Animated Skeleton

Parts List:

- 1 – 10’ x ½” steel conduit
- 4 – 10’ x 3/4” thin wall PVC pipe (not Schedule 40..its too heavy)
- 12 – ¾” 45° PVC Elbows
- 10 – ¾” 90° PVC Elbows
- 6 – ¾” PVC Cross Fittings
- 5 – ¾” “T” Fittings
- 4 – 36” “Sturdy Stakes” (Garden Department)
- PVC Cement
- SPT1 (or2) wire
- Tie wraps
- Assortment of heat shrink diameters (3/16, 1/4, 3/8 and 1/2”)
- Approx 65 ft LED cool white rope light (or 12v LED strip)
- 17 channels - Appropriate lighting controller & power for your choice of lighting

Sources:

- Both Home Depot and Lowes carry everything but the rope light
- Harbor freight is a way better source for cheap tie wraps and heat shrink. (http://www.harborfreight.com/5-piece-heat-shrink-wire-wrap-assortment-9639.html)
- 18’ lengths of cool white LED rope were $16.99 @ Costco (I needed 4 boxes). Waterproof 12v LED Strip lighting can be found most anywhere on the Internet, prices fluctuate constantly.

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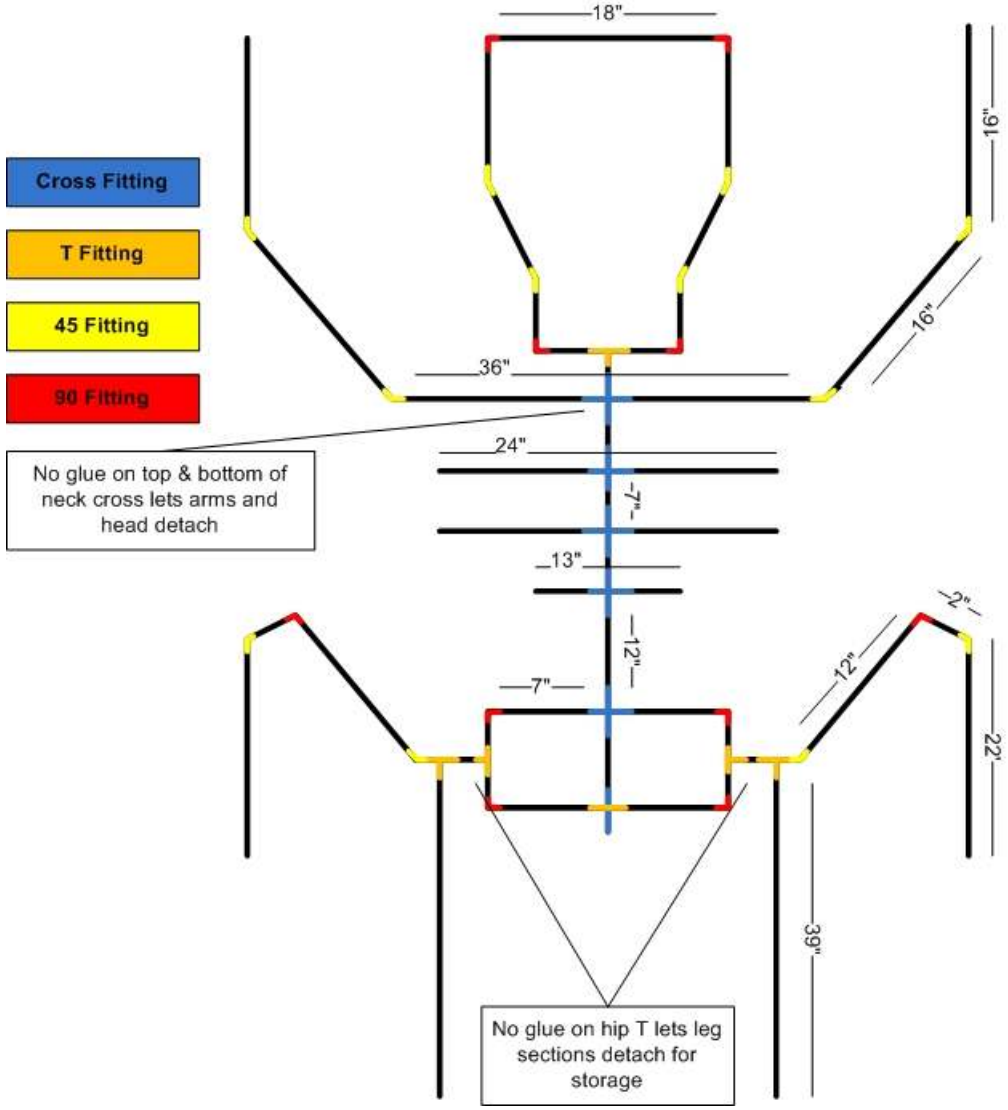
About this Project

This project was born about 2 weeks before Halloween 2012 which left me with no time to obtain white 12v waterproof LED 5050 strip lights via the Internet. That would have been my first choice for this project since they are REAL easy to cut to length and plenty of 12V DMX lighting controllers exist.
I wound up adding to the existing LED Rope light stock I had on hand and used Lynx Express controllers (http://www.diylightanimation.com/) to provide 110v to each segment of rope light. Vixen was used to create the sequences.

The Frame

The frame is all thin wall ¾ " PVC. Additional arms are just tied to "sturdy stakes" bent to shape and hung at shoulder joints by tie wraps. Steel conduit is driven into the ground and the entire spine is lowered on to it.



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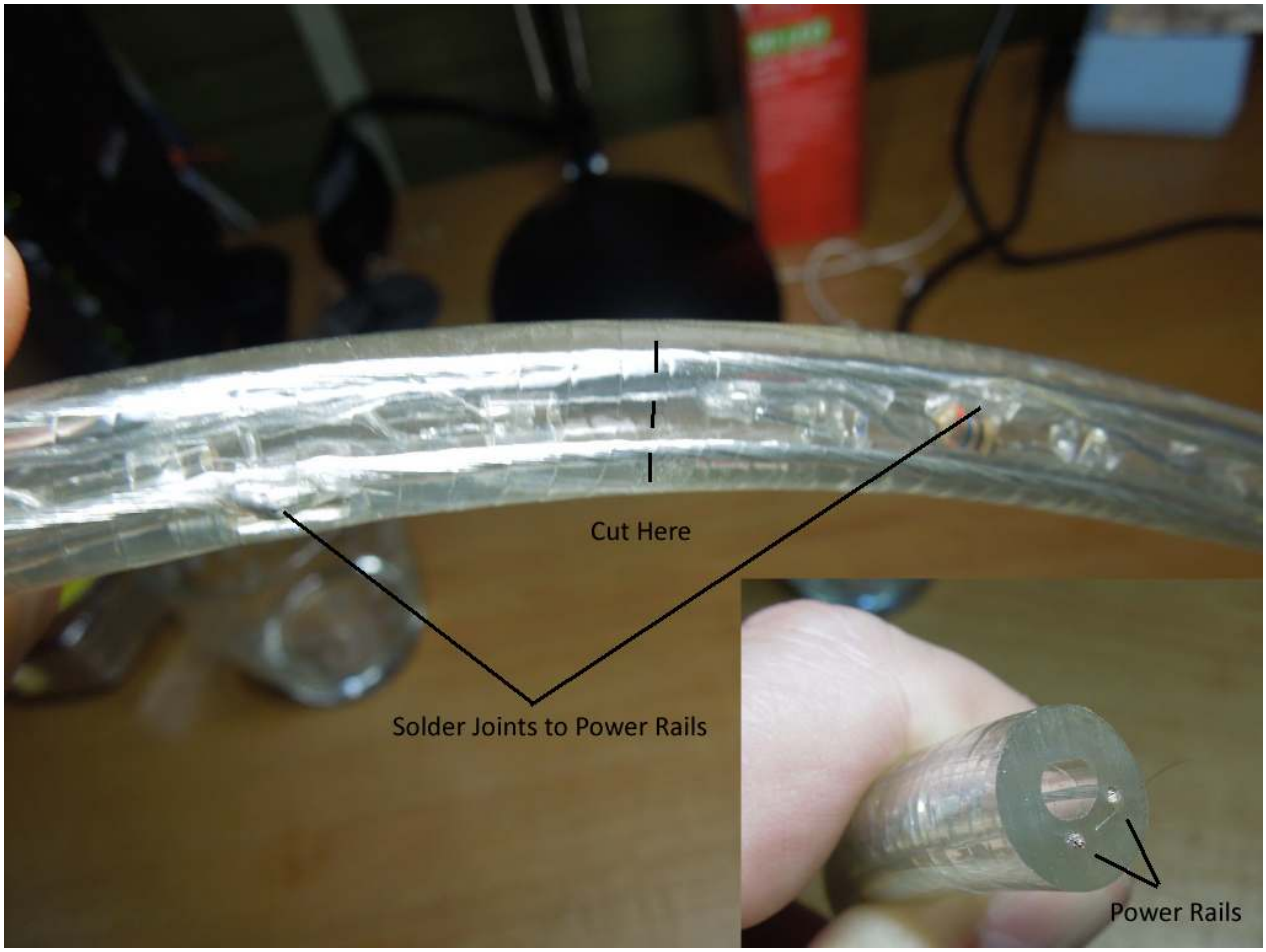
Creating sections of LED Rope Light

With the proliferation of waterproof 12v DC 5050 LED strips, 110v AC rope light is no longer the preferred choice for creating lighted sections for animations, but there may still be the need from time to time, so I hope this helps.

My rope light came from Costco. Like most 110v rope light, it had a bulge in the power lead that rectifies the 110v AC coming in and supplies 110V DC to the two wire rails embedded in the clear PVC. The LEDs themselves are wired in series; 36" segments with resistors inserted every 6 LEDs to limit the current. Each end of a segment is soldered to one of the rails

To make life easy, I tried to design the Skeleton frame to use 36" sections as much as possible. These can be wired to a pigtail and plugged directly into the 110V AC. Sure they flicker, but you aren't really going to notice once a sequence is running.



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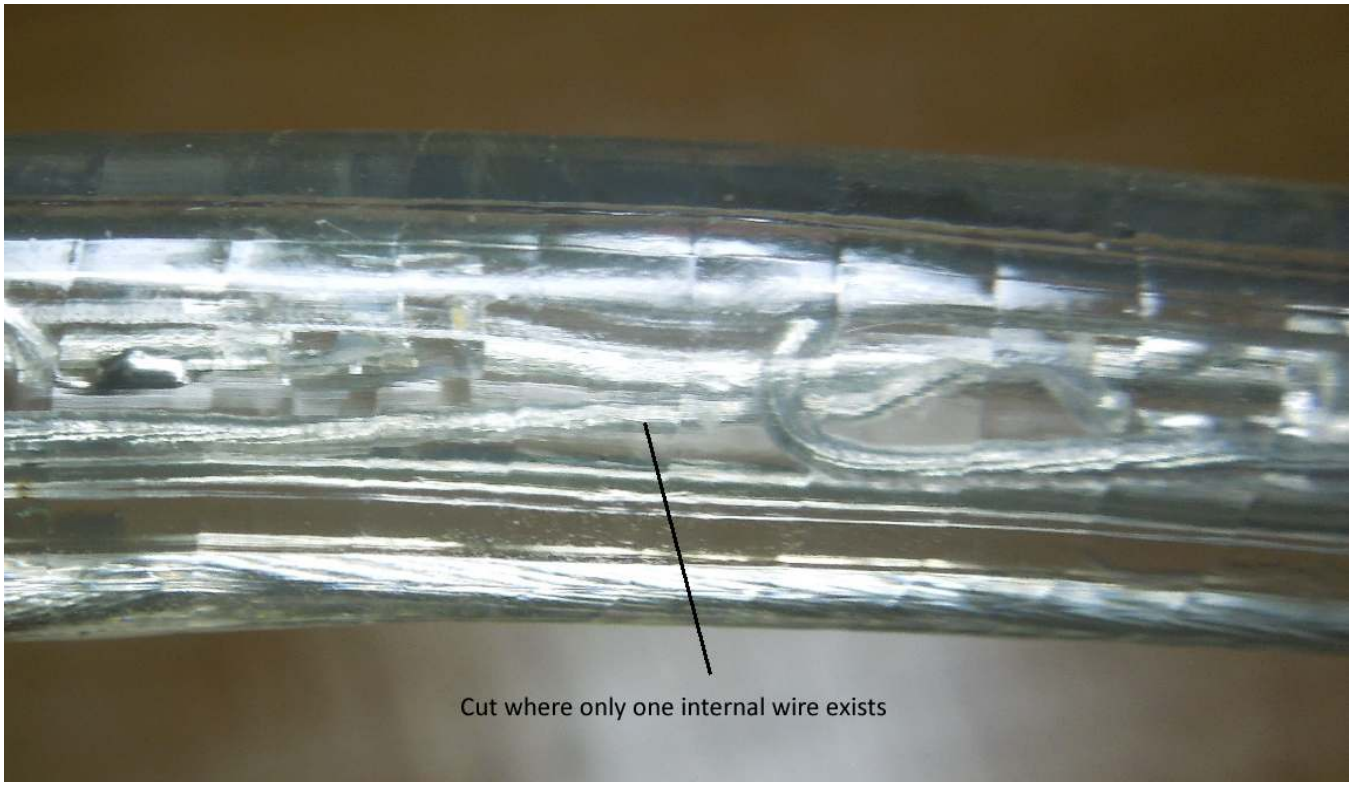
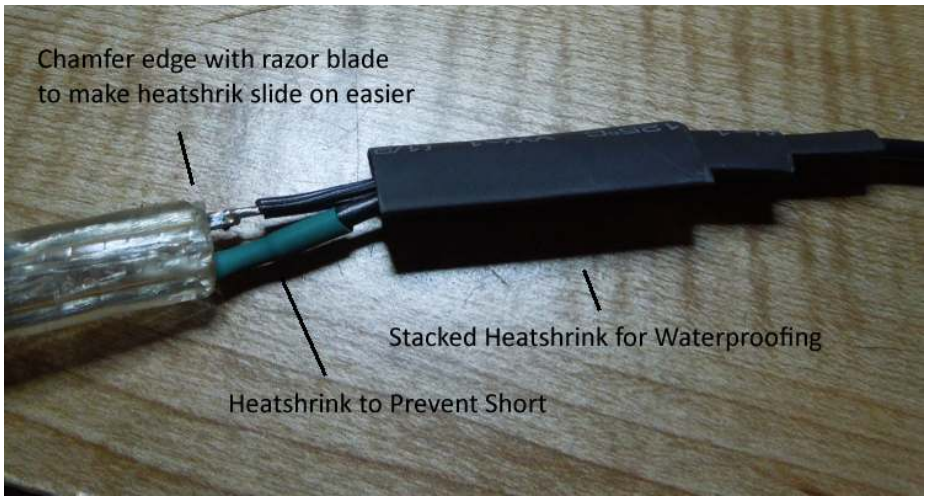
For short lengths or lengths that need to include part of the next 36” section, look at the rope carefully and cut where only one wire is running. Once you trim back the clear PVC with a razor to expose the rails for your pigtail, you will need to solder the loose end of the LED segment to the appropriate rail. This may require a visual from the last solder point to determine which of the rails you need to attach to. If the LED segment was now 18” or less, I would insert another resistor as I attached that loose end to the rail. I just used whatever was handy, 400 -1500 ohm. If the shorty segment seemed way too bright, I’d try a higher value resistor.



Solder on your pigtails and seal up the joints



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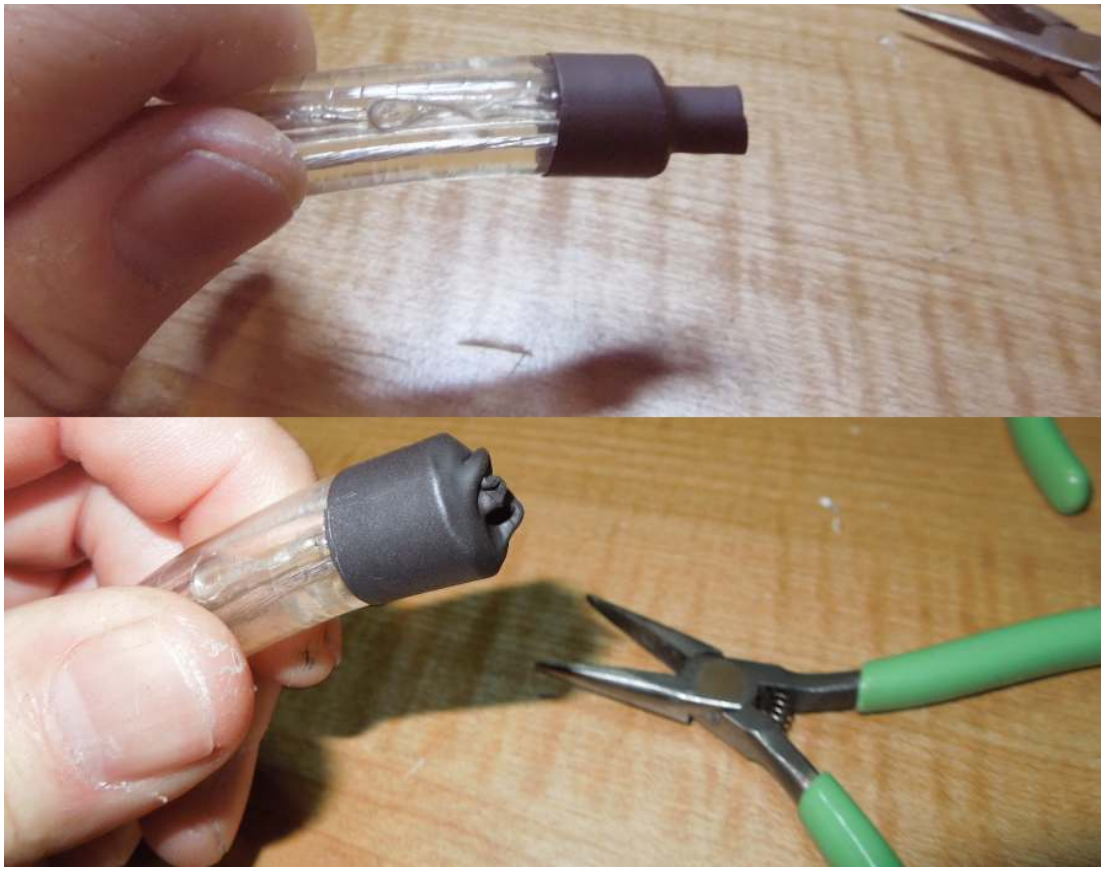
Use a piece of ½" heat shrink to weatherproof the "dead" end. Just get it good and hot and use something (like those needle nose pliers) to fold the ends over on themselves and back into the rope.



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Steel conduit runs all the way up spine to the chin “T” for support. Leg sections detach from hip for easy storage.

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Heads, shoulder and arms are all 36” sections. The two 24” rib sections and held up well without an additional resistor, but short 13” rib needed one to keep from smoking.

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Additional arm or leg sections can be created by using “sturdy stakes” and just hung on frame with tie wraps.