

December 15, 1978

Subject: Monitoring Report #1

Ann Arbor Waste Treatment Plant

77S7 Ann Arbor, Michigan

Spence Brothers, General Contractors

Date of Monitoring: December 5, 1978 (working day 237)

Project: 78:58

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Monitored from Issue #2 dated November 10, 1978, sheets SM1, SM2 and SM3

Actions taken:

- Continued work on summary diagram and detail diagrams
- Evaluated current job status
- Conferred briefly with owner's scheduling representative re work progress

General Summary

Currently Detroit Edison is just starting their work on relocating the existing power line at the primary settling tank (PST). We are assuming this work will be done by December 15, 1978 (working day 245) which should allow energizing the relocated power line, tapping in the temporary power line at the temporary drop and then removing the existing power line and poles at the primary settling tanks.

The existing dry ash system was deactivated on November 6, 1978 (working day 217) and the area is now being cleaned so mass excavation can begin for the new aeration tank complex. Work there is expected to begin about December 4, 1978 (working day 236).

Sludge building substructure is currently in work and field operations will be continued as weather permits. Completion of the substructure work is dependent upon removal of the existing north/south power feeds

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

to the plant as discussed above.

Work at the maintenance building is proceeding fairly well. Once closed in, it will be used as a temporary storage facility for the contractors.

Our major effort at this session was focused upon reviewing and revising the summary networks, sheets SM1, SM2 and SM3, Issue #3 dated December 5, 1978 (working day 237). During this process ~~we~~ ~~estimated the owner's scheduling consultant's requests and made every~~ ~~effort to conform wherever possible to these suggestions.~~ Summary networks are presently being drafted into final form for issue.

As part of our session we also identified to the best extent possible the long lead time equipment necessary to place in the various facilities prior to total close-in. In respect to procurement and delivery schedules, it has been decided that the very complex mechanical and electrical procurement details will be provided to the owner by copies of the mechanical and electrical contractors procurement logs. This matter will be handled by the mechanical and electrical contractor in conjunction with the general contractor.

At our afternoon session we continued preparing detail diagrams of the sludge building on through close-in. We also checked over our network on the maintenance building up through close-in. It is intended to continue working on these projects as intensively as possible and as information is obtained from the various sources required.

Presently as noted above, the summary diagram is being drafted into final form and dated with early start/early finish calendar dates.

~~We are holding a target startup and debugging point of April 10, 1981~~ ~~(working day 836)~~ for the new plant which should give us adequate time to complete startup procedures at the plant and subsequently remodel the existing plant as required.

Our next planning session is set for December 19, 1978 at the site. During the session we will continue to plan procurement and detail activities for the entire project.


Ralph J. Stephenson, P. E.

RJS/m

To: Mr. Hugh Spence
Spence Brothers
55 S. Dixboro Road
Ann Arbor, Mich. 48105

(Original and 1 copy)

January 4, 1979

Subject: Monitoring Report #2
Ann Arbor Waste Treatment Plant
7757 Ann Arbor, Michigan
Spence Brothers, General Contractors

Date of Monitoring: December 19, 1978 (working day 247)

Project: 78158

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target contract completion date: January 1, 1982 (working day 1021)

Actions taken:

- Reviewed summary networks, sheets S1, S12, S13 and S14, Issue #3 dated December 5, 1978 (working day 237)
- Established major field priority plans for next 6 to 8 months
- Reviewed current Issue #3 networks for close-in of sludge building (Issue #3 dated December 5, 1978, sheets 1 and 1A)
- Began diagramming aeration tank complex (primary, blower and electrical building and aeration tank)

General Summary

The early work today was a review of the final drafted summary network to make it suitable for issuance to the owner. In this network each major sector of the project is shown in a summary diagram indicating the early start and early finish dates by calendar date. It should be noted that dates are shown in month, day of month and year with the year indicated by an 8, 9, 0 or 1 indicating 78, 79, 80 and 81. This network model will be used as a guideline for major work in the field and will also be helpful in preparing detail project networks to follow. Mr. Spence will distribute the plan of work as he feels appropriate.

~~Reviewed mechanical and electrical interfaces into the network~~
with the mechanical and electrical contractors. Both contractors are working on their procurement plans and although much has been done, there still remains a considerable amount of work before total definitive

and authentic information can be given for all procurement items. Both the mechanical and electrical contractors have prepared detailed procurement logs by which they hope to let contracts, process shop drawings and fabricate and deliver material and equipment. These logs have or will be provided to the owner as required and as felt necessary. Procurement work which directly affects activities shown in the network model will be indicated on the network plan as each contractor feels necessary. I strongly recommend the network model be used in conjunction with the procurement log to follow and expedite delivery of materials as the project progresses.

Both mechanical and electrical contractors are working on their action plans which are to interface with the master detailed network now in preparation by the general contractor. We will continue to tie in the mechanical and electrical information, both front end and field, as provided. The objective is to continue planning in detail for 6 to 8 months ahead using the summary network model as a guideline to insure that this planning is consistent with overall objectives of the total project. Meanwhile, of course, we are continuing to prepare the longer range, detailed networks.

Our afternoon work at this session was to begin detail diagramming of the aeration tank complex (ATC). ATC work includes the aeration tank proper (AT), the primary building (PB), the blower building (BB), the electrical building (EB) and where appropriate to combine, the blower and electrical building (BE). The preliminary network model for these facilities is shown on sheets 3 and 4, Issue #4 dated December 19, 1978.

Present ATC plans are that once the existing ash lagoon is pumped dry, mass excavation for the primary building will begin, followed by mass excavation at the electrical building, the blower building and the aeration tank. After mass excavation at the primary building, the auger cast piles will be driven followed by piles at the electrical and blower building and then at the aeration tank. Since the aeration tank complex is emerging as a very critical part of the total program, as much heavy, early attention as possible is being focused there now. It is, of course, being started in a very difficult time of the year but hopefully, by careful use of good construction techniques, the work on installation of the mud mat, base mat and walls and columns will be able to start as early as March 20, 1979 (working day 310). It is expected that work will carry on continuously through to close-in of each individual facility where interior work is to be installed. Careful attention by all members of the project team will be important to insure that submittals, approvals, fabrication and deliveries are carefully and continuously expedited, particularly at the ATC, a vital part of the new facility.

We are presently using the table shown on sheet S11 of the summary network model, Issue #3 dated December 5, 1978 as our standard of measure for shop drawing turn-around. Apparently these dates have been discussed with the architect/engineer and are satisfactory.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Prints of the network models prepared and issued at this session are being made by Mr. Spence and will be distributed as felt appropriate. Meanwhile, we have set our next planning session at which it is the intent to continue detail work on the structures and close-in of all the major facilities. When these structural network models have been substantially completed, we will then begin preparing detail networks for equipment and machinery installation. Meanwhile, the mechanical and electrical contractors are obtaining as much data as possible for use in the preparation of these network models. They probably will be an integral part of our ongoing meetings, as we plan equipment installation.

Ralph J. Stephenson, P.E.

RJS

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To: Mr. Hugh Spence
Spence Brothers
55 S. Dixboro Road
Ann Arbor, Mich. 48105

(Original and 1 copy)

May 13, 1979

Subject: Monitoring Report #3
Ann Arbor Waste Treatment Plant
77-5-7 Ann Arbor, Michigan
Spence Brothers, General Contractors

Project: 78:58

Date of Monitoring: May 10, 1979 (working day 347)

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: January 1, 1982 (working day 1321)

Actions taken:

- Conferred with Mr. Spence and [redacted] re planning and scheduling
- Inspected project
- Reviewed and updated as necessary networks for Issue #7, dated April 13, 1979 (working day 328) for areas 1, 2 and 3
- Evaluated current job status

General summary:

The network model for major portions of the project has now been substantially completed, is being drafted into final form, debugged and subjected to computer processing. There is still some updating necessary and this will be done as the network model is issued in sections.

We have divided the project into three major areas for ease of analysis; these are as follows:

- Area 1 includes:
 - Sludge building (SB)
 - Special corridor (X)
- Area 2 includes:
 - Sludge thickener tanks (STT)
 - Sludge thickener building (STB)
 - Primary settling tanks (PST)
 - Aeration tanks (AT)
 - Primary building (PB)
 - Electrical building (EB)
 - Blower building (BB)

- Area 3 includes:
- Final settling tanks (FST)
 - Chlorine contact tank (CCT)
 - Tertiary filter (TF)
 - Maintenance building (MB)
 - Storm water pump station (SWP)

We will monitor the project by major areas and the network model will be issued in accordance to the area breakdown above.

A brief review of each major area status is given below:

Area 1 - Sludge Building (SB)

Presently, foundation work is substantially complete except for miscellaneous footings left out at the west side of the building for access to the lower level. All walls and columns to the first supported deck have been completed less a series of columns at the west side of the building. These have been formed and are ready to pour.

However, on April 30, 1979 (working day 339) the concrete truck drivers went out on strike and are still off work. There is no current word on when this strike will end. When it does there will probably be a sizable order backlog which may impose a slow start of concrete work on the job; thus, it is not possible at the present time to project with any accuracy resumption of concrete pouring at the site.

Forming has started for the supported deck at the first floor and will continue as far as possible without pouring. At present the lag of deck work over the Issue #7 network is 10 to 12 working days. It can be expected this lag will increase as the concrete strike goes on.

It would be desirable for ease of access to have early deliveries on the lime slurry day tanks and the ferric chloride tanks. Presently, ferric chloride tanks are expected on the job by June 15, 1979 (working day 372). There is no word on delivery of the lime slurry day tanks. The design of the tanks was revised, and shop drawings for the revised tank construction are now in to the architect-engineer for review and approval. There is no current word on when they will be returned.

Area 2 - Primary Building (PB)

Auger cast piles have been drilled and cast and excavation is substantially complete at the primary building. Underground mechanical work is due to begin there by June 1, 1979 (working day 362).

Area 2 - Aeration Tank (AT)

Excavation will start at the aeration tank on May 24, 1979 (working day 357). This work is expected to proceed on out to completion with the present goal to finish most major structural work at the aeration tank by winter.

At the blower and electrical building excavation is substantially complete and auger cast piles have been installed. Probably work on underground installation of utilities will begin about June 15, 1979 (working day 372). Delivery of pipe is presently the major hold up at the blower and electrical building.

Area 2 - Primary Settling Tanks (PST)

Excavation and center core work has proceeded for three of the four primary tanks. Some concrete work has also been done on the influent structure and flow splitter. It is expected that the primary influent and pumped sludge line to the edge of tank #4 will start May 17, 1979 (working day 352).

Work on excavation and the remaining parts of the other tanks will proceed within the near future. ~~Work was delayed by a break in the dike which contains Fleming Creek.~~ The creek was running high due to heavy rains three weeks ago, and the high water forced the dike to break, flooding the entire primary settling tank area. Work has not yet again resumed full production and the excavation is still being dewatered and cleaned.

Area 2 - Sludge Thickener Tanks (STT)

Excavation for tanks 1 and 2 has been completed and the mud mat for tank #1 has been installed. Work is about to begin on the base slab.

It is expected the owner will abandon the existing potable water well by June 1, 1979 (working day 362), which will allow work to begin at sludge thickener tank #3 and the sludge thickener building. This will be important since it is necessary to start work on the third tank and the building soon to complete them by cold weather.

Area 3 - Chlorine Contact Tank (CCT)

The tank has been half excavated and walls are formed and some re-enforcing set. However, the concrete truck drivers' strike has held up delivery of concrete and therefore work on the area has substantially stopped. It is not advisable to open up the rest of the excavation until there can be some assurance that work will proceed on a continuous basis. This is to avoid excessive weather exposure of the hole.

Area 3 - Storm Water Pump Station (SWP)

Work is expected to start on the storm water pump station by June 15, 1979 (working day 372). It is important that this work be carried out continuously once it starts.

Area 3 - Maintenance Building (MB)

Work will resume on the maintenance building June 1, 1979 (working day 362), with exterior masonry walls starting up then. Slab on grade work will resume the early part of July, 1979. Thus, the building should be able to be closed in late this summer.

Area 3 - Tertiary Filter (TF)

A test pile has been driven and tested. However, during the drilling of the test pile, ~~water was encountered and this has not caused serious delays to proceeding further with the work.~~

Currently a relief well has been drilled to the side of the filter structure and is running continuously at a high volume.

Exploration of the sub soil is in work and a solution to relieving the high head expected on the base slab is being evolved. Present design efforts are aimed at eliminating piling and design will be released. Meanwhile, to all intents and purposes, work has stopped in the field at the tertiary filter.

Area 3 - Final Settling Tanks (FST)

Presently it is expected that work at the final settling tank area can begin sometime in early fall. A tentative starting date of September 4, 1979 (working day 427) has been set; however, this is currently subject to review depending upon how work proceeds at the tertiary filter building.

General summary:

Overall the project is moving fairly well although presently it is being ~~delayed~~ by several ~~factors beyond control of the project forces.~~ The concrete truck drivers are on ~~strike~~ and this has stopped work where concrete is needed on an on-going basis.

~~Tertiary filter work has been held pending resolution of the foundation and work at the~~ thickener area is still ~~dependent upon~~ ~~approval~~ of the potable water supply by the owner.

The network model has been drafted and is presently being processed. It will be issued by areas with the model and accompanying run delivered as each area is processed.

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

Ralph J. Stephenson, P.E.

RJS:j

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j-

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

June 10, 1979

Subject: Monitoring Report #4

Ann Arbor Waste Treatment Plant

77-S-7 Ann Arbor, Michigan

Spence Brothers, General Contractors

Project: 78:58

Date of Monitoring: [REDACTED] 1, 1979 (working day 362)

Monitored from: [REDACTED] dated May 18, 1979 (working day 345)

Approximate date of notice to proceed: August 1, 1979 (working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Actions taken:

- Inspected project
- Confer with Mr. Spence re project progress
- Completed durations for Area #3 network Issue #8
- Evaluated current job status

General Summary

The network model for Area #1 (sludge building and corridor X) was distributed today to Mr. Spence. Area #2 will be issued next week, and Area #3 will follow shortly after. These areas are as defined in Monitoring Report #3, dated May 13, 1979, page 1 and 2.

[REDACTED] work on the project has been [REDACTED] or [REDACTED] completely by the [REDACTED] of concrete truck drivers. This strike began May 1, 1979 (working day 340) and there is no current probable end of the strike information available. We will, however, proceed to issue network models for areas #2 and #3 Issue #8, May 18, 1979 (working day 353) to provide a standard of performance by which we can measure job progress.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Monitored from Issue #8, dated May 18, 1979 - Sheets 1, 2, 3, and 4.

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The only major activity in work at the sludge building is forming of the second floor deck and completion of resteel work on the storm water tank cover. As many areas as possible are being made ready for receipt of concrete pending the end of the truck drivers' strike.

Currently, according to the Issue #8 network, the first floor supported deck should be about half poured out. However, the cement truck drivers' strike stopped work on columns to the second floor which, in turn, slowed the sequence of formed deck installation and setting in floor work. Therefore, the current lag is considered to be between 20-25 working days.

The major difficulty relative to the lack of concrete is that production on forming the second floor has slowed considerably since there is only a limited area in which to work.

At the stormwater tank cover, the deck is formed and resteel is set. This area is substantially ready for pouring.

The lime slurry day tank shop drawings were submitted and returned to be resubmitted. There is no current word on when they will be back for further approval. Ferric chloride tank shop drawings have been approved and the tanks should be in fabrication.

These tanks are important in that it would be desirable to get them into the building prior to installation of major structural work surrounding them. Whether or not this will be possible is yet to be determined.

Further work on the sludge building is substantially halted until the concrete truck drivers return to work.

Area 2 - Primary building (PB)

No work has been done on the Primary building since the previous monitoring report. Lack of concrete has stopped all work at this facility.

Area 2 - Aeration tank (AT)

Concrete truck drivers' strike has stopped projected work at this area. Excavation was originally intended to start in May. However, since concrete is not available it has been decided that excavation cannot be initiated since concrete is needed immediately after the area is opened to weather.

Area 2 - Blower and electrical building (BE)

No work has been done on this area since the previous monitoring. As with other areas, the concrete drivers' strike has halted all major operations.

Area 2 - Primary settling tanks (PST)

Work at the primary tanks has halted due to the concrete drivers' strike. Some miscellaneous work is being done on forming and setting resteel at the flow splitter. However, this is presently fill-in work.

Area 2 - Sludge thickener tanks (STT)

No work has been done on the sludge thickener tank area since the previous monitoring due to the concrete drivers' strike.

Area 3 - Chlorine contact tank (CTT)

No work has been done on the chlorine contact tank since the previous monitoring report due to the concrete drivers' strike.

Area 3 - Storm water pump station (SWP)

No work will be done at the storm water pump station until the end of the concrete drivers' strike.

Area 3 - Maintenance building (MB)

Exterior masonry will start up on the maintenance building shortly. The intent is to close in the building late this summer or in early fall.

Area 3 - Tertiary filter (TF)

Because of serious water problems that have been encountered, the project engineer and the owner have under study a plan to redesign foundations for the tertiary filter. No word is available on when the revised design will be issued.

The [REDACTED] encountered at the tertiary filter [REDACTED] to [REDACTED] heavily, and various methods are presently being tried to control this flow and lower the water level. There is [REDACTED] information on when work can resume at the tertiary filter area.

Area 3 - Final settling tanks (FST)

No work has been done at this area as yet.

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

General

The project is ~~almost completely stopped because of the current concrete truck drivers' strike.~~ No work continuity can be generated until this strike is over. In addition, it should be remembered that when the strike is over, the expected high demand for concrete will undoubtedly slow down the start up of the project once again. This matter will be evaluated at a later date. A decision on updating the network model will be made at that time.

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

Ralph J. Stephenson, P.E.
(signature)
Ralph J. Stephenson, P.E.

RJS:sps

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

July 5, 1979

Subject: Monitoring Report #5
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - General Contractors

Project: 78:58

Date of Monitoring: July 5, 1979 (working day 385)

Monitored from Issue #8, dated May 18, 1979 (working day 353)

Approximate date of notice to proceed: August 1, 1979 (working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Actions taken:

- Inspected project
- Conferred with Mr. Spence re project progress
- Evaluated current job status

General summary:

The Issue #8 network model, dated May 18, 1979 (working day 353), has now been issued with computer runs for areas 1, 2 and 3; the areas being as defined in Monitoring Report #3, dated May 13, 1979. These areas are also identified on drawing 4219-1, prepared by Spence Brothers.

The concrete drivers' strike, which began on May 1, 1979 (working day 340), ended June 11, 1979 (working day 368). This was a direct delay of 28 working days plus the time involved in slow down just prior to the strike and start up required once the strike ended. Mr. Spence has written a letter requesting an extension of time for this strike.

The network model Issue #8, dated May 18, 1979 (working day 353), is the current standard of performance and once full production has again been regained after the strike, we will evaluate the need to update the network to reflect current information.

Another uncontrolled problem that has affected the project, principally in delivery of materials, is the sporadic strikes, slowdowns, and work abstentions of truckers throughout the country. Problems with truck deliveries have been experienced over the past three months and have contributed on this job to delayed deliveries primarily of mechanical piping and equipment. Some of this material is critical to continuation of work on foundations for certain of the tank work.

As part of our monitoring, Mr. Spence and I inspected the job and a brief review of the status of each major area is given below:

Area 1 - Sludge Building (SB)

Presently work is proceeding on setting re-steel and other in-floor work at the first floor supported deck. It is expected the first pour can be made by about July 12, 1979 (working day 390). It was anticipated in the Issue #8 network, dated May 18, 1979 (working day 353) that this pour would be made about May 18, 1979 (working day 353); thus, the projected lag ranges from 32 to 37 working days.

The storm water tank cover was poured out about June 14, 1979 (working day 371) and is currently curing and being made ready for stripping. Miscellaneous work continues on the sub-base at the sludge building basement; however, most work there will be installed once decks above have been poured and form work stripped.

Shop drawings for the lime slurry day and the ferric chloride tanks have been approved, and presently the tanks are in fabrication. Lime slurry day tanks are due on the job sometime in mid or late December, 1979; ferric chloride tanks will be on the job sometime near the end of July, 1979. Mr. Spence commented it will be possible to set these tanks without holding construction of the sludge building structure.

Area 2 - Primary Building (PB)

Work on installation of underground mechanical has not yet begun at the primary building.

Area 2 - Aeration Tank (AT)

Mass excavation for the aeration tank has just started. This excavation was due to begin May 24, 1979 (working day 357); thus, the current lag is about 28 working days. The basic reason for deferring excavation at the aeration tank has been to avoid having open cuts sitting exposed to the weather without having assurance of concrete to construct structures in the excavation. Work is expected to continue now on an on-going basis at the aeration tank.

Area 2 - Blower and Electrical Building (BE)

No major work has been done at this area since the previous monitoring. Work is expected to begin shortly.

Area 2 - Primary Settling Tanks (PST)

Work is furthest along on tank #3, where the mud mat, cut-offs and relief valves are almost complete. It is expected that base mat forming will begin almost immediately. The lag at primary settling tank #3 is approximately 17 working days currently.

At primary settling tank #4, work at the center sump and on the primary influent pump sludge line is almost complete and backfill to the tank bottom will be started shortly. The current lag at PST 4 is about 21 working days.

At primary settling tank #1, mass excavation has not yet fully started and the lag there is currently about 33 working days.

At primary settling tank #2, the lag is about 5 working days with excavation for the tank bottom almost complete. The center sump and the primary influent pump sludge line has been installed and work can begin shortly on the tank bottom.

Area 2 - Sludge Thickener Tanks (STT)

At sludge thickener tank #1, the base mat is presently being formed and re-steel set for the pour. At sludge thickener tank #2, excavation is proceeding with a portion of the base mat mud slab placed and installation of the center core complete. At the thickener building and tank #3, no work has been started yet since the owner has not yet abandoned the existing potable water supply.

Work was due to begin on tank #3 and the thickener building by June 1, 1979 (working day 362) so the current lag over the desired starting date is about 23 working days. The lag from our evaluation at sludge thickener tank #2 is about 39 working days while sludge thickener tank #1 is currently meeting targets within the early start and early finish range.

It will become increasingly important, as summer moves on, to allow full work to be maintained in the sludge thickener tank area, particularly at the building and tank #3, so as to complete as much concrete work as possible before the onset of colder weather. This is true throughout the entire project area.

Area 3 - Chlorine Contact Tank (CCT)

The north half of the chlorine contact tank has been constructed to grade, and the supported deck, at the cover slab, is now being formed ready for setting re-steel. The pour for the north half of the supported deck was due to be made no later than July 13, 1979 (working day 391), and it appears presently this target is still achievable.

No work has begun at the south half of the tank, again because of the desire to not excavate unless construction of the structures was to follow immediately.

Area 3 - Maintenance Building (MB)

Work on overhead mechanical lines is underway and installation of underground plumbing is also in work. Masonry at the exterior of the building was expected to begin next week, probably July 9, 1979 (working day 387). Work at the maintenance building is currently meeting targets between early and late starts and finishes. It is still the desire to utilize this building for storage starting early fall, 1979.

Area 3 - Tertiary Filter (TF)

Tertiary filter construction has stopped completely, pending release of work on the revised foundation design. While drilling for the test column, an artesian well was struck on March 1, 1979 (working day 297). This stopped all work on piling until the water level could be drawn down to an acceptable point. Apparently this has now occurred and the test pile will be pulled and the hole stopped with concrete.

The foundations have been revised and the redesign was issued June 8, 1979 (working day 364). This redesign is now being estimated with a cost expected to be available next week. An early release on the work is, of course, desirable since again the amount of concrete work at the tertiary filter makes it important that as much be done prior to cold weather as possible.

There are now two temporary wells installed to assist in drawing down the water levels.

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Spence Brothers
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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

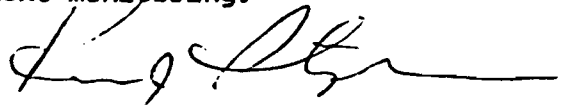
Area 3 - Final Settling Tanks (FST)

No work has been done at this area as yet.

General

The project is now starting up again after a 28 working day concrete truck drivers' strike. Of course, there was some slowdown prior to the strike and some slowness in starting up full production once the strike was over.

The basic lag on the project in those areas that show a lag, ranges from between 5 and 35 working days. We shall be able to better evaluate the position of the project at our next monitoring, since by then continuity on various elements of all three major areas should be better able to be seen. I shall be in touch with Mr. Spence shortly to set the date of the next monitoring.



Ralph J. Stephenson, P. E.

RJS:jc

To: Mr. Hugh Spence (original & 1 copy)

y/v [signature]

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

August 1, 1979

Subject: Monitoring Report #6
 Ann Arbor Waste Treatment Plant 77-S-7
 Ann Arbor, Michigan
 Spence Brothers - General Contractors

Project: 78:58

Date of Monitoring: August 1, 1979 (working day 404)

Monitored from [redacted] dated May 18, 1979 (working day 353)

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Actions taken:

- Inspected project with Mr. Spence
- Reviewed project status in progress with Mr. Spence
- Evaluated current job status

General Summary

The work pace on the project is beginning to pick up with the opening of additional areas of work on the site. However, there are still several delay problems being experienced.

One of the most serious of these continues to be at the area 3, tertiary filter building (TF). Working drawings for the revised foundation have been issued and priced; the quotes are now with the architect-engineer and owner for evaluation. Some work relative to water flow control at the building has been released by field order.

At the primary settling tank [redacted] on Wednesday, July 11, 1979 (working day 369). This closed [redacted] and the primary settling area tank with about 7 feet of water and [redacted] is still in work at the PST's.

The third area of delay presently being encountered is at the sludge thickener building and the sludge thickener tank #3. Construction on these facilities cannot begin until the existing potable water well is taken out of service. There is no word as yet when this will occur.

As noted in the previous monitoring report, there had been some serious delays due to the independent truckers strike; however, most of these problems have now been resolved and apparently the truckers are back full time on the job.

During our monitoring, Mr. Spence and I walked the job and a brief review of the observed status of each major area is given below:

Area 1 - Sludge building (SB)

Slightly more than half of the supported 1st floor deck has been poured out and the remaining parts of the deck (about 9 more pours) will be made over the next 15 to 20 working days. Projecting ahead, using the 15-day working period, brings completion of the pours to about August 22, 1979 (working day 419). The projected completion of the 1st floor supported deck was the morning of July 13, 1979 (working day 391); thus, the projected lag could be about 28 working days. This is a slight reduction over the previous monitoring lag.

Stripping of 1st floor form work is in progress and as soon as enough area is freed up, installation of underground mechanical and electrical will begin.

The ferric chloride tanks have been delivered to the job site; and once the area they are to be located in is cleared, they are to be set in place.

Delivery of the lime slurry day tanks is still set for December, 1979.

Projecting work to be done over the next month, walls and columns to the 2nd floor are about to begin and as noted, completion of the 1st floor supported deck is expected by mid or late August. Of course, poured decks will continue to be stripped, freeing up as much of the basement level as possible for start of underground utilities.

Area 2 - Primary building (PRB)

The excavation and piling are complete at the primary building. No work, as yet, has started on utility underground installation. [REDACTED] July 11, 1979 (working day 389) for [REDACTED] and made it [REDACTED]. It is presently being cleaned.

Area 2 - Aeration tank (AT)

Mass excavation has begun at the west end of the tank and is expected to continue next week using additional excavation equipment. The current lag at the aeration tank over the projected dates in Issue #8, dated May 18, 1979 (working day 353) is about 42 working days. It is hoped that, once production excavation starts, a pickup will be gained in the originally projected times allowed.

Area 2 - Blower and electrical building (BE)

At the BE building the mud mat and cutoffs have been installed and underground mechanical work is being put in place. Work there has been meeting target dates between early and late starts and finishes.

Area 2 - Primary settling tanks (PST)

On Wednesday, July 11, 1979 (working day 389), Flemming Creek flooded, due to excessively heavy rains, filling the entire primary settling tank excavation with about 7 feet of water. It was not possible to pump the excavation down until the flooded creek levels lowered and clean up of the mud and debris is still in work at the entire primary settling tank areas. Therefore, progress there over the past month has been nominal.

At tank #3, forming the outer edge of the base mat is in work and the lag over target late starts and late finishes is about 33 working days. This, of course, is a direct reflection of the delay due to flooding.

At primary settling tank #4, the tank nearest the creek, it will be necessary to refill the easterly portion of the base mat area so the dike can be built higher to prevent future flooding; thus, foundation work on tank #4 will be deferred until tanks #2 & #3 are further along.

Work on primary tank #1 has not yet started. The work will begin after completion of installation on the 60-inch primary influent line to the north. The pipe installation was delayed by the independent trucker strike which interfered with deliveries of pipe to the job site.

Area 2 - Sludge thickener tanks (STT)

The base mats for tank #1 and #2 have been poured and walls are in work on tank #1. The base mat for the sludge splitter and the meter vault have been poured and the walls for the meter vault will be poured out today. Work on the sludge thickener tanks #1 and #2 lags about 21 working days, taking into account the reversal of the order of construction. Originally it was intended to move from tank #2 to tank #1; now the sequence is from tank #1 to tank #2.

At the sludge thickener building and tank #3 no field work has yet begun. The reason for this is because the potable water well there has still not been abandoned by the owner. This is a direct delay on work and it is becoming increasingly serious since it disrupts continuity of action on the sludge thickener area.

Already, with 2 base mats installed, the crew momentum that has been built up will be disrupted since there is no 3rd base mat to go to. There is no current word on when the potable water supply will be abandoned and the area turned over to the contractor.

Area 3 - Chlorine contact tank (CCT)

The north half of the chlorine contact tank supported deck is being poured out today. The original target for this pour to be made and completed was July 13, 1979 (working day 391). Thus, the lag is about 13 working days. Once the north end is poured out, work will immediately start up at the south half of the tank.

Area 3 - Maintenance building (MB)

Miscellaneous work on interior mechanical overhead continues. Masonry at the exterior of the building will start sometime within the next 10 working days. There are still some access problems at the maintenance building and these must be resolved before full masonry operation can begin and be maintained.

Area 3 - tertiary filter (TF)

Field orders have been issued for water control work and the test pile has been pulled and the hole capped. Sand wicks are to be drilled around the perimeter of the project so as to assist in relieving the underground water pressure expected. Also,

observations are to be made on the clay sub-base, presently exposed, to determine if there has been any upheaval that might cause problems with later structural settlement. These items all delay the beginning of active foundation work, and there is no way to currently determine when construction will actually start.

The pricing of the bulletin for foundation changes is completed and currently being considered by the owner and architect-engineer. No word is available on when revisions will be released by change order or field order. Thus, the current status of the tertiary filter is indeterminate.

Area 3 - Final settling tanks (FST)

Work at the final settling tanks is not scheduled to begin as yet.

General

The project is now moving fairly well after several delays by strikes, slow-downs and excessive rain and flooding; however, there still are some difficult problems to be resolved external to the construction process. I strongly urge that these be expedited to the greatest extent possible and that as much field work as possible be freed up so that major concrete operations can be completed to the greatest extent possible before cold weather.

I shall be in touch with Mr. Spence shortly to set the date of the next monitoring.

Ralph J. Stephenson, P. E.

RJS:jc

Mr. Hugh Spence (0 & 1)

000007

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

September 5, 1979

Subject: Monitoring Report #7
 Ann Arbor Waste Treatment Plant 77-S-7
 Ann Arbor, Michigan
 Spence Brothers - General Contractors

Project: 78:58

Date of Monitoring: [REDACTED] (working day 428)

Monitored from Issue #8, dated May 18, 1979 (working day 353)

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Note: Requests for extensions of time have been submitted.
 These are presently being considered.

Actions taken:

- Inspected project with Mr. Spence
- Reviewed project status
- Evaluated current job position
- Met with owners' planning representative to review
 updating process

A brief review of each major area is given below:

Area 1 - Sludge Building (SB)

The current lag at the sludge building ranges from 41 working days in construction of the first floor supported deck to about 58 working days at the second floor supported deck.

There remain three pours at the first floor that will be finished within the next four working days. Columns and walls to the second floor are well along with floor framing just starting.

The ferric chloride tanks have been set at the basement and some slab-on-grade at the basement level has been poured. Major installation of underground mechanical and electrical at the sludge building basement (SBB) will begin September 10, 1979 (working day 431).

Present plans are to prepare a major updating of the network model in early October, 1979. By this time it is expected by Mr. Spence that progress will be substantial and it will be possible to project with some accuracy points at which the various sectors of the building will be available for owner equipment installation. The major thrust in the sludge building over the next two months is to get most of the cast-in-place concrete work done so as to free up sizable areas for installation of mechanical and electrical trades.

Sludge building conveyor shop drawings have been submitted and were approved recently. This work has now been released for fabrication.

Area 2 - Primary Building (PB)

Work on underground utility installation will start soon at the primary building. The major cause of delay there to date has been the flooding that occurred earlier this summer; however, portions of the area are now available and concrete work will begin there as soon as the aeration tank excavation proceeds into that section of the total aeration tank complex. There still remains some water to be removed from the primary building excavation.

Area 2 - Aeration Tank (AT)

Excavation at the aeration tank has moved well over the past month and there remains another 10 to 15 working days to complete mass excavation.

Meanwhile, fine grading and installation of mats and cutoffs has just started at the south end. This work currently lags the Issue #8 network, dated May 18, 1979 (working day 353), by about 48 working days. It is possible that a portion of this lag can be picked up over the next three or four weeks since mass excavation presently is 9 to 14 working days ahead of late start, late finish targets.

Area 2 - Blower and Electrical Building (BE)

The mud mat has been completed at the blower and electrical building, and most underground mechanical work has been installed. Currently, work at this area is meeting targets between early and late starts and finishes.

It should be noted that the base mat at the blower and electrical building borders on the south edge of the aeration tank base mat, and to construct the blower and electrical mat adjoining the aeration tank, it will be necessary to install the south aeration tank mat and wall. Mr. Spence said that this strip at the south will be the first section of the mat to be poured in the aeration tank area.

In evaluating the current status of the work, there was some question raised as to the procurement position of large process pipe at the aeration tank complex. It is desired that this pipe be stored at elevation 726' prior to construction of the first floor supported deck in the blower and electrical building. Therefore, it would be wise to check on the present anticipated delivery of this pipe in the very near future.

Area 2 - Primary Settling Tanks (PST)

The primary settling tank area has now been cleaned out after the summer flooding, and work is proceeding on tanks P2, P3, and P4. Tank P1 work is still held by the need to complete the 60-inch line at the north of the primary settling tanks. Access to this work is through the area to be occupied by primary settling tank #1. The lag in start of work at PST 1 currently is about 76 working days.

At PST 2, the mud mat has been completed and work is just starting on resteel for the base mat. This work is about 40 working days behind late start, late finish targets.

PST 3 walls will be substantially complete this week and ready for backfilling. The lag at PST 3 is about 39 working days.

The PST 4 center sump has been installed and backfilling is about to start for the tank bottom. This area was the hardest hit by the summer floods and has been very difficult to clean and keep clean, ready for actual construction. The current lag at PST 4 is about 64 working days.

Area 2 - Sludge Thickener Tanks (STT)

The walls for sludge thickener tanks 1 and 2 have been completed up to the trough bottom. The lower sump base has been constructed for tank 3 and this area is ready now for upper piping.

The owner abandoned the existing potable water well about August 20, 1979 (working day 417), which allowed work to begin at STT 3. Work has not yet begun at the thickener building since there is presently some consideration of moving it to miss the existing well. This proposed change is presently being priced and a decision will be made in the near future as to the location of the sludge thickener building. It is desirable to get this decision as early as possible so that all concrete work that can be done at the sludge thickener area is completed before cold weather.

The sludge splitter and meter vault walls have been completed and the structures are presently ready for mechanical piping and electrical installation.

Area 3 - Chlorine Contact Tank (CCT)

The north half supported deck has been completed and the south half mud mat has just been poured. Work on the south base mat has started.

The current lag at the chlorine contact tank over the Issue #8 network, dated May 18, 1979 (working day 353), is about 52 working days.

Area 3 - Maintenance Building (MB)

Masonry is nearly complete at the maintenance building and all work there is currently meeting targets between early and late starts and finishes. It is the intent to use this building for storage starting sometime within the next two months.

Area 3 - Tertiary Filter (TF)

The revised foundations issued on bulletin 14 have been priced and a change order issued. However, resolution of the extension of time requested must be accomplished before work under the change order can proceed at the tertiary filter area.

During our analysis, the starting dates projected for this tertiary filter work were reviewed in some detail. It was noted that on the rough summary network, sheet SM1 and SM2, Issue #1, dated October 9, 1978 (working day 197), that construction of tertiary filter footings and mats was set to begin on April 16, 1979 (working day 329). This date was reflected in the Issue #3 network, sheets SM1 and SM2, dated December 5, 1978 (working day 237). The official issue network model Issue #9, dated May 18, 1979 (working

day 353), sheets 16 and 17 show the network based on a starting date for base mat work of March 5, 1979 (working day 299).

It is recognized that this building is a very complex structure and the need existed in our early planning, as it does now, to get as much work done as possible on substructure work before cold weather. Presently there is only about two months or slightly more before we can expect to run into bad construction weather, and therefore the current anticipated later start may cause serious problems relative to working in the area over the winter months.

The tertiary filter is a very critical part of the total complex and it is urged that the time extension matter be cleared just as quickly as possible. Mr. Spence and the owner and the architect-engineer are working on this.

General Summary

Overall, the project lag ranges between 30 to 60 working days, with a serious need existing to get as much concrete work, particularly substructure concrete work, done within the next two and a half months as possible. Heavy concentrations of efforts are being placed presently on the sludge building and the aeration tank complex.

Present plans are to update the Issue #8 network model, dated May 18, 1979 (working day 353), early in October. At this updating session, it would be helpful if all contractors could have up-to-date information on their procurement so a review can be made of the logic and durations of work remaining to be done on each facility. I shall be in touch with Mr. Spence regarding the specific date of this meeting.

Ralph J. Stephenson, P. E.

RJS:jc

Mr. Hugh Spence (0 & 1)

November 12, 1979

Subject: Monitoring Report #8

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - General Contractors

Project: 78:58

Dates of Monitoring: October 10, 1979 (working day 453) and
November 7, 1979 (working day 473)

Monitored from Issue #9, dated October 10, 1979 (working
day 453)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: January 1, 1982 (working
day 1021)

Note: Requests for time extensions have
been submitted and are presently
being considered.

Actions taken:

- Inspected project
- Reviewed current status of job
- Updated network model to Issue #9, dated October 10,
1979 (working day 453)
- Reviewed updated model with mechanical contractor

General

The monitoring on October 10, 1979 (working day 453) dealt basically with a complete updating of all three areas of the project to Issue #9, dated October 10, 1979 (working day 453). The logic revisions and duration changes were combined into a manual computation of the network. The rough network was then issued to all concerned parties by Mr. Spence.

Updating took into consideration the current status of the project, delays that had been encountered, and the projections of work that could be expected to proceed over cold weather months. In addition, restraints due to the onset of colder weather were shown where felt appropriate.

The major problem identified in this updating concerns construction of work in area 3. This is the area which contains the final settling tanks and the tertiary filter as its major structures. At area 3, redesign of the tertiary filter foundation and the subsequent delay it caused has moved mass excavation to a later point where if this excavation proceeds it will be necessary to wait until next spring, probably about mid-April, 1980 before the base mat can be built. Of course, if excavation is delayed until next spring, this also has the impact of moving much of the major work at the lower area of the tertiary filter into a 1980 start.

Thus projecting through to completion we find that the dislocation of the end date of the tertiary filter is affected by two factors, the redesign delay, and the subsequent weather delay caused by not being able to construct sub-structure work on grade during cold weather months.

The updated network model is still under study by the various contractors involved on the project, and I am presently completing the drafting and data processing of areas 2 and 3. The area 1 network, sheets 1, 2, 3, and 4, along with the computer run, were given to Mr. Spence at our monitoring on November 7, 1979 (working day 473).

Our inspection of the project on November 7, 1979 (working day 473) utilized that model as a reference point. A brief review of the status of each major area as of November 7, 1979 is given below:

Area 1 - Sludge Building (SB)

The entire first floor and a portion of the second floor, exclusive of the ash handling area have been poured out at the sludge building. In addition, some of the rough slab on grade sections at the basement are complete. Progress on remaining slab on grade areas is presently being held by the shoring extending through first floor

openings and supporting second floor forms. Once these are stripped after the second floor deck has been poured, slab on grade work will proceed to completion as quickly as possible.

The sludge holding tank fillet concrete is in work and will be completed soon. Walls and columns to the second floor are continuing. Presently the lag in the supported deck construction at the second floor is 10 to 13 working days measured against the Issue #9 network. Manpower, particularly resteel workers, is scarce in the area, and this, in conjunction with the complex pour pattern, has tended to slow work.

Walls and columns to the third floor will begin shortly, and walls and columns to the second floor are meeting targets between early and late starts and finishes.

Presently it is the intent to continue aggressive work on the sludge building structure and to begin closing in interior areas and exterior areas with masonry as soon as possible.

Note: On sheet 2 of Issue #9, dated October 10, 1979 (working day 453) the description of task 70-75 should read: Complete FRP walls and columns to SB 2 and SB M.

Area 2 - Primary Building (PB)

Work on the base mat at the primary building has not yet begun, but Mr. Spence indicated that as soon as the walls of the aeration tank have proceeded further around the aeration tank to the north and east that the primary building base mat can be started. This probably will be in 5 to 10 working days.

Area 2 - Aeration Tank (AT)

The major share of mud mat and cutoff installation is completed except at the southeast corner which must be kept open for construction access to the interior of the tank. The base mat at the aeration tank is about 50% complete, and work will proceed on it to the ramp area just as quickly as possible. Work at the aeration tank lags early starts and early finishes by approximately 9 working days.

Area 2 - Blower and Electrical Building (BE)

Construction of the base mat at the blower and electrical building is just starting and lags early starts and early finishes by approximately 12 working days. This work is expected to proceed rapidly from here, with the intent to complete most of it prior to the onset of cold weather.

It was noted at our meeting with the mechanical contractor that the large process pipe to be used in the aeration tank complex will have to be stored before the first floor supported deck is poured out. It is not essential that the pipe be stored prior to the start of the deck, although at some point soon along the way after start of forming the pipe should be set to avoid disruption of form work erection. This is important and should be given a high priority of attention by the field forces.

Area 2 - Sludge Thickener Tanks

Sludge thickener tanks #1 and #2 have been completed up to the trough bottoms and backfilling is in work. Sludge thickener tank #3 is practically complete to trough bottom and is also partially backfilled. The small structures outside the sludge thickener tanks are complete, and mechanical work is about to start.

Mass excavation for the sludge thickener building is in work, and it is expected that this project will continue as rapidly as weather will permit. The present intent is to get out of the foundation areas at the sludge thickener building before the end of the year.

Some yard piping has been installed at the ST area.

Area 2 - Primary Settling Tanks

Tanks #1, #2, and #3 have been constructed to trough bottoms, and backfilling around these tanks is in work. Construction of PST 1 probably will be deferred until later since the access to the north part of the site is very critical and presently uses the area where PST 1 is located as a major access point. Efforts will be made in the very near future to start construction of trough bottoms and walls at the tanks.

Meanwhile, backfilling will continue at the central area of the primary settling tanks which will allow construction of the influent flume to be started.

Yard piping is actively in work at the south of the primary settling tanks, both on the east and the west. Efforts are being made presently to free up as many work places as possible in the PT area for the mechanical contractor. It was mentioned by him in our meeting that if the area at the primary building along with work on the tanks could be brought to a point where they could begin heavy installation of machinery, piping, and equipment in area 2 it would aid in leveling out their manpower at this very critical point. Every effort is being made to assure that this can be done.

Area 3 - Chlorine Contact Tank

Walls of the tank are now being completed at the south end with decking for the supported slabs in work. There is a slight lag at the tank over early starts and finishes, but this is not critical at present.

Area 3 - Maintenance Building

Roofing and exterior masonry is complete, the floor slab on grade has been poured out and full exterior close in is expected soon. Presently, the building is being used for storage, and it is the intent to continue using the building for a closed in storage space during the remainder of the project.

Interior masonry will start soon although the desire is to keep the interior of the building as open as possible to allow for flexibility of use during the storage period.

Area 3 - Tertiary Filter

Work at the tertiary filter can proceed as soon as the needed excavating equipment can be assembled and moved on the job site. Some mass excavation may be done this year, but as noted earlier, construction of the base mat will probably have to be deferred until spring of 1980 due to difficulties of constructing this type of foundation work during cold winter months.

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Ann Arbor Waste Treatment Plant
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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

In our updated network, it should be noted that construction of the tertiary filter due to the delays in redesign of the foundation and the subsequent pushing of base mat work into next year has caused the target completion for the tertiary filter to be very late.

An evaluation is currently in work as to the granting of a time extension, and this matter is being followed by all concerned on a day-to-day basis.

General Summary

Overall, the project is now being worked upon with the intent to complete as much weather-sensitive work as possible before late November and early December 1979. The current emphasis is to get the slabs on grade presently in progress completed, particularly at the sludge thickener tanks, the primary settling tanks, the primary building, the aeration tanks, and the blower and electrical building. These areas are presently receiving top attention, and bringing them up out of the ground will free up sizable areas for the contractors to maintain field operations during the winter months.

I shall complete processing and distributing Issue #9, dated October 10, 1979 (working day 453) areas 2 and 3. These will be sent directly to Mr. Spence for distribution.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (app)

RJS:sps

To: Mr. Hugh Spence ✓
(original and 1)

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

December 10, 1979

Subject: Monitoring Report #9

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - General Contractors

Project: 78159

Date of Monitoring: December 5, 1979 (working day 492)

monitored from Issue #9, dated October 10, 1979 (working
day 453)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: January 1, 1982
(working day 1021)

Note: Requests for time extensions have been submitted
and are presently being considered.

Actions taken:

- Inspected project
- Reviewed current status of work

General

The Issue #9 network, dated October 10, 1979 (working day 453) has been distributed by Mr. Spence and is presently being used as the standard of performance from which to measure the project. A brief review of the status of each major area is given below:

Area 1 - Sludge Building (SB)

North of column line 8/9, the second floor deck (SB 2) has been poured out, and scaffolding is being erected for construction of roof elements in this area. South of column line 8/9, the deck has been partially constructed at the first floor (SB 1), elevation 754', and work is expected to start on walls and columns to the third floor next Monday, December 10, 1979 (working day 495).

At the ash handling area (SBA), underground utilities and slab-on-grade are partially installed, and construction of the first floor deck at elevation 754' is in work.

An evaluation of current lags at the sludge building over late starts and late finishes in the Issue #9 network, dated October 10, 1979 range from 10 to 20 working days. These are primarily in construction of upper floor decks at the north portion of the building and start of work at the south portion of the building on upper walls and columns.

At stripped areas, mechanical work consists primarily of installing mechanical system B. Installation of sludge bunkers is expected to be started by the first of the year, 1980.

No major electrical work aside from under floor and in floor installation has been done at the sludge building.

Area 2 - Primary Building (PB)

Work at lower lift aeration tank walls has now proceeded on past the primary building, and work has been initiated on primary building mud mat and base slab. Installation will continue as weather permits so as to provide additional areas for the mechanical contractor to work in just as quickly as possible.

Area 2 - Aeration Tank (AT)

Construction of perimeter walls at the aeration tank continues with the west wall being now built to full height and the north wall complete for about two-thirds of its length up to the level of the trough supported slab. Very little additional work has been done on base mats since the previous monitoring, and work there will proceed as weather allows.

The lag in construction of walls and columns at the aeration tank is presently 25 to 30 working day over the Issue #9 network model, dated October 10, 1979 (working day 453).

Walls at the area adjoining the blower and electrical building have started up, and these will continue on through to completion as quickly as weather permits.

Area 2 - Blower and Electrical Building (BE)

The base mat has been completed for the blower and electrical building, and walls are well along at both the north and south sides of the structure. Work on supported decks at the BE building will begin within the next ten working days. This work was due to begin at a late start of November 14, 1979 (working day 478). The goal is to get a structure built and closed in just as soon as possible to release as many areas of work as possible to sub-contractors, particularly the mechanical and electrical trades.

Area 2 - Sludge Thickener Tanks

All three tanks have been completed up to the trough bottom, and steel columns and structural steel mechanisms have been, or are being, installed at each of the tanks. Construction of tank troughs will proceed as weather permits.

The sludge thickener building base mat is formed and reinforcing steel is set. Probably the base mat will be poured out this afternoon. Construction of the sludge thickener building lags the current network model by about 20 working days. However, work is expected to proceed quickly once the base mat is poured, and it is possible that a portion of this lag can be regained.

Area 2 - Primary Settling Tanks

Tanks #1, #2, and #3 have been constructed to the trough bottoms with backfilling as far as it can proceed at present. The flow splitter structure has been built to grade, and construction of supported decks will start in the near future.

Heavy efforts are being made to complete the area directly across from the blower and electrical building so that major mechanical work to be installed in this section of the project can proceed.

Area 3 - Chlorine Contact Tank

Tank walls at the south end are substantially complete, and forming of the supported decks is in work. Although work at the chlorine contact tank lags the Issue #9 network model, it is presently not a critical structure and is being used to even out work assignments on the site.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Area 3 - Maintenance Building

The maintenance building is now substantially closed in. Interior masonry walls are being erected, and the facility is being used to store electrical equipment.

Area 3 - Tertiary Filter

Mass excavation has started at the tertiary filter, and efforts are being made to construct portions of the base mat as the area is excavated at the west end. The intent is to make every effort possible to construction a portion of this base mat prior to the onset of very cold freezing weather.

One section of the base mat at the west end has been poured out. This includes construction of the two sumps at the west end.

Final Settling Tanks (FST)

No work has started as yet at the final settling tanks.

General Summary

Overall, the project lags from 15 to 30 working days in the three major areas of the site. There has been some difficult and wet weather experienced, primarily at the end of November where heavy rains were encountered followed by freezing. This caused a great deal of ice to accumulate on the job site, and time was lost in breaking the ice and clearing the area for work.

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

[Note: On Sheet 9 of Issue #9, dated October 10, 1979 (working day 453), the dummy arrow 241 to 236 should be deleted from the logic plan).

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. 10

RJS:sps

To: Mr. Hugh Spence
(original and one)

January 9, 1980

Subject: Monitoring Report #10
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - General Contractors

Project: 78:58

Date of Monitoring: January 2, 1980 (working day 510)

Monitored from Issue #9, dated October 10, 1979 (working day 453)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: January 1, 1982 (working day
1021)

Note: Requests for time extensions have been submitted
and are presently being considered.

Actions taken:

- Inspected project with Mr. Hugh Spence
- Reviewed current status of work
- Reprojected work on structural frame of sludge building

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

Area 1 - Sludge Building (SB)

Work at the sludge building continues on the slab on grade and on low roof framing, column lines 1 to 8. At column line 9 to 13, deck framing work is in progress at elevations 754' and 776'. At the ash handling area column lines 13 to 16, the first floor deck at elevations 754' and 756' is being worked upon.

- To gain a better perspective as to where each area stands we did a very rough network diagram for structural work remaining from column line 9 to column line 13, the incinerator area. Present indications are that the columns

and beams for the high roof at this area will be poured out by about March 17, 1980 (working day 563), ready for erection of precast after a suitable curing period.

The area from column line 1 to column line 8 at the low roof area is presently being formed and will probably be poured out within the next 15 to 25 working days.

At the ash handling area, present projections are that roof beams will be completed about March 14, 1980 (working day 562) with about 10 working days to be allowed for curing and stripping prior to setting precast.

Thus, the present construction plan for the structural frame indicates that precast will probably be erected in early or mid-April, 1980. Our target in the Issue #9 network model, dated October 10, 1979 (working day 453) was for erection to begin between mid-March and late May, 1980.

Exterior masonry for the sludge building will begin in early or mid-March, 1980 depending upon the weather, and Mr. Spence said he is still trying to hold a target date for closing in the building with insulation, roofing, and masonry by our present Issue #9 target of August 6, 1980 (working day 918).

Installation of system B piping (non-potable water) continues at the sludge building. However, other systems have not yet been put into work. The boilers are set at the 736' elevation and at the upper floors sludge conveyor equipment is being set. Generally, interior mechanical systems work is currently meeting targets between early and late starts and finishes.

At yard corridor X, to the east of the sludge building, some yard piping has started on the aeration tank side of the corridor. However, work here will generally be held until later this year when the area has been cleared on both sides so full traffic access can be maintained to the greatest extent possible.

Area 2 - Primary Building (PB)

Underground mechanical work and mud mat cutoffs have been installed at the primary building, and the base mat will be poured out shortly. The current lag over the dates shown in the Issue #9 network, dated October 10, 1979 (working day 453) is about 45 working days. However, this is measured against a desired early completion date and thus the delay is not currently a serious hold up to surrounding work.

Area 2 - Aeration Tank (AT)

The base mat for the aeration tank is complete except for an area at the southeast corner being used for construction access to the interior of the tank. Walls have moved well at the tank and are completed to full height at the west side and to mid-height on the north almost to the easterly boundary of the tanks.

Measuring progress at the aeration tank against our current network model shows that work on walls and columns is meeting dates between early start/late start targets.

Presently it is the intent to begin construction of supported decks at the tank in about three weeks. This brings start of work there to about January 23, 1980 (working day 525). The late start target anticipated by our current monitoring documents was February 12, 1980 (working day 539).

Area 2 - Blower and Electrical Building (BE)

Construction of walls at the blower and electrical building has moved well over the past month, and they are now about 70% complete. Columns will start shortly. The lag at the blower and electrical building over current monitoring diagram is about 27 working days. This, again, is measured against a set of desired targets to bring this building to an early close in date. Although it is the intent to get the building closed to weather as soon as possible, the current lag does not adversely affect planned work progress for the facility over the next few months.

Much of the major electrical equipment which is to go into the blower and electrical building is already at the job site and stored at the maintenance building area.

Area 2 - Primary Settling Tanks (PST)

No substantial work has been done at the primary settling tanks since the previous monitoring. Work there over the winter will proceed as weather and manpower permits. However, full work will start up again about April 1, 1980 (working day 574).

The mechanisms for the three tanks that have been constructed will be installed as crewing restraints permit by the mechanical contractor.

Area 2 - Sludge Thickener (ST)

The three sludge thickener tanks are now up to trough level, and the column and mechanisms have been set for all three tanks. Further work there will be dependent on the weather throughout the winter, and probably most remaining work will not be completed until next spring.

The base mat at the thickener building has been poured, and walls and columns will start shortly. The lag here over our Issue #9 network model is about 34 working days. As with other areas, this lag is measured against a desired target completion, and currently the lag is not materially affecting surrounding work.

At the sledge splitter and the meter vault, mechanical piping has been started.

Area 3 - Chlorine Contact Tank (CCT)

Tank walls and the supported deck at grade are substantially complete with present work focused on completing walls on the deck. The exterior of the tank is being backfilled, and construction is to all intents and purposes nearly complete on the structure.

Presently the intent is to use the deck of the chlorine contact tank for storage, and the fill on the top of the tank will therefore be held until a later date.

Area 3 - Maintenance Building (MB)

The maintenance building is closed in, most interior masonry complete, and the facility continues to be used as a storage area.

Area 3 - Tertiary Filter (TF)

Over the past month, mass excavation has continued, and additional sections of the base mat have been completed. Measured against our Issue #9 network model, dated October 10, 1979 (working day 453) work there is meeting targets between early and late starts and finishes. Efforts will be made as weather permits to continue concrete work at the base mat and walls.

To this point the weather, aside from some very heavy rain in late December 1979, has been fairly good for construction and as much advantage is being taken of this as possible.

Area 3 - Final Settling Tanks (FST)

No work has started yet at the final settling tanks. The present intent is to begin construction there in early May, 1980 although the actual starting date will depend to a considerable extent on disposition of the stockpiled excavation material from the aeration tank and the tertiary filter area.

General Summary

The current lag over the past month has increased in some areas and decreased at others. The change in progress is due to the need to focus on the more complex areas while the winter weather remains good. None of the current lags appear to be overly critical in terms of their impact on surrounding areas. However, the more work that can be done during the relatively mild winter weather presently being experienced gives that much of a jump on closing in the various facilities that are to be constructed above grade this coming spring, summer, and fall.

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (sps)

RJS:sps

To: Mr. Hugh Spence
(original and one)

February 14, 1980

Subject: Monitoring Report #10

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - General Contractors

Project: 78:58

Date of Monitoring: February 1, 1980 (working day 532)

Monitored from Issue #9, dated October 10, 1979 (working day 453)

Approximate date of notice to proceed: August 1, 1978 (working
day 149)

Present target completion date: January 1, 1982 (working day 1021)

Note: Requests for time extensions have been submitted and are
under consideration.

Actions taken:

- Inspected project with Mr. Hugh Spence
- Reviewed current work status
- Evaluated current work status

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

Area 1 - Sludge Building (SB)

At the sludge building, the supported deck at 754.5' is poured out and work is in progress at various other levels of the building. For monitoring purposes, we have broken the structure into three major sections - the ash handling area at the south end, column lines 13 to 16, the south section of the building to the expansion joint, column lines 9 to 13, and the north half of the building beyond the expansion joint, column lines 1 to 8.

At the ash handling area, the supported deck is poured out at 754.5' and walls and columns to the next level are in work. At column lines 9 to 13, columns and walls to approximate elevation 765' are in work and between column lines 1 and 8, top structural members are presently being formed with some of the exterior members having been poured out.

The construction plan for the structural frame is still being held to permit a start of precast erection by early or mid April, 1980. Exterior masonry at the sludge building is still to start in early or mid March, 1980 with the target for closing in the building being held at early August, 1980. Mr. Spence said that precast roof tee shop drawings are reviewed and approved and that precast will be available as needed.

Work on the conveyor equipment and at bunkers for sludge handling has moved well over the past month, and substantial progress is being made on this system. It is presently meeting or slightly ahead of early starts and finishes. System B piping, not-potable water, continues and is meeting targets between early and late starts and finishes. Some miscellaneous piping for the system A sludge handling has started although this work is not yet in full swing.

Boiler equipment is set, but there still remains a few pieces of major equipment to be brought in before piping will start.

No additional work has been done on corridor X outside the sludge building over the past month and probably this work will be held until the cast in place concrete along the east side of the building is complete.

Area 2 - Primary Building (PB)

The base mat has been poured and walls and columns to grade are presently in work. There still remain 5 to 10 working days to complete these to the supported deck level. The lag in the walls over our desired early completion dates is about 57 working days.

Slight increases in lags at some concrete elements of the project have been evidenced over the past month because the fairly good construction weather encountered in January, 1980 made it desirable to focus heavily on installing the base mat at the tertiary filter. This, in turn, has caused lags over desired targets for constructing other parts of the total plant.

Area 2 - Aeration Tank (AT)

Work has continued over the past month on the exterior walls of the tank and these have now been brought around to the southeast corner where access is gained to the interior of the tank. Construction of walls and columns is presently meeting desired targets although the cold weather to be expected over the next month and one half may slow progress on these.

The base mat of the aeration tank is about 95% complete with the remaining portion at the ramp yet to be constructed. Work on the interior walls of the aeration tank are in work and the pipe gallery sub-structure area is being cleared so that it can be strawed to allow work to proceed on that slab on grade as desired.

The lag at the aeration tank is fundamentally in the projected start of supported decks and is between 0 and 10 working days. Deck work will probably begin within the next 10 to 15 working days.

Area 2 - Blower and Electrical Building (BE)

Construction of walls and columns is nearly complete at the blower and electrical building, and the supported deck has just been started. Every effort is to be made to move this work rapidly although here, too, progress above grade has been slowed by a shift in emphasis to the tertiary filter base mat during the good weather of January, 1980.

Area 2 - Primary Settling Tanks (PST)

It is still planned to resume major work on the primary settling tanks in early spring, 1980. Tank #1 work has not yet begun, but the mechanisms have been placed (not erected) in each of the three tanks that are built to trough level.

Area 2 - Sludge Thickener (ST)

Work over the past month at the sludge thickener area has been focused on bringing the sludge thickener building up to grade. There the slab has been poured and the walls are built, water-proofed, and backfilled to grade. The lag over desired early finishes at the sludge thickener building is in start of the supported deck and is presently about 36 working days. This is a lag over desired targets and is not seriously affecting project progress.

Area 2 - Chlorine Contact Tank (CCT)

This structure is now complete to grade, and no further work will be done on the above grade portion of the facility until late in the spring of 1980.

Area 3 - Maintenance Building (MB)

Work has been taken as far as it will go until the facility is no longer used for storage. This probably will be for several months, probably until early 1981. No further reporting on this facility will be done until additional work is under way.

Area 3 - Tertiary Filter (TF)

At the tertiary filter, construction of the base mat continues and presently about 1/3 of this mat is in place. The work is proceeding piece by piece and as an area becomes ready to work it is excavated, the mud mat placed immediately, and then in-slab work set, and the base mat poured. This allows the sub-soil to be protected from the very cold freezing weather we are now encountering. Thus, work there has been able to move despite the very wet weather we have had to date.

Mr. Spence said he expects to start walls in the tertiary filter building shortly. Present progress shows the facility at present ahead of the projected early starts and finishes primarily because of construction that could proceed there during the fair weather of January, 1980.

Area 3 - Final Settling Tanks (FST)

Present intent is to begin construction of tanks in May, 1980, which is about when the fill that occupies a portion of the final setting tank area will have been removed and placed.

General Summary

There has been a slight increase in the current and projected lag for concrete walls, columns, and decks over the past month primarily due to the shift in construction emphasis from the northern areas of the site to the tertiary filter building. This shift has allowed work at the base mat at the tertiary filter to proceed somewhat better than had been expected.

However, cold weather is now commencing, and it can be expected that progress at the tertiary filter which is fundamentally on slab on grade work will slow and that, again, the supported concrete work at other portions of the project will again pick up in tempo.

Of particular note here is that the sludge conveyor system and bunker storage at the sludge building has moved well over the past month and is in good line with our projected targets.

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. 12

John

RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

Subject: Monitoring Report #11
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: March 3, 1980 (working day 553)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Note: Negotiations for time extensions are still in progress.

Actions taken:

- Inspected project with Mr. Hugh Spence
- Evaluated current project progress

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

Area 1 - Sludge Building (SB)

All decks at elevation 754.5' have been poured out, and the deck at 765.0' is to be cast starting this week. Forming for the deck at 776' from column line 9 to 13 is partially in work and will begin in full production shortly. At the roof of the main building from column line 1 to 9 forming support beams for precast continues.

We made a detailed evaluation of the projected start of masonry and start of precast to better evaluate the feasibility of meeting the close in targets at this session. It is the intent to start precast in late April, 1980 or near the beginning of May, 1980. Forming of the beams, particularly the deep members at the roof, has proven to be very complex and time consuming. Therefore, an exact projection of the start of precast is difficult to make at this time.

Exterior masonry will probably be started the early part of April, 1980 with the goal still to close in the building

in August, 1980. At the interior, installation of bunkers and sludge handling conveyors continues to move well, and piping has started on the boiler equipment. System A sludge lines are being installed at the basement level, and considerable work has been done on non-potable water lines in the building. There also has been some additional process piping installed, and this work is now starting to pick up speed, at the basement level particularly.

To be watched is the construction of the ash handling area, column line 13 to 16. The deck has been formed to elevation 765.0' and will be poured out as part of the pours made at the main building.

In corridor X outside the sludge building some work is continuing but major efforts in this corridor will probably not proceed until most of the sludge building roof pours have been completed.

Area 2 - Primary Building (PB)

Walls and columns have been poured, and construction of the first floor supported deck will begin about March 10, 1980 (working day 558). The lag there is about 68 working days over late starts and late finishes shown in Issue #9, dated October 10, 1979 (working day 452). The intent of the plan shown in the Issue #9 diagram was to have this building closed in by early spring. However, efforts over the past few weeks have been to concentrate on construction at the tertiary filter. Thus, other less critical areas have slowed.

Area 2 - Aeration Tank (AT)

Work has moved well on walls and columns over the past month although there still remains some sections to be completed primarily at the north walls and on east interior columns. No major production start has been made on construction of supported decks, but Mr. Spence intends to begin these within the next 10-15 working days, weather permitting.

Area 2 - Blower and Electrical Building (BE)

Walls and columns are nearly complete and the supported first floor deck has been partially poured out. Work there will continue on the first floor deck while concurrently moving up with the columns and beams to the roof. Some roof column steel at the west end has been placed.

Area 2 - Primary Settling Tanks (PST)

No major work has been done over the past month at the primary settling tanks.

Area 2 - Sludge Thickener (ST)

Yard piping at the sludge thickener area is well along and construction of the supported deck at the sludge thickener building is currently in work. Work on troughs at the tanks will begin as soon as weather allows proper backfilling and construction of concrete work on grade.

Area 3 - Chlorine Contact Tank (CCT)

(Note: In Monitoring Report #10, the chlorine contact tank was indicated to be in Area 2. It is in Area 3.)

All sub-structure work is complete to grade. No further reporting to be done until work resumes at the tank.

Area 3 - Maintenance Building (MB)

Monitoring held until construction resumes.

Area 3 - Tertiary Filter (TF)

Progress has been good at the tertiary filter over the past month, and the base mat is now about 70% complete with walls starting up at the west end. Strong efforts are being made to concentrate efforts, manpower, and equipment on this vital part of the project since it is one of the most difficult areas and must be expedited as much as possible.

Concentration of effort on concrete work at the tertiary filter has been possible by taking extra cold weather care, and providing special protection from the cold temperatures.

Area 3 - Final Settling Tank (FST)

It is still the intent to begin work at the final settling tanks in May, 1980.

General Summary

Overall, the major thrust presently is to get the above grade structures, particularly the sludge building and the blower

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

and electrical building, to a point where precast erection can be carried out at both structures concurrently. It appears presently we will be able to have these buildings closed in by mid or late summer 1980 freeing up considerable area for the complex mechanical and electrical installation that must follow.

Work at the primary and final settling tanks will resume when the weather breaks, and in the case of the final settling tanks, after the large stockpiled backfill at the tank area is trimmed back and reduced.

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

Ralph J. Stephenson, P. E.
Ralph J. Stephenson, P.E. (sps)

RJS:sps

To: Mr. Hugh Spence✓
(original and one)

April 15, 1980

Subject: Monitoring Report #12
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - General contractors

Project: 78:58

Date of Monitoring: April 8, 1980 (working day 579)

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: January 1, 1982 (working day 1021)

Note: Negotiations for time extensions are still in progress.

Monitored from Issue #9, dated October 10, 1979 (working day 709)

Actions taken:

- Inspected project with Mr. George Prokop
- Evaluated current project progress
- Color coded network set for Mr. Spence's use with owner

General Summary

Overall, the project is currently moving well at area 3 but is hampered at areas 1 and 2 by excessively wet spring weather which has made access to the various sectors of the site very difficult.

At present there is some concern about contract expiration dates of several trades critical to maintaining job progress. The following dates of contract expirations were discussed briefly with Mr. Prokop at our monitoring session:

<u>Trade</u>	<u>Contract Expires</u>
Iron Workers (resteel)	May 30, 1980 (working day 616)
Operators	May 30, 1980 (working day 616)

<u>Trade</u>	<u>Contract Expires</u>
Plumbers and fitters	May 30, 1980 (working day 616)
Roofers	May 30, 1980 (working day 616)
Electricians	June 1, 1980 (working day 617)
Carpenters	July 31, 1980 (working day 659)
Masons	July 31, 1980 (working day 659)
Laborers	July 31, 1980 (working day 659)

There is no word available, officially or informally, regarding the possibility of a strike. Therefore, no projections can be made at present about the impact of contract expirations on job progress. It is to be noted traditionally that prior to a contract expiration some slow down in work pace along with some reduction in productivity can be expected. Although this is not true of all trades the impact of a few tends to slow overall work progress.

In addition, it should be kept in mind that once strikes have been resolved that start up is always a difficult problem particularly as field work nears fall weather and the demand for tradesmen is heavy. Therefore, present job planning is taking into account the possibility of work stoppages and considering the impact of these upon the job.

Area 1 - Sludge Building (SB)

From column line 1 through 8 work continues on beams at the roof. These should be poured out by April 18, 1980 (working day 587). At the ash handling area, column line 13 to column line 16, the deck at elevation 764' has been poured and walls and columns to 787' are in work. Forming of the deck at 787' should begin this week. The present goal is to hold a target at the ash area for curing and stripping roof beams by May 22, 1980 (working day 611).

Column line 9 to 13 work is lagging the current target of May 22, 1980 (working day 611) by about one month and probably will be ready for precast near the end of June, 1980. Every effort will be made to improve this completion date but presently, due to the concentration of effort on the tertiary filter along with the difficult access to the site, it does not appear that any major improvement can be made in this end target.

Systems work for mechanical installation is proceeding quite well at the interior of the sludge building, and most tasks are meeting targets between early and late starts and finishes.

Of importance to maintaining clear access to the area 2 site is corridor X which runs between the sludge building and the aeration tank complex. Underground piping has been started in this corridor; however, backfilling cannot be completed until a portion of the aeration tank slab has been poured along the west edge. Corridor X is still a very important access corridor to the sludge thickener area and the primary tanks along with some portions of the aeration tank complex.

Area 2 - Primary Building (PB)

The first floor supported deck at the primary building was poured out April 3, 1980 (working day 576). Columns and beams are presently being constructed to the roof and should be poured out within the next two weeks. After the cast in place members cure, precast roof deck and following actions can begin at the upper areas of the primary building.

When the first floor deck just poured is stripped, rough mechanical work can begin at the basement area.

Again, it should be pointed out that we have selected a desired target of July 18, 1980 (working day 650) to complete the work at the primary building and the lags there presently are not affecting the remainder of the project.

Area 2 - Aeration Tank (AT)

Most of the perimeter wall at the aeration tank except near the access ramp has been completed, and work is ready to begin in full production on supported decks at the west side. As with many other areas of the project, we have selected desired completion dates for concrete work and although the lag over these present targets at the aeration tank is about two months this lag is not necessarily critical to work in area 2.

However, since the goal is to complete all major cast in place concrete construction by mid or late fall, 1980 it becomes very important to concentrate efforts on all poured concrete structures. At the aeration tank it is expected to begin heavy production work on the supported deck within the next 5 to 15 working days.

Area 2 - Blower and Electrical Building (BE)

The electrical portion of the building at the first floor has been poured out, and columns there are being formed to the roof. A portion of the perimeter walls for the entire blower and electrical building are yet to be built at the east and north ends. However, it is expected that this work will be complete within the next ten working days. This should free up the entire building for completion of the first floor supported deck.

Present projections indicate that we could possibly complete the structure ready for precast by early June, possibly by June 2, 1980 (working day 617). This is a desirable target since it corresponds roughly with the dates at which we expect to start erection of precast at other elements of the project.

Area 2 - Primary Settling Tanks (PST)

No major work has been done over the past month at the primary settling tanks. It is expected that once the weather breaks that at tanks #3 and #4 work will begin on construction of the troughs. Some filling is required at tank #2 to begin trough work, but this will proceed concurrently with construction of the troughs on the far east tanks.

There still is no progress on construction of tank #1. This occupies a very strategic access position in the site, and there is no current word on when it will be possible to start mass excavation for primary tank #1.

Area 2 - Sludge Thickener (ST)

The supported deck at the thickener building has been poured out, and work is in progress on construction of the walls and columns to support the roof. Most yard piping is installed at the sludge thickener area, and active work will begin on backfilling and construction of troughs for the tanks in the near future. Most of the mechanisms have been set with the exception of the motors.

Overall, this area is in good shape with work there expected to resume within the next few weeks.

Area 3 - Chlorine Contact Tank (CCT)

No reporting in this monitoring.

Area 3 - Maintenance Building (MB)

Monitoring held until construction resumes.

Area 3 - Tertiary Filter (TF)

Progress continues very good at the tertiary filter, with the base mat now about 95% complete and walls about 50% complete.

Supported decks at the west end are due to begin within the next 5 working days. Heavy efforts have been made to concentrate on the tertiary filter area since, as has been repeatedly pointed out, the delays there due to the redesign made it essential to pick up as much time as possible. These efforts at the tertiary filter have, in turn, tended to slow progress at some of the other major concrete areas. However, it was felt worthwhile to focus on this building since it is one of the most complex structures in the entire facility. In addition, concentrating on the tertiary filter has given us a good opportunity to provide several areas in which mechanical and electrical work of the more complex type can be installed.

Area 3 - Final Settling Tanks (FST)

The delay to beginning final settling tanks is removal, at least in part, of the large amount of stockpiled soil presently occupying the area. There is no current word on when removal of this soil will begin, but the target starting date for final settling tank work was set at May 1, 1980 (working day 596). Even with this target date we could be hard pressed to complete the major share of the concrete work by the end of the year, 1980. A decision will be made shortly on the actual starting date for the work, and this may be tempered by the possibility of work stoppage resulting from contract expirations.

General Summary

Overall, the major objective continues to be to complete all poured in place concrete at the sludge building and to get as much below grade concrete completed as soon as possible so that the site can be drained, backfilled, and brought to a point where free access to all areas is possible.

Critical to this is freeing up corridor X between the sludge building and the aeration tank and also removing the stored soil at the final settling tank areas. Of major concern presently is the possibility of work stoppage that might occur as contracts expire. No definitive word is available on the possibility of work stoppages, but this matter will be watched carefully as negotiations proceed.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

As part of this monitoring, I color coded a set of network models, Issue #9, dated October 10, 1979 (working day 453) for Mr. Spence's use in discussing the project with the owner. These were left at the construction office with Mr. Prokop.

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (97)

RJS:sps

To: Mr. Hugh Spence
(original and one)

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The project continues to move fairly well at area #3. At areas #1 and #2 work progress is improving due to the progressive drying of the site from its previous very wet condition. Access to the various parts of the site continues to be a problem that will get more difficult as work begins on the final settling tank. Thus, it becomes very important to get as many sub-structure concrete facilities to a point where they can be backfilled to provide as much ground space on which to work as possible, and to reduce the large amount of stockpiled earthwork at the southeast corner of the site.

There is still no word on the potential for work stoppages due to contract expiration dates, and therefore evaluations of strike impacts will have to be made on a day to day basis when, and if, they occur. There, to date, has been no discernible trend for strikes or settlements although in some areas of the state settlements have already been negotiated with several key trades.

The owner will probably begin installation of the incinerator by mid or late June, 1980. Installation of dewatering equipment at the top floor of the sludge building will probably begin within the next 10 working days.

Still of prime importance is to get all major concrete structural work done by late this year so that full concentration can be centered upon installation of machinery and equipment. This is still the overall goal of Mr. Spence relative to the structural elements of the project.

A detailed review of each area is given below:

Area 1 - Sludge building (SB)

The main area of the building to the north of column line 8 has been completely poured out, and most roof members either are stripped or are being stripped. At the south end of the building between column lines 9 and 13, the deck at elevation 787' is being formed and probably will be poured out within the next 5 to 10 working days. This then will free up start of work on roof beams and columns in this area.

At the ash handling area, column line 13 to column line 16, the deck at elevation 787' is being formed and will be poured out with the deck in the area between column lines 9 to 13. As noted above, it is the owner's intent to begin installation of equipment, both sludge dewatering and incinerator, within the next 10 to 25 working days.

Probably the remaining close in elements of the building including roof precast and masonry will be held to a starting date that will allow as much free access to the building as possible for setting of major owner equipment elements. Masonry will begin within the next 10 to 15 working days with precast presently holding for a start of erection in mid or late June, 1980.

Mechanical systems work at the first and second levels in the building is moving very well and some systems are nearly complete. Boiler room equipment is set, and conveyor equipment at the lower level is well along. The sludge agitation mechanism has been installed.

Outside the building at corridor X, major remaining work will have to be held until additional backfilling can proceed along the aeration tank wall. Corridor X will be maintained as clear as possible to allow access to the sludge thickener areas and the primary settling tanks. Exterior scaffolding for masonry will probably be located in the corridor once exterior masonry begins.

Area 2 - Primary building (PB)

Roof beams have been poured out at the primary building and have been completely stripped. The building is available for following work at the lower level. Probably precast roof deck will be erected at the primary building during the same period it is being installed at the sludge building and the blower and electrical building.

Area 2 - Aeration tank (AT)

Forming of the west supported deck is well in work, and the goal presently is to make the first pour in about 10 working days. It is important to get this deck installed along corridor X so work can proceed in the corridor particularly backfilling of the tank walls.

Access must still be maintained through the east ramp and as soon as the site dries a bit more, this ramp will be regraded so equipment and materials can be brought into the tank. The construction sequence will be to move from west to east working out of the ramp as the deck is constructed.

During the past month some work has been done on interior tank walls and over the next few weeks heavy concentration will be given to pouring as much concrete on supported decks columns as possible.

Area 2 - Blower and electrical building (BE)

Most of the first floor supported deck has been poured out. The area left open is where large prefabricated piping units will be brought down to the lower level. The remainder of the deck will be poured out once this pipe has been set below. Columns and deck are just starting for the roof structure, and work will proceed concurrently with construction of supported decks in the aeration tank. The goal is to have this roof structure complete so precast roof units can be set during the same period as they are installed at the sludge building and the primary building.

At the ground floor of the blower and electrical building, mechanical piping is well along, and adequate area is available for this installation to proceed without excessive interferences from floor deck construction above.

Area 2 - Primary settling tanks (PST)

No major work has been done on these tanks over the past month; however, backfilling for the troughs is expected to get under way within the next 5 working days. Of prime importance is to get tank #4 in such condition that the earth berm along the stream can be built so as to use material from the large stockpile at the final settling tank area. It is still the intent to put primary settling tank #1 into work shortly and complete it by late this year.

Area 2 - Sludge thickener (ST)

Work is in progress on the interior tank walls at the sludge thickener building. Installation of exterior mechanical piping is continuing with this activity presently restraining full start of trough work at the sludge thickener tank exterior. Trough work will probably start within the next 15 to 20 working days.

Area 3 - Chlorine contact tank (CCT)

No work done here over the past month.

Area 3 - Maintenance building (MB)

Monitoring will be held until construction resumes.

Area 3 - Tertiary filter (TF)

Work progress continues fair on the tertiary filter. The entire mat is now poured out with walls 65 to 75% complete. Wall construction will be finished within the next 15 to 20 working days. The present plan is to get most of this structure ready for backfilling as quickly as possible to allow use of the stockpiled material.

Area 3 - Final settling tanks (FST)

No work has yet begun on the final settling tanks due to the need to start removal of the stockpile. It is the intent to move this dirt as quickly as possible as noted in previous evaluations of various areas.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

The construction time for the final settling tanks is such that work must begin on these as quickly as possible to avoid having to suspend the operation due to cold weather. It still is the plan to construct these at least up to the trough level by winter of this year, and, if possible, complete the troughs also. There is no current projection as to when work can begin at the final settling tanks.

Stormwater Pumphouse (SWP)

The walls of the pumphouse have been brought up to grade and backfilling will begin shortly. It is the intent to proceed on through to completion of this structure as quickly as possible.

General Summary

Overall, the project continues to experience a basic problem of access and working space. This condition will probably continue until most sub-structure work has been completed and backfilled at which time there will be more working surface available from which to stage operations for superstructure work.

A key item of work presently is the start of the final settling tanks and the construction of primary settling tank #1. These are the major unstarted concrete structures remaining. It appears presently there is a good chance that most concrete work in progress now can be completed by early fall, 1980 or sooner.

So far as work stoppages are concerned there is no current word on whether we will actually experience delays due to strikes or not. This matter will have to be followed on a day to day basis.

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

Ralph J. Stephenson, P.E.
(apj)
Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Hugh Spence
(original and one)

June 13, 1980

At areas #1 and #2 work is continuing at a moderate pace with the intent still to complete all major exposed concrete work by the onset of cold weather. The sludge building will probably be poured out within the next 5 to 10 working days. Work on other major exposed concrete structures in areas #1

and #2 is at various stages of construction. It is still essential to obtain more ground area at grade level. This is possible only when we can backfill major structures particularly the aeration tank in area #2.

At the aeration tank floor deck is moving well, but bracing requirements on backfilling the wall demand that additional deck be constructed before corridor X can be backfilled to grade.

Currently no trades are on strike and the general pattern of negotiations is a cautious move toward settlement in the various trades as their contracts expire. It is still not possible to predict with any certainty whether work stoppages will occur or not, but the present pattern is encouraging.

Owner installation of incinerator and dewatering equipment at the sludge building is due to begin within the next 2 to 10 working days. Areas are ready to receive equipment with some minor work yet to be done on the roof structure at the incinerator location.

A detailed review of each major area is given below:

Area 1 - Sludge building (SB)

Most roof beams will be poured out within the next five working days, and stripping of form work will follow. Thus, within the next 10 to 15 working days the entire sludge building structure should be complete and stripped out except for miscellaneous reshoring. Owner installation of incinerator equipment will probably begin June 16, 1980 (working day 627) and should be able to move continuously on through to completion. Installation of dewatering equipment at the upper floor will probably start June 9, 1980 (working day 622) and also proceed on through to completion in a continuous fashion.

Installation of the lime storage bins is in work at the upper floors, and all material is on the job for that work to proceed without major interruption.

Exterior masonry at the sludge building will probably start about June 16, 1980 (working day 627). Present plans for erection of precast are to set the sludge building, the electrical building, and primary building in one trip by the erector. Precast erection is planned to begin July 1, 1980 (638) probably at the sludge building. Setting precast will be from the northwest corner of the aeration tank. Therefore, it is important to insure that the area is backfilled as quickly as possible. Present indications are that the floor deck in the aeration tank will be far enough along to allow this backfilling to be completed.

Installation of mechanical systems at the first and second levels continues to move well, and although no detailed information was available at this monitoring as to the percentages of work complete, it appears that mechanical work is meeting targets between early and late starts and finishes.

At corridor X, no additional work has been done since our previous monitoring. It is necessary to get additional deck poured at the aeration tank before backfilling and completion of utilities can proceed there. This is still a critical access route for traffic to and from the north part of the site.

Area 2 - Primary building (PB)

The primary building columns and beams are complete, stripped, and the structure is ready for erection of precast roof deck. Roof deck will be set after precast is set at the sludge building.

No current word was available on the status of the systems piping at the basement of the primary building. However, indications are that this work is moving fairly well. We shall plan, at our next monitoring, to review mechanical and electrical status in detail at each of the facilities.

Area 2 - Aeration tank (AT)

Major work at the aeration tank is now being concentrated upon completing walks and slabs at grade. These are presently formed for tank #1, with about 40% of the walks poured out over tank #1. No work on forming has begun at tanks #2, #3, or #4.

Tank #1 is critical, as noted above, as it will be necessary to get the walks in to the eastern edge of tank #1 to complete backfilling in corridor X.

Area 2 - Blower and electrical building (BE)

Most of the pipe that must be placed at the lower level has now been set, and the floor slab at the first floor is being completed. Columns to the roof at the blower and electrical building are well along and heavy efforts are being made to complete columns and beams to the roof by the target date for erection of precast at the sludge building and the primary building. As noted above, this work is due to begin July 1, 1980 (working day 638). The time between now and July 1, 1980 (working day 638) is available, plus the amount of time it will take to erect precast at the sludge building and the primary building. The sequence roof structure construction is presently very tight and is being given careful attention so enough area will be available for continuous precast roof deck erection.

It is desirable to get the roof of the blower and electrical building in place quickly so the building can be closed in and major electrical work started at the lower and upper floor levels.

Area 2 - Primary settling tanks (PST)

No major progress has been made on these tanks over the past month. Some work has just started on the troughs on tank #4; however, construction is still delayed by access difficulty. Piping is being installed at the corridor between the primary settling tanks and aeration tanks. This, of course, prevents major work from starting on troughs at tanks #2 and #3.

Work is expected to begin on primary settling tanks #1 (PST-1) about July 1, 1980 (working day 638). If this date can be met, probably the major concrete work for PST-1 can be put in place, the tank backfilled, and perhaps the troughs being built by late fall, 1980.

Area 2 - Sludge thickener (ST)

Major concrete wall work at the sludge thickener building is complete and columns and roof beams will be put into work shortly. Much of the yard piping at the sludge thickener has been completed, and backfilling will proceed there over the next 10 to 15 working days to bring tanks up to trough level and the sludge thickener building to grade so masonry erection can be started.

Area 3 - Chlorine contact tank (CCT)

No work done here over the past month.

Area 3 - Maintenance building (MB)

No work done here over the past month.

Area 3 - Tertiary filter (TF)

Work progress continues good at the tertiary filter, and construction of supported decks is in work. About 90% of the walls to elevation 737' plus or minus have been completed, and the project is currently ahead of projected early and late starts and finishes.

The prime goal at the filter is to complete as much concrete work as possible and allow major backfilling to begin soon. The tertiary filter continues as a critical part of the total project, and I suggest when we update the network model we give this area special attention since it is a very complex and difficult facility to build.

Area 3 - Final settling tanks (FST)

Work is still being held at these tanks pending a reduction in the volume of the stored fill now preventing work from beginning. There is no current word on when work at the final settling tanks (FST) will begin.

Stormwater Pumphouse (SWP)

The cover slab at the pumphouse has been built and the area backfilled.

General

Access and site circulation difficulties continue to hinder progress on the job, although as sub-structure areas are brought to completion and backfilling proceeds, more and more ground space will become available for storage and traffic. It is expected that over the next two months that considerable backfilling can be completed at the aeration tank, and the blower and electrical building, and tertiary filter. This should serve to reduce the stockpiled fill and give more ground area in which to work.

At our next session, I suggested to Mr. Spence that we concentrate on selected difficult areas and update the network model to reflect current work desired. I recommend that at this meeting we focus first upon the structures and then concentrate on reviewing mechanical and electrical installation at key areas particularly the tertiary filter and the blower and electrical building. The next session is set for July 3, 1980 (working day 640).

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (apm)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

July 15, 1980

Subject: Monitoring Report #15
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78,58

Date of Monitoring: July 3, 1980 (working day 640)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: approximately April 28, 1982
(working day 1103)

Note: The exact date is set by an extension of 118 calendar days to the original target completion date of January 1, 1982 (working day 1021). Please also note that the date and working days for completion as given in Monitoring Report #14 should be revised to approximately as above.

Monitored from Issue #9, dated October 10, 1979 (working day 453)

Actions taken:

- Briefly inspected project
- Updated network model to Issue #10, dated July 3, 1980 (working day 640)
- Reviewed current status of project with Mr. Spence and key specialty contractors

General Summary

Work progress over the past month has been good with the sludge building having been poured out and considerable additional work there being completed at the aeration tanks and tertiary filter. The primary building and blower and electrical building are rapidly being readied for erection of precast along with the sludge building. Installation of equipment is well in work at the sludge building.

Construction at the primary settling tanks is just restarting on construction of the troughs. No work has yet begun on

PST-1. At the final settling tanks, no work has begun yet since these occupy a very critical area of the site, and therefore can only be built when certain site constraints have been removed.

Our major work today consisted of updating sheets 1 through 21 to Issue #10, dated July 3, 1980 (working day 640). In this updating, tasks that are completed were removed from the network model and a new set of early start/early finish calculations made based on the status of the work as of today.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

As noted above, the structure is completely poured out and most major form stripping has been completed. Installation of owner equipment is in progress.

The various piping systems at each level of the sludge building was reviewed and the updated model reflects as nearly as possible a current evaluation as to the status of each major piping system. These are shown on sheet #3, Issue #10, dated July 3, 1980 (working day 640).

The present thrust of work is to completely close in the sludge building, and heavy efforts are to be bent toward this end in the near future. Precast roof beam erection will start about July 14, 1980 (working day 646), and erection of exterior masonry is already in work. The present goal is to complete roofing the building in late September or early October, 1980.

At corridor X, backfilling is continuing and as additional space becomes available, traffic congestion at the area will be relieved. However, it will be still necessary to make available the full width of corridor X before traffic can move as freely as needed. The area will be kept as clear as possible throughout erection of exterior masonry at the sludge building to allow flexibility of movement in masonry and other work.

Area 2 - Primary building (PB)

The main structure is poured out and now waiting for start of erection of precast. Roof deck probably will start at the primary building sometime about July 25, 1980 (working day 655). This will then be followed by erection of masonry and closing in of the building.

Area 2 - Aeration tank (AT)

Aeration tank work presently being concentrated upon includes pouring out the walkways and roof decks along with construction of the pipe gallery at the center of the project. Current plans are to be complete with the supported deck columns at the aeration tank by late August, 1980 except at access points used for entrance into the tank interior.

Area 2 - Blower and electrical building (BE)

Efforts are presently being made to complete the structure of the blower and electrical building so precast roof deck can be installed during the same period that precast is erected at the sludge building and the primary building. The intent is to close in the blower and electrical building by early October, 1980.

Area 2 - Primary settling tanks (PST)

Work is just starting on installation of trough bottoms at primary settling tank #4. Work on succeeding tank troughs will proceed from #4 to #3 to #2. It is expected that work on primary settling tank #1 will begin about August 1, 1980 (working day 660).

Area 2 - Sludge thickener (ST)

Construction is proceeding well at the sludge thickener area, and erection of exterior masonry at the thickener building is about ready to begin. This work will be followed by erection of the precast roof deck and close in with insulation and roofing. Backfilling is in work at the ST area, and it is expected that the tank troughs can be started in the near future.

Area 3 - Chlorine contact tank (CCT)

No work done here over the past month.

Area 3 - Maintenance building (MB)

No work done here over the past month.

Area 3 - Tertiary filter (TF)

Construction continues at a good pace at the tertiary filter, and most of the walls and a good share of the supported slab are complete. Work remains slightly ahead of target early start and early finishes.

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Ann Arbor Waste Treatment Plant 77-S-7
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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

In our updating session today, we decided to maintain the current network model logic and durations, Issue #9, dated October 10, 1979 (working day 453). However, sheet 17 will be re-issued with the new issue date on it.

Area 3 - Final settling tanks (FST)

Work will probably begin on final settling tanks by about September 29, 1980 (working day 700). Our updating shows this as a target date for beginning mass excavation at tank #4. Due to the central location of the tanks, field operation planning will have to be carefully done so as to maintain free access to various parts of the site as demanded by construction needs.

Of particular importance will be construction of manhole #2 since it is in a central location and occupies a pivot point for electrical conduit in and around the sludge building and the blower and electrical building. This matter was discussed in detail and a tentative plan of action was decided upon as reflected in the updated network model.

Stormwater pumphouse (SWP)

No major work was done here over the past month.

General

Overall, progress continues good, and we are now planning for the remainder of the summer and early winter work. The objective is to close in all interior areas by this winter so mechanical and electrical trades can proceed without interruption.

Some discussion was held regarding protection of work in these areas and these matters will be reviewed with the field and office management of each of the contractors.

At this session we completed updating network models for each of the major areas #1, #2, and #3 and these will be issued as manually computed diagrams.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. *(signature)*

RJS:sps

To: Mr. Hugh Spence
(original and one) ✓

August 4, 1980

Subject: Monitoring Report #16

Ann Arbor Waste Treatment Plant 77 S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: August 1, 1980 (working day 660)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: May 1, 1982 (working day 1105)

Monitored from Issue #11, dated July 26, 1980 (working day 656)

Actions taken:

- Inspected project
- Reviewed current status of project with Mr. Hugh Spence
- Evaluated current job status

General Summary

The updated network model Issue #11 dated July 26, 1980 (working day 656) has been distributed and will be used as a standard of performance in subsequent monitorings. Work progress at this session was measured against the Issue #11 network.

Progress over the past month at the sludge building has been good, particularly on interior piping and equipment. Precast work is under way and exterior masonry has been started. Exterior masonry work, however, has been stopped due to a strike of masons beginning the morning of August 1, 1980 (working day 660). This strike also affects cement finishers as well.

The masonry strike is serious in that every effort is being made presently to clear corridor X to the east of the sludge building. Masonry erection there is a contributing factor to difficult access along corridor X, therefore any delay to masonry on the sludge building causes additional congestion problems. The strike by cement finishers will

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be a serious problem particularly in construction of aeration tank supported walkways and tertiary filter walls and slabs.

At the sludge area and the primary settling tanks back-filling continues and trough work is underway. Construction of walkways, columns and walls continues at the aeration tank and progress there has been good. Tertiary filter work has also moved well over the past month, and work is meeting or bettering early start/early finish targets.

No work has yet begun on primary settling tank #1 or on the final settling tanks. Work on final settling tanks, of course, is dependent upon removal of the spoil pile at the east of the site. Redistribution of this pile is due to begin next week.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Exterior masonry has just begun at the east elevation, but as noted above, has been stopped due to the masons' strike. Precast deck is partially set and the remainder is being held presently to allow setting large pieces of incinerator equipment. It remains important to get the roof on the sludge building so as to provide weather protection for trades that must have a safeguard against moisture, particularly electrical work on equipment now being set. The present goal is to close in the building by mid-September, 1980.

Area 2 - Primary building (PB)

The structure is complete and ready for setting precast. Some interior piping work has been done on the basement of the primary building and exterior yard piping to the area is continuing.

Area 2 - Aeration tank (AT)

Work is moving well in accordance with the Issue #11 network model dated July 26, 1980 (working day 656). However, construction of the walkways has been stopped due to the strike of cement finishers which began today, August 1, 1980 (working day 660).

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Area 2 - Blower and electrical building (BE)

This building is ready to receive precast, and erection of roof units will start as soon as the blowers are set. So electrical equipment has been placed at the 1st floor, and generally work at this building is meeting targets between early and late starts and finishes.

Area 2 - Primary settling tanks (PST)

No work has begun on tank #1 although it is planned to start within the next few days. Work on the troughs at P#2 and #3 is well along, and no problems are foreseen in completing this work prior to cold weather.

Area 2 - Sludge thickener (ST)

Backfilling continues at the area and construction of trough mat and walls is proceeding at tank #3. This work will continue on around to the other tanks as filling is completed. Work is currently meeting targets between early and late starts and finishes.

Area 3 - Chlorine Contact tank (CCT)

No work done here over the past month.

Area 3 - Maintenance building (MB)

No work done here over the past month.

Area 3 - Tertiary filter (TF)

Construction has moved very well over the past month and is currently meeting or bettering early starts and early finish.

Area 3 - Final settling tanks (FST)

Plans are still to begin construction of final settling tanks on or before September 29, 1980 (working day 700). The sequence in the current plan of work is rather tight and it is desired and desirable to get this work underway as quickly as is permitted by redistribution of the stock-piled dirt at the east of the site.

Stormwater pumphouse (SWP)

No work done here over the past month.

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General

Overall, work has moved well in July and should continue moving well during the good weather season. The main problem confronting the project now is the strike of cement finishers and masons which began August 1, 1980 (working day 660). There is no way of evaluating if this will be a long strike or not. However, its duration will influence project progress, particularly the sludge building, the aeration tanks and the tertiary filter.

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

Ralph J. Stephenson, P.E.

RJS:po

To: Mr. Hugh Spence
(original and one)

September 22, 1980

Subject: Monitoring Report #17
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78158

Date of Monitoring: September 15, 1980 (working day 690)

Approximate date of notice to proceed: August 1, 1978 (working
day 149)

Present target completion date: May 1, 1982 (working day 1105)

Monitored from Issue #11, dated July 26, 1980 (working day 656)

Actions taken:

- Inspected project
- Reviewed current project status with Mr. Hugh Spence
- Evaluated current job status
- Reviewed decision tree techniques

General Summary

The masons' strike which began on August 1, 1980 (working day 660), ended on August 5, 1980 (working day 662). A request for an extension of time due to this strike has been made by the general contractor.

Overall, progress on the job has been good over the past six weeks with substantial progress made toward closing in the sludge building, constructing troughs at the sludge thickener and primary settling tanks, and constructing walls, columns, and walkways at the aeration tank. Progress also has been good at the tertiary filter, with the present goal to complete all major concrete pours there by the end of the year.

Site utility work is still impeded by the difficult traffic circulation problems inherent in the site arrangement. However, once the east elevation masonry is complete at the sludge building, work on corridor X should be able to proceed with less interference than is presently the case.

On Monday afternoon, September 8, 1980 (working day 685) the architect/engineer verbally requested off site hauling from the stockpile at the east of the site be stopped (at and adjacent to the final settling tank areas). This is a very critical operation, since until we can clear the stockpiled fill, work cannot begin on the final settling tanks. These are now very critical due to the approach of cold weather and the resolution of the problem is imperative. Tests are being made of the fill with results expected to be known by September 19, 1980 (working day 694). There is no way of accurately predicting what these tests results will dictate as to a course of action. We evaluated several different methods of proceeding at our monitoring session, and a decision as to how to resolve this particular problem will be made shortly.

No work has yet begun on primary settling tank #1, of course, or on the final settling tanks.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Exterior masonry is moving well, and a heavy concentration of effort is being put on the east elevation adjoining corridor X. Work on incinerator erection is also continuing and considerable progress has been made on mechanical piping and electrical conduit installation over the past six weeks. A detailed evaluation of the current status of process mechanical and electrical work will be made at our next monitoring session.

Most of the major equipment to be installed in the sludge building by the general contractor and his sub-contractors is now on the job or available. Thus, work should be able to proceed with reasonable continuity throughout the winter and spring.

Roof precast is all erected and the present target is to complete insulation and roofing by mid or late October, 1980.

Area 2 - Primary building (PB)

Precast roof deck has been set at the primary building and masonry will begin there shortly. Work, meanwhile, is proceeding on installation of A, B, D, and E system piping at the basement.

Area 2 - Aeration tank (AT)

Walls and columns except at the ramp access are almost complete and within the next 10 to 15 working days it is expected to complete most walkways except at the access area. It will probably require an additional 3 to 4 weeks to complete the base mat, wall, column, and walkways at the southeast corner of the aeration tank. Meanwhile, air piping is being installed at the gallery and work is proceeding well.

Area 2 - Blower and electrical building (BE)

Precast roof deck is erected at the blower and electrical building and most major mechanical and electrical equipment is set at the first floor. Exterior masonry is being erected with the goal in mind to close in the blower and electrical building and make it secure to weather within the next 20 to 30 working days.

Area 2 - Primary settling tanks (PST)

Trough walls are built on tank #4, and most of the tank has been backfilled. Trough walls are in progress on tank #3 and the trough mat is being poured out on trough #2. Work is expected to begin on primary settling tank #1 shortly.

Area 2 - Sludge thickener (ST)

Masonry is complete at the sludge thickener building and interior work is about to begin. Roofing should be installed shortly. Construction of trough slab on grade and walls is proceeding and is complete at tank #3, in work at tank #1, and about ready to start at tank #2. Probably topping placement in the tank bottoms both for the primary settling tanks and the sludge thickener tanks will be deferred until next spring.

Area 3 - Chlorine contact tank (CCT)

No work done here since previous monitoring.

Area 3 - Maintenance building (MB)

No work done here since previous monitoring.

Area 3 - Tertiary filter (TF)

Construction continues ahead of target early starts and finishes at the tertiary filter. Walls to approximately 753' are continuing in work and moving well. A portion of the operating room floor at about 754' has been poured out, and columns and beam roof supports are being built. Backfilling is also proceeding around the perimeter of the building as access can be gained to the various areas of the structure. At the gallery structural steel supports are being installed as walls are built. Backwash water piping is being installed currently.

Stormwater pumphouse (SWP)

No work done here since previous monitoring.

General

Overall, work is moving well with the goal to complete as much reinforced concrete work before the onset of cold weather as possible. A serious delay potential now exists in the halting of hauling of stockpiled earth at the east end of the site. This matter must be resolved promptly if delays to construction of the final settling tank are to be kept to a minimum.

I shall be in touch with Mr. Spence shortly to set the next monitoring session. At this session we will make a detailed review of mechanical and electrical work in all three major areas.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (aps)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

November 16, 1980

Subject: Monitoring Report #18

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: October 31, 1980 (working day 724)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: (with extensions) March 15, 1983
(working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)

Actions taken:

- Reviewed current job status
- Updated network model Issue #11 dated July 26, 1980
(working day 656) to Issue #12, dated October 31, 1980
(working day 724)

General Summary

The purpose of this session was to update essential elements of the network model so as to reflect extensions requested and granted. The present time structure in which we are proceeding is based upon the following targets:

Complete construct new physical plant - December 31, 1981
(working day 1020)

Start testing and debugging new physical plant - December 31, 1981
(working day 1020)

Start up new physical plant - September 13, 1982 (working day 1201)

Complete remodel existing plant - March 15, 1983 (working day 1328)

We re-evaluated the current plan of action and with the information available inserted updating time restraints along with the new completion targets to provide a manually computed network model for use as a future guide to work.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Exterior masonry is substantially complete and roof curbs and equipment have been installed and set. No date has yet been selected for installation of insulation and roofing. Progress on the interior mechanical systems, according to Mr. Spence, has been good. We shall make a further detailed analysis of these systems at a near future meeting.

In corridor X, work on additional yard piping installation is planned to begin shortly with the goal being to substantially complete most underground mechanical and electrical work there by the start of heavy winter weather near the first of the year.

Primary building (PB)

Most exterior masonry is complete and the building is being readied for installation of insulation and roofing. Interior mechanical systems work is continuing and as at the sludge building we shall make a detailed evaluation of this work at a future session. However, currently it is within early and late start and finish targets as shown in Issue #11, dated July 26, 1980 (working day 656).

Area 2 - Aeration tank (AT)

The base mat has been completed at the access area, and walls and columns are being built there, to be followed by the supported deck. The target presently is to complete all major concrete work at the aeration tank by the onset of cold weather.

Area 2 - Blower and electrical building (BE)

Most exterior masonry has been completed, and the building is being readied for start of insulation and roofing. There is no current word on when roofing will be done. Meanwhile, work continues on installation of mechanical and electrical systems at the blower and electrical building with plans presently to start the high voltage feeders sometime early next spring. The present objective is to complete most mechanical and electrical systems exclusive of branch circuit wiring and lighting circuit and fixtures in June, 1981. This target is subject to re-evaluation as work proceeds over the winter months.

Area 2 - Primary settling tanks (PST)

Work has begun at the primary settling tank #1 with excavation, underground utilities, center sump and the fill to the tank bottom substantially complete. It is expected that the first base mat pour will be made next week. Present plans are to finish as much work as possible through to the first of the year and then to hold off completion of the mechanism and remaining concrete work until April or May, 1981.

Work will proceed on scrapers as weather permits. It is expected to begin placing the grout at PST-4 about May 1, 1981 (working day 851).

Area 2 - Sludge thickener (ST)

Structural concrete work is substantially complete at the sludge thickener area with grouting at tank bottoms to be done in the very near future. Exterior masonry is complete along with precast roof deck at the thickener building and the facility is being readied for installation of insulation and roofing.

Work is continuing on miscellaneous mechanical and electrical systems at the sludge thickener area.

Area 3 - Chlorine contact tank (CCT)

Not evaluated at this session.

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Structural concrete installation is continuing in good alignment with current early start/early finish targets. Therefore, no updating was considered necessary at this time.

Area 3 - Yard piping and electrical

Considerable evaluation was done on this network since it is a very critical part of the total electrical and mechanical facility. Most of the installation is underground facilities at the final settling tanks and the tertiary filter. Since this area is very congested, much of the underground work will be restrained by further

construction of the final settling tanks. The various constraints are given to the best of our current knowledge on the updated model. This plan of work will have to be restudied to insure that the current logic is correct. We shall plan to do this on an ongoing basis at each of our monitoring sessions.

Area 3 - Final settling tanks (FST)

Work on FST-4 is now expected to begin November 17, 1980 (working day 735). Work will proceed continuously on FST-4 to completion of the walls; however, backfilling will be deferred until next spring. Construction of FST-3 will probably be held until mid-March, 1981 due to the difficulty in constructing these exposed facilities during cold weather. Present plans are to complete the final settling tanks by early December, 1981. This will allow the start of testing, debugging, and turn on for the new plant to begin as presently planned by December 31, 1981 (working day 1020).

General

Overall, progress on the entire facility is continuing on a fair to good basis. The updated network model indicates that barring unusually difficult weather conditions or other disruptive influences we will be able to meet the current target completion dates as given in the early parts of this report. Much of the facility is still moving in substantial conformance with early and late starts and finish targets shown in Issue #11 dated July 26, 1980 (working day 656).

I shall have the Issue #12 network model dated October 31, 1980 (working day 724) drafted and dated with the current information. These will be completed and issued sometime in the near future. Meanwhile, I shall be in touch with Mr. Spence to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (aps)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

December 11, 1980

Subject: Monitoring Report #19

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78,58

Date of Monitoring: December 3, 1980 (working day 746)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Evaluated current job status

General Summary

The project is now entering a cold weather period, and exposed work will proceed on an as-able basis over the next few months. Most major structural work except at the final settling tanks has been brought up to grade, and thus it is now a matter of completing the superstructures on the building within the winter constraints.

Installation of piping work at most areas is moving fairly well, and heavy efforts are being made to free up as much of the site as possible to maintain continuity in placing yard piping and to get under way with yard electrical work.

A brief review of each major area is given below:

Area 3 - Chlorine contact tanks (CCT)

Not evaluated at this session.

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Work has moved well on the tertiary filter over the past month and an analysis of job progress shows the structure is 65 to 70 working days ahead of the current network model Issue #11, dated July 26, 1980 (working day 656). The operating floor has been substantially completed except for minor openings, and work on filter wash troughs is approaching completion. About half of the roof structural concrete frame has been cast and exterior masonry is being erected as weather permits.

Area 3 - Yard piping and electrical

Major work on yard piping and electrical installation depends to a large extent upon progress at the final settling tanks. Since work on these tanks is just now getting under way most heavy progress on underground yard piping and electrical will have to await partial installation of the tanks. This has been reflected in our updated network model.

(It should be noted that on sheet #21 task #387 to #391, complete backfill FST #2 trough walls to grade, was shown as restraining the start of upper yard piping at the west final settling tank area. This restraint should be brought into a complete portion of the upper yard piping since an early portion of the upper yard piping at the west final settling tank area will probably begin in early or mid March, 1981. This revision to the Issue #12 network model dated October 31, 1980 (working day 724) has been noted on Mr. Spence's field monitoring set.)

Area 3 - Final settling tanks (FST)

Mass excavation at final settling tank #4 has begun and presently is moving well in accordance with targets between early and late starts and finishes. It is expected that construction of final settling tanks will continue on through as weather permits this winter. Therefore, we are maintaining the target dates established in the updated Issue #12 dated October 31, 1980 (working day 724).

Area 1 - Sludge building (SB)

Interior masonry is in work, and installation of piping and electrical work continues at all levels. A detailed evaluation of the current status of each system was not made at this session.

Area 2 - Primary building (PB)

Interior mechanical and electrical systems work continues at the primary building; however, we did not make a detailed evaluation of the current status of each system at this session.

Area 2 - Aeration tank (AT)

Aeration tank base mat, walls, columns, and walkways are now complete and rough backfilling has been done around the entire perimeter of the tank.

Area 2 - Blower and electrical building (BE)

Most current work at the electrical building is concentrated on installation of piping at the lower gallery. Progress continues on closing in upper areas of the building that were left for equipment access. Generally, work at the blower and electrical building is meeting targets between early and late starts and finishes.

Area 2 - Primary settling tanks (PST)

Tank #1 work has moved well over the past several weeks, with walls being brought up to, and in some places slightly above, the trough mat. Trough mat has been poured for a portion of the tank and is being completed now. Construction will probably move as weather permits through to the completion of walls up to their final elevation.

Some mechanisms have been stored in the tanks and their installation will proceed as weather permits.

Area 2 - Sludge thickener (ST)

Major work in progress at present is installation of mechanical and electrical piping and wiring at the sludge thickener building. Work there is proceeding in accordance with the updated network model Issue #12, dated October 31, 1980 (working day 723).



Area 3 - Chlorine contact tanks (CCT)

Not evaluated at this session.

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Work has moved well on the tertiary filter over the past month and an analysis of job progress shows the structure is 65 to 70 working days ahead of the current network model Issue #11, dated July 26, 1980 (working day 656). The operating floor has been substantially completed except for minor openings, and work on filter wash troughs is approaching completion. About half of the roof structural concrete frame has been cast and exterior masonry is being erected as weather permits.

Area 3 - Yard piping and electrical

Major work on yard piping and electrical installation depends to a large extent upon progress at the final settling tanks. Since work on these tanks is just now getting under way most heavy progress on underground yard piping and electrical will have to await partial installation of the tanks. This has been reflected in our updated network model.

(It should be noted that on sheet #21 task #387 to #391, complete backfill FST #2 trough walls to grade, was shown as restraining the start of upper yard piping at the west final settling tank area. This restraint should be brought into a complete portion of the upper yard piping since an early portion of the upper yard piping at the west final settling tank area will probably begin in early or mid March, 1981. This revision to the Issue #12 network model dated October 31, 1980 (working day 724) has been noted on Mr. Spence's field monitoring set.)

Area 3 - Final settling tanks (FST)

Mass excavation at final settling tank #4 has begun and presently is moving well in accordance with targets between early and late starts and finishes. It is expected that construction of final settling tanks will continue on through as weather permits this winter. Therefore, we are maintaining the target dates established in the updated Issue #12 dated October 31, 1980 (working day 724).

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

General

Overall, progress on the entire facility continues fair to good with work being well in line with revised completion dates established by the extensions granted. I shall be in touch with Mr. Spence shortly to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (sp)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

January 16, 1981

Subject: Monitoring Report #20

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: January 9, 1981 (working day 771)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12 dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Evaluated current job status

General Summary

Exterior work progress on the project has been slowed over the past few weeks by the very cold weather and large amount of snowfall. Nevertheless, work on final settling tanks has begun and yard work will be continued as weather permits.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Exterior masonry is substantially complete, and interior masonry at the boiler room is also substantially complete. Major efforts have been concentrated on installation of bulk mechanical piping and electrical conduit. Now the focus will shift to completing systems work within the building.

Area 2 - Primary building (PB)

Most work here has concentrated on installation of mechanical work, and bulk piping is well along, and in some cases, substantially complete. Again, as at the sludge building, the major concentration now will be on completing the various systems to which the piping groups belong.

Work at the upper floor of the primary building is just getting under way and as the lower floor is completed work efforts will be moved to the upper floor.

Area 2 - Aeration tank (AT)

Structural concrete work at the aeration tank is substantially complete and railings are being installed. Much of the bulk piping at the central gallery is installed overhead and is being hooked up at the far ends of the gallery. It is expected to start aeration piping installation at the tanks as soon as some of the miscellaneous iron railings have been installed.

Area 2 - Blower and electrical building (BE)

Exterior masonry is nearly complete and proceeding as weather permits. The major thrust of work is on installation of mechanical piping at the basement level. This work has progressed extremely well and much of the bulk piping has been completed. Interior masonry at the electrical room is in work presently.

Area 2 - Primary settling tanks (PST)

Tank #1 has been brought up to grade, walls and troughs are complete and backfilling is substantially complete. Thus, all four primary settling tanks have now been built and installation of sludge mechanisms will proceed as weather permits. Installation of grout at the interior of the tanks will be done starting in spring when the weather is more suitable.

Area 2 - Sludge thickener (ST)

Most work at the thickener building is now concentrated on installing mechanical systems. These are presently progressing in general accordance with early and late start and finish targets shown in the Issue #12 network model dated October 31, 1980 (working day 724).

Area 3 - Existing chlorine contact tank

The existing tank is being given a new structural cover to increase the load capacity of the tank top. Columns and walls have been started at the tank to receive the framing for the new cover slab.

Area 3 - New chlorine contact tank (CCT)

Not evaluated at this session.

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Work continues to move very well despite the cold weather, and tertiary filter work is presently 55 to 65 working days ahead of the current network model Issue #11 dated July 26, 1980 (working day 656). Piping has moved well in the pipe gallery and work there is well ahead of projected targets. Masonry is being erected as weather permits.

Area 3 - Yard piping and electrical

No major work has been done on yard piping and electrical work over the past few weeks due to the excessively cold weather and heavy precipitation.

Area 3 - Final settling tanks (FST)

Mass excavation at FST #4 is complete and the center core is being installed along with the piping to the edge of the tank from the center core. Presently this work is meeting targets between early and late starts and finishes shown on sheet #19, Issue #12, dated October 31, 1980 (working day 724). The present intent is to move to FST #3 as soon as excavating equipment is freed up at tank #4. This progress will be determined to a large extent by weather and temperature conditions.

General

Overall progress continues fair to good on the entire facility particularly on structures and piping work. This work is generally in line on major operations with revised completion dates presently being used as targets.

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

Ralph J. Stephenson P.E.
(ms)

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Hugh Spence (original and one) ✓

RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER
March 12, 1981

Subject: Monitoring Report #21

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78,58

Date of Monitoring: March 5, 1981 (working day 810)

Approximate date of notice to proceed: August , 1978 (working
day 149)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12 dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
and Mr. Pat Cavanaugh
- Evaluated current job status

General Summary

Overall work progress on the job has been good over the past two months and the weather is now turning warmer which should aid materially as the site dries. Present work is still hampered by muddy conditions but these should be alleviated as the warmer weather and sun dry out the site.

Because of the early warm weather half load restrictions were placed on the surrounding roads February 20, 1981 (working day 801). They are still in effect and this has forced major earthwork removal to be stopped.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Exterior masonry is complete except for miscellaneous access openings, and interior masonry is nearly complete. Installation of bulk piping is, for most systems, substantially complete at the lower and middle levels. Work is to be completed at the

upper level (elevation 776') as soon as the weather turns slightly warmer.

Piping in corridor X to the east of the sludge building is nearly complete with only a few smaller lines near the surface to be yet installed. Boiler room equipment is all set and most of it is piped. Installation of light fixtures has started and the electrical work pace will increase as soon as the weather warms a bit.

Area 2 - Primary building (PB)

The majority of the systems piping at the basement is almost complete with piping at the upper level to start shortly.

Area 2 - Aeration tank (AT)

The major work in progress now at the aeration tank is installation of handrails and shortly to begin, installation of aeration piping at the bottom of the tanks.

Area 2 - Blower and electrical building (BE)

Some masonry still remains to be completed at the east end of the building, and this will be completed as soon as the deep excavation work presently in progress adjoining the building is completed. Piping and equipment installation at the BE building is moving well, electrical equipment is set, and electrical installation and hookup should be under way soon.

Area 2 - Primary settling tanks (PST)

All tank wall construction is now complete with the only major work remaining being installation of the scraper mechanism and the grout. This will be done this summer.

Area 2 - Sludge thickener area (ST)

Major work in progress at the sludge thickener area now is completion of all exterior underground piping and backfilling of the tanks. Most piping work is complete at the building and this building will be worked on as the need arises for fill in operations for the mechanical and electrical trades. Sludge scraper mechanism and grout will probably be installed this summer.

Area 3 - Existing chlorine contact tank (CCT)

The cover slab has been poured and stripped.

Area 3 - New chlorine contact tank (CCT)

Not evaluated at this session.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Masonry progress continues good at the building with most of the lower area brick work complete. Piping of the various systems below the operating room floor have also moved well and is nearly complete. Plumbing work above the operating room floor is presently being installed and as the building is closed in installation of electrical work will be initiated. Some electrical equipment has already been set at the operating room level.

Area 3 - Yard piping and electrical

Considerable work has been done and is in progress on yard piping at the area #3 section. This will continue from east to west as the final settling tanks are built from #4 through to #1.

Area 3 - Final settling tanks (FST)

The base and a portion of the first lift of walls is complete in final settling tank #4. The center core foundation and the mud mat have been laid for final settling tank #3. This work is currently meeting targets between early and late starts and finishes.

General

Overall, progress continues fair to good on the entire facility and work progress on yard installation which is of heavy importance now will pick up as the weather warms and the site dries. I shall be in touch with Mr. Spence shortly to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Hugh Spence
(original and one) ✓

1-80-509 4-17-81
RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

April 9, 1981

Subject: Monitoring Report #22

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - General contractors

Project: 78.58

Date of Monitoring: April 3, 1981 (working day 831)

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12 dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Evaluated current job status

General Summary

Efforts are still being made to get the various building units closed in, but the extensive excavation and earth moving presently being done on the site primarily at the final settling tanks tend to hamper full operations particularly on the blower and electrical building and to a lesser extent at the tertiary filter and the sludge building. Half load restrictions have been removed from the road system and hauling is now back at the regular pace.

The weather is now definitely turning warmer and once close in of the buildings is accomplished work probably will proceed side the structures with minimal disruptions.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Major architectural trades work inside the building is now concentrated on completion of interior masonry. The walls at the various levels are important to complete so that interiors can be cleared for uninterrupted mechanical and

and electrical installation work. Also yet to be done is installation of topping which will follow shortly after completion of interior masonry.

As noted in the previous monitoring report, bulk piping with the possible exception of the systems B non-potable water is well along and in some areas substantially complete. The concentration now will be on specific systems. Electrical work appears to be moving well although there still remains a large amount of work to be done at the upper level electrical room.

Sometime in the near future it would be wise to initiate discussions about the procedure by which the sludge building is to be turned over and made operative. There are many steps necessary in testing out a facility of this complexity, and it would be well to identify these as early as possible and plan the turn-on procedure so it can be done in a methodical and orderly fashion. Close interfacing with activities of the owner and the architect/engineer is usually necessary in making such a plant operative and both should be involved on a cooperative basis very early in the program.

In corridor X no major additional work has been done since the previous monitoring.

Area 2 - Primary building (PB)

A detailed review of the progress made over the past month on mechanical piping was not accomplished at this session. However, upper level work at the primary building will probably proceed on an as able basis since most of the work at the lower level particularly bulk piping has now been installed.

Area 2 - Aeration tank (AT)

The aeration tank is now being pumped out and will be cleaned and dried ready to start aeration piping. Handrails are being installed at the walkways and progress on these appears to be good.

Area 2 - Blower and electrical building (BE)

Exterior masonry completion is still being held at the BE building because of heavy excavation and pipe work at the south side of the structure. As soon as possible masonry will be completed and the roof installed which will then free up the weather sensitive portions of the electrical work.

No major monitoring was done of the mechanical systems at the blower and electrical building at this session although it was noted that work is continuing well on equipment installation at the first floor.

Area 2 - Primary settling tanks (PST)

Installation of scraper mechanisms has not yet begun but is expected to start just as soon as the tanks have been pumped dry and cleaned. Probably this will be sometime in April, 1981.

Area 2 - Sludge thickener area (ST)

Exterior backfilling continues at the sludge thickener area and work at the interior of the building on mechanical and electrical systems proceeds as the total job work load permits. Work here is in fairly good shape.

Area 3 - Existing chlorine contact tank (CCT)

Not evaluated at this session.

Area 3 - New chlorine contact tank (CCT)

Not evaluated at this session.

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Exterior masonry erection is being brought to completion and the building is to be roofed shortly. Of concern at the tertiary filter building is installation of electrical work which has not yet begun on a major production basis. There is considerable electric work to be done, and I recommend that this matter be given careful attention in the near future. Piping work at the tertiary filter is in relatively good condition.

Area 3 - Yard piping and electrical

At the final settling tanks this work is proceeding from east to west as tank construction proceeds. The pace of work in yard areas is basically geared to the pace of construction work in adjoining areas. This area is exceptionally critical since it contains many of the mechanical and electrical yard work items that are essential to plant operation and are also somewhat complex to install.

Area 3 - Final settling tanks (FST)

The bases for tanks #4, #3, and #2 are complete. Lift #1 of the walls is complete for tanks #4 and #3 and is partially complete for tank #2. Excavation for tank #1 is now under way and construction will proceed on it as rapidly as possible.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

General

I recommend we give our early attention to identifying with the owner and the architect/engineer a plan for making the plant operational. This matter should be reviewed with the sub-contractors at an early date and all items required, particularly those that interface with needs of the owner and architect/engineer, should be resolved at as early a date as possible.

I shall be in touch with Mr. Hugh Spence shortly to set the next monitoring.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (eps)

RJS:sps

To: Mr. Hugh Spence
(original and one) ✓

May 27, 1981

Subject: Monitoring Report #23
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: May 18, 1981 (working day 862)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11 dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence

(Note: In the actions taken portion of Monitoring Report #22 dated April 9, 1981 please note the job review was made with Mr. Ed Spence not Mr. Hugh Spence. Please correct this in your copy. Thank you.)

- Evaluated current job status

General Summary

One of the major problems still is construction traffic circulation and the ability to move around on the site. This problem is intensified as work in the final settling tank area moves from east to west, and nears the site of the job trailers.

Roofing on all units is well in work and the sludge building is roofed with gravel being laid, the roof has been laid at the primary building and at the sludge thickener building and is partially installed at the blower and electrical building and the tertiary filter. Yard work is still moving slowly due to the problems with site circulation but some progress has been made over the past month and a half.

Another major difficulty presently affecting work progress is the problem of air content control in concrete being poured in the area of the final settling tanks. Some of the work there is being held pending the taking, curing, and testing of core samples. Thus, in some cases work at the final settling tanks has been brought to a complete halt.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Installation of interior masonry continues and is now very critical since it is somewhat of a disruption to following trades. Present plans are to substantially complete the sludge building by September 15, 1981 (working day 945) for occupancy and use by the owner. Work is presently concentrated on getting the building totally in the dry. This then should free up most interior trades susceptible to weather for completing installation. This is particularly the case at the 3rd floor electrical room where work is in progress.

In corridor X installation of underground work is proceeding as the area traffic makes possible. Manhole #6 has been installed, but no conduit has been run as yet from the electrical manholes.

Area 2 - Primary building (PB)

Mechanical piping continues to be installed at the upper level and insulation and roofing is nearly complete. Major interior electrical work is about ready to begin and now that the building is closed to weather should be able to proceed without delay.

Area 2 - Aeration tank (AT)

Work on handrails continues at the upper level of the aeration tank along with installation of aeration piping supports in the tank proper.

Area 2 - Blower and electrical building (BE)

Insulation and roofing is being installed and is about 50% complete. Installation of electrical equipment and systems at the blower and electrical building is now very critical but should be able to move into full production shortly.

Mechanical piping work at the basement is well along and in some cases is substantially complete. Piping work at the upper level is moving fairly well and presently lags late start/late finish targets by only a few working days.

Area 2 - Primary settling tanks (PST)

Installation of scraper mechanisms is to start near the end of May, 1981. No major work has been done on the tanks over the past month and a half since our previous monitoring. Work in the corridor between the primary settling tanks and the aeration tanks continues however, and presently the deep storm line is being installed and backfilled.

Area 2 - Sludge thickener building (ST)

The roof is on the sludge thickener building and presently work is being concentrated upon completion of interior piping and electrical work. Much of the piping work at the basement is nearly or fully complete with miscellaneous piping and electrical work being installed at the upper level elevation 743'.

Area 2 - Sludge thickener area (ST)

Miscellaneous work continues on yard piping, now almost totally complete at the thickener area. There still remains some outside electrical conduit to install after which final grading of the area can be initiated. Mechanisms for the tank will probably be installed starting sometime in May or June, 1981.

Area 3 - Existing chlorine contact tank (CCT)

There still remains some minor manhole work to be completed at this area. However, the work does not pose any major problems at this time.

Area 3 - New chlorine contact tank (CCT)

Not evaluated at this session.

Area 3 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Most major work at the tertiary filter continues to meet targets between early and late starts and finishes. Presently installation of control panels and branch circuit wiring is a major activity that will be getting under way shortly. The roof is now being installed at the tertiary filter and close in should allow much of the interior work that may be weather sensitive to start or be continued.

Area 3 - Yard piping and electrical

The present hold on the final settling tanks caused by testing requirements has posed some delay problems to installing yard

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

pipng at the tertiary filter and at the final settling tanks. However, once this hold is released and work can again resume at full production in construction of the final settling tanks yard installation should follow closely behind.

Lower yard piping at the east of the final settling tanks is substantially complete. Manhole #1 is poured out, and constant efforts are being maintained to free up work in the area.

Core sampling on tanks could be started by May 26, 1981 (working day 867) and these samples after one week can be broken after which decisions will be made as to how construction will proceed. This is a very critical decision point and heavily affects work continuity at the final settling tanks.

Area 3 - Final settling tanks (FST)

All tank bases have been poured out and walls have been built up to the trough bottoms in tanks #4, #3, and #2. Walls are about 1/3 complete in tank #1. The delay mentioned above due to problems with air entrainment and resultant concrete strength is the major deterrent to work continuity presently. However, overall work there presently is still meeting targets as defined in Issue #12, dated October 31, 1980 (working day 724) between early and late starts and finishes.

General

I shall be in touch with Mr. Spence shortly to set the next monitoring date.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (gms)

RJS:sps

To: Mr. Hugh Spence
(original and one) ✓

*Issue this is
No 24*

RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

July 17, 1981

Subject: Monitoring Report
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: July 9, 1981 (working day 898)

Approximate date of notice to proceed: August 1, 1978 (working day 149)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11 dated July 26, 1980 (working day 656) and
Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Evaluated current job status

General Summary

Over the past month and a half considerable progress has been made on yard piping and a heavy concentration of effort has been placed on completing systems work and masonry at the sludge building. All buildings now are roofed and most exterior walls are up. A delay to the job has been encountered in the sheet metal trades however. Sheet metal workers went on strike June 1, 1981 (working day 871) and are still out. There is no current indication as to when they might return. Yard work continues to hinder fully effective construction traffic on the site, particularly now with manhole #2 under construction. However, despite these problems work has continued on yard installation at a fairly good pace.

Final settling tank work has been released and tank #4 walls are in work. Floor topping is being installed at most buildings and progress has been good with nearly 100,000 square feet of concrete floor surface to place. This work will continue

over the next several days. The air content control problem which held work at the final settling tanks has been resolved and there presently is no major holdup on completing all remaining structural concrete work.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Mechanical and electrical systems installation continue to move well with most mechanical piping work well along, and at some levels substantially complete. Everything possible is being done to allow the owner to bring this facility on line this fall, and the major thrust over the past few weeks has been in this direction. Most interior masonry is substantially complete, and work is presently in progress at closing out exterior construction access openings. Corridor X piping work is complete with only electrical conduit yet to be installed.

Area 2 - Primary building (PB)

Work in the primary building has now progressed to the point where the major installation remaining is completion of electrical feeders and miscellaneous piping. The building is roofed and basically closed to weather so that there should be no delays to completion of remaining work there over the next several weeks.

Area 2 - Aeration tank (AT)

Work continues on handrails along with installation of air piping at the top deck. This work is in relatively good condition.

Area 2 - Blower and electrical building (BE)

Roofing is nearly complete and the building for all intents and purposes is closed to summer weather. Electrical installation continues at the interior of the building with work just beginning on feeders, both high and low voltage. Blower piping at the 1st floor is not yet in full production but is expected to start soon. Air intakes have been set at the roof.

Area 2 - Primary settling tanks (PST)

Installation of scraper mechanisms is just starting and will be followed by placing of the topping concrete at each tank.

Area 2 - Sludge thickener building (ST)

Most building work is complete and the remaining work to be done is in mechanical piping and electrical installation. This work is in progress.

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

Area 2 - Sludge thickener area (ST)

Some miscellaneous work remains to be completed. Most site work at the sludge thickener building and tanks is complete and ready for completion of grading.

Area 3 - Existing chlorine contact tank (CCT)

There still remains some minor manhole work to be completed at the existing chlorine contact tank. This work will proceed as crewing allows.

Area 3 - New chlorine contact tank (CCT)

Not evaluated at this session.

Area 2 - Maintenance building (MB)

Not evaluated at this session.

Area 3 - Tertiary filter (TF)

Topping work is in progress at the filter floor and will be completed at the entire tertiary filter building within the next few days. Work on electrical installation continues and is the major activity to be concentrated on in the near future.

Area 3 - Yard piping and electrical

Considerable progress has been made on yard work at the area #3 and a heavy concentration of effort has been placed on this work over the past month and a half. It is a very critical activity since area #3 is one of the key access points to the site.

Area 3 - Final settling tanks (FST)

All tank walls have been poured, and at tank #1 trough walls are now being constructed. Once these are built, backfilling at the final settling tanks can be completed and the area brought to rough grade. There are no current holds on tank construction and work should be able to proceed on out to completion over the next two or three weeks.

General

I shall be in touch with Mr. Spence shortly to set the next monitoring date.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (gm)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

August 21, 1981

Subject: Monitoring Report #25

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: August 14, 1981 (working day 924)

Approximate date of notice to proceed: August 1, 1978 (working
day 149)

Present target completion date (with extensions): March 15, 1983
(approximately
working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Updated network model to Issue #13, dated August 14, 1981
(working day 924)
- Evaluated current job status

(Note: The previous monitoring report dated July 17, 1981 was incorrectly labeled Monitoring Report #23. It should read Monitoring Report #24. Please make the appropriate corrections to your copies.)

General Summary

Our main work today consisted of updating the network model currently in use to a new Issue #13, dated August 14, 1981 (working day 924). Progress continues on the project in all three areas. At the sludge building most of the mechanical systems are complete. However, sheet metal workers who went on strike June 1, 1981 (working day 871) are still on strike and there still remains considerable work for them to do in the sludge building. There is no way of predicting when this strike may end and therefore those tasks affected by it must be left open until the strike is settled and

workers come back to the job, at which time we can expect a start up slow period.

At corridor X, most heavy yard piping is in place and installation of electrical duct bank work will be starting soon. At area #2, most work is complete in the primary building except for branch circuit wiring, currently in work. At the primary settling tanks the mechanism is installed in tank #4, partially installed in tank #3, and will be installed shortly in tanks #2 and #1. Grouting of tank #4 is to begin momentarily and grouting will proceed from #4 to #3 to #2 to #1 as the tank mechanisms are completed. Underground branch circuit work and duct bank work is due to begin in about a month at the primary tank area.

In the sludge thickener area, most work at the sludge thickener building is either complete or near complete. Branch wiring is being worked upon but installation of the remaining sheet metal duct work in the heating, ventilating, and air conditioning system must wait on the end of the sheet metal workers' strike. This problem has been outlined previously.

At the blower and electrical building, installation of electrical equipment and feeders continues. Considerable work still remains on the low voltage feeders which is followed by completion of branch circuit wiring. Piping systems are also in work and should be complete within the next ten to twenty working days.

Work at the tertiary filter continues on electrical and miscellaneous architectural trades. Again, HVAC work is affected by the sheet metal strike and will not be able to be completed until the strike is over.

Yard piping in area #3 has shown considerable progress over the past few months, and work remaining is fundamentally centered in the electrical trades and concerns duct bank and wire from manhole to manhole, and then to the transformer and the sub-station. There also still remains some work to be done on upper yard piping in the tertiary filter area.

Structural work on final settling tanks is nearly complete with trough stub walls being poured out in tank #1. Within the next month it is expected to begin installation of scraper mechanisms at the final settling tanks which will be followed by placement of the tank bottom grout.

In conjunction with Mr. Hugh Spence I updated the full network model to Issue #13, dated August 14, 1981 (working day 924)

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

and manually computed the diagram showing early starts and early finishes in working days. This set of network model sepia's was left with Mr. Spence for printing and distribution.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (gms)

RJS:sps

To: Mr. Hugh Spence
(original and one) ✓

October 9, 1981

Subject: Monitoring Report #26
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: October 2, 1981 (working day 958)

Approximate date of notice to proceed: August 1, 1978 (working
day 149)

Present target completion date (with extensions): March 15, 1983
(approximately
working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence, Mr. Gary Wlosinski of Southeastern Electric, and Mr. August Kehn and Mr. Pat Cavanaugh of Cavanaugh
- Evaluated current job status

General Summary

We made a review of each facility in each area architecturally, structurally, mechanically, and electrically and evaluated the current condition of the work relative to the current monitoring diagram. The sheet metal strike has been settled and the workers came back to work September 3, 1981 (working day 948). This strike began on June 1, 1981 (working day 871) and had a total length, excluding slowdown and start up prior and subsequent to the strike, of 67 working days. The main concentration of effort presently is on interior systems work at the sludge building and careful attention was paid to this particular facility. A report on each facility is given below:

Area 1 - Sludge building (SB)

Mechanical piping systems in the sludge building are basically installed except for minor corrective action, testing and completion of insulation. It is estimated that the remaining piping work should take about 30 working days with the present target for completing this work set for late November, 1981. On non-potable water systems there still remains some recoating to be done. On chemical systems piping there is an outside line that must be installed. The compressor for the air system is expected on the job about October 12, 1981 (working day 964) and it will require about 7 working days to pipe this tank once in place. For the fuel oil system the pump is to be set October 12, 1981 (working day 964) with piping to be completed in about another week.

HVAC work at the sludge building will require probably another 10 to 20 working days to complete. Most architectural work in the sludge building is complete with the exception of elevator work and painting. Instrumentation installation is due to start in mid-October 1981 with connections at the main control panel to be the prime activity to be carried out in hooking up the controls.

Area 2 - Primary building (PB)

Piping systems at the primary building are nearly complete and presently are not holding up work at the area. Panels and motor control centers have been installed at the upper level and some lighting and branch circuit wiring is installed.

Area 2 - Aeration tank (AT)

Most handrail work is now complete at the aeration tanks, and the heavy current thrust of work there is on installation of air piping. A current estimate places air piping at about 30% complete. This activity will be reviewed at subsequent monitoring sessions.

Work in the pipe gallery of the aeration tanks on piping systems is substantially complete.

Area 2 - Blower and electrical building (BE)

The main work yet to be completed at the blower and electrical building is installation of electrical work. Presently, work is in progress on the low voltage feeders. Some work has been done on lighting circuits and fixtures, but high voltage meters have not yet begun.

There still remains some miscellaneous piping work on the sludge system and on non-potable water. However, piping installation is not currently restraining any major other work. Installing the translucent in-filling of the various open exterior wall areas is proceeding and moving well.

Area 2 - Primary settling tanks (PST)

Installation of scraper mechanisms is substantially complete and installation of grout on tank bottoms is to start shortly.

Area 2 - Sludge thickener building (ST)

Installation of tank scraper mechanisms is complete, and grout on tank bottoms will be finished by October 5, 1931 (working day 959). Branch wiring to mechanical equipment in the thickener building is nearly complete, and about 40% of the lighting system is installed. HVAC work at the thickener building is about 20% complete. No duct work has been installed as yet.

There remains some work to be done on lower yard piping in adjusting elevations and installation of new lines. This activity will require about 10 working days.

Area 3 - Existing chlorine contact tank (CCT)

work is substantially complete.

Area 3 - New chlorine contact tank (CCT)

work is substantially complete.

Area 3 - Tertiary filter (TF)

Here the main work to be completed is installation of electrical equipment and systems including installation of electrical panels and feeders at the operating floor followed by installation of branch circuit wiring at the operating floor. Lighting system work is not yet fully in production at the operating floor although some of the work has been completed below the operating floor. Branch circuit wiring below the operating floor is about 50% complete.

Piping at the tertiary filter is well along and should be able to be completed within the presently contemplated time frame.

Area 3 - Yard piping and electrical

Considerable yard work, particularly in the electrical system, has been accomplished in area #3 over the past two months. The transformer base is complete and all manholes have been

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

constructed. Presently the main activity deals with installation of conduit and wire between the various manholes and equipment points.

Upper yard piping is being installed at the tertiary filter area and will require about 30 working days to substantially complete. At corridor X, piping work is complete; although electrical conduit work remaining is dependent upon the yard piping work to be done at the sludge thickener area since there are some potential elevation interferences between electrical systems and this pipe. No major problems are anticipated in installation at present.

Area 3 - Final settling tanks (FST)

Most structural work is complete on the tanks with the exception of the inner ring on tank #4. It is anticipated that scraper mechanisms will be installed first at tank #1 and move to #2, #3, and #4 in succession. Work on the scraper mechanisms will probably start next week.

General

I shall be in touch with Mr. Spence shortly to set the next monitoring meeting.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (aps)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

November 12, 1981

Subject: Monitoring Report #27
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: November 6, 1981 (working day 983)

Approximate date of notice to proceed: August 1, 1978 (working
day 149)

Present target completion date (with extensions): March 15, 1983
(approximately
working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence, Mr. Ed Spence, and Mr. August Kehn
- Evaluated current job status

General Summary

Late in October, 1981 the original electrical contractor on the job left the project and a new contractor is now working on the electrical contract.

Present work in the field is focused strongly on underground site installation and the interior systems at the sludge building. Work at the primary building, aeration tanks, and blower and electrical building is mainly air pipe installation.

At the final settling tanks and the primary settling tanks grout is being placed at the tank bottoms, and at the tertiary filter efforts have been focused on completing building close in and interior pipe work.

A report on each area is given below:

Area 1 - Sludge building (SB)

Electrical work is primarily concentrated on 1st floor areas which now are about 90% complete electrically. Once most of the electrical work at the 1st floor has been finished the electricians will clean up work at the other floors.

Mechanical piping work throughout the building is nearing completion with the major activities yet remaining being installation of minor pipe runs and testing, all followed by completion of insulation work. HVAC work is close to completion with about 10 more working days required to finish up sheet metal duct work. The air compressor has not yet arrived; however, fuel oil pumps are set and the oil piping is substantially complete.

Painting has started on exterior walls and is moving well particularly at the filter press floor. Elevator cab work is in progress and door frames are expected to be completed soon.

Lighting installation continues and is well along at the lower floors. It will progress on through remaining areas within the next few working days.

Area 2 - Primary building (PB)

Most mechanical and architectural work at the primary building is complete with the remaining work being in the electrical trades.

Area 2 - Aeration tank (AT)

Installation of air piping is moving well and should be completed within the next 15 to 25 working days. The entire inside and outside air system will be completed before testing the system. In addition there is, prior to testing, additional required work on hookup of the blowers.

If testing moves well and the system can be broken into proper testing components it should take from 5 to 10 days to complete a full test on the air system.

Waterproofing at the aeration tank is complete.

Area 2 - Blower and electrical building (BE)

Inside air piping is nearly complete and, as noted above, will be tested along with outside air piping following completion of miscellaneous work on the blowers.

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CONSULTING ENGINEER

Area 2 - Primary settling tanks (PST)

Scraper mechanism installation is substantially complete and grouting of all four tanks will be finished by the end of the day today, November 6, 1981 (working day 983). There still remains to be done the electrical hookup of the scraper mechanisms.

Area 2 - Sludge thickener area (ST)

Grouting is completed in the tanks and work is continuing inside the sludge building. HVAC work is about 30% complete although no duct work has been installed as yet. Work is in progress on the lower yard piping and should be done shortly. This work is not presently interfering with any major other operations at the sludge thickener area.

Area 3 - Existing chlorine contact tanks (CCT)

Not monitored at this session.

Area 3 - New chlorine contact tank (CCT)

Not monitored at this session.

Area 3 - Tertiary filter (TF)

Miscellaneous mechanical and architectural work continues at the building and close in is now complete using temporary closures at the window openings. This is to assist in placement of the filter media.

Area 3 - Yard piping and electrical

Installation of yard work continues with most mechanical lines installed except for a plant effluent water line which is yet to be placed and tested. Much of the electrical underground conduit in area #3 is also installed.

Area 3 - Final settling tanks (FST)

Work presently is being completed on installation of scraper mechanisms and tank bottom grout will start Monday, November 9, 1981 (working day 984). FST work is presently very close to being completed by the target early and late starts and finishes.

Area 1 - Corridor X

The only remaining underground work to be installed is an electrical conduit from manhole #7 to manhole #6. This work is to be done shortly.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

General

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

December 7, 1981

Subject: Monitoring Report #28

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: December 4, 1981 (working day 1002)

Approximate date of notice to proceed: August 1, 1978 (working
day 149)

Present target completion date (with extensions): March 15, 1983
(approximately
working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656) and
Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence and
Mr. Ed Spence
- Evaluated current job status

General Summary

The weather remains fairly mild but the site has become extremely muddy and difficult of access. However, major efforts are still being made to complete most major underground mechanical and electrical work before the onset of full winter weather. There has been steady progress made over the past month in cleaning up remaining items of work in yard utility installation.

Work on the building also is continuing with major attention now being given to the sludge building and the sludge thickener building. Tank work is rapidly being completed and grout at the last settling tank will be complete today, December 4, 1981 (working day 1002).

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Major efforts are being made to intensify interior utility and finish work at the sludge building. Block filler has been started and the pace of painting will pick up as the interior of the building warms and dries slightly more.

The boilers were activated Wednesday, December 2, 1981 (working day 1000). HVAC work continues and is nearly complete with only a few runs and dampers yet to be installed. Lighting installation in the building is continuing and is now about 70% complete with the 3rd floor yet remaining to be finished.

At the elevator shaft the elevator platform and cab is being worked upon, and it is expected that masonry at door frames will be completed in the very near future.

Area 2 - Primary building (PB)

Not monitored at this session.

Area 2 - Aeration tank (AT)

Piping at the aeration tank is about 90% complete, and handrail installation is substantially complete. As noted in the previous report, installation of air piping inside and outside will be completed before testing the air system.

Area 2 - Blower and electrical building (BE)

Cleanup is under way in the building and interior doors have been hung. Work continuing there is focused on the blower and the air system to make ready for required air tests.

Area 2 - Primary settling tanks (PST)

All scraper mechanisms and grout are complete at the primary settling tanks. There still remains some electrical conduit to be installed to the tanks.

Area 2 - Sludge thickener area (ST)

At the sludge thickener building, work continues on mechanical and electrical utility installation. At the exterior of the building and tanks most yard work is complete and in the tanks themselves the mechanisms and grout is complete.

Heavy efforts are being concentrated on electrical installation at the sludge thickener building to bring this work along concurrently with work at the sludge building.

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CONSULTING ENGINEER

Area 3 - Existing chlorine contact tanks (CCT)

Not monitored at this session.

Area 3 - New chlorine contact tank (CCT)

Not monitored at this session.

Area 3 - Tertiary filter (TF)

Waterproofing of filter tanks is complete and air piping has been substantially installed in the clear wells under the filter tanks. Electricians are currently wiring pump motors at below operating floors levels.

Area 1 - Corridor X

All underground mechanical and electrical yard work has been installed.

General

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (signature)

RJS:sps

Tp: Mr. Hugh Spence ✓
(original and one)

January 14, 1982

Subject: Monitoring Report #29

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: January 8, 1982 (working day 1025)

Approximate date of notice to proceed: August 1, 1978
(working day 149)

Present target completion date (with extensions): March 15, 1983
(approximately
working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Evaluated current job status

General Summary

Most yard work with the exception of a small run near the existing administration building has been completed. Heavy work is now concentrated in each of the building facilities, and close attention is being given to the sludge building. There, most mechanical piping and systems work is either nearly or substantially complete. Work also continues at the interiors of the blower and electrical building and the tertiary filter. Tank work on final settling tanks, primary settling tanks, and sludge thickener tanks is substantially complete with the machinery and grout being installed at all three sets of tanks.

A review of each major area is given below:

Area 1 - Sludge building (SB)

Heavy efforts continue in the sludge building to complete as much work as possible on systems and equipment. Heat has

been on in the building now since December 30, 1981 (working day 1019), and the working environment is reasonably comfortable for interior finish work. Painting will probably resume next Monday, January 11, 1982 (working day 1026).

Elevator installation continues, and all masonry is complete at the shaft. Masonry in other areas of the building is also complete. Work on control systems is to resume January 15, 1982 (working day 1030) and installation of the lighting system should be complete in the very near future. HVAC work is also substantially complete. There still remains some electrical cable and wire to be pulled to the sub-station at the sludge building. This work is ongoing.

Area 2 - Primary building (PB)

Electrical work continues at the primary building.

Area 2 - Aeration tank (AT)

Work at the aeration tanks has been carried as far as possible this winter and is now generally closed for the cold weather period. The small amount of remaining work will be completed when the weather is warmer.

Area 2 - Blower and electrical building (BE)

Cleanup continues at the blower and electrical building and work is ongoing on major electrical equipment. Most air piping is complete and testing will be done once permanent power is available.

Area 2 - Primary settling tanks (PST)

All scraper mechanisms and grout are complete and most electrical conduit work to the tanks has been completed.

Area 2 - Sludge thickener area (ST)

Mechanical and electrical work at the sludge thickener building is substantially complete, and the HVAC system is to be turned on within the next few days.

Area 3 - Existing chlorine contact tanks (CCT)

Not monitored at this session.

Area 3 - New chlorine contact tanks (CCT)

Not monitored at this session.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

Area 3 - Tertiary filter (TF)

Water testing of the tanks is being conducted and mechanical and electrical installation is also in work at the tertiary filter.

Area 1 - Corridor X

Work is substantially complete.

General

The weather has turned very cold and what little remaining exterior work is to be done will be completed as the weather moderates. I shall be in touch with Mr. Spence shortly to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (e)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

February 13, 1982

Subject: Monitoring Report #30

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: February 5, 1982 (working day 1045)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Evaluated current job status

General Summary

Snowfall over the past week has been exceptionally heavy, and therefore most field work has been concentrated in the buildings. Heat is on in all buildings and working conditions are reasonably good. Finish work is being concentrated on at the sludge building while work at other areas is being directed toward installation of electrical systems and testing of tanks at the tertiary filter.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

Cleanup continues at the sludge building and installation of controls, wiring, and trim is in work for much of the equipment. Production installation has started on the control panels at the control room. This will be a heavy focus activity over the next few weeks. Painting and other interior architectural work is also in progress.

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CONSULTING ENGINEER

Area 2 - Primary building (PB)

Electrical work continues at the primary building.

Area 2 - Aeration tank (AT)

Not monitored at this session.

Area 2 - Blower and electrical building (BE)

Cleanup continues and electrical and mechanical work is in progress.

Area 2 - Primary settling tanks (PST)

Not monitored at this session.

Area 2 - Sludge thickener area (ST)

The HVAC system has been activated at the thickener building. Work is also continuing there on miscellaneous electrical items and finish architectural trades.

Area 3 - Existing chlorine contact tanks (CCT)

Not monitored at this session.

Area 3 - New chlorine contact tanks (CCT)

Not monitored at this session.

Area 3 - Tertiary filter (TF)

Water testing of the tanks continues. Mechanical and electrical installation is also in work.

General

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (ep)

RJS:sps

To: Mr. Hugh Spence
(original and one) ✓

March 8, 1982

Subject: Monitoring Report #31

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: March 2, 1982 (working day 1062)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #11, dated July 26, 1980 (working day 656)
and Issue #12, dated October 31, 1980 (working day 724)

Actions taken:

- Inspected project
- Reviewed current job status with Mr. Hugh Spence
- Reviewed remaining electrical work at sludge building with Mr. Ron Kowalchik of Electric Services
- Evaluated current job status

General Summary

Over the past month considerable progress has been made in overall installation of electrical service and presently there remain only a few major links to be completed to bring permanent power into the building group.

A brief review of each major area is given below:

Area 1 - Sludge building (SB)

The major thrust now is to complete as much electrical work as possible that restrains production interior painting. This will be a major effort over the next few weeks so that the building can be cleaned and the painter can complete his interior work.

The elevator has been substantially completed with some minor finish work yet remaining. Holding tanks have been tested and are now being drained. The filtrate tanks and sludge blending tanks have also been tested. At elevation 776' work on the electrical room continues with hookup of sub-station #5 in progress. Cabinet work at motor control centers R and S is continuing concurrently.

At the control room most terminations have been made at the control panel and wire is being completed out to the various field devices. Lighting is nearly complete in the building and acoustic ceilings are being installed at the office, toilet rooms, lab, and control room. Throughout the building, electrical work is also continuing on completion of the sound systems, making final connections to various pieces of equipment and installing miscellaneous control wiring and electrical trim.

Area 2 - Primary building (PB)

Electrical work on distribution wiring and equipment hookup continues at the primary building. The hoist at the upper level has been installed.

Area 2 - Sludge thickener area (ST)

Most work has been completed except for miscellaneous electrical hookup at the sludge thickener area. The tanks have been tested.

Area 2 - Primary settling tanks (PST)

Not monitored at this session.

Area 2 - Aeration tanks(AT)

Most air piping at the tanks has been completed, and miscellaneous finish work is in progress including installation of gates and operators at the north end of the tanks.

Area 2 - Blower and electrical building (BE)

Cleanup is still in progress and work is now being concentrated on connections at the electrical equipment room in the electrical building.

Concrete finishing and cleaning of pipe has been substantially complete. Some miscellaneous block filling may proceed soon, but most finish painting will be deferred until electrical conduit has been run on walls and in the ceilings. The hoist at the blower and electrical building is installed.

Area 3 - Final settling tanks (FST)

Not monitored at this session.

Area 3 - Tertiary filter (TF)

Water testing of the tanks is still in work with efforts being concentrated now on the north bank of the tanks. Electrical work at the equipment room is in progress,

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

and some cable connections have been made. Finishes at the toilet room are being installed with ceramic tile complete. Finish work has also been started at the control room of the tertiary filter building.

General

Overall, the project is now being knit together electrically by final tie ins of various systems. Most equipment and major systems installations are well on their way toward being complete and tied in to the total plant.

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (72)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

you

- Area 1 - Sludge building (SB)
- Area 2 - Primary building (PB)
 - Sludge thickener (ST)
 - Primary settling tanks (PST)
 - Aeration tanks (AT)
 - Blower and electrical building (BE)
- Area 3 - Final settling tanks (FST)
 - Tertiary filter (TF)
 - New chlorine contact tanks (CCT)

The early discussions at the session revolved around confirming the content of the electrical activity laundry list prepared at our previous monitoring with Mr. Kowalchik. Later in the session we prepared in conjunction with J.F. Cavanaugh personnel the laundry list for mechanical work. Activities included in these two major contracts have now been defined in the random laundry list, and we will continue to plan the work sequences desired at future sessions.

At our meeting we were able to prepare the network model for mechanical and electrical work elevations 736', 756', 765', 776', including some blower and electrical area work on switchgear and transformer installation closely related to sludge building tasks. In addition, we prepared a network model of remaining mechanical and electrical work at the sludge thickener areas.

These networks are shown on sheets #21, #22, and #23, Issue #14, dated March 24, 1982 (working day 1078). Most mechanical installation activities are closed with an activity entitled check and test the equipment. Once this check and test is done a clean up and move out activity can be initiated.

It should be noted that on sheets #21, #22, and #23, Issue #14, dated March 24, 1982 (working day 1078) only early starts and early finishes have been calculated on the preliminary sheets. At future sessions we will establish the late starts and late finishes and complete the full model computations.

It should be noted that the float time available to any task is assumed to be the contractors and is to be used at their discretion. Extension of dates beyond early starts and finishes can be only with the approval of Spence Brothers.

At subsequent sessions we will complete the logic plans for remaining work and once these have been put into a form suitable to all concerned, will be issued for field guidance. Meanwhile, the preliminary network prepared at our meeting of March 24, 1982 (working day 1078) has been printed and distributed to those concerned.

We now have the majority of the laundry list items identified, and therefore will plan on concentrating heavily at our subsequent sessions, as noted above, on completing the logic diagram.

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (gms)

RJS:sps

To: Mr. Hugh Spence
(original and one)✓

June 7, 1982

Subject: Monitoring Report #33

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78,58

Date of Monitoring: May 7, 1982 (working day 1110)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #14, dated March 24, 1982 (working day 1078)

Actions taken:

- Reviewed current status of work shown on sheets #21, #22, and #23, Issue #14, dated March 24, 1982 (working day 1078). These sheets contain remaining work for the sludge building and the sludge thickener area.
- Continued preparing logic plans for remaining areas of the facility

General Summary

We first reviewed the status of the project from Issue #14 dated March 24, 1982 (working day 1078). The current position of project activity was annotated on the tracings. A full monitoring of this section of the work will be done at our next review meeting in June, 1982.

We then continued diagramming project work on sheets #24, #25, and #26, Issue #15, dated May 7, 1982 (working day 1110). On these sheets is shown remaining activities for the following:

Aeration tank (AT)

Primary building (PB)

Blower and electrical building (BE)

Final settling tanks (FT)

Tertiary filter (TF)

Primary settling tanks (PT)

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

For the primary tanks, aeration tank, primary building, blower and electrical building, and final settling tanks the logic plan only was prepared. For the logic plan at the tertiary filter we were able to assign preliminary durations, and these will be reviewed in detail at our next planning and monitoring session. Durations for work at those sectors of the project that were not quantified will be assigned at that time. The tracings were left with Mr. Hugh Spence for distribution as may be needed.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (api)

RJS:sps

To: Mr. Hugh Spence
(original and one)✓

July 2, 1982

Subject: Monitoring Report #34

Ann Arbor Waste Treatment Plant 77-S-2

Ann Arbor, Michigan

Spence Brothers - General Contractors

Project: 78:58

Date of Monitoring: July 1, 1982 (working day 1148)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #16, dated June 3, 1982 (working day 1128)
Sheets 21, 22, 23, 24, 25, and 26

Actions taken:

- Inspected project
- Monitored current status of work of all areas with Mr. Hugh Spence and major subcontractors
- Evaluated current job status

General Summary:

At present the project is being delayed in some areas by strikes that are affecting important activities. A brief review of the strike situation since June 1, 1982 (working day 1126) is given below.

- Structural iron workers - On strike June 1, 1982 (working day 1126). Still out. No word on settlement. Major delays caused by strike are in installation of wells, completion of checking mechanisms and adjustment of mechanisms.
- Painters - On strike June 1, 1982 (working day 1126). Still out and delaying painting and coating, particularly at tank exteriors where painting holds back filling.
- Operating engineers - On strike June 1, 1982 (working day 1126). Settled June 14, 1982 (working day 1136).

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The strikes are disruptive and of course, seriously affect work continuity. At present every effort is being made by all contractors to work around the strike problems. This will get increasingly difficult to do as areas near completion and must be checked out for owner acceptance.

The network model from which we monitored the project is that contained on sheets 21 through 26 of Issue #16, dated June 3, 1982 (working day 1128). This model has been issued to those concerned and will be used to evaluate the project until it appears appropriate to update the information contained in it.

A brief review of each major area and its current status is given below.

Sludge building (SB)

At elevation 736' most work is complete, except for minor checking and testing of pumps. The motors have all been installed, rotations reviewed, and final checking and testing of the mechanical electrical systems is presently in work.

At elevation 756' there has been some minor difficulties at the polymer feed pumps but these problems are expected to be resolved shortly and the area is to be completed within the near future.

At elevation 765' most work is complete.

At elevation 776' major efforts have been concentrated on the electrical work and although there are still some minor interconnection problems to be resolved, it appears the total system should be available for final check and energizing shortly. The Bristol instrumentation system is being checked out and this work is proceeding very well. Finishes in various special areas at elevation 776' are nearly complete with only minor items being deferred to avoid damage. These include resilient floor covering, toilet fixtures, and minor trim items.

In the overall building there still remains some painting to be done, however, this work will have to await the settlement of the painters strike.

Sludge thickener area (ST)

Testing of all equipment is in work, although the final checking and testing of the scum concentrate mechanism will be possible only on return of the iron workers from strike. They are needed for final testing and adjusting. Also, some repairs will have to be held until return of iron workers from strike.

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The owner has not yet issued a change order to relocate the scum-well level sensor so that the sensor LE 412 can be relocated. There is no word on when this will be issued.

Primary tanks (PT)

Installation of fiberglass weirs at the primary tanks is being held by the iron workers strike. Approval has been given by the architect/engineer on tanks #1, 2, and 3 but remaining testing will be restrained by settlement of the iron workers strike.

Primary building (PB)

Motor rotations are being checked, instrument air piping is being installed and work on panel terminations is in progress. Work at the primary building is moving well, although painting has been delayed by the painters strike.

Aeration tanks (AT)

Most work at the aeration tanks has been done and work remaining is restrained by the iron workers and painters strike. The iron workers are needed to install fiberglass weirs. The painters strike is delaying application of thoroseal to surfaces that must be backfilled.

Blower and electrical building (BE)

Two blower control panels have been set and wiring is underway. Conduit installation is moving well and some motor hookup has started. The intercom system is installed and connected and work is proceeding on hooking up instruments.

The remaining mechanical work is held by the need for a bypass valve operator. It will probably be delivered in mid July, 1982 and will allow the major remaining mechanical work to be completed.

Final settling tanks (FST)

Installation of fiberglass weirs and completion of scum boxes is being held by the iron workers strike. Completion of painting is being held by the painters strike. Most of remaining installation work at the final settling tanks is held until the strikes are settled. Maintenance work on the tanks has been initiated and is in work.

Tertiary filter (TF)

Tertiary filter work is moving well and the tanks are now

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being placed. In addition, testing is proceeding on all process piping, and conduit and wire is being installed at many sections of the building. The lighting system is installed at most areas except for the basement. The intercom system installation and hook-up is presently in progress.

The control panel has been delivered and is set and being wired. Instrument air piping is well along and there are needed only a few additional days to complete instrument air piping.

We added an additional task to the network model on sheet 26, Issue #16, dated June 3, 1982 (working day 1128) showing installation of PEW control wiring. This control wiring must be installed before start of check out of the control panel. We shall review the logic of this activity sequence at our next monitoring session.

Overall, work at the tertiary filters is moving well and aside from those areas affected by the strikes, work there is generally meeting targets between early and late starts and finishes.

General

Aside from delays to local work at each major area caused by the current painters and structural iron workers strike, the project is moving very well and work progress is being generally maintained in alignment with Issue #16, dated June 3, 1982 (working day 1128). At some areas we have extended past the desired target completion dates but overall the work is in line with the network. We shall better be able to evaluate the impact of the strikes on the project at our next monitoring session.

I shall meanwhile be in touch with Mr. Hugh Spence shortly to set the date of the next monitoring.

Ralph J. Stephenson, P.E.

R. J. Sigay

August 10, 1982

Subject: Monitoring Report #35

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78158

Date of Monitoring: August 6, 1982 (working day 1173)

Present target completion date: (with extensions) - March 15, 1983
(approximately working day 1328)

Monitored from Issue #16, dated June 3, 1982 (working day 1128)
sheets #21, #22, #23, #24, #25, and #26

Actions taken:

- Inspected project
- Reviewed current status of work with Mr. Hugh Spence and major sub-contractors
- Evaluated current job status

General Summary

Key trades are now back on the job and the general strike history is as follows:

- Structural iron workers - On strike June 1, 1982 (working day 1126). Settled July 12, 1982 (working day 1154).
- Painters - On Strike June 9, 1982 (working day 1132). Settled July 7, 1982 (working day 1151).
- Operating engineers - On strike June 1, 1982 (working day 1126). Settled June 14, 1982 (working day 1135).

Finish site work operations are under way, and efforts are being exerted toward getting paving started in the very near future. Site clean up is also in work.

Meanwhile, progress continues from fair to good on most new facilities within the project.

A brief review of each major area and its current status is given below:

Sludge building (SB)

There still remain a small amount of mechanical and electrical finish work at elevation 736'-0". At elevation 756' completion of hookup and checking of rotation of the polymer feed pumps is being restrained by need for parts to be provided by the mechanical contractor. These must be installed before additional work can be done. There is no current word on their availability.

At elevation 776' work continues on making connections at sub-station #5. It should be pointed out that permanent power could be provided if needed. However, if the system is activated prematurely there is a sizable efficiency-loss ongoing cost. To avoid this unnecessary expense, system activation will be done only when required.

Control room work on the Bristol instrumentation system is ongoing and has been reduced to a nominal remaining amount of work.

At elevation 736' work is presently in progress on checking and testing all pump systems. At elevation 756' rotation of the lime slurry pump motors is under way. Yet to be done is checking and testing of the lime slurry pumps. Also remaining is installation of the drawoff valve packing which will be accomplished when the packing has been delivered.

At elevation 776' finish work at the office, showers, and toilet room is still not totally complete. Most work yet to be done is being held to prevent possible construction damage to interior finishes. However, it is the intent to complete this work in the near future when the area can be made relatively secure from casual construction traffic.

There is a need to resolve the Stevens flow and level sensor matter at several buildings including the sludge building. Once this has been done, the needed materials and equipment can be obtained and the sensors installed.

Sludge thickener area (ST)

Work remaining at the sludge thickener area includes checking and testing the scum concentrate mechanism, relocating the scum well level sensor (LE-412), and completing instrumentation panel wiring. There also is some minor interior finish work yet to complete.

The scum well level sensor (LE-412) relocation is being held by the need for the owner to issue a change order for this relocation work. Completion of instrumentation panel wiring is being held pending the relocation.

Also to be resolved is the matter of the Stevens flow and level sensors described earlier at the sludge building.

Primary tanks (PT)

The Stevens flow and level sensor matter must also be resolved here. Tank handrails are not yet on the job. This was a bulletin and change order revision. They will be installed as soon as they arrive.

Primary building (PB)

Motor rotation has been checked, and the mechanical system is now ready for checking. Interior painting is continuing and the Bristol instrumentation check out is also in work. At the primary building, the Stevens flow and level sensor problem also must be resolved.

Aeration tanks (AT)

Most major work at the aeration tanks has been completed except for testing of aeration piping. This will be done when the blowers are activated and concurrent with checking out the blower piping at the blower and electrical building.

Blower and electrical building (BE)

Work is being completed at the blower and electrical building on blower control panels, conduit, and wiring. Work has begun on installation of the lighting system, and control panel terminations along with completing hookup of all instruments is in work concurrently. The material has arrived on the job to complete connections at the blower cooling water systems, and will be installed shortly.

Field order #140-7 was issued recently revising the control valves from manual to pneumatic/electric. The valves arrived on the job July 30, 1982 (working day 1168). The Stevens flow and level sensor items must also be added to work at the blower and electrical building once the item is resolved.

Final settling tanks (FST)

Work is just beginning on installation of fiberglass weirs and painting is nearly complete. Stevens flow and level

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RALPH J. STEPHENSON, P.E.
CONSULTING ENGINEER

sensor problems also must be resolved at the final settling tanks and the tertiary filter building.

Tertiary filter (TF)

Granular filter material has been placed, and work will start on placing the coal media next week. The control panel is set and terminations are being installed at the panel. PEW control wiring is also being installed, and there remains about 2 working days to complete this installation. Work at the tertiary filter is moving in relatively close conformance to desired target completions.

General

At present, all major trades are back and there are no current strikes affecting the job in the field. Heavy efforts are being placed on completing finish site work, and the entire project is now being cleaned and checked readying for the final few months of construction.

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (aps)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

September 11, 1982

Subject: Monitoring Report #36

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: September 2, 1982 (working day 1192)

Present target completion date: (with extensions - March 15, 1983
(approximately working day 1328))

Monitored from Issue #16 dated June 3, 1982 (working day 1128)
sheets #21, #22, #23, #24, #25, and #26

Actions taken:

- Inspected project
- Reviewed current work status briefly with Mr. Hugh Spence

General Summary

Major activity on the job at present is being concentrated on getting the site ready for paving, and completing remaining finish and trim items at the sludge building, sludge thickener area, primary tanks, aeration tanks, and primary building.

At the blower and electrical building and the tertiary filter, work continues on testing, installation of systems, and completion of wiring and controls.

A brief review of each major area and its current status is given below:

Sludge building (SB)

Work here is at about the same point as reported in the previous monitoring. Some additional work has been done in the control room however, and substantially progress has been made in wiring of the control panels.

Sludge thickener area (ST)

Work is continuing on interior and exterior finish items. No further evaluation was made of the area at this monitoring.

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

Primary tanks (PT)

The mechanisms are being checked out, final baffle and weir elevations set, and finish work is being brought to completion.

Primary building (PB)

Not monitored at this review.

Aeration tank (AT)

Miscellaneous work is continuing. Most major work has been completed.

Blower and electrical building (BE)

Most work remaining at the blower and electrical building is concerned with completion of electrical wiring, and control panel work. These items were not monitored in detail at this session.

Final settling tanks (FST)

Installation of fiberglass weirs and painting is nearly complete, work continues on checking out the mechanisms and on miscellaneous backfilling and trim work.

Tertiary filter (TF)

The coal media has been placed and work is under way on installation of exterior translucent window panels. Interior work on control panel wiring continues.

General

Work concentration now, as noted above, is on site work and readying each building for check and test operations. I recommend that procedures for these check and test operations be set just as quickly as possible so that as each of the areas is completed, the owner, the architect/engineer, and the contractors can mutually cooperate to implement an effective turnover program. I shall be in touch with Mr. Spence soon to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (RJS)

RJS:sps

To: Mr. Hugh Spence
(original and one)✓

October 31, 1982

Subject: Monitoring Report #37
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors
Project: 78:58

Date of Monitoring: October 26, 1982 (working day 1229)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #16 dated June 3, 1982 (working day 1128)
sheets #21, #22, #23, #24, #25, and #26

Actions taken:

- Inspected project
- Reviewed current work status with Mr. Hugh Spence
- Discussed remaining electrical work with electrical contractor project manager

General Summary

Overall, site work is being brought to completion with landscaping and seeding in work, and paving to be completed within the next few working days. The base course has been laid at all areas, and the wearing course is expected to be applied within the next week.

Sidewalk slabs are complete, and final grading and trimming out of various fill areas is well along.

At the buildings, major work is still being concentrated upon cleaning up systems work, installing mechanical, electrical and architectural trim items, and ongoing testing and checking mechanical and electrical systems. It is presently expected to have all equipment checked and tested by December 1, 1982 (working day 1254) ready for acceptance by the owner. Exceptions to this are certain unresolved matters that still require owner, architect/engineer action. The most critical of these deals with resolution of problems with level sensors located in the sludge building, thickener building,

primary building, blower building, filter building, and at the old plant. There has been no clear cut course of action yet given to the contractor by the owner, architect/engineer, and it is very important this matter be addressed now. Revisions that might be made to the sensor installation by the architect/engineer and owner will probably require submittals, and the items have long lead times. Considerable additional cost will be incurred if revisions are made.

Thus, it is of the utmost importance that the matter of level sensors be addressed now.

A brief review of each major area is given below:

Sludge building (SB)

Current work at the sludge building is mainly concerned with remaining finish items to be installed at various levels in the facility. Permanent power could be provided if necessary; however, as noted in previous monitoring reports if the system is activated prematurely there is a sizable efficiency/loss ongoing cost. To avoid this unnecessary expense system activation will be done only when required.

It should be again noted that a decision on level sensors is needed for the sludge building.

Sludge thickener area (ST)

Most work except that in respect to the relocation of the scum well level sensor has been completed, and work is now in progress on clean up and move out of the sludge thickener area.

Primary tanks (PT)

Most work has been completed at the primary tanks, and the major activity is now concentrated on clean up and move out work.

Primary building (PB)

Work continues on checking and testing the primary building mechanical systems and on clean up and move out. Most other work is substantially complete. Here as with other areas a decision on the level sensor is required.

Blower and electrical building (BE)

Work here is concentrated on completing hookup of control panels, checking all motors, and checking and testing

pumps. Also work is in progress on interior finish painting. Installation of blowers is still in progress, and the owner's contractor is completing his work getting the blowers ready for running and checking by the owner. There was no word at this session on when this installation will be complete.

At the blower building the level sensor problem, as noted above, also must be resolved.

Final settling tanks (FST)

Most work is complete at these tanks and clean up is in work.

Tertiary filter (TF)

Fiberglass exterior panels are all installed and most work now is concentrated upon checking and testing mechanical and electrical systems along with completing interior painting and installation of other architectural, mechanical, and electrical trim installation. The tertiary filter is included as one of those where decisions must be made in respect to the type of level sensor.

General

Work is now moving rapidly toward completion of site work, checking and testing of all building systems, and clean up ready for turning the facility over to the owner, the architect, and the engineer for their acceptance and turn on. Present target date for this turnover to the owner and the architect/engineer is December 1, 1982 (working day 1254).

Again, to emphasize its importance, a resolution must be provided immediately on the type of level sensor to be used since it influences several major elements of the project.

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

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (gs)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

December 4, 1982

Subject: Monitoring Report #30
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78,58

Date of Monitoring: November 30, 1982 (working day 1253)

Present target completion date: (with extensions) March 15, 1983
(approximately working day 1328)

Monitored from Issue #16 dated June 3, 1982 (working day 1128)
sheets #21, #22, #23, #24, #25, and #26

Actions taken:

- Inspected project
- Reviewed current work status with Mr. Hugh Spence
- Discussed remaining electrical and mechanical work with electrical and mechanical contractor project managers

General Summary

The total new project is now being brought to a point where the owner can accept all systems. Permanent power is on and resolution of remaining problems is continuing as rapidly as possible. It is anticipated that most or all of these problems will be resolved by the third week in December, 1982. Present plans are to encourage the architect/engineer and owner to take over the entire new plant for their turn on, testing, and run in.

Informal punching out of the project has been started by the architect/engineer but no formal punch lists have been received as yet by the contractors. These are expected momentarily.

Mr. Spence and I reviewed the need for further planning of the remodeling work to be done in the existing plant. This is a program to be done once the owner has decided the procedure for shutting down the existing plant since no major work can be done at the existing plant until it is taken out of service by the owner and turned over to the contractor.

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

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

Ralph J. Stephenson, P.E.
(2/12)
Ralph J. Stephenson, P.E.

RJS:eps

To: Mr. Hugh Spence
(original and one) ✓

February 10, 1983

Subject: Monitoring Report #39
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: January 28, 1983 (working day 1294)

Present target completion date: (with extension) March 15, 1983
(approximately working day 1328)

Note: This target date is now being re-evaluated due to a non contractual delay period imposed upon the project by the owner to allow a 6-month operational running of the new plant prior to closing down the existing plant for remodeling.

Monitored from: Issue #18, dated January 28, 1983 (working day 1286)

Actions taken:

- Inspected project
- Reviewed current work status with Mr. Hugh Spence
- Set end time restraints for network model Issue #18 dated January 28, 1983 (working day 1286 sheets 27, 28, 29, 30, 31 and 32)

General Summary

The new plant according to Mr. Hugh Spence is available for owner takeover whenever the owner chooses to do so. Presently liquid media (probably PEW) is being circulated through various elements of the new plant, and now that liquid flow has begun it would be difficult to shut this flow down and empty various container elements. Thus, it becomes very important that the owner take over the plant just as quickly as possible.

We did not get into extensive detail as to the reasons for the delay in accepting the plant; however, all contractors on the job are working diligently to comply with the owner requests so the plant can be accepted and put into operation by the owner.

We added late starts and late finishes to the network model for existing plant remodeling sheets 27 through 32, Issue #18, dated January 28, 1983 (working day 1286) and established a rationale for the planning and scheduling of this work once the existing plant becomes totally available. The network model has been assembled on the basis that the total float time available belongs to Spence Brothers and is to be used only by them in planning and executing their work. All others who desire to use the float time available must obtain written permission from Spence Brothers for such use.

The amount of time allowed by contract to remodel the existing plant from the time it is turned over to the contractors is six months. In our planning of the work, it was found that the construction would actually require somewhat less than that, so we assumed the latest allowable desired completion date was when the last element of the work could be completed by this plan. However, the contract late finish of the total project is maintained at six months following shut down of the existing plant, and full turnover of it to the contractor for unimpeded work there.

The contractors are entitled to the full six months allowed by the contract documents to remodel the existing plant, and therefore any float time between the desired late finish of the work as shown in the network model and the contract late finish, as noted above, belongs to Spence Brothers Inc. We have used a late finish date on other elements of the existing plant the same as the desired late finish indicated as required for remodeling of the longest of the existing plant facilities.

Thus, in summary, the network model shows first, the total six month period to which Spence Brothers is entitled to complete the existing plant once it is turned over and second, shows the desired completion date, which is somewhat shorter than the six month period, by which Spence Brothers desires to complete the facility. The desired date is considered to be the late finish for the entire existing plant work. The number of days difference between the contract date and the desired date belong to Spence Brothers to use as they see fit in planning and scheduling their work along with that of their sub-contractors.

We are now adding the late start and late finish calculations to the rough tracings and expect to issue this network model for the remodeling of the existing

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

plant within the next few days. Meanwhile, I shall be in touch with Mr. Hugh Spence shortly to set the date for the next monitoring and evaluation session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (apt.)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

March 7, 1983

Subject: Monitoring Report #40
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: March 4, 1983 (working day 1319)

Present target completion date: March 15, 1983 (working day 1327)

Note: This target is now being re-evaluated due to a non contractual delay period imposed upon the project by the owner to allow a 6-month operational running of the new plant prior to closing down the existing plant for remodeling. The owner has recently evaluated this period of time and is now discussing a possible reduction of this length of time with their consultants and Spence Brothers.

Monitored from Issue #18, dated January 28, 1983 (working day 1294)

Actions taken:

- Inspected new project
- Reviewed current work progress with Mr. Hugh Spence
- Evaluated schedule of times provided by the owner to Mr. Hugh Spence March 2, 1983 (working day 1317)

General Summary

The owner has continued to evaluate the time between completion of the new plant and shutting down of the existing plant. Their review resulted in a schedule prepared by them and their consultants which was given to Mr. Hugh Spence on March 2, 1983 (working day 1317).

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In this tabular schedule each existing plant area was defined, the pre-shutdown activity identified, the post-shutdown activity defined, restraints on moving in to do the new work under 77-S-7 established, and established the earliest possible starting date by which the owner feels they can turn over that part of the plant. In addition, the contractor's starting dates were shown as identified in Issue #17, dated December 30, 1982 (working day 1274).

Ongoing discussions will be conducted in respect to this turnover schedule, but presently it is being assumed that it is valid and Spence can proceed on the basis of the dates given.

Existing final tank #3 has not been in operation due to a machinery breakdown and has been turned over to Spence Brothers. It is the intent to begin work there on Monday, March 7, 1983 (working day 1320) on necessary demolition work. In addition, it is expected that three existing east primary tanks will be made available on March 7, 1983 (working day 1320) for work by Spence. The majority of the existing plant is expected to be made available to Spence by April 11, 1983 (working day 1345).

At the new plant raw sewage was introduced into the plant on February 14, 1983 (working day 1305). The plant was ready to accept influent according to Mr. Spence on January 7, 1983 (working day 1279). The owner began seeding the system with activated sludge about February 1, 1983. At present sludge is being collected in the sludge holding tanks so as to have enough sludge available for the owner to check, test, and operate the sludge dewatering presses at the sludge building. It is anticipated by April 11, 1983 (working day 1345) the owner will have the sludge filter presses operating. At that point the owner expects to release the majority of the existing plant for work to proceed without interruption.

The matter of updating the Issue #18 network model dated January 28, 1983 (working day 1294) was discussed, and since the actual turnover dates for each area vary and have not yet been fully confirmed it was decided to defer updating until the turnover dates could be predicted with greater certainty. We will discuss this at the next monitoring session. I shall be in touch with Mr. Spence shortly to set the date for that review.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (gpi)

RJS:sps

To: Mr. Hugh Spence
(original and one)

April 7, 1983

Subject: Monitoring Report #41 ...
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors
Project: 78,58
Date of Monitoring: March 30, 1983 (working day 1337)
Target completion date: March 15, 1983 (working day 1327)

Note: This target is now being re-evaluated due to a non-contractual delay period imposed upon the project by the owner to allow a 6-month operational running of the new plant prior to closing down the existing plant for remodeling. The owner has recently re-evaluated this period of time and is now discussing a possible reduction of the length of time with their consultants and Spence Brothers.

Monitored from Issue #18, dated January 28, 1983 (working day 1294)

Actions taken:

- Inspected portions of new plant
- Inspected work in progress at existing plant
- Reviewed current work progress with Mr. Hugh Spence
- Discussed electrical progress on existing plant work with electrical contractor
- Evaluated current work status with Mr. Hugh Spence

General Summary

The owner has turned over the existing final settling tank #3 and the north half of the east existing primary settling tank. The mechanisms have been removed from the existing final settling tank #3, and work is in progress installing new equipment.

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

At the existing east primary tanks mechanisms have been removed and new concrete struts are being installed. These are being cast in place instead of being precast. This change was authorized by the architect/engineer.

The owner anticipates releasing the existing west primary settling tank and the south portion of the east existing primary settling tanks on April 11, 1983 (working day 1345) for additional work in these areas.

At the existing machinery building (XMB) most preparatory work to energizing the new sub-station #2A has been done and energizing should take place soon. Some work has started on the new blower piping and on the intercom system.

At the south existing control building (SXCB) demolition has begun on existing lighting and power outlets. At the north existing control building (NXCB) the new lighting and intercom system have been installed and the new unit heaters and fin tube piping are substantially complete.

At the existing north south gallery (XNSG) new electrical conduit and wiring is in progress along with installing and hooking up the intercom system. At the existing retention basin (XRB) and the existing raw sewage lift station (XRL) the UU units have been installed. At the existing digester building (XDB) new conduit and wire is in work.

Overall, at the existing plant, work is still waiting full shutdown of the plant and turnover of the facilities to Spence. The work being done presently on only a small part of the existing plant available is piecemeal and does not allow developing continuity for production revisions to the facility. This slows completion of the total project.

I shall be in touch with Mr. Spence soon to set the date of the next monitoring.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (copy)

RJS:eps

To: Mr. Hugh Spence
(original and one)

May 22, 1983

Subject: Monitoring Report #42
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: May 17, 1983 (working day 1371)

Target completion date: Was March 15, 1983 (working day 1327)

Note: The total project has been extended beyond this date, and it is presently not possible to predict with accuracy the full completion point since the existing plant has not yet been totally turned over for work. Spence claims substantial completion of the new plant on January 7, 1983 (working day 1279). According to specification, 180 calendar days were to be allowed for completion of phase #2 work upon substantial completion of the new plant and completion of turnover of existing plant for full phase #2 work.

Monitored from Issue #18, dated January 28, 1983 (working day 1294)

Actions taken:

- Inspected portions of existing plant
- Reviewed current work progress with Mr. Hugh Spence
- Reviewed progress of mechanical and electrical work on existing plant with mechanical and electrical contractors
- Color coded field network

General Summary

Work is in progress at several areas of the existing plant which have been made available by the owner where physical and systems access is possible. However, there is still not a complete shutdown of the existing plant and therefore

the existing power supply to the plant cannot be shut off. This is beginning to impose projected delays to the work since there are several projected long activity items that can only be initiated once the entire plant shutdown occurs and power is shut off. Electrically, major problems occur at the south existing blower building, the south existing control building, and the existing machinery building.

In the network model Issue #18 dated January 26, 1983 (working day 1294) the total shutdown of the existing plant including draining of systems was shown at June 10, 1983 (working day 1388) (node #5 on sheet #27). Following that, activity 6 to 314 showed the time allocated by contract to complete phase #2 work upon substantial completion of the new plant and complete turnover of existing plant for full phase #2 work. The end point for the total project was shown at December 12, 1983 (working day 1516). Naturally it is hoped that the work can be done as quickly as possible but we are now rapidly approaching the complete turnover point shown in the Issue #18 network of June 10, 1983 (working day 1388), and it will be imperative that the entire existing plant area be released for work.

A brief review of each major work area is given below:

Existing final tanks (XFT)

The tanks have been emptied and mechanisms removed. There still remains some miscellaneous piping to be taken out. Installation of new mechanisms will begin soon. Current work is meeting early start/early finish targets.

West existing primary tank (WXPT)

The tank has been flushed down, the equipment substantially removed, and work is about ready to begin on installation of new mechanisms, conveyors, and motors.

The new struts are in place. These were cast in place by permission of the owner instead of being installed as precast units.

Work at the WXPT is currently meeting early start/early finish targets.

East existing primary tank (EXPT)

Work here is currently meeting early start/early finish targets. The new struts are installed, existing

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mechanisms and conveyors have been removed and installation of new mechanisms and conveyors is in work.

Existing aeration tank (XAA)

Work has started on removal and replacement of deteriorated walkways and repair of walls. The old concrete, once removed to sound material, is to be rebuilt with a grout to be placed as the bearing surface of the precast units. Spence was using a latex coating on the existing concrete surface to bind the new grout to the surface. As installation proceeded, however, the owner and his engineer requested that epoxy be used in place of the latex and that concrete be used in place of the sand and cement grout. This change has not yet been formally approved, and the owner is currently reviewing the cost of the work. However, removal of installation already in place with the latex and mortar grout has been started by Spence so as to not delay the work. However, there has been no formal word on the approved revision to epoxy and concrete, and a decision is currently being made as to how much further to carry the work without this formal approval. Hopefully the matter will be resolved immediately since the corrective work on the existing aeration tank is considerable, and it will be important to make a decision as to the system to be installed very soon.

Existing machinery building (XMB)

This area is very critical electrically because it is here that the new sub-station 2A must be installed and energized. Following energizing of additional sub-stations the power company can disconnect overhead lines to the existing sub-station 2A, provided the owner has shut down the existing plant completely. This is a very critical point since the work following the power company disconnect is important to other areas of the work.

Work on new blower piping is proceeding, and installation of lighting, and the intercom system has moved well, hitting targets between early and late starts and finishes.

South existing control building (SXCB)

Installation and hookup of new lighting and the new intercom system is well along and meeting targets between early and late starts and finishes. Mechanical systems have been substantially completed at the building.

The work remaining depends upon shutdown of the existing plant, after which work on demolition of the existing control panel and motor control center can begin. This work will then be followed by installation and connection of the new control panel and the instrumentation both of which are long duration activities. Also to be noted is the need to install the flow elements and the transmitter at the Parshall flume.

North existing control building (NXCB)

Most electrical and mechanical work here is complete or meeting targets between early and late starts and finishes.

North existing blower building (NXBB)

New lighting and intercom systems are well along and meeting targets between early and late starts and finishes. Mechanical installation is substantially complete and blower piping is presently being installed.

The check and test of the new blowers depends upon completion of electrical work to the blower and installation and hookup of the new motor control center at the existing machinery building. As pointed out previously, work at the existing machinery building is becoming very important to being able to check and test new installations.

Existing north/south gallery (XNSG)

Most mechanical and electrical work is meeting targets between early and late starts and finishes. There still remains considerable work to do on installation of new conduit, wiring, and field instruments. However, presently the work is proceeding well, but at some time before the total completion, will require checking and testing of the new pumps, and tie in to the total system.

Existing east/west gallery (XEWG)

Most domestic electrical work is complete at the XEWG. It should be noted that on the network model there was shown some piping tasks to the existing sample pumps in this area. Apparently there are no sample pumps in the east/west gallery so we have deleted this activity from the network.

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Existing sludge building (XSB)

Mechanical demolition work was completed May 5, 1983 (working day 1363). Painting is substantially complete at the XSB and work remaining deals with clean up and move out.

Existing chlorine contact tank (XCC)

The river levels have been high this spring and therefore, no work has begun as yet at the existing chlorine contact tank. However, it is expected to begin architectural and mechanical demolition there in the very near future.

South existing blower building (SXEB)

Mechanical demolition and installation of new mechanical work has been completed. Sub-station #3 will be shut down as soon as the owner has deactivated the existing plant. This is to be followed by installation of sub-station #3 and the motor control center. These are fairly long duration activities and therefore, become quite important in the electrical plan of future projected operations.

Existing chlorine building (XCB)

Conduit and wire have been installed and the existing chlorinators are hooked up temporarily. These will be changed over to the new sub-station #3 when #3 is installed and energized.

Existing retention basin (XRB)

Work here is substantially complete.

Existing raw sewage lift station (XRL)

Work here is substantially complete.

Existing primary building (XPB)

Work is under way for hook up of the new control panel CP-31. Work is meeting targets between early and late starts and finishes.

Existing digester building (XDB)

Work is currently meeting targets between early starts and early finishes, and electrical work on the lighting and

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

intercom systems is nearly complete. Rewiring existing motors will be deferred until the existing plant is deactivated.

General

Overall, the work remaining is now emerging as being dependent upon a full shutdown of the existing plant as discussed above. It is hoped that this shutdown can be accomplished soon and that the entire plant will be available as needed in the near future. Present projections of completion dates show that, based upon current status, completion probably will be sometime in mid or late September, 1983. Of course, any delays to closing down the existing plant will be reflected in corresponding delays to completion of phase #2 work.

At our monitoring session Mr. Spence and I discussed the need to update the current network model Issue #18 dated January 28, 1983 (working day 1294). Since the project is meeting current targets between early and late starts and finishes as shown in this diagram, and since we are rapidly approaching the June 10, 1983 (working day 1355) date shown for full shutdown of the existing plant and draining, it was not felt appropriate at present to update the diagram since it currently represents a valid yardstick against which to measure job progress.

I shall discuss this again with Mr. Spence at our next monitoring session, and we will again evaluate the need to update the network model.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (aps)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

July 14, 1983

Subject: Monitoring Report #43

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78:58

Date of Monitoring: July 8, 1983 (working day 1407)

Target completion date: Was March 15, 1983 (working day 1327)

Note: The total project has been extended beyond this target date and the present Spence desired completion date is September 27, 1983 (working day 1463). The contract completion date is taken to be December 20, 1983 (working day 1522).

Monitored from Issue #18 dated January 28, 1983 (working day 1294)

Actions taken:

- Reviewed current work progress with Mr. Hugh Spence
- Reviewed progress of mechanical and electrical work at existing plant with mechanical and electrical contractor

Work continued in progress in most areas of the existing plant. A brief review of each major work area is given below:

Existing final tanks (XFT)

The existing mechanisms and piping have been removed and installation of the new mechanisms, piping, and channels is currently in work. Progress at the area is currently meeting targets between early and late starts and finishes.

West existing primary tank (WXPT)

Electrical work is presently being installed with work currently meeting early start/early finish targets.

East existing primary tank (EXPT)

Most major work here is complete and is meeting or has met targets between early and late starts and finishes.

Existing aeration tank (XAT)

Deteriorated walkways have been removed and wall repairs are complete. New precast walkways are currently being installed and are almost complete. It is planned to begin installation of handrails July 11, 1983 (working day 1408). Work is meeting early start/early finish targets.

Existing machinery building (XMB)

Current plans are to energize the new sub-station 2B by July 21, 1983 (working day 1416). Meanwhile, work is proceeding at existing sub-station 2A. The primary side of 2A has been demolished and the vault was removed. Installation of the new motor control center is started and plans are to complete installation and hookup of the new motor control center by August 17, 1983 (working day 1435). This new control center is a very critical piece of equipment and efforts will be made to expedite its installation. Other work is meeting targets between early and late starts and finishes.

South existing control building (SXCB)

The major work yet to be done here is connection of the new CP-30 and checking out the instrumentation. It is anticipated that the new installations can be checked and tested by September 30, 1983 (working day 1458) after which miscellaneous checking and testing will be conducted. Major tasks here are meeting targets between early and late starts and finishes.

Existing north/south gallery (XNSG)

Two major elements of work remain here - installation of sludge pumps, sample pumps, and related piping, along with completion of new conduit and wiring, and installation of field instruments. The new conduit and wiring can be completed once the new sub-station #3 and the motor control center at the south existing blower building (XSBB) are set and connected. The electrical sequence is very critical and must be given careful attention so as to meet current desired targets.

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

Installation of mechanical work is also important and should be reviewed carefully to insure that it will be done within the current desired target time frame.

Existing east/west gallery (XEWG)

Work is currently meeting targets between early and late starts and finishes. New lighting is almost complete, and it appears that the target dates for completion will be met.

Existing sludge building (XSB)

Most major work here is complete.

Existing chlorine contact tank (XCCT)

Work is about to begin on installation of new sluice gates, mechanical demolition, and later installation of wire and hookup of new scum pumps. Work at the XCCT is currently meeting early start/finish targets.

South existing blower building (SXBB)

A critical operation here is the setting and connecting of the new sub-station #3 and the motor control center. This work can begin after the new sub-station #2B is energized, presently planned for July 21, 1983 (working day 1416). Efforts will be made to compress the time required for installation of the new sub-station #3 and motor control center since it is a very critical element in the electrical sequence.

Existing chlorine building (XCB)

Most major work here is complete.

Existing retention building (XRB)

Most major work is complete.

Existing raw sewage lift station (XRL)

Most major work here is complete.

Existing primary building (XPB)

Most major work here is complete or nearly complete.

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

Existing digester building (XDB)

Major work remaining is rewiring the existing motors. This work can begin once the new motor control center at the existing machinery building is installed and hooked up. Work here is meeting targets between early and late starts and finishes.

General

Work remaining revolves basically around completion of electrical work, and mechanical piping and equipment installation. Since the time to the target completion is relatively short, it would be wise to plan now for how the check and test sequences are to be handled and approved.

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

Ralph J. Stephenson, P.E.
(sps)

Ralph J. Stephenson, P.E.

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

August 13, 1983

Subject: Monitoring Report #44

Ann Arbor Waste Treatment Plant 77-S-7

Ann Arbor, Michigan

Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: August 5, 1983 (working day 1327)

Target completion date: Was March 15, 1983 (working day 1327)

Note: The total project has been extended beyond this target date and the present Spence desired completion date is September 27, 1983 (working day 1463). The contract completion date is taken to be December 20, 1983 (working day 1522).

Monitored from Issue #18 dated January 28, 1983 (working day 1294)

Actions taken:

- Inspected phase #2 work
- Reviewed current work status with Mr. Hugh Spence
- Reviewed progress of mechanical and electrical work at existing plant with mechanical and electrical contractors

General Summary

Work is continuing in most areas of the existing plant with a heavy concentration of effort being placed on phase #2 mechanical piping and completion of electrical work, particularly in respect to motor control centers and control panels. A brief review of each major work area is given below:

Existing final tanks (XFT)

Work continues on installation of the new mechanisms with the heavy work on troughs and mechanisms mainly complete

at the tanks. Fitting up the work and final welding is yet to be done. Work is currently meeting targets between early and late starts and finishes.

West existing primary tank (WXPT)

Completion of electrical work at the existing primary tank depends on installation of a new disconnect switch and the associated wire installation. This work is being done on a field order. The disconnect should be here next week, and it should take only a few days after it arrives to complete installation.

East existing primary tank (EXPT)

The owner has decided to install new drives and sprockets. He has ordered these and will install them when they arrive. All other work is substantially complete except for installation of the chains on the sockets. Since these cannot be installed now, the chains will be turned over to the owner so he can install them when the new drives and sprockets are in place.

Existing aeration tank (XAT)

Work here is substantially complete.

Existing machinery building (XMB)

The owner would not allow the power at the existing south blower building disconnected until two feeds were available into the plant. Spence has since been waiting for Edison to complete their work on the north feed. Once this is done, Spence can continue work on power installation.

South existing control building (SXCB)

Work is in progress on installation and connection of the new control panel #30. Control panel #30 instrumentation is also in work.

North existing control building (NXCB)

Most work at the NXCB is done except for miscellaneous painting and clean up and move out.

North existing blower building (NXBB)

Installation of new blower piping is in work and meeting targets between early and late starts and finishes. Most

electrical work is complete with the exception of final installation of emergency light fixtures. Work here is meeting targets between early and late starts and finishes.

Existing north/south gallery (XNSG)

New sludge and sample pumps along with related piping is being installed at this area. Field instruments are also being installed concurrently. Work here is currently meeting targets between early and late starts and finishes.

Existing east/west gallery (XEWG)

Most work in this area is complete, with some minor instrumentation wiring to control panel #31 yet to be done. Work here is currently meeting targets between early and late starts and finishes.

Existing sludge building (XSB)

Most major work here is complete.

Existing chlorine contact tank (XCT)

The new sluice gates are in work with stems yet to be installed. Work here is meeting targets between early and late starts and finishes.

South existing blower building (SXBB)

Setting and connecting the new sub-station #3 and the motor control center is dependent upon energizing new sub-station #2B. This work should be able to start sometime in the near future.

Existing chlorine building (XCB)

Work here is substantially complete.

Existing retention building (XRB)

Work here is substantially complete.

Existing raw sewage lift station (XRL)

Work here is substantially complete.

Existing primary building (XPB)

Work continues on installation and hookup of the new panel #31. This work is currently meeting targets between early and late starts and finishes.

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RALPH J. STEPHENSON, P. E.
CONSULTING ENGINEER

Existing digester building (XDB)

Most work here is complete except for the rewiring of the existing motors. This will be done when the motor control center has been installed and hooked up.

General

Every effort is now being made to identify all remaining tasks and to clean up work to permit final acceptance of phase #2. I shall be in touch with Mr. Spence shortly to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (sps)

- RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

September 15, 1983

Subject: Monitoring Report #45
 Ann Arbor Waste Treatment Plant 77-S-7
 Ann Arbor, Michigan
 Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: September 7, 1983 (working day 1449)

Target completion date: Was March 15, 1983 (working day 1327)

Note: The total project has been extended beyond this target date and the Spence desired completion date was September 27, 1983 (working day 1463). The contract completion date is taken to be December 20, 1983 (working day 1522).

Monitored from Issue #18 dated January 28, 1983 (working day 1294)

Actions taken:

- Reviewed current status of work with Mr. Hugh Spence and the mechanical and electrical sub-contractors
- Prepared new network model for major remaining work areas Issue #19 dated September 17, 1983 (working day 1449) sheets #33 and #34

General Summary

Most architectural trades work is complete on the project, and the major attention is now being given to completion of mechanical and electrical installation, and checking and testing. At this session it was felt appropriate to make a detailed review of the work remaining, with particular attention to the mechanical and electrical trades. Selected areas were diagrammed showing the remaining work from the monitoring date on out to completion. These updated networks were printed in rough and sent to Mr. Spence for his use.

A brief review of each major area is given below:

Existing final tanks (XFT)

Installation of new mechanisms, piping, and weirs is continuing with electrical work being installed concurrently. The present goal is to substantially complete installation of the mechanisms, piping, and weirs by September 27, 1983 (working day 1463). New electrical work will be brought to a point where it will be necessary to have the new motor control centers K and L at the south existing blower building connected. At this time the existing final tank work can be completed and the new installation checked and tested.

The updated network model is shown on sheet #33. Once it is checked by Mr. Spence and the sub-contractors we will, if appropriate, monitor against the target dates shown on that plan of work. This is the case with all major areas of the project.

West existing primary tank (WXPT)

All work is substantially complete at this facility, with work remaining, to check and test the new installation. There is no current word on when this can be accomplished.

East existing primary tank (EXPT)

All work is substantially complete at the EXPT except activities that must be done when owner furnished drives are delivered. These drives may be here in October, 1983. The present intent is to turn over the material to connect to these drives to the owner so he can make the installation once the drives are on the site.

Existing machinery building (XMB)

The new motor control center is energized and has been connected to the new blowers, so when the blower piping is complete there remains only a short time duration for installation of electrical work after which the blowers can be checked and tested. It appears there presently is another five to seven working days of installation required prior to checking and testing operations.

South existing control building (SXCB)

Control panel #30 (CP-30) is being installed and connected. Concurrently, instrumentation to CP-30 is being checked

out. This work can proceed to a point where it will be necessary to have additional electrical installation and mechanical work done at other areas in order that the CP-30 instrumentation check out can be brought to completion.

North existing control building (NXCB)

All major work at the north existing control building is substantially complete with minor clean up in progress.

North existing blower building (NXBB)

Some minor electrical work remains to be done here along with completion of work on blower piping. It is expected that this work will take from 5 - 10 working days to install.

Existing north/south gallery (XNSG)

Installation of sludge pumps and piping is being completed concurrent with installation of new conduit and wiring. However, there is a tie in needed to new conduit and wiring, from the new motor control centers K and L at the SXBB. Once the new motor control centers K and L are energized, the new pumps can be checked and tested.

It should be noted that our present plan of work is predicated upon the assumption that the owner has reviewed and approved the present condition of existing instrumentation, sludge piping, and electrical devices.

Existing east/west gallery (XEWG)

The XEWG was not monitored at this session.

Existing chlorine contact tank (XCT)

Most work is complete at the XCT with exception of minor work on the new sluice gates. Presently the mechanical contractor is waiting for specially fabricated nuts after which there will be only but one or two working days to complete installation. These nuts are to be shipped this week or next.

There also remains some miscellaneous mechanical demolition and some electrical work to the new scum pumps. Following completion of the electrical work to the scum pumps, the equipment must be checked and tested.

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Ann Arbor Waste Treatment Plant 77-S-7
Page four

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

South existing blower building (SXBB)

This is a very critical area, and work here now is being concentrated upon installation of the new sub-station #3, and setting and connecting the new motor control centers K and L.

We replanned the work at this area, and the plan will be reviewed by Mr. Spence with the electrical contractor to insure that the logic and durations are correct and appropriate. Key tasks are completion of setting the motor control centers, continuation of the connection of these motor control centers, energizing the new sub-station #3, and energizing the motor control centers K and L. These tasks are major restraints on other work throughout the existing facility.

The causes for delay in work at the SXBB are related to delays encountered at the existing machinery building. These were noted in the previous monitoring report and also have been documented by Mr. Spence to the owner.

Existing primary building (XPB)

Control panel CP-31 is now being brought to completion and the electrical contractor is working on field order work presently. When the field order work is done, there will be required about 10 working days to complete CP-31.

Existing digester building (XDB)

Work on rewiring existing motors is about ready to begin and should be able to start the second week in September, 1983.

General

The updated network model Issue #19 dated September 7, 1983 (working day 1449) has been sent to Mr. Spence. He will review it with the major sub-contractors and if the logic and durations are appropriate and correct, we will monitor from this network model. I shall be in touch shortly with Mr. Spence to set the next monitoring session.

Ralph J. Stephenson, P.E.
Ralph J. Stephenson, P.E. (eps)

RJS:sps

To: Mr. Hugh Spence ✓
(original and one)

November 1, 1983

Subject: Monitoring Report #46
Ann Arbor Waste Treatment Plant 77-S-7
Ann Arbor, Michigan
Spence Brothers - general contractors

Project: 78.58

Date of Monitoring: October 24, 1983 (working day 1482)

Target completion date: Was March 15, 1983 (working day 1327)

Note: The total project has been extended beyond this target date and the Spence desired completion date was September 27, 1983 (working day 1463). The contract completion date is taken to be December 20, 1983 (working day 1522).

Monitored from Issue #19 dated September 7, 1983 (working day 1449)

Actions taken:

- Briefly inspected selected areas of project
- Reviewed current status with Mr. Hugh Spence and the electrical sub-contractor

General Summary

Major work is now being concentrated on electrical installation at the south existing blower building (SXBB), the existing north/south gallery (XNSG), existing final tanks (XFT), existing machinery building (XMB), and existing control building (SXCB). The current desired target of Spence to complete all major work at the existing plant is November 25, 1983 (working day 1505). However, there are still revisions being made to the project, and it was not possible to currently project an accurate total completion date. However, the above represents the desired target.

A brief review of each major area is given below: