The following case presents a realistic situation facing a construction firm that has just won a competitive contract. The realistic conditions complicating the project are described in detail, as are the alternatives offered by the staff for dealing with these complexities.

CASE

THE SHARON CONSTRUCTION CORPORATION*

E. Turban and J. R. Meredith

The Sharon Construction Corporation has been awarded a contract for the construction of a 20,000-seat stadium. The construction must start by February 15 and be completed within one year. A penalty clause of $15,000 per week of delay beyond February 15 of next year is written into the contract.

Jim Brown, the president of the company, called a planning meeting. In the meeting he expressed great satisfaction at obtaining the contract and revealed that the company could net as much as $300,000 on the project. He was confident that the project could be completed on time with an allowance made for the usual delays anticipated in such a large project.

Bonnie Green, the director of personnel, agreed that in a normal year only slight delays might develop due to a shortage of labor. However, she reminded the president that for such a large project, the company would have to use unionized employees and that the construction industry labor agreements were to expire on November 30. Past experience indicated a fifty–fifty chance of a strike.

Jim Brown agreed that a strike might cause a problem. Unfortunately, there was no way to change the contract. He inquired about the prospective length of a strike. Bonnie figured that such a strike would last either eight weeks (70 percent chance) or possibly 12 weeks (30 percent chance). Jim was not pleased with these prospects. However, before he had a chance to discuss contingency plans he was interrupted by Jack White, the vice-president for engineering. Jack commented that a colder December than had been assumed was now being predicted. This factor had not been taken into consideration during earlier estimates since previous forecasts called for milder weather. Concrete pouring in December might thus require in one out of every three cases (depending on the temperature) special heating that costs $500 per week.

This additional information did not please Jim at all. The chances for delay were mounting. And an overhead expense of $500 per week would be incurred in case of any delay. The technical details of the project are given in the appendix to this case.

The management team was asked to consider alternatives for coping with the situation. At the end of the week, five proposals were submitted.

1. Expedite the pouring of seat gallery supports. This would cost $20,000 and cut the duration of the activity to six weeks.
2. The same as proposal 1, but in addition, put a double shift on the filling of the field. A cost of $10,000 would result in a five-week time reduction.
3. The roof is very important since it precedes several activities. The use of three shifts and some overtime could cut six weeks off the roofing at an additional cost of only $9,000.
4. Do nothing special until December 1. Then, if December is indeed cold, defer the pouring until the cold wave breaks, schedule permitting, and heat whenever necessary. If a strike occurs, wait until it is over (no other choice) and then expedite all remaining activities. In that case, the duration of any activity could be cut but to no less than one-third of its normal duration. The additional cost per activity for any week which is cut would be $3,000.
5. Do not take any special action, that is, hope and pray that no strike and no cold December occur (no cost).

Appendix: Technical Details of the Stadium

The stadium is an indoor structure with a seating capacity of 20,000. The project begins with clearing the site, an activity that lasts eight weeks. Once the site is clear, the work can start simultaneously on the structure itself and on the field.

The work in the field involves subsurface drainage which lasts eight weeks, followed by filling for the playing field and track. Only with the completion of the filling (14 weeks) can the installation of the artificial playing turf take place, an activity that consumes 12 weeks.

The work on the structure itself starts with excavation followed by the pouring of concrete footings. Each of these activities takes four weeks. Next comes the pouring of supports for seat galleries (12 weeks), followed by erecting pre-cast galleries (13 weeks). The seats can then be poured (4 weeks) and are ready for painting. However, the painting (3 weeks) cannot begin until the dressing rooms are completed (4 weeks). The dressing rooms can be completed only after the roof is erected (8 weeks). The roof must be erected on a steel structure which takes 4 weeks to install. This activity can start only after the concrete footings are poured.

Once the roof is erected, work can start simultaneously on the lights (5 weeks) and on the scoreboard and other facilities (4 weeks). Assume that there are 28 days in February and that February 15 falls on a Monday.