LINEWEIGHT
Every line used in a set of working drawings will be interpreted by those using the drawing in a manner consistent with the significance given to it by the drafter. This variation in significance of line is one of the most important factors in clarifying the drawings and avoiding the misinterpretations that may arise from the many different conditions represented by the lines in the drawings.

All lines used in the drawings must be opaque in order to reproduce in the diazo printing process; therefore, the variation in the significance of lines is accomplished primarily by varying the thickness of the lines. The resulting significance of the line is commonly referred to as its "weight." In general, the more important or conspicuous a condition is, the heavier the line weight that should be used to represent it. This contrast of line weight produces several categories of lines commonly used in working drawings which contribute directly to their success.

SECTION PROFILE LINE
The majority of drawings in the working drawing set describe the construction as though the object had been hypothetically sliced, either vertically or horizontally, to expose the inner parts that make up the assembly. The heaviest line weight is reserved for differentiating between those parts of the assembly that have been sliced and those for which only the surface is shown in the drawings. This is done by emphasizing, with a heavy line weight, the profile of the assembly that has been sliced or shown in section. Thus, the section profile line does not describe an actual edge on the assembly, but a hypothetical one that would exist if the assembly were constructed and then sliced. If the entire assembly were dipped in dye, like an egg up to the point of the hypothetical cut, the section profile line can be thought of as tracing around the surface of the assembly at the line that would be marked by the dye. Note that if the entire assembly is shown in the drawing, the section profile line must close back on itself. It is always thickened toward the inside of the assembly so the drawing can be measured accurately with a scale. Thus, for example, both the clear room dimension and the wall thickness can be scaled from a floor plan.

Figure 1. The section profile line is used to differentiate materials cut in section.
OBJECT LINES
Object lines describe the actual edges on the project and make up the second category of lines. Several line weights are used as object lines in accordance with the significance of the edge or condition being described. Specifically, greater definition will be achieved in the drawings if the line weight is progressively reduced to distinguish between the following conditions:

MAJOR PROFILE LINES - As most working drawings are orthographic multi-views, only two dimensions of the three dimensional object can be shown in a single drawing. Emphasizing the line that represents the profile or silhouette of an object and separates the object or assembly from its background will help to describe the third dimension (a drop in space between two surfaces) that is not otherwise shown in the drawings.

SECONDARY PROFILE LINE - Secondary profiles are those lines that represent the drop in space between two adjacent surfaces on the object itself. These lines are typically given less emphasis than the major profile lines. As a general rule, the greater the distance or drop in dimension not shown by the drawing, the more the line representing the edge should be emphasized.

CHANGE IN PLANE - Those lines that indicate a change in plane between two adjacent surfaces, i.e., one shown in true view as done at an angle to the drawing, should be less emphasized than those edges shown in profile, as they do not represent a drop in space between the surfaces.

CHANGE OF MATERIAL - Lines that represent two different adjacent materials in the same plane should be less emphasized than those lines representing a change of plane or abrupt bend in the surface.

JOINT IN THE PLANE - The object line drafted with the lightest line weight is the line representing a joint in a single material that is all the same plane; such as, the joints between tongue-and-grove siding seen in elevation.

Figure 2. Hierarchy of object line weights.
REFERENCE LINES
The third category of line includes those that represent a reference to the object and not an actual edge on the object. Such lines as dimension lines, extension lines, leader lines and grid lines are drafted in the lightest line weight to distinguish them from the object itself. The use of these lines is discussed in greater detail in the section on dimensioning.

The above categorization of line weight is not intended to suggest that there exists an absolute line weight for each type of line but merely a significance that the drafter should attempt to convey by varying the line weights in the drawings. In the ideal situation, anyone looking at the drawing should be able to distinguish the different types of lines. Thus, the line weight used for any one type of line will be relative to the other lines used in the drawing. On small scaled drawings, even the most skillful drafter will not be able to produce a distinction between all of the types of lines suggested in the outline without the heaviest lines obscuring information. Because there is a maximum thickness of line that can be used effectively in a drawing of a given scale, the larger scale drawings will generally exhibit more variations in line weight than can be successfully used in the smaller scale drawings. Even on the largest scale details some situations cannot be well illustrated without exaggeration, for example, showing a separation of lines representing roofing and flashing even when these materials will be in direct contact in the finished construction. The major question the drafter should ask is: Have I made the drawing as clear as possible or can it be fourth reclarified by emphasizing some of the lines?

Figure 3. Partial floor plan illustrating the use of line weight, coded lines, and reference lines.
CODED LINES

In addition to varying the line weight of continuous lines, coded lines are made up of repeating sequences of dots and dashes or other breaks and are also used in working drawings to provide further information. As with most symbols used in working drawings, no universal meaning exists for the coded lines. Therefore, whenever they are used, they must be defined either by direct labeling or by a key in the drawings to have legal definition. Typically, labeling the coded line on the drawing will be clearer unless it occurs too often in the drawings.

In the same manner as continuous lines, coded lines are drafted with variations in line weight in accordance with their significance; however, in the case of the coded lines, the meaning is primarily carried by the manner of the break in the line. Thus, care must be taken to ensure that the coding is consistent throughout the length of line and that each coded line is distinct from other similar coded lines used in the drawings. By emphasizing the beginning and end of each dash and maintaining uniform intervals and marks throughout each type of coded line, the coded lines may even cross one another on the drawing without confusion.

Most of the various technical fields within the construction industry have developed line codes and symbols for their specialties which are defined in ARCHITECTURAL GRAPHIC STANDARDS by Charles G. Ramsey and Harold R. Sleeper. For general architectural drafting, the following line codes are suggested:

SECTION CUT LINE - Section cut lines are shown on the base drawing to indicate the exact location of the section cut and are typically drafted with a heavy line weight for emphasis.

MAJOR LIMIT LINES - Are drafted with a heavy line weight; and are generally used to describe major property or boundary lines.

Figure 4. Partial floor plan illustrating the use of coded lines.

Figure 5. Section cut line

Figure 6. Major limit line.
MINOR LIMIT LINES - Are drafted in a medium line weight and used to describe a minor boundary or line such as: the limit of construction, easements or setback requirements.

MATCH LINE - Is drafted in a light line weight to indicate the "match point" between parts of the same view that, due to lack of sufficient space, must be shown on separate sheets. The match line should extend beyond the outline of the view.

CONCEALED LINE - Used to describe an edge or other portion of the object that would normally be drafted as an object line but is below (in plan views) or behind (in section and elevation views) the object shown in the drawing and thus concealed from view. The concealed line is typically drafted in a line weight slightly lighter than would be used if the edge was not concealed and thus shown as an object line.

REFERENCE LOCATION LINE - Is used to reference the location of an edge or other portion of the object that would normally be drafted as an object line but is above (in plan views) or in front of (in section and elevation views) the object shown in the drawing. The reference location line is generally drafted in a line weight slightly lighter than would be used if it was shown as an object line. The reference location line is used to locate such features as the edge of the roof or breaks in the ceiling over the floor plan, etc.

FUTURE LOCATION LINE - Is drafted in a light line weight and used to indicate the location of future construction or equipment that is not included in the contract, but will have an effect on the construction under contract. Thus, future location lines are used to show such items as appliances, cabinets, etc. that are to be installed under separate contract or to show future additions or alterations that are contemplated.
FORMER LOCATION LINE - Is drafted in a light line weight and used to indicate aspects of the construction that are currently existing but are to be removed under the contract. The former location line is used to show such items as the location of walls to be removed in remodeling or the current location of contours that are to be changed in the grading plan.

CENTER LINE - Is drafted in a light line weight and used to indicate symmetry about an axis or as extension lines and grid lines when they designate center locations. It is recommended that the note be used with the center line and that the lines extend beyond the outline of the object or view.

REFERENCE FLOOR LINE - Is drafted in a medium line weight to indicate the location of reference floor levels on the building sections and exterior elevations. Extend the reference floor line beyond the views and note the floor level indicated and its reference elevation.

FASTENER INDICATION - Is drafted in a medium line weight and used to indicate the locations of nails, screws, bolts, etc.

PROJECTION LINE - Is drafted in a light line weight and used to indicate extensions for dimension reference, alignment, or for projection in exploded views.

BREAK LINE - Is drafted in a light line weight to limit or reduce the size of drawings or partial views and to eliminate unimportant portions of detail that are similar to those included in the portion of the object that is shown in the drawing. The break line should extend beyond the outline of the object or view.

AREA DESIGNATOR - Is drafted in a light line weight and used to designate or include an area referenced by note by marking the diagonals of the area. The area designator lines may be used to designate such items as open areas in a floor plan.