SIGN CONVENTIONS
IN BUILDER PLATFORM SOFTWARE

This explains the status of sign conventions in ADAPT-Builder platform on August 2007. It covers the following:

- ❖ Sign conventions for user defined applied loads and software reported displacements
- ❖ Sign convention for the actions reported by user made manual design sections
- ❖ Sign convention for program generated tabular reports from automatically generated design sections.

This Technical Note does not cover the sign convention used in the 3D graphical viewer.

While in most instances the sign conventions are compatible among the various parts of the program, you are cautioned to interpret each of the actions reported by the program, using the associated sign convention.

USER DEFINED ACTIONS AND PROGRAM REPORTED DISPLACEMENTS

The positive signs of the user defined **applied forces** and user defined **applied displacements**, and program reported **calculated displacements** are illustrated in Fig. 1. Figure 1 does not apply to program reported actions.
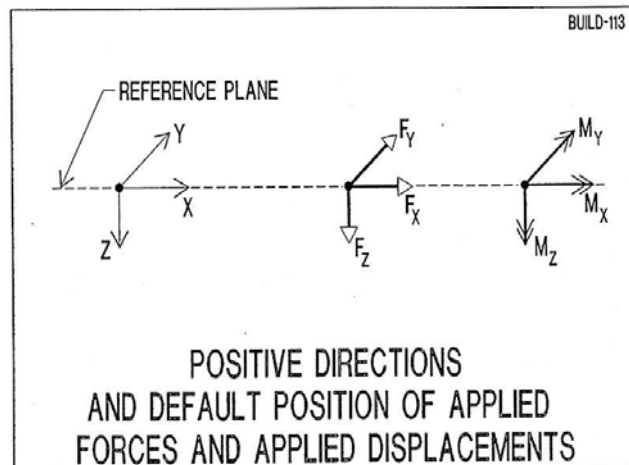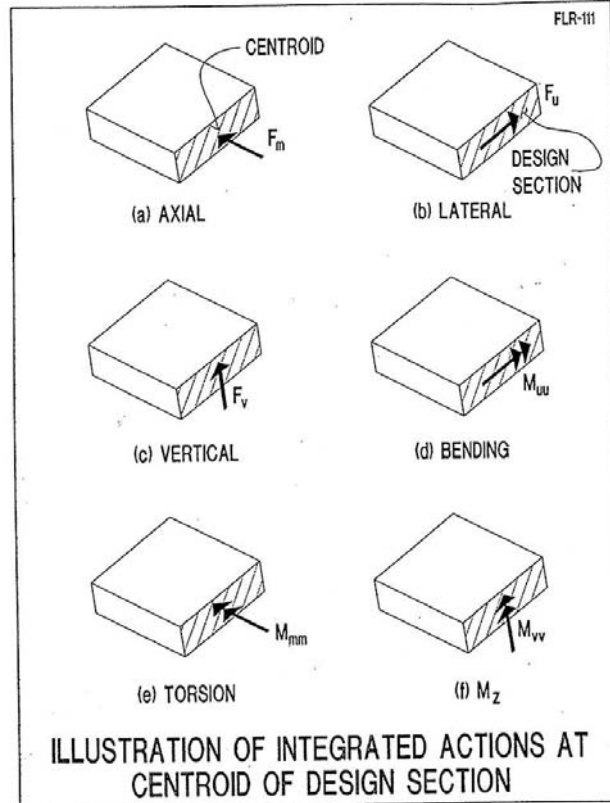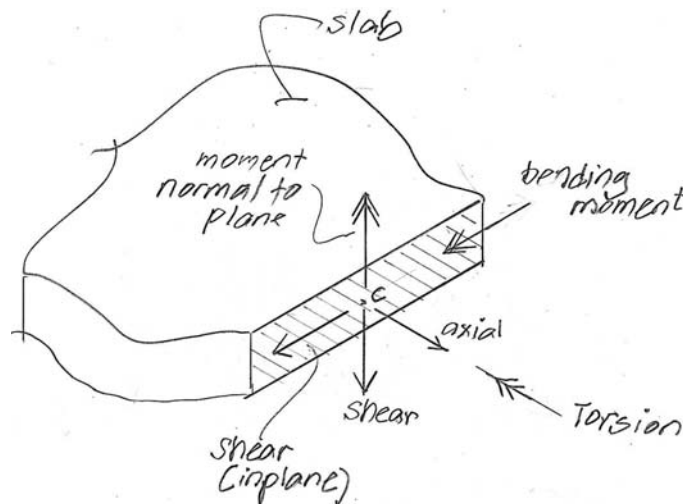

FIGURE 1

SIGN CONVENTION FOR ACTIONS REPORTED BY USER MADE MANUAL SECTIONS

Six actions exist on the face of each design section. These are illustrated in Fig. 2. The program calculates the resultant of each of the six actions at the centroid of the design section (point C in Fig. 3), and reports them in the design sections property box (Fig. 4).

FIGURE 2

C = centroid of the cut section

FIGURE 3 POSITIVE DIRECTION OF THE ACTIONS FOR
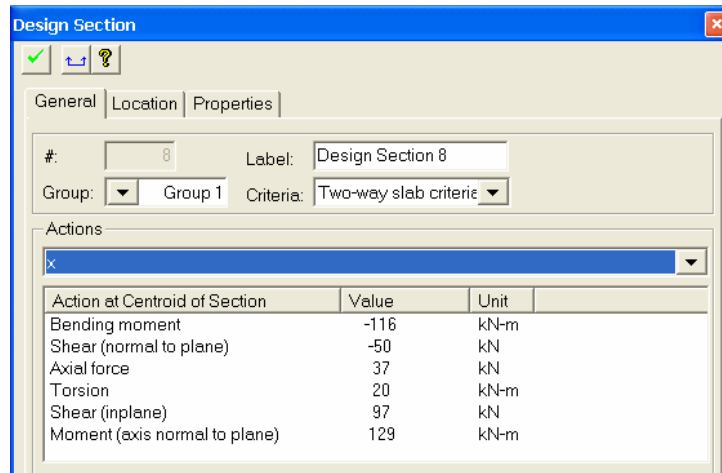MANUALLY GENERATED SECTIONS

FIGURE 4 DIALOG WINDOW FOR REPORTING THE ACTIONS
ON MANULLY GENERATED DESIGN SECTGIONS

The positive directions of the actions on the manually generated design sections are shown in Fig. 3. The same sign convention is used for reporting the forces generated by a manual design section in the program's tabular compilation of the actions.[1]

SIGN CONVENTION FOR PROGRAM GENERATED TABULAR REPORTS FOR AUTOMATICALLY GENERATED DESIGN SECTIONS

In its automatically generated tabular reports, such as the sample shown in Table 1, the program lists the actions on the leading face of a design section, again expressed at the centroid of each design section (Fig. 5).   Unlike the manual sections, where all the six actions are reported, the automatically generated report is limited to the four of major actions as shown with the positive directions in Fig. 5. These are bending moment, torsion, shear normal to the slab and axial force.
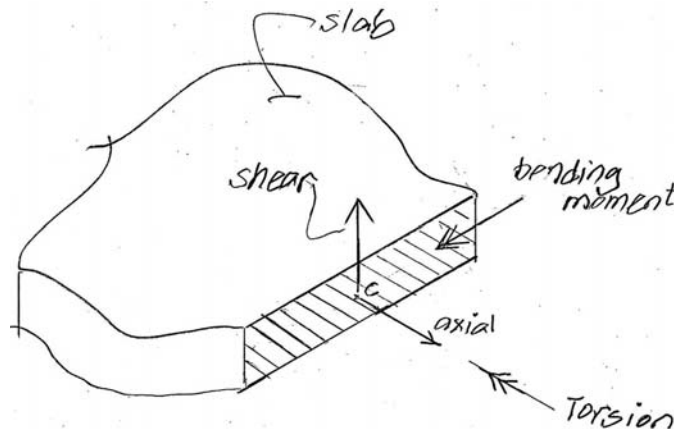

FIGURE 5 POSITIVE DIRECTION OF ACTIONS LISTED IN PROGRAM
GENERATED TABULAR REPORTS

TABLE 1 SAMPLE OF AUTOMATICALLY GENERATED TABULAR REPORT

---

[1] This differs from the sign convention used in the tabular report for automatically generated sections.

OF ACTIONS FOR AUTOMATICALLY GENERATED DESIGN SECTIONS

Design section	Moment	Shear	Axial	Torsion
	k-ft	k	k	k-ft
102000	-31.209	-20.096	-3.401	2.916
102001	4.630	0.087	-8.769	-3.690
102002	21.504	-11.101	-2.564	-5.403
102003	33.706	-3.878	-1.864	-9.488
102004	7.666	-0.075	-11.531	-2.554
102005	36.128	1.821	0.560	-8.532
102006	27.216	8.136	3.006	-7.477
102007	12.591	8.140	3.033	-7.817
102008	-12.374	14.717	6.368	-7.181
102009	-42.483	27.740	10.384	-20.190
102010	-92.597	27.756	10.716	-21.382
103000	-141.390	-39.530	9.568	20.247