Stroudley Outside Framed Tender:

General Advice:

I have assumed you will use solder construction at most stages, with the exception of the attachment of whitemetal castings, though if you are adept at low-melt soldering, you can do this – *though proceed with great caution, as no liability can be accepted for damage to castings caused by soldering*.

Careful removal of parts from the frets, and gentle cleaning up of tabs and any ragged edges with a needle file is recommended.

An arrangement for bending the tender sides and coping is also recommended. This can simply be a drill shank or rod of suitable diameter, held in a vice (suitably lined to protect the part). Simple right-angle bends are best made using a vice, with the bend line a hair's width above the jaws. Carefully check the bend line is parallel to the top of the vice jaws / bending bars, and using a steel rule / piece of wood behind to bend the metal towards you. This will ensure a clean bend.

All bends are made with the ½-etched line on the inside of the bend, unless otherwise stated. Many of the holes are deliberately etched slightly undersized. This is to cater for individual preferences with regard to fittings (which do vary) – especially in the wheel department.

Please also note that there are areas that I have been deliberately cautious about – and I have offered alternative procedures. This is due to the absence of either precise information, or convincing proof as to the detail under consideration. In these cases, I offer a way forward, rather than a definitive answer. As you read through the instructions, it should be obvious where this occurs.

PLEASE READ EACH COMPLETE SECTION BEFORE PROCEEDING WITH CONSTRUCTION.

Stroudley Outside frame tender: I am aware that there are three versions of this tender, as has been made clear by Colin Binnie in an article back in the Model Railway Constructor (?) in 1973, so I have endeavoured to make some provision for this. If you have scrutinised photos of early LBSCR locos, you will have noticed that the main areas of difference are: -

3.1. **Tender body height**: Very early versions of this tender appear lower-sided, though I have only seen drawings – not photos showing this. It appears that there were 3 capacities: 1,650, 1,860 & 2,550 gallons. It appears that the 1,860 was supplied for the C class generally, and the largest for the C1. This would account for the varying heights of coping as they align with the lower side of the cab cut out.

3.2. **Rear footstep** – Early versions have the spring hanger coming up through the middle of the step. This step has been included on the fret – it is obvious which one it is. It will be necessary to cut off the reverse-curved extreme lower end of the frame. Check first with photos / drawings here.

3.3. **Peripheral items** such as the steam dome and water tank filler-cap are of different types & sizes. These are included in the castings – so well produced by Chris Cox.

3.4. **Tender Brakes:** these are included, though very little information has been forthcoming about them. I have not been able to find out how they were operated at wheel level – how many pull rods or their location. It is left to your best guess, as they were fairly well hidden behind the outside frames.

3.5. **Coal Chute:** There is written evidence (Maskeleyne and Colin Binnie's article on the D2's - Model Railway Constructor 1973) to suggest that there simply was not one, and that the idea was introduced on the later Inside frame tenders. I have not discovered any other conclusive information here. (See later)

3.6. **Footplate boxes:** There is a grey area here – with regard to the location of the Handbrake stanchion – was it behind or passing through the box which stands in front of it? No conclusive evidence here either.

Parts still needed to complete: As usual, wheels, axles, paint, transfers and couplings are not included – as these are left to personal choice, though draw bars of varying lengths are included with the matching kits – C, C1, Belgravia and Single. (These latter 2 may be projected for later on in 2003)

O/F Tender Construction: Where illustrations are provided, they are called **"Diagram"** and numbered as the text paragraph.

1. Remove the two **side frames** – parts **1&2** from the fret, along with the **tender footplate** – part **3** and the **front and rear spacers** – parts **4&5**.

   Note: the front spacer has the larger slot in it for the drag-beam, while the rear one has the buffer holes and coupling hook slot – slightly wider than on the buffer beam.

2. Clean up and ensure the frames are flat. **The ½-etched rectangles denote the outside.** Push the small square tabs in the footplate downwards – **½ etched line is on the outside of the bend this time** – until they are at 90° to the footplate. These form the location arrangements for the lower side frames.

3. First solder the drag beam - pt **5b** in position - **under** the footplate - against a square-cornered wooden block to ensure true vertical fixing. Once this is in position, the frames will butt up against this.
   Solder the frames on the outside of the bent-down tabs, taking care to ensure the side frames are set at right angles to the footplate. It is helpful for strength to run a fillet of solder along the whole length of each frame / footplate joint.

4. Clean up the front & rear spacers, and bend the ends at 90°. The front spacer has the drag link pin fold-downs. The spacers solder in position inside the frame ends. Note carefully which one goes where! It may be helpful to 'solder-strengthen' the inside of the folds.

5. Remove **buffer beam** - part **5a**, and clean up. Solder in position – sweating may be better – on to the back of the rear spacer – ensuring it is in the correct position. The rectangular slots are to assist in this procedure. Buffer beam should be flush with the footplate sides, but slightly recessed from footplate top. Some filing may be needed here to achieve this.

6. Remove **tender top** and **tender sides** – parts **6, 7 & 8**. ***Care is needed at this stage.*** Use the tender top as a 'jig' for bending of the sides, but do not solder anything up until both sides are bent to the correct shape, and the rear joint is fitting well.
   Note 1: *the half-etched ends form an overlapping joint at the back – the lower part of which will be hidden by the toolbox.*
   Note 2: *If you are modelling the earliest & smallest tender, cut along the ½ etched line parallel with the long sides, and remove the surplus brass. If you are modelling the middle-sized tender, remove only half this quantity. This third size only became apparent after the tender kit had been produced, hence the lack of lines (which would also tend to weaken the sides and encourage bending)*

   Parts **6a & 7a** are strengtheners/height gauges which can be folded and soldered on the inside to ensure extra strength and location assistance. See fig **1.**

   Choice 1: If you believe that an inclined coal chute was in existence on the tender you are modelling - then bend the triangular 'wings' down at 90°, and run a fillet of solder along the inside of the fold. Repeat for the other side. Attach the **rectangular coal chute** – part **9** - to the sides so as to make up an 'inclined plane'. The horizontally bent end 'tab' fits under the tender top.

   Choice 2: If, however, you believe there was no inclined chute, build up the sides and end to make up a rectangular 'well'. Parts are not provided for this. Otherwise – fill up the space with coal, so you can't tell anyway! The information from Colin Binnie suggests that wooden planks were piled up to retain the coal. Some Wills' / Slaters' plastic planking would do the trick.

   Attaching side to top. There are two ways of proceeding here as well: -

   Choice 1: If you wish to fix the sides to the top first, proceed with this section.

   6.1. Lay the top upside down, and solder each formed side to the top. This will ensure the top edges are flush. Finally secure the back overlap joint – see **diagram**.
   6.2. Carefully solder the now-formed unit down on to the footplate, lining up with the ½ etched marks – with a minimal amount of solder.

   Choice 2: If, however, you wish to attach the sides to the footplate first, then proceed with this section:

6.3. As access to the inside is difficult, you could now solder up the end joint first, with the top as a 'loose spacer', and then attach the sides to the tender footplate at this point.

6.4. Having done this, you now need to solder the tender top, with attached coal chute (or not – depending on your previous choice) flush with the top of the sides. (In making up the prototype, I used this method – though soldering the top cleanly, while strongly, was quite a challenge.

If all is soldered correctly, the footplate should be out of sight where the tender sides are – leaving it visible only at front & back. In practice, I simply 'soldered as I went' after each bend, so I was nearer to the 1st choice, and actually removed the ½-etched ends, and they met perfectly. Now attach toolbox to rear of tender body, over the lower half of joint, and add lid afterwards.

7. Remove **chassis sides** – parts **10 & 11** from nickel silver fret, and clean up. Use a blunt-pointed scriber to press out the rivet pattern on the ½ etch marks. Rivets show on the **outside** of the chassis – just visible between the wheels, through the slots in the outside frames. *Note that the brake hanger holes are at the backs of the wheels – therefore the longer protruding end of the chassis is the back.* The holes in the spacers allow nut & bolt attachment, and, if necessary, packing to adjust ride-height. (Alternative adjustment can be made by varying the vertical position of the horn plates up or down the slot) If you opt for flexichas, then the compensation beam can be 'tweaked' to adjust the ride-height of the two movable axles.

8. Decide which chassis **spacers** you need – according to your track gauge (00, EM or P/S4). It is vital that you solder spacers to opposite sides at opposite ends of frames – to avoid distortion on cooling, and fit the centre spacer last. The slot in the centre spacer is there for the compensation beam to pass through.

   Choice: You can either build a rigid chassis, or fully compensated one. Holed and slotted hornplates are provided for your choice. A little filing may be necessary. A semi-rigid chassis could also be built with the centre axle running 'loose' – using a slotted horn, and a gentle downward-pressure spring wire - to assist track holding. If you choose this option, then merely use a slotted horn plate, instead of one with a hole, and solder in the centre chassis slot. Use a flexichas bearing with the axle. A wire keeper needs to be attached at the base of the slot.

   Decide on your arrangement, and solder relevant parts into place. Holes for compensation beam are provided @ 1mm dia. Decide also whether you want fixed axles or a form of 'flexichas' (or even a sprung chassis!). Slotted horn plates should have the bearings a close sliding fit on their plates - with no front-to-back slop.
   Guard irons – parts **12** are provided for those (early) versions that had them fitted. They were bent inwards, being fitted to the outer frame (In reality was there an inner chassis? Probably not!) and lined up with the rails. Information as to their exact attachment is vague, though the Bradley picture of the rear of no. 408 appears to just show two rivets / bolts. I leave you to use photographic guidance.

9. **Brakes:** Information is scant here, and those provided are very 'cosmetic'. Remove brake hangers – part **13** and bend up so that attachment loops are on opposite side to brake block. Attach thickening parts **14,** and hang on 0.7mm brass wire, through holes in chassis. From the rear-view photo Fig 111, opposite page 125, in Bradley's book 'Locos of the LBSCR' Vol. 1, there appears to be a bar that stretches across the backs of both rear brake hangers. I suggest you solder a suitably stout wire across here – in line with the centre of the brake blocks. See **Diagram**. I have found no information at all from GA drawings regarding operating rods.

10. **Coping.** The two parts of the coping are 'handed' – with the ½-etched edge provided for wire to be soldered on as beading, and should be facing outwards. It appears the ½-etch ended up on the wrong side on one part, so needs to be rectified simply by turning upside down and flattening with the butt end of a small try square.
    Use the same diameter drill to bend the corner, holding carefully at half the angle. (I did this in my hands, rather than in a vice)
    The same ½ etched arrangement is provided at the rear joint. I recommend you start at the front end, and work your way backwards. **Offer them up first, as a 'dry run'.** Then solder in place carefully.

11. **Toolbox.** Remove toolbox – part **15** from the fret, and fold up to form a sloping-topped box. This solders in place centrally behind the tender body, on the exposed portion of 'footplate'.

12. **Front Footplate Boxes.** – Parts **16 & 17.** Remove from fret, and fold up carefully. The lid should bend down part way across, to follow the contour of the box below it. In the event of a mis-match, a piece of fret waste can be used as a replacement lid. In the event, it appears that conflicting dimensions from various drawings have meant that the boxes have turned out slightly wide, and some narrowing is required to allow the handrail to fit in the hole provided. Leaving the back off assists filing.

    The 'skirting' – parts **18 & 19** - is now carefully bent up, dry run & fitted. If you feel that from photos the box should not stand away from the tender body, then remove the back portion of the skirt where it would contact the body. It is a good idea to plan to fit it so that the join is not on the visible side. Attach to the footplate.

13. **Coal Front plate.** This is another vague area. Pictures of C & C1's show wooden coal retainers – made from what look like sleepers. A picture of the single 'Grosvenor' shows some form of coal plate in place. This is part **20**. It solders together with the reinforcement surround – part **21,** and fits at the front of the coal opening, butting up to the chute. If you wish to form a kind of 'door' this is left to your ingenuity.

14. **Foot steps.** (*Refer back to introduction.*) These fit to the ½-etched areas on the outer frames – at each end. Note that the larger steps are the lower ones, and the slotted ones are for the earlier 2 versions of the tender, where the rear spring hangers go through the rear steps. If you are building this version, then you will need to offer up the spring casting, mark where it will fit, and solder the step in position, and cut off the surplus curve of the outside framing. ***Do not fit casting first, or soldering will melt the whitemetal part****.*

    After cleaning up, you can now fit the springs – either with low-melt solder, or epoxy/Cyano them in position. I recommend the latter here! The castings locate simply in the slot provided in the frame. **Note. The centre springs are longer than the outer ones – as with all Stroudley's vehicles.**

    If you are building the later version, then discard the slotted steps, and simply solder all in their relevant, obvious positions. The larger ones fit on lower front framing, but attach **behind** the frame. Castings can be fitted now, as above.

15. **Drag link:** This is provided with each loco kit. If you are building these as well, then you will find links of varying length to suit your choice on the respective frets, according to the ruling curve on your layout. They are doubled to give a better appearance, when soldered together. If the tender & loco look rather as though there is a day's march from the coalface to the firebox, you are probably correct! It was a surprisingly long way for the fireman, especially when the coal was low, and the fireman tired at the end of a run.

16. **Hand rails.** Part **22**. These are located between the buffer beam, part **5**, and the tender top – part **6** on the fret. ½ etched location positions are on the front of the top panel – again, information is lacking here, and this is my 'best guess'. An ***alternative*** rendering is to turn the tender top over and file a small slot each side at the top of the front of the sides, and solder this part up from underneath. This will alter the ½ etch line for the coal chute sides to the outside, but coal will probably hide this in the finished model.

    They will need to be trimmed to length, and possibly narrowed a little, and soldered up with boiler handrail wire representing the pillars. These latter locate in the holes in the footplate. The loop type grab handles are made from wire. There is small drilling jig etch on the fret, which will enable you to locate them at the same height on each corner.

    Tender fall plates are on the loco frets, and have slots in them to assist attachment.

17. **Coupling Hooks**. These are not provided, as they are best fitted from currently available ranges - also couplings are as much down to personal choice as are gears and motor set-ups for locos.

18. **Remaining castings:** Choices here include early and later steam domes, and filler caps. They fit in obvious holes on tender top, filler to rear. I deduced that the very tall dome and 'slam down' filler lid are used on the very early version; the shorter dome on the middle version with the slam shut lid, and the shortest dome and lock-down filler on the final and latest version. If you think there should be a knob on the top of this latter, then a pinhead drilled into the centre will suffice. Most of Stroudley's tank engines appear to have had this. Consult photos.

Handbrake stanchion needs trimming to length at bottom, before fitting to l.h.s. of tender front, above slant-lid box. (Looking rearwards) A photo will help here.

Painting Details: All of these tenders carried the Stroudley goods green livery with C/C1 locos, though many of them were attached to Passenger classes such as 2-4-0's, singles (early years) & D2's, and as such would have been painted in passenger yellow livery. See Bradley for details. ***Note:*** The two side lining panels were said not to be of equal length – check photos. Debate has also raged as to the exact buffer beam colour & lining. Some favour red buffer beam with green buffer sockets, others think sockets were also red. Lining is also thought to vary – some with black and white, some think yellow instead of white! Did the red Westinghouse lining either side of the black extend to the buffer beams? Will we ever know?

Enjoy!