

CEE 1720 Carnegie Study Land Use & Parking Group



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Data Collection (Parking)



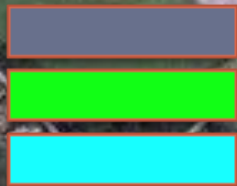
- The West Busway Carnegie Station has a dedicated parking lot that supplies spots for 215 vehicles.
 - Fills up by 7 AM.
- There are multiple other metered lots and private lots which supply permits to commuters in the area.
- Parking study
 - Counted the number of filled spaces in area lots.
 - Completed on a weekday at approximately 10 AM.

Parking Supply



- **Free**
 - 215 supplied
 - 0 available (13 additional demand)
- **Permits Available to Public**
 - 174 supplied
 - 116 available

Proposed Land Uses



Multi – Family Mid Rise
Structured Parking & Retail
Multi – Family Low Rise





Professional Office Mid-Rise
Flex-Space – One Story
Mixed – Use Retail Mid Rise



Trip Generation



Slow Growth

Total Trip Generation	AM	PM	Saturday	Parking Spots
	72 trips/hr	154 trips/hr	166 trips/hr	181 spots

Flat Growth

Total Trip Generation	AM	PM	Saturday	Parking Spots
	36 trips/hr	62 trips/hr	59 trips/hr	80 spots

Census Data



- According to the 2010 census, it is estimated that 309 people take public transportation to work (and 3300 drive to work alone).
- We found 286 parkers in the vicinity of the busway station.
- 58 of those were paying parkers, so we assume those to be a demand of free parking.
- Difficult to determine the demand for those that would like to use the busway rather than drive.

Parking Garage



- The parking garage will need to support the parkers for the busway station and the mixed use retail on the lower floor.
- 290 spots for the busway station
- About 40 spots for the retail
- At least 330 spots needed in the parking garage with the retail spots reserved or with a time limit.

Transit Data



- Port Authority – Average of 189 passengers leave the Carnegie bus station during the PM peak hours
- Current G2 buses – capable of carrying 40 people (with no standees)
 - 12 run per hour
 - Can carry 480 passengers/hour >> 189 passenger/hour

Transit Data



- There are currently only an average of 0.39 passengers/seat (LOS A) and 16 passengers/bus (LOS A)
- Thus, the Carnegie station is nowhere near its available capacity
- Current capacity is suitable for projected population growth of Carnegie
 - Only 7.24% of Carnegie citizens use public transit
 - Applied to the Land Use slow-growth model
 - Resulted in 0.496 passengers/seat (LOS A)

Pedestrian Data - Existing Conditions



- Some of the locations have pedestrians but no sidewalks.
- **All sidewalks** are given an “A” level of service in the existing analysis.
- Main existing crossways are the intersections of **West Main St. and 3rd St, West Main St. and Mansfield Blvd, and West Main St. Bridge.**
(seen next slide)

Current Pedestrian Conditions

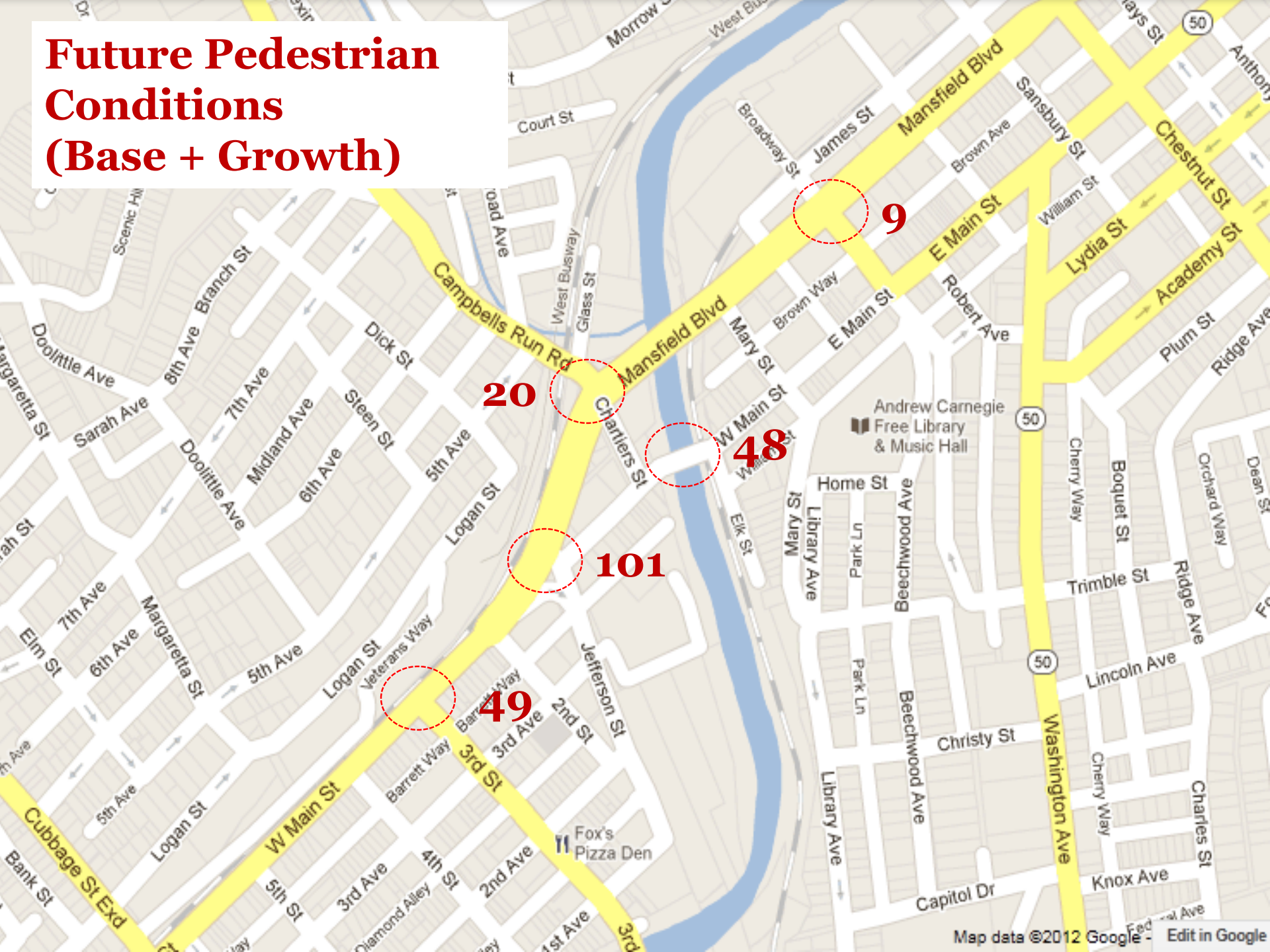


Pedestrian Data - Future Projection



- Found the new projected future conditions for base + growth stage. The same three intersections remain the largest but with notable increases.
- The future analysis was found using the HCM 2000 edition and **all sidewalks** are still given an “A” level of service.
- Some places still do not have sidewalks for pedestrians.
 - Recommend building sidewalks where none are present.
 - Community initiative to encourage more residents to walk to the busway station.

Future Pedestrian Conditions (Base + Growth)



Traffic Analysis



- Collected turning movement count data at 6 intersections:
 - Mansfield and Walnut (unsignalized)
 - Mansfield and Broadway
 - Mansfield and Campbell's Run
 - Busway and Campbell's Run
 - Mansfield, Jefferson, and Main
 - Main Street and Third Street

Traffic Analysis Methodology



- **Base:** Grew the existing traffic by 1% (linearly) for 10 years to get 2022 future base volumes.
 - Performed Highway Capacity Manual (HCM) capacity analysis at each intersection.
- **Trip Distribution:** Reduced trips generated by each land use by 5% to account for transit use.
 - Then determined distribution of entering and exiting traffic for the TAZ using existing proportions and distributed the trips for each new land use through the network using these proportions.
- **Combined:** Added trips generated by new land use to 2022 base volumes to determine projections for the combined condition
 - Performed HCM capacity analysis at each intersection.

Level of Service Analysis



Intersections	Existing		Future Base		Future Combined	
	HCM LOS	Average User Delay	HCM LOS	Average User Delay	HCM LOS	Average User Delay
Mansfield and Walnut	A	1	A	1.1	A	1.9
Mansfield and Broadway	B	15.6	B	17.1	C	22.3
Mansfield and Campbell's Run	D	35.5	D	39.5	D	52.3
Busway and Campbell's Run	A	5.4	A	5.8	A	5.9
Mansfield, Jefferson, and Main	B	11.9	B	12.3	C	23.9
Main Street and Third Street	B	16.5	B	18.1	C	20.9

Summary of Recommendations



- Parking garage should have at least 290 commuter spaces and 40 retail spaces.
- Construct sidewalks where needed.
- Encourage community members to walk to the busway station
- Transit service is acceptable
- All intersections operate at an acceptable LOS.
 - Optimize the signals every three years.