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## **I. INTRODUCTION**

This project manual is a guide for Metra project managers and consultants in the design of surface commuter parking lots and to assist municipalities in understanding Metra guidelines and project development procedures.

It is Metra's policy to cooperate with area communities in developing commuter parking facilities while maximizing the number of parking spaces for the dollars available to optimize rail service to the entire Metra service area. In this regard, this manual should be used in conjunction with municipal standards to ensure that the parking facility meets the objectives of Metra as well as the municipality.

These Metra guidelines supplement information contained in the "Guidelines for Planning, Design and Operation of Rail Commuter Parking Facilities" dated March, 1990, by the Chicago Area Transportation Study, herein referred to as "CATS".

These Parking Standard Guidelines have also taken into consideration infrastructure that could support functional Intelligent Transportation System (ITS) applications, and future installations that may accommodate communications-based technologies. Such innovative technologies would include, but are not limited to, electronic signage, wireless communications, surveillance systems, coordinated networks with internet links and real time/transit data collection technologies that provide commuters with critical transit information.

This parking manual is intended to be used in conjunction with the most current version of the Metra CAD/D Manual which is available at the Technical Services Division web site at <http://www.metrar.com/techservices/>. The website also contains the most recent standard details and other items required to complete a set of project deliverables.

Any references to documents contained in this manual are intended to be the most recent version of the reference document.



## II. GUIDELINES

### A. SITE INVESTIGATION

#### 1. UTILITIES

An investigation to determine the existence of utility facilities for any project site is a necessity. There are numerous utilities commonly located near railroad facilities whose presence must be verified due to their potential effect on site development.

Utilities may consist of railroad communication and signal lines, telephone and communication cables, fiber optic lines and any of more than 20 natural gas and petroleum pipelines in the Metra service area. The presence of these utilities can have a significant effect on the layout and design of the parking lot. A number of design parameters such as: minimum depth of cover over the utility, allowable pavement types, areas over utilities required to be open grassed space and minimum clearances between proposed underground facilities and electrical or sewer crossings must be considered.

Other types of utilities found in the area are government owned or regulated facilities controlled by Local Municipalities, State or County Highway Departments, Drainage Districts, Water Districts and Sanitary Districts. Facilities operated by these agencies may include storm and sanitary sewers, field tiles, water mains, and street and traffic lights.

Certain utilities which tend to parallel or be adjacent to railroad rights-of-way are: petroleum pipeline, water transmission lines, sanitary sewer interceptors, fiber optic cables and railroad signal wires.

A number of private utilities are also found in the Metra service area: Commonwealth Edison Company (ComEd) provides electrical service for most of Metra's facilities; however, there are exceptions in areas which contain both ComEd and local electric services. Among these exceptions are the municipalities of Naperville, Geneva and Glencoe. Northern Illinois Gas (NiCor) has gas pipelines within the suburban portion of the area serviced by Metra, but other gas utilities providing service are North Shore Gas and People's Gas. Ameritech provides phone service for the Chicago metropolitan area, but other telephone companies such as AT&T and Sprint have facilities throughout the area.

The identification of all of these utilities is of major importance because the existence may restrict the use of a site for the project. Determining the existence of utilities can usually be accomplished by the following steps:

- Contact the local community to determine which utilities serve the area and which may be located within the project vicinity. If the site is on railroad property, also contact the Real Estate/Lease Department of the railroad.
- Review available documents such as previous plans and plats of survey to identify easements.
- Conduct a site survey for visual identification of possible utilities.
- Contact all utilities suspected to be in the project area and request that information on their facilities be marked on a preliminary plan of the project.
- Determine the agency that has jurisdiction of adjacent roadways and contact accordingly. Permitting, bonding, insurance, and design requirements should be determined.



- When possible, have all pertinent utility companies expose their underground facilities during the design phase so that exact vertical and horizontal locations can be determined (contact J.U.L.I.E. and D.I.G.G.E.R. as appropriate)
- The designer should coordinate with ComEd for electric service. This should be done early in the design phase, preferably shortly after the survey has been done and potential locations for the electrical control cabinets have been identified.

During the various design stages copies of the plans should be transmitted by the Consultant to all involved utilities and agencies. Keep records of all communications.

## 2. GEOTECHNICAL

Before the initial design activities for the parking lot may begin, the engineer must have a reasonably accurate concept of the existing surface and subsurface conditions and how these conditions will affect the design and construction aspects of the project.

The following list contains potential sources of information for determining and assessing the soil conditions at the site prior to conducting a detailed soil investigation.

Site visits

Aerial photographs

Agricultural maps and soil surveys

United States Geological Survey (USGS) maps

Illinois State Geological Survey (ISGS) maps - Geologic Materials to a Depth of 20 Feet

Soil boring information from nearby developments

Experience with nearby parking lots and construction projects

Historical experience from municipal engineers and construction inspectors

FEMA mapping, National Wetlands Inventory (NWI), Hydrologic Atlases (HA), ADID Wetlands Inventories, and local (e.g. Lake County) wetland inventories.

Soil borings should be performed for most projects. Soil conditions can vary widely in their engineering characteristics and properties. The engineer should obtain sufficient information that will permit the existing subsurface conditions at the site to be well defined. For small projects without substantial earthwork or structural foundation requirements, it may be appropriate to use available soils information. An investigation should normally be performed and any decision not to perform a soils investigation should be based on the engineer's understanding of the site and the complexity of the project.

The number of borings in reference to the size of the proposed parking lot can be estimated as follows:



Recommended Number of Borings	Number of Proposed Parking Spaces
4	1-100
6	100-300
8	300-600
10	600-1000
12	1000-1500
14	1500-2000

If erratic or highly variable conditions are expected, additional borings may become necessary. A minimum of four borings is recommended since the cost of mobilizing equipment and personnel to a site makes up a majority of the expense in performing soils investigations for smaller project sites. The prior use of the land may dictate the level of investigation. For example, if the land had previously been a farm field, a boring in each corner and one in the center, supplemented by soil probes at 300' intervals may be adequate. If the initial borings are inconsistent, more borings may well be necessary.

The minimum depth of the soil borings should be 15 feet below existing grade. The maximum boring depth should not exceed twenty feet below existing grade except if unusual soil conditions dictate otherwise.

The rate of soil sampling, based on boring depth, should be at 2.5 foot intervals to a depth of 10 feet below ground surface and at 5 foot intervals thereafter. Split barrel sampling procedures (ASTM D-1586) should be employed for non-cohesive and miscellaneous fill materials. Shelby tube sampling procedures (ASTM D-1587) should be utilized where cohesive soils are encountered.

Tests should include (among others):

water content tests for non-cohesive soils and density, water content and unconfined compressive strength or penetrometer tests for cohesive soils. California Bearing Ratio (CBR) tests should be performed when required by local regulations or when parking lot sizes exceed 200 spaces. Plasticity index  
Sample size gradation

A subsurface investigation report should be performed under the direction of a Registered Professional Engineer and should include the following<sup>1</sup>:

- Boring logs with soil classification and laboratory test results
- Earthwork or site grading recommendations
- Groundwater condition
- Recommended pavement designs
- Recommendations for treatment of any unusual soil conditions

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<sup>1</sup> See e.g. Geotechnical Manual, Illinois Department of Transportation



B. STALL DIMENSIONS AND LAYOUT

The parking stall and module (the module is defined as the combined dimension of two parking stalls and the aisle between them) dimensions are related to the type of parking, the rate of turnover of parking spaces and the familiarity of users with a particular facility. In the case of commuter parking facilities, several salient features should be noted:

Except in rare instances there is little turn-over of spaces; a vehicle is parked for the from morning rush hour to evening rush hour. Most commuters become creatures of habit, utilizing the same train each day. Infrequent users are rare except in unusual circumstances such as unseasonable weather or long-term disruptions to alternative commuting modes. Many commuter lot users will routinely seek the same space or area in a particular section of the lot. Regular users become highly familiar with lot layout and operation. Because of these conditions, special consideration can be given to providing spaces at or near the minimum dimensions for efficient operation. This will increase the flexibility of the lot layout and generally maximize the number of spaces that can be provided in a given land area.

With such a design standard, the following minimum module widths are recommended based on a basic stall width of 8'-6":

Parking Angle	Stall Length Perpendicular to Centerline of Driving Aisle	Width of Driving Aisle	Minimum Module Width
45° (one-way)	17'3"	12'6"	47'
60° (one-way)	18'6"	16'	53'
75° (one-way)	19'	19'	57'
90° (two-way)	18'	22'	58'
0°	9' min.	24'	22'

Geometry for intermediate parking angles can be interpolated but there is little advantage gained in striping at odd angles.

The dimensions shown assume parking lot conditions without physical restrictions. In those instances where positive vehicle restraint is not provided, vehicles occasionally pull far into the stall affecting the aisle width in the adjacent module. This can be a particular problem in the Chicago area when space markings are sometimes obscured by snow. Therefore, when a curb, wall or other physical restraint is provided at each parking space, the aisle width (and therefore the resulting module) can be reduced by one foot.

To maintain the standard comfort level with wider stalls, the module width can be reduced by three inches for each additional inch of stall width up to a maximum of six inches. Stall widths greater than minimum will provide a greater level of comfort with the module shown.

Figures A-1-4 provide a number of commonly occurring dimensions needed for designs. These are regarded as a minimum dimensions required for safe and efficient operation of a typical commuter parking lot. Where local requirements may exceed these dimensions, every effort should be made to gain compliance with the value contained herein as a means of improving the space supply characteristics of a given lot.

C. VEHICULAR AND PEDESTRIAN ACCESS CONSIDERATIONS



The main function of a commuter station parking facility is to safely and quickly move people and vehicles. For this reason, the location of the access points to and from the parking lot and their effect on traffic and pedestrian flow needs careful design consideration. Some of these design considerations are listed below:

1. ADJACENT ROADWAYS

The greatest effect that adjacent roadway operations will have on commuter station parking lot design is the location of the access drive(s). The placement of any access point onto an adjacent street should be based on the capacity of that street to carry the added traffic generated by the commuter facility.

When designing the access location, external factors to consider are: adjacent roadway level of service; distance to nearest intersections (signalized or unsignalized), ingress and egress points of adjacent land uses, existing curb cuts, location of access points of facilities opposite the proposed facility, physical features of the adjacent roadway, such as width and terrain, the operating speed on the adjacent roadway, and one-way streets.

2. EXTERNAL FACTORS

Avoid access onto roadways which are operating at a level of service lower than C. (See Highway Capacity Manual for criteria relating to the determination of the level of service.) Locate access points at least 150 feet from public intersections and other ingress and egress points, if possible or align the access point to become the fourth leg of a "T" intersection. Use existing curb cuts when possible. If there is a frequently used access point located opposite the proposed site, consider aligning the commuter lot access opposite the existing access point. This may be required by local or state agencies having jurisdiction of the roadway. Allow for adequate vehicle turning movements onto adjacent roadways without forcing the vehicles into the adjacent traffic lane. Design criteria for adequate turning radii should be in accordance with IDOT standards. The following is a tabular excerpt based on the IDOT Handbook<sup>2</sup>:

	RURAL	URBAN
WIDTH OF DRIVE (At Property Line or Termination)	14' Min., 24' Max. 1-Way Operation 24' Min., 35' Max. 2-Way Operation	
RADII OF FLARES (For Bus Access see PACE Guidelines)	20' Min 50' Max	15' Min. 40' Max.
ANGLE OF DRIVE	45° - 90° for 1-Way Operation 60° - 90° for 2-Way Operation 90° Desirable	

Provide for adequate acceleration distances. If the adjacent roadway carries high speed traffic, acceleration lanes, deceleration lanes and turning lanes may be necessary. Design criteria should be based on the IDOT Bureau of Design and Environment Manual and the Bureau of Local Roads Administrative Policies.

<sup>2</sup> Handbook for the Policy on Permits for Access Driveways to State Highways, Illinois Department of Transportation.



If two or more access points are needed, the additional access point should, where possible, disperse traffic onto a second street. If any of the above criteria cannot be met, a traffic effect study should be considered.

### 3. TRAFFIC VOLUMES

Traffic counts can supply a great deal of the information needed to evaluate and design an access onto an existing roadway. Without this information, determining the number of access points needed and the best locations for those points is conjecture. Existing and projected traffic volumes can be obtained from a number of sources including: Chicago Area Transportation Study (CATS), Northeastern Illinois Planning Commission (NIPC), Illinois Department of Transportation, Counties, and Municipalities. Detailed daily traffic data may not be needed. However, at a minimum, peak commuter hour traffic patterns should be addressed. The designer should look at peak embarking and disembarking rates (because they may well be different) and size the lot accordingly. If the adjacent roadway has a high volume of traffic and fewer than two lanes in each direction, turning lanes may be needed to reduce traffic congestion.

### 4. COMMUTER PARKING FACILITY SIZE, SHAPE AND USAGE

The number of access points needed to provide adequate ingress and egress into a commuter station parking facility is based on factors related to the number of parking spaces provided, shape of the facility, expected usage (peak commuter hours), intended transit services (taxi, bus and similar operations), and adjacent roadway conditions.

In general, the number of access points required for a commuter station cannot be determined solely on the number of parking spaces. A commuter facility lot with only 50 spaces located in Central Business District (CBD) may need two entrances and exits due to its proximity to other traffic generators and lack of storage space for turning movements to and from the local street. However, a commuter parking lot with over a hundred spaces may operate quite efficiently with only one access drive due to a more remote location. The frequency of trains as well as the peak hour disembarking rate will also affect the design criteria.

The shape of the site will also influence the number of access points necessary. For example, an elongated parking lot may operate better with a one-way circulation and, therefore, need two access points. An oddly shaped site may have insufficient space for proper set backs or turning movement storage to operate with a two-way drive, but work well with two separate access points. (see page 8: INTERNAL CIRCULATION)

In order to determine whether one or two access points are needed, the designer needs to consider time delays and queue lengths. Two resources on time delay and acceptable queuing are the Highway Capacity Manual and the ITE Transportation and Traffic Engineering Handbook.

The proposed access locations should not increase congestion on the existing roadway network adjacent to the site. The commuter parking facility should be designed to keep queuing in the parking facility rather than on the adjacent roadway. This can be accomplished by avoiding conflicting movements near the access points. The locations of adjacent at-grade railroad crossings are a major factor when looking at possible queues, or the adequacy of storage space for right or left turn movements. Because most traffic generated by the parking facility will coincide with the arrival of one or more trains, conflicting traffic movements at or near track crossings should be avoided. As a general rule, there should be at least 150 feet between the access point and the at-grade crossing. The designer should avoid having vehicles queuing across railroad tracks while entering or leaving the proposed lot.



Adequate sight distance for at-grade railroad crossings and intersections should be provided in accordance with IDOT standards, the "Railroad-Highway Grade Crossing Handbook", Report No. FHWA-TS-86-215 and, the "Manual on Uniform Traffic Control Devices", (MUTCD). No guideline is all inclusive, and there will always be situations that are not covered by these guidelines which must be evaluated using good engineering judgment.

The access drive location will consequently affect design decisions for the internal circulation pattern. If the location of the access point has some flexibility, the internal circulation pattern may determine the optimum location of the access point.

## 5. INTERNAL CIRCULATION

In order to accommodate as many commuters as possible, the flexibility and additional parking spaces which can be gained by 90 degree parking should be considered for each site. The preferred design is for two-way aisles with 90° parking. This maximizes the number of spaces in a given area and it allows the commuter to drive directly to the parking space.

Two-way aisles are used with a 90 degree parking and one-way aisles are used with angled parking. A combination of angled and 90° spaces can also be used in order to accommodate as many parking spaces as possible. One method of combining both 90 degree parking and angle parking is designing the outer perimeter of the lot as two-way with 90 degree parking stalls and the interior as one-way with less than 90 degree stalls (Figure A-6). Special attention should be given to points of intersection when using combined flow because the potential for conflicts is increased.

Turning radii between aisles should be wide enough to allow for a fluid movement. The turning movements should be designed based on the size of the largest vehicle anticipated to use the facility. For internal circulation in the lot use the AASHTO Passenger Car (P) as the design vehicle. For areas where busses are expected, use the BUS design vehicle. Turning templates should be used to check turning movements at the entrances, exits, and internal circulation paths.

If bus drop-offs are anticipated, the internal circulation should be designed to avoid routing of the bus through any of the aisles. Buses should be given a clear ingress and egress route which does not obstruct the flow of commuters on foot or in vehicles. The PACE Development Guidelines should be referred to when designing a commuter lot serviced by buses.

Whenever possible, storage space for queuing near the access points should be planned for. This is best accomplished by avoiding any sudden or sharp turning movements near the access drives. A minimum of 80 feet should be provided at each access drive for queuing.

The layout of the parking lot should consider snowplowing, sweeping and maintenance operations. Consider using depressed curbs in corners to allow snow to be pushed off the pavement.

See Section IV. LIST OF FIGURES for a number of possible layouts.

## 6. PEDESTRIAN FLOW

Pedestrian movement is also an important factor to consider when locating the access points. This is especially important if the proposed parking lot is not located adjacent to the commuter rail station (note that the maximum walking distance is to be 1,300 feet). Pedestrian flow between the parking lot and the commuter station should be designed to avoid conflict with vehicles



turning in and out of the area. Other pedestrian-vehicular conflicts which need to be considered are: local pedestrian patterns (i.e. commuters who walk from nearby housing or apartment complexes), bus stops, drop-offs areas (See Kiss n' Ride section) and schools. Pedestrian crosswalks, signage and pedestrian signals may all need to be considered in areas with heavy pedestrian traffic areas.

Pedestrian circulation in parking lots should be provided by marked aisles. Additional provision for pedestrian circulation by means of designated walkways may be required where aisles exceed 300 feet in length and interfere with the direct path of pedestrians to and from the stations or train platform areas. Such a requirement will also serve to minimize the potential hazard of pedestrian traffic in aisles. Designated pedestrian walkways must meet all handicap design criteria. (See Section: II.D. OTHER PARKING FACILITIES)

The lighting design and pedestrian flow patterns or designated pedestrian walkways should be coordinated to complement each other. This is especially important at points where pedestrian movements and vehicular movements are in conflict. (See Section II.F. LIGHTING CONSIDERATIONS)

Sidewalks intended for use by the general public should have a minimum width of five feet. The minimum width of a sidewalk adjacent to a bus or taxi loading zone should be 12 feet.

Pedestrian barriers should be provided whenever it is desirable to discourage or prevent pedestrians from entering locations where unusual hazards or unreasonable interference with vehicular traffic would otherwise result. Pedestrian barriers may consist of railings, fences, walls or landscaping. These barriers should be used with sight distances in mind for both pedestrian and vehicle movement. The minimum horizontal clearance between a barrier and vehicle should be two feet.

Handicap accessibility must be considered. The designer should avoid creating barriers to use. See e.g. ADA Standards for Accessible Design, The Illinois Accessibility Code, and the ADA-TA technical assistance updates available from Disability Rights Section, Civil Rights Division, United States Department of Justice.

#### D. OTHER PARKING FACILITIES

Special use facilities which should be considered in the development of plans for a parking lot project include handicapped parking and access, bus drop-off and loading, Kiss 'n Ride areas, motorcycle parking, and bicycle parking. The general recommendation for the special use facilities is shown in the following table:



Access Mode	Percent of Riders <sup>3</sup>	Spaces Recommended
Drove & Parked-Carpool	3%	Per Request for Services with goal to maximize land use
Drove & Parked-Alone	52%	
Rode in Carpool	3%	-0-
Kiss 'n Ride	15%	15% of the highest total evening trains disembarking in a 15 minute period
Rode Bus	5%	Contact PACE
Motorcycle	<1%	0-10
Bicycle	1%	1-2 racks included with the Depot
Walk	21%	-0-
Rapid Transit	<1%	-0-
Taxi	<1%	0-2, usually use Kiss 'n Ride in lieu of a separate taxi stand
Other	<1%	-0-

The Project's Request for Services, CATS Guidelines and handicap access laws address these requirements in detail. Exact numbers of spaces required will vary on a per station basis. All parking areas, especially special use areas should be clearly defined through signage, pavement marking, location and configuration. The sign types can be found in Sign Cell Libraries. They are described in the Metra CAD/D Manual.

## 1. HANDICAP PARKING

Handicap spaces shall be provided in all parking lots, whether new designs, additions or existing lots. In instances where a parking lot is being restriped, enlarged or an additional parking lot is proposed, the restriping of existing regular spaces closest to the station's handicap access points shall be performed to provide the additional required handicap spaces nearest to their point of use. Locate the handicap spaces nearest their point of use to minimize travel distance. Remove any barriers to the handicapped between the handicap parking spaces and the depot and platforms to provide an accessible pathway. This provision should be extended to include an accessible pathway for all parking spaces where possible. Locate the handicap parking spaces such that driving aisles will not have to be crossed.

## 2. BUS DROP-OFF

If there is to be a bus stand where buses will idle for any period, a portland cement concrete wearing surface should be utilized to prevent pavement degradation from oils. "PACE Development Guidelines" should be reviewed for design factors which may affect the parking lot design. The pavement section and turning radii should be verified, and a separate drawing containing the vehicle maneuver paths prepared, for aisles used by buses. When buses share an aisle, adequate pavement must be provided for parking aisle, through lane, and bus lane. Buses should not, as a rule, be required to travel through parking aisles.

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<sup>3</sup> Market Analysis of Access Travel to Metra Suburban Rail Stations, Midwest System Sciences, Inc.



### 3. KISS 'N RIDE

Kiss 'n Ride provisions should be considered only for parking lots adjacent to commuter stations. The average number of spaces provided should be approximately 15% of highest evening train disembarking within a 15 minute period. The number of spaces needed may differ due to the different characteristics of the riders at each station and the station's location. Existing lots adjacent to the platforms which are to be expanded or to be supplemented with additional separate lots should be observed for the current demand for Kiss "n Ride spaces. There are two designs normally used for Kiss 'n Ride facilities. Which one to use depends on the size and shape of the site and area which is available.

#### a) KISS 'N RIDE DROP OFF LANE OPTION

The first option is a drop-off lane, apart from the driving aisles, which parallels the platform or sidewalk leading to the platform (Figure C-1). The direction of travel should allow the passenger side of the car to face the sidewalk or platform. This style is best for drop-offs, but should be reviewed to allow for adequate storage of cars awaiting the arrival of trains on existing or estimated demand for this type of space.

#### b) SHORT TERM KISS 'N RIDE PARKING OPTION

A second method is to provide a defined area of parking spaces for limited time parking (Figure C-2). The Kiss 'n Ride spaces should be a minimum of 9 feet wide to facilitate a rapid turn over. With this option, if parking demand increases or if the estimated volume of Kiss 'n Ride users is not attained, these spaces can be converted to all day parking. Therefore, designs should take this possible conversion into account. A combination of the two methods provides the most versatility allowing for quick drop offs and pick ups as well as allowing for short waits or driver/passenger shifts.

### E. PAVEMENT DESIGN

The bituminous materials in a flexible pavement, specifically the binder and surface course, provide the riding and wearing surface. The binder and surface course must be of a sufficient thickness to reduce the fatigue stresses at the base course interface layer.

Examples of typical minimum pavement sections (Figure B-1) where either the IBR is a minimum of 3.0 or the CBR is a minimum of 5.0 are:

#### 1. PAVEMENT STRUCTURE

##### a) MAIN PARKING LOT PAVEMENT:

- 1 ½ inches Bituminous Concrete Surface Course
- 1 ½ inches Bituminous Concrete Binder Course
- 10 inches Aggregate Base Course, Type B or
- 4 ½ inches Bituminous Base Course



b) BUS BAY:

- 8 inches jointed, reinforced P.C.C. Pavement (PACE Standard
- 4 inches Aggregate Sub-Base, Type B

Pavement sections and materials other than those listed above may be used, considering factors such as actual bearing capacity of subgrade, availability and cost of materials, and experience with other lots in the area.

Major pavement typical sections are composites based on sections previously utilized on Metra or IDOT/FTA commuter lots and sections specified in local municipal codes.

Geotechnical Fabric should be used whenever the subgrade silt content exceeds 10% or the IBR is less than 3.5.

## 2. PAVEMENT SPECIFICATIONS

Materials and construction methods shall be in accordance with the requirements of the Illinois Department of Transportation (IDOT) which are contained in the latest addition of the Standard Specifications for Road and Bridge Construction.

Pavement Materials Properties should meet the following minima:

1. Materials and construction methods shall be in accordance with the requirements of the Illinois Department of Transportation (IDOT)

- 2. Bituminous Concrete Surface Course, Class I and Bituminous Concrete Binder Course:
  - a. Asphalt Cement grade AC-10b. Marshall Stability 1700 lbs. Minimum at 140°F. Recycled Material for Binder Course may be used (Specify the higher penetration and Marshall Stability to provide a more rigid pavement surface to prevent indenting by the point loadings of parked cars).
- Aggregate Base Course, Type B:

IDOT gradation CA-6, Crushed  
(Specify crushed aggregate to provide a stronger pavement through greater aggregate interlock).

- 4. Aggregate Sub-Base Course, Type B:
- IDOT gradation CA-6, Crushed

(Specify crushed aggregate to provide a stronger pavement through greater aggregate interlock).

5. Bituminous Base Course:

Marshall Stability 1500 lbs. minimum at 140°F

6. Portland Cement Concrete:

- a. 5-8% air entrainment
- b. 3500 psi minimum 14 day compressive strength



## F. LIGHTING CONSIDERATIONS

Prior to beginning the design of the lighting system, several considerations should be investigated. The maintaining agency should be contacted and the following issues explored:

- Is there a standard luminaire or light pole utilized by the community?
- If there is not a standard light pole, what is the maximum mounting height that the community can reach for maintenance with their existing equipment?
- What types of circuits are normally used in the community (i.e., two- or three-wire, 120/240V or 240/480V, 20 amp or 30 amp, etc.)?
- Is there a maximum allowable level for spillage of light onto adjacent properties? If not, the designer should endeavor to limit light pollution onto other properties, especially if these properties are residential.

The power company servicing the area should be contacted to verify the following:

- The nearest service location where the voltage being proposed for the lighting system is available.
- Any changes necessary for providing service (i.e., transformers, line extensions, etc.).
- Any meter requirements for installation.

The design of the system should consider the features of the luminaire and light source. Of the light sources available, in general, high pressure sodium vapor is the most desirable due to its energy efficiency along with minor loss of color observation ability. Much less desirable is mercury vapor which operates at approximately half the energy efficiency of high pressure sodium and should not be used unless it is required by the community. Low pressure sodium vapor is unacceptable, with the exception of its use to call attention to a railroad crossing, as the colors of the parked vehicles cannot be determined under its monochromatic light.

The standard luminaire is a flat-bottom, sharp cut-off, shoe box style luminaire known for its control of the light distribution and non-glare features. Other styles of luminaires can be utilized; however, the following should be considered:

- Cost per luminaire and efficiency of light distribution,
- Degree of light pollution onto adjacent properties and into the air,
- Mounting height combined with light distribution to avoid blinding motorists with glare.

The luminaire's light should not be visible to the locomotive's engineer and possibly be mistaken for a "green ball" signal or the glare blind the Engineer. The normal design lighting intensity should be a minimum of 1.0 average maintained foot-candles as measured at pavement level. There should be a higher intensity at major points of conflict (e.g., any intersections of driving lanes, exits and entrances, pedestrian crossings of traffic lanes and at any fare collection points). The uniformity ratio (average to minimum) should not be greater than 3 to 1. A computerized photo metrics plot of the pavement lighting levels of the proposed system should be generated to verify the design.

The control of the lighting system can be by photocell, timer or combination of the two. The photocell is the preferred control because it adapts to the seasonal daylight variations and to overcast skies. The economics of the photocell system should compare:

- the cost of providing photocells at each luminaire,
- a single photocell operating either several luminaires or
- an electrically held contactor for the entire system.



The use of a timer should be considered on lots having six or more luminaires to reduce energy costs and extend lamp life by turning off all but security lighting after the last train. Timers should be of the 7-day astronomical type with a back-up system for power outages.

The designer should consider the use of small boxes mounted on the light poles to house controls rather than the more costly ground mounted control cabinets. When timers and multiple circuits become necessary the designers should determine if cabinets are warranted. If the lighting for on-street strip parking also functions as street lighting, it should be controlled by a photocell and comply with the requirements for street lighting for the street area in question.

A METRA standard pole and luminaire has not been developed in this manual for several reasons. At the present, time each local municipality, rather than Metra, maintains the lots and its and as such local requirements are to be followed. Color and design compatibility with adjacent lighting and station is another factor. A concluding factor is the volatility of the market with manufacturers improving photometric capabilities, developing aesthetic designs and changing price system-wide .

## G. STORMWATER DRAINAGE AND DETENTION

among others

Positive stormwater drainage is a major factor in the successful design of a surface parking lot.

To assure positive drainage of

the proposed lot, pavement slopes should range from a minimum slope of 0.50% to a maximum slope of 5.00%, with a 2.00% slope being desirable.

To assure a stable sub-grade for the pavement, underdrains should be provided whenever aggregate base courses are proposed on relatively impervious (clay or silt) subgrades or whenever the water table is within three feet of subgrade. The draining water from the sub-grade and base course reduces the risk of damage from frost heave or loss of sub-grade support to the pavement as result of saturation. Underdrains can be as simple as several short lengths (i.e., 5-10 feet) extended from drainage structures, or more complex if existing conditions warrant longer lengths.

In terms of sizing the storm sewer collection system all components should be designed for the storm frequency required by the local community.

- Sheet drainage of the lot is usually the most economical approach, provided the run-off does not attain a volume or velocity which would cause flooding or erosion. There are several negative factors to be considered prior to specifying sheet drainage. If there is high ground which drains toward the proposed lot, the surface flow will tend to enter into the aggregate sub-base or base course at the edge of pavement, causing the subgrade to saturate and weaken. This increases the susceptibility of the pavement structure to freeze/thaw action. Where there is a relatively long flow path across a lot in winter, snowmelt from the higher side will tend to refreeze on the pavement and during heavy rains may tend to erode the downstream edge of pavement. Another drawback for sheet drainage is the use of wheel-stops instead of Portland Cement Concrete (P.C.C.) curbing around the lot perimeter. Wheel stops are difficult to clean around, are displaced by snowplowing, and if located too near the edge of pavement, will tend to cause settlement and deterioration of the edge of pavement.

During the design process, the existing drainage patterns must be identified and maintained. A topographic survey should be performed with the limits extended a minimum of 20 feet beyond the proposed improvement area to document drainage patterns both to and from the site. The



drainage plan developed should maintain drainage from adjacent higher properties by rerouting around, passing under, or passing across the proposed lot. This rerouting should be accomplished economically and should not create a flooding or icing condition on the proposed lot. The drainage plan should be reviewed in order to guard against flooding or erosion of areas on or adjacent to the proposed parking lot.

Stormwater detention should be provided, if required by local ordinance. The most often used methods of providing storm water detention are construction of separate grassed or paved basins, placement of underground oversized pipe(s) or chambers, and containment on the surface of the proposed parking lot. A separate stormwater detention basin outside the parking area will reduce the space available for parking. Therefore, the projected need for spaces must be compared to those which will be provided after the reduction in spaces available occurs due to the detention basin. An underground stormwater storage system may maximize available space, but at a high cost. This option should be carefully examined at the concept design stage. Storage of stormwater on the surface of the parking lot is only recommended if no other storage area is available. This is due to the fact that it places the unattended vehicles at risk, inconveniences users, and destabilizes the pavement structure by saturating the sub-grade. For parking lot storage, a maximum ponding depth of 1.0 feet should be used and be located outside of the driving aisles.

During development of the site's drainage system, existing floodplains and/or wetlands impacted by the proposed parking lot should be noted and mitigation efforts coordinated with the drainage design.

The design of the project should include provisions for the control of soil erosion and sedimentation. The provisions of the Illinois Environmental Protection Agency's (IEPA) "standards and Specifications for Soil Erosion and Sedimentation" dated October 1987, or the Association of Illinois Soil and Water Conservation District's (SCS) "Procedures and Standards for Urban Soil Erosion and Sedimentation Control", shall be employed in the design of the project. Some counties have erosion control ordinances and those shall be followed, if applicable.

#### H. FEE COLLECTION SYSTEM

The optimal fee collection system will be the one which, at the conclusion of the design process, is the most economical to install and to maintain while at the same time serving the type of user (i.e., monthly or daily) efficiently. The following table presents various types of parking controls which may be considered:



PARKING CONTROL ALTERNATIVES<sup>4</sup>

CONTROL METHOD	ENFORCEMENT	COMMENT
1. Monthly Permit		
a. Parking permit purchased monthly; valid for specific facility.	Ticket or Towing for vehicle without appropriate identification.	Simple low-cost method of control.
b. Card-access system with entry/exit control gates; card inserted into reader raises gate to enter or leave.	No enforcement required	Relatively expensive; requires card reader and gates. Higher maintenance
2. Daily Fee		
a. Parking meter	Meter enforcement personnel check meters; issue tickets for expired meters; use municipal enforcement personnel	Simple method of control; up to 12-hour time limit desirable. High initial cost and requires maintenance system and coin collection personnel.

---

4



b. Coin box spaces are numbered; patron pays for that space by inserting (Coin, Bill, or token into machine. An electronic fare box can also accept a prepaid debit card and issued printed date-time-space no. receipts.

Enforcement personnel check for non-payment  
Simplified enforcement -- once in the morning after most commuters have left.

Medium price initial cost.  
One source of money collection.  
Less staff time required to enforce and collect lot fees than individual meters.



c. Exit cashiering; pay cashier for time parked; based on ticket obtained when entering facility

None -- checked at exit cashier

Most expensive Requires extended exit time to empty facility.

For the size and operation of Metra surface commuter parking lots, a cashier should not be considered nor should a gate control due to costs and length of time required to enter or exit. The fee system should be coordinated with the maintaining and enforcing agencies.

I. GUIDANCE AND REGULATORY SIGNS

Signs for the commuter parking lots should follow the "Manual on Uniform Traffic Control Devices" (MUTCD) as adopted by the State of Illinois, the Metra sign program "Sign Specification Manual", the Illinois Department of Transportation "Standard Specifications for Traffic Control Items" and the typical sign details which included in the appendix as figures 4 through 21. The typical signs are provided as a guide and factors such as safety, lot size, traffic flow, parking type, aesthetics and cost should be considered.

1. GUIDE SIGNS

a) EXTERNAL:

The main entrance(s) to the Metra commuter parking lots should be provided with an entrance sign similar to Sign Type 1B (all Sign Types refer to Metra Technical Services CAD/D Manual.). The entrance sign should contain the following information:

- o :
- o

Metra logo  
Station name (If the community name differs from the station name a fourth sign line for community name may be added)

Commuter parking lot name or designation

The entrance sign shall have a "Metra Blue" (PMS 301) background color and the lettering color shall be white. Along major access roadways, highly visible lots may warrant a more elaborate sign. "Park and Ride" guide signs conforming to Section 2D.40 (Figure D-2) of the MUTCD shall be used to direct commuters from nearby arterial streets or expressways. Any such signs used on limited-access highways shall conform to Section 2E.33 (Figure 2E-16) of the MUTCD. On Illinois Department of Transportation maintained roadways the guide signs, if warranted, will be erected by IDOT upon request. The need for guide signs should be reviewed with the municipality.

b) INTERNAL:

Appropriate guide signs for traffic flow and parking lot usage must be provided. Examples would be exclusive bus drop-off lanes and kiss-and-ride areas. Signs should also be posted at appropriate locations indicating different types of parking. Examples of this are permit parking, daily-fee (fare box) parking, handicapped parking and motorcycles or compact cars only parking. The Metra Technical Services CAD/D Manual contains both typical Sign Types and guidelines for locating those signs.

2. REGULATORY SIGNS

Any regulatory signs shall conform to the MUTCD.



### 3. SPACE NUMBERING SIGNS

Parking space number signs for fare box or permit parking may be either post-mounted or span-wire mounted. Typical details are shown in the Metra standard drawing: Park-Fee.dgn. Span-wire mounted signs shall not be attached to light poles. Modifications may be made to suit local conditions. An example of would be a desire to match existing signs or for aesthetic reasons. Painted space numbers on the pavement in lieu of signs shall not be used.

### 4. HANDICAPPED PARKING SIGNS

Each handicapped parking space shall be equipped with a sign that complies with the ADA.

### 5. PLATFORM AND STATION SIGNS

All Platform and station mounted signs shall follow the Metra Sign Program which is contained within the Metra Technical Services CAD/D Manual.

### J. LANDSCAPING AND FENCING

#### 1. LANDSCAPING

Landscaping and fencing can soften the visual effect of a parking facility and help integrate and buffer this use with the surrounding land uses. It can also be used to control pedestrian movement. Landscaping of unpaved areas with plantings other than grass will only be included in a project at the municipality's request and with Metra's concurrence. The municipality must also agree to maintain the landscaping. The decision to utilize landscaping and fencing should address specific needs and requirements such as satisfying specific local ordinances. The landscaping elements should be both part of the overall design development and within budgetary restraints. The municipality will be expected to make a commitment to promote the survival, general upkeep and appearance of the plantings. The Contract Documents must clearly specify acceptable planting techniques, outline supervision, acceptance and guarantee of plantings, and require a specific post planting maintenance guideline to be prepared by the contractor for the maintaining agency's use.

#### a) PLANT MATERIAL

When selecting plants consider:

#### (1) NATURAL DURABILITY OF PLANTS INCLUDING:

- Hardiness to area
- Disease and insect resistance
- Adaptable to wet or drought conditions
- Tolerance to wind, ice and frost damage
- Tolerance to anticipated site specific factors including: auto exhaust, reflected heat from parking surface, and deicing compounds
- Soil pH effects from pavement limestone base course, and possible runoff of oil and pollutants from the pavement surface



- Restricted root zones in islands
- Physical damage from piling of plowed snow on or against plants

(2) SPECIAL VARIETY OF PLANTS INCLUDING:

- Low maintenance
- Thornless and non-fruiting are desirable characteristics
- Ornamental characteristics such as flowering and good fall odor
- Year round screening
- Leaf type and size to avoid clogged inlets
- Shallow rooted plants should be avoided
- Local availability and cost

(3) SIZE AND HABIT:

- Mature plant size should be considered so as not to restrict safe sight distances at entrance/exits and at vehicular-pedestrian intersections.
- Shrubs and hedges should not exceed 30" height at maturity, or be maintained at that height.
- Shade trees should be branched no lower than 7' at time of installation.

b) LOCATION

When determining the location of each plant, the designer needs to consider:

- Interference with vehicular and/or pedestrian visibility. The plantings should provide a sense of security and easy surveillance of the area.
- Interference with trains or the required railroad setbacks.
- Interference with light distribution from luminaries or with overhead wires.
- Shrubs should be selected so that mature height will not block signage.
- Mass plantings or planting in groups to maximize visual effect and reduce maintenance.
- Potential areas where plowed snow will be stored.
- Evergreen trees and bushes should not be planted within five feet of the back of a curb to minimize damage from road salt.
- Shrub plantings can direct pedestrian movement by providing a barrier.
- Landscaping of the pedestrian areas on the perimeter is preferred because it is easier to maintain than plantings in the aisles.
- When placing Screening plantings on the perimeter of site, there should be a minimum of three feet of open space, plus any vehicle overhang, to the property or setback line.

## 2. FENCING

Fencing is an alternative to plantings for screening and as a pedestrian barrier. The type of fence, material, height and extent of use is determined on a site specific basis. The decision to use fencing for a pedestrian barrier should be based on a need to protect or control. A screening fence should not obscure the site to the extent that public safety is at risk by creating hidden and obscured areas.



a) OPAQUE FENCING

Opaque fencing can serve as an alternate to landscape screening as illustrated in IDOT Highway Standard 2365.

b) ORNAMENTAL FENCING

Ornamental fence may be used in highly visible areas in lieu of a chain link fence. For an example, see Figure 24.

c) CHAIN LINK FENCING

Chain link fence should generally conform to IDOT Highway Standard 2168 except that it should be PVC-coated, brown in color and have a top rail and bottom tension wire.

Landscaping and fencing can be major expenditures, and the uses should be appropriate for the site. Low maintenance materials used wisely will keep landscaping and fencing from becoming detriments to the project.

K. SHELTER DESIGN AND CONSIDERATIONS FOR COMMUTERS

Shelter designs should comply with applicable building codes including Municipal, Federal, and Illinois Accessibility Codes.

In order to standardize the Metra shelters, they should be of a prefabricated design similar to those currently in use by METRAMetra, (See Standard Detail Sheet 1 for a typical shelter and shelter padMetra).

Glazing shall be mar-resistant polycarbonate MR-5000 coating with wrap-around neoprene gaskets (Note: refer to local ordinance for code compliance, especially fire codes on the use of polycarbonate walls and doors).

Shelters shall be provided with lighting such that the interior of the shelter is illuminated to a level of 5 foot-candles, measured at the center front of the shelter. A ground fault system shall be utilized and the metal shelter framing grounded.

Shelters that are adjacent to a station should be architecturally compatible with the station design.



### **III. PROJECT MANUAL AND PROJECT DELIVERABLES**

#### **A. PROJECT MANUAL**

The project manual should contain: the bidding requirements, contract forms and conditions and the specifications. For Metra let projects, the bidding and contract information shall follow Metra's contract requirements and the consultant should only supply the technical specifications and plan sheets. Individual communities may have a preference or requirement for the project manual, if letting the project themselves or if another funding agency is involved. The project manual should be reviewed carefully to protect the interests of Metra. The responsibility for a successful and safe project should be assigned to rest with full liability on the Contractor, not the Engineer, Owner, or Metra. The preferred format of the project manual is the Engineer's Joint Contract Documents Committee (EJCDC) or American Institute of Architects (AIA) "Uniform Location of Subject Matter and Information in Construction Documents" with its 16 division specification format. If the project is not being let by Metra, then the letting community or agency may use its own specific contract requirements. However, the basic format of the contract documents should be followed.

#### **B. PROJECT DELIVERABLES**

The project deliverables are determined and called out in the Parking Lot Design Request for Specific Services (RFSS). Some examples of these deliverables include:

- Plans: Drawings are submitted at the completion of each phase of the project.
- Checklists: Checklists are to be completed and submitted at the completion of the Schematic Design Phase, the Design Development Phase, and the Construction Document Phase.
- Specifications: Specifications are completed and submitted at the completion of each phase.
- Final Plans: The final Drawings are submitted to Metra in Mylar format as well as electronic format.

These are only general examples of deliverables required when completing a parking lot design. The Parking Lot Design RFSS should be referenced for a complete list of required deliverables for each phase of the project.

#### **C. PLAN FORMAT**

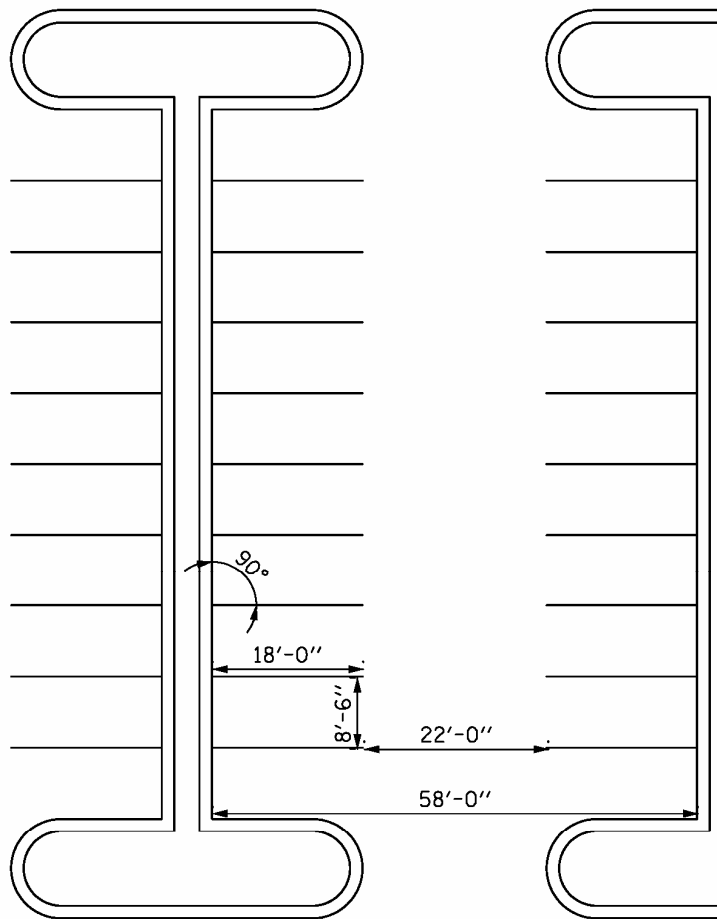
The format of the sheets and design conventions are set out in the Metra Technical Services Division CAD/D Manual.



#### **IV. LIST OF FIGURES**

- A. PARKING LOT CONFIGURATIONS
  - A-1 TYPICAL PARKING MODULE: 90 DEGREES
  - A-2 TYPICAL PARKING MODULE: 75 DEGREES
  - A-3 TYPICAL PARKING MODULE: 60 DEGREES
  - A-4 TYPICAL PARKING MODULE: 45 DEGREES
  - A-5 INTERNAL CIRCULATION TWO WAY
  - A-6 INTERNAL CIRCULATION COMBO ONE/TWO WAY
- B. TYPICAL SECTIONS AND DETAILS
  - B-1 TYPICAL-SECTION
- C. KISS-N-RIDE CONFIGURATIONS
  - C-1 TYPE A (PARALLEL)
  - C-2 TYPE B (CIRCULAR)
- D. SPECIAL SPACE CONFIGURATIONS
  - D-1 HANDICAPPED PARKING SIGNAGE DETAILS
  - D-2 BUS TURNING
  - D-3 BUS PARKING
- E. PARKING LOT SHELTERS AND FARE COLLECTION DETAILS
  - E-1 PARKING LOT SHELTERS AND FARE COLLECTION DETAILS
- F. TYPICAL DRAWING SHEET
  - F-1 TYPICAL DRAWING SHEET

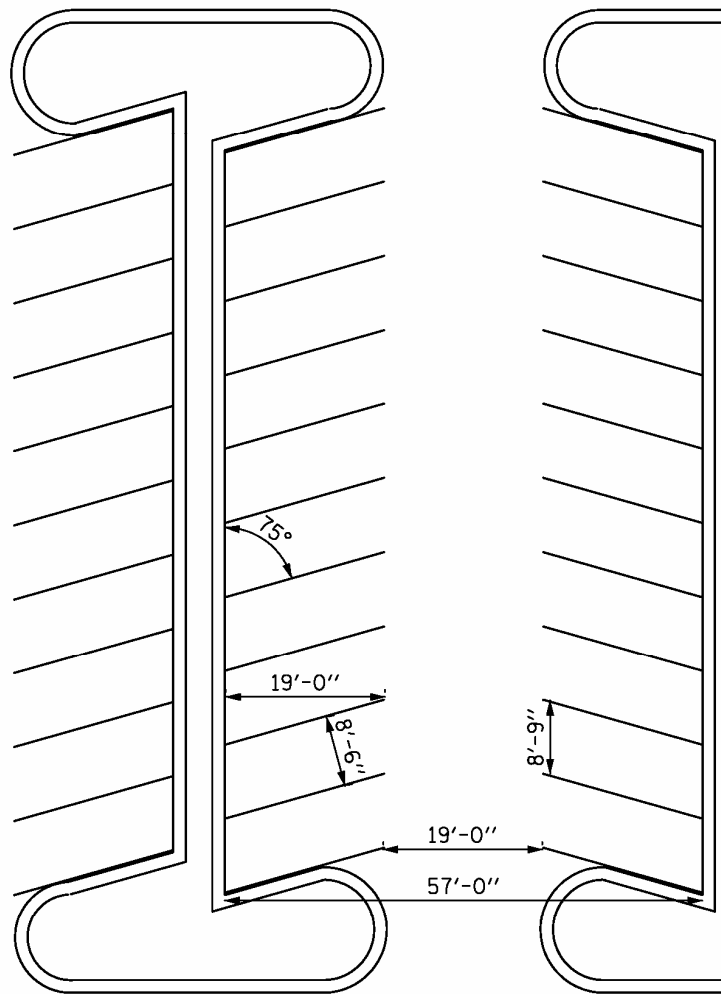
# TYPICAL PARKING MODULE: 90 DEGREES



STALL DEPTH	DRIVING AISLE WIDTH	STALL WIDTH ON ANGLE	MODULE WIDTH	REDUCTION IN MODULE PER INTERLOCK	OFFSET
18'	22'	8'-6"	58'	0	0

FIGURE A-1

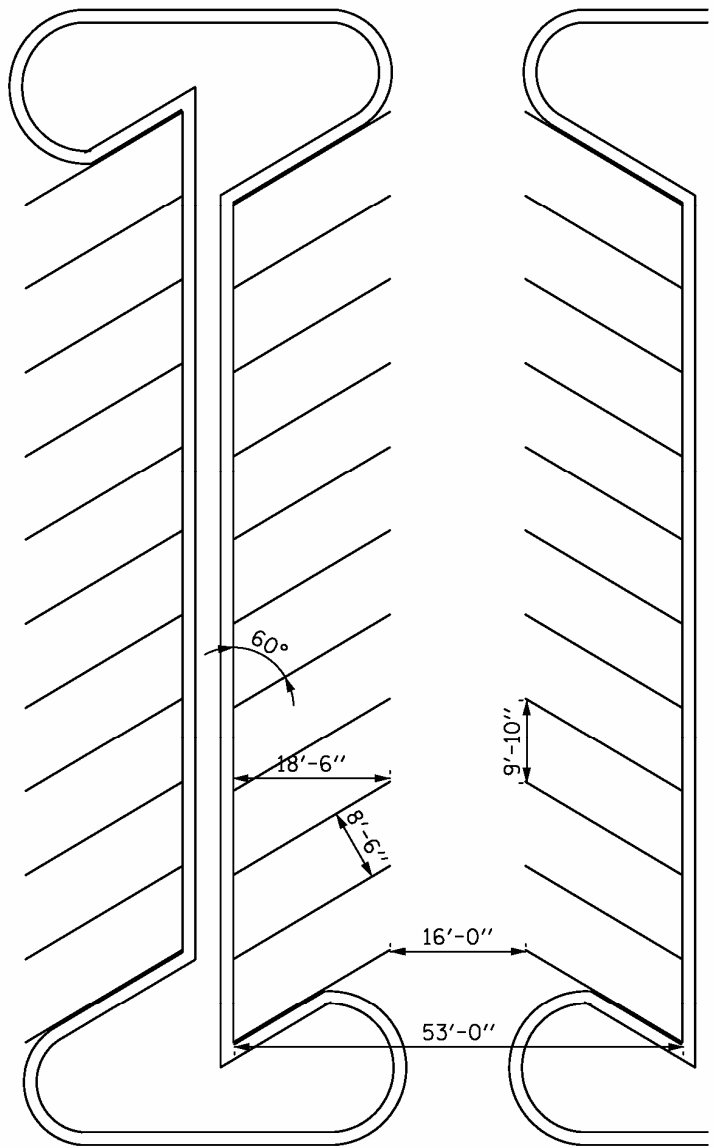
# TYPICAL PARKING MODULE: 75 DEGREES



STALL DEPTH	DRIVING AISLE WIDTH	STALL WIDTH ON ANGLE	MODULE WIDTH	REDUCTION IN MODULE PER INTERLOCK	OFFSET
19'	19'	8'-9"	57'	1'-1"	5'-1"

FIGURE A-2

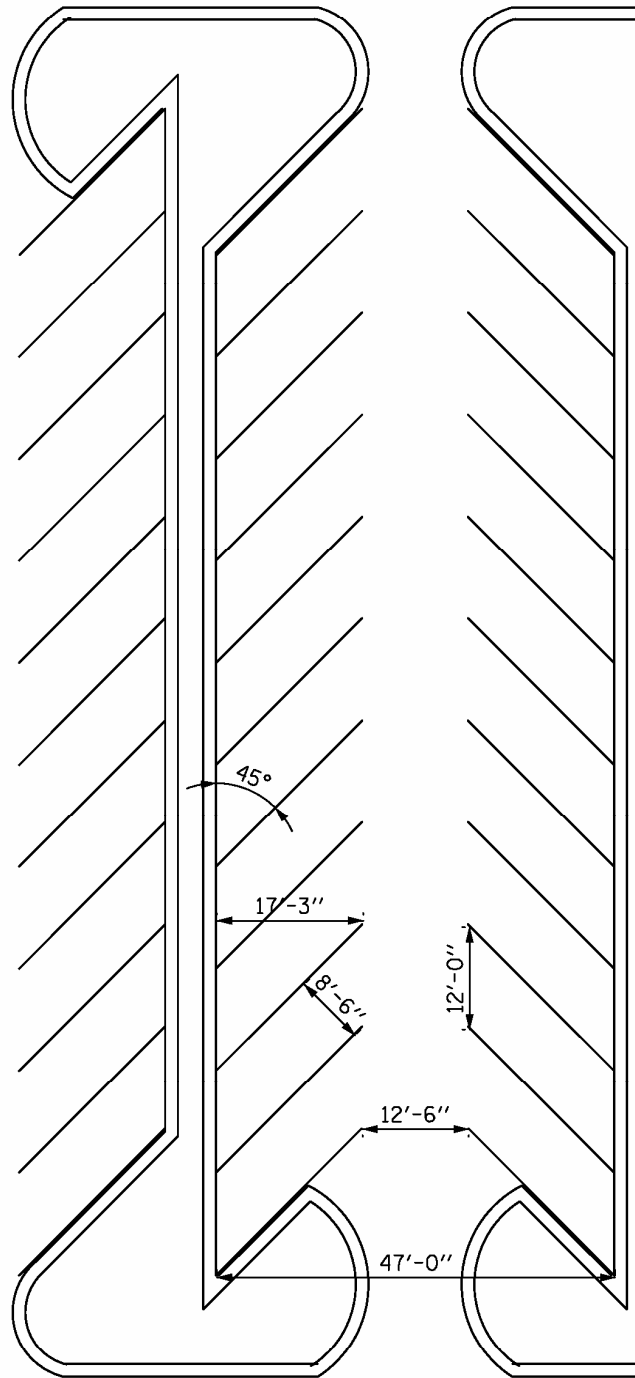
# TYPICAL PARKING MODULE: 60 DEGREES



STALL DEPTH	DRIVING AISLE WIDTH	STALL WIDTH ON ANGLE	MODULE WIDTH	REDUCTION IN MODULE PER INTERLOCK	OFFSET
18'-6"	16'	9'-10"	53'	2'-1"	10'-8"

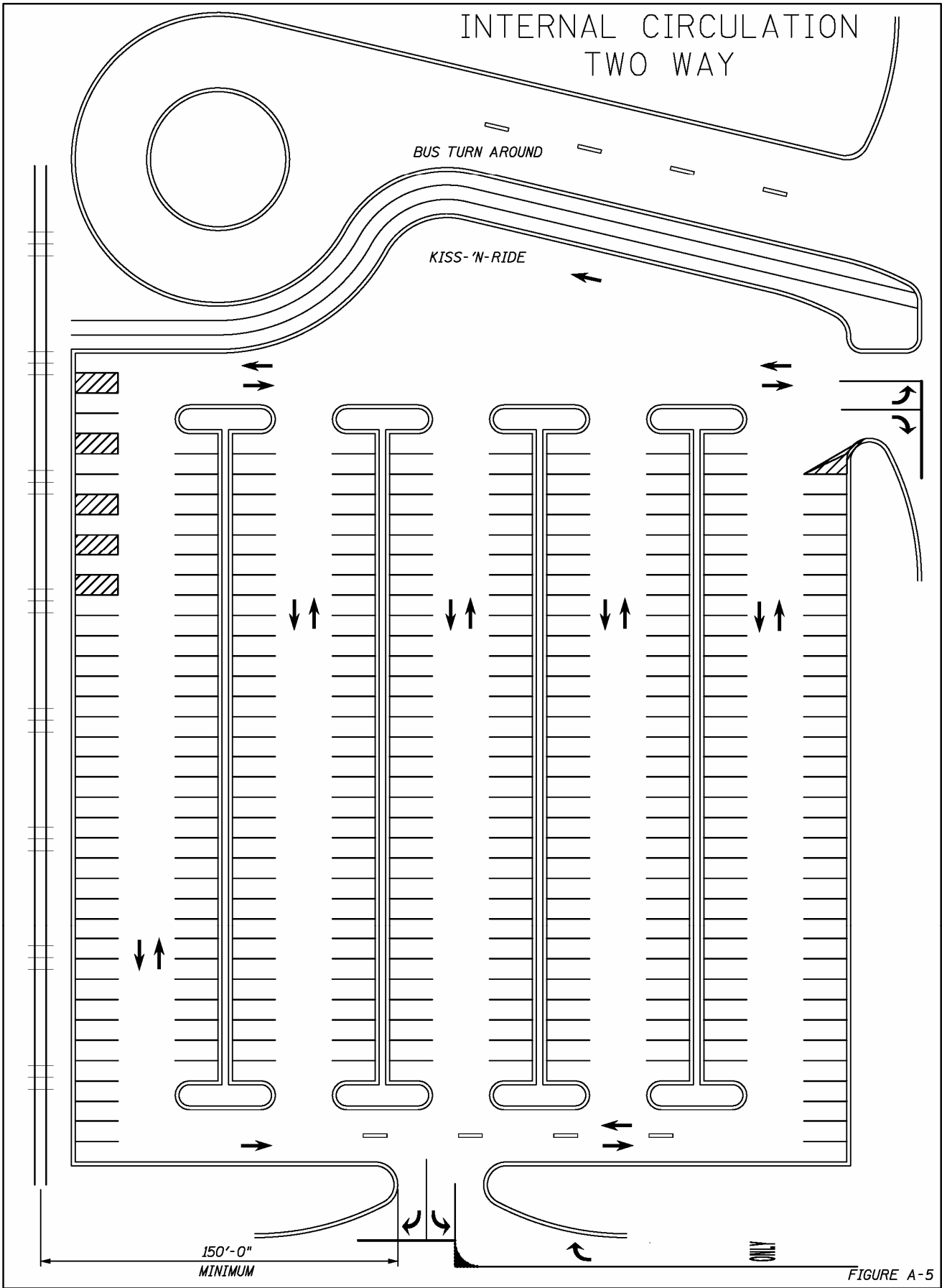
FIGURE A-3

# TYPICAL PARKING MODULE: 45 DEGREES



STALL DEPTH	DRIVING AISLE WIDTH	STALL WIDTH ON ANGLE	MODULE WIDTH	REDUCTION IN MODULE PER INTERLOCK	OFFSET
17'-3"	12'-6"	12'	47'	3'	12'

FIGURE A-4



INTERNAL CIRCULATION  
COMBO ONE/TWO WAY

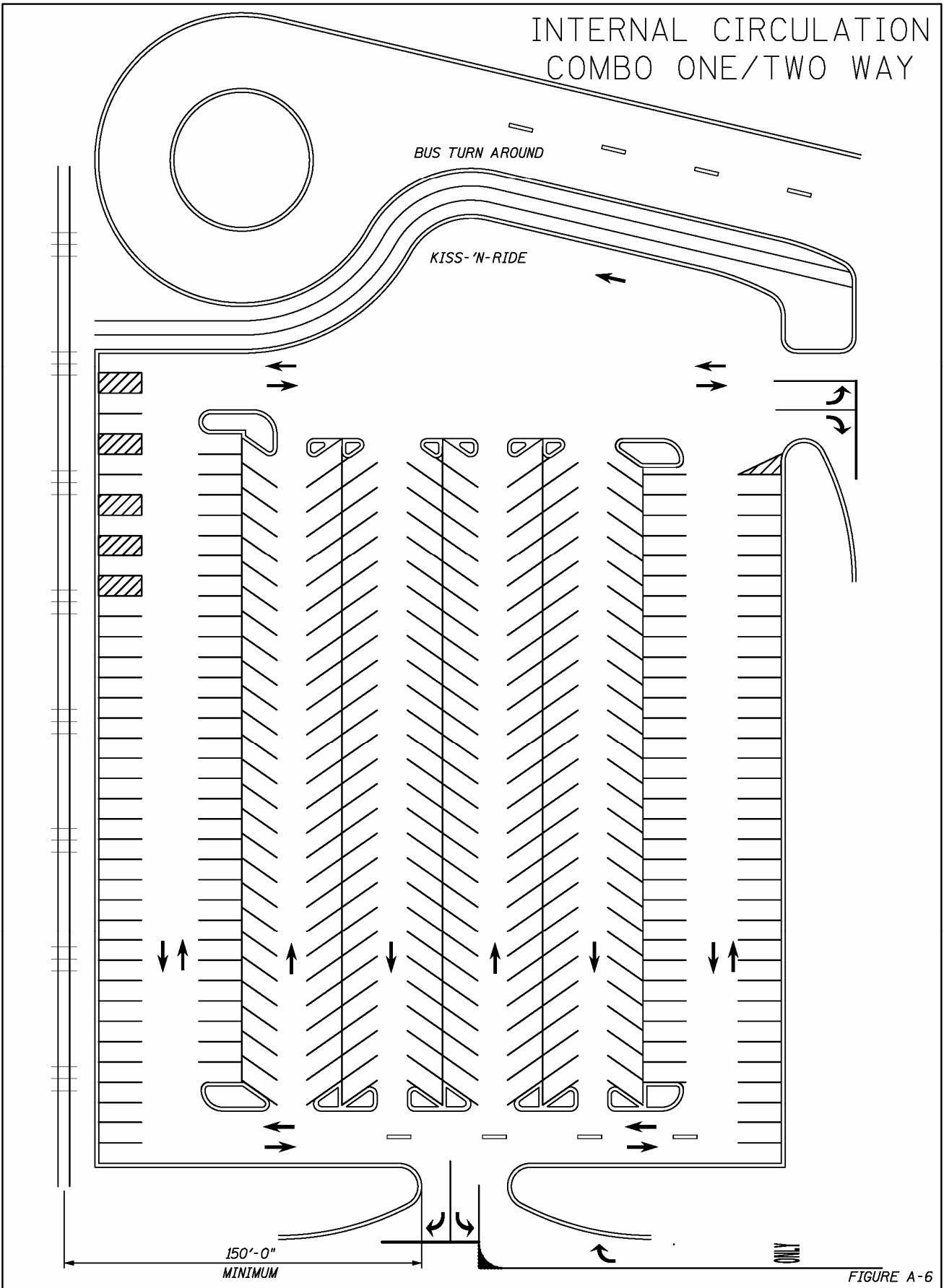


FIGURE A-6

# TYPICAL SECTION

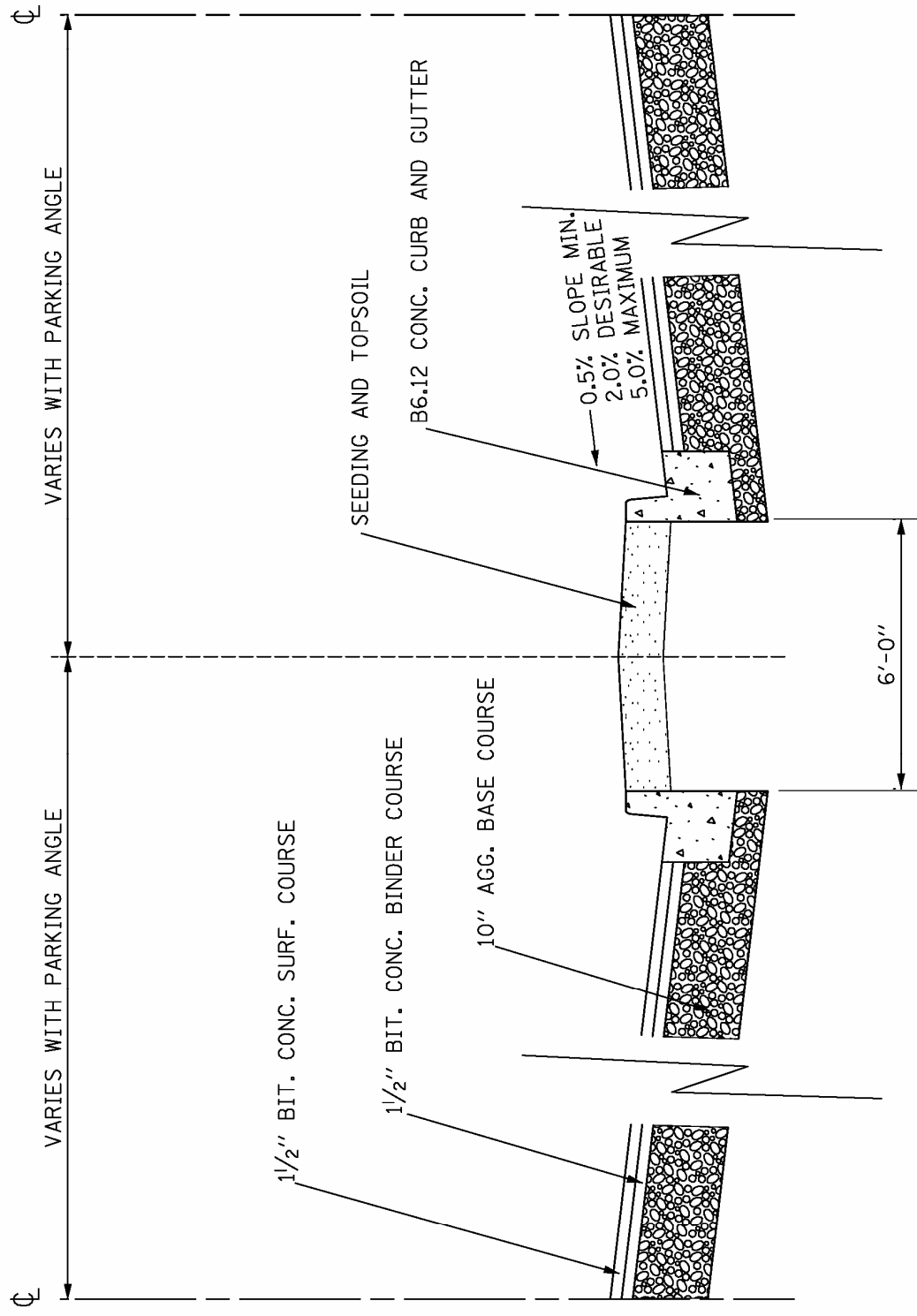
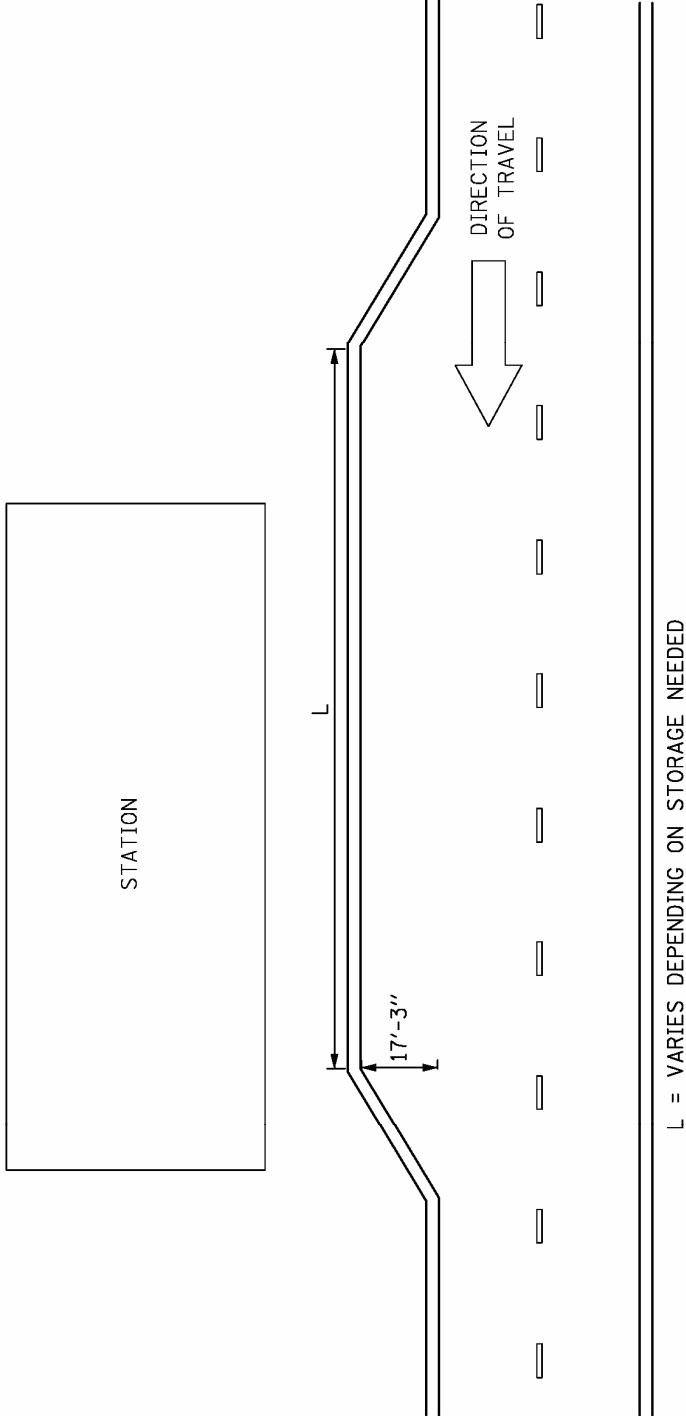


FIGURE B-1

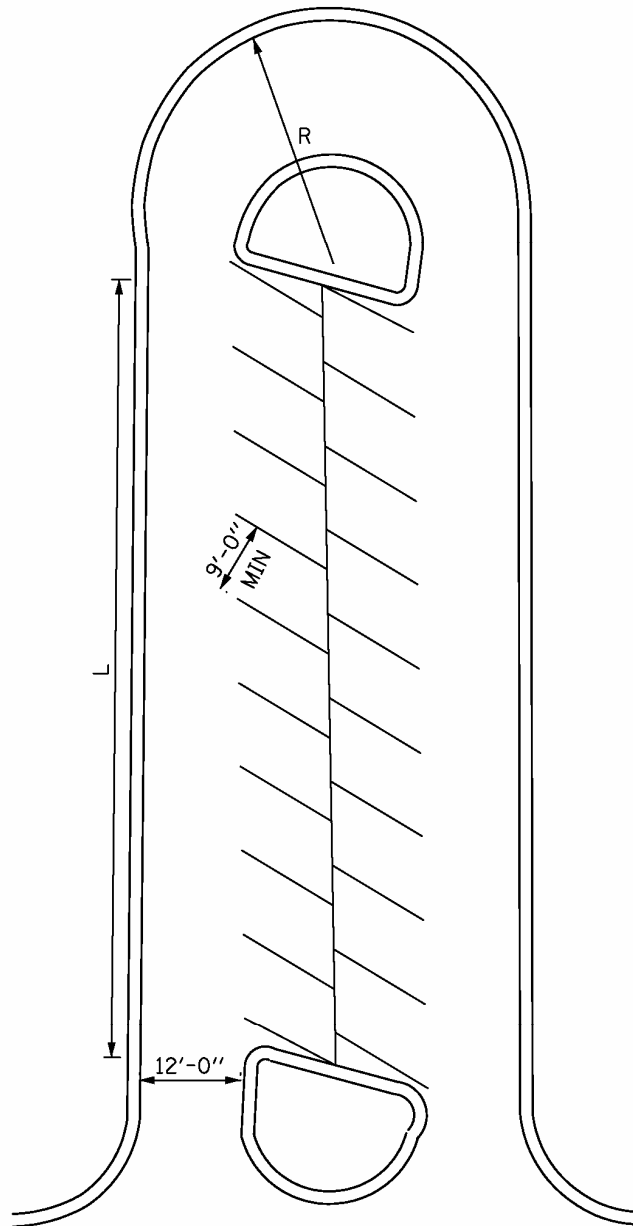
# "KISS 'N RIDE" - TYPE A



L = VARIES DEPENDING ON STORAGE NEEDED

FIGURE C-1

# "KISS 'N RIDE" - TYPE B



L = DEPENDS ON NUMBER OF NECESSARY PARKING SPACES  
R = LANE WIDTH + STALL DEPTH -OR-  
AUTOTURN FOR LARGEST ANTICIPATED VEHICLE

FIGURE C-2



# BUS TURNING

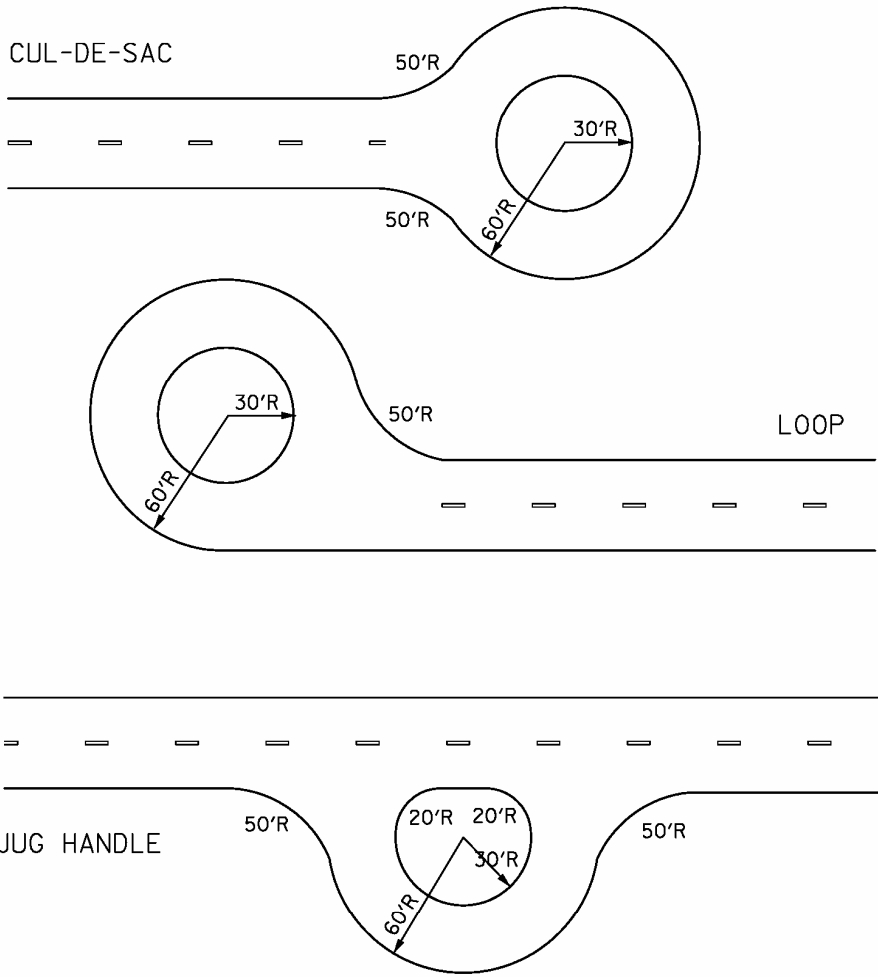
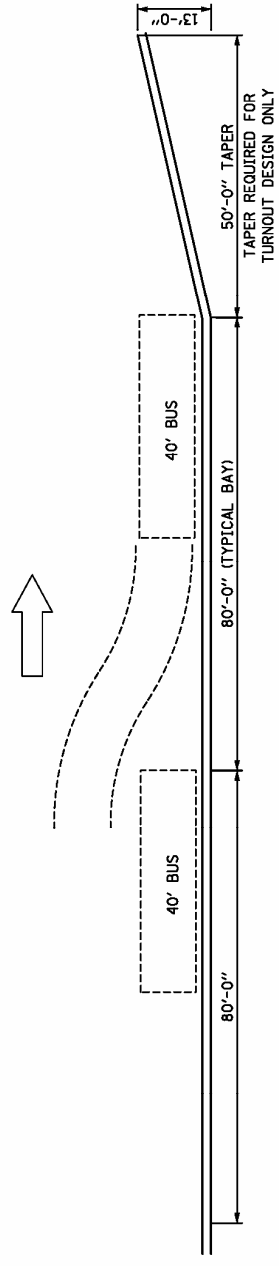
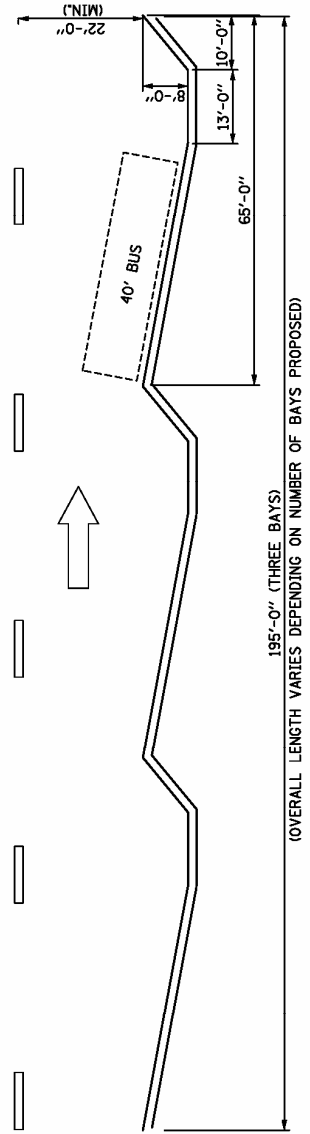


FIGURE D-2

# BUS PARKING



PARALLEL DESIGN



SAWTOOTH (SCALLOP) DESIGN

FIGURE D-3







**APPENDIX A. PARKING LOT DESIGN CHECKLISTS**

PARKING LOT DESIGN PROJECT SCOPE CHECKLIST



## 60% PARKING LOT DESIGN CHECKLIST



## 90% PARKING LOT DESIGN CHECKLIST



## **APPENDIX B. SUGGESTED AGENDA FOR INITIAL MEETING WITH MUNICIPALITY**

- A. Introduction of Metra and the Consultant's project manager/contact persons.
- B. Presentation of the Scope of Project.
- C. Discussion
  - 1. Parking Module size
  - 2. Landscaping and screening
  - 3. Pavement Section
  - 4. Drainage and/or detention facilities
  - 5. Improvements to roads accessing the site
  - 6. Unusual or special signing or lighting
  - 7. Shelters for Kiss 'n Ride, Bus Stands or Fare Collection
  - 8. Type of fare collection
  - 9. Permits, bonds and insurance
  - 10. Snow Removal
- D. Request from the municipality:
  - 1. Municipality's Standard details and specifications (i.e. frames and grates, light poles and luminaries, fare collection devices, etc.)
  - 2. Permit forms
  - 3. General knowledge of site (i.e. utilities, soil conditions, drainage, traffic, etc.)
  - 4. Name of municipal contact person(s) (i.e. for questions, utilities, plan reviews, permits)
  - 5. "Front End" documents if project is to be let by municipality, and if they have a required standard.
- E. Discussion of timetable for : plan review, bidding, and construction.
- F. Open Discussion
- G. Conclusion: Summary of meeting results, thanks to all for attending and for providing their input.
- H. Aftermath:
  - 1. Consultant should prepare minutes of meeting and send to participants.
  - 2. Consultant should review results of meeting to identify major impact on COST and NUMBER OF SPACES ABLE TO BE PROVIDED. If there are significant impacts, they should be discussed with Metra.



## APPENDIX C. UTILITY LETTER FORMAT

UTILITY ADDRESS:

DATE:

PROJECT NAME:

METRA PROJECT NO.:

MUNICIPALITY:

COUNTY:

TOWNSHIP:

SECTION QUARTER AND NO.:

Dear Mr. \_\_\_\_\_

(Consultant Name) is Design Architect/Engineer for Metra on the (Project Name) consisting of (Project Description)

Transmitted herewith is one set of (preliminary/detailed)\* plans for the subject improvement which is scheduled tentatively for a \_\_\_\_\_ letting by (Metra/Municipality)\*.

Please review these plans as to the location of your utility facilities. Should you find any additions and/or corrections, you must notify \_\_\_\_\_ by \_\_\_\_\_. Failure to comply with this notification could result in damage to your facilities and delays during the construction of this project.

(You are also hereby requested to/not to proceed with the adjustment of your facilities required by this improvement and notify this office as to the status of conflicts.)\*

Should you have any questions regarding this improvement, contact \_\_\_\_\_(name) at \_\_\_\_\_(telephone number)

Very truly yours,

CONSULTANT FIRM NAME

ATTACHMENT

\* As Applicable



#### **APPENDIX D. PROCEDURE FOR OBTAINING LETTERS - CITY OF CHICAGO**

Regarding the existence of public or quasi-public Utilities in Land in the City of Chicago

A. Address Letter

Board of Underground Work of Public Utilities of Chicago  
Room 300A, 320 North Clark Street  
Chicago, Illinois 60610

B. Enclose a request as to whether there are any public utilities in existence or being used in the land in question.

C. Describe the land both by street address and legal description.

D. Enclose 25 small drawings or sketches of the plat showing said land with corresponding dimensions.

E. Give reason for seeking information. If reason is for title insurance, give the name of the title company.

F. A service fee of fifty dollars is required. Check to be made to: City of Chicago, Department of Public Works.

G. The Board of Underground will contact and collect letters from the public utilities that are board member and submit them to the applicant.

NOTE: PLEASE ALLOW A MINIMUM OF 30 DAYS FOR LETTERS TO BE RETURNED.



## APPENDIX E. MANUFACTURERS LISTING

### A. Fare Box – Manual (Coin, Token, Bill):

Park-Safe  
John W. Hinner Sales and Equipment Company  
1345 Oakview Terrace  
Woodstock, Illinois 60098  
(815) 338-2197

Southern Specialties Corporation  
1828 North 105<sup>th</sup> E Avenue  
Tulsa, Oklahoma 74116  
(918) 584-3553

### B. Fare Box – Electronic (Coin, Token, Bill, Prepaid Card):

Schlumberger Technologies  
825-B Greenbrier Circle  
Chesapeake, Virginia 23320  
(757) 546-2472

### C. Parking Meters

Duncan Industries  
340 West Industrial Park Road  
Harrison, Arkansas 72601  
(870) 741-5481

### D. Gates (Card, Token, Coin Operated):

Cincinnati Time  
11785 Highway Drive  
Cincinnati, Ohio 45241  
(513) 733-5300

Federal APD  
6046 West 63<sup>rd</sup> Street  
Chicago, Illinois 60638  
(773) 586-9001



E. Prefabricated Shelters:

Belson Manufacturing Company, Inc.  
111 N. River Road  
North Aurora, Illinois 60542  
(800) 323-5664

Brasco, Inc.  
1000 Mt. Elliot  
Detroit, Michigan 48207  
(800) 893-3665

Midwest American Shelter Systems  
A Division of Bellows Industries, Inc.  
P.O. Box 4555  
Akron, Ohio 44310  
(330) 673-4505

Tafco Corporation  
400 East Elm Avenue  
La Grange, Illinois 60525  
(847) 678-8425