

Report of the State engineer  
and surveyor

N.Y.(State) State Engineer and Surveyor

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**STATE OF NEW YORK**

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**REPORT**

**OF THE**

**State Engineer and Surveyor**

**ON THE**

**Survey of Route and Estimate of Cost for  
Constructing a Branch of the Barge  
Canal From the Seneca River  
to Auburn**

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**TRANSMITTED TO THE LEGISLATURE MARCH 28, 1918**

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# STATE OF NEW YORK

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No. 45

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## IN SENATE

MARCH 29, 1918

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**Report of the State Engineer and Surveyor covering the  
Survey of Route and Estimate of Cost for the Construction  
of a Branch of the Barge Canal extending from the City of  
Auburn to the Seneca River.**

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MARCH 28, 1918

*To the Legislature:*

I have the honor to transmit herewith my report covering the survey of route and estimate of cost for the construction of a branch of the Barge canal extending from the city of Auburn to the Seneca river, as authorized by chapter 376, Laws of 1917.

Respectfully yours,

FRANK M. WILLIAMS,

*State Engineer and Surveyor.*

LAWS OF NEW YORK.—By Authority.

Chapter 376

AN ACT to provide for making a survey for an extension of the Barge canal from Auburn to Port Byron and making an appropriation therefor.

*The People of the State of New York, represented in Senate and Assembly, do enact as follows:*

Section 1. The state engineer and surveyor shall cause a survey to be made for the construction of an extension of the Barge canal from Auburn to Port Byron following generally the outlet of Owasco lake. Such officer shall make a report to the legislature of nineteen hundred and eighteen, embodying the result of his investigations, together with estimates of the cost for which such work may be done.

Section 2. The sum of ten thousand dollars (\$10,000), or so much thereof as may be necessary, is hereby appropriated for the purposes of this act, out of any money in the treasury not otherwise appropriated, payable by the treasurer on the warrant of the comptroller on the order of the state engineer and surveyor.

Section 3. This act shall take effect immediately.

STATE OF NEW YORK, }  
Office of the Secretary of State. } ss:

I have compared the preceding with the original law on file in this office, and do hereby certify that the same is a correct transcript therefrom and of the whole of said original law.

FRANCIS M. HUGO  
Secretary of State



## REPORT

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The contemplated route to be followed lying within the limits of the middle division of the New York State canals, I directed Division Engineer Guy Moulton to take general supervision of the work outlined. As soon as the money appropriated became available, Division Engineer Moulton directed Senior Assistant Engineer H. C. Smith to take charge of the work and detailed Assistant Engineer H. H. Brown to have direct charge of the field and office with headquarters at Port Byron, N. Y.

A field party was organized and placed under Mr. Brown, who on July 16, 1917, started the work.

*Base line:* In order to get the necessary information from which to make an estimate of cost, an accurate base line was first located, carefully measured by means of a graduated steel tape, and monumented. The directions of the lines connecting the monuments were all referred to the *true meridian*. To obtain this, frequent observations were taken on Polaris.

*Levels:* In conjunction with the running of the base line, a line of levels was started from a bench of known elevation, Barge canal datum, on the Seneca river and carried to the city of Auburn. The levels were carefully checked, and benches established at sufficiently frequent intervals to carry on the work.

*Topography:* The base line and benches having been established, the taking of topography was started. In this work all points and elevations were located and determined by the stadia method.

*Cross-sections:* Cross-sections of the streams and old canal were made in the usual way by actual measurements with tape, and either level or sounding rod. The upland sections were taken from the contour maps. The sections were plotted on cross-section paper, the proposed channel superimposed by means of a template, and the areas computed by means of the planimeter, and the volumes by average end areas. In taking

the sections, the different classes of material to be moved were noted, as earth, rock, etc. Note was also made as to the probable or possible manner of making the excavation, as by dipper-dredge, hydraulic dredge, steam shovel, etc.; also the location of spoil banks. Where rock did not crop, drive rod tests were made at frequent intervals, and also at the sites of the proposed structures, to determine its existence and elevation.

*Locks:* In estimating the concrete in the locks, the plan and size used on the Barge canal were assumed. A curve was prepared using the volumes of concrete in completed locks of various lifts on the Barge canal. After the locks had been located, and the lift determined, the volume of concrete of each was taken from the curve thus prepared.

The weights of structural steel, machinery, etc., were taken from similar structures completed on the Seneca and Oswego rivers.

*Power-houses:* Power-houses with both hydraulic and electrical equipment were also taken from completed structures similarly located.

*Bridges:* The quantities of excavation, concrete, and steel in bridges were taken from structures of similar height and span constructed on the Cayuga and Seneca canal.

*Dams:* The height of the various dams was first fixed. The section of the structure was then taken from completed dams on the Barge canal, and the volumes computed. In order to care for flood conditions at the dams it was found necessary to provide for a Taintor gate at each dam. The quantities in these also were taken from existing completed structures of like character.

#### DESCRIPTION OF LINE

From a study of the United States Geological Survey maps of the Auburn and Weedsport quadrangles, it was found that the valley of Owasco creek could be followed from Auburn to Port Byron. To follow it from Port Byron to the Seneca river would entail the crossing of both the West Shore and New York Central railroads. To avoid the expense of these crossings, it was thought best to turn west at Port Byron village and follow the old Erie canal to near its crossing of Crane creek, thence down

Crane creek to its junction with Salt creek and down this latter to its junction with the Seneca river. It was over this route that the topography, etc., were taken.

After the field notes were plotted and the maps completed, the center line of the proposed canal was located, and the elevations of the different levels and locations of the necessary structures were decided upon.

The center line of the proposed canal diverges from the center line of the existing Barge canal at about Sta. 5371, near the junction of Salt creek with the improved Seneca river, and about 1.46 miles northerly from the old Montezuma aqueduct, which carried the Erie canal over the Seneca river.

The line runs easterly up Salt and Crane creeks about 8,000 feet (1.6 miles) where it leaves the creek and continues easterly until it joins the old Erie canal.

*Lock No. 1.* This is located just east of where the line leaves Crane creek. The level of Seneca river, as maintained by the dam at Baldwinsville, is carried to this lock. The lift is 19 feet, (elevation 374 to 393).

It is proposed to take both Salt and Crane creeks into the canal; and stream entrance structures will be necessary. Between lock No. 1 and the old Erie, the water level of the proposed canal will be above the natural ground surface, and held by embankment or dykes on either side. When the old Erie is reached, it is proposed to follow it to Port Byron village. The old canal will be deepened and widened on the south side to obtain the proposed Barge canal section. The present towing-path bank, or north bank, with its protecting slope wall is to be retained. Because this bank is only two feet above the proposed pool level, a spillway 100 feet wide is provided above lock No. 1, the water to be carried to Crane creek and thence into the canal below the lock.

At Port Byron village the line turns southerly and follows up the valley of the Owasco creek.

*Lock No. 2 and Dam No. 1* are located in the village of Port Byron, about 1,000 feet southerly from the old Erie canal. The lift of the lock will be 19 feet (elevation 393 to 412). The dam has a spillway 100 feet long, and a 30-foot Taintor gate. It is located practically on the site of Warren's existing dam.

It is proposed to carry Owasco creek around lock No. 2 in its present channel by enlarging same opposite where it is cut by the easterly lower approach wall to the lock. The level below the lock is to be fed from the pool above by means of a sluice gate and conduit through the dyke, opposite and parallel to the lower westerly thrust wall of the lock.

From lock No. 2 the line follows the creek to the present State dam, where lock No. 3 and dam No. 2 are located, a distance of 1.78 miles.

*Lock No. 3* has a lift of 28 feet (elevation 412 to 440). Dam No. 2 has a spillway of 100 feet and a 30-foot Taintor gate.

*Locks Nos. 4 and 5*, to be built tandem, are located in a cut-off of the creek, about 3,400 feet (0.64 mile) above lock No. 3. The tandem locks will have lifts of 30 feet each, or a combined one of 60 feet (elevation 440 to 500). At the upper end of lock No. 5 dam No. 3 is located. This dam is to have a spillway of 300 feet, and is to raise the water in the narrow creek valley above, so that no excavation will be necessary until the village of Throopsville is reached, a distance of 2.15 miles.

*Lock No. 6* is located at Throopsville in a land cut, 2.6 miles above lock No. 5. The lift is 26 feet (elevation 500 to 526). At the upper end of the lock is dam No. 4 with a spillway of 100 feet and a 30-foot Taintor gate for flood purposes.

With the crest of dam 4 at elevation 526, some excavation will be necessary at the upper end of this level, and about 800 lin. ft. of highway on the west side of the creek opposite the upper approach to the lock will have to be raised.

*Lock No. 7* is to be located in a cut-off about 3,000 feet upstream from lock No. 6. The lift will be 25 feet (elevation 526 to 551). Dam No. 5 is to be located across the valley west of the lock, with a spillway of 100 feet and a 30-foot Taintor gate. The crest of this dam is placed at elevation 551, so as not to raise or interfere with the tail-waters of hydraulic power of the Auburn button works.

This elevation will necessitate the raising of 1,700 lin. ft. of highway on the west side of the creek valley, but is not high enough to obviate considerable excavation on this level.

At the upper end of this level the proposed canal will end in a turning-basin 450 feet long by 350 feet wide. This basin will be nearly parallel to and 250 feet from Bradley street in the city of Auburn.

The upper end of the turning-basin will be at Sta. 644 + 50, or 12.2 miles from the Barge canal by the line described.

On the above line the following structures will be necessary:

### LOCKS

LOCK NO.	Lift	El. pool, below	El. pool, above	From station	To station
1.....	19 feet...	374.0	393.0	80+71	86+00 earth foundation.
2.....	19 feet...	393.0	412.0	267+50	272+79 earth foundation.
3.....	28 feet...	412.0	440.0	361+00	366+29 rock.
4 and 5.....	60 feet...	440.0	500.0	393+70	402+35 rock.
6.....	26 feet...	500.0	526.0	533+00	538+29 rock.
7.....	25 feet...	526.0	551.0	570+07	575+36 rock.

### DAMS

DAM NO.	Crest elevation	Location	Description
1.....	412.0	Station, Warrens....	100-foot spillway, 30-foot Taintor gate, sill 4 feet below crest. Earth foundation.
2.....	440.0	Station, Hagdens....	100-foot spillway, 30-foot Taintor gate, sill 4 feet below crest.
3.....	500.0	Station.....	300-foot spillway.
4.....	526.0	Station, Throopville.	100-foot spillway, 30-foot Taintor gate, sill 4 feet below crest.
5.....	551.0	Station.....	100-foot spillway, 30-foot Taintor gate, sill 4 feet below crest.

### BRIDGES

LOCATION	Station	Description
River road.....	Sta. 35+80....	Main span, 124 ft. 7 in.; 2 approach spans, 80 ft. 18-ft. roadway.
Above lock 1.....	Sta. 98+50....	124 ft. 7-in. span; 15 ft. 10-in. roadway.
Hotalings.....	Sta. 197+95....	124 ft. 7-in. span; 15 ft. 10-in. roadway.
Canal St., Port Byron....	Sta. 250+50....	124 ft. 7-in. span; 2 sidewalks; 18-ft. roadway.
Rochester St., Port Byron.	Sta. 264+63....	Span over creek, 92 ft. long; over canal, 128 ft. long. 2 sidewalks; only 1 to be built.
Haydens.....	Sta. 354+55....	124 ft. 7 in.-span; 15 ft. 10 in.-roadway.
Lower bridge, Throopville.....	Sta. 514+26....	170-ft. span; 18-ft. roadway; 1 sidewalk.
Upper bridge, Throopville.....	Sta. 533+.....	Over lock, span, 82 ft. long; 18-ft. roadway. Over creek, raising existing bridge; build two 30-ft. slab approaches.

Trolley bridges—Two if line is not changed. (Could be eliminated if line were relocated on tow-path.)

## MISCELLANEOUS STRUCTURES

Stream entrance, Salt creek.

Stream entrance, Crane creek.

Spillway above lock No. 1.

Ditch head-wall — Culvert above lock No. 1 and ditch south side of Erie canal.

## EXISTING POWER AND POWER RIGHTS AFFECTED

Located on the Owasco creek between Auburn and Port Byron are seven power rights, with hydraulic heads varying from 11 feet to 18 feet. Three of these powers are in use at the present time; the other four have not been in use for years. These unused rights exist and are capable of development, and must, therefore, be considered. Without going too much into detail for a preliminary estimate, the total power on the stream between the above limits is estimated at \$200,000 without land or buildings. The value of the land, buildings and machinery is included in the general estimate.

## WATER REQUIRED AND SUPPLY

Assuming that 500,000 tons of freight will be moved on the proposed canal in a season of 210 days, the tonnage per day would be practically 2,400. If the size of the boats used were such that 700 tons would pass through the locks at a time, there would be four lockages per day. In addition, there would be some empty boats, and some pleasure boats passing, which would increase the daily lockages to say seven.

The area of the standard lock chamber is 15,255 square feet, so that each foot of lift would require 15,255 cu. ft. of water. The maximum proposed lift is 30 feet. One lockage would then require 457,650 cu. ft. of water, and seven lockages would require 3,203,550 cubic feet of water per day, or say 37 cubic feet per second.

From a compilation by Mr. Wm. B. Landreth, Deputy State Engineer, I submit the following table showing the probable minimum use of water for the canal:

1. Loss at spillway . . . . .	16 c. f. s.
2. Loss at lock gates and valves . . . . .	16 c. f. s.
3. For power and lighting . . . . .	64 c. f. s.
4. For lockages . . . . .	37 c. f. s.

Showing a total of. . . . . 133 c. f. s.

The only source of supply is Owasco lake, located above the city of Auburn. This lake has long been used as a reservoir for feeding the present Erie canal. Its elevation is controlled by the State in conjunction with the city of Auburn, by a State-built dam located in the outlet about 8,000 ft. downstream from the lake. The lake is also used as a source of water-supply for the city of Auburn, the water being pumped into the mains. The city has an hydraulic power pumping station immediately below the State dam, and a steam plant at the head of the outlet for use in low-water periods. Being interested in the lake water and the elevation of same, the City Water Commissioners have caused records of elevation and run-off to be kept for a number of years, and have kindly furnished us with copies, also with copies of run-off charts, etc.

From these records has been taken the following:

*Table Showing Minimum Flows in Owasco Lake Outlet during the Canal Season, when the Discharge Was Less than 133 Cubic Feet per Second.*

YEAR	May	June	July	Aug.	Sept.	Oct.	Nov.	Mean
1913.....	107	18	62	27	71	47	47	54.4
1914.....			91		107	63	37	81.0
1915.....		76			128			104.0
1916.....				55	46	33	10	37.5

Taking the low year, 1913, when the mean of the minimum flow during the canal year was 54 c. f. c. (omitting decimals), a deficiency of 79 c. f. s. is shown ( $133 - 54 = 79$ ). A flow of 79



c. f. s. for one day = 6,825,600 cubic feet, and in 184 days (the low water period) = 1,255,910,400 cubic feet. This volume of water therefore must be stored. The area of Owasco lake = 289,935,360 sq. ft. and the water to be stored will cover it to a depth of 4.3 feet.

To provide this storage it is proposed to raise the existing State dam 2.5 feet above its present crest, or to elevation 708.36, United States Geological survey datum at Auburn, leaving a fixed crest of about 75 feet, and a 25-foot Taintor gate, with a sill at elevation 704.36, four feet below the fixed crest.

The recorded flood run-off from the lake is approximately 3,000 c. f. s. To flood the low lands surrounding the lake as little as possible, it is proposed to control the discharge at the dam by means of the Taintor gate, so that the maximum depth on the crest will be but two feet. The size, location and elevation of the present head-gates in the dam are not to be changed.

To bring about the necessary storage, it will be necessary not only to raise the dam as described, but to raise the lake, which will flood a certain land acreage, much of which is either under cultivation, or occupied as cottage sites. It will also make necessary the widening and deepening of the Owasco creek from the lake to the State dam.

The probable cost of providing the necessary storage, including the raising of the State dam and all work above same, in addition to that provided for under chapter 645, Laws of 1913, is estimated at \$410,000.

The cost of constructing the canal from Auburn to Port Byron and the Seneca river, as outlined above, is estimated at \$8,830,000, which, added to the estimated cost of the water-supply, makes a total probable cost for the entire improvement of \$9,240,000.

Appended hereto are tables showing the quantities and prices used in arriving at the above cost, together with a set of drawings showing the topography of the Owasco creek valley from Auburn to Port Byron, and the country adjacent to the route selected from Port Byron westerly to the Seneca river. The drawings show also the locations of the center line and of all necessary structures of the proposed canal.

The field books, maps, details of estimates, ~~all papers and records~~ pertaining to the survey and estimate as above outlined are on file in the office of the Division Engineer of the Middle Division of the Canals at Syracuse, N. Y.

*Table Showing the Probable Quantities and Cost of Providing the Necessary Water-supply by Raising the State Dam and thereby the Level of Owasco Lake.*

No.	ITEMS	Price	Amounts
1	140,000 cu yds., excavation.....	\$0 75	\$105,000 00
2	24,000 cu. yds., embankment.....	30	7,200 00
3	200 cu. yds., lining.....	2 50	500 00
4	1,000 cu. yds., 2d-class concrete.....	10 00	10,000 00
5	2,000 lbs., metal reinforcement.....	07	140 00
6	297,000 lbs., structural steel.....	08	23,760 00
7	4,000 lin. ft., foundation piles in place.....	60	2,400 00
8	6 M. Ft. B. M., sawed lumber (pine).....	90 00	540 00
9	6 M. Ft. B. M., sawed lumber (treated).....	110 00	660 00
10	400 lin. ft., fencing.....	35	140 00
11	24 moving boat-houses.....	50 00	1,200 00
12	1 bailing and draining, lump sum.....	5,000 00	5,000 00
13	1 land and buildings, lump sum.....	200,000 00	200,000 00
Total.....			\$356,540 00
Add for engineering and contingencies, 15%.....			53,481 80
Say.....			\$410,021 00
			410,000 00

*Detailed Estimate of Probable Cost of Proposed Barge Canal Extension from Auburn to Port Byron, Showing Work, Materials, Prices and Damages.*

Quantities	ITEMS	Price	Amounts
32.0	Acres..... Clearing..... Per acre	\$35 00	\$2,870 00
16,000.0	Cu. yds..... Grubbing..... Per cu. yd.	50	8,000 00
600.0	M. ft. B. M. Sheeting and bracing... Per M. ft. B. M.	75 00	45,000 00
2,920,000.0	Cu. yds..... All excavation..... Per cu. yd.	79	2,306,800 00
500,000.0	Cu. yds..... Embankment..... Per cu. yd.	30	150,000 00
53,000.0	Sq. ft..... Steel sheet-piling..... Per sq. ft.	2 25	119,250 00
3,500.0	Cu. yds..... Lining..... Per cu. yd.	2 00	7,000 00
144.0	M. ft. B. M. Yellow pine, sawed lumber, Per M. ft. B. M.	* 100 00	14,400 00
58.0	M. ft. B. M. White oak, sawed lumber, Per M. ft. B. M.	150 00	8,700 00
163,000.0	Lin. ft..... Foundation piles..... Per lin. ft.	60	97,800 00
1,000.0	Cu. yds..... 1st-class concrete..... Per cu. yd.	20 00	20,000 00
340,000.0	Cu. yds..... 2d-class concrete..... Per cu. yd.	10 00	3,400,000 00
21,000.0	Cu. yds..... Wash wall..... Per cu. yd.	2 50	52,500 00
4,000.0	Cu. yds..... 2d-class riprap..... Per cu. yd.	2 50	10,000 00
4,462,000.0	Lbs..... Structural steel..... Per lb.	08½	379,270 00
179,350.0	Lbs..... Metal reinforcement..... Per lb.	07	12,554 50
43,680.0	Lbs..... Steel castings..... Per lb.	12	5,241 60
721,900.0	Lbs..... Iron castings (plain)..... Per lb.	06	43,314 00
270,162.0	Lbs..... Iron castings (machined)..... Per lb.	10	27,016 20
11,000.0	Lin. ft..... Wooden fence..... Per lin. ft.	35	3,850 00
2,400.0	Sq. yds..... Bituminous surfacing..... Per sq. yd.	50	1,200 00
640.0	Sq. yds..... Brick paving..... Per sq. yd.	3 00	1,920 00
750.0	Lin. ft..... Lattice railing..... Per lin. ft.	2 00	1,500 00
125.0	Lin. ft..... Wrought-iron pipe-railing..... Per lin. ft.	2 00	250 00
18,250.0	Lin. ft..... Transmission line..... Per lin. ft.	1 20	21,900 00
2,500.0	Sq. ft..... Concrete sidewalk..... Per sq. ft.	30	750 00
42.0	No..... Oil signal lamps..... Each	20 00	840 00
100%	..... Coffor-dams, pumping, bailing and draining..... Per lump sum		120,000 00
100%	..... Maintaining highway traffic..... Per lump sum		2,500 00
100%	..... Removing old superstructures..... Per lump sum		350 00
100%	..... Raising old bridge..... Per lump sum		400 00
100%	..... Value of building..... Per lump sum		59,000 00
3	..... Power-houses..... Each	22,000 00	66,000 00
7	..... Electrical equipment..... Each	45,000 00	315,000 00
920.0	Acres..... Land to be appropriated..... Per acre	100 00	92,000 00
1	..... Relocating R. S. & R. R. R.....		75,000 00
	..... Harbor equipment, lights and buoys, Per lump sum		28,000 00
Add 15% for engineering and contingencies.....			\$7,501,176 30
Total.....			1,125,176 44
Say.....			\$8,626,352 74
For existing power rights add.....			8,630,000 00
Total.....			200,000 00
Add for water-supply.....			\$8,830,000 00
Total, whole improvement.....			410,000 00
			\$9,240,000 00

The estimate of cost above submitted is based upon construction costs prevailing as of this date.

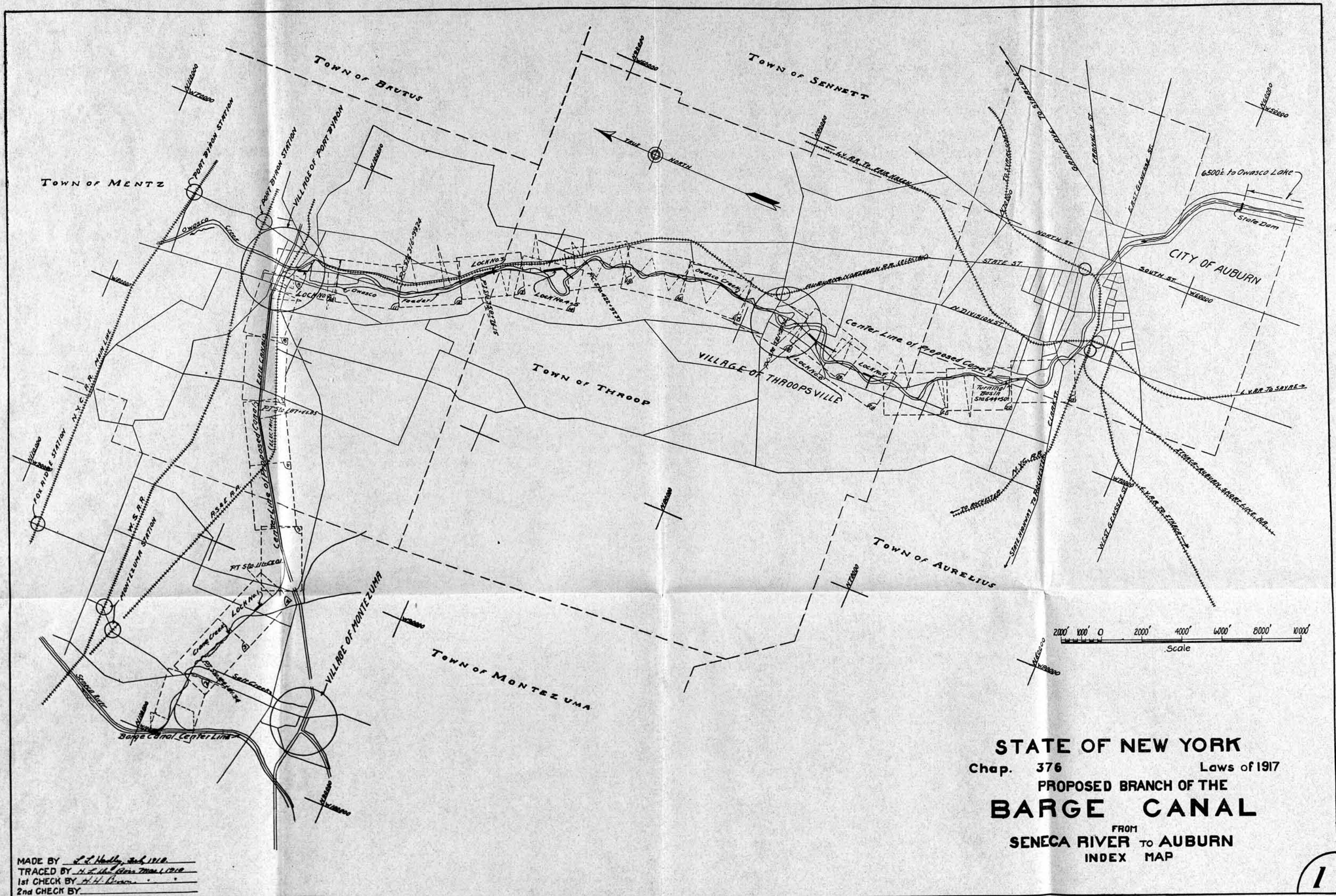
Respectfully submitted,

FRANK M. WILLIAMS,

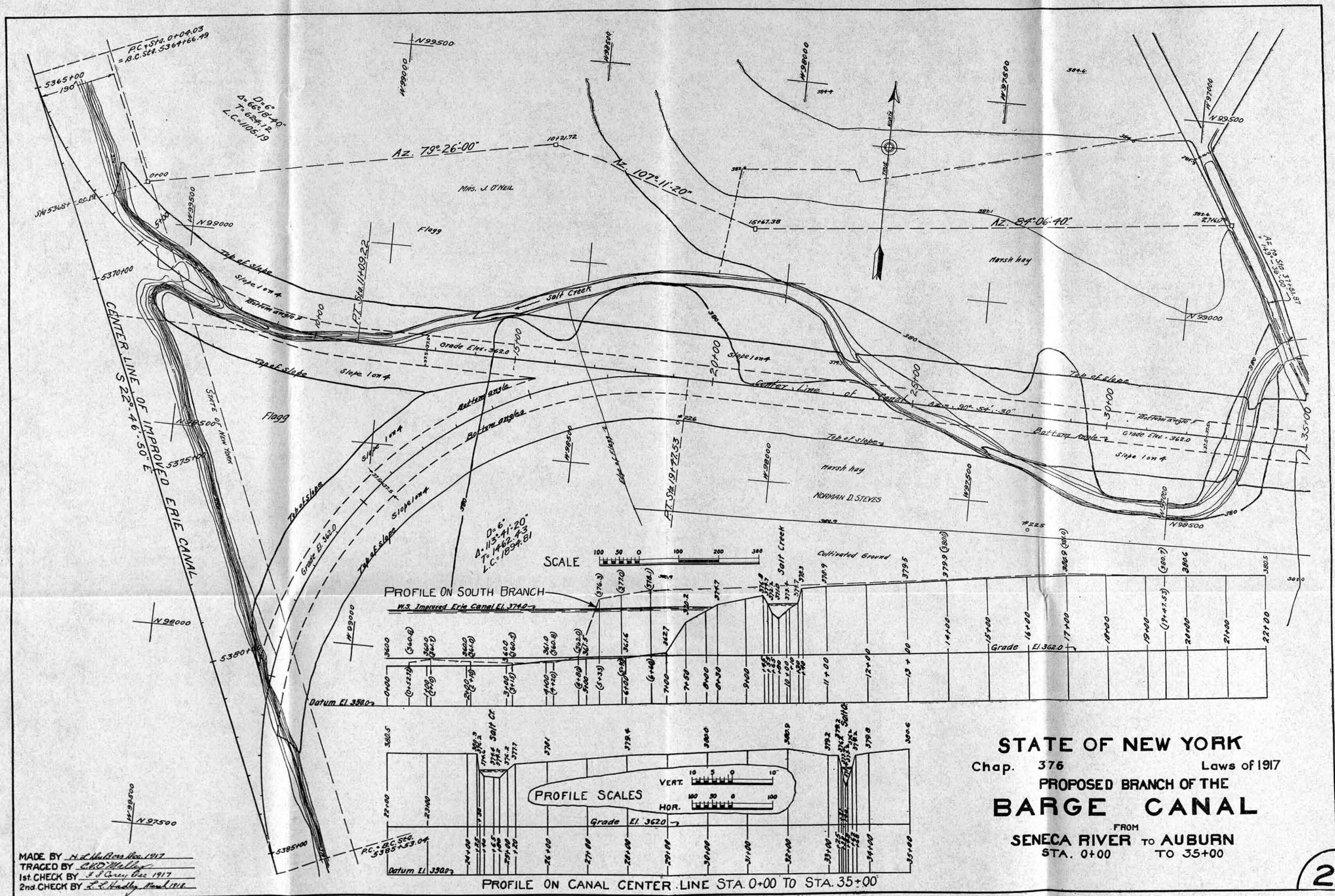
State Engineer and Surveyor.

March 29, 1918.





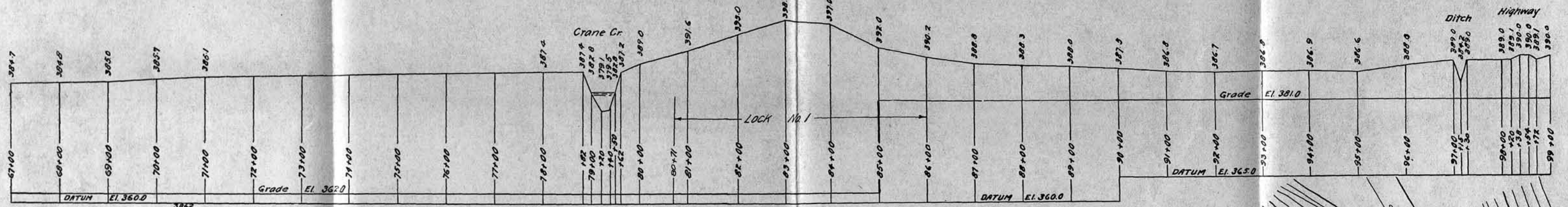






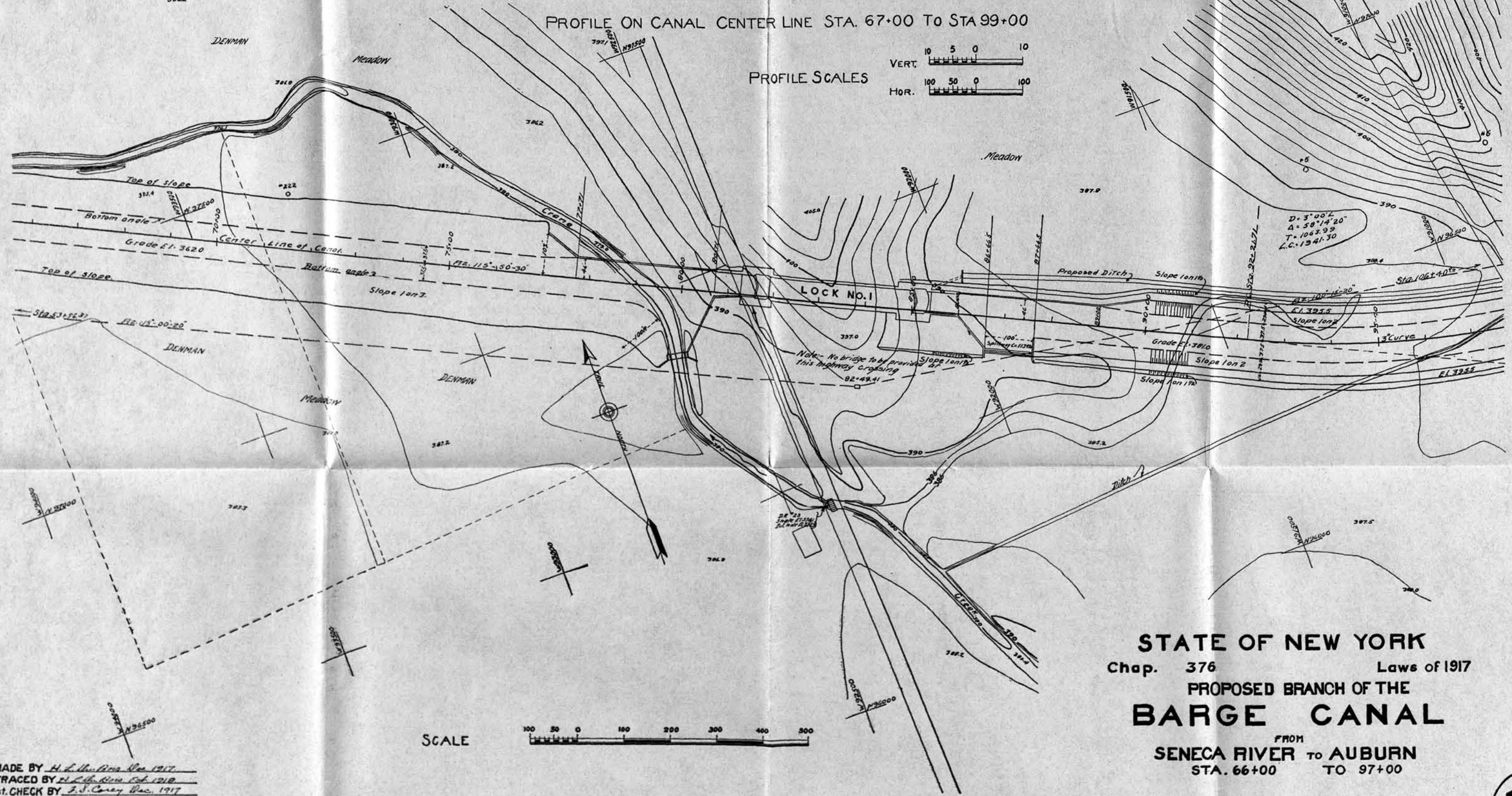
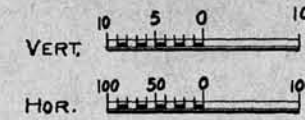




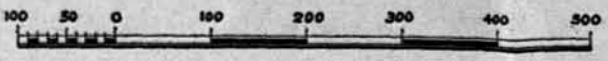


PROFILE ON CANAL CENTER LINE STA. 67+00 To STA 99+00

PROFILE SCALES



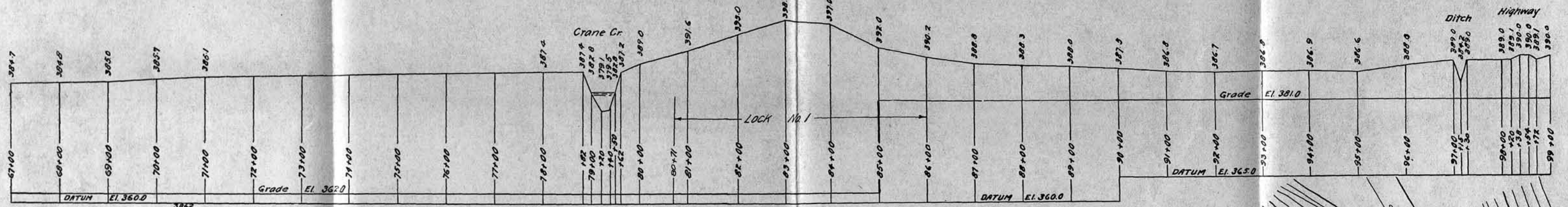
SCALE



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TRACED BY H. L. Thompson Feb. 1918  
1st. CHECK BY J. J. Conroy Dec. 1917  
2nd. CHECK BY J. J. Conroy March 1918

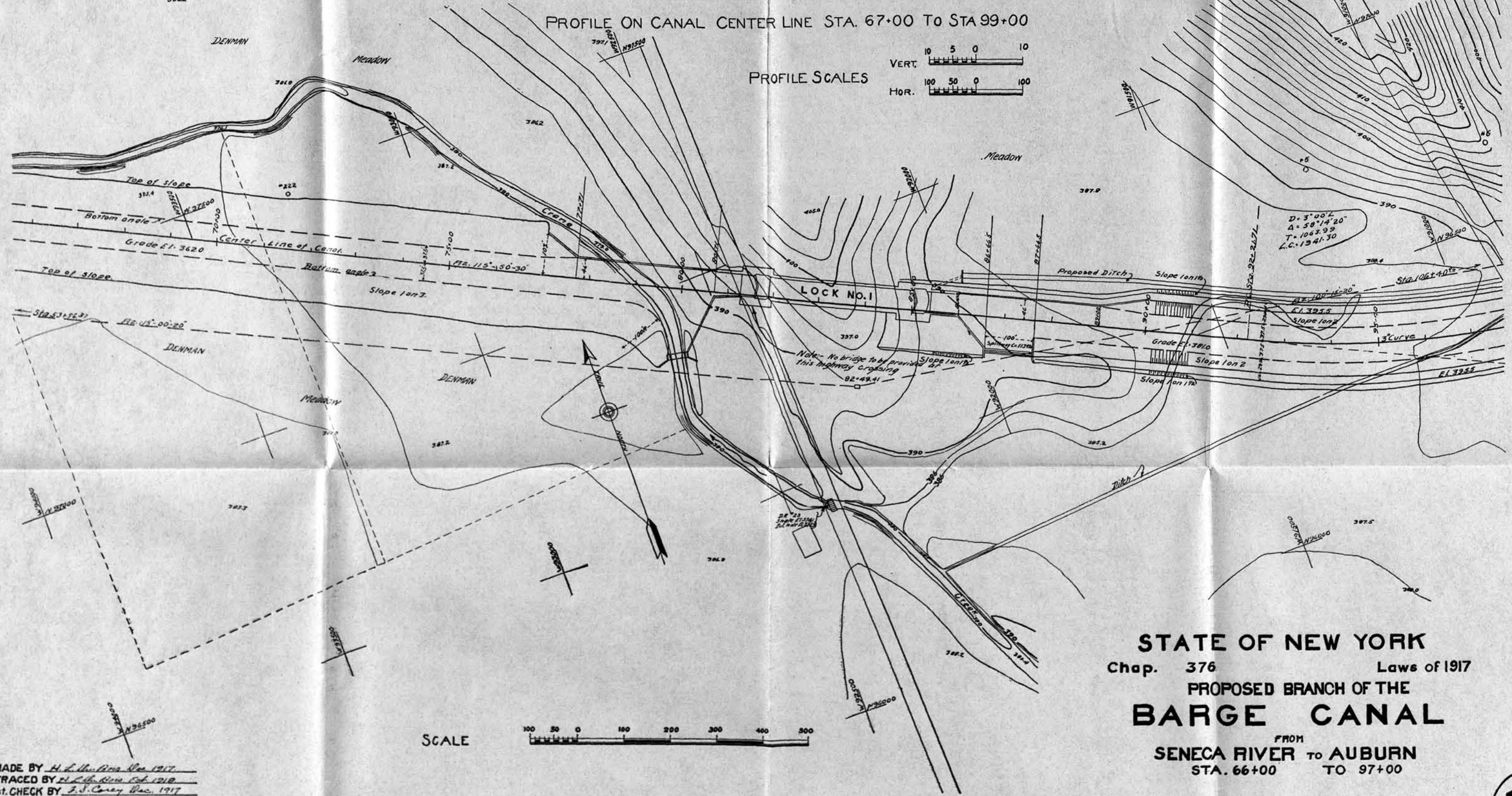
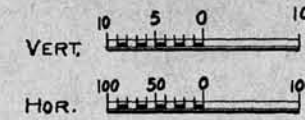
STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 66+00 TO 97+00





PROFILE ON CANAL CENTER LINE STA. 67+00 To STA 99+00

PROFILE SCALES



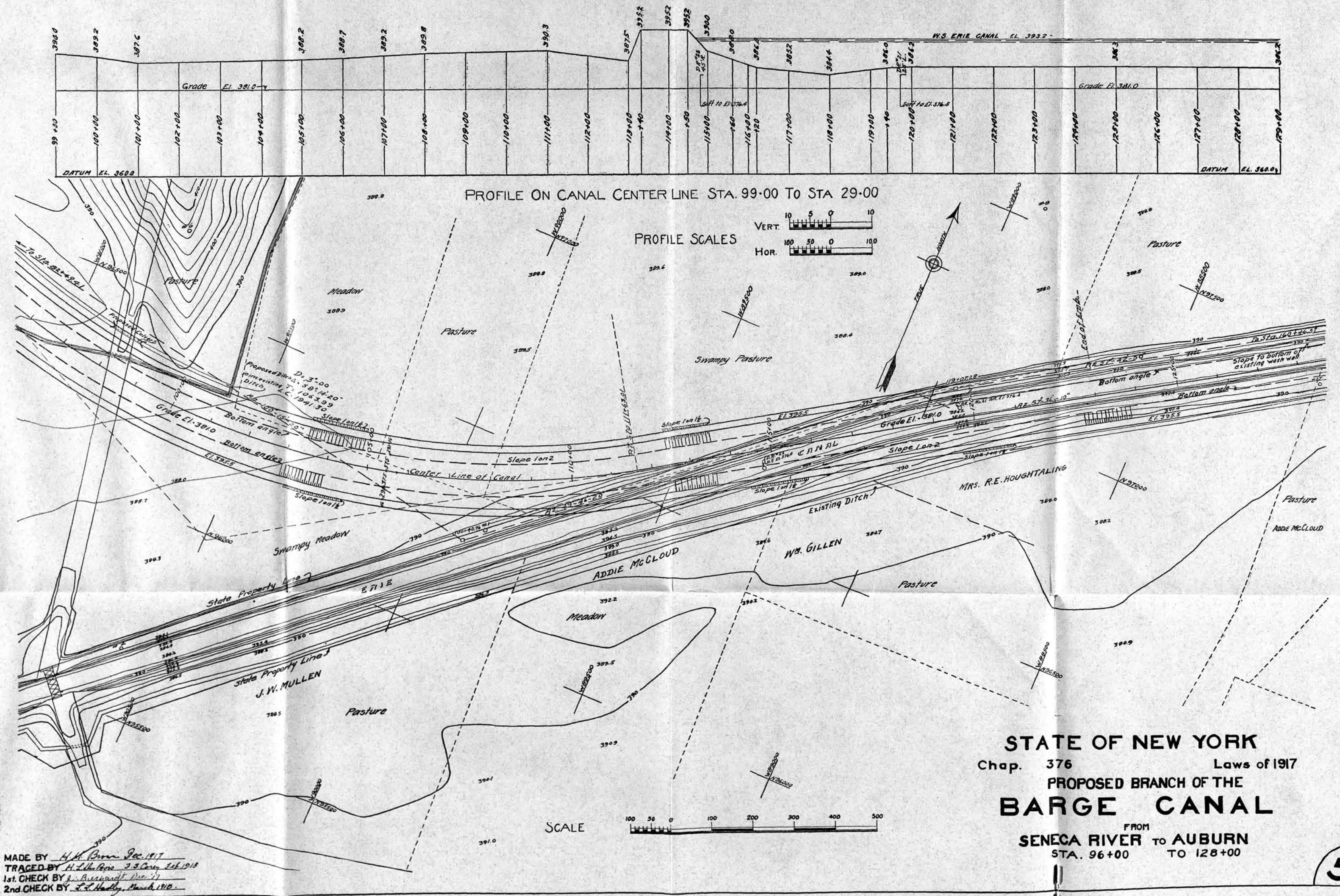
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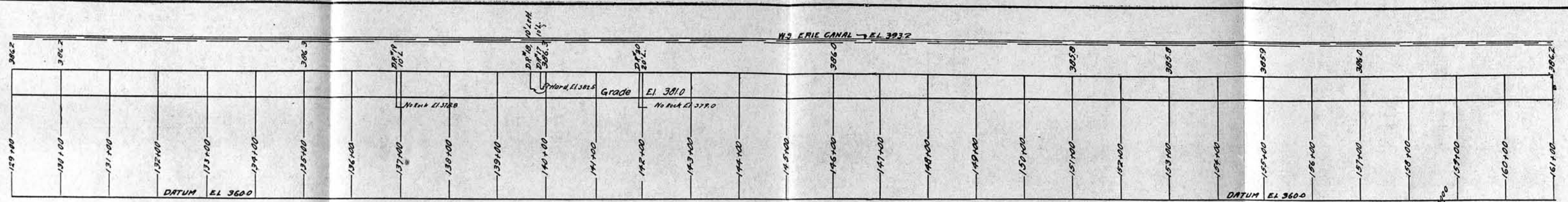


STATE OF NEW YORK  
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PROPOSED BRANCH OF THE  
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STA. 66+00 TO 97+00

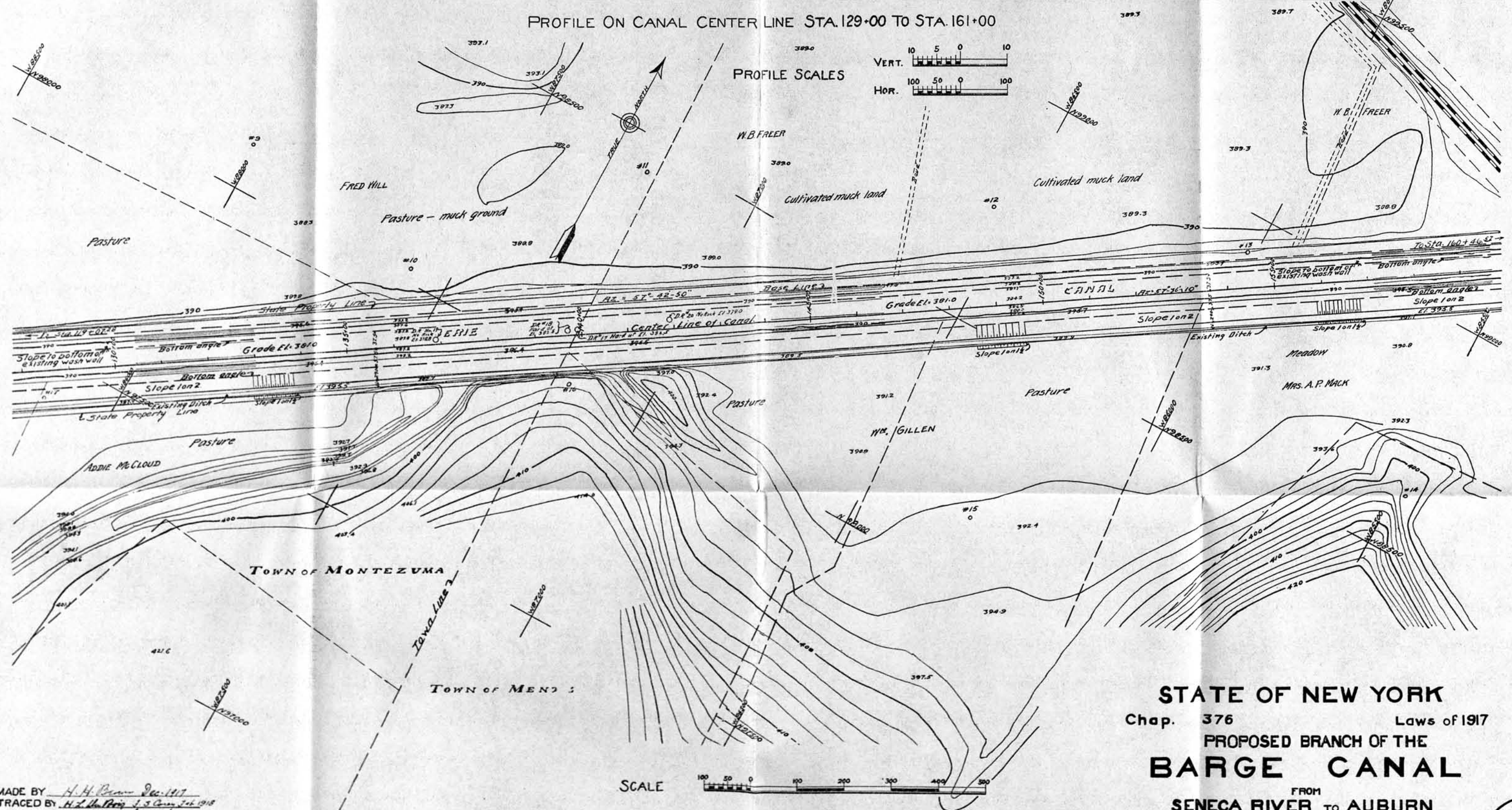








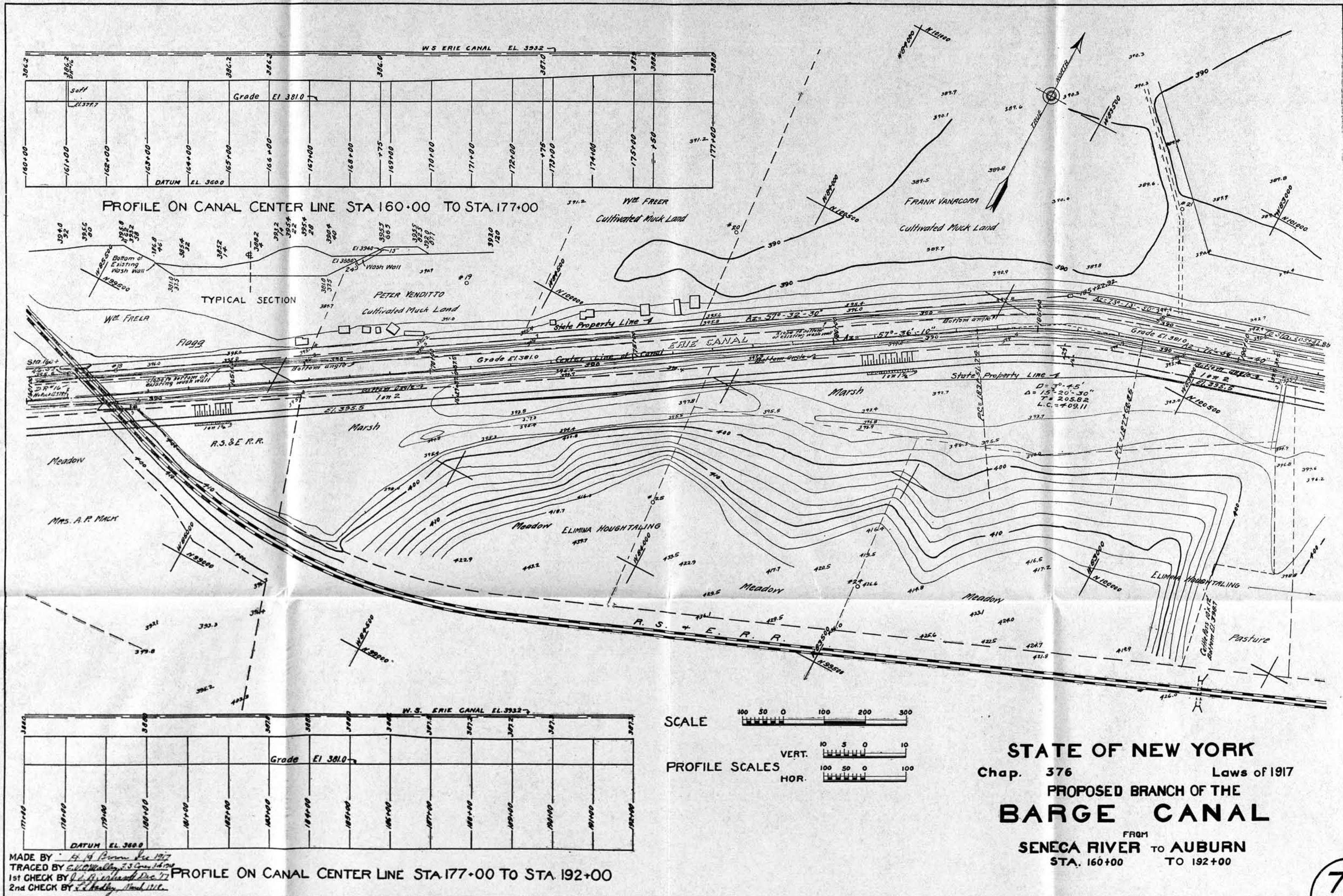
PROFILE ON CANAL CENTER LINE STA. 129+00 TO STA. 161+00



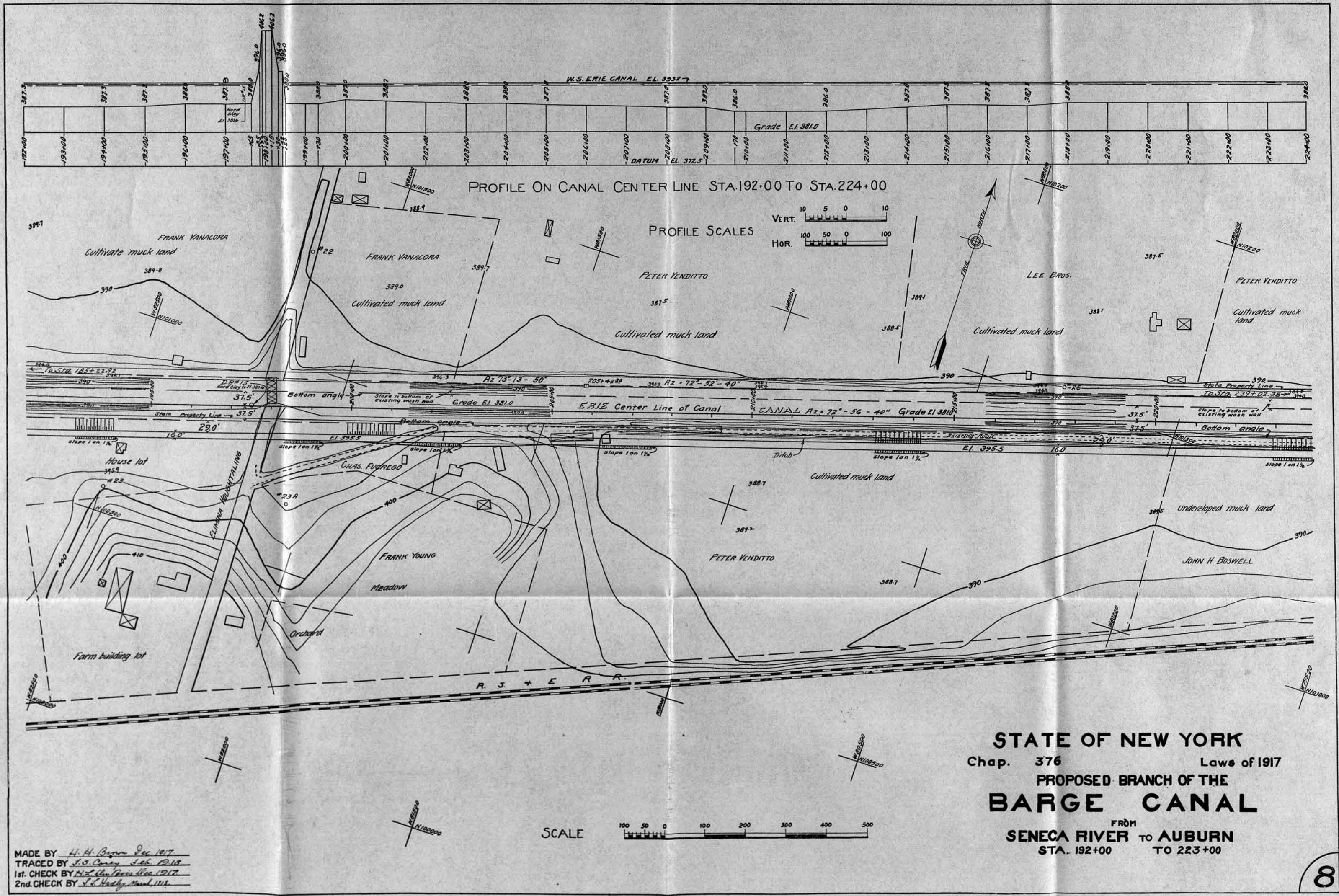
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 2nd CHECK BY L. L. Heddy March 1918

**STATE OF NEW YORK**  
Chap. 376 Laws of 1917  
**PROPOSED BRANCH OF THE**  
**BARGE CANAL**  
**FROM**  
**SENECA RIVER TO AUBURN**  
**STA. 128+00 TO 159+00**

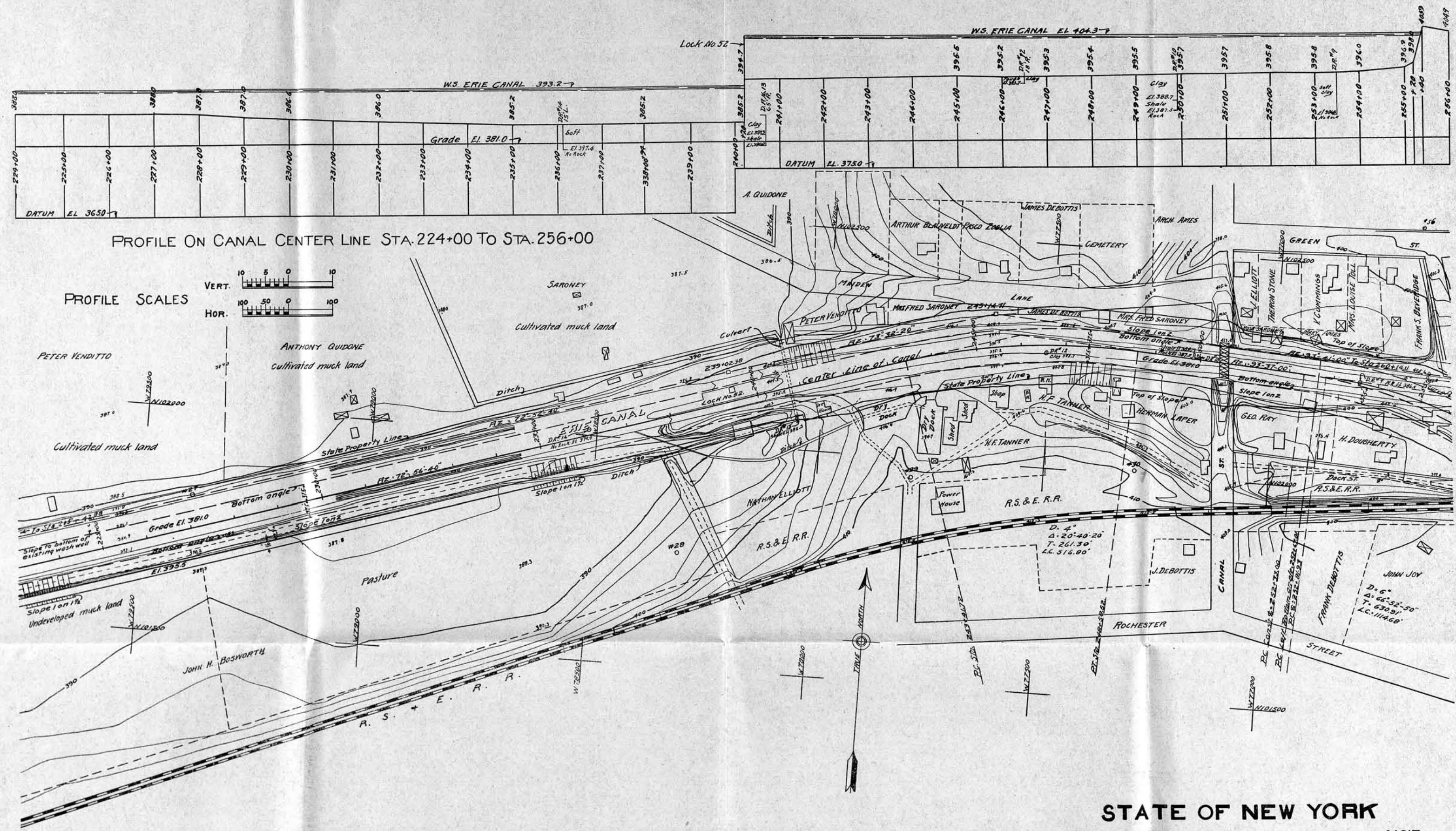








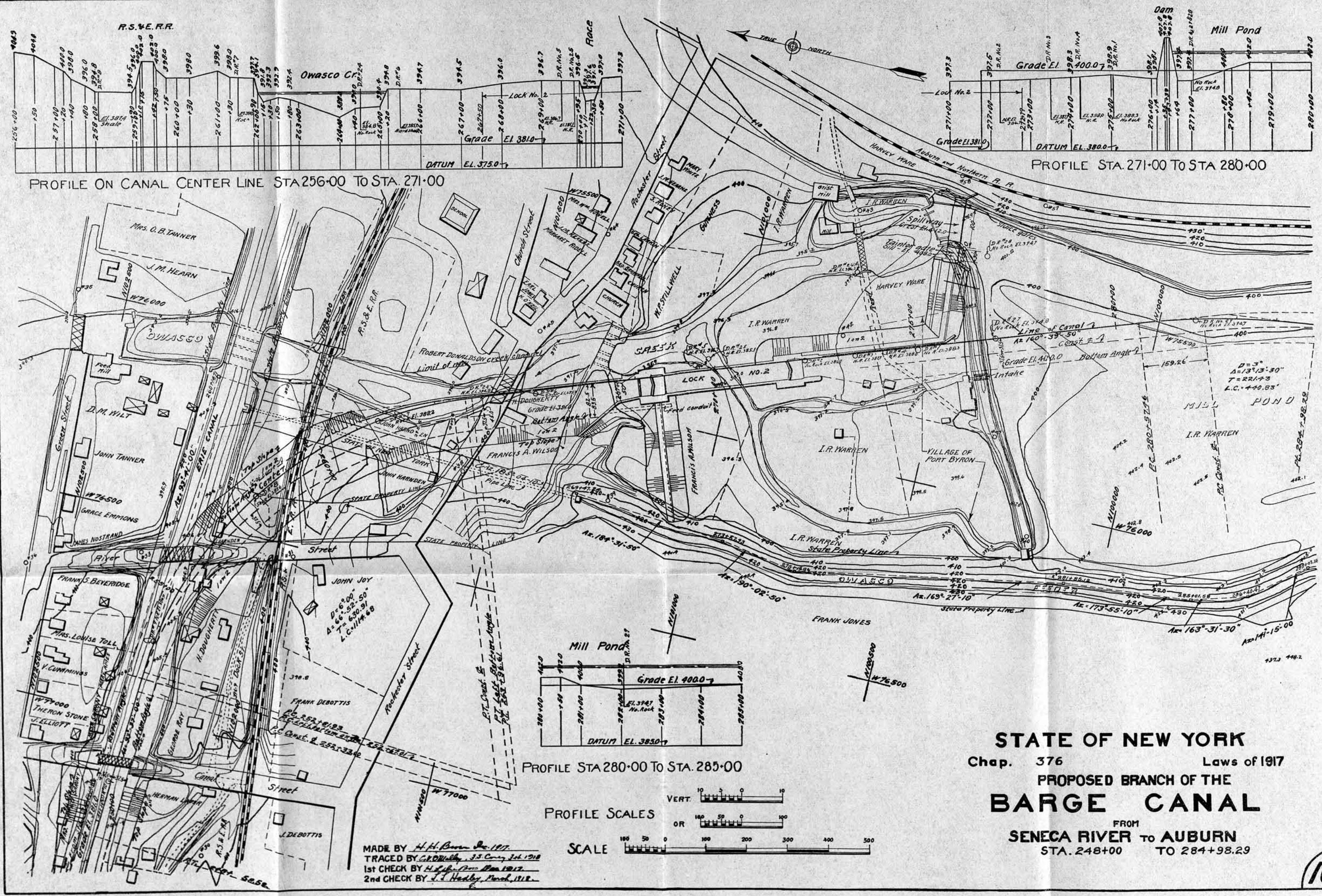




MADE BY *H. H. Burr* Dec. 1917  
TRACED BY *J. L. Burr* Dec. 1918  
1st. CHECK BY *H. L. Burr* Dec. 1917  
2nd. CHECK BY *J. L. Burr* March 1918

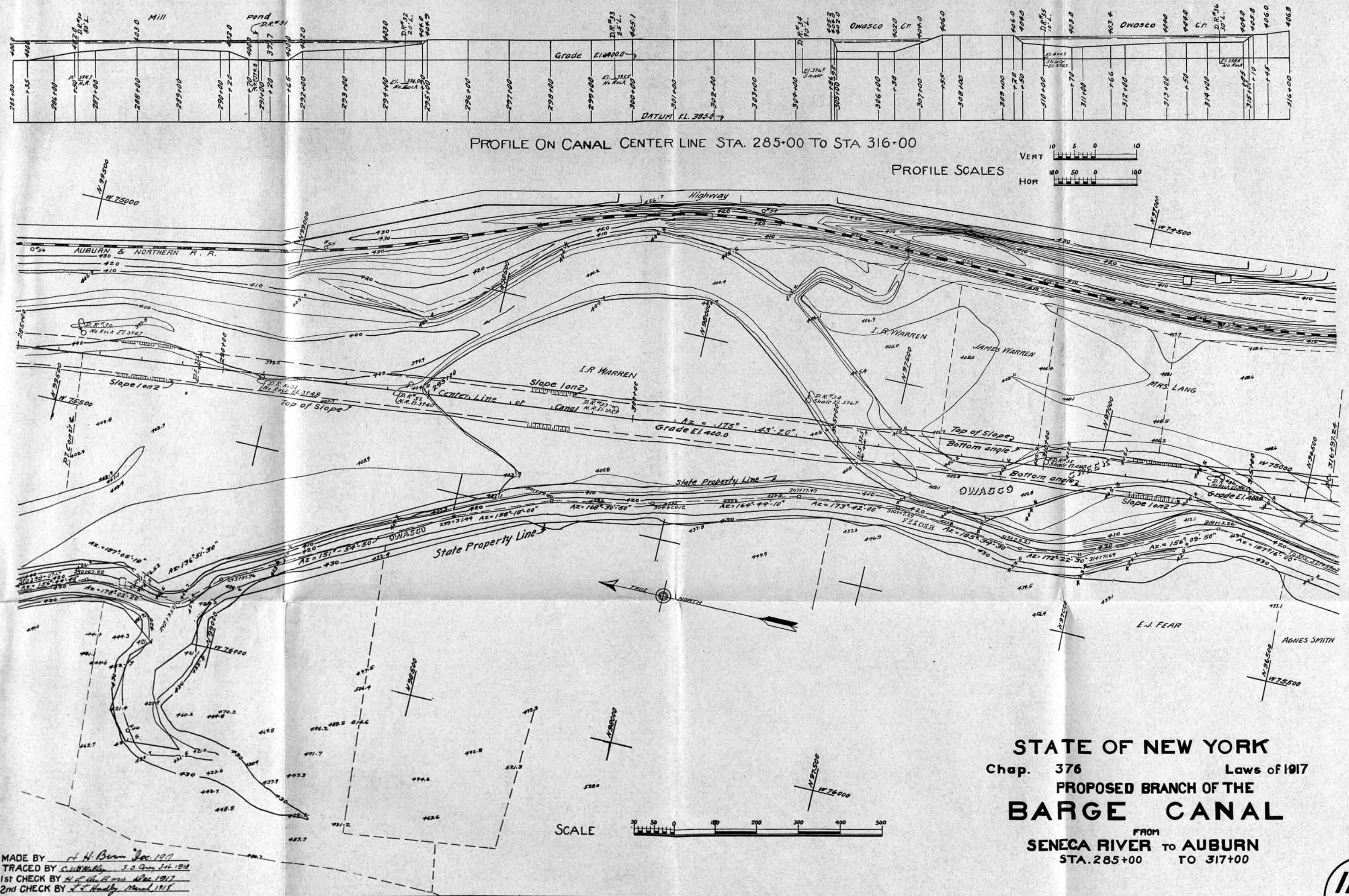
STATE OF NEW YORK  
Chap 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
**SENECA RIVER TO AUBURN**  
STA. 224+00 TO 255+00



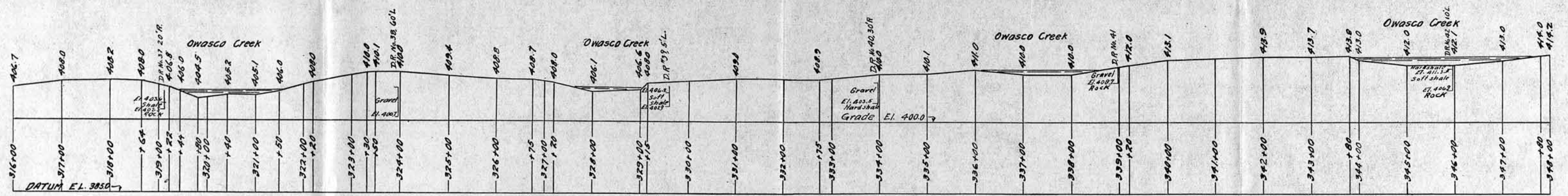


STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
**SENECA RIVER TO AUBURN**  
STA. 248+00 TO 284+98.29



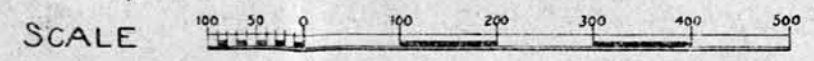
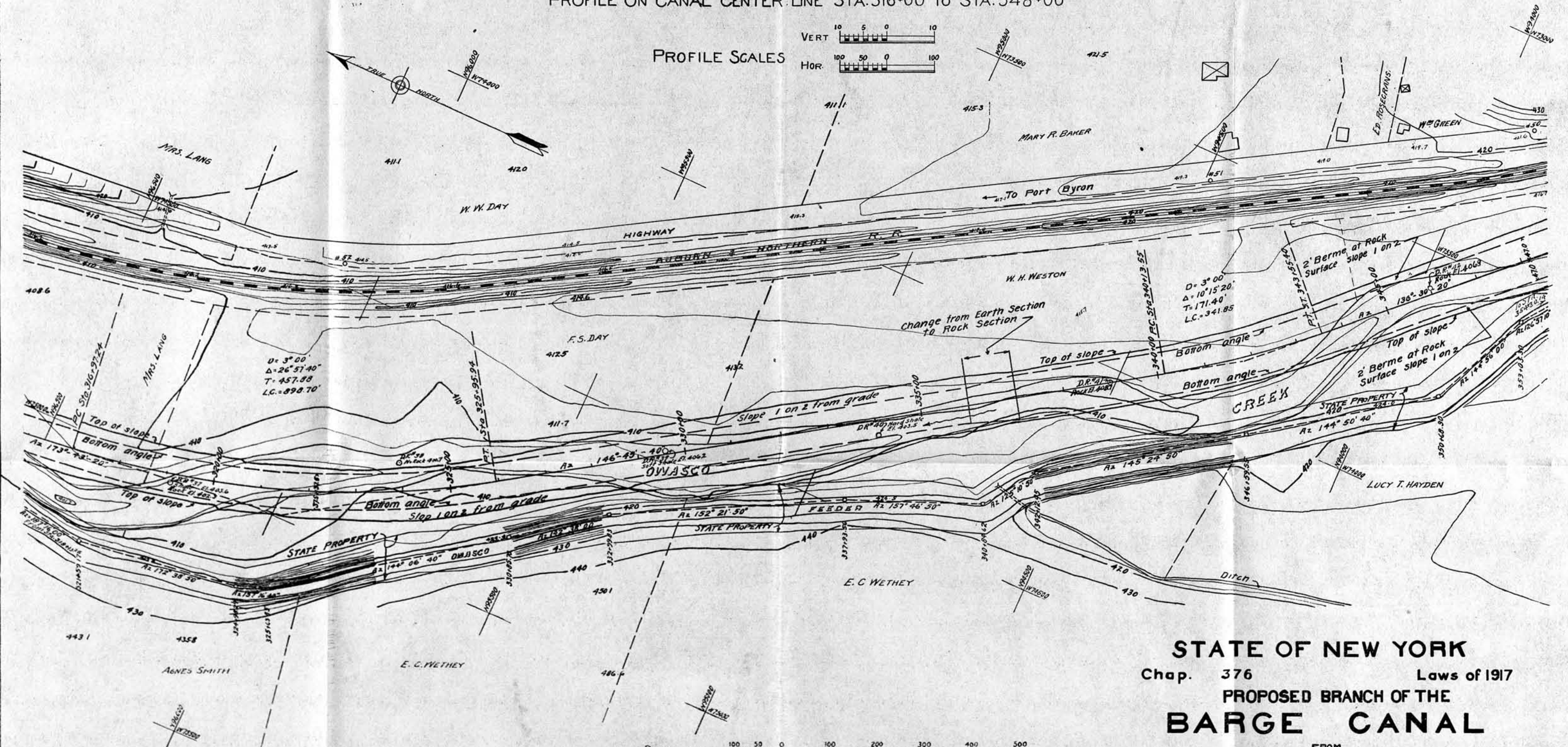
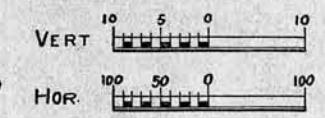






PROFILE ON CANAL CENTER LINE STA. 316+00 TO STA. 348+00

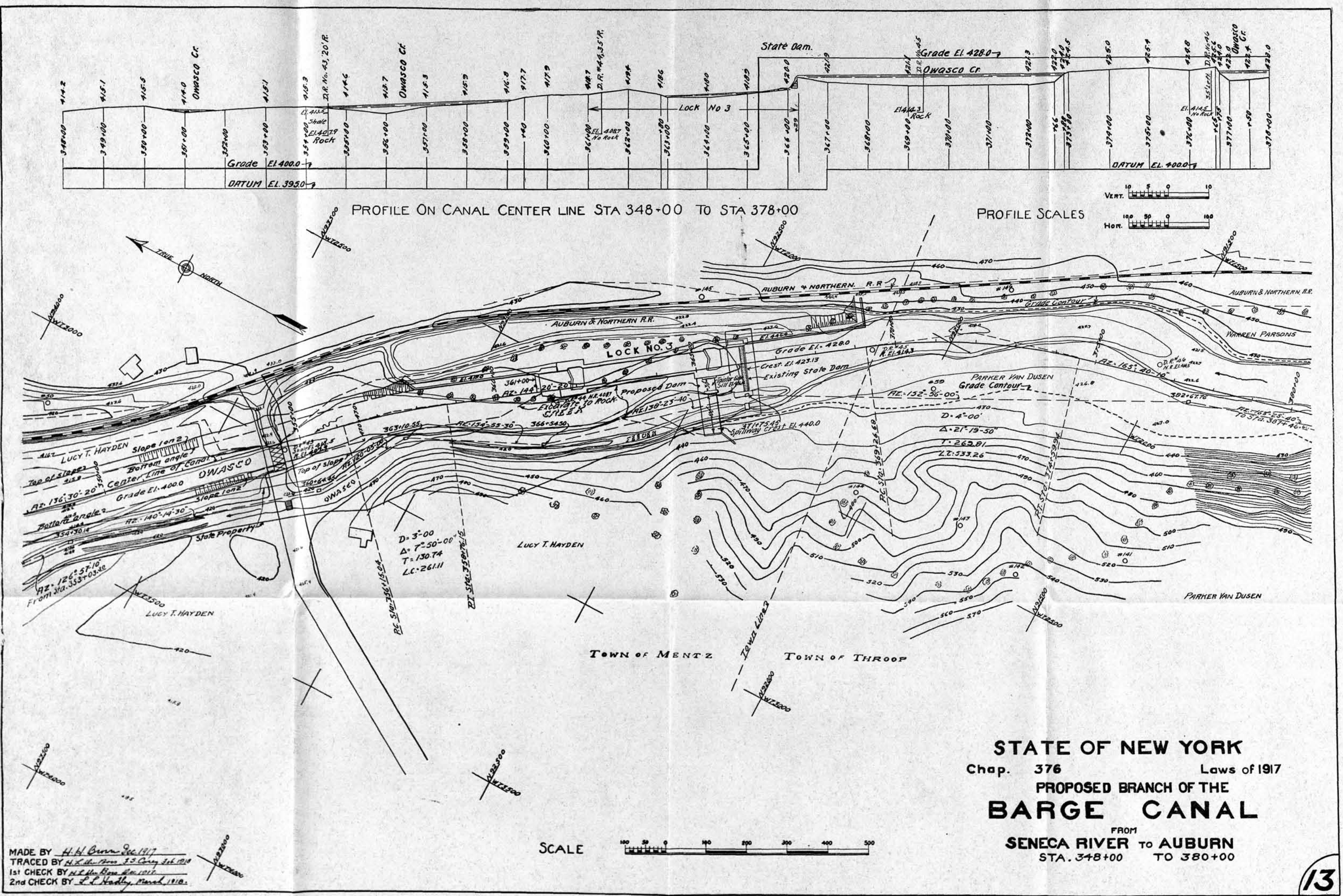
PROFILE SCALES



STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 316+00 TO 348+00

MADE BY H. H. Brown Dec 1917  
TRACED BY J. S. Conry Feb 1918  
1st CHECK BY H. E. Allen Dec 1917  
2nd CHECK BY J. W. Hadley March 1918



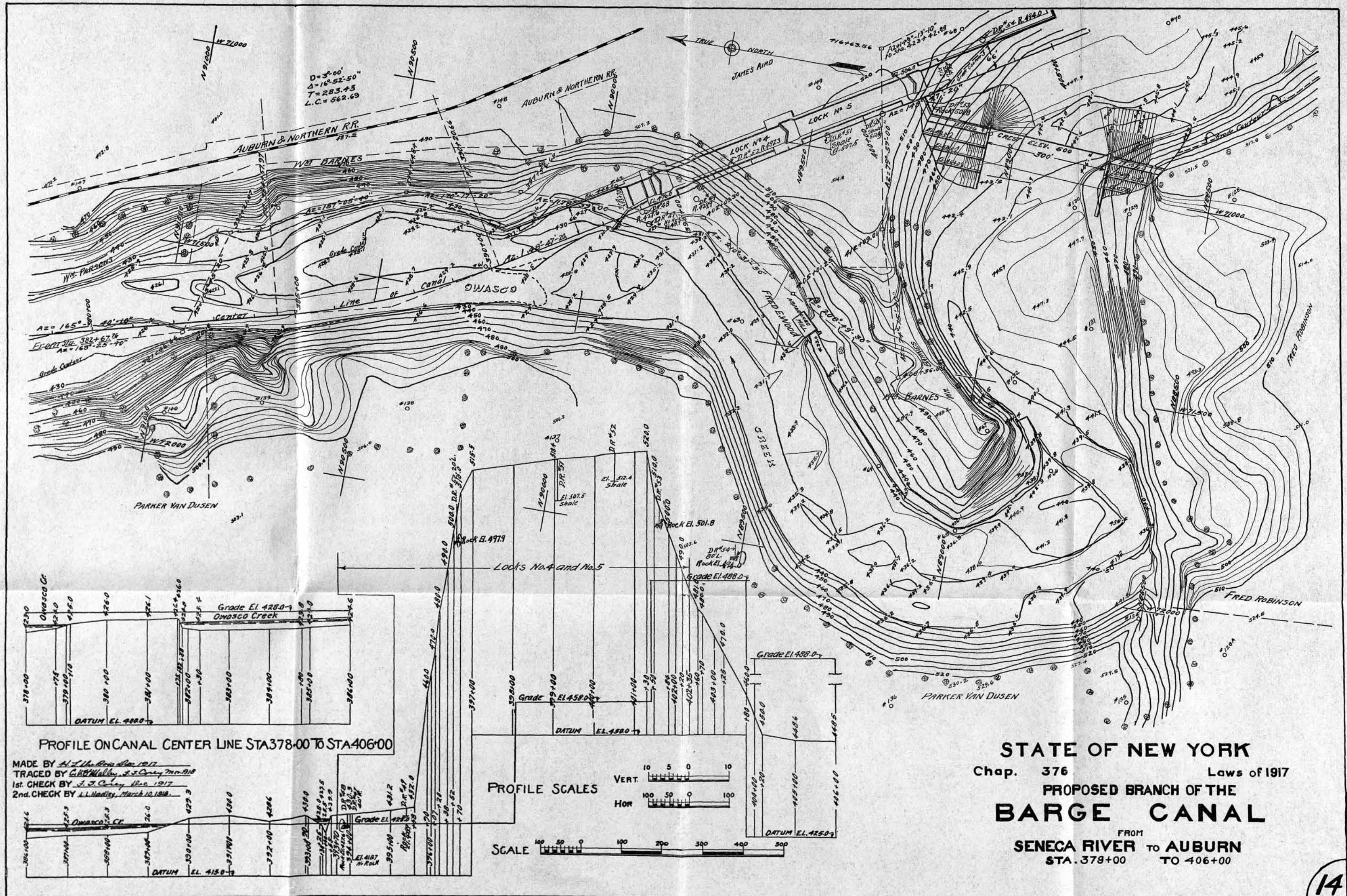


MADE BY H. H. Brown Dec 1917  
TRACED BY H. H. Brown J. S. Conroy Feb 1918  
1st CHECK BY H. H. Brown Mar 1918  
2nd CHECK BY L. L. Hadley, March 1918.

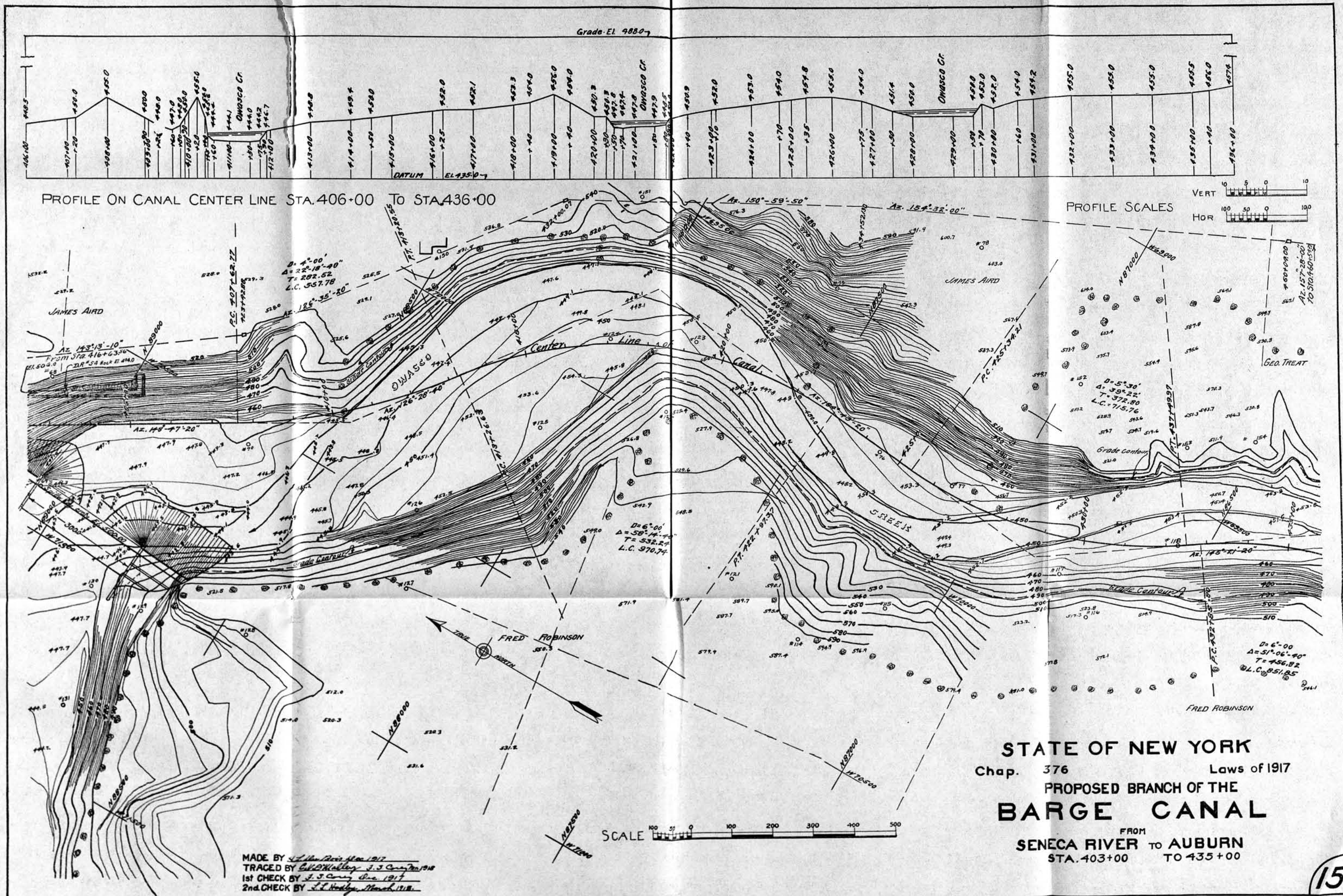
SCALE 1" = 100'

STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 348+00 TO 380+00

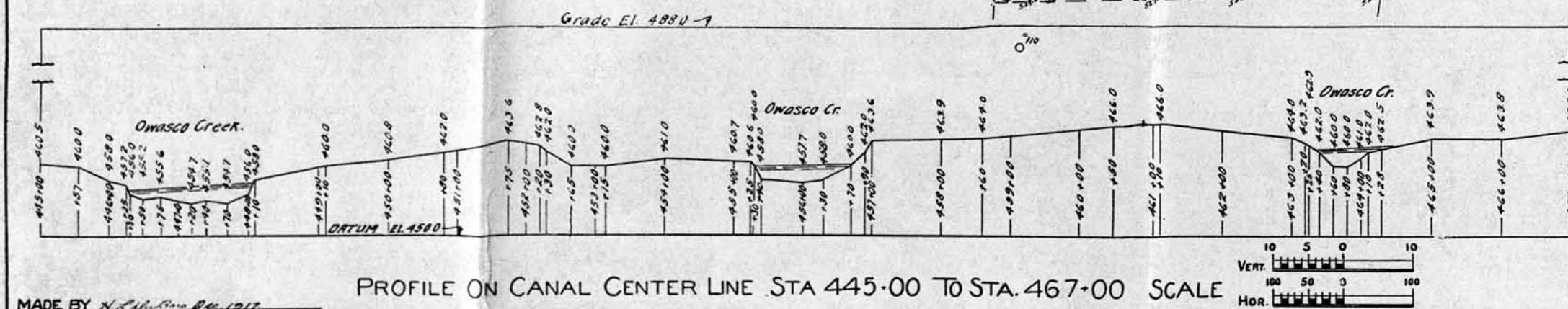
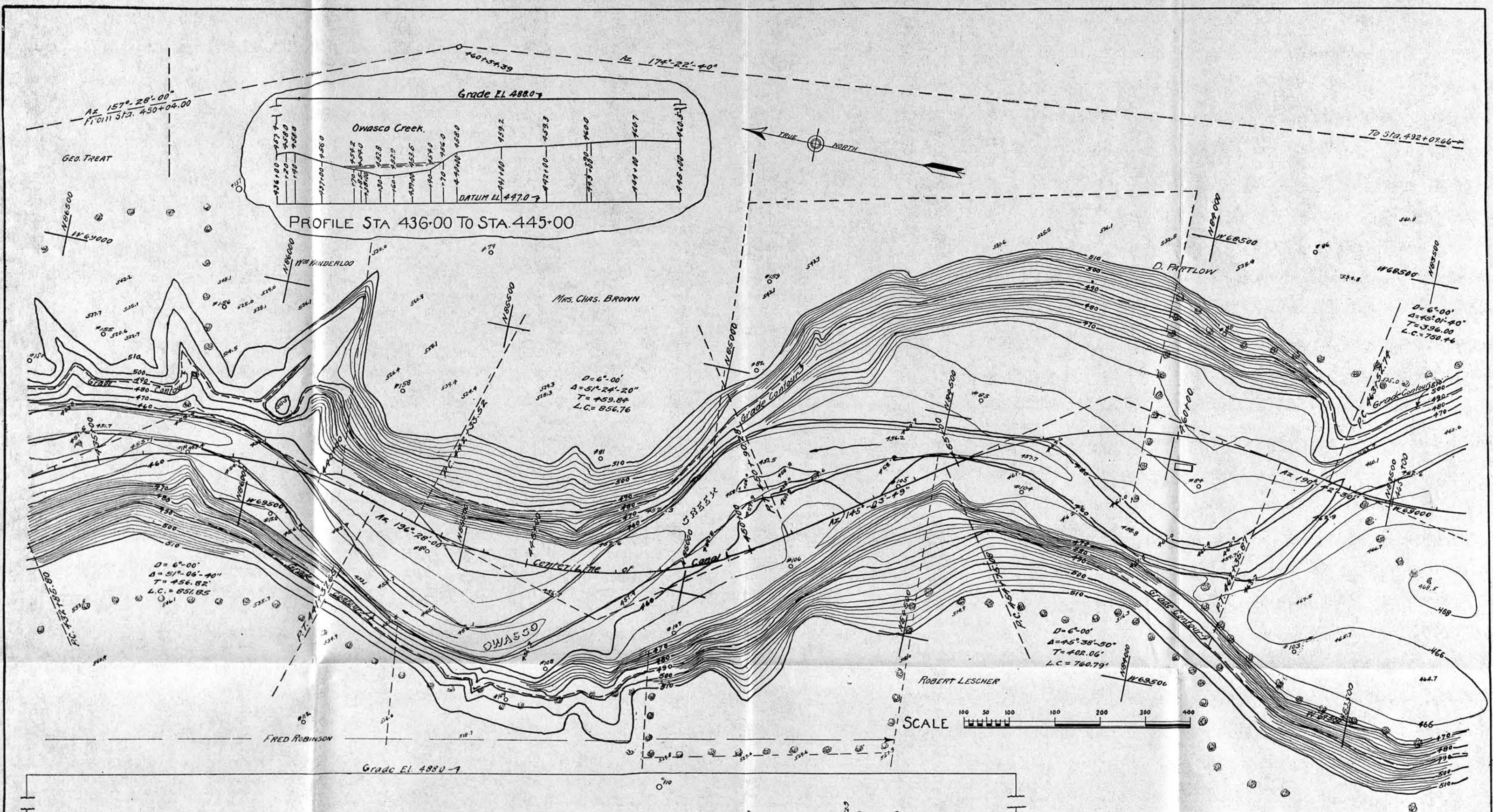








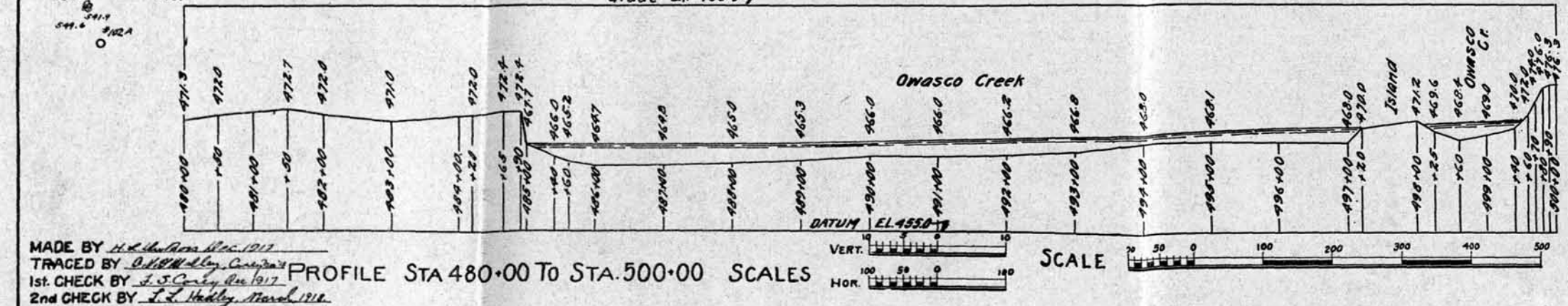
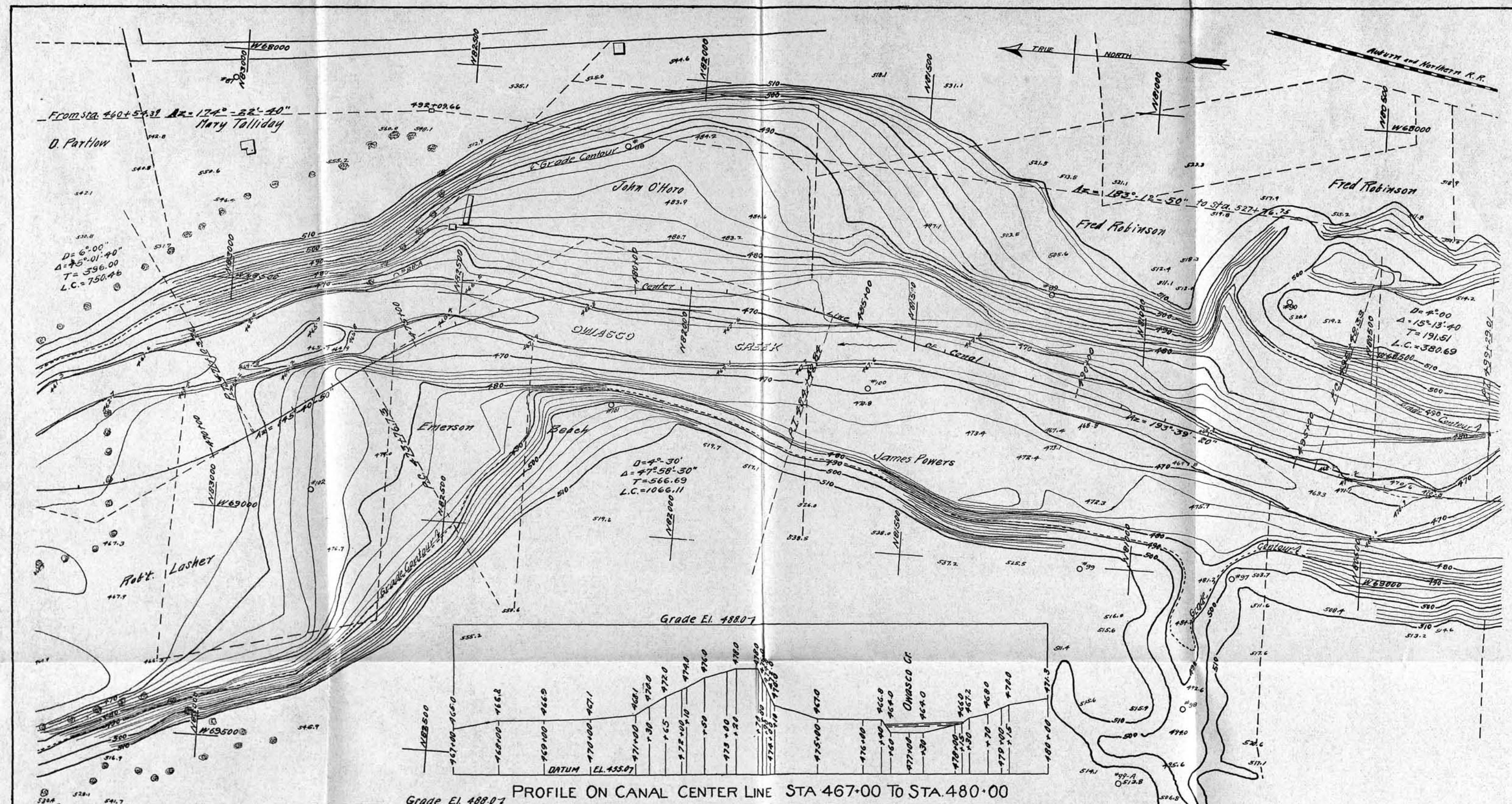




MADE BY H. L. Hartman Dec. 1917  
 TRACED BY G. W. H. Mollay, J. S. Carey, Dec. 1918  
 1st. CHECK BY J. S. Carey Dec. 1917  
 2nd. CHECK BY L. L. Hadley, March, 1918.

**STATE OF NEW YORK**  
Chap. 376 Laws of 1917  
**PROPOSED BRANCH OF THE**  
**BARGE CANAL**  
FROM  
**SENECA RIVER TO AUBURN**  
STA. 434+00 TO 466+00

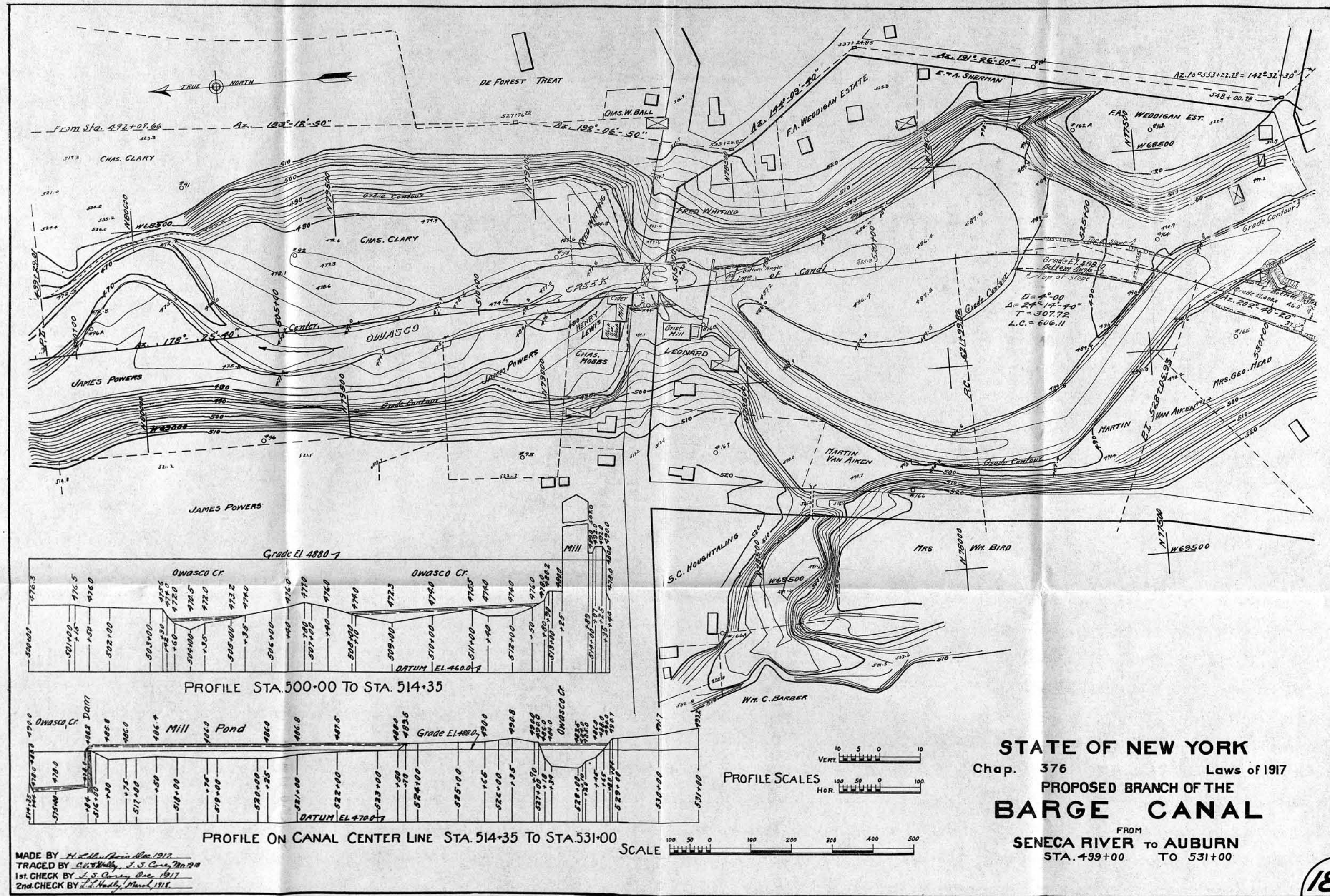




MADE BY H.R. Allen Dec. 1917  
TRACED BY D.H. Allen, Canals  
1st CHECK BY J.S. Canals, Dec. 1917  
2nd CHECK BY J.S. Canals, March 1918

STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 467+00 TO 499+29.01

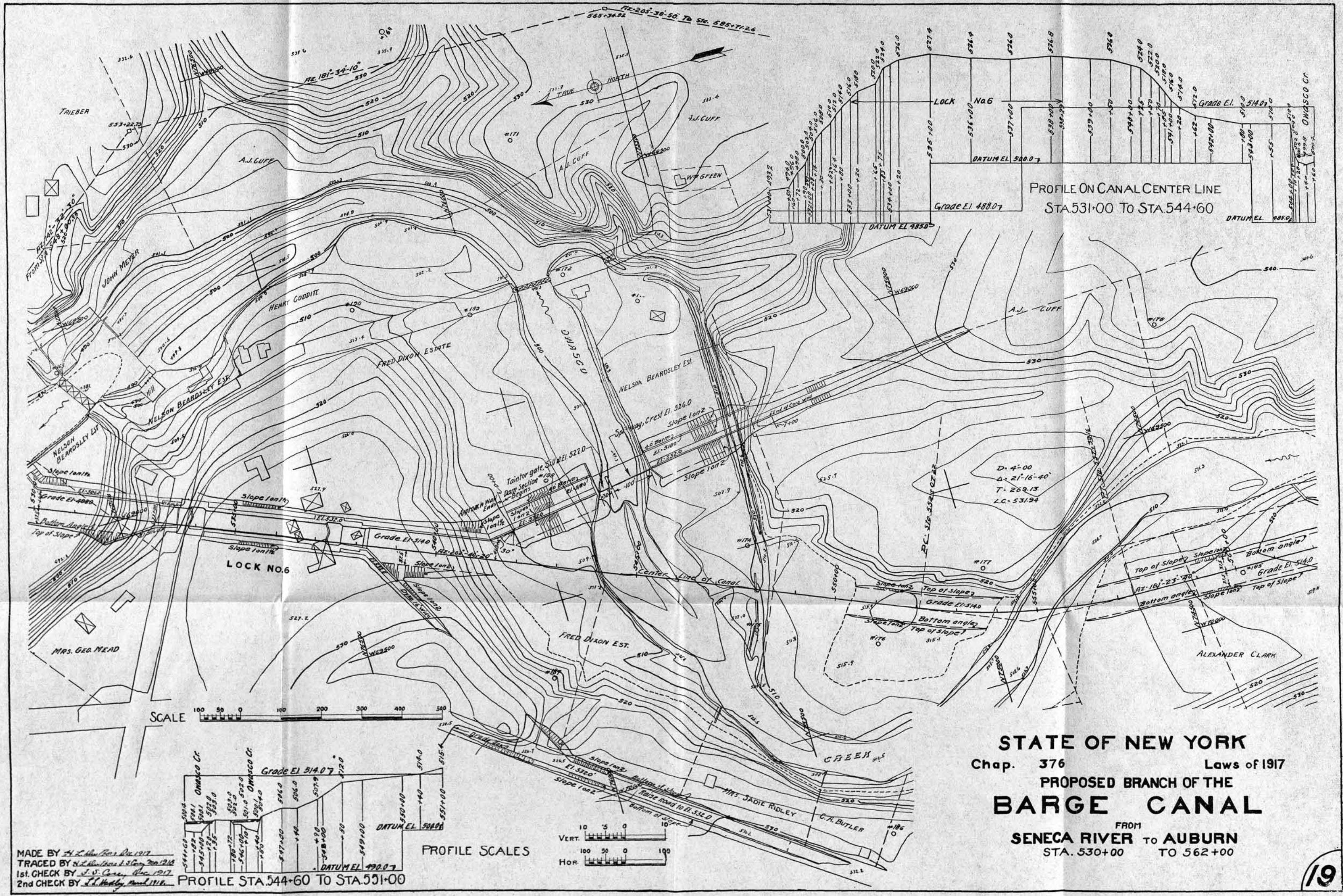




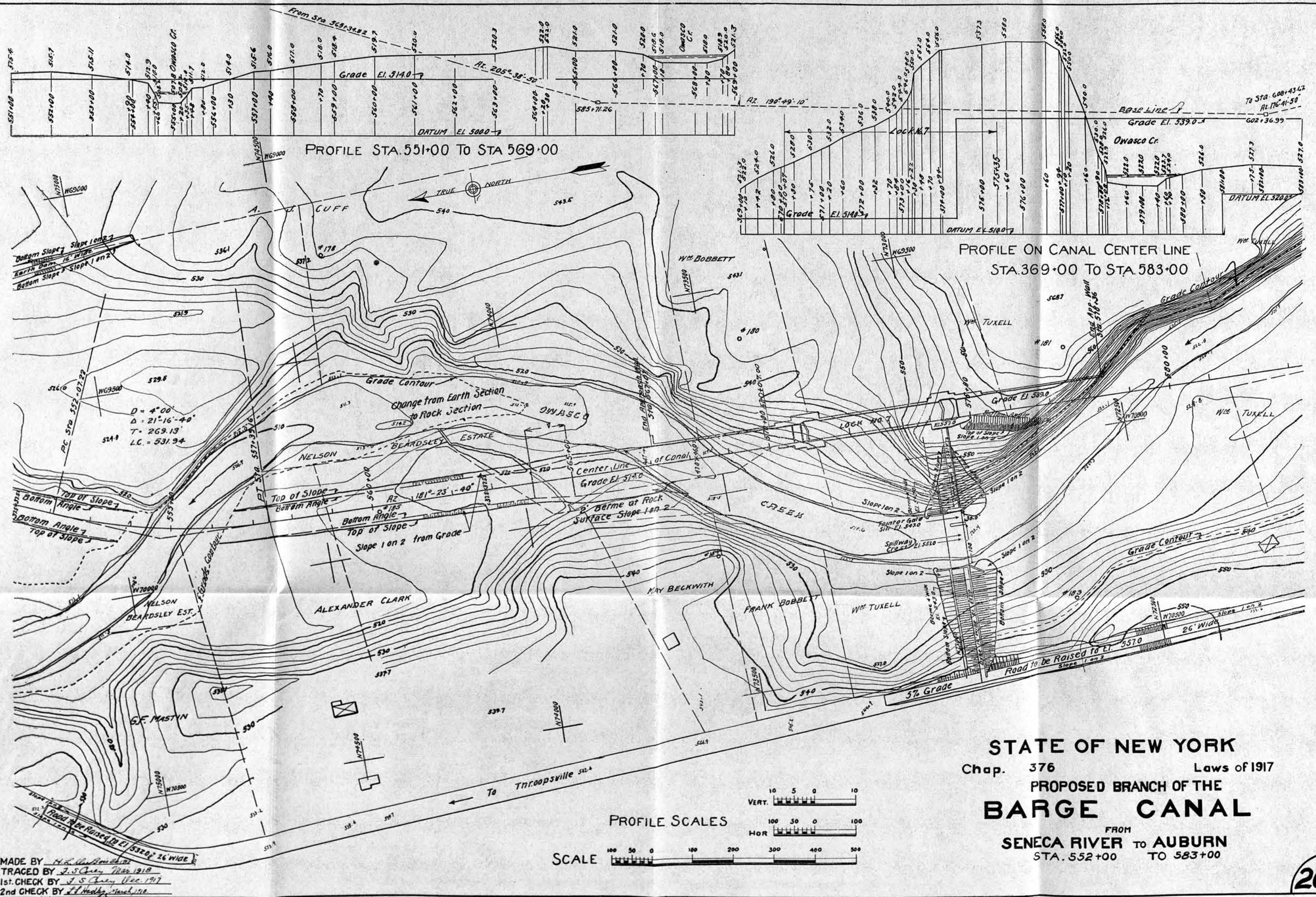
MADE BY *H. L. Smith* Dec. 1917  
TRACED BY *C. S. Kelly, J. S. Cady* Mar. 1918  
1st. CHECK BY *J. S. Cady* Dec. 1917  
2nd. CHECK BY *J. L. Hadley* March 1918

STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 499+00 TO 531+00



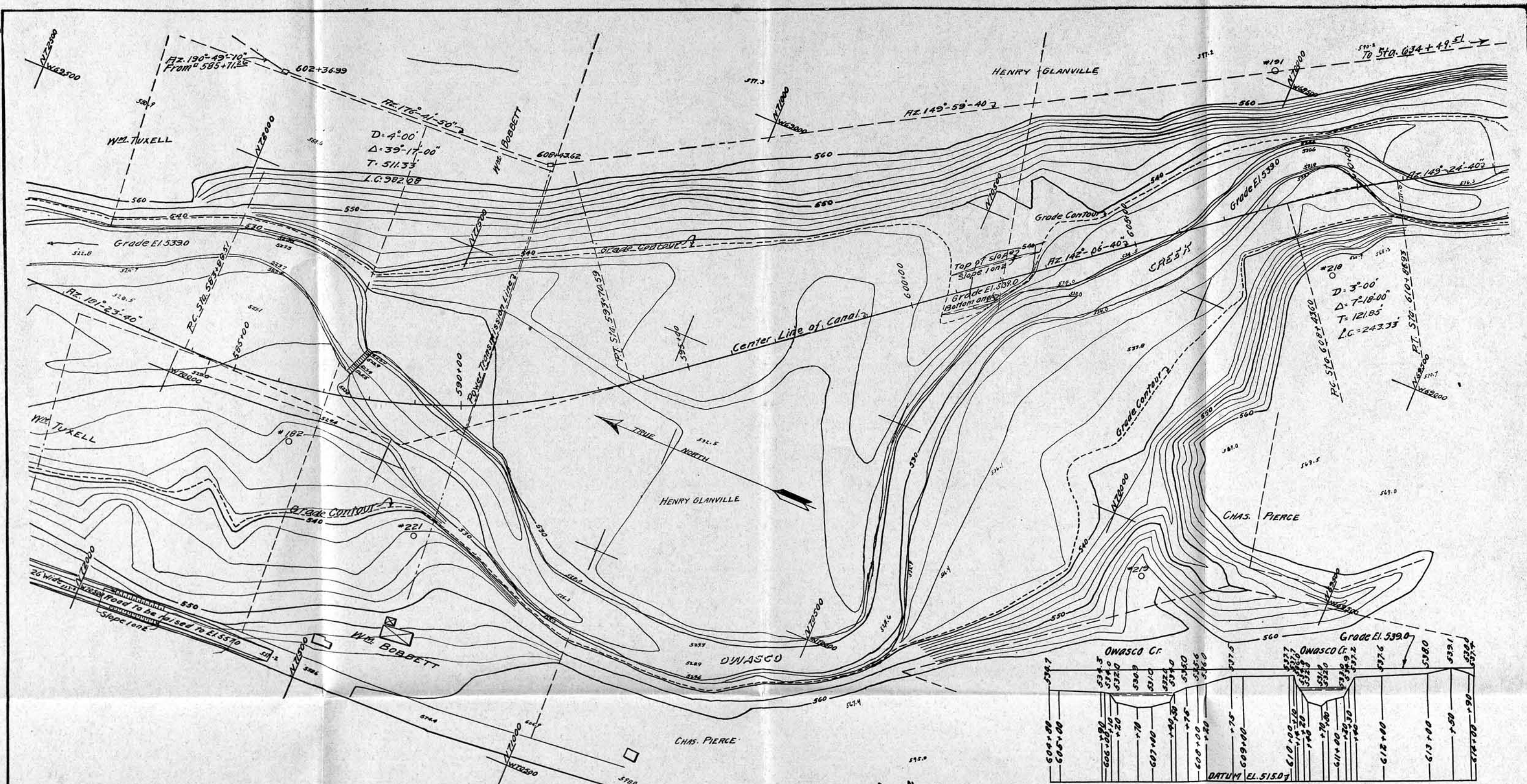




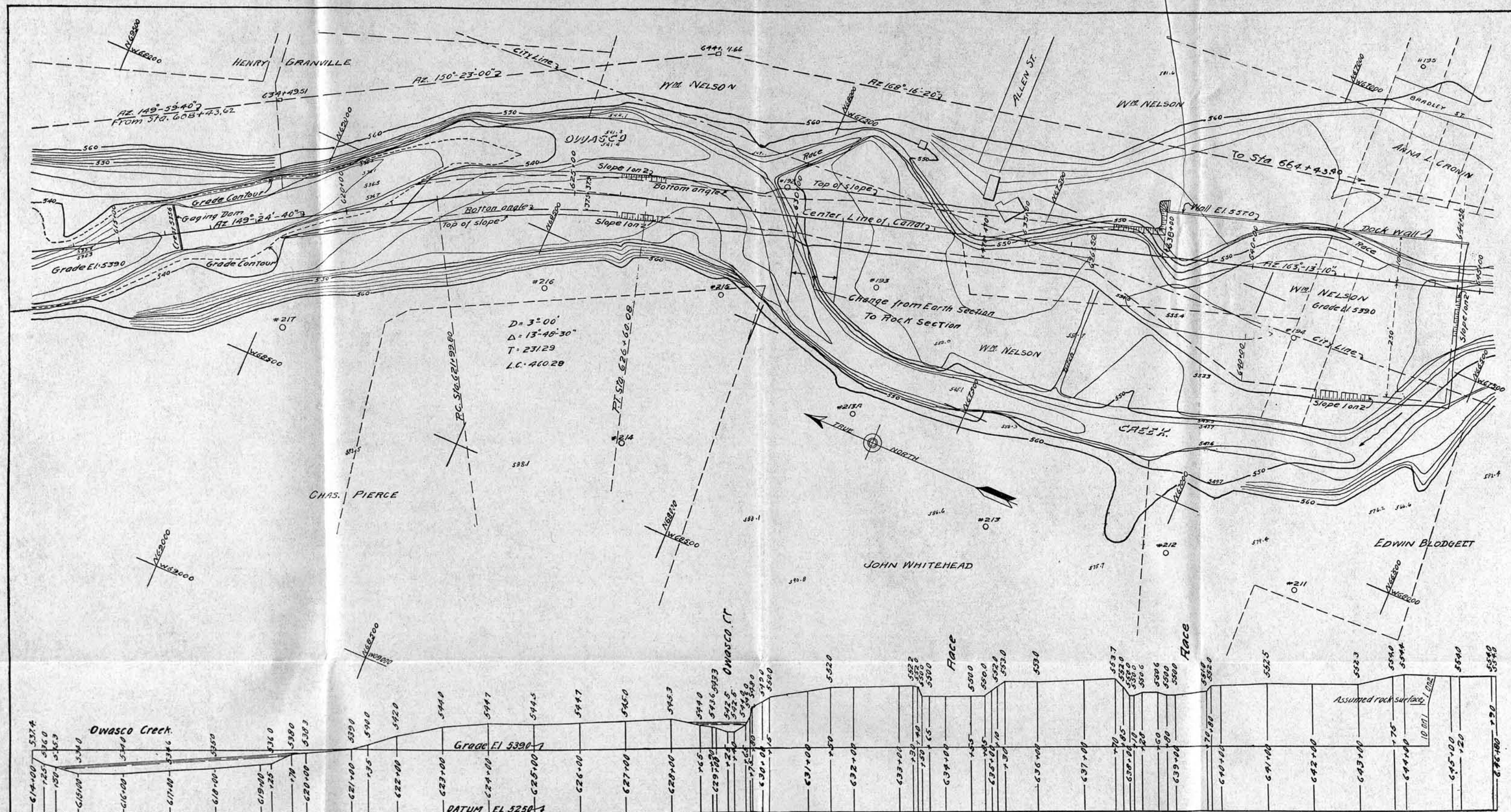


STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 552+00 TO 583+00



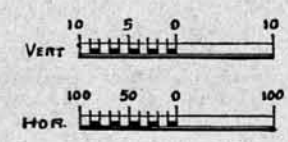




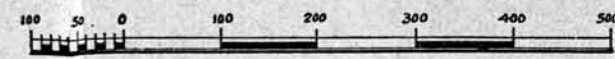


PROFILE ON CANAL CENTER LINE STA 614+00 To STA 646+00

SCALES



SCALE



STATE OF NEW YORK  
Chap. 376 Laws of 1917  
PROPOSED BRANCH OF THE  
**BARGE CANAL**  
FROM  
SENECA RIVER TO AUBURN  
STA. 614+00 TO 645+00

MADE BY H. L. Van Buren Dec. 1917  
TRACED BY H. L. Van Buren J. C. Craig Mar. 1918  
1st CHECK BY J. C. Craig Dec. 1917  
2nd CHECK BY L. Lee Hadley March 9, 1918



