



**National Automated Highway System Consortium
Technical Feasibility Demonstration
Test/Certification Plan**

for the

**Automated Highway System
System Definition Phase
Cooperative Agreement Number:
DTFH61-94-X-00001
Amendment 1**

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1.0 PURPOSE

The purpose of this Demonstration Test/Certification Plan, is to provide an overview of the National Automated Highway System Consortium Technical Feasibility Demonstration Test/Certification process. The Demonstration system validation and certification process described will be implemented to support informal and formal validation and certification during the preliminary and formal certification phases. This Test/Certification plan also identifies and describes the tasks to be accomplished by the Demonstration System Safety/Certification team during the various phases of certification. Test/certification procedures are attached which focus on validating the requirements as represented in the final version of the National Automated Highway System Consortium Technical Feasibility Demonstration Specification. Those procedures do not address the informal engineering development test performed by the Demonstration vehicle/system developers.

2.0 DOCUMENT OVERVIEW

This plan, the Demonstration Test/Certification Plan, contains general information of how the validation/certification program will be conducted, controlled, and reported. This plan contains organization and responsibilities of the Demonstration Safety/Certification Team, a description of requirement validation methodologies to be used in the validation/certification process and the locations, scope and schedule of the preliminary certification ("pre-cert") and formal certification activities.

3.0 APPLICABLE DOCUMENTS

National Automated Highway System Consortium Technical Feasibility Demonstration Specification, dated April 1997.

National Automated Highway System Consortium Technical Feasibility Demonstration Performance and Safety Certification Procedure, dated April 1997.

National Automated Highway System Consortium Technical Feasibility Demonstration Interface Document, dated March 1997.

National Automated Highway System Consortium Technical Feasibility Demonstration Safety Plan, dated March 1997.

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4.0 DEMONSTRATION SAFETY/CERTIFICATION TEAM

Responsible for the day-to-day contact with the Demonstration Team for all Test and Certification issues. This team will be responsible for finalizing and implementing the Demonstration Test/Certification Plan and associated certification procedures. It will finalize the Demonstration requirements and ensure their inclusion in vehicle certification procedures. This group will also develop recommended "pass / fail criteria" for each step in the certification process.

The Demonstration Safety/Certification Team will also serve as part of the Safety Review Team. In that capacity the Demonstration Safety/Certification Team provide test/certification procedures and criteria to the Safety Board for their approval.

Proposed Demonstration Safety/Certification Team Membership:

Name	Organization	Responsibilities
Ron Colgin	NAHSC P.O.	Safety/Certification Team Chair, Vehicle Integration Engineer
Joe Meyer	LMC	Safety/Certification Team Co-Chair, Safety Integration Engineer
Pat McKenzie	LMC	Demonstration Integration Engineer
Phil Coopman	CMU	Software Engineer
Andrew Segal	PATH	Software Engineer
Bill Stevens	NAHSC P.O.	Software Engineer
Bob Battersby	CALTRANS	I-15 Corridor Safety Engineer
TBD	GM	Vehicle Engineer for Platoon, Multi-Platform Free Agent and Maintenance Certification
Damon Delorenzis	Honda	Vehicle Engineer for Control Transition and Alternate Technology Certification
Michael Wolterman	Toyota	Vehicle Engineer for Evolutionary Certification
Michael Leshner	Eaton VORAD	Vehicle Engineer for Truck Certification
Bill Kennedy	LMC	Development Engineer for Truck and Alternate Technology Certification
Wei-Bin Zhang	PATH	Development Engineer Evolutionary and Multi-Platform Free Agent Certification
Todd Jochem	CMU	Development Engineer for Control Transition, Maintenance and Platoon Certification
Tommy Viner	NAHSC P.O.	Alternate Demonstration Integration Engineer
Pat Langley	LMC	Alternate Demonstration Integration Engineer

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5.0 TEST/CERTIFICATION OBJECTIVES

This section describes the phases of testing and certification and requirements validation methods to be performed during the Demonstration Test/Certification process. This includes engineering development test, preliminary certification and formal qualification or certification of Demonstration scenarios, systems and vehicles to be performed during the Demonstration Test/Certification process.

5.1 Informal Tests

The following paragraphs describe the informal tests that will be performed during the demonstration vehicle and system development. Informal tests include all tests conducted to obtain information to aid the design process and are not qualification or certification tests.

5.1.1 Engineering Development Test - During the engineering development activities, the development engineers will test and evaluate Commercial Off-the-Shelf (COTS), or developmental items, hardware and software products. The engineering development tests will consist of running informal functional and performance validations to ensure that the selected items will meet the Demonstration functional, performance and safety requirements called out in the National AHS Consortium Technical Feasibility Demonstration Specification.

5.1.2 Preliminary Certification - After the development of the test/certification procedures, the Demonstration Safety/Certification Team will conduct Preliminary Certification process to determine the status of vehicle and other demonstration system development design and the readiness of the Demonstration vehicle and system to enter formal test/certification activities. The Preliminary Certification process is intended to be conducted at the vehicle/system development site. (Refer to Demonstration Test/Certification Schedule - Attachment A) Certain requirements of the Test/Certification Procedure may be certified during this preliminary certification phase. Wherever possible safety requirements will be verified during these preliminary certifications. This preliminary certification process will also serve to validate the established test/certification procedures for each demonstration vehicle and system.

5.1.3 Dry Runs - Dry Runs will be conducted by each demonstration vehicle and system developer at the I-15 High Occupancy Vehicle (HOV) Express Lanes in San Diego, California. Dry Runs include, continued development, experiments, test and scenario validation for demonstration vehicle and system developer.

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5.2 Formal Test/Certification

The objective of the Formal Test/Certification is to validate the implementation of all functional, performance and safety requirements as specified in the Demonstration Specification, Test/Certification procedures and the prescribed scenario. Formal test/certification will be executed in a structured and controlled test environment, following specific test/certification procedures, administered and witnessed by the Demonstration Safety/Certification Team and test results documented in a test/certification report. Three elements will constitute the formal test structure:

5.2.1 Certification Run - A certification run is the execution of the demonstration scenario using the test/certification procedures to certify demonstration vehicles/systems or re-certify demonstration vehicles/systems after corrective actions have been implemented to a previously tested vehicle/system. The number of runs will vary for each scenario based on need.

5.2.2 Dress Rehearsal - A dress rehearsal is a composite certification run of all demonstration sequence of scenarios after demonstration vehicle/system certification wherein accompanying demonstration logistics support is exercised.

5.2.3 Regression Tests - Regression tests will be conducted after certification and dress rehearsals but prior to the demonstration for the re-certification and re-validation of demonstration vehicles/systems requirements. When changes or corrections are made to the certified / validated demonstration vehicles / systems, the Safety/Certification Team will conduct and witness regression testing.

5.3 Test/Certification Guidelines

5.3.1 Vehicle Certification

All vehicles shall be subject to the provisions of the National Automated Highway System Consortium Technical Feasibility Demonstration Test/Certification and Safety requirements.

As part of the vehicle certification process, a Safety/Certification team shall visit each vehicle developer site to conduct an on-site evaluation of all vehicles prior to delivery of the vehicles to the San Diego I-15 lanes.

All vehicle "On-Lane" certification shall be accomplished prior to the first scheduled Dress Rehearsal in July 1997. Completion of vehicle "On-Lane" certification is a pre-requisite for participation in the first Dress Rehearsal.

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5.3.2 "On-Lane" Test Plan

Each Live Vehicle Demonstration participant shall submit an "On-Lane" Test Plan for proposed testing on the I-15. On-Lane Test Plans shall be submitted not later than two weeks prior to a Vehicle Developer's scheduled on-lane testing.

All vehicles shall be subject to the provisions of the Automated Highway System (AHS) 1997 Demonstration Performance, Safety and Certification Requirements.

5.3.3 "On - Lane" Dry Runs

Vehicles shall participate in dry runs at the I-15 demonstration site for the purposes of validating that vehicles meet functional, performance and safety requirements as specified in the Demonstration Specification ("the Requirements").

5.3.4 Dress Rehearsals

The Vehicle Developer shall participate in all Consortium sponsored "Dress Rehearsals" during the month of July, 1997. Each dress rehearsal shall take place in a period of time not to exceed a week (7 days) in duration.

5.3.5 Exclusion from Demonstration

Vehicles and personnel which do not participate in all scheduled Dress Rehearsals shall be excluded from the live vehicle demonstration.

The Consortium shall exclude from the Demonstration any vehicle or personnel that fails to meet the "Requirements" as specified by the National Automated Highway System Consortium Technical Feasibility Demonstration Specification, and Performance and Safety certification procedures.

5.4 Test/Certification Reporting

After each major event in the certification process, a report will be prepared which summarizes the results. This report will include appropriate comments, discrepancies and recommendations (example: number of requirements verified during a certification event). As the Safety/Certification Team chair, Ron Colgin will present the findings to the Safety Board along with appropriate recommendations. The Safety Board will then make the final decision regarding a scenario's readiness to proceed to the next step in the process (pre-certification to dry runs, certification to dress rehearsals, dress rehearsals to Demonstration participation). Certification status presentations will also be given at Demonstration Team meetings and Program Manager's Council (PMC) meetings as appropriate.

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6.0 PERFORMANCE AND SAFETY CERTIFICATION PROCEDURES

The National Automated Highway System Consortium Technical Feasibility Demonstration Performance and Safety Certification Procedure, dated April 1997 documents the step-by-step instructions to verify vehicle/scenario functional, performance and safety requirements at levels that assure the Demonstration vehicles/scenarios performs repeatedly as certified.

6.1 Requirement Validation Methods

The methods of validation to be used are: Inspection, Analysis, Demonstration, and Test.

Inspection - Certification or validation by visual examination of the item, reviewing descriptive documentation, and comparing the appropriate characteristics with a reference standard to determine conformance to requirements. This includes the mechanical inspection of equipment, validation of accuracy and completeness of documentation.

Analysis - Certification or validation by evaluation or simulation using mathematical simulations representation, charts, graphs, circuit diagrams, or data reduction. This includes analysis of algorithms independent of computer implementation, analytical conclusions drawn from test data, and extension of test produced data to untested conditions.

Demonstration - Certification or validation by operation, movement, or adjustment of the item under a specific condition to perform the designed function. This includes the content of displays, comparison of vehicle/system products with independently derived test cases, and prompt vehicle/system recovery from induced failure conditions.

Test - Certification or validation through systematic exercising of the applicable item under all appropriate conditions with instrumentation and collection, analysis, and evaluation of quantitative data.

6.2 Pass / Fail Criteria

Pass/Fail criteria specify results that must be obtained to determine that a requirement has been satisfied as defined by the applicable test/certification procedure verifying the requirement. Pass/Fail criteria may be binary in nature or employ tolerance and limits. A validation method having a pass/fail criterion verifies a performance and/or design requirement as specified in the Demonstration Specification with no deviation or exceptions or when the results are specified to be within a pre-determined range.

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Attachment A:

NAHSC Technical Feasibility Demonstration Test/Certification Schedule

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A1 Pre-Certification Schedule Overview

Participant	Pre-Certification Date	Pre-Certification Location	Certification Date
Eaton Vorad	5/6	I-15, San Diego	TBD
Honda	4/29	Honda Test Track, Mojave	6/10
Toyota	4/24	Toyota Test Track, Phoenix	5/21
Cal/LMC	5/4	I-15, San Diego	7/12
OSU	5/15	TRC, Marysville	6/21
PATH	6/12	I-15, San Diego	7/2
CMU/Metro	6/?	TRC, Marysville	7/15

A-2 Pre-Certification, Certification, Dry Runs, Dress Rehearsals Schedule Overview

Participant	Date	Location	Event
Toyota	4/24	Toyota Test Track, Phoenix	Pre- Certification
Honda	4/29	Honda Test Track, Mojave	Pre- Certification
Cal/LMC	5/4	I-15, San Diego	Pre- Certification
Eaton Vorad	5/6	Surface Streets, San Diego	Pre- Certification
OSU	5/15	TRC, Marysville	Pre- Certification
Toyota	5/21	I-15, San Diego	Certification
PATH	6/12	I-15, San Diego	Pre- Certification
CMU/Metro	6/?	TRC, Marysville	Pre- Certification
OSU	6/21	I-15, San Diego	Certification
Honda	6/10	I-15, San Diego	Certification
PATH	7/2	I-15, San Diego	Certification
Cal/LMC	7/12	I-15, San Diego	Certification
CMU/Metro	7/15	I-15, San Diego	Certification
Eaton Vorad	7/?	I-15, San Diego	Certification
All Participants	7/17-7/20	I-15, San Diego	Dress Rehearsal
All Participants	7/24-7/27	I-15, San Diego	Dress Rehearsal
All Participants	7/31-8-3	I-15, San Diego	Dress Rehearsal
All Participants	8/7-8/10	I-15, San Diego	Demo

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MAR/APR		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		330	331	401	402	403	404	405	
7:30	1 N								
	1 S								
9:30	2 N	Caltrans	EATON	EATON	EATON	EATON	EATON		
	2 S	Caltrans	EATON	EATON	EATON	EATON	EATON		
11:30	3 N	Caltrans	EATON	EATON	EATON	EATON	EATON		
	3 S	Caltrans	EATON	EATON	EATON	EATON	EATON		
1:30	4 N	Caltrans							
	4 S	Caltrans							
3:30	5 N	Caltrans							
	5 S	Caltrans							
5:30	6 N								
	6 S								
Night	7								

APRIL		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		406	407	408	409	410	411	412	
7:30	1 N								
	1 S								
9:30	2 N		Caltrans	Caltrans	Caltrans	EATON	EATON	PATH	
	2 S		Caltrans	Caltrans	Caltrans	EATON	EATON	PATH	
11:30	3 N		Caltrans	Caltrans	Caltrans	EATON	EATON	PATH	
	3 S		Caltrans	Caltrans	Caltrans	EATON	EATON	PATH	
1:30	4 N							PATH	
	4 S							PATH	
3:30	5 N							PATH	
	5 S							PATH	
5:30	6 N								
	6 S								
Night	7								Lane Survey

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APRIL		SUN	MON	TUE	WED	THU	FRI	SAT	Comments					
		413	414	415	416	417	418	419						
7:30	1 N													
	1 S													
9:30	2 N	PATH	CMU	CMU	CMU	CMU	CMU	CMU						
	2 S	PATH	PATH	PATH	PATH	PATH	PATH	PATH						
11:30	3 N	PATH	CMU	CMU	CMU	CMU	CMU	CMU						
	3 S	PATH	PATH	PATH	PATH	PATH	PATH	PATH						
1:30	4 N	PATH						CMU						
	4 S	PATH						PATH						
3:30	5 N	PATH						CMU						
	5 S	PATH						PATH						
5:30	6 N													
	6 S													
Night	7								Shoulder Work					

APRIL		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		420	421	422	423	424	425	426	
7:30	1 N								
	1 S								
9:30	2 N	CMU	CMU	CMU	CMU	CMU	CMU	PATH	
	2 S	CMU	CMU	PATH	PATH	PATH	PATH	PATH	
11:30	3 N	CMU	CMU	CMU	CMU	CMU	CMU	PATH	
	3 S	CMU	CMU	PATH	PATH	PATH	PATH	PATH	
1:30	4 N	CMU						PATH	
	4 S	CMU						PATH	
3:30	5 N	CMU						PATH	
	5 S	CMU						PATH	
5:30	6 N								
	6 S								
Night	7								

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APR/MAY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		427	428	429	430	501	502	503	
7:30	1 N							CAL/LMC	
	1 S							TOYOTA	
9:30	2 N	PATH	TOYOTA	TOYOTA	TOYOTA	TOYOTA	TOYOTA	CAL/LMC	
	2 S	PATH	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	TOYOTA	
11:30	3 N	PATH	TOYOTA	TOYOTA	TOYOTA	TOYOTA	TOYOTA	CAL/LMC	
	3 S	PATH	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	TOYOTA	
1:30	4 N	PATH						CAL/LMC	
	4 S	PATH						TOYOTA	
3:30	5 N	PATH						CAL/LMC	
	5 S	PATH						TOYOTA	
5:30	6 N							CAL/LMC	
	6 S							TOYOTA	
Night	7								

MAY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		504	505	506	507	508	509	510	
7:30	1 N	CAL/LMC						CAL/LMC	
	1 S	CAL/LMC						CAL/LMC	
9:30	2 N	CAL/LMC	PATH	PATH	PATH	PATH	PATH	CAL/LMC	
	2 S	CAL/LMC	TOYOTA	TOYOTA	TOYOTA	TOYOTA	TOYOTA	PATH	
11:30	3 N	CAL/LMC	PATH	PATH	PATH	PATH	PATH	CAL/LMC	
	3 S	CAL/LMC	TOYOTA	TOYOTA	TOYOTA	TOYOTA	TOYOTA	PATH	
1:30	4 N	CAL/LMC						CAL/LMC	
	4 S	CAL/LMC						PATH	
3:30	5 N	CAL/LMC						CAL/LMC	
	5 S	CAL/LMC						PATH	
5:30	6 N	CAL/LMC						CAL/LMC	
	6 S	CAL/LMC						CAL/LMC	
Night	7								

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MAY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		511	512	513	514	515	516	517	
7:30	1 N	CAL/LMC							
	1 S	CAL/LMC							
9:30	2 N	CAL/LMC	TOYOTA	TOYOTA	TOYOTA	TOYOTA	TOYOTA	HONDA	
	2 S	PATH	PATH	PATH	PATH	PATH	PATH	PATH	
11:30	3 N	CAL/LMC	TOYOTA	TOYOTA	TOYOTA	TOYOTA	TOYOTA	HONDA	
	3 S	PATH	PATH	PATH	PATH	PATH	PATH	PATH	
1:30	4 N	CAL/LMC						HONDA	
	4 S	PATH						PATH	
3:30	5 N	CAL/LMC						HONDA	
	5 S	PATH						PATH	
5:30	6 N	CAL/LMC							
	6 S	CAL/LMC							
Night	7								

MAY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		518	519	520	521	522	523	524	Bold/Italic = Cert
7:30	1 N	HONDA						CAL/LMC	
	1 S	HONDA						CAL/LMC	
9:30	2 N	HONDA	TOYOTA	TOYOTA	<i>TOYOTA</i>	TOYOTA	CAL/LMC	CAL/LMC	
	2 S	HONDA	TOYOTA	TOYOTA	<i>TOYOTA</i>	TOYOTA	CAL/LMC	CAL/LMC	
11:30	3 N	HONDA	TOYOTA	TOYOTA	<i>TOYOTA</i>	TOYOTA	CAL/LMC	CAL/LMC	
	3 S	PATH	TOYOTA	TOYOTA	<i>TOYOTA</i>	TOYOTA	CAL/LMC	CAL/LMC	
1:30	4 N	HONDA						CAL/LMC	
	4 S	PATH						CAL/LMC	
3:30	5 N	HONDA						CAL/LMC	
	5 S	PATH						CAL/LMC	
5:30	6 N	HONDA						CAL/LMC	
	6 S	PATH						CAL/LMC	Magnet
Night	7		Caltrans	Caltrans	Caltrans	Caltrans	Caltrans		Construction

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MAY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		525	526	527	528	529	530	531	
7:30	1 N	CAL/LMC	CAL/LMC						
	1 S	CAL/LMC	CAL/LMC						
9:30	2 N	CAL/LMC	CAL/LMC	HONDA	HONDA	HONDA	HONDA	Caltrans	
	2 S	CAL/LMC	CAL/LMC	PATH	PATH	PATH	PATH	Caltrans	
11:30	3 N	CAL/LMC	CAL/LMC	HONDA	HONDA	HONDA	HONDA	Caltrans	
	3 S	CAL/LMC	CAL/LMC	PATH	PATH	PATH	PATH	Caltrans	
1:30	4 N	CAL/LMC	CAL/LMC					Caltrans	
	4 S	CAL/LMC	CAL/LMC					Caltrans	
3:30	5 N	CAL/LMC	CAL/LMC					Caltrans	
	5 S	CAL/LMC	CAL/LMC					Caltrans	
5:30	6 N	CAL/LMC	CAL/LMC						Striping
	6 S	CAL/LMC	CAL/LMC						3M Tape Installation
Night	7			Caltrans	Caltrans	Caltrans	Caltrans		

JUNE		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		601	602	603	604	605	606	607	
7:30	1	CAL/LMC						CAL/LMC	
	1	PATH						PATH	
9:30	2	HONDA	HONDA	HONDA	HONDA	HONDA	HONDA	HONDA	
	2	Share	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	Share	
11:30	3	CAL/LMC	PATH	PATH	PATH	PATH	PATH	CAL/LMC	
	3	PATH	Share	Share	Share	Share	Share	PATH	
1:30	4	HONDA						HONDA	
	4	Share						Share	
3:30	5	CAL/LMC						CAL/LMC	
	5	PATH						PATH	
5:30	6	HONDA						HONDA	
	6	Share						Share	
Night	7		CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC		9:00-11:00 PM

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JUNE		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		608	609	610	611	612	613	614	
7:30	1 N	HONDA						OSU	
	1 S	PATH						PATH	
9:30	2 N	HONDA	HONDA	HONDA	HONDA	HONDA	OSU	HONDA	
	2 S	PATH	PATH	PATH	PATH	PATH	PATH	Share	
11:30	3 N	HONDA	HONDA	HONDA	HONDA	HONDA	HONDA	OSU	
	3 S	PATH	PATH	PATH	PATH	PATH	Share	PATH	
1:30	4 N	HONDA						HONDA	
	4 S	PATH						Share	
3:30	5 N	HONDA						OSU	
	5 S	PATH						PATH	6/13-6/14
5:30	6 N	HONDA						HONDA	3M Tape Installation
	6 S	PATH						Share	Contingency
Night	7		PATH	PATH	PATH	PATH	PATH		9:00-11:00 PM

JUNE		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		615	616	617	618	619	620	621	Bold/Italic = Cert
7:30	1 N	OSU						OSU	
	1 S	OSU						OSU	
9:30	2 N	OSU	PATH	PATH	PATH	PATH	OSU	OSU	
	2 S	OSU	OSU	OSU	OSU	OSU	OSU	OSU	
11:30	3 N	OSU	PATH	PATH	PATH	PATH	OSU	OSU	
	3 S	OSU	OSU	OSU	OSU	OSU	OSU	OSU	
1:30	4 N	OSU						OSU	
	4 S	OSU						OSU	
3:30	5 N	OSU						PATH	
	5 S	OSU						PATH	
5:30	6 N	OSU						PATH	
	6 S	OSU						PATH	
Night	7		OSU	OSU	OSU	OSU	OSU		9:00-11:00 PM

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JUNE		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		622	623	624	625	626	627	628	
7:30	1 N	PATH						PATH	
	1 S	PATH						PATH	
9:30	2 N	PATH	PATH	PATH	PATH	PATH	PATH	PATH	
	2 S	PATH	PATH	PATH	PATH	PATH	PATH	PATH	
11:30	3 N	PATH	PATH	PATH	PATH	PATH	PATH	PATH	
	3 S	PATH	PATH	PATH	PATH	PATH	PATH	PATH	
1:30	4 N	PATH						PATH	
	4 S	PATH						PATH	
3:30	5 N	PATH						PATH	
	5 S	PATH						PATH	
5:30	6 N	PATH						PATH	
	6 S	PATH						PATH	
Night	7		CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC	CAL/LMC		9:00-11:00 PM

JUN/JUL		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		629	630	701	702	703	704	705	Bold/Italic = Cert
7:30	1 N	PATH							
	1 S	PATH							
9:30	2 N	PATH	PATH	PATH	<i>PATH</i>	PATH			
	2 S	PATH	PATH	PATH	<i>PATH</i>	PATH			
11:30	3 N	PATH	PATH	PATH	<i>PATH</i>	PATH			
	3 S	PATH	PATH	PATH	<i>PATH</i>	PATH			
1:30	4 N	PATH							
	4 S	PATH							
3:30	5 N	PATH							
	5 S	PATH							
5:30	6 N	PATH							7/4-7/6
	6 S	PATH							Lanes Closed
Night	7		PATH	PATH	PATH	PATH	PATH		9:00-11:00 PM

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JULY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		706	707	708	709	710	711	712	
7:30	1 N							CAL/LMC	Bold/Italic = Cert
	1 S							CAL/LMC	
9:30	2 N						CAL/LMC	<i>CAL/LMC</i>	
	2 S						CAL/LMC	<i>CAL/LMC</i>	
11:30	3 N						CAL/LMC	<i>CAL/LMC</i>	
	3 S						CAL/LMC	<i>CAL/LMC</i>	
1:30	4 N							CAL/LMC	
	4 S							CAL/LMC	
3:30	5 N							CAL/LMC	
	5 S							CAL/LMC	
5:30	6 N							CAL/LMC	
	6 S							CAL/LMC	
Night	7								

JULY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		713	714	715	716	717	718	719	Bold/Italic = Cert
7:30	1 N	CMU/MET							
	1 S	CMU/MET							
9:30	2 N	CMU/MET	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
	2 S	CMU/MET	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
11:30	3 N	CMU/MET	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
	3 S	CMU/MET	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
1:30	4 N	CMU/MET						REHEAR	
	4 S	CMU/MET						REHEAR	
3:30	5 N	CMU/MET						REHEAR	
	5 S	CMU/MET						REHEAR	
5:30	6 N	CMU/MET							
	6 S	CMU/MET							
Night	7					REHEAR	REHEAR		Veh Rtn to So. Yard

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JULY		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		720	721	722	723	724	725	726	
7:30	1 N								
	1 S								
9:30	2 N	REHEAR	CMU/MET	CMU/MET		REHEAR	REHEAR	REHEAR	
	2 S	REHEAR	CMU/MET	CMU/MET		REHEAR	REHEAR	REHEAR	
11:30	3 N	REHEAR	CMU/MET	CMU/MET		REHEAR	REHEAR	REHEAR	
	3 S	REHEAR	CMU/MET	CMU/MET		REHEAR	REHEAR	REHEAR	
1:30	4 N	REHEAR						REHEAR	
	4 S	REHEAR						REHEAR	
3:30	5 N	REHEAR						REHEAR	
	5 S	REHEAR						REHEAR	
5:30	6 N								
	6 S								
Night	7					REHEAR	REHEAR		Veh Rtn to So. Yard

JUL/AUG		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		727	728	729	730	731	801	802	
7:30	1 N								
	1 S								
9:30	2 N	REHEAR	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
	2 S	REHEAR	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
11:30	3 N	REHEAR	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
	3 S	REHEAR	CMU/MET	CMU/MET	CMU/MET	REHEAR	REHEAR	REHEAR	
1:30	4 N	REHEAR						REHEAR	
	4 S	REHEAR						REHEAR	
3:30	5 N	REHEAR						REHEAR	
	5 S	REHEAR						REHEAR	
5:30	6 N								
	6 S								
Night	7					REHEAR	REHEAR		Veh Rtn to So. Yard

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AUGUST		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		803	804	805	806	807	808	809	
7:30	1 N								
	1 S								
9:30	2 N	REHEAR				DEMO	DEMO	DEMO	
	2 S	REHEAR				DEMO	DEMO	DEMO	
11:30	3 N	REHEAR				DEMO	DEMO	DEMO	
	3 S	REHEAR				DEMO	DEMO	DEMO	
1:30	4 N	REHEAR						DEMO	
	4 S	REHEAR						DEMO	
3:30	5 N	REHEAR						DEMO	
	5 S	REHEAR						DEMO	
5:30	6 N								
	6 S								
Night	7					DEMO	DEMO		Veh Rtn to So. Yard

AUGUST		SUN	MON	TUE	WED	THU	FRI	SAT	Comments
		810	811	812	813	814	815	816	
7:30	1 N								
	1 S								
9:30	2 N	DEMO							
	2 S	DEMO							
11:30	3 N	DEMO							
	3 S	DEMO							
1:30	4 N	DEMO							
	4 S	DEMO							
3:30	5 N	DEMO							
	5 S	DEMO							
5:30	6 N								
	6 S								
Night	7								

