FINAL REPORT

of

OKLAHOMA

RAILROAD GRADE CROSSING

SAFETY TASK FORCE

May 21, 1998

BOB ANTHONY
Commissioner

DENISE A. BODE
Commissioner

ED APPLE
Commissioner

OKLAHOMA

Corporation Commission

P.O. Box 52000-2000 FAX (405)521-2916

Jerry V. Matheson, Director
(405) 521-4131

OKLAHOMA CITY, OKLAHOMA 73152-2000

Transportation Division

May 21, 1998

To Interested Parties:

In 1997, the Oklahoma State Legislature enacted House Resolution 1026 and Senate Resolution 40 which recommended the Oklahoma Corporation Commission create the Oklahoma Railroad Grade Crossing Safety Task Force.

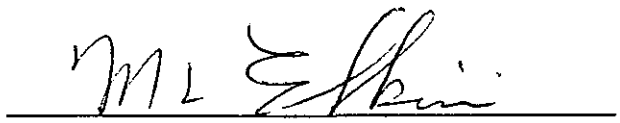
The Oklahoma Railroad Grade Crossing Safety Task Force was charged with reviewing and developing recommendations for improvements in highway rail crossing safety, including guidelines for opening or consolidating crossings.

The Oklahoma Railroad Grade Crossing Safety Task Force was formed in September of 1997 and represents a cross section of public and private officials. Members of the Oklahoma Railroad Grade Crossing Safety Task Force have worked diligently for several months and have addressed those issues identified by the Oklahoma State Legislature.

We, the members of the Oklahoma Railroad Grade Crossing Safety Task Force, would like to present our final report.

Respectfully,

Jerry V. Matheson, Chairman
Oklahoma Railroad Grade Crossing Safety Task Force



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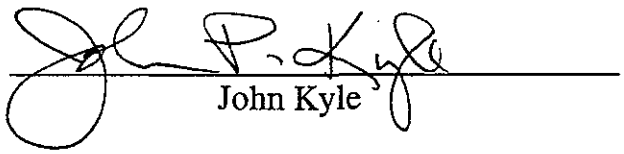
Captain Mike Grimes



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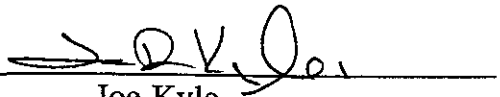

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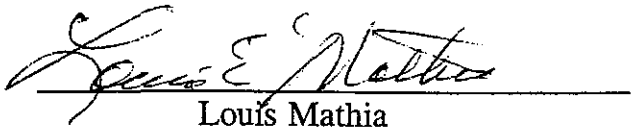

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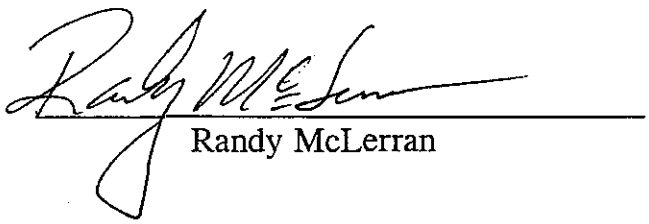
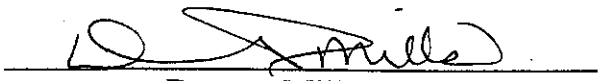


Randy McLerran



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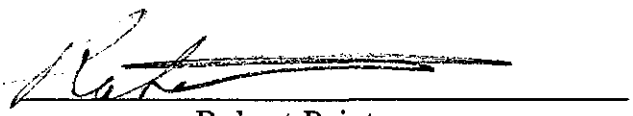

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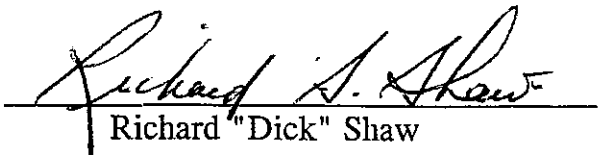
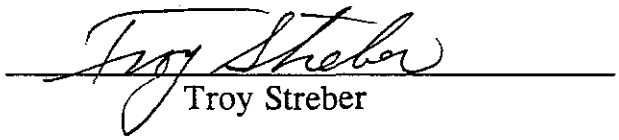


Richard "Dick" Shaw



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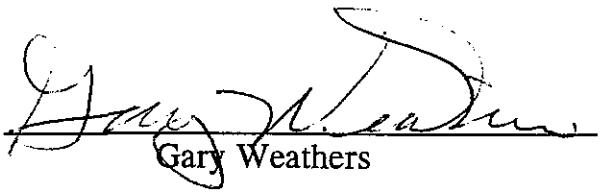

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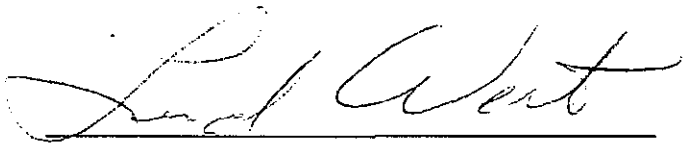

Leonard West

FINAL REPORT

OF

OKLAHOMA
RAILROAD GRADE CROSSING
SAFETY TASK FORCE

The Federal Railroad Administration, United States Department of Transportation, developed a public safety initiative in 1994 designed to consolidate or eliminate 25 percent of this nation's 280,000 public and private grade crossings. The program objective is to identify unnecessary crossings and when feasible close the crossing and redirect traffic to an alternate crossing equipped with safety upgrades. In essence, the grade crossing consolidation initiative addresses the persistent problem of collisions at low volume and redundant grade crossings.

In 1997 the Oklahoma State Legislature enacted House Resolution1026 and Senate Resolution 40 which encouraged the Oklahoma Corporation Commission to create the Oklahoma Railroad Grade Crossing Safety Task Force. The task force was charged to review and develop recommendations for improvement of highway rail grade crossing safety including guidelines for opening and consolidating crossings.

The Oklahoma Corporation Commission appointed the Task Force in September, 1997. Members of the Task Force have worked diligently for several months and have addressed the grade crossing issues identified by the Legislature.

THE FINAL REPORT EMBRACES THE FOLLOWING RECOMMENDATIONS:

- General Recommendations For Highway-Rail Grade Crossing Safety.
- Guidelines For Consolidation Or Closure Of A Public Highway-Rail grade Crossing.
- Guidelines For Opening A Public Highway-Rail Grade Crossing.

GENERAL RECOMMENDATIONS FOR HIGHWAY-RAIL GRADE CROSSING SAFETY

1. If a passive crossing has experienced two or more train/automobile collisions in the past five (5) years and has a geometric design or sight distance problem, in the absence of funding for signal lights and automatic barricades, it is recommended the Corporation Commission and local jurisdiction consider an engineering study to determine if a compelling reason exists to install a stop sign in compliance with the provisions of the Manual on Uniform Traffic Control Devices (MUTCD).

2. When a passive crossing has a restricted sight distance it is recommended that "Rumble Strips" be installed on the pavement near the advance warning sign and near the advance pavement markings.

3. The Task Force recommends a close coordination between the Oklahoma Corporation Commission, Oklahoma Department of Public Safety and the Oklahoma Department of Transportation, counties, municipalities and railroads regarding injury and fatal grade crossing collisions with an objective of identifying problem highway/rail crossings and causation factors.

4. If cost benefit studies validate the effectiveness of reflectorized crossbuck poles at passive crossings, the Task Force recommends this as a standard practice and a retrofit program.

5. The Task Force recommends the Oklahoma Corporation Commission work with the Association of County Commissioners, Oklahoma Municipal League, and the Oklahoma Department of Transportation in developing a procedure whereby a local government entity can determine if and when a safety upgrade of signal lights and/or barricades is planned for a crossing or if some other safety improvement is scheduled.

6. The Task force recommends information be provided to all enforcement agencies to assist them in the enforcement of existing laws relative to violations at railroad grade crossings.

7. The Oklahoma Corporation Commission should coordinate with the Oklahoma Department of Transportation in developing a standard low cost median device which cities and counties can incorporate when construction projects are planned on streets or roads intersecting railroads. The purpose of such device would be to deter motorists from driving around crossing barricade devices.

8. The Task Force recommends the Oklahoma Corporation Commission research a program which exists in the State of Texas wherein a 1-800 telephone number is placed on an active crossing device for the public to report a non-working signal system. If such a program is feasible for Oklahoma, the Task Force recommends its implementation.

9. The Task Force strongly supports the public broadcast of railroad grade crossing safety spots and encourage state government and private funding for such broadcasts. We recommend a cooperative program involving the Oklahoma Corporation Commission, Oklahoma Department of Transportation, Oklahoma Department of Public Safety and Oklahoma's railroads. Such programs should also alert the public to the increase in train traffic in Oklahoma which is the result of strong growth in the United States economy.

10. The Task Force recommends legislation be enacted which provides limited liability for research and implementation of projects which will reduce the cost of active protection at railroad/highway crossings.

11. The Task Force recommends that the Oklahoma Corporation Commission, Oklahoma Department of Transportation, and railroad companies continue to improve the system within which safety projects can be completed within a minimum period of time.

12. The Task Force recommends that "Operation Lifesaver" be utilized by the Oklahoma Corporation Commission to present rail safety education programs when communities request or need such educational program.

GUIDELINES FOR CONSOLIDATION OR CLOSURE OF A PUBLIC HIGHWAY-RAIL GRADE CROSSING

The Task force evaluated Federal recommendations regarding crossing consolidation. In addition, several studies from other states provided important criteria from which the Task Force framed their discussions and ultimately their recommendations.

It is the recommendation of the Grade Crossing Safety Task Force that Six Primary Criteria and Six Secondary Criteria be considered when evaluating or identifying a grade crossing for possible closure.

Primary Criteria Considerations For Consolidation Or Closure A Crossing

1. Collision History For The Past Five Years

   The Task Force ranked the collision history of a grade crossing as one of the most important criteria in evaluating a crossing for possible closure. The Task Force recommends the following:

   - A crossing should be evaluated for closure when two or more train/motor vehicle collisions have occurred during the past five years which have resulted in a fatality, personal injury or substantial property damage.

   - The Commission should establish a procedure whereby all railroad companies, state and local law enforcement agencies, and Oklahoma Department of Transportation officials can report "near miss" incidents wherein a train and motor vehicle were perilously close to colliding at a crossing. A citizen report system on "near miss" incidents should also be considered. When a pattern of "near miss" incidents occur at a crossing over a determined time frame, the crossing should be evaluated for closure.

2. Sight Distance On Roadway Approach To The Crossing

   Any grade crossing with a limited sight distance should be carefully evaluated for closure. There are three condition distances which are important to the safety of the crossing:

   - The distance down the road where the driver can see the crossing and stop if a train is occupying the crossing.
   - The distance to the left and right the driver can see down the tracks as the driver approaches the crossing. This so-called "sight triangle" is a combination of train speed and highway speed. The inability of the automobile driver to properly check

both left and right triangles at a crossing due to an obstruction qualifies the crossing as a candidate for closure in most cases.

- The distance down the track the driver can see if they stop at the stop location on the road. Large trucks and school buses accelerate slower than passenger cars and require more sight distance.

When the configuration or geometric design of a grade crossing limits the reasonable sight distance of the motor vehicle driver the crossing should be a candidate for closure. However, in the event the crossing cannot be closed, the proper traffic control signs, devices or reconfiguration should be considered by the Commission.

3. Number Of Trains and Train Speed

The number of trains per day and the authorized train speed should be considered in evaluating a crossing for closure. Recent traffic trends nationally project increased freight movement by the nation's railroads. As train traffic and speeds increase, a larger number of crossings may qualify for closure.

Train movements of switching and industrial spur service can create temporary blockage of a crossing which will increase the potential for accidents. If an alternate crossing is free of switching or industrial rail traffic, it is recommended that the alternate crossing be upgraded if necessary and the crossing subject to blocking be closed.

If passenger service is restored to Oklahoma, crossings on the intended route should be reevaluated utilizing sight distance requirements consistent with passenger train speeds. Full utilizations of existing grade separations is recommended in both urban and rural areas.

4. Number Of Motor Vehicles Using The Crossing

There is a need to have different values for the maximum traffic to be considered in railroad crossing closure. One value for rural areas and another set for urban areas.

Nationally about 85 percent of rural roads have less than 200 vehicles per day and 52 percent have less than 50 vehicles per day. There is little data for rural Average Daily Traffic (ADT's) in Oklahoma as counties which have the majority of these roads do not routinely take traffic counts. The number 150 vehicles per day has been used by several other state and is recommended as the base number for closure consideration in Oklahoma.

Urban roads have significantly higher vehicles per day with only 24 percent of the mileage having vehicles per day less than 200. Forty-eight percent of urban streets have ADT of less than 500. Forty-four percent of urban streets have ADT between 500 and 2000 vehicles per day. The number 750 vehicles per day has been used by several other states and is recommended as the urban base number for Oklahoma. The Task Force also recommends that the value between 150 vehicles per day and ten percent of the urban population be used for those areas under 7,500 population.

5. Use Of The Crossing By Emergency Or Special Vehicles

Consideration must be given to any emergency or special vehicles which use the crossing being studied for closure. Emergency vehicles such as ambulances, police and fire department equipment are usually responding to situations that are time sensitive. Special vehicles such as school buses, city buses, vehicles used by utility providers and commercial vehicles provide essential services to residents and/or businesses.

- How many of these emergency and special vehicles use the crossing per day on average?
- Distance to the nearest alternative crossing and how much time would be added to a trip made by an emergency vehicle?
- Can alternative crossings accommodate large school/city buses and fire department vehicles?

- Is the vehicle storage distance between the stop markings at the railroad crossing and the roadway clearance point less than 200 feet?

6. Characteristics Of The Alternate Crossing

In considering closure of a railroad crossing, the Task Force recommends the Commission evaluate the alternate crossing as it relates to:

- Distance to the alternate crossing

- Any necessary upgrades at the alternate crossing(s)

- Effect on neighborhood traffic patterns and needed traffic control devices

- Condition of the alternate route concerning adequate bridges and culverts for special vehicles

Secondary Criteria Considerations For Consolidating Or Closing A Crossing

1. Number of Tracks

When the roadway crosses a multiple set of railroad tracks the risk factor increases for train/motor vehicle collisions. Most multiple track areas involve switching service wherein slow moving trains are operated on some tracks and faster moving through trains on one or more main tracks. The mix of multiple tracks and multiple trains operating at various speeds qualifies any such crossing as a candidate for closure.

2. Type Of Warning Device

The type of warning device can qualify a crossing for closure. When a crossing has an active warning device and continues to have an inordinate number of train/motor vehicle collisions, the crossing should be evaluated for closure. A crossing which has an inherent problem such as sight distance, angle on the roadway intersection, multiple tracks, etc. that has a passive device (crossbuck), should first be evaluated for closure prior to any active device consideration.

3. Angle Of The Roadway/Rail Intersection

Grade crossings which have a horizontal or vertical alignment which inhibits a driver's view of an approaching train should be evaluated for closure. Curvature of the roadway prior to the crossing distracts a driver who must negotiate the curve and at the same time look for a train. Such a crossing should also be evaluated for closure. High profile crossings or "humped" crossings may adversely affect the motor vehicle driver's ability to safely cross over the track and in such case should qualify the crossing for closure.

4. Crossing Closure Cost And Economic Benefits

There are several accepted cost benefit techniques which could be used for examining alternatives. The Oklahoma Department of Transportation has developed costs for railroad crossing accidents by road type. There are several planning models which can be used to estimate travel costs on given routes. These can be used in both urban and rural areas. Using this and the savings from maintenance and costs of removal one can estimate over a given analysis period if the benefit cost ratio exceeds One and by how much.

5. Development Projections In The Vicinity Of The Crossing

- Projected development of property, residential or commercial, in the vicinity of a crossing which is a candidate for closure must be carefully considered by planners.

- Should development near the track be discouraged because of safety and noise concerns?

- It is recommended that the Commission coordinate with planning officials of municipalities and counties early in the planning process to facilitate the best possible safety strategy for developing areas.

- Planning officials should evaluate grade crossing safety concerns with the Oklahoma Corporation Commission and Oklahoma Department of Transportation prior to issuing building permits for development near any railroad crossing.

6. Recreational Use Of Route

Many pedestrians cross tracks under human power wherever it is convenient even though they may be trespassing. The latest statistics show that more pedestrian trespassers are being killed by trains than motorists involved in train/motor vehicle collisions. This pedestrian fatality statistic is on the increase. If streets and roads are closed there may be an increase in foot traffic as this will be the quickest route to the other side. In places where a significant number of persons are separated by the crossing it may be necessary to consider active control devices for foot traffic crossings. This is especially critical in urban areas near parks, schools and other public places.

GUIDELINES FOR OPENING A PUBLIC HIGHWAY-RAIL GRADE CROSSING.

The prospect of opening a new at-grade crossing runs directly counter to the Federal Railroad Administration's 1994 safety initiative which seeks to eliminate 25 percent of the nation's grade crossings. The Task Force recommends close scrutiny of any requests to construct a new crossing and strongly recommends that any authorization to open a new crossing be accompanied with a closure order of an existing crossing.

Any proposed new crossing should be evaluated by asking, "if the crossing were an existing crossing, would it be a candidate for closure?" If the proposed new crossing would be a candidate for closure under the Guidelines for Closure contained in this report the Commission should strongly discourage its construction.

The Task Force recommends the Commission consider the following guidelines in evaluating a request for a new crossing:

- The roadway alignment must provide adequate sight distance for the motor vehicle driver to see a train occupying the crossing.
- The motor vehicle driver must have enough "sight triangle" distance to his left and right to make a safe stop if a train is approaching at its authorized speed.
- The crossing must allow enough sight distance for slower moving buses and commercial vehicles to cross safely.
- Will the number of trains per day and the authorized train speed make this crossing more accident prone?
- A sufficient number of motor vehicles must utilize the crossing daily to justify its safety risk and financial expense.
- If emergency vehicles will be subject to being blocked by train activity, the proposed crossing should not be authorized.
- Any proposed new crossing which involves multiple tracks with the potential for more than one train occupying the tracks should not be authorized.
- The new crossing must have an appropriate warning device.
- The new crossing must meet appropriate design criteria for vertical or horizontal alignment.

- The vehicle storage distance between the stop markings at the railroad crossing and roadway clearance point should be at least 200 feet.

The Task Force understands that Oklahoma is a productive state and that growth abounds in residential developments and business and commercial centers throughout the state. However, new at-grade crossings should be the product of local planners coordinating with the Commission staff, Oklahoma Department of Transportation staff and railroad safety experts. Only through such coordinated planning can the safest and most productive crossings be accomplished.

# # #

MEMBERS OF OKLAHOMA GRADE CROSSING SAFETY TASK FORCE

Jerry V. Matheson
Task Force Chairman
Oklahoma Corporation Commission

Michael Elkins
Burlington Northern Santa Fe Railway Co.

Captain Mike Grimes
Department of Public Safety

Joe Kyle
Oklahoma Department of Transportation

John Kyle
Oklahoma Railroad Association

Chuck Mai
AAA

Randy McLerran
Oklahoma State Dept. of Education

Louis Mathia
Mayor, City of Miami

Deanna Mills
Federal Highway Administration

Robert Painter
Stratton, Moore & Painter

Richard "Dick" Shaw
Farmrail System, Inc.

Troy Streber
Grady County Commissioner

Gary Weathers
Operation Lifesaver

Leonard West
City of Norman