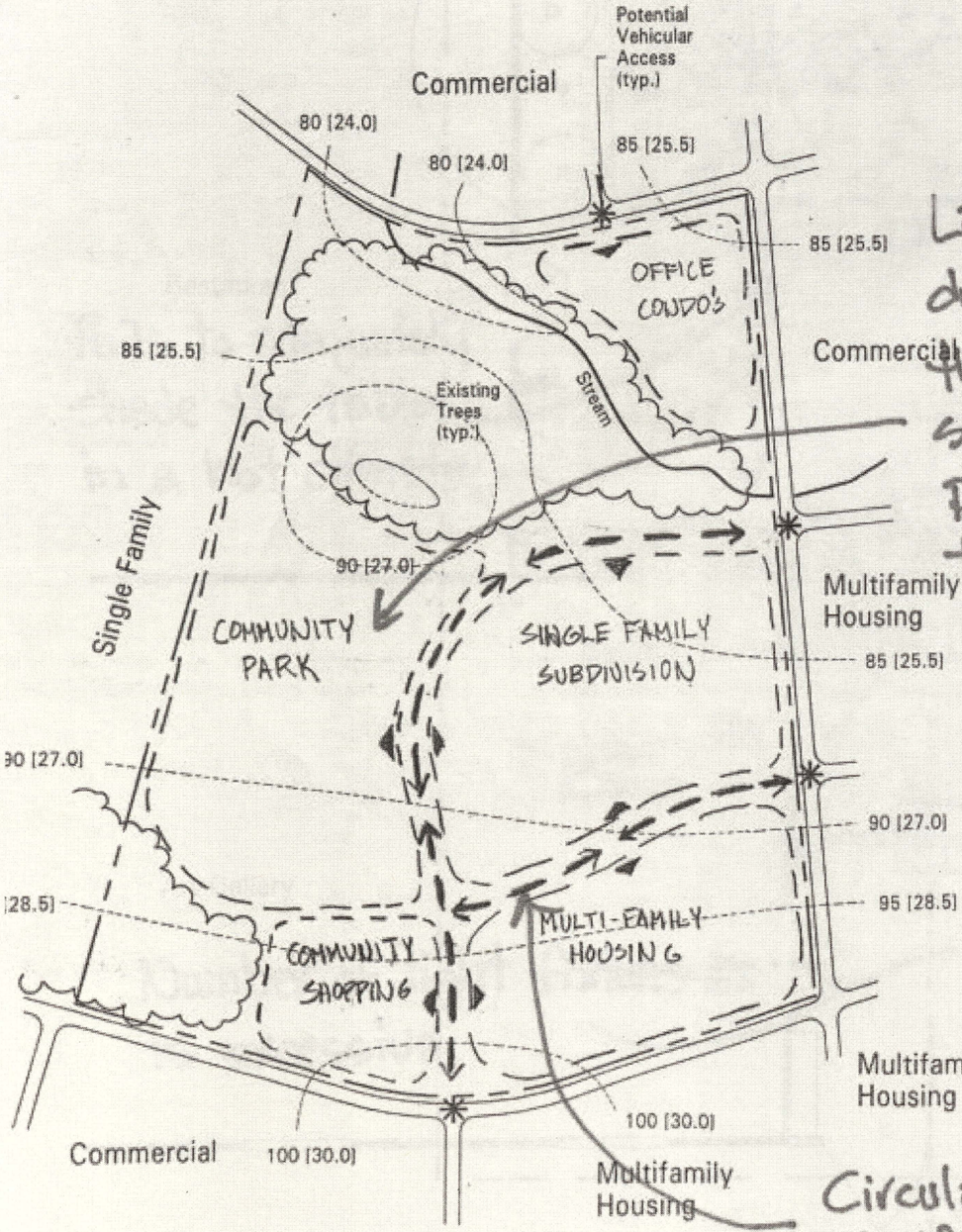
Planning and Site Design

Landscape Architect Registration Examination

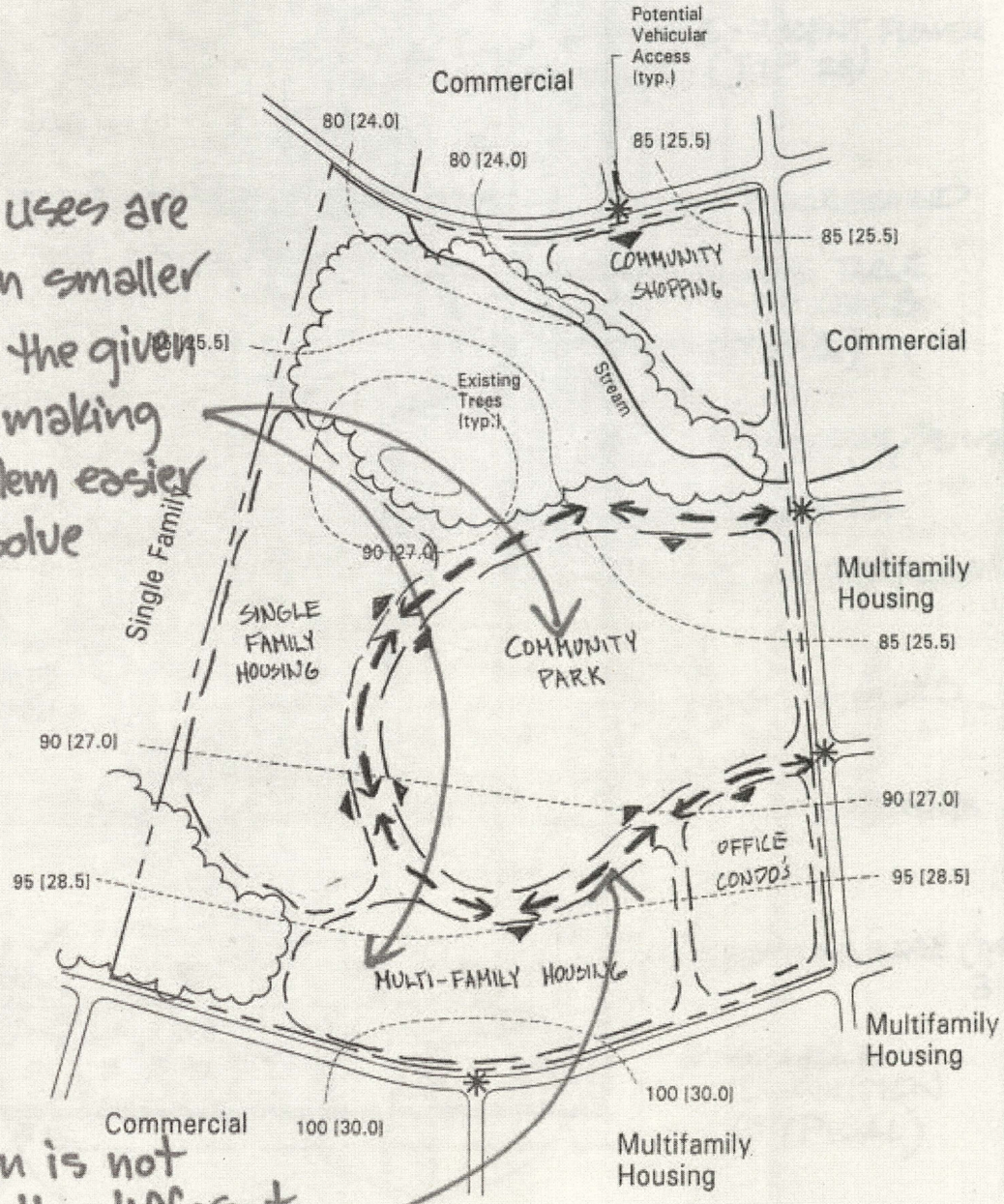
Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]



Land uses are drawn smaller than the given size making problem easier to solve



Circulation is not significantly different

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1"=400' [1:5000 metric]

Sample Problem 3
Solution 1 of 12

D - FLOWER/ACCENT
Contract Limit Line
6' [2m] High Masonry Wall
E - BACKGROUND
D - FLOWER/ACCENT
E - ACCENT FLOWER (TYP 2Φ)
E - BACKGROUND
DINING TABLE WITH CHAIRS (TYP 6)
D - ACCENT/FLOWER
HANDRAIL
D - ACCENT/FLOWER
E - BACKGRD.
CENTERLINE
SCULPTURE BASE (TYP 3)
E - SPATIAL DEFINITION (TYPICAL)
E - SHADE (TYP 8
D - FLOWER/ACCENT
Sidewalk
Gate
Old Town Road
Sidewalk
6' [2m] High Masonry Wall
16' RAMP
4' HIGH WALL
WATER FEATURE
PAVED AREA FOR SCULPTURE DISPLAY
PAVED AREA FOR RESTAURANT
D - SPECIMEN
D - ACCENT FLOWER
BL(TYP)
AL
AC
BL
103.5 [31.5]
104.0 [31.7]
105.0 [32.0]
104.5 [31.8]

Low light fixtures in pedestrian travelways are hazardous

Fails to adequately shade the tables in a hot climate

Number of light fixtures is excessive

Restaurant

Art Gallery

Planning and Site Design

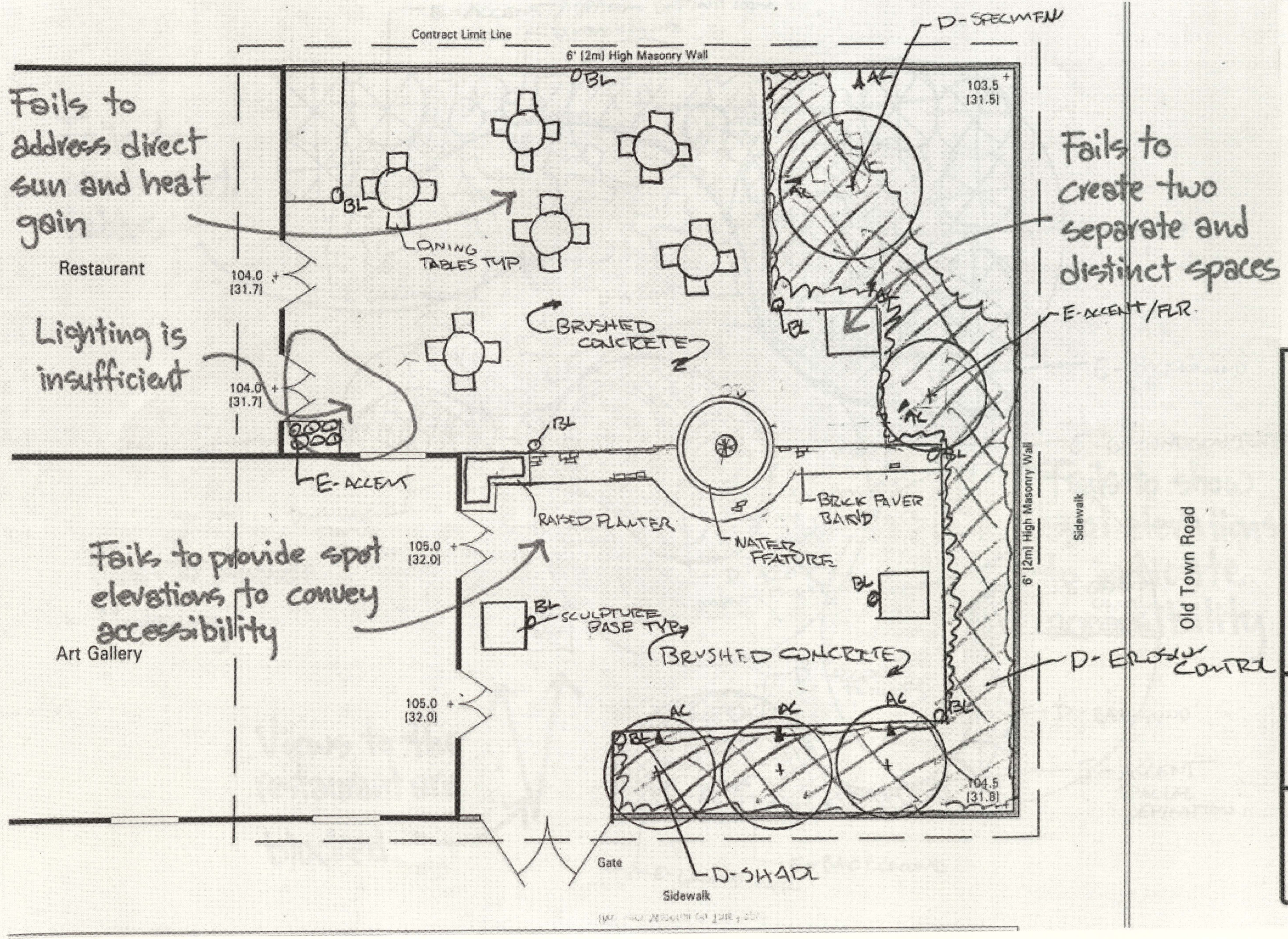
Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

Sample Problem 3
Solution 2 of 12



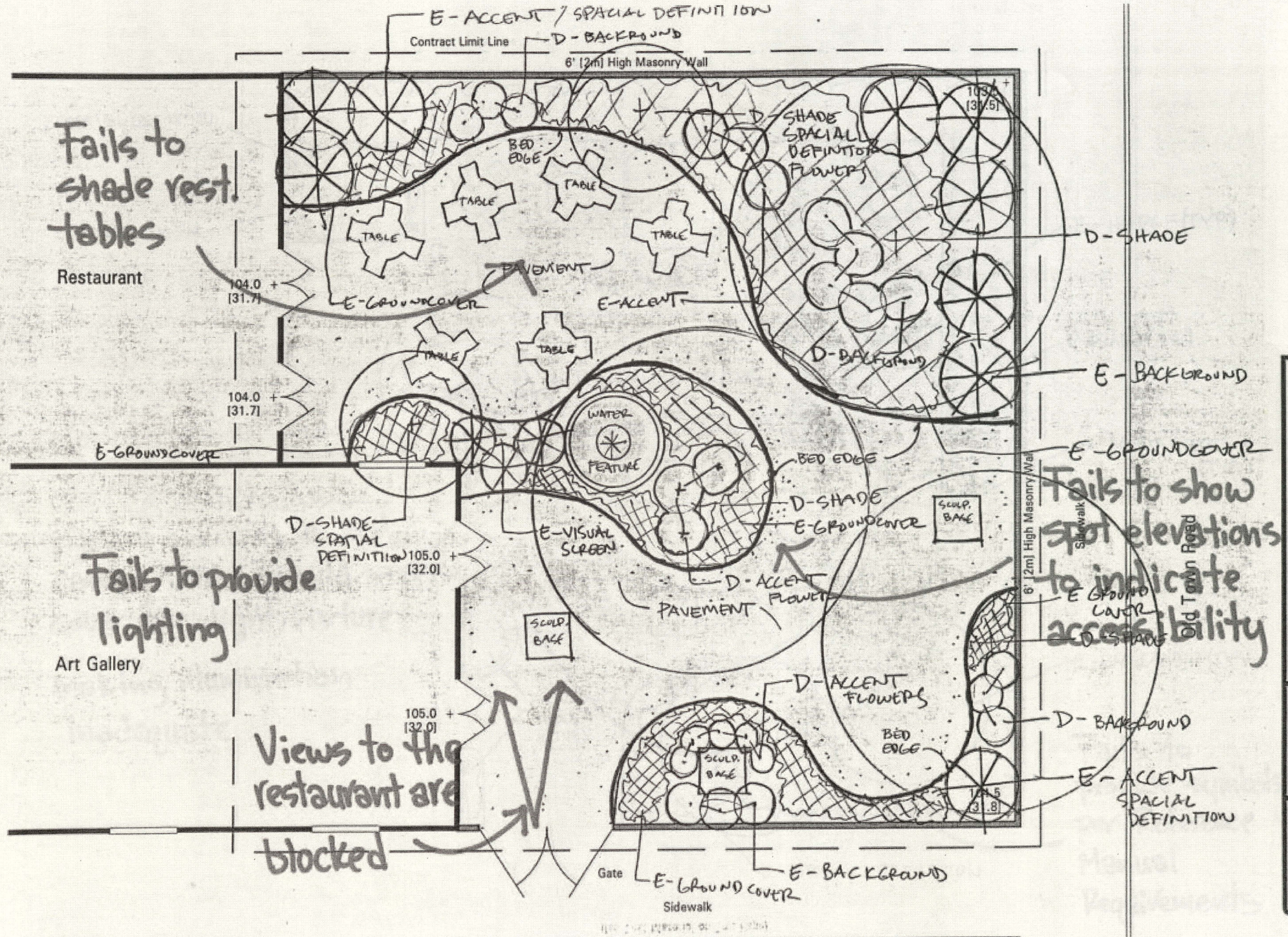
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]


E-ACCENT / SPACIAL DEFINITION
Contract Limit Line
D-BACKGROUND
6' [2m] High Masonry Wall
Fails to shade rest. tables
Restaurant
BED EDGE
TABLE
D-SHADE SPACIAL DEFINITION FLOWERS
D-SHADE
PAVEMENT
E-GROUNDCOVER
E-ACCENT
104.0 [31.7]
E-BACKGROUND
E-GROUNDCOVER
WATER FEATURE
BED EDGE
D-SHADE
E-GROUNDCOVER
SCULP. BASE
D-SHADE SPATIAL DEFINITION
105.0 [32.0]
E-VISUAL SCREEN
D-ACCENT FLOWERS
PAVEMENT
Fails to provide lighting
Art Gallery
Fails to show spot elevations to indicate accessibility
E GROUND COVER
D-SHADE
D-ACCENT FLOWERS
D-BACKGROUND
BED EDGE
E-ACCENT SPACIAL DEFINITION
Views to the restaurant are blocked
Gate
E-GROUND COVER
E-BACKGROUND
Sidewalk
Old Town Road
Sample Problem 3
Solution 3 of 12
Landscape Architect Registration Examination
Planning and Site Design
Council of Landscape Architectural Registration Boards
North
Scale: 1/8"=1'-0" [1:100 metric]

Contract Limit Line

6' [2m] High Masonry Wall

E- SPATIAL DEFINITION

D- SPECIMEN

Restaurant

104.0 [31.7]

104.0 [31.7]

AL 103.9

D-ACCENT/FLOWER (TYP)

D-SHADE

AL

103.5 [31.5]

AL

E-HEDGE (TYP)

D-SHADE (TYP.)

104.0

D-SHADE

D-ACCENT/FLOWER (TYP)

104.7

104.7

104.6

AL

104.5

D-ACCENT/FLOWER (TYP.)

E- BACKGROUND

Symbol indicates a 30' canopy which would cover the light fixture making illumination inadequate

105.0 [32.0]

LP 104.9

Art Gallery

105.0 [32.0]

E-ACCENT/ FLOWER (TYP?)

AL

AL

6' [2m] High Masonry Wall

Sidewalk

Old Town Road

E-BACKGROUND (TYP)

104.5 [31.8]

Fails to provide symbols per Reference Manual Requirements

Gate

E- SPATIAL DEFINITION

Sidewalk

Sample Problem 3
Solution 4 of 12

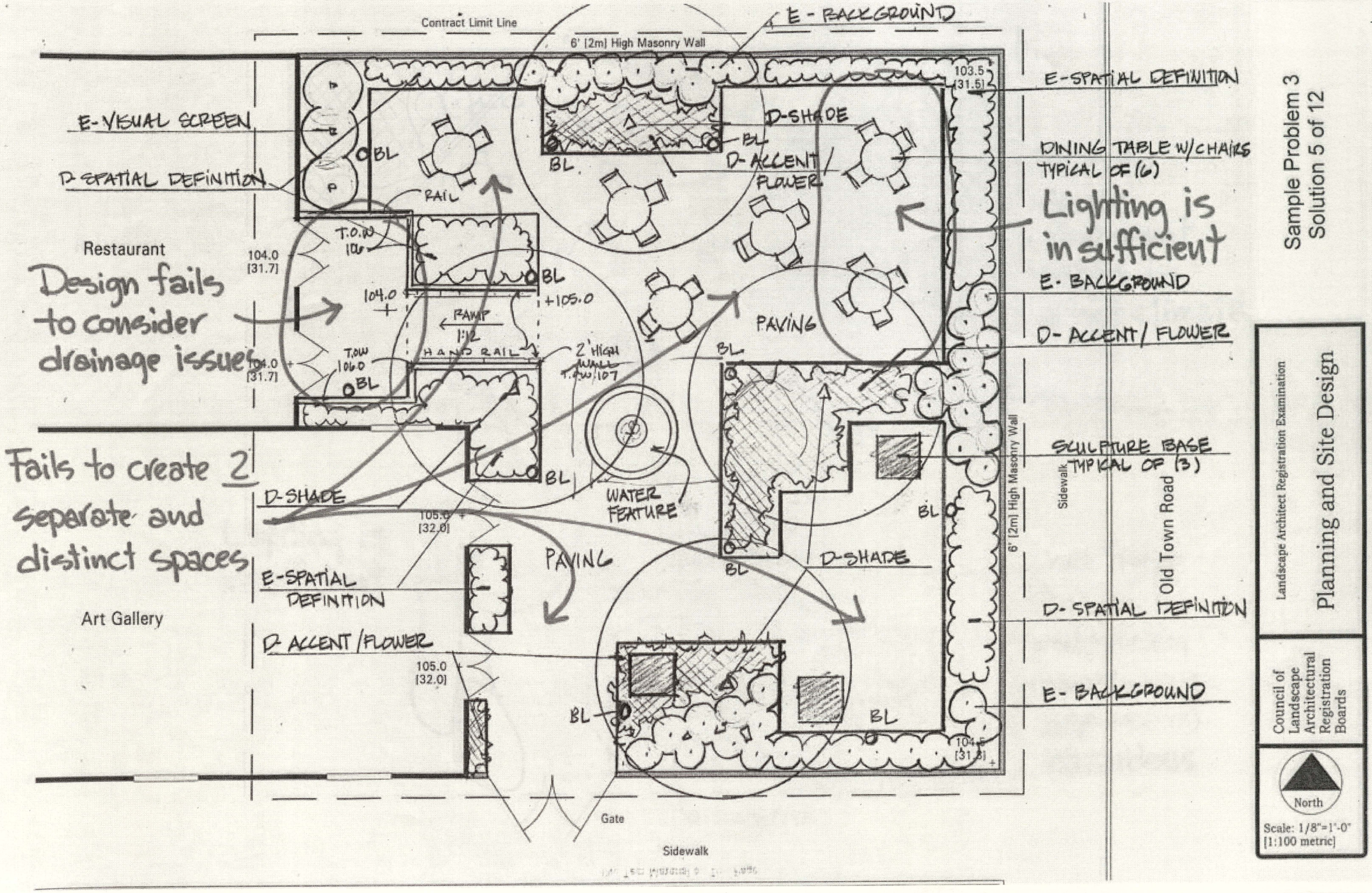
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]



Sample Problem 3
Solution 5 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

Contract Limit Line

6' [2m] High Masonry Wall

Restaurant

Art Gallery

104.0 [31.7]

104.0 [31.7]

105.0 [32.0]

105.0 [32.0]

103.5 [31.5]

DINING TABLES W/CHAIRS (TYP.)

WATER FEATURE

SCULPTURE BASE

SCULPTURE BASE

STAIRS

CONCRETE PAVERS W/ACCENT COLOR EDGE

SCULPTURE DISPLAY AREA

SCULPTURE BASE

104.5 [31.8]

D-SPACIAL DEFINITION(TYP.)

E-BACKGROUND(TYP.)

D-ACCENT/FLOWER(TYP.)

D-SHADE(TYP.)

Gate

Sidewalk

6' [2m] High Masonry Wall

Sidewalk

Old Town Road

Fails to Shade restaurant tables in a hot climate

Lighting is insufficient

Low light fixtures in pedestrian travelways are hazardous

Sample Problem 3
Solution 6 of 12

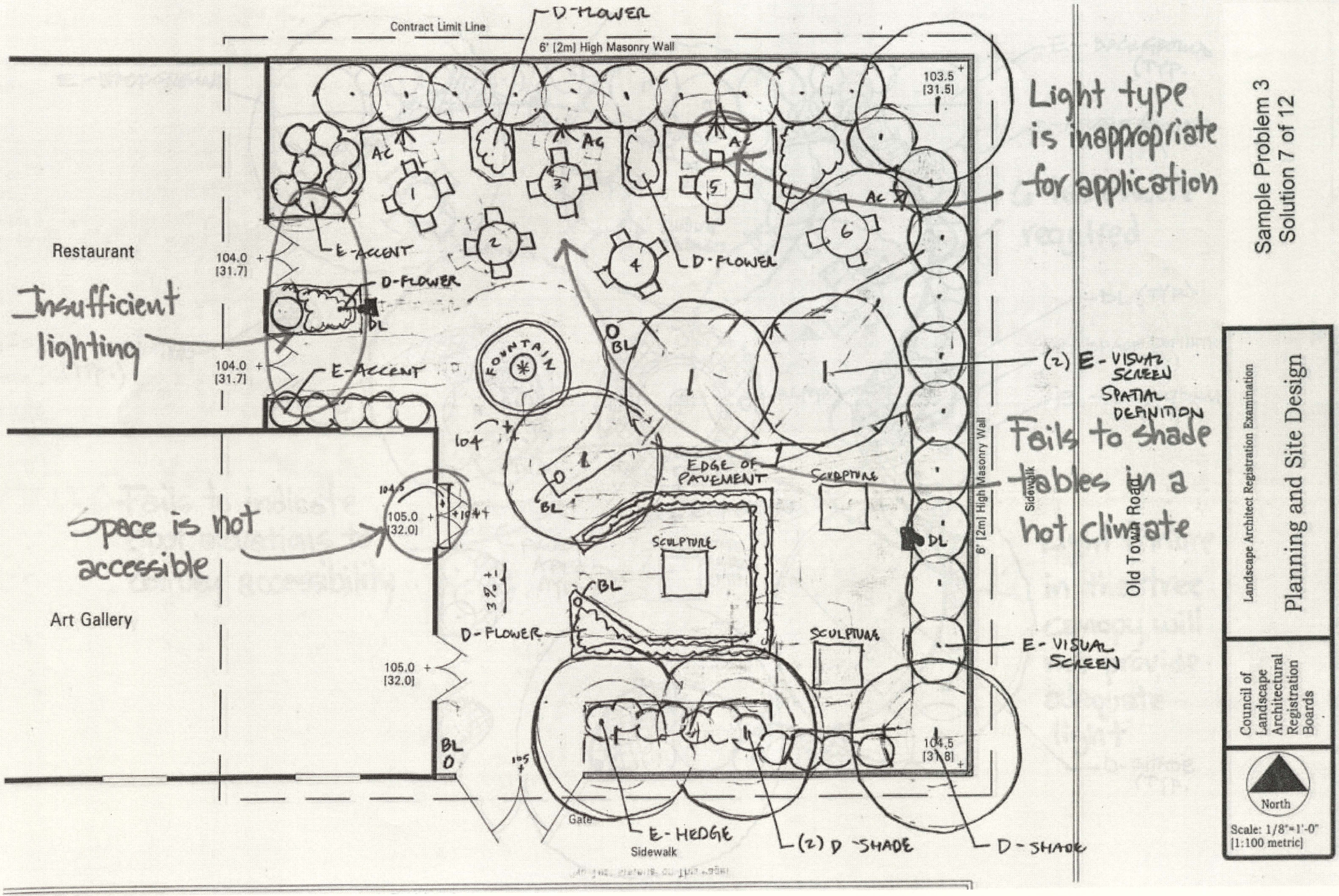
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]


Contract Limit Line
6' [2m] High Masonry Wall
D-FLOWER
103.5 [31.5]
Light type is inappropriate for application
Sample Problem 3
Solution 7 of 12
Restaurant
104.0 [31.7]
Insufficient lighting
E-ACCENT
D-FLOWER
BL
FOUNTAIN
(2) E-VISUAL SCREEN
SPATIAL DEFINITION
Fails to shade tables in a hot climate
EDGE OF PAVEMENT
SCULPTURE
Sidewalk
6' [2m] High Masonry Wall
Old Town Road
Space is not accessible
105.0 [32.0]
Art Gallery
E-VISUAL SCREEN
E-HEDGE
(2) D-SHADE
D-SHADE
Gate
Sidewalk
104.5 [31.8]
Landscape Architect Registration Examination
Planning and Site Design
Council of Landscape Architectural Registration Boards
North
Scale: 1/8"=1'-0" [1:100 metric]

Contract Limit Line

6' [2m] High Masonry Wall

E-BACKGROUND

103.5 [31.5]

DL

OB

DINING TABLES

Restaurant

104.0 [31.7]

D-SPACE DEFINITION (TYP.)

104.0 [31.7]

BL(TYP.)

WATER FEATURE

Fails to indicate spot elevations to convey accessibility

105.0 [32.0]

PAVED AREA (TYP.)

SCULPTURE BASES (TYP.)

Art Gallery

105.0 [32.0]

Gate

Sidewalk

E - BACKGROUND (TYP.

D-ACCENT/FLOWER (TYP.)

6 tables were required

DL (TYP.)

D-SPACE DEFINITION (TYP.)

E - BACKGROUND (TYP.)

6" [2m] High Masonry Wall

Sidewalk

Old Town Road

Light fixture in the tree canopy will not provide adequate light

D-SHADE (TYP.

Sample Problem 3
Solution 8 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

Contract Limit Line

6' [2m] High Masonry Wall

E-BACKGROUND

D-ACCENT/FLOWER

DINING TABLE TYP.

Restaurant

104.0 [31.7]

104.00

WATER FEATURE

AC

BL

LAWN

103.5 [31.5]

DL

E-ACCENT

SCULPTURE BASE

Low branching is hazardous to pedestrians

Light fixtures are shown backwards

D-SHADE

E-SPATIAL DEFINITION

105.0 [32.0]

105.0

Art Gallery

Lighting is insufficient

104.5 [31.8]

Gate

Sidewalk

Old Town Road

Fails to create two separate and distinct spaces

Sample Problem 3
Solution 9 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

Sample Problem 3
Solution 9 of 12

Contract Limit Line

6' [2m] High Masonry Wall

E-BACKGROUND

D-ACCENT/FLOWER

DINING TABLE TYP.

Restaurant

104.0 [31.7]

104.00

WATER FEATURE

AC

LBL

QL

LAWN

BL

103.5 [31.5]

Light fixtures are shown backwards

NL

E-ACCENT

SCULPTURE BASE

Low branching is hazardous to pedestrians

D-SHADE

E-SPATIAL DEFINITION

E-BACKGROUND

D-ACCENT/FLOWER

105.0 [32.0]

105.0

Art Gallery

Lighting is insufficient

Old Town Road

6' [2m] High Masonry Wall

Sidewalk

Gate

104.5 [31.8]

Fails to create two separate and distinct spaces

Planning and Site Design

Landscape Architect Registration Examination

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

Contract Limit Line

6' [2m] High Masonry Wall

E-SPATIAL DEFINITION

E-BACKGROUND (TYP)

Restaurant

104.0 [31.7]

Fails to provide accessibility to the restaurant

104.0 [31.7]

D-ACCENT/ FLOWER

E-SPATIAL DEFINITION

105.0 [32.0]

STEPS

+104.0

+105.0

Art Gallery

Accent lights in pedestrian travelways are hazardous

105.0 [32.0]

Gate

Sidewalk

103.5 [31.5]

D-SHADE

Fails to provide shade for the tables in a hot climate

WATER FEATURE

E-SPATIAL DEFINITION

LAWN

SCULPTURE BASES

E-CIRCULATION CONTROL

104.5 [31.8]

6' [2m] High Masonry Wall

Sidewalk

Old Town Road

Sample Problem 3
Solution 10 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

Contract Limit Line

6' [2m] High Masonry Wall

AL

E-Hedge

103.5 [31.5]

D-Specimen

AL

Restaurant

104.0 [31.7]

Restaurant Area

Brick Edged Planter to Take Up Grade Change

D-Specimen + Shade

End 104.0

104.0 [31.7]

E-Spatial Definition

Water feature

8%

2, 6" risers

Begin Ramp 105.0

AL

D-Shade

base 3

AC

Sidewalk

6' [2m] High Masonry Wall

Old Town Road

105.0 [32.0]

seat wall edging water feature

Lighting is insufficient

base 2

Art Gallery

105.0 [32.0]

base 1

AC

104.5 [31.8]

Lights within the tree canopy will not provide adequate illumination

D-Shade

Gate

Sidewalk

E-Spatial Definition

Sample Problem 3
Solution 11 of 12

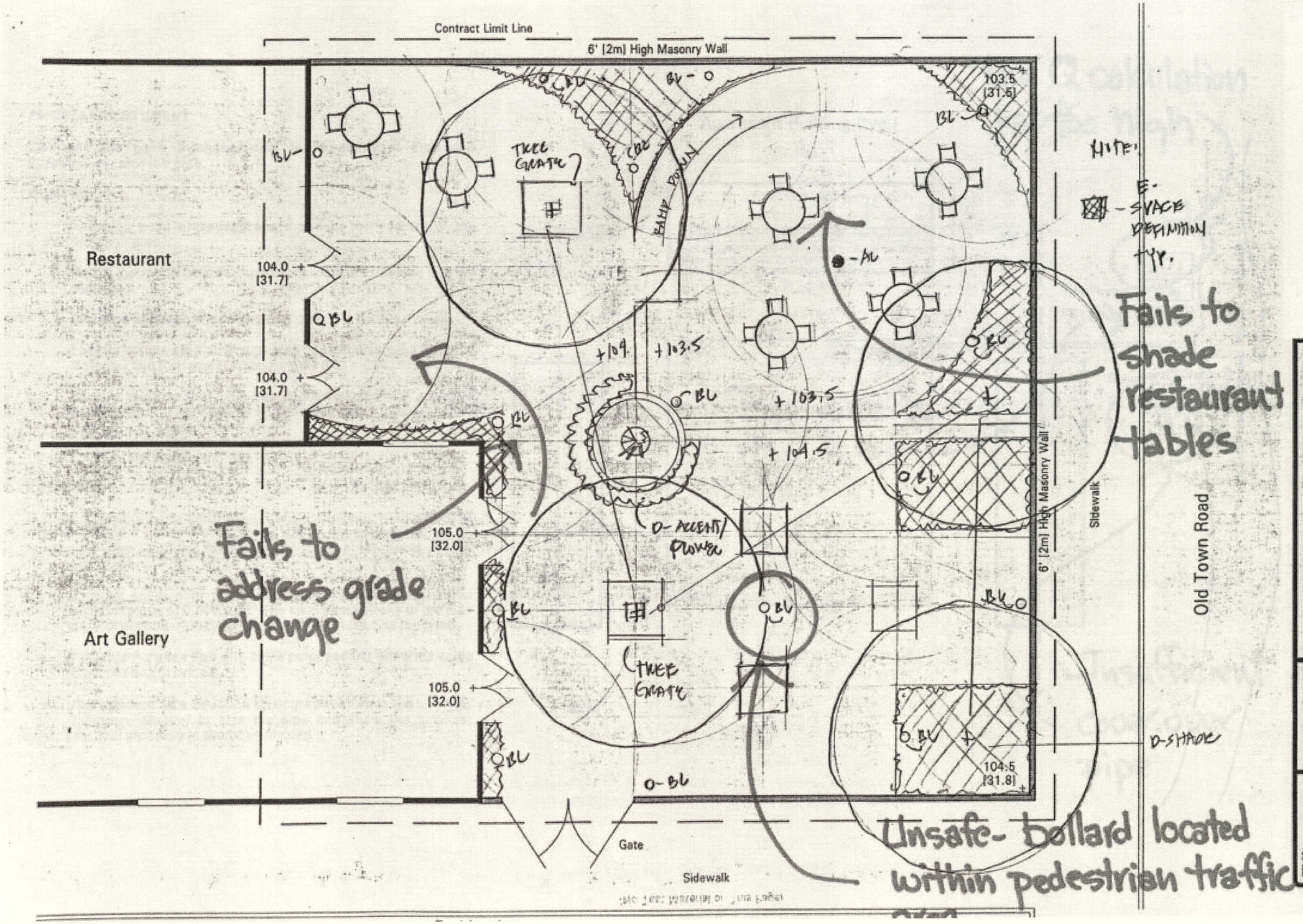
Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]



Sample Problem 3
Solution 12 of 12

Landscape Architect Registration Examination

Planning and Site Design

Council of Landscape Architectural Registration Boards

North

Scale: 1/8"=1'-0" [1:100 metric]

PROBLEM STATEMENT:

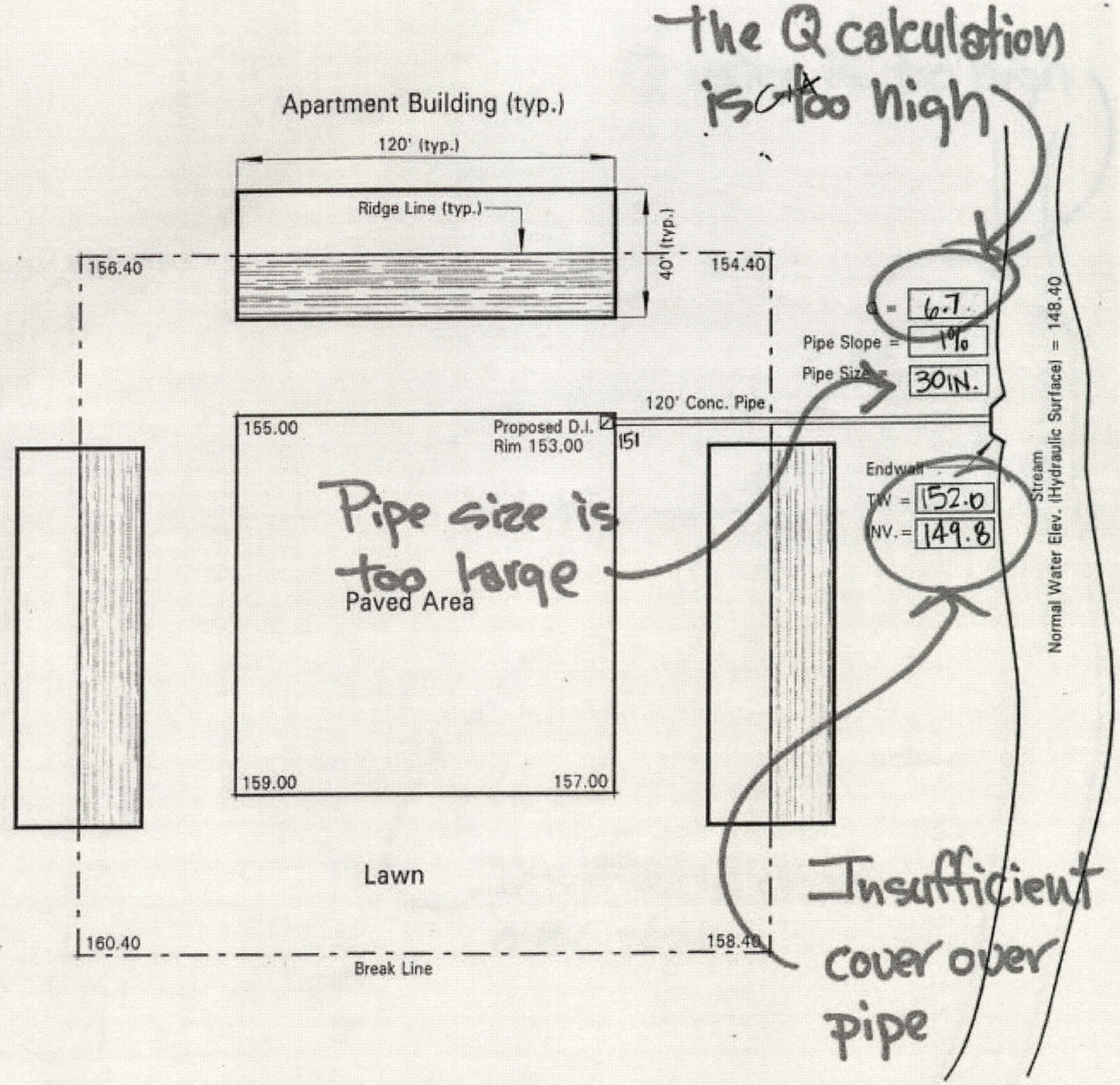
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 1 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

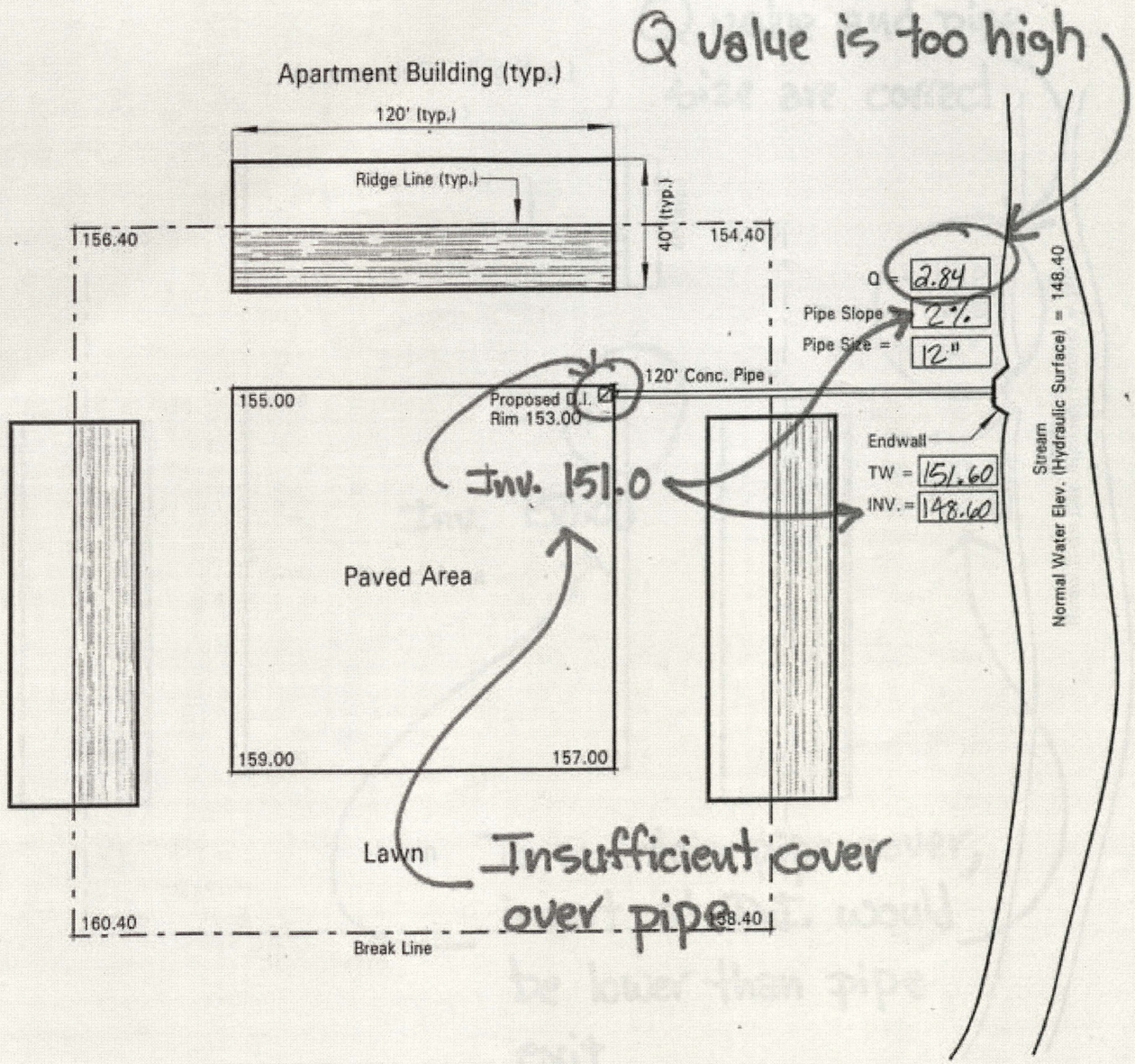
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual*.

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- ✓ Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- ✓ Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 2 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

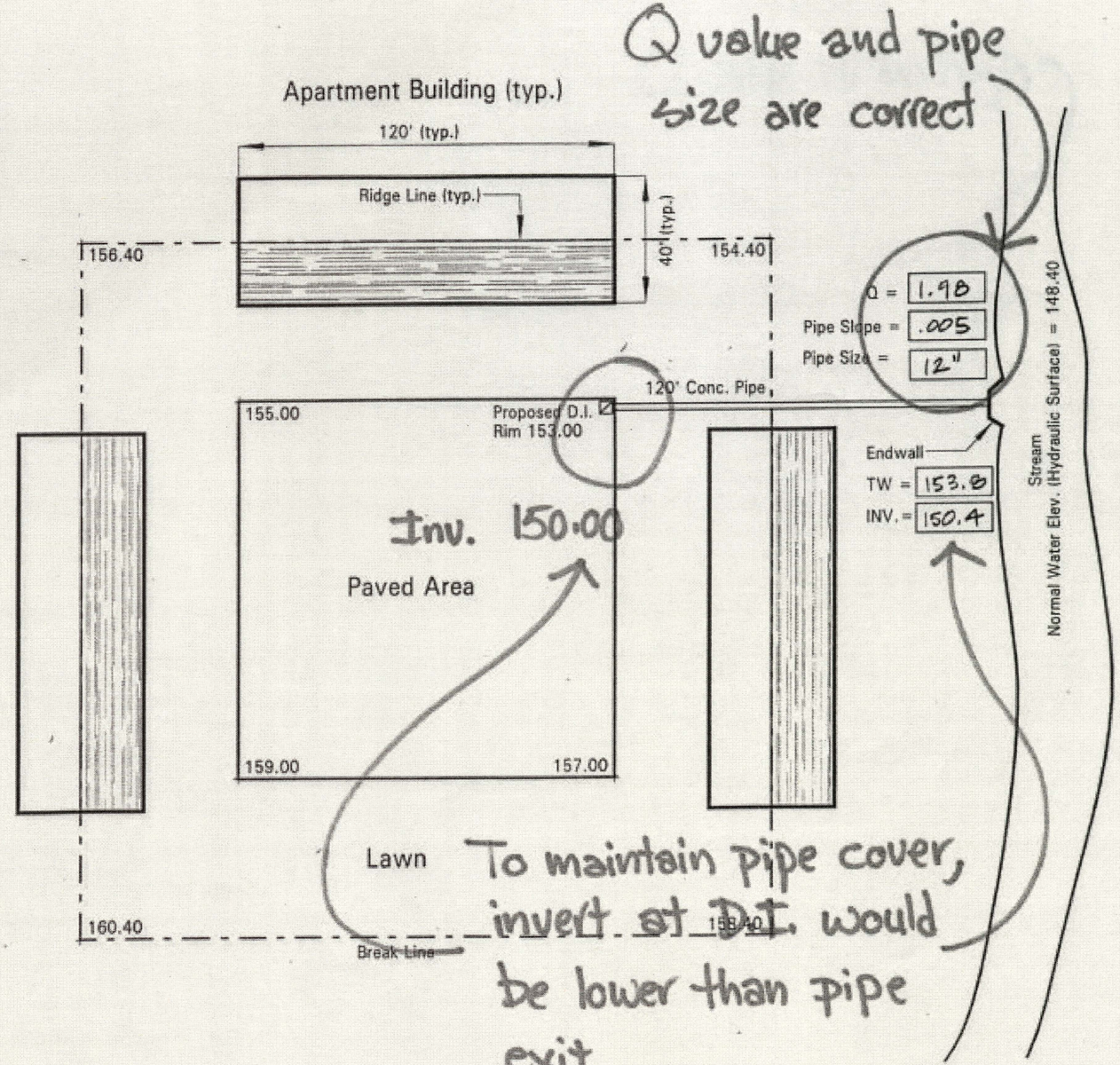
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 3 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

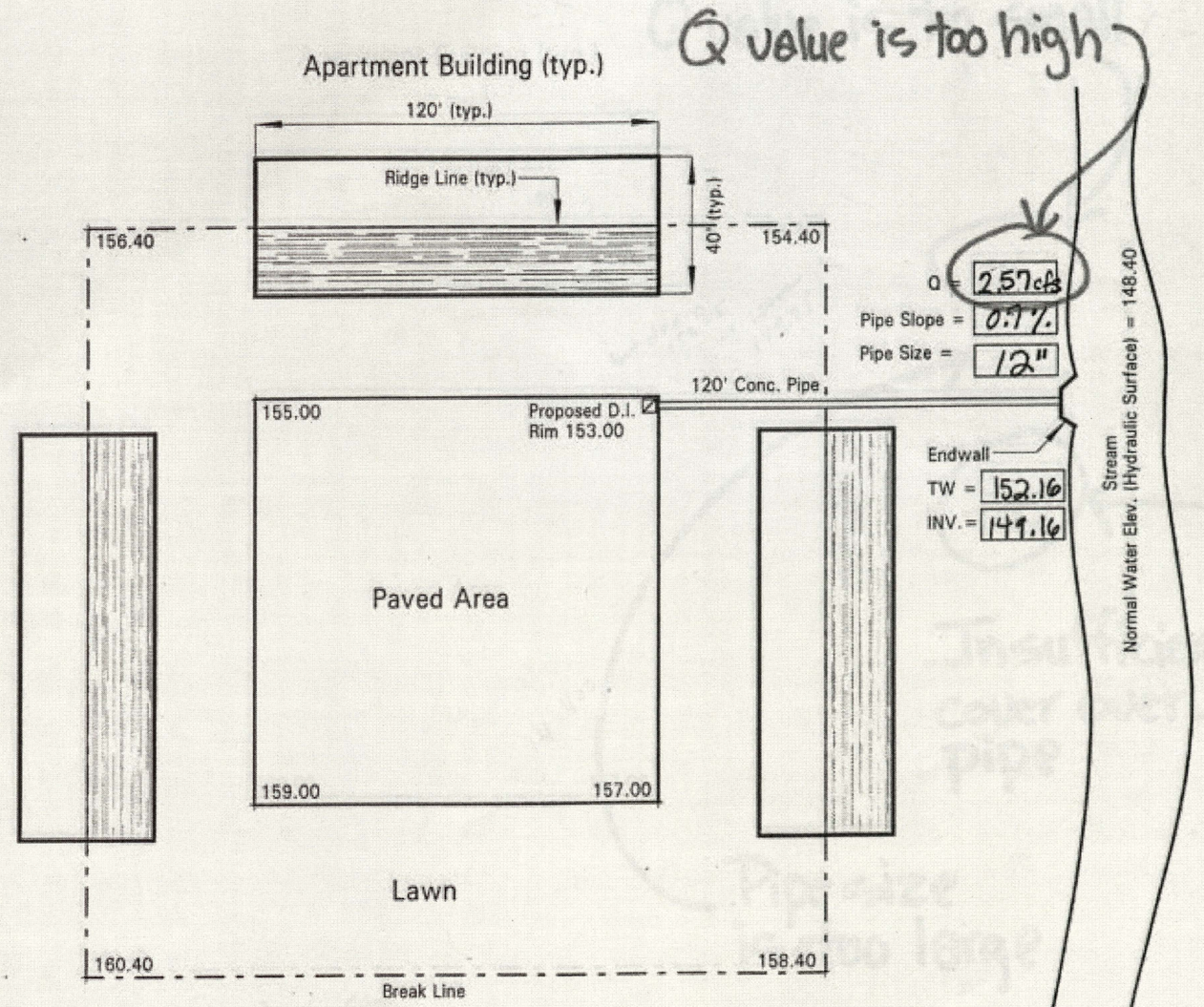
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 4 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

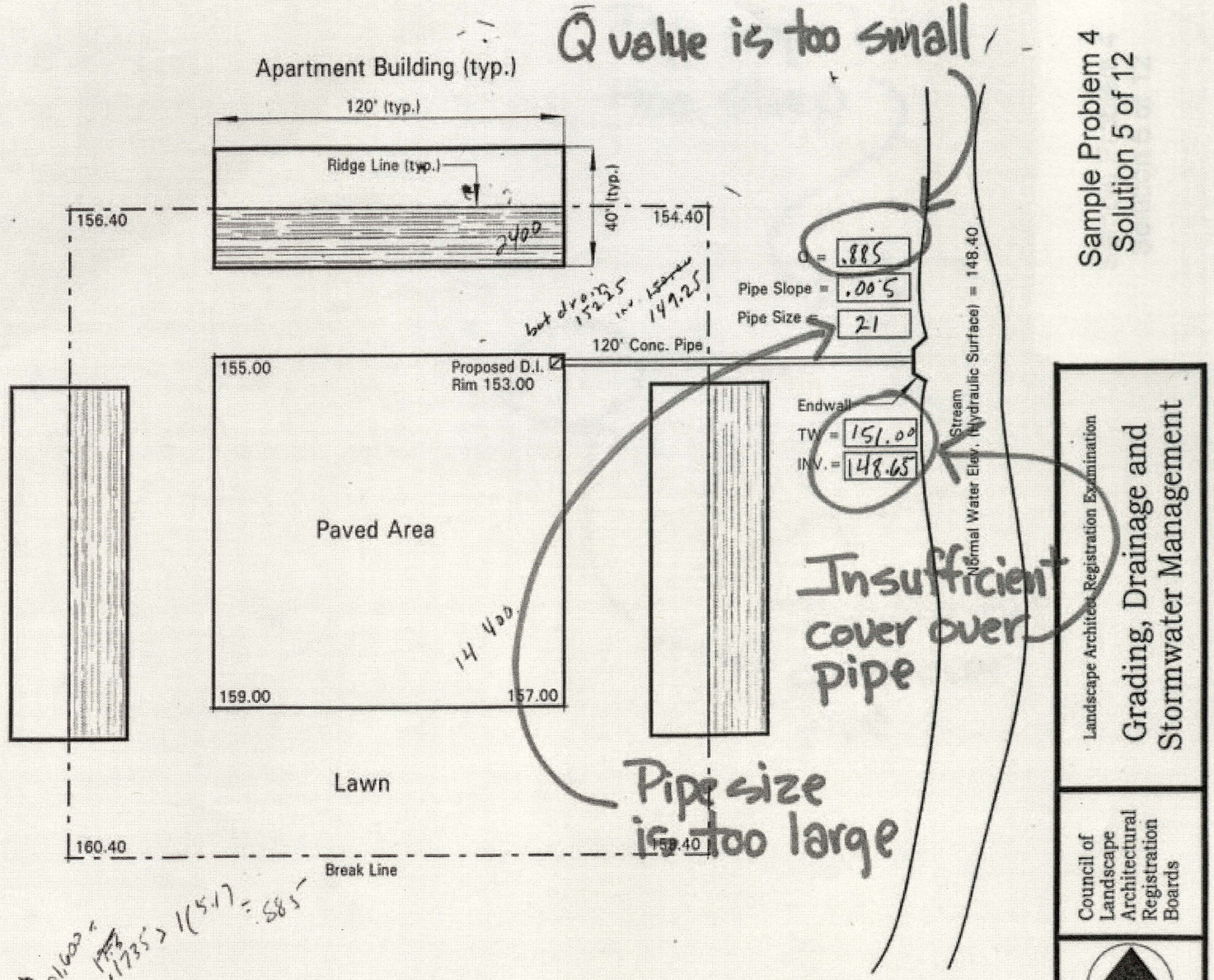
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

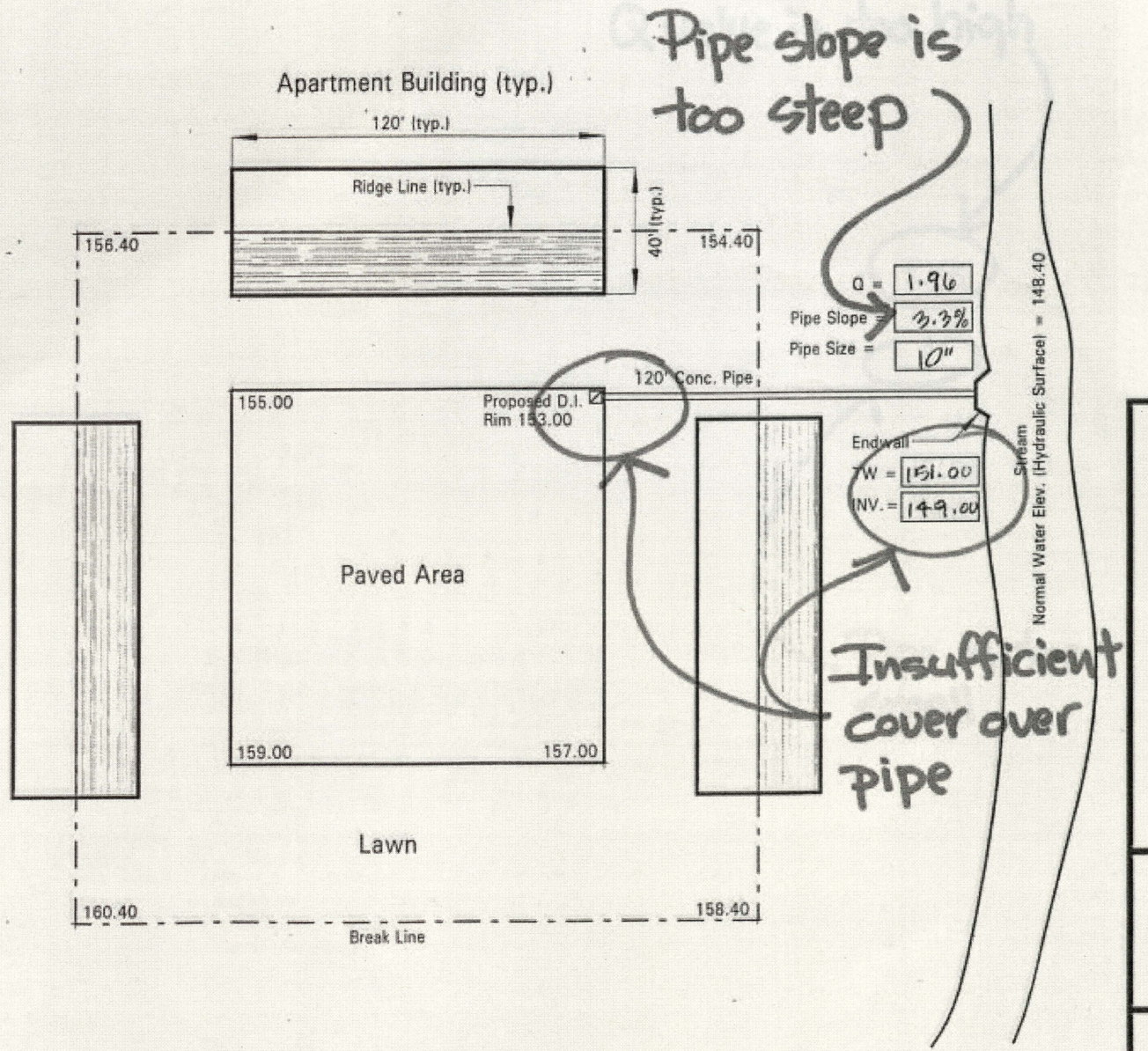
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual*.

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 6 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

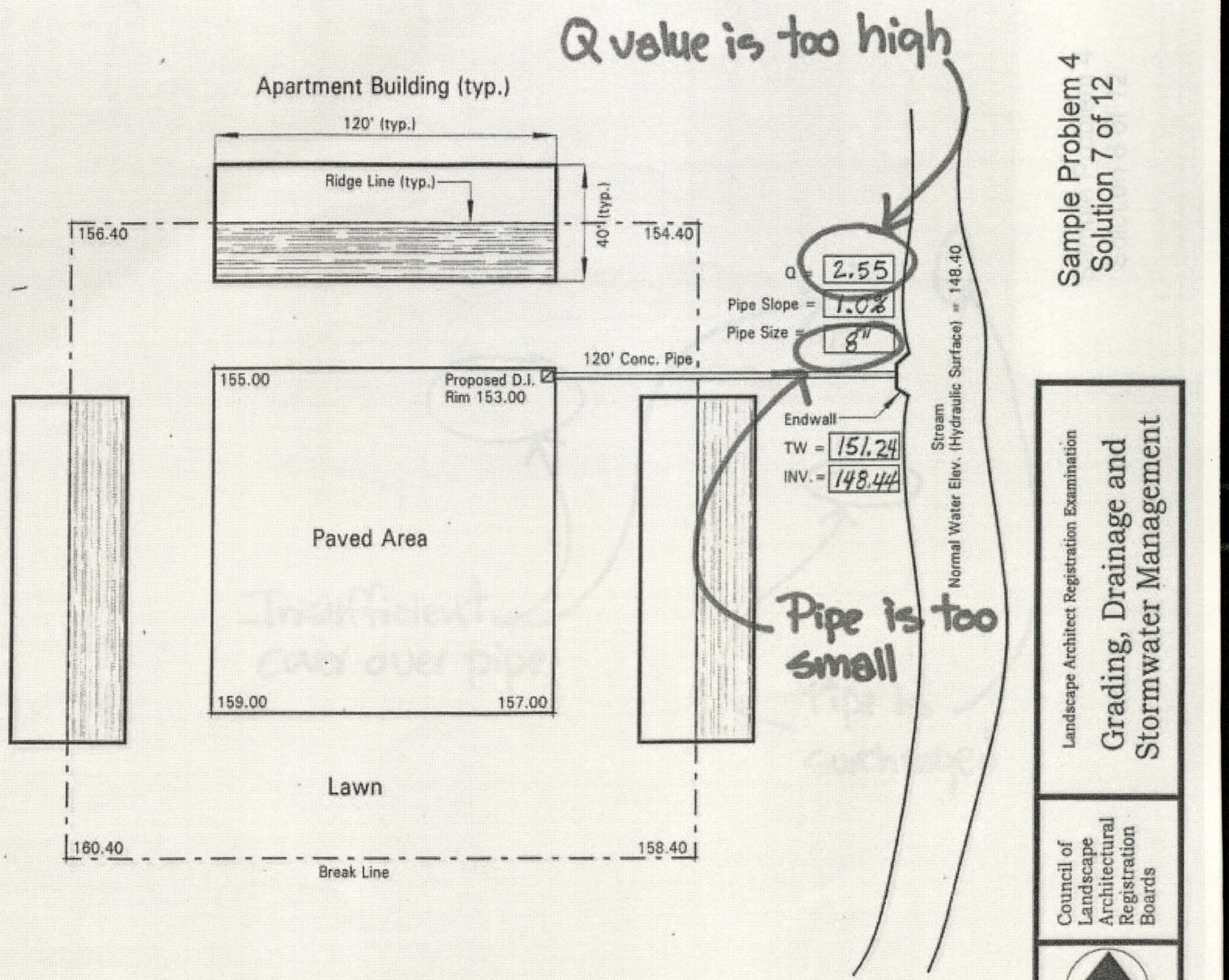
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 7 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

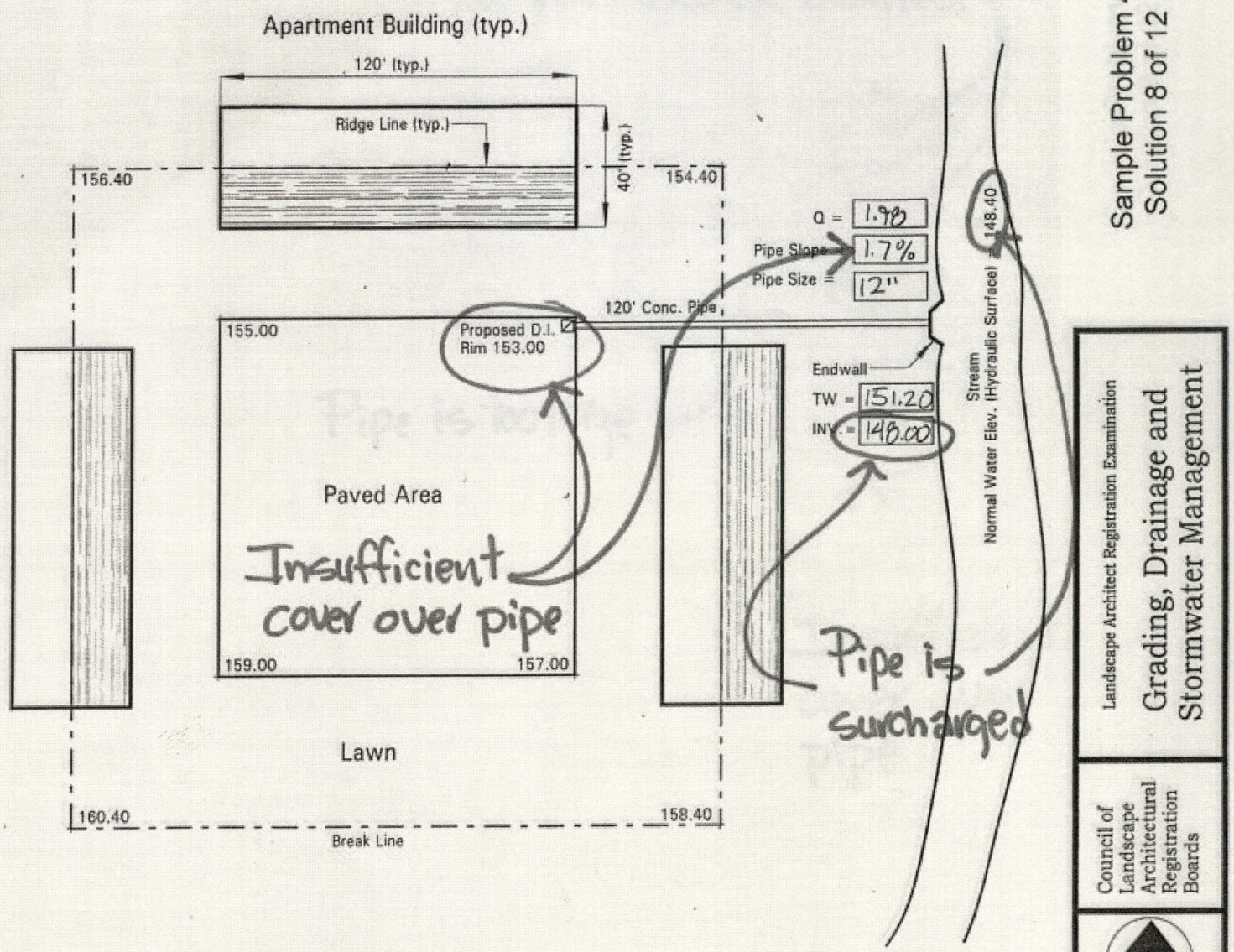
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 8 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

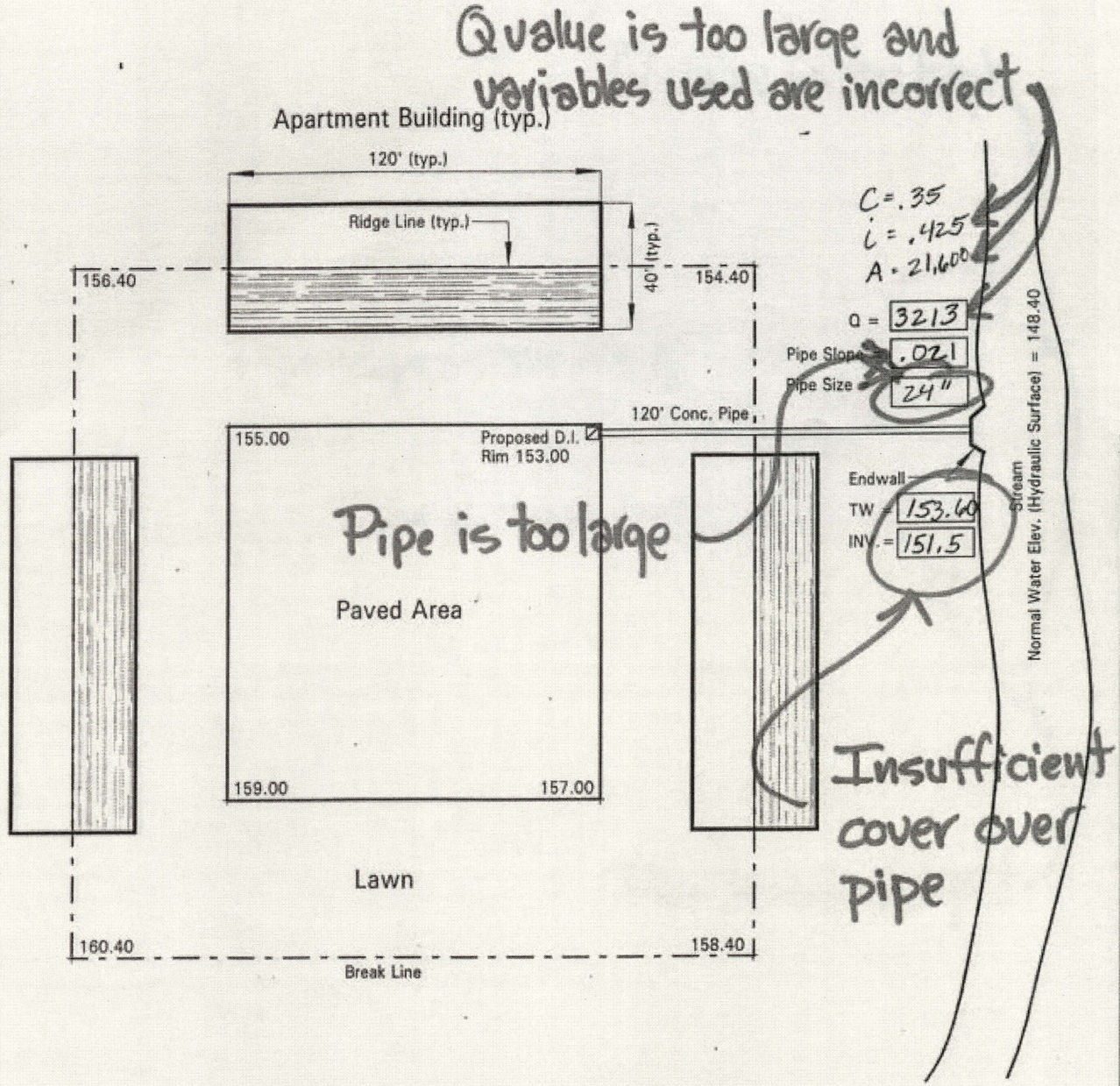
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 9 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

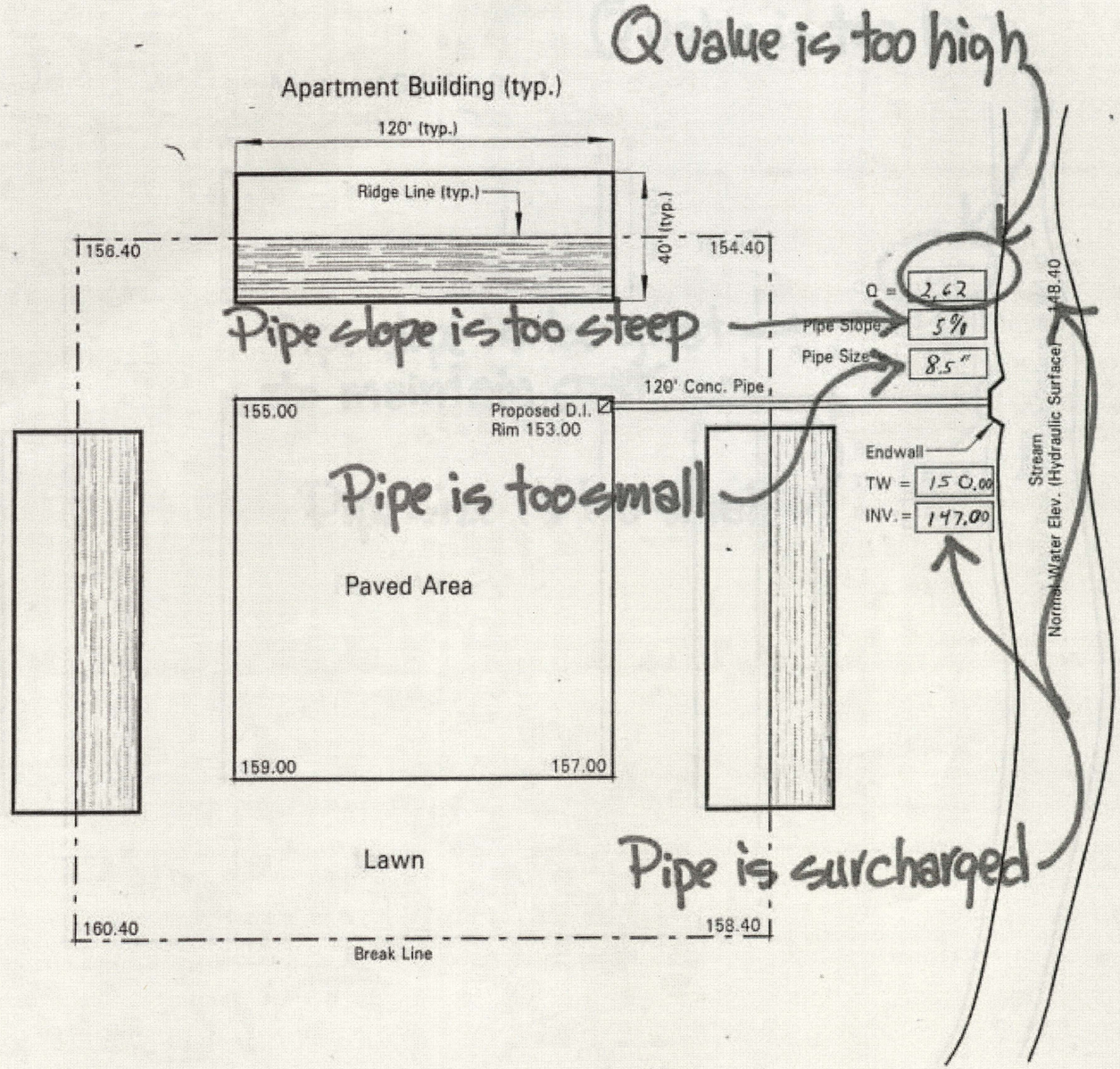
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 10 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

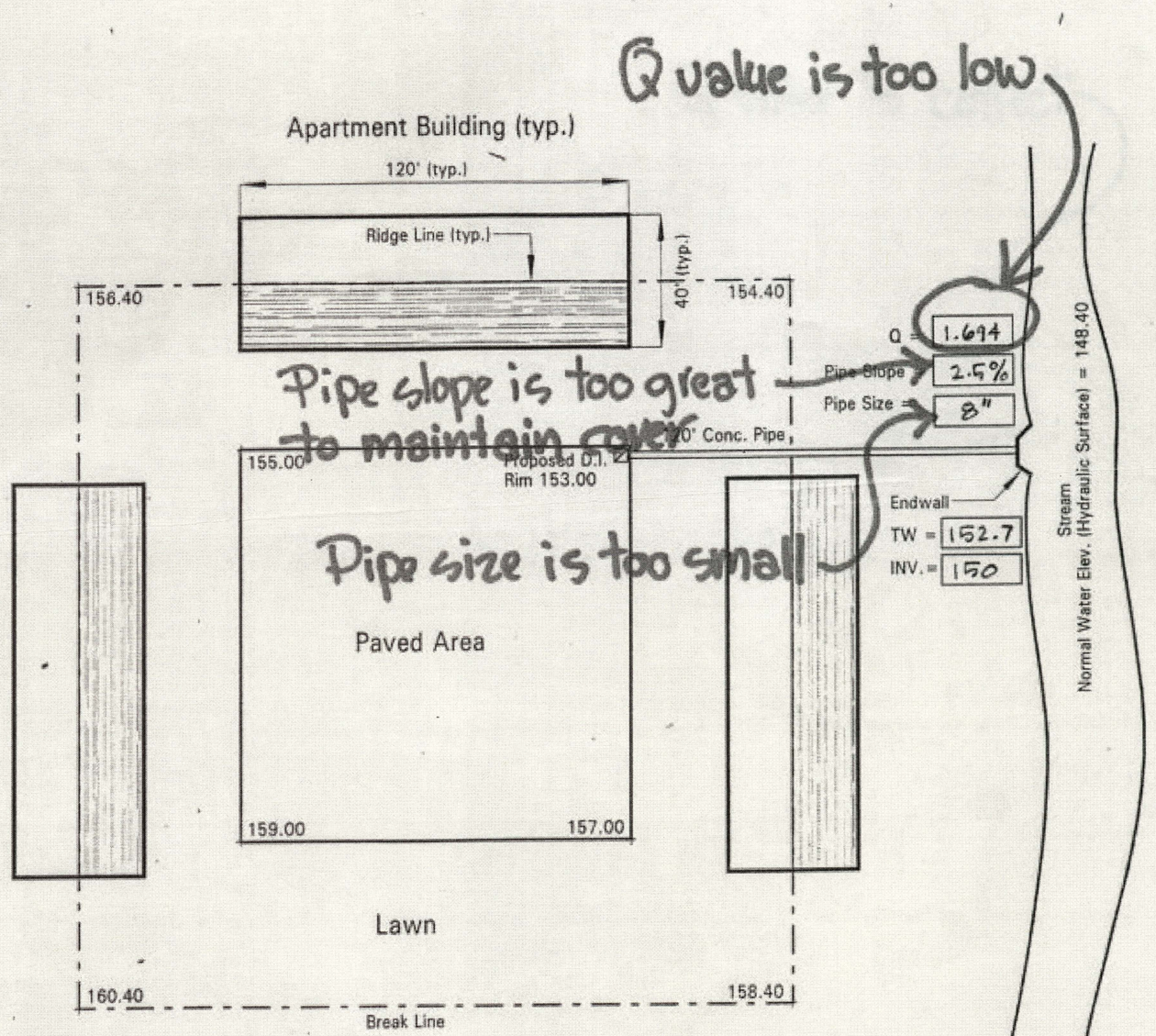
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual.*

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 11 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=40'

PROBLEM STATEMENT:

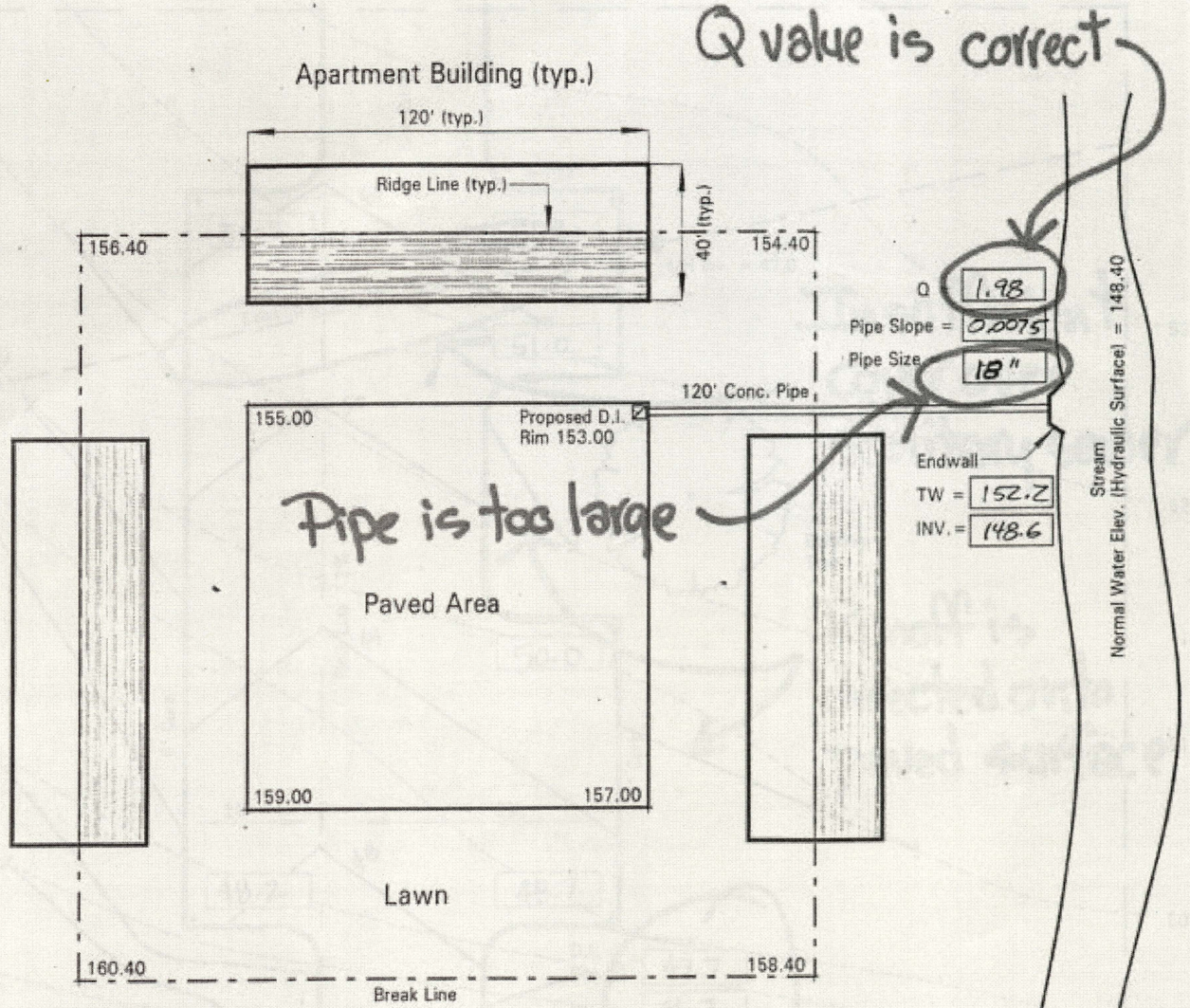
Calculate the peak discharge rate for a courtyard area and appropriately size the pipe.

CONTEXT:

- The high point elevations are shown at the corners of the drainage area.
- Half of the runoff from the apartment roofs are directed into the courtyard.
- Drainage lines consist of concrete pipe.
- The city requires that drainage lines be sized using the Rational Method. The Rational Method formula is Q = CiA.
- The city requires that a 50-year storm be used with a rainfall intensity of 5.1" per hour for all sites less than 10 acres.
- Runoff coefficients for the Rational Method can be found in the *L.A.R.E. Reference Manual*.

REQUIRED:

- Indicate the invert and the top of endwall elevations in the boxes provided. The outlet must be set so that there will be no surcharge (standing water) on the storm drain during normal storm flow.
- Minimum cover over the pipe is 2'. The pipe is to have a minimum slope of 0.005 ft./ft. The maximum velocity of the pipe is 5' per second. Indicate the pipe slope in the box provided.
- Calculate the peak flow rate at the proposed DI. Show the value (Q) in the box provided.
- Use the Manning's Equation Nomograph shown in the *L.A.R.E. Reference Manual* to size the pipe and show the smallest practical pipe size in the box provided.



Sample Problem 4
Solution 12 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

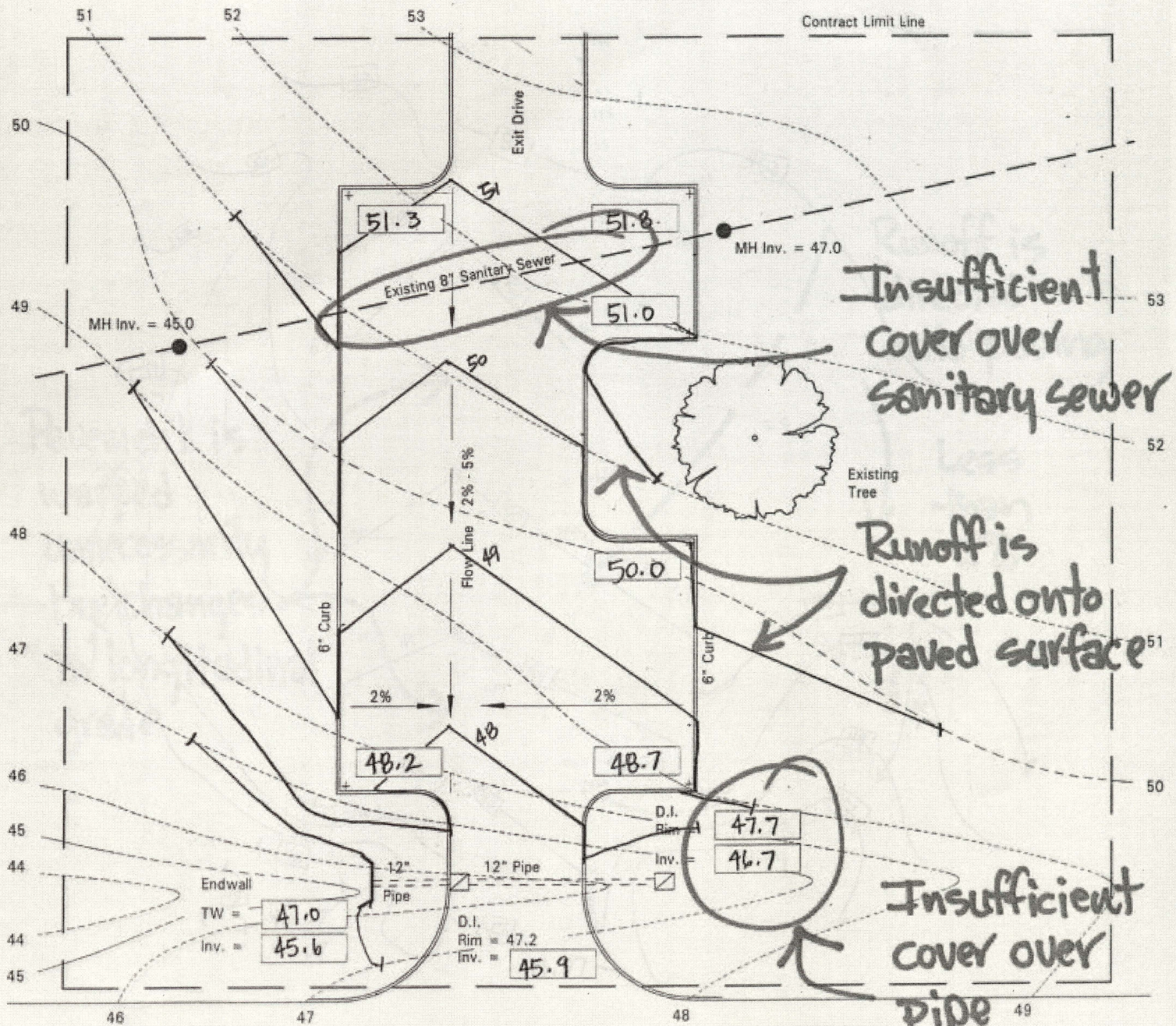
Scale: 1"=40'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 1 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

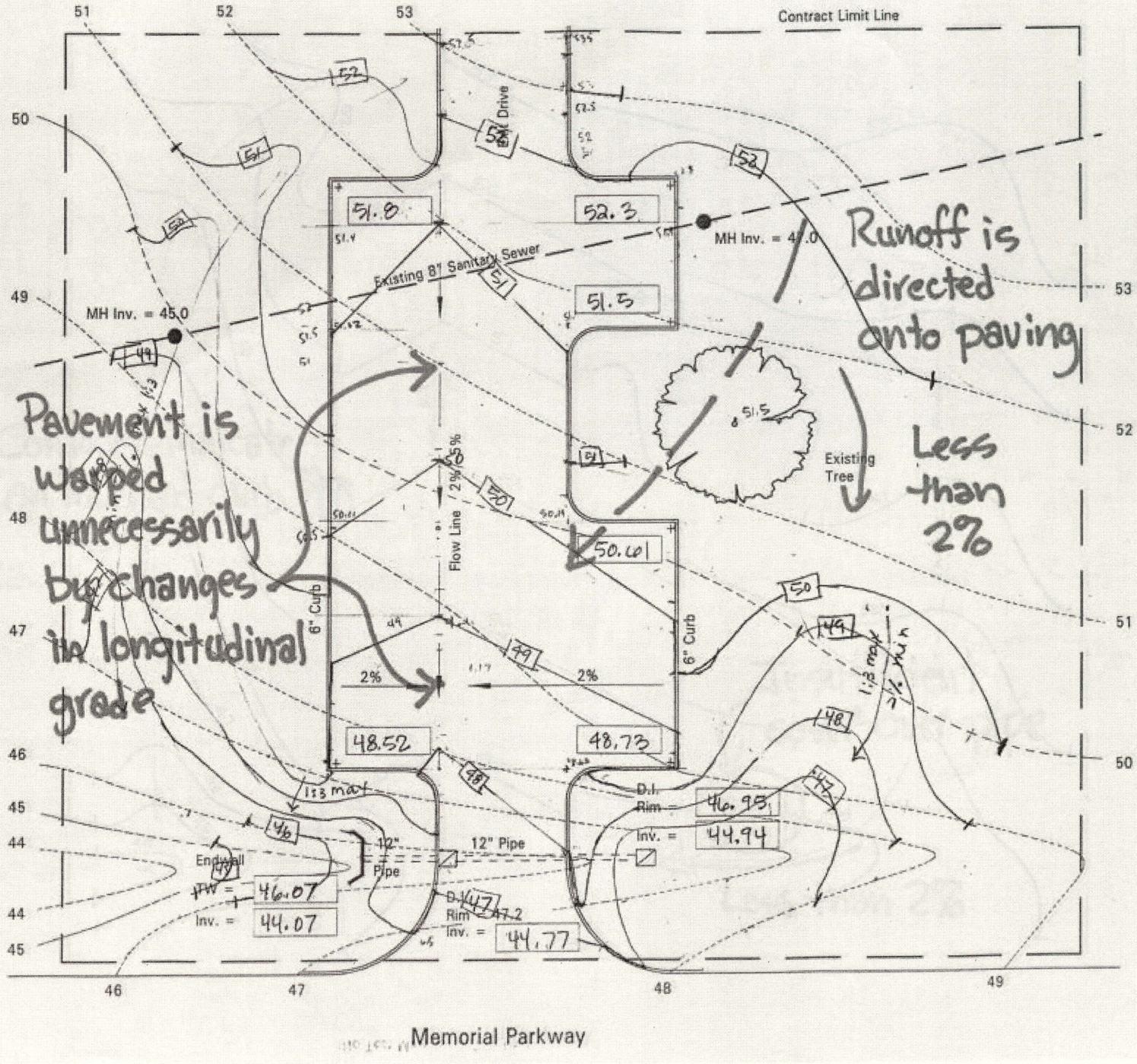
Council of Landscape Architectural Registration Boards

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 2 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

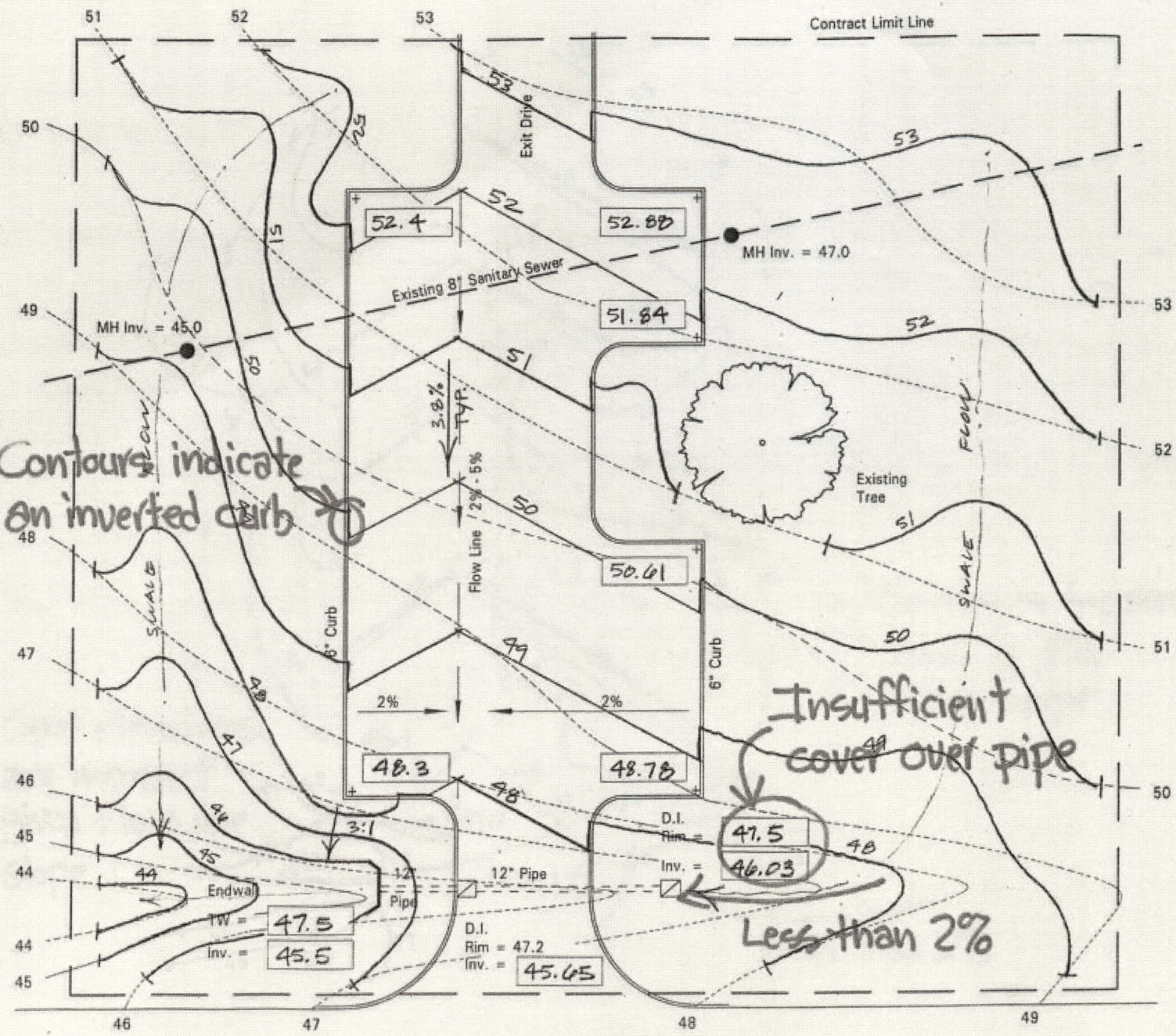
Council of Landscape Architectural Registration Boards

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 3 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

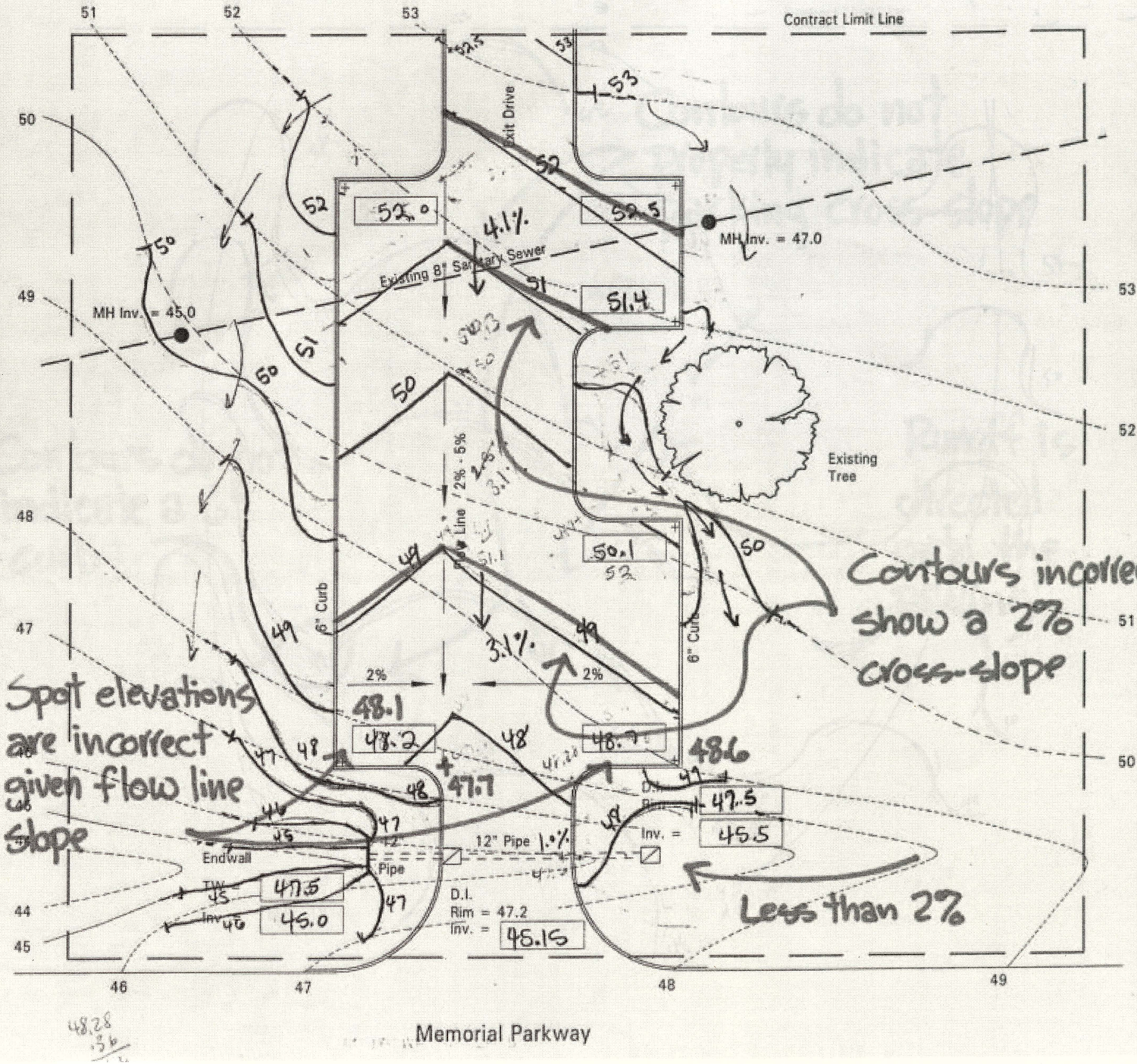
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 4 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

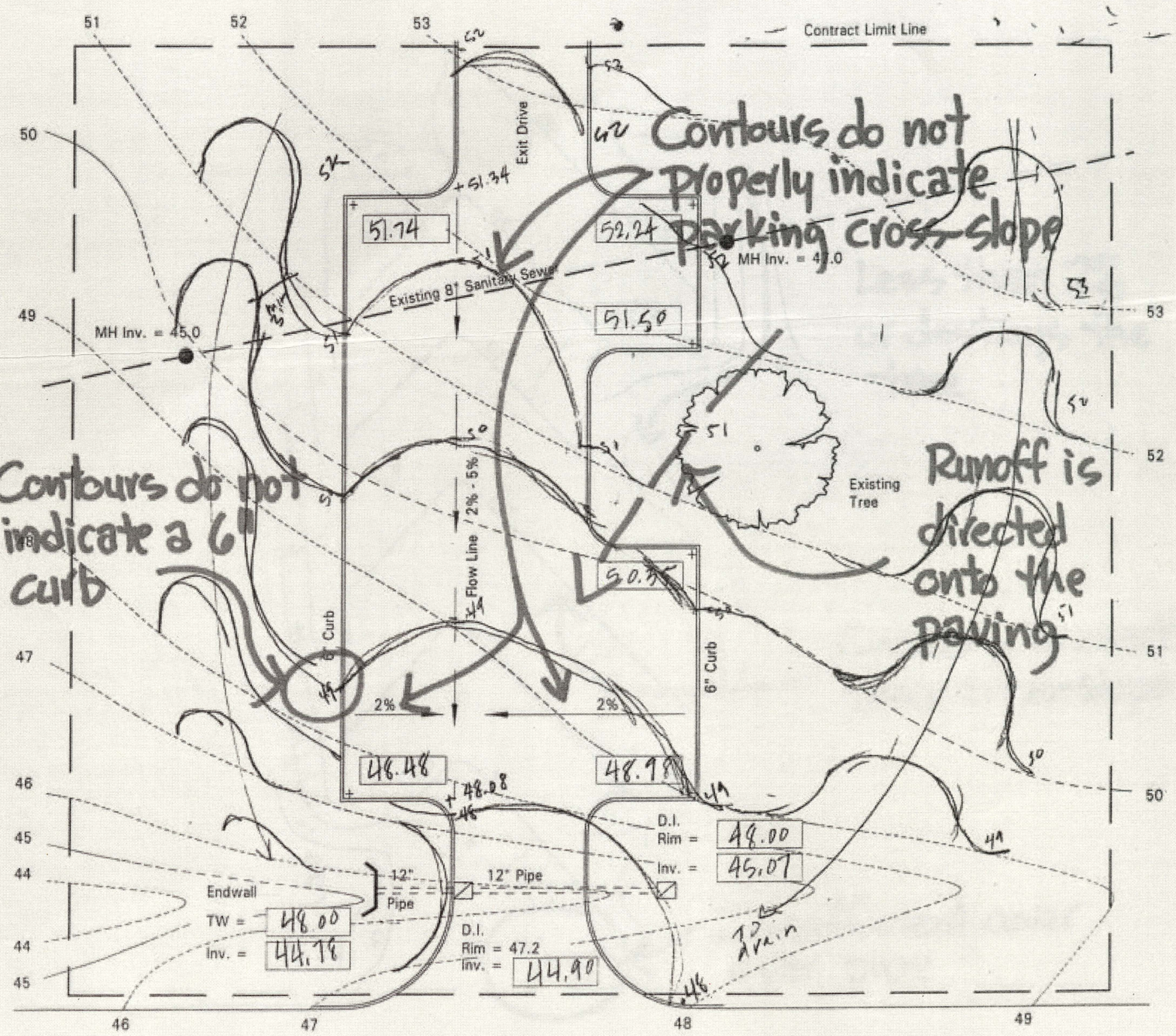
Council of Landscape Architectural Registration Boards

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 5 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

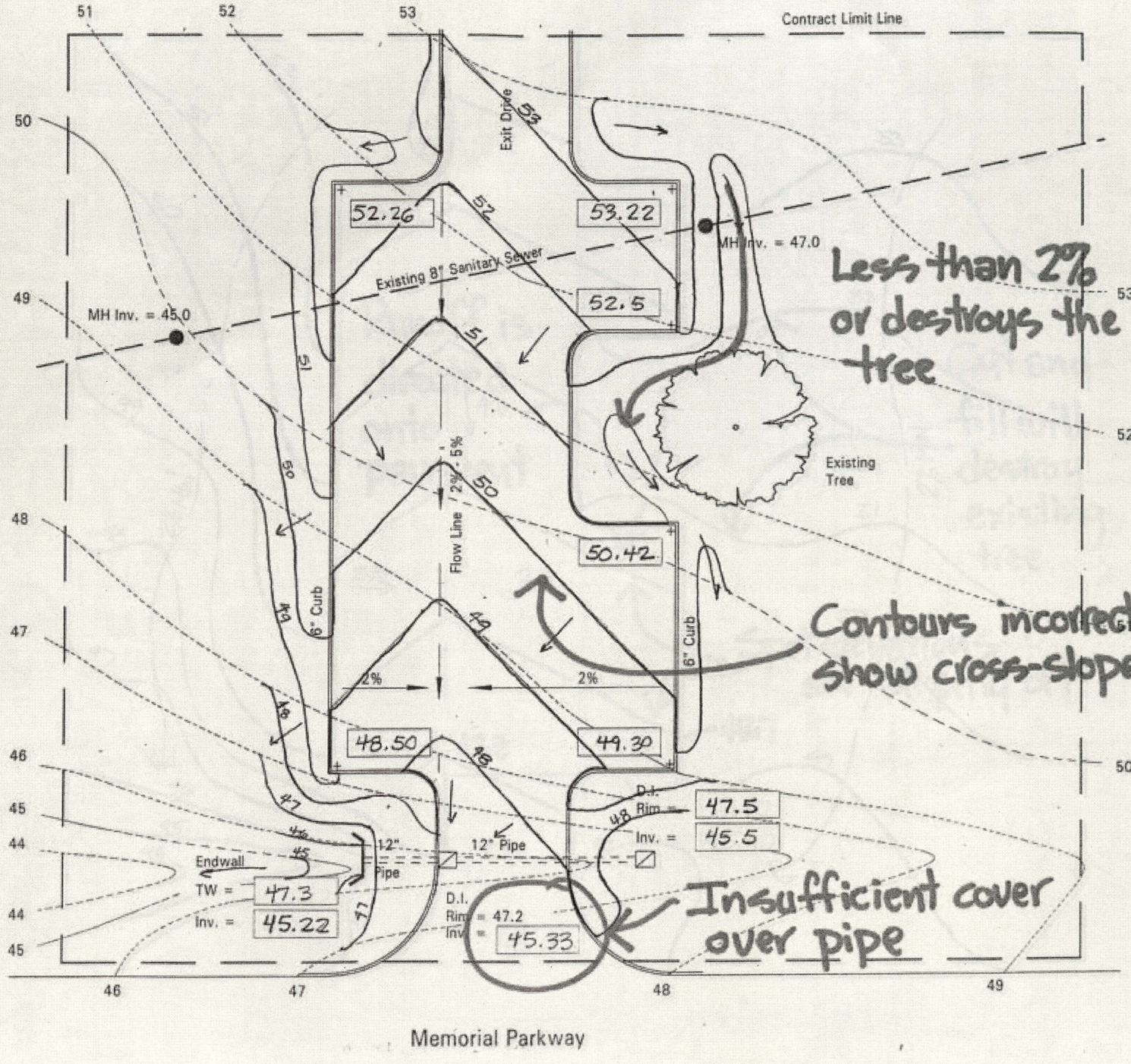
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 6 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

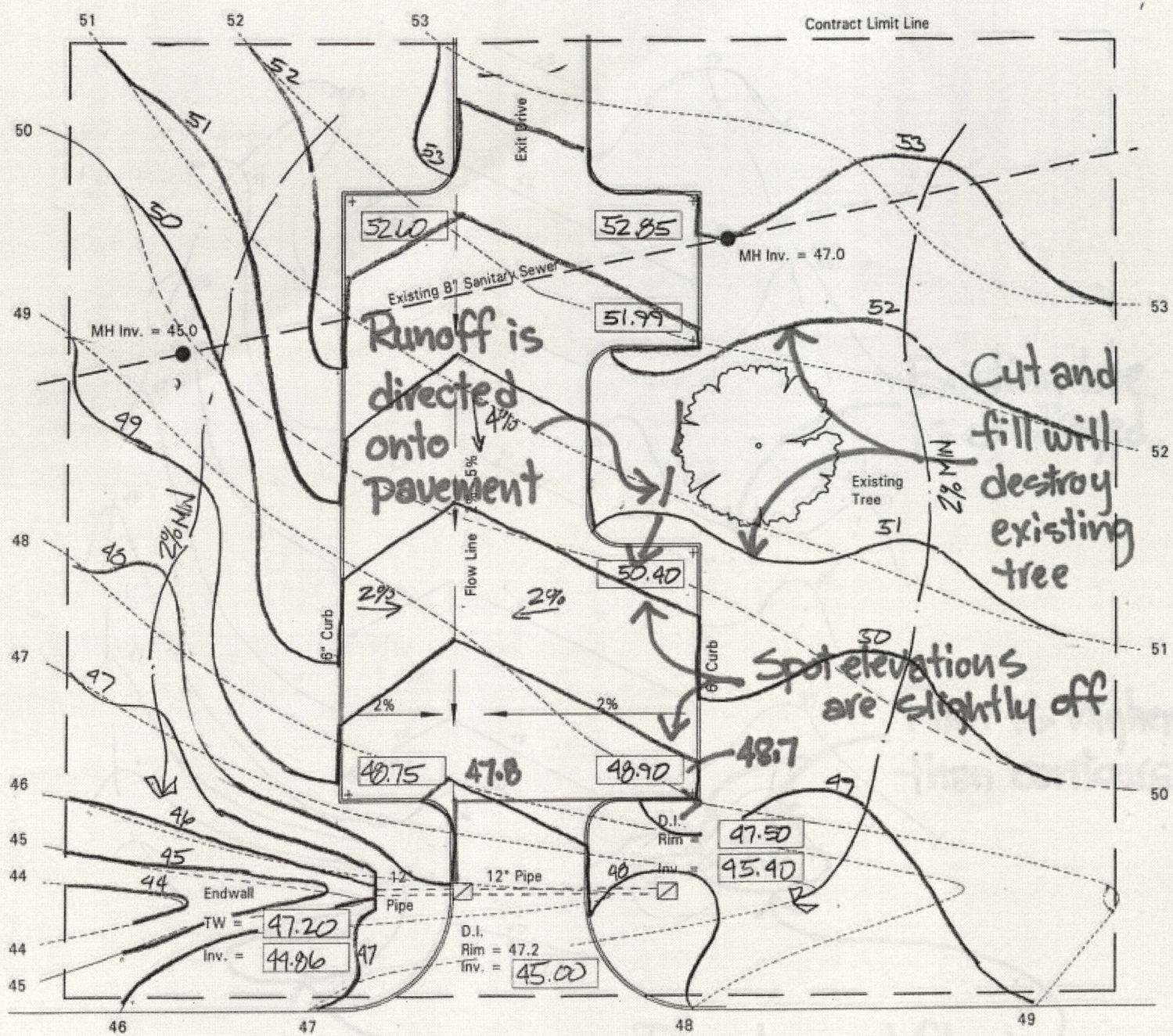
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 7 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

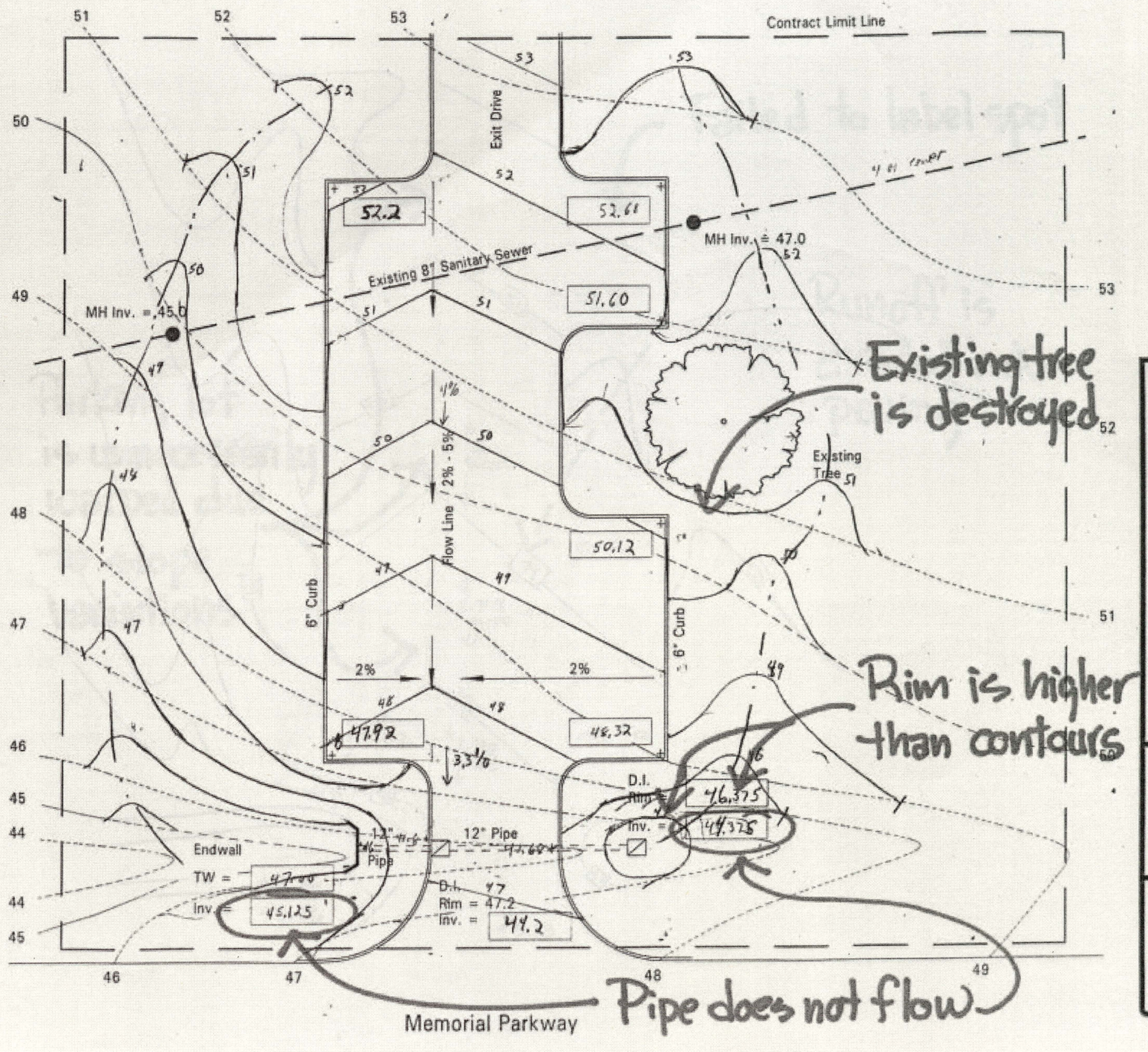
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 8 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

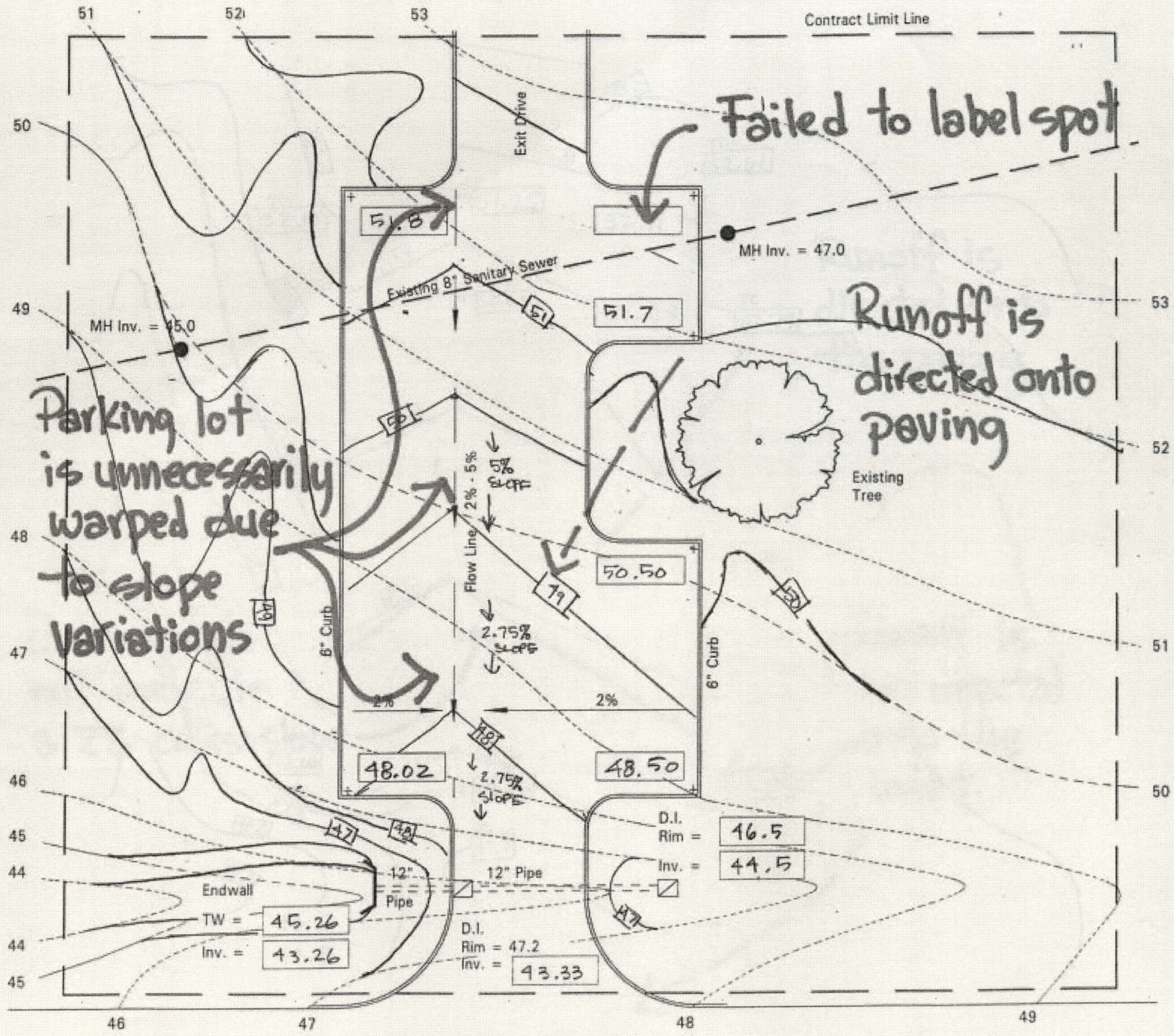
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 9 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

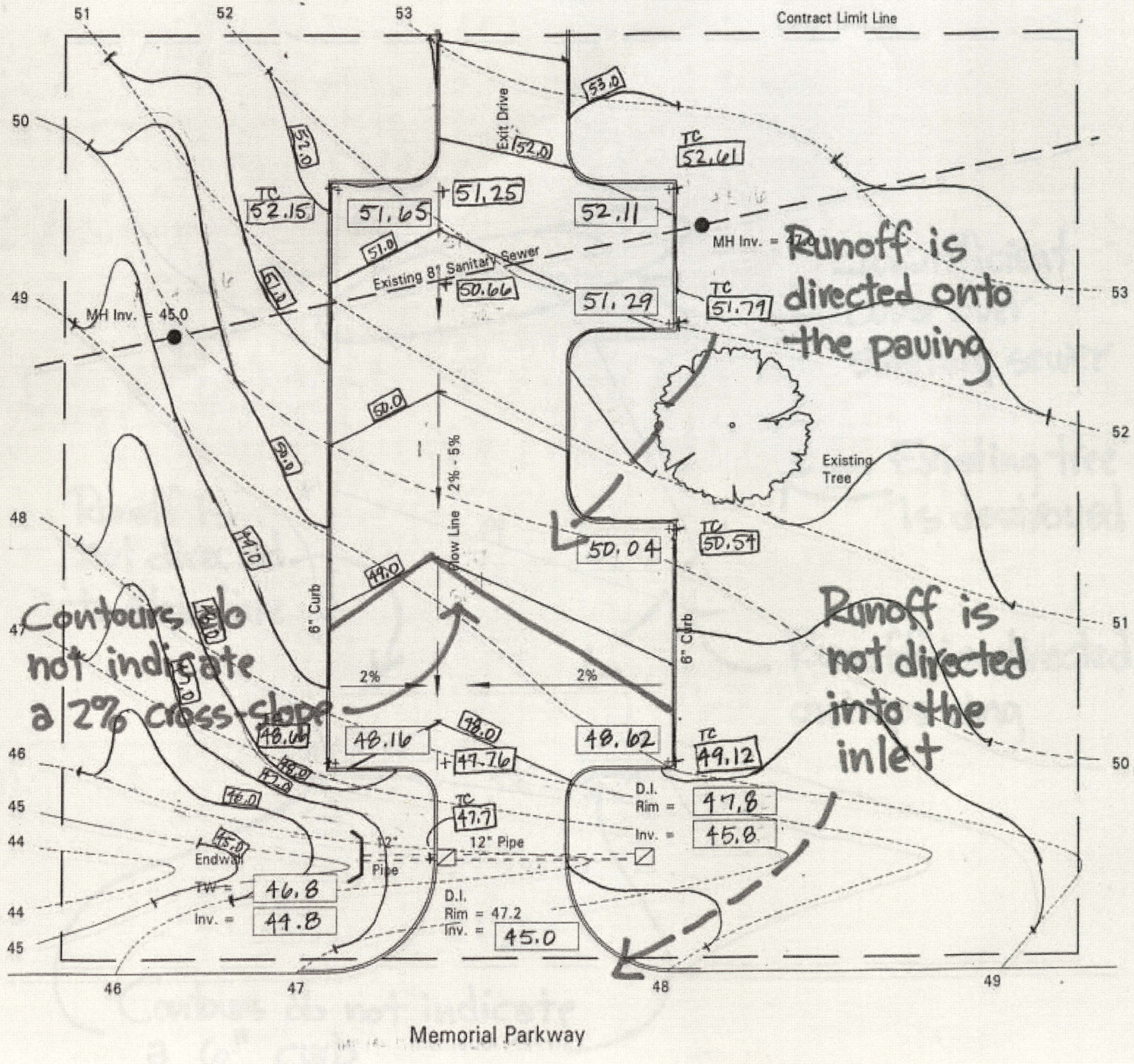
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

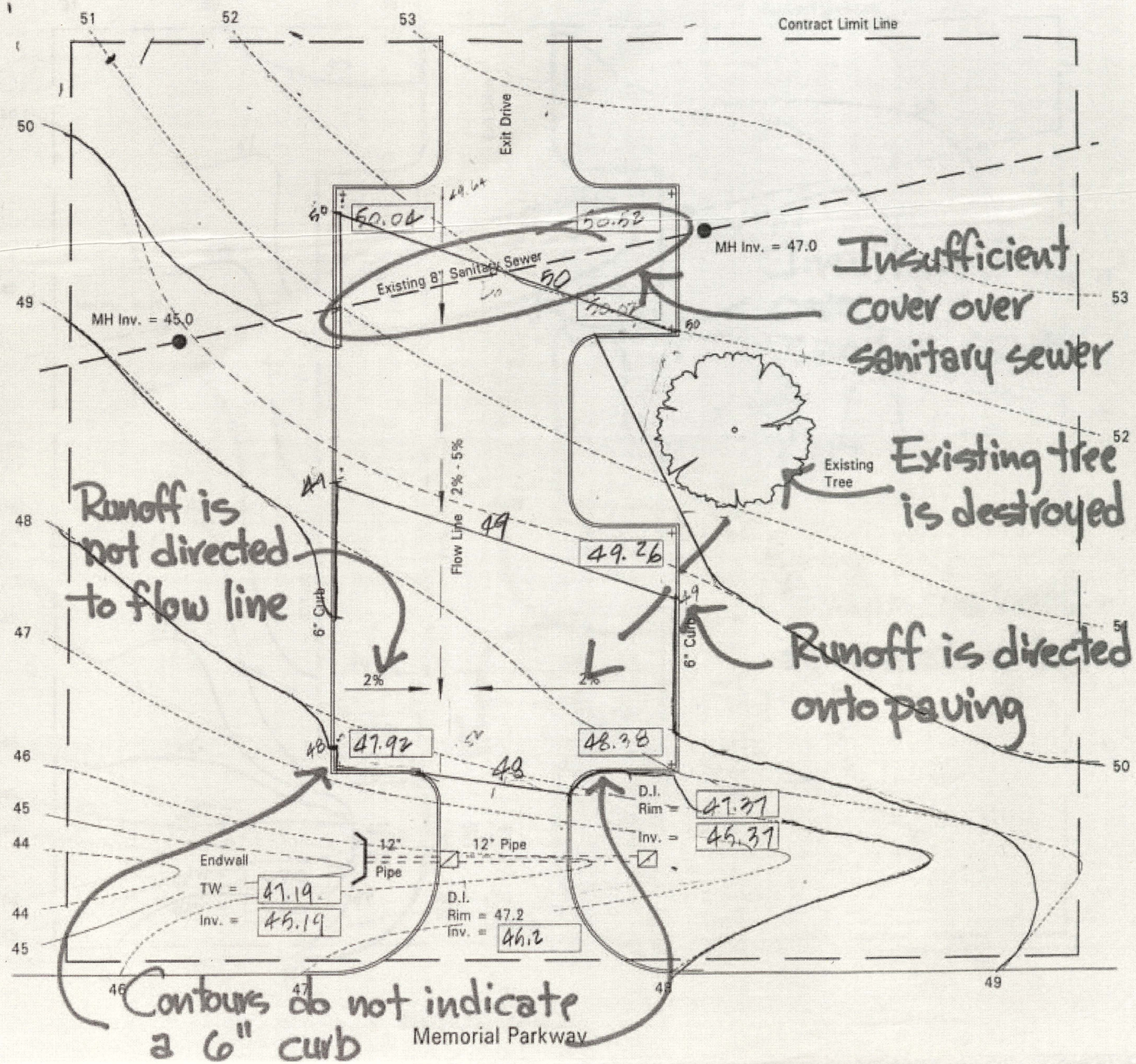
Scale: 1"=20'

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 11 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

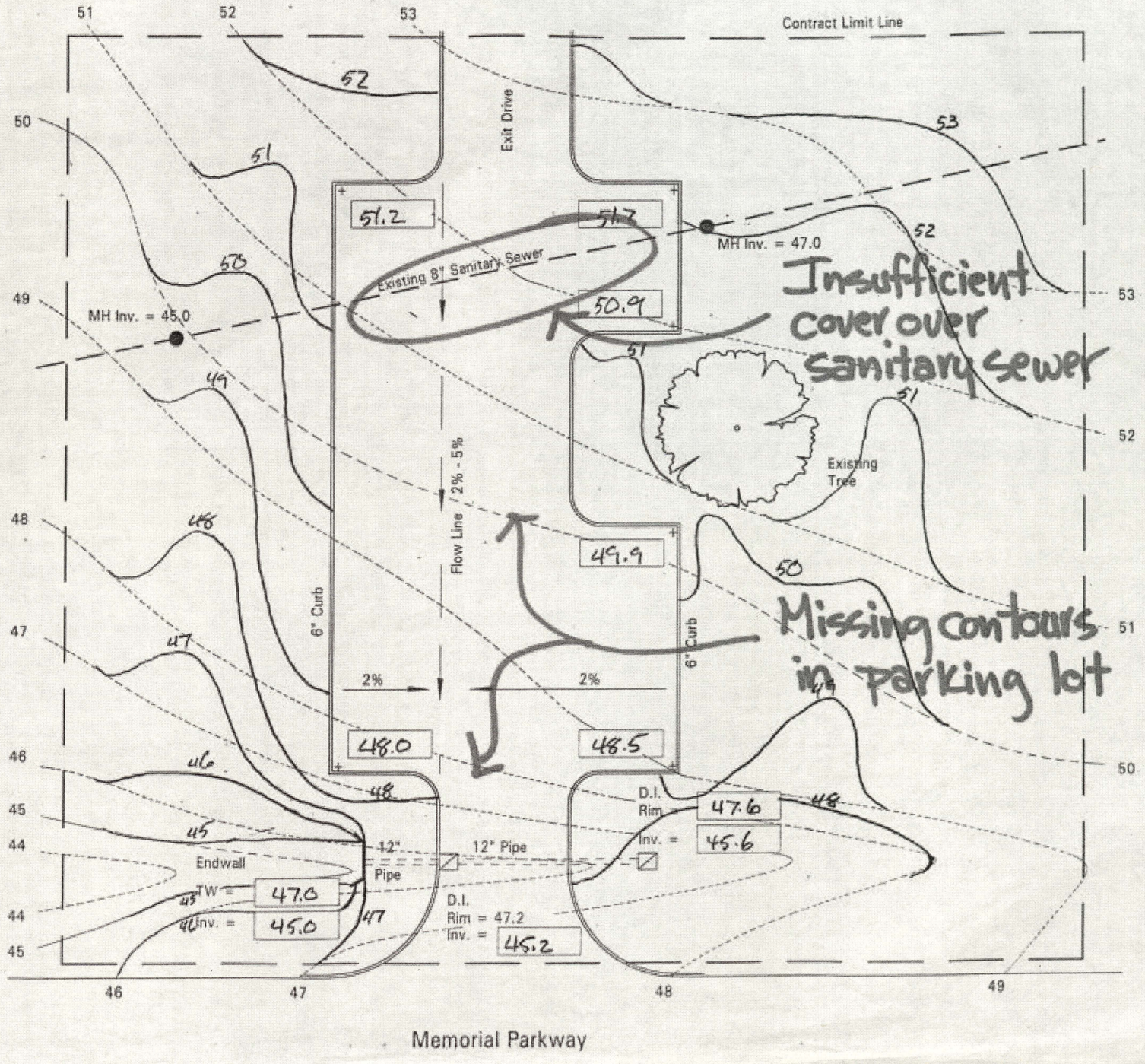
HB OWENS RESOURCE CENTER
3 2108 03152 6984

PROBLEM STATEMENT:

Grade the site area indicated within the contract limit lines.

REQUIRED:

- Grade the parking lot within the gradients shown.
- All run-off from the parking lot shall drain into the drain inlet in the entrance drive.
- Divert all surface run-off around the parking lot.
- Show and label all proposed 1' contours and meet existing contours within contract limit lines.
- Provide spot elevations in the boxes provided.
- Maintain at least 4' of cover over the existing sanitary sewer pipe.
- Maintain at least 1' of cover over the storm pipe located under the entrance drive. Minimum pipe slope is 0.5%. Indicate pipe inverts at each end of the pipe.
- On all unpaved surfaces the minimum gradient is to be 2% and the maximum gradient is to be 3:1.
- Save the existing tree. Do not grade within the dripline of the tree.
- Drainage from unpaved surfaces should not flow onto the paved surfaces.
- No additional retaining walls or drainage structures are permitted.



Sample Problem 5
Solution 12 of 12

Landscape Architect Registration Examination

Grading, Drainage and Stormwater Management

Council of Landscape Architectural Registration Boards

North

Scale: 1"=20'