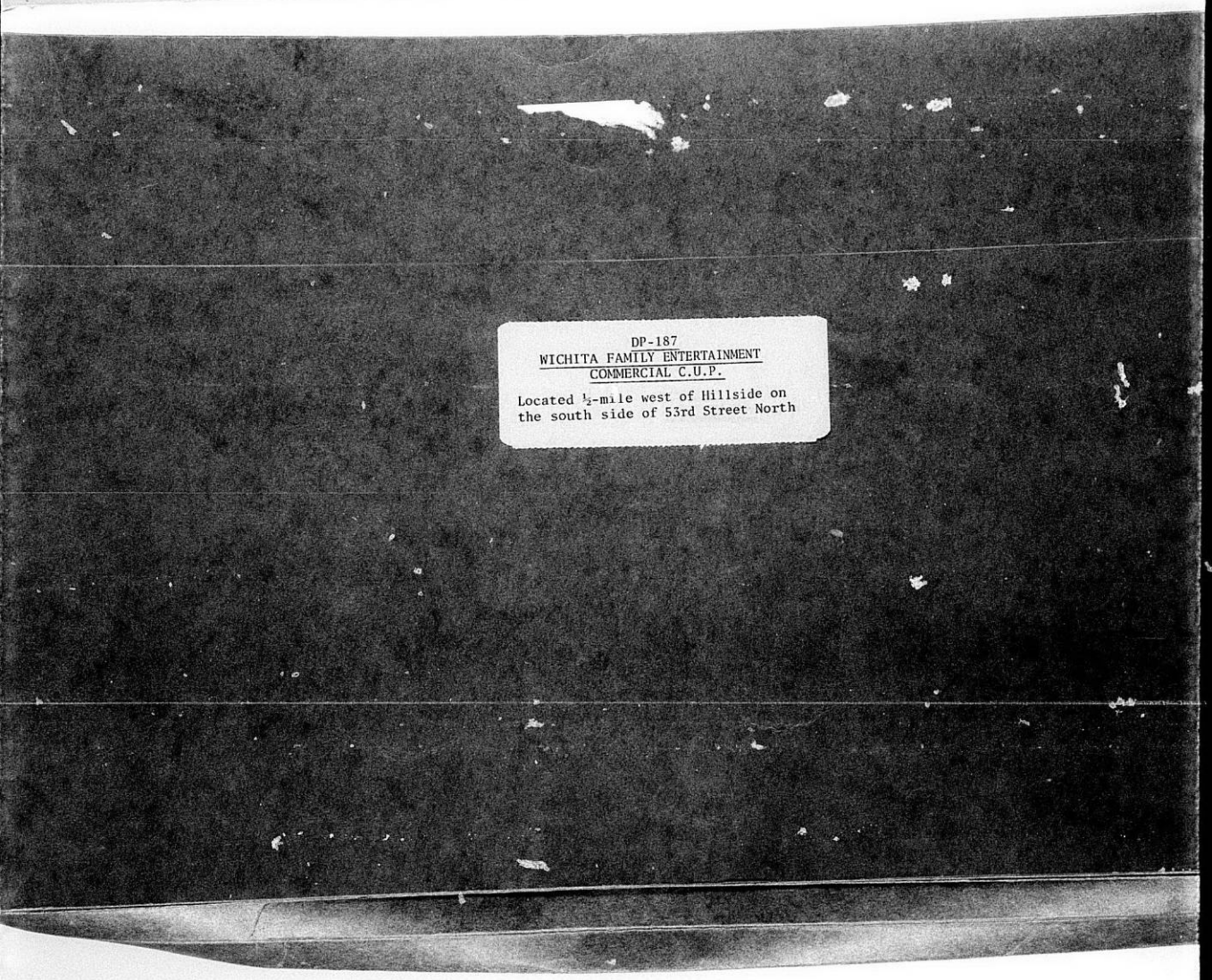


DP-187
WICHITA FAMILY ENTERTAINMENT
COMMERCIAL C.U.P.

Located ½-mile west of Hillside on the south side of 53rd Street North

posted 8-12-88 KV

ACTION

	DATE
S/D COMMITTEE	
M.A.P.C. Approve subj to conditions line - platting	9/1/88
W.C.C. [redacted] ~~Approved subject~~ to added conditions + platting	9/27/88

DENIED & CLOSED - 10-19-89
(FAILURE TO PLAT)

posted 8-12-88
KD

ACTION

		DATE
S/D COMMITTEE		
M.A.P.C.	Approve subj to conditions line - platting	9/1/88
W.C.C.	[redacted] ~~Approved subject~~ to added conditions + platting	9/27/88

DENIED & CLOSED - 10-19-89
(FAILURE TO PLAT)

DATA SHEET

MAP #: 5653D

Z-
SCZ-
CU-
DR-
DP- 187
Amend #
Case Filed: 7/21/88
Associated Case: Z-2925
CPO Council Area: 1B
CPO Meeting Date: 8/16/88
MAPC Hearing Date: 9/1/88

APPLICATION DATA:

1. GENERAL LOCATION: One-half mile west of Hillside on the south side of 53rd Street North

2. FROM _____ to _____

3. Proposed Use: _____

4. DP Name: WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN

5. Applicant: Norman L. and Jonny Scott
   Address: 164 Dogwood, Garfield, AK. 72732 Phone: (501) 359-3538

   Applicant: Gary A. and Marilyn Applegate
   Address: 8441 Irwin Road, #202, Bloomington, MN. 55437 Phone: (612)831-0194

   Applicant: Bill and Geraldine Mason
   Address: 4757 Calle Camarada, Santa Barbara, CA. 93110 Phone: (805)964-2118

   Applicant: Gerald T. Aaron
   Address: P. O. Box 782710, Wichita, KS. 67278 Phone: 685-1208

   Applicant: Robert L. Collins
   Address: 260 N. Rock Rd., Suite 160, Wichita, KS. 67206 Phone: 683-7515

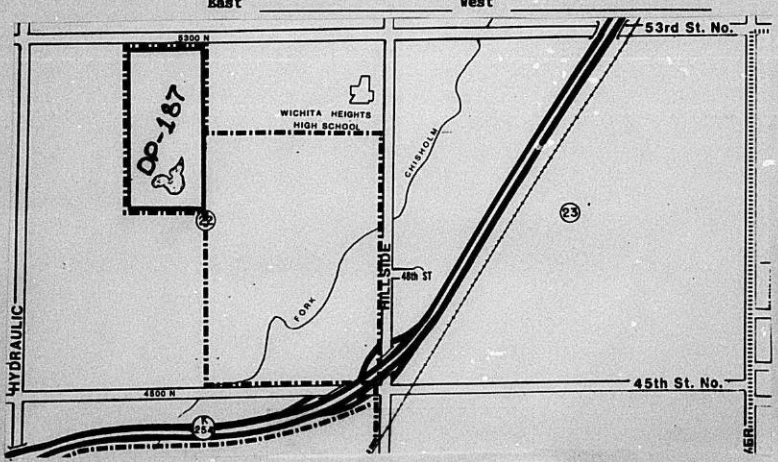
   Applicant: Richard A. DeVore
   Address: P. O. Box 118, Wichita, KS. 67201 Phone: 267-3211

   Applicant: Howard Sherwood
   Address: P.O. Box 9163, Wichita, KS. 67277 Phone: 942-0211

6. Agent: N. Brent Wooten, c/o Baughman Company, P.A.
   Address: 315 South Ellis, Wichita, KS. 67211 Phone: 262-7271

AREA DATA:

1. Acres: 80 (_____ ft. by _____ ft.)
2. Adjoining Zoning: N "R-1" S "R-1" E "AA" & "R-1" W "R-1"
3. Land Use: North _____ South _____
   East _____ West _____



WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING DEPARTMENT

DATE: November 1, 1989

TO: Monty Robson, Superintendent of Central Inspection

FROM: Robert L. Young, Principal Planner

SUBJECT: Closing the files for Spencer Gardens - Boeing Commercial (DP-182) C.U.P. and Wichita Family Entertainment Commercial (DP-187) C.U.P.

Attached are copies of letters sent to the applicants of the above referenced community unit plans advising them that the C.U.P. proposals are now considered denied and closed due to their failure to plat the properties within the required time limit.

The files you may have in your office should be marked accordingly as these C.U.P. documents have no further official standing. If you have any questions concerning this matter, please contact me. We will see that the microfilm reader cards of the Official Zoning Map are amended to delete these C.U.P. designations during the next updating.

WICHITA — SEDGWICK COUNTY

W-SC

METROPOLITAN AREA PLANNING DEPARTMENT

CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1686
(316) 268-4561

October 19, 1989

Robert L. Collins
260 N. Rock Road, Suite 160
Wichita, KS 67206

RE: Z-2925 "AA" to "C" and DP-187 Wichita Family Entertainment Commercial Community Unit Plan. Located on the south side of 53rd. Street North, 1/2 mile west of Hillside.

Dear Mr. Collins:

On September 27, 1988, the above-captioned zone case and community unit plan were approved by the Wichita City Council subject to platting the property within one year or the applications would be considered denied and closed. [See item (d.) our letter to Brent Wooten dated October 3, 1988 - A copy is attached.] A plat of the property has NOT been completed and recorded as required and therefore, the zoning and community unit plan requests are now considered DENIED AND CLOSED.

If you have any questions about this matter, please call me at 268-4421.

Sincerely,

Forrest L. Nagley

Forrest L. Nagley
Senior Planner

FILE COPY

FLN:ksk

Attachment

cc: Brent Wooten, c/o Baughman Co., P.A., 315 Ellis, 67211
Norman L. and Jonny Scott, 164 Dogwood, Garfield, AK 72732
Gary A. and Marilyn Applegate, 8441 Irwin Road, #202, Bloomington, MN. 55437
Bill and Geraldine Mason, 4757 Calle Camarada, Santa Barbara, CA. 93110
Gerald T. Aaron, P.O. Box 782710, Wichita, KS 67278
Richard A. DeVore, P.O. Box 118, Wichita, KS 67201
Howard Sherwood, P.O. 9163, Wichita, KS 67277

WICHITA BUSINESS JOURNAL 9-18-89 p.3

Developer says Mid-America amusement park concept escaped many

By DAVID DINELL

Architect and developer Bob Collins, who has put on hold plans for a proposed $12 million Mid-America Great Escape theme park, said last week that many in the community never fully understood the concept behind the park.

Collins said the park in north Wichita was intended to draw people from a 100-mile radius of Wichita, an area he said has about 600,000 potential customers, enough to support a park such as Mid-America, which has a targeted attendance of 285,000 for its first year.

Some people in Wichita, Collins said, viewed the park as a threat — a sponge that would take money away from other areas of the amusement industry. Collins said that belief was wrong and that the economic benefit to Wichita would far outweigh the cost of any abatements.

"Compare who benefits and who is at risk," Collins said. "It was a clean deal that could've worked. There's room for everyone here. Everyone is just afraid of their market share."

The park, planned by a group of four Wichita-area businessmen for an 80-acre site on 53rd North between Hillside and Hydraulic, was dealt a major blow earlier this year when the Sedgwick County Commission voted 5-0 to reject several requests of the developers. The requests concerned constructing acceleration and deceleration lanes and a left-turn lane at the park's entrance, and changing the scheduled repaving of 53rd North so as not to conflict with the proposed opening of the park.

The 53rd North paving project between I-135 and Meridian, which is currenlty under way, is scheduled to be completed next summer. The job of working on 53rd North from I-135 to Oliver, which would have affected the proposed theme park, will be let next year.

The Wichita City Council had earlier approved including the park in the city's enterprise zone and the issuing of $8 million in industrial revenue bonds. The bonds would have been used to construct the theme park, said Karl Kennedy, an industrial analyst with the city. The council also approved a 100 percent tax abatement on the improvements for five years and special assessment bonds of $506,000 to $515,000 a year, contingent on the County Commission's approval of the developers' requests. The special assessment bonds' purpose is to pay for utility and street improvements next to the park's property, Kennedy said.

Kennedy said if the developers wanted to try to obtain financial support from the city again, they would have to file a new letter of intent with city officials.

Collins said the project could still be undertaken, but it would require a fresh infusion of support and an improved economic climate.

"This project is too important to drop," said Collins, who has spent two years on the undertaking. "It's important not to quit. I've never failed at anything I've set out to do. There's definitely a need for this, our goal is to make it happen."

But for Stan Nelson, the owner of Joyland, Wichita's largest amusement park, there's no room in town for two such parks.

"It (Mid-America) would have an impact on Joyland," Nelson said. "There's only so many discretionary dollars that people have to spend after they pay their rent and groceries."

The competition for that money by facilities such as Sports World, Golf Park and Joyland is intense, said Nelson. Nelson, who has been in the amusement park business for 40 years, disputed Collins' claim that a theme park could draw enough people from a surrounding area to support it.

"Seventy to 80 percent of your business is going to have to come from Wichita," Nelson said, adding that he objected to the use of public funds to support the theme park.

Leonard Biggs, city administrator for Park City, whose boundary is just north of the proposed site, said his city would definitely be interested in seeing a theme park developed in the area. Biggs said he doesn't understand how the city of Wichita was able to annex the land where the park is planned, since his city's "area of influence," extends to 49th North. The land was annexed by Wichita on July 22, 1988.

Collins said the economic benefit of theme parks was something that Wichita's government officials needed to examine closely.

Mid-America would have a $10 million impact on Wichita's economy during its first year of operation, Collins said. The impact over a 10-year period is estimated to be $90 million, he added.

In a study done for the city, David Poynter, director of the Center for Economic Development and Business Research at Wichita State University, came up with a first-year economic impact figure of about $6 million, which he said was on the conservative side. Poynter said for a theme park to have a $10 million impact in its first year was not unrealistic.

"Once we lost the (government) support, the air went out of the plan," Collins said. There is a possibility of a smaller, scaled-down park, he said, but the first phase of it may take five years to implement.

Rip Gooch, City Council member from the first district, said he would support the construction of a theme park in Wichita, but added that the problem was with the use of public money to help finance a private enterprise in a highly competitive field.

"The fact that they would get these tax breaks would have given them a competitive edge," said Gooch, whose district includes the land designated for the park. Gooch was not on the council when it voted on the issue last February.

Besides Collins, the three other major backers of the park are Jerry Aaron, a private consultant to food-service businesses; Howard Sherwood, president of Sherwood Construction Co. Inc.; and Richard DeVore, president of Jack DeVore Enterprises, a publisher of religious material and owner of cattle ranching operations.

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING DEPARTMENT

November 8, 1988

TO: Monty Robson, Superintendent of Central Inspection

FROM: Robert L. Young, Principal Planner, Current Plans

SUBJECT: Approval of (DP-187) - WICHITA FAMILY ENTERTAINMENT COMMERCIAL C.U.P. and Z-2925, associated zone change request from "AA" to "C" located one-half mile west of Hillside on the south side of 53rd Street North.

On September 27, 1988, the Wichita City Council considered the above-captioned C.U.P. and associated zone change request. Their action was to approve the zone change and C.U.P. subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission for their consideration.

c. The transfer of title of all or any portion of the land included within the Community Unit Plan does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. The property included in this C.U.P. shall be platted within one year from the date of approval by the City Council members, or the provisions of this C.U.P. shall become null and void for the portions which remain unplatted. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

FILE COPY

By copy of this memo, the applicant is advised that the plat for the property being rezoned should be recorded with the Register of Deeds by September 27, 1989, or the zone change case file will be marked denied and closed. The plat should be submitted as soon as possible, and this will be the only notification of the platting deadline.

Attached for your information and files are two approved C.U.P. copies. If you have any questions concerning this matter, please call me at 268-4421.

RLY:blv
Attachments

cc: Brent Wooten, c/o Baughman Company, P.A., 315 Ellis, Wichita, KS. 67211
Norman L. and Jonny Scott, 164 Dogwood, Garfield, AK. 72732
Bill and Geraldine Mason, 4757 Calle Camarada, Santa Barbara, CA. 93110
Gerald T. Aaron, P.O. Box 782710, Wichita, KS. 67278
Robert L. Collins, 260 North Rock Road, Suite 160, Wichita, KS. 67206
Richard A. DeVore, P.O. Box 118, Wichita, KS. 67201
Howard Sherwood, P.O. Box 9163, Wichita, KS. 67277

WICHITA SEDGWICK COUNTY

METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1688
(316) 268-4561

October 3, 1988

Brent Wooten
c/o Baughman Company, P.A.
315 Ellis
Wichita, Kansas 67211

RE: DP-187 (WICHITA FAMILY ENTERTAINMENT COMMERCIAL C.U.P.) and Z-2925 ("AA" to "C"). Located 1/2-mile west of Hillside on the south side of 53rd Street North.

Dear Brent:

During the regular meeting of September 27, 1988, the Wichita City Council considered the above-captioned cases. The action of the Wichita City Council was to approve the commercial development plan and associated zone change request subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

FILE COPY

e. The general provisions of the C.U.P. shall be expanded to include the following statements:

17. Outdoor sound amplification equipment shall be directed away from adjacent properties and baffled, if necessary, to minimize the noise impact on those properties.

18. The property shall not be used for a musical performance attracting more than 1500 attendees, unless that performance is part of a larger set of attractions available to those same attendees on the property on the same day or evening of the performance.

19. Tracks, trestles and equipment associated with at-grade scaled train ride is permitted outside the perimeter building setbacks, but not within the perimeter landscaped areas.

20. The property owner(s) will not oppose assessments for improvement of 53rd Street North.

Please add the provisions set out in Item "e" above to the face of the C.U.P. drawing and forward four (4) copies of the revised drawing to our office for filing. Also, please note condition "d" above, which requires platting within one year. The final plat for the property covered by this development plan should be completed and recorded on or before September 27, 1989. If you have any questions concerning this matter, please contact our office.

Sincerely,

Robert L. Young

Robert L. Young
Principal Planner

RLY:biw

cc: Norman L. and Jonny Scott, 164 Dogwood, Garfield, AK. 72732
Gary A. and Marilyn Applegate, 8441 Irwin Road, #202, Bloomington, MN. 55437
Bill and Geraldine Mason, 4757 Calle Camarada, Santa Barbara, CA. 93110
Gerald T. Aaron, P.O. Box 782710, Wichita, KS. 67278
Robert L. Collins, 260 North Rock Road, Suite 160, Wichita, KS. 67206
Richard A. DeVore, P.O. Box 118, Wichita, KS. 67201
Howard Sherwood, P.O. 9163, Wichita, KS. 67277

Robert J. Wolf
607 Michael Drive
Omaha, NE 68128

September 16, 1988

Mrs. Sally Dewey
City Councilwoman
Wichita City Council
City of Wichita
City Hall - First Floor
455 North Main
Wichita, Kansas 67202

Dear Mrs. Dewey:

I would like to offer this letter as a demonstration of my support for the new regional theme park that is being planned just north of my property there in Wichita. As I understand, the project site is in your representative district. As a property owner, I was interested in what was being planned. I have had the opportunity to visit with the project sponsors and we feel very comfortable with the thoroughness and the creative ideas that they have expressed to me. We fully support their efforts.

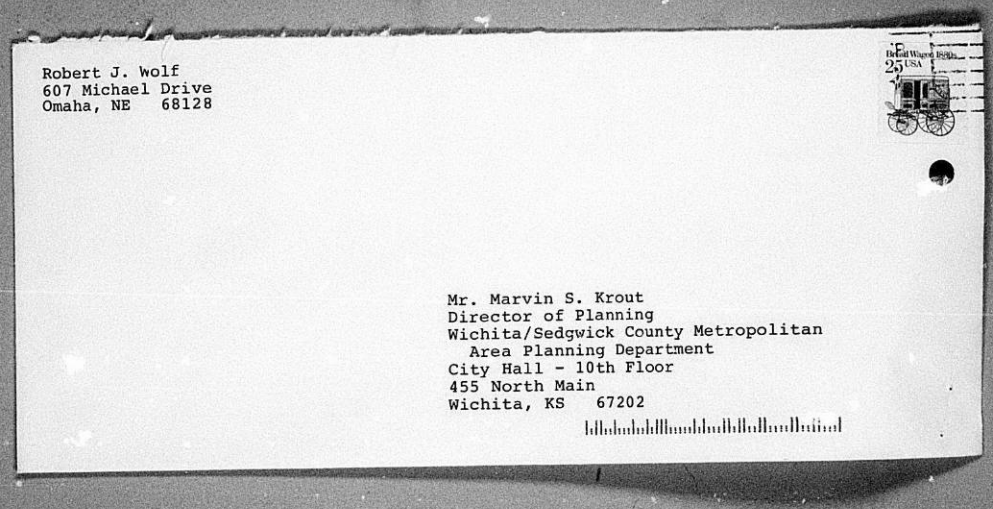
Unfortunately, business commitments here in Omaha will prevent me from attending the City Council meeting on the 27th of September at which time the zoning change request will be reviewed by the Council. Please accept this letter as my demonstration of support for the zoning change request.

Sincerely,

Robert J. Wolf

Robert J. Wolf

cc: Marvin S. Krout
Mayor Sheldon Kamen
Vice Mayor Skeets Winkler
Councilman Bob Knight
Councilman Greg Ferris



Robert J. Wolf
607 Michael Drive
Omaha, NE 68128

Mr. Marvin S. Krout
Director of Planning
Wichita/Sedgwick County Metropolitan
Area Planning Department
City Hall - 10th Floor
455 North Main
Wichita, KS 67202

Planning Agenda Item #_____

City of Wichita
City Council Meeting
September 27, 1988

Agenda Report #____

TO: Mayor and City Council Members

SUBJECT: DP-187, WICHITA FAMILY ENTERTAINMENT COMMERCIAL C.U.P.

Z-2925 - ZONE CHANGE FROM "AA" TO "C", LOCATED 1/2-MILE WEST OF HILLSIDE ON THE SOUTH SIDE OF 53RD STREET NORTH (District #1)

INITIATED BY: Metropolitan Area Planning Department

AGENDA ACTION: Planning

MAPC Recommendation: Approve, subject to conditions, including platting. (4-3)

Staff Recommendation: Approve, subject to conditions.

CPO Recommendation: CPO Council 1B recommends approval by a vote of 6-2.

Background: On September 1, 1988, the MAPC held a public hearing to consider a commercial community unit plan and associated zone change request from the "AA" One-Family Dwelling District to the "C" Commercial District on an unplatted 80-acre tract of land located 1/2-mi. west of Hillside on the south side of 53rd Street N.

The applicant proposes to divide the tract into two parcels for future development. Parcel No. 1 is 69.48 acres in size and is intended to be developed with a recreational/amusement theme park for primarily outdoor entertainment purposes. The parcel is proposed to have a maximum building coverage factor of 15% and a maximum gross floor area of 453,985 square feet.

Parcel No. 2 is 9.92 acres in size and is intended to be developed with support facilities for the recreational theme park, such as restaurants, hotels, motels, indoor recreational centers and parking lots. A maximum gross floor area of 172,795 square feet is proposed with a maximum building coverage on the parcel of 30%.

The maximum building height on both parcels is proposed to be 50 feet, except on Parcel No. 1, where towers and amusement ride structures are to be permitted to a height of 250 feet.

Due to the size of the application area and the large amount of gross floor area requested, the applicant has provided a traffic study. The study indicates that right turn deceleration and left turn storage lanes will be needed along 53rd Street North at the entrances to the project. These improvements are to be guaranteed at the time of platting.

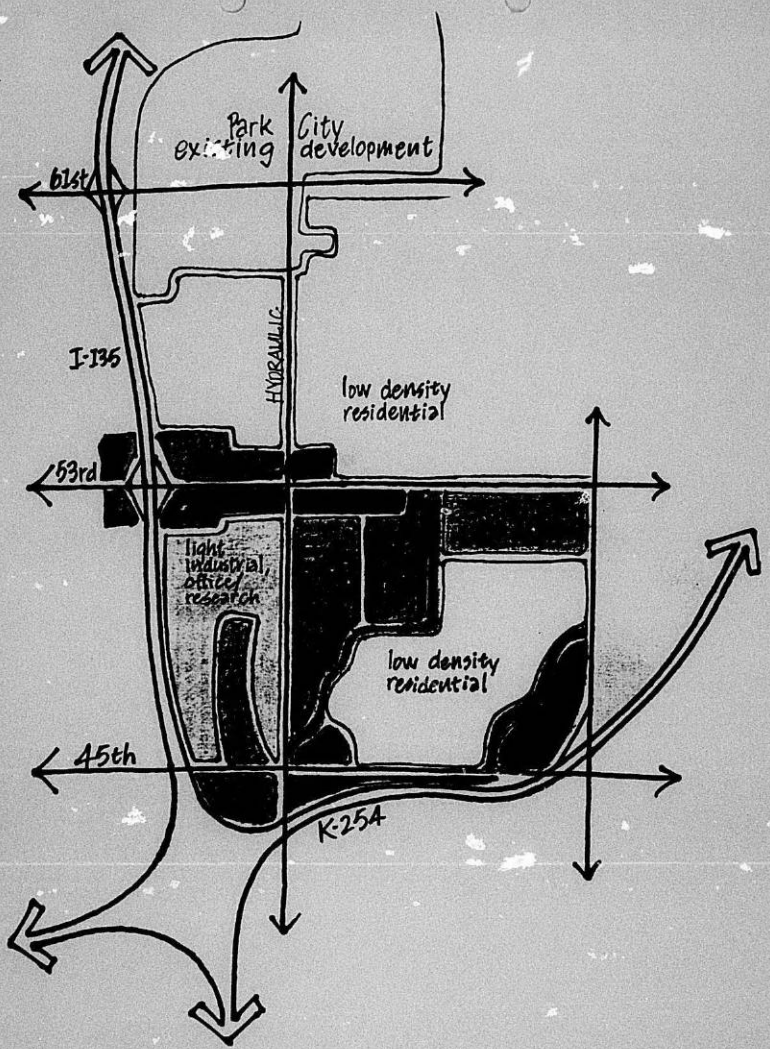
The MAPC, at their public hearing, discussed the appropriateness of this site and the impacts of the proposed uses on surrounding property. Staff agreed that a site with freeway frontage would seem a more natural choice that can use the freeway itself as a buffer along one of its boundaries. On the other hand, this site is situated much like the proposed dog track on the east side of I-135 south of 85th Street North. We feel that a reasonable pattern of land uses can develop surrounding the proposed theme park. A sketch indicating the kind of pattern that might develop is attached. Land to the west of the proposed park would most likely not develop for traditional residential use, but instead for outdoor recreational uses such as golf course, driving range, miniature golf, or a possible camping area for recreational vehicles. Based on the development plan for the theme park, the land to the south and east should be able to develop with traditional single-family subdivisions. Property between I-135 and Hydraulic could be expected to develop in light industrial/office-type uses (some of this property is already zoned and platted for such). Medium density residential uses could be expected north of the 254 corridor as a transition between that highway and the lower density subdivisions. The frontage along 53rd Street east from the I-135 interchange can be expected to develop for a variety of "roadside commercial" uses, such as motel and restaurant, as a result of the theme park development. This development should not be discouraged, but effective sign and access controls and required landscaping along the frontage will be needed to maintain a positive image for this area.

At the conclusion of discussion, the Planning Commission took action to recommend approval of the C.U.P. and zone change request, subject to the conditions listed in the staff report, with the exception of condition "i". Condition "i" calls for the establishment of a combined maximum seating capacity of 1,500 seats for indoor and outdoor theaters at the theme park. The purpose of this condition was to help ensure that large-scale concert-type events which would overwhelm the traffic capacity of 53rd Street not take place on this site. The applicant's agent expressed acceptance of all the suggested conditions of approval, except condition "i".

Recommendations/Actions:

1. Concur with the findings of the MAPC and approve the zone change and C.U.P., subject to the recommended conditions; instruct the Planning Department to forward the ordinance for first reading when the plat is forwarded to the City Council; or

2. Return the applications to the MAPC for reconsideration, stating reasons.


Park existing
City development
61st
I-135
HYDRAULIC
low density residential
53rd
light industrial, office/ research
low density residential
45th
K-254

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING DEPARTMENT

DATE: September 20, 1988

TO: Mayor and City Council Members
(through Chris Cherches, City Manager)

FROM: Marvin S. Krout, Director of Planning MKrout

SUBJECT: DP-187 and Z-2925

These two associated cases on your Planning Agenda for September 27 concern the proposed recreational theme park on a recently annexed tract on 53rd Street North. Since the MAPC meeting, staff has continued to discuss the proposed development with the applicant, and would suggest that the following additional conditions be included in any motion to approve the CUP application:

1. To address potential noise impacts: "Outdoor sound amplification equipment shall be directed away from adjacent properties and baffled if necessary to minimize the noise impact on those properties."

2. To prevent the property from being used for major concerts that are not a part of the overall daily activity of the theme park, and might overload the road system due to peaking traffic: "The property shall not be used for a musical performance attracting more than 1500 attendees, unless that performance is part of a larger set of attractions available to those same attendees on the property on the same day or evening of the performance."

3. To clarify the perimeter setback: "Tracks, trestles, and equipment associated with at-grade scaled train ride is permitted outside the perimeter building setbacks but not within the perimeter landscaped areas."

The applicants have reviewed these additions and concur with their being appended to the CUP.

MSK:rme

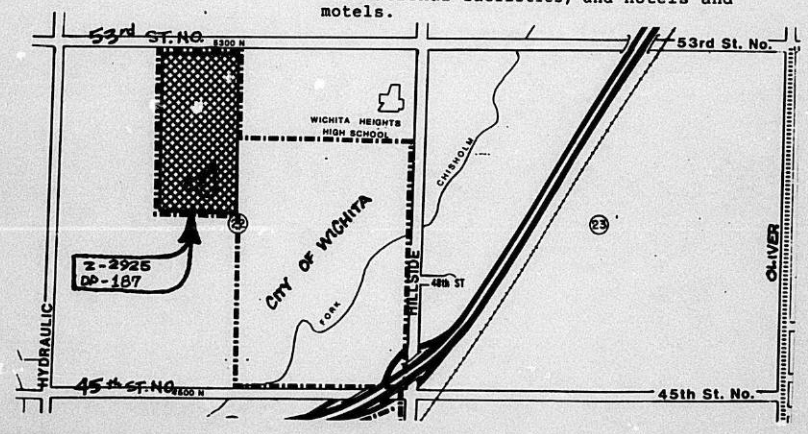
WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 6a+b

September 1, 1988

STAFF REPORT

CASE NUMBER:	DP-187 & Z-2925
OWNER/APPLICANT/AGENT:	Norman L. Scott, et al. (owner/applicant) Brent Wooten/Baughman Co., P.A. (agent)
REQUEST:	Approval of Wichita Family Entertainment Commercial Community Unit Plan (C.U.P.) and associated zone change request from "AA" One-Family Dwelling District to "C" Commercial District
CURRENT ZONING:	"AA" One-Family Dwelling District
SITE SIZE:	80.0 acres (gross)
LOCATION:	One-half mile west of Hillside on the south side of 53rd Street North.
PROPOSED USE:	Restaurants, retail businesses, recreation centers, rentals, offices, amusement park rides, sports activity fields and arenas, parking lots, studios, indoor and outdoor theaters or places of entertainment, golf courses, picnic areas, go-cart tracks, warehouses and storage areas for the amusement park only, swimming pools or water recreational facilities, and hotels and motels.



BACKGROUND: The applicant is requesting the approval of a commercial community unit plan and an associated zone change request from the "AA" One-Family Dwelling District to the "C" Commercial District on an unplatted 80-acre tract of land located one-half mile west of Hillside on the south side of 53rd Street North.

The applicant proposes to divide the tract into two parcels for future development. Parcel No. 1 is 69.48 acres in size and is intended to be developed with a recreational/amusement theme park for primarily outdoor entertainment purposes. The parcel is proposed to have a maximum building coverage factor of 15% and a maximum gross floor area of 453,985 square feet.

Parcel No. 2 is 9.92 acres in size and is intended to be developed with support facilities for the recreational theme park, such as restaurants, hotels, motels, indoor recreational centers and parking lots. A maximum gross floor area of 172,795 square feet is proposed with a maximum building coverage on the parcel of 30%.

The maximum building height on both parcels is proposed to be 50 feet, except on Parcel No. 1, where towers and amusement ride structures are to be permitted to a height of 250 feet.

Due to the size of the application area and the large amount of gross floor area requested, the applicant has provided a traffic study. The study indicates that right turn deceleration and left turn storage lanes will be needed along 53rd Street North at the entrances to the project. These improvements are to be guaranteed at the time of platting.

The application area is surrounded by property zoned for residential purposes. Most of the surrounding property is undeveloped and in agricultural use in the County. The property adjoining on the west was recently approved under the County conditional use procedures for the extraction of fill dirt to build the new ramps for the I-135 and I-235 bypass interchange. The project has been completed and the excavation operation has created a small lake on the adjoining property. During the course of the conditional use proceedings, the property owner to the west submitted redevelopment plans which indicated his intent to create large single-family residential lots on the property after excavation of the site was completed. To date, a platted subdivision creating such lots has not been filed. The sketch accompanying the earlier conditional use case, however, indicated a pattern of large single-family lots backing onto the application area.

In consideration of the potential for low density residential development occurring on adjacent properties, it is very important that the less desirable aspects of an amusement/theme park be adequately minimized within the confines of the application area. The tallest, brightest and noisiest structures and facilities should be located toward the center of the site and well away from adjoining residential

areas. The applicant has indicated building setbacks of 60 feet on the west, and 75 feet on the south and east sides of the application areas. Building heights are limited to 50 feet at this point, except towers and amusement rides are proposed to be allowed to heights of 250 feet. The prospect of having an amusement ride or tower structure looming 250 feet over the back yards of single-family residences would not appear acceptable from a land use planning standpoint. It is suggested that an inclining plane be established for building heights, whereby for every additional foot of setback established from the suggested building lines, an additional foot of vertical height of the structure be allowed. It is also suggested that a landscape strip 20 feet or more in width be established along the east, west and south property lines within which any existing tree cover will be retained and supplemented with additional plantings to create a dense landscape screen of the amusement/theme park activities.

CASE HISTORY: The property was annexed into the City on July 22, 1988. There is no prior case history on the property.

ADJACENT ZONING AND LAND USE:

NORTH	"R-1"	Agricultural
SOUTH	"R-1"	Agricultural
EAST	"R-1" & "AA"	Public high school and agricultural
WEST	"R-1"	Agricultural

PUBLIC SERVICES: City Engineering indicates that water service can be provided from a 20" diameter water main existing at 45th Street and Hillside. A 16" diameter main will be extended to the site from that point. Sanitary sewer service may be provided by a private temporary lagoon system until such time as a sewer main existing at Hydraulic and 37th Street is extended to serve the area. The sewer main extension is scheduled to be initiated in 1989 in the current issue of the City's Capital Improvement Program. Access to the property will be provided via 53rd Street North. 53rd Street North is a two-lane County arterial roadway paved to County standards with shoulders and open ditches on each side. The street is scheduled for resurfacing in 1990 in the current issue of Sedgwick County's Capital Improvement Program.

CONFORMANCE TO PLANS/POLICIES: The site is located within an area designated as vacant/agricultural on the Sedgwick County Overall Development Scheme-Year 2000 Map. It is adjacent to an area designated for public/semi-public use. No large scale commercial uses are projected for this area.

RECOMMENDATION: It is recommended that the commercial development plan and associated zone change request be approved, subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

e. General Provision No. 9 shall be modified to read as follows:

"Parking requirements shall be as follows: Parcel No. 1 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita, or as determined adequate by the Office of Central Inspection in consultation with the applicant on each phase of development, but in no case shall less than 35 spaces be provided for every acre of outside recreation area developed. Parcel No. 2 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita."

f. General Provision No. 10 shall be modified to read as follows:

"A planting strip no less than 20 feet in width is required along the north line of parcels 1 and 2 adjacent to 53rd Street North. Landscape and planting strips no less than 20 feet in width shall also be established within 60 feet of the west line and within 75 feet of the east and south lines of Parcel No. 1.

Trees existing along the east, west and south lines of Parcel No. 1 shall be retained and supplemented with additional trees (on no more than 25-foot

spacings) and other landscape materials to maximize the screening of theme park activities from adjacent residential districts. A landscape plan prepared by a landscape architect for the planting strips indicating the type, location and specification of plant materials and the method of providing water to the plant materials shall be submitted to the Planning Department for review and approval on each phase of development prior to the issuance of building permits. A financial guarantee for the acquisition and installation of plant materials approved in the landscape plan shall be required prior to the issuance of any occupancy permit if the required landscaping has not been completed."

g. Condition "E" of the parcel description for Parcel No. 1 shall be modified to read as follows:

"E. Maximum building heights shall be limited to 50 feet, except that one foot may be added to the height of amusement park rides and towers for each foot that the structure or portion thereof is set back from the established building setback line."

h. The term "rentals" shall be removed from condition "G - Proposed uses ..." of the parcel description for Parcel No. 1.

i. Add a general provision that states:

"Indoor and outdoor theaters shall have a combined maximum capacity of 1,500 seats."

EXCERPT FROM PLANNING COMMISSION MINUTES OF SEPTEMBER 1, 1988

6a. Case No. DP-187 - Norman L. Scott, et al request approval of a Commercial Community Unit Plan for the E1/2 of the NW1/4 of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas. Generally located one-half mile west of Hillside on the south side of 53rd Street North.

6b. Case No. Z-2925 - Norman L. Scott, et al request zone change from "AA" to "LC" for the E1/2 of the NW1/4 of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas. Generally located one-half mile west of Hillside on the south side of 53rd Street North.

YOUNG pointed out land use, zoning and showed slides of the general area. He reviewed the following staff report:

BACKGROUND: The applicant is requesting the approval of a commercial community unit plan and an associated zone change request from the "AA" One-Family Dwelling District to the "C" Commercial District on an unplatted 80-acre tract of land located one-half mile west of Hillside on the south side of 53rd Street North.

The applicant proposes to divide the tract into two parcels for future development. Parcel No. 1 is 69.48 acres in size and is intended to be developed with a recreational/amusement theme park for primarily outdoor entertainment purposes. The parcel is proposed to have a maximum building coverage factor of 15% and a maximum gross floor area of 453,985 square feet.

Parcel No. 2 is 9.92 acres in size and is intended to be developed with support facilities for the recreational theme park, such as restaurants, hotels, motels, indoor recreational centers and parking lots. A maximum gross floor area of 172,795 square feet is proposed with a maximum building coverage on the parcel of 30%.

The maximum building height on both parcels is proposed to be 50 feet, except on Parcel No. 1, where towers and amusement ride structures are to be permitted to a height of 250 feet.

Due to the size of the application area and the large amount of gross floor area requested, the applicant has provided a traffic study. The study indicates that right turn deceleration and left turn storage lanes will be needed along 53rd Street North at the entrances to the project. These improvements are to be guaranteed at the time of platting.

The application area is surrounded by property zoned for residential purposes. Most of the surrounding property is undeveloped and in agricultural use in the County. The property adjoining on the west was recently approved under the County conditional use procedures for the extraction of fill dirt to build the new ramps for the I-135 and I-235 bypass interchange. The project has been completed and the excavation operation has created a small lake on the adjoining property. During the course of the conditional use proceedings, the property owner to the west submitted redevelopment plans which indicated his intent to create large single-family residential lots on the property after excavation of the site was completed. To date, a platted subdivision creating such lots has not been filed. The sketch accompanying the earlier conditional use case, however, indicated a pattern of large single-family lots backing onto the application area.

In consideration of the potential for low density residential development occurring on adjacent properties, it is very important that the less desirable aspects of an amusement/theme park be adequately minimized within the confines of the application area. The tallest, brightest and noisiest structures and facilities should be located toward the center of the site and well away from adjoining residential areas. The applicant has indicated building setbacks of 60 feet on the west, and 75 feet on the south and east sides of the application areas. Building heights are limited to 50 feet at this point, except towers and amusement rides are proposed to be allowed to heights of 250 feet. The prospect of having an amusement ride or tower structure looming 250 feet over the back yards of single-family residences would not appear acceptable from a land use planning standpoint. It is suggested that an inclining plane be established for building heights, whereby for every additional foot of setback established from the suggested building lines, an additional foot of vertical height of the structure be allowed. It is also suggested that a landscape strip 20 feet or more in width be established along the east, west and south property lines within which any existing tree cover will be retained and supplemented with additional plantings to create a dense landscape screen of the amusement/theme park activities.

CASE HISTORY: The property was annexed into the City on July 22, 1988. There is no prior case history on the property.

ADJACENT ZONING AND LAND USE:

NORTH	"R-1"	Agricultural
SOUTH	"R-1"	Agricultural
EAST	"R-1" & "AA"	Public high school and agricultural
WEST	"R-1"	Agricultural

PUBLIC SERVICES: City Engineering indicates that water service can be provided from a 20" diameter water main existing at 45th Street and Hillside. A 16" diameter main will be extended to the

site from that point. Sanitary sewer service may be provided by a private temporary lagoon system until such time as a sewer main existing at Hydraulic and 37th Street is extended to serve the area. The sewer main extension is scheduled to be initiated in 1989 in the current issue of the City's Capital Improvement Program. Access to the property will be provided via 53rd Street North. 53rd Street North is a two-lane County arterial roadway paved to County standards with shoulders and open ditches on each side. The street is scheduled for resurfacing in 1990 in the current issue of Sedgwick County's Capital Improvement Program.

CONFORMANCE TO PLANS/POLICIES: The site is located within an area designated as vacant/agricultural on the Sedgwick County Overall Development Scheme-Year 2000 Map. It is adjacent to an area designated for public/semi-public use. No large scale commercial uses are projected for this area.

RECOMMENDATION: It is recommended that the commercial development plan and associated zone change request be approved, subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

e. General Provision No. 9 shall be modified to read as follows:

"Parking requirements shall be as follows: Parcel No. 1 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita, or as determined adequate by the

Office of Central Inspection in consultation with the applicant on each phase of development, but in no case shall less than 35 spaces be provided for every acre of outside recreation area developed. Parcel No. 2 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita."

f. General Provision No. 10 shall be modified to read as follows:

"A planting strip no less than 20 feet in width is required along the north line of parcels 1 and 2 adjacent to 53rd Street North. Landscape and planting strips no less than 20 feet in width shall also be established within 60 feet of the west line and within 75 feet of the east and south lines of Parcel No. 1.

Trees existing along the east, west and south lines of Parcel No. 1 shall be retained and supplemented with additional trees (on no more than 25-foot spacings) and other landscape materials to maximize the screening of theme park activities from adjacent residential districts. A landscape plan prepared by a landscape architect for the planting strips indicating the type, location and specification of plant materials and the method of providing water to the plant materials shall be submitted to the Planning Department for review and approval on each phase of development prior to the issuance of building permits. A financial guarantee for the acquisition and installation of plant materials approved in the landscape plan shall be required prior to the issuance of any occupancy permit if the required landscaping has not been completed."

g. Condition "E" of the parcel description for Parcel No. 1 shall be modified to read as follows:

"E. Maximum building heights shall be limited to 50 feet, except that one foot may be added to the height of amusement park rides and towers for each foot that the structure or portion thereof is set back from the established building setback line."

h. The term "rentals" shall be removed from condition "G - Proposed uses ..." of the parcel description for Parcel No. 1.

i. Add a general provision that states:

"Indoor and outdoor theaters shall have a combined maximum capacity of 1,500 seats."

YOUNG stated that the applicant proposes to divide the site into two separate parcels. Parcel 1 is approximately 70 acres in size and is proposed to be developed with a recreational theme park and an associated amusement ride facility. Parcel 2 is approximately 10 acres in size and is proposed to be developed with supporting commercial facilities, such as motels, hotels and restaurants. He said that the applicant has provided a traffic study which indicates that right turn and left turn storage lanes will be needed at the entrances to the project. The applicant has proposed a 20-foot wide landscape planting strip along 53rd Street frontage. **YOUNG** said that due to the existence of mature trees and hedgerows, and the need to maintain a natural atmosphere in this outlying area, it is suggested that the landscape buffers be extended along the east, west and south sides of the project. CPO Council "1B" voted 6-2 to recommend approval of the requests. Staff also recommended approval of the applications.

PARSONS asked what would be the purpose of removing the term "rentals" from the conditions?

YOUNG said that it would not open it up long-term for rental of equipment for off-site use.

FAIRBANKS asked about parking requirements, especially whether the spaces per acres include storage areas, building areas, parking lots, etc.

YOUNG replied that the parking requirements would be determined at the time each phase of the project is developed.

BRENT WOOTEN, agent representing the Wichita project group, the contract purchasers, stated that this group is comprised of four Wichita businessmen which includes Jerry Aaron, Dick DeVore, Bob Collins, and Howard Sherwood. This group has retained L.A.R.C. Consultants of Dallas, Texas to do a feasibility study and a design, and also follow through with the design concept plan for this regional theme park.

WOOTEN passed around a smaller version of the plan to the Commissioners. He explained that this plan illustrates the proposed phase one production of the theme park. It comprises approximately 30 to 35 acres of development to be done entirely when construction begins. The parking shown on the plan is more than appropriate. He said that the basic concept of this park is to follow a theme throughout the nature of the entire site development. The actual theme has not yet been chosen. The park will provide a broad spectrum of entertainment for the entire family. It will range from stage shows, music, theatre productions to arts and craft shops. Along with the entertainment, there will also be amusement park rides spread throughout the park. Another portion of phase one is an area

developed generally for the use of group outings, company picnics, etc. Food services and retail sales will also be established throughout the site development. Access to the site will be on the northwest corner. The major entrance will be oriented to 53rd Street and be accommodated with right turn decel lanes and left turn lanes. There will be one other entrance on the northeast corner of the site. **WOOTEN** said that during the months of April and May, and September and October, the theme park will only operate on the weekends, from 10 a.m. to 8 p.m. During the months of June, July and August, they will operate during the weekdays from 10 a.m. to 10 p.m. That will change to 10 a.m. to 12 p.m. on weekends. The production schedule now is to start construction at the end of this year, use all of the 1989 construction season and be ready for admission in May or June of 1990. There will be about 100 to 200 part time employees. They project that the total investment in this phase will be $10 to 12 million. **WOOTEN** said that they were in complete agreement with the staff comments except the applicants want the railroad to be able to encroach into the building setbacks, and they do not want to be tied to a maximum seating capacity.

SHERMAN asked what is a studio use.

WOOTEN explained that it is a recording studio for preparing programs or broadcasting.

SHERMAN asked how parking needs could be evaluated without maximum seating capacity.

WOOTEN stated that they could live with a limit of 1500 seating capacity at any one time, but not for 1500 as total in all available seating areas.

FAIRBANKS commented that he has a real concern that if they do not allocate enough parking originally on any of the roads coming into the park they will have a real problem. This is such a beautiful plan that he did not want that to be a problem.

WOOTEN said that the applicants have allocated 1400 parking spaces in the first phase of the plan.

SYLVIA STECKLEY, 5500 North Hillside, speaking in opposition, stated that she was here approximately one year ago when she lived in Woodlawn Village. She moved away from that situation and did not realize that she was getting herself into a worse one. She said that she was very concerned about many aspects of this project. She felt that this was a wonderful project and would benefit Wichita, but she was typical of many people in Wichita that she did not want it next to her property. She was concerned about it being adjacent to the school. She said that there was a lot of concern with the neighbors. They are uncertain as to what is going to actually take place. **STECKLEY** mentioned her situation. They have cattle and horses,

and all of this can be affected by traffic, noise level and security. If things change and there has to be special assessments, that can be very expensive. She mentioned that one of her primary concerns is noise level. She can hear the 81 Speedway and it is farther away than this property. When Heights High School has their football games, it is quite noisy and the lights are very bright. She added that she knew it was there when she moved there. The kind of noise that can be generated from a theme park is quite a bit more than those people had anticipated. She said that she would hate to think of having noise until midnight on the weekend during the summertime.

DAN PHILLIPS, attorney, and to some degree, representing some of the neighbors, stated that he has some concern about the noise. He thinks that this is a great project. He has two teenagers and a 5-year old, and they all think it is a great idea. But the residents in the area do have some concerns about future growth. This is really a juggernaut because there is nothing out there but the high school and suburban residential homes, and there is going to be some growth in the future. Decisions will be made today and they will be based immediately upon the prospects of this theme park. They all realize that from this theme park there are going to be spinoffs. There is going to be an increase in traffic and noise. He said that he could live with the noise in some ways because he has the highway immediately to the north and to the west of him. He has always anticipated that those would be buffers as it relates to industrial growths. He can really seriously anticipate that if this goes in, there is going to be more light commercial businesses on at least 53rd Street. The concern of himself and his neighbors is that when the Planning Commission makes its decision, they want them to anticipate this kind of growth, and as they move in all directions, to what degree are they going to limit light commercial expansion. **PHILLIPS** said that their real concern is that they would like to see the park do something, but would like to see the level of traffic maintained and the noise controlled.

KAY WOOLSEY, 5301 North Hydraulic, speaking in opposition, stated that if the park is approved, the roller coaster will be about 1300 feet from her house, and she certainly opposed it. She is concerned about the noise and traffic. She is also concerned about the fact that at the CPO meeting, which she did not get a notice of and neither did she get one of this meeting, they did not mention the future expansion of the motel, studio and theatre. She is concerned about the fact that this is zoned commercial. She felt that a lot of the little green trees are going to turn into noise makers. She is concerned about the devaluation of her property. She felt that this request is incompatible with the homes around the area. **WOOLSEY** was concerned about the safety of her children, the litter that is going to be on the streets, the comment that most of this is granted to the same theme. She said that they spent two or three years looking for a place in the country that would not be too

far away from downtown Wichita, and the idea that an amusement park is going to go in is almost the worst thing that could happen. The lot to the west was supposed to be platted for single family homes, and she doubted that will happen if the amusement park goes in.

SHERMAN said that if this proposal is successful, it will have a profound effect on the area.

GARDNER wondered why a frontage on I-135 was not chosen instead. The proximity to the school was disturbing to him. He said that he was a little troubled about how you deal with situating something of this size and magnitude in the proximity of other property owners so that it does not constitute a significant problem. He had real concerns with this proposal at this location.

MILES commented that he does not have a problem with this proposal going in on this site. He cited The Moorings as an example of a residential area developing well even with undesirable surrounding land uses (sandpit, trash dump, and Dukes Diamond).

KROUT commented that this is the kind of use that all of them would want in the community. There is probably money going outside of the community that could be spent here in trying to build up reasons for people to come here. He said that staff did their best to encourage the applicants to locate in the I-135 corridor that is zoned industrial today. The school adjacency was not something that bothered staff too much, and the area north of 53rd Street would not be adversely affected, but the areas to the west and south are questionable. He said if they had finished the update on the Comprehensive Plan six months ago, this would have been a blank area on the map and they would be sitting here today with that same question, what to do with this section. He said that there would probably be problems with this use in almost any location. The Traffic Engineer did look at the traffic impact and his recommendation is that they need to look for improvements immediately off the site onto 53rd Street which are based on the assumptions of the traffic study that was conducted and submitted. That traffic study looked at the expected arrivals and departures of visitors to this park. **KROUT** said that staff's concern with limiting theatre seats was to prevent the sudden peaking.

SHERMAN asked Krout his thoughts of the impact this proposal is going to have on the surrounding area if it goes in and becomes successful?

KROUT stated that staff expected the area between Hydraulic and the interstate to develop for commercial and industrial uses. He said that the possible impact of this development would see some kind of more intense uses, such as office parks, as opposed to residential development.

PARSONS said that the Planning Commission was not in a position to determine the feasibility of the site for the applicant and that he would have more concern about the additional traffic created by this theme park coupled with the Coliseum traffic. He mentioned that Joyland has been successful even though it is not on a major highway. He felt that the Commission had to look at the impact on Wichita and Sedgwick County economic development, the development and creation of jobs that are not here now, and felt that progress was exactly that. He felt that this is a good development for Wichita and Sedgwick County and is something that they must encouraged.

SHERMAN asked Wooten if there was much consideration given to putting this along I-135.

WOOTEN stated that they studied the whole corridor and that this was not their primary site.

GARDNER commented that he supposed that in the observation offered that "we are not here to make a decision on feasibility of sites", an interesting commentary of how zoning does and should function if zoning is a proactive force in protecting neighborhoods and shaping the community and that is probably to say that there is a fairly high level of proper locations close and approximate to the I-135 corridor, and if your zoning plans, be they comprehensive plans or are just general policies in place of plans prepared to the level they should be, it would probably dictate that something of this nature had to have a proximity to a high type transportation corridor with major arterial access, so that it was not plunked out in the middle of an area creating a different neighborhood atmosphere. He supposed that if zoning worked the way it should, applicants would be directed to those other locations. He thought that everyone here would agree that this is not an optimum location. It should be more approximate to I-135. From an economic perspective, the site selection is most relevant as to the general public having reasonable access. The difference of whether you are paying $3,000, $5,000 or $10,000 an acre for a particular site is peanuts compared to the overall development costs of the project. Whether or not you get good attendance at the location is another factor. Where you put your money has to do with guaranteeing the ultimate success of the development venture. If you don't plunk it out on the backside of Kechi or the far side of Clearwater or the backside of Valley Center, or even the backside of 254, you would have a reasonable location of at least a dozen other locations in town that would be substantially securer.

GARDNER continued that it seemed to him that unless there is an explanation as to what the noise level will be in the neighborhood after 5 o'clock in the evening and how lights will affect adjacent properties, there is a problem. The point is you use zoning and you use the City and County transportation systems

to select appropriate sites and try to place them in optimum locations and the best locations with minimum impact.

PARSONS commented that obviously everybody on the bench felt there could have been a better location.

SHERMAN stated that although they would like to see zoning in black and white, it is in a gray area. He felt that they all were in agreement that it is a good development for Wichita, and that this is not the optimum location. He said that he wrestles real often if it is the role of the Planning commission to tell an applicant where something belongs. In some cases he felt that was the purpose of zoning to encourage the development and direction that the Commission wants it to go.

SHERMAN stated that he does not want to lose this as a use in Wichita.

MOTION: Having considered the factors as contained in Policy Statement No. 10; taking into consideration the rural character of the neighborhood; the zoning and uses of properties nearby, the suitability of subject property for the uses proposed; and the recommendation of staff; I move that we recommend to the governing body that the commercial development plan and associated zone change request be approved subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published

until the plat has been recorded with the Register of Deeds.

e. General Provision No. 9 shall be modified to read as follows:

"Parking requirements shall be as follows: Parcel No. 1 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita, or as determined adequate by the Office of Central Inspection in consultation with the applicant on each phase of development, but in no case shall less than 35 spaces be provided for every acre of outside recreation area developed.
Parcel No. 2 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita."

f. General Provision No. 10 shall be modified to read as follows:

"A planting strip no less than 20 feet in width is required along the north line of parcels 1 and 2 adjacent to 53rd Street North. Landscape and planting strips no less than 20 feet in width shall also be established within 60 feet of the west line and within 75 feet of the east and south lines of Parcel No. 1.

Trees existing along the east, west and south lines of Parcel No. 1 shall be retained and supplemented with additional trees (on no more than 25-foot spacings) and other landscape materials to maximize the screening of theme park activities from adjacent residential districts. A landscape plan prepared by a landscape architect for the planting strips indicating the type, location and specification of plant materials and the method of providing water to the plant materials shall be submitted to the Planning Department for review and approval on each phase of development prior to the issuance of building permits. A financial guarantee for the acquisition and installation of plant materials approved in the landscape plan shall be required prior to the issuance of any occupancy permit if the required landscaping has not been completed."

g. Condition "E" of the parcel description for Parcel No. 1 shall be modified to read as follows:

"E. Maximum building heights shall be limited to 50 feet, except that one foot may be added to the height of amusement park rides and towers for each foot that the structure or portion thereof is set back from the established building setback line."

h. The term "rentals" shall be removed from condition "G - Proposed uses ..." of the parcel description for Parcel No. 1.

Fairbanks moved, Miles seconded.

There was considerable discussion among the Commission regarding the parking.

BOB COLLINS, one of the applicants, stated that their market area dictates that their park is a very entertainment oriented park as opposed to mechanical rides oriented. Their main emphasis is entertainment, good service and those kind of activities that the demographics indicate that their primary market area are folks oriented. So to provide entertainment facilities for that market, they are going to heavily emphasize live entertainment. They will have a series of different theatres. They will have a holiday in the park kind of attraction that will be open from Thanksgiving through New Year's.

KROUT asked if Mr. Collins had a problem with parking based on looking at the area, excluding theatres, and calculating that at 35 spaces per acre, and then providing one space for every five theatre seats.

COLLINS stated that on their peak days there will be a lot of bus traffic, and they will charge for parking which is one of the ways to encourage carpooling.

GARDNER asked Mr. Collins what limits was he willing to place on outside amplification.

COLLINS said that he has to have the capability to have the guests to be able to hear the performance.

VOTE ON THE MOTION: It carried with a vote of 4 in favor (Fairbanks, Miles Brown and Parsons) and 3 opposed (Gardner, Goebel and Sherman). Brinegar and Moore were absent.

THE CITY OF WICHITA

DATE: August 16, 1988

TO: Jack Galbraith, Chief Planner, Current Plans

FROM: Barry L. Carroll, Administrative Aide III BLC

SUBJECT: DP-187/Z-2925: One-Half mile west of Hillside on the south side of 53rd Street North.

On Tuesday, August 16, 1988, CPO Atwater/University Neighborhood Council 1B considered the captioned request for approval of the WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN and an associated zone change request from the "AA" One-Family District to the "C" Commercial District.

Council members were provided the notice to adjoining property owners and a map of the area. After extensive discussion, the Council voted 6-2 to recommend approval of the requests.

The applicant, Robert L. Collins, 260 N. Rock Road, Suite 160, was present to describe the requests and respond to questions from the Council. Mr. Collins displayed a site plan and described the various features to be included in the proposed theme park. Mr. Collins noted that, if approved, construction would begin in the fall of '89 and the park would be scheduled to open in 1990. According to Mr. Collins, there will be a ten-year building phase before construction is totally completed.

Kay Woolsey, 5301 N. Hydraulic, was present and voiced opposition to the plan. Ms. Woolsey explained that she was concerned over the potential negative impact of noise and traffic congestion for the area.

Council members, John Smith and Ben Martin, stated that they could not vote for the plan without first reading information contained in MAPD staff comments. MAPD staff comments were not available for members's review. (MAPD staff comments will be provided to members at their next meeting on 9-6-88, following the MAPC and prior to the City Council's meeting).

Please provide the CPO Council's recommendation to the MAPC and City Council when case DP-187 & Z-2925 are considered.

BLC:blc

Bob/file.

LETTER TO INTERESTED NEIGHBORS

16 September 1988

The enclosed letter was sent to persons whose property is near the project site and who have previously expressed concerns regarding the theme park and its location. Bob has agreed to meet with them if they so desire to talk about the project and respond to their concerns.

An introductory letter was also sent to Dr. Martin Smith, Principal of Heights High School. Karen will set up a meeting with him next week if he so desires to discuss some ideas for the park.

letter #2

1. Mrs. Sylvia Steckley
   5500 North Hillside
   Wichita, Kansas 67219

2. Mr. Dan Phillips
   4709 North Hydraulic
   Wichita, KS 67219

3. Mrs. Kay Woolsey
   5301 North Hydraulic
   Wichita, Kansas 67219

letter #1

4. Dr. Martin Smith, Principal
   Wichita Heights High School
   5301 North Hillside
   Wichita, KS 67219 Phone: 833-4500

cc: G. Aaron
R. DeVore
H. Sherwood
Project file

#1

Fourteen
September
1988

Reference: Regional Theme Park
I-135 and 53rd Street North
Wichita, Kansas

Dear ----------

Before long, ---------- will have a new neighbor - Wichita's regional theme park. Our site is located on 53rd Street North between Hillside and Hydraulic, just a short distance from you.

As your future neighbor, we would like the opportunity to share with you some of our ideas and preliminary plans for the park. No doubt, you have thought about how ---------- will be affected, come the spring of 1990 when we have our Grand Opening. We want it to be a very positive effect!

I will call you in a day or two to set up a time that is convenient for you so that we can get acquainted and discuss this exciting prospect for Wichita.

I am looking forward to meeting you.

Sincerely,

ROBERT L. COLLINS & ASSOCIATES

Karen Collins

cc: Project file

#2

Sixteen
September
1988

Reference: Regional Theme Park
I-135 and 53rd Street North
Wichita, Kansas

Dear ----------;

At a recent Metropolitan Area Planning Commission meeting, you expressed your concerns regarding the regional theme park to be located near your property. As your future neighbor, we are very interested in your thoughts and ideas. We want to be a good neighbor to everyone in the area. This is your park, too.

We would be happy to meet with you and any of your neighbors who are interested in learning more about our plans for the park. Please feel free to call me to set up a time that would be convenient to come talk to your neighborhood group.

If you should have any questions regarding the theme park, please do not hesitate to contact me.

Sincerely,

ROBERT L. COLLINS & ASSOCIATES

Robert L. Collins

cc: Project file

ROBERT L. COLLINS & ASSOCIATES
ARCHITECTURE • URBAN LAND PLANNING • INTERIOR DESIGN
CONSTRUCTION MANAGEMENT • URBAN LAND ECONOMICS
EXECUTIVE PARK EAST
260 NORTH ROCK ROAD • SUITE 160
WICHITA, KANSAS 67206 (316) 683-7519

WICHITA, KS 672
PM
16 SEP
1988

ALWAYS USE ZIP CODE

Broad Wagon 1892
25 USA

RECEIVED
SEP 19 1988
METROPOLITAN PLANNING
ROUTE ☐ _____
☐ _____

Mr. Marvin S. Krout
Director of Planning - MAPD
City Hall - 10th Floor
455 N. Main
Wichita, KS 67202

THE OFFICE OF **ROBERT L. COLLINS & ASSOCIATES**

EXECUTIVE PARK EAST
280 NORTH ROCK ROAD • SUITE 160
WICHITA, KANSAS 67206
(316) 683-7515

Ten
August
1988

Mr. Jack Galbraith
Director, Current Plans
Wichita MAPD
Tenth Floor - City Hall
455 North Main
Wichita, KS 67202

Reference: Regional Theme Park
I-135 and 53rd Street North
Wichita, Kansas
Project Number: 087145

Dear Jack;

I appreciated the chance to visit with you the other day in your office. We are all headed in the same direction, but I agree you need to know more about our specific plans.

I have jotted down some of our thinking in a Memorandum so that you could have it for your file. I have tried to address the issues that we visited about.

I do think it would be a great idea if we could all go out and walk the site together. This would help everyone visualize the character of the site and the magnitude of the screening effect of the existing trees.

Thank you for your continued assistance with our project.

If you should have any questions or if I can supply you with any additional information please let me know.

Sincerely,

ROBERT L. COLLINS & ASSOCIATES

Robert L. Collins

Enclosure

cc: G. Aaron
R. DeVore
H. Sherwood
M. Jenkins
B. Wooten
Project file

RECEIVED
AUG 11 1988
METROPOLITAN PLANNING
ROUTE ☐ _____
☐ _____

MEMORANDUM: Forty-nine

DATE: 10 August 1988

PROJECT: Regional Theme Park

LOCATION: I-135 & 53rd Street North
Wichita, Kansas

PROJECT NUMBER: 087145

TO: Metropolitan Area Planning Dept.
Jack Galbraith

FROM: The Wichita Project
Robert L. Collins

SUBJECT: Community Unit Plan/Zoning

1. Enclosed is Memorandum Number Thirty-three which gives a brief description of the project scope.

2. Project Development Time Schedule. The initial phase of the park development will include the theme park and the picnic park along with the parking and entrance support facilities. A ten-year time frame has been established for the complete construction of the facility.

The goal of phase one construction is to provide enough entertainment units to accomplish a four-hour length of stay for park guests. Attractions and additions to the park will be made each year so that the ten-year goal is a length of stay in excess of six hours.

3. Hours of operation. When the park first opens, we do not expect year-round operation; however, that is our interim five-year goal. The year-round operation would consist primarily of the entry plaza area and the barn dance facility.

The following is a brief summary of the hours of operation at the different seasonal times. The park would operate on weekends from April through May. There may be some weekday activities during Spring Break and other holiday times. The park would open at 10:00 A.M. each day and close at 6:00 P.M. during the week and 8:00 P.M. on weekends.

The summertime operation from June through August would be from 10:00A.M. until 8:00 P.M. during the week and 10:00 P.M. during the month of June. The park would close at 12 Midnight on the 4thof July and the weekend nights during July and August. The September and October time schedule would go back to a weekend-only operation with the weekend nights closing at 8:00 P.M. Again, the park would open at 10:00 A.M.

We will have special events and promotions during the fall. There may be some activities during the week at this time as well.

We also plan to have a "Holiday in the Park" which would generally run on weekends from Thanksgiving through New Years. We may have a New Year's Eve party in the entry plaza area that will close at 2:00 A.M.

These are generally our operating hours. During the summer, I am sure we will have a company picnic for our staff that may occur after closing hours. This picnic may extend until 2:00 A.M. in the morning. We also may have special school outings for after-prom activities. We would expect these to be sponsored by parent groups and organizations such as Students Against Drunk Driving. This would simply be a place for prom-goers to go after the school activity and have quality,supervised fun. This idea may not work at all but we need the flexibility to provide that type of entertainment.

4. Sound levels for go-karts. We have not made a final decision whether or not we will have go karts in our park. We do need the flexibility to do so if our market indicates that activity is desired. Basically, go-karts are powered by a 5-H.P. standard lawn-mower type engine with muffled exhaust. The decibel level for each kart at full-speed operation averages between 78 decibles and 88 decibels. This seems to be fairly standard in the industry and would be a good number to use if we need to single out and identify that activity. This is probably lower than the sounds generated by the roller coaster or the screams from the flume ride. Out park is an outdoor entertainment facility and there will be noise generated by people having fun. The closest house to our property line is 1,250 feet away. The next-closest house is 1,550 feet away. One of the prime reasons for selecting this site was its isolated location to existing residential property.

5. Parking regulations. Over the last couple of days I have visited with several sources regarding language for the Community Unit Plan as it relates to parking requirements.

I have explored the possibility of having some relationship between hourly capacity and entertainment units and the number of spaces provided. Unfortunately, this relationship is not a straight-line curve and the parking requirements become disproportionate to the actual capacity needed. From our standpoint the number of spaces needed is directly related to the design day attendance. We have enclosed a copy of the feasibility analysis that addresses the parking requirements issue. I think we can come to some understanding on the language for the Community Unit Plan based on this anlaysis. As our annual attendance and our design day attendance increase, additional parking will need to be provided. For

the successful operation of any park of this type, the parking facilities must be adequate and conveniently planned. It is to our own best interest to have adequate parking available for our guests.

6. Site screening. The existing trees around the perimeter of our site are very important to us. We will maintain these trees and replace them if needed. We will have a security fence around the perimeter of our site and good park planning would position landscaping and other screening effects so that the security fence is not visible from within the park. By doing this, we also effectively screen the interior of our park from the adjacent property. We would only develop screening and landscaping areas for the part of the park that is developed initially. As we expand, we would, of course, extend the limits of our landscaping greenbelt. We are very aware of the necessity to have adequate screening and landscaping.

7. Height restrictions. The following is a suggested height restriction and setback requirement for height of structures located in the park.

HEIGHT OF STRUCTURE	DISTANCE FROM PROPERTY LINE
250 Feet	250 feet
200 feet	200 feet
150 feet	100 feet
100 feet	75 feet

The trees located on the perimeter of our site are major trees and will provide excellent screening from the adjacent property. Again, the adjacent property is all agricultural land and there are no inhabitants within 1,000 feet of any of our property lines.

8. Maximum capacity of the park. There will be a maximum capacity of the park established and when that maximum capacity is reached, the turnstiles will be closed. This will be part of our operations plan and a stated requirement of our insurance underwriter.

I think everyone understands that there may be one or two times a year when the maximum capacity of the park is reached. At least, we hope so!

9. Outdoor concerts. Initially, we had planned a 1,200 seat outdoor amphitheater for the first phase of construction. We have been re-thinking the need for this facility in the first phase. Our present thoughts are to have a smaller 500-seat± children's theater and an indoor 220-250 seat theater adjacent to the entry plaza that we could also use at fall promotion and holiday in the park activities. The larger amphitheater would come later as our attendance increases. The 1,200 seat outside amphitheater does seem adequate at the present time for our market area. Hopefully, our project will be well-received and we will see an increase

in attendance at which time we may need the ability to have larger outdoor activities. We do not want to restrict our options in this area. We want to have the capability of having any kind of entertainment activity that would be appropriate for the park. We need to be very careful about land use restrictions for the park as it does relate directly to the finance-ability of the project. We need to think about the positive opportunities that will be available if this project is received by the regional and tertiary markets. If we do have larger group concerts, we would need to design the facilities to accomodate these larger attendance numbers.

Memorandum by: Robert L. Collins

Copies to: G. Aaron
R. DeVore
H. Sherwood
M. Jenkins
B. Wooten
Project file

MEMORANDUM: Number Thirty-three

DATE: 10 June 1988

PROJECT: Regional Theme Park

LOCATION: I-135 and 53rd Street North
Wichita, Kansas

PROJECT NUMBER: 087145

TO: Sullivan Higdon & Sink, Inc.
Al Higdon

FROM: The Wichita Project
Robert L. Collins

SUBJECT: Project Scope

1. There are two main elements of the regional theme park project. First, is the regional theme park; and Second, is the company picnic park.

2. Regional Theme Park. A regional theme park is broken down into three main entertainment opportunities:

1. Rides
2. Attractions & Games
3. Food Service

Rides. This would include a variety of rides for a broad range of age groups. Our park would include a roller coaster, a water flume ride, a large ferris wheel, a carousel, antique car track, a train, and various smaller rides for small children.

Attractions and Games. With the demographics of our market area, I feel that we need to emphasize the attractions for our park. This would include magic shows, 50's & 60's reviews, country & western - the whole spectrum of live entertainment. There would be second- and third-tier entertainers, as our market will not support "big name" entertainers. I do feel that we need special events and maybe create our own "holiday." The games would be creative amusement games that would all be extra pay.

Food Service. There is an addage in this industry that everyone in the park is either eating or standing in line for food. We want our food service to be excellent and eventually, we would like to have food items that are only available in our park (i.e., maybe a new fast food). Again, we would need to serve the entire population everything from ice cream to perhaps an imported-beer garden. I do think the beer service would be de-emphasized.

The main emphasis of the theme park is family fun and entertainment. We want the entire family to visit the park together. Ideally, our goal is to create an entertainment environment where it's the moms' and dads' idea to come to the park.

We would also have major emphasis on attractions for teenagers. We would do everything from after-Prom parties to special events during the week in the summer just for teens. We would also have special events for schools and church groups. Basic park philosophy is creative management and excellent entertainment value.

3. Company Picnic Park. This is a project all by itself. Emphasis on group sales to local companies for their company picnics, client outings and in-house company meetings. We would have an entire menu of activities, including softball tournaments, superstars competitions, golf tournaments, horse-shoe tournaments, chuck wagon feed with country & western music, hayrack rides, barn dances, authentic New England clambake on the sand bar and pig roasts, etc. We would organize the picnic for the company and have a picnic guide (one of our staff) be with the group for the duration of the picnic. The scope of our picnic park, I think, is unique and will present a new entertainment opportunity for the business community.

Those attending the company picnics would probably receive a discounted price for access to the regional theme park on the day of the company's picnic. I think that in all of our conversations , and particularly printed text, we need to refer to our project as a regional theme park. I would really like to stay away from "amusement park" terminology, because we will be much more than that. Whenever our market area thinks of wholesome family fun and entertainment, we want them to think of our project first.

Memorandum by: Robert L. Collins

Copies to: Those listed above
G. Aaron
R. DeVore
H. Sherwood
M. Jenkins
Project file

Parking Requirements

Parking requirements are determined by the projected number of visitors anticipated to visit the facility by types of transportation, the average number of persons in each type, the peak in-project attendance and the average number of vehicles which can be parked per acre. Additional parking spaces must be provided for employees. This will be based on the number of employees at other parks having similar attendance levels. Therefore, parking requirements can be determined by the following formula:

In Grounds attendance x % arriving by private vehicle = Number of guests serviced.

Number guests serviced/Average number guests per vehicle = Number spaces required.

Number guest spaces /Spaces per acre parking = Number acres required for guest parking.

Number employees in park/Average number of employees per vehicle = Number spaces required.

Number employee spaces/Spaces per acre = Number of acres required for employees.

Guest spaces + employee spaces = Total number spaces.

Guest acres + employee acres = Total number acres.

While only operating experience will allow a precise determination of the number of guests arriving per vehicle and the

number of employees arriving per vehicle, industry averages are as follows:

Average Number of Guests Per Vehicle: This figure will normally vary between an average of 3.2 persons per vehicle and 4.1 persons per vehicle.

Average Number of Employees Per Vehicle: This figure normally averages from 1.2 to 1.5 employees per vehicle and is found to be gradually increasing.

MEMORANDUM: Number Forty-one

DATE: 7 July 1988

PROJECT: Regional Theme Park
Wichita, Kansas

LOCATION: I-135 and 53rd Street North
Wichita, Kansas

SUBJECT: Notification of Adjoining
Property Owners

The enclosed letter was sent to the following owners of property adjacent to our project site on 7 July 1988.

Lester P. Jeter, II
Trustee
2014 Crescent Drive
Seattle, WA 98112

Wilbur A. Neal
Joan M. Neal
2100 E. 45th Street North
Wichita, KS 67219

Samuel A. Mackey
Barbara A. Mackey
2212 E. 45th Street North
Wichita, KS 67219

Melvin R. Hull
Lydia Hull and Hazelle Grulke
16337 Muni Court
Apple Valley, CA 92307

Rural High School
District #192
c/o USD #259
428 S. Broadway
Wichita, KS 67202

Ezelle Williams
1659 North Minnesota
Wichita, Kansas 67214

Keith P. Pendergraft
Loretta M. Pendergraft
5914 E. Zimmerly
Wichita, KS 67218

Joseph P. Olden
Marilyn A. Olden
12540 E. Mt. Vernon
Wichita, KS 67207

John P. Devore
Flora P. Devore
c/o David Brake
1516 Lawrence Ct.
Wichita, KS 67206

PIA Properties
4100 E. 53rd Street North
Wichita, KS 67220

Memorandum by: Robert L. Collins

Copies to: Norman L. Scott
Robert G. Herrman
Gerald T. Aaron
Richard A. DeVore
Howard Sherwood
Allan K. Higdon
Marvin S. Krout
Project file

RECEIVED
JUL 08 1988
METROPOLITAN PLANNING
ROUTE ☐ ~~Jack~~/Bob/file MK
☐ _____

THE OFFICE OF **ROBERT L. COLLINS & ASSOCIATES**

EXECUTIVE PARK EAST
260 NORTH ROCK ROAD • SUITE 160
WICHITA, KANSAS 67206
(316) 683-7515

Seven
July
1988

Dear

Over the past year we have been working on a very exciting project for our community - - development of a regional theme park.

We have executed a real estate purchase agreement with the Scott family for 80 acres of land located between Hillside and Hydraulic on the south side of 53rd Street North. Over the next few weeks, we will be entering into a zoning change request for that project site.

As a property owner within a 1,000-foot radius of the project, you will be receiving official notification from the Metropolitan Area Planning Department regarding this zoning change request. But, because we truly want to be a good neighbor, we feel it's important to communicate our initial planning directly with you. The enclosed news announcement includes preliminary information about the project.

Also, later this month you will be invited to a Citizen Participation Organization meeting. This forum will allow all area residents to discuss and ask questions about this new development.

We hope you can attend the CPO meeting, and look forward to seeing and visiting with you there. Meanwhile, please call me at any time with questions or comments about the project.

Sincerely,

ROBERT L. COLLINS & ASSOCIATES

Robert L. Collins

Enclosure

cc: Project file

NEWS RELEASE

Local Group Investigating New Regional Theme Park For Area

Feasibility studies are complete and master planning is well underway for a proposed $20 million regional theme park to be located just north of Wichita's present city limits.

Robert L. Collins, a local architect who heads a group of four prominent Wichita businessmen sponsoring the project, said city and county staffs are now reviewing data on traffic impact, utility extensions and related planning matters.

"We've gone about this very systematically and comprehensively since mid-1987," Collins said. "We're very serious about it, and the project continues to look like an exciting one for our area."

The 80-acre development will stress creative family fun and entertainment, and include an organizational picnic park. The theme park will incorporate both traditional and unique-to-the-area rides, crafts activities and innovative group entertainment and recreational centers.

(more)

SULLIVAN HIGDON & SINK
ADVERTISING · MARKETING · PUBLIC RELATIONS
801 EAST DOUGLAS · POST OFFICE BOX 11009 WICHITA, KANSAS 67202-0009 · 316-263-0124

About half of the property will be developed initially at a cost of some $10 million, Collins said. Expansions and improvements would take place each year, enhancing and widening the attraction's appeal, and adding to the initial investment.

Collins said while feasibility studies indicate primary visitor traffic would come from Kansas and northern Oklahoma, the facility would also generate guests from outside the immediate region.

"We feel this type of wholesome, family activity is greatly needed in our area and is consistent with the economic development and improved livability objectives of the Wichita/Sedgwick County Partnership for Growth," Collins said. "There would be a lot for teenagers and young adults to enjoy, as well as children and older adults."

During its peak season the theme park would employ some 300 full- and part-time workers.

Collins said a go-ahead by governmental and investor groups by the end of this summer would allow initial construction work to begin at the site sometime this fall. Opening could occur as early as May 1990.

* * *

ROBERT L. COLLINS & ASSOCIATES
ARCHITECTURE • LAND PLANNING • INTERIOR DESIGN
CONSTRUCTION MANAGEMENT • URBAN LAND ECONOMICS
EXECUTIVE PARK EAST
260 NORTH ROCK ROAD • SUITE 160
WICHITA, KANSAS 67206 (316) 683-7515

WICHITA, KS 672
PM
7 JUL
1982

Broad Wagon 1880s
25¢

Mr. Marvin S. Krout
Director of Planning
Wichita/Sedgwick County Metropolitan
Area Planning Department
City Hall - Tenth Floor
455 North Main
Wichita, Kansas 67202

CAST OF CHARACTERS

Planning Consultants

Leisure and Recreation Concepts, Inc.
Michael A. (Mike) Jenkins
President
2151 Fort Worth Avenue
Dallas, TX 75211-1812
(214) 942-4474

Baughman Company, P.A.
William L. Korher, L.S.
John E. Lundblade, L.S.
N. Brent Wooten, P.E.
315 Ellis
Wichita, Kansas 67211
(316) 262-7271

Sponsors

Gerald T. Aaron
President
IPHFHA
Post Office Box 782710
Wichita, Kansas 67278
(316) 685-1208

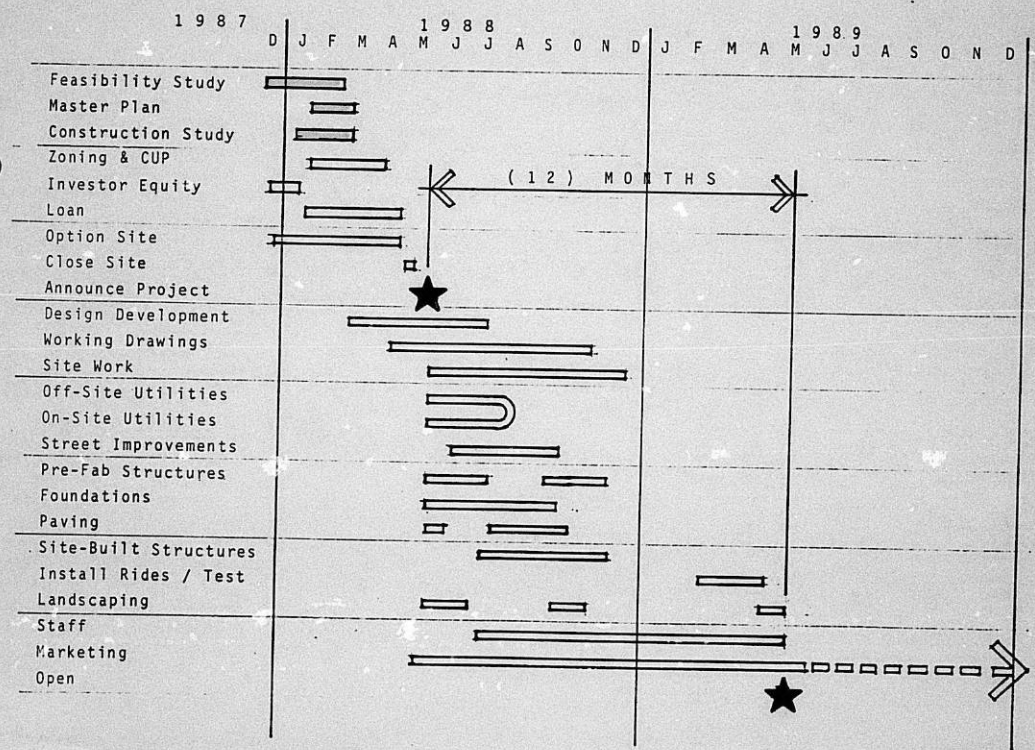
Robert L. Collins, AIA
Principal
Robert L. Collins & Associates
260 North Rock Road - Suite 160
Wichita, Kansas 67206
(316) 683-7515

Richard A. DeVore
Partner
DeVore Enterprises
Post Office Box 118
Wichita, Kansas 67201
(316) 267-3211

Howard Sherwood
President
Sherwood Construction Company, Inc.
Post Office Box 9163
Wichita, Kansas 67277
(316) 943-0211

Regional Theme Park
Wichita, Kansas

T I M E F R A M E S T U D Y



DeShazo, Starek & Tang, Inc.
Engineers • Planners

One Memorial Place, Suite 375
7633 E. 63rd Place • Tulsa, OK 74133-1214
918/250-2621

July 6, 1988

Robert L. Collins
Robert L. Collins & Associates
Executive Park East
260 North Rock Road, Suite 160
Wichita, Kansas 67206

RE: Regional Theme Park in Wichita, Kansas

Dear Mr. Collins:

The proposed theme park in north Wichita, Kansas offers excellent accessibility not only to Wichita but also to the surrounding areas. The site is only one (1) mile from I-135 interchange with N. 53rd Street. The interchange is only one (1) mile north of the north freeway loop around Wichita. Direct street access will be from N. 53rd Street. Arterial street access to 53rd Street is provided by Hydraulic and Hillside Avenues. The site offers the best accessibility of the alternate locations along I-135.

A traffic impact study dated June, 1988, shows that all the adjacent street intersections are operating at an excellent levels of service. With the planned improvements including a left turn lane on 53rd Street at the main entrance, the adjacent street system will not experience any problems.

In summary, the site offers excellent accessibility to adjacent freeways and streets that are operating at high levels of service.

Sincerely,

Nelson B. Nuckles, P.E.
Manager, Tulsa Office

NBN/km

ROBERT L. COLLINS & ASSOCIATES
ARCHITECTURE • URBAN LAND PLANNING
CONSULTING • MARKET RESEARCH • URBAN LAND ECONOMICS
EXECUTIVE PARK EAST
250 NORTH ROCK ROAD • SUITE 160
WICHITA, KANSAS 67206 (316) 683-7515

WICHITA KS 672
PM
15 SEP
1988

CONQUER
MULTIPLE
SCLEROSIS

25 USA

Mr. Marvin S. Krout
Director of Planning - MAPD
City Hall - 10th Floor
455 N. Main
Wichita, KS 67202

WICHITA
PUBLIC SCHOOLS

Office of the
Deputy Superintendent

August 19, 1988

Jack Whitson, Mayor
City of Park City
6125 N. Hydraulic
Wichita, Kansas 67219

Dear Mr. Whitson:

This letter is to follow up our conference on Friday, August 19 regarding additional transportation needs of secondary students in Park City. As I informed you, I will be making a presentation to the Board of Education supporting the request for hazardous transportation as a temporary solution. I want to reiterate and emphasize your assistance in pushing for sidewalk construction in any new commerical or residential development along 53rd North and 61st North from Hydraulic to Hillside.

The long range resolution must be in providing adequate walkways within the 2 1/2 mile area of Heights. It is inevitable that the area in question will be developed given the proposed "Theme Park" on 53rd and Hydraulic and inquiries from commercial investors for land parcels along 53rd. It is reasonable, therefore, to request that proper sidewalks/crossing lights be installed.

Again, thank you for your assistance and support. I look forward to working with you in achieving a long range solution.

Sincerely,

Al Jones
Deputy Superintendent

cc: Mark Borst, Bureau of Public Services
Marvin Krout, Planning Department
Stuart Berger, Superintendent
Members, Board of Education

RECEIVED
AUG 24 1988
METROPOLITAN PLANNING
ROUTE ☐ ~~Jack/Bob~~
☐ [redacted] think we need to have sidewalk blt w/ CUP/development, [redacted] or wait til future widening?
MK

IMPORTANT MESSAGE

FOR Bob

DATE 8-1 TIME 10 A.M. P.M.

WHILE YOU WERE AWAY

Walt Campbell

OF Fire Dept.

PHONE No. 4565

TELEPHONED		PLEASE CALL	
CALLED TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RETURNED YOUR CALL	

MESSAGE W.F.D. has reviewed the development plan proposed for Wichita Family Entertainment Commercial C.U. and have no problems with it.

SIGNED Brooks

FORM 000-017

WICHITA PUBLIC SCHOOLS
ADMINISTRATION BUILDING
Office of the Deputy Superintendent
428 South Broadway
WICHITA, KANSAS 67202

WICHITA KANS. AUG 22 '88 U.S. POSTAGE 0.25

Mr. Marvin Krout
Sedgwick County Planning Dept.
525 N Main
Wichita, KS 67202

SEDGWICK COUNTY
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1688
(316) 268-4561

September 2, 1988

Sylvia Steckley
5500 N. Hillside
Wichita, KS 67219

Re: DP-187 & Z-2925 - Wichita Family Entertainment Commercial C.U.P. and "AA" to "C", one-half mi. west of Hillside on the south side of 53rd St. N.

Dear Ms. Steckley:

The Planning Commission at its regular meeting of September 1, 1988, considered the above-captioned cases, and their action was as indicated on the attached letter.

This is to advise you that if property owners within 200 feet of the application area desire to submit legal protest petitions, they must be submitted to the Office of the City Clerk no later than 5:00 p.m. on Thursday, September 15, 1988. Enclosed are several copies of the protest petition form. If you need more, they may be obtained at our office.

If you have any questions concerning this matter, please call.

Sincerely yours,

Louise Olivarez

Louise Olivarez
Principal Planner

LO/jcm
Enclosures

cc: Dan Phillips, 4709 N. Hydraulic, Wichita, KS, 67219
Kay Woolsey, 5301 N. Hydraulic, Wichita, KS, 67219

SEDGWICK COUNTY

METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1688
(316) 268-4561

September 2, 1988

Brent Wooten
Baughman Company, P.A.
315 S. Ellis
Wichita, KS 67211

Re: DP-187 (Wichita Family Entertainment Commercial C.U.P.) & Z-2925 ("AA" to "C"), located 1/2-mi. west of Hillside on the south side of 53rd St. N.

Dear Brent:

At its regular meeting on September 1, 1988, the Metropolitan Area Planning Commission considered the above-captioned cases. The action of the Planning Commission was to recommend that the commercial development plan and associated zone change request be approved, subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

e. General Provision No. 9 shall be modified to read as follows:

"Parking requirements shall be as follows: Parcel No. 1 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita, or as determined adequate by the Office of Central Inspection in consultation with the applicant on each phase of development, but in no case shall less than 35 spaces be provided for every acre of outside recreation area developed. Parcel No. 2 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita."

f. General Provision No. 10 shall be modified to read as follows:

"A planting strip no less than 20 feet in width is required along the north line of parcels 1 and 2 adjacent to 53rd Street North. Landscape and planting strips no less than 20 feet in width shall also be established within 60 feet of the west line and within 75 feet of the east and south lines of Parcel No. 1.

Trees existing along the east, west and south lines of Parcel No. 1 shall be retained and supplemented with additional trees (on no more than 25-foot spacings) and other landscape materials to maximize the screening of theme park activities from adjacent residential districts. A landscape plan prepared by a landscape architect for the planting strips indicating the type, location and specification of plant materials and the method of providing water to the plant materials shall be submitted to the Planning Department for review and approval on each phase of development prior to the issuance of building permits. A financial guarantee for the acquisition and installation of plant materials approved in the landscape plan shall be required prior to the issuance of any occupancy permit if the required landscaping has not been completed."

g. Condition "E" of the parcel description for Parcel No. 1 shall be modified to read as follows:

"E. Maximum building heights shall be limited to 50 feet, except that one foot may be added to the height of amusement park rides and towers for each foot that the structure or portion thereof is set back from the established building setback line."

h. The term "rentals" shall be removed from condition "G - Proposed uses ..." of the parcel description for Parcel No. 1.

Please submit 10 corrected folded copies of the C.U.P. no later than September 14, 1988, in order for this matter to be forwarded to the City Council for consideration at their regular meeting on September 27, 1988. This meeting will be held in the City Council Chambers, First Floor, City Hall, 455 N. Main, Wichita, Kansas, beginning at 9:00 a.m. We would remind you that planning items are considered after all other matters of business.

This is a reminder that the zoning notification signs should now be removed from the property. If you have any questions concerning this matter, please contact our office.

Sincerely yours,

Louise Olivarez

Louise Olivarez
Principal Planner

LO/jcm

cc: Norman & Jonny Scott, 164 Dogwood, Garfield, AK, 72732
Gary & Marilyn Applegate, 8441 Irwin Rd., #202, Bloomington, MN, 55437
Bill & Geraldine Mason, 4757 Calle Camarada, Santa Barbara, CA, 93110
Gerald T. Aaron, Box 782710, Wichita, KS, 67278
Robert Collins, 260 N. Rock Rd., Ste. 160 Wichita, KS, 67206
Richard A. DeVore, Box 118, Wichita, KS, 67201
Howard Sherwood, Box 9163, Wichita, KS, 67277
Sylvia Steckley, 5500 N. Hillside, Wichita, KS, 67219
Dan Phillips, 4709 N. Hydraulic, Wichita, KS, 67219
Kay Woolsey, 5301 N. Hydraulic, Wichita, KS, 67219

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 6a+b

September 1, 1988

STAFF REPORT

CASE NUMBER:	DP-187 & Z-2925
OWNER/APPLICANT/AGENT:	Norman L. Scott, et al. (owner/applicant) Brent Wooten/Baughman Co., P.A. (agent)
REQUEST:	Approval of Wichita Family Entertainment Commercial Community Unit Plan (C.U.P.) and associated zone change request from "AA" One-Family Dwelling District to "C" Commercial District
CURRENT ZONING:	"AA" One-Family Dwelling District
SITE SIZE:	80.0 acres (gross)
LOCATION:	One-half mile west of Hillside on the south side of 53rd Street North.
PROPOSED USE:	Restaurants, retail businesses, recreation centers, rentals, offices, amusement park rides, sports activity fields and arenas, parking lots, studios, indoor and outdoor theaters or places of entertainment, golf courses, picnic areas, go-cart tracks, warehouses and storage areas for the amusement park only, swimming pools or water recreational facilities, and hotels and motels.

BACKGROUND: The applicant is requesting the approval of a commercial community unit plan and an associated zone change request from the "AA" One-Family Dwelling District to the "C" Commercial District on an unplatted 80-acre tract of land located one-half mile west of Hillside on the south side of 53rd Street North.

The applicant proposes to divide the tract into two parcels for future development. Parcel No. 1 is 69.48 acres in size and is intended to be developed with a recreational/amusement theme park for primarily outdoor entertainment purposes. The parcel is proposed to have a maximum building coverage factor of 15% and a maximum gross floor area of 453,985 square feet.

Parcel No. 2 is 9.92 acres in size and is intended to be developed with support facilities for the recreational theme park, such as restaurants, hotels, motels, indoor recreational centers and parking lots. A maximum gross floor area of 172,795 square feet is proposed with a maximum building coverage on the parcel of 30%.

The maximum building height on both parcels is proposed to be 50 feet, except on Parcel No. 1, where towers and amusement ride structures are to be permitted to a height of 250 feet.

Due to the size of the application area and the large amount of gross floor area requested, the applicant has provided a traffic study. The study indicates that right turn deceleration and left turn storage lanes will be needed along 53rd Street North at the entrances to the project. These improvements are to be guaranteed at the time of platting.

The application area is surrounded by property zoned for residential purposes. Most of the surrounding property is undeveloped and in agricultural use in the County. The property adjoining on the west was recently approved under the County conditional use procedures for the extraction of fill dirt to build the new ramps for the I-135 and I-235 bypass interchange. The project has been completed and the excavation operation has created a small lake on the adjoining property. During the course of the conditional use proceedings, the property owner to the west submitted redevelopment plans which indicated his intent to create large single-family residential lots on the property after excavation of the site was completed. To date, a platted subdivision creating such lots has not been filed. The sketch accompanying the earlier conditional use case, however, indicated a pattern of large single-family lots backing onto the application area.

In consideration of the potential for low density residential development occurring on adjacent properties, it is very important that the less desirable aspects of an amusement/theme park be adequately minimized within the confines of the application area. The tallest, brightest and noisiest structures and facilities should be located toward the center of the site and well away from adjoining residential

areas. The applicant has indicated building setbacks of 60 feet on the west, and 75 feet on the south and east sides of the application areas. Building heights are limited to 50 feet at this point, except towers and amusement rides are proposed to be allowed to heights of 250 feet. The prospect of having an amusement ride or tower structure looming 250 feet over the back yards of single-family residences would not appear acceptable from a land use planning standpoint. It is suggested that an inclining plane be established for building heights, whereby for every additional foot of setback established from the suggested building lines, an additional foot of vertical height of the structure be allowed. It is also suggested that a landscape strip 20 feet or more in width be established along the east, west and south property lines within which any existing tree cover will be retained and supplemented with additional plantings to create a dense landscape screen of the amusement/theme park activities.

CASE HISTORY: The property was annexed into the City on July 22, 1988. There is no prior case history on the property.

ADJACENT ZONING AND LAND USE:

NORTH	"R-1"	Agricultural
SOUTH	"R-1"	Agricultural
EAST	"R-1" & "AA"	Public high school and agricultural
WEST	"R-1"	Agricultural

PUBLIC SERVICES: City Engineering indicates that water service can be provided from a 20" diameter water main existing at 45th Street and Hillside. A 16" diameter main will be extended to the site from that point. Sanitary sewer service may be provided by a private temporary lagoon system until such time as a sewer main existing at Hydraulic and 37th Street is extended to serve the area. The sewer main extension is scheduled to be initiated in 1989 in the current issue of the City's Capital Improvement Program. Access to the property will be provided via 53rd Street North. 53rd Street North is a two-lane County arterial roadway paved to County standards with shoulders and open ditches on each side. The street is scheduled for resurfacing in 1990 in the current issue of Sedgwick County's Capital Improvement Program.

CONFORMANCE TO PLANS/POLICIES: The site is located within an area designated as vacant/agricultural on the Sedgwick County Overall Development Scheme-Year 2000 Map. It is adjacent to an area designated for public/semi-public use. No large scale commercial uses are projected for this area.

RECOMMENDATION: It is recommended that the commercial development plan and associated zone change request be approved, subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

e. General Provision No. 9 shall be modified to read as follows:

> "Parking requirements shall be as follows: Parcel No. 1 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita, or as determined adequate by the Office of Central Inspection in consultation with the applicant on each phase of development, but in no case shall less than 35 spaces be provided for every acre of outside recreation area developed. Parcel No. 2 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita."

f. General Provision No. 10 shall be modified to read as follows:

> "A planting strip no less than 20 feet in width is required along the north line of parcels 1 and 2 adjacent to 53rd Street North. Landscape and planting strips no less than 20 feet in width shall also be established within 60 feet of the west line and within 75 feet of the east and south lines of Parcel No. 1.
>
> Trees existing along the east, west and south lines of Parcel No. 1 shall be retained and supplemented with additional trees (on no more than 25-foot

spacings) and other landscape materials to maximize the screening of theme park activities from adjacent residential districts. A landscape plan prepared by a landscape architect for the planting strips indicating the type, location and specification of plant materials and the method of providing water to the plant materials shall be submitted to the Planning Department for review and approval on each phase of development prior to the issuance of building permits. A financial guarantee for the acquisition and installation of plant materials approved in the landscape plan shall be required prior to the issuance of any occupancy permit if the required landscaping has not been completed."

g. Condition "E" of the parcel description for Parcel No. 1 shall be modified to read as follows:

"E. Maximum building heights shall be limited to 50 feet, except that one foot may be added to the height of amusement park rides and towers for each foot that the structure or portion thereof is set back from the established building setback line."

h. The term "rentals" shall be removed from condition "G - Proposed uses ..." of the parcel description for Parcel No. 1.

i. Add a general provision that states:

"Indoor and outdoor theaters shall have a combined maximum capacity of 1,500 seats."

THE CITY OF WICHITA

DATE: August 16, 1988

TO: Jack Galbraith, Chief Planner, Current Plans

FROM: Barry L. Carroll, Administrative Aide III BLC

SUBJECT: DP-187/Z-2925: One-Half mile west of Hillside on the south side of 53rd Street North.

On Tuesday, August 16, 1988, CPO Atwater/University Neighborhood Council 1B considered the captioned request for approval of the WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN and an associated zone change request from the "AA" One-Family District to the "C" Commercial District.

Council members were provided the notice to adjoining property owners and a map of the area. After extensive discussion, the Council voted 6-2 to recommend approval of the requests.

The applicant, Robert L. Collins, 260 N. Rock Road, Suite 160, was present to describe the requests and respond to questions from the Council. Mr. Collins displayed a site plan and described the various features to be included in the proposed theme park. Mr. Collins noted that, if approved, construction would begin in the fall of '89 and the park would be scheduled to open in 1990. According to Mr. Collins, there will be a ten-year building phase before construction is totally completed.

Kay Woolsey, 5301 N. Hydraulic, was present and voiced opposition to the plan. Ms. Woolsey explained that she was concerned over the potential negative impact of noise and traffic congestion for the area.

Council members, John Smith and Ben Martin, stated that they could not vote for the plan without first reading information contained in MAPD staff comments. MAPD staff comments were not available for members's review. (MAPD staff comments will be provided to members at their next meeting on 9-6-88, following the MAPC and prior to the City Council's meeting).

Please provide the CPO Council's recommendation to the MAPC and City Council when case DP-187 & Z-2925 are considered.

BLC:blc

WICHITA—SEDGWICK COUNTY
W.SC
METROPOLITAN AREA PLANNING DEPARTMENT
CITY HALL — TENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4561

July 19, 1988

Mr. Brent Wooten
Baughman Company, P.A.
315 Ellis
Wichita, Kansas 67211

RE: Staff review of the Wichita Family Entertainment Commercial Community Unit Plan Proposal and Associated Zone Change Request. Generally located one-quarter mile east of Hydraulic on the south side of 53rd Street North.

Dear Brent:

We have reviewed the above-referenced C.U.P. proposal and associated zone change request with the City Engineering and Fire Departments. As we indicated to you and Mr. Collins in our recent discussion, we are concerned about the suggested configuration of Parcel No. 1 along the northern portion of the site. The proposed configuration would establish the potential for strip commercial activities along 53rd Street North. We believe that setting the tone for this type of development along 53rd Street would be imcompatible with the atmosphere you desire to create within the proposed theme park and the character of the surrounding area. We do not view this as an area for neighborhood services. Those services should be encouraged to develop only at major street intersections. If it is intended that the uses on Parcel No. 1 relate to the activities and clientele of the theme park, such as restaurants and motels, they should be oriented inward to face the park and not 53rd Street North. The 53rd Street frontage should be an attractive, well land-scaped introduction to the overall park with large building setbacks and liberal use of landscape materials and features (berms, retaining walls, water features, flower gardens, etc.). Access to the supporting commercial type facilities should be from the interior park roadway system as opposed to direct access from 53rd Street.

Our second major concern is with the proposed location of the roller coaster next to adjoining properties which have the potential for the future development of low density single-family residential uses. In the interest of being the best neighbor possible to this type of development, we believe the brightest, highest and loudest parts of a roller coaster facility (or any other amusement ride facility) should be as far away as possible from potential residential living areas. Please consider establishing a height restriction on the C.U.P. that will provide for the location of tall facilities near the center of your site. A sloping plane with a scale ratio of one foot of height for each two feet of setback from the property line may be acceptable.

In any case, we believe that the setback along the north and west sides of your site should more closely match the setback suggested for the south and east sides (120').

In association with our concerns, we would like to see the proposed use list limited to those types of uses and support facilities directly associated with your theme park facility. This would include restaurants (except drive-up or drive-thru), hotels, motels, service stations, offices, retail shops, amusement park rides, sports acitivity fields and arenas, indoor and outdoor theatres or places of entertainment, golf courses, picnic areas, race tracks (except drag strips, horse and dog tracks and full scale automotive racing facilities), swimming pools and water recreation facilities.

We do not believe wholesale businesses, warehousing or other intensive uses permitted by the "C" General Commercial district are appropriate in this area.

In addition to our above concerns, we suggest that the following comments be added to the general provisions of your C.U.P. proposal:

1. Left turn storage lanes and right turn deceleration lanes to the entrances to 53rd Street North will be guaranteed at the time of platting.

2. The portion of the major entrance to Parcel No. 2, on public right-of-way, will be guaranteed at the time of platting. The portion of the major entrance on private property will be a requirement at the time of any major building permit is required.

3. Trash receptacles, loading docks, maintenance and storage areas, and utility vaults, boxes and equipment shall be screened from ground level view from 53rd Street and adjoining non-commercial districts.

4. Fire hydrant installation and paved access to all building sites shall be provided for each phase of construction prior to the issuance of building permits.

5. Fire lanes shall be in accordance with the fire code of the City of Wichita. No parking shall be allowed in said fire lanes although they may be used for passenger loading and unloading.

6. An overall site development plan shall be provided for approval by the Director of Planning prior to the issuance of building permits.

General Provision No. 9 should be changed to read:

> "Access points as follows: Two points of access to 53rd Street North, one of which will be constructed to major street standards on Parcel No. 2."

It would also be helpful if you could specify on the C.U.P. some measures that will be taken to hold the noise level from rides and activities and direct and indirect background glow of outdoor lighting to a minimum. The intended hours of operation of the theme park should also be indicated.

We would be happy to discuss these comments with you and your client if you have questions about our concerns. The closing date for the August 18, 1988 MAPC hearing is July 20, 1988. The next closing date will be August 3, 1988, for the September 1, 1988 MAPC meeting.

Once you have decided on the final layout and comments for your commercial C.U.P. proposal, please submit (14) fourteen folded copies with your filing fee and ownership list of all owners within 1000 feet of the application area and we will schedule it for a public hearing before the Metropolitan Area Planning Commission.

Sincerely,

Robert L. Young
Principal Planner

RLY:blw

cc: Robert L. Collins, Executive Park East, 260 North Rock Road, Suite 160, Wichita, Kansas 67206

Agenda Item #_____

City of Wichita
City Council Meeting
July 12, 1988

Agenda Report # _____

TO: Mayor and City Council Members

SUBJECT: A88-8 NORMAN L. SCOTT, ETAL AND ROBERT G. HERRMAN, ETAL REQUEST THE ANNEXATION OF PROPERTY ADJOINING THE CITY ON THE NORTHWEST CORNER OF 45TH STREET NORTH AND HILLSIDE.

INITIATED BY: Metropolitan Area Planning Department

AGENDA ACTION: Planning

Recommendation: Approve the annexation request.

Background: Norman L. Scott, Etal and Robert G. Herrman, Etal have requested that property under their ownership be annexed into the City of Wichita. This request is scheduled for consideration by the City Council during the July 12, 1988 meeting. The property is an unplatted tract of land approximately 320.5 acres in size. It is located on the northwest corner of 45th Street North and Hillside. The current City boundary adjoins the property on the south side as indicated on the referral sheet map included with this report as Attachment No. 1.

The property is zoned "R-1" suburban residential district under the Sedgwick County Zoning Resolution except for a 300'x350'x500' triangle of "LC" Light Commercial zoning existing on the northwest corner of the 45th Street North and Hillside Avenue intersection. The Light Commercial zoning exists because when County zoning was established in 1958, most section line intersections within the three-mile ring of Wichita were zoned "LC" on each corner of the intersection for a distance of 600'. Upon annexation, the County "R-1" suburban residential district will convert to the "AA" one-family dwelling district under the City Zoning Code and the County "LC" will convert to City "LC".

The owners have indicated an intent, at this time, to develop the northwest 80 acres of the requested annexation area as a regional theme park. The remaining 240 acres are not presently being considered for development. The owners have submitted additional information concerning the nature and timing of the proposed development. This information is included in the annexation evaluation sheets included as Attachments No. 2A, B and C. In order to develop the proposed 80 acre theme park, it will be necessary for the property owners to file a request for a change of zoning to accommodate the proposed use on the northwest portion of the site. Platting of the property will also be necessary.

Analysis: City Engineering indicates that water service can be provided to the requested annexation area from an existing 20" diameter water main located at 45th Street North and Hillside. It will be necessary to extend a 16" diameter main

approximately 9,240 feet to serve the property requesting annexation. Adequate guarantees for the necessary extension of the water main will be secured at the time final platting of the property occurs.

Sanitary sewer service can be provided to the property by extending a sewer main from a main which exists in District 23 at Hydraulic and 37th Street North. The sewer main project is included in the "proposed current" issue of the City's Capital Improvement Program and is identified under project number S-52 as "extension in District 23 from Hydraulic and 37th Street North to K-254." It is scheduled for construction in 1989 at an estimated cost of $570,000.

The Wichita Fire Department indicates that fire protection can be extended to the requested annexation area from City Fire Station No. 3 located at 3261 N. Broadway, within a five minute response time. The property will also benefit from the "first response" agreement between Sedgwick County Fire District No. 1 and the City of Wichita, whereby the closest City or County fire fighting apparatus and personnel may be dispatched to a fire inside or outside the City limits. The City Fire Department will assume primary responsibility for fire protection service to the site on January 1, 1990.

Upon annexation, police protection will be provided to the property by the officers and equipment in the response areas of Baker Bureau serving the eastern portion of the City.

The property requested for annexation is located adjacent to the future urban growth area of the City of Wichita as delineated in various adopted elements of the comprehensive plan for the metropolitan area.

Financial Considerations: Under current City Policy, the benefitting properties finance the cost of installing water mains up to eight inches in diameter necessary to serve all of the site. The costs of all service connections, meter sets and fire hydrants are also financed by the benefitting properties. Inside the City, the City of Wichita, through the water utility fund, will finance the cost of oversizing water mains that may be necessary in excess of eight inches in diameter. The oversizing costs attributable to the requested annexation area for its proportionate share of the extension of the 16" diameter water main to serve the proposed annexation site are estimated to be $95,000.

The benefitting properties also finance the total cost of extending a lateral sewer line to serve the site. The City, through the sewer utility fund, will participate in financing 50% of the cost of extending sewer mains to serve properties inside the City. Until a sewer service plan can be developed for the area requesting annexation, it is not possible to determine costs of providing main sewer service to the property.

Legal Considerations: The proposal is eligible for annexation under K.S.A. 1987 Supp. 12-520(7) of State law.

Actions: Approve the annexation request and place an annexation ordinance on first reading.

Attachments:
Attachment No. 1 - Referral Sheet Map
Attachment No. 2A, B, & C - Annexation Evaluation Sheet I

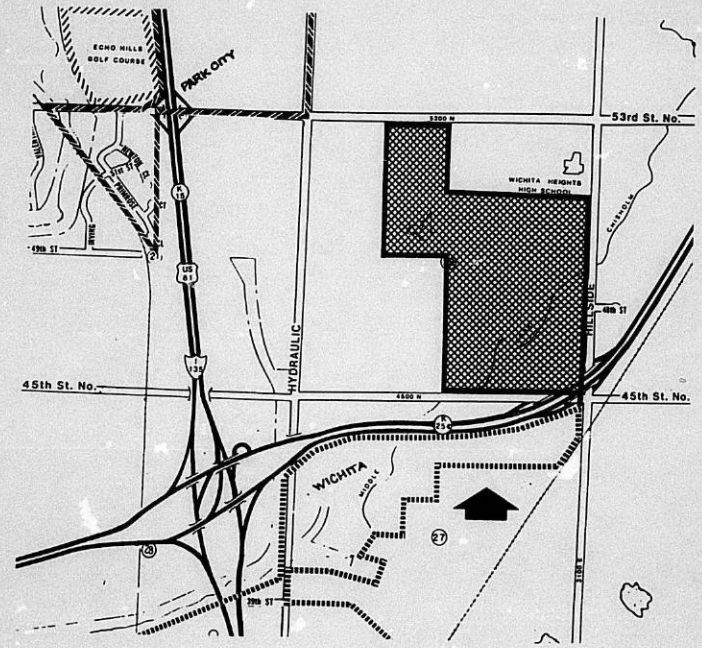
Planning Agenda Item: A98-8 , Attachment No. 1

An ordinance including and incorporating certain blocks, parcels, pieces, and tracts of land within the limits and boundaries of the City of Wichita, Kansas, and relating thereto.

General Location:

314.08	Area in Acres	Reason(s) for Annexation:	
3	Population (Est.)	____	Petition ____%
1	Dwelling Units	____	Needed for benefit district
0	Business Units	X	Other Owner's Request

"R-1" Suburban Residential and "LC" Light Commercial County Zoning



City Limits | Area to be Annexed 1st Rd. Ord. | Area to be Annexed 2nd Rd. Ord.

The City Manager recommends that the ordinance be placed on first reading.

ACTION: Place the ordinance on first reading.

Annexation Evaluation Sheet I

PROJECT INFORMATION

Attachment 2A

Information to be provided by Petitioner:

Owner: NORMAN L. SCOTT, ETAL TRUSTEES 164 DOGWOOD GARFIELD, ARKANSAS 72732
Name Address

Description: SEE ATTACHED EXHIBITS A & B (use common descriptive name and attach separate legal description to this form)
Developed ( )%
Undeveloped (100)%

Location: 2101 EAST 53RD STREET NORTH
Platted ( )%
Unplatted (100)%

Size of Area 80 ACRES Existing Zoning R-1

Current Assessed Valuation: Land 8,000 Impts. -0- Total 8,000

Is existing and/or anticipated development in conformance with existing zoning districts. ☐ Yes ☒ No

If no, what zoning changes will be requested? 65 acres of C
15 acres of LC
acres of

Type of Development Existing and Anticipated:

Residential:	No. of Units	Value of Units	No. of Lots or Acres	Value of Lots or Acres	Total Est. Value
Single Family					
Duplexes					
Four Plexes					
Patio Homes					
Townhouses					
Apartments					
				Total	

Office and Commercial:	Size (sq. ft.)	Unit Value ($/sq. ft.)	Total Estimated Value
Structure			
Exterior Site Improvements	REGIONAL THEME PARK		$10,000,000
Site	80 ACRES	$2.750/ACRE	220,000
		Total	

Estimated number of Employees 206

Industrial:	Size (sq. ft.)	Unit Value ($/sq. ft.)	Total Estimated Value
Structure			
Exterior site Improvements			
Site			
		Total	Total Estimate Value

Estimated Number of Employees NONE

Staging of Development (in %)

	Current Yr.	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 10	Yr. 20
Residential							
Commercial		80%			20%		
Industrial							

EXHIBIT "A"

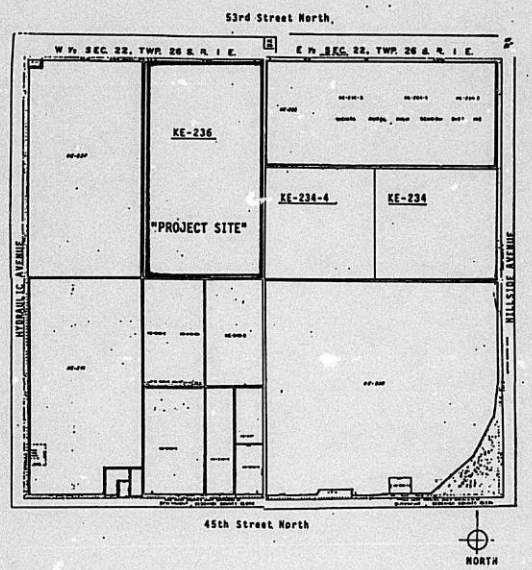
LEGAL DESCRIPTION

KE-236

EAST 1/2 NW 1/4 SEC 22-26-1E SEDGWICK COUNTY, KANSAS

EXHIBIT "B"

TRACT DIAGRAM



Annexation Evaluation Sheet I

PROJECT INFORMATION

Attachment 2B

Information to be provided by Petitioner:

Owner: NORMAN L. SCOTT, ETAL TRUSTEES 164 DOGWOOD GARFIELD, ARKANSAS 72732
Name Address

Description: SEE ATTACHED EXHIBITS A & B (use common descriptive name and attach separate legal description to this form)
Developed ( )%
Undeveloped (100)%

Location: 5001 NORTH HILLSIDE
Platted ( )%
Unplatted ( )%

Size of Area 80.5 ACRES Existing Zoning R-1

Current Assessed Valuation: Land 17,480 Impts. -0- Total 17,480

Is existing and/or anticipated development in conformance with existing zoning districts. ☒ Yes ☐ No

If no, what zoning changes will be requested? _____ acres of _____
_____ acres of _____
_____ acres of _____

Type of Development Existing and Anticipated: SEE NOTE BELOW

Residential:	No. of Units	Value of Units	No. of Lots or Acres	Value of Lots or Acres	Total Est. Value
Single Family					
Duplexes					
Four Plexes					
Patio Homes					
Townhouses					
Apartments					
				Total	

Office and Commercial:	Size (sq. ft.)	Unit Value ($/sq. ft.)	Total Estimated Value
Structure			
Exterior Site Improvements			
Site			
		Total	

Estimated number of Employees _____

Industrial:	Size (sq. ft.)	Unit Value ($/sq. ft.)	Total Estimated Value
Structure			
Exterior site Improvements			
Site			
		Total	Total Estimate Value

Estimated Number of Employees _____

Staging of Development (in %)

	Current Yr.	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 10	Yr. 20
Residential							
Commercial							
Industrial							

NOTE: DEVELOPMENT OF THIS PROPERTY IS NOT PRESENTLY UNDER CONSIDERATION. THE NEED FOR ANNEXATION IS TO PROVIDE LAND ADJACENT TO THE PROPERTY INDICATED AS "PROJECT SITE" ON THE ENCLOSED EXHIBIT "B" TRACT DIAGRAM. A REGIONAL THEME PARK IS PROPOSED FOR THAT PARCEL.

EXHIBIT "A"

LEGAL DESCRIPTION

KE-234

SE 1/4 NE 1/4 & S 16.5 FT NE 1/4 NE 1/4 EXC HILLSIDE AVE.
& EXC BEG 100 FT W SE COR N 250.87 FT SWLY TO PT 125.09
FT W OF BEG E TO BEG FOR RD
SEC 22-26-1E SEDGWICK COUNTY, KANSAS

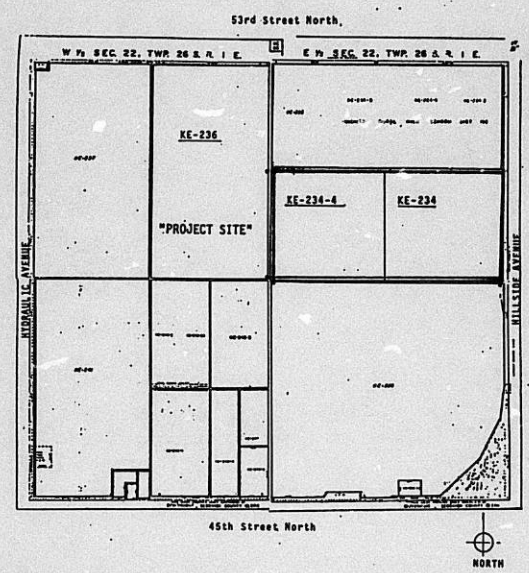
AND

KE-234-0004

SW 1/4 NE 1/4 & S 16.5 FT NW 1/4 NE 1/4
SEC 22-26-1E SEDGWICK COUNTY, KANSAS

EXHIBIT "B"

TRACT DIAGRAM



Annexation Evaluation Sheet I

Attachment 2C

PROJECT INFORMATION

Information to be provided by Petitioner:

Owner: R. G. HERRMAN, ETAL TRUSTEE 1725 WEST 27th STREET NORTH WICHITA, KS 67204
Name Address

Description: SEE ATTACHED EXHIBITS A & B (use common descriptive name and attach separate legal description to this form)

Developed (2)%
Undeveloped (98)%

Location: NORTHWEST CORNER HILLSIDE & 45TH STREET NORTH

Platted ( )%
Unplatted (100)%

Size of Area 160 ACRES Existing Zoning R-1

Current Assessed Valuation: Land 26,570 Impts. 10,150 Total 36,720

Is existing and/or anticipated development in conformance with existing zoning districts. [X] Yes [ ] No

If no, what zoning changes will be requested? _____ acres of _____
_____ acres of _____
_____ acres of _____

Type of Development Existing and Anticipated: SEE NOTE BELOW

Residential:	No. of Units	Value of Units	No. of Lots or Acres	Value of Lots or Acres	Total Est. Value
Single Family					
Duplexes					
Four Plexes					
Patio Homes					
Townhouses					
Apartments					
				Total	

Office and Commercial:	Size (sq. ft.)	Unit Value ($/sq. ft.)	Total Estimated Value
Structure			
Exterior Site Improvements			
Site			
			Total

Estimated number of Employees _____

Industrial:	Size (sq. ft.)	Unit Value ($/sq. ft.)	Total Estimated Value
Structure			
Exterior site Improvements			
Site			
		Total	Total Estimate Value

Estimated Number of Employees _____

Staging of Development (in %)

	Current Yr.	Yr. 2	Yr. 3	Yr. 4	Yr. 5	Yr. 10	Yr. 20
Residential							
Commercial							
Industrial							

NOTE: DEVELOPMENT OF THIS PROPERTY IS NOT PRESENTLY UNDER CONSIDERATION. THE NEED FOR ANNEXATION IS TO PROVIDE LAND ADJACENT TO THE PROPERTY INDICATED AS "PROJECT SITE" ON THE ENCLOSED EXHIBIT "B" TRACT DIAGRAM. A REGIONAL THEME PARK IS PROPOSED FOR THAT PARCEL.

E X H I B I T "A"

LEGAL DESCRIPTION

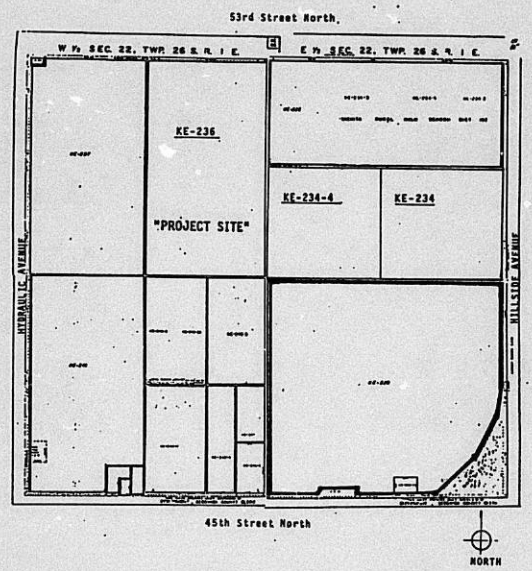
SE 1/4 EXC BEG N LI HWY 1290 FT W SE COR SE 1/4 N 182 FT E 240 FT S 182 FT W TO BEG & EXC K-254 ROW CCAB-19603 & EXC BEG 453 FT N-L S NE COR SE 1/4 N TO NE COR W 75.09 FT SW TO PT 49.13 FT S & 80 FT W NE COR SE 1/4 X 200 FT SELY TO BEG FOR RD. SEC 22-26-1E

AND

BEG ON N LI HWY K-254 ROW 1290 FT W SE COR SE 1/4 N 182 FT E 240 FT S 182 FT W TO BEG SEC 22-26-1E

EXHIBIT "B"

TRACT DIAGRAM



WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING DEPARTMENT

June 27, 1988

TO: Marvin S. Krout, Director of Planning
Walt Campbell, Deputy Chief, Fire Department
Bill McKinley, Traffic Engineer
Mike Lindebak, City Engineer

FROM: Robert L. Young, Principal Planner, Current Plans Division

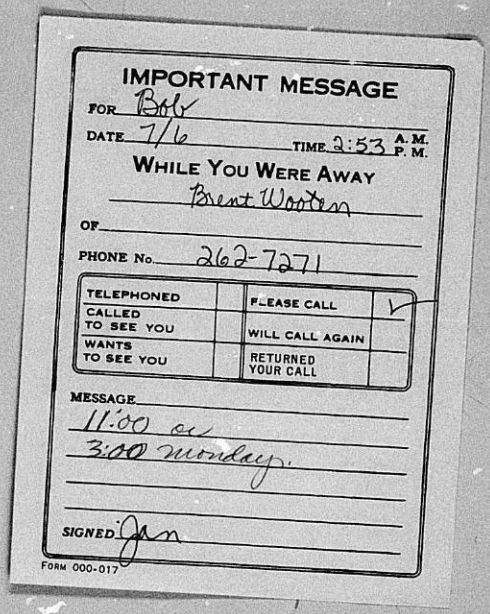
SUBJECT: Proposed development plan for Wichita Family Entertainment Commercial Community Unit Plan. Generally located one-quarter mile east of Hydraulic on the south side of 53rd Street North.

Attached for your review and comment is a copy of a proposed commercial development plan for the above-referenced property. This parcel is in the process of being annexed into the City of Wichita. Once annexation occurs, the applicant intends to file for the approval of this development plan proposal and an associated zone change request for the "LC" Light Commercial and the "C" Commercial Districts on Parcels 1 and 2 respectively. The site is adjacent to Heights High School on the east and is otherwise generally surrounded by undeveloped property in agricultural use. Principal uses proposed for the larger of the two parcels on the development plan are oriented to outdoor entertainment and recreation.

I would appreciate your comments regarding this development proposal as soon as possible so we can schedule it for MAPC consideration. I plan to review this proposal during our next development review committee meeting on Friday morning, July 1, 1988. You may wish to relay your comments on the proposal at that time.

RLY:blw
Attachment

PL/6745/4



IMPORTANT MESSAGE

FOR Bob

DATE 7/6 TIME 2:53 A.M. P.M.

WHILE YOU WERE AWAY

Brent Wooten

OF

PHONE No. 262-7271

TELEPHONED		PLEASE CALL	✓
CALLED TO SEE YOU		WILL CALL AGAIN	
WANTS TO SEE YOU		RETURNED YOUR CALL	

MESSAGE

11:00 or
3:00 Monday.

SIGNED Jan

FORM 000-017

PROPERTY OWNER NOTICES

CASE NO. DP-187

DATE OF MAILOUT: 8/10/88

12	Property Owners
8	Applicant(s) and Agent
3	CPO, Vicky Huang, and City Council Member
5	Jack, Louise, Bob, Forrest and Karen
2	File Copies
30	TOTAL

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING COMMISSION
CITY HALL, TENTH FLOOR, 455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1688

August 10, 1988

TO WHOM IT MAY CONCERN AND TO ALL PERSONS INTERESTED:

NOTICE IS HEREBY GIVEN THAT ON THURSDAY, SEPTEMBER 1, 1988, the Wichita-Sedgwick County Metropolitan Area Planning Commission, in the City Council Chambers, First Floor, City Hall, 455 North Main Street, Wichita, Kansas, beginning at 1:30 p.m., will consider the following applications for approval of the **WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN** and an associated zone change request from the **"AA"** One-family Dwelling District to the **"C"** Commercial District for property legally described as follows:

DP-187 and Z-2925:

The E1/2 of the NW1/4 of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas. **Generally located one-half mile west of Hillside on the south side of 53rd Street North.**

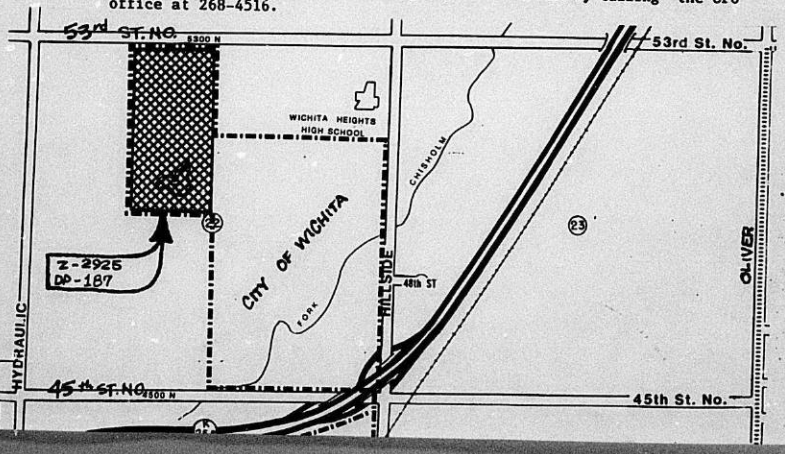
The Development Plan of this area has been submitted as required under the Community Unit Plan provisions of Section 28.04.190 of the Wichita Zoning Ordinance. The Development Plan is on file in the Planning Department Office, Tenth Floor, City Hall, 455 North Main, Wichita, Kansas, and is available for public information and review.

The proposed commercial development plan now on file divides the 79.4-acre site into two (2) parcels for commercial development purposes. The applicant proposes to develop the property with outdoor recreational, amusement park and associated uses. The proposed use list includes restaurants (except drive-up and drive-thru), retail business, recreational centers, rentals, offices, amusement park rides, sports activity fields and arena, parking lots, studios, indoor and outdoor theaters, golf courses, picnic areas, go-cart tracks, warehouses and storage areas only for the amusement park facilities, swimming pools or other water recreation facilities, and hotels and motels. Two points of access are proposed to 53rd Street North, one of which will be constructed to major entrance standards. The maximum gross floor area for the property is not to exceed 778,108 square feet. Information regarding setbacks, access points, landscaping and screening is specified on the plan.

The hearing of the proposed development plan and associated zone change request is to be held and the same will then and there be discussed and considered by said MAPC, and all persons interested in said matters will be heard at this time.

If you have any questions or wish additional information concerning these cases, please call the Planning Department office at 268-4421.

NOTE: We have been advised by the Citizens Participation Organization staff that CPO North Central Neighborhood Council **"1B"** will consider this case at their meeting to be held on **Tuesday, August 16, 1988,** at 7 p.m., at the Evergreen Recreation Center, 2700 North Woodland. Additional information regarding this CPO meeting may be obtained by calling the CPO office at 268-4516.



(_____) Published in The Daily Reporter on August 9, 1988 (One Time)

OFFICIAL NOTICE

TO WHOM IT MAY CONCERN AND TO ALL PERSONS INTERESTED:

NOTICE IS HEREBY GIVEN THAT ON THURSDAY, SEPTEMBER 1, 1988, the Wichita-Sedgwick County Metropolitan Area Planning Commission, in the City Council Chambers, First Floor, City Hall, 455 North Main Street, Wichita, Kansas, beginning at 1:30 p.m., will consider the following applications for approval of the **WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN** and an associated zone change request from the **"AA" One-family Dwelling District** to the **"C" Commercial District** for property legally described as follows:

DP-187 and Z-2925:

The E1/2 of the NW1/4 of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas. **Generally located one-half mile west of Hillside on the south side of 53rd Street North.**

The Development Plan of this area has been submitted as required under the Community Unit Plan provisions of Section 28.04.190 of the Wichita Zoning Ordinance. The Development Plan is on file in the Planning Department Office, Tenth Floor, City Hall, 455 North Main, Wichita, Kansas, and is available for public information and review.

The proposed commercial development plan now on file divides the 79.4-acre site into two (2) parcels for commercial development purposes. The applicant proposes to develop the property with outdoor recreational, amusement park and associated uses. The proposed use list includes restaurants (except drive-up and drive-thru), retail business, recreational centers, rentals, offices, amusement park rides, sports activity fields and arena, parking lots, studios, indoor and outdoor theaters, golf courses, picnic areas, go-cart tracks, warehouses and storage areas only for the amusement park facilities, swimming pools or other water recreation facilities, and hotels and motels. Two points of access are proposed to 53rd Street North, one of which will be constructed to major entrance standards. The maximum gross floor area for the property is not to exceed 778,108 square feet. Information regarding setbacks, access points, landscaping and screening is specified on the plan.

The hearing of the proposed development plan and associated zone change request is to be held and the same will then and there be discussed and considered by said MAPC, and all persons interested in said matters will be heard at this time.

WITNESS MY HAND this 9th day of August, 1988.

Marvin S. Krout, Secretary
Wichita-Sedgwick County
Metropolitan Area Planning Commission

CASE NO. DP-187

WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN

The E1/2 of the NW1/4 of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas. Generally located one-half mile west of Hillside on the south side of 53rd Street North.

CITY APPLICATION FEE - $525.00

APPLICATION FOR COMMUNITY UNIT PLAN (PLANNED RESIDENTIAL OR COMMERCIAL DEVELOPMENT) FOR PROPERTY LOCATED WITHIN THE LIMITS OF THE CITY OF WICHITA, KANSAS

DP-187

This is an application for a Community Unit Plan - Planned Development. The form must be completed and filed at the Planning Department, Tenth Floor, City Hall, 455 North Main Street, Wichita, Kansas, in accordance with directions on the accompanying instruction sheet. AN INCOMPLETE APPLICATION CANNOT BE ACCEPTED.

1. Name of applicant or applicants and/or their agent or agents.

Property Owners

Norman L. & Jonny Scott
164 Dogwood
Garfield, AK 72732
Phone: (501) 359-3538

Gary A. & Marilyn Applegate
8441 Irwin Road - No. 202
Bloomington, Minnesota 55437
Phone: (612) 831-0194

Bill & Geraldine Mason
4757 Calle Camarada
Santa Barbara, California 93110
Phone: (805) 964-2118

Authorized Agent

Robert L. Collins
Robert L. Collins & Associates
260 N. Rock Road - Suite 160
Wichita, Kansas 67206
Phone: (316) 683-7515

Contract Purchasers

Gerald T. Aaron
Post office Box 782710
Wichita, KS 67278
Phone: (316) 685-1208

Robert L. Collins
260 N. Rock Road - Suite 160
Wichita, Kansas 67206
(316) 683-7515

Richard A. DeVore
Post Office Box 118
Wichita, Kansas 67201
Phone: (316) 267-3211

Howard Sherwood
Post Office Box 9163
Wichita, Kansas 67277
Phone: (316) 942-0211

2. A. The applicant hereby requests (approval) amendment (circle appropriate word) of a Community Unit Plan on property zoned C - COMMERCIAL* and legally described as Lot(s) (SEE BELOW), Block(s) _____ of the _____ Addition.

(If appropriate, metes and bounds description may be provided in the space below or on an attached sheet).

*ZONING CHANGE REQUEST UNDER SIMULTANEOUS CONSIDERATION

LEGAL DESCRIPTION

EAST 1/2 NW 1/4 SECTION 22-26-1E, WICHITA, SEDGWICK COUNTY, KANSAS

B. There are 80 acres (round to nearest tenth) in the above described property.

FOR OFFICE USE ONLY

CPO 13-8-16-88

Map No. 5653D Zoning (N) "R1" (S) "R1" (E) "AA", "R1" (W) "R-1" MAPC 9-1-88

T9-330-3 Revised 5/87

3. The general location is (USE APPROPRIATE SECTION):

A. At the _____ corner of _____ and _____, OR

B. On the south side of 53rd St. North (Ave.)Street between Hydraulic (Ave.)Street and Hillside (Ave.)Street.

4. WE ACKNOWLEDGE RECEIPT OF THE INSTRUCTION SHEET EXPLAINING THE METHOD OF SUBMITTING THIS APPLICATION. WE REALIZE THAT THIS APPLICATION CANNOT BE PROCESSED UNLESS IT IS COMPLETELY FILLED IN; IS ACCOMPANIED BY A CURRENT ABSTRACTOR'S CERTIFICATE AS REQUIRED IN THE INSTRUCTION SHEET; AND IS ACCOMPANIED BY THE APPROPRIATE FEE. WE FURTHER CERTIFY THAT THE ABOVE AND FOREGOING INFORMATION IS TRUE AND CORRECT TO THE BEST OF OUR KNOWLEDGE. WE ACKNOWLEDGE THAT THE BOARD OF CITY COMMISSIONERS SHALL HAVE AUTHORITY TO IMPOSE SUCH CONDITIONS THAT IT DEEMS NECESSARY IN ORDER TO SERVE THE PUBLIC INTEREST AND WELFARE.

APPLICANTS SIGNATURE

Norman L. Scott — Jonny Scott

CONTRACT PURCHASER

Robert L. Collins

Marilyn Applegate — Gary A. Applegate

Geraldine Mason — Bill Mason

AUTHORIZED AGENT:

Robert L. Collins & Associates

J. Brent Wooten

J. Brent Wooten

OFFICE USE ONLY

This application was received at the Planning Department at 3:15 (AM, PM) on July 21, 1988 (day, month, year). It has been checked and found to be complete and accompanied by required documents and the appropriate fee of $525.00.

Robert L Young — Name

Principal Planner — Title

T9-330-4

Revised 5/87

SECURITY IS KNOWING
Title Insurance • Escrow Closings • Abstracts

OWNERSHIP LIST

Property Description	Property Owner
The E½ of the NW¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Geraldine Mae Mason and Marilyn Kay Applegate and Norman Lee Scott, as trustees 5152 N. Hillside Wichita, KS 67219
The W½ of the NW¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, except beginning 28 feet East of the NW/c of the W½ of the NW¼; th. East 10 rods; th. South 8 rods; th. West 10 rods; th. North 8 rods to the point of beginning.	Lester Palmer Jeter II, Trustee 2014 Crescent Dr. Seattle, WA 98112
The W½ of the N½ of the E½ of the SW¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Wilbur Alfred Neal Joan M. Neal 2100 E. 45th St. North Wichita, KS 67219
The E½ of the N½ of the E½ of the SW¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Samuel A. Mackey Barbara A. Mackey 2212 E. 45th St. North Wichita, KS 67219
The W½ of the SW¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, except beginning at the SE/c of said SW¼; th. North 357.5 feet; th. West 396 feet; th. South 357.5 feet; th. East 396 feet to beginning.	Melvin R. Hull Lydia Hull and Hazelle Grulke 16337 Muni Ct. Apple Valley, CA 92307
The W½ of the NW¼ of the NE¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, except the South 16½ feet thereof. The E½ of the NW¼ of the NE¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, except the South 16½ feet thereof.	Rural High School District #192 c/o USD #259 428 S. Broadway Wichita, KS 67202 Same As Above
The SW¼ of the NE¼ and the South 16½ feet of the NW¼ of the NE¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Geraldine Mae Mason and Marilyn Kay Applegate and Norman Lee Scott, as trustees 5152 N. Hillside Wichita, KS 67219
The SE¼ of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Scott A. Herrman and Rogert G. Herrman and Terrence Lee Herrman c/o Robert G. Herrman 1725 W. 27th St. North Wichita, KS 67204

SECURITY IS KNOWING

Title Insurance • Escrow Closings • Abstracts

Property Description	Property Owner
The East 6 acres of the East 15 acres of the S½ of the SW¼ of Section 15, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Ezell Williams 1659 N. Minnesota Wichita, KS 67214
The West 9 acres of the East 15 acres of the S½ of the SW¼ of Section 15, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Same As Above
The West 15 acres of the East 30 acres of the S½ of the SW¼ of Section 15, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.	Keith P. Pendergraft Loretta M. Pendergraft 5914 E. Zimmerly Wichita, KS 67218
The S½ of the SW¼ of Section 15, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, except a 20 acre tract described as beginning at the SW/c of the SW¼; th. North approximately 933.318 feet; th. East approximately 933.381 feet; th. South 933.381 feet; th. West to the point of beginning, and except the East 30 acres thereof.	Joseph P. Olden Marilyn A. Olden 12540 E. Mt. Vernon Wichita, KS 67207
A tract in the S½ of the SW¼ of Section 15, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, described as beginning at the SW/c of the SW¼; th. North approximately 933.318 feet; th. East approximately 933.381 feet; th. South 933.381 feet; th. West to the point of beginning.	John P. Devore Flora P. Devore c/o David Brake 1516 Lawrence Ct. Wichita, KS 67206
The SE¼ of Section 15, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas, except the East 531 feet of the North 349 feet thereof and except the East 50 feet and South 40 feet for roads.	PIA Properties 4100 E. 53rd St. North Wichita, KS 67220

We hereby certify the foregoing to be a true and correct list of the property owners of the hereinbefore described tracts within a 1000 foot radius of:

The East Half of the Northwest Quarter of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas.

as shown by the last deed of record on file in the Office of the Register of Deeds, Sedgwick County, Kansas, on the 1st day of June, 1988, at 7:00 o'clock A.M.

THE SECURITY ABSTRACT AND TITLE COMPANY, INC.

By Glenn B. Edwards
Vice-President

Order No. 395335 nj

DATA SHEET

MAP #: 5653D

Z-
SCZ-
CU-
LR-
DP- 187
Amend #
Case Filed: 7/21/88
Associated Case: Z-2925
CPO Council Area: 1B
CPO Meeting Date: 8/16/88
MAPC Hearing Date: 9/1/88

APPLICATION DATA:

1. **GENERAL LOCATION:** One-half mile west of Hillside on the south side of 53rd Street North

2. **FROM** _____ to _____

3. **Proposed Use:** _____

4. **DP Name:** WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN

5. **Applicant:** Norman L. and Jonny Scott
   Address: 164 Dogwood, Garfield, AK. 72732 **Phone:** (501) 359-3538

   Applicant: Gary A. and Marilyn Applegate
   Address: 8441 Irwin Road, #202, Bloomington, MN. 55437 **Phone:** (612)831-0194

   Applicant: Bill and Geraldine Mason
   Address: 4757 Calle Camarada, Santa Barbara, CA. 93110 **Phone:** (805)964-2118

   Applicant: Gerald T. Aaron
   Address: P. O. Box 782710, Wichita, KS. 67278 **Phone:** 685-1208

   Applicant: Robert L. Collins
   Address: 260 N. Rock Rd., Suite 160, Wichita, KS. 67206 **Phone:** 683-7515

   Applicant: Richard A. DeVore
   Address: P. O. Box 118, Wichita, KS. 67201 **Phone:** 267-3211

   Applicant: Howard Sherwood
   Address: P.O. Box 9163, Wichita, KS. 67277 **Phone:** 942-0211

6. **Agent:** N. Brent Wooten, c/o Baughman Company, P.A.
   Address: 315 South Ellis, Wichita, KS. 67211 **Phone:** 262-7271

AREA DATA:

1. **Acres:** 80 (_____ ft. by _____ ft.)
2. **Adjoining Zoning:** N "R-1" S "R-1" E "AA" & "R-1" W "R-1"
3. **Land Use:** North _____ South _____
   East _____ West _____

No 00275

METROPOLITAN AREA PLANNING DEPARTMENT

Description Commercial CUP & Zone Change Application

Name Brent Wooten

Address 215 Ellis Wichita, Ks. 67211

Fund No. (circle one) (755-40710-003) (fees) 755-40710-004 (books, xerox) 755-40710-026 (microfilm)

Amount $225.00

Date 7/21/88 Due Date 7/21/88 By [illegible]

Form 00-000

Bob: gave this file to the west. JS

Jack/Bob: let me know what the proposed development to west of theme park looks like. Roller coaster @ that location still bothers me/especially if it is tall & near property line. Would like you to draft a letter noting our concerns & comments, including that one, & also – "racetracks"
– concerts for >1200 people
– more specific descriptions of tree rows to be preserved, added landscaping along 53rd & other prop'y lines
– uses near 53rd to be oriented "inward" – no access, etc. to 53rd
– sign limits
– other?
MK

8-5-88

Bob: Pull the CUP west of Dubs Diamonds to see how we handled noise from "Go Carts". We may had a shuffle standard or decibel reading.

(nothing there)

MK

Here is the file on the property west of Theme Park. Note SF lots right next to proposed roller coster.

Thanks. I'm still really troubled by this. Maybe 80 acres just isn't enough land to do what they want and create good buffers – I think that's their problem to solve. What is rel'ship of Joyland's roller coasters to SF homes? We should make them (negative) plant that 30 foot strip along the west line.... MK

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING COMMISSION
CITY HALL, TENTH FLOOR, 455 NORTH MAIN STREET
WICHITA, KANSAS 67202-1688

August 10, 1988

TO WHOM IT MAY CONCERN AND TO ALL PERSONS INTERESTED:

NOTICE IS HEREBY GIVEN THAT ON THURSDAY, SEPTEMBER 1, 1988, the Wichita-Sedgwick County Metropolitan Area Planning Commission, in the City Council Chambers, First Floor, City Hall, 455 North Main Street, Wichita, Kansas, beginning at 1:30 p.m., will consider the following applications for approval of the **VICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN** and an associated zone change request from the **"AA" One-family Dwelling District to the "C" Commercial District** for property legally described as follows:

DP-187 and Z-2925:

The E1/2 of the NW1/4 of Section 22, Township 26 South, Range 1 East of the 6th P.M., Sedgwick County, Kansas. Generally located one-half mile west of Hillside on the south side of 53rd Street North.

The Development Plan of this area has been submitted as required under the Community Unit Plan provisions of Section 28.04.190 of the Wichita Zoning Ordinance. The Development Plan is on file in the Planning Department Office, Tenth Floor, City Hall, 455 North Main, Wichita, Kansas, and is available for public information and review.

The proposed commercial development plan now on file divides the 79.4-acre site into two (2) parcels for commercial development purposes. The applicant proposes to develop the property with outdoor recreational, amusement park and associated uses. The proposed use list includes restaurants (except drive-up and drive-thru), retail business, recreational centers, rentals, offices, amusement park rides, sports activity fields and arena, parking lots, studios, indoor and outdoor theaters, golf courses, picnic areas, go-cart tracks, warehouses and storage areas only for the amusement park facilities, swimming pools or other water recreation facilities, and hotels and motels. Two points of access are proposed to 53rd Street North, one of which will be constructed to major entrance standards. The maximum gross floor area for the property is not to exceed 778,108 square feet. Information regarding setbacks, access points, landscaping and screening is specified on the plan.

The hearing of the proposed development plan and associated zone change request is to be held and the same will then and there be discussed and considered by said MAPC, and all persons interested in said matters will be heard at this time.

If you have any questions or wish additional information concerning these cases, please call the Planning Department office at 268-4421.

NOTE: We have been advised by the Citizens Participation Organization staff that CPO North Central Neighborhood Council "1B" will consider this case at their meeting to be held on **Tuesday, August 16, 1988,** at 7 p.m., at the Evergreen Recreation Center, 2700 North Woodland. Additional information regarding this CPO meeting may be obtained by calling the CPO office at 268-4516.

CPO "1B"
meets at
Atwater
not Evergreen.
L.O.
8-17-88

(_____) Published in the Daily Record on _____, 1986 (One Time)

OFFICIAL NOTICE

TO WHOM IT MAY CONCERN AND TO ALL PERSONS INTERESTED:

NOTICE IS HEREBY GIVEN that on Thursday, SEPTEMBER 1, 1988, 1986, the Wichita-Sedgwick County Metropolitan Area Planning Commission (MAPC), at a meeting beginning at 1:30 p.m. in the City ~~Commission Meeting Room~~ Council Chambers, First Floor of City Hall, 455 North Main, Wichita, Kansas, will consider an application for (approval of ~~Amendment to~~) the WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN for property legally described as follows: and associated zone change request from the "AA" one-family Dwelling District to the "C" Commercial District

DP-187

In association with this Community Unit Plan (Development Plan), re-zoning has been requested as follows:

Z-2925

The Development Plan of this area has been submitted as required under the Community Unit Plan provisions of Section 28.04.190 of the Wichita Zoning Ordinance. The Development Plan is on file in the Planning Department Office, Tenth Floor, City Hall, 455 North Main, Wichita, Kansas, and is available for public information and review.

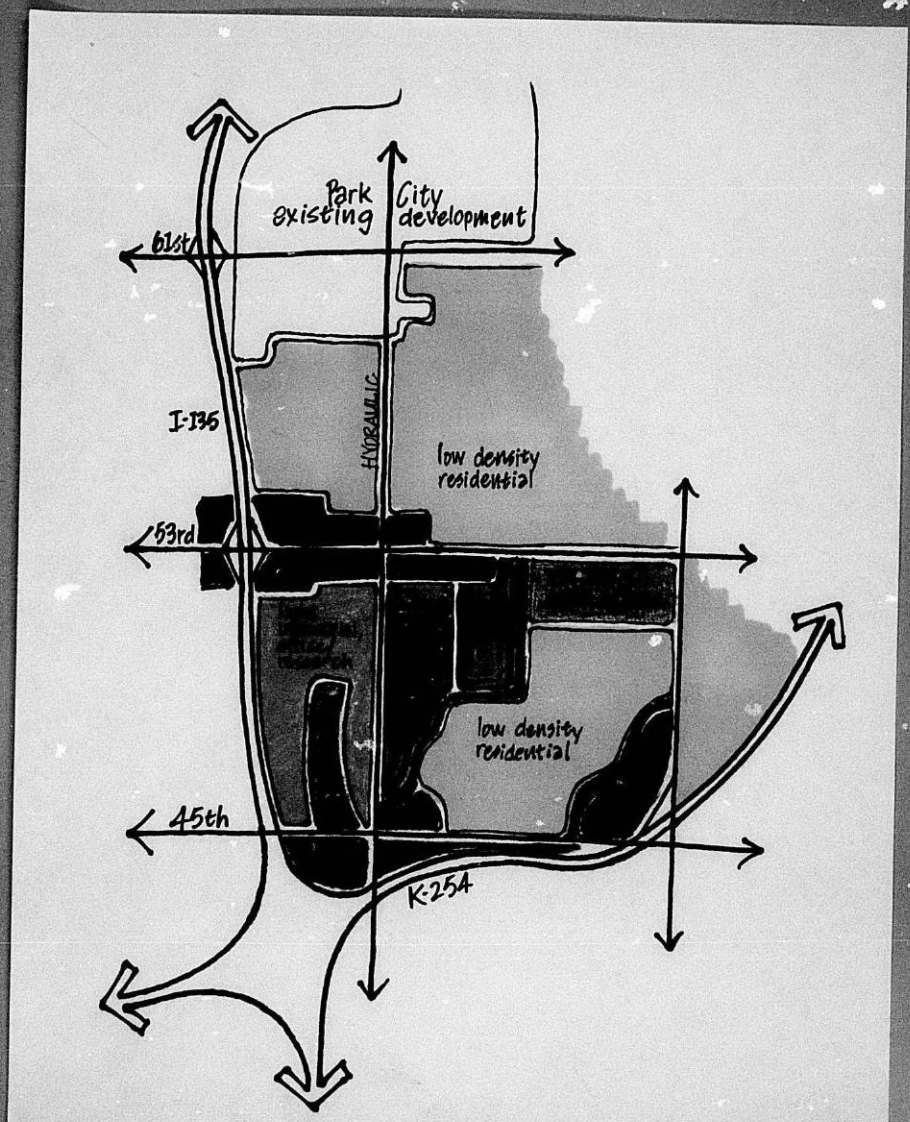
The proposed Commercial Development Plan now on file divides the 79.4 acre site into two (2) parcels for commercial development purposes. The applicant proposes to develope the property with ~~outdoor~~ recreational, ~~and~~ amusement park and associated uses. The proposed use list includes restaurants (except drive ups and drive thrus), retail business, recreational centers, rentals, offices, amusement park rides, sports activity fields and arenas, parking lots, studios, indoor and outdoor theatres, golf courses, picnic areas, go cart tracks, warehouses and storage areas only for the amusement park facilities, swimming pools or other water recreation facilities, and hotels and motels. Two points of access are proposed to 53rd Street north, one of which will be constructed to major entrance standards. The maximum gross floor area for the property ~~shall~~ is not to exceed 778,108 square feet. Information regarding set backs, access points, landscaping, and screening is specified on the plan. The hearing of the proposed Development Plan and associated zone change request is to be held and the same will then and there be discussed by said MAPC. Those persons interested in this matter will be heard at that time.

WITNESS MY HAND AND SEAL this _____ day of _____, 1986.

Michael E. Lindebak, Secretary
Wichita-Sedgwick County
Metropolitan Area Planning
Commission

(SEAL)

(CUP OFFICIAL NOTICE SAMPLE)


Park existing
City development
61st
I-135
HYDRAULIC
low density residential
53rd
low density residential
45th
K-254

DP-187 & Z-2925

WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING DEPARTMENT

DATE: September 20, 1988

TO: Mayor and City Council Members
(through Chris Cherches, City Manager)

FROM: Marvin S. Krout, Director of Planning MKrout

SUBJECT: DP-187 and Z-2925

These two associated cases on your Planning Agenda for September 27 concern the proposed recreational theme park on a recently annexed tract on 53rd Street North. Since the MAPC meeting, staff has continued to discuss the proposed development with the applicant, and would suggest that the following additional conditions be included in any motion to approve the CUP application:

1. To address potential noise impacts: "Outdoor sound amplification equipment shall be directed away from adjacent properties and baffled if necessary to minimize the noise impact on those properties."

2. To prevent the property from being used for major concerts that are not a part of the overall daily activity of the theme park, and might overload the road system due to peaking traffic: "The property shall not be used for a musical performance attracting more than 1500 attendees, unless that performance is part of a larger set of attractions available to those same attendees on the property on the same day or evening of the performance."

3. To clarify the perimeter setback: "Tracks, trestles, and equipment associated with at-grade scaled train ride is permitted outside the perimeter building setbacks but not within the perimeter landscaped areas."

The applicants have reviewed these additions and concur with their being appended to the CUP.

MSK:rme

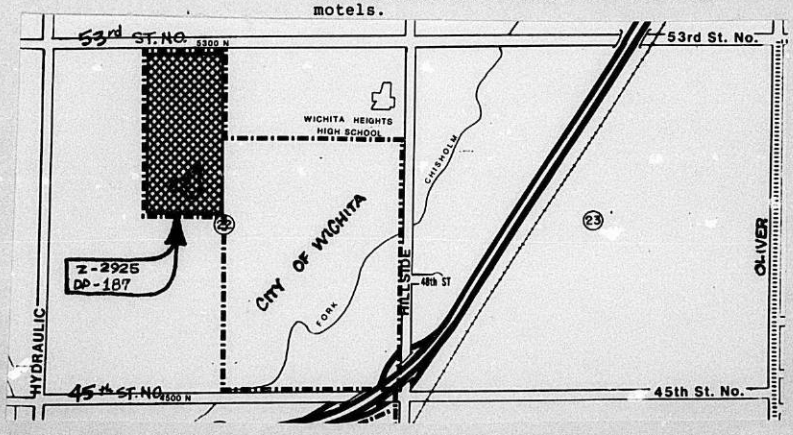
WICHITA-SEDGWICK COUNTY
METROPOLITAN AREA PLANNING COMMISSION

AGENDA ITEM NO. 6a+b

September 1, 1988

STAFF REPORT

CASE NUMBER:	DP-187 & Z-2925
OWNER/APPLICANT/AGENT:	Norman L. Scott, et al. (owner/applicant) Brent Wooten/Baughman Co., P.A. (agent)
REQUEST:	Approval of Wichita Family Entertainment Commercial Community Unit Plan (C.U.P.) and associated zone change request from "AA" One-Family Dwelling District to "C" Commercial District
CURRENT ZONING:	"AA" One-Family Dwelling District
SITE SIZE:	80.0 acres (gross)
LOCATION:	One-half mile west of Hillside on the south side of 53rd Street North.
PROPOSED USE:	Restaurants, retail businesses, recreation centers, rentals, offices, amusement park rides, sports activity fields and arenas, parking lots, studios, indoor and outdoor theaters or places of entertainment, golf courses, picnic areas, go-cart tracks, warehouses and storage areas for the amusement park only, swimming pools or water recreational facilities, and hotels and motels.



BACKGROUND: The applicant is requesting the approval of a commercial community unit plan and an associated zone change request from the "AA" One-Family Dwelling District to the "C" Commercial District on an unplatted 80-acre tract of land located one-half mile west of Hillside on the south side of 53rd Street North.

The applicant proposes to divide the tract into two parcels for future development. Parcel No. 1 is 69.48 acres in size and is intended to be developed with a recreational/amusement theme park for primarily outdoor entertainment purposes. The parcel is proposed to have a maximum building coverage factor of 15% and a maximum gross floor area of 453,985 square feet.

Parcel No. 2 is 9.92 acres in size and is intended to be developed with support facilities for the recreational theme park, such as restaurants, hotels, motels, indoor recreational centers and parking lots. A maximum gross floor area of 172,795 square feet is proposed with a maximum building coverage on the parcel of 30%.

The maximum building height on both parcels is proposed to be 50 feet, except on Parcel No. 1, where towers and amusement ride structures are to be permitted to a height of 250 feet.

Due to the size of the application area and the large amount of gross floor area requested, the applicant has provided a traffic study. The study indicates that right turn deceleration and left turn storage lanes will be needed along 53rd Street North at the entrances to the project. These improvements are to be guaranteed at the time of platting.

The application area is surrounded by property zoned for residential purposes. Most of the surrounding property is undeveloped and in agricultural use in the County. The property adjoining on the west was recently approved under the County conditional use procedures for the extraction of fill dirt to build the new ramps for the I-135 and I-235 bypass interchange. The project has been completed and the excavation operation has created a small lake on the adjoining property. During the course of the conditional use proceedings, the property owner to the west submitted redevelopment plans which indicated his intent to create large single-family residential lots on the property after excavation of the site was completed. To date, a platted subdivision creating such lots has not been filed. The sketch accompanying the earlier conditional use case, however, indicated a pattern of large single-family lots backing onto the application area.

In consideration of the potential for low density residential development occurring on adjacent properties, it is very important that the less desirable aspects of an amusement/theme park be adequately minimized within the confines of the application area. The tallest, brightest and noisiest structures and facilities should be located toward the center of the site and well away from adjoining residential

areas. The applicant has indicated building setbacks of 60 feet on the west, and 75 feet on the south and east sides of the application areas. Building heights are limited to 50 feet at this point, except towers and amusement rides are proposed to be allowed to heights of 250 feet. The prospect of having an amusement ride or tower structure looming 250 feet over the back yards of single-family residences would not appear acceptable from a land use planning standpoint. It is suggested that an inclining plane be established for building heights, whereby for every additional foot of setback established from the suggested building lines, an additional foot of vertical height of the structure be allowed. It is also suggested that a landscape strip 20 feet or more in width be established along the east, west and south property lines within which any existing tree cover will be retained and supplemented with additional plantings to create a dense landscape screen of the amusement/theme park activities.

CASE HISTORY: The property was annexed into the City on July 22, 1988. There is no prior case history on the property.

ADJACENT ZONING AND LAND USE:

NORTH	"R-1"	Agricultural
SOUTH	"R-1"	Agricultural
EAST	"R-1" & "AA"	Public high school and agricultural
WEST	"R-1"	Agricultural

PUBLIC SERVICES: City Engineering indicates that water service can be provided from a 20" diameter water main existing at 45th Street and Hillside. A 16" diameter main will be extended to the site from that point. Sanitary sewer service may be provided by a private temporary lagoon system until such time as a sewer main existing at Hydraulic and 37th Street is extended to serve the area. The sewer main extension is scheduled to be initiated in 1989 in the current issue of the City's Capital Improvement Program. Access to the property will be provided via 53rd Street North. 53rd Street North is a two-lane County arterial roadway paved to County standards with shoulders and open ditches on each side. The street is scheduled for resurfacing in 1990 in the current issue of Sedgwick County's Capital Improvement Program.

CONFORMANCE TO PLANS/POLICIES: The site is located within an area designated as vacant/agricultural on the Sedgwick County Overall Development Scheme-Year 2000 Map. It is adjacent to an area designated for public/semi-public use. No large scale commercial uses are projected for this area.

RECOMMENDATION: It is recommended that the commercial development plan and associated zone change request be approved, subject to the following conditions:

a. The development of this property shall proceed in accordance with the development plan as recommended for approval by the Planning Commission and approved by the governing body, and any substantial deviation of the plan, as determined by the Superintendent of Central Inspection and the Director of Planning, shall constitute a violation of the building permit authorizing construction of the proposed development.

b. Any major changes in this development plan shall be submitted to the Planning Commission and to the City Council for their consideration.

c. The transfer of title of all or any portion of the land included within the C.U.P. does not constitute a termination of the plan or any portion thereof, but said plan shall run with the land for commercial development and be binding upon the present owners, their successors and assigns, unless amended.

d. All property included within this C.U.P. and zone case shall be platted within one year after approval of this C.U.P. by the City Council or the cases shall be considered denied and closed. The ordinance establishing the zone change shall not be published until the plat has been recorded with the Register of Deeds.

e. General Provision No. 9 shall be modified to read as follows:

> "Parking requirements shall be as follows: Parcel No. 1 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita, or as determined adequate by the Office of Central Inspection in consultation with the applicant on each phase of development, but in no case shall less than 35 spaces be provided for every acre of outside recreation area developed. Parcel No. 2 - Parking shall be provided in accordance with Section 28.04.140 et. seq. of the Code of the City of Wichita."

f. General Provision No. 10 shall be modified to read as follows:

> "A planting strip no less than 20 feet in width is required along the north line of parcels 1 and 2 adjacent to 53rd Street North. Landscape and planting strips no less than 20 feet in width shall also be established within 60 feet of the west line and within 75 feet of the east and south lines of Parcel No. 1.
>
> Trees existing along the east, west and south lines of Parcel No. 1 shall be retained and supplemented with additional trees (on no more than 25-foot

spacings) and other landscape materials to maximize the screening of theme park activities from adjacent residential districts. A landscape plan prepared by a landscape architect for the planting strips indicating the type, location and specification of plant materials and the method of providing water to the plant materials shall be submitted to the Planning Department for review and approval on each phase of development prior to the issuance of building permits. A financial guarantee for the acquisition and installation of plant materials approved in the landscape plan shall be required prior to the issuance of any occupancy permit if the required landscaping has not been completed."

g. Condition "E" of the parcel description for Parcel No. 1 shall be modified to read as follows:

"E. Maximum building heights shall be limited to 50 feet, except that one foot may be added to the height of amusement park rides and towers for each foot that the structure or portion thereof is set back from the established building setback line."

h. The term "rentals" shall be removed from condition "G - Proposed uses ..." of the parcel description for Parcel No. 1.

i. Add a general provision that states:

"Indoor and outdoor theaters shall have a combined maximum capacity of 1,500 seats."

THE CITY OF WICHITA

DATE: August 16, 1988

TO: Jack Galbraith, Chief Planner, Current Plans

FROM: Barry L. Carroll, Administrative Aide III BLC

SUBJECT: DP-187/Z-2925: One-Half mile west of Hillside on the south side of 53rd Street North.

On Tuesday, August 16, 1988, CPO Atwater/University Neighborhood Council 1B considered the captioned request for approval of the WICHITA FAMILY ENTERTAINMENT COMMERCIAL COMMUNITY UNIT PLAN and an associated zone change request from the "AA" One-Family District to the "C" Commercial District.

Council members were provided the notice to adjoining property owners and a map of the area. After extensive discussion, the Council voted 6-2 to recommend approval of the requests.

The applicant, Robert L. Collins, 260 N. Rock Road, Suite 160, was present to describe the requests and respond to questions from the Council. Mr. Collins displayed a site plan and described the various features to be included in the proposed theme park. Mr. Collins noted that, if approved, construction would begin in the fall of '89 and the park would be scheduled to open in 1990. According to Mr. Collins, there will be a ten-year building phase before construction is totally completed.

Kay Woolsey, 5301 N. Hydraulic, was present and voiced opposition to the plan. Ms. Woolsey explained that she was concerned over the potential negative impact of noise and traffic congestion for the area.

Council members, John Smith and Ben Martin, stated that they could not vote for the plan without first reading information contained in MAPD staff comments. MAPD staff comments were not available for members's review. (MAPD staff comments will be provided to members at their next meeting on 9-6-88, following the MAPC and prior to the City Council's meeting).

Please provide the CPO Council's recommendation to the MAPC and City Council when case DP-187 & Z-2925 are considered.

BLC:blc

Planning Agenda Item #_____

City of Wichita
City Council Meeting
September 27, 1988

Agenda Report #____

TO: Mayor and City Council Members

SUBJECT: DP-187, WICHITA FAMILY ENTERTAINMENT COMMERCIAL C.U.P.

Z-2925 - ZONE CHANGE FROM "AA" TO "C", LOCATED 1/2-MILE WEST OF HILLSIDE ON THE SOUTH SIDE OF 53RD STREET NORTH (District #1)

INITIATED BY: Metropolitan Area Planning Department

AGENDA ACTION: Planning

MAPC Recommendation: Approve, subject to conditions, including platting. (4-3)

Staff Recommendation: Approve, subject to conditions.

CPO Recommendation: CPO Council 1B recommends approval by a vote of 6-2.

Background: On September 1, 1988, the MAPC held a public hearing to consider a commercial community unit plan and associated zone change request from the "AA" One-Family Dwelling District to the "C" Commercial District on an unplatted 80-acre tract of land located 1/2-mi. west of Hillside on the south side of 53rd Street N.

The applicant proposes to divide the tract into two parcels for future development. Parcel No. 1 is 69.48 acres in size and is intended to be developed with a recreational/amusement theme park for primarily outdoor entertainment purposes. The parcel is proposed to have a maximum building coverage factor of 15% and a maximum gross floor area of 453,985 square feet.

Parcel No. 2 is 9.92 acres in size and is intended to be developed with support facilities for the recreational theme park, such as restaurants, hotels, motels, indoor recreational centers and parking lots. A maximum gross floor area of 172,795 square feet is proposed with a maximum building coverage on the parcel of 30%.

The maximum building height on both parcels is proposed to be 50 feet, except on Parcel No. 1, where towers and amusement ride structures are to be permitted to a height of 250 feet.

Due to the size of the application area and the large amount of gross floor area requested, the applicant has provided a traffic study. The study indicates that right turn deceleration and left turn storage lanes will be needed along 53rd Street North at the entrances to the project. These improvements are to be guaranteed at the time of platting.

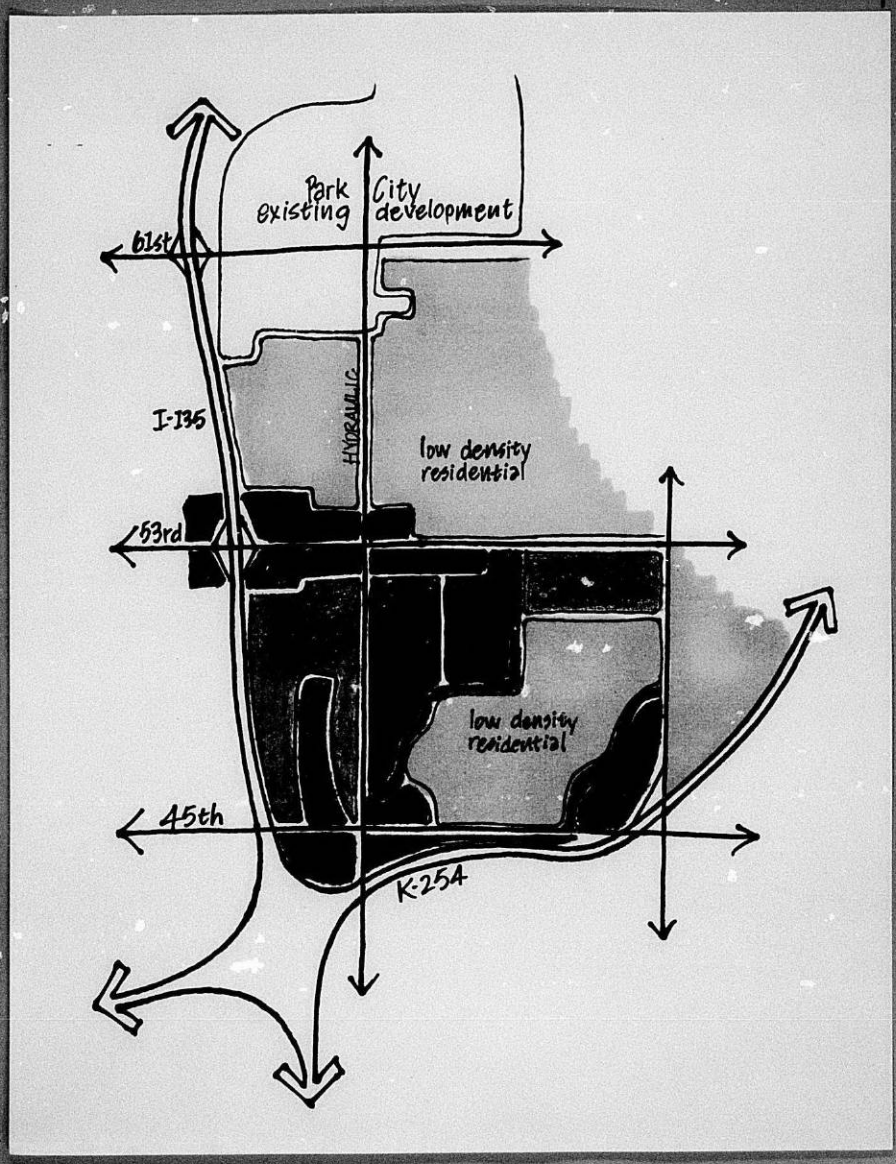
The MAPC, at their public hearing, discussed the appropriateness of this site and the impacts of the proposed uses on surrounding property. Staff agreed that a site with freeway frontage would seem a more natural choice that can use the freeway itself as a buffer along one of its boundaries. On the other hand, this site is situated much like the proposed dog track on the east side of I-135 south of 85th Street North. We feel that a reasonable pattern of land uses can develop surrounding the proposed theme park. A sketch indicating the kind of pattern that might develop is attached. Land to the west of the proposed park would most likely not develop for traditional residential use, but instead for outdoor recreational uses such as golf course, driving range, miniature golf, or a possible camping area for recreational vehicles. Based on the development plan for the theme park, the land to the south and east should be able to develop with traditional single-family subdivisions. Property between I-135 and Hydraulic could be expected to develop in light industrial/office-type uses (some of this property is already zoned and platted for such). Medium density residential uses could be expected north of the 254 corridor as a transition between that highway and the lower density subdivisions. The frontage along 53rd Street east from the I-135 interchange can be expected to develop for a variety of "roadside commercial" uses, such as motel and restaurant, as a result of the theme park development. This development should not be discouraged, but effective sign and access controls and required landscaping along the frontage will be needed to maintain a positive image for this area.

At the conclusion of discussion, the Planning Commission took action to recommend approval of the C.U.P. and zone change request, subject to the conditions listed in the staff report, with the exception of condition "i". Condition "i" calls for the establishment of a combined maximum seating capacity of 1,500 seats for indoor and outdoor theaters at the theme park. The purpose of this condition was to help ensure that large-scale concert-type events which would overwhelm the traffic capacity of 53rd Street not take place on this site. The applicant's agent expressed acceptance of all the suggested conditions of approval, except condition "i".

Recommendations/Actions:

1. Concur with the findings of the MAPC and approve the zone change and C.U.P., subject to the recommended conditions; instruct the Planning Department to forward the ordinance for first reading when the plat is forwarded to the City Council; or

2. Return the applications to the MAPC for reconsideration, stating reasons.


Park existing
City development
61st
I-135
HYDRAULIC
low density residential
53rd
low density residential
45th
K-254

Parks are a business!

THIS column is in a magazine which deals largely with the "business" of amusement.

Which is appropriate, since amusement parks are businesses.

But we roller coaster enthusiasts are wary of the "business" considerations behind the parks and rides we so love. We have conflicting reactions to the implications. We know that, as with all businesses, amusement parks must realise a profit. They have expenses: employees to pay, supplies to buy, repairs to undertake. Money must come in for the business to go on.

Yet it seems to us (and to many members of the general public I'm sure), amusement parks shouldn't really be "like" all other businesses. They don't churn out toilet paper or hawk life insurance. Instead, they supply more magical commodities. They offer escape. They sell fun.

The right stuff

When the product involved is as subjective and special as "amusement", the "business" of offering it must be approached in a special and subjective way. A child-like perspective, a flair for showmanship and an instinct for what will make people happy would seem necessary.

You can feel the successful application on this approach in such magical realms as Disneyland, Kennywood (in Pittsburgh, PA), Kings Island (near Cincinatti, OH), Santa Cruz Beach Boardwalk (in California) and Liseberg (Gothenberg, Sweden). A sense of vision, a purposeful pride and charmed creativity are abundantly evident at these havens of fun. It has obviously been communicated to their employees, managers, designers and builders. Together, they've created sanctuaries where all who enter are allowed to laugh, cry, scream and want more. These parks are priceless creations.

Yet these are also businesses, subject to the rules of cruel economics. Do they make money? I hope so. They make enough to stay open anyway. But they work so well that the business of staying in business isn't obvious.

This is serious business

No one can really put a price on fun, but we all know when an amusement park gives us value for what it asks us to pay.

Regrettably, there are parks (especially some of the bigger ones in America) where this kind of value can seem lost. It's been factored out of profit margins, bludgeoned by accountant reports, dissected through cost analyses and pummelled by marketing mentality. "Fun" is merely a business equation component.

At such parks, guests can feel treated like a mere walking wallet.

Kings Island consistently displays vision and daring in its rides, case in point The Beast roller coaster. And this ride has generated very good business indeed. (Photograph by Allen Ambrasini).

Precious little magic, pride, or joy inhabits these parks' amusements. Instead, a suffocation, a cold calculation permeates. You wonder whether the owners really know or care what an amusement park should feel like, how a roller coaster should ride or what cotton candy is *really* supposed to taste like.

You might conclude that these parks weren't created to be wonderful in the hopes they'd make money. Instead you fear they were set up to make as much moola as possible and designed to rake it in with "bottom-line" efficiency. "Wonderful"-ness is a by-product.

There's a fine line here, I realise. Of course no-one goes into the amusement business risking large amounts of capital without intending to make money back. This legitimate and requisite need for a profit plays a vital role in park decisions, naturally. But it's the direction from which these decisions are approached that matters.

"We hope you barely enjoy your day here at . . .". In other words, in the business of amusement, is the emphasis on the business or the amusement?

There are parks where you can "feel" crowded, overcharged and even manipulated. You almost have to work to have fun. The food seems tasteless and overpriced, the lines endless, the ride times short and the shows tame and predictable. The whole "look" of the place is bland and uninspired. Prices seem exhorbitant.

What is wrong? Too much business, too little amusement.

Some parks make money the old-fashioned way. You can "sense" when a park respects you; when it wants to earn what it charges, when it has as much fun as you. Even in the old days, when some parks were considered sleazy, their barkers enticing you to play rigged games and their rides looking rickety and dangerous, there was still a playfulness, a devil-may-care magic to it.

Like Riverview in Chicago, the Long Beach Pike in California or Coney Island in its heyday, the fun show-biz brash flash of it all came through. They had a good time making their money. You had a good time spending it.

These places were businesses, but they appreciated the difference between themselves and, say, more "normal" ventures like Consolidated Widgets.

They loved what they did. It showed. They gave a little extra. You could tell.

The barkers, sleaze and rickety rides are mostly gone now. But you can still see that little extra given at places like Blackpool Pleasure Beach (England), Miracle Strip (Panama City, FL), Rye Playland (Rye, NY), Lakeside Park (Denver, CO), Six Flags Over Texas, Seabreeze (Rochester, NY) and so many others like them.

How? Maybe you notice it in the divine french fries a certain park makes—they're twice as large and tasty as anywhere else. Maybe you see it in the way extra trees are planted throughout a park for no reason other than their extra beauty. Perhaps a couple of park's shows display unique skill and talent. Maybe another park steadily adds extra rides to its arsenal in order to offer thrill variety and greater ride capacity. Perhaps yet another park's personnel volunteer extra smiles and extra help. Maybe another park's buildings are designed with fanciful architectural touches.

As roller coaster enthusiasts, we look for such touches as the way one park's rides are especially well-maintained (no unnecessary roughness). We love that some park's coasters are operated with few or no

IN this issue of *Park World*, our regular columnist Randy Geisler of the American Coaster Enthusiasts (ACE) looks at amusement parks in a way that probably only the owners and operators of these facilities would ever look upon them—as businesses and money-making organisations.

Randy has been a member of ACE since 1979 and is the club's President. Founded in 1978. ACE is a world-wide, non-profit making organisation dedicated to the enjoyment and appreciation of the roller coaster. Further information can be obtained from ACE, P.O. Box 8226, Chicago, Illinois 60680, USA.

mid-course brakes, letting the rides fly their flat-out fastest. We appreciate being able to select and wait for a seat we prefer on a coaster train (it's particularly galling to stand in line for half-an-hour only to be forced to a seat you don't want). We enjoy it when as many trains as possible are run on a coaster throughout a day to keep queue lines short. And of course, we love coasters that are thrilling, beautiful and unique—rides which display craftsmanship, care and vision.

Any coaster, even a small one, can be made a little more fun, pretty, comfortable, or exciting by little touches—a tunnel here, lights there, seat padding here, colourful paint there and so on.

All of these touches, whether on coasters or anywhere in a park, confirm that the "business" cares about its rides and its patrons.

But let's look at the other side of this issue. If parks should give so much extra, why don't they have ten wooden roller coasters each? Why don't they charge $0.05 for all day admission and give away free pop on hot days?

Even to rabid enthusiasts, it's obvious why not—business can't give *too* much extra or they'd lose money and close. Nobody wins if that happens.

As enthusiasts, we sometimes wish parks would offer more truly ultimate, really intense thrill rides. But in our heart of hearts, we know a park can't spend multi-millions to build a coaster *so* ultimate only 1,500 crazy enthusiasts would get on it. In the business of amusements, compromises are made. A park must appeal to the widest possible spectrum of potential patrons, not just to enthusiasts, to make money.

Yet, within these dictates, we've had wonderful creations presented, from inventive kiddie rides to incredible for-the-whole-family river rampage adventures, from spook mansions to amazing roller coasters.

A little thing, but Busch Gardens Olde Country often times the trains on its Loch Ness Monster coaster so that two go through its interlocking loops simultaneously enhancing the ride's thrills and fun.

As for coasters, marvellous variety prevails—from the intensity of the Riverside Cyclone to the scenic railway-like wonders of Marineworld's exciting Dragon Mountain; from La Ronde's wooden mammoth Monster to the steel brain warpage of Oscar Bruch's Thriller.

Creativity, ingenuity and joy went into these devices and all the others like them. Something special resulted and so did good business.

How to succeed in business without really trying

An amusement park is a business. I know and I realise the limits this imposes as well as the opportunities it offers.

Knowing this, enthusiasts such as I are all the more respectful of those parks and carnivals which relish this opportunity, providing fun, laughs, thrills and adventures to millions. What a blast! And what a shame for those few parks misusing the privilege.

Sadly, many parks which do put their hearts and souls into the effort aren't appreciated by the public. A few barely scrape by, year after year. Some go out of "business", the victims of bad locations, changing public tastes or poor "business" decisions.

The business end can never be totally forgotten, we realise. Even the abundantly evident "right stuff" at a park can't guarantee success. We enthusiasts try to help—by patronising and promoting nice parks as much as we're able.

No-one said it would be easy

So it can be a very tricky balancing act—the proper mix of amusement and business. Given that, it's all the more amazing that so many parks pull it off so well.

What a pleasure it is to visit complete successes like Knoebels Grove (Elysburg, PA), Busch Gardens Olde Country (Williamsburg, VA), Canobie Lake (Salem, NH), Linnanmaki (Helsinki, Finland), Indiana Beach (Lake Shafer, IN) or Kings Dominion (Doswell, VA).

You're barely aware that these places are money-dependent enterprises. They're too much fun. That's as it should be in the amusement business.

Fanciful decor delights everywhere at Canada's Crystal Beach. (Photograph by Crystal Beach).

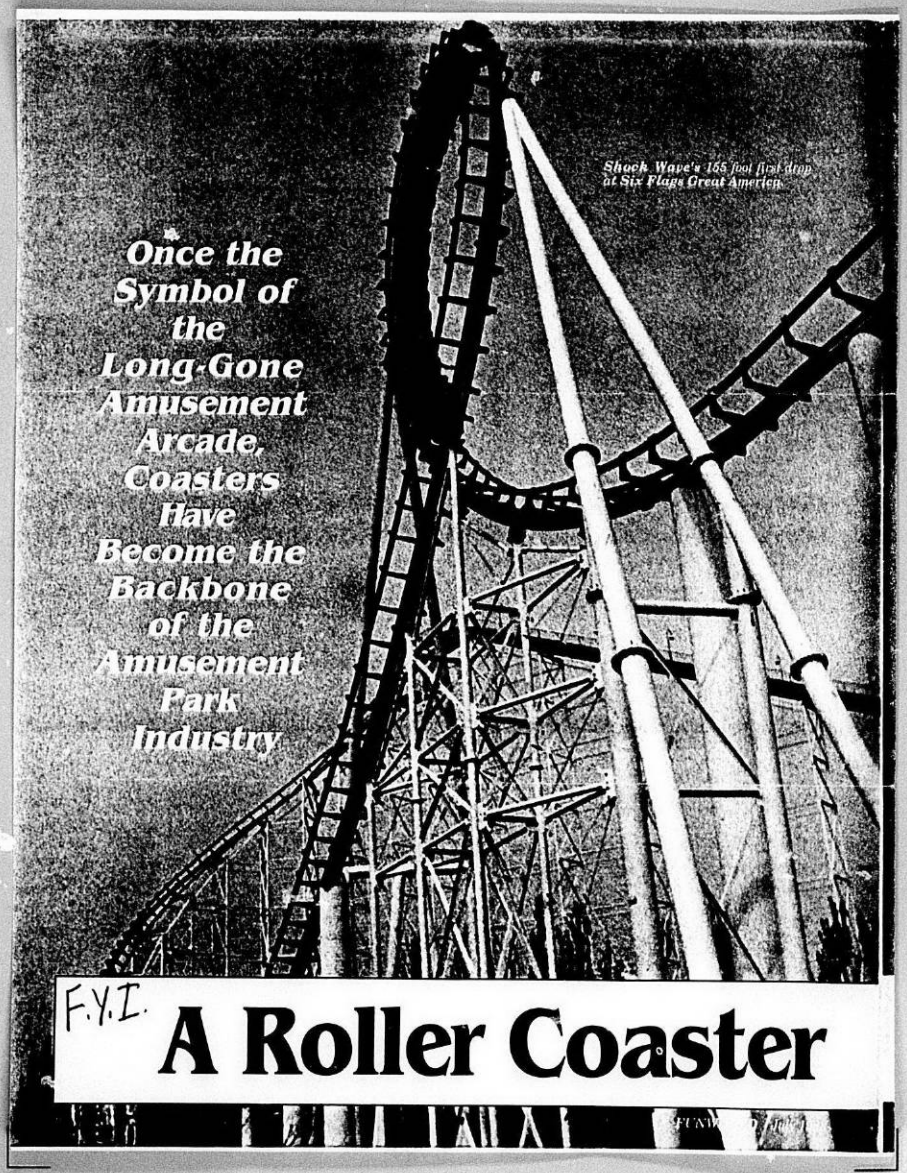
How can we enthusiasts (and the public) not help but love a "business" which offers as many rides as Blackpool Pleasure Beach.

to bottom/backlit $1470
not bklit $560
+change out top $1787
(blue or brn)

for placque on base $245

for pedestal placque $466 + pedestal

small side panel (unlit) $209



F.Y.I.

A Roller Coaster

Renaissance

AT THE PARK

by Paul L. Ruben

In the late 1920's, there were nearly 2,000 roller coasters in North America. Their population dwindled to less than 200 in the 1960's, but that trend has been reversed. During just the past five years, 35 new coasters have been built. This summer, thrill-seekers will find the roller coaster renaissance evident nationwide, as nine more coasters open. Offering a tantalizing variety of experiences, the new rides are bigger, safer, and more outrageous than ever before.

Without doubt, the most awesome new coaster is Shock Wave, a $6 million, record-setting steel supercoaster just unveiled by Six Flags Great America, Gurnee, Illinois. The 3,900-foot-long Shock Wave is the world's tallest free- standing steel coaster, 170 feet high, and the fastest at 65 m.p.h.

It begins with a devastating 155-foot twisting plunge before hurling passengers through three consecutive vertical loops. Riders are then wrenched through a coiled double corkscrew. The finale is a heart-shaped, heart-pounding double barrel roll called the boomerang. Shock Wave establishes coasterdom's newest standard for dementia, turning riders upside-down seven times.

Is that too much? Jim Wintrode, president of Great America, doesn't think so. "Coaster riding is a phenomenon," he notes, "a part of our culture. It's a challenge and people are always looking for something to test the edge. Shock Wave is a way they can do it safely, yet feel the thrill and the excitement."

Ron Toomer is the designer of Shock Wave and president of Utah-based Arrow Dynamics, the coaster's manufacturer. He doesn't think seven inversions is the limit to human endurance, either. "It's getting crazy," Toomer admits. "But as long as marketing is involved, parks will want to out-do each other."

Crazy or not, Shock Wave is now attracting coaster- lovers to Great America. Wintrode is certain "it will deliver a big year for us." But most important, he points out, "It's helping us to become one of the best parks in the United States for coasters and coaster enthusiasts."

Six Flags Magic Mountain in Valencia, California hopes to attract visitors with the thought of flying down a mountainside at 55 m.p.h. and careening through a thicket of trees. This new roller coaster, the Ninja, has been proclaimed "the black belt of roller coasters."

The $6 million Ninja is a particularly unnerving ride because there is no track beneath passengers, just bushes, tree branches, or a pool of water. On Ninja, riders dangle beneath the 2,700 feet of overhead track. Unlike most coasters passengers board the train near the top of the mountain and quickly begin the twisting flight downhill. The chain lift is at the end of the ride, thoughtfully providing guests with a few relatively tranquil moments to regain their composure before disembarking. The appeal of Ninja, according to Joe Schillaci, president of Magic Mountain, begins with its speed. "We wanted to make sure this was the fastest suspended coaster in the world. At 55 m.p.h., riders will swing out at angles up to 110 degrees. We make a lot of fast turns, so we combine both the speed and the swinging sensation while going through the

cont. on p.8

AT THE PARK *cont. from p.7*

trees."

Ron Toomer, who also designed Ninja, thinks the thrills are derived from two factors, "its closeness to the ground and its speed. It is going pretty fast when it gets down towards the bottom of the mountain," he acknowledges. "It's real exciting."

The legendary Riverview Park Bobs, which thrilled Chicago-area riders from 1924 to 1967, has been recreated this year at Geauga Lake, Aurora, Ohio. Now called the Raging Wolf Bobs, this $2.5 million, twister-style wooden coaster looms 80 feet above the midway. An irresistible lure to coaster buffs, the new 3,426- foot-long Bobs slams riders through curves, over hills, and around banked turns. It's the breathtaking noisy, and disorienting classic coaster experience of the '20's updated for a new generation of riders.

"We did not want a tame coaster," declares Jim Meikle, Geauga Lake's general manager. "The Bobs is a proven thriller. We asked [Charles Dinn, the designer] to duplicate the original as closely as possible. To meet today's maintenance and safety standards, some modifications were necessary. Anything we changed only improved it."

How do you improve a classic? "We made it five feet higher than the original Bobs," Dinn discloses, "to get a little more speed. It's a twisting, turning coaster with high-speed banked turns. At one point within 60 feet, it goes from a 45-degree right bank to a 45-degree left bank at 50 m.p.h."

Another large Dinn-designed wooden coaster, the Wolverine Wildcat, has been built at Michigan's Adventure, a small amusement park in Muskegon. The park's attendance is expected to increase dramatically as a result. The Wildcat rampages over a unique 3,000-foot layout at speeds up to 55 m.p.h.

Dinn attributes the Wildcat's relatively modest $1.4- million price tag to special construction equipment and a crew of only 15 men instead of the 40 previously required. He cites reduced costs as part of the reason for the roller coaster renaissance. Although he can only build two or three a year, he's "been talking to 15 people who want to buy new coasters."

According to Dinn, the Wolverine Wildcat is longer and bigger than the owner of Michigan's Adventure, Roger Jourdan, originally thought he would get. "It's a big coaster, 85 feet tall," says Dinn. "It's exciting and surprising."

"Exciting and surprising" also describes Nightmare, a new indoor coaster introduced this year by Boblo Island, near Detroit. Nightmare operates in the dark, so passengers are not able to anticipate what is around the next curve, or even where the curve is.

Erected inside Boblo's newly renovated International Pavilion, the $2.4-million project features an eerie underground Victorian loading station and plenty of frightening special effects. The 1,150-foot-long coaster was built by Vekoma International, the respected Dutch ride manufacturer.

On it, riders travel in two-passenger, bobsled-style cars, 12 cars per train. To heighten the mystery, Nightmare's other statistics are secret. The experience is part coaster part dark ride, all bizarre.

An unusual new steel coaster, the Red Devil, has been built at Ghost Town in the Sky, Maggie Valley, North Carolina. This 2,025-foot-long, single-looper sits atop one of the peaks in the Great Smokey Mountains. It begins with a white-knuckle plunge down the mountainside and ends with an 85-foot lift hill.

"There isn't a better coaster in the country," promises Ghost Town President R.B. Coburn. "The mountain drops right out from under you. There's nothing like it anywhere."

The Avalanche Bobsled at Kings Dominion, Doswell, Virginia, is an intriguing variation on the coaster theme. It has completely abandoned any pretense of a track. Instead, guests board a train of six two-passenger cars and rocket through a steel trough.

Like a bobsled twisting down an olympic course, the train climbs as much as 70 degrees up the sidewalls as it snakes through the 1,905-foot-long layout at speeds reaching 30 m.p.h.

Located in the Wild Animal Safari section of Kings Dominion, the $3-million Avalanche Bobsled was built by the Mack Company of West Germany. It is the first of its kind in North America, and closely recreates the ride experienced of the notorious Flying Turns, a 1930's coaster variation once found at several of that era's major parks.

Camden park, Huntington, West Virginia, has a new steel shuttle loop coaster, Thunderball Express. Just climbing the five-story tower to reach the loading platform gets visitor's blood rushing.

Once aboard the Thunderball Express train, passengers drop downhill, shoot through a vertical loop, and climb to another platform 600 feet away. The train is then pushed backwards down the hill, backwards through the vertical loop, and backwards to the starting point. It sure clears the sinuses.

> ***"It's getting crazy. But as long as marketing is involved, parks will want to out-do each other."***
>
> ***-Ron Toomer Arrow Dynamics***

Completing this season's line-up of unusual new coasters is Z-Force at Six Flags Over Georgia in Atlanta. It is 1,900 feet long and 74 feet high, built by Intamin of Switzerland.

Z-Force propels its riders through a series of six vertical, compact corkscrew-like turns that give the brief sensation of falling. Instead of entering the vertical turns from the bottom as you do on other steel coasters, however, riders enter the turns from the top and dive into them. It's different, and devastating.

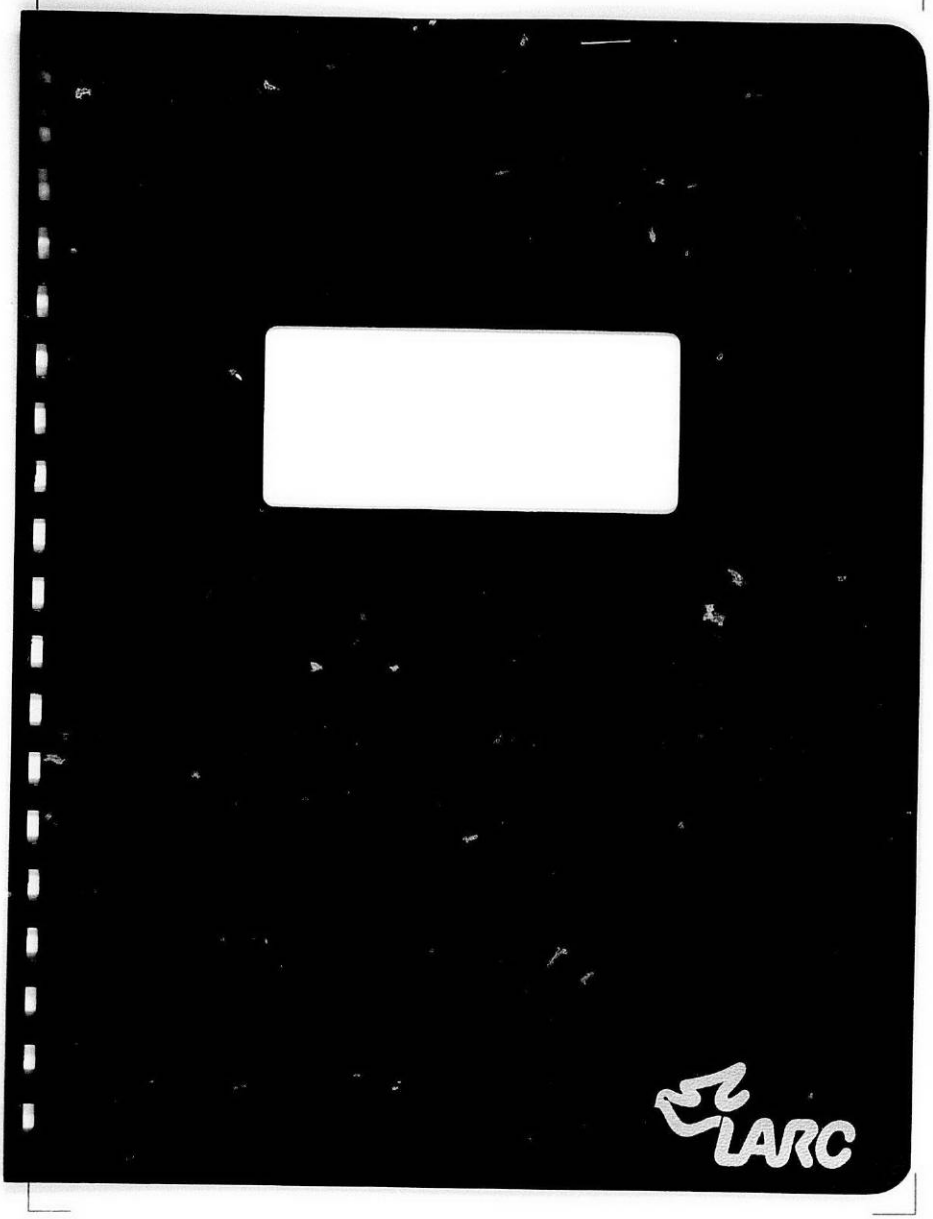
The roller coaster renaissance rolls on, both in the form of innovative new tummy-turners and as classic screamers revisited.

ROBERT L. COLLINS & ASSOCIATES
ARCHITECTURE • URBAN LAND PLANNING • INTERIOR DESIGN
CONSTRUCTION MANAGEMENT • URBAN LAND ECONOMICS
EXECUTIVE PARK EAST
260 NORTH ROCK ROAD • SUITE 160
WICHITA, KANSAS 67206 (316) 683-7515

WICHITA, KS 672
PM
26 JUL
1988

RECEIVED
JUL 27 1988
METROPOLITAN PLANNING
ROUTE ☐ ____________
☐ ____________

Mr. Jack Galbraith
Director of Current Plans
Wichita/Sedgwick County Metropolitan
Area Planning Department
City Hall - 10th Floor
455 North Main
Wichita, Kansas 67202


LARC

FEASIBILITY ANALYSIS OF A
REGIONAL THEME PARK IN
WICHITA, KANSAS

CONFIDENTIAL

Prepared for:

Robert L. Collins
Executive Park East
260 North Rock Road, Suite 160
Wichita, Kansas 67206

Prepared by:

Leisure and Recreation Concepts, Inc.
2151 Fort Worth Avenue
Dallas, Texas 75211

Jim Belner
214/942-4474

Date: February 29, 1988

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LIST OF TABLES

LIST OF TABLES

LIST OF TABLES

SECTION I

INTRODUCTION

In the fall of 1987, Leisure and Recreation Concepts, Inc. was approached regarding the development of a theme park in Wichita, Kansas, which would be based upon the themes of Kansas history and lore as seen through a pioneer family's eyes. This concept is appropriate, and if properly designed, should be well received. With this objective, the services of Leisure and Recreation Concepts, Inc. (LARC) were secured to analyze the economic feasibility of a theme park project and to determine potential levels of attendance for a theme park in the Wichita area.

LARC has prepared this study to determine the size of the market and probable attendance. Based upon this, design criteria are established and financial projections prepared. With this report, the financial analysis has been prepared, utilizing assumptions based on established criteria.

Following this introduction, Section II provides the summary and conclusions of the findings of the report. Section III provides an overview of the leisure industry and the project concepts. Section IV presents the site analysis. Section V

establishes the market available to the project. Section VI reviews the concepts proposed for the project. Section VII defines the attendance projected for the facility, while Section VIII establishes facility requirements necessary to accommodate the forecast attendance levels. Section IX presents the financial analysis of the project.

This report was prepared under the direction of James M. Bednar, Sr., Director of Economic Studies for LARC.

SECTION II

SUMMARY AND CONCLUSIONS

This segment of the report presents an abstract of the results of the research, statistics and analysis contained in the body of the report and introduces LARC's basic conclusions and recommendations based on this data. The supporting documentation and analysis used in developing the conclusions are shown in considerable detail in subsequent sections of the report.

Basic Conclusions

1. The theme park has become a major force in the leisure industry in the United States. Large, multi-million dollar facilities now service many major metropolitan areas as well as larger tourist destination markets. In recent years, the regional theme park or specialty park (water theme parks and creative playground parks) have also been successfully developed in markets with less available population.

2. The resident market projected to be available to the planned theme park in 1990 is forecast to be 658,889 persons residing within a one hour drive, 486,446 persons within a one-to-two-hour, and 1,855,879 persons residing within a two-to-three-hour drive of the proposed site in 1990. The

total resident market within a three-hour drive is forecast to be 3,001,214 persons and the total available market including an estimated 500,000 visitors annually is 3,501,214 persons.

3. The marketplace for the proposed theme park does contain other leisure parks, but none of the scope planned for this project.

4. To insure penetration of this market, the theme park must strive for as large an initial impact as possible. The image and word-of-mouth-opinion of the park during its initial operating period will greatly influence the degree of subsequent success obtainable. Initial development of an exceptional attraction incorporating major concepts and philosophies developed by amusement industry leaders is crucial.

Based on the primary assumption that the Wichita theme park will be developed as a high-quality family entertainment center with imaginative design, outstanding implementation and professional management and operation, LARC has developed an economic profile to access the feasibility of the proposed project. The findings of this report are summarized as follows:

Market

The total available market for the theme park has been estimated to be 3,501,214 persons during the first year of operation, including residents of the area and tourists visiting the area for holiday or leisure purposes. A market of this size is considered to be adequately large to support the leisure facility proposed.

Attendance

Total attendance for the first operating year is projected to be approximately 275,000 persons. Attendance is projected to increase annually reaching approximately 344,800 persons in the fifth year of operation. The total cumulative attendance during the first five full years of operation is anticipated to be approximately 1,553,800 persons, an average of 310,660 annually.

Seasonality

The theme park is proposed to operate 123 days each year. During the regular operating season, July is forecast as the peak month of operation with 28.8 percent of the annual attendance expected to visit during this month. On a weekly basis, weekend days are each expected to account for 25 percents of the week's attendance--about 2.5 times the number of visitors expected on an average weekday. The anticipated "design day" (an average weekend day in July) is projected to be approximately 4,450 persons during the first year.

SECTION III

INDUSTRY OVERVIEW

Today, in the United States, the outdoor amusement industry provides an integral part of the leisure activities for the American public. Recently, total attendance at outdoor amusement facilities, including theme parks and attractions, ride parks and natural attractions, exceeded 225 million persons. Theme parks and attractions alone reached attendance levels significantly exceeding 100 million persons. This was more than those attending professional football, baseball, basketball and hockey - combined. The theme park, thus, has become an American way of life. This is illustrated in Table III-1 which lists the 1986 attendance, the most recent available, for the top 40 reporting amusement parks. For these alone, attendance exceeded 105.0 million.

The modern day theme park began with Walt Disney in 1955. Disney had tired of taking his own children to traditional amusement parks offering little appeal to families or adults. With his characteristic, single-minded dedication to high-quality and wholesome entertainment, he created a park that would once again attract entire families. He developed individual

areas of rides, shops, restaurants and live entertainment all oriented around various themes.

While, undoubtedly, another entrepreneur would have eventually seen the need for this type of entertainment, it is fortunate for the industry that Walt Disney was the first to recognize the potential. His dedication to quality established a new industry. Disneyland was an instant success and that success spawned imitators.

Many of these imitators have been very successful and provide excellent, high-quality family entertainment using the same basic principals established by Disney. While none have achieved the levels of attendance and public response accomplished at the two Disney parks in the United States, other organizations including Six Flags, Taft Broadcasting, Busch Gardens, Marriott and Knott's Berry Farm all provide first-class facilities and high-quality operations. Traditional parks, such as Cedar Point, Geauga Lake, Elitch Gardens and Lagoon, have upgraded their facilities to "theme park" quality in order to compete and maintain high visitation levels.

While there is no true definition of "theme park," it is generally accepted to include any major recreational facility creating a total environment by its theatrical use of a theme or themes most often based on history, legend or folklore. This concept provides a direction for the architectural style and treatment of the buildings and structures. Rides and attractions

can be re-designed or given cosmetic treatment to fit the specific theme. Proper execution of the theme in the use of signs, graphics, color and costuming reinforce the general ambience desired.

The amusement and commercial attraction industry is an entrenched, family-fun activity that has been rapidly improving in the quality and variety of entertainment offered. In a period where rising costs are a greater consumer concern, inflation has seemed to add to the favorable cost spread between commercial attractions and other leisure-time activities. Thus, presentation of an entertaining experience with broad consumer appeal, at competitive prices, suggests continued growth for the commercial leisure attraction industry.

There are a number of reasons for new entries into the leisure industry. Some of the factors which have contributed to the success of better projects are listed below.

1. Quality attractions which are well-maintained do not depreciate in value or experience obsolescence as do assets in manufacturing industries.

2. Attractions, shows, sets and rides are not subject to the same degree of competition that occurs in many industries.

3. With more leisure time available, leisure activities are no longer luxuries, but an integral part of life.

4. A higher standard of living and better transportation have expanded the prime markets for leisure attractions. Increased attendance results in greater utilization of facilities, adding to a project's earning potential.

5. Many established attractions are not able to capitalize upon expanding markets in their areas due to the inability to expand the attractions.

6. With over 100 years of public support of commercial leisure activities - attractions, rides, games, shows, exhibits, etc. - it is reasonable to assume long-term revenue and earnings growth for well-run projects.

7. Leisure facilities which are first in an area with sufficient land, access and quality facilities have distinct advantages. The cost of entries into a market continue to rise with inflation. The cost of capital plus the higher investment required for subsequent projects results in higher break-even-attendance and reduces near term financial prospects. A second project opening in typical market reduces the attendance potential for both attractions but more so for the later entry which must establish an identity within the market place.

Capital, a good location, efficient and attractive design, and experienced operating personnel are important requirements necessary to enter the leisure business. As with any project, good planning and sound management will best accomplish long-term success. Given the numerous alternatives for leisure spending, marketing will also continue as a key area for park and leisure attraction managements.

Until the last several years, the theme park was largely confined to development within the United States. Most amusement park developments in other countries were limited to the more "traditional amusement park" concept. During recent years, however, the theme park concept has spread to Canada, Europe, the Middle East, Japan, Australia, South America and Mexico. Many facilities have been developed and more are now being planned.

TABLE III-1

1986 Attendance

Selected Theme Parks

		Attendance
1.	Walt Disney World/Epcot	22,400,000
2.	Disneyland	12,000,000
3.	Sea World of Florida	4,000,000
4.	Universal Studios Tour	3,800,000
5.	Knott's Berry Farm	3,500,000
6.	Sea World of California	3,100,000
7.	Six Flags Great Adventure	2,900,000
8.	Busch Gardens, The Dark Continent	2,870,000
9.	Kings Island	2,869,669
10.	Six Flags Magic Mountain	2,800,000
11.	Cedar Point	2,750,000
12.	Six Flags Great America	2,700,000
13.	Six Flags Over Texas	2,575,000
14.	Six Flags Over Georgia	2,410,000
15.	Opryland, U.S.A.	2,370,000
16.	Ontario Place	2,202,900
17.	Kings Dominion	2,127,000
18.	Busch Gardens, The Old Country	1,973,794
19.	Marriott's Great America	1,865,000
20.	Santa Cruz Beach Boardwalk	1,650,000
21.	Astroworld	1,660,000

TABLE III-1
CONTINUED

22.	Hersheypark	1,585,000
23.	Darien Lake	1,500,000
24.	Dollywood	1,400,000
25.	Six Flags Over Mid-America	1,360,000
26.	Cypress Gardens	1,300,000
27.	Worlds of Fun	1,266,551
28.	Carowinds	1,168,957
29.	Kennywood Park	1,050,000
30.	Marine World/Africa USA	1,050,000
31.	Sea World of Ohio	1,000,000
32.	Elitch Gardens	1,000,000
33.	Playland Amusement Park	996,000
34.	Geauga Lake	983,260
35.	Valleyfair	950,000
36.	Rocky Point Park	898,500
37.	Sandy Lake Amusement Park	800,000
38.	Action Park & Vernon Valley	760,000
39.	Knoebels Groves	750,000
40.	Boblo Island	688,800
	TOTAL	105,030,431

Source: Amusement Business; December 17, 1986.

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

SECTION IV
SITE ANALYSIS

In the site analysis for any proposed project, several factors must be considered. These factors deal with the suitability of the site and its ability to accommodate the contemplated project. The site must be evaluated by both economic/marketing terms and physical planning criteria. Major items reviewed in this section will be the location of the site in relation to existing and projected markets, access to the site, and visibility of the site.

Other important criteria in evaluating the site include the topography of the site, the soils, and the availability of utilities and other necessary infrastructure. Finally, other competitive developments within the market area and climatic conditions are reviewed in preparing the site assessment.

Project Location

Several sites are under consideration near the intersection of I-135 and 53rd Street. As several tracts of land, in close proximity to each other, are being considered, the analysis will not be as specific had a site been identified. The I-135 and 53rd Street intersection is approximately seven miles north of

downtown Wichita and the Civic Center. While the area is outside the city limits, a strong growth and traffic pattern to the north has been developing. One stimulus for this has been the development of the Kansas Coliseum and the identification of a proposal site for a horse and/or dog race track in the Wichita area.

Major companies in Wichita have located in the northern sectors of the area. These include the corporate headquarters for Rent-a-Center and the Best Western regional reservation center. The Canotara Industrial Park has also attracted firms such as My lassis Color Graphics.

Resid Canotara has also been occurring in this area. Two are the Tallgrass Country Club and the Terrad is further to the east.

Access

The project site is conveniently located to major Wichita highways. Primary access is by the Interstate 135. I-135 is currently a four-lane, divided freeway passing approximately 1/4 mile west of the site. The location of the property is approximately 1 mile north of the loop road system being developed in Wichita.

Approximately 1 mile to the west is US Highway 81, and the major north/south artery in Wichita. Interstate Highway 235, the loop road, provides convenient access to all west side residents.

downtown Wichita and the Civic Center. While the area is outside the city limits, a strong growth and traffic pattern to the north has been developing. One stimulus for this has been the development of the Kansas Coliseum and the identification of a proposal site for a horse and/or dog race track in the Wichita area.

Major companies in Wichita have located in the northern sectors of the area. These include the corporate headquarters for Rent-a-Center and the Best Western regional reservation center. The Canotara Industrial Park has also attracted firms such as Mycro-Tek, Inc. and Valassis Color Graphics.

Residential development has also been occurring in this area. Two major developments are the Tallgrass Country Club and the Terradyne development which is further to the east.

Access

The project site is conveniently located to major Wichita highways. Primary access is by the Interstate 135. I-135 is currently a four-lane, divided freeway passing approximately 1/4 mile west of the site. The location of the property is approximately 1 mile north of the loop road system being developed in Wichita.

Approximately 1 mile to the west is US Highway 81, and the major north/south artery in Wichita. Interstate Highway 235, the loop road, provides convenient access to all west side residents.

Highway 3 and Highway 81 provide direct access from the south side of Wichita.

Visibility

The site enjoys some visibility from the Interstate, but not extensive views. This situation can be alleviated and visibility enhanced through the use of physical features designed into the park.

Utilities

All underground utilities must be brought to the site. Water and sewage systems are available and engineering studies are currently underway to identify the most cost effective methods of serving the site. Power and communications (telephone) are available to the site.

Topography And Conditions

The topography on the preferred site falls very slightly from north to south. The highest elevation, near 53rd Street North, is approximately 1380 feet. The lowest point, at the southern property line, is approximately 1355 feet. The overall slope from north to south is between 3 percent and 4 percent. These conditions are typical of the general topography of the area although conditions may be somewhat different on adjacent tracts.

The property also contains a lake in the northern half. This lake will offer excellent design opportunities. Limited tree cover exists on the site. Tree cover exists on no more than 10 percent of the site.

No borings of the site have been conducted to date. Soil conditions, based upon visual inspection appeared to be satisfactory for any construction for the project. Surrounding development tends to confirm the suitability of area soils for construction.

Climate

Tables IV-1, IV-2, and IV-3 contain data on the conditions in the Wichita area. The temperatures in the area reflect relatively warm summers with average maximums exceeding 90 degrees Fahrenheit in July and August. Winter temperatures are cold with average maximums in December, January and February in the 40's. Minimums during the winter months average in the mid 20's and with the normal winds can be exceedingly cold. This would prohibit all but the normal summer operating season for a typical theme park project. Imaginative planning and design with year round structures might make a winter program possible if other factors support such a program.

Rainfall in Wichita averages more than 30 inches annually with June receiving an average of 4.5 inches. July also receives more than 4 inches of rain. However, May experiences the

greatest number of days with precipitation (11). June, July and August average 8 days with precipitation. The percentage of sunshine during the normal operating season for a park is 73 percent. This is a very positive factor in maximizing attendance.

Influencing the inability to establish winter programs is the annual snowfall which occurs principally in December and continues through March. This, with average winds exceeding 12 miles per hour, creates bitterly cold conditions.

Competition

There are three facilities in Wichita which might be considered competition. These are:

- Joyland Amusement Park
- FantaSea Park
- Eberly Farm

Joyland Amusement Park celebrates its 40th Anniversary in 1988. This facility, while predominantly a ride park, generates significant business from corporate picnics in the Wichita area. Attendance in 1987 was between 200,000 and 250,000.

The park currently contains 14 major rides and 7 kiddie rides. Additional facilities include an athletic field, arcade, go-kart track and roller rink.

The market area for the park extends to a distance of approximately 60 miles which is normal given the facilities in Oklahoma City, Kansas City and Branson, Missouri.

The location of the park at 2801 South Hillside may prove to be a limiting factor. With growth occurring in a northerly direction in Wichita, the propensity to visit the park may decrease over time.

FantaSea Park is a waterpark located in the northeast section of Wichita on North Woodlawn. While there are two dry slides, the focus is on water activities. The park contains a wave pool, cork screw and speed slides and complimentary activity pools. In addition, there is a lake on the property offering opportunities for canoeing and rowboats. Australian waterbikes will be offered in 1988. Picnic facilities are available as a pavilion and the park will cater all events. There is a pay-one-price admission of $11.95 for 1988. The price is the same for all 4 years and older.

Eberly Farms is located at 13111 West 21st Street, on the west side of Wichita. The focus of activities is on corporate picnics and outings. A large barn serves as the center with prices averaging $3.00 per person. This fee allows use of the area for 7 hours. Equipment is available for volleyball, softball, basketball and horseshoes. A swimming pool is available during the summer.

Facilities are available for groups to prepare their own meals. However, food service is available through a catering operation of the farm. Prices range from $4.75 to $8.00 per person.

The group and corporate outing market is apparently quite strong in Wichita. All three of the existing areas promote extensively to this market with apparent success. A new facility offering state of the art rides and attractions with picnic facilities, should have an excellent opportunity to penetrate this market, considering the growth pattern of Wichita.

In order to accomplish a strong penetration of this market, several things should be taken into consideration in the structure of the group sales program. First, this will be a long term project in sales. Most large companies plan from one to three years in advance for their annual outings, so there may not be a large percentage of group sales attendance generated from this market during the first two years. Secondly, company outing planners are very hesitant to book into a new place until it is finished and they can physically tour the facilities. Most are also hesitant to try something new until they can see how other groups have been handled. Thirdly, the group sales programs must be very competitive and flexible in price and nature. Many group planners like to feel they've "cut a deal" for their companies, so that flexibility will need to be built into the group pricing. Also, in the design of the park, the physical

facilities will need to be competitive with others in the area. Another factor to consider in the development stage is the addition of an in-house catering kitchen, so all food revenues can be a part of the park operation rather than using a catering company.

The above factors are not meant to be discouraging, but rather to provide realistic insights into the targeting of this market, which has the potential to be extremely profitable.

TABLE IV-1

RAINFALL AND TEMPERATURE DATA
WICHITA, KANSAS

Month	Average Rainfall Inches	Temperature (^{o}F) Ave. Max.	Ave. Min.	Mean
January	0.85	41.4	21.2	31.3
February	0.98	47.1	25.4	36.3
March	1.78	55.0	32.1	43.6
April	2.95	68.1	45.1	56.6
May	3.60	77.1	55.0	66.1
June	4.49	86.5	65.0	75.8
July	4.35	91.7	69.6	80.7
August	3.10	91.0	68.3	79.7
September	3.69	81.9	59.2	70.6
October	2.50	71.3	47.9	59.6
November	1.17	55.8	33.8	44.8
December	1.12	44.3	24.6	34.5
Annual	30.58	67.6	45.6	56.6

Source: National Oceanic and Atmospheric Administration

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE IV-2

PRECIPITATION AND SUNSHINE
WICHITA, KANSAS

Month	Mean Number Of Days With Precipitation (0.01 Week or more)	Sunshine Average Percentage of Possible
January	6	59
February	5	60
March	7	61
April	8	64
May	11	64
June	9	70
July	8	75
August	7	74
September	8	67
October	6	67
November	5	59
December	5	59
Annual	85	66

Source: National Oceanic and Atmospheric Administration

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE IV-3

SNOWFALL AND WIND
WICHITA, KANSAS

Month	Average Snowfall (Inches)	Wind Average Speed (MPH)
January	4.2	12.3
February	4.4	12.9
March	2.6	14.3
April	0.3	14.3
May	0.0	12.6
June	0.0	12.3
July	0.0	11.2
August	0.0	11.3
September	0.0	11.4
October	T	12.1
November	0.9	12.1
December	2.8	12.1
Annual	15.2	12.4

T = Trace

Source: National Oceanic and Atmospheric Administration

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

SECTION V
MARKET ANALYSIS

Potential attendance at any attraction is the function of several factors, including market size and characteristics, competition and local attitudes toward attractions. Market characteristics to be considered include the size, economic well-being and geographic distribution of the available resident market and the number of leisure-oriented tourists to the Wichita area. Of equal importance is the scope and quality of the proposed project. While all these factors interrelate, it is obvious that a larger, more affluent market normally offers greater potential support for an attraction such as is planned.

Resident Market

The resident market is generally very important to attendance results at theme parks and other major attractions. Within the attractions industry, however, the impact of this market varies according to the nature of the facility and its location. For example, a recent survey indicated that water parks generally attract from 50 to 90 percent of their total attendance from within 50 miles of the park site. Industry data for outdoor dramas reveal that approximately 25 percent of total attendance comes from within 100 miles of the theater site, the remainder of the attendance coming from beyond this distance. Major theme parks normally attract approximately 65 percent of

total attendance from within 150 miles, or roughly a three-hour drive of the site, depending on the population and population density in the outlying areas. On the other hand, other parks and attractions located in highly popular tourist destinations (such as Central Florida) attract greater than 50 percent of total attendance from beyond 150 miles of the site. These facilities are promoted on a regional and national basis.

The propensity to visit attractions normally decreases as the distance between residence and the site increases. As a result, analysis of the resident market begins with segmenting, by driving distance and time, areas from the proposed site for further analysis. The total resident market population for this analysis has been defined as those persons living within a three hour drive of the proposed project. These persons would generally not need to stay overnight in Wichita when visiting the project since they should be able to travel from their residence to the project and return home within the same day.

Resident Market Analysis

The permanent resident market population has been divided, as noted into the following three segments defined by distance (and time) from the site: 0-50 miles, 50-100 miles, and 100-150 miles. Analysis of data is completed in this manner because the relationship between drive time or distance from an attraction and the achievable penetration rate and resultant attendance is well documented. The population for these market segments is

listed in Table V-1. The permanent resident population in each segment, estimated for 1988, is as follows:

Primary Segment (0-50) miles The population residing in close proximity to the site is estimated to be 633,975 persons. This area is dominated by the Wichita MSA but does include the cities of El Dorado, Hutchinson and Newton.

Secondary Segment (50-100 miles) Approximately 474,170 persons reside within this segment. This area contains the least population in a predominately rural environment. Major cities in this area include Great Bend, Salina and Junction City. Emporia is in this band but may be more influenced by Kansas City.

Tertiary Segment (100-150 miles) This segment is estimated to contain 1,813,008 residents. Only that part of this area west and northwest of Wichita are prone to visit Wichita. Major cities to the Northeast would be much closer to Kansas City. For theme park entertainment, those cities to the south and east are influenced by Silver Dollar City in Branson, Missouri and Frontier City and White Water in Oklahoma City.

Total Resident Population Within a Three-Hour Drive

The total 1988 resident population within a three-hour drive, or approximately a 150-mile radius of the proposed

project, is estimated to be 2,921,153 persons. As the data indicates, the population beyond the Wichita metropolitan area is considerably greater than within the primary market area.

Resident Market Characteristics

Examination of the demographic characteristics and trends relating to the resident population provide insight into the viability and the potential of the local marketplace to contribute its support to the proposed project.

Between 1980 and 1988, the population increase in all segments of the resident market was similar to that experienced in many smaller metropolitan areas. Growth in Wichita was not as strong, for example, as in the Sunbelt areas reflecting the economic situation in agricultural states. The growth between 1980 and 1988 was estimated to have been 8.2 percent for the primary segment (0-50 miles), 2.1 percent for the secondary segment (50-100 miles) and 8.2 percent for the tertiary segment (100-150 miles). Population in the overall resident market has been estimated to have increased by 7.2 percent between 1980 and 1988. Data on population in the individual segments and overall resident market area is detailed in Tables V-1 and V-2. Based on available data, the population within the market area of the site is projected to exhibit a continued increase from 1988 to 1993.

In comparing the growth of the market area to that of Kansas and the United States, the growth in the market area was greater

than that in Kansas, which was 6.2 percent between 1980 and 1988, but less than that of the United States. Population in the U.S. increased by 8.3 percent during this time. This underscores the economic impact of depressed agricultural prices on states in the Midwest, especially in the early 1980's.

Projections indicate the population growth in the market area will be greater than that for Kansas and the U.S. from 1988 to 1993. As compared, the growth in the study area of 6.2 percent is 0.4 percent higher than for Kansas and 1.9 percent greater than the U.S. increase.

Within the United States, demographers have been observing the fact that for several years the number of households in the United States has been increasing at a much more rapid rate than the increase in population. This trend is supported by several factors relating to household formation. Americans have been marrying at a later age, but this same age group of young adults has continued to form independent households, either as singles or with other non-married persons. One result has been a rapid increase in the number of households without the parallel increase in population.

This trend is also apparent in the Wichita market. The number of households in the resident market has been increasing at a higher rate than that of the resident market population, which correlates with the national patterns during this time. Between 1980 and 1988, households in the resident market increased by an

estimated 98,809, representing an increase of 9.7 percent, a considerably greater percentage increase than that of the population. Data is presented in Table V-3 for households in the segments comprising the permanent resident market. Projections indicate that the total number of households in all resident market segments will continue to increase through 1993, reaching approximately 1,204,383 in that year, as indicated in Table V-4.

A second characteristic of households which impacts available discretionary income is the number of persons per household. As the number of persons per household decreases, the available household discretionary income may increase. Households with fewer persons tend to have more discretionary income to spend on activities such as dining out, travel and recreation.

Household size has decreased within the resident market, which is in keeping with national trends. From 1980 to 1988, the estimated decrease in household size was from 2.62 to 2.58 persons per household in the primary segment, 2.54 to 2.48 persons in the secondary segment, and 2.58 to 2.52 persons in the tertiary segment. Average household size in all segments of the resident market area is projected to continue decreasing between 1987 and 1993, as is indicated in Table V-5.

In evaluating the suitability of a market for a themed attraction, the age distribution of the resident population is also an important consideration. The age of the resident market for the proposed project was approximately the same as that of

Kansas and of the nation in general in 1988. While the median age nationally was 32.6 years of age in 1988 and 32.3 years in Kansas, according to the available data, it was 32.3, 32.5, and 32.3 years of age in the primary, secondary and tertiary segments, respectively, of the resident market area during that year. The majority of the permanent resident population was below the age of 45 in 1988. This group constituted 69.2, 67.0 and 69.1 percent of the total populations of the primary, secondary and tertiary segments, respectively, of the resident market area. This data is detailed in Tables V-6 through V-8.

The population under 45 years of age is of importance to attractions in general. Statistics recently published by the International Association of Amusement Parks and Attractions, indicate that nearly 90 percent of the persons attending theme and amusement parks and attractions in the United States in 1986 were under 45 years of age. These statistics are presented in Table V-9. Thus, a large portion of the resident market in 1988 was within the age categories which have been observed to heavily attend attractions. This project will have appeal to the family market, in particular, within these age groups. This is indicative of the importance of wholesome family entertainment sought by many.

Income levels and household income trends in the market area are important indicators of the ability of an area to contribute significantly to the support of an attraction. Income (per

capita and household) has risen substantially during the period from 1979 to 1988. Per capita income has increased during these years by an estimated 51.3, 55.5 and 51.3 percent of the populations of the primary, secondary and tertiary segments, respectively, of the resident market area. Average household income, during the same period, has been estimated to have increased by 48.9, 51.7 and 47.5 percent, respectively, for the population in the primary, secondary and tertiary segments of the resident market area. Per capita and average household income are projected to continue to increase for all segments of the resident market area through 1993. Estimates of income breakdown are detailed in Tables V-10 through V-12.

The percentage of households in the primary market segment in all income groups earning greater than $25,000 increased between 1979 and 1988; while the percentage of those groups with households earning less than $25,000 annually decreased.

In the secondary and tertiary segments of the resident market, there were a greater number of households in the income brackets earning more than $25,000 in 1988 than in 1979. The distribution of household income is presented for all market segments in Tables V-13 through V-15.

Tourist and Convention Market

The leisure-oriented tourist is normally in the marketplace on holiday or vacation seeking recreational activities. In the

case of Wichita, the visitor market does contain a higher level of convention delegates than do other markets.

The estimated tourist and convention market available to the proposed project, for the purposes of this analysis, has been estimated to be 500,000 persons. This is based on discussions with officials knowledgeable of the situation in Wichita. Based upon expenditure data from the U.S. Travel Data Center in Washington, D.C., the three county Wichita SMSA accounts for 33.6 percent of total tourist expenditures in the state of Kansas. Further analysis of the spending indicates that 27.2 percent of expenditures in Kansas are for food service, 23.5 percent for auto travel and 22.1 percent for public transportation. Lodging accounted for 9.0, percent which does indicate tiat much of the travel is through rather than to the State.

Total Available Market

The total available market for the proposed project is projected for the year 1990, which has been estimated as the opening year for the project. Based upon anticipated patterns of change in population growth between 1987 and 1992, estimates of the resident market size in 1990 have been prepared. The total resident market is estimated to be 3.5 million persons in 1990. This is comprised of 658,889 in the primary segment (0-50 miles from the site), 486,446 in the secondary segment (50-100 miles) and 1,885,879 in the tertiary segment (100-150 miles). Combined

with the estimated tourist market of 500,000 persons to the Wichita area, the total available market is projected to be 3,501,214 persons (Table V-16).

TABLE V-1

POPULATION TRENDS
RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1980-1993

Year	POPULATION 0-50 Miles	50-100 Miles	100-150 Miles
1980	586,111	464,378	1,674,927
1988	633,975	474,170	1,813,008
1993 (Proj.)	687,752	498,401	1,914,698
Change:			
1980 - 1988	8.2%	2.1%	8.2%
1988 - 1993	8.5%	5.1%	5.6%

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-2

POPULATION TRENDS
RESIDENT MARKET IN TOTAL
PROPOSED THEME PARK
WICHITA, KANSAS
1980-1993

Year	POPULATION (0 - 150 Miles)
1980	2,725,416
1988	2,921,153
1993 (Proj.)	3,100,851
Change:	
1980 - 1988	7.2%
1988 - 1993	6.2%

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-3

HOUSEHOLD TRENDS
RESIDENT MARKET BY SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1980 - 1993

Year	HOUSEHOLDS		
	0-50 Miles	50-100 Miles	100-150 Miles
1980	218,672	174,027	625,910
1988	240,413	182,131	694,874
1993 (Proj.)	263,666	194,603	746,114
Change:			
1980 - 1988	9.9%	4.7%	11.0%
1988 - 1993	9.7%	6.8%	7.4%

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-4

HOUSEHOLD TRENDS
RESIDENT MARKET IN TOTAL
PROPOSED THEME PARK
WICHITA, KANSAS
1980 - 1993

Year	Households (0 - 150 Miles)
1980	1,018,609
1988	1,117,418
1993 (Proj.)	1,204,383
Change:	
1980 - 1988	9.7%
1988 - 1993	7.8%

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-5

HOUSEHOLD SIZE
RESIDENT MARKET BY SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1980 - 1993

Year	PERSONS PER HOUSEHOLD		
	0-50 Miles	50-100 Miles	100-150 Miles
1980	2.62	2.54	2.58
1988	2.58	2.48	2.52
1993 (Proj.)	2.56	2.45	2.48
Change:			
1980 - 1988	-1.5%	-2.4%	-2.3%
1988 - 1993	-0.8%	-1.2%	-1.6%

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-6

AGE DISTRIBUTION
PRIMARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1988

Age	AGE DISTRIBUTION 0 - 50 MILES Count	%
0 - 4	52,062	8.2
5 - 11	67,494	10.6
12 - 16	44,453	7.0
17 - 21	48,319	7.6
22 - 29	82,127	13.0
30 - 44	144,417	22.8
45 - 54	59,369	9.4
55 - 64	56,645	8.9
65 +	79,089	12.5
MEDIAN AGE	32.3	
AVERAGE AGE	35.2	

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-7

AGE DISTRIBUTION
SECONDARY MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1988

Age	AGE DISTRIBUTION 50 - 100 MILES Count	$
0 - 4	38,968	8.2
5 - 11	49,859	10.5
12 - 16	32,058	6.8
17 - 21	39,661	8.4
22 - 29	60,781	12.8
30 - 44	96,220	20.3
45 - 54	42,169	8.9
55 - 64	40,508	8.5
65 +	73,945	15.6
MEDIAN AGE	32.5	
AVERAGE AGE	36.3	

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-8

AGE DISTRIBUTION
TERTIARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1988

Age	AGE DISTRIBUTION 100 - 150 MILES Count	%
0 - 4	140,557	7.8
5 - 11	185,091	10.2
12 - 16	127,894	7.1
17 - 21	153,893	8.5
22 - 29	236,374	13.0
30 - 44	408,172	22.5
45 - 54	174,990	9.7
55 - 64	154,007	8.5
65 +	232,031	12.8
MEDIAN AGE	32.3	
AVERAGE AGE	35.4	

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-9

PERCENTAGE OF
TOTAL THEME PARK/ATTRACTION VISITORS
IN THE U.S.
BY AGE
1986

Age /1	% of Adult Survey Respondents	% of Total Visitors
0 - 17	N/A	50
18 - 24	20	10
25 - 44	58	29
45 - 64	15	8
65 and Older	6	3
Total /2	100%	100%

/1 Survey conducted with adults 18 years of age and older. Data from the International Association of Amusement Parks and Attractions, however, indicates that amusement/theme park visitation is split evenly between adults and children.

/2 Totals may not equal 100 percent due to rounding.

Source: International Association of Amusement Parks and Attractions.

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-10

INCOME CHARACTERISTICS
PRIMARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1979 - 1993

Year	------INCOME CHARACTERISTICS /1---- 0 - 50 Miles Per Capita	Average HH
1979	$ 7,561	$ 20,266
1988	11,441	30,171
1993 (Proj.)	12,352	32,220
$ Change 1979 - 1988	$ 3,880	$ 9,905
% Change 1979 - 1988	51.3%	48.9%
$ Change 1988 - 1993	$ 911	$ 2,049
% Change 1988 - 1993	8.0%	6.8%

/1 Income figures are expressed in current dollars for 1980 and 1988, 1993 figures are expressed in 1988 dollars.

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-11

INCOME CHARACTERISTICS
SECONDARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1979 - 1993

Year	-----INCOME CHARACTERISTICS /1------ 50 - 100 Miles Per Capita	Average HH
1979	$ 6,453	$ 17,220
1988	10,036	26,128
1993 (Proj.)	10,999	28,169
$ Change 1979 - 1988	$ 3,583	$ 8,908
% Change 1979 - 1988	55.5%	51.7%
$ Change 1988 - 1993	$ 963	$ 2,041
% Change 1988 - 1993	9.6%	7.8%

1/ Income figures are expressed in current dollars for 1980 and 1988, 1993 figures are expressed in 1988 dollars.

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-12

INCOME CHARACTERISTICS
TERTIARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1979 - 1993

Year	----INCOME CHARACTERISTICS /1------ 100 -150 Miles Per Capita	Average HH
1979	$ 7,059	$ 18,890
1988	10,681	27,869
1993 (Proj.)	11,636	29,862
$ Change 1979 - 1988	$ 3,622	$ 8,979
% Change 1979 - 1988	51.3%	47.5%
$ Change 1988 - 1993	$ 955	$ 1,993
% Change 1988 - 1993	8.9%	7.2%

/1 Income figures are expressed in current dollars for 1980 and 1988, 1993 figures are expressed in 1988 dollars.

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-13

HOUSEHOLD INCOME DISTRIBUTION
PRIMARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1979 & 1988

	Percent Distribution 0 - 50 Miles	
	1979	1988
Less than $10,000	25.3	15.5
$10,000 - $14,999	16.0	9.3
$15,000 - $24,999	29.5	21.7
$25,000 - $34,999	17.0	20.0
$35,000 - $49,999	8.1	18.8
$50,000 - $74,999	2.8	10.4
$75,000 and over	1.2	4.2

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-14

HOUSEHOLD INCOME DISTRIBUTION
SECONDARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1979 & 1988

	Percent Distribution 50 - 100 Miles	
	1979	1988
Less than $10,000	33.9	20.5
$10,000 - $14,999	18.2	12.5
$15,000 - $24,999	27.1	23.4
$25,000 - $34,999	12.8	18.1
$35,000 - $49,999	5.3	15.2
$50,000 - $74,999	1.8	7.2
$75,000 and over	0.9	3.1

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-15

HOUSEHOLD INCOME DISTRIBUTION
TERTIARY RESIDENT MARKET SEGMENT
PROPOSED THEME PARK
WICHITA, KANSAS
1979 & 1988

	Percent Distribution 100 - 150 Miles	
	1979	1988
Less than $10,000	31.1	19.5
$10,000 - $14,999	16.3	11.3
$15,000 - $24,999	27.0	21.7
$25,000 - $34,999	14.5	18.1
$35,000 - $49,999	7.3	16.5
$50,000 - $74,999	2.5	8.8
$75,000 and over	1.3	4.0

Source: CACI

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE V-16

TOTAL AVAILABLE MARKET
PROPOSED THEME PARK
WICHITA, KANSAS
1990

Segment	Population
Resident Market	
Primary	658,889
Secondary	486,446
Tertiary	1,855,879
TOTAL RESIDENT MARKET	3,001,214
Visitor Market	500,000
TOTAL AVAILABLE MARKET	3,501,214

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

SECTION VI
CONCEPT DEVELOPMENT

Before attendance can be forecast for a project and projections of revenues and expenses made, it is necessary to know what the project will be. The project should be designed to meet the desires of the market. To do otherwise would limit a project's potential.

In the preceding section, the market available for a theme park project in the Wichita area was identified. This market is composed of both residents and visitors, as is typical of the market for this type of project.

Recognizing the characteristics of the market segments, LARC has, working with the project sponsors, prepared a concept to meet the desires of the market. The plan will focus on the areas of Kansas heritage, entertainment and participative activities.

In developing the concept for the project, LARC has recognized that a typical outdoor theme park will be difficult to justify. Most projects depend heavily on the primary resident market and this market segment for Wichita is approximately 660,000, less than others supporting theme parks.

Major criteria in planning for this project must therefore include:

- Uniqueness in approach and design;
- Utilization of simulation as an entertainment experience recognizing its future role in the industry.
- Rides should still be one of several "keystones" to the project; and
- A grand multi-purpose entrance area should be considered.

In developing this project, care will also be taken to design a facility which has appeal to many corporations located in Wichita for corporate outings and other functions. These include, for example:

- The Coleman Company
- Cessna Aircraft
- Beech Aircraft
- Rent-A-Center
- Koch Industries
- Learjet
- Pizza Hut
- Boeing
- ABS Corporation
- Chance Manufacturing
- Garvey Company

Utilizing the nostalgic past for direction in theming has been successful for other projects and might be here also.

Providing active, participative opportunities for residents and visitors of all ages within a theme or themes will be important.

One suggestion of a theme has been described by the project sponsors. This would be "Webster Island". This could develop as a Kansas family who arrived from the east coast in the 1800's. A family "tree" of characters and relatives would be developed, each with their own past. While the family tradition would be emphasized, the family would certainly have a "black sheep" or two. These would all be presented in a whimsical manner. This will allow for appropriate theming.

One member of the family might be great, great uncle Ned Webster, the first prospector to strike gold in Kansas. A story of the trials and tribulations of this strike could be developed.

Webster Island might be a small man-made island and include an elaborate, creative playground area. Access to the island would be by way of suspension sway bridges. A stage would be located on one side of the island, and amphitheater seating located across the waterway.

Aunt Martha Webster's kitchen could be a family-style chicken dinner restaurant. This would not only be a restaurant but also provide the necessary catering facilities for corporate outings which are expected to be an important part of the market.

In reviewing this concept, LARC does not believe this, in itself, to be a strong enough concept. LARC believes that a

project can be developed where the Wichita resident and visitor will think of this project first when contemplating entertainment, special shopping (i.e. crafts), dining and active fun. All of these elements can be included in a balanced manner.

SECTION VII

MARKET DEMAND ANALYSIS

The most accurate method of projecting attendance at a theme park, such as that proposed, is by applying reasonable market "penetration" or capture rates to the available resident and tourist markets. This is the approach used to forecast attendance at other major theme parks in the United States. This same method will be utilized to project the attendance levels for this project.

Patterns of Market Penetration

Analysis of the experience of most of the major theme park and entertainment projects throughout the United States indicates that market penetration is a function of attraction size and scope, and that it varies inversely with distance i.e., that propensity to attend drops off demonstrably as travel time to the attraction increases. Based on evidence at some of the U.S. projects operating in the more densely populated urban areas--such as Marriott's Great America in the Chicago area and Great Adventure in the New York market -- it also appears that large and densely populated market areas yield lower rates of penetration. Reasons for this are that the more densely populated markets tend to be characterized by lower rates of automobile

ownership and the presence of high levels of market area competition for available leisure time and money. Table VII-1 relates attendance to primary market population at theme parks in comparable markets in the United States. While the ratios expressed are not penetration rates, as only a portion of each park's attendance originates from within its primary market population, they do illustrate that attendance at parks with larger primary market population are not proportionately higher than the attendance at parks with smaller primary market populations.

Penetration Rates

The applied percentage method of penetration or capture rates to both the available resident market and estimated visitor population will be used to forecast anticipated attendance for purposes of this report. However, other factors influence the anticipated penetration rates:

1. Uncertainty of market perception.
2. Competition for the leisure dollar and time in the marketplace.

As a result, the attendance projections in this report have been approached on the basis of a low-probable-high range of market penetration and their corresponding levels of attendance.

These influencing factors should not be considered as deterrents to the development of the project, but should be recognized realistically when approaching project development in a prudent,

business-like manner. If it is well-planned and executed, and its operation and promotion are of similar quality to leaders of the industry, this project should prove successful.

After applying estimated penetration/capture rates to each segment of the resident population and visitor market, it is possible to calculate the resultant attendance anticipated from each category. These components of anticipated attendance can then be totaled in order to arrive at a total attendance and penetration/capture rate for the project.

Projected penetration rates for the project are presented in Table VII-2. This table illustrates the anticipated penetration rates for the three different levels of planning (low-probable-high) for each segment of the resident and visitor markets. The attendance of each market segment for each level is determined by applying the relevant penetration rate to the appropriate market segment population.

The penetration rate in 1990 for the most accessible market area, the primary segment, which contains those persons residing within a one hour drive of the proposed park, is projected to range from a low of 22.50 percent to a high of 27.50 percent. The probable penetration rate is estimated to be 24.72 percent. In a market such as Wichita, with very little competition, this appears realistic. In larger markets with greater competition and limitations on traffic movements, the rates would tend to fall rapidly.

The penetration rates for subsequent market segments declines as driving time increases. In the market area from one to two hours driving time from the proposed park, or the secondary segment, penetration rates range from a low of 4.0 percent to a high of 6.5 percent, with the probable rate being 5.0 percent. Projected penetration rates for the tertiary segment (two to three hours drive) of the resident market area ranges from a low of 1.25 percent to a high of 1.76 percent, with a probable penetration rate of 1.5 percent.

It is anticipated that the penetration rate for the visitor market will range from a low of 10.0 percent to a high of 15.0 percent. The probable rate of penetration of the visitor market is estimated to be 12.0 percent. This too is realistic given the role of Wichita within the region. Residents of northern Oklahoma and western Kansas perceive Wichita as a place for entertainment, shopping and medical services. These calculations are summarized in Table VII-2. The probable total market penetration rate for the proposed theme park is expected to be 7.85 percent.

Based upon the penetration rates, attendance at the proposed theme park in the first operating year is projected to be approximately 275,000 persons, within a predicted range of from 241,000 to 320,400 persons. This data is presented in Table VII-3.

Attendance has been projected for the first five years of operation in Table VII-4. This attendance forecast has been based on the assumption that the facility will be well-designed and executed and operated in a high-quality manner associated with successful major parks and attractions. The increase in year 4 assumes a new exciting attraction will be added for the resident market. As presented in Table VII-4, attendance is expected to increase annually, with an overall increase of 25.4 percent during the five-year period, reaching a forecast level of approximately 344,800 persons during the fifth operating year.

It can be observed that the portion of the estimated attendance which is expected to originate from the visitor market is projected to be a small part of the total. The park, to be successful, must effectively penetrate the primary market. A strong marketing program, begun early, will be necessary. While the secondary market is more proximate to Wichita than competition in Kansas City, Branson or Oklahoma City, the population in this area is not great. Only a small portion of the population in the tertiary market will be attracted to the park in Wichita due to distance/drive time and competition.

The proposed theme park is conceived to be a place which will appeal to the resident market and visitors are expected to be a significant source of attendance at this park.

It is anticipated that the ratio of attendance to primary resident market population for the project will remain relatively

stationary, even as attendance increases from year to year. Table VII-5 presents the estimated ratios of attendance to primary market population during the first five years of operation of the project due to population growth in the market. These ratios are projected to increase from 0.42 in year one to 0.50 in year five. While this is at the lower limits of the parks compared in Table VII-1, it must be remembered that these parks have been operating for some time and have established their position within their marketplace.

Operating Calendar

After considering weather conditions, state school holidays and public holidays observed by the state, a typical operating calendar has been developed. Table VII-6 illustrates a typical operating calendar for the proposed theme park, which should initially allow for approximately 115 to 140 days of operation. The total number of operating days used for purposes of this report, 123, is also presented in Table VII-6

Distribution of Attendance

The projected monthly distribution of attendance is presented in Table VII-7. The peak month of attendance during the operating season is projected to be July. Attendance during this month is anticipated to be 79,200 persons, representing 28.8 percent of total anticipated attendance.

Table VII-8 establishes the monthly and daily distribution of projected attendance. Each average weekend day is expected to account for about 25 percent of the weekly total attendance, or 2.0 times the number of visitors expected on an average weekday. Average daily weekend attendance during the peak month, July, is estimated to be approximately 4,450 persons. This establishes the design day necessary for planning the proposed theme facilities and attraction mix, as the complex must be planned properly to handle the anticipated crowds. Calculations utilized in developing this table reflect the impact inclement weather may have on attendance patterns.

Estimated arrival and departure patterns, which are similar to those experiences at comparable facilities in the United States, are shown in Table VII-9. Attendance during the design day is expected to peak between the hours of 1:00 and 2:00 p.m., during which time approximately 69 percent of the day's visitors will be in the theme park. This in-grounds crowd will be approximately 3,070 persons.

TABLE VII-1

RATIO ANALYSIS
ATTENDANCE TO PRIMARY POPULATION
COMPARABLE U.S. THEME PARKS

Facility	Attendance	Population	Ratio
Adventureland (Des Moines, Iowa)	522,000	381,300	1.369
Worlds of Fun (Kansas City, MO)	1,310,422	1,517,800	0.863
Lagoon (Salt Lake City, UT)	850,377	1,041,400	0.817
Elitch Gardens (Denver, CO)	1,000,000	1,633,100	0.612
Six Flags Over Mid-America (St. Louis, MO)	1,400,000	2,438,000	0.574
Peony Park (Omaha, NB)	289,179	614,300	0.471
Valleyfair (Minneapolis, MN)	1,050,000	2,295,200	0.457
Frontier City (Oklahoma City, OK)	315,000	982,900	0.320
Liberty Land (Memphis, TN)	287,588	959,500	0.300

Source: Amusement Business
U.S. Department of Commerce; Bureau of the Census
Metropolitan Statistical Areas by Population Rank;
Interviews with Park Officials.

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-2

PROJECTED PENETRATION RATES
PROPOSED THEME PARK
WICHITA, KANSAS
1990

Market Segment	Penetration Rate (%) Low	Probable	High
Primary Resident	22.50	24.72	27.50
Secondary Resident	4.00	5.00	6.50
Tertiary Resident	1.25	1.50	1.76
Visitor Market	10.00	12.00	15.00
Total Available Market	6.88	7.85	9.15

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-3

RANGE OF FORECAST ATTENDANCE
PROPOSED THEME PARK
WICHITA, KANSAS
1990

Market Segment	Attendance Range		
	Low	Probable	High
Primary Resident	148,300	162,900	181,200
Secondary Resident	19,500	24,300	31,600
Tertiary Resident	23,200	27,800	32,600
Visitor Market	50,000	60,000	75,000
Total Available Market	241,000	275,000	320,400

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-4

ATTENDANCE PROJECTIONS
PROPOSED THEME PARK
WICHITA, KANSAS
YEARS ONE THROUGH FIVE

Year	% Increase	Absolute Increase	Attendance
One	-	-	275,000
Two	6.65	18,300	293,300
Three	5.73	16,800	310,100
Four	6.45	20,000	330,100
Five	4.45	14,700	344,800

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-5

RATIO OF ATTENDANCE TO
PRIMARY MARKET POPULATION
PROPOSED THEME PARK
WICHITA, KANSAS

Year of Operation	Ratio
Year One - Low	0.37
- Probable	0.42
- High	0.49
Year Two	0.44
Year Three	0.46
Year Four	0.48
Year Five	0.50

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-6

ANTICIPATED DAYS OF OPERATION
PROPOSED THEME PARK
WICHITA, KANSAS
1990

Month	Operating Days: Weekend Days/ Holidays	Operating Days: Weekdays	Total
January	-	-	-
February	-	-	-
March	-	-	-
April	-	-	-
May	9	9	18
June	8	22	30
July	9	22	31
August	8	23	31
September	5	8	13
October	-	-	-
November	-	-	-
December	-	-	-
TOTAL	**39**	**84**	**123**

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-7

PROJECTED MONTHLY DISTRIBUTION OF ATTENDANCE
PROPOSED THEME PARK
WICHITA, KANSAS
1990

Month	% Annual	Attendance
January	-	-
February	-	-
March	-	-
April	-	-
May	11.5	31,625
June	24.8	68,200
July	28.8	79,200
August	27.0	74,250
September	7.9	21,725
October	-	-
November	-	-
December	-	-
TOTAL	**100.0**	**275,000**

Prepared by Leisure and Recreation Concepts, Inc// February, 1988.

TABLE VII-8

PROJECTED MONTHLY AND DAILY DISTRIBUTION OF ATTENDANCE
PROPOSED THEME PARK
WICHITA, KANSAS
1990

Month	Weekend Days /1	Week Days	Total Days	Attendance Percent	Attendance Number	Attendance /2 Weekday	Attendance /2 Weekend
January	-	-	-	-	-	-	-
February	-	-	-	-	-	-	-
March	-	-	-	-	-	-	-
April	-	-	-	-	-	-	-
May	9	9	18	11.5	31,625	1,004	2,510
June	8	22	30	24.8	68,200	1,624	4,060
July	9	22	31	28.8	79,200	1,780	4,450
August	8	23	31	27.0	74,250	1,727	4,317
September	5	8	13	7.9	21,725	1,060	2,650
October	-	-	-	-	-	-	-
November	-	-	-	-	-	-	-
December	-	-	-	-	-	-	-
TOTAL	**39**	**84**	**123**	**100.0**	**275,000**	**N/A**	**N/A**

/1 Includes both weekend days and holiday days

/2 Based on ratio of weekend day/weekday of 2 to 1

N/A = Not Applicable

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

TABLE VII-9

ESTIMATED ARRIVAL AND DEPARTURE PATTERNS
DURING A TYPICAL DESIGN DAY
PROPOSED THEME PARK
WICHITA, KANSAS

Time Period	Arrivals (%) Hourly	Arrivals (%) Cumulative	Departures (%) Hourly	Departures (%) Cumulative	In-Grounds Crowd (%)
10 am - 11 am	20.1	20.1	-	-	20.1
11 am - 12 noon	22.4	42.5	.2	.2	42.3
12 noon - 1 pm	17.1	59.6	.7	.9	58.7
1 pm - 2 pm	10.9	70.5	.8	1.7	68.8
2 pm - 3 pm	6.3	76.8	8.5	10.2	66.6
3 pm - 4 pm	9.4	86.2	16.0	26.2	60.0
4 pm - 5 pm	3.0	89.2	6.0	32.2	57.0
5 pm - 6 pm	3.2	92.4	5.7	37.9	54.5
6 pm - 7 pm	3.5	95.9	17.5	55.4	40.5
7 pm - 8 pm	2.0	97.9	10.6	66.0	31.9
8 pm - 9 pm	1.5	99.4	12.8	78.8	20.6
9 pm - 10 pm	0.6	100.0	2.7	81.5	18.5
10 pm - 11 pm	-	-	18.5	100.0	0.0

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.

SECTION VIII
FACILITIES REQUIREMENTS

Design criteria establishes guidelines for quantifying the facilities necessary to service the anticipated levels of attendance at the proposed project. While relating to the total annual attendance, the design criteria is more a function of the seasonal distribution of this attendance and daily "peaking." The levels of attendance determined by these factors necessitate specific requirements for the various categories of facilities planned, including: food services, merchandise space, restrooms, parking space and other visitor services and conveniences.

Seasonal distribution and daily peaking characteristics are calculated to determine the probable attendance levels expected during an average peak day's operation. This establishes the "design day" demand which is based on the total number of persons attending the project during the course of the operating day, the average length of visitor stay, the peak arrival hours, the peak departure hours and the resulting in-grounds attendance during given hours. These attendance calculations establish parameters necessary to develop design criteria for the project.

Definition of Design Criteria

Annual Attendance: The number of persons attending the project during a specified one-year period. This may be for either a calendar or fiscal year as required for business purposes.

Seasonal Attendance: The total number of persons attending the project during a specific segment of the project's calendar or operating year. This term may or may not relate to normal calendar seasons (i.e.: spring, summer, etc.)

Peak Daily Attendance: The maximum number of persons attending the facility during a single operating day, or average of several such days. This is also considered the design day.

Design Day: The day or days for which the project facilities are planned. This is normally based on an average peak attendance day, which generally occurs ten to fifteen times per year. Facilities planned for this attendance will provide adequate services and conveniences for attendees without undue waiting time or personal inconvenience. An "absolute" peak day's attendance, which might occur 3 or 4 times per year, may exceed the established design day parameters. However, the design day facilities would be adequate to

accommodate this increased demand, but waiting times may increase, visitor satisfaction decline and per capita revenues decrease.

Peak Arrival Hour: The maximum number of persons expected to arrive at the project during a one-hour period.

Peak Departure Hour: The maximum number of persons expected to depart the project during a one-hour period.

Average Length of Visitor Stay: The average amount of time the typical visitor will remain in the park during the course of their visit.

In-Project Attendance: The total attendance inside the park during a specified period of time. This is normally expressed in hourly increments since incoming and outgoing attendance are measured on an hourly basis. Therefore, in-grounds attendance is the difference between the cumulative number of arriving visitors less the cumulative number of visitors having left the project at a specific time. Normal hourly measuring results in an hourly in-project attendance number being established. Services and conveniences must be provided to adequately accommodate peak hourly in-project attendance generated during a design day.

Development of these attendance levels provides the basic parameters necessary to develop the project design criteria which follow.

Parking Requirements

Parking requirements are determined by the projected number of visitors anticipated to visit the facility by types of transportation, the average number of persons in each type, the peak in-project attendance and the average number of vehicles which can be parked per acre. Additional parking spaces must be provided for employees. This will be based on the number of employees at other parks having similar attendance levels. Therefore, parking requirements can be determined by the following formula:

In Grounds attendance x % arriving by private vehicle = Number of guests serviced.

Number guests serviced/Average number guests per vehicle = Number spaces required.

Number guest spaces /Spaces per acre parking = Number acres required for guest parking.

Number employees in park/Average number of employees per vehicle = Number spaces required.

Number employee spaces/Spaces per acre = Number of acres required for employees.

Guest spaces + employee spaces = Total number spaces.

Guest acres + employee acres = Total number acres.

While only operating experience will allow a precise determination of the number of guests arriving per vehicle and the

number of employees arriving per vehicle, industry averages are as follows:

Average Number of Guests Per Vehicle: This figure will normally vary between an average of 3.2 persons per vehicle and 4.1 persons per vehicle.

Average Number of Employees Per Vehicle: This figure normally averages from 1.2 to 1.5 employees per vehicle and is found to be gradually increasing.

Entrance Requirements

Entrance requirements relate directly to the volume of attendance projected for the peak arrival hour. Adequate facilities must be planned to serve the anticipated number of people since the most important service provided is the sale of admissions. The number of transactions consistently achievable by an admissions cashier is determined by the complexity of the admission policy offered and the system of issuing those admissions. The number of transactions must be compared to the anticipated peak hourly arrivals to determine the number of admissions sales locations necessary.

Entry and exit control points must equal the estimated ingress and egress attendance levels. A minimum of one control point must be designed with the physical capability of ingress and/or egress for wheelchairs and infant "strollers."

Other needed entrance capabilities should be to provide necessary services for group sales, special guests and other special services important for arriving or departing guests.

Restroom Requirements

The restroom requirements for a major attraction are determined by the peak number of persons in-grounds during the design day. Standards indicate a need for one fixture (toilet or urinal) for each 200 persons in-grounds. The resulting number of fixtures will normally exceed most local or regional code requirements. The final ratio of toilets to urinals to lavatories (including handicapped facilities) can be determined through the normal code ratios for the area.

Food and Beverage Requirements

Food and beverage seating requirements for a major attraction are generally planned to accommodate those persons desiring food and beverage service during peak dining hours, most often 12 noon until 3:00 p.m. The average number of persons in-grounds must be determined for this three-hour period, then averaged to determine the average hourly demand. The projected number of seats provide the extent of food and beverage facilities required. As most facilities are cafeteria or modified self service, the average space allocated per seat is 15 square feet which also allows comfortable public circulation.

Benches and Seating

It is normally accepted that fifteen percent of the design day's peak attendance on-site will require seating at any given time.

Drinking Fountain Requirements

Public drinking fountains are planned on the basis of one fountain for each 350 persons on-site during the peak hour of the design day. These are normally spread throughout the facility in "banks" of two or more. Handicapped facilities are provided to exceed codes.

Retail Merchandising

The space provided for retail merchandising is a function of anticipated total revenue from merchandise sales divided by a standard gross revenue per square foot. Merchandise space should generate revenues between $100 per square foot and $175 per square foot.

Ride/Attraction Requirements

The experience of most major family entertainment centers has established the necessity of providing rides and attractions offering a combined hourly capacity of 1.5 to 2.0+ times the number of guests anticipated during a peak "in-grounds" hour.

This total hourly capacity of "entertainment units" will normally provide an adequate satisfaction level for park visitors - even in peak demand situations.

DESIGN CRITERIA

For planning purposes, the design criteria is for the proposed Wichita theme park, with the anticipated annual attendance for the first year of operation projected to be 275,000 persons.

Attendance

Annual Attendance	275,000
Design Day	4,450
Peak In-Grounds Hour	3,070
Peak Arrival Hour	997
Peak Departure Hour	823

Parking Requirements

Peak In-Grounds Hour	3,070
Percent Visitors Arriving by Private Vehicle	95%
Number Visitors to Require Auto Park Facilities During Peak Hour	2,917
Average Number of Visitors Per Vehicle	2.4
Number of Spaces Required During Peak Hour	1,215
Average Number of Spaces Per Acre	120
Number of Acres Required for Visitor Parking	10.1
Number of Acres Required ggr Employee Parking	0.8
Total Acres Required for Parking (rounded)	10.9

Main Entrance

Peak Arrival Hour	997	
Average Hourly Ticket Sales Per Window	500	
Minimum Number Ticket Windows Required	2	
Minimum Number Entry Turnstiles (Registering)	2	
Minimum Number Exit Turnstiles (Registering)	2	/1
Stack Up Area Before Ticket Window (1/2 Sheltered)	60	LF
Re-entry/Exit Turnstiles (Registration)	1	
Security/Stroller/Wheelchair Gate	1	

Rest Rooms

Peak In-Grounds Hour	3,070	
Ratio: Fixtures/In-Grounds Crowds	1:200	
Number Fixtures Required	15	/2

Food/Beverage

Design Day	4,450	
Peak Dining Period (Average % of Design Day Crowd)	65%	
Peak Number Persons Desiring Service	2,893	
Average Hourly Demand (@ 33.33%)	964	
Number Seats (Cafeteria)	135	/3
Number Seats (Snack Stands)	157	/4

Benches/Seating

Peak In-Grounds Hour	3,070
Number Seats Required (20% Demand)	614

Drinking Fountains

Peak In-Grounds Hour	3,070
Ratio: Units/In-Grounds Crowd	1:350
Number Units Required	9

Shade/Shelter

Peak In-Grounds Hour	3,070
Ratio: S.F./In-Grounds Crowd	5:1
Shade/Shelter Square Footage Required	15,350 SF

Retail Merchandising

Total Annual Attendance	275,000
Estimated Per Capita Revenue	$1.15
Estimated Gross Revenue	$ 316,250
Average Revenue Per Square Foot	$125
Retail Merchandising Square Footage	2,530 SF

Rides and Attractions

Peak In-Grounds Hour	3,070
Per Capita Hourly Ride Unit Ratio	1:2
Hourly Ride/Entertainment Capacity Units Required	6,140

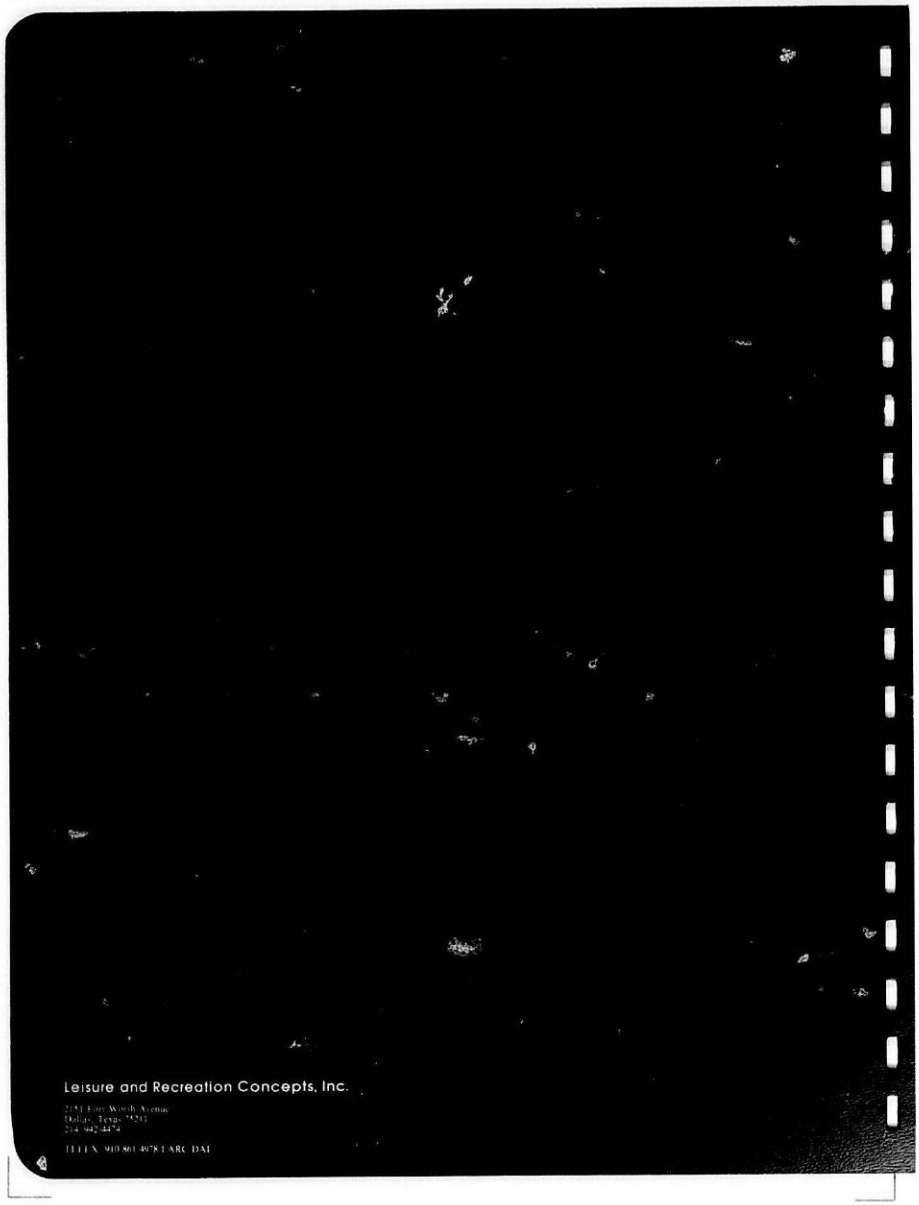
/1 Minimum of one regular exit turnstile to be reversible.

/2 At 2.5 turns per hour - 35% demand

/3 At 4 turns per hour - 65% demand

/4 Sanitary facilities will vary with final determination of local code requirements.

Prepared by Leisure and Recreation Concepts, Inc.; February, 1988.


Leisure and Recreation Concepts, Inc.
2101 Fort Worth Avenue
Dallas, Texas 75208
214-942-4474
TELEX 910 861 4978 LARC DAL

TRAFFIC IMPACT STUDY
FOR REGIONAL THEME PARK
IN WICHITA, KANSAS

DeShazo Starek & Tang

TRAFFIC IMPACT STUDY
FOR REGIONAL THEME PARK
IN WICHITA, KANSAS

Prepared For:

Robert L. Collins & Associates

Prepared By:

DeShazo, Starek & Tang, Inc.
One Memorial Place, Suite 302
7633 E. 63rd Place
Tulsa, OK 74133

June 1988

DeShazo, Starek & Tang, Inc.
Engineers • Planners

One Memorial Place, Suite 302
7633 E. 63rd Place • Tulsa, OK 74133 • 918/250-2621

TECHNICAL MEMORANDUM

TO: Mr. Robert L. Collins
Robert L. Collins & Associates

FROM: DeShazo, Starek & Tang, Inc.

DATE: June 7, 1988

SUBJECT: Traffic Impact Study for Regional Theme Park in Wichita, Kansas; J88144

PURPOSE

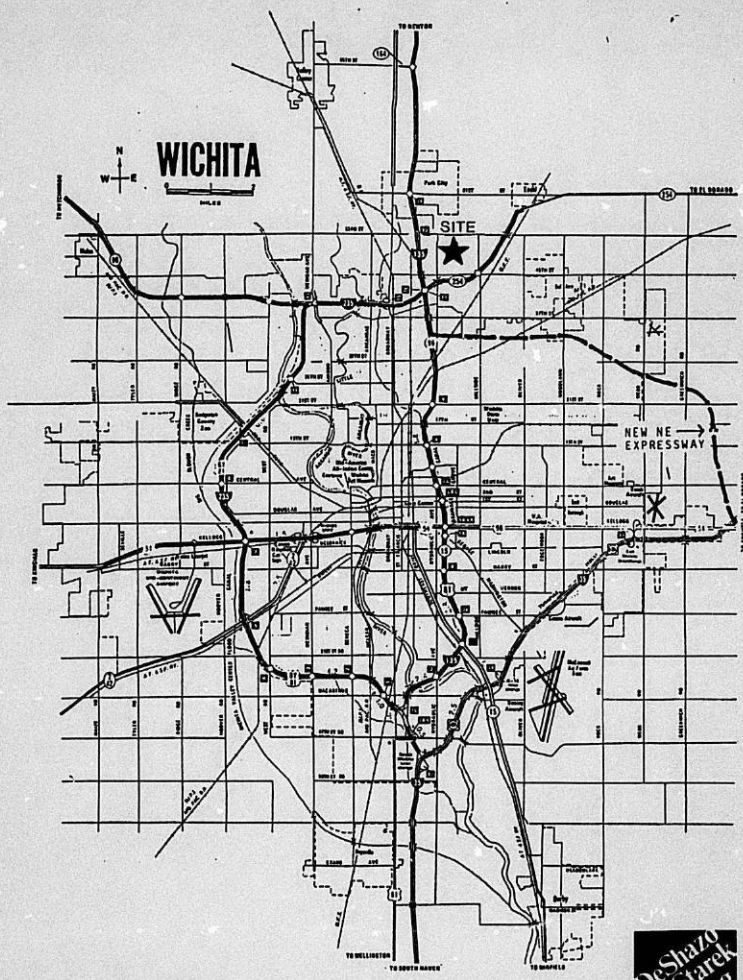
This memorandum addresses the transportation impacts of a proposed regional theme park located on north 53rd Street between Hydraulic Avenue and Hillside Avenue. The location of this site is illustrated in Figure 1. Both existing and projected year 2000 conditions are evaluated.

EXISTING CONDITIONS

In order to determine the impact of the proposed development, a base condition was first established. Peak on-street traffic occurs from 5:00 to 6:00 p.m. and peak site generated traffic occurs from 11:00 to noon. Additionally, theme parks generally produce the majority of their trips on weekend days. In recognition of these facts, three time periods were analyzed so as to determine the critical time of operation. These are listed below:

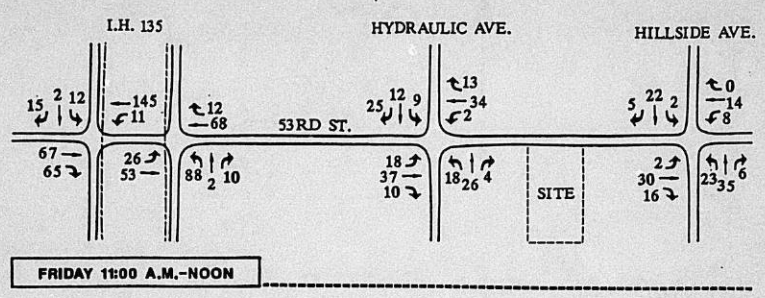
- Friday 11:00 a.m. - noon
- Friday 5:00 p.m. - 6:00 p.m.
- Saturday 11:00 a.m. - noon

Traffic volumes for each of these times are depicted in Figure 2. These volumes have been analyzed using methodologies described in

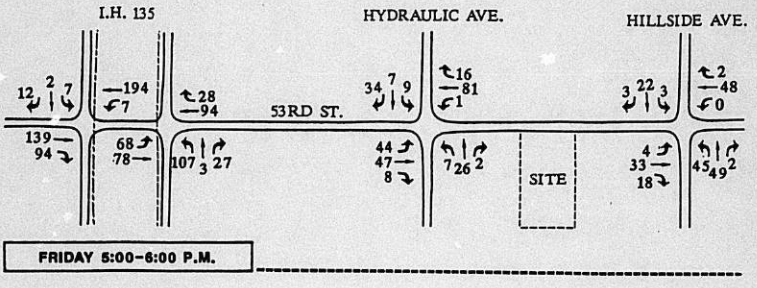


SITE LOCATION PLAN

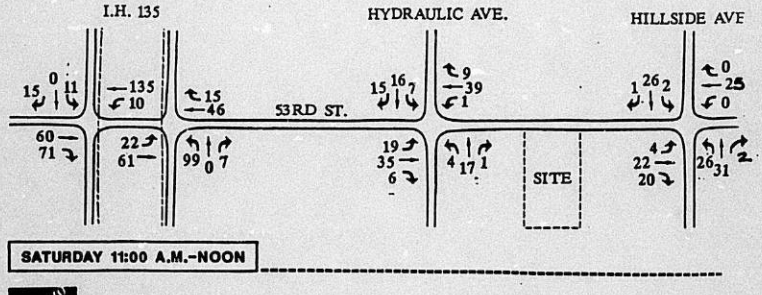
FIGURE 1



FRIDAY 11:00 A.M.-NOON

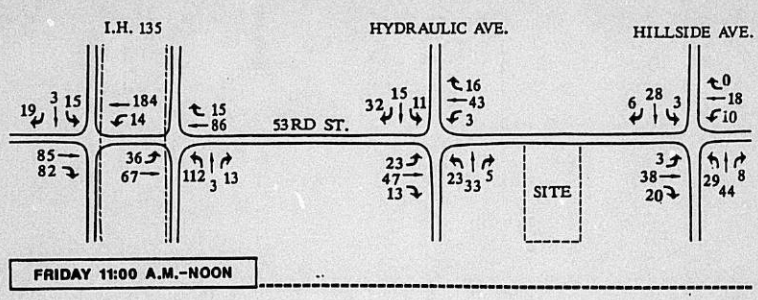


FRIDAY 5:00-6:00 P.M.

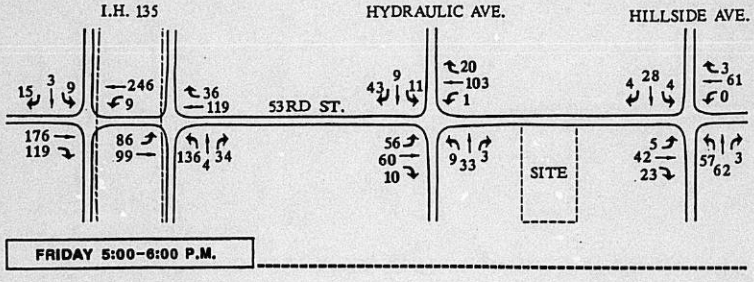


SATURDAY 11:00 A.M.-NOON

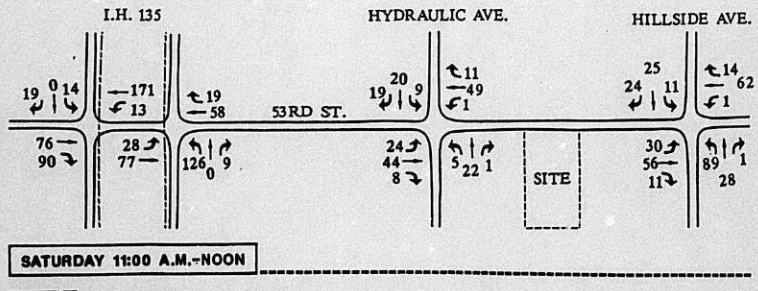
FIGURE 2
Existing Traffic Volumes



FRIDAY 11:00 A.M.-NOON



FRIDAY 5:00-6:00 P.M.



SATURDAY 11:00 A.M.-NOON

FIGURE 3

Year 2000 Base Traffic Volumes

the 1985 Highway Capacity Manual. The results will be presented in a later section of this report.

YEAR 2000 BASE CONDITIONS

Using existing traffic counts and an assumed growth rate of two percent (2%) per year, it was possible to come up with projected traffic volumes for the year 2000. Figure 3 presents these volumes. For this scenario it was assumed that existing geometries would still be in place, with no changes in either lane geometries or traffic control.

YEAR 2000 BASE PLUS DEVELOPMENT

Trip generation for the site is based on information provided by Leisure and Recreation Concepts, Inc. (LARC) in their feasibility analysis of this site. Figures 4 and 5 are graphic illustrations of attendance on both a monthly basis and as a daily distribution, respectively. Peak attendance for the site is projected to be 4,450 persons in July on a weekend day. Weekday attendance also peaks during this month, but is of a lesser magnitude (1,780 persons). Using this data, the number of trips generated by the site have been determined and are listed in Table 1 below.

TABLE 1
TRIP GENERATION

* TOTAL ATTENDANCE: 1,780 persons - weekday
4,450 persons - weekend

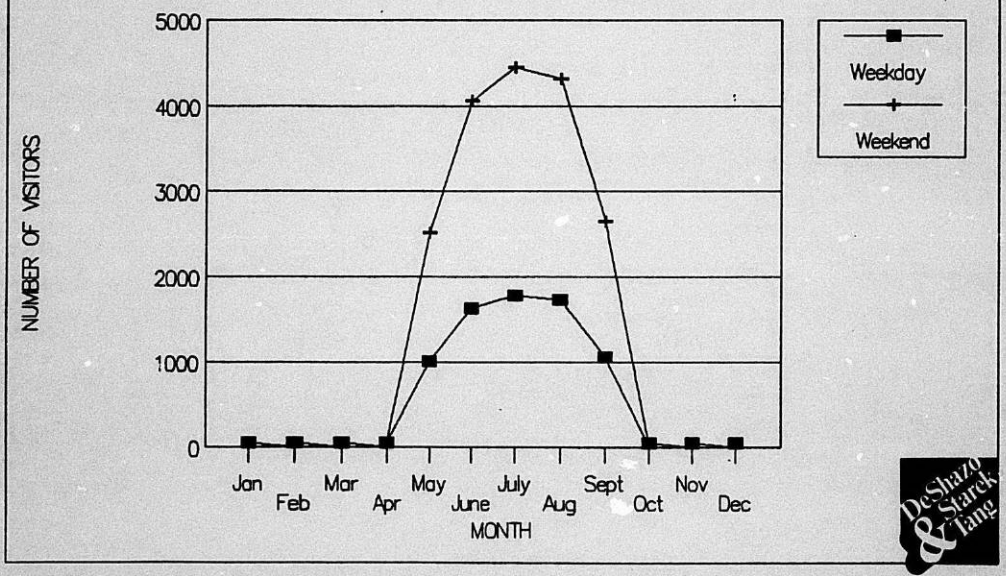
VEHICLE OCCUPANCY: 3 persons per vehicle

TIME PERIOD		PERCENT OF TOTAL*	VEHICLES	PERCENT OF TOTAL*	VEHICLES
Friday	11:00-noon	22.4	133	0.2	2
Friday	5:00-6:00 pm	3.2	19	5.7	34
Saturday	11:00-noon	22.4	332	0.2	3

* Based on peak month data supplied by Leisure and Recreation Concepts (LARC) report

FIGURE 4

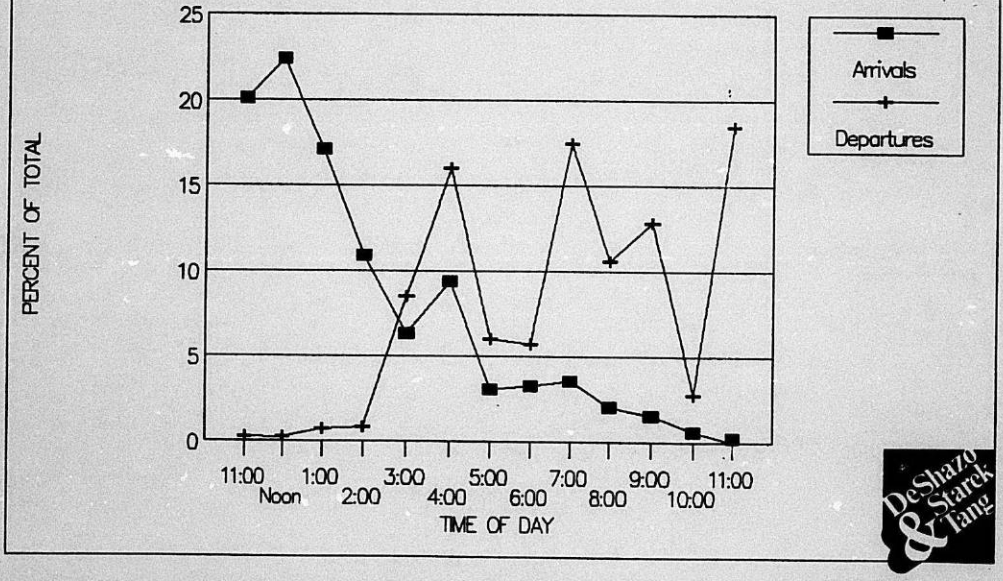
PROJECTED DAILY ATTENDANCE



DeShazo Starck & Tang

FIGURE 5

DAILY DISTRIBUTION OF VISITORS



Trip distribution for these vehicles was determined using trip data from existing 24-hour traffic counts provided by the Kansas Department of Transportation. Trip orientations for site generated traffic are depicted in Figure 6. Vehicles accessing the site have been distributed through the local transportation network as shown in Figure 7. The "Base Plus Development" traffic volumes are provided in Figure 8.

ANALYSIS RESULTS

Analysis for the intersections studied is based on methodology presented in the 1985 Highway Capacity Manual for unsignalized intersections and four-way stops. Results are given based on the Level-of-Service (LOS) concept and range from LOS "A" to LOS "F", with LOS "A" representing the best case. Design criteria for major urban areas usually designate LOS "D" as minimum acceptable traffic operations. All analysis sheets for this study are provided in an Appendix at the end of this report. Table 2 lists the analysis results for each intersection. Comparing the results, it is apparent that the only intersection significantly impacted by the site is at the I.H. 35 northbound service road during the weekday evening peak period. Traffic operations at this location drop from LOS "A" to LOS "B" due to the addition of site generated traffic; however, this still represents stable flow through the intersection, with ample reserve capacity for future growth.

SUMMARY/RECOMMENDATIONS

This study addresses traffic operations both with and without the proposed regional theme park in place. Impact of the park is negligible, with only one location being forced to a lower level of service.

Traffic volumes are low enough that site driveway operations are possible using only one lane of ingress and egress. However, it is recommended that a minimum of two lanes be provided for each

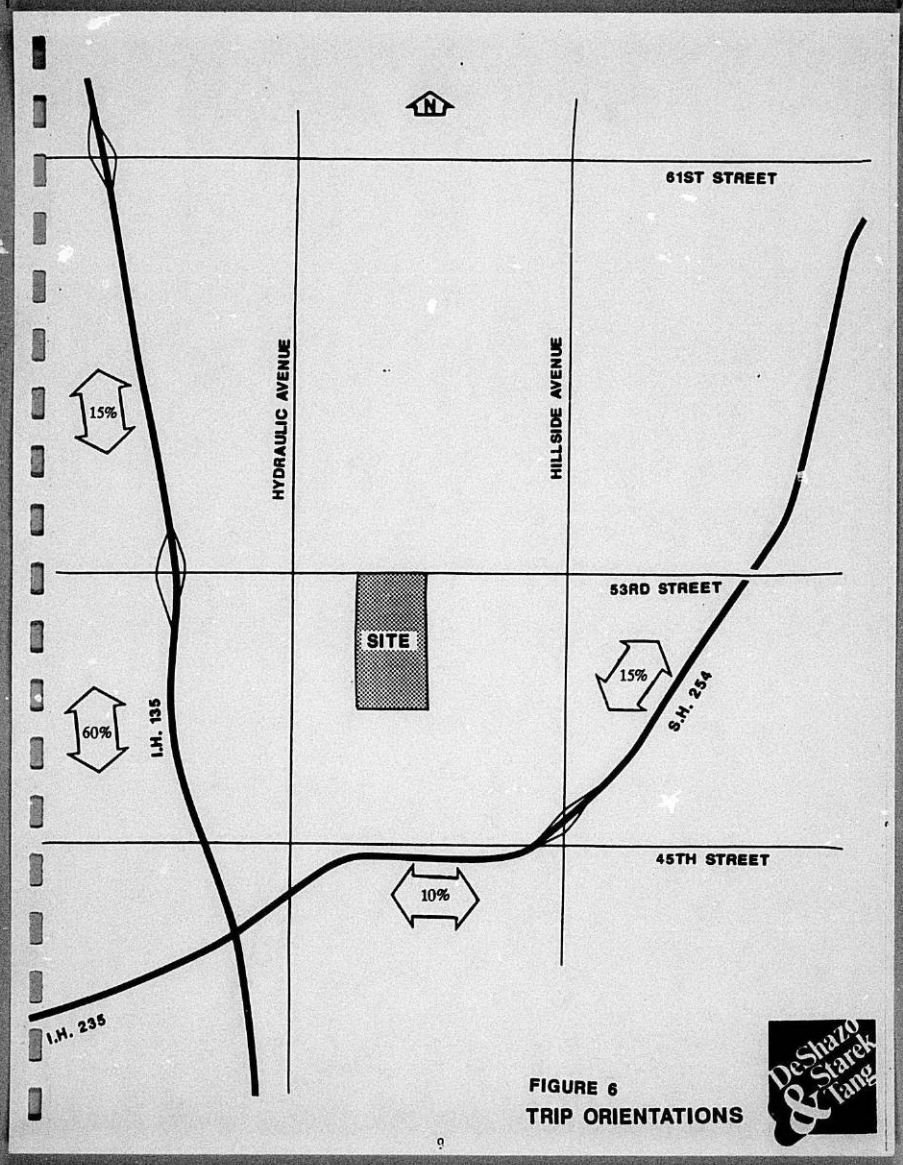
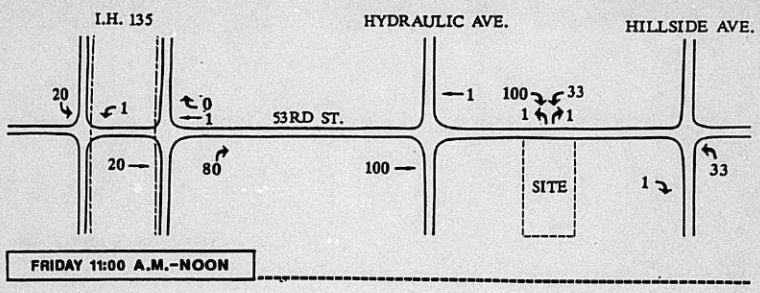
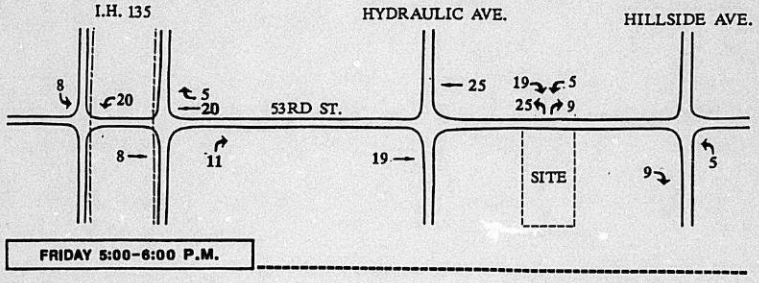


FIGURE 6
TRIP ORIENTATIONS

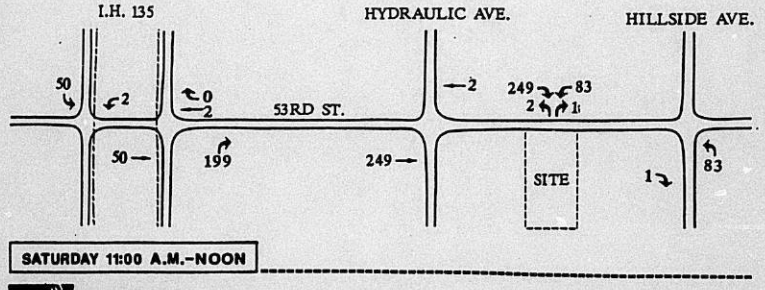
DeShazo & Starek Tang



FRIDAY 11:00 A.M.-NOON

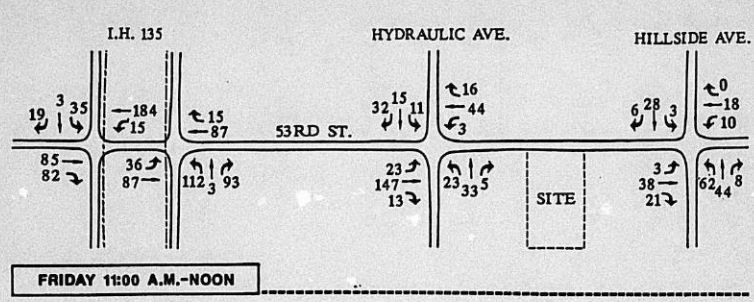


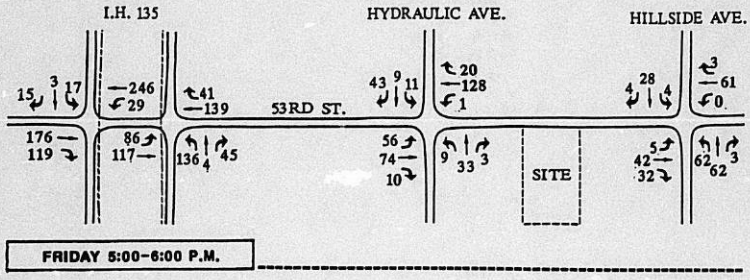
FRIDAY 5:00-6:00 P.M.



SATURDAY 11:00 A.M.-NOON

FIGURE 7
Site Generated Traffic Volumes





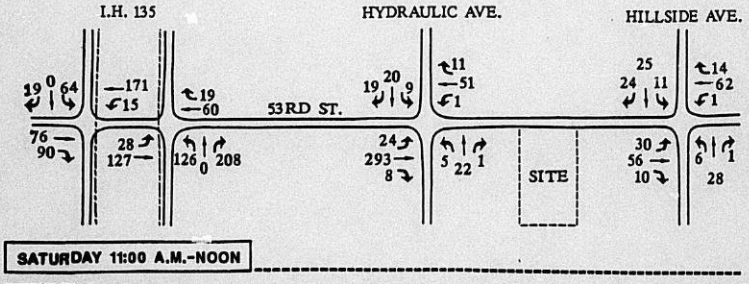


FIGURE 8
Year 2000 Base Plus Development Traffic Volumes

TABLE 2
ANALYSIS RESULTS

INTERSECTION	TIME PERIOD	SCENARIO	LEVEL OF SERVICE
I.H. 135 Southbound Service Road & 53rd Street	Friday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Friday 5:00-6:00 pm	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Saturday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
I.H. 135 Northbound Service Road & 53rd Street	Friday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Friday 5:00-6:00 pm	Existing	A
		2000 Base	A
		2000 Base + Dev.	B
	Saturday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
Hydraulic Avenue & 53rd Street	Fridayay 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Friday 5:00-6:00 pm	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Saturday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
Hillside Avenue & 53rd Street	Friday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Friday 5:00-6:00 pm	Existing	A
		2000 Base	A
		2000 Base + Dev.	A
	Saturday 11:00-Noon	Existing	A
		2000 Base	A
		2000 Base + Dev.	A

TABLE 2
ANALYSIS RESULTS
(Continued)

INTERSECTION	TIME PERIOD	SCENARIO	LEVEL OF SERVICE
Proposed Driveway & 53rd Street	Friday 11:00-Noon	Existing	---
		2000 Base	---
		2000 Base + Dev.	A
	Friday 5:00-6:00 pm	Existing	---
		2000 Base	---
		2000 Base + Dev.	A
	Saturday 11:00-Noon	Existing	---
		2000 Base	---
		2000 Base + Dev.	A

movement to provide emergency access. Additionally, turning volumes on 53rd Street are high enough to warrant right and left turn storage lanes at the site driveway.

This site currently enjoys excellent access to all locations due to its proximity to area freeways. The local transportation system is more than adequate to handle travel to and from the site. It currently operates well below capacity, with substantial room for future traffic volume increases.

APPENDIX

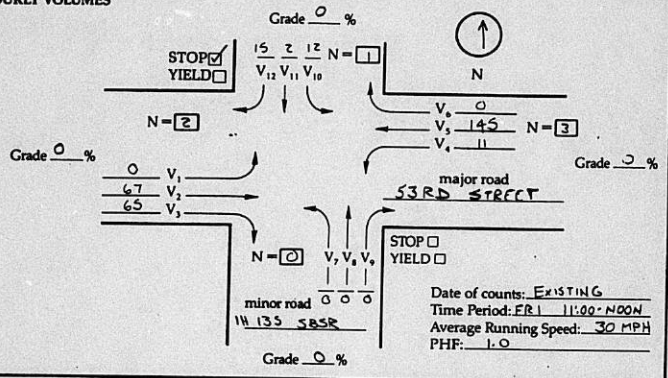
IH 135 SBSR / 53RD
FRI 11:00-noon
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 SBSR / 53RD ST Name: BDYOW

HOURLY VOLUMES

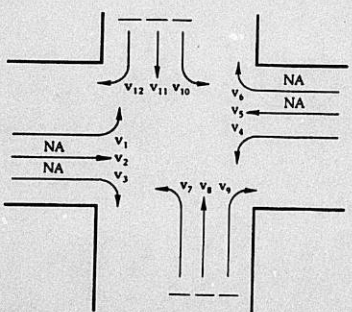


Date of counts: EXISTING
Time Period: FRI 11:00-NOON
Average Running Speed: 30 MPH
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	67	65	11	145	0	0	0	0	12	2	15
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



IH 135 SBSR / 53RD
FRI - 11:00. NOON
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ ____ + ____ = ____ vph	$1/2\,V_6 + V_5 = V_{c12}$ 0 + 73 = 73 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ____ pcph	c_{p12} = 1050 pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = 6.9 %
Impedance Factor, P (Fig. 10-5)	P_9 = ____	P_{12} = .98
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ____ pcph	$c_{m12} = c_{p12}$ = 1050 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 65 + 67 = 132 vph	$V_6 + V_5 = V_{c1}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 950 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 13.9 %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .91	P_1 = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 950 pcph	$c_{m1} = c_{p1}$ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_6+V_5+V_4=V_{c8}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 145 + 11 + 65 + 67 + 0 = 288 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 650 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = 44.3 %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = .63
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 591 = 650 × 1.0 × .91 (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} ____ + ____ + ____ = ____ vph	V_{c11} (step 3) + V_8 + V_9 = V_{c10} 288 + 0 + 0 = 288 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 590 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ ____ = ____ × ____ × ____ × ____ × ____ (pcph)	$c_{m10} = c_{p10} \times P_4 \times P_1 \times P_8 \times P_9$ 537 = 590 × .91 × 1.0 × 1.0 × 1.0 (pcph)

IH 135 SBSR / 53RD
FRI - 11:00-NOON
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_i + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7					
8					
9					

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	12	537	725	713	A
11	2	591	725	723	A
12	15	1050	725	710	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1				
4	11	950	939	A

COMMENTS:

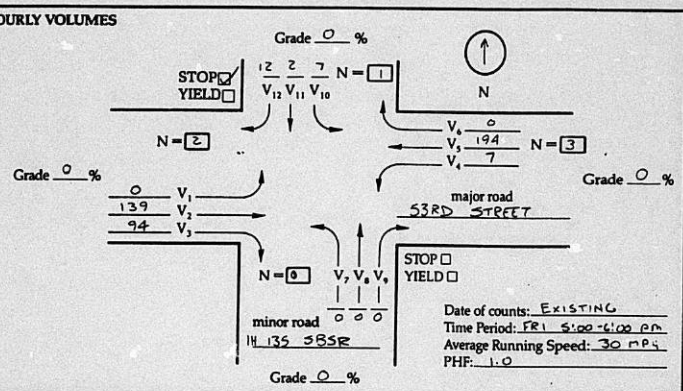
SBSR IH 135 / 53RD
FRI · 5:00-6:00 P.M.
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 SBSR / 53RD ST Name: BOVDW

HOURLY VOLUMES

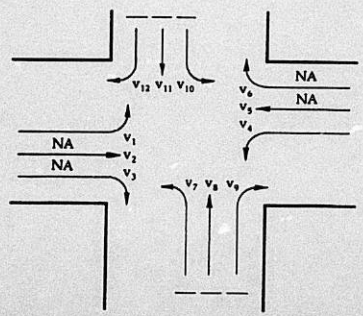


Date of counts: EXISTING
Time Period: FRI 5:00-6:00 PM
Average Running Speed: 30 MPH
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	139	94	7	194	0	0	0	0	7	2	12
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



IH 35 SBSR / 53RD
FRI 5:00-6:00 PM
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ ____ + ____ = ____ vph	$1/2\,V_6 + V_5 = V_{c12}$ 0 + 194 = 97 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ____ pcph	c_{p12} = 1000 pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = 1.2 %
Impedance Factor, P (Fig. 10-5)	P_9 = ____	P_{12} = .99
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ____ pcph	$c_{m12} = c_{p12}$ = 1000 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 94 + 139 = 233 vph	$V_6 + V_5 = V_{c1}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 850 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 3.8 %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	. = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 850 pcph	$c_{m1} = c_{p1}$ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_6+V_5+V_4=V_{c8}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 194 + 7 + 94 + 139 + 0 = 434 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 525 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = 0.4 %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = .99
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 520 = 525 × 1.0 × .99 (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} ____ + ____ + ____ = ____ vph	V_{c11} (step 3) + V_8 + V_9 = V_{c10} 434 + 0 + 0 = 434 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 475 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ ____ = ____ × ____ × ____ × ____ (pcph)	$c_{m10} = c_{p10} \times P_4 \times P_1 \times P_8 \times P_9$ 470 = 475 × 99 × 1.0 × 1.0 × 1.0 (pcph)

IH 35 SBSR / 53RD
FRI 5:00-6:00 PM
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_i + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7					
8					
9					

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	7	470	683	676	A
11	2	520	683	681	A
12	12	1000	683	671	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1				
4	7	850	843	A

COMMENTS:

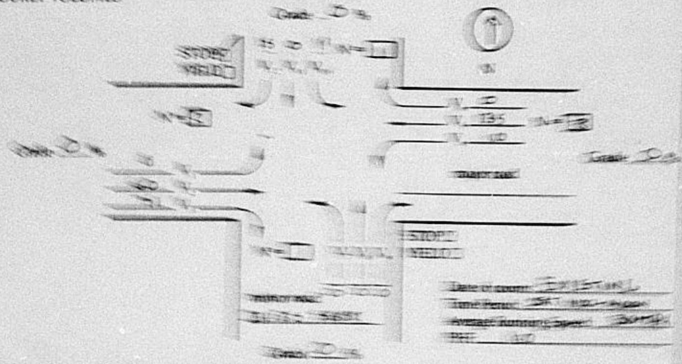
IH 135 FRONTAGE / 33RD ST
Existing

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 / 33RD ST   Name:

HOURLY VOLUMES



Date of count: EXISTING

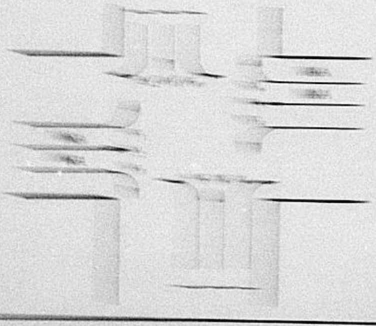
Time Period:

Average Running Speed:

PHF:

VOLUME ADJUSTMENTS

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ ___ + ___ = ___ vph	$1/2\,V_8 + V_5 = V_{c12}$ 0 + 15½ = 68 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ___ pcph	c_{p12} = 1050 pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ___ %	$(v_{12}/c_{p12}) \times 100$ = 1.4 %
Impedance Factor, P (Fig. 10-5)	P_9 = ___	P_{12} = .99
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ___ pcph	$c_{m12} = c_{p12}$ = 1050 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 71 + 60 = 131 vph	$V_8 + V_5 = V_{c1}$ ___ + ___ = ___ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	___ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 975 pcph	c_{p1} = ___ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 1.0 %	$(v_1/c_{p1}) \times 100$ = ___ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = ___
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 975 pcph	$c_{m1} = c_{p1}$ = ___ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_8+V_5+V_4=V_{c8}$ ___ + ___ + ___ + ___ + ___ + ___ = ___ vph	$1/2V_8+V_5+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 135 + 10 + 71 + 60 + 0 = 276 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ___ pcph	c_{p11} = 650 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ___ %	$(v_{11}/c_{p11}) \times 100$ = 0 %
Impedance Factor, P (Fig. 10-5)	P_8 = ___	P_{11} = 1.0
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ___ = ___ × ___ × ___ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 644 = 650 × 1.0 × .99 (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} ___ + ___ + ___ = ___ vph	V_{c11} (step 3) + V_8 + V_5 = V_{c10} 276 + 0 + 0 = 276 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ___ pcph	c_{p10} = 595 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_8 \times P_{11}$ ___ · ___ · ___ · ___ · ___ · ___ (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_8 \cdot P_{11}$ 589 595 · .99 · 1.0 · 1.0 · 1.0 (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_m) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_l + v_k}{(v_t/c_m) + (v_l/c_{ml}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7					
8					
9					

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	11	589	789	778	A
11	0	644			
12	15	1050	789	774	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1				
4	10	975	965	A

COMMENTS:

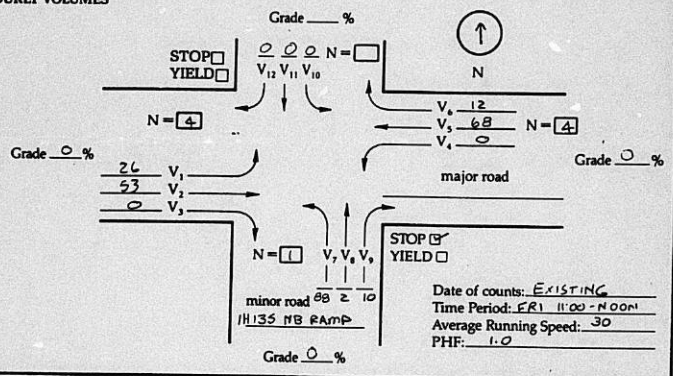
NBSR : IH 135 / 53RD
FRI 11:00 -NOON
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 NBSR / 53RD Name: BDVDW

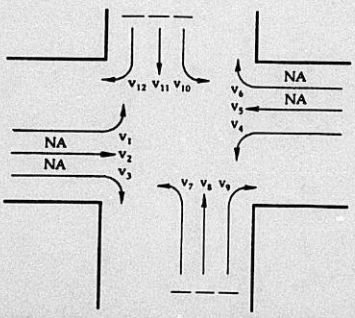
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	26	53	0	0	68	12	88	2	10	0	0	0
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



IH 135 NBSR / 53RD ST.
FRI 11:00 - NOON
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ 0 + 27 = 27 vph	$1/2\,V_6 + V_5 = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = 1080 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = 2.5 %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_9 = .99	P_{12} = ____
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = 1080 pcph	$c_{m12} = c_{p12}$ = ____ pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_6 + V_5 = V_{c1}$ 12 + 68 = 80 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 1025 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 7.8 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .95
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 1025 pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_3+V_1+V_6+V_5+V_4=V_{c8}$ 0 + 53 + 36 + 12 + 68 + 0 = 159 vph	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 750 pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = 21.2 %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = .85	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 713 = 750 × .95 × 1.0 (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + $V_{11} + V_{12} = V_{c7}$ 159 + 0 + 0 = 159 vph	V_{c11} (step 3) + $V_8 + V_9 = V_{c10}$ ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 700 pcph	c_{p10} = ____ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 665 = 700 × .95 × .95 × 1.0 × 1.0 (pcph)	$c_{m10} = c_{p10} \times P_4 \times P_1 \times P_8 \times P_9$ ____ = ____ × ____ × ____ × ____ × ____ (pcph)

IH 135 NBSR / 53RD ST
FRI 11:00 - NOON
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_i + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	88	665	693	605	A
8	2	713	693	711	A
9	10	1080	693	683	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10					
11					
12					

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	26	1025	999	A
4				

COMMENTS:

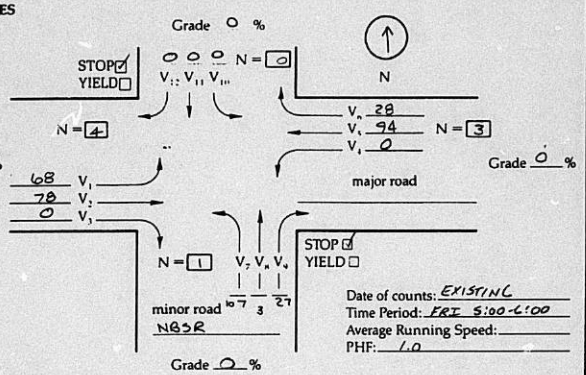
NBSR IH 135/53RD
FRI 5:00-6:00 PM
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 NBSR / 53RD STREET Name: BRYAN

HOURLY VOLUMES

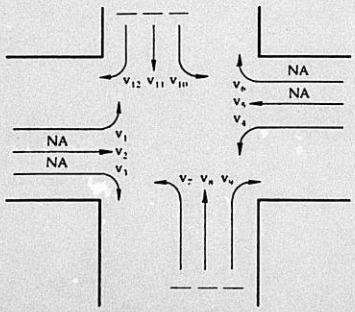


Date of counts: EXISTING
Time Period: FRI 5:00-6:00
Average Running Speed:
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	68	78	0	0	94	28	107	3	27	0	0	0
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	⌜ V_w	⌡ V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c4}$ 0 + 78 = 39 vph	$1/2\,V_8 + V_4 = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 1100 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_w/c_{pw}) \times 100$ = 2.5 %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_w = .99	P_{12} = ____
Actual Capacity, c_m	$c_{mw} = c_{pw}$ = 1100 pcph	$c_{m12} = c_{p12}$ = ____ pcph

STEP 2: LT From Major Street	⌜ V_4	⌡ V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_8 + V_5 = V_{c1}$ 28 + 94 = 122 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 975 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 7.0 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .95
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 975 pcph

STEP 3: TH From Minor Street	↑ V_8	↓ V_{11}
Conflicting Flows, V_c	$1/2V_1+V_2+V_3+V_8+V_5+V_4=V_{c8}$ 0 + 78 + 68 + 28 + 94 + 0 = 268 vph	$1/2V_8+V_5+V_4+V_3+V_2+V_1=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 650 pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = 0.5 %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = .99	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 570 = 650 × .95 × 1.0 (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)

STEP 4: LT From Minor Street	⌝ V_7	⌞ V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} 268 + 0 + 0 = 268 vph	V_{c11} (step 3) + V_9 + V_8 = V_{c10} ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 600 pcph	c_{p10} = ____ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 570 = 600 · .95 · 1.0 · 1.0 · 1.0 (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ ____ · ____ · ____ · ____ · ____ · ____ · ____ · ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_t + v_l + v_k}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	107	570	630	523	A
8	3	570	630	627	A
9	27	1100	630	203	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10					
11					
12					

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	68	975	907	A
4				

COMMENTS:

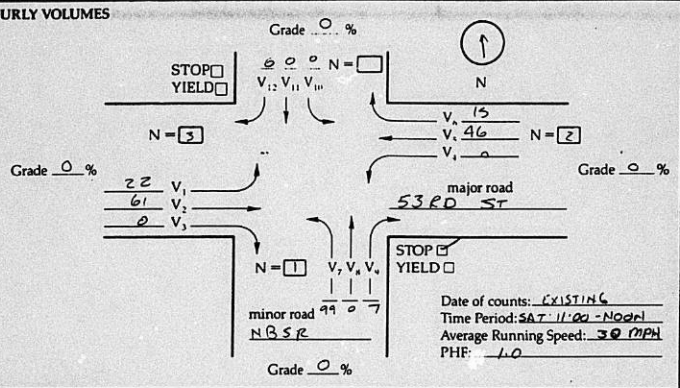
IH 135 NBSR / 53RD
SAT 11:00-NOON
EXISTING

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 NBSR / 53RD ST. Name: BOWDEN

HOURLY VOLUMES

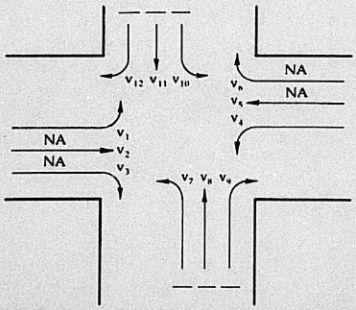


Date of counts: EXISTING
Time Period: SAT 11:00 - NOON
Average Running Speed: 30 MPH
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	22	61	0	0	46	15	99	0	7	0	0	0
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ 0 + 6½ = 31 vph	$1/2\,V_6 + V_8 = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = 1075 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_9 = ____	P_{12} = ____
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = 1075 pcph	$c_{m12} = c_{p12}$ = ____ pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_6 + V_8 = V_{c1}$ 15 + 46 = 61 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 1050 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 2.1 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .99
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 1050 pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_6+V_5+V_4=V_{c8}$ 0 + 61 + 32 + 15 + 46 + 0 = 194 vph	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 775 pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 767 = 775 × .99 × 1 (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} 194 + 0 + 0 = 194 vph	V_{c11} (step 3) + V_8 + V_9 = V_{c10} ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 700 pcph	c_{p10} = ____ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 693 = 700 · 1 · .99 · 1 · 1 (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11}$ ____ = ____ · ____ · ____ · ____ · ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_j}{(v_t/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_i + v_k}{(v_t/c_{mi}) + (v_i/c_{mj}) + (v_L/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	99	693	710	611	A
8	0	767	710	710	A
9	7	1075	710	703	A

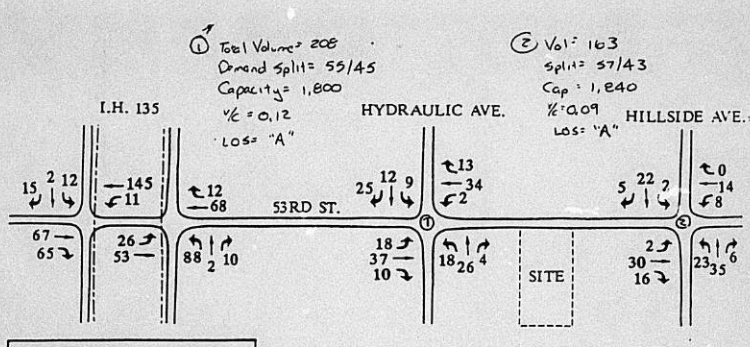
MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10					
11					
12					

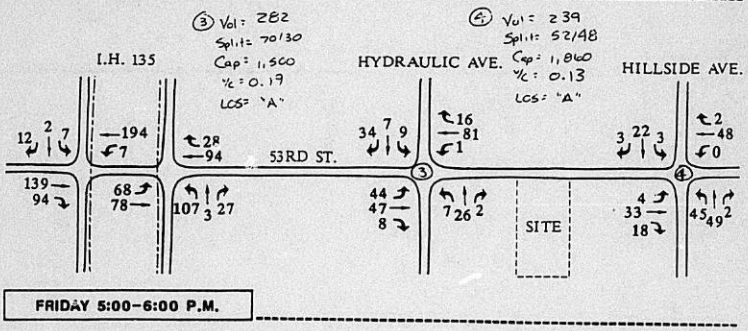
MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	22	1050	1028	A
4				

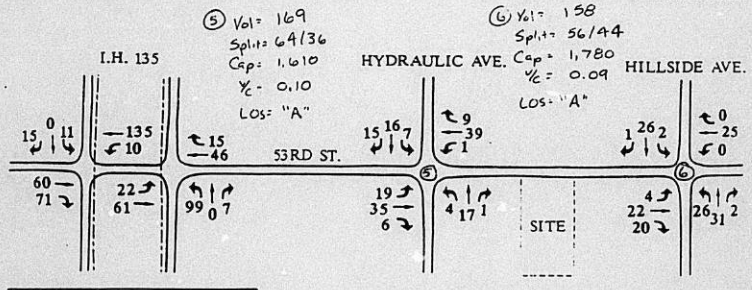
COMMENTS:



FRIDAY 11:00 A.M.–NOON



FRIDAY 5:00–6:00 P.M.



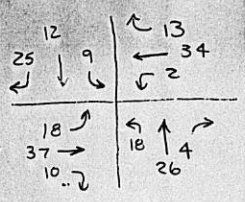
SATURDAY 11:00 A.M.–NOON

4 Way Stop Analyses

Existing Traffic Volumes

* Sample for ① shown on next sheet

① Sample 4-Way Stop Analysis



Total Volume using intersection = 208 vehicles

Demand Split = $\frac{25+12+9+18+126+4}{208} = \frac{94}{208} \Rightarrow 45/55$

From P. 10-14, Highway Capacity Manual (1985), Table 10-5 entitled "Capacity of a Two-by-Two Lane Four-Way Stop-Controlled Intersection For Various Demand Splits" → Capacity = 1,800 veh/hour

volume/capacity (v/c) ratio = $\frac{208}{1,800} = 0.12$

From Circular 212 → for v/c < 0.60, Level of Service = "A"

LOS = "A"

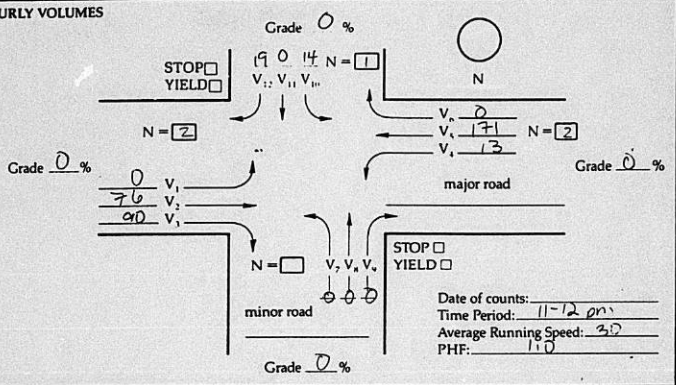
53rd @ I.H. 10
2000 BASE
SATURDAY

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: Name:

HOURLY VOLUMES

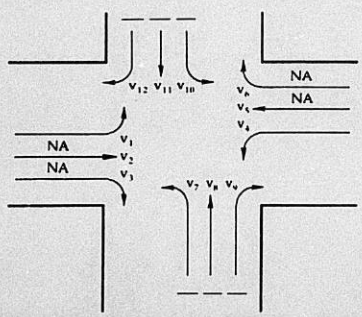


Date of counts:
Time Period: 11-12 pm
Average Running Speed: 30
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	76	90	13	171	0	0	0	0	14	0	19
Vol. (pcph), see Table 10-1	0			13			0	0	0	14	0	19

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\ V_1 + V_2 = V_{c9}$ ____ + ____ = ____ vph	$1/2\ V_5 + V_6 = V_{c12}$ 0 + 171 = 171 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ____ pcph	c_{p12} = 930 pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = 2 %
Impedance Factor, P (Fig. 10-5)	P_9 = ____	P_{12} = .99
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ____ pcph	$c_{m12} = c_{p12}$ = 930 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 90 + 76 = 166 vph	$V_5 + V_6 = V_{c1}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 930 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 930 pcph	$c_{m1} = c_{p1}$ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_5+V_6+V_4=V_{c8}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_5+V_6+V_4+V_1+V_2+V_3=V_{c11}$ 0 + 171 + 13 + 90 + 76 + 0 = 350 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 600 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = 0 %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_8 (step 3) + V_{11} + V_{12} = V_{c7} ____ + ____ + ____ = ____ vph	V_{11} (step 3) + V_8 + V_9 = V_{c10} 350 + 0 + 0 = 350 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 550 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ ____ × ____ × ____ × ____ × ____ (pcph)	$c_{m10} = c_{p10} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 515 × ____ × ____ × ____ × ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	0	—	—	—	—
8	0	—	—	—	—
9	0	—	—	—	—

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	14	545	695	681	A
11	0	—	—	—	—
12	9	930	695	686	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	0	—	—	—
4	13	930	917	A

COMMENTS:

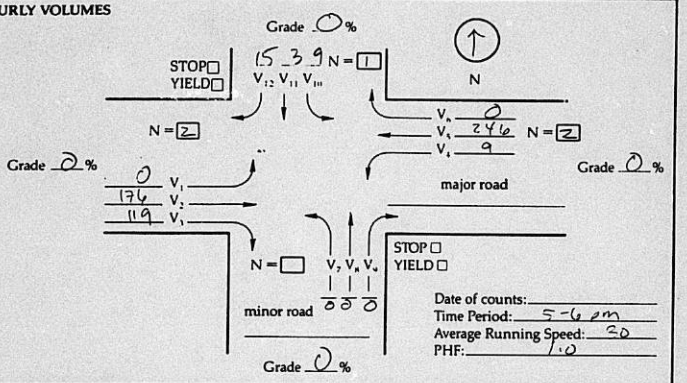
52:8(0) I.H. 35 S.A.
2000 BASE
FRIDAY 5:00-6:00

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: Name:

HOURLY VOLUMES

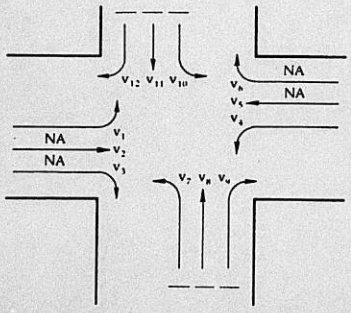


Date of counts:
Time Period: 5-6 pm
Average Running Speed: 20
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	176	119	9	246	0	0	0	0	9	3	15
Vol. (pcph), see Table 10-1	0			9			0	0	0	9	3	15

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ ___ + ___ = ___ vph	$1/2\,V_8 + V_5 = V_{c12}$ 0 + 246 = 246 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ___ pcph	c_{p12} = 850 pcph
Percent of c_p Utilized	$(V_9/c_{p9}) \times 100$ = ___ %	$(V_{12}/c_{p12}) \times 100$ = 2 %
Impedance Factor, P (Fig. 10-5)	P_9 = ___	P_{12} = .99
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ___ pcph	$c_{m12} = c_{p12}$ = 850 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 119 + 176 = 295 vph	$V_8 + V_5 = V_{c1}$ ___ + ___ = ___ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	___ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 800 pcph	c_{p1} = ___ pcph
Percent of c_p Utilized	$(V_4/c_{p4}) \times 100$ = 1 %	$(V_1/c_{p1}) \times 100$ = ___ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = ___
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 800 pcph	$c_{m1} = c_{p1}$ = ___ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_8+V_5+V_4=V_{c8}$ ___ + ___ + ___ + ___ + ___ + ___ = ___ vph	$1/2V_8+V_5+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 246 + 9 + 119 + 176 + 0 = 541 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ___ pcph	c_{p11} = 450 pcph
Percent of c_p Utilized	$(V_8/c_{p8}) \times 100$ = ___ %	$(V_{11}/c_{p11}) \times 100$ = 1 %
Impedance Factor, P (Fig. 10-5)	P_8 = ___	P_{11} = .99
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ___ = ___ × ___ × ___ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 446 = ___ × ___ × ___ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} ___ + ___ + ___ = ___ vph	V_{c11} (step 3) + V_8 + V_5 = V_{c10} 541 + 0 + 0 = 541 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ___ pcph	c_{p10} = 400 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ ___ = ___ · ___ · ___ · ___ · ___ (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 396 = ___ · ___ · ___ · ___ · ___ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_t}{(v_i/c_{mi}) + (v_t/c_{mt})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_t + v_L}{(v_T/c_{mi}) + (v_t/c_{mt}) + (v_L/c_{mL})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	0	—	—	—	—
8	0	—	—	—	—
9	0	—	—	—	—

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	9	396	655	646	A
11	3	446	655	652	A
12	15	850	655	640	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	0	—	—	—
4	9	800	796	A

COMMENTS:

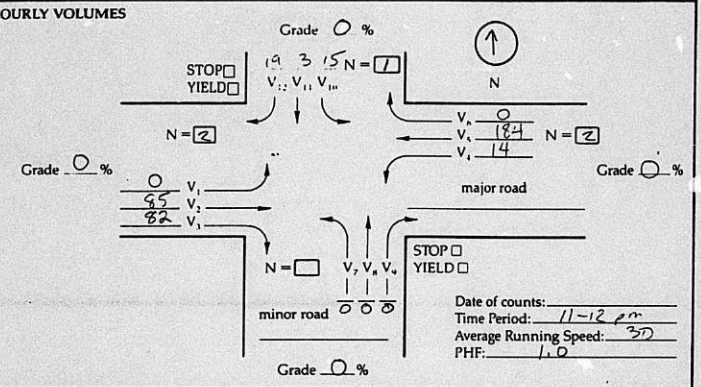
53rd @ I-H 35 SE
2000 BASE
FRIDAY 11:00-12:00

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: Name:

HOURLY VOLUMES

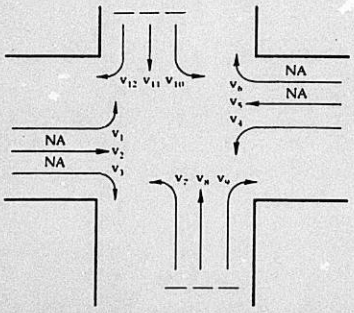


Date of counts:
Time Period: 11-12 pm
Average Running Speed: 35
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	85	82	14	184	0	0	0	0	15	3	19
Vol. (pcph), see Table 10-1	0			14			0	0	0	15	3	19

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	V_u	V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_2 = V_{cu}$ ____ + ____ = ____ vph	$1/2\ V_u + V_6 = V_{c12}$ 0 + 184 = 184 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{pu} = ____ pcph	c_{p12} = 900 pcph
Percent of c_p Utilized	$(v_u/c_{pu}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = 2 %
Impedance Factor, P (Fig. 10-5)	P_u = ____	P_{12} = .99
Actual Capacity, c_m	$c_{mu} = c_{pu}$ = ____ pcph	$c_{m12} = c_{p12}$ = 900 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_1 + V_2 = V_{c4}$ 93 + 85 = 167 vph	$V_u + V_5 = V_{c1}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 930 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 2 %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 930 pcph	$c_{m1} = c_{p1}$ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_u+V_6+V_4=V_{c8}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_u+V_6+V_4+V_1+V_2+V_5=V_{c11}$ 0 + 184 + 14 + 82 + 85 + 0 = 365 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 580 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = 0 %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = 1.0
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 575 = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} ____ + ____ + ____ = ____ vph	V_{c11} (step 3) + V_8 + V_9 = V_{c10} 365 + 0 + 0 = 365 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 530 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ ____ · ____ · ____ · ____ · ____ = ____ (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_8 \cdot P_9$ 525 · ____ · ____ · ____ · ____ = ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_j + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	0	—	—	—	—
8	0	—	—	—	—
9	0	—	—	—	—

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	15	525	722	707	A
11	3	515	722	719	A
12	19	900	722	703	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	0	—	—	—
4	14	930	916	A

COMMENTS:

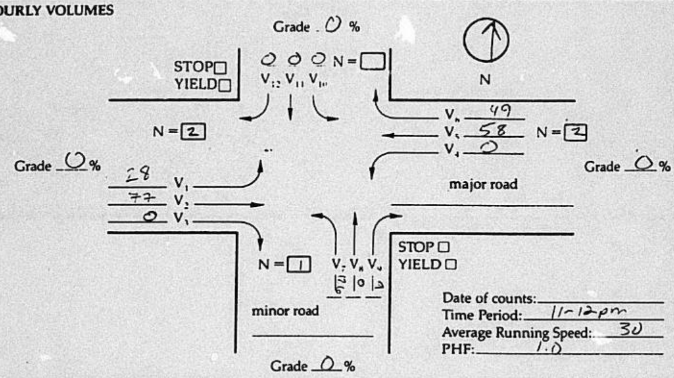
53rd @ 1.1 135 ½
2000 BASE
SATURDAY 11:00

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: .... Name: ....

HOURLY VOLUMES

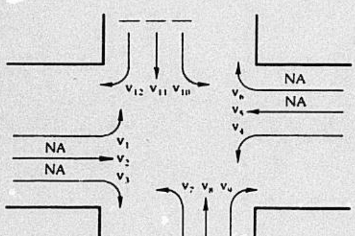


Date of counts: ________
Time Period: 11-12 pm
Average Running Speed: 30
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	28	77	0	0	58	49	126	0	9	0	0	0
Vol. (pcph), see Table 10-1	28			0			126	0	9	0	0	0

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	V_w	V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_2 = V_{cw}$ 0 + 77 = 77 vph	$1/2\ V_w + V_s = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{pw} = 1000 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_w/c_{pw}) \times 100$ = 1 %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_w = .99	P_{12} = ____
Actual Capacity, c_m	$c_{mw} = c_{pw}$ = 1000 pcph	$c_{m12} = c_{p12}$ = ____ pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_1 + V_4 = V_{c4}$ ____ + ____ = ____ vph	$V_n + V_4 = V_{c1}$ 49 + 58 = 107 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 1000 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 3 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .98
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 1000 pcph
STEP 3: TH From Minor Street	V_n	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_n+V_4+V_s=V_{cn}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_n+V_4+V_2+V_1+V_2+V_s=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{pn} = ____ pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_n/c_{pn}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_n = ____	P_{11} = ____
Actual Capacity, c_m	$c_{mn} = c_{pn} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	V_s	V_{1n}
Conflicting Flows, V_c	V_s (step 3) + V_{11} + V_{12} = V_{cs} 212 + 0 + 0 = 212 vph	V_{c11} (step 3) − V_n + V_w = V_{c1n} ____ + ____ − ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{ps} = 650 pcph	c_{p1n} = ____ pcph
Actual Capacity, c_m	$c_{ms} = c_{ps} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 657 × ____ × ____ × ____ × ____ × ____ (pcph)	$c_{m1n} = c_{p1n} \times P_1 \times P_4 \times P_{11} \times P_{12}$ ____ × ____ × ____ × ____ × ____ × ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{sh} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{sh} = \frac{v_t + v_l + v_k}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{sh}(pcph)	$c_R = c_{sh} - v$	LOS
7	126	637	661	535	A
8	0	—	—	—	—
9	9	1000	661	652	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{sh}(pcph)	$c_R = c_{sh} - v$	LOS
10	0	—	—	—	—
11	0	—	—	—	—
12	0	—	—	—	—

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	28	1000	972	A
4	0	—	—	—

COMMENTS:

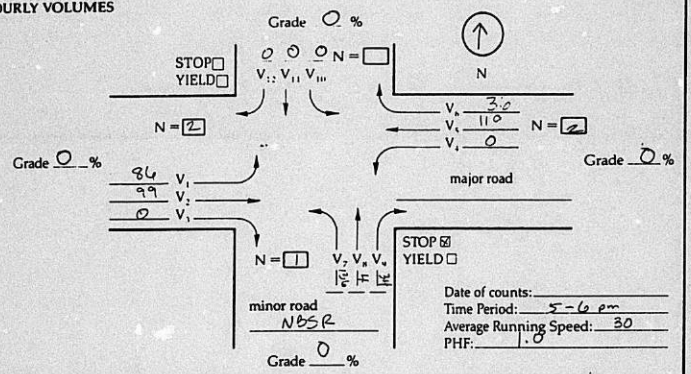
535' @ IH 35 NB -
2000 BASE
FRIDAY 5:00-6:00

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: Name:

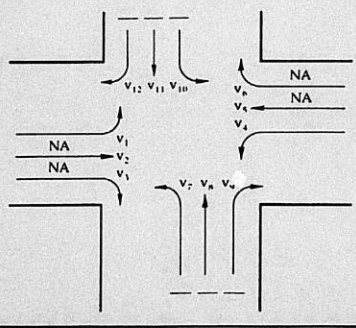
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	86	99	0	0	119	36	136	4	34	0	0	0
Vol. (pcph), see Table 10-1	86			0			136	4	34	0	0	0

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_1 + V_2 = V_{c9}$ 0 + 99 = 99 vph	$1/2\,V_n + V_c = V_{c12}$ ___ + ___ = ___ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	___ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = 1000 pcph	c_{p12} = ___ pcph
Percent of c_p Utilized	$(v_9/c_{m9}) \times 100$ = 33 %	$(v_{12}/c_{p12}) \times 100$ = ___ %
Impedance Factor, P (Fig. 10-5)	P_9 = 98 %	P_{12} = ___
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = 1000 pcph	$c_{m12} = c_{p12}$ = ___ pcph

STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_5 = V_{c4}$ ___ + ___ = ___ vph	$V_n + V_5 = V_{c1}$ 36 + 119 = 155 vph
Critical Gap, T_c (Tab. 10-2)	___ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ___ pcph	c_{p1} = 950 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ___ %	$(v_1/c_{p1}) \times 100$ = 9 %
Impedance Factor, P (Fig. 10-5)	P_4 = ___	P_1 = 953
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ___ pcph	$c_{m1} = c_{p1}$ = 950 pcph

STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_1+V_2+V_3+V_4+V_5+V_6=V_{c8}$ 0 + 99 + 86 + 36 + 119 + 0 = 340 vph	$1/2V_n+V_5+V_6+V_3+V_2+V_1=V_{c11}$ ___ + ___ + ___ + ___ + ___ + ___ = ___ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	___ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 1200 pcph	c_{p11} = ___ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = 1 %	$(v_{11}/c_{p11}) \times 100$ = ___ %
Impedance Factor, P (Fig. 10-5)	P_8 = 1.0	P_{11} = ___
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 570 = ___ × ___ × ___ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ___ = ___ × ___ × ___ (pcph)

STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c8} (step 3) + V_{11} + V_{12} = V_{c7} 340 + 0 + 0 = 340 vph	V_{c11} (step 3) + V_5 + V_6 = V_{c10} ___ + ___ + ___ = ___ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	___ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 550 pcph	c_{p10} = ___ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 525 = ___ · ___ · ___ · ___ · ___ (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_5$ ___ = ___ · ___ · ___ · ___ · ___ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_x + v_j}{(v_j/c_{mj}) + (v_i/c_{mi})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_f + v_i + v_k}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	136	525	619	483	A
8	4	570	619	615	A
9	34	1000	619	585	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	0	—	—	—	—
11	0	—	—	—	—
12	6	—	—	—	—

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	86	950	864	A
4	0	—	—	—

COMMENTS:

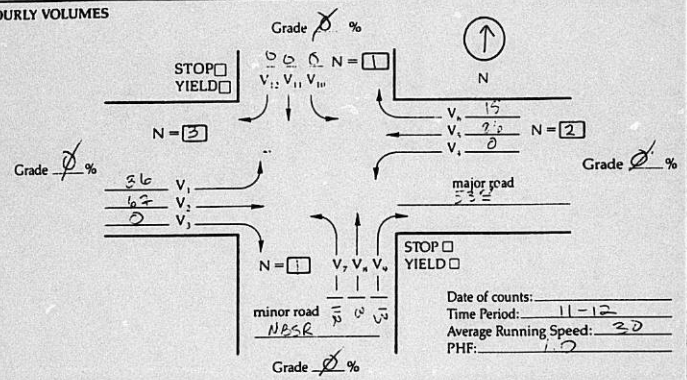
53rd @ I.H.-135N
2000 BASE
FRIDAY 11:30 – 12:00

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: 53rd @ I. H. 135 NBSR Name: BDJ

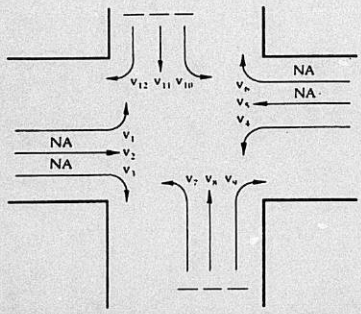
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	36	67	0	0	80	15	112	3	13	0	0	0
Vol. (pcph), see Table 10-1	36			0			112	3	13	0	0	0

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	⌜ V_w	⌟ V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_2 = V_{cw}$ 0 + 67 = 67 vph	$1/2\ V_w + V_s = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{pw} = 1000 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_w/c_{pw}) \times 100$ = 0 %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_w = 1.0	P_{12} = ____
Actual Capacity, c_m	$c_{mw} = c_{pw}$ = 1000 pcph	$c_{m12} = c_{p12}$ = ____ pcph

STEP 2: LT From Major Street	⌜ V_4	⌟ V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_w + V_s = V_{c1}$ 15 + 86 = 101 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 1022 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 1 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .97
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 1000 pcph

STEP 3: TH From Minor Street	↑ V_R	↓ V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_w+V_s+V_4=V_{cR}$ 0 + 67 + 15 + 36 + 86 + 0 = 204 vph	$1/2V_w+V_s+V_4+V_1+V_2+V_3=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{pR} = 720 pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_R/c_{pR}) \times 100$ = 0 %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_R = 1.0	P_{11} = ____
Actual Capacity, c_m	$c_{mR} = c_{pR} \times P_1 \times P_4$ 720 = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)

STEP 4: LT From Minor Street	⌝ V_x	⌞ V_{10}
Conflicting Flows, V_c	V_{cx} (step 3) + $V_{11} + V_{12} = V_x$ 204 + 0 + 0 = 204 vph	V_{c11} (step 3) + $V_w + V_s = V_{c10}$ ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{px} = 670 pcph	c_{p10} = ____ pcph
Actual Capacity, c_m	$c_{mx} = c_{px} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 650 ____ · ____ · ____ (pcph)	$c_{m10} = c_{p10} \times P_1 \times P_4 \times P_{11} \times P_{12}$ ____ · ____ · ____ · ____ · ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_t + v_l + v_k}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	112	650	687	569	A
8	3	720	687	684	A
9	13	1000	687	674	A

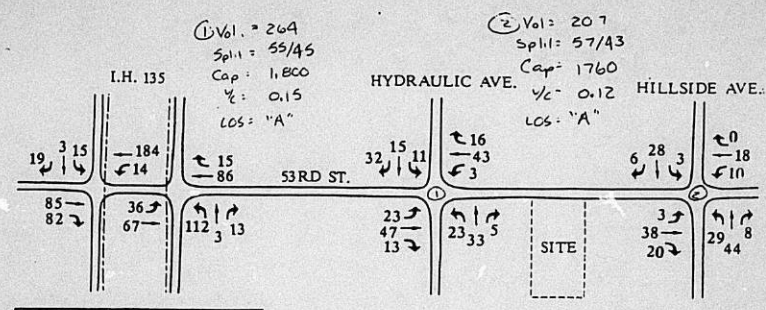
MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	0	—	—	—	—
11	0	—	—	—	—
12	0	—	—	—	—

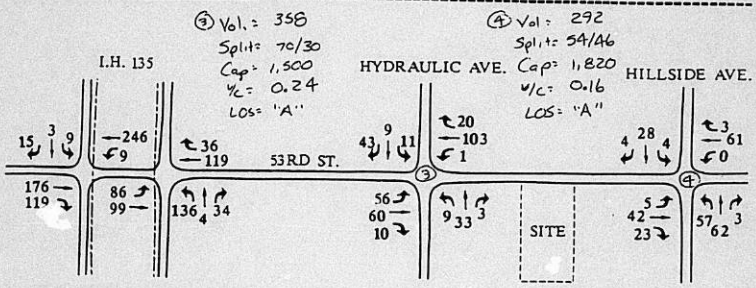
MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	36	1000	1000	A
4	0	—	—	—

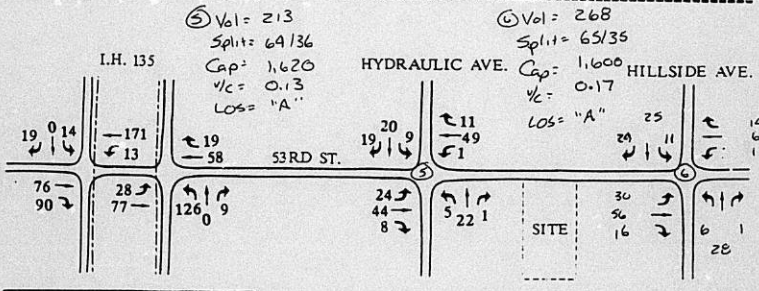
COMMENTS:



FRIDAY 11:00 A.M.–NOON



FRIDAY 5:00–6:00 P.M.



SATURDAY 11:00 A.M.–NOON

4-Way Stop Analyses

Year 2000 Base Traffic Volumes

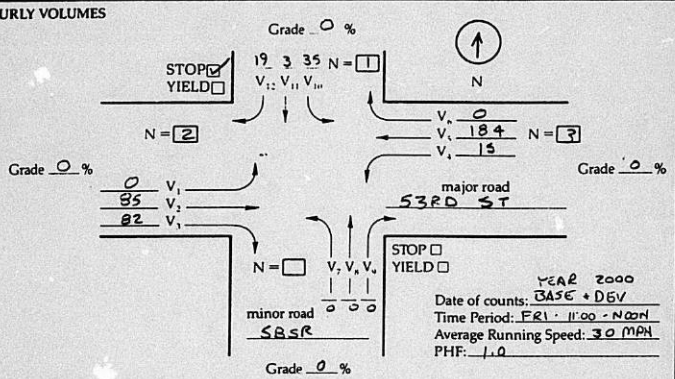
IH 135 SBSR / 53RD ST
FRI 11:00-NOON
BASE + DEV

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 SBSR / 53RD ST. Name: BOVDW

HOURLY VOLUMES

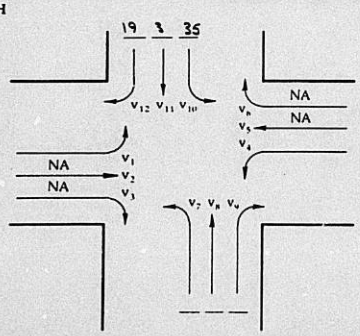


YEAR 2000
Date of counts: BASE + DEV
Time Period: FRI · 11:00 - NOON
Average Running Speed: 30 MPH
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	85	82	15	184	0	0	0	0	35	3	19
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	V_w	V_{12}
Conflicting Flows, V_c	~~$1/2\,V_3 + V_2 = V_{c8}$~~ ____ + ____ = ____ vph	$1/2\,V_8 + V_9 = V_{c12}$ 0 + 184 = 92 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p12} = 1000 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{12} = ____
Actual Capacity, c_m	~~$c_{m8} = c_{p8}$~~ = ____ pcph	$c_{m12} = c_{p12}$ = 92 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 82 + 85 = 167 vph	~~$V_8 + V_9 = V_{c1}$~~ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 930 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 18 %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 930 pcph	~~$c_{m1} = c_{p1}$~~ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	~~$1/2V_3+V_2+V_1+V_8+V_9+V_4=V_{c8}$~~ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_8+V_9+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 184 + 15 + 82 + 55 + 0 = 366 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 590 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 584 = 590 × .99 × ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	~~V_8 (step 3) + V_{11} + V_{12} = V_{c7}~~ ____ + ____ + ____ = ____ vph	V_{c11} (step 3) + V_8 + V_9 = V_{c10} 366 + 0 + 0 = 366 vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 530 pcph
Actual Capacity, c_m	~~$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$~~ ____ · ____ · ____ · ____ · ____ (pcph)	~~$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$~~ 525 = 530 · .99 · ____ · ____ · ____ (pcph)

40

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_l + v_L}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_L/c_{mL})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7					
8					
9					

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	35	525	628	593	A
11	3	584	628	625	A
12	19	1000	628	609	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1				
4	15	930	915	A

COMMENTS:

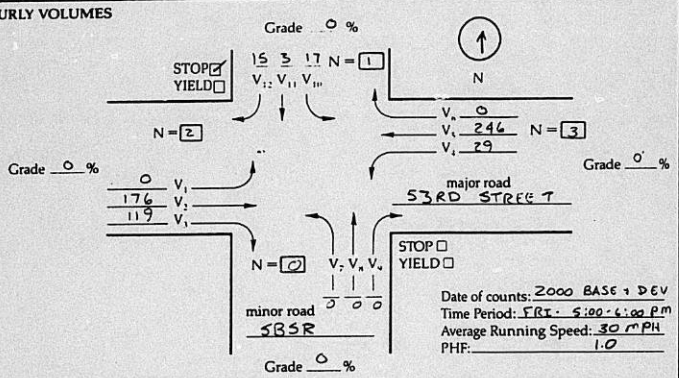
IH 135 SBSR / 53RD
FRI - 5:00-6:00 PM
2000 BASE + DEV

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 SBSR / 53RD Name: BOVOW

HOURLY VOLUMES

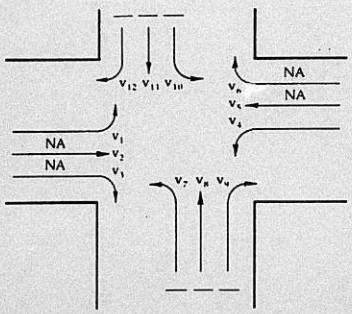


Date of counts: 2000 BASE + DEV
Time Period: FRI: 5:00 - 6:00 PM
Average Running Speed: 30 MPH
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	176	119	29	246	0	0	0	0	17	3	15
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ ____ + ____ = ____ vph	$1/2\,V_8 + V_5 = V_{c12}$ 0 + 246/2 = 123 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ____ pcph	c_{p12} = 980 pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = 1.5 %
Impedance Factor, P (Fig. 10-5)	P_9 = ____	P_{12} = .99
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ____ pcph	$c_{m12} = c_{p12}$ = 123 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_1 + V_2 = V_{c4}$ 119 + 176 = 295 vph	$V_8 + V_5 = V_{c1}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 800 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 3.6 %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .98	P_1 = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 800 pcph	$c_{m1} = c_{p1}$ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_1+V_2+V_3+V_6+V_5+V_4=V_{c8}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ 0 + 246 + 29 + 119 + 176 + 0 = 570 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 430 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = 0.6 %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = .99
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 421 = 430 × .98 × 1 (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c7} (step 3) + V_{11} + V_{12} = V_{c7} ____ + ____ + ____ = ____ vph	V_{c11} (step 3) + V_8 + V_9 = V_{c10} 570 + 0 + 0 = 570 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 385 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ ____ · ____ · ____ · ____ · ____ ____ · ____ · ____ (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 377 · 385 · .98 · .99 ____ · ____ · ____ · ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_l + v_k}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7					
8					
9					

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	17	377	518	501	A
11	3	421	518	515	A
12	15	980	518	503	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1				
4	29	800	771	A

COMMENTS:

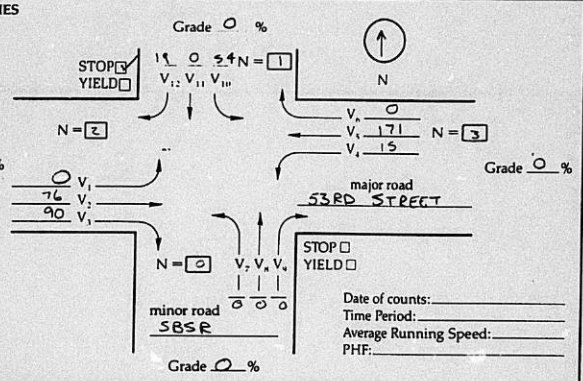
IH 135 SBSR / 53RD
SAT 11:00 - NOON
2000 BASE DEV.

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 SBSR / 53RD STREET Name: BOYDW

HOURLY VOLUMES

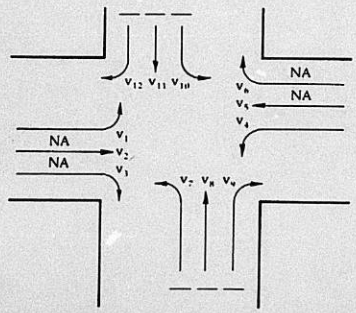


Date of counts:
Time Period:
Average Running Speed:
PHF:

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	0	76	90	15	171	0	0	0	0	54	0	19
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\,V_3 + V_2 = V_{c9}$ ____ + ____ = ____ vph	$1/2\,V_8 + V_5 = V_{c12}$ 0 + 171/2 = 86 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = ____ pcph	c_{p12} = 1025 pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = ____ %	$(v_{12}/c_{p12}) \times 100$ = 1.9 %
Impedance Factor, P (Fig. 10-5)	P_9 = ____	P_{12} = .95
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = ____ pcph	$c_{m12} = c_{p12}$ = 1025 pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ 90 + 76 = 166 vph	$V_8 + V_5 = V_{c1}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = 950 pcph	c_{p1} = ____ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = 1.6 %	$(v_1/c_{p1}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_4 = .99	P_1 = ____
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = 950 pcph	$c_{m1} = c_{p1}$ = ____ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_9+V_7+V_4=V_{c8}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph	$1/2V_9+V_7+V_4+V_1+V_2+V_3=V_{c11}$ 0 + 171 + 15 + 90 + 76 + 0 = 352 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	6.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = ____ pcph	c_{p11} = 590 pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ 384 = 590 × 1 × .99 (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c7} (step 3) + V_{11} + V_{12} = V_{c7} ____ + ____ + ____ = ____ vph	V_{c10} (step 3) + V_8 + V_5 = V_{c10} 352 + 0 + 0 = 352 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	7.0 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = ____ pcph	c_{p10} = 535 pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_1 \times P_4 \times P_{11} \times P_{12}$ ____ = ____ × ____ × ____ × ____ (pcph)	$c_{m10} = c_{p10} \times P_1 \times P_4 \times P_{11} \times P_{12}$ 530 = 535 × .99 × 1 × 1 × 1 (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_l + v_k}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_k/c_{mk})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7					
8					
9					

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10	54	530	606	552	A
11	0	584	606	606	A
12	19	1025	606	587	A

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1				
4	15	950	935	A

COMMENTS:

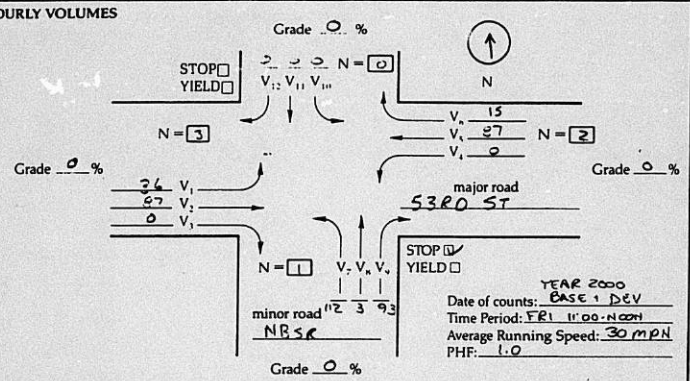
IH 135 NBSR / 53RD
FRI 11:00-NOON
BASE + DBV

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 NBSR / 53RD Name: BDVDW

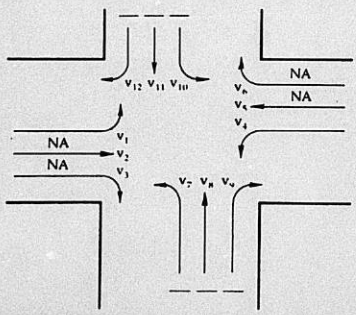
HOURLY VOLUMES



VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	36	87	0	0	87	15	112	3	93	0	0	0
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	⌜ V_9	⌟ V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_2 = V_{c9}$ 0 + 87/2 = 44 vph	$1/2\ V_8 + V_4 = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = 1050 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = 8.9 %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_9 = .94	P_{12} = ____
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = 1050 pcph	$c_{m12} = c_{p12}$ = ____ pcph
STEP 2: LT From Major Street	⌜ V_4	⌟ V_1
Conflicting Flows, V_c	$V_8 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_8 + V_5 = V_{c1}$ 15 + 87 = 102 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 1000 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 3.6 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .98
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 1000 pcph
STEP 3: TH From Minor Street	↑ V_8	↓ V_{11}
Conflicting Flows, V_c	$1/2V_1+V_2+V_3+V_8+V_5+V_4=V_{c8}$ 0 + 87 + 36 + 15 + 87 + 0 = 225 vph	$1/2V_8+V_5+V_4+V_3+V_2+V_1=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 700 pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = 0.9 %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = .99	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 686 = 700 × .98 × 1 (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	⌝ V_7	⌞ V_{10}
Conflicting Flows, V_c	V_{c7} (step 3) + V_{11} + V_{12} = V_{c7} 225 + 0 + 0 = 225 vph	V_{c10} (step 3) + V_8 + V_9 = V_{c10} ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 635 pcph	c_{p10} = ____ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 627 = 635 · .98 · 1 · 1 · 1 (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ ____ · ____ · ____ · ____ · ____ · ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_r}{(v_t/c_{mt}) + (v_r/c_{mr})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_t + v_L}{(v_t/c_{mt}) + (v_r/c_{mr}) + (v_L/c_{mL})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	112	622	762	650	A
8	3	686	762	759	A
9	93	1050	762	669	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10					
11					
12					

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	36	1000	964	A
4				

COMMENTS:

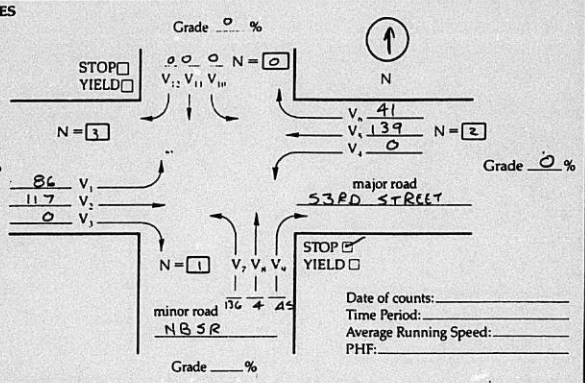
IH 135 NBSR / 53RD
FRI 5:00-6:00 P.M.
2000 Base + Dev

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 / 53RD ST. Name: BRYDW

HOURLY VOLUMES

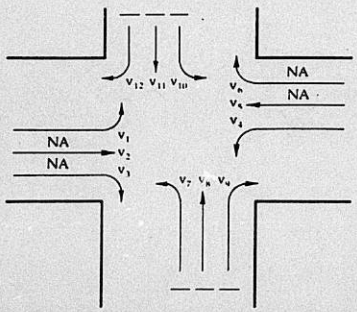


Date of counts: _____
Time Period: _____
Average Running Speed: _____
PHF: _____

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	86	117	0	0	139	41	136	4	45	0	0	0
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_2 = V_{c9}$ 0 + 117/2 = 59 vph	$1/2\ V_8 + V_5 = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p9} = 1050 pcph	c_{p12} = ____ pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100$ = 4.3 %	$(v_{12}/c_{p12}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_9 = .98	P_{12} = ____
Actual Capacity, c_m	$c_{m9} = c_{p9}$ = 1050 pcph	$c_{m12} = c_{p12}$ = ____ pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_4 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_8 + V_5 = V_{c1}$ 41 + 139 = 180 vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p4} = ____ pcph	c_{p1} = 900 pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100$ = ____ %	$(v_1/c_{p1}) \times 100$ = 9.6 %
Impedance Factor, P (Fig. 10-5)	P_4 = ____	P_1 = .95
Actual Capacity, c_m	$c_{m4} = c_{p4}$ = ____ pcph	$c_{m1} = c_{p1}$ = 900 pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_3+V_2+V_1+V_8+V_5+V_4=V_{c8}$ 0 + 117 + 86 + 41 + 139 + 0 = 383 vph	$1/2V_8+V_5+V_4+V_3+V_2+V_1=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p8} = 515 pcph	c_{p11} = ____ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100$ = ____ %	$(v_{11}/c_{p11}) \times 100$ = ____ %
Impedance Factor, P (Fig. 10-5)	P_8 = ____	P_{11} = ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ 489 = 515 × .95 × 1 (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ × ____ × ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c7} (step 3) + $V_{11} + V_{12} = V_{c7}$ 383 + 0 + 0 = 383 vph	V_{c10} (step 3) + $V_8 + V_9 = V_{c10}$ ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	c_{p7} = 470 pcph	c_{p10} = ____ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ 447 = 470 · .95 · 1 · 1 · 1 (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ ____ = ____ · ____ · ____ · ____ · ____ · ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_i + v_j}{(v_i/c_{mi}) + (v_j/c_{mj})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_i + v_L}{(v_i/c_{mi}) + (v_j/c_{mj}) + (v_L/c_{mL})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	136	447	521	384	B
8	4	489	521	517	A
9	45	1050	521	476	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10					
11					
12					

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	86	900	814	A
4				

COMMENTS:

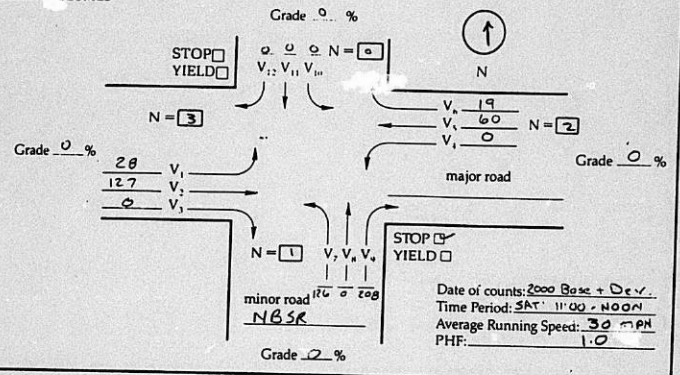
IH 135 NBSR / 53RD ST
SAT 11:00 - NOON
2000 BASE + DEV

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 1

Location: IH 135 NBSR / 53RD STREET Name: BDVDW

HOURLY VOLUMES

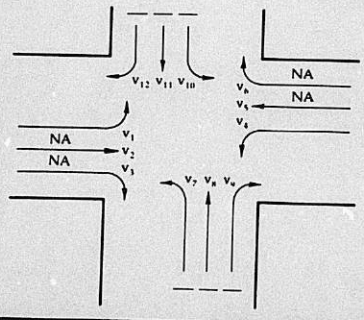


Date of counts: 2000 Base + Dev.
Time Period: SAT 11:00 - NOON
Average Running Speed: 30 MPH
PHF: 1.0

VOLUME ADJUSTMENTS

Movement No.	1	2	3	4	5	6	7	8	9	10	11	12
Volume (vph)	28	127	0	0	60	19	126	0	208	0	0	0
Vol. (pcph), see Table 10-1												

VOLUMES IN PCPH



WORKSHEET FOR FOUR-LEG INTERSECTIONS Page 2

STEP 1: RT From Minor Street	V_9	V_{12}
Conflicting Flows, V_c	$1/2\ V_3 + V_{10} = V_{c9}$ $0 + 127 = 64$ vph	$1/2\ V_6 + V_7 = V_{c12}$ ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	5.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	$c_{p9} = 1050$ pcph	$c_{p12} =$ ____ pcph
Percent of c_p Utilized	$(v_9/c_{p9}) \times 100 =$ ____ %	$(v_{12}/c_{p12}) \times 100 =$ ____ %
Impedance Factor, P (Fig. 10-5)	$P_9 =$ ____	$P_{12} =$ ____
Actual Capacity, c_m	$c_{m9} = c_{p9} = 1050$ pcph	$c_{m12} = c_{p12} =$ ____ pcph
STEP 2: LT From Major Street	V_4	V_1
Conflicting Flows, V_c	$V_3 + V_2 = V_{c4}$ ____ + ____ = ____ vph	$V_6 + V_5 = V_{c1}$ $19 + 60 = 79$ vph
Critical Gap, T_c (Tab. 10-2)	____ (sec)	5.5 (sec)
Potential Capacity, c_p (Fig. 10-3)	$c_{p4} =$ ____ pcph	$c_{p1} = 1050$ pcph
Percent of c_p Utilized	$(v_4/c_{p4}) \times 100 =$ ____ %	$(v_1/c_{p1}) \times 100 = 7.6$ %
Impedance Factor, P (Fig. 10-5)	$P_4 =$ ____	$P_1 = .99$
Actual Capacity, c_m	$c_{m4} = c_{p4} =$ ____ pcph	$c_{m1} = c_{p1} = 1050$ pcph
STEP 3: TH From Minor Street	V_8	V_{11}
Conflicting Flows, V_c	$1/2V_1+V_2+V_3+V_8+V_9+V_{10}=V_{c8}$ $0 + 127 + 28 +$ $19 + 60 + 0 = 234$ vph	$1/2V_6+V_5+V_4+V_3+V_2+V_1=V_{c11}$ ____ + ____ + ____ + ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	6.5 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	$c_{p8} = 680$ pcph	$c_{p11} =$ ____ pcph
Percent of c_p Utilized	$(v_8/c_{p8}) \times 100 =$ ____ %	$(v_{11}/c_{p11}) \times 100 =$ ____ %
Impedance Factor, P (Fig. 10-5)	$P_8 =$ ____	$P_{11} =$ ____
Actual Capacity, c_m	$c_{m8} = c_{p8} \times P_1 \times P_4$ $673 = 680 \times$ $.99 \times 1$ (pcph)	$c_{m11} = c_{p11} \times P_1 \times P_4$ ____ = ____ $\times$ ____ $\times$ ____ (pcph)
STEP 4: LT From Minor Street	V_7	V_{10}
Conflicting Flows, V_c	V_{c7} (step 3) + $V_{11} + V_{12} = V_{c7}$ $234 + 0 + 0 = 234$ vph	V_{c10} (step 3) + $V_8 + V_9 = V_{c10}$ ____ + ____ + ____ = ____ vph
Critical Gap, T_c (Tab. 10-2)	7.0 (sec)	____ (sec)
Potential Capacity, c_p (Fig. 10-3)	$c_{p7} = 630$ pcph	$c_{p10} =$ ____ pcph
Actual Capacity, c_m	$c_{m7} = c_{p7} \cdot P_1 \cdot P_4 \cdot P_{11} \cdot P_{12}$ $624 \quad 630 \cdot .99 \cdot$ $1 \cdot 1 \cdot 1$ (pcph)	$c_{m10} = c_{p10} \cdot P_1 \cdot P_4 \cdot P_8 \cdot P_9$ ____ ____ ____ ____ ____ (pcph)

WORKSHEET FOR FOUR-LEG INTERSECTIONS

Page 3

SHARED-LANE CAPACITY

$$c_{SH} = \frac{v_t + v_l}{(v_t/c_{mt}) + (v_l/c_{ml})}$$ where 2 movements share a lane

$$c_{SH} = \frac{v_T + v_l + v_L}{(v_t/c_{mt}) + (v_l/c_{ml}) + (v_L/c_{mL})}$$ where 3 movements share a lane

MINOR STREET APPROACH MOVEMENTS 7, 8, 9

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
7	126	624	835	709	A
8	0	673	835	835	A
9	208	1050	835	627	A

MINOR STREET APPROACH MOVEMENTS 10, 11, 12

Movement	v(pcph)	c_m(pcph)	c_{SH}(pcph)	$c_R = c_{SH} - v$	LOS
10					
11					
12					

MAJOR STREET LEFT TURNS 1, 4

Movement	v (pcph)	c_m (pcph)	$c_R = c_m - v$	LOS
1	28	1050	1022	A
4				

COMMENTS:

DRIVEWAY / 53RD
FRI 11:00-NOON
2000 B+D

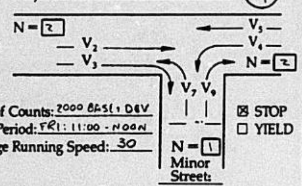
WORKSHEET FOR ANALYSIS OF T-INTERSECTIONS

LOCATION: Theme Park Driveway / 53rd St

NAME: BDVDW

HOURLY VOLUMES

Major Street: 53RD ST



Grade 0 %

Date of Counts: 2000 BASE + DEV

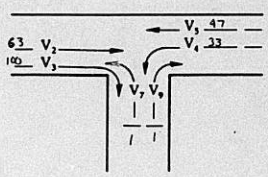
Time Period: FRI: 11:00 - NOON

Average Running Speed: 30

☒ STOP ☐ YIELD

PHF: 1.0 Grade 0 % DRIVEWAY

VOLUMES IN PCPH



VOLUME ADJUSTMENTS

Movement No.	2	3	4	5	7	9
Volume (vph)	63	100	33	47	1	1
Vol. (pcph), see Table 10-1						

STEP 1: RT from Minor Street — V_9

Conflicting Flow, V_c	$1/2\ V_3 + V_2 =$ 50 + 63 = 113 vph (V_{c9})
Critical Gap, T_c, and Potential Capacity, c_p	$T_c =$ 5.5 sec (Table 10-2) $c_{p9} =$ 975 pcph (Fig. 10-3)
Actual Capacity, c_m	$c_{m9} = c_{p9} =$ 975 pcph

STEP 2: LT From Major Street — V_4

Conflicting Flow, V_c	$V_3 + V_2 =$ 100 + 63 = 163 vph (V_{c4})
Critical Gap, T_c, and Potential Capacity, c_p	$T_c =$ 5.0 sec (Table 10-2) $c_{p4} =$ 1020 pcph (Fig. 10-3)
Percent of c_p Utilized and Impedance Factor (Fig. 10-5)	$(v_4/c_{p4}) \times 100 =$ 3.2 $P_4 =$ .98
Actual Capacity, c_m	$c_{m4} = c_{p4} =$ 1020 pcph

STEP 3: LT From Minor Street — V_7

Conflicting Flow, V_c	$1/2\ V_3 + V_2 + V_5 + V_4 =$ 50 + 63 + 47 + 33 = 193 vph (V_{c7})
Critical Gap, T_c, and Potential Capacity, c_p	$T_c =$ 6.5 sec (Table 10-2) $c_{p7} =$ 725 pcph (Fig. 10-3)
Actual Capacity, c_m	$c_{m7} = c_{p7} \times P_4 =$ 725 × .98 = 711 pcph

SHARED-LANE CAPACITY

$$SH = \frac{v_7 + v_9}{(v_7/c_{m7}) + (v_9/c_{m9})} \text{ if lane is shared}$$

Movement No.	v(pcph)	c_m (pcph)	c_{SH} (pcph)	c_R	LOS
7	1	711	822	821	A
9	1	975	822	821	A
4	33	1020			A

DRIVEWAY / 53RD
FRI 5:00-6:00 PM
2000 B.D

UNSIGNALIZED INTERSECTIONS

WORKSHEET FOR ANALYSIS OF T-INTERSECTIONS

LOCATION: Tierra Park Driveway / 53rd

NAME: BDVDW

HOURLY VOLUMES

Major Street: 53RD ST ↑ N

N = 1

Grade 0 %

V_2 —
V_3 —
V_1 —
V_4 —
N = 1

V_7, V_9

☑ STOP
☐ YIELD

N = 1 Minor Street:

Date of Counts: 2000 Board Day
Time Period: Fri 5:00-6:00 PM
Average Running Speed: 30

PHF: 1.0 Grade 0 % Driveway

VOLUME ADJUSTMENTS

Movement No.	2	3	4	5	7	9
Volume (vph)	69	19	5	122	25	9
Vol. (pcph), see Table 10-1						

STEP 1: RT from Minor Street (V_9)

Conflicting Flow, V_c: $1/2\,V_3 + V_2 = 10 + 69 = 79$ vph (V_{c9})
Critical Gap, T_c, and Potential Capacity, c_p: $T_c = 5.5$ sec (Table 10-2) $c_{p9} = 1020$ pcph (Fig. 10-3)
Actual Capacity, c_m: $c_{m9} = c_{p9} = 1020$ pcph

STEP 2: LT From Major Street (V_4)

Conflicting Flow, V_c: $V_3 + V_2 = 19 + 69 = 88$ vph (V_{c4})
Critical Gap, T_c, and Potential Capacity, c_p: $T_c = 5.0$ sec (Table 10-2) $c_{p4} = 1100$ pcph (Fig. 10-3)
Percent of c_p Utilized and Impedance Factor (Fig. 10-5): $(v_4/c_{p4}) \times 100 = 0.4$ $P_4 = .99$
Actual Capacity, c_m: $c_{m4} = c_{p4} = 1100$ pcph

STEP 3: LT From Minor Street (V_7)

Conflicting Flow, V_c: $1/2\,V_3 + V_2 + V_9 + V_4 = 10 + 69 + 122 + 5 = 206$ vph (V_{c7})
Critical Gap, T_c, and Potential Capacity, c_p: $T_c = 6.5$ sec (Table 10-2) $c_{p7} = 700$ pcph (Fig. 10-3)
Actual Capacity, c_m: $c_{m7} = c_{p7} \times P_4 = 700 \times .99 = 693$ pcph

SHARED-LANE CAPACITY

$$SH = \frac{v_7 + v_9}{(v_7/c_{m7}) + (v_9/c_{m9})} \quad \text{if lane is shared}$$

Movement No.	v(pcph)	c_m (pcph)	c_{SH} (pcph)	c_g	LOS
7	25	693	757	732	A
9	9	1020		748	A
4	5	1100		1095	A

50

DRIVEWAY /53RD
SAT 5:00-6:00 AM
2000 B+D

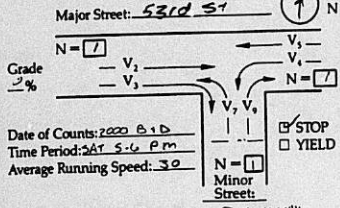
WORKSHEET FOR ANALYSIS OF T-INTERSECTIONS

LOCATION: Driveway / 53rd St

NAME: BOVOW

HOURLY VOLUMES

Major Street: 53rd St

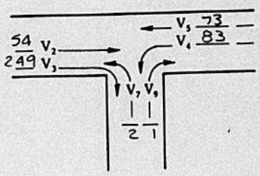


Date of Counts: 2000 B+D
Time Period: SAT 5-6 PM
Average Running Speed: 30

☑ STOP
☐ YIELD

PHF: 1.0 Grade 0 % DRIVEWAY

VOLUMES IN PCPH



VOLUME ADJUSTMENTS

Movement No.	2	3	4	5	7	9
Volume (vph)	54	249	83	73	2	1
Vol. (pcph), see Table 10-1						

STEP 1: RT from Minor Street (V_9)

Conflicting Flow, V_c — $1/2\,V_3 + V_2 =$ 125 + 54 = 179 vph (V_{c9})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 5.5 sec (Table 10-2) $c_{p9} =$ 905 pcph (Fig. 10-3)

Actual Capacity, c_m — $c_{m9} = c_{p9} =$ 905 pcph

STEP 2: LT From Major Street (V_4)

Conflicting Flow, V_c — $V_3 + V_2 =$ 249 + 54 = 303 vph (V_{c4})

Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 5.0 sec (Table 10-2) $c_{p4} =$ 885 pcph (Fig. 10-3)

Percent of c_p Utilized and Impedance Factor (Fig. 10-5) — $(v_4/c_{p4}) \times 100 =$ 9.4 $P_4 =$ .95

Actual Capacity, c_m — $c_{m4} = c_{p4} =$ 885 pcph

STEP 3: LT From Minor Street (V_7)

Conflicting Flow, V_c — $1/2\,V_3 + V_2 + V_5 + V_4 =$ 125 + 54 + 73 + 83 = 335 vph (V_{c7})

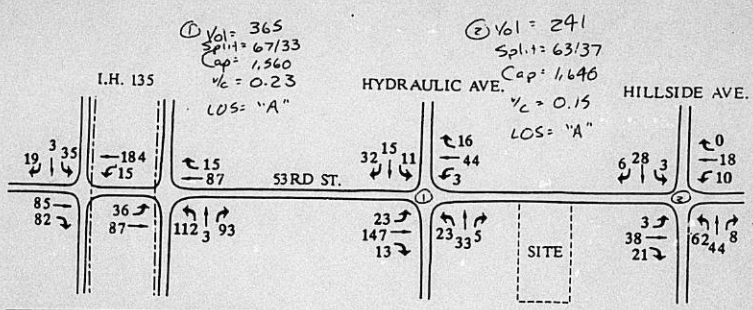
Critical Gap, T_c, and Potential Capacity, c_p — $T_c =$ 6.5 sec (Table 10-2) $c_{p7} =$ 540 pcph (Fig. 10-3)

Actual Capacity, c_m — $c_{m7} = c_{p7} \times P_4 =$ 540 × .95 = 513 pcph

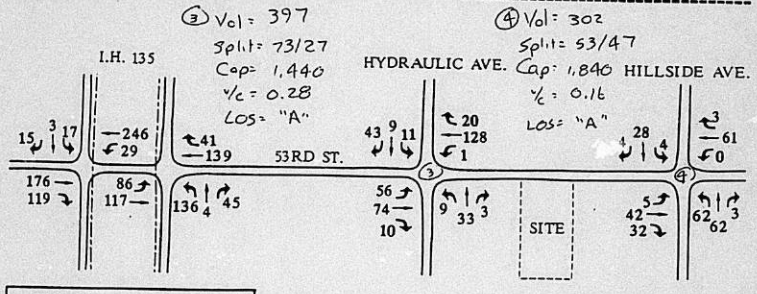
SHARED-LANE CAPACITY

$$SH = \frac{v_7 + v_9}{(v_7/c_{m7}) + (v_9/c_{m9})}$$ if lane is shared

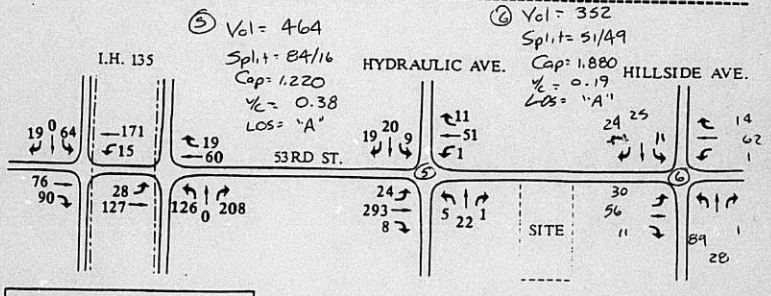
Movement No.	v(pcph)	c_m (pcph)	c_{SH} (pcph)	c_R	LOS
7	2	513		511	A
9	1	905		904	A
4	83	885		802	A



FRIDAY 11:00 A.M.–NOON



FRIDAY 5:00–6:00 P.M.



SATURDAY 11:00 A.M.–NOON

4-Way Stop Analysis

Year 2000 Base Plus Development Traffic Volumes

Joyland - study by Health Dept

(at home)
50 to 60 DBA - (normal background)

60 to 70 DBA - with car running in drive.
60 to 70 DBA - while driving down Pawnee.

(at Joyland.):

in parking lot - 50 to 60 (background noise)

80 to 85 in close proximity to roller coaster - 200' to 300' away
50 to 60 with roller coaster cars going by

on north side - 50 to 60
on south side next to residences on the back side. - 65 to 70
- 60 to 65 when go carts are running.

6-7-85

Maurice:

The Feasibility Analysis does mention Joyland, Fantasea Park and Ebenly Farms as "competition". pgs 19-21

Thanks

The facilities were mentioned "to provide realistic insights into the targeting of this market, which has the potential to be extremely profitable."

The analysis is based on numbers of persons and households living within market area; 0-50 miles, 5-100 miles and 100-150 miles as well as expected tourists and projected industry utilization rates. No mention of dividing market shares among other parks.

CPM

*

This DP File
Has a Large Drawing
On 35mm Microfilm.
Roll #1

*