

ENGINEER'S REPORT
ON THE
G.D. BALDWIN DRAINAGE SCHEME
TOWNSHIP OF MOUNTAIN

June, 1976.

To the Reeve and Members of Council,
Township of Mountain,
c/o Ms. Joan Maxwell, Clerk-Treasurer,
Mountain, Ontario.

Reeve and Members of Council:

The following report is respectfully submitted for Council's consideration and deals with the maintenance, improvement and construction of the G.D. Baldwin Drainage Scheme under Sections 3 and 53, The Drainage Act (R.S.O. 1970 Chapter 136; 1972, Chapter 1, S.7)

This report replaces the Engineer's Report dated March 19th, 1976 submitted for this scheme which was considered by Council under Section 25, The Drainage Act, on April 12th, 1976. The original report was referred back to the Engineer for reconsideration under Section 28 of The Drainage Act.

The objections to the original report together with the changes made as a result of these objections are summarized as follows:

1. Mr. M. Graham and Mr. D. Berry presently own the lands that were formerly assessed to A.R.D.A. namely, Lot 13 of Con. 1 and Lot 15 of Con. 1. The plans, report and assessments were revised accordingly.
2. Mr. M. Graham requested a branch drain in Lot 13 of Con. 1 as hereinafter reported on, namely the Graham Branch.
3. Mr. S. Keyes requested that the G.D. Baldwin Drain be extended in Lot 13 of Con. 1 as hereinafter reported on, namely the G.D. Baldwin Extension.
4. Mr. S. Keyes and Mr. S. Ketellars requested that the proposed Sam Keyes Branch between Station 0+00 and Station 23+00 be deleted and replaced with a drain along the Township Road and County Road No. 5 (Road between the Township of Mountain and the Township of Matilda) as hereinafter reported on and designated Station 0+00 to 40+45, Sam Keyes Branch.
5. Mr. S. Ketellars requested a farm crossing in Lot 13 of Con. 1 giving him access from the Township Road.
6. Mr. S. Keyes requested two farm crossings in Lots 13 and 14 of Con. 1 giving him access from County Road No. 5.

7. Several of the owners indicated that the height of land in various locations were shown incorrectly. These assertions were investigated and generally were found to be correct and the plan was revised accordingly.

Special Assessment Considerations

As a result of the revised height of land approximately 1.0 acre of land owned by Mr. M. Graham and the southerly part of the Boundary Road in Lots 18, Commons, and 19 of Con. 8 in the Township of Matilda would normally be included for assessment. However for the purpose of this report no assessment has been levied against these lands as the cost of collecting such monies would exceed the amount of monies assessed against these lands.

Background

The G.D. Baldwin Drain, formerly known as the Jacob Shaver Award, was originally constructed as a Municipal Drain under a report by Thomas H. Dunn, C.E., dated June 8th, 1904. The Drain was then maintained under a report by R.F. Mucklestone, O.L.S. in 1957.

Further, the portion of this drain from its intersection with the Sam Keyes Branch to the boundary between Mountain and Matilda Township was maintained and improved in 1973 to provide outlet for proposed work on the Sam Keyes Branch under a report by W. Johnston, O.L.S. and authorized by By-law No. 73-4. Also, the section of the G.D. Baldwin Drain in the Township of Matilda was maintained and improved in 1969 under a report prepared by L.P. Stidwill, O.L.S. Unfortunately, we had no record of the authorizing by-law for this improvement.

These two lower sections shall continue to be maintained by the Township of Mountain and the Township of Matilda as provided under the applicable authorizing by-laws.

Under the aforesaid By-law No. 73-4 the Sam Keyes Branch was maintained and improved from the line between the east and west halves of Lot 14 of Concession 1 easterly to its intersection with the G.D. Baldwin Drain.

Purpose of Drainage Improvement

The purpose of the drainage improvement reported on herein is as follows:

1. Maintain and improve the G.D. Baldwin Drain from County Road No. 2 (Road between the east and west halves of Lot 13 of Concession 1) easterly to where the 1973 improvement began (at the intersection of the Sam Keyes Branch).

A minor extension of the drain is proposed to provide outlet for lands west of the County Road and this extension is designated at Station 0+60 (West) to Station 0+00.

2. Maintain and improve the Sam Keyes Branch by deepening that portion of this branch drain which was improved in 1973 under By-law No. 73-4 and by extending it to provide outlet for lands in Lots 13 & 14 of Concession 1.
3. Construct new branch drains, namely the Graham Branch and the G.D. Baldwin Extension to provide outlet for lands in Lot 13 of Concession 1.

The recommended improvement has been designed to accommodate surface run-off and provide outlet for proposed private tile and open drainage systems. Consequently, the drainage improvement recommended in this report should significantly improve the productivity of lands adjacent to the drain.

It should be noted that the proposed drainage improvement, herein reported, will not immediately improve all wet areas unless lateral drains are constructed by the individuals concerned.

DESCRIPTION OF THE G.D. BALDWIN DRAINAGE SCHEME

The contract drawings have been photographically reduced and included herein to illustrate pictorially the locations, lengths and scope of improvement to the drains. Names of present owners are shown within their respective properties.

Following is a brief description of the G.D. Baldwin Drainage Scheme;

G.D. Baldwin Drain

The G.D. Baldwin Drain begins in mid-Lot 13 of Con. 1, Township of Mountain near the western R.O.W. limit of County Road No. 2 approximately 2,400 feet southerly from the road between Con. 1 and 2 (Station 0+60 (West)), and runs in a north-easterly direction crossing under the aforesaid County Road at Station 0+20 (West); then continues in a generally north-easterly and south-easterly direction across Lots 13 to 15 where the Same Keyes Branch intersects the G.D. Baldwin Drain at Station 76+00 in the centre of the east half of Lot 15, some 1,350 feet north-westerly from the road comprising the boundary between the Township of Mountain and the Township of Matilda. The improvement of the drain under this report terminates at Station 77+00 except for some work required at the culvert under County Road No. 5. However, for record purposes, the G.D. Baldwin Drain continues in a generally easterly direction across Lots 15 and 16 crossing under County Road No. 5 (Road between the Township of Mountain and the Township of Matilda) at Station 110+48; then continues in Lot 13 of Concession 8, Township of Matilda in a south-easterly and north-easterly direction crossing under the Township road between Lots 12 and 13 (Station 124+63); then continues in a generally easterly direction across Lots 12 and 11 outletting into the South Branch of the Nation River.

The improvement was terminated at Station 77+00 as the existing G.D. Baldwin Drain downstream from this point is in fairly good condition and provides adequate outlet.

G.D. Baldwin Drain Extension

The G.D. Baldwin Drain Extension begins in the mid-eastern part of Lot 13, in Concession 1 (Station 0+00) and runs in a generally north-easterly direction across Lot 13 to County Road No. 2 (Station 4+19); then continues in a north-westerly direction adjacent to and outside the right-of-way limit for the said County Road outleting into the G.D. Baldwin Drain at Station 7+93. (Station 7+93, G.D. Baldwin Drain Extension = Station 0+60 West, G.D. Baldwin Drain).

Graham Branch

The Graham Branch begins in Lot 13 of Con. 1 approximately 1,900 feet south-easterly from the road between Con. 1 & 2 and adjacent to and outside the south-westerly right-of-way limit for County Road No. 2, Station 0+00 and runs in a generally south-easterly direction adjacent to the aforesaid county road outleting into the G.D. Baldwin Drain at Station 4+85 (Station 4+85, Graham Branch = Station 0+60 West, G.D. Baldwin Drain).

Sam Keyes Branch

The Sam Keyes Branch begins in Lot 13 of Con. 1 in the Township of Mountain approximately 785 feet south-westerly from County Road No. 2 and some 365 feet north-westerly from the Boundary Road between the Township of Mountain and the Township of Matilda Station 0+00, and runs in a south-easterly direction to the aforesaid Boundary Road; then continues in a north-easterly direction adjacent to and outside the Township Road Right-of-Way crossing under County Road No. 2 at Station 12+13 (intersection of County Road Nos. 2 & 5); then continues in a north-easterly direction in Lots 13 and 14 adjacent to and outside the north-westerly Right-of-Way limit for County Road No. 5 to Station 31+93; then continues in a north-westerly direction in Mid Lot 14 to Station 40+45, (Equation - Station 40+45 Back = Station 23+00 Ahead); then continues in a generally north-easterly direction across Lots 14 and 15 outleting into the G.D. Baldwin Drain at Station 54+53. (Station 54+53, Sam Keyes Branch = Station 76+00, G.D. Baldwin Drain.)

Outlet Restriction

The South Branch of the Nation River which outlets into the South Nation River some 2,500 feet downstream from the outlet of the G.D. Baldwin Drain provides adequate outlet for the G.D. Baldwin Drain during most of the growing season. Unfortunately the South Nation River does not have the capacity to handle either Spring floods or Summer floods and at such times municipal drains in this area are "backed up" and considerable flooding of agricultural lands occurs. Depending on the time that Summer floods occur considerable crop loss over inundated areas may result. The South Nation Conservation Authority has, over the years, considered improvements to the South Branch of the Nation River and South Nation River to reduce this problem but to date, no programme of improvement has been adopted.

Summary of the G.D. Baldwin Drainage Scheme

The following table summarizes the length of drain, excavation quantities and classification and area drained for each drain included as part of this report.

<u>Name of Drain</u>	<u>Length</u> <u>L.F.</u>	<u>Earth</u> <u>Excavation</u> <u>C.Y.</u>	<u>Area</u> <u>Drained</u> <u>Acres</u>
G.D. Baldwin Drain (incl. G.D. Baldwin Extension)	8,853	8,193	356.1
Graham Branch	485	500	27.1
Sam Keyes Branch	7,198	6,610	226.1
Totals	16,536	15,303	582.2

The total drainage area for the entire scheme is approximately 582.2 acres or 0.91 square miles being the addition of the drainage basins for the G.D. Baldwin Drain and the Sam Keyes Branch. The total length of drainage improvement is 16,536 l.f. or approximately 3.13 miles.

CO-OPERATION WITH OWNERS

During our survey of this drain most of the owners affected by the proposed scheme were consulted and to the best of our knowledge this scheme is in accord with the wishes of the owners.

Only the drains, which the owners involved wanted improved, were surveyed. For this reason there are other branches which are not included in this report. Some of these branches are shown on the plan in a broken line. If, in the future, the owners concerned wish to improve these branches, a new drainage study will be required; however, this new study would in no way affect the assessments established in this report.

DRAWINGS FORMING PART OF ENGINEER'S REPORT

Plan

A new plan was prepared from a mosaic of aerial photographs. On it are shown the names of the present owners within their respective properties and the area assessed for outlet liability, which is indicated by a heavy solid line.

The location of the drains are indicated by a heavy solid line. Drains not being improved under this scheme are shown by a broken line.

A legend is shown on the enclosed plan to explain the various symbols used.

Profile

To survey the drain, a traverse line was run adjacent to the course of the drain and major deviations in the course of the drain were located by establishing hubs known as points of intersection or P.I. adjacent to these deviations. Then, at 100 foot intervals along the traverse line, marked by 1" x 1" stakes, levels were taken along the course of the drain (or proposed course of the drain in the case of diversions) and along the line to obtain a profile of the existing drain and the traverse line.

The profiles, the traverse chainage and the P.I.'s are all shown on the profile sheets. The proposed grades of the improved drains are also shown together with the various percentage grades, the vertical P.I.'s and reference bench marks.

RECOMMENDED IMPROVEMENT

Drain Improvement

A visual inspection of the drain indicated that it was unlikely that rock would be encountered at the depths of excavation proposed. The "Classification of Excavated Material" would consequently place the work to be done in the category of earth excavation.

The recommended improvement includes the excavation of 15,303 cubic yards of earth. A typical cross-section of the new drain will have a bottom width of 2½ feet with side slopes of 1½ horizontal to 1 vertical. Should the material in some areas be unstable then the contractor shall be instructed to construct flatter side slopes as directed by the Engineer with an appropriate adjustment in the earth quantities. A typical cross-section is shown on the drawings.

The contractor, prior to construction, shall receive a list of "cut" figures, being the depth from the original ground grade at each station on the traverse line to the bottom (or profile grade) of the improved drains. These figures will be used by the contractor to construct the drain subject to checking by the Engineer.

Farm Crossings

Provision has been made for farm bridges under this scheme. All reconstructed or new farm bridges shall be corrugated steel pipe culverts, the location, sizes and lengths being listed in Schedule "G", together with the names of the owners.

A total of 216 lineal feet of Corrugated Steel Pipe Culverts is required for farm crossings as follows:

<u>Length of Culverts Required</u> (lineal feet)		<u>Description of Culverts</u>
24	-	24" Dia. C.S.P.
72	-	30" Dia. C.S.P.
48	-	36" Dia. C.S.P.
72	-	42" Dia. C.S.P.
<u>Total</u>		<u>216 Lineal Feet</u>

In addition provision has been made to lower three existing farm bridges on the Sam Keyes Branch as follows:

- Lower existing 48" Dia. C.S.P. at Station 28+12
(G. Backes Lot 14, Con. 1)
- Lower existing 54" Dia. C.S.P. at Station 38+32
(D. Berry Lot 15, Con. 1)
- Lower existing 72" Dia. C.S.P. at Station 52+92
(R. Baldwin Lot 15, Con. 1)

The location, sizes and lengths are also summarized on Schedule "G" with the owners names.

General

The contractor shall be responsible for the supplying, excavating for and placing of corrugated steel pipe culverts for new farm crossings and for the removal and lowering of existing farm crossings.

Although we attempted to contact all owners regarding the necessity of farm bridges some owners may have been missed or since our interview have realized that an additional crossing is necessary. It is recommended in such cases and where the need for a crossing is obvious that additional farm bridges be installed with the corresponding increase in the owner's assessment being made.

DISPOSAL OF EXCAVATED MATERIALS

Disposal of Material on Adjacent Lands

Some or all of the excavated materials may be disposed of adjacent to the drain by placing, spreading and trimming it within allowance designated for this purpose as follows:

Case A - where material is disposed of on one side of the drain only, within 100 feet of but no closer than 5 feet from the brow of the drain.

Case B - where material is disposed of on both sides of the drain, within 50 feet of but no closer than 5 feet from the brow of the drain.

The Contractor shall be responsible for contacting the owner to decide whether excavated material shall be spread on only one or both sides of the drain. In cases of dispute the Engineer's decision respecting allowances for disposal of excavated material shall be final.

In addition, the spreading and trimming of excavated material shall conform to the following provisions:

Earth material shall be so placed as not to impede the natural drainage of the adjacent lands and in any case no deeper than 6".

Surplus earth material and all boulders, rock excavation or other debris that would render unsightly the appearance of the finished work, or that would be injurious to farm implements or machinery shall be disposed of in locations provided for the purpose by the contractor at the contractor's expense.

ROAD BRIDGES

All elevations given in the report and shown on the contract drawings are based on assumed datum.

Following are recommendations regarding road bridges:

United Counties of Stormont, Dundas and Glengarry

1. Culvert crossing under County Road No. 2 in Lot 13 of Con. 1 at Station 0+20 (West), G.D. Baldwin Drain. The existing 18" Dia. C.S.P. Culvert should be replaced with 56 lineal feet of 30" Dia. C.S.P. Culvert with an invert elevation of 93.4.
2. Culvert crossing under County Road No. 5 in Lot 16 of Con. 1 (Road between Township of Mountain and Township of Matilda) at Station 110+48, G.D. Baldwin Drain - The existing 60" Dia. C.S.P. Culvert should be replaced with 60 lineal feet of 72" Dia. C.S.P. Culvert with an invert elevation of 77.5.
3. Culvert crossing under County Road No. 2 in Lot 13 of Concession 1 at Station 12+13, Sam Keyes Branch - The existing 24" Dia. C.S.P. Culverts should be replaced with 66 lineal feet of 30" Dia. C.S.P. Culvert with an invert elevation of 90.90.

The length of culvert recommended is based on existing roadway widths and may be subject to change.

Where invert elevations are given for road culverts, the elevation pertains to the centre of the culvert. Where the drain is being improved to a specific grade, the gradient of the pipe should parallel the gradient of the drain. In general, the invert elevations were established so that the culvert invert would be approximately 6" to 8" below the bottom of the improved drain. It is very important for road culverts to be installed at the proper grades.

The contract documents will include a provision that the drainage contractor shall supply, excavate for, place and backfill road culverts as directed by the United Counties. The cost of providing road culverts shall be billed directly to the Road Authority in accordance with present policy. Therefore, no provision for assessment for the cost of these culverts against the United Counties is provided for in this report. As an assistance for budgeting funds for the culvert installations, we estimate that the cost of this work will be approximately \$8,500.00.

ALLOWANCES UNDER SECTION 8(1), THE DRAINAGE ACT

Damage to crops and land will result from the construction of the drains reported on herein. Therefore, allowances have been provided to compensate the owners affected and these allowances are summarized in Schedule "E".

ALLOWANCES UNDER SECTION 8(8), THE DRAINAGE ACT

Where the drains run adjacent to existing right-of-way allowances for roads, provision has been made to locate the drains outside the road right-of-ways. Where this is done allowances have been provided to compensate the owners for land. These allowances are summarized in Schedule "F".

A description of the relocation of the drain off the road allowance is as follows:

Graham Branch

From Station 0+00 to Station 4+85 the drain is to be constructed outside and adjacent to the south-western right-of-way limit for County Road No. 2 in Lot 13 of Con. 1.

G.D. Baldwin Extension

From Station 4+19 to Station 7+93 the drain is to be constructed outside and adjacent to the south-western right-of-way limit for County Road No. 2 in Lot 13 of Con. 1.

Sam Keyes Branch

From Station 3+65 to Station 31+93 the drain is to be constructed outside and adjacent to the north-western right-of-way limit for the township boundary road in the western part of Lot 13 and County Road No. 5 in Lots 13 and 14 of Con. 1.

DEFINITION OF OUTLET ASSESSMENT

Under The Drainage Act provision is made for both "outlet liability" and "injuring liability" assessments. However, it is our firm's practice to include assessments for "injuring liability" with "outlet liability" assessments since both relate to volume of run-off.

ESTIMATE OF COST

The total estimated cost for the improvement reported herein for the G.D. Baldwin Drainage Scheme is \$38,000.00 and is summarized as follows:

Earth Excavation 15,303 c.y. @ \$1.25/c.y.	\$ 19,128.75
Farm Bridges	5,950.00
Allowances (Section 8(1), The Drainage Act)	2,670.00
Allowances (Section 8(8), The Drainage Act)	540.00
Preparing By-law	150.00
Clerk's Fees	450.00
Engineer's Fees - Report & Tender Documents	5,600.00
Engineering Supervision	2,000.00
Contingencies (Advertising, Carrying Charges, Etc.)	<u>1,511.25</u>
Total Estimated Cost	\$ 38,000.00

The total estimated cost has been apportioned as follows:

Outlet Liability - Agricultural Property, Privately-Owned	\$ 10,655.00
Benefit Liability - Agricultural Property, Privately-Owned	22,725.00
Outlet Liability - Non-agricultural Property Privately-Owned	10.00
Outlet Liability - Roads, United Counties of Stormont, Dundas and Glengarry	990.00
Benefit Liability - Roads, United Counties of Stormont, Dundas and Glengarry	2,700.00
Outlet Liability - Roads, Township of Mountain	265.00
Benefit Liability - Roads, Township of Mountain	<u>655.00</u>
Total Estimated Cost	\$ 38,000.00

DISTRIBUTION OF COST OF IMPROVEMENT

Assessment Considerations

The schedules of assessment for the improvement work reported upon herein have been derived as follows:

G.D. Baldwin Drain

The original schedule of assessment was determined in 1904 and the Engineer's Report for that improvement was not available for reference. Subsequent improvements were presumably assessed on the basis of the original schedule, however, an examination of Schedule "B" in By-law No. 73-4 indicates that apportionment of cost would not be equitable in this case. Also, since so many improvements and property changes have occurred over the last 20 years it was decided to prepare a new schedule of assessment in accordance with assessment principles used by our firm.

Sam Keyes Branch

Under By-law No. 73-4, Schedule "E", no outlet assessment was levied against the county road or lands west of County Road No. 2. Also, since a significant improvement is involved (i.e., westerly extension of approximately 4,045 feet), the former schedule of assessment is no longer applicable. Therefore, as for the G.D. Baldwin Drain, a new schedule of assessment was prepared using our current assessment principles.

Grants

Under the provisions of The Drainage Act, and the Agricultural Rehabilitation and Development Act, grants totalling two-thirds of the cost of such drainage improvements that drain agricultural lands are available. These grants, when received, will reduce the cost of this improvement assessed against agricultural property by \$22,253.33 leaving an estimated cost of \$11,126.67 to be shared by the owners of real property in accordance with the attached schedules.

No drainage grants are available to reduce the assessments for roads and/or properties owned by the Township of Mountain or United Counties of Stormont, Dundas and Glengarry. Also drainage grants are not available for Mr. J. Doucette as his property cannot be classed as agricultural land.

Schedule "D" shows each owner's net cost based on the estimated cost of this improvement.

FUTURE MAINTENANCE

The G.D. Baldwin Drainage Scheme shall be maintained by the Township of Mountain although the owners shall be responsible for periodically inspecting the drains and reporting maintenance problems, if any, to the Township. The Township may, if it so wishes, appoint a commissioner under Section 12(1), The Drainage Act, to report annually on the state of repair of the drainage works.

The owners shall be responsible for all reasonable and normal maintenance of farm bridges. Extraordinary maintenance such as the correction of damages caused by extreme flooding shall be the responsibility of the Township.

The cost of future minor maintenance work shall be assessed against the owners of lands and roads assessed for its construction in the same proportion as shown in Schedules "A" to "C" except that where lands are subsequently subdivided appropriate pro-rated assessments shall be determined. However when major maintenance and improvement work is required we believe that a different apportionment of cost is necessary because of the nature of the work being done under this report (i.e. new construction combined with maintenance).

We have not prepared such schedules for inclusion in this report because significant changes in the type of future maintenance and improvement together with probable numerous changes in property ownerships, along with subdividing of lands, would result in such schedules being of very limited value. Accordingly the preparation of assessment schedules for future major maintenance and improvement work should be the responsibility of the drainage practitioner engaged to prepare the necessary engineer's report.

Yours very truly,

R.M. KOSTUCH ASSOCIATES LTD.



A handwritten signature in cursive script, appearing to read "C.G. Hanes".

C.G. Hanes,
Drainage Supervisor.

A handwritten signature in cursive script, appearing to read "R.M. Kostuch".

R.M. Kostuch, P.Eng.,
Drainage Engineer.

June 29th, 1976.
Brockville, Ontario.

SCHEDULE "A"

SCHEDULE OF ASSESSMENT

GRAHAM BRANCH

<u>OWNER</u>	<u>PROPERTY</u>		<u>AREA DRAINED</u>	<u>BENEFIT</u>	<u>OUTLET LIABILITY</u>
	<u>LOT</u>	<u>CON.</u>	(Acres)		
M. Graham	13	1	24.4	500.00	420.00
S. Keyes	13	1	1.1	15.00	15.00
United Counties of Stormont, Dundas and Glengarry			1.6	150.00	50.00
Totals			<u>27.1</u>	<u>665.00</u>	<u>485.00</u>

SCHEDULE "B"

SCHEDULE OF ASSESSMENT

SAM KEYES BRANCH

<u>OWNER</u>	<u>PROPERTY</u>		<u>AREA DRAINED</u>	<u>BENEFIT</u>	<u>OUTLET LIABILITY</u>
	<u>LOT</u>	<u>CON.</u>	(Acres)		
N. Backes	12	1	12.8		150.00
M. Ellis	12&13	1	9.1		130.00
S. Ketellars	12&13	1	18.4	2,660.00	680.00
S. Keyes	13&14	1	48.8	4,510.00	1,350.00
G. Backes	13	1	1.4		15.00
G. Backes	14	1	72.8	1,130.00	930.00
D. Berry	15	1	43.7	950.00	420.00
R. Baldwin	15	1	13.4	250.00	70.00
Township of Mountain (Roads)			1.6	655.00	190.00
United Counties of Stormont, Dundas and Glengarry (Roads)			4.1	1,850.00	500.00
Totals			<u>226.1</u>	<u>12,005.00</u>	<u>4,435.00</u>

SCHEDULE "C"

SCHEDULE OF ASSESSMENT

G.D. BALDWIN DRAIN

(INCLUDING G.D. BALDWIN DRAIN EXTENSION)

<u>OWNER</u>	<u>PROPERTY</u>		<u>AREA DRAINED</u>	<u>BENEFIT</u>	<u>OUTLET LIABILITY</u>
	<u>LOT</u>	<u>CON.</u>	(Acres)		
N. Backes	12	1	3.7		40.00
M. Graham	13	1	24.4	230.00	450.00
S. Ketellars	12	1	6.0		75.00
S. Keyes	13	1	24.8	1,850.00	670.00
M. Ellis	12&13	1	9.1		120.00
G. Backes	13	1	70.2	2,620.00	1,490.00
G. Backes	14	1	51.2	2,120.00	945.00
S. Keyes	14	1	1.0		10.00
J. Doucette	14	1	1.0		10.00
L. Belway	14	1	50.0	1,960.00	1,050.00
D. Berry	15	1	49.8	1,870.00	825.00
R. Baldwin	15	1	56.1	2,060.00	800.00
Township of Mountain (Roads)			2.7		75.00
United Counties of Stormont, Dundas and Glengarry (Roads)			6.1	700.00	440.00
Totals			356.1	13,410.00	7,000.00

SCHEDULE "D"

COMBINED ASSESSMENTS UNDER SCHEDULES "A" TO "C"

INCLUDING OWNER'S ESTIMATED NET COST

G.D. BALDWIN DRAINAGE SCHEME

<u>OWNER</u>	<u>PROPERTY</u>		<u>AREA DRAINED</u>	<u>BENEFIT</u>	<u>OUTLET LIABILITY</u>	<u>TOTAL ASSESSMENT</u>	<u>OWNER'S PORTION AFTER GRANTS</u>	<u>LESS ALLOWANCES 8(1)&8(8)</u>	<u>OWNER'S ESTIMATED NET COST</u>
	<u>LOT</u>	<u>CON.</u>	<u>(Acres)</u>						
N. Backes	12	1	16.5		190.00	190.00	63.33		63.33
M. Graham	13	1	24.4	730.00	870.00	1,600.00	533.33	165.00	368.33
S. Ketellars	12&13	1	24.4	2,660.00	755.00	3,415.00	1,138.33	350.00	788.33
S. Keyes	13&14	1	74.6	6,375.00	2,045.00	8,420.00	2,806.67	1,075.00	1,731.67
M. Ellis	12&13	1	18.2		250.00	250.00	83.33		83.33
G. Backes	13&14	1	195.6	5,870.00	3,380.00	9,250.00	3,083.33	775.00	2,308.33
J. Doucette	14	1	1.0		10.00	10.00	10.00		10.00
L. Belway	14	1	50.0	1,960.00	1,050.00	3,010.00	1,003.33	160.00	843.33
D. Berry	15	1	93.5	2,820.00	1,245.00	4,065.00	1,355.00	300.00	1,055.00
R. Baldwin	15	1	69.5	2,310.00	870.00	3,180.00	1,060.00	385.00	675.00
Township of Mountain (Roads)			4.3	655.00	265.00	920.00	920.00		920.00
United Counties of Stormont, Dundas & Glengarry (Roads)			10.2	2,700.00	990.00	3,690.00	3,690.00		3,690.00
Totals			582.2	26,080.00	11,920.00	38,000.00	15,746.65	3,210.00	12,536.65

SCHEDULE "E"

SCHEDULE OF ALLOWANCES UNDER SECTION 8 (1)

THE DRAINAGE ACT

G.D. BALDWIN DRAIN AND SAM KEYES BRANCH

<u>OWNER</u>	<u>PROPERTY</u>		<u>ALLOWANCE</u>		<u>REMARKS</u>
	<u>LOT</u>	<u>CON.</u>	<u>AMOUNT</u>	<u>SUB-TOTAL</u>	
M. Graham	13	1	95.00	95.00	Graham Spur
S. Keyes	13	1	5.00		Graham Spur
	13	1	160.00		G.D. Baldwin Drain Extension
	14	1	<u>560.00</u>	725.00	Sam Keyes Branch
S. Ketellars	13	1	230.00	230.00	Sam Keyes Branch
G. Backes	14	1	190.00		Sam Keyes Branch
	13	1	320.00		G.D. Baldwin Drain
	14	1	<u>265.00</u>	775.00	G.D. Baldwin Drain
D. Berry	15	1	165.00		G.D. Baldwin Drain
	15	1	<u>135.00</u>	300.00	Sam Keyes Branch
L. Belway	14	1	160.00	160.00	G.D. Baldwin Drain
R. Baldwin	15	1	70.00		Sam Keyes Branch
	15	1	<u>315.00</u>	385.00	G.D. Baldwin Drain
Total			<u>2,670.00</u>	<u>2,670.00</u>	

SCHEDULE "F"
SCHEDULE OF ALLOWANCES UNDER SECTION 8(8)
THE DRAINAGE ACT
G.D. BALDWIN DRAINAGE SCHEME

<u>OWNER</u>	<u>PROPERTY</u>		<u>ALLOWANCE</u>		<u>REMARKS</u>
	<u>LOT</u>	<u>CON.</u>	<u>AMOUNT</u>	<u>SUB-TOTAL</u>	
M. Graham	13	1	70.00	70.00	Graham Spur
S. Keyes	13	1	5.00	350.00	Graham Spur G.D. Baldwin Ext. Sam Keyes Branch
	13	1	55.00		
	14	1	<u>290.00</u>		
S. Ketellars	13	1	120.00	120.00	Sam Keyes Branch
Total			<u>540.00</u>	<u>540.00</u>	

SCHEDULE "G"

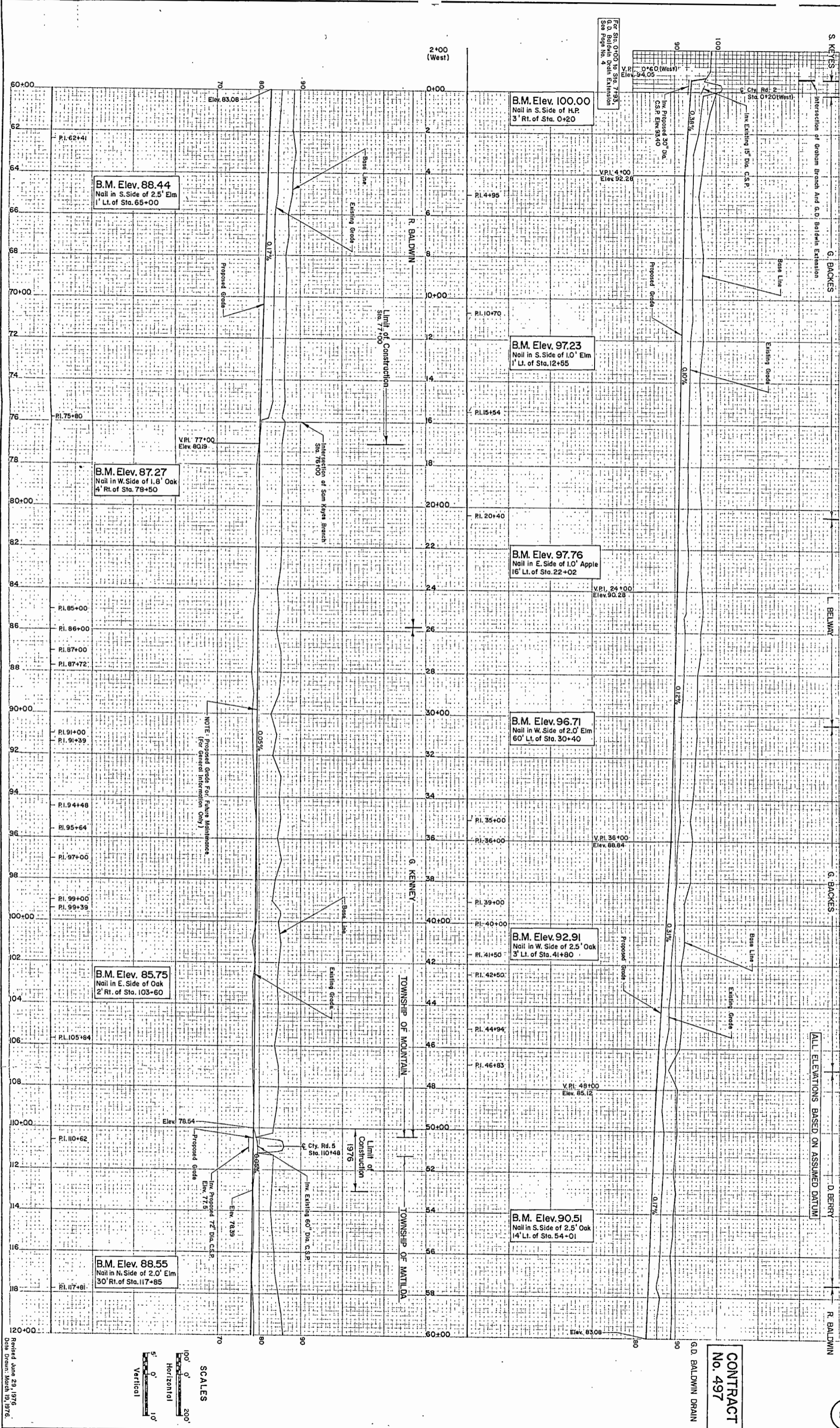
SCHEDULE OF FARM BRIDGES

G.D. BALDWIN DRAINAGE SCHEME

<u>OWNER</u>	<u>PROPERTY</u>		<u>STATION</u>	<u>DESCRIPTION</u>
	<u>LOT</u>	<u>CON.</u>		
<u>G.D. Baldwin Drain</u>				
G. Backes	13	1	3+77	1 @ 24 L.F. of 30" Dia. C.S.P. 16 Ga.
G. Backes	13	1	10+73	1 @ 24 L.F. of 36" Dia. C.S.P. 16 Ga.
G. Backes	14	1	39+30	1 @ 24 L.F. of 42" Dia. C.S.P. 14 Ga.
L. Belway	14	1	25+29	1 @ 24 L.F. of 36" Dia. C.S.P. 16 Ga.
D. Berry	15	1	52+25	1 @ 24 L.F. of 42" Dia. C.S.P. 14 Ga.
R. Baldwin	15	1	57+38	1 @ 24 L.F. of 42" Dia. C.S.P. 14 Ga.
<u>Sam Keyes Branch</u>				
S. Ketellars	13	1	5+95	1 @ 24 L.F. of 24" Dia. C.S.P. 16 Ga.
S. Keyes	13	1	17+15	1 @ 24 L.F. of 30" Dia. C.S.P. 16 Ga.
S. Keyes	14	1	21+92	1 @ 24 L.F. of 30" Dia. C.S.P. 16 Ga.
G. Backes			28+12	Lower 24' of 48" Dia. C.S.P.
A.R.D.A. (D. Berry)			38+32	Lower 24' of 54" Dia. C.S.P.
R. Baldwin			50+92	Lower 24' of 72" Dia. C.S.P.

G. D. BALDWIN DRAIN

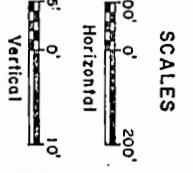
R. M. KOSTUCH ASSOCIATES LTD.
CONSULTING ENGINEERS
BROOKVILLE, ONTARIO.



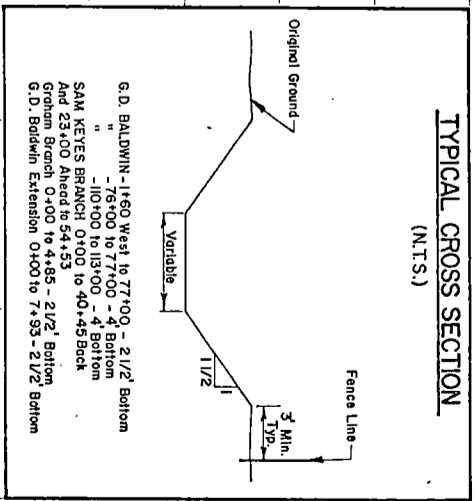
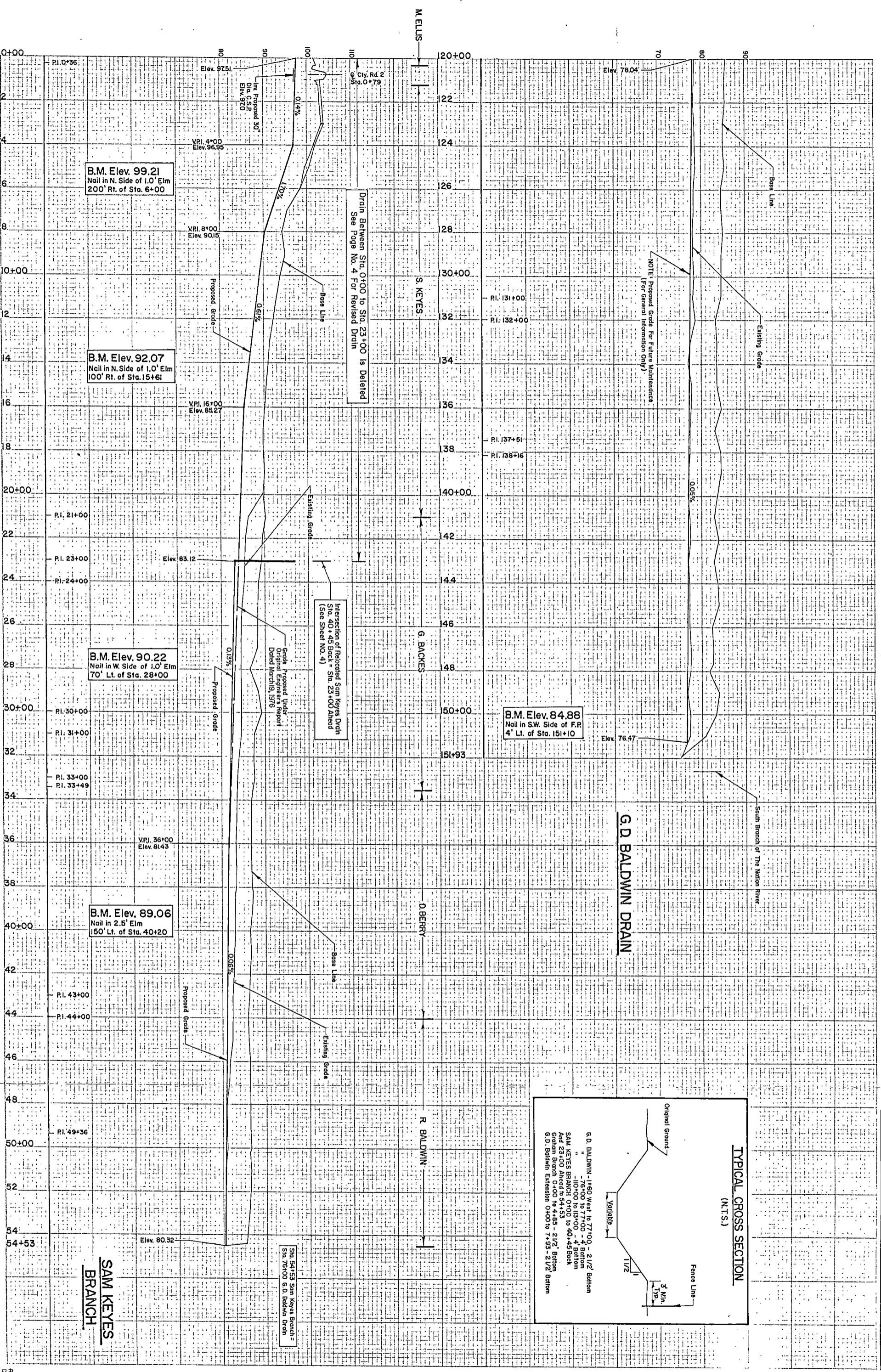
NOTE: Proposed Grade For Future Maintenance (For General Information Only)

ALL ELEVATIONS BASED ON ASSUMED DATUM

CONTRACT No. 497



Revised June 29, 1976
Date Drawn: March 19, 1976.



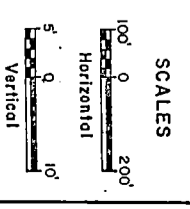
B.M. Elev. 99.21
Nail in N. Side of 1.0' Elm
200' Rt. of Sta. 6+00

B.M. Elev. 92.07
Nail in N. Side of 1.0' Elm
100' Rt. of Sta. 15+61

B.M. Elev. 90.22
Nail in W. Side of 1.0' Elm
70' Lt. of Sta. 28+00

B.M. Elev. 89.06
Nail in 2.5' Elm
150' Lt. of Sta. 40+20

**SAM KEYES
BRANCH**



**CONTRACT
No. 497**

G.D. BALDWIN DRAIN
SAM KEYES BRANCH

