Transit Feed Specification

Revised July 19, 2006

Contents

Overview [Contents]

Google Transit Trip Planner enables users to create efficient travel itineraries using public transportation schedules. This document explains how you can provide public transportation schedules to Google so that those schedules can be incorporated into Google Transit. It explains the types of files that comprise a Google Transit feed and defines the fields used in all of those files.

Term Definitions [Contents]

This section defines terms that are used throughout this document.

- **Field required** - The field column must be included in your feed, and a value must be provided for each record. Some required fields permit an empty string as a value. Please see the field definition for details.

- **Field optional**
- **Dataset unique** - The field contains a value that maps to a single distinct entity within the column. For example, if a route is assigned the ID **1A**, then no other route may use that route ID. However, you may assign the ID **1A** to a location because locations are a different type of entity than routes.

Understanding the Google Transit Feed Format [Contents]

Google Transit feeds consist of the following files:

- **agency.txt - Required**. This file contains information about the transit agency.

- **stops.txt - Required**. This file contains information about individual locations where vehicles pick up or drop off passengers.

- **routes.txt - Required**. This file contains information about a transit organization's routes. A route is a sequence of two or more stops.

- **trips.txt - Required**. This file contains information about scheduled service along a particular route. Trips consist of two or more stops that are made at regularly scheduled intervals.

- **stop_times.txt - Required**. This file lists the times that a vehicle arrives at and departs from individual stops for each trip along a route.
- **calendar.txt - Required**. This file defines service categories. Each category indicates the days that service starts and ends as well as the days that service is available.

- **calendar_dates.txt - Optional**. This file lists exceptions for the service categories defined in the **calendar.txt** file.

File Requirements [Contents]

The following requirements apply to the format and contents of your files:

- All Google Transit feeds should be saved as comma-delimited text.

- The first line of your feeds must contain field names. Each subsection of the Google Transit Feed Field Definitions section corresponds to one of the files in a Google Transit Feed and lists the field names you may use in that file.

- All field names are case-sensitive.

- Field values may not contain tabs, carriage returns or new lines. If a field contains any of these characters, we will not be able to process that data.

- Field values that contain quotation marks or commas must be enclosed within quotation marks. In addition, each quotation mark in the field value must be preceded with a quotation mark. This is consistent with the manner in which Microsoft Excel outputs comma-delimited (CSV) files. The following example demonstrates how a field value would appear in a comma-delimited file:

  Original field value: - Contains "quotes", commas and text
  Field value in CSV file: - "Contains ""quotes"", commas and text"

- Field values should not contain HTML tags, comments or escape sequences.

- Files should be encoded in UTF-8 to support all Unicode characters.

- Name your feed files using the following naming conventions:

  - agency.txt
  - stops.txt
  - routes.txt
  - trips.txt
  - stop_times.txt
  - calendar.txt
  - calendar_dates.txt

- Zip the files in your feed. Name the zip file **google_transit.zip**. Post the zip file in a directory named **YYYYMMDD** where **YYYYMMDD** is the earliest date of valid service included in any of the files.

Updating Your Feeds

These guidelines apply to feed updates:

- You may simultaneously post more than one zip file if each zip file contains all of the data for a unique date range. In other words, different zip files cannot contain data for overlapping service dates. **Note:** As described in the previous section, each zip file that you post should reside in a different directory on your server.
- When Google fetches a new file, the data in that file will overwrite all data previously stored for your agency. As a result, please ensure that your files provide complete data for a service date range. As noted in the previous section, you can provide multiple zip files as long as the files do not contain data for overlapping service dates.

Requirements for Posting Your Feeds

These requirements apply to the location of your feeds:

- You will need to provide the URL location of your feed. We support HTTP and HTTPS. You will also need to provide a login and password if they are needed to retrieve your feed.

- Your IT/Networking teams should know that we are periodically fetching data from the location that you specify so that they do not change file permissions for your feed or otherwise block or break the data fetching process.

Google Transit Feed Field Definitions [Contents]

agency.txt - Field Definitions [Contents]

Field Name	Details
agency_name	**Required**. The **agency_name** field contains the name of the transit agency. **Example(s):** TriMet
agency_url	**Required**. The **agency_url** field contains the URL of the transit agency. The value must be a fully qualified URL that includes **http://**. **Example(s):** http://www.trimet.org
agency_timezone	**Required**. The **agency_timezone** field contains the timezone where the transit agency is located. Please refer to http://en.wikipedia.org/wiki/List_of_tz_zones for a list of valid values. **Example(s):** America/Los_Angeles

stops.txt - Field Definitions [Contents]

Field Name	Details
stop_id	**Required**. The **stop_id** field contains an ID that uniquely identifies a stop. Multiple routes may use the same stop. The **stop_id** is dataset unique. **Example(s):** S81NATHIST
stop_name	**Required**. The **stop_name** field contains the name of a stop. Please use a name that people will understand in the local and tourist vernacular. **Example(s):** 81 St-Museum of Natural History
stop_desc	**Optional**. The **stop_desc** field contains a description of a stop. Please provide useful, quality information. Do not simply duplicate the name of the stop. **Example(s):** The 81 St-Museum of Natural History stop is located at the southwest corner of the intersection at West 81st St. and Central Park West. The stop is two blocks south of the American Museum of Natural History.
stop_lat	**Required**. The **stop_lat** field contains the latitude of a stop. The field value should contain a WGS 84 geodetic datum. This field is optional if you provide complete address information. **Example(s):** 40.781969
stop_lon	**Required**. The **stop_lon** field contains the longitude of a stop. The field value should contain a WGS 84 geodetic datum. This field is optional if you provide complete address information. **Example(s):** 73.972011
stop_street	**Optional if stop_lat and stop_lon fields are provided**. The **stop_street** field identifies the street address of a stop. **Example(s):** 393 7th Ave.

stop_city	**Optional if stop_lat and stop_lon fields are provided**. The **stop_city** field identifies the city where a stop is located. **Example(s):** New York
stop_region	**Optional if stop_lat and stop_lon fields are provided**. The **stop_region** field contains the state or region where a stop is located. **Example(s):** NY
stop_postcode	**Optional if stop_lat and stop_lon fields are provided**. The **stop_postcode** field contains the postal code or zip code for a stop. **Example(s):** 10001
stop_country	**Optional if stop_lat and stop_lon fields are provided**. The **stop_country** field contains the ISO 3166 country code for a stop. **Example(s):** US

routes.txt - Field Definitions [Contents]

Field Name	Details
route_id	**Required**. The **route_id** field contains an ID that uniquely identifies a route. The **route_id** is dataset unique. **Example(s):** R17X
route_short_name	**Required**. The **route_short_name** contains the short name of a route. This will often be the route number or route character(s). If the route does not have a short name, please use an empty string as the value for this field. See a Google Transit screenshot highlighting the **route_short_name**. **Example(s):** If the route full name is **17-NW 21st Ave/St Helens Rd**, then please provide **17** as the **route_short_name** value.

route_long_name	**Required**. The **route_long_name** contains the full name of a route. This name will often include the route's destination or stop. If the route does not have a long name, please use an empty string as the value for this field. See a Google Transit screenshot highlighting the **route_long_name**. **Example(s):** If the route full name is **17-NW 21st Ave/St Helens Rd**, then please provide **NW 21st Ave/St Helens Rd** as the **route_long_name** value.
route_desc	**Optional**. The **route_desc** field contains a description of a route. Please provide useful, quality information. Do not simply duplicate the name of the route. **Example(s):** A trains operate between Inwood-207 St, Manhattan and Far Rockaway-Mott Avenue, Queens at all times. Also from about 6AM until about midnight, additional A trains operate between Inwood-207 St and Lefferts Boulevard (trains typically alternate between Lefferts Blvd and Far Rockaway.
route_type	**Required**. The **route_type** field describes the type of transportation used on a route. Valid values for this field are: **0** - Tram **1** - Subway **2** - Rail **3** - Bus **4** - Ferry See a Google Transit screenshot highlighting the **route_type**. **Example(s):** 2

trips.txt - Field Definitions [Contents]

Field Name	Details
route_id	**Required**. The **route_id** field contains an ID that uniquely identifies a route. This value is referenced from the routes.txt file. **Example(s):** R17X
service_id	**Required**. The **service_id** contains an ID that uniquely identifies a set of dates when service is available for one or more routes.This value is referenced from the calendar.txt file. **Example(s):** WE

trip_id	**Required**. The **trip_id** field contains an ID that identifies a trip. The **trip_id** is dataset unique. **Example(s):** 1AWE
trip_headsign	**Optional**. The **trip_headsign** field contains the text that appears on a sign in the vehicle that identifies the trip's destination to passengers. See a Google Transit screenshot highlighting the **trip_headsign**. **Example(s):** Montgomery Park
block_id	**Optional**. The **block_id** field identifies the block to which the trip belongs. A block consists of two or more sequential trips made using the same vehicle, where a passenger can transfer from one trip to the next trip by staying on the same vehicle. Any trips that occur on the same day and that have the same **block_id** will be considered part of the same block. **Example(s):** B1AWE

stop_times.txt - Field Definitions [Contents]

Field Name	Details
trip_id	**Required**. The **trip_id** field contains an ID that identifies a trip. This value is referenced from the trips.txt. **Example(s):** 1AWE
arrival_time	**Required**. The **arrival_time** specifies the arrival time at a specific stop for a specific trip on a route. The value should be expressed in either HH:MM:SS local time after midnight of the day on which the trip begins or in seconds after midnight of the day on which the trip begins. For example, **12:10:00 a.m.** could also be expressed as **600**. If the arrival and departure times are identical, please provide the same value for the **arrival_time** and **departure_time** fields. Please include all times for stops that are time points. The arrival time for the last stop in a trip is required. All other arrival times are optional and, if unavailable, may be represented with an empty string value. Stops without arrival times will be scheduled based on the nearest preceding timed stop. Do not interpolate stops.

	Example(s): The following columns list stop times for a trip and the proper way to express those times in the **arrival_time** field: **Time** **arrival_time value** 08:10:00 A.M. 08:10:00 01:05:00 P.M. 13:05:00 07:40:00 P.M. 19:40:00 01:55:00 A.M. 25:55:00 **Note:** Trips that span multiple dates will have stop times greater than **24:00:00**. For example, if a trip begins at 10:30:00 p.m. and ends at 2:15:00 a.m. on the following day, the stop times would be **22:30:00** and **26:15:00**. Entering those stop times as **22:30:00** and **02:15:00** would not produce the desired results.
departure_time	**Required**. The **departure_time** specifies the departure time from a specific stop for a specific trip on a route. The value should be expressed in either HH:MM:SS local time after midnight of the day on which the trip begins or in seconds after midnight of the day on which the trip begins. For example, **12:10:00 a.m.** could also be expressed as **600**. If the departure and arrival times are identical, please provide the same value for the **arrival_time** and **departure_time** fields. Please include times for all stops that are time points. The departure time for the first stop in a trip is required. All other departure times are optional and, if unavailable, may be represented with an empty string value. Stops without departure times will be scheduled based on the nearest preceding timed stop. Do not interpolate stops. --- **Example(s):** The following columns list stop times for a trip and the proper way to express those times in the **departure_time** field: **Time** **departure_time value** 08:10:00 A.M. 08:10:00 01:05:00 P.M. 13:05:00 07:40:00 P.M. 19:40:00 01:55:00 A.M. 25:55:00 **Note:** Trips that span multiple dates will have stop times greater than **24:00:00**. For example, if a trip begins at 10:30:00 p.m. and ends at 2:15:00 a.m. on the following day, the stop times would be **22:30:00** and **26:15:00**. Entering those stop times as **22:30:00** and **02:15:00** would not produce the desired results.
stop_id	**Required**. The **stop_id** field contains an ID that uniquely identifies a stop. Multiple routes may use the same stop. This value is referenced from the stops.txt file. --- **Example(s):** S81NATHIST
stop_sequence	**Required**. The **stop_sequence** field contains the cardinal number that identifies the order of a stop on a particular trip. The first stop on the trip should have a **stop_sequence** of **1**, the second stop on the trip should have a **stop_sequence** of **2**, and so forth. --- **Example(s):** 3

pickup_type	**Required**. The **pickup_type** field indicates whether passengers are picked up at a stop as part of the normal schedule or whether a pickup at the stop is not available. This field also allows the transit agency to indicate that passengers must call the agency or notify the driver to arrange a pickup at a particular stop. Valid values for this field are: • **0** - Regularly scheduled pickup • **1** - No pickup available • **2** - Must phone agency to arrange pickup • **3** - Must coordinate with driver to arrange pickup The default value for this field is **0**. **Example(s):** 1
drop_off_type	**Required**. The **drop_off_type** field indicates whether passengers are dropped off at a stop as part of the normal schedule or whether a drop off at the stop is not available. This field also allows the transit agency to indicate that passengers must call the agency or notify the driver to arrange a drop off at a particular stop. Valid values for this field are: • **0** - Regularly scheduled drop off • **1** - No drop off available • **2** - Must phone agency to arrange drop off • **3** - Must coordinate with driver to arrange drop off The default value for this field is **0**. **Example(s):** 1

calendar.txt - Field Definitions [Contents]

Field Name	Details
service_id	**Required**. The **service_id** contains an ID that uniquely identifies a set of dates when service is available for one or more routes.The **service_id** is dataset unique. **Example(s):** WE
monday	**Required**. The **monday** field contains a binary value that indicates whether the service is valid for all Mondays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Mondays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Mondays in the date range. **Example(s):** 1

tuesday	**Required**. The **tuesday** field contains a binary value that indicates whether the service is valid for all Tuesdays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Tuesdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Tuesdays in the date range. --- **Example(s):** 1
wednesday	**Required**. The **wednesday** field contains a binary value that indicates whether the service is valid for all Wednesdays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Wednesdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Wednesdays in the date range. --- **Example(s):** 1
thursday	**Required**. The **thursday** field contains a binary value that indicates whether the service is valid for all Thursdays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Thursdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Thursdays in the date range. --- **Example(s):** 1
friday	**Required**. The **friday** field contains a binary value that indicates whether the service is valid for all Fridays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Fridays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Fridays in the date range. --- **Example(s):** 1

saturday	**Required**. The **saturday** field contains a binary value that indicates whether the service is valid for all Saturdays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Saturdays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Saturdays in the date range. **Example(s):** 1
sunday	**Required**. The **sunday** field contains a binary value that indicates whether the service is valid for all Sundays. **Note:** You may list exceptions for particular dates, such as holidays, in the calendar_dates.txt file. A value of **1** indicates that service is available for all Sundays in the date range. (The date range is specified using the start_date and end_date fields.) A value of **0** indicates that service is not available on Sundays in the date range. **Example(s):** 1
start_date	**Required**. The **start_date** field contains the start date for the service. The **start_date** field's value should be in YYYYMMDD format. **Example(s):** 20060525
end_date	**Required**. The **end_date** field contains the end date for the service. This date is included in the service interval. The **end_date** field's value should be in YYYYMMDD format. **Example(s):** 20071225

calendar_dates.txt - Field Definitions [Contents]

Field Name	Details
service_id	**Required**. The **service_id** contains an ID that uniquely identifies a set of dates when service is available for one or more routes.This value is referenced from the calendar.txt file. **Example(s):** WE
date	**Required**. The **date** field specifies a particular date when service availability is different than the norm. You can use the **exception_type** field to indicate whether service is available on the specified date. The **date** field's value should be in YYYYMMDD format. **Example(s):** 20071225
exception_type	**Required**. The **exception_type** indicates whether service is available on the date specified in the **date** field. A value of **1** indicates that service has been added for the specified date. A value of **2** indicates that service has been removed for the specified date. For example, suppose a route has one set of trips available on holidays and another set of trips available on all other days. You could have one **service_id** that corresponds to the regular service schedule and another **service_id** that corresponds to the holiday schedule. For a particular holiday, you would use the calendar_dates file file to add the holiday to the holiday **service_id** and to remove the holiday from the regular **service_id** schedule. **Example(s):** 2

Sample Data [Contents]

This section shows comma-delimited data samples for each file in a Google Transit feed.

agency.txt

```
agency_name,agency_url,agency_timezone
The Fun Bus,http://www.thefunbus.org,America/Los Angeles
```

stops.txt

```
stop_id,stop_name,stop_desc,stop_lat,stop_lon,stop_street,stop_city,stop_region,stop_country
S1,Mission St. & Silver Ave.,The stop is located at the southwest corner of the intersection.,37.728631,-122.431282,,,,
S2,Mission St. & Cortland Ave.,The stop is located 20 feet south of Mission St.,37.74103,-122.422482,,,,
S3,Mission St. & 24th St.,The stop is located at the southwest corner of the intersection.,37.75223,-122.418581,,,,
S4,Mission St. & 21st St.,The stop is located at the northwest corner of the intersection.,37.75713,-122.418982,,,,
S5,Mission St. & 18th St.,The stop is located 25 feet west of 18th St.,37.761829,-122.419382,,,,
S6,Mission St. & 15th St.,The stop is located 10 feet north of Mission St.,37.766629,-122.419782,,,,
```

routes.txt

```
route_id,route_short_name,rout_long_name,rout_desc,route_type
A,17,Mission,"The ""A"" route travels from lower Mission to Downtown. The ""A"" route is available for service on weekdays and weekends, but weekend service has limited stops.",B
```

trips.txt

```
route_id,service_id,trip_id,trip_headsign,block_id
A,WE,AWE,Downtown,1
A,WE,AWE,Downtown,2
```

agency.txt

```
trip_id,arrival_time,departure_time,stop_id,stop_sequence,boarding type
AWE,00:06:00,00:06:00,S1,1,0,0
AWE,,,S2,2,0,0
AWE,00:09:00,00:09:00,S3,3,0,0
AWE,,,S5,4,0,0
AWE,00:15:00,00:15:00,S6,5,0,0
AWD,00:06:00,00:06:00,S1,1,0,0
AWD,,,S2,2,0,0
AWD,00:09:00,00:09:00,S3,3,0,0
AWD,,,S4,4,0,0
AWD,,,S5,5,0,0
AWD,00:15:00,00:15:00,S6,6,0,0
```

calendar.txt

```
service_id,monday,tuesday,wednesday,thursday,friday,saturday,sunday,start_date,end_date
WE,0,0,0,0,0,1,1,20060701,20060731
WD,1,1,1,1,1,0,0,20060701,20060731
```

calendar_dates.txt

```
service_id,date,exception_type
WE,20060703,1
WE,20060704,1
WD,20060703,2
WD,20060704,2
```

Displaying Google Transit Data to Users [Contents]

The following screenshots show sample user interfaces displaying Google Transit data. Each screenshot highlights a different field from the Google Transit data feed.

Note: The Google Transit user interface is subject to change at Google's discretion. As such, there is no guarantee that the data that you provide will be displayed as shown in the screenshots below.

Figure 1: Highlighting the route's short name (20)

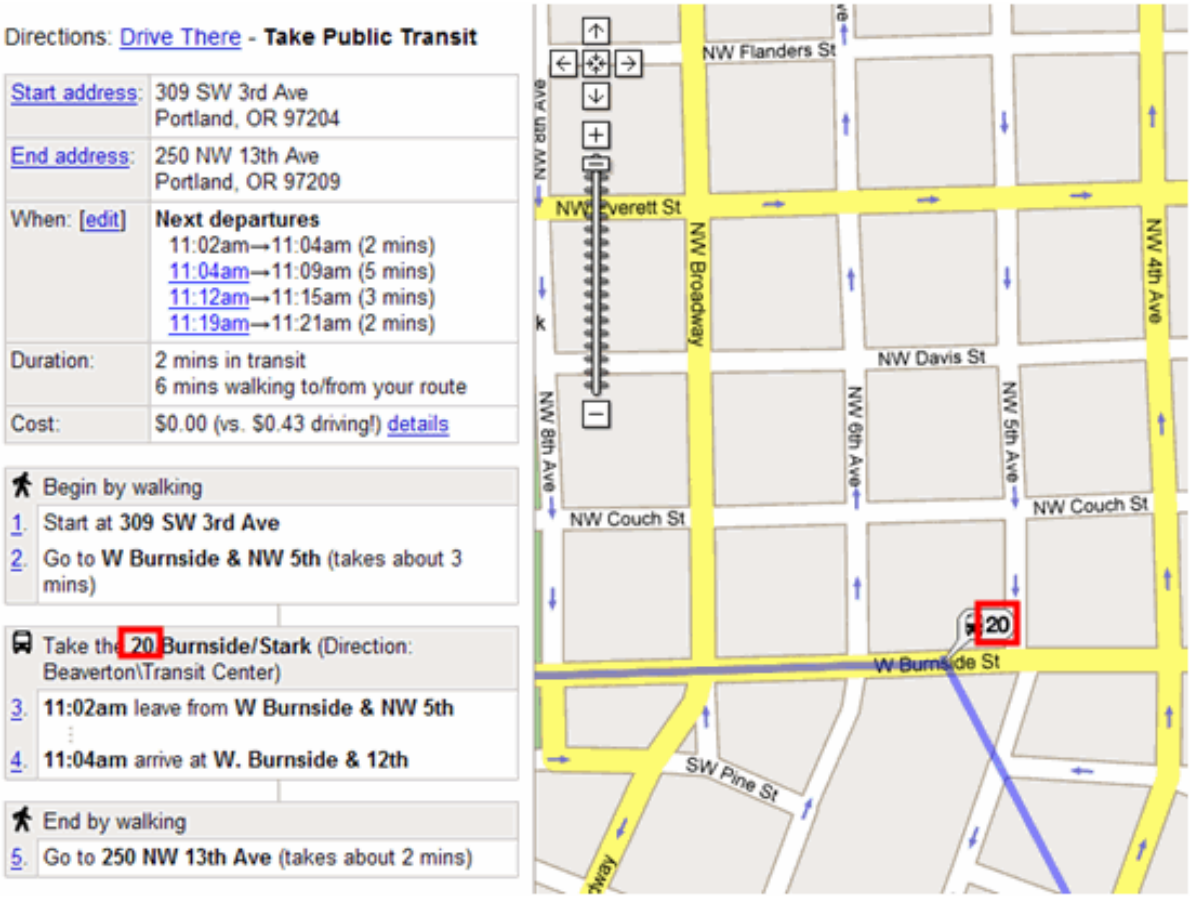

Figure 2: Highlighting the route's long name (Burnside/Stark)

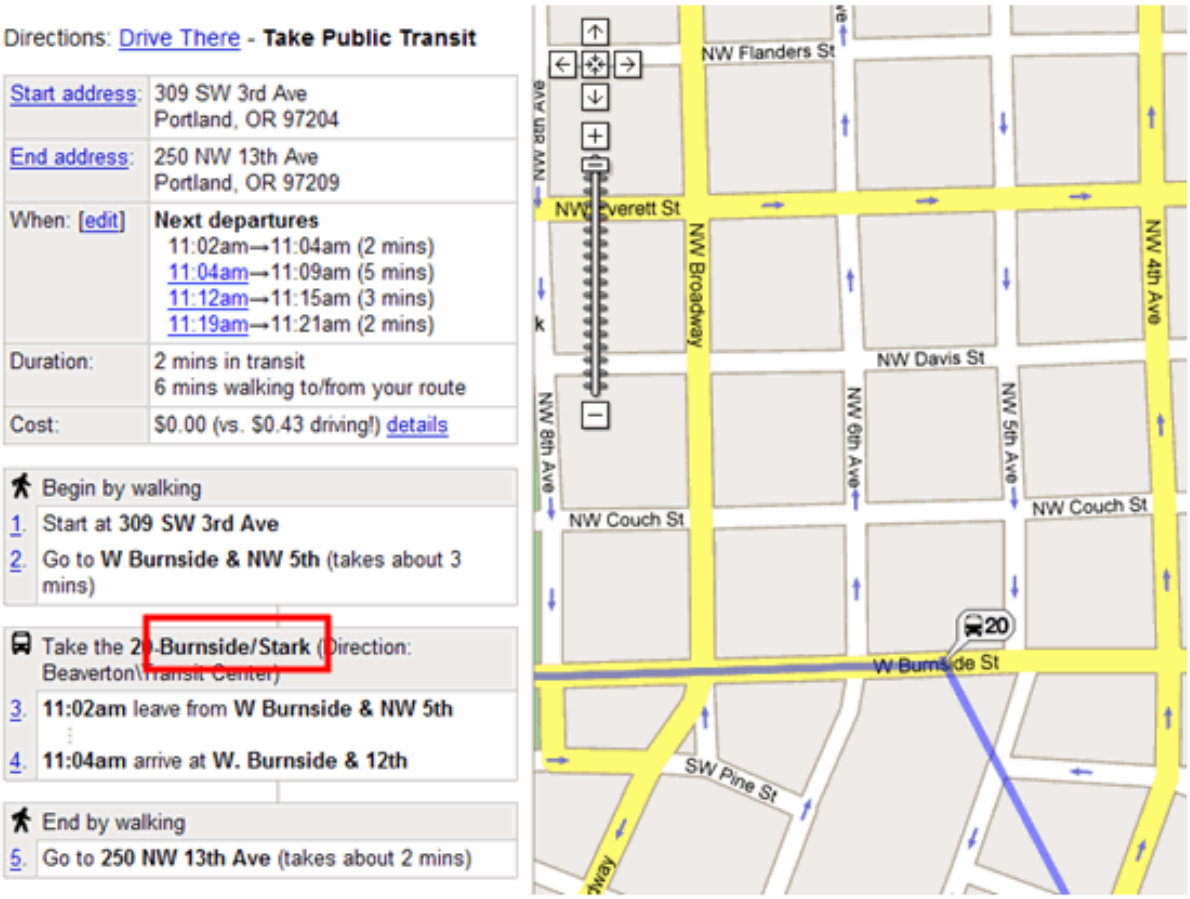

Figure 3: Highlighting the Trip Headsign (Beaverton\Transit Center)

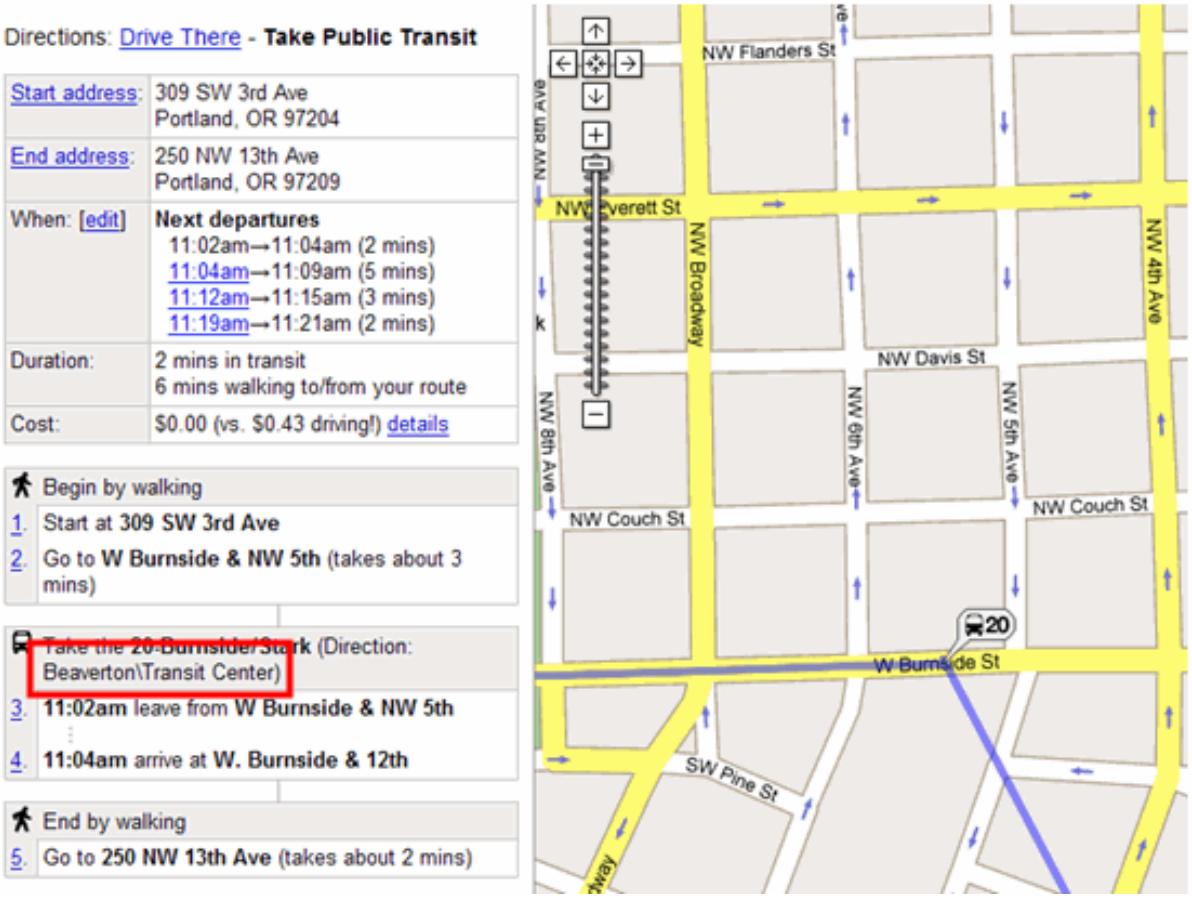

Figure 4: Highlighting the Route Type (with a bus icon)