SERVICING AND STORMWATER MANAGEMENT REPORT - 2885 CARP ROAD

December 2, 2022

Prepared for:
HQ Management Group

Prepared by:
Stantec Consulting Limited
300-1331 Clyde Avenue
Ottawa, Ontario, K2C 3G4

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Prepared by: 

Signature

Michael Wu, E.I.T.

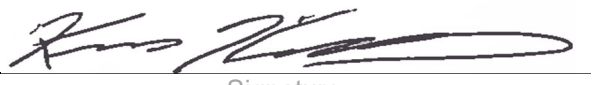
Printed Name

Reviewed by: 

Signature

Neal Cody, P.Eng.

Printed Name

Approved by: 

Signature

Kris Kilborn, C.E.T.

Printed Name

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1 Introduction

Stantec Consulting Ltd. Has been commissioned by HQ Management Group to prepare a servicing study in support of a Site Plan Control submission for the proposed development located at 2885 Carp Road in the City of Ottawa. The site is situated along the west side of Carp Road, just southeast of West Lake Crescent and southwest of the intersection of McGee Road and Carp Road.

The proposed development site currently comprises of a vacant property with temporary buildings at the centre. The site area is approximately 1.20 ha of land and will support a single-storey warehouse for storage of concrete trucks and will replace several small temporary buildings. The site is currently zoned as RC9 (Rural Commercial) by the City of Ottawa with its location illustrated in **Figure 1**. The intent of this report is to provide a servicing scenario for the site that is free of conflicts, provides on-site servicing in accordance with City of Ottawa design guidelines, and utilizes the existing local infrastructure in accordance with the guidelines outlined per consultation with City of Ottawa staff.

Figure 1: 2885 Carp Road Site Location

2 Background

Documents referenced in preparation of the design for the 2885 Carp Road development include:

- *Geotechnical Investigation – Proposed Commercial Development – 2885 Carp Road,* GEMTEC Consulting Engineers and Scientists Limited, August 2, 2022.
- *City of Ottawa Sewer Design Guidelines* and all subsequent technical bulletins, October 2012
- *Ontario Regulation 332/12: Building Code,* November 1, 2022
- Records of Pre-consultation with the City of Ottawa (Appendix C)

3 Water Supply Servicing

3.1 Background

The proposed development comprises a one-storey pre-engineered warehouse building, complete with above ground parking and access areas. The proposed warehouse will be serviced via a 25 mm diameter building service connection from the existing well located on the north edge of the access roadway, east of the proposed building.

3.2 Potable Water Demands

Water demands for the development were estimated using the Ministry of Environment's Design Guidelines for Drinking Water Systems (2008).

The assessment for fire flow requirements was completed according to the Ontario Building Code (OBC) criteria using a "combustible with fire resistance" rating. As the proposed warehouse is for the storage of concrete trucks, low hazard industrial occupancy (Group F Division 3) was applied. Based on the calculations per the OBC (**Appendix A.1**), the maximum required fire flows for this development are 60 L/s (3,600 L/min).

Three underground potable water storage tanks are proposed to supplement low yielding wells to meet fire flow water demands. The tanks will receive water from the well that are filled during off peak hours. The facility's water demand requires three portable storage tanks with a total 135,000 L capacity (45,000 L per tank), which is sufficient for the required volume of 113,322 L.

3.3 Summary of Findings

The proposed development is located in an area of the City that will require private servicing to obtain the required domestic and emergency fire flows. The proposed servicing plan will provide sufficient water supply for fire flows for the proposed development based on OBC guidelines and as per the City of Ottawa water design guidelines.

4 Wastewater Servicing

The subject site is located outside the City's sanitary collection area. The pre-consultation has not identified any special constraints for the proposed development to be serviced by a private sewage system other than those related to the Ontario Building Code (OBC) requirements. As such, the proposed building will require installation of a new septic tank and bed located south of the proposed warehouse building, which will service the building via a 150 mm diameter sanitary service lateral. The proposed location of the sewage system is identified on Stantec's servicing and grading plans (**Drawing SSGP-1**) in **Appendix E**, with details to be provided by the geotechnical consultant.

5 Stormwater Management

5.1 Objectives

The goal of this stormwater servicing and stormwater management (SWM) plan is to determine the measures necessary to control the post-development runoff from the proposed development quantity and quality of stormwater released from the proposed development to the pre-development rates, meeting the criteria established during the consultation process with City of Ottawa and Mississippi Valley Conservation Authority (MVCA), and to provide sufficient details required for approval and construction.

The existing drainage conditions of the site has a sloping tendency towards the south.

5.2 SWM Criteria and Constraints

Criteria were established by combining current design practices outlined by the City of Ottawa Design Guidelines (2012), and through consultation with City of Ottawa staff. The following summarizes the criteria, with the source of each criterion indicated in brackets:

General

- Use of the dual drainage principle (City of Ottawa).
- Wherever feasible and practical, site-level measures should be used to reduce and control the volume and rate of runoff (City of Ottawa)
- Assess impact of 100-year event outlined in the City of Ottawa Sewer Design Guidelines on major & minor drainage system (City of Ottawa)

Ditch & Inlet Controls

- Proposed site to discharge to the existing ditch within the Carp Road ROW at the eastern boundary of the subject site (City of Ottawa).
- All stormwater runoff from the site up to and including the 100-year storm event to be stored on site and released into the ditch at a maximum discharge equivalent to the 100-year storm predevelopment release rate.

Surface Storage & Overland Flow

- Building openings to be a minimum of 0.30m above the 100-year water level (City of Ottawa)
- Maximum depth of flow under either static or dynamic conditions shall be less than 0.30m (City of Ottawa)
- Provide adequate emergency overflow conveyance off-site (City of Ottawa)

Pre- Consultation Notes

- The Carp Road roadway ditch to the east of the site is the preferred stormwater outlet
- Restrict post-development flows for all storms exceeding any allowable release up to and including the 100-year event to pre-development rates
- Utilize swales and ditches on-site to convey surface flows to the preferred outlet
- Ensure stormwater management design has adequate erosion and sediment controls
- Provide normal (70% TSS removal) quality control
- Meet the infiltration target of 204 mm/year, as the area is designated as high groundwater recharge potential in the Carp River Subwatershed Study

The site servicing approach is to direct stormwater runoff to an appropriate outlet by surface flows and to utilize rural drainage infrastructure, such as swales and ditches, for conveyance and storage.

5.3 Stormwater Management Design

The intent of the stormwater management plan presented herein is to mitigate any negative impact from runoff that the proposed development will have on the existing rural drainage infrastructure, while providing adequate capacity to service the proposed building. The proposed stormwater management plan is designed to detain runoff on site to ensure that peak flows after construction will not exceed the allowable site release rate detailed below.

PCSWMM modeling was employed to assess the rate and volume of runoff generated during pre – and post-development conditions. The site was subdivided into subcatchments (subareas) to represent the site within PCSWMM. A summary of subcatchment areas and runoff coefficients is provided further within the report.

5.3.1 ALLOWABLE RELEASE RATE

Based on consultation with City of Ottawa staff, post-development allowable peak flows up to the 100-year event are to be controlled to the pre-development 100-year peak flow levels. Excess stormwater is to be restricted on-site using control measures. The existing site condition is considered vacant with a runoff coefficient of 0.2.

The existing drainage conditions for the external areas (EX) and the subject site are considered to be vacant lots. The on-site areas and the adjacent external areas contribute to the final discharge rate from the site, which can be seen below in **Table 5.1.**

Table 5.1: Existing Areas and Runoff Coefficients

Area ID	Area (ha)	C
EX	0.49	0.20
SITE	1.20	0.20

A hydrologic modeling exercise was completed with PC-SWMM to generate pre-development runoff response from the site and external areas. The pre-development stage model is shown in **Figure 2.** Due to the rural drainage area, the 100-year 24-hour SCS storm event was used to generate surface runoff from the site and external areas under the pre-development stage. The pre-development stage peak flow was obtained at a single outlet location as shown in **Figure 2**.

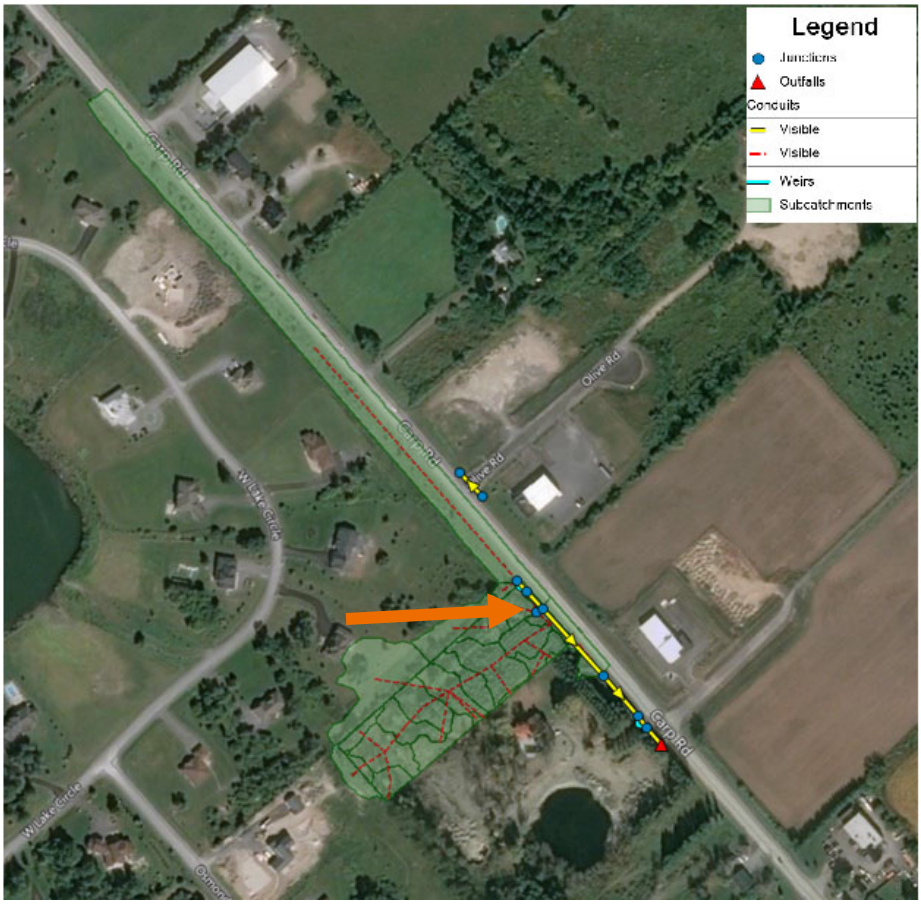


Figure 2: Existing Conditions Model Layout

The following assumptions were applied to the existing conditions model:

- Hydrologic parameters as per Ottawa Sewer Design Guidelines, including Manning's 'n', initial abstraction and depression storage values
- Land use across the subject site and external areas was determined from aerial imagery.
- Subcatchment and drainage system were delineated using DEM data

The pre-development models were run with 24-hour SCS storm events. The simulated maximum flows for each return period are shown in **Table 5.2.** The post-development peak flows up to the 100-year 24-hour SCS storm event must be restricted to be less than or equal to the target flow rates.

Table 5.2: Target Release Rate

Design Storm Event	Pre-Development Peak Flow (L/s)
5-Year	19
10-Year	33
25-Year	53
50-Year	69
100-Year	88

5.3.2 PROPOSED CONDITIONS

The stormwater from the subject site and the external areas will be collected in a swale and will ultimately be conveyed to the roadside ditch on Carp Road over a rock weir acting as an outlet. A single dry well in the northwest corner of the site will also be proposed. The post-development model (**Figure 3**) was built in PCSWMM and includes the site and off-site drainage areas, the proposed dry well in the north-west and swale running across the western and southern property lines and ultimately conveying the flows towards the swale on the eastern end of the property. The dry well will receive some flows from the external areas as well as the proposed development while the swale will receive the majority of flows.

To meet the stormwater discharge criteria for the proposed development, the proposed swale will be used for stormwater detention, reduce peak flow discharge from the area to the roadside ditch, promote infiltration and improve water quality.

Figure 3: Proposed Conditions Model Layout

5.3.3 SITE STORAGE REQUIREMENTS

To meet the restrictive stormwater release criteria for the proposed development, surface storage within a swale in conjunction with a weir and subsurface storage within a dry well will be used for stormwater detention and to reduce the peak outflow from the site. The proposed swale along with the weir details are specified in **Drawing SSGP-1**.

5.3.3.1 Surface Storage

Surface storage in the swale will be utilized during storm events to help adequately control flows and achieve the target allowable release rates for the proposed development. **Table 5.3** outlines the surface storage potential within the swale and he storage requirement during the largest storm event modeled, the 100-year event. The surface storage will accommodate both active stormwater storage and infiltration stormwater storage for its catchment areas (discussed in **Section 5.5**).

Table 5.3: Surface Storage Requirements

Design Storm	Controlled Release (L/s)	Volume Available (m^3)	Volume Stored (m^3)
100-Year	82.8	251	226

5.3.3.2 Subsurface Storage

An underground drywell is proposed to capture and store runoff coming from the north-western end of the subject site as well as some of the external areas. The dry well has a capacity of 4.0m^3.

The bottom of subsurface storage well has been set higher than the groundwater levels at 114.97m. The dry well detail can be found in the **Drawing SSGP-1**. **Table 5.4** outlines the maximum head level and the required volume within the dry well.

Table 5.4: Subsurface Storage

Storm Return Period	Design Head (m)	$V_{required}$ * (m^3)
100-year	2.2	3.74

5.3.3.3 Uncontrolled Release

Due to grading restrictions, one subcatchment area has been designed to sheet flow uncontrolled as determined by the site grading design and the natural topography. The UNC-1 catchment area will discharge off-site uncontrolled to the adjacent south property. The amount of flow to the adjacent property will be less than that in pre-development conditions since most of the area will be redirected to the proposed ditch system within the Carp Road ROW as shown in **Drawing SD-1**.

Table 5.5 summarizes the estimated uncontrolled storm release rate during the 100-year storm events from the uncontrolled area (UNC-1) flowing south towards the adjacent property from the site.

Table 5.5: Uncontrolled Area Release Rate

Design Storm	Uncontrolled Release (L/s)
100-Year	6

Peak discharges from the uncontrolled area have been considered in the overall SWM plan. However, as can be seen in **Figure 4,** the peak of the uncontrolled hydrograph occurs at a different time from the weir discharge to the Carp Road ROW ditch. The peak of uncontrolled flows happens earlier than the controlled peak flow from the swale. Thus, the peaks do not coincide, and the combined hydrograph outflow does not exceed the target release rate for the site.

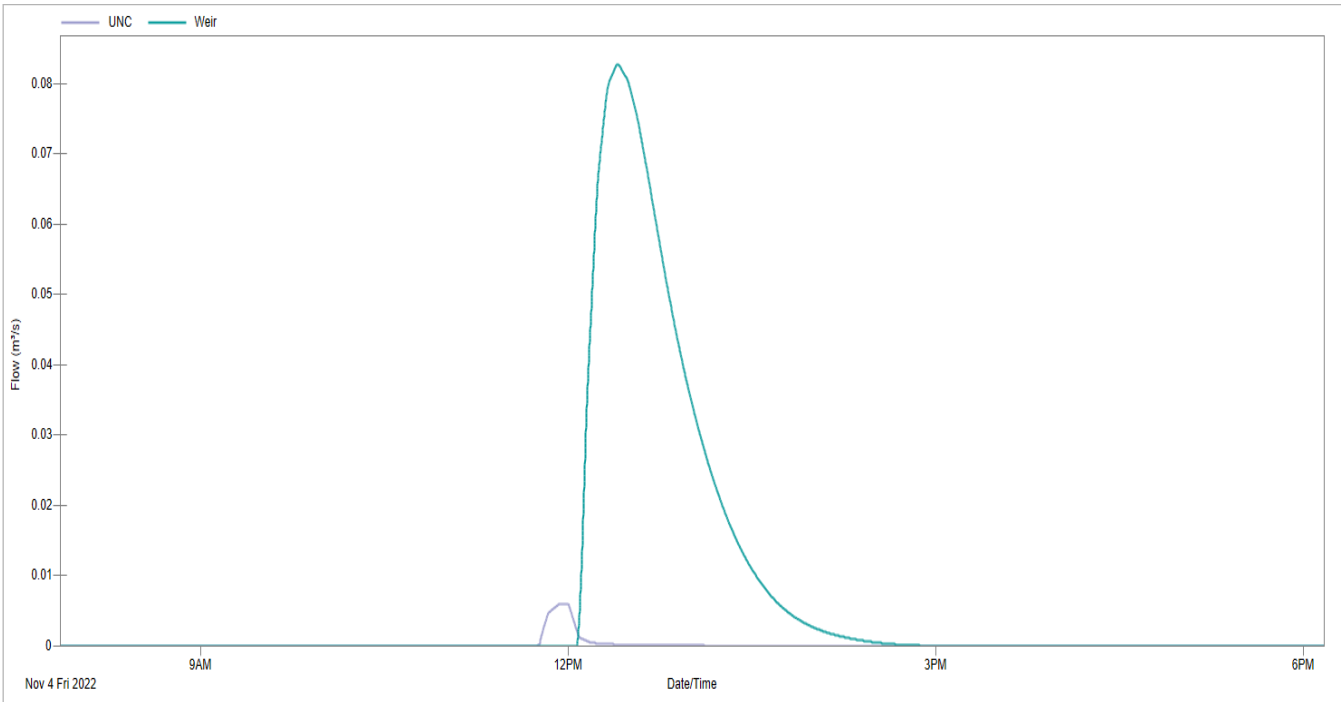


Figure 4: Hydrographs for Uncontrolled area ("UNC", smaller hydrograph in purple at left) and Controlled flow from the Surface Storage ("Weir", larger hydrograph in blue at right).

Table 5.6 presents the summary of pre-development and post-development flows for different design storm events. The PCSWMM model was run for the 5, 10, 25, 50 and 100-year SCS design storms, and in all design scenarios the post-development flows were lower than the pre-development flows. Therefore, the proposed stormwater management plan provides adequate attenuation storage to control the post-development flows to below target rates.

Table 5.6: Comparison of Pre-Dev to Post-Dev Flows

Design Storm Event	Pre-Dev Flow (L/s)	Post-Dev Flow (L/s)
5-Year	19	0
10-Year	33	8
25-Year	53	37
50-Year	69	59
100-Year	88	83

5.4 Water Quality Control

Water quality treatment to a 'Normal' level of protection (70% TSS removal) is required for the site per the MVCA. In order to achieve this level of treatment, a treatment train approach is proposed for the site. The proposed site drainage allows for most of the site to sheet drain across the grassed area towards the swale. This will allow for an initial filtering and settling of solids.

Secondly, the swale would act as quality control. The swale would provide stormwater quality improvements by primarily trapping sediments and oils. According to the Stormwater Management Planning and Design Manual (2003) by MOECP, the water quality storage requirements of the swale were determined. As per **Table 5.7**, the required storage volume for the site in order to attain the minimum TSS removal of 70% is 9.1m^3. For the purposes of this analysis, the minimum storage volume factor of 20 m^3/ha was taken from Table 3.2 of MOE SWM Design Manual to be conservative although the site impervious levels are lower.

Table 5.7: SWMP Water Quality Requirement

SWMP Type	Drainage Area (ha)	Protection Level (%)	Water Quality Requirement (m^3/ha)	Storage upstream at the elevation of check dam (m^3)	Longevity Factor	Volume of water quality storage required (m^3)
Swale	1.68	70	20	49	0.5	9.1
(1) Calculations based on MOE Stormwater Management Planning and Design Manual, 2003 *(2) Water quality requirement calculated from Table 3.2 of the design manual* *(3) Longevity factor estimated from Table 4.12 of the design manual*						

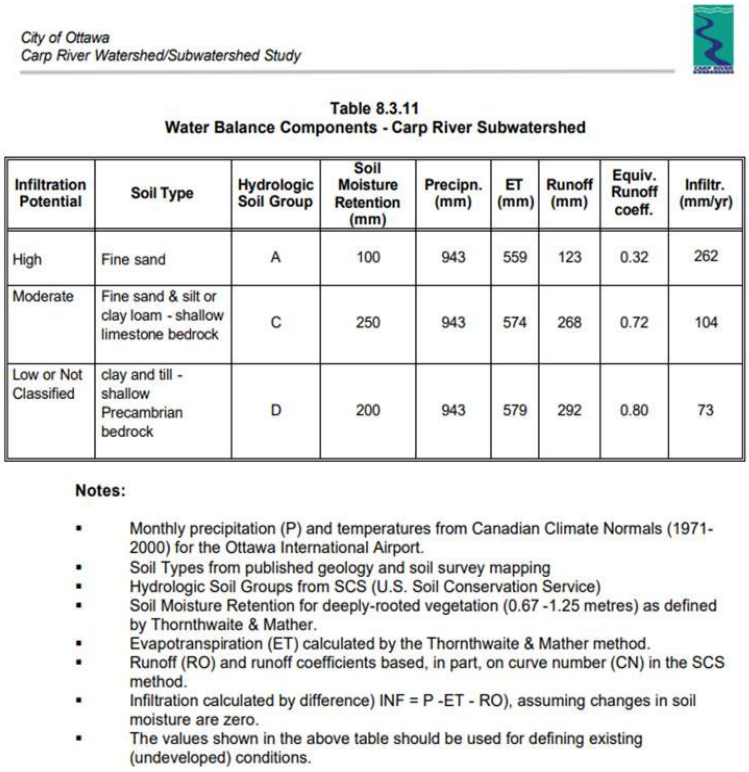
Therefore, with the various proposed measures it is estimated that at least 70% TSS removal will be achieved through the system.

5.5 Annual Infiltration Capture

MVCA has indicated that the development site needs to target a total infiltration of 204 mm per year, according to the Carp River Subwatershed Study. As can be seen from the **Figure 5** taken from the Carp River Subwatershed Study, the annual precipitation is 943 mm. However, the target infiltration rate for sandy silt soils (Hydrological Soil Group B) has not been mentioned within the table. Therefore using interpolation a target infiltration rate of 204mm was established, which is derived from the fact that this site lies within an area of high-moderate infiltration potential soils (i.e., sandy - silt soils). The values for hydrological parameters were determined as shown in **Table 5.8** and using guidance from the Carp River Subwatershed Study (see excerpt, **Figure 5**).

Table 5.8: Carp River Watershed - Water Balance Components (Includes Hydrological Group B)

Soil Type	Water Holding Capacity (mm)	Hydrologic Soil Group	Precipitation (mm)	Evapo-transpiration (mm)	Surplus Water (mm)	Infiltration (mm)	Runoff (mm)
Fine Sand	100	A	943	559	384	262	123
Fine Sandy Loam	150	B	943	572	371	204	167
Silt Loam	250	C	943	574	369	104	268
Clay	200	D	943	579	364	73	292



City of Ottawa
Carp River Watershed/Subwatershed Study

Table 8.3.11
Water Balance Components - Carp River Subwatershed

Infiltration Potential	Soil Type	Hydrologic Soil Group	Soil Moisture Retention (mm)	Precipn. (mm)	ET (mm)	Runoff (mm)	Equiv. Runoff coeff.	Infiltr. (mm/yr)
High	Fine sand	A	100	943	559	123	0.32	262
Moderate	Fine sand & silt or clay loam - shallow limestone bedrock	C	250	943	574	268	0.72	104
Low or Not Classified	clay and till - shallow Precambrian bedrock	D	200	943	579	292	0.80	73

Notes:

- Monthly precipitation (P) and temperatures from Canadian Climate Normals (1971-2000) for the Ottawa International Airport.
- Soil Types from published geology and soil survey mapping
- Hydrologic Soil Groups from SCS (U.S. Soil Conservation Service)
- Soil Moisture Retention for deeply-rooted vegetation (0.67 -1.25 metres) as defined by Thornthwaite & Mather.
- Evapotranspiration (ET) calculated by the Thornthwaite & Mather method.
- Runoff (RO) and runoff coefficients based, in part, on curve number (CN) in the SCS method.
- Infiltration calculated by difference) INF = P -ET - RO), assuming changes in soil moisture are zero.
- The values shown in the above table should be used for defining existing (undeveloped) conditions.

Figure 5: Water Balance Components - Carp River Watershed

To meet the infiltration requirements Stantec has used an annual water balance approach. The rainfall parameters and the methodology from the Carp River Watershed Study have been used to compare the pre- and post-development conditions.

The water balance analysis for the site is presented in **Table 5.9**, including the amount of precipitation on the site and the runoff, infiltration, and evaporation.

Table 5.9: Summary of Water Balance Results

Conditions	Precipitation			Evapotranspiration			Infiltration			Runoff		
	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent
PreDev Drainage	16,019	943	***100%***	9,615	566	***60%***	3,430	202	***21%***	2,967	175	***19%***
Post Dev Drainage (without augmented Infiltration)	16,019	943	***100%***	8,798	518	***55%***	3,139	185	***20%***	4,082	240	***25%***

Conditions	Precipitation			Evapotranspiration			Infiltration			Runoff		
	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent
PostDev Drainage (without augmented Infiltration)	16,019	943	***100%***	8,798	518	***55%***	3,139	185	***20%***	4,082	240	***25%***
Infiltration Augmentation							3,855			-3,855		
Post Dev Drainage (with augmented Infiltration)	16,019	943	***100%***	8,798	518	***55%***	6,993	412	***44%***	227	13	***1%***

As can be seen in the annual water balance spreadsheet in **Appendix B.1,** in order to reach the target infiltration rate, an infiltration swale has been provided to capture the rainfall and store a volume of up to 49 m^3 for infiltration (see Storage Calc. Sheet for Swale). The runoff volume and corresponding rainfall depth required to completely fill the infiltration volume was determined as 30.13 mm.

Historical daily rainfall amounts were collected from the Ottawa Macdonald-Cartier Gauge for the years 1971-2000 and are presented in **Figure 6.**

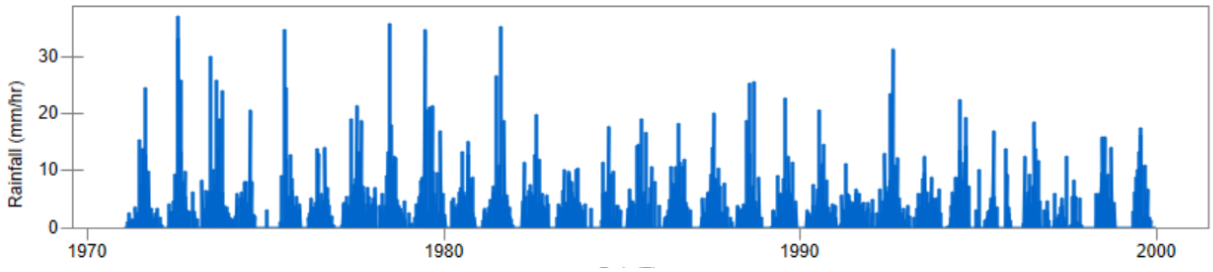


Figure 6: Rainfall Events 1971-2000

Daily rainfall volumes were ranked and percentiles calculated to determine the percentage of rainfall events that would be captured within the storage swale for infiltration. The methodology used for calculation of

percentile rainfall is outlined in the *LEED Stormwater Management Quantity Credit Requirement*[1], a common industry standard method also used by the US EPA (see **Appendix B.2** for the calculation sheet).

Figure 7 represents the percentile-precipitation events ranked. It can be seen that the required rainfall for completely using the infiltration storage (30.13 mm) corresponds to a value of 95.2%, meaning 95.2% of all daily rainfall values are equal to or smaller than this amount - meaning that on an annual average basis, 95.2% of all daily events will be captured by the infiltration storage swale.

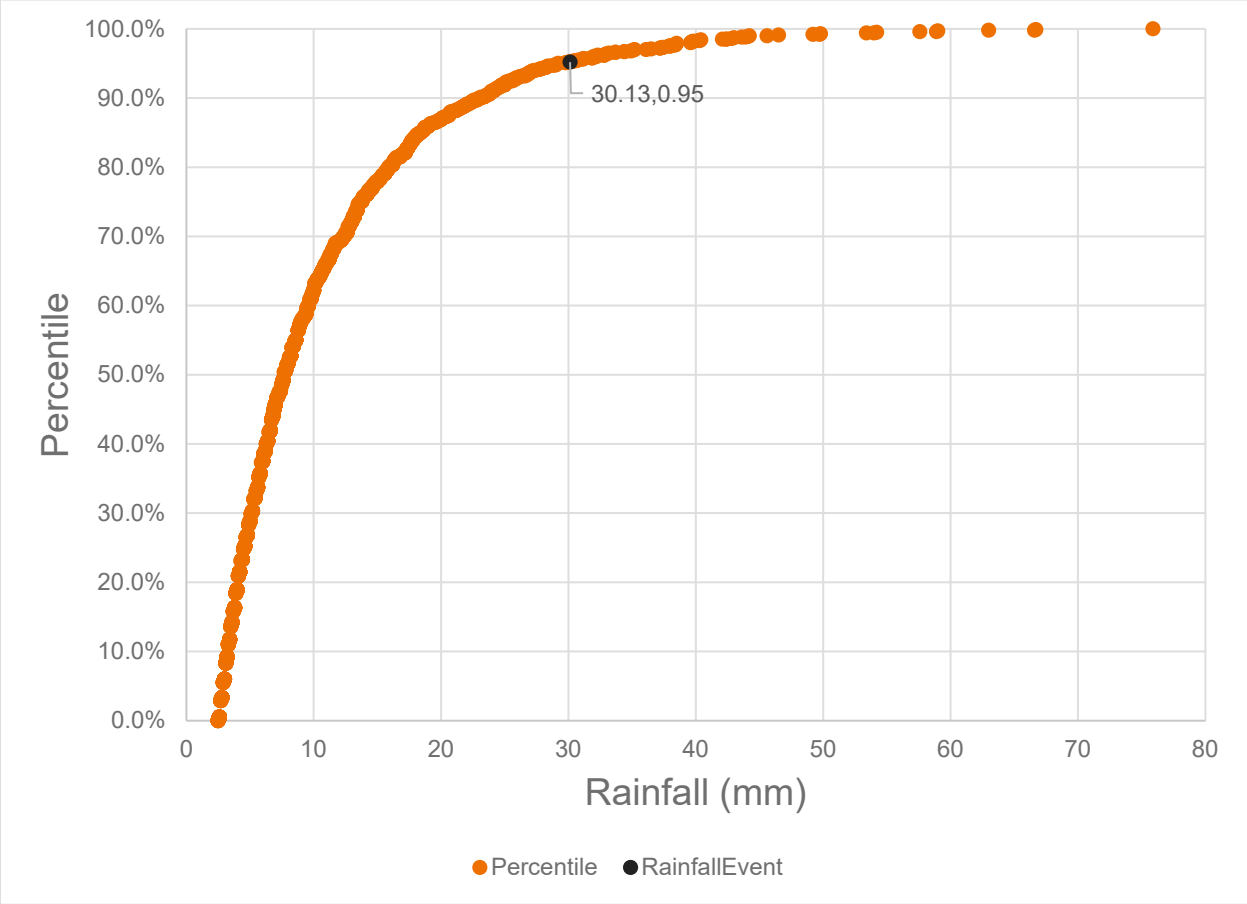


Figure 7: Percentile-Precipitation Event Graph, Daily Rainfall, 1971-2000

Using the ratio of 95.2% infiltration capture and applying it to the annual runoff amount entering the swale allows us to calculate the annual volume which is infiltrated through the swale.

Hence, after comparing the pre-development to post-development water balance components, it was found that post-development the site infiltration would be more than the pre-development conditions (see **Table 5.10**) for the site.

[1] Stormwater Management | U.S. Green Building Council (usgbc.org)

Table 5.10: Comparison of Pre and Post Development Infiltration Rates

Conditions	Precipitation			Evapotranspiration			Infiltration			Runoff		
	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent	(cu.m/yr)	(mm/yr)	Percent
PreDev Drainage	16,019	943	***100%***	9,615	566	***60%***	3,430	202	***21%***	2,967	175	***19%***
Post Dev Drainage	16,019	943	***100%***	8,798	518	***55%***	6,993	412	***44%***	227	13	***1%***

In the Geotechnical Investigation Report (see **Appendix D.1)**, the site soils were characterized as sandy silt. Thus, the infiltration rate for these types of soils was assumed to be 20mm/hr (based on soil infiltration rates determined by Food Agriculture Organization[2]). Over a bed area of 286 m^2, infiltration of 20 mm/hour (minimum rate taken to be conservative) would take 8.6 hours to infiltrate 49 m^3 of storage with an outflow infiltration rate of 1.6L/s. As can be seen, the site soils have the capacity for adequately infiltrating within a 24-hour drawdown period, reducing the likelihood of spilling from the infiltration storage during a back-to-back storm event. Thus, the site will have adequate storage space and infiltrative capacity to accommodate the infiltration volume.

[2] Annex 2 Infiltration rate and infiltration test - Food and Agriculture ...

6 Grading and Drainage

The proposed development site measures approximately 1.20 ha in area and is currently partly developed with temporary buildings. The topography across the site is relatively flat, and most of the site currently drains from north to south.

A detailed grading plan (see **Drawing SSGP-1**) has been provided to satisfy the stormwater management requirements for the site and minimize the cut and fill requirements. The grading approach maintains emergency overland flow routes for major system flows as illustrated in **Drawing SSGP-1**, in accordance with City of Ottawa requirements.

7 Utilities

Hydro overhead lines exist along Carp Road. It is anticipated that the existing infrastructure will be sufficient to provide a means of distribution for the proposed site under interim and ultimate conditions. Consultation with Hydro Ottawa will continue throughout the Composite Utility Planning process. Exact size, location, and routing of hydro utilities, as well as required transformer locations, will be finalized after design circulation.

Bell lines are expected to be able to service the proposed site via infrastructure within Carp Road. Bell may require easements for their respective cabinets and vaults. Easement requirements and location of telecommunication infrastructure will be determined as part of the Composite Utility Planning process, following design circulation.

8 Approvals/Permits

The pre-consultation has identified that an Environmental Compliance Approval (ECA) will likely be required from the Ministry of the Environment, Conservation and Parks (MECP). It is expected that the stormwater management would be subject to an ECA.

Installation of the septic tank, line and bed is expected to require approval from the Ottawa Septic System Office by way of OSSO permit. Furthermore, the Mississippi Valley Conservation Authority (MVCA) will need to be consulted in order to obtain municipal approval for site Water Supply Servicing.

For typical ground or surface water volumes being pumped during the construction phase, between 50,000 to 400,000 L/day, it is required to register on the Environmental Activity and Sector Registry (EASR). A minimum of two to four weeks should be allotted for completion of the EASR registration and the preparation of the Water Taking and Discharge Plan by a Qualified Person as stipulated under O.Reg. 63/16. An MECP Permit to Take Water (PTTW) is required for dewatering volumes exceeding 400,000L/day, which is not anticipated for the site.

9 Erosion Control During Construction

Erosion and sediment controls must be in place during construction. The following recommendations to the contractor will be included in contract documents and communicated to the Contractor.

1. Implement best management practices to provide appropriate protection of the existing and proposed drainage system and the receiving watercourse(s).
2. Limit the extent of the exposed soils at any given time.
3. Re-vegetate exposed areas as soon as possible.
4. Minimize the area to be cleared and grubbed.
5. Protect exposed slopes with geotextiles, geogrid, or synthetic mulches.
6. Provide sediment traps and basins during dewatering works, as required.
7. Schedule the construction works at times which avoid flooding due to seasonal rains.

The Contractor will also be required to complete inspections and guarantee the proper performance of their erosion and sediment control measures at least after every rainfall. The inspections are to include verification that stormwater is not flowing under silt barriers.

Refer to **Drawing EC-1** in for the proposed location of the silt fences and other erosion control measures.

10 Geotechnical Investigation

A geotechnical investigation for 2885 Carp Road was carried out by GEMTEC Consulting Engineers and Scientists Limited on May 2022. The report summarizes the existing soil conditions within the subject area and construction recommendations.

Subsurface soil conditions within the subject area were determined from 2 boreholes on the western area of the site, where the proposed warehouse will be built. The subsurface profile at the test hole locations consists of fill at the ground surface in borehole 22-01 and under the tope soil in borehole 22-02, extending to approximate depths of 2.3 metres below the existing ground surface. The fill was generally observed to consist of silty sand with varying amounts of gravel and clay.

Bedrock at the site is indicated to be interbedded limestone and shale of the Verulam formation at depths ranging from about 5 m to 10 m below ground surface, and groundwater levels were observed to be around at 2.5 m depth from ground surface elevation. As the site is underlain by native deposits of glacial till, there are no grade raise restrictions recommended for grading based on the borehole information.

The recommended pavement structure is further presented in **Table 10.1** below.

Table 10.1: Recommended Pavement Structure

Material	Car Only Parking Areas	Access Lanes and Heavy Truck Parking Areas
Wear Course –Superpave 12.5 Asphaltic Concrete	80 mm	40 mm
Wear Course –Superpave 19.0 Asphaltic Concrete	-	50 mm
BASE – OPSS Granular A	150 mm	150 mm
SUBBASE – OPSS Granular B Type II	300 mm	450 mm

For further details, please refer to the full GEMTEC report in **Appendix D.1**.

11 Conclusions

11.1 Water Servicing

The existing well on site is deemed capable of supplying the required water supply for fire flows. Based on the OBC calculations, the maximum required fire flow for the site is 60 L/s (3,600 L/min). Fire suppression protection will be provided through three underground 45,000 L water storage tanks.

11.2 Wastewater Servicing

A new sewage (septic) system will be established to support the occupancy and usage demands of the subject site, to be designed by Others.

11.3 Stormwater Servicing

The stormwater management plan provided can effectively control on-site runoff and meet the target allowable release rates. Surface storage and subsurface storage will be utilized to provide additional detention benefits. The ultimate storm outlet will be the roadside ditch along Carp Road. An infiltration swale provided within the site would meet the 70% TSS removal water quality requirement. Infiltration volume storage is provided below the weir elevation in the surface storage area (swale) to capture storms and exceed the 204 mm/year infiltration target.

11.4 Grading

Grading for the site has been designed to direct as much runoff as possible to the Carp Road roadside ditch east of the site, and to provide minimum grades and slopes in compliance with design guidelines. Erosion and sediment control measures will be implemented during construction to reduce the environmental impacts to the receiving watercourses.

11.5 Utilities

Utility infrastructure exists within overhead lines within the Carp Road ROW at the eastern boundary of the proposed site. It is anticipated that existing infrastructure will be sufficient to provide a means of distribution for the proposed site. Exact size, location and routing of utilities will be finalized after design circulation.

11.6 Approvals/Permits

Due to the infiltration component of the proposed stormwater management, it is likely that an ECA will be required from the MECP for the stormwater management. A Permit To Take Water is not anticipated to be required for the pumping requirements for service lateral and building footing installation. The Mississippi

Valley Conservation Authority will need to be consulted in order to obtain municipal approval for site Water Supply Servicing.

APPENDICES

Appendix A Water Supply Servicing

A.1 Fire Flow Requirements Per OBC

Fire Flow Calculations as per Ontario Building Code 2006 (Appendix A)

Job#	160401724	Designed by:	MW
Date	15-Nov-22	Checked by:	
		Description:	Service Building

$Q = KVS_{tot}$

Q = Volume of water required (L)
V = Total building volume (m3)
K = Water supply coefficient from Table 1
S_{tot} = Sotal of spatial coefficeint values from property line exposures on all sides as obtained from the formula

$S_{tot} = 1.0 + [S_{side1} + S_{side2} + S_{side3} + S_{side4}]$

1	Type of construction	Building Classification		Water Supply Coefficient
	Combustible with Fire-Resistance Ratings	A-4, F-3		22

2	Area of one floor (m^2)	number of floors	height of ceiling (m)	Total Building Volume (m^3)
	704.223	1	4.8768	3,434

3	Side	Exposure Distance (m)	Spatial Coefficient	Total Spatial Coeffiecient
	North	4.59	0.5	1.5
	East	161.34	0	
	South	26.79	0	
	West	10.09	0	

4	Established Fire Safety Plan?	Reduction in Volume (%)		Total Volume Reduction
	no	0%		0%

5		**Total Volume 'Q' (L)**
		113,322
		Minimum Required Fire Flow (L/min)
		3,600

Appendix B Stormwater Management

B.1 Annual Water Balance

Water Balance and Infiltration Calculations

Project : 2885 Carp Road

Existing Drainage Conditions

	Cover	Soils	Topography
The soils are: Average For Stage	Forest	Sandy	Rolling Land (~2%)

204 mm/yr Infiltration Rate (1)
572 mm/yr Evapotranspiration Rate (3)

Area with:					
Average For Stage	1.7	ha	% Impervious	1%
Total	1.7	ha	% Impervious	1%

	Average For Stage		
Precipitation	943	mm/yr (2)	
Evapotranspiration	566	mm/yr (3)	(ET*(1-%IMP))
Infiltration	202	mm/yr	(INFIL*(1-%IMP))
Evaporation (Open Water)	0	mm/yr (4)	
Runoff	175	mm/yr	

Precipitation	16,012	m^3/yr	943.0	mm/yr
Total Evapotranspiration (pre)	9,615	m^3/yr	566.3	mm/yr
Total Predevelopment Infiltration	**3,430**	**m^3/yr**	**202.0**	**mm/yr**
Total Evaporation (pre)	0	m^3/yr	0.0	mm/yr
Total Runoff (pre)	2,967	m^3/yr	174.7	mm/yr

Proposed Drainage Conditions - External Areas

Surface Water Regime

	Cover	Soils	Topography
The soils are: Average For Stage	Grass	Sandy	Rolling Land (~2%)

204 mm/yr Infiltration Rate (1)
572 mm/yr Evapotranspiration Rate (3)

Area with:					
Average For Stage	0.5	ha	% Impervious	1%
Total	0.5	ha	% Impervious	1%

	Average For Stage		
Precipitation	943	mm/yr (2)	
Evapotranspiration	566	mm/yr (3)	(ET*(1-%IMP))
Infiltration	202	mm/yr	(INFIL*(1-%IMP))
Evaporation	0	mm/yr (4)	
Runoff	175	mm/yr	

Precipitation	4,661	m^3/yr	943	mm/yr
Total Evapotranspiration (post)	2,799	m^3/yr	566	mm/yr
Total Infiltration (post)	999	m^3/yr	202	mm/yr
Total Evaporation (post)	0	m^3/yr	0	mm/yr
Total Runoff (post)	864	m^3/yr	175	mm/yr

Infiltration Post Development is **999 m^3/yr** 202.0 mm/yr

Proposed Drainage Conditions - Site

Surface Water Regime

	Cover	Soils	Topography
The soils are: Average For Stage	Cultivated	Sandy	Rolling Land (~2%)

204 mm/yr Infiltration Rate (1)
572 mm/yr Evapotranspiration Rate (3)

Area with:					
Average For Stage	1.186	ha	% Impervious	13.11%
Total	1.186	ha	% Impervious	13.11%

	Average For Stage		
Precipitation	943	mm/yr (2)	
Evapotranspiration	497	mm/yr (3)	(ET*(1-%IMP))

Infiltration	177	mm/yr	(INFIL*(1-%IMP))
Evaporation	0	mm/yr (4)	
Runoff	269	mm/yr	

Precipitation	11,179	m3/yr	943	mm/yr
Total Evapotranspiration (post)	5,892	m3/yr	497	mm/yr
Total Infiltration (post)	2,102	m3/yr	177	mm/yr
Total Evaporation (post)	0	m3/yr	0	mm/yr
Total Runoff (post)	3,185	m3/yr	269	mm/yr

Infiltration Post Development is	**2,102**	**m3/yr**	177 mm/yr

Proposed Drainage Conditions - Uncontrolled

Surface Water Regime

Cover	Soils	Topography
Grass	Sandy-Silt	Rolling Land (~2%)

The soils are: Average For Stage — 204 mm/yr Infiltration Rate (1)
572 mm/yr Evapotranspiration Rate (3)

Area with:	Average For Stage	0.019	ha	% Impervious	1.00%
	Total	0.019	ha	% Impervious	1.00%

	Average For Stage		
Precipitation	943	mm/yr (2)	
Evapotranspiration	566	mm/yr (3)	(ET*(1-%IMP))
Infiltration	202	mm/yr	(INFIL*(1-%IMP))
Evaporation	0	mm/yr (4)	
Runoff	175	mm/yr	

Precipitation	178	m^3/yr	15.0	mm/yr
Total Evapotranspiration (post)	107	m^3/yr	9.0	mm/yr
Total Infiltration (post)	38	m^3/yr	3.2	mm/yr
Total Evaporation (post)	0	m^3/yr	0.0	mm/yr
Total Runoff (post)	33	m^3/yr	2.8	mm/yr

Infiltration Post Development is	**38**	**m^3/yr**	202 mm/yr

Infiltration Augmentation

Swale (Area):	286	m^2	
Swale (Depth):	0.15	m	
Available Infiltration Volume	49	m3	*(Based on swale volume calculations in calc sheet)*
Runoff Capture	2.92	mm	
% Imperviousness for the overall site	9.68%		
Rainfall Inflow	30.13	mm	
% of Rainfall Events smaller than Rainfall	95.2	%	
Runoff Volume/ year	3855		

Total Added Infiltration:	**3,855**	**m3/yr**	
Average Infiltration from the site	**3,100**	**m3/yr**	184.6 mm/yr
Average Infiltration from the uncontrolled area	**38**	**m3/yr**	202.0 mm/yr
Total Post Development Infiltration	**6,993**	**m3/yr**	411.7 mm/yr

SUMMARY

Infiltration required as per Carp Watershed Study	**204**	**mm/yr**
Infiltration rate calculated as per Water Balance	**412**	**mm/yr**

(1) Precipitation, Infiltration and Evapotranspiration values based on the Carp River Watershed Study

B.2 Rainfall Volume Percentile Calculation

Calculation of Percentile for Rainfall Volumes, Using Ottawa MacDonald-Cartier Gauge, 1971-2000

Uses methodology for calcualtion of percentile rainfall outlined in LEED Stormwater Management Quantity Credit Requirement, referencing these docur
https://www.usgbc.org/credits/cities-plan-deisgn-communities-plan-design/v41-15
https://www.epa.gov/sites/default/files/2015-08/documents/epa_swm_guidance.pdf
Uses hourly rainfall aggregated into daily events, neglecting all days with less then 2.5mm of rain.

Date	Duration (h)	Maximum Rainfall (mm/hr)	Minimum Rainfall (mm/hr)	Mean Rainfall (mm/hr)	Duration of Exceedances (h)	Duration of Deficits (h)	Number of Exceedances	Number of Deficits	Volume of Exceedances (mm)	Volume of Deficits (mm)	Total Rainfall (mm)	Percentile
10/6/1995 0:00	24	13.8	0	3.163	24	6	1	1	75.9	0	75.9	100.0%
8/5/1981 0:00	24	35.3	0	2.779	24	16	1	3	66.7	0	66.7	99.9%
6/3/1995 0:00	24	16.9	0	2.775	24	11	1	2	66.6	0	66.6	99.8%
9/14/1979 0:00	24	9.5	0	2.625	24	11	1	2	63	0	63	99.8%
7/24/1987 0:00	24	20	0	2.458	24	13	1	4	59	0	59	99.7%
10/21/1995 0:00	24	9.3	0	2.454	24	5	1	4	58.9	0	58.9	99.6%
9/11/1986 0:00	24	10.7	0	2.4	24	5	1	4	57.6	0	57.6	99.6%
7/17/1992 0:00	24	23.6	0	2.258	24	9	1	4	54.2	0	54.2	99.5%
7/20/1990 0:00	24	20.6	0	2.25	24	11	1	2	54	0	54	99.4%
8/7/1972 0:00	24	25.9	0	2.225	24	9	1	4	53.4	0	53.4	99.4%
6/22/1981 0:00	24	17.3	0	2.075	24	13	1	3	49.8	0	49.8	99.3%
6/21/1972 0:00	24	9.1	0	2.071	24	7	1	3	49.7	0	49.7	99.2%
8/4/1981 0:00	24	28.4	0	2.05	24	19	1	3	49.2	0	49.2	99.2%
8/4/1992 0:00	24	31.5	0	1.938	24	12	1	2	46.5	0	46.5	99.1%
6/25/1988 0:00	24	18.8	0	1.9	24	16	1	4	45.6	0	45.6	99.0%
3/21/1980 0:00	24	4.6	0	1.842	24	4	1	3	44.2	0	44.2	99.0%
6/16/1979 0:00	24	34.9	0	1.838	24	21	1	2	44.1	0	44.1	98.9%
7/13/1972 0:00	24	33.3	0	1.829	24	20	1	3	43.9	0	43.9	98.8%
8/8/1973 0:00	24	25.9	0	1.817	24	17	1	2	43.6	0	43.6	98.8%
10/25/1980 0:00	24	8.9	0	1.792	24	11	1	1	43	0	43	98.7%
9/8/1981 0:00	24	18.7	0	1.783	24	17	1	2	42.8	0	42.8	98.6%
11/26/1979 0:00	24	16.9	0	1.767	24	14	1	4	42.4	0	42.4	98.5%
7/29/1986 0:00	24	18.3	0	1.767	24	19	1	2	42.4	0	42.4	98.5%
11/8/1996 0:00	24	3.1	0	1.754	24	2	1	1	42.1	0	42.1	98.5%

2/21/1997 0:00	24	5.9	0	1.683	24	9	1	2	40.4	0	40.4	98.4%
8/25/1982 0:00	24	9.5	0	1.679	24	13	1	2	40.3	0	40.3	98.3%
10/5/1983 0:00	24	10.1	0	1.675	24	11	1	3	40.2	0	40.2	98.3%
9/12/1987 0:00	24	10.4	0	1.658	24	11	1	5	39.8	0	39.8	98.2%
6/27/1994 0:00	24	9.9	0	1.654	24	9	1	3	39.7	0	39.7	98.1%
9/6/1999 0:00	24	11	0	1.654	24	17	1	3	39.7	0	39.7	98.1%
9/1/1977 0:00	24	18.9	0	1.65	24	18	1	3	39.6	0	39.6	98.0%
7/20/1975 0:00	24	24.6	0	1.604	24	18	1	2	38.5	0	38.5	97.9%
3/13/1977 0:00	24	4.3	0	1.6	24	1	1	2	38.4	0	38.4	97.7%
6/18/1978 0:00	24	36	0	1.6	24	20	1	3	38.4	0	38.4	97.7%
8/12/1984 0:00	24	17.8	0	1.6	24	12	1	5	38.4	0	38.4	97.7%
7/12/1972 0:00	24	37.3	0	1.596	24	22	1	2	38.3	0	38.3	97.7%
10/20/1989 0:00	24	11.5	0	1.583	24	8	1	3	38	0	38	97.5%
3/27/1992 0:00	24	6.8	0	1.583	24	10	1	1	38	0	38	97.5%
7/31/1996 0:00	24	18.5	0	1.579	24	11	1	4	37.9	0	37.9	97.5%
8/10/1971 0:00	24	24.6	0	1.558	24	18	1	4	37.4	0	37.4	97.3%
6/17/1985 0:00	24	14.7	0	1.558	24	20	1	1	37.4	0	37.4	97.3%
8/28/1990 0:00	24	14.6	0	1.558	24	18	1	3	37.4	0	37.4	97.3%
10/5/1973 0:00	24	24.1	0	1.55	24	16	1	3	37.2	0	37.2	97.2%
7/26/1988 0:00	24	25.3	0	1.55	24	19	1	4	37.2	0	37.2	97.2%
7/27/1989 0:00	24	22.7	0	1.521	24	17	1	4	36.5	0	36.5	97.1%
7/24/1975 0:00	24	17.3	0	1.504	24	18	1	4	36.1	0	36.1	97.0%
9/30/1990 0:00	24	8.3	0	1.467	24	12	1	2	35.2	0	35.2	97.0%
7/8/1975 0:00	24	34.8	0	1.463	24	22	1	2	35.1	0	35.1	96.9%
6/25/1994 0:00	24	13.5	0	1.454	24	16	1	3	34.9	0	34.9	96.8%
6/16/1973 0:00	24	6.4	0	1.433	24	12	1	2	34.4	0	34.4	96.7%
8/2/1979 0:00	24	14.8	0	1.433	24	20	1	3	34.4	0	34.4	96.7%
3/4/1974 0:00	24	5.8	0	1.404	24	12	1	1	33.7	0	33.7	96.6%
1/15/1995 0:00	24	5.3	0	1.404	24	6	1	3	33.7	0	33.7	96.6%
4/4/1987 0:00	24	5.2	0	1.383	24	8	1	2	33.2	0	33.2	96.5%
7/14/1987 0:00	24	14.1	0	1.375	24	18	1	3	33	0	33	96.4%
5/19/1976 0:00	24	4.3	0	1.367	24	1	1	2	32.8	0	32.8	96.2%
7/1/1979 0:00	24	20.6	0	1.367	24	15	1	4	32.8	0	32.8	96.2%
9/21/1983 0:00	24	10	0	1.367	24	15	1	2	32.8	0	32.8	96.2%

9/20/1976 0:00	24	4.8	0	1.346	24	7	1	2	32.3	0	32.3	96.2%
4/9/1980 0:00	24	5.2	0	1.342	24	5	1	1	32.2	0	32.2	96.0%
11/28/1993 0:00	24	4.8	0	1.342	24	8	1	3	32.2	0	32.2	96.0%
7/17/1977 0:00	24	21.3	0	1.333	24	20	1	2	32	0	32	96.0%
3/17/1973 0:00	24	8.4	0	1.329	24	6	1	4	31.9	0	31.9	95.8%
6/15/1981 0:00	24	26.8	0	1.329	24	20	1	3	31.9	0	31.9	95.8%
7/17/1971 0:00	24	13.7	0	1.325	24	17	1	1	31.8	0	31.8	95.8%
4/11/1978 0:00	24	5.9	0	1.3	24	7	1	2	31.2	0	31.2	95.7%
6/6/1994 0:00	24	8.7	0	1.3	24	13	1	1	31.2	0	31.2	95.7%
7/18/1974 0:00	24	20.6	0	1.296	24	21	1	1	31.1	0	31.1	95.6%
5/19/1986 0:00	24	7.6	0	1.283	24	8	1	5	30.8	0	30.8	95.5%
11/8/1972 0:00	24	2.5	0	1.275	24	3	1	2	30.6	0	30.6	95.4%
5/11/1981 0:00	24	4.4	0	1.275	24	10	1	3	30.6	0	30.6	95.4%
10/15/1991 0:00	24	4.3	0	1.267	24	12	1	2	30.4	0	30.4	95.3%
6/11/1973 0:00	24	30	0	1.263	24	22	1	2	30.3	0	30.3	95.3%
8/24/1988 0:00	24	4	0	1.25	24	6	1	2	30	0	30	95.2%
9/10/1981 0:00	24	5.1	0	1.242	24	13	1	4	29.8	0	29.8	95.1%
5/22/1986 0:00	24	6.8	0	1.242	24	15	1	1	29.8	0	29.8	95.1%
8/28/1976 0:00	24	14	0	1.217	24	16	1	4	29.2	0	29.2	95.0%
8/6/1984 0:00	24	10.2	0	1.208	24	18	1	3	29	0	29	94.8%
5/20/1986 0:00	24	5	0	1.208	24	10	1	3	29	0	29	94.8%
9/1/1989 0:00	24	12.5	0	1.208	24	14	1	3	29	0	29	94.8%
9/17/1988 0:00	24	25.5	0	1.2	24	18	1	3	28.8	0	28.8	94.7%
5/21/1979 0:00	24	8.9	0	1.183	24	13	1	4	28.4	0	28.4	94.6%
8/4/1988 0:00	24	11.7	0	1.183	24	16	1	2	28.4	0	28.4	94.6%
8/29/1979 0:00	24	21.5	0	1.179	24	19	1	3	28.3	0	28.3	94.5%
5/18/1973 0:00	24	5.1	0	1.175	24	2	1	2	28.2	0	28.2	94.4%
10/27/1981 0:00	24	3.5	0	1.175	24	5	1	2	28.2	0	28.2	94.4%
1/14/1992 0:00	24	4.9	0	1.175	24	12	1	2	28.2	0	28.2	94.4%
5/17/1991 0:00	24	5.6	0	1.167	24	9	1	2	28	0	28	94.3%
12/25/1979 0:00	24	5.8	0	1.158	24	6	1	1	27.8	0	27.8	94.2%
9/27/1985 0:00	24	3.4	0	1.158	24	6	1	2	27.8	0	27.8	94.2%
8/14/1971 0:00	24	12.7	0	1.154	24	19	1	3	27.7	0	27.7	94.1%
5/31/1993 0:00	24	5.8	0	1.142	24	10	1	3	27.4	0	27.4	94.0%

10/23/1972 0:00	24	2.5	0	1.133	24	3	1	3	27.2	0	27.2	93.9%
6/24/1986 0:00	24	6.1	0	1.133	24	12	1	3	27.2	0	27.2	93.9%
8/28/1971 0:00	24	4.8	0	1.129	24	8	1	3	27.1	0	27.1	93.8%
9/5/1973 0:00	24	19.1	0	1.125	24	19	1	2	27	0	27	93.7%
7/10/1989 0:00	24	8.5	0	1.125	24	15	1	3	27	0	27	93.7%
7/22/1972 0:00	24	13.7	0	1.121	24	19	1	2	26.9	0	26.9	93.6%
9/11/1975 0:00	24	12.7	0	1.121	24	18	1	2	26.9	0	26.9	93.6%
4/20/1982 0:00	24	5.4	0	1.117	24	11	1	3	26.8	0	26.8	93.4%
6/12/1986 0:00	24	7.3	0	1.117	24	11	1	2	26.8	0	26.8	93.4%
10/7/1998 0:00	24	6.9	0	1.112	24	11	1	3	26.7	0	26.7	93.4%
4/2/1979 0:00	24	3.7	0	1.108	24	7	1	2	26.6	0	26.6	93.2%
8/5/1990 0:00	24	9.2	0	1.108	24	8	1	4	26.6	0	26.6	93.2%
4/21/1991 0:00	24	4.8	0	1.1	24	12	1	1	26.4	0	26.4	93.2%
11/4/1982 0:00	24	2.2	0.2	1.092	24	0	1	0	26.2	0	26.2	93.1%
1/26/1978 0:00	24	6.9	0	1.088	24	12	1	2	26.1	0	26.1	93.0%
7/2/1994 0:00	24	14.1	0	1.087	24	20	1	2	26.1	0	26.1	93.0%
11/27/1993 0:00	24	6.7	0	1.079	24	11	1	1	25.9	0	25.9	92.9%
6/22/1988 0:00	24	16.4	0	1.075	24	16	1	3	25.8	0	25.8	92.7%
4/8/1991 0:00	24	11.3	0	1.075	24	17	1	4	25.8	0	25.8	92.7%
4/10/1993 0:00	24	3.2	0	1.075	24	4	1	1	25.8	0	25.8	92.7%
7/24/1999 0:00	24	16.2	0	1.071	24	18	1	3	25.7	0	25.7	92.7%
7/26/1986 0:00	24	6.4	0	1.067	24	18	1	3	25.6	0	25.6	92.5%
9/8/1987 0:00	24	9	0	1.067	24	12	1	2	25.6	0	25.6	92.5%
5/24/1993 0:00	24	3.8	0	1.058	24	14	1	2	25.4	0	25.4	92.5%
4/27/1973 0:00	24	6.4	0	1.054	24	13	1	1	25.3	0	25.3	92.4%
5/2/1983 0:00	24	5.3	0	1.05	24	12	1	4	25.2	0	25.2	92.3%
9/26/1977 0:00	24	7.2	0	1.046	24	12	1	2	25.1	0	25.1	92.3%
10/3/1973 0:00	24	6.1	0	1.042	24	17	1	3	25	0	25	91.9%
11/17/1978 0:00	24	4.6	0	1.042	24	12	1	1	25	0	25	91.9%
9/23/1981 0:00	24	2.7	0	1.042	24	7	1	3	25	0	25	91.9%
6/24/1984 0:00	24	6	0	1.042	24	15	1	4	25	0	25	91.9%
7/31/1992 0:00	24	8.4	0	1.042	24	11	1	1	25	0	25	91.9%
7/31/1979 0:00	24	21.2	0	1.033	24	20	1	2	24.8	0	24.8	91.9%
6/22/1979 0:00	24	13.9	0	1.029	24	17	1	3	24.7	0	24.7	91.8%

10/8/1983 0:00	24	3	0	1.025	24	9	1	1	24.6	0	24.6	91.6%
5/5/1985 0:00	24	4.1	0	1.025	24	9	1	2	24.6	0	24.6	91.6%
8/8/1996 0:00	24	13.9	0	1.025	24	19	1	2	24.6	0	24.6	91.6%
9/27/1998 0:00	24	14.1	0	1.025	24	16	1	4	24.6	0	24.6	91.6%
5/18/1980 0:00	24	4.2	0	1.021	24	6	1	2	24.5	0	24.5	91.5%
8/28/1992 0:00	24	6.1	0	1.017	24	12	1	3	24.4	0	24.4	91.4%
8/4/1994 0:00	24	11.4	0	1.017	24	18	1	3	24.4	0	24.4	91.4%
8/5/1977 0:00	24	13.3	0	1.013	24	17	1	3	24.3	0	24.3	91.3%
9/26/1975 0:00	24	6.4	0	1.008	24	13	1	4	24.2	0	24.2	91.1%
9/18/1976 0:00	24	6.9	0	1.008	24	17	1	3	24.2	0	24.2	91.1%
6/15/1993 0:00	24	5.7	0	1.008	24	16	1	4	24.2	0	24.2	91.1%
4/28/1988 0:00	24	2.2	0	1	24	4	1	3	24	0	24	91.0%
8/4/1991 0:00	24	5.8	0	1	24	8	1	5	24	0	24	91.0%
5/26/1994 0:00	24	7.2	0	0.9958	24	12	1	3	23.9	0	23.9	90.9%
8/6/1990 0:00	24	5.9	0	0.9917	24	12	1	3	23.8	0	23.8	90.6%
6/29/1994 0:00	24	22.6	0	0.9917	24	22	1	2	23.8	0	23.8	90.6%
8/28/1994 0:00	24	19.2	0	0.9917	24	17	1	4	23.8	0	23.8	90.6%
4/20/1996 0:00	24	12.6	0	0.9917	24	11	1	4	23.8	0	23.8	90.6%
5/28/1981 0:00	24	5.7	0	0.9833	24	13	1	2	23.6	0	23.6	90.4%
8/15/1981 0:00	24	5.3	0	0.9833	24	12	1	4	23.6	0	23.6	90.4%
10/2/1988 0:00	24	4.6	0	0.9833	24	9	1	4	23.6	0	23.6	90.4%
5/9/1974 0:00	24	2.5	0	0.975	24	3	1	2	23.4	0	23.4	90.2%
5/7/1989 0:00	24	5	0	0.975	24	15	1	2	23.4	0	23.4	90.2%
11/15/1991 0:00	24	2.9	0	0.975	24	10	1	3	23.4	0	23.4	90.2%
10/17/1993 0:00	24	2.6	0	0.975	24	6	1	3	23.4	0	23.4	90.2%
8/3/1972 0:00	24	13.2	0	0.9708	24	19	1	3	23.3	0	23.3	90.1%
1/8/1978 0:00	24	5.1	0	0.9625	24	15	1	2	23.1	0	23.1	90.1%
9/1/1980 0:00	24	10	0	0.9583	24	16	1	4	23	0	23	89.9%
7/23/1990 0:00	24	9	0	0.9583	24	16	1	3	23	0	23	89.9%
10/9/1976 0:00	24	3.8	0	0.9542	24	12	1	3	22.9	0	22.9	89.9%
4/27/1979 0:00	24	3.3	0	0.95	24	12	1	2	22.8	0	22.8	89.7%
2/14/1984 0:00	24	3.2	0	0.95	24	7	1	2	22.8	0	22.8	89.7%
9/3/1993 0:00	24	8.7	0	0.9417	24	14	1	4	22.6	0	22.6	89.7%
8/18/1990 0:00	24	11.1	0	0.9375	24	21	1	2	22.5	0	22.5	89.6%

8/25/1985 0:00	24	6.2	0	0.9333	24	15	1	3	22.4	0	22.4	89.4%
7/24/1988 0:00	24	13	0	0.9333	24	17	1	2	22.4	0	22.4	89.4%
11/5/1988 0:00	24	8.9	0	0.9333	24	17	1	1	22.4	0	22.4	89.4%
5/12/1974 0:00	24	4.8	0	0.9292	24	7	1	4	22.3	0	22.3	89.3%
9/1/1982 0:00	24	11.9	0	0.9208	24	21	1	2	22.1	0	22.1	89.1%
7/27/1993 0:00	24	6.1	0	0.9208	24	15	1	3	22.1	0	22.1	89.1%
8/21/1994 0:00	24	14.3	0	0.9208	24	16	1	2	22.1	0	22.1	89.1%
5/3/1997 0:00	24	5.2	0	0.9167	24	13	1	3	22	0	22	89.1%
9/13/1971 0:00	24	9.9	0	0.9083	24	16	1	3	21.8	0	21.8	88.8%
5/30/1983 0:00	24	4.3	0	0.9083	24	12	1	2	21.8	0	21.8	88.8%
10/3/1984 0:00	24	9.9	0	0.9083	24	17	1	3	21.8	0	21.8	88.8%
6/29/1987 0:00	24	7.6	0	0.9083	24	18	1	3	21.8	0	21.8	88.8%
6/13/1998 0:00	24	7.1	0	0.9083	24	19	1	2	21.8	0	21.8	88.8%
9/8/1996 0:00	24	5.9	0	0.9042	24	6	1	4	21.7	0	21.7	88.7%
8/1/1982 0:00	24	19.8	0	0.9	24	21	1	2	21.6	0	21.6	88.6%
7/12/1992 0:00	24	6.5	0	0.9	24	16	1	2	21.6	0	21.6	88.6%
8/3/1978 0:00	24	11.2	0	0.8917	24	14	1	6	21.4	0	21.4	88.4%
7/29/1985 0:00	24	5.5	0	0.8917	24	14	1	4	21.4	0	21.4	88.4%
8/1/1973 0:00	24	7.6	0	0.8833	24	14	1	4	21.2	0	21.2	88.2%
10/4/1983 0:00	24	10.4	0	0.8833	24	12	1	3	21.2	0	21.2	88.2%
10/9/1990 0:00	24	3.3	0	0.8833	24	7	1	2	21.2	0	21.2	88.2%
9/26/1998 0:00	24	14.1	0	0.8833	24	19	1	2	21.2	0	21.2	88.2%
2/24/1985 0:00	24	3.3	0	0.875	24	4	1	2	21	0	21	88.1%
6/26/1983 0:00	24	9.9	0	0.8667	24	17	1	3	20.8	0	20.8	88.0%
1/20/1995 0:00	24	4.2	0	0.8667	24	13	1	2	20.8	0	20.8	88.0%
9/12/1996 0:00	24	4.7	0	0.8625	24	14	1	3	20.7	0	20.7	87.9%
9/30/1972 0:00	24	5.3	0	0.8583	24	15	1	3	20.6	0	20.6	87.5%
7/21/1980 0:00	24	6.1	0	0.8583	24	15	1	3	20.6	0	20.6	87.5%
8/31/1980 0:00	24	12.7	0	0.8583	24	19	1	3	20.6	0	20.6	87.5%
9/12/1986 0:00	24	9	0	0.8583	24	19	1	3	20.6	0	20.6	87.5%
6/26/1998 0:00	24	15.8	0	0.8583	24	17	1	3	20.6	0	20.6	87.5%
7/1/1999 0:00	24	11.9	0	0.8583	24	21	1	2	20.6	0	20.6	87.5%
7/15/1977 0:00	24	13.2	0	0.85	24	21	1	2	20.4	0	20.4	87.3%
8/26/1985 0:00	24	16.7	0	0.85	24	21	1	2	20.4	0	20.4	87.3%

4/13/1994 0:00	24	4.3	0	0.85	24	9	1	7	20.4	0	20.4	87.3%
7/17/1999 0:00	24	17.5	0	0.85	24	21	1	2	20.4	0	20.4	87.3%
7/8/1980 0:00	24	7.5	0	0.8417	24	16	1	4	20.2	0	20.2	87.2%
6/7/1971 0:00	24	15.5	0	0.8375	24	19	1	3	20.1	0	20.1	87.1%
8/18/1973 0:00	24	13.7	0	0.8375	24	22	1	2	20.1	0	20.1	87.1%
7/16/1972 0:00	24	11.7	0	0.8333	24	19	1	4	20	0	20	86.9%
6/23/1985 0:00	24	8.8	0	0.8333	24	19	1	2	20	0	20	86.9%
7/16/1985 0:00	24	19	0	0.8333	24	20	1	2	20	0	20	86.9%
5/28/1977 0:00	24	5.6	0	0.8292	24	14	1	4	19.9	0	19.9	86.8%
10/1/1985 0:00	24	4.1	0	0.825	24	12	1	2	19.8	0	19.8	86.7%
9/29/1986 0:00	24	11.2	0	0.825	24	18	1	2	19.8	0	19.8	86.7%
10/7/1995 0:00	24	10.5	0	0.8208	24	18	1	1	19.7	0	19.7	86.6%
6/27/1986 0:00	24	5.3	0	0.8167	24	12	1	3	19.6	0	19.6	86.5%
8/13/1990 0:00	24	2	0	0.8167	24	11	1	2	19.6	0	19.6	86.5%
7/19/1992 0:00	24	12.4	0	0.8083	24	19	1	2	19.4	0	19.4	86.4%
3/12/1985 0:00	24	6.6	0	0.8	24	13	1	3	19.2	0	19.2	86.3%
5/26/1991 0:00	24	4.6	0	0.8	24	12	1	3	19.2	0	19.2	86.3%
5/23/1977 0:00	24	19.1	0	0.7958	24	23	1	2	19.1	0	19.1	86.1%
6/15/1982 0:00	24	5.3	0	0.7958	24	16	1	1	19.1	0	19.1	86.1%
9/29/1997 0:00	24	5	0	0.7958	24	12	1	3	19.1	0	19.1	86.1%
10/1/1977 0:00	24	3.4	0	0.7917	24	9	1	2	19	0	19	85.9%
7/8/1978 0:00	24	18.1	0	0.7917	24	21	1	3	19	0	19	85.9%
5/16/1981 0:00	24	7.1	0	0.7917	24	13	1	5	19	0	19	85.9%
8/23/1998 0:00	24	9.4	0	0.7833	24	18	1	3	18.8	0	18.8	85.8%
8/21/1997 0:00	24	5.3	0	0.7792	24	14	1	4	18.7	0	18.7	85.7%
6/14/1998 0:00	24	4.7	0	0.7792	24	14	1	3	18.7	0	18.7	85.7%
8/16/1978 0:00	24	10.6	0	0.775	24	20	1	3	18.6	0	18.6	85.3%
8/13/1984 0:00	24	11.3	0	0.775	24	16	1	2	18.6	0	18.6	85.3%
4/3/1990 0:00	24	2.3	0	0.775	24	2	1	2	18.6	0	18.6	85.3%
5/17/1992 0:00	24	12.9	0	0.775	24	20	1	2	18.6	0	18.6	85.3%
9/22/1992 0:00	24	12.3	0	0.775	24	17	1	3	18.6	0	18.6	85.3%
1/4/1993 0:00	24	3	0	0.775	24	8	1	1	18.6	0	18.6	85.3%
4/13/1972 0:00	24	4.1	0	0.7667	24	14	1	4	18.4	0	18.4	85.0%
8/30/1980 0:00	24	15	0	0.7667	24	22	1	2	18.4	0	18.4	85.0%

2/23/1981 0:00	24	3.4	0	0.7667	24	12	1	3	18.4	0	18.4	85.0%
5/24/1999 0:00	24	6.3	0	0.7667	24	13	1	2	18.4	0	18.4	85.0%
10/13/1985 0:00	24	7	0	0.7625	24	17	1	4	18.3	0	18.3	84.9%
5/6/1997 0:00	24	3.5	0	0.7625	24	10	1	2	18.3	0	18.3	84.9%
6/30/1980 0:00	24	13.3	0	0.7583	24	20	1	2	18.2	0	18.2	84.7%
6/16/1981 0:00	24	9.6	0	0.7583	24	17	1	4	18.2	0	18.2	84.7%
9/6/1982 0:00	24	4.2	0	0.7583	24	12	1	2	18.2	0	18.2	84.7%
7/29/1980 0:00	24	5.4	0	0.7542	24	12	1	4	18.1	0	18.1	84.7%
11/10/1975 0:00	24	5.3	0	0.75	24	18	1	2	18	0	18	84.4%
6/11/1979 0:00	24	5.5	0	0.75	24	12	1	5	18	0	18	84.4%
5/2/1989 0:00	24	1.6	0	0.75	24	3	1	2	18	0	18	84.4%
6/20/1999 0:00	24	10	0	0.75	24	21	1	2	18	0	18	84.4%
9/29/1972 0:00	24	3.6	0	0.7458	24	15	1	2	17.9	0	17.9	84.2%
10/2/1977 0:00	24	2	0	0.7458	24	3	1	2	17.9	0	17.9	84.2%
6/13/1978 0:00	24	5.6	0	0.7458	24	13	1	3	17.9	0	17.9	84.2%
5/27/1981 0:00	24	5.5	0	0.7417	24	14	1	3	17.8	0	17.8	83.9%
6/18/1984 0:00	24	11.5	0	0.7417	24	19	1	3	17.8	0	17.8	83.9%
1/20/1986 0:00	24	3.7	0	0.7417	24	9	1	5	17.8	0	17.8	83.9%
10/21/1993 0:00	24	5	0	0.7417	24	18	1	1	17.8	0	17.8	83.9%
9/27/1982 0:00	24	3.5	0	0.7375	24	8	1	4	17.7	0	17.7	83.8%
8/23/1984 0:00	24	8.8	0	0.7375	24	6	1	4	17.7	0	17.7	83.8%
7/26/1971 0:00	24	12.7	0	0.7333	24	18	1	2	17.6	0	17.6	83.4%
10/30/1973 0:00	24	3.8	0	0.7333	24	13	1	3	17.6	0	17.6	83.4%
10/9/1977 0:00	24	4	0	0.7333	24	15	1	3	17.6	0	17.6	83.4%
3/14/1978 0:00	24	3.8	0	0.7333	24	14	1	3	17.6	0	17.6	83.4%
8/19/1978 0:00	24	12.3	0	0.7333	24	18	1	4	17.6	0	17.6	83.4%
3/31/1982 0:00	24	11.4	0	0.7333	24	18	1	3	17.6	0	17.6	83.4%
5/30/1972 0:00	24	4.6	0	0.725	24	15	1	3	17.4	0	17.4	82.8%
4/24/1977 0:00	24	3.8	0	0.725	24	14	1	3	17.4	0	17.4	82.8%
9/13/1977 0:00	24	5.5	0	0.725	24	13	1	1	17.4	0	17.4	82.8%
6/23/1979 0:00	24	13.9	0	0.725	24	18	1	1	17.4	0	17.4	82.8%
11/3/1982 0:00	24	3.1	0	0.725	24	5	1	2	17.4	0	17.4	82.8%
11/11/1984 0:00	24	3.2	0	0.725	24	9	1	1	17.4	0	17.4	82.8%
2/23/1985 0:00	24	2.1	0	0.725	24	8	1	1	17.4	0	17.4	82.8%

10/24/1985 0:00	24	10.7	0	0.725	24	18	1	3	17.4	0	17.4	82.8%
5/16/1986 0:00	24	5	0	0.725	24	14	1	5	17.4	0	17.4	82.8%
9/22/1973 0:00	24	4.3	0	0.7208	24	15	1	3	17.3	0	17.3	82.6%
4/1/1976 0:00	24	3	0	0.7208	24	11	1	3	17.3	0	17.3	82.6%
2/20/1981 0:00	24	2.6	0	0.7208	24	5	1	5	17.3	0	17.3	82.6%
11/15/1989 0:00	24	4.5	0	0.7208	24	10	1	3	17.3	0	17.3	82.6%
5/8/1982 0:00	24	2	0	0.7167	24	5	1	3	17.2	0	17.2	82.1%
3/19/1983 0:00	24	4.2	0	0.7167	24	10	1	2	17.2	0	17.2	82.1%
7/27/1984 0:00	24	5.6	0	0.7167	24	14	1	2	17.2	0	17.2	82.1%
11/10/1984 0:00	24	3.4	0	0.7167	24	5	1	2	17.2	0	17.2	82.1%
9/28/1996 0:00	24	4.6	0	0.7167	24	12	1	4	17.2	0	17.2	82.1%
6/22/1997 0:00	24	12.5	0	0.7167	24	20	1	1	17.2	0	17.2	82.1%
7/16/1998 0:00	24	15.8	0	0.7167	24	20	1	3	17.2	0	17.2	82.1%
5/11/1995 0:00	24	2.3	0	0.7125	24	7	1	2	17.1	0	17.1	82.0%
9/20/1975 0:00	24	8.6	0	0.7083	24	19	1	2	17	0	17	81.9%
6/21/1982 0:00	24	4.9	0	0.7083	24	16	1	2	17	0	17	81.9%
7/8/1992 0:00	24	8.4	0	0.7083	24	17	1	1	17	0	17	81.9%
4/16/1994 0:00	24	6.1	0	0.7042	24	18	1	3	16.9	0	16.9	81.8%
10/10/1985 0:00	24	3.6	0	0.7	24	15	1	2	16.8	0	16.8	81.5%
6/10/1989 0:00	24	5.8	0	0.7	24	10	1	4	16.8	0	16.8	81.5%
4/22/1991 0:00	24	3.1	0	0.7	24	5	1	2	16.8	0	16.8	81.5%
11/23/1992 0:00	24	3.3	0	0.7	24	14	1	3	16.8	0	16.8	81.5%
7/19/1996 0:00	24	6.7	0	0.6958	24	15	1	3	16.7	0	16.7	81.5%
5/31/1978 0:00	24	13.3	0	0.6875	24	21	1	2	16.5	0	16.5	81.4%
7/10/1973 0:00	24	10.2	0	0.6833	24	18	1	3	16.4	0	16.4	81.1%
5/17/1990 0:00	24	7.6	0	0.6833	24	12	1	4	16.4	0	16.4	81.1%
9/3/1992 0:00	24	10.8	0	0.6833	24	18	1	3	16.4	0	16.4	81.1%
1/13/1995 0:00	24	10	0	0.6833	24	19	1	3	16.4	0	16.4	81.1%
11/2/1997 0:00	24	2.9	0	0.6833	24	9	1	4	16.4	0	16.4	81.1%
6/1/1972 0:00	24	2.8	0	0.6792	24	13	1	3	16.3	0	16.3	80.9%
6/9/1972 0:00	24	9.4	0	0.6792	24	19	1	2	16.3	0	16.3	80.9%
7/10/1972 0:00	24	6.4	0	0.675	24	17	1	5	16.2	0	16.2	80.4%
12/23/1979 0:00	24	1.7	0	0.675	24	9	1	2	16.2	0	16.2	80.4%
4/25/1980 0:00	24	3.6	0	0.675	24	12	1	4	16.2	0	16.2	80.4%

5/8/1983 0:00	24	2.9	0	0.675	24	9	1	2	16.2	0	16.2	80.4%
5/31/1985 0:00	24	14.4	0	0.675	24	20	1	3	16.2	0	16.2	80.4%
12/1/1985 0:00	24	8	0	0.675	24	20	1	1	16.2	0	16.2	80.4%
9/29/1990 0:00	24	6.2	0	0.675	24	14	1	3	16.2	0	16.2	80.4%
9/18/1992 0:00	24	5.9	0	0.675	24	18	1	4	16.2	0	16.2	80.4%
9/7/1999 0:00	24	4.4	0	0.675	24	11	1	2	16.2	0	16.2	80.4%
6/30/1979 0:00	24	5.2	0	0.6708	24	13	1	4	16.1	0	16.1	80.2%
5/16/1994 0:00	24	8.7	0	0.6708	24	17	1	3	16.1	0	16.1	80.2%
3/28/1985 0:00	24	4.6	0	0.6667	24	18	1	2	16	0	16	80.2%
7/23/1971 0:00	24	13.7	0	0.6625	24	18	1	3	15.9	0	15.9	80.0%
4/28/1997 0:00	24	2.9	0	0.6625	24	9	1	2	15.9	0	15.9	80.0%
7/9/1999 0:00	24	6.1	0	0.6625	24	18	1	2	15.9	0	15.9	80.0%
5/17/1978 0:00	24	9.1	0	0.6583	24	18	1	4	15.8	0	15.8	79.6%
5/12/1979 0:00	24	8.3	0	0.6583	24	18	1	4	15.8	0	15.8	79.6%
8/23/1979 0:00	24	10.8	0	0.6583	24	21	1	2	15.8	0	15.8	79.6%
5/31/1992 0:00	24	4.2	0	0.6583	24	6	1	3	15.8	0	15.8	79.6%
6/2/1999 0:00	24	6.7	0	0.6583	24	19	1	2	15.8	0	15.8	79.6%
9/18/1982 0:00	24	3.7	0	0.6542	24	14	1	3	15.7	0	15.7	79.5%
6/20/1993 0:00	24	9.6	0	0.6542	24	14	1	2	15.7	0	15.7	79.5%
8/29/1975 0:00	24	5.3	0	0.65	24	10	1	4	15.6	0	15.6	79.1%
8/8/1978 0:00	24	12.6	0	0.65	24	20	1	3	15.6	0	15.6	79.1%
10/6/1981 0:00	24	5.7	0	0.65	24	16	1	4	15.6	0	15.6	79.1%
8/21/1986 0:00	24	5.1	0	0.65	24	18	1	2	15.6	0	15.6	79.1%
4/28/1987 0:00	24	2.6	0	0.65	24	9	1	3	15.6	0	15.6	79.1%
10/28/1998 0:00	24	4.4	0	0.65	24	17	1	2	15.6	0	15.6	79.1%
10/14/1978 0:00	24	3.1	0	0.6417	24	12	1	3	15.4	0	15.4	78.8%
10/21/1979 0:00	24	9.5	0	0.6417	24	21	1	2	15.4	0	15.4	78.8%
6/6/1981 0:00	24	4.9	0	0.6417	24	16	1	4	15.4	0	15.4	78.8%
4/3/1988 0:00	24	3.6	0	0.6417	24	14	1	5	15.4	0	15.4	78.8%
3/2/1991 0:00	24	5.7	0	0.6417	24	16	1	2	15.4	0	15.4	78.8%
7/15/1972 0:00	24	5.8	0	0.6333	24	18	1	3	15.2	0	15.2	78.3%
9/22/1980 0:00	24	8.6	0	0.6333	24	19	1	1	15.2	0	15.2	78.3%
8/10/1984 0:00	24	6.9	0	0.6333	24	20	1	4	15.2	0	15.2	78.3%
10/8/1984 0:00	24	2.5	0	0.6333	24	9	1	2	15.2	0	15.2	78.3%

6/27/1987 0:00	24	9.4	0	0.6333	24	21	1	3	15.2	0	15.2	78.3%
9/7/1996 0:00	24	11.6	0	0.6333	24	19	1	3	15.2	0	15.2	78.3%
7/9/1998 0:00	24	9.1	0	0.6333	24	20	1	1	15.2	0	15.2	78.3%
8/10/1979 0:00	24	4	0	0.625	24	13	1	3	15	0	15	77.9%
10/12/1979 0:00	24	3.6	0	0.625	24	12	1	4	15	0	15	77.9%
7/18/1982 0:00	24	12.7	0	0.625	24	22	1	2	15	0	15	77.9%
7/11/1984 0:00	24	6.2	0	0.625	24	19	1	2	15	0	15	77.9%
10/7/1987 0:00	24	4.4	0	0.625	24	12	1	4	15	0	15	77.9%
9/22/1990 0:00	24	3.2	0	0.625	24	10	1	3	15	0	15	77.9%
6/5/1975 0:00	24	3	0	0.6208	24	16	1	2	14.9	0	14.9	77.9%
5/28/1973 0:00	24	3.8	0	0.6167	24	13	1	5	14.8	0	14.8	77.6%
7/3/1986 0:00	24	7.1	0	0.6167	24	20	1	2	14.8	0	14.8	77.6%
7/5/1986 0:00	24	10.6	0	0.6167	24	20	1	3	14.8	0	14.8	77.6%
6/17/1989 0:00	24	5.8	0	0.6167	24	17	1	3	14.8	0	14.8	77.6%
9/22/1989 0:00	24	5.8	0	0.6167	24	18	1	3	14.8	0	14.8	77.6%
4/10/1983 0:00	24	3.5	0	0.6125	24	11	1	2	14.7	0	14.7	77.4%
4/4/1990 0:00	24	2.5	0	0.6125	24	4	1	3	14.7	0	14.7	77.4%
5/3/1979 0:00	24	5.8	0	0.6083	24	14	1	3	14.6	0	14.6	77.0%
5/27/1985 0:00	24	6.5	0	0.6083	24	17	1	3	14.6	0	14.6	77.0%
6/8/1987 0:00	24	4.6	0	0.6083	24	17	1	4	14.6	0	14.6	77.0%
10/13/1990 0:00	24	2.6	0	0.6083	24	15	1	2	14.6	0	14.6	77.0%
12/18/1990 0:00	24	3	0	0.6083	24	12	1	4	14.6	0	14.6	77.0%
4/12/1995 0:00	24	2.7	0	0.6083	24	12	1	2	14.6	0	14.6	77.0%
7/3/1992 0:00	24	7.2	0	0.6042	24	15	1	5	14.5	0	14.5	77.0%
8/22/1984 0:00	24	8.8	0	0.6	24	20	1	1	14.4	0	14.4	76.6%
8/30/1984 0:00	24	9.4	0	0.6	24	21	1	3	14.4	0	14.4	76.6%
8/19/1985 0:00	24	6.3	0	0.6	24	19	1	3	14.4	0	14.4	76.6%
4/25/1993 0:00	24	5.9	0	0.6	24	18	1	2	14.4	0	14.4	76.6%
5/31/1998 0:00	24	6	0	0.6	24	20	1	2	14.4	0	14.4	76.6%
10/6/1972 0:00	24	2.3	0	0.5958	24	15	1	1	14.3	0	14.3	76.6%
6/8/1976 0:00	24	13.7	0	0.5917	24	22	1	2	14.2	0	14.2	76.1%
4/14/1979 0:00	24	5.4	0	0.5917	24	16	1	3	14.2	0	14.2	76.1%
8/18/1986 0:00	24	11.4	0	0.5917	24	20	1	2	14.2	0	14.2	76.1%
8/27/1986 0:00	24	10	0	0.5917	24	20	1	1	14.2	0	14.2	76.1%

5/14/1987 0:00	24	5	0	0.5917	24	18	1	1	14.2	0	14.2	76.1%
10/18/1990 0:00	24	3.6	0	0.5917	24	18	1	2	14.2	0	14.2	76.1%
10/14/1998 0:00	24	3.2	0	0.5917	24	12	1	3	14.2	0	14.2	76.1%
1/9/1978 0:00	24	4.2	0	0.5833	24	19	1	2	14	0	14	75.8%
8/24/1978 0:00	24	4.1	0	0.5833	24	16	1	1	14	0	14	75.8%
9/30/1986 0:00	24	12	0	0.5833	24	18	1	3	14	0	14	75.8%
9/29/1987 0:00	24	7.1	0	0.5833	24	19	1	2	14	0	14	75.8%
11/17/1987 0:00	24	7.7	0	0.5833	24	15	1	4	14	0	14	75.8%
5/18/1976 0:00	24	2.5	0	0.5792	24	14	1	4	13.9	0	13.9	75.7%
6/11/1976 0:00	24	6.1	0	0.5792	24	16	1	5	13.9	0	13.9	75.7%
6/16/1976 0:00	24	13	0	0.575	24	22	1	2	13.8	0	13.8	75.1%
11/13/1978 0:00	24	3.7	0	0.575	24	17	1	1	13.8	0	13.8	75.1%
9/13/1980 0:00	24	3.5	0	0.575	24	16	1	1	13.8	0	13.8	75.1%
3/30/1981 0:00	24	2.5	0	0.575	24	9	1	4	13.8	0	13.8	75.1%
5/3/1983 0:00	24	6.5	0	0.575	24	16	1	2	13.8	0	13.8	75.1%
8/26/1986 0:00	24	10	0	0.575	24	21	1	1	13.8	0	13.8	75.1%
8/20/1989 0:00	24	3.6	0	0.575	24	14	1	4	13.8	0	13.8	75.1%
4/20/1991 0:00	24	1.6	0	0.575	24	8	1	3	13.8	0	13.8	75.1%
11/1/1975 0:00	24	3.3	0	0.5708	24	15	1	3	13.7	0	13.7	75.1%
8/21/1973 0:00	24	5.3	0	0.5667	24	17	1	2	13.6	0	13.6	74.8%
3/31/1976 0:00	24	5.1	0	0.5667	24	14	1	4	13.6	0	13.6	74.8%
12/3/1982 0:00	24	4.2	0	0.5667	24	18	1	1	13.6	0	13.6	74.8%
11/22/1990 0:00	24	2.5	0	0.5667	24	9	1	5	13.6	0	13.6	74.8%
9/8/1999 0:00	24	4.6	0	0.5667	24	12	1	5	13.6	0	13.6	74.8%
12/5/1973 0:00	24	2.5	0	0.5625	24	15	1	5	13.5	0	13.5	74.6%
4/2/1977 0:00	24	5.3	0	0.5625	24	15	1	2	13.5	0	13.5	74.6%
5/28/1995 0:00	24	4.5	0	0.5625	24	14	1	2	13.5	0	13.5	74.6%
12/9/1971 0:00	24	3.3	0	0.5583	24	17	1	2	13.4	0	13.4	73.8%
4/20/1978 0:00	24	2.6	0	0.5583	24	12	1	3	13.4	0	13.4	73.8%
4/14/1980 0:00	24	3.9	0	0.5583	24	14	1	1	13.4	0	13.4	73.8%
6/20/1980 0:00	24	6.9	0	0.5583	24	16	1	4	13.4	0	13.4	73.8%
2/11/1981 0:00	24	2.7	0	0.5583	24	8	1	3	13.4	0	13.4	73.8%
4/18/1985 0:00	24	4.7	0	0.5583	24	18	1	2	13.4	0	13.4	73.8%
8/28/1988 0:00	24	7.1	0	0.5583	24	15	1	5	13.4	0	13.4	73.8%

12/23/1990 0:00	24	3.1	0	0.5583	24	16	1	1	13.4	0	13.4	73.8%
10/2/1991 0:00	24	3.8	0	0.5583	24	13	1	4	13.4	0	13.4	73.8%
9/26/1994 0:00	24	7.3	0	0.5583	24	19	1	3	13.4	0	13.4	73.8%
6/7/1996 0:00	24	4.6	0	0.5583	24	14	1	3	13.4	0	13.4	73.8%
8/27/1997 0:00	24	8	0	0.5583	24	21	1	2	13.4	0	13.4	73.8%
12/6/1972 0:00	24	6.1	0	0.5542	24	20	1	2	13.3	0	13.3	73.6%
9/23/1993 0:00	24	4.5	0	0.5542	24	19	1	2	13.3	0	13.3	73.6%
6/7/1995 0:00	24	11.7	0	0.5542	24	20	1	3	13.3	0	13.3	73.6%
4/4/1974 0:00	24	3.8	0	0.55	24	17	1	4	13.2	0	13.2	72.9%
4/3/1982 0:00	24	3.2	0	0.55	24	14	1	4	13.2	0	13.2	72.9%
7/11/1982 0:00	24	5.5	0	0.55	24	17	1	2	13.2	0	13.2	72.9%
5/15/1983 0:00	24	10.2	0	0.55	24	21	1	1	13.2	0	13.2	72.9%
4/9/1991 0:00	24	11.3	0	0.55	24	14	1	3	13.2	0	13.2	72.9%
4/15/1991 0:00	24	3	0	0.55	24	11	1	3	13.2	0	13.2	72.9%
1/5/1993 0:00	24	3.9	0	0.55	24	17	1	1	13.2	0	13.2	72.9%
7/3/1993 0:00	24	12.6	0	0.55	24	22	1	2	13.2	0	13.2	72.9%
12/1/1996 0:00	24	2.7	0	0.55	24	13	1	3	13.2	0	13.2	72.9%
7/7/1999 0:00	24	13.2	0	0.55	24	23	1	2	13.2	0	13.2	72.9%
5/12/1997 0:00	24	3.9	0	0.5458	24	12	1	3	13.1	0	13.1	72.9%
10/11/1975 0:00	24	2.8	0	0.5417	24	13	1	2	13	0	13	72.2%
9/1/1976 0:00	24	2.8	0	0.5417	24	12	1	3	13	0	13	72.2%
7/29/1977 0:00	24	5.3	0	0.5417	24	18	1	3	13	0	13	72.2%
7/18/1981 0:00	24	4.3	0	0.5417	24	18	1	1	13	0	13	72.2%
7/21/1983 0:00	24	7.9	0	0.5417	24	20	1	3	13	0	13	72.2%
7/14/1985 0:00	24	12.1	0	0.5417	24	22	1	2	13	0	13	72.2%
9/23/1986 0:00	24	3.7	0	0.5417	24	17	1	2	13	0	13	72.2%
10/29/1986 0:00	24	2.4	0	0.5417	24	16	1	2	13	0	13	72.2%
3/31/1987 0:00	24	2.9	0	0.5417	24	10	1	2	13	0	13	72.2%
12/21/1990 0:00	24	3.9	0	0.5417	24	19	1	1	13	0	13	72.2%
6/18/1998 0:00	24	9.5	0	0.5417	24	20	1	2	13	0	13	72.2%
8/8/1983 0:00	24	6.2	0	0.5375	24	17	1	4	12.9	0	12.9	71.9%
8/13/1997 0:00	24	3.1	0	0.5375	24	14	1	2	12.9	0	12.9	71.9%
11/1/1997 0:00	24	5	0	0.5375	24	18	1	2	12.9	0	12.9	71.9%
9/30/1999 0:00	24	6.8	0	0.5375	24	15	1	3	12.9	0	12.9	71.9%

6/18/1977 0:00	24	4.3	0	0.5333	24	16	1	2	12.8	0	12.8	71.5%
8/28/1978 0:00	24	3.6	0	0.5333	24	16	1	3	12.8	0	12.8	71.5%
5/30/1980 0:00	24	6.2	0	0.5333	24	20	1	3	12.8	0	12.8	71.5%
8/27/1980 0:00	24	9.3	0	0.5333	24	19	1	4	12.8	0	12.8	71.5%
10/26/1981 0:00	24	2.9	0	0.5333	24	12	1	2	12.8	0	12.8	71.5%
6/2/1995 0:00	24	9.6	0	0.5333	24	21	1	2	12.8	0	12.8	71.5%
9/9/1999 0:00	24	4.7	0	0.5292	24	19	1	2	12.7	0	12.7	71.4%
10/28/1972 0:00	24	2.5	0	0.525	24	10	1	4	12.6	0	12.6	70.5%
3/14/1977 0:00	24	1.8	0	0.525	24	10	1	2	12.6	0	12.6	70.5%
6/2/1977 0:00	24	4.6	0	0.525	24	16	1	4	12.6	0	12.6	70.5%
7/29/1978 0:00	24	4.9	0	0.525	24	17	1	3	12.6	0	12.6	70.5%
4/12/1980 0:00	24	3.2	0	0.525	24	14	1	3	12.6	0	12.6	70.5%
9/13/1987 0:00	24	3.4	0	0.525	24	15	1	3	12.6	0	12.6	70.5%
10/24/1988 0:00	24	2.9	0	0.525	24	14	1	3	12.6	0	12.6	70.5%
5/20/1990 0:00	24	2.2	0	0.525	24	12	1	2	12.6	0	12.6	70.5%
4/10/1991 0:00	24	10.8	0	0.525	24	20	1	3	12.6	0	12.6	70.5%
7/22/1991 0:00	24	6.6	0	0.525	24	20	1	1	12.6	0	12.6	70.5%
10/10/1991 0:00	24	3.3	0	0.525	24	17	1	2	12.6	0	12.6	70.5%
6/19/1992 0:00	24	4.1	0	0.525	24	17	1	2	12.6	0	12.6	70.5%
10/2/1993 0:00	24	2.8	0	0.525	24	17	1	3	12.6	0	12.6	70.5%
9/27/1994 0:00	24	3	0	0.525	24	13	1	5	12.6	0	12.6	70.5%
5/14/1995 0:00	24	5.2	0	0.5208	24	17	1	3	12.5	0	12.5	70.5%
11/8/1977 0:00	24	6.9	0	0.5167	24	16	1	3	12.4	0	12.4	70.0%
5/25/1979 0:00	24	3.4	0	0.5167	24	14	1	3	12.4	0	12.4	70.0%
5/30/1979 0:00	24	5.1	0	0.5167	24	17	1	3	12.4	0	12.4	70.0%
11/11/1983 0:00	24	2.4	0	0.5167	24	9	1	1	12.4	0	12.4	70.0%
3/25/1988 0:00	24	3.9	0	0.5167	24	18	1	1	12.4	0	12.4	70.0%
5/12/1989 0:00	24	9.1	0	0.5167	24	11	1	6	12.4	0	12.4	70.0%
12/5/1994 0:00	24	3.1	0	0.5167	24	14	1	4	12.4	0	12.4	70.0%
12/31/1972 0:00	24	2.8	0	0.5125	24	14	1	2	12.3	0	12.3	69.9%
6/13/1974 0:00	24	8.1	0	0.5083	24	22	1	3	12.2	0	12.2	69.5%
6/6/1975 0:00	24	9.1	0	0.5083	24	21	1	3	12.2	0	12.2	69.5%
7/28/1975 0:00	24	11.9	0	0.5083	24	22	1	2	12.2	0	12.2	69.5%
12/15/1975 0:00	24	4.1	0	0.5083	24	15	1	3	12.2	0	12.2	69.5%

1/11/1980 0:00	24	2.3	0	0.5083	24	14	1	2	12.2	0	12.2	69.5%
8/14/1984 0:00	24	4.4	0	0.5083	24	17	1	4	12.2	0	12.2	69.5%
10/5/1988 0:00	24	1.5	0	0.5083	24	6	1	3	12.2	0	12.2	69.5%
10/16/1989 0:00	24	5	0	0.5042	24	19	1	2	12.1	0	12.1	69.4%
9/25/1975 0:00	24	4.8	0	0.5	24	18	1	2	12	0	12	69.2%
10/13/1975 0:00	24	3.8	0	0.5	24	17	1	2	12	0	12	69.2%
10/16/1992 0:00	24	3.9	0	0.5	24	17	1	3	12	0	12	69.2%
9/19/1971 0:00	24	3	0	0.4958	24	15	1	2	11.9	0	11.9	69.2%
6/16/1974 0:00	24	3.3	0	0.4917	24	10	1	5	11.8	0	11.8	69.1%
7/25/1996 0:00	24	7.2	0	0.4875	24	21	1	3	11.7	0	11.7	69.0%
4/1/1973 0:00	24	3.3	0	0.4833	24	14	1	3	11.6	0	11.6	68.3%
6/15/1973 0:00	24	1.5	0	0.4833	24	12	1	3	11.6	0	11.6	68.3%
10/1/1978 0:00	24	3.4	0	0.4833	24	16	1	2	11.6	0	11.6	68.3%
12/24/1979 0:00	24	2.5	0	0.4833	24	13	1	2	11.6	0	11.6	68.3%
10/26/1983 0:00	24	1.1	0	0.4833	24	5	1	5	11.6	0	11.6	68.3%
9/20/1987 0:00	24	3.4	0	0.4833	24	6	1	3	11.6	0	11.6	68.3%
4/29/1988 0:00	24	2.9	0	0.4833	24	14	1	4	11.6	0	11.6	68.3%
9/15/1991 0:00	24	3.6	0	0.4833	24	16	1	3	11.6	0	11.6	68.3%
11/12/1992 0:00	24	2.3	0	0.4833	24	13	1	2	11.6	0	11.6	68.3%
8/27/1993 0:00	24	3.9	0	0.4833	24	20	1	3	11.6	0	11.6	68.3%
7/16/1996 0:00	24	7.3	0	0.4833	24	21	1	3	11.6	0	11.6	68.3%
8/22/1971 0:00	24	3.8	0	0.4792	24	15	1	2	11.5	0	11.5	68.0%
4/4/1973 0:00	24	2	0	0.4792	24	12	1	2	11.5	0	11.5	68.0%
8/3/1974 0:00	24	7.9	0	0.4792	24	21	1	2	11.5	0	11.5	68.0%
8/5/1976 0:00	24	4.6	0	0.4792	24	19	1	2	11.5	0	11.5	68.0%
11/11/1995 0:00	24	2.5	0	0.4792	24	11	1	4	11.5	0	11.5	68.0%
9/26/1980 0:00	24	4.3	0	0.475	24	17	1	4	11.4	0	11.4	67.5%
5/28/1982 0:00	24	7.6	0	0.475	24	19	1	4	11.4	0	11.4	67.5%
3/26/1992 0:00	24	1.3	0	0.475	24	10	1	3	11.4	0	11.4	67.5%
7/4/1992 0:00	24	5.2	0	0.475	24	19	1	2	11.4	0	11.4	67.5%
1/24/1993 0:00	24	2	0	0.475	24	12	1	2	11.4	0	11.4	67.5%
11/5/1993 0:00	24	2.9	0	0.475	24	14	1	2	11.4	0	11.4	67.5%
6/22/1996 0:00	24	4.2	0	0.475	24	14	1	4	11.4	0	11.4	67.5%
7/28/1998 0:00	24	8.7	0	0.475	24	20	1	2	11.4	0	11.4	67.5%

7/6/1971 0:00	24	4.1	0	0.4708	24	16	1	3	11.3	0	11.3	67.3%
5/3/1974 0:00	24	2.8	0	0.4708	24	14	1	3	11.3	0	11.3	67.3%
9/20/1997 0:00	24	5.5	0	0.4708	24	14	1	3	11.3	0	11.3	67.3%
8/8/1976 0:00	24	3	0	0.4667	24	16	1	5	11.2	0	11.2	66.6%
7/13/1981 0:00	24	11	0	0.4667	24	22	1	2	11.2	0	11.2	66.6%
8/2/1987 0:00	24	4.2	0	0.4667	24	16	1	2	11.2	0	11.2	66.6%
6/30/1988 0:00	24	3.8	0	0.4667	24	17	1	6	11.2	0	11.2	66.6%
10/28/1990 0:00	24	2.6	0	0.4667	24	12	1	5	11.2	0	11.2	66.6%
8/24/1993 0:00	24	4.4	0	0.4667	24	15	1	4	11.2	0	11.2	66.6%
7/8/1994 0:00	24	8.2	0	0.4667	24	22	1	1	11.2	0	11.2	66.6%
1/16/1995 0:00	24	1.7	0	0.4667	24	10	1	1	11.2	0	11.2	66.6%
12/13/1996 0:00	24	4.6	0	0.4667	24	11	1	5	11.2	0	11.2	66.6%
9/11/1997 0:00	24	3.1	0	0.4667	24	10	1	4	11.2	0	11.2	66.6%
7/31/1971 0:00	24	5.1	0	0.4625	24	17	1	3	11.1	0	11.1	66.6%
10/1/1975 0:00	24	3.8	0	0.4583	24	17	1	2	11	0	11	66.1%
10/6/1979 0:00	24	3.8	0	0.4583	24	17	1	3	11	0	11	66.1%
5/12/1981 0:00	24	2	0	0.4583	24	14	1	4	11	0	11	66.1%
5/18/1986 0:00	24	10.6	0	0.4583	24	21	1	3	11	0	11	66.1%
8/9/1986 0:00	24	5.7	0	0.4583	24	20	1	3	11	0	11	66.1%
10/24/1987 0:00	24	2.4	0	0.4583	24	14	1	1	11	0	11	66.1%
8/4/1999 0:00	24	10.8	0	0.4583	24	22	1	2	11	0	11	66.1%
8/2/1972 0:00	24	4.8	0	0.4542	24	17	1	2	10.9	0	10.9	65.9%
5/31/1974 0:00	24	7.9	0	0.4542	24	21	1	3	10.9	0	10.9	65.9%
10/14/1995 0:00	24	3	0	0.4542	24	13	1	2	10.9	0	10.9	65.9%
4/29/1974 0:00	24	3.3	0	0.45	24	15	1	3	10.8	0	10.8	65.4%
10/31/1976 0:00	24	2	0	0.45	24	13	1	2	10.8	0	10.8	65.4%
9/14/1977 0:00	24	6.2	0	0.45	24	19	1	3	10.8	0	10.8	65.4%
4/4/1981 0:00	24	3.6	0	0.45	24	13	1	5	10.8	0	10.8	65.4%
8/2/1986 0:00	24	9.1	0	0.45	24	21	1	3	10.8	0	10.8	65.4%
11/26/1986 0:00	24	2.9	0	0.45	24	18	1	3	10.8	0	10.8	65.4%
8/2/1989 0:00	24	2.8	0	0.45	24	18	1	2	10.8	0	10.8	65.4%
5/17/1995 0:00	24	4	0	0.45	24	15	1	2	10.8	0	10.8	65.4%
7/27/1973 0:00	24	3.3	0	0.4458	24	18	1	6	10.7	0	10.7	65.1%
9/30/1977 0:00	24	2.5	0	0.4458	24	15	1	4	10.7	0	10.7	65.1%

7/28/1982 0:00	24	2.7	0	0.4458	24	15	1	2	10.7	0	10.7	65.1%
4/24/1998 0:00	24	5.9	0	0.4458	24	18	1	3	10.7	0	10.7	65.1%
4/2/1973 0:00	24	2.3	0	0.4417	24	6	1	4	10.6	0	10.6	64.7%
9/6/1979 0:00	24	9.9	0	0.4417	24	20	1	4	10.6	0	10.6	64.7%
6/1/1986 0:00	24	5.1	0	0.4417	24	17	1	4	10.6	0	10.6	64.7%
7/13/1986 0:00	24	7.4	0	0.4417	24	20	1	2	10.6	0	10.6	64.7%
9/10/1986 0:00	24	4.8	0	0.4417	24	19	1	2	10.6	0	10.6	64.7%
10/5/1995 0:00	24	5.2	0	0.4417	24	20	1	1	10.6	0	10.6	64.7%
8/25/1998 0:00	24	7.1	0	0.4417	24	19	1	2	10.6	0	10.6	64.7%
6/25/1971 0:00	24	3.3	0	0.4375	24	17	1	3	10.5	0	10.5	64.3%
10/19/1975 0:00	24	3.3	0	0.4375	24	17	1	3	10.5	0	10.5	64.3%
8/13/1976 0:00	24	3	0	0.4375	24	18	1	3	10.5	0	10.5	64.3%
11/2/1995 0:00	24	3.6	0	0.4375	24	14	1	3	10.5	0	10.5	64.3%
9/13/1996 0:00	24	3.2	0	0.4375	24	16	1	5	10.5	0	10.5	64.3%
11/6/1981 0:00	24	2.1	0	0.4333	24	14	1	3	10.4	0	10.4	64.0%
6/6/1985 0:00	24	6.2	0	0.4333	24	20	1	2	10.4	0	10.4	64.0%
10/13/1986 0:00	24	2.9	0	0.4333	24	13	1	4	10.4	0	10.4	64.0%
11/6/1988 0:00	24	4.8	0	0.4333	24	16	1	2	10.4	0	10.4	64.0%
1/23/1992 0:00	24	2.7	0	0.4333	24	16	1	1	10.4	0	10.4	64.0%
9/26/1976 0:00	24	2.8	0	0.4292	24	15	1	2	10.3	0	10.3	63.8%
9/13/1994 0:00	24	2.8	0	0.4292	24	16	1	2	10.3	0	10.3	63.8%
6/12/1997 0:00	24	7.5	0	0.4292	24	18	1	2	10.3	0	10.3	63.8%
7/23/1999 0:00	24	4	0	0.4292	24	16	1	4	10.3	0	10.3	63.8%
6/12/1981 0:00	24	3.7	0	0.425	24	18	1	3	10.2	0	10.2	63.4%
11/23/1982 0:00	24	5.7	0	0.425	24	18	1	2	10.2	0	10.2	63.4%
10/2/1989 0:00	24	4.4	0	0.425	24	17	1	3	10.2	0	10.2	63.4%
9/2/1997 0:00	24	8.2	0	0.425	24	22	1	2	10.2	0	10.2	63.4%
7/5/1999 0:00	24	10.2	0	0.425	24	23	1	2	10.2	0	10.2	63.4%
8/27/1972 0:00	24	8.1	0	0.4208	24	22	1	2	10.1	0	10.1	63.2%
4/19/1978 0:00	24	2.3	0	0.4208	24	15	1	2	10.1	0	10.1	63.2%
9/27/1993 0:00	24	5.1	0	0.4208	24	14	1	2	10.1	0	10.1	63.2%
5/4/1972 0:00	24	1.8	0	0.4167	24	15	1	1	10	0	10	62.2%
5/23/1974 0:00	24	4.8	0	0.4167	24	18	1	4	10	0	10	62.2%
6/17/1977 0:00	24	7.6	0	0.4167	24	20	1	3	10	0	10	62.2%

8/23/1978 0:00	24	3.8	0	0.4167	24	20	1	1	10	0	10	62.2%
6/11/1982 0:00	24	6.1	0	0.4167	24	19	1	1	10	0	10	62.2%
3/18/1983 0:00	24	4.1	0	0.4167	24	19	1	1	10	0	10	62.2%
6/27/1984 0:00	24	2.9	0	0.4167	24	19	1	3	10	0	10	62.2%
7/2/1986 0:00	24	6.8	0	0.4167	24	22	1	2	10	0	10	62.2%
9/20/1988 0:00	24	7.3	0	0.4167	24	20	1	3	10	0	10	62.2%
6/23/1990 0:00	24	6.7	0	0.4167	24	16	1	6	10	0	10	62.2%
6/16/1991 0:00	24	3.7	0	0.4167	24	14	1	6	10	0	10	62.2%
9/10/1991 0:00	24	4.8	0	0.4167	24	19	1	5	10	0	10	62.2%
5/1/1992 0:00	24	4.7	0	0.4167	24	17	1	2	10	0	10	62.2%
9/21/1992 0:00	24	2.8	0	0.4167	24	16	1	2	10	0	10	62.2%
6/17/1997 0:00	24	6.1	0	0.4167	24	19	1	2	10	0	10	62.2%
7/17/1998 0:00	24	9.4	0	0.4167	24	21	1	4	10	0	10	62.2%
9/18/1972 0:00	24	9.9	0	0.4125	24	23	1	2	9.9	0	9.9	61.7%
9/18/1973 0:00	24	3.3	0	0.4125	24	17	1	1	9.9	0	9.9	61.7%
7/16/1976 0:00	24	5.8	0	0.4125	24	18	1	5	9.9	0	9.9	61.7%
5/2/1977 0:00	24	2.8	0	0.4125	24	19	1	2	9.9	0	9.9	61.7%
9/26/1993 0:00	24	4.1	0	0.4125	24	14	1	4	9.9	0	9.9	61.7%
5/29/1995 0:00	24	3.3	0	0.4125	24	19	1	4	9.9	0	9.9	61.7%
4/16/1996 0:00	24	2.1	0	0.4125	24	11	1	4	9.9	0	9.9	61.7%
11/17/1977 0:00	24	5.4	0	0.4083	24	20	1	3	9.8	0	9.8	61.0%
11/7/1980 0:00	24	1.7	0	0.4083	24	15	1	1	9.8	0	9.8	61.0%
9/26/1981 0:00	24	4.9	0	0.4083	24	18	1	2	9.8	0	9.8	61.0%
10/23/1981 0:00	24	2.2	0	0.4083	24	17	1	2	9.8	0	9.8	61.0%
10/7/1982 0:00	24	5.1	0	0.4083	24	20	1	3	9.8	0	9.8	61.0%
6/27/1983 0:00	24	6.5	0	0.4083	24	18	1	2	9.8	0	9.8	61.0%
7/5/1983 0:00	24	9.2	0	0.4083	24	21	1	4	9.8	0	9.8	61.0%
6/11/1987 0:00	24	4.6	0	0.4083	24	19	1	1	9.8	0	9.8	61.0%
8/20/1988 0:00	24	3.3	0	0.4083	24	17	1	3	9.8	0	9.8	61.0%
7/4/1991 0:00	24	4.3	0	0.4083	24	20	1	1	9.8	0	9.8	61.0%
6/10/1996 0:00	24	9.2	0	0.4083	24	22	1	2	9.8	0	9.8	61.0%
9/11/1978 0:00	24	3.1	0	0.4042	24	16	1	5	9.7	0	9.7	60.9%
5/2/1998 0:00	24	5	0	0.4042	24	10	1	6	9.7	0	9.7	60.9%
11/2/1972 0:00	24	2.8	0	0.4	24	10	1	3	9.6	0	9.6	60.0%

6/7/1973 0:00	24	4.3	0	0.4	24	18	1	2	9.6	0	9.6	60.0%
9/20/1977 0:00	24	1.8	0	0.4	24	8	1	4	9.6	0	9.6	60.0%
8/5/1979 0:00	24	6	0	0.4	24	19	1	3	9.6	0	9.6	60.0%
10/12/1983 0:00	24	2.3	0	0.4	24	12	1	3	9.6	0	9.6	60.0%
7/25/1986 0:00	24	6	0	0.4	24	20	1	2	9.6	0	9.6	60.0%
9/15/1986 0:00	24	3.1	0	0.4	24	17	1	1	9.6	0	9.6	60.0%
5/11/1987 0:00	24	3.3	0	0.4	24	15	1	4	9.6	0	9.6	60.0%
7/14/1988 0:00	24	4.6	0	0.4	24	18	1	4	9.6	0	9.6	60.0%
4/4/1989 0:00	24	2.7	0	0.4	24	18	1	3	9.6	0	9.6	60.0%
8/6/1989 0:00	24	6.5	0	0.4	24	20	1	5	9.6	0	9.6	60.0%
5/10/1990 0:00	24	3.7	0	0.4	24	18	1	2	9.6	0	9.6	60.0%
7/30/1996 0:00	24	2.5	0	0.4	24	16	1	2	9.6	0	9.6	60.0%
7/13/1971 0:00	24	6.1	0	0.3958	24	18	1	2	9.5	0	9.5	59.7%
10/9/1971 0:00	24	2.3	0	0.3958	24	14	1	2	9.5	0	9.5	59.7%
9/2/1975 0:00	24	5.3	0	0.3958	24	19	1	2	9.5	0	9.5	59.7%
12/1/1977 0:00	24	3.5	0	0.3958	24	16	1	2	9.5	0	9.5	59.7%
8/23/1982 0:00	24	5.7	0	0.3958	24	18	1	2	9.5	0	9.5	59.7%
9/17/1997 0:00	24	5.5	0	0.3958	24	20	1	2	9.5	0	9.5	59.7%
11/7/1975 0:00	24	3.8	0	0.3917	24	20	1	2	9.4	0	9.4	58.8%
5/11/1976 0:00	24	3.3	0	0.3917	24	16	1	3	9.4	0	9.4	58.8%
3/4/1977 0:00	24	4.1	0	0.3917	24	19	1	2	9.4	0	9.4	58.8%
7/13/1977 0:00	24	8.6	0	0.3917	24	22	1	2	9.4	0	9.4	58.8%
4/10/1978 0:00	24	2.6	0	0.3917	24	15	1	1	9.4	0	9.4	58.8%
5/15/1978 0:00	24	1.9	0	0.3917	24	10	1	5	9.4	0	9.4	58.8%
6/5/1978 0:00	24	3	0	0.3917	24	17	1	3	9.4	0	9.4	58.8%
5/26/1981 0:00	24	6.2	0	0.3917	24	20	1	4	9.4	0	9.4	58.8%
10/18/1981 0:00	24	3.4	0	0.3917	24	18	1	3	9.4	0	9.4	58.8%
5/30/1988 0:00	24	4	0	0.3917	24	18	1	2	9.4	0	9.4	58.8%
4/10/1990 0:00	24	1.9	0	0.3917	24	14	1	3	9.4	0	9.4	58.8%
4/22/1996 0:00	24	4.3	0	0.3917	24	18	1	3	9.4	0	9.4	58.8%
9/19/1997 0:00	24	4	0	0.3917	24	18	1	2	9.4	0	9.4	58.8%
10/15/1975 0:00	24	2.8	0	0.3875	24	15	1	4	9.3	0	9.3	58.5%
3/30/1979 0:00	24	3.2	0	0.3875	24	12	1	4	9.3	0	9.3	58.5%
4/13/1982 0:00	24	1.7	0	0.3875	24	13	1	4	9.3	0	9.3	58.5%

10/1/1982 0:00	24	5.8	0	0.3875	24	20	1	3	9.3	0	9.3	58.5%
5/3/1971 0:00	24	3.6	0	0.3833	24	15	1	3	9.2	0	9.2	58.2%
5/17/1973 0:00	24	1.8	0	0.3833	24	12	1	4	9.2	0	9.2	58.2%
11/16/1989 0:00	24	2.5	0	0.3833	24	17	1	3	9.2	0	9.2	58.2%
9/10/1990 0:00	24	4.6	0	0.3833	24	20	1	3	9.2	0	9.2	58.2%
10/11/1990 0:00	24	3	0	0.3833	24	14	1	5	9.2	0	9.2	58.2%
6/1/1993 0:00	24	4.7	0	0.3833	24	18	1	4	9.2	0	9.2	58.2%
6/22/1972 0:00	24	7.9	0	0.3792	24	15	1	4	9.1	0	9.1	58.1%
4/20/1986 0:00	24	3	0	0.375	24	16	1	2	9	0	9	57.6%
5/1/1986 0:00	24	4.9	0	0.375	24	21	1	2	9	0	9	57.6%
10/14/1986 0:00	24	4.3	0	0.375	24	19	1	2	9	0	9	57.6%
6/9/1993 0:00	24	8.6	0	0.375	24	21	1	3	9	0	9	57.6%
5/18/1996 0:00	24	6.2	0	0.375	24	22	1	2	9	0	9	57.6%
6/27/1998 0:00	24	15.8	0	0.375	24	20	1	3	9	0	9	57.6%
8/6/1999 0:00	24	6.2	0	0.375	24	22	1	2	9	0	9	57.6%
6/21/1971 0:00	24	7.6	0	0.3708	24	20	1	2	8.9	0	8.9	57.1%
4/19/1972 0:00	24	2.5	0	0.3708	24	15	1	3	8.9	0	8.9	57.1%
6/23/1972 0:00	24	3.8	0	0.3708	24	19	1	3	8.9	0	8.9	57.1%
8/2/1974 0:00	24	3	0	0.3708	24	17	1	2	8.9	0	8.9	57.1%
1/9/1975 0:00	24	2	0	0.3708	24	16	1	2	8.9	0	8.9	57.1%
5/1/1976 0:00	24	3	0	0.3708	24	19	1	1	8.9	0	8.9	57.1%
3/28/1977 0:00	24	2.8	0	0.3708	24	19	1	1	8.9	0	8.9	57.1%
10/13/1983 0:00	24	4.3	0	0.3708	24	18	1	2	8.9	0	8.9	57.1%
11/24/1973 0:00	24	3.6	0	0.3667	24	18	1	4	8.8	0	8.8	56.4%
10/26/1978 0:00	24	1.9	0	0.3667	24	16	1	3	8.8	0	8.8	56.4%
6/19/1982 0:00	24	3.5	0	0.3667	24	14	1	3	8.8	0	8.8	56.4%
10/23/1983 0:00	24	1.7	0	0.3667	24	12	1	4	8.8	0	8.8	56.4%
11/2/1983 0:00	24	3.9	0	0.3667	24	18	1	2	8.8	0	8.8	56.4%
12/9/1987 0:00	24	3.6	0	0.3667	24	19	1	2	8.8	0	8.8	56.4%
8/25/1988 0:00	24	2.8	0	0.3667	24	15	1	4	8.8	0	8.8	56.4%
3/17/1990 0:00	24	2	0	0.3667	24	13	1	2	8.8	0	8.8	56.4%
11/16/1990 0:00	24	3.5	0	0.3667	24	19	1	2	8.8	0	8.8	56.4%
10/16/1993 0:00	24	2.1	0	0.3667	24	16	1	3	8.8	0	8.8	56.4%
6/14/1999 0:00	24	8.8	0	0.3667	24	23	1	2	8.8	0	8.8	56.4%

8/8/1972 0:00	24	5.6	0	0.3583	24	20	1	2	8.6	0	8.6	55.0%
9/10/1976 0:00	24	4.8	0	0.3583	24	21	1	2	8.6	0	8.6	55.0%
8/24/1979 0:00	24	3.4	0	0.3583	24	20	1	2	8.6	0	8.6	55.0%
10/5/1979 0:00	24	1.9	0	0.3583	24	15	1	4	8.6	0	8.6	55.0%
11/22/1979 0:00	24	1	0	0.3583	24	5	1	4	8.6	0	8.6	55.0%
10/3/1980 0:00	24	7	0	0.3583	24	21	1	1	8.6	0	8.6	55.0%
10/4/1980 0:00	24	3.3	0	0.3583	24	17	1	4	8.6	0	8.6	55.0%
2/19/1981 0:00	24	2.3	0	0.3583	24	16	1	4	8.6	0	8.6	55.0%
4/23/1981 0:00	24	4.8	0	0.3583	24	14	1	3	8.6	0	8.6	55.0%
6/1/1982 0:00	24	4	0	0.3583	24	20	1	3	8.6	0	8.6	55.0%
8/26/1983 0:00	24	5	0	0.3583	24	21	1	2	8.6	0	8.6	55.0%
10/27/1986 0:00	24	3.5	0	0.3583	24	14	1	6	8.6	0	8.6	55.0%
7/3/1987 0:00	24	8	0	0.3583	24	20	1	4	8.6	0	8.6	55.0%
8/17/1987 0:00	24	8.6	0	0.3583	24	23	1	2	8.6	0	8.6	55.0%
10/10/1988 0:00	24	2.5	0	0.3583	24	16	1	2	8.6	0	8.6	55.0%
6/9/1989 0:00	24	2.1	0	0.3583	24	17	1	3	8.6	0	8.6	55.0%
10/5/1991 0:00	24	3.4	0	0.3583	24	15	1	1	8.6	0	8.6	55.0%
4/17/1993 0:00	24	2.1	0	0.3583	24	11	1	6	8.6	0	8.6	55.0%
8/2/1993 0:00	24	5	0	0.3583	24	22	1	3	8.6	0	8.6	55.0%
8/31/1994 0:00	24	1.4	0	0.3583	24	12	1	5	8.6	0	8.6	55.0%
4/25/1996 0:00	24	2	0	0.3583	24	17	1	2	8.6	0	8.6	55.0%
10/1/1998 0:00	24	3.1	0	0.3583	24	16	1	2	8.6	0	8.6	55.0%
11/1/1973 0:00	24	2.3	0	0.3542	24	13	1	4	8.5	0	8.5	54.8%
3/4/1979 0:00	24	1.8	0	0.3542	24	13	1	3	8.5	0	8.5	54.8%
5/22/1974 0:00	24	4.3	0	0.35	24	19	1	4	8.4	0	8.4	54.1%
6/26/1980 0:00	24	4	0	0.35	24	18	1	4	8.4	0	8.4	54.1%
7/15/1980 0:00	24	5.4	0	0.35	24	17	1	5	8.4	0	8.4	54.1%
5/30/1981 0:00	24	2.8	0	0.35	24	18	1	2	8.4	0	8.4	54.1%
1/19/1986 0:00	24	2	0	0.35	24	13	1	3	8.4	0	8.4	54.1%
5/23/1986 0:00	24	3.6	0	0.35	24	16	1	2	8.4	0	8.4	54.1%
4/20/1990 0:00	24	1.8	0	0.35	24	14	1	3	8.4	0	8.4	54.1%
6/18/1993 0:00	24	2.1	0	0.35	24	13	1	3	8.4	0	8.4	54.1%
7/8/1993 0:00	24	5.7	0	0.35	24	21	1	3	8.4	0	8.4	54.1%
3/1/1997 0:00	24	3.8	0	0.35	24	18	1	2	8.4	0	8.4	54.1%

7/1/1998 0:00	24	2	0	0.35	24	14	1	3	8.4	0	8.4	54.1%
4/22/1976 0:00	24	3.6	0	0.3458	24	18	1	4	8.3	0	8.3	53.9%
7/29/1983 0:00	24	8.1	0	0.3458	24	22	1	2	8.3	0	8.3	53.9%
6/21/1993 0:00	24	2.1	0	0.3458	24	15	1	4	8.3	0	8.3	53.9%
8/16/1996 0:00	24	4.8	0	0.3458	24	20	1	3	8.3	0	8.3	53.9%
5/4/1971 0:00	24	1.8	0	0.3417	24	14	1	4	8.2	0	8.2	52.7%
4/28/1973 0:00	24	2.3	0	0.3417	24	14	1	3	8.2	0	8.2	52.7%
5/1/1973 0:00	24	2.8	0	0.3417	24	15	1	2	8.2	0	8.2	52.7%
7/24/1974 0:00	24	3	0	0.3417	24	18	1	4	8.2	0	8.2	52.7%
7/2/1975 0:00	24	5.6	0	0.3417	24	19	1	4	8.2	0	8.2	52.7%
12/6/1975 0:00	24	3	0	0.3417	24	17	1	2	8.2	0	8.2	52.7%
8/12/1976 0:00	24	3.6	0	0.3417	24	20	1	3	8.2	0	8.2	52.7%
5/9/1983 0:00	24	3.2	0	0.3417	24	18	1	3	8.2	0	8.2	52.7%
6/17/1983 0:00	24	7.5	0	0.3417	24	21	1	3	8.2	0	8.2	52.7%
11/5/1984 0:00	24	3.9	0	0.3417	24	14	1	4	8.2	0	8.2	52.7%
8/15/1985 0:00	24	5.1	0	0.3417	24	20	1	3	8.2	0	8.2	52.7%
1/17/1988 0:00	24	1.8	0	0.3417	24	14	1	1	8.2	0	8.2	52.7%
8/17/1991 0:00	24	4.4	0	0.3417	24	19	1	1	8.2	0	8.2	52.7%
9/25/1991 0:00	24	1.6	0	0.3417	24	12	1	1	8.2	0	8.2	52.7%
6/26/1993 0:00	24	3.6	0	0.3417	24	19	1	2	8.2	0	8.2	52.7%
12/10/1993 0:00	24	2.4	0	0.3417	24	15	1	5	8.2	0	8.2	52.7%
10/2/1999 0:00	24	2.4	0	0.3417	24	16	1	2	8.2	0	8.2	52.7%
10/6/1971 0:00	24	2.3	0	0.3375	24	16	1	5	8.1	0	8.1	52.5%
6/4/1973 0:00	24	4.8	0	0.3375	24	21	1	2	8.1	0	8.1	52.5%
9/3/1974 0:00	24	2	0	0.3375	24	13	1	2	8.1	0	8.1	52.5%
7/27/1975 0:00	24	3	0	0.3375	24	20	1	3	8.1	0	8.1	52.5%
8/9/1972 0:00	24	3	0	0.3333	24	17	1	5	8	0	8	51.7%
10/13/1973 0:00	24	2.5	0	0.3333	24	17	1	3	8	0	8	51.7%
1/1/1979 0:00	24	2.4	0	0.3333	24	15	1	4	8	0	8	51.7%
4/29/1980 0:00	24	1.4	0	0.3333	24	14	1	6	8	0	8	51.7%
9/2/1980 0:00	24	6.8	0	0.3333	24	20	1	2	8	0	8	51.7%
10/25/1984 0:00	24	2	0	0.3333	24	17	1	1	8	0	8	51.7%
5/5/1986 0:00	24	3.2	0	0.3333	24	17	1	3	8	0	8	51.7%
7/25/1987 0:00	24	5.2	0	0.3333	24	22	1	2	8	0	8	51.7%

9/4/1988 0:00	24	2.5	0	0.3333	24	11	1	2	8	0	8	51.7%
11/9/1989 0:00	24	2.3	0	0.3333	24	11	1	3	8	0	8	51.7%
5/23/1992 0:00	24	3.8	0	0.3333	24	18	1	3	8	0	8	51.7%
6/24/1994 0:00	24	7.6	0	0.3333	24	22	1	1	8	0	8	51.7%
7/23/1974 0:00	24	1.8	0	0.3292	24	17	1	1	7.9	0	7.9	51.4%
4/21/1976 0:00	24	2.8	0	0.3292	24	20	1	2	7.9	0	7.9	51.4%
4/22/1977 0:00	24	2.8	0	0.3292	24	14	1	4	7.9	0	7.9	51.4%
12/12/1984 0:00	24	3.1	0	0.3292	24	20	1	1	7.9	0	7.9	51.4%
10/9/1993 0:00	24	2.2	0	0.3292	24	19	1	2	7.9	0	7.9	51.4%
5/7/1976 0:00	24	2.8	0	0.325	24	17	1	4	7.8	0	7.8	50.6%
7/26/1979 0:00	24	2.4	0	0.325	24	16	1	3	7.8	0	7.8	50.6%
8/12/1980 0:00	24	3.3	0	0.325	24	20	1	2	7.8	0	7.8	50.6%
4/6/1986 0:00	24	1.8	0	0.325	24	10	1	5	7.8	0	7.8	50.6%
5/27/1986 0:00	24	7.8	0	0.325	24	23	1	2	7.8	0	7.8	50.6%
10/3/1986 0:00	24	2.9	0	0.325	24	15	1	4	7.8	0	7.8	50.6%
10/4/1986 0:00	24	3.2	0	0.325	24	15	1	3	7.8	0	7.8	50.6%
5/6/1991 0:00	24	2.3	0	0.325	24	17	1	4	7.8	0	7.8	50.6%
10/4/1993 0:00	24	3.2	0	0.325	24	18	1	3	7.8	0	7.8	50.6%
5/31/1994 0:00	24	5.6	0	0.325	24	22	1	2	7.8	0	7.8	50.6%
6/12/1998 0:00	24	1.8	0	0.325	24	17	1	2	7.8	0	7.8	50.6%
9/16/1999 0:00	24	3.9	0	0.325	24	20	1	1	7.8	0	7.8	50.6%
5/7/1983 0:00	24	1.8	0	0.3208	24	9	1	4	7.7	0	7.7	50.4%
11/15/1993 0:00	24	2.5	0	0.3208	24	14	1	4	7.7	0	7.7	50.4%
4/27/1994 0:00	24	5.3	0	0.3208	24	17	1	5	7.7	0	7.7	50.4%
4/13/1971 0:00	24	1.3	0	0.3167	24	16	1	3	7.6	0	7.6	49.2%
6/15/1972 0:00	24	4.6	0	0.3167	24	22	1	2	7.6	0	7.6	49.2%
11/10/1977 0:00	24	2.4	0	0.3167	24	16	1	2	7.6	0	7.6	49.2%
5/20/1978 0:00	24	4.2	0	0.3167	24	20	1	3	7.6	0	7.6	49.2%
10/7/1979 0:00	24	3.4	0	0.3167	24	15	1	8	7.6	0	7.6	49.2%
4/29/1981 0:00	24	1.9	0	0.3167	24	17	1	2	7.6	0	7.6	49.2%
6/29/1982 0:00	24	5.7	0	0.3167	24	22	1	2	7.6	0	7.6	49.2%
7/4/1983 0:00	24	6.5	0	0.3167	24	21	1	1	7.6	0	7.6	49.2%
7/4/1986 0:00	24	2.9	0	0.3167	24	19	1	2	7.6	0	7.6	49.2%
5/23/1987 0:00	24	3.4	0	0.3167	24	11	1	5	7.6	0	7.6	49.2%

8/31/1987 0:00	24	3.4	0	0.3167	24	17	1	4	7.6	0	7.6	49.2%
5/6/1989 0:00	24	2	0	0.3167	24	17	1	3	7.6	0	7.6	49.2%
6/3/1989 0:00	24	3.9	0	0.3167	24	22	1	1	7.6	0	7.6	49.2%
7/8/1990 0:00	24	3	0	0.3167	24	18	1	2	7.6	0	7.6	49.2%
7/30/1990 0:00	24	5.7	0	0.3167	24	21	1	1	7.6	0	7.6	49.2%
5/1/1991 0:00	24	6	0	0.3167	24	21	1	3	7.6	0	7.6	49.2%
6/30/1992 0:00	24	3.7	0	0.3167	24	19	1	2	7.6	0	7.6	49.2%
4/22/1993 0:00	24	2.5	0	0.3167	24	19	1	2	7.6	0	7.6	49.2%
5/9/1997 0:00	24	2	0	0.3167	24	13	1	6	7.6	0	7.6	49.2%
4/29/1971 0:00	24	2.5	0	0.3125	24	16	1	4	7.5	0	7.5	48.6%
5/26/1971 0:00	24	2.5	0	0.3125	24	17	1	5	7.5	0	7.5	48.6%
8/18/1972 0:00	24	6.9	0	0.3125	24	21	1	3	7.5	0	7.5	48.6%
7/31/1982 0:00	24	6.1	0	0.3125	24	19	1	6	7.5	0	7.5	48.6%
8/22/1982 0:00	24	2.4	0	0.3125	24	16	1	1	7.5	0	7.5	48.6%
9/23/1982 0:00	24	4.3	0	0.3125	24	21	1	2	7.5	0	7.5	48.6%
10/31/1989 0:00	24	3	0	0.3125	24	19	1	2	7.5	0	7.5	48.6%
11/5/1990 0:00	24	2.3	0	0.3125	24	19	1	1	7.5	0	7.5	48.6%
11/21/1975 0:00	24	2.8	0	0.3083	24	19	1	2	7.4	0	7.4	47.7%
10/3/1977 0:00	24	1.3	0	0.3083	24	13	1	1	7.4	0	7.4	47.7%
6/4/1981 0:00	24	5.8	0	0.3083	24	21	1	3	7.4	0	7.4	47.7%
8/9/1981 0:00	24	3.8	0	0.3083	24	20	1	3	7.4	0	7.4	47.7%
8/31/1981 0:00	24	5.2	0	0.3083	24	17	1	3	7.4	0	7.4	47.7%
11/20/1981 0:00	24	1.4	0	0.3083	24	14	1	5	7.4	0	7.4	47.7%
3/13/1982 0:00	24	4.7	0	0.3083	24	19	1	4	7.4	0	7.4	47.7%
11/4/1984 0:00	24	3	0	0.3083	24	19	1	2	7.4	0	7.4	47.7%
5/29/1987 0:00	24	6.1	0	0.3083	24	21	1	3	7.4	0	7.4	47.7%
5/20/1988 0:00	24	3.4	0	0.3083	24	18	1	5	7.4	0	7.4	47.7%
6/21/1990 0:00	24	3.2	0	0.3083	24	20	1	2	7.4	0	7.4	47.7%
12/30/1990 0:00	24	1.6	0	0.3083	24	16	1	3	7.4	0	7.4	47.7%
8/9/1991 0:00	24	1.9	0	0.3083	24	13	1	2	7.4	0	7.4	47.7%
6/13/1992 0:00	24	6.2	0	0.3083	24	20	1	3	7.4	0	7.4	47.7%
8/2/1992 0:00	24	2.8	0	0.3083	24	15	1	4	7.4	0	7.4	47.7%
10/2/1973 0:00	24	2.3	0	0.3042	24	15	1	2	7.3	0	7.3	47.5%
6/25/1982 0:00	24	1.3	0	0.3042	24	11	1	3	7.3	0	7.3	47.5%

5/8/1999 0:00	24	2.7	0	0.3042	24	18	1	3	7.3	0	7.3	47.5%
5/31/1973 0:00	24	6.1	0	0.3	24	21	1	4	7.2	0	7.2	46.9%
9/6/1973 0:00	24	6.1	0	0.3	24	21	1	2	7.2	0	7.2	46.9%
4/25/1977 0:00	24	1	0	0.3	24	11	1	3	7.2	0	7.2	46.9%
7/1/1977 0:00	24	2	0	0.3	24	17	1	6	7.2	0	7.2	46.9%
9/9/1980 0:00	24	3.4	0	0.3	24	21	1	2	7.2	0	7.2	46.9%
8/24/1981 0:00	24	4.2	0	0.3	24	20	1	4	7.2	0	7.2	46.9%
10/4/1990 0:00	24	3.5	0	0.3	24	17	1	3	7.2	0	7.2	46.9%
9/8/1992 0:00	24	5	0	0.3	24	21	1	3	7.2	0	7.2	46.9%
10/11/1992 0:00	24	3.9	0	0.3	24	18	1	5	7.2	0	7.2	46.9%
11/8/1975 0:00	24	4.8	0	0.2958	24	21	1	3	7.1	0	7.1	46.6%
4/23/1976 0:00	24	2.8	0	0.2958	24	20	1	3	7.1	0	7.1	46.6%
11/9/1979 0:00	24	1.7	0	0.2958	24	18	1	1	7.1	0	7.1	46.6%
7/4/1981 0:00	24	3.1	0	0.2958	24	21	1	3	7.1	0	7.1	46.6%
4/15/1972 0:00	24	1.8	0	0.2917	24	16	1	2	7	0	7	45.7%
6/25/1972 0:00	24	2.8	0	0.2917	24	19	1	1	7	0	7	45.7%
10/8/1977 0:00	24	2.8	0	0.2917	24	16	1	3	7	0	7	45.7%
9/18/1979 0:00	24	5.9	0	0.2917	24	22	1	2	7	0	7	45.7%
7/28/1980 0:00	24	2.4	0	0.2917	24	17	1	3	7	0	7	45.7%
7/28/1981 0:00	24	2.5	0	0.2917	24	16	1	3	7	0	7	45.7%
8/11/1981 0:00	24	2.2	0	0.2917	24	17	1	2	7	0	7	45.7%
11/1/1986 0:00	24	2.1	0	0.2917	24	18	1	2	7	0	7	45.7%
9/23/1988 0:00	24	2.8	0	0.2917	24	19	1	3	7	0	7	45.7%
11/27/1990 0:00	24	4.2	0	0.2917	24	18	1	6	7	0	7	45.7%
3/27/1991 0:00	24	3	0	0.2917	24	18	1	3	7	0	7	45.7%
7/21/1991 0:00	24	3.4	0	0.2917	24	20	1	2	7	0	7	45.7%
8/30/1991 0:00	24	5.8	0	0.2917	24	20	1	3	7	0	7	45.7%
10/23/1992 0:00	24	2.6	0	0.2917	24	19	1	3	7	0	7	45.7%
7/6/1999 0:00	24	4.3	0	0.2917	24	21	1	3	7	0	7	45.7%
5/16/1972 0:00	24	1.8	0	0.2875	24	18	1	2	6.9	0	6.9	45.0%
11/28/1973 0:00	24	2.8	0	0.2875	24	14	1	4	6.9	0	6.9	45.0%
4/22/1974 0:00	24	6.1	0	0.2875	24	21	1	3	6.9	0	6.9	45.0%
9/19/1975 0:00	24	1	0	0.2875	24	12	1	2	6.9	0	6.9	45.0%
6/25/1977 0:00	24	4.3	0	0.2875	24	20	1	2	6.9	0	6.9	45.0%

4/15/1983 0:00	24	1.2	0	0.2875	24	10	1	5	6.9	0	6.9	45.0%
5/5/1993 0:00	24	3.1	0	0.2875	24	19	1	3	6.9	0	6.9	45.0%
9/16/1994 0:00	24	3.1	0	0.2875	24	19	1	2	6.9	0	6.9	45.0%
6/30/1996 0:00	24	3.8	0	0.2875	24	20	1	4	6.9	0	6.9	45.0%
7/23/1996 0:00	24	3.9	0	0.2875	24	20	1	2	6.9	0	6.9	45.0%
9/17/1973 0:00	24	3.3	0	0.2833	24	20	1	1	6.8	0	6.8	44.0%
10/16/1977 0:00	24	1.7	0	0.2833	24	11	1	2	6.8	0	6.8	44.0%
10/20/1979 0:00	24	3.7	0	0.2833	24	19	1	2	6.8	0	6.8	44.0%
12/12/1979 0:00	24	2.1	0	0.2833	24	17	1	4	6.8	0	6.8	44.0%
8/3/1980 0:00	24	3.5	0	0.2833	24	17	1	4	6.8	0	6.8	44.0%
9/21/1980 0:00	24	6.6	0	0.2833	24	22	1	2	6.8	0	6.8	44.0%
6/30/1981 0:00	24	5.5	0	0.2833	24	22	1	2	6.8	0	6.8	44.0%
11/21/1982 0:00	24	2	0	0.2833	24	15	1	4	6.8	0	6.8	44.0%
6/6/1983 0:00	24	2.7	0	0.2833	24	18	1	2	6.8	0	6.8	44.0%
9/28/1986 0:00	24	5.5	0	0.2833	24	22	1	1	6.8	0	6.8	44.0%
7/8/1991 0:00	24	3.3	0	0.2833	24	21	1	3	6.8	0	6.8	44.0%
4/16/1992 0:00	24	1.9	0	0.2833	24	18	1	3	6.8	0	6.8	44.0%
6/20/1992 0:00	24	3.9	0	0.2833	24	22	1	2	6.8	0	6.8	44.0%
4/21/1995 0:00	24	3	0	0.2833	24	19	1	3	6.8	0	6.8	44.0%
4/23/1996 0:00	24	1.4	0	0.2833	24	16	1	2	6.8	0	6.8	44.0%
8/15/1997 0:00	24	3.6	0	0.2833	24	20	1	2	6.8	0	6.8	44.0%
5/19/1973 0:00	24	2.3	0	0.2792	24	17	1	4	6.7	0	6.7	43.5%
7/9/1974 0:00	24	4.3	0	0.2792	24	19	1	2	6.7	0	6.7	43.5%
6/7/1975 0:00	24	1.8	0	0.2792	24	15	1	3	6.7	0	6.7	43.5%
9/27/1975 0:00	24	1.5	0	0.2792	24	15	1	5	6.7	0	6.7	43.5%
7/13/1978 0:00	24	3.7	0	0.2792	24	18	1	2	6.7	0	6.7	43.5%
9/14/1996 0:00	24	2.7	0	0.2792	24	20	1	3	6.7	0	6.7	43.5%
6/28/1999 0:00	24	3.4	0	0.2792	24	20	1	2	6.7	0	6.7	43.5%
4/2/1971 0:00	24	1.3	0	0.275	24	15	1	1	6.6	0	6.6	41.9%
7/19/1972 0:00	24	5.6	0	0.275	24	22	1	2	6.6	0	6.6	41.9%
6/29/1977 0:00	24	1.8	0	0.275	24	17	1	5	6.6	0	6.6	41.9%
9/17/1977 0:00	24	6	0	0.275	24	20	1	3	6.6	0	6.6	41.9%
10/22/1977 0:00	24	2.6	0	0.275	24	18	1	3	6.6	0	6.6	41.9%
6/12/1978 0:00	24	3.7	0	0.275	24	22	1	2	6.6	0	6.6	41.9%

6/14/1978 0:00	24	3.7	0	0.275	24	22	1	2	6.6	0	6.6	41.9%
4/4/1980 0:00	24	1.7	0	0.275	24	14	1	5	6.6	0	6.6	41.9%
6/8/1981 0:00	24	3.9	0	0.275	24	21	1	2	6.6	0	6.6	41.9%
9/12/1981 0:00	24	4.9	0	0.275	24	21	1	2	6.6	0	6.6	41.9%
8/22/1983 0:00	24	2.2	0	0.275	24	16	1	2	6.6	0	6.6	41.9%
11/20/1983 0:00	24	3.1	0	0.275	24	21	1	1	6.6	0	6.6	41.9%
12/15/1983 0:00	24	4	0	0.275	24	21	1	3	6.6	0	6.6	41.9%
7/18/1984 0:00	24	2.9	0	0.275	24	20	1	2	6.6	0	6.6	41.9%
8/23/1986 0:00	24	2.1	0	0.275	24	18	1	3	6.6	0	6.6	41.9%
4/23/1987 0:00	24	1.5	0	0.275	24	14	1	3	6.6	0	6.6	41.9%
6/28/1987 0:00	24	3.9	0	0.275	24	20	1	4	6.6	0	6.6	41.9%
5/11/1989 0:00	24	2.2	0	0.275	24	16	1	3	6.6	0	6.6	41.9%
10/5/1989 0:00	24	3.2	0	0.275	24	20	1	1	6.6	0	6.6	41.9%
10/12/1992 0:00	24	5.2	0	0.275	24	19	1	3	6.6	0	6.6	41.9%
7/22/1994 0:00	24	3.1	0	0.275	24	20	1	3	6.6	0	6.6	41.9%
6/11/1995 0:00	24	5.4	0	0.275	24	21	1	1	6.6	0	6.6	41.9%
9/27/1996 0:00	24	1.4	0	0.275	24	15	1	3	6.6	0	6.6	41.9%
9/10/1999 0:00	24	2.5	0	0.275	24	18	1	1	6.6	0	6.6	41.9%
10/23/1999 0:00	24	1.6	0	0.275	24	14	1	3	6.6	0	6.6	41.9%
4/27/1995 0:00	24	2.2	0	0.2708	24	16	1	4	6.5	0	6.5	41.7%
4/18/1997 0:00	24	1.6	0	0.2708	24	11	1	1	6.5	0	6.5	41.7%
6/8/1971 0:00	24	3.3	0	0.2667	24	20	1	3	6.4	0	6.4	40.4%
7/23/1972 0:00	24	3.3	0	0.2667	24	21	1	2	6.4	0	6.4	40.4%
6/22/1973 0:00	24	3.6	0	0.2667	24	21	1	2	6.4	0	6.4	40.4%
8/2/1973 0:00	24	5.3	0	0.2667	24	21	1	2	6.4	0	6.4	40.4%
6/17/1974 0:00	24	3.6	0	0.2667	24	19	1	2	6.4	0	6.4	40.4%
7/4/1974 0:00	24	3.8	0	0.2667	24	20	1	3	6.4	0	6.4	40.4%
5/26/1979 0:00	24	3.8	0	0.2667	24	18	1	3	6.4	0	6.4	40.4%
5/19/1982 0:00	24	6.4	0	0.2667	24	23	1	2	6.4	0	6.4	40.4%
11/11/1982 0:00	24	1.5	0	0.2667	24	18	1	1	6.4	0	6.4	40.4%
4/29/1987 0:00	24	1.8	0	0.2667	24	15	1	2	6.4	0	6.4	40.4%
11/8/1988 0:00	24	1.8	0	0.2667	24	16	1	3	6.4	0	6.4	40.4%
3/25/1989 0:00	24	1.5	0	0.2667	24	16	1	3	6.4	0	6.4	40.4%
4/14/1990 0:00	24	2.1	0	0.2667	24	16	1	2	6.4	0	6.4	40.4%

12/22/1990 0:00	24	2.2	0	0.2667	24	12	1	2	6.4	0	6.4	40.4%
9/26/1991 0:00	24	4.1	0	0.2667	24	20	1	4	6.4	0	6.4	40.4%
10/19/1991 0:00	24	2.7	0	0.2667	24	17	1	2	6.4	0	6.4	40.4%
11/3/1992 0:00	24	2.6	0	0.2667	24	20	1	3	6.4	0	6.4	40.4%
6/13/1996 0:00	24	6	0	0.2667	24	22	1	2	6.4	0	6.4	40.4%
4/6/1997 0:00	24	2.2	0	0.2667	24	16	1	1	6.4	0	6.4	40.4%
6/25/1999 0:00	24	5.8	0	0.2667	24	20	1	4	6.4	0	6.4	40.4%
8/27/1971 0:00	24	1.3	0	0.2625	24	16	1	3	6.3	0	6.3	40.0%
5/6/1972 0:00	24	2.8	0	0.2625	24	17	1	2	6.3	0	6.3	40.0%
9/3/1972 0:00	24	1.8	0	0.2625	24	18	1	3	6.3	0	6.3	40.0%
3/21/1976 0:00	24	2.5	0	0.2625	24	15	1	5	6.3	0	6.3	40.0%
4/30/1996 0:00	24	2.5	0	0.2625	24	19	1	3	6.3	0	6.3	40.0%
8/22/1997 0:00	24	4.5	0	0.2625	24	20	1	3	6.3	0	6.3	40.0%
6/15/1998 0:00	24	1.9	0	0.2625	24	18	1	2	6.3	0	6.3	40.0%
12/10/1971 0:00	24	3.3	0	0.2583	24	18	1	4	6.2	0	6.2	38.9%
5/29/1973 0:00	24	1.3	0	0.2583	24	17	1	3	6.2	0	6.2	38.9%
5/25/1974 0:00	24	5.1	0	0.2583	24	20	1	4	6.2	0	6.2	38.9%
4/26/1979 0:00	24	1.7	0	0.2583	24	16	1	2	6.2	0	6.2	38.9%
10/13/1979 0:00	24	2.8	0	0.2583	24	18	1	3	6.2	0	6.2	38.9%
7/20/1986 0:00	24	2.6	0	0.2583	24	21	1	3	6.2	0	6.2	38.9%
5/22/1987 0:00	24	2	0	0.2583	24	18	1	4	6.2	0	6.2	38.9%
8/29/1987 0:00	24	2.2	0	0.2583	24	20	1	2	6.2	0	6.2	38.9%
10/30/1987 0:00	24	1.6	0	0.2583	24	15	1	4	6.2	0	6.2	38.9%
8/2/1988 0:00	24	5.8	0	0.2583	24	22	1	2	6.2	0	6.2	38.9%
5/13/1989 0:00	24	2.8	0	0.2583	24	19	1	2	6.2	0	6.2	38.9%
6/4/1989 0:00	24	3.7	0	0.2583	24	18	1	1	6.2	0	6.2	38.9%
6/6/1992 0:00	24	1.7	0	0.2583	24	12	1	4	6.2	0	6.2	38.9%
11/10/1992 0:00	24	2	0	0.2583	24	17	1	2	6.2	0	6.2	38.9%
8/20/1993 0:00	24	2.3	0	0.2583	24	18	1	5	6.2	0	6.2	38.9%
10/8/1993 0:00	24	2.9	0	0.2583	24	20	1	3	6.2	0	6.2	38.9%
8/12/1972 0:00	24	5.8	0	0.2542	24	22	1	2	6.1	0	6.1	38.6%
7/2/1974 0:00	24	3	0	0.2542	24	21	1	3	6.1	0	6.1	38.6%
4/5/1987 0:00	24	1.3	0	0.2542	24	15	1	4	6.1	0	6.1	38.6%
9/28/1993 0:00	24	5.1	0	0.2542	24	19	1	1	6.1	0	6.1	38.6%

6/1/1999 0:00	24	1.9	0	0.2542	24	19	1	2	6.1	0	6.1	38.6%
6/2/1971 0:00	24	1.3	0	0.25	24	17	1	2	6	0	6	37.5%
11/16/1977 0:00	24	1.2	0	0.25	24	14	1	3	6	0	6	37.5%
9/3/1978 0:00	24	4.8	0	0.25	24	20	1	2	6	0	6	37.5%
8/14/1980 0:00	24	4.1	0	0.25	24	19	1	3	6	0	6	37.5%
2/2/1981 0:00	24	1.1	0	0.25	24	12	1	2	6	0	6	37.5%
4/1/1981 0:00	24	2.9	0	0.25	24	20	1	2	6	0	6	37.5%
4/14/1981 0:00	24	2.2	0	0.25	24	20	1	2	6	0	6	37.5%
7/1/1983 0:00	24	4.1	0	0.25	24	22	1	2	6	0	6	37.5%
10/5/1986 0:00	24	3.4	0	0.25	24	21	1	2	6	0	6	37.5%
10/20/1987 0:00	24	2.4	0	0.25	24	19	1	2	6	0	6	37.5%
11/8/1987 0:00	24	1.5	0	0.25	24	17	1	1	6	0	6	37.5%
3/12/1990 0:00	24	2.9	0	0.25	24	17	1	3	6	0	6	37.5%
9/4/1991 0:00	24	2.8	0	0.25	24	20	1	1	6	0	6	37.5%
1/4/1992 0:00	24	2.4	0	0.25	24	18	1	2	6	0	6	37.5%
7/13/1992 0:00	24	6.5	0	0.25	24	21	1	1	6	0	6	37.5%
8/26/1994 0:00	24	3.2	0	0.25	24	22	1	2	6	0	6	37.5%
5/20/1996 0:00	24	4.4	0	0.25	24	22	1	2	6	0	6	37.5%
6/18/1997 0:00	24	2.8	0	0.25	24	16	1	2	6	0	6	37.5%
11/21/1973 0:00	24	2.3	0	0.2458	24	20	1	1	5.9	0	5.9	37.3%
4/14/1974 0:00	24	5.1	0	0.2458	24	21	1	2	5.9	0	5.9	37.3%
6/16/1997 0:00	24	2.7	0	0.2458	24	18	1	2	5.9	0	5.9	37.3%
4/21/1971 0:00	24	1	0	0.2417	24	11	1	3	5.8	0	5.8	35.7%
8/30/1971 0:00	24	2.5	0	0.2417	24	21	1	2	5.8	0	5.8	35.7%
10/7/1972 0:00	24	1.3	0	0.2417	24	16	1	2	5.8	0	5.8	35.7%
10/16/1972 0:00	24	3	0	0.2417	24	22	1	2	5.8	0	5.8	35.7%
1/11/1975 0:00	24	3	0	0.2417	24	20	1	3	5.8	0	5.8	35.7%
7/27/1978 0:00	24	3.5	0	0.2417	24	20	1	3	5.8	0	5.8	35.7%
7/2/1979 0:00	24	3.4	0	0.2417	24	18	1	5	5.8	0	5.8	35.7%
9/17/1983 0:00	24	1.8	0	0.2417	24	18	1	4	5.8	0	5.8	35.7%
8/7/1984 0:00	24	5.8	0	0.2417	24	23	1	2	5.8	0	5.8	35.7%
9/5/1985 0:00	24	2.2	0	0.2417	24	18	1	4	5.8	0	5.8	35.7%
9/13/1986 0:00	24	5.8	0	0.2417	24	23	1	2	5.8	0	5.8	35.7%
10/21/1986 0:00	24	3.3	0	0.2417	24	21	1	2	5.8	0	5.8	35.7%

3/30/1987 0:00	24	1.6	0	0.2417	24	16	1	3	5.8	0	5.8	35.7%
5/27/1987 0:00	24	5.8	0	0.2417	24	23	1	2	5.8	0	5.8	35.7%
6/28/1988 0:00	24	3.2	0	0.2417	24	20	1	2	5.8	0	5.8	35.7%
8/14/1988 0:00	24	4.3	0	0.2417	24	21	1	3	5.8	0	5.8	35.7%
8/21/1988 0:00	24	5.4	0	0.2417	24	22	1	1	5.8	0	5.8	35.7%
6/18/1989 0:00	24	1.9	0	0.2417	24	18	1	5	5.8	0	5.8	35.7%
9/29/1991 0:00	24	2.2	0	0.2417	24	19	1	2	5.8	0	5.8	35.7%
2/19/1992 0:00	24	2.6	0	0.2417	24	15	1	4	5.8	0	5.8	35.7%
10/19/1992 0:00	24	0.7	0	0.2417	24	11	1	3	5.8	0	5.8	35.7%
9/10/1993 0:00	24	2	0	0.2417	24	15	1	3	5.8	0	5.8	35.7%
8/25/1994 0:00	24	5.4	0	0.2417	24	22	1	3	5.8	0	5.8	35.7%
6/3/1999 0:00	24	5.6	0	0.2417	24	22	1	1	5.8	0	5.8	35.7%
10/25/1971 0:00	24	1.8	0	0.2375	24	16	1	3	5.7	0	5.7	35.2%
4/13/1977 0:00	24	2.3	0	0.2375	24	20	1	3	5.7	0	5.7	35.2%
7/14/1983 0:00	24	4.8	0	0.2375	24	22	1	2	5.7	0	5.7	35.2%
5/21/1986 0:00	24	2.1	0	0.2375	24	18	1	3	5.7	0	5.7	35.2%
7/15/1996 0:00	24	2.3	0	0.2375	24	18	1	4	5.7	0	5.7	35.2%
7/30/1998 0:00	24	5.1	0	0.2375	24	21	1	2	5.7	0	5.7	35.2%
9/29/1999 0:00	24	1.9	0	0.2375	24	17	1	3	5.7	0	5.7	35.2%
10/14/1971 0:00	24	3.3	0	0.2333	24	21	1	2	5.6	0	5.6	33.7%
10/24/1972 0:00	24	1.3	0	0.2333	24	15	1	2	5.6	0	5.6	33.7%
2/22/1974 0:00	24	2	0	0.2333	24	18	1	3	5.6	0	5.6	33.7%
8/13/1975 0:00	24	2.8	0	0.2333	24	20	1	2	5.6	0	5.6	33.7%
5/31/1976 0:00	24	2.5	0	0.2333	24	20	1	2	5.6	0	5.6	33.7%
6/14/1976 0:00	24	3.3	0	0.2333	24	21	1	2	5.6	0	5.6	33.7%
10/26/1980 0:00	24	0.8	0	0.2333	24	11	1	4	5.6	0	5.6	33.7%
9/4/1981 0:00	24	2.3	0	0.2333	24	18	1	3	5.6	0	5.6	33.7%
7/2/1982 0:00	24	2.8	0	0.2333	24	21	1	2	5.6	0	5.6	33.7%
9/16/1983 0:00	24	1.8	0	0.2333	24	16	1	1	5.6	0	5.6	33.7%
11/29/1984 0:00	24	1	0	0.2333	24	14	1	3	5.6	0	5.6	33.7%
6/16/1986 0:00	24	2.8	0	0.2333	24	20	1	3	5.6	0	5.6	33.7%
3/25/1987 0:00	24	1.8	0	0.2333	24	18	1	2	5.6	0	5.6	33.7%
11/10/1988 0:00	24	2.5	0	0.2333	24	20	1	3	5.6	0	5.6	33.7%
9/14/1989 0:00	24	1.7	0	0.2333	24	17	1	2	5.6	0	5.6	33.7%

9/23/1990 0:00	24	1.9	0	0.2333	24	17	1	4	5.6	0	5.6	33.7%
3/16/1993 0:00	24	1.6	0	0.2333	24	16	1	1	5.6	0	5.6	33.7%
3/21/1994 0:00	24	1.6	0	0.2333	24	18	1	2	5.6	0	5.6	33.7%
4/2/1994 0:00	24	3.8	0	0.2333	24	21	1	2	5.6	0	5.6	33.7%
4/26/1994 0:00	24	1.5	0	0.2333	24	16	1	3	5.6	0	5.6	33.7%
6/5/1996 0:00	24	2.1	0	0.2333	24	15	1	4	5.6	0	5.6	33.7%
6/27/1996 0:00	24	3	0	0.2333	24	20	1	2	5.6	0	5.6	33.7%
11/9/1996 0:00	24	3.1	0	0.2333	24	14	1	4	5.6	0	5.6	33.7%
6/21/1997 0:00	24	4.6	0	0.2333	24	20	1	2	5.6	0	5.6	33.7%
7/3/1972 0:00	24	1.8	0	0.2292	24	18	1	2	5.5	0	5.5	33.2%
8/19/1974 0:00	24	2.3	0	0.2292	24	19	1	2	5.5	0	5.5	33.2%
7/12/1976 0:00	24	3.3	0	0.2292	24	18	1	2	5.5	0	5.5	33.2%
10/18/1985 0:00	24	1.1	0	0.2292	24	16	1	1	5.5	0	5.5	33.2%
7/17/1991 0:00	24	4.1	0	0.2292	24	21	1	2	5.5	0	5.5	33.2%
4/5/1997 0:00	24	1.6	0	0.2292	24	18	1	1	5.5	0	5.5	33.2%
7/4/1998 0:00	24	1.8	0	0.2292	24	15	1	4	5.5	0	5.5	33.2%
5/25/1971 0:00	24	1.5	0	0.225	24	18	1	3	5.4	0	5.4	32.2%
9/14/1971 0:00	24	2	0	0.225	24	19	1	2	5.4	0	5.4	32.2%
6/12/1975 0:00	24	1.3	0	0.225	24	16	1	4	5.4	0	5.4	32.2%
9/12/1975 0:00	24	3	0	0.225	24	19	1	1	5.4	0	5.4	32.2%
7/13/1976 0:00	24	2	0	0.225	24	17	1	3	5.4	0	5.4	32.2%
9/21/1978 0:00	24	3.7	0	0.225	24	19	1	4	5.4	0	5.4	32.2%
3/25/1979 0:00	24	4	0	0.225	24	21	1	2	5.4	0	5.4	32.2%
11/10/1979 0:00	24	2.5	0	0.225	24	18	1	1	5.4	0	5.4	32.2%
2/24/1981 0:00	24	1.5	0	0.225	24	15	1	2	5.4	0	5.4	32.2%
10/5/1985 0:00	24	2.3	0	0.225	24	16	1	3	5.4	0	5.4	32.2%
6/3/1987 0:00	24	2.4	0	0.225	24	19	1	4	5.4	0	5.4	32.2%
11/28/1988 0:00	24	1.8	0	0.225	24	18	1	3	5.4	0	5.4	32.2%
4/22/1992 0:00	24	1.5	0	0.225	24	20	1	1	5.4	0	5.4	32.2%
7/5/1992 0:00	24	2	0	0.225	24	19	1	4	5.4	0	5.4	32.2%
11/26/1992 0:00	24	2.5	0	0.225	24	17	1	3	5.4	0	5.4	32.2%
6/24/1972 0:00	24	1.5	0	0.2208	24	14	1	5	5.3	0	5.3	32.0%
3/5/1974 0:00	24	3	0	0.2208	24	19	1	2	5.3	0	5.3	32.0%
1/22/1993 0:00	24	2	0	0.2208	24	16	1	2	5.3	0	5.3	32.0%

9/13/1972 0:00	24	2	0	0.2167	24	18	1	3	5.2	0	5.2	30.3%
10/22/1972 0:00	24	1.5	0	0.2167	24	16	1	4	5.2	0	5.2	30.3%
5/3/1973 0:00	24	2.8	0	0.2167	24	19	1	5	5.2	0	5.2	30.3%
6/23/1973 0:00	24	3.3	0	0.2167	24	19	1	5	5.2	0	5.2	30.3%
6/20/1974 0:00	24	4.1	0	0.2167	24	20	1	3	5.2	0	5.2	30.3%
11/12/1975 0:00	24	1.8	0	0.2167	24	17	1	2	5.2	0	5.2	30.3%
4/5/1977 0:00	24	1.3	0	0.2167	24	16	1	3	5.2	0	5.2	30.3%
12/25/1977 0:00	24	4	0	0.2167	24	21	1	2	5.2	0	5.2	30.3%
5/8/1978 0:00	24	3.8	0	0.2167	24	21	1	1	5.2	0	5.2	30.3%
5/21/1978 0:00	24	4.6	0	0.2167	24	21	1	2	5.2	0	5.2	30.3%
9/6/1978 0:00	24	4.6	0	0.2167	24	20	1	5	5.2	0	5.2	30.3%
11/28/1979 0:00	24	2.2	0	0.2167	24	18	1	2	5.2	0	5.2	30.3%
10/17/1980 0:00	24	2	0	0.2167	24	20	1	1	5.2	0	5.2	30.3%
2/25/1981 0:00	24	1	0	0.2167	24	12	1	6	5.2	0	5.2	30.3%
7/9/1981 0:00	24	4.2	0	0.2167	24	22	1	2	5.2	0	5.2	30.3%
10/12/1982 0:00	24	3.8	0	0.2167	24	20	1	2	5.2	0	5.2	30.3%
11/2/1982 0:00	24	3.4	0	0.2167	24	19	1	2	5.2	0	5.2	30.3%
5/20/1985 0:00	24	1.8	0	0.2167	24	19	1	5	5.2	0	5.2	30.3%
6/13/1985 0:00	24	1.7	0	0.2167	24	15	1	4	5.2	0	5.2	30.3%
10/28/1988 0:00	24	3.2	0	0.2167	24	18	1	2	5.2	0	5.2	30.3%
6/8/1989 0:00	24	4.5	0	0.2167	24	22	1	2	5.2	0	5.2	30.3%
8/22/1991 0:00	24	3.6	0	0.2167	24	20	1	3	5.2	0	5.2	30.3%
6/22/1993 0:00	24	3.2	0	0.2167	24	22	1	2	5.2	0	5.2	30.3%
7/6/1993 0:00	24	4.8	0	0.2167	24	22	1	2	5.2	0	5.2	30.3%
3/29/1997 0:00	24	1.2	0	0.2167	24	14	1	3	5.2	0	5.2	30.3%
5/15/1997 0:00	24	2.1	0	0.2167	24	19	1	3	5.2	0	5.2	30.3%
9/2/1998 0:00	24	3.5	0	0.2167	24	21	1	3	5.2	0	5.2	30.3%
10/18/1975 0:00	24	1.5	0	0.2125	24	19	1	2	5.1	0	5.1	29.9%
11/18/1981 0:00	24	1	0	0.2125	24	12	1	3	5.1	0	5.1	29.9%
8/9/1992 0:00	24	3.7	0	0.2125	24	21	1	2	5.1	0	5.1	29.9%
2/27/1997 0:00	24	1.5	0	0.2125	24	18	1	3	5.1	0	5.1	29.9%
7/23/1998 0:00	24	2.7	0	0.2125	24	20	1	4	5.1	0	5.1	29.9%
7/25/1999 0:00	24	3.6	0	0.2125	24	21	1	2	5.1	0	5.1	29.9%
4/18/1972 0:00	24	1.3	0	0.2083	24	13	1	4	5	0	5	28.8%

6/24/1976 0:00	24	1.3	0	0.2083	24	19	1	2	5	0	5	28.8%
8/9/1978 0:00	24	4.8	0	0.2083	24	22	1	2	5	0	5	28.8%
10/25/1978 0:00	24	2.6	0	0.2083	24	20	1	3	5	0	5	28.8%
10/2/1980 0:00	24	1.8	0	0.2083	24	19	1	2	5	0	5	28.8%
5/15/1981 0:00	24	2.8	0	0.2083	24	22	1	2	5	0	5	28.8%
7/15/1985 0:00	24	2.4	0	0.2083	24	20	1	2	5	0	5	28.8%
6/7/1986 0:00	24	3.4	0	0.2083	24	19	1	5	5	0	5	28.8%
9/30/1987 0:00	24	1.7	0	0.2083	24	16	1	4	5	0	5	28.8%
7/21/1990 0:00	24	1.8	0	0.2083	24	19	1	3	5	0	5	28.8%
7/31/1990 0:00	24	2	0	0.2083	24	19	1	1	5	0	5	28.8%
10/3/1991 0:00	24	2.5	0	0.2083	24	18	1	3	5	0	5	28.8%
11/19/1991 0:00	24	4.4	0	0.2083	24	20	1	2	5	0	5	28.8%
1/3/1993 0:00	24	2.2	0	0.2083	24	21	1	1	5	0	5	28.8%
6/22/1994 0:00	24	4	0	0.2083	24	21	1	2	5	0	5	28.8%
9/24/1996 0:00	24	1.2	0	0.2083	24	16	1	3	5	0	5	28.8%
8/20/1998 0:00	24	3.7	0	0.2083	24	20	1	3	5	0	5	28.8%
6/8/1972 0:00	24	3.8	0	0.2042	24	21	1	2	4.9	0	4.9	28.3%
1/23/1973 0:00	24	1	0	0.2042	24	14	1	7	4.9	0	4.9	28.3%
8/24/1975 0:00	24	4.6	0	0.2042	24	22	1	3	4.9	0	4.9	28.3%
11/21/1977 0:00	24	2.9	0	0.2042	24	18	1	4	4.9	0	4.9	28.3%
11/15/1984 0:00	24	3.9	0	0.2042	24	20	1	2	4.9	0	4.9	28.3%
2/19/1997 0:00	24	1.1	0	0.2042	24	18	1	2	4.9	0	4.9	28.3%
6/10/1998 0:00	24	3.5	0	0.2042	24	21	1	2	4.9	0	4.9	28.3%
4/2/1974 0:00	24	1.5	0	0.2	24	19	1	2	4.8	0	4.8	26.8%
4/23/1974 0:00	24	1	0	0.2	24	15	1	5	4.8	0	4.8	26.8%
7/10/1975 0:00	24	2.5	0	0.2	24	21	1	1	4.8	0	4.8	26.8%
6/20/1977 0:00	24	2.8	0	0.2	24	21	1	2	4.8	0	4.8	26.8%
12/6/1979 0:00	24	1.8	0	0.2	24	18	1	2	4.8	0	4.8	26.8%
4/9/1981 0:00	24	2.5	0	0.2	24	18	1	5	4.8	0	4.8	26.8%
7/2/1981 0:00	24	2.7	0	0.2	24	22	1	2	4.8	0	4.8	26.8%
8/30/1981 0:00	24	4.8	0	0.2	24	23	1	2	4.8	0	4.8	26.8%
9/27/1981 0:00	24	3.2	0	0.2	24	18	1	4	4.8	0	4.8	26.8%
5/31/1982 0:00	24	1.9	0	0.2	24	19	1	2	4.8	0	4.8	26.8%
9/3/1982 0:00	24	2.3	0	0.2	24	18	1	5	4.8	0	4.8	26.8%

6/11/1986 0:00	24	2.2	0	0.2	24	20	1	2	4.8	0	4.8	26.8%
5/17/1987 0:00	24	1.4	0	0.2	24	14	1	6	4.8	0	4.8	26.8%
5/31/1987 0:00	24	2.2	0	0.2	24	19	1	2	4.8	0	4.8	26.8%
10/8/1987 0:00	24	1.9	0	0.2	24	18	1	3	4.8	0	4.8	26.8%
11/18/1987 0:00	24	7.7	0	0.2	24	20	1	4	4.8	0	4.8	26.8%
1/18/1988 0:00	24	1.1	0	0.2	24	10	1	4	4.8	0	4.8	26.8%
5/16/1988 0:00	24	1.6	0	0.2	24	18	1	3	4.8	0	4.8	26.8%
6/29/1988 0:00	24	2.4	0	0.2	24	20	1	2	4.8	0	4.8	26.8%
11/8/1989 0:00	24	2.9	0	0.2	24	20	1	1	4.8	0	4.8	26.8%
5/11/1994 0:00	24	1.6	0	0.2	24	19	1	4	4.8	0	4.8	26.8%
6/25/1996 0:00	24	1.7	0	0.2	24	18	1	6	4.8	0	4.8	26.8%
9/29/1996 0:00	24	4.6	0	0.2	24	22	1	2	4.8	0	4.8	26.8%
5/2/1972 0:00	24	2	0	0.1958	24	18	1	4	4.7	0	4.7	26.5%
8/23/1972 0:00	24	2.3	0	0.1958	24	19	1	3	4.7	0	4.7	26.5%
8/31/1976 0:00	24	1.8	0	0.1958	24	20	1	1	4.7	0	4.7	26.5%
12/4/1982 0:00	24	2.9	0	0.1958	24	20	1	1	4.7	0	4.7	26.5%
2/22/1985 0:00	24	2.1	0	0.1958	24	20	1	2	4.7	0	4.7	26.5%
12/11/1971 0:00	24	3.3	0	0.1917	24	22	1	2	4.6	0	4.6	25.2%
6/26/1976 0:00	24	2.5	0	0.1917	24	20	1	3	4.6	0	4.6	25.2%
3/15/1983 0:00	24	1.3	0	0.1917	24	15	1	3	4.6	0	4.6	25.2%
4/30/1983 0:00	24	1.5	0	0.1917	24	18	1	2	4.6	0	4.6	25.2%
7/17/1984 0:00	24	2.9	0	0.1917	24	22	1	1	4.6	0	4.6	25.2%
7/20/1984 0:00	24	2.6	0	0.1917	24	22	1	2	4.6	0	4.6	25.2%
6/12/1985 0:00	24	1.5	0	0.1917	24	18	1	3	4.6	0	4.6	25.2%
4/7/1986 0:00	24	1.4	0	0.1917	24	17	1	3	4.6	0	4.6	25.2%
4/15/1988 0:00	24	1.8	0	0.1917	24	18	1	3	4.6	0	4.6	25.2%
9/14/1988 0:00	24	2.1	0	0.1917	24	20	1	3	4.6	0	4.6	25.2%
8/4/1989 0:00	24	3.9	0	0.1917	24	20	1	3	4.6	0	4.6	25.2%
11/7/1989 0:00	24	1.2	0	0.1917	24	19	1	2	4.6	0	4.6	25.2%
6/3/1990 0:00	24	1.8	0	0.1917	24	19	1	3	4.6	0	4.6	25.2%
9/15/1990 0:00	24	2.7	0	0.1917	24	18	1	4	4.6	0	4.6	25.2%
9/23/1991 0:00	24	3	0	0.1917	24	17	1	4	4.6	0	4.6	25.2%
5/2/1992 0:00	24	1.8	0	0.1917	24	18	1	4	4.6	0	4.6	25.2%
5/6/1993 0:00	24	3.4	0	0.1917	24	22	1	2	4.6	0	4.6	25.2%

5/28/1993 0:00	24	1.4	0	0.1917	24	17	1	2	4.6	0	4.6	25.2%
4/25/1994 0:00	24	1.4	0	0.1917	24	16	1	3	4.6	0	4.6	25.2%
9/12/1997 0:00	24	2	0	0.1917	24	20	1	2	4.6	0	4.6	25.2%
7/24/1971 0:00	24	13.7	0	0.1875	24	19	1	4	4.5	0	4.5	24.8%
6/26/1972 0:00	24	1	0	0.1875	24	16	1	5	4.5	0	4.5	24.8%
11/13/1973 0:00	24	1	0	0.1875	24	15	1	4	4.5	0	4.5	24.8%
9/18/1975 0:00	24	1	0	0.1875	24	17	1	2	4.5	0	4.5	24.8%
7/11/1976 0:00	24	3.6	0	0.1875	24	20	1	4	4.5	0	4.5	24.8%
11/23/1979 0:00	24	2.5	0	0.1875	24	20	1	2	4.5	0	4.5	24.8%
9/26/1972 0:00	24	2	0	0.1833	24	18	1	3	4.4	0	4.4	23.3%
6/24/1973 0:00	24	3.6	0	0.1833	24	22	1	3	4.4	0	4.4	23.3%
6/19/1976 0:00	24	3.3	0	0.1833	24	21	1	3	4.4	0	4.4	23.3%
9/16/1977 0:00	24	1.8	0	0.1833	24	17	1	3	4.4	0	4.4	23.3%
11/15/1977 0:00	24	3.1	0	0.1833	24	21	1	2	4.4	0	4.4	23.3%
7/17/1980 0:00	24	1.6	0	0.1833	24	18	1	4	4.4	0	4.4	23.3%
5/19/1983 0:00	24	1.6	0	0.1833	24	18	1	2	4.4	0	4.4	23.3%
5/22/1983 0:00	24	3.4	0	0.1833	24	21	1	2	4.4	0	4.4	23.3%
11/21/1983 0:00	24	1.8	0	0.1833	24	20	1	1	4.4	0	4.4	23.3%
12/2/1985 0:00	24	2.2	0	0.1833	24	19	1	3	4.4	0	4.4	23.3%
6/12/1987 0:00	24	4.6	0	0.1833	24	19	1	1	4.4	0	4.4	23.3%
4/24/1988 0:00	24	0.8	0	0.1833	24	15	1	5	4.4	0	4.4	23.3%
11/10/1990 0:00	24	2.5	0	0.1833	24	21	1	2	4.4	0	4.4	23.3%
5/24/1991 0:00	24	3.3	0	0.1833	24	22	1	2	4.4	0	4.4	23.3%
8/21/1991 0:00	24	2.1	0	0.1833	24	17	1	4	4.4	0	4.4	23.3%
6/5/1992 0:00	24	1.1	0	0.1833	24	18	1	3	4.4	0	4.4	23.3%
11/4/1992 0:00	24	1.8	0	0.1833	24	18	1	2	4.4	0	4.4	23.3%
11/5/1992 0:00	24	1.5	0	0.1833	24	18	1	2	4.4	0	4.4	23.3%
8/4/1993 0:00	24	1.9	0	0.1833	24	20	1	2	4.4	0	4.4	23.3%
9/8/1993 0:00	24	3.6	0	0.1833	24	21	1	3	4.4	0	4.4	23.3%
9/9/1993 0:00	24	3.1	0	0.1833	24	21	1	3	4.4	0	4.4	23.3%
4/30/1994 0:00	24	1.8	0	0.1833	24	21	1	1	4.4	0	4.4	23.3%
5/29/1994 0:00	24	2	0	0.1833	24	18	1	3	4.4	0	4.4	23.3%
9/28/1994 0:00	24	1.2	0	0.1833	24	17	1	3	4.4	0	4.4	23.3%
4/16/1983 0:00	24	0.8	0	0.1792	24	14	1	3	4.3	0	4.3	23.1%

9/5/1986 0:00	24	3.7	0	0.1792	24	20	1	3	4.3	0	4.3	23.1%
8/14/1972 0:00	24	1.3	0	0.175	24	19	1	2	4.2	0	4.2	21.5%
11/2/1973 0:00	24	1.5	0	0.175	24	19	1	2	4.2	0	4.2	21.5%
12/27/1973 0:00	24	1.8	0	0.175	24	20	1	3	4.2	0	4.2	21.5%
3/13/1976 0:00	24	1.8	0	0.175	24	18	1	3	4.2	0	4.2	21.5%
5/9/1978 0:00	24	2.9	0	0.175	24	18	1	3	4.2	0	4.2	21.5%
3/24/1979 0:00	24	1.8	0	0.175	24	19	1	3	4.2	0	4.2	21.5%
9/10/1979 0:00	24	1.5	0	0.175	24	19	1	2	4.2	0	4.2	21.5%
5/9/1982 0:00	24	1.4	0	0.175	24	17	1	2	4.2	0	4.2	21.5%
9/14/1982 0:00	24	3.8	0	0.175	24	21	1	3	4.2	0	4.2	21.5%
10/8/1982 0:00	24	2.8	0	0.175	24	17	1	6	4.2	0	4.2	21.5%
4/9/1986 0:00	24	1.3	0	0.175	24	17	1	3	4.2	0	4.2	21.5%
6/7/1987 0:00	24	4	0	0.175	24	22	1	2	4.2	0	4.2	21.5%
4/8/1988 0:00	24	1.6	0	0.175	24	18	1	2	4.2	0	4.2	21.5%
8/6/1988 0:00	24	4	0	0.175	24	22	1	3	4.2	0	4.2	21.5%
5/8/1990 0:00	24	2.1	0	0.175	24	21	1	3	4.2	0	4.2	21.5%
7/16/1990 0:00	24	4.2	0	0.175	24	23	1	2	4.2	0	4.2	21.5%
3/7/1991 0:00	24	1.2	0	0.175	24	19	1	2	4.2	0	4.2	21.5%
8/1/1992 0:00	24	1.5	0	0.175	24	18	1	3	4.2	0	4.2	21.5%
8/30/1992 0:00	24	2.4	0	0.175	24	19	1	4	4.2	0	4.2	21.5%
10/9/1992 0:00	24	1.4	0	0.175	24	17	1	2	4.2	0	4.2	21.5%
11/11/1992 0:00	24	2	0	0.175	24	19	1	3	4.2	0	4.2	21.5%
5/15/1993 0:00	24	2	0	0.175	24	18	1	2	4.2	0	4.2	21.5%
9/17/1993 0:00	24	1.1	0	0.175	24	17	1	4	4.2	0	4.2	21.5%
10/24/1995 0:00	24	3.3	0	0.175	24	21	1	2	4.2	0	4.2	21.5%
6/2/1998 0:00	24	3.7	0	0.175	24	21	1	3	4.2	0	4.2	21.5%
4/24/1971 0:00	24	2	0	0.1708	24	20	1	2	4.1	0	4.1	20.9%
10/14/1972 0:00	24	2.5	0	0.1708	24	20	1	3	4.1	0	4.1	20.9%
4/30/1974 0:00	24	2.5	0	0.1708	24	20	1	2	4.1	0	4.1	20.9%
5/6/1974 0:00	24	1.5	0	0.1708	24	20	1	3	4.1	0	4.1	20.9%
7/31/1974 0:00	24	1.8	0	0.1708	24	19	1	6	4.1	0	4.1	20.9%
9/23/1976 0:00	24	1.5	0	0.1708	24	20	1	3	4.1	0	4.1	20.9%
7/31/1977 0:00	24	4.1	0	0.1708	24	23	1	2	4.1	0	4.1	20.9%
5/1/1994 0:00	24	1.8	0	0.1708	24	15	1	4	4.1	0	4.1	20.9%

6/25/1998 0:00	24	2.5	0	0.1708	24	18	1	4	4.1	0	4.1	20.9%
4/28/1971 0:00	24	1	0	0.1667	24	15	1	3	4	0	4	18.9%
7/11/1975 0:00	24	2.8	0	0.1667	24	19	1	5	4	0	4	18.9%
6/27/1978 0:00	24	3.4	0	0.1667	24	21	1	3	4	0	4	18.9%
7/19/1978 0:00	24	3.2	0	0.1667	24	20	1	4	4	0	4	18.9%
10/12/1978 0:00	24	3.4	0	0.1667	24	21	1	2	4	0	4	18.9%
11/6/1979 0:00	24	1	0	0.1667	24	17	1	3	4	0	4	18.9%
3/10/1980 0:00	24	2.6	0	0.1667	24	21	1	3	4	0	4	18.9%
3/18/1980 0:00	24	2.2	0	0.1667	24	20	1	4	4	0	4	18.9%
10/18/1980 0:00	24	2.5	0	0.1667	24	21	1	2	4	0	4	18.9%
9/22/1981 0:00	24	1	0	0.1667	24	14	1	4	4	0	4	18.9%
12/2/1982 0:00	24	2.1	0	0.1667	24	21	1	1	4	0	4	18.9%
6/19/1986 0:00	24	1.7	0	0.1667	24	20	1	2	4	0	4	18.9%
8/6/1986 0:00	24	3.8	0	0.1667	24	22	1	3	4	0	4	18.9%
3/26/1987 0:00	24	1.4	0	0.1667	24	17	1	5	4	0	4	18.9%
9/28/1987 0:00	24	2.5	0	0.1667	24	21	1	2	4	0	4	18.9%
4/23/1988 0:00	24	1	0	0.1667	24	17	1	3	4	0	4	18.9%
4/27/1988 0:00	24	2	0	0.1667	24	21	1	1	4	0	4	18.9%
8/9/1988 0:00	24	1.3	0	0.1667	24	18	1	4	4	0	4	18.9%
5/26/1989 0:00	24	1.8	0	0.1667	24	19	1	4	4	0	4	18.9%
11/4/1990 0:00	24	1.1	0	0.1667	24	18	1	2	4	0	4	18.9%
10/1/1991 0:00	24	2.2	0	0.1667	24	20	1	2	4	0	4	18.9%
9/27/1992 0:00	24	1	0	0.1667	24	19	1	3	4	0	4	18.9%
11/25/1992 0:00	24	1.1	0	0.1667	24	18	1	3	4	0	4	18.9%
10/20/1993 0:00	24	3.4	0	0.1667	24	22	1	1	4	0	4	18.9%
7/15/1994 0:00	24	3.1	0	0.1667	24	22	1	1	4	0	4	18.9%
9/11/1996 0:00	24	3.4	0	0.1667	24	22	1	1	4	0	4	18.9%
12/16/1996 0:00	24	1	0	0.1667	24	18	1	2	4	0	4	18.9%
12/17/1996 0:00	24	1	0	0.1667	24	13	1	3	4	0	4	18.9%
4/22/1997 0:00	24	3.6	0	0.1667	24	22	1	2	4	0	4	18.9%
8/23/1997 0:00	24	2.5	0	0.1667	24	21	1	3	4	0	4	18.9%
9/14/1998 0:00	24	2.4	0	0.1667	24	21	1	2	4	0	4	18.9%
3/29/1973 0:00	24	0.8	0	0.1625	24	15	1	4	3.9	0	3.9	18.4%
6/10/1973 0:00	24	2.3	0	0.1625	24	21	1	3	3.9	0	3.9	18.4%

11/27/1973 0:00	24	0.8	0	0.1625	24	16	1	3	3.9	0	3.9	18.4%
9/13/1975 0:00	24	1.5	0	0.1625	24	18	1	3	3.9	0	3.9	18.4%
5/6/1976 0:00	24	1.3	0	0.1625	24	19	1	2	3.9	0	3.9	18.4%
10/17/1977 0:00	24	1.4	0	0.1625	24	18	1	3	3.9	0	3.9	18.4%
10/4/1978 0:00	24	2.5	0	0.1625	24	18	1	4	3.9	0	3.9	18.4%
4/1/1971 0:00	24	1.5	0	0.1583	24	20	1	1	3.8	0	3.8	16.3%
10/7/1976 0:00	24	1.5	0	0.1583	24	20	1	3	3.8	0	3.8	16.3%
9/21/1977 0:00	24	1.1	0	0.1583	24	16	1	5	3.8	0	3.8	16.3%
5/7/1978 0:00	24	3.8	0	0.1583	24	23	1	1	3.8	0	3.8	16.3%
9/27/1978 0:00	24	2.7	0	0.1583	24	22	1	1	3.8	0	3.8	16.3%
8/18/1979 0:00	24	1.5	0	0.1583	24	18	1	5	3.8	0	3.8	16.3%
6/29/1980 0:00	24	1.6	0	0.1583	24	21	1	2	3.8	0	3.8	16.3%
9/14/1980 0:00	24	3.4	0	0.1583	24	21	1	3	3.8	0	3.8	16.3%
4/18/1981 0:00	24	2.1	0	0.1583	24	21	1	3	3.8	0	3.8	16.3%
10/14/1982 0:00	24	1.2	0	0.1583	24	17	1	4	3.8	0	3.8	16.3%
3/9/1983 0:00	24	1.6	0	0.1583	24	18	1	4	3.8	0	3.8	16.3%
4/4/1983 0:00	24	1.4	0	0.1583	24	20	1	3	3.8	0	3.8	16.3%
8/29/1984 0:00	24	2.3	0	0.1583	24	21	1	3	3.8	0	3.8	16.3%
3/11/1985 0:00	24	1.3	0	0.1583	24	19	1	1	3.8	0	3.8	16.3%
10/9/1985 0:00	24	0.9	0	0.1583	24	16	1	2	3.8	0	3.8	16.3%
3/19/1986 0:00	24	0.9	0	0.1583	24	16	1	3	3.8	0	3.8	16.3%
6/26/1987 0:00	24	1.2	0	0.1583	24	18	1	3	3.8	0	3.8	16.3%
10/27/1987 0:00	24	1.3	0	0.1583	24	17	1	2	3.8	0	3.8	16.3%
4/4/1988 0:00	24	1.7	0	0.1583	24	19	1	4	3.8	0	3.8	16.3%
4/26/1988 0:00	24	2	0	0.1583	24	19	1	4	3.8	0	3.8	16.3%
5/13/1988 0:00	24	1.5	0	0.1583	24	18	1	3	3.8	0	3.8	16.3%
5/15/1988 0:00	24	2.4	0	0.1583	24	21	1	1	3.8	0	3.8	16.3%
10/18/1988 0:00	24	1.4	0	0.1583	24	19	1	2	3.8	0	3.8	16.3%
5/3/1989 0:00	24	1.2	0	0.1583	24	17	1	2	3.8	0	3.8	16.3%
5/30/1989 0:00	24	1.5	0	0.1583	24	15	1	3	3.8	0	3.8	16.3%
9/19/1990 0:00	24	2.2	0	0.1583	24	18	1	3	3.8	0	3.8	16.3%
8/16/1991 0:00	24	1.4	0	0.1583	24	18	1	3	3.8	0	3.8	16.3%
11/24/1991 0:00	24	1	0	0.1583	24	18	1	2	3.8	0	3.8	16.3%
6/24/1992 0:00	24	1.1	0	0.1583	24	17	1	4	3.8	0	3.8	16.3%

6/13/1994 0:00	24	1.9	0	0.1583	24	19	1	2	3.8	0	3.8	16.3%
8/20/1994 0:00	24	1.5	0	0.1583	24	21	1	2	3.8	0	3.8	16.3%
4/3/1995 0:00	24	1.9	0	0.1583	24	20	1	2	3.8	0	3.8	16.3%
5/23/1995 0:00	24	1.4	0	0.1583	24	18	1	1	3.8	0	3.8	16.3%
7/14/1971 0:00	24	2.8	0	0.1542	24	20	1	3	3.7	0	3.7	15.8%
11/15/1973 0:00	24	1.3	0	0.1542	24	18	1	2	3.7	0	3.7	15.8%
7/20/1993 0:00	24	3.7	0	0.1542	24	23	1	2	3.7	0	3.7	15.8%
9/15/1993 0:00	24	1.6	0	0.1542	24	20	1	3	3.7	0	3.7	15.8%
8/20/1996 0:00	24	1.6	0	0.1542	24	19	1	2	3.7	0	3.7	15.8%
9/23/1997 0:00	24	1.8	0	0.1542	24	19	1	2	3.7	0	3.7	15.8%
9/8/1998 0:00	24	1.4	0	0.1542	24	17	1	2	3.7	0	3.7	15.8%
5/16/1971 0:00	24	2	0	0.15	24	20	1	1	3.6	0	3.6	14.2%
10/24/1971 0:00	24	1.8	0	0.15	24	21	1	2	3.6	0	3.6	14.2%
1/21/1974 0:00	24	1.3	0	0.15	24	20	1	2	3.6	0	3.6	14.2%
10/13/1978 0:00	24	2.1	0	0.15	24	20	1	1	3.6	0	3.6	14.2%
7/20/1981 0:00	24	0.8	0	0.15	24	16	1	4	3.6	0	3.6	14.2%
9/19/1981 0:00	24	3	0	0.15	24	22	1	2	3.6	0	3.6	14.2%
11/12/1982 0:00	24	1.2	0	0.15	24	16	1	3	3.6	0	3.6	14.2%
6/5/1985 0:00	24	2.1	0	0.15	24	18	1	3	3.6	0	3.6	14.2%
9/4/1985 0:00	24	3	0	0.15	24	22	1	2	3.6	0	3.6	14.2%
10/15/1985 0:00	24	1.7	0	0.15	24	21	1	2	3.6	0	3.6	14.2%
10/26/1986 0:00	24	2.3	0	0.15	24	21	1	1	3.6	0	3.6	14.2%
11/3/1987 0:00	24	0.9	0	0.15	24	16	1	4	3.6	0	3.6	14.2%
11/5/1987 0:00	24	1.4	0	0.15	24	19	1	2	3.6	0	3.6	14.2%
4/14/1988 0:00	24	1.1	0	0.15	24	16	1	3	3.6	0	3.6	14.2%
7/25/1988 0:00	24	1.5	0	0.15	24	19	1	3	3.6	0	3.6	14.2%
9/27/1988 0:00	24	1.6	0	0.15	24	19	1	3	3.6	0	3.6	14.2%
3/28/1989 0:00	24	3.1	0	0.15	24	21	1	3	3.6	0	3.6	14.2%
8/21/1989 0:00	24	2.9	0	0.15	24	20	1	4	3.6	0	3.6	14.2%
11/11/1989 0:00	24	1.1	0	0.15	24	18	1	2	3.6	0	3.6	14.2%
10/24/1991 0:00	24	2.4	0	0.15	24	22	1	2	3.6	0	3.6	14.2%
11/30/1991 0:00	24	3.2	0	0.15	24	21	1	4	3.6	0	3.6	14.2%
6/21/1992 0:00	24	0.9	0	0.15	24	17	1	5	3.6	0	3.6	14.2%
7/26/1993 0:00	24	3.2	0	0.15	24	21	1	3	3.6	0	3.6	14.2%

11/11/1993 0:00	24	1.4	0	0.15	24	18	1	5	3.6	0	3.6	14.2%
7/11/1995 0:00	24	3.6	0	0.15	24	23	1	1	3.6	0	3.6	14.2%
4/25/1971 0:00	24	1.3	0	0.1458	24	18	1	3	3.5	0	3.5	13.6%
5/4/1973 0:00	24	0.8	0	0.1458	24	17	1	6	3.5	0	3.5	13.6%
5/9/1973 0:00	24	1	0	0.1458	24	16	1	4	3.5	0	3.5	13.6%
5/10/1973 0:00	24	1.3	0	0.1458	24	19	1	1	3.5	0	3.5	13.6%
9/12/1977 0:00	24	2.3	0	0.1458	24	20	1	2	3.5	0	3.5	13.6%
4/17/1982 0:00	24	1.1	0	0.1458	24	19	1	3	3.5	0	3.5	13.6%
10/1/1990 0:00	24	1.3	0	0.1458	24	18	1	2	3.5	0	3.5	13.6%
12/2/1993 0:00	24	1.3	0	0.1458	24	20	1	1	3.5	0	3.5	13.6%
3/21/1995 0:00	24	0.9	0	0.1458	24	15	1	3	3.5	0	3.5	13.6%
5/3/1972 0:00	24	1.8	0	0.1417	24	20	1	2	3.4	0	3.4	11.7%
7/25/1972 0:00	24	1.8	0	0.1417	24	20	1	4	3.4	0	3.4	11.7%
5/24/1974 0:00	24	1	0	0.1417	24	17	1	7	3.4	0	3.4	11.7%
6/8/1975 0:00	24	1.5	0	0.1417	24	20	1	2	3.4	0	3.4	11.7%
11/30/1975 0:00	24	1.5	0	0.1417	24	18	1	5	3.4	0	3.4	11.7%
4/16/1979 0:00	24	1.4	0	0.1417	24	18	1	2	3.4	0	3.4	11.7%
11/24/1979 0:00	24	2.6	0	0.1417	24	20	1	3	3.4	0	3.4	11.7%
5/10/1981 0:00	24	2.3	0	0.1417	24	20	1	1	3.4	0	3.4	11.7%
10/7/1981 0:00	24	0.8	0	0.1417	24	14	1	4	3.4	0	3.4	11.7%
5/25/1983 0:00	24	1.2	0	0.1417	24	19	1	1	3.4	0	3.4	11.7%
6/8/1985 0:00	24	1.7	0	0.1417	24	17	1	3	3.4	0	3.4	11.7%
4/8/1986 0:00	24	1.2	0	0.1417	24	13	1	4	3.4	0	3.4	11.7%
9/4/1986 0:00	24	1.5	0	0.1417	24	21	1	2	3.4	0	3.4	11.7%
10/2/1987 0:00	24	1.1	0	0.1417	24	17	1	4	3.4	0	3.4	11.7%
3/27/1988 0:00	24	1.3	0	0.1417	24	20	1	2	3.4	0	3.4	11.7%
4/3/1989 0:00	24	1	0	0.1417	24	17	1	4	3.4	0	3.4	11.7%
5/21/1989 0:00	24	0.9	0	0.1417	24	17	1	4	3.4	0	3.4	11.7%
6/2/1989 0:00	24	1.3	0	0.1417	24	20	1	3	3.4	0	3.4	11.7%
9/9/1989 0:00	24	1.8	0	0.1417	24	22	1	2	3.4	0	3.4	11.7%
10/17/1990 0:00	24	2.6	0	0.1417	24	20	1	2	3.4	0	3.4	11.7%
4/30/1992 0:00	24	1.4	0	0.1417	24	19	1	3	3.4	0	3.4	11.7%
12/20/1992 0:00	24	1.1	0	0.1417	24	18	1	2	3.4	0	3.4	11.7%
4/11/1993 0:00	24	1.8	0	0.1417	24	20	1	1	3.4	0	3.4	11.7%

6/5/1993 0:00	24	1.1	0	0.1417	24	19	1	3	3.4	0	3.4	11.7%
9/6/1993 0:00	24	0.9	0	0.1417	24	17	1	2	3.4	0	3.4	11.7%
6/12/1994 0:00	24	2.8	0	0.1417	24	21	1	3	3.4	0	3.4	11.7%
9/1/1994 0:00	24	1.9	0	0.1417	24	21	1	1	3.4	0	3.4	11.7%
11/12/1995 0:00	24	2.1	0	0.1417	24	22	1	1	3.4	0	3.4	11.7%
8/3/1999 0:00	24	3.2	0	0.1417	24	22	1	2	3.4	0	3.4	11.7%
2/27/1971 0:00	24	2.5	0	0.1375	24	21	1	2	3.3	0	3.3	11.0%
10/10/1971 0:00	24	1.5	0	0.1375	24	21	1	1	3.3	0	3.3	11.0%
8/1/1972 0:00	24	2.3	0	0.1375	24	22	1	2	3.3	0	3.3	11.0%
1/22/1973 0:00	24	1.5	0	0.1375	24	20	1	2	3.3	0	3.3	11.0%
8/27/1974 0:00	24	0.8	0	0.1375	24	17	1	3	3.3	0	3.3	11.0%
4/26/1976 0:00	24	0.8	0	0.1375	24	16	1	5	3.3	0	3.3	11.0%
9/25/1977 0:00	24	1.2	0	0.1375	24	19	1	4	3.3	0	3.3	11.0%
12/5/1982 0:00	24	0.9	0	0.1375	24	19	1	3	3.3	0	3.3	11.0%
7/15/1990 0:00	24	1.6	0	0.1375	24	17	1	4	3.3	0	3.3	11.0%
10/8/1998 0:00	24	1.1	0	0.1375	24	19	1	2	3.3	0	3.3	11.0%
9/13/1999 0:00	24	0.9	0	0.1375	24	19	1	1	3.3	0	3.3	11.0%
6/21/1974 0:00	24	1.5	0	0.1333	24	19	1	2	3.2	0	3.2	9.2%
6/7/1978 0:00	24	0.8	0	0.1333	24	20	1	2	3.2	0	3.2	9.2%
6/19/1978 0:00	24	1.4	0	0.1333	24	19	1	3	3.2	0	3.2	9.2%
11/24/1978 0:00	24	1.5	0	0.1333	24	19	1	2	3.2	0	3.2	9.2%
10/28/1979 0:00	24	0.5	0	0.1333	24	16	1	4	3.2	0	3.2	9.2%
5/7/1980 0:00	24	1.1	0	0.1333	24	20	1	3	3.2	0	3.2	9.2%
7/2/1980 0:00	24	1.8	0	0.1333	24	18	1	2	3.2	0	3.2	9.2%
9/17/1980 0:00	24	2.9	0	0.1333	24	22	1	2	3.2	0	3.2	9.2%
2/28/1981 0:00	24	0.9	0	0.1333	24	17	1	4	3.2	0	3.2	9.2%
9/17/1981 0:00	24	1.4	0	0.1333	24	20	1	3	3.2	0	3.2	9.2%
10/15/1981 0:00	24	1.6	0	0.1333	24	21	1	2	3.2	0	3.2	9.2%
10/6/1983 0:00	24	1.4	0	0.1333	24	19	1	3	3.2	0	3.2	9.2%
2/18/1984 0:00	24	1.5	0	0.1333	24	19	1	1	3.2	0	3.2	9.2%
9/10/1984 0:00	24	1.8	0	0.1333	24	18	1	2	3.2	0	3.2	9.2%
11/1/1984 0:00	24	2.8	0	0.1333	24	21	1	2	3.2	0	3.2	9.2%
4/28/1985 0:00	24	0.8	0	0.1333	24	18	1	2	3.2	0	3.2	9.2%
11/9/1986 0:00	24	1.1	0	0.1333	24	17	1	2	3.2	0	3.2	9.2%

6/4/1990 0:00	24	2.4	0	0.1333	24	21	1	3	3.2	0	3.2	9.2%
6/29/1990 0:00	24	1.6	0	0.1333	24	18	1	4	3.2	0	3.2	9.2%
3/6/1991 0:00	24	1.2	0	0.1333	24	20	1	1	3.2	0	3.2	9.2%
7/9/1993 0:00	24	3.2	0	0.1333	24	23	1	1	3.2	0	3.2	9.2%
7/12/1993 0:00	24	3	0	0.1333	24	22	1	2	3.2	0	3.2	9.2%
3/22/1994 0:00	24	1.6	0	0.1333	24	16	1	2	3.2	0	3.2	9.2%
6/7/1994 0:00	24	4.6	0	0.1333	24	22	1	2	3.2	0	3.2	9.2%
6/14/1994 0:00	24	3.2	0	0.1333	24	23	1	1	3.2	0	3.2	9.2%
8/15/1998 0:00	24	2.5	0	0.1333	24	21	1	3	3.2	0	3.2	9.2%
8/17/1999 0:00	24	1.7	0	0.1333	24	22	1	2	3.2	0	3.2	9.2%
9/14/1999 0:00	24	2.8	0	0.1333	24	22	1	2	3.2	0	3.2	9.2%
5/27/1971 0:00	24	1.3	0	0.1292	24	20	1	3	3.1	0	3.1	8.3%
10/4/1971 0:00	24	1.8	0	0.1292	24	22	1	2	3.1	0	3.1	8.3%
11/19/1971 0:00	24	2.5	0	0.1292	24	21	1	4	3.1	0	3.1	8.3%
9/7/1972 0:00	24	1	0	0.1292	24	19	1	3	3.1	0	3.1	8.3%
1/19/1973 0:00	24	1	0	0.1292	24	18	1	3	3.1	0	3.1	8.3%
7/31/1973 0:00	24	1	0	0.1292	24	19	1	2	3.1	0	3.1	8.3%
1/27/1974 0:00	24	1.5	0	0.1292	24	19	1	3	3.1	0	3.1	8.3%
9/24/1975 0:00	24	1.3	0	0.1292	24	20	1	2	3.1	0	3.1	8.3%
8/15/1976 0:00	24	2.8	0	0.1292	24	22	1	3	3.1	0	3.1	8.3%
3/10/1979 0:00	24	1.1	0	0.1292	24	18	1	2	3.1	0	3.1	8.3%
6/27/1993 0:00	24	2.3	0	0.1292	24	21	1	3	3.1	0	3.1	8.3%
5/15/1994 0:00	24	1.1	0	0.1292	24	19	1	2	3.1	0	3.1	8.3%
5/1/1997 0:00	24	2.3	0	0.1292	24	19	1	4	3.1	0	3.1	8.3%
5/20/1971 0:00	24	1.5	0	0.125	24	21	1	2	3	0	3	6.0%
5/11/1973 0:00	24	1	0	0.125	24	18	1	5	3	0	3	6.0%
5/7/1974 0:00	24	1	0	0.125	24	17	1	4	3	0	3	6.0%
7/21/1975 0:00	24	1.5	0	0.125	24	21	1	2	3	0	3	6.0%
6/9/1978 0:00	24	3	0	0.125	24	23	1	2	3	0	3	6.0%
5/19/1979 0:00	24	2.5	0	0.125	24	22	1	2	3	0	3	6.0%
4/28/1980 0:00	24	0.5	0	0.125	24	16	1	2	3	0	3	6.0%
6/18/1980 0:00	24	1.3	0	0.125	24	19	1	3	3	0	3	6.0%
7/25/1980 0:00	24	2.4	0	0.125	24	22	1	2	3	0	3	6.0%
8/16/1981 0:00	24	1.2	0	0.125	24	18	1	5	3	0	3	6.0%

9/2/1981 0:00	24	1.4	0	0.125	24	20	1	2	3	0	3	6.0%
5/10/1983 0:00	24	1.4	0	0.125	24	19	1	5	3	0	3	6.0%
5/26/1983 0:00	24	1.6	0	0.125	24	21	1	1	3	0	3	6.0%
9/7/1983 0:00	24	3	0	0.125	24	23	1	2	3	0	3	6.0%
9/10/1983 0:00	24	2.8	0	0.125	24	22	1	3	3	0	3	6.0%
9/3/1984 0:00	24	1.3	0	0.125	24	21	1	2	3	0	3	6.0%
9/9/1987 0:00	24	1.8	0	0.125	24	21	1	2	3	0	3	6.0%
7/11/1988 0:00	24	1	0	0.125	24	19	1	4	3	0	3	6.0%
10/17/1988 0:00	24	1.6	0	0.125	24	21	1	3	3	0	3	6.0%
8/3/1989 0:00	24	2.3	0	0.125	24	21	1	2	3	0	3	6.0%
8/15/1989 0:00	24	1.9	0	0.125	24	21	1	3	3	0	3	6.0%
10/15/1989 0:00	24	3	0	0.125	24	23	1	1	3	0	3	6.0%
11/1/1989 0:00	24	1.7	0	0.125	24	20	1	4	3	0	3	6.0%
9/24/1990 0:00	24	0.7	0	0.125	24	15	1	2	3	0	3	6.0%
11/22/1992 0:00	24	1.2	0	0.125	24	20	1	1	3	0	3	6.0%
4/21/1993 0:00	24	0.9	0	0.125	24	17	1	3	3	0	3	6.0%
6/6/1993 0:00	24	1	0	0.125	24	17	1	3	3	0	3	6.0%
9/2/1993 0:00	24	1.6	0	0.125	24	20	1	2	3	0	3	6.0%
10/3/1993 0:00	24	1.4	0	0.125	24	19	1	2	3	0	3	6.0%
6/28/1994 0:00	24	1.4	0	0.125	24	20	1	3	3	0	3	6.0%
3/20/1995 0:00	24	1.4	0	0.125	24	18	1	4	3	0	3	6.0%
5/19/1996 0:00	24	3	0	0.125	24	23	1	1	3	0	3	6.0%
2/26/1997 0:00	24	1.1	0	0.125	24	20	1	1	3	0	3	6.0%
8/29/1998 0:00	24	0.9	0	0.125	24	20	1	3	3	0	3	6.0%
9/15/1998 0:00	24	0.6	0	0.125	24	17	1	5	3	0	3	6.0%
5/25/1999 0:00	24	1	0	0.125	24	19	1	2	3	0	3	6.0%
5/2/1973 0:00	24	1	0	0.1208	24	18	1	4	2.9	0	2.9	5.5%
6/29/1973 0:00	24	1.3	0	0.1208	24	20	1	3	2.9	0	2.9	5.5%
7/31/1983 0:00	24	0.9	0	0.1208	24	18	1	5	2.9	0	2.9	5.5%
5/28/1994 0:00	24	1.8	0	0.1208	24	21	1	3	2.9	0	2.9	5.5%
4/4/1995 0:00	24	2.1	0	0.1208	24	20	1	3	2.9	0	2.9	5.5%
9/15/1996 0:00	24	1.6	0	0.1208	24	18	1	2	2.9	0	2.9	5.5%
5/9/1999 0:00	24	1.4	0	0.1208	24	19	1	3	2.9	0	2.9	5.5%
9/11/1971 0:00	24	1.5	0	0.1167	24	21	1	3	2.8	0	2.8	3.3%

1/13/1972 0:00	24	1.8	0	0.1167	24	22	1	2	2.8	0	2.8	3.3%
6/16/1975 0:00	24	2	0	0.1167	24	21	1	2	2.8	0	2.8	3.3%
9/6/1975 0:00	24	1.3	0	0.1167	24	21	1	3	2.8	0	2.8	3.3%
4/27/1976 0:00	24	1	0	0.1167	24	17	1	6	2.8	0	2.8	3.3%
6/28/1977 0:00	24	1.8	0	0.1167	24	22	1	1	2.8	0	2.8	3.3%
8/29/1977 0:00	24	2.8	0	0.1167	24	23	1	2	2.8	0	2.8	3.3%
9/28/1977 0:00	24	2	0	0.1167	24	21	1	2	2.8	0	2.8	3.3%
4/1/1978 0:00	24	2.6	0	0.1167	24	22	1	3	2.8	0	2.8	3.3%
3/5/1979 0:00	24	1.2	0	0.1167	24	19	1	3	2.8	0	2.8	3.3%
8/27/1979 0:00	24	1.2	0	0.1167	24	18	1	2	2.8	0	2.8	3.3%
7/11/1980 0:00	24	2.8	0	0.1167	24	23	1	2	2.8	0	2.8	3.3%
11/6/1980 0:00	24	0.6	0	0.1167	24	17	1	2	2.8	0	2.8	3.3%
5/25/1981 0:00	24	1.3	0	0.1167	24	20	1	4	2.8	0	2.8	3.3%
10/21/1984 0:00	24	1.4	0	0.1167	24	21	1	3	2.8	0	2.8	3.3%
5/6/1985 0:00	24	2	0	0.1167	24	22	1	2	2.8	0	2.8	3.3%
6/22/1985 0:00	24	1.4	0	0.1167	24	20	1	2	2.8	0	2.8	3.3%
8/8/1986 0:00	24	1.8	0	0.1167	24	20	1	2	2.8	0	2.8	3.3%
9/5/1988 0:00	24	1.5	0	0.1167	24	21	1	2	2.8	0	2.8	3.3%
11/13/1988 0:00	24	0.7	0	0.1167	24	15	1	3	2.8	0	2.8	3.3%
4/17/1989 0:00	24	1	0	0.1167	24	18	1	3	2.8	0	2.8	3.3%
9/23/1989 0:00	24	5.8	0	0.1167	24	22	1	1	2.8	0	2.8	3.3%
5/5/1990 0:00	24	1.5	0	0.1167	24	18	1	3	2.8	0	2.8	3.3%
8/15/1990 0:00	24	2.2	0	0.1167	24	20	1	3	2.8	0	2.8	3.3%
9/20/1990 0:00	24	2	0	0.1167	24	22	1	2	2.8	0	2.8	3.3%
7/25/1991 0:00	24	1.8	0	0.1167	24	20	1	2	2.8	0	2.8	3.3%
5/13/1992 0:00	24	2	0	0.1167	24	21	1	3	2.8	0	2.8	3.3%
8/8/1992 0:00	24	2	0	0.1167	24	21	1	3	2.8	0	2.8	3.3%
8/10/1992 0:00	24	1	0	0.1167	24	21	1	3	2.8	0	2.8	3.3%
4/28/1993 0:00	24	2.6	0	0.1167	24	22	1	3	2.8	0	2.8	3.3%
10/12/1993 0:00	24	1.6	0	0.1167	24	22	1	2	2.8	0	2.8	3.3%
6/30/1994 0:00	24	2.8	0	0.1167	24	23	1	2	2.8	0	2.8	3.3%
7/1/1995 0:00	24	2	0	0.1167	24	22	1	2	2.8	0	2.8	3.3%
7/14/1996 0:00	24	2.6	0	0.1167	24	22	1	2	2.8	0	2.8	3.3%
8/1/1996 0:00	24	1	0	0.1167	24	20	1	3	2.8	0	2.8	3.3%

5/8/1971 0:00	24	1.3	0	0.1125	24	19	1	3	2.7	0	2.7	2.9%
4/23/1972 0:00	24	0.8	0	0.1125	24	19	1	3	2.7	0	2.7	2.9%
9/20/1973 0:00	24	0.8	0	0.1125	24	18	1	3	2.7	0	2.7	2.9%
10/20/1973 0:00	24	1	0	0.1125	24	18	1	3	2.7	0	2.7	2.9%
6/2/1994 0:00	24	1.6	0	0.1125	24	20	1	2	2.7	0	2.7	2.9%
5/21/1997 0:00	24	0.9	0	0.1125	24	18	1	3	2.7	0	2.7	2.9%
7/16/1971 0:00	24	2	0	0.1083	24	21	1	2	2.6	0	2.6	0.5%
7/1/1973 0:00	24	1.8	0	0.1083	24	22	1	2	2.6	0	2.6	0.5%
6/25/1976 0:00	24	1	0	0.1083	24	19	1	1	2.6	0	2.6	0.5%
8/24/1977 0:00	24	1.3	0	0.1083	24	21	1	2	2.6	0	2.6	0.5%
6/26/1978 0:00	24	2.1	0	0.1083	24	21	1	2	2.6	0	2.6	0.5%
9/20/1978 0:00	24	1.6	0	0.1083	24	20	1	4	2.6	0	2.6	0.5%
11/14/1978 0:00	24	2.2	0	0.1083	24	21	1	1	2.6	0	2.6	0.5%
5/13/1979 0:00	24	0.8	0	0.1083	24	19	1	2	2.6	0	2.6	0.5%
3/17/1980 0:00	24	1.1	0	0.1083	24	18	1	3	2.6	0	2.6	0.5%
4/24/1981 0:00	24	0.6	0	0.1083	24	16	1	6	2.6	0	2.6	0.5%
7/1/1981 0:00	24	1.2	0	0.1083	24	20	1	2	2.6	0	2.6	0.5%
9/7/1981 0:00	24	2.6	0	0.1083	24	23	1	2	2.6	0	2.6	0.5%
10/2/1981 0:00	24	0.8	0	0.1083	24	16	1	4	2.6	0	2.6	0.5%
8/27/1982 0:00	24	2	0	0.1083	24	22	1	2	2.6	0	2.6	0.5%
9/6/1983 0:00	24	2.6	0	0.1083	24	23	1	2	2.6	0	2.6	0.5%
12/1/1984 0:00	24	1	0	0.1083	24	18	1	3	2.6	0	2.6	0.5%
6/9/1987 0:00	24	1.1	0	0.1083	24	21	1	2	2.6	0	2.6	0.5%
7/20/1987 0:00	24	2.6	0	0.1083	24	23	1	2	2.6	0	2.6	0.5%
9/19/1987 0:00	24	0.6	0	0.1083	24	17	1	3	2.6	0	2.6	0.5%
10/23/1987 0:00	24	1.2	0	0.1083	24	20	1	4	2.6	0	2.6	0.5%
10/28/1987 0:00	24	0.8	0	0.1083	24	19	1	2	2.6	0	2.6	0.5%
9/16/1989 0:00	24	0.8	0	0.1083	24	19	1	2	2.6	0	2.6	0.5%
10/19/1989 0:00	24	1.6	0	0.1083	24	21	1	1	2.6	0	2.6	0.5%
10/12/1990 0:00	24	0.6	0	0.1083	24	17	1	2	2.6	0	2.6	0.5%
12/4/1990 0:00	24	1	0	0.1083	24	17	1	5	2.6	0	2.6	0.5%
9/27/1991 0:00	24	1.2	0	0.1083	24	20	1	2	2.6	0	2.6	0.5%
3/10/1992 0:00	24	0.9	0	0.1083	24	19	1	3	2.6	0	2.6	0.5%
4/21/1992 0:00	24	0.9	0	0.1083	24	19	1	3	2.6	0	2.6	0.5%

8/26/1992 0:00	24	2.4	0	0.1083	24	22	1	3	2.6	0	2.6	0.5%
4/24/1993 0:00	24	1.2	0	0.1083	24	20	1	1	2.6	0	2.6	0.5%
12/3/1993 0:00	24	1.4	0	0.1083	24	21	1	2	2.6	0	2.6	0.5%
10/3/1995 0:00	24	1.8	0	0.1083	24	22	1	1	2.6	0	2.6	0.5%
11/7/1996 0:00	24	1.3	0	0.1083	24	20	1	5	2.6	0	2.6	0.5%
7/13/1998 0:00	24	1.7	0	0.1083	24	20	1	3	2.6	0	2.6	0.5%
7/27/1998 0:00	24	2.4	0	0.1083	24	22	1	3	2.6	0	2.6	0.5%
9/29/1998 0:00	24	1.1	0	0.1083	24	19	1	1	2.6	0	2.6	0.5%
7/3/1973 0:00	24	2.5	0	0.1042	24	23	1	2	2.5	0	2.5	0.0%
9/27/1973 0:00	24	2	0	0.1042	24	22	1	2	2.5	0	2.5	0.0%
6/28/1976 0:00	24	2.5	0	0.1042	24	23	1	2	2.5	0	2.5	0.0%
7/8/1983 0:00	24	2.1	0	0.1042	24	22	1	2	2.5	0	2.5	0.0%
4/5/1991 0:00	24	0.6	0	0.1042	24	16	1	3	2.5	0	2.5	0.0%
8/27/1992 0:00	24	1.4	0	0.1042	24	20	1	4	2.5	0	2.5	0.0%
4/19/1995 0:00	24	0.9	0	0.1042	24	21	1	3	2.5	0	2.5	0.0%
5/29/1998 0:00	24	1.6	0	0.1042	24	20	1	3	2.5	0	2.5	0.0%
6/9/1999 0:00	24	1.2	0	0.1042	24	20	1	3	2.5	0	2.5	0.0%

Appendix C Consultation

C.1 Pre-consultation Notes

Wu, Michael

From: Debbie Belfie <belfied@rogers.com>
Sent: Wednesday, 21 August, 2019 06:33
To: Jim Bell; Curtis Melanson
Subject: Fwd: Pre-con Minutes, report list - 2885 Carp Road
Attachments: Applicant's Study and Plan Identification List -2885 Carp.pdf

Hi

Finally received the city planners meeting notes and list of required reports for the preconsultation meeting for the site plan at 2885 Carp Road. Please see email below and attached PDF

Debbie

Sent from my iPad

Begin forwarded message:

> **From:** "Wang, Anne" <anne.wang1@ottawa.ca>
> **Date:** August 20, 2019 at 3:23:57 PM EDT
> **To:** Deborah Belfie <belfied@rogers.com>
> **Cc:** "McWilliams, Cheryl" <Cheryl.McWilliams@ottawa.ca>, "Rehman, Sami" <Sami.Rehman@ottawa.ca>, "Di Iorio, Tessa" <tessa.diiorio@ottawa.ca>, Niall Oddie <noddie@mvc.on.ca>, "Giampa, Mike" <Mike.Giampa@ottawa.ca>
> **Subject: Pre-con Follow-up - 2885 Carp Road**
>
> Hello
>
> Please refer to the below regarding the Pre-Application Consultation (pre-con) Meeting held on July 16, 2019 for the property at 2885 Carp Road for Site Plan Control Application in order to allow the development of one storey warehouse. I have also attached the required Plans & Study List for application submission.
>
> Below are staff's preliminary comments based on the information available at the time of pre-con meeting. Further changes may result in additional submission requirement(s). Please confirm with the file planner prior to making the submission.
>
> **Planning**
>
> - The property is designated as Rural Employment Area and the Carp Road Corridor CDP recognizes the subject property as Highway Commercial. The Zoning RC9[322r] permits warehouse.
> - Carp Road Corridor CDP identifies a large portion of the site as within the high groundwater recharge area. A technical pre-consultation is recommended with City's Hydrogeologist Tessa Di Iorio.
> - There appears to be a body of water located at the west portion of the property. Proponent should assess this and adjust the proposal accordingly. The required EIS (see below) should also address this feature on-site.
> - It is understood the site will be used for storage of vehicle (concrete truck) only. Any additional use(s), including accessory use may trigger additional submission requirements.

- Site design should demonstrate sufficient space to accommodate truck movements.
- In addition to all the relevant policies and provisions in the Official Plan, it is recommended that the final site design should consider additional screening abutting the residential subdivision to the north.
- It is recommended to confirm with the file planner prior to submitting the application to confirm the type of the application. For reference, the new site plan subtype threshold can be found : https://documents.ottawa.ca/sites/documents/files/siteplan_thresholds_en.pdf

Feel free to contact Cheryl McWilliams, at Cheryl.McWilliams@ottawa.ca, for follow-up questions.

Engineering

- Post-Development stormwater run-off will be required to be controlled to pre-development rates.
- Any proposed stormwater outlet(s) should be identified as part of the submission and shall have legal right to permit the proposed drainage outlet.
- The applicant should have their consultant contact Ottawa Fire Services to determine if fire protection is required.(Contact Information: Allan Evans, Engineer, Fire Protection, City of Ottawa, Allan.Evans@ottawa.ca)
- Owner to consult with the Conservation Authority on any quality requirements for stormwater treatment. A brief comment from MVCA is included in this email. Please consult with MVCA before finalizing the proposal.
- ECA is likely required and please contact the Ministry to identify all the necessary requirement and timelines.
- This site is in an area of high groundwater recharge. This will have to be reflected in the Stormwater design.
- Any exterior lighting proposed for the site is required by the City of Ottawa to be certified by a qualified engineer conforming the design complies with the following criteria:
  - It must be designed using only fixtures that meet the criteria for Full-Cut-Off (Sharp cut-off) Classification, as recognized by the illuminating Engineering Society of North America (IESNA or IES).
  - It must result in minimal light spillage onto adjacent properties. As a guide, 0.5 foot-candle is normally the maximum allowable spillage.
  - The location of the fixtures, fixture types (make, model, and part number) and the mounting heights must be provided.

Feel free to contact Infrastructure Project Manager, Kevin Hall, at Kevin.Hall@ottawa.ca, for follow-up questions.
Any questions regarding the hydrogeology assessment and reporting requirements, please contact Tessa Di Iorio via email (tessa.diiorio@ottawa.ca) or telephone at 613-580-2424 ext. 17658.

Transportation

- The applicant must submit TIA Scoping document for their proposed site.

Feel free to contact Transportation Project Manager, Mike Giampa, at Mike.Giampa@ottawa.ca, for follow-up questions.

Environmental

- The subject property is part of the Natural Heritage System (OP section 2.4.2) and therefore, the proposed development requires an Environmental Impact Statement (EIS). More specifically, the EIS should address the following items,
  - significant woodlands, in proximity to a water feature.
  - potential significant habitat for threatened or endangered species (See OP Section 4.7.4)
  - investigate the waterbody and its ecological significance (such as but not limited to, connections to adjacent waterbodies, water input and output, permanency, presence of wetland species, aquatic communities, flora, presence of organic soils, fish habitat, etc.), and if a water feature setback is required (OP Section 4.7.3).
- The EIS shall demonstrate no negative impacts on the natural features and functions on and adjacent to the subject property. The EIS should also inform the design of proposed development. Further details of the EIS requirements can be found in OP Section 4.7.8 and the EIS guidelines, https://documents.ottawa.ca/sites/default/files/documents/eis_guidelines2015_en.pdf
- A Tree Conservation Report (TCR) will also be required, as per OP Section 4.7.2. The TCR can be combined with the EIS to avoid duplications. The TCR guidelines are:
  https://ottawa.ca/en/residents/water-and-environment/trees-and-community-forests/protection#tree-conservation-report-guidelines
- Please ensure the consult with the Conservation Authority to determine if a permit or approval is required under their regulation.

Feel free to contact Environmental Planner, Sami Rehman, at Sami.Rehman@ottawa.ca, for follow-up questions.

Parkland

- As per City of Ottawa Parkland Dedication By-law No. 2009-95, parkland dedication will be owed for the proposed industrial development of the site. As per the By-law, the parkland requirement for commercial and industrial purposes is calculated as 2% of the gross land area of the site being developed.
- The City will require payment of money in-lieu of accepting a conveyance of land (Cash-in-lieu-of-Parkland). The value of the land will be determined as of the day before planning approval is given for Site Plan Control, and in the amount as provided by a market appraisal as approved by the City. Furthermore, the Owner will be responsible for the cost of the appraisal.

Conservation Authority

- SW quantity: City of Ottawa's guideline should follow for the design of minor and major storm sewer system (if applicable). The stormwater quantity control required to restrict post-development flows for all storms exceeding any allowable release up to and including 100-year event.
- SW quality: A normal level of water quality treatment is required.
- Infiltration Target: As per the Carp River subwatershed study, the area is of high groundwater recharge. Therefore, an infiltration target of 204mm/yr has to meet for the development of this site.

Please refer to the links to "Guide to preparing studies and plans" and fees for general information. Additional information is available related to building permits, development charges,

and the Accessibility Design Standards. Be aware that other fees and permits may be required, outside of the development review process. You may obtain background drawings by contacting informationcentre@ottawa.ca.

These pre-con comments are valid for one year. If you submit a development application(s) after this time, you may be required to meet for another pre-consultation meeting and/or the submission requirements may change. You are as well encouraged to contact us for a follow-up meeting if the plan/concept will be further refined.

Please do not hesitate to contact Cheryl or myself if you have any questions.

Regards,

Anne Wang
Planner
Natural Systems and Rural Affairs
Planning, Infrastructure and Economic Development Department

110 av Laurier Avenue
Ottawa, ON, K1P 1J1
Tel: 613.580.2424 ext./poste 26406

Absent Alert: I will be out of the office on Friday August 16, 2019.

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Kilborn, Kris

From: Jessica D'Aoust <jessica@jdplan.ca>
Sent: Thursday, September 15, 2022 9:25 PM
To: Tim Gilchrist; Kilborn, Kris; drew.paulusse@gemtec.ca; andrius.paznekas@gemtec.ca; Bekim Concrete Inc.; HQ MANAGEMENT GROUP INC.
Cc: Boles, Raouf; cameron@jrpeng.com; philipp@jrpeng.com; Jim Bell
Subject: 2885 Carp Road Follow-Up - Site Plan Control
Attachments: Applicant's Study and Plan Identification List -2885 Carp[1].pdf; Fwd- Pre-con Minutes, report list - 2885 Carp Road.eml; Elevations - 2885 Carp Road.pdf; Site Plan - 2885 Carp Road.dwg; Site Plan - 2885 Carp Road.pdf; z173_topo_deliverable.dwg

Hi everyone,

Thanks again for meeting on Wednesday to review the 2885 Carp Road development and application for site plan control to the City. Please find attached the plans and studies list as well as the original pre-con minutes from 2019. Per the new assigned planner, these notes/minutes still stand with the addition of a few highlighted notes below to be included as well.

ADDITIONAL NOTES FROM CITY PLANNER (2021):
The list of plans and reports remains the same as the original 2019 pre-consultation, assuming no change to the proposal (use, extent etc). The new Official Plan has a shift in the environmental policies relating to no impact but that does not change the required study. With the tree removal that occurred in and around 2019 we will be looking for additional buffering for the adjacent residential uses. I would note that from the original layout the building is now closer to those residential properties which would make the provisions of visual and potentially noise buffering more difficult.

REQUIRED PLANS/STUDIES:
So that everything is in one place, the plans and studies required and respective consultants are listed below:

- **Civil – Stantec**
  - Site Servicing Plan
  - Grading and Drainage Plan
  - Erosion and Sediment Control Plan / Brief
  - Stormwater Management Brief
- **Engineering / Environmental – Gemtec**
  - Geotechnical Study – ***please circulate draft to team for coordination with civil***
  - Hydrogeological and Terrain Analysis
  - Tree Conservation Report
  - Environmental Impact Statement ***– Gemtec to prepare fee proposal for EIS for review by Afrim/Bekim, to complete field work ASAP***
- **Traffic – JD Planning *(scope form ONLY)***
  - Transportation Impact Assessment Scoping - *if TIA required, traffic engineer to be retained*
- **Architectural – Bell + Associates**
  - Site Plan
  - Architectural Elevations
- **Planning Rationale – JD Planning**
- **Survey – ?**
  - *Afrim to confirm whether final updated survey was completed / deposited (.dwg copy is attached)*
- **Landscape Plan – ?**

    - *Landscape Architect to be retained*
- **Mechanical / Electrical – JRP**
    - Lighting Certificate – required at time of SPC approval
    - Site Lighting Plan – may be requested / coordinated with site plan for SPC
    - All other mechanical/electrical is required at time of Building Permit, not SPC (coordination with Bell + Associates)
- **Structural – Stantec**
    - Required at time of Building Permit, not SPC (coordination with Bell + Associates)

Everything other than mechanical/electrical and structural are required for a complete application to the City for Site Plan Control. The site plan (pdf and cad) and elevations are also attached for review/coordination. From our conversation, it seemed a 4-6 week turnaround for all required materials would be reasonable, so I would like to target submission for the last week of October / first week of November. If you could please review the attached notes and confirm whether this is feasible, that would be appreciated.

If I am missing anyone who should be on this email thread, please forward to them. Any questions or concerns otherwise, don't hesitate to let me know.

Thanks all and looking forward to working with you on this project.

Jessica D'Aoust RPP MCIP M.PI
Principal | Senior Planner
JD PLANNING
t 613 812 1726 **e** jessica@jdplan.ca **w** www.jdplan.ca
43 Eccles Street, Unit C, Ottawa ON K1R 6S3

Appendix D Geotechnical Investigation

D.1 Geotechnical Investigation, GEMTEC Consulting, August 2, 2022

GEMTEC
www.gemtec.ca

DRAFT

Geotechnical Investigation
Proposed Commercial Development
2885 Carp Road
Ottawa, Ontario

GEMTEC
www.gemtec.ca

Submitted to:

Bell & Associates Architecture
PO Box 178 (101-3108 Carp Road)
Carp, Ontario
K0A 1L0

Geotechnical Investigation
Proposed Commercial Development
2885 Carp Road
Ottawa, Ontario

August 2, 2022
Project: 101688.002

experience • knowledge • integrity

GEMTEC Consulting Engineers and Scientists Limited
32 Steacie Drive
Ottawa, ON, Canada
K2K 2A9

August 2, 2022

File: 101688.002

Bell & Associates Architecture
PO Box 178 (101-3108 Carp Road)
Carp, Ontario
K0A 1L0

Attention: Tim Gilchrist, Associate

Re: Geotechnical Investigation
Proposed Commercial Development
2885 Carp Road
Ottawa, Ontario

Please find enclosed our geotechnical investigation report for the above noted project, in accordance with our proposal dated April 8, 2022. This report was prepared by Mr. Alex Meacoe, P.Eng., and reviewed by Brent Wiebe, P.Eng..

Alex Meacoe, P.Eng.

Brent Wiebe, P.Eng.

PS/WAM/BW

Enclosures
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1.0 INTRODUCTION

This report presents the results of a geotechnical investigation carried out for the proposed commercial development to be located at 2885 Carp Road in the City of Ottawa, Ontario. The purpose of the investigation was to identify the general subsurface and groundwater conditions at the site by means of a limited number of boreholes and, based on the factual information obtained, to provide engineering guidelines on the geotechnical design aspects of the project, including construction considerations that could influence design decisions.

2.0 BACKGROUND

2.1 Project Description

Plans are being prepared for a proposed new commercial development located at 2885 Carp Road in Ottawa, Ontario. The details of the proposed development are not known at this time, but are assumed to consist of a new commercial building with at grade parking and landscaped areas.

The site is currently occupied by a gravel surfaced lot with temporary site trailers.

2.2 Site Geology

Surficial geology maps of the Ottawa area indicate that the site is underlain by sand and silt over glacial till. Bedrock geology maps of the area show that the overburden deposits are underlain by interbedded limestone and shale of the Verulam formation. Drift thickness mapping indicates that the bedrock surface is expected at depths ranging from about 5 to 10 metres below ground surface. Fill material associated with the previous and surrounding development of the site should be anticipated.

3.0 SUBSURFACE INVESTIGATION

3.1 Geotechnical Investigation

The fieldwork for the geotechnical investigation was carried out on May 18, 2022. On that day, two boreholes (numbered 22-01 and 22-02) were advanced at the approximate locations shown on the Site Plan, Figure 1.

The boreholes were advanced with a truck mounted hollow stem auger drill rig supplied and operated by CCC Geotechnical and Environmental Drilling of Ottawa, Ontario. The boreholes were advanced to depths about 6.8 and 6.0 metres below the existing ground surface in boreholes 22-01 and 22-02, respectively.

Standard penetration tests were carried out in the boreholes at regular intervals of depth and samples of the soils encountered were recovered using a 50-millimetre diameter split spoon sampler.

A monitoring well was sealed in the overburden in borehole 22-02 to measure the groundwater levels.

The fieldwork was supervised throughout by a member of our engineering staff who directed the drilling, logged the samples and boreholes, and carried out the in-situ testing. Following completion of the drilling, the soil samples were returned to our laboratory for examination by a geotechnical engineer and for laboratory testing. Selected soil samples were tested for water content and grain size distribution.

One sample of soil obtained from borehole 22-02 was sent to Paracel Laboratories Ltd. for basic chemical testing relating to corrosion of buried concrete and steel.

The borehole locations were selected by GEMTEC and positioned on site relative to existing features. The ground surface elevations at the borehole locations were determined using a precision GPS survey unit.

Descriptions of the subsurface conditions logged in the boreholes are provided on the Record of Borehole Sheets in Appendix A. The results of the laboratory classification testing are provided on the Record of Borehole sheets and in Appendix B. The results of chemical testing completed on one soil sample are provided in Appendix C. The results of the slope stability analysis are provided in Appendix D. The approximate locations of the boreholes are shown on the Site Plan, Figure 1.

3.2 Description of Slope

A site reconnaissance was carried out on June 22, 2022, by a member of engineering staff.

At the time of the site visit, the geometry of the slope along the west side of the site was measured at three locations using precision GPS surveying equipment. The cross sections were positioned at the site by GEMTEC personnel. The locations of the cross sections considered are provided on Figure 1. Cross sections of the slopes are provided in Appendix D.

The geometries of the cross sections are summarized in Table 3.1:

Table 3.1 – Slope Cross Section Height and Slope Inclination

Cross Section	Slope Height (metres)	Overall inclination from horizontal (degrees)
A-A	2.3	33
B-B	2.4	30
C-C	2.2	25

In general, the slopes at the site are vegetated with grass with small to large trees, granular material, cobbles, and boulders. No signs of overall slope instability (i.e., rotational failures) were observed at the site.

4.0 SUBSURFACE CONDITIONS

4.1 General

The soil conditions logged in the boreholes from this investigation are provided on the Record of Borehole Sheets in Appendix A. The borehole logs indicate the subsurface conditions at the specific test locations only. Boundaries between zones on the logs are often not distinct, but rather are transitional and have been interpreted. Subsurface conditions at locations other than the test hole locations may vary from the conditions encountered in the boreholes. In addition to soil variability, fill of variable physical and chemical composition can be present over portions of the site.

The soil descriptions in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves judgement and GEMTEC does not guarantee descriptions as exact but infers accuracy to the extent that is common in current geotechnical practice.

The following presents an overview of the subsurface conditions encountered in the boreholes advanced as part of the current investigation.

4.2 Topsoil

Topsoil was encountered at the ground surface in borehole 22-02. The topsoil has a thickness of about 100 millimetres.

4.3 Fill Material

A layer of fill material was encountered at the ground surface in borehole 22-01 and below the topsoil in borehole 22-02. The fill material consists of silty sand with varying amounts of gravel and clay and extends to depths of about 2.3 metres below the existing ground surface.

Standard penetration tests carried out in the fill material gave SPT N values ranging from 7 to 14 blows per 0.3 metres of penetration, which reflect a loose to compact relative density.

The water content of three samples of the fill material ranges from about 11 to 14 percent.

4.4 Glacial Till

Native deposits of glacial till were encountered below the fill material in boreholes 22-01 and 22-02. The glacial till was not fully penetrated in the boreholes but was proven depths of about 6.0 metres below the existing ground surface. Glacial till is a heterogeneous mix of all grain sizes,

which at this site is described as sand and gravel, some silt, trace clay. The glacial till in this area is also known to contain cobbles and boulders.

Standard penetration tests carried out in the native deposit of glacial till gave N values ranging from 14 to greater than 50 blows per less than 0.3 metres of penetration, which reflect a compact to very dense relative density. The higher blow counts may reflect the presence of cobbles and boulders in the glacial till deposit rather than the bedrock surface.

One grain size distribution test was carried out on a sample of the glacial till. The results are provided in Appendix B and are summarized In Table 4.1, below.

Table 4.1 – Summary of Grain Size Distribution Test (Glacial Till)

Borehole Number	Sample Number	Sample Depth (metres)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
22-01	5	3.1 – 3.7	44	42	11	3

The water content of 10 samples of the glacial till ranges from about 10 to 26 percent.

4.5 Sand

A native deposit of sand, with some silt and gravel was encountered below the glacial till in borehole 22-01. The sand deposit was not fully penetrated in the borehole but was proven to a depth of about 6.8 metres below the existing ground surface.

One standard penetration test carried out in the sand deposit gave an N value of 29 blows per 0.3 metres of penetration, which reflect a compact relative density.

The water content measured on one sample of the sand is about 16 percent.

4.6 Refusal

Auger refusal was encountered in boreholes 22-01 and 22-02 at depths of about 6.8 and 6.0 metres below the existing ground surface, respectively. The auger refusal likely represents the presence of cobbles or boulders within the glacial till deposit or the bedrock surface.

A summary of the refusal depths and elevations is provided in Table 4.2.

Table 4.2 – Summary of Auger Refusal Depth and Elevation

Borehole Number	Ground Surface Elevation (metres)	Depth to Refusal (metres)	Refusal Elevation (metres)
22-01	117.4	6.8	110.6
22-02	117.3	6.0	111.3

4.7 Groundwater Levels

A well screen was sealed in the overburden in borehole 22-02 for measurement of the groundwater level. The groundwater level in the monitoring well was measured on May 25, 2022. The groundwater level depth and elevations are summarized in Table 4.3, below.

Table 4.3 – Summary of Groundwater Levels

Borehole Number	Groundwater Depth (metres)	Groundwater Elevation (metres)	Date
22-02	2.5	114.8	May 25, 2022

The groundwater levels may be higher during wet periods of the year such as the early spring or following periods of precipitation.

4.8 Chemistry Relating to Corrosion

One soil sample obtained from borehole 22-02 was sent to Paracel Laboratories for basic chemical testing relating to corrosion of buried concrete and steel. The results of chemical testing are provided in Appendix C and summarized in Table 4.4, below.

Table 4.4 – Summary of Corrosion Testing

Parameter	Borehole 21-02 Sample 3
Chloride Content (µg/g)	43
Resistivity (Ohm.m)	10.0
Conductivity (µs/cm)	988
pH	7.37
Sulphate Content (µg/g)	889

5.0 RECOMMENDATIONS

5.1 General

The information in the following sections is provided for the guidance of the design engineers and is intended for the design of this project only. Contractors bidding on or undertaking the works should examine the factual results of the investigation, satisfy themselves as to the adequacy of the information for construction, and make their own interpretation of the factual data as it affects their construction techniques, schedule, safety and equipment capabilities.

The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at this site. The presence or implications of possible surface and/or subsurface contamination resulting from previous uses or activities of this site or adjacent properties, and/or resulting from the introduction onto the site from materials from off site sources are outside the terms of reference for this report.

GEMTEC has conducted a Phase One and a Phase Two Environmental Site Assessment for this property, which are provided in separate reports.

5.2 Excavation

The excavations for the proposed commercial development will be carried out through the topsoil, where encountered, fill material, and into the glacial till deposit. The sides of the excavations should be sloped in accordance with the requirements in Ontario Regulation 213/91 under the Occupational Health and Safety Act. According to the Act, the overburden soils at this site can be classified as Type 3 and, accordingly, allowance should be made for excavation side slopes of 1 horizontal to 1 vertical, or flatter, for soils above the groundwater level. The overburden soils below the groundwater can be classified as Type 4 and, accordingly, allowance should be made for excavation side slopes of 3 horizontal to 1 vertical, or flatter.

Cobbles and boulders should be anticipated in the glacial till. As such, an allowance should be made for removal of boulders from the glacial till during excavation which may require use of larger excavation equipment and possible subexcavation, if boulders are protruding at the underside of footing level.

5.3 Groundwater Management

The groundwater level on May 25, 2022, was measured to be about 2.5 metres below ground surface in borehole 22-02.

Any groundwater inflow into the excavation should be handled from within the excavation by pumping from filtered sumps. Suitable detention and filtration will be required before discharging the water to a sewer or ditch. The amount of groundwater entering the excavation for the

construction of the foundations at this site should not exceed 50,000 litres per day and therefore it is not anticipated that an Environmental Activity and Sector Registry (EASR) will be required.

5.4 Foundation Design

Based on the results of the investigation, the proposed commercial development could be founded on footings bearing on or within the native undisturbed glacial till deposits. The topsoil and fill material are considered to be highly compressible and should be removed from below any foundations and slabs on grade.

After the removal of the existing fill material, and where the existing subgrade surface is below the proposed founding level, the grade could be raised with compacted granular material (engineered fill). The engineered fill should consist of granular material meeting Ontario Provincial Standard Specifications (OPSS) requirements for Granular B Type II and should be compacted in maximum 200 millimetre thick lifts to at least 95 percent of the material's standard Proctor maximum dry density. To provide adequate spread of load beneath the footings, the engineered fill should extend horizontally at least 0.5 metres beyond the footings and then down and out from this point at 1 horizontal to 1 vertical, or flatter.

For design purposes, exterior footings bearing on the native, undisturbed glacial till, or on a pad of engineered fill above native, undisturbed glacial till should be sized using a geotechnical reaction at Serviceability Limit State (SLS) of 150 kilopascals and a factored geotechnical resistance at Ultimate Limit State (ULS) of 300 kilopascals.

The post construction, total and differential settlement of the footings at SLS should be less than 25 and 15 millimetres, respectively, provided that all loose or disturbed soil is removed from the bearing surfaces.

5.5 Grade Raise Restrictions

The site is underlain by native deposits of glacial till. Based on the borehole information, there are no grade raise restrictions at this site, from a geotechnical perspective. The settlement due to compression of the native soils due to fill placement should be relatively small and should occur during or shortly after the fill placement.

5.6 Frost Protection of Foundation

All exterior footings should be provided with at least 1.5 metres of earth cover for frost protection purposes. Isolated (unheated) footings that are located in areas that are to be cleared of snow should be provided with at least 1.8 metres of earth cover for frost protection purposes. Alternatively, the required frost protection could be provided by means of a combination of earth cover and extruded polystyrene insulation. An insulation detail could be provided upon request.

If the foundation and/or slab on grade are insulated in a manner that will reduce heat flow to the surrounding soil, the foundation depth shall conform to that required for foundations for an unheated space.

5.7 Seismic Design of Proposed Structures

Based on the results of the investigation, it is anticipated that the proposed foundations will be supported on native deposits of glacial till, or a pad of engineered fill constructed above the native deposits. As such, in our opinion, the proposed commercial development should be designed for seismic Site Class D.

There is no potential for liquefaction of the overburden deposits at this site.

5.8 Foundation Wall Backfill and Drainage

The native deposits at this site are frost susceptible and should not be used as backfill against foundations. To avoid frost adhesion and possible heaving, the foundations should be backfilled with imported, free-draining, non-frost susceptible granular material such as that meeting the requirements of OPSS Granular A, or Granular B Type I or II.

Where the backfill will ultimately support areas of hard surfacing (pavement, sidewalks or other similar surfaces), the backfill should be placed in maximum 200 millimetre thick lifts and should be compacted to at least 95 percent of the material's standard Proctor maximum dry density value using suitable vibratory compaction equipment. Light walk behind compaction equipment should be used next to the foundation walls to avoid excessive compaction induced stress on the foundation walls.

Where future landscaped areas will exist next to the proposed structure and if some settlement of the backfill is acceptable, the backfill could be compacted to at least 90 percent of the material's standard Proctor maximum dry density value. Where areas of hard surfacing (concrete, sidewalks, pavement, etc.) abut the proposed structure, a gradual transition should be provided between those areas of hard surfacing underlain by non-frost susceptible granular wall backfill and those areas underlain by existing frost susceptible fill material to reduce the effects of differential frost heaving. It is suggested that granular frost tapers be constructed from 1.5 metres below finished grade to the underside of the granular subbase material for the hard surfaced areas. The frost tapers should be sloped at 1 horizontal to 1 vertical, or flatter.

It is recommended that roof downspouts discharge to a suitable outlet that will not result in saturation of the backfill material below hard surfaced areas.

The frost susceptible native soils could be considered for foundation wall backfill purposes in soft landscaped areas provided that a suitable bond break is applied to the surface of the foundations to prevent frost jacking. A suitable bond break could consist of at least 2 layers of 6 MIL polyethylene sheeting or a proprietary plastic drainage medium. It is also pointed out that the

native soils at this site can be impacted by changes in moisture content and this could affect the ability to compact this material to the required density.

Perimeter foundation drainage is not considered necessary for a slab on grade structure provided that the floor slab level is above the finished exterior ground surface level.

5.9 Slab on Grade Support

To provide predictable settlement performance of the slab on grade, all topsoil, fill material, organic material or disturbed soil and debris should be removed from the slab area. The base for the floor slab should consist of at least 150 millimetres of OPSS Granular A.

OPSS documents allow recycled asphaltic concrete and Portland cement concrete to be used in Granular A material. Since the source of recycled material cannot be determined or controlled, it is suggested that any imported Granular A materials be composed of 100 percent crushed rock only, for environmental reasons.

All imported granular materials placed below the proposed floor slab should be compacted in maximum 200 millimetre thick lifts to at least 95 percent of the standard Proctor maximum dry density value.

Underfloor drainage is not considered necessary provided that the floor slab level is above the finished exterior ground surface level. If any areas of the building are to remain unheated during the winter period, thermal protection of the slab on grade may be required. Further details on the insulation requirements could be provided, if necessary.

Proper moisture protection with a vapour retarder should be used for any slab on grade where the floor will be covered by moisture sensitive flooring material or where moisture sensitive equipment, products or environments will exist. The “Guide for Concrete Floor and Slab Construction”, ACI 302.1R-04 should be considered for the design and construction of vapour retarders below the floor slab.

5.10 Proposed Services

5.10.1 Excavation

In the overburden, the excavation for flexible service pipes should be in accordance with Ontario Provincial Standard Drawing (OPSD) 802.010 for Type 3 soil. The excavation for rigid service pipes should be in accordance with OPSD 802.031 for Type 3 soil. The sides of the excavations within overburden soils should be sloped in accordance with the requirements in Ontario Regulation 213/91 under the Occupational Health and Safety Act. According to the Act, the soils at this site above the groundwater level can be classified as Type 3 soils. Therefore, for design purposes, allowance should be made for 1 horizontal to 1 vertical, or flatter, excavation slopes.

As an alternative or where space constraints dictate, the service installations could be carried out within a tightly fitting, braced steel trench box, which is specifically designed for this purpose.

Groundwater seepage into excavations should be controlled, as necessary, by pumping from within the excavations. It is not expected that short term pumping during excavation will have a significant effect on nearby structures and services.

It should be noted that excavations below the groundwater table will likely present some constraints (i.e., sloughing of soils). Sloughing of the excavation side slopes below the groundwater level could be reduced, where necessary, by advancing thick steel plates along the sides and front of the trench box to below the level of the excavation in combination with pumping from within the excavation. It may be necessary to advance the steel plates below the limits of the excavation in order to reduce the amount of groundwater inflow.

Cobbles and boulders should be anticipated in the glacial till. As such, an allowance should be made for removal of boulders from the glacial till during excavation. In order to advance the trench box, even boulders that partially intrude into the sides of the excavation must be removed, which may result in a wider excavation than anticipated. Further, additional backfill and bedding material may be required to fill any voids left from the removal of boulders.

5.10.2 Trench Backfill

In areas where the service trench will be located below or in close proximity to existing or future areas of hard surfacing (pavement, sidewalk, etc.), acceptable native materials should be used as backfill between the roadway subgrade level and the depth of seasonal frost penetration in order to reduce the potential for differential frost heaving between the area over the trench and the adjacent hard surfaced area. The depth of frost penetration in exposed areas can be taken as 1.8 metres below finished grade. Where native backfill is used, it should match the native materials exposed on the trench walls. Backfill below the zone of seasonal frost penetration could consist of either acceptable native material or imported granular material conforming to OPSS Granular B Type I or II.

To minimize future settlement of the backfill and achieve an acceptable subgrade for the driving lanes, parking areas, sidewalks, etc., the trench backfill should be compacted in maximum 300 millimetre thick lifts to at least 95 percent of the material's standard Proctor dry density value. The specified density for compaction of the backfill materials may be reduced where the trench backfill is not located below or in close proximity to existing or future areas of hard surfacing and/or structures.

5.11 Access Roadway/Parking Lot Areas

5.11.1 Subgrade Preparation

In preparation for access roadway/parking lot construction at this site, all surficial topsoil, and any soft, wet or deleterious materials should be removed from the proposed roadway areas. It is not considered necessary to remove the existing earth fill from below parking or access roadway areas, provided the proof rolling is carried out as described below.

5.11.2 Proof Rolling

Prior to placing granular material for the roads and parking lots, the exposed subgrade should be inspected and approved by a geotechnical personnel. Any soft areas should be subexcavated and replaced with suitable (dry) earth borrow that is frost compatible with the materials exposed on the sides of the area of subexcavation.

Areas where it will be necessary to raise the roadway/parking lot grades at this site, material which meets OPSS specifications for Select Subgrade Material, Earth Borrow or well shattered and graded rock fill material may be used.

The Select Subgrade material or Earth Borrow should be placed in maximum 300 millimetre thick lifts and compacted to at least 95 percent of the standard Proctor maximum dry density value using vibratory compaction equipment. Rock fill should be placed in maximum 500 millimetre thick lifts and suitably compacted either with a large drum roller, the haulage and spreading equipment, or a combination of both.

Truck traffic should be avoided on the native soil subgrade or the trench backfill within the roadways/parking lot areas especially under wet conditions.

5.11.3 Pavement Structures

For the parking areas to be used by light vehicles (cars, etc.), the following minimum pavement structure is recommended:

- 80 millimetres of hot mix asphaltic concrete (Two 40 millimetre lifts of Superpave 12.5), over
- 150 millimetres of OPSS Granular A base, over
- 300 millimetres of OPSS Granular B, Type II subbase

For parking areas and access roadways to be used by heavy truck traffic, the suggested minimum pavement structure is:

- 100 millimetres of hot mix asphaltic concrete (40 millimetres of Superpave 12.5 over 60 millimetres of Superpave 19.0), over
- 150 millimetres of OPSS Granular A base, over
- 450 millimetres of OPSS Granular B, Type II subbase

The above pavement structures assume that the access roadway and parking lot subgrade surfaces are prepared as described in this report. If the subgrade surfaces become disturbed or wetted due to construction operations or precipitation, the granular subbase thicknesses given above may not be adequate and it may be necessary to increase the thickness of the subbase and/or to incorporate a woven geotextile separator between the subgrade surfaces and the granular subbase material. The adequacy of the design pavement thicknesses should be assessed by geotechnical personnel at the time of construction.

If the granular pavement materials are to be used by construction traffic, it may be necessary to increase the thickness of the granular subbase layer, install a woven geotextile separator between the roadway subgrade surface and the granular subbase material, or a combination of both, to prevent pumping and disturbance to the subbase material. The contractor should be made responsible for their construction access.

5.11.4 Asphalt Cement Type

Performance grade PG 58-34 asphalt cement should be specified for Superpave asphaltic concrete mixes.

5.11.5 Pavement Transition

As part of the access roadway/parking lot construction, the new pavement may abut the existing pavement at Carp Road. The following is suggested to improve the performance of the joint between the new and the existing pavements:

- Neatly saw cut the existing asphaltic concrete;
- Remove the asphaltic concrete and slope the bottom of the excavation within the existing granular base and subbase at 1 horizontal to 1 vertical, or flatter, to avoid undermining the existing asphaltic concrete.
- To avoid cracking of the asphaltic concrete due to an abrupt change in the thickness of the roadway granular materials where new pavement areas join with the existing pavements, the granular depths should taper up or down at 5 horizontal to 1 vertical, or flatter, to match the existing pavement structure.
- Remove (mill off) 40 to 50 millimetres of the existing asphaltic concrete to a distance of 300 millimetres at the joint and tack coat the asphaltic concrete at the joint in accordance with the requirements in OPSS 310.

5.11.6 Pavement Drainage

Adequate drainage of the pavement granular materials and subgrade is important for the long term performance of the pavement at this site. The subgrade surfaces should be crowned and shaped to drain to the ditches and/or catch basins to promote drainage of the pavement granular materials.

Catch basins should be equipped with minimum 3 metre long stub drains extending in two directions at the subgrade level.

5.11.7 Granular Material Compaction

The granular base and subbase materials should be compacted in maximum 300 millimetre thick lifts to at least 98 percent of the material's standard Proctor maximum dry density value.

5.12 Corrosion of Buried Concrete and Steel

The measured sulphate concentration in the sample of soil recovered from borehole 22-02 was 889 micrograms per gram. According to Canadian Standards Association (CSA) "Concrete Materials and Methods of Concrete Construction", the concentration of sulphate can be classified as low. Therefore, any concrete in contact with the native soil could be batched with General Use (GU) cement. The effects of freeze thaw in the presence of de-icing chemical (sodium chloride) use on the roadway should be considered in selecting the air entrainment and the concrete mix proportions for any concrete.

Based on the resistivity and pH of the sample, the soil in this area can be classified as slightly aggressive towards unprotected steel. It should be noted that the corrosivity of the soil or groundwater could vary throughout the year due to the application sodium chloride for de-icing.

6.0 SLOPE STABILITY ANALYSIS

6.1 General

The purpose of this stability assessment is to establish the safe setback distance for the site with respect to slope stability.

The slope stability analysis was carried out at Section A-A using Slope/W, a two dimensional limit equilibrium slope stability program. The results of the slope stability analysis are provided in Appendix D.

6.2 Soil Strength Parameters

The soil conditions used in the stability analyses were based, in part, on the results of the boreholes advanced across the site. The slope stability analyses were carried out using soil strength parameters based on site specific studies in the area of the site. To determine the existing factor of safety against overall rotational failure, the slope stability analysis was carried out using drained soil parameters, which reflect long term conditions

The following table summarizes the soil parameters used in the analyses:

Table 6.1 – Slope Stability Soil Strength Parameters

Soil Type	Unit Weight, γ (kN/m^3)	Effective Cohesion, c′ (kilopascals)	Effective Angle of Internal Friction, φ (degrees)
Fill Material	18	0	32
Glacial Till	22	0	38
Sand	19	0	32

The results of a stability analysis are highly dependent on the assumed groundwater conditions. The groundwater levels measured during this investigation at about 114.8 metres, geodetic datum, however, it was assumed that the groundwater level will be at the ground surface at the toe of the slope for this analysis.

The slope stability analyses were carried out using soil parameters, groundwater conditions and a slope profile that attempt to model the slopes in question but do not exactly represent the actual conditions.

For the purposes of this study, a computed factor of safety of less than 1.0 to 1.3 is considered to represent a slope bordering on failure to marginally stable, respectively; a factor of safety of 1.3 to 1.5 is considered to indicate a slope that is less likely to fail in the long term and provides a degree of confidence against failure ranging from marginal (1.3) to adequate (1.4 and greater) should conditions vary from the assumed conditions. A factor of safety of 1.5, or greater, is considered to indicate adequate long-term stability.

6.3 Setback Requirements

The slope stability analysis indicated that the existing slope, has a factor of safety against overall rotational failure of less than 1.0.

Based on the results of the analysis, a factor of safety of 1.5 exists at a setback of about 3.1 metres from the crest of the slope. As such, any development (i.e., building, services, etc.) should be set a minimum of 3.1 metres from the crest of the slope. Alternatively, the slope could be regraded with side slopes of 3 horizontal to 1 vertical, or flatter, and would be considered stable from a geotechnical point of view.

7.0 ADDITIONAL CONSIDERATIONS

7.1 Effects of Construction Induced Vibration

Some of the construction operations (such as granular material compaction and excavation) will cause ground vibration on and off the site. The vibrations will attenuate with distance from the source, but may be felt at nearby structures. However, the magnitude of the vibrations is expected to be much less than that required to cause damage to the nearby structures or services.

7.2 Winter Construction

The soils that exist at this site are highly frost susceptible and are prone to significant ice lensing. If construction is required during freezing temperatures, the soil below the footings and floor slabs should be protected immediately from freezing using straw, propane heaters and insulated tarpaulins, or other suitable means.

7.3 Excess Soil Management Plan

This report does not constitute an excess soil management plan. The disposal requirements for excess soil from the site have not been assessed.

7.4 Well Abandonment

The monitoring wells installed in borehole 22-02 as part of this investigation should be decommissioned by a licensed well technician. The well abandonment could be carried out in advance of, or during the construction.

7.5 Design Review and Construction Observation

The final details for the proposed construction were not available to us at the time of preparation of this report. It is recommended that the design drawings be reviewed by the geotechnical engineer as the design progresses to ensure that the guidelines provided in this report have been interpreted as intended.

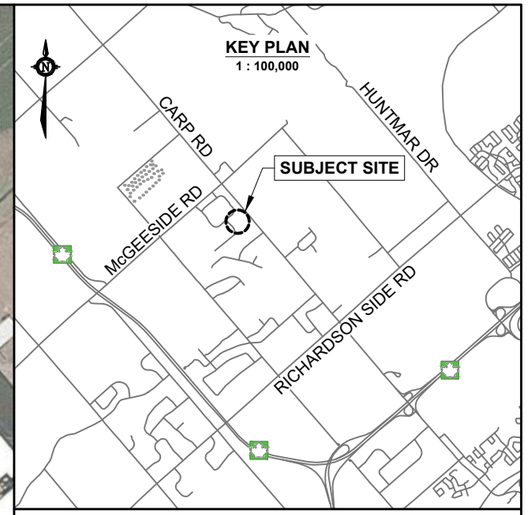
In accordance with Section 4.2.2.2 of the Ontario Building Code (2012), the engagement of the services of the geotechnical consultant during construction is recommended to confirm that the subsurface conditions throughout the proposed excavations do not materially differ from those given in the report and that the construction activities do not adversely affect the intent of the design. The subgrade surfaces for the proposed structures, access roadways, parking areas and site services should be inspected by experienced geotechnical personnel to ensure that suitable materials have been reached and properly prepared. The placing and compaction of earth fill and imported granular materials should be inspected to ensure that the materials used conform to the grading and compaction specifications.

8.0 CLOSURE

We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact our office.

Alex Meacoe, P.Eng.
Senior Geotechnical Engineer

Brent Wiebe, P.Eng.
VP Operations- Ontario



LEGEND

BH # — BOREHOLE ID

XX.XX — GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM

BOREHOLE LOCATION
(current investigation by GEMTEC)

APPROXIMATE PROPERTY BOUNDARY

A A' — SLOPE CROSS SECTION LOCATION

Scale
1:1000

0 20 40 60m

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive
Ottawa, ON K2K 2A9
Tel: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

Drawing
SITE PLAN

Client
BELL & ASSOCIATES ARCHITECTURE

Project
101688.002

GEOTECHNICAL INVESTIGATION
2885 CARP ROAD
CARP, ONTARIO

Drwn by
S.L.

Chkd by
W.A.M.

Date
AUGUST, 2022

Rev.
0

FIGURE 1

APPENDIX A

Record of Borehole Sheets
List of Abbreviations and Symbols
Borehole Logs 22-01 and 22-02

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

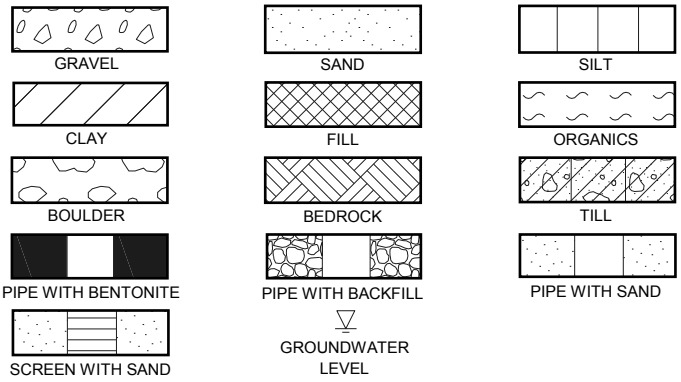
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

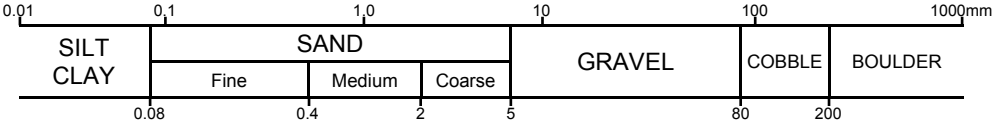
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard

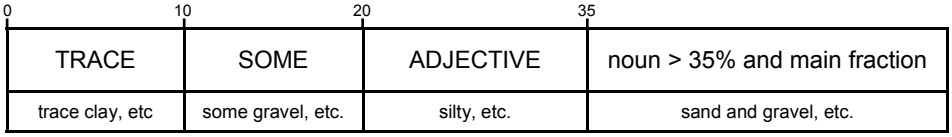


GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

(Based on the CANFEM 4th Edition)



RECORD OF BOREHOLE 22-01

CLIENT: Bell & Associates Architecture
PROJECT: Geotechnical Investigation, Proposed Development, 2885 Carp Road, Ottawa
JOB#: 101688.002
LOCATION: See Site Plan, Figure 1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: May 18 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m	PENETRATION RESISTANCE (N), BLOWS/0.3m / DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m / SHEAR STRENGTH (Cu), kPA / WATER CONTENT, %	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Power Auger, Hollow Stem Auger (108mm OD)	Ground Surface		117.36							
		Loose to compact, brown silty sand, some gravel, trace clay (FILL MATERIAL)			1	SS	205	14			
1					2	SS	355	9			
2					3	SS	510	9			
				115.07							
		Dense to very dense, grey sand and gravel, some silt, trace clay (GLACIAL TILL)		2.29	4	SS	455	31			
3					5	SS	355	34			
4					6	SS	405	84			
					7	SS	560	58			
5					8	SS	205	57			
				111.42							
6		Dense, grey brown, SAND, some silt and gravel		5.94	9	SS	560	29			
				110.56							
7		End of Borehole Auger Refusal		6.80							
8											
9											
10											

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: + NATURAL ⊕ REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

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Consulting Engineers and Scientists

LOGGED: PS
CHECKED: WAM

RECORD OF BOREHOLE 22-02

CLIENT: Bell & Associates Architecture
PROJECT: Geotechnical Investigation, Proposed Development, 2885 Carp Road, Ottawa
JOB#: 101688.002
LOCATION: See Site Plan, Figure 1

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: May 18 2022

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	NUMBER	TYPE	RECOVERY, mm	BLOWS/0.3m
0	Power Auger, Hollow Stem Auger (108mm OD)	Ground Surface		117.27				
		TOPSOIL		0.10				
		Loose, brown silty sand (FILL MATERIAL)			1	SS	305	7
1		Loose to compact, dark brown, silty sand, some gravel (FILL MATERIAL)		116.36 / 0.91	2	SS	405	11
					3	SS	255	8
2		Compact to very dense, grey sand and gravel, some silt, trace clay (GLACIAL TILL)		114.98 / 2.29	4	SS	100	>50 for 75mm
3					5	SS	205	14
4					6	SS	150	>50 for 100mm
5					7	SS	355	29
					8	SS	205	>50 for 100mm
6		End of Borehole Auger Refusal		111.30 / 5.97				
7								
8								
9								
10								

PENETRATION RESISTANCE (N), BLOWS/0.3m
DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m
SHEAR STRENGTH (Cu), kPA: NATURAL, REMOULDED
WATER CONTENT, %: W_P — W — W_L
10 20 30 40 50 60 70 80 90

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Stickup protective casing
Bentonite seal
Auger cuttings
Bentonite seal
Filter sand
50mm diameter PVC screen

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEV. (m)
22/05/25	2.5 ▽	114.8

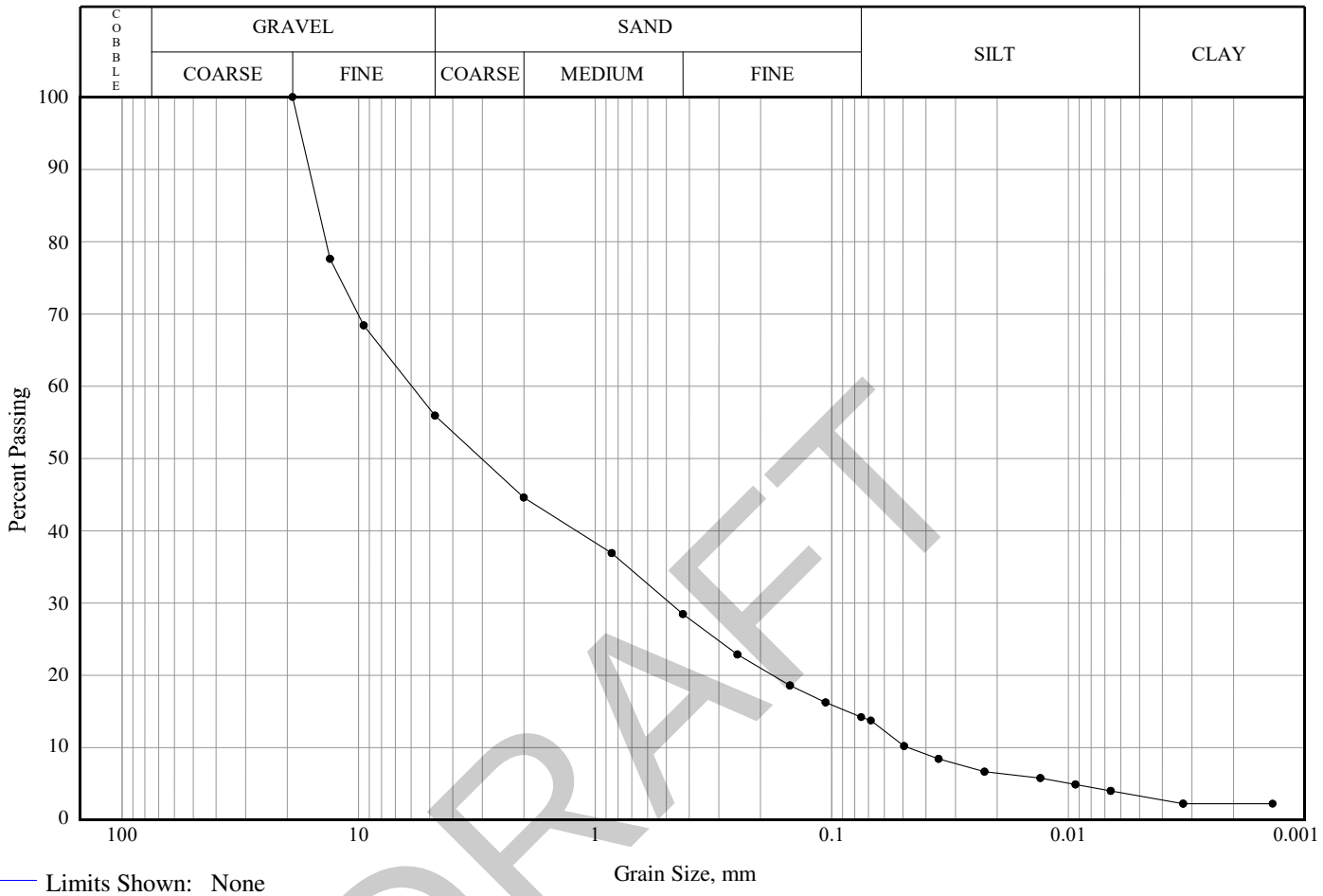
GEMTEC
Consulting Engineers and Scientists

LOGGED: PS
CHECKED: WAM

APPENDIX B

Laboratory Test Results
Soil Grading Chart

GEMTEC Consulting Engineers and Scientists	Client: Bell & Associates Architecture	Soils Grading Chart (LS-702/ ASTM D-422)
	Project: Geotechnical Study / Slope Stability Study Phase One / T	
	Project #: 101688002	



Line Symbol	Sample	Borehole/ Test Pit	Sample Number	Depth	% Cob.+ Gravel	% Sand	% Silt	% Clay
—●—	GLACIAL TILL	22-01	SA 5	3.05-3.66	44.1	41.7	10.9	3.3

Line Symbol	CanFEM Classification	USCS Symbol	D_{10}	D_{15}	D_{30}	D_{50}	D_{60}	D_{85}	% 5-75µm
—●—	Gravel and sand , some silt , trace clay	N/A	0.05	0.09	0.48	3.02	5.96	14.89	10.9

APPENDIX C

Chemical Analysis of Soil Sample
Samples Relating to Corrosion
(Paracel Laboratories Ltd. Order No. 2224088)

Certificate of Analysis

Report Date: 13-Jun-2022

Client: GEMTEC Consulting Engineers and Scientists Limited

Order Date: 6-Jun-2022

Client PO:

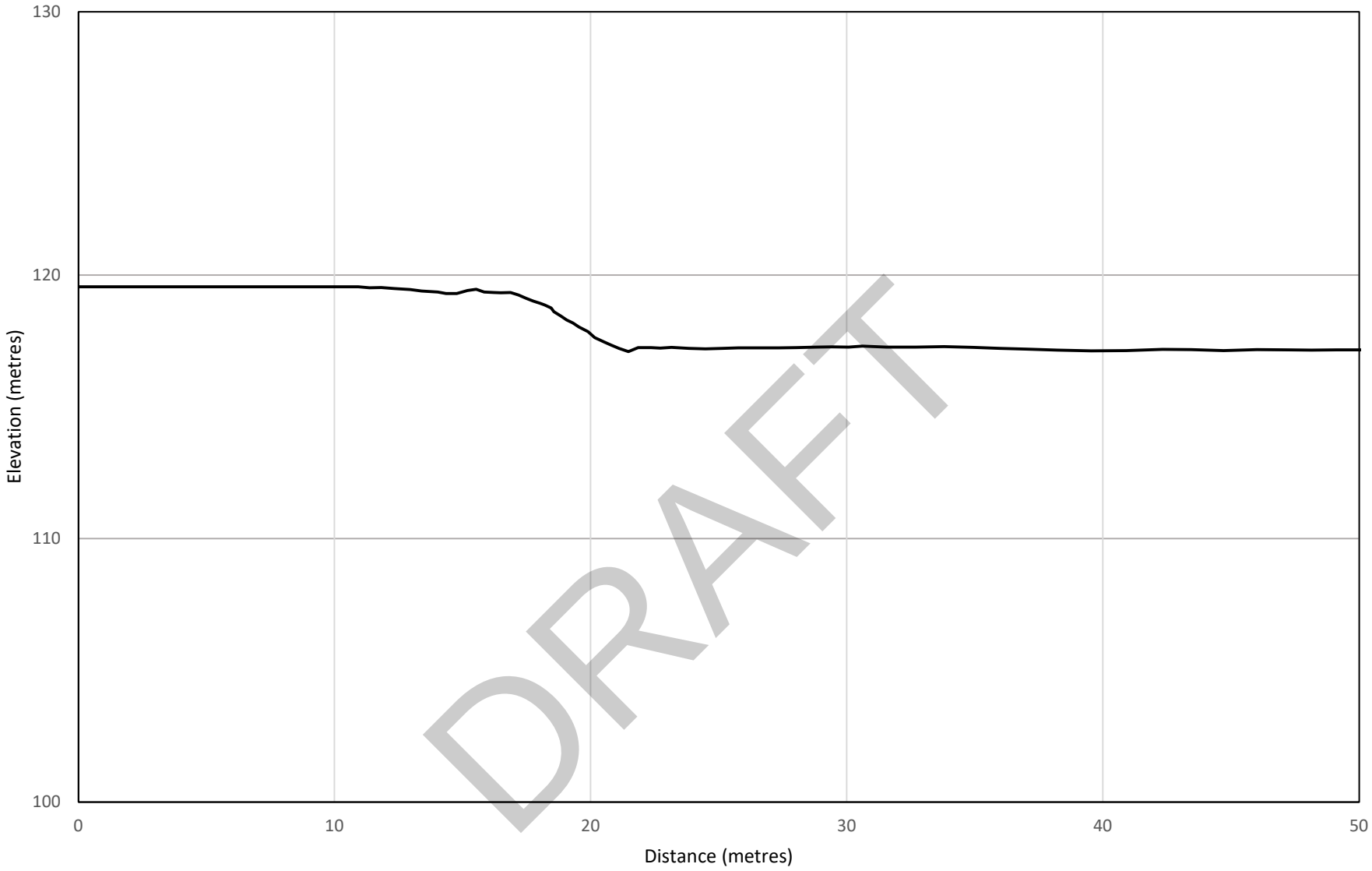
Project Description: 101688.002

	Client ID:	BH22-02 SA3	-	-	-
	Sample Date:	06-Jun-22 13:45	-	-	-
	Sample ID:	2224088-01	-	-	-
	MDL/Units	Soil	-	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	84.3	-	-	-
General Inorganics					
Conductivity	5 uS/cm	998	-	-	-
pH	0.05 pH Units	7.37	-	-	-
Resistivity	0.10 Ohm.m	10.0	-	-	-
Anions					
Chloride	5 ug/g dry	43	-	-	-
Sulphate	5 ug/g dry	889	-	-	-

APPENDIX D

Slope Stability Assessment
Figures D1 to D5

Report to: Bell & Associates Architecture
Project: 101688.002 (August 2, 2022)



GEMTEC
Consulting Engineers and Scientists

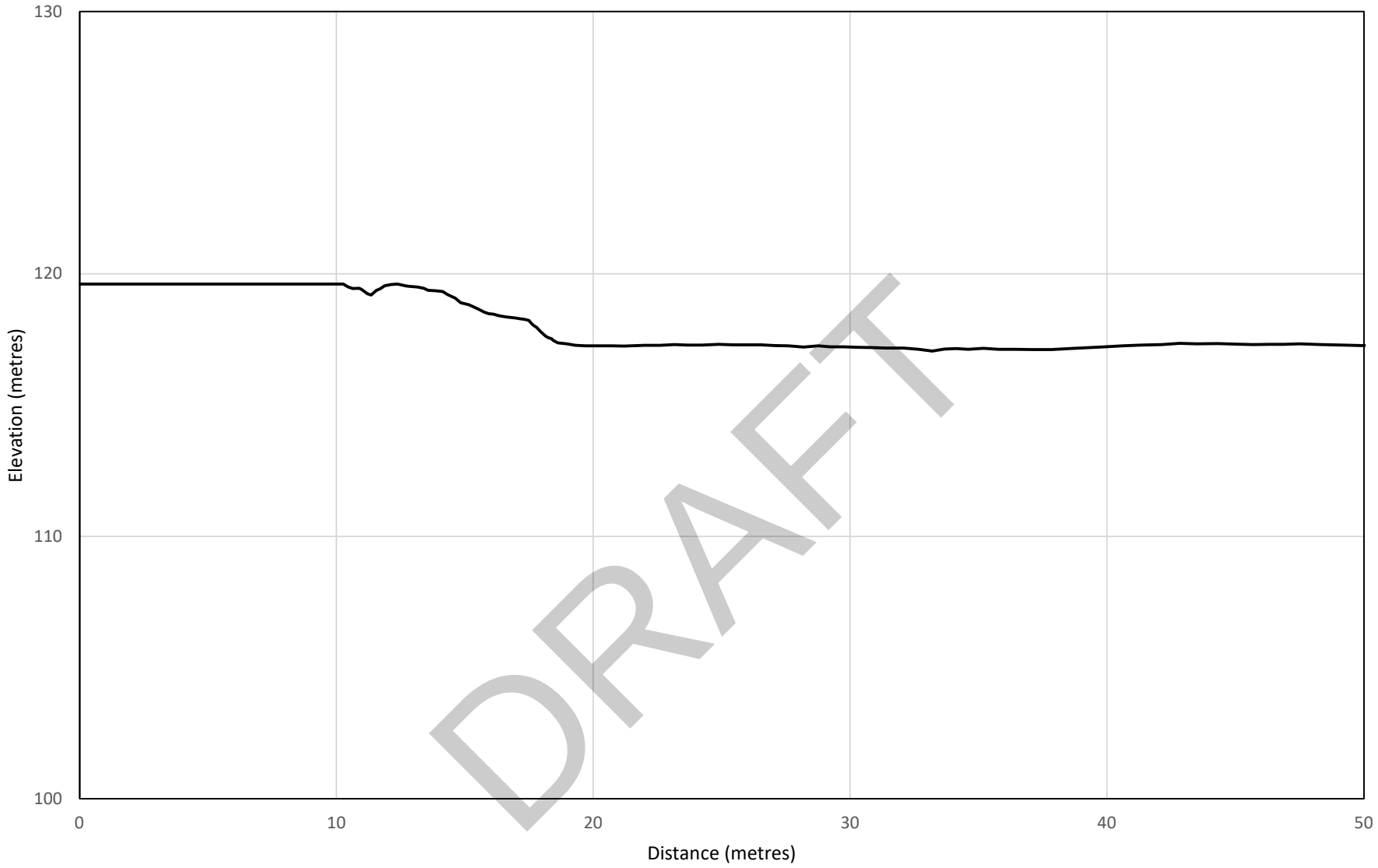
Slope Cross Section AA

2885 Carp Road

Ottawa, Ontario

Project No.	101688.002
Drawn:	WAM
Date:	19/07/2022

Figure D1



GEMTEC
Consulting Engineers and Scientists

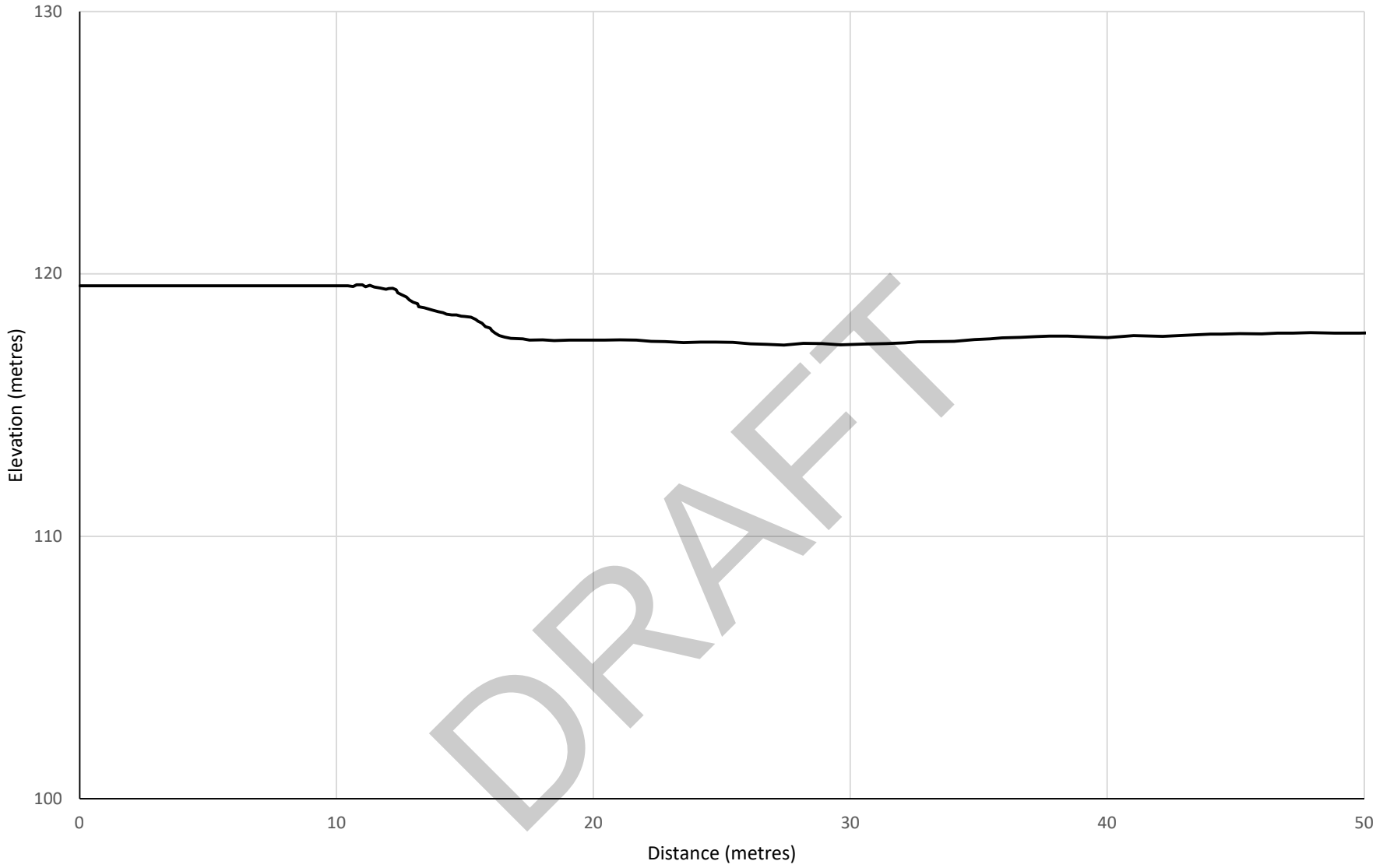
Slope Cross Section BB

2885 Carp Road

Ottawa, Ontario

Project No.	101688.002
Drawn:	WAM
Date:	19/07/2022

Figure D2



GEMTEC
Consulting Engineers and Scientists

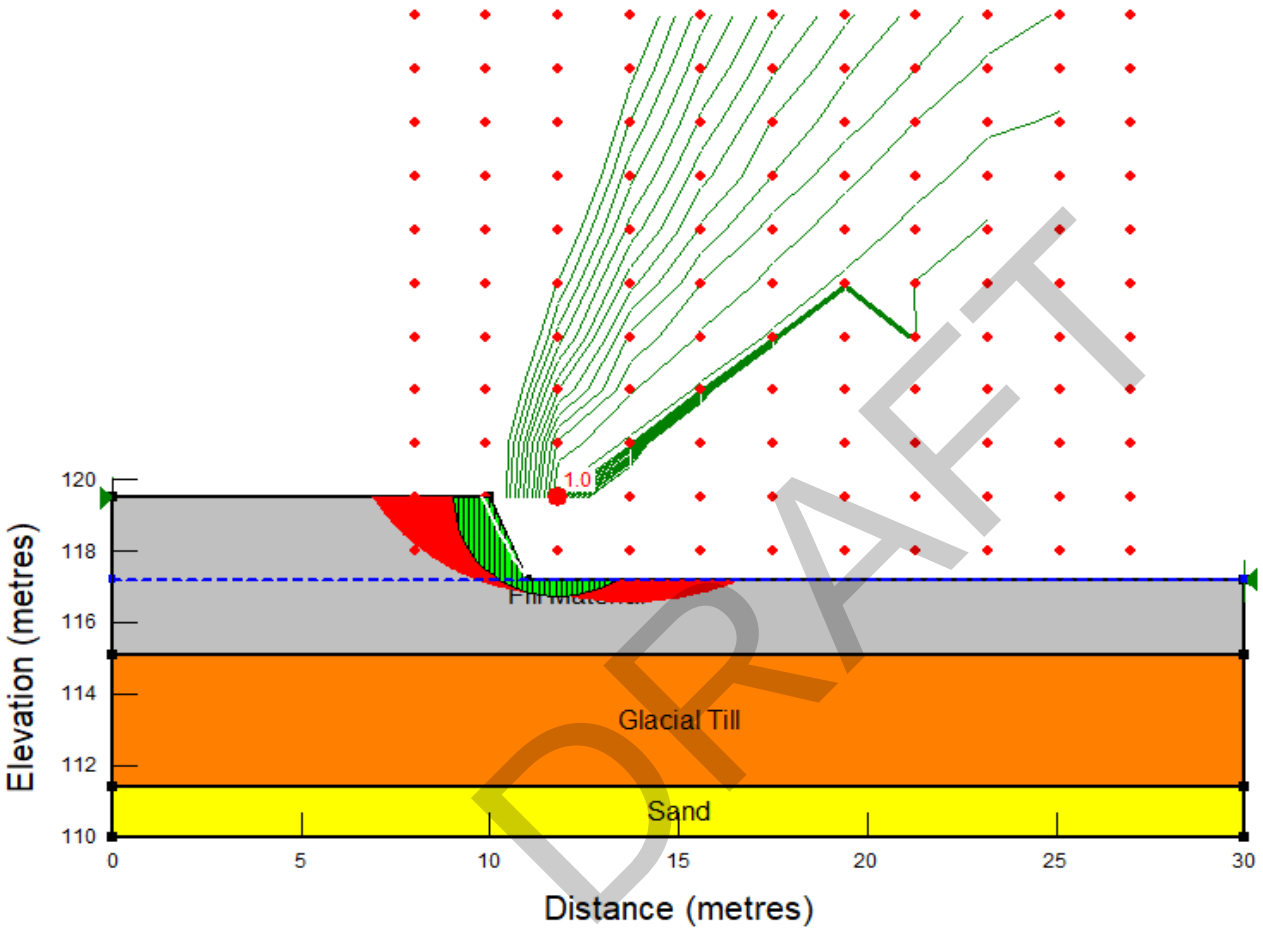
Slope Cross Section CC

2885 Carp Road

Ottawa, Ontario

Project No.	101688.002
Drawn:	WAM
Date:	19/07/2022

Figure D3



Name: Fill Material
Model: Mohr-Coulomb
Unit Weight: 18 kN/m³
Cohesion: 0 kPa
Phi: 32 °
Piezometric Line: 1

Name: Glacial Till
Model: Mohr-Coulomb
Unit Weight: 22 kN/m³
Cohesion: 0 kPa
Phi: 38 °
Piezometric Line: 1

Name: Sand
Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion: 0 kPa
Phi: 32 °
Piezometric Line: 1

GEMTEC
Consulting Engineers and Scientists

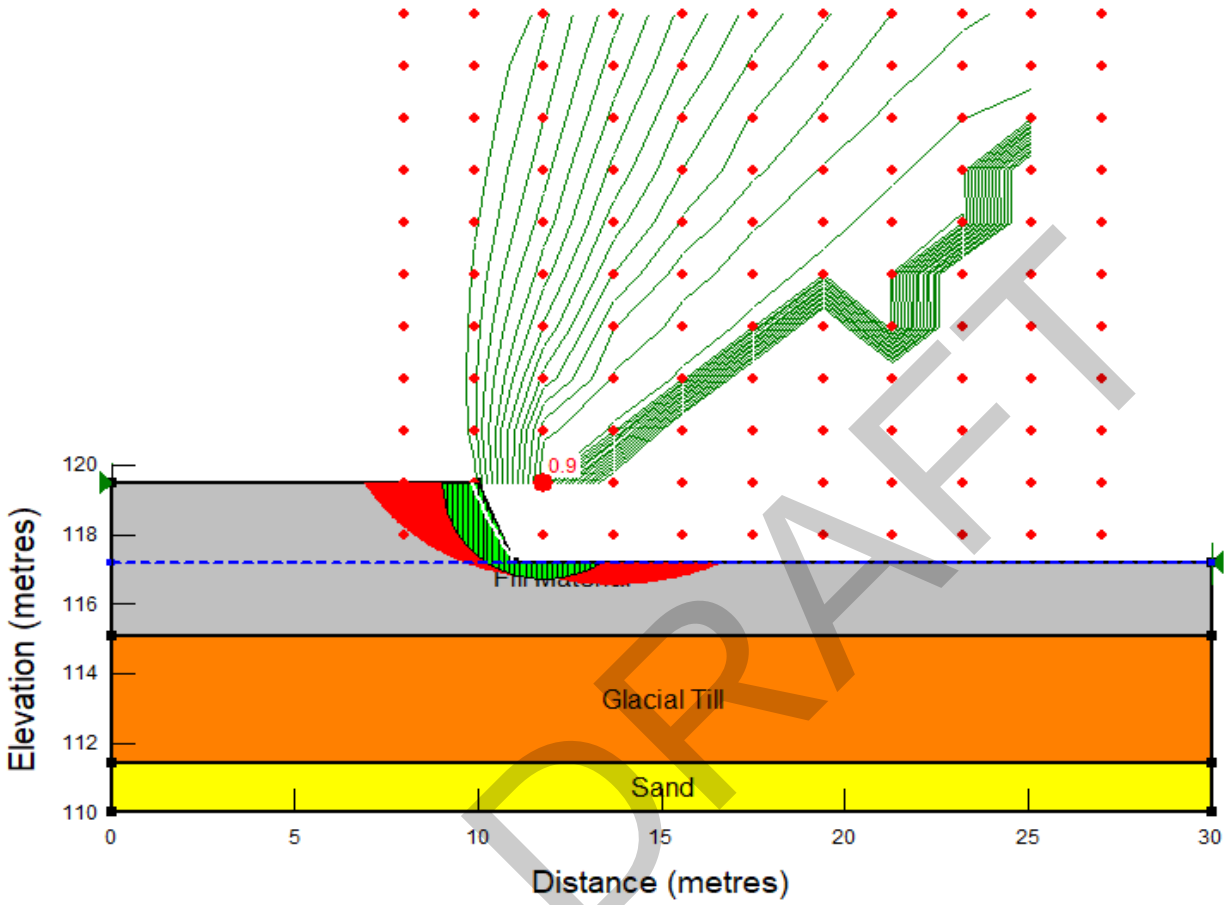
Cross Section AA - Static Analysis

2885 Carp Road

Ottawa, Ontario

Project No.	101688.002
Drawn:	WAM
Date:	19/07/2022

Figure D4



Name: Fill Material
Model: Mohr-Coulomb
Unit Weight: 18 kN/m³
Cohesion: 0 kPa
Phi: 32 °
Piezometric Line: 1

Name: Glacial Till
Model: Mohr-Coulomb
Unit Weight: 22 kN/m³
Cohesion: 0 kPa
Phi: 38 °
Piezometric Line: 1

Name: Sand
Model: Mohr-Coulomb
Unit Weight: 19 kN/m³
Cohesion: 0 kPa
Phi: 32 °
Piezometric Line: 1

Horz Seismic Load: 0.126

GEMTEC
Consulting Engineers and Scientists

Cross Section AA - Seismic Analysis

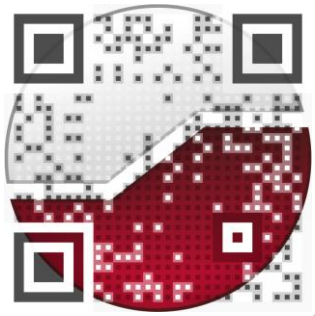
2885 Carp Road

Ottawa, Ontario

Project No.	101688.002
Drawn:	WAM
Date:	19/07/2022

Figure D5

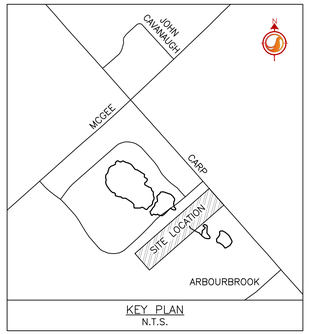
experience • knowledge • integrity



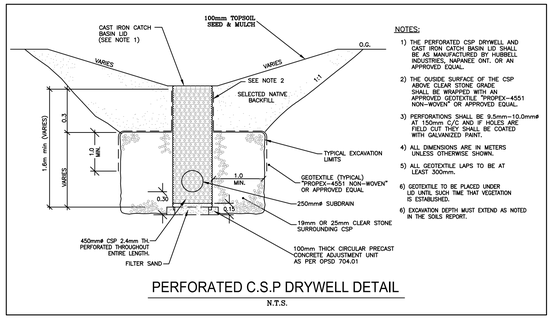
civil	civil
geotechnical	géotechnique
environmental	environnementale
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité

Appendix E Drawings



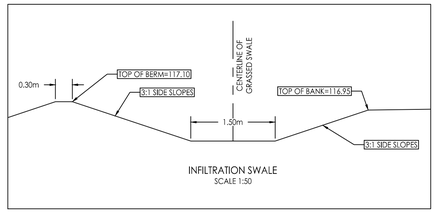
KEY PLAN
N.T.S.



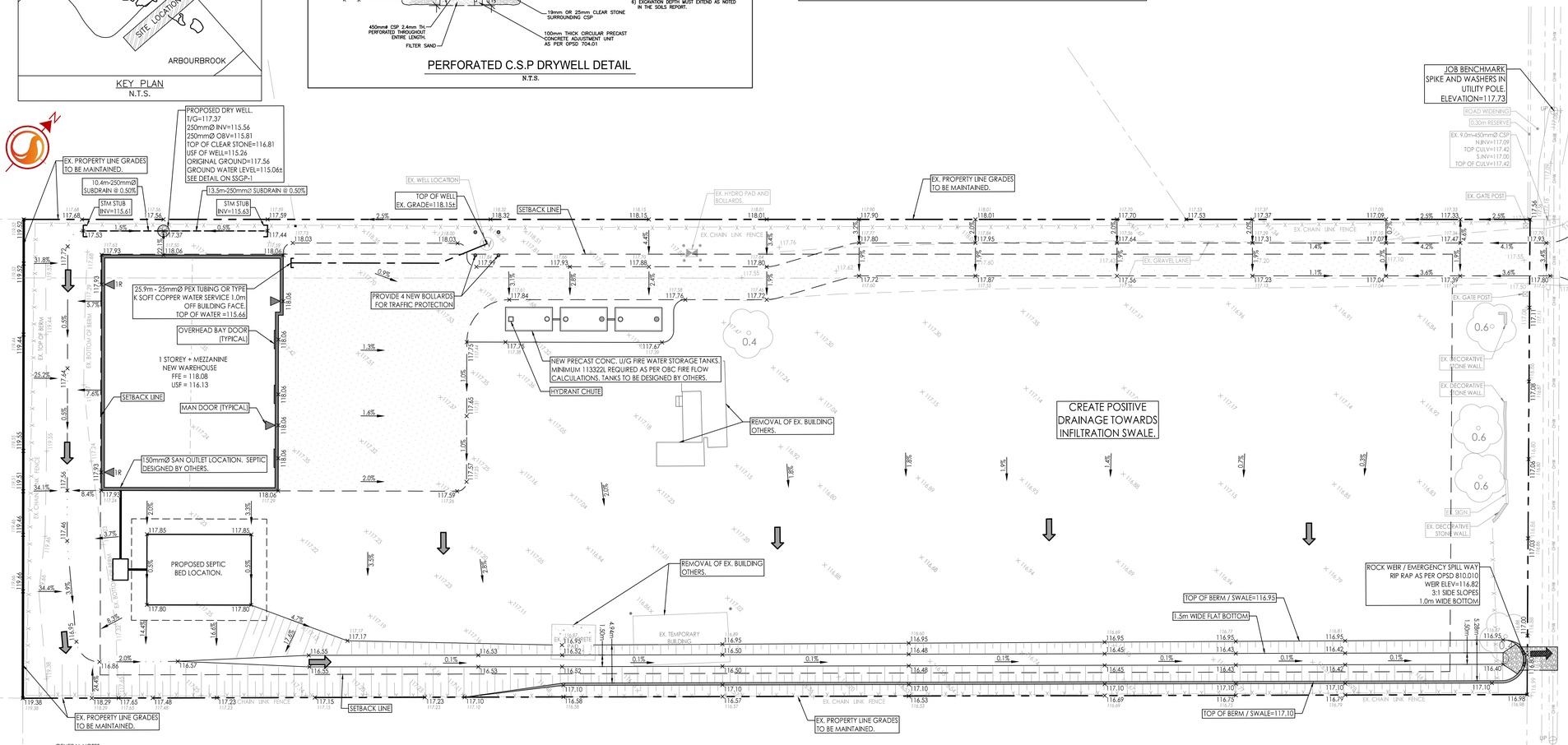
NOTES:

1) THE PERFORATED CSP DRYWELL AND CAST IRON CATCH BASIN LID SHALL BE AS MANUFACTURED BY HUBBELL INDUSTRIES, NAPANEE ONT. OR AN APPROVED EQUAL.
2) THE OUTSIDE SURFACE OF THE CSP SHALL BE CORRUGATE GRADE, SHALL BE WRAPPED WITH AN APPROVED GEOTEXTILE "PROPEX-4551 NON-WOVEN" OR APPROVED EQUAL.
3) PERFORATIONS SHALL BE 9.5mm-10.0mm# AT 150mm C/C AND IF HOLES ARE FIELD CUT THEY SHALL BE COATED WITH GALVANIZED PAINT.
4) ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN.
5) ALL GEOTEXTILE LAPS TO BE AT LEAST 300mm.
6) GEOTEXTILE TO BE PLACED UNDER LID UNTIL SUCH TIME THAT VEGETATION IS ESTABLISHED.
6) EXCAVATION DEPTH MUST EXTEND AS NOTED IN THE SOILS REPORT.

PERFORATED C.S.P DRYWELL DETAIL
N.T.S.



INFILTRATION SWALE
SCALE 1:50



GENERAL NOTES

1. ALL WORK SHALL BE CARRIED OUT IN COMPLIANCE WITH THE ONTARIO OCCUPATIONAL HEALTH AND SAFETY ACT AND REGULATIONS FOR CONSTRUCTION PROJECTS.
2. ALL WORK AND MATERIALS TO CONFORM WITH CURRENT MINISTRY OF THE ENVIRONMENT & ENERGY OF ONTARIO, CITY OF OTTAWA AND ONTARIO PROVINCIAL STANDARDS AND SPECIFICATIONS, LOCAL UTILITY STANDARDS AND MINISTRY OF TRANSPORTATION STANDARDS WILL APPLY WHERE REQUIRED.
3. THE CONTRACTOR IS ADVISED THAT WORKS BY OTHERS MAY BE ONGOING DURING THE PERIOD OF THIS CONTRACT. THE CONTRACTOR SHALL COORDINATE CONSTRUCTION ACTIVITIES AND COORDINATION WITH ALL OTHER CONTRACTORS AND PREVENT CONSTRUCTION CONFLICTS.
4. THE INFORMATION SHOWN FOR EXISTING UTILITIES WAS PROVIDED BY OTHERS. THE CONTRACTOR IS RESPONSIBLE FOR LOCATING AND PROTECTING ALL UTILITIES DURING CONSTRUCTION. ALL EXISTING UTILITIES MUST BE LOCATED AND VERIFIED BY EACH UTILITY PRIOR TO COMMENCEMENT OF WORK. ANY VARIANCE IS TO BE IMMEDIATELY REPORTED TO THE ENGINEER. LOST TIME DUE TO FAILURE OF THE CONTRACTOR TO CONFIRM UTILITY LOCATIONS AND NOTIFY THE ENGINEER OF POSSIBLE CONFLICTS PRIOR TO CONSTRUCTION WILL BE AT THE CONTRACTORS EXPENSE.
5. ALL CONSTRUCTION SHALL BE CARRIED OUT IN ACCORDANCE WITH THE RECOMMENDATIONS MADE BY THE GEOTECHNICAL CONSULTANT, OBC, MUNICIPAL AND PROVINCIAL STANDARDS.
6. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL PERMITS REQUIRED AND TO BEAR THE COST OF SAME INCLUDING WATER PERMIT AND ASSOCIATED COSTS.
7. ALL DISTURBED AREAS SHALL BE REINSTATED TO EQUAL OR BETTER CONDITION TO THE SATISFACTION THE ENGINEER AND THE TOWNSHIP. PAVEMENT REINSTATEMENT FOR SERVICE AND UTILITY CUTS SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STANDARD R10, OPSD 509.010 AND OPSS 310.
8. BENCHMARKS: IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THAT THE SITE BENCHMARK(S) HAS NOT BEEN ALTERED OR DISTURBED AND THAT ITS RELATIVE ELEVATION AND DESCRIPTION AGREES WITH THE INFORMATION SHOWN ON DRAWING SSGP-1.
9. THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER 1 (ONE) SET OF AS CONSTRUCTED SITE SERVICING, GRADING, AND SITE ELECTRICAL DWGS.
10. CONTRACTOR TO LOCATE EXISTING SERVICE LATERALS PRIOR TO CONSTRUCTION. EXISTING STORM AND SANITARY SERVICE LATERALS TO BE ABANDONED PER S11.4. EXISTING WATER SERVICE TO BE BLANKED AT THE MAIN (TYP.)
11. TOPOGRAPHIC SURVEY SUPPLIED BY FAIRHALL MOFFATT AND WOODLAND LTD. JOB No. Z17300. TOPOGRAPHIC SURVEY OF PART OF LOT 9, CONCESSION 3 GEOGRAPHIC TOWNSHIP OF HUNTLEY, CITY OF OTTAWA.
12. SITE PLAN PREPARED BY JIM BELL ARCHITECTURAL DESIGN INC. DATED OCTOBER 14, 2021 DRAWING A.0.
13. GEOTECHNICAL REPORT PREPARED BY GEMTEC, TITLED PROPOSED COMMERCIAL DEVELOPMENT, 2885 CARP ROAD, OTTAWA, ONTARIO.

WATER SUPPLY SERVICING

1. THE CONTRACTOR SHALL CONSTRUCT WATERMAIN, WATER SERVICES, CONNECTIONS & APPURTENANCES AS PER CITY OF OTTAWA SPECIFICATIONS & SHALL CO-ORDINATE AND PAY ALL RELATED COSTS INCLUDING THE COST OF CONNECTION, INSPECTION & DISINFECTION.
2. WATER SERVICE TO BE INSTALLED 1.0m OFF BUILDING FACE.
3. DRILLED POTABLE WATER WELL IS TO BE DESIGNED AND INSTALLED BY LICENSED WELL CONTRACTOR THAT USES LICENSED TECHNICIANS. INSTALLATION OF ON-SITE WELL SHALL BE AS PER ONTARIO BUILDING CODE AND ONTARIO REGULATION 903 UNDER THE WATER RESOURCES ACT.
4. WATERMAIN TRENCH AND BEDDING SHALL BE IN ACCORDANCE WITH CITY OF OTTAWA STD. W17 UNLESS OTHERWISE SPECIFIED. BEDDING AND COVER MATERIAL TO BE SPECIFIED BY PROJECT GEOTECHNICAL CONSULTANT.
5. CATHODIC PROTECTION TO BE SUPPLIED ON METALIC FITTINGS AS PER CITY OF OTTAWA STD. W40 AND W42.
6. ALL WATERMAIN BENDS, JOINTS, TEES AND PLUGS SHALL BE MECHANICALLY RESTRAINED IN ACCORDANCE WITH CITY OF OTTAWA STANDARDS.
7. ALL WATERMAINS SHALL HAVE MIN. COVER OF 2.4m. WATERMAINS ARE TO BE INSTALLED TO THE ELEVATIONS SHOWN ON THE APPROVED SITE SERVICING DRAWING. WHERE SPECIFIC WATERMAIN ELEVATIONS ARE NOT SHOWN ON SERVICING DRAWING, A MINIMUM COVER OF 2.4m FROM PROPOSED GRADES, AS SHOWN ON THE GRADING PLAN, MUST BE MAINTAINED AT ALL TIMES. IN PREGRADE AREAS COVER TO BE FROM PREGRADED ELEVATIONS. WHERE WATERMAIN COVER IS LESS THAN 2.4m, INSULATION TO BE SUPPLIED IN ACCORDANCE WITH CITY OF OTTAWA STD. W22.

SITE GRADING

1. ALL GRANULAR BASE & SUB BASE COURSE MATERIALS SHALL BE COMPACTED AS PER GEOTECHNICAL CONSULTANT RECOMMENDATIONS.
2. ALL DISTURBED GRASSED AREAS SHALL BE RESTORED TO ORIGINAL CONDITION OR BETTER, WITH SOD ON MIN.
3. REFER TO ARCHITECTURAL SITE PLAN FOR DIMENSIONS AND SITE DETAILS.
4. CONTRACTOR TO OBTAIN A ROAD OCCUPANCY PERMIT 48 HOURS PRIOR TO COMMENCING ANY WORK WITHIN THE MUNICIPAL ROAD ALLOWANCE IF REQUIRED BY THE MUNICIPALITY.
5. EMBANKMENTS TO BE SLOPED AT MAX. 3:1, UNLESS OTHERWISE SPECIFIED.
6. ALL NECESSARY CLEARING AND GRUBBING SHALL BE COMPLETED BY THE CONTRACTOR. REVIEW WITH ARCHITECT AND THE TOENSHIP PRIOR TO TREE CUTTING.
7. SUB-EXCAVATE SOFT AREAS & FILL WITH GRANULAR 'B' COMPACTED IN 0.15m LAYERS.
8. NO ALTERATION TO EXISTING GRADES OR DRAINAGE PATTERN ON PROPERTY LINE MAY BE MADE WHERE NO PERMISSION TO ENTER ADJACENT PROPERTY EXISTS.
9. NO EXCESS DRAINAGE. DURING AND AFTER CONSTRUCTION. IS TO BE DIRECTED TOWARDS NEIGHBOURING PROPERTIES.
10. UNDERSIDE-OF-FOOTING TO HAVE MINIMUM COVER OF 1.5m. WHERE SUFFICIENT COVER IS NOT PROVIDED, FOOTINGS ARE TO BE INSULATED TO PROVIDED EQUIVALENT INSULATION.
11. PAVEMENT CONSTRUCTION SHALL BE AS PER GEOTECHNICAL CONSULTANT RECOMMENDATIONS.

Stantec

Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
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Legend

- PROPERTY LINE
- EXISTING GROUND ELEVATION
- EXISTING ROAD SIDE DITCH
- EXISTING OVERHEAD WIRES
- EXISTING UTILITY POLE
- EXISTING CHAIN LINK FENCE
- EXISTING CONCRETE GATE POST
- EXISTING ROAD CENTERLINE
- EXISTING TREE
- EXISTING WELL LOCATION
- EXISTING TRANSFORMER AND BOLLARDS
- EXISTING CULVERT
- PROPOSED WATER SERVICE
- PROPOSED ELEVATION
- PROPOSED LOT CORNER ELEVATION / EXISTING ELEVATION AT LOT CORNER
- FLOW DIRECTION AND GRADE
- FFE=100.00 FINISHED FIRST FLOOR ELEVATION
- USF=97.00 UNDERSIDE OF FOOTING ELEVATION
- E.F. ENGINEERED FILL REQUIRED
- 3:1 TERRACING 3:1 SLOPE MAXIMUM (UNLESS OTHERWISE SHOWN)
- DIRECTION OF OVERLAND FLOW
- PROPOSED GRAVEL ACCESS

0	ISSUED FOR SPA	MJS	NC	22.12.02
	Revision	By	Appd.	YY.MM.DD

File Name: 160401724 DB		MJS	NC	MJS	22.11.09
		Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

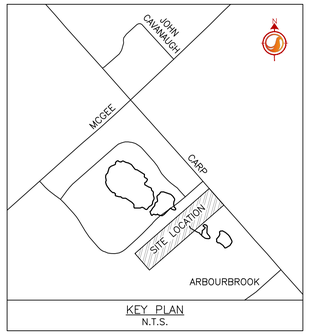
LICENSED PROFESSIONAL ENGINEER
2022-12-05
N. P. CODY
100125430
PROVINCE OF ONTARIO

Client/Project
HQ MANAGEMENT GROUP

2885 CARP ROAD
NEW WAREHOUSE BUILDING
OTTAWA, ON, CANADA

Title
SITE SERVCING AND GRADING PLAN

Project No.	Scale	Drawing No.	Sheet	Revision
160401724	1:300	SSGP-1	1 of 3	0



KEY PLAN
N.T.S.

PROPOSED DRY WELL
T/G=117.37
250mmØ INV=115.56
250mmØ OBV=115.81
TOP OF CLEAR STONE=116.81
USF OF WELL=115.26
ORIGINAL GROUND=117.56
GROUND WATER LEVEL=115.06±
SEE DETAIL ON SSGP-1

10.4m-250mmØ SUBDRAIN @ 0.50%
STM STUB INV=115.61
13.5m-250mmØ SUBDRAIN @ 0.50%
STM STUB INV=115.63

EX. EXTERNAL AREA = 0.43ha

EX. WELL LOCATION

EX. HYDRO PAD AND BOLLARDS.

DRY WELL
0.01 | 0.20

EX. CHAIN LINK FENCE

EX. GRAVEL LANE

EX. EXTERNAL AREA = 0.06ha

EX. CHAIN LINK FENCE

EX. TOP OF BERM

EX. BOTTOM OF BERM

1 STOREY + MEZZANINE
NEW WAREHOUSE
FFE = 118.08
USF = 116.13

150mmØ SAN OUTLET LOCATION. SEPTIC DESIGNED BY OTHERS.

PROPOSED SEPTIC BED LOCATION.

0.4

SWALE
1.17 | 0.32

JOB BENCHMARK
SPIKE AND WASHERS IN UTILITY POLE.
ELEVATION=117.73

ROAD WIDENING

0.30m RESERVE

EX. 9.0m-450mmØ CSP
N.INV=117.09
TOP CULV=117.42
S.INV=117.00
TOP OF CULV=117.42

EX. GATE POST

EX. GRAVEL SHOULDER

EX. EDGE OF PAVEMENT

EX. CENTERLINE OF ASPHALT

0.6

EX. DECORATIVE STONE WALL

EX. SIGN

ROCK WEIR / EMERGENCY SPILL WAY
RIP RAP AS PER OPSD 810.010
WEIR ELEV=116.82
3:1 SIDE SLOPES
1.0m WIDE BOTTOM

PONDING ELEV=116.95
VOLUME=251.5m³
MAX DEPTH=0.55m

TOP OF BERM / SWALE=116.95

1.5m WIDE FLAT BOTTOM

4.9m

1.50m

5.9m

1.50m

TOP OF BERM / SWALE=117.10

UNC-1
0.02 | 0.20

APPROXIMATE LOCATION OF EX. ROAD SIDE DITCH

UP

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ORIGINAL SHEET - ARCH D

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400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

Legend

L101A
1.00 | 0.85
AREA ID
RUNOFF COEFFICIENT
STORM DRAINAGE AREA ha.
STORM DRAINAGE BOUNDARY

EXT-1
1.00 | 0.50
AREA ID
EXTERNAL RUNOFF COEFFICIENT
EXTERNAL STORM DRAINAGE AREA ha.
EXTERNAL STORM DRAINAGE BOUNDARY
DIRECTION OF OVERLAND FLOW
DIRECTION OF EMERGENCY OVERLAND FLOW
MAXIMUM STATIC PONDING LIMITS

Notes

0	ISSUED FOR SPA	MJS	NC	22.12.02
Revision		By	Appd.	YY.MM.DD

File Name: 160401724 DB	MJS	NC	MJS	22.11.09
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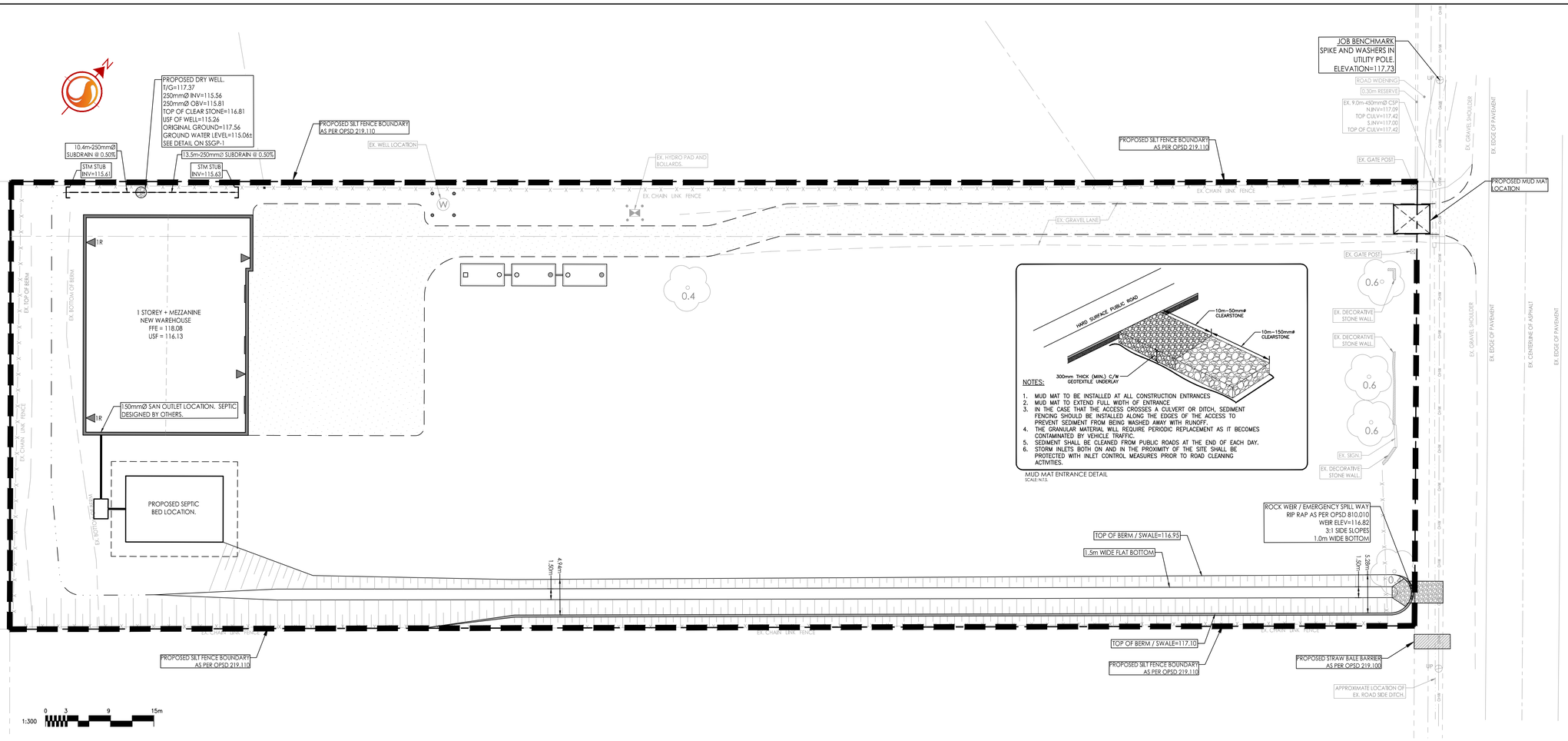
100125430
PROVINCE OF ONTARIO

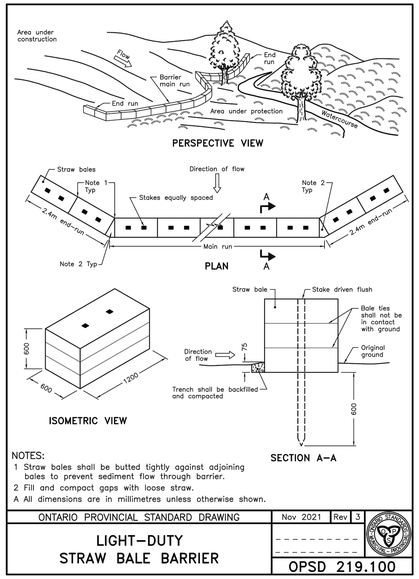
Client/Project
HQ MANAGEMENT GROUP

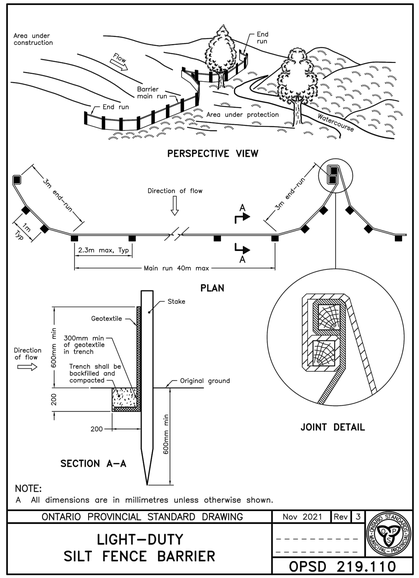
2885 CARP ROAD
NEW WAREHOUSE BUILDING
OTTAWA, ON, CANADA

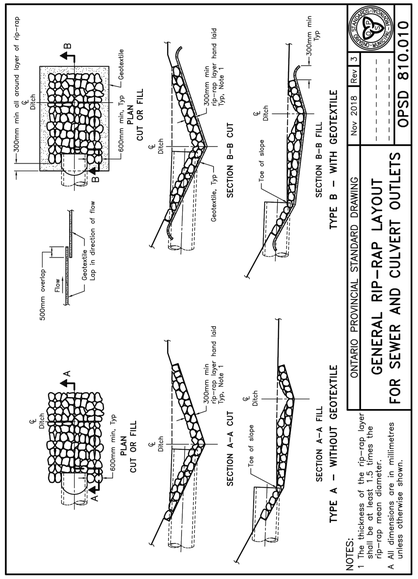
Title
STORM DRAINAGE PLAN

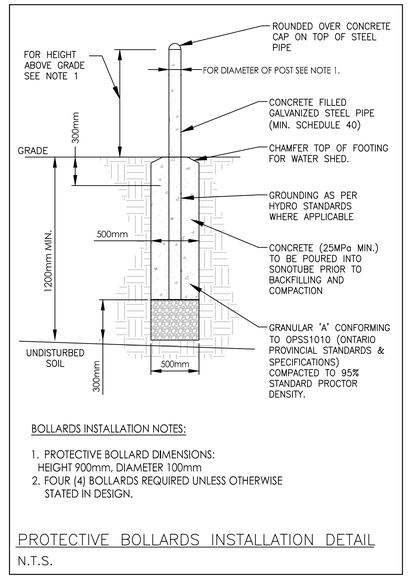
Project No. 160401724
Scale 1:300 (0 3 9 15m)
Drawing No. SD-1
Sheet 2 of 3
Revision 0











BOLLARDS INSTALLATION NOTES:

1. PROTECTIVE BOLLARD DIMENSIONS:
   HEIGHT 900mm, DIAMETER 100mm
2. FOUR (4) BOLLARDS REQUIRED UNLESS OTHERWISE STATED IN DESIGN.

PROTECTIVE BOLLARDS INSTALLATION DETAIL

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Legend

- PROPOSED SILT FENCE BOUNDARY AS PER OPSD 219.110
- PROPOSED MUD MAT LOCATION
- PROPOSED STRAW BALE LOCATIONS

Best Management Practices

CONTRACTOR TO PROVIDE EROSION AND SEDIMENT CONTROLS (BEST MANAGEMENT PRACTICES) DURING CONSTRUCTION OF THIS PROJECT.

EROSION MUST BE MINIMIZED AND SEDIMENTS MUST BE REMOVED FROM CONSTRUCTION SITE RUN-OFF IN ORDER TO PROTECT DOWNSTREAM AREAS. DURING ALL CONSTRUCTION, EROSION AND SEDIMENTATION SHOULD BE CONTROLLED BY THE FOLLOWING TECHNIQUES:

1. LIMIT THE EXTENT OF EXPOSED SOILS AT ANY GIVEN TIME.
2. REVEGETATE EXPOSED AREAS AND SLOPES AS SOON AS POSSIBLE.
3. MINIMIZE AREA TO BE CLEARED AND GRUBBED.
4. PROTECT EXPOSED SLOPES WITH PLASTIC OR SYNTHETIC MULCHES.
5. INSTALL CATCH BASIN INSERTS OR EQUIVALENT IN ALL PROPOSED CATCH BASINS AND CATCH BASIN MANHOLES AND IN ALL EXISTING CATCH BASINS THAT WILL RECEIVE RUN-OFF FROM THE SITE.
6. A SILT FENCE SHALL BE INSTALLED AROUND THE PERIMETER OF ALL AND ANY STOCKPILES OF MATERIAL TO BE USED OR REMOVED FROM SITE. (LOCATION TO BE DETERMINED)
7. A VISUAL INSPECTION SHALL BE DONE DAILY ON SEDIMENT CONTROL MEASURES AND CLEANED OF ANY ACCUMULATED SILT AS REQUIRED. THE DEPOSITS WILL BE DISPOSED OFF SITE AS PER THE REQUIREMENTS OF THE CONTRACT.
8. SEDIMENT CONTROL BARRIERS MAY ONLY BE REMOVED TEMPORARILY WITH APPROVAL OF CONTRACT ADMINISTRATOR TO ACCOMMODATE CONSTRUCTION OPERATIONS. ALL AFFECTED BARRIERS MUST BE REINSTATED AT NIGHT WHEN CONSTRUCTION IS COMPLETED. NO REMOVAL WILL OCCUR IF THERE IS A SIGNIFICANT RAINFALL EVENT ANTICIPATED (>10mm) UNLESS A NEW DEVICE HAS BEEN INSTALLED TO PROTECT EXISTING STORM AND SANITARY SEWER SYSTEMS, OR DOWNSTREAM WATERCOURSES.
9. NO REFUELING OR CLEANING OF EQUIPMENT IS PERMITTED NEAR ANY EXISTING WATERWAY.
10. CONTRACTOR SHALL REMOVE SEDIMENT CONTROL MEASURES WHEN, IN THE OPINION OF THE CONTRACT ADMINISTRATOR, THE MEASURE(S) IS NO LONGER REQUIRED. NO CONTROL MEASURES SHALL BE PERMANENTLEY REMOVED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE CONTRACT ADMINISTRATOR.
11. THE CONTRACTOR SHALL PERIODICALLY, OR WHEN REQUESTED BY THE CONTRACT ADMINISTRATOR, CLEAN OUT ACCUMULATED SEDIMENTS AS REQUIRED.
12. THE CONTRACTOR SHALL IMMEDIATELY REPORT TO THE ENGINEER ANY ACCIDENTAL DISCHARGES OF SEDIMENT MATERIAL INTO THE WATERCOURSE. APPROPRIATE RESPONSE MEASURES, INCLUDING ANY REPAIRS TO EXISTING CONTROL MEASURES OR THE IMPLEMENTATION OF ADDITIONAL CONTROL MEASURES, SHALL BE CARRIED OUT BY THE CONTRACTOR WITHOUT DELAY.
13. CONTRACTOR SHALL INSTALL MUD MATS AT BOTH ENTRANCES TO THE SITE.
14. STORMWATER SWALES TO BE COVERED WITH HYDRO-SEED AND MULCH.

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OTTAWA, ON, CANADA

Title
EROSION CONTROL PLAN AND DETAILS SHEET

Project No.	Scale	
160401724		
Drawing No.	Sheet	Revision
EC/DS-1	3 of 3	0