

Adelman Doug

From: Adelman Doug
Sent: Thursday, June 14, 2001 8:13 AM
To: Council Group
Cc: Nelson Randy; Bjerke Dan
Subject: Indiana/5th

At the May 14 information meeting, I was asked to check with the owners on Indiana regarding possibility of removing parking on Indiana to allow for three lanes to be striped on the east approach of Indiana Street. I spoke with Mr. John Bracken who lives on the southeast corner of subject intersection. He said he is very much opposed to the removal of parking. He has 3 cars and uses this section of on street parking daily (which I have observed). The house on the northeast corner is a rental. I was unable to contact this owner by phone.

Analysis indicates we would need to remove parking or widen Indiana from 5th Street back to the alley (approx. 150') to provide adequate storage length during the AM peak hour. Westbound right turns represent 77% of the total westbound traffic during the AM peak hour. Providing a designated westbound right turn lane would significantly decrease delay for the vehicles making this movement.

A third lane could be added by removing parking from the north side of Indiana Street, and widening on both sides of Indiana. A preliminary cost estimate for this option is \$26,000. This would retain parking on the south side of Indiana and remove parking on the north side of Indiana.

I would emphasize that obtaining 3 lanes on the Indiana approach is a much more appropriate intersection improvement than installing a traffic signal at this point in time. With no significant growth in traffic volumes foreseen on Indiana, the need for a traffic signal in the future is also questionable. Analysis indicates that current peak hour queue lengths of about 9 cars could be reduced to about 4 by providing a designated right turn lane for the westbound Indiana approach. Both east and west legs of this intersection should accommodate 3 lanes in conjunction with any proposed signal installation in the future.

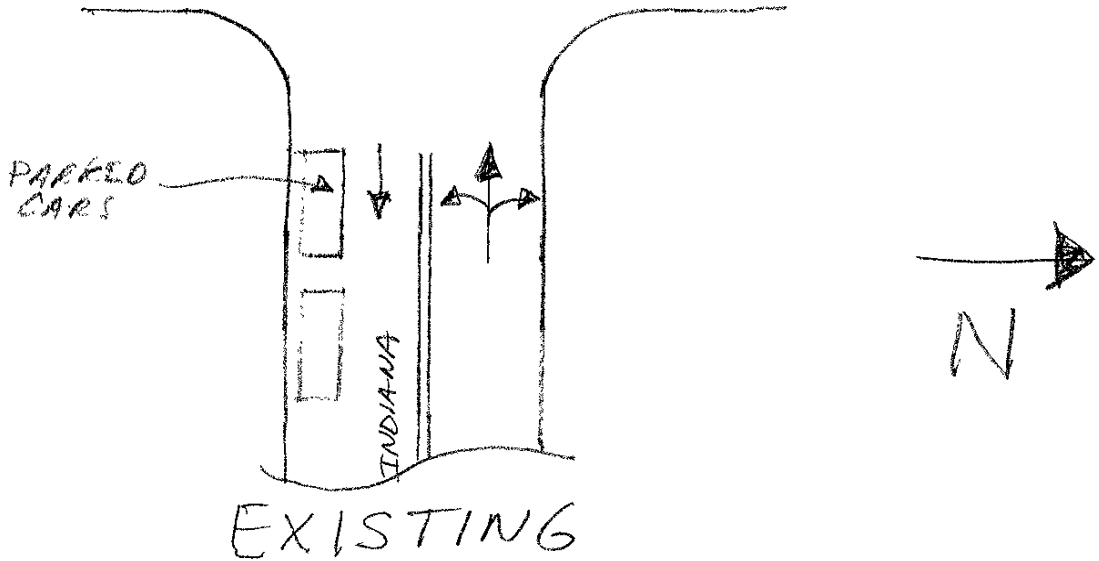
The Indiana/5th Street intersection currently ranks number 18 on a list of 25 unsignalized intersections which have been prioritized based on number of accidents, accident rates, and signal warrants met.

Respectfully,
Douglas Adelman

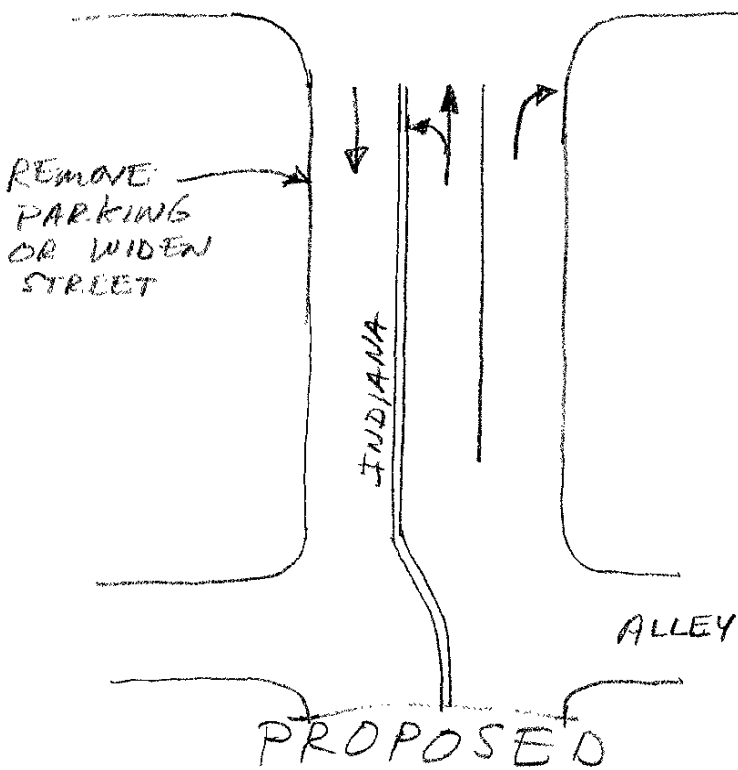
5th/INDIANA 9/20/01

DJA
PW092601-08

5th STREET



5th STREET





CITY OF RAPID CITY

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5/7/01

Council Members

RE: 5th Street Corridor Evaluation

Dear Council Members:

A re-evaluation of the 5th Street corridor from Indiana to Flormann has been completed this month per Council request as a follow up to the original study that was done in the fall of 2000. Traffic data for the original study was collected during Cathedral Drive reconstruction, and it was requested that the study be repeated after completion of Cathedral Drive.

STUDY PURPOSE

The purpose of the original study was to **evaluate a proposal to move the existing traffic signal from the intersection of Meade and 5th Street to the intersection of Indiana and 5th Street.** The existing traffic signal at 5th/Meade was installed in 1992 under the school-crossing warrant. This warrant allows for the installation of a traffic signal when the gaps in traffic are too short for school children to get across the street.

SCHOOL-CROSSING ISSUE

The signal at Meade Street is one of a few signals in Rapid City that were installed solely for the purpose of providing a safer crossing for school children. Thus, the school-crossing issue must be considered as integral to the evaluation of the proposal to move the traffic signal. The signal at Meade was installed under Warrant No. 4, School-crossing. **The sole reason for the signal at Meade is to provide gaps in traffic for school children. Moving this signal one block south to Indiana Street could compromise the safety of school children crossing 5th Street.**

It is of utmost importance that a school-crossing signal is installed at a pedestrian friendly and convenient location. To evaluate convenience one must consider the location of the school and its boundary limits. For this crossing we are particularly



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concerned with students attending South Park Elementary. (The experience of school officials and our pedestrian counts indicate that middle school students are much less likely to take advantage of a designated crossing than elementary students. Also, national statistics indicate that pedestrian accident rates are highest for males aged 5 to 9.) The boundary for South Park Elementary extends from St. Patrick Street to Cathedral Dr. The school uses three entrances:

- 1) Kindergarten uses the Flormann entrance
- 2) Grades 1 and 2 use the west entrance (located between Flormann and Meade.)
- 3) Grades 3-5 use the south entrance (located close to Prairie Ave. about in line with Meade Street.)

Considering the school entrance locations and the potential for students to come from homes both north and south of the school, Meade is a convenient location for a pedestrian crossing. Flormann would be the next most convenient location for a school-crossing signal because of its proximity to the South Park Elementary school entrances. Indiana is the least desirable of the three locations for a school-crossing signal because it is too far south of the school entrances. A child living north of Indiana Street would have to walk an extra 2 blocks to get to school. This inconvenience can easily become a safety issue if a child is tempted to cross at a more convenient (and less safe) location. Finally, the higher vehicular turning movement volumes on the east leg of Indiana would present more conflicts to school children crossing 5th Street.

To summarize the school-crossing issue: The proposed moving of the existing signal at Meade/5th Street must also address the school-crossing issue. Three options include:

- 1) Moving school-crossing to Indiana with traffic signal.
- 2) Add new signal at Indiana and keep existing school-crossing signal at Meade.
- 3) Install new signal at Indiana and install new school-crossing signal at Flormann.

As mentioned above, Indiana is the least favorable of the three locations for a school-crossing. Option 2) would result in spacing between signals which would be too close and would degrade progression along 5th Street. Option 3) is the most desirable school-crossing alternative if a signal is going to be installed at Indiana. However, option 3) also has a negative impact on 5th Street progression.

TRAFFIC SIGNAL WARRANTS: RE-EVALUATION

Traffic signal warrants are minimum threshold conditions established by the Manual of Uniform Traffic Control Devices (MUTCD), a Federal standard. Any proposed location for a traffic signal must be evaluated individually based on these warrants. The MUTCD indicates that a traffic study must be completed, and at least one warrant should be met before the installation of a traffic signal is considered.

I completed another warrant analysis for the Indiana/5th Street intersection, and the results indicate that no traffic signal warrants are met at the Indiana/5th Street intersection based on April, 2001 traffic counts. The count data indicates that the traffic volume on Indiana Street has decreased by 7% since the original study in September of last year. The counts were higher in September most likely because Cathedral Drive construction caused traffic to detour onto various parallel routes, one of which was Indiana Street.

It should be noted that both studies indicated that the west leg of the Flormann/5th intersection has 18% more daily traffic than the east leg of the Indiana/5th intersection. In fact, warrant analysis indicates that at least one traffic signal warrant is met at the Flormann/5th intersection. The Flormann/5th intersection ranks higher than the Indiana/5th intersection in the Rapid City unsignalized intersection evaluation program (which compares intersection accident rates, traffic volumes, and warrants met).

Please keep in mind that there are situations where warrants are met, but for progression or safety reasons, a signal installation is undesirable. A traffic signal at Indiana could cause queues to the south resulting in stopped vehicles at the bottom of the hill where northbound vehicles may have difficulty stopping in time. Another issue to be addressed with any future signal along this section of 5th Street, is the impact of the proposed signal on progression. Signal spacing and traveling speed determine the quality of progression and thus the efficiency with which traffic flows through this corridor. We have recently discussed the 5th Street corridor with the Department of Transportation. They expressed concern regarding how traffic signal placement on 5th Street may influence the future location of traffic signals on Mount Rushmore Blvd.

ALTERNATIVES TO TRAFFIC SIGNALS

The MUTCD states "Since vehicular delay and the frequency of some types of crashes are sometimes greater under traffic signal control than under STOP sign control, consideration should be given to providing alternatives to traffic control signals even if one or more of the signal warrants has been satisfied". One alternative recommended in the MUTCD is to widen the minor street approaches to accommodate two inbound lanes. Providing an additional lane on the minor street can reduce delay by separating the left turns from the right turns.

SUMMARY

- 1) Traffic volumes have decreased on Indiana since the previous study.
- 2) No traffic signal warrants are met at the Indiana/5th Street intersection.
- 3) At least one traffic signal warrant is met at the Flormann/5th Street intersection.
- 4) Any proposal to install an unwarranted traffic signal at Indiana must also address the school-crossing issue because the Meade Street signal was installed as a school-crossing signal.

RECOMMENDATIONS

- 1) A traffic signal should not be installed at Indiana Street at this time.
- 2) The traffic signal at Meade must not be removed until an alternative school crossing is agreed upon and installed.
- 3) Meade Street is currently the preferred location for a school-crossing traffic signal for the following reasons:
 - a) It is centrally located to the entrances to South Park Elementary School.
 - b) Meade has relatively less vehicular traffic, and thus less potential conflicts between vehicles and school children.
 - c) Meade Street is half way between Saint Patrick Street and Cathedral Drive. This location provides better signal spacing and thus allows better progression along 5th Street.
- 4) If the signal at Meade is removed by Council action, a school-crossing signal should be installed at Flormann.
- 5) Before installing a traffic signal at Flormann or Indiana, the following intersection improvement should be completed:
 - a) Install pavement markings to obtain 3 lanes on the west Flormann and east Indiana approaches. This can be done by removing on street parking for approximately 150 feet.
 - b) If on-street parking is retained, the streets would have to be widened to obtain the recommended 3 lane section.

Respectfully,

Douglas Adelman

Douglas Adelman
Project Manager, Traffic

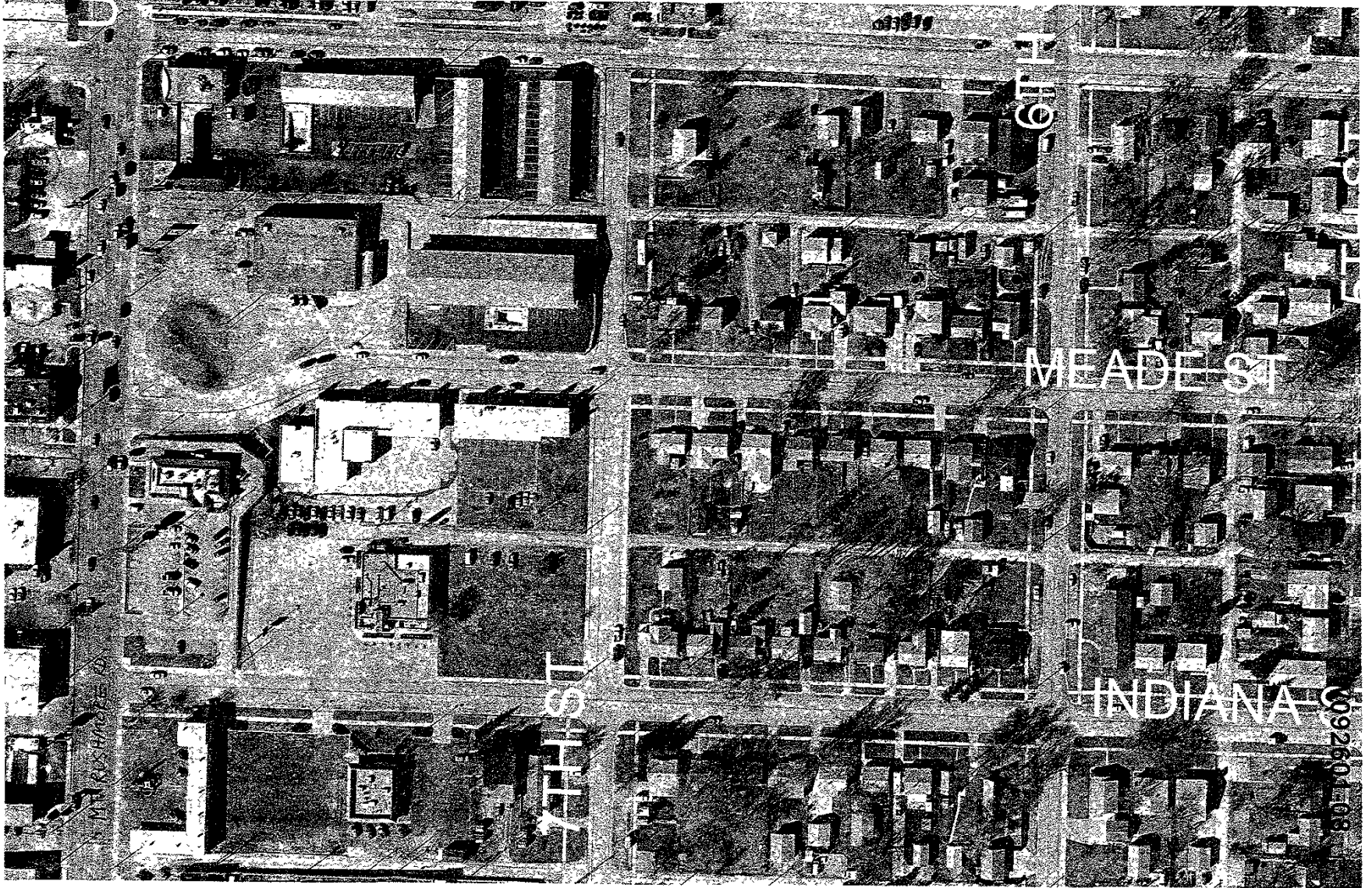
CITY OF RAPID CITY SIGNAL WARRANT PROGRAM

Date: 1/12/2001

LOCATION	ID #	SUM OF RANK	3 YEARS OF ACCID.		ACCIDENT RATE		DAILY TRAFFIC		WARRANTS MET		PEDESTRIAN ACTIVITY	SCHOOL ZONE	EXISTING CONTROL
			DATA	RANK	RANK	RANK	RANK	RANK					
1) E St Patrick St/ Elk Vale Rd		25	20	1	0.92	3	19800	14	1,2,5,6,7,8,9,11	1	None	No	Stop
2) Valley Dr/ E Hwy 44		31	26	2	1.34	1	17700	18	2,6,9	8	Little	No	Stop
3) Haines Av/ Knollwood Dr	133	39	25	3	1.11	2	20490	13	None	17	Little	No	Stop
4) Cambell St (SD79)/ Catron Bl		45	14	4	0.89	5	14438	23	2,7,8,9,11	3	None	No	Stop
5) Cambell St/ Centre St		46	14	4	0.47	11	27000	4	2,6,9,11	5	Little	No	Stop
6) W Chicago St/ St Onge St		53	13	7	0.72	8	16480	19	1,2,8,9,11	3	Little	No	Stop
7) W Chicago St/ 44th St		56	14	4	0.78	7	16459	20	7,9	11	Some	No	Stop
8) Elm Av/ E St Patrick St		63	10	8	0.42	14	21700	11	1,2,6,7,8,9,11	2	Some	No	Stop (4way)
9) W Main/St. Onge	695	64	10	8	0.35	15	25729	6	2,6,9,11	5		No	Stop
10) Haines Av/ Mall Dr		72	9	10	0.79	6	10400	27	None	17	Little	No	Stop
11) E Minnesota St/ Cambell St (SD 79)		75	8	13	0.31	16	23587	9	2,7,9,11	5	None	No	Stop
12) Sedivy Ln/ E Hwy 44	1005	76	9	10	0.42	13	19370	16	9,11	11	Little	No	Stop
13) Elm/Indiana	1402	79	6	18	0.90	4	6064	35	4	14	School Xing	Yes	Stop
14) 5th St/ Quincy St		80	9	10	0.31	16	26667	5		17	Some	No	Stop
15) Mt Rushmore Rd/ Flormann St	1300	85	8	13	0.29	18	25498	7	5,7	11	High (summer)	No	Stop
16) St Joseph St/ 4th St	832	87	8	13	0.45	12	16090	21		17	Moderate	No	Stop
17) N Maple Av/ Disk Dr	105	89	7	17	0.64	9	9950	28	None	17	Some	No	R/Y Flasher
18) 5th St/ St Cloud St	1031	95	8	13	0.25	21	29000	2	None	17	Some	No	Stop
19) Elm Av/ E Minnesota St		105	3	21	0.56	10	4862	37		17	Some	No	Stop
20) E St Patrick St/ Sedivy Ln		106	5	19	0.21	23	21756	10	2,9,11	8	Little	No	Stop
21) N Maple Av/ Anamosa St	252	110	4	20	0.27	19	13634	25	5,7,9	8	School Xing	Yes	R/R Flasher
24) 5th St/ Flormann St		133	3	21	0.15	27	18269	17	9	14	Some	Yes	Stop
22) St Joseph St/ 3rd St		134	3	21	0.17	25	16090	21		17	Moderate	No	Stop
23) Cathedral Dr/ Tower Rd		134	3	21	0.19	24	14193	24		17	Little	No	Stop
25) N Lacrosse St/ Rapp St/ Farnwood St		137	3	21	0.14	28	19546	15		17	Some	No	Stop
26) North St/ W Bl (N)		138	2	27	0.26	20	7122	34		17	Some	Yes	Stop
27) Indiana/5th		140	3	21	0.13	30	21555	12	None	17	Some	Yes	Stop
28) 5th St/ Texas St		143	2	27	0.24	22	7710	33		17	Little	No	Stop
29) Kansas City St/ West Bl		154	2	27	0.14	28	12635	26		17	Moderate	No	Stop (4way)
30) N Lacrosse St/ Mall Dr		161	1	30	0.16	26	5629	36		17	Some	No	Stop
31) Soo San Dr/ Range Rd		168	1	30	0.11	31	8282	31	4	14	School Xing	Yes	Stop
32) W Main St/ 44th St		172	1	30	0.10	32	8844	29		17	Some	No	Stop (4way)
33) E. St Patrick/E Hwy 44	1220						28971	3					
34) Jackson Bl/ W Omaha St		#VALUE!	FI		ND		35023	1		17	Little	No	
35) Sheridan Lake Rd/ W Omaha St													
36) E Oakland St/ Cambell St (SD 79)		#VALUE!	FI		ND		24642	8		17	None	No	
37) Heartland Express/ E Anamosa St		#VALUE!	FI		ND		8516	30		17	None	No	
38) Heartland Express/ Concourse Dr		#VALUE!	FI		ND		8167	32		17	None	No	
39) 5th St/ Catron Bl		#VALUE!	FI		ND		3356	38		17	None	No	
40) Elm Av/ Catron Bl		#VALUE!	FI		ND		3356	38		17	None	No	
41) 5th St/ Minnesota St		#VALUE!	ND		ND		2849	40		17	Little	No	
42) Heartland Express/ E Fairmont St		#VALUE!	FI		ND		ND			17	None	No	
43) Heartland Express/ E Minnesota St		#VALUE!	FI		ND		ND			17	None	No	
44) Kansas City St/ 9th St		#VALUE!	ND		ND		ND			17	Moderate	No	

PW092601-08

INDIANA STREET CORRIDOR-WEST



MEADE ST

INDIANA ST

100 0 100 200 Feet

09250108

INDIANA STREET CORRIDOR-EAST



100 0 100 200 Feet