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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

June 10, 1981

Subject: Monitoring Report #1

Zale Corporation World Headquarters

Irving, Texas

HOK Inc. Architects and Planners

Project: 81:25

Date of Monitoring: June 1 and 2, 1981 (working days 106 and 107)

Actions taken:

- Reviewed physical characteristics of project
- Conferred with project team and prepared laundry lists for all approvals presently required
- Prepared network model for design/development period with HOK and their consultants
- Met briefly with owner's representative to review planning and scheduling work ahead
- Prepared illustrative example of histogram for design time on elevation studies
- Reviewed interactions required and tasks to be completed prior to preparation of contract documents

General Summary

These participating in the meetings were:

Monday, June 1, 1981 (working day 106)

Mr. Doug Harden, HOK
Mr. Cribb Altman, HOK
Mr. Corkey Cunningham, HOK
Mr. Charles McCameron, HOK
Mr. Wayne Majors, Zale Corp.
Mr. Leo Galetta, ETI
Mr. Wayne Glover, Herman Blum

(Note: Some of the above attended only part time).

Tuesday, June 2, 1981 (working day 107)

Mr. Doug Harden, HOK
Mr. Cribb Altman, HOK
Mr. Corkey Cunningham, HOK
Mr. Charles McCameron, HOK

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Tuesday, June 2, 1981 (working day 107) (continued)

Mr. Wayne Glover, Herman Blum
Mr. Leo Galetta, ETI
Mr. Ken Bonds, Tech Plan Inc.
Mr. Dick McCleary, Muhauser/McCleary

(Note: Some of the above attended only part time).

The morning of the first day was devoted to discussing the physical, technical, organizational, and design characteristics of the project in detail. It was decided that the best planning approach during our initial session would be to identify all items upon which owner or other approvals or additional discussion and resolution was required. We further decided that we should devote one sheet (sheet #1) to tabulating items of this type. Therefore, on sheet #1 we have made up a list of randomly identified items which are important to the beginning of contract documents. This random laundry list was developed in part from the checklist that Mr. Doug Harden is compiling for a detailed review with the owner.

Once we had identified all of the major elements which required high priority attention, we then assigned an importance rating from one to ten to each. One indicated that the item was of very little importance to getting the project into the contract document stage. Ten signified that it was imperative that the activity be completed just as quickly as possible since it played an important role in CD's that follow.

We then began diagramming each of the items which were assigned a 10. We were able to complete the majority of these, and the network models for them are shown on sheets #2, #3, #4, and #5. There still are several sets of activities that must be given special attention and which we were not able to translate into network models. We will continue to consider these at subsequent sessions to see if they are being resolved promptly.

A brief discussion of each of the major critical early activity areas is given below:

Sheet #2 - Issue #1, dated June 1, 1981 (working day 106)

- Questionnaires

  Space questionnaires, particularly for atypical areas, are presently being completed and should be for the most part back in HOK's hands by June 11, 1981 (working day 114). There still will remain some which will be sent back later but HOK's overall analysis of questionnaire responses will, on June 11, 1981 (working day 114), begin to be sent back to Zale for their review and ultimate approval of the design

program for typical and atypical areas. It is planned that by June 24, 1981 (working day 123) approvals of the entire design program can be had from Zale. The questionnaires are a basic design document and very important to maintaining good job progress.

- Block space plans

Block space plans are nearly all complete and will be submitted to Zale for their review and approval on June 8, 1981 (working day 111). Like the questionnaires, block space plans are basic documents and are very important to determining the atypical elevation openings in exterior walls.

- Elevation studies

Receipt of Zale's approval on building elevations and wall section design is an important part of the early design work. Present plans are to concentrate on identifying the structural, mechanical, electrical, and architectural design elements affecting elevations and to have them available ready to complete elevation sketches and prepare required study models by June 15, 1981 (working day 116).

Once the elevation study has been fully assembled, it will be presented to Zale as an approval package. Hopefully, we will have obtained this full building elevation and wall section design review and approval by July 2, 1981 (working day 129).

- Floor loading

When the design program has been reviewed and approved by Zale on June 24, 1981 (working day 123) floor loading recommendations can be prepared for review and approval by Zale. These floor loading recommendations are necessary to fully establish the design criteria for the structural frame of the building. Present plans are to have the review and approval of these by July 6, 1981 (working day 130).

- Column spacing

The recommended column spacing has already been submitted and is presently being reviewed. An approval is expected by June 4, 1981 (working day 109).

- 4th level parking

The analysis of whether or not a fourth level of parking will be provided is presently being prepared and should be completed by June 5, 1981 (working day 110) for presentation to Zale. This analysis is important to preparation of final parking recommendations for the overall program.

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- Parking recommendations

  Two major factors influence the final parking recommendations report - Zale's direction regarding van pooling and the analysis by HOK regarding small/large car ratios. It is expected that a total parking recommendation report will be ready to submit to the client by June 22, 1981 (working day 121). A recommendation approval is expected within two days of this submission.

- Landscaping

  There is some feeling that an early contract should be let for landscaping to insure that the proper tree saving and transplant operations can be carried out. Presently HOK is working on a master landscaping concept which should be submitted to Zale by June 24, 1981 (working day 123). Following Zale's approval, HOK will site tag the trees to be saved and prepare a tree saving specification. This specification will be submitted for approval and upon approval, probably proposals for saving and transplanting trees will be solicited and a contract awarded. There is some question as to whether this is a fully critical activity, but for the present we are targeting award of contract for August 12, 1981 (working day 157).

Sheet #3, Issue #1, dated June 1, 1981 (working day 106)

- Ceilings, lighting, and demountable partitions

  This system consisting of three major elements - the ceilings, the lighting, and the demountable partition arrangement, must be analyzed very carefully since it forms a basic unit of the building that accounts for a large share of its total cost. The analysis is being made and recommendations are expected to be completed by about July 6, 1981 (working day 130).

  Following preparation of recommendations it will be necessary to inspect several projects where various ceiling systems have been used and possibly to construct mock ups.

  Following the inspections and construction of mock ups, Zale will be able to review and approve the three element arrangement. Present target to receive this approval is July 23, 1981 (working day 143).

- In floor systems

  As with ceilings, lighting, and demountable partitions it will be necessary to prepare recommendations regarding the communications and electrical in floor work to be included in the basic project. Probably some inspection

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of in floor systems will also have to be made prior to Zale reviewing and approving the recommendations. Approval of the in floor system presently is targeted for an early finish of July 7, 1981 (working day 131).

- Central plant configuration

It is felt necessary by HOK that a final review of the physical and functional configuration of the central plant be made and that Zale review and approve the analysis and configuration. The first step is to confirm the master plan assumptions with the client and then to prepare, assemble, and submit the central plan analysis. It is expected that the analysis will be ready by June 22, 1981 (working day 121) with approval desired by June 26, 1981 (working day 125).

- Food service program rework

Due to changes in the scope of work, the food service program must be reworked and resubmitted after which HOK can complete their revisions of the area and have the entire package approved by Zale. Following approval, food service block space plans can be put into work.

- Grading

A final review and approval of the grading plan must be made since grades affect how the parking structure will be ventilated. A grading analysis is presently in work and should be completed shortly. It will also be necessary to make a code analysis relative to requirements for parking ventilation.

- Soil borings

Soil borings and a preliminary soil analysis are needed to get into a full effort for preparation of structural drawings. Presently it is necessary to confirm the final building locations and to lay out the soil borings in the field. Following this, borings will be made from which preliminary reports can be provided for early structural design.

Sheet #4, Issue #1, dated June 2, 1981 (working day 107)

- Structural framing

There still remain several important structural decisions that must be made. Of particular importance is the core area where maximum flexibility and head room is desired for utilities above the ceiling. This area is presently being studied, and it is expected that there should be

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little, if any, problem in reaching an agreement on the core structural configuration within the next 10 to 15 working days. Typical framing plans will then be prepared to be submitted in the design/development package.

- Space plans and color and material selection (CMM)

A detailed analysis was made at our planning session of the various areas to be studied relative to space planning and color and material selection. Those identified as particularly important are the:

- Lobby
- Food service
- Training
- Executive
- Emeritus
- MIS (management information services)
- Support
- Display
- Base building
- Typical office

Each will require careful consideration during the design/development period and a review and approval of the space plans in order to totally free preparation of working drawings.

It is anticipated that a good share of the block space planning can begin on or before June 29, 1981 (working day 126). There are some internal crewing restraints within the various design offices on when some work can start due to manpower restraints. However, these are being worked on at present, and it is intended that the most critical of the areas be approached just as quickly as possible. Approval of space plans is important to the completion of the design development package.

Sheet #5, Issue #1, dated June 2, 1981 (working day 107)

- Mechanical and electrical system approvals

The mechanical and electrical system concept is a relatively critical package to approve and work on it will be initiated by preparation of a mechanical and electrical

rate study. It is hoped that the study can be completed by June 16, 1981 (working day 116) although the schedule is tight. Upon Zale's review and approval of the rate study work can proceed on central plant layout and outline mechanical and electrical specifications. Meanwhile, it will be necessary to confirm the two equipment room module arrangements with Zale after which layout of these areas can also proceed. Present plans are to have client's approval on the mechanical and electrical package by July 23, 1981 (working day 143).

* * * * *

The overall design approach presently is to clear away all early reviews and approvals and to have a design/development package approved by Zale by August 3, 1981 (working day 150) that will allow a full effort to be spent on major contract document preparation. Some of the many disciplines involved may be able to start their contract document preparation earlier than August 3, 1981 (working day 150) since it is imperative that we start each discipline as quickly as possible. The strong desire of the owner and all of his consultants presently is to complete a full set of contract documents and obtain firm price commitments from the contractors proposing on the job. It is not possible to determine if this is a fully feasible course of action, but we shall concentrate in subsequent meetings on identifying how we can achieve this procedure to the greatest extent possible.

Presently the major thrust of the work has to be concentrated on clearing all unresolved matters and getting a full approval of the design/development package so we can move with confidence into preparation of the contract documents.

At our next meeting presently scheduled for early July, 1981 we will monitor the project, complete diagramming the design/development phase and to get as far into preparation of network models for contract document preparation as is possible. The goal is to establish a reasonable date by which we can expect to have all contract documents completed. This will be the major objective of our July, 1981 session. *

I shall be in touch with Mr. Harden shortly with a suggested agenda for that meeting.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Doug Harden

cc: Mr. Charles McCameron

Note: Additional distribution as desired to be made by Mr. Harden.

Hok
Bob
8/1:28

- CRITICAL PATH PLANNING
- LAND PLANNING
- MANAGEMENT CONSULTING
- PLANT LOCATION

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PHONE 273-5026

June 7, 1981

Mr. Doug Harden
Project Manager
Hellmuth, Obata & Kassabaum Inc.
5453 1st International Bldg.
1201 Elm Street
Dallas, Texas 75270

Dear Doug:

Enclosed is one set of prints of sheet 1 through 5 which I have marked up using an interim graphics technique that may make it a bit easier for you to measure progress against major milestones. Because of the random configuration of the rough network this system may not be as effective as it normally would be. However, let me explain to you what the various colored lines are and perhaps you can, with your very fertile imagination, develop some additional ideas on what that will make it most useful.

Looking at sheet #2 notice the green lines on the far left of each diagram represent the 106 working day point. The next set of lines to the right, the blue lines, indicates the points in the network modal where the early start is equal to day 116 (two weeks later than the starting point of 106). The third set of lines, yellow, represents those points in the network where the early date is 126, and so on at 10 working day intervals.

I have divided the various small networks on this sheet by a pink line so within each of the pink boundaries the isoquant (my name for the lines of equal quantity) are kept distinct from other areas also outlined in pink.

So, if we trace along any of the areas between the green and the blue line it can be seen what the work to be done within the next 10 working days covers. This gives you a pretty good handle on the scope and magnitude of the job to be done. It also allows you to track the project by seeing where you actually are on a day to day basis.

Originally I had planned to show the isoquants on 5-day increments. However, at 5-day intervals they were so close together I changed my mind and used the 10 day increments. If you would like to add in the intermediate points at 111, 121, 131, etc., it might be of interest to you.

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Notice on sheet #3 the same pattern has been followed and although there there are several independent networks the isoquants are still relatively easy to read. The analysis is repeated on sheet #4 where no division of the network areas is required and on sheet #5 where I also could maintain the isoquants on a single network unit.

As we diagram more work and put this material into final form we will decide on the actual translation method that is best for you and your staff. I would appreciate if you would give this some thought because at our next session we should make it a part of our agenda. There are several ways of making good translations, and careful consideration of the techniques to be used are important.

I appreciate your patience and courtesy during our last session and want to compliment you and your staff for their alertness and intensity of interest in this job. There is a good feeling about the project and with careful planning I am certain we will be able to achieve the goals we are setting. Of prime importance is to continually feed the significant needs for approvals and decisions to the owner so he is constantly providing signed off information to the design team in a manner that will minimize or eliminate delays. These early approvals and problem resolutions are imperative if the job is to move well and continuously.

I am looking forward to seeing you again in early July, 1981 and will drop a note to you shortly with a full suggested agenda. Again, thanks for your help and interest.

Best regards,

Ralph J. Stephenson, P.E.

RJS:sps

cc: Mr. Charles McCameron

Enclosures

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July 14, 1981

Subject: Monitoring Report #2

Zale Corporation World Headquarters

Irving, Texas

HOK Inc. Architects and Planners

Project: 81:28

Dates of Monitoring: July 1, 1981 (working day 128) and
July 2, 1981 (working day 129)

Actions taken:

- Reviewed current status of project work
- Reviewed needs of consultant contractor for estimating and construction planning
- Prepared network model for production of structural contract documents
- Prepared network model for production of crib unit and early site work contract documents
- Prepared network model for installation of early site work
- Prepared summary network model for building work in conjunction with consultant contractor
- Prepared network model for production of mechanical, electrical, and plumbing (MEP) contract documents
- Made detailed analysis of project needs relative to early issues of key contract documents

Those participating in the meetings were:

Wednesday, July 1, 1981 (working day 128)

Rob Sovinski, HOK
Pat Moore, J.W. Bateson Co.
Doug Harden, HOK
Don Olson, HOK
Leo Galetta, ETI
Wayne Glover, Herman Blum

(Note: Some of the above attended part time only).

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Thursday, July 2, 1981 (working day 129)

Rob Sovinski, HOK
Paul Bauman, HOK
Don Olson, HOK
Doug Harden, HOK
Pat Moore, J.W. Bateson Co.
Leo Galetta, ETI
Wayne Glover, Herman Blum
Corky Cunningham, HOK
Crib Altman, HOK

(Note: Some of the above attended part time only).

General Summary

Our early work at the first day's session was concentrated upon monitoring the current status of the project in accordance with the Issue #1 network dated June 1, 1981 (working day 106). A series of small bar charts had been prepared from the early network showing early starts and early finishes for key tasks. It was decided after a review of these bar charts that it would be best if Mr. Harden continued to prepare his bar chart format on the larger sheets that he had been using over the past month since this would give him documents uniquely suited to his need. Therefore, efforts from now will be concentrated upon preparing the logic plans and whatever other translations are needed to analyze manpower needs. Day to day working translations will be prepared for the most part by Mr. Harden.

Our monitoring shows that progress to date has been in fairly good alignment with the desired plan of action. A major change in strategy was indicated as possible because of long lead times particularly in the production of precast structural units and for site work precast elements. The analysis below, however, is based on the initial network prepared in early June , 1981.

- Questionnaires - All major questionnaire work has been done and the design program has been formulated, approved, and reviewed by Zale.

- Floor loadings - These are to be submitted July 2, 1981 (working day 129) and are scheduled for approval by July 7, 1981 (working day 131).

- Block space plans - These have been completed, reviewed, and approved.

- 4th level parking - The 4th level parking analysis has been reviewed and approved.

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- Elevation studies - Elevation sketches are presently in work and will be completed July 2, 1981. The study models for these elevations are also in work and are to be completed on July 2, 1981 (working day 129).

- Landscaping - This network model for landscaping work is to be redone at our next session.

- Parking recommendations - Assumptions have been made on the van pooling, and the owner has reviewed and approved the small/large car ratio analysis. Work is now ready to proceed with preparation of total parking recommendations for subsequent approval by the owner. Zale is expected to review and approve these recommendations by about July 14,1981 (working day 136).

(Note: The above items are shown on sheet #2, Issue #2, dated July 1, 1981 (working day 128).

- Ceilings, lighting, and demountable partitions - The systems analysis for these three major elements is to be completed by July 2, 1981 (working day 129), after which a review will be made of them by Zale, followed by an inspection of various installed ceiling systems. Mock ups will then be built and a full review and approval made. It is anticipated presently that approval on the ceiling and demountable partition recommendations will be given by July 28, 1981 (working day 146).

- In floor systems - The systems analysis has been completed and inspection of ~~the~~ existing in floor systems will be done shortly.

- Food service program rework - Zale has reviewed and approved the reworked food service program.

- Central plant configuration - The owner has reviewed and approved the central plant analysis and configuration.

- MIS - The basic MIS space plan criteria has been established.

- Site grading - Grading concepts have been confirmed and the code analysis relative to parking ventilation is now in work. This information will be presented about July 10, 1981 (working day 134).

- Soil borings - We are presently obtaining proposals for clearing the site enough to make soil borings. Meanwhile, Zale is expected to release boring work shortly. After a soil analysis contract has been awarded the soil boring contractor can move on the site,make the borings and prepare and submit his preliminary report. The preliminary soil boring report is due back by July 27, 1981 (working day 145).

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(The above work is shown on sheets #3 and #5, Issue #2, dated July 1, 1981 (working day 128).

- Structural framing - The core configuration has been set and typical framing plans are now about ready to start. We prepared a total network analysis of the structural contract document preparation and this plan will be discussed later in the monitoring report.

- Space plans, color, and material selection - Work is proceeding, but since the scope of operation covers a large range of items we will have to make a full analysis of it at our next session when we prepare the network model for architectural contract document production.

  There is a feeling that progress on the work is lagging. However, a hard analysis of current status will be better possible at our next session. In any event, I recommend that heavy attention be given each of the items defined in this diagram over the next two weeks since information regarding each will be critical to effectively preparing architectural contract documents. Since the time allocation is extremely tight, adequate manning of this work by those responsible for it must be maintained.

(The above items are shown on sheets #4 and #5, Issue #2, dated July 1, 1981 (working day 128).

Review of construction needs

On both the first and second days of our session we met with Mr. Pat T. Moore, Vice President of J.W. Bateson Co., Inc. of Dallas, Texas. In these meetings we explored the construction needs of the program within the constraints of which we are aware, and within the desired completion time frames. For the purpose of our analysis we have assumed that March 26, 1984 (working day 824) is the date by which Zale must complete its full move into all three modules of the new facility. It is possible that they will wish to move into module C, the service module, at an earlier date. But in any event, the target for a complete move from their present headquarters into the new facility has been set at the above target date.

In our review of the work we addressed two major items - erection of the structural frame and close in of the building, and installation of early site work adequate to allow timely construction to begin on foundations. A full analysis of this information is shown on sheets #7 and #8, Issue #2, dated July 1, 1981 (working day 128). In it, we worked backward from the move-in date assuming that move-in and construction of the facility from start of foundations would require about two years. This assumes that once we start foundations (presumably in March, 1982) that we must be able to proceed continuously with no delivery delays interrupting construction continuity.

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We next evaluated what would be essential to maintain such continuity. The major item that shows up early in the project as a procurement delay is the precast structure. Assuming that within two months after start of the foundations or in June, 1982 we would be ready for the first precast unit to be erected we worked back making rough approximations as to durations and then established the steps necessary to bring precast to the job as needed. Elements that must preceed delivery of precast include (listed in reverse order) fabrication, review and approval of shop drawings, selection of a contractor and award of a contract, receipt of proposals, printing and issuing the precast CD's, review and approving these CD's, and to start the entire process complete the precast structural contract documents. preparation of shop dwgs.

Indications were that it could be necessary to award a contract for precast fabrication no later than December 21,1981 (working day 248). This means we would have to issue precast contract documents for Zale's final review by about October 30, 1981 (working day 213).

Of course, the above analysis is subject to further review and Mr. Moore is doing this in conjunction with those that he feels can provide the authoritative information needed to confirm or properly revise our early work. Nevertheless, there is enough feeling that these time allocations and tasks to be done are reasonable enough that we should proceed immediately into preparation of full structural contract documents. Therefore, in consultance with the structural engineer, we prepared the plan of action for his production of documents based upon this assumption.

The next analysis made was that of the early site work needed to begin construction of foundations in the field. It was found that due to site restrictions and access needs that it would be desirable, and perhaps essential, that the north road from both the east and the west be available for the construction start. This means that with the current proposed design using precast crib units that it would be necessary to have these units on the job, in place, and the road built by the time building work is to start. This further means it would be necessary to award a crib unit contract by about September 4, 1981 (working day 174). Awarding the early contract would allow preparation of shop drawings, review and approval of shop drawings, and fab and deliver of early crib units to be completed by early November, 1981. Site work could then begin on clearing and laying out the building, building the crib walls and roadways, and balancing the site so building construction could start by our desired target of March 30, 1982 (working day 317).

This led to another need, that of preparing early site work contract documents so a contract could be awarded by late

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November, 1981. It is recognized and should be stressed, that the owner, as do many others on the project team, wish to avoid splintering of contract awards. Every effort has been made to put the project together in that manner, but it appears at present that there are some valid reasons for issuing the precast structure, the site work, and the crib unit contract documents at an early date. These reasons are noted on sheet #8, dated July 1, 1981 (working day 128) and reproduced below for ease of reference:

Reasons (at random) for issuing precast structural, early site work, and site crib unit contract documents at an early date

- The need for meeting a fixed end date past which the owner may be heavily penalized, means that start of work must be staggered so that there is no interruption due to deliveries or site preparation once building foundation work starts. Since there are varying times requirements for early support work such as delivery of precast units and preparation of the site for proper access, a reconciliation of these dates with start of building work is best achieved by an early issue on those items mentioned.

- To avoid premium payment labor demands it is the considered opinion of the project team at present that the site must be ready for building work to start no later than approximately two years before the current target end date. Construction must then be continuous from that two year ahead date through to occupancy of the building.

- Precast structural fabrication requires long lead times for shop drawings, obtaining approvals, casting, and delivery of the units. This amount of time is considerably longer than the time required to construct foundations to receive the building structure. This differential is the major reason why an earlier issue of the structural drawings is desirable.

- To have proper access for precast deliveries, storage and erection we must have the site balanced and an all weather access road available by the start of foundation construction. This will require an early start on initial site work.

- To construct the north access road to a usable grade at the west, we must have the crib units on the job and partially placed so as to be able to start early site balancing and road construction.

Precast crib units will require several weeks lead time to detail, approve, fabricate, and deliver. We should award the precast crib unit fabrication at an early enough date to insure timely delivery.

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- The early elements - precast structure, site work, and crib units - scope of work can be clearly defined and competitive proposals solicited that will carry the work to specific, well identified interface points with remaining work. Thus, there should be little difficulty, with good management of the work, in clearly defining the scope of each of these three contracts.

- The construction market is presently, and for a short time into the near future will be, very competitive. Thus, good price proposals should be possible within the next four months.

- If a major earthwork and road contract is let early, there is an opportunity to have a better contractual and labor condition surrounding its award than if it were made part of the later general contract for the entire project.

- The three early contracts proposed to be awarded represent a relatively small amount of the total contract. The bulk of the construction expenditure still remains within the general contract.

- Entrances to the site should be maintained at both east and west. At the east there is a possibility although somewhat remote at present that interstate exchange construction could close the frontage road. This means that it could be important to provide early in the job an all weather north road to rough grade upon which access from the west can be obtained, requiring early construction of the crib wall system.

This information, as noted, has been shown on sheets #7 and #8 Issue #2, dated July 1, 1981 (working day 128).

It should be cautioned that the summary construction diagram on sheets #7 and #8 is an early diagram and as noted on the sheet #8 should <u>not be used</u> for identifying intermediate milestone dates.

<u>Structural contract documents</u>

From the information derived in our analysis of necessary construction procedures, we next prepared a detailed review of the plan of work for preparing structural contract documents including foundation work and the precast structural frame. This information is shown on sheet #9, Issue #3, dated July 2, 1981 (working day 129). The information has been reviewed by Mr. Galetta of ETI along with his staff and presently it appears to be a reasonable and achievable plan. However, it should be cautioned that as with the mechanical, electrical, and plumbing, as well as with the architectural that the manpower demands to meet the plan will be considerable, and that a rapid mobilization of project production manpower is essential to achieving the schedule proposed.

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In the structural drawing preparation most work can begin shortly requiring only the updated module A and B throwaways. In addition, full approval on the floor loading recommendations will be required. As structural drawings move into full production it will be necessary to complete the lateral loading analysis and to give to the structural engineer exterior wall design details along with module C, D, and E updated throwaways.

The present target completion date for issuance of the precast structural drawings exclusive of the foundation work is October 19, 1981 (working day 204). This is a tight date and if the owner's approval is given on proceeding with the early issue concept will have to be maintained to meet our rather demanding construction schedule.

Mechanical, electrical, and plumbing (MEP) contract drawing preparation

The present goal is to obtain a full set of contract documents exclusive of those early issues mentioned above by early January, 1982. Our planning of the MEP contract document package shows that we probably can make that the date in preparation of this package, again presuming that adequate manpower is assigned to the project, and that the needed restraints on start of work are resolved early. The restraints are identified on sheet #10, Issue #2, dated July 2, 1981 (working day 129). They should be examined carefully, and at our next session we shall monitor the program and make whatever revisions are needed to more truly reflect actual job conditions.

With the present plan of work it appears that the MEP contract documents can probably be issued by December 29, 1981 (working day 253). Again, this presumes that manpower will be available to produce the documents and that needed information will be provided progressively and aggressively.

Mr. Glover is now making a full review of the network model and will provide for further analysis whatever manpower loading information is required to identify the staff levels needed to accomplish the work.

Architectural contract documents

At our next session in late July, 1981 we will plan to complete the model for this work. It is already apparent that an extremely careful review of manpower needs and an assurance that such needs will be met are going to be sizable factors in completing the architectural drawings and specifications by the end of the year. If we analyze the amount of time remaining from July 2, 1981 (working day 129) to January 4, 1982 (working day 256) we find this period contains only 128 working days. A rough idea of what this means in manpower

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can be seen by using the general assumption of number of hours required per sheet of contract document and multiplying it by the number of sheets (this has been determined). Next this product should be divided by the number of hours remaining in the year for one individual. This is 128 x 8 or 1,024 hours per person exclusive of vacations and time off. This analysis will probably indicate that the project loading demands will be such that an average of 6 to 8 production people will be needed on the job from here on out, each working day to avoid heavy overtime demands. We shall further refine this analysis at our next session. Meanwhile, however, I recommend that gearing up for drawing production begin immediately since no time can afford to be lost.

General

From our work at this session I will have the network models already prepared, drafted into final form and probably will use some form of computer processing to translate them into daily work tools. Meanwhile, Mr. Harden will also prepare whatever translations he needs for his own management purposes from the diagrams already prepared.

Our next session is scheduled to be held on Wednesday and Thursday, July 29 and 30, 1981 (working days 147 and 148) at the HOK office in Dallas. For that meeting, I suggest the following agenda items be considered:

- Monitor current status of project from diagrams prepared to date
- Review discussions with owner held re early issue of precast, site work, and crib units
- Monitor progress of structural and mechanical/electrical/plumbing contract documents
- Prepare network plan for production of architectural contract documents
- As time permits, analyze manpower needs for each of the disciplines involved
- As time permits, refine the summary construction network models in conjunction with the construction consultant

There are several other items that could be covered if time permits, but in all likelihood the above will require our full attention during most of the session.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Doug Harden
cc: Mr. Charles McCameron

81:2P Plans bid in report Rh.

- CRITICAL PATH PLANNING
- LAND PLANNING
- MANAGEMENT CONSULTING
- PLANT LOCATION

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August 20, 1981

Mr. Doug Harden
Hellmuth, Obata & Kassabaum Inc.
5453 1st International Bldg.
1201 Elm Street
Dallas, Texas 75270

Dear Doug:

I'm sorry our recent session was interrupted by the fire but, again I want to thank you and Don for sending me back the material I had to leave in the conference room.

We are presently drafting up the network sheets that you have prepared and are just about to send you the final draft and computer runs on the structural and mechanical work plans. Sometime early next week we will be mailing this package to you, and I would like to briefly describe the material so when you receive the packet you will better understand what each element is for. Each has a definite function, and I truly believe that if you become familiar with the information it will help you greatly in monitoring and evaluating progress on the very important design work for the Zale program.

Once we complete drafting the rough networks you prepared I think it would be appropriate before we final process these that we have another meeting. Perhaps one day would be enough to update that information and establish, as we were going to at our last session, the end time restraints and late allowable finish dates for each of the individual networks. I shall be in touch with you shortly to set such a meeting to wind up our design diagramming work. This meeting could also serve as a monitoring session and perhaps allow us to do some additional diagramming, if appropriate, on the summary building network. Probably the session will be set for sometime in mid-September although I shall try to establish an earlier date if possible. The reason for the mid-September date is that I am planning to be on vacation for a couple of weeks beginning September 7, 1981.

Now to review what material you will be receiving on the structural and mechanical/electrical plumbing package. I shall itemize these for ease of reference. In the package will be:

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1. A set of final drafted network models which display for each task an early and late start and finish in calendar dates. You will notice that the drafting of the model is considerably more legible than the rough copies I prepared with you. I use the network drawings to color code progress on tasks. The colors used and their designations are:

   Green - indicates the task is meeting early start and early finish dates

   Orange - indicates the task is in no major difficulty but is now past its early finish date but will probably meet its late finish date.

   Blue - indicates the task, at its current pace, will probably not meet the late finish date.

   Yellow - indicates the task is now past its late finish date.

   A further explanation of the color coding is bound into the computer printout accompanying the drawings.

2. Computer printouts - These are bound copies of computer runs containing considerable items of schedule information. The loose sheets entitled Worksheet for Update are the documents used to prepare periodic project status reports. I will describe these later. The bound set of information contains special abbreviations, a four year working day calendar, standard abbreviations, and a two page description of control system techniques for color coding and identifying the various computer listings. Following the front section you will find several baffling looking computer sheets which, however, are deceptively simple.

   The various computer listings are described on the control system technique paper bound in with the computer run. However, I shall briefly review the listings below for emphasis. Column headings identify the node numbers, total durations, responsibility codes, location codes, task descriptions, and then the computed early and late starts and late finishes, and total float. Dates are given in numeric form with the first one or two numbers being the month (i.e. 4 is April, 10 is October) followed by the day of the month with the last digit being the last digit of the year. Thus, a date shown as 5081 is May 8, 1981. A little practice at reading these will show you that they are quite easy to decipher. The fifth column entitled TF is the total float column and gives the amount of total float time available to that particular activity.

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Notice that early and late starting dates are morning dates and that early and late finish dates are evening dates. This is a conversion that is accomplished in the computer. The first set of these listings up to the next green sheet is the node sequence and lists all of the tasks and dummies in the network in ascending order of node numbers.

Moving to the next sequence after the node sequence we find the early start listing which shows the tasks listed in ascending order of their early start dates. The third listing is in ascending order of their late starts; the fourth is in ascending order of late finishes and the fifth is in ascending order of the total float time available.

Each person develops their own method of reading computer runs once they become acquainted with the information. Each of the five sequences has a definite use and place. A review of how they can be used is given in the control system techniques description.

The worksheet for update document is one that can be extremely useful. Notice it is a late start sequence and at a regular monitoring point (this can be every two, three, or four weeks - I recommend on this project that it be kept every three weeks) the person monitoring the project marks those tasks that are complete, substantially complete (still a very small amount of work remaining but not restraining following tasks) or in work. Tasks that are not in work are not marked. The mark to be used is a standard symbology for this particular program, but for simplicity I suggest that in front of the tasks that are complete we put a check. Those substantially complete mark S, and those in work mark W. I shall then, when you mail me the work sheet, fill in the computer designation. Probably you will receive this packet of material about August 25, 1981 and I recommend you fill in the worksheet for progress as of August 26, 1982. If you will then mail this document to me I shall process it for a one month period ahead to September 28, 1982 and forward back to you the reports generated.

Probably by the time this letter reaches you I will have spoken with you personally and will have alerted you to the fact that the information will be arriving and perhaps briefing you by phone a bit. If you have any questions when you receive the material please, of course, do not hesitate to call.

Meanwhile, we shall continue working on the architectural portion of the work and I shall plan to have the architectural networks prepared in final graphic form ready by the end of

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August. I shall send these to you for your perusal and checking while meanwhile preparing the basic information that goes into the computer run for them. Once you have been able to check it over I shall meet with you and we shall complete quantification of the diagram, ready for the final computer run.

I hope the fire did not damage any critical materials and that you were able to get back into production rapidly following the problem. I would appreciate knowing what caused the explosion and fire and hearing any of the details on how you all managed to assemble once it was over and to again resume the work you were doing.

I'm looking forward to seeing you again. Best of luck and regards.

Ralph J. Stephenson, P.E.

RJS:sps

cc: Mr. Charles McCameron

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November 4, 1981

Mr. Doug Harden
HOK, Inc.
5453 1st International Bldg.
1201 Elm Street
Dallas, Texas 75270

Dear Doug:

Following our most recent meeting on the Zale project I cleaned up the miscellaneous work that we did at that session and sent you a sepia of the summary logic plan for remaining work on the job. I also have had drafted some additional sheets from the logic plans that you prepared earlier. However, at this point I feel we have gone as far as it would be wise to go with the Zale project since you are now relatively close to an issue date, and I believe that the maximum benefits of the planning we have done have been realized (within the time frame we had available).

I would like to suggest that on future design and production programs that planning efforts start earlier since, as you well know, the early efforts in articulating problems and planning sequences can sometimes pay handsome dividends in helping the project move ahead and in maintaining good control and morale on the program.

I talked to Charles yesterday and suggested to him that I clean up the material that is now pending and then do no more work on the project unless an unusual circumstance arises where my help can be of assistance to you. I shall have sepias made of all of the final drafted networks we prepared to date and mail them to you for your records and use on other projects. I believe sincerely that the patterns that you have established in your own diagramming coupled with those that we did together should provide a good reference source for future jobs in your office. If you wish additional sepias of the the material or prints of the rough sheets please do not hesitate to call.

In the program we have used I have tried to give you the benefit of most major techniques used in network modeling. These include the random laundry list, proper question asking (very important), methods of involving others in establishing the logic plan, preparation of rough unquantified networks, quantification of diagrams, allocation of manpower

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to project activities, dating of the diagrams, issuance of network model computer runs, use of the network to monitor projects and methods of analyzing problems as they appear along the path of the diagram.

I wish to further emphasize that network modeling is a tool that is no better than the managers who are using it. What it accomplishes is a sharpening of the sight and a broadening of the range of manager that allows him a better awareness of influences and their impacts upon a program.

It has been a pleasure working with you, Don Olson, Paul Bauman, Crib and all the others in the program and I am truly looking forward to participating again with you in the near future. I hope the project turns out well for your office and in the field. Please keep me posted on how things are going and when I am in Dallas I shall certainly give you a call to see how things are going.

Best regards,

Ralph J. Stephenson, P.E.

RJS:sps

cc: Mr. Charles McCameron