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

July 11, 1984

Subject: Monitoring Report #1

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account # 110-47-2699-001

Project: 84:29

Date of Monitoring: June 22, 1984 (working day 123)

Monitored from Issue #1, dated June 22, 1984 (working day 123)

Actions taken:

- Reviewed overall project and intended sequence of work.
- Prepared preliminary laundry list of early work in units 400, 700, and 500.
- Began preparation of network model for unit 400.

General Summary

The contract B prime contractors are:

- FGB - Structural and architectural contractor
- J. F. Cavanaugh Co. - Mechanical contractor
- Demers - Electrical contractor

Some of the more involved early subcontractors also attended the session, along with Mr. Mc Comb, representative of the State of Michigan Bureau of Facilities.

Contract B consists of 3 major units including:

- Building 400 - medium security
- Building 700 - medium security (similar to building 400)
- Building 500 - close custody

At each of the medium security facilities we had some preliminary discussions about breaking the project into cell units, service links, and connectors, as well as lower, upper, and roof levels.

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We will discuss this breakdown in more detail at our next session since a method of designating work areas will be important to establish at an early date.

Some of the early work that must be done as soon as possible on the project are to obtain early building permits, confirm base line locations and lay out the building; and also to provide a source of temporary power, along with internal area distribution of that power. It presently appears that mass excavation could start at the contract B area as early as July 25, 1984 (working day 145). However, as we began to prepare the network model for the units, leading up to the construction of the first supported deck, we found that additional study of the sequences, amount of form work available, and relation of slabs on grade to the supported decks was required. This will be evaluated in more detail by the prime contractors involved. They are planning to meet together to discuss the interrelationship of their work, particularly in the early stages of the project. These discussions will, in all likely hood, be held prior to the next planning and diagraming session so that additional information should be available then.

Copies of the network model Issue #1, dated 6/22/82 (working day 123), sheets R1, and 1 have been sent to Mr. Mc Comb at the Bureau of Facilities and he will distribute the rough network models for review. Copies of monitoring reports will be sent directly to the managers with the various prime contractors. Distribution of monitoring reports to subcontractors of the prime contractor will be by the prime contractor.

Planning and diagraming dates will be set by the Bureau of Facilities, State of Michigan probably through Mr. Mc Comb. Adequate lead time for preparing for the meeting will be given to each contractor so that they can come to the meetings prepared for the meeting will be given to each contractor so that they can come to the meetings prepared for the subject to be addressed.

I shall be in touch with Mr. Mc Comb shortly to set the next planning and diagraming session for contract B work.

RJS:gmy

Ralph J. Stephenson, P.E.

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

July 26, 1984

Subject: Monitoring Report #2
~~Contract B,~~ Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29

Date of Monitoring: July 9, 1984 (working day 133)

Monitored from Issue #1, dated June 22, 1984 (working day 123)

Actions taken:

- Discussed sequence of work with prime contractors
- Continued preparation of laundry list for early work
- Rediagrammed sequence of work in typical medium security unit

General Summary

As a result of our initial meeting on June 22, 1984 (working day 123) the prime contractors have restudied the close in sequence of work. Our discussions today revolved around the methods by which construction sequencing could best be done for units 400,700, and 500. It was decided to rediagram the close in of the units breaking them into sections within the 400, 700, and 500 buildings.

Unit 400 was broken into areas #4a and #4b; unit #700 into #7a and #7b and unit 500 will be a single unit. The sequence of foundation work will be to move from 4a, the southeast unit of 400, to 4b, the northwest unit, then to unit #5 and then back to unit #7a, the northwest unit of 700, and ending at 7b, the southeast unit of 700.

Within the units the various concrete decks are labeled 1 through 5. Number one is the second floor of the southerly 4a unit and #2 is the second floor of the northerly 4 unit. Deck #3 is the mechanical equipment room at the service module between the two main buildings. Deck #4 is the roof of the southerly #4a unit and deck #5 is the roof of the northerly 4 unit.

The sequence of floor pours is shown on sheet #2, Issue #2, dated July 9, 1984 (working day 133). The location of these various modules, units, and decks will be shown on a key plan to be drafted, and issued along with the final drafted network models.

In light of the redesignation of the units our work at this session concentrated on planning through the close in of unit #4a, the southeasterly section of building 400. Mass excavation is presently due to begin at an early start of July 25, 1984 (working day 145). The first supported deck #4a-1 of the southeast unit at the second floor will be started under the present plan at about October 17, 1984 (working day 204). It is hoped that it is able to be complete pouring out all concrete decks in the 400 unit, finishing out at pour #4a-#5, the northwesterly roof deck by early February, 1985. The intent is presently to use this sequence for the #4a section of the project as a standard from which the other units, #4b, #7a, #7b, and to some extent #5, can be projected. We will further evaluate the appropriateness of this at our next session.

Meanwhile, the contractors have moved on the site, and early building permits have been obtained. Work is being concentrated on releasing sub-contracts and obtaining, reviewing, and approving submittals. The network models, Issue #2 dated July 9, 1984 (working day 133) sheets #1 and #2 have been distribu ted to the contractors. In addition, sheet R-1, the laundry list for contract B, has also been printed and distributed.

I have been in touch with Mr. Robert McComb of the State Bureau of Facilities, and he will set the next planning and review session for the project. We shall monitor current work and work progress from the Issue #2 network dated July 9, 1984 (working day 13), sheets #1 and #2. Monitoring reports are currently being sent to Mr. McComb for distribution. However, in the near future they will be distribu ted directly to the prime cont racto rs for dissemination throughout their project organizations.

Ralph J. Stephenson,P.E.

RJS:sps

TO: Mr. Robert McComb
(for further distribution)

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

August 13, 1984

Subject: Monitoring Report #3

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29

Date of Monitoring: August 6, 1984 (working day 153)

Monitored from Issue #2 dated July 9, 1984 (working day 133)

Actions taken:

- Set sequence of work movement in units
- Prepared calculated network model for plan of close in at unit 4A, 4B, and 5
- Discussed masonry sequencing
- Reviewed security system interrelationships with frames and other architectural elements
- Prepared laundry list for interior finish work at 400 unit

General Summary

Mass excavation has been substantially completed in the field for building 400 and footings are now under way. Presently job progress appears to be in line with target early starts and early finishes.

Our major activities at this session consisted of first, reviewing the sequence of close in for the 400 unit shown on sheets #1 and #2. This network model was generally confirmed with a few minor revisions. It was then decided that the sequence of field movement would be from 4A (unit 400 southeast unit) to 4B (unit 400 northwest unit) to 5 (unit 500) and from unit 5 to 7A (northwest unit of 700) finishing at 7B (southeast unit of 700). The movement will be sequenced in mass excavation and footings. However, mechanical underground work which is a very important and critical early trade will be able to work in the 4 and 5 areas as they become available. Some minor sequencing of bearing masonry is also introduced into the network. But generally 4A, 4B, and 5 will be put into work as quickly as possible without interconnecting restraints.

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

Floor form work will have to be sequenced carefully, and present planning is to use second floor forms in 4A for the roof forming in 4A and then to move them from the 4A roof to unit 5 second floor. Meanwhile, forming of unit 4B will be independent of 4A. The floor pours at each of the five units, 4A, 4B, 5, 7A, and 7B, have been designated 1 through 5. These are located as follows:

- Pour #1 - First pour at second floor
- Pour #2 - Second pour at second floor
- Pour #3 - Mechanical room floor at service connection
- Pour #4 - First roof pour
- Pour #5 - Second roof pour

In units #4 and #5 it is assumed that the first floor and roof pour will be at the southeastern ends. However, in unit #7 it might be that the first pour will be shifted to the northwest ends because of the clockwise movement of trades. This shall be decided at a subsequent diagramming session.

We also discussed at our session the interrelationship of security systems relative to door frames to be built into masonry walls. Every effort is presently being made to provide submittals and get approvals of shop drawings for this work since early delivery of door frames is critical to erection of walls. This matter is being followed closely by all concerned.

At our afternoon session we prepared a laundry list for interior finish work in the 400 unit. It was expected that this laundry list can be used for all five of the areas with some minor modifications in the 500 unit. As we continue our planning work we will add the durations to the laundry list. Copies of this laundry list are attached to this report for the prime contractors' review and use.

I shall be in touch with Mr. McComb shortly to set the next planning session date.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb

cc: Mr. John Hogle
Mr. Mike Gehart
Mr. Chris Drake

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

September 17, 1984

Subject: Monitoring Report #4

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29

Date of Monitoring: September 5, 1984 (working day 174)

Monitored from Issue #3 dated August 6, 1984 (working day 153)

Actions taken:

- Reviewed sequence of work with architectural, electrical, and security prime contractors
- Prepared preliminary calculated network for units 400, 500, and 700

General Summary

Our main work at this session was to revise and calculate as accurately as possible the close in networks for each of the three major buildings composing contract B. These calculated networks have been sent to each of the prime contractors along with a site plan, S-1. At our next session it is expected to complete the close in diagrams and to incorporate comments and revisions as required by the prime contractors into the model so it can be completed and issued.

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

Unit 400 (sheets 400-1, 400-2, 400-3, 400-4, Issue #4, dated September 5, 1984 (working day 174)

At unit 4 (abbreviated from 400) underground utilities are well along at 4A (south half) and are also being installed at 4B (north half). Footings are substantially complete in 4A and in work at 4B. Columns in 4A are completed to the upper level.

A major discussion was held on the sequence for erection of grouted interior walls to the upper level. It is desired by the architect/engineer that these walls do not make contact

with the upper level slab so that deck loads are not transmitted into the grouted walls. Thus, at unit 4 we have assumed that the deck is to be poured out, stripped, and then the masonry walls at unit 4 are to be erected. This sequence has not yet been finally decided upon. It is presently being further studied at 4 as well as the other units by the general and masonry contractors.

In addition, there is some delay in getting hollow metal frames, and therefore it was decided that the supported deck at unit 400A will proceed without having the lower level interior walls erected. It may be that the following units including 4B will be constructed with the interior walls at the lower level erected ahead of the supported slab but not in contact with it. Methods by which this is to be done are presently being worked out by the architect, the general contractor and the masonry sub-contractor.

Unit 500 (sheets 500-1,500-2, Issue #4 dated September 5, 1984 (working day 174)

Mass excavation is complete at unit 5 and footings are expected to begin by September 17, 1984 (working day 182).

Unit 700 (sheets 700-1, 700-2, 700-3, 700-4 Issue #4 dated September 5, 1984 (working day 174)

Mass excavation at building 7 is due to begin immediately at the northernmost area 7A and then will proceed on through to 7B to the south.

General

Close in points have been generally established for each unit, subject to final check of the calculations and a review of the logic. The close in point is generally designated by completion of insulation and roofing at both the concrete decks and at the metal roof deck over the equipment rooms. These dates tentatively are as follows. The later date of the two is given:

Unit 4A - April 22, 1985 (working day 334)

Unit 4B - May 6, 1985 (working day 344)

Unit 5 - June 18, 1985 (working day 374)

Unit 7A - July 1, 1985 (working day 383)

Unit 7B - Not calculated as yet. This netowrk will be completed at our next planning session.

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

Overall, work at units 4, 5, and 7 appears to be moving relatively well at present, with the exception of the problems caused by the masonry sequencing and with early delivery difficulties with hollow metal frames. These matters are being worked out and in the near future definitive sequencing should be possible on an ongoing basis.

Our next planning session is set for Monday, September 17, 1984 at which time we shall plan to complete the close in diagrams and begin preparing network models for the interior rough and finish work on a typical unit. Attached to this monitoring report is an updated copy of the responsibility codes, abbreviations, and names of those involved to date in the contract B discussions.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb

cc: Mr. John Hogle
M.P. Kamath
Mr. Chris Drake
Mr. Rupert Davey

Attachments

SCOTT REGIONAL FACILITY CONTRACT B RESPONSIBILITY CODES PAGE 1
LISTED BY CODE DATE PRINTED: SEP 16 1984
RALPH J. STEPHENSON PE PC D145

NUM	REFERENCE	REC#
001	DEPARTMENT OF CORRECTIONS - DOC	1
002	DEPARTMENT OF MANAGEMENT & BUDGET - DMB	2
003	TMP & ASSOCIATES	3
004	FERGUSON, HOGLE, BRASSELL CONSTRUCTION CO	4
005	DEMERS ELECTRIC CO	5
006	J.F. CAVANAUGH CO - MECHANICAL CONTRACTOR	6
007	MICHAEL WILSON ENTERPRISES - EARTHWORK CONTRACTOR	7
008	NAVETTA CO - MASONRY CONTRACTOR	8
009	WILLIAM H. KELLY CO - WATERPROOFING	9
010	HONEYWELL INC, COMMERCIAL DIVISION	10
011	AMERICAN GLASS & METALS CORP - SASH & GLASS	11
012	CARRIER CONST - ROUGH CARPENTRY	12
013	VIRAN - HVAC CONTRACTOR	13
014	OLYMPIAN - SPRINKLER CONTRACTOR	14
015	J & W DRYWALL CONSTRUCTION - ACOUSTICAL CONTRACTOR	15
016	LOUVER CONTRACTOR	16
017	MOBLEY FABRICATORS - STRUCTURAL STEEL	17
018	Z PAINTING CO - PAINTING	18
019	TRIDENT NATIONAL - PIPE PAINTING	19
020	QUALITY FLOOR - RESIL & CARPET	20
021	PALOMBIT - CERAMIC & QUARRY TILE	21
022	CHALKBOARD & TACKBOARD - GREENSTEEL INC	22
023	ELEVATORS - GENERAL ELEVATOR	23
024	CUSTOM SIGN - SIGNING & IDENTIFYING DEVICES	24
025	JOHN GRECO - SITE UTILITIES	25
026	JOHNS MANVILLE -	26
027	JOHNSON CONTROLS	27
029	AIR & WATER BALANCING CONTRACTOR	28
029	WIRE & IRON PRODUCTS - WIRE MESH PARTITIONS	29
030	R.E LEGGETTE CO - TOILET PARTITIONS	30
031	C. JORDAN & SONS - ROOFING	31
032	CECO	32
033	HOGEWARREN & ZIMMERMAN	33

SCOTT REGIONAL FACILITY PROJECT NAME ABBREVIATIONS
LISTED BY NAME DATE PRINTED: SEP 16 1984
RALPH J. STEPHENSON PE PC D145

(B)

ABB	NAME & TITLE	ORG	CONTR	REC#
AGM	AMERICAN GLASS & METALS	AGM	B	45
AB	BORTOLON, AL - SUPT	FHB	B	35
CB	BRASSEL, CHARLES	FHB	B	34
TB	BUECHLE, TIM	AGM	B	48
CEC	CECO	CEC	A/B	56
DEE	DEMERS ELECTRIC CO	DEE	B	31
AD	DEMERS, AL	DEC	B	30
DD	DROZD, DONALD	CEC	A/B	49
FHG	FERGUSON, HOGLE & BRASSEL CONSTRUCTION CO	FHG	B	13
MG	GEHART, MICHAEL - PROJECT MANAGER	JFC	B	28
HAZ	HOGEWARREN & ZIMMERMAN	HAZ	B	51
JMH	HOGLE, JOHN M VP	FHB	B	12
JWD	J & W DRYWALL CONSTRUCTION INC	JWD	B	47
JFC	J.F. CAVANAUGH CO INC	JFC	B	29
JL	LANE, JACK	OHI	B	42
MM	MARTINDILL, MARTIN	CEC	A/B	32
RJM	MCLAREN, RICH J. - PROJECT MANAGER	MFA	A/B	23
MWE	MICHAEL WILSON ENTRERPRISES INC	MWE	B	37
MFA	MOBLEY FABRICATORS	MFA	A/B	22
MLM	MOBLEY, MAX L. - PRESIDENT	MFA	A/B	21
NMA	NAVETTA MASONRY INC	NMA	B	39
MN	NAVETTA, MIKE	NMA	B	38
OCC	O'REILLY CONSTRUCTION CO	OCC	B	41
JO	O'REILLY, JIM	OCC	B	40
OHI	OSHTEMO HILL	OHI	B	43
ETE	TENCER, ELLEN - PROJECT MANAGER	FHG	B	55
CEC	THE CECO COMPANY	CEC	A/B	33
JV	VOGELSBERG, JAMES	AGM	B	44
WW	WILLIAMS, WILLIE	JWD	B	46
MCW	WILSON, MICHAEL C	MWE	B	36

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

September 22, 1984

Subject: Monitoring Report #5

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29

Date of Monitoring: September 17, 1984 (working day 182)

Monitored from Issue #4 dated September 5, 1984 (working day 174)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Completed detailed review of network models for close in of units 400,500, and 700
- Established agreed upon area designations for units 4, 5, and 7
- Inspected project
- Evaluated current job status

General Summary

As of September 17, 1984 (working day 182) footings and utilities are substantially complete in 4A, and in about half of 4B. Masonry stub walls are in work at 4A and moving well. Some water has been encountered at unit 4B, and this matter is being reviewed presently, with pumping to start soon. Mass excavation is complete at unit 5 and well along at unit 7.

Overall, work is currently meeting targets between early and late starts and finishes, with the exception of exterior masonry to bearing at 4A. This work has not yet begun, although there is some float time available to the task. It is the intent to start supported deck work at 4A by September 28, 1984 (working da 191). Exterior bearing masonry will have to be completed by that point in order to start deck work. It also is desired to have slab on grade work complete to form from although no major work has yet begun on filling and fine grading for this slab area.

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CONSULTING ENGINEER

We completed our designations of the units at this session and all prime contractors agreed that the numbering system would be as follows:

- 4A - southeast half of 400
- 4B - northwest half of 400
- 401 - south unit of 4A
- 402 - north unit of 4A
- 403 - south unit of 4B
- 404 - north unit of 4B
- 405 - service area and mechanical room at 4A
- 406 - service area and mechanical room at 4B
- 407 - link between 4A and 4B
- 501 - southeast half of 500
- 502 - northwest half of 500
- 503 - service area and mechanical equipment room at 500
  (Note: Mr. Al Bortolon, superintendent for Ferguson, Hogle, and Brassel requested that we consider making the northwest half of 500,501; and the southeast half of 500,502)
- 7A - northwest half of 700
- 7B - southeast half of 700
- 701 - north unit of 7A
- 702 - south unit of 7A
- 703 - north unit of 7B
- 704 - south unit of 7B
- 705 - service area and mechanical equipment room at 7A
- 706 - service area and mechanical equipment room at 7B
- 707 - link between 7A and 7B

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

It would be appreciated if the prime contractors could set the 500 unit building designations and identify which of the two systems noted above is to be used.

Our major diagramming work today consisted of completing the close in network for all three major buildings. We now have the basics of the close in diagrams, and these will be drafted into final form, dated, and issued. The interior masonry sequencing has also been decided upon. At building 4A and 4B (401 through 407) interior non-bearing masonry will be erected after the decks above such non-bearing masonry have been poured and stripped. At units 5, 7A, and 7B interior non-bearing masonry will be erected off the slab below prior to forming and pouring the deck above. This sequencing should help materially in allowing hollow metal frames to be provided to the job, and being able to get these in place without excessive toothing. The sequence is being further studied at present by the project staff at FHB, but we shall prepare the final network models using this masonry plan.

There are several pending matters that must be cleared quickly. One of these is to review the hollow metal frame mock-up for arrangement of conduit and hardware. Present plans are to view the mock-up at the Jackson infirmary since it is in place and similar. Arrangements are being made for this inspection by the owner and his representatives. Another item deals with the mounting of plumbing fixtures and arrangement of outlets from these fixtures in the pipe space. This matter is presently under consideration by the architect/engineer.

Apparently the problem with brick color has been resolved and masonry is expected on the job in the near future.

During our session we identified the major points at which the roof is complete at each unit, both the roof on concrete and the roof on metal deck. These tentative dates are as follows subject to review and final check of calculations.

- Unit 4A - Roof substantially complete April 22, 1985 (working day 334)
- Unit 4B - Roof substantially complete May 6, 1985 (working day 344)
- Unit 5 - Roof substantially complete June 10, 1985 (working day 368)
- Unit 7A - Roof substantially complete June 13, 1985 (working day 371)

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

- Unit 7B - Roof substantially complete July 2, 1985 (working day 384)

With these tentative close in dates, it appears that the current contract completion dates can be achieved. We will begin our detailed interior planning for each of the units at subsequent sessions in the near future. I shall be in touch with Mr. McComb to set our next meeting for initiating this work.

Meanwhile, I shall print the network model prepared at this session and send copies to each of the prime contractors and the owner. I shall also initiate final drafting on the close in networks and these will be issued along with an updated site plan in the near future.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb

cc: Mr. John Hogle
Mr. Chris Drake
M.P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

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

October 23, 1984

Subject: Monitoring Report #6

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29

Date of Monitoring: October 11, 1984 (working day 200)

Monitored from Issue #5 dated September 17, 1984 (working day 182)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Spoke briefly to Mr. Al Bortolon, superintendent for Ferguson
- Briefly discussed current mechanical status with Mr. M.P. Kamath of J.F. Cavanaugh
- Reviewed project status with Mr. Robert Adams, Department of Management and Budget
- Evaluated current job status

General Summary

As of October 11, 1984 (working day 200) mass excavation for most of buildings 4, 5, and 7 is complete. Footings are complete in 4 and 5 and just starting in 7. Exterior and interior masonry is in progress at units 4A and 4B and columns are up to the 2nd floor in units 4A and part of 4B. The major effort in the 4A unit is presently to complete the floor slab on grade so forming for the 2nd floor deck, pour #1, can begin.

At unit 4A, exterior bearing masonry still remains to be erected before full construction of the 2nd floor deck can be completed. At present, there is no accurate information on when the floor slab on grade at 4A might be completed; an estimate, however, indicates that there remains about another

five to ten working days for this work to be done. The start of pouring on the floor slabs was due at an early start of September 21, 1984 (working day 186). If we assume that the contractor might begin this pour on October 18, 1984 (working day 205) the projected lag is 19 working days in the floor slab on grade. If this carries on through into the start of forming for the supported deck above, we can presume that that lag there is also about 19 working days which would bring its start to October 25, 1984 (working day 210).

Again, it is very important to bring exterior bearing masonry up with the construction of the slab on grade since it is a bearing wall for the supported deck. The current lag on exterior masonry appears also to be about 19 working days so careful attention must be given this trade so it meshes with installation of the floor slab on grade.

At unit 4B underground utilities are not quite complete since there were some problems with water at the sub-grade that have now been resolved. Exterior masonry to bearing is being worked on there presently to maintain masonry continuity. However, as soon as appropriate these crews will move back to the 4A unit. Some masonry stud walls have been erected at 4B. Filling, fine grading, and in floor work for slab on grade installation was due to begin at 4B at an early start of October 19, 1984 (working day 206). Presently it is doubtful that this date will be met and the lag can be projected from that point since construction of the supported deck at the 2nd floor is dependent upon the floor slab on grade and bearing masonry. The current intent is to have a full set of deck forms for one unit which means that two of the units can be built concurrently.

At unit 5, foundations are in and utility work is in progress. Unit #5 is presently meeting early start/early finish targets. However, there is some crew movement anticipated in working from unit to unit and if there is any slowdown in this movement, unit 5 could well drop behind in the future.

Footings at unit 7A are in work and the entire 700 unit is substantially excavated. It should be noted that this substructure work is weather sensitive work and careful attention will have to be paid soon to protecting installed foundations and finish sub-grades.

At present, the network model Issue #5 dated September 17, 1984 (working day 182) is calculated in working days and has been distributed to the prime contractors. The final draft is in work and will contain the calendar dates for the activities

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

in both early and late starts and finishes. Once completed, it will be distributed to the owner, the architect/engineer, and the prime contractors for their use.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb

cc: Mr. John Hogle
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

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

November 19, 1984

Subject: Monitoring Report #7

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29

Date of Monitoring: November 16, 1984 (working day 226)

Monitored from Issue #5, dated September 17, 1984 (working day 182)

Contract completion date: July 2, 1986 p.m. (working day 440)

Actions taken:

- Reviewed current status of project with owner and prime contractors
- Discussed sequencing of close in work
- Updated network models for close in of units 4A and 4B, sheets 400-1, 400-2,400-3, and 400-4

General Summary

As of November 16, 1984 (working day 226),it was felt that the current status of the project warranted a re-evaluation of the sequencing of close in work. At present, the three units - 401, 402, and 403 - have progressed to a point where the second level supported decks are in varying stages of form work and installation, and thus, the sequencing from unit to unit has been slightly disrupted. This sequencing was the subject of our discussion and unit 400 was replanned in accordance with the present desired sequence.

Our basic concern today was to replan the work so that all prime contractors would be able to proceed with more certainty as to the work pattern for the next few months.

At unit 400, foundation work is complete, most of the bearing walls are up to supported deck level, and the intent now is to proceed with supported decks in 400 at the second level without the slabs on grade being constructed. This plan of work is reflected in the updated network model,Issue #6, dated

November 16, 1984 (working day 226). It was also decided at this session to revise the deck pour numbers in unit 4A and thus, a review of the current deck numbers for 4B and 4A are given below:

- 4A-1 - second floor supported deck in 402
- 4A-2 - second floor supported deck in 401
- 4A-3 - mechanical room deck in 4A(unit 405)
- 4A-4 - roof deck in 402
- 4A-5 - roof deck in 401
- 4B-1 - second level deck in 403
- 4B-2 - second floor deck in 404
- 4B-3 - mechanical room deck in 4B (unit 406)
- 4B-4 - roof deck in 403
- 4B-5 - roof deck in 404

It is expected to pour out 4B-1 Monday, November 19, 1984 (working day 227) while continuing to form decks at 4A-1 and 4A-2. The 4A-1 deck is due to be poured out with the new plan on November 27, 1984 (working day 232); deck 4A-2 will be poured out on December 6, 1984 (working day 239).

Meanwhile, work on bearing walls to the mechanical floor at both 4A and 4B will proceed since this mechanical room deck is a pivotal area to continuing to pour out roof supported decks. Once supported decks at the second level and at the mechanical room floors are poured out and total stripped, the intent is to install the lower level cell area slabs on grade and the mechanical area slabs on grade (405 and 406) in units 4A and 4B. Slabs on grade at the house activities area in 4A and 4B will be poured out after the roof decks have been poured , cured, and total stripped. Thus, all supported decks in the 4A units over slabs on grade will be constructed off from mud sills with grade slabs to be constructed later.

During our session, some of the prime contractors took notes on early start and finish dates. A further check of these dates has been made and there are some revisions to those discussed. They show in the network models that were printed and I suggest that they be reviewed in final form particularly by the general contractor and his mason contractor. Two copies

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of the network model sheets #401 through #404 have been forwarded to Ferguson, Hogle, and Brassel for use and evaluation.

At the mechanical room there was interest by the mechanical contractor in when the concrete decks would be available, when structural steel and metal deck would be erected, and when the roof would be on. Since there were some changes to this once calculations were checked, the present dates shown on the Issue #6 network model dated November 16, 1984 (working day 226) are given below:

Activity	Unit 405	Unit 406
Mechanical room deck poured out	Dec. 24, 1984 (working day 257)	January 7, 1985 (working day 259)
Start erect structural steel and deck	March 7, 1985 (302) (working day 302)	March 13, 1985 (working day 306)
Start insulation and roofing at metal deck	March 14, 1985 (working day 307)	March 20, 1985 (working day 311)
Roof on at equipment rooms	March 27, 1985 p.m. (working day 317)	April 2,1985 p.m (working day 321)
Slab on grade poured out under equipment room	Feb. 5, 1985 p.m. (working day 281)	Feb. 15,1985 p.m (working day 289)

These dates are subject to further check and confirmation since they were taken from the rough network models and must be again reviewed before final issue.

The updated plan appears to be a valid plan of work but it should be cautioned that the buildup of trades, particularly masonry, appears to be quite heavy in the early part of 1985. Masonry may be in progress at several different areas of the project concurrently. This matter will be addressed by the architectural and structural trades contractor in conjunction with his masonry sub-contractor to insure that the work will be able to proceed properly.

I shall have these network models for unit 400 drafted into final form and distributed in the near future. If anyone wishes copies of the rough diagram, please call me and I shall forward such rough copies as are needed. Meanwhile, the tracings for the rough copies have been sent to Mr. McComb for further printing and distribution from his office.

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At this session we did not monitor the current status of work at unit 500 and 700 due to the focus on work at the 400 unit which currently is very critical. Foundation work at 500 is substantially complete, and foundation work at 701 and 702 is in progress with some slowdown due to the difficult November, 1984 weather.

The prime contractors are planning to meet with each other shortly to discuss in detail how foundation work is to proceed during the remaining winter months. This is important to decide early due to the interrelationship between the various prime contractor operations.

It should be noted that the designations for each sub-section of the 400, 500 , and 700 units is substantially as described on page #2 of Monitoring Report #5, dated September 22, 1984.It has been decided that unit 500 will be numbered as called out on page #2 of Monitoring Report #5 with 501 being the southeast half of 500; 502 being the northwest half of 500; and 503 being the service area and mechanical equipment room at 500.

In Monitoring Report #5 on page #3 the roof completion dates were noted as major milestone points. Since roofing was to be deferred until next spring,these target dates for completion of roofing remain the same.

General

I shall be in touch with Mr. McComb shortly to set the next monitoring and evaluation session as well as the next planning session. At this meeting, we should complete a review of the close in networks for units 500 and 700. After this work we shall start planning the interior rough and finish work for each of the units. Since there is some similarity in each of the component areas of contract C buildings, it is felt that the laundry list we prepared earlier can be used for planning at most of the areas.

Ralph J.Stephenson,P.E.

RJS:sps

To: Mr. Robert McComb
cc: Mr. John Hogle
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

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

January 3, 1985

Subject: Monitoring Report #8

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: December 18, 1984 (working day 247)

Monitored from issues as noted below

Date of notice to proceed: June 5, 1984 (working day 110) (to be confirmed)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Conferred briefly with Mr. Al Bortolon, superintendent for architectural/structural prime contractor
- Evaluated project status

General Summary

The heavy thrust at B contract areas has been construction of second floor decks at units 4A, 4B, and 501. Mass excavation is substantially complete for unit 7A and 7B with footings installed at unit 701. It is apparently the intent to concentrate major work for the remainder of the winter on units 400 and 501. This plan does not seem to be fully decided upon as yet, but indications are that the heavy focus of all winter work will be on these areas.

A brief review of current status of work at each major area is given below. See page #2 of Monitoring Report #7 dated November 19, 1984 for location codes.

Unit 4A (southeast area of 400 complex) Monitored from Issue #6 dated November 16, 1984 (working day 226)

At units 401 and 402, upper level supported decks have been poured out and main forming stripped. Columns have been erected to the roof in 402. At 401, exterior bearing masonry

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at the upper level is being erected to the roof. Work currently is meeting targets between early and late starts and finishes as defined in the Issue #6 network model dated November 16, 1984 (working day 226), sheets #400-1 and #400-2. There is a slight lag in forming mechanical decks at 405, but this lag should not be difficult to pick up. It should be noted that some roof construction depends upon this slab being constructed and bearing masonry being erected from it. It is an important link and should be given careful attention.

At units 403 and 404 (4B), the northwest area of complex 400, upper level decks have been poured and generally met early start/early finish targets. Work is now under way at the slab on grade in 403,and columns to the roof are erected in 403.

Overall, work at the 400 complex is currently meeting most targets between early and late starts and finishes. Again, it should be cautioned that the mechanical equipment room supported deck is an important link at each of the areas and should be given early attention to optimize potential for close in of the facilities as early as possible.

Unit 500 - Monitored from Issue #5 dated September 17, 1984 (working day 182). (This is a rough draft issue that was manually computed for early starts and early finishes only). The rough network has been provided to the prime contractors.

As of December 18, 1984 (working day 247) forming of upper level decks at 500 is in work. Presently it is the intent to bring this supported deck as far along as possible before cold weather makes working conditions excessively difficult. According to the network model sheet #500-2, Issue #5 dated September 17, 1984 (working day 182) it is hoped to be able to pour out the initial upper level deck in unit #5 by January 16, 1985 (working day 266) and to complete all upper level pours by February 11, 1985 (working day 284). It is presently not possible to determine whether this sequence will be met although present progress indicates that if the weather holds these dates may be bettered. We shall plan to complete close in planning for unit 500 at our next planning session.

Unit 700 - Monitored from Issue #5 dated September 17, 1984 (working day 182).

As of December 18, 1984 (working day 247) work at the 700 unit has stopped with the major effort now focused on units 400 and 500. Mass excavation is complete at unit 700, and most footings are installed in unit 701 (northwest corner of the total area). There is no current decision on whether or not work will

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continue at the 700 unit over the winter. However, there are strong indications that additional work at the 700 area will be deferred until next spring. Steps have been taken to protect the 701 footings from damage by cold weather, and they are presently strawed in. We will complete the close in planning for unit 700 at our next planning session.

General

Overall, the project is moving slightly better than previously in accordance with the desired plan of work and progress has been fairly good on pouring out supported decks particularly at the 400 unit where all four upper level decks have been completed. Units 500 and 700 progress,to a large extent, will depend upon weather, and the progress made in getting ready for roof pours at the 400 unit.

We shall continue close in and interior rough and finish work planning at our next few planning sessions. I shall be in touch with Mr. Robert McComb shortly to set the dates for these sessions.

Ralph J. Stephenson, P.E.

RJS: sps

To: Mr. Robert McComb

cc: Mr. John Hogle
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

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

January 25, 1985

Subject: Monitoring Report #9

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: January 17, 1985 (working day 267)

Monitored from issues as noted below

Date of notice to proceed: June 5, 1984 (working day 110) (to be confirmed)

Contract completion date: July 2, 1986 p.m. (working day 640) (to be confirmed)

Actions taken:

- Inspected project
- Conferred briefly with Mr. Al Bortolon, superintendent for architectural/structural prime contractor
- Reviewed current status with Mr. Robert Adams and Mr. Dan Hoey

General Summary

The major concentration of work in contract B remains focused on unit 400. Strong efforts are being made to close in the lower level areas covered by second floor decks. Once the roofs are poured, it might be possible to temporarily protect the raised roof area and to concentrate on upper slab on grade areas.

A brief review of each major area is given below. See page #2 of Monitoring Report #174 dated November 19, 1984 for location codes.

Unit 4A (southeast area of 400 complex) - Monitored from Issue #6 dated November 16, 1984 (working day 226)

Exterior masonry is erected to roof level at unit 402, columns are poured to the roof level, and the intent is to pour out

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the 402 roof deck sometime within the next two weeks. It should be cautioned that in our planning there was some concern that bearing masonry at the mechanical supported deck might be required for support at the roof level in all units. This matter should be checked carefully to insure that whatever is needed to complete the roof pours can be in place so as not to delay work.

Lower level slab on grade areas are being heated at units 401 and 402, and it is the intent to pour out lower level slabs on grade within the next one to two weeks.

Work at the 4A area is beginning to drop behind target late start/late finish dates established in Issue #6 dated November 16, 1984 (working day 226). The lag is primarily in exterior masonry and columns to the roof level in unit 401 and in construction of the mechanical floor supported deck. Construction of all roof decks at unit 4A was due to be complete by no later than the evening of February 19, 1985 (working day 291). It is still possible to meet this target, but work will have to be considerably expedited to accomplish this.

It is the present intent to meet on Friday, February 1, 1985 (working day 278) to update the current network model. A part of this meeting will, of course, concentrate on the desired sequences at unit 4A and 4B (the southeast and northwest areas of unit 400).

Unit 4B (northwest area of 400 complex) - Monitored from Issue #6 dated November 16, 1984 (working day 226)

At units 403 and 404, upper level supported decks are poured out and generally stripped. It is anticipated that the lower level slabs on grade for 403 will be poured out after the 401 slab on grade. In all likelihood, construction of the slab on grade in 404 will follow 403. At unit 403, columns are poured out to the roof; however, no roof deck forming has yet started. Unit 404 is generally not being worked on as intensively as are 401 through 403, although the focus of attention will shift there as soon as more close in work is complete and interior areas can be released for interior work.

Work at 4B has begun to drop behind the late start/late finish targets outlined in the Issue #6 network model dated November 16, 1984 (working day 226). This network will also be re-evaluated at our planning session on February 1, 1985. The lag is beginning to appear in erection of masonry to the roof level and construction of the roof levels slabs. All roof level decks in unit 4B were due to be poured out no later than

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February 26, 1985 (working day 296) p.m. It is doubtful that this date can be met; however, we shall evaluate progress on an ongoing basis.

Unit 500 - Monitored from Issue #5 dated September 17, 1984 (working day 182). (Issue #5 is in a dough draft diagram that is considered preliminary. Therefore, an evaluation of it will not be made as of this monitoring).

At unit 500, upper level supported deck construction is in progress along with backfilling for lower level slabs on grade. The weather has prevented substantial progress on this portion of the project over the last few days and the work there has slowed considerably.

Unit 700 - Monitored from Issue #5 dated September 17, 1984 (working day 182). (Issue #5 is a rough preliminary network model and will be updated when work on 700 resumes).

At unit 700, there has been little, if any, progress since the previous monitoring. It appears that work there will not be resumed until later this year.

General

The project is beginning to slow and it is currently experiencing difficulty in meeting target late start/late finish dates. However, the shift in emphasis has been to focus on closing in as much of the 400 unit as possible, and this may make it easier to recapture some of the current and projected lags once interior areas become available for work. However, considerable attention must be paid to establishing and maintaining a desirable sequence of work that will allow opening up as many interior areas to rough and finish work as possible. Again, we shall review these needs at our planning session on February 1, 1985 (working day 278).

Mr. McComb of the Department of Management and budget will send a notice of this meeting to those involved, and will establish the place and time of the session.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb

cc: Mr. John Hogle
Mr. Chris Drake
Mr. M. P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

February 11, 1985

Subject: Monitoring Report #10

Contract B, Northville,Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29 B

Date of Monitoring: February 1, 1985 (working day 278)

Monitored from Issue #6 dated November 16, 1984 (working day 226)

Date of notice to proceed: June 6, 1984 (working day 110)

Contract completion date July 2, 1986 p.m. (working day 640)

Actions taken:

- Met with general contractor and his sub-contractors, mechanical contractor, and owner to review current progress and update network model
- Prepared updated model Issue #7 dated February 1, 1985 (working day 278) for unit 400
- Prepared network model for typical interior finish sequence on one quadrant (i.e. 401)
- Put durations on activities in laundry list tabulation R-2, Issue #3, dated August 6, 1984 (working day 153)

General Summary

The purpose of this meeting was to update the close in networks for units 400, 500, and 700 and to complete to the greatest degree possible the network model for interior finish work. The electrical contractor, control contractor, and site work contractors were not at the session, but information was obtained from the electrical contractor by phone to assist in doing the planning work. The work accomplished will have to be checked with the control contractor and the site work contractor for its appropriateness.

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Our first efforts at the session were to use the laundry list prepared on sheet R-2 Issue #3 dated August 6, 1984 (working day 103) to tabulate durations for various interior activities. It was decided that project rough and finish work will be diagrammed for each pod or quadrant. These quadrants are the units 401 through 407, 501 through 508, and 701 through 707. The location of these units is defined on the site plan which was distributed at the session. Additional copies of this site plan are available upon request.

The durations assigned were considered reasonable by those involved at the session, and at a later point in the meeting we prepared a network model of the interior work for one of the units in the 400 building. Total durations of interior work in the buildings except for the 500 unit appears to be about 65 working days from close in where interior plastering can proceed. This is based on the assumption that rough mechanical, electrical, sprinkler , and control work can proceed ahead of the close in point so that when each of the units is closed to weather the plastering can begin immediately.

On this particular schedule, it presently appears that the project can be finished well within the current target completion date of July 2, 1986 p.m. (working day 640). We checked this using a turnover cycle for each unit of 20 working days.

It should be cautioned, however, that close in of the units is critical and it is very important that a predictable sequence of work be established for closing in each of the units. At present, close in work is proceeding from 402 and 401 (area 4A) to 403 and 404 (area 4B). We updated the network models, sheets #401, #402, #403, and #404 to reflect present thinking and this updated model indicates that close in for unit 401, 402, and 405 can be accomplished by early May, 1985. Close in of units 403, 404, and 406 should be able to be completed by early June, 1986. Close in of the 400 units will allow work to move to the 500 area and then next spring to the 700 units.

No additional work than that now installed is anticipated to be put in place for the 700 unit until next spring or early summer.

We were not able to do any additional detailed planning on close in of unit 500 at our session today, and we shall continue to monitor from the rough Issue #5 network model sheets #500-1 and #500-2 dated September 17, 1984 (working day 182).

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At the 400 building the upper level supported deck has been poured out for 401, 402, 403, 404, and 405 (mechanical equipment room at 4A). Work is in progress on the roof deck at 402 and the present plan is to pour it out on February 15, 1985 (working day 288). Meanwhile, masonry to the roof at 401 will be put in work and the deck pour will be made as quickly as possible. The intent presently is to get the roof decks at the 4A and 4B units completely poured out by the end of April, 1985.

Slabs on grade at the lower level have been poured out in 403 and 402. No grade level slabs on grade have been constructed as yet. These slabs on grade will be critical, of course, to full implementation of the work program and are presently being given considerable attention by the general contractor.

The network models on sheets #401 through #404 will be revised and issued in the near future. The network model prepared for a typical rough and interior finish work at one unit has been printed and issued to the prime contractors for their general review and comments. It should be pointed out that this network model is preliminary and subject to change as those contractors involved indicate. It is important that this network be reviewed carefully since it will form the basis for sequencing of interior finish work for the remainder of the job. These drawings are identified as preliminary network models, sheets A and B, Issue #7 dated February 1, 1985 (working day 278). Where two durations are indicated below a task, the upper is for the 400 and 700 units and the lower is for the 500 unit. It would be appreciated if all prime contractors could review this pair of network sheets and where revisions are indicated, convey this information to me at as early a date as possible. We shall use these in our ongoing planning for units 400, 500, and 700.

It was brought out at our session today that there is a small exterior toilet room to be constructed to the northeast of the 700 unit. We have not as yet planned this project but will work on it at an early date depending upon the current construction planning of the contractors.

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

Ralph J. Stephenson,P.E.

RJS:sps
To: Mr. Robert McComb
cc: Mr. John Hogle
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

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

March 5, 1985

Subject: Monitoring Report #11

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: February 25, 1985 (working day 294)

Monitored from Issue #7 dated February 7, 1984 (working day 298)

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Reviewed general job status
- Updated network model reflecting current job status
- Completed logic diagrams for 400A, 400B, and 500 through completion of interior finish and rough work

General Summary

At this session we did a complete updating of units 400 and 500 reflecting current job conditions. However, on February 27, 1985 (working day 296) load restrictions were to be placed on the access routes to the site which would tend to disrupt planned floor pours because of concrete truck load restrictions. However, the updated network models have been provided to Mr. McComb for printing and distribution as reference material. Further updating will be needed when more information is available as to the pouring sequence.

Currently the upper floors have been poured out in 401, 402, 403, and 404. The 501 deck is nearly ready for the pour and some roof decks at the 400 unit are also being readied for floor pours. This work has proceeded fairly well over the past few weeks, and is rapidly being brought up to roof level at the 400 unit. With imposition of restricted load conditions on the surrounding road patterns, it may be that a

concentration of effort will be placed upon the 700 unit where smaller concrete loads can be brought in and used effectively. This matter is presently being reviewed by the general contractor on the project and a decision will be made shortly.

In looking at the completion date potential for the project as of February 25, 1985 (working day 294) it appears feasible to meet the following target completion dates for each of the units:

- For 401 - August 12, 1985 (working day 412)
- For 402, September 10, 1985 (working day 432)
- For 403, October 8, 1985 (working day 452)
- For 404, November 5, 1985 (working day 472)

Notice the turnover cycle has been kept at 20 working days per main unit. Included in the finish work for each unit is the upper and lower levels as well as the related service cores at the connecting link. Units 501 and 502 will take longer to build because of longer security durations and the larger numbers of plumbing fixtures to be installed. Completion dates for these are shown on sheets #500-3, #500-4, #500-5, and #500-6. It is intended to maintain the 20 working day cycle which signals conditions needed to start interior finish work.

The target end date for the entire project through 704 is desired by FH & B, along with the other prime contractors, to be April 25, 1986 (working day 592) slightly ahead of the contract completion date. In order to meet this date, it will be essential to restart work in the 700 unit by mid-March, 1985. This is currently the intent of the general contractor.

Meanwhile, I am proceeding to draft the updated network model into finish form, and will hold on the final dating of the 400 and 500 units until we have specific data on when roof pours can be made. I shall be in touch with the general contractor on this matter in the near future.

Mr. McComb is printing and distributing the network model updates prepared on February 25, 1985 (working day 294) and will distribute the prints to the prime contractors on the project. The quality of this set of drawings is not of the highest since it has been revised and worked on several times.

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

Nevertheless, it should be able to be read adequately to give preliminary information about the intended sequence of work. I shall also be in touch with Mr. McComb shortly to set the next planning, monitoring, and udpating session.

Ralph J. Stephenson,P.E.

RJS:sps

To: Mr. Robert McComb
cc: Mr. John Hogle
Mr. Chris Drake
Mr. M. P. Kamath
Mr. Rupert Davey
Mr. Leo McGough

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

March 12, 1985

Subject: Monitoring Report #12

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: March 6, 1985 (working day 301)

Monitored from Issue #7 dated February 1, 1985 (working day 278) sheets 400-1 through 400-12 and Issue #8 dated February 25, 1985 (working day 314) sheets 500-1 through 500-6 (Note: In Monitoring Report #11 it was indicated the monitoring was from Issue #7 dated February 7, 1984 (working day 298). It should read: Monitored from Issue #7 dated February 1, 1985 (working day 278).

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed current progress with owner representative and architect engineer representative
- Evaluated current job status

General Summary

The project was monitored from the network model prepared at our February 1, 1985 (working day 278) and February 25, 1985 (working day 314) meetings. These updated rough networks have been issued to all concerned by Mr. McComb. They are currently being drafted into final form for issue.

As noted in Monitoring Report #11, load restrictions were placed on the access roads to the site and this has slowed work on the floor decks. However, masonry at the 400 units is proceeding on up to roof level and these roof decks will be made ready for pours to be accomplished once concrete

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

suppliers can reach the site. The deck at 402 is formed and in floor work is being placed. Work is in various stages of forming at 401 and the other units. The sequence of roof pours will be from 402 to 401 to 403 to 404.

Interior masonry at the 400 units where floor slabs on grade are poured at the lower level is proceeding well and work on these will continue as floor slab pours on grade permit.

At building 500 no progress has been made, and the work stands substantially at the point reported in Monitoring Report #11. The 501 upper floor deck will be ready for a pour when it can be cleaned of snow and debris, with masonry at 502 being erected to the upper level supported deck.

No further work has been done on foundations at building 700. It is anticipated that pumping of water out of the excavation will begin soon and work is expected to then proceed on foundations.

I shall stay in touch with Mr. McComb and the field staff of the state along with Mr. Brassel at FHB to determine when production work can once again start on concrete floor decks. This is a critical item and must be watched carefully.

Ralph J.Stephenson,P.E.

RJS:sps
To: Mr. Robert McComb

cc: Mr. John Nogle
Mr. Chris Drake
Mr. M. P. Kameth
Mr. Rupert Davey
Mr. Leo McGough

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

April 5, 1985

Subject: Monitoring Report #13

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: April 5, 1985 (working day 323)

Monitored from issue #8 dated February 25, 1985 (working day 294) sheets 400-1 through 400-12 and 500-1 through 500-6

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed current job status with owner and general contractor
- Evaluated current job status
- Reviewed permanent power tie-in with prime electrical contractors

General Summary

The project has been hampered recently by considerable wet weather which makes working conditions difficult. However, the contractor has brought a road into the site which has allowed entrance of heavy trucks and permitted concrete pours to resume.

At the 400 unit roof decks have been poured out in 401 and 402. At the 500 unit the upper level supported deck has been poured out at 501.

At building 700 it does not appear that any major work has re-started on foundations. We will resume planning on the 700 unit at our next session on April 17, 1985 (working day 331). This unit is beginning to approach a very critical point and as noted in Monitoring Report #11, page 2, it is essential to restart work in the 700 unit just as quickly as possible if the end date for the entire project is to be met.

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

At a separate meeting held today, we reviewed the tie-in of permanent power to each of the buildings and the interrelationships between the electrical contractors making this tie-in. At the meeting were the prime electrical contractors for contracts A, B and C. The present intent is to have permanent power available at building 400 by early mid-May. Pulling cable from building 400 is expected to begin by June 17, 1985 (working day 373), and tie-ins will be completed shortly after. Installation of permanent power will permit removal of most of the temporary power system on the site and should aid in permitting better construction traffic circulation.

The electrical contractors will discuss the interrelationships between their work on pulling cable on an ongoing basis. We will review these tie-ins at subsequent monitoring sessions.

A brief review of each major unit in contract B work is given below:

Building 400 - As noted above, the roof decks for 401 and 402 are poured out with the roof decks for 403 and 404 being formed. It is presently expected to achieve the target pour dates for the roofs of building 403 and 404. These are respectively April 23, 1985 (working day 335) and May 2, 1985 (working day 342). The major lagging element presently is completion of slabs on grade in the 401 and 402 areas. Work on these has been hindered to some extent by wet weather, but it is now imperative that this work begin just as quickly as possible to free up rough interior work and allow interior finish work at each of the units to begin at the expected close-in point.

The lag in slab on grade work at the lower level and 405 areas (mechanical equipment room at 4A) is about 29 working days. Perhaps some of this lag could be reduced since a certain amount of lower level interior walls have been erected. However at present slabs on grade are a critical task and should be given careful attention.

It is presently the intent within the current network model to begin plastering in the 402 unit by May 23, 1985 (working day 357). This initiates the 20 working day turnover cycle in which work on interior installation will move from 402 to 401 to 403 to 404. Any delay in starting interior finish work which is initiated by start of interior plastering at 402 can be expected to impact upon the turnover cycle for following units.

At the 406 area (northwest equipment room) the supported deck pour is expected to be made by Monday, April 8, 1985 (working day 324). This should permit construction of bearing walls to the roof resting on the supported deck at 406.

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Overall, work on the 400 unit is not at such a point that it would be impossible to recapture the current lag provided work is initiated immediately on slabs on grade at the early areas. However, the tendency on the job has been to use the float time available and this is still a discernible pattern.

Unit 500 - The upper level deck for unit 501 was poured out about March 15, 1985 (working day 308) and masonry walls to the 501 roof are well along with expectations that the current target pour date for the roof of 501, June 3, 1985 (working day 363) can be met. Work has not yet begun on the upper level supported deck for unit 502. Forming is to start April 11, 1985 (working day 327) and the deck is to be poured out by May 2, 1985 (working day 342). This shows a lag of work at the 502 unit of 14 working days. Here too, it is critical to maintain the interior finish cycle that will be initiated by interior work at unit 400.

Once the weather improves at the site, we can expect to see some pick up in field performance and possibly some or most of the lag presently noticed on the project could be recaptured. We shall be able to pick up any performance improvement as we monitor on an ongoing basis.

Unit 700 - No major work has been done at building 700 since the previous monitoring. Although apparently some pumping is going on most of the time. It is imperative that work on building 700 start shortly if the contract completion date is to be met. We will initiate our detailed planning of unit 700 at our next planning session. It should be similar to unit 400 although I urged the contractors to carefully evaluate the interrelationship between the supported deck pours and the slabs on grade.

General

Overall the project is still struggling to gain alignment with the desired plan of work. With the improvement in weather expected within the next few weeks perhaps some of the lag that is being experienced, particularly at the 400 and 700 units, can be recaptured.

Ralph J. Stephenson, P.E.

RJS/pw
To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. John Hogle
Mr. Chris Drake
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Mr. Rupert Davey

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

April 26, 1985

Subject: Monitoring Report #14

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: April 17, 1985 (working day 331)

Monitored from sheets 700-1 through 700-12, Issue #1 dated April 17, 1985 (working day 331)

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Prepared network model for unit 700 foundations and slabs on grade
- Prepared network model for unit 700 A structure, close in and finish work

General Summary

Our main efforts today were to prepare a network model for unit 700, the only remaining major unit yet to be planned in contract B. We were able to rediagram the entire foundation and underground facility work along with the masonry sequences and slab on grade installation. Due to the nature of the contractor's present desires, we decided to totally rediagram the foundation, close in and utility work on sheets 700-1 and 700-2, Issue #1 dated April 17, 1985 (working day 331). For the superstructure and close in along with the interior finish work, we used the standard sheets developed for the unit 400 network model. Preliminary calculations of the network sheets indicate that using the same finish sequencing as for unit 400 we probably can anticipate starting interior finish trades, basically the plastering operation, in unit 701 by about December 26, 1985 (working day 507). This would complete finish work at 701 in 69 working days which was our previously calculated time for unit 400, bringing finish work at 701 to completion by April 3, 1986 (working day 576).

Using a 20-day turnover cycle, unit 702 would be finished by May 1, 1986 (working day 596); unit 703 by May 30, 1986 (working day 616); and 704 by June 27, 1986 (working day 636).

Since this is only about 4 days ahead of the contract completion date, it is a very tight projected schedule and efforts probably will have to be made to initiate finish operations earlier if the above sequencing is desired. Nevertheless, this sequencing represents a starting point for the planning of unit 700 and I have issued to those concerned the work through completion of unit 702 all shown on sheets 700-1, 700-2, 700-3,700-4, 700-5, 700-6, and 700-7. Meanwhile, I shall not complete rough calculations on the sheets for unit 78 (703 and 704) until the 8 contractors have been able to review and respond to the 700 foundation sheets and the 700A structure and interior plans.

We also discussed in detail the current difficulties in getting work started in the equipment rooms particularly at the 400 unit. The time required for work on the equipment rooms is being assumed at about 30 working days once partial protection from the weather is available. At the equipment rooms, particularly the equipment rooms in units 405, 406, 503, 705, and 706 it will be necessary to apply the waterproofing then the topping, construct equipment bases, and to allow some curing time. From start of waterproofing through to the point where the bases are cured represents about 6 working days. Present plans are to have equipment room 405 available by about April 26, 1985 (working day 338) for setting equipment). Room 406 should be available about May 1, 1985 (working day 341) for equipment to be set.

In addition to the supported mechanical rooms, there are small equipment rooms in the corners of the residential units. These also must be addressed and it is important that they be freed up as soon as possible for start of work.

Ongoing discussions will be maintained between the general prime contractor and the mechanical prime contractor to assure that the needs of each are identified in respect to the equipment room. I shall begin putting the network model for unit 700 into final form sometime in the near future but will

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generally give enough time for response to the model for 700 foundations and 700A structure and interior work before beginning production work on the networks. If there are any comments or revisions desired, please let Mr. McComb or myself know as soon as possible. Meanwhile, we shall monitor the project from the rough network model prepared at our session today.

Ralph J. Stephenson,P.E.

RJS:sps

To: Mr. Robert McComb
cc: Mr. Leo McGeough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M. P. Kamath
Mr. Rupert Davey
Mr. Walter Barabell

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May 9, 1985

Subject: Monitoring Report #15

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: May 3, 1985 (working day 343)

Monitored from sheets as noted below under each building description

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed current progress with general contractor superintendent and owner representative
- Evaluated current job status

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

Building 400 - Monitored from Issue #8 dated February 25, 1985 (working day 294)

All roof decks in building 400 have now been poured out, with the last one of these in 404 having been poured out May 2, 1985 (working day 342). At building 401, the lower level slab on grade was poured out May 3, 1985. The upper level slabs on grade at 4A will probably be completed about May 8, 1985 (working day 346). Lower level masonry has moved reasonably well in those units where lower level slabs have been completed. The main remaining work now is to get the upper level slabs on grade completed for following interior work.

At present, the lags in unit 400 are primarily in slabs on grade at 401 where the lag is about 43 working days on the lower level pours and about 15 working days projected on the upper level pours.

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The most important element now to consider is close in of unit 400. There was no authentic word on when the unit will be roofed. It was planned to start laying fill, insulation, and roofing at concrete decks on April 2, 1985 (working day 320). However, there appears to be some problem with the original sequence in that now some consideration is being given to erecting glass block prior to installation of roofing. If this is the case, then it is possible that roofing may not be started until the end of May, 1985 which could increase the lag considerably, to as much as 40 to 45 working days. Roofing and general close in will be very critical activities to bring to completion at building 400 in the very near future since the interior work turnover cycle is based upon specific close in points on each unit.

In building 402 interior finish work starting with weather sensitive trades was due to begin May 23, 1985 (working day 357). At building 401 it was due to begin on June 3, 1985 (working day 363). In building 403, interior finish work was due to begin July 1, 1985 (working day 383) and at building 404 finish work was to begin July 30, 1985 (working day 403). These dates are important to meet since they set a pattern of turnovers throughout the entire project. With the present lag pattern on close in, it appears that these dates may be moved back as much as 4 to 8 weeks and this could prove quite serious.

It would be well to check into the need to have glass block up previous to installing roofing and insulation to determine if this actually is a requirement.

Also, it appears that little, if any, mechanical equipment is yet placed at the mechanical equipment upper areas. This should be done as quickly as possible so that the mechanical equipment rooms also can be closed in to weather.

Building 500 - Monitored from Issue #8 dated February 25, 1985 (working day 294)

At present, the upper level slab is poured out at 501 and forming has started for the roof level deck there. No forming has yet started for the upper level slab at 502. It apparently is the intent presently to pour out the floor slab on grade at 502 before starting up with form work. In discussions with the contractor, the lower level slab on grade at 502 will be poured out by May 10, 1985 (working day 348) and the upper level form work will start on May 13, 1985 (working day 349). This would give a lag of about 40 working days on upper level deck forming since according to the Issue #8 network dated February 25, 1985 this deck was due to begin on March 18, 1985 (working day 309).

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At the roof level of 501, work is meeting early start/early finish targets. In all likelihood, the pouring out of the roof deck at 501 could meet its target of June 3, 1985 (working day 363).

The major difficulty at unit 500 is caused by the rather extreme difference in the current positions of the two pods. In addition, of course, the mechanical equipment room is very essential and provides the necessary link to move on up to the roof pours.

Building 700 - Monitored from Issue #1 dated April 17, 1985 (working day 331)

Some work has resumed on foundations in 702 and most footings are complete in 701 and 702. Columns are also poured to the upper level in these two units.

There apparently is some concern about the sequence of work as was planned at our session on April 17, 1985 (working day 331)and shown on sheets 700-1 and 700-2. Mr. Brassel was to have had the logic revisions to me in the field at our monitoring; however, this matter is still under discussions and no resolution has been arrived at. The problem apparently results from a difference of opinion between prime contractors as to the sequence of underground utility work and erection of masonry. This matter must be worked out between the prime contractors, and when it has been resolved we shall reflect the decision in our plan of work. Meanwhile, I shall hold off drafting the unit 700 foundation and close in network until more information is available from the prime contractors. I shall check with them periodically on the status of this discussion.

At present, monitoring from the Issue #1 dated April 17, 1985 (working day 331), the footings are just meeting late start/late finish dates, masonry was due to begin on April 23, 1985 (working day 335) and has not yet gotten into production. Therefore, the current lag is about 8 working days. As has been mentioned before, this is the last of the contract B units to be built, and it is very critical because even under present conditions the completion date is extended out to very close to contract completion dates.

General

Overall, contract B work is presently from one to two months behind the network models being used to evaluate progress. This is a very serious lag, and steps to pick up this time

should be taken now while the weather is reasonably good. Of prime importance is to complete closing in unit 400 so finish work can start. Concurrently interior rough work, not sensitive to weather, must be moving rapidly in 400 so that the interior finishes can be initiated as soon as close in is complete.

At unit 500, the discrepancy in progress between the two units is somewhat serious in that one is well ahead and the other is far behind the plan of work.

Unit 700 is still in the early stages of construction and as soon as the sequencing is worked out, care must be taken to maintain progress in accordance with the network model Issue #1 dated April 17, 1985 (working day 331). It is still assumed that the upper level structure and the close in along with the interior work diagrams for 700 will remain substantially the same as in the April 17, 1985 (working day 331) issue.

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

Ralph J. Stephenson,P.E.

RJS:sps

To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. David Renshaw

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

June 13, 1985

Subject: Monitoring Report #16

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: June 7, 1985 (working day 367)

Monitored from network models as noted below under each building description

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed current progress with general contractor superintendent
- Reviewed current progress with owner representative architect/engineer representative
- Evaluated current job status

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

Building 400 - Monitored from Issue #8 dated February 25, 1985 (working day 294)

Completion dates as shown in the current network model for each of the units in building 400 are:

- 402 - p.m. August 29, 1985 (working day 426)
- 401 - p.m. September 9, 1985 (working day 432)
- 403 - p.m. October 7, 1985 (working day 452)
- 404 - p.m. November 4, 1985 (working day 472)

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These are desired end dates set in conjunction with the various prime contractors, and of course, represent completions considerably ahead of the contract completion date. However, they were set to permit spacing of the work and to avoid bunching up of trades at the end of the project.

As of June 7, 1985 (working day 367) dislocations from these end dates is becoming serious not in relation to unit 400 but in relation to the entire contract B work. It has been desired generally to maintain a 20-working day turnover cycle between each of the unit completion dates. The current lag on the project is about 40 working days primarily in the projected start in plastering at the 402 unit. It is possible that by concentrating efforts on closing in the unit 402 and 401 that this lag could be reduced. However, at present it appears that there could be as much as 30 working days of interior work needed before plastering could actually begin at the unit. Plastering in 402 was due to start no later than May 23, 1985 (working day 357). Thus, the current lag is 10 working days, and with 30 additional days to get the project to a point of starting plastering it could result in the projected 40 working day lag.

The lag is sufficiently great at the 400 unit so that a consideration of updating should be given as soon as current labor difficulties are resolved. These difficulties presently are a strike of the masons which started June 3, 1985 (working day 363) and a strike of the contract B concrete drivers which began June 4, 1985 (working day 364). It does not appear that presently these strikes are necessarily affecting completion of close in at units 400A (402 and 401). Roofing at the 400A unit is expected to begin about June 17, 1985 (working day 373). It was due to have started no later than April 2, 1985 (working day 320) so there is a projected lag there of about 53 working days although again, some of this time could be recaptured by compressing the roofing time and working concurrently to bring interior work to a point where interior finishes could start. Slab on grade work is substantially complete in 400A but slabs on grade in B are yet to be completed. There is no word on when the concrete driver's strike might be settled, so these slabs will have to await resolution of this labor stoppage.

Thus, overall the lag at unit 400 could be considered between 40 and 53 working days with the trend toward the lesser amount.

Building 500 - Monitored from Issue #8 dated February 25, 1985 (working day 294)

Desired end dates from the Issue #8 network model dated February 25, 1985 (working day 294) are:

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- 501 - p.m. January 21, 1986 (working day 525)

- 502 - p.m. January 30, 1986 (working day 532)

At present, forming is in work for the roof of unit 501 and at the upper level supported deck at 502. There is no current projection possible on when these might be poured out due to the concrete driver's strike which started June 3, 1985 (working day 364). The current lag at the roof of 501 is about four working days. This deck was due to have been poured out on June 3, 1958 (working day 363). The upper level at unit 502 was due to be poured out on April 10, 1985 (working day 326). Thus, the lag there is about 41 working days currently. To that it must be added the amount of time that it takes to complete forming the upper level at 502 along with any extension past that that might be caused by the work stoppage. Probably we can consider the lag at unit 500 to be between 41 and 55 working days. Again, this is serious in that it has a direct impact upon the end dates of the units which are presently in late January, 1986. It can be seen that adding the lag to be projected desired end date brings completion of the job into late March or early April, 1986. This is very close to the contract end date, and encroaches upon the turnover sequence as desired for the last unit to be built, unit 700.

Once the mason and drivers strike is resolved, it is highly recommended that we consider a re-evaluation of the network and an updating of the plan of operation.

Building 700 - Monitored from Issue #1 dated April 17, 1985 (working day 331)

Currently most foundation work is complete for building 700, and columns have been poured to the upper level. Underground utility work is well along in 700A and is being installed in 700B. Masonry cannot begin in 700A until resolution of the current strike and thus, work is presently at a standstill on architectural trades. The revised projections for completion of unit 700 from the rough Issue #1 network model dated April 17, 1985 (working day 331) indicate that the completion dates for the full unit now are very close or beyond the contract completion dates if we consider the unit to be separate and distinct from units 400 and 500. This is a relatively serious matter since it now appears that considerable difficulty will be encountered in completing the total contract B by the target contract completion of July 2, 1986 p.m. (working day 640).

At present, we are drafting of the network model based upon masonry starting in 700A and 700B only after completion of

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underground utility work in these two areas. Again, however, because of the strike it would be advisable to defer total completion of the plan until more accurate information can be obtained on when work will resume on erection of masonry.

General

Overall, work on units 400, 500, and 700 lag considerably, and it appears presently the contract completion will be very difficult to meet for the entire contract. I strongly recommend that once the concrete driver's strike and the mason's strike is resolved we make a complete review of the project and update the network models as may be appropriate. I shall discuss this in detail with Mr. McComb and the others involved.

Ralph J. Stephenson,P.E.

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Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. David Renshaw

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

August 2, 1985

Subject: Monitoring Report #17

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: July 24, 1985 (working day 399)

Monitored from network models as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Briefly reviewed current project with general contractor , superintendent
- Reviewed current progress with owner representative
- Evaluated current job status

General

The project is now lagging monitoring plans of work in such amounts as to make an updating of network models of buildings 400, 500, and 700 a recommended course of action. I suggest this be done over the next few weeks as the project is inspected and monitored at our regular sessions. Measurement of the project is still being made against the desired late finishes outlined in Monitoring Report #16 dated June 13, 1985 (working day 371) pages #1, #2, and #3.

A brief review of contract B work is given below:

Building 400 - Monitored from Issue #8 dated February 25, 1985 (working day 294)

Building 400 is approaching a point where practically all four pods are at the same current position. The general status of the work is that most interior masonry has been erected,

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mechanical and electrical overhead work is in progress, and the next major activity to be initiated is starting framing and lath for plaster fascias, ceilings, and soffits. Some work on this has been done in unit 402 although there is very little completed yet.

In a project of this nature work must move sequentially. If a set of units arrives at a point where practically all are at the same position of completion, it usually will pose problems of sequencing. I highly recommend that a sequence of operations for building 400 be re-established as quickly as possible. The original sequence was to move on interior work from 401 to 402 to 403 to 404. This was revised some time ago so as to move from 402 to 401 to 403 to 404. Apparently there is some consideration that the sequence will now go back to the 401 to 402 to 403 to 404 pattern. In any event, a sequence must be established shortly if this portion of the project is to be completed without excessive grouping of trades at the end of the job.

The current lag on unit 400 can be directly measured from the start of framing and lath. This work was due to begin in unit 402 no later than May 9, 1985 (working day 347). It is just now getting under way and thus, the current lag is about 52 working days. This is an increase of considerable amount over the lag noted on thh previous monitoring on June 7, 1985 (working day 357). It remains a source of concern, not only for completion of the 400 unit itself, but for the sequencing of this building in relation to the other two structures, 500 and 700.

Roofing of the project has not as yet been initiated in production, but should be started soon. There have been some very recent difficulties with the roofer on the project and these are being resolved.

Building 500 - Monitored from Issue #8 dated February 25, 1985 (working day 294)

The roof deck at 501 has been poured out and is presently being stripped. The lag there is about 30 working days. The roof pour for 502 is ready to be made, and probably will be poured out within the next week. This lag represents a reasonably accurate evaluation of the behind position of this unit since it directly relates to close in and subsequent rough and finish operations. As with building 400, it is strongly recommended that a complete updating of the network model be done in the near future.

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Building 700 - Monitored from Issue #1 dated April 17, 1985 (working day 331)

The floor slabs on grade in building 701 and 702 are in progress with foundation masonry being erected in unit 703 and 704. Currently 700 work is meeting targets between early and late starts and finishes at all four units. However, it must be cautioned that the network model presently being used to monitor from is one which gives a target end date of unit 704, the last of the units to be built, of June 27, 1985 (working day 636). This is very close to the target completion date for the entire project. It does not take into account any bunching up of trades that might be caused by the present lags in the 400 and 500 units. Thus, although the plan of action apparently is realistic and perhaps even at present being met, we must continually evaluate it to insure that it is a course of action desired by the contractors involved. Whatever can be done to get the unit 700 structural frame up and started early would be of great help in work for the entire project.

General

Overall, the entire contract B progress lags in the field over desired target late finishes. The lags are primarily in the 400 and 500 units where they are presently projected to force finish work in these units to be done concurrently with finish work in the 700 unit. The concurrency is in similar trades and could cause some serious difficulties in manning the job. Therefore, I recommend that we completely update the network models for units 400 and 500 and re-evaluate the network model for 700 to determine if the grouping of trades at the end of the project is going to prove detrimental to the contractors involved and to completion of the project.

I shall be in touch with Mr. McComb and those concerned shortly to discuss how best to proceed on this updating.

Ralph J. Stephenson,P.E.

RJS:sps
To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. David Renshaw

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

September 6, 1985

Subject: Monitoring Report #18

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: August 29, 1985 (working day 425)

Monitored from network models as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- On August 13, 1985 (working day 413) updated network models for building 400, 500, and 700
- On August 29, 1985 (working day 425) inspected project, reviewed current status with owner representative and evaluated current job status

General

We are now monitoring the project from the udpated network models as prepared in our meetings of August 13, 1985 (working day 413). At these sessions we met with the prime contractors and reviewed the networks for buildings 400, 500 and 700. The building 400 update was Issue #9 dated August 13, 1985 (working dya 413). The updating for building 500 was Issue #9 dated August 13, 1985 (working day 413), and the updating for building 700 was Issue #2 dated August 13, 1985 (working day 413). The completed network models for buildings 400 and 500 have been sent to Mr. McComb for distribution. The plan for 700 is not yet fully updated but will be issued in the near future.

A brief review of contract B work is given below:

Building 400 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Building 400 has not yet been totally closed in but efforts are being made presently to complete this work so interior trade installation primarily lathing and plastering can begin. The lag in the building can be directly measured from the planned start of plastering in the 401 unit, where interior finish work was to begin. This plastering was due to begin no later than August 19, 1985 (working day 417) to meet a target completion date at the 401 unit of the p.m. of November 22, 1985 (working day 486). Presently work is not at a point where plastering could begin, and thus the current lag as of August 29, 1985 (working day 425) is from 8 - 12 working days.

This lag will reflect itself directly in the turnover cycle sequence set for the building. At present, we are working on the basis of a turnover cycle reduced from the original desired sequence of 20 working days to a turnover time of 15 working days. Thus, it can be seen that this lag has the potential for extending the entire project past the total target completion date by contract of July 2, 1986 (working day 640).

If we take the current network model completion for the first unit to be finished, 401, by the evening of November 11, 1985 (working day 486) and we assume that there are 9 more units to finish in order, 15 days apart, the completion date for architectural, mechanical, and electrical work, the completion target is now getting very close to the contract date.

If we further assume that security work must continue somewhat past the completion of other trades work, we now are at, if not beyond, the contract completion target. Therefore, it is imperative to start the interior finish trade cycle at the 400 unit.

All four areas at 400 - 401, 402, 403, 404 - are somewhat at the same stage of work and it will be necessary, as has been discussed previously, to start sequencing these units so trades can follow in an orderly and proper progression to avoid excessive buildup of manpower requirements this winter. The lag of 8 - 12 working days in the 400 unit so soon after a major updating is of considerable significance and should be corrected as quickly as possible.

Building 500 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Heavy concentration of effort is now being placed on completion of exterior masonry and start of exterior rough and

finish work. All decks have been poured out at the 500 unit, and interior rough trades are under way at the lower levels. The target completions set in the Issue #9 network model dated August 13, 1985 (working day 413) are p.m. March 19, 1986 (working day 566) for 501; and p.m. April 9, 1986 (working day 581) for 502. Evaluating the current status against these targets shows that the project is currently meeting target dates between early and late starts and finishes. However, it should be pointed out that to meet completion dates, plastering at the 501 unit will have to begin no later than November 12, 1985 (working day 477) and at the 502 unit no later than December 4, 1985 (working day 492). This , of course, requires that all rough work leading up to finish trades be completed, and most importantly that the building be closed in and tight to weather since at that point the winter will be just starting.

In addition, it is essential now to consider the methods by which heat will be provided during cold weather. It presently appears that most of the interior finish work in units 400 and 500 will be under way or complete by cold weather, and methods of protecting this work from cold should be established now.

Building 700 - Monitored from Issue #1 dated April 17, 1985 (working day 331)

This monitoring evaluation was made from the previous network model issued in April, 1985. However, the new updating is presently being completed and will be used for future evaluations. The Issue #1 network plan dated April 17, 1985 gave a full completion date for the 704 unit of the evening of June 26, 1986 (working day 636) for architectural, mechanical, and electrical trades and the evening of July 22, 1986 (working day 652) for completion of security work. These dates were revised in the Issue #2 network model dated August 13, 1985 (working day 413) to fall within the contract completion limits. At present work on the superstructure of buildings 701, 702, 703, and 704 is moving relatively well and are within or ahead of the target dates set in the Issue #1 network model dated April 17, 1985 (working day 331) which was used for this monitoring.

At building 701, exterior masonry to the roof is being erected while at 702, upper level decks have been poured out and masonry will probably start there to the roof in the near future. At 703 forming is under way for the upper level supported deck and the 704 upper level deck is just now

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starting in work. Thus, progress on the entire 700 unit is quite good. Efforts are being made to get the exterior of the building completed so adjoining site work can be continued as quickly as possible. Still of major importance is to get the structure up and closed in as early as possible so as to be ready for the sequencing of finish trades as they move from 400 to 500 to 700.

General

Difficulty is still being encountered in trying to start interior finish work at building 400. This is critical since 400 initiates the turnover cycle on through the rest of the project. The work at 500 and 700 is moving toward completion of the structures, and close in of the buildings is moving relatively well. However, as these buildings are ready for finish trades, in all likelihood, the trades will still be working in the 400 unit unless multiple sequencing of finish trades can be effected. This may pose manpower problems as winter approaches. I suggest this matter be evaluated very carefully by the contractors involved.

Meanwhile, the updated issue for buildings 400 and 500 has been sent to Mr. McComb, as noted above, for his distribution. Building 700 will be updated in the very near future and distributed as it is completed.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M. P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

RALPH J. STEPHENSON, P.E., P.C.
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September 26, 1985

Subject: Monitoring Report #19
Contract B, Northville, Michigan
Scott Regional Facility
Bureau of Facilities, State of Michigan
Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: September 19, 1985 (working day 439)

Monitored from network models as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Monitored project
- Conferred briefly with general contractor superintendent
- Conferred with owner site representative
- Evaluated current job status

General

Building 400 work lags the current network model by about 19 working days primarily in sequencing of interior finish trades. At building 500, work is presently meeting targets between early and late starts and finishes in both 501 and 502. At building 700, structural frames are moving quite well, and the sequencing there has been such to keep work slightly ahead of early start/early finish targets.

The major problem being encountered still relates to sequencing of interior finish trades, where at some point the need to establish a turnover cycle of interior finish work, primarily start of plastering in each unit, will take over and govern the start of key operations in each unit. The lag, therefore, in unit 400 will reflect itself in lags in each of the other units, irrespective of when these are closed in under the present sequencing.

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To finish the project within the present contract completion dates, it appears it may be necessary to consider working interior finish trades with multiple crews in on similar activities in several units at a time. The point at which this will become evident and the needs can more firmly be addressed will be as units 500 and 700 are brought to a point where they are closed in and plastering can start.

We have updated and issued units 400 and 500 in issue #9 dated August 13, 1985 (working day 413). Unit 700 is being updated and will be issued sometime in the near future.

A brief review of the work in each of the major units is given below:

Building 400 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Glass block is being erected at the roof level, and the building, for this time of year, can be considered primarily in the dry. Plastering of 401 fascia, ceilings, and soffits has started. This work began about September 16, 1985 (working day 436) and currently lags the target plaster dates in 401 by about 19 working days. Plastering was due to have started in unit 401 on August 19, 1985 (working day 417). At unit 402, the framing and lath for plaster is being installed and well along. However, plastering is not yet started there. Plastering in unit 402 was due to begin no later than September 10, 1985 (working day 432) and thus currently lags by 9 working days. At unit 403, much of the overhead rough work is complete with framing and lathing ready to be initiated. This area lags currently by about two working days. At 404, rough work still remains to be fully completed. Plastering there was due to begin no later than October 22, 1985 (working day 462). Since in all units except 401 roofing is yet to be installed, probably the start of plastering will be delayed by roofing, and it may be somewhat difficult to pick up the current lag reflected in unit 401 of 19 working days.

Roofing has proven to be very difficult, and little progress appears to have been made over the past several weeks in laying insulation and roofing except at unit 401. This is a very serious matter, and must be given ongoing expediting attention.

The 400 group is the key starting unit for the entire project since it is there that the sequencing of interior finish trades must start. Therefore, it is imperative that heavy

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attention be given unit 400 to establish the very important progressive sequencing of work. Although some improvements in the sequencing have been noted, this is still not fully accomplished and should be addressed on an ongoing basis.

Building 500 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

The structural frame of the building is complete, and work is now under way on interior rough above floor mechanical and electrical installation. Presently work is meeting targets between early and late starts and finishes at building 501. Plastering on unit 501 is due to begin no later than November 12, 1985 (working day 477). This is a key trade operation and presently fits in with the 15-working day cycle established at our recent planning session. (Note: On sheet #3 Issue #9 dated August 13, 1985, the late finishes shown at nodes 407, 408, 410, and 411 are in error. They should read October 28, 1985 to correspond with the working day dates given at the arrowhead. Please make this revision to your network models).

Building 700 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

The structures for units 701, 702, 703, and 704 are in construction and moving well. The roof deck for 701 is formed and resteel is being set. Probably it will be poured out within the next week or so. Forming for the roof deck of unit 702 is just being started and will follow roof forming for 701. Work at the 703 and 704 units are following closely behind.

Exterior masonry work is also moving well, with the intent presently to work around the north end of the 701 unit and move down toward the southeast on the interior court side of the structures. It is estimated that face brick will be completed on this interior court side within the next 15 - 20 working days.

Overall, progress on unit 700 for the structure and toward close in is moderately good. Again, the major problem will be encountered as cycling for plastering is initiated since presently this turnover cycle is what sets the starting point for interior finish trades. We shall continue to monitor the project using the 15-day working day turnover cycle insertion as has been agreed on in our planning session. This brings completion of building 700 to very close to the contract completion date. It may be possible that time could be picked up on some interior finish work, but for the time being, we

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shall continue to monitor from the issue #9 network model dated August 13, 1985. This model has not yet been officially issued, but it is presently in work and will be issued shortly. It is the model that was prepared at our monitoring and planning session on August 13, 1985 (working day 413).

General

The current monitoring model which the project is being measured against in the field brings completion to a point very close to the end of June, 1986. This is a tight date. It is critical that cycling on interior finish work be maintained. At present, there is a sizable lag in interior finish work in building 400 where the entire cycle begins. Thus, steps must be taken to catch this work up or the delay will reflect itself in the other units and with this lag the completion date would be pushed considerably past the present contract completion target. I shall be in touch with those concerned to set the next monitoring date.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
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RALPH J. STEPHENSON, P.E., P.C.
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October 28, 1985

Subject: Monitoring Report #20

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: October 22, 1985 (working day 462)

Monitored from network models as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Conferred with owner site representative re job progress
- Discussed project briefly with general contractor superintendent
- Evaluated current project status

General

Building 400 now lags the current network model Issue #9 dated August 13, 1985 (working day 413) by about 35 working days, primarily in the 401 sector. This lag is in completion of plastering the fascia, ceilings, and soffits. Since plastering is the starting trade for interior finish work and will set cycling for the entire project, it becomes imperative that a continuation of interior finish work be initiated immediately in the 401 unit and be carried through on an ongoing sequence from 400 to 500 to 700.

We are currently using a 15-working day turnover cycle which brings us out to completion of building 700 very close to the contract completion date. The current lag in building 400, if not recaptured, will undoubtedly push the entire project past the target contract date.

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For building work, our present completion target for building 704 is June 5, 1986 p.m. (working day 621). Adding 35 working days to this brings the date to the evening of July 25, 1986 (working day 656).

Security work which continues on slightly later than building is now projected to complete by about mid-August, 1986, which is a very serious delay in the total project.

Thus, it is very critical that immediate attention be given to unlocking work in the 400 unit that will free up interior finish work to move without hinderance and into 500 and 700 building as they are closed in. If the sequencing cannot be compressed, then consideration of multiple crews should be given for selected trades, and plans made now for such an implementation of work. This matter should be discussed in detail in the near future.

A brief review of the work in each of the major units is given below:

Building 400 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Units 401, 402, and 403 are substantially closed to the weather and unit 404 glass block is now being erected. Plastering is partially complete in buildings 401 and 402 while lathing is in progress in 403, but not yet into full production in 404. Apparently there has been some difficulty in completing sprinkler piping to a point where lathing can proceed on a full production basis. This, in turn, has slowed the plaster who wants more lathe in place before starting plaster work. This is a matter that must be worked out by mutual efforts among the contractors involved. It is imperative that additional finish work be started at the early finishing units so that a full production sequencing on interior finish trades can be initiated.

Building 500 - Monitored from Issue #9 dated August 13, 1985 working day 413)

The structure is substantially complete for unit 500, and interior work is moving relatively well, currently meeting targets between early and late starts and finishes. Framing and lath for plaster ceilings, fascia, and soffits is due to begin in unit 501 no later than October 29, 1985 (working day 467). It does not appear presently that this target will be met. The lag on the project will be able to be measured directly from a comparison of this late start with the actual start.

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Building 700 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Progress on the structure of unit 700 has been excellent, and the decks are rapidly being brought to completion, the roof deck of unit 703 being poured today, October 22, 1985 (working day 462), and probably within the next 5 to 10 working days the last roof deck on unit 700 at 704 will be poured out. Face brick on 700 is also moving extremely well, and has allowed the site work between buildings 400 and 700 to proceed.

The next major milestones to be met on unit 700 are starts of interior rough and finish trades. Here, again, it is anticipated that because of the late sequencing on building 400 that unless multiple crews are used, there will be delays in the initiation of field work on interior rough and finish installation. At building 701, for instance, framing and lath for plaster ceilings and soffits is due to begin no later than December 11, 1985 (working day 497), and plaster no later than December 26, 1985 (working day 507). These dates, again, will be direct measuring points for the status of the project as the units are closed in and rough work is started.

As was noted above, the completion dates for building 700 was set at June 5, 1986 p.m. (working day 621) for 704 unit construction work and p.m. of June 30, 1986 (working day 637) for installation of security work.

The present 35 working day lag in unit 400 could directly impact upon these completion dates and push finish dates into early and mid-August, 1986.

General

All network models have now been issued for the contract B work, including units 400, 500 and 700. These have been furnished to the State of Michigan and they, in turn, have distributed them to the contractors and others involved.

I suggest immediate discussions be initiated as to how the production cycle for interior work is to be initiated at the 400 unit. Meanwhile, I shall be in touch with Mr. McComb to set the next monitoring session.

Ralph J. Stephenson, P.E.

RJS:sps
To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

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December 28, 1985

Subject: Monitoring Report #21

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: December 11, 1985 (working day 497)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner site representatives
- Evaluated current project status

General

Building 400 lags the current network model Issue #9 dated August 13, 1985 (working day 413) by 40 to 50 working days basically in finish trades. The sequencing at unit 400 now appears to be swinging back toward working the units from 401 through to 404 although this was not totally apparent from our monitoring. I suggest a sequence for this finish work be established just as quickly as possible.

With the present lags, which are an increase of from 5 to 15 working days over those noted at our previous monitoring on October 22, 1985 (working day 462) the project shows a continuation of the lag trend on the entire contract B work. Using the current working day turnover cycle of 15 working days will probably now push the entire project considerably past the contract date.

I believe we are at a point in the project where a full updating is necessary on the job and will be in touch with Mr. Davenport shortly to discuss this matter.

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At building 500 the lag is somewhat less than at building 400 ranging from 18 to 30 working days. However, as has been pointed out repeatedly, and as must be constantly remembered, the sequencing of the job will have to be done on some kind of an ordered turnover cycle. Thus, even though current work, which is basically rough interior above floor installation at 500, is closer to being on time than at 400, in all likelihood, with the present crewing pattern, following trades will not be cycled until completed or partially complete at the 400 unit. Thus, the critical element for the entire project is not where each unit stands, but where the greatest lagging unit is at any given date. This is in building 400 work presently.

In unit 700, the lags range from zero to 30 or more working days, primarily in close in operations.

It can be seen from the above general summary that the true measure of the project, as has been the case from almost the beginning of construction, is how closely we adhere to the selected cycle of work and the maintenance of a shortened cycle where needed. If we look at the present turnover cycle in effect, 15 working days, and apply it to the date where the first unit was to have been substantially completed, November 22, 1985 (working day 486) (unit 401) we get an idea of the lag in the entire project. Finishing the first unit at the p.m. of November 22, 1985 (working day 486) still leaves nine more units to be completed. At 15 working days per unit this requires another 135 working days from the completion of the first unit. The present lag at the first unit to be completed is about 48 working days. Thus, completion of the total facility will be the proposed completion date for the first unit, working day 86, 486, plus the 48 working day lag, plus the 135 working days needed to maintain the cycle on the remaining nine units. This brings projected completion to mid or late August, 1986. For security equipment the completion date will be even later since the first target completion of security work was the p.m. of December 17, 1985 (working day 502). Using the same turnover cycle analysis would show security work completing about 18 working days later, or in early or mid September, 1986.

A brief review of work at each of the major units is given below:

Building 400 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Interior finish work is under way at units 402 and 401 with painting about ready to start in unit 402. The lag in unit 402 is about 40 working days in finish trades. At unit 401,

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the lag in finish trades is about 48 working days in painting. These two initial units are fairly close together relative to their sequencing and should be considered the starting points for all finishing work throughout the project. It should be again pointed out that in the planning process the security work was to be completed about sixteen working days later than was the main building work. Thus, it can be seen that the current lags in the building when applied as mentioned above to the entire project, push present projected end dates well past the contract completion date.

At unit 403, work is just starting on plastering, this trade having begun in unit 403 on about December 9, 1985. The lag there is about 48 working days since plastering was due to have begun on October 1, 1985 (working day 447).

At unit 404, the current lag is in installation of framing and lath for plaster and is about 48 working days primarily in getting ready to initiate this work.

Thus, overall the lag at the entire 400 unit can be considered to be between 40 and 50 working days tending toward the larger amount.

Building 500 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

The lag in unit 501 which is the southeast unit is presently about 30 working days in above floor rough installation and the start of framing and lath for plastering. At unit 502, the lag is less being about 18 working days in rough above floor trades. The lags at the 500 unit are considerably less than those at the 400 unit which indicates that serious consideration should be given now to increasing crews for interior finish work primarily starting with the plastering trades so that when the 500 and later 700 units are ready for start of finish work in plastering that it can begin independent of work at the 400 unit. This, in my opinion, is one of the best ways at present to bring the units back into line with contract completion date requirements.

Building 700 - Monitored from Issue #9 dated August 13, 1985 (working day 413)

Progress continues fairly well on closing in the building with the exception of roofing which was due to have been done on the 700-A unit by November 19, 1985 p.m. (working day 483). It is not yet complete and lags by about 24 working days. At the 700-B unit (southeast half of the structure), close in work lags by three or four working days. Above floor rough work at

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units 701 and 702 lag between zero and 16 working days. Framing and lath for plaster work at unit 701 was due to begin no later than December 11, 1985 (working day 497); for unit 702 no later than January 3, 1986 (working day 512); for unit 703 no later than January 24, 1986 (working day 527); and no later than February 14, 1986 (working day 542) for 704. These, as with all work to date, represents critical points in time since they are the measures against which the true status of the project can be evaluated.

To emphasize the need for attention to this multiple crewing particularly of the early trades, and then later of other finish work installation must be a high priority consideration at this time if we are to complete the project as presently desired.

General

From the slippage in the project since the previous monitoring to this monitoring and with the current lag on the job, it is now apparent that a major review of progress must be made within the contractor group by the State of Michigan. I further suggest that a date be set just as quickly as possible for a full updating of the network model and that consideration be given now to either multiple crewing of the project or, as a less desirable alternative, the establishment of methods that will provide a reduction in the present turnover cycle of 15 working days. These will be important matters to discuss when we update the network if this is decided upon, and when we go into the meeting it would be well for all contractors to have thought through their work sequences as carefully as possible.

Of particular importance now is the impact of the building work on completion of security installation. This matter will be considered as part of our revision to the plan of work.

Ralph J. Stephenson, P.E.

RJS:sps
To: Mr. Robert McComb
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

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

March 12, 1986

Subject: Monitoring Report #22

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities, State of Michigan

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: March 7, 1986 (working day 557)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner, site representative, and architect/engineer site representative
- Evaluated current project status

General Summary

The project was monitored from the network model, Issue #10 dated January 24, 1986 (working day 527). This set of networks for units 400, 500, and 700 were prepared at an updating session held on January 24, 1986 (working day 527). The networks had been issued by the state to those concerned. It should be noted that in the network models buildings 500 and 700 show completion dates extending beyond the current contract completion dates. The issuance of these networks does not mean that such extensions are approved; however, the completion dates were shown in the diagrams so that additional evaluation and study can be made to see what is necessary to pull completion dates back to current contract completion targets.

In building 400, at unit 401, the current lag over the late starts and late finishes is 30 working days over the updated network model issued 30 working days ago. This indicates little, if any, progress being made toward completion of the area and is a major source of concern since we still will find it necessary to follow a given turnover cycle for the majority of the work. Lags in other portions of 400 range downward as we move from 402 to 404.

Current lags in the buildings 500 and 700 range from five working days at 502 downward. These lags are all measured against late starts and late finishes and take into account delays measured against the completion dates as shown below. These completion dates were taken directly from the network model Issue #10 dated January 24, 1986 (working day 527) and represent targets from the updated network models of January 24, 1986 (working day 527).

It is fully recognized by all contractors and by other parties involved that these dates must be further evaluated to bring them in line with contract completion times. Thus, to be repeated, the completion dates shown below are not approved completion dates for contract B work but are merely evaluation targets against which current measurements are being made.

	Building work	Security work
Unit 401 -	p.m. March 7, 1986 (558)	p.m. March 31, 1986 (574)
Unit 402 -	p.m. March 28, 1986 (523)	p.m. April 21, 1986 (589)
Unit 403	p.m. April 18, 1986 (573)	p.m. May 12, 1986 (604)
Unit 404	p.m. May 9, 1986 (603)	p.m. June 3, 1986 (619)
Unit 501	p.m. May 29, 1986 (616)	p.m. June 20, 1986 (632)
Unit 502	p.m. June 19, 1986 (631)	p.m. July 14, 1986 (647)
Unit 701	p.m. June 12, 1986 (626)	p.m. July 7, 1986 (642)
Unit 702	p.m. July 3, 1986 (640)	p.m. July 28, 1986 (657)
Unit 703	p.m. July 25, 1986 (656)	p.m. Aug. 18, 1986 (672)
Unit 704	p.m. August 15, 1986 (671)	p.m. Sept. 9, 1986 (687)

As can be seen from these updating targets, the completion date in portions of 500 and 700 extend past the contract

completion date of p.m. July 2, 1986 (working day 640). Every effort must be made now to pick up this time since there presently remain only 83 working days to contract completion for the project. It is imperative that a sequencing of interior finish work be actively initiated and that methods be found to complete units starting in the 401 and 402 area, closing the areas to construction traffic as they are brought to a completion point.

A brief review of each major facility in contract 8 is given below:

Unit 400

The lag at unit 400 is greatest in 401 and is about 30 working days there. Painting is relative far along; however, paste on tile, interior glazing and interior doors and trim have not yet begun. Interior doors and trim were due to begin no later than January 24, 1986 (working day 527); thus, the lag is measured directly from that particular point. Taking into account this 30 working day lag at 401 would bring completion of building work at unit 401 to the p.m. of April 18, 1986 (working day 588). This in itself is not overly serious except that it represents too late a point to begin the turnover cycle for the buildings. This turnover cycle is going to become increasingly important as the trades move through the building and it will be essential to establish a turnover cycle pattern at some point in the very near future. The lags in other units of building 400 range downward from 30 working days and all are at a point where interior finish work remaining could be carried out very aggressively. I recommend that this be done.

Unit 500

Currently the lag in building 500 is five working days in unit 501, primarily in the lag of painting over the projected desired starting point. Painting was due to begin no later than February 28, 1986 (working day 552). It has not yet started in production as of March 7, 1986 (working day 557). As with other units, there is no current indication that a sequence is being followed here and chances are that painting will not begin in the next few days. Thus, we can visualize that probably unit 502 will also be adversely affected and not be following 501 on as close a basis as is necessary. With the lag at unit 501, it puts completion of security work at five days later than the present target completion of the morning of June 23, 1986 (working day 632) or at the morning of June 30, 1986 (working day 637).

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

At unit 502, the project is currently meeting general targets between early and late starts and finishes. However, since it is sequenced from unit 501 it will be necessary to sequence carefully to insure that interior trade items follow from 501 to 502.

Unit 700

Currently most work in unit 700 is meeting targets between early and late starts and finishes. However, close in of these units is not totally effected yet and at all areas the low roof remains to be placed. This work is expected to begin next week provided weather permits. In addition, there is still glass block to erect at the clerestory in units 703 and 704. I recommend that efforts be made to proceed independently with finishes at the 700 building apart from sequencing with the 400 unit. This undoubtedly will require additional crew sizes for finish trades, but if we are planning to finish this job on time it will be essential that interior work at the various units be done concurrently.

An item of ongoing concern in the buildings is the unfinished condition of sprinkler piping. In most areas, sprinkler piping is installed where ceilings are dropped. However, very little sprinkler piping particularly in 500 and 700 is installed in the exposed areas. This trade must continue to be addressed on an ongoing basis so that it does not hold up interior finishing particularly painting and trim work.

General

Based upon the slippage on the project since the previous monitoring and updating on January 24, 1986 (working day 527) it appears that serious difficulties will be encountered in meeting the target contract end date unless concurrent work can be put into the field at units 500 and 700 along with finishing up of unit 400. This matter must be given immediate and serious consideration due to the short amount of time remaining on the total project.

I shall be in touch with Mr. Whiting shortly to set the next monitoring session.

Ralph J. Stephenson, P.E.

RJS:sps
To: Mr. Jerry Whiting
cc: Mr. Lee McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

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

April 29, 1986

Subject: Monitoring Report #23

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities

Account #110-47-269-001

Project: 84:29B

Date of Monitoring: April 11, 1986 (working day 582)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2~~8~~, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner site representative
- Evaluated current project status

The project is being monitored from a set of networks which currently contain target completion dates as follows:

	Building work	Security work
Unit 401	p.m. March 7, 1986 (working day 558)	p.m. March 31, 1986 (working day 574)
Unit 402	p.m. March 28, 1986 (working day 523)	p.m. April 21, 1986 (working day 589)
Unit 403	p.m. April 18, 1986 (working day 573)	p.m. May 12, 1986 (working day 604)
Unit 404	p.m. May 9, 1986 (working day 603)	p.m. June 3, 1986 (working day 619)
Unit 501	p.m. May 29, 1986 (working day 616)	p.m. June 20, 1986 (working day 632)

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Unit 502	p.m. June 19, 1986 (working day 631)	p.m. July 7, 1986 (working day 647)
Unit 701	p.m. June 12, 1986 (working day 626)	p.m. July 7, 1986 (working day 642)
Unit 702	p.m. July 3, 1986 (working day 640)	p.m. July 28, 1986 (working day 657)
Unit 703	p.m. July 25, 1986 (working day 656)	p.m. Aug. 18, (working day 672)
Unit 704	p.m. Aug. 15, 1986 (working day 671)	p.m. Sept. 9, 1986 (working day 687)

As can be seen, several of the dates in unit 500 and unit 700 extend past the contract completion date. The network dates are only to be used as measuring devices and do not represent any approval of an extension of time past the contract completion date.

It is imperative that the owner, the architect/engineer and the contractors continually review the status of the project and the insure that steps are taken to bring the project back into line with the contract completions. The monitoring below is based upon an evaluation of the project against the target dates shown above.

A brief review of each major facility in contract B is given below:

Unit 400 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

The current lag at 401 is about 38 working days which should bring completion, if remaining work is pursued aggressively, to a target within the contract completion date. At the succeeding areas, 402, 403, and 404, lags decrease, being about 30 working days at 402, about 25 working days at 403, and about 10 working days at 404. I recommend that efforts be made to complete the entire 400 building 400 and to complete the contractor punch out ready for owner and architect/engineer inspection and punching out. Once the building has been completed it should be possible to close it off as a unit to any construction traffic, minimizing damage to finish work.

It is very desirable to progressively close out facilities such as these and, in my opinion, if this is done it would be of great benefit to all parties concerned.

As in the past, the units throughout the contract B area are showing signs of being brought to the same point of field work which means that it becomes difficult, if not impossible, to properly cycle the starts and completions of critical trades. To fail to correct this problem at this late stage in the project would be serious, and would detract from the potential of completing the entire project by the contract completion date.

Unit 500 - Monitored from Issue #10 dated January 24, 1986 (working day 527).

The current lag at 501 is about 8 working days.This lag is primarily in installation of plumbing fixtures. There is aconsiderable amount of work here because of the need for plumbing each individual cell. Therefore, it is strongly recommended that heavy attendion be given mechanical finish work immediately.

At 502, work is meeting targets between early and late starts and finishes but is beginning to show signs of dropping behind the target dates which had been established in the Issue #10 network model dated January 24, 1986 (working day 527).

As with unit 400, the work is tending to be brought to a similar point of completion before succeeding trades are started. This prevents a proper turnover cycle of work, and makes it very difficult to complete as much work as must be done concurrently. The 500 unit also offers an excellent opportunity to bring the full project to completion to inspect and punch it out and then to close it to construction traffic. By doing this sequentially from 400 to 500, it will help move the trades into an intensive completion sequence at building 700.

Unit 700 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Work at the 700 areas seems to be moving relatively well in relation to the target completion dates shown earlier in this report. However, it is important to note that practically all work in unit 700 has been currently shown as completing at a later date than the contract completion target. This is presently not an acceptable schedule of completions, and every effort must be made to bring the project into an earlier completion work mode.

Interior finish work at each of the units is in progress with work at 701 being concentrated on completion of plastering at the ceilings and fascia.At unit 702, plastering is in

progress. At unit 703, plastering is also in work as is the completion of framing and lath.At 704, framing and lath for plaster surfaces is being brought to a point where plastering can start.

There apparently are still elements of the mechanical work that must be completed for full progress to be maintained in the 700 unit.

It is recommended that in all meetings relative to the work to be done that contractors be requested to specifically identify the elements of work that are restraining them from completing their work on the project, or on the phase of project upon which they are engaged. At this point on the project, when there are only about 58 working days to completion, the schedule of work to be done must be identified explicitly at each session. Otherwise, there are bound to be discrepancies and loose ends that are not accommodated.

A schedule of punching out and turning over for each of the 10 units in the contract B is essential to completion.

General

Overall, the project is now at a point where it does not appear it can meet its contract completion targets unless extra special attention is given to the completion sequence and a special concentration of effort is made on finishing areas that are well along in work and closing them to construction traffic. I strongly recommend this matter be discussed in detail with all concerned as soon as possible.

I shall be in touch with Mr. Whiting shortly to set the next monitoring session.

Ralph J. Stephenson, P.E.

RJS:sps
To: Mr. Jerry Whiting
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

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

May 23, 1986

Subject: Monitoring Report #24

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities

Account #110-47-2699-001

Project: 84:298

Date of Monitoring: May 9, 1986 (working day 602)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner, site representative, and architectural site representative
- Evaluated current project status

The project is being monitored from a set of networks which currently contain target completion dates as follows:

	Building work	Security work
Unit 401	p.m. March 7, 1986 (working day 558)	p.m. March 31, 1986 (working day 574)
Unit 402	p.m. March 28, 1986 (working day 523)	p.m. April 21, 1986 (working day 589)
Unit 403	p.m. April 18, 1986 (working day 573)	p.m. May 12, 1986 (working day 604)
Unit 404	p.m. May 9, 1986 (working day 603)	p.m. June 3, 1986 (working day 619)
Unit 501	p.m. May 29, 1986 (working day 616)	p.m. June 20, 1986 (working day 632)

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CONSULTING ENGINEER

Unit 502	p.m. June 19, 1986 (working day 631)	p.m. July 7, 1986 (working day 647)
Unit 701	p.m. June 12, 1986 (working day 626)	p.m. July 7, 1986 (working day 642)
Unit 702	p.m. July 3, 1986 (working day 640)	p.m. July 28, 1986 (working day 657)
Unit 703	p.m.July 25, 1986 (working day 656)	p.m. Aug. 18, 1986 (working day 672)
Unit 704	p.m. Aug. 15, 1986 (working day 671)	p.m. Sept. 9, 1986 (working day 687)

It should be noted that several of the dates for unit 500 and 700 completions extend past the contract end date. These dates shown above are to be used only as measuring points and do not represent any approval of an extension of time past the contract completion date.

A brief review of each major facility in contract 8 is given below:

Unit 400 - Monitored from Issue #10 dated January 24, 1986 (working day 627)

The current lag at 401 appears to be about 57 working days, an increase over the previous monitoring. In addition, corrective work at the slab on grade in the connecting link is presently causing some severe dust problems in the area.Cleaning will undoubtedly take a considerable amount of time since dust has settled on most of the exposed surfaces in the unit. The lag at 401 will probably bring completion to late May or possibly early June, 1986 for building work. It has been suggested that the contractor try to complete his punching out and then have the owner punch out the facility so as to be able to lock up the entire 400 unit to construction traffic and focus trades work on the other units. It does not appear that strong efforts are being made at present to accomplish this. Most of the work in the 400 unit in each of the pods is about at the same position and this status will make it difficult to finish them in any ordered sequence since the trades are apparently not moving in a structured manner through the building.

At 402, the lag currently is about 50 working days which puts completion of building work in mid or late June, 1986. Here as with the other 400 areas the work remaining is relatively small but does not appear to be being addressed in an intensive and planned manner.

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At unit 403, the lag is about 46 working days bringing completion of building work there to late June, 1986 on a projected basis. With intensive attention to the four pods in 400, probably most of the building work could be brought to completion by early June, 1986, ready and available for cleaning, contractor punching, and owner punching. This would be of help in moving out of the facility and getting it ready for occupancy. I suggest that intensive discussions be held to try and accomplish this.

At 404 the lag is about 30 working days, bringing the target completion of building work to mid or late June, 1986.

Unit 400 is at a point presently where with some concerted effort it could be completed in a relatively short period of time.If there is any intention of turning this facility over and accepting it by the target completion date of July 2, 1986 p.m. (working day 640) plans must be made now for the process by which the area is going to be accepted. I recommend highly that all concerned strive toward finishing the 400 unit and moving out of it, locking it to all except absolutely essential construction traffic.

Unit 500 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

At unit 501 the current lag is about 19 working days an increase over the eight working days noted on April 11, 1986 (working day 582). Currently interior finish work is in progress and with the projected lag the finish exclusive of security work is estimated at mid or late June, 1986.

At unit 502, the lag is about three working days primarily in installation of plumbing fixtures. There is, however, a major problem with doors in the 500 unit that must be addressed now and resolved quickly. This matter is under discussion at present. The projected completion of building work with the current lag brings the job to a finishing point in late June, 1986. Please note that in most evaluations the security work extends beyond the building work completion dates. The completion projected takes into account only building work at present.

Unit 700 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

At unit 701, the lag has increased to 14 working days which brings a projected completion of building work to early July, 1986 and security installation to late July or early August, 1986. Over the past month work has moved relatively well at the total 700 unit. However, it is being measured against a set of dates that, for the most part, extend beyond the target

contract completion points. Therefore, of course, it is not appropriate to consider that this unit will be able to be finished by the present target contract completion date of July 2, 1986 (working day 640).

Again, I recommend that discussions be initiated between the owner and the contractors relative to the actual completion targets projected. I em presently making an informal update of the network models to determine the revised projected end dates relative to the current status of the work. I shall discuss these with the contractors involved and the owner once this updating has been brought to an initial preliminary point and before it is issued for full use.

At unit 702, the current lag is about four working days which is an increase over the previous position of the job. This lag brings completion of building work to mid July, 1986 and security work to early August, 1986.

At unit 703 work is currently meeting targets between early and late starts and finishes in accordance with the current network model. However, these dates are well past the contract completion targets as desired. The dates shown in the current network model for completion of the 703 building work are p.m. July 25, 1986 (working day 656) and p.m. August 18, 1986 (working day 672) for security systems installation.

Work at unit 704 is also currently meeting targets between early and late starts and finishes in accordance with the Issue #10 network model dated January 24, 1986 (working day 527). The target completion dates in the network for unit 704 are shown for building work at August 15, 1986 p.m. (working day 671) and September 9, 1986 p.m. (working day 687). It presently appears there is little, if any, chance of completing any of the 700 building by the contract completion target of July 2, 1986 p.m. (working day 640). Therefore, as recommended with the other units that discussions be initiated immediately as to what realistic completion dates can be expected and what punching out schedules by the contractor followed by those prepared by the owner to determine when move in might be accomplished.

General

Overall, the project is now at a point where a concerted effort should be made to clean and take all corrective action required to lock each of the 400, 500, and 700 buildings to construction traffic. The 400 building is in such condition that if an intensive effort is made to do this it probably could be cleaned and locked to most traffic by the end of June, 1986. Again, it will take an intensive effort to accomplish this.

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The 500 unit could probably be completed and traffic limited there by late July, 1986. At the 700 building the work there probably could be completed and the building locked by mid September or early October, 1986. In any event, I strongly recommend a studied plan of turnover of the buildings be prepared by the owner and the contractors and that this plan be worked to by both parties in order to give the occupancy of this facility more predictability and control potential.

I shall be in touch with Mr. Whiting shortly to set the next monitoring session. Meanwhile, I shall update the network models in accordance with the current status of the work and then review these with those involved for comments and revisions prior to issuing.

Ralph J. Stephenson, P.E.

To: Mr. Jerry Whiting
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Beraboli
Mr. Tom Davis

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

July 12, 1986

Subject: Monitoring Report #15

Contract B, Scott Regional Facility

Northville, Michigan

Bureau of Facilities

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: June 19, 1986 (working day 630)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner and architectural site representatives
- Evaluated current project status

The project is being monitored from networks containing target completion dates as follows:

	Building work	Security work
Unit 401	p.m. March 7, 1986 (working day 558)	p.m. March 31, 1986 (working day 574)
Unit 402	p.m. March 28, 1986 (working day 523)	p.m. April 21, 1986 (working day 589)
Unit 403	p.m. April 18, 1986 (working day 573)	p.m. May 12, 1986 (working day 604)
Unit 404	p.m. May 9, 1986 (working day 603)	p.m. June 3, 1986 (working day 619)
Unit 501	p.m. May 29, 1986 (working day 616)	p.m. June 20, 1986 (working day 632)

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	Building work	Security work
Unit 502	p.m. June 19, 1986 (working day 631)	p.m. July 7, 1986 (working day 641)
Unit 701	p.m. June 12, 1986 (working day 626)	p.m. July 7, 1986 (working day 641)
Unit 702	p.m. July 3, 1986 (working day 640)	p.m. July 28, 1986 (working day 657)
Unit 703	p.m. July 25, 1986 (working day 656)	p.m. Aug. 18, 1986 (working day 672)
Unit 704	p.m. Aug. 15, 1986 (working day 671)	p.m. Sept. 9, 1986 (working day 687)

It should be noted that several of the dates for units 500 and 700 extend past the contract end date. The dates above are to be used only as measuring points and do not represent any approval of time extending past the contract completion dates.

A brief review of each major facility in contract B is given below:

Unit 400 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Units 401 through 404 are all at approximately the same stage of completion with 401 and 402 being slightly more complete than 403 and 404. Overall it appears that there could be from 20 - 30 working days of 400 unit building work yet to be accomplished. This brings projected completion to late July or early August, 1986, a lag of 30 to 50 working days over the desired targets set in the current network monitoring models.

There has been considerable difficulty in getting these areas in condition for punching out. However, they are now at a point where with some concerted effort, particularly on corrective work and clean up, that punching out could start in the near future. The major remaining items are finish trim that generally can be installed rapidly. I strongly recommend that the remaining items be cleaned up as quickly as possible.

There are also some other elements of the project that should be given careful attention including mechanical equipment rooms and completion of roofing.

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Unit 500 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

At unit 500 the current lag has increased to about 30 working days in the building work and about 35 working days in security work. Both units 501 and 502 are about at the same position and have about 25 to 50 working days of installation remaining. This brings the projected completion of these areas to early August for building work and early September, 1986 for security work. There was no detailed evaluation made of the current status of security work, and I suggest at our next planning and monitoring session we thoroughly evaluate the planned completion of security work.

Unit 700 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Progress at unit 700 is such that the various interior operations are approaching the same level of completion in 701, 702, 703, and 704. Measuring the lags there the 704 unit probably is about three working days behind the dates established as desired target completions. This is a slippage over the previous monitoring on May 9, 1986 (working day 602). Projecting completions from teh current lag it seems that building work in 700 could probably be done by late August, 1986 or early September, 1986 with security work being complete in mid to late September, 1986.

The main problem at unit 700 is that all of the units are being brought to the same state of completion meaning that the trade finishes will have to be staggered on out. Looking at unit 701, it will probably require about 36 to 40 working days to compelte building work and at unit 702 it will take about the same amount of time. However, this is assuming that all trades work concurrently which has not proven to be the case in the past.

Thus, if we stagger the units on a turnover cycle of 10 - 15 working days we find that completion of 704 in the sequence would be brought to about 80 days from the current monitoring date of June 19, 1986 (working day 630). This would put project completion in late September or early October, 1986, with security installation and testing extending beyond this date. The problem, is intensified by the need to finish unit 500 concurrently with 700. We shall further evaluate the current situation in these buildings at our next planning and monitoring session.

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One element that has not been monitored on an ongoing basis is installation of equipment rooms at each of the units. These rooms are at various stages of construction and the status of each should be reviewed and evaluated to determine when they can be brought on line. At our next planning and monitoring session it would be good to review both the security system status as well as the current progress being made toward completing all mechanical equipment rooms at each of the units.

Overall, the B contract is now at a point where the projected completion is probably optimistically in mid or late August, 1986 or pessimistically in early or mid-October, 1986. This is presuming that manpower on the job can be deployed properly and the movement of the trades through the various units is maintained aggressively and continuously.

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

Ralph J. Stephenson,P.E.

RJS:sps
To: Mr. Jerry Whiting
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

August 2, 1986

Subject: Monitoring Report #26
Contract B, Scott Regional Facility
Northville, Michigan
Bureau of Facilities
Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: July 11, 1986 (working day 645)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner and architectural site representative
- Discussed project briefly with general contractor representative
- Evaluated current project status

The project is being monitored from networks containing target completion dates as follows:

	Building work	Security work
Unit 401	p.m. March 7, 1986 (working day 558)	p.m. March 31, 1986 (working day 574)
Unit 402	p.m. March 28, 1986 (working day 523)	p.m. April 21, 1986 (working day 589)
Unit 403	p.m. April 18, 1986 (working day 573)	p.m. May 12, 1986 (working day 604)
Unit 404	p.m. May 9, 1986 (working day 603)	p.m. June 3, 1986 (working day 619)

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Unit 501	p.m. May 29, 1986 (working day 616)	p.m. June 20, 1986 (working day 632)
Unit 502	p.m. June 19, 1986 (working day 631)	p.m. July 7, 1986 (working day 641)
Unit 701	p.m. June 12, 1986 (working day 626)	p.m. July 7, 1986 (working day 641)
Unit 702	p.m. July 3, 1986 (working day 640)	p.m. July 28,1986 (working day 657)
Unit 703	p.m. July 25, 1986 (working day 656)	p.m. Aug. 18, 1986 (working day 672)
Unit 704	p.m. Aug. 15, 1986 (working day 671)	p.m. Sept. 9, 1986 (working day 687)

It should be noted that several of the dates for units 500 and 700 extend past the contract end date. It is intended that the dates as set above will be used only as measures of project progress. They do not represent an approval of time to extend past the contract completion dates.

A brief review of each major facility in contract B is given below:

Unit 400 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Work remaining in units 401 through 404 deal primarily with completion of glazing, miscellaneous painting, and trim work. It appears that probably all work in units 401 through 404 could be completed in five to fifteen working days if heavy efforts were made. The problem that still remains in these units is that they are open to construction and casual traffic which prevents them from being fully cleaned and punched out. I recommend that attention be given to cleaning units completely, punching them finally, and locking them to traffic.

Unit 500 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Both units 501 and 502 are at approximately the same point of completion. It appears that in each unit there remains about 20 to 25 working days to complete. This would bring completion of the 500 unit to early or mid-August, 1986 which is lag of

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between 39 and 49 working days over the target dates. Again, as with unit 400, work is now nearly at a point in unit 500 where consideration of full punching out and locking of the building to casual traffic should be considered. There is also corrective work to be done there which should be accomplished quickly if the project is to be completed by the presently projected early or mid-August, 1986.

Unit 700 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Progress continues fair at units 701 through 704 so that all are being maintained at about the same level of completion. From our inspection there appears to be from 20 to 30 working days remaining to complete all of 700. This would bring projected completion to mid or late August, 1986. The lag, thus, over the above dates ranges from 0 to 40 working days.

The difficulty in completing work at building 700 and 500 within the remaining period projected, which for both buildings was between 20 and 40 working days, was that it will require large concentrations of similar finishing trades at all of the building concurrently. In addition, building 400 must still be completed using somewhat similar trades to a lesser extent. If all of this work can be done concurrently it is possible that the project could be completed by late August or early September, 1986. However, it is impossible to project with accuracy whether this concentration of effort will be provided.

General

This monitoring did not include an evaluation of security work since it is being reviewed continuously by the owner and the security contractor. I suggest this review continue to insure that security installation is brought to completion concurrently with building completion.

At present building completion appears feasible by early September, 1986 and security work should be tailored to accommodate this date.

I shall be in touch with Mr. Whiting shortly to confirm our next monitoring. Meanwhile, it is recommended that the owner and the contractors, along with the architect/engineer, make a

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

determined effort to punch out, correct, clean, and move out of each unit as it is available. This will assist greatly in final turnover of the project for occupancy.

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Jerry Whiting
cc: Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

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

August 29, 1986

Subject: Monitoring Report #27

Contract B, Scott Regional Facility

Northville, Michigan

Bureau of Facilities

Account #110-47-2699-001

Project 84:29B

Date of Monitoring: August 4, 1986 (working day 661)

Monitored from networks as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 p.m. (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner and architectural site representative
- Discussed project briefly with general contract superintendent
- Evaluated current project status

The project is being monitored from networks containing target completion dates as follows:

	Building work	Security work
Unit 401	p.m. March 7, 1986 (working day 558)	p.m. March 31, 1986 (working day 574)
Unit 402	p.m. March 28, 1986 (working day 523)	p.m. April 21, 1986 (working day 589)
Unit 403	p.m. April 18, 1986 (working day 573)	p.m. May 12, 1986 (working day 604)
Unit 404	p.m. May 9, 1986 (working day 603)	p.m. June 3, 1986 (working day 619)

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

Unit 501	p.m. May 29, 1986 (working day 616)	p.m. June 20, 1986 (working day 632)
Unit 502	p.m. June 19, 1986 (working day 631)	p.m. July 7, 1986 (working day 641)
Unit 701	p.m. June 12, 1986 (working day 626)	p.m. July 7, 1986 (working day 641)
Unit 702	p.m. July 3, 1986 (working day 640)	p.m. July 28, 1986 (working day 657)
Unit 703	p.m. July 25, 1986 (working day 656)	p.m. Aug. 18, 1986 (working day 672)
Unit 704	p.m. Aug. 15, 1986 (working day 671)	p.m. Sept. 9, 1986 (working day 687)

It should be noted that several of the dates for units 500 and 700 extend past the contract end date. It is intended that the dates above will be used only as measuring points. They do not represent an approval of time to extend past the contract completion dates.

A brief review of each major facility is given below:

Unit 400 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

All units in building 400 are nearly complete and all are at practically the same position. Some punching out has been made but very little corrective action has been taken on these units to date. It is not clear from our monitoring what the plan for completing the units, punching them out, taking corrective action, and turning them over is. I strongly recommend that the owner and the architect/engineer in conjunction with the contractors decide immediately what is intended in the punching out and turnover process so that there is no question whatsoever about procedures to be followed.

It is to be noted again that the units are not generally locked to construction traffic and clean up is somewhat complicated by the amount of casual pedestrian access maintained to the job from outside.

The analysis above does not take into account security work which was not monitored at this session. This work probably will extend on past the normal building work although at this time there has been enough access available for the security

contractor so that he may be able to finish up concurrently with other work.

Unit 500 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

In building 500, no punching out has been done as yet. It appears, however, that there remains about 5 to 10 working days to complete building work except for doors. Trouble is still being encountered with hardware in the doors and they could take as much as 10 - 15 working days to complete.

There was no accurate information available on control work, but this could take as much as 20 to 25 additional working days to complete.

There is mechanical work yet to complete in heating, ventilating, and air conditioning, as well as in fire protection work. This must be brought to completion concurrently with building work.

As with building 400, a procedure should be established in the near future with all contractors, the owner, and the architect/engineer to outline what is required to complete these buildings and turn them over for occupancy. This procedure so far does not appear to be clearly set nor understood by all parties, and it is critical to a proper turnover of the facilities.

Note that as with building 400 the evaluation above does not extend in detail to the security installation.

Unit 700 - Monitored from Issue #10 dated January 24,1986 (working day 527)

Most of the 700 units are about at the same position of completion and there appears to be about 20 working days to complete all work except for security installation. Security installation was not evaluated at this monitoring.

Balancing of mechanical systems in the buildings is due to begin on August 7, 1986 (working day 664). Boilers are to be started up about the same time. There has been no punching out on the 700 units as yet.

Again, the major difficulty that probably will be encountered is that all the 500 and 700 units are completing concurrently.

RALPH J. STEPHENSON, P.E., P.C.
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At the 700 unit, it is to be noted that there is no punch out yet and this means that in addition to the need to complete the work time must be allocated to punch out the job and take corrective action that will be needed as a result of the punching out. We had a brief discussion with the general contractor superintendent and representative on the job relative to punch out.

General

As noted above this monitoring did not include an evaluation of security work. Overall, the work in units 400 to complete deals mainly with correction of work to be done so the facilities are acceptable to the owner.

I shall be in touch with Mr. Whiting shortly to confirm the next monitoring as may be needed.

Ralph J. Stephenson, P.E.

RJS:sps/gmy
TO: Mr. Jerry Whiting
Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
Mr. Walter Baraboll
Mr. Tom Davis

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

October 11, 1986

Subject: Monitoring Report #28

Contract B, Northville, Michigan

Scott Regional Facility

Bureau of Facilities

State of Michigan

Account #110-47-2699-001

Project: 84:29B

Date of Monitoring: September 2, 1986 (working day 681)

Monitored from issues as noted below

Date of notice to proceed: June 10, 1984 (working day 110)

Contract completion date: July 2, 1986 (working day 640)

Actions taken:

- Inspected project
- Reviewed project with owner and architectural site representative
- Evaluated current project status

The project is being monitored from networks containing target completion dates as follows:

	Building work	Security work
Unit 401	p.m. March 7, 1986 (working day 558)	p.m. March 31, 1986 (working day 574)
Unit 402	p.m. March 28, 1986 (working day 523)	p.m. April 21, 1986 (working day 589)
Unit 403	p.m. April 18, 1986 (working day 573)	p.m. May 12, 1986 (working day 604)
Unit 404	p.m. May 9, 1986 (working day 603)	p.m. June 3, 1986 (working day 619)
Unit 501	p.m. May 29, 1986 (working day 616)	p.m. June 20, 1986 (working day 632)
Unit 502	p.m. June 19, 1986 (working day 631)	p.m. July 7, 1986 (working day 641)

Unit 701	p.m. June 12, 1986 (working day 626)	p.m. July 7, 1986 (working day 641)
Unit 702	p.m. July 3, 1986 (working day 640)	p.m. July 28, 1986 (working day 657)
Unit 703	p.m. July 25, 1986 (working day 656)	p.m. August 18, 1986 (working day 672)
Unit 704	p.m. August 15, 1986 (working day 671)	p.m. September 9, 1986 (working day 687)

It should be noted that several of the dates above for Unit 500 and 700 extend beyond the contract end dates. It is intended that the dates be used only as measuring points and that they do not represent an approval of time to extend past the contract completion dates.

A brief review of each major facility is given below:

Unit 400 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

All buildings in Unit 400 are at about the same position. There has been no major progress since the previous meeting, although equipment rooms are being hooked up and security is nearly complete. The areas could be finished off with concentrated attention in probably 3 to 8 working days.

Unit 500 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

Door corrections in Building 501 are nearly complete and are in progress in Building 502. There is still considerable clean up and corrective action to be taken. Since the amount of time remaining to complete work will depend totally upon the degree of attention given this completion.

Aside from door corrective work the areas could probably be finished off in 5 to 10 working days, exclusive of security installation. There was no authenic data on the amount of time remaining for installation of security equipment.

Unit 700 - Monitored from Issue #10 dated January 24, 1986 (working day 527)

All 700 units are at about the same point of completion. Painting is still to be completed, some sprinkler trim is to be done, carpet must be completed, and the lifts must be hooked up. There still remains 10 to 15 working days to complete Unit 700. No authenic word was available on completion on security equipment.

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

General

The project is now at a point where additional monitoring is not required. Therefore, I shall not inspect the project further unless there is a specific need.

I would like to thank the owner, the architect/engineer, and the contractors for the assistance and cooperation given me in the planning and monitoring the project.

I shall not be in touch with Mr. Whiting re further sessions unless there is a need expressed.

Ralph J. Stephenson, P.E.

RJS:gmy
TO: Mr. Gerald Whiting
Mr. Leo McGough
Mr. Charles Brassel
Mr. Chris Drake
Mr. M.P. Kamath
Mr. Rupert Davey
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