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# REPORT TO THE GOVERNOR

OF THE

## ADVISORY BOARD

OF

# CONSULTING ENGINEERS

UPON ITS WORK RELATING TO THE BARGE CANAL  
FROM JANUARY 1, 1909, TO JANUARY 1, 1910

TRANSMITTED TO THE LEGISLATURE FEBRUARY 15, 1910

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# STATE OF NEW YORK

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No. 4.

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## IN ASSEMBLY

February 15, 1910.

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### REPORT

OF THE

### MINUTES AND PROCEEDINGS OF THE ADVISORY BOARD OF CONSULTING ENGINEERS.

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STATE OF NEW YORK,

EXECUTIVE CHAMBER,

ALBANY, *February 14, 1910.*

*To the Legislature:*

I have the honor to transmit herewith a copy of Minutes of Proceedings of the Advisory Board of Consulting Engineers, covering the period from January 1, 1909, to January 1, 1910, and also a report of the same Board concerning the general conditions surrounding work under chapter 147 of the Laws of 1903 and acts amendatory thereto, as called for by section 8 of said act.

CHARLES E. HUGHES.





# REPORT.

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Hon. CHARLES E. HUGHES, *Governor, Executive Chamber, Capitol:*

SIR.— We, the undersigned, beg to transmit herewith the Fifth Annual Report and corresponding copy of Minutes of Proceedings of the Advisory Board of Consulting Engineers for the improvement of State canals, covering the period from January 1, 1909, to January 1, 1910, giving the general conditions of the work being performed under chapter 147, Laws of 1903, and amendatory acts, as called for by section 8 of said act.

The First Annual Report showed six contracts, covering twenty-four miles in length, awarded at the aggregate contract price of \$4,242,620, which is about 11.6 per cent. less than the amount allowed for construction in the estimate of 1903, upon which the appropriation for the Barge canal was based. As has been stated in previous reports, these contracts were selected with a view of obtaining bids on work involving the various characters of material and kinds of structures entering into the construction of the canal and in order to obtain information as to the sufficiency of the Barge canal appropriations.

The Second Annual Report showed twelve contracts, aggregating forty-four miles in length, awarded during 1906 at \$11,032,918, which is about 12.9 per cent. less than the 1903 estimate.

The Third Annual Report showed three contracts, covering fifty-nine miles of canal, awarded during the year 1907 at \$7,066,740, being approximately 9 per cent. above the 1903 estimate.

The Fourth Annual Report showed that during the year 1908 fifteen contracts were awarded for approximately seventy-one miles of canal at \$13,421,772, being 8 per cent. less than the 1903 estimate.

The present or Fifth Annual Report shows that during the year 1909 there have been awarded nineteen new contracts, covering approximately 122 miles at \$18,317,372, being about 1 per cent. more than the estimate of 1903.

Summarizing, we find that there have been let to date of January 1, 1910, fifty-six contracts for construction of the canal, one of which was for the construction of a dam and reservoir. The 1903 estimate provided \$56,791,537 for this work and the original contracts as let amounted to \$54,098,579. The alterations and additions and extra work which were found to be necessary to these contracts during their progress changed the probable cost of the work from the prices at which they were let to \$54,294,425. It is reasonable, therefore, to estimate that the work in the contracts representing 316 miles (Contract No. 5 originally 5.66 miles has been reduced to 2.3 miles in length), will cost the State approximately \$2,500,000 or 4½ per cent. less than the amount allowed for said construction in the estimate of 1903.

There are under contract at the present time 316 miles, the estimates for which in 1903, making allowance for contingencies, amounted to \$69,479,412. The probable cost of construction in progress, making a similar allowance, is \$66,744,718, to which is added extra work to date, making a total of \$66,900,564, the difference, \$2,578,848, being a possible saving on construction over the 1903 estimate.

Summarizing the eight contracts, covering 34.45 miles which have been approved by the Advisory Board but which have not been awarded, we find that the 1903 estimate provided for construction \$3,873,233; that the present Engineer's estimate provides \$5,077,591, and that if the contracts are let at figures not exceeding the Engineer's estimate, it will result in an increased cost of \$1,204,358, or 23.7 per cent. over the original estimate for construction. This increase is due largely to Contracts Nos. 39 and 73 on which more difficult conditions were encountered than were originally believed to exist. Allowing for contingencies, the appropriation in 1903 for the work under these contracts amounted to \$5,392,454.

A summation of contracts awarded and those which have passed the Advisory Board but have not yet been let shows that 350 miles of canal may be constructed for \$59,327,016 and that the 1903 estimate provided \$60,664,770 for this work. The difference, \$1,292,754, represents a saving in the probable cost of construction of approximately 2.11 per cent. If ordinary con-

tingencies due to construction are added to the above summarization, we find that \$74,871,866 was appropriated under chapter 147, Laws of 1903, for the 350 miles of canal work under consideration. The probable cost based on contracts awarded including payments for extra work, and present Engineer's estimate for contracts not yet awarded, will be \$73,036,479 which represents a possible saving of \$1,835,387.

From present indications it is believed that the engineering expenses will be well within the amount included therefor in the 1903 estimate. It is possible, however, that the cost of right of way, if there are included in this item consequential damages, will exceed the amount originally estimated therefor.

In considering the cost of the canal it must be borne in mind that mandatory legislation in the matter of widening of locks, lowering of level from Lockport to Tonawanda, and improvement of Syracuse Harbor, has reduced the amount available for contingencies by about \$4,000,000. If the cost of the Barge canal is to be kept within its original appropriation the construction of work not contemplated by chapter 147, Laws of 1903, should receive its own appropriation from the Legislature.

Immediately following may be found a map showing the location of the Barge canal contracts, a table from which the above information may be obtained, and a descriptive list, etc., of contracts grouped by the years in which they were awarded.

IMPROVEMENT OF THE ERIE, OSWEGO AND CHAMPLAIN CANALS.  
Statement of Work Under Contract.

January 1, 1910.

Table with columns: Contract No., CANAL, Section, Contractor, Date of contract, Date to be completed, 1903 estimate, Engineer's estimate, Original amount of contract, Amount of contract revised by alterations, Percent done, Percent should be done to date, Extra work to date, Total payments to date including extra work ordered.

Table with columns: Contract No., CANAL, Section, Contractor, Date of contract, Date to be completed, 1903 estimate, Engineer's estimate, Original amount of contract, Amount of contract revised by alterations, Percent done, Percent should be done to date, Extra work to date, Total payments to date including extra work ordered.

\* Relet—not included in footings.

To January 1, 1910.

CONTRACTS AWARDED.

Contract No.	Length in miles.	CANAL.	Plans approved by Advisory Board.	Plans approved by Canal Board.	Contract signed.	Number of sheets of drawings.	1903 ESTIMATE.		1905-9 ESTIMATE.		Contract No.	
							Amount of work.	Total estimate.	Amount of work (Eng'r's est.)	Contract bid.		Total estimate.
1	7.075	Champlain.....	Sept. 8, 1904	Sept. 29, 1904	April 18, 1905	48	\$632,109	\$732,155	\$619,846	\$605,008	1	
2	0.910	Erre.....	July 7, 1904	Sept. 3, 1905	April 3, 1905	80	1,037,244	1,300,052	1,022,640	\$832,330	2E	
3	2.164	Champlain.....	July 8, 1904	Sept. 28, 1904	Dec. 8, 1905	62	0	0	(263,180)	(498,426)	3	
4	4.830	Erre.....	Sept. 19, 1904	Sept. 24, 1904	April 4, 1905	61	702,580	814,207	760,576	730,815	4	
5	2.300	Erre.....	July 19, 1904	Sept. 29, 1904	April 18, 1905	57	179,886	225,589	245,589	381,988	5	
6	3.280	Erre.....	Sept. 8, 1904	Sept. 29, 1904	May 3, 1905	25	1,418,164	1,667,456	1,381,662	1,005,982	6	
7	0.700	Erre and Champlain.....	Sept. 17, 1904	May 1, 1906	Aug. 10, 1906	25	100,181	114,936	102,123	107,635	7	
8	5.682	Erre.....	Feb. 21, 1906	Feb. 28, 1906	May 22, 1906	87	1,255,169	1,505,392	1,518,382	1,433,817	8	
9	1.200	Oswego.....	Sept. 20, 1907	Nov. 28, 1906	Mar. 18, 1908	45	886,500	1,019,194	724,014	1,435,905	9	
10	1.600	Erre.....	Feb. 21, 1906	Feb. 28, 1906	June 7, 1906	48	1,171,769	1,512,784	1,149,988	1,336,718	10	
11	43.730	Erre.....	Dec. 19, 1905	Dec. 19, 1905	May 21, 1906	55	1,834,308	2,202,214	1,671,385	1,590,475	11	
12	15.000	Erre.....	April 11, 1907	July 28, 1907	Sept. 23, 1907	119	2,832,772	3,580,778	3,082,560	3,301,716	12	
13	6.800	Erre.....	April 17, 1906	May 1, 1906	Nov. 7, 1908	8	36,678	42,180	29,775	31,571	13	
14	0.400	Champlain.....	Sept. 11, 1906	Nov. 15, 1906	Sept. 10, 1907	161	2,926,368	3,656,471	2,875,750	2,955,763	14	
15	3.630	Champlain and Erre.....	July 11, 1906	Nov. 15, 1906	Aug. 9, 1907	132	1,753,446	2,073,425	1,380,760	1,509,040	15	
16	4.500	Erre.....	Oct. 4, 1906	Nov. 15, 1906	Dec. 20, 1906	8	80,234	92,269	70,719	74,081	16	
17	12.460	Erre.....	July 11, 1906	Nov. 15, 1906	Dec. 20, 1906	77	972,623	1,184,787	883,926	895,479	17	
18	4.500	Erre.....	April 27, 1909	Nov. 15, 1906	Dec. 26, 1906	107	597,449	684,851	1,038,245	1,000,497	18	
20A	10.100	Erre.....	April 27, 1909	April 29, 1909	Aug. 20, 1909	30	653,000	1,306,433	499,000	490,592	20A	
20C	7.900	Erre.....	April 27, 1909	April 29, 1909	Aug. 18, 1909	26	747,000	956,800	848,540	933,194	20C	
20D	36.200	Erre.....	April 27, 1909	April 29, 1909	Aug. 18, 1909	86	2,957,005	3,692,198	2,600,000	2,681,040	20D	
23	5.630	Erre.....	June 13, 1906	April 27, 1909	Aug. 18, 1909	25	1,693,035	2,047,341	1,166,600	1,887,038	23	
26	0.540	Champlain.....	Dec. 5, 1907	June 28, 1906	Aug. 19, 1906	138	1,814,136	2,175,737	1,849,831	1,754,238	26	
27	3.760	Champlain.....	Aug. 8, 1906	Jan. 29, 1908	April 6, 1908	6	37,500	43,925	60,225	59,790	27	
29	4.000	Champlain.....	Dec. 8, 1906	Aug. 13, 1906	Nov. 23, 1906	76	1,177,586	1,386,406	988,920	972,210	29	
30	14.620	Erre.....	Mar. 27, 1909	Dec. 31, 1908	April 3, 1909	47	745,377	802,803	630,500	683,714	30	
31	1.010	Erre.....	April 30, 1908	May 26, 1908	Sept. 1, 1908	120	2,288,631	2,810,551	2,650,500	2,891,666	31	
32	0.500	Erre.....	Jan. 18, 1909	May 16, 1909	July 16, 1909	74	897,693	1,135,965	813,800	899,770	32	
33	0.850	Champlain.....	Jan. 5, 1909	May 16, 1909	Aug. 19, 1909	15	57,976	66,672	59,820	46,707	33	
34	0.550	Erre and Champlain.....	May 17, 1909	Oct. 3, 1906	Dec. 28, 1906	31	82,786	95,204	133,619	159,610	34	
35	0.550	Oswego.....	May 17, 1909	Oct. 3, 1906	Dec. 28, 1906	4	45,518	52,346	22,604	20,612	35	
36	3.320	Champlain.....	Oct. 19, 1909	Dec. 28, 1909	Sept. 16, 1907	66	649,575	807,400	752,700	739,261	36	
38	315.921	Erre.....	Sept. 13, 1909	Oct. 21, 1908	Jan. 11, 1909	5	19,764	22,728	20,131	17,157	38	
							APPROVED - NOT AWARDED.					
40	0.840	Erre.....	Aug. 19, 1908	Sept. 1, 1908	Nov. 27, 1908	37	812,388	935,898	2,516,743	2,166,298	40	
41	0.800	Erre.....	Aug. 19, 1908	Sept. 1, 1908	Dec. 5, 1909	6	381,648	443,895	383,190	281,330	41	
42	8.960	Erre.....	Mar. 17, 1909	Mar. 18, 1909	July 9, 1909	78	1,699,927	2,056,844	1,312,814	1,163,625	42	
43	10.320	Erre.....	June 30, 1909	July 20, 1909	Oct. 15, 1909	79	1,924,854	2,441,213	1,529,885	1,320,560	43	
44	7.100	Erre.....	Nov. 4, 1908	Nov. 4, 1909	Dec. 28, 1909*	91	1,640,352	2,008,458	1,926,093	1,748,679	44	
45	0.550	Erre.....	Feb. 7, 1908	Mar. 4, 1908	May 6, 1908	54	1,694,008	1,765,183	425,124	467,514	45	
46	14.460	Erre.....	July 29, 1908	Sept. 1, 1908	Nov. 23, 1908	60	1,590,996	1,767,583	1,367,563	1,212,833	46	
47	0.230	Oswego.....	July 29, 1908	Sept. 1, 1908	Nov. 30, 1908	64	1,329,174	2,118,796	1,434,148	1,262,688	47	
48	0.220	Champlain.....	May 18, 1909	May 29, 1909	Aug. 13, 1909	26	329,346	338,745	200,500	166,735	48	
49	8.530	Erre.....	June 10, 1908	Sept. 22, 1909	Dec. 13, 1909	25	475,900	558,000	(232,908)	(250,590)	49	
50	7.390	Erre.....	April 3, 1908	July 21, 1908	Oct. 19, 1908	58	715,083	1,014,525	905,347	(308,626)	50	
51	9.910	Erre.....	April 16, 1908	July 21, 1908	Oct. 13, 1908	58	1,437,071	1,647,964	1,014,525	(281,186)	51	
52	6.350	Erre.....	Apr. 30, 1908	May 26, 1908	Aug. 6, 1908	43	1,229,851	1,410,882	1,000,219	1,349,984	52	
53	1.400	Champlain.....	May 27, 1908	June 11, 1908	Sept. 23, 1908	65	1,758,353	2,039,855	1,207,930	1,242,913	53	
54	0.170	Champlain.....	July 28, 1908	Sept. 1, 1908	Nov. 23, 1908	45	1,325,404	1,325,404	751,039	1,580,402	54	
55	3.320	Champlain.....	Oct. 19, 1909	Aug. 25, 1909	Dec. 11, 1908	42	329,366	313,392	270,675	240,061	55	
56	3.960	Champlain.....	Oct. 19, 1909	Oct. 19, 1909	Dec. 28, 1909*	11	911,000	1,077,156	749,300	308,662	56	
57	3.960	Champlain.....	Oct. 19, 1909	Oct. 27, 1909	Dec. 28, 1909*	43	911,000	1,077,156	1,502,100	1,561,119	57	
58	0.270	Erre.....	Sept. 13, 1909	Sept. 22, 1909	Dec. 14, 1909	13	1,490,939	1,731,089	1,439,733	1,192,758	58	
							\$56,791,537	\$69,479,412	\$56,447,788	\$69,448,579	\$66,744,718	
							\$788,664	\$914,185	\$795,679	\$943,927	\$843,927	49
							1,016,328	1,951,247	1,042,200	1,416,430	1,416,430	50
							107,100	120,660	39,525	45,454	45,454	75
							\$1,912,092	\$2,986,092	\$1,847,404	\$2,405,811	\$2,405,811	
							\$1,393,977	\$1,088,201	\$1,475,900	\$1,830,362	\$1,830,362	21
							0	0	77,873	89,554	89,554	24
							335,713	446,992	642,900	1,100,635	1,100,635	39
							231,451	271,169	648,300	786,126	786,126	73
							0	0	55,154	63,427	63,427	78
							\$1,961,141	\$2,406,362	\$3,230,187	\$3,930,104	\$3,930,104	
							\$60,664,770	\$74,871,866	\$61,525,297	\$72,880,633	\$72,880,633	
							73,036,479			155,846	155,846	
							\$1,835,387			\$73,036,479	\$73,036,479	
								less than original estimate.				

\* B's opened on date shown. Contracts not signed up to January 1, 1910.  
† B-det—not included in footings.

PASSED BY ADVISORY BOARD.

## CONTRACTS COMPLETED.

1909.

Contract No. 3. Excavating 2.164 miles of Champlain canal, near Fort Miller, and constructing Lock No. 6, etc.

Contract No. 7. Constructing bridge superstructures on Contracts Nos. 2, 3, 4, 5 and 6, at various points.

Contract No. 34. Constructing bridge superstructure over Erie canal at Waterford.

Contract No. 38. Constructing superstructure, substructure and approaches for bridge over Erie canal at Wapping, 2.5 miles west of Fairport.

## CONTRACTS AWARDED.

1905.

Contract No. 1. Excavating 7.075 miles of river channel, Champlain canal, between Fort Edward and Northumberland.

Contract No. 2. Excavating 0.91 miles of channel, Erie canal, and constructing Locks Nos. 2 and 3 through the village of Waterford.

Contract No. 3. Excavating 2.164 miles of Champlain canal, near Fort Miller, and constructing Lock No. 6, etc.

Contract No. 4. Excavating 4.83 miles, Erie canal, near Oneida Lake, and incidental work.

Contract No. 5. Excavating 5.66 miles, Erie canal, near Savannah, and incidental work.

Contract No. 6. Excavating 3.28 miles, Erie canal, near South Greece, and incidental work.

1906.

Contract No. 7. Constructing bridge superstructures on Contracts Nos. 2, 3, 4, 5 and 6, at various points.

Contract No. 8. Constructing Dams Nos. 4, 5 and 6, and Locks Nos. 8, 9 and 10, on the Mohawk river, Erie canal, near Rotterdam and Cranes village.

Contract No. 10. Excavating, 1.2 miles, Oswego canal, in city of Fulton, constructing Dams, Locks Nos. 2 and 3, etc.

Contract No. 11. Excavating 1.6 miles of channel, Erie canal, and constructing Locks Nos. 4, 5 and 6, etc, near Waterford.

Contract No. 15. Excavating 6.8 miles, Champlain canal, near Whitehall, and constructing Lock No. 12, Dam No. 5, etc.

Contract No. 16. Constructing bridges on Contracts Nos. 11, 25 and 27, at various points.

Contract No. 17. Constructing Dams Nos. 7 and 8 and Locks Nos. 11 and 12 on Mohawk river, Erie canal, and incidental work.

Contract No. 18. Excavating 3.63 miles, Erie canal and constructing Lock No. 16, near Mindenville.

Contract No. 19. Excavating 12.46 miles, Erie canal, and building structures from Niagara river to Sulphur Spring.

Contract No. 25. Excavating 13 miles, Champlain canal, constructing Locks Nos. 9 and 10 and other structures, near Comstock.

Contract No. 27. Excavating 3.76 miles, Champlain canal, constructing Locks Nos. 7 and 8 and other structures, near Fort Edward.

Contract No. 34. Constructing bridge superstructure over Erie canal at Waterford.

#### 1907.

Contract No. 12. Excavating 43.73 miles, Erie canal, from west end of Oneida Lake to Mosquito Point, constructing Lock No. 23, etc.

Contract No. 14. Dredging 15 miles of channel in Mohawk river, constructing Dams Nos. 2, 3, 9, 10 and 11 and Locks Nos. 7, 13, 14, 15, etc.

Contract No. 35. Excavating .85 miles Oswego canal, and constructing Locks Nos. 7 and 8, etc., in the city of Oswego.

#### 1908.

Contract No. 9. Excavating 5.682 miles, Erie canal, from 0.164 miles east of Eagle Harbor bridge to 0.09 miles west of Beal's bridge.

Contract No. 13. Constructing three highway bridge superstructures on Contract No. 12, Erie canal, section 6, and two on Contract No. 18, Erie canal, section 4.

Contract No. 26. Dredging a channel in the Hudson river between the south end of Contract No. 27 and the north end of Contract No. 1, a distance of 0.76 miles.

Contract No. 31. Improving 1.01 miles, Erie canal, constructing Lock No. 17 and guard-gates at Little Falls and modifying dam at Rocky Rift.

Contract No. 40. Improving 4.84 miles of Erie canal, from Lockport to Sulphur Spring guard lock.

Contract No. 41. Building 0.8 miles of embankment at Iron-dequoit creek crossing.

Contract No. 45. Constructing a dam in the Oneida river at Caughdenoy and Lock No. 24, and incidental work at Baldwinsville, a distance of .55 miles.

Contract No. 46. Constructing 9.44 miles of Erie canal from Fox Ridge to the southeast corner of the town of Galen.

Contract No. 47. Constructing 14.46 miles of Erie canal from the southeast corner of the town of Galen to a point near the N. Y. C. & H. R. R. R. crossing at Lyons.

Contract No. 55. Constructing a reservoir dam on the Mohawk river, relocating a portion of Black River canal, building four locks and incidental work.

Contract No. 60. Improving 8.53 miles of Erie canal from west end of Contract No. 6.

Contract No. 61. Improving 7.39 miles of Erie canal from west end of Contract No. 60 of the west line of Monroe county.

Contract No. 64. Excavating 9.91 miles of Erie canal between Medina and Gasport.

Contract No. 66. Excavating 6.35 miles of Erie canal between Gasport and Lockport locks.

Contract No. 68. Constructing Locks Nos. 3, 4 and 5, in the Hudson river, and 1.4 miles of land line.

#### 1909.

Contract No. 20-A. Dredging 4.5 miles Mohawk river channel, etc., between the upper miter wall of the new lock at Mindenville and the upper miter wall of the lock at Little Falls.

Contract No. 20-B. Dredging 10.1 miles Mohawk river channel, constructing stream entrances, etc., between the center of bridge at Dam No. 10, at Canajoharie, and the upper miter wall of the new lock at Mindenville.



Contract No. 20-C. Dredging 7.9 miles Mohawk river channel, constructing stream entrances, etc., between center of bridge at Dam No. 9, at Yosts, and center of bridge at Dam No. 10, at Canajoharie.

Contract No. 20-D. Dredging 36.2 miles Mohawk river channel, constructing stream entrances, etc., between deep water below Rexford Flats aqueduct and center of bridge at Dam No. 9, at Yosts.

Contract No. 23. Excavating 6.3 miles, Erie canal, between King's bend and Genesee river, and constructing Locks Nos. 32 and 33, guard lock, bridges, culverts, etc.

Contract No. 29. Excavating 4.0 miles, Erie canal, from Sterling creek to Oneida-Herkimer county line, constructing lock at Sterling creek, bridges, etc.

Contract No. 30. Dredging 14.62 miles Mohawk river channel and land line from Little Falls to Sterling creek, constructing Lock No. 18 at Jacksonburg, Dam No. 14, and guard-gates at Herkimer, retaining dam at Frankfort, bridges, etc.

Contract No. 33. Furnishing lock gates, needle beams, guard and sluice gates, and lock valves on Contracts Nos. 2, 10, 11 and 16.

Contract No. 38. Constructing superstructure, substructure and approaches for bridge over Erie canal at Wapping, 2.5 miles west of Fairport.

Contract No. 42. Excavating 8.96 miles, Erie canal, between Herkimer-Oneida county line and Oriskany, and constructing Lock No. 20, bridges, spillway, stream entrances, culverts, etc.

Contract No. 43. Excavating 10.32 miles, Erie canal, from just east of Oriskany road to about 1,500 feet west of Mud creek, constructing a junction lock, guard-gate and other structures.

Contract No. 44. Excavating 7.1 miles, Erie canal, from about 1,500 feet west of Mud creek to about three miles west of New London, constructing Locks Nos. 21 and 22, and a junction lock and other structures.

Contract No. 53. Constructing Lock No. 1, Oswego canal, with its approach walls, and excavating prism from Phoenix bridge northerly about 1,400 feet, length .23 miles.

Contract No. 54. Constructing Lock No. 7 and its approaches, Champlain canal, at Fort Edward, etc., length .22 miles.

Contract No. 69. Constructing Lock No. 2, Champlain canal, below Mechanicville, etc., length .17 miles.

Contract No. 70. Dredging a channel in the Hudson river from Waterford to Lock No. 1, a distance of 3.32 miles.

Contract No. 71. Constructing Lock and Dam No. 1, above Waterford, and dredging from Lock No. 1 to Lock No. 2, a distance of 3.96 miles.

Contract No. 72. Dredging 4.1 miles of channel in the Hudson river, and performing incidental work from Lock No. 2 at lower Mechanicville to Lock No. 4 at Stillwater.

### CONTRACTS RELET.

1908.

Contract No. 17. Dams Nos. 7 and 8 and Locks Nos. 11 and 12 on Mohawk river, Erie canal, and incidental work.

This contract was relet because the contractor was unable to fulfill his part of the contract, and as a means of permitting the Surety company to carry on the work.

1909.

Contract No. 2. Relet as Contract No. 2-E. Completing construction of canal from Mohawk river, at Waterford, to a point about one-fourth mile above head of Lock No. 3.

This contract was relet because the original contractors did not satisfactorily progress their work.

### CONTRACTS AWAITING AWARD.

Contract No. 36. Constructing operating winches for movable dams in Mohawk river.

### CONTRACTS APPROVED BY ADVISORY BOARD AND CANAL BOARD BUT NOT AWARDED.

Contract No. 49. Constructing 6.18 miles, Erie canal, from a point about 500 feet east of Yellow Mills bridge, about one mile west of Palmyra, west to the Monroe county line, Lock No. 30, bridges, three culverts, etc.

Contract No. 50. Constructing dam, waste gates and spillway across West Canada creek, at Hinckley.

Contract No. 75. Constructing three guard gates, etc., on Contracts Nos. 60, 61 and 64.

#### CONTRACTS APPROVED BY THE ADVISORY BOARD BUT NOT BY CANAL BOARD.

Contract No. 21. Excavating 2.43 miles, Erie canal, and constructing bridge abutments, guard lock, etc., between the Genesee river and east end of Contract No. 6.

Contract No. 24. Constructing guard gate at Crocker's Reef.

Contract No. 39. Dredging channel in Oswego river, constructing stream entrances, excavating through Hinmansville cut-off, etc., between Three River Point and Fulton, except portion covered by Contract No. 53.

Contract No. 73. Dredging Hudson river from Stillwater to Northumberland.

Contract No. 78. Constructing dike on Oswego river, near Fulton.

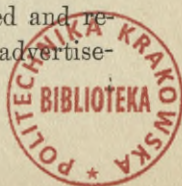
#### BIDS AND BIDDERS.

During the year 1909 up to and including December 28th, there have been successfully advertised twenty-one contracts on which there have been received ninety-five bids, not including one or two contracts advertised but not awarded. The total amount of work involved according to the 1903 estimate was \$19,637,278. The total amount of the bids involved was \$18,829,630. The difference, \$807,648, represents a saving over the estimate for 1903.

Fifteen bids were received for the work under Contract No. 23 which was the greatest number obtained on a single contract.

The mileage comprised on the contracts let in 1909 is approximately 122. There have been a large number of desirable bidders on Barge canal work during the year, indicating that the work is receiving favorable attention from contractors.

In several instances since the beginning of the Barge canal work it has been deemed advisable to reject bids received and re-advertise the work. As an example may be cited the re-advertise-



ment of work under Contract No. 2-E, and the work formerly included under Contract No. 20, since divided into Contracts Nos. 20-A, 20-B, 20-C and 20-D, the result of readvertisement in both instances being greatly to the State's interest.

Attention is called to the increased cost of material and labor and its effect upon the contract work let during the current fiscal year, a notable example being furnished by the increased cost of steel which, at the present time is nearly 20 per cent. greater than a year ago. Another factor affecting the cost of contract work is the inability of the contractor to obtain prompt deliveries of material because of the large amount of construction work in progress throughout the country.

TABLE SHOWING THE NUMBER OF CONTRACTS, NAME OF CONTRACTOR AND ADDRESSES.

January 1, 1910.

Contract No.	CONTRACTOR	Address.
1	Empire Engineering Corporation.....	60 Wall st., New York city.
2E	Holler & Shepard.....	Rochester, N. Y.
3	Sundstrom & Stratton.....	90 West st., New York city.
4	Empire Engineering Corporation.....	60 Wall st., New York city.
5	Empire Engineering Corporation.....	60 Wall st., New York city.
6	Frank A. Maselli.....	428 Granite bldg., Rochester, N. Y.
7	Groton Bridge Company.....	Groton, N. Y.
8	Pittsburg-Eastern Company.....	Cannon place, Troy, N. Y.
9	Thos. Crimmins Contracting Company.....	444 East 69th st., New York.
10	McDermott Contracting Co.....	Pennsylvania bldg., Philadelphia, Pa.
11	Fort Orange Construction Co.....	112 State st., Albany, N. Y.
12	Stewart-Kerbaugh-Shanley Co.....	30 Church st., New York city.
13	Penn Bridge Company.....	Beaver Falls, Pa.
14	Acme Engineering & Contracting Co.....	Herkimer, N. Y.
15	Atlantic, Gulf & Pacific Company.....	Park Row bldg., New York city.
16	United Construction Company.....	467 Broadway, Albany, N. Y.
17	Alexander Murdoch.....	Fidelity bldg., Baltimore, Md.
18	O'Brien & Hoolihan Contracting Co.....	1541 S. Salina st., Syracuse, N. Y.
19	Great Lakes Construction Company.....	Buffalo, N. Y.
20A	Houston Barnard.....	Rochester, N. Y.
20B	S. Pearson & Son.....	507 Fifth ave., New York city.
20C	American Pipe & Construction Co.....	112 N. Broad st., Philadelphia, Pa.
20D	American Pipe & Construction Co.....	112 N. Broad st., Philadelphia, Pa.
23	Millard & Lupton Company.....	Allegany ave. and Tulip st., Philadel- phia, Pa.
25	Atlantic, Gulf & Pacific Company.....	Park Row bldg., New York city.
26	Lake Erie Dredging Company.....	1100 D. S. Morgan bldg., Buffalo, N. Y.
27	Kinser Construction Company.....	Montezuma, N. Y.
29	Maryland Dredging & Contracting Co.....	Baltimore, Md.
30	Acme Engineering & Contracting Co.....	Herkimer, N. Y.
31	Casey & Murray.....	311 Powers bldg., Rochester, N. Y.
32	Penn Bridge Company.....	Beaver Falls, Pa.
33	Penn Bridge Company.....	Beaver Falls, Pa.
34	M. Fitzgerald.....	Hoosick Falls, N. Y.
35	Gilmour-Horton-Allen Co.....	Sandy Hill, N. Y.
36	J. D. Miller.....	39 Courtlandt st., New York city.
38	Henry Tosh & Son.....	Port Byron, N. Y.
40	United Engineering & Contracting Co.....	17 West 42d st., New York city.
41	Butler Bros. Construction Company.....	1170 Broadway, New York city.
42	Shanley-Morrissey Company.....	527 Fifth ave., New York city.
43	M. A. Talbot Company.....	1110 American bldg., Baltimore, Md.
44	Scott Bros.....	Baldwinsville, N. Y.
45	Scott Bros.....	Baldwinsville, N. Y.
46	Kinser Construction Company.....	Montezuma, N. Y.
47	Crowell-Sherman-Stalter Company.....	3111 Carnegie ave., Cleveland, Ohio.
53	Scott Bros.....	Baldwinsville, N. Y.
54	Scott Bros.....	Baldwinsville, N. Y.
55	Arthur McMullen.....	Singer bldg., New York city.
60	Empire Engineering Corporation.....	60 Wall st., New York city.
61	Cleveland & Sons Company.....	Brockport, N. Y.
64	Empire Engineering Corporation.....	60 Wall st., New York city.
66	Empire Engineering Corporation.....	60 Wall st., New York city.
68	Shanley-Morrissey Company.....	527 Fifth ave., New York city.
69	I. A. Hodge & Co.....	Syracuse, N. Y.
70	Shanley-Morrissey Company.....	527 Fifth ave., New York city.
71	Shanley-Morrissey Company.....	527 Fifth ave., New York city.
72	Shanley-Morrissey Company.....	527 Fifth ave., New York city.

## CAYUGA AND SENECA CANAL PROJECT.

The enlargement of the Cayuga and Seneca canals has been considered by the Advisory Board at various times in connection with the studies for the Barge canal. At a meeting held December 20, 1905, alternate canal locations in the vicinity of Savannah were considered by the Board, and it was, on motion:

“Resolved, That the route south of Crusoe Island known as the ‘South Route’ be adopted.”

It was, on motion:

“Resolved, That the Chairman address a letter to the State Engineer, giving him the reasons for reaching the conclusion that the ‘South Route’ should be adopted.”

The reasons for adopting the “South Route” are set forth in the following quotation from a letter written by the chairman to the State Engineer under date of December 22, 1905, in compliance with the last mentioned resolution.

“The ‘South Route’ is estimated to cost \$162,495 less than the ‘Middle Route’ as the ‘South Line’ is five and three-fourths miles longer than the ‘Middle Line,’ this saving in first cost would not warrant the change of line; but by an examination of the map it will be seen that the so called ‘finger lakes,’ namely, Cayuga and Seneca Lakes, lie to the south of Savannah, and as the head waters of these lakes at Ithaca and Watkins are the nearest points to the center of the coal fields of Pennsylvania of any navigable water in our state, it is believed by our Board that the requirements of the near future would call for the enlargement of what is known as the Cayuga and Seneca Canal to the same dimensions as those of the Barge Canal now being constructed. Five and one-half miles of this southern route could be utilized in case the Cayuga and Seneca Canal should be enlarged to Barge Canal size, which, in that event, would make a saving of upwards of \$1,000,000 in the construction of the canal, to connect these two lakes as herein outlined.

“There is a strong sentiment in the central portion of the State of New York to provide, in the near future, for waterways that will permit of the delivery of coal to all of the interior portions of the State, at less freight rates than are now being paid; in fact this movement is quite active at Utica at this time. If the near future should develop the necessity for reaching the coal mines by a navigable canal, it is the opinion of our Board that

the most practical way to reach this result, would be through the Seneca Lake to Watkins; thence by way of the abandoned Chemung Canal to a summit level near Horseheads that could be fed from the Chemung River by diverting water from said river near Corning; thence following said canal to Elmira and down the Chemung River to the Pennsylvania State Line, where it could be continued in the state of Pennsylvania to the junction with the Susquehanna River and through said river into the coal fields.

“With the desire to so construct this canal that it will meet the requirements of the State to the greatest possible advantage fifty or one hundred years hence, it is believed by this Board that the ‘South Route’ should be adopted.”

The changes in the Barge Canal Law which would permit such deviation from the route of the Barge canal originally laid down as was necessary for the adoption of the “South Route” between Fox Ridge and Fairport, were incorporated in chapter 710, Laws of 1907, and became effective on July 23, 1907.

At its meetings held August 14 and 28, 1907, and March 4, 1908, the Board approved the general location from Fox Ridge to Lyons known as the “South Line,” for the reasons mentioned in the letter from which quotation has just been made.

In 1909 the Legislature set aside \$20,000 for surveys and estimates to determine the most feasible route to connect the Barge canal with Cayuga and Seneca lakes, and also passed a referendum bill for submission to the people at the election held November 2, 1909, appropriating \$7,000,000 for this construction, which was approved by the people.

Surveys by the State Engineer were started about June 1, 1909, and at the date of this report are nearly completed.

#### CHARTS.

Early provision should be made for charting the lakes through which the Barge canal route passes, and certain river sections of the canal, so that the charts may be ready for use of navigators on completion of the Barge canal.

CONFERENCE AT OTTAWA, CANADA, RELATIVE TO PROPOSED ENLARGEMENT OF THE RICHELIEU RIVER NAVIGATION SYSTEM AND CHAMBLY CANAL TO SAME MINIMUM DIMENSIONS AS ON BARGE CANAL SYSTEM.

The enlargement of this portion of the Canadian canals would connect the Barge canal system directly with Montreal and without doubt would greatly increase the traffic on the Champlain canal and Hudson river. The following paragraph is quoted from the minutes of the Advisory Board for January 18, 1909, as a report by the member of this Board who attended a conference with various Canadian government officials and representatives of several industrial associations and corporations of New York State, held at Ottawa, Canada, January 15, 1909.

“Mr. Fry reported that he had availed himself of the authority to represent the Board at a conference held at Ottawa, Canada, January 15, 1909, with the Canadian Prime Minister, Sir Wilfred Laurier, the Minister of Public Works, and other officials in connection with the proposed Canadian enlargement of the Richelieu River Navigation System and the Chambly canal to the same minimum dimensions as those proposed for the Barge canals of the State of New York as regards depth and width of prism and length, width and depth of locks.

“Mr. Fry also reported that this conference had been attended by a delegation representing the Canal Association of Greater New York, at whose instance it had been called, and that there were also present representatives of transportation companies, paper manufacturing, mining and other industrial interests of New York State. The Prime Minister stated that the proposed enlargement of the Richelieu River System would be given full consideration, and directed that the work of preparing estimates, etc., in connection therewith be immediately begun by the Canadian Department of Public Works.”

CONTRACT No. 20.

The history of Contract No. 20, which includes all the dredging between Little Falls and Rexford Flats, to date of January 1, 1909, may be found in the fourth annual report, a reference to which will show that the Advisory Board, in a letter to the Su-



perintendent of Public Works, recommended the rejection of the bids received on December 27, 1908, expressing the opinion that by changing the form of contract better prices would be obtained.

During the early part of the year considerable study was devoted as to what might be the most advantageous course to be pursued, having in mind the legal questions involved. It was presented to the Advisory Board on February 4, 1909, as a single contract with specifications changed and permitting of the acceptance of the work in sections of about one mile in length. It was withdrawn and resubmitted on March 18, 1909, and was approved in this form by the Board.

Further consideration, however, developed the idea that it might be of advantage to the State to subdivide the contract into smaller contracts. Plans, specifications and estimates were again submitted to the Advisory Board April 27, in two forms, one of which proposed to do the whole work under one contract, and the other of which proposed to do the work under four separate contracts, namely, No. 20-A, 20-B, 20-C and 20-D. The board approved both forms. It was advertised under the latter form and the awards were made on a total for the four contracts of \$4,690,546.90, which is \$222,621.35 below the lowest bid previously received for this work.

Actual construction has been begun and it is believed that no delay in the final opening of the canal has been caused by the time required to let the contracts for this work.

#### DUMPING OF WASTE IN ONONDAGA LAKE.

In the last annual report of this Board, reference was made to the dumping of waste and refuse into Onondaga lake, and to the imperfect methods of retaining the refuse dumped along the shores of the lake. The Board believes that this condition continues, and furthermore, that the bulkheads intended to retain the waste land are going to pieces and allowing the material to be washed away. This encroachment upon navigable waters will soon curtail the use and value of the lake unless it is stopped, and the board again calls attention to the resolutions passed by the Board under date of April 15, 1908, as follows:

“Whereas, Onondaga lake has become by law a part of the navigable canal system of the State, and

"Whereas, A large amount of dumping has been done in the lake particularly by the Solvay Company, which encroaches on the navigable waters of the lake, and still more encroachment is threatened, therefore be it

"Resolved, That it is recommended that the proper authorities take up this matter and carefully investigate it, making a hydrographic survey of the lake, which shall also show the areas already encroached upon, the methods used to retain the materials deposited in the lake, and the sufficiency of these methods for the present and future. Further be it

"Resolved, That it is also recommended that to guard the navigable part of the lake, bulkhead harbor lines be established about the lake beyond which no filling shall be allowed to take place. Parties causing filling to be done inside these bulkhead lines shall construct suitable bulkheads in a substantial and tight manner so as to effectually prevent any material from getting beyond them into the lake; also that pier head or harbor lines be established outside the bulkhead lines, to which open pier construction may be built."

#### FINAL MAPS AND PLANS.

It is important that as the construction of the Barge canal progresses there should be prepared such plans as will show the actual dimensions of all structures built, the actual foundation conditions disclosed by the excavation and the relation of the structure to the original survey lines, so that all future work adjoining a structure or repairs to it may be designed with certainty and dispatch, and maps of the canal showing the locations of all right of way monuments, the original lines of the various parcels of lands appropriated and the numbers of the appropriation maps referring to the same and the soil conditions actually disclosed by the excavation for the canal. That these maps and plans be made under the supervision of, and certified to, by the Engineers in charge of the work of construction, is of great advantage in obtaining an accurate map at the least expense.

It is evident that many of the men now in charge of construction will have gone away within a few years after the completion of the Barge canal and that the value of their intimate knowledge of the section of work under their charge will then be practically lost to the State.

There should be placed on the maps referring to any particular contract or section of the canal, a legend showing the temporary or final numbers of all note and computation books used with all surveys in connection with the improvement, the topography of land adjoining the structures of canal prism from preliminary surveys, bench-marks, instrument points and references of all kinds which may be required or of advantage in the future. These maps should be of standard size and made on the best quality of mounted paper. The data given should follow a carefully devised and standardized plan for the whole Barge canal system. The maps after being properly certified by the Engineer in charge should be made the legal or authorized map of the canals. Such maps if properly made and kept will be the means of saving money to the State every time a reference is made to any portion of the canal demanding accurate information as to distances or structures. The total amount of such saving will without doubt, be many times the cost of the maps not counting the inestimable value in case of damage suits against the State due to the canal construction. In addition to this, the notes recorded thereon as to the character of materials and actual conditions disclosed by excavation will be of great worth should conditions arise which make necessary the enlargement of the Barge canal system or render it necessary to build additional locks therefor.

It is vital therefore from almost every standpoint, legal, commercial and practical, that a complete engineering record be preserved of this work, and hence the necessity for unusual care in the preparation of complete plans of every detail relating thereto.

In this connection attention is invited to the advisability of an accurate determination of the boundaries of lands now occupied by the State for canal purposes.

Upon the completion of the Barge canal system there will be considerable land in the possession of the State which will not be needed for canal purposes. In a number of instances this land is of great value and could be much more advantageously disposed of by the State if the State being certain of its boundaries could give a guaranteed title to the purchaser. Should the boundaries of such land as belongs to the State in the cities of Syracuse and Rochester, for example, be in the least degree uncertain there is

no doubt but what the market-value of the whole tract would be greatly decreased. Inasmuch as the present blue line is in general referenced from what has been termed the front angle and because this "front angle" in many places will be destroyed after the opening of the Barge canal, it would seem a very wise precaution to so reference this "front angle" by the necessary surveys tying it to permanent references that its location may be determined with certainty any time in the future. In view of the fact that there are so many encroachments upon State lands both in the country and city districts, it seems that unless the State boundaries can be reproduced with certainty and dispatch and are known to the citizens of the various places, the State will suffer great loss on this account. These surveys or references to the existing blue line should be properly mapped so that they may be available whenever it may be necessary or desirable to dispose of any lands now occupied for canal purposes.

#### GUARD GATE AT CROCKER'S REEF DAM CHAMPLAIN CANAL.

The status of the plans for this structure at the present time is the same as when the last annual report was made, namely, that they have passed the Advisory Board as Contract No. 24, and are awaiting the action of the Canal Board.

The Advisory Board has urged the necessity of action regarding same on the State officers concerned and is of the opinion that this structure should be built as soon as possible in order that the prism already constructed below the site of the guard gate may be properly protected, should the temporary coffer dam (built for construction purposes) fail, and so that the section of the Barge canal in this immediate vicinity may be placed in operation as soon as practicable and in order to avoid a possible interruption to the navigation on the Champlain canal.

The guard gate in question is to be located at the upper end of Contract No. 3 nearly opposite the dam across the Hudson river about two miles north of Fort Miller, known in this Department as Crocker's Reef dam, and only a short distance from the point where the canal leaves the river. The principal object of the structure is to prevent the waters of the Hudson river, when at

high stage, from flowing through the land section of the Barge canal. In view of the importance of the early construction of this guard gate, it seems proper to call attention to the following paragraph from the report of 1908:

“The Board discussed with W. R. Hill, Special Deputy State Engineer, the construction of a guard gate at Crocker’s Reef, Champlain Canal, and on motion, the following preambles and resolutions were adopted:

“Whereas, the original plans for Contract No. 3, provided for the construction of a guard gate at Crocker’s Reef Dam, Champlain Canal, and on September 21, 1906, by the terms of Alteration No. 2, Contract No. 3, work of building the guard gate was eliminated from said contract; and

“Whereas, new plans, specifications and estimate of cost for a guard gate known as Contract No. 3-B were approved by the State Engineer November 23, 1906, and by the Advisory Board November 23, 1906, for the construction of a guard gate on amended plans at Crocker’s Reef; and

“Whereas, this Board is informed that the matter is now before the Canal Board for action, and this Board deems it advisable and necessary that this guard gate should be built as quickly as possible in order to avoid damage to the work already completed on Contract No. 3 due to the future possible failure of the temporary coffer dam at Crocker’s Reef, Champlain Canal, therefore be it

“Resolved, That the Chairman be requested to write a letter to the Canal Board calling its attention to the necessity for prompt construction of said guard gate at Crocker’s Reef, to the end that damage to work already completed on Contract No. 3 may be prevented and the work on this portion of the canal fully completed.’

“Plans, specifications and estimates for this work were submitted to this Board as Contract No. 24, which were approved by this Board on August 18, 1908, in the following language quoted from the minutes:

“Resolved, That plans, specifications and estimate of cost for Contract No. 24, providing for constructing a guard gate and other incidental work near Crocker’s Reef Dam, sheets 1 to 24 inclusive, presented to this Board by the State Engineer August 18, 1908, be hereby approved.

“Further Resolved, That this approval is predicated on the understanding that such action is legal.’”

## HARBOR AND TERMINAL FACILITIES.

In its report for 1908 the Advisory Board stated its position as to the necessity of harbors and terminals for canal purposes.

The Legislature of 1909 created a board known as the Barge Canal Terminal Commission of the State of New York (Chapter 438) to inquire into the question as to providing terminal facilities for the Barge canal system.

It is understood that the Commission has held hearings at various places and that its report will soon be published.

## HEARINGS, MEETINGS AND INSPECTIONS.

Citizens of various places affected by the location or construction of the Barge canal or the construction of its reservoirs for water supply, have appeared before the Advisory Board for the purpose of showing how their interests are affected. Sometimes these hearing and conferences have been at the request of citizens and at other times by the invitation of the Board. The location of the Barge canal in the vicinity of Lyons and Newark has been the subject of a number of these hearings, and the construction of the reservoir and dam at Hinckley has been considered on several occasions.

Meetings of the Advisory Board have generally been held at Albany during the year, except when occasion demanded the presence of the Board at other places.

Inspections of routes for the canal, construction work in progress and completed work have been made during the year by the full Board or individual members thereof as the case required.

## HUDSON RIVER IMPROVEMENT.

The Advisory Board of Consulting Engineers believes that it is proper for the United States Government to improve the Hudson river from the point at Waterford where the Erie canal connects with it, on to the south so that vessels engaged in canal navigation could freely pass to the sea coast and has made it a portion of its duties to bring this about.

Under date of January 17, 1909, Col. Thomas W. Symons made a report to the Board on the condition of this river, what

was necessary to be done, and the advisable procedure in the matter. The following is the gist of Col. Symons' report.

"First: From information received, it is certain that between deep water below New Baltimore and Troy there are a number of places where a depth of 12 feet is not available at all stages during the season of navigation, and at which places fully laden canal boats would be prevented from passing.

"Second: There will probably be no General River and Harbor Bill passed by Congress this winter, but it is believed that a small bill will be passed providing for continuing some important works, maintenance and for preliminary examinations and plans and survey, in such particular instances as may be designated in the bill.

"Third: I believe that efforts should now be made to have included in the probable River and Harbor Bill an item looking to a preliminary examination and plans and surveys for deepening the river from New York to Waterford, so as to provide a depth of 12 feet at all stages during the season of navigation. The proper wording of the item in the list providing for these examinations I conceive to be as follows:

"Hudson River, New York, with the view of providing a navigable channel which shall not be less than 200 feet wide and 12 feet deep at all times during the season of navigation, from deep water in the lower river to Waterford, including a lock and dam at Troy suitable in size for all probable purposes of navigation and commerce.' If this item is included all the necessary work can be done, preliminary to an appropriation for it under the next general or regular River and Harbor Bill.

"It is suggested that this matter be brought to the attention of the Governor, the State Engineer and the Superintendent of Public Works, in the hope that they will take the necessary steps to bring it to the attention of our Senators and representatives in Washington, urging that the action as outlined be taken, unless something better be suggested."

Col. Symons took this matter up with the members of the River and Harbor Committee of the House of Representatives in Washington, who were engaged in preparing the River and Harbor Bill, and finally succeeded in having incorporated the desired item in the bill looking to the necessary surveys, plans and estimate of

cost for the work required to give a depth of 12 feet at all stages of water and not less than 200 feet wide. The idea of the bill as explained to the Committee was that the channel from Waterford to Troy would be 200 feet wide, and below Troy that the channel would be 400 feet wide, as now called for by the existing project for improvement of the river.

This River and Harbor Bill, finally passed the House and was sent to the Senate. A number of people in New York became alarmed that one of the results from the bill would be to narrow the channel from deep water to Troy from 400 feet to 200 feet and were very desirous to have the item amended to preclude this possibility. Although not sharing strongly in this fear, and yet to set at rest the minds of those interested in the navigation of the Hudson and to remove the question from the realm of doubt and uncertainty, Col. Symons laid the matter before Senator Depew and asked that an amendment be added to the item making the channel from Troy down correspond in width with the existing project, i. e., 400 feet.

This item so amended passed the Senate, but the amendment was finally thrown out in conference and as finally passed the bill contains the following items:

“Hudson River, with a view to providing a channel not less than two hundred feet wide and twelve feet deep at all stages from deep water in the lower river to Waterford, including a lock and dam at Troy suitable in size for all probable purposes of navigation and commerce to and from the Barge Canal.”

It will be necessary for the State officials and people interested in the navigation of the river to convince the United States Engineers who will have the matter in charge that the channel from Troy down should be given a width of 400 feet as now specified in the existing project. As this portion of the waterway will have to accommodate not only the commerce of the Barge canal but the large vessels running from New York to Albany and Troy, it would seem that little difficulty should exist in convincing the examining engineers of the necessity of the projected width 400 feet as desired.



Col. William M. Black, Corps Engineers United States Army, A. C. Harper and R. H. Talcott, Assistant Engineers, appeared before the Board at its meeting held November 23, 1909, and discussed with it matters in relation to the proposed improvement of the Hudson river by the United States Government from deep water below Albany to the junction of the Barge canal with the Hudson river, especially with regard to the construction of the proposed lock and dam above Troy; also matters in reference to a draw span over the Hudson river at Waterford and to the height and span of other bridges.

The Board set forth to Col. Black the desirability of making every effort to have the estimates for the said improvement ready to be submitted to Congress as early as possible in its coming session so that the item for this work might be included in the River and Harbor bill this year, and in order that the work might be begun at an early date so as to be completed by the time the Barge canal is ready for operation.

#### INTERNATIONAL NAVIGATION CONGRESSES.

The attention of the Advisory Board has been called to a proposition for holding the next meeting of the Permanent International Association of Navigation Congresses at Philadelphia in 1912, and the Board has been asked to use its influence to obtain from the General Government an appropriation to help defray the expenses of such a meeting. The Board is of the opinion that a meeting of this important body would be of great value to all who are interested in water transportation. It, therefore, desires to record its belief that every effort should be made by the representatives of this State to secure an appropriation for this purpose from the Federal Government.

#### MAINTENANCE.

With the completion of the work under some of the earlier contracts for certain structures and sections of the Barge canal, comes the necessity of being prepared to maintain these structures and sections of the canal prism until the opening of the canal for navigation. Early in the coming year, at least two contracts — one

on the Champlain canal, covering a distance of two miles or more, and one on the Erie canal, covering nearly five miles of prism — now practically completed, will be turned over to the State and require maintenance. In addition to this, three contracts for bridges over the Barge canal have been completed. It is probable that by the spring of 1911 several other contracts, involving movable dams, and 17 miles of canal, will be turned over to the State and require maintenance.

Chapter 147, Laws of 1903, known as the "Barge Canal Act," makes no provision for maintenance, and it would seem, therefore, necessary that the State authorities consider this question in order that needful provisions may be made for maintaining in good condition all finished work on the Barge canal, in order to prevent any deterioration of completed structures or channels and to avoid unnecessary delay in the final opening of the canal.

#### OPENING AND CLOSING OF NAVIGATION ON THE PRESENT ERIE CANAL.

As the number of contracts for Barge canal construction increases, it becomes the more necessary that the navigation season of the present canal system be made to comply with the provisions of chapter 147, Laws of 1903, which specifies that the canal shall be closed November 15 and opened for navigation on May 15, and which specification is included in many important contracts.

In a large part of the Barge canal system, where winter work forms the major portion of the contract, the time between November 15 and January 1, and between April 1 and May 15 is of the greatest value in progressing the construction. Should the navigation season of the present canals be extended it might lead to the abrogation of some contracts, and in any case would greatly delay the final completion of the Barge canal work.

As stated in its report of 1908, the Board is of the opinion that the execution of the contracts for the Barge canal has reached such a state that it will hereafter be necessary every year to provide the minimum period of navigation prescribed by law in order that the Barge canal work may be efficiently and expeditiously prosecuted.

ROUTE OF BARGE CANAL IN THE VICINITY OF  
LYONS AND NEWARK.

The location of the Barge canal as originally adopted by chapter 147, Laws of 1903, followed the Erie canal from the village of Clyde to the village of Macedon except for slight detours at Newark and Lyons. As studies progressed for the work, it was evident that due to the topography of the country in this section, to the interference of the New York Central and the West Shore railroads, and to the adoption of what has been called the "South Route" through the Montezuma Marshes, the route in the vicinity of Newark and Lyons as originally planned was not the most desirable one for the State. The following is quoted from a memorandum on file in the office of the Advisory Board:

"As early as March, 1904, the Board had under consideration proposed location of the Barge Canal between Newark and South Greece and in May of that year visited that portion of the line between Newark and Fairport. Again, in June, 1905, the Board made a personal examination from Lyons to Newark, Palmyra, Macedon and Fairport. Again, in November, 1907, the Board inspected several routes of the Barge Canal between Lyons and Macedon. Much time and study developed several possible locations in the vicinity of Newark. At that time it was decided to make preliminary surveys of that part of the valley from a point two miles east of Newark to a point about three miles east of Palmyra. Early in 1908 in considering the line between the above points, the Board recommended that 'No North Line yet considered be adopted until further study is given to the entire location, the thought being to confine the location to what is known as the "North Line."'"

On July 28, 1908, the Board approved plans for Contract No. 47, providing for the construction of the canal from the southeast corner of the town of Galen to a point near the N. Y. C. & H. R. R. R. crossing at Lyons, a distance of 14.46 miles, at which time it was believed that the line of the canal would pass through the village of Lyons to the north of the village of Newark. Either the Port Gibson or a more northerly line following the main valley of

Ganargua creek to be determined later. These lines would be common through Lyons to a point two miles east of Newark.

Early in July, 1909, the State Engineer presented to the Advisory Board for consideration reports and maps relative to the various routes for the Barge canal from a point just east of Lyons to a point about two miles east of Palmyra. The Board made detailed studies of suggested locations considering especially interference with railroads, cost of construction, and alignment of canal most desirable. Hearings were granted the citizens of the village of Newark in order to ascertain which route was deemed by the village authorities to be most advantageous to Newark. Inasmuch as some of the proposed routes interfered with Contract No. 47 already let to the Crowell-Sherman-Stalter Company, proposing to eliminate a part of the work on the westerly end of their contract, it was necessary to confer with these contractors in order to see what position they would take in regard to such elimination. The Board has considered all these matters and finally at its meeting of August 18 the following resolution, approving what is known as "Line No. 5," was adopted:

"Resolved, That 'Line No. 5' as shown on white-print File No. 4,111-844 be approved, subject to the receipt of proper legal waiver of any damages whatsoever from the Crowell-Sherman-Stalter Company, as to the elimination of that part of their contract involved by change due to the adoption of 'Line No. 5.'"

"Line No. 5" leaves the Clyde river at a point about two miles east of Lyons and keeps south of the West Shore Railroad to Palmyra following the old canal a short distance through Newark and the valley by way of Port Gibson.

The reasons for the adoption of this line may be summarized by the following quotation from minutes of the meeting of October 19, 1909:

"1. 'Line No. 5' is 1.5 miles shorter than either of the 'North Routes' and contains one less lock, resulting in a saving of three-quarters of an hour in time of transit.

"2. It costs less to construct 'Line No. 5' by about \$250,000.

"3. Having one less lock it is cheaper to maintain and operate than the 'North Routes.'

"4. It provides better opportunities for a junction with the Cayuga and Seneca Canal, if built.

"5. It improves the drainage of all the land adjoining it because the proposed water surface is low.

"6. It permits of good wharfage facilities and permits of street bridges being placed at the natural grade of the streets.

"7. It interferes less with the railroads than the 'North Routes.'"

The plans for this section of canal are now well under way and it is hoped will soon be ready for letting.

#### TEMPORARY LOCK NEAR MINDENVILLE.

Because of two successive years of very light rainfall and a corresponding low stage on the Mohawk river, it was found impracticable to attempt to maintain navigation in the present canal without using the Rocky Rift Feeder. In order that the contractors on Contract No. 18 might carry on their work and that the navigation of the present canal system might not be seriously interfered with it became necessary to move the entrance of the Rocky Rift Feeder into the canal about two and one-half miles west. In order to permit the moving of the entrance of the feeder it became necessary to construct two temporary locks in the old canal above the proposed new entrance.

The matter was discussed by the Advisory Board with the State Engineer, the Superintendent of Public Works, and the Canal Board at its meeting of November 16, 1909, and at its meeting of November 23, 1909, and an attempt was made to get this work in such shape that it might be let under regular contracts. Such contracts, Nos. 59 and 59-A, were approved by the Advisory Board November 16, 1909.

Further discussion and study of the matter developed the fact that it would be impossible to let this work at a date sufficiently early to be sure that it would be completed in time for the opening of navigation in 1910. It was then decided that it was to the best interests of the State to construct these locks by an extra or

unspecified work order under Contract No. 18 and the following quotation from the minutes of the Advisory Board of November 23, 1909, is given to show the action of the Advisory Board thereon:

“The Chairman presented communications from the State Engineer dated November 23, 1909, transmitting for its consideration copy of the Extra or Unspecified Work Order proposed to be given on Contract No. 18, said order being accompanied by tracings ‘A,’ ‘B’ and ‘C,’ specifications and Engineer’s preliminary estimate, and also a copy of a proposed letter to the Canal Board dated November 22, 1909.

“After consideration of the matter, all the members being present, on motion, the following preambles and resolutions were unanimously adopted:

“Whereas, In order to maintain navigation on the Erie Canal at or near Mindenville, it becomes necessary to construct two temporary timber locks and their approaches before the opening of navigation for the season of 1910; and

“Whereas, After joint meeting with the Canal Board, conference with the State Engineer, the Superintendent of Public Works, and with possible bidders on work referred to, it develops that it will be impossible to build said locks and approaches so as to open navigation on said canal May 15, 1910, if the usual routine for advertising similar work is followed, therefore be it

“Resolved, That this Board unanimously approves proposed Extra or Unspecified Work Order, to be given on Contract No. 18, providing for building temporary locks and approaches near Mindenville, in accordance with sheets “A,” “B” and “C,” specifications and Engineer’s preliminary estimate of cost to the State of \$32,250, submitted to this Board by the State Engineer, November 23, 1909.

“Further be it resolved, That the Board desires in approving this order to record its acquiescence in the reasons for issuance of said order set forth in the State Engineer’s letter to the Canal Board under date of November 22, 1909, copy of which is on file in this office. The Board also gives weight to the fact that two seasons of exceptionally low rainfall have produced a stage of water in the Mohawk river which makes work called for by said Extra or Unspecified Work Order absolutely essential for the proper maintenance of navigation of the Erie canal as aforesaid.

“Further be it resolved, That the board is influenced by the fact that the contractors for Contract No. 18 will not be able to progress their work as now planned, hence complications might arise resulting in possible damages to the State, unless said Extra or Unspecified Work Order is issued and the timber locks therein described are available for the season of 1910.

“Further be it resolved, That in consequence of action taken as herein recorded, the Board's approval of Contracts Nos. 59 and 59-A is hereby rescinded.”

### TYPES OF VESSELS AND BARGES.

The practical design and economical size of vessels and barges to be used on Barge canal system when finished will no doubt be decided by future experience, and it is probable that vessels of various sizes and types will be necessary to successfully handle and transport the different classes of freight.

With the completion of the Barge canal well within the life of properly built canal boats, it would seem to be a reasonable proposition for those actively engaged in transportation to build boats which may be practical for use on the present canal and yet be used to advantage on the Barge canal. It is possible to design canal boats of such beam and length as will permit of their being passed through the existing locks and which for the present may be operated with a load draft of six feet on the present canal and also operated on the Barge canals with a draft of from eight to nine feet.

In a letter written by a member of this Board, Colonel Symons to Captain Charles Campbell there was pointed out the advantages of transportation by boats of the existing length and beam on the present canal and on the new Barge canal if the boats were built with higher sides so that loads and draft could be increased to correspond with the greater depth of water in the new canal. The idea of the suggestion was that such boats could be used properly on the existing canal in fleets of six, and when the Barge canal or any portion of it is completed these fleets can be very advantageously used thereon due to the more ample waterway and the fact that an entire fleet can be passed through the locks at one lockage with the breaking of but one pair of boats. This

suggestion was taken up and a company was formed to carry it into effect.

The company was organized and has constructed one fleet consisting of a power boat and five barges. These boats are 98 feet long, 17 feet beam and capable of a draft of 9 feet when fully loaded. The fleet reached New York on its first trip from Buffalo about the 20th of November of this year, carrying a load of 83,000 bushels of grain. It is stated that on the trip the fleet passed about one hundred boats towed by animals and three fleets towed by the ordinary steam canal boat. It is understood that this company is to build a number of additional fleets of this character.

Because more than one-half the mileage of the Barge canal system will be through channels exceeding 150 feet in width it follows that the speeds of boats will be much greater than on the present canal. It would seem that the canal boat of the future should be so designed that it may be towed at the rate of six miles per hour through wide waters without unnecessary expenditure of power due to poor design.

The rectangular shape of the present canal boat seems to have been the result of an effort to make a boat of a maximum carrying capacity that would pass through the existing locks and due also to the fact that because of the tractive power in use the rate of progress was necessarily very slow. The increased draft and greater speed which will follow the completion of the Barge canal system will make it necessary to improve the lines of both the bow and stern of canal boats in order to avoid undue resistance.

### WATER SUPPLY.

The Barge canal system requires water to be supplied for various purposes to the summit level on the Champlain canal near Fort Edward to the summit level on the Erie canal at Rome and to the level west of Lockport.

The canal descends from Tonawanda to Three River Point on the Erie canal and to Lake Ontario on the Oswego. The water supply for this section of the Erie canal is to be obtained from the Niagara river at Tonawanda supplemented by various streams. The supply to the Rome summit level requires in addition to the existing feeders south of the present canal, the construction of



large reservoirs for storing and utilizing the flood waters of the north branch of the Mohawk river at Delta and of the West Canada creek at Hinckley.

In addition to the previously mentioned supplies, all streams wherever desirable and practicable have been led into the Barge canal.

Of the two great reservoirs necessary to build, that at Delta, on the Mohawk river north of Rome, is being constructed by Arthur McMullen under Contract No. 55. The work is about 25 per cent. completed and is progressing at a rapid rate.

The plans for the dam and reservoir on West Canada creek at Hinckley were passed by the Advisory Board December 16, 1909, and will probably be advertised at an early date.

The plans for the feeder connecting West Canada creek with Nine Mile creek in order to utilize the supply from the Hinckley reservoir, are nearly ready for submission to the Advisory Board.

Many perplexing questions have arisen during the progress of the plans for this dam due to the existence of the many riparian owners and users of water from West Canada creek and its tributaries. Among these are the Consolidated Water Company of Utica, the Hinckley Fiber Company, the Utica Gas and Electric Company of Utica, and power users at Newport, Middleville and Herkimer.

Hearings have been given to various riparian owners at times early in the year, the Advisory Board by advertisement inviting all riparian owners to a conference to be held at Albany February 3, 1909, and practically all the power interests were represented at the meeting. This was done in an effort to learn the position of the various owners and to devise means whereby no owner should suffer owing to the construction of this dam and reservoir by the State.

It is now believed that in all instances the owners will be benefited by the action of the State reservoir in producing a more uniform flow than heretofore and by protection from excessive floods.

The State proposes to pass not less than 350 cubic feet per second by the Hinckley dam for the supply of power owners which has been stated in various reports to be the amount of water neces-

sary to maintain the stream at its economical horse power or the point of development to which it is profitable to provide the necessary machinery, buildings and other construction for the development of power for commercial purposes.

The Advisory Board is of the opinion that the reservoir construction should be pushed as rapidly as possible, in order that these reservoirs may be used to control the flood waters during the construction period along the Mohawk river and also for supplying water for purposes of navigation.

### PROGRESS OF CONTRACT WORK.

Construction work under Barge canal contracts has progressed rapidly during the year 1909. It is also to be noted in this connection that there has been a decided improvement in the quality of the work performed and that it now is of a higher standard of excellence than at any time since the work began. Attention is called to the fact indicated by table headed "Statement of Work Under Contract January 1, 1910" that there are nine contracts which are ahead of schedule. (See page 8.)

In some instances, however, during the year the Board has called the attention of the State officials concerned to the need of urging more progress on the construction covered by certain contracts.

Immediately following will be found tables showing the amounts and percentages of work done on all contracts each year since the beginning of the work.

January 1, 1906.

Contract No.	CONTRACTOR.	TOTAL VALUE OF WORK.			Percentage of work done to date.
		Put under contract.	Done to January 1, 1906.	Done during December, 1905.	
1	Empire Engineering Corporation...	\$605,008	\$12,710	\$0,000	2.1
2	Ferguson Contracting Company....	852,330	85,830	8,595	9.2
3	Sundstrom & Stratton.....	670,497	102,200	15,210	14.5
4	Empire Engineering Corporation...	726,815	2,920	690	0.4
5	Empire Engineering Corporation...	381,988	1,870	230	0.5
6	Frank A. Maselli.....	1,005,982	124,590	12,640	12.4
	Totals.....	\$4,242,620	\$330,120	\$37,365	

In table dated January 1, 1907, we find 18 contracts in force covering 67.569 miles on ten of which contracts actual work had been in progress previous to that date. The total amount of work done to January 1, 1907, was \$1,041,610.

January 1, 1907.

Contract No.	CONTRACTOR.	TOTAL VALUE OF WORK.			Percentag of work done to date.
		Put under contract.	Done to January 1, 1907.	Done during December, 1906.	
1	Empire Engineering Corporation...	\$605,008	\$92,340	\$1,290	15.26
2	Ferguson Contracting Company....	*934,345	199,800	3,500	21.3
3	Sundstrom & Stratton.....	*673,939	290,060	7,320	43.0
4	Empire Engineering Corporation...	*719,979	87,040	3,000	12.0
5	Empire Engineering Corporation...	381,988	17,360	1,090	4.6
6	Frank A. Maselli.....	*1,005,752	289,380	2,970	29.0
7	Groton Bridge Company.....	97,635	0	0	0
8	Pittsburg-Eastern Company.....	1,433,817	20,100	370	1.4
10	Mosier & Summers.....	1,126,718	26,460	9,250	2.3
11	Fort Orange Construction Co.....	1,359,475	18,800	2,900	1.4
15	Atlantic, Gulf & Pacific Co.....	*1,507,770	0	0	0
16	United Construction Company.....	63,473	0	0	0
17	The Scofield Company.....	835,725	0	0	0
18	O'Brien & Hoolihan Contracting Company.....	859,460	0	0	0
19	Great Lakes Construction Company	1,000,497	0	0	0
25	Atlantic, Gulf & Pacific Company..	1,754,236	0	0	0
27	Kinser Construction Company.....	972,210	0	0	0
34	M. Fitzgerald.....	20,612	0	0	0
	Totals.....	\$15,352,639	\$1,041,610	\$31,690	

\* As affected by alterations in force to date.

In table dated January 1, 1908, we find 21 contracts in force covering 127.149 miles, 20 of which were actually worked. The total amount of work done to January 1, 1908, was \$3,257,910.

January 1, 1908.

Contract No.	CONTRACTOR.	TOTAL VALUE OF WORK.			Percentage of work done to date.
		Put under contract.	Done to January 1, 1908.	Done during December, 1907.	
1	Empire Engineering Corporation...	*\$605,008	\$338,690	.....	56.0
2	The Ferguson Contracting Company	*902,145	459,470	\$29,870	50.8
3	Sundstrom & Stratton.....	*677,019	527,050	3,940	77.8
4	Empire Engineering Corporation...	*725,065	213,880	500	29.4
5	Empire Engineering Corporation...	*375,872	125,820	200	33.5
6	Frank A. Maselli.....	*1,022,601	491,990	17,340	48.0
7	Groton Bridge Company.....	97,537	34,860	3,630	35.7
8	Pittsburg-Eastern Company.....	*1,434,755	145,640	4,800	10.1
10	Mosier & Summers.....	*1,107,610	96,570	6,740	8.7
11	Fort Orange Construction Company.	1,359,475	227,930	8,690	16.8
12	Stewart-Kerbaugh-Shanley Co. . . .	3,391,716	0	0	0
14	Acme Engineering Contracting Co. .	2,935,763	10,710	8,220	.4
15	Atlantic, Gulf & Pacific Company..	*1,507,770	177,450	1,940	11.8
16	United Construction Company.....	63,473	0	0	0
17	The Scofield Company.....	*836,643	57,560	1,480	6.9
18	O'Brien & Hoolihan Contracting Company.....	*861,599	113,210	10,670	13.1
19	Great Lakes Construction Company.	1,000,497	50,700	7,800	5.1
25	Atlantic, Gulf & Pacific Company..	1,754,236	111,830	1,980	6.4
27	Kinser Construction Company.....	*972,210	60,010	6,450	6.2
34	M. Fitzgerald.....	*22,449	14,540	0	54.8
35	Gilmour-Horton-Allen Company...	739,261	0	0	0
Totals.....		\$22,392,704	\$3,257,910	\$114,250	

\* Includes all alterations in force to date.

In table dated January 1, 1909, we find 36 contracts in force on the canal covering 194,911 miles and one contract for water supply, namely, No. 55, of which 33 were actually under construction. The total amount of work done to January 1, 1909, was \$8,701,223.

January 1, 1909.

Contract No.	CONTRACTOR.	TOTAL VALUE OF WORK.			Percentage of work done to date.
		Put under contract.	Done to January 1, 1909.	Done during December, 1908.	
1	Empire Engineering Corporation...	*\$603,898	\$449,310	.....	74.0
2	The Ferguson Contracting Company	*906,896	694,390	0	76.7
3	Sundstrom & Stratton.....	*657,273	581,830	\$3,560	88.6
4	Empire Engineering Corporation...	*729,568	446,980	5,080	61.2
5	Empire Engineering Corporation...	*375,872	125,820	0	33.5
6	Frank A. Maselli.....	*1,024,257	710,020	13,190	69.2
7	Groton Bridge Company.....	*101,930	82,540	10,140	81.0
8	Pittsburg-Eastern Company.....	*1,505,362	448,890	6,920	29.8
9	Thos. Crimmins Contracting Co....	*747,301	123,610	12,300	16.5
10	Mosier & Summers.....	*1,103,023	248,980	25,400	22.5
11	Fort Orange Construction Company	*1,354,864	531,910	7,500	39.3
12	Stewart-Kerbaugh-Shanley Co....	*3,391,894	477,510	31,380	14.1
13	Penn Bridge Company.....	23,674	0	0	.....
14	Acme Engineering and Contracting Company.....	*2,947,838	762,030	72,560	25.8
15	Atlantic, Gulf & Pacific Company..	*1,523,820	817,320	12,790	53.6
16	United Construction Company.....	*69,077	5,170	2,520	7.6
17	The Scofield Company.....	*836,782	57,560	0	6.9
17	Alexander Murdoch.....	*†(806,455)	269,140	32,890	33.4
18	O'Brien & Hoolihan Contracting Company.....	*855,002	325,270	3,300	38.0
19	Great Lakes Construction Company.	*891,401	171,870	12,600	19.3
25	Atlantic, Gulf & Pacific Company..	*1,717,649	524,430	4,360	30.5
26	Lake Erie Dredging Company.....	59,795	9,640	0	16.1
27	Kinser Construction Company.....	*968,295	378,650	15,950	39.1
31	Casey & Murray.....	829,770	23,590	13,360	3.0
34	M. Fitzgerald.....	*22,449	22,303	0	Finished.
35	Gilmour-Horton-Allen Company....	*745,968	91,900	14,380	12.3
40	United Engineering and Contracting Company.....	2,166,298	0	0	0
41	Butler Brothers Hoff Company....	281,330	0	0	.....
45	Scott Brothers.....	467,514	139,690	22,550	29.9
46	Kinser Construction Company.....	1,212,833	0	0	.....
47	Crowell & Sherman Company.....	1,262,638	0	0	.....
55	Arthur McMullen.....	905,347	230	230	.....
60	Empire Engineering Corporation...	1,349,084	122,860	58,560	9.1
61	Cleveland & Sons Company.....	1,047,994	4,330	3,840	0.4
64	Empire Engineering Corporation...	1,290,492	38,710	22,900	3.0
66	Empire Engineering Corporation...	750,685	12,560	10,080	1.7
68	Shanley-Morrissey, Incorporated...	1,018,323	2,170	2,170	0.2
Totals.....		\$35,746,136	\$8,701,223	\$420,560	

\* Includes all alterations in force to date.

† Relet, not included in total.

The table dated January 1, 1910, shows 56 contracts in force on the canal covering 316 miles, including one contract for construction of a dam and reservoir for the water supply of the canal. On 43 contracts construction has been in progress during the year. On the remaining contracts the time since the letting of the work has been occupied in obtaining or building the necessary machinery for executing the work involved.

The approved estimate for work done to January 1, 1910, is shown to be \$16,291,315.

January 1, 1910.

Contract No. †	CONTRACTOR.	TOTAL VALUE OF WORK.			Per-centage of work done to January 1, 1910.
		Put under contract.	Done to January 1, 1910.	Done during December, 1909.	
1	Empire Engineering Corporation...	*\$580,424	\$466,470	0	80.4
2	Ferguson Contracting Company...	*946,106	694,390	0	73.4
2E	Holler & Shepard.....	†*(261,668)	0	0	0.0
3	Sundstrom & Stratton.....	*657,273	633,290	0	96.3
4	Empire Engineering Corporation...	*729,568	680,100	\$8,730	93.3
5	Empire Engineering Corporation...	*156,941	125,820	0	80.2
6	Frank A. Maselli.....	*1,026,550	903,040	14,640	88.0
7	Groton Bridge Company.....	*101,930	99,080	0	Finished.
8	Pittsburg-Eastern Company.....	*1,516,789	716,100	6,790	47.3
9	Thomas Crimmins Contracting Co..	*760,751	362,360	17,170	47.6
10	McDermott Contracting Company...	*1,111,965	443,100	15,650	39.8
11	Fort Orange Construction Company..	*1,354,864	779,890	8,680	57.5
12	Stewart-Kerbaugh-Shanley Co.....	*3,514,819	897,980	0	25.6
13	Penn Bridge Company.....	*28,126	5,810	4,890	20.7
14	Acme Engr'g & Contract'g Company	*2,964,989	1,655,670	44,200	55.7
15	Atlantic Gulf & Pacific Company...	*1,460,595	967,300	5,040	66.3
16	United Construction Company.....	*69,077	5,380	0	7.8
17	The Scofield Company.....	*842,613	57,560	0	6.9
17	Alexander Murdoch.....	†*(812,287)	474,110	16,390	58.4
18	O'Brien & Hoolihan Contracting Co.	*856,252	436,810	18,830	51.0
19	Great Lakes Construction Company..	*891,401	397,230	18,450	44.6
20A	Houston Barnard.....	490,592	0	0	0.0
20B	S. Pearson & Son, Inc.....	933,194	750	420	0.1
20C	American Pipe & Construction Co..	585,720	0	0	0.0
20D	American Pipe & Construction Co..	2,681,040	0	0	0.0
23	Millard & Lupton Company.....	*1,888,638	23,630	8,360	1.3
25	Atlantic, Gulf & Pacific Company...	*1,706,205	987,490	6,980	57.9
26	Lake Erie Dredging Company.....	*40,057	32,830	380	82.0
27	Kinser Construction Company.....	*723,269	378,650	0	52.3
29	Maryland Dredging & Contract'g Co.	683,714	62,270	4,120	9.1
30	Acme Engineering & Contract'g Co..	2,591,666	6,660	6,240	0.3
31	Casey & Murray.....	*829,306	358,590	15,760	43.2
32	Penn Bridge Company.....	46,797	11,930	6,170	25.5
33	Penn Bridge Company.....	199,640	0	0	0.0
34	M. Fitzgerald.....	*22,449	22,258	0	Finished.
35	Gilmour-Horton-Allen Company.....	*707,186	238,930	8,510	33.8
36	J. D. Miller.....	\$44,800	0	0	0.0
38	Henry Tosh & Son.....	*16,870	16,287	0	Finished.
40	United Engr'g & Contract'g Co.....	*2,166,298	284,030	35,500	13.1
41	Butler Bros. Construction Company.	*281,330	114,970	11,790	40.8
42	Shanley-Morrissey, Inc.....	1,163,625	65,810	17,060	5.6
43	M. A. Talbott Company.....	1,320,560	0	0	0.0
44	Scott Brothers.....	1,748,679	0	0	0.0
45	Scott Brothers.....	*469,881	393,810	13,420	83.8
46	Kinser Construction Company.....	1,212,833	212,340	23,210	17.5
47	Crowell-Sherman-Stalter Company..	*1,273,071	218,000	12,200	17.1
53	Scott Brothers.....	166,735	30,110	11,640	18.0
54	Scott Brothers.....	250,590	0	0	0.0
55	Arthur McMullen.....	*905,347	353,830	13,720	39.0
60	Empire Engineering Corporation...	*1,448,598	629,350	42,220	43.5
61	Cleveland & Sons Company.....	1,047,994	132,260	12,360	12.6
64	Empire Engineering Corporation...	*1,327,039	259,680	15,400	19.5
66	Empire Engineering Corporation...	*803,617	211,290	8,080	26.3
68	Shanley-Morrissey, Inc.....	1,016,382	444,070	17,040	43.7
69	I. A. Hodge & Co.....	240,061	0	0	0.0
70	Shanley-Morrissey, Inc.....	779,636	0	0	0.0
71	Shanley-Morrissey, Inc.....	1,561,119	0	0	0.0
72	Shanley-Morrissey, Inc.....	1,192,758	0	0	0.0
	Total.....	\$54,138,329	\$16,291,315	\$470,040	.....

\* Includes all alterations in force to date.

† Relet — not included in total.

‡ Contract not yet signed

A study of these tables shows the rate of increase in contracts let and construction work done expressed in money value, as follows:

Previous to January 1, 1906, the work done was estimated at.....	\$330,120
During the year 1906 at.....	711,490
During the year 1907 at.....	2,216,300
During the year 1908 at.....	5,443,313
During the year 1909 at.....	7,590,092

From the above statement it appears that the amount of work being done, as shown by the estimates, is rapidly increasing and that for the year 1909 it amounted to \$7,590,092, which is approximately equal to 87 per cent. of all work done previous to that year and exceeds the amount of construction for the year 1908 by about 40 per cent.

The largest monthly estimates for the year 1909 were for work done in August and September, amounting respectively to \$1,016,170 and \$1,003,140.

Using the total amount of money involved in all of the contracts in force to date and in the total of all estimates for work done to January 1, 1910, as a basis of comparison, it may be estimated that there is completed approximately 30 per cent of the work now under contract. In comparing the total of January 1, 1909, with that of January 1, 1910, it may be noticed that there are four contracts on which there has been an exceptionally large amount of work done during the year. Of these contracts, Contract No. 14 is credited with the largest amount, \$893,640, followed by Contract No. 60, which is credited with \$506,490, by Contract No. 25 credited with \$463,000 and Contract No. 68 credited with \$441,900, making a total for these four contracts of \$2,305,090.

The excavation of all classes of material to date equals 26,195,000 cubic yards at a cost of \$8,975,000, and at an average price per cubic yard of 34 cents. Of the total excavation to date approximately 11,000,000 cubic yards have been made the past year.

Approximately 418,000 cubic yards of all classes of concrete have been placed during the past year making a total of concrete placed to January 1, 1910, of 806,700. The total cost of concrete placed is approximately \$5,260,000 which gives an average of \$6.52 per cubic yard.

The balance of the work done to date equals \$2,157,000 approximately and includes forming embankment, iron and steel construction and miscellaneous items.

The excavation to date has amounted to approximately 54 per cent. and the concrete to approximately 32 per cent. of the total value of the work.

The following table shows the quantities of work done to date as separated into the different contract items:



TOTAL AMOUNT OF ALL KINDS OF CONSTRUCTION WORK, TO JANUARY 1, 1910.

Similar kinds of work are grouped under one heading; an enumeration of the items grouped is shown in the foot-notes.

CONTRACT NUMBER.	Excavation. <i>a</i>	Embankment. <i>b</i>	Concrete. <i>c</i>	Dry stone work. <i>d</i>	Saved lumber. <i>e</i>	Round timber.	Piles.	Iron and steel. <i>f</i>	Iron and steel. <i>g</i>	Miscellaneous items of work. <i>h</i>	Miscellaneous items. <i>i</i>	Extra and un-specified work. <i>j</i>	Extra and un-specified work. <i>k</i>
1.	<i>Cu. yds.</i> 691,940	<i>Cu. yds.</i> 24,657	<i>Cu. yds.</i> 3,608	<i>Cu. yds.</i> 13,589	<i>Ft. B. M.</i> 85,724	<i>Lins. ft.</i> 65,343	<i>No.</i> 9	<i>Lbs.</i> 308	0	\$288	0	\$7,834	0
2.	426,125	58,420	82,910	0	26,440	0	1,488	375,792	\$1,626	28,156	\$3,368	7,374	\$28,568
2E.	0	0	0	0	0	0	0	0	0	0	0	0	0
3.	830,138	110,371	34,321	28,721	54,716	0	16	184,595	495	6,338	1,181	17,763	37,076
4.	2,718,619	83,398	10,990	54,369	1,149,422	533,783	2,647	213,534	0	35,513	1,818	281	1,257
5.	901,601	10,649	1,770	518	56,457	0	36	0	0	2,862	153	0	0
6.	1,857,188	34,835	3,663	5,624	0	0	0	0	0	560	15,467	23	0
7.	0	0	111	0	139,617	0	0	1,859,128	0	1,000	4,611	101	0
8.	227,920	37,141	58,286	8,712	303,560	0	13,754	386,215	28,755	682	5,460	139	0
9.	393,167	190,871	5,125	22,223	44,398	0	135	1,063,883	0	9,080	6,369	3,490	0
10.	278,470	19,390	25,601	4,933	80,400	0	0	252,624	5,200	100	4,824	1,198	0
11.	546,457	201,383	90,793	2,245	228,199	0	333	379,974	0	1,336	6,705	0	0
12.	2,155,493	18,927	1,894	650	64,090	0	121	612,533	0	6,234	1,359	329	0
13.	0	0	0	0	0	0	0	154,989	0	0	4	0	0
14.	454,681	73,082	157,414	13,988	433,282	0	1,872	335,960	43,047	70	1,632	3,477	0
15.	2,301,360	12,706	41,374	781	146,894	0	5,120	221,358	23,068	300	27	5,500	0
16.	0	0	0	0	9,267	0	0	111,687	0	0	4	0	0
17.	132,836	18,357	46,091	14,843	134,915	0	1,768	230,079	21,712	200	673	853	0
18.	432,087	160,768	25,756	959	23,985	0	240	77,867	23,818	2,200	1,155	12,184	0
19.	1,304,823	12,943	10,688	33	982,307	15,832	46	256,803	0	252	332	4,038	0
20A.	0	0	0	0	0	0	0	0	0	0	0	0	0
20B.	889	0	0	48	0	0	0	0	0	49	0	0	0
20C.	0	0	0	0	0	0	0	0	0	0	0	0	0
20D.	0	0	0	0	0	0	0	0	0	0	0	0	0
23.	78,638	196	0	0	0	0	0	0	0	258	750	0	0
25.	3,597,265	9,623	19,339	3,187	914,873	0	1,127	74,455	0	1,400	15	550	0
26.	94,456	0	0	0	0	0	0	0	0	10	0	0	0
27.	920,187	30,514	18,866	0	84,819	0	419	82,820	0	1,189	125	7,174	7,711
29.	215,845	80,462	684	0	19,900	0	64	9,456	0	1,460	250	0	0
30.	15,344	8,607	0	0	0	0	0	0	0	90	0	0	0
31.	104,995	4,043	35,265	3,539	53,900	2,598	0	177,039	443	170	2,413	451	0
32.	0	0	0	0	11,420	0	0	0	11,116	0	0	0	0
33.	0	0	0	0	0	0	0	0	0	0	0	0	0
34.	0	0	195	3	0	0	0	377,532	0	0	3,893	59	0

TOTAL AMOUNT OF ALL KINDS OF CONSTRUCTION WORK, TO JANUARY 1, 1910 (Concluded).  
 Similar kinds of work are grouped under one heading; an enumeration of the items grouped is shown in the foot-notes.

CONTRACT NUMBER.	Excavation. <sup>a</sup>	Embankment. <sup>b</sup>	Concrete. <sup>c</sup>	Dry stone work. <sup>d</sup>	Sawed lumber. <sup>e</sup>	Round timber.	Piles.	Iron and steel. <sup>f</sup>	Iron and steel. <sup>g</sup>	Miscellaneous items of work. <sup>h</sup>	Miscellaneous construction items. <sup>i</sup>	Extra and unspecified work. <sup>j</sup>	Extra and unspecified work. <sup>k</sup>
	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Cu. yds.</i>	<i>Ft. B. M.</i>	<i>Lin. ft.</i>	<i>No.</i>	<i>Lbs.</i>					
35	49,860	0	19,493	5	15,860	0	0	385,473	\$16,047	0	\$2,825	\$761	0
38	12,885	0	315	846	1,986	0	0	111,433	0	\$200	1,308	348	0
40	354,780	0	0	0	0	0	0	0	0	1,500	5,797	0	0
41	437,477	372,628	203	0	0	0	0	0	0	1,120	159	0	0
42	308,290	58,462	0	0	0	0	0	0	0	193	0	0	0
43	0	0	0	0	0	0	0	0	0	0	0	0	0
44	0	0	0	0	0	0	0	0	0	0	0	0	0
45	244,917	30,937	30,878	2,869	51,096	0	106	311,281	16,846	30,492	5,527	867	0
46	1,235,244	0	0	0	5,000	0	0	9,310	0	2,350	0	0	0
47	1,048,237	1,057	335	11	5,570	586	76	1,973	18	4,370	791	0	0
53	24,517	0	1,687	0	0	0	0	340	0	540	3	0	0
54	0	0	0	0	0	0	0	0	0	0	0	0	0
55	231,636	83,218	32,222	0	9,643	177	0	273,221	4,730	1,225	8	0	0
60	617,033	360,993	11,531	18,557	47,036	0	287	978,601	3,350	20,775	12,391	4,958	0
61	160,313	76,694	11,547	4,500	6,477	0	0	52,389	0	3,480	224	0	0
64	196,239	135,311	7,874	3,387	8,898	0	83	717,693	750	19,084	1,813	108	0
66	159,803	60,505	7,552	1,944	41,605	0	151	662,590	0	7,037	5,780	1,373	0
68	433,561	34,170	17,213	0	31,224	1,892	0	12,043	626	5,117	500	0	0
	26,195,332	2,416,308	806,694	211,096	5,272,980	620,211	29,898	957,648	\$201,647	\$192,380	\$99,714	\$81,233	\$74,612

NOTE.—*a* Includes earth and rock excavation and grubbing. *b* Includes embankment and puddle. *c* Includes concrete (all classes) and grouted filling. *d* Includes ballast, dry retaining wall, wash-wall, lining, riprap and stone filling in cribs. *e* Includes sawed lumber (all kinds) wooden sheet-piling and sheeting and bracing. *f* Includes chains, iron castings (plain or machined), iron pipe and specials, metal reinforcement, steel and iron fastenings, steel castings, structural steel and wrought iron. *g* Includes items usually paid for by the piece—fender fastenings, gate-boists, lock-gates, needle-dams, valves, valve-seats and valve-supports. *h* Includes balling and draining, clearing, extra labor on forms and finishing concrete, lock-gates, concrete, dressing concrete, maintaining traffic, overhaul and removing revetment. *i* Includes channeling, cut stone work, iron railings, paving (all kinds), removing existing structures, raising bridge superstructures, repairs to local sewers, etc., sidewalks and curbs, steel sheet-piling, trenching and backfilling, vitrified pipe and wooden fencing and drilling both holes. *j* At contract prices. *k* At cost, plus a fixed percentage.

## FUTURE WORK.

## PROGRESS OF PLANS AS BEING PREPARED.

In the early part of this report, there have been shown tables and descriptive lists of the contracts in force and the mileage of canal involved.

The following is a descriptive list of contracts for future work, in which is stated the state of progress of the plans therefor.

In addition it may be stated that there are 67.7 miles on which the plans are practically completed, and nine miles on which the plans are 75 per cent. done, and that the plans for the balance of the work are well under way.

*Erie Canal.*

Contract No. 22. Bridges on Contract No. 12. Plans 60 per cent. completed.

Contract No. 74. Dredging Mohawk river from Hudson river to Contract No. 2-E. Plans now undergoing revision.

Contract No. 48. Prism excavation, construction of two locks, an aqueduct over Canandaigua outlet, etc., from about one-third of a mile west of Creager's bridge to be about one mile west of Geneva street, Lyons. Plans 25 per cent. completed.

Contract No. 76. Prism excavation, including two deep rock cuts west of Lyons, construction to Newark, six highway bridges, guard gate, etc., from about one mile west of Geneva street, Lyons, to about one and one-half miles west of Newark. Plans under way.

Contract No. 77. Prism excavation, construction of lock, three highway bridges, etc., from about one and one-half miles west of Newark to about one-half mile west of Macedon-Palmyra town line. Plans 85 per cent. completed.

Contract No. 59. Excavating a channel in the Genesee river and constructing a moveable dam at Rochester. Plans under way.

Contract No. 62. Prism excavation and construction of culverts, bridge substructures, etc., between Orleans-Monroe county line and point near Eagle Harbor bridge. Plans returned from Advisory Board and undergoing revision.

Contract No. 65. For work from west end of Contract No. 9 near Beal's bridge to east end of Contract No. 64, including aqueduct at Oak Orchard creek crossing. Plans nearly completed.

Contract No. 67. Construction of Locks No. 34 and 35, approaches, etc., at Lockport. Plans returned from Advisory Board for further study.

#### *Champlain Canal.*

Contract No. 28. Constructing an apron at Crocker's Reef dam. Plans returned from Advisory Board without approval, immediate construction not being necessary.

Contract No 56. Glens Falls Feeder. Work on plans suspended.

#### *Oswego Canal.*

Contract No. 37. Constructing dams and other structures between Three Rivers and Oswego, except in the portions covered by Contracts Nos. 10, 35, and 53. Plans under way.

#### *Water Supply.*

Contract No. 51. Constructing a diverting dam and feeder to Nine Mile Creek watershed. Plans 92 per cent. completed.

Contract No. 90. Constructing several hydro-electric power plants and certain electrical equipments on Erie, Champlain and Oswego canals. Plans completed.

#### *Plans Before Canal Board.*

Contract No. 21. Excavating 2.43 miles, Erie canal, constructing bridge abutments, guard lock, etc., between the Genesee river and east end of Contract No. 6.

Contract No. 24. Constructing guard gate at Crocker's Reef.

Contract No. 39. Dredging channel in Oswego river, constructing stream entrances, excavating through Hinmansville cut-off, etc., between Three River Point and Fulton, except portion covered by Contract No. 53.

Contract No. 73. Dredging Hudson river from Stillwater to Northumberland.

Contract No. 78. Constructing a dike on Oswego river near Fulton.

#### *Ready for Letting.*

Contract No. 49. Constructing the canal from Yellow Mills bridge west to Monroe county line, including Lock No. 30, etc.

Contract No. 50. Constructing dam, waste gates and spillway across West Canada Creek at Hinckley.

Contract No. 75. Construction of three guard gate superstructures on Contracts Nos. 60, 61 and 64.

As mentioned in previous reports, the Board deems it proper to once more call attention to the reviving interest in the various projects of inland transportation by water throughout the United States which is shared by the citizens of our State as evidenced in voting \$7,000,000 to enlarge the Cayuga and Seneca canals to Barge canal dimensions.

By reference to the table on page 45 showing the comparative progress of canal work from January 1, 1906, to January 1, 1910, it will be seen that the progress of work on the Barge canal contracts has been good throughout the past year, and it is still the belief of the Board that if the citizens throughout the various sections of the State will investigate the progress of construction work on the Barge canal, taking into account the preparation of plans and difficulties of administration, they will be satisfied with the progress and will realize that it is being efficiently and honestly managed.

The Board desires to acknowledge the courteous assistance of the various State officials and all with whom they have been associated in the performance of their duty.

Respectfully submitted,

EDWARD A. BOND,

*Chairman.*

M. G. BARNES,

ALFRED BROOKS FRY,

JOSEPH RIPLEY,

THOMAS W. SYMONS.



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**Minutes and Proceedings**

OF THE

**Advisory Board of Consulting Engineers**

FOR

**BARGE CANAL**

**January 1, 1909, to January 1, 1910**

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Minutes and Proceedings of the Advisory Board of Consulting  
Engineers for the Year Ending December 31, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., January 5, 1909.

Board met at 12 o'clock noon.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY,  
Col. SYMONS.

Minutes of the meeting of December 31, 1908, were read, corrected and approved.

The Chairman reported that a conference had been held between members of the Board and the Superintendent of Public Works, in regard to bids received and now under consideration for Contract No. 20, and that a further conference on this subject with said officials was proposed in the near future.

The Chairman presented a communication dated January 2, 1909, from the State Engineer requesting the withdrawal of Appropriation Maps No. 1118 and 1129 on Contract No. 55; said official desiring to give further consideration to the value of the property covered by said Appropriation Maps and the need of at present acquiring the same in behalf of the State.

The Chairman was requested to return said Appropriation Maps.

Recess at 1:30 P. M.

Board reconvened at 2:30 P. M., the same members being present.

The Chairman presented a letter addressed to this Board under date of December 23, 1908, by a committee representing the interests of the village of Albion, N. Y., also a resolution of the ex-

ecutive committee of the Chamber of Commerce adopted at a meeting held December 24, 1908; both referring to the location of the Barge Canal, through the village of Albion.

After a consideration of the matter, it was, on motion

*Resolved*, That the Chairman be requested to acknowledge the receipt of this letter and resolution, giving the writers the information that the matter is now being considered by the State Engineer's Department.

*Further Resolved*, That copies of this letter and of the resolution be forwarded to the State Engineer, suggesting that they be considered in connection with the study now being made of the route of the Barge Canal through the village of Albion.

The State Engineer met with the Board and discussed the proposed status of contract work at present progressing as well as that of plans for future work until adjournment.

Board adjourned at 6:15 P. M., to meet at 9:30 A. M., January 6, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., January 6, 1909.

Board met at 9:30 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY,  
Col. SYMONS.

Minutes of the meeting of January 5, 1908, were read, corrected and approved.

The Board discussed the matter of deepening the channel of the upper portion of the Hudson river, approximately from New Baltimore to Troy, so that a depth of twelve feet might be obtained under the lowest navigable conditions, including neap-tides and strong northwest winds, and in connection with this matter, it was, on motion

*Resolved*, That Col. Thomas W. Symons, Engineer Corps, U. S. A., retired, member of this Board, be requested to take up with the Federal authorities the question of deepening the channel of the Hudson river from deep water below New Baltimore to Waterford, N. Y., so that a minimum depth of twelve feet may be secured at the lowest navigable stage of said river, giving due weight to the possible combination of neap-tides and strong and prolonged northwest winds, looking also to a minimum navigable width of channel that shall not be less than 200 feet.

The Board discussed with the State Engineer, Special Deputy State Engineer William B. Landreth and Division Engineer Guy Moulton, the conditions disclosed by actual excavation on Contract No. 12, Erie canal. After a consideration of said conditions and giving due weight to personal examinations made by members of the Board on the site of said contract, on motion, the following preamble and resolution were adopted:

*Whereas*, Actual excavation on certain portions of Contract No. 12, Erie canal, Stewart-Kerbaugh-Shanley Co., contractors, has disclosed the fact that it will be necessary, because of unstable material encountered, to flatten the slopes of the proposed canal prism and to set further back the spoil banks from the upper portion of said prism than was originally contemplated, therefore, be it

*Resolved*, That it be recommended to the State Engineer that he cause to be prepared and executed in the usual manner, an alteration agreement which shall provide that between stations hereafter named the spoil banks shall be set back to a distance of not less than fifty feet from the top of slopes of canal prism with slopes of 1 on 4, and that said prism shall be excavated so as to provide for an ultimate minimum bottom width of seventy-five feet with slopes of 1 on 4. Said alteration agreement to provide for setting back the spoil banks said distance of not less than fifty feet between stations as follows:

Station 2867 to 2904 set back spoil banks on one or both sides as hereafter directed.

Station 3024 to 3035 set back spoil banks on south side as directed.

Station 3184 to 3232 set back spoil banks on one or both sides as hereafter directed.

Station 3293 to 3302 set back spoil banks on one side as directed.

Station 3657 to 3680 set back spoil banks on one side as directed.

Station 3720 to 3729 set back spoil banks on one side as directed.

Station 4073 to 4090 set back spoil banks on one side as directed.

Station 4170 to 4178 set back spoil banks on one side as directed.

*Further Resolved,* That the proposed alteration include all questions that are in sight or pending between the contractor and the State Engineer's Department, particularly in reference to the location of spoil on this contract.

The Chairman presented a letter dated January 6, 1909, from the State Engineer, transmitting Appropriation Maps No. 1137 and 1138 on Contract No. 60, and No. 1139 and 1140 on Contract No. 64, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved,* That Appropriation Maps No. 1137 and 1138 on Contract No. 60, and No. 1139 and 1140 on Contract No. 64, received from the State Engineer, January 6, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said Appropriation Maps, and the Engineer-Secretary was requested to forward duplicate copies of the Chairman's approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated January 6, 1909, transmitting Appropriation Maps No. 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1171, 1172, 1173 and 1174 on Contract No. 64. Also, Maps No. 1092, 1093 and 1094, on Contract No. 25, said maps superseding No. 222, 223, 448, 449 and 453 previously appropriated. Also, Maps No. 1085 and 1089 on Contract No. 31, said maps superseding No. 948 and 949.

The maps having been examined and compared with the original contract, it was, on motion

*Resolved*, That Appropriation Maps No. 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1171, 1172, 1173, and 1174 on Contract No. 64, received from the State Engineer, January 6, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps, and also to forward duplicate copies of his approval to the Superintendent of Public Works and the State Engineer.

Regarding Appropriation Maps No. 1092, 1093 and 1094 on Contract No. 25, superseding No. 222, 223, 448, 449 and 453, and Maps No. 1085 and 1089 on Contract No. 31, superseding No. 948 and 949, action on these maps was postponed pending the return from the Canal Board of the original appropriation maps.

Board adjourned at 4 P. M. to meet at 9:30 A. M. Monday, January 18, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., January 18, 1909.

Board met at 9:30 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. FRY,  
Col. SYMONS.

The Chairman stated that Mr. Brackenridge was on a tour of inspection of Barge Canal contracts and would arrive later in the day.

Minutes of the meeting of January 6, 1909, were read, corrected and approved.

Mr. M. G. Barnes made a verbal report of an inspection made by him of Contracts No. 8 and 17.

Mr. A. B. Fry made a verbal report of an inspection made by him of work under Contracts No. 12 and 31.

Col. T. W. Symons made a verbal report of an inspection of work under Contracts No. 6, 19, 40 and 66.

In compliance with a resolution passed by the Board at its meeting of January 6, 1909, Col. T. W. Symons made the following report, which was approved by the Board:

“ROCHESTER, N. Y., *January 17, 1909.*

*Hon. E. A. Bond, Chairman, Adv. Bd. of Consulting Engineers,  
Albany, N. Y.:*

DEAR SIR.—I am not yet prepared to make a full report on the matter of the Hudson River Improvement referred to me by resolution at the last meeting of the Board, but circumstances seem to make it advisable for me to make a report at the present time, which I do as follows:

First: From information received, it is certain that between deep water below New Baltimore and Troy there are a number of places where a depth of 12 feet is not available at all stages during the season of navigation, and at which places fully laden canal boats would be prevented from passing.

Second: There will probably be no General River and Harbor Bill passed by Congress this winter, but it is believed that a small bill will be passed providing funds for continuing some important works, maintenance, and for preliminary examinations and plans and survey, in such particular instances as may be designated in the bill.

Third: I believe that efforts should now be made to have included in the probable River and Harbor Bill an item looking to a preliminary examination and plans and surveys for deepening the river from New York to Waterford, so as to provide a depth of 12 feet at all stages during the season of navigation. The proper wording of the item in the list providing for these examinations I conceive to be as follows:

‘Hudson River, New York, with the view of providing a navigable channel which shall be not less than 200 feet wide and 12 feet deep at all times during the season of navigation, from deep water in the lower river to Waterford, including a lock and dam at Troy suitable in size for all probable purposes of navigation and commerce.’ If this item is included all the necessary

work can be done, preliminary to an appropriation for it under the next general or regular River and Harbor Bill.

It is suggested that this matter be brought to the attention of the Governor, the State Engineer and the Superintendent of Public Works in the hope that they will take the necessary steps to bring it to the attention of our Senators and Representatives in Washington, urging that the action as outlined be taken, unless something better be suggested.

With the approval of the Board, I will take the matter up personally with the River and Harbor Committee of the House of Representatives and Commerce Committee of the Senate.

Very respectfully,

(Signed.) THOMAS W. SYMONS."

It was on motion

*Resolved*, That a copy of the letter of Col. Thomas W. Symons, dated January 17, 1909, in regard to deepening the channel of the Hudson river from deep water below New Baltimore to Waterford, N. Y., be sent to the Governor, the State Engineer and the Superintendent of Public Works, with the statement that this recommendation meets the approval of the Advisory Board, and with the suggestion that immediate action be taken in the matter by the officials named, so as to get it before Congress at the earliest date possible.

Mr. Fry reported that he had availed himself of the authority to represent the Board at a conference held at Ottawa, Canada, January 15, 1909, with the Canadian Prime Minister, Sir Wilfred Laurier, the Minister of Public Works, and other officials in connection with the proposed Canadian enlargement of the Richelieu River Navigation System and the Chambly Canal to the same minimum dimensions as those proposed for the Barge Canals of the State of New York as regards depth and width of prism and length, width and depth of locks. Mr. Fry also reported that this conference had been attended by a delegation representing the Canal Association of Greater New York, at whose instance it had been called, and that there were also present representatives of transportation companies, paper manufacturing, lumber manufacturing, mining and other industrial interests of New York State. The Prime Minister stated that the

proposed enlargement of the Richelieu River System would be given full consideration, and directed that the work of preparing estimates, etc., in connection therewith be immediately begun by the Canadian Department of Public Works.

The Chairman presented a letter from the State Engineer dated January 18, 1909, accompanied by a report from William B. Landreth, Special Deputy State Engineer, dated January 11, 1909, in regard to extra or unspecified work order dated September 30, 1908, on Contract No. 2, The Ferguson Contracting Co., Contractor, covering the furnishing of material and all work incidental to paving the approaches to the Saratoga Avenue bridge at Waterford, N. Y., within the property lines of the State of New York, amounting to \$5,661. This matter was considered by the Board at its meeting of December 18, 1908, and was returned to the State Engineer for certain information covered in the report of Mr. Landreth.

On motion

*Resolved*, That the final account for work done on Contract No. 2, by The Ferguson Contracting Co., under extra or unspecified work order dated September 30, 1908, amounting to \$5,661, submitted to this Board by the State Engineer December 16, 1908, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated January 18, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 32, Champlain Canal, for the consideration of the Board.

The plans, specifications and estimate were examined and discussed by the Board, and it was on motion

*Resolved*, That the plans, specifications and estimate for Contract No. 32, Champlain Canal, for constructing lock gates, needle beams, needles and lock valves on Contracts No. 3, 25 and 27, sheets 1 to 15 inclusive, submitted to this Board by the State Engineer January 18, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of such approval and notify the State Engineer of such action.



At the meeting of January 6, 1909, the following Appropriation Maps were submitted by the State Engineer, namely: Maps No. 1092, 1093 and 1094 on Contract No. 25, said maps superseding parcels No. 222, 223, 448, 449 and 453 previously appropriated. Also Maps No. 1088 and 1089 on Contract No. 31, said maps superseding No. 948 and 949.

These maps having since been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1092, 1093 and 1094 on Contract No. 25, said maps superseding parcels No. 222, 223, 448, 449 and 453 on Contract No. 25, and also Maps No. 1088 and 1089 on Contract No. 31, said maps superseding No. 948 and 949, received from the State Engineer January 6, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps and to forward duplicate copies of his approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated January 8, 1909, transmitting Appropriation Map No. 1071 on Contract No. 10, for the consideration of the Board.

The map having been examined and compared with the original contract, it was on motion

*Resolved*, That Appropriation Map No. 1071 on Contract No. 10 received from the State Engineer December 19, 1908, returned to the State Engineer December 31, 1908, and resubmitted to this Board January 11, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation map and to forward duplicate copies of his approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated January 12, 1909, transmitting Appropriation Maps No. 1192 and 1196 on Contract No. 19, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contract, it was on motion

*Resolved*, That Appropriation Maps No. 1192 and 1196 on Contract No. 19 received from the State Engineer January 13, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps and to forward duplicate copies of his approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated January 9, 1909, transmitting Appropriation Maps No. 1175 on Contract No. 45; No. 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183 on Contract No. 66, and No. 1170, on Contract No. 64, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1175 on Contract No. 45; No. 1176, 1177, 1178, 1179, 1180, 1181, 1182 and 1183 on Contract No. 66, and 1170 on Contract No. 64, received from the State Engineer January 11, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps and to forward duplicate copies of his approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated January 18, 1909, transmitting Appropriation Maps No. 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1210, 1211, 1212, 1213, 1214, 1215 and 1216 on Contract No. 9; No. 1175 on Contract No. 19; No. 1191 on Contract No. 60; No. 1185 on Contract No. 61, and No. 1186, 1187, 1188, 1189, 1190, 1193, 1194 and 1195 on Contract No. 66, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1210, 1211, 1212, 1213, 1214, 1215 and 1216 on Contract No. 9; No. 1175 on Contract No. 19; No. 1191 on Contract No. 60; No. 1185 on Contract No. 61, and No. 1186, 1187, 1188, 1189, 1193, 1194 and 1195 on Contract No. 66, received from the State Engineer January 18, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps and to forward duplicate copies of his approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented two letters from P. J. McWeeney, Financial Clerk, Department of Public Works, transmitting estimates for work done on Barge Canal contracts to January 1, 1909, as follows:

- Estimate No. 45, Contract No. 3.
- Estimate No. 36, Contract No. 4.
- Estimate No. 40, Contract No. 6.
- Estimate No. 19, Contract No. 7.
- Estimate No. 24, Contract No. 8.
- Estimate No. 8, Contract No. 9.
- Estimate No. 29, Contract No. 11.
- Estimate No. 9, Contract No. 12.
- Estimate No. 14, Contract No. 14.
- Estimate No. 20, Contract No. 15.
- Estimate No. 2, Contract No. 16.
- Estimate No. 8, Contract No. 17.
- Estimate No. 22, Contract No. 18.
- Estimate No. 19, Contract No. 19.
- Estimate No. 18, Contract No. 25.
- Estimate No. 19, Contract No. 27.
- Estimate No. 3, Contract No. 31.
- Estimate No. 12, Contract No. 35.

- Estimate No. 7, Contract No. 45.
- Estimate No. 1, Contract No. 55.
- Estimate No. 5, Contract No. 60.
- Estimate No. 2, Contract No. 61.
- Estimate No. 3, Contract No. 64.
- Estimate No. 2, Contract No. 66.
- Estimate No. 1, Contract No. 68.

The estimates were examined and the regular certificate signed by the Board and attached thereto.

Board adjourned at 2 P. M., to meet at 10 A. M., January 19, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., January 19, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE.

The Chairman presented a letter from the State Engineer dated January 19, 1909, transmitting Appropriation Map No. 1217 on Contract No. 46 for the consideration of the Board.

The maps having been examined and compared with the original plans for said contract, it was on motion

*Resolved*, That Appropriation Map No. 1217 on Contract No. 46 received from the State Engineer January 19, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation map, and to forward duplicate copies of said approval to the Superintendent of Public Works and the State Engineer. It was on motion

*Resolved*, That the Chairman be requested to ask the State Engineer to inform the Board as to whether the item of embank-

ment the Board has heretofore questioned on Contracts No. 18 and 25 has been eliminated from the estimates of January 1, 1909, in each of said contracts.

Various questions connected with the relation of the Hinckley Dam to the Consolidated Water Company of Utica, the Hinckley Fibre Company and all riparian owners between said Hinckley Dam and the junction of the West Canada Creek with the Mohawk River at Herkimer, were discussed by the Board, and it was arranged with the State Engineer that he would attend a hearing, and the Chairman was requested to serve notice on as many of the parties in interest as could be reached, that there would be a hearing on this matter at which time the State Engineer would be present; that the Chairman would invite the Attorney-General, the Superintendent of Public Works and all of the parties in interest that wished to be represented, to attend a meeting to be held at the office of the Advisory Board at Albany, N. Y., Wednesday, February 3, 1909, beginning at 2 P. M.

Recess at 1 P. M.

Board reconvened at 2 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated January 19, 1909, transmitting for the consideration of the Board six copies of Alteration No. 1, Contract No. 60, Section 9, Erie Canal, with three sheets of drawings accompanying the same. This is a proposed changed location for a waste weir near Spencerport, N. Y., it having been found that the culvert under the present canal might, in time of extreme flood, be too small to carry the drainage area adjacent thereto, in addition to the maximum flow of water in the canal, and was brought about with a desire to change the waste weir from the south side of the canal to the north side.

This matter having heretofore been considered by the Board, was again taken up in its various details, and it was on motion

*Resolved*, That Alteration No. 1, Contract No. 60, providing for changing the location of the waste weir at Spencerport, N. Y.,

at an increased cost to the State of \$4,875.50, submitted to this Board by the State Engineer January 19, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated January 19, 1909, transmitting six copies of a supplemental agreement covering Alteration No. 5, Contract No. 14, for the consideration of the Board, excavation at the side of the dam having developed the fact that the rock at each end of the dam as originally designed was of such an unstable character as to necessitate extending the dam at each end to solid rock.

The papers were examined, and it was on motion

*Resolved*, That Alteration No. 5, Contract No. 14, providing for extending Dam "C" at Crescent to solid rock at each end, at an increased cost to the State of \$3,646.02, submitted to this Board by the State Engineer January 19, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman also presented a letter from the State Engineer dated January 19, 1909, stating for the information of the Board that the item of embankment on Contracts No. 18 and 25, in regard to which the Board had heretofore raised some question, had been eliminated from the estimates of January 1, 1909, on each of these contracts. After receiving such notice the Board signed the usual certificates for the estimates on Contracts No. 18 and 25 in the regular form.

Board adjourned at 4.15 p. m., to meet at 12 m. Wednesday, February 3, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., February 3, 1909.

Board met at 12.15 P. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY.

Minutes of meetings of January 18 and 19, 1909, were read, corrected and approved.

Recess at 1 P. M.

Board reconvened at 2 P. M., the same members being present.

A hearing before the Board was held relative to riparian rights of property owners along the shores of West Canada creek between the Mohawk river and Hinckley dam. The parties appearing and being heard were representatives of the Middleville Electric Light Co., Nelson-Dedich Felt Co., L. H. Goodman and Gordon Law, Middleville; Michigan Condensed Milk Co., and Monteith Morey of Newport; Gem Knitting Co., Standard Furniture Co., Herkimer Business Men's Association, and George Mourse Helmer, Herkimer; International Paper Co., New York city; Utica Gas and Electric Co., Utica; Hinckley Fibre Co., Hinckley; Consolidated Water Company of Utica, and the city of Utica, some of whom presented briefs and others promised to file briefs within the next week. The rights of various riparian owners in connection with the building of a dam on the headwaters of West Canada creek were discussed in various phases. The matter was laid on the table later to be taken under advisement and referred to the Attorney-General for an opinion.

The Chairman presented a letter from the State Engineer dated January 27, 1909, transmitting Appropriation Maps No. 1156 on Contract No. 55; No. 1219, 1221 and 1222 on Contract No.

61; No. 1223, 1225, 1226, 1227, 1228 and 1229 on Contract No. 60, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1156 on Contract No. 55; Maps No. 1219, 1221 and 1222 on Contract No. 61; Maps No. 1223, 1225, 1226, 1227, 1228 and 1229 on Contract No. 60, received from the State Engineer January 28, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated January 21, 1909, transmitting Appropriation Maps No. 1209 on Contract No. 9; No. 1230 superseding No. 1110 on Contract No. 66, and 1220 superseding No. 1104 on Contract No. 61, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Map No. 1209 on Contract No. 9; Map No. 1230 superseding Map No. 1110 on Contract No. 66, and Map No. 1220 superseding Map No. 1104 on Contract No. 61, received from the State Engineer January 21, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said Appropriation Maps No. 1209, 1220 and 1230. The Engineer-Secretary was directed to properly stamp Maps No. 1104 and 1110 and forward duplicate copies of the Chairman's approval of Maps. No. 1209, 1220 and 1230 to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated February 1, 1909, transmitting Appropriation Maps No. 1246,



1247, 1248, 1249 and 1250 on Contract No. 66; No. 1241 and 1242 on Contract No. 47, and No. 1224 and 1236 on Contract No. 60, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1246, 1247, 1248, 1249 and 1250 on Contract No. 66; Maps No. 1241 and 1242 on Contract No. 47, and Maps No. 1224 and 1236 on Contract No. 60, received from the State Engineer February 2, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the Superintendent of Public Works and the State Engineer.

The Chairman presented a letter from the State Engineer dated February 2, 1909, transmitting Appropriation Maps No. 1239 on Contract No. 1; No. 1238, 1254 and 1256 on Contract No. 61, and No. 1251, 1252, 1253 and 1255 on Contract No. 60, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1238, 1254 and 1256 on Contract No. 61; Maps No. 1251, 1252, 1253 and 1255 on Contract No. 60, received from the State Engineer February 3, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the Superintendent of Public Works and the State Engineer.

Regarding Appropriation Map No. 1239 on Contract No. 1, action on this map was deferred, pending an examination of the plans for said contract.

The Chairman presented a letter from the State Engineer dated January 25, 1909, transmitting copy of extra or unspecified work order dated January 23, 1909, Contract No. 12, for the information of the Board.

The Engineer-Secretary was directed to acknowledge its receipt and place it on file.

The Chairman presented a letter from the State Engineer dated January 30, 1909, relative to the alteration of plans for Contract No. 60 so as to provide for certain vertical walls at Spencerport, N. Y.

The letter was read and laid on the table for an answer as to questions as to the estimated cost.

The Chairman presented a letter from the State Engineer dated January 29, 1909, inclosing a letter from Hon. Thomas Wheeler, Mayor of the city of Utica, relative to the use of water from Hinckley reservoir. Also a letter from Hon. Frederick C. Stevens, Superintendent of Public Works, relative to a hearing of riparian owners along the shores of West Canada creek. Both letters were read and ordered filed.

The Chairman presented a letter from the State Engineer dated February 1, 1909, relative to the method of construction of embankments on Contract No. 41. The Board sees no objection to permission being given to contractor to make the experiment. However, it believes good results will not be obtained thereby, and suggests that better results would probably be obtained by placing a track on each side of the proposed embankment instead of one track in the center as suggested.

Board adjourned at 6.30 P. M., to meet at 9.30 A. M., February 4, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., February 4, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY.

The Chairman presented a letter from the State Engineer dated February 3, 1909, transmitting Appropriation Maps No. 1243, 1244, 1245 and 1257 on Contract No. 38, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contract, it was, on motion

*Resolved*, That Appropriation Maps No. 1243, 1244, 1245 and 1257 on Contract No. 38, received from the State Engineer February 3, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated February 2, 1909, transmitting Appropriation Map No. 1240 on Contract No. 1, for the consideration of the Board.

The map having been examined and compared with the original plans for said contract, it was, on motion

*Resolved*, That Appropriation Map No. 1240 on Contract No. 1, received from the State Engineer February 3, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of this Board of said appropriation map, and the Engi-

neer-Secretary was directed to forward duplicate copies of the Chairman's approval to the Superintendent of Public Works and the State Engineer. It was, on motion

*Resolved*, That Appropriation Map No. 1239 on Contract No. 1, received from the State Engineer February 3, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Board discussed the statements produced at a hearing given February 3, 1909, to certain riparian owners on West Canada creek, said hearing being with regard to the construction of a proposed reservoir at Hinckley, N. Y., with special reference to the application of the Consolidated Water Company of Utica, N. Y., to be provided with intakes through said dam for its corporate purposes. It was, on motion

*Resolved*, That the Engineer-Secretary be requested to prepare a brief for the consideration of the Attorney-General, said brief to describe so far as known the existing typographic, hydraulic and engineering conditions obtaining at or near Hinckley, N. Y., that affect in any material way the construction of a proposed reservoir for Barge canal purposes at said place.

*Further Resolved*, That after the preparation of said brief it be submitted to the State Engineer, with the request that he refer the same to the Attorney-General for an opinion as to whether or not the State can legally provide intakes in said proposed dam at Hinckley, in order that the city of Utica and surrounding territory may be supplied with water through said intakes via the system or plant of the Consolidated Water Company of Utica, N. Y.

*Further Resolved*, That the Attorney-General also be requested to give an opinion as to the rights of the Hinckley Fibre Company with relation to said proposed dam and reservoir at Hinckley, N. Y.

The Chairman presented a letter from the State Engineer dated February 3, 1909, transmitting six copies of Alteration No. 1, Contract No. 45, and sheet No. 55 of said contract plans, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 1, Contract No. 45, providing for the substitution of standard retaining wall for concrete-capped crib dock at Lock 24, at an increased cost to the State of \$134.55, submitted by the State Engineer February 3, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

It is to be noted that, although the adjustment of items and quantities on Contract No. 45 due to Alteration No. 1 will show a slight increase in cost, the net results to the State will be a decrease in cost, due to the reduction in amount of excavation on the adjoining Contract No. 12.

The Chairman presented a letter from W. A. Dickinson, secretary Lockport Board of Trade, Lockport, N. Y., dated January 16, 1909, relative to the matter of dispensing with the bridge over the Erie canal in the city of Lockport.

The Engineer-Secretary was directed to acknowledge the receipt of the same and forward the letter to the State Engineer for consideration.

The Chairman presented a letter from the State Engineer dated January 30, 1909, relative to silting on Lake Champlain, which was read and placed on file for future reference.

The Chairman presented a letter from the State Engineer dated February 4, 1909, transmitting a letter from William B. Landreth, Special Deputy State Engineer, dated February 4, 1909, relative to the matter of spoil areas on Contract No. 61, stating that the contractors had requested that the spoil areas shown on the contract be changed in certain instances to the south side of the canal; these letters asking advice of the Board relative to the matter.

After consideration with the State Engineer and the Special Deputy State Engineer, and due to the fact that the contract was already let, it was, on motion

*Resolved*, That it is recommended to the State Engineer that where high embankments occur on the north side of the canal along this contract spoil be placed back of said embankments as shown on the plans. Where, however, the higher embankments occur on the south side and the contractor prefers the spoil placed on that side of the canal, his request should be granted where such change will not increase the cost to the State.

The Chairman presented a letter from the State Engineer dated February 4, 1909, transmitting six copies of Alteration No. 5, Contract No. 18, and sheets No. 78, 79, 80 and 81 of said contract plans, for the consideration of the Board.

The alteration was duly considered, and it was, on motion

*Resolved*, That the words "which the contractors were under contract obligations to maintain," be added to the first sentence of the "Explanation" of said alteration, making this sentence as follows:

"The explanation for the change proposed is that according to original plans the proposed canal would have cut across and into the line of the Rocky Rift Feeder, and would have cut off the supply of water for navigation which the contractors were under contract obligations to maintain."

It was then, on motion

*Resolved*, That with the above correction Alteration No. 5, Contract No. 18, providing for changing location of center line between stations 4008 and 4029 be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated February 3, 1909, transmitting plans and specifications, as revised, for Contract No. 20, for the consideration of the Board.

The plans and specifications were discussed, and it was, on motion

*Resolved*, That the plans and specifications, as revised, for Contract No. 20, providing for dredging a channel in the Mohawk

river and performing work incidental thereto between Rexford Flats and Little Falls, length 58.7 miles, sheets 1 to 145 inclusive, submitted to this Board by the State Engineer February 3, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated February 3, 1909, transmitting six copies of Alteration Order No. 2, Contract No. 60, and sheet No. 62 of said contract plans, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration Order No. 2, Contract No. 60, providing for the substitution of retaining wall for slope wall on north side of canal at Spencerport, at an increased cost to the State of \$10,024.24, submitted by the State Engineer to this Board February 3, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Mr. G. F. Stickney, Supervising Engineer, informally presented various matters relative to Alteration Order No. 2, Contract No. 12, and also matters relating to Alteration Order No. 7, Contract No. 2, all of which were discussed by the Board.

Recess at 1:30 p. m.

Board met at 2:30 p. m., the same members being present.

Mr. G. F. Stickney, Supervising Engineer, informally presented various matters relating to Alteration Order No. 5, Contract No. 10, which were discussed by the Board, which recommended that channeling be done as proposed by the alteration except where the rock excavation is less than six feet in depth and at Lock No. 2.

Mr. Stickney also submitted a plan relating to the break on Contract No. 27 on the Champlain canal, which outlined the construction of a previously proposed dyke, in order to make the naviga-

tion of the present Champlain canal possible during the coming season.

It was suggested that this work be done under an extra work order.

Board adjourned at 3:20 P. M., to meet in Rochester, N. Y., the morning of February 5, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Rochester, N. Y., February 5, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. BRACKENRIDGE,

Mr. FRY.

The Board was joined by Hon. Frank M. Williams, State Engineer; D. A. Watt, Supervising Engineer; T. W. Barrally, Division Engineer, and T. J. Morrison, Resident Engineer.

Supervising Engineer Watt and Division Engineer Barrally presented maps and profiles and all data in regard to the various lines south of the city of Rochester, and including the line through the river reaching into the city to a point at or near the Johnson and Seymour dam.

E. A. Fisher, city engineer of Rochester, appeared before the Board with maps, plans, cross-sections and suggested ideas as proposed by the city officials and members of the Chamber of Commerce regarding a harbor in the city of Rochester for Barge canal purposes.

All of these various maps, profiles, cross-sections and data in relation thereto were thoroughly discussed by the city engineer and the various State officials.



There was also an informal discussion of the proposed dam and lock on Contract No. 69 on the Hudson river above Waterford and below Mechanicville.

At 3 p. m. at the rooms of the Rochester Chamber of Commerce, there was a public hearing, at which time all of the citizens who desired to be heard presented their views in regard to the crossing of the Genesee river at South Park by the Barge canal, harbor facilities in Rochester, and the retention of certain portions of the present Erie canal in the western portion of the city.

After the citizens had fully presented their views there were remarks by the State Engineer, the Chairman and other members of the Advisory Board.

Board adjourned at 5 p. m., to meet at 12 m., Tuesday, February 16, 1909, at its office in State Hall, Albany, N. Y.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., February 16, 1909.

Board met at 12 m.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. FRY,  
Col. SYMONS.

Minutes of meetings of February 3d and 4th held in Albany and of February 5, 1909, held at Rochester, were read, corrected and approved.

Recess at 1 p. m.

Board reconvened at 2.30 p. m., the same members being present.

Mr. M. G. Barnes presented a report dated February 16, 1909, relative to proposed alterations to Contract No. 10.

After considerable discussion the subject was referred to the State Engineer for a report thereon.

The Chairman presented a letter dated February 9, 1909, from Arthur McMullen, contractor, Park Row Building, New York city, relative to Contract No. 55, which was read and ordered filed.

The Chairman presented a letter from the State Engineer dated February 15th, transmitting five copies each of final accounts for work done under extra or unspecified work orders on contracts as follows:

- Contract No. 66, order dated January 30, 1908,
- Contract No. 19, order dated December 11, 1908,
- Contract No. 1, order dated December 19, 1908,

for the consideration of the Board.

The final accounts were carefully examined and discussed by the Board, and it was, on motion.

*Resolved*, That the final account for work done under extra or unspecified work order dated January 30, 1908, on Contract No. 66, amounting to \$382.80, submitted to this Board by the State Engineer February 15, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That the final account for work done under extra or unspecified work order dated December 11, 1908, on Contract No. 19, amounting to \$650, submitted to this Board by the State Engineer February 15, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That the final account for work done under extra or unspecified work order dated December 19, 1908, on Contract No. 1, amounting to \$8.40, submitted to this Board by the State Engineer February 15, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the International Paper Co., New York city, dated February 13, 1909, relative to the diversion of waters of West Canada creek by the construction of the proposed dam at Hinckley, N. Y., which was read and ordered filed.

The Chairman presented a letter from Sanford T. Church, attorney, Albion, N. Y., dated February 11, 1909, relative to the use of water from the proposed Barge canal for power purposes at Albion, N. Y. As the Chairman had already written Mr. Church on the subject, the letter was ordered filed.

The Chairman presented a letter from the State Engineer dated February 9, 1909, transmitting Appropriation Maps No. 1237 on Contract No. 60 and No. 1258 on Contract No. 20. Also two letters dated February 15, 1909, transmitting Appropriation Maps No. 1267, 1268 and 1269 on Contract No. 61, No. 1259, 1260, 1261 and 1262 on Contract No. 60, No. 1263 on Contract No. 47, No. 1265 and 1266 on Contract No. 66 and No. 1271 on Contract No. 12, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion.

*Resolved*, That Appropriation Maps No. 1237 on Contract No. 60 and No. 1258 on Contract No. 20, received from the State Engineer February 10, 1909; Maps No. 1267, 1268 and 1269 on Contract No. 61, No. 1259, 1260, 1261 and 1262 on Contract No. 60, No. 1263 on Contract No. 47, No. 1265 and 1266 on Contract No. 66, and 1271 on Contract No 12, received from the State Engineer February 15, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated February 15, 1909, transmitting Appropriation Maps No. 1231, 1232, 1233, 1234 and 1235 on Contract No. 40, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1231, 1232, 1233, 1234 and 1235 on Contract No. 40, received from the State Engi-

neer February 16, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated February 15, 1909, transmitting five copies of a final account for work done under extra or unspecified work order dated June 26, 1908, on Contract No. 19, for the consideration of the Board.

The final account was carefully examined, and it was, on motion

*Resolved*, That the final account for work done under extra or unspecified work order dated June 26, 1908, on Contract No. 19, amounting to \$360, submitted to this Board by the State Engineer February 15, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated February 16, 1909, transmitting information relative to proposed alterations on Contracts No. 15 and 25, which were discussed in part, the remainder being held for further consideration.

Board adjourned at 5.40 P. M., to meet at 10.30 A. M., February 17, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., February 17, 1909.

Board met at 10.30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. FRY,

Col. SYMONS.

Minutes of the meeting of February 16, 1909, were read, corrected and approved.

The Board discussed a proposed bill to be submitted to the Legislature, looking toward the establishment of a board on harbors and terminals in connection with the Barge Canal and decided the action it would take thereon.

Several owners of water power at Fulton, N. Y., appeared before the Board, asking for information as to the conditions under Contract No. 10.

The Chairman presented a letter from W. B. Landreth, Special Deputy State Engineer, dated February 16, 1909, transmitting copy of Extra or Unspecified Work Order dated February 11, 1909, on Contract No. 7, for the information of the Board, which was discussed and ordered filed.

The Chairman presented a letter from the State Engineer dated February 16, 1909, transmitting Alteration Order No. 3, Contract No. 19, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration Order No. 3, Contract No. 19, providing for the construction of a pier foundation and the relaying of the masonry in the pier of the Delaware Avenue bridge at Tonawanda, N. Y., at no increased cost to the State, submitted to this Board by the State Engineer February 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Board then resumed the discussion of certain suggested changes in plans and specifications for Contracts No. 15 and No. 25, Champlain Canal, begun at the meeting of February 16, 1909, and made certain recommendations thereon.

The Chairman presented a letter from the State Engineer dated February 17, 1909, transmitting six copies of Alteration Order No. 1, Contract No. 31, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration Order No. 1, Contract No. 31, providing for changing the specifications for concrete aggregates, at

no increased cost to the State, submitted to this Board by the State Engineer February 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated February 17, 1909, transmitting six copies each of Alteration Order No. 8 and No. 9, Contract No. 10, for the consideration of the Board.

After a discussion of the matter, the following preamble and resolution were adopted:

*Whereas*, The Canal Board by its resolution of February 10, 1909, has rescinded its previous resolution relative to Alteration No. 5, Contract No. 10, Oswego Canal; and

*Whereas*, The desirable features of Alteration No. 5, Contract No. 10, are embodied in Alteration Orders No. 8 and 9, Contract No. 10, this day presented by the State Engineer to this Board, be it therefore

*Resolved*, That this Board rescinds its approval of said Alteration No. 5, Contract No. 10. It was on motion

*Resolved*, That Alteration Order No. 8, Contract No. 10, providing for changing size and grade of drain at south end of said contract, at an increased cost to the State of \$9,830.19, submitted to this Board by the State Engineer February 17, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval. It was, on motion

*Resolved*, That Alteration Order No. 9, Contract No. 10, providing for changing details of construction and specifications for concrete aggregate, at a decreased cost to the State of \$5,444.94, submitted to this Board by the State Engineer February 17, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated February 17, 1909, transmitting six copies of Alteration Order No. 2, Contract No. 35, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration Order No. 2, Contract No. 35, providing for changing location of Lock No. 7; leaving part of tow-path wall in place; providing for fillets in lock culverts and to admit moving weigh lock house, at a decreased cost to the State of

\$67,425.45, submitted to this Board by the State Engineer February 17, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented letters dated February 15, 16 and 17, 1909, from P. J. McWeeney, financial clerk, Department of Public Works, transmitting estimates for work done on Barge Canal contracts to February 1, 1909, as follows:

Estimate No. 34,	Contract No. 1.
Estimate No. 42,	Contract No. 2.
Estimate No. 46,	Contract No. 3.
Estimate No. 37,	Contract No. 4.
Estimate No. 41,	Contract No. 6.
Estimate No. 20,	Contract No. 7.
Estimate No. 25,	Contract No. 8.
Estimate No. 9,	Contract No. 9.
Estimate No. 29,	Contract No. 10.
Estimate No. 30,	Contract No. 11.
Estimate No. 10,	Contract No. 12.
Estimate No. 15,	Contract No. 14.
Estimate No. 21,	Contract No. 15.
Estimate No. 3,	Contract No. 16.
Estimate No. 9,	Contract No. 17.
Estimate No. 23,	Contract No. 18.
Estimate No. 20,	Contract No. 19.
Estimate No. 19,	Contract No. 25.
Estimate No. 6,	Contract No. 26.
Estimate No. 20,	Contract No. 27.
Estimate No. 4,	Contract No. 31.
Estimate No. 13,	Contract No. 35.
Estimate No. 1,	Contract No. 38.
Estimate No. 8,	Contract No. 45.
Estimate No. 1,	Contract No. 46.
Estimate No. 2,	Contract No. 55.
Estimate No. 6,	Contract No. 60.
Estimate No. 3,	Contract No. 61.
Estimate No. 4,	Contract No. 64.
Estimate No. 3,	Contract No. 66.
Estimate No. 2,	Contract No. 68.

The estimates were examined and the regular certificate of the Board signed by the members present, and attached thereto.

The Board then informally discussed with W. B. Landreth, Special Deputy State Engineer, certain changes relative to Contracts No. 66 and 67.

The Board recommended that this work proceed under Extra or Unspecified Work Order until an Alteration Order covering same could be prepared, and the Chairman was authorized to sign said Alteration Order upon its presentation.

The location and construction of a dyke on Contract No. 27 was also informally discussed with Mr. Landreth. The general location of the dyke was approved but the top was recommended to be not less than sixteen feet in width.

Board adjourned at 4.40 P. M., to meet at 10.40 A. M., at Bagg's Hotel, Utica, N. Y., Monday, March 1, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held February 25, 1909.

Board met at 1.30 P. M.

Present: Mr. BOND, *Chairman*,  
MR. BARNES,  
MR. FRY.

Minutes of the meeting of February 17, 1909, were read, corrected and approved.

The Chairman presented a letter from Hon. A. B. Steele of Herkimer, N. Y., dated February 18, 1909, relative to the route of the Barge canal near that place. The letter was read and referred to the State Engineer.

The Chairman presented a letter dated February 24, 1909, from William B. Landreth, Special Deputy State Engineer,



transmitting copy of Extra or Unspecified Work Order dated February 24, 1909, on Contract No. 66, for the information of the Board. The letter was read and ordered filed.

The Chairman presented two reports from Mr. M. G. Barnes dated February 25, 1909, relative to work on Contracts No. 60 and 66 which were read and discussed by the Board.

On motion

*Resolved*, That the report of Mr. M. G. Barnes dated February 25, 1909, relative to work on the western end of Contract No. 66, be referred to the State Engineer with the recommendation, if practicable, for the removal of the over-burden of earth mentioned in said report.

*Further Resolved*, That a copy of said report be forwarded to the Superintendent of Public Works accompanied by a letter calling his attention to the vital necessity of keeping all the water out of the hydraulic race above the excavation in question.

The Chairman presented a letter from the State Engineer dated February 24, 1909, transmitting Appropriation Maps No. 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289 and 1290 on Contract No. 31; No. 1308, 1310, 1311 and 1312 on Contract No. 40; No. 1270, 1277 and 1184 on Contract No. 61; No. 1313 and 1299 on Contract No. 64, and 1264 and 1304 on Contract No. 66, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289 and 1290 on Contract No. 31; No. 1308, 1310, 1311 and 1312 on Contract No. 40; No. 1270, 1277 and 1184 on Contract No. 61, and No. 1264 and 1304 on Contract No. 66, received from the State Engineer February 24, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

Regarding Appropriation Maps No. 1299 and 1313 on Contract No. 64, it was, on motion

*Resolved*, That Appropriation Maps No. 1299 and 1313 on Contract No. 64 received from the State Engineer February 24,

1909, be hereby approved in accordance with Chapter 196, Laws of 1908, providing that the said appropriation of the telephone lines belonging to the Bell Telephone Company and to the Independent Union Telephone Company, named in said maps, is found to be proper and legal by the Attorney-General.

*Further Resolved*, That Appropriation Maps No. 1299 and 1313 on Contract No. 64, received from the State Engineer February 24, 1909, be returned to the State Engineer with the request that the opinion of the Attorney-General be asked as to the legality of such appropriation.

The Chairman presented a letter from the State Engineer dated February 24, 1909, transmitting Appropriation Maps No. 1278 on Contract No. 12; No. 1291, 1305, 1306 and 1309 on Contract No. 40; No. 1300, 1301 1302 and 1303 on Contract No. 47; No. 1294, 1295, 1296, 1297 and 1298 on Contract No. 60, and No. 1292 and 1293 on Contract No. 61, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1278 on Contract No. 12; No. 1291, 1305, 1306 and 1309 on Contract No. 40; No. 1300, 1301, 1302 and 1303 on Contract No. 47; No. 1294, 1295, 1296, 1297 and 1298 on Contract No. 60, received from the State Engineer February 25, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman presented a letter from the State Engineer dated February 20, 1909, transmitting five copies each of final accounts for work done under Extra or Unspecified Work Order dated September 30, 1908, on Contract No. 19, and for work done under Extra or Unspecified Work Order dated January 23, 1909, on Contract No. 12, for the consideration of the Board.

The final accounts were carefully examined by the Board, and on motion the following resolutions were adopted:

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated September 30, 1908, on Contract No. 19, amounting to \$1,417.65, submitted to this Board by

the State Engineer February 20, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated January 23, 1909, on Contract No. 12, amounting to \$328.51, submitted to this Board by the State Engineer February 20, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The board then gave a hearing to certain power owners of Fulton, N. Y., at which the State Engineer and the Superintendent of Public Works were present.

The Board adjourned at 4.30 P. M., to meet at 10.40 A. M., at Bagg's Hotel, Utica, N. Y., Monday, March 1, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held at Bagg's Hotel, Utica, N. Y., March 1, 1909.

Board met at 10.40 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. FRY.

In company with Hon. Frank M. Williams, State Engineer, H. W. De Graff, Deputy State Engineer, William B. Landreth, Special Deputy State Engineer, D. A. Watt, Supervising Engineer, and S. M. Savage, Engineer-Secretary, the Advisory Board, at the request of the State Engineer, met in Utica for the purpose of meeting a committee of the Utica Chamber of Commerce to discuss with said committee the location of the Barge canal through what is known as the New River Channel to the north of and opposite the city of Utica, as against the location of the canal some few hundred feet to the north of said New River Channel.

The several State officers were met by the committee above-named and escorted to the rooms of the Utica Chamber of Com-

merce, where the views of the various citizens of Utica were expressed, and a general informal discussion of the situation was joined in by all the parties present.

Recess at 1.30 p. m.

Board reconvened at 2.15 p. m., the same members being present.

The Chairman presented a letter from the State Engineer dated February 27, 1909, transmitting Appropriation Maps No. 1315 on Contract No. 40; No. 1314 on Contract No. 47, and No. 1272, 1273, 1274, 1275 and 1276 on Contract No. 25, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1315 on Contract No. 40; No. 1314 on Contract No. 47, and No. 1272, 1273, 1274, 1275 and 1276 on Contract No. 25 received from the State Engineer February 27, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated March 1, 1909, transmitting six copies of Alteration Order No. 4, Contract No. 9, for the consideration of the Board.

The Alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration Order No. 4, Contract No. 9, providing for changing the position of wash walls on south side slopes of prism, at no increased cost to the State, submitted to this Board by the State Engineer March 1, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 1, 1909, submitting plans, specifications and Engineer's preliminary estimate of cost for Contract No. 42, providing for constructing the Erie canal from the Herkimer-Oneida county line to a point just east of the Oriskany road, sheets 1 to 78 inclusive, length 8.96 miles, for the consideration of the Board.

The plans, specifications and estimate were examined and discussed by the Board but held for further investigation.

William B. Landreth, Special Deputy State Engineer, presented informally some matters relative to the specifications for bronzes which were discussed, but final action thereon was deferred pending further investigation and discussion.

The Board then informally discussed with the State Engineer and the Special Deputy State Engineer and others, matters pertaining to the specifications for use of metal reinforcement.

Board adjourned at 3.10 P. M., to meet at the call of the Chairman.

Upon adjournment some members of the Board, the State Engineer and his Deputies proceeded to Phoenix to look over the proposed location of a lock and structures connected therewith in that village.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., March 16, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Col. SYMONS.

Minutes of meetings of February 25 and March 1, 1909, were read, corrected and approved.

The Chairman presented a letter from M. A. Mesler of Gasport, N. Y., dated March 11, 1909, and a petition of the citizens of Gasport, dated February 13, 1909, relative to construction of vertical walls for the sides of the Barge canal through that village at such places as vertical walls now exist on the canal.

After some discussion, it was, on motion

*Resolved*, That the petition of citizens of Gasport N. Y., dated February 13, 1909, relative to the construction of vertical walls at certain places in that village, be referred to the State Engineer with the suggestion that the matter be carefully examined for the purpose of formulating plans complying with the wishes of the citizens as nearly as may be practicable.

The Chairman presented a letter from Hon. A. B. Steele, of Herkimer, N. Y., relative to the route of the Barge canal near that place. The letter was read and ordered filed.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated March 3, 1909, transmitting copy of Extra or Unspecified Work Order dated February 26, 1909, to apply on Contract No. 66, for the information of the Board, both of which were read and ordered filed.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated March 2, 1909, relative to Contract No. 66, and keeping water from the "hydraulic race on south side of canal" at Lockport, N. Y. The letter was read and ordered filed.

The Chairman presented a copy of a letter to W. A. Brackenridge from H. C. Brainard, relative to dockage at Spencerport, N. Y. The Engineer-Secretary was directed to notify Mr. Brainard as to action of the Board thereon.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps, as follows:

March 5, 1909, Contract No. 14, Maps No. 1323, 1324 and 1325.

- March 5, 1909, Contract No. 40, Maps No. 1316, 1317, 1318, 1319 and 1320.
- March 6, 1909, Contract No. 60, Map No. 1322.
- March 8, 1909, Contract No. 55, Maps No. 1326, 1327, 1129, 1141, 1145, 1132, 1152, 1153, 1157 and 1159.
- March 8, 1909, Contract No. 19, Map. No. 1321.
- March 8, 1909, Contract No. 55, Maps No. 1328, 1329 and 1330.
- March 12, 1909, Contract No. 19, Maps No. 1336, 1337, 1338, 1339, 1340, 1341, 1342 and 1343.
- March 12, 1909, Contract No. 40, Maps No. 1332, 1333, 1334, 1335, 1375, 1376 and 1377.
- March 12, 1909, Contract No. 47, Maps No. 1357, 1358 and 1359 superseding 1242.
- March 12, 1909, Contract No. 41, Maps No. 1360, 1361 and 1362.
- March 12, 1909, Contract No. 60, Maps No. 1363, 1364, 1365, 1366, 1367 and 1369.
- March 12, 1909, Contract No. 61, Maps No. 1370, 1371, 1372 and 1373.
- March 12, 1909, Contract No. 66, Map No. 1374.

The maps having been examined and compared with the original plans for said contract, it was, on motion

*Resolved*, That Appropriation Maps No. 1323, 1324 and 1325 on Contract No. 14, and Maps No. 1316, 1317, 1318, 1319 and 1320 on Contract No. 40, received from the State Engineer March 5, 1909; Maps No. 1326, 1327, 1129, 1132, 1141, 1145, 1152, 1153, 1157 and 1159 on Contract No. 55, received from the State Engineer March 8, 1909; Map No. 1321 on Contract No. 19, and Maps No. 1328, 1329 and 1330 on Contract No. 55, received from the State Engineer March 9, 1909; Maps No. 1336, 1337, 1338, 1339, 1340, 1341, 1342 and 1343 on Contract No. 19; Maps No. 1357, 1358 and 1359 superseding No. 1242 on Contract No. 47; Maps No. 1360, 1361 and 1362 on Contract No. 41; Maps No. 1363, 1364, 1365, 1366, 1367 and 1369 on Contract No. 60; Maps No. 1370, 1371, 1372 and 1373 on Contract No. 61, Maps No. 1333, 1334, 1335, 1375 and 1377 on Contract No. 40; received from the State Engineer March 13, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

*Resolved*, That Appropriation Map No. 1376 on Contract No. 40, and No. 1374 on Contract No. 66, received from the State Engineer March 13, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and to the Superintendent of Public Works.

Regarding Appropriation Map No. 1322 on Contract No. 60, transmitted by letter of the State Engineer under date of March 6, 1909; it was recommended by the Board that this matter and correspondence be returned to the State Engineer with the suggestion that an investigation be made as to the advisability of building a vertical wall on the existing property of the State and avoiding the taking of the land belonging to private individuals covered by said appropriation map.

Also, that it be considered alternately on the basis of constructing a vertical wall 100 feet only in length, being 50 feet easterly and westerly from a point where a line drawn from the center of the coalshed at right angles to the axis of the canal would join the southern margin thereof.

Recess at 1 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Board held a conference with Hon. George Clinton of Buffalo, relative to certain matters in connection with progress of Barge canal work.

The Board then considered its Annual Report to the Governor for the year January 1, 1908, to January 1, 1909.

Board adjourned at 5 P. M., to meet at 9.30 A. M., March 17, 1909.



Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., March 17, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Col. SYMONS.

Minutes of the meeting of March 16, 1909, were read, corrected and approved.

The Board then took up with the Engineer-Secretary the brief called for by resolution of the Board adopted February 4, 1909, as follows:

“It was, on motion

“*Resolved*, That the Engineer-Secretary be requested to prepare a brief for the consideration of the Attorney-General, said brief to describe so far as known the existing topographic, hydraulic and engineering conditions obtaining at or near Hinckley, N. Y., that affect in any material way the construction of a proposed reservoir for Barge canal purposes at said place.

“*Further Resolved*, That after the preparation of said brief it be submitted to the State Engineer, with the request that he refer the same to the Attorney-General for an opinion as to whether or not the State can legally provide intakes in said proposed dam at Hinckley, in order that the city of Utica and surrounding territory may be supplied with water through said intakes via the system or plant of the Consolidated Water Company of Utica, N. Y.

“*Further Resolved*, That the Attorney-General also be requested to give an opinion as to the rights of the Hinckley Fibre Company with relation to said proposed dam and reservoir at Hinckley, N. Y.”

and with certain corrections, the same was approved.

The Chairman presented a letter from the State Engineer dated March 16, 1909, transmitting copy of a letter from William B. Landreth, Special Deputy State Engineer, under the same date, in regard to changing the elevation of wash walls on Contracts No.

60, 64 and 66. The wash walls on the above three contracts are under the same conditions as those on Contract No. 9 for which an alteration order was submitted to the Advisory Board at its meeting of March 1, 1909.

It was the opinion of the Board that the alternate suggested by Mr. Landreth, "that the contractor should be directed to proceed under the original contract," be approved.

After further consideration of this subject in relation to Contract No. 9, it was, on motion

*Resolved*, That the action of the Board of March 1, 1909, approving of the change on Contract No. 9, be rescinded and that the wash wall on said contract be built under the conditions governing in the original contract.

The Chairman presented a letter from P. J. McWeeney, Financial Clerk, transmitting estimates for work done to March 1, 1909, on Barge canal contracts as follows:

- Estimate No. 35, Contract No. 1.
- Estimate No. 43, Contract No. 2.
- Estimate No. 47, Contract No. 3.
- Estimate No. 38, Contract No. 4.
- Estimate No. 42, Contract No. 6.
- Estimate No. 21, Contract No. 7.
- Estimate No. 26, Contract No. 8.
- Estimate No. 30, Contract No. 10.
- Estimate No. 31, Contract No. 11.
- Estimate No. 11, Contract No. 12.
- Estimate No. 16, Contract No. 14.
- Estimate No. 22, Contract No. 15.
- Estimate No. 4, Contract No. 16.
- Estimate No. 10, Contract No. 17.
- Estimate No. 24, Contract No. 18.
- Estimate No. 21, Contract No. 19.
- Estimate No. 20, Contract No. 25.
- Estimate No. 7, Contract No. 26.
- Estimate No. 21, Contract No. 27.

- Estimate No. 5, Contract No. 31.
- Estimate No. 14, Contract No. 35.
- Estimate No. 2, Contract No. 38.
- Estimate No. 9, Contract No. 45.
- Estimate No. 2, Contract No. 46.
- Estimate No. 3, Contract No. 55.
- Estimate No. 7, Contract No. 60.
- Estimate No. 4, Contract No. 61.
- Estimate No. 5, Contract No. 64.
- Estimate No. 4, Contract No. 66.
- Estimate No. 3, Contract No. 68.

The estimates were carefully examined by the Board and the regular certificate, in duplicate, signed and attached to the following:

- Estimate No. 35, Contract No. 1.
- Estimate No. 47, Contract No. 3.
- Estimate No. 38, Contract No. 4.
- Estimate No. 42, Contract No. 6.
- Estimate No. 21, Contract No. 7.
- Estimate No. 26, Contract No. 8.
- Estimate No. 10, Contract No. 9.
- Estimate No. 30, Contract No. 10.
- Estimate No. 11, Contract No. 12.
- Estimate No. 16, Contract No. 14.
- Estimate No. 10, Contract No. 17.
- Estimate No. 21, Contract No. 19.
- Estimate No. 20, Contract No. 25.
- Estimate No. 5, Contract No. 31.
- Estimate No. 14, Contract No. 35.
- Estimate No. 2, Contract No. 38.
- Estimate No. 9, Contract No. 45.
- Estimate No. 2, Contract No. 46.
- Estimate No. 7, Contract No. 60.
- Estimate No. 4, Contract No. 61.
- Estimate No. 5, Contract No. 64.
- Estimate No. 4, Contract No. 66.
- Estimate No. 3, Contract No. 68.

There being no increase in the amount of work done since the last certificate of the Board to estimates on Contracts No. 2, 11, 15, 16, 18, 26, 27 and 55, these estimates were returned to the Superintendent of Public Works without certificates.

Recess at 1 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated March 16, 1909, submitting revised specifications for Contract No. 20, for dredging a channel in the Mohawk river and performing work incidental thereto between Rexford Flats and Little Falls, length 58.7 miles, sheets 1 to 145 inclusive, for the consideration of the Board.

After a careful examination and discussion of the specifications, it was, on motion

*Resolved*, That revised specifications for Contract No. 20, for dredging a channel in the Mohawk river and performing work incidental thereto between Rexford Flats and Little Falls, length 58.7 miles, sheets 1 to 145 inclusive, submitted to this Board by the State Engineer March 16, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and to notify the State Engineer of such action.

The Board then gave further consideration to Contract No. 42, submitted by the State Engineer March 1, 1909, and discussed at the meeting of the Board on that date. After a careful examination, it was, on motion.

*Resolved*, That the plans, specifications and Engineer's estimate for Contract No. 42, providing for constructing the Erie canal from the Herkimer-Oneida county line to a point just east of Oriskany road, length 8.96 miles, sheets 1 to 78 inclusive, submitted to this Board by the State Engineer March 1, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval and notify the State Engineer of such action.

The State Engineer submitted a preliminary layout for relocation of Lock No. 7, Champlain canal. After discussing the matter with the State Engineer, William B. Landreth, Special Deputy State Engineer, and G. F. Stickney, Supervising Engineer, it was, on motion

*Resolved*, That the relocation of Lock No. 7, Champlain canal, as indicated on sheet "A" presented to the Advisory Board March 17, 1909, be hereby approved.

*Further Resolved*, That so much of the guide wall as is located on present Contract No. 27, be left in abeyance pending further study as to foundations.

*Further Resolved*, That the Board approves of the approach walls at the lower end of the Junction lock being cut off at the eastern side of Argyle street, and deflected substantially as shown on the map.

*Further Resolved*, That it is recommended to the State Engineer that such alterations in Contracts No. 26 and 27 as are made necessary by the relocation of this lock and canal at this point be prepared at the earliest possible date.

The Chairman presented a letter from the State Engineer dated March 17, 1909, submitting plans, specifications and Engineer's estimate of cost for Contract No. 23, for the consideration of the Board.

Board adjourned at 6 P. M., to meet at 9.30 A. M., March 18, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., March 18, 1909.

Board met at 9:30 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Col. SYMONS.

Minutes of meeting of March 17, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated March 16, 1909, transmitting six copies of Alteration No. 2, Contract No. 35, superseding a similar alteration of the same number approved by the Board February 17, 1909. Also a letter from William B. Landreth, Special Deputy State Engineer, dated March 16, 1909, in which he states that upon further examination by himself and his subordinates it was found that part of the old canal retaining wall is in such poor condition that it is advisable to tear down and rebuild part of same, which action will increase the quantity of concrete affected in said alteration.

Upon representations above made by the Special Deputy State Engineer, it was, on motion

*Resolved*, That the Board rescinds its action of February 17, 1909, approving Alteration No. 2, Contract No. 35, as submitted to this Board by the State Engineer on that date.

It was, on motion

*Resolved*, That Alteration No. 2, Contract No. 35, providing for changing location of Lock No. 7; leaving part of towpath wall in place; providing for fillets in lock culverts and to omit moving Weigh Lock House, at a decreased cost to the State of \$46,898.45, submitted to this Board by the State Engineer, March 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 18, 1909, transmitting six copies of Alteration No. 5, Contract No. 15, for the consideration of the Board.

This subject had already been under consideration by different members of the Board in negotiations with the contractors with a view to adjusting all unsettled matters on this contract.

After a full discussion by the Board, it was, on motion

*Resolved*, That Alteration No. 5, Contract No. 15, providing for changing dimensions and sides of prism, and changes in embankment at certain points, at an estimated decreased cost to the

State of \$61,112, submitted to this Board by the State Engineer March 18, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 18, 1909, transmitting six copies of Alteration No. 3, Contract No. 60, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 3, Contract No. 60, providing for the construction of retaining wall for docking purposes at Adams Basin, N. Y., at an increased cost to the State of \$22,346.90, submitted to this Board by the State Engineer March 18, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 18, 1909, transmitting Appropriation Map No. 1332 on Contract No. 40, and Map No. 1378 on Contract No. 47, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Map No. 1332 on Contract No. 40, and Map No. 1378 on Contract No. 47, received from the State Engineer March 18, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated March 18, 1909, enclosing a letter from William B. Landreth, Special Deputy State Engineer, dated March 17th, relative to proposed specification for mental reinforcement in Barge canal contracts, for the consideration of the Board.

The Chairman presented a letter from the State Engineer dated March 18, 1909, transmitting copy of an opinion dated March 17th from Hon. Edward R. O'Malley, Attorney-General, relative to guard gate forming a part of Contract No. 3, for the information of the Board.

The Chairman was requested to reply thereto as follows:

“ALBANY, N. Y., March 18, 1909.

HON. FRANK M. WILLIAMS, *State Engineer and Surveyor:*

DEAR SIR.—I beg to acknowledge the receipt of your letter of March 18th, enclosing copy of an opinion of the Attorney-General in reference to the guard gate on Contract No. 3, and to state to you that this matter was discussed by the Advisory Board, and with the approval of said Board, submit the following for your consideration:

The original contract was amended by State Engineer Henry A. Van Alstyne on the advice of Attorney-General Julius M. Mayer. Previous to the above action of the State Engineer and Attorney-General, there had been prepared an Alteration Agreement No. 2 for the construction of the Crocker's Reef Guard Gate under the new conditions obtaining from the widening of the locks from 28 to 45 feet. The contractors for Contract No. 3 declined to do this work under the amended plans at the same unit prices as those covered in their contract, hence the State Engineer on the advice of the Attorney-General, as above mentioned, eliminated the above work from Contract No. 3.

The Board is of the opinion that it would be inadvisable to attempt now to require the contractor for Contract No. 3 to build and furnish the guard gate for which the specifications have been made, and believes that it would be very greatly to the interests of the State to let this work under a separate contract as hitherto proposed and recommended.

Very truly yours,

EDWARD A. BOND,

*Chairman.*”



The Chairman presented a letter from the State Engineer dated March 18, 1909, submitting plans, specifications and Engineer's estimate of cost for Contract No. 30, for constructing the river and land line from Little Falls to Sterling Creek, for the consideration of the Board.

Board adjourned at 1 P. M., to meet at the call of the Chairman.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., March 26, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE.

Certain power owners on the Oswego river at Phoenix, N. Y., with their engineer, appeared before the Board, and presented arguments and an engineering brief as to conditions of the water which obtain at different stages of the river, and as to the probable effect of the Barge canal construction on the water powers owned or represented by them.

Minutes of meeting of March 18, 1909, were read, corrected and approved.

The Board then discussed informally with William B. Landreth, Special Deputy State Engineer, the proper elevations for bridges over the Barge canal at Three Rivers, Belgium, Mud Lock, Baldwinsville, and also the high navigable stage of the Seneca river.

The Chairman presented a letter from the State Engineer, dated March 26, 1909, transmitting a letter sent to him by William B. Landreth, Special Deputy State Engineer, dated March 26, 1909, by which attention is directed to the advisability of increasing the

width of the canal prism on curves of one degree to four degrees, where same is bounded by vertical walls, the object being to provide the clearance between passing boats consistent with the clearance provided at vertical wall sections on tangents.

After a discussion and a general statement by the Special Deputy State Engineer as to the localities where the canal would be affected by such changes, it was, on motion

*Resolved*, That where vertical walls are provided on the line of the Barge canal at points where the alignment on curves of one degree to four degrees inclusive is necessary, it be recommended to the State Engineer that wherever practicable, vertical walls which form the sides of the canal on curves be so located as to provide the clearances indicated in the following table, quoted from letter of the Special Deputy State Engineer heretofore mentioned:

Degree of curvature	CLEARANCE FOR BOATS		Width <sup>5</sup> between walls
	150' long	300' long	
On Tangent:	2.6	2.6	94'
1 Degree	3.4	2.6	98'
2 "	4.5	2.8	102'
3 "	5.3	2.7	106'
4 "	6.1	2.6	110'

A change in the location of a cut-off on Irondequoit creek, Contract No. 41, was discussed informally with the Special Deputy State Engineer.

Recess at 1 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The State Engineer presented for the consideration of the Board a communication addressed to him by William B. Landreth, Special Deputy State Engineer, dated March 26, 1909, relative to the location of Lock No. 2, Contract No. 69, Champlain canal, in the vicinity of the dam of the Hudson River Electric Company, said communication accompanied by blue print showing a proposed location for lock on the island near the middle of the Hud-

son river, providing for wide water navigation and following approximately the centre of the Hudson river, and an alternative location providing for a land line with lock located about 2,000 feet below said dam of the Hudson River Electric Company.

The State Engineer also presented for the consideration of the Board alternate plans accompanied by comparative estimates for Contract No. 69 showing the difference in cost resulting from a change in elevation of the dam at Waterford of 1.7 feet.

After a very thorough discussion of this entire matter with the State Engineer, William B. Landreth, Special Deputy State Engineer, and D. A. Watt, Supervising Engineer, the several questions involved were referred back to the State Engineer for further investigation and report as to the probable damage that might result to the said Hudson River Electric Company by the construction of said dam at a crest elevation of 31.2 as against elevation 29.5.

Board adjourned at 7.30 P. M., to meet at 9 A. M., March 27, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., March 27, 1909.

Board met at 9 A. M.

Present: Mr. BOND, *Chairman*,  
 Mr. BARNES,  
 Mr. BRACKENRIDGE.

The Board took up the further consideration of plans, specifications and engineer's preliminary estimate for Contract No. 23, submitted by the State Engineer March 17, 1909.

After discussing the matter with the State Engineer and William B. Landreth, Special Deputy State Engineer, it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 23, for constructing a land line from Kings Bend to Genesee river, length 5.63 miles, sheets 1 to 107 inclusive, submitted to this Board by the State Engineer March 16, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated March 26, 1909, transmitting six copies of Alteration No. 2, Contract No. 25, Champlain canal, together with tracings, sheets 187 to 205 inclusive, for the consideration of the Board.

The alteration was carefully examined and discussed with the State Engineer and Special Deputy State Engineer, and it was, on motion

*Resolved*, That Alteration No. 2, Contract No. 25, providing for changes in banks and side slopes at various locations; making changes in bridges and bridge abutments, etc., at Comstock and at Smith's Basin; providing for changes in Lock No. 9 and approaches changing specifications for embankment and for peeling of piles and changing location of drainage ditch, at a decreased cost to the State of \$15,456.90, submitted to this Board by the State Engineer March 26, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 26, 1909, transmitting six copies of Alteration No. 10, Contract No. 8, Erie canal, sheets 110 to 113 inclusive, for the consideration of the Board.

The alteration was examined and discussed with the State Engineer and Special Deputy Engineer, and it was, on motion

*Resolved*, That Alteration No. 10, Contract No. 8, providing for changes in abutments and foundations of movable dams, and increasing size of chains and certain bridge members, at an increased cost to the State of \$7,771.60, submitted to this Board by the State Engineer March 26, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 26, 1909, transmitting six copies of Alteration No. 6, Contract No. 14, sheets 181 to 185 inclusive, for the consideration of the Board.

The alteration was examined and discussed with the State Engineer and Special Deputy State Engineer, and it was, on motion

*Resolved*, That Alteration No. 6, Contract No. 14, providing for changes in the foundation and abutments and increasing size of certain members in bridges, and size of chains of movable dams, at an increased cost to the State of \$5,938.80, submitted to this Board by the State Engineer March 26, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated March 26, 1909, transmitting six copies of Alteration No. 7, Contract No. 17, sheets 93 and 94, for the consideration of the Board.

The alteration was examined and discussed with the State Engineer and Special Deputy State Engineer, and it was, on motion

*Resolved*, That Alteration No. 7, Contract No. 17, providing for increasing size of certain bridge members of movable dams, and for increasing size of chains, at an increased cost to the State of \$4,172.50, submitted to this Board by the State Engineer March 26, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented the following letters from the State Engineer; transmitting appropriation maps on various contracts:

March 24, 1909, Contract No. 10, Maps No. 379, 380, superseding 299, and 381 superseding 300 and 565.

March 25, 1909, Contract No. 46, Maps No. 1382, 1383, 1384 and 1385.

March 25, 1909, Contract No. 27, Maps No. 1386, 1387, 1388 and 1389.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 379, 380, superseding 289, and 381 superseding 300 and 565, on Contract No. 10, received from the State Engineer March 4, 1909; Maps No. 1386, 1387, 1388 and 1389 on Contract No. 27, and Maps No. 1382, 1383, 1384 and 1385 on Contract No. 46, all received from the State Engineer March 25, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated March 26, 1909, transmitting plans, specifications and engineer's preliminary estimate for Contract No. 53, Oswego canal, for the consideration of the Board.

After discussing these plans with the State Engineer and the Special Deputy State Engineer, it was, on motion

*Resolved*, That this Board recommends to the State Engineer that the upper surface of the skin of the lock gates on Contract No. 53, be placed at elevation 366.0, the assumed high navigable stage at this location, and that the coping of the lock walls be placed about six inches above maximum flood stage.

*Further Resolved*, That this Board approves of the plans, specifications and Engineer's preliminary estimate for said lock with the changes above recommended for said Contract No. 53, for construction of Lock No. 1 at Phoenix, N. Y., length .23 mile, sheets 1 to 26 inclusive, submitted to this Board by the State Engineer March 26, 1909; and that the Chairman be requested to sign the proper certificate of approval on said plans and to notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated March 26, 1909, transmitting for advice and consideration of the Board copy of alternative specifications for metal reinforcement, suggesting that they be substituted for those submitted to the Board March 17, 1909.

After some discussion the Board recommended the use of "medium steel reinforcement" be used on future contracts, and approved the following specifications:

## "MEDIUM STEEL.

117h  
**Metal  
 Reinforce-  
 ment** Unless otherwise designated upon the plans, all metal reinforcement shall consist of approved 'deformed' bars or rods which shall have an elastic limit of not less than 35,000 pounds per square inch and an elongation of not less than 22 per cent. in a length of 8 inches.

Metal reinforcement shall not contain more than 5/100 of one per cent. of sulphur. Acid steel shall not contain more than 8/100 and basic steel not more than 4/100 of one per cent. of phosphorus.

All metal reinforcement shall be of openhearth steel, shall be uniform in quality and shall endure bending 180 degrees, when cold, around a circle whose diameter is equal to the diameter or thickness of the test piece without fracture on the outside of the bent portion. Old materials re-rolled shall not be used.

All steel or iron for metal reinforcement shall, when embedded, be free from mill scale, grease, injurious rust, dirt or other foreign substance.

All metal reinforcement shall be securely held in place so that it will be in the prescribed position after the concrete has been thoroughly compacted."

The Board then considered plans, specifications and Engineer's preliminary estimate for Contract No. 30, submitted by the State Engineer on March 18, 1909.

After a full discussion of this contract with the State Engineer and Special Deputy State Engineer, it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 30, providing for constructing the river and land line from Little Falls to Sterling creek, length 14.62 miles, sheets 1 to 120 inclusive, submitted to this Board by the State Engineer March 18, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated March 16, 1909, transmitting copy of a report to William B. Landreth, Special Deputy State Engineer, by E. F. Van Hoesen, Expert on Railroad Crossings, Barge canal, dated March 15,

1909, in reference to the relocation of the Troy-Schenectady Branch of N. Y. C. & H. R. R. R., near Niskayuna, N. Y., which was read and placed on file.

The attention of the Board having been directed to certain bills relative to canal matters which had been introduced in the Senate and the Assembly, the following letters were sent to Hon. Victor M. Allen, Chairman, Committee on Canals in the Senate, and to Hon. William M. Colne, Chairman, Committee on Canals in the Assembly:

“The attention of the Advisory Board of Consulting Engineers has been called to a bill introduced in the Senate by Mr. Allen of the Canal Committee, Introductory No. 463, and a similar bill introduced by Mr. Colne, Chairman of the Canal Committee in the Assembly.

“The Advisory Board desires to enter its protest against the passage of this bill unless separate funds than those covered by chapter 147, Laws of 1903, known as the ‘Barge Canal Act,’ are set aside to provide for the payment of same. It is impossible at this time for a person to estimate the amount of money that the State might be obligated to pay if this act becomes a law.

“Chapter 147, Laws of 1903, appropriated \$101,000,000 for the construction of the Barge canal. It is believed by the Advisory Board if this money is honestly and judiciously spent, that the work contemplated by that act can be accomplished within the appropriation, but if the money is to be diverted for other uses, similar to those of the development of water-powers, not contemplated in that act, it would be very doubtful whether there would be sufficient funds to carry out the intent of the people when the Barge Canal Act became a law.

“Again, if property is to be taken by the State for the purpose of developing water-power, it should only be taken at such points as would insure a revenue to the State that would warrant the State’s investing the additional money for taking such power.

“Chapter 147, Laws of 1903, vests in the State Engineer all power necessary for the acquisition of lands and properties required for the Barge canal.”

“The attention of the Advisory Board of Consulting Engineers has been called to a bill introduced by Mr. McInerney, Introductory No. 655, covering an amendment to chapter 147, Laws of 1903, and stipulating certain improvements to the Genesee river in



the city of Rochester in connection with Barge canal construction for the purpose of a harbor for said city.

“The added cost over and above what would ordinarily be required for Barge canal purposes, as called for in the original act, will involve the expenditure of nearly \$1,000,000. While the Advisory Board realize and appreciate the fact that the prosperous and growing city of Rochester should have adequate harbor facilities, we think it should be reached through an act similar to that covered in a bill introduced by Mr. MacGregor of the Assembly, Introductory No. 203, ‘authorizing an inquiry into the question as to providing terminal facilities on the canals of this State with a view to ultimately improving and fostering the commerce of the State, and making appropriation therefor.’

“The question of harbors is one that is of growing interest to the citizens of the State, and the time has come when the Advisory Board believes the same should receive serious consideration, but the money to pay for such harbor improvements should be provided through other than the Barge canal funds under chapter 147, Laws of 1903, from the fact that the cost of the harbors as covered in Mr. McInerney’s bill for Rochester and harbors of that character was not contemplated by the original act.”

“The attention of the Advisory Board of Consulting Engineers has been called to a bill introduced by Mr. MacGregor, Introductory No. 203, ‘authorizing an inquiry into the question as to providing terminal facilities on the canals of this State with a view to ultimately improving and fostering the commerce of the State, and making appropriation therefor.’

“It is the opinion of the Advisory Board that a bill of this character should become a law, and that any bills calling for the improvement of harbors at points along the Barge canal should be covered in this act, so that finally the funds will be appropriated from other funds than those provided under chapter 147, Laws of 1903, known as the ‘Barge Canal Act.’”

The Chairman presented a letter from the State Engineer dated March 22, 1909, transmitting five copies of a final account for extra or unspecified work on Contract No. 7, for the consideration of the Board.

The final account was examined and discussed, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated February 11, 1909, on Contract No. 7, by the Groton Bridge Co., amounting to \$24.18, submitted to this Board by the State Engineer March 22, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Board adjourned at 1.30 P. M., to meet at the call of the Chairman.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., April 13, 1909.

Board met at 9.30 A. M.

Present: Mr. BARNES, *Acting Chairman*.  
Mr. BRACKENRIDGE,  
Col. SYMONS.

Minutes of meetings of March 26 and 27, 1909, were read, corrected and approved.

The Chairman presented letters from Hon. Frederick C. Stevens, Superintendent of Public Works, dated April 3, 1909, relative to awarding Contracts No. 29 and 32, for the information of the Board.

The Chairman presented a letter from the American Brake Shoe and Foundry Company dated March 30, 1909, relative to furnishing Manganese Steel, which was read and ordered filed.

The Chairman presented a letter from Charles P. Williams, Attorney, Lyons, N. Y., dated April 1, 1909, inclosing resolution of Lyons Business Men's Association, relative to the route of the Barge canal through that village.

The letter and resolution were read and the Chairman was requested to reply, stating that the matter had come to the notice of the Board and due consideration would be given when complete studies of the various routes were made.

The Chairman presented a letter from W. D. Trimble, Secretary North Tonawanda Board of Trade, North Tonawanda, N. Y., dated April 9, 1909, inclosing resolution relative to providing draw bridges over the Barge canal at that place for the purpose of bettering the harbor facilities.

The letter and resolution were read and the Chairman was directed to reply thereto.

The Chairman presented a letter from the State Engineer dated April 12, 1909, transmitting five copies of a final account for Extra or Unspecified work done on Contract No. 6, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated December 22, 1908, on Contract No. 6, by F. A. Maselli, Contractor, amounting to \$22.54, submitted to this Board by the State Engineer April 12, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated April 9, 1909, transmitting five copies of a final account for Extra or Unspecified work done on Contract No. 3, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated September 21, 1908, on Contract No. 3, by Sundstrom & Stratton, Contractors, amounting to \$160, submitted to this Board by the State Engineer April 9, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated April 13, 1909, transmitting five copies of a final account for Extra or Unspecified work done on Contract No. 60, for the consideration of the Board.

The final account was examined, and it was, on motion.

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated February 2, 1909, on Contract

No. 60, by the Empire Engineering Corporation, Contractor, amounting to \$4,957.87, submitted to this Board by the State Engineer April 13, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated April 9, 1909, transmitting Appropriation Maps, as follows:

Contract No. 19, Maps No. 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431 and 1432.

Contract No. 12, Map No. 1397.

Contract No. 60, Maps No. 1368, 1395 and 1396.

Contract No. 64, Maps No. 1407 and 1408.

Contract No. 41, Map No. 1390.

Contract No. 61, Maps No. 1391, 1392, 1393 and 1394.

Contract No. 40, Map No. 1421.

Also letter dated April 12, 1909, transmitting Appropriation Maps, as follows:

Contract No. 66, Maps No. 1398 and 1399.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1421, Contract No. 40, Maps No. 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432 on Contract No. 19, Map No. 1397 on Contract No. 12; Maps No. 1407 and 1408 on Contract No. 64; Maps No. 1368, 1395 and 1396 on Contract No. 60; Map No. 1390 on Contract No. 41; Maps No. 1391, 1392, 1393 and 1394 on Contract No. 61, and Maps No. 1398 and 1399 on Contract No. 66, all received from the State Engineer April 12, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated April 9, 1909, transmitting six copies of Alteration Order No. 7, Contract No. 2, with sheets 98 to 101 inclusive, for the consideration of the Board.

The alteration was examined and discussed by the Board, and it was, on motion

*Resolved*, That Alteration No. 7, Contract No. 2, providing for changing the plan for retaining wall at head of Lock No. 2; extending walls to make junction with present Champlain canal; substituting concrete lining for puddle lining in bottom of canal and changing by-pass around Lock No. 3 and specifications for crushed stone for concrete, at an increased cost to the State of \$39,209.50, submitted to this Board April 9, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated April 13, 1909, transmitting Alteration Order No. 2, Contract No. 35, dated April 12, 1909, superseding one submitted March 16, 1909. After due consideration the following preambles and resolution were, on motion, adopted:

*Whereas*, At its meeting held March 18, 1909, the Advisory Board approved Alteration Order No. 2, Contract No. 35, submitted by the State Engineer March 16, 1909; and

*Whereas*, It has since been found advisable to leave in place more of the existing wall than was planned by said Alteration Order No. 2, Contract No. 35, therefore, be it

*Resolved*, That Alteration Order No. 2, Contract No. 35, dated April 12, 1909, providing for changing the location of Lock No. 7; leaving part of towpath wall in place; providing for fillets in lock culverts, and to omit moving Weigh Lock House, at a decreased cost to the State of \$46,898.45, superseding and modifying Alteration Order No. 2, Contract No. 35, dated March 15, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Recess at 1 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented a letter from W. A. Brackenridge, relative to the construction of the Hinckley Dam and Reservoir, Contract No. 50. The letter was read, and it was, on motion

*Resolved*, That the letter be referred to the State Engineer for his consideration.

The Chairman presented a letter from the State Engineer dated April 13, 1909, transmitting two letters from William B. Landreth, Special Deputy State Engineer, and a report from C. C. Egbert, Expert in Electrical Design, dated April 8, 1909, relative to the effect of Barge canal construction on the water power of the Hudson River Power Transmission Company at Dam No. 2 below Mechanicville.

The Board discussed the matter at length with the State Engineer and William B. Landreth, Special Deputy State Engineer, and it was, on motion

*Resolved*, That the crest of Dam No. 1 at Waterford be placed at Elevation 28.7.

*Further Resolved*, That Lock No. 2, Champlain canal, be located substantially as shown in yellow and designated as "Location B" on blue-print "A" be hereby approved.

The Chairman presented a letter from the State Engineer dated April 13, 1909, transmitting copy of letters received from the West Virginia Pulp and Paper Company, Mechanicville, N. Y., relative to proposed water power development at that place, adjacent to Lock No. 3, Contract No. 68, proposing a change in the location of Lock No. 3.

The letter was read and discussed with the State Engineer and William B. Landreth, Special Deputy State Engineer. The Board expressed the opinion that it was advisable to adhere to the present location of Lock No. 3.

The Chairman presented a letter from the State Engineer dated April 13, 1909, transmitting six copies of Alteration Order No. 2, Contract No. 25, dated April 10, 1909, modifying and superseding Alteration Order No. 2, Contract No. 25, dated March 20, 1909.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration Order No. 2, Contract No. 25, providing for changes in banks and side slopes at various locations; making changes in bridges and bridge abutments, etc., at Comstock and at Smith's Basin; providing for changes in Lock No. 9 and approaches; changing specifications for embankment and changing location of drainage ditch, at a decreased cost to the

State of \$19,260.90, submitted to this Board by the State Engineer April 13, 1909, and superseding and modifying Alteration Order No. 2, Contract No. 25, approved by this Board March 27, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated April 13, 1909, transmitting six copies of Alteration Order No. 3, Contract No. 12, dated April 12, 1909, for the consideration of the Board.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration Order No. 3, Contract No. 12, providing for flattening side slopes of prism, at an estimated increased cost to the State of \$122,985.50, submitted to this Board by the State Engineer April 12, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The monthly estimates for work done on Barge canal contracts to April 1, 1909, received from the State Engineer, were examined by the Board and the regular certificates, in duplicate, signed and attached to the following:

Contract No. 6,	Estimate No. 43.
Contract No. 7,	Estimate No. 22.
Contract No. 8,	Estimate No. 27.
Contract No. 9,	Estimate No. 11.
Contract No. 10,	Estimate No. 31.
Contract No. 12,	Estimate No. 12.
Contract No. 14,	Estimate No. 17.
Contract No. 19,	Estimate No. 22.
Contract No. 25,	Estimate No. 21.
Contract No. 31,	Estimate No. 6.
Contract No. 35,	Estimate No. 15.
Contract No. 38,	Estimate No. 3.
Contract No. 40,	Estimate No. 1.
Contract No. 45,	Estimate No. 10.
Contract No. 46,	Estimate No. 3.
Contract No. 47,	Estimate No. 1.
Contract No. 55,	Estimate No. 4.
Contract No. 60,	Estimate No. 8.
Contract No. 64,	Estimate No. 6.
Contract No. 66,	Estimate No. 5.
Contract No. 68,	Estimate No. 4.

The following estimates were returned without certificate, no work having been done on these contracts during the month of March, 1909:

Contract No. 1, Estimate No. 36.  
Contract No. 2, Estimate No. 44.  
Contract No. 3, Estimate No. 48.  
Contract No. 4, Estimate No. 39.  
Contract No. 11, Estimate No. 32.  
Contract No. 15, Estimate No. 23.  
Contract No. 16, Estimate No. 5.  
Contract No. 17, Estimate No. 11.  
Contract No. 18, Estimate No. 25.  
Contract No. 26, Estimate No. 8.  
Contract No. 27, Estimate No. 22.  
Contract No. 61, Estimate No. 4.

Board adjourned at 4.30 P. M., to meet at 9.30 A. M., Tuesday, April 27, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., April 27, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Col. SYMONS.

Minutes of the meeting of April 13, 1909, were read, corrected and approved.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps on various contracts, as follows:

April 17, 1909, Contract No. 14, Map No. 1433; Contract No. 64, Map No. 1435.

April 20, 1909, Contract No. 41, Maps No. 1437 and 1454.

April 21, 1909, Contract No. 41, Map No. 1436; Contract No. 47, Maps, No. 1444, 1445, 1447, 1451 and 1452.

April 22, 1909, Contract No. 61, Maps No. 1464, 1465, 1466, 1467 and 1468; Contract No. 66, Map No. 1455.



April 27, 1909, Contract No. 41, Map No. 1446; Contract No. 60, Maps No. 1471 and 1472; Contract No. 61, Maps No. 1470, 1473, 1474, 1475, 1476 and 1477.

April 27, 1909, Contract No. 19, Map No. 1457; Contract No. 25, Map No. 1469; Contract No. 40, Maps No. 1458, 1459, 1460, 1461, 1462 and 1463; Contract No. 47, Map No. 1448; Contract No. 60, Maps No. 1449 and 1450.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Map No. 1435 on Contract No. 64 received from the State Engineer April 19, 1909; Maps No. 1437 and 1454 on Contract No. 41 received from the State Engineer April 21, 1909; Map No. 1436 on Contract No. 41 and Maps No. 1444, 1445, 1447, 1451 and 1452 on Contract No. 47 received from the State Engineer April 23, 1909; Maps No. 1464, 1465, 1466, 1467 and 1468 on Contract No. 61 and Map No. 1455 on Contract No. 66 received from the State Engineer April 23, 1909; Map No. 1446 on Contract No. 41, Maps No. 1471 and 1472 on Contract No. 60 and Maps No. 1470, 1473, 1474, 1475, 1476 and 1477 on Contract No. 61 received from the State Engineer April 27, 1909, and Map No. 1457 on Contract No. 19, Map No. 1469 on Contract No. 25, Maps No. 1458, 1459, 1460, 1461, 1462 and 1463 on Contract No. 40, Map No. 1448 on Contract No. 47 and Maps No. 1449 and 1450 on Contract No. 60 received from the State Engineer April 27, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

Regarding Appropriation Map No. 1433 on Contract No. 14, it was on motion

*Resolved*, That the Chairman be requested to return Appropriation Map No. 1433 on Contract No. 14 to the State Engineer, with the statement that this land not being permanently required by the State the contractor should make a temporary lease for the time that he would require it.

The Chairman presented a letter from the State Engineer dated April 27, 1909, transmitting six copies of Alteration No. 1, Contract No. 41, for the consideration of the Board.

The Alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 1, Contract No. 41, section 9, Erie canal, providing for change in location of Irondequoit Creek diversion channel, at no increased cost to the State, submitted to this Board by the State Engineer April 27, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Mr. T. C. Sweet, of Phoenix, N. Y., appeared before the Board relative to matters connected with Barge canal construction on the Oswego river.

The Chairman presented a letter from the State Engineer dated April 27, 1909, transmitting reports of R. E. Horton, Resident Engineer, and C. C. Egbert, Expert in Electrical Design, relating to the upper dam at Fulton, and the dam at Phoenix, which were read and discussed with the State Engineer and William B. Landreth, Special Deputy State Engineer.

On motion, the following preamble and resolution were adopted:

*Whereas*, Further study and consideration indicate that the crest of the upper dam at Fulton if built to an elevation of 354 as at present planned and contracted for, will cause too great an elevation of the tail water at the Phoenix dam, to the extent of 1.2 feet, therefore be it

*Resolved*, That it is the opinion of this Board that the elevation of the crest of the upper dam at Fulton should be reduced from elevation 354 to 352.8, and that the work between Fulton and Phoenix, including the lock at Phoenix, should be planned to conform to this elevation.

Recess at 1 P. M.

Board met at 2.30 P. M., the same members being present.

The Chairman presented a letter from the State Engineer, dated April 14, 1909, transmitting five copies of a final account for work done on Contract No. 66, for the consideration of the Board.

The final account was examined and discussed, and it was on motion

*Resolved*, That the final account for work done under extra or unspecified work order dated February 24, 1909, on Contract No.

66, by the Empire Engineering Company, contractor, amounting to \$989.70, submitted to this Board by the State Engineer April 14, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated April 27, 1909, transmitting six copies of Alteration No. 1, Contract No. 26.

This alteration was examined and discussed by the Board and held for further consideration.

The Chairman presented a letter from the State Engineer, dated April 27, 1909, transmitting six copies of Alteration No. 3, Contract No. 12, which was a resubmission of Alteration No. 3, Contract No. 12, approved by the Advisory Board April 13, 1909; the new form omitting Object No. 4 which referred to an extension of time, it being deemed advisable not to include the matter of the extension of time in the alteration order.

It was on motion

*Resolved*, That the resolution passed by this Board April 13, 1909, approving Alteration No. 3, Contract No. 12, be and hereby is rescinded.

*Further Resolved*, That Alteration No. 3, Contract No. 12, providing for flattening the side slopes of prism, at an increased cost to the State of \$122,985.50, submitted to this Board by the State Engineer, April 27, 1909, in which no reference is made to the matter of extension of time on Contract No. 12, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated April 27, 1909, relative to a change in specifications for Contract No. 23. After a discussion of the matter with the State Engineer and William B. Landreth, Special Deputy State Engineer, on motion, the following resolution relating to the spoiling of material in South Park at Rochester, N. Y., under Contract No. 23, was adopted:

*Resolved*, That the following paragraph 6-s, relative to work in South Park, at Rochester, N. Y., be substituted for paragraph 6-s of the original specifications passed by the Advisory Board March 27, 1909:

## 6-s. WORK IN SOUTH PARK.

“Special care must be taken with all work in South Park not to injure grass, trees, or other property outside the right of way and the Contractor will be held responsible for all damages resulting from neglect of this stipulation.

“The Contractor will not be allowed to begin any work under this contract within the limits of South Park until at least 90 per cent. of the excavation to be done under this contract east of the eastern boundary line of the park shall have been completed, and he shall so plan and carry on his work that his operation within the park limits will be entirely finished within a period including but one summer season, covering the months between May 1st and October 1st.

“If any spoil should be desired by the Park Commission to be placed within the limits of South Park the State will not object to the Contractor’s spoiling material within the limits of the park upon such conditions as the Park Commission and the Contractors may agree to. Spoil used for filling this park shall be considered as withdrawn from the high spoil banks shown west of Lock 33, and these spoil banks shall be reduced uniformly in width by an amount whose contents equal that of the spoil used in the park.”

The Chairman presented a letter, dated April 15, 1909, from the Automobile Club of Rochester, N. Y., Bert Van Tyle, Secretary, urging the construction of a lift bridge over the Barge Canal at Adams Basin, N. Y.

The letter was read and the Engineer-Secretary was directed to acknowledge its receipt.

The Chairman presented a letter, dated April 16, 1909, from Messrs. Rowley & Eddy, Medina, N. Y., relating to interference with their business by reason of Barge Canal construction at Middleport.

The letter was read and the Engineer-Secretary was directed to reply and state action taken thereon.

The Chairman presented a letter, dated April 26, 1909, from S. E. Filkins, attorney, Medina, N. Y., relative to the above-mentioned matter. The letter was read and the Chairman was requested to reply thereto.

The Chairman presented five letters from the State Engineer, dated April 27, 1909, transmitting plans, specifications and Engineer's preliminary estimates of cost for Contracts No. 20-A, 20-B, 20-C and 20-D, and also Contract No. 20, a combination of Contracts No. 20-A, 20-B, 20-C and 20-D for the consideration of the Board.

The plans, specifications and Engineer's preliminary estimates were examined and discussed, and it was, on motion

*Resolved*, That the plans, specifications and Engineer's estimates for Contract No. 20-A, providing for a river and land line and other work necessary to complete the canal between Little Falls and Mindenville, length 4.5 miles, sheets 1, 7, and 103 to 110, inclusive; Contract No. 20-B, providing for dredging a channel in the Mohawk river and performing work incidental thereto between Mindenville and Canajoharie, length 10.1 miles, sheets 1, 6, 85 to 102, inclusive, 113, 124, 125, 126, 137-A, 141, 142, 143, 144 and 145; Contract No. 20-C, providing for dredging a channel in the Mohawk river and performing work incidental thereto between Canajoharie and Yosts, length 7.9 miles, sheets 1, 5-A, 71-A, 72 to 84, inclusive, 85-A 111, 112, 121, 122, 123, 136 to 140, inclusive, and 145, and Contract No. 20-D, providing for dredging a channel in the Mohawk river and performing work incidental thereto between Yosts and Rexford Flats, length 36.2 miles; sheets 1 to 5, inclusive; 8 to 71, inclusive; 114 to 120, inclusive; 127 to 135, inclusive, and 145, be hereby approved, and that the Chairman be requested to sign the proper certificates of approval on said plans and notify the State Engineer of such action.

*Further Resolved*, That it is recommended that the work be advertised as separate contracts, and also in combination as an alternate proposition, provided that it be found that this can be legally done.

The Chairman presented a letter from Fred Greiner, Postmaster, Buffalo, N. Y., dated April 17, 1909, also copy of a letter from Hon. George Clinton, Buffalo, N. Y., addressed to the State Engineer under date of April 21, 1909, also copy of resolutions of the North Tonawanda Council, dated April 20, 1909, all of which were in reference to the construction of lift bridges over Tonawanda creek.

The communications were read and the Engineer-Secretary was directed to acknowledge their receipt.

Board adjourned at 5.30 P. M., to meet at 9 A. M., Tuesday, May 18, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., May 18, 1909.

Board met at 10 A. M.

Present: MR. BOND, *Chairman*,  
MR. BARNES,  
Col. SYMONS.

Minutes of the meeting of April 27, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated May 5, 1909, transmitting five copies of a final account for work done under Extra or Unspecified Work Order dated November 24, 1908, on Contract No. 1, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated November 24, 1908, on Contract No. 1, amounting to \$7,633.08, submitted to this Board by the State Engineer May 5, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, transmitting copy of Extra or Unspecified Work Order dated May 5, 1909, on Contract No. 31, providing for fenders and temporary towpath around Lock No. 17. Also copy of Extra or Unspecified Work Order dated April 13, 1909, on Contract No. 8, providing for the necessary work to modify the forms for gate recesses temporarily, and to provide recesses for needle beam spars for lock at Cranes Village. Also

copy of Extra or Unspecified Work Order dated April 29, 1909, on Contract No. 38, providing for the construction of a timber towpath in front of north abutment of Bridge No. 48 (Wappings). Also copy of Extra or Unspecified Work Order dated May 10, 1909, on Contract No. 7, providing for the erection of two stairways leading from the floor of the bridge at Sylvan Beach as shown on accompanying blue-prints.

These extra work orders were read and ordered filed.

The Chairman presented a letter from James T. Hoile, Chairman, The Manufacturers' Association of New York, dated May 5, 1909, relative to the appointment of a commission for the promotion of commerce and the improvement of terminal facilities of the harbors of New York, Buffalo, Oswego and Whitehall.

The letter was read and ordered filed.

The Chairman presented a letter from H. L. Howe, Attorney, Oswego, N. Y., dated April 29, 1909, transmitting copy of protest by the Ontario Industrial Company, Standard Spinning Co., and National Starch Co., dated April 24, 1909, against the narrowing of the Oswego river.

The protest was read and ordered filed.

The Chairman presented a letter from George W. Knox, President, Board of Trade of Niagara Falls, Niagara Falls, N. Y., dated April 27, 1909, transmitting copy of resolution passed by said Board of Trade April 26, 1909; a letter from S. J. Elliott, Secretary, Retail Merchants' Association of North Tonawanda, North Tonawanda, N. Y., dated May 8, 1909, transmitting copy of resolution adopted by said Association May 6, 1909; a letter from Wm. A. Dickinson, Secretary, Lockport Board of Trade, Lockport, N. Y., dated May 17, 1909, and also a petition signed by business men of North Tonawanda, Tonawanda, Buffalo, Lockport and Niagara Falls, all of which related to the construction of movable bridges over Tonawanda creek.

The letters, resolutions and petition were read, and the Engineer-Secretary was directed to acknowledge the receipt thereof.

The Chairman presented for further consideration of the Board, Alteration No. 1, Contract No. 26, originally submitted April 27, 1909.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 1, Contract No. 26, Section 2, Champlain canal, providing for changing location of channel, at a decreased cost to the State of \$19,738, submitted to this Board by the State Engineer April 14, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated May 18, 1909, transmitting six copies of Alteration No. 6, Contract No. 27, for the consideration of the Board.

The alteration was examined but action was deferred pending the result of certain conferences with the contractor, and the receipt of an opinion from the Attorney-General thereon.

Recess at 12.45 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated May 18, 1909, relative to the borings at the site of proposed lock on Contract No. 69, on what is known as the "South Line," and requesting the Board to visit the site of the lock.

The letter was read and action thereon deferred pending investigation of the matter.

The Chairman presented a letter from Dr. E. L. Corthell, former member of the Board, for general information.

The Chairman presented a letter from the State Engineer dated May 18, 1909, transmitting six copies of Alteration No. 11, Contract No. 10, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion



*Resolved*, That Alteration No. 11, Contract No. 10, Oswego canal, providing for lowering the grade of the canal at Lock No. 2, at a decreased cost to the State of \$31, submitted to this Board by the State Engineer May 18, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated May 18, 1909, regarding work on Contract No. 3, with special reference to placing wash wall along certain parts of said contract where washouts and slides have occurred, the letter requesting the Board to inspect work on the ground.

The letter was read and discussed, and it was, on motion

*Resolved*, That the Chairman be requested to notify the State Engineer that two members of the Board had inspected that work during the past week and had their attention called to certain washouts above Lock No. 6, hence consider it unnecessary to again inspect the work at this time. It is, however, recommended to the State Engineer that he have washouts shown in photograph accompanying his letter cleaned out where thought advisable and refilled with rock spoil, so placed as to allow the natural ground water to percolate through it; this spoil making a suitable footing or foundation for the wash wall and being a very convenient place to deposit rock yet to be excavated from the bottom and sides of the canal in this vicinity.

The treatment of slides that occurred during the seasons of 1907 and 1908 has been covered by former resolutions of this Board, and the Board sees no reason for changing its recommendation in this regard.

The Chairman presented a letter from the State Engineer dated May 18, 1909, resubmitting plans, specifications and preliminary estimates for Contract No. 53, Oswego canal, for constructing Lock No. 1 at Phoenix, length of contract, 0.23 mile, sheets 1 to 26, inclusive, plans, specifications and estimates for this contract as originally submitted and approved on March 27, 1909, having been changed to meet the requirements of the resolution of the Board passed at its meeting of April 27, 1909.

The plans, specifications and estimates were examined and discussed by the Board, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimates for Contract No. 53, Oswego canal, for constructing Lock No. 1 at Phoenix, length of contract, 0.23 miles, sheets 1 to 26 inclusive, resubmitted to this Board by the State Engineer May 18, 1909, be hereby approved and that the Chairman be requested to sign the proper certificate on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated May 18, 1909, submitting plans, specifications and preliminary estimates for Contract No. 43, Erie canal, for constructing the canal from a point just east of Oriskany road to about 1500 feet west of Mud creek, length 10.32 miles, sheets 1 to 77 inclusive, for the consideration of the Board.

The contract was examined by the Board and held for further consideration.

The Chairman presented a letter from P. J. McWeeney, Financial Clerk, Department of Public Works, dated May 17, 1909, transmitting monthly estimates on Barge canal contracts, as follows:

Estimate No. 37,	Contract No. 1.
Estimate No. 40,	Contract No. 4.
Estimate No. 44,	Contract No. 6.
Estimate No. 28,	Contract No. 8.
Estimate No. 12,	Contract No. 9.
Estimate No. 32,	Contract No. 10.
Estimate No. 33,	Contract No. 11.
Estimate No. 13,	Contract No. 12.
Estimate No. 18,	Contract No. 14.
Estimate No. 24,	Contract No. 15.
Estimate No. 6,	Contract No. 16.
Estimate No. 11,	Contract No. 17.
Estimate No. 26,	Contract No. 18.
Estimate No. 23,	Contract No. 19.
Estimate No. 22,	Contract No. 25.
Estimate No. 7,	Contract No. 31.
Estimate No. 16,	Contract No. 35.
Estimate No. 4,	Contract No. 38.

- Estimate No. 2, Contract No. 40.
- Estimate No. 1, Contract No. 41.
- Estimate No. 11, Contract No. 45.
- Estimate No. 2, Contract No. 47.
- Estimate No. 5, Contract No. 55.
- Estimate No. 9, Contract No. 60.
- Estimate No. 6, Contract No. 61.
- Estimate No. 7, Contract No. 64.
- Estimate No. 6, Contract No. 66.
- Estimate No. 5, Contract No. 68.

The estimates were examined by the Board and the regular certificate of approval, in duplicate, signed and attached thereto.

The Chairman presented letters from the State Engineer transmitting Appropriation Maps as follows:

May 6, 1909,— Contract No. 14, Map No. 724-A, superseding 724. Contract No. 31, Maps No. 1478, 1479, 1480, 1481 and 1482.

May 10, 1909,— Contract No. 31, Maps No. 1483 and 1484.

May 11, 1909,— Contract No. 41, Map No. 1485.

May 17, 1909,— Contract No. 46, Map No. 1487. Contract No. 35, Maps No. 746, 1486, 705-A and 705-B, superseding 705. Contract No. 29, Maps No. 1488, 1490, 1491, 1492, 1493, 1494. Contract No. 12, Maps No. 262-A, superseding 262; 263-A, superseding 263; 264-A, superseding 264; 265-A, superseding 265; 1438 and 1442.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Map No. 724-A, superseding 724 on Contract 14, and Maps No. 1478, 1479, 1480, 1481 and 1482 on Contract No. 31 received from the State Engineer May 7, 1909; Maps No. 1483 and 1484 on Contract No. 31 and Map No. 1485 on Contract No. 41 received from the State Engineer May 15, 1909; Map No. 1487 on Contract No. 46, Maps No. 746, 1486, 705-A and 705-B, superseding 705; Maps No. 1488, 1490, 1491, 1942, 1493 and 1494 on Contract No. 29; Maps No. 262-A, su-

perseding 262; 263-A, superseding 263; 264-A, superseding 264; 265-A, superseding 265, 1438 and 1442, on Contract No. 12 received from the State Engineer May 18, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said Appropriation Maps, and the Engineer-Secretary was directed to forward duplicate copies of said approval to the State Engineer and to the Superintendent of Public Works.

Col. T. W. Symons made a verbal report of inspection of Contracts No. 15, 25, 26, 27, 1, 3, 2, 11, 14, 68.

A telegram was read from Mr. Fry stating that owing to bad weather he had been delayed in his inspections and would be unable to report for the meeting.

Board adjourned at 5.30 P. M., to meet at 9.30 A. M., May 19, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., May 19, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
 Mr. BARNES,  
 Mr. FRY.

Mr. A. B. Fry made a verbal report on inspection of foreign canals, and exhibited photos and pictures of various details. This report to be followed later by a written report.

The Chairman presented a written report dated May 17, 1909, of inspections made by him on May 10 to 15, 1909, of work under Contracts No. 41, 6, 60, 61, 9, 64 and 66.

Mr. M. G. Barnes made a verbal report of inspections made by him May 11 to 15, 1909, of work on Contracts No. 10, 12, 4, 35, 45, 46, 47 and 55.

Mr. Fry submitted a written report of inspections made by him May 10 to 15, 1909, of work on Contracts No. 8, 14, 17, 18, 29 and 31.

In discussing the progress of work on various contracts, the attention of the Board was particularly called to conditions obtaining on Contract No. 11, Erie canal, Fort Orange Construction Co., contractor, and it was, on motion

*Resolved*, That the Chairman be requested to write the State Engineer in relation to this contract, calling his attention to the fact that Contract No. 11 must be completed, the contract for the gates and operating machinery must also be let and the work completed before Contract No. 14 can be finished at Vischers Ferry and Crescent.

Under the terms of Contract No. 11 that contract expires October 1, 1909, and on May 1, 1909, only 39.9 per cent of the work had been completed. It seems impossible to complete that contract on time with the present equipment and force employed.

It is respectfully recommended to the State Engineer that he use every effort to cause the contractor to secure sufficient force and equipment to complete Contracts No. 2 and 11 this year, and also that he advances plans for the gates and operating machinery for these contracts as rapidly as possible, so that portion of the Barge canal can be placed in operation, thus permitting work on Contract No. 14 to progress.

In connection with this matter, the attention of the State Engineer is respectfully invited to resolutions passed by this Board and addressed to his predecessor under dates of January 9 and December 29, 1908.

Board adjourned at 1 p. m., to meet at 9 a. m., Tuesday, June 1, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., June 1, 1909.

Board met at 10 a. m.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. BRACKENRIDGE,

Col. SYMONS.

Minutes of the meetings of May 18 and 19, 1909, were read, corrected and approved.

The Chairman presented letters from the State Engineer transmitting appropriation maps as follows:

May 19, 1909, Contract No. 64, Map No. 1434.

May 25, 1909, Contract No. 27, Map No. 507-A superseding 507.

May 25, 1909, Contract No. 19, Map No. 1495.

May 25, 1909, Contract No. 29, Map No. 1489.

May 25, 1909, Contract No. 66, Maps No. 1496 and 1497.

May 26, 1909, Contract No. 60, Maps No. 1535, 1536 and 1537.

May 27, 1909, Contract No. 6, Maps No. 1538, 1539 and 1540.

May 27, 1909, Contract No. 19, Maps No. 1541, 1542, 1543, 1544, 1545, 1546, 1547 and 1548.

May 27, 1909, Contract No. 47, Maps No. 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533 and 1534.

May 27, 1909, Contract No. 61, Maps No. 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524 and 1525.

May 28, 1909, Contract No. 47, Map No. 1549.

June 1, 1909, Contract No. 64, Map No. 1401.

June 1, 1909, Contract No. 68, Map No. 1218.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Map No. 1434 on Contract No. 64, received from the State Engineer May 20, 1909; Map No. 1495 on Contract No. 19, No. 507-A superseding 507 on Contract No. 27, No. 1489 on Contract No. 29, No. 1496 and 1497 on Contract No. 66, received from the State Engineer May 26, 1909; Maps No. 1538, 1539 and 1540 on Contract No. 6, No. 1541, 1542, 1543, 1544, 1545, 1546 and 1547 on Contract No. 19, No. 1526, 1527, 1528, 1529, 1530, 1531, 1532, 1533, 1534 and 1549 on Contract No. 47, No. 1548 on Contract No. 19, No. 1535, 1536 and 1537 on Contract No. 60, No. 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524 and 1525 on Contract No. 61, all received from the State Engineer May 28, 1909; Map No. 1401 on Contract No. 64 and No. 1218 on Contract No. 68, received from the State Engineer June 1, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copies of this resolution to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated May 27, 1909, transmitting five copies of a final account for work on Contract No. 19, for the consideration of the Board.

The final account was examined and discussed by the Board, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated October 20, 1908, on Contract No. 19, amounting to \$1,310.40, submitted to this Board by the State Engineer May 27, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated May 27, 1909, inclosing copy of Extra or Unspecified Work Order dated May 21, 1909, on Contract No. 19, which was read and ordered filed.

The Chairman presented a letter from the State Engineer dated May 21, 1909, transmitting five copies of a final account for work done on Contract No. 27, for the consideration of the Board.

The final account was examined and discussed, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated January 6, 1909, on Contract No. 27, amounting to \$42.34, submitted to this Board by the State Engineer May 21, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated May 27, 1909, transmitting copy of Extra or Unspecified Work Order dated May 20, 1909, on Contract No. 4, which was read and ordered filed.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated May 21, 1909, relative to the opening of bids on Contracts No. 30, 36 and 42, at the Superintendent's office June 22, 1909.

The Chairman presented a letter from R. U. Sherman, President, Consolidated Water Company of Utica, N. Y., dated May 19, 1909, in relation to matters at Hinckley, N. Y. The letter was read and discussed, and it was, on motion

*Resolved*, That the letter of R. U. Sherman, President, Consolidated Water Company of Utica, N. Y., dated May 19, 1909, be referred to the State Engineer for transmission to the Attorney-General, to be attached to the brief relating to the construction of the Hinckley dam previously submitted to him.

*Further Resolved*, That the State Engineer be requested to ask the Attorney-General to give his opinion in this matter as soon as possible in order that the plans for the construction of the dam at Hinckley may be completed at an early date.

The Board discussed the matter of the relocation of the New York Central railroad at Rome with Mr. M. G. Barnes, who presented blue-prints made by the railroad company showing proposed new tracks and crossings over the Barge Canal, which were referred to the State Engineer for his information.

The Chairman presented a letter from the State Engineer dated June 1, 1909, relating to specifications for white oak, in which he stated that it has been found practically impossible to obtain white oak which will fully comply with the specifications for the same on Contracts No. 45, 47, 8, 14 and 17. He also stated that the object in changing the specifications was in order to make it possible to require the best white oak obtainable and to permit of the rejection of all timber not of suitable quality for the purposes for which it is to be used.

The Chairman presented a letter from the State Engineer dated June 1, 1909, transmitting six copies of Alteration No. 8, Contract No. 17, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion



*Resolved*, That Alteration No. 8, Contract No. 17, providing for changes in gauge of tracks; increasing size of track channels, etc., and changing specifications for chains and miter sills, at an increased cost to the State of \$1,659, submitted to this Board by the State Engineer June 1, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Recess at 12.30 P. M.

Board convened at 2.30 P. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY,  
Col. SYMONS.

The Chairman presented a letter from the State Engineer dated June 1, 1909, transmitting six copies of Alteration No. 6, Contract No. 1, for the consideration of the Board.

The alteration was examined and discussed by the Board, and on motion, the following preambles and resolutions were adopted:

*Whereas*, Further investigation has shown it to be of advantage to the State to change the conditions involved in Alteration No. 6, Contract No. 1, approved by this Board December 2, 1908, therefore be it

*Resolved*, That this Board rescinds its action of December 2, 1908, approving Alteration No. 6, Contract No. 1.

On motion

*Resolved*, That Alteration No. 6, Contract No. 1, providing for the elimination of excavation from Sta. 9+52 to Sta. 23+85, and lowering top of crib docking at Lock No. 6, at a decreased cost to the State of \$26,997.25, submitted to this Board by the State Engineer June 1, 1909, be hereby approved, provided that the communication from the Empire Engineering Corporation to the State Engineer under date of May 27, 1909, whereby that company relieves the State from all claims due to the elimination of the portion of their contract involved in this alteration, shall be incorporated in the alteration order this day approved by this Board.

The Chairman presented a letter from the State Engineer dated June 1, 1909, transmitting six copies of Alteration No. 4, Contract No. 19, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 4, Contract No. 19, providing towpath on north side of canal from McDonald's culvert to Pendleton bridge, at an increased cost to the State of \$2,581.10, submitted to this Board by the State Engineer June 1, 1909, be hereby returned to the State Engineer for further investigation to see if the building of a low wooden fence with a round top rail to guide the tow line, and the utilization of the existing highway for traction animals will not accomplish the desired result at a less cost to the State.

The Chairman presented a letter from the State Engineer dated June 1, 1909, transmitting six copies of Alteration No. 1, Contract No. 47, providing for changes in cross section of lock wall, conduits for electric wire and specifications for miter sills; providing for joints and valves in floor of lock and increasing amount of clearing on contract, for the consideration of the Board.

The alteration was examined and discussed, action thereon being deferred pending further investigation.

Mr. Barnes then made an oral report regarding the action of the ice and elements upon concrete structures in the Mohawk river. In view of the deterioration which has taken place during the past winter, on structures subject to the action of ice and drift, the Board recommends that the State Engineer investigate this matter with a view of protecting such structures from deterioration by means of suitable armour.

The Board then discussed until adjournment with C. C. Egbert, Expert in Electrical Design, matters relating to the electric equipment for the operation of lock gates, valves and capstans, which were held for further investigation.

The Board adjourned at 6 P. M., to meet at 9 A. M., June 2, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., June 2, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY,  
Col. SYMONS.

Minutes of the meeting of June 1, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated June 2, 1909, transmitting copy of a report from William B. Landreth, Special Deputy State Engineer, dated June 1, 1909, relative to the location of Lock No. 2, Contract No. 69, Champlain canal, at Lower Mechanicville, giving further information as to the comparative costs of the south or land line and of the north or river line.

The Board discussed the subject with the State Engineer and Special Deputy State Engineer, and, on motion, the following preambles and resolutions were adopted:

*Whereas*, Upon further investigation it has developed that the foundation for upper approach to Lock No. 2 on the location approved at the meeting of the Advisory Board of April 13, 1909, has been found by actual borings to be lower than was anticipated; and

*Whereas*, The crest elevation of Dam No. 1 at Waterford was fixed at the elevation of 28.7 because of the approval of the location of Lock No. 2 on what is known as the south or land line at this point, therefore be it

*Resolved*, That the Board hereby rescinds its resolutions of April 13, 1909, relating to the location of Lock No. 2, Champlain canal, and the crest elevation of 28.7 for Dam No. 1 at Waterford.

It was then, on motion

*Resolved*, That Dam No. 1 at Waterford be of the fixed type with no movable crest or flash-boards, and that the crest of this

dam be at such an elevation as may hereafter be found to result in the greatest economy to the State.

*Further Resolved*, That the Board recommends to the State Engineer the adoption of what is known as the north or river line at Lower Mechanicville on Contract No. 69, and the location of Lock No. 2, which corresponds thereto, as originally proposed.

The Chairman presented a letter from the State Engineer dated June 2, 1909, transmitting copy of a report from William B. Landreth, Special Deputy State Engineer, dated June 1, 1909, relative to the canalization of the Oswego river from the Battle Island Dam to Oswego.

The report presented four different plans for the canalization of this river, and attached to the report were the following: One copy of Map File No. 6.119-246, showing an outline of various plans proposed by D. A. Watt, Supervising Engineer; also blue-print of profiles of the Oswego river showing various routes, File No. 6.112-110, and one blue-print of plan and cross-sections showing part of the buildings of the Minetto Meriden Shade Cloth Company, Minetto, N. Y., dated March 15, 1909. Also attached to this report was a report by C. C. Egbert, Expert in Electrical Design, dated May 21, 1909, relative to damages caused by the construction as outlined by Plan No. 3 on blue-print 6.112-110.

The matter was discussed with the State Engineer and Special Deputy State Engineer, and it was, on motion

*Resolved*, That it be recommended that the State Engineer complete plans for the canalization of the Oswego river from Battle Island Dam to Oswego substantially as outlined on Plan No. 1 on blue-print No. 6.119-246, conforming as closely as practicable to a resolution passed by the Board at its meeting held November 4, 1905.

The Chairman presented a letter from A. E. Tuck, Deputy Attorney-General, dated June 1, 1909, notifying the Board of a meeting with the representatives of the Kinser Construction Company in regard to matters on Contract No. 27, Champlain canal, and it was arranged that members of the Board should be present at said conference.

The Chairman presented a letter from the State Engineer dated June 2, 1909, transmitting six copies of Alteration No. 11, Contract No. 8, Erie canal, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 11, Contract No. 8, providing for changing gauge of tracks, increasing size of track channels, etc., and changing specifications for chains and miter sills, at an increased cost to the State of \$2,100, submitted to this Board by the State Engineer June 2, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated June 2, 1909, transmitting six copies of Alteration No. 2, Contract No. 45, Erie canal, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 2, Contract No. 45, providing for changing plans for power plant, machinery recess, bridge approaches, and specifications for miter sills; substituting yellow pine for white oak fenders and providing conduits for electric wires, at an increased cost to the State of \$2,223, submitted to this Board by the State Engineer June 2, 1909, be hereby approved and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated June 2, 1909, transmitting six copies of Alteration No. 7, Contract No. 14, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 7, Contract No. 14, providing for changing gauge of tracks; increasing size of track channels, etc.; changing specifications for chains and miter sills, and adding certain quantities to preliminary estimate, at an increased cost to the State of \$5,260, submitted to this Board by the State Engineer June 2, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated June 2, 1909, transmitting six copies of Alteration No. 6, Contract No. 15, Champlain canal, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 6, Contract No. 15, providing for changing plan of dam at Whitehall, at an increased cost to the State of \$512, submitted to this Board by the State Engineer June 2, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The State Engineer verbally presented matters relating to materials for forming embankments on Contract No. 11, asking the advice of the Board as to the advisability of permitting the contractor to deposit in the embankments around core walls material consisting of a mixture of earth and shale, soft enough to be excavated by the steam shovel without the use of explosives.

A majority of the Board visited the contract and after an inspection of the materials and conditions of the work, recommended that the State Engineer permit the contractors to use this mixture of soft shale and earth, if excavated from the prism, for the embankments about the core walls and back of structures, provided they use special care to so mix the shale and earth as to avoid the formation of pockets of shale and to thoroughly compact the embankments so formed.

Board adjourned at 7 P. M., to meet at 9 A. M., June 16, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., June 16, 1909.

Board met at 9 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY,  
Col. SYMONS.

Minutes of the meeting of June 2, 1909, were read, corrected and approved.

The Chairman presented letters from the State Engineer, transmitting appropriation maps as follows:

June 4, 1909, Contract No. 29, Maps Nos. 1550, 1551, 1552 and 1553.

June 7, 1909, Contract No. 41, Map No. 1454-A superseding 1454.

June 9, 1909, Contract No. 60, Map No. 1322.

June 10, 1909, Contract No. 68, Map No. 1085-A superseding 1085.

June 15, 1909, Contract No. 64, Map No. 1418.

June 16, 1909, Contract No. 61, Map No. 1554.

June 16, 1909, Contract No. 31, Maps Nos. 928-A and 928-B.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps Nos. 1550, 1551, 1552 and 1553 on Contract No. 29, received from the State Engineer June 4, 1909; Map No. 1454-A superseding 1454 on Contract No. 41 received from the State Engineer June 7, 1909; Map No. 1322 on Contract No. 60, received from the State Engineer June 9, 1908; Map No. 1418 on Contract No. 64, received from the State Engineer June 16, 1909; Map No. 1554 on Contract No. 61, and No. 928-A and 928-B on Contract No. 31, received from the State Engineer June 16, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copy of this resolution to the State Engineer and to the Superintendent of Public Works.

Regarding Map No. 1085-A superseding 1085 on Contract No. 68, it was, on motion

*Resolved*, That Appropriation Map No. 1085-A superseding 1085 on Contract No. 68, received from the State Engineer June 11, 1909, be returned to the State Engineer for further investigation as the plans for said contract before us do not seem to indicate that the excavation of the prism will encroach upon buildings mentioned in the correspondence submitted.

*Further Resolved*, That it is recommended that the State Engineer investigate as to whether a change in the side slopes might not preclude the necessity of appropriating these buildings.

The Chairman presented a letter from the State Engineer dated June 16, 1909, transmitting Appropriation Maps Nos. 1555, 1556, 1557, 1558, 1559, 1560, 1561, 1562, 1563, 1564, 1565, 1566 and 1567 on Contract No. 61, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contract, it was, on motion

*Resolved*, That Appropriation Maps Nos. 1555, 1560, 1561, 1562, 1563, 1566 and 1567 on Contract No. 61 received from the State Engineer June 16, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward copy of this resolution to the State Engineer and to the Superintendent of Public Works.

Regarding Maps Nos. 1556, 1557, 1558, 1559, 1564 and 1565, it was, on motion

*Resolved*, That Appropriation Maps Nos. 1556, 1557, 1558, 1559, 1564 and 1565 on Contract No. 61, received from the State Engineer June 16, 1909, be returned to the State Engineer, requesting that he investigate as to the practicability and advisability of altering the plans for said contract between Main street and Station 3702 on the south side of the canal in the village of Brockport, omitting the embankment and increasing, if necessary, the cross section of the facing to the old retaining wall, thus permitting the construction to be completed without encroaching on property to the south of the existing blue line.

The Chairman presented a letter from the State Engineer dated June 11, 1909, transmitting a letter from William B. Landreth, Special Deputy State Engineer, dated June 9, 1909, relative to embankments on Contract No. 18.

The letter was read and after discussion with the State Engineer, it was, on motion



*Resolved*, That the letter from the State Engineer dated June 11, 1909, transmitting letter from William B. Landreth, Special Deputy State Engineer, dated June 9, 1909, relative to embankments on Contract No. 18, be returned to the State Engineer in compliance with his request.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated June 8, 1909, transmitting copy of Extra or Unspecified Work Order dated June 3, 1909, Contract No. 25.

The letter was read and ordered filed.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer dated June 9, 1909, transmitting copies of rules for grading of hardwood, pine and hemlock lumber.

The letter was read and the Engineer-Secretary was directed to acknowledge same with thanks.

The Chairman presented a letter from Mr. M. G. Barnes dated June 15, 1909, relative to Alteration No. 1, Contract No. 47, originally presented to the Board at its meeting of June 1, 1909, and held for further consideration.

The letter was read, and it was, on motion

*Resolved*, That Alteration No. 1, Contract No. 47, be returned to the State Engineer, and that a copy of the letter of Mr. M. G. Barnes addressed to the Chairman of this Board under date of June 15, 1909, also be transmitted to the State Engineer, with the recommendation that the changes mentioned therein be made in said alteration plans.

The Chairman presented a letter from Mr. M. G. Barnes dated June 16, 1909, transmitting copy of correspondence relating to the operation of the Moline Lock and to the experience on the Mississippi as to the passage of boats through bridge openings of various widths.

The letter and correspondence were read, and it was, on motion

*Resolved*, That a copy of the letter of Mr. M. G. Barnes and correspondence relating to the operation of the Moline Lock and to the experience on the Mississippi as to the passage of boats

through bridge openings of various widths, be referred to the State Engineer to be placed in the hands of the Expert in Electrical Design, for his information.

Mr. A. B. Fry presented for the files a paper on the Siemens-Schukert System of Electrical Towing written in German by Dr. Georg. Myer, together with a translation of the same.

Mr. Fry also presented a paper on the Electrical Equipment of the Horine Lock, Moldau, Bohemia, written by Dr. Sycora, Electrical Engineer to the Austria-Hungarian Government, to be referred to C. C. Egbert, Expert in Electrical Design.

Recess at 1 P. M.

Board reconvened at 2 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated June 16, 1909, transmitting six copies of Alteration No. 7, Contract No. 27 superseding Alteration No. 6, Contract No. 27, submitted May 18, 1909, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 7, Contract No. 27, which eliminates construction of Lock No. 7, makes changes in bridge abutments and dock walls, changes plan of sluice gates and spillway, changes dimensions of prism, provides concrete retaining wall at certain points and changes plan for wheel-pits at lower plant at Lock No. 8, at a decreased cost to the State of \$245,027.50, submitted to this Board by the State Engineer June 16, 1909, be hereby approved, provided the method it is proposed to adopt under the said Alteration No. 7 be found not to be illegal, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works dated June 9, 1909, advising the Board of the proposed receipt of bids for Contracts No. 20-A, 20-B, 20-C, 20-D and 23, on July 13, 1909, at 12 o'clock noon.

The letter was read and the Engineer-Secretary was directed to acknowledge the receipt thereof, thanking the Superintendent for his courtesy.

The Chairman presented a letter from the State Engineer dated June 16, 1909, transmitting six copies of Alteration No. 7, Contract No. 6, and one tracing No. 29, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 7, Contract No. 6, providing for raising embankments and bridge approaches; changing side slopes and providing additional wash walls, at an increased cost to the State of \$2,293, submitted to this Board by the State Engineer June 16, 1909, be hereby approved, and that the chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated June 16, 1909, transmitting six copies of Alteration No. 6, Contract No. 18, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 6, Contract No. 18, providing for the use of gravel in concrete, at decreased cost to the State of \$617.90, submitted to this Board by the State Engineer June 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from P. J. McWeeney, Financial Clerk, Department of Public Works, dated June 16, 1909, transmitting monthly estimates on Barge Canal contracts as follows:

- Estimate No. 38, Contract No. 1.
- Estimate No. 50, Contract No. 3.
- Estimate No. 41, Contract No. 4.
- Estimate No. 45, Contract No. 6.
- Estimate No. 24, Contract No. 7.
- Estimate No. 29, Contract No. 8.
- Estimate No. 13, Contract No. 9.

Estimate No. 33,	Contract No. 10.
Estimate No. 34,	Contract No. 11.
Estimate No. 14,	Contract No. 12.
Estimate No. 19,	Contract No. 14.
Estimate No. 25,	Contract No. 15.
Estimate No. 13,	Contract No. 17.
Estimate No. 27,	Contract No. 18.
Estimate No. 24,	Contract No. 19.
Estimate No. 23,	Contract No. 25.
Estimate No. 10,	Contract No. 26.
Estimate No. 1,	Contract No. 29.
Estimate No. 8,	Contract No. 31.
Estimate No. 17,	Contract No. 35.
Estimate No. 5,	Contract No. 38.
Estimate No. 3,	Contract No. 40.
Estimate No. 2,	Contract No. 41.
Estimate No. 12,	Contract No. 45.
Estimate No. 3,	Contract No. 47.
Estimate No. 6,	Contract No. 55.
Estimate No. 10,	Contract No. 60.
Estimate No. 7,	Contract No. 61.
Estimate No. 8,	Contract No. 64.
Estimate No. 7,	Contract No. 66.
Estimate No. 6,	Contract No. 68.

The estimates were examined by the Board and the regular certificate of approval signed by the various members and attached.

Mr. A. B. Fry verbally reported inspections of Contracts Nos. 8, 17, 18, 29 and the upper portion of Contract No. 14.

Mr. M. G. Barnes verbally reported inspections of Contracts Nos. 1, 2, 3, 15, 25, 26, 27 and 68.

Mr. W. A. Brackenridge verbally reported inspections of Contracts Nos. 6, 9, 10, 19, 31, 40, 35, 45, 60, 61, 64 and 66.

The Chairman presented a letter from the State Engineer dated June 16, 1909, transmitting plans, specifications and Engineer's preliminary estimate of cost for Contract No. 44, Erie Canal, sheets 1 to 91 inclusive.

The plans, specifications and estimate were examined by the Board and held for further consideration.

The Chairman presented a letter from the State Engineer, dated June 16, 1909, transmitting the final account for work done under Contract No. 34, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Contract No. 34, dated August 8, 1906, by M. Fitzgerald, Contractor, providing for furnishing and erecting in place a steel highway bridge superstructure over the Erie canal at Saratoga avenue, Waterford, N. Y., amounting to \$22,257.58, submitted to this Board by the State Engineer June 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Board then considered with the State Engineer matters relating to the progress of contract work on the Barge canal.

The Board then considered with William B. Landreth, Special Deputy State Engineer, and D. A. Watt, Supervising Engineer, matters relating to the details of construction of the locks at Lockport, N. Y., Contract No. 67.

Board adjourned at 5.30 P. M., to meet at 9 A. M., Wednesday June 30, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held June 30, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE,  
Mr. FRY,  
Col. SYMONS.

Minutes of the meeting of June 16, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated June 22, transmitting Appropriation Map No. 1420 on Contract

No. 64, together with copy of letter from T. W. Barrally, Division Engineer, addressed to William B. Landreth, Special Deputy State Engineer, dated June 22, and copy of letter addressed to the State Engineer by the Special Deputy State Engineer under date of June 24, 1909, all in reference to said Appropriation Map No. 1420 on Contract No. 64.

A comparison of this appropriation map with the original right of way shown on the contract drawings, indicates that the land proposed to be appropriated is greatly in excess of that shown upon the contract drawings, and in the opinion of the Board the explanation offered in Mr. Barrally's letter of June 22, 1909, gives no satisfactory reason for the acquisition of this additional land and is insufficient to justify approval by this Board. It was therefore, on motion

*Resolved*, That said Appropriation Map No. 1420 on Contract No. 64 be returned to the State Engineer without the approval of this Board.

The Chairman presented letters from the State Engineer transmitting appropriation maps, as follows:

June 28, 1909, Contract No. 64, Map No. 1420.

June 28, 1909, Contract No. 29, Maps Nos. 1571, 1572, 1573, 1574, 1576, 1577, 1578.

June 29, 1909, Contract No. 29, Maps Nos. 1575 and 1579.

June 29, 1909, Contract No. 10, Map No. 1580.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps Nos. 1571, 1572, 1573, 1574, 1576, 1577 and 1578 on Contract No. 29 received from the State Engineer June 29, 1909, Maps Nos. 1575 and 1579 on Contract No. 29, and Map No. 1580 on Contract No. 10 received from the State Engineer June 30, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copy of this resolution to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a report dated June 30, 1909, of inspections by Col. T. W. Symons of work under Contracts Nos. 55, 44, 4, 45, 12, 46 and 47 which was read and discussed. It was, on motion

*Resolved*, That the report of Col. T. W. Symons, dated June 30, 1909, relative to Contracts Nos. 55, 44, 4, 45, 12, 46 and 47 be referred to the State Engineer for his consideration.

The Chairman presented a letter from Col. T. W. Symons dated June 30, 1909, relative to the improvement of the Hudson River between Troy and Waterford.

The letter was read and discussed, and it was, on motion

*Resolved*, That a copy of the letter of Col. T. W. Symons dated June 30, 1909, relative to the improvement of the Hudson River between Troy and Waterford be forwarded to the State Engineer and to the Attorney-General for their consideration, stating that the Board concurred with the recommendations contained in said letter.

The Chairman presented a letter from the State Engineer dated June 30, 1909, transmitting six copies of Alteration No. 1, Contract No. 47, resubmitting it for the consideration of the Board.

The alteration was examined and discussed, and on motion, the following preamble and resolutions were adopted:

*Whereas*, It appears that it will involve some delay in the prosecution of the work under this contract to make the changes in plans suggested by the Board, and that the saving which would result from these changes would be somewhat over-balanced by this delay, therefore be it

*Resolved*, That Alteration No. 1, Contract No. 47, providing for changing cross section of lock wall, conduits for electric wires and specifications for miter sills; providing for joints and valves in floor of lock, and increasing amount of clearing on contract, at an estimated increased cost to the State of \$10,433.35, submitted to this Board by the State Engineer June 30, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Further Resolved*, That it is the opinion of the Board that the recommendation previously made in reference to Alteration No.

1, Contract No. 47, be put into effect on all locks of similar character hereafter designed.

Recess at 1 p. m.

Board reconvened at 2 p. m., the same members being present.

The Chairman presented a letter from the State Engineer dated June 30, 1909, submitting plans, specifications and engineer's preliminary estimate for Contract No. 67, Erie canal, for the construction of the canal prism with two locks and all other structures at Lockport, length 0.57 miles, sheets 1 to 70 inclusive.

The plans, specifications and estimate were examined and discussed by the Board and held for further consideration.

The Board again considered plans, specifications and engineer's preliminary estimate for Contract No. 44, originally presented to the Board at its meeting of June 16, 1909, certain changes recommended by the Board having been made. It was, on motion

*Resolved*, That plans, specifications and engineer's preliminary estimate of cost for Contract No. 44, Erie canal, for constructing the canal from a point about 1500 feet west of Mud Creek to Contract No. 4, length 7.10 miles, sheets 1 to 91 inclusive, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Board then considered plans, specifications and engineer's preliminary estimate for Contract No. 43, Erie canal, originally presented to the Board May 18, 1909, certain changes having been made upon the recommendation of the Board. It was, on motion

*Resolved*, That plans, specifications and engineer's preliminary estimate of cost for Contract No. 43, Erie canal, for constructing the canal from a point just east of Oriskany road to about 1500 feet west of Mud Creek, length 10.32 miles, sheets 1 to 77 inclusive, submitted to this Board by the State Engineer May 18, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.



The matter of access to the canal and State land was discussed by the Board, and it was, on motion

*Resolved*, That the Chairman be requested to ask the Superintendent of Public Works to issue to each member of the Board permits allowing them to travel the present Erie canal by boat and towing path by vehicle in the prosecution of their duties.

Mr. Fry presented to the Chairman for use of the Harbor and Terminal Commission an illustrated report and plans, describing the Duisburg-Ruhrort terminal on the Rhine.

The Chairman presented a letter from Mr. M. G. Barnes dated June 30, 1909, transmitting copy of a report made to the Superintendent of Public Works on the breaks in the Erie canal at Culverts No. 45 and 49 west of the city of Rochester, N. Y.

The report was read and discussed, and it was, on motion

*Resolved*, That the Board recommends that copy of the report of Mr. M. G. Barnes, dated June 30, 1909, made to the Superintendent of Public Works on the breaks in the Erie canal at Culverts No. 45 and 49 west of the city of Rochester, N. Y., be sent to the State Engineer for his consideration, with the statement that the Board concurs in the recommendations therein contained.

The Chairman presented a written report of an inspection made by Mr. M. G. Barnes of Contract No. 41, referring to matters relating to the formation of embankments and control of ground water.

The report was read and discussed, and it was, on motion

*Resolved*, That the report of Mr. M. G. Barnes dated June 30, 1909, relative to Contract No. 41 be referred to the State Engineer recommending that proper action thereon be taken.

The Chairman presented a report from Mr. A. B. Fry, making recommendations regarding work on Contracts No. 15, 25, 68 and 11.

The report was read, and it was, on motion

*Resolved*, That a copy of the report of Mr. A. B. Fry dated June 30, 1909, relative to Contracts No. 15, 25, 68 and 11 be referred to the State Engineer for his consideration.

Board adjourned at 4.30 P. M., to meet at 9 A. M., July 1, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., July 1, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. BRACKENRIDGE,

Mr. FRY,

Col. SYMONS.

Minutes of the meeting of June 30, 1909, were read, corrected and approved.

The Board continued the discussion of the plans, specifications and Engineer's preliminary estimate for Contract No. 67, and also discussed matters in general in connection with Barge Canal work.

Recess at 12 M.

Board reconvened at 2 P. M., the same members being present.

Upon the invitation of the Canal Board, the Advisory Board attended a hearing granted the owners and representatives of power interests at Fulton, N. Y., the subject being proposed changes in Contract No. 10, Oswego canal, affecting the elevations of the upper and lower dams at Fulton.

Representatives of all the water power interests at Fulton were present, and presented their views and arguments relating to the Barge Canal construction at that place.

The hearing lasted until 6.30 P. M., after which the Board adjourned to meet at 9 A. M., Wednesday, July 14, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., July 14, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. BRACKENRIDGE,

Mr. FRY,

Col. SYMONS.

Minutes of the meeting of July 1, 1909, were read, corrected and approved.

The unhealthful condition existing in the present canal in city of Lockport, N. Y., having been brought to the attention of the Board, the Chairman was requested to communicate with the State Engineer, drawing his attention to the fact that considerable sewage is being discharged into the canal within the limits of the city of Lockport, also that garbage is being disposed of in the canal in the same locality, all of which will be a serious obstacle to the building and operation of the new locks now proposed for construction, and requesting that the State Engineer detail an engineer to make a thorough investigation and report on this matter, to be presented to the Board, if practicable, before August 1, 1909.

Col. T. W. Symons made a verbal report of an inspection of Contracts No. 6, 9, 19, 40, 60, 61, 64 and 66.

Mr. W. A. Brackenridge made a verbal report of inspections of Contracts No. 4, 12 and 55.

Mr. M. G. Barnes made a verbal report of inspections of Contracts No. 10, 35, 45, 46 and 47.

Mr. A. B. Fry made a verbal report of inspections of Contracts No. 1, 2, 3, 11, 15, 25, 26 and 68.

The Chairman presented a written report dated July 12, 1909, of inspections made by the Engineer-Secretary of Contracts No. 8, 17, 14, 18, 29 and 31.

The Board then discussed with William B. Landreth, Special Deputy State Engineer, matters relating to the construction of "High Dam" on the Oswego river, especially regarding the location of the bulkhead. The opinion of the Board was that the said bulkhead should be located substantially perpendicular to the contours of the river bank, at the end of the dam at which the bulkhead is to be located.

William B. Landreth, Special Deputy State Engineer, appeared before the Board and presented for its consideration and advice, a suggestion emanating from the contractors that the excavation for the canal prism through the cut immediately west of Brewerton, be so conducted as to permit the banks to take their natural slope by undercutting, in lieu of forming a definite slope as prescribed by the specifications governing this contract. The Board believes that the suggestion will result in an irregular section of canal prism with the probability of unstable sides, and therefore disapprove the suggestion and recommends to the State Engineer that the excavation be made, in general, in accordance with the specifications as amended by the Supplemental Order, Alteration No. 3, Contract No. 12, modifying the original provisions of the contract.

The Board then informally discussed with William B. Landreth, Special Deputy State Engineer, and H. D. Alexander, Resident Engineer, a tentative plan for the construction of dry walls for sides of prism, through the quarry section, on Contract No. 62. No decision was reached and the matter was held for more complete estimates as to cost.

Recess at 1.15 p. m.

Board reconvened at 2.30 p. m., the same members being present.

The Chairman presented a letter from the State Engineer dated July 14, 1909, asking the advice of the Board relative to the rebuilding of the bridge across the Hudson river at Waterford which had been recently destroyed by fire, and transmitting a blue-print of sheet No. 54, Contract No. 70, and a letter from William B. Landreth, Special Deputy State Engineer, relating thereto.

After a discussion of the matter, the Board recommended that the bridge be located and the channel be excavated substantially in accordance with the original line on blue-print No. 54 of Contract No. 70, dated December 31, 1908; with the proviso, however, that the permit for the construction of new bridge contain a provision that if at any time in the future a draw span is required, the owners of said bridge obligate themselves to construct such draw span of such size as may be specified by the State officials.

The Chairman presented a communication from the State Engineer, dated July 14, 1909, transmitting for the consideration of the Board, plans, specifications and engineer's preliminary estimates, providing for the completion of the Barge Canal Contract No. 2, Erie canal, section No. 1.

This communication stated that the plans and specifications transmitted had been prepared in accordance with an opinion of the Attorney-General, copy of which accompanied said letter. There was also enclosed with said letter of the State Engineer a communication dated July 14, 1909, from William B. Landreth, Special Deputy State Engineer, which transmitted copies of reports made by Assistant Engineer John H. McElroy, under date of June 7, 1909, and Resident Engineer C. Arthur Poole, under date of June 2, 1909. The letter of the Special Deputy State Engineer suggested that new contract herein referred to be hereafter known as Contract No. 2-E, in which suggestion the Board coincided.

After a consideration of said new proposed contract with its accompanying plans and specifications, and after a conference with the Special Deputy State Engineer, Supervising Engineer G. F. Stickney and Assistant Engineer John H. McElroy, it was, on motion

*Resolved*, That plans, specifications and engineer's preliminary estimates providing for the completion of the construction of Barge Canal Contract No. 2, Erie canal, section 1, be hereby approved by this Board, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

*Further Resolved*, That this Board recommends to the State Engineer that the contract above named be hereafter known as Contract No. 2-E, Erie canal, section 1.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps as follows:

July 8, 1909, Contract No. 5, Map No. 109-A, releasing to original owner land formerly appropriated under Map No. 109.

*July 9, 1909.*

Contract No. 60, Map No. 970-A, superseding Map No. 970.

Contract No. 66, Map No. 1028-A, superseding Map No. 1028.

Contract No. 66, Map No. 1030-A, superseding Map No. 1030.

Contract No. 66, Map No. 1033-A, superseding Map No. 1033.

Contract No. 66, Map No. 1180-A, superseding Map No. 1180.

Contract No. 66, Map No. 1193 A, superseding Map No. 1193.

Contract No. 66, Map No. 1250-A, superseding Map No. 1250.

Contract No. 45, Map No. 1581.

*July 14, 1909.*

Contract No. 42, Maps No. 1582, 1583, 1584 and 1585.

Contract No. 47, Map No. 1586.

Contract No. 64, Map No. 1587.

Contract No. 68, Map No. 1085-A, superseding Map No. 1085.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Map No. 109-A, on Contract No. 5, received from the State Engineer July 9, 1909; Maps No. 970-A, superseding No. 970 on Contract No. 60, Maps No. 1028-A, superseding No. 1028, No. 1030-A, superseding No. 1030, No. 1033-A, superseding No. 1033, No. 1180-A, superseding No. 1180, No. 1193-A, superseding No. 1193 and No. 1250-A, superseding No. 1250 on Contract No. 66, and Map No. 1581 on Contract No. 45, received from the State Engineer July 10, 1909, Maps No. 1582, 1583, 1584 and 1585 on Contract No. 42, Map No. 1586 on Contract No. 47, and Map No. 1587 on Contract No. 64, received from the State Engineer July 14, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copy of this resolution to the State Engineer and the Superintendent of Public Works.

Regarding Appropriation Map No. 1085-A, Contract No. 68, re-submitted by the State Engineer July 14, 1909, it was, on motion

*Resolved*, That Appropriation Map No. 1085-A on Contract No. 68, resubmitted by the State Engineer July 14, 1909, be returned for investigation to see if some method of construction can be adopted whereby the taking of the residence on the land covered by said Appropriation Map No. 1085-A may be avoided.

The Chairman presented a letter from the State Engineer dated July 1st, transmitting a letter from William B. Landreth, Special Deputy State Engineer, dated June 29, and from Resident Engineer T. W. Barrally, dated June 19, relative to coping on wash wall for Contract No. 9, Erie canal, requesting the opinion of the Board as to whether the plans definitely show coping on the south side of the canal.

After an examination of the original plans and specifications for said contract, it was, on motion.

*Resolved*, That the Chairman be requested to write the State Engineer, stating that it is the opinion of the Board that the intent of the original plans and specifications called for coping on wash wall on both sides of the canal on this contract. This coping is specifically shown on the south side on sheets No. 3, 4, 5, 6, 7, 8, 9, 11 and 12. Sheet No. 3 also shows detail of construction of a portion of the north bank which includes wash wall, coping and lining. It is the opinion of the Board that it was the intent of the design to show in said detail method of construction rather than location, especially as the typical cross sections in small scale on sheets above referred to plainly indicate coping on the south side.

The Chairman is further requested to invite attention to paragraphs 3 and 4 of the specifications covering questions where alleged ambiguity exists in the plans.

The State Engineer presented monthly estimates for work done to July 1, 1909, on the following Barge Canal contracts which estimates were examined by the Board and the regular certificate of approval, in duplicate, signed and attached thereto:

Estimate No. 39, Contract No. 1.

Estimate No. 51, Contract No. 3.

Estimate No. 42, Contract No. 4.  
Estimate No. 46, Contract No. 6.  
Estimate No. 30, Contract No. 8.  
Estimate No. 14, Contract No. 9.  
Estimate No. 34, Contract No. 10.  
Estimate No. 35, Contract No. 11.  
Estimate No. 15, Contract No. 12.  
Estimate No. 19, Contract No. 14.  
Estimate No. 26, Contract No. 15.  
Estimate No. 14, Contract No. 17.  
Estimate No. 28, Contract No. 18.  
Estimate No. 25, Contract No. 19.  
Estimate No. 24, Contract No. 25.  
Estimate No. 11, Contract No. 26.  
Estimate No. 2, Contract No. 29.  
Estimate No. 9, Contract No. 31.  
Estimate No. 18, Contract No. 35.  
Estimate No. 6, Contract No. 38.  
Estimate No. 4, Contract No. 40.  
Estimate No. 3, Contract No. 41.  
Estimate No. 13, Contract No. 45.  
Estimate No. 6, Contract No. 46.  
Estimate No. 4, Contract No. 47.  
Estimate No. 7, Contract No. 55.  
Estimate No. 11, Contract No. 60.  
Estimate No. 8, Contract No. 61.  
Estimate No. 9, Contract No. 64.  
Estimate No. 8, Contract No. 66.  
Estimate No. 7, Contract No. 68.

The following estimates received from the State Engineer were returned without the certificate of the Board, no work having been done on these contracts during the month of June, 1909:

Estimate No. 47, Contract No. 2.  
Estimate No. 25, Contract No. 9.  
Estimate No. 8, Contract No. 16.  
Estimate No. 25, Contract No. 27.



The Chairman presented a letter from the State Engineer dated July 6, 1909, transmitting copy of report of H. E. Breed, relative to the break in the lock of the Sault Ste. Marie canal, together with blue-prints and photographs.

The Chairman was requested to write the State Engineer acknowledging the receipt of the letter and report and thank him for his courtesy.

The Board gave further consideration to Contract No. 67, previously presented, and it was, on motion

*Resolved*, That Contract No. 67, Erie Canal, Section 10, providing for the construction of the canal prism with two locks and all other structures at Lockport, length 0.57 mile, sheets 1 to 70 inclusive, be returned to the State Engineer for further study especially as regards omitting the by-pass and power culverts from the proposed lock walls, and placing a culvert or tunnel to the south of the proposed lock walls. The said proposed tunnel or culvert to act both as a by-pass and power culvert, it being the belief of the Board that the above outlined construction may be more advantageous.

In compliance with a request of the State Engineer the Board decided to go over the route of the feeder from the Hinckley reservoir between Morgan's dam and the West Canada creek and Nine Mile creek on July 15, 1909.

The Board adjourned at 6 P. M. to meet at 9 A. M. Wednesday, August 4, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., August 4, 1909.

Board met at 9.30 A. M.

Present: Mr. BRACKENRIDGE, *Acting Chairman*,  
 Mr. BARNES,  
 Mr. FRY,  
 Col. SYMONS.

Minutes of the meeting of July 14, 1909, were read, corrected and approved.

On July 15, 1909, members of the Board proceeded from Morgan's Dam on West Canada Creek on foot and by team over the line of the proposed feeder between the site of said dam and near the point of proposed discharge into Nine Mile creek, noting the conditions as affecting construction.

The Chairman presented a letter from William Halloway, President, Lyons Business Men's Association, dated July 29th, and a resolution passed by the board of trustees of the village of Lyons, dated July 30, 1909, relative to the location of the Barge canal in the vicinity of that village, both of which withdrew formal protests of these bodies against the proposed route of the Barge canal south of Lyons.

The letters were read and the Chairman was requested to acknowledge receipt of same, stating that the location was still under consideration and had not been definitely decided.

It having been brought to the attention of the Board that the Attorney-General and the Superintendent of Public Works desired certain verbal changes in the form of Contract No. 2-E, said verbal changes being as follows from the draft of said contract as originally approved by this Board:

Removal from the estimate for the contract those items which did not appear in the original contract and which referred to the finishing of surfaces of concrete already built, and the cleaning up of the site of the work, and inserting under Special Specifications new paragraphs 4s, 5s, 6s and 7s, which refer to these items, and changing the general description of the contract so as to omit all reference to the repair of defective work heretofore done on this contract.

In giving due consideration to the matter, it was on motion

*Resolved*, That the Board acquiesce in the following changes in Contract No. 2-E, namely, paragraphs 4s, 5s, 6s and 7s, and paragraph 1, General Description, the above action being taken to confirm informal action taken by members of the Board individually.

The Chairman presented a letter from Mr. M. G. Barnes, dated July 31, 1909, transmitting a report addressed to the State Engi-

neer under date of July 27, 1909, giving results of detailed inspections made in company with Engineers of the State Engineer's Department on Contracts No. 60, 9 and 64, with special reference to concrete work installed under said contracts. Defective concrete work is evidenced on Culverts 44, 45, 51 and 53 and on the South Greece bridge on Contract No. 9; also as regards one bridge pier of Allen's bridge on Contract No. 9.

After giving due weight to the foregoing, it was on motion

*Resolved*, That the Chairman be requested to write a letter to the State Engineer, giving to him the views of the Board regarding what it conceived to be the proper action with reference to the matters covered by Mr. Barnes' report.

The Chairman presented a communication dated July 31, 1909, from Mr. M. G. Barnes, in relation to the study of four projects for the improvement of the Oswego river between Fulton and Oswego, N. Y., this matter, having been considered by the Advisory Board on June 2, 1909, and at certain previous meetings.

After a discussion of the letter, it was on motion

*Resolved*, That the Chairman be requested to transmit to the State Engineer a copy of the letter of Mr. M. G. Barnes, dated July 31, 1909, giving certain estimates for Plan No. 1 and Plan No. 3, for the improvement of the Oswego river between Fulton and Oswego, N. Y., said estimates by Mr. Barnes showing a wide variance from the estimates submitted by the State Engineer under date of June 1, 1909.

*Further Resolved*, That the Chairman be requested to ask the State Engineer to submit to this Board a report, in detail, covering points raised in Mr. Barnes' communication herein referred to.

The Chairman presented a letter from Mr. M. G. Barnes dated July 31, 1909, transmitting copy of a letter addressed to the State Engineer under date of July 27, 1909, relative to the "rounding of quantities for preliminary estimates" on contract work, for the information of the Board. The letter was read and ordered filed.

The Chairman presented a report dated July 27, 1909, relative to inspections of Contracts No. 6, 60, 61, 9, 64, 66, 19, 40 and 41,

made by S. M. Savage, Engineer-Secretary, in company with Hon. Edward A. Bond, Chairman, on July 21, 22 and 23, 1909. The report was read and referred to the State Engineer for his information.

The Chairman presented a letter from E. A. Tuck, Deputy Attorney-General, dated July 20, 1909, relative to a report of Col. Thomas W. Symons, dated July 30, 1909, which referred to the improvement of the Hudson river from Troy to Waterford in connection with the Barge canal, asking for certain information. The letter was read and referred to the State Engineer with the request that the Attorney-General be furnished with the desired information.

The Chairman presented a letter from Mr. M. G. Barnes dated July 31, 1909, transmitting copy of a report made to the State Engineer under date of July 30, 1909, on concrete work on Contracts No. 15 and 25, Champlain canal. The letter was read and ordered filed.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated July 21, 1909, relative to the award of Barge Canal Contracts No. 20-A, 20-B, 20-C and 23. The letter was read and the Engineer-Secretary was directed to acknowledge the same, thanking Mr. Mead for his courtesy.

Recess at 1 p. m.

Board reconvened at 2.30 p. m., the same members being present.

The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting a report by E. F. Van Hoesen, Expert on Railroad Crossings, dated August 3, 1909, giving further information regarding the matter of railroad crossings on the proposed lines for the Barge canal in the vicinity of Lyons. The Board discussed the proposed locations in that vicinity in considerable detail with William B. Landreth, Special Deputy State Engineer.

There also appeared before the Board Mr. Stalter and Mr. Sherman of the Crowell-Sherman-Stalter Co., contractors for Contract No. 47, who made certain statements as to the effect of proposed changes of alignment of the Barge canal in the vicinity of Lyons, on the work included within their contract, a stenographic record of the conversation on the subject being made and placed on file.

The matter was finally referred to the State Engineer for further investigation as to the comparative costs, with special reference to the necessary changes in electric railway lines, which does not appear to have been given full consideration on the estimates thus far presented to the Board.

The Board then discussed with William B. Landreth, Special Deputy State Engineer, and C. C. Egbert, Expert in Electrical Design, matters relative to the operation of locks, gates, valves, etc.

In the matter of operating the gates, it was the opinion of the Board that the plan whereby the gates might be operated from either side of the lock or individually, was the most desirable.

The Board recommended that all operating motors should be placed below the surface of the lock wall, agreeing with a former opinion of the Board on this matter.

The Board recommended that motors rated at  $7\frac{1}{2}$  H. P. be used for the operation of the gates, motors rated at 18 to 20 H. P. be used for the capstans, and motors of 3 H. P., be used for operating the valves; that these motors be preferably of what is known as the "Mill Type."

The Board expressed the opinion that the operating machinery should be so designed that the minimum time in which the miter gates could be opened should be thirty seconds, and that for lift gates the time should be one minute. The Board also expressed the opinion that the machinery operating the valves should be so designated that the rate of opening should be approximately six feet per minute.

The Board also informally discussed preliminary studies for power development at Crescent Dam, Contract No. 14, and at Lock 12, Contract No. 15, at Whitehall. The Board was of the opinion that the State Engineer should proceed with plans substantially along the lines as shown on the plans exhibited and discussed.

The Board considered with William B. Landreth, Special Deputy State Engineer, and A. D. Sanderson, Assistant Engineer, matters in connection with the feeder for the Hinckley Dam, Contract No. 51.

After some discussion, the Board recommended that concrete lining be shown throughout the entire length of the feeder, wherever it is thought possible that it might be required, and that the contract be so drawn that concrete lining might be reduced 100 per cent. if desired. The Board also recommended that in cases where it is necessary to change the earth section of feeder to a section lined with concrete, that the cross-section of the feeder be varied and the established grade of feeder maintained, in order that a uniform flow through the feeder might be obtained.

Board adjourned at 6 P. M. to meet at 9.30 A. M., August 5, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., August 5, 1909.

Board met at 9.30 A. M.

Present: Mr. BRACKENRIDGE, *Acting Chairman*,  
           Mr. BAERNES,  
           Mr. FRY,  
           Col. SYMONS.

Minutes of the meeting of August 4, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated July 29, 1909, transmitting five copies of a final account for work

done under Extra or Unspecified Work Order dated December 17, 1908, on Contract No. 17, amounting to \$686.42, the work covered being the construction of a tie buttress to the south abutment of Dam No. 7, Contract No. 17, for the consideration of the Board.

The Board discussed the matter, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated December 17, 1908, on Contract No. 17, amounting to \$686.42, submitted to this Board by the State Engineer July 29, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Board desires to record the fact that in giving its approval of this order, it does so because the State is undoubtedly legally obligated by the action of its officers in ordering this work as a State charge. The Board further desires to record its belief of the fact that said work was performed.

The Chairman presented a letter from the State Engineer dated July 29, 1909, transmitting five copies of a final account for work done under Extra or Unspecified Work Order dated July 3, 1909, on Contract No. 25, the work covered being the furnishing and driving of fifty-five 20-foot piles under the retaining wall at the west end of the Comstock Road bridge on said contract, in addition to the piles called for by the original plans, the amount involved for said fifty-five piles being \$275.

The final account was examined by the Board, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated June 3, 1909, on Contract No. 25, amounting to \$275, submitted to this Board by the State Engineer July 29, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated July 23, 1909, transmitting five copies of a final account for work done under Extra or Unspecified Work Order dated November 25, 1908, on Contract No. 14, for the consideration of the Board.

After a discussion of the matter by the Board, it was on motion

*Resolved*, That the approval of final account for work done under Extra or Unspecified Work Order dated November 25, 1908, on Contract No. 14, amounting to \$970.78, be withheld pending the receipt of further information.

The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting six copies of Alteration No. 12, Contract No. 8, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 12, Contract No. 8, providing for changing nosing of piers for Dams No. 4 and 5, at an increased cost to the State of \$127.02, submitted to this Board by the State Engineer August 4, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting six copies of Alteration No. 5, Contract No. 9, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 5, Contract No. 9, providing for retaining wall for docking purposes at Knowlesville, and providing retaining wall for Knowlesville bridge approach, at an increased cost to the State of \$13,450.63, submitted to this Board by the State Engineer August 4, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting six copies of Alteration No. 2, Contract No. 64, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 2, Contract No. 64, providing for the construction of the south head wall of Culvert No. 103 of concrete instead of first-class masonry, at a decreased cost to the State of \$1,661.88, submitted to this Board by the State Engineer August 4, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.



The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting six copies of Alteration No. 7, Contract No. 15, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 7, Contract No. 15, Champlain canal, providing for changing nosing of bridge piers at Clinton street, Whitehall, and providing rip-rap at lower approach to Lock 11, at an increased cost to the State of \$453.40, submitted to this Board by the State Engineer August 4, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting six copies of Alteration No. 8, Contract No. 14, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 8, Contract No. 14, providing for changing nosing of piers for Dams No. 9, 10 and 11, at an increased cost to the State of \$92.08, submitted to this Board by the State Engineer August 4, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 4, 1909, transmitting six copies of Alteration No. 3, Contract No. 60, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 3, Contract No. 60, superseding Alteration No. 3, Contract No. 60, submitted by the State Engineer March 18, 1909, providing for making certain changes in the approaches to bridge No. 100; providing retaining wall for docking purposes at Adams Basin, and providing extension for culvert under New York Central Railroad, at an increased cost to the State of \$38,091.84, submitted to this Board by the State Engineer August 4, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 5, 1909, transmitting six copies of Alteration No. 2, Contract No. 31, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 2, Contract No. 31, providing for changes in power plant for Lock 17 at Little Falls, and changing position of ports in north lock wall, at an estimated decreased cost to the State of \$464.65, submitted to this Board by the State Engineer August 5, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 4, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 54, Section 2, Champlain canal, for constructing Lock No. 7 at Fort Edward, length 0.22 mile, sheets 1 to 25 inclusive, for the consideration of the Board.

The plans, specifications and Engineer's preliminary estimate were discussed by the Board and held for further study.

The Chairman presented a letter from the State Engineer dated August 4, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 69, Section 1, Champlain canal, for constructing in the Hudson river, Lock No. 2, below Mechanicville together with all appertaining construction, length about 0.17 mile, sheets 1 to 42, inclusive, for the consideration of the Board.

The plans, specifications and Engineer's preliminary estimate were discussed by the Board and held for further study.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated August 4, 1909, transmitting copy of Extra or Unspecified Work Order dated July 26, 1909, on Contract No. 19. The order was read and filed.

Mr. M. G. Barnes made a verbal report of inspections made by him on August 2, 1909, of work under Contracts No. 1, 3, 26 and 68.

Mr. W. A. Brackenridge made a verbal report of inspections made by him on July 16, 1909, of work under Contracts No. 10, 35 and 45.

The Board then discussed with William B. Landreth, Special Deputy State Engineer, C. C. Egbert, Expert in Electrical Design, and A. D. Sanderson, Assistant Engineer, matters in relation to details of construction of the Hinckley dam.

Recess at 1.30 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps on various contracts, as follows:

July 20, 1909, Contract No. 26, Map No. 513-A superseding 513.

July 22, 1909, Contract No. 61, Maps No. 1639 to 1652, inclusive.

July 22, 1909, Contract No. 61, Maps No. 1639 to 1652, inclusive, and 1602.

July 22, 1909, Contract No. 42, Maps No. 1603 to 1608, inclusive.

July 22, 1909, Contract No. 66, Map No. 1588.

August 3, 1909, Contract No. 14, Map No. 1681.

August 3, 1909, Contract No. 18, Maps No. 1653, 1654 and 1655.

August 3, 1909, Contract No. 19, Maps No. 1430-A, superseding 1430; 701-A, superseding 701; 1660, 1661, 1662, 1663, 1664, 1665, 1666 and 1667.

August 3, 1909, Contract No. 26, Map No. 1656.

August 3, 1909, Contract No. 30, Maps No. 1615, 1617 to 1626 inclusive, 1634 and 1637.

August 3, 1909, Contract No. 46, Maps No. 1657, 1658, 1659, 1670 and 1671.

August 3, 1909, Contract No. 47, Maps No. 1668 and 1669.

August 3, 1909, Contract No. 55, Map No. 1680.

August 3, 1909, Contract No. 60, Maps No. 930-A, superseding 930, and 1638.

August 3, 1909, Contract No. 64, Map No. 1601.

August 4, 1909, Contract No. 9, Maps No. 762-A and 762-B, superseding 762.

August 4, 1909, Contract No. 30, Maps No. 1612, 1613, 1614, 1616, 1630, 1631, 1632 and 1633.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Map No. 513-A, superseding 513, on Contract No. 26, received from the State Engineer July 21st; Maps No. 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651 and 1652 on Contract No. 61, Maps No. 1589, 1590, 1591, 1592, 1593, 1594, 1595, 1596, 1597, 1598, 1599, 1600 and 1602 on Contract No. 64, Maps No. 1603, 1604, 1605, 1606, 1607 and 1608 on Contract No. 42, and Map No. 1588 on Contract No. 66, received from the State Engineer July 22d; Map No. 1681 on Contract No. 14, Maps No. 1653, 1654 and 1655 on Contract No. 18, Map No. 1430-A, superseding 1430, and Map No. 701-A, superseding 701, Maps No. 1660, 1661, 1662, 1663, 1664, 1665, 1666 and 1667 on Contract No. 19, Map No. 1656 on Contract No. 26, Maps No. 1615, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1634 and 1637 on Contract No. 30, Maps No. 1657, 1658, 1659, 1670 and 1671 on Contract No. 46, Maps No. 1668 and 1669 on Contract No. 47, Map No. 1680 on Contract No. 55, Map No. 930-A, superseding 930, and Map No. 1638 on Contract No. 60, Maps No. 762-A and 762-B, superseding 762, on Contract No. 9, Map No. 1601 on Contract No. 64, Maps No. 1612, 1613, 1614, 1616, 1630, 1631, 1632 and 1633 on Contract No. 30, received from the State Engineer August 4, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copy of this resolution to the State Engineer and to the Superintendent of Public Works.

Board adjourned at 4 p. m., to meet at 9 a. m., Wednesday, August 18, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany N. Y., August 18, 1909.

Board met at 9 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Col. SYMONS.

Minutes of the meeting of August 5, 1909, were read, corrected and approved.

Col. T. W. Symons made a verbal report of inspections made by him on August 16 and 17, 1909, of work under Contracts No. 29, 31, 18 and 14.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps, as follows:

August 6, 1909, Contract No. 55, Maps No. 1698 to 1702, inclusive, 1142 and 1144; 991-A, superseding 991; 997-A, superseding 997; 1055-A, superseding 1055; 1133-A, superseding 1133.

August 10, 1909, Contract No. 23, Maps No. 1691 to 1696, inclusive, and 1712.

August 10, 1909, Contract No. 30, Maps No. 1704 to 1709, inclusive.

August 10, 1909, Contract No. 47, Maps No. 1687 to 1690, inclusive.

August 10, 1909, Contract No. 60, Map No. 1697.

August 10, 1909, Contract No. 61, Maps No. 1682, 1684 and 1710.

August 10, 1909, Contract No. 66, Map No. 1711.

August 13, 1909, Contract No. 42, Maps No. 1713 to 1723, inclusive.

August 13, 1909, Contract No. 29, Maps No. 1685 and 1703.

August 17, 1909, Contract No. 14, Maps No. 1724, 1725, 1727 to 1731, inclusive.

August 18, 1909, Contract No. 30, Maps No. 1732 and 1733.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1698, 1699, 1700, 1701, 1702, 1142, 1144, 991-A superseding 991, 997-A superseding 997, 1055-A superseding 1055, and 1133-A superseding 1133 on Contract No. 55, received from the State Engineer August 6th; Maps No. 1691, 1692, 1693, 1694, 1695, 1696 and 1712 on Contract No. 23; No. 1704, 1705, 1706, 1707, 1708 and 1709 on Contract No. 30; No. 1687, 1688, 1689 and 1690 on Contract No. 47; No. 1697 on Contract No. 60; No. 1682, 1684 and 1710 on Contract No. 61; and No. 1711 on Contract No. 66, received from the State Engineer August 12th; Maps No. 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722 and 1723 on Contract No. 42, and No. 1685 and 1703 on Contract No. 29, received from the State Engineer August 16th; Maps No. 1724, 1725, 1727, 1728, 1729, 1730 and 1731 on Contract No. 14, received from the State Engineer August 17th; and Maps No. 1732 and 1733 on Contract No. 30, received from the State Engineer August 18, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward a copy of this resolution to the State Engineer and to the Superintendent of Public Works.

In reference to the final account for work done under Extra or Unspecified Work Order dated November 25, 1908, on Contract No. 14, submitted by the State Engineer August 5, 1909, and on which action was deferred pending further information:

After due consideration, the Board declines to approve of this final account for work done under Extra or Unspecified Work Order dated November 25, 1908, on Contract No. 14, providing for the construction of a roadway on Contract No. 14 near the site of Lock 14, Erie canal, believing that the work covered by said order should have been performed by the contractor, if done at all, at his own expense as work incidental in connection with carrying on his contract.

The Board then considered plans, specifications and Engineer's preliminary estimates for Contract No. 69, originally presented to it at the meeting of August 5, 1909.

On motion

*Resolved*, That plans, specifications and engineer's preliminary estimates for Contract No. 69, section 1, Champlain canal, for constructing the Hudson river Lock No. 2 below Mechanicville, together with all appertaining construction, length about 0.17 mile, sheets 1 to 42 inclusive, submitted to this Board by the State Engineer August 5, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Board then considered plans, specifications and Engineer's preliminary estimates for Contract No. 54, originally presented to it at the meeting of August 5, 1909.

On motion

*Resolved*, That plans, specifications and engineer's preliminary estimates for Contract No. 54, section 2, Champlain canal, for constructing Lock No. 7 at Fort Edward, length 0.22 mile, sheets 1 to 25 inclusive, submitted to this Board by the State Engineer August 5, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from Mr. W. A. Brackenridge dated August 16, 1909, in relation to the construction of locks at Lockport, N. Y., under Contract No. 67. The letter was read, and it was, on motion

*Resolved*, That a copy of the letter of Mr. W. A. Brackenridge dated August 16, 1909, relative to the plans for locks at Lockport, N. Y., under Contract No. 67, be sent to the State Engineer for his information.

The Chairman presented a letter from Mr. W. A. Brackenridge dated August 16, 1909, in relation to certain modifications for the Hinckley Dam. The letter was read, and it was, on motion

*Resolved*, That a copy of the letter of Mr. W. A. Brackenridge dated August 16, 1909, relative to certain modifications for the Hinckley Dam, be referred to the State Engineer for his information.

The Chairman presented a letter dated August 5, 1909, from Mr. Winslow M. Mead, Deputy Superintendent of Public Works, relative to the award of Contracts No. 20-D and 23. The letter was read and the Engineer-Secretary was directed to acknowledge the receipt of same with thanks.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated August 10, 1909, transmitting copy of Extra or Unspecified Work Order dated August 5, 1909, on Contract No. 45, for the information of the Board. The order was read and filed.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated August 16, 1909, transmitting copy of Extra or Unspecified Work Order dated August 4, 1909, on Contract No. 41, for the information of the Board. The order was read and filed.

The Chairman presented a letter from the State Engineer dated August 18, 1909, in regard to the relocation of the Troy branch of the New York Central & Hudson River Railroad at Niskayuna, accompanied by copy of a letter addressed to the State Engineer by Winslow M. Mead, Deputy Superintendent of Public Works, under date of August 12, 1909, on the same subject. This correspondence was read and the Engineer-Secretary was directed to acknowledge the receipt of same.

The Chairman presented a letter from the State Engineer dated August 18, 1909, transmitting six copies of Alteration No. 1, Contract No. 55, Section 5, Erie canal, providing for change in location of culvert under Black River canal near Station 77, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion



*Resolved*, That Alteration No. 1, Contract No. 55, section 5, Erie canal, providing for change in location of culvert under Black River canal near Station 77, at no increased cost to the State, submitted by the State Engineer August 18, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Recess at 1 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented a letter from P. J. McWeeny, Financial Clerk, Department Public Works, dated August 17, 1909, transmitting monthly estimates for work done on Barge canal contracts to August 1, 1909, as follows:

- Estimate No. 40, Contract No. 1.
- Estimate No. 52, Contract No. 3.
- Estimate No. 43, Contract No. 4.
- Estimate No. 47, Contract No. 6.
- Estimate No. 31, Contract No. 8.
- Estimate No. 15, Contract No. 9.
- Estimate No. 35, Contract No. 10.
- Estimate No. 36, Contract No. 11.
- Estimate No. 16, Contract No. 12.
- Estimate No. 21, Contract No. 14.
- Estimate No. 27, Contract No. 15.
- Estimate No. 15, Contract No. 17.
- Estimate No. 29, Contract No. 18.
- Estimate No. 26, Contract No. 19.
- Estimate No. 25, Contract No. 25.
- Estimate No. 12, Contract No. 26.
- Estimate No. 3, Contract No. 29.
- Estimate No. 10, Contract No. 31.
- Estimate No. 19, Contract No. 35.
- Estimate No. 5, Contract No. 40.
- Estimate No. 4, Contract No. 41.
- Estimate No. 14, Contract No. 45.

- Estimate No. 7, Contract No. 46.
- Estimate No. 5, Contract No. 47.
- Estimate No. 8, Contract No. 55.
- Estimate No. 12, Contract No. 60.
- Estimate No. 9, Contract No. 61.
- Estimate No. 10, Contract No. 64.
- Estimate No. 9, Contract No. 66.
- Estimate No. 8, Contract No. 68.

These estimates were examined by the Board and the regular certificates of approval, in duplicate, signed and attached thereto.

The Board then discussed the various routes for the location of the Barge canal in the vicinity of Lyons, N. Y., with William B. Landreth, Special Deputy State Engineer, and G. F. Stickney, Supervising Engineer, and after the matter had been studied in detail, it was decided that the line most advantageous to the State was that known as "Line No. 5," and it was, on motion

*Resolved*, That "Line No. 5," as shown on white-print, File No. 4.111-844, be approved subject to the receipt of proper legal waiver of any damages whatsoever from the Crowell-Sherman-Stalter Company as to the elimination of that part of their contract involved by change due to the adoption of "Line No. 5."

The Board then discussed with William B. Landreth, Special Deputy State Engineer; D. A. Watt, Supervising Engineer, and W. R. Davis, Chief Bridge Designer, matters in relation to the design of winches for the operation of movable dams.

Board adjourned at 4.30 P. M., to meet at 9 A. M., August 19, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., August 19, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. FRY.

Mr. A. B. Fry reported verbally inspections made by him on August 18, 1909, of work under Contracts No. 4, 12, 46 and 47.

He stated, in regard to Contract No. 12, that he regretted to see the discontinuance of dredging operations on Oneida lake due to the failure of the conveyors, and that it would require a period of about two months to put the plant in working condition.

The Board then resumed consideration of the matter of winches for operating movable dams with D. A. Watt, Supervising Engineer, and W. R. Davis, Chief Bridge Designer.

The Board also discussed informally with William B. Landreth, Special Deputy State Engineer, a proposed alteration on Contract No. 14, providing for the construction of a power culvert through the abutment at the easterly end of the Crescent dam.

Board adjourned at 1 P. M., to meet at 9 A. M., Wednesday, September 1, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., September 1, 1909.

Board met at 10 A. M.

Present: Mr. BOND, *Chairman*,  
 Mr. BARNES,  
 Col. SYMONS.

Minutes of meetings of August 18 and 19, 1909, were read and approved.

The Chairman presented letters from the State Engineer, transmitting appropriation maps as follows:

August 24, 1909, Contract No. 14, Map No. 1726.

August 31, 1909, Contract No. 30, Maps No. 1609, 1610, 1611, 1628 and 1629.

August 31, 1909, Contract No. 29, Maps No. 1737 and 1738 inclusive.

August 31, 1909, Contract No. 61, Map No. 734.

September 1, 1909, Contract No. 14, Maps No. 1735 and 1736.

September 1, 1909, Contract No. 20-B, Maps No. 1673, 1675, 1676, 1678, 1741 and 1742.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Map No. 1726 on Contract No. 14, received from the State Engineer August 25, 1909; Maps No. 1609, 1610, 1611, 1628 and 1629 on Contract No. 30; Maps No. 1737 and 1738 on Contract No. 29, and Map No. 734 on Contract No. 61 received from the State Engineer August 31, 1909; Maps No. 1735 and 1736 on Contract No. 14, and Maps No. 1673, 1675, 1676, 1678, 1741 and 1742 on Contract No. 20-B, received from the State Engineer September 1, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copies of these resolutions to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated September 1, 1909, transmitting five copies of a final account on Contract No. 7, for the consideration of the Board.

The final account was examined, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated August 17, 1909, on Contract No. 7, amounting to \$27.25, submitted to this Board by the State Engineer September 1, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated September 1, 1909, transmitting five copies of a final account for work on Contract No. 38, for the consideration of the Board.

The final account was examined, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated April 29, 1909, on Contract No. 38, amounting to \$348.25, submitted to this Board by the State Engineer September 1, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 27, 1909, transmitting five copies of a final account on Contract No. 31, for the consideration of the Board.

The final account was examined, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated May 5, 1909, on Contract No. 31, amounting to \$451.27, submitted to this Board by the State Engineer August 27, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated August 23, 1909, transmitting copy of a letter from the Empire Engineering Corporation, relative to a break in the Erie canal at Culvert 54, Contract No. 60, asking the Board's advice in the matter. These letters were read and held for investigation and further consideration.

The Chairman presented a letter from Hon. Frederick C. Stevens, Superintendent of Public Works, dated August 23, 1909, requesting copy of report by Mr. M. G. Barnes, bearing on the subject of conditions of work on Contracts No. 9, 60 and 64, and a copy of letter addressed by the Chairman of this Board to the State Engineer, giving the Board's action in the matter. The Chairman also submitted a letter from the Superintendent of Public Works under date of August 24, 1909, acknowledging receipt of above papers and indorsing the action of the Board.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated August 25, 1909, transmitting copy of Extra or Unspecified Work Order dated August 19, 1909, on Contract No. 60. The order was read and filed and the Engineer-Secretary was directed to acknowledge receipt of same.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated August 30, 1909, transmitting copy of Extra or Unspecified Work Order dated August 28, 1909, on Contract No. 8. The order was read and filed, and the Engineer-Secretary was directed to acknowledge its receipt.

The Chairman presented a letter from the State Engineer dated August 30, 1909, transmitting five copies of a final account on Contract No. 34, for the consideration of the Board.

The final account was examined, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated February 27, 1908, on Contract No. 34, amounting to \$59.32, submitted to this Board by the State Engineer August 30, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated September 1, 1909, transmitting six copies of Alteration No. 9, Contract No. 14, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 9, Contract No. 14, providing for modifying abutment "A" of Crescent Dam, at an estimated increased cost to the State of \$2,214, submitted to this Board by the State Engineer September 1, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Board adjourned at 12 noon, to meet at the call of the Chairman.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., September 13, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. BRACKENRIDGE,

Mr. FRY.

Minutes of the meeting of September 1, 1909, were read and approved.

The Chairman presented a letter from the State Engineer dated September 9, 1909, transmitting a letter from S. F. Sherman, President Newark Board of Trade, relative to the route adopted for the Barge Canal in the vicinity of Newark. The letters were read and filed.

The Chairman presented a letter from S. F. Sherman, President Newark Board of Trade, and a letter from James E. Ratchford, dated September 11, 1909, and a petition of citizens of Newark dated September 9, 1909, all of which communications referred to a reconsideration of the adoption of the "South Route" in that vicinity.

The letters and petition were read and after a consideration of the matter, the Chairman was requested to reply, stating the reasons for the adoption of the "South Route."

The Chairman presented letters from the State Engineer, transmitting appropriation maps on various contracts, as follows:

September 8, 1909, Contract No. 19, Maps No. 1743 to 1747, inclusive.

September 8, 1909, Contract No. 23, Maps No. 1748 to 1760, inclusive.

September 8, 1909, Contract No. 23, Map No. 1781.

September 8, 1909, Contract No. 41, Map No. 1782.

September 8, 1909, Contract No. 60, Maps No. 1779 and 1780.

September 8, 1909, Contract No. 61, Maps No. 1775 to 1778, inclusive.

September 8, 1909, Contract No. 66, Maps No. 1761 to 1764, inclusive.

September 8, 1909, Contract No. 66, Maps No. 1766 to 1770, inclusive.

September 8, 1909, Contract No. 66, Map No. 1178-A superseding 1178.

September 13, 1909, Contract No. 30, Maps No. 1797 to 1804, inclusive.

September 13, 1909, Contract No. 40, Map No. 1771.

September 13, 1909, Contract No. 55, Maps No. 1783 to 1796, inclusive.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1743, 1744, 1745, 1746 and 1747 on Contract No. 19, Maps No. 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760 and 1781 on Contract No. 23, Map. No. 1782 on Contract No. 41, Maps No. 1779 and 1780 on Contract No. 60, Maps No. 1775, 1776, 1777 and 1778 on Contract No. 61, Maps No. 1761, 1762, 1763, 1764, 1766, 1767, 1768, 1769, 1770 and 1178-A superseding 1178 on Contract No. 66, received from the State Engineer September 9, 1909, and Maps No. 1797, 1798, 1799, 1800, 1801, 1802, 1803 and 1804 on Contract No. 30, received from the State Engineer September 13, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward a copy of this resolution to the State Engineer and the Superintendent of Public Works.

Regarding Maps No. 1783 to 1796, inclusive, on Contract No. 55, and Map No. 1771 on Contract No. 40, these maps were held for further investigation.

G. F. Stickney, Supervising Engineer, appeared before the Board with additional detail sheets in connection with proposed construction of Lock No. 7, Contract No. 54, Champlain Canal.

Giving due weight to the previous general approval for said plans for said lock, and after further discussion of the matter, it was on motion

*Resolved*, That the Board approves of design marked "A" showing a cross-section of Lock No. 7, Contract No. 54, Champlain canal, with the addition of timber piles under the walls, and also under the floors of the structure, provided it is found practicable to drive such piles.

*Further Resolved*, That it is recommended to the State Engineer that suitable rip-rap be placed back of the river wall of said Lock No. 7 to protect against scour from the new back channel for the Hudson river to be constructed alongside of the lock.



The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated September 8, 1909, transmitting copy of Extra or Unspecified Work Order dated September 2, 1909, on Contract No. 6. The communication was read and filed.

Recess at 12.45 P. M.

Board reconvened at 2 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated September 13, 1909, transmitting six copies of Alteration No. 3, Contract No. 64, for the consideration of the Board.

The alteration was examined, and it was on motion

*Resolved*, Alteration No. 3, Contract No. 64, providing for changing position of Jackson's Bridge No. 141, at no increased cost to the State, submitted to this Board by the State Engineer September 13, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Monthly estimates for work done on Barge Canal Contracts to September 1, 1909, were received from the State Engineer, and upon examination by the Board the regular certificates of approval were signed in duplicate, and attached as follows:

- Estimate No. 41, Contract No. 1.
- Estimate No. 53, Contract No. 3.
- Estimate No. 44, Contract No. 4.
- Estimate No. 48, Contract No. 6.
- Estimate No. 32, Contract No. 8.
- Estimate No. 16, Contract No. 9.
- Estimate No. 36, Contract No. 10.
- Estimate No. 37, Contract No. 11.
- Estimate No. 17, Contract No. 12.
- Estimate No. 22, Contract No. 14.
- Estimate No. 28, Contract No. 15.
- Estimate No. 16, Contract No. 17.
- Estimate No. 30, Contract No. 18.
- Estimate No. 27, Contract No. 19.

Estimate No. 26, Contract No. 25.

Estimate No. 13, Contract No. 26.

Estimate No. 4, Contract No. 29.

Estimate No. 11, Contract No. 31.

Estimate No. 20, Contract No. 35.

Estimate No. 6, Contract No. 40.

Estimate No. 5, Contract No. 41.

Estimate No. 1, Contract No. 42.

Estimate No. 15, Contract No. 45.

Estimate No. 8, Contract No. 46.

Estimate No. 6, Contract No. 47.

Estimate No. 9, Contract No. 55.

Estimate No. 13, Contract No. 60.

Estimate No. 10, Contract No. 61.

Estimate No. 11, Contract No. 64.

Estimate No. 10, Contract No. 66.

Estimate No. 9, Contract No. 68.

The Chairman presented a letter from the State Engineer dated September 13, 1909, submitting plans, specifications and Engineer's preliminary estimate for Barge Canal Contract No. 36, for the consideration of the Board.

The plans, specifications and Engineer's estimate were examined, and it was on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 36, Erie Canal, providing for winches for movable dams, submitted to this Board by the State Engineer September 13, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

*Further Resolved*, That the Board recommends an increase in the price for winches from \$4,000 to \$4,500.

The Chairman presented a letter from the State Engineer dated September 13, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 72, Champlain Canal, for the consideration of the Board.

The plans, specifications and Engineer's estimate were examined, and it was on motion

*Resolved*, That plans, specifications and Engineer's estimate for Contract No. 72, Champlain Canal, providing for dredging a channel in the Hudson river and performing work incidental thereto from Lock No. 2 to Lock No. 4, length 4.1 miles, sheets 1 to 13, inclusive, submitted to this Board by the State Engineer September 13, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

Board adjourned at 4.30 P. M., to meet at the call of the Chairman.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., September 21, 1909.

Board met at 2 P. M.

Present: Mr. BOND, *Chairman*,  
 Mr. BARNES,  
 Mr. FRY.

The Chairman presented letters from the State Engineer, transmitting appropriation maps, as follows:

September 21, 1909, Contract No. 12, Map No. 1809.

September 21, 1909, Contract No. 14, Map No. 1806, 1807 and 1808.

September 20, 1909, Contract No. 40, Map No. 1311-A, superseding 1311.

September 21, 1909, Contract No. 42, Map No. 1813 to 1817, inclusive.

September 20, 1909, Contract No. 53, Map No. 1803.

September 21, 1909, Contract No. 60, Map No. 1818, 1819 and 1820.

September 21, 1909, Contract No. 66, Map No. 1810, 1811 and 1812.

September 21, 1909, Contract No. 14, Map No. 1823 and 1824.

The maps having been examined and compared with the original plans for said contract, is was on motion

*Resolved*, That Appropriation Map No. 1771 on Contract No. 40, received from the State Engineer September 13, 1909, Map No. 1809 on Contract No. 12, Maps No. 1810, 1811 and 1812 on Contract No. 66, Maps No. 1806, 1807, 1808, 1823 and 1824 on Contract No. 14, Map No. 1311-A on Contract No. 40, Maps No. 1813, 1814, 1815, 1816 and 1817 on Contract No. 42, Map No. 1803 on Contract No. 53, Maps No. 1818, 1819 and 1820 on Contract No. 60, received from the State Engineer September 21, 1909, be hereby approved in accordance with Chapter 196, Laws of 1908.

Board adjourned at 5 p. m., to meet at the call of the Chairman.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., October 5, 1909.

Board met at 10 a. m.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. BRACKENRIDGE.

Minutes of the meetings of September 13 and 21, 1909, were read and approved.

A telegram was read from Mr. A. B. Fry stating his inability to be present at the meeting, by reason of duties in connection with the Hudson-Fulton celebration.

The Chairman presented a letter from Mr. A. B. Fry, dated September 14, 1909, transmitting suggested memorandum of reasons which led to the action of the Advisory Board in recommending what is known as the "South Line No. 5" for the Barge Canal from a point southeast of Lyons to a point near Macedon. The communication was read and filed.

The Chairman presented a letter from Mr. M. G. Barnes, dated September 21, 1909, transmitting copy of a letter addressed by him to Mr. E. F. Van Hoesen, expert on railroad crossings under date of September 21, 1909, relative to the elevation of high water in the vicinity of Rome, after the completion of the Barge Canal and the Delta Dam.

The communications were read, and it was, on motion

*Resolved*, That the Board recommends to the State Engineer that the clearance line for the New York Central Railroad bridges across the Mohawk river in the vicinity of Rome, be placed at elevation 428 as recommended by Mr. Barnes.

The Chairman presented a letter from Mr. M. G. Barnes, dated September 17, 1909, relative to a break in the canal at Culvert 54, Contract No. 60, near Adams Basin.

The letter was read and considered in connection with a letter on the same subject, dated August 23, 1909, from the State Engineer and originally presented at the meeting of September 1, 1909, and it was, on motion

*Resolved*, That the Board endorses the recommendations made by Mr. Barnes, under date of September 17, 1909, relative to break in the canal at Culvert 54, Contract No. 60, near Adams Basin, and recommends to the State Engineer that an investigation be made immediately after the close of navigation to determine where the responsibility lies for the leak in question.

The Chairman presented a letter from the State Engineer, dated September 23, 1909, transmitting five copies of a final account on Contract No. 4, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order, dated May 20, 1909, amounting to \$281.34, on Contract No. 4, submitted to this Board by the State Engineer, September 23, 1909, be hereby approved, and that the

Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated September 17, 1909, transmitting a copy of Extra or Unspecified Work Order, dated September 15, 1909, on Contract No. 9. The order was read and filed.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated September 24, 1909, transmitting copy of Extra or Unspecified Work Order, dated September 20, 1909, and another dated September 21, 1909, both on Contract No. 9. The orders were read and filed.

The Chairman presented a letter, dated September 13, 1909, from William B. Landreth, Special Deputy State Engineer, transmitting copy of Extra or Unspecified Work Order, dated September 11, 1909, on Contract No. 14. The order was read and filed.

The Chairman presented a communication from the Secretary of the Public Service Commission, Second District, dated September 16, 1909, relative to the abandonment of a portion of the route of the Hudson Valley Railway Company. The communication was read and filed.

The Chairman presented a letter from S. F. Sherman, President, Newark Board of Trade, dated September 20, 1909, relative to the route of the Barge Canal in the vicinity of Newark. The letter was read and the Chairman was requested to reply thereto.

The Chairman presented a letter from Mr. M. G. Barnes, dated October 4, 1909, transmitting copies of correspondence relative to backfill at Lock 9, Contract No. 25.

The letter was read, and it was, on motion

*Resolved*, That the Board forward to the State Engineer its approval of the recommendations of Mr. Barnes relative to the backfill at Lock 9, Contract No. 25, as expressed in his letter to William B. Landreth, Special Deputy State Engineer, under date of September 30, 1909.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting copy of a letter from William B. Landreth, Special Deputy State Engineer, dated October 4, 1909, relative to the clearance spans at various bridges along the Barge Canal route on the Mohawk river. The communications were read and held for consideration.

The Chairman presented letters from the State Engineer, transmitting appropriation maps as follows:

September 22, 1909, Contract No. 23, Maps No. 1821 and 1822.

October 4, 1909, Contract No. 19, Maps No. 1825, 1826, 1827, 1855 and 1856.

October 4, 1909, Contract No. 42, Maps No. 1828 to 1854 inclusive.

October 4, 1909, Contract No. 66, Map No. 1862.

October 5, 1909, Contract No. 40, Maps No. 1857 to 1861 inclusive.

October 5, 1909, Contract No. 29, Maps No. 1703-A and 1740.

The maps have been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1821 and 1822 on Contract No. 23 received from the State Engineer September 22, 1909; Maps No. 1825, 1826, 1827, 1855 and 1856 on Contract No. 19; Maps No. 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1843, 1844, 1845, 1846, 1847, 1848, 1849, 1850, 1851, 1852, 1853 and 1854 on Contract No. 42 and Map No. 1862 on Contract No. 66, received from the State Engineer, October 4, 1909; Maps No. 1857, 1858, 1859, 1860 and 1861 on Contract No. 40, and Maps No. 1703-A and 1740 on Contract No. 29, received from the State Engineer, October 5, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copy of this resolution to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting Appropriation Map No. 1085-A on Contract No. 68. This map was considered and held for future action.

Recess at 1 P. M.

Board reconvened at 2 P. M., the same members being present.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting six copies of Alteration No. 1, Contract No. 13, together with one tracing No. 9, for the consideration of the Board.

The alteration was examined and discussed, and it was on motion

*Resolved*, That Alteration No. 1, Contract No. 13, providing for short steel approach spans to bridges at Sta. 2901+83 and Sta. 3185+48 on Contract No. 12, Erie Canal, at an increased cost to the State of \$4,451.50 submitted to this Board by the State Engineer October 5, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting plans, specifications and Engineer's preliminary estimate for Contract No. 33, providing for constructing lock gates, needle beams, guard and sluice gates, lock valves, etc., on Contracts No. 2, 10, 11 and 15, for the consideration of the Board.

In examining these plans it was noted that the contract covers work included in the sites of existing contracts above enumerated, namely, No. 2, 10, 11 and 15. The Board does not assume to pass upon the legality of letting new contracts covering the site of existing contracts, but refers this matter to the legal department for review.

After further consideration of the plans, it was, on motion

*Resolved*, That subject to review and approval by the Attorney-General of the legal questions involved, plans, specifications and Engineer's preliminary estimate for Contract No. 33, providing



for the construction of lock gates, needle beams, guard and sluice gates, lock valves, etc., on Contracts No. 2, 10, 11 and 15, submitted to this Board by the State Engineer October 5, 1909, be approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting six copies of Alteration No. 8, Contract No. 15, Champlain Canal, for the consideration of the Board.

The alteration was examined and discussed, and on ascertaining that it covered work heretofore covered in Alteration No. 6, Contract No. 15, approved by this Board June 2, 1909, it was, on motion

*Resolved.* That the action of this Board on June 2, 1909, approving Alteration No. 6, Contract No. 15, be hereby rescinded.

*Further Resolved,* That Alteration No. 8, Contract No. 15, providing for the changing of plans for siphon spillway at Whitehall, and providing for paving the ends of four highway bridge approaches at an estimated increased cost to the State of \$2,565.80, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting six copies of Alteration No. 3, Contract No. 35, together with tracings No. 85 and 86, for the consideration of the Board.

The alteration was discussed and held for further study.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting six copies of Alteration No. 3, Contract No. 66, together with tracing No. 46.

The alteration was discussed and held for further study.

The Chairman presented a letter from the State Engineer, dated October 5, 1909, transmitting plans, specifications and Engineer's preliminary estimate for Contract No. 75, providing for the construction of guard gates, as follows: about 1.3 miles east of Spen-

cerport; near west line of Brockport; 1.5 miles east of Middleport, and incidental work appertaining thereto.

The plans, specifications and estimate were discussed and held for further study.

Board adjourned at 5 p. m., to meet at 9 a. m., October 18, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., October 18, 1909.

Board met at 2.30 p. m.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES.

A hearing was given the following gentlemen, representing the Newark Board of Trade and various interests at Newark, namely, S. F. Sherman, President Newark Board of Trade; Hon. S. S. Piersons, R. A. S. Bloomer, George Burnham, Charles Stewart and Mr. Perkins. These gentlemen stated as their views that the majority of the citizens of Newark desired the location of the Barge canal on what is known as one of the "North Routes," the principal argument being that the canal so located would not then divide the city of Newark into two parts. The Board discussed the matter with the delegation and took under advisement the statements made by the members thereof.

Board adjourned at 5.30 p. m., to meet at 9 a. m., October 19, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., October 19, 1909.

Board met at 10 a. m.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. FRY.

Minutes of the meeting of October 5, 1909, were read and approved.

The Chairman presented a letter from the State Engineer dated October 15th, transmitting copy of a letter from Willam B. Landreth, Special Deputy State Engineer, dated October 13, 1909, relative to the crossing of the line of the Barge Canal by the West Shore Railroad at a point about two miles east of Clyde, and asking the opinion of the Board as to whether the pier in the centre of the river should be removed.

After an examination of the plans, it was, on motion

*Resolved*, That the Board recommends to the State Engineer that the central pier of the West Shore Railroad bridge crossing the line of the Barge Canal at a point about two miles east of Clyde be removed, and if new abutments are required the clear span should be 125 feet at this point. In coming to this decision, the Board has given due weight to the location being on a four-degree curve and to the fact of the Clyde river having high velocity in times of flood.

The Chairman made a verbal report of inspections made by him of work under Contracts No. 6, 19, 40 and 41.

The Chairman presented a written report dated October 15, 1909, of inspections made by Mr. M. G. Barnes on October 12th and 13th, of Contracts No. 55, 42, 29, 46 and 47.

The report was read, and it was, on motion

*Resolved*, That a copy of the report of Mr. M. G. Barnes dated October 15, 1909, of inspections made by him of work under Contracts No. 55, 42, 29, 46 and 47 be forwarded to the State Engineer, with the statement that the Board concurs in the recommendations made by Mr. Barnes.

Mr. A. B. Fry made a verbal report of inspections made by him on October 18, 1909, of work under Contracts No. 1, 3, 26, 32 and 68, Champlain Canal.

The Chairman presented a letter from S. F. Sherman, President, Newark Board of Trade, dated October 9, 1909, relative to a hearing of a committee of citizens from Newark in reference to

the location of the Barge Canal through that village, and acquainted the Board with statements made by the delegation of Newark citizens to himself and Mr. Barnes at the hearing held October 18, 1909, relative to the route of the Barge Canal through Newark.

The Board considered these statements in detail but maintained the position that "Line No. 5" as previously recommended was the most advantageous for the State and for Newark for various reasons some of which are as follows:

1. "Line No. 5" is 1.5 miles shorter than either of the "North Routes" and contains one less lock, resulting in a saving of three-quarters of an hour in time of transit.
2. It costs less to construct "Line No. 5" by about \$250,000.
3. Having one less lock it is cheaper to maintain and operate than the "North Routes."
4. It provides better opportunities for a junction with the Cayuga and Seneca canal, if built.
5. It will improve the drainage of all the land adjoining it because the proposed water surface is low.
6. It permits of good wharfage facilities and permits of street bridges being placed at the natural grade of the streets.
7. It interferes less with the railroads than the "North Routes."

The Chairman presented a letter from Hon. Frederick C. Stevens, Superintendent of Public Works, dated October 5, 1909, relative to the award of Contract No. 43. The letter was read and the Engineer-Secretary was directed to acknowledge the same with thanks.

The Chairman presented letters from William B. Landreth, Special Deputy State Engineer, transmitting copies of Extra or Unspecified Work Orders as follows:

October 6, 1909, Contract No. 60, Extra Work Order, dated October 4, 1909.

October 9, 1909, Contract No. 18, Extra Work Order, dated October 7, 1909.

October 13, 1909, Contract No. 3, Extra Work Order, dated October 12, 1909.

October 15, 1909, Contract No. 19, Extra Work Order, dated October 12, 1909.

October 15, 1909, Contract No. 17, Extra Work Order, dated October 14, 1909.

The Chairman presented a letter from the State Engineer, dated October 19, 1909, transmitting five copies of a final account on Contract No. 17, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated August 23, 1909, on Contract No. 17, amounting to \$166.53, submitted to this Board by the State Engineer October 19, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a communication from the State Engineer, dated October 5, 1909, which transmitted Appropriation Map No. 1085-A on Contract No. 68, together with certain correspondence relating thereto including a letter from the State Engineer, dated July 14th, and a letter from Resident Engineer F. N. Sanders, dated July 2, 1909.

The Board again considered the matter of this appropriation which had been the subject of debate on July 14 and October 5, 1909, and after further consideration, it was, on motion

*Resolved*, That Appropriation Map No. 1085-A on Contract No. 68 received from the State Engineer October 5, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps as follows:

October 11, 1909, Contract No. 20-B, Maps No. 1674 and 1677.

October 18, 1909, Contract No. 63, Map No. 1863.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1674 and 1677 on Contract No. 20-B received from the State Engineer October 12th, and Appropriation Map No. 1863 on Contract No. 63 received from the State Engineer October 19, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copies of the above resolutions to the State Engineer and to the Superintendent of Public Works.

Recess at 1 p. m.

Board reconvened at 2:30 p. m., the same members being present.

The Chairman presented letters from the State Engineer, transmitting six copies each of alterations as follows:

- October 16, 1909, Alteration No. 3, Contract No. 25.
- October 18, 1909, Alteration No. 1, Contract No. 38.
- October 18, 1909, Alteration No. 4, Contract No. 60.
- October 18, 1909, Alteration No. 1, Contract No. 61.
- October 18, 1909, Alteration No. 4, Contract No. 64.

Also, six copies of alterations previously presented at the meeting of October 5, 1909, as follows:

- Alteration No. 3, Contract No. 35.
- Alteration No. 3, Contract No. 66.

After an examination of these alterations, on motion, the following resolutions were adopted:

*Resolved*, That Alteration No. 3, Contract No. 25, providing for changing plans for abutments of Comstock highway bridge, changing location of Fort Ann Highway bridge, and providing for paving ends of bridge approaches, at an increased cost to the State of \$7,816, submitted to this Board by the State Engineer

October 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That Alteration No. 3, Contract No. 35, providing for enlarging the bulkhead at the upper end of the Hydraulic Canal on east side of the Oswego river at Oswego, N. Y., at an increased cost to the State of \$8,166.40, submitted to this Board by the State Engineer, October 5, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That Alteration No. 1, Contract No. 38, providing for allowing contractor to complete embankment with material excavated outside of canal prism, and providing for eliminating construction of Culvert "N," at a decreased cost to the State of \$287.60, submitted to this Board by the State Engineer, October 18, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That Alteration No. 4, Contract No. 60, providing for eliminating all work between Stations 3217+08 and 3219+08, at a decreased cost to the State of \$5,822.90, submitted to this Board by the State Engineer, October 18, 1909, be hereby approved, provided the Alteration Order be not issued until the contractors have signed a supplemental agreement thereto, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That Alteration No. 1, Contract No. 61, providing for eliminating all work between Stations 3739 and 3741, at a decreased cost to the State of \$6,349.50, submitted to this Board by the State Engineer, October 18, 1909, be hereby approved, provided the Alteration Order be not issued until the contractors have signed a supplemental agreement thereto, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That Alteration No. 4, Contract No. 64, providing for the elimination of all work between Stations 5169 and 5171, at a decreased cost to the State of \$6,759.10, submitted to this Board by the State Engineer, October 18, 1909, be hereby approved, provided the Alteration Order be not issued until the contractors have signed a supplemental agreement thereto, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That Alteration No. 3, Contract No. 66, providing for retaining wall for docking purposes on north side of canal at lower town, Lockport; providing openings in retaining wall for entrance to dry docks, and providing for increasing strength of Culvert No. 125, at an increased cost to the State of \$26,869.47, submitted to this Board by the State Engineer, October 5, 1909,

be hereby approved, except as to the provision for retaining wall on the north side of the canal, recommending instead of approximately 865 feet provided by said alteration that the length be reduced to about 300 feet, extending easterly from the end of the wall provided by the original contract Station 5854+55, thus saving approximately \$17,000, and that the Chairman be requested to notify the State Engineer of such approval.

The Board resumed consideration of plans, specifications and Engineer's preliminary estimate for Contract No. 75, originally presented to the Board at its meeting of October 5, 1909.

On motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 75, for constructing guard gates as follows: About 1.3 miles east of Spencerport; near west line of Brockport; 1.5 miles east of Middleport, and incidental work appertaining thereto, sheets 1 to 14, inclusive, submitted to this Board by the State Engineer, October 5, 1909, be hereby approved, provided that there be added to the plans and specifications a description showing the wooden bridges for the passage of traction animals about abutments of proposed guard gates on the towpath side of the canal; further providing that contractors shall close south opening at each guard gate for the better progress of their work during the season of navigation; further providing that there be added to the specifications a definite provision for by-passing any drainage required through any cofferdams that it may be essential to install in connection with said Contract No. 75, and further providing that this contract be not let until the alterations this date approved on Contracts No. 60, 61 and 64 are put into effect. The Chairman was requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer, dated October 18, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 71, for the consideration of the Board.

The plans, specifications and estimate were examined and discussed by the Board, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 71, providing for constructing in the



Hudson River lock and Dam No. 1 above Waterford, and dredging from Lock No. 1 to Lock No. 2, with all appertaining construction, length about 3.96 miles, sheets 1 to 43, inclusive, submitted to this Board by the State Engineer, October 18, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer, dated October 18, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 70, for the consideration of the Board.

The plans, specifications and estimate were examined and discussed by the Board, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 70, providing for dredging a channel in the Hudson river and performing work incidental thereto from Waterford to Lock No. 1, length 3.32 miles, sheets 1 to 11, inclusive, submitted to this Board by the State Engineer, October 18, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter dated October 18, 1909, from P. J. McWeeney, financial clerk, transmitting monthly estimates on Barge canal contracts for work done to October 1, 1909, as follows:

- Estimate No. 42, Contract No. 1.
- Estimate No. 54, Contract No. 3.
- Estimate No. 45, Contract No. 4.
- Estimate No. 49, Contract No. 6.
- Estimate No. 33, Contract No. 8.
- Estimate No. 17, Contract No. 9.
- Estimate No. 37, Contract No. 10.
- Estimate No. 38, Contract No. 11.
- Estimate No. 18, Contract No. 12.
- Estimate No. 23, Contract No. 14.
- Estimate No. 29, Contract No. 15.
- Estimate No. 17, Contract No. 17.
- Estimate No. 31, Contract No. 18.

- Estimate No. 28, Contract No. 19.
- Estimate No. 27, Contract No. 25.
- Estimate No. 14, Contract No. 26.
- Estimate No. 5, Contract No. 29.
- Estimate No. 12, Contract No. 31.
- Estimate No. 21, Contract No. 35.
- Estimate No. 2, Contract No. 42.
- Estimate No. 6, Contract No. 41.
- Estimate No. 6, Contract No. 40.
- Estimate No. 16, Contract No. 45.
- Estimate No. 9, Contract No. 46.
- Estimate No. 7, Contract No. 47.
- Estimate No. 1, Contract No. 53.
- Estimate No. 10, Contract No. 55.
- Estimate No. 14, Contract No. 60.
- Estimate No. 11, Contract No. 61.
- Estimate No. 12, Contract No. 64.
- Estimate No. 10, Contract No. 68.
- Estimate No. 11, Contract No. 66.
- Estimate No. 1, Contract No. 20-B.

The estimates were examined by the Board and the regular certificate, in duplicate, signed and attached.

The Chairman presented a letter from the State Engineer, dated October 19, 1909, relative to power development at the Lockport Locks, No. 34 and 35, Contract No. 67, accompanied by a letter from William B. Landreth, Special Deputy State Engineer, dated October 12, 1909, and a report by C. C. Egbert, expert in electrical design, dated September 18, 1909, referring to the same subject.

These letters were read and held for further consideration.

Mr. Fry presented for the files copy of a letter addressed by him to A. R. Smith, Secretary, Harbor and Terminal Commission, under date of October 13, 1909, relative to Barge canal terminals at the port of New York.

Board adjourned at 6:30 P. M., to meet at 9 A. M., Wednesday, November 3, 1909.

Minutes of a special meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., October 27, 1909.

Board met at 11:30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. FRY,

A hearing was given to the following representatives of certain interests at Lower Lockport, N. Y.: J. H. Eliers, L. E. Huston and Herbert Whitman, who desired to advocate an extension in length of the vertical wall section of the canal of this place, approved by this Board under Alteration No. 3, Contract No. 66, on October 19, 1909.

By request of the Canal Board, after having listened to the statements of the gentlemen above mentioned, the members of the Advisory Board present attended a hearing with the same gentlemen before the Canal Board where the matter above referred to was discussed, and at which time the Advisory Board stated its position in the matter.

Board adjourned at 4:30 P. M.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., November 3, 1909.

Board met at 9:30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. FRY,

Col. SYMONS.

Minutes of the meetings of October 18 and 19, 1909, were read, corrected and approved.

The Board discussed with William B. Landreth, Special Deputy State Engineer, George D. Williams, Division Engineer, and D. B. LaDu, Resident Engineer, and O. L. Williams, Vice-

Pres., Atlantic Gulf & Pacific Co., C. R. Neher and C. W. Fields, Engineers with same company, matters in relation to the hydraulic backfilling behind the walls of Lock No. 11, Contract No. 15.

After considering the matter, the Board desires to state that it sees no objection to the use of the hydraulic method of backfilling in this case providing the method quoted from letter of William B. Landreth, Special Deputy State Engineer to the Atlantic Gulf & Pacific Co., under date of November 4, 1909, be followed:

“First, let the prism fill to elev. 122.0 and construct a spillway at the south end of the S. W. approach wall in order that the water behind the wall would not raise above 122.0. Then the backfill behind the N. W. approach wall should be made first, starting to fill at the north and work south to the lock; this fill should be made in three lifts as follows: first filling to elev. 107.0, and after this has been settled fill to elev. 113.0; after this has been settled fill to the top of the wall or to elev. 118.0. Then before the filling is placed behind the west lock wall a dyke should be built at the north end of the lock to elev. about 124.0, and the fill made not above elev. 122.0 in three lifts: first to elev. 109.0, second to elev. 117.0, and third to elev. 122.0. The backfill behind the S. W. approach should be made in three layers of the same thickness as the N. W. approach.”

The Board then made a study of the lengths of spans required for bridges over the Barge canal between Rexford Flats and Little Falls.

Recess at 1 p. m.

The Board attended the funeral of Hon. Charles H. Gaus, Comptroller of the State of New York, at 2:30 p. m., and reconvened at 3 p. m., the same members being present, at which time the following resolutions were adopted:

*Resolved*, That the Advisory Board of Consulting Engineers desires to express its deep regret at the death of Hon. Charles H. Gaus, Comptroller of the State of New York, and to record its high appreciation of the aid, assistance and co-operation which the Board has always received at his hands; and be it

*Resolved*, That the Board desires further to extend its heartfelt sympathy to Mrs. Gaus and her family in the great loss they have sustained.

The Chairman was requested to transmit a copy of these resolutions to Mrs. Gaus and to the Canal Board.

Col. T. W. Symons made a verbal report to the Board on examinations and observations of the construction of waterways about Puget Sound, the filling in of tide flats by hydraulic dredging and by hydraulicking down high lands in the vicinity, and the construction of a new dock by the Navy Department at Bremer-ton, State of Washington, some features of which he will make the subject of a written report to the Board.

The Chairman presented a letter from the State Engineer dated October 19, 1909, relative to power development on Locks 34 and 35, Contract No. 67, at Lockport, which had been previously presented to the Board at its meeting of October 19, 1909, and held for further consideration. Copies of this letter had previously been sent to each member of the Board for their information.

After discussing the matter with William B. Landreth, Special Deputy State Engineer, and D. A. Watt, Supervising Engineer, the Chairman was requested to write the State Engineer, stating that in the opinion of the Board the best interests of the State would seem to be served by adherence to the plan which has been before tentatively settled upon, i. e., taking the water for lock power purposes through one lock wall, and for feeding the canal below the locks through the other lock wall.

The Board has considered all other plans which have been suggested or proposed, and believes that it should recommend the original plan which is entirely independent of power development with the by-pass water on account of the questionable legality of spending money for the development of power for commercial or other purposes than required specifically for canal purposes.

The attention of the State Engineer is invited to the fact that it is proposed in the originally suggested plan to put in a proper grillage at the outlet at the head of the locks, so that the by-pass water can be diverted and utilized for power purposes independently of any construction work proposed in the plans recommended.

Board adjourned at 5:30 P. M., to meet at 9:30 A. M., November 4, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., November 4, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,  
          Mr. FRY,  
          Col. SYMONS.

Minutes of a special meeting October 27, and regular meeting November 3, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated November 3, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 44, for the consideration of the Board.

The plans, specifications and Engineers's preliminary estimate were examined and discussed by the Board, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 44, Section 5, Erie Canal, for constructing the canal from a point about 1,500 feet west of Mud Creek to Contract No. 4, length 7.10 miles, sheets 1 to 91, inclusive, re-submitted to this Board by the State Engineer November 3, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated November 3, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 49, for the consideration of the Board.

The plans, specifications and Engineer's preliminary estimate were examined and discussed, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 49, Section 8, Erie canal, for constructing the canal from a point about 500 feet east of Yellow Mills bridge to Wayne-Monroe county line, length 6.18 miles, sheets 1

to 60, inclusive, submitted to this Board by the State Engineer November 3, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented letters from the State Engineer, transmitting Appropriation Maps as follows:

October 22, 1909, Contract No. 23, Map No. 1866.

October 22, 1909, Contract No. 38, Map No. 1864.

October 22, 1909, Contract No. 30, Maps No. 1869 to 1873, inclusive.

October 22, 1909, Contract No. 60, Maps No. 1867 and 1868.

October 26, 1909, Contract No. 19, Map No. 1925.

October 26, 1909, Contract No. 35, Maps No. 685-A, 688-A and 703-A.

October 26, 1909, Contract No. 55, Maps No. 1111, 1113, 1114, 1118, 1120 to 1123, inclusive; 1128, 1134, 1147, 1148, 1150, 1151, 1154, 1155, 1158, 1875 to 1920, inclusive.

October 28, 1909, Contract No. 29, Map No. 1874.

November 4, 1909, Contract No. 55, Maps No. 1130 and 1926 to 1934, inclusive.

October 28, 1909, Contract No. 19, Maps No. 1921 to 1924, inclusive.

The maps having been examined and compared with the original plans for said contract, it was, on motion

*Resolved*, That Map No. 1866 on Contract No. 23, Map No. 1864 on Contract No. 38, Maps No. 1869, 1870, 1871, 1872 and 1873 on Contract No. 30, and Maps No. 1867 and 1868 on Contract No. 60, received from the State Engineer October 22d; Map No. 1925 on Contract No. 19, and Maps No. 1111, 1113, 1114, 1118, 1120, 1121, 1122, 1123, 1128, 1134, 1143, 1147, 1148, 1150, 1151, 1154, 1155, 1158, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1886, 1887, 1888, 1890, 1891, 1892, 1893, 1894, 1895, 1897, 1898, 1899, 1900, 1901, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919 and 1920 on Contract No. 55, received from the State Engineer October 26th; Maps No. 1921, 1922, 1923 and 1924 on Contract No. 19 and Map

No. 1874 on Contract No. 29, received from the State Engineer October 28th; Maps No. 1130, 1926, 1927, 1928, 1929, 1930, 1931, 1932, 1933 and 1934 on Contract No. 55, received from the State Engineer November 4, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copies of this resolution to the State Engineer and to the Superintendent of Public Works.

Regarding Maps No. 685-A, 688-A and 703-A, on Contract No. 35, being maps of land to be released to the original owners from whom it was previously appropriated, it was, on motion

*Resolved*, That Maps No. 685-A, 688-A and 703-A, on Contract No. 35, received from the State Engineer October 26, 1909, be returned to the State Engineer with the approval of this Board for such releases.

Recess at 1 p. m.

The Board reconvened at 2 p. m., the same members being present, at which time the Board attended a conference in the office of the State Engineer between the State Engineer, the Superintendent of Public Works, the Attorney-General and the State Treasurer, in relation to matters in connection with Contract No. 2.

On motion, the following preamble and resolutions were adopted:

*Whereas*, William A. Brackenridge, a member of our Board since its inception, has resigned to accept a position of trust and responsibility on the Pacific coast; therefore, be it

*Resolved*, That his associates on this Board hereby express sincere regret at the severance of their relations with Mr. Brackenridge in the public service, where his professional skill, integrity and conscientious discharge of duty, with unvarying courtesy toward his fellow members, have made certain their work and lightened their labors to a degree felt and appreciated by them all.



From the position as member of this Board Mr. Brackenridge withdraws to accept merited recognition and takes with him general confidence of the public he has faithfully served, and from each of the individual members of this Board their lasting friendship and good will; and be it further

*Resolved*, That this minute be spread upon the records of this Board.

The Chairman presented a letter from the State Engineer dated November 3, 1909, withdrawing Appropriation Maps No. 1896 and 1889 on Contract No. 55.

The Chairman presented for the information of the Board copy of U. S. Government specifications relating to the "Co-operation of Contractors," which specifications had been furnished the Board by Mr. A. B. Fry, and which were read and filed.

The Chairman presented a letter from Mr. M. G. Barnes dated October 21st, transmitting copy of a letter addressed to the State Engineer under the same date, relative to the construction of the upper guide-wall of Lock 7, Contract No. 14, and the construction of embankment back of the lower guide-wall of said lock. The letters were read and the Chairman was requested to refer the matter to the State Engineer's Department, asking for a report thereon.

The Chairman presented a letter from Arthur McMullen dated October 27, 1909, in relation to appropriation maps on Contract No. 55.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated October 26, 1909, transmitting copy of Extra or Unspecified Work Order dated October 22, 1909, on Contract No. 11, for the information of the Board. Also a letter dated November 3, 1909, transmitting copy of Extra or Unspecified Work Order dated October 29, 1909, on Contract No. 45. These orders were read and filed.

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The Chairman presented a letter from the State Engineer dated October 5, 1909, originally presented to the Board October 5th,

transmitting a letter from William B. Landreth, Special Deputy State Engineer, relative to the clearance and spans of various bridges along the Barge canal route on the Mohawk river, copies of which were forwarded to the members of the Board for individual study after the meeting of October 5, 1909.

Having examined the plans for the Barge canal at the various crossings and having studied the conditions obtaining, the Board in answer to the questions contained in above-mentioned letter, recommends as follows:

*Sta. 1052+92. Highway bridge at Rexford Flats.*—The removal of the two piers within the limits of the Barge canal channel and the construction of a clear span over the canal.

*Sta. 1084+25. Schenectady Railway bridge.*—The piers be not removed.

*Sta. 1187+17. Delaware & Hudson Railway Co. bridge.*—Piers be removed and a new pier built on the centre line of the Barge canal. The clear span provided to be not less than 100 feet on each side.

*Sta. 1199+73. Highway bridge.*—The removal of the two piers and the construction of one pier at the centre of the canal with a clear span of 100 feet on each side.

*Sta. 1250+70. Main Line N. Y. C. & H. R. R. R. bridge.*—Remove piers No. 2 and 3 and construct new pier at centre line, making the clear openings as near 100 feet as practicable on each side.

*Sta. 1269+08. Scotia highway and trolley bridges.*—Remove one pier and make one clear span approximately 190 feet in order to permit the use of existing piers should the masonry be sufficiently good.

*Sta. 1573+58. B. & M. R. R. bridge.*—That the existing piers be retained, the clear span either side of the central pier to be 130 feet or more.

*Sta. 1750+16. West Shore R. R. bridge.*—The pier be not removed and the length of clear opening to be 100 feet or more each side.

*Sta. 2145+35. Highway bridge, Amsterdam.*—The existing pier in the Barge canal channel be rebuilt in order to permit the full depth of water as close as possible to the pier, the length of span remaining as at present.

*Sta. 2435+25. Suspension bridge, Tribes Hill.*—No change.

*Sta. 2702+50. Highway bridge, Fonda.*—The pier in river be rebuilt making no change in length of span.

*Sta. 3341+58. Highway bridge, Canajoharie.*—The present north pier to be taken out, the span to extend from middle pier to north abutment.

*Sta. 3515+86. Highway bridge, Fort Plain.*—Two old piers of former bridge be removed. The present bridge be not raised.

*Sta. 3817+80. Highway bridge, St. Johnsville.*—Present pier be not removed and there be no change in length of span.

*Sta. 4244+42. Highway bridge, east of Little Falls.*—No change beyond the raising of the bridge in order to reach standard clearance.

It is noted that standard highway bridges have been designed for crossings over the land line of the Barge canal at Sta. 3894+31 and 3951, and that no farm bridges have been provided for by contract plans.

The Chairman presented a letter from the State Engineer dated November 3, 1909, transmitting copy of a letter from William B. Landreth, Special Deputy State Engineer, dated November 1, 1909, both of which related to the request of the city of Lockport that the contractor for Contract No. 40 be required to pass sufficient water by his contract through the closed canal season to furnish the city of Lockport with an adequate supply of water for fire and other purposes.

In consideration of this subject, the Board desires to state that it agrees with the report of the Special Deputy in the matter, and believes that it would be unjust to impose upon the contractor any such condition or expense which might be construed to be in violation of his contract. Furthermore, it desires to recall to the at-

tention of the State Engineer that the city of Lockport was warned as early as the year 1905 that when construction of the Barge canal began west of Lockport, there would be an interference with the taking of water from the canal for city purposes. It also concurs in the belief that the contractor will require all the time at his disposal before the expiration of his contract in order to complete his work.

Board adjourned at 4 P. M.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., November 5, 1909.

Board met at 3 P. M.

Present: Mr. BOND, *Chairman*,  
Mr. RIPLEY,  
Col. SYMONS.

Mr. Joseph Ripley, appointed a member of the Board by the Governor to fill the vacancy occasioned by the resignation of Mr. W. A. Brackenridge, attended the meeting and formally assumed his duties as member of the Advisory Board.

The Board has received information that the Empire Engineering Corporation has formally advised the State Engineer that it intends to complete the work on Contract No. 4 sometime in the month of December. It has been suggested that some member of the State Engineer's Department and of the Department of Public Works be assigned to make an examination of the work in its present condition, to determine any questions which might arise before the acceptance of the work.

The Barge canal work on the various canals was discussed and assignments made for the various members for inspections to be made on or before November 15, 1909.

Board adjourned at 4 P. M., to meet at 12 o'clock noon, Tuesday, November 16, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., November 16, 1909.

Board met at 12 m.

Present: Mr. BOND, *Chairman*,  
Mr. FRY,  
Mr. RIPLEY,  
Col. SYMONS.

Minutes of meetings of November 4 and 5, 1909, were read, corrected and approved.

The Chairman presented a letter from Mr. M. G. Barnes dated November 10, 1909, relative to bridges on the Mohawk river. The letter was read and filed.

The Chairman presented a letter from the State Engineer dated November 10, 1909, transmitting five copies of a final account on Contract No. 3, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated October 12, 1909, on Contract No. 3, amounting to \$16, submitted to this Board by the State Engineer November 10, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated November 9, 1909, transmitting copy of Extra or Unspecified Work Order dated November 5, 1909, on Contract No. 3, Champlain canal. The order was read and filed.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated November 8, 1909, relative to a final inspection of the south section of the dam

at Fort Plain, and in connection therewith the Chairman read a report of inspection of the same made by S. M. Savage, Engineer-Secretary, on November 12, 1909, a confirmation of which inspection was made, as far as possible, by Mr. A. B. Fry on November 15th, the coffer-dam having been partly flooded. In consideration of the matter, the Board stated that judging from the results of these inspections there was no reason why the coffer-dam about the south section of said dam at Fort Plain should not be removed, and recommended that the Superintendent of Public Works be so informed.

Hon. Frederick C. Stevens, Superintendent of Public Works, appeared before the Board and discussed with the Board matters in relation to the necessary construction of a temporary lock near Mindenville, in order to insure navigation on the present Erie canal during the next canal season.

Recess at 1.15 P. M.

Board reconvened at 2.15 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated November 16, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 59, for the consideration of the Board.

The plans, specifications and estimate were examined and discussed, and it was on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 59, Section 4, Erie canal, for constructing two timber locks and connected work near Mindenville, N. Y., length .19 of a mile, sheets 1 to 5, inclusive, submitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated November 16, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 59-A, for the consideration of the Board.

The plans, specifications and estimate were examined and discussed, and it was on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 59-A, Section 4, Erie canal, for excavating the upper approach and site of temporary locks near Mindenville, N. Y., length .1 mile, sheet 1, submitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

*Further Resolved*, That it is the judgment of the Board that no apparent objection exists to the combination of Contracts No. 59-A and 59, and the Board approves of this combination if in the judgment of the State Engineer and the Superintendent of Public Works it would be desirable.

The Board discussed with J. W. Pfau, Engineer in Charge of Railroad Crossings for the N. Y. C. & H. R. R. R., and E. F. Van Hoesen, Expert on Railroad Crossings, matters in relation to the relocation of the N. Y. C. & H. R. R. R., south of Rome, chiefly with regard to the stability of the proposed roadbed in new location. This matter was held for further consideration.

The Board attended a joint meeting with the Canal Board in further consideration of matters in relation to the construction of the previously mentioned temporary lock near Mindenville.

After returning from said joint meeting, the Chairman presented letters from the State Engineer dated November 16, 1909, transmitting five copies each of final accounts for work done under Extra or Unspecified Work Order dated September 20, 1909, and Extra Work Order dated December 5, 1908, on Contract No. 9, for the consideration of the Board.

The final accounts were examined, and it was on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated September 20, 1909, on Contract No. 9, amounting to \$332.38, submitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated December 5, 1908, on Contract No. 9, amounting to \$298.50, submitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated November 16, 1909, transmitting six copies of Alteration No. 13, Contract No. 8, Erie canal, together with one tracing No. 118, for the consideration of the Board.

The alteration was examined, and it was on motion

*Resolved*, That Alteration No. 13, Contract No. 8, Section 2, Erie canal, providing for changes in apron and protection of north span of Dam 6 at Cranesville, at an estimated increased cost to the State of \$1,162.56, submitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated November 16, 1909, transmitting six copies of Alteration No. 10, Contract No. 3, Champlain canal, for the consideration of the Board.

The alteration was discussed and held for further consideration.

The Chairman presented a letter from the State Engineer dated November 16, 1909, transmitting six copies of Alteration No. 1, Contract No. 23, Erie canal, for the consideration of the Board.

The alteration was discussed, and it was on motion

*Resolved*, That Alteration No. 1, Contract No. 23, Section 9, Erie canal, providing for moving guard-lock westward about thirteen feet, at an increased cost to the State of \$1,602, sub-



mitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

*Further Resolved*, That the action of this Board is based on information that the Attorney-General rules that the State is obligated for the increased cost of the guard-gate under consideration, because the changes in the Erie Railroad were made before the plans for the guard-gate were passed by the Canal Board.

The Chairman presented letters from the State Engineer, transmitting appropriation maps as follows:

November 10, 1909, Contract No. 14, Maps No. 1935 to 1941, inclusive.

November 12, 1909, Contract No. 64, Maps No. 1400, 1402 to 1406, 1409 to 1414, inclusive, 1416, 1417, 1419 and 1947.

November 16, 1909, Contract No. 23, Maps No. 1944 to 1946, inclusive.

November 16, 1909, Contract No. 20-B, Map No. 1672.

November 16, 1909, Contract No. 19, Maps No. 1949 and 1950.

November 16, 1909, Contract No. 9, Maps No. 1942 and 1943.

November 16, 1909, Contract No. 20-B, Map No. 1679.

November 16, 1909, Contract No. 30, Maps No. 1953 to 1958, inclusive.

November 16, 1909, Contract No. 64, Maps No. 1415, 1951 and 1952.

The maps having been examined and compared with the original plans for said contracts, it was on motion

*Resolved*, That Appropriation Maps No. 1935, 1936, 1937, 1938, 1939, 1940 and 1941 on Contract No. 14, received from the State Engineer November 10th; Maps No. 1400, 1402, 1403, 1404, 1406, 1409, 1410, 1411, 1412, 1413, 1414, 1416, 1417, 1419 and 1947 on Contract No. 64, received from State Engineer November 13th; Maps No. 1944, 1945 and 1946 on Contract No. 23, Map No. 1672 on Contract No. 20-B, Maps No. 1948, 1949 and 1950 on Contract No. 19, and Maps No. 1942 and 1943 on Contract No. 9, received from the State Engineer November 15, 1909, be hereby approved, in accordance with chapter 196, Laws of 1908.

*Resolved*, That Appropriation Map No. 1679, on Contract No. 20-B, Maps No. 1953, 1954, 1955, 1956, 1957 and 1958 on Contract No. 30, and Maps No. 1415, 1951 and 1952 on Contract No. 64, received from the State Engineer November 16, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

Board adjourned at 6.15 P. M., to meet at 9.30 A. M., November 17, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., November 17, 1909.

Board met at 10 A. M.

Present: MR. BOND, *Chairman*,

MR. FRY,

MR. RIPLEY,

Col. SYMONS.

Minutes of the meeting of November 16, 1909, were read, corrected and approved.

The Chairman presented a communication from Col. T. W. Symons, accompanied by a sketch for a bronze commemorative tablet, designed to be placed on the principal structures of the Barge Canal.

The Board considered the matter and recommended that the sketch of tablet submitted by Col. Symons be referred to the State Engineer for study in his office, with the further recommendation that the tablet or a modification thereof be placed on the principal structures of the Barge Canal.

It having been brought to the attention of the Board that the northerly approach to the Vernon Street Bridge at Middleport on Contract No. 64 was of a very steep gradient, the Board again examined the plans for said contract, and recommended that the State Engineer investigate as to the cost and practicability of lessening the grade of the northerly approach of this bridge so as not to exceed the grade of the southerly approach thereto, and also

as to the expense of providing steps for an approach at each end of the bridge proper.

The Chairman presented a letter from the State Engineer dated November 17, 1909, transmitting Appropriation Maps No. 1960 to 1989, inclusive, on Contract No. 14, and Map No. 768-A on Contract No. 9, for the consideration of the Board.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1960, 1961, 1962, 1963, 1964, 1967, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1976, 1979, 1980, 1981, 1982, 1983, 1984, 1985, 1986, 1987, and 1989 on Contract No. 14 received from the State Engineer November 17, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward a copy of this resolution to the State Engineer and the Superintendent of Public Works.

On motion

*Resolved*, That Appropriation Maps No. 1959, 1965, 1966, 1975, 1977, 1978, 1988 on Contract No. 14, received from the State Engineer, November 17, 1909, be returned to the State Engineer recommending that the right of way line be modified by using longer and a less number of boundary courses, so that the monumenting and future surveying of the State boundary line may be simplified.

Regarding Map No. 768-A on Contract No. 9, being a map of land to be released on the original owner from whom it was previously appropriated, it was, on motion

*Resolved*, That Appropriation Map No. 768-A on Contract No. 9 received from the State Engineer, November 17, 1909, be returned to the State Engineer with the approval of this Board of such release.

Mr. A. B. Fry presented a written report dated November 17, 1909, of inspections made by him on November 13 to 16, 1909, of work under Contracts No. 8, Upper 14, 17, 18, 31, 29, 42 and

20-B. The report was read and the Chairman was requested to transmit a copy thereof to the State Engineer for his information.

Col. T. W. Symons made a verbal report of inspections made by him during the week ending November 13, 1909, of work under Contracts No. 41, 23, 6, 60, 61, 9, 64, 66, 40 and 19.

The Chairman made a verbal report of inspections made by him during the week ending November 13, 1909, of work under Contracts No. 10, 35, 45 and 53.

The Chairman presented a report dated November 15, 1909, of an inspection on November 12 and 13, 1909, by S. M. Savage, Engineer-Secretary, of work at Canajoharie, Lock No. 7, Contract No. 14, and at Crescent on Contract No. 14, and on Contract No. 11. The report was read and filed.

The Chairman presented a letter from the State Engineer dated November 16, 1909, transmitting five copies of a final account on Contract No. 45, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated October 29, 1909, on Contract No. 45, amounting to \$317.97, submitted to this Board by the State Engineer November 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated November 15, 1909, relative to a report upon matters contained in a report of an inspection by Mr. M. G. Barnes of work at Vischer's Ferry. The letter was read and filed.

The Chairman presented a letter from the State Engineer dated November 17, 1909, resubmitting six copies of Alteration No. 3, Contract No. 66.

After a discussion of the alteration, it was, on motion

*Resolved*, That Alteration No. 3, Contract No. 66, Section 10, Erie canal, providing for retaining wall for docking purposes on

north side of canal at lower town, Lockport; providing for openings in retaining wall for entrance to dry docks, and providing for increasing strength of Culvert No. 125, at an increased cost to the State of \$26,869.47, submitted to this Board by the State Engineer November 17, 1909, be respectfully returned to the State Engineer without approval, the Board adhering to its previous recommendation as set forth in minutes of meeting of October 19, 1909, reading as follows:

*Resolved*, That Alteration No. 3, Contract No. 66, providing for retaining wall for docking purposes on north side of canal at lower town, Lockport; providing for openings in retaining wall for entrance to dry docks, and providing for increasing strength of Culvert No. 125, at an increased cost to the State of \$26,869.47, submitted to this Board by the State Engineer, October 5, 1909, be hereby approved, except as to the provision for retaining wall on the north side of the canal, recommending instead of approximately 865 feet provided by said alteration that the length be reduced to about 300 feet, extending easterly from the end of the wall provided by the original Contract Station 5854+88, thus saving approximately \$17,000, and that the Chairman be requested to notify the State Engineer of such approval."

The above action regarding the length for construction of proposed retaining wall is because of the additional expense involved which was not contemplated in the original estimates; and moreover, because the Board believes that existing conditions in lower Lockport do not justify the increased length of vertical wall.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated November 16, 1909, transmitting two copies of Extra or Unspecified Work Order dated October 25, 1909, on Contract No. 10, Oswego Canal. The communications were read and filed.

After a discussion of matters in connection with Contract No. 46, it developed that statements had been made in regard to conditions encountered in actual excavation for proposed lock near May's Point, it was, therefore, on motion

*Resolved*, That there being some doubt as to the conditions disclosed by actual excavation for the foundation for lock near May's Point, the Chairman was authorized to take the necessary steps to have the conditions examined by the Board with a view, if necessary, to recommending another site for lock in question.

*Further Resolved*, That a copy of this resolution be sent to the State Engineer for his information, with the suggestion that he unite in the examination heretofore referred to.

After a discussion of matters in connection with Contract No. 3, in view of the fact that the contractor proposes to finish his work at an early date, it was, on motion

*Resolved*, That the Chairman designate a member of the Board to accompany representatives of the State Engineer's Department and representatives of the contractor, to inspect conditions at Contract No. 3, with a view of determining what work remains to be done to complete said contract.

Mr. Joseph Ripley made a written report, dated November 16, 1909, of inspections made by him of work under Contracts No. 4, 68, 3, 25 and 15. The report was read and the Chairman was requested to forward copies thereof to the State Engineer and the Superintendent of Public Works.

The Chairman presented a letter from the State Engineer dated November 17, 1909, relative to the construction of a dyke along the Oswego canal south of Fulton. The letter was read and the matter was taken under consideration but held for further study.

The Chairman presented a letter from the State Engineer dated November 17, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 21, for excavating the canal prism and constructing guard lock, highway bridge abutments and all appertaining work between the Genesee river and a point west of the tracks of the N. Y. C. & H. R. R., length 2.43 miles, sheets 1 to 25 inclusive, for the consideration of the Board.

The plans, specifications and estimate were discussed by the Board and held for further study.

The Chairman presented a letter from the State Engineer dated November 17, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 50, for constructing a reservoir and dam on the West Canada creek, and performing all other work appertaining to the contract, area of reservoir inside of clearing line about 6.1 square miles, sheets 1 to 26 inclusive, for the consideration of the Board.

The plans, specifications and estimate were discussed by the Board and held for further study.

The Chairman presented a letter from P. J. McWeeney, Financial Clerk, Department of Public Works, transmitting monthly estimates for work done to November 1, 1909, on Barge canal contracts as follows:

Estimate No. 43, Contract No. 1.....	\$1,070
Estimate No. 55, Contract No. 3.....	5,980
Estimate No. 46, Contract No. 4.....	13,660
Estimate No. 50, Contract No. 6.....	18,240
Estimate No. 34, Contract No. 8.....	32,420
Estimate No. 18, Contract No. 9.....	7,510
Estimate No. 38, Contract No. 10.....	41,960
Estimate No. 39, Contract No. 11.....	16,890
Estimate No. 19, Contract No. 12.....	33,510
Estimate No. 24, Contract No. 14.....	161,770
Estimate No. 30, Contract No. 15.....	24,820
Estimate No. 18, Contract No. 17.....	44,120
Estimate No. 32, Contract No. 18.....	29,140
Estimate No. 29, Contract No. 19.....	26,930
Estimate No. 2, Contract No. 20-B.....	130
Estimate No. 1, Contract No. 23.....	2,290
Estimate No. 28, Contract No. 25.....	43,250
Estimate No. 15, Contract No. 26.....	7,090
Estimate No. 6, Contract No. 29.....	16,590
Estimate No. 13, Contract No. 31.....	36,670
Estimate No. 1, Contract No. 32.....	3,390
Estimate No. 22, Contract No. 35.....	18,310
Estimate No. 8, Contract No. 40.....	52,410
Estimate No. 7, Contract No. 41.....	9,020
Estimate No. 3, Contract No. 42.....	13,670
Estimate No. 17, Contract No. 45.....	21,190
Estimate No. 10, Contract No. 46.....	29,970
Estimate No. 8, Contract No. 47.....	40,540
Estimate No. 2, Contract No. 53.....	6,000
Estimate No. 11, Contract No. 55.....	72,640
Estimate No. 15, Contract No. 60.....	27,280
Estimate No. 12, Contract No. 61.....	20,360
Estimate No. 13, Contract No. 64.....	12,350
Estimate No. 12, Contract No. 66.....	17,730
Estimate No. 11, Contract No. 68.....	52,470

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\$961,370

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The estimates were examined by the Board and the regular certificate, in duplicate, signed and attached.

The Chairman presented a letter from the State Engineer dated November 16, 1909, transmitting copy of a letter from William B. Landreth, Special Deputy State Engineer, dated November 12, 1909, relative to bridges on Contract No. 12.

After a discussion of the matter, the Board made the following recommendations:

*Bridge over State Ditch, Sta. 4395.*

The Board recommends a new bridge with a span of 130 feet as covered in letter of William B. Landreth.

*Jordan Bridge, Sta. 4600.*

The Board recommends that the piers be allowed to remain in their present location and that the superstructure be raised to the clearance height, provided investigation shows that it be a sufficiently strong and safe structure to justify such action.

*Bonta's Bridge, Sta. 4699.*

The Board recommends a new structure with a clear span of at least 150 feet over the Barge canal channel, with the remaining spans made of the most economical length.

*Lehigh Valley Railroad Co., Sta. 4804.*

The Board notes the action taken in regard to the Superintendent of Public Works sending said railroad company a clearance diagram, and while the notice to said company would be satisfactory to the Board, the Board sees no objection to assenting, if necessary, to a bridge with a clear span of 150 feet over the Barge canal channel measured at right angles.

*Weedsport Bridge, Sta. 4819.*

The Board recommends that the abutments be rebuilt at the same site and that the superstructure be raised to the clearance height, provided that said superstructure be of sufficient strength to justify such action.



*Free Bridge, Sta. 5021.*

The Board desires to investigate this matter further before making a recommendation.

Board adjourned at 6 P. M., to meet at the call of the Chairman.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., November 23, 1909.

Board met at 9:30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. FRY,

Mr. RIPLEY,

Col. SYMONS.

Minutes of the meeting of November 17, 1909, were read, corrected and approved.

Colonel William S. Black, A. C. Harper and U. S. Assistant Engineer R. H. Talcott appeared before the Board and discussed with it matters in relation to the proposed improvement of the Hudson river by the U. S. government, from deep water below Albany to the junction of the Barge canal with the Hudson river, especially with regard to the construction of the proposed lock and dam above Troy; also matters in reference to a draw span over the Hudson river at Waterford, and to the height and span of other bridges.

The Board stated to Col. Black the desirability of making every effort to have the estimates for the said improvement ready to be submitted to Congress as early as possible in its coming session.

W. Barclay Parsons, representing the Empire Engineering Corporation, contractor for Contracts No. 60 and 64, appeared and

discussed with the Board and the State Engineer proposed alterations on these contracts which alterations eliminated certain sections of work from said contracts in order to permit the construction of guard gates. He stated that the Empire Engineering Corporation objected to having such work eliminated particularly because of the interference which would be caused by having another contractor enter upon the site of its work and the financial loss entailed by the elimination of the said excavation. He agreed to undertake for his company the building of the structure for the guard gates complete, excepting the metal gates, towers and operating machinery. He also agreed to complete one of the structures ready for the metal gates, etc., during the present closed season of navigation and to progress the construction of the second guard gate as rapidly as possible.

After consideration of the matter by the Board, it was, on motion

*Resolved*, That it be recommended to the State Engineer that an Extra or Unspecified Work Order or Alteration agreement be issued to the Empire Engineering Corporation, to build the guard gates on Contracts No. 60 and 64 complete, with the exception of the gates, towers and operating machinery, such Extra Work Order to cover all items in Contract No. 75, except metal in the said portions of these structures, with the understanding that no extra allowance be made the contractor for bailing and draining or maintaining navigation.

The Chairman presented communications from the State Engineer, dated November 23, 1909, transmitting for its consideration copy of Extra or Unspecified Work Order proposed to be given on Contract No. 18, said order being accompanied by tracings "A," "B" and "C," specifications and engineer's preliminary estimate, and also copy of a proposed letter to the Canal Board, dated November 22, 1909.

After consideration of the matter, all the members being present, on motion, the following preambles and resolutions were unanimously adopted:

*Whereas*, In order to maintain navigation on the Erie canal at or near Mindenville, it becomes necessary to construct two temporary timber locks and their approaches before the opening of navigation for the season of 1910; and

*Whereas*, After joint meeting with the Canal Board, conference with the State Engineer, the Superintendent of Public Works and with possible bidders on work referred to, it develops that it will be impossible to build said locks and approaches so as to open navigation on said canal May 15, 1910, if the usual routine for advertising similar work is followed, therefore be it

*Resolved*, That this Board unanimously approves proposed Extra or Unspecified Work Order, to be given on Contract No. 18, providing for building temporary locks and approaches near Mindenville, in accordance with sheets "A," "B" and "C," specifications, and engineer's preliminary estimate of cost to the State of \$32,250, submitted to this Board by the State Engineer, November 23, 1909.

*Further be it Resolved*, That the Board desires in approving this order to record its acquiescence in the reason for issuance of said order set forth in the State Engineer's letter to the Canal Board under date of November 22, 1909, copy of which is on file in this office. The Board also gives weight to the fact that two seasons of exceptionally low rainfall have produced a stage of water in the Mohawk river which makes work called for by said Extra or Unspecified Work Order absolutely essential for the proper maintenance of navigation of the Erie canal as aforesaid.

*Further be it Resolved*, That the Board is influenced by the fact that the contractors for Contract No. 18 will not be able to progress their work as now planned, hence complications might arise resulting in possible damages to the State, unless said Extra or Unspecified Work Order is issued and the timber locks therein described are available for the season of 1910.

*Further be it Resolved*, That in consequence of action taken as herein recorded, the Board's approval of Contracts No. 59 and 59-A is hereby rescinded.

The Chairman presented Alteration No. 10, Contract No. 3, originally presented to the Board at its meeting of November 16, 1909.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration No. 10, Contract No. 3, Section 10, Champlain canal, providing for eliminating all work not yet completed between Stations 256 and 262, at a decreased cost to the

State of \$4,828, submitted to this Board by the State Engineer, November 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated November 23, 1909, transmitting six copies of Alteration No. 5, Contract No. 60, for the consideration of the Board.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration No. 5, Contract No. 60, Section 9, Erie canal, providing for rebuilding the old trunks in Culverts No. 44, 45, 49, 50, 51 and 53, at an increased cost to the State of \$46,521.25; submitted to this Board by the State Engineer, November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated November 23, 1909, transmitting six copies of Alteration No. 5, Contract No. 64, for the consideration of the Board.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration No. 5, Contract No. 64, Section 10, Erie canal, providing for rebuilding old trunks in Culverts No. 110 and 111, and providing for the construction of a waste-weir, etc., at the east branch of Johnson's creek, at an increased cost to the State of \$38,208.90, submitted to this Board by the State Engineer, November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated November 23, 1909, transmitting six copies of Alteration No. 4, Contract No. 66, for the consideration of the Board.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration No. 4, Contract No. 66, Section 10, Erie canal, providing for rebuilding the old trunks of Culverts No. 119 and 121, and for putting a concrete floor in Culvert No. 120, at an increased cost to the State of \$26,062.28, submitted to this Board by the State Engineer, November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated November 23, 1909, transmitting six copies of Alteration No. 1, Contract No. 68, for the consideration of the Board.

The alteration was discussed, and it was, on motion

*Resolved*, That Alteration No. 1, Contract No. 68, Section 1, Champlain canal, providing for modification of west approach to highway bridge at Stillwater, at a decreased cost to the State of \$1,941.32, submitted to this Board by the State Engineer, November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated November 23, 1909, transmitting five copies of a final account on Contract No. 38, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Contract No. 38, dated January 5, 1909, by Henry Tosh & Son, contractors, providing for constructing the superstructure, substructure and approaches for a highway bridge at Wappings, 2.5 miles west of Fairport, N. Y., Sta. 2003+51, amounting to \$16,286.67, submitted to this Board by the State Engineer, November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer, dated November 23, 1909, transmitting five copies of a final account on Contract No. 64, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order, dated February 26, 1909, on Contract No. 64, amounting to \$108, submitted to this Board by the State Engineer, November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

Mr. M. G. Barnes made a verbal report of inspections made by him on November 22, 1909, of work under Contracts No. 19, 40 and 66.

Recess at 1 P. M.

Board reconvened at 2.30 p. m., the same members being present.

The Board discussed informally with William B. Landreth, Special Deputy State Engineer, matters in relation to the construction of retaining walls at certain points on Contract No. 6.

The Board also discussed informally with William B. Landreth, Special Deputy State Engineer, and E. F. Van Hoesen, Expert on Railroad Crossings, matters in relation to the construction and relocation of the Troy branch of the N. Y. C. & H. R. R. R., below Vischer's Ferry, as to the approval of cost of the work by the Advisory Board. The matter was held pending the receipt of additional information.

The Chairman presented a letter from the State Engineer, dated November 17, 1909, submitting to the Board a white print map No. 6.111-571 of the Oswego river in the vicinity of Fulton, whereon is shown the towpath and the lands which may be flooded when the crest of the upper dam at Fulton is raised about five feet above its present height; also report of Supervising Engineer G. F. Stickney, stating the number of acres of land which will be flooded, an estimate of cost of raising the dyke so as to prevent the lands from being flooded, and the estimated value of lands which may have to be appropriated.

It was, on motion

*Resolved*, That it is recommended by the Board, based on information obtained by a personal inspection of the conditions by the Chairman and Mr. Ripley, together with a study of topographic maps and other reports pertaining to the subject, that it will be advisable to make a dyke by raising the towpath from a point opposite the Fulton Fuel & Light Company's building up to Station 70. The low land lying back of the towpath to be drained by ditches connecting with a sewer which empties into the river below the dam. Also, that southerly from Station 70 the lands which may be flooded to be appropriated by the State. Also, that the highway between Stations 65 and 95 be raised to elevation above flood stage of the river.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated November 18, 1909, asking that an inspection be made of the northerly section of the dam at Rotterdam, on Contract No. 8, and also letter from S. M. Savage, Engineer-Secretary, in regard to an inspection made by him of said work on November 20, 1909, which was read. It was, on motion

*Resolved*, That the substance of the report of S. M. Savage, Engineer-Secretary, of an inspection made by him of the northerly section of the dam at Rotterdam on Contract No. 8, on November 20, 1909, be conveyed to the Superintendent of Public Works as expressing the views of the Board.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated November 19, 1909, transmitting, for the information of the Board, two copies of Extra or Unspecified Work Order, dated November 18, 1909, on Contract No. 4, providing for the construction of certain earth embankments to protect completed work from possible damage by spring floods, at an estimated cost of \$55.25. The letters were read and filed.

Referring to the matter of an inspection of the site of the proposed lock near May's Point, recorded in minutes of meeting of the Board of November 17, 1909, the Chairman stated that he had conferred with Guy Moulton, Division Engineer, with a view of getting him to accompany Mr. Joseph Ripley and the Chairman on an inspection of the lock site in question, but was informed that nothing of value could be learned by an inspection of the lock site at this time; that it would be better to delay the inspection until a little more of the excavation had been done.

A verbal report to be followed by a written report was made by the Chairman and Mr. Ripley of an inspection of work under Contract No. 3, in company with George D. Williams, Division Engineer, and G. F. Stickney, Supervising Engineer, and Charles Sundstrom, for the contractor, on November 19, 1909.

The Chairman presented a letter from the State Engineer, dated November 22, 1909, submitting plans, specifications and En-

gineer's preliminary estimate for Contract No. 63, for the consideration of the Board.

The contract was considered by the Board and held for further study.

The Board considered Contract No. 21, originally presented at its meeting of November 17, 1909, and it was, on motion

*Resolved*, That Plans, Specifications and Engineer's preliminary estimate for Contract No. 21, for excavating the canal prism and constructing guard lock, highway bridge abutments and all appertaining work between the Genesee river and the east end of Contract No. 6, length 2.43 miles, sheets 1 to 25 inclusive, submitted to this Board by the State Engineer, November 17, 1909, be hereby approved, except the Board recommends that the channeling be increased from 50,000 square feet to 350,000 square feet, or as much thereof as may be necessary to channel the sides of the prism below elevation 516.6 and that the estimated unit price for excavation be reduced from 57 cents to 55 cents per cubic yard. The Chairman was requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

Board adjourned at 6 P. M., to meet at 12 M., Tuesday, December 7, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., December 7, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. FRY,

Mr. RIPLEY,

Col. SYMONS.

Minutes of the meeting of November 23, 1909, were read, corrected and approved.



It was, on motion

*Resolved*, That the Chairman be requested to designate Col. Thomas W. Symons to represent the Advisory Board of Consulting Engineers at the National Waterways Convention to be held in Washington, D. C., December 8, 1909.

The Chairman presented letters from the State Engineer, transmitting appropriation maps as follows:

November 27, 1909, Contract No. 14, Maps No. 1959, 1965, 1977, 1978 and 1988.

November 27, 1909, Contract No. 14, Map No. 1992.

December 6, 1909, Contract No. 60, Maps No. 2012 to 2015 inclusive.

December 6, 1909, Contract No. 61, Maps No. 1994 to 2010 inclusive.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1959, 1965, 1977, 1978, 1988 and 1992 on Contract No. 14 received from the State Engineer November 29th; Maps No. 2012, 2013, 2014 and 2015 on Contract No. 60, and Maps No. 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009 and 2010 on Contract No. 61, received from the State Engineer, December 7, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward copies of this resolution to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated December 2, 1909, transmitting one copy of Extra or Unspecified Work Order dated November 23, 1909, on Contract No. 18, providing for the build-

ing of temporary locks near Mindenville, N. Y., at an estimated cost of \$32,250. The order was read and filed.

The Chairman presented a letter from Dr. E. L. Corthell dated November 19, 1909, relative to holding meeting of the Permanent International Association of Navigation Congresses in the city of Philadelphia, Pa., in 1912. The letter was read and the Chairman was requested to reply thereto, stating that the Board would be glad to co-operate as far as possible.

The Chairman presented a letter from Hon. Frederick C. Stevens, Superintendent of Public Works, dated December 3, 1909, relative to the award of Contracts No. 54, 69, 72 and 2-E; also inclosing copy of a letter to the low bidder on Contract No. 36, relating to the award thereof. The letters were read and the Engineer-Secretary was directed to acknowledge the same, thanking the Superintendent for the information.

The Chairman presented a letter from W. W. Storrs, Lockport, N. Y., dated December 1, 1909, requesting that he be notified when plans for the construction of the locks at Lockport should be filed for consideration by the Board. The letter was read and the Chairman was requested to notify Mr. Storrs of the date of filing of said plans with the Advisory Board.

The Chairman presented a letter from the State Engineer dated November 29, 1909, inclosing copy of a report addressed to George D. Williams, Division Engineer, by E. J. Pickwick, Resident Engineer, relative to recommendations contained in report made by Mr. A. B. Fry as to the forms for concrete construction used on Contract No. 8. The letters were read and filed.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated November 26, 1909, advising that the Superintendent of Public Works would open bids for Barge Canal Contracts No. 33, 44, 70 and 71 at noon December 28, 1909. The letter was read and filed and the Engineer-Secretary was directed to acknowledge the same with thanks for the information.

The Chairman presented a letter from Winslow M. Mead, Deputy Superintendent of Public Works, dated November 26, 1909, requesting that an inspection be made of the north section of the dam at Canajoharie and in connection therewith, a written report by Mr. M. G. Barnes. The letter and report were read, and it was, on motion

*Resolved*, That a copy of the report by Mr. M. G. Barnes dated November 29, 1909, of an inspection of the north section of the dam at Canajoharie be forwarded to the Superintendent of Public Works for his information.

The Chairman also presented a letter from George D. Williams, Division Engineer, dated November 24, 1909, stating that the north section of the dam at Canajoharie would be ready for inspection after November 26, 1909. Inspection by Mr. M. G. Barnes on November 29, 1909, showed that the work had not been entirely completed.

The Chairman presented a letter from the State Engineer dated November 27, 1909, transmitting five copies of a final account on Contract No. 45, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated August 5, 1909, on Contract No. 45, amounting to \$480.20, submitted to this Board by the State Engineer November 27, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 1, 1909, transmitting five copies of a final account on Contract No. 45, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated December 15, 1908, on Contract No. 45, amounting to \$68.71, submitted to this Board by the State Engineer December 1, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated November 26, 1909, transmitting two copies of Extra or Unspecified Work Order dated November 24, 1909, on Contract No. 61, providing for foundation piles for Bridge No. 109 over the canal at Smith street, Brockport, N. Y., at an estimated cost of \$300. The order was read and filed.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting copy of a report from E. F. Van Hoesen, Expert on Railroad Crossings, dated December 2, 1909, accompanied by a tabular statement relating to the cost of the relocation of the New York Central and Hudson River Railroad (Troy Branch) at Niskayuna. The letter was read and filed.

Recess at 1 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated December 7, 1909, accompanied by letters from Guy Moulton, Division Engineer, dated December 1st, T. W. Barrally, Division Engineer, dated November 16th, and C. A. Ingersoll, Resident Engineer, dated December 5, 1909, all of which referred to methods employed on various contracts in the Middle and Western Division for forming embankment.

The letters were read and the Board discussed with said officials. (a) Contracts drawn prior to December 19, 1908. (b) Contracts drawn subsequent to December 19, 1908. It was the opinion of the Board that as regards contracts drawn prior to December 19, 1908, where material for embankment has been placed not in the manner specified but simply from the apparatus used in excavating or from cars or buckets fed from said apparatus, no payment should be made except by due course through the Court of Claims if the contractor believes he has an equity or right to damages in the premises. That wherever in the future

it is deemed practicable for the contractor to manipulate any portion of said embankment deposited in manner not specified, the contractor should be paid for such portions of said embankment as have been manipulated or compacted to the satisfaction of the Engineer. That in future on such contracts as are now in force and operating under said earlier specifications, lifting material to a height of not less than 20 feet and generally 30 feet dumping and scattering same, if this method be approved by the Engineer, will be deemed a satisfactory means of forming embankment under conditions heretofore recited.

As regards contracts drawn subsequent to December 19, 1908, under the so-called *new specifications*, it was the opinion of the Board that if the provisions of paragraph 30 of the general specifications entitled "Compacting" were followed, no difficulties would arise in securing impervious and satisfactory embankment, and also that no condition would arise in the field with which the contractor would be unable to comply. In this connection, due weight must of course be given to the matter of depositing of frozen material, or attempting to carry on the work with apparatus obviously unsuited to obtain impervious embankment without manipulation of excavated material.

The Board further debated the desirability of adding a new paragraph to the general specifications for contracts yet to be let and requiring forming embankment, and the Chairman was requested to incorporate in a letter to the State Engineer the opinion of the Board on this subject heretofore recorded together with a suggested draft of proposed specifications.

The Chairman presented a letter from the State Engineer dated November 23, 1909, transmitting five copies of a final account on Contract No. 14, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated November 25, 1908, on Contract No. 14, amounting to \$970.78, submitted to this Board by the State Engineer November 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

In taking this action the Board does so, believing that the State is legally obligated for the expense incurred.

The Chairman presented a letter from George D. Williams, Division Engineer, dated December 7, 1909, notifying the Board that the work on the north span of the foundation of Dam No. 6 at Cranesville, would probably be ready for inspection by December 11, 1909. The letter was read and the Chairman was requested to designate a member to make said inspection.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated December 7, 1909, relative to bridges over the Mohawk river, and the recommendations made by the Advisory Board at its meeting held November 4, 1909, as to clearance and spans at the various crossings, accompanying which were letters from E. F. Van Hoesen, Expert on Railroad Crossings, dated November 22d, W. R. Davis, Chief Bridge Designer, dated November 22d, and D. A. Watt, Supervising Engineer, dated November 17, 1909.

These communications were read and after consideration the Board adhered to its resolutions of November 4, 1909, in all cases except as regards the Delaware and Hudson Railroad at Station 1187+17 and the main line of the New York Central and Hudson River Railroad, at Station 1250+70 and the highway bridge at Amsterdam. In the case of the railroad bridges, the Board recommended that comparative estimate be made as to the cost of carrying out the recommendations of the Board of November 4, 1909, and as to providing single spans for these bridges in lieu of the two spans recommended. In the case of the highway bridge at Amsterdam, the Board recommended that investigation be made as to the practicability of protecting the existing pier instead of rebuilding as previously recommended.

Board adjourned at 5.30 P. M., to meet at 9.30 A. M., December 8, 1909.

Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., December 8, 1909.

Board met at 9.30 A. M.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. FRY,

Mr. RIPLEY.

Minutes of the meeting of December 7, 1909, were read, corrected and approved.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting six copies of Alteration No. 6, Contract No. 60, for the consideration of the Board.

The alteration was examined, and it was, on motion

*Resolved*, That Alteration No. 6, Contract No. 60, providing for building entire structure for guard gate on this contract, except the metal gates and towers and operating machinery, at an increased cost to the State of \$22,255.20, submitted to this Board by the State Engineer December 7, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting six copies of Alteration No. 6, Contract No. 64, for the consideration of the Board.

The alteration was examined, and it was, on motion

*Resolved*, That Alteration No. 6, Contract No. 64, providing for building entire structure for guard gate on this contract, except the metal gates and towers and operating machinery, at an increased cost to the State of \$14,641.65, submitted to this Board by the State Engineer December 7, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Board considered with William B. Landreth, Special Deputy State Engineer, and D. A. Watt, Supervising Engineer, a communication from Mr. Landreth dated December 7th, transmitting a report from Guy Moulton, Division Engineer, dated December 3, 1909, with reference to the matter of building retaining wall on the east side of the Oswego canal, Contract No. 35, between Locks 7 and 8.

The Board debated this matter at some length, and it was, on motion

*Resolved*, That as regards the matter of retaining wall on east side of Oswego canal, Contract No. 35, between Locks 7 and 8, the State Engineer be requested to sink test-pits, make borings, drive rods or by other means determine the condition of the foundation or supports for retaining wall between Culvert 2 and Lock 8, with a view to permitting, if practicable, the old wall to remain in position, and with further reference to this matter, that he request the contractor not to tear out said wall for the present nor to place the riprap as shown on sheet 84, Alteration No. 2, Contract No. 35.

The Chairman presented letters from the State Engineer, transmitting appropriation maps, as follows:

December 7, 1909, Contract No. 23, Maps No. 2016, 2017 and 1695-A superseding 1695.

December 7, 1909, Contract No. 61, Map No. 2011.

December 8, 1909, Contract No. 23, Map No. 1757-A superseding 1757.

December 8, 1909, Contract No. 66, Map No. 1107-A superseding Maps No. 1107 and 1108.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 2016, 2017 and 1695-A superseding 1695 and 1757-A superseding 1757 on Contract No. 23, Map No. 2011 on Contract No. 61, and Map No. 1107-A superseding Maps No. 1107 and 1108 on Contract No. 66, received from the State Engineer December 8, 1909, be hereby approved in accordance with chapter 196, Laws of 1908.



The Chairman was requested to report to the Canal Board the approval of said appropriation maps, and the Engineer-Secretary was directed to forward copies of this resolution to the State Engineer and to the Superintendent of Public Works.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated December 7th, transmitting two copies of Extra or Unspecified Work Order dated December 6, 1909, on Contract No. 11, providing for the placing of a broken stone and sand foundation in pot-holes under certain piers at an estimated cost of about \$400. The order was read and filed.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting six copies of Alteration No. 6, Contract No. 9, for the consideration of the Board.

The alteration was examined, and it was, on motion

*Resolved*, That Alteration No. 6, Contract No. 9, providing retaining wall for the public dock at Eagle Harbor, also providing for stripping trunks of old Culverts No. 95 and 96, and placing concrete jacket thereon, at an increased cost to the State of \$17,931.10, submitted to this Board by the State Engineer December 7, 1909, be hereby approved, provided that said culverts are founded on rock, and if not so founded, that new concrete bottoms be constructed; and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting six copies of Alteration No. 10, Contract No. 14, for the consideration of the Board.

The alteration was examined, and it was, on motion

*Resolved*, That Alteration No. 10, Contract No. 14, providing for extending abutment "D" and for extending back water Dam "C" to junction with abutment, at an increased cost to the State of \$1,826.40, submitted to this Board by the State Engineer December 7, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 8, 1909, transmitting six copies of Alteration No. 4, Contract No. 4, for the consideration of the Board.

The Alteration was examined, and it was, on motion

*Resolved*, That Alteration No. 4, Contract No. 4, providing for eliminating unfinished portion of embankments between Stations 6803 and 6940, at a decreased cost to the State of \$2,788, submitted to this Board by the State Engineer December 8, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Board discussed with William B. Landreth, Special Deputy State Engineer, conditions now obtaining on Contracts No. 11 and 14, and after giving due weight to the condition of work on each contract, it was, on motion

*Resolved*, That this Board recommends to the State Engineer that he take the necessary action with the contractor for Contract No. 11 and the State officials concerned, to secure the building at once of a suitable dike at a proper site on Contract No. 11 to prevent diversion of flood waters of the Mohawk river through the newly excavated channel for the Barge canal between the Upper Mohawk and West Waterford, thus to guard against possible serious damage to public or private property between the Mohawk and Hudson rivers.

Recess at 1.30 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting six copies of Alteration No. 2, Contract No. 61, providing for certain changes in Culverts No. 56, 57, 58, 59 and 61; providing for building substructure for one guard gate; providing for eliminating embankment back of certain section of wall at Brockport.

The alteration was discussed and held for further consideration.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting plans, specifications and Engineer's preliminary estimate for Contract No. 73, Champlain canal, Section 1, for dredging a channel in the Hudson river and performing work incidental thereto from Northumberland to Stillwater, length about 15 miles, sheets 1 to 42, inclusive, for the consideration of the Board.

This contract was examined and discussed and held for further study.

The Board discussed informally with C. C. Egbert, Expert in Electrical Design, matters in relation to the electrical equipment of locks, more particularly as to the method of carrying the electrical cables from one side of the lock to the other, whether overhead or otherwise.

The Board was of the opinion that it was not desirable to place any overhead construction across the locks for the purpose of carrying these cables.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated December 7, 1909, relative to the construction of an approach to the highway bridge near Mindenville on Contract No. 18.

The letter set forth two plans of constructing this approach, of which the Board recommended that Plan No. 2 be adopted.

The Chairman presented a letter from the State Engineer dated December 7, 1909, transmitting plans, specifications and Engineer's preliminary estimate for Contract No. 75, for the consideration of the Board.

The plans, specifications and estimate were examined, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 75, Erie canal, Sections 9 and 10 for constructing guard gate superstructures as follows: About

1.3 miles east of Spencerport; near west line of Brockport; 1.5 miles east of Middleport, sheets 1 to 9, inclusive, submitted to this Board by the State Engineer December 7, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from the State Engineer dated December 7, 1909, submitting plans, specifications and Engineer's preliminary estimate for Contract No. 39, Section 1, Oswego canal, for dredging a channel in the Oswego river and performing work incidental thereto, between Three Rivers Point and Fulton, length about 10.84 miles, sheets 1 to 23, inclusive, for the consideration of the Board.

This contract was examined and discussed and held for further study.

The Board then resumed consideration with William B. Landreth, Special Deputy State Engineer, of plans for Contract No. 63, originally presented at its meeting of November 23, 1909.

Board adjourned at 5 p. m., to meet at 9 a. m., Thursday, December 16, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., December 16, 1909.

Board met at 9.30 a. m.

Present: Mr. BOND, *Chairman*,

Mr. BARNES,

Mr. FRY,

Mr. RIPLEY,

Col. SYMONS.

Minutes of the meeting of December 8, 1909, were read and approved.

The Chairman presented letters from the State Engineer, transmitting appropriation maps as follows:

December 9, 1909, Contract No. 61, Maps No. 1499-A and 1499-B superseding 1499.

December 10, 1909, Contract No. 55, Maps Nos. 993, 996, 2018 to 2020 inclusive.

December 10, 1909, Contract No. 14, Maps Nos. 2021 to 2023 inclusive.

December 10, 1909, Contract No. 61, Maps Nos. 1524-A superseding 1524, 1650-A superseding 1650, 1684-A superseding 1684.

December 14, 1909, Contract No. 69, Maps Nos. 2024 and 2025.

December 14, 1909, Contract No. 66, Map No. 1765.

December 14, 1909, Contract No. 19, Map No. 1993.

December 14, 1909, Contract No. 72, Map No. 2026.

The maps having been examined and compared with the original plans for said contracts, it was, on motion

*Resolved*, That Appropriation Maps No. 1499-A and 1499-B superseding 1499 on Contract No. 61, received from the State Engineer December 9th; Maps No. 993, 996, on Contract No. 55, Maps No. 1524-A superseding 1524, 1650-A superseding 1650, and 1684-A superseding 1684 on Contract No. 61, received from the State Engineer December 11th; Maps No. 2024 and 2025 on Contract No. 69, Map No. 1765 on Contract No. 66, Map No. 1993 on Contract No. 19 and Map No. 2026 on Contract No. 72, received from the State Engineer December 14, 1909, be hereby approved, in accordance with chapter 196, Laws of 1908.

The Chairman was requested to report to the Canal Board the approval of said appropriation maps and the Engineer-Secretary was directed to forward copies of this resolution to the State Engineer and to the Superintendent of Public Works.

Regarding maps on Contract No. 14, it was, on motion

*Resolved*, That Appropriation Maps No. 2018, 2019 and 2020 on Contract No. 14 be returned to the State Engineer, in order that the relation of the Barge canal centre line to the lands appropriated may be shown thereon.

The Chairman presented a written report of a joint inspection of work under Contract No. 3, made by Mr. Ripley and himself on November 19, 1909, which was in confirmation of a verbal report of the same inspection made at the meeting of November 23, 1909.

The report was read, and it was, on motion

*Resolved*, That a copy of the joint report of an inspection of work under Contract No. 3 made by the Chairman and Mr. Ripley on November 19, 1909, be forwarded to the State Engineer and to the Superintendent of Public Works for their information.

The Chairman presented a report by Mr. M. G. Barnes dated December 10, 1909, of an inspection of work under Contract No. 8 made on same date.

The report was read, and it was, on motion

*Resolved*, That a copy of the report of Mr. M. G. Barnes dated December 10, 1909, of an inspection of work under Contract No. 8 be forwarded to the State Engineer and to the Superintendent of Public Works, for their information.

The Chairman presented a report by S. M. Savage, Engineer Secretary, dated December 16, 1909, of inspections of Contracts No. 42, 30, 31 and 18 made on December 15, 1909.

The report was read and filed.

Mr. A. B. Fry made a verbal report of inspections of work under Contracts No. 46, 47, 45, 53, 10 and 35 made by him December 14 and 15, 1909.

The Board resumed consideration of Contract No. 50 originally presented at the meeting of November 17, 1909.

After a discussion of the plans, specifications and estimates with William B. Landreth, Special Deputy State Engineer, and D. A. Watt, Supervising Engineer, it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 50, for constructing a reservoir and dam on the West Canada creek, and performing all other work appertaining to the contract, area of reservoir inside of

clearing line about 6.1 square miles, sheets 1 to 26 inclusive, submitted to this Board by the State Engineer November 17, 1909, be hereby approved, subject to the following changes:

1. That in the plans for Contract No. 50 provision be made for the delivery of water through the dam at the southerly end of the spillway section; also, that one of the discharge pipes in the northerly end of the spillway section be equipped so that pipe connections may be made therewith in the future.

2. That the specifications for the embankment for the earth portion of the dam be so drawn as to require the complete saturation of the material and placement thereof in horizontal layers not exceeding twelve inches in thickness wherever the material used is suitable for such manipulation.

*Further Resolved*, That the action of the Board relative to the discharge pipes is predicated on the probable desirable or obligatory use for power or domestic purposes of water in the Hinckley reservoir not required for canal uses, and provided the use of said water for other than canal purposes is found legal and proper.

*Further Resolved*, That in taking this action the Board desires to invite the attention of the State officers concerned to the resolution of the Advisory Board under date of February 4, 1909, page 22 of the minutes.

*Further Resolved*, That the Chairman be requested to sign the proper certificate of approval on said plans, and notify the State Engineer of such action."

The Chairman presented a letter from P. J. McWeeney, financial clerk, Department of Public Works, dated December 15, 1909, transmitting monthly estimates of work done on Barge canal contracts to December 1, 1909, as follows:

Contract No. 1, Estimate No. 44.....	\$940 00
Contract No. 4, Estimate No. 47.....	14,820 00
Contract No. 6, Estimate No. 51.....	19,010 00
Contract No. 8, Estimate No. 35.....	24,330 00
Contract No. 9, Estimate No. 19.....	8,700 00
Contract No. 10, Estimate No. 39.....	28,150 00
Contract No. 11, Estimate No. 40.....	32,440 00
Contract No. 13, Estimate No. 1.....	920 00
Contract No. 14, Estimate No. 25.....	84,320 00
Contract No. 15, Estimate No. 31.....	8,520 00
Contract No. 17, Estimate No. 19.....	17,760 00

Contract No. 18, Estimate No. 33.....	\$7,430 00
Contract No. 19, Estimate No. 30.....	40,550 00
Contract No. 20-B, Estimate No. 3.....	120 00
Contract No. 23, Estimate No. 2.....	12,980 00
Contract No. 25, Estimate No. 29.....	47,020 00
Contract No. 26, Estimate No. 16.....	3,880 00
Contract No. 29, Estimate No. 7.....	11,150 00
Contract No. 30, Estimate No. 1.....	420 00
Contract No. 31, Estimate No. 14.....	22,110 00
Contract No. 32, Estimate No. 2.....	2,370 00
Contract No. 35, Estimate No. 23.....	2,700 00
Contract No. 40, Estimate No. 9.....	60,260 00
Contract No. 41, Estimate No. 8.....	3,750 00
Contract No. 42, Estimate No. 4.....	17,290 00
Contract No. 45, Estimate No. 18.....	17,330 00
Contract No. 46, Estimate No. 11.....	3,240 00
Contract No. 47, Estimate No. 9.....	46,760 00
Contract No. 53, Estimate No. 3.....	10,900 00
Contract No. 55, Estimate No. 12.....	65,860 00
Contract No. 60, Estimate No. 16.....	36,940 00
Contract No. 61, Estimate No. 13.....	18,260 00
Contract No. 64, Estimate No. 14.....	9,980 00
Contract No. 66, Estimate No. 13.....	11,640 00
Contract No. 68, Estimate No. 12.....	47,120 00
Total . . . . .	<u>\$739,970 00</u>

The estimates were examined by the Board and the regular certificate, in duplicate, signed and attached.

Recess at 1.30 P. M.

Board reconvened at 2.30 P. M., the same members being present.

The Board resumed consideration of Alteration No. 2, Contract No. 61, originally presented at the meeting of December 8, 1909, and it was, on motion



*Resolved*, That Alteration No. 2, Contract No. 61, providing certain changes in Culverts 56, 57, 58, 59 and 61; providing for building substructure for one guard gate; providing for eliminating embankment back of certain section of wall at Brockport, at an increased cost to the State of \$26,660.42, submitted to this Board by the State Engineer December 8, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 16, 1909, transmitting six copies of Alteration No. 7, Contract No. 18, for the consideration of the Board.

The alteration was examined and discussed, and it was, on motion

*Resolved*, That Alteration No. 7, Contract No. 18, providing for building approach from the east to connect with south approach to bridge at Station 3894+31, at an increased cost to the State of \$1,658, submitted to this Board by the State Engineer December 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 16, 1909, transmitting five copies of a final account on Contract No. 8, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated August 28, 1909, on Contract No. 8, amounting to \$139.27, submitted to this Board by the State Engineer December 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 16, 1909, transmitting five copies of a final account on Contract No. 9, for the consideration of the Board.

The final account was examined, and it was, on motion

*Resolved*, That the final account for work done under Extra or Unspecified Work Order dated September 15, 1909, on Contract No. 9, amounting to \$2,859.38, submitted to this Board by

the State Engineer December 16, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 16, 1909, submitting plans, specification and Engineer's preliminary estimate for Contract No. 78, for the consideration of the Board.

The plans, specifications and Engineer's estimate was examined and discussed, and it was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate amounting to \$55,154 for Contract No. 78, for the construction of a dike along the Oswego river in the vicinity of Fulton, length 1.23 miles, sheets 1 to 4 inclusive, submitted to this Board by the State Engineer December 16, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Board resumed consideration of plans, specifications and estimate for Contract No. 73 originally presented at the meeting of December 8, 1909. It was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 73, Champlain canal, section 1, for dredging a channel in the Hudson river and performing work incidental thereto from Northumberland to Stillwater, length about 15.0 miles, sheets 1 to 42 inclusive, submitted to this Board by the State Engineer December 8, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Board resumed consideration of plans, specifications and Engineer's preliminary estimate for Contract No. 39 originally presented at the meeting of December 8, 1909. It was, on motion

*Resolved*, That plans, specifications and Engineer's preliminary estimate for Contract No. 39, Oswego canal, section 1, for dredging a channel in the Oswego river and performing work incidental thereto, between Three Rivers and Fulton, length about 10.84

miles, sheets 1 to 23 inclusive, submitted to this Board by the State Engineer December 8, 1909, be hereby approved, and that the Chairman be requested to sign the proper certificate of approval on said plans and notify the State Engineer of such action.

The Chairman presented a letter from William B. Landreth, Special Deputy State Engineer, dated December 14, 1909, transmitting two copies of Extra or Unspecified Work Order dated December 14, 1909, providing for the construction of a dike on Contract No. 11, at an estimated cost to the State of \$498. The order was read and filed.

The Chairman presented a letter from the State Engineer dated December 16, 1909, relative to the relocation of the N. Y. C. & H. R. R. R. (Troy Branch) at Niskayuna which was read and considered in connection with a report thereon from E. F. Van Hoesen, Expert on Railroad Crossings, dated December 2, 1909, and originally presented at the meeting of December 7, 1909.

The Board notes in the bids for said work that the principal difference between the Board's estimate and the lowest bid received on June 28, 1909, by the N. Y. C. & H. R. R. R. Co., is the item for riprap in place. The Board estimated that there would be required 10,000 cu. yds. of riprap, while the N. Y. C. & H. R. R. R. Co.'s estimate submitted to bidders was for 33,000 cu. yds. This one item makes a difference between the Board's estimate and the bid of Elmore & Hamilton, the lowest bidder, of \$63,305 which includes 10 per cent. for engineering and contingencies. This item added to the Board's estimate would bring the Board's estimate up to \$257,390.65, very nearly equaling the amount for which the Canal Board proposes to settle with the N. Y. C. & H. R. R. R. Co. The Board does not believe that this amount of riprap will be required for suitable protection to the railroad tracks, but if such amount is required and is actually placed at this time, it is believed that \$260,000 is a fair basis of settlement.

In making this statement, the Board has taken into consideration the conditions surrounding Contract No. 14 at this point.

The work under said contract has advanced to such a point that any material delay in making railroad changes might cause suspension of operations and corresponding delay on said Contract No. 14 which delay might involve the State in damages exceeding the difference between the Board's estimate and the amount for which the Canal Board proposes to settle with the N. Y. C. & H. R. R. Co. Also, delay in making railroad changes will result in direct damages to railroad company by flooding tracks with resultant stoppage of traffic.

The Chairman presented a letter from the State Engineer dated December 16, 1909, transmitting copy of a report from William B. Landreth, Special Deputy State Engineer, giving a tabulated statement showing the status to date of the question of docks in various towns between Rochester and Lockport. The communications were read and filed.

The Chairman presented a letter from the State Engineer dated December 16, 1909, suggesting that certain changes be made in paragraphs 50 "Test Piles" and 53b "Payment" of the general specifications.

50  
**Test Piles** "Piles shall be furnished to fit the localities. The contractor shall, when required, drive preliminary test piles, each of which will be paid for at the contract price for the class of piles driven. After the test piles are driven a statement will be furnished the contractor by the Engineer showing for the information of the contractor, the probable number of piles of the different kinds required, grouped between certain lengths in feet.

53b "Payment will be made at the contract price per linear foot for the total length of piles driven as per written orders of the Engineer and shall include the furnishing and delivering upon the work, the peeling, banding, tenoning, framing, driving, painting and all other work that may be required to place the pile in the finished structure.

"Round piles will be paid for at the contract price per linear foot.

“Wooden sheet *piling* will be paid for at the contract price per thousand feet board measure of *wooden sheet piling*.”

After consideration of the matter, it was, on motion

*Resolved*, That the above specifications be approved.

Board adjourned at 5.30 p. m., to meet at 12 noon, Thursday, December 23, 1909.

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Minutes of a meeting of the Advisory Board of Consulting Engineers held in Albany, N. Y., December 23, 1909.

Board met at 10 a. m.

Present: Mr. BOND, *Chairman*,  
Mr. BARNES,  
Mr. RIPLEY.

The Chairman presented a letter from the State Engineer dated December 22, 1909, transmitting six copies of Alteration No. 1, Contract No. 72, for the consideration of the Board.

The alteration was examined and found to cover an item omitted in the original estimate but called for in the plans and specifications and payment therefor not otherwise provided. It was, on motion

*Resolved*, That Alteration No. 1, Contract No. 72, Champlain canal, section 1, providing for furnishing sawed lumber for construction of timber cribs, at an increased cost to the State of \$9,900, submitted to this Board by the State Engineer December 23, 1909, be hereby approved, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 22, 1909, relative to corrections found to be necessary in the preliminary estimate for Contract No. 49, as follows:

Item No. 28 — “3 sluice gates 30" x 42", with machinery complete in place at \$400 each, amounting to \$1,200.00.”

Should be — “3 sluice gates at 42" x 60", with machinery complete in place at \$700 each, amounting to \$2,100.00.”

Item No. 38 — “Deduct price to be paid to the State of New York for buildings in place to be removed by the contractor without additional expense to the State, \$1,200.00.”

Should be — “Deduct price to be paid to the State of New York for buildings in place to be removed by the contractor without additional expense to the State, \$1.00.”

After considering the matter, it was, on motion

*Resolved*, That the Board approves of changes in Items No. 28 and 38 of Contract No. 49 originally presented to and approved by the Board at the meeting of November 4, 1909, as stated in letter from the State Engineer dated December 22, 1909, and that the Chairman be requested to notify the State Engineer of such approval.

The Chairman presented a letter from the State Engineer dated December 23, 1909, transmitting six copies of Alteration No. 7, Contract No. 9, for the consideration of the Board.

Various members of the Board had previously examined the plans and specifications covering said alteration, and upon further discussion of said plans and specifications as this day presented, it was, on motion

*Resolved*, That the Board does not approve of the installation of lift bridges where it is practicable to install fixed bridges. At the locations covered, it is believed that the money damages to property adjacent to approaches of fixed bridges will be less than the additional cost of lift bridges, to say nothing of the excess cost of maintaining and operating life bridges.

*Further Resolved*, That the Board approves the engineering features of Alteration No. 7, Contract No. 9, providing for construction of lift bridges at Eagle Harbor and Knowlesville in place of the fixed bridges provided by the original contract, at an increased cost to the State of \$10,487.95, submitted to this Board by the State Engineer, December 23, 1909, and that the Chairman be requested to notify the State Engineer of such action.

Board adjourned at 2 P. M., to meet at 12 noon, Tuesday, January 4, 1910.



Illustrations Showing Progress of Work in  
Construction of the

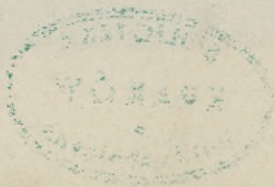
# BARGE CANAL

Accompanying Report to the Governor

of the

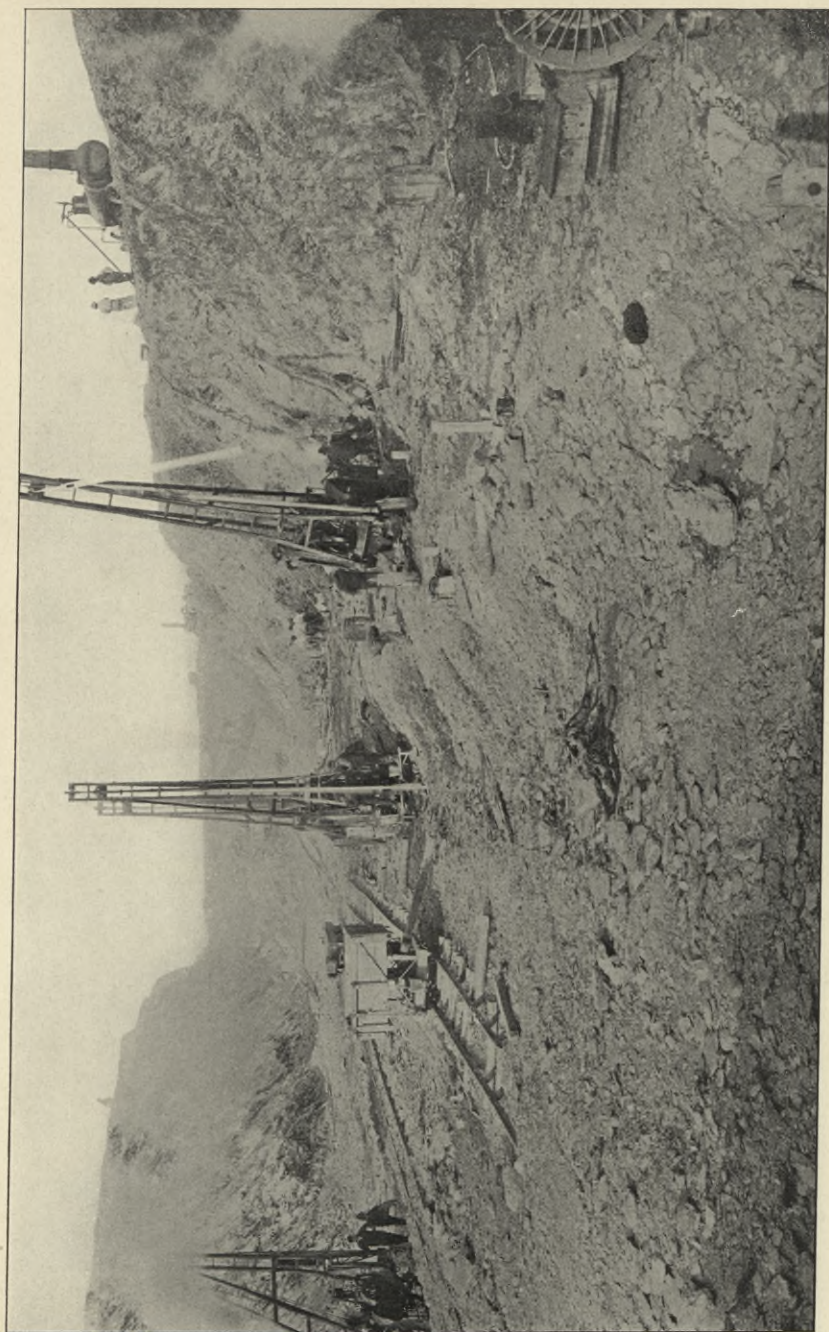
Advisory Board of Consulting Engineers

For Year Ending December 31, 1909



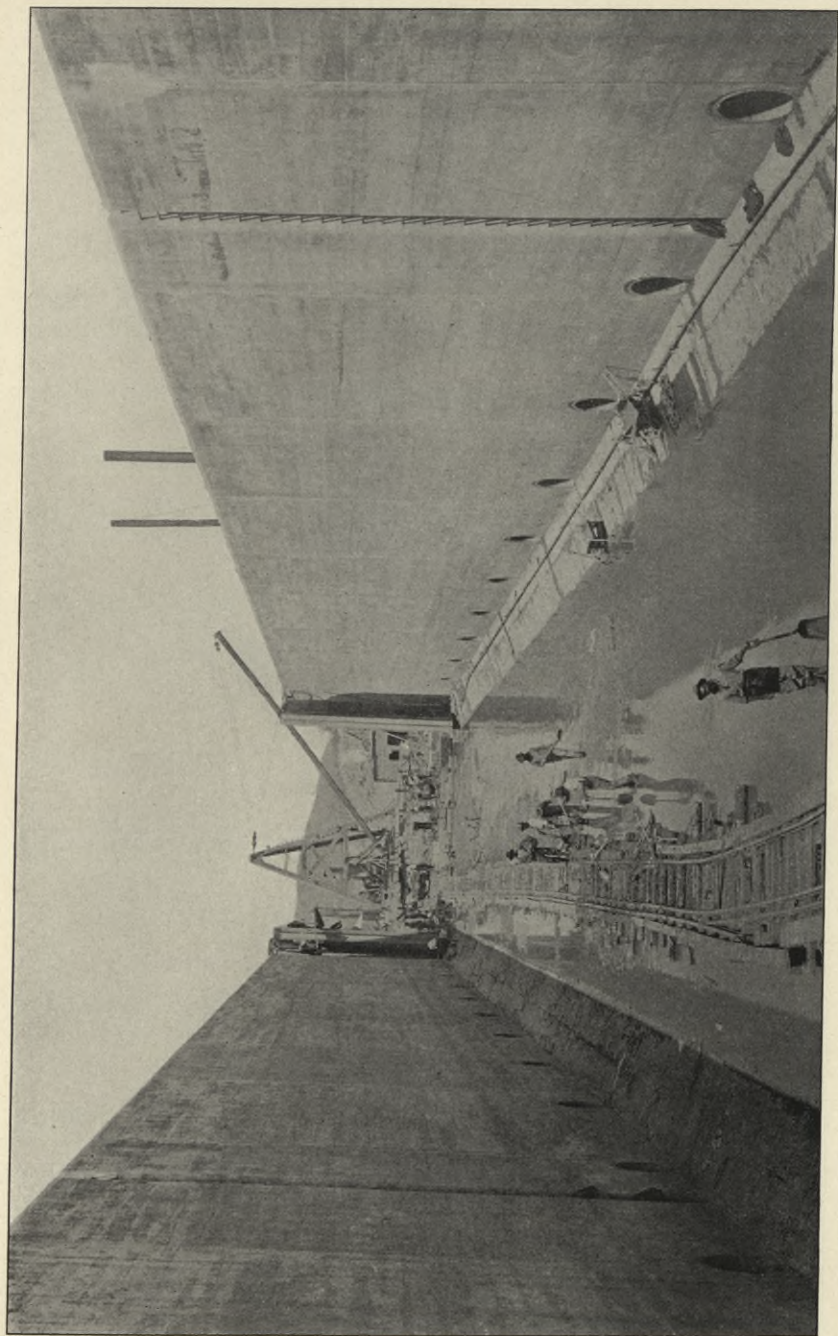






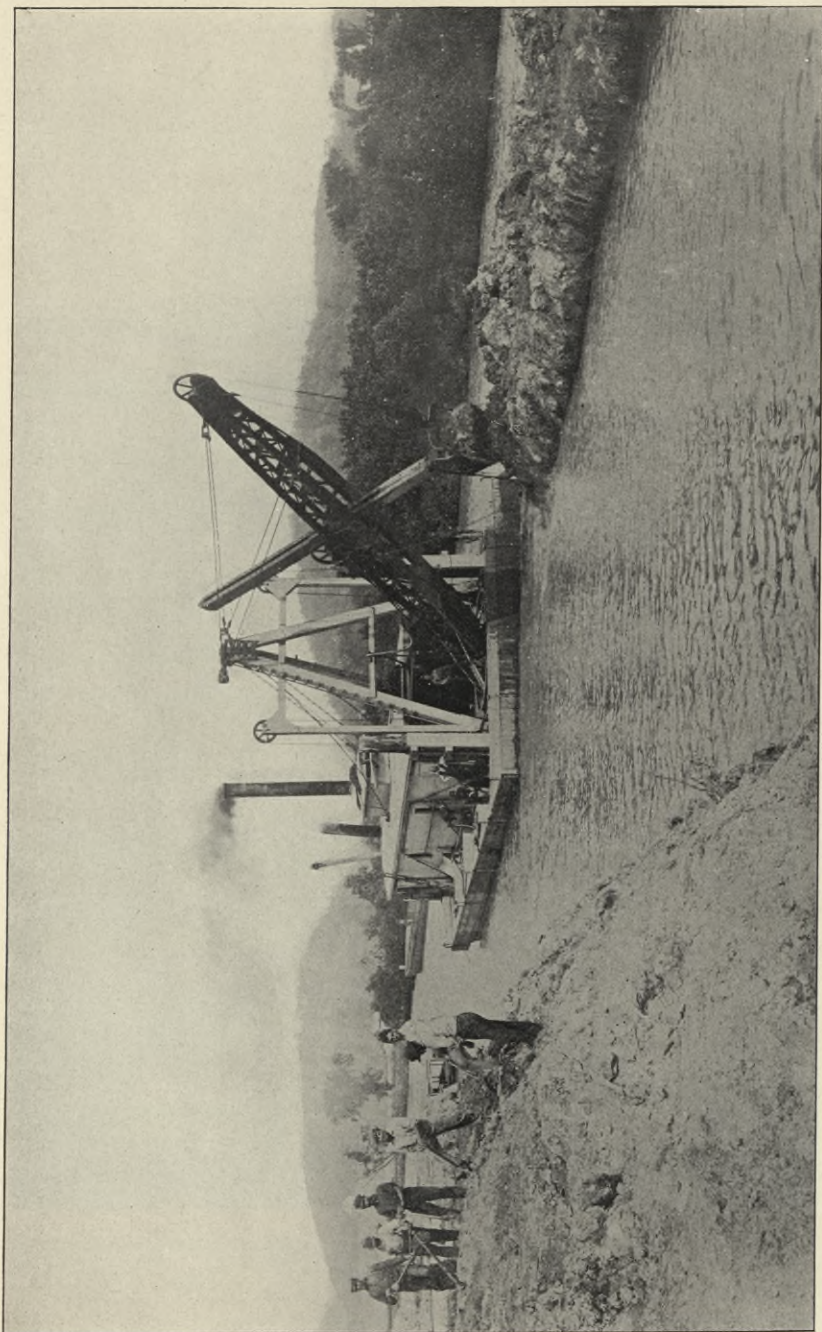
Contract No. 68, Champlain Canal. Showing Well Drills in Operation ahead of Steam Shovel.





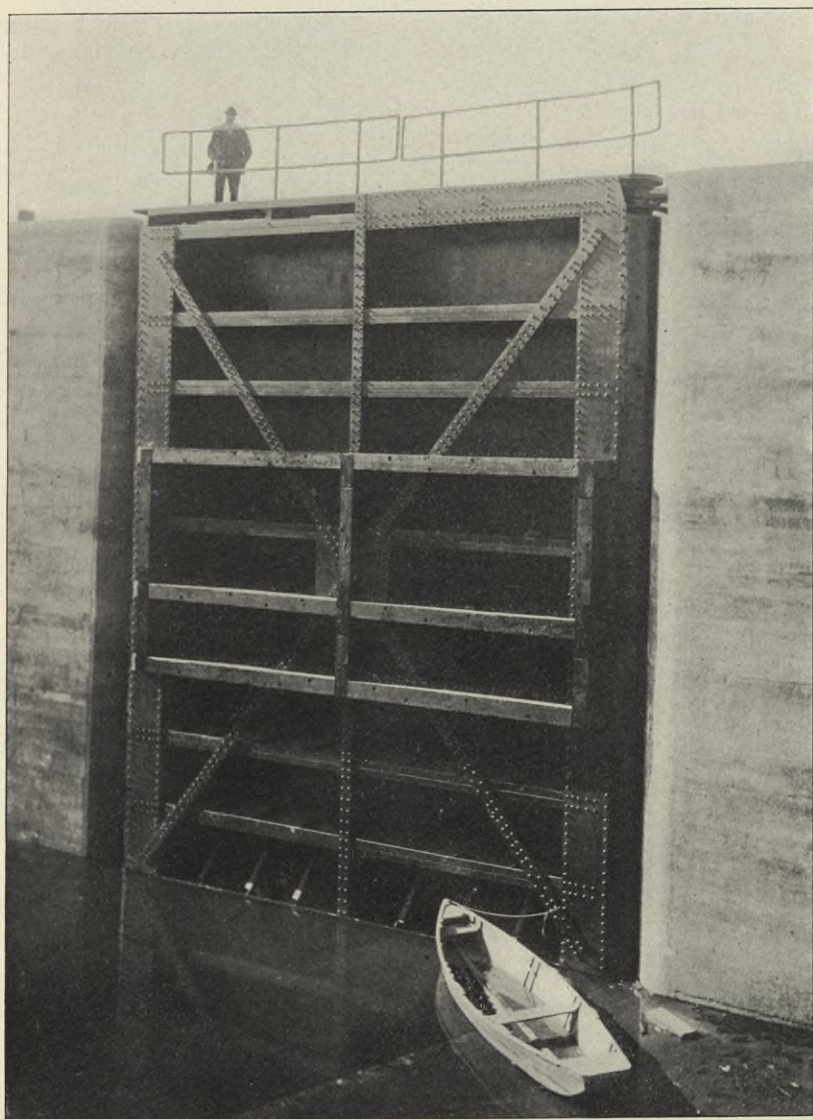
Contract No. 15. Showing Lock Chamber, Lock No. 11, Champlain Canal.





Contract No. 25. Showing Dipper Dredge at work near Fort Ann.

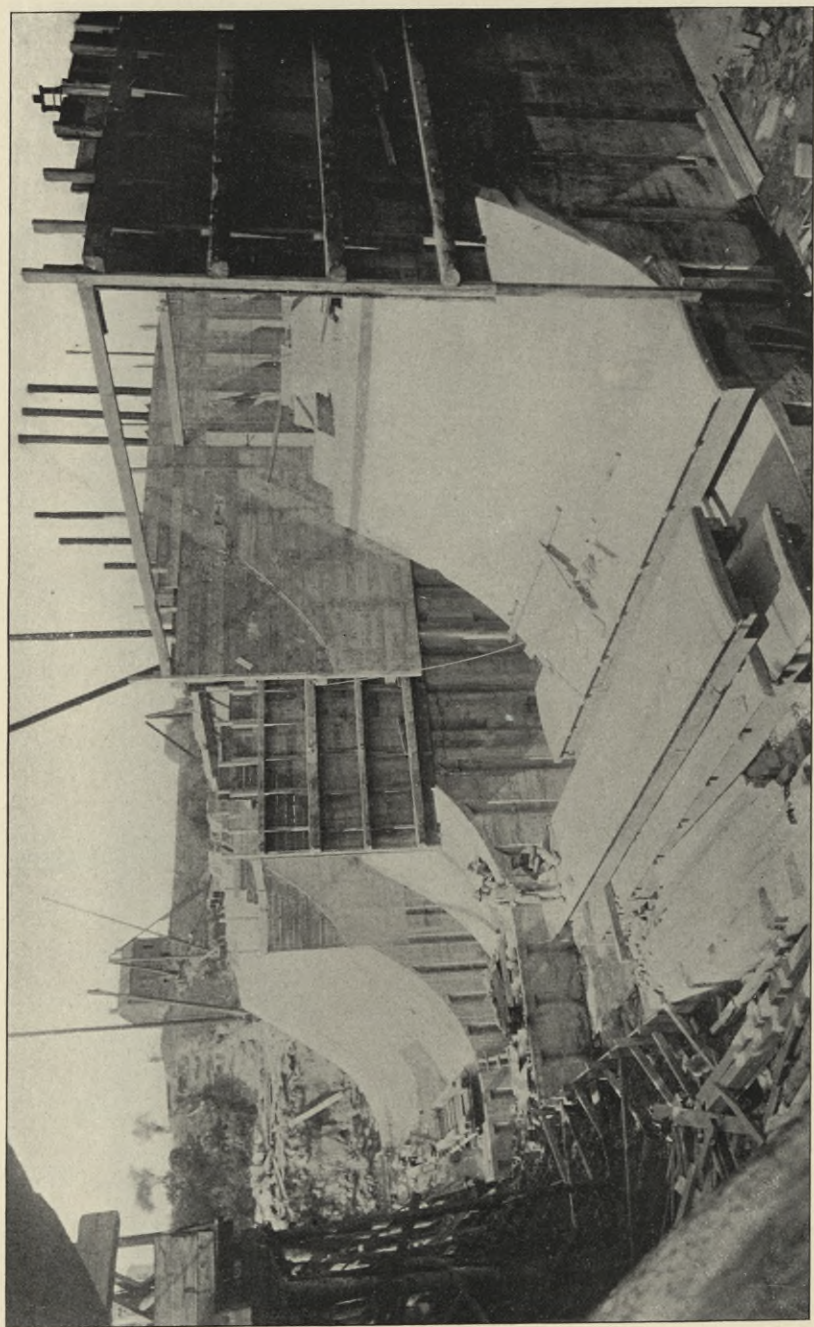




Contract No. 15. Showing Lower Gate, Lock No. 11, Champlain Canal, December 30, 1909.

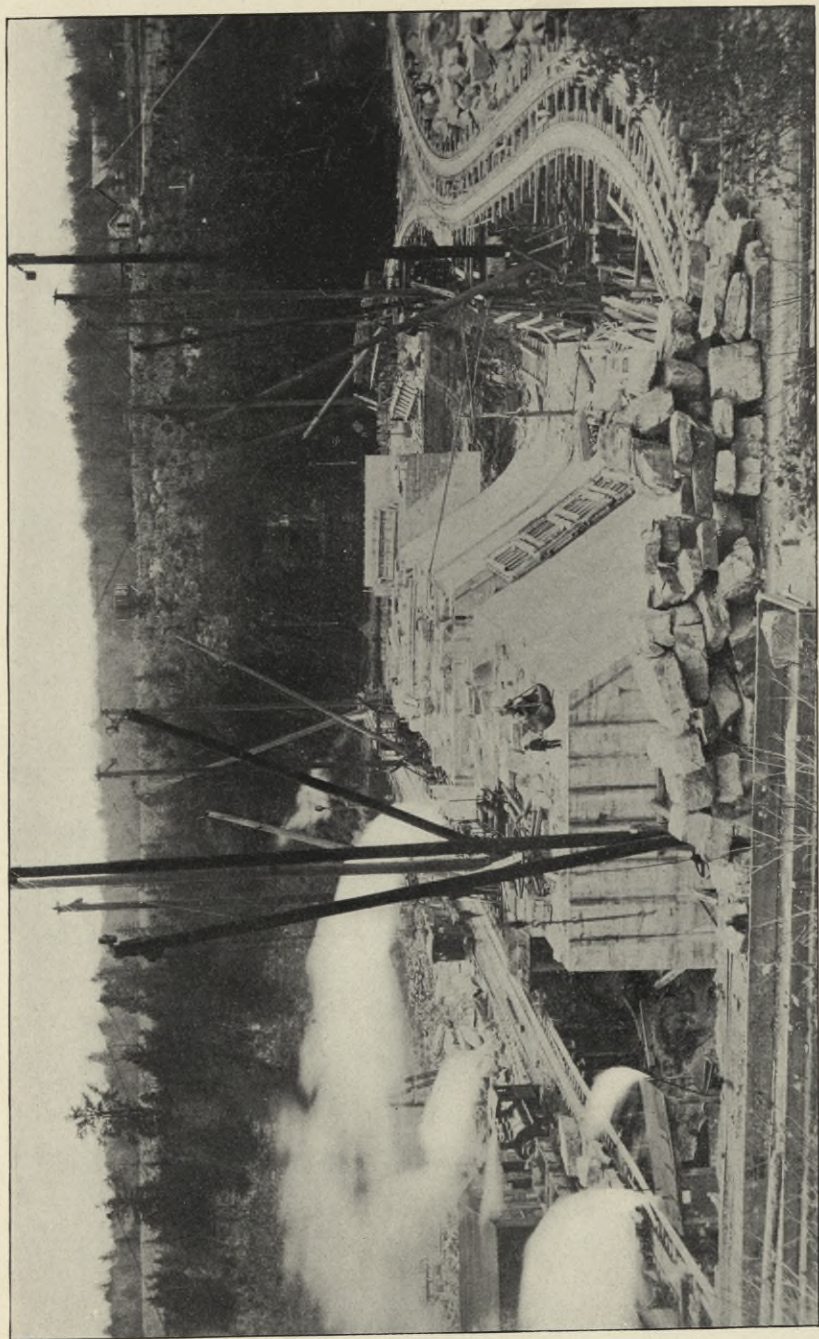






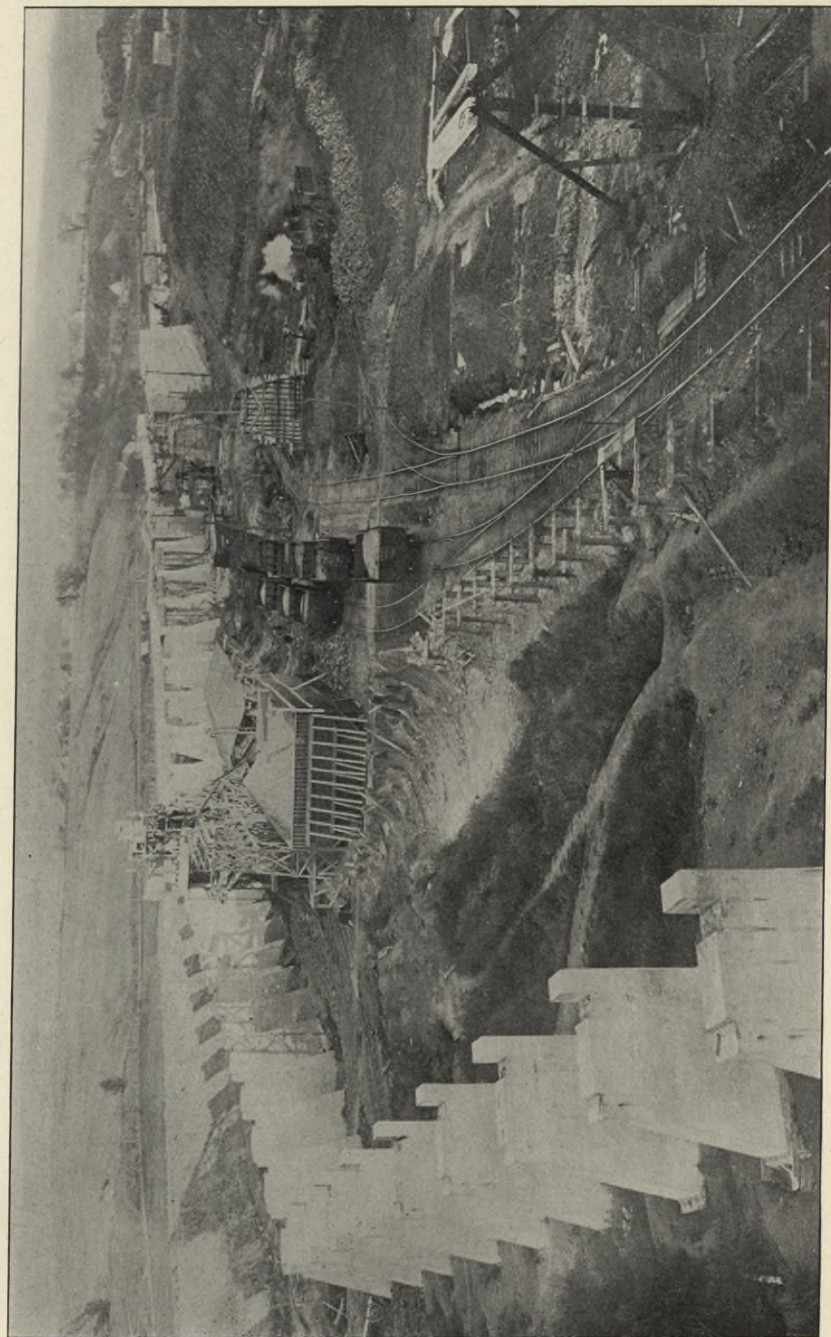
Contract No. 55. Showing progress of construction of Delta Dam, September 20, 1909.





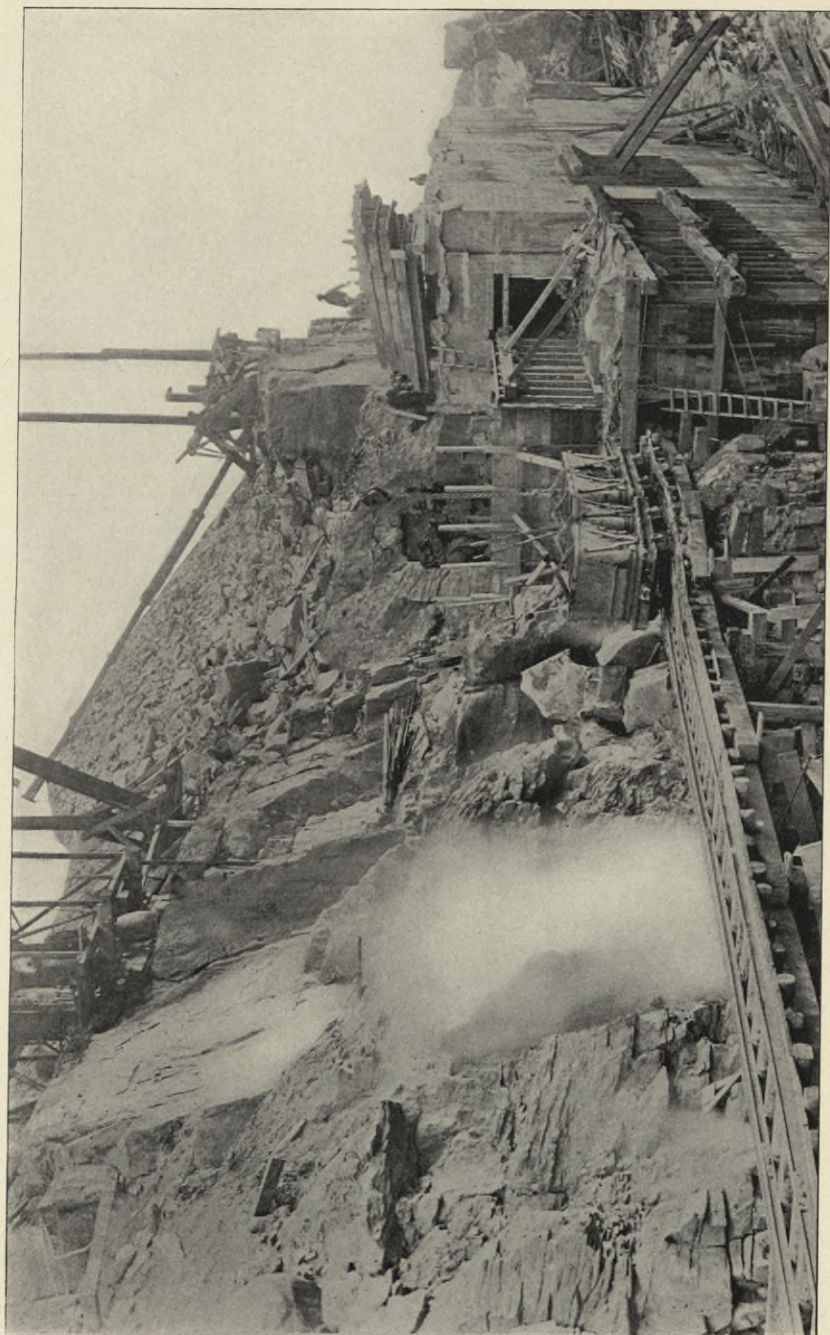
Contract No. 55. Showing progress of construction of Delta Dam, September 20, 1909.



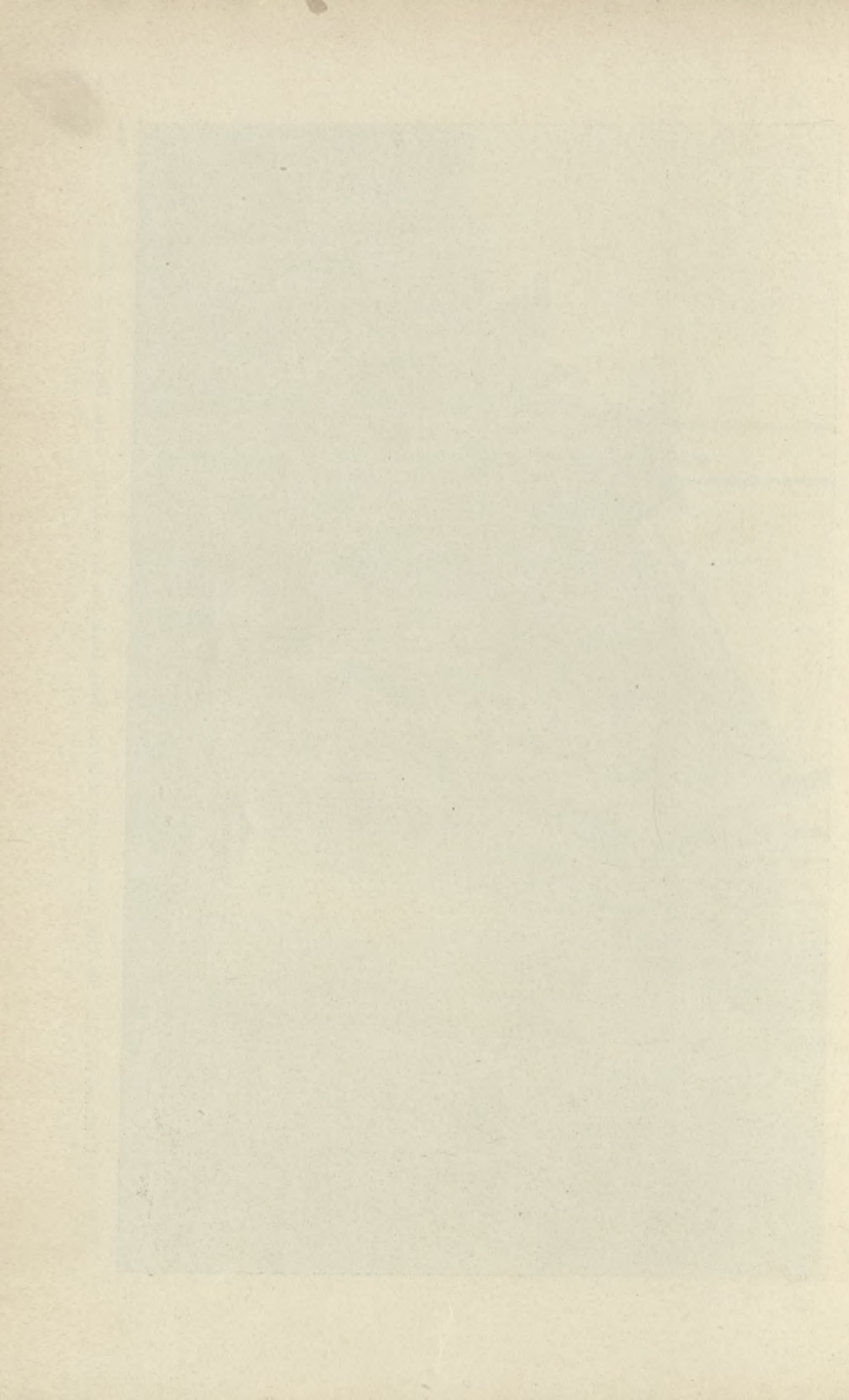


Contract No. 11. Looking from Lock No. 5, towards Lock No. 4, showing Guide Piers in Place.

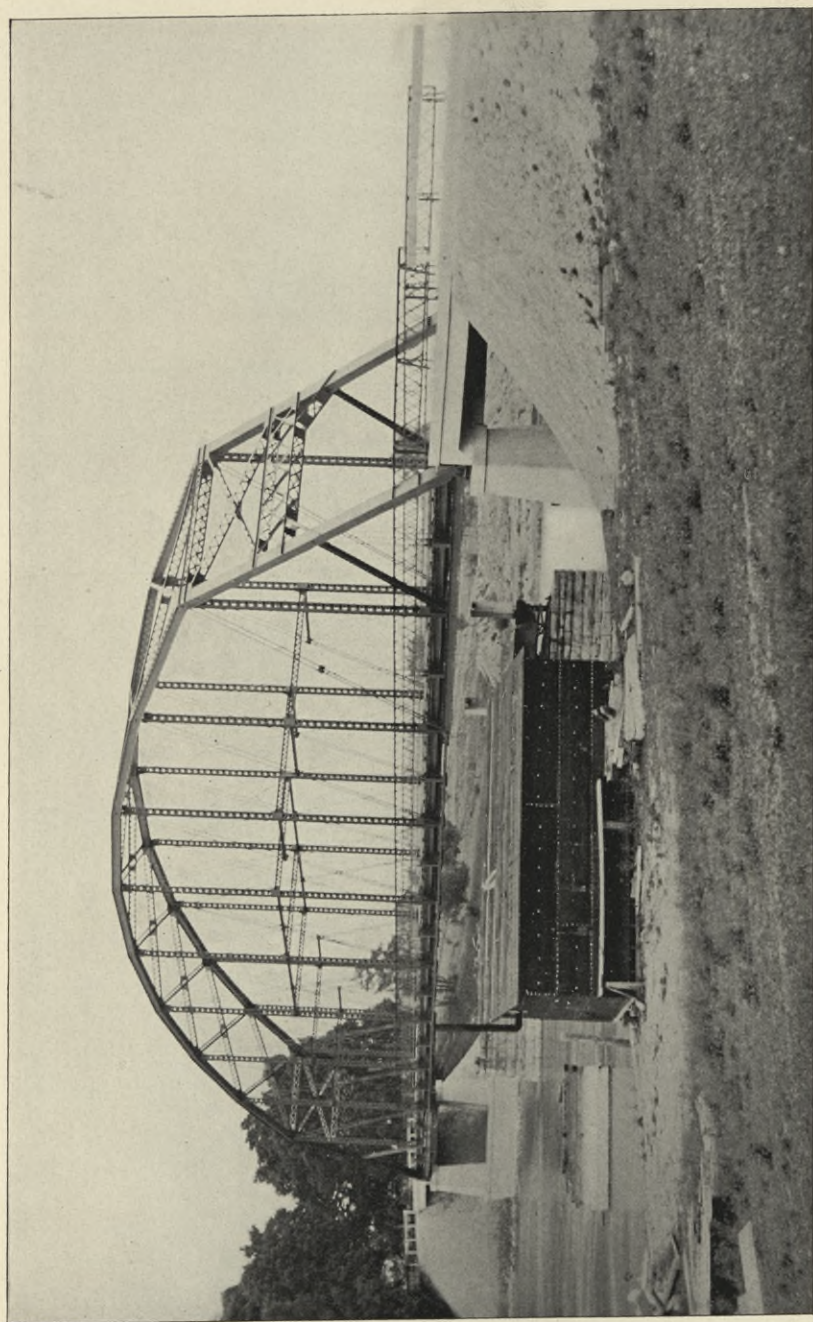




Contract No. 31. Showing construction of North Wall, Lock No. 17, at Little Falls, December 3, 1909.

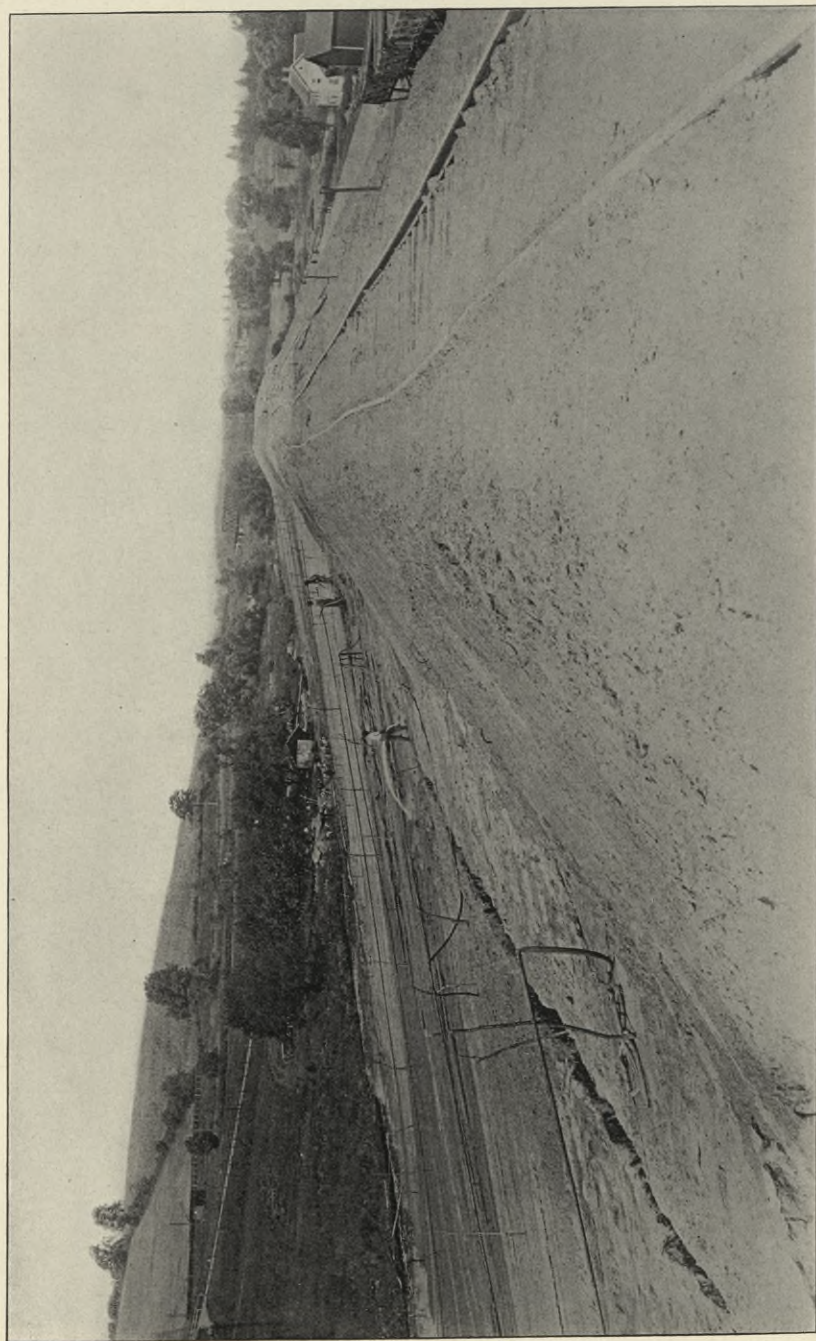






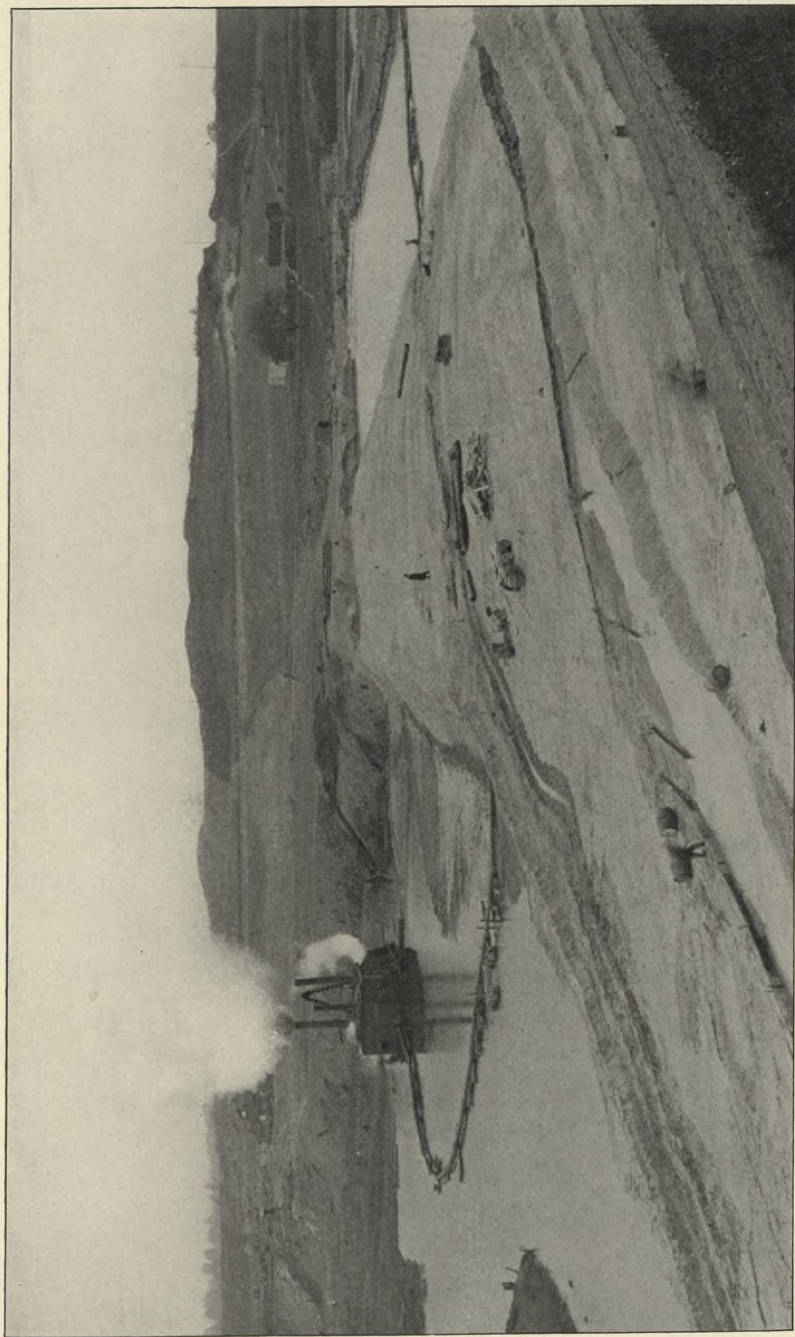
Contract No. 12. Showing completed Highway Bridge over Barge Canal at Oak Orchard, June 10, 1909.





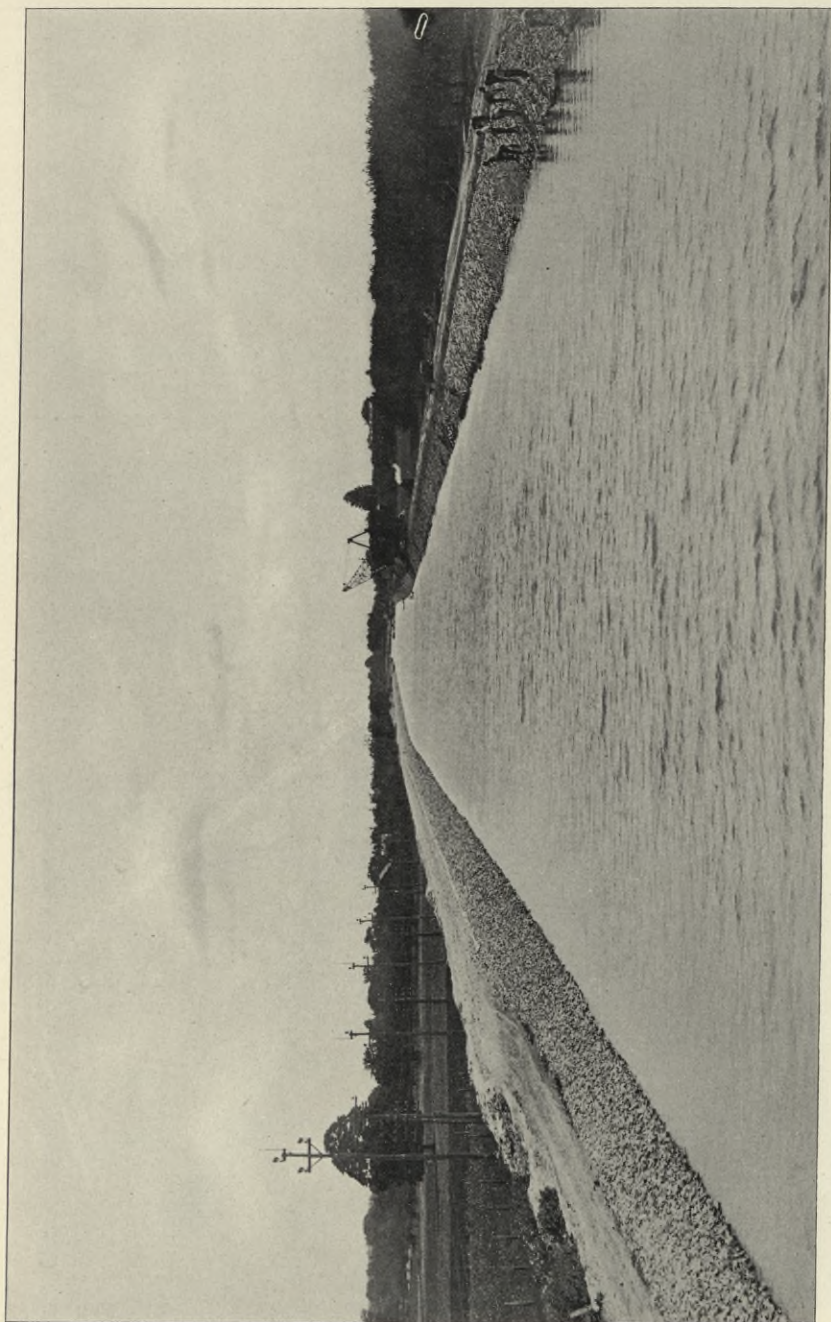
Contract No. 41. Showing Hydraulic Method of Spreading Materials and Embankment, August 24, 1909.





Contract No. 41. Showing Dredge Building Hydraulic Embankment at Arondequoit Creek Crossing, November 10, 1909.

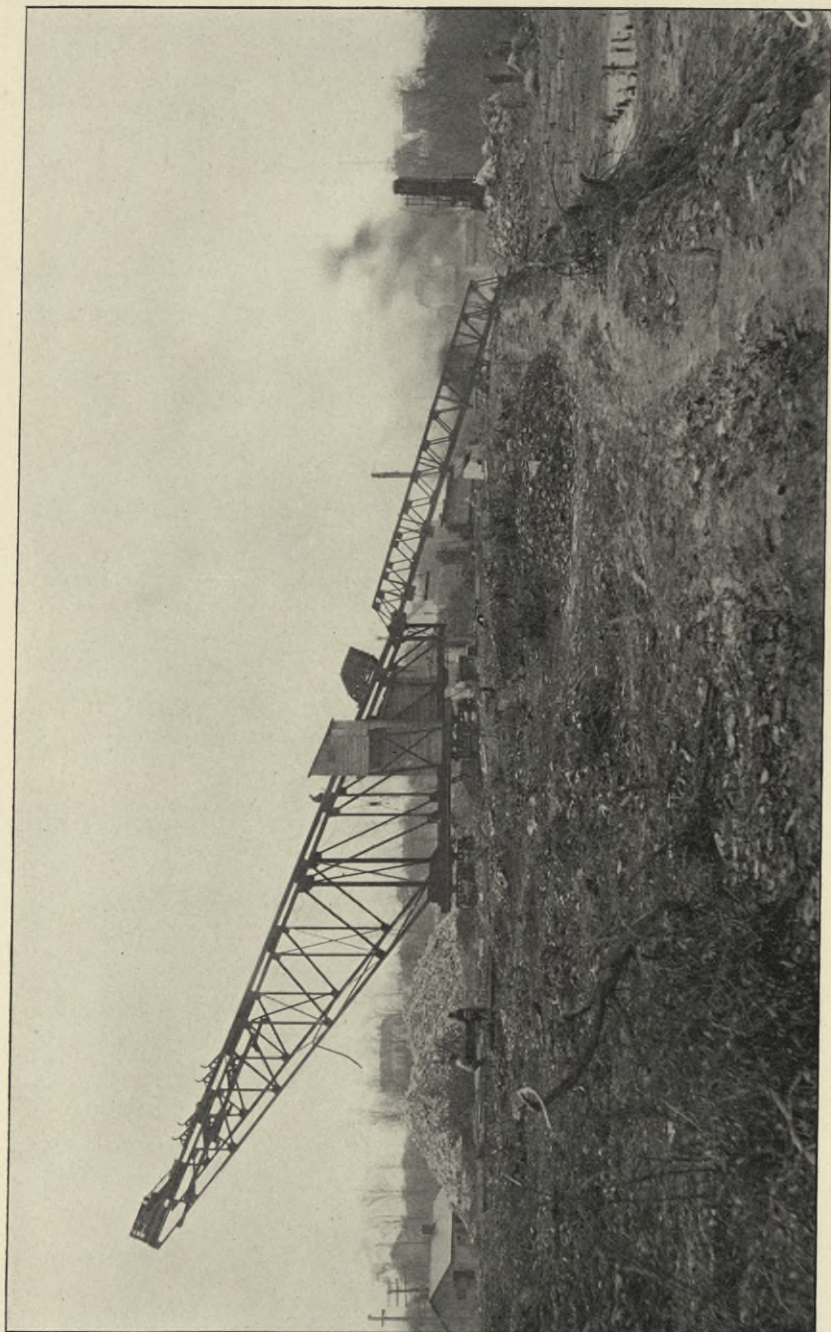




Contract No. 9. Showing Canal Prism and the placing of Wash Wall, looking east from Beal's Bridge, August 11, 1909.

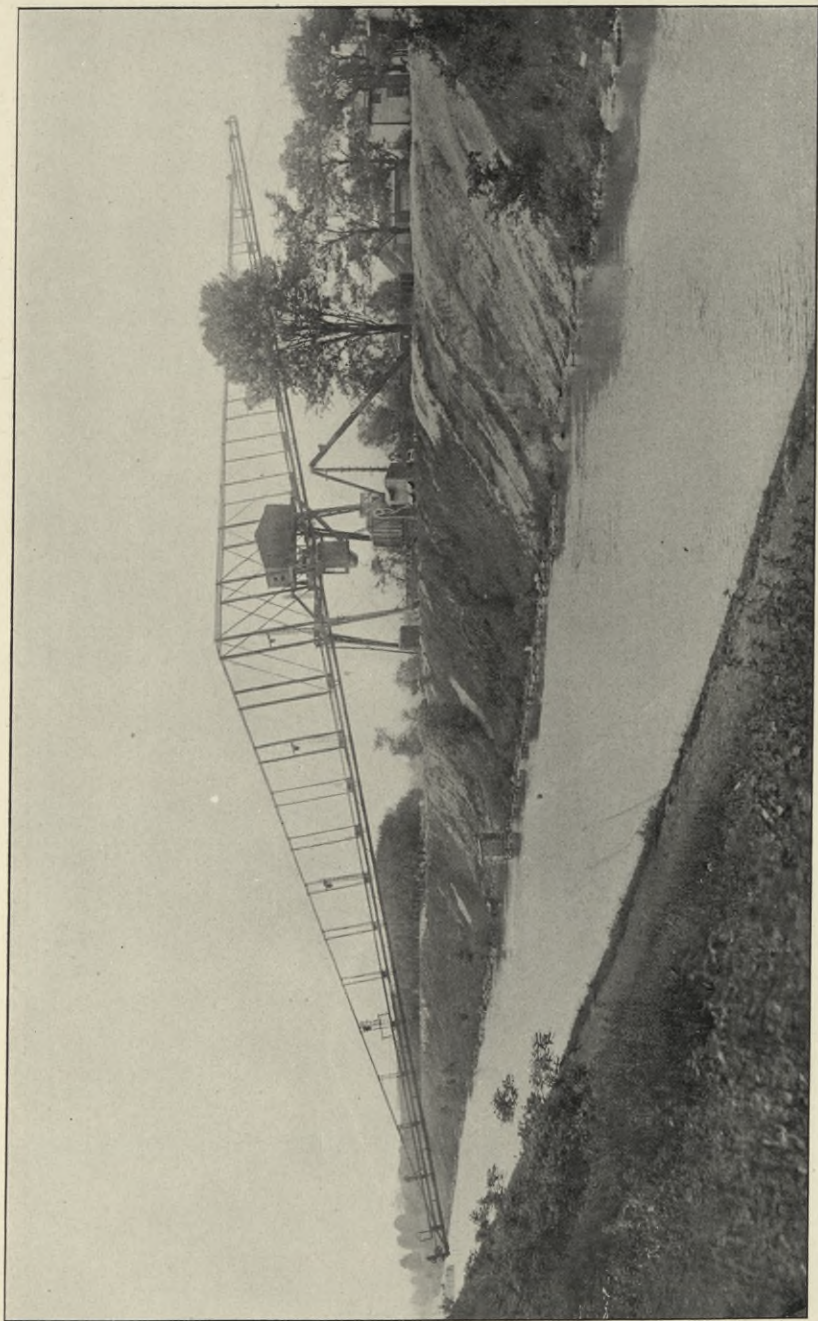






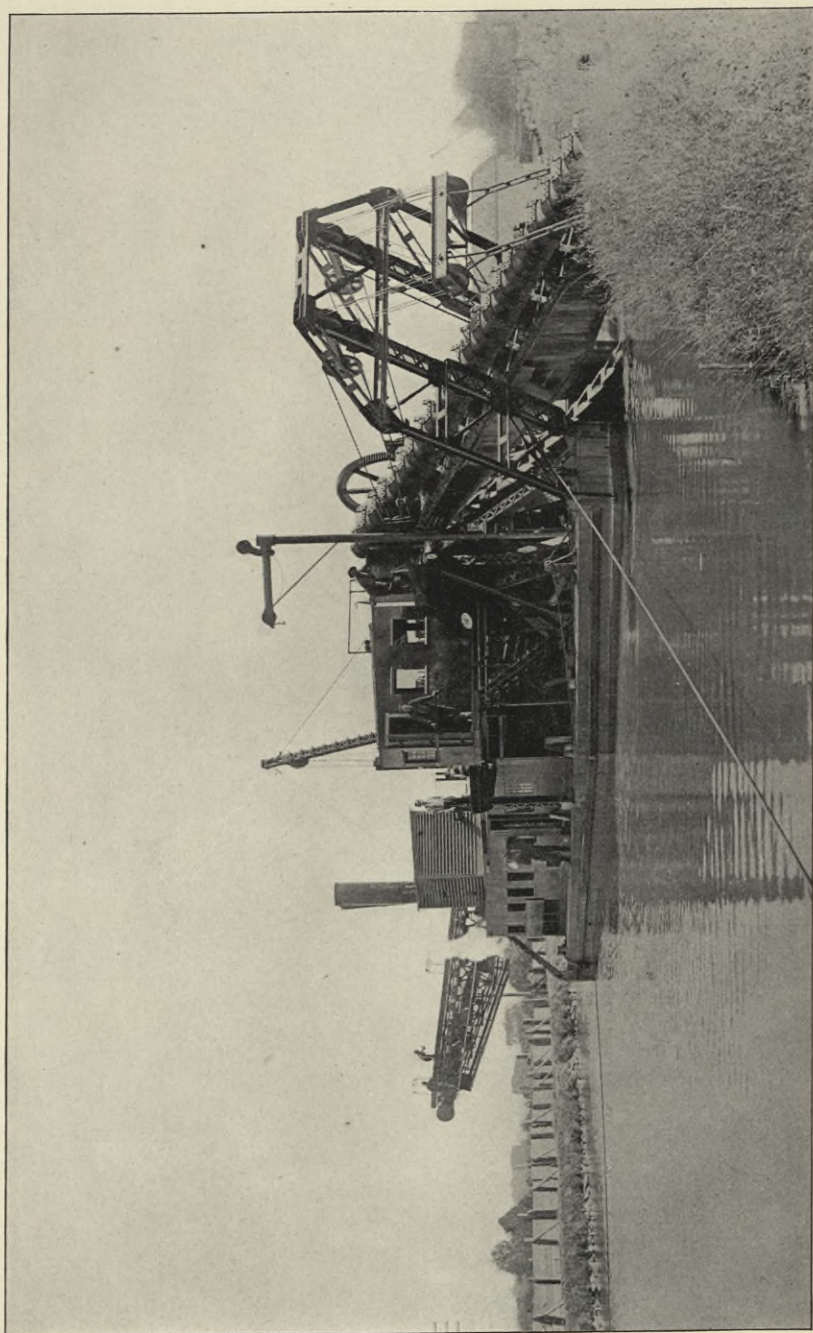
Contract No. 40. Showing steam shovel and tippel at work just west of Lockport, November 4, 1909.





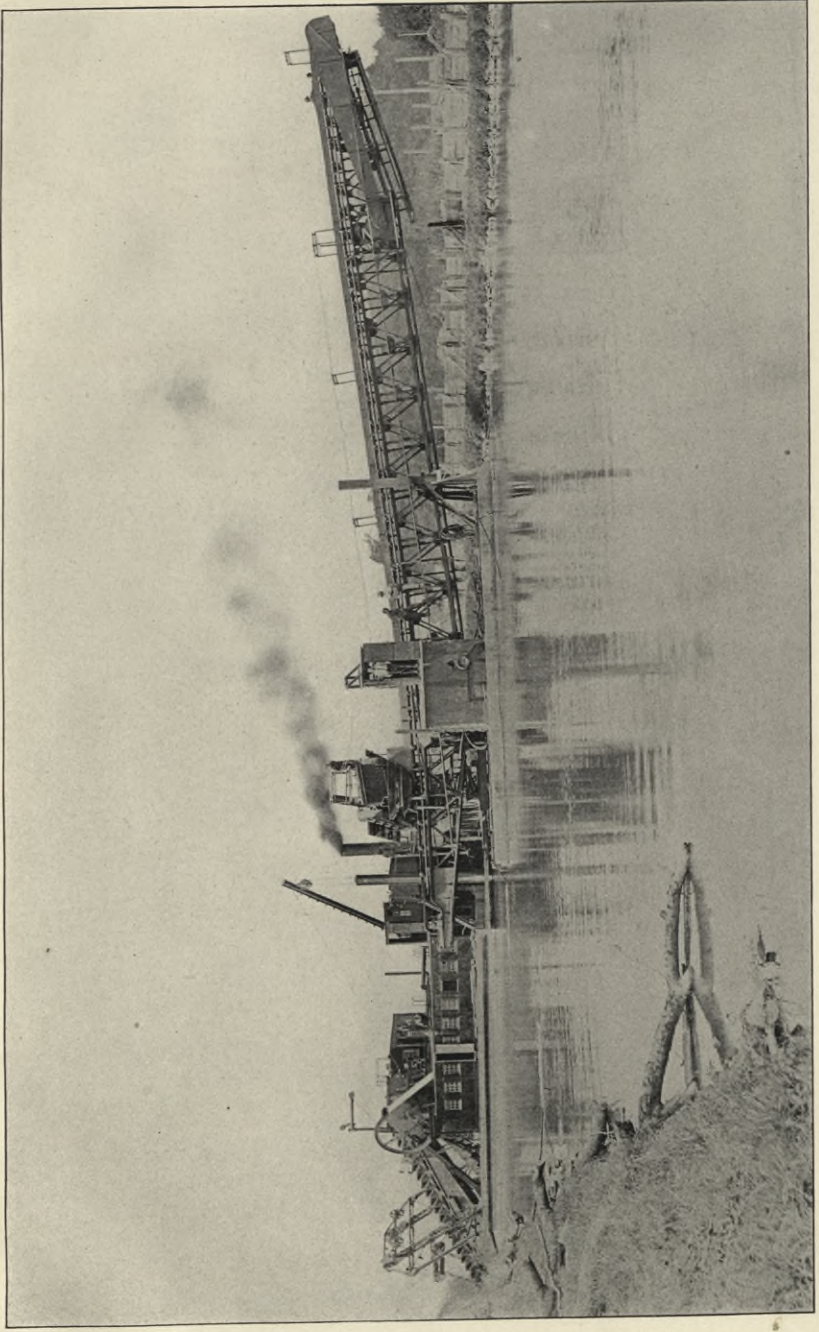
Contract No. 40. Cantilever excavator, Erie canal, between Lockport and Tonawanda, June 15, 1909.





Contract No. 66. Showing Ladder Dredge.





Contract No. 66. Showing ladder dredge and belt conveyor, September 10, 1909.







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S. 61

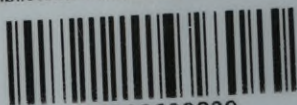


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