Bill Foley - project mgr
Wayne Anderson
Neville Simpson
Harry Data
Don Whyte
Tom Lovell
Dan Deasy
Robert Carnog Warren Rasmussen

EN80

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

January 2, 1981

Subject: Monitoring Report #1

Project - Energy 80's

Macwhyte Company

Kenosha, Wisconsin

Project: 80:63

Date of Monitoring: December 22 and 23, 1980 (working day 250 and 251)

Starting date for formal project planning: December 22, 1980 (working day 250)

Actions taken:

- Reviewed project management and network modeling concepts with task force
- Identified project phases to be implemented during planning, design, and construction
- Prepared network models for conceptual and programming period
- Identified elements of project configuration weighting systems
- Named project

General Summary

Our work the morning of Monday, December 22, 1980 (working day 250) was devoted primarily to a review of project management concepts and network models. We stressed the importance of planning to evaluate, translating to communicate, controlling to achieve, correcting to maintain, and learning to improve.

We also discussed in detail the elements of process, substance, and implementation. Definitions for these were given as follows

Process - How we get from here to there

Substance - What we accomplish during the process and upon its completion

Implementation - The method by which we carry out, or d the process

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After a detailed review of the participants normally involved in a project and the line of action, it was decided to follow a fundamental pattern of working along the line of action in our planning approach to the Energy 80's program. We first identified that during the conceptual planning period we must, among other things, do the following (listed at random):

- Select a project physical configuration
- Set the product mix
- Refine preliminary financial analyses
- Test the configuration and its boundaries

Basic definitions were established in this early stage that were of importance in preparing the network model for the conceptual period. These included:

Configuration - the outer boundary of the land area for the functions to be housed

Project objectives - What it is that project activities should contribute to Macwhyte in its new configuration

Configuration objectives - What it is that the total configuration should contribute to Macwhyte over the configuration's life

At present, there are four or five basic configurations under study. We discussed these in brief and generated a preliminary land use analysis method which will be used to evaluate these and other configurations. This land use analysis suggests we label each parcel of available land and then identify configurations by the parcels which the configuration is expected to occupy. This will be one of the early activities of the project task force, and they will decide upon a method by which each parcel is adequately identified and its use established.

It should be understood that an essential ingredient of setting the configuration component areas will be to identify the characteristics of each parcel of land including location, size and use of existing utilities, present zoning, restrictions upon the parcel's use, and all other factors and characteristics which will affect its potential use for the expansion program whether for buildings or auxiliary uses.

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We next moved into a discussion of the programming phase and established that here an evaluation of the level of facility that Macwhyte could build should be made early. To do this, I suggested the project team use the must, functionally desirable, desirable technique. In this method, the absolute minimum facility that would serve the intended purpose is first defined in terms of physical characteristics. These physical characteristics include the building substructure, superstructure, exterior skin, interior rough work, interior finish work, systems work, equipment, site work, and all other elements that are a part of the building and equipment package. I left with the Energy 80's task force a suggested project program outline in which some of the elements to be considered are listed. This is not a comprehensive list but does provide a start toward identifying the basic elements of any industrial building.

From the definition of the must facility, a project budget can be made and compared to the allowable capital expenditure established by the broad brush financial analysis. Thus, the feasibility of the project can be early determined relative to the must facility. If funds are still available for use on the project, the project team next moves to insertion of functionally desirable items in the program. These are items not part of the must facility, but which would be desirable and by serving a useful function would provide a return on their capital investment over the life of the facility adequate to pay for that investment. If after adding these to the program, the team still has funds available it can go on to the consideration of those items that are desirable but which probably will not provide an identifiable return on their capital investment. These are such things as additional landscaping, outside leisure areas, and other elements to which a price return cannot be necessarily assigned.

The principles of the must, functionally desirable, and desirable concept were shown on flip chart sheet #5, dated December 23, 1980 (working day 251). On that chart I stressed the importance of designing the project to fit the budget. It should be clearly understood that the pro forma analysis must control the program cost through proper and effective design. This led us into a detailed discussion about retention of professional architectural, engineering, and contractual assistance on the Energy 80's program. I outlined with the project task force some of the methods by which cost controls can be exerted. The method stressed today was to establish a project control budget prior to, or right at, the start of preparation of contract documents. Then, by means of regular line comparisons with the project control budget to maintain direction of the design with project control estimates prepared periodically. These

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control estimates should be used to give direction to the design team relative to costs of items added, or deducted from the original concept for which the project control budget was prepared. The control budgets and estimates should include both building and equipment. The method outlined may appear complex, but it has been used successfully on many projects and will work. It does require careful, continuous and competent attention and management by the project team.

Another important part of our early discussions dealt with methods by which we might evaluate the various configurations possible. As noted above, there exist four or five basic configurations which are now under consideration. Probably others will emerge out of further analysis, although the intent will be to keep the number of configurations to be analyzed to a minimum by careful screening and selection.

During the study of the configurations, a factor weighting system should be established which contains four fundamental elements identified by column below:

Column #1

The factors considered important in evaluating a configuration should first be listed. These factors are those that contribute to a good project and might include:

- Satisfaction of ROI requirements
- Meeting product mix demands
- Fitting pre-purchased equipment capacities
- Fitting existing equipment capacities
- Providing adequate space for a five year expansion program
- Etc.

Column #2

The various factors should then be weighted from 1 to 10 relative to their contribution in achieving project objectives. A weight of one means the factor is insignificant in insuring that project objectives are achieved. A ten weight means it is extremely significant in insuring that project objectives are achieved.

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Column #3

When the specific configurations have been identified, they then should be measured individually against the various weighted factors and themselves be given a weight for each factor showing how well the configuration would achieve project and configuration goals.

Column #4 - Probability factors (X)

For each configuration there will always be a probability that it will be successful or unsuccessful. The X factor sets the probability of the configuration being implemented successfully. It is derived from a multitude of considerations such as public attitudes toward the project, internal resources that can be assigned to the various implementation programs, and many others. An early responsibility of the task force is to establish project probability criteria that will allow each configuration to be assigned a probability of success. Again, I suggest that a weighting system from one to ten be used - one denoting totally improbable and ten being totally probable.

Using the column references as given above the product of column #2 and #3 will give us a total factor weight for the configuration being considered. The sum of these can then be multipled by X, the probability factor identified in #4 above, to determine its total weight ranking. If it is desired to normalize these to a ten or one hundred base this can be done once the system has been established.

Following our detailed discussion of the elements described above, we moved to preparation of a network model for the conceptual and programming period items. These models are shown on sheets #1, #2, and #3, Issue #1, dated December 22 and 23, 1980 (working days 250 and 251). The logic was assembled and reviewed very carefully by the Energy 80's task force after which estimated durations in elapsed working days were assigned. The analysis shows that the major thrust of the work can be expected to start on January 5, 1981 (working day 258) and move through establishment of product mix and pro forma needs while concurrently setting project configuration weighting criteria, establishing space needs and preparing configuration alternatives budget estimates.

By March 23, 1981 (working day 313) it is expected that formal ranking of configuration alternatives could begin. Shortly afterwards, preparation of the Amsted in-principle (IP) approval package should begin, resulting in material

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to be assembled along with the broad brush financial package, reproduced and then reviewed with the Amsted vice president. This review is presently set for May 4, 1981 (working day 343).

Next, necessary revisions would be made to the in-principle presentation and the package submitted to Amsted for their review and approval. Probably we can expect that this in-principle approval will be forthcoming by June 4, 1981 (working day 355). It might be possible by some compression of time to bring approval to an earlier date; however, a detailed review of critical items indicates that our assigned durations were quite tight and that time compression would prove difficult. Therefore, it was decided to maintain those durations shown on sheets #1, #2, and #3, Issue #1, December 22 and 23, 1980 (working days 250 and 251).

We also prepared network models for a portion of the program writing and land transfer phases. These are shown on sheet #2, Issue #1, dated December 23, 1980 (working day 251). However, we were not able to interconnect starting points for these phases with the in-principle package network since it is not certain yet at what point we want to begin the sizable work effort needed to write the program and to initiate the sensitive discussions regarding additional land. These items have been left unrestrained in the plan and the project team will identify the best overlapping point at which to begin work on the various program and land transfer activities.

It would be well to begin program writing and land transfer phases at as early a date as possible since the current goal is to get construction under way in good weather, 1981. However, projections indicate this may be difficult. Progress pace will heavily depend upon the configuration analysis. For this reason, I stress that the early conceptual work is extremely important and will point the major direction to be taken on the entire project.

I suggest, therefore, that the early steps shown on sheet #1, Issue #1, dated December 22, 1980 (working day 250) be given particularly careful attention over the next three weeks to see if the configuration analysis can be completed at an earlier date than presently appears possible.

Overall, Energy 80's is a very exciting project and will assume many interesting dimensions as the various configuration alternatives are established. The project

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team has a good grounding in the principles of basic project management; we have discussed in depth the method by which the implementation program could be carried out; and a detailed preliminary road map has been prepared to identify the tasks that have to be done over the next 2 to 4 months. So, Energy 80's is off and moving!

I shall be in touch with Mr. Rasmussen shortly to determine what additional participation might be most appropriate on my part. Meanwhile, I would like to wish the project team and the Macwhyte management good luck and a very happy and prosperous New Year.

Ralph J. Stephenson, P.E.

RJS:sps

cc: Mr. Warren Rasmussen

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

March 2, 1981

Subject: Monitoring Report #2

Project - Energy 80's

Macwhyte Company

Kenosha, Wisconsin

Project: 80:63

Date of Monitoring: February 16, 1981 (working day 288)

Actions taken:

- Reviewed project progress with Mr. Bill Foley, project manager
- Evaluated current job status
- Continued network modeling for configurations other than #1 (#1 requires a land transfer)
- Evaluated impact of various schemes upon completion dates
- Reviewed methodology of preparing must, functionally desirable, and desirable estimates for facility
- Reviewed color coding methods with project team
- Evaluated milestone dates for various configurations

General Summary

Those attending the session today included:

Bill Foley, project manager
Wayne Anderson
Neville Simpson
Harry Data
Don Whyte
Tom Levall
Don Deasy
Warren Rasmussen
(Note: Some of the above were part time only)

The agenda for this meeting included evaluating current job status and continuing on with planning for overall project implementation. We first reviewed the current position of the program relative to late starts and late finishes.

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Mr. Foley has been keeping accurate data regarding the actual starting and completion dates for each task, and this was of great help in making the evaluation. Work on the product mix and pro forma portion of the analysis has moved well, and presently work there is meeting or bettering early start and finish targets. The preliminary pro forma analysis #1 is in work and expected to be completed shortly.

Progress on configuration and weighting work had moved well although over the past few days has slowed, and the definition of configuration objectives is presently in work to be submitted momentarily for review, revision, and ultimate approval. This is an important part of the program since it leads to a determination of space needs for new and pre-purchased equipment. The lag appears to be about 5 working days although because of some work that has been done earlier on space needs and material flow it might be possible to pick all of this time up within a week or two. The decision was made to leave durations and early and late starts and finishes substantially the same as shown in Issue #1 with a target of March 23, 1981 (working day 313) to start final ranking and selection of configurations.

Work to date, thus, has moved quite well and in substantial accordance, except for the lag noted above, with the Issue #1 plan of work dated December 22, 1980 (working day 250).

We next turned to a review of the configurations being considered. There has been much work and study done on this matter over the past few weeks, and there still remain additional evaluations to be made. However, the choices have been narrowed down to three or four configurations which have been designated as #1, #2, #6 and configuration D alone. Configuration D is construction at the courtyard of the existing facility. Working drawings for configuration D have already been prepared and are ready to release for proposals and start of work whenever it is deemed desirable. However, our detailed discussions today indicate that it probably would be best to let contracts for the entire facility rather than breaking it into smaller units. Smaller contract packages could tend to increase the cost of each of the facilities. However, this matter has not been finally decided upon and the timing of contract awards will be part of the considerations evaluated when assigning weights to the various methods that could be used to construct the new facility.

I again hasten to point out that in a complex expansion of this type there are many configurations possible, and I urge that the project team continually disassemble and reassemble the various parcels now available along with those expected

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to be available so they obtain the best possible building and material handling outlines. Even though one scheme or another is apparently out of the running as a plan to be considered the formal evaluation system should be applied to all configurations considered, irrespective of whether they were early ruled out or not. This is essential since occasionally we find that hidden merits of certain arrangements of land are uncovered by further study and by the demands of a mathematical rating system. Mr. Foley has published a series of small 8 1/2" x 11" site plans which show the various configurations possible and indicate those that are under consideration.

During our session we analyzed the logic on network model sheets #2 and #3 relative to various configuration selections. Four configurations were selected for analysis - configurations #1, #2, #6, and D alone. Configuration #1 consists of the K-3 parcel alone. Configuration #2 includes D-1 and a portion of the C parcel, while configuration #6 is made up of parcels D-1, B-1, and B-2. For configurations other than #1 the saving over #1 in time could be significant due to the elimination of the need to deal with the public and regulatory agencies. Nevertheless, many factors are involved and since this is a major capital expansion program and one that will be expected to operate for many years at high effectiveness, the time required in bringing the facility on line may be only one of many critical factors, some of which could be even more significant than the time span required for the initial construction. This again is part of the evaluation process that must be made in the near future.

The project team has tabulated the milestone dates for the various schemes and these are shown on page #5 in the enclosures accompanying Mr. Foley's report of February 19, 1981 (working day 291). This tabulation is a part of the flip chart reproductions prepared from our meeting of February 16, 1981 (working day 288).

We also reviewed, although not in as great detail as would have been desirable, the use of the must, functionally desirable, and desirable system to help prepare the project program. We also completed assigning durations to preparation of the program writing phase and this information is shown on sheet #3, Issue #2, dated February 16, 1981 (working day 288). Again, in the duplication of the handout material Mr. Foley has reproduced the flip chart on which the discussion was recorded.

Considering the use of the must, functionally desirable, desirable technique described above for selecting characteristics of the program, we can either identify building components by the conventional 16-section CSI classifications

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or use the building component technique. It might be that a combination of both would be best for this application. At our next planning session it might be well to continue work on this technique as time permits. We did have an opportunity to consider each of the two systems for constructing the sub-structure of the facility but there still remains some work and coaching that would be desirable with the team for optimum use of the three cost system. I believe though the project team now has a good enough grasp of the technique so they can proceed with their evaluation.

It should be remembered as was reviewed in Monitoring Report #1 that the must facility is the absolute minimum facility that would serve the intended purpose. This includes consideration of not only the specified physical elements of the building but also its size in square feet and cubic feet. I sometimes recommend considering that if any one of the program items written for the must facility has to be violated then it is adequate reason to scrub the project. This is perhaps a harsh evaluation method but nevertheless in programs of this type it helps greatly to have a clear picture of the absolute minimum to be considered during the program. Building up from this facility with functionally desirable and desirable items then becomes a pleasure and can be considered a reward of careful planning and successful cost control.

Before the meeting end today I demonstrated to the project team the method of progress color coding and defined for them the meaning of the four basic colors I use in monitoring. These colors indicate trends in the job as the project proceeds, and I strongly suggest that color coding be used on an ongoing basis to indicate the movement of the project toward good or bad.

The system that Mr. Foley has established for tabulating and following his project team's progress on the job is quite good. Of particular interest is the listing of tasks in ascending order of their starting dates and indicating the assignment of these tasks to the various parties involved. In addition, he has reduced the network model in size which gives the team members a bit more workable format than the larger diagrams.

Any of these translations that can be made and used that will assist the project team to better track their progress and anticipate demands of the program are welcome and should be encouraged. Careful record keeping is an important part of successful project management. It is through this process of recording performance and then evaluating its impact upon total progress that improvements are made in this and in subsequent programs.

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I shall be in touch with Mr. Rasmussen shortly to set the next planning and monitoring session. Meanwhile, I urge that the constant search for the best configurations continue on up to the point where the final weighting and evaluation is made. This is important since it is only by exhaustive analysis that we can be certain that we have the best facility outline.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. William Foley

cc: Mr. Warren Rasmussen

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

April 4, 1981

Subject: Monitoring Report #3

Project - Energy 80's

Macwhyte Company

Kenosha, Wisconsin

Project: 80:63

Date of Monitoring: March 17, 1981 (working day 309)

Actions taken:

- Reviewed project progress with Mr. Bill Foley, project manager,and the project team
- Made physical inspection of major site configuration components
- Evaluated current job status
- Reviewed early program statements and initial cost estimates
- Discussed methods of letting contracts and managing project work
- Prepared major topic outlined of backup for Amsted presentation
- Initiated discussions re land transfer steps

General Summary

Those attending the session today included:

Mr. Bill Foley, project manager
Mr. Wayne Anderson
Mr. Neville Simpson
Mr. Harry Data
Mr. Don Whyte
Mr. Tom Levall
Mr. Don Deasy
Mr. Warren Rasmussen
Mr. David Pawlowski
(Note: Some of the above attended part time only)

Mr. Foley and I first reviewed the current status of the project and found that it was in substantial conformance with early and late starts and finishes, with a trend toward early dates. The configuration alternatives have been narrowed

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down to one prime selection with further evaluations to be made of it along with a formal ranking of the others. (Again, I urge that such a ranking be done irrespective of whether or not there is present consideration of other alternatives since it is essential to have a rationale for having selected one configuration over the others.)

The major effort that has gone into the project team's work over the past several weeks is in the program writing area. Considerable work has been done in establishing the must cost estimate, the program statements and the various utility demands.

The must cost estimate and the principles involved in establishing that estimate were reviewed in some detail during the morning and afternoon sessions. It should be understood that the reason for the must estimate is to allow subsequent introduction of additional affordable items into the project on a studied and reasonable basis. This assists to maintain full cost and content control of the project within the ceiling or cap price.

It is also important to realize that contingencies must be considered in establishing the cap on expediture of project capital funds. Contingencies may include:

- Predictable cost overruns
- Costs of revisions
- Escalation
- Unanticipated additional utility relocation cost
- Unanticipated city generated costs for land, utilities, or other such expenses

There may be other contingency amounts to be allocated, and these will be identified as the project team continues their work.

The basic effort at our session today was to outline the major topics to be covered in the in-principle presentation to be made to Amsted's Board of Directors. We considered there will be two levels of material used. The first will be a brief, easily comprehended summary of the project to be used to discuss the program at the meeting. Director's time is extremely valuable, and therefore presentation material for that session should be able to be quickly understood. Probably a small amount of graphics to reinforce the presentation would be of help.

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The second document will be a narrative backup which can be read by each director at his leisure. This material will provide an elaboration on the summary reports presented to the board. It was felt by those experienced in corporate presentation work that the length of the backup narrative should not exceed ten pages, excluding graphics.

It should be kept in mind that the purpose of presenting the project at this meeting is primarily to gain in-principle approval of the board for the plan of action to be taken.

The major topic outline prepared at this session as a suggested format has been incorporated into flip charts and reproduced by Mr. Foley for distribution to the project team. Key elements are:

- Cover letter (very brief)
- An introduction giving a statement of purpose and a brief description of the facility
- An investment summary which reviews the capital expenditures anticipated and how the various elements making up this capital expenditure were formulated
- A profit summary which discusses income, production costs, profit, and contains a return on investment projection and calculation of investment
- Some graphics elaborating upon the facility and its configuration. This probably should include a site plan, a schematic building plan and an equipment layout, along with some chart material regarding market share and projected increase in market penetration and perhaps a perspective aerial photo of the site.

Copies of the graphics included in the backup report should probably be made available during the presentation as a help to the speaker in covering the material involved. This is optional, however, and it may be that such a degree of sophistication is not appropriate for the meeting. The project team should review this matter with the executive committee of Macwhyte.

As the discussion about the presentation evolved, it was recommended highly by the financial groups within Macwhyte that the content be oriented around the money characteristics of the investment. There were no major objections to this approach, and therefore it is expected that a good share of the discussion of the plan will concern its financial characteristics.

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This can be seen in the suggested topic outline where the heavy emphasis is on those elements that concern investment and income production along with market penetration.

Our discussions next turned to assembly of the actual design and construction team along with methods of letting contracts for the work. Since there will be a considerable time before any design documents are completed it is possible that construction advisory services may be retained early to aid the project team and the architect engineer in developing a truly economical design. Frequently, it is found that the addition of a contractor to the early design group improves the functional analysis of the program and often aids in maintaining proper cost over the design itself. This is a matter that should be decided by the project team at an early point.

On this program, the architect/engineer that will probably be used apparently has a good working relation with both Macwhyte and contractual groups in the community. Therefore, it might be an excellent idea to gain contractor input early so that it can be valuable in establishing the must, functionally desirable, and desirable criteria to meet allowable capital expenditures. The establishment of cost goals against which the design must be measured is imperative to good project programs.

It should always be remembered that money for any construction program is committed during the programming and design stage. During construction the funds are merely spent. Good cost control starts right back at the programming phase.

As we talked about the project team and how they would assemble the design and construction group we also discussed in depth the parties who might be involved in the various phases of the project depending upon what configuration was finally selected. There are a large number of these groups and individuals and we listed some of them on flip chart #10, dated March 17, 1981 (working day 309). I suggest this list be studied on a continuing basis by the team to insure that the nature of all parties on it are understood and their role in the work to be done is clear.

Present trending toward a program that might involve some land transfer makes it essential that the path to the end of the program be charted very carefully and thoroughly. Thus, we spent considerable time identifying the procedures that might be necessary to follow in order to get the job done once the in-principle approval is obtained. These procedures are crucial to project success and must be carefully established and then be continually studied and reviewed for improvement as we get closer to the actual start of contract document preparation. At our next session we should once again discuss in depth the anticipated method by which the program will proceed once the in-principle approval has been obtained.

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I recommend highly that the cost estimates used as the basis of the projected program be reviewed carefully and cross checked by two or three estimating methods. The reason is that without checks and balances occasionally a cost estimate becomes a self-fulfilling prophecy. In other words, without checks and balances we sometimes rationalize that what we are including in the job are really essential ingredients whereas in reality they may only be functionally desirable or desirable but not a part of the must list. This is permissable only so long as the money exists to pay for them.

It should also be remembered that in estimating the cost of the project, that escalation of construction costs may continue over the next few years and must be taken into account in reviewing what the project will cost at the time it will get under way. This escalation can be a sizable amount, sometimes as much as 10 - 12% per year. Therefore it is essential to consider when anticipating the costs of projects to be built in the future.

The next meeting is tentatively set for mid-May, and I shall be in touch with Mr. Rasmussen shortly to confirm the date.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. William Foley

cc: Mr. Warren Rasmussen

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

June 8, 1981

Subject: Monitoring Report #4

Project - Energy 80's

MacWhyte Company

Kenosha, Wisconsin

Project: 80:63

Date of Monitoring: May 11, 1981 (working day 348)

Actions taken:

- Reviewed project progress with Mr. Bill Foley, project manager
- Reviewed status of total program with project team
- Prepared decision tree example for contract award method selection
- Reviewed method of designing and constructing facility with project team
- Reviewed needs of project with architect and engineer

General Summary

Mr. Foley and I first reviewed the present status of the project in some detail. As of May 11, 1981 work progress has been good and the in-principle presentation package is being readied for presentation to Amsted. This presentation is scheduled for May 18, 1981 (working day 353) and as of May 11, 1981 (working day 348) there was one more major internal review to be made before submission. It is hoped to receive Amsted's review and approval of the in-principle package by June 4, 1981 (working day 365).

Later we discussed the program with the project team concentrating especially on what is to be prepared for the contract document packages, how contracts are to be let, how the construction is to be managed, preparation of and processing of shop drawings, and maintenance of field inspection on the job. The results of our discussion were summarized in a set of flip charts which has been reproduced by Mr. Foley and distributed to those concerned.

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In this discussion we prepared a decision tree analysis of the various methods by which we could select contractors and manage the construction program. There is a tendency to favor allowing MacWhyte to let several prime contracts on a hard money basis and then to have their architect/engineer be responsible for the day to day management of the program itself. No firm decisions were made during this session, although we did lay the groundwork for further discussions with the architect/engineer.

In addition, we identified the elements of the building that must be considered in the design and construction program. These are summarized on flip chart FC-1, dated May 11, 1981 (working day 348).

With the entire project team we also reviewed activity areas we felt were appropriate. Subjects covered included bonding, liquidated damages, profiling, competitive bids, insurance, low bidder selection and provision of contractor selection criteria. This material was also summarized on flip charts. There was considerable discussion about the methods by which contractors could be selected and by which contracts could be awarded. A review of the methods discussed is not necessarily appropriate here since the material has been distributed to the project team for their consideration. I do wish to stress, however, that it is very important to generate and have available some well identified procedures by which the various contractors will be selected and brought on to the job. This is critical to getting the job off and running on the right foot.

Suggested criteria identified for contractor selection is quite important to review carefully. This material is summarized on flip chart #5 dated May 11, 1981 (working day 348).

Preparation time for construction documents is difficult to estimate at this time, but a preliminary review indicated we should probably expect these documents to be substantially completed within about 75 working days or about 3 1/2 months after their start. This time period should be reviewed frequently to be certain it is well founded and has backup data available.

At the afternoon session we met with Mr. Bob Kueny, the architect and Mr. Bill Bragg, the engineer who have been selected to design the job. With them it was agreed that after contracts are let we should probably allow for most trades 20 working days to prepare and submit shop drawings, 8 working days to review and approve these shop drawings, and anywhere between 5 and 60 working days for fabrication

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

and delivery of material and equipment based upon current conditions at the time of fabrication. We further reviewed the subject of how best to award construction contracts with the architect/engineer in the afternoon meeting, and several good points emerged. All on the project are aware of the need to streamline all activities from here on out since an in-principle approval by corporate headquarters will mean that this is a definite program and will probably be time sensitive.

The remainder of our discussion with the architect/engineer dealt with the manner in which we are to acquire the real estate for construction of the job. This subject is complex and there are several aspects to it that will have to be studied in depth over the next few months.

I shall be in touch with Mr. Rasmussen shortly to set the next monitoring session. It probably will be held sometime in mid-July, 1981 and at that time we should prepare detailed plans of procedures to be followed relative to acquiring the necessary real estate for the program.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. William Foley

cc: Mr. Warren Rasmussen