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September 26, 1967

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O.A. Finsand
Middletown Construction

JOB NO.

7100

SUBJECT

Kaiser Engineers' Weekly Field Activity Report



Transmitted herewith is the subject report for the week ending September 26, 1967.

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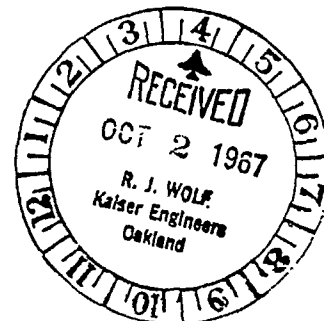
Armco

D. C. Osborne
C. G. Kramer
F. W. Barnes
T. R. Foley
P. R. Smith
D. Cox
J. S. Lotz
J. J. Delaney

Kaiser

R. J. Wolf (Oakland)
W. F. Bort (Oakland)
D. A. Daly
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KEN 003927

KAISER ENGINEERS
WEEKLY FIELD ACTIVITY REPORT
Week Ending September 26, 1967

WEATHER: Scattered rainfall and
a general cooling trend
throughout the period.

Client: Armco Steel Corporation

Location: Middletown, Ohio

Job Number: 6471

TEMPERATURE: Maximum - 87 degrees
Minimum - 37 degrees

JOB VISITORS

J. A. Foy, Bill Frank, W. E. Burger,
D. R. Kowalski, S. Montel

SUMMARY FORCE REPORT

	Kaiser Engineers		<u>Subcontractors</u>	<u>Foothill Electric</u>	<u>Total</u>
	<u>Exempt</u>	<u>Non-Exempt</u>			
Management	5	3		1	9
General Supervision	16	3	25	5	49
Field Engineering	46	27	14	14	101
Warehs. & Mtl. Control	4	3		1	13
Survey	2	22	4		28
Office Srv. & Repro.	1	7			8
Clerical			17	19	36
Craft *	—	<u>1,775</u>	<u>1,256</u>	<u>701</u>	<u>3,732</u>
TOTAL	74	1,845	1,316	741	3,976

* Average for week of men on payroll.

Average for week of Crafts is as follows:

Kaiser Engineers	1,602
Subcontractors	1,213
Foothill Electric	<u>660</u>
Total Crafts Working	3,475

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PROJECT PROGRESS

1. 7148 - HOT STRIP MILL

- 1.1 Excavation and Backfill: 25 cubic yards of backfill was accomplished during the period in the Hot Strip Mill for a total to date of 885,879 cubic yards.
- 1.2 Concrete: 38 cubic yards of concrete was placed during the period for a corrected total to date of 209,464 cubic yards. Period concrete consisted of car puller foundations and transfer car track grouting at #1 slab transfer car. Remaining concrete is estimated at 582 cubic yards, including 383 cubic yards for electrical duct run at the Green Coil Storage Area.
- 1.3 Structural and Miscellaneous Steel: Progress was maintained in several areas of the Hot Strip Mill during the period on miscellaneous steel erection. The four bridges over the coil conveyor trenches are now complete. In the main aisle of the Hot Strip Mill, the seven stairway access covers are installed. In the downcoiler area, progress continued on handrail, stairways and grating installation. Covers for the pipe trenches along E-line are all trimmed to fit, however, some work remains in this area to remove warps. In the furnace area, the dry scale removal plate, handrails and bucket guide rails are complete. The charging table flume canopy installation is also complete. The transfer car rails and stops for the three slab yard transfer systems are complete and grouted. Assembly work was continued during the period on the three slab transfer cars and the two roll transfer cars. These five transfer cars are now 80% complete. Electrical work on the transfer cars will begin next period. In the rougher area, the pipe protection covers are complete at all roughers except rougher #1 and rougher #2. Pipe cover work in this area will complete as soon as the pipe installation is accomplished. At Scale Pit #1 and 2, the access structure was erected for gantry crane #316. Progress was also continued during the period in the roll shop on plate work and grating at the work roll lay down area and the roll assembly area. These areas are now 80% complete.
- 1.4 Roofing and Siding: 300 square feet of roof decking was installed at the Hot Strip Mill recorder room during the period for a roofing total to date of 754,640 square feet.
- 1.5 Heating and Ventilating: During this period, sheetmetal work was continued on bag houses #5, 15 and 10 through 13. At the close of the period, sheetmetal work for bag houses #5 and 15 was completed and sheetmetal progress at bag houses #10 through 13 is 85% complete and

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scheduled to complete by Friday, October 6. Electrical progress was continued during the period on bag houses #1, 2, 5 and 14. Bag houses #1 and 14 will complete electrically on September 29. The major work effort on all remaining bag houses is electrical and at the close of this period, Foothill Electric accelerated their work progress in this area. Late delivery valves for the bag house heaters are now at the job site with the exception of bag house #8 and progress was initiated at the close of this period to complete the steam piping to the bag house coils. At the Clarification Plant, work was reactivated during the period on the heating and ventilating systems for the pump house and switchgear building. All diffusers are installed at the extractor director room, the R2 director room and the finishing mill director room. Ductwork and duct insulation was completed during the period at the coil conveyor director room. At the slab yard scheduling office, insulation of overhead duct systems was continued through the period. This insulation is now 40% complete.

- 1.6 Mechanical: Richleay continued throughout the period with an average force of 90 men in the Hot Strip Mill. Progress during the period was concentrated mainly in the furnace pusher area, finisher area, downcoiler area, conveyor facility and scale removal system at Scale Pit #3. Mechanical installation in the charging facility is now 90% complete. Charging tables #3 through 11 are installed and progress is continuing on table #12. Pusher #1 and 2 are complete and progress was continued during the period on pusher #3. The oil problem at pusher #2 was resolved and the equipment grouted. The approach table bearings are presently being cleaned up and connected to lube oil #4. Complete circulation of lube oil #4 through the bearings will be accomplished in about two weeks. The furnace extractors and tables are now 97% complete. Remaining work consists of test operations. The vertical scalebreaker is complete. Roughers #1 through 4 are 97% complete and roughers #5 and 6 are complete. All table work between the vertical scalebreaker and the finishing mill is complete. Mechanical erection at the finishing mills and the hot runoff is 95% complete. In the downcoiler area, mechanical erection is also 95% complete. The coil conveyor system is now 65% complete and is scheduled to complete mechanically by October 25. At Scale Pit #3, the scale removal system is 50% complete. In the roll shop, roll grinder #2 is complete and operating. Roll grinders #1 and 3 are awaiting delivery. Progress on the chock tilter system is 50% complete.

The following uncoupled tests were accomplished during the period: finishing mill #1 main motor, rougher #3 inching drive, rougher #4 inching drive and rougher #4 turntable. Coupled tests were as follows: the two furnace cooling tower motor driven pumps, finishing mill #2 main motor and delivery tables #24, 26 and 27 operated through

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the director. Coupled tests were conducted on the P50 and P550 computer in association with rougher #5 ram, turntable and automatic roll change, also the roughers #2 and 3 screndown. Area sequence checks at roughers #5 and 6 were continued by Westinghouse during the period.

- 1.7 Piping: During the period, 8,960 linear feet of piping was installed for a total to date of 269,315 linear feet. The remaining quantity to complete is 78,728 linear feet. Major piping systems worked on during the period were grease, hydraulic system 18, hydraulic system 15, mill water, furnace cooling water, clarifier sludge piping, sample piping, plant air, well water, chemical systems, heating and ventilating piping, and instrumentation. During the period, reflushing of Morgoil #1 was continuing and permanent oil in this system is scheduled for October 9. Reflushing of hydraulic system 12 was also initiated during the period because of excessive foreign material found in the system. Hydraulic system 15 is now under going the hydro test. Preparations are in progress for hydro testing hydraulic system 16 which is scheduled for next period. Slow progress is being experienced on the high pressure descaling system because of extensive rework related to defective welds and our limited number of qualified welders for this specialized work. Presently, there are nine welders active on this system. At the pump house, the furnace cooling water was circulated through the cooling tower motor driven supply pumps and the cooling tower. The four supporting vacuum systems are also complete and in operation. The first air compressor is scheduled to ship to the job site next period. Major piping in the clarification is now essentially complete. Progress during the period was concentrated mainly on the sludge piping system and low pressure water systems.
- 1.8 Electrical: Foothill Electric Corporation installed 35,700 lbs. of exposed conduit for a total to date of 1,264,900 lbs. or 104% of the current estimate at completion. 900 feet of 2.4 KV cable was installed for a total to date of 35,600 feet or 81% complete. 60 2.4 KV cable terminations were accomplished during the period for a total to date of 398 or 97% complete. 35,000 feet of low voltage cable was installed for a total to date of 1,307,000 feet or 86% complete. 700 low voltage cable terminations were made for a total to date of 21,000. 32,000 feet of control cable was installed for a corrected total to date of 1,430,000 feet. 1,600 control cable terminations were accomplished for a total to date of 39,400 or 68% complete. 29,400 feet of computer cable was installed for a total to date of 638,000 feet or 68% complete. 560 computer cable terminations were made for a corrected total to date of 21,500 or 71% complete. 4,232 lbs. of lighting conduit and 4,100 feet of lighting wiring was installed during the period. 370 lbs. of structural grounding was installed for a total to date of 128,300 lbs. or 95% complete.

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- 1.9 Miscellaneous Subcontracts: In the Clarification facility, Marley Company's representatives were at the job site during the period and test runs were accomplished on the cooling tower fans. The cooling towers have been checked out and this subcontract is now considered complete. At the clarifier structure, the Walker Processing equipment is completely installed and painting has been completed on the clarifier tanks. Equipment check out was accomplished during the period on the clarifier equipment with the exception of clarifiers #3 and 5. These two clarifier units will be checked out by Bay Construction at a later date.

Bilbrey Masonry Contractors completed the block installation at D-line between column 50 and 52 during the period. They are scheduled to proceed with the pedestrian tunnel closure next period. This contract is near completion.

Moeschl-Edwards (Contractor for the Rolling Door Installation) during the period completed the ten ventilation doors in the pump house and installation was in progress at the pump house on the power operated truck door. At the Clarifier Building, three of the five rolling doors have been installed. Progress was continued during the period on installation of ventilation doors along E-line. This subcontractor expects to have 50 of the 72 roll-up doors completed by October 1. Door installation is presently being restrained by framing work in three areas --- the opening between column line 51 and 52 on D-line, the coil conveyor truck doorways and the vent opening on E-line at column 21.

The Owens Corning Fiberglas Company installed 450 feet of insulation on the 165 lb. steam system in the Hot Strip Mill and 1,100 feet of condensate and lube oil piping in the Hot Strip Mill oil cellar during the period. This subcontractor is scheduled to begin insulation of steam condensate and water systems in the Waste Heat Boiler Area next period.

Salem-Brosius continued their progress on the three reheat furnaces during the period. At furnace #1, the soak zone blower was installed and aligned.

Newco Electric continued with wire pulling and terminations related to furnace #1 control devices. Refractory work was continued on furnace #2 up-take and the waste gas stack. Progress was also continued on furnace piping at unit #2 and 3. Systems worked on were: pilot gas piping, air lines, steam and oil piping. Insulation continued during the period on the combustion air ducts, steam piping and oil piping at furnace #1.

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Babcock and Wilcox during the period continued with installation of the ventilating duct system below Elevation 154. Some rework was necessary in this area due to pipe interferences. Alignment and leveling of the #2 I.D. fan and drive, also, the #3 I.D. fan and drive was continued during the period. Insulation and lagging continued during the period on the #1 combustion air and hot gas duct system and is now near completion. Erection was in progress during the period on the #3 I.D. fan stacks. Refractory work in the #3 combustion air transition sections is scheduled to complete on September 27. This contract is now 70% complete.

The Mo Piping (Contractor for the Waste Heat Boiler 2 $\frac{1}{2}$ " and over piping) is now 92% complete. Good progress was maintained during the period in finishing up several pipelines in the boiler area. Some pipelines completed are as follows: boiler feed piping below Elevation 154, treated water piping below Elevation 154 and the 6" fuel oil supply header below Elevation 154. Hydro testing of piping systems in the Waste Heat Boiler Area will be carried out jointly by Mo Pipeline and Norm Woolley. Preparations for these tests will begin next period.

Norm Woolley (Contractor for the Waste Heat Boiler 2" and under piping) is now 47% complete. Progress for the period consisted mainly of installation of the 2" return fuel oil line which is now completed, the boiler blow down and water well drains for boiler #1 and front trim piping at boiler #2. Progress by this contractor improved considerably during the period.

Minneapolis-Honeywell (Instrumentation Contractor for the Waste Heat Boiler Area) continued with installation of instrumentation in the Waste Heat Boiler Area related mainly to boiler #1. Progress consisted of instrument mounting in the control room and installation of the $\frac{1}{2}$ " stainless steel tubing between the #1 boiler and the control room. Progress was also initiated during the period on instrument mounting for the F.D. and I.D. fan damper controllers. This contractor is now 44% complete.

Delta Pipeline Contractors installed 2,160 linear feet of service piping in the Hot Strip Mill during the period for a total to date of 20,126 linear feet. This piping consists of main headers for oxygen, plant air, nitrogen and well water as well as 16 drops.

2. 7146 - SIAB MILL

- 2.1 Excavation and Backfill: 12,020 cubic yards of backfill was completed during the period for a total to date of 182,382 cubic yards.

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- 2.2 Concrete: 517 cubic yards of concrete was placed during the period for a total to date of 43,580 cubic yards. Major concrete pours were: the west wall of the #4 Scale Pit between column 9.5a and 10.5a, the crop distributor foundation and the skip hoist south wall east of E-line.
- 2.3 Structural and Miscellaneous Steel: Progress was continued during the period on erection of the mill ventilation exhaust stack and structural erection of bag houses #3 and 4.
- 2.6 Mechanical: Eichleay Corporation continued their mechanical installation in the Slab Mill with an average work force of 45 men. Progress during the period consisted of installation of the #3 mill approach table motor bases, the #11 scarfer approach table, the #1 piler, #4 and #10 table motor bases, the #16 and #17 tables, and the #13 scarfer runout table motor bases. Erection of the horizontal mill and vertical mill was also continued throughout the period. 959 tons of Mesta equipment was received during the period for a total to date of 5,664 tons or 73% complete. Major items received were the crop conveyor components, the vertical mill drive assembly, components for the slab shear, mill spindles and carriers and table #15 components.
- 2.7 Piping: Hunter (Piping Contractor for the Slab Mill Piping) maintained a complement of 61 men on piping installation in the Slab Mill during the period. In the oil cellar, progress was continued on lubrication systems #3, 6 and 7, plant air and mill water. Header piping was also installed in the main mill aisle during the period at Elevation 136 on 3" grease, 2" oxygen, 4" natural gas and plant air. To date, Hunter has installed 7,680 linear feet of piping of an estimated 36,000 feet at completion.
- 2.8 Electrical: 2,300 lbs. of embedded conduit was installed during the period by Foothill Electric for a total to date of 580,700 lbs. or 91% complete. 680 feet of cable tray was installed for a total to date of 12,900 feet or 92% complete. 250 lbs. of structural grounding was installed for a total of 11,600 lbs. or 23% complete. Electrical progress in this area improved during the period.
3. 7143 - SOAKING PITS
 - 3.1 Excavation and Backfill: 705 cubic yards of backfill was accomplished during the period for a total to date of 112,004 cubic yards.
 - 3.2 Concrete: 214 cubic yards of concrete was placed for a total to date of 26,853 cubic yards. Major concrete pours were the Z-line loading door wall and piers, the charging track north slab and the Y-line trench slab between column 6.5 and 7.5.
 - 3.3 Structural and Miscellaneous Steel: Ohio Valley erected 60 tons of structural steel on the soaking pit service bay during the period for a total structural quantity of 4,131 tons to date.
 - 3.4 Roofing and Siding: 2,500 square feet of Steelox siding was installed during the period for a total to date of 91,868 square feet.

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- 3.6 Mechanical: Loftus Engineering maintained good progress on mechanical installation in the soaking pit throughout the period. Four recuperators in battery #5 were installed and all sixier clean out doors were installed at battery #5. Actuating operators for clean out doors on battery #6 are now 60% complete and three clean out doors for battery #4 were installed during the period. Burner installation was completed on battery #4. Refractory work at battery #6 is near completion and no additional refractory work evident in this battery during the period. At battery #5, refractory work was completed on archways and collecting flues. Deck brick at Elevation 124 was laid from pit #24 at battery #6 to pit #18 at battery #5. Loftus continued with installation of coke oven gas and natural gas piping between the manifolds and burners for batteries #6, 5 and 4. This piping is now 90%, 60% and 40% complete respectively. Progress was also maintained on cooling water piping, combustion air piping and dilution air piping for these three batteries as well. These systems average at 60% complete. Structural floor framing at Elevation 124 is now complete. Conduit work was also maintained during the period at battery #6 and electrical equipment was set at mezzanine floor.
- 3.7 Piping: Delta Pipeline Contractors initiated work on service piping in the soaking pits with a six man crew during the period. They are prefabricating pipe and pipe supports and installing pipe supports at Elevation 134 in the building for support of the 36" through 8" furnace cooling water return header.
- 3.8 Electrical: 9,500 lbs. of exposed conduit was installed for a total to date of 15,600 lbs. or 104% of the estimate at completion. 1,600 lbs. of embedded conduit was installed for a total to date of 61,000 lbs. or 79% complete. 65 lbs. of structural grounding was installed for a total to date of 2,100 lbs. or 38% complete.
4. 7128 - BASIC OXYGEN SHOP
- 4.1 Excavation and Backfill: 15,308 cubic yards of backfill was completed during the period for a total to date of 194,627 cubic yards. Backfill work during the period was concentrated east of D-line.
- 4.2 Concrete: 447 cubic yards of concrete was placed for a total to date of 16,243 cubic yards. Concrete piers consisted of D-line piers between column 17 and 20, two G-line piers, completion of the nitrogen sphere support piers, the first lift of furnace #2 support piers and seven footings at the office-lab building facility.

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- 4.3 Structural and Miscellaneous Steel: Progress was continued on bolt-up of the mold yard structure during the period. No structural steel erection was evident.
- 4.4 Roofing and Siding: 7,200 square feet of roofing was completed during the period at the mold yard building between column 24 and 17.
5. 7145 - STRIPPER
- 5.3 Structural and Miscellaneous Steel: 103 tons of structural steel was erected at the Stripper Building for a total to date of 773 tons. Some progress was initiated at the facility on preparation of the west side railroad subgrade and preparation of the rectifier subgrade slab.
6. 7150, 7156 and 7159 - PICKLE AREA
- 6.1 Excavation and Backfill: Dewatering continued at the Pickle Coil Storage deep excavation to Elevation 71 in support of foundation construction throughout the period. Backfill and compaction continued in the Green Coil Storage aisles. Backfill in this building is now 95% complete.
- 6.2 Concrete: 68 cubic yards of concrete was placed in the Green Coil Storage for a total to date of 5,572 cubic yards. 80 cubic yards of concrete was placed at the Pickle Line facility for a total to date of 5,921 cubic yards. 208 cubic yards of concrete was placed at the Pickle Coil Storage building for a total to date of 2,954 cubic yards.
- 6.3 Structural and Miscellaneous Steel: 5 tons of structural steel was erected at the Pickle Line Building for a total to date of 2,882 tons. 7 tons of structural steel was erected at the Pickle Coil Storage for a total to date of 107 tons. Bolt-up continued at the Green Coil Storage building in support of advancing sheetmetal work.
- 6.6 Mechanical: Ohio Valley Riggers continued with erection of crane #401 in the Green Coil Storage Building. This crane has been rolled back into the building in order to make way for crane #402 which is scheduled to arrive at the job site on September 27 and will be erected at the east end. Progress was also continued on erection and bolt-up of crane #403 in the adjacent aisle of the Green Coil Storage Building. Basic erection of this crane is 90% complete.
- 6.7 Piping: Green Coil Storage piping was awarded to Norm Woolley Company.
- 6.8 Electrical: At the Pickle Line Building, Lake Erie Electric has completed 20% of the high bay lighting feeder conduits. Installation of conduit support brackets in the conveyor aisle was in progress during the period. In the Green Coil Storage Area, electrical progress was initiated on crane #401. This work is expected to complete in two weeks time.

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7. UTILITIES

7105 - Water - Work Order by McGraw - Water Treatment Plant: Construction is complete on the Water Treatment Plant, however, formal acceptance of this plant has not been established yet and McGraw is continuing with some clean up and punch list items as required. At the main pump station, the pump has been placed in operation for the past three days and is functioning satisfactorily. A temporary bypass was installed in order to use city water supply until the permanent filter corrections are completed.

7109 - Pipeline: 127 cubic yards of backfill was completed during the period for a total to date of 479 cubic yards. Delta Pipeline was in the process of completing the coke oven gas piping at the coke plant.

7110 - Power Distribution: At the Melt Area substation, the underground electrical duct run to the mold preparation area was damaged and is presently being repaired. Foundations for the 13.8 KV switchgear were formed at this substation during the period and concrete is expected to be placed next period. Installation of conductors was initiated for the 13.8 KV power line to the mold preparation building. Embedded conduit was installed during the period in the underground duct run to the Stripper Building. Installation of embedded conduit at the Mold Preparation rectifier station is scheduled to start next period. At the cold finishing substation, wire pulling was continued after completion of corrections to some drawing errors. Slag surfacing of the station area was completed during the period and filling of the transformers is now underway.

7111 - Sanitary Sewers: 466 cubic yards of backfill was completed for a total to date of 52,232 cubic yards. Delta Pipeline continued with installation of manholes in the Steelmaking Area and the forming of six manhole tops in the south area has been completed. The original subcontract is 98% complete.

7112 - Drainage and Site Development: 32,199 cubic yards of excavation was completed during the period for a total to date of 597,281 cubic yards. 8,447 cubic yards of backfill was accomplished for a total to date of 852,948 cubic yards. In the Steelmaking Area, Delta Pipeline installed 500 linear feet of corrugated metal pipe ranging in size from 36" to 15" in diameter during the period.

7113 - Trackwork: During the period, DRS Corporation laid 1,954 feet of track and six turnouts south of the soaking pit. Track ballast was also installed in this area. A total of 81,564 linear feet of track has been laid to date. Estimated trackwork at completion remains at 171,700 feet.

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7114 - Locker Rooms: David L. Smith Construction Company continued with progress on both locker room facilities throughout the period. At the south area locker room, the steel wall panels and exterior masonry walls were essentially completed. Tubular framing was also completed during the period. Interior door framing, roofing, plumbing and interior lighting was initiated during the period. At the Steelmaking Area, this contractor continued with erection of the tubular framework and interior backfilling. Progress on both of these locker rooms is now planned to continue through to completion without interruption.

7136 - Lagoon: 791 cubic yards of slag backfill was installed for a total backfill quantity of 73,599 cubic yards.

Prepared by: O.A. Finsand
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Approved by: G. L. Roberts
G. L. Roberts
Construction Manager

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