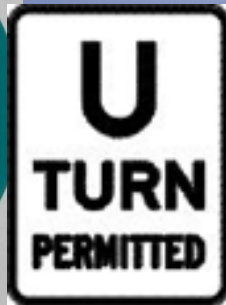


# 2011 STATEWIDE TRAFFIC ENGINEERS MEETING

*JUNE 16, 2011*

*ROBERT ISEMANN, P.E.  
DESIGN DEVELOPMENT ENGINEER*

# U-TURNS/ BULB OUTS



# OVERVIEW

- WHAT IS A BULB OUT?
- DESIGN CRITERIA FOR CREATING A DETAIL
- BULB OUT EXAMPLES
- LA 42 TEST CASE

# WHAT IS A BULB OUT?



*The 'bulb out' allows U-turns for larger vehicles such as buses and semi-trucks.*

# NCHRP 505

## Review of Truck Characteristics as Factors in Roadway Design

- WB-50 Truck makes up about 8% of truck fleet on the highway system
- Trucks larger than a WB-62 represent more than 65% of truck fleet
- Report recommends removing the WB-50 from future editions of AASHTO's Green Book





# DESIGN VEHICLE TURNING RADII

DESIGN VEHICLE TYPE	PASSENGER CAR	SINGLE UNIT TRUCK	WB-67
MINIMUM DESIGN TURNING RADIUS (ft)	24'	42'	45'
CENTERLINE TURNING RADIUS (ft)	21'	38'	41'
MINIMUM INSIDE RADIUS (ft)	14.4'	28.3'	4.4'

# WB-67 TURNING PATH

AASHTO—Geometric Design of Highways and Streets

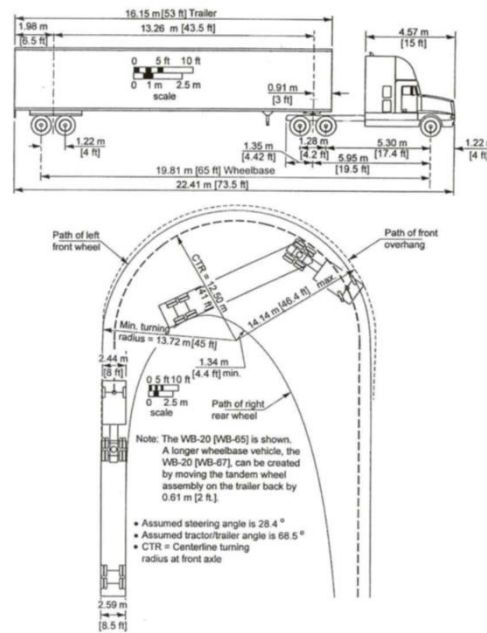
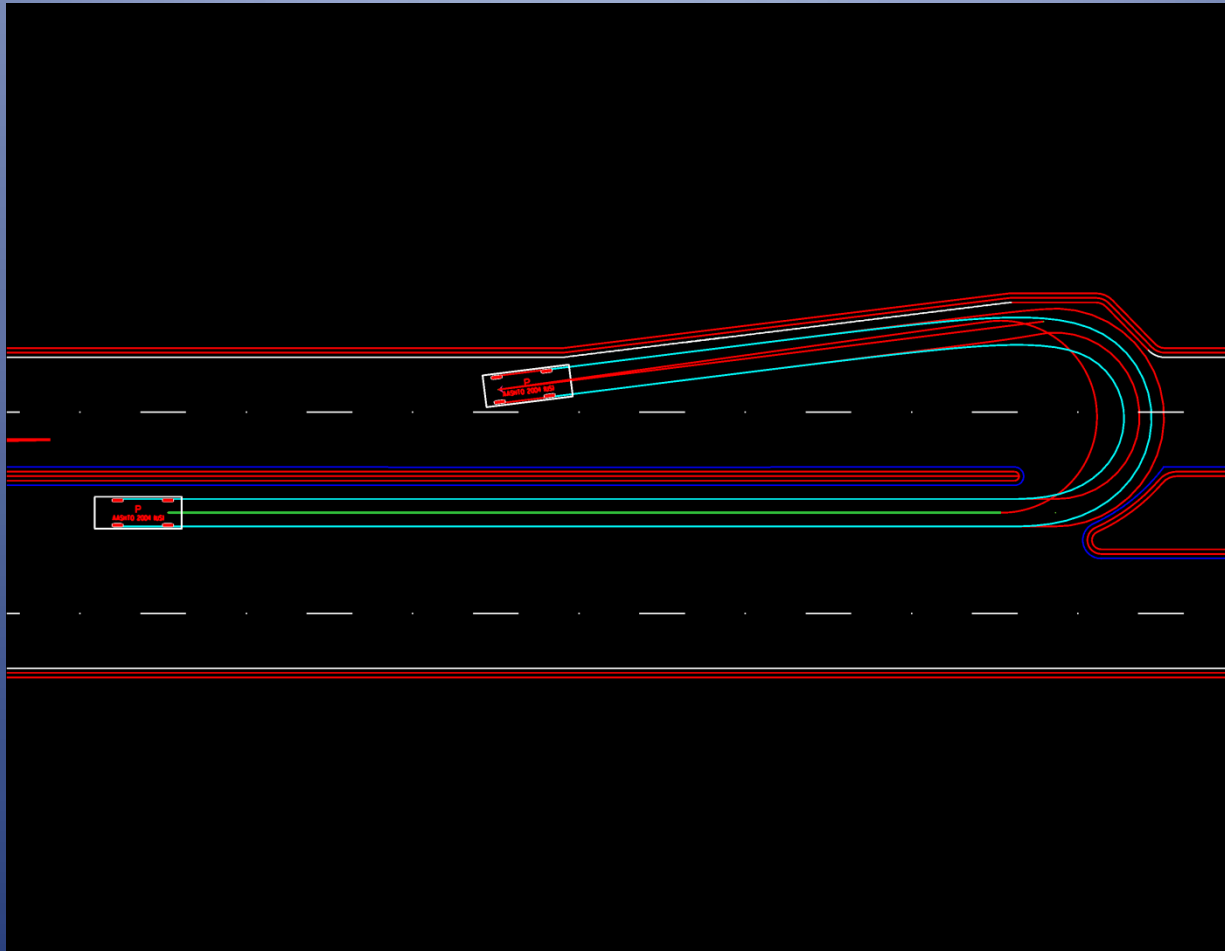


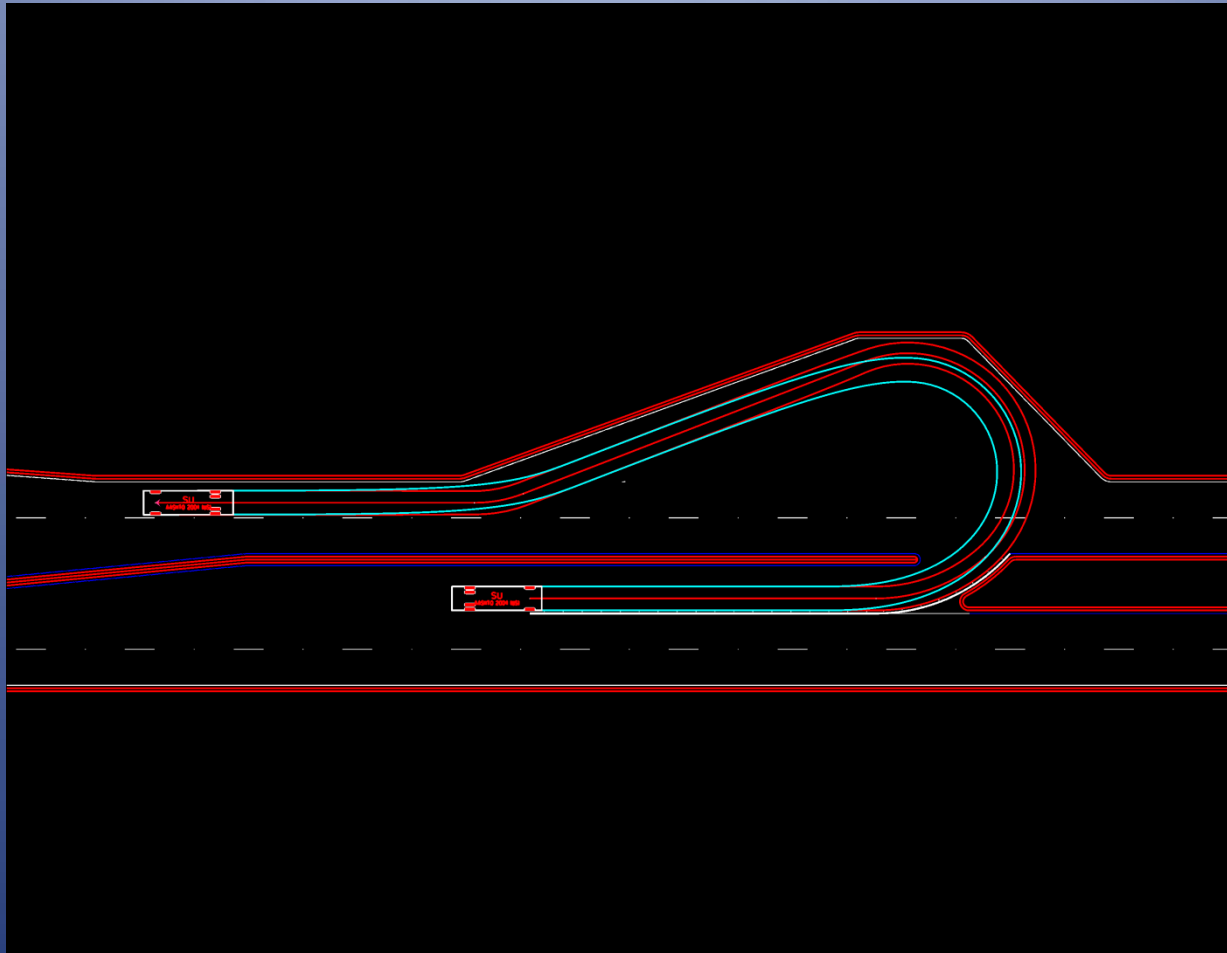
Exhibit 2-16. Minimum Turning Path for Interstate Semitrailer (WB-20 [WB-65 and WB-67]) Design Vehicle



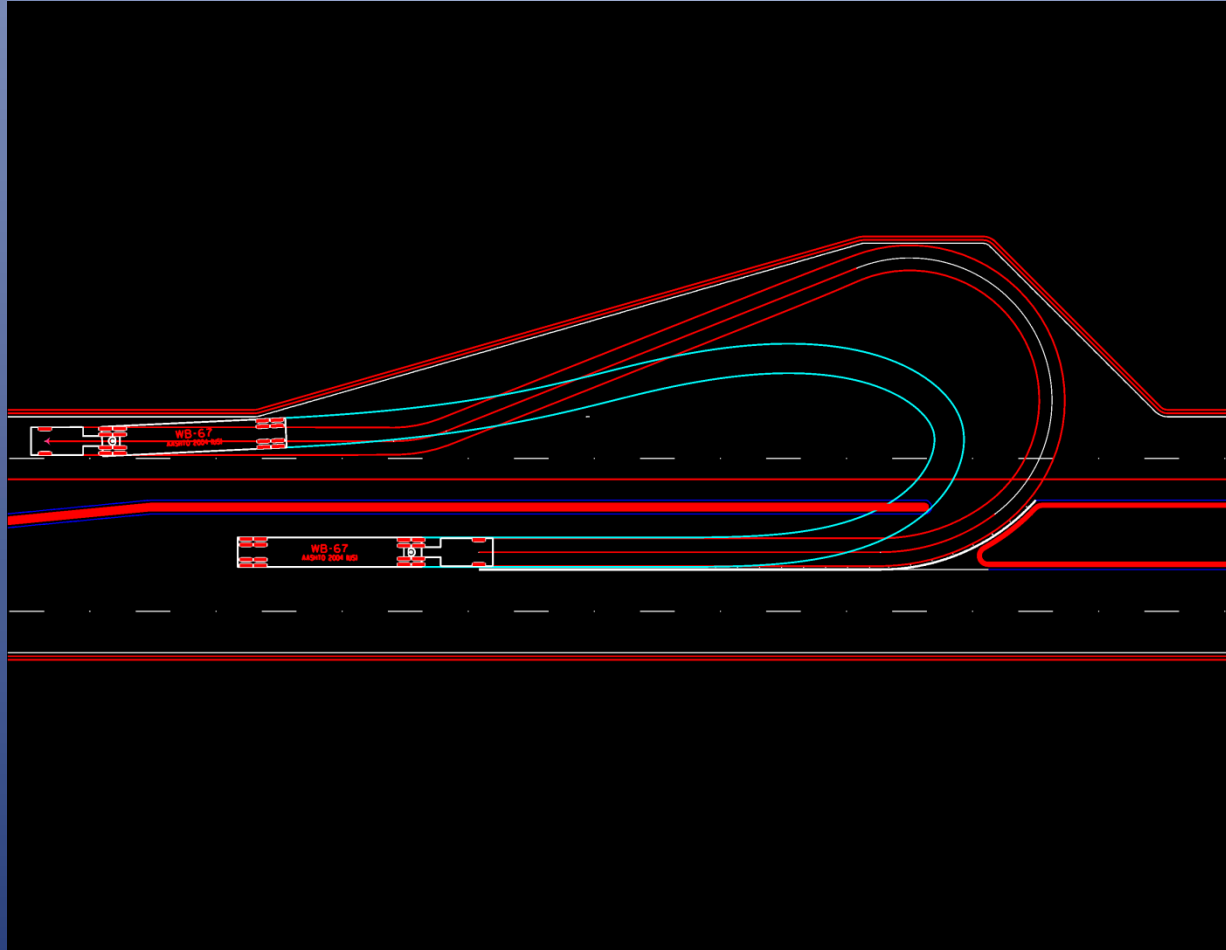
# AUTO TURN PASSENGER VEHICLE



# AUTO TURN SINGLE UNIT



# AUTO TURN WB-67 TRUCK





# BULB OUT EXAMPLE



VETERANS BOULVARD

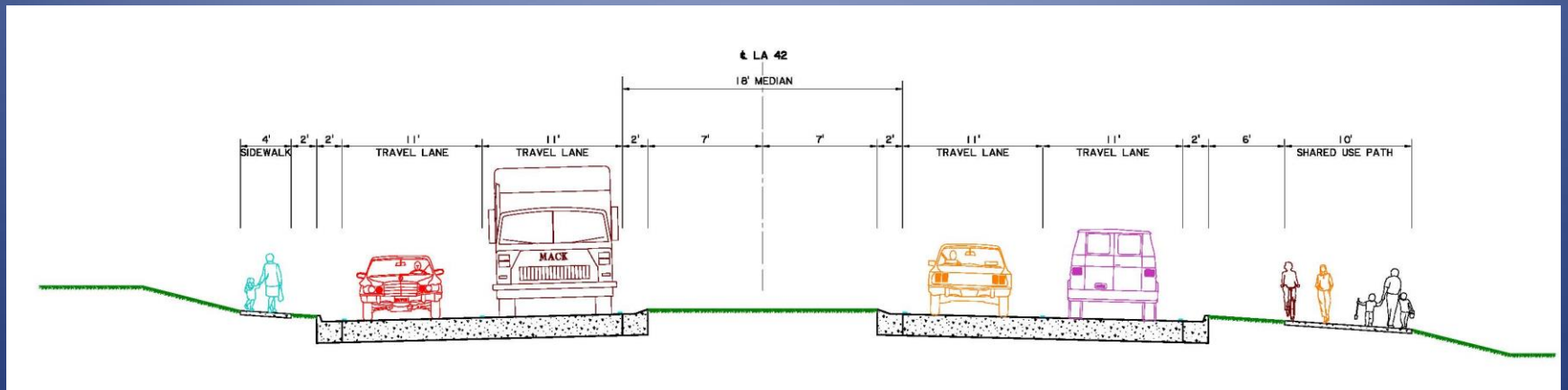
# BULB OUT EXAMPLE



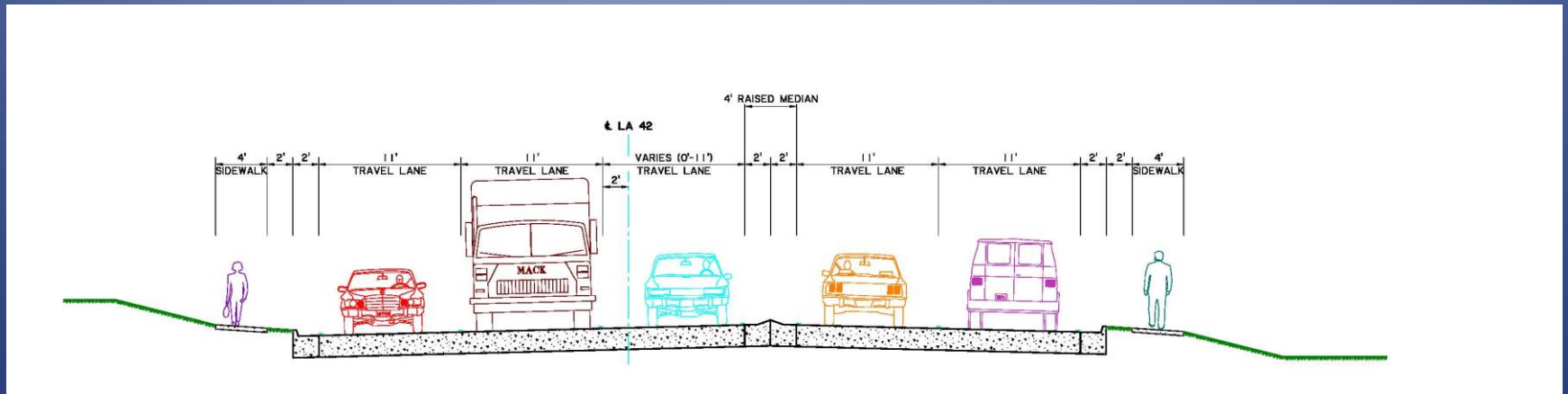
LAPALCO BOULAVARD



# LA 42 TYPICAL SECTION 4-LANE



# LA 42 TYPICAL SECTION 4-LANE W/ TURN LANE



# LA 42 BULB OUT TEST VEHICLE



# LA 42 BULB OUT TEST VEHICLE





# BULB OUT FIELD TEST



# BULB OUT FIELD TEST





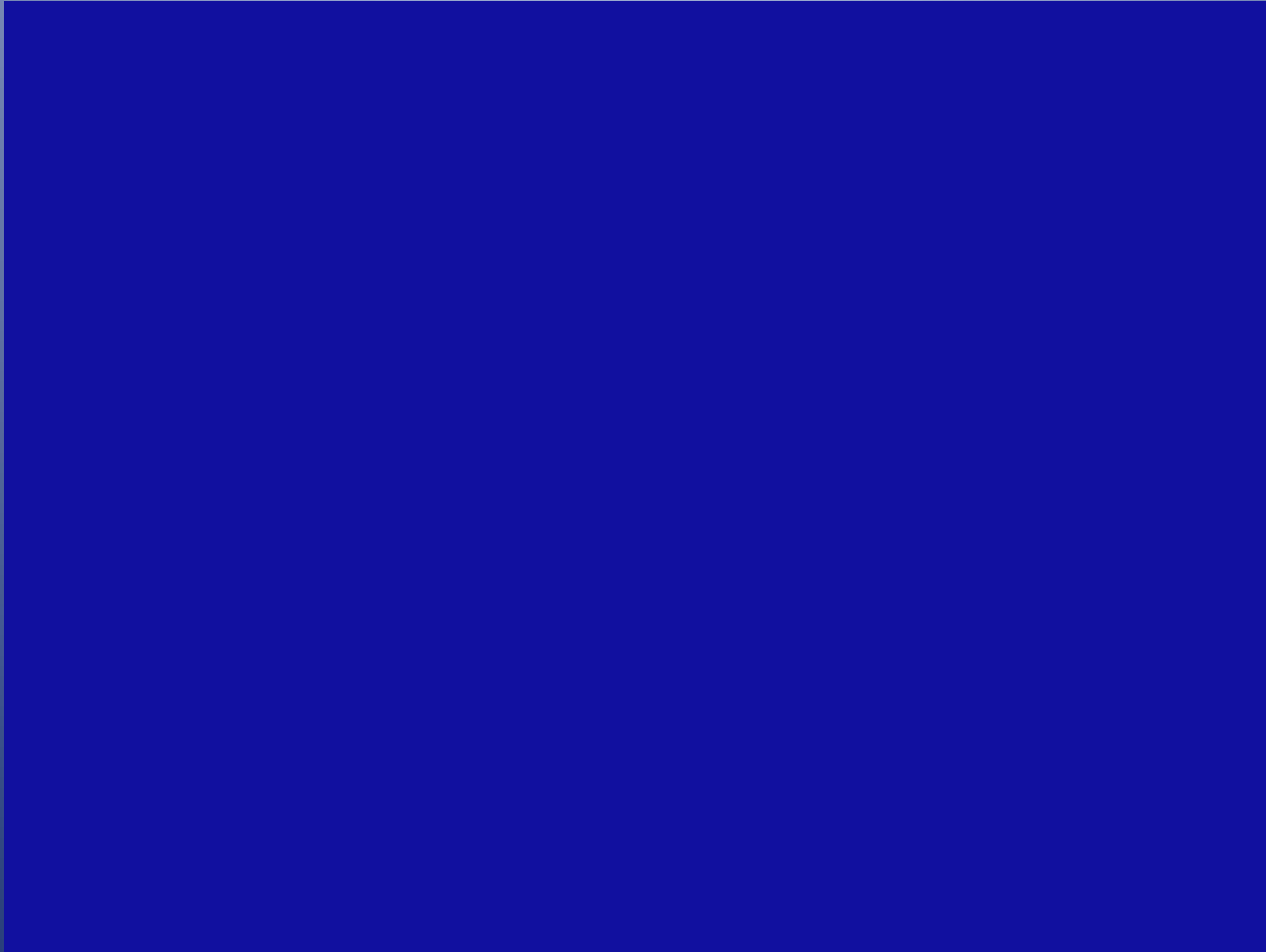
# BULB OUT FIELD TEST



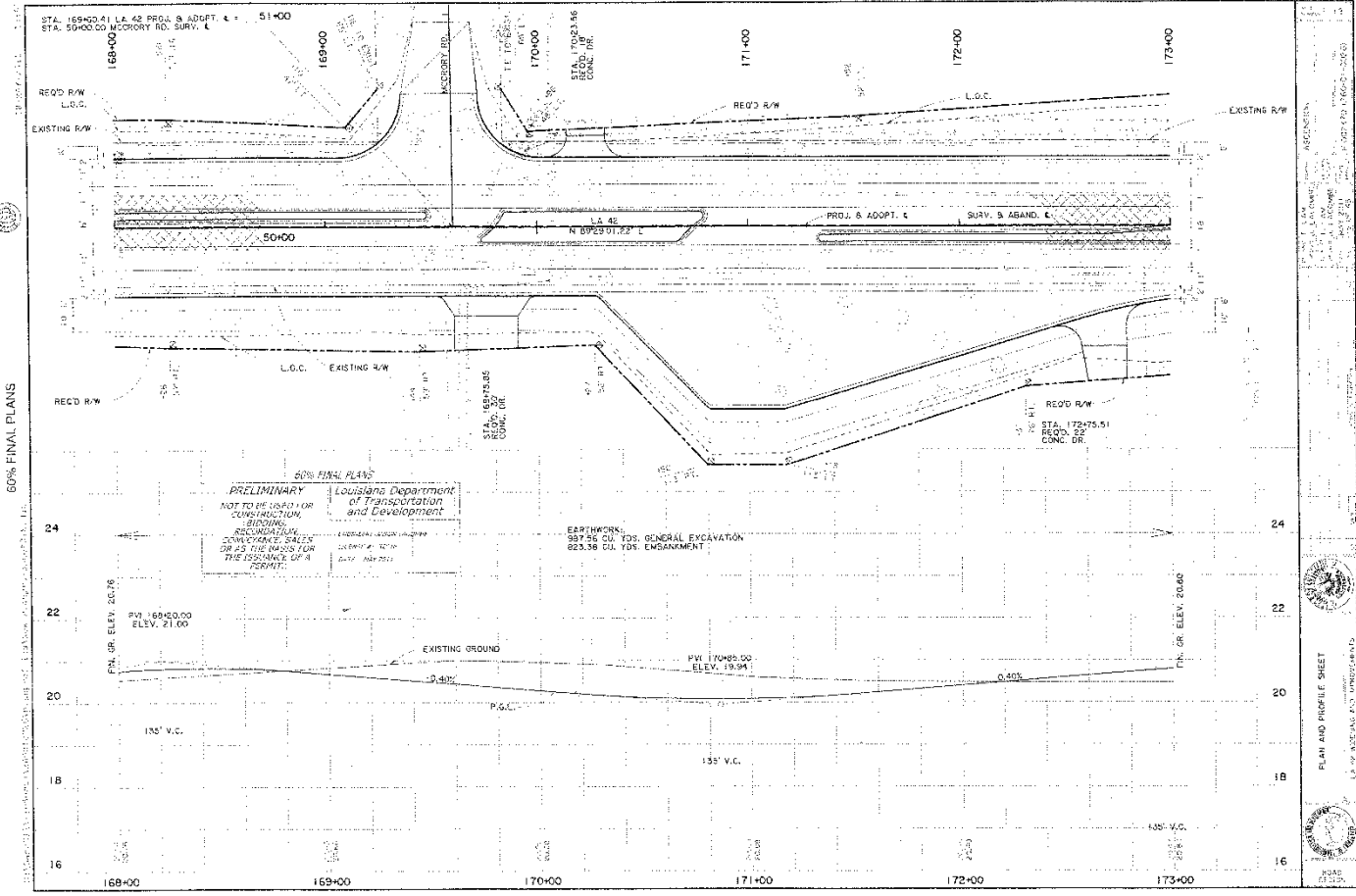
# BULB OUT FIELD TEST



# BULB OUT TEST VIDEO



# LA 42 BULB OUT DESIGN



**QUESTIONS**

**???**