AGENDA

Meeting Type:	WORKSHOP
Date.	06/01/1998

City of Charlotte, City Clerk's Office

CHARLOTTE

Mayor Patrick McCrory *Mayor Pro Tem Lynn Wheeler*

Rod Autrey
Charles Baker
Patrick Cannon
Malachi Greene
Mike Jackson
Nasif Rashad Majeed
Don Reid
Al Rousso
Tim Sellers
Sara Spencer

CITY COUNCIL WORKSHOP

Council Agenda

Monday, June 1, 1998

Dinner
Room 267

5 00 - 6·00 p.m.	Transportation and Economic Development· Transit Process and Study Briefing
6 00 - 6:45 p.m	Transportation and Economic Development: Connectivity
6 45 - 7:15 p.m	Economic Development: Conveyance/Sale of City Property
7 30 p m	Citizens' Forum Council Chambers

COUNCIL WORKSHOP
AGENDA ITEM SUMMARY

TOPIC: Transit Planning Process

COUNCIL FOCUS AREA: Transportation/Economic Development

STAFF RESOURCES: Jim Humphrey, Martin Cramton

KEY POINTS (Issues, Cost, Change in Policy):

- This update is designed to provide you with a status report on several aspects of the Transit Planning Process and related issues
  --overview of the work in progress and final products/reports
  --update on work of the Transit Planning Advisory Committee (T-PAC)
  --status of the governance issue
  --status of roadwork
  --opportunities for additional Council information/discussion

- City Council has made the development of a transit and land use plan one of its top priorities in 1998

- In February, Council approved a process for developing a plan in the City's five major corridors The plan recommendations are to be presented to Council in July, with decision options at that time, including whether and when to recommend a referendum on a half-cent sales tax At the earliest, the Board of County Commissioners could place the referendum on the November 1998 ballot

- The process includes significant organizational and technical work and public involvement In addition to meetings with the Transit Planning Advisory Committee (T-PAC), four rounds of public meetings have already been held (March 19 kickoff, April corridor meetings, May corridor meetings and May 27 community forum) The public information process also includes fax and email newsletters, information on the City/County web site, local media reporting and special features, Government Channel programming, meetings with various civic, business and neighborhood groups and other avenues

- For the next round of corridor group meetings (June 15-17), the consultants will present preliminary plans for both land use and technology options Citizens will have the opportunity to review and comment on these recommendations

- Mecklenburg's eight County, City and Town Managers have been meeting to discuss options for structuring a possible county-wide transit organization The Managers will provide recommendations for a plan of governance to the elected officials in July 1998

- Staff is also developing and reviewing current and future roads strategies This work includes options for local funding for state road projects Council is currently considering as part of the budget process

OPTIONS: N/A

COUNCIL DECISION OR DIRECTION REQUESTED: Presented for information

ATTACHMENTS:
- Calendar of Events
- Transit Planning Advisory Committee Update
- Summary of May Corridor Group Meetings
- Outline of Transit Development Plan Final Report
- Summary of local and state road projects (completed, underway and proposed)
- Summary of Alternative Governance Options
- Transit Technology Options Report-Draft

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Schedule of Events

for Elected Officials, Transit Planning Advisory Council, and Public Meetings

✔	March 19	Public Kick-Off
✔	March 30	Transit Planning Advisory Committee (T-PAC) Workshop
✔	April 20-22	Corridor Meetings (First Round)
✔	April 20-23	T-PAC Meetings (First Round)
✔	May 4	City Council Update
✔	May 6	County Commission Update
✔	May 18	Transit Planning Advisory Committee
✔	May 18-20	Corridor Meetings (Second Round) • Independence Corridor (May 18) • South Corridor (May 18) • University Corridor (May 19) • Airport Corridor (May 19) • North Corridor (May 20)
✔	May 21	Transit Planning Advisory Committee
✔	May 27	Community-Wide Update Meeting (and Regional Officials Reception 5·30-6 30 pm) Charlotte-Mecklenburg Government Center, 6 30-9 pm
	May 28	Board of County Commissioners Briefing (12 00)
	June 4	City Council Briefing (5 00)
	~~June 9~~	~~Southern Town Boards Briefing~~ (Pineville, Matthews, Mint Hill)
	June 10	Northern Town Boards Briefing (Davidson, Cornelius, Huntersville)
	June 10	Transit Planning Advisory Committee (Half-Day Workshop)
	June 15	Transit Planning Advisory Committee
	June 15-17	Corridor Meetings (Third Round) • University Corridor (June 15) • Airport Corridor (June 15) • Independence Corridor (June 16) • South Corridor (June 16) • North Corridor (June 17)
	June 16	Elected Officials Update (City-County-Schools Joint Luncheon)
	June 17	Transit Planning Advisory Committee
	July 2	Transit Planning Advisory Committee
	July 14	Presentation of Recommendations to County, City, and Towns
	July 14	Board of County Commissioners
	July 16	Transit Planning Advisory Committee Recommendation
	July 21	Community-Wide Update Meeting (and Regional Officials Reception)
	July 27	City Council
	August 11	Board of County Commissioners

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A COMMUNITY IN MOTION

Transportation Planning Advisory Committee (T-PAC)

Composition and Charge

- The 21-member group was appointed by Mecklenburg s nine elected bodies The committee is co-chaired by Johnsie Beck and Jim Palermo T-PAC members include

Nelson Benzing	Ike Heard, Jr	Ken Loucks	Edwin D Smith
Daren S Bitter	Rick Hood	Bill Mowry	Frank Tilley
Bob Collins	Steve Horton	Thomas Mussoni	Ed Weisiger Jr
Shellie Marie Davis	Scott Lawrence	James Ross	Joyce M White
David T Hartgen	Mark Loflin	Ruth Samuelson	

- The advisory committee s charge is to
  (1) advise the elected officials, staff and consultants on the thoroughness of the technical and public involvement process,
  (2) in July, 1998, make a collective ' go/no-go recommendation to the Board of County Commissioners on a November referendum for the half-cent sales tax, and
  (3) report to their respective governing bodies

Activities To Date

Orientation Workshop with Staff and Consultants (March 30)

The three-hour session provided
- background on the project and an overview of the process
- a discussion of transit and land use principles by the consultants
- a review of the experience of other cities
- a discussion of the consultants scope of work and major products expected
- committee members selection of corridors to monitor

T-PAC Meeting (April 20)

The committee received a preview of the first round of corridor meetings, as well as
- background and discussion of the South Boulevard Major Investment Study (MIS), and an explanation of why this corridor is somewhat unique from the other four
- discussion of related issues, including coordination of the South Boulevard MIS with the time frame of this process and clarification on whether priorities have already been set,
- discussion on other issues, such as the importance of assuring the public that the transit strategy is part of an overall transportation plan that includes attention to road needs

T-PAC Review of Corridor Meetings (April 23)

Committee members had attended corridor meetings in the previous three nights, and their selected spokespersons reported to the group on each of the five corridor meetings, noting
- their impressions of the level of public involvement, and
- the key issues and opportunities identified in each of the corridors

- **T-PAC Meeting (May 18)**

  The committee received a preview of the second round of corridor meetings, and
  - identified questions and issues staff and/or consultants are to address
  - received and reviewed summary list of all information that has been distributed to date, summary of final report contents and interim report on major technology options
  - received copy of *2015 Transportation Plan*

- **T-PAC Review of Corridor Meetings (May 21)**

  Committee members attending corridor meetings in the previous three nights reported to the group on each of the five corridor meetings, noting
  - their impressions of the level of public involvement, and
  - the key issues and opportunities identified in each of the corridors

  Committee also agreed to hold additional technical information half-day workshop June 10

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A COMMUNITY IN MOTION

May Corridor Meetings
The Second Round

- **Public Meetings** were held in each of the five corridors, attended by a total of 200 citizens

South	-- May 18 at Nations Ford Elementary (40 citizens)
Independence	-- May 18 at Greenway Park Elementary (43 citizens)
University	-- May 19 at Nathaniel Alexander Elementary (34 citizens)
Airport	-- May 19 at Westerly Hills Elementary (22 citizens)
North	-- May 20 at Ranson Middle School (61 citizens)

- **The consultants** (Parsons Brinckerhoff and LDR International [Barton Aschman for South Corridor])
  - reviewed key issues from last corridor group meetings
  - presented background information on existing and future numbers of people, homes, and jobs in each of the corridors,
  - showed citizens examles of development of varying densities that already exist in Mecklenburg County,
  - reviewed proposed major evaluation criteria to select preferred land use plan, station sites and transit alignment
  - described land use alternatives, including summaries of corridor features and existing plans positive and negative trends with respect to Center and Corridors, proposed areas of compact development
  - showed proposed station locations and alignment options
  - showed examles of three types of rapid transit being considered -- bus rapid transit (BRT) light rail transit (LRT), and diesel multiple units, such as the Flexliner (DMU),
  - stressed that a transit plan must complement a well-planned, ongoing roadway improvement plan

- **Citizen work groups**
  - The majority of the meeting time was focused on work groups, where citizens reviewed and commented on proposed evaluation criteria, land use proposals, potential station sites and potential alignments
  - ☛ *The results of these work groups and a summary of the meeting evaluations are attached*

June Corridor Meetings -- Expectations for the Third Round

- The meetings will be held during June 15-17 Please see the schedule on page 1 for dates

- The meeting format will continue to emphasize citizen involvement and interaction The consultants will begin the meeting with a presentation, followed by breakout sessions This is a very important series of meetings as the consultant will present the preferred transit alignment, station locations and associated land use plans for each corridor These plans will be based on technical data and citizen imput reviewed to date

THE WHEELS OF CHANGE
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Transit/Land-Use Planning Process
May Corridor Meetings
Comment Sheet Results Summary

1. Please rate the information you received during tonight's meeting. Was the information:
(Check a box to indicate a point along the scale closest to where you would rate each)

1 2 3 4 5
Easy to understand ☐ ☐ ☐ ☐ ☐ Difficult to understand

People indicated the information they received was easy to understand

University	**2.1**
Independence	**1.8**
Airport	**1.6**
South	**2.3**
North	**2.6**

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1 2 3 4 5
Useful ☐ ☐ ☐ ☐ ☐ Not useful

People indicated the information was generally useful

University	**2.1**
Independence	**2.0**
Airport	**1.6**
South	**1.6**
North	**2.2**

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1 2 3 4 5
Too simple ☐ ☐ ☐ ☐ ☐ Too complex

People indicated the information was about right in terms of degree of complexity

University	**2.9**
Independence	**3.0**
Airport	**3.0**
South	**2.9**
North	**3.0**

1 2 3 4 5

Adequate for your needs ☐ ☐ ☐ ☐ ☐ **Not adequate for your needs**

People indicated a general desire for more information

University	**1.9**
Independence	**3.0**
Airport	**2.2**
South	**2.6**
North	**3.6**

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2. Please rate your level of involvement in tonight's meeting. Was there:
(Check a box to indicate a point along the scale closest to where you would rate each)

Too much opportunity for involvement ☐ ☐ ☐ ☐ ☐ **Not enough opportunity for involvement**

People indicated general satisfaction with the opportunity for involvement

University	**2.9**
Independence	**3.2**
Airport	**3.2**
South	**3.0**
North	**3.0**

Too many people to be involved ☐ ☐ ☐ ☐ ☐ **Not enough people for good involvement**

People indicated general satisfaction with the number of people involved

University	**3.1**
Independence	**3.0**
Airport	**2.8**
South	**3.0**
North	**3.0**

Too much time spent on exercise ☐ ☐ ☐ ☐ ☐ **Not enough time spent on exercise**

People indicated either that adequate time was spent on the group exercise or a preference for slightly less time to be spent on the group exercise

University	**3.1**
Independence	**3.2**
Airport	**3.0**
South	**4.3**
North	**3.0**

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Report from May 19 UNCC Corridor Meeting

1. Do you agree with locations shown for more intensive development/redevelopment? Are there others?

* lateral transfer station at UNCC
* each station must carry its own load
* limit greenfield development until we can spur redevelopment on brownfield sites
* Yes, we agreed
* we also believe that additional commercial/office development is more likely along the North Tryon corridor
* redevelop the truck terminals on Graham St so you can create jobs
* add something for the vocational tech school if it gets built near Graham and N Tryon
* maintain manufacturing along Graham St, North Tryon corridor
* Graham Street should be redeveloped
* Yes, North Tryon
* need land use regulations

2. Do you agree with locations shown for transit stations? Are there others?

* some express transportation is important
* IBM location will NOT create ridership
* put one at Kings Grant development near Speedway

This group suggests you add the following

On Tryon Street 1) at 36th street, 2) at Sugar Creek, 3) at Eastway Dr , 4) at Harris Blvd , 5) at UNCC

On the Green line 1) Tom Hunter Rd 2) W Rocky River Rd 3) Harris Blvd and 4) UNCC

On Graham at 1) 30th, 2) Atando, 3) I-85, 4) Sugar Creek, 5) FUNB-IBM, 6) University Place, 7) UNCC

* likes the Park 'n' Ride locations

Group 3 refers us to the map and suggests stations at 1) I-85 Graham, 2) Derita Rail Junction, 3) FUNB-IBM, 4) University City-Hospital, 5) UNCC, 6) 485

Group 4 suggests these locations

1) UNCC, 2) Harris @29, 3) Davidson-36th, 4) Atando-Graham, 5) 485 have a Park 'n' Ride, 6) at Research Park

3. What alignment works best for you and others who live and work in the corridor?

* need more demographic data
* busway at Graham Street
* rail in mixed traffic
* rail at Graham Street
* over time we will need them all
* has space concerns for busway on Graham Street
* least expensive
* loop it through the corridor

4. What changes would you make to the alignment? Are there additional alignments that should be considered?

* make transit friendly retrofits at UNCC
* US 29
* HAVE NO MORE THAN
  -two transfers in corridor and three times to get across town
  -must create circumferential across town connections
  -have connectivity between the hubs with express service BLT in mixed traffic
* Harris/the Plaza/ Uptown
* Consider having CBD station as NCDOT is proposing at West Trade
* Use Tryon Street to propose 36th street connection to I-85
* Use N Tryon through University City up to Speedway

5. Review the criteria which are proposed for use in evaluating the land use and transit alternatives. Are there others? Which are most important to you?

Group 1
6 votes --- convenience (station location)
4 votes ---connectivity
4 votes --- Economic Development Opportunities(added environmental impact)
1 vote ---mode choice/travel time
1 vote --- cost

Group 2
6 votes ---convenience
2 votes-- mode choice
2 votes - economic development
2 votes --connectivity
2 votes -- cost

Group 3
3 vote-- travel time savings
3 votes-- cost
3 votes --economic development
2 votes -- connectivity
1 vote - convenience of stations

Group 4
5 votes -- economic development
4 votes -- travel time advantages
2 votes --cost
1 vote--connectivity
0 votes -- convenience

TOTAL SCORES FOR GROUP
17 votes -- mode(also as travel time)
14 votes-- economic development opportunities
13 votes -- convenience
10 votes - travel time advantage
9 votes -- connectivity
8 votes - cost

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Report from May 20 North Corridor Meeting

1 Do you agree with locations shown for more intensive development/redevelopment? Are there others?

Group A
* I-77 at Gilead Rd
* Beatties Ford at Sunset
* West and east of the RR between Cornelius and Huntersville
* Gibbon Rd East of 115

Group B
* Ada Jenkins School
* redevelop the old mill in Davidson
* proposed developments that are already in planning/review/construction
* Torrence Lile School (TLS on map)

Group C
* concern about land use around Beatties Ford Rd , could become truck stop
* 77 becomes a parking lot
* access & development along Beatties Ford Rd/ability to cross 77, barrier

Group D
* we don't know enough to comment
* density should be compatible with existing development

Group E
No comments given

Group F
* keep as much open space as possible, would prefer no development if possible
* Historic Beatties Ford should b taken out of development, agree with that approach
* concentrate intense development in ½ mile from transit
* strong concern expressed over Huntersville's ability to keep its development
* policy and preserve open space
* do not want 30 per acre housing density

2 Do you agree with locations shown for transit stations? Are there others?

Group A
* at Sunset
* at the interchanges
* at the north-county towns, but locate along 77 or at RR
* near schools
* need parking at transit stops around Huntersville

Group B
* Yes, specifics are noted on our map for Mays Rd site

Group C
no comments

Group D
* have concerns about parking and security around stations yet understand that parking is necessary at each station

Group E
* too many stops (rail), reduce by 6

Group F
* Beatties Ford Rd hub is a good idea
* group identified various transit stops on the map as being better for mixed use vs for residential vs retail/office

3 What alignment works best for you and others who live and work in the corridor?

Group A
* on Norfolk Southern main line

Group B
* these citizens have concerns about auto-bus congestion Highway 115 to Hambright as well as the school congestion on 115
* they prefer the "red" route

Group C
* buses will be used if and only if they save time
* mirror rail proposals for busway stops

Group D
* Bus route that parallels 77/Statesville Rd

Group E
* Old Statesville Rd Rail preferred

Group F
no comments given

4 What changes would you make to the alignment? Are there additional alignments that should be considered?

Group A
* consider downtown at West Trade terminal link to east side terminal
* University connection is important, look at IBM spur

Group B
* Put the bus route on US 21 instead of Highway 115

Group C
* funding is seen as the big question

Group D
* should add auxiliary alignment along Statesville Rd or Graham St

Group E
* consider traffic at schools (4) located Hambright & Old Statesville

Group F
* area along Statesvile Rd - lots of redevelopment but no apparent transit alignment to serve the corridor
* instead of having bus branch off at Hambright, suggest it come down to Sunset, then across and down Statesville (to foster redevelopment)

5 Review the criteria which are proposed for use in evaluating the land use and transit alternatives. Are there others? Which are most important to you?

Group A
0 votes ---connectivity
3 votes --- Economic Development Opportunities
1 vote --- convenience (station location)
2 votes ---mode choice/travel time
0 votes --- cost
3 votes - station security and also which mode will residents be willing to increase taxes for

Group B
3 votes --connectivity
5 votes - economic development
4 votes ---convenience
5 votes-- mode choice
0 vote -- cost
1 vote environmental concerns
0 votes - travel time savings

Group C
3 votes --connectivity
1 vote - economic development
2 votes ---convenience
1 vote-- mode choice
1 vote -- cost

Group D
3 votes --connectivity
1 votes - economic development
7 votes ---convenience
3 votes-- travel time savings
8 vote -- cost

Group E
0 votes --connectivity
4 votes - economic development
1 votes ---convenience
0 votes-- mode choice
0 vote -- cost
1 vote - preservation of open space/ public lands
0 votes - noise levels
0 votes - ozone levels
2 votes - levels of income
2 votes - planned growth around mall
0 votes - environmental (water, wildlife, open space linkages)

Group F
3 votes --connectivity
1 vote - economic development
3 votes ---convenience
0 votes-- mode choice
2 vote -- cost vote - lifestyle choice

TOTAL SCORES FOR GROUP
12 votes --connectivity
15 votes - economic development
18 votes ---convenience
11 votes-- mode choice
11 vote -- cost
1 vote - preservation of open space/ public lands
0 votes - noise levels
0 votes - ozone levels
2 votes - levels of income
2 votes - planned growth around mall
0 votes - environmental (water, wildlife, open space linkages)

General Comments
How do you get people to recognize what's needed and what goes along with transit development (i e , density)?

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Report from Independence Corridor Meeting

1. Do you agree with locations shown for more intensive development/redevelopment? Are there others?

* most areas near the stations are already developed except those that are far out or beyond the county line
* type of redevelopment should be location specific (i e Independence corridor needs employment vs housing)
* should target employment centers at redevelopment sites to balance jobs and housing
* agree with areas at Albemarle Rd and Independence
* should add areas at Sam Newell and Independence
* strongly support redevelopment of property at Highway 51 and Independence as well as at Coliseum center
* between Conference and Independence, Margaret Wallace - Toys R Us, Circuit City
* north of Sharon Amity along rail line by the school bus garage (50 acres there)

2. Do you agree with locations shown for transit stations? Are there others?

* eliminate one of the close in stations to lessen the impact on those neighborhoods
* transit stations next to elementary schools
* locate at Coliseum
* locate between Independence and Monroe Rd
* Harris or Margaret Wallace
* add station at Crown Point (Sardis & Monroe)
* very much like location at Conference and Independence
* instead of putting station in the middle of Matthews, look to locate beyond Matthews or before Sardis Rd N because the middle of Matthews is difficult to get into and out of
* keep station in middle of Matthews for destination and pedestrian but also need to build a Park and Ride lot before and after (see above)

3. What alignment works best for you and others who live and work in the corridor?

* another option would be for rail (dedicated lane) to proceed along 74 until the McAlpine Greenway and then cut over to Monroe - no stops or development, use it only as a pass through
* area between Conference and Greenway along Monroe is the worst part of the alignment because the neighborhoods east of Monroe Rd are backed by the rail line and their only access out is to Monroe Rd
* suggest using Monroe as the rail corridor and Independence/74 as the highway the whole length, then allow the land between those two to support them both
* Use Crown Point to cross from 74 to Monroe
* Instead of connecting at Conference, why not use Briar Creek?
* stay on Independence rather than cutting over at Conference
* use existing HOV lanes to Albemarle Rd
* routes may compete with bus routes on Central, Eastway, etc
* continue rail into uptown, see map for new alignment
* busways that can go into neighborhoods
* crosstown commutes (Independence - Central Business District - 77 - Tyvola-Woodlawn)

4. What changes would you make to the alignment? Are there additional alignments that should be considered?

* use existing rail line which parallels Monroe Rd
* move cross over from Monroe Rd to Independence and from Conference to Greenway
* put commuter rail on existing track from Monroe to Matthews and run it four times in morning and four in P M
* railroad line which parallels Albemarle
* put stations next to elementary schools
* Providence Rd opportunity which should be explored
* make the crossover from Independence to Monroe farther out, perhaps as far as Krefeld
* need route from Matthews to Pineville

5. Review the criteria which are proposed for use in evaluating the land use and transit alternatives. Are there others? Which are most important to you?

Group 1
5 votes --- Economic Development Opportunities
4 votes --- cost
3 votes ---connectivity
3 votes ---mode choice
1 vote --- convenience (station location)

Group 2
5 votes ---convenience
3 votes - economic development
3 votes --connectivity
1 vote-- mode choice
0 votes -- cost

Group 3
5 votes -- connectivity
4 votes --speed and frequency
3 votes - convenience
2 votes --aesthetics/design
0 votes -- mode choice
0 votes-- cost
0 votes --economic development
0 votes --safety

Rick's Group
4 votes -- economic development
3 votes -- convenience (defined not just as station locations, but also schedules and routing)
1 vote -- mode choice
0 votes --cost
0 votes--connectivity

TOTAL SCORES FOR GROUP
12 votes-- economic development opportunities
12 votes -- convenience
11 votes -- connectivity
4 votes - cost
3 votes -- mode

Others listed by one group
4 votes - speed and frequency
2 votes --aesthetics/design
0 votes but listed - safety

Other comments

* Don't let the east side get the short end of the stick in favor of the north end, don't give us buses while others get rail, we need rail for redevelopment and the benefits it can bring
* people move into the suburbs to have lower taxes, then expect us to pay for them to get the nice new technology

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Report from May 18 South Corridor Meeting

1. Do you agree with locations shown for more intensive development/redevelopment? Are there others?

* Yes, we agree
* There are multiple opportunities along South Blvd from Woodlawn to Arrowood
* more site-specific information is needed
* Yes, we agree
* New coliseum area needs "feeder" development
* future development should be mixed use
* we question the number of dots at SouthEnd
* look at old Lowe's(on South Blvd) for commercial uses
* we like the HQ node
* need to look at the southwest side of South Blvd/Woodlawn intersection (south of Media Play)
* also look at the wedge between Nations Ford, 49, Tyvola (Yorkmont)
* public-private partnerships with companies (i e , Lance)
* Woodlawn between South Blvd and 77 could be a major hub to SouthPark
* look at Woodlawn between South and rail line for retail
* Heritage USA property could be a SC link
* Zone wedge areas to allow change in uses

2. Do you agree with locations shown for transit stations? Are there others?

* This group does not agree with all the locations on the maps and suggests you add or move the following
  move stadium stop to 277/Morehead
  add stop at East Blvd and South
  add stop at South Blvd and Remount Rd
  add stop at South Blvd and Clanton Rd
  add stop at South Blvd and Archdale
  add stop at South Blvd and Sharon Lakes
  add both a stop and a Park 'n' Ride at South Blvd and 485
  add Park 'n' Ride at I-77 rest area
  add Park 'n' Ride at Carmel Rd , Johnston Rd, 521

*Second group suggests that
  a stop is needed at East Blvd and South Blvd
  something at Scaleybark where there is good parking
  add stop at Clanton Rd
  stop at Remount
  stop at Archdale (access to residential)
  stop at I-485 at Carolina Pavilion with connection to Carolina Place Mall and at Sharon Rd West

*Group 3 agrees with locations shown and suggests these additional locations
at East/West and South Blvd
at Remount
at Archdale
at Westinghouse
at Sharon Lakes
at I-485 interchange with South Blvd
at 521 near McAlpine Creek Treatment Plant
*Group 4 suggests
something is needed at Archdale
add something at Sharon Rd West
add I-77 stop to pick up SC riders below I-485
add Westinghouse Blvd stop
add stop at East Blvd and South Blvd
*Group 5 says
what about SouthEnd?
have more stops closer to uptown
SouthPark station needed

3. What alignment works best for you and others who live and work in the corridor?

* shift alignment to vacant land west of Pineville
* we like the South Blvd rail alignment
* airport alignment is good
* SouthPark alignment is important (use Duke Power easement to Woodlawn/South Blvd)
* I-77 for bus to SC line
* use existing rail
* stay off South Blvd
* instead use the rail right of way for rail or bus transit
* use the existing rail corridor along South Blvd
* dedicated bus route on I-77 first, then rail lines south of Tyvola
* This group was evenly divided between advocating the use of I-77 and of rail

4. What changes would you make to the alignment? Are there additional alignments that should be considered?

NOTE only 3 of the 5 groups filled out this sheet

* find the correct balance between the number of stops and the trip time
* parking space that considers growth (please explain!!!)
* interconnectivity between the corridors
* 485 as outer loop crosstown
* connect the SouthPark bus hub to the Tyvola stop
* Park Rd should be a feeder to rail

5. Review the criteria which are proposed for use in evaluating the land use and transit alternatives. Are there others? Which are most important to you?

Group 1
5 votes ---connectivity
3 votes --- Economic Development Opportunities
3 votes --- convenience (station location)
2 vote ---mode choice/travel time
1 vote --- cost

Group 2
4 votes-- mode choice
3 votes - economic development
3 votes --connectivity
2 votes - mobility
1 vote ---convenience
1 vote -- cost
1 vote safety/security

Group 3
6 votes - convenience
4 votes -- connectivity
1 vote-- mode choice
1 vote - travel time savings
0 votes-- cost (they define as to construction & operation, yet give it no votes)
0 votes --economic development

Group 4
3 votes--connectivity
3 votes -- convenience
2 votes -- economic development
2 votes -- mode choice/travel time
2 votes --cost

Group 5
7 votes -- mode choice/travel time
3 votes--connectivity
3 votes -- economic development
2 votes -- convenience
1 vote--cost

TOTAL SCORES FOR GROUP
18 votes -- connectivity
17 votes -- mode(also as travel time)
15 votes -- convenience
11 votes-- economic development opportunities
5 votes - cost

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Report from Airport Corridor Meeting

1. Do you agree with locations shown for more intensive development/redevelopment? Are there others?

Group 1 wanted to reinforce a few of the choices already identified

* Queens Gate would be an excellent place for mixed use development since is basically just a parking lot now
* development around the airport
* at the Lake Placid Motel area, just east of Little Rock Rd However it will have to be developed commercially because of the airport noise
* the Ashley Rd area is a prime area, it used to be mixed use and pedestrian friendly
* west of 485, however the zoning will need to be changed
* felt it was important to extend this beyond the airport-CBD connection

Group 2 called attention to

* the southwest corner of Remount and Wilkinson
* need to consider access to the Coliseum area
* felt the dots were not as identifiable as needed to be so in many cases they felt they could not provide information

Group 3 agreed with the locations, but questioned the accessibility they offered Moreover, they felt there were other opportunities as follows

* that north of runway 18L there was a possible redevelopment area
* Highland Park and other neighborhoods need to be preserved/strengthened
* Freedom Drive offers lots of redevelopment potential
* as does area east of Mulberry Church Rd

2. Do you agree with locations shown for transit stations? Are there others?

This group feels the stations in the middle section of the corridor are too close together They also think bus service into the neighborhoods will have to be maintained and that you should stop at I-77

The second group suggests

* a stop at the Lake Placid motel area
* a Park 'n' Ride would be helpful beyond 485
* a stop to accommodate the western traffic into the city (west of 485) would be needed
* a connection to Pineville is needed
* a stop west of Little Rock Road should be added

Last group advocates a feeder system to the Freedom Mall/ City View area

One group was very methodical in designating sites

* kept stops at CBD, Stadium but eliminated Morehead as too close
* really liked Queens Gate because near neighborhoods and had strong redevelopment potential
* debated the 485 stop and never decided on it except as potential job hub

3. What alignment works best for you and others who live and work in the corridor?

* alignment needs to extend past the airport and into Gaston County to be efficient
* prefer the orange alignment
* strong preference for Wilkinson Blvd
* use rail line that's already there
* doubt that rail line will spur higher residential development
* Wilkinson is preferred
* alignment into CBD to give quick and direct access to transit center

4. What changes would you make to the alignment? Are there additional alignments that should be considered?

* should go out to Gaston County
* access to Freedom, Coliseum and City View
* needs to extend past 485, not end at airport
* consider the P&N railroad as an alternate corridor
* buses are inconsistent with our city's image, just aren't cool
* Gastonia needs an alignment that matches up with ours
* look into possible river development at Mt Holly
* keep abreast of NCDOT's plans for a new multimodal AMTRAK station so you don't link at East Trade when they are building at West Trade
* bridge reconstruction on Wilkinson and West
* need to look at regional transit authority

5. Review the criteria which are proposed for use in evaluating the land use and transit alternatives. Are there others? Which are most important to you?

Group 1
3 votes --- cost
3 votes --- Economic Development Opportunities
2 votes --- convenience of stations
2 votes ---connectivity
0 votes - travel time savings

Group 2
4 votes --connectivity
3 votes - economic development
2 vote ---convenience
1 vote -- cost
1 vote mode (rail or bus)
0 votes - travel time savings

Group 3
3 votes -- connectivity
3 votes - preservation of neighborhoods
3 votes - economic development
1 vote-- potential ridership
0 votes - conservation of energy
0 votes - convenience of stations

0 votes - travel time savings
0 vote - travel time savings
0 votes-- cost (they define as to maintenance & operation, yet give it no votes)

TOTAL SCORES FOR GROUP
9 votes -- connectivity
9 votes-- economic development opportunities
4 votes - cost
4 votes -- convenience
3 votes - preservation of neighborhoods
1 vote - mode (bus or rail)
1 vote - potential ridership
0 votes - conservation of energy
0 votes -- travel time savings

THE WHEELS OF CHANGE

A COMMUNITY IN MOTION

Charlotte-Mecklenburg Rapid Transit Development Plan Study

The City of Charlotte has contracted with Parsons Brinckerhoff Quade & Douglas, Inc and LDR International to address the following basic question What transit and land use future will realize the Centers and Corridors plan and be supported by the citizens of Charlotte-Mecklenburg? The study includes all five major corridors North, South University Independence and Airport The study will develop technical data and evaluations for options in each corridor The study will yield two documents

1. **The Corridor Land Use/Transit Master Plan for Charlotte-Mecklenburg**
   A vision of a financially feasible system of public transit including preliminary recommendations for a rapid transit network in Charlotte-Mecklenburg at the 2025 planning horizon that will serve to support the Centers and Corridors Plan This document will provide a framework for decision-making within which further studies will determine the precise detail of the plan as Charlotte-Mecklenburg evolves The plan will
   - provide a flexible, balanced approach to transportation through a combination of road and public transit investments
   - show a phased approach to developing a transit system for the corridors how the corridors are connected to each other and how the connections will work with potentially different modes in different corridors
   - define technology options and corresponding recommended alignments
   - include suggested changes in land use regulations/incentives patterns of land use and conceptual land use diagrams for selected station areas
   - identify locations for stations and generic station designs
   - include feeder services and circumferential corridor connections for rapid transit stations
   - address other transit services related to corridor travel (including hubs in the corridors)
   - include order-of-magnitude cost estimates

2. **Stage One of the Rapid Transit Action Plan**
   Addresses the first five-years of the Corridor Land Use/Transit Master Plan Consists of a specific series of relatively low-capital, high benefit projects which
   - Cover all the corridors
   - Result in noticeable improvements in transit level or quality of service
   - Are flexible enough to accommodate the range of technologies that may ultimately be appropriate for each corridor
   - Establish visible, physical commitment to developing public transit in Charlotte-Mecklenburg
   - Identify necessary land use initiatives

Road Projects Funded from Prior Bond Issues

1986 Bonds

City Projects		(Dollars)
Park Road, Phase 2		35,000,000
Shamrock Drive		11,100,000
Carmel Road		15,000,000
Sardis Road		14,000,000
Milton Road		2,000,000
Joint Public/Private		
Colony Road	City Part	12,400,000
Hebron St		
Westinghouse		
City Participation in State Projects		10,300,000
	TOTAL	99,800,000

1987 Bonds

City Projects	
Idlewild Road widening	4,000,000
Park Road Alignment	2,500,000
Rama Road widening	2,000,000
Joint Public/Private	
Westinghouse B Ext	2,500,000
Leveraging	5,200,000
City Funding of State Roads	
Monroe Road	4,000,000
Beatties Ford Road	6,350,000
Park/Johnston	4,650,000
TOTAL	31,200,000

1996 Bonds

City Projects

Fairview & Sharon Rd s widening	3,925,000	Const	FY98/99
CSX Bridge Mt Holly Rd	5,700,000	Const	FY99/00
Beatties Ford widening	1,500,000	Const	FY99/00
Colony Road Ext	10,945,000	Const	FY99/00
Hoskins Rd widening	1,320,000	Const	FY01/02
Prosperity Ch Rd Widening	4,000,000	Const	FY01/02
Johnston Rd Ext	8,500 000	Const	After annexation
Intersections	10,020,000	Const	FY98/99-01/02
TOTAL	45,910,000		

CDOT May 21 1998

Charlotte 2001 State System Unfunded Roadway Needs

(from 2015 Transportation Plan)

Option 4 - City Fully Funds All High & Very High Safety Projects Except Freeway Projects

2015 Plan Rank	Roadway	Limits	Type	Safety Benefit	10-YEAR Needs Cost ($millions)	City Funded Projects ($millions)	NCDOT Funded Projects ($millions)
5	I-77 HOV Lanes	I-85 to Northern Outer Loop*	Freeway Imp	moderate	44 0		44 0
6	US 74 / Sharon Amity	Expressway Interchange	Interchange	**Very High**	12 0		12 0
8	NC 27 (Freedom Dr)	I-85 to City Limit	Widening	**Very High**	19 5	19 5	
11	US 74 Expressway / HOV	SharonAmity Rd to Idlewild Rd	Freeway	**High**	16 0		16 0
13	I-77 Widening/HOV Project	Southern Outer Loop to I-85*	Freeway Imp	moderate	210 0		210 0
14	US 74 Expressway / HOV	Idlewild Rd to Outer Loop	Freeway	**High**	60 0		60 0
15	I-85 Widening	29/49 Connector to Cabarrus Co Line*	Freeway Imp	some	16 0		16 0
19	NC 16 (Brookshire Blvd)	I-85 to Hoskins Rd	Widening	moderate	3 0		3 0
20	Albemarle Rd / Harris Blvd	Interchange	Interchange	**High**	10 0	10 0	
21	NC160 (West Blvd)	US 521 to City Limits	Widening	some	4 0		4 0
22	NC 16 (Brookshire Freeway)	Current End to I-85	Freeway	**High**	3 0		3 0
25	US29-NC49 (Graham St)	I-277 to Statesville Ave	Widening	moderate	1 5		1 5
26	NC49 / Graham St Connector	I-85 to US29	New Road	**High**	21 0	21 0	
30	BillyGraham Pkwy / West Blvd	Expressway Interchange	Interchange	**High**	8 0		8 0
31	US521 (BillyGraham Pkwy)	JoshBirmingham Pkwy to Tyvola Rd	Freeway	moderate	1 0		1 0
33	BillyGraham Pkwy / Wilkinson Blvd	Interchange	Interchange	**High**	4 0	4 0	
35	NC 115 (OldStatesville Rd)	Statesville Rd to City Limits	Widening	moderate	4 0		4 0
36	US29-74 (Wilkinson Blvd)	LittleRock Rd to City Limits	Widening	moderate	2 0		2 0
38	US521 (South Blvd)	Tyvola Rd to Archdale Rd	Median	**High**	1 8	1 8	
40	US521 (South Blvd)	Woodlawn Rd to Tyvola Rd	Widening	moderate	12 3		12 3
	GRAND TOTAL				453 1	56 3	396 8
	State System - Freeways* & Expressways				370 0		370 0
	-Non-Freeways				83 1	56 3	26 8

* Significant Sections of Several Freeway Projects Extend Beyond City Limits

SUFO4AS WK4

Charlotte 2001 State System Unfunded Roadway Needs

(from 2015 Transportation Plan)

Option 2 - City Fully Funds All Projects Except Freeway & Expressway Projects

2015 Plan Rank	Roadway	Limits	Type	Safety Benefit	10-YEAR Needs Cost ($millions)	City Funded Projects ($millions)	NCDOT Funded Projects ($millions)
5	I-77 HOV Lanes	I-85 to Northern Outer Loop*	Freeway Imp	moderate	44 0		44 0
6	US 74 / Sharon Amity	Expressway Interchange	Interchange	**Very High**	12 0		12 0
8	NC 27 (Freedom Dr)	I-85 to City Limit	Widening	**Very High**	19 5	19 5	
11	US 74 Expressway / HOV	SharonAmity Rd to Idlewild Rd	Freeway	**High**	16 0		16 0
13	I-77 Widening/HOV Project	Southern Outer Loop to I-85*	Freeway Imp	moderate	210 0		210 0
14	US 74 Expressway / HOV	Idlewild Rd to Outer Loop	Freeway	**High**	60 0		60 0
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	GRAND TOTAL				453 1	83 1	370 0
	State System - Freeways* & Expressways				370 0		370 0
	-Non-Freeways				83 1	83 1	0 0

* Significant Sections of Several Freeway Projects Extend Beyond City Limits

SUFO2NF WK4

THE WHEELS OF CHANGE
A COMMUNITY IN MOTION

Transit Governance

Mecklenburg's eight County, City and Town managers have been meeting to discuss options for structuring a possible county-wide transit organization The Managers will provide recommendations for a plan of governmance to the elected officials in July 1998

Just what form that organization might take is still being discussed The Managers however, are looking most closely at variations of Alternative #--Separated, Coordinated Regional and Local Operations are described below Some of the basic assumptions emerging from discussions include

- Any structure will need to assure Town interests are represented
- The elected bodies will retain direct approval and decision-making responsibility for long-range transit plans and service levels
- Public involvement and input must be a component
- The governing structure must be flexible and expandable so that jurisdictions outside Mecklenburg County could become part of the system if they are willing to participate financially
- The structure will be accomplished through interlocal agreements rather than statutory changes

Four Alternative Models

1 **Centralized** - all transit service is planned and operated much like tranditional regional transit authorities

2 **Decentralized** - all transit service within a jurisdiction is funded and operated by that jurisdiction, service across boundaries is arranged by agreement

3 **Separated, Coordinated Regional and Local Operations** - an agency plans and operates regional (countywide) service with local input, localities plan and operate local service in coordination with the regional service

4 **Regional Broker** - a regional policy board or oversight agency plans and markets all service using the most cost-effective operators

CHARLOTTE-MECKLENBURG

CORRIDORS STUDY

TRANSIT TECHNOLOGIES REPORT

Prepared for:
City of Charlotte

prepared by
Parsons Brinckerhoff Quade & Douglas Inc

in association with
LDR International Inc
McCormick Rankin International
Ralph Whitehead Associates
Hopper Communications
Howard/Stein-Hudson

May 1998

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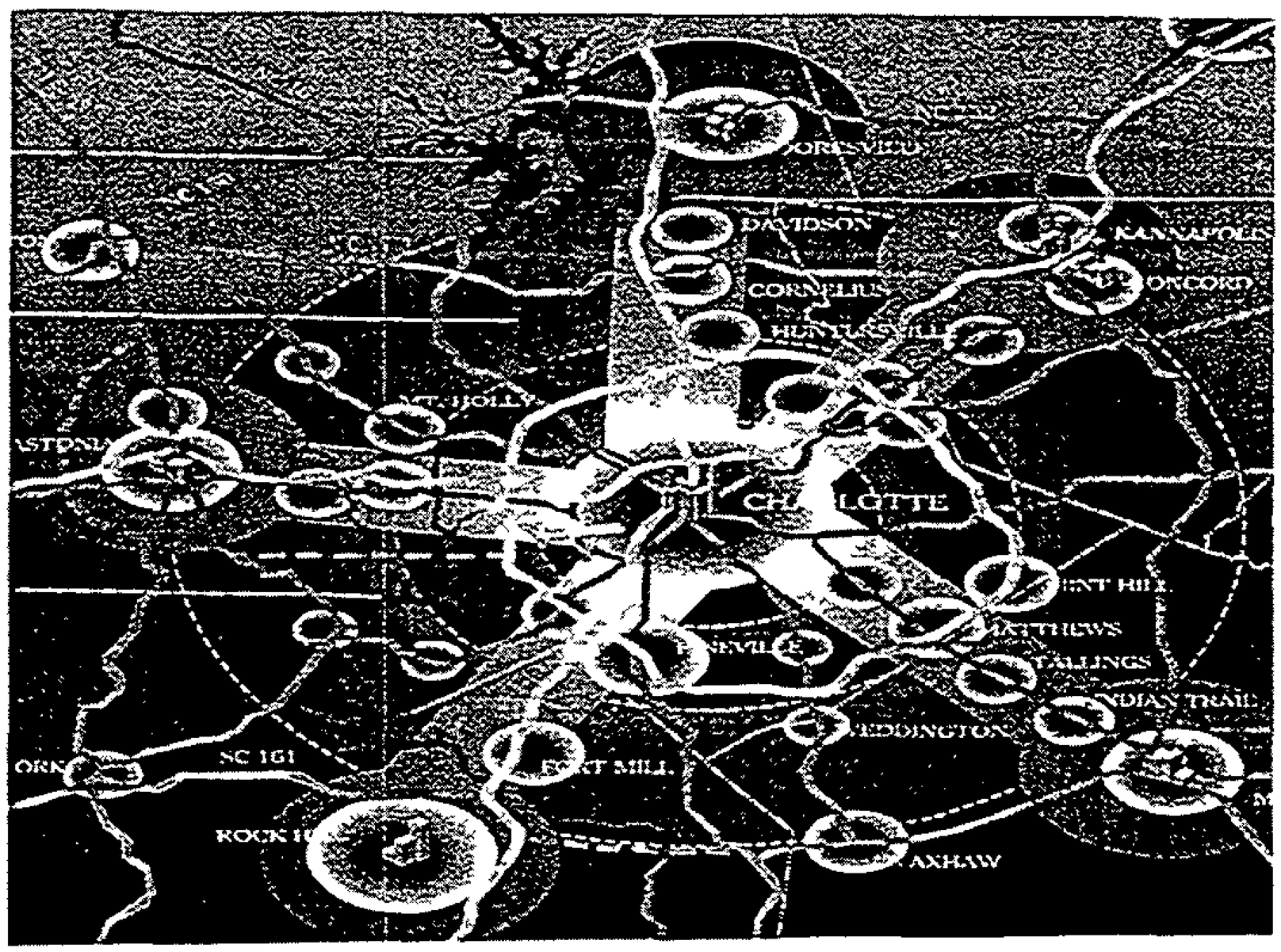
1. INTRODUCTION

The Charlotte-Mecklenburg Land Development and Rapid Transit Development Plan is designed to help public officials and planners develop a new integrated land use/transportation approach for the Charlotte metropolitan area. The purpose of the plan is to underpin the development of the *Centers and Corridors Land Use Plan* adopted by the City of Charlotte and Mecklenburg County in 1992 and illustrated schematically in Figure 1 This land use plan is intended to preserve existing residential and employment areas while providing choices for existing and new residents who wish to live in more transit-oriented developments similar to those currently found in some of the older areas of the City The availability of these choices will be important to the continued economic well being of Charlotte and its ability to attract high-paying jobs while developing in a way that respects existing values The achievement of the *Centers and Corridors Plan* will be enhanced by some form of rapid transit in each corridor to provide a high level of transit service that will attract some people who would otherwise use their cars for commuting to work and other trips

Figure 1. Centers and Corridors Plan



The integrated land use/transportation plan will consider alternative transportation alignments for rapid transit within each corridor in light of their compatibility with the likely development of transit-oriented land uses The transit alignments should connect locations or nodes of higher levels of development which would form the major stations for the rapid transit system

This technical memorandum presents an overview of the rapid transit technologies that are being considered the most appropriate for the needs of the Charlotte area and the potential alignments within each corridor These are

- **Light Rail Transit or LRT** consisting of electrified rail cars operating in exclusive corridors or on city streets
- **Commuter Rail** consisting of diesel powered self-propelled rail cars operating mostly on existing rail track and
- **Bus Rapid Transit or BRT** consisting of buses operating in exclusive busways and roads

Summary information is given on key operating and service characteristics, right-of-way requirements and cost factors for each mode Tables 1 and 2 provide a summary of the main operational features of each system while Table 3 shows some of the more significant operating engineering and right-of-way characteristics and typical costs These costs are provided for comparison purposes only since actual costs can vary considerably for the same technology in different locations (e g downtown versus suburbs) Illustrations of each system are included at the back of the report

It is noted that all three forms of rapid transit will need to be supported by a network of local bus services not unlike that being operated today in Charlotte This existing network undoubtedly will have to be improved in terms of frequency and coverage if the corridor rapid transit services are to function in an optimum way Local bus services will be needed to bring people to the rapid transit stations and to take them from the stations to areas beyond a convenient walking distance Improved local bus services will also be required in many places not in any of the corridors and to connect the corridors so as to facilitate region-wide travel by transit

Local on-street bus service is the most prevalent form of transit in urban areas in the US Charlotte Transit provides extensive coverage of the Charlotte area with local (as well as express) bus service Local bus service operates in mixed traffic making frequent stops and traveling at slow speeds therefore it is typically used only for short to medium length trips which are contained within a single urban area Depending on the frequency of service local bus can serve light to medium passenger volumes Because it operates over an existing street network it provides flexible routing and scheduling

Local bus also is ideally suited for providing feeder service to a higher speed, line haul, rapid transit system that operates in a longer distance corridor In this respect, local service can function as a collector system at the residential end of the trip and as a distribution system at the employment end of the trip

Express bus service is similar to the local bus service with the exception that express bus service operates over long distances and at higher speeds Express buses may collect passengers on local streets or at a park-and-ride facility at one end of the route then operate with few or no intermediate stops until reaching the other end of the route In many cities (including Charlotte) express service operates from outer suburbs to the central business district with stops at several locations at both ends of the route In all cases the buses operate on major roads and highways rather than local streets

2. LIGHT RAIL TRANSIT (LRT)

Light rail transit (LRT) is a flexible transportation mode that can operate in a variety of settings As the technological descendent of the streetcar a distinctive feature of LRT is that vehicles draw power from an overhead catenary wire This is in contrast to heavy rail vehicles that usually are powered from a track-level third contact rail This overhead power collection feature allows LRT systems to be integrated with other at grade transportation modes and pedestrians With overhead power collection and the

availability of articulated LRT vehicles LRT can operate in mixed traffic on tracks embedded in the street (like streetcars) on an at-grade right-of-way with street and pedestrian crossings or on a fully segregated exclusive right-of-way

The most recent light rail systems in the US use vehicles that are 90 to 95 feet long, up to 9 feet 6 inches wide, and comprised of two body halves connected by a swiveling articulation joint Operator cabs at both ends of the vehicle (articulated or non-articulated) allow bi-directional operation Vehicles can operate either as a single car or in multi-car trains The capacity of a typical LRT vehicle ranges between 120 and 170 passengers, of which approximately 40 to 70 may be seated A four-unit train can carry up to 640 passengers and the single direction hourly capacity of a line can approach 20 000 passengers Therefore, to be feasible LRT requires relatively high development densities in the corridor particularly around stations

The maximum effective operating speed of modern LRT systems ranges between 55 and 65 miles per hour making it suitable for medium distance trips in suburbs or between central business districts and other major activity centers System operating speeds are a function of the exclusivity of the right-of-way and the number of stops Operating in mixed traffic reduces system speed Typical scheduled speeds including station stops range from 25 mph to 35 mph on existing US systems

While LRT vehicles theoretically can operate on existing railroad tracks (assuming compatible facilities) for safety reasons they cannot operate jointly during the same time frame with railroad locomotives because of different buff strength requirements and varying signal system limitations

The approximate width of a double track LRT system (outside of stations) with vehicles side-by-side on each track is 23 feet However the typical right-of-way requirement is considerably higher approximately 50 feet When adjacent to active freight tracks additional separation may also be required

LRT station design may incorporate high or low platforms depending on the line setting Generally lines with on-street operations where passengers can walk across tracks utilize simple stations at stops with low platforms while lines with all separated right-of-way can utilize high platforms With passage of the Americans with Disabilities Act (ADA) of 1990 all new rapid transit stations must provide accessibility for the disabled to every door This means that all LRT systems that open after January 1993 must provide level boarding Level boarding can be accomplished in one of two ways--high-level station platforms or low-floor vehicles Low-floor light rail vehicles are becoming quite common in Europe but there are only a few in operation in North America (e g Portland)

The per mile capital cost of LRT is typically higher than a busway or DMU system

LRT is noisiest when operating at full speed The noise level introduced into the environment at top speed is moderately loud (78 dBA) comparable to a vacuum cleaner Because cars are electrically powered it is the quietest of the three technologies

North American cities that have constructed light rail transit systems in the last ten years include Baltimore Calgary Dallas Denver Edmonton Los Angeles/Long Beach Pittsburgh Portland Sacramento San Diego San Jose and St Louis Cities that have recently decided to implement a LRT system are Virginia Beach/Norfolk and Orlando (Florida)

The Portland and Sacramento LRT systems are illustrated in Figure 2 and Figure 3

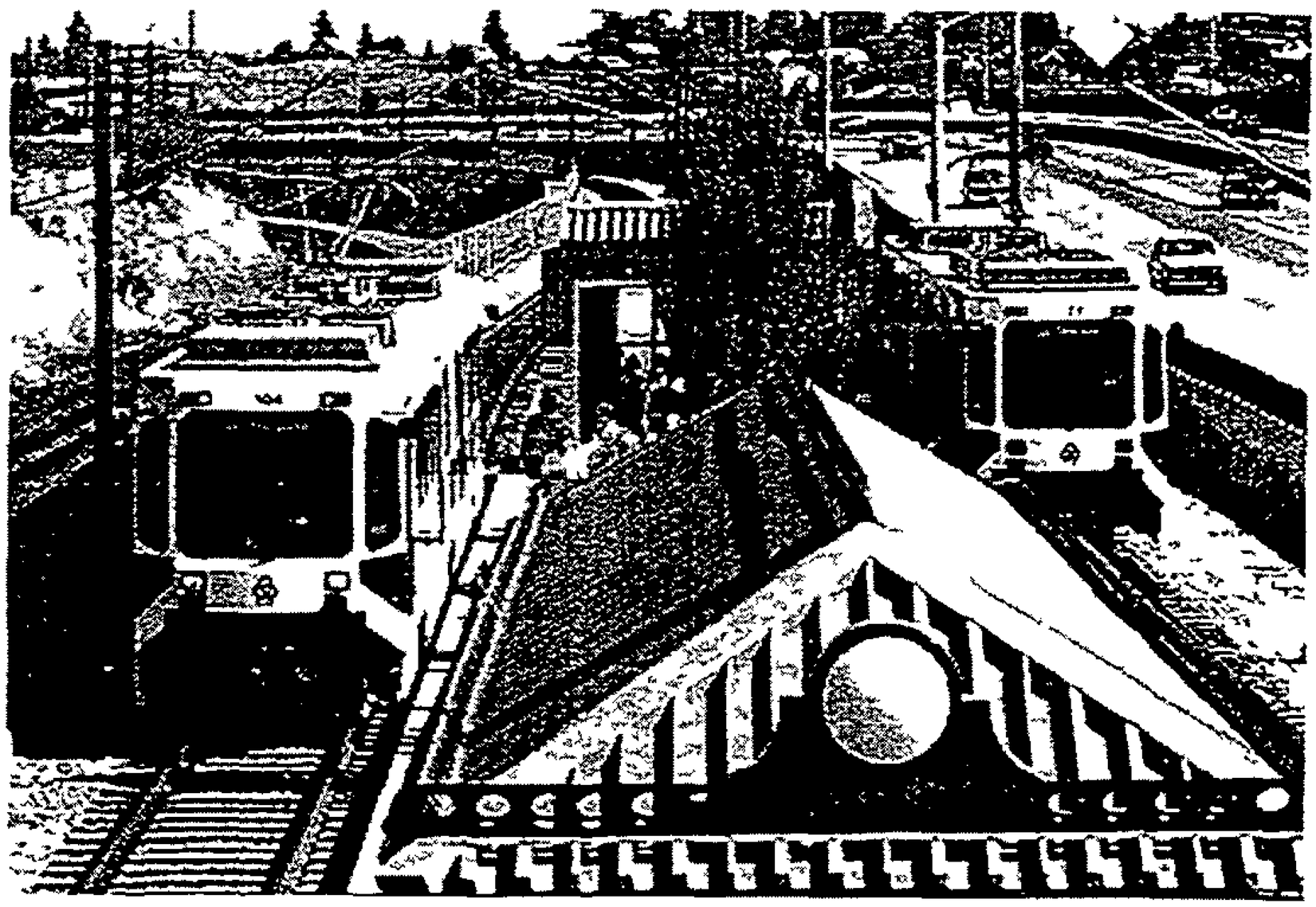


Figure 2. Portland MAX LRT

Figure 3. Sacramento RT Metro LRT

3. DIESEL MULTIPLE UNITS (DMU)

Advanced diesel multiple units (DMUs), also referred to as regional rail " are a form of commuter rail with one key difference - they are powered by diesel motors mounted on the car rather than pulled by a locomotive This system is intended primarily for low-density non-electrified secondary lines up to 30 miles in length that link city centers and midsize towns with suburban surroundings As with LRT the use of diesel power rather than electricity allows safe integration with other at-grade transportation modes as well as pedestrians

DMUs are typically considered where an available railroad exists and can be shared Some DMUs are designed to be safe to operate at the same time as other trains while others do not have the buff strength (which is more often the case) to operate in mixed traffic The requires the track to be used only by the DMUs or the DMUs to run at times no other trains are permitted on that section of the railroad

DMU cars comprised of two body halves connected by an articulation joint are between approximately 80 and 150 feet in length and 9 4 feet wide Vehicles can operate alone or in trains of up to three vehicles The capacity of an articulated rail vehicle ranges from 75 to 110 seats Standing passengers also can be accommodated (though this may be undesirable since DMUs typically travel longer distances than LRT) increasing the total capacity to 170 or more passengers A four-car train therefore can carry up to 440 seated passengers in a single direction with an hourly capacity on a line up to 5 280 (9 000 if standees are also considered but because of the typically long distance trip application of DMUs the seated load is usually used to determine capacity)

The typical maximum operating speed of a DMU is 65 to 75 mph (at least one technology can achieve speeds in excess of 100 mph) making it suitable for regional transportation A typical average operating speed including stops however would be 30 to 40 mph with stations spaced every two to five miles Because of longer acceleration and stopping times DMUs are best suited for longer distance trips than LRT

The approximate width of a double track DMU system and right-of-way requirements are similar to LRT A three-step entrance at the doorway allows flexible access either from the street or from a raised platform

The capital cost for DMUs is lower than for LRT because typically they operate in existing railroad rights-of-way and preferably on tracks used by other rail operators thereby reducing capital costs

DMU transit is noisiest when operating at top speed Its exterior noise level 86 dBA, is comparable to a heavy truck operating at high speed By a small margin this is the noisiest of the three technologies

Examples of this technology include

- Siemens Transportation Systems RegioSprinter (Germany/US) - self-propelled, double-articulated vehicle that combines standard bus components with modern light rail vehicle technology (see Figure 4) As many as four vehicles can be operated in multiple units The double-articulated design shown in the figure is 82 ft long and contains a 70 percent continuous low-floor area 21 inches above top-of-rail elevation It has a 74 seated and 100 standing passenger capacity Maximum speed is 62 mph In Europe it meets requirements for operating on both main line railways and light rail lines The technology has not received the Federal Railroad Administration s (FRA) certification for operating in the United States There are no systems currently in regular revenue service in the United States
- Advantz Flexliner (ABB Daimler-Benz Transportation GMbH Germany) – high-speed DMU originally developed by ABB Traction in California in cooperation with Amtrak West (see Figure 5) This vehicle with a maximum speed of 110 mph toured Charlotte early in 1998

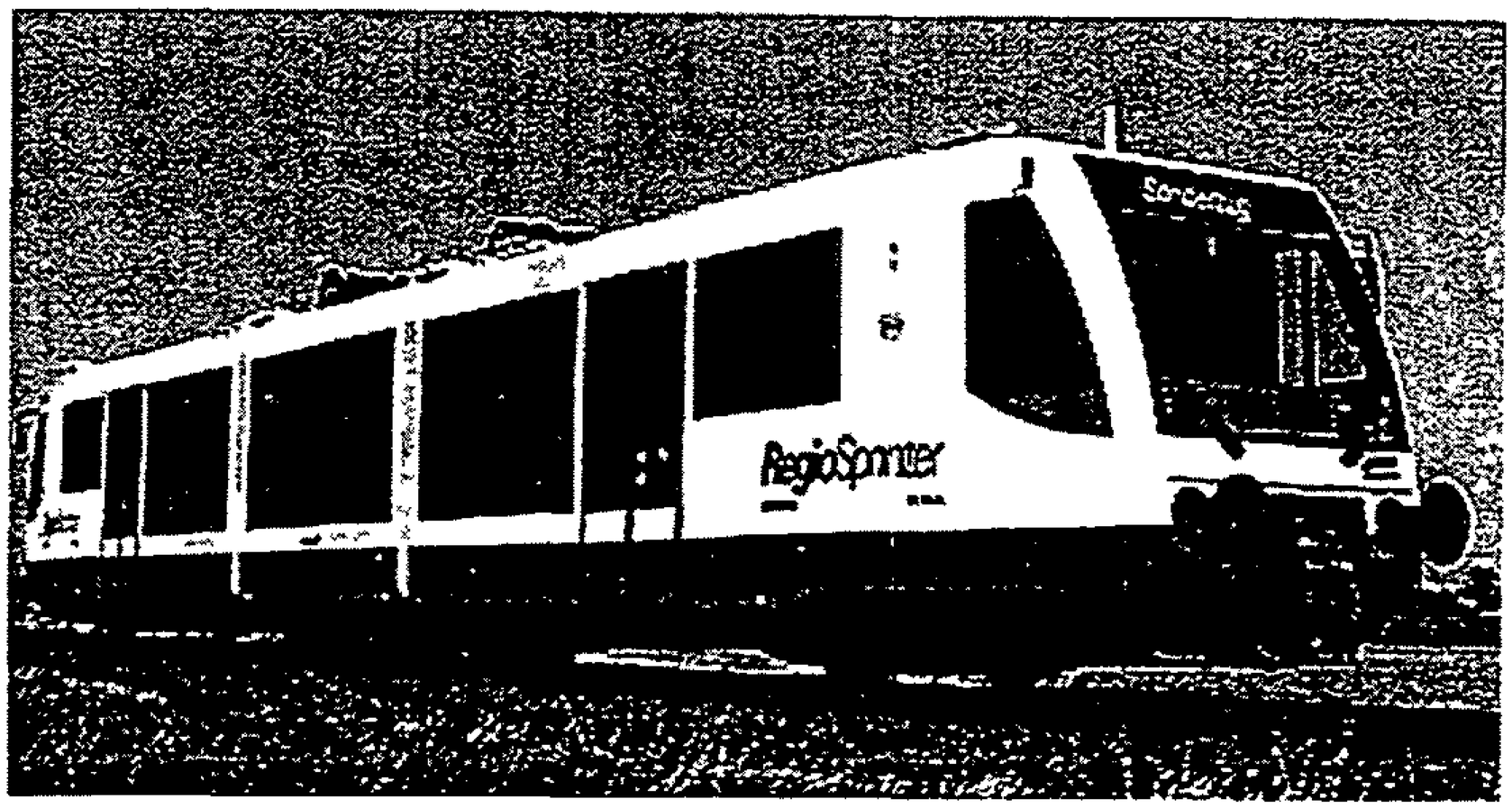


Figure 4. Siemens RegioSprinter

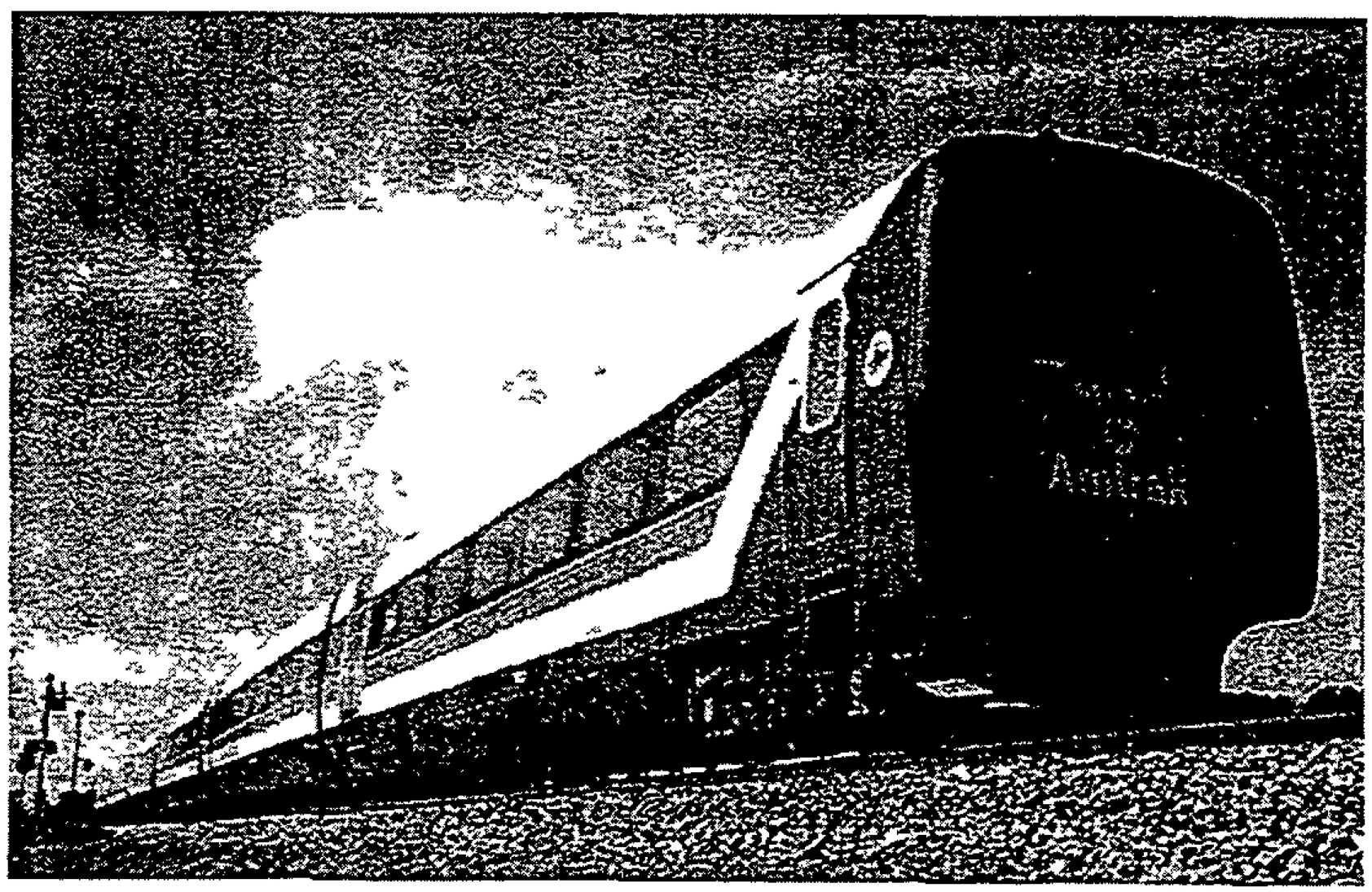


Figure 5. Flexliner

4. BUS RAPID TRANSIT (BRT)

BRT is usually cheaper to build and operate than rail transit when a new right-of-way has to be created It is particularly compatible with the low-density suburban land uses that characterize most growing communities BRT technology thus offers the opportunity to establish rapid transit in places that can not yet justify the cost of rail transit

Modern BRT technology can provide some of the flexibility offered by the automobile because the same vehicle does the pickup distribution and line-haul (or the high speed) parts of the commuter trip In just the same way, the car user drives on local streets to the freeway travels on the freeway and then on local streets again to his or her place of work

While a BRT system includes the traditional feeder buses and park-and-ride lots found on rail rapid transit its key attribute is the buses that combine the feeder line-haul and distribution functions With a BRT system such a bus will loop through a neighborhood picking up passengers within convenient walking distance of their homes It then will enter the busway (which is usually an exclusive or semi exclusive right-of-way) via a special busway ramp and then travel on the busway and serve on-line stations just like a rail rapid transit vehicle It then will leave the busway via another busway ramp and circulate through an employment center

Whether this is a downtown center or a suburban office park makes no difference the result is that a fast transfer free ride is a possibility for most users Commuters who work in areas not directly served by the buses that loop in their neighborhood need only make a single transfer in a station similar to a rail station to be able to travel to and other work location served by the busway system of routes

Because a range of vehicle capacities is feasible peak period service frequencies can be maintained at a high level (i e many buses can be operated so that a wait for a bus is very short), producing a convenient service express type for all passengers including those who must transfer

The busway itself is a two-lane two-way road with shoulders The total width is about 35 feet. In critical sections such as on a structure this right-of-way width between barriers can be reduced to as low as 30 feet without difficulty Where right-of way is very restricted guided bus technology can be used to reduce the required width even further to about 22 feet (Guided bus technology retains the busway flexibility that allows a bus to operate both on and off the busway but in this case the bus is fitted with a guide wheel attached to the steering mechanism that follows a horizontal guide rail when the bus is on the busway New electronic guidances systems which obviate the need for the guide rail are currently under development To protect the future flexibility to convert the busway to rail it is usually engineered to rail-compatible geometric standards in terms of curvature, grade and structural clearances The same approach is taken with structural loadings on bridges and retaining walls

At stations the right-of-way is widened to add two platforms two through-lanes and a median barrier The ideal station width is 96 feet but this may be narrowed to 76 feet by reducing the platforms to 10-feet wide Station platforms are 180-feet long and can be designed readily to ADA standards The four-lane width in the station area is important because it allows some buses to pass through the station as non-stop higher speed express services The station buildings and facilities are the same as those required for rail and can be as simple as a single shelter or as complex as those found on any subway rail system Because both stopping and express services can use the same stations station spacings can be as little as 2 000 feet where land use reasons dictate As with rail BRT stations can be designed with high platforms and pre-paid areas to speed loading and facilitate ADA access

Because the BRT bus operates both on and off the busway, the busway can be built in discontinuous sections linked by bus lanes or other priority treatments such as signal pre-emption and queue jumps on arterial roads or freeways This means that the busway can be built incrementally with priority being

given to the construction of the busway sections that produce the highest initial benefit and rate of return This also offers the option of distributing the benefits of rapid transit throughout a regional area early on in a transit implementation program rather than concentrating them in a particular corridor

BRT technology has application for corridor volumes ranging from the upper end of local bus operations of about 1 000 to 2,000 passengers per hour up to at least 20 000 passengers per hour Current experience in Ottawa and Pittsburgh is of busways with peak hour, peak direction passenger volumes of between 2 500 and 10 000 passengers Daily busway system passenger volumes range from 46 000 to 200,000

Scheduled travel speeds including station stops are in the 25 to 35 mph range depending upon right-of-way design and station spacing Vehicle peak load factors and per passenger loading times are improved by busway operation compare to regular bus operations Peak period load factors are 15 to 20 percent higher than with buses on arterial streets because of the better schedule adherence of separate right-of-way operations and the concentrated loading at stations Station operation also allows greater use of multiple door loadings on articulated buses and consequently faster average per passenger boarding times

The backbone of the BRT network is the busway that operates just like a rail service with buses stopping at each station where they serve passengers arriving and departing at the station on foot by feeder bus bicycle kiss and ride and at some locations by park-and-ride The most extensive park-and-ride facilities are usually located at terminal busway stations at the outer ends of busway corridors To avoid wasting potentially valuable developable land adjacent to the stations for this purpose the all stops route is often extended off the busway via a priority routing if necessary to a remote park and-ride site The service frequency of the all stops service is high throughout the normal operating day (5 minutes peak 10 minutes midday at least)

A key feature of BRT is the ability to offer a high frequency no-transfer service to a higher proportion of trips than is usually the case for rapid transit in suburban areas In the Ottawa busway system for example 70 percent of the passengers use this type of service and on the Adelaide (Australia) guided busway 64 percent of passengers access their bus before it reaches the busway This is achieved through the operation of a network of one-way high frequency express/limited stop services which in the A.M peak for example pick up passengers in residential areas away from the busway travel on the local street system to the busway which they enter using bus ramps Once on the busway the buses operate in an express or limited stop mode depending upon the demand levels and trip patterns The intermediate station stops allow passengers to directly access developments next to the stations and to transfer to the all-stops and counter peak direction express/limited stop services for travel to other locations in the corridor In the P M peak the one-way service is provided in reverse This combination of areawide peak and counter peak direction express/limited stop network means that all major destinations can be within a one transfer ride of virtually all residential areas These factors translate into per passenger mile operating costs being less than those for an equivalent surface bus operation

Operating experience has shown that BRT operating costs are usually lower than those of equivalent rail systems Per boarding passenger costs range from less than half to about 90% of the costs for a rail system because BRT is usually more competitive at the low passenger volumes usually experienced initially on most new rapid transit systems

The BRT construction costs depend on the nature of the corridor being built but typically average $20 to $ 25 million per mile for grade-separated construction

Noise impacts of buses are greatest when they stop and start Traveling at full speed local buses produce a moderately loud noise level of 79 decibels (dBA) comparable to a vacuum cleaner

In addition to busways BRT can use high occupancy vehicle (HOV) lanes which are open to vehicles carrying more than a designated number of passengers (typically three or more) A well-designed and

operated HOV lane can provide similar operational benefits to a facility dedicated exclusively to buses so long as proper provision is made for on-line stations Overall busway/HOV options include

- An exclusive facility in its own right-of-way i e a road for buses outside existing roadway rights-of-way Examples include new rights-of-way in Ottawa Canada or use of a railroad right-of-way (as in Pittsburgh s East Busway)

- An exclusive facility in an existing roadway right-of-way These are lanes typically built in a freeway right-of-way that are physically separated from the other freeway lanes and may have exclusive flyover access ramps The Shirley Highway in Washington D C and the HOV lanes under construction on US 74 (Independence Boulevard East) in Charlotte are examples of this type of facility

- Non-separated lanes on a freeway or highway typically the inside lanes which have pavement markings and signs to indicate that use is restricted to HOVs There are numerous examples of this type of facility including an extensive network in Orange County California I-95 outside of Washington D C and I-95 north of downtown Miami

A unique form of busway is the guided bus or O-Bahn system (shown in the figures) One example of this technology is a 7-mile route in Adelaide Australia The advantages of O-Bahn over a conventional busway include improved safety at higher operating speeds (up to 105 km/h [65 mph]) increased passenger comfort and a reduced right-of-way requirement The cost of the track is slightly higher than a conventional busway

An arterial street busway developed in Curitiba Brazil features fully-enclosed weather-protected and air-conditioned stations with platforms that are level with the floor of the bus This type of station decreases passenger boarding and alighting times thereby reducing overall travel time and offers passengers a more comfortable and secure waiting environment that is similar to many rail transit stations

Busway travel facilities are illustrated in Figures 6-10 A typical busway station is shown in Figure 11

Figure 6. **Busway in HOV Lane**
Los Angeles CA

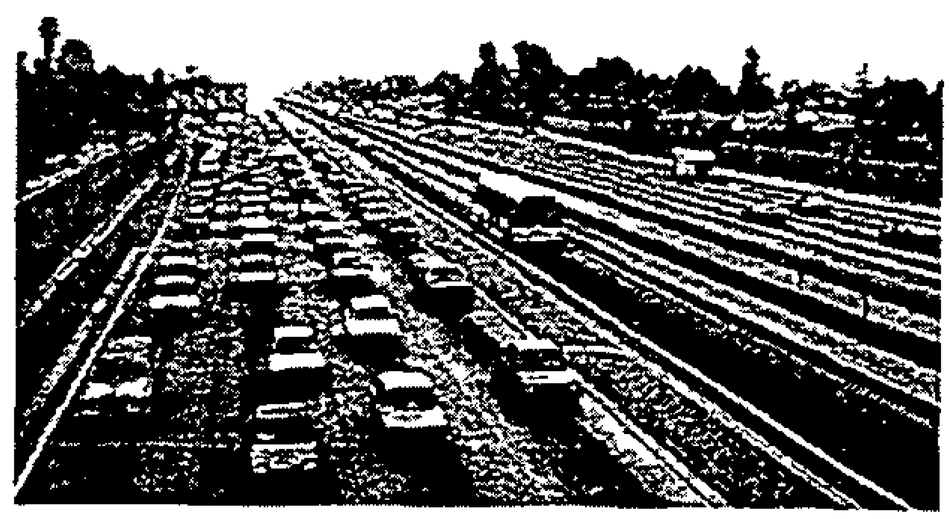
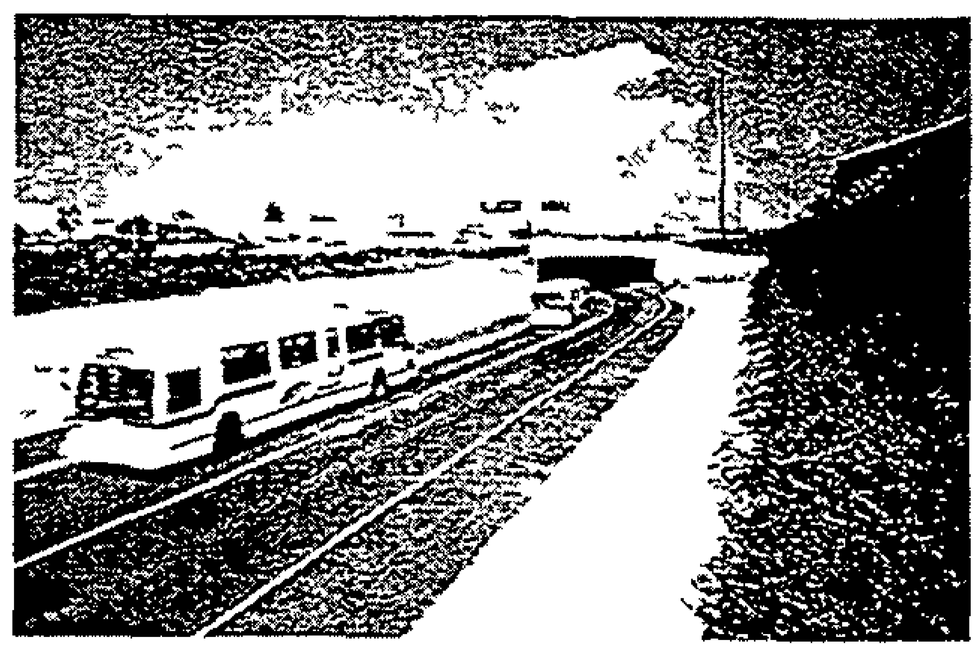


Figure 7. **Busway Next to Rail**
Pittsburgh PA

Figure 8. **Busway on New Alignment**
Ottawa Canada



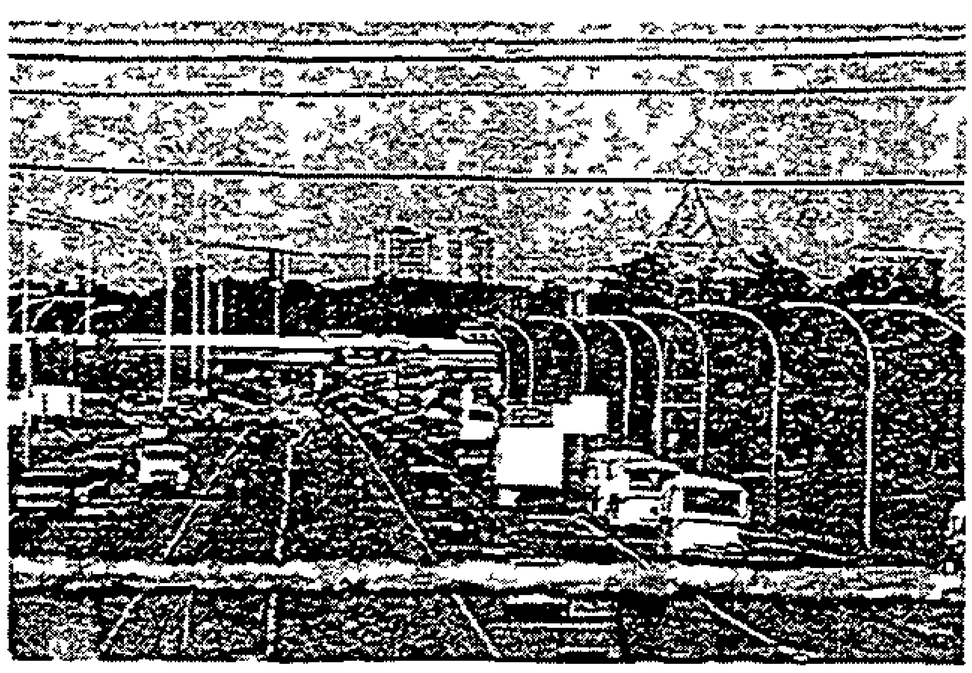


Figure 9. **Shoulder Bus Lane**
Ottawa Canada

Figure 10. Guided Bus
Essen Germany

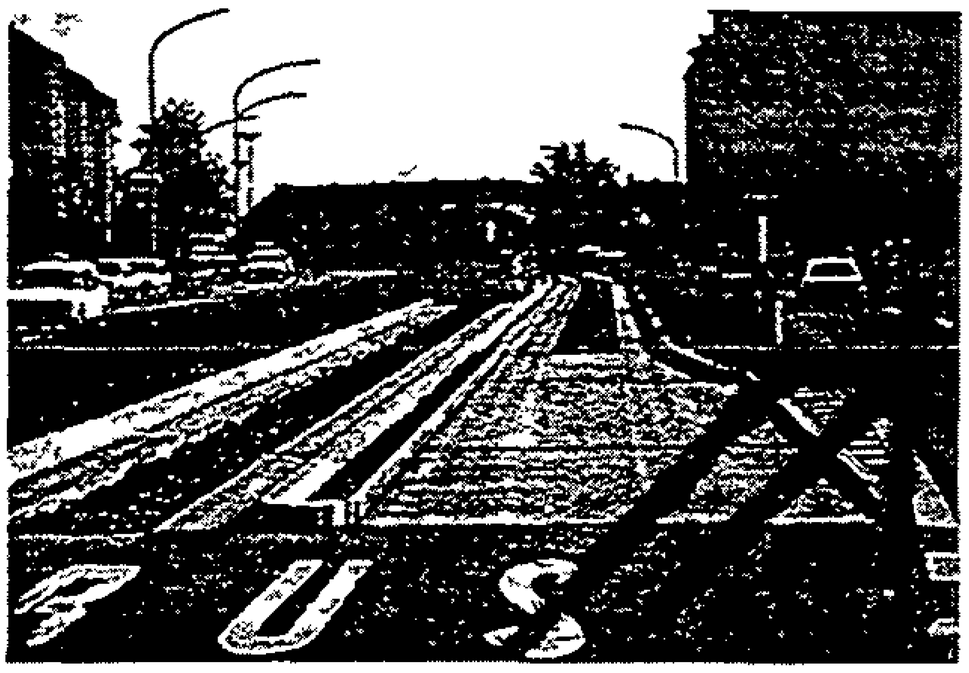


Figure 11. Typical Busway Station
Ottawa Canada

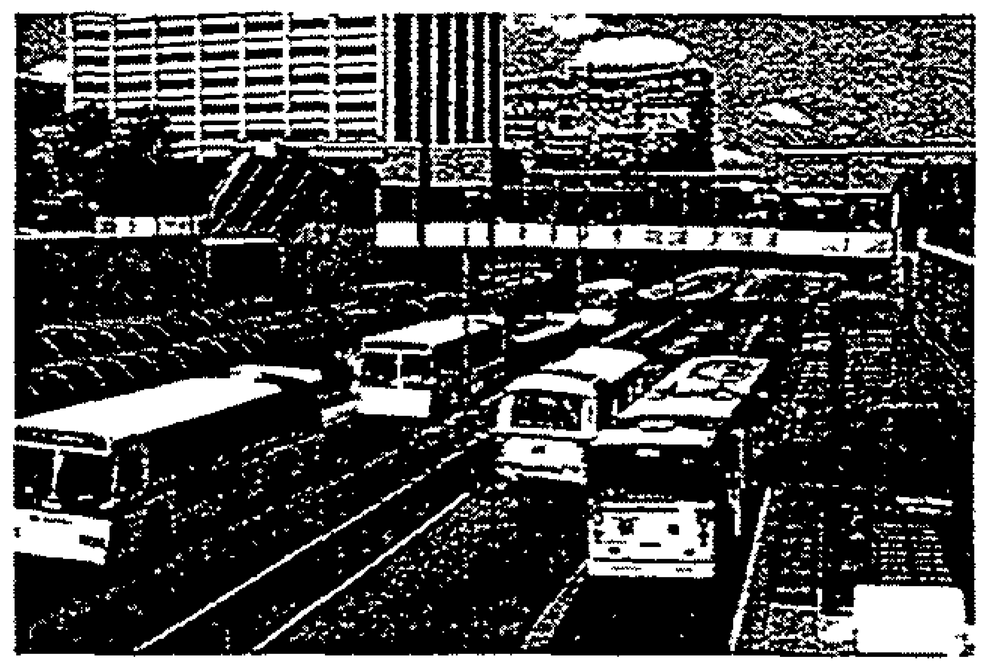


Table 1. Summary of Significant Technology Features

Light Rail Transit

Serves medium (light) to high passenger volume
Up to 170 passengers per vehicle 680 passengers in 4-car train
Low to medium speed (depending on degree of separation of right-of-way and distance between stops) - 55 to 65 mph [90 to 105 km/h]
May serve short to long distance trips
Stations spaced 0 5 to 1 0 miles [0 8 to 1 6 kilometers] apart
Normally uses overhead power collection
May operate on- street in traffic or on exclusive right-of-way
Can negotiate steep grades of up to 7% and horizontal curve radii of 82 feet [25 m] min at low speeds
Stations may be elaborate or simple May use low platforms and/or high platforms
Vehicles may operate alone or in trains of up to four or more vehicles
Numerous vehicle suppliers
Cannot operate jointly with freight trains or other railroad equipment
Moderately high capital cost (more than commuter rail or DMU)

DMU Rail

Serves medium passenger volume
Diesel powered self propelled vehicles
Can typically operate on existing tracks but not at same time as other railroad traffic
Serves medium to high passenger volume over medium to long distances
Up to 110 seated passengers per vehicle
Up to 440 seated passengers in 4-car train
High speed up to 79 mph [127 km/h]
Stations spaced 2 to 5 miles [3 to 8 kilometers] apart at a minimum
Stations may be elaborate or simple and use low platforms high platforms or both
Can have long trains (usually up to 3 sets of articulated cars)
Low to medium capital cost (if using existing tracks in good condition)

Bus Rapid Transit

Serves medium passenger volumes
Typically 50-60 seated passengers per vehicle
High speed up to 65 mph [105 km/h] avoids roadway congestion by use of exclusive lanes
Serves long distance and short distance trips
Station stops at short intervals if necessary
Buses continue on a local collector route to provide a one-seat ride without transfers
May operate in HOV lanes with other traffic or on exclusive lanes
Numerous vehicle suppliers
May require additional rights-of-way for new park-and ride lots and lane expansions
Mature technology
Low vehicle cost but medium to high cost for ramps and HOV or exclusive lanes or busway

COUNCIL WORKSHOP
AGENDA ITEM SUMMARY

TOPIC: Connectivity

COUNCIL FOCUS AREA: Transportation & Economic Development

STAFF RESOURCES: Randy Jones, Linda Beverly, Bill Finger

KEY POINTS:

- At the January retreat, the City Council identified "Connectivity" as one of its top priorities for 1998

- Staff is providing a presentation and an issues paper on "Connectivity" The paper focuses on the issues and options for adjacent land development, primarily residential, with streets, sidewalks, and bicycle paths This paper is not intended to provide the answers, but rather to identify the scope of the issues which will need further evaluation

COUNCIL DECISION OR DIRECTION REQUESTED:

- Council is asked to provide direction about proceeding with further study of Connectivity

- One possible process for Council to proceed from the presentation

  1) Comment on the Issues Paper Have all the issues been identified? What additional questions or concerns need to be addressed?

  and

  2) Refer to Council Committee for review and recommendation, including a stakeholders' involvement process

ATTACHMENTS:

None The Issues Paper will be sent to Council in the Friday, May 29 Council-Manager Memo

COUNCIL WORKSHOP
AGENDA ITEM SUMMARY

TOPIC: Conveyance/Sale of City Property

COUNCIL FOCUS AREA: Economic Development

STAFF RESOURCE Jim Schumacher

KEY POINTS (Issues, Cost, Change in Policy):

- City Council has recently adopted master plan documents for First Ward and Third Ward, where the City owns several parcels of land
- In accordance with asset management guidelines adopted by the City Council in 1994, surplus property, including the First and Third Ward parcels, is being marketed or prepared for sale
- In marketing the property in First and Third Wards, as well as some other parcels around the City, there are public policy goals to be considered in addition to gaining revenue from the sale
- State statutes provide various options for the sale of public land, requiring that each parcel be evaluated to determine what statutory constraints will apply to each sale, and what methods can be used to achieve the City's public policy goals
- These issues are being reviewed by the asset management subcommittee on May 27, and the Privatization/Competition Advisory Committee on May 28

OPTIONS: N/A

COUNCIL DECISION OR DIRECTION REQUESTED:

No decision requested Staff will review the existing Council policies, with focus on the process being followed to consider public policy goals in the sale of land Council actions on the marketing and sale of various parcels will be coming forward to the City Council in coming months

ATTACHMENTS: None