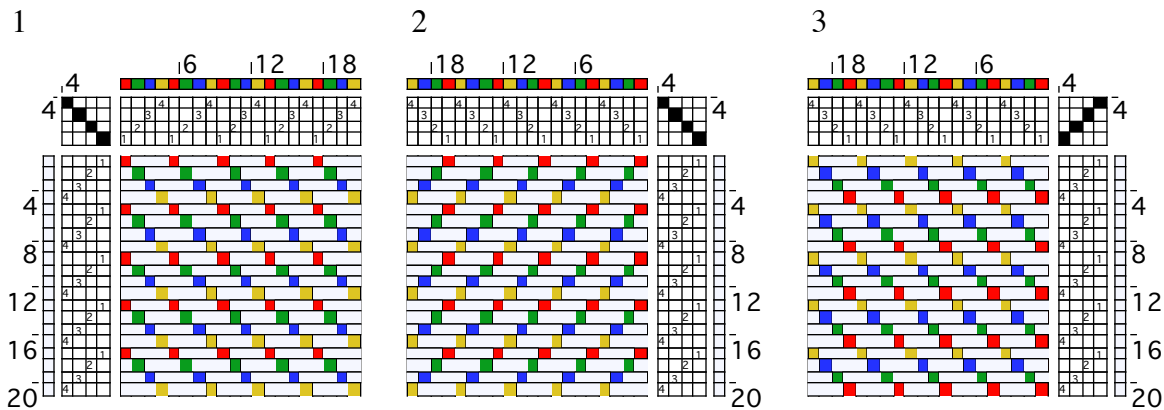


Drafting basics

Drafting on paper is the same method as drafting on the computer, except that the computer does it much faster with a greater degree of accuracy than the human process of producing a pattern on paper. The draft can then be printed out so that it can be taken to the loom for handy reference when threading or treadling.

Now look at the colors and notice that green signifies that each thread is operated by the #2 shaft; blue shows what threads on shaft #3 do; yellow governs shaft #4.

Notice that figure 2 operates from right to left instead of the left to right orientation in figure 1. This orientation does not matter as long as the weaver realizes that a simple change in the direction of either the tie



The purpose of drafting is to find out what a pattern will look like before going to all the work of making a warp and threading the loom.

Look at the three draw downs along the top of the page. The numbers in the threading area signify which shaft or harness that should be threaded. The generally accepted convention in America is to number the shafts from the front to the back when sitting down at the loom. Red (fig.1) signifies that the first warp thread is on shaft 1. When treadle #1 is depressed (indicated by a 1 under the first of four treadles in the box above) a red thread is lifted and shows when a weft thread passes underneath it. The colors in the color bar of the threading found directly above the threading numbers indicate what happens when #1 thread is raised by #1 treadle or lever in a table loom.

The next thing to notice is that the box with the black squares (found either on the right or the left of the threading and above the treadling) as shown on this page has numbers indicating that the tie up has 4 vertical squares and 4 horizontal squares. The horizontal squares indicate which treadles are to be used and the vertical squares how many shafts are used.

up, color sequence or treadling can bring about the same results in the basic structure.

One of the things that does matter, though, is the placement of color which can be seen to vary in the draw downs above. When you warp the loom in a preselected sequence of colors, it is a permanent feature and is not easily changed short of rethreading the loom. The only purpose of choosing colors in the threading above is to show what happens on each of the shafts and how it looks in the draw down.

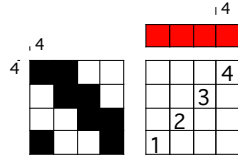
Pattern Making using Draw downs

The following examples show how patterns are generated by changing the tie ups. Instead of using only one shaft at a time as done on this page, two shafts are used at a time. Look at the tie up area. #1 tie up is found on the lower right corner of the tie up because the numbering in this diagram is from right to left (note the 4 in the upper left corner) so shafts 1 and 2 are “tied” to the first treadle (found in the lower right corner of the tie up area.) Follow the black squares in the tie up area and the next two squares are on shafts 2 and 3. The black square in

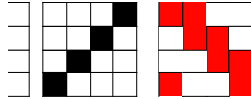
the area under the tie up shows that the next two shafts to be depressed are on 3 and 4 and the last two are on 1 and 4 as they are adjacent to each other when threaded.

The major factor to consider is that when a warp

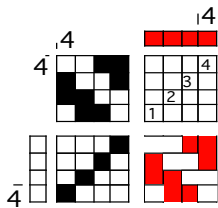
tie up



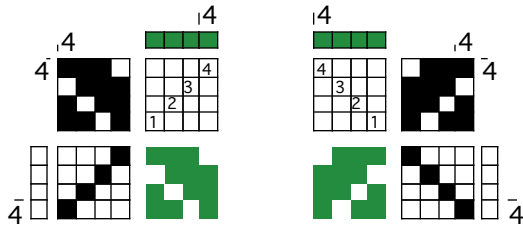
is raised, the weft threads goes under it so the warp thread shows. This is why a draw down normally shows the warp threads unless the tie up is reversed.



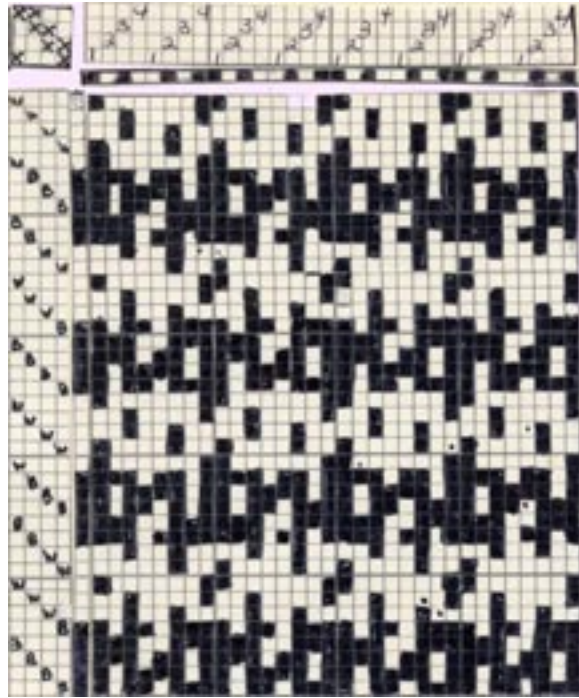
Compare this tie up and draw down with the one at the top of the page. Note that the red warp threads have taken the place of the white weft threads and the white weft threads are now red warp threads. If you are following a pattern from a book that is using a counter balance loom or sinking shed, you may want to convert the pattern so that it will weave right side up.



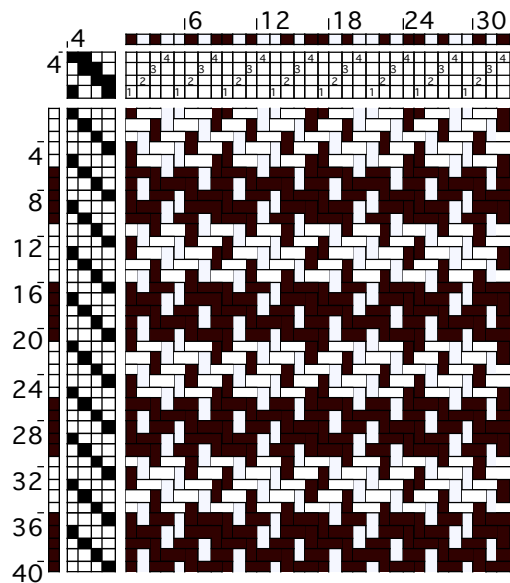
The draw downs above show a 3/1 twill with weaving information right oriented and left oriented.



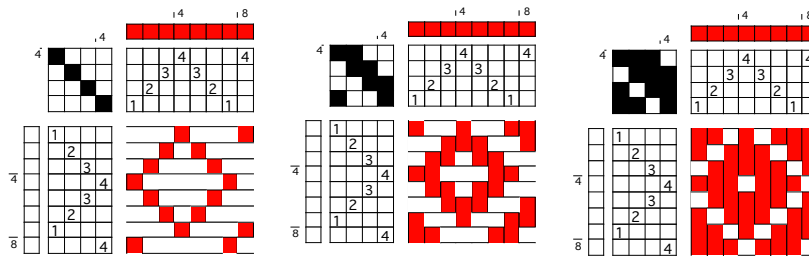
The thread outlines have not been selected, so the draw down has the appearance of green squares being drawn in. If the draw down has been done on paper, grid lines will appear to separate the squares. The hand drawn draw down in the second column shows a pattern that is the result of a black and white threading and treadling coupled with a 2/2 tie up. The “Ws” indicate white threads and the “Bs” indicate, black threads. This method of doing a draw down is extremely time consuming and requires exact rendition.



When colors are added in both warp and/or weft, there are two factors that have to be taken into consideration is the warp thread white or black and does the weft thread which can be either black or white show on the top or lie underneath. The small dots in the diagram above have been inserted to indicate that a white warp and weft make a white square.



For those who have computer programs, the job becomes a cinch. The computer does the work for you.



This example is the same as the hand drawn one, but shows the thread outlines, an added bonus. The color bars efficiently show the color change sequence. Time, about 2 minutes and no expensive gummed graph paper required.

Draw downs showing how to make diamonds by reversing the threading and treading. The extra thread on shaft #4 gives an extra design possibility to add to the complexity of the single diamond. Study the diagrams using 1/3, 2/2 and 3/1 tie up changes. This should give ideas for creating other designs by manipulating warp and/or weft threads.

ven to produce “squares” on an angle of 45° as they move from one block (A, B, C or D) to another. Alternate tabbies (plain weave

shots) separate each pattern shot. More efficient ways have been devised to read the pattern and weave it, but it is important to know how to read the old patterns if they are to be duplicated.

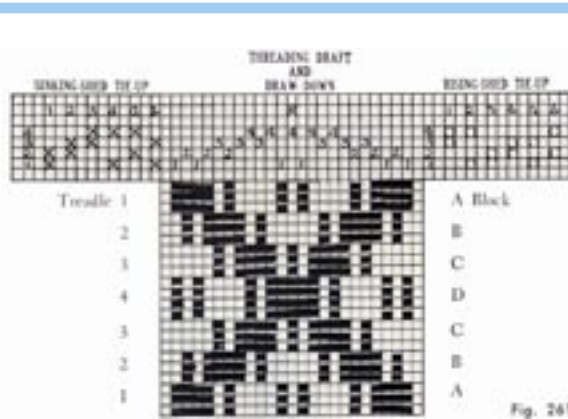


Fig. 261

From Black's *New Key to Weaving*

Most of the diagrams in Mary Black's book show tie ups for both a sinking and a rising shed loom. Convention dictated that “Xs” signified the lowering shed while “Os” were for rising sheds. Since the majority of looms in North America now use rising shed or jack type looms, this type of information has now been replaced in favor of the jack loom system.

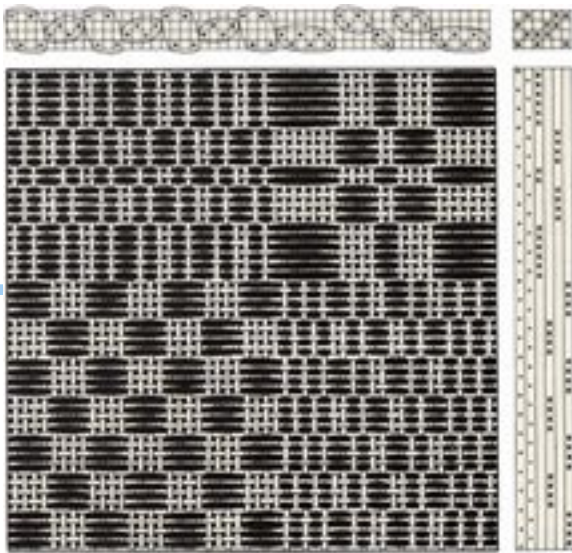
The draw down from Black's book also shows how an overshot pattern is designated. Depending upon the number of repeats in each block of the threading pattern, the number of weft repeats is wo-



Marguerite Davison's *A Handweaver's Pattern Book* is all written for a lowering shed loom. The tie ups should be inverted to weave on a jack loom and close attention to her notation system must be made. She groups “blocks” of the pattern together and puts small numbers to signify the number of threads in each section as well as arrows to define the length of the pattern repeat. She does not differentiate between left or right orientation so often the treading information is placed to either side of the pictured fabric.

Davison often gives several treading options which are numbered with Roman numerals. Within each section, she gives the number of weft shots, color and tabby option. There is often a “repeat” designation if certain areas are to be repeated but others are left as single patterning.

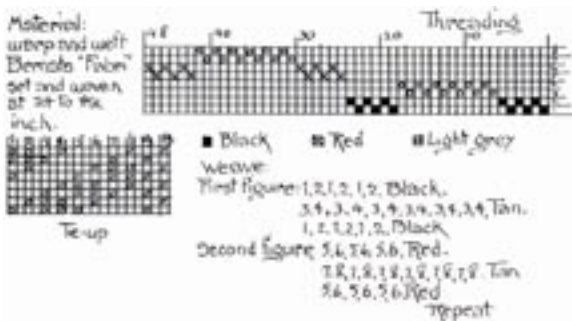
Overshot draw down from Burnhams' *Keep Me Warm One Night*



Some of the clearest draw downs can be found in Burnham and Burnham as seen above. The “blocks” of patterns are encircled so the number of repeats in the treadling can be counted and woven “as drawn in” more easily. “As drawn in” or “tromp as writ” are descriptions of how to weave the pattern with a 2/2 tie up and follow the threading pattern to produce a weave that will show the pattern vertically as well as horizontally.

Most of the looms used in Europe and colonial America were counterbalanced using pulleys so that two shafts up would balance with two shafts down. These looms were mostly sinking shed so the tie ups produced the pattern on the bottom of the fabric which could be produced this way or the tie up could be reversed to show the pattern of the weaving on the top.

Mary Atwater' notation for displaying a pattern

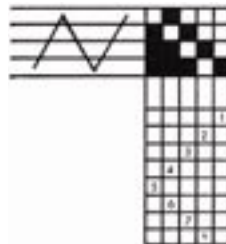


Mary Meigs Atwater’s pattern books have truly been done by hand. She separates each column in her tie ups which are usually done for a rising shed. They are numbered as her treadling instructions are written in a casual way with instructions beside each shot to define the type of yarn that should be used. She also differentiates between the threads in the threading by choosing squares filled with different symbols and placed in the shaft area to designate the number being used. Her thread numbering is done from right to left.

Consider how this right to left notation came about when the majority of weavers at the time of Mary Atwater all read from left to right—their descendants probably still do! Why then, did the handweavers choose to read from right to left? Perhaps they found it easier to thread their looms because of better lighting or because it was more convenient for them to do so.

Some of the computer programers have followed the suit and proceed from right to left as a default in their programs. The better programers have made it possible to choose the starting side. In the Scandinavian countries and Europe the tie up is usually found at the bottom right, the threading to the left of the tie up and the treadling above the tie up.

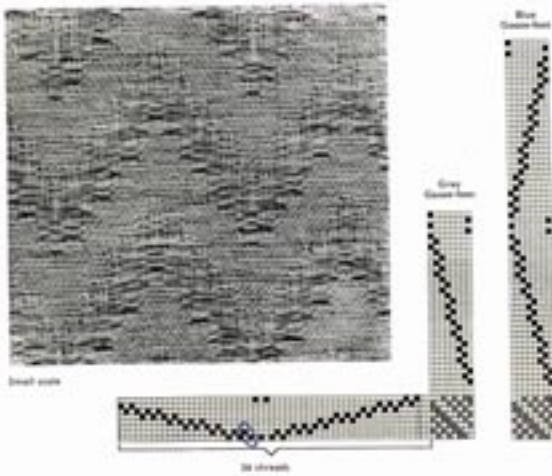
From *Weaves and Pattern Drafting* by John Tovey



John Tovey had his book published in Great Britain in 1969, but this method of displaying the draw down information seems to have been adopted for years before that.

Malin Selander's Method of Making a Draw down/up

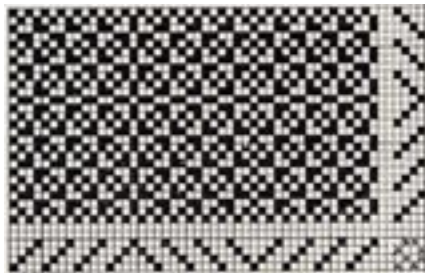
This notation is most common to the Scandinavians and Europeans. It assumes that the weavers is working from the bottom up as that is the way the weaving turns out. Although most Europeans have used counterbalanced loom, they also use countermarch looms. A countermarch loom uses a jack-type tie up but each treadle also has the remaining shafts tied up to a mechanism that raises and lowers shafts at the same time. This method



usually produces a larger shed and the treadling is easier. Today's looms have other mechanisms that aid in the action of the shafts to make weaving smoother and easier to do.

From *Designing and Drafting for Handweavers* by Berta Frey

Berta Frey gives an excellent description of how to draft. Her draw downs were more



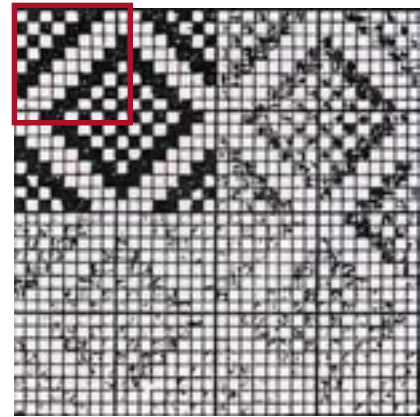
like the computer draw downs seen in today's weaving, but she was one of the few American weavers who used the European layout.

Manuscript Notes on Weaving by James Holmes, M.S.A.

This book was published by the author in 1912 and shows how drafting was taught by him in England.

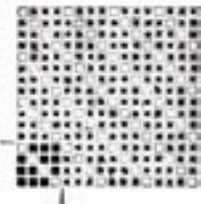
One portion or quarter of the pattern has been penned in with the other three portions being filled in by reflecting the draw down vertically and then horizontally. The problem for the weaver is to fill in the other three quadrants so that a complete pattern can be seen. From this type of draw down,

it can be seen that only the first portion need be shown and the rest of the threading and treadling can be easily determined. Can you see what is needed? A point threading of nine shafts repeated—a point treadling of nine shots repeated.

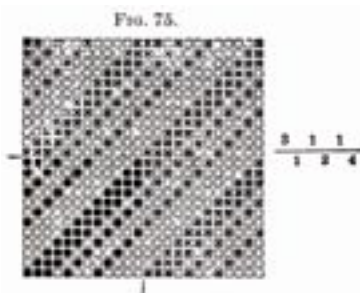


A Handbook of Weaves by G. H. Oelsner
Translated and revised by Samuel S. Dale

One of the best sources for patterns available, "Oelsner and Dale" is probably the least used as few weavers are familiar with how to use it. Each Figure represents a pattern which has the tie up or lift plan embedded within the full pattern. Look on the bottom left corner of the figure and see two small lines projecting from the left and bottom side. If there are no lines visible, count the number of squares (black and white) until a full repeat is found. In the case of the draw down seen here, there are four squares across and four squares up. This is all you need to know to set up your tie up or make a lift plan. In most cases the threading is a straight draw (1,2,3,4) and is treadled 1,2,3,4 as tied up.



Oelsner also uses the $3/1/2/1/4$ notation which has been altered here for ease in interpretation. The red numbers are the warp threads 'up' and the green numbers, the threads



'down'. Because it is sometimes difficult to remember which threads are up and which down (remember that the black squares are warp showing, or that the thread will go under the warp) you may want to change the notation so the reds are under the line and the greens are above.) In most patterns the reverse pattern is weaving on the back side so all that needs to be done is turn the fabric over if your pattern does not match the draw down.

3	1	1	
1	2	4	

The Profile Draft

The profile draft is a short method of showing the pattern when using blocks or groups of threads that are repeated. As these blocks can take up a great amount of space if drawn in full, substituting one square for each block can give the appearance of the overall pattern which can be seen in a larger view than trying to cram all of the threads into an available space.

The blocks are usually indicated by alphabetical capital letters both warpwise and weftwise.



The profile draft can be done easily using a computer as each of the blocks can replace a number of threads in a unit and be placed in the threading using A block for the first thread, B for the threads on shaft #2, etc. Most programs allow instant "as drawn in" or you can design your own pattern as the blocks

that you enter in the threading area remain fixed. Most good programs also allow you to click in the draw down area to make your pattern and instantly reflect the result in the treadling area.

Some points to remember

- Plain weave or tabby is left out in most draw downs if it follows or precedes pattern shots. This is mainly done to simplify a repetitive action and save space. When using a tabby shot to separate pattern shots, make sure that you have a plan, i.e. odd tabby is thrown from right to left and even tabby is thrown from left to right. The tabby is put in to preserve the pattern shots so that they do not slide over one another and in so doing they create a pattern of their own in the areas where plain weave is predominant.
- When working with color, make sure that you indicate a warp color (up or over) and dominant, a weft color (down or under.) If this becomes confusing when using paper draw downs, make a small dot to indicate which is which. *This is another great advantage of a computer assisted pattern as it automatically knows what to do.)*

Weaving computer programs on the market today These support WIF files which are accessible on the programs listed below.

WeaveMaker for both Mac and PC (bundled together)

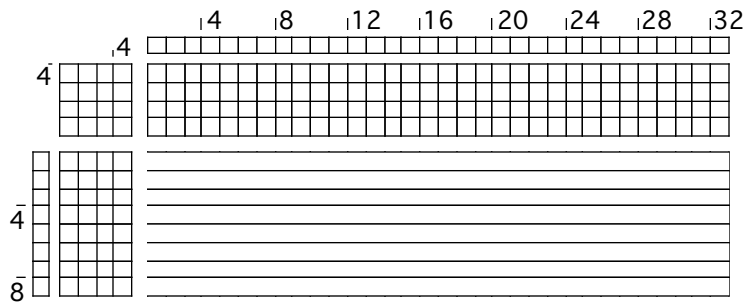
WeavePoint for PC only

SwiftWeave for Mac only

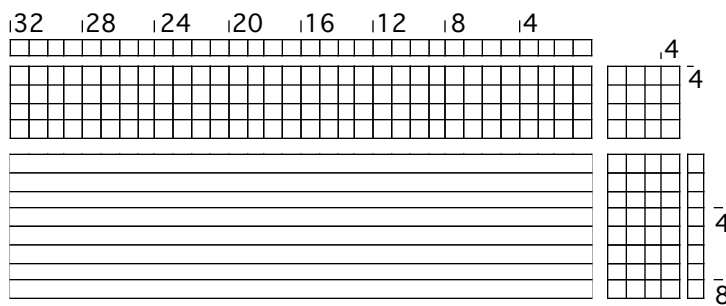
Patternland for PC only

ProWeave for both Mac and PC (sold separately)

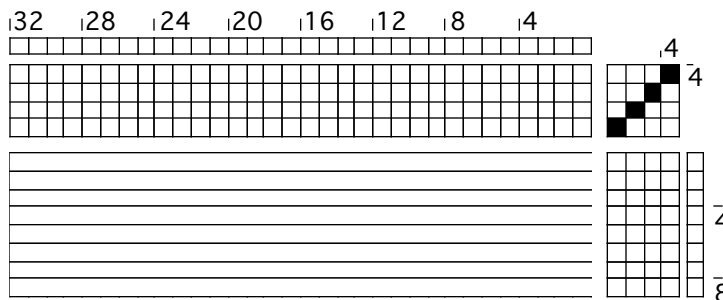
Fiberworks for PC only



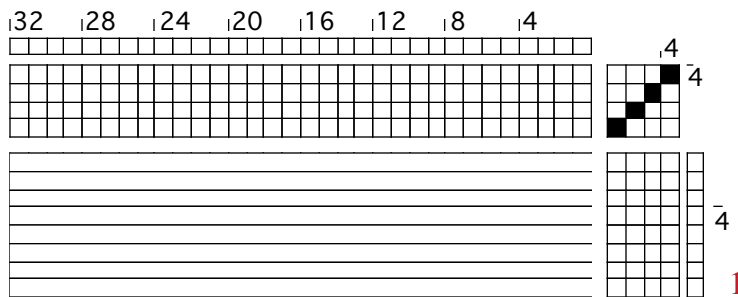
Fill in a threading, tie up and treadling sequence. If you need to have squares in the draw down area, use a ruler to run lines down from the threading or warp sections.



The third diagram down is what you would see for a peg plan or lift plan. As the program used retains the tie up area, the black squares serve only to show which line of lifts are being used. In some programs on the computer, this area is left blank.



Note that the bottom diagram shows a red "1" starting at the bottom of the lift plan or treadling. This feature is not supported in many weaving programs but would be the preferred way to show the pattern as that is the way it weaves. You would not want to weave a man that would turn out upside down!



If you wish you can fill in colors in the warp bar on the top of the threading and the weft bar beside the treadling or lift plan.