



Special Interest Report

Perishable Freight Opportunities for Operation

Mike White

Forward	Page 2
Part 1 - Introduction	Page 3
Part 2 - Refrigeration	Page 8
Part 3 - Ventilation Service	Page 15
Part 4 - Protective Service and LCL	Page 16
About the Author	Page 20
Bibliography	Page 21

Forward

Parts 1 through 3 of this 4 part series were originally published in the Potomac Flyer, the NMRA's Mid-Eastern Region publication, from March through December of 2016. Parts 1 through 3 are provided here more or less as they originally appeared in the Flyer with some minor editing for format, flow, and use of references. This Special Report also includes Part 4 which was not included in the published series.

The focus of this article is the use of waybills in perishable freight operations. It goes deep into the regulations behind perishable freight waybilling and provides guidelines for use of realistic waybills in model railroad operations. For those who have an interest in perishable freight operation there are opportunities including waybilled icing and re-icing which can greatly enhance operational realism and enjoyment.

To put perishable freight waybilling into practice on a model railroad an operating scheme has to be developed to represent the economic traffic. To develop a scheme take into account the region the railroad is set in, what agricultural products are grown and produced, the era, the season, and what car types would be used. Some research is needed, but that's part of the fun of model railroading. State agricultural agencies and railroad historical sources can provide useful information. Another source that can be informative is *Produce Traffic & Trains*, Jeff Wilson, 2018, Kalmbach Publishing.

If the links don't work directly from the text, copy and paste the link in your browser's address line. Full URL's for all links are provided in the Bibliography.

Part 1 - Introduction

This article, which is in several parts due to the scope of the subject matter, is intended to provide background information for making model railroad operations more interesting and varied with the use of a “Perishable Freight” waybill. While what is described here drives waybill development to a higher level of detail than normally found elsewhere, it also increases the realism of the waybills associated with various circumstances encountered in the handling of perishable freight and provides for more variety in model railroad operations. Part 1 presents an introduction to the transportation of perishable freight. Subsequent parts will cover some of the specifics in more detail. Links to references and source material are provided in the text.

Serious attention to handling these commodities resulted in the 1920 publication of Perishable Protective Tariff No.1, Agent J. C. Fairbanks, I.C.C. No. 6, published by the National Perishable Freight Committee in Chicago and it’s adoption by all of the major railroads transporting perishable goods.

Some of the source material for this article comes from [The Station Agent’s Blue Book](#), by O. B. Kirkpatrick, published in 1928. Much more has been extracted from [Perishable Protective Tariff No 11 \(1940\)](#).

The 1920’s were the period of a great expansion in perishable goods transportation and the technical innovations related to it. Most of what guided the railroads engaged in this business was continuing refinements in procedures as a result of experience gained in the 1920s. Over the years, the National Perishable Freight Committee, the Department of Agriculture, and the various railroads, published pamphlets and instructions on specific aspects of perishable goods preservation and transportation for use by those directly engaged in these shipments.

This article relates to circumstances as they existed from 1920 until the replacement of ice bunker refrigerator cars (the “ice age”) by mechanical refrigerator cars beginning in the early 1950s. This is a period that would produce rail cars appropriate to a model railroad through the 1960s, so the material presented is probably suitable for a large number of operations eras by today’s modelers. Fortunately, many of the supplementary publications referenced have been digitized and are available on the internet.

This list provides examples of the variety of products that can be shipped by a wide-range of modeled industries. The list is taken from an early edition of the Perishable Protective Tariff as referenced in the Station Agent’s Blue Book, pg 102.

Perishable Freight - Opportunities for Operation

“PERISHABLE COMMODITIES ARE ARTICLES WHICH ARE SUSCEPTIBLE TO DETERIORATION OR DECAY, AND/OR WHICH MAY BE PROTECTED BY REFRIGERATION, ICING, VENTILATION OR AGAINST COLD, INCLUDING:

- | | | |
|---|---|--|
| (3) Ale (except ginger), in glass or earthenware. | (1)-(a) Fish, fresh, frozen, pickled, or smoked. | (3) Mucilage. |
| (1) Ale (except ginger), not in glass or earthenware. | (3) Fish, canned. | (1)-(a) Mushrooms, fresh. |
| (3) Ale, ginger. | (1) Flavoring syrups. | (3) Mushrooms, canned. |
| (1)-(a) Bananas. | (1) Flowers. | (3) Mustard, prepared. |
| (3) Beer, in glass. | (1)-(a) Frog legs. | (1) Nursery stock. |
| (1) Beer, except in glass. | (3) Fruit butter. | (1) Nuts, edible. |
| (1) Berries. | (3) Fruit juices. | (2) Oils, edible, in packages. |
| (3) Beverages, in glass or earthenware. | (1)-(a) Fruits, fresh, N.O.I.B.N. | (1)-(a) Oleomargarine. |
| (1) Beverages, except in glass or earthenware. | (3) Fruits, canned. | (3)-(a) Onion sets. |
| (3) Blacking, liquid. | (1)-(a) Fruits, crushed, evaporated, or preserved. | (1)-(a) Oysters, fresh. |
| (2) Bladders, not dried. | (1)-(a) Game. | (1)-(a) Packinghouse products, as specified herein. (See Item No. 1135). |
| (3) Bluing, liquid. | (1)-(a) Grease, edible. | (3) Paste. |
| (1) Bulbs (plant). | (3) Holly. | (3)-(a) Pickles, in glass or in jars. |
| (1)-(a) Butter and butter substitutes. | (1) Honey. | (1) Pineapples. |
| (2) Candles. | (2) Ice. | (1) Plants. |
| (2) Candy, confectionery. | (2) Ice cream. | (3) Polish, liquid. |
| (3) Canned goods, edible. | (3) Ink, liquid. | (3) Porter, in glass or earthenware. |
| (1) Cantaloupes. | (3) Jams and jellies. | (1) Porter, not in glass or earthenware. |
| (2) Casings (intestines), not dried. | (3) Juices, in glass or earthenware. | (1)-(a) Poultry, dressed. |
| (3) Catsup, in glass or earthenware. | (1) Juices, not in glass or earthenware. | (3) Preserves. |
| (1) Catsup, not in glass or earthenware. | (1)-(a) Lard and lard substitutes. | (3) Sauces, table. |
| (1) Cheese. | (3) Liquors and liquids, in glass or earthenware. | (3)-(a) Sauerkraut. |
| (3) Chestnuts. | (1)-(a) Lobsters. | (1)-(a) Scallops, fresh. |
| (2) Chocolate. | (3) Malt extract, in glass or earthenware. | (1)-(a) Sea foods. |
| (1) Cider. | (1)-(a) Meats, fresh, dried, cured, salted, smoked, pickled, potted, cooked, or corned. | (2) Shellac, dry ground. |
| (1)-(a) Clams, fresh. | (3) Meats, canned, with or without vegetable ingredients. | (1) Shrubbery. |
| (1) Coconutnuts. | (3) Meat products, edible. | (2) Stearine. |
| (1) Corn, fresh, green. | (3) Medicine, liquid. | (2) Syrups (except flavoring syrups). |
| (1)-(a) Crabs. | (1) Melons. | (2) Tallow. |
| (1) Cranberries. | (1) Milk, condensed or evaporated. | (1) Trees. |
| (1) Cream. | (1)-(a) Mincemeat. | (1)-(a) Turtles. |
| (3) Drugs, liquid. | (3) Mistletoe. | (1)-(a) Vegetables, fresh or green. |
| (1)-(a) Eggs. | (2) Molasses. | (3) Vegetables, canned. |
| (2) Eggs, shelled, frozen. | | (3) Vinegar. |
| (3) Extracts, liquid. | | (3) Water. |
| | | (1) Wine. |
| | | (1) Yeast. |

- (1) Articles enumerated above, prefixed thus (1), may be protected against heat and/or cold.
 (2) Articles enumerated above, prefixed thus (2), may be protected against heat.
 (3) Articles enumerated above, prefixed thus (3), may be protected against cold.
 (a) Articles shown above, prefixed thus (a), are liable to be damaged by use of artificial heat.

“590. Definition. The term “Perishable Freight” has reference to commodities which are particularly susceptible to deterioration, decay, or damage through exposure to extreme heat or cold, and which usually must be protected against heat or cold, as the case may be, during transportation by refrigeration, ventilation or heater. The commodities most commonly requiring this service include fresh fruits and vegetables, fresh meat, milk and dairy products, eggs, fish and game, beverages, liquids, etc.” (Station Agent’s Blue Book, pg 102)

Technical Terms

There are a number of technical terms used in the protection of perishable freight which need to be understood in the context of the protective services tariff. Refer to pages 98 to 101 of the [Perishable Protective Tariff No. 11 \(1940\)](#) for the explanation of technical terms.

Recording Requested Services

It was the shipper's responsibility to specify exactly, within any limits imposed by the tariff, what services the railroad was to provide for each shipment of perishable goods. This, on the shipper's part, was accomplished by specifying on the Bill of Lading the type and extent of service required. This information, including any shipper instructions, was transferred to the waybill when it was prepared.

"593. Shipper's Instructions. When a carload shipment of perishable freight is offered for transportation, the shipper must declare in writing on the bill of lading just what kind of protective service is desired. Each carrier's perishable protective tariff (usually the "Perishable Protective Tariff," published by R. C. Dearborn, Agent) specifically outlines just what protective service is provided and only the protective instructions of shipper's that are strictly in accordance therewith should be accepted." (Station Agent's Blue Book, pg 103)

As mentioned above the service and instruction information was transferred to the waybill when the waybill was prepared. Early on the railroads recognized that some obvious distinction needed to be made from the ordinary Freight Waybill to cause the special handling of the carload to be recognized. This was accomplished through the use of a "Freight Waybill - Preferred Movement"

"600. Preferred Movement Waybill. The "Freight Waybill - Preferred Movement" is a form of waybill recommended by the Railway Accounting Officers Association, and is used by most carriers in waybilling perishable shipments. It is printed on pink paper, and while as to form is exactly like the ordinary freight waybill, its distinctive color, and the preferred-movement notation, indicates that the shipment should receive prompt and special attention." (Station Agent's Blue Book, pg 104).

While in general form and content the modeled version of this waybill is similar to the Freight Waybill, it differs with respect to Title and the inclusion of specific fields related to icing requirements. Examples are provided below:

Perishable Freight - Opportunities for Operation

721 SOUTHERN PACIFIC COMPANY 721			
PERISHABLE FREIGHT WAYBILL			
TO BE USED FOR SINGLE CONSIGNMENTS, CARLOAD AND LESS CARLOAD			
CAR INITIAL		CAR NUMBER	
PFE		41354	
ZEP CLASS OF CAR ORIGIN		CLASSIFICATION OF CAR ORIGIN	
RS			
TO STATION	STATE	FROM STATION	STATE
PORTLAND	OR	SHUMALA	CA
CONSIGNEE AND ADDRESS		SHIPPER	
BLUE SHIELD FOODS		PHELAN & TAYLOR PACKING	
ROUTE Show in route order		Indicate how weights were obtained for L.C.L. Shipments only.	
SP		S-Shipper's Tested Weights T-Tariff Classification or Minimum R-Railroad Scale E-Estimated	
On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS)			
PRE ICE	INITIAL ICE	SALT	CPS
	X		2
No. PKGS C/L		DESCRIPTION OF ARTICLES	
462 CRATES		ORANGES	

Figure 1

745 SOLOMONS and PATUXENT 745			
PERISHABLE FREIGHT WAYBILL			
TO BE USED FOR SINGLE CONSIGNMENT, CARLOAD OR LESS CARLOAD			
TO STATION	STATE	FROM STATION	STATE
BALTIMORE, MD		BROOMES IS., MD	
CONSIGNEE AND ADDRESS		SHIPPER	
FREE STATE HOTEL SUPPLY		WARREN DENTON CO.	
ROUTE Show in route order		AAR Class of Car	
S&P SM B&O		RS	
		LENGTH/CAPY	
		36	
Indicate how weights were obtained for L.C.L. Shipments only			
S-Shipper's Tested Weights			
T-Tariff Classification or Minimum			
R-Railroad Scale E-Estimated			
On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS)			
PRE ICE	INITIAL ICE	SALT	CPS
	X		2
No. PKGS C/L		DESCRIPTION OF ARTICLES	
		GAL CASES OYSTERS	

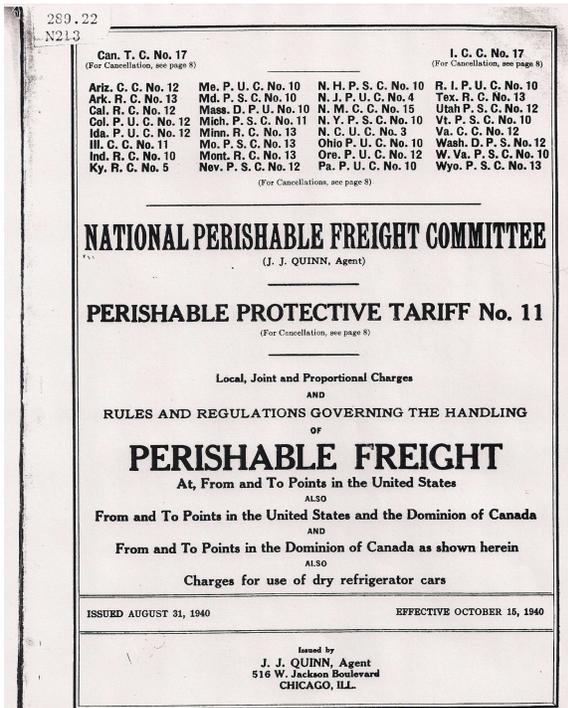
Figure 2

Figure 1 is the Micro-Mark/Old Line Graphics-sized waybill. Figure 2 is the larger format initially designed by Tony Thompson. Notice that the title has been changed from that described above and that specific fields have been provided for icing information to simplify operations for those simulating reefer icing.

Information on the development and production of these waybills can be found at the links and references contained in [The Case for the Single-Cycle Waybill](#).

Perishable Freight - Opportunities for Operation

The Perishable Protective Tariff is organized in Sections beginning with the General Rules and Regulations applying to the various services. The Section titles are rather long and legalistic but can be simplified for reference purposes. For example the title of Section 2, in full, is:



“Section No.2 Charges and Special Rules Governing Refrigeration Services, (as provided in this section) on Carload Shipments, also less than carload shipments as provided for in Rules Nos. 260, 265, and 270 of Fruits, Vegetables, Berries, Melons and Other Perishable Freight As Provided For In This Section
This Section will not apply to Bananas or Coconuts in straight or mixed carloads, except as provided for in Paragraph A of Rule No. 200. Governed by General Rules and Regulations in Section No. 1, unless otherwise specifically provided for in this Section.
The provisions of this section take precedence over Sections 3 and 4.”

This is more information than we need for modeling purposes as are the titles of the other sections. We will refer to them here as:

Section 1	Rules and Regulations
Section 2	Refrigeration Services
Section 3	Replenishing Services
Section 4	Icing and Re-icing Services
Section 5	Heater Service
Section 6	Less Than Carload
Section 7	Refrigeration Revenue Disposition
Section 8	Dry Refrigerator Car Service

Within each Section are rules specific to the services covered by that Section. The largest Section by far is Section 2 - Refrigeration Services occupying 249 pages of the 432 pages of the complete tariff.

Later editions of the Perishable Protective Tariff rearrange the contents of the Sections and add additional rules and charges for new services such as Mechanical Refrigeration which was still in its experimental stages in 1940.

It is important that the Section numbers which will be converted to “CPS” entries (see Figures 1 and 2) are consistent across all of your perishable waybills. I recommend that you select a single tariff from your particular era (if available) and use the section numbers from that tariff alone. (CPS, Carriers Protective Services, Ed.)

Part 2 - Refrigeration

Some definitions are in order here to specify what is covered by each service: (There are slight and unambiguous, differences between the terminologies used to identify the services in the Station Agent’s Blue Book [1928] and the Perishable Protective Tariff No. 11 [1940].

“594. Full Refrigeration. When a car is transported under full refrigeration, it means that the car is to be fully iced at the point of origin and re-iced to capacity at all regular icing stations. This service should be indicated by the shipper as “Standard Refrigeration” (if salt is desired the shipper must specify percentage). The charge for this service is so much per car from the point of origin to the final destination of the shipment and is called a “stated refrigeration charge”.”

(Station Agent’s Blue Book, pg 103)

“Rule No. 201:

Shipper’s Instructions

“ . . . shipper must specify on shipping order and/or bill of lading the service as authorized by this Section using one of the shipping instructions as indicated below and Agent must enter on the waybill the notation as given below (C) to cover the service:

- (A) - Service
- (B) - Shipper’s Instructions.
- (C) - Waybill Notation

A. Fresh Fruits, Vegetables, Berries or Melons

- 1 - A Standard Refrigeration without salt.
B Standard Refrigeration
C Re-ice to capacity at all regular icing stations
- 2 - A Standard Refrigeration with salt
B Standard Refrigeration. Use 5% salt. (maximum)
C See List in Rule 202

B. Preserved, crushed, evaporated, dried, frozen, canned or cold pack, fruits, berries, vegetables or melons and/or fruit juices

- 1 - A Standard Refrigeration without salt.
B Standard Refrigeration
C Re-ice to capacity at all regular icing stations with (coarse or chunk) ice

Perishable Freight - Opportunities for Operation

- 2 - A Standard Refrigeration with salt
- B Standard Refrigeration. Use ___% salt.
- C See List in Rule 203

C. Perishable freight other than referred to in paragraphs A. and B

- 1 - A Standard Refrigeration without salt.
- B Standard Refrigeration
- C Re-ice to capacity at all regular icing stations with chunk ice
- 2 - A Standard Refrigeration with salt
- B Standard Refrigeration. Use ___% salt
- C Re-ice to capacity at all regular icing stations with (coarse or chunk) ice and ___% salt.”

(Perishable Protective Tariff No. 11 [1940], pages 118 -119)

Model Waybill Examples [Instruction and Icing portion of model waybill]

Perishable Freight - Opportunities for Operation

A. Fresh Fruits, Vegetables, Berries or Melons

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS: RE-ICE-TO CAPACITY AT ALL REGULAR ICING STATIONS			
PRE ICE	INITIAL ICE	SALT	CPS
	X		2

Figure CPS 2 A-1-C
Standard Refrigeration

The use of salt with icing of fresh and preserved fruits and vegetables was complex and allowed for multiple variations of initial and enroute salting under Standard Refrigeration.

See Rule 202 *
Figure CPS 2 A-2-C
Standard Refrigeration w/Salt

B. Preserved, crushed, evaporated, dried, frozen, canned or cold pack, fruits, berries, vegetables or melons and/or fruit juices

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS: RE-ICE-TO CAPY AT ALL REG. ICING STA. WITH CHUNK ICE			
PRE ICE	INITIAL ICE	SALT	CPS
	X		2

Figure CPS 2 B-1-C
Standard Refrigeration

The use of salt with icing of fresh and preserved fruits and vegetables was complex and allowed for multiple variations of initial and enroute salting under Standard Refrigeration.

See Rule 203 *
Figure CPS 2 B-2-C
Standard Refrigeration w/Salt

C. Perishable freight other than referred to in paragraphs A. and B

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS: RE-ICE-TO CAPY AT ALL REG. ICING STA. WITH CHUNK ICE			
PRE ICE	INITIAL ICE	SALT	CPS
	X		2

Figure CPS 2 C-1-C
Standard Refrigeration

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS: RE-ICE-TO CAPY AT ALL REG. ICING STA. WITH CHUNK ICE AND 5% SALT			
PRE ICE	INITIAL ICE	SALT	CPS
	X	5%	2

Figure CPS 2 C-2-C
Standard Refrigeration w/Salt

* Rule 202 is on page 119 of the [Perishable Protective Tariff No 11 \(1940\)](#), and Rule 203 is on page 120.

These examples should cover almost all modelers' waybill requirements. Those wishing to model more extensive icing operations should refer to the instructions and waybill samples for Replenishment Service and Icing and Re-icing Service described below.

Perishable Freight - Opportunities for Operation

The charges for any perishable freight protection were over and above the regular tariff charges for moving freight. The cost of moving a carload of perishable freight was, therefore, the regular freight charges from origin to destination plus the charges for any protective service.

At this point, the natural question for the modeler interested in representing icing is “OK, but how was a car icing accomplished?” Probably the most straightforward and succinct explanation of this is Tony Thompson’s post on [Refrigerator Car Service Terminology](#) in his December 2012 Blog.

Anyone who is really interested in the what, when, how, and why of icing should pause here to read this before continuing. In the post, Tony makes reference to the circulars issued by the railroads to their employees engaged in perishable freight operations. One such circular is [SFRD Circular 2-L, a reprint of the National Perishable Freight Committee Circular 20-D](#).

“595. Replenishing Service (stated charge). Shippers do not always desire the carrier’s full refrigeration service or their shipments, and certain commodities only are subject to this provision as specified in the tariff. They may ice the car themselves at the shipping point and only desire the carrier’s icing service from some point enroute to the final destination
For such service a flat replenishing charge is provided at so much per car between certain points, which is called a “stated replenishing charge”.
In ordering such service the shipper is required to declare in writing on the bill of lading to the initial carrier at the loading station if the car is to be initially iced by the shipper or by the carrier, and whether it is to be re-iced enroute. If salt is desired shipper must specify percentage.”
([Station Agent’s Blue Book](#), pg 103)

“Rule No. 312:

Shipper’s Instructions

“(B) Shipper must specify on shipping order and/or bill of lading the service as authorized by this Section using one of the shipping instructions as indicated below and Agent must enter on the waybill the notation as given below (C) to cover the service:

A - Service

B - Shipper’s Instructions.

C - Waybill Notation

- 1 - A Replenishing service without salt.
 - B “Replenishing Service”
 - C “Re-ice to capacity at all regular icing stations”
- 2 - A Replenishing service with salt
 - B “Replenishing service. Use ____% salt.”
 - C “Re-ice to capacity at all regular icing stations with ____% salt.”
- 3 - A - Under ice. Do not re-ice

Perishable Freight - Opportunities for Operation

B - "Under ice. Do not re-ice."

C - "Do not re-ice" "

([Perishable Protective Tariff No. 11 \(1940\)](#), page 370)

Model Waybill Examples [Instruction and Icing portion of model waybill]

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when Icing should be charged & EXCEPTIONS: RE-ICE-TO CAPACITY AT ALL REGULAR ICING STATIONS			
PRE ICE	INITIAL ICE	SALT	CPS
	X		3

CPS 3-1
Replenishing Service w/o Salt

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when Icing should be charged & EXCEPTIONS: RE-ICE-TO CAPACITY AT ALL REGULAR ICING STATIONS WITH 5% SALT			
PRE ICE	INITIAL ICE	SALT	CPS
	X	5%	3

CPS 3-2
Replenishing Service w/Salt

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when Icing should be charged & EXCEPTIONS: DO NOT RE-ICE			
PRE ICE	INITIAL ICE	SALT	CPS
	X		3

CPS 3-3
Under Ice Do Not Re-ice

Tariff Section 3 - Replenishing Service:

“596. Icing and Re-icing Service (Cost of Service). Shippers may desire a special icing service not coming under the scope of either the refrigeration or replenishing service, and the carriers have provided an icing and re-icing service to meet the demand, which is based on the cost of service. The tariff states the cost of ice and salt furnished at the various points at which the service is applicable. The cost of ice ranges from \$4 to \$7 per ton and salt from 75 cents to \$1.20 per cwt.” [1940 prices]

([Station Agent’s Blue Book](#), pg 103)

“(1) When the service rendered is not included within the charges applicable as provided in Sections Nos. 2, 3, and 6, the rules and charges in this Section will apply for all ice, salt, or both, supplied to shipments of perishable freight including the following commodities:

Meats (fresh) in straight or mixed carloads

Packing-house products (Rule 1147) in straight or mixed carloads.

Butter, Eggs, Cheese, Dressed Poultry or game in straight or mixed carloads, or when shipped in mixed carloads with Live Poultry transported in combination

Live Poultry Refrigerator cars

Butterine or Oleomargarine, carloads

Fish, Including Clams, Crabs, Lobsters, Oysters, and Shrimp, carloads

Perishable Freight - Opportunities for Operation

*Ale, Beer and Beverages, in straight or mixed carloads
Bananas and Cocoanuts, in straight or mixed carloads.
Except when such commodities are loaded in mixed carloads on which stated
charges are published in Sections Nos. 2, 3, or 6, the charges shown in those
Sections will apply.”*

(Perishable Protective Tariff No. 11 [1940], page 374)

While “Shippers Instructions” are supplied in Rule No. 405, [Perishable Protective Tariff No 11 \(1940\)](#), page 374, no particular waybill wording is specified. for the 19 different “shippers instructions” listed. It is therefore up to the modeler to supply the wording for the waybill “Instructions” section based on the examples shown previously. Two suggested examples are shown below.

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when Icing should be charged & EXCEPTIONS: ICE-TO CAPACITY WITH CRUSHED ICE AT ALL REG. ICING STATIONS			
PRE ICE	INITIAL ICE	SALT	CPS
	X		4

CPS 4-1
Rule 405 (1)
Icing Service w/o Salt

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when Icing should be charged & EXCEPTIONS: ICE-TO CAPY W/CHUNK ICE AT ALL REG ICING STATIONS AND 5% SALT			
PRE ICE	INITIAL ICE	SALT	CPS
	X	5%	4

CPS 4-2
Rule 405 (3)
Icing Service w/Salt

The one remaining item of interest in the discussion of Refrigeration Service is the subject of Top or Body icing. Anytime certain commodities were shipped from or through very warm areas the removal of field heat and retention of moisture were a major consideration. These objectives were met by top icing, body icing or a combination of the two. In many cases this was accomplished by precooling the car, the load, or both prior to beginning transit.

Special Methods of Pre-cooling Commodities

“Pre-cooling is the rapid cooling of a commodity by removing field heat to obtain a suitable transit or storage temperature soon after harvest before it is moved in transit or placed in storage. The idea of “field heat” includes two different effects, the thermal heat imparted by warm air and sunshine upon the produce, and the biological heat generated by continuing life processes within the fruit or vegetable itself even though it has been detached from its parent plant. Removal of field heat thus means lowering the temperature of the produce to a suitable level, which slows ripening as well as suppressing the action of decay organisms. Moisture loss must also be controlled to retard wilting and shrinkage of the produce.”

Pacific Fruit Express, Thompson, Anthony W.; Robert J. Church, Bruce H. Jones, 2nd Edition (2000), Signature Press, Wilton, CA, page 347

Perishable Freight - Opportunities for Operation

Top or Package Ice Precooling

“This method was most effective for precooling leafy vegetables, cantaloupes, and similar products. The placement of crushed or snow ice in the shipping container as it was packaged or the blowing in of a layer of snow ice over the load inside the car, or both, contributed to precooling and moisture retention. By allowing the melting all the top ice before transit, the shipper was relieved from paying certain charges ordinarily assessed with cars billed as forwarded with top ice tariffs.”

Pacific Fruit Express, page 349

Top Icing for Transit

“This service, used mainly for leafy vegetables, root vegetables, melons, keg or draught beer, and Christmas trees, consisted of the placing of finely crushed ice blown into the car over the top of the load. The amount, or net quantity, was specified by the shipper. Ventilation was sometimes specified with this type transit. Re-top icing could also be specified by the shipper as required in transit”.

Pacific Fruit Express, page 349

Large shippers such as the big independent packing houses owned by grower’s associations who supplied hundreds or thousands of carloads in many instances had their own precooling and icing facilities. In these cases most of the pre-cooling (if needed) and initial icing of the cars would be accomplished by the shipper with the carrier providing re-icing or replenishment in transit. For the smaller shippers the carrier provided the complete spectrum of icing services.

An example of a waybill instruction where the carrier supplied a pre-iced car and the shipper did the precooling and initial icing with the carrier to provide in transit icing as required is shown below:

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS COOLED, RE-ICED TO CAPACITY BY SHIPPER AT LOADING STATION			
PRE ICE	INITIAL ICE	SALT	CPS
X			2

CPS 2 Pre-cooled
Pre-iced car from Carrier

This concludes Refrigeration Service (CPS2) for road haul commodities. Less Than Carload (LCL) and local delivery are covered under CPS 6.

Part 3 - Ventilation Service

The distinctive feature separating Refrigeration Service from Ventilation Service is that, although cars are usually iced in both cases, under Refrigeration Service, hatch plugs are always in and hatch covers are always closed.

Ventilation service was used most frequently in connection with the transportation of fruits and vegetables from point of harvest to market (by volume, mostly points north and east of the Mississippi River). This transit, depending on the time of year, encountered wide variations in outside air temperature. Fruits and vegetables, however, required that the rail car in which they were shipped maintain a more or less constant temperature range over the entire journey. The most valuable resource for the results of the extensive research into what the optimum temperature ranges were is found in [U. S. Department of Agriculture Handbook No. 195, entitled "Protection of Rail Shipments of Fruits and Vegetables"](#). While this is dated 1961, the research occurred over the 50 years prior to its publication and is suitable for any era to that point.

In Perishable Protective Tariff No. 11, which is being used as a source for this article, Ventilation Service falls under Section 1. Therefore references to Ventilation service will be referred to as CPS 1.

For ventilation service to work most effectively, pre-cooling of the car and product was essential (See above for pre-cooling methods). The heat to be removed (the heat load) before transit included

- (1) sensible or field heat of the commodity, packages, and car structure,
- (2) the heat of respiration of the commodity,

The heat to be removed during transit included

- (1) heat leakage into the refrigerator car during transit, and
- (2) heat generated by the operation of car fans.

Maintaining a given level of moisture was also of importance especially in the transport of leafy vegetables (See "Top Icing", above).

Ventilation service is defined as "the manipulation of ventilation devices (hatch covers and plugs) of car bunkers to permit or prevent passage of outside air to the car interior".

Standard Ventilation is the manipulation of vents at certain temperatures as prescribed in the rule.

Special Ventilation is the manipulation of vents at temperatures or stations specified by the shipper, and

Perishable Freight - Opportunities for Operation

Combination Ventilation is the use of both Standard and Special Ventilation, each on a portion of the route. The carrier will also accept instructions to keep the vents closed throughout entire handling of the shipment.

Between the three types of Ventilation Service offered, the shipper had far more decisions to make than under Refrigeration Service.

Since the main purpose of this article is model railroad operations, all of the variations of inserting or removing plugs and opening and closing hatches are not of much practical use. The prescribed waybill notations are extensive and vary depending on the commodity being transported (See: Perishable Protective Tariff No. 11, Section 1, Rule No. 85, pg 111 ff.). This is a level of detail way beyond anything useful to the modeler. Standard Ventilation covered a variety of products as well as plug and hatch arrangements. Since few model reefers permit hatch manipulation, I would argue that a notation of “Standard Ventilation” should be sufficient for waybills used in model operations.

On C.L. TRAFFIC INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS			
STANDARD VENTILATION			
PRE ICE	INITIAL ICE	SALT	CPS
	X		1

CPS 1 Standard Ventilation

Part 4

Protective Service Against Cold

Protective services against cold are the services needed when the outside air temperature is below that specified for the transit temperature of the load. It was achieved by placing charcoal heaters (and later thermostatically controlled LF (liquid fuel - alcohol heaters) in the empty ice bunkers of the reefers carrying the product.

Protective Service Against Cold is covered in Section 5 of Perishable Protective Service Tariff No. 11 (1940). The model waybill reference will therefore be CPS 5.

Protective Service Against Cold was only offered at certain times of the year and in certain parts of the United States. The geographic areas covered were known as “heater territory(s)”. The Cold Weather Period specified in the tariff runs from October 15th to the following April 15th, inclusive, except as provided in other rules.

Heater Territory under Carrier Protective Service is shown on pg. 60, Figure 32 of *USDA Handbook 195, Protection of Rail Shipments of Fruits and Vegetables*. Shipper Specified Service territory is shown in Figure 33 on pg. 61. “Carriers’ Protective Service Against Cold or Heater Service will be supplied only on shipments loaded in

Perishable Freight - Opportunities for Operation

refrigerator cars equipped with ventilating devices and of such construction as to permit installation of heaters in bunkers or tanks”.

For standard Carriers’ Protective Service Against Cold, the waybill must carry the notation “Carriers’ Protective Service Against Cold”

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS			
CARRIER'S PROTECTIVE SERVICE AGAINST COLD			
PRE ICE	INITIAL ICE	SALT	CPS
			5

Carriers’ Protective Service Against Cold for shipments originating outside of Heater Territory was only furnished from the point of entry into the Heater Territory through which the shipment passed. The waybill was required to carry the notation “Carriers’ Protective Service Against Cold from point of entry into Heater Territory”.

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS			
CPS AGAINST COLD FROM POINT OF ENTRY INTO HEATER TERRITORY			
PRE ICE	INITIAL ICE	SALT	CPS
			5

There was also, as with Refrigeration Service, a “Shippers’” version of protection against cold known as “Shippers’ Protective Service Against Cold”. All of the services that could be obtained under the Carriers’ Protective Service were available but many of the details such as servicing the heaters enroute, providing fuel, and removing heaters at the destination were each charged for individually. The burden was placed on the shipper to specify when and how the heaters were to be used. While this could be more expensive, it gave the shipper more latitude over carload temperature control over the entire trip within and outside of Heater Territory than available under Carriers’ Protective Service Against Cold. Use of Shippers’ Protective Service Against Cold required a variety of tariff-specified waybill notations which will be of little use to the modeler. Care should be taken in the use of perishable waybill notations as they are dependent on the location of the model railroad (Heater Territory?) and the time of the year represented (late fall, winter, early spring?).

Less than Carload (LCL)

Most of the above describes the waybilling associated with full carload shipment of perishable goods. There was still the necessity of moving perishables to the retail level once the line haul trip was done. Most perishables were shipped to wholesale grocery concerns who in turn would handle distribution to the local retailers. The major exception to this was the handling of fresh meat. All LCL shipments of

perishable freight were subject to the rules specified in Section 6 of Tariff No. 11, so the model waybill designation will specify CPS 6.

Meat Peddler Cars

The major meat packers (Swift, Armour, etc.) moved their product from the meat packing plant to “branch houses” located in cities and towns distant from the main plant. Branch houses would in most cases perform additional processing functions such as cutting to customer order or sausage making. These branch houses would deal directly with butcher shops, meat markets, restaurants, and other end consumers. In those situations where markets and towns were too small to have their own branch house, the packer supplied a refrigerator car known as a “meat peddler car”. This was defined as “a car handled by carriers under special arrangements made with shippers for less than carload shipments of Meats and/or Packing House Products, etc.”, A meat peddler car was loaded by and at the expense of the consignor with several LCL loads for destinations and customers along a specified route. Any requirements for ice and or salt for icing or re-icing were subject to the charges for these services under the provisions of CPS 4.

While there are no specific tariff instructions required on waybills associated with this service, the following is a suggested Instruction to identify for the operator how the car is to be handled.

Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS			
MEAT PEDDLER CAR			
PRE ICE	INITIAL ICE	SALT	CPS
	X		6
No. PKGS	DESCRIPTION OF ARTICLES		
20 SIDES	DRESSED BEEF		

Scheduled Refrigerator Car Service

The term “Scheduled Refrigerator Car Service” means insulated car service established or operated by and at the convenience of carriers for the handling of less than carload shipments of perishable freight. While there are no tariff instruction requirements for waybills for this service, shippers are required to state on the shipping order or bill of lading one of the following notations:

“Box Car Service”

“Scheduled Refrigerator Car Service”

The following is a suggested Instruction to identify for the operator how the car is to be handled.

Perishable Freight - Opportunities for Operation

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS)			
SCHEDULED REFRIGERATOR CAR SERVICE			
PRE ICE	INITIAL ICE	SALT	CPS
	X		6
No. PKGS	DESCRIPTION OF ARTICLES		
10 BOXES	DRESSED PORK PRODUCTS		

Box Car Service

There are some locations on lightly traveled routes where the carrier does not provide Scheduled Refrigerator Car Service over all or a portion of the route. In those cases LCL perishable freight is carried in box cars. The effort is made to maintain temperature control by icing the containers or packages along with hanging curtains within the box car and over the box car door openings to minimize the introduction of heat during unloading at intermediate stops.

“Ordinary box car service or its equivalent will be given between points from and to which there is no “Scheduled Refrigerator Car Service” available over any portion of the route. In such cases bills of lading and *waybills* should carry notation as follows: “Box Car Service”.”

As the tariff specifies that waybills carry the notation the following instruction would be appropriate:

On C.L. TRAFFIC-INSTRUCTIONS (Regarding Icing, Ventilation, Heating, Weighing, etc. If used, specify when icing should be charged & EXCEPTIONS)			
BOX CAR SERVICE			
PRE ICE	INITIAL ICE	SALT	CPS
			6
No. PKGS	DESCRIPTION OF ARTICLES		
10 BOXES	DRESSED PORK		

“Where there is “Scheduled Refrigerator Car Service” over a portion of the route, perishable freight may be given the benefit of it, but will be subject to ordinary box car service or its equivalent for that portion of the route over which “Scheduled Refrigerator Car Service” is not operated. In such cases the bills of lading and waybills should carry the following notation:

“Subject to box car service or its equivalent for that portion of the route over which “Scheduled Refrigerator Car Service” is not operated.”

Since it is highly unlikely that any model railroad would intentionally model such a situation, no example waybill instruction is provided.

Note that in all of the LCL examples the “No. Pkgs.” Entry reflects a quantity that is a fraction of a carload and is representative of amounts delivered at the retail level.

About the Author



Mike White was a member of several rail oriented clubs and historical societies. Mike is past MER Secretary and Potomac Division Paymaster. His Solomons and Patuxent Railroad, inspired and informed by the Maryland and Pennsylvania Railroad, represents a rural north-south line between Owings, MD and interchange with the Chesapeake Beach Railway and Solomons Island.

Murray Michael White, 77, of Owings, MD passed away April 2, 2016 at Anne Arundel Medical Center. He was born October 2, 1938 in Baltimore, MD to William Murray and Thelma Delores (Houston) White.

Mike was a lovable curmudgeon with soft spots for family, trains, burgers and his kitty-cats. A sailor and a pilot, he brought a craftsman's skill and a designer's architectural eye to his many creative projects, ranging from small (his ambitious HO train layout) to large – the dream house he and wife Sue built in the Southern Maryland countryside.

He was proud of his service in the US Army and the Maryland State Police. His love of uniforms continued with participation in the Coast Guard Auxiliary and Boy Scout Leadership. Mike loved to share his knowledge; he was a true Renaissance man. He adored his grandchildren and they loved him fiercely in return. His wife and children were at his side and he never lost his sense of humor. He was himself to the end.

Bibliography

With hyperlinks

If the links don't work directly from the text, copy and paste the link in your browser's address line.

The Station Agent's Blue Book

<http://babel.hathitrust.org/cgi/pt?id=mdp.39015011139303;page=root;view=image;size=100;seq=5;num=i>

Perishable Protective Tariff No. 11 (1940)

<https://archive.org/details/CAT10939686>

Perishable Protective Tariff No. 11 - Supplements No. 12 and 19

<https://drive.google.com/file/d/0B7SG5wBHSOgPdUVwbTFZUTR5emM/view?usp=sharing> (Supplements 12 and 19)

AUTHOR'S NOTE: Since I began researching and writing this article, I have made several visits to the USDA National Agricultural Library (NAL) in Beltsville, Maryland to obtain access to their copy of Perishable Protective Tariff No. 11. Over the course of several months, and with the able assistance of Wayne Thompson of the NAL, I was able to influence the NAL to digitize Perishable Protective Tariff No. 11 and make it available to a wider audience. An unexpected benefit of this has been the additional digitization of two Supplements to this tariff, one of which was not discovered until the effort took place.

The Case for the Single-Cycle Waybill, Mike White

<https://drive.google.com/file/d/0B7SG5wBHSOgPNHlWOG5Ob0Q3aTA/edit?usp=sharing>

Refrigerator Car Service Terminology

<http://modelingthesp.blogspot.com/2012/12/refrigerator-car-service-terminology.html>

SFRD Circular 2-L, a reprint of the National Perishable Freight Committee Circular 20-D

<https://drive.google.com/file/d/0B7SG5wBHSOgPd1BvM3FRcElZYTg/edit?usp=sharing>

Perishable Freight - Opportunities for Operation

U. S. Department of Agriculture Handbook No. 195, "*Protection of Rail Shipments of Fruits and Vegetables*".

<https://drive.google.com/file/d/0B7SG5wBHSOgPbFB3S2tzaW9sY00/view?usp=sharing>