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The Black Hammock Drainage District

....OF....

ORANGE COUNTY, FLORIDA

Text of the Drainage Laws of Florida
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Engineer's Report, Committee's Report
General Information
Specifications, Estimates
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Form of Contract, Form of Bond to be Executed

March 1913

"The Black Hammock" Drainage District

Orange County, Florida

Board of County Commissioners of Orange County

M. O. OVERSTREET — FRANK WOODRRUFF
J. L, DILLARD — S. W. ELDRIDGE
E. L. BROWN

Clerk
B. M. ROBINSON

Committee for This District
W. A. BEASLY — B. F. WHEELER — W. H. BROWNING

Attorney
LEROY B. GILES, Orlando

Engineer
FRED. T. WILLIAMS, Sanford

March 1913

Total acreage 5572, Assessment $8.oo per acre$44576.o o
Estimated expense other than contract, $3000.oo

Total of appropriation per cu. yd. 18.68 cts.

Available price per cu. yd. including cutting right of way 17.425 cts per cu. yd.

95 acres of clearing - right of way - at 40.oo per acre $3800.oo

Available price per cu. yd. cfor excavating 15.828 cts. per yd.

PRESS
REPORTER-STAR PUBLISHING COMPANY
ORLANDO, FLORIDA

General Statutes, State of Florida

1st Division, Title 9, Chapter 16

DRAINS BY COUNTIES.

Chap. 5035. Acts 1901. Sec. 1. 950. Public Ditch, Drain or Canal.

Whenever it shall be deemed necessary or expedient for the benefit of any lands that are low, submerged or liable to be submerged, to establish a public drain, ditch or canal in any of the counties of this State by a majority of those owning lands through which such proposed ditch, drain or canal shall run, and those owning contiguous lands thereto that are to receive the benefit of such drainage, a majority of those owning such lands as aforesaid shall present a petition to the County Commissioners of the county in which such ditch, drain or canal is to be located, with a plat or survey of the same, setting forth the dimensions of such drain, the lands through which the same shall run, its length, and the lands to be benefitted. Whereupon the County Commissioners shall lay the same over until the next or succeeding regular meeting, as they may determine, and give notice by publication for at least three weeks in some newspaper published in the county of the time when they will consider such petition, citing all persons who may be interested to appear and present any reason why such petition should or should not be granted.

Ib. Sec. 2. 951. Powers of County Mommissioners in Reference Thereto:

Should the County Commissioners, when the same has been considered, for good and sufficient reasons deem it improper to grant such petition, then the same shall be dismissed, but should they conclude that such petition ought to be granted, they shall so determine.

Ib. Sec. 3. 952. County Commissioners to Appoint Committee:

When the County Commissioners shall determine that such ditch, drain, or canal, shall be established ,they shall appoint a committee

Drainage and Marshlands

of three competent, disinterested persons, who are citizens of the county, who shall cause an accurate survey to be made of the proposed drain, particularly naming such drain by which it shall thereafter be known, and shall establish the commencement, route and terminus of said drain, and the width, length, and depth thereof, and make and present to the County Commissioners at their next regular meeting an estimate of the cost of said drainage; and upon report of said committee to them, they shall advertise not less than thirty (30) days in a newspaper published in the county for bids on said work, to be given to the lowest responsible bidder, with the privilege of rejecting all bids that may be offered should the same be considered unreasonable, and in case said bids are rejected, they may again advertise for further bids. Whenever the survey for any ditch or canal is made through or on any land, and objection is made by the owner of such land, the Board of County Commissioners may proceed to condemn the right of way for such canal or ditch, as is prescribed for acquiring private property for public use.

Ib. Sec. 4. 953. Bond Required Before Letting Contract:

Before letting the contract for the work of digging such ditch, drain or canal, the County Commissioners shall require a good and sufficient bond for the construction and completion of said work, with such specifications as may be required, including the time for the completion of the work, which shall be under the supervision of the committee appointed as aforesaid.

Ib. Sec. 5. 954. Completion of Work.

When the work shall be completed, the committee shall certify the same to the Board of County Commissioners, who shall also inspect such work before final payment is made to the contractor, and such confirmation with the report of the committee that the work has been done according to contract shall be made a matter of record; Provided, That nothing in this Chapter shall prevent the Commissioners from making payments in installments during the progress of the work if deemed expedient.

Ib. Sec. 6. 955. Committee to View Land Before Letting Contract:

Before letting such contract, the committee appointed by the Commissioners shall view all the land to be benefitted by such drain and assess each parcel according and in proportion as each shall be benefitted, both those lands lying immediately along such ditch, drain or canal, and those adjacent thereto, for all the expenses that may be incurred in the construction of said drain and keeping the same in repair from year to year, and shall file a report of same with the Board of County Commissioners who shall at once give notice by publishing in a newspaper in said county for not less than two weeks prior to a regular meeting that they will at their next regular meet-

ing hear complaints from the owner or agent of any real estate against the assessment so made against their said property; and said County Commissioners shall have the full power to equalize the assessment so made against said real estate, but can not raise or lower the entire assessment so made by the said committee so appointed by them to make said assessments, and the said amount shall, by the commissioners, when they are satisfied that such assesments are just and proper, be turned over to the Tax Assessor with instructions to levy such assessments upon such parcel of land as aforesaid. Said assessment may be levied for one year or in yearly assessments for two, three, four, or six years, according as it may be deemed advisable and for the best interest of those concerned, and shall be collected by the tax collector in like manner as other taxes are collected, and made a special fund for the cancellation or redemption of the indebtedness incurred in the construction of said ditch, canal or drain as aforesaid.

Ib. Sec. 7. 956. Assessments:

When such assessments have been ordered by the County Commissioners they may issue script bearing six (6) per cent. interest, redeemable in one, two, three, four or six years, as the case may be, upon which they may borrow money with which to pay for the work aforesaid, and such script shall be made a lien upon the lands assessed as aforesaid until such script shall be redeemed and the indebtedness fully satisfied; Provided, That no lien shall lie or be enforced against any tract of land for more than the amount so assessed against said tract.

Ib. Sec. 8. 957. Contracts:

All contracts, whether executed or executory, entered into by the County Commissioners of any county in the State of Florida, under and by virtue of Chapter 4807, Laws of Florida, approved June 1st, 1899, under which any ditching or draining has been done or is being done, are hereby declared legal and binding, and all assessments which may have been made and expenses incurred in the construction of any drain under said Chapter 4807 ,may be collected as provided.

Ib. Sec. 9. 958. Commpensation of Committee:

The committee appointed by the County Commissioners for the purposes aforesaid shall receive such compensation for their services as may be agreed upon.

Chap. 5201, Sec. 12. Acts 1903. 959. Application to Lateral Ditches:

The provisions of this Chapter with reference to locating, surveying, cutting and maintaining the same, and every other provision of said Chapter with reference to such public ditch, drain or canal,

be and the same is hereby made applicable to all lateral ditches and drains that may be deemed necessary or expedient for the drainage and benefit of lands lying in the vicinity of such public ditch, drain or canal, that may be reached, drained, or benefitted by lateral ditches or drains.

Ib. Sec. 13. 960. May be Established in Like Manner as Main Ditch.

Such lateral ditches or drains may be made a part of the original plat and survey of such ditch, drain or canal, and may be included in the ariginal petition for digging, cutting, opening and maintaining the same; or such lateral ditch or drain may be established in like manner under the provisions of this Chapter at any time after the opening of such main ditch, drain or canal, upon a petition of a majority of those whose lands are to be benefitted thereby.

Engineer's Report

Sanford, Florida, November 14, 1912.

Messrs.W. A. Beasley, W. H. Browning, B. F. Wheeler, Commissioners for the Drainage of Black Hammock Drainage District, Orange County, Florida.

Gentlemen:—The following is my report on the drainage of the Black Hammock Drainage District, and accompanying it are plans and specifications for drainage of same.

GENERAL TOPOGRAPHY.

The Black Hammock Drainage District is located on the South shore of Lake Jessup, extending for a distance of four miles along the shore of the lake and from two to three miles back from it.

Except for pine islands and pine pockets around the edges of the district, the entire tract is covered with a dense growth of timber, consisting of palmetto, gum, maple, elm, oak, ash, hickory, cedar and cypress. The most of the cedar and hickory have been removed.

The general slope of the land is toward the North, draining into Lake Jessup and having an elevation of six feet at the Lake and 25 to 30 feet along the South line, giving ample fall for good drainage when proper channels are constructed. Three natural water courses traverse this tract and empty into Lake Jessup, viz. Salt Creek, Sweet Water Creek and a small stream near the westerly line of the district, which for lack of a name I will refer to as Solary Creek.

The area of the drainage district is approximately 5,600 acres, but the area of the water shed is about 8,500 acres, taking in a strip of land from half a mile to a mile in width along the East and South boundaries. This land lies considerably above the drainage district, sloping toward it. A portion of it is high, dry, sandy land. While water never stands on this land, it crops out in springs along the lower side of the hills, saturating the ground with water and in several places forming ponds.

Salt Creek and Sweet Water Creek rise outside the drainage district; flowing down into the Hammock they have defined channels until they reach the South central portion of the district, where there is about 1,200 acres with very little slope. By consulting accompanying map, you will note the location of the flat section by the fact that the creeks do not cross it. Here the water spreads over the ground, keeping it almost continually saturated. After crossing this flat stretch of ground there is more slope to the land, defined channels appear and the water finally reaches the lake. Sulphur springs are found along these creeks, and in a dry time, furnish the only water that runs down them.

While the general slope of the District is North, there is a strip of land lying midway between the Lake and Sweet Water (which runs nearly paralell with the lake) which is from six to eight feet higher than the Sweet Water basin, forming a divide from which the water runs North-westerly to the Lake and South-westerly to Sweet Wtaer Creek. Another divide occurs between Salt Creek and Sweet Water, beginning on edge of prairie and extending South 1 1-4 miles to the flat area.

RAINFALL.

It is a matter of common observation that in Florida there is a rainy season occurring during the summer months. Also that the excessive rains occur during this portion of the year.

The following data I have obtained from Mr. A. J. Mitchell, Director of the U. S. Weather Bureau, Jacksonville, Fla.

Mean. annual rainfall for Florida 52.4 inches. Average rainfall in Orange County for a series of 17 years 51.28 inches which was distributed on an average throughout the year as follows:

January	2.54 inches
February	2.78 inches
March	2.34 inches
April	2.04 inches
May	3.81 inches
June	7.46 inches
July	6.77 inches
August	7.36 inches
September	8.14 inches

October... ... ...4.44 inches
November... ... ...1.44 inches
December... ... ... .2.16 inches

Mr. Mitchell also informs me that excessive rainfall of from 2 to 4 inches in 24 hours may occur between May 1st, and October 15th, of each year, as shown by their records at Jacksonville, for forty years. During this period the 24 hour amounts exceeded or reached 4 inches in only five instances.

RUN OFF.

Of the water that falls on a given area, a portion is returned to the air by evaporation; part sinks into the ground and the remainder flows over or through the ground to the streams, and through them passes out of the country as run-off.

The chief factors affecting the amount of run-off are rainfall, evaporation, slope of ground and capacity of the soil to take up the water. In planning the drainage of the Black Hammock District I have calculated the size of the canals and ditches large enough to take care of a rainfall of 3 inches in 24 hours—2 inches running off. Rainfalls exceeding 3 inches in 24 hours occur so seldom that I do not think the extra expense of larger canals and ditches warranted.

OUTLET FOR DRAINAGE.

Lake Jessup, the outlet for the drainage of the district fluctuates in its elevation being considerably higher after the rainy season than in the Spring before frequent rains begin to fall. At low water the lake is on a level with the Ocean. During the present year the lake has been 4 1-2 feet above low water mark, which heighth can be expected every year. Dark rings on trees around the edge of the lake show that the lake at times rises to a heighth of eight feet above low water mark. The Lake reached this heighth the fall of 1910, and it is reasonable to suppose that it will again reach the same heighth. According to old settlers, this heighth was exceeded in 1876 and again about 1888.

When the lake rises to a heighth of 8 feet above low water mark, the following lands will be overflowed: A strip of land from 50 to 100 feet wide along edge of Hammock. Sweet Water will be 1400 feet wide where it enters prairie, 900 feet wide on East and West 1-4 line Sec. 25, and the overflow land will run out to a point on the South line of the Section. Salt Creek will be 1200 feet wide on North 1-8 line Sec. 25.500 feet wide half a mile farther South; the overflow land extending to the South line of the Section.

Improvements on St. Johns River—removing sand bars and straightening its course—gives a better outlet for the water so that we ought not (weather conditions being the same) to have as

high water in the future. Large drainage projects on the head water of the St. Johns where they are draining the surplus water into the Indian River, will also help to reduce the high water mark.

SURVEY AND DESIGN OF DRAINAGE SYSTEM.

The survey for the drainage of this district was commenced August 19, 1912, and completed October 28, following. The purpose of the survey was to locate such canals and main ditches as would be necessary to drain the land.

Sweet Water and Salt Creeks have about the same water shed. The outlets to these two creeks are through prairie or marsh. The width of the prairie at mouth of Sweet Water being 1600 feet to open water, while at Salt Creek it is 1 1-2 miles. Salt Creek has a deep channel through the prairie but is very crooked and not large enough to carry all the water from its water shed. In as much as about one-half of the Salt Creek water can easily be diverted to the Sweet Water outlet, I have planned to carry that portion of its water shed in Township 21 over to Sweet Water. This leaves the outlet of Salt Creek through the prairie as it now exists, large enough to take care of the balance of its water shed and necessitating only small ditches to drain the area.

Diverting the upper portion of the Salt Creek watershed, into the Sweet Water outlet, it devolves upon this outlet to take care of the largest portion of the entire district, so I have planned for 3.85 miles of canal and 8.5 miles of ditches in this district to carry off the water. Had I disposed of all the Salt Creek water shed by the Salt Creek outlet, it would have required a canal in both districts. Diverting a portion of the Salt Creek water, reduces the amount of canal and cost of construction to a minimum.

The head water of Solary Creek are separated from the upper portion of Sweet Water Creek by a narrow strip of pine, so I have planned to extend the Solary main ditch and tap the upper part of Sweet Water creek, carrying it by the most direct route to the lake and thus preventing it from spreading over the flat ground in the Sweet Water basin.

With the above conditions, I have planned for the drainage of the District with three separate systems, viz:

1. SALT CREEK SYSTEM, having a water shed of 2,000 acres, planned to drain the Northeastern section of the district, and including the Salt Creek main ditch together with all the latterals that drain to the Salt Creek outlet.

2. SWEET WATER SYSTEM, having a water shed of 4,500 acres, planned to drain the Central portion of the district, and including the Sweet Water canal and all of its tributaries, as shown on accompanying plan.

3. SOLARY SYSTEM, having a water shed of 2,000 acres, planned to drain the Wester nportion of the district, and including the Solary main ditch together with all its laterals as shown on accompanying plan.

All canals and ditches have their lines shown on accompanying plan; have been run out on the ground and their location marked by stakes driven even 100 feet. All stakes are numbered consecutively, beginning at the outlet of each ditch or canal with "O". All stakes are set on the center line of each canal or ditch except on Lat. No. 10 from "O" to 25 the center line of ditch is 4 feet west of stakes set.

LEVEL SURVEY.

For the level survey, mean low tide at Fernandina, Fla., is taken as the datum plane, and all elevations given are with reference to this plane. Bench marks being made at convenient places along the canal and ditch line, their description, location and elevation being given on accompanying profiles. Levels were taken every 100 feet at the statkes set on the various lines, from which the accompanying profiles were made and the depth of ditch at each stake ascertained.

SOIL SURVEY.

Borings with a two-inch auger were made along the canal and ditch lines at intervals of 1,000 to 1,300 feet, according to the nature of the soil, in some places being taken more often. These borings were from 5 to 10 feet deep and show that the larger portion of the Hammock has an average of from 1 to 3 feet black loam on top, underlaid with clay or a mixture of sand and clay. This is particularly noticeable along the principal water courses and on the lower land. On the higher portions of the Hammock the soil in places is sand all the way down except for the top foot which is a sandy loam. Other places are underlaid with clay. The pine wood is underlaid with hard pan 2 to 3 feet below the surface.

A tabulated list of all borings and the character of the soil, accompanies this report. The top soil is as a rule of porous nature and will drain readily.

SIZE AND FORM OF DITCHES.

Accompanying this report is given in tabular form the dimensions and yardage of each canal and all ditches.

The tendency of banks of ditches is to cave unless given a slope. The nature of the soil in this district requires a slope of 1:1. There are places where the earth would stand at a steeper slope but in such cases it will not injure the ditch to have a 1:1 slope for its banks. The slope to the ditch gives additional cross section, which is needed when the water begins to rise.

SEQUENCE OF WORK:

The Contractor is required, as far as possible, to so arrange his work to so dispose of his materials as not to interfere with the work of any other contractor that may be engaged on the work. He is also required to join his work to that of others in a proper manner, and to perform his work in the proper sequence in relation to that of other contractors, and as he may be directed by the Engineer. The Engineer shall have the right to decide upon the sequence of the work when necessary, to prevent delay of one contractor by another.

SURVEY STAKES:

The Contractor shall take pains to preserve all stakes on the lines of the canals and ditches at all times and in case of failure to do so and resetting of stakes becomes necessary, it shall be done at his expense.

BRIDGES:

Suitable wooden bridges made of 3 inch heart pine plank 16 feet long on good pine or cypress stringers shall be built where the following ditches (Lat. No. 10 Sweet Water system and Lats. No. 1 and 3 Solary system) cross the road between Lake Charm and the Leinhart farm.

INSPECTIONS:

The Engineer shall inspect the work of the contractor approximately once a month, or oftener if he deems it necessary; and shall recommend payment according to his contract for the amount of work which has been completed according to specifications.

CORRECTIONS:

Engineer shall decide as to the meaning and intent of any portion of these specifications, or of the plans, where the same may be found obscure or in dispute; and said Engineer shall have the right to correct any errors or omissions therein, when such corrections are necessary to the proper fulfillment of the intention of said plans and specifications.

DELAYS TO CONTRACTORS:

No charge against the District shall be made by said contractor for damages or loss of profits due to hindrances or delay on account of any legal difficulty or failure of any other contractor to do his work, or for any other cause in the progress of any portion of the work; but an unavoidable delay shall entitle him to an extension of time allowed for the completion of the work sufficient to cover time lost by such delay, to be determined by the Engineer. The Contractor will sustain all damages arising from the action of the elements,

the nature of the work to be done under thes pecifications, or from any unforseen obstructions or encumberances on the line of the work which may be encountered in the prosecution of the same.

The object of these specifications is to secure work which will accomplish the purpose for which the ditches are intended, with the least possible damage to the property affected, and they will be so construed. All provisions of the State Drainage Laws under which this District is formed, shall constitute essential parts of these specifications.

Yours very truly,

FRED. T. WILLIAMS, Eng'r..

DESCRIPTION

BLACK HAMMOCK DRAINAGE DISTRICT.

Commencing on the South shore of Lake Jessup, Orange County, Florida, where it intersects the West line of Section 34, Township 20 South, Range 31 East; thence South to West 1-4 post of Section 3, Township 21 South, Range 31 East; thence West 1-2 mile; thence South 1-4 mile; thence East 1-4 mile; thence South 1-2 mile; thence East 1-2 mile; thence North 30 rods; thence East 1-4 mile; thensce North 50 rods to S. 1-4 post Section 3, Township 21 South, Range 31 East; thence East 1 mile; thence South 1-4 mile; thence East 1-4 mile; thence South 1-4 mile; thence East 1-4 mile; thence North 1-2 mile; thence East 1 mile; thence North 1 mile; thence East 1-2 mile; thence North 1 1-4 miles; thence West 1-4 mile; thence North 1-2 mile; thence East 1-4 mile; thence North 3-4 miles to center of Sec. 19, Tp. 20 South, Range 32 East; thence West to shore of Lake Jessup; thence South-westerly along shore of said lake to beginning.

DESCRIPTIONS LOCATING CANALS AND DITCHES.

SALT CREEK SYSTEM.

MAIN DITCH:

Com. at a point in Salt Creek 600 ft. West and 683 ft. N. of E. 1-4 S. Sec. 25, Tp. 20 S., R. 31 E., thence S. 2 deg. 45 min. W. 702 ft.; thence S. 5 deg. 25 min. W. 2608 ft. to a point 25 ft. North and 990 ft. West of Se. cor. said Sec. 25; thence S. 39 deg. 30 min. W. 3128 ft.; thnce South 1762 ft. to terminus.

LAT. NO. ONE:

Com. at intersection of the N. 1-8 line of Sec. 25, Tp. 20 S., R. 31 E. with Salt Creek being 757 ft. East of the Sw. corner of the Ne. 1-4 of Ne. 1-4 said Sec. 25; thence W. 1493 ft. to terminus.

LAT. NO. TWO:

Com. at a point in Salt Creek 225 ft. North and 560 ft. West of the Se. corner of the Ne1-4 of Ne1-4 Sec. 25, Tp. 20 S., R. 31 E.; thence East 1400 ft. to terminus.

LAT. NO. THREE:

Com. at a point 990 ft. N. and 552 ft. E. of Sw. corner of Sw1-4 of Sw1-4 Sec. 25, Tp. 20, S. R. 31 E.; thence West 1500 ft. to terminus.

LAT. NO. FOUR:

Com. at a point 990 ft. N. and 452 ft. E. of Sw. corner of Sw1-4 of Sw1-4 Sec. 25, Tp. 20 S., R. 31 E.; thence E. 600 ft.; thence S. 72 deg. E. 1700 ft. to terminus.

LAT. NO. FIVE:

Com. 330 ft. W. and 22 ft. S. of center 1-4 S. Sec. 36, Tp. 20 S., R. 31 East; thence West 1600 ft., to terminus.

LAT. NO. SIX:

Com. 819 ft. E. and 1639 ft. N. of center 1-4 S. Sec. 36, Tp. 20 S., R. 31 E.; thence S. 50 deg. 30 min., E. 1065 min. to a point 990 min. N. and 982 ft. W. of E. 1-4 S. said Sec. 36; thence East 1300 ft.; thence South 1725 ft. to terminus.

SWEET WATER SYSTEM.

MAIN CANAL AND DITCH:

Com. at edge of Sweet Water Creek near its mouth at a point 258 ft. E. and 950 ft. N. of Nw. corner Sec. 25, Tp. 20 S., R 31 E.; thence S. 27 deg. E. 1613 ft. to a point 990 min. E. of West line said Sec. 25; thence South 3492 ft. to S. 1-8 line said Sec. 25; thence S. 30 deg. W. 1522 ft. to a point 25 min. N. and 195 ft. E. of Sw. corner said Sec. 25; thence S. 22 deg. 40 min. W. 3689 ft. to E. 1-8 line Sec. 35, Tp. 20 S., R. 31 E.; thence South (at 1906 min. cross South line said Sec. 36) 7153 ft.; thence S. 17 deg. 30 min. East 74 ft.; thence South 1157 ft. to terminus.

LAT. NO. ONE:

Com. 990 fet E. and 22 min. N. of W1-4 S. Sec. 25, Tp. 20 S., R. 31 E.; thence West 2500 ft. to terminus.

LAT. NO. TWO:

Com. 194 ft. E .and 22 ft. N. of Sw. corner Sec. 25, Tp. 20 S., R. 31 E.; thence East 1500 ft.

LAT. NO. THREE:

Com. 194 ft. E. and 22 ft. N. of Sw. corner Sec. 25, Tp. 20 S., R. 31 E.; thence West 3400 ft. to terminus.

LAT. NO. FOUR:

Com. 22 ft. S. and 1005 ft. W. of E. 1-4 S. Sec. 35, Tp. 20 S., R. 31 E. Run E. 1000 ft. to terminus.

LAT. NO. FIVE:

Com. 22 ft. S. and 1005 ft. W. of E. 1-4 Sec. 35, Tp. 20 S., R. 31 E. Run West 3980 ft. to terminus.

LAT. NO. SIX:

Com. 25 ft. S. of the Sw. corner of Se1-4 of Se1-4 Sec. 35, Tp. 20 S., R. 31 E. Run E. 5457 ft. t oa point 180 min, and 25 ft. S. of Nw. corner of Ne1-4 of Ne1-4 Sec. 1, Tp. 21 S., R. 31 E.; thence S. 45 deg. E. 303 ft.; thence South 1375 ft.; thence S. 18 deg. E. 891 ft. to a point 25 ft. N. and 660 ft. W. of E. 1-4 S. Sce. 1, Tp. 21 S., R. 31 E.; thence South 474 ft; thence S. 52 deg. E. 1000 ft. to terminus, a point 134 ft. West and 29 ft. North of Ne. corner of Se1-4 of Se1-4 said Sec. 1.

LAT. NO. SEVEN:

Com. 25 ft. S. of the Sw. corner of Se1-4 of Se1-4 Sec. 35, Tp. 20 S., R. 31 E. Run East 6600 ft .to terminus.

LAT. NO. EIGHT:

Com. 22 ft. S. and 22 ft. W. of Sw. cor. of Se1-4 of Ne1-4 Sec. 2, Tp. 21 S., R. 31 E. Run East 3638 ft.; thence S. 49 deg. 20 min. E. 873 ft.; thence South 730 min.; thence E. 459 ft. to terminus.

LAT. NO. NINE:

Com. 22 ft. W. and 660 ft. S. of Sw. corner of Se1-4 of Ne1-4 of Sec. 2, Tp. 21 S., R. 31 E. Run West 2000 ft. to terminus.

LAT. NO. TEN:

Com. 25 ft. S. and 22 ft. West of Ne. corner of Nw1-4 of Nw1-4 Sec. 2, Tp. 21 S., R. 31 E. Run South 2500 ft.; thence S. 21 deg. 30 min. W. 70 oft.; thence S. 61 deg. W. 1200 ft.; thence S. 45 deg. W. 1735 ft.; thence West 400 ft. to terminus.

LAT. NO. ELEVEN:

Com. at a point 660 ft. W. and 22 ft. S. of Ne. corner Sec. 3, Tp. 21 S., R. 31 E. Run N. 800 ft.; thence N. 45 deg. W. 650 ft.; thence N. 450 ft. to terminus.

LAT. NO. TWELVE:

Com. at a point 660 ft. W. and 22 ft. N. of the Ne. corner Sec. 3, Tp. 21 S., R. 31 E. Run S. 1950 ft.; thence S. 11 deg. E. 110 ft. to terminus.

SOLARY SYSTEM.

SOLARY MAIN DITCH:

Com. in Cypress on shore Lake Jesup 1429 ft. N. and 337 ft. E. of Sw. corner Sec. 34, Tp. 20 S., R. 31 E. Run S. 10 deg. E. 800 ft.; thence S. 1 deg. 30 min. E. 100 ft.; thence S. 10 deg. W. 200 ft.; thence S. 17 deg. E. 50 ft. to Creek then following creek Southeasterly 625 ft.; thence S. 57 deg. E. 150 ft.; thence S. 30 deg. E. 700 ft.; thence S. 10 deg. E. 229 ft. to a point 22 ft. W. of Se. corner of NW1-4 of NW1-4 Sec. 3, Tp. 21 S., R. 31 E.; thence South 1532 ft.; thence S. 45 deg. E. 339 ft.; thence South 900 ft.; thence S. 31 deg. 30 min. E. 777 ft. to Sweet Water Creek, the terminus.

LAT. NO. ONE:

Com. 986 ft. N. and 415 ft. E. of Sw. corner Sec. 34, Tp. 20 S., R. 31 E. Run East 2700 ft. to terminus.

LAT. NO. TWO:

Com. 22 ft. W. and 336 ft. S. of Se. corner of NW1-4 of NW1-4 Sec. 3, Tp. 21 S., R. 31 E.; run West 700 ft. thence S. 45 deg. W. 600 ft.; thence South 1903 ft.; thence West 897 ft. to the terminus, a point 737 ft. Wset of Ne. corner of SE1-4 of SE1-4 Sec. 4, Tp. 21 S., R. 31 E.

LAT. NO. THREE:

Com. 22 ft. W. of Se. corner of NW1-4 of NW1-4 of Sec. 3, Tp. 21 S., R. 31 E. Run 1321 ft. to terminus.

LAT. NO. FOUR:

Com. 185 ft. S. and 292 ft. West of Ne. corner of SW1-4 of SW1-4 Sec. 3, Tp. 21 S., R. 31 E. Run N. 45 deg. W. 880 ft.; thence South 565 ft. to terminus.

DITCH On N. 1-8 line Sec. 34, Tp. 20 S., R. 31 E. Com. in willows on shore of Lake Jessup 1192 ft. West of N. 1-8 S. on E. line of Sec. 34 Tp. 29 S., R. 31 E. Run E. 1400 ft. to terminus.

SPECIFICATIONS FOR CONSTRUCTION OF DRAINAGE CANALS AND DITCHES.

DEFINITIONS:

Where ever the word (District) is used in these specifications, it shall be held to mean the Black Hammock Drainage District, as described in accompanying report and shown on map of same.

Where ever the word (Contractor) is used in these specifications, it shall be held to mean the person or firm, company, corporation, or whosoever shall be employed to do any or all of the construction work for said District.

Where ever the word (Commissioners) is used in these specifications, it shall be held to mean the duly appointed and authorized commissioners of said District.

Where ever the word (Engineer or Engineers) is used, it shall be held to mean the Engineer or Engineers duly appointed by said Commissioners, or their assistants, within the limit of their authority.

GENERAL SPECIFICATIONS:

All trenches over 12 feet bottom width are classed as canals, and all under 12 feet are ditches. There being, however, no ditches over 6 or under 3 feet bottom width.

All work to be done under the supervision of the Drainage Commissioners and their engineer. All ditches and canals to be constructed according to plans and specifications, and to be considered a part of these specifications and anything shown on them and not mentioned in these specifications, to have equal weight as though mentioned in both, and vice-versa.

The work to be pushed with energy and to be done in a workman like manner to the satisfaction of the Drainage Commissioners and Engineer. Should delay arise from the reason of neglect of the Contractor to prosecute the work, and if in the opinion of the Drainage Commissioners, this delay is unnecessary and unreasonable, they may complete the contract in any way they may see fit, using for such purpose, all materials and tools found upon the work and belonging to the contractor, and shall assess the cost of such work, together with additional tools and materials that may be required to perform the same, against the sum which would have been due under the contract.

SLOPE:

The slope of the side of the ditch shall be 1:1 unless otherwise specified. Provided the sides of the ditches or canals in any place required more slope t osecure the bottom width specified; this additional slope or curbing to hold banks shall be made by the contractor

without extra compensation. It shall not be considered a fault if the ditch is made larger than the plans call for.

The distance from the top of ditch bank to waste bank constitutes the berm and shall be 3 feet in width for ditches 3 feet bottom width, 4 feet in width for all other ditches and 6 feet for canals, and said berm must be maintained until work is accepted.

RIGHT OF WAY:

The width of right of way shall constitute; width of ditch on top, plus width of berm, plus width of a strip of land (on one or both sides of ditch) wide enough to take care of excavated earth.

The width of right of way will approximate as follows:

For	ditch	width	3	ft. Bottom	16	ft.	each	side	of center
"	"	"	3.5	"	17		"	"	"
"	"	"	4	"	18		"	"	"
"	"	"	5	"	20		"	"	"
"	"	"	6	"	22		"	"	"
"	canals	"	12	"	30		"	"	"
"	"	"	16	"	33		"	"	"
"	"	"	18	"	38		"	"	"
"	"	"	20	"	40		"	"	"

All logs, brush and trees under 6 inches shall be moved from right of way of all ditches and canals, disposing of it on adjacent land, but in no instance to be placed on cleared land or where it will block a roadway. All stumps, roots, etc., which have to be removed in construction of ditches, shall be removed beyond right of way. In construction of canals, trees on waste bank to be cut low and removed from right of way. On North side of Lat. Nos. 6 and 7, stumps along North side of canal to be left not over 12 inches high, on account of highway laid out here.

CHARACTER OF WORK:

The ditches and canals must be finished so that the margins shall be clear cut and the bottom of even grade. Openings not less than 6 feet wide at the bottom and not more than 400 feet apart must be left through the waste banks on each side, and at the crossings of all natural drains and depressions, so that the surface water may have free access to the ditch. The Engineer shall locate such openings in case he deems it necessary. Excavated earth to be placed on both sides of canal and ditches in about equal amounts unless otherwise directed by Engineer.

Where ditches are crossed by natural water courses, unless the same ditch taps the water course farther up, the bottom of water course shall be sloped from bottom of the finished ditch up stream a distance of 50 feet.

SWEET WATER SYSTEM

CANAL	STATION	Length Feet	Bottom Width	Grade Per 100	Average Depth	Excavation Cubic Yards	TOTAL	
Sweet Water Canal	0 to 37x62	3,762	20 0	0.05	5 6	1[illegible].757		0 to 16 Prairie. Bal. Hammock
" " "	37x62 to 66x30	2.868	18.0	0 05	6.5	16.8[illegible]		Hammock
" " "	66x30 to 122x47	5,617	16 0	0 05	7.7	38 376		"
Lateral No. 6 "	0 to 34	3 4 0	12.0	0 05	5.6	12.[illegible]7		"
Lateral No, 7 "	0 to 46x60	4,660	12.0	0.05	5.9	18 33[illegible]		"
		20,3[illegible]7	3.85	Miles			105.885	
Sweet Water, Main Ditch	122x47 to 148	2 553	6 0	0.10	6.1	6,909		"
" " " "	148 to 154	600	3 0	(.35	5.2	988		"
" " " "	154 to 163	900	3.0	0 8[illegible]	5.0	1 394		"
" " " "	163 to 172	900	3.0	0.60	4 7	1.179		"
" " " "	172 to 187	1,500	3 0	0.15	5.1	2,397	12,867	172 to 185 Open Pine, 185 to 187 Cypress Pond
Lateral No. 1	0 to 6	600	3.0	1.0	5.9	1,179		Hammock
" "	6 to 25	1,900	3.0	0.1	4.9	2,737	3,916	"
Lateral No. 2	0 to 6	600	3.0	1.0	5.4	974		"
" "	6 to 15	900	3.0	0.2	4.6	1,173	2,167	"
Lateral No. 3	0 to 24	2.400	3.0	0.36	5.4	4.083		"
" "	24 to 34	1,000	3.0	0.15	4.7	1,393	5,476	"
Lateral No, 4	0 to 10	1,000	3 0	0.40	5 7	1,849	1,849	"

NOTE—X means Plus

SWEET WATER SYSTEM

DITCH	STATIONS	Length Feet	Bottom Width	Grade Per 100	Average Depth	Excavation Cubic Yards	TOTAL	
Lateral No. 5	x20 to 40	3,980	3.0	0.17	5.2	6,401	6,401	Hammock
Lateral No. 6	34 to 54	2,000	4.0	0.24	5.1	3,440		"
" "	54 to 81	2,700	4.0	0.20	5.0	4,563		"
" "	8' to 85	400	3.0	0 60	4.5	504		"
	85 to 95	1,000	3.0	0.20	4.4	1,265	9,772	Open Pine
Lateral No 7	4[illegible]x60 to 57	1,040	3.0	0.40	5.1	1,638		Hammock
" "	57 to 66	900	3.0	0.25	5.1	1,324	2,962	"
Lateral No. 8	0 to 10	1 000	5.0	0.10	5 3	2,049		"
" "	10 to 25	1,500	4.0	0.28	4.8	2,576		"
" "	25 to 35	1,000	3.0	0.28	5.0	1,481		"
" "	35 to 45	1,000	3.0	0.25	4 3	1,162		"
" "	45 to 57	1.290	3.0	0.40	4.5	1,804	8,872	45 to 53 Ham., Bal. Open Pine
Lateral No. 9	0 to 10	1,000	3.0	0.10	5.0	1.476		Hammock
" "	10 to 20	1,000	3.0	0.15	4.5	1,242	2,718	"
Lateral No. 10	0 to 32	3,200	4.0	0.10	4.9	5,156		"
" "	32 to 63x65	3,165	3 0	0.17	4.5	4,042	9,198	"
Lateral No. 11	{ 0 to 9	900	3 0	0.40	5.3	1,442		"
" "	{ 9 to 19	1,000	3.0	0.10	5.3	1,663	3,105	"
Lateral No. 12	0 to 21x60	2,060	3.0	0.10	4.6	2,724	2,724	"
		65,205	feet =	12.35	Miles		177,912	Cubic Yards.

NOTE—X means Plus

SALT CREEK SYSTEM

DITCH	STATIONS	Length Feet	Bottom Width	Grade Per 100	Average Depth	Excavation Cubic Yards	TOTAL	
Salt Creek Main	0 to 23x37	2,337	6.0	0.08	5.8	6,287		0 to 4 Prairie, Bal. Hammock
" "	23x37 to 46x31	2,294	5.0	0.08	5 8	5,200		Hammock
" "	46x31 to 65	1 869	3 0	0 08	5.4	3,200		"
" "	65 to 82	1,700	3.0	0.10	4-9	2,501		"
							17,188	
Lateral No. 1	0 to 5	500	3.0	0 9	4.2	488		0 to 4 Prairie
" "	5 to 14x93	993	3.0	0.2	4.6	1,397	1,885	Hammock
Lateral No. 2	0 to 14	1 400	3.0	0.45	4.1	1 515	1,515	0 to 3 Prairie, Bal. Hammock
Lateral No. 3	0 to 5	500	3.0	0.5	4 6	713		Hammock
" "	5 to 15	1,900	3 0	0.2	4.6	1,230	1,943	"
Lateral No. 4	0 to 6	600	3.0	0.8	4.7	1,020		"
" "	6 to 21	1,500	3.0	0.2	4.7	1,743	2,763	"
Lateral No. 5	0 to 16	1,600	3.0	0 1	4 4	1,910	1,918	"
Lateral No. 6	(—10x65) to 0	1,065	3.5	0.3	4.9	1,638		"
" "	0 to 9	900	3 5	0 4	4 9	1,416		"
" "	9 to 30x25	2,124	3.5	0.1	4,9	3,238	6,290	"
Total		20,383	fee' =	3.86	Miles		33,502	Cubic Yare'.

NOTE—X means Plus

SOLARY SYSTEM

DITCH	STATION	Length Feet	Bottom Width	Grade Per 100	Average Depth	Excavation Cubic Yards	TOTAL	
Main Ditch	1 to 9	1,000	6 0	0 2	3.9	1 475		Hammock
"	9 to 17	800	5.0	0.5	4.7	1,349		"
"	17 to 23	600	5.0	0.6	5.2	1,178		"
"	23 to 31	800	5 0	0.15	5.3	1,626		"
"	31 to 36	500	5.0	0.8	4.7	854		"
"	36 to 62x77	2,677	5.0	0.1	5.6	5,890	12,352	"
Lateral No. 1	0 to 5	500	3.0	1.3	5 0	775		Hammock
" "	5 to 10	500	3.0	0.50	4.6	632		"
" "	10 to 27	1,709	3.0	0.1	4 7	2,323	3.730	"
Lateral No. 2	0 to 5	500	3.0	0.4	4.4	675		"
" "	5 to 22	1,600	3.0	0.15	4.7	2,240		"
" "	22 to 28	600	3.0	0 8	4.5	750		"
" "	28 to 42	1 400	3.0	0 15	5.2	2,212	5,877	"
Lateral No. 3	0 to 8	800	3.0	0.15	5.3	1,275		0 to 9 Hammock
" "	8 to 13x21	521	3.0	0.20	4.6	707	1,982	9 to 13x21 Open Pine
Lateral No. 4	-3x80 to 10x65	1,445	3.0	0.10	4.7	1,927	1,927	Hammock
Nltch on N.⅛ Line Sec. 34	0 to 14	1,400	3.0	0.6	3.7	1,306	1,306	"
		17,343	feet =	3.28	Miles		27,174	Cubic Yards.

NOTE—X mear s Plus

SUMMARY

Sweet Water System	Canal	3.85	Miles	105,885	Cubic Yards
	Ditches	8.50	"	72,027	" "
		12.35		177,912	
Salt Creek System		3.86	"	33,502	" "
Salary System		3.28	"	27,174	" "
Total		19.49	"	238,588	" "

TEST HOLES—SWEET WATER SYSTEM

LOCATION	STA.	CHARACTER OF SOIL
Sweet Water Main..	17	0-4 ft. black loam, 4-6 ft. clay and sand mixed
" " ..	26	0-4 ft. black loam, 4-6 ft. clay and sand mixed.
" " ..	39	0-6 ft. black loam
" " ..	51	0-2 ft. sand loam, 2-7 ft. clay.
" " ..	66	0-2 ft. sand loam, 2-7 ft. clay.
" " ..	79	0-4 ft. black loam, 4-6 ft, blue clay
" " ..	95	0-5 ft. sand, 5-6 ft. clay and sand mixed.
" " ..	103	0-5 ft. black loam. 5-6 ft. hard sand.
" " ..	117	0-2 ft. black loam, 2-9 ft. blue clay.
" " ..	122	0-4 ft. black loam, 4-9 ft. blue clay.
" " ..	128	0-7 ft. black loam,. 7-9 ft. clay.
" " ..	138	0-7 ft. black loam, 7-9 ft. clay.
" " ..	148	0-4 ft. sand, 4-6 ft. running sand.
" " ..	160	0-1 ft. sandy loam, 5-6 ft sand.
" " ..	174	0-3 ft. sand, 3-5 ft. hard pan, 5-6 ft sand.
Lateral No. 1.....	9	0-1 ft. sandy loam, 1-5.5 ft. sand.
" " 2.....	0	0-2 ft. sandy loam, 2-7 ft. clay.
" " 2	9	0-1 ft. sandy loam, 1-6 ft. sand.
" " 3.....	0	0-2 ft. sandy loam, 2-7 ft. clay.
" " 3.....	13	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 3.....	26	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 4	0	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 5.....	0	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 5.....	14	0-2 ft. black loam, 2-5 ft. sand 5-6 ft. sand and clay mixed.
" " 5.....	26	0-1 ft. black loam, 1-5 ft, sand, 5-6 ft sand and clay mixed.
" " 5.....	39	0-5 ft. sand, 5-6 feet sand and clay mixed.
" " 6.....	0	0-4 ft. black loam, 4-9 ft. blue clay.
" " 6.....	13	0-5 ft. black loam, 5-8 ft. clay.
" " 6	26	0-2 ft. black loam, 2-7 ft. sand.
" " 6	39	0-1 ft. sandy loam, 1-6 ft. sand.
" " 6.....	52	0-1 ft. sandy loam. 1-6 ft. sand.
" " 6.....	65	0-1 ft. sandy loam, 1-6 ft. sand.
" " 6.....	70	0-5 ft. sandy loam, 5-6 ft. sand and clay.
" " 6.....	85	0-5.5 ft. sand.
" " 7.....	0	0-4 ft. black loam, 4-9 ft. blue clay.
" " 7.....	10	0-8 ft. black loam, 8-9 ft. clay.
" " 7.....	20	0-8 ft. black loam, 8-9 ft. clay.
" " 7.....	26	0-6 ft. black loam.
" " 7.....	47	0-5 ft. sand, 5-6 ft. clay and sand mixed.
" " 7.....	56	0-1 ft. sandy loam, 5-6 ft. sand.
" " 8.....	0	0-4 ft. sand, 4-6 ft. running sand.
" " 8..	13	0-1.5 ft black loam, 1.5-5 ft. sand.
" " 8	26	0-3 ft. black loam, 3-6 ft. sand.
" " 8.....	36	0-1 ft. sandy loam, 1-6 ft. sand.
" " 8.....	44	0-1 ft. sandy loam, 1-6 ft. sand.
" " 9.....	13	0-1 ft. sandy loam, 1-6 ft. sand.

TEST HOLES—SWEET WATER SYSTEM

[CONTINUED.]

LOCATION	STA.	CHARACTER OF SOIL
Lateral No 10.....	0	0-6 ft. black loam.
" " 10.....	13	0-6 ft. black loam.
" " 10.....	25	0-2 ft. black loam, 2-4 ft. sand and clay mixed. 4-5 ft. clay, 5-6 fi running sand.
" " 10	37	0-5 ft sand, 5-6 ft. sand and clay mixed.
" " 10	49	0-4 ft. black loam, 4-6 ft. blue clay.
" " 10.....	60	0-1 ft. sandy loam, 1-6 ft. yellow clay.
" " 11.....	0	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 11.....	11	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 12	0	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 12	19	0-5 ft. sand, 5-6 ft sand nnd clay mixed.

TEST HOLES—SALT CREEK SYSTEM

LOCATION,	STA.	CHARACTER OF SOIL
Main Ditch	0	0-1 ft. black loam, 1-3 ft. clay and sand mized, 3-6 ft. blue clay.
" "	13	0-1 ft. sandy loam, 1-6 ft. clay.
" "	23	0-1.5 ft sand, 1.5-6 ft. clay and sand
" "	37	0-1.5 ft. saudy loam, 1.5-6 clay mixed.
" "	50	0-1 ft. sandy loam, 1-5.4 ft. clay.
" "	64	0-1 ft. black loam, 1-5 ft. sand and clay mixed.
" "	67	0-3 ft sandy loam, 3-5 ft. clay and sand mixed, 5-6 ft. blue clay.
" "	76	0-2 ft. black loam, 2-5 ft. sand, 5-6 ft. clay
Lateral No. 1.....	9	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 2.....	9	0-5 ft. sand, 5-6 ft. sand and clay mixed.
" " 3.....	0	0-1.5 ft. sand, 1.5-6 ft. clay and sand mix't
" " 3.....	10	0-1.5 ft. black loam, 1.5-6 ft. blue clay.
" " 4.....	0	0-1.5 ft. sand, 1.5-6 ft. clay and sand mixed.
" " 4.....	9	0-6 ft. sand.
" " 5.....	0	0-3 ft. sandy loam. 3-5 ft. clay and sand mixed, 5-6 ft. blue clay.
" " 5.....	15	0-4 ft. black loam, 4-5 ft. clay and sand mized, 5-6 ft. blue clay.
" " 6.....	0	0-1 ft. sandy loam, 1-6 ft. sand.
" " 6.....	13	0-3 ft. sandy loam, 3-5.5 ft. hard sand-like hard-pan.
" " 6.....	25	0-2 ft. sand, 2-5.5 ft. hard sand--like hard-pan.

TEST HOLES--SOLARY SYSTEM

LOCATION.	STA.	CHARACTER OF SOIL
Solary Main	4	0-5 ft. sand, 5-6 ft. clay.
" "	14	0-1 ft. sandy loam, 1-6 ft clay and sand mixed, 6-8 ft. clay.
" "	27	0-1 ft. sand loam, 1-6 ft. sand.
" "	41	0-6 ft. black loam.
" "	48	0-6 ft. black loam.
" "	50	0-5 ft. sand 5 ft. hard-pan.
" "	51	0-7 ft. sand.
" "	55	0-1 ft. sand loam, 1.8 ft. sand.
Lateral No. 1. ...	0	0-5 ft. sand, 5-6 ft. clay.
" " 1	17	0-5 ft. sand, 5-6 ft. clay and sand mixed.
" " 2.....	0	0-1 ft. sand loam, 1-6 ft. sand.
" " 2	13	0-1 ft. sandy loam, 1-6 ft. sand.
" " 2	26	0-1 ft. sandy loam, 1-6 ft. sand.
" " 2.....	36	0-1 ft. sandy loam, 1-6 ft. sand.
" " 3.....	0	0-1 ft. sandy loam, 1-6 ft. sand.
" " 3.....	9	0-1 ft. sandy loam, 1-5 ft. sand.
" " 4	5	0-7 ft. black loam.
Ditch on N. 1-8 Line Sec. 34.	14	0-1 ft. sandy loam, 1-6 ft. sand.