RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

Sept. 15, 1986

Subject: Monitoring Report #1

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - Contractor

Project: 86:55

Dates of Monitoring:

July 15, 1986 (working day 137)

Aug. 5, 1986 (working day 152)

Aug. 13, 1986 (working day 158)

Sept. 3, 1986 (working day 172)

Monitored from various networks as indicated below.

Actions taken:

- Inspected overall site
- Began preparation of master project note set
- Refined definition of projectssite areas and building areas
- Prepared preliminary network models for site and building work.
- Evaluated current job status

General Summary

The project is one that contains several elements, each of which is to be planned using network modeling. Site work plans have been broken into several geographic areas which are shown on network sheet #1, Issue #1 dated July 15, 1986 (working day 137) and updated at a subsequent meeting to Issue #3 dated Sept. 3, 1986 (working day 172).

Site work includes work below grade and at grade work on various building areas as well as site installation at storage pads, truck retention, and parking areas. These areas have

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been defined by the project team and are shown on a marked up site plan posted at the job site.

Building work has been divided into several areas as noted below:

- Area 2 A-1 - northwest addition to building 2 A
- Area 2 A-2 - northeast addition to building 2 A
- Area 2 A-3 - southeast addition to building 2 A
- Area 2 A-4 - east truck dock and office at building 2 A addition adjoining 2 A-2 and 2 A-3
- Courtyard addition
- Paint shop addition to existing plant 1

In our planning work to date we have completed network models for the site work, and a building template which is being used for all major structure plans. Detailed diagrams have been completed for 2 A-1, 2 A-2, 2 A-3, and for special network SSTL 1, which shows details of structural steel, joists, joist girder, deck, and composite modular metal panels for areas 2 A-1, 2 A-2, 2 A-3, and 2 A-4. These networks have all been bought up to date as of Sept. 3, 1986 (working day 172) and will be distributed as they are put into final form.

Present plans are to have most site work completed and the areas partially paved by the onset of cold weather this year.

Structural steel for building 2 A-1 is presently due to arrive on the job site for start of erection on Nov. 3, 1986 (working day 215). Erection of structural steel, joist girders, deck, and exterior composite modular metal panels is antipated to move in sequence from 2 A-1 to 2 A-2 to 2 A-3 to 2 A-4.

The following dates have tentatively been set for start of steel erection at each of these areas.

2 A-1	Nov. 3, 1986 (working day 215)
2 A-2	Dec. 16, 1986 (working day 245)
2 A-3	Jan. 29, 1987 (working day 275)
2 A-4	Mar. 12, 1987 (working day 305)

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There have been no detail networks prepared yet for the remaining building additions pending receipt of additional information from the owner. We did make some preliminary projections as to requirements for obtaining this information so as to be able to complete the project by the current desired completion dates. This information has been provided to the project team for use in their ongoing discussions with the owner.

At present, the project is being planned and data is stored on disks which are being kept by Sorensen Gross and me. A full set of the material prepared at each meeting is provided to the project team so they can utilize it in their planning work between monitoring sessions.

At our meeting on Sept. 3, 1986 (working day 172) we evaluated the current status of work at each of the major areas. A brief review of the project is given below.

Site work - Monitored from Issue #1 dated July 15, 1986 (working day 137).

The south parking area A base course was completed about Aug. 22, 1986. The wearing course, striping, and turning over to the owner should occur about Sept. 15, 1986. No work has yet started on south parking area B.

Balancing of earthwork is complete at areas 1, 2, and 3 except at the owner's trailer storage. This area is expected to be vacated completely the week of Sept. 3, 1986. Balancing will be completed once the owner has moved trailers. This earth balancing restrains foundation work at building 2 A-1, 2 A-2, and 2 A-3. Of major importance is to establish when the concrete road at site areas 2 and 3 can be abandoned. We will review this at our next planning session. Site areas 4, 5, 6, and 7 have been partially balanced.

Underground utilities and road work is completed in phase 1 site area except for the southeast curve. Phase 1 is the east road area of the site. Phase 2, the northeast road work is not yet complete. Phase 3, the link roads, and phase 4, the northwest roads have not yet been started.

At concrete storage slabs the owner had requested a redesign of loading ramp #1. This redesign delayed construction of the east concrete storage slab. Drawings for loading ramp #1 are to be released by the owner Sept. 5, 1986 (working day 174).

This will free up loading ramp #1 construction, and allow installation of the remainder of the east concrete storage slab. The owner will relocate trailers to the east storage slab by Sept. 7, 1986 (working day 175).

Some poor soil conditions have been encountered in land balance areas 3, 5 and 6. This had the impact of reducing bearing capacities to lower than current design called for. The poor soil is being removed or replaced, or footings are being resized to accommodate this situation.

Building Work

At building 2 A-1 work has proceeded on procurement of early underground utilities and these are in work in the field, along with construction of exterior wall footings. Work at 2 A-1 is currently meeting targets between early and late starts and finishes.

We updated the Issue #2 network model for building 2 A-1 to Issue #3 dated Sept. 3, 1986 (working day 172). In this diagram the preliminary completion shown for 2 A-1 work is June 4, 1987 (working day 364). This date as with all interior dates is subject to further check and review.

At building 2 A-2 work is beginning on deep underground utilities and will proceed through installation of foundations, with the target being to complete the building ready for start of erection of structural steel by Dec. 16, 1986 (working day 245). Presently, steel erection is establishing most of the target dates for work progress. The current tentative date for completion of building 2 A-2 as shown in Issue #3 dated Sept. 3, 1986 (working day 172) is July 17, 1987 (working day 394).

At building area 2 A-3 work is to begin shortly on underground utilities and footings. The target start of structural steel at area 2 A-3 is currently set at Jan. 29, 1987 (working day 275) with completion of the building currently targeted for Aug. 28, 1987 (working day 424).

Again it should be cautioned that the above dates are tentative and will be reviewed at each of our monitoring sessions for volity.

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There were several owner items discussed at this monitoring session that should be watched carefully. These include:

1. Completion of condensate and steam to plant 2 A from the power house.
2. Removal of the wastewater plant equipment from building 2 B.
3. Release of design data for plant 1 A.
4. Release of design data for plant 2 B.
5. Removal from trailers from plant 2 area.

This items have been reviewed and identified by the project team for Sorensen Gross and for the owner.

General

The current plan is to monitor the project on a regular basis probably about once every 3 to 5 weeks. At each of these monitorings we should plan to inspect and review current progress at the job site, either by direct or remote monitoring. In addition we should plan to complete all network models for remaining work, and where appropriate update current network models.

I shall set the next date with Mr. Robert Avendt and will be in touch with him shortly to confirm future dates for planning and monitoring sessions.

Ralph J. Stephenson, P.E.

TO: Mr. Robert Avendt
CC: Mr. Ghassan Saab

RJS:gmy

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

October 21, 1986

Subject: Monitoring Report #2

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - contractor

Project: 86:55

Date of Monitoring: October 13, 1986 (working day 200)

Monitored from various networks as indicated below:

Actions taken:

- Inspected project
- Reviewed current status in detail
- Updated site plan of work, sheet 1 to Issue #2 dated October 13, 1986 (working day 200)

General Summary

Currently the project is moving reasonably well despite heavy rains over the past two months. Mr. Avendt said they have lost about 27 working days to weather between the start of the project and the current monitoring date. Footing installation and foundation wall construction has proceeded well and is moving generally from east to west. Work on the site is also moving relatively well although there has been considerable delay caused by the need to redesign the truck ramps. Also the redesign of layouts and grades for some of the concrete storage areas has been necessary.

Structural steel has started to arrive on the job and erection of steel will probably begin about October 23, 1986 (working day 208). It was due to begin according to our Issue #3 network model dated September 3, 1986 (working day 172) on November 3, 1986 (working day 215). Therefore, it is possible to pick up a slight amount of time on structural steel. However, this ahead position may or may not be able to be maintained, depending upon following steel delivery dates and weather impacts upon the job.

Still of major concern is the paint shop addition building 1A. This area is still on hold pending the owner's release. We discussed this in detail at our session, and it was generally agreed that design and construction of building 1A should be

initiated just as quickly as possible. Since it is a paint facility and since these generally require special design and construction attention, it would be wise to get building design into work soon. The owner has retained their paint consultant, Durr Engineering Management Company, who will design and install the paint equipment. Equipment design is currently in progress and I recommend highly that the Sorensen Gross project staff follow it carefully.

Paint shop releases were reviewed with the owner in a meeting on May 22, 1986 (working day 101) in a preaward meeting. The conference was taped by the owner and Sorensen Gross has requested transcripts of the tape to throughly review the date structure discussed in that session. It is expected that this transcript will be forthcoming shortly.

A brief review of each of the major areas of the project is given below:

Site earthwork and balancing - monitored from Issue #1 dated July 15, 1986 (working day 137). The south parking area A is complete except for striping and removal of temporary fencing. The owner has yet to approve a parking layout and striping, of course, will be contingent upon this layout. It is possible that this area will not be striped until next year. Apparently, the owner does not intend to occupy the south parking area A until the striping is complete.

At south parking area B no work has yet started and probably construction there will be held until the contractor's trailers are removed in April, 1988.

Earthwork balancing at site areas 1, 2, and 3 are complete. The owner vacated the trailer storage at these areas about September 22, 1986 and site area 2 balancing was completed about September 29, 1986.

Balancing at site area 4 is in work and efforts are presently being made to dry out the area 4 road link portion of the site work. This is critical to completion of building 2A-1 column 5A footing.

Site area 5 balancing is complete, and site area 6 work is in progress. Completion at area 6 will be held by the need for the owner to release a bulletin for the railroad retaining wall.

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Site area 7 is where the concrete batching plant has been located and will probably be maintained in operation until late fall, 1987. However, it is possible that some of site area 7 work will be done this year and then completed in 1987.

Truck ramps

Construction of truck loading ramps has been delayed by redesign work requested by the owners. The requests were made in August, 1986 and approval of the redesign was provided about September 29, 1986.

The truck ramp numbers were reconfirmed at our monitoring session and are as follows:

Truck ramp 1 is located at the far east end of the project.

Truck ramp 2 is located at the west end of site area 6.

Truck ramp 3 is located at the east end of site area 6.

Truck ramp 4 and 5 are located in the north and south portions of area 7 respectfully.

Truck ramp 1 has been released for construction and is being built. Footings are complete and walls are in progress. Truck ramp 2 is on hold. There is a possibility it may be deleted. Truck ramp 3 has been released for construction. However, the existing railroad track #1 must be removed before ramp 3 can be built. The owner will release removal of this railroad when building 2A-1 is occupied and railroad track 1A is complete. Truck ramp 4 has been released for construction. Ramp 5 is on hold and may be deleted.

There is a possibility that the truck dock canopies may not be built. There is no word yet from the owner on this matter.

Concrete storage areas, roads, utility work, and railroad work

Concrete storage and retention slabs have moved reasonably well and the east concrete storage slab is complete except for concrete work around loading ramp 1. The north plant 2 concrete retention area, north of the road, is complete and concrete paving in work at the north plant 2 area south of the road. This area has been delayed by rainy weather and is being somewhat delayed by completion of the underground fire main running along the north wall of building 2A-1 and 2A-2.

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Foundation walls in building 2A are being constructed and backfilled so that the concrete retention area at the south of the road can be completed.

The north plant 1 concrete retention area is being balanced and graded. Again, there is some additional fire protection work necessary to complete this work. Also the existing railroad track #1 must be removed to be able to complete the area concrete. The site area 7 truck retention area is being balanced and graded. The concrete batching plant there will restrain completion.

Site road work is in good shape with phase 1 and 2 roads completed. The link road, which is in phase 3, has not been started as yet. There must be a connecting road built at the link in order to abandon the current road around the buildings. Weather permitting, the new connection should be available in late October, 1986. Present plans are to use a temporary asphalt crossing installation at the existing railroad tracks so as to permit use of the connection that replaces the present perimeter route.

Phase 4 roads are about 50% complete. There will be a shut down of existing track number 4 for about 10 working days in order to complete this roadway. Mr. Avendt will work with the owner in this matter.

Underground utility work in phase 1, the east area, is completed. Utilities are in progress at the northeast area phase 2 and the link area phase 3. In phase 4, utility work at the northwest areas are complete.

Poor soil has been encountered on the site and where this has been the case, it has been removed and replaced with suitable fill or foundations have been resized for lower bearing capacities.

Railroad track work will be installed as the information and areas are available. Existing railroad track #1 must be removed to complete ramp 3 and the storage slabs. As noted above, this will occur when building 2A-1 is occupied and track 1A has been completed.

Existing track #2 elevations must be altered. The necessary information to revise these elevations has been provided to the owner by Sorensen Gross.

The existing track #3 will have to be shut down for about 10 days to allow completion of phase 4 road work. The existing track #4 has been removed.

Building 1A Paint Shop Addition

This building is on hold pending owner release. I recommended to Mr. Avendt that he obtain as much information about the nature of the paint facility and how construction is intended to proceed, particularly as it affects footings and steel heights in the building. There are many different ways of designing and building paint facilities and since it is often custom work, it would be wise to closely follow the design for this facility by Durr.

Building 2A-1

Monitored from Issue #3 dated September 3, 1986 (working day 172). Building 2A-1 is the northwest addition to Building 2A. At this area foundations are 95% complete and deep underground utility work has been installed. However, problems have been encountered at the tie in area of the sanitary sewer and will require some redesign. This redesign was discussed on October 9, 1986 (working day 198) with the owner and the redesign will be reviewed at the October 17, 1986 (working day 204) design meeting. Installation of the sewer will restrain the 2A-1 floor slabs.

Structural steel for 2A-1 is arriving on the job site and is expected to start October 23, 1986 (working day 208). Structural steel at building 2A-1, according to the current network model, was due to begin on November 3, 1986 (working day 215). This gives ahead position of about 7 working days on start of structural steel.

Building 2A-2

At building 2A-2 the exterior foundations are complete. Interior footings are being installed along with the underground utility work. No problems are expected relative to readying the area for erection of structural steel. Structural steel at area 2A-2 is currently due to begin by December 16, 1986 (working day 245) or earlier.

Building 2A-3

Work at building 2A-3 on exterior footings is complete. Interior footings are nearly complete. Here, as in building 2A-2, no problem is expected in meeting the current anticipated start of structural steel. This steel is due to begin January 29, 1987 (working day 275).

Building 2A-4

Exterior foundation work at building area 2A-4 is substantially complete. However, no dock foundations or dock walls are yet installed. Structural steel at building 2A-4 is due to begin March 12, 1987 (working day 305). Presently, no major problems is expected in meeting this date.

Building 2B

This is the courtyard addition at the present courtyard area. Building 2B is generally considered part of the paint shop complex. It cannot be started until the owner has abandoned and removed the existing wastewater treatment plant. Apparently this cannot be done until the new wastewater treatment plant is operating. This sequence should be checked carefully since the entire paint shop complex is potentially a serious bottleneck to ongoing progress as the other buildings are brought to completion. We should review this matter in great detail at each of our planning and monitoring sessions.

Network Updating

At this session we updated the site work, plan of work to Issue #2 dated October 13, 1986 (working day 200). In this we completely revised the logic, removing all activities completed, and showing the activities remaining. No durations were assigned to this plan, however, Mr. Avendt will review the logic, make corrections as required, and return the network model to me for completion. This is an important diagram and should be checked carefully since it represents a sizable amount of work that is impacted by owner decisions. Once I receive the diagram I shall complete it, print it, and issue for field use.

General

Meanwhile, I shall continue to due whatever minor work can be accomplished on the diagrams to get them ready for use at our next session in a major updating effort. I have asked Mr. Avendt to please forward me any information that can be put on the diagram prior to our next session that he may wish to insert as restraints on work. One of the major of these deals with the temporary heat that may be needed for construction of slabs on grade. Mr. Avendt had inserted these into his 2A-1 network model. However, due to the press of time, we were not able to incorporate them into an official issue document. He will either provide this to me before our next meeting or we will discuss it at that session.

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I shall be in touch with Mr. Avendt shortly to set the next planning and monitoring session.

Ralph J. Stephenson, P.E.

RJS:gmy

TO: Mr. Robert Avendt
CC: Mr. Ghassan Saab

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

January 14, 1987

Subject: Monitoring Report #3

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - Contractor

Project: 86:55

Date of Monitoring: December 22, 1986 (working day 249)

Monitored from various networks as indicated below

Actions taken:

- Inspected project
- Reviewed current network models
- Updated and refined network models for building close in work
- Updated and refined building models for areas 1A and 2B

General Summary

Currently structural steel erection is complete in areas 2A-1, 2A-2, and a portion of 2A-3. Steel is trimmed out in areas 2A-1, and in a major share of area 2A-2. Metal roof deck is substantially complete in area 2A-1 and just starting in area 2A-2. Precast sill walls are partially erected in area 2A-1.

Structural steel at present is 14 to 20 working days ahead of the erection plan shown in the network model, issue #3 dated September 3, 1986 (working day 172). Because of this ahead position it was decided to rework the networks, and a new close in diagram for area 2A-1 was prepared at our session. The network logic plan had been prepared earlier in issue #3 dated December 10, 1986 (working day 249) at our session.

In it siding was shown as starting on December 23, 1986 (working day 250) at the 2A-1 area. Exterior precast erection was anticipated to continue along the north of the 2A-1 and 2A-2 building and installation of roofing, which has been started in building 2A, was expected to continue on out to the close in point. It was planned that the 2A-1 structure was to be enclosed and ready for heating by January 7, 1987 (working day 259). This would allow slab on grade work to start there in mid to late January, 1987. Plans are being made to keep the interior of the building rough graded so the amount of rough grading work necessary after heat has been brought into the structure will be minimal. Train well

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work has not yet begun. However, it is not expected to be a major problem action.

We also reviewed the work done by the project team on typical interior network models for the 2A-1, 2A-2, and 2A-3 buildings. The group will continue work on these in accordance with our discussions since the format they have been using for interior work planning is generally acceptable to the project team.

We next analyzed the design and approval process for building 1A and 2B. In our network model shown in issue #4 dated December 22, 1986 (working day 249) sheet 1-1a, the process of approvals is traced on through to the point where final working drawings are released and structural steel shop drawings can be put into work. This plan indicates that delivery of structural steel for buildings 1A and 2B could be as late as July 7, 1987 (working day 386) with completion of close in of the building in mid or late February, 1988. The entire sequence shown in this network model, which was left with Mr. Avendt, is labeled i4GMWSTRST1A2B, issue #4 dated December 22, 1986. Sheet 1-A1A should be studied in detail and reviewed for accurancy by the project team. We shall at subsequent planning and monitoring sessions monitor the network model and update it as required.

All work done at this session was left with Mr. Avendt on his field disk copy. Therefore, I will do no more additional work on the network models until requested by Mr. Avendt or until our next session when we will continue analyzing interior work for each of the facilities.

I shall be in touch with Mr. Avendt shortly to discuss the date of our next planning and monitoring session.

Ralph J. Stephenson, P.E.

RJS:gmy
TO: Mr. Robert Avendt
CC: Mr. Ghassan Saab

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

February 2, 1987

Subject: Monitoring Report #4

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - Contractor

Project: 86:55

Date of Monitoring: January 29, 1987 (working day 275)

Monitored from networks as indicated below.

Actions taken:

- Inspect project
- Reviewed current status of project with Mr. Avendt and Mr. Builte
- Prepared network model for office facility
- Updated network model for buildings 1A and 2B

General Summary

Currently, structural steel is erected in areas 2A-1, 2A-2, and 2A-3, as well as in the truck dock areas of 2A-4. Office structural steel has not yet been started. Steel has been plumbed, bolted, welded, and detailed in areas 2A-1, 2A-2, and in about 2/3 of area 2A-3. In area 2A-4 detailing of steel has been started and is in progress.

Metal roof deck is complete in areas 2A-1 and 2A-2. Roofing has been installed in 2A-1, and on a small portion of 2A-2 metal deck.

Precast sill panels are complete in 2A-1 and are erected on about 2/3 of the north wall of 2A-2. Metal siding has been erected in area 2A-1. At the interior of the buildings fire protection piping is being installed at 2A-1 and 2A-2. Down spouts are connected in 2A-1 and underground utilities are complete. At 2A-2 underground utilities are generally complete, and work will continue on above floor utilities in the immediate future. In 2A-1 toilet room walls and precast roof deck are complete.

One of the problems that must be resolved in the very near future is deposition of existing fire protection post indicator valves.

There are 10 or 11 of these in area 2A-1 and it will be essential to decide how they are to be handled relative to pouring out the floor slab on grade in 2A-1. It is the intent to start slab on grade work in area 2A-1 in the near future. Thus, it will be essential to resolve any major problems that might prevent rapid progress on construction on his slab.

It is to be cautioned as the sub-base at the various buildings is thawed, provision must be made to exhaust the moisture and dry out the area concurrent with heating. Plans are being made presently by the project team to accomplish this.

If we measure the current status of the job against the issue #4 network model, dated October 13, 1986 (working day 200), it indicates that the project is currently meeting targets between early and late starts and finishes. In that network model roofing at unit 2A was due to be completed by February 3, 1987 (working day 278) with slab on grade work in filling and fine grading to start on January 27, 1987 (working day 273). The key to slab on grade work is to initiate thawing, fine grading, and setting in floor work just as soon as possible. Slab on grade pours in 2A-1 in the network were due to begin no later than February 10, 1987 (working day 283). Mr. Avendt and Mr. Builte have updated this issue #4 network model subsequent to its issue. I shall obtain copies, and subsequent monitorings of the project will be against the later network.

It appears presently that work in the 2A-4 units is in relatively good condition.

As a major part of our work today we prepared network models for the office building and also updated the network model for close in of unit 1A and 2B. The network model for the office OB-1, issue #1, dated January 29, 1987 (working day 275), shows the office work structural steel starting in about 2 weeks, on February 12, 1987 (working day 285). However, it will be necessary to wait until spring weather, probably until mid April, 1987 to rough backfill and to begin underground utilities and exterior perimeter masonry on the office building.

Close in of the office building is expected about May 22, 1987. At that point interior work can begin. We prepared a network model for each of the 2 floors in the building and they show a completion date for the first floor of September 21, 1987 (working day 439), and for the second floor of September 24, 1987 (working day 442). These dates appear to be acceptable target completions and we shall maintain them.

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CONSULTING ENGINEER

Building 1A and 2B are still somewhat difficult areas since the release of the work poses many design considerations. The project was monitored from issue #4 of the network model, dated December 22, 1986 (working day 249). This was updated to issue #5 of the network diagram.

The budget cost estimates for 1A alternate design are in work, and to be submitted to the owner on February 2, 1987 (working day 277). Concurrently the owner and the paint systems consultant will continue working on 1A and 2B systems and layout design.

Once the owner has reviewed and approved cost estimates the substructure and superstructure drawings will be completed for the two buildings. The present target is to have a construction work release on buildings 1A and 2B by mid April, 1987 and to have structural steel on the job by July 24, 1987 (working day 399).

Meanwhile, work in the field is expected to begin on foundations as early as May 20, 1987 (working day 354). This pattern of work will allow the structure and close in to proceed so probably exterior wall panels could be in place by mid December, 1987 and roofing completed on both buildings by February 11, 1988 (working day 539).

The current network model was copied to Mr. Avendt's data disk and prints of it furnished to him and Mr. Builte. They will evaluate the network to determine its appropriateness.

Overall, the job is moving fairly well. However, we were not able to fully evaluate the procurement and processing of revisions at this session. I suggest that at subsequent monitoring meeting we evaluate, not only the physical status, but also discuss in detail procurement status of all critical items and the processing status of revisions to the project.

Large industrial programs of this type usually involve many revisions on an ongoing bases. Prompt processing of these is important to maintaining good job progress.

Meanwhile, all data disks worked upon have been copied unto Mr. Avendt's disk files and are in his possession. I highly recommend these files be copied and backup disks on which the copies are maintained be stored in a safe place away from the job site. The possibility of accidental damage at a construction site is high.

I shall be in touch with Mr. Avendt to set the next planning and monitoring session.

Ralph J. Stephenson, P.E.

RJS:gmy
TO: Mr. Robert Avendt
CC: Mr. Ghassan Saab

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

April 11, 1987

Subject: Monitoring Report #5

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - Contractor

Project: 86:55

Date of Monitoring: March 31, 1987 (working day 318)

Monitored from networks as indicated below.

Actions taken:

- Prepared laundry lists of activities for installation of paint system at building 1A
- Began determining conditions under which paint system could be installed at building 1A
- Developed preliminary coding technique for summary diagramming of paint installation
- Prepared summary network models for selected portion of paint system to be installed at building 1A
- Inspected project

General Summary

Major work at this planning and monitoring session revolved around detailed discussions of how the paint system was to be installed at the 1A building, along with discussions of the interfacing of the general contract work with that of the paint system designer and contractor.

A detailed set of notes accompany this monitoring report. These have been updated from those distributed at the meeting and can be provided to those desired by Mr. Avendt of Sorensen Gross.

Although the notes are self explanatory, it would be well to highlight some of the key elements since there were changes made subsequent to the planning and monitoring session. The following observations are at random and reference specific sections of the attached report.

A. In section 2.1, abbreviations used in the paint system laundry lists are identified. Note that as requested a cross reference is now provided for conditions that must be met for

work to be released on the paint system and the work items that are released. This cross referencing is described under the laundry list descriptions on pages 1 and 2.

B. The conditions that must be met and the work to be done are described for the following systems in the paint area.

- Waste water plant (WW)
- E-coat oven system (EO)
- E-coat system (ES)
- Buffer tank system (BU)
- Pretreatment system (PT)
- Overhead conveyor system (OC)

For each of these a detailed set of conditions and work to be done items, cross referenced as noted in the laundry list explanation of pages 1 and 2, are given in the attached set of notes.

We took these conditions to be met, and the work to be done (called a work phase) and incorporated them into a sample summary network model for the waste water plant (WW), the buffer system (BU), and the E-coat oven (EO). Time did not permit completion of the other 3 systems and their incorporation into this summary diagram. However, with the material provided in the attached report, along with the summary diagram prepared to date (also enclosed with this report), additional work now can be done by the project team on this summary model.

It is particularly important that the summary model accurately show interfaces between Sorensen Gross general contract work, G.M. Warehouse division work, and the paint system installation by DEMI. These interconnections are critical to refine just as early as possible since they will determine to a great extent how future work will progress on the job.

At present, it is planned that DEMI equipment will be on the project in early January, 1988. However, it is possible some of their equipment could arrive earlier provided negotiations can be carried to completion and design be allowed to proceed in the very near future.

At the site, the current efforts at building 1A are to get the site cleared so construction work can proceed in the very near future. Mr. Avendt and Mr. Builte have prepared and submitted a preliminary network model showing their intent relative to closing in this building. There was some discussion of the model at our session, particularly in respect to the point at which various elements of the paint system could be initiated. This entire plan of operation will be

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influenced heavily by conditions that will emerge as the paint system design and the negotiations for work continue over the next few weeks.

We plan to again meet in the near future to continue work on these elements of the project. They are important to the job and must be planned carefully and in depth if we are to be able to identify problems to be presolved and the difficulties to be resolved prior to their occurring in the field.

As part of our work we also briefly inspected the project. Structural steel for buildings 2A-1, 2A-2, and 2A-3, along with the truck dock and office area has been substantially erected, plumbed, and trimmed. Metal deck is being brought to completion at area 2A-3.

At area 2A-1, floor slabs on grade have been started at the east end of the building and are to be installed from east to west. Progress appears to be good on these floor slabs and, overall, the present intent is to complete building 2A-1 by mid July, 1987 for use by the owner. This date is in substantial agreement with desires of the owner and Sorensen Gross. It should be noted here that overall building progress has closely conformed at building 2A-1, 2A-2, and 2A-3, and the truck dock and office to early work plan diagrams. However, the project appears in good condition at those areas under construction at the present time. It is to again be stressed that the paint shop area must be put into work just as quickly as possible since it will be a critical and demanding portion of the project for the owner. It is also a very difficult part of the project since it requires a considerable amount of interfacing with other contractors by Sorensen Gross and the owner.

Again, accompanying this report is a full set of notes as revised from our meeting on March 31, 1987 (working day 318) along with the summary network models prepared during that meeting. Please note that the dates shown on this network model are now preliminary, and must be confirmed before using for any authenic set of data.

I shall be in touch with Mr. Avendt shortly to set the next planning and monitoring session.

Ralph J. Stephenson, P.E.

RJS:gmy
TO: Mr. Robert Avendt
Mr. Ghassan Saab

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

May 15, 1987

Subject: Monitoring Report #6

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorenseon Gross Construction Co. - contractor

Project: 86:55

Date of Monitoring: May 4, 1987 (working day 342)

Monitored from networks as indicated below.

Actions taken:

- Completed preparation of summary network model for paint systems installation
- Prepared updated network model for interior finishes at building 1A, issue #1, dated May 4, 1987 (working day 342)
- Inspected project
- Evaluate current job status

General Summary

The main effort at this meeting was to complete the summary network model for installation of paint systems at building 1A. This resulted in issue #3, dated May 4, 1987 (working day 342) of sheet SD1. Representatives of the owner, DEMI, and Sorensen Gross participated in the meeting and provided input.

The basis of the network model was the extensive laundry list prepared originally at our meeting on March 31, 1987 (working day 318), and updated on April 5, 1987 (working day 322). In this updated diagram the conditions needed to accomplish each of the major actions in the summary diagram were identified in detail on the diagram.

The summary networks prepared were for the following:

- waste water plant (WW)
- buffer system (BU)
- elpo oven (EO)
- pretreatment system (PT)
- elpo system (ES)
- overhead conveyor system (OC)

The network model sheet SD1, issue #3, dated May 4, 1987 (working day 342) shows the following completion dates for each element.

- waste water plant (WW) - bring waste water plant on line - phase WW-C1 - April 11, 1988 (working day 581)

- buffer system (BU) - complete and install DEMI buffer work - phase BU-B1 - March 7, 1988 (working day 556)

- elpo oven (EO) - install DEMI work at elpo oven - phase EO-C1 - August 4, 1988 (working day 662)

- pretreatment system (PT) and elpo system (ES) - complete and install DEMI pretreatment at DEMI work - phase PT-B1 - September 19, 1988 (working day 693)

- overhead conveyor system (OC) - complete and install DEMI work for overhead conveyor system - phase OC-A1 - September 19, 1988 (working day 693)

For each of these major elements, a considerable number of building conditions must be met. These were defined in detail by the group participating in the meeting and generally agreed to by all attending.

I strongly recommend that this network be given very careful study and that it be brought up to date at any point where the information appears to require revision or restudy.

After this summary model was prepared the Sorenson Gross team concentrated on preparing a network model for interior finish work at building 1A. This network was printed and reviewed by the Sorensen Gross project team and will be studied and revised as appropriate. Copies of the diagram were left with Mr. Avendt on his project disks.

We then traveled to the job site and inspected the project. Currently, all structural steel in areas 2A-1, 2A-2, 2A-3, and 2A-4 is substantially erected and trimmed out. Metal deck is about 80% complete and roofing about 75% complete. Slab on grade work at 2A-1 is moving well, and it is still expected that building 2A-1 will be turned over to the owner by July 15, 1987 (working day 392). This appears to be a feasible target date. Forming for the slab on grade in 2A-2 is due to begin on May 5, 1987 (working day 343).

Overall, work for the entire project, at present, seems to be moving well in line with the expectations of both the owner and the contractors.

I did not have available to me, a complete current updated network model for the work and thus, was not able to fully compare progress

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with what had been originally anticipated. However, a brief review of the early structural steel and metal deck erection program indicates that the project has moved well in line with most of the early network models prepared.

We did not make a detailed evaluation of the precast and metal siding erection at this session. That should be done at a near future monitoring evaluation.

At building 2A-4, the loading dock area underground utilities are in and work is proceeding at grade. Structural steel at the office is erected and interior and skin work will continue there on an aggressive basis.

At building 1A, the concrete apron has been removed and about 25% of the footings have been completed. The road loop is to be completed soon. Structural steel is expected to be delivered to the job site on June 1, 1987 (working day 361).

The network model for close in of the 1A building has been prepared by Mr. Avendt and Mr. Builte. They are presently evaluating this diagram, along with the network model sheet 1AF, issue #1, dated May 4, 1987 (working day 342), showing building 1A interior finish work.

We shall continue to evaluate this operation relative to the summary network models prepared at the session today in subsequent planning and monitoring meetings.

Overall, it presently appears that the project is moving well and that the first section of the project, building 2A-1, will be available on July 15, 1987 (working day 392). Parking lot A was turned over to the owner on May 1, 1987 (working day 341).

I shall be in touch with Mr. Avendt shortly to set the next planning and monitoring session.

Ralph J. Stephenson, P.E.

RJS:gmy

TO: Mr. Robert Avendt
Mr. Ghassan Saab

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

July 7, 1987

Subject: Monitoring Report #7

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - contractor

Project: 86:55

Date of Monitoring: June 22, 1987 (working day 376)

Monitored from networks indicated below

Actions taken:

- Inspected project
- Updated plant 2A-1 network model
- Updated office area model
- Reviewed current job status with Mr. Robert Avendt
- Evaluated current job status

General Summary

As of June 22, 1987 (working day 376) work is being focused on readying area 2A-1 for turnover to G.M. by the evening of July 15, 1987 (working day 393). This is not a contract date, but is one that has been committed to by the parties. Every effort is being made to maintain it as a turnover target. Presently, it appears that it is a feasible date to meet for the majority of the work needed for owner occupancy at that section of the building.

An item that will extend beyond the turnover date is setting motorized smoke vents. This work is due to be accomplished near the end of July, 1987.

At area 2A-1, all pending bulletins have been released, mechanical piping is substantially complete at the warehouse areas and toilet rooms, and fire protection is complete except at the battery charger area. It would be well to make a check on how testing and activation of the system is to be accomplished and particularly to check to see if the system can be operated in area 2A-1 somewhat independent of the other areas.

Lighting and power distribution is complete in area 2A-1; however, work is currently in progress on installation of the motor control center and the energy management system. Final painting and touch up will be initiated in the very near future.

The only major incomplete area at area 2A-1 is the battery charger area where there are yet two floor pours to be made. These were held by the owner for additional in-slab work. It is expected they will be poured out by the afternoon of June 26, 1987 (working day 381). Masonry at the washer room will be completed after the floor pours have been made.

At the rail siding, well walls are complete and track is presently being laid. No ballast has been installed as of June 22, 1987 (working day 376). Mr. Avendt said, however, they do have all the materials needed for completing the siding on the site or available. This includes rail signals, bumpers, and derails. The owner is to deliver the bumpers by July 13, 1987 (working day 390).

So far as the skin of the building, all is complete, including the roof, the metal siding, and the precast sill walls, except for final caulking. As noted above, smoke vents will be set on July 25, 1987 (working day 400).

To confirm that the July 15th date is reasonably valid, we prepared a network model updating sheet 2A-1 in update 2, dated June 22, 1987 (working day 376). The tight areas are completion of track 1A and abandonment of track 1, along with general interior finish work at the building. However, there has been considerable discussion about the acceptable scope of work for turnover and apparently the owner is fairly satisfied with the projected condition of the building on turnover.

Area 2A-2 has been divided into two sections for ease of reference. These areas are referred to as 2A2 west and 2A2 east. West is the portion of the building between column lines Y and R and east is the portion between column lines Y and Z4. Apparently pending bulletins at 2A-2 are not a serious problem currently. The biggest difficulty has been release of energy management system. There are several mechanical and electrical bulletins that still must be converted to change orders. Most or all have been quoted by Sorensen Gross and are in the owner's hands.

The slab on grade at area 2A-2 is poured out in the 2A-2 west section from column line 1 to 3. It is also poured out in the 2A-2 west section from column line 3 to 13 except for the intermediates. The slab is poured out in 2A-2 east from column line 1 to 3 complete. It is presently being placed at the dock from column line 3 to the office.

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Most mechanical work is complete including underground, as well as above floor plumbing, steam and condensate, and heaters. Fire protection mains are complete but branches still remain to be installed.

Area 2A-2 electrical work is moving reasonably well with about 30% of the permanent fixtures installed for temporary lighting. The remainder will be installed after painting is completed. Power distribution is just being put into work. Motor control centers at the toilet room roofs have not yet started; nor has the energy management system installation. No painting has been started as of June 22, 1987 (working day 376).

At the rail siding, the track will be completed along with area 2A-1. Track is being laid and it is anticipated that the siding will be completed out to the east parking lot connection in time for the turnover of area 2A-1.

The roof on area 2A-2 is complete. Metal siding is complete to column line Z4 and precast sill walls are complete for all of 2A-2.

The anticipated turnover date for 2A-2 is January 1, 1988 (working day 511), and presently it appears that this date can be met.

Area 2A-3 is also due to be turned over by January 1, 1988 (working day 511). This building has also been divided into two sections, west and east; the west section being between column lines Y and R; east being between column lines Y and Z4. Generally, comments for pending bulletins are the same for building 2A-2.

Slab on grade work has not started at 2A-3, however, all underground mechanical work is installed and filling and fine grading is in progress. Construction of floor slabs will begin when 2A-2 west has been poured out.

Mechanical work and fire protection work are basically at the same stage as in area 2A-2.

No 2A-3 lighting installation has begun as yet, power distribution has just started, and other electrical work is not yet in progress. No painting has started as of June 22, 1987 (working day 376).

The roof of 2A-3 is complete. Metal siding has yet not started. Precast sill walls are complete to column line Y-21.

At area 2A-4, the loading dock area, the anticipated turnover date is also January 1, 1988 (working day 511). In this area strip drains are being built at the dock floor. Slab on grade work has not yet started in the loading dock. All underground work is installed and overhead work is in progress with roof sumps complete. Steam and condensate and heaters have not yet been started.

2A-4 fire protection work has not yet been put into the field and electrical work is still to be done, both underground and overhead.

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No painting has been done as of June 22, 1987 (working day 376). The roof is complete. Overhead doors are available and will be installed after slab on grade is poured out. Interior metal siding at column line Z4 has not yet begun.

At the office, work is just beginning on interior rough trades. The slab on grade is expected to be poured out by June 26, 1987 (working day 380), the second floor slab has been completed and exterior masonry will probably begin in mid July, 1987. Overhead work at the first floor is expected to begin in late June, 1987. Present plans are to proceed on through with interior rough work and then moving directly into the interior finish work. To close in the office building, all that is required is erection of the exterior perimeter masonry and the exterior sash and glass.

At present, and with projections from the issue 2 network model, dated June 22, 1987 sheet OB1, the office building will be done by late October or early November, 1987. This is apparently a suitable date for this portion of the project.

At the paint shop, building 1A, underground utilities are complete. Column footings are substantially complete from the west to the paper dock and foundation walls are about 30% installed. Structural steel detailing has started as of June 22, 1987 (working day 376), nor has any roof metal deck been erected.

Track 2 rail well walls are poured and track 2 was reopened for rail traffic on June 14, 1987 (working day 371). The intent, presently, is to pour out the west bay slab on grade to give the owner a haul road. The owner will then abandoned the haul road on the east.

A major problem, at present, is getting structural steel and joist delivery problems resolved so a heavy production erection schedule can be maintained. The project team is focusing on this matter at present.

Demolition at the 1A existing building exterior wall is about 85% complete and the DEMI organization is moving on the job Tuesday, June 23, 1987 (working day 377) to start preliminary work on the actual paint areas.

Although the 1A project is currently moving slower than desired, it appears the lag can be recaptured. Time did not permit a full evaluation and updating network model for building 1A. Updating of this diagram should be given a high priority at subsequent planning and monitoring sessions.

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Overall, the total project appears to be in relatively good condition and work is proceeding extremely well in the initial phases of the work on projects 2A-1, 2A-2, 2A-3, 2A-4, and the office area.

Other areas will be further evaluated as the work moves into a full production cycle.

I shall be in touch with Mr. Avendt shortly to set the next planning and monitoring meeting on the project.

Ralph J. Stephenson, P.E.

RJS: gmy

To: Mr. Robert Avendt
Mr. Ghassan Saab

RALPH J. STEPHENSON, P.E., P.C.
CONSULTING ENGINEER

July 19, 1987

Subject: Monitoring Report #8

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - contractor

Project: 86:55

Date of Monitoring: July 15, 1987 (working day 392)

Monitored from networks indicated below.

Actions taken:

- Briefly inspected project
- Prepared full network for building 1A, paint shop
- Made detailed review of condtions required for start of work on various phases on paint system installation

General Summary

As of July 15, 1987 (working day 392) the plant 2A-1 area has been turned over to General Motors. They are now in the facility and installing warehousing equipment.

We made a brief inspection of the remainder of the project as time permitted. In general, areas 2A-2 and 2A-3 appear to be moving in such fashion as to be able to meet the current turnover target of January 1, 1988 (working day 511).

At the office area, work has moved somewhat more slowly than had been expected. The floor slab on grade is poured out, as is the second floor supported deck. Work is in progress on installation of rough overhead trades. The office area had a desired target completion date of October 21, 1987 (working day 447) as outlined in the network model on sheet OB1, issue 2, dated June 22, 1987 (working day 376). It is too early in the project to fully evaluate whether the present lag can be recaptured. However, I suggest a reasonably heavy concentration of effort be placed on the office area. It is liable to be a portion of the building that General Motors may desire to occupy at as early a date as they can.

Loading dock work is continuing and overhead doors are expected to arrive on the job and be installed in the very near future.

At building 1A, the new paint shop, work tempo has picked up considerably and erection of structural steel is continuing at a reasonably good pace. This area is a very critical area due to the extensive interfacing 1A will have with the paint systems contractor DEMI.

Interfacing of the various elements of the building with DEMI's work has been reviewed thoroughly in our meetings of March 31, 1987 (working day 318), in the updated notes of April 5, 1987 (working day 322) and in a subsequent meeting on May 4, 1987 (working day 342). Critical elements of this work are shown in the summary network model for interelations between base building work and DEMI paint systems installation, sheet SD1, issue 3, dated May 4, 1987 (working day 342).

In this diagram the conditions that must exist for start of work are identified by a three letter code. The first two letters of the code indicate the area at which the work is to be done. These two letter codes are as follows:

WW - wastewater plant

BU - buffer tank system

EO - E-coat oven

PT - pretreatment system

ES - E-coat system

OC - overhead conveyor system

Following the two letter code is a dash and a third letter. This third letter is the designation of a group of conditions which must be met to free up work by DEMI. For instance, WW-B is the condition of the Sorensen Gross work where process power distribution is complete. This then allows certain DEMI work at the wastewater plant to proceed.

The work item code is designated by an area code as noted above, a condition code as noted above, followed by a number. For instance, in the above example, DEMI work phase WW-B1 is the wastewater work that can be installed as a result of condition WW-B being met for base building work. DEMI's work phase WW-B1 includes turning on the system, testing and debugging, and transferring the flow from the existing plant to new plant. These conditions are all outlined in the note file updated April 5, 1987 (working day 322). Copies of this set of notes were provided at the current monitoring to Mr. Avendt and to Mr. Larry Builte.

The main work thrust today consisted of checking each of the condition points (those with a three letter code) against the network model for construction of area 1A. To do this we completed a network model for area 1A, as shown on sheet 1A, issue 3, dated July 15, 1987 (working day 392). This network was left with Mr. Avendt and Mr. Builte on their disk for future reference and use. If it is to be revised at all, I recommend that a new issue number be assigned to it and that the old file be saved as the new file, maintaining the issue 3 network in its printed form as it was made at this meeting.

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The main areas checked today dealt with the installation of the conditions necessary for the elpo oven (EO). The start of work on the oven is triggered by structural steel being erected at the oven area to the column splice above elevation 36' and having a concrete floor deck at elevation 36'. When this work is done the oven heaters can be set after which work on the structural steel structure at the oven area can continue on to completion. Once the area has been closed in and several other conditions are met relative to condition EO-B, the remaining oven work can be completed. Condition EO-B is expected to be arrived at by March 1, 1988 (working day 552) or earlier if possible. We were not able to establish a full set of conditions EO-B at this meeting and I suggest that Mr. Avendt and Mr. Builte do so with the current diagram available to them. Again, this working network model is sheet 1A-1, issue 3, dated July 15, 1987 (working day 392).

In subsequent meetings as required we should continue identifying the nature of the interfaces between the various elements of the project and DEMI. These basic conditions, as pointed out above, are defined on sheet SD1, issue 3, dated May 4, 1987 (working day 342). This has a file name of i3sgdemigmspopaint. In any event, the entire analysis for the interfacing of plant 1A and 2B, base building work, can now be projected in depth from the network models prepared at our session today.

The full job is running reasonably well and probably my future involvement will be on an as needed basis. I shall be in touch with Mr. Avendt to determine when and to what extent future planning and monitoring sessions should be scheduled.

I shall particularly like to offer my congratulations to Sorensen Gross, especially their project team and their subcontractors, along with the General Motors project team, for a noteworthy accomplishment in bringing plant area 2A-1 on line at the desired date.

Ralph J. Stephenson, P.E.

RJS:gmy
To: Mr. Robert Avendt
Mr. Ghassan Saab

• CRITICAL PATH PLANNING

• LAND PLANNING

• MANAGEMENT CONSULTING

• PLANT LOCATION

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July 22, 1988

Subject: Monitoring Report #9

General Motors Warehousing and Distribution Facility

Swartz Creek, Michigan

Sorensen Gross Construction Company - contractor

Project: 86:55

Date of Monitoring: July 14, 1988 (working day 647)

Monitored from: Sheet 2B s 1, Issue 1, dated July 14, 1988 (working day 647)

Actions taken:

- Inspected project with Mr. Jerry Allen and Mr. Larry Builte
- Reviewed current status of building 2B
- Prepared laundry list for 2B south work
- Prepared network model for 2B south work

General Summary

The main activities during this monitoring were to inspect the entire project, and to determine an approach and a plan for constructing the south portion of building section 2B. This is the area formerly occupied by the waste water treatment facilities and the causeway between existing plant #1 and plant #2.

Most of the total new facility is now in place and operative as of early July, 1988. The owner intends to turn over the physical site of 2B south on July 25, 1988 (working day 654) for active construction work to begin there.

Much 2B procurement work has been completed, and most materials and equipment are on the job for the project. However, there are some front end items that remain to be cleared for the project to begin in the field. These include the following:

1. Bulletin #54 covering soil removal at the old tank area, and

installation of the new lift door in the exterior precast wall panels must be priced, issued, reviewed and approved. It is expected this revision will issued as a formal contract change by July 25, 1988 (working day 654).

2. The cost of remobilization must be estimated, submitted to the owner, approved and released. This is to be accomplished by July 26, 1988 (working day 655).

3. On site anchor bolts, leveling plates, structural steel, steel joists and metal deck must be inventoried to insure that adequate supplies are on hand to complete the project. Inventory work is expected to be completed by late July, 1988.

4. The addition of a high lift door and frame must be covered in a change order. Processing of the change order is to be completed by July 25, 1988 (working day 654).

It is hoped to be able to begin removal of unsuitable soil at the old tank area by August 2, 1988 (working day 660). Concurrently, temporary protection will be erected at the building and the existing overhead lines will be shored and protected. Installation of foundation work is to start by August 24, 1988 (working day 676). Steel erection should be able to begin September 8, 1988 (working day 686), and the building closed in horizontally by October 26, 1988 (working day 720). Metal siding is to be complete about October 18, 1988.

If the above dates can be met, the 2B facility should be completed by late December, 1988 or early January, 1989, except for epoxy joint filler at the slab on grade. This material is not to be placed until three months curing time has elapsed. Thus, installation of epoxy will be in late February, 1989.

All other sectors of the project are substantially complete and the owner is occupying the entire project except for 2B south and a small section of building 1A. Also, the site area where the concrete batch plant was located is still to be paved. There have been some grade problems at this location, but these have now been resolved. Construction of paving at the unfinished site area is expected to begin in about 10 working days.

Our diagraming today encompassed preparation of a detailed laundry list and a network model, sheet 2Bx 1, issue 1, dated July 14, 1988 (working day 647). The network is to be reviewed, revised as needed, and then issued to guide field work over the next 5 to 6 months. The network and the notes for the day's work were copied to Sorensen Gross's data file for their further use.

It should be noted that the very early planned date by which 2B

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structural steel erection to have started was June 24, 1987 (working day 378), as shown on the network model for structural steel erection, sheet SSTL2, issue 3, dated September 3, 1986 (working day 172). I suggest the Sorensen Gross project team check to see how much delay to starting 2B south was expected in the early job planning, and how much was actually encountered. It appears there has been an excessively long period of time between construction and occupation of 2B north and the start of 2B south work.

I shall be in touch with Bob Avendt and Jerry Allen to determine future monitoring and planning requirements for the project. Meanwhile, copies of the network model for 2B, the laundry list, and this monitoring report have been left with Jerry Allen for his use and distribution.

Ralph J. Stephenson, P.E.

RJS:gmy
To: Robert Avendt
Additional distribution to be by Mr. Avendt