

Spot Safety Project Evaluation

Project Log # 200704318

Spot Safety Project # 04-98-210

**Spot Safety Project Evaluation of the Left Turn Lane Installation
At the Georgia Pacific Company main gate entrance on SR 2010
Wayne County, Town of Dudley**

Documents Prepared By:

Safety Evaluation Group
Traffic Safety Systems Management Section
Traffic Engineering and Safety Systems Branch
North Carolina Department of Transportation

Principal Investigator

Jason B. Schronce

Date

Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 04-98-210 located at the entrance to the Georgia Pacific Plywood Manufacturing Plant on SR 2010 (Brewington Rd) in Wayne County.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was the installation of a 300 foot left turn lane at the Georgia Pacific manufacturing plant entrance. SR 2010 is a two-lane facility at the subject location with no turn lanes and is posted with a 55 mph speed limit. The subject location is a three-leg intersection, which was controlled by a stop sign from the GPC gated entrance. The Georgia Pacific facility has approximately 450 employees that access SR 2010 through three shift changes. Also, an additional 70 tractor-trailer trucks use this intersection per day.

The original statement of problem was the lack of a left turn lane into this major facility and is deemed necessary to improve safety for other traveling motorists along this roadway. SR 2010 also carries a significant amount of school traffic to both Southern Wayne High School and other primary schools located in the vicinity.

The initial crash analysis was completed from November 1, 1991 to October 30, 1997 with thirteen (13) reported crashes. The final completion date for the improvement at the subject intersection was on March 1, 2002 with a total cost of \$75,000.00.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was the months of February and March of 2002. The before period consisted of reported crashes from September 1, 1996 through January 31, 2002 (5 years and 5 months); and the after period consisted of reported crashes from April 1, 2002 through August 31, 2007 (5 years and 5 months). The ending date for this analysis was determined by the date of available crash data at the time of analysis.

The treatment data consisted of all crashes on SR 2010 from MP 0.528 to 1.171. This is the portion of SR 2010 (Brewington Rd) that borders and approaches the Georgia Pacific Property. *Please see attached location map and photos for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that eastbound SR 2010 rear-end crashes approaching the entrance of the GPC Plywood Plant were considered the target crashes for the applied countermeasure.

Treatment Information			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	4	6	50.00 %
Total Severity Index	4.65	3.43	- 26.24 %
Target Crashes	0	0	N/A
Target Crash Severity Index	0.00	0.00	N/A
Volume	2000	2400	20.00 %
<u>Injury Crash Summary - Total</u>			
Fatal injury Crashes	0	0	N/A
Class A injury Crashes	0	0	N/A
Class B injury Crashes	1	1	0.00 %
Class C Injury Crashes	1	2	100.00 %
Total Injury Crashes	2	3	50.00 %

The naive before and after analysis at the treatment location resulted in a 50 percent increase in Total Crashes, complete absence of selected Target Crashes, and a 26 percent decrease in the Total Severity Index. The before period ADT year was 1999 and the after period ADT year was 2004.

Results and Discussion

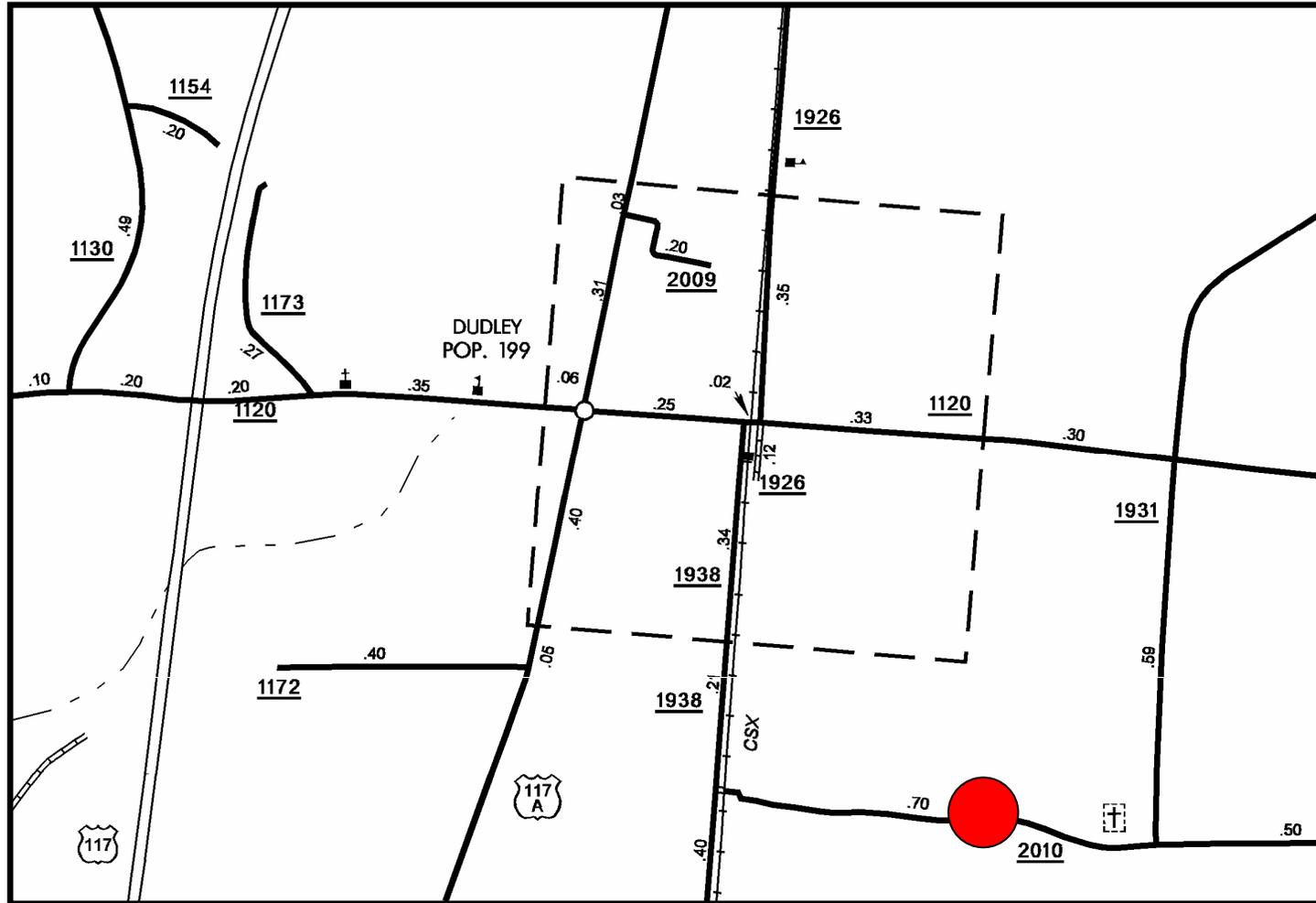
The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 50 percent increase in Total Crashes but a 26 percent reduction in the Total Severity Index.

Referencing the *Collision Diagrams*, for the period of time within our analysis, zero crashes occurred at the main entrance intersection during the before period. In the after period, two crashes occurred including one truck rollover for making the sharp right turn and a left turn – same roadway crash as the vehicle attempted to enter the facility. Our analysis did not show any eastbound rear-end collisions labeled as Target Crashes for this study.

Please see the attached *Treatment Site Photos*. Photos are provided for both approaches to the treatment intersection.

As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.

Location Map
Wayne County, Town of Dudley
Evaluation of Spot Safety Project # 04-98-210



Treatment Location: SR 2010 (Brewington Road) at Georgia Pacific Corporation Main Entrance

SS# 04-98-210 Aerial Map



TREATMENT SITE PHOTOS TAKEN 1/16/2008



Georgia Pacific Plywood Facility



Traveling East on SR 2010 (Brewington Road)



Traveling East on SR 2010 at GP Entrance



Traveling West on SR 2010 (Brewington Rd)



Traveling West on SR 2010 at Entrance

BENEFIT-COST ANALYSIS WORKSHEET

LOCATION: Main at Elm
 COUNTY: Jackson
 FILE NO.: SS 01-01-200

BY: JBS
 DATE: 2/22/2007
 NOTES: Total Crashes

DETAILED COST: TYPE IMPROVEMENT - Shoulder Guardrail

ITEMS	TOTAL	SERVICE	CRF	ANNUAL COST
Construction	\$0	0	0.000	\$0
	\$0	0	0.000	\$0
Right-of-Way	\$0	0	0.000	\$0

TOTALS \$0 #DIV/0! #DIV/0! \$0

ESTIMATED INCREASE IN ANNUAL MAINT. COST = \$0
 ESTIMATED INCREASE IN ANNUAL UTILITY COST = \$0
 TOTAL ANNUAL COST= \$0
 TOTAL COST OF PROJECT= \$0

COMPREHENSIVE COST REDUCTION:

ESTIMATED NUMBER OF ANNUAL ACCIDENT DECREASES

TIME PERIOD	YEARS	ESTIMATED NUMBER OF ANNUAL ACCIDENT DECREASES				PDO		ANNUAL COSTS
		K & A CRASHES	K & A CRASHES PER YR	B & C CRASHES	B & C CRASHES PER YR	CRASHES	CRASHES PER YR	
BEFORE	0.00	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!
AFTER	0.00	0	#DIV/0!	0	#DIV/0!	0	#DIV/0!	#DIV/0!

Annual Benefits from Crash Cost Savings #DIV/0!

NET AVG. ANNUAL BENEFITS = AVG. ANNUAL BENEFITS - TOTAL ANNUAL COST = #DIV/0!

BENEFIT-COST RATIO = AVG ANNUAL BENEFITS/TOTAL ANNUAL COST = #DIV/0!

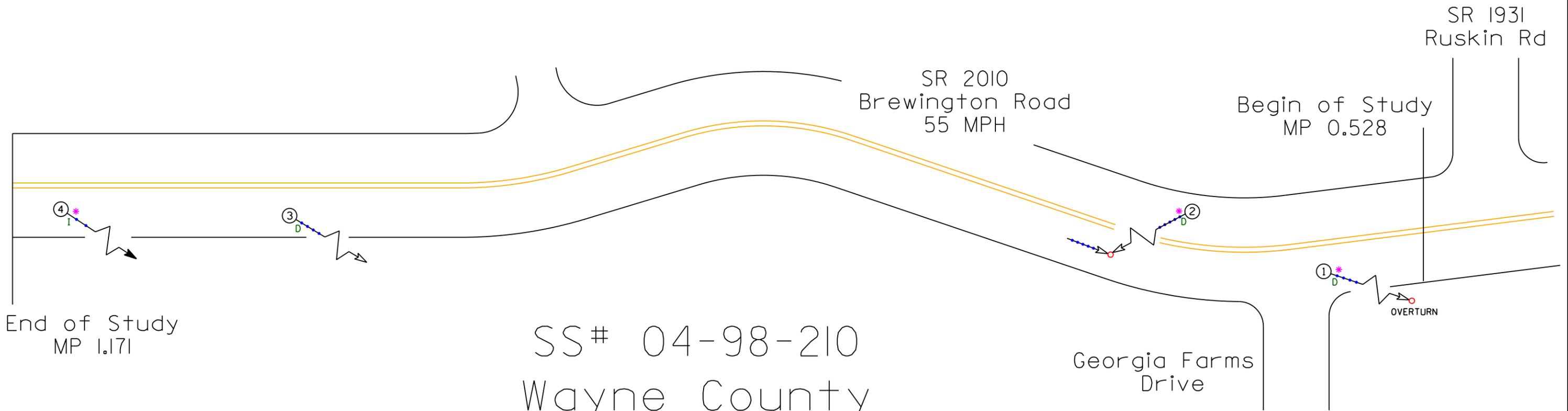
TOTAL COST OF PROJECT - \$0 COMPREHENSIVE B/C RATIO - #DIV/0!

Georgia Pacific Corporation
(Plywood Plant)



LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS	P	PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19	T	TRAIN
	PARKED VEHICLE		BACKING		20 MPH TO 29	*	DRIVER AT FAULT
	PARKING VEHICLE		SIDESWIPE		30 MPH TO 39	D	DRY
	FIXED OBJECT		OUT OF CONTROL		40 MPH TO 49	W	WET
	HEAD ON		INJURY		50 MPH TO 59	I	ICY OR SNOWY
	REAR END		FATALITY		60 MPH TO 69	0	OILY
	RAN OFF ROAD		70 AND UP		SPEED UNKNOWN		



SS# 04-98-210
Wayne County
Town of Dudley
Before Period
9/1/96 - 1/31/02

Target Crashes

TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT

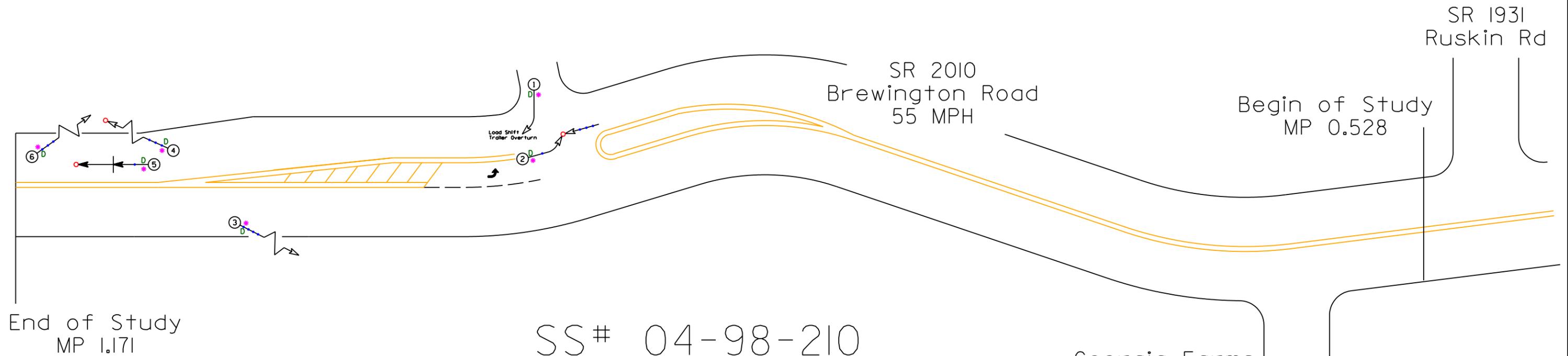
	COLLISION DIAGRAM	
	DIVISION: 4	AREA:
	STUDY PERIOD: 9/1/1996 TO 1/31/2002	
	DISTANCE: Y-LINE = 150FT	
ANALYSIS PREPARED BY: JBS		
ANALYSIS CHECKED BY: BR		
DIAGRAM PREPARED BY: JBS		
DIAGRAM REVIEWED BY: ST		
SCALE: NOT TO SCALE		
DATE: 1-30-2008		
LOG NUMBER: SS# 04-98-210		

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH

Georgia Pacific Corporation
(Plywood Plant)



LEGEND			
	MOVING VEHICLE		ANGLE
	PEDESTRIAN		TURNING
	PARKED VEHICLE		BACKING
	PARKING VEHICLE		SIDESWIPE
	FIXED OBJECT		OUT OF CONTROL
	HEAD ON		INJURY
	REAR END		FATALITY
	RAN OFF ROAD		9 MPH OR LESS
			10 MPH TO 19
			20 MPH TO 29
			30 MPH TO 39
			40 MPH TO 49
			50 MPH TO 59
			60 MPH TO 69
			70 AND UP
			SPEED UNKNOWN
			PEDESTRIAN
			TRAIN
			DRIVER AT FAULT
			DRY
			WET
			ICY OR SNOWY
			OILY



SS# 04-98-210
Wayne County
Town of Dudley
After Period
4/1/02 - 8/31/07

Target Crashes

TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT	
COLLISION DIAGRAM	
DIVISION: 4	AREA: 4
STUDY PERIOD: 4/1/2002 - 8/31/2007	
DISTANCE: Y-LINE = 150FT	
ANALYSIS PREPARED BY: JBS	
ANALYSIS CHECKED BY: BR	
DIAGRAM PREPARED BY: JBS	
DIAGRAM REVIEWED BY: ST	
SCALE: NOT TO SCALE	
DATE: 2-28-2008	
LOG NUMBER: SS# 04-98-210	

N.C. DEPARTMENT of TRANSPORTATION
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TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH