Drafty - User Guide

<Introduction

Drafty is a CAD tool for lighting, sound, and video professionals to generate plots and paperwork quickly and efficiently. Drafty's extensive smart tools and auto-layer management places focus on the design not the tool.

Drafty differs from traditional drawing programs which tend to offer a dizzying suite of tools when only a tiny fraction of them are used in the generation of a typical plot. This excess of options leads to work slowdowns, confusion, layer mismanagement, and overly complex drawings for all but the hardest core of power users. The freedom afforded by Drafty through in-software layer management and smart tools reduces the time and effort to generate paperwork.

Drafty is 3D CAD with a 2D interface. The Smart Section and Beam Visualizer tools exploit the complexities of 3D math while presenting the data in easy to use and quick to read 2D interfaces.

Styling controls are built to conform to USITT and ABTT graphic standards, with minimal variation. This simultaneously reduces complexity and increases clarity of the drawing experience and the final product.

Behind a facade of simplicity, Drafty provides tremendous power in the generation of Lighting, Audio, and Video paperwork.

The streamlined visual interface belies a host of complex tools through the integration of contextual menus, tools revealed via modifier keys (Shift, Alt, Control, Command), and of course an extensive suite of Smart Tools. Drafty displays only the options necessary to complete the task at hand. Nothing more and nothing less. These advanced features were specifically built to reduce workspace clutter.

Many of the tools and buttons have additional power and control through the use of modifier keys. Click on the ERS button to add a Source-4. Command-Click and it's a VL3500. The Pipes button creates a Pipe object. Shift-Click to add a Boom object. The default Arch Object is a rectangle. Shift-Click and it's a line. See the last several pages of this guide for a complete listing of modifier actions and keyboard shortcuts.

This is the foundational principle of Drafty. Ease of use, power, and precision.

Ready? Good. Let's begin......
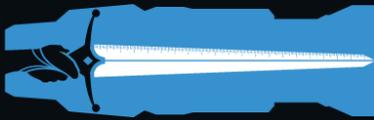
The Drafting Table

The heart of Drafty is The Drafting Table. Upon creation of a new Drafty document, the blank drawing space includes a Centerline, Plasterline, and empty Titleblock contained in a bounding box. The program starts on the BORDER layer, which is at the top of the drawing stack.
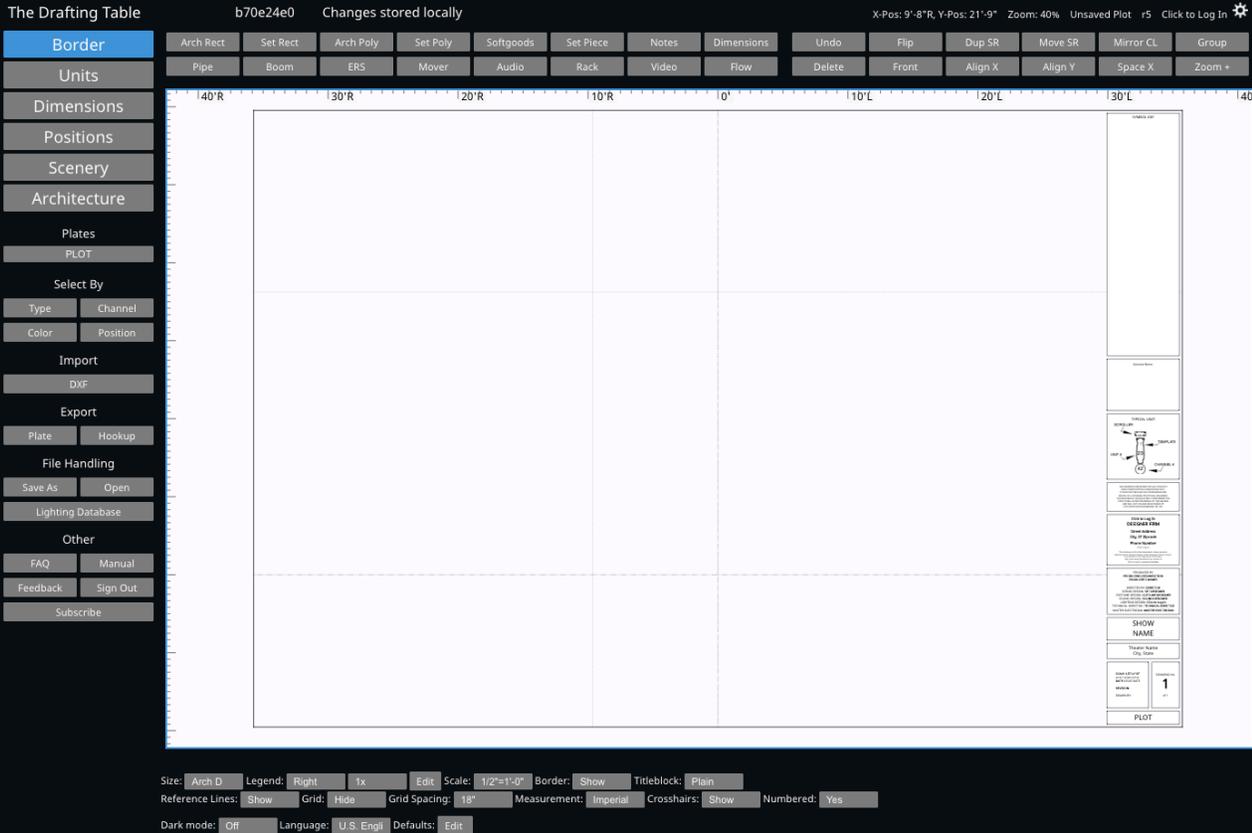
With nothing selected the bottom contextual menu contains Layer level controls. On the BORDER layer are core drawing elements like Page Size, Scale, Titleblock layout and style, Measurement Units, drafting guides, and User Defaults. Click Defaults:[Edit] to set up user information that will pre-populate in all NEW drawings moving forwards.
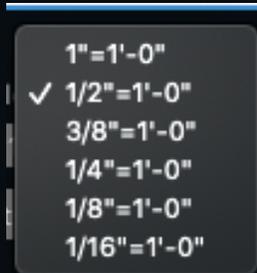
Set drawing size and scale with dropdown menus in the lower left-hand corner. Metric and Imperial options are set here as well. Gridlines are available as a drawing reference. Set the spacing or turn them off. Similarly, cursor crosshairs toggle on and off with a button click.
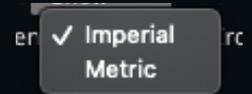
The point of intersection between Centerline and Plasterline is the Drawing's 0-0 point. Objects can be precisely positioned using the X/Y boxes. Drafty accepts 6'3", or 75, or 6'3, or 6 3 all as valid inputs to indicate something at six-foot three-inches. Metric measurements can be in mm, cm, or m.
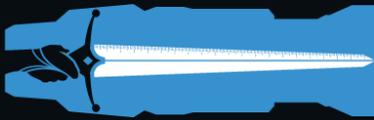
Plots and Plates

Drafty offers up to 30 plates of drafting. All new Drafty documents come with five pre-named Plates. Plot, Section (more on this later), Elevation, Signal Flow, and Racks. Clicking 'Edit...' in the dropdown opens up the Plate Name Panel where the various plates may be renamed.

Plates

PLOT
Section
Elevation
Signal Flow
Racks
Other
Edit...

Like many tools in Drafty, Plates are Smart Objects and as such are aware of drawing elements placed in the document. Thus Plate numbering is automatically generated based upon the uniquenesses of the drawings. If only the Plot and Elevation Plates are used, for example, Drafty will name the Plot drawing 1 of 2 and Elevation 2 of 2. Likewise Plot, Section, and Signal Flow will be 1 of 3, 2 of 3, and 3 of 3 respectively.

When setting Border and Titleblock controls on a new drawing, all the edits made to the Plot Plate carry through to the other plates ensuring a consistent style for all Plates of Drafting. After the initial global styling is set, later Plates may be edited discretely as needed. Changes propagate down from the Plate on which edits are made.

Style and drafting settings can be unique to each plate. Centerline and Plasterline origins for Plot and Section may be set differently. Scale may also vary on a per Plate basis. This may be useful for Signal Flow and Rack drawings or some design detail plates.

Centerline and Plasterline markers can be added from the Dimensions layer with a single button click. There are various text styles available and CL markers are locked to the CL and draggable along it. PL markers likewise are locked to Plasterline and draggable there.

Magic Sheets may be generated as a Plate in Drafty. Drafty's Magic Sheet Tools are a variant on a Light Object and operate with all the organization and smart controls available to a Light.

Plate names may be edited from the Plate Name Panel or directly on the Plate itself from the Border Layer. Any changes made in the Plate Name Panel will be reflected on the Drawing and *vice versa*.

In User Defaults the basic Plate Style that all new documents will start from may be edited. This includes Titleblock Style and Orientation, Design Type (Lighting, Sound, or Projections), default name of the Plot Plate, and more.

1:	PLOT
2:	Section
3:	Elevation
4:	Signal Flow
5:	Racks
6:	Other
7:	
8:	
9:	
10:	
11:	
12:	
13:	
14:	
15:	
16:	
17:	
18:	
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Update Cancel
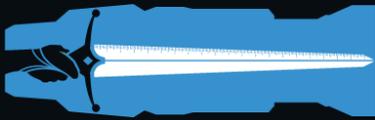
Importing PDFs and the Architecture Layer

Auto-layer management means that activating a tool will navigate to the proper layer and insert the object there. This includes importing Architectural and Scenic elements in PDF and DXF format. The import function works like any other import function and draws the PDF to the Architecture layer at the bottom of the layer stack. Shift-click Import: [DXF] on the right hand toolbar to activate. The PDF may then be moved to the Scenic Layer after import.

NOTE: To properly scale a PDF, FIRST set the Page Size and Scale in Drafty to match that of the PDF being imported. Once the PDF is in the drawing, resize and rescale the Drafty document as needed for final output. Drafty's Scale to Points feature may be used to correct any errors.

Once the PDF is in the drawing, move it to get the Centerline and Plasterline to line up with the ones in Drafty. Notice how Drafty's CL and PL draw *above* the PDF? This is the magic of automated layer management. The Centerline and Plasterline can be turned off in Drafty on the Border Layer. To relocate the CL or PL, go to the Dimensions Layer, Shift-Click the line, and position it accordingly. Use Shift to resize the PL, or enter its length manually.

Once the PDF is imported, trace or re-scale as needed. To trace, start with the outer walls of the venue. Use the [Arch Rect] tool to place a rectangle in the drawing. Move and resize it appropriately and then repeat this process until all walls are drawn. To finish off the stage edge, Shift-Click [Arch Rect] to add a line and set its styling to "Inner Wall". Place and shape the lines to make the stage edge. Complex shapes may be drawn with the [Arch Poly] tool. The default Polygon shape can be changed by selecting a point and clicking + to add a point clockwise and - to add a point anti-clockwise. Selecting a point and pressing delete removes it.

Quick note, many non-proscenium stages probably want to have the Plasterline be in the same place as the stage edge. For full round and site specific installations, proper placement of the Centerline and Plasterline will be context dependent.

At this point, if not before, it would be a good idea to save the working file. All new Drafty files are unsaved until clicking [Save As]. Doing so brings up a dialog box to set a title for the document. If this is the first time saving a Drafty file, the program will create a "Drafty" folder in Google Drive. From there on, every new file created goes into that folder. Drafty saves in the background continuously, never interrupting the workflow. Use [Save As] to make a new backup version or Shift-[Save As] to force a save. For working versions click "Add today's date" to append that to the file.
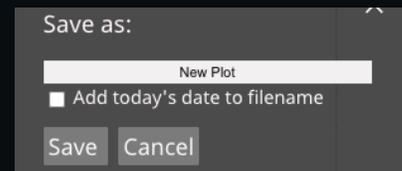
NOTE: Drafty defaults to 45° and 30° rotation increments. For arbitrary angles, use Shift while dragging. Don't want to drag the handle bar? Use Shift-LeftArrow or Shift-RightArrow with an object selected. The arrow keys move lights at 45° increments. Other objects rotate at 30° and 45° intervals. Use the dialog box in the contextual menu to set exact arbitrary angles.

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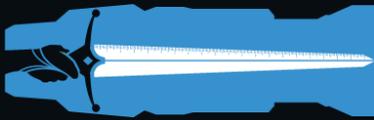
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Importing DXF, Scale, and Group

New in 4.0 is the ability to import DXF files. These may be drawings coming from collaborators who use any number of common drafting programs. Drafty will take in all data from the file. Do note however, that Blocks are rendered as groups not as symbols. Thus if you import a lightplot, the drawing may look like a lightplot, but the lights will not behave like symbols in Drafty. There is currently no way to convert them.

Press Import:[DXF] and a standard import dialog box is presented. Select the DXF to import and press the Import button. Drafty will analyze the file and present a layer selection dialog box. This list of all layers in the DXF file allows Drafty to place elements from the DXF file into the Architecture Layer, the Scenic Layer, or discard them. Make the necessary selections and click Import to confirm.

Select DXF to import

Datei auswählen | Keine ausgewählt

Import | Cancel

By using import you acknowledge you own the rights to use the selected image and indemnify Lumax LLC against any liability related to copyright

Drafty then imports the DXF file and places elements on the correct layers. The imported elements are grouped for ease of placement in the Drafty file. Holding down Shift, turns the [Group] Button into [Ungroup]. Click this to release the imported elements from their Group.

Select DXF layers to import:

Layer	Items	Arch	Scene	Neither
MT DIMS	3	○	○	●
MT PEOPLE	1	○	●	○
MT SETOUT OFF	3	○	●	○
MT VENUE	2	●	○	○

Import | Cancel
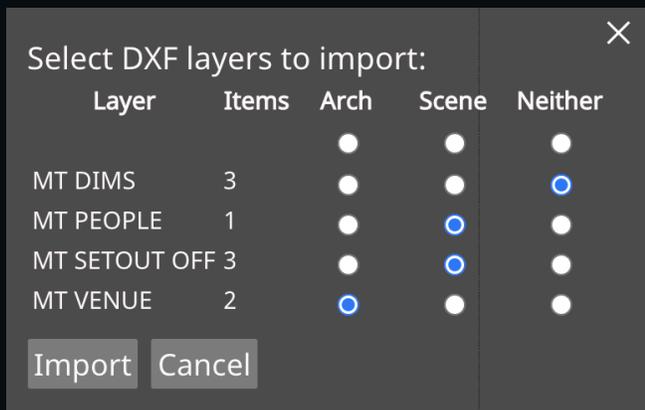
Sometimes the imported DXF is not scaled correctly due to the DXF export settings in the original drawing program. To quickly correct this, Drafty provides the Scale to Points tool. With the imported Group selected, Hold down Option and the [Group] Button becomes [Scale]. Click this and then click a known reference point in the Group. Click the second point to define the measurement and enter the Correct Distance, what that line ought to be, in the Dialog box. Click Scale to confirm and Drafty will scale the group to match your input.

Scenery

| Arch Rect | Set Rect | Arch Poly | Set Poly | Softgoods | Set Piece |
| Pipe | Boom | ERS | Mover | Audio | Rack |
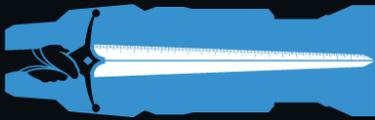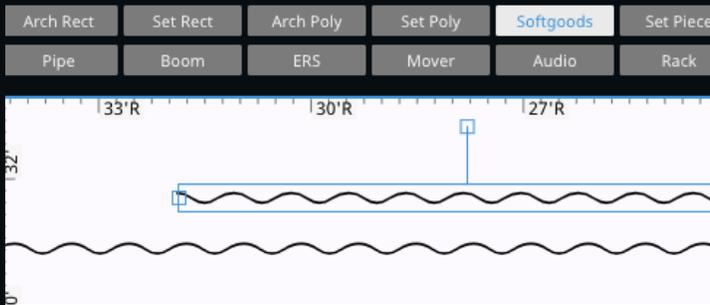
Now onto Scenery. Import a PDF, DXF, or draw with Drafty's drawing tools. This time use the [Set Obj] tool and set styling as needed to draw the scenery. Add masking legs and borders using the [Softgoods] tool. Care about Extreme Sitelines? Use the [Dimensions] tool to draw sightline objects.

Click [Set Piece] to add scenic elements like chairs, couches, musical instruments, flats, and more. All Scenic elements, including symbols, shapes, and PDFs, have opacity controls to determine the proper value and balance for the drawing.

Drafty automatically jumps to the Scenery layer when a Set Object is added. Rather than generic drawing tools that place items anywhere in the drawing, Drafty has a specialized toolset that understands layers implicitly and will move to the proper layer when a tool is activated.

Drawing scenery is easy with Drafty's advanced drawing tools available in the Pro Version. Lineweight and color controls conform to USITT and ABTT industry standard practices. Lineweights are built to scale as the drawing scale is changed, meaning the proper balance between weights will be maintained when a drawing goes from from ½" to ¼" scale or from 1:25 to 1:50 without needing to reset all the lineweights.

Use the [Dimensions] Tool to place measured dimensions between any two points. Simply click-drag the end points to snap to the drawing element being dimensioned.

Drafty Pro users have access to a selection of scenic objects to layout basic ground plans. An offering of chairs, tables, and other furniture are available with more symbols coming regularly. Drafty is not built with complex scenic drafting in mind but it has all the tools necessary to draft Ground Plans and Section sufficient for most shows.

All Scenic objects, be they a chair or a rectangle, draw to the Scenery layer. To move any object, the program's focus must be on the corresponding layer. The sole exception to this is that the Positions Layer allows moving and editing an Electric, the lights locked to that position will move. Lights along a pipe can be moved or edited while on the Positions Layer.
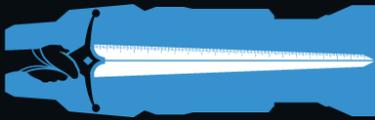
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Lights and Speakers and Positions

Add hanging Positions with the [Pipe] tool. A Position Label appears with each pipe. Use the textbox or double click the label to edit directly. All lights on a Position inherit Position Name and receive a Unit Number based on their relative position on the Pipe.

Duplicating a pipe with lights also duplicates the lights. If the Position name is #1 Electric, the duplicated pipe will be #2 Electric. If drawing a repertory dance plot for example, only one Electric may need to be drawn and then duplicated a few times.
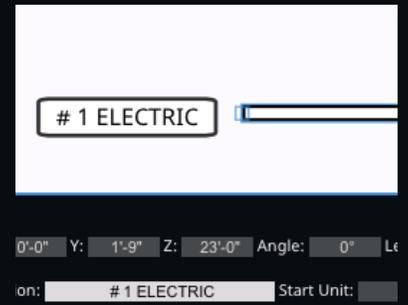
Add lights with the [ERS] button. Duplicate creates a copy of an object offset Stage Right at the spacing set in the Interval Dropdown. Shift-Duplicate duplicates Stage Left.
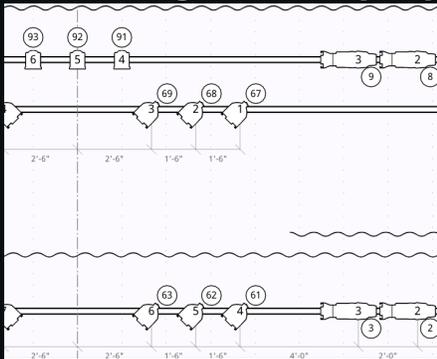
A sample workflow might look like this:
Start at CL and duplicate to one end of the position. Then go back and swap out unit types and rotate as needed. For symmetrical plots, there is no need to draw everything discretely. Draw half the pipe then use the Mirror Tool to mirror objects across Centerline.

Speakers and lights all have a beam visualizer to calculate lighting and sound coverage. For Speakers, [Angles] defaults to OFF but clicking it ON presents an adjustable cone to draw coverage diagrams and beam sections. They represent the narrow and wide angles for asymmetrical spreads. Obviously, symmetrical speakers only have one set of lines. For lights, use the [Angles] or the Beam Visualizer described later in this guide.
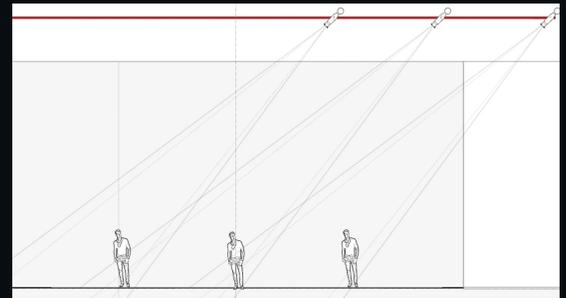
The [Pipe] and [Boom] buttons create Position Objects. Straight pipes, curved pipes, truss, booms, and ladders are accessible with modifier keys. Booms and ladders have dimensions on by default at +2'-0" increments. Each text box can be edited or deleted as necessary.

For positions like a Balcony Rail, made up of several discrete physical pipes, give all those pipes the same Position Name "Balcony Rail". Then, in the field 'Start Unit' letter them A, B, C, &c, from SL to SR and auto numbering will number units jumping from pipe to pipe as though they are a single physical pipe.

Seting a Pipe visibility to OFF makes the stroke and fill white so it does not display on print. The pipe can be seen on the Drafting Table but it prints invisible. Useful for Groundrows or Speaker/Projector rigging points. Or display the batten trim by setting the Trim field to ON.
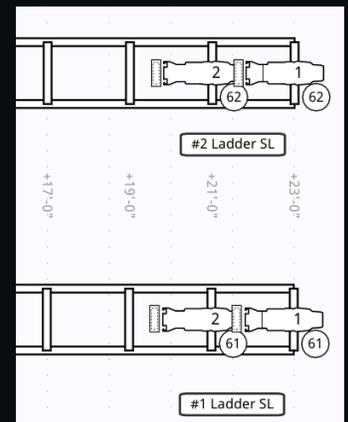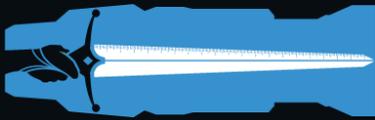
Data Entry and Drafting Details

Drafty offers myriad options for speeding up workflows. Multi-Unit data editing is just one. Color, Purpose, and Template can all be edited as a grouped selection so that all the lights in the template wash, for example, have the same pattern, color, and purpose. The "Select By" tools in the Pro Subscription allow for fast selection of Lights with similar features or metadata.
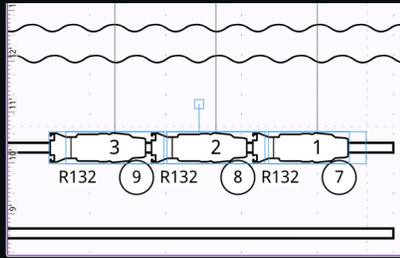
Address and Channel numbering can be quickly and efficiently incremented. Select the lights in the order their channels should increase and type "301+" for example. This results in the first light selected being channel 301, the second 302, 303, &c. This can be useful for Automated Lighting to designate the start address. If these were movers with 23 DMX addresses type "513+23" to return 513, 536, 559, &c.

When a pipe moves, the lights on the pipe also move. Duplicating a pipe duplicates all the lights on it.

The notes tool may be used to add any special notes needed on the plot. Basic style controls for the bounding box, opacity, and font are provided in the Contextual Menu.

Dimensioning is a critical part of generating plots. In Drafty dimensions are Smart Objects. Select a position and turn ON Dimensions. Dimension lines and text will update in real time as lights are added, deleted, or moved on the pipe. Dimension lines can be dragged up and down relative to the pipe.

Layer visibility is handled via the layer buttons. Hold down Shift and press a layer button and all items on that layer are temporarily rendered invisible. This is a toggle state. Thus, to turn that layer back on press the layer button again whilst holding Shift.

On the BORDER Layer most of the text is user definable. Double click the text field to edit and make changes. Note the Instrument Key is auto generated based on the lights used in the plot. It updates based on the proper order the lights should be in rather than the order added to the drawing. Edit the default name of a light, projector, or speaker by editing the Key field in any selected object. Use the 'Alt-Import: [PNG, JPG] button to place a show logo or Union Bug on the titleblock. Plate numbering is automated.

On the BORDER layer is a contextual menu below the main drafting space. Click Defaults:[Edit] Drafty presents a popup that has various default layout settings. Fields for Address, Phone, and Email will populate on all new drawings. Setting 'Design Type' to Sound or Video will replace the default text about Lighting Designers.

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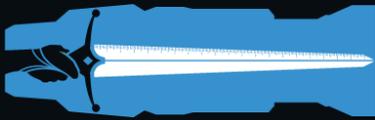
The Lineset Scheduler

Designing for a fly system presents unique challenges. Fitting everything into a tightly packed overhead, managing constant updates to the linesets, and myriad other tasks transforms the Lineset Schedule into a critical lynchpin holding multiple departments, and ultimately the whole show, together. As such many designers prefer to work from a lineset schedule before the real meat of a design begins. Drafty's Lineset Scheduler is both easy to use and robust enough to keep up with the constant changes which occur during production.

Controls for the Lineset Schedule are found on the Scenic Layer. There, with nothing else selected, sits the Lineset visibility toggle button. Click [Lineset] and a lineset schedule object appears at Plaster Line on the left hand side of the drawing.

Selecting the Lineset Schedule reveals several contextual items for building the show's Schedule. Count defines how many linesets there are. Spacing defines standard spacing between lines. Drafty defaults to 6" spacing but any standard spacing (including Metric standards) may be set. Many venues do not have consistent spacing for all lines. For irregular spacing, set Distance Markers to Show and then individually edit each lineset as needed. Use TAB and Shift-TAB to edit cell by cell. For very tight spacing of linesets it is common to stagger the layout. To do this select Width:Double.

Lineset Schedule		
10	Unused	4'-6"
9	Unused	4'-0"
8	Unused	3'-6"
7	Unused	3'-0"
6	Unused	2'-6"
5	Unused	2'-0"
4	Unused	1'-6"
3	Unused	1'-0"
2	Unused	0'-6"
1	Unused	0'-0"

91	Unused		92	Unused
		90	Translucency
89	Act 2 Drop		88	Act 1 Drop
87	Unused		86	Unused
85	Black Scrim		84	Unused

The Purpose of any lineset may be directly edited by double clicking the text. TAB or Shift-TAB scrolls through the Purpose column allowing quick data entry.

Selecting a Purpose cell reveals additional contextual controls. To add a Pipe to a particular lineset, select the Purpose of the Lineset and click the Position button. Likewise for Borders and Legs and Scenery.

| POSITION | BORDER | LEGS | SCENERY |

Each item created from the Lineset Schedule itself has the Y position locked to the lineset. Thus, in order to move the position, select and drag the Lineset purpose. Borders work the same way. Legs are a little different in that the legs always maintain an equal distance from CL. So moving one leg Left or Right will move the other leg the same distance in the opposite direction. The Scenery object is a rectangle that can be made flat to represent a drop or dimensional to represent scenery.

Using the Lineset Scheduler to add positions ensures all paperwork stays in sync as the production evolves.
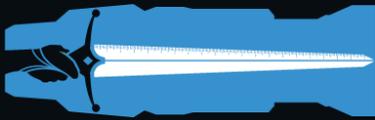
Smart Section

While Drafty does not provide a traditional 3D user interface, the software does employ complex 3D tools that work without the complexity of a 3D GUI. The cornerstone of this is the Smart Section.

Begin on the default Plot plate utilizing all the tools outlined in the previous section to attach Pipes to the lineset. Once done, navigate to the Scenery Layer and find a button labeled 'Smart Section'. Clicking this turns it ON and begins drawing plot elements on the section plate. Now navigate to the Section Plate and see all the Pipes, Booms, Ladders, Legs, and Borders represented in Section. If the Z height was left unedited, they will draw at the default trim of 23'.
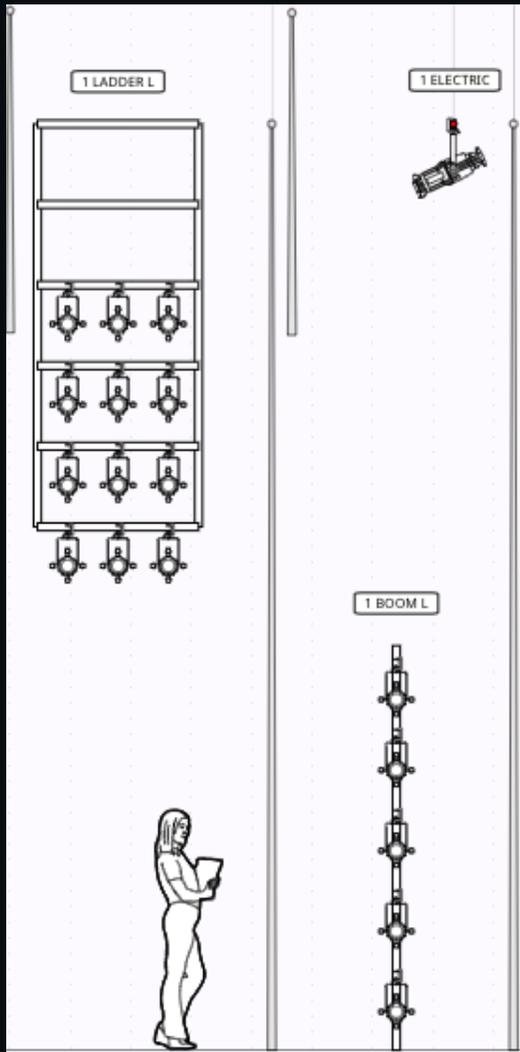
On the Section Plate adjust the trim of any element via drag and drop or by using the text inputs in the lower contextual menu. Ladders and booms reflect the number and placement of lights on them as per the Plot.

The Smart Section will default to standard Profiles but these can be changed to scroller units or other types of fixture as shown in the image on this page.

Items on the Smart Section that are attached to the Lineset Scheduler may be moved via the Lineset Scheduler at the top of the Section Plate just like on the Plot Plate. Items such as Booms and Ladders need to be positioned on the Plot Plate.

Position names are inherited from the Plot and can be arranged as needed for the drawing.

Border trim and length can be set in the Smart Section. Legs will always land on the deck so setting the trim will also set the height of the softgoods.

Ladder trim defaults to 23'-0" as per battens and is taken from the TOP of the Position. Booms default to 0'-0" and the measurement is from the BOTTOM of the Position. Thus a trim of 0'-0" would be sitting on the stage floor. To place a boom on a 1' piece of scenery set the Z height to 1' and the Boom will now sit 1'-0" above the stage floor.

Change the view from SL to SR with the click of a button and all the items drawn by Drafty will swap. Imported PDFs will not flip.

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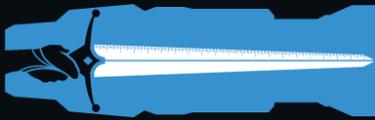
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Auto-worksheeting

Drafty provides several tools to make basic layout of a lightplot fast, efficient, and accurate. Auto-Worksheeting is built to reduce the mechanical tedium that goes into a lot of lightplot generation.

Note: Auto-Worksheeting requires a very specific workflow to operate properly.

First lay out all lighting positions. This includes Pipes, Booms & Ladders, Truss, Curved Pipes, and so forth. Pipe or Truss trim defaults to a Z height of +23'-0". Edit this to be the proper trim of the position. Ladders also get a Z of 23'. This marks the TOP of the ladder. Booms have a Z of 0'-0" and this marks the BOTTOM of the boom.

Once Positions are properly laid out add Focus Points. On the Units Layer, when nothing else is selected the contextual menu presents Focus Point controls, [Add FP] and [Make Plot]. Click [Add FP] draws a Focus Point Labeled 'A' with a default diameter of 8'-0" and a Z of 6'0". Resize the diameter by dragging a control point or entering a value in the text box. The Z is the height at which Drafty will guarantee full coverage of the Focus Point. Command-F will add a Focus Point at the cursor point.

Drafty increments points A, B, C, D &c. as they are added or duplicated. Layout the focus points in the order in which the channels should increment.

Once the Focus Points are in place Click [Make Plot]. This presents a dialog box with settings for type of lighting System, a System Name, which Focus Points are included, the Optimal Angle, Color, and Start Channel. Enter as much of this data as necessary. Drafty adds one light per Focus Point at the closest match to the optimal angle incrementing the Channel Number by the Focus Point letter, and adding Color and Purpose information to each light.
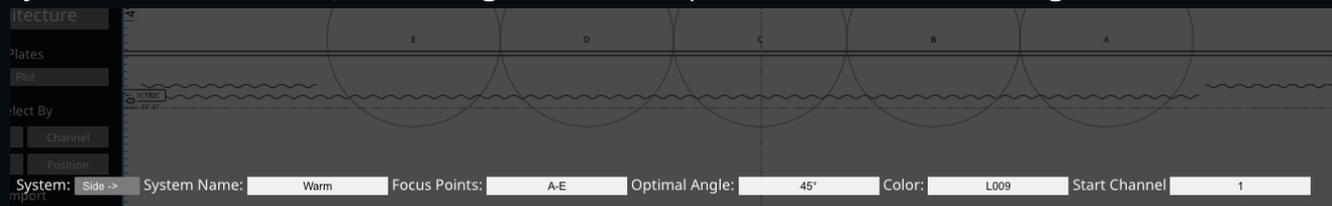
Example: Selecting 'Side ->' and give it a System Name of 'Warm', Focus Points 'A-C', an Optimal Angle of 45°, a Color of R53, and a Start Channel of 1. Drafty returns three lights as close to the Optimal Angle from the Center of the Focus Point to the best Position possible, Channels will be 1, 2, 3 with Purposes as 'Side -> Warm A', 'Side -> Warm B', and 'Side -> Warm C' respectively.

If Drafty cannot find a suitable Position it will draw a unit off-Pipe within 10' and outline it in RED. If there is nothing within 10' of a pipe Drafty will warn that it could not find a suitable location.

SPECIAL NOTE: While Drafty does handle 3D trigonometry it does not currently understand objects in space like Walls and Borders. Thus personal judgement is necessary to determine the appropriateness of distance between Light and Border or Leg.
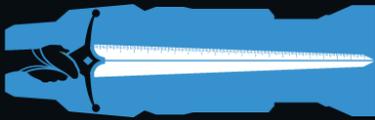
Beam Visualizer

Where the Auto-Worksheeting tool can be quite effective in laying out systems quickly, special cases abound in lighting. Figuring out difficult shots, important specials, and shutter cuts in advance saves valuable time in the Theatre. For this Drafty offers the Beam visualizer tool.

To activate the tool select a light or series of lights and click [Beams]. Doing so renders with two ovals representing your coverage on the Stage Floor (Magenta) and at +6' from the floor (Cyan). The Z height inherits from the Position the light is attached to. When not on a position the Z height defaults to +23' from Stage Floor. Move either the light or the focus point to explore placement of your lights. Command-Click-Drag will keep the Light and the Beam locked in relative position. Duplicating the light will maintain the relative focus of the Beam until placement is adjusted.
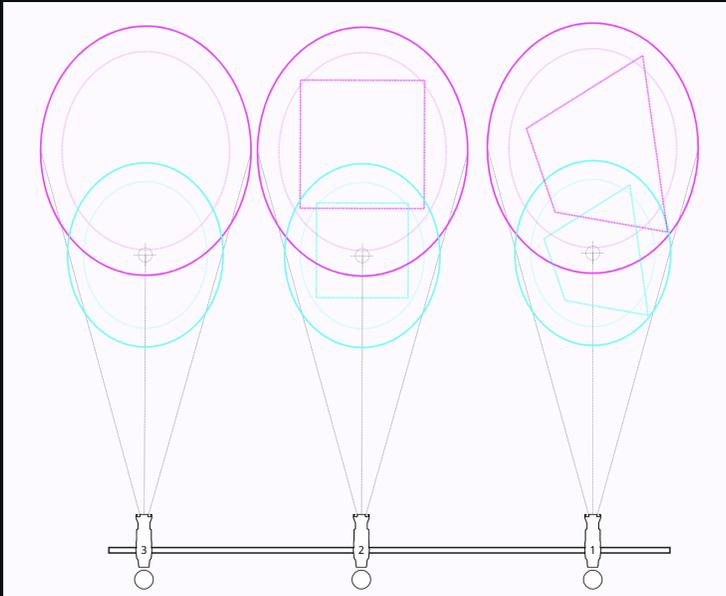
Place the focus of the light via drag and drop or enter precise coordinates in the contextual menu.

Not only are the beams shown, but shutters as well. Sliders for each shutter plus rotation allow for the exact plotting of specials and system lights against the realities of your scenery and stage.

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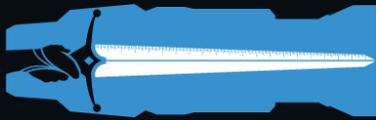
Signal Flow and Media Routing

Audio and Video paperwork operates a little differently than Lighting. Lighting designers use the plot as the primary piece of paperwork to convey the design to their technicians. Sound and video is much more concerned with the signal flow or media patch. Thus Drafty offers the Signal Processor Tool. The tool itself is deceptively simple but allows for the generation of very complex paperwork.
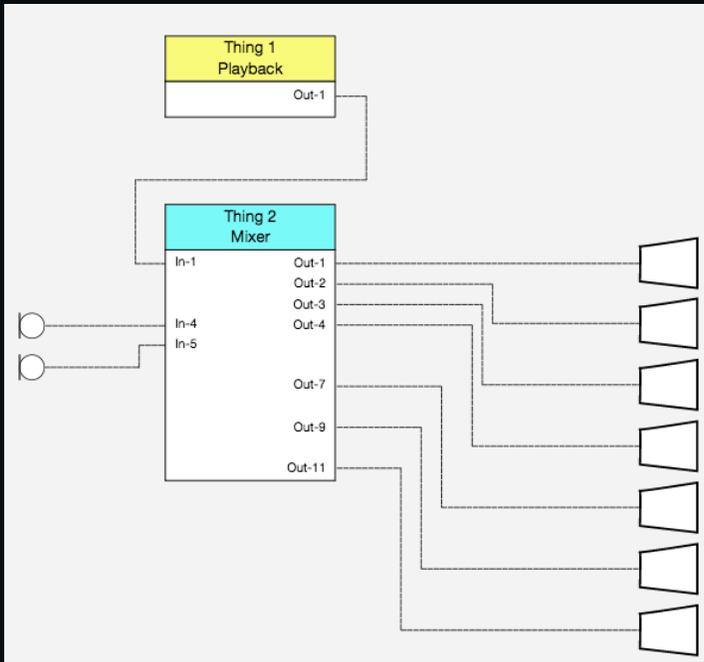
The [Flow] button creates a new Processor Object in the drawing. The default Processor Object has 3 Inputs and 3 Outputs represented by 3 circles on the left and right side of the object respectively. To change the number of outputs, click and drag on the control point at the bottom of the selected Processor Object.

To connect an Output to another item click and drag an Output to a Speaker, Mic, or other Processor Object's Input. Connect to speakers at the clamp position. This is the same location where a Speaker snaps to a Position Object, roughly the center of the symbol. To disconnect, select the wire itself and delete. This will only delete the selected wire(s).

The text label at the top of a Processor Object can be edited to make the Processor Object any kind of gear necessary. In the Audio world this could be Computer playback device, mixing console, effects processor, &c. In the Video world this might be Computer Playback, Video Switcher, & so forth.

Each Input and Output can be discretely labeled. Skipping Outputs may create better visual spacing. Hold down Shift to turn [Flow] into [Mic] to add mic inputs to the signal flow drawings. Option/Alt transforms the button into [Multi] allowing access to various multi-circuit passthrough objects including amplifiers and multi-circuit break-ins/outs. If a line is selected when creating a passthrough object, it will automatically insert itself into the line flow. This becomes a convenient tool for manual routing if the automated tools don't guess properly or specific routing paths are desired..

Much of this process can be automated. Simply navigate to the Signal Flow Plate and turn ON the Smart Flow. This creates a second instance of every speaker on the Plot. Not only will the inventory stay current with changes to the plot, but the duplicate speakers will not appear in the Audio Database. So no duplicate items.
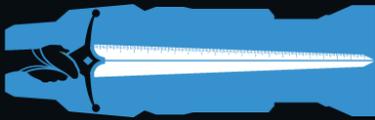
The Rack Tool

Drafty provides a Rack builder tool for Audio and Video paperwork. Click [Rack] to create a new Rack Object. Or press Shift-Alt/Option-C to insert at the cursor point.
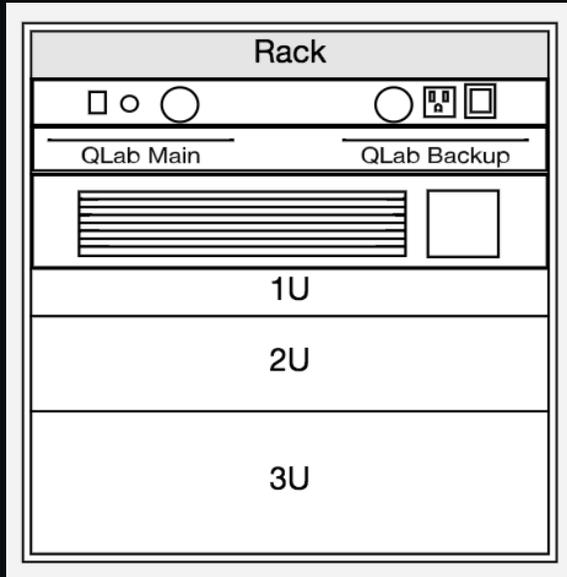
Creating a Rack Object will display several contextual menus. Select a 1U, 2U, or 3U Component as well as how many of each to create per click. Click the [Add] button and those Components are added to the Rack Object. All of these items are resizable (via drag and drop on their control points) and re-nameable (by double clicking the text inside the Component).

Each Rack Object has a Label field at the top that can be edited via a double click on the text. Show/Hide Casters on the bottom of the Rack via a contextual dropdown.

Drafty's built in graphical Components are featured above. Only the most common everyday objects are in the built-in library. This includes a 2U UPS, a 1U Power Conditioner, and 1U QLab and MacMini rack mounted Components. These are not resizable into different RUs. If the rack mounted playback is larger than 1U the text based Rack Units should be used. Or import image files.

To import image files, click [Import] in the contextual menu and a standard file picker pops up. Drafty assumes the image being uploaded is cropped to a standard Rack Mount Component. As such the image is scaled using the horizontal axis to fit inside the Rack Object. Thus it is important to properly prepare the artwork so that it renders correctly in Drafty.

Creating and preparing images can be done in any graphics program. One RU is 19" wide by 1.75" tall. If the artwork comes from a vector-graphics program, drawing items in a scale of 10 pixels per inch provides a good balance to the automated tools in Drafty. Thus a 1U component would be 190px wide by 17.5px high. This keeps lineweights in the same proportion as the native Drafty Components. If using a raster program or photo editor, lock the crop aspect ratio to 19x1.75 to ensure properly prepared artwork.

The maximum file size for an imported image is 512kb. This ought to allow a 10U high graphic at 140dpi for printing. If the file is too large explore compression options to find the right balance of image integrity and file size.
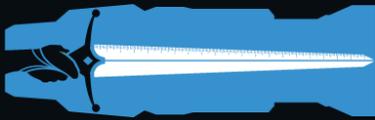
Miscellaneous AV Tools

Speaker orientation can be set from the Default Top view to a Side view. Obviously a line array is not going to be side-hung, but many other speaker options may be. If the speakers hang straight down (or up) the Side orientation is often best. More orientation options (including top and bottom) as well as side views of Line Arrays for section drawings are currently in development.

The default audio symbol set in Drafty is abstracted like the lighting symbol set. For a more real world accurate drafting style, additional symbol sets are available for in-app purchase. These are not necessary for the functioning of the program but are a preferred drafting style for many designers. The additional symbol library was made by Team Sound in New York City.
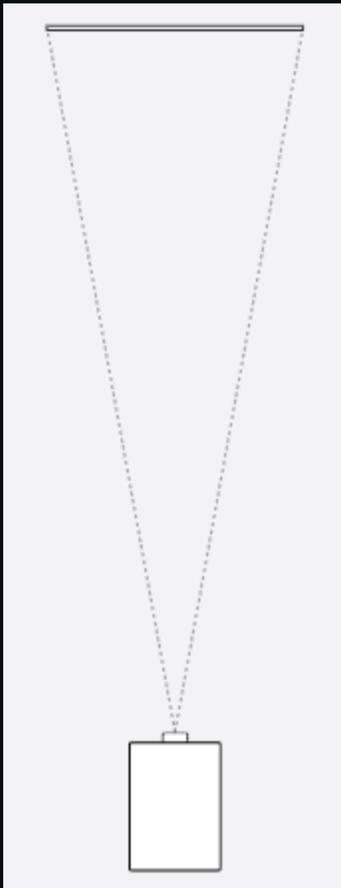
Video Projectors have a 'Screen Object' added by clicking the [Add] button next to Device:Screen. The screen object will automatically calculate the minimum lens needed to make the shot. It assumes a projector at the top of the screen. To hang the projector above the screen, use the Z-Height to indicate the height above the top of the screen that the projector sits.

2.8 Lens

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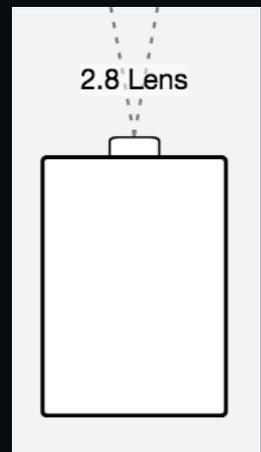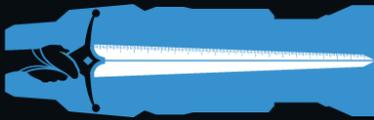
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The Lighting Database Manager

For smaller plots most of the data entry can be completed in the Drafting Table. Once things scale up, a spreadsheet view may prove more useful. Click [Lighting Database] to open The Database Manager in a new window. This is a spreadsheet view of all the plot information. Sort by any column by clicking the column name. Position, obviously, does a double sort by Position Name and then by Unit Number.
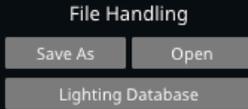
To Bulk edit, select contiguous cells in a column, enter the value, and press return. Or enter data in one cell and then drag the cell selector handle UP or DOWN to fill in the other cells.

Incrementing numbers works just like on the lightplot. Enter the start number and follow with the plus sign so, for example, to enter dimmers in the second universe enter '513+' into the first cell. And jumping numbers is easy too. Enter '513+10' to return 513, 523, 533, 543, 553, &c.

Autocomplete is available for Instrument Type and Wattage. The Database Manager only allows valid entries as per the Instrument selection drop downs in the Drafting Table. Changing any of these items will update the fixtures on the plot to the corresponding symbol.

The Database Manager automatically calculates basic information relevant to generating Paperwork. To the right of the main spreadsheet window are two smaller windows one calculating unit totals and the other color totals. The color window breaks down the count by cuts and by sheets. Standard frame sizes are included in the Drafty Database, but they max be overridden as necessary.

Inst Type	Frame Size	Totals	Inventory	Available
Source-4 26° 575w	6.25" x 6.25"	4	12	8
Source-4 36° 575w	6.25" x 6.25"	50	50	0
Source-4 Zoom 25-50 575w	7.5" x 7.5"	24	24	0
Source-4 Jr Zoom 575w	6.25" x 6.25"	11	6	-5
S4 PAR MFL 575w	7.5" x 7.5"	10	25	15
S4 PAR WFL 575w	7.5" x 7.5"	23	25	2
Source-4 Revolution 750w	N/A	2	2	0

On the far right hand side of the Database Manager is a column for arranging Position information. The order here maintains controls the Position Sort function both inside the Database Manager and when printing a Hookup or Instrument Schedule.

Once all the color, purpose, and dimming information has been entered, tabbing back to the Drafting Table reveals it all drawn to the plot. No refresh needed nor any managing of sidecar files. It just works.

Printing is just a click away. Hold down Shift and the Export:[Plate] button becomes Export:[Hookup]. By pressing that, Drafty will output a pre-formatted Channel Hookup and Instrument Schedule in PDF format that can either be emailed to collaborators or printed directly. The paperwork also includes a totals page at the end for quickly generating shop orders and color lists.
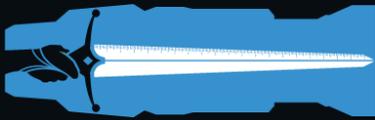
The Audio Database Manager

When using Smart Flow, the Audio Database keeps track of not only speakers and mixers but also who plugs in where. Specify cable lengths, plugs and more. Hold down the Option key and [Lighting Database] becomes [Audio Database] Click that and a new window opens where all the relevant information for Speakers, Cables, Amps, Mixers, and more may be edited.

When routing cables using Smart Flow, Drafty will track where those wires go. Thus in the Database Manager the ins and outs of every item in the plot are clearly noted. Inputs show what is plugged into the particular object while Outputs shows where it is sending to.

Using Smart Flow ensures that the database is clean as all duplicate speakers added via the Smart Flow tool are not counted in the Database Manager. This means that the Signal Flow plate and Database Manager are alternate views into the same file. This eliminates the need to manage multiple instances of objects.

The Audio Database offers a one click output to PDF. In the main Drafting Table hold down Option and Export:[Hookup] becomes Export:[Ins&Outs]. This report is organized by the Parent object (most often a Mixer or Rack as defined by a Processor Object in the Signal Flow, although it could be an Amp or other item.
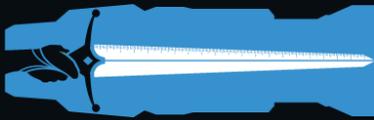
Miscellaneous Features

Working offline? Download the .drafty files to the desktop and load them directly into the program without needing access to Drive. It is possible to work on multiple files offline in this manner. Savings is just a matter of downloading the .drafty file to the Desktop before loading a new one.

Drafty has a couple of handy tools for moving around the document quickly. First is scroll wheel or trackpad zoom. This tool quickly zooms in and out of various areas of the drawing. Command-[Zoom] zooms to show the full page drawing. Alt-[Zoom] zooms to fill the screen with whatever object is selected. Holding the command key and dragging a selection will zoom to the selection area. Spacebar-Drag pans the view. Note: for increased speed, Drafty uses Spacebar-Drag rather than spacebar-Click-Drag.

Size and Position data can be proportionally edited. Drafty allows values of ++N or --N to change values proportionately. Want to make two lines 18 inches longer? Enter "++18" into the Length field. Or need to move several items 6 inches Screen Left? Enter "--6" into the X Position field.

Drafty uses the log-in credentials to pre-populate the Titleblock elements. All Titleblock text may be edited via double click from the BORDER Layer. Name, address, and other identifying information may be set in the Defaults dialog, available from the BORDER Layer. For Sound and Video designers, the most important Default will probably be changing 'Lightplot' to 'Speaker Plot' or 'Video Plot'.

Every object draws to the correct layer. It is entirely possible to never touch the Layer buttons during the whole drafting process. The lights are always drawn over the pipes which are over the scenery, which is over the theater. As it should be. Line-weights are all balanced based on what kind of information is being conveyed.

To print the plot, click Export: [Plate] and the currently active Plate is downloaded as a properly sized, scale accurate PDF. To print a Hookup or Instrument Schedule hold Shift while pressing the Plot (renamed Hookup) button.

CSV export is also possible. Click Export: [As csv], to download a text file which may then be imported into any spreadsheet or database program.

Plots and Paperwork may be emailed as PDF to electricians, or shared directly. To enable file sharing, log-in to Google Drive and navigate to the file under the Drafty folder. Right-click or control-click to open the context menu and click 'share'. Enter the intended recipient's email address. Best practices suggest making a copy of the file before sharing to ensure an unadulterated version to fall back on.
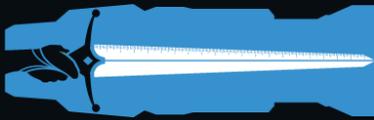
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Magic Sheets

Building a Magic Sheet in Drafty is very straightforward. The Magic Sheet tools are just light objects and thus all the advanced selection tools used to edit and manipulate lights are applicable to Magic Sheets.
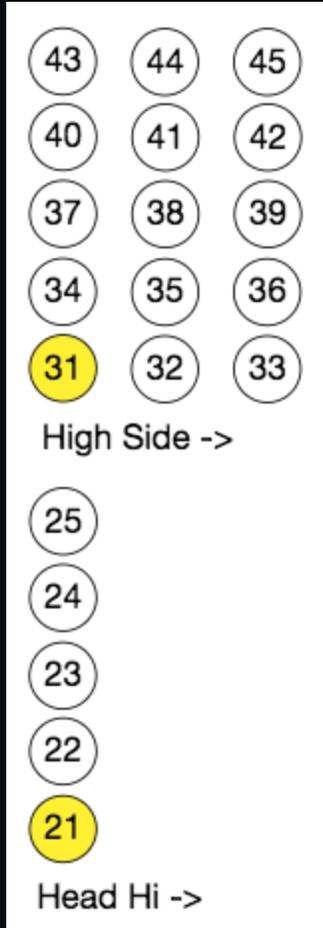
Drafty provides three basic channel shapes: Circle, Oval, and Square. Each of these have four styles: Normal (white fill with black outline), Yellow fill, Grey Fill, and Plain (white fill with no outline). These may be used as Channels, Groups, Focus Points, Presets, or whatever information is to be provided on a Magic Sheet.

In the Drafty environment a Magic Sheet is just another plate. As such head over to the Plates dropdown, select Edit... and then label the preferred plate(s) for the Magic Sheet. Set Page size to Letter (ANSI A/A4) or Legal (ANSI B/A3) and scale to ½" = 1'-0". Depending on the design it may make sense to reset the origin point to the bottom left hand corner. If the plot is very symmetrical, like a dance rep plot, then keeping the Centerline in the middle might be best to allow use of the Mirror Tool for copying and a faster workflow.
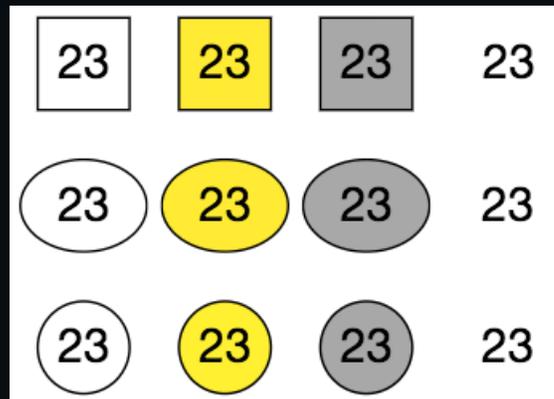
The tools were built to use the normal circle for channels and a Yellow filled circle to indicate group numbers. If the plot has very large channel numbers, over 999, the wider oval shape may be more effective. Some users enjoy indicating striplights with squares and movers with ovals.

The Plain Style is useful for system and color naming in lieu of the typical notes tool since in the creation of a Magic Sheet it can often be useful to have all items on a single layer.
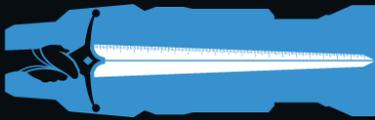
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Webtools and Offline Editing

Drafty is optimized for a web connected world, but has been designed to work offline or in situations with less than perfect WiFi. This is especially useful when drafting in older theaters.

Upon log-in, the Drafty will download essential tools and objects to local storage thus allowing for uninterrupted work in the event that the WiFi at the theater cuts out, the plane does not offer it, or the hotel network is down. But this ability comes with some limitations as certain features rely on the more advanced processing available only with connection to the Drafty servers.

Feature	Offline	Network Needed
Add and delete objects	Yes	No
Change objects already inserted	Yes	No
Open the Database Manager	Yes	No
Edit in the Database Manager	Yes	No
Draw geometric shapes	Yes	No
Dimension tools and smart objects	Yes	No
Create Smart Section	Yes	No
Saving	Local storage only. No Cloud backup	Yes
Opening other Drafty Documents	No	Yes
Importing PDFs and Images	No	Yes
Exporting Plot	No	Yes
Exporting Database	Yes	No
Printing Hookup	No	Yes

Most of the functionality is available in an offline scenario. Best practices suggest preparing for questionable situations by downloading .drafty files in advance and loading the program into a Browser before heading into the unknown.

Also, while all the data will be safe and secure in local storage, getting on-line as soon as possible to sync with the cloud storage is a good idea. Local browser storage is neither designed nor intended to be long term.
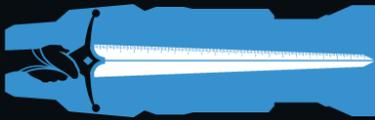
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Toolbar Buttons

Delete	Deletes selected object from drawing	{Delete} {Backspace}
Clone	Duplicates an object from Right to Left at the spacing set by Interval	D
Front	Sends selected object to the top of the Layer	F
Back	Sends the selected object to the bottom of the layer	Shift-F
Undo	Undoes last action	Cmnd-Z
Redo	Redoes last action that had been undone	Shift-Cmnd-Z
H-Align	Aligns the X Position of selected objects at their midpoint	H
V-Align	Aligns the Y Position of selected objects at their midpoint	V
H-Spacing	Spaces selected objects evenly horizontally from outside objects	Shift-K
V-Spacing	Spaces selected objects evenly vertically from outside objects	K
Move	Move selected object by the distance set in Interval	M
Mirror	Mirrors selected object across Centerline	W
Zoom In	Zooms the window view to enlarge objects on screen	Option--
Zoom Out	Zooms the window to shrink objects on screen	Option-+

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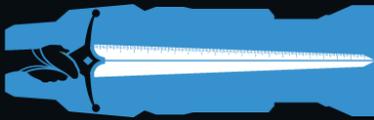
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Sidebar Buttons

[**Lights**]	Creates a Light Object – Default is Source-4 36° 575w	L
Shift-[**Lights**]	Adds PAR 64	Shift-L
Opt-[**Lights**]	Adds Striplight	Opt-L
Cmd-[**Lights**]	Adds Mover	Cmd-L
	Adds Fresnel	Shift-Opt-L
[**Pipe**]	Creates a Lighting Position Object	P
Shift-[**Pipe**]	Creates a curved Pipe	
Alt-[**Pipe**]	Creates a Truss Object	
[**Boom**]	Adds single boom	Shift-P
Shift-[**Boom**]	Adds double boom	Opt-P
Alt-[**Boom**]	Adds 3X ladder – This object is adjustable to a 1X or 2X ladder	Cmd-P
[**Audio**]	Creates a Speaker Object – Default is Small Single Speaker	C
[**Flow**]	Create Processor Object for Signal Flow Diagrams	Shift-C
Shift-[**Flow**]	Create Microphone object for Signal Flow Diagrams	Opt-C
Alt-[**Flow**]	Create a Multi-Circuit passthrough object	Y
[**Rack**]	Creates a Rack Object	Shift-Opt-C
[**Video**]	Creates a Projector Object – Default is Medium Projector	T
[**Arch Obj**]	Creates an Architecture Object – Defaults to Rect	A
Shift-[**Arch Obj**]	Creates an Architecture Line Object	Shift-A
Option-[**Arch Obj**]	Creates an Architecture Ellipse Object	Opt-A
Cmd-[**Arch Obj**]	Creates an Architecture Curve Object	Cmd-A
[**Set Obj**]	Creates a Scenic Object – Defaults to Rect	S
Shift-[**Set Obj**]	Creates a Scenic Line Object	Shift-S
Option-[**Set Obj**]	Creates a Scenic Ellipse Object	Opt-S
Cmd-[**Set Obj**]	Creates a Scenic Curve Object	Cmd-S
[**Softgoods**]	Creates a Softgoods Object	B
[**Set Piece**]	Creates a Scenic Object	Shift-B
Shift-[**Set Piece**]	Creates a 6' Figure	
[**Dimensions**]	Creates a Dimensions Object	
Shift-[**Dimensions**]	Creates an adjustable Ruler Object	
Opt-[**Dimensions**	Creates a Siteline Object	
[**Notes**]	Creates a Text Object	X
Shift-[**Notes**]	Creates a callout arrow	Shift-X

Drafty-App.com
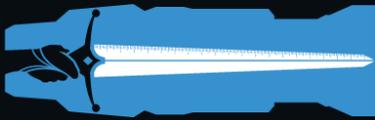
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[**Type**]   Selects similar Lights based on a selected light's Type   G
[**Channel**]   Selects similar Lights based on a selected light's Channel Shift-G
[**Color**]   Selects similar Lights based on a selected light's Color   Opt-G
[**Position**]   Selects similar Lights based on a selected light's Position Cmd-G

[**Plot**]   Exports the drawing as PNG   E
[**Database**]   Exports a CSV file to import into a Database program   Shift-E
[**Open**]   Opens the Choose File dialog to select a file   O
Shift-[**Open**]   Creates a New blank file to work on   Shift-Opt-Cmd-N
[**Save As**]   Opens the Save As dialog to save the current working file Shift-O
Shift-[**Save As**] Saves the current document at its present state.
[**Venue**]   Import PDF to Architecture layer   I
Shift-[**Venue**]   Import PDF to Scenery layer   Shift-I
[**Architecture**]   Set Active Layer to Architecture   1
[**Scenery**]   Set Active Layer to Scenery   2
[**Positions**]   Set Active Layer to Positions   3
[**Dimensions**]   Set Active Layer to Dimensions   4
[**Units**]   Set Active Layer to Units   5
[**Border**]   Set Active Layer to Border   6
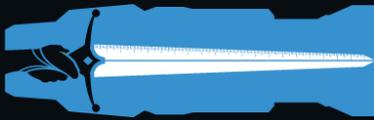
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Toolbar Modifiers

Shift-[→ ←]	Rotates object by default rotation lock. 45° for lights 30/45° all others.	
Shift-[CLONE]	Clones object from Left to Right at set Interval	Shift-D
Shift-[CLONE] (Pipe)	Pipes Clone Up 2' by default. With Shift they clone down 2'	Shift-D
Option-[CLONE]	Clones object down at set interval	Opt-D
Command-[CLONE]	Clones object up at set interval	Ctrl-D
{Spacebar}-{Drag}	Shifts the view of the drafting space with cursor movement	
Shift-[ZOOM]	Zooms Out	
Alt-[ZOOM]	Zooms to fill screen with selection	Shift-Opt--
Cmd-[ZOOM]	Zooms to show everything inside the Border	Shift-Opt-+
Shift-{Drag}	Scales an object (pipe, rect, line) from center	
Option-{Drag}	Free scale an object (pipe, rect, line) from control point	
Shift-Option-{Drag}	Free scare an object (pipe, line, rect) from center	
{Arrow}	Pan screen 6" in arrow direction	
Option-{Arrow}	Move selected object(s) 4" in arrow direction	
Shift-[H-Align]	Aligns to the Right Side of the objects	Shift-H
Option-[H-Align]	Aligns to the Left Side of the objects	Opt-H
Shift-[V-Align]	Aligns to the Top of the object	Shift-V
Option-[V-Align]	Aligns to the Bottom of the object	Option-V
Shift-[Move]	Move Object Right	Shift-M
Option-[Move]	Moves object Down	Opt-M
Cmd-[Move]	Moves Object Up	Ctrl-M
Shift-[Mirror]	Flips an object over Plasterline	
Select Current Layer	Select All on the current Layer	Ctrl-A
Select All	Select All on the whole drawing	Shift-Ctrl-A

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