APTA Streetcar & Heritage Trolley Subcommittee

Task Force Meeting, Seattle, Washington

Draft Minutes 9-27-09

Agenda

1. Introductions
2. Current state of the industry, including work to date on standards applicable to modern streetcar systems
    a. US Research, Standards and Safety Certification
        i. APTA
        ii. TRB
        iii. ASME
        iv. Other
    b. EU Research, Standards and Safety Certification
        i. UK Railway Safety Principles & Guidance
        ii. CEN
            1. European Committee for Electrotechnical Standardization (CENELEC)
        iii. VDV
            1. BOStrab
        iv. Other
3. ASME RT-1 Standard "Safety Standard for Structural Requirements for Light-Rail Vehicles".
    a. Revisions to CPUC General Order 143
4. Vehicle / platform interface
    a. vehicle width
    b. platform height and arrangement
    c. bridge plate and other ADA issues
    d. interoperability with light rail and other transit vehicles
5. 2010 Work Program

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Subcommittee Chair Jim Graebner and our host from Seattle Streetcar, Carl Jackson, began the meeting with a welcome and introductions. The group then began a discussion about existing research, standards and safety certification practices relevant to modern streetcar vehicles and systems. The purpose of the discussion was to begin with a look at what is already out there in terms of standards and to identify where US and World standards may differ. This seemed especially relevant since many modern streetcar designs have originated outside the US.

Relevant US documents from APTA, TRB, ASME and others were discussed. Relevant European Union documents from the UK Office of Rail Regulation ("Railway Safety Principles & Guidance" and "Guidance on Tramways") were discussed. The group reviewed relevant excerpts from the list of UK railway safety principles, noting how each principle is supported by a list of relevant "factors" that influence implementation. A brief discussion was then held about the CENELEC safety certification (aka "Safety Case") process, noting that it is regularly paired with the German BOStrab tramway standards in EU safety certification work. The group reviewed in detail relevant sections of the German VDV BOStrab (tramway) standard and noted the existence of other detailed tramway documents from VDV. John Smatlak will inquire with Martin Schroeder as to whether APTA has any official liaison with VDV that might facilitate obtaining English translations of more VDV documents. An English translation of the 1987 version of BOStrab (apparently the most current) is available.

The group also discussed having Tim Borchers work through APTA to request a copy of the Victorian Government (Australia) tramway standards. Robert Janku of Inekon also provided some insight into Czech Republic tramway standards and vehicle testing practice. This section of the meeting concluded with a discussion of the differences between US and World standards relevant to streetcars. It was noted that braking rates specified for US streetcars and LRVs appear to be lower than those called out in EU standards, and that this topic should be researched further. The specific example of changes to the Czech Inekon modern streetcar for US operators was discussed.

Next on the agenda was a discussion of the newly released ASME RT-1 Standard "Safety Standard for Structural Requirements for Light-Rail Vehicles". This standard has just been released and is available for purchase on the ASME website. The group discussed the development of the standard and familiarized itself with the layout, noting the separate criteria established for streetcar and light rail vehicles. The existence of the EU Crashworthiness Standard EN 15227 was also noted. It was further noted that ~~the EU standard differs from RT-1 in not having~~ while both standards have separate criteria for streetcar and light rail vehicles, ~~and~~ the EU standard differs from RT-1 in not having the same level of specificity on leading end design criteria for protection of automobiles and other street vehicles.

The group then discussed APTA's efforts to work with the California PUC to revise the structural language contained in General Order 143-~~A~~B, which will hopefully lead to the incorporation of the CEM principles embodied in RT-1 in lieu of the existing fixed 2g buff strength criteria. The group also thought that it would be useful to know how current streetcar designs would stack up relative to RT-1 and EN 15227.

A general discussion about the broader issue of crashworthiness followed. It was noted that the newer streetcar designs present new challenges to the operating authority in terms of reparability. In general older streetcar designs could sustain localized damage without major

frame damage, thus facilitating repairs. The question of whether newer car frame designs mighty be more susceptible than older designs to having the frame twisted in moderate severity collisions was also discussed.

The next portion of the agenda looked at the broad issue of vehicle / platform interface. Several diagrams were passed around illustrating some examples of modern and heritage streetcars, as well as light rail vehicles, berthing at various platform designs. The group developed an initial list of key issues relating to vehicle / platform interface. Standards for vehicle widths were noted to be most commonly between 24600mm (8 ft. 0 in.) and 2650mm (8 ft. 8 in.). Issues relating to sharing platforms with other transit services such as buses were also discussed. It was further noted that the TRB Light Rail Circulator Subcommittee has a similar topic (platform design) already in its work plan.

The concluding discussion centered on options for moving forward with a work plan (whether a standard, recommended practice or other product) that could facilitate implementation of modern streetcar projects by assisting buyers with vehicle selection. A discussion was held concerning the potential audiences for such a document, and the differences between a standard and a recommended practice, including the approval processes, which are typically much longer for a standard.

It was apparent to the task force that the most practical way to move forward was with an initial project to create a guideline document addressing modern streetcar vehicle selection criteria. Major issues would be identified and each topic would be covered in a separate section of the document. The example of the format used in the TRB "Trackway Infrastructure Guidelines for Light Rail Circulator Systems" was discussed. In this format, each section addresses a key issue and a guideline statement is provided at the end of the section.

The group discussed the resources necessary to support development of a Modern Streetcar Vehicle Selection guideline document. Significant research will be required in many key areas and this issue will need to be discussed with the Subcommittee's APTA and TRB peers. As an example of how an individual topic might be assembled for development within the document, the group walked through the issue "Vehicle / Platform Interface". It was decided that an overall project outline could be developed with a format that identified key issues, available resources and research needs for each topic. The Vehicle / Platform Interface topic example is attached on the following page. John Smatlak will assemble the draft document outline for review.

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EXAMPLE OF FORMAT PROPOSED FOR ADVANCING THE MODERN STREETCAR VEHICLE SELECTION GUIDELINE DOCUMENT

Topic: Vehicle / platform interface

Key Issues:

a. Vehicle Width

i. Typical Modern Streetcar and Light Rail vehicle widths are between 2460 mm (8 ft. 0 in.) and 2650mm (8 ft. 8 in.)

ii. Narrower cars have numerous issues. Below a certain width, it becomes difficult to do 2-2 seating, find room for bicycles, etc. (note: this is probably not desired anyway in low floor / accessible section of car). Seating requirements within car should be considered based on local operating conditions. ADA more challenging to implement in a narrower car since two wheelchairs can't fit across the car.

b. Platform Height, Length and Arrangement

i. Significant variation exists in platform design, influenced primarily by initial vehicle selection.

ii. Platforms are sometimes built with two levels to accommodate ADA access

iii. Platforms are frequently blended in with the sidewalk in an urban street environment

c. Bridge Plate and Other ADA Issues

i. Significant variation exists in bridge plate approach, e.g.: DC has purchased modern streetcars with active suspensions and no bridge plates, using instead a higher 14 in. platform. This approach has created issues for berthing buses at the same platform.

d. Interoperability with Light Rail and Other Transit Vehicles

i. If a narrow car is selected, it will be more difficult to also operate wider cars on the same line. Consideration should also be given to future upgrade of line to Light Rail and operation of streetcars over light rail system if applicable (e.g.: the narrow Portland streetcars can't do passenger operations on the Light Rail Mall)

ii. If platform is to be shared with buses, approach and departure angle for the busses must be considered along with platform height.

Research Needs:

- What are the issues with low floor buses of all types and lengths docking at a streetcar platform? Low-floor buses can use what curb / platform heights? (presumably 0 – 8 inches).

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- Survey of streetcar vehicle floor heights, vehicle widths

- Survey of low-height streetcar and light rail platforms arrangements and dimensions such as Portland, Seattle, Melbourne, Toronto and other international examples of cities sharing platforms with buses. How does Seattle handle wheelchairs on and off LRT and buses in the tunnel?

- Survey of Bridge plate: what's out there?

    - Examples of streetcars and LRT vehicles with and without active suspension, e.g.: DC Inekon cars will have higher platform (14") and no bridge plate. Concern that these platforms can't be used by buses.

    - Bridge plate locations within the car's floor plan

- What is the range of vehicle threshold / platform disparity that a bridge plate can compensate for?

- Should typical US street lane widths influence vehicle width? Do any major US cities have European type narrow streets? Given typical US lane widths, are there perceived or real advantages for a narrow (2460 mm / 8 ft. 0 in.) vehicle?

Available Resources:

- Chapter 5 "Tram Stops" in UK "Guidance on Tramways" document

- BOStrab Section 31 "Stopping Places"

- Paragraph from TRB "Trackway Infrastructure Guidelines for Light Rail Circulator Systems", excerpt from Part 7 "Compatibility of LRT and Light Rail Circulator Systems"

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