APPENDIX D

BACKGROUND INFORMATION

STORMWATER MANAGEMENT STUDY
ROAD IMPROVEMENTS FOR
REGIONAL ROAD NO. 5
THROUGH THE TOWN OF CLAREMONT

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CONSULTING ENGINEERS ▫ BRAMALEA ▫ ONTARIO

STORMWATER MANAGEMENT STUDY
ROAD IMPROVEMENTS FOR
REGIONAL ROAD NO. 5
THROUGH THE TOWN OF CLAREMONT

9471

May 1996

Paul Theil Associates Limited
131 Delta Park Boulevard
Brampton, Ontario
L6T 5M8

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STORMWATER MANAGEMENT STUDY
ROAD IMPROVEMENTS FOR
REGIONAL ROAD NO.5
THROUGH THE TOWN OF CLAREMONT

1 – INTRODUCTION

The Regional Municipality of Durham has identified the need for improvements to Regional Road No. 5 (Central Street) through the Town of Claremont. The following report documents the investigations and analyses done to evaluate drainage options in support of the proposed road work.

The traditional approach the Region adopted for road projects similar to this undertaking in the past was to excavate the existing road base, replace the road material, widen to present standards including curb and gutter, and install storm sewers with outfalls to local watercourses. In recent years the Region has re–evaluated this approach taking into account the following factors:

- the increasing cost of road construction with greater demands being placed on the municipal road budgets
- the need to evaluate storm runoff and address water quality concerns
- the benefit of public input into the development of viable alternatives through workshops

The approach taken for this road project is to rehabilitate the existing road and to modify the local drainage network to alleviate existing impacts where possible. The drainage analysis follows the approach which is typically adopted for road projects which go through an environmental assessment. The analysis included the following:

- identify all upstream drainage areas that contribute flows which pass through the Regional Road No. 5 right–of–way
- identify flows anticipated for various return periods
- identify downstream areas as well as locations within the right–of–way that are impacted by these various flow conditions
- evaluate alternatives for mitigating these impacts

This report presents the results of hydrologic modelling of various alternatives and provides the technical information for the proposed drainage scheme.

2 - STUDY AREA

2.1 Existing Conditions

The study area consists of the Regional Road No. 5 through the Town of Claremont with the west boundary at the culvert crossing for a main tributary to Mitchell Creek and the east boundary at the Brock Road By-pass. The study area can be divided into four distinct drainage basins which are all small catchment areas for various small tributaries of Mitchell Creek. These basins have been identified as follows:

- East basin
- Centre basin
- West Centre basin
- West Basin

Figure 1 shows the local drainage basins.

2.1.1 East Basin

This area is bounded by the Lorn Street intersection and the Brock Road bypass. The total upstream drainage area is 2.68 hectares. The drainage is collected in the local ditches along Regional Road No. 5 (south side) which is directed to the east and southerly along Brock Road.

2.1.2 Centre Basin

This is the largest drainage area comprising 15.73 hectares which includes an 11 hectare undeveloped drainage area at the north end of Franklin Street. The entire area outlets to a small culvert requiring repair. The road drainage includes all the area between the Lorn Street intersection and Victoria Street intersection.

2.1.3 West Centre Basin

This area comprises the drainage system which discharges to the storm sewer on Canso Drive including the centre of town. The road drainage includes surface drainage and existing storm sewer services in the area bounded by the Victoria Street intersection and the east property line of the Claremont Public School.

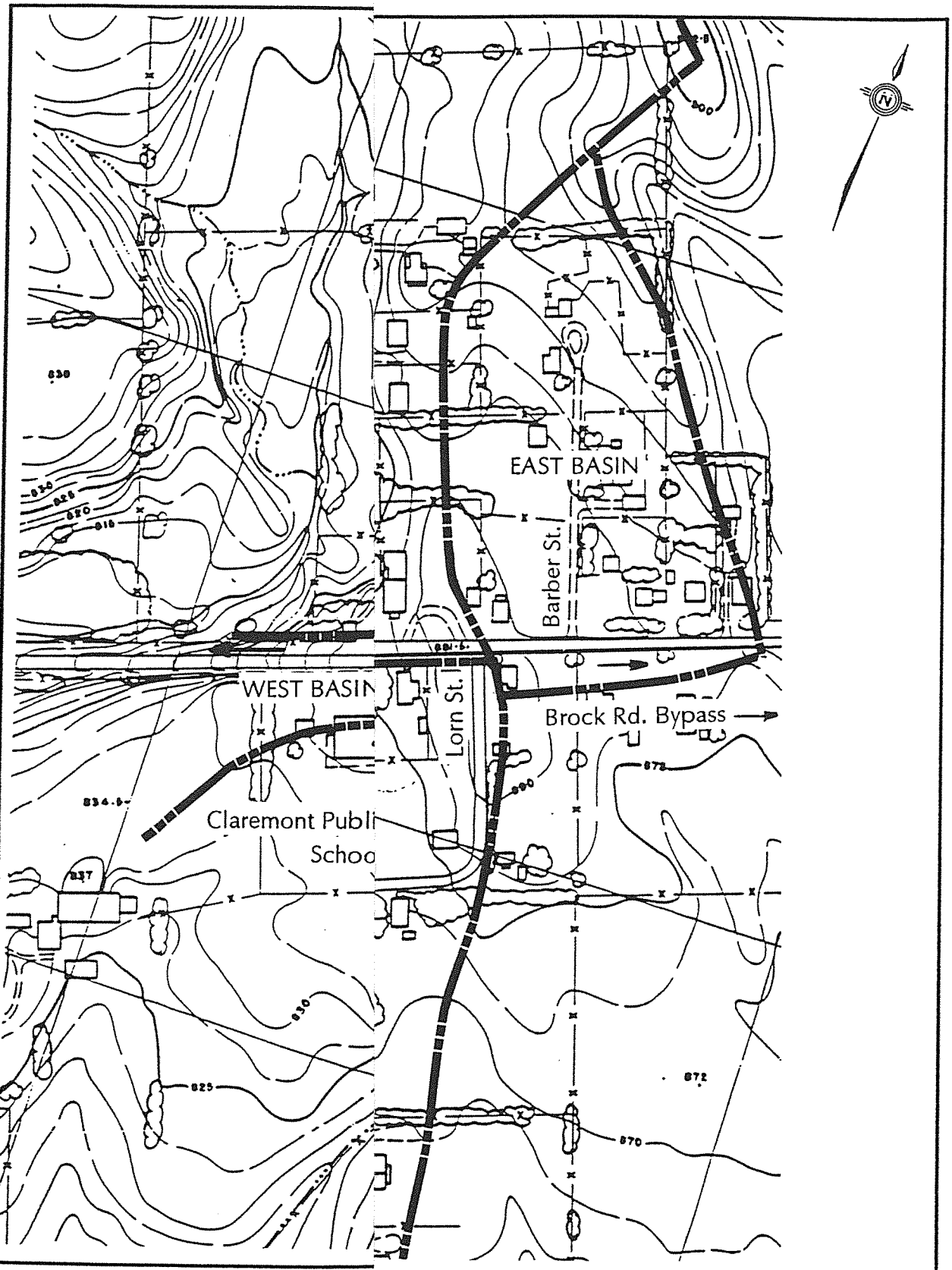

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FIGURE 1

TABLE 1 - EXISTING FLOW CONDITIONS

Drainage Outlet	Return Period (yr)	Peak Flow (cms.)
East Basin	2	0.05
	100	0.27
Centre Basin (at culvert)	2	0.14
	100	0.64
West Centre Basin (behind school)	2	0.20
	100	1.03

Barber Street

Constraint Area 1 is located north of the intersection with Central Street. Both local ditches have low spots which do not have positive drainage. These areas experience considerable ponding. Constraint Area 2 is the south ditch along Central Street. There is a high point approximately 100 metres east of the intersection which results in ponding of flows at the outlet of the culvert crossing adjacent the intersection.

Franklin Street

Constraint Area 3 is the local channel and culvert which directs drainage from Franklin Street through private property directly to Barclay Street. This area constantly floods. Constraint Area 4 is the west side of Franklin Street. Local regrading has removed the roadside ditches resulting in the street drainage flowing to the west impacting the local homeowner adjacent the intersection with Central Street.

Centre Basin Culvert

The local culvert is in need of replacement and the sizing of the structure will cause impacts either upstream or downstream. Constraint Area 5 is the local drainage path immediately upstream of the existing culvert which floods during severe events. Constraint Area 6 is the local drainage path downstream of the existing culvert. This drainage path consists of a shallow ditch which overtops frequently. The next downstream culvert is a shallow perched culvert with very little grade which is impacted with larger flows.

Victoria Street

Constraint Area 7 is the local ponding at the intersection of Victoria Street and Central Street. There is no defined ditch system at this location. This location forms the boundary between two drainage basins.

Wixson Street

Constraint Area 8 comprises a poor surface drainage route along Wixson Street and also once the surface drainage reaches the intersection with Central Street. At present surface drainage consists of sheet flow with no defined swale or ditch.

West of Claremont Public School

Constraint Area 9 consists of the local ditch along the south side of Central Street. There is a steep embankment which is being slowly undermined by this ditch. The present slope is very steep and is a potential future erosion hazard.

3 - HYDROLOGY

The hydrologic analysis focused on two main issues which included the effect at the existing outfalls due to changes within the Central Street ROW and the effect of these same outfalls from drainage improvements for external areas. All drainage alternatives and the existing conditions were modelled using OTTHYMO.89. This model allowed for the assessment of very small flows (1.0 l/sec) and short time steps (1 min). The model also has the flexibility to divert flows and to separate flows in the storm sewer and identify flows remaining at the road surface.

For the most part, this exercise consisted of a micro-drainage analyses which resulted in the set up of small drainage areas. The Central Street ROW was isolated in the analysis in order to assess the impact of the changes in the road section. The proposed road changes maintained the ditch system within the ROW. The ditch changes include minor realignment and the addition of swales in areas where the road and sidewalk are at the same elevation.

To assess the road changes, the total imperviousness ratio was adjusted by 25% to account for the additional pavement. The resulting flows for the proposed road changes do not increase flows at the outlets from existing conditions. Table 1 shows the flows for existing conditions at the three main outlet locations. All the flow comparisons for other drainage alternatives are discussed in Section 5. Summary output files for the modelling are provided in the Appendix.

4 - WATER QUALITY CONSIDERATIONS

All drainage outlets from the Central Street ROW eventually discharge into Mitchell Creek, a tributary of Duffins Creek. The three main outlets discharge into natural drainage paths which are of sufficient length to provide excellent treatment based on the volumes of flows involved.

The general requirements for water quality for road reconstruction projects is to provide appropriate treatment for the new segment of paved surface. The road rehabilitation proposed will increase the road section from 6.0 metres to 7.5 metres in width. Over the length of the project, a 25 mm storm would generate less than 50 m^3 of volume for treatment for this new paved area.

The means of providing water quality treatment are best suited to using measures that introduce treatment "at-source" where possible. Measures which address surface runoff-treatment for road sections utilize a ditch system with enhanced swales where possible. In the case of Central Street, water quality treatment can best be achieved by introducing an improved system of ditches and swales which direct runoff away from paved areas.

The appropriate road design should maximize the distance that runoff must pass through ditch systems prior to reaching the existing outlets. The design should also isolate runoff from external drainage areas from impacting these ditch systems where possible. At present, the flows within the existing ditches are small unless external flows are being conveyed.

Also, appropriate sediment controls are required during construction in order to protect the downstream areas. These details will be discussed further with the review of various alternatives in Section 5.

5 - ALTERNATIVE EVALUATION

Several alternatives were investigated to mitigate existing drainage problems in the Town of Claremont. The investigation involved a twofold approach where an overall drainage servicing strategy was set for the runoff within the Central Street ROW and secondly measures were screened for dealing with issues external to the road.

5.1 Traditional Approach

In earlier decades, road improvements through the Town of Claremont would include replacement of the road base, the installation of curb and gutter, and the replacement of ditches with storm sewers. To alleviate external drainage problems, the storm sewer would be oversized to convey future flows which would involve stubs from the sewer to the side streets. The storm sewer would outlet at the nearest culvert crossing to a local stream. The local streams through the Town of Claremont do not have the capacity to convey any additional flows without the implementation of appropriate SWM controls.

The Region usually applies a 10 year return period when designing storm sewers to service roads. In this case, the flows from external areas which eventually drain to Central Street would have to be included in any sewer design. Applying a 10 year design to the entire contributing area results in sewer sizes which are prohibitive. Conveying the external flows plus introducing curb and gutter on Central Street increased flows at the outlets substantially. Other considerations included reducing the return period of the design and applying other non-standard drainage features are addressed in subsequent options.

5.2 Modified Traditional Approach

This alternative is similar to the traditional approach except that the storm sewer is realigned to convey all flows to the west directly to the Mitchell Creek tributary at the west end of the study area. This particular alternative ensures there are no increased flows at the three present outlets in the study area. This alternative would require an end-of-pipe facility at the new outlet which would have to be located in the flood plain of the creek. There is no way to provide a positive continuous overland flow route, therefore the three existing outlets would still operate during more severe storms. This alternative is the most expensive option with the most prohibitive impacts by introducing all flows to one outlet.

5.3 "Natural Drainage" Approach

This alternative involves no additional curb and gutter than presently exists with the exception of some local improvements to existing curb at the Central Street and Old Brock Road intersection. All drainage improvements within the Central Street ROW are to provide conveyance by ditch or swale unless positive drainage cannot be achieved by this technique (i.e., Barber Street). Where full road ditches cannot be developed a shallow swale will be provided. The base of the road shoulder will be drained by weeping tile where there is not a positive drainage outlet.

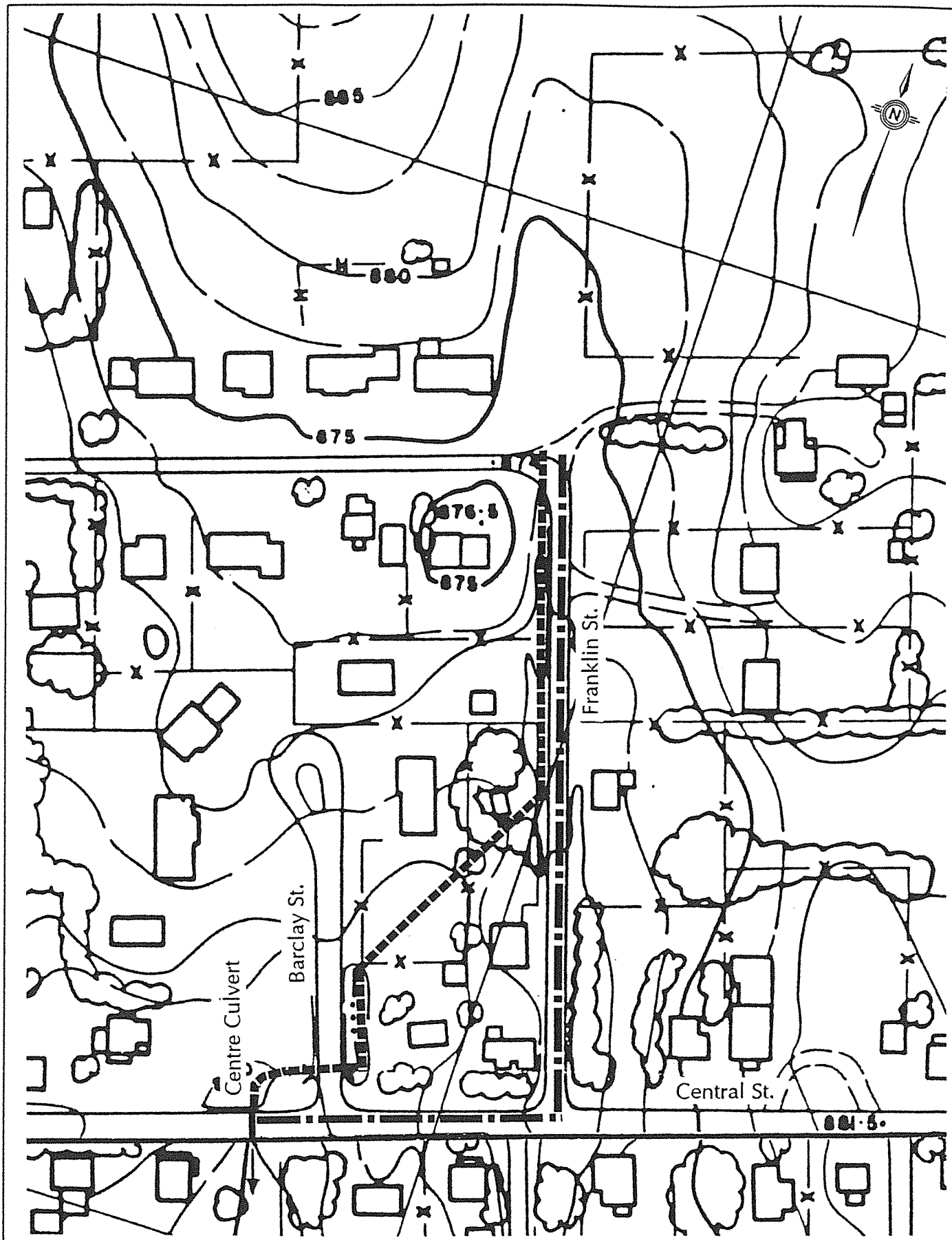
It was determined that this approach would be used for the collection and treatment of drainage in the Central Street ROW. The improvements and enhancements to the local ditch system ensured that treatment of runoff was maximized "at source" prior to reaching the three present outlets. The intent was to also maintain the present rural character of the community and to repair the existing road in an economical fashion. A key drainage consideration was how to deal with the external drainage constraints which were important to the local homeowners. These subsequent alternatives all utilize ditches/swale to deal with local Central Street drainage. Other features were also investigated.

5.3.1 Centre Basin Culvert Replacement

If the Region only had to address the drainage within the Central Street ROW, the only other work required would be the replacement of the existing culvert west of the Barclay Street intersection. This culvert has been identified for replacement by Region maintenance staff. The replacement culvert can be a small precast box culvert (0.9 m x 1.8 m) which would be embedded. Although the local drainage path from the culvert is a very small shallow ditch, the intent would be to provide a reasonable natural bottom with additional support and erosion protection. Small diameter stone would be used to form the local bottom treatment.

5.3.2 Franklin Street Drainage Realignment

The Region of Durham and the Town of Pickering have agreed to deal with the flooding concerns of the homeowners between Barclay Street and Franklin Street. Presently the surface drainage from the north end of Franklin Street is directed through private property to Barclay Street. In order to provide protection this drainage should be directed southerly on Franklin Street directly to Central Street.

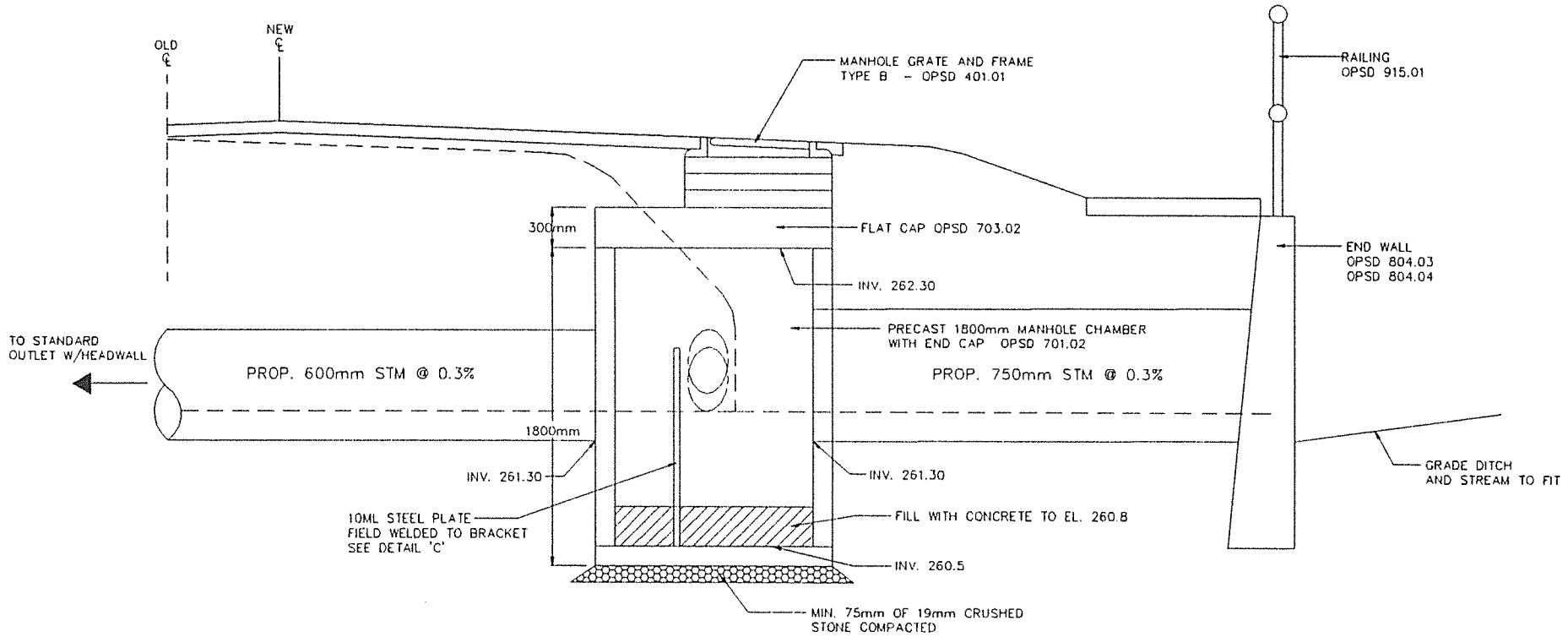


Drainage Routes

Existing

Proposed

		Franklin Street Realignment	paul theil associates limited consulting engineers	FIGURE 3



SECTION A–A

N.T.S

Diversion Manhole Detail

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FIGURE 4

There is no available space in the Franklin Street R.O.W. for the provision of an adequate ditch system. Therefore, a storm sewer would have to be considered along Franklin Street and a subsequent storm sewer installed under Central Street to link the Franklin Street storm sewer to the nearest outlet which is the Centre basin culvert west of Barclay Street. Figure 3 shows the present route and proposed storm sewer.

Through hydrologic modelling it has been determined that the longer storm sewer length provides the same response time as the present shorter ditch/CMP system. The summary modelling runs are provided in the appendix. The storm sewer has been sized to provide a 5 year storm conveyance for existing development. The storm sewer also can convey the 100 year pre-development flow from the 11 ha. parcel north of Franklin Street. These two flow conditions are not linearly added since the inlet time for the predevelopment flows is much longer than for the developed area. Any future development north of Franklin Street must provide controls to pre-development conditions.

5.3.3 Franklin Street Drainage Realignment - Partial Diversion

Although it has been determined that the Franklin Street drainage realignment does not aggravate flow conditions in the Centre basin creek, the downstream homeowners requested some provisions to alleviate the flooding that presently occurs. Every homeowner expressed a desire to maintain an appropriate baseflow in the local drainage course, however, they would prefer less flow for the more severe events.

The hydrologic investigation focused on a partial diversion of flows at the present culvert location. A DIVERT HYD was introduced into the model to reflect the splitting of flows to allow for a small portion to continue in a new storm sewer to be linked to the existing sewer at Old Brock Road. The modelling involved several iterations to determine whether flow conditions could be maintained similar to existing conditions up to the 2 year event and the flows at the 100 year event would be reduced in the Centre basin. The additional flows introduced into the Centre West basin, however, would have to not create an adverse impact at the outlet or impact present conveyance conditions in the system.

The culvert would be replaced by a special control manhole with a weir that would control the flows that would outlet into the Centre basin. The west storm sewer outlet would be vertically offset to ensure the correct split of flows. The local drainage entering the present culvert would be reduced since the local drainage area would be reduced by 85%. Figure 4 shows the proposed arrangement.

5.3.4 Barber Street Drainage

The local drainage constraints at Barber Street were investigated separately from the other areas. In order to drain the low points north of the intersection, two options were first considered.

- regrading the ditch system in the Central Street ROW
- installing a storm sewer

Lowering the existing ditch system on the north side of Central Street would impact several mature trees on the east limit of the Town. To direct all drainage to the south side of Central Street would require the existing culvert crossing to be lowered and the ditch would have to be entirely regraded as far as the Brock Road Bypass and further to the south along Brock Road.

This ditch would have to be lowered by approximately 1 metre in certain locations. The driveway culverts would have to lengthened and lowered with the ditch to be realigned.

The provision of a storm sewer would eliminate major regrading to the ditch, however, the storm sewer would have to be extended to the east an additional 200 metres in order to have an adequate outlet. It was decided to investigate the possibility of using a storm sewer which would convey flows to the west into the other drainage network. Several iterations were investigated in order to balance the diversion at the control manhole as well as the impact on flows in the Central West basin. An adequate flow balance could be achieved only by limiting the flow in the storm sewer to 70 l/sec. This flow rate constitutes only a 2 year event. Additional flows would temporarily pond in the ditch systems. The maximum ponding would be 0.3 m prior to flows spilling to the east as well. This is a considerable improvement over present conditions since there are two locations which continuously pond with no means of drainage.

The hydrologic modelling for this analysis is also provided in the appendix. The 2 year flow is maintained at the Centre basin outlet and is increased only by 20 l/sec at the Centre West basin outlet (behind Claremont Public School). The 100 year flow is reduced in the Centre basin outlet and is contained within the pipe network on Canso Drive thereby not increasing the overland flow component. Table 2 shows the proposed flows at the main outlets for all the drainage alternatives.

TABLE 2 - PROPOSED FLOW CONDITIONS

Drainage Outlet	Return Period (yr)	Peak Flow (cms.)	Alternative 'C' Franklin St. Realignment	Alternative 'D' Barber St Addition
East Basin	2	0.05	-	-
	100	0.27	-	-
Centre Basin (at culvert)	2	0.14	0.10	0.14
	100	0.64	0.31	0.42
West Centre Basin (behind school)	2	0.20	0.20	0.22
	100	1.03	1.24	1.20

5.4 Erosion and Sediment Controls

During construction the following erosion and sediment controls should be implemented:

i)	rock check dams	–	installed downstream of the existing outfalls.
ii)	straw bales	–	along the new swales and ditches until stabilized since there are only low flows generated within the Central Street R.O.W.
iii)	catchbasin stone filters	–	the lower existing catchbasins along the south side of Central Street between Canso Drive and Old Brock Road.

The specific measures will follow the details provided in the Erosion and Sediment Control Guidelines for Metro Toronto Region Conservation Authority.

6 – CONCLUSIONS AND RECOMMENDATIONS

The following conclusions can be made concerning the proposed road rehabilitation project based on the hydrologic analysis:

- the proposed rehabilitation includes construction of an additional 1.5 metre road width which will bring the road up to present day standards. This will result in the realignment of roadside ditches.
- improvements to roadside ditches and the introduction of shallow swales between the road shoulder and existing sidewalk will enhance the existing surface runoff treatment.
- all road surface in the study area will be directed into surface drainage paths for some treatment prior to reaching the outfalls with the exception of the present area adjacent Old Brock Road intersection.
- all external drainage that impacts the Central Street R.O.W. can be collected independently prior to entering the realigned ditch and swale system.
- the local homeowners have identified a need for relief from the present flooding in the Centre basin both upstream and downstream of the Central Street culvert.
- the flow contribution from the Central Street R.O.W. is a small component of the total flow at the existing outfalls.

- the low areas requiring drainage relief adjacent the Barber Street intersection can be best serviced by a short storm sewer to the west as opposed to extensive ditch work to the east.
- a partial diversion of flows with a control manhole replacing the Centre basin culvert can reduce the incidents of flooding locally and still maintain appropriate base flow and low return period flow characteristics in this basin. The small portion of flow which is diverted during severe events can easily be conveyed within the sewer system in the Centre West basin.
- a standard 10 year storm sewer design is not warranted to achieve a reasonable level of flood protection and the existing "nuisance" flooding problems can be alleviated with a 2 to 5 year return period storm sewer design.
- there are sections of the existing storm sewer that can convey the 100 year storm because of the slopes of the pipe.
- the proposed road improvements do not increase the flows at the existing outlets. The storm sewer improvements to alleviate existing flooding problems external to the Central Street R.O.W. result in minor changes to flows.

The following recommendations can be made:

- the undeveloped area at the north end of Franklin Street will require stormwater management controls to reduce post development flows to predevelopment conditions for all return periods up to and including the 100 year event.
- a partial diversion of flows at the Centre basin crossing will reduce flooding impacts locally. These diverted flows do not change the peak flow conditions at the outfall behind Claremont Public School for the lower return periods and increase flows by less than 10 percent over a 5 minute period for the 100 year event.
- local flooding along Franklin Street is best alleviated with the installation of a storm sewer. The additional length of the storm sewer route offsets any efficiency in flow conveyance due to a smooth pipe resulting in the same overall travel time to the Centre basin outlet.
- the local flooding adjacent the Barber Street intersection should be alleviated with a short storm sewer to the west to link with the new storm sewer from Franklin Street. This storm sewer should only convey 2 year flows in order to maintain an effective balance with the partial flow diversion scheme.

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Project No. 9471

Design Brief

Date MAY 1996

Project Title REG. RD. Nº 5 - CLAREMONT

Sheet _____ of _____

Subject EAST DRAINAGE BASIN

Designed _____

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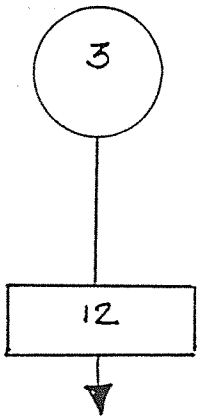
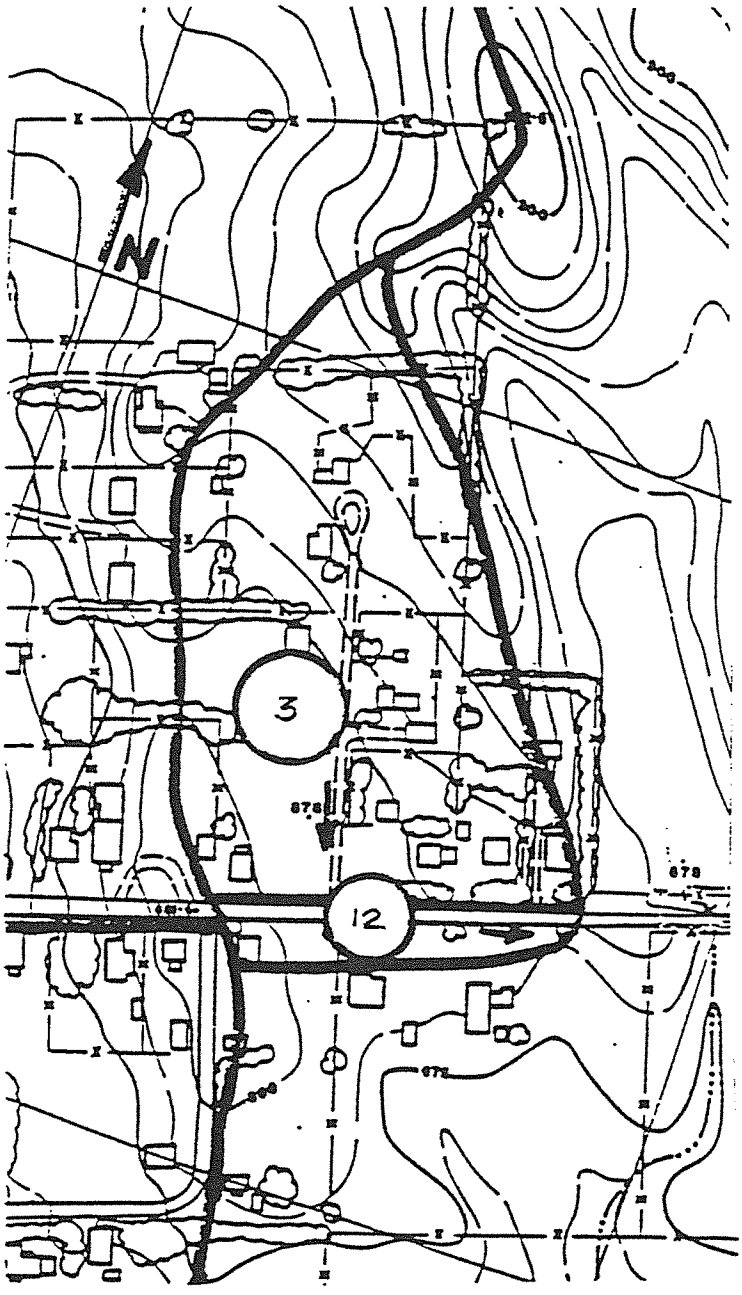


PREAST. SUM – existing conditions
PSEAST. SUM – post conditions.

This confirms the proposed road works do not change flow conditions This analysis is prior to confirming any external drainage alternatives.



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PRINT HYD	0003	3	1.0	2.68	.05	.75	6.82	n/a	.000

FINISH

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2.1.4 West Basin

This area includes all the drainage to the road from Claremont Public School to the west study limit boundary at the culvert.

2.2 Drainage Impacts

Two types of drainage impacts were determined which include:

- impacts within existing right-of-way
- external drainage systems and impacts which may affect road design

2.2.1 Drainage Constraints Within Central Street ROW

The proposed road rehabilitation involves pulverizing the existing road surface and adding additional granular A (75 mm) and placing new asphalt top (95 mm). The existing pavement width of 6.0 m is to be changed to a 7.5 m width with full shoulder where possible. This new road section will reduce the space between the road shoulder and sidewalk through the study area. The base of the road shoulder will be extended from 3 to 5 metres beyond its existing point in certain locations.

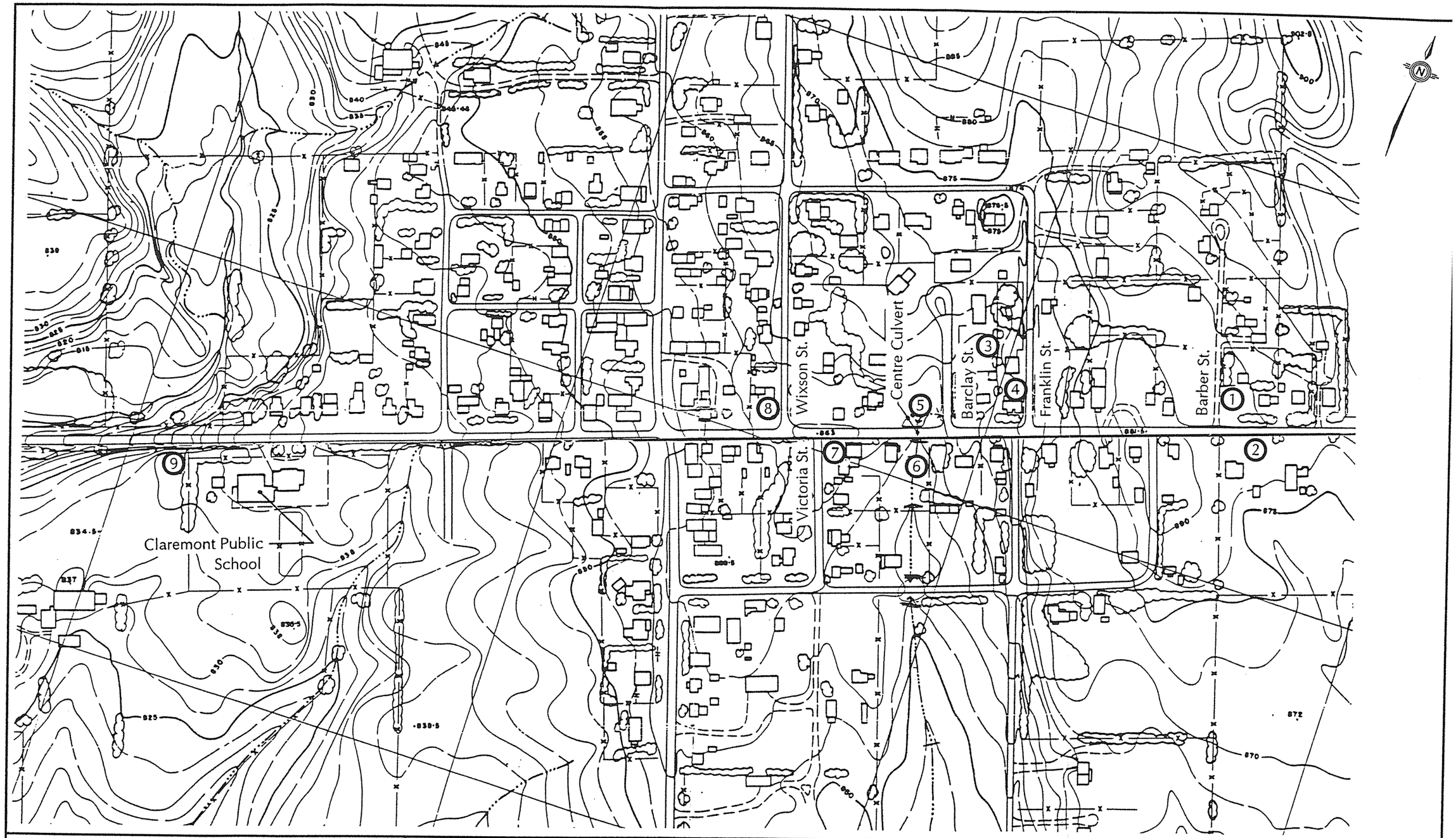
- west of Barclay Street intersection.
- both west and east of the Barber Street intersection

Road shoulder improvements will result in ditch realignment and driveway culvert relocations.

2.2.2 External Drainage Constraints

A list of external drainage constraints was compiled from field reconnaissance with Region staff and with staff from the Town of Pickering. Previous drainage complaint documents were augmented with interviews with homeowners during the Public Workshop. Figure 2 references the locations of the various constraint areas. These areas include:

- Barber Street ..... -1, 2
- Franklin Street ..... -3, 4
- Centre basin culvert ..... -5, 6
- Victoria Street ..... -7
- Wixson Street ..... -8
- West of Claremont Public School ..... -9



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Drainage Constraint Features

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FIGURE 2

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O   O    T      T    H   H   Y Y   MM MM  O   O   * * * 1989b * * *
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Design Brief

Date MAY 1996

Project Title REG. RD. No. 5 - CLAREMONT

Sheet _____ of _____

Subject CENTRE DRAINAGE BASIN

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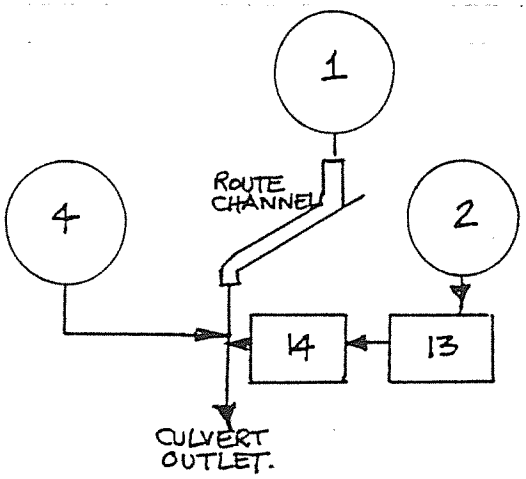
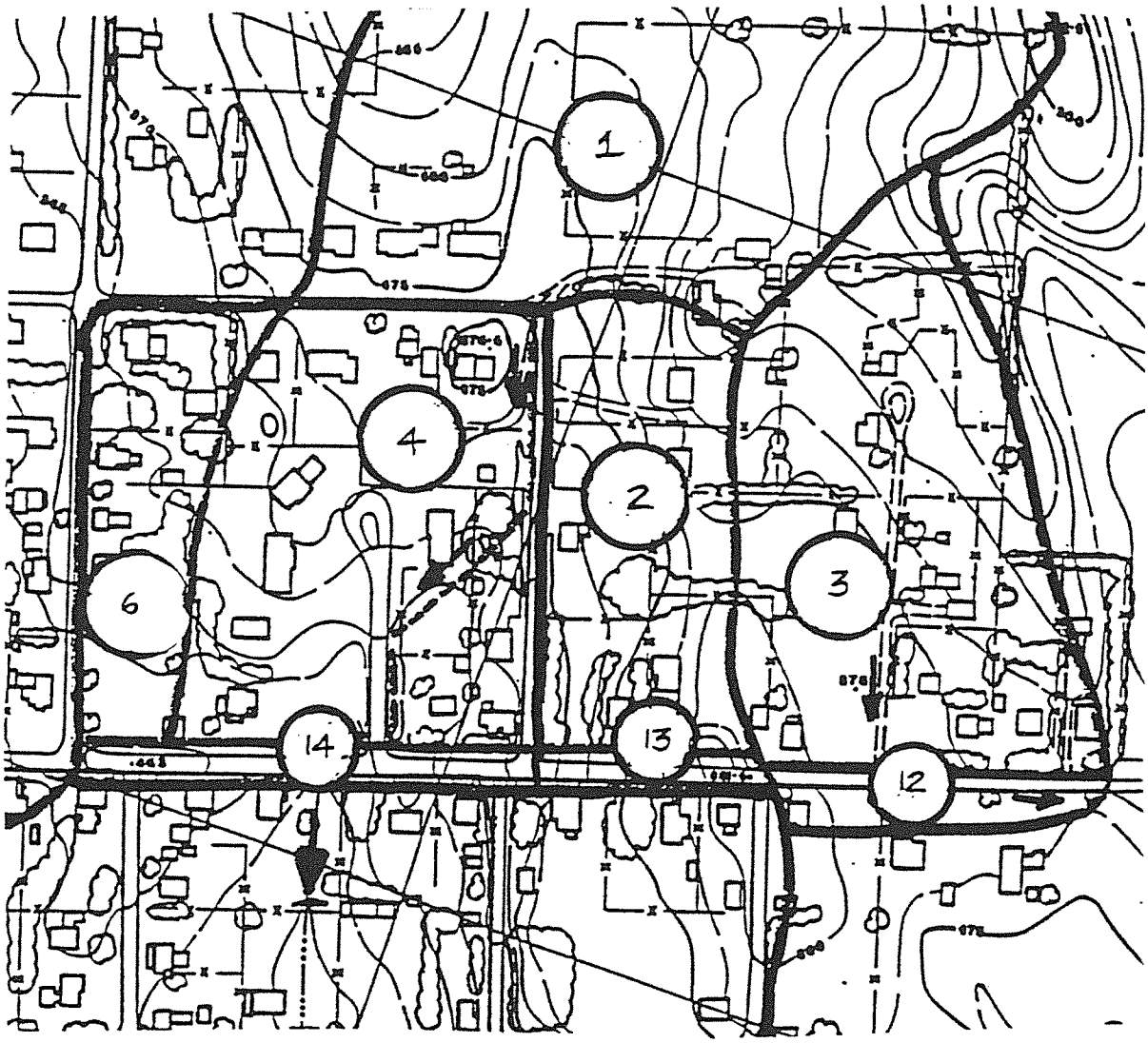


PRCEN.SUM – existing conditions
PSCEN.SUM – road modified only for diversions see other alternatives.



```
 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    I N T E R H Y M O
O   O    T      T    H   H   Y Y   MM MM  O   O   * * * 1989b * * *
O   O    T      T    HHHHH    Y    M M M  O   O
O   O    T      T    H   H    Y    M   M  O   O
 OOO     T      T    H   H    Y    M   M   OOO    cC-515990500006
```


***** S U M M A R Y O U T P U T *****

Input filename: prcen.dat
Output filename: prcen.out
Summary filename: prcen.sum

DATE: 11-03-1995 TIME: 17:25:03

USER: _____

COMMENTS: _____

****
** SIMULATION NUMBER: 1 **
****

W/E	COMMAND	HYD ID		DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ .00 hrs									
	READ STORM			5.0						
	[Ptot= 53.52 mm]									
	fname :AES100G.STM									
	remark:AES 100YR 1H GREENWOOD									
	DESIGN NASHYD	0001	1	1.0	11.22	.44	1.27	19.79	.37	.000
	[CN=75.0]									
	[N= 3.0:Tp= .70]									
	CHANNEL[1 : 0001]	0002	2	1.0	11.22	.44	1.32	19.79	n/a	.000
*	DESIGN STANDHYD	0003	1	1.0	1.39	.13	.73	23.47	.44	.000
	[I%= 6.1:S%= 2.00]									
	DUHYD	0003	1	1.0	1.39	.13	.73	23.47	n/a	.000
	MAJOR SYSTEM:	0003	5	1.0	.56	.08	.73	23.47	n/a	.000
	MINOR SYSTEM:	0003	4	1.0	.83	.05	.40	23.47	n/a	.000
*	DESIGN STANDHYD	0006	3	1.0	.08	.01	.62	25.33	.47	.000
	[I%= 5.0:S%= 4.00]									
	ADD [0003 + 0006]	0100	9	1.0	.65	.09	.73	23.71	n/a	.000

	PRINT HYD	0100	9	1.0	.65	.09	.73	23.71	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	2.92	.29	.70	24.48	.46	.000
	ADD [0002 + 0011]	0012	8	1.0	14.14	.52	.98	20.76	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.01	.72	25.33	.47	.000
	ADD [0003 + 0013]	0015	7	1.0	.95	.06	.72	23.71	n/a	.000
	ADD [0100 + 0012]	0110	2	1.0	14.79	.58	.90	20.89	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	15.74	.64	.90	21.06	n/a	.000
	PRINT HYD	0110	1	1.0	15.74	.64	.90	21.06	n/a	.000
	READ STORM			5.0						
	[Ptot= 22.20 mm]									
	fname :AES002G.STM									
	remark:2 YEAR 1 HOUR AES EVENT - GREENWOOD									
	DESIGN NASHYD [CN=75.0]	0001	1	1.0	11.22	.09	1.30	4.07	.18	.000
	[N= 3.0:Tp= .70]									
	CHANNEL[1 : 0001]	0002	2	1.0	11.22	.09	1.33	4.06	n/a	.000
*	DESIGN STANDHYD [I%= 6.1:S%= 2.00]	0003	1	1.0	1.39	.02	.82	5.61	.25	.000
	DUHYD	0003	1	1.0	1.39	.02	.82	5.61	n/a	.000
	MAJOR SYSTEM:	0003	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003	4	1.0	1.39	.02	.82	5.61	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 4.00]	0006	3	1.0	.08	.00	.77	6.06	.27	.000
	ADD [0003 + 0006]	0100	9	1.0	.08	.00	.77	6.06	n/a	.000
	PRINT HYD	0100	9	1.0	.08	.00	.77	6.06	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	2.92	.06	.78	6.13	.28	.000
	ADD [0002 + 0011]	0012	8	1.0	14.14	.12	1.15	4.49	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.00	.90	6.07	.27	.000
	ADD [0003 + 0013]	0015	7	1.0	1.51	.02	.90	5.65	n/a	.000
	ADD [0100 + 0012]	0110	2	1.0	14.22	.12	1.13	4.50	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	15.74	.14	1.03	4.61	n/a	.000
	PRINT HYD	0110	1	1.0	15.74	.14	1.03	4.61	n/a	.000

FINISH

	PRINT HYD	0100	9	1.0	.65	.09	.73	23.90	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	2.92	.29	.70	24.48	.46	.000
	ADD [0002 + 0011]	0012	8	1.0	14.14	.52	.98	20.76	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.01	.70	26.82	.50	.000
	ADD [0003 + 0013]	0015	7	1.0	.95	.06	.70	23.90	n/a	.000
	ADD [0100 + 0012]	0110	2	1.0	14.79	.58	.90	20.90	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	15.74	.64	.90	21.08	n/a	.000
	PRINT HYD	0110	1	1.0	15.74	.64	.90	21.08	n/a	.000
	READ STORM [Ptot= 22.20 mm] fname :AES002G.STM remark:2 YEAR 1 HOUR AES EVENT - GREENWOOD			5.0						
	DESIGN NASHYD [CN=75.0] [N= 3.0:Tp= .70]	0001	1	1.0	11.22	.09	1.30	4.07	.18	.000
	CHANNEL[1 : 0001]	0002	2	1.0	11.22	.09	1.33	4.06	n/a	.000
*	DESIGN STANDHYD [I%= 6.1:S%= 2.00]	0003	1	1.0	1.39	.02	.82	5.61	.25	.000
	DUHYD	0003	1	1.0	1.39	.02	.82	5.61	n/a	.000
	MAJOR SYSTEM:	0003	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003	4	1.0	1.39	.02	.82	5.61	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 4.00]	0006	3	1.0	.08	.00	.77	6.57	.30	.000
	ADD [0003 + 0006]	0100	9	1.0	.08	.00	.77	6.57	n/a	.000
	PRINT HYD	0100	9	1.0	.08	.00	.77	6.57	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	2.92	.06	.78	6.13	.28	.000
	ADD [0002 + 0011]	0012	8	1.0	14.14	.12	1.15	4.49	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.00	.82	6.57	.30	.000
	ADD [0003 + 0013]	0015	7	1.0	1.51	.03	.82	5.69	n/a	.000
	ADD [0100 + 0012]	0110	2	1.0	14.22	.12	1.13	4.50	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	15.74	.14	1.03	4.62	n/a	.000
	PRINT HYD	0110	1	1.0	15.74	.14	1.03	4.62	n/a	.000

FINISH

*	DESIGN STANDHYD [I%= 9.8:S%= 2.00]	0009	3	1.0	1.19	.11	.72	23.98	.45	.000
	DUHYD	0009	3	1.0	1.19	.11	.72	23.98	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.11	.72	23.98	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.42	.73	23.85	n/a	.000
*	PIPE [7 : 0012] {DiamUsed= 653.mm}	0013	2	1.0	4.37	.42	.75	23.85	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.05	.55	30.68	.57	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.46	.72	24.43	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.46	.75	24.42	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.16	.70	23.79	.44	.000
	DUHYD	0018	4	1.0	1.70	.16	.70	23.79	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.09	.03	.70	23.79	n/a	.000
	MINOR SYSTEM:	0018	6	1.0	1.61	.13	.55	23.79	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.38	.60	.75	24.26	n/a	.000
	ADD [0018 + 0009]	0021	2	1.0	.09	.03	.70	23.79	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.61	.15	.70	24.97	.47	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	6	1.0	1.58	.17	.63	25.04	.47	.000
	DUHYD	0031	6	1.0	1.58	.17	.63	25.04	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.17	.63	25.04	n/a	.000
	ADD [0031 + 0028]	0034	5	1.0	1.61	.15	.70	24.97	n/a	.000
*	DESIGN STANDHYD [I%=75.0:S%= 2.65]	0035	4	1.0	.08	.02	.50	44.45	.83	.000
	DUHYD	0035	4	1.0	.08	.02	.50	44.45	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.02	.50	44.45	n/a	.000
	ADD [0031 + 0035]	0033	4	1.0	1.66	.18	.63	25.94	n/a	.000
	ADD [0035 + 0034]	0034	9	1.0	1.61	.15	.70	24.97	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.61	.15	.70	24.97	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	3.27	.33	.65	25.46	n/a	.000
	DUHYD	0100	7	1.0	3.27	.33	.65	25.46	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000

	ADD [0003 + 0008]	0150	10	1.0	12.61	.47	1.18	20.20	n/a	.000
	PRINT HYD	0100	9	1.0	.08	.01	.62	26.82	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	1.53	.15	.65	24.48	.46	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.01	.70	26.82	.50	.000
	ADD [0150 + 0013]	0015	7	1.0	12.73	.47	1.17	20.26	n/a	.000
	ADD [0100 + 0011]	0110	2	1.0	1.61	.16	.65	24.60	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	14.35	.55	.97	20.75	n/a	.000
	PRINT HYD	0110	1	1.0	14.35	.55	.97	20.75	n/a	.000
	DIVERT HYD	0110	1	1.0	14.35	.55	.97	20.75	n/a	.000
	Outflow	0152	2	1.0	8.35	.31	.97	20.75	n/a	.000
	Outflow	0153	3	1.0	6.00	.23	.97	20.75	n/a	.000
	PRINT HYD	0152	2	1.0	8.35	.31	.97	20.75	n/a	.000
**	PIPE [3 : 0153] {DiamUsed= 450.mm}	0155	2	1.0	6.00	.23	.97	20.75	n/a	.000
**	PIPE [2 : 0155] {DiamUsed= 450.mm}	0156	6	1.0	6.00	.23	.98	20.75	n/a	.000
	PRINT HYD	0156	6	1.0	6.00	.23	.98	20.75	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 3.76]	0001	1	1.0	2.09	.20	.70	23.29	.44	.000
*	DESIGN STANDHYD [I%= 9.1:S%= 2.77]	0004	3	1.0	1.09	.11	.70	24.79	.46	.000
	ADD [0001 + 0004]	0005	4	1.0	3.18	.31	.70	23.80	n/a	.000
	DUHYD	0005	4	1.0	3.18	.31	.70	23.80	n/a	.000
	MAJOR SYSTEM:	0005	1	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0005	3	1.0	3.18	.31	.70	23.80	n/a	.000
*	PIPE [3 : 0005] {DiamUsed= 540.mm}	0008	2	1.0	3.18	.31	.73	23.80	n/a	.000
*	DESIGN STANDHYD [I%= 9.8:S%= 2.00]	0009	3	1.0	1.19	.11	.72	23.98	.45	.000
	DUHYD	0009	3	1.0	1.19	.11	.72	23.98	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.11	.72	23.98	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.42	.73	23.85	n/a	.000
*	PIPE [7 : 0012] {DiamUsed= 653.mm}	0013	2	1.0	4.37	.42	.75	23.85	n/a	.000

	MINOR SYSTEM:	0100	6	1.0	3.27	.33	.65	25.46	n/a	.000
	---									
*	DESIGN STANDHYD [I%=19.0:S%= 2.10]	0036	4	1.0	.48	.06	.63	29.71	.56	.000
	---									
*	DESIGN STANDHYD [I%=75.0:S%= 2.65]	0039	3	1.0	.05	.01	.50	44.43	.83	.000

	ADD [0036 + 0039]	0103	9	1.0	.53	.07	.55	31.07	n/a	.000

	ADD [0103 + 0100]	0104	4	1.0	.53	.07	.55	31.07	n/a	.000

	ADD [0104 + 0100]	0103	9	1.0	3.80	.40	.65	26.24	n/a	.000

	DUHYD	0103	9	1.0	3.80	.40	.65	26.24	n/a	.000
	MAJOR SYSTEM:	0103	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0103	6	1.0	3.80	.40	.65	26.24	n/a	.000

	DESIGN STANDHYD [I%=75.0:S%= 1.46]	0045	3	1.0	.13	.03	.50	44.46	.83	.000

	ADD [0045 + 0103]	0105	10	1.0	.13	.03	.50	44.46	n/a	.000

	ADD [0020 + 0103]	0047	3	1.0	10.18	.99	.70	25.00	n/a	.000

	ADD [0021 + 0105]	0049	4	1.0	.22	.05	.67	35.73	n/a	.000

	ADD [0049 + 0047]	0200	1	1.0	10.40	1.03	.70	25.23	n/a	.000

	DUHYD	0200	1	1.0	10.40	1.03	.70	25.23	n/a	.000
	MAJOR SYSTEM:	0200	6	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0200	2	1.0	10.40	1.03	.70	25.23	n/a	.000

	PRINT HYD	0200	2	1.0	10.40	1.03	.70	25.23	n/a	.000
	---									
*	PRINT HYD	0200	6	1.0	.00	.00	.00	.00	n/a	.000

	READ STORM [Ptot= 22.20 mm]			5.0						
	fname :AES002G.STM									
	remark:2 YEAR 1 HOUR AES EVENT - GREENWOOD									
	---									
*	DESIGN STANDHYD [I%= 8.6:S%= 3.76]	0001	1	1.0	2.09	.04	.78	5.75	.26	.000
	---									
*	DESIGN STANDHYD [I%= 9.1:S%= 2.77]	0004	3	1.0	1.09	.02	.78	6.23	.28	.000

	ADD [0001 + 0004]	0005	4	1.0	3.18	.06	.78	5.91	n/a	.000

	DUHYD	0005	4	1.0	3.18	.06	.78	5.91	n/a	.000
	MAJOR SYSTEM:	0005	1	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0005	3	1.0	3.18	.06	.78	5.91	n/a	.000

	PIPE [3 : 0005] {DiamUsed= 525.mm}	0008	2	1.0	3.18	.06	.82	5.91	n/a	.000
	---									
*	DESIGN STANDHYD [I%= 9.8:S%= 2.00]	0009	3	1.0	1.19	.02	.80	6.04	.27	.000

	DUHYD	0009	3	1.0	1.19	.02	.80	6.04	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.02	.80	6.04	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.08	.80	5.94	n/a	.000
	PIPE [7 : 0012] {DiamUsed= 600.mm}	0013	2	1.0	4.37	.08	.82	5.94	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.01	.53	9.23	.42	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.09	.80	6.22	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.09	.82	6.22	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.03	.80	5.89	.27	.000
	DUHYD	0018	4	1.0	1.70	.03	.80	5.89	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0018	6	1.0	1.70	.03	.80	5.89	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.48	.11	.82	6.14	n/a	.000
	ADD [0018 + 0009]	0021	2	.0	.00	.00	.00	6.22	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.61	.03	.77	6.55	.29	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	6	1.0	1.58	.03	.77	6.30	.28	.000
	DUHYD	0031	6	1.0	1.58	.03	.77	6.30	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.03	.77	6.30	n/a	.000
	ADD [0031 + 0028]	0034	5	1.0	1.61	.03	.77	6.55	n/a	.000
	DESIGN STANDHYD [I%=75.0:S%= 2.65]	0035	4	1.0	.08	.01	.50	17.02	.77	.000
	DUHYD	0035	4	1.0	.08	.01	.50	17.02	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.01	.50	17.02	n/a	.000
	ADD [0031 + 0035]	0033	4	1.0	1.66	.04	.75	6.80	n/a	.000
	ADD [0035 + 0034]	0034	9	1.0	1.61	.03	.77	6.55	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.61	.03	.77	6.55	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	3.27	.07	.77	6.68	n/a	.000
	DUHYD	0100	7	1.0	3.27	.07	.77	6.68	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0100	6	1.0	3.27	.07	.77	6.68	n/a	.000
*	DESIGN STANDHYD	0036	4	1.0	.48	.01	.55	8.47	.38	.000

	[I%=19.0:S%= 2.10]								
	---								
*	DESIGN STANDHYD	0039	3	1.0	.05	.00	.50	17.01	.77	.000
	[I%=75.0:S%= 2.65]								

	ADD [0036 + 0039]	0103	9	1.0	.53	.02	.53	9.26	n/a	.000

	ADD [0103 + 0100]	0104	4	1.0	.53	.02	.53	9.26	n/a	.000

	ADD [0104 + 0100]	0103	9	1.0	3.80	.08	.75	7.04	n/a	.000

	DUHYD	0103	9	1.0	3.80	.08	.75	7.04	n/a	.000
	MAJOR SYSTEM:	0103	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0103	6	1.0	3.80	.08	.75	7.04	n/a	.000

	DESIGN STANDHYD	0045	3	1.0	.13	.01	.52	17.03	.77	.000
	[I%=75.0:S%= 1.46]								

	ADD [0045 + 0103]	0105	10	1.0	.13	.01	.52	17.03	n/a	.000

	ADD [0020 + 0103]	0047	3	1.0	10.27	.19	.78	6.47	n/a	.000

	ADD [0021 + 0105]	0049	4	1.0	.13	.01	.52	17.03	n/a	.000

	ADD [0049 + 0047]	0200	1	1.0	10.40	.20	.78	6.60	n/a	.000

	DUHYD	0200	1	1.0	10.40	.20	.78	6.60	n/a	.000
	MAJOR SYSTEM:	0200	6	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0200	2	1.0	10.40	.20	.78	6.60	n/a	.000

	PRINT HYD	0200	2	1.0	10.40	.20	.78	6.60	n/a	.000
	---								
*	PRINT HYD	0200	6	1.0	.00	.00	.00	.00	n/a	.000

FINISH

==========

```
 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    I N T E R H Y M O
O   O    T      T    H   H   Y Y   MM MM  O   O   * * * 1989b * * *
O   O    T      T    HHHHH    Y    M M M  O   O
O   O    T      T    H   H    Y    M   M  O   O
 OOO     T      T    H   H    Y    M   M   OOO    cC-515990500006
```


***** S U M M A R Y O U T P U T *****

Input filename: PSWCEN.DAT
Output filename: PSWCEN.OUT
Summary filename: PSWCEN.SUM

DATE: 11-03-1995 TIME: 17:25:03

USER: _____

COMMENTS: _____

****
** SIMULATION NUMBER: 1 **
****

W/E	COMMAND	HYD ID		DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ .00 hrs									
	READ STORM			5.0						
	[Ptot= 53.52 mm]									
	fname :AES100G.STM									
	remark:AES 100YR 1H GREENWOOD									
*	DESIGN STANDHYD	0001	1	1.0	2.09	.20	.70	23.29	.44	.000
	[I%= 8.6:S%= 3.76]									
*	DESIGN STANDHYD	0004	3	1.0	1.09	.11	.70	24.79	.46	.000
	[I%= 9.1:S%= 2.77]									
	ADD [0001 + 0004]	0005	4	1.0	3.18	.31	.70	23.80	n/a	.000
	DUHYD	0005	4	1.0	3.18	.31	.70	23.80	n/a	.000
	MAJOR SYSTEM:	0005	1	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0005	3	1.0	3.18	.31	.70	23.80	n/a	.000
*	PIPE [3 : 0005]	0008	2	1.0	3.18	.31	.73	23.80	n/a	.000
	{DiamUsed= 540.mm}									
*	DESIGN STANDHYD	0009	3	1.0	1.19	.11	.72	23.98	.45	.000
	[I%= 9.8:S%= 2.00]									

	DUHYD	0009	3	1.0	1.19	.11	.72	23.98	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.11	.72	23.98	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.42	.73	23.85	n/a	.000
*	PIPE [7 : 0012] {DiamUsed= 653.mm}	0013	2	1.0	4.37	.42	.75	23.85	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.05	.55	30.68	.57	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.46	.72	24.43	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.46	.75	24.42	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.16	.70	23.79	.44	.000
	DUHYD	0018	4	1.0	1.70	.16	.70	23.79	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.09	.03	.70	23.79	n/a	.000
	MINOR SYSTEM:	0018	6	1.0	1.61	.13	.55	23.79	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.38	.60	.75	24.26	n/a	.000
	ADD [0018 + 0009]	0021	2	1.0	.09	.03	.70	23.79	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.61	.15	.70	24.97	.47	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	6	1.0	1.58	.17	.63	25.04	.47	.000
	DUHYD	0031	6	1.0	1.58	.17	.63	25.04	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.17	.63	25.04	n/a	.000
	ADD [0031 + 0028]	0034	5	1.0	1.61	.15	.70	24.97	n/a	.000
*	DESIGN STANDHYD [I%=79.0:S%= 2.65]	0035	4	1.0	.08	.02	.50	45.77	.86	.000
	DUHYD	0035	4	1.0	.08	.02	.50	45.77	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.02	.50	45.77	n/a	.000
	ADD [0031 + 0035]	0033	4	1.0	1.66	.18	.63	26.00	n/a	.000
	ADD [0035 + 0034]	0034	9	1.0	1.61	.15	.70	24.97	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.61	.15	.70	24.97	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	3.27	.33	.65	25.49	n/a	.000
	DUHYD	0100	7	1.0	3.27	.33	.65	25.49	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0100	6	1.0	3.27	.33	.65	25.49	n/a	.000
*	DESIGN STANDHYD	0036	4	1.0	.48	.06	.63	29.71	.56	.000

```
     [I%=19.0:S%= 2.10]
     ------------------
*    DESIGN STANDHYD    0039  3  1.0     .05     .01   .50  45.76  .86    .000
     [I%=79.0:S%= 2.65]
     ------------------
     ADD [0036 + 0039]  0103  9  1.0     .53     .07   .55  31.20  n/a    .000
     ------------------
     ADD [0103 + 0100]  0104  4  1.0     .53     .07   .55  31.20  n/a    .000
     ------------------
     ADD [0104 + 0100]  0103  9  1.0    3.80     .40   .65  26.29  n/a    .000
     ------------------
     DUHYD              0103  9  1.0    3.80     .40   .65  26.29  n/a    .000
        MAJOR SYSTEM:   0103  7  1.0     .00     .00   .00    .00  n/a    .000
        MINOR SYSTEM:   0103  6  1.0    3.80     .40   .65  26.29  n/a    .000
     ------------------
     DESIGN STANDHYD    0045  3  1.0     .13     .03   .50  45.78  .86    .000
     [I%=79.0:S%= 1.46]
     ------------------
     ADD [0045 + 0103]  0105 10  1.0     .13     .03   .50  45.78  n/a    .000
     ------------------
     ADD [0020 + 0103]  0047  3  1.0   10.18     .99   .70  25.02  n/a    .000
     ------------------
     ADD [0021 + 0105]  0049  4  1.0     .22     .05   .67  36.49  n/a    .000
     ------------------
     ADD [0049 + 0047]  0200  1  1.0   10.40    1.03   .70  25.26  n/a    .000
     ------------------
     DUHYD              0200  1  1.0   10.40    1.03   .70  25.26  n/a    .000
        MAJOR SYSTEM:   0200  6  1.0     .00     .00   .00    .00  n/a    .000
        MINOR SYSTEM:   0200  2  1.0   10.40    1.03   .70  25.26  n/a    .000
     ------------------
     PRINT HYD          0200  2  1.0   10.40    1.03   .70  25.26  n/a    .000
     ------------------
*    PRINT HYD          0200  6  1.0     .00     .00   .00    .00  n/a    .000
     ------------------
     READ STORM               5.0
     [ Ptot= 22.20 mm ]
     fname :AES002G.STM
     remark:2 YEAR 1 HOUR AES EVENT - GREENWOOD
     ------------------
*    DESIGN STANDHYD    0001  1  1.0    2.09     .04   .78   5.75  .26    .000
     [I%= 8.6:S%= 3.76]
     ------------------
*    DESIGN STANDHYD    0004  3  1.0    1.09     .02   .78   6.23  .28    .000
     [I%= 9.1:S%= 2.77]
     ------------------
     ADD [0001 + 0004]  0005  4  1.0    3.18     .06   .78   5.91  n/a    .000
     ------------------
     DUHYD              0005  4  1.0    3.18     .06   .78   5.91  n/a    .000
        MAJOR SYSTEM:   0005  1  1.0     .00     .00   .00    .00  n/a    .000
        MINOR SYSTEM:   0005  3  1.0    3.18     .06   .78   5.91  n/a    .000
     ------------------
     PIPE   [ 3 : 0005] 0008  2  1.0    3.18     .06   .82   5.91  n/a    .000
     {DiamUsed= 525.mm}
     ------------------
*    DESIGN STANDHYD    0009  3  1.0    1.19     .02   .80   6.04  .27    .000
     [I%= 9.8:S%= 2.00]
     ------------------
     DUHYD              0009  3  1.0    1.19     .02   .80   6.04  n/a    .000
        MAJOR SYSTEM:   0009 10  1.0     .00     .00   .00    .00  n/a    .000
        MINOR SYSTEM:   0009  5  1.0    1.19     .02   .80   6.04  n/a    .000
```

	ADD [0008 + 0009]	0012	7	1.0	4.37	.08	.80	5.94	n/a	.000
	PIPE [7 : 0012] {DiamUsed= 600.mm}	0013	2	1.0	4.37	.08	.82	5.94	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.01	.53	9.23	.42	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.09	.80	6.22	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.09	.82	6.22	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.03	.80	5.89	.27	.000
	DUHYD	0018	4	1.0	1.70	.03	.80	5.89	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0018	6	1.0	1.70	.03	.80	5.89	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.48	.11	.82	6.14	n/a	.000
	ADD [0018 + 0009]	0021	2	.0	.00	.00	.00	6.22	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.61	.03	.77	6.55	.29	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	6	1.0	1.58	.03	.77	6.30	.28	.000
	DUHYD	0031	6	1.0	1.58	.03	.77	6.30	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.03	.77	6.30	n/a	.000
	ADD [0031 + 0028]	0034	5	1.0	1.61	.03	.77	6.55	n/a	.000
	DESIGN STANDHYD [I%=79.0:S%= 2.65]	0035	4	1.0	.08	.01	.50	17.73	.80	.000
	DUHYD	0035	4	1.0	.08	.01	.50	17.73	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.01	.50	17.73	n/a	.000
	ADD [0031 + 0035]	0033	4	1.0	1.66	.04	.75	6.83	n/a	.000
	ADD [0035 + 0034]	0034	9	1.0	1.61	.03	.77	6.55	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.61	.03	.77	6.55	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	3.27	.07	.77	6.69	n/a	.000
	DUHYD	0100	7	1.0	3.27	.07	.77	6.69	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0100	6	1.0	3.27	.07	.77	6.69	n/a	.000
*	DESIGN STANDHYD [I%=19.0:S%= 2.10]	0036	4	1.0	.48	.01	.55	8.47	.38	.000
*	DESIGN STANDHYD	0039	3	1.0	.05	.00	.50	17.71	.80	.000

[I%=79.0:S%= 2.65]									
ADD [0036 + 0039]	0103	9	1.0	.53	.02	.53	9.33	n/a	.000
ADD [0103 + 0100]	0104	4	1.0	.53	.02	.53	9.33	n/a	.000
ADD [0104 + 0100]	0103	9	1.0	3.80	.08	.75	7.06	n/a	.000
DUHYD	0103	9	1.0	3.80	.08	.75	7.06	n/a	.000
MAJOR SYSTEM:	0103	7	1.0	.00	.00	.00	.00	n/a	.000
MINOR SYSTEM:	0103	6	1.0	3.80	.08	.75	7.06	n/a	.000
DESIGN STANDHYD [I%=79.0:S%= 1.46]	0045	3	1.0	.13	.01	.52	17.73	.80	.000
ADD [0045 + 0103]	0105	10	1.0	.13	.01	.52	17.73	n/a	.000
ADD [0020 + 0103]	0047	3	1.0	10.27	.19	.78	6.48	n/a	.000
ADD [0021 + 0105]	0049	4	1.0	.13	.01	.52	17.73	n/a	.000
ADD [0049 + 0047]	0200	1	1.0	10.40	.20	.78	6.62	n/a	.000
DUHYD	0200	1	1.0	10.40	.20	.78	6.62	n/a	.000
MAJOR SYSTEM:	0200	6	1.0	.00	.00	.00	.00	n/a	.000
MINOR SYSTEM:	0200	2	1.0	10.40	.20	.78	6.62	n/a	.000
PRINT HYD	0200	2	1.0	10.40	.20	.78	6.62	n/a	.000
* PRINT HYD	0200	6	1.0	.00	.00	.00	.00	n/a	.000

FINISH

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paul theil associates limited
consulting engineers

Project No. 9471

Design Brief

Date MAY 1996

Project Title REG. RD Nº 5 - CLAREMONT

Sheet _____ of _____

Subject FRANKLIN ST. REALIGNMENT

Designed D. MOSS

Ref. Dwgs. BARBER ST. ALTERNATIVES.

Checked _____

PARTIAL BYPASS.

LINK CENTRE BASIN TO WEST CENTRE BASIN THROUGH DIVERT HYD.

FOR BARBER ST.

ADD EAST BASIN TO AREA 13 AND LINK TO WEST CENTRE BASIN THROUGH DIVERT HYD.

PSWCENAC.SUM — PARTIAL BYPASS

PSWCENAD.SUM — BARBER ST. ADDITION

```
 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    I N T E R H Y M O
O   O    T      T    H   H   Y Y   MM MM  O   O   * * * 1989b * * *
O   O    T      T    HHHHH    Y    M M M  O   O
O   O    T      T    H   H    Y    M   M  O   O
 OOO     T      T    H   H    Y    M   M   OOO    cC-515990500006
```


***** S U M M A R Y O U T P U T *****

Input filename: pswcenac.dat
Output filename: pswcenac.out
Summary filename: pswcenac.sum

DATE: 11-03-1995 TIME: 17:25:03

USER: _____

COMMENTS: _____

****
** SIMULATION NUMBER: 1 **
****

W/E	COMMAND	HYD ID		DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ .00 hrs									
	READ STORM			5.0						
	[Ptot= 53.52 mm]									
	fname :AES100G.STM									
	remark:AES 100YR 1H GREENWOOD									
	DESIGN NASHYD	0001	1	1.0	11.22	.44	1.27	19.79	.37	.000
	[CN=75.0]									
	[N= 3.0:Tp= .70]									
*	PIPE [1 : 0001]	0008	2	1.0	11.22	.44	1.30	19.79	n/a	.000
	{DiamUsed= 518.mm}									
*	DESIGN STANDHYD	0003	1	1.0	1.39	.13	.73	23.47	.44	.000
	[I%= 6.1:S%= 2.00]									
	DUHYD	0003	1	1.0	1.39	.13	.73	23.47	n/a	.000
	MAJOR SYSTEM:	0003	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003	4	1.0	1.39	.13	.73	23.47	n/a	.000
*	DESIGN STANDHYD	0006	3	1.0	.08	.01	.62	26.82	.50	.000
	[I%= 5.0:S%= 4.00]									
	ADD [0003 + 0006]	0100	9	1.0	.08	.01	.62	26.82	n/a	.000

	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.05	.55	30.68	.57	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.46	.72	24.43	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.46	.75	24.42	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.16	.70	23.79	.44	.000
	DUHYD	0018	4	1.0	1.70	.16	.70	23.79	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.09	.03	.70	23.79	n/a	.000
	MINOR SYSTEM:	0018	3	1.0	1.61	.13	.55	23.79	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.38	.60	.75	24.26	n/a	.000
	ADD [0018 + 0009]	0021	2	1.0	.09	.03	.70	23.79	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.50	.14	.70	24.97	.47	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	4	1.0	1.58	.17	.63	25.04	.47	.000
	DUHYD	0031	4	1.0	1.58	.17	.63	25.04	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.17	.63	25.04	n/a	.000
	ADD [0156 + 0031]	0159	5	1.0	7.58	.38	.73	21.64	n/a	.000
	ADD [0031 + 0028]	0034	9	1.0	1.50	.14	.70	24.97	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 2.65]	0035	4	1.0	.08	.01	.63	26.81	.50	.000
	DUHYD	0035	4	1.0	.08	.01	.63	26.81	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.01	.63	26.81	n/a	.000
	ADD [0159 + 0035]	0033	4	1.0	7.66	.39	.72	21.70	n/a	.000
	ADD [0034 + 0035]	0034	3	1.0	1.50	.14	.70	24.97	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.50	.14	.70	24.97	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	9.16	.54	.72	22.23	n/a	.000
	DUHYD	0100	7	1.0	9.16	.54	.72	22.23	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0100	6	1.0	9.16	.54	.72	22.23	n/a	.000
*	DESIGN STANDHYD [I%=19.0:S%= 2.10]	0036	4	1.0	.48	.06	.63	29.71	.56	.000
*	DESIGN STANDHYD [I%=79.0:S%= 2.65]	0039	3	1.0	.05	.01	.50	45.76	.86	.000
	ADD [0036 + 0039]	0103	9	1.0	.53	.07	.55	31.20	n/a	.000

	ADD [0103 + 0100]	0104	4	1.0	.53	.07	.55	31.20	n/a	.000
	ADD [0104 + 0100]	0103	9	1.0	9.69	.60	.70	22.72	n/a	.000
	DUHYD	0103	9	1.0	9.69	.60	.70	22.72	n/a	.000
	MAJOR SYSTEM:	0103	7	1.0	.11	.04	.70	22.72	n/a	.000
	MINOR SYSTEM:	0103	6	1.0	9.57	.56	.58	22.72	n/a	.000
	DESIGN STANDHYD [I%=79.0:S%= 1.46]	0045	3	1.0	.13	.03	.50	45.78	.86	.000
	ADD [0045 + 0103]	0105	10	1.0	.24	.06	.70	34.95	n/a	.000
	ADD [0020 + 0103]	0047	3	1.0	15.96	1.15	.75	23.34	n/a	.000
	ADD [0021 + 0105]	0049	4	1.0	.33	.09	.70	31.83	n/a	.000
	ADD [0049 + 0047]	0200	1	1.0	16.29	1.24	.72	23.51	n/a	.000
	DUHYD	0200	1	1.0	16.29	1.24	.72	23.51	n/a	.000
	MAJOR SYSTEM:	0200	6	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0200	2	1.0	16.29	1.24	.72	23.51	n/a	.000
	PRINT HYD	0200	2	1.0	16.29	1.24	.72	23.51	n/a	.000
*	PRINT HYD	0200	6	1.0	.00	.00	.00	.00	n/a	.000
	READ STORM [Ptot= 22.20 mm] fname :AES002G.STM remark:2 YEAR 1 HOUR AES EVENT - GREENWOOD			5.0						
	DESIGN NASHYD [CN=75.0] [N= 3.0:Tp= .70]	0001	1	1.0	11.22	.09	1.30	4.07	.18	.000
	PIPE [1 : 0001] {DiamUsed= 375.mm}	0008	2	1.0	11.22	.09	1.33	4.07	n/a	.000
*	DESIGN STANDHYD [I%= 6.1:S%= 2.00]	0003	1	1.0	1.39	.02	.82	5.61	.25	.000
	DUHYD	0003	1	1.0	1.39	.02	.82	5.61	n/a	.000
	MAJOR SYSTEM:	0003	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003	4	1.0	1.39	.02	.82	5.61	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 4.00]	0006	3	1.0	.08	.00	.77	6.57	.30	.000
	ADD [0003 + 0006]	0100	9	1.0	.08	.00	.77	6.57	n/a	.000
	ADD [0003 + 0008]	0150	10	1.0	12.61	.10	1.23	4.24	n/a	.000
	PRINT HYD	0100	9	1.0	.08	.00	.77	6.57	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	1.53	.03	.78	6.13	.28	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.00	.82	6.57	.30	.000

	ADD [0150 + 0013]	0015	7	1.0	12.73	.11	1.23	4.26	n/a	.000
	ADD [0100 + 0011]	0110	2	1.0	1.61	.03	.78	6.15	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	14.35	.12	1.12	4.47	n/a	.000
	PRINT HYD	0110	1	1.0	14.35	.12	1.12	4.47	n/a	.000
	DIVERT HYD	0110	1	1.0	14.35	.12	1.12	4.47	n/a	.000
	Outflow	0152	2	1.0	13.73	.10	1.12	4.47	n/a	.000
	Outflow	0153	3	1.0	.61	.02	1.12	4.47	n/a	.000
	PRINT HYD	0152	2	1.0	13.73	.10	1.12	4.47	n/a	.000
**	PIPE [3 : 0153] {DiamUsed= 450.mm}	0155	2	1.0	.61	.02	1.13	4.47	n/a	.000
**	PIPE [2 : 0155] {DiamUsed= 450.mm}	0156	6	1.0	.61	.02	1.15	4.47	n/a	.000
	PRINT HYD	0156	6	1.0	.61	.02	1.15	4.47	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 3.76]	0001	1	1.0	2.09	.04	.78	5.75	.26	.000
*	DESIGN STANDHYD [I%= 9.1:S%= 2.77]	0004	3	1.0	1.09	.02	.78	6.23	.28	.000
	ADD [0001 + 0004]	0005	4	1.0	3.18	.06	.78	5.91	n/a	.000
	DUHYD	0005	4	1.0	3.18	.06	.78	5.91	n/a	.000
	MAJOR SYSTEM:	0005	1	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0005	3	1.0	3.18	.06	.78	5.91	n/a	.000
	PIPE [3 : 0005] {DiamUsed= 525.mm}	0008	2	1.0	3.18	.06	.82	5.91	n/a	.000
*	DESIGN STANDHYD [I%= 9.8:S%= 2.00]	0009	3	1.0	1.19	.02	.80	6.04	.27	.000
	DUHYD	0009	3	1.0	1.19	.02	.80	6.04	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.02	.80	6.04	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.08	.80	5.94	n/a	.000
	PIPE [7 : 0012] {DiamUsed= 600.mm}	0013	2	1.0	4.37	.08	.82	5.94	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.01	.53	9.23	.42	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.09	.80	6.22	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.09	.82	6.22	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.03	.80	5.89	.27	.000

	DUHYD	0018	4	1.0	1.70	.03	.80	5.89	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0018	3	1.0	1.70	.03	.80	5.89	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.48	.11	.82	6.14	n/a	.000
	ADD [0018 + 0009]	0021	2	.0	.00	.00	.00	6.22	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.50	.03	.77	6.55	.29	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	4	1.0	1.58	.03	.77	6.30	.28	.000
	DUHYD	0031	4	1.0	1.58	.03	.77	6.30	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.03	.77	6.30	n/a	.000
	ADD [0156 + 0031]	0159	5	1.0	2.19	.04	1.00	5.79	n/a	.000
	ADD [0031 + 0028]	0034	9	1.0	1.50	.03	.77	6.55	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 2.65]	0035	4	1.0	.08	.00	.78	6.56	.30	.000
	DUHYD	0035	4	1.0	.08	.00	.78	6.56	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.00	.78	6.56	n/a	.000
	ADD [0159 + 0035]	0033	4	1.0	2.27	.04	1.00	5.82	n/a	.000
	ADD [0034 + 0035]	0034	3	1.0	1.50	.03	.77	6.55	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.50	.03	.77	6.55	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	3.77	.06	.98	6.11	n/a	.000
	DUHYD	0100	7	1.0	3.77	.06	.98	6.11	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0100	6	1.0	3.77	.06	.98	6.11	n/a	.000
*	DESIGN STANDHYD [I%=19.0:S%= 2.10]	0036	4	1.0	.48	.01	.55	8.47	.38	.000
*	DESIGN STANDHYD [I%=79.0:S%= 2.65]	0039	3	1.0	.05	.00	.50	17.71	.80	.000
	ADD [0036 + 0039]	0103	9	1.0	.53	.02	.53	9.33	n/a	.000
	ADD [0103 + 0100]	0104	4	1.0	.53	.02	.53	9.33	n/a	.000
	ADD [0104 + 0100]	0103	9	1.0	4.30	.08	.77	6.50	n/a	.000
	DUHYD	0103	9	1.0	4.30	.08	.77	6.50	n/a	.000
	MAJOR SYSTEM:	0103	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0103	6	1.0	4.30	.08	.77	6.50	n/a	.000
	DESIGN STANDHYD [I%=79.0:S%= 1.46]	0045	3	1.0	.13	.01	.52	17.73	.80	.000

ADD [0045 + 0103]	0105	10	1.0	.13	.01	.52	17.73	n/a	.000
ADD [0020 + 0103]	0047	3	1.0	10.78	.19	.78	6.28	n/a	.000
ADD [0021 + 0105]	0049	4	1.0	.13	.01	.52	17.73	n/a	.000
ADD [0049 + 0047]	0200	1	1.0	10.90	.20	.78	6.42	n/a	.000
DUHYD	0200	1	1.0	10.90	.20	.78	6.42	n/a	.000
MAJOR SYSTEM:	0200	6	1.0	.00	.00	.00	.00	n/a	.000
MINOR SYSTEM:	0200	2	1.0	10.90	.20	.78	6.42	n/a	.000
PRINT HYD	0200	2	1.0	10.90	.20	.78	6.42	n/a	.000
* PRINT HYD	0200	6	1.0	.00	.00	.00	.00	n/a	.000

FINISH

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```
 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    I N T E R H Y M O
O   O    T      T    H   H   Y Y   MM MM  O   O   * * * 1989b * * *
O   O    T      T    HHHHH    Y    M M M  O   O
O   O    T      T    H   H    Y    M   M  O   O
 OOO     T      T    H   H    Y    M   M   OOO    cC-515990500006
```


***** S U M M A R Y O U T P U T *****

Input filename: pswcenad.dat
Output filename: pswcenad.out
Summary filename: pswcenad.sum

DATE: 11-03-1995 TIME: 17:25:03

USER: _____

COMMENTS: _____

****
** SIMULATION NUMBER: 1 **
****

W/E	COMMAND	HYD ID	DT min	AREA ha	Qpeak cms	Tpeak hrs	R.V. mm	R.C.	Qbase cms
	START @ .00 hrs								
	READ STORM		5.0						
	[Ptot= 53.52 mm]								
	fname :AES100G.STM								
	remark:AES 100YR 1H GREENWOOD								
	DESIGN NASHYD	0001 1	1.0	11.22	.44	1.27	19.79	.37	.000
	[CN=75.0]								
	[N= 3.0:Tp= .70]								
*	PIPE [1 : 0001]	0008 2	1.0	11.22	.44	1.30	19.79	n/a	.000
	{DiamUsed= 518.mm}								
*	DESIGN STANDHYD	0003 1	1.0	1.39	.13	.73	23.47	.44	.000
	[I%= 6.1:S%= 2.00]								
	DUHYD	0003 1	1.0	1.39	.13	.73	23.47	n/a	.000
	MAJOR SYSTEM:	0003 5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003 4	1.0	1.39	.13	.73	23.47	n/a	.000
*	DESIGN STANDHYD	0001 1	1.0	2.53	.25	.65	25.42	.47	.000
	[I%=15.0:S%= 3.60]								
*	DESIGN STANDHYD	0002 10	1.0	.15	.01	.77	26.82	.50	.000

	[I%= 5.0:S%= .45]									
	ADD [0001 + 0002]	0003	3	1.0	2.68	.27	.67	25.49	n/a	.000
	PRINT HYD	0003	3	1.0	2.68	.27	.67	25.49	n/a	.000
	DUHYD	0003	3	1.0	2.68	.27	.67	25.49	n/a	.000
	MAJOR SYSTEM:	0003	9	1.0	1.48	.20	.67	25.49	n/a	.000
	MINOR SYSTEM:	0003	8	1.0	1.20	.07	.25	25.49	n/a	.000
	PRINT HYD	0003	9	1.0	1.48	.20	.67	25.49	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 4.00]	0006	3	1.0	.08	.01	.62	26.82	.50	.000
	ADD [0003 + 0006]	0100	9	1.0	.08	.01	.62	26.82	n/a	.000
	ADD [0003 + 0008]	0150	10	1.0	12.61	.47	1.18	20.20	n/a	.000
	ADD [0003 + 0150]	0162	1	1.0	13.81	.54	1.15	20.66	n/a	.000
	PRINT HYD	0100	9	1.0	.08	.01	.62	26.82	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	1.53	.15	.65	24.48	.46	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.01	.70	26.82	.50	.000
	ADD [0162 + 0013]	0015	7	1.0	13.93	.54	1.15	20.71	n/a	.000
	ADD [0100 + 0011]	0110	2	1.0	1.61	.16	.65	24.60	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	15.54	.62	.97	21.12	n/a	.000
	PRINT HYD	0110	1	1.0	15.54	.62	.97	21.12	n/a	.000
	DIVERT HYD	0110	1	1.0	15.54	.62	.97	21.12	n/a	.000
	Outflow	0152	2	1.0	12.15	.42	.97	21.12	n/a	.000
	Outflow	0153	3	1.0	4.84	.21	.97	21.12	n/a	.000
	PRINT HYD	0152	2	1.0	12.15	.42	.97	21.12	n/a	.000
	PIPE [3 : 0153] {DiamUsed= 450.mm}	0155	2	1.0	4.84	.21	.97	21.12	n/a	.000
	PIPE [2 : 0155] {DiamUsed= 450.mm}	0156	6	1.0	4.84	.21	.98	21.12	n/a	.000
	PRINT HYD	0156	6	1.0	4.84	.21	.98	21.12	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 3.76]	0001	1	1.0	2.09	.20	.70	23.29	.44	.000
*	DESIGN STANDHYD [I%= 9.1:S%= 2.77]	0004	3	1.0	1.09	.11	.70	24.79	.46	.000
	ADD [0001 + 0004]	0005	4	1.0	3.18	.31	.70	23.80	n/a	.000
	DUHYD	0005	4	1.0	3.18	.31	.70	23.80	n/a	.000

	MAJOR SYSTEM:	0005	1	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0005	3	1.0	3.18	.31	.70	23.80	n/a	.000
*	PIPE [3 : 0005] {DiamUsed= 540.mm}	0008	2	1.0	3.18	.31	.73	23.80	n/a	.000
*	DESIGN STANDHYD [I%= 9.8:S%= 2.00]	0009	3	1.0	1.19	.11	.72	23.98	.45	.000
	DUHYD	0009	3	1.0	1.19	.11	.72	23.98	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.11	.72	23.98	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.42	.73	23.85	n/a	.000
*	PIPE [7 : 0012] {DiamUsed= 653.mm}	0013	2	1.0	4.37	.42	.75	23.85	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.05	.55	30.68	.57	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.46	.72	24.43	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.46	.75	24.42	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.16	.70	23.79	.44	.000
	DUHYD	0018	4	1.0	1.70	.16	.70	23.79	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.09	.03	.70	23.79	n/a	.000
	MINOR SYSTEM:	0018	3	1.0	1.61	.13	.55	23.79	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.38	.60	.75	24.26	n/a	.000
	ADD [0018 + 0009]	0021	2	1.0	.09	.03	.70	23.79	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.50	.14	.70	24.97	.47	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	4	1.0	1.58	.17	.63	25.04	.47	.000
	DUHYD	0031	4	1.0	1.58	.17	.63	25.04	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.17	.63	25.04	n/a	.000
	ADD [0156 + 0031]	0159	5	1.0	6.42	.35	.77	22.08	n/a	.000
	ADD [0031 + 0028]	0034	9	1.0	1.50	.14	.70	24.97	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 2.65]	0035	4	1.0	.08	.01	.63	26.81	.50	.000
	DUHYD	0035	4	1.0	.08	.01	.63	26.81	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.01	.63	26.81	n/a	.000
	ADD [0159 + 0035]	0033	4	1.0	6.50	.36	.77	22.14	n/a	.000

```
     ADD [0034 + 0035]  0034   3  1.0    1.50     .14    .70   24.97   n/a    .000
     ------------------
     ADD [0034 + 0005]  0050  10  1.0    1.50     .14    .70   24.97   n/a    .000
     ------------------
     ADD [0050 + 0033]  0100   7  1.0    8.00     .50    .75   22.67   n/a    .000
     ------------------
     DUHYD              0100   7  1.0    8.00     .50    .75   22.67   n/a    .000
        MAJOR SYSTEM:   0100   5  1.0     .00     .00    .00     .00   n/a    .000
        MINOR SYSTEM:   0100   6  1.0    8.00     .50    .75   22.67   n/a    .000
     ------------------
*    DESIGN STANDHYD    0036   4  1.0     .48     .06    .63   29.71   .56    .000
     [I%=19.0:S%= 2.10]
     ------------------
*    DESIGN STANDHYD    0039   3  1.0     .05     .01    .50   45.76   .86    .000
     [I%=79.0:S%= 2.65]
     ------------------
     ADD [0036 + 0039]  0103   9  1.0     .53     .07    .55   31.20   n/a    .000
     ------------------
     ADD [0103 + 0100]  0104   4  1.0     .53     .07    .55   31.20   n/a    .000
     ------------------
     ADD [0104 + 0100]  0103   9  1.0    8.52     .56    .72   23.20   n/a    .000
     ------------------
     DUHYD              0103   9  1.0    8.52     .56    .72   23.20   n/a    .000
        MAJOR SYSTEM:   0103   7  1.0     .00     .00    .72   23.20   n/a    .000
        MINOR SYSTEM:   0103   6  1.0    8.52     .56    .68   23.20   n/a    .000
     ------------------
     DESIGN STANDHYD    0045   3  1.0     .13     .03    .50   45.78   .86    .000
     [I%=79.0:S%= 1.46]
     ------------------
     ADD [0045 + 0103]  0105  10  1.0     .13     .03    .50   45.14   n/a    .000
     ------------------
     ADD [0020 + 0103]  0047   3  1.0   14.90    1.15    .75   23.65   n/a    .000
     ------------------
     ADD [0021 + 0105]  0049   4  1.0     .23     .05    .72   36.27   n/a    .000
     ------------------
     ADD [0049 + 0047]  0200   1  1.0   15.13    1.20    .72   23.84   n/a    .000
     ------------------
     DUHYD              0200   1  1.0   15.13    1.20    .72   23.84   n/a    .000
        MAJOR SYSTEM:   0200   6  1.0     .00     .00    .00     .00   n/a    .000
        MINOR SYSTEM:   0200   2  1.0   15.13    1.20    .72   23.84   n/a    .000
     ------------------
     PRINT HYD          0200   2  1.0   15.13    1.20    .72   23.84   n/a    .000
     ------------------
*    PRINT HYD          0200   6  1.0     .00     .00    .00     .00   n/a    .000
     ------------------
     READ STORM                   5.0
     [ Ptot= 22.20 mm ]
     fname :AES002G.STM
     remark:2 YEAR 1 HOUR AES EVENT - GREENWOOD
     ------------------
     DESIGN NASHYD      0001   1  1.0   11.22     .09   1.30    4.07   .18    .000
     [CN=75.0          ]
     [ N= 3.0:Tp=  .70]
     ------------------
     PIPE   [ 1 : 0001] 0008   2  1.0   11.22     .09   1.33    4.07   n/a    .000
     {DiamUsed= 375.mm}
     ------------------
*    DESIGN STANDHYD    0003   1  1.0    1.39     .02    .82    5.61   .25    .000
     [I%= 6.1:S%= 2.00]
     ------------------
```

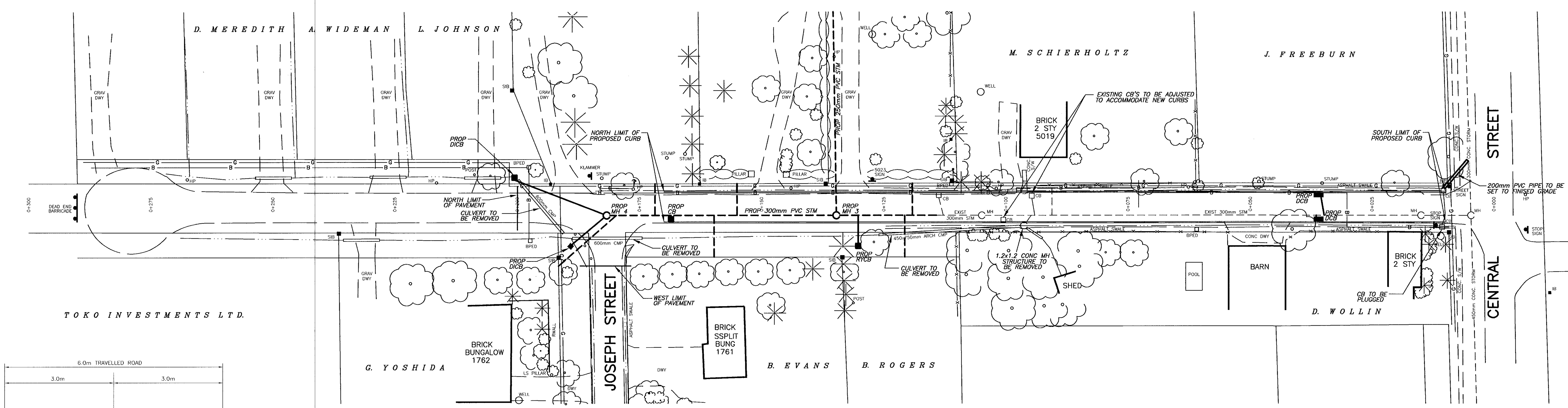
	DUHYD	0003	1	1.0	1.39	.02	.82	5.61	n/a	.000
	MAJOR SYSTEM:	0003	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003	4	1.0	1.39	.02	.82	5.61	n/a	.000
*	DESIGN STANDHYD [I%=15.0:S%= 3.60]	0001	1	1.0	2.53	.05	.75	6.86	.31	.000
*	DESIGN STANDHYD [I%= 5.0:S%= .45]	0002	10	1.0	.15	.00	.95	6.56	.30	.000
	ADD [0001 + 0002]	0003	3	1.0	2.68	.05	.75	6.85	n/a	.000
	PRINT HYD	0003	3	1.0	2.68	.05	.75	6.85	n/a	.000
	DUHYD	0003	3	1.0	2.68	.05	.75	6.85	n/a	.000
	MAJOR SYSTEM:	0003	9	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0003	8	1.0	2.68	.05	.75	6.85	n/a	.000
*	PRINT HYD	0003	9	1.0	.00	.00	.00	.00	n/a	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 4.00]	0006	3	1.0	.08	.00	.77	6.57	.30	.000
	ADD [0003 + 0006]	0100	9	1.0	.08	.00	.77	6.57	n/a	.000
	ADD [0003 + 0008]	0150	10	1.0	12.61	.10	1.23	4.24	n/a	.000
	ADD [0003 + 0150]	0162	1	1.0	15.29	.13	.98	4.69	n/a	.000
	PRINT HYD	0100	9	1.0	.08	.00	.77	6.57	n/a	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 3.40]	0011	3	1.0	1.53	.03	.78	6.13	.28	.000
*	DESIGN STANDHYD [I%= 5.0:S%= 1.30]	0013	2	1.0	.12	.00	.82	6.57	.30	.000
	ADD [0162 + 0013]	0015	7	1.0	15.41	.13	.98	4.71	n/a	.000
	ADD [0100 + 0011]	0110	2	1.0	1.61	.03	.78	6.15	n/a	.000
	ADD [0110 + 0015]	0110	1	1.0	17.02	.16	.97	4.84	n/a	.000
	PRINT HYD	0110	1	1.0	17.02	.16	.97	4.84	n/a	.000
	DIVERT HYD	0110	1	1.0	17.02	.16	.97	4.84	n/a	.000
	Outflow	0152	2	1.0	14.70	.14	.97	4.84	n/a	.000
	Outflow	0153	3	1.0	2.33	.02	.97	4.84	n/a	.000
	PRINT HYD	0152	2	1.0	14.70	.14	.97	4.84	n/a	.000
	PIPE [3 : 0153] {DiamUsed= 450.mm}	0155	2	1.0	2.33	.02	.97	4.84	n/a	.000
	PIPE [2 : 0155] {DiamUsed= 450.mm}	0156	6	1.0	2.33	.02	.98	4.84	n/a	.000
	PRINT HYD	0156	6	1.0	2.33	.02	.98	4.84	n/a	.000
*	DESIGN STANDHYD	0001	1	1.0	2.09	.04	.78	5.75	.26	.000

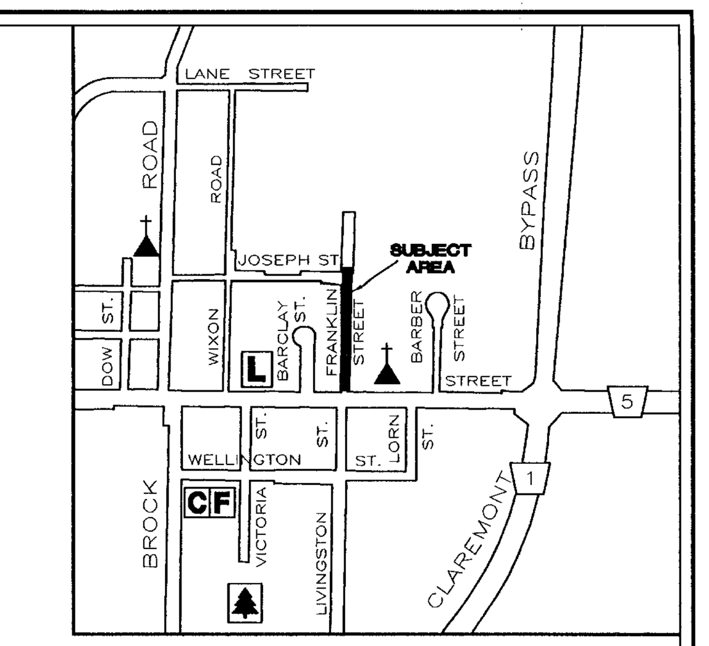
	[I%= 8.6:S%= 3.76]									
*	DESIGN STANDHYD [I%= 9.1:S%= 2.77]	0004	3	1.0	1.09	.02	.78	6.23	.28	.000
	ADD [0001 + 0004]	0005	4	1.0	3.18	.06	.78	5.91	n/a	.000
	DUHYD	0005	4	1.0	3.18	.06	.78	5.91	n/a	.000
	MAJOR SYSTEM:	0005	1	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0005	3	1.0	3.18	.06	.78	5.91	n/a	.000
	PIPE [3 : 0005] {DiamUsed= 525.mm}	0008	2	1.0	3.18	.06	.82	5.91	n/a	.000
*	DESIGN STANDHYD [I%= 9.8:S%= 2.00]	0009	3	1.0	1.19	.02	.80	6.04	.27	.000
	DUHYD	0009	3	1.0	1.19	.02	.80	6.04	n/a	.000
	MAJOR SYSTEM:	0009	10	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0009	5	1.0	1.19	.02	.80	6.04	n/a	.000
	ADD [0008 + 0009]	0012	7	1.0	4.37	.08	.80	5.94	n/a	.000
	PIPE [7 : 0012] {DiamUsed= 600.mm}	0013	2	1.0	4.37	.08	.82	5.94	n/a	.000
	DESIGN STANDHYD [I%=25.6:S%= 2.10]	0014	8	1.0	.41	.01	.53	9.23	.42	.000
	ADD [0013 + 0014]	0016	9	1.0	4.78	.09	.80	6.22	n/a	.000
	PIPE [9 : 0016] {DiamUsed= 750.mm}	0017	2	1.0	4.78	.09	.82	6.22	n/a	.000
*	DESIGN STANDHYD [I%= 8.6:S%= 2.70]	0018	4	1.0	1.70	.03	.80	5.89	.27	.000
	DUHYD	0018	4	1.0	1.70	.03	.80	5.89	n/a	.000
	MAJOR SYSTEM:	0018	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0018	3	1.0	1.70	.03	.80	5.89	n/a	.000
	ADD [0017 + 0018]	0020	8	1.0	6.48	.11	.82	6.14	n/a	.000
	ADD [0018 + 0009]	0021	2	.0	.00	.00	.00	6.22	n/a	.000
*	DESIGN STANDHYD [I%=12.6:S%= 2.27]	0028	3	1.0	1.50	.03	.77	6.55	.29	.000
*	DESIGN STANDHYD [I%= 9.0:S%= 4.30]	0031	4	1.0	1.58	.03	.77	6.30	.28	.000
	DUHYD	0031	4	1.0	1.58	.03	.77	6.30	n/a	.000
	MAJOR SYSTEM:	0031	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0031	9	1.0	1.58	.03	.77	6.30	n/a	.000
	ADD [0156 + 0031]	0159	5	1.0	3.91	.05	.80	5.43	n/a	.000
	ADD [0031 + 0028]	0034	9	1.0	1.50	.03	.77	6.55	n/a	.000
*	DESIGN STANDHYD	0035	4	1.0	.08	.00	.78	6.56	.30	.000

	[I%= 5.0:S%= 2.65]									
	DUHYD	0035	4	1.0	.08	.00	.78	6.56	n/a	.000
	MAJOR SYSTEM:	0035	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0035	6	1.0	.08	.00	.78	6.56	n/a	.000
	ADD [0159 + 0035]	0033	4	1.0	3.98	.05	.80	5.45	n/a	.000
	ADD [0034 + 0035]	0034	3	1.0	1.50	.03	.77	6.55	n/a	.000
	ADD [0034 + 0005]	0050	10	1.0	1.50	.03	.77	6.55	n/a	.000
	ADD [0050 + 0033]	0100	7	1.0	5.48	.08	.78	5.75	n/a	.000
	DUHYD	0100	7	1.0	5.48	.08	.78	5.75	n/a	.000
	MAJOR SYSTEM:	0100	5	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0100	6	1.0	5.48	.08	.78	5.75	n/a	.000
*	DESIGN STANDHYD [I%=19.0:S%= 2.10]	0036	4	1.0	.48	.01	.55	8.47	.38	.000
*	DESIGN STANDHYD [I%=79.0:S%= 2.65]	0039	3	1.0	.05	.00	.50	17.71	.80	.000
	ADD [0036 + 0039]	0103	9	1.0	.53	.02	.53	9.33	n/a	.000
	ADD [0103 + 0100]	0104	4	1.0	.53	.02	.53	9.33	n/a	.000
	ADD [0104 + 0100]	0103	9	1.0	6.01	.10	.78	6.07	n/a	.000
	DUHYD	0103	9	1.0	6.01	.10	.78	6.07	n/a	.000
	MAJOR SYSTEM:	0103	7	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0103	6	1.0	6.01	.10	.78	6.07	n/a	.000
	DESIGN STANDHYD [I%=79.0:S%= 1.46]	0045	3	1.0	.13	.01	.52	17.73	.80	.000
	ADD [0045 + 0103]	0105	10	1.0	.13	.01	.52	17.73	n/a	.000
	ADD [0020 + 0103]	0047	3	1.0	12.49	.21	.80	6.10	n/a	.000
	ADD [0021 + 0105]	0049	4	1.0	.13	.01	.52	17.73	n/a	.000
	ADD [0049 + 0047]	0200	1	1.0	12.62	.22	.78	6.22	n/a	.000
	DUHYD	0200	1	1.0	12.62	.22	.78	6.22	n/a	.000
	MAJOR SYSTEM:	0200	6	1.0	.00	.00	.00	.00	n/a	.000
	MINOR SYSTEM:	0200	2	1.0	12.62	.22	.78	6.22	n/a	.000
	PRINT HYD	0200	2	1.0	12.62	.22	.78	6.22	n/a	.000
*	PRINT HYD	0200	6	1.0	.00	.00	.00	.00	n/a	.000

FINISH

==========

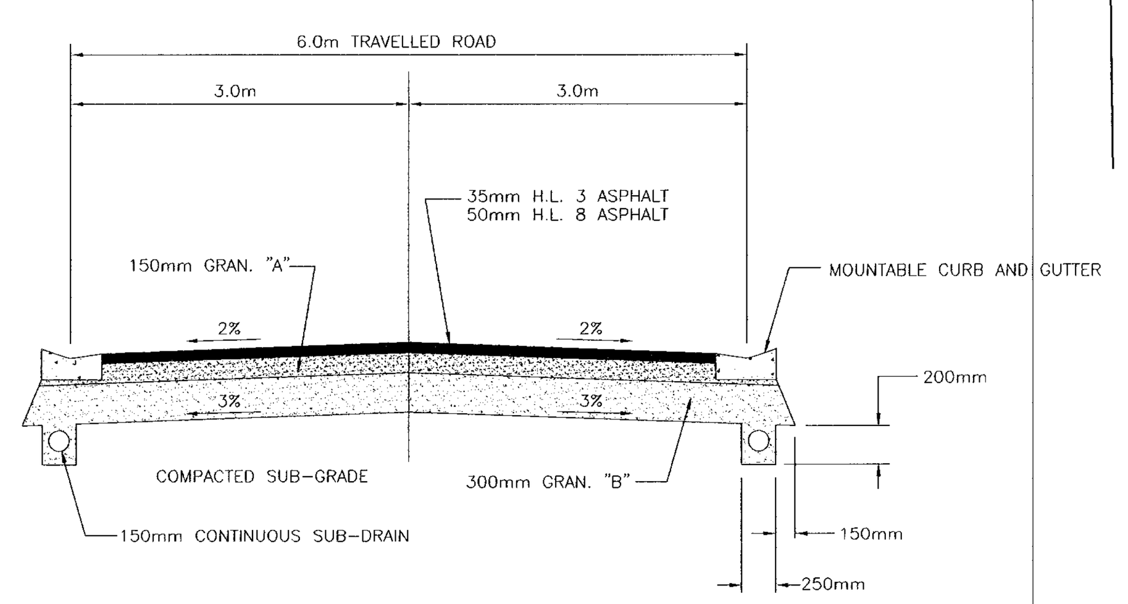




LOCATION MAP

NOTES :

1. THE CONTRACTOR SHALL SUPPLY AND ERECT ALL ADVANCE WARNING AND PROJECT SIGNS, BARRICADES, DELINEATORS, FLASHING LIGHTS AND SUCH OTHER PROTECTIONS AS MAY BE REQUIRED BY THE ENGINEER TO PROTECT THE TRAVELLING PUBLIC DURING THE COURSE OF THE PROJECT.
2. FLAGGING FOR TRAFFIC CONTROL SHALL BE IN CONFORMANCE WITH THE PROCEDURE OUTLINED IN THE PAMPHLET ENTITLED "CORRECT METHODS FOR TRAFFIC CONTROL" ISSUED BY THE CONSTRUCTION SAFETY ASSOCIATION.
3. BEDDING FOR ALL PROPOSED STORM SEWER SHALL CONFORM TO P-400. (19mm CRUSHED LIMESTONE TO BE USED IN PLACE OF THE HL-6 STONE BEDDING)
4. SERVICE CONNECTION LOCATIONS FOR EXISTING HOUSES TO BE CONFIRMED IN THE FIELD PRIOR TO TEE INSTALLATION. LOCATIONS SHOWN ON DRAWINGS ARE ONLY PRELIMINARY.
5. EXISTING SUMP PUMP OUTLETS IN EXISTING DITCH TO BE RAISED TO SURFACE AND OUTLET ONTO FINISHED BOULEVARD. PROVIDE POSITIVE DRAINAGE TOWARDS STREET.

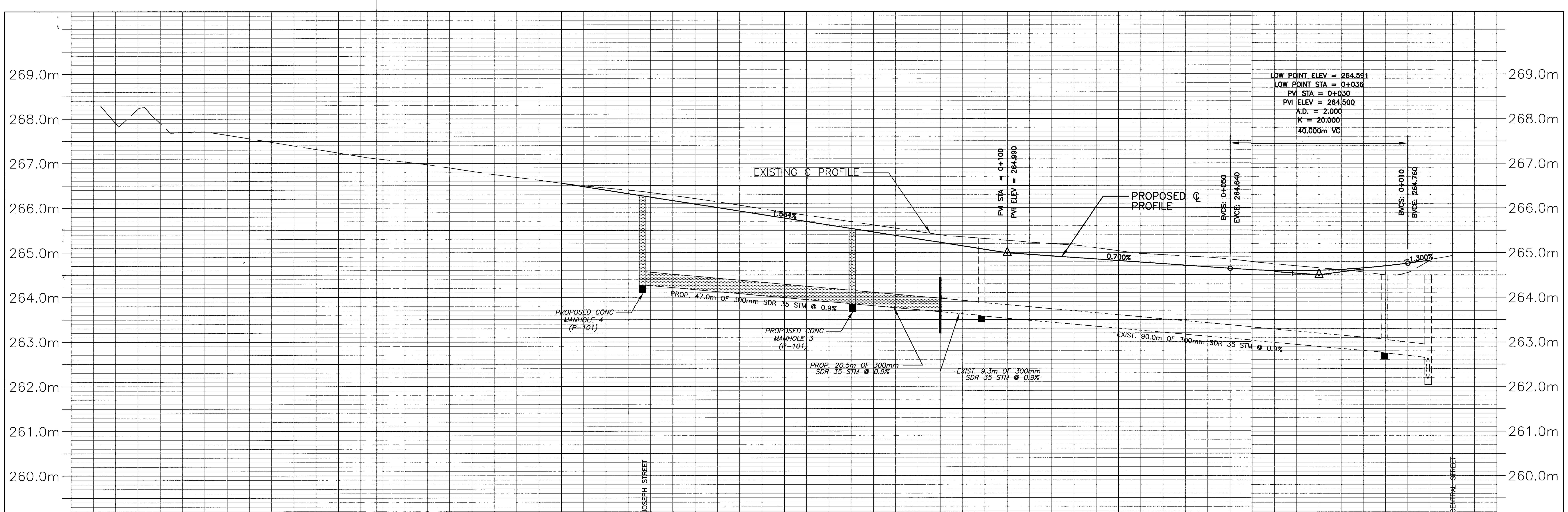


TYPICAL SECTION
N.T.S.

FRANKLIN STREET

BENCH MARK ELEV. 268.629

No. 9-003: Brass Plate set horizontally in south face of Baptist Church.



℄ CHAINAGE	0+300	0+275	0+250	0+225	0+200	0+175	0+150	0+125	0+100	0+075	0+050	0+025	0+005	0+000
EXISTING ROAD GRADES	267.896	267.634	267.232	266.895	266.554	266.276	265.904	265.543	265.269	265.035	264.845	264.616	264.825	264.936
PROPOSED ROAD GRADES					266.554	266.163	265.772	265.381	264.990	264.815	264.640	264.621	264.825	

SEWER INVERTS: S 264.338 · N 263.915, E 264.000, S 263.890 · N 263.622, S 263.597 · N 262.787, S 262.762 · N 262.650, W 262.180, E 263.400

No.	DATE	BY	REVISIONS

NOTICE TO CONTRACTORS

The CONTRACTOR is responsible for the location of all existing U/G and OVERHEAD UTILITIES. The appropriate UTILITIES are to be notified, a stake-out or locate obtained BEFORE any digging begins. The TOWN assumes no responsibility for the accuracy of the location of existing utilities as indicated on this drawing.

NOTICE TO CONTRACTORS

The CONTRACTOR is responsible for the verification of all sewer inverts within the limits of construction.

THE TOWN OF PICKERING

PUBLIC WORKS DEPARTMENT

Richard W. Holborn, P. Eng.
DIRECTOR OF PUBLIC WORKS (ACTING)

TITLE

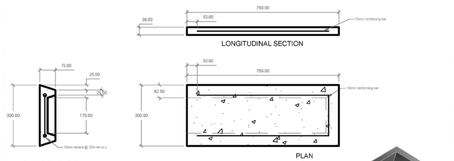
FRANKLIN STREET

SURVEY BY:	REGION OF DURHAM	DATE:	MARCH, 1997
DRAWN BY:	P. NEUMAN	DATE:	MARCH, 1997
DESIGN BY:	P. NEUMAN	DATE:	MARCH, 1997
PLAN SCALE:	1:500	℄ PROFILE SCALE:	H 1:500 V 1:50

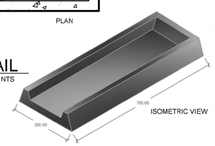
CONTRACT No.: T-3-97

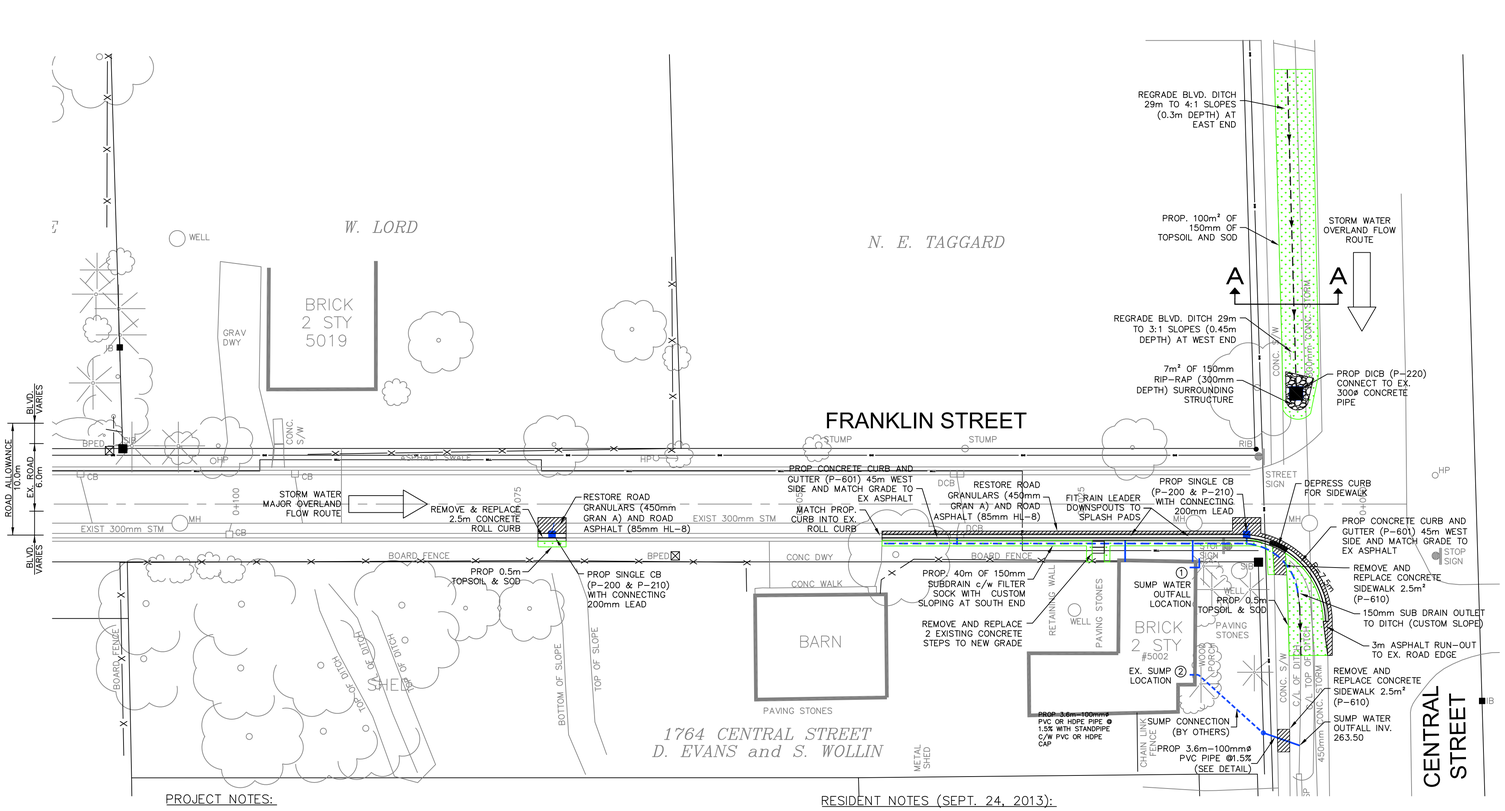
DRAWING No.

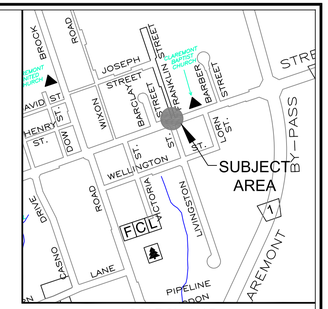
SHEET 1 OF 4



30`` SPLASH PAD DETAIL
SC NTS







LOCATION MAP

PROJECT NOTES:

1. PROPOSED CURB AND GUTTER WILL PROVIDE AN ADDITIONAL 150mm ELEVATION FOR CATCHMENT AREA (WEST SIDE ONLY).

2. ADDITIONAL BASINS WILL PROVIDE ADDITIONAL STORM ENTRY POINT, ALTHOUGH MAIN STORM PIPE IS AT CAPACITY.

3. MODIFICATION TO CURB AND GUTTER WILL BETTER CHANNEL THE OVERLAND FLOW TO THE BASINS, AND DEFLECT WATER AWAY FROM SUBJECT PROPERTY.

RESIDENT NOTES (SEPT. 24, 2013):

1. DISCUSS NEW SUMP WATER OUTLET ON CITY PROPERTY TO ACCOMMODATE POSSIBLE RELOCATION OF INTERNAL SUMP PUMP FLOW BY RESIDENT.

2. CUSTOMIZE CURB SUB-DRAIN TO REDIRECT WATER SOUTH INTO THE EXISTING DITCH.

NOTES:

GENERAL

1. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION OF ALL EXISTING U/G AND OVERHEAD UTILITIES. THE APPROPRIATE UTILITIES ARE TO BE NOTIFIED, A STAKE-OUT OR LOCATE OBTAINED BEFORE ANY DIGGING BEGINS. THE CITY ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

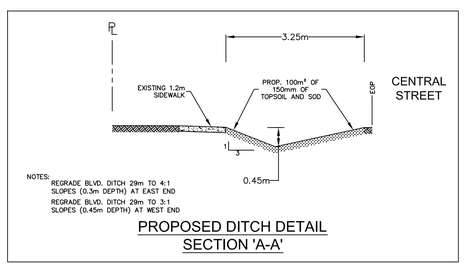
2. THE CONTRACTOR IS RESPONSIBLE FOR THE VERIFICATION OF ALL SEWER INVERTS WITHIN THE LIMITS OF CONSTRUCTION.

3. THE CONTRACTOR MUST KEEP AT LEAST ONE LANE OF ROAD OPEN WITHIN THE CONTRACT LIMITS TO ALL LOCAL TRAFFIC FOR THE DURATION OF THE WORKS. ROAD CLOSURE WILL BE GRANTED WITH THE PERMISSION OF THE CITY.

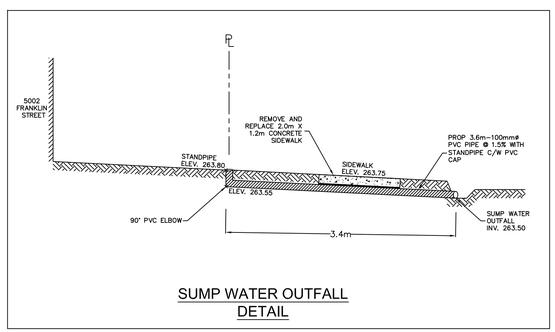
4. THE CONTRACTOR SHALL SUPPLY AND ERECT ALL DETOUR, ADVANCE WARNING AND PROJECT SIGNS, BARRICADES, DELINEATORS, FLOATING LIGHTS AND SUCH OTHER PROTECTIONS AS MAY BE REQUIRED BY THE ENGINEER AND BY THE ONTARIO TRAFFIC MANUAL BOOK 7, TO PROTECT THE TRAVELLING PUBLIC DURING THE COURSE OF THE PROJECT.

5. FLAGGING FOR TRAFFIC CONTROL, AS REQUIRED, SHALL BE IN ACCORDANCE WITH THE PROCEDURE OUTLINED IN THE ONTARIO TRAFFIC MANUAL BOOK 7 ISSUED BY THE PROVINCE OF ONTARIO.

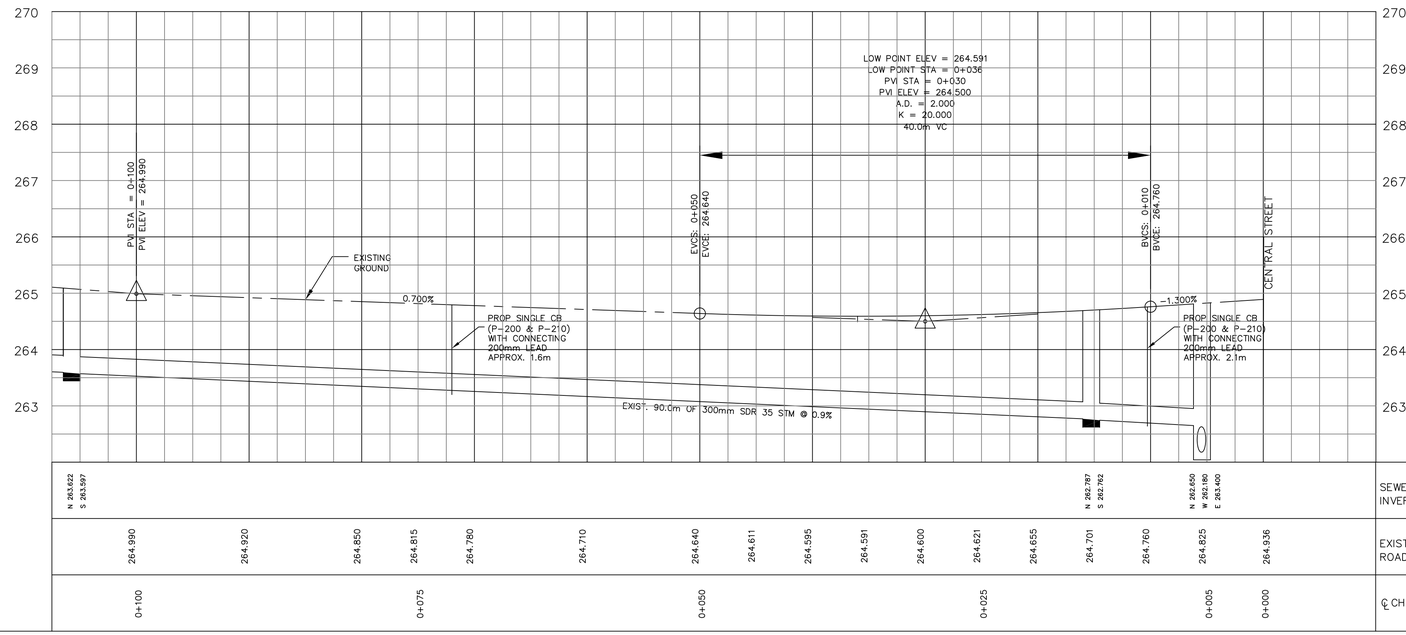
6. CONTRACTOR TO PROVIDE SUPPORT FOR UTILITY POLES AS REQUIRED DURING INSTALLATION OF UNDERGROUND SERVICES OR SLOPE STABILIZATION WORKS.



PROPOSED DITCH DETAIL
SECTION 'A-A'



SUMP WATER OUTFALL
DETAIL



CITY OF PICKERING BENCH MARK ELEV. 268.629

No. 9-003:
Brass tablet set horizontally in South face of Baptist Church on North side of Central Street approximately 58m East of Franklin Street in village of Claremont. Plate is 0.20m West of Southeast corner and 0.40m above grade.

No.	DATE	BY	REVISIONS
1	SEPT 24	SB	UPDATED AS PER RESIDENT CONVERSTIONS

City of PICKERING

ENGINEERING & PUBLIC WORKS DEPARTMENT

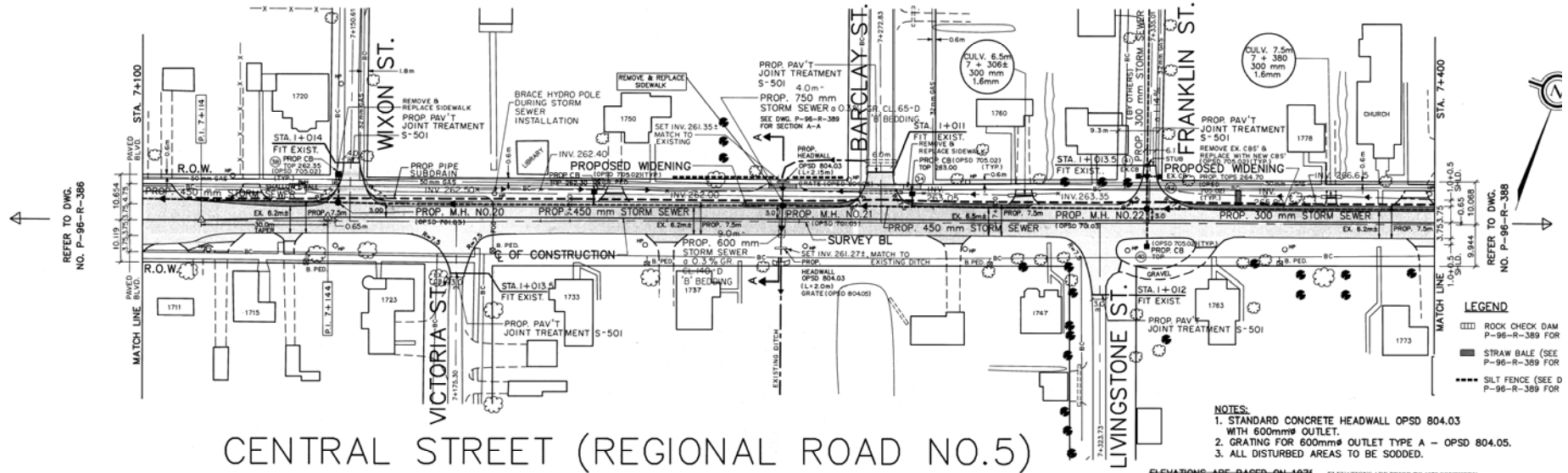
for RICHARD HOLBORN, P. ENG.
DIRECTOR, ENGINEERING & PUBLIC WORKS

TITLE

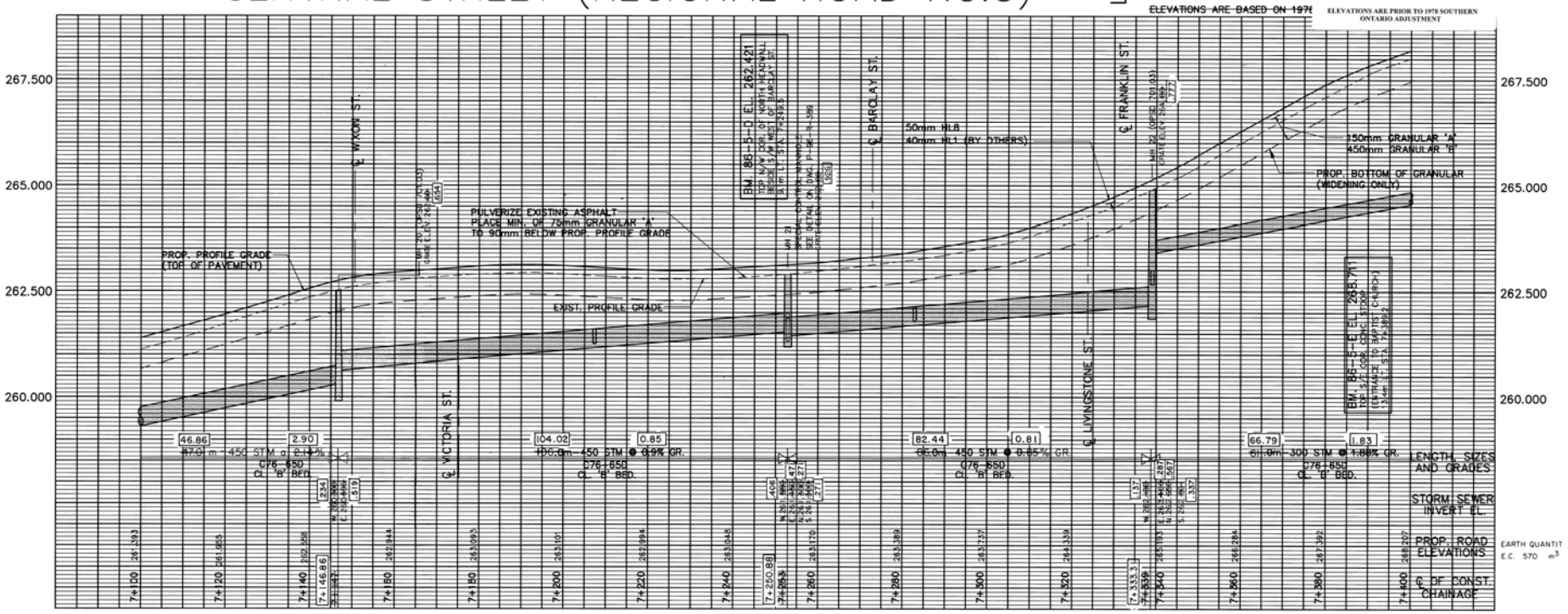
DRAINAGE IMPROVEMENTS AT FRANKLIN STREET & CENTRAL STREET (R.R. 5) INTERSECTION

SURVEY BY:	REGION OF DURHAM	DATE:	MARCH, 1997
DRAWN BY:	S. BOOKER	DATE:	SEPTEMBER, 2013
DESIGN BY:	S. BOOKER	DATE:	NOVEMBER, 2013
PLAN SCALE:	1:250	℄ PROFILE SCALE:	H 1:250 V 1:50
DRAWING No.	P-01	SHEET 1 of 2	

File: L:\MPondE\CAD Work\DRAWINGS\2013\Q-X-2013 Franklin Street\Franklin Street\Plan & Profile.dwg - Revised by <SMOHAMMED> : Fri, Oct 04 2013 - 9:31am



CENTRAL STREET (REGIONAL ROAD NO.5)



ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED

CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. THE REGION ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

paul theil associates limited
consulting engineers
131 Delta Park Blvd. , Brampton, Ontario

UTILITIES VERIFIED
BELL CANADA – 1996 06 14

LICENSED PROFESSIONAL ENGINEER PROVINCE OF ONTARIO

NO.	DATE	NAME	REVISIONS
	97 11	K.M.	AS RECORDED (H. PARK)

DRAWN	KIRK SCHULZ	DATE	05/96
DESIGN	DON MOSS	DATE	05/96
CHECKED	WERNER GLEIS	DATE	05/96
APPROVED		DATE	

HORZ. 10 0 5 10m
SCALE
VERT. 5 0 5m

SURVEY DATA
DATA 1968 07
UPDATES: 1983,1986,1988 1990,1991

THE REGIONAL MUNICIPALITY OF DURHAM
WORKS DEPARTMENT
WHITBY ONTARIO

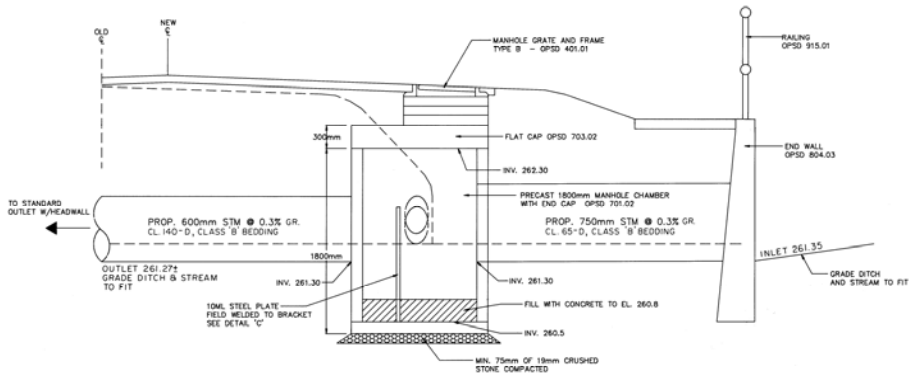
REGIONAL ROAD 5
FROM 50m E. OF OLD BROCK RD. TO 20m W. OF LORN ST.

RD. NO. 5 LOT NO. CON. VIII & IX TWP. AREA MUN. PICKERING

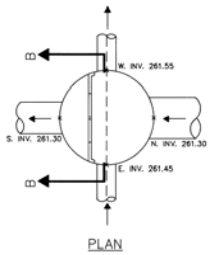
CONTRAC D96·

DRAWING P-96-R

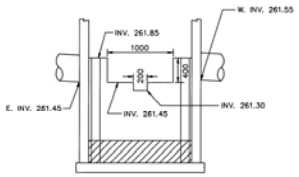
SHEET



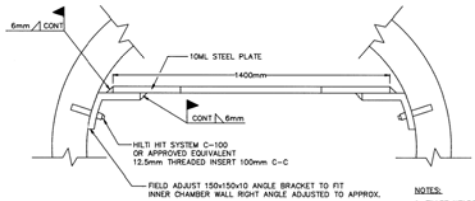
SECTION A-A
N.T.S.



PLAN

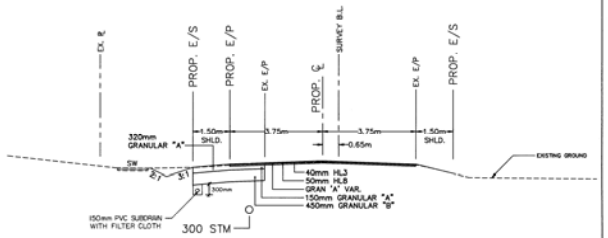


SECTION B-B

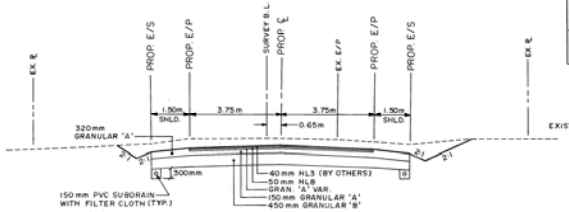


DETAIL 'C'

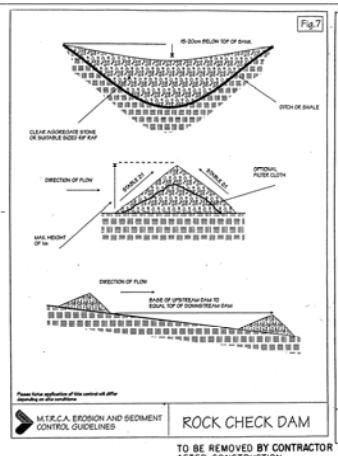
NOTES:
1. FILLET WELDS WITH E480XX ELECTRODES.
2. PAINT STEEL PLATE AND BRACKETS AFTER INSTALLATION OR FACTORY WELD AND ASPHALT COAT THE PLATE.



TYPICAL ROAD CROSS SECTION (WIDENING)
1:100

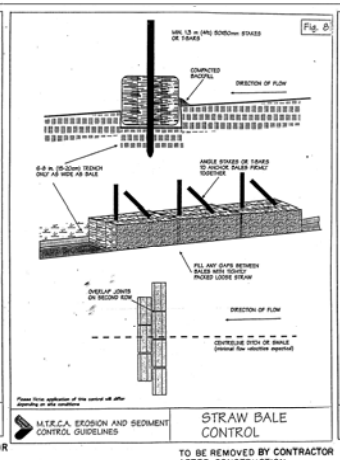


TYPICAL ROAD CROSS SECTION (FULL WIDTH GRANULAR)
STA. 6+700 TO STA. 6+775
1:100



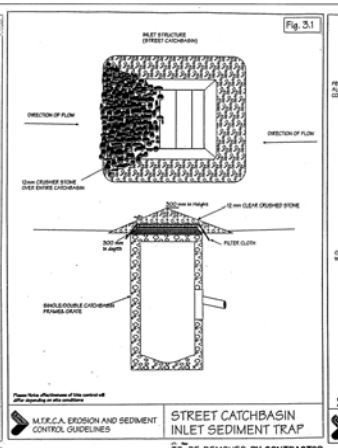
M.T.R.C.A. EROSION AND SEDIMENT CONTROL GUIDELINES — ROCK CHECK DAM

TO BE REMOVED BY CONTRACTOR AFTER CONSTRUCTION



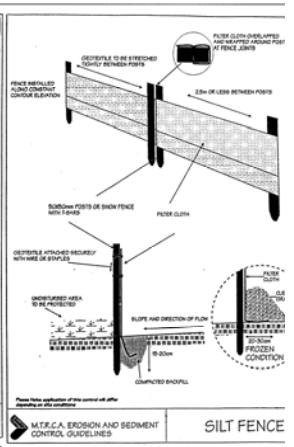
M.T.R.C.A. EROSION AND SEDIMENT CONTROL GUIDELINES — STRAW BALE CONTROL

TO BE REMOVED BY CONTRACTOR AFTER CONSTRUCTION



M.T.R.C.A. EROSION AND SEDIMENT CONTROL GUIDELINES — STREET CATCHBASIN INLET SEDIMENT TRAP

TO BE REMOVED BY CONTRACTOR AFTER CONSTRUCTION



M.T.R.C.A. EROSION AND SEDIMENT CONTROL GUIDELINES — SILT FENCE

TO BE REMOVED BY CO AFTER CONSTRUCTION

ELEVATIONS ARE PRIOR TO 1978 SOUTHERN ONTARIO ADJUSTMENT

ALL DIMENSIONS IN METRES UNLESS OTHERWISE NOTED

CONTRACTOR TO BE RESPONSIBLE FOR LOCATION OF ALL EXISTING U/G & OVERHEAD UTILITIES. VARIOUS UTILITIES CONCERNED TO BE GIVEN REQUIRED ADVANCE NOTICE PRIOR TO ANY DIGGING, FOR STAKE OUT. THE REGION ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF EXISTING UTILITIES AS INDICATED ON THIS DRAWING.

paul theil associates limited
consulting engineers
131 Delta Park Blvd. , Brampton, Ontario

UTILITIES VERIFIED
BELL CANADA - 1996 06 14

LICENSED PROFESSIONAL ENGINEER — RICHARD T. MOSS — 01/11/96 — PROVINCE OF ONTARIO

NO.	DATE	NAME	REVISIONS

DRAWN	KIRK SCHULZ	DATE 05/96
DESIGN	DON MOSS	DATE 05/96
CHECKED	WERNER GLEIS	DATE 05/96
APPROVED		DATE
SCALE : AS NOTED	SURVEY DATA DATA 1966 07	
	UPDATES: 1983,1986,1988 1990,1991	

THE REGIONAL MUNICIPALITY OF DURHAM
WORKS DEPARTMENT
WHITBY ONTARIO

REGIONAL ROAD 5
CONSTRUCTION DETAILS

RD. NO. 5 LOT NO. CON. VIII & IX TWP. AREA MUN. PICKERING

CONTRAC
D96-

DRAWING
P-96-R-

SHEET 7


NO
EXIT


STOP


STOP