

**ORIGINAL**

Decision No. 72225

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Commission investigation to establish )  
procedure for making allocations to )  
local agencies under the "Crossing )  
Protection Maintenance Fund" provided )  
for in Public Utilities Code section )  
1231.1, and to determine methods for )  
ascertaining maintenance costs of )  
automatic crossing protection. )

Case No. 8249

(Appearances listed in Appendix A)

O P I N I O N

On August 17, 1965 the Commission instituted this investigation. It is a result of the enactment in 1965 of Section 1231.1 of the Public Utilities Code. (Stats. 1965, ch. 1644.) Said section reads as follows:

"1231.1. In each annual budget report prepared by the California Highway Commission and the Department of Public Works under Section 143.1 of the Streets and Highways Code, commencing with the 1966-67 fiscal year, a sum not to exceed one million dollars (\$1,000,000) shall be set aside for allocations to the Public Utilities Commission, for the purposes of paying to cities, counties, and cities and counties the share of the cost of cities, counties, and cities and counties of maintaining automatic grade-crossing protection. The specific amount of the total allocation shall be determined by the California Highway Commission and shall constitute the amount necessary for such maintenance. In arriving at such amount, the California Highway Commission shall consult with representatives of the Public Utilities Commission. Any amounts not expended by the Public Utilities Commission in any one fiscal year may be credited to subsequent annual allocations.

"Funds appropriated for the purposes specified herein shall be available for allocation and expenditure without regard to fiscal years. (Added 1965, Ch. 1644.)"

The purposes of the Order Instituting Investigation were:

"1. To establish a procedure for the making of allocations to local agencies from the 'Crossing Protection Maintenance Fund' provided for in Public Utilities Code section 1231.1.

"2. To determine a method or methods for ascertaining maintenance cost of automatic grade crossing protection, both as to individual crossings and as to total annual requirements.

"3. To issue such order or orders as may be appropriate."

Public hearings were held in San Francisco or Los Angeles before Examiner Gravelle on November 3 and 10, 1965, February 16, 17, 18, 23, 24 and 25, 1966, and April 19, 20, 21, 22, 25, 26 and 27, 1966. The matter was submitted upon the filing of briefs the last of which was filed on August 8, 1966.

The hearings were interspersed with a series of informal meetings amongst the parties in an effort to reach agreement upon some of the problems involved herein.

On August 30, 1965 the State of California Department of Public Works filed a "Petition" which was amended at the hearing of November 3, 1965 by adding thereto. Said amended "Petition" prays that the Commission institute an investigation of both Sections 1202.2 and 1231.1 of the Public Utilities Code, or enlarge the scope of this proceeding and sets forth many questions which the Department deems essential to be answered.

The Commission did on September 8, 1965 reopen, under Application No. 45058, et al., various proceedings with regard to the applicability and interpretation of Section 1202.2. Many of the questions raised by the Department are considered in those reopened proceedings in which a decision was today issued, and others are considered herein. To the extent of the response to said "Petition"

in the reopened proceedings, and here, it is granted; in all other respects it is denied. Several public agency parties joined by motion in the "Petition" of the Department. Said motions are granted or denied to the same extent as the "Petition" has been granted or denied.

The main issues in this proceeding involve the determination of the cost of maintaining automatic grade crossing protection and once this has been determined, how to get the funds therefor to the appropriate railroad company.

With regard to the determination of maintenance costs there were two major contentions. The first may be characterized as the actual cost method and the second as the AAR unit system. AAR stands for Association of American Railroads, an industry organization which has compiled a system of relative unit values it has assigned to the various components of a signal system including grade crossing protection.

Throughout the fifteen days of hearing it was testified many times by several railroad witnesses who were familiar with either railroad signal systems or railroad accounting that the keeping of actual cost records to determine the cost of automatic grade crossing protection maintenance was an impractical, difficult, expensive, inaccurate and burdensome task. The reasons for such conclusions were set forth in detail by these witnesses and included the problems of assignment of time to the correct facility, identification of specific facilities, assignment of material to the facilities, reflection of use of transportation and other equipment on an actual basis as well as numerous other difficulties. The cross-examination of these witnesses by the various public agency

representatives and their response to the suggestions advanced by some of the public agencies is convincing that the railroads are not presently geared to keep accurate cost records of the maintenance of automatic grade crossing protection. Furthermore, it might be difficult for them to institute such a system. The accuracy of actual costs is also open to doubt. It is clear that we cannot categorically state on this record that with proper preparation a system of actual cost record keeping could not be instituted. The railroads display an attitude of impossibility to this approach that is not supported by evidence. On the other hand, no proponent of such a system has shown it to be workable.

The parties who filed briefs herein with the exception of the Department of Public Works are agreeable to the use of an AAR system, at least on an interim basis. The Department has remained adamant that the AAR system should not be utilized. But its witness, a Certified Public Accountant, testified that such a system might be more accurate than an actual cost basis if he were convinced that the relative unit values were properly established and that the costs associated therewith were properly identifiable. The Department has generally adopted a negative attitude toward anything other than actual costs, yet it has not established how such actual costs can be determined. It has requested that a study be undertaken to determine a proper method of ascertaining costs. It has implied that nothing should be done in the meantime, yet its witness admitted that the study he envisioned might take several years.

The Commission is faced with the reality of the requirements of Sections 1202.2 and 1231.1 and the obvious mandate of the legislature. It is our duty to find promptly a workable solution to the problems with which we are confronted.

The AAR system has features which are positive as well as some which are negative. On the positive side it would present a method of determining costs which would be relatively inexpensive to administer for the railroad, the local agencies and the state agencies. It is a method with which the railroads are familiar and to them poses no new techniques. From an engineering standpoint for construction or alterations occurring after October 1, 1965 the AAR units in any particular grade crossing facility would be readily identifiable and therefore the maintenance cost thereof would be relatively simple to discover.

On the negative side, however, are such considerations that the cost to maintain an AAR unit can and does vary from one railroad to another and from one year to another. In some instances the signal systems involved are outside of the State of California. We cannot determine for a fact that the relative unit values are accurately established and we have no control over their composition. Furthermore, we do not know if they are weighted in favor of or against crossing protection as opposed to signal system devices. In some cases it is only very recently that even the railroad parties here have utilized this system to divide costs. The basic reason for its creation was to divide cost between or among railroads sharing common facilities and obviously determinations regarding the expenditure of public funds for grade crossing protection need not have been considered, let alone thought of. Lastly, this system was initiated some 60 years ago by persons who were unavailable to comment on their initial and basic makeup.

Nevertheless, as the railroads have pointed out the AAR system is the only workable solution that was put into evidence during the course of the hearings, and as a practical matter it is the only plan the Commission has before it for consideration.

The manner of operation of the AAR system as outlined by its proponents and as established by the testimony and exhibits may be briefly summarized. Each component of a railroad signal system is assigned, by a committee of the Association of American Railroads, a relative unit value. These components include those utilized in automatic grade crossing protection as well as in block signal systems and other railroad signal devices. By adding the specific components utilized in any given facility one may arrive at a total number of units in such facility. A crossing protected with two automatic gates would be an example of such a facility. The railroad then determines the total maintenance cost of its entire signal system, or a division thereof and by extraction of certain figures from its books and records, it also determines the total number of AAR units in its entire signal system, or division thereof. Thereafter by dividing the total number of AAR units into the total cost of maintenance thereof a cost to maintain a single unit is determined. That figure is then applied to the specific facility in question and after multiplying the number of units in the facility times the cost to maintain one unit the railroad arrives at the cost to maintain the specific facility over a given period of time. Each railroad in this proceeding developed its own cost to maintain and explained in some detail the bookkeeping entries that were utilized. Exhibit No. 6 contains the basic data used in accounts required by the Interstate Commerce Commission and this Commission. The railroad witnesses were careful to point out that the sums they used in developing the cost to maintain the signal system for purposes of this proceeding were selected conservatively. That is to say, if there was doubt as to the identification of a sum as a signal cost figure, it was excluded. Consequently, they claim that only readily identifiable cost figures are included in their exhibits.

These exhibits as we previously mentioned indicate a range of cost to maintain among railroads and where shown, also between time periods.

Exhibit No. 22 shows that for The Western Pacific Railroad Company, the cost to maintain one relative unit for the twelve months ending June 30, 1965 was \$31.0779. The relative units of Western Pacific in California totalled 11,540, in Nevada 5,032 and in Utah 2,070.

Exhibit No. 13 shows that for The Sacramento Northern Railway, the cost to maintain one relative unit for the twelve months ending June 30, 1965 was \$31.012. The train signal relative units of Sacramento Northern totalled 145 and grade crossing relative units 282.

Exhibits Nos. 20 and 21 were sponsored by Great Northern Railway Company. Exhibit No. 20 shows a 1964 relative unit cost of \$25.08 and a 1965 relative unit cost of \$28.09 for the Cascade Division in British Columbia, Canada. Exhibit No. 21 shows a relative unit cost of \$67.64 for the twelve months ending September 30, 1965 for the Klamath Division in California and Oregon.

Exhibit No. 23 shows a relative unit cost of \$31.14 for Union Pacific Railroad Company on its California Division from July 1964 to June 1965, inclusive.

Exhibit No. 24 shows a relative unit cost of \$31.97 for Southern Pacific Company for the twelve months ending June 30, 1965.

Exhibit No. 25 relates to both Northwestern Pacific Railroad Company and the Petaluma and Santa Rosa Railroad Company. It shows a relative unit cost of \$29.67 for the twelve months ending December 31, 1964.

Exhibit No. 26 for San Diego & Arizona Eastern Railway Company shows a relative unit cost of \$29.37 for twelve months ending June 30, 1965.

Exhibit No. 27 for Pacific Electric Railway Company shows a relative unit cost of \$34.47 for the twelve months ending June 30, 1965.

Exhibit No. 32 shows a relative unit cost of \$29.47 for The Atchison, Topeka and Santa Fe Railway Company for twelve months ending June 30, 1965 and Exhibit No. 33 indicates average unit costs at one train facility operated by Santa Fe for the years 1956 through 1965. This facility is the Mission Tower Interlocking Plant, the average unit cost by years, follows:

1956	\$26.01	1961	\$33.19
1957	23.22	1962	31.40
1958	43.61	1963	27.13
1959	54.16	1964	23.71
1960	38.13	1965	20.78

The Union Pacific, California Division, runs from Los Angeles through Las Vegas; 9,741 relative units are located in California and 1,516 units in Nevada.

Exhibit No. 25 of the Northwestern Pacific Railroad and the Petaluma & Santa Rosa Railroad Companies reflects 1,491 relative units attributed to automatic grade crossing protection and 159 units for train signals. Exhibit No. 26 of San Diego & Arizona Eastern Railway Company reflects 274 grade crossing units and 13 train signal units and Exhibit No. 27 of Pacific Electric Railway Company reflects 5,687 grade crossing units as opposed to 592 train signal units.

A Southern Pacific witness in testifying with regard to use of the AAR units stated that it was not until about 1962 that



his company developed a relative unit cost. At that time it was approximately \$28.00. He further testified that Southern Pacific had not used the \$28.00 figure to divide costs among other railroads where joint facilities were used. The AAR units, however, were employed to divide on a percentage basis the cost of maintaining such joint facilities. He also testified that the relative unit costs developed for each of the railroad subsidiaries of Southern Pacific varied because of age of the facility or the area in which it operated. Pacific Electric is mainly in and around metropolitan Los Angeles. San Diego & Arizona Eastern Railway Company operates out of metropolitan San Diego and through sparsely populated areas to Niland, all in California. It is obvious that in the beginning of the application of Sections 1202.2 and 1231.1 the facilities involved will be new and as the Southern Pacific witness testified, newer facilities, obviously, do not require as much maintenance as older facilities.

We must conclude that the AAR system, using the bookkeeping suggestions set forth in Exhibit No. 6, is far from an exact system. Since it is not exact, we will not adopt for the purposes of this decision the figures developed for each railroad as its cost to maintain. Instead we will adopt a figure of \$30.00 per AAR unit as a reasonable figure to be utilized for the purpose of determining grade crossing protection maintenance cost. This figure will be utilized by all railroads and public agencies until further order of the Commission. Inasmuch as there are suggestions, previously mentioned, with regard to the possible use of actual costs, or the use of a California relative unit system, we will direct the railroad parties to this proceeding to immediately undertake studies to determine the feasibility of developing actual cost records and to

the feasibility of developing a system of California units. Such studies will consider only costs incurred in this State and from which the Commission may establish its own relative unit system to be applied to those costs for facilities used in California. We will, in the future, institute another investigation to receive the evidence developed by the railroads and to consider modification of this decision.

With regard to the second main question presented, that is, how Section 1231.1 funds will find their way into the hands of the railroads, there were two diverse views.

The railroads and most local public agencies advocate that payment from the state fund go direct to the railroad. If payment could be made in this manner the local agencies state that they would be relieved of the problem of certifying to the accuracy of the railroad bill. Further, they would be relieved of the bookkeeping involved in receiving funds from the state and paying funds to the railroad.

The Commission staff basing its conclusion on the language of the statute and the testimony of a witness from the office of the State Controller maintained that payment must be made direct to the public agency involved. The specific language involved in Section 1231.1 is "... for the purposes of paying to cities, counties, and cities and counties the share of the cost of cities, counties, and cities and counties of maintaining automatic grade-crossing protection." (Emphasis added.)

We see no question of interpretation here. While admittedly it might be less burdensome to the local agencies for the Controller to make payment direct to the railroad, the statute calls for payment to the local public agency.

The City of Los Angeles has raised the problem of payment from its treasury for the cost of maintenance with particular reference to Sections 361 and 374 of the Charter of City of Los Angeles. The City witness in his testimony and in Exhibits Nos. 14, 15 and 16 implies that AAR units may not be used, that the City auditor would have to audit any bill presented by a railroad and determine that the maintenance billed had been performed. By the adoption of a set figure of \$30.00 per AAR unit, a good portion of the problem relative to certification is removed. What remains is to determine if the facility is in existence, if the facility is the responsibility of the public agency and whether the proper number of units was billed. As for payment from the local agency treasury, the obligation to pay will result from a Commission action and should be treated no differently than any other debt of the local public agency. If there is a question concerning the number of AAR units involved in any automatic grade crossing protection, the Commission will have to decide those properly assignable to the crossing. This may be accomplished with or without hearing by order, or by resolution.

Utilizing Exhibits Nos. 4 and 5 as a basis for setting forth the procedure that will be followed, the railroads shall bill the public agencies on a calendar year basis. The railroad bill will set forth the following, which, as a convenience, is also set forth in Appendix C:

1. The crossing number and name of the street or roadway.
2. The type of protection authorized and the decision or resolution number which apportioned or approved the division of maintenance cost.

3. The date on which the public agency liability commenced and the date it terminated.

4. The number of relative units, using the AAR scale as hereinafter set forth, involved in the automatic crossing protection.

5. The percentage of maintenance to be borne by the public agency involved and the number of relative units therefor allocated to the public agency.

6. The monetary obligation of the public agency for the cost of maintaining the automatic grade crossing protection, using a basis of \$30.00 per relative unit.

7. The railroad bill shall be submitted in duplicate to the public agency, with one additional copy each to the Public Utilities Commission and the Department of Public Works.

The public agency shall within thirty days after receipt of the railroad bill forward to the Commission a copy of the bill or notify the railroad of any alleged error in the bill. If a corrected bill is submitted to the public agency it shall have thirty days thereafter to forward a copy thereof to the Commission. The copy of the railroad bill submitted to the Commission by the public agency shall be accompanied by a claim form which shall contain the following certification:

I certify under penalty of perjury that I am the duly authorized officer of the claimant herein; that this claim is true, correct and in accordance with law; that this claim represents the share of this claimant for the cost of maintaining automatic grade crossing protection for Crossing No. \_\_\_\_\_ pursuant to Section 1202.2 of the Public Utilities Code as authorized or approved by the Public Utilities Commission by (Decision or Resolution Number) \_\_\_\_\_ and by Decision No. \_\_\_\_\_ (this decision) \_\_\_\_\_; that I have not violated any of the provisions of Sections 1090 to 1096 of the Government Code in incurring the items of expense included in this claim nor in any other way; and that payment has not previously been received for the amount claimed herein, or at all.

By \_\_\_\_\_  
(Signature of Authorized Official)

\_\_\_\_\_  
Title

The Public Utilities Commission shall in turn submit a claim on Form 218 (Exhibit No. 8) to the State Controller. When approved, warrants will then be issued by the Controller to the public agency which shall upon receipt forthwith make payment to the billing railroad.

The annual amount of money to be included in the budget of the Highway Commission and the Department of Public Works shall be determined by consultation as accomplished for fiscal years 1966-67 and 1967-68.

With regard to those cases where there is an obligation on the part of a public agency commencing with October 1, 1965 but no Section 1231.1 funds were budgeted therefor in that fiscal year, the section itself provides, "Funds...shall be available for allocation and expenditure without regard to fiscal years."; hence the share of maintenance cost of such public agency is eligible for any Section 1231.1 funds available.

For the purpose of clarity we will set forth in Appendix B to this decision the table of relative unit values which are to be utilized for the determination of the cost of maintenance of automatic grade crossing protection until modified by this Commission. Said table will follow Exhibit No. 6 and include items 30 and 31 although said items have not been adopted by the Association of American Railroads.

After consideration the Commission finds that:

1. A system of relative units should be adopted to determine the cost of automatic grade crossing protection at crossings.
2. The table of relative unit values set forth in Exhibit No. 6 and in Appendix B hereof should be adopted for determining the cost of automatic grade crossing protection.

3. A cost of \$30.00 per relative unit is fair and reasonable for determining the annual cost of maintaining automatic grade crossing protection as to the railroads, the local public agencies and the state agencies concerned.

4. The railroad parties to this proceeding should immediately commence studies to determine the feasibility of maintaining accurate records of the cost of automatic grade protection at individual grade crossing installations and the feasibility of developing a California relative unit system utilizing railroad signal components used in California together with related costs incurred in California.

5. Payment of funds for the cost of maintaining automatic grade crossing protection pursuant to Public Utilities Code Section 1231.1 must be made to the local public agency involved and in turn by such agency to the railroad.

6. Payment of Public Utilities Code Section 1231.1 funds may be made only after authorization or approval by this Commission in the form of a Commission order or resolution.

7. The bills of the railroad to the public agency and the claim of the public agency to this Commission must be in accord with the requirements set forth in Appendix C of this opinion.

8. Upon receipt of payment from the State of California for a share of the cost of maintaining automatic grade crossing protection, each local public agency must forthwith make compensating payment to the billing railroad.

Based upon the foregoing findings of fact, the evidence and the briefs herein, the Commission concludes that the following order should be entered.

O R D E R

IT IS ORDERED that:

1. The relative unit values set forth in Appendix B attached hereto and made a part hereof shall be utilized for determining the cost of maintaining automatic grade crossing protection for administering Section 1231.1 of the Public Utilities Code.

2. A cost of \$30.00 per relative unit is reasonable and shall be used by railroads and local public agencies for determining the share of the public agencies' annual cost of maintaining automatic grade crossing protection as provided in Section 1231.1 of the Public Utilities Code.

3. For purposes of Section 1231.1 of the Public Utilities Code the annual cost of maintaining automatic grade crossing protection shall be determined by multiplying \$30.00 as provided in paragraph 2 hereof by the number of relative units as provided in paragraph 1 hereof associated with such automatic grade crossing protection. The share of the cost of the public agency will then be calculated in a dollar amount based upon the percentage apportioned or approved by Commission order or resolution as said public agency's responsibility.

4. Billing for the share of the cost of maintenance of automatic grade crossing protection shall be by the railroad to the public agency on a calendar year basis. Bills shall be submitted in duplicate to the public agency by said railroad with one additional copy each to the Public Utilities Commission and the Department of Public Works and shall incorporate the items enumerated in Appendix C of this decision as if set forth herein.

5. The public agency shall within thirty days after receipt of the bill referred to in paragraph 4 or a corrected bill in case of error, transmit to this Commission a copy of said bill together with a claim form approved by this Commission and containing the certification set forth in the body of this decision.

6. Upon receipt of the bill and claim as provided for in paragraph 5, this Commission shall transmit to the Controller of the State of California upon Form No. 218 or a similar appropriate form the claim for the public agency's share of the cost of maintaining automatic grade crossing protection.

7. Payment for the public agency's share of the cost of maintaining automatic grade crossing protection shall thereafter be made directly to said public agency. Said public agency shall upon receipt of payment for its share of the cost of maintaining automatic grade crossing protection forthwith make payment to the billing railroad.

8. Public agencies liable for a share of the cost of maintaining automatic grade crossing protection from October 1, 1965 and thereafter may utilize the funds provided therefor by Section 1231.1 of the Public Utilities Code.

9. Annual requirements for the Crossing Protection Maintenance Fund of Section 1231.1 of the Public Utilities Code shall be made by estimate after consultation between the Department of Public Works and the Public Utilities Commission and said estimate shall be made annually by October 1 of each year for the ensuing fiscal year.

10. Each of the railroad company parties to this proceeding is directed within thirty days after the effective date of this order, to initiate studies, either individually or collectively, to determine the feasibility of maintaining accurate actual cost records of the maintenance cost of automatic grade crossing protection in California and the feasibility of developing a relative unit system method of determining such costs restricted to signal system components utilized in California by said railroad companies and based upon



costs incurred in California by said railroad companies. The Commission staff and other parties hereto are directed to cooperate in all respects in the making of the studies herein ordered.

The Commission shall in the future institute an investigation to receive the results of the studies and determine if any modification of this order is required.

The effective date of this order shall be twenty days after the date hereof.

Dated at San Francisco, California, this 27<sup>th</sup> day of MARCH, 1967.

John E. Mitchell  
President  
William W. Bennett  
August  
William Sproule  
Fred P. Morrissey  
Commissioners

## APPENDIX A

LIST OF APPEARANCES

## INTERESTED PARTIES:

George D. Moe, Melvin R. Dykman and Joseph C. Easley, for State of California, Department of Public Works, Division of Highways; Harold S. Lentz, for Southern Pacific Company, Northwestern Pacific Railroad Company and San Diego & Arizona Eastern Railway; Walter G. Treanor, for Western Pacific Railroad, Sacramento Northern Railway and Tidewater Southern Railroad; Marshall W. Vorkink, for Union Pacific Railroad Company; Robert B. Curtiss, for Atchison, Topeka & Santa Fe Railway Company, Los Angeles Junction Railway Company, Sunset Railway Company, and Central California Traction Company; Woodrow L. Taylor, for Great Northern Railway; Warren P. Marsden, for San Francisco Bay Area Rapid Transit District; William C. Sharp, for the City of Oakland; Charles W. Sullivan, for City of Los Angeles; Harold W. Kennedy by Ronald L. Schneider, for County of Los Angeles; Alan R. Watts, for City of Anaheim; Robley E. George, for San Joaquin County; Edgar C. Schott, for Director of Public Works & Utilities of City of Santa Clara; Claude Minard, for California Railroad Association; Clay Castleberry, for Butte County; Michael Zambory, for City of Oroville; Richard K. Karren, for City of San Jose; F. Andre Burgess, for State Controller-Division of Audits; Richard G. Barbite, for Stanislaus County; George W. Ballard, for Brotherhood of Railroad Trainmen AFL-CIO; William H. Stoffers by Warwick Downing, for Monterey County; James F. Vivrette, for County Engineers Association of California; Richard Carpenter, for League of California Cities; Vincent B. Lasken, for State Controller; Dan R. Tonelli, for Contra Costa County Public Works; James L. Evans, for State Legislative Board, Brotherhood of Locomotive Firemen and Enginemen; Clinton Beery by Floyd R. B. Viau, for Fresno County; David K. Spaer, for the County of San Diego; James E. Howe, for Brotherhood of Railroad Trainmen, AFL-CIO; Bruce A. Packard, for the City of Placentia; Richard W. Andrews, for the Highway Advisory Commission, County Supervisors' Association and County Engineers Association; Fritz Zapf, for the City of Pasadena; Henry E. Jordan, for the City of Long Beach; Louis Possner, for the City of Long Beach; William Knecht, for California Farm Bureau Federation; Roger Arnebergh by Charles E. Mattson, for the City of Los Angeles; Thomas V. Tarbet, for the City of Los Angeles; and R. G. Spencer, for City and County Engineers' Association.

## COMMISSION STAFF:

Vincent V. MacKenzie and Harold J. McCarthy.

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TABLE OF RELATIVE UNITS

<u>UNIT NO.</u>	<u>DESCRIPTION</u>	<u>RELATIVE UNIT VALUE</u>
1	Signal arm, or light, inoperative .....	1
2	Signal, complete with mast, blade or light, inoperative .....	2
3(a)	Signal, three aspects, semaphore or light ...	6
(b)	Signal, two aspects, semaphore or light .....	4
(c)	Signal, one aspect, semaphore or light .....	2
(d)	Signal, each additional aspect .....	2
(e)	Signal, mechanically operated, manual block, train order or railroad grade crossing signal, two or three aspects .....	4
(f)	Smashboard, mechanical or power .....	4
4	Marker light, operated .....	2
5	Grade signal, semaphore or light, operative .....	2
6	Switch (2 points) or derail	
	(a) Mechanical .....	4
	(b) Power .....	8
7	Slip switch (2 points)	
	(a) Mechanical .....	4
	(b) Power .....	8
8	Slip switch (4 points)	
	(a) Mechanical .....	8
	(b) Power .....	12
9	Movable point frog (4 points)	
	(a) Mechanical .....	8
	(b) Power .....	12
10	Derail, pipe connected to switch and operated thereby .....	1
11	Detector bar, 55 ft. in length, or fraction thereof .....	2
12(a)	Facing point lock, movable bridge lock or rail lock	
	1. Mechanical .....	2
	2. Power .....	6
(b)	Facing point lock, movable bridge lock or rail lock operated with another unit .....	1
13	Spring switch	
	(a) Buffer .....	1
	(b) Mechanical facing point lock .....	4
14	Switch-and-lock movement, mechanical .....	1
15(a)	Movable bridge circuit controller or pipe coupler	
	1. Mechanical .....	4
	2. Power .....	8
(b)	Movable bridge circuit controller or pipe coupler operated with another unit .....	2
(c)	Auxiliary circuit controller on movable bridge wedge, latch, lift rail, etc. ....	1

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TABLE OF RELATIVE UNITS

<u>UNIT NO.</u>	<u>DESCRIPTION</u>	<u>RELATIVE UNIT VALUE</u>
16(a)	Non-coded track circuit .....	2
(b)	Superimposed circuit on track circuit .....	2
(c)	Coded track circuit .....	4
(d)	Auxiliary track instrument for train detection .....	2
17(a)	Electric lever lock applied to a mechanical lever .....	1
(b)	Electric lock on hand-operated switch or railroad grade crossing gate .....	2
(c)	Electric lock applied to units 12-a, 12-b and 14 .....	1
(d)	Mechanical time lock applied to a mechanical lever, hand-operated switch and to units 12-a, 12-b and 14 .....	1
18	Skate placing machine .....	4
19	Car retarder including operating mechanism per rail foot of braking length per rail ..	1
20(a)	Highway grade crossing signal, bell type, with or without reflectorized signs, per mast .....	1
(b)	Highway grade crossing signal, wig-wag or flashing light type (one pair of flash- ing lights), with or without bell or reflectorized signs, per mast .....	2
(c)	Additional pair of flashing lights, illumi- nated "STOP" sign, auxiliary illuminated sign or rotating "STOP" disc. ....	1
(d)	Each gate mechanism, automatic .....	4
21	Highway grade crossing gate, manual, per post (a) Mechanical .....	1
	(b) Power .....	2
22(a)	Train control inductor or loop circuit .....	1
(b)	Train control ramp (energized) magnet .....	2
23	Switch circuit controller, signal or highway crossing protection .....	1
24	Indicator (a) Wayside track occupancy or switch ..	2
	(b) Yard track .....	4
	(c) Third rail clearance, per instrument .....	2
	(d) Switch or derail, target or light ..	1
	(e) Track pan lights, per mast .....	1
25	Railroad grade crossing gate, per gate (a) Mechanical .....	2
	(b) Power .....	4

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TABLE OF RELATIVE UNITS

<u>UNIT NO.</u>	<u>DESCRIPTION</u>	<u>RELATIVE UNIT VALUE</u>
26(a)	Approach locking, per track per direction .....	2
(b)	Time locking, per track per direction .....	1
27(a)	Traffic lever (including circuit within the interlocking or block station) .....	1
(b)	Traffic lever (including circuit within and without the interlocking or block station) ...	2
28	Detector devices	
	(a) Slide or rock fall, per 100 ft. of detection .....	2
	(b) High water or fire, per installation .....	1
	(c) Dragging equipment, per detector .....	2
29	Switch heaters, controlled or automatic, per pair of switch points .....	2
30	Grade Crossing Predictor .....	8
31(a)	Hot Box Detector System (without recorder) .....	65
(b)	Hot Box Detector System (with recorder) .....	73
(c)	Hot Box Detector System (with recorder and locator) .....	88
(d)	Hot Box Detector System (Bi-Directional) (with recorder and two locators) .....	103
(e)	Hot Box Detector System (with remote recorder and with dual channel analog carrier) .....	80

APPENDIX C

REQUIREMENTS OF BILLS SEEKING PAYMENT OF  
PUBLIC UTILITIES CODE SECTION 1231.1 FUNDS

1. The crossing number and name of the street or roadway.
2. The type of protection authorized and the decision or resolution number which apportioned or approved the division of maintenance cost.
3. The date on which the public agency liability commenced and the date it terminated.
4. The number of relative units, using the AAR scale as hereinafter set forth, involved in the automatic crossing protection.
5. The percentage of maintenance to be borne by the public agency involved and the number of relative units therefor allocated to the public agency.
6. The monetary obligation of the public agency for the cost of maintaining the automatic grade crossing protection, using a basis of \$30.00 per relative unit.
7. The railroad bill shall be submitted in duplicate to the public agency, with one additional copy each to the Public Utilities Commission and the Department of Public Works.

The public agency shall within thirty days after receipt of the railroad bill forward to the Commission a copy of the bill or notify the railroad of any alleged error in the bill. If a corrected bill is submitted to the public agency it shall have thirty days thereafter to forward a copy thereof to the Commission. The copy of the railroad bill submitted to the Commission by the public agency shall be accompanied by a claim form which shall contain the following certification:

I certify under penalty of perjury that I am the duly authorized officer of the claimant herein; that this claim is true, correct and in accordance with law; that this claim represents the share of this claimant for the cost of maintaining automatic grade crossing protection for Crossing No. \_\_\_\_\_ pursuant to Section 1202.2 of the Public Utilities Code as authorized or approved by the Public Utilities Commission by \_\_\_\_\_ (Decision or Resolution Number) and by Decision No. \_\_\_\_\_ (this decision); that I have not violated any of the provisions of Sections 1090 to 1096 of the Government Code in incurring the items of expense included in this claim nor in any other way; and that payment has not previously been received for the amount claimed herein, or at all.

By \_\_\_\_\_  
(Signature of Authorized Official)

\_\_\_\_\_  
Title