

**FOUNDATION INVESTIGATION AND DESIGN
REPORT
HIGH MAST LIGHTING POLES
HIGHWAY 401 REHABILITATION
RENFORTH DRIVE TO HIGHWAY 427
MTO Central Region
G.W.P. 47-99-00**

Prepared for

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INTRODUCTION

This report presents the results of a geotechnical foundation study that was completed by DST Consulting Engineers (DST) in relation to the construction of proposed High Mast Lighting Poles along Highway 401 between Renforth Drive and Highway 427. The purpose of this study was to establish the prevalent soil and groundwater conditions within the project limits and, based on that information, provide pertinent geotechnical design recommendations for the High Mast Lighting poles.

In accordance with MTO standards for this type of project, this report has been prepared in two distinct sections, i.e., Part A – Foundation Investigation Report and Part B – Foundation Design Report. Part A addresses the factual data aspects of the project whereas Part B addresses the design aspects of the project.

This report is subject to the attached Statement of Limitations of Appendix A.

PART A – FOUNDATION INVESTIGATION REPORT

1.0 SITE DESCRIPTION

The proposed High Mast Lighting (HML) Poles will be installed along Highway 401 between Renforth Drive and Highway 427. More specifically, the HML's will be constructed at various locations within the Highway 401/Highway 427 basket-weave interchange which extends from just west of Renforth Drive to just east of Highway 27.

The topography within the interchange area is dominated by a series of approach embankments and earth cuts associated with the many overpass and underpass structures that are present within the Highway 401 and 427 Interchange. Overall, the terrain with the intersection slopes from west to east and north to south. Drainage through the interchange is dominated by the north south flowing Mimico Creek which passes through the site in a man-made channel a short distance to the east of Highway 27.

The area surrounding the Highway 401/427 interchange is totally developed by a series of commercial and industrial developments.

2.0 INVESTIGATION METHODOLOGY AND RESULTS

The investigation aspects of this study consisted of the following:

1. Compilation of sub-surface information for the general site area as available from within the “Geocres” databank system of the MTO’s Foundation Design Section.
2. Cross-referencing of the data obtained during 1) relative to the proposed HML pole locations, leading to the identification of those most relevant to the present study.
3. Reproduction of the relevant boreholes using present day borehole presentation software to produce a series of legible and consistent looking borehole logs. This included converting the northings, eastings and elevations of the original logs into the present day systems.

This exercise resulted in a total of 48 boreholes (BHC1 though BH C48) being identified as relevant to the proposed works. The location of these boreholes is shown on the attached Borehole Locations Plan, with borehole logs presented in the attached Appendix B. For completeness, Table 1 presents details on the origin of the compiled boreholes relative to their original borehole designation and file number within the MTO’s “geocres” databank system. The prefix C has been added to the borehole numbers of this report to reflect their “compiled” nature and to help avoid confusion with the original borehole numbers. As indicated in Table 1, the boreholes reproduced within this report were all drilled in 1966 and 1967.

Laboratory water content data, plasticity data and grain size data as presented on the original borehole logs has been included on the reproduced borehole logs of Appendix B. However, complete grain size distribution curves as presented as part of the original studies are not reproduced within.

Borehole location data as presented on the reproduced borehole logs of Appendix B and on the Borehole Locations Plan are relevant to the NAD83 system and were obtained based on the assumption the original imperial co-ordinates shown on the logs were based on the NAD23 system. Geodetic elevation data as presented on the logs was determined by straight conversion of the imperial elevation data presented on the original borehole logs. Through discussion with the survey department of Marshall Macklin Monaghan it is understood that this approach may result in the elevations being in error by between 0.1 and 0.2m, which is considered insignificant to the present study.

3.0 SUBSURFACE CONDITIONS

3.1 General

Based on the soil conditions encountered within the boreholes, the original soil profile within the project limits consists of a thin surficial layer of topsoil overlying an extensive layer of clayey silt to sandy silt till that typically extends to the top of the underlying shale bedrock. However, discontinuous layers/pockets of cohesionless sand and gravelly sand are present at many locations within the till. The total thickness of overburden deposits increase from about 5 to 8 m in the vicinity of Renforth Drive to a depth in excess of 15 m to the east of Highway 27. In association with the increasing thickness of overburden deposits, the elevation to the underlying shale bedrock decreases from about elevation 150 m in the vicinity of Renforth Drive to below elevation 130 m to the east of Highway 27. Surficial deposits of fill material associated with the construction of the various embankments that are present within the project limits are also expected, although data relating to the type, consistency and extent of these deposits was not obtained as part of this study. Reported groundwater levels within the various boreholes across the site indicates that the original water table was located at quite shallow depth.

A more in depth discussion on each of the various soil materials identified above is presented in Section 3.2 with an assessment of groundwater conditions presented in Section 3.3. However, for specific information the reader should consult the attached Borehole logs of Appendix B. It should also be noted that the discussion presented within is based on borehole data that dates back to 1966 and 1967. While the sub-surface conditions at depth are not expected to have changed significantly, the conditions within the upper 3 m may vary substantially as a result of construction and landscaping activities that have been undertaken since that time.

3.2 Subsurface Profile

3.2.1 Fill

While surficial **fill materials** are only reported within two (2) of the boreholes presented within (BH C6 and C21), these types of materials are known to exist throughout the interchange area as part of the many embankments that are present. While not confirmed, it would be expected that the fill would primarily consist of local earth fill similar to that encountered within BH C6 and C21. However, some fill sections constructed with shale bedrock could also be present.

3.2.2 Topsoil

A layer of topsoil varying between 200 and 300 mm was encountered at surface at the location of most of the Boreholes presented in Appendix B. However, it is expected that these depths will have changed as a part of subsequent construction and landscaping activities within the Highway 401/Highway 427 interchange area.

3.2.3 Clayey Silt\Sandy Silt Till

This material represents the dominant overburden layer across the site as evidenced by its presence in every borehole log presented in Appendix B either immediately below the surficial topsoil layer or inter-bedded with interglacial sand deposits. In many instances this material extends uninterrupted to the top of the underlying shale bedrock. The total thickness of overburden till deposits, including the inter-bedded sand layers, varies from about 6 to 8 m in the vicinity of Renforth Drive to greater than 15 m to the east of Highway 27. There is also some evidence to suggest that the total thickness of overburden deposits increases along Highway 27 from north to south.

Texturally, the till material appears to consist of a combination of slightly cohesive clayey silt and more non-plastic sandy silt materials. Traces of gravel and occasional cobbles and boulders are also noted within the till, which is consistent with the glacial origin of this material. The results of 20 grain size distribution analyses on the clayey silt fraction of the deposit as presented on the attached borehole logs reveal the following:

Gravel	Average Content	7 % (range 0 to 18%)
Sand	Average Content	33 % (range 12 to 50 %)
Silt	Average Content	42 % (range 5 to 57 %)
Clay	Average Content	24 % (range 8 to 24 %)

Similarly, the results of 16 grain size distribution analyses for the sandy silt fraction as presented on the attached borehole logs reveal the following:

Gravel	Average Content	12 % (range 0 to 35%)
Sand	Average Content	33 % (range 6 to 75 %)
Silt	Average Content	48 % (range 5 to 93 %)
Clay	Average Content	7 % (range 0 to 16 %)

Atterberg plasticity results completed on clayey silt fraction indicate that the material is of low plasticity, with in-situ water contents that are typically below the plastic limit of the soil.

SPT 'N' values reported on the logs are typically in excess of 30 and most often well in excess of 50, indicating that the plastic clayey silt portion has a hard consistency with the more cohesionless sandy silt material being considered dense to very dense. However, at a few locations, some lower values were recorded in the uppermost 2 to 3 m, suggesting that stiff to very stiff conditions occasionally exist near the surface.

3.2.4 Interglacial Sand and Gravel

This refers to apparently discontinuous layers/pockets of cohesionless sand and gravelly sand mixtures that were frequently encountered either above, within or below the dominant glacial till materials. The maximum confirmed thickness of these materials within the boreholes of Appendix B is 4.4 m at BH C13 although typically, these deposits are present as layers between about 2 to 3 m in thickness. However, thin lenses of similar material are also noted at many other locations within the till unit.

Texturally, the material is quite variable and varies from silty sand through to sand with a trace of silt to gravelly sand materials. The results of 16 grain size distribution analyses as reported on the attached borehole logs from samples of these materials indicate the following:

Gravel	Average Content	21% (range 0 to 68 %)
Sand	Average Content	54 % (range 30 to 87 %)
Silt	Average Content	25% (range 1 to 67 %)

SPT 'N' values within this layer are typically well in excess of 30, with most values being greater than 50. Accordingly, this material is described as having a dense to very dense degree of compactness. However, at a few locations, some lower values were recorded in the uppermost 2 m, suggesting that some compact conditions occasionally exist near the surface.

3.2.5 Shale Bedrock

Shale bedrock of the Georgian Bay formation was confirmed to be present below the clayey silt till and/or interglacial sand deposits within 17 of the 48 borehole logs presented in Appendix C and is expected to underlie the entire site. Overall, the depth to the top of the shale varies from a low of 4.9 m at BH C28 to greater than 17 m at BH C38. However, in general terms the borehole data suggests that the top of the shale is in the order of 6 to 8 m deep in the vicinity of Renforth Drive, increasing to greater than 15 m to the east of Highway 27 and to even greater depths to the south of Eglinton Avenue along Highway 427. In terms of elevation, the shale appears to be present at about elevation 150 m in the vicinity of Renforth Drive decreasing towards the east to about elevation 135 m east of Highway 27 to the north of Eglinton Avenue and to below elevation 130 m to the south Eglinton Avenue along Highway 427.

The borehole data suggests that the upper portion of the shale is weathered which gives way to more sound material at depth. Available data tends to suggest that the unconfined compressive strength of the intact shale of the Georgian Bay Formation is typically quite strong at between about 15 to 25 MPa. However, this formation is known to contain many sub-layers of dolomite and/or limestone, which can be considerably stronger with unconfined compressive strengths that are often in excess of 100 MPa. Typically, these layers are in the order of 100 to 200 mm thick although thicker layers up to about 400 mm are often present.

3.3 Groundwater

The reported groundwater level within the boreholes upon completion of drilling and about 2 weeks after completion of drilling, indicate that stabilized water table at the site was originally quite high, i.e., about 1 to 2 m below ground surface. However, it should be noted that these measurements are relatively short term and may vary seasonally. It is also possible that the groundwater level within the interchange area may have been lowered since the late 60's in response to the many earth cuts that are present.

PART B – FOUNDATION DESIGN REPORT

4.0 ENGINEERING DISCUSSIONS AND RECOMMENDATIONS

4.1 General

A total of 35 HML poles (P1 through P35) are proposed within the project limits as noted on the attached drawings of Appendix C as prepared by Marshall Macklin Monaghan. Based on the soil conditions encountered within the attached borehole logs of Appendix B, the soils at the site are considered suitable for design and construction of the proposed HML's using conventional large diameter caissons as per the recommendations provided in Section 4.2.

Please note that the information provided within the following sections is intended for the sole use of the designer's of the project. Contractors bidding on the work should make their own assessment of the factual data as to how it will impact their selection of construction equipment, methodology, production and the like. It should be further noted that the soil and groundwater conditions presented in this report were based on historical borehole data from 1966 and 1967. Therefore, in addition to expected ground changes between borehole locations, some local changes should also be expected as a result of construction and landscaping works that has been completed at the site since that time.

4.2 Foundation Recommendations

As input to the design of the large diameter caissons for support of the HML's in accordance with Brom's method as detailed in the Ministry of Transportation's document entitled "Procedures for the Design of High Mast Pole Foundations" dated June 1994, the attached Table 2 provides a summary of the recommended design stratigraphy for each HML location together with appropriate unfactored geotechnical design parameters. Table 1 also provides a recommended water table depth for each caisson and a reference to which borehole (s) is considered most relevant to that HML. Please note that as input to the above referenced design guide for High Mast Poles, the Unconfined Compressive Strength (q_u) as referenced in the design guide is equal to two times the recommended Undrained Shear Strengths (C_u) of Table 1.

Notwithstanding the recommendations presented in Table 2, lateral resistance should be ignored for soils located within the anticipated depth of frost penetration of 1.2 m or, for caissons located within existing cut or fill sections, the greater of either the frost penetration depth or the depth of soil located above the intersection of an imaginary line rising at 45 degrees from the edge of the caisson at a level equal to that of the base of cut (or fill) and an imaginary line inclined at 1 vertical to 2 horizontal rising from the toe of the cut (or fill).

Caisson excavations using conventional augering techniques should be possible, with the many of the caissons expected to be completed entirely through the clayey silt/sandy silt till and underlying shale bedrock, both of which are expected to remain stable in an uncased condition. However, localized sloughing of the sides of the caissons should be expected when excavating through the interglacial sand layers that are frequently present, especially if they are located below the water table. Under this latter condition, installation of an outer steel casing may be required to maintain an open excavation. Excavation works within the till deposits are also expected to experience occasional difficulties due to the presence of boulders and similarly, excavation difficulties may occur within the shale bedrock if thick stronger layers (greater than 200 mm) of limestone or dolomite or other cemented materials are encountered.

All manned entry into the proposed caissons must be in accordance with the latest edition of the Ontario Health and Safety Guidelines for Construction Projects. In this regard, the Occupational Health and Safety Act recognizes four (4) broad classifications of soils, which are summarized below.

TYPE 1 SOIL

- a. is hard, solid, only able to be penetrated by a small sharp object with difficulty;
- b. can only be excavated by mechanical equipment;
- c. shows no sign of visible cracks after excavation;
- d. exhibits a dry, shiny appearance after excavation; and
- e. possesses a low moisture content and a high degree of internal strength.

TYPE 2 SOIL

- a. cracks or crumbles;
- b. can be penetrated by small sharp objects easily;
- c. can be excavated by hand tools with moderate difficulty;
- d. exhibits signs of surface cracking;
- e. exhibits a damp appearance after excavation; and
- f. possesses a low to medium moisture content and a medium degree of internal strength.

TYPE 3 SOIL

- a. is loose, soft, sandy, or previously excavated;
- b. can be excavated with hand tools easily;
- c. will run easily into a well defined conical pile if dry;
- d. will flow or shift unless supported if wet; and
- e. possesses a low degree of internal strength.

TYPE 4 SOIL

- a. is wet or muddy;
- b. will run easily or flow unless completely supported immediately after excavation;
- c. exerts substantial fluid pressure upon its supporting system; and
- d. possesses almost no internal strength.

The dominant clayey silt till soils at the site may be considered as Type 1 Soil, with the interglacial sand deposit considered to Type 4 Soil unless they are either located above the water table or dewatered in advance of excavation, in which case they should act Type 1 or Type 2 Soil.

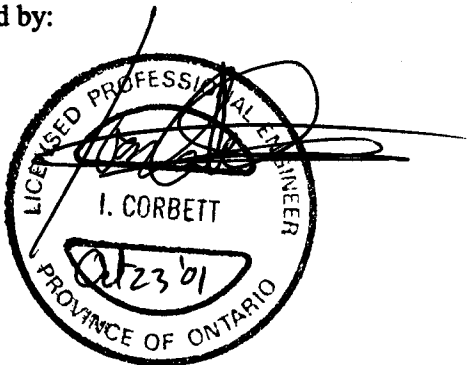
Excavation and construction of the proposed HML caissons should be completed in accordance with the MTO's Non Standard Special Provision, dated January 1998 and entitled "Amendment to OPSS 631, January 1990".

5.0 CLOSURE

We trust that this report is sufficient for your present requirements. Should you have any questions or require clarification on any matter, please do not hesitate to contact us.

DST CONSULTING ENGINEERS INC.

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TABLE 1
HIGHWAY 401 REHABILITATION,
RENFORTH DRIVE TO HIGHWAY 427
HIGH MAST LIGHTING POLE FOUNDATION STUDY
ORIGIN OF COMPILED BOREHOLES

Compiled Borehole Number	MTO DATABANK INFORMATION		
	Date of Drilling	Original Borehole Number	MTO File Number
C1	April 25, 1967	17	30M11-44
C2	April 27, 1967	16	30M11-44
C3	April 26, 1967	15	30M11-44
C4	July 13, 1967	8	30M11-55
C5	July 19-20, 1967	6	30M11-55
C6	August 4, 1967	6a	30M11-55
C7	August 31, 1967	9	30M11-55
C8	June 29, 1967	4	30M11-55
C9	July 5, 1967	3	30M11-55
C10	July 10, 1967	32	30M11-55
C11	July 5, 7, 10, 1967	33	30M11-55
C12	April 26, 1967	14	30M11-44
C13	July 12, 19, 1967	28	30M11-55
C14	July 10, 11, 1967	27	30M11-55
C15	July 5, 6, 1967	23	30M11-55
C16	July 12, 14, 1967	24	30M11-55
C17	July 10, 1967	22	30M11-55
C18	Dec. 14-15, 1966	26	30M11-53
C19	Dec. 15-16, 1966	24	30M11-53
C20	December 22, 1966	31	30M11-53
C21	December 22, 1966	29	30M11-53
C22	Dec. 20-21, 1966	27	30M11-53
C23	December 16, 1966	30	30M11-53
C24	December 16, 1966	28	30M11-53

TABLE 1
HIGHWAY 401 REHABILITATION,
RENFORTH DRIVE TO HIGHWAY 427
HIGH MAST LIGHTING POLE FOUNDATION STUDY
ORIGIN OF COMPILED BOREHOLES

C25	Dec 16, 19, 1966	34	30M11-53
C26	April 27, 1967	12	30M11-44
C27	April 26, 1967	11	30M11-44
C28	April 26, 1967	10	30M11-44
C29	April 25, 1967	9	30M11-44
C30	June 29, 1967	2	30M11-44
C31	July 13, 14, 1967	37	30M11-53
C32	July 14, 1967	35	30M11-53
C33	April 24, 1967	5	30M11-44
C34	December 13, 1966	17	30M11-53
C35	April 27, 1967	3	30M11-44
C36	April 27, 1967	2	30M11-44
C37	December 12, 1966	15	30M11-53
C38	December 9, 1966	5	30M11-53
C39	Dec. 1, 2, 1966	12	30M11-53
C40	December 3, 1966	13	30M11-53
C41	July 20-21, 1967	47	30M11-53
C42	July 5, 1967	39	30M11-53
C43	July 6, 1967	30	30M11-55
C44	April 25, 1967	8	30M11-44
C45	December 14, 1966	20	30M11-53
C46	April 25, 1967	7	30M11-44
C47	Dec. 12-13, 1966	1	30M11-53
C48	Dec. 13-15, 1966	4	30M11-53

TABLE 2
HIGHWAY 401 REHABILITATION,
RENFORTH DRIVE TO HIGHWAY 427
SUMMARY OF HML GEOTECHNICAL DESIGN PARAMETERS

Relevant HMP's	Design Stratigraphy		Geotechnical Design Parameters				Assumed Water Table Depth (m)	Most Relevant Borehole(s)
	Elevation Interval (m)	Description	Effective Friction Angle (degs)	Undrained Shear Strength (kpa)	Bulk Density (kN/m ³)	Coeff of Subgrade Reaction (n _h - kN/m ³)		
P1, P2	Surf to 156.5	Clayey Silt\Sandy Silt Till	na	200	22	na	1.5	C2
	156.5 to 153.5	Gravel and Sand	40	na	22	11,000		
	153.5 to 151.0	Clayey Silt\Sandy Silt Till	na	300	23	na		
	below 151.0	Shale Bedrock	na	2,500	25	na		
P3	Surf to 148.5	Clayey Silt\Sandy Silt Till	na	200	22	na	1.5	C8
	below 148.5	Shale Bedrock	na	2,500	25	na		
P4, P5	Surf to 155.0	Clayey Silt\Sandy Silt Till	na	200	22	na	1.0	C3, C9, C12
	155.0 to 151.0	Sand and Gravel	40	na	22	11,000		
	below 151.0	Shale Bedrock	na	2,500	25	na		
P6, P8	Surf to 155.0	Clayey Silt\Sandy Silt Till	na	200	22	na	1.5	C11, C13, C14
	155.0 to 152.0	Gravel and Sand	40	na	22	11,000		
	152.0 to 149.0	Clayey Silt\Sandy Silt Till	na	300	23	na		
	below 149.0	Shale Bedrock	na	2,500	25	na		
P7	Surf to 156.0	Clayey Silt\Sandy Silt Till	na	200	22	na	1.0	C26
	156.0 to 151.0	Sand and Gravel	40	na	22	11,000		
	below 151.0	Shale Bedrock	na	2,500	25	na		
P9	Surf to 147.0	Clayey Silt\Sandy Silt Till	na	200	22	na	1.5	C17
	147.0 to 145.0	Gravel and Sand	40	na	22	11,000		
	145.0 to 143.5	Clayey Silt\Sandy Silt Till	na	300	23	na		
	below 143.5	Shale Bedrock	na	2,500	25	na		
P10	Surf to 140.0	Clayey Silt\Sandy Silt Till	na	200	22	na	1.0	C18
	below 140.0	Shale Bedrock	na	2,500	25	na		
P11	Surf to 140.0	Clayey Silt\Sandy Silt Till	na	200	22	na	1.5	C19
	below 140.0	Shale Bedrock	na	2,500	25	na		

TABLE 2
HIGHWAY 401 REHABILITATION,
RENFORTH DRIVE TO HIGHWAY 427
SUMMARY OF HML GEOTECHNICAL DESIGN PARAMETERS

P12	Surf to 135.0 Below 135.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C22
P13	Surf to 145.0 Below 145.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C15, C16
P14	Surf to 137.5 Below 137.5	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C30
P15, P16	Surf to 147.0 Below 147.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C28
P17, P19	Surf to 132.5 Below 132.5	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C47
P18	Surf to 135.0 Below 135.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C31, C32
P20	Surf to 135.0 Below 135.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C38
P21	Surf to 140.0 140.0 to 137.5 below 137.5	Clayey Silt\Sandy Silt Till Sand and Gravel Shale Bedrock	na 40 na	200 na 2,500	22 22 25	na 11,000 na	1.0	C33
P22, P27	Surf to 135.5 135.5 to 130.0 below 130.0	Sand Clayey Silt\Sandy Silt Till Shale Bedrock	30 na na	na 200 2,500	18 22 25	2,000 na na	1.0	C34
P23	Surf to 130.0 Below 130.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C35
P24	Surf to 140.0 140.0 to 135.0 below 135.0	Clayey Silt\Sandy Silt Till Sand and Gravel Shale Bedrock	na 40 na	200 na 2,500	22 22 25	na 11,000 na	1.5	C40
P25	Surf to 132.50 Below 132.5	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C41
P26	Surf to 130.0 Below 130.0	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C37
P28, P29, P30	Surf to 137.5 Below 137.5	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C18, C20, C32

TABLE 2
HIGHWAY 401 REHABILITATION,
RENFORTH DRIVE TO HIGHWAY 427
SUMMARY OF HML GEOTECHNICAL DESIGN PARAMETERS

P31	Surf to 140.0 140.0 to 135.0 below 135.0	Clayey Silt\Sandy Silt Till Sand and Gravel Shale Bedrock	na 40 na	200 na 2,500	22 22 25	na 11,000 na	1.5	C48
P32, P33, P34	Surf to 132.5 Below 132.5	Clayey Silt\Sandy Silt Till Shale Bedrock	na na	200 2,500	22 25	na na	1.5	C41
P35	Surf to 141.0 141.0 to 139.0 139.0 to 136.5 below 136.5	Clayey Silt\Sandy Silt Till Gravel and Sand Clayey Silt\Sandy Silt Till Shale Bedrock	na 40 na na	150 na 300 2,500	20 22 23 25	na 11,000 na na	1.5	C25

na not applicable

APPENDIX A

Statement of Limitations

LIMITATIONS OF REPORT

The conclusions and recommendations presented in this report are based on information determined at the borehole locations. Subsurface and groundwater conditions between and beyond the boreholes may differ from those encountered at the specific locations tested, and conditions may become apparent during construction which were not detected and could not be anticipated at the time of the site investigation.

The design recommendations given in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with details stated in this report. Since all details of the design may not be known, we recommend that we be retained during the final stage to verify that the design is consistent with our recommendations, and that assumptions made in our analysis are valid.

Unless otherwise noted, the information contained herein in no way reflects on environmental aspects of either the site or the subsurface conditions.

The comments given in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of boreholes may not be sufficient to determine all the factors that may affect construction methods and costs, e.g. the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusion as to how the subsurface conditions may affect their work.

APPENDIX B

Borehole Logs

RECORD OF BOREHOLE No C1

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836457.9 N; 297360.1E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
 DATUM Geodetic DATE 25.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100	W _p	W	W _L		
162.5	Ground Level													
0.0	SANDY SILT, very dense.		1	SS	101									
			2	SS	121									
157.8			3	SS	100									
4.7	SANDY GRAVEL, very dense.													
157.0			4	SS	96									
5.5	CLAYEY SILT with SAND, fragments of shale, glacial till, hard. Glacial Till													
154.3			5	SS	100									
8.2	END OF BOREHOLE AT 8.23 m.		6	SS	102									

+³.X³: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C2

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836547.5 N; 297550.9 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Washboring BX Casing COMPILED BY KN
 DATUM Geodetic DATE 27.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa								WATER CONTENT (%)
								○ UNCONFINED	+ FIELD VANE	× LAB VANE						
159.1	Ground Level						20 40 60 80 100									
0.0	CLAYEY SILT with SAND, hard						159									
			1	SS	65		158									
156.7							157									
2.4	GRAVEL AND SAND, coarse to fine, very dense		2	SS	100		156							5 87 (8)		
			3	SS	77		155							68 31 (1)		
153.4							154									
5.8	CLAYEY SILT with SAND, hard		4	SS	143		153									
			5	SS	100		152									
150.9							151									
8.2	SHALE BEDROCK		6	SS	100		150									
							149									
148.0			7	SS	100											
11.1	END OF BOREHOLE AT 11.12 m															

+³, X³. Numbers refer to
Sensitivity

○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C3

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836591.1 N; 297633.2 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Washboring BX Casing COMPILED BY KN
DATUM Geodetic DATE 26.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE						
157.4 0.0	Ground Level CLAYEY SILT, hard						20 40 60 80 100								
			1	SS	99										
154.4 3.1	GRAVEL AND SAND, coarse to fine, very dense		2	SS	100									37 5 36 22	
			3	SS	59										
152.3 5.2	SILTY SAND, with gravel, grey, very dense Glacial Till		4	SS	100									16 66 (18)	
150.7 6.7	SHALE BEDROCK		5	SS	100										
			6	SS	100										
147.8 9.6	END OF BOREHOLE AT 9.60 m														

+³, X³. Numbers refer to
Sensitivity

○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C4

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836693.5 N; 297660.3 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Continuous Flight Auger COMPILED BY KN
DATUM Geodetic DATE 13.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							
								20 40 60 80 100	20 40 60 80 100	20 40 60 80 100					
157.2	Ground Level														
0.0	CLAYEY SILT, with some sand, traces of gravel, stiff to hard														
			1	SS	12										
			2	SS	31										
			3	SS	25										
			4	SS	74										
			5	SS	100										
151.1	CLAYEY SILT with shale fragments														
6.1			6	SS	108										
149.4	BEDROCK														
149.3	END OF BOREHOLE AT 7.86 m														
7.9															

+3, X3. Numbers refer to
Sensitivity

○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C5

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836737.7 N; 297654.8 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 19.7.67 - 20.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE □ QUICK TRIAXIAL X LAB VANE	PLASTIC LIMIT W _p NATURAL MOISTURE CONTENT W LIQUID LIMIT W _L WATER CONTENT (%)	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES						
156.2	Ground Level						156				
0.0	CLAYEY SILT with some sand, traces of gravel, very stiff to hard		1	SS	30		155				
			2	SS	19		154				
			3	SS	15		153				
			4	SS	35		152				
150.6	CLAYEY SILT with fragments of shale, hard		5	SS	100		151				
5.6	Glacial Till		6	SS	100		150				
			7	RC			149				
147.2	SHALE BEDROCK		8	RC			148				
9.0							147				
144.2	END OF BOREHOLE AT 12.04 m						146				
12.0							145				

+ 3, X 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C6

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836796.3 N; 297687.0 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 4.8.67 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa 20 40 60 80 100 O UNCONFINED + FIELD VANE □ QUICK TRIAXIAL X LAB VANE		W _p	W		
163.8	Ground Level												
0.0	FILL, clayey silt, some sand pockets, traces of gravel, brown to grey, stiff to very stiff												
			1	SS	8								
			2	SS	15								
			3	SS	28								
			4	SS	26								
			5	SS	9								
			6	SS	29								
			7	SS	13								
			8	SS	33								
150.4													
13.4	CLAYEY SILT with fragments of shale, grey, hard		9	SS	100								
			10	SS	100								
146.9			11	SS	100								
16.9	END OF BOREHOLE AT 16.92 m												

+³, X³: Numbers refer to Sensitivity O³% STRAIN AT FAILURE

ON MOT MTO-015.GPJ ON MOT.GDT 19/10/01

RECORD OF BOREHOLE No C7

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836872.2 N; 297648.1 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 31.8.67 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT MOISTURE LIMIT CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa		W _p	W		
							20 40 60 80 100						
159.4	Ground Level												
0.0	CLAYEY SILT with SAND, some organics, traces of gravel, stiff to hard		1	SS	29								
			2	SS	18								
			3	SS	12								
			4	SS	30								
			5	SS	18								
			6	SS	60								
150.6	CLAYEY SILT with fragments of shale, grey, hard		7	SS	100								
8.8			8	SS	100								
147.2	END OF BOREHOLE AT 12.19 m		9	SS	100								
12.2													

+³, X³: Numbers refer to Sensitivity O³% STRAIN AT FAILURE

1 OF 1

METRIC

DATUM Geodetic DATE 29.6.67 CHECKED BY IC

+³, ×³: Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C9

1 OF 1

METRIC

W.P. 47-99-00	LOCATION 4836700.3 N; 297789.9 E	ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange	BOREHOLE TYPE Cont. Flight Auger	COMPILED BY KN
DATUM Geodetic	DATE 5.7.67	CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE						
157.4	Ground Level							20 40 60 80 100							
0.0	CLAYEY SILT, becoming SANDY SILT to SILTY SAND with GRAVEL, very dense														
			1	SS	51		157								
							156								
			2	SS	100		155								
							154								
			3	SS	52		153								
			4	SS	47		152								
151.0							151								
6.4	SHALE BEDROCK		5	SS	80		150							2 31 54 13	
			6	RC			149								
147.8							148								
9.6	END OF BOREHOLE AT 9.60 m														

+ 3 . X 3 Numbers refer to Sensitivity
 ○ 3% STRAIN AT FAILURE

ON MOT MTO-015.GPJ ON MOT.GDT 19/10/01

RECORD OF BOREHOLE No C10

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836816.1 N; 298014.2 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
 DATUM Geodetic DATE 10.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE						
157.6	Ground Level							20 40 60 80 100							
0.0	SANDY SILT to SILTY SAND, very dense		1	SS	94		157								
155.8							156								
1.9	SAND with gravel becoming GRAVEL with some sand, very dense		2	SS	100		155								
							154								
			3	SS	100		153								
							152								
151.7							151								
5.9	CLAYEY SILT, with fragments of shale		4	SS	100		150								
			5	SS	100										
149.6			6	SS	12										
8.0	END OF BOREHOLE AT 8.0 m														

+³, ×³: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C11

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836808.5 N; 297938.3 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 5.7.67 - 10.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						
157.1 0.0	Ground Level SANDY SILT, traces of gravel													GR SA SI CL 0 6 93 1
155.3 1.7	SAND with gravel, becoming GRAVEL with sand, occasional boulders, very dense		1	SS	74									
			2	SS	25									
152.5 4.6	CLAYEY SILT, with sand, and numerous fragments of shale, hard		3	SS	74									
			4	SS	75									
149.1 7.9	SHALE BEDROCK WEATHERED		5	SS	100									
147.4 9.7	SOUND		6	RC										
145.3 11.7	END OF BOREHOLE AT 11.73 m													

+³, X³: Numbers refer to
Sensitivity

○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C12

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836636.9 N; 297750.5 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
 DATUM Geodetic DATE 26.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						
157.4							20 40 60 80 100							
0.0	SILTY CLAY TO CLAYEY SILT, hard		1	SS	58		20 40 60 80 100							
155.0							20 40 60 80 100							
2.4	SANDY SILT, traces of gravel, very dense		2	SS	100		20 40 60 80 100							
152.8							20 40 60 80 100							
4.6	SANDY SILT, some gravel and clay, grey Glacial Till		3	SS	52		20 40 60 80 100							
151.6							20 40 60 80 100							
5.8	Shale Bedrock		4	SS	100		20 40 60 80 100							
							20 40 60 80 100							
			5	SS	100		20 40 60 80 100							
148.6							20 40 60 80 100							
8.8	END OF BOREHOLE AT 8.84 m		6	SS	100		20 40 60 80 100							

+³.X³: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

METRIC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT NATURAL MOISTURE CONTENT LIQUID LIMIT 	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV. DEPTH	DESCRIPTION	STRAT. PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa					
156.8	Ground Level							○ UNCONFINED + FIELD VANE □ QUICK TRIAXIAL X LAB VANE	20 40 60 80 100 10 20 30			GR SA SI	

[illegible]

+³, ×³: Numbers refer to Sensitivity ○^{3%} STRAIN AT FAILURE

RECORD OF BOREHOLE No C14

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836882.8 N:298084.9 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 10.7.67 - 11.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE						
156.2	Ground Level						20 40 60 80 100	20 40 60 80 100							
0.0	CLAYEY SILT, some sand and gravel, hard					▽	156								
154.4			1	SS	117		155								
1.8	SAND, some gravel, very dense						154								
			2	SS	152		153							25 66 (9)	
151.5			3	SS	115		152								
4.7	CLAYEY SILT, some sand, traces of gravel		4	SS	100		151								
			5	SS	100	150									
			6	SS	100	149									
148.7	SHALE BEDROCK, weathered					RC	148								
7.5							147								
145.3							146								
10.9	END OF BOREHOLE AT 10.9 m														

+ 3. X 3. Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C15

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836889.8 N; 298160.2 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 5.7.67 - 6.7.67 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa					
154.1	Ground Level												
0.0	CLAYEY SILT, with sand, traces of gravel, hard		1	SS	57								
			2	SS	96								
			3	SS	199								
149.9	CLAYEY SILT, with numerous shale fragments, hard		4	SS	110								
4.3			5	SS	100								
			6	SS	100								
			7	SS	100								
			8	SS	100								
			9	SS	100								
143.2	SHALE BEDROCK		10	RC									
11.0													
141.0	END OF BOREHOLE AT 13.1 m												
13.1													

+ 3. x 3 Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C16

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836942.6 N; 298225.1 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 12.7.67 - 14.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa				
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE			
152.0	Ground Level											
0.0	CLAYEY SILT, with sand and sand seams, traces of gravel, hard											
			1	SS	49							
			2	SS	130							
			3	SS	123							
			4	SS	130							
146.9	SHALE BEDROCK, weathered		5	SC	100							
5.0												
144.5	END OF BOREHOLE AT 7.50 m											
7.5												

+3 x 3 Numbers refer to
Sensitivity

0 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C17

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836980.1 N; 298228.8 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 10.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)					
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)				
								○ UNCONFINED	+ FIELD VANE										
								□ QUICK TRIAXIAL	x LAB VANE										
							20	40	60	80	100	10	20	30	GR	SA	SI	CL	
152.7	Ground Level																		
0.0	CLAYEY SILT, with sand, traces of gravel, hard						152												
			1	SS	62		151												
			2	SS	142		150												
			3	SS	182		149												
			4	SS	116		148												
147.2							147												
5.5	SILTY SAND with gravel, occasional boulders, very dense		5	SS	77		146												
			6	SS	100		145												
145.1							144												
7.6	CLAYEY SILT with fragments of shale, hard		7	SS	100		143												
143.8			8	RC			142												
8.8	SHALE BEDROCK, weathered																		
141.6																			
11.1	END OF BOREHOLE AT 11.12 m																		

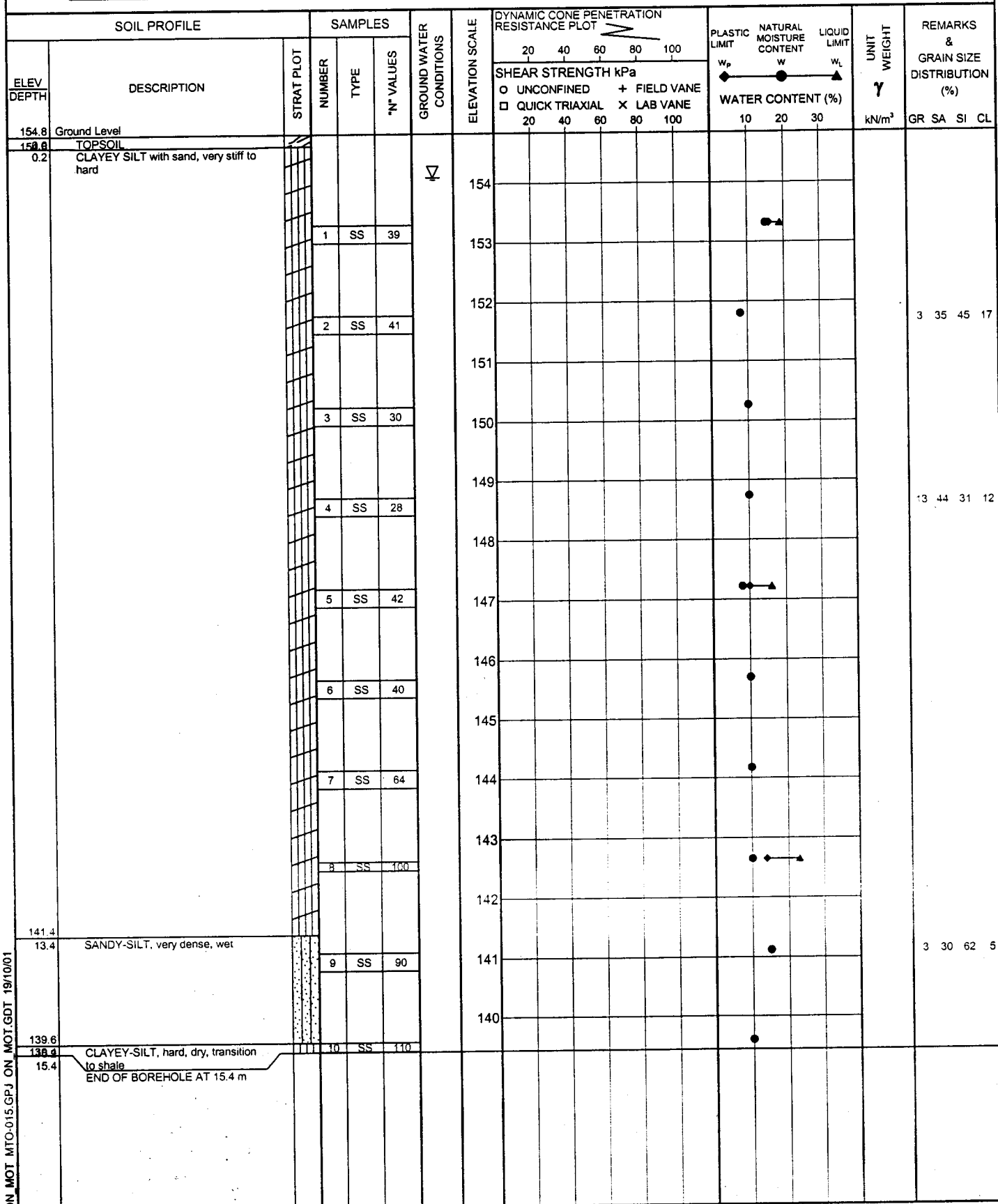
+³ . X³ Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C18

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837117.8 N: 298415.0 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 14.12.66 - 15.12.66 CHECKED BY IC



+³, X³: Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

ON MOT MTO-015.GPJ ON MOT.GDT 19/10/01

RECORD OF BOREHOLE No C19

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837264.1 N; 298448.5 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 15.12.66 - 16.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa	WATER CONTENT (%)					
152.2	Ground Level													
152.0	TOPSOIL													
0.2	CLAYEY SILT with sand, brown to grey, hard		1	SS	45									
			2	SS	58									
			3	SS	41									
			4	SS	42									
			5	SS	56									
			6	SS	100									
142.4	SAND AND SILT, trace of gravel, very dense, wet		7	SS	80									
140.3	CLAYEY SILT, hard, transition to shale		8	SS	100									
11.9														
139.9														
12.3	END OF BOREHOLE AT 12.3 m													

+ 3, X 3: Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C20

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837342.2 N; 298542.1 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
 DATUM Geodetic DATE 22.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE □ QUICK TRIAXIAL X LAB VANE 20 40 60 80 100	PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES								
140.6	Ground Level												
140.8	TOPSOIL												
0.2	SANDY SILT, traces of clay, stiff		1	SS	12		140						8 32 46 14
138.2	CLAYEY SILT with shale fragments, hard		2	SS	128		139						
2.4			3	SS	63		138						
							137						
							136						
134.4	END OF BOREHOLE AT 6.2 m						135						

RECORD OF BOREHOLE No C21

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837431.8 N; 298510.1 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
 DATUM Geodetic DATE 22.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)			
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa									
								20 40 60 80 100									
								20 40 60 80 100									
							UNCONFINED + FIELD VANE QUICK TRIAXIAL X LAB VANE		WATER CONTENT (%)								
142.6	Ground Level																
140.8	TOPSOIL																
0.2	FILL- silty sand, loose																
			1	SS	9		142										
							141										
140.2	CLAYEY SILT with SAND, hard						140										
2.4			2	SS	80												
							139										
138.3	END OF BOREHOLE AT 4.3 m		3	SS	80												
4.3																	

+³ ×³ Numbers refer to
Sensitivity

○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C22

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837481.5 N; 298474.4 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 21.12.66 - 21.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED	+ FIELD VANE						
								□ QUICK TRIAXIAL	x LAB VANE						
149.9	Ground Level						20 40 60 80 100								
149.9	TOPSOIL						20 40 60 80 100								
0.2	CLAYEY SILT with sand, hard														
			1	SS	112										
			2	SS	62										
			3	SS	42										
			4	SS	55										
			5	SS	45										
141.4	SILTY SAND, with traces of gravel, very dense		6	SS	60									8 37 39 16	
139.5	CLAYEY SILT with sand, hard		7	SS	70										
10.4			8	SS	70										
136.0	END OF BOREHOLE AT 13.89 m		9	SS	100										
13.9															

+ 3, X 3: Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C23

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837520.8 N; 298543.6 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 16.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa								WATER CONTENT (%)
								○ UNCONFINED	+ FIELD VANE	□ QUICK TRIAXIAL						
144.0	Ground Level						20	40	60	80	100					
143.9	TOPSOIL AND FILL															
0.3	CLAYEY SILT with SAND, brown, stiff		1	SS	8											
141.6	SILTY SAND, trace of gravel, compact		2	SS	29											
139.2	CLAYEY SILT with sand, grey, hard		3	SS	62											
4.8	Transition to Shale		4	SS	110											
136.4	END OF BOREHOLE AT 7.56 m		5	SS	100											
7.6																

+3, X3 Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C24

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837583.9 N; 298523.5 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 16.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE						
143.6	Ground Level							20 40 60 80 100							
140.0	TOPSOIL							20 40 60 80 100							
0.2	CLAYEY SILT with sand, brown, hard		1	SS	34	▽	143								
141.2							142								
2.4	SILTY SAND, grey, very dense		2	SS	74		141							1 62 32 5	
							140								
138.9			3	SS	54		139								
4.7	CLAYEY SILT with sand, some shale fragments, hard, dry		4	SS	70		138								
			5	SS	69		137								
			6	SS	110		136							7 50 24 19	
						135									
						134									
132.9			7	SS	66	133									
10.7	END OF BOREHOLE AT 10.7 m														

+3, X3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C25

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837656.7 N; 298557.6 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Washboring BX Casing COMPILED BY KN
DATUM Geodetic DATE 16.12.66 - 19.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE						
144.7	Ground Level						20 40 60 80 100								
143.8	TOPSOIL														
0.2	CLAYEY SILT, trace of sand, stiff to very stiff		1	SS	13										
			2	SS	24									0 24 5 21	
140.7															
4.0	GRAVELLY SAND, trace of silt, very dense		3	SS	57									32 53 13 2	
138.9															
5.8	CLAYEY SILT with sand, hard		4	SS	70										
136.8			5	SS	88										
7.9	SHALE BEDROCK		6	RC											
			7	RC											
133.7															
11.0	END OF BOREHOLE AT 11.0 m														

+³, X³: Numbers refer to Sensitivity O³% STRAIN AT FAILURE

1 OF 1

METRIC[illegible]

+³, X³: Numbers refer to Sensitivity ○^{3%} STRAIN AT FAILURE

RECORD OF BOREHOLE No C27

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836772.8 N; 298120.9 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
 DATUM Geodetic DATE 26.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE × LAB VANE					
155.7 0.0	SANDY SILT TO SILT, very dense						20 40 60 80 100							
154.0 1.7	GRAVEL, SAND and SILT, very dense		1	SS	100									
152.5 3.2	CLAYEY SILT TO SANDY SILT, grey Glacial Till		2	SS	50									
			3	SS	150									
150.0 5.6	SHALE BEDROCK WITH LIMESTONE		4	SS	100									
			5	SS	140									
			6	SS	100									
148.1 9.6	END OF BOREHOLE AT 9.60 m													

+3, X3 Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C28

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836798.7 N; 298241.0 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 26.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	*N* VALUES			20 40 60 80 100	20 40 60 80 100					
152.2														
0.0	SANDY SILT TO SILT with some clay, very dense		1	SS	67									
148.9			2	SS	50									
3.3	CLAYEY SILT, grey, hard Glacial Till		3	SS	100									
147.3			4	SS	150									
4.9	SHALE BEDROCK		5	SS	200									
144.4	END OF BOREHOLE AT 7.77 m													
7.8														

+³, X³: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C29

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836843.2 N; 298379.3 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 25.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa				
								20 40 60 80 100				
								20 40 60 80 100				
						WATER CONTENT (%)						

+ 3, X 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C30

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836935.0 N; 298431.5 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 29.6.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							
								○ UNCONFINED	+ FIELD VANE						
								□ QUICK TRIAXIAL	x LAB VANE						
153.3							20 40 60 80 100	20 40 60 80 100	10 20 30						
0.0	CLAYEY SILT, traces of sand and gravel, hard						153								
			1	SS	30		152								
							151								
			2	SS	58		150								
							149								
			3	SS	47		148								
							147								
			4	SS	51		146								
			5	SS	40		145								
			6	SS	46		144								
144.6			7	SS	150		143								
8.7	SILT TO SILTY SAND, traces of gravel, very dense		8	SS	197		142								
							141								
			9	SS	203		140								
			10	SS	125										
139.4			11	SS	140										
13.9	END OF BOREHOLE AT 13.3 m														

+ 3, X 3: Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C31

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836980.1 N; 298654.0 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 13.7.67 - 14.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE □ QUICK TRIAXIAL X LAB VANE	PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES								
153.7	Ground Level												
0.0	CLAYEY SILT, some sand, trace of gravel, occasional cobbles, hard		1	SS	85		153						
			2	SS	150		152						
			3	SS	71		151						
			4	SS	64		150						
			5	SS	65		149						
			6	SS	68		148						
			7	SS	82		147						
142.7			8	SS	95		146						
11.0	SILTY SAND with gravel, very dense		9	SS	110		145						
			10	SS	100		144						
			11	SS	100		143						
			12	SS	115		142						
138.4							141						
15.3	END OF BOREHOLE AT 15.33 m						140						
							139						

+³, X³: Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C33

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 48369801.0 N; 298762.8 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
 DATUM Geodetic DATE 24.4.67 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT		NATURAL MOISTURE CONTENT		LIQUID LIMIT		UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa		w _p	w	w _L	WATER CONTENT (%)				
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE x LAB VANE								
146.8	Ground Level						20 40 60 80 100										
0.0	SANDY SILT to SILT with traces of gravel and clay, very dense					∇	146										
			1	SS	26		145										
			2	SS	45		144										
			3	SS	40		143										
			5	SS	127		142										
			6	SS	74		141										
140.7	SILTY SAND, some clay, grey, very dense		7	SS	87		140									8 57 (35)	
6.1			8	SS	135	139											
			9	SS	125	138											12 21 45 22
137.7	SHALE FRAGMENTS																
9.1	END OF BOREHOLE AT 9.60 m																
137.2																	
9.6																	

+ 3, X 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C34

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837089.8 N; 298842.3 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
 DATUM Geodetic DATE 13.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						
139.1	Ground Level													
0.0	SAND, trace of silt, loose to compact		1	SS	7									
			2	SS	22									
135.4	CLAYEY SILT with sand, hard													
3.7														
133.0	END OF BOREHOLE AT 6.04 m													
6.0														

RECORD OF BOREHOLE No C35

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837016.3 N; 299006.6 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Bombardier Flight Auger COMPILED BY KN
DATUM Geodetic DATE 27.4.67 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa					
139.1	Ground Level												
0.0	SANDY SILT to SILTY SAND, traces of gravel and clay, very dense												
			1	SS	9								
			2	SS	50								
			3	SS	64								
			4	SS	139								
			5	SS	100								
131.9	CLAYEY SILT with shale, grey, hard												
7.2													
130.6	END OF BOREHOLE AT 8.53 m												
8.5													

+³, X³: Numbers refer to
Sensitivity

○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C36

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837006.9 N, 299099.3 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Continuous Flight Auger COMPILED BY KN
 DATUM Geodetic DATE 27.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%)	
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa								WATER CONTENT (%)
								○ UNCONFINED □ QUICK TRIAXIAL	+ FIELD VANE × LAB VANE							
139.8	Ground Level							20 40 60 80 100								
0.0	SANDY SILT with gravel, trace of clay, very dense		1	SS	45											
			2	SS	61											
			3	SS	100											
			4	SS	100											
132.8	SANDY SILT with shale fragments and clay, hard		5	SS	100											
7.0																
130.6	END OF BOREHOLE AT 9.20 m															
9.2																

+³, X³: Numbers refer to
Sensitivity

○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C37

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4837070.6 N; 299180.0 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 12.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)					
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40						60	80	100	20	40
139.2	Ground Level																		
139.0	TOPSOIL																		
0.2	CLAYEY SILT with sand, soft to firm		1	SS	4														
136.9	SILT, grey, dense to very dense		2	SS	40														
2.3			3	SS	60														
136.0	CLAYEY SILT with sand, some gravel, hard, dry		4	SS	75														
3.2			5	SS	76														
131.5	END OF BOREHOLE AT 7.7 m		6	SS	100														
7.7																			

+3, X 3: Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C38

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836798.7 N; 298727.1 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 9.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC NATURAL LIQUID LIMIT MOISTURE CONTENT			UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100	W _p	W	W _L		
152.3	Ground Level													
152.8	TOPSOIL													
0.2	CLAYEY SILT with sand, brown to grey, hard													
			1	SS	68									
			2	SS	96									
			3	SS	79									
			4	SS	64									
			5	SS	65									
			6	SS	88									
			7	SS	100									
			8	SS	100									
	BOULDER AT 12.2 m		9	SS	100									
			10	SS	100									
137.7	CLAYEY SILT, hard, dry													
14.6	Transition to Shale													
135.5	END OF BOREHOLE AT 16.86 m													
16.9														

+ 3. X 3. Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

ON MOT MTO-015.GPJ ON MOT.GDT 19/10/01

RECORD OF BOREHOLE No C39

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836853.3 N; 298901.5 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 1.12.66 - 2.12.66 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	SHEAR STRENGTH kPa					
151.4	Ground Level												
150.0	TOPSOIL												
0.2	CLAYEY SILT with SAND, brown to grey, hard												
			1	SS	54								
			2	SS	85								
			3	SS	73								6 39 39 16
			4	SS	54								
			5	SS	37								
			6	SS	70								3 40 40 17
141.3	END OF BOREHOLE AT 10.06 m												

+ 3 X 3 Numbers refer to Sensitivity 0 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C40

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836858.4 N; 298940.2 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
 DATUM Geodetic DATE 3.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20 40 60 80 100	20 40 60 80 100					
150.1	Ground Level													
149.9	TOPSOIL													
0.2	CLAYEY SILT with sand, occasional cobbles, brown to grey, hard to very stiff		10	AS			149							
			1	SS	52		148							
			2	SS	50		147							3 31 47 19
			3	SS	29		146							
			4	SS	33		145							
			5	SS	21		144							6 31 47 16
			6	SS	31		143							
140.6	SILTY SAND with gravel, dense to very dense		7	SS	90		142							
9.4							141							
							140							
							139							22 41 32 5
138.8	END OF BOREHOLE AT 11.3 m													
11.3														

+ 3% X 3% Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C41

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836743.2 N; 298835.9 E ORIGINATED BY MK
DIST 8 HWY 401/427 Interchange BOREHOLE TYPE Continuous Flight Auger COMPILED BY KN
DATUM Geodetic DATE 20.7.67 - 21.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)		
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40						60	80
148.6	Ground Level															
0.0	CLAYEY SILT, some sand, trace of gravel, hard															
			1	SS	88											
			2	SS	95											
			3	SS	83											
			4	SS	62											
			5	SS	57											
138.4			6	SS	47											
10.2	SANDY SILT, trace of gravel, very dense		7	SS	40											
			8	SS	200											
134.8			9	SS	100											
13.8	END OF BOREHOLE AT 13.8 m															

+3, X3: Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C42

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836530.5 N; 298869.1 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Continuous Flight Auger COMPILED BY KN
DATUM Geodetic DATE 5.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40					
148.1	Ground Level													
0.0	CLAYEY SILT, some sand, trace of gravel, hard													
			1	SS	51									
			2	SS	140									
			3	SS	60									
			4	SS	69									
			5	SS	77									
			6	SS	155									
			7	SS	75									
			8	SS	114									
			9	SS	26									
137.1	SILT to SANDY SILT, very dense		10	SS	100									
136.2	END OF BOREHOLE AT 11.9 m													

+³.X³ Numbers refer to Sensitivity ○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C43

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836823.1 N; 298095.3 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 6.7.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa						
156.3	Ground Level													
0.0	CLAYEY SILT traces of sand and gravel, hard		1	SS	47									
153.9														
2.4	SILTY SAND with gravel, very dense		2	SS	140									
152.6														
3.7	CLAYEY SILT with numerous shale fragments		3	SS	98									
			4	SS	100									
			5	SS	100									
148.6			6	SS	100									
7.7	SHALE BEDROCK		7	RC										
146.7														
9.6	END OF BOREHOLE AT 9.63 m													

+3, X3. Numbers refer to Sensitivity O 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C44

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836865.5 N; 298436.9 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Cont. Flight Auger COMPILED BY KN
DATUM Geodetic DATE 25.4.67 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT			PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			SHEAR STRENGTH kPa							
								20 40 60 80 100	20 40 60 80 100	20 40 60 80 100					
152.6	Ground Level														
0.0	SANDY SILT with some clay and gravel, very dense		1	SS	39		152								
							151								
				2	SS	100		150							8 32 46 14
148.1	SANDY SILT traces of clay and gravel, grey, very dense Glacial Till		3	SS	32		148								
4.6							147								
			4	SS	35		146								12 37 45 6
			5	SS	100		145								
			6	SS	100		144								
143.0	END OF BOREHOLE AT 9.60 m														
9.6															

+³, X³: Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C45

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836936.5 N; 298491.2 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 14.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 SHEAR STRENGTH kPa ○ UNCONFINED + FIELD VANE □ QUICK TRIAXIAL x LAB VANE 20 40 60 80 100	PLASTIC LIMIT W _p NATURAL MOISTURE CONTENT W LIQUID LIMIT W _L WATER CONTENT (%) 10 20 30	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES						
150.1	Ground Level										
149.8	TOPSOIL										
0.3	CLAYEY SILT with sand, stiff to hard, brown to grey Glacial Till		1	SS	24						
			2	SS	36						
			3	SS	80						
			4	SS	100						
			5	SS	100						7 36 43 14
140.7	SILT SAND, trace of clay and gravel, very dense, damp		6	SS	100						
9.4											
139.3	END OF BOREHOLE AT 10.79 m		7	SS	100						8 46 36 10
10.8											

+³.X³ Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C46

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836915.8 N; 298611.9 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Washboring BX Casing COMPILED BY KN
 DATUM Geodetic DATE 25.4.67 CHECKED BY IC

SOIL PROFILE		SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT w _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT w _L	UNIT WEIGHT γ kN/m ³	REMARKS & GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	20					
150.5	Ground Level												
0.0	CLAYEY SILT, trace of gravel, hard		1	SS	50								
			2	SS	100								
146.5													
4.0	CLAYEY SILT with sand, hard Glacial Till		3	SS	67								
			4	SS	40								
			5	SS	85								
			6	SS	50								
140.9													
9.6	END OF BOREHOLE AT 9.60 m												

+ 3 . X 3. Numbers refer to
Sensitivity

○ 3% STRAIN AT FAILURE

RECORD OF BOREHOLE No C47

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836778.0 N; 298560.4 E ORIGINATED BY MK
DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Solid Stem Augers COMPILED BY KN
DATUM Geodetic DATE 12.12.66 - 13.12.66 CHECKED BY IC

SOIL PROFILE			SAMPLES			GROUND WATER CONDITIONS	ELEVATION SCALE	DYNAMIC CONE PENETRATION RESISTANCE PLOT		PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT W	LIQUID LIMIT W _L	UNIT WEIGHT γ	REMARKS & GRAIN SIZE DISTRIBUTION (%)		
ELEV. DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES			20	40						60	80
150.1	Ground Level						150									
0.0	CLAYEY SILT with sand, brown to grey, hard Glacial Till		1	SS	50		149									
			2	SS	100		148									
			3	SS	67		147									
			4	SS	48		146									
			5	SS	100		145									
			6	SS	100		144									
139.5			7	SS	100		143									
10.7	SANDY SILT, trace of gravel and clay, very dense		8	SS	100		142									
			9	SS	100		141									
134.9			10	SS	100		140									
15.2	END OF BOREHOLE AT 15.24 m						139									
							138									
							137									
							136									
							135									

+³ ×³ Numbers refer to Sensitivity ○³% STRAIN AT FAILURE

RECORD OF BOREHOLE No C48

1 OF 1

METRIC

W.P. 47-99-00 LOCATION 4836732.0 N: 298661.9 E ORIGINATED BY MK
 DIST 6 HWY 401/427 Interchange BOREHOLE TYPE Washboring BX Casing COMPILED BY KN
 DATUM Geodetic DATE 13.12.66 - 15.12.66 CHECKED BY IC

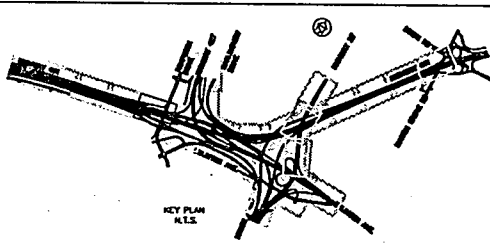
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ELEV DEPTH	DESCRIPTION	STRAT PLOT	NUMBER	TYPE			"N" VALUES	20 40 60 80 100					
150.0	Ground Level												
0.0	FILL- TOPSOIL and CLAYEY SILT with SAND												
148.8													
1.2	CLAYEY SILT with sand, brown to grey, hard Glacial Till		1	SS	45								
			2	SS	79								
			3	SS	50								
			4	SS	54								
			5	SS	90								
			6	SS	70								
139.8													
10.2	GRAVELLY SAND with some silt, very dense Glacial Till		7	SS	100								
			8	SS	115								
136.2													
13.8	END OF BOREHOLE AT 13.79 m												

+³, X³ Numbers refer to
Sensitivity

○³% STRAIN AT FAILURE

APPENDIX C

Drawings of Proposed HML Poles



METRIC
 DIMENSIONS ARE IN METRES
 AND/OR MILLIMETRES
 UNLESS OTHERWISE SHOWN

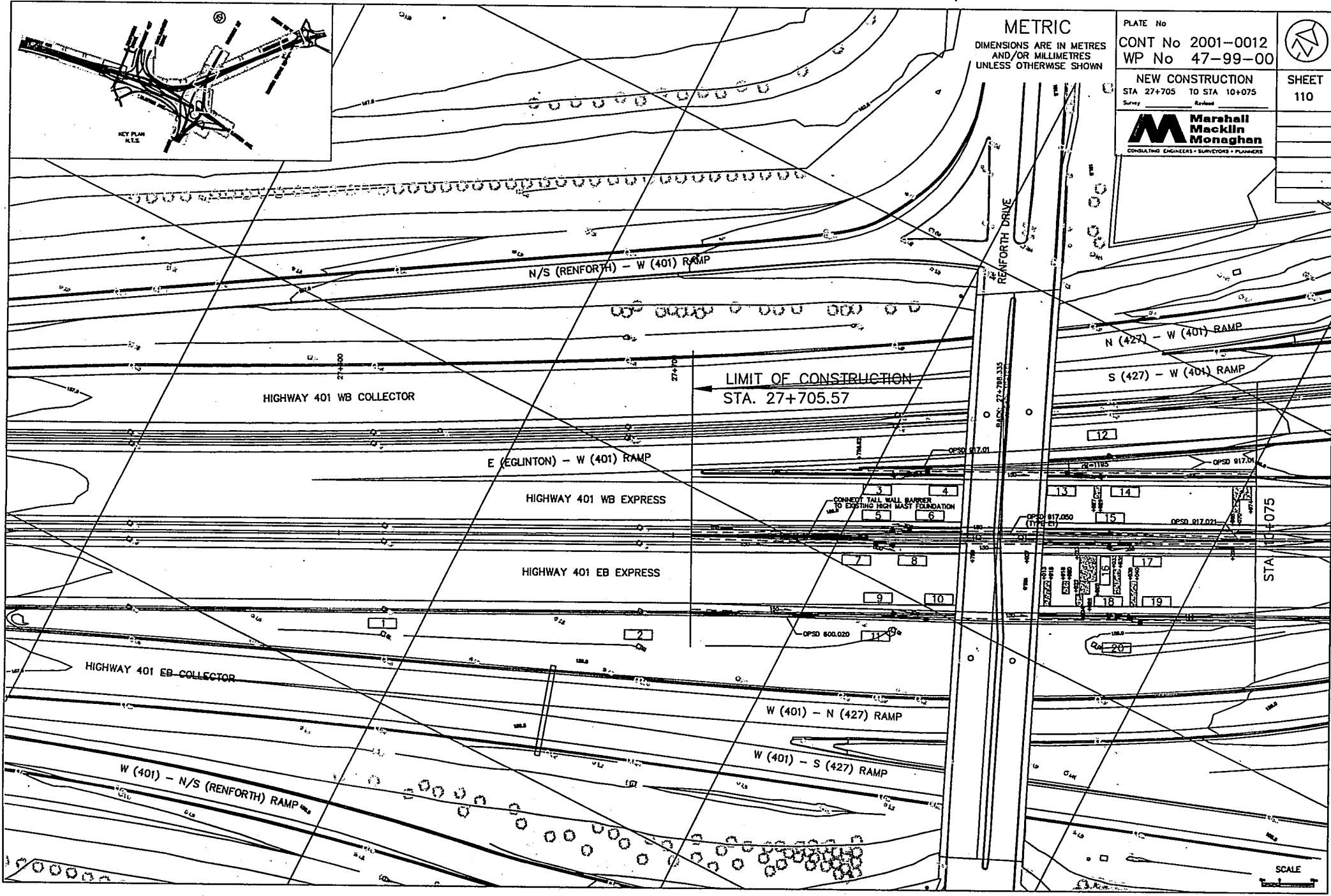
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 WP No 47-99-00



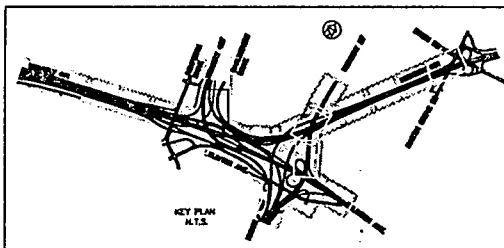
NEW CONSTRUCTION
 STA 27+705 TO STA 10+075
 Survey Revised

SHEET
 110

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SCALE



METRIC
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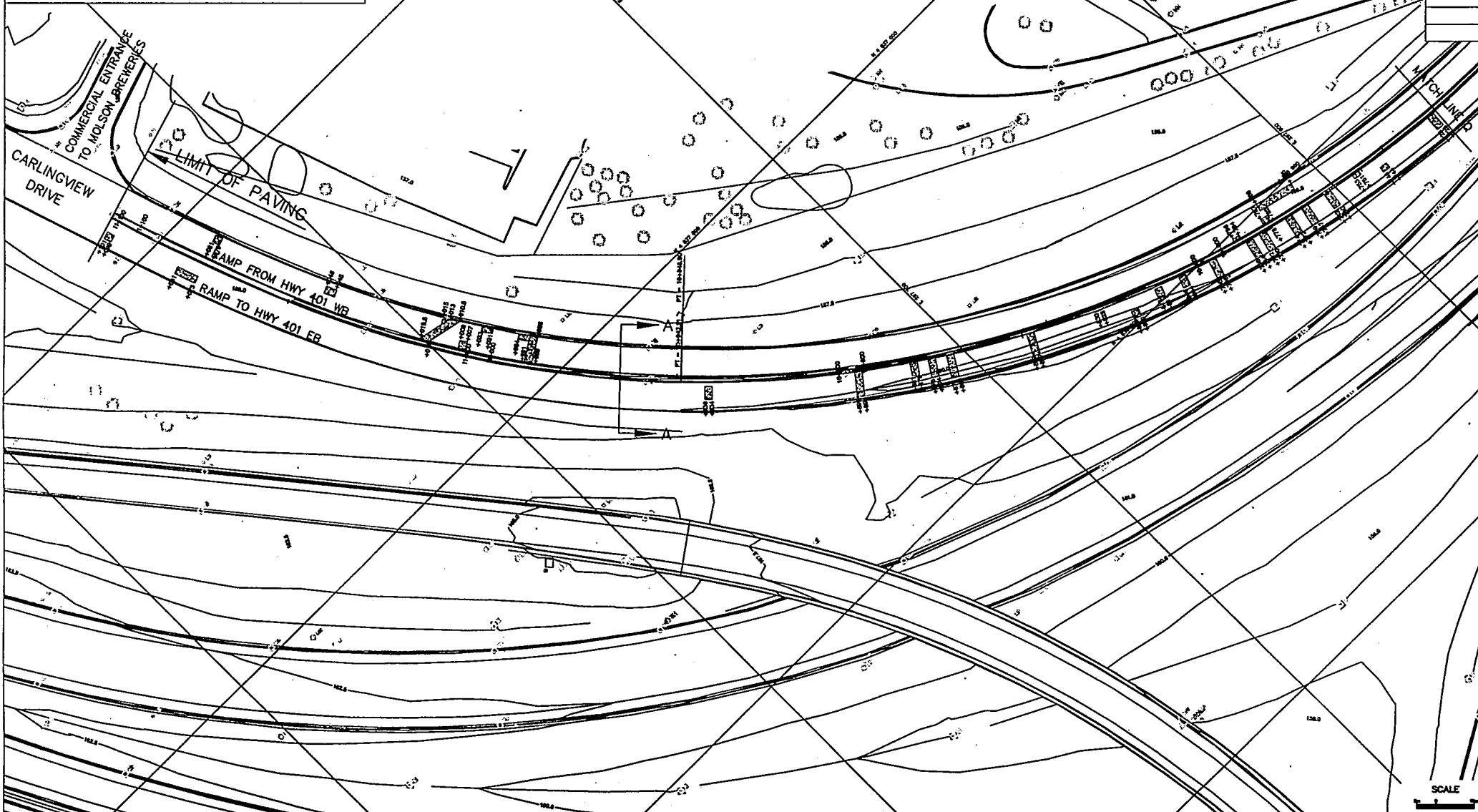
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WP No 47-99-00

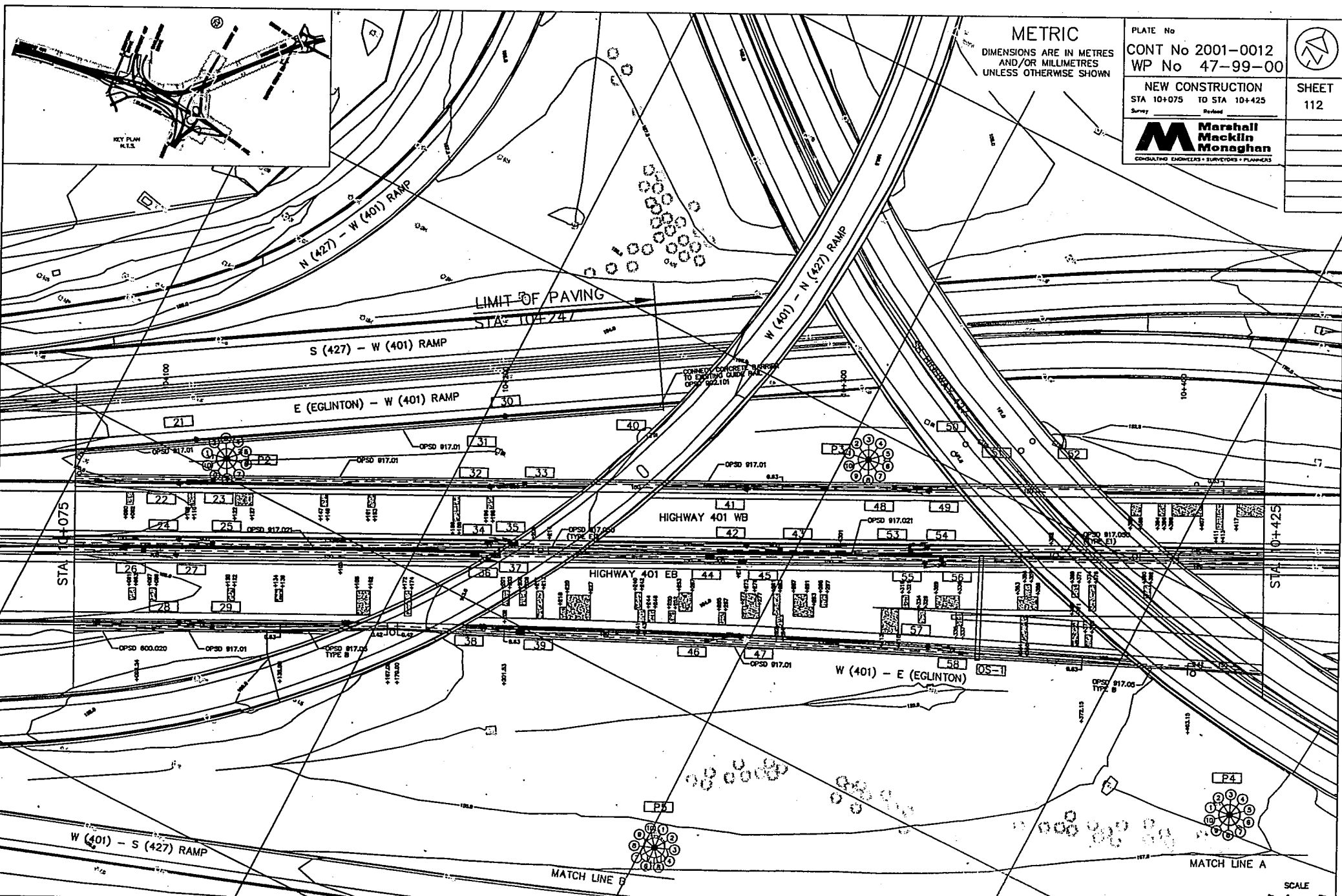
NEW CONSTRUCTION
CARLINGVIEW DRIVE

Survey Revised
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111



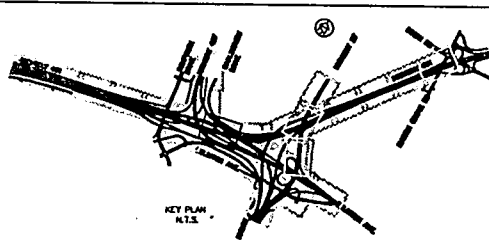


KEY PLAN
N.E.S.

METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
UNLESS OTHERWISE SHOWN

PLATE No		
CONT No 2001-0012		
WP No 47-99-00		SHEET 112
NEW CONSTRUCTION		
STA 10+075	TO STA 10+425	
Survey	Revised	
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SCALE



METRIC
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UNLESS OTHERWISE SHOWN

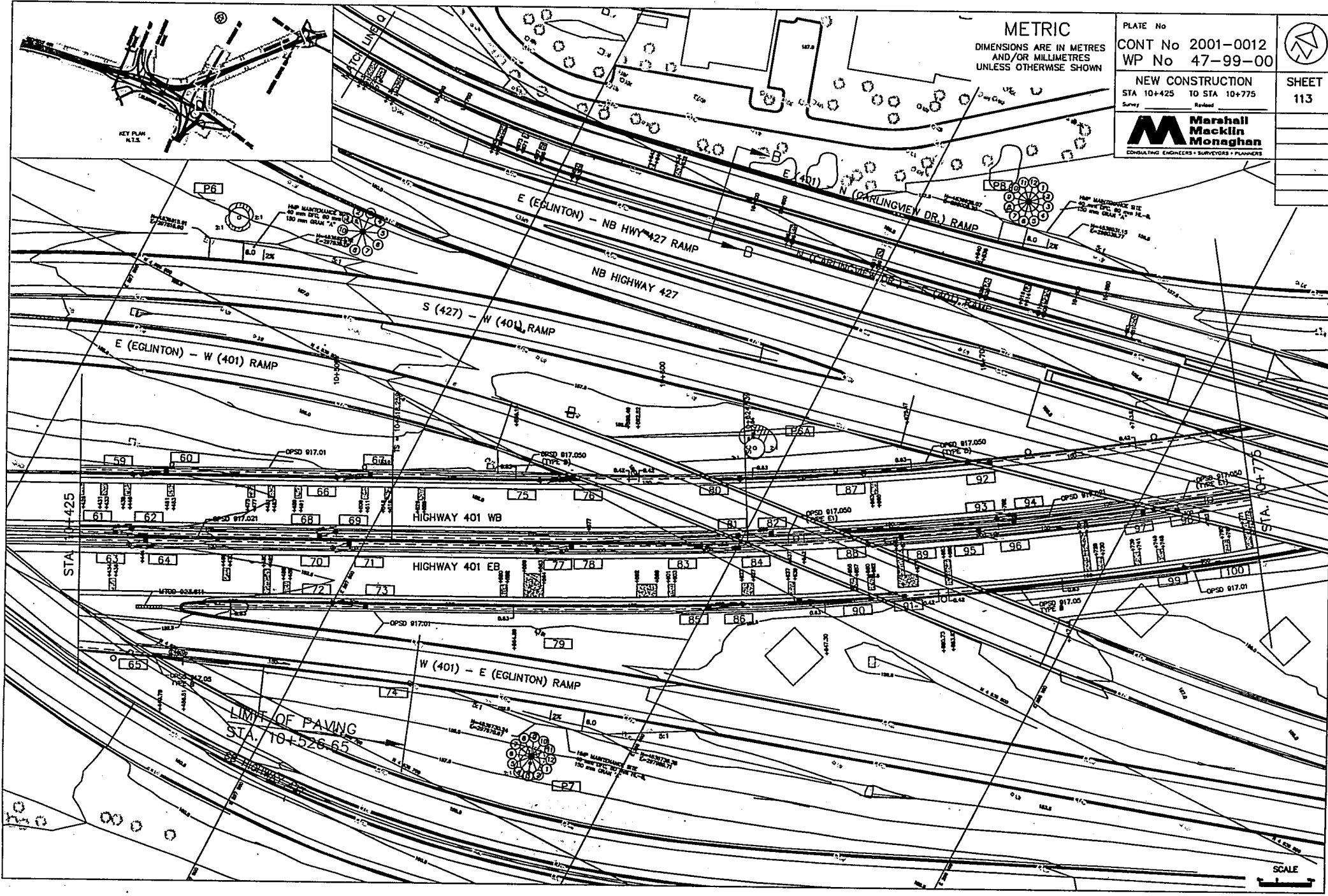
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WP No 47-99-00

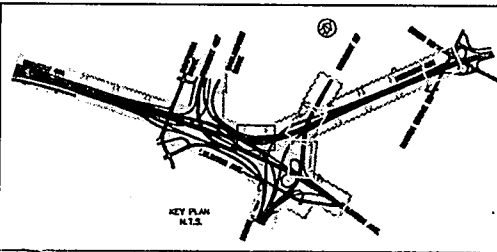


NEW CONSTRUCTION
STA 10+425 TO STA 10+775
Survey

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113

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METRIC
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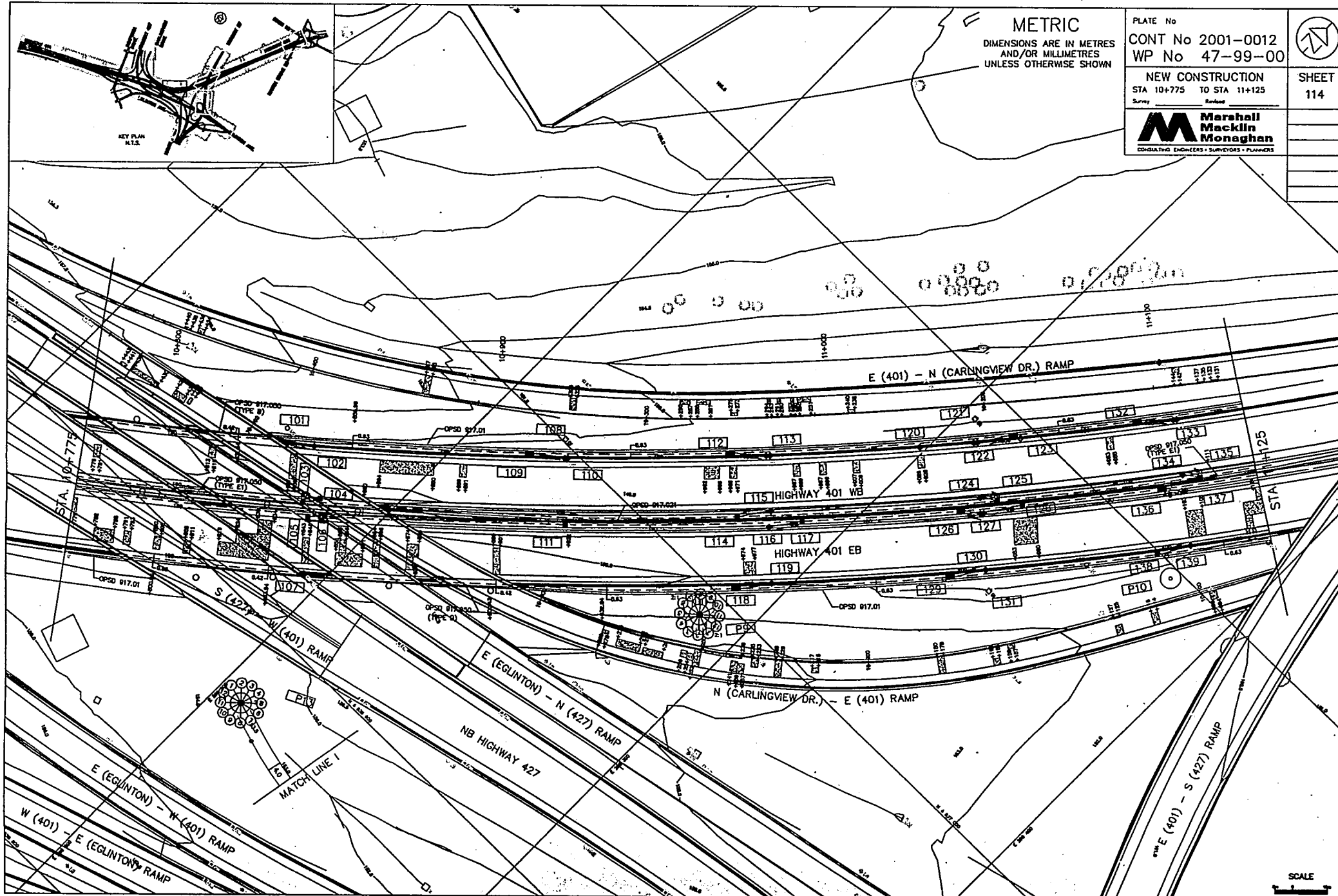
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CONT No 2001-0012
WP No 47-99-00

NEW CONSTRUCTION
STA 10+775 TO STA 11+125
Survey Revised

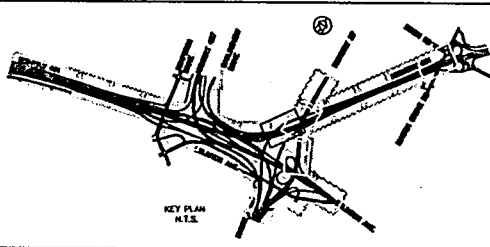
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SHEET
114



SCALE
1" = 100'



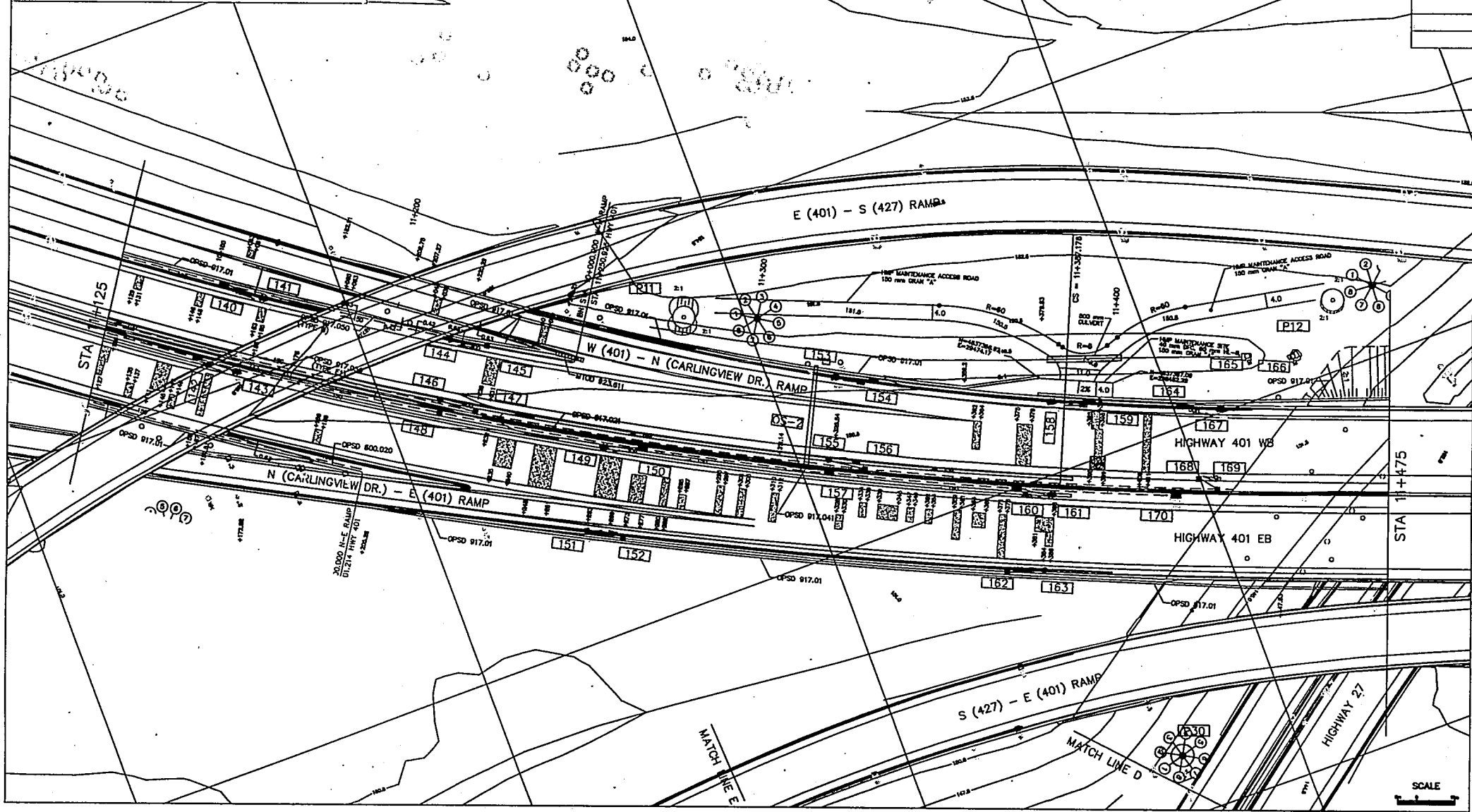
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DIMENSIONS ARE IN METRES
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CONT No 2001-0012
WP No 47-99-00

NEW CONSTRUCTION
STA 11+125 TO STA 11+475
Survey Road

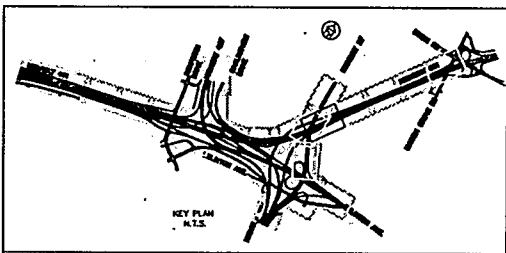
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SHEET
115



STA 11+475

SCALE



METRIC
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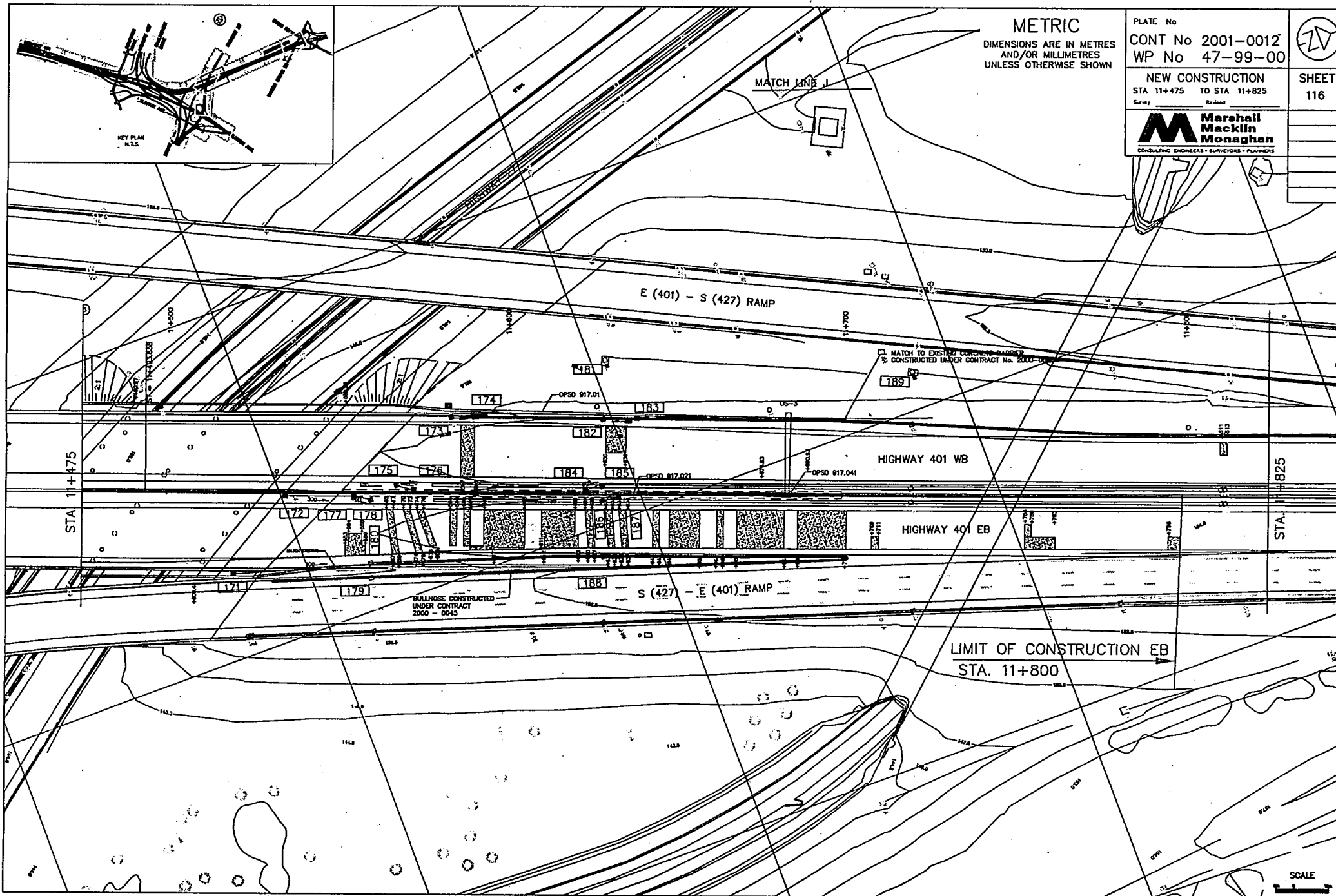
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WP No 47-99-00

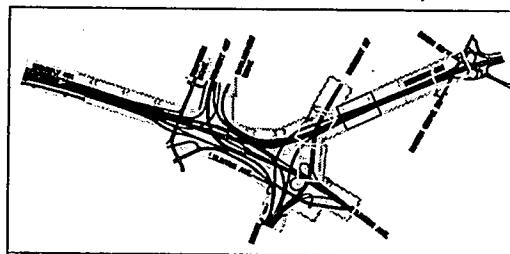


NEW CONSTRUCTION
STA 11+475 TO STA 11+825
Survey _____
Revised _____

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116

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NEW CONSTRUCTION
STA 11+825 TO STA 11+875

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SHEET
117

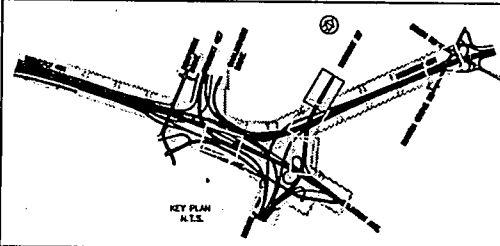
LIMIT OF
CONSTRUCTION WB
STA 11+875

E (401) - S (427) RAMP

HIGHWAY 401 WB EXPRESS

HIGHWAY 401 EB EXPRESS

SCALE



METRIC
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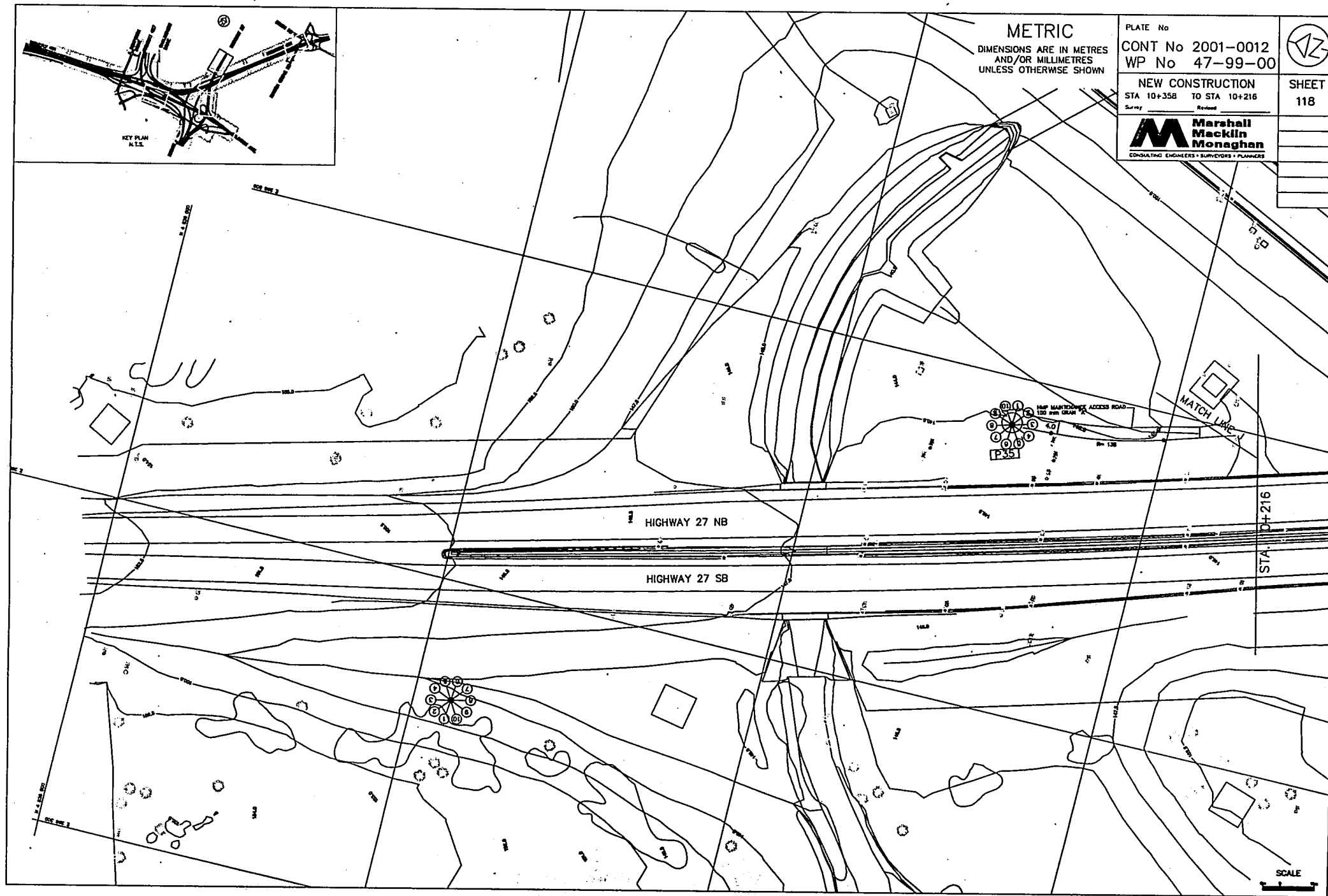
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 CONT No 2001-0012
 WP No 47-99-00

NEW CONSTRUCTION
 STA 10+358 TO STA 10+216
 Survey Revised

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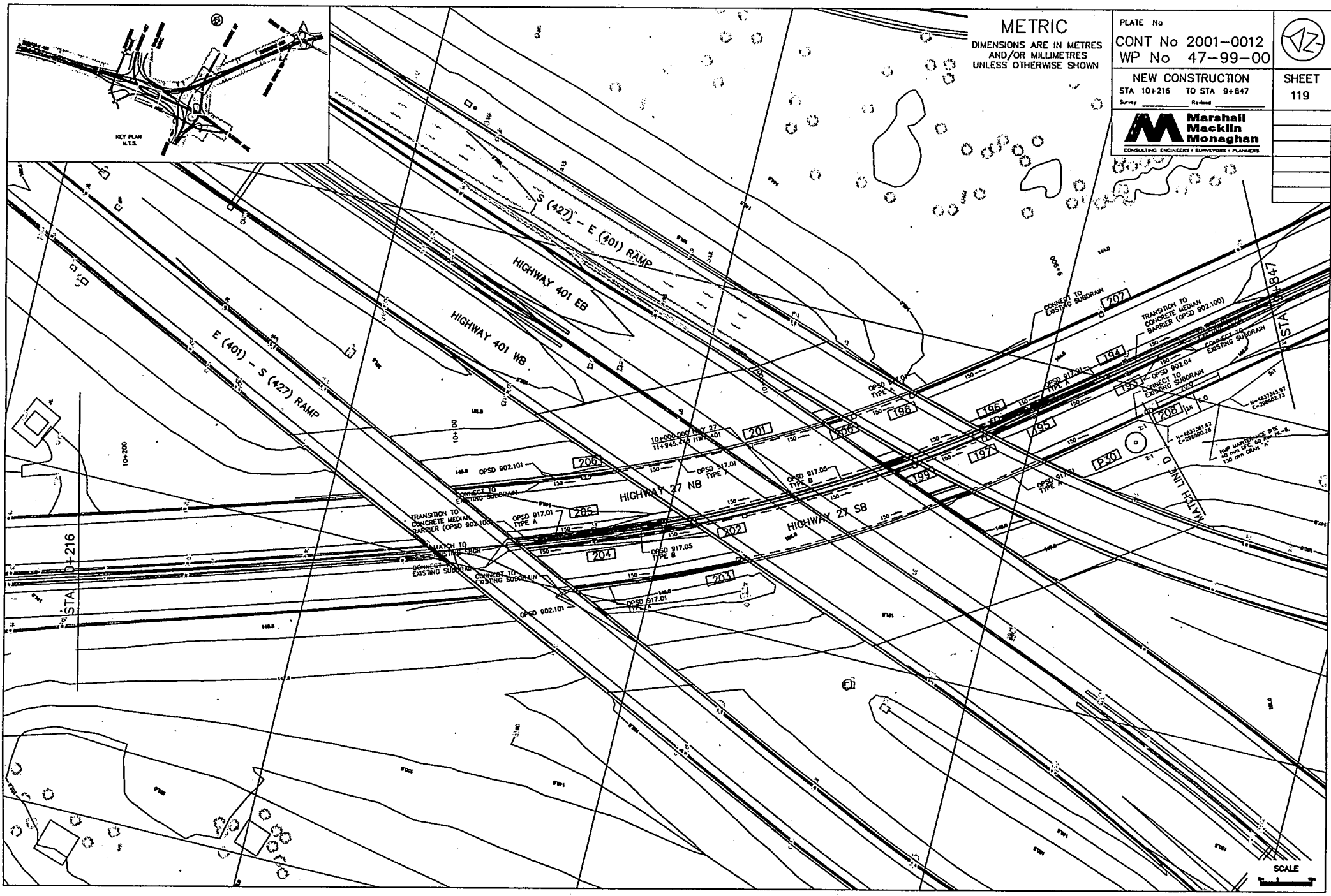


SHEET
 118



STA. 10+216

SCALE




METRIC
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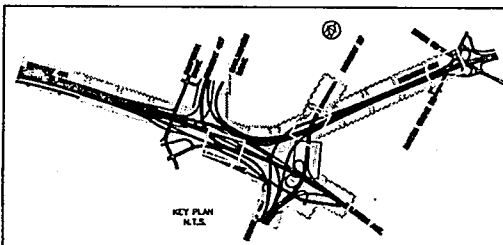
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CONT No 2001-0012
WP No 47-99-00

NEW CONSTRUCTION
STA 10+216 TO STA 9+847
Survey Reduced

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SHEET
119

SCALE

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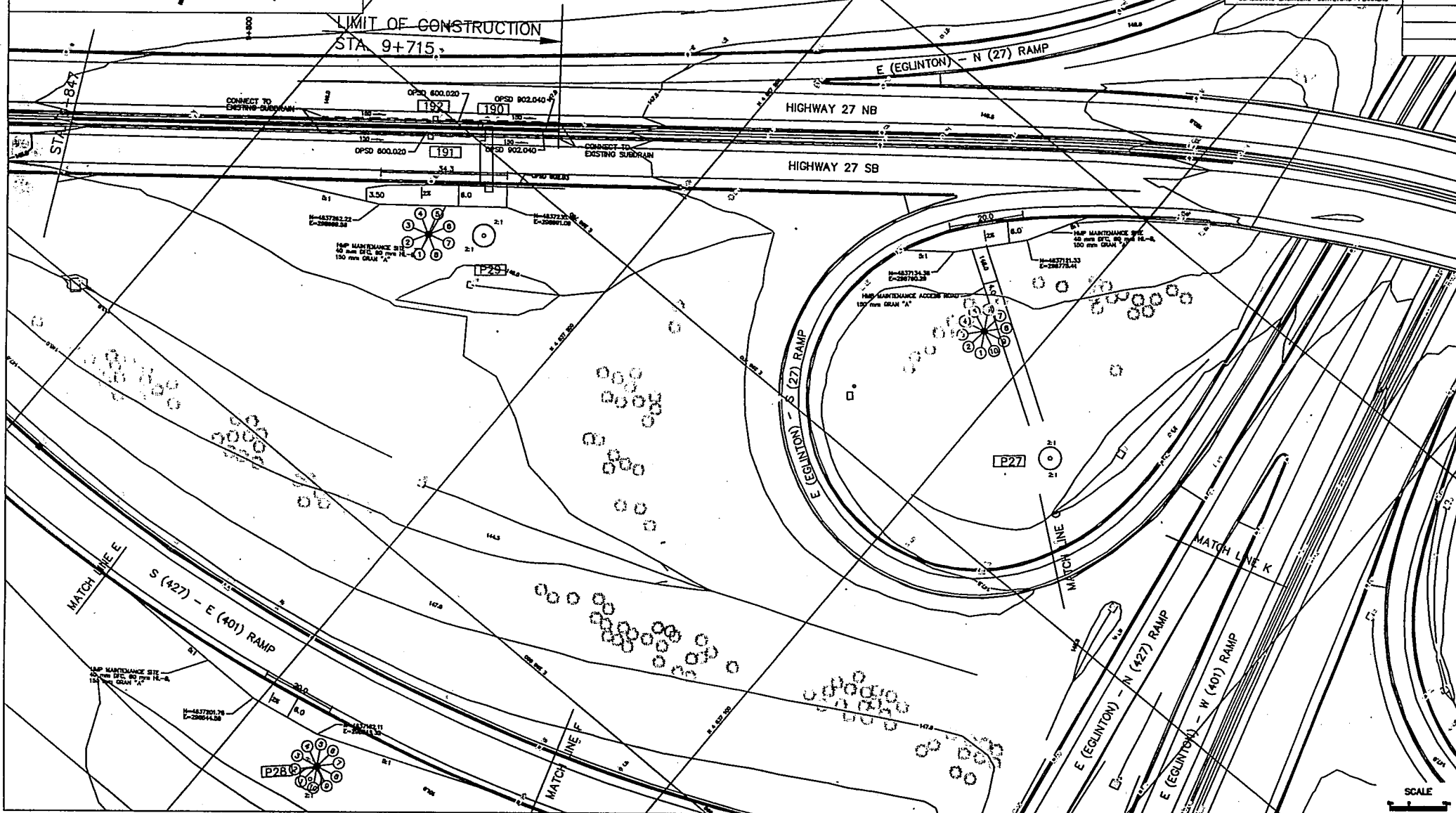
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WP No 47-99-00

NEW CONSTRUCTION
STA 9+847 TO STA 9+715

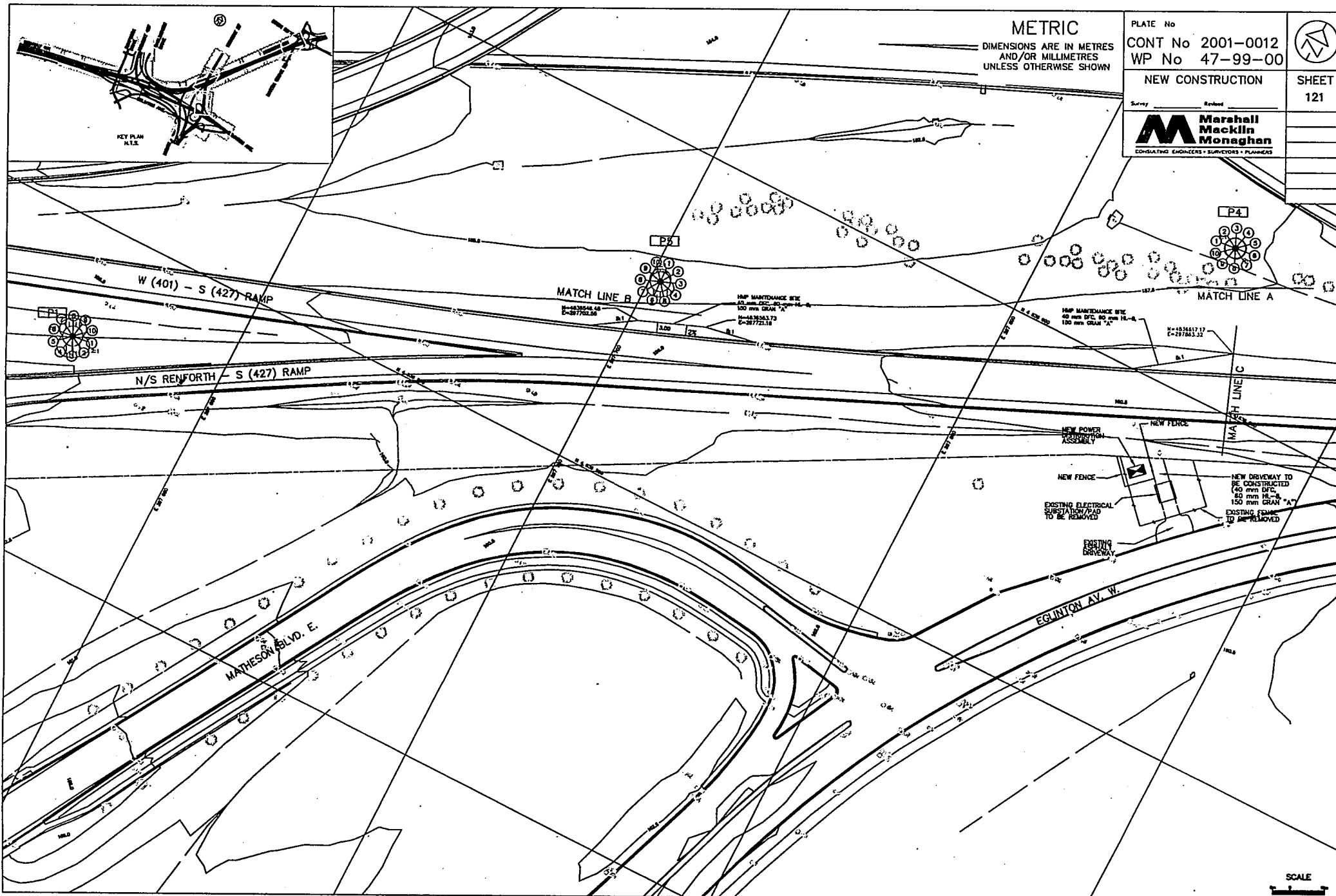
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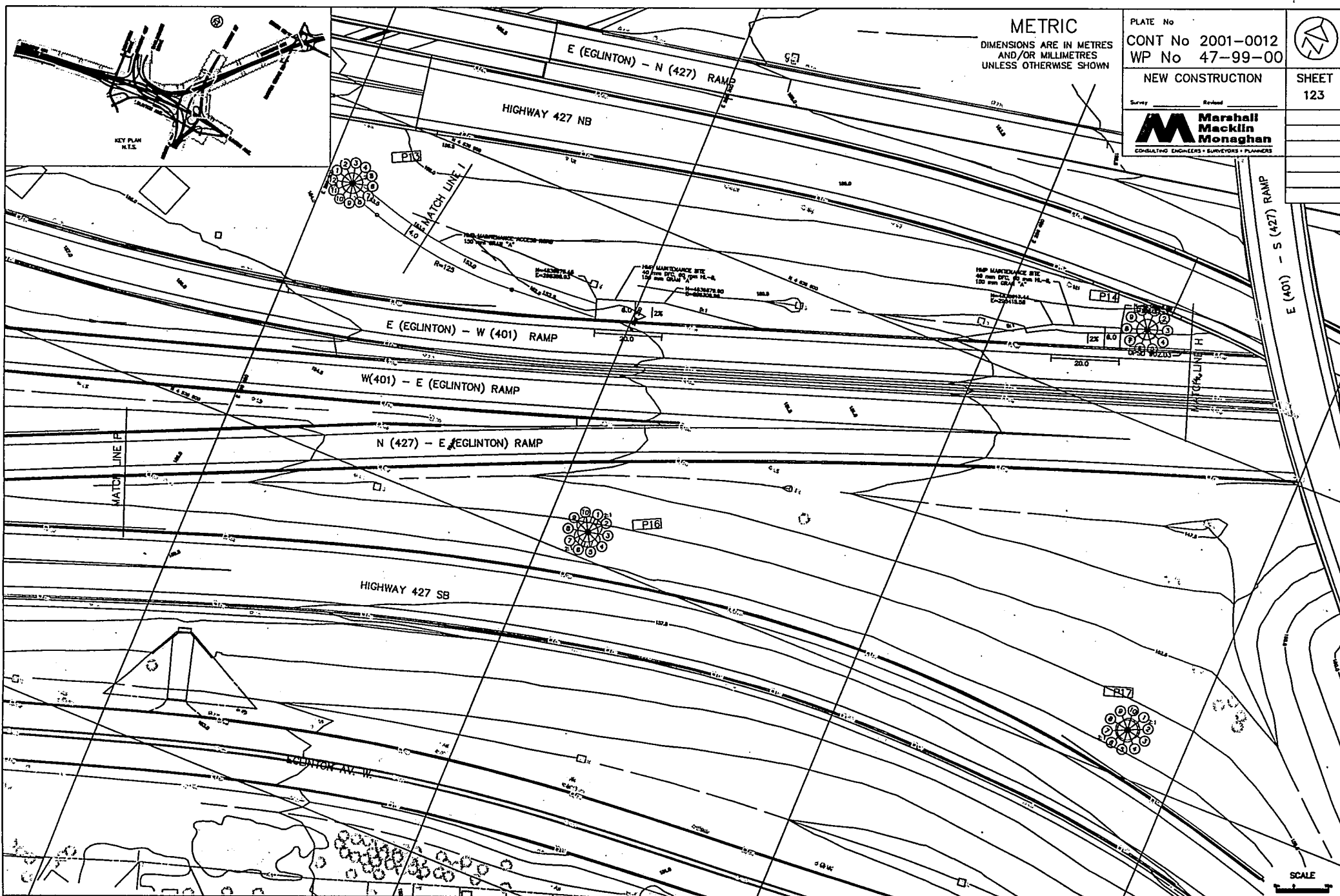


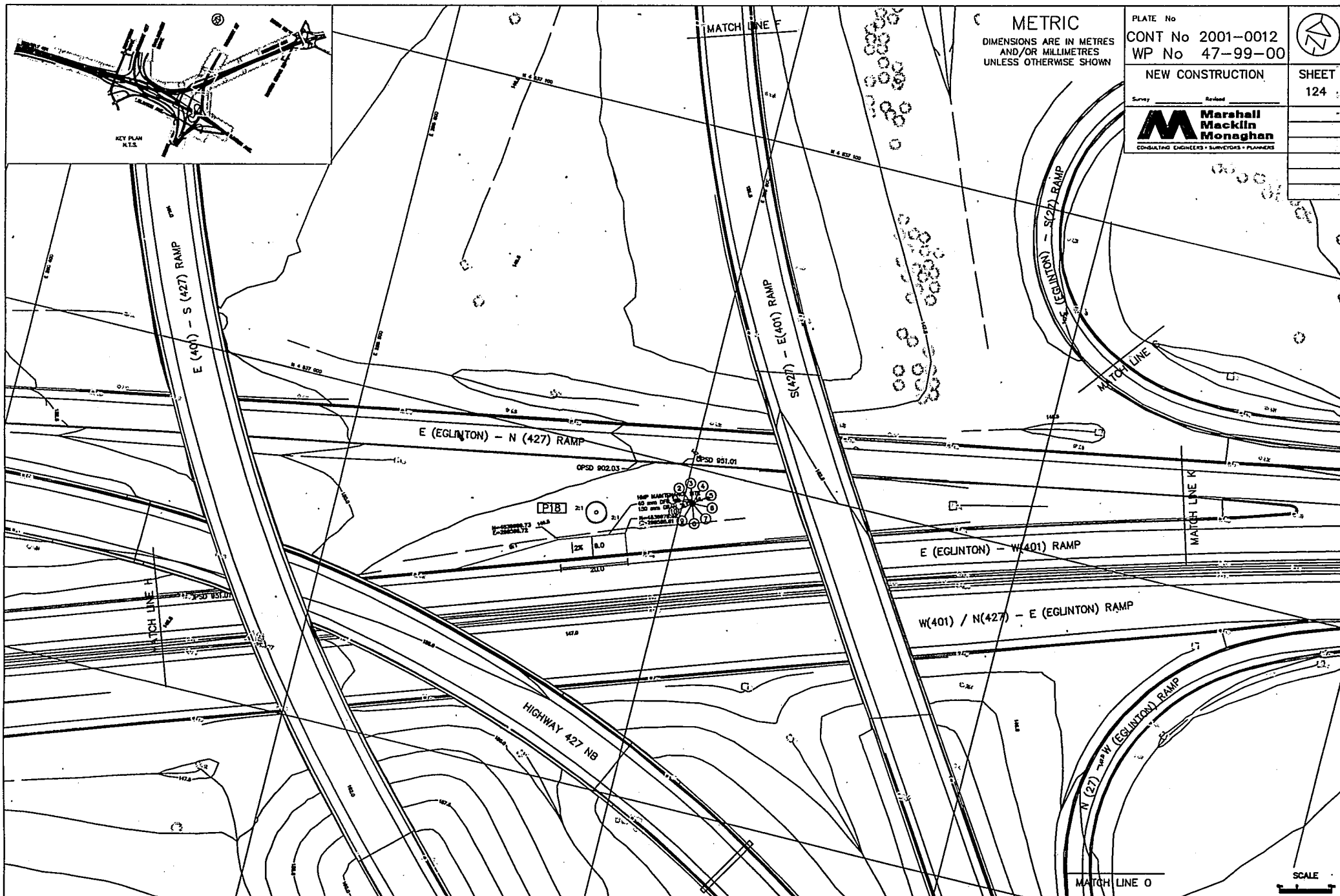
SHEET
120



SCALE







METRIC
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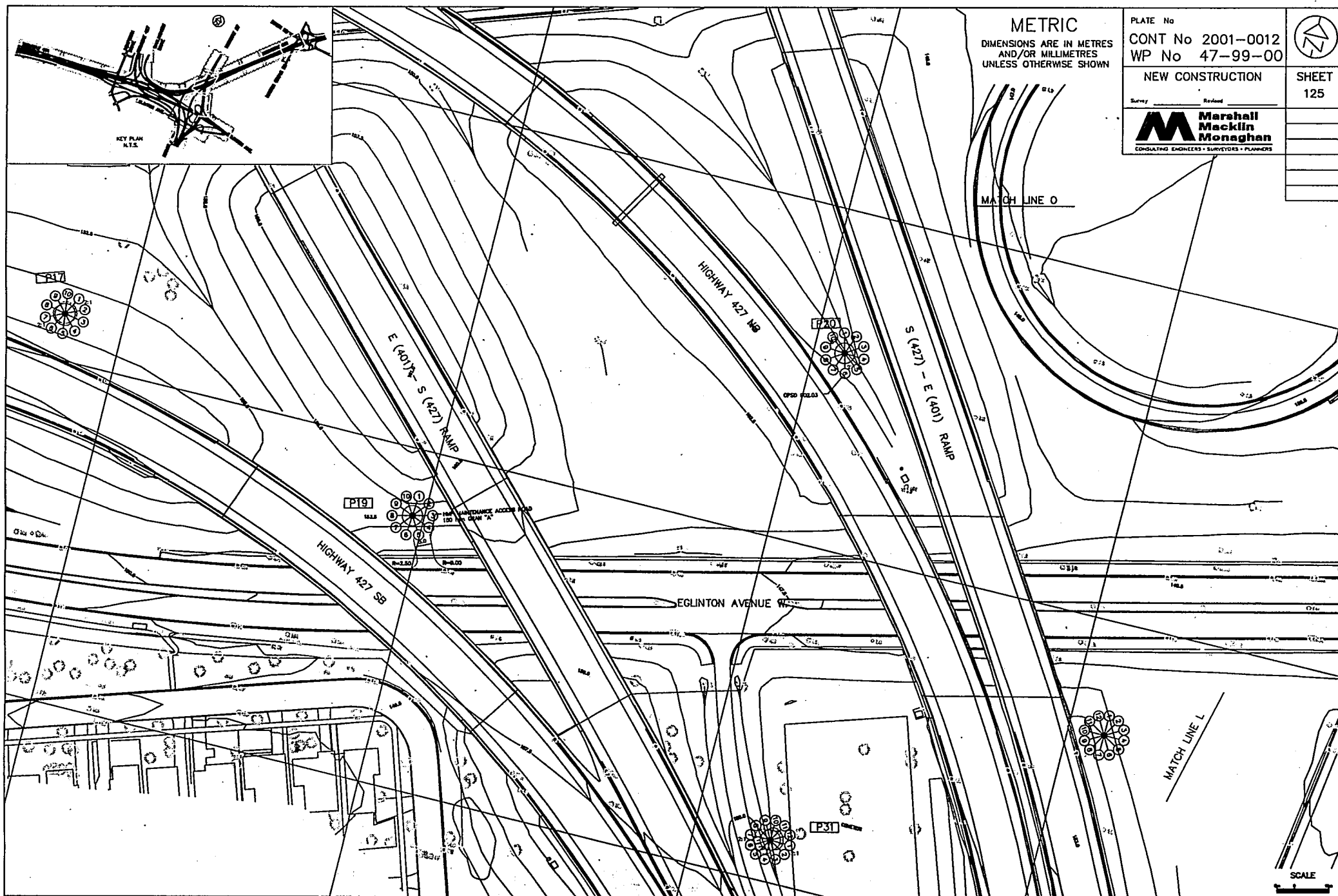
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WP No 47-99-00

NEW CONSTRUCTION

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SHEET
124

SCALE



METRIC
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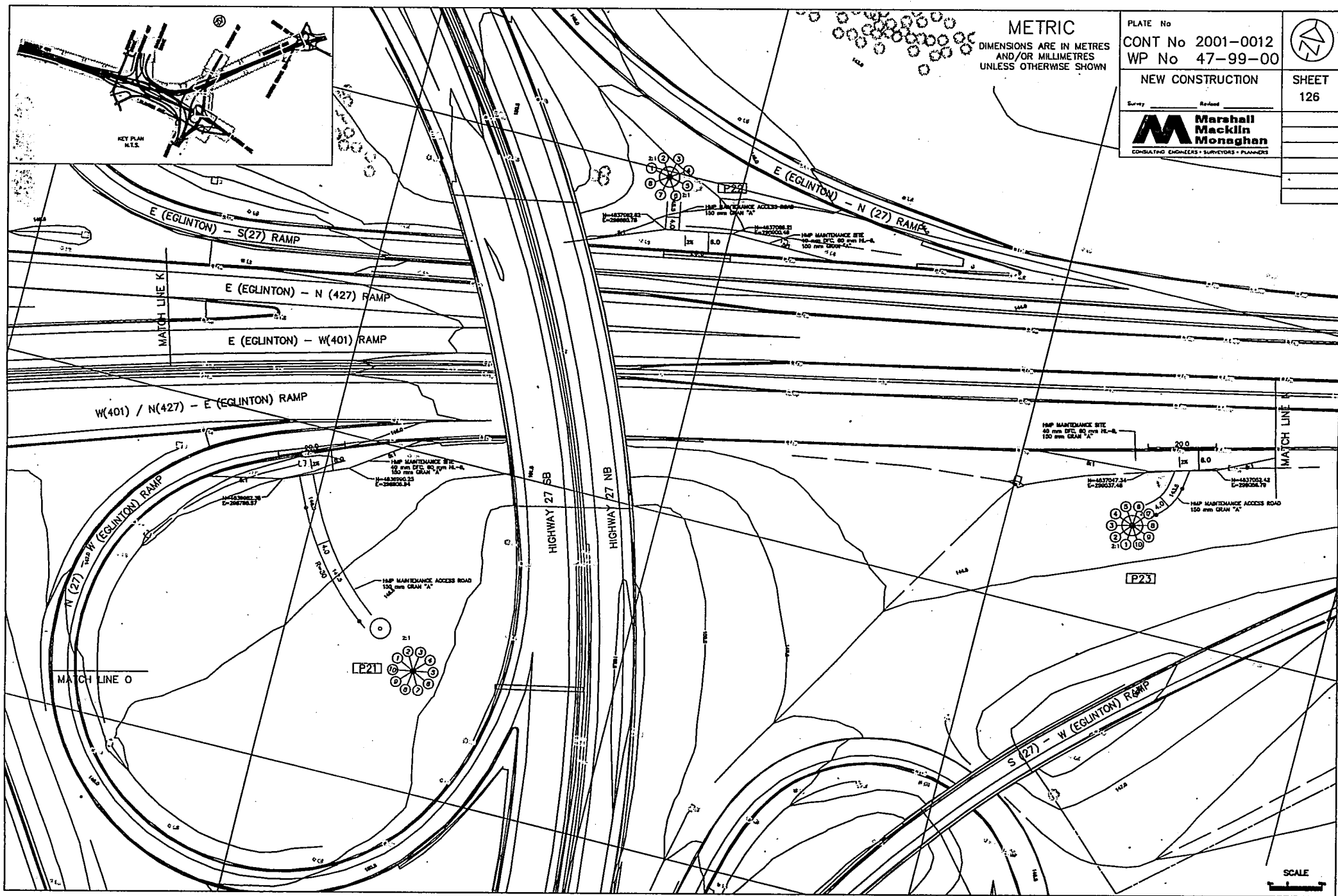
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CONT No 2001-0012
WP No 47-99-00

NEW CONSTRUCTION


Survey _____ Recheck _____
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SHEET
125

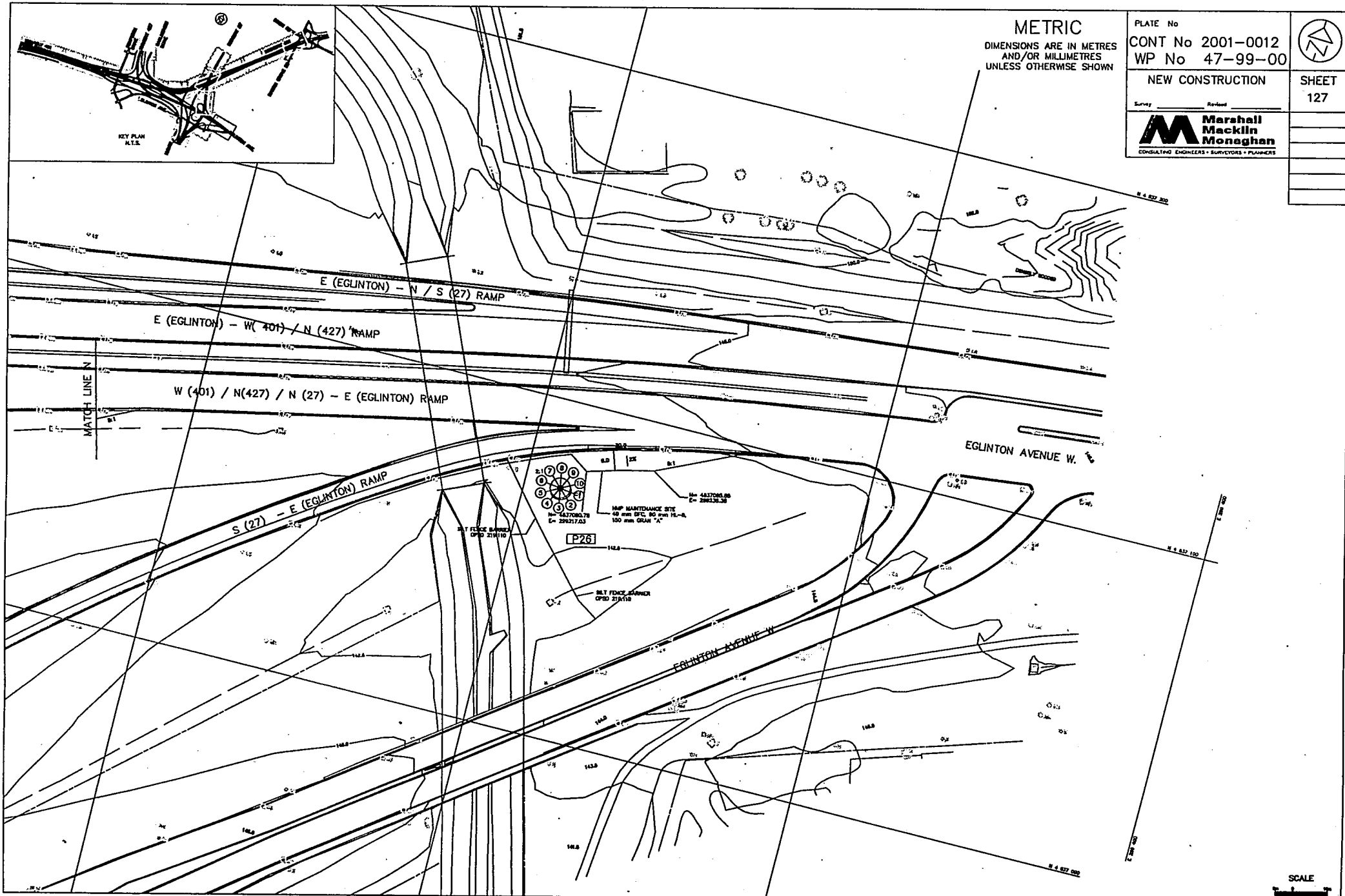
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METRIC
DIMENSIONS ARE IN METRES
AND/OR MILLIMETRES
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PLATE No	CONT No 2001-0012	
	WP No 47-99-00	
NEW CONSTRUCTION		SHEET 126
Survey _____ Revised _____		
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SCALE



METRIC
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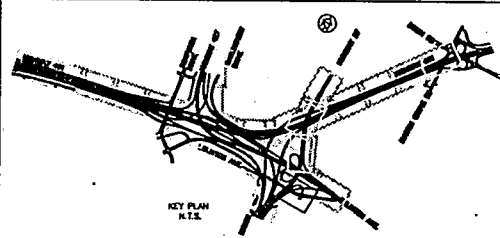
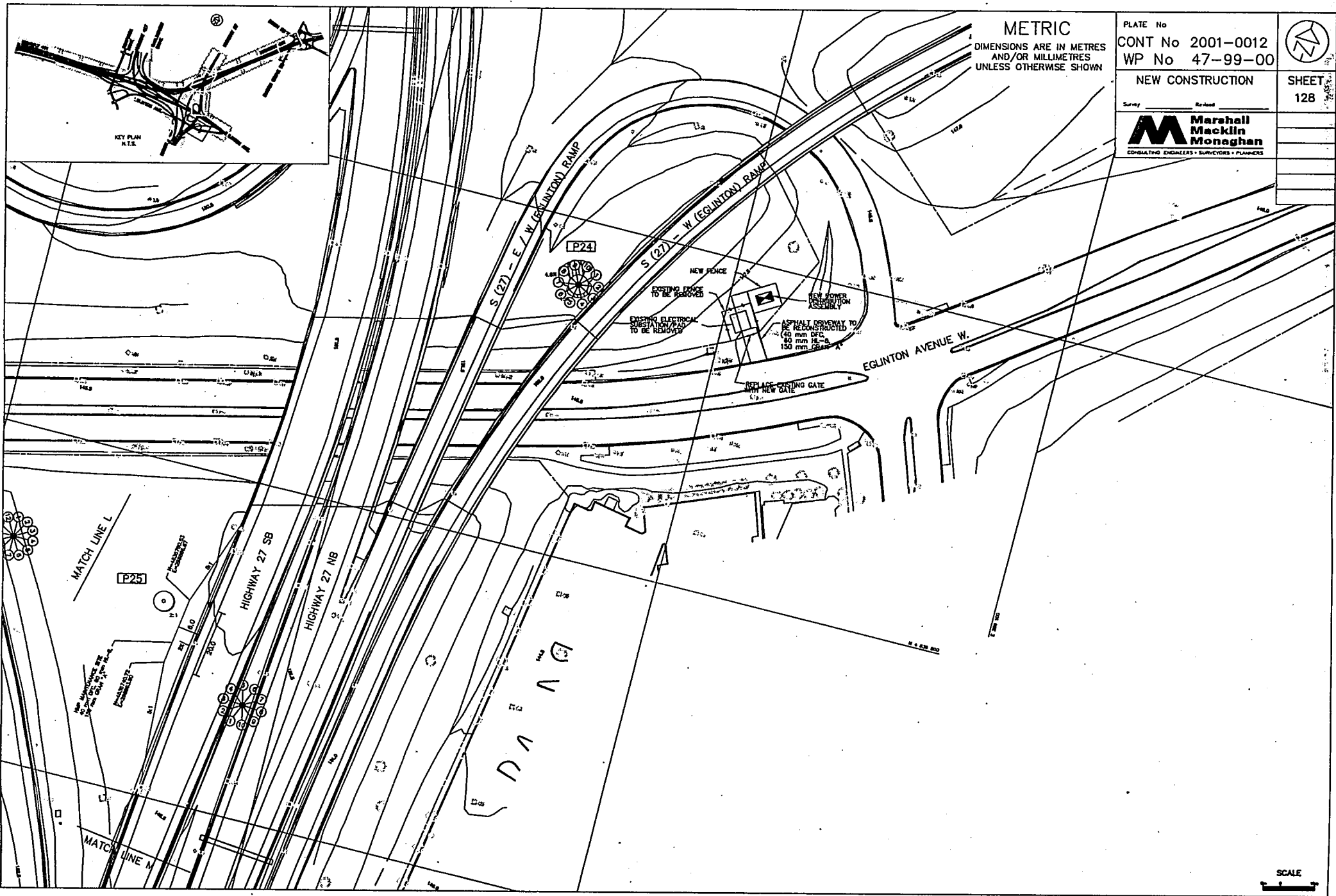
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WP No 47-99-00

NEW CONSTRUCTION



SHEET
127

SCALE
1" = 100'



METRIC
 DIMENSIONS ARE IN METRES
 AND/OR MILLIMETRES
 UNLESS OTHERWISE SHOWN

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 WP No 47-99-00

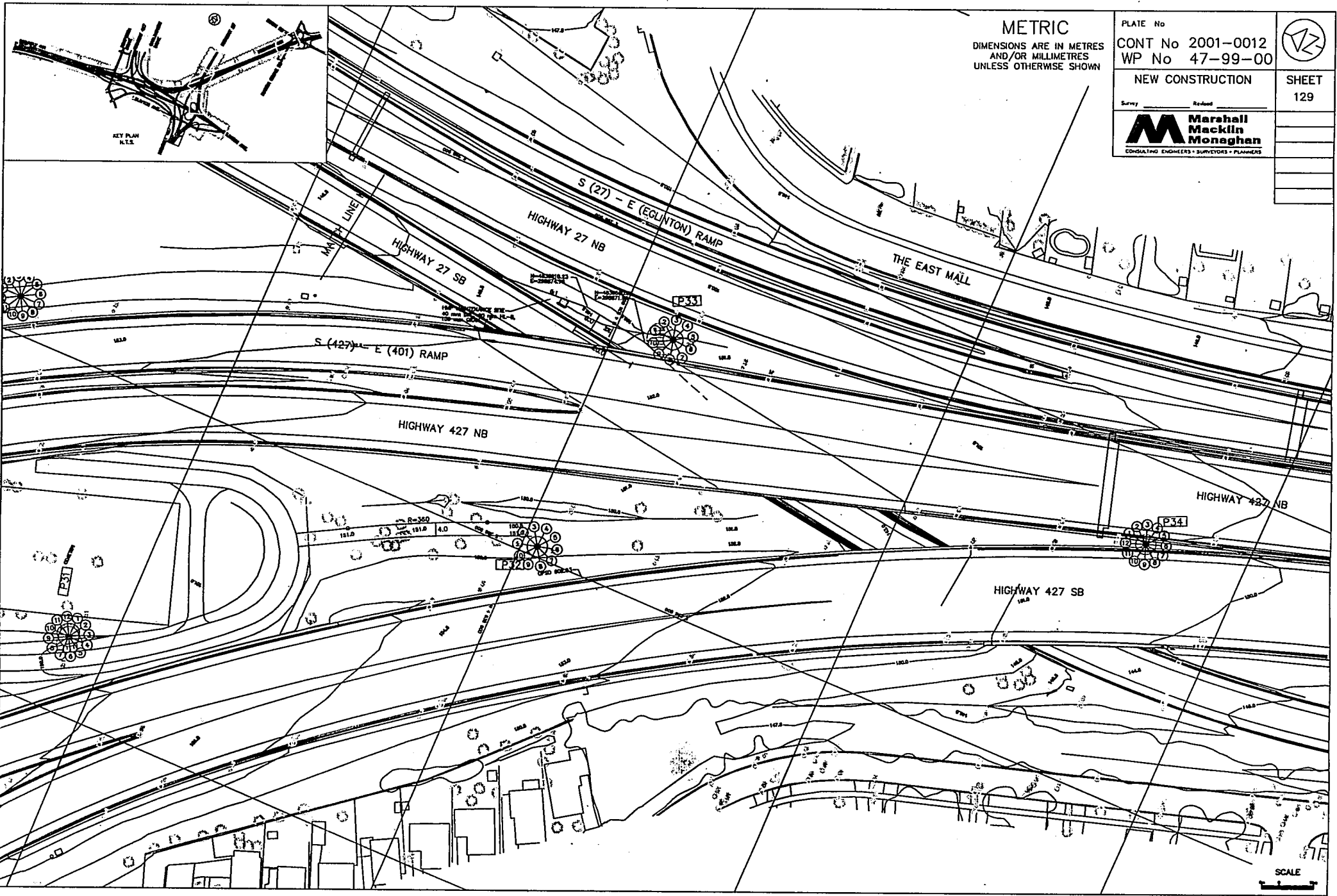


NEW CONSTRUCTION

SHEET
 128

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SCALE



METRIC
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WP No 47-99-00

NEW CONSTRUCTION

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SHEET
129

SCALE
1" = 100'



METRIC

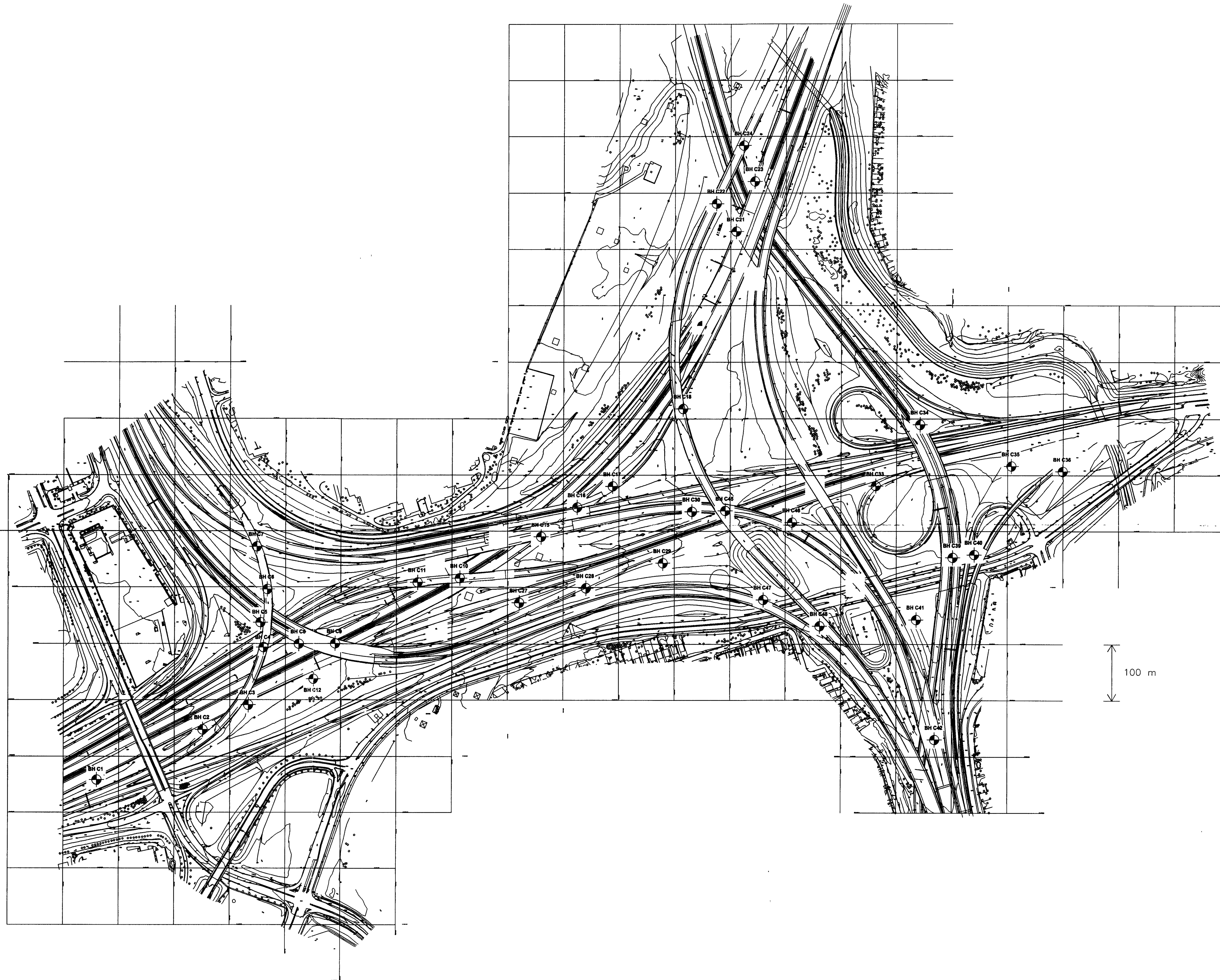
PLATE No PLATE
CONT No
WP No 47-99-00



HIGHWAY 401 REHABILITATION,
RENFORTH DRIVE TO HIGHWAY 427
BORE HOLE LOCATIONS

SHEET

DST
CONSULTING ENGINEERS



No	ELEVATION	CO-ORDINATES	
		NORTH	EAST
C1	162.52	4 836 457.9	297 360.1
C2	159.14	4 836 547.5	297 550.9
C3	157.43	4 836 591.1	297 633.2
C4	157.15	4 836 693.5	297 660.3
C5	156.24	4 836 737.7	297 654.8
C6	163.83	4 836 796.3	297 667.0
C7	159.41	4 836 872.2	297 648.1
C8	157.19	4 836 699.6	297 724.0
C9	157.43	4 836 700.3	297 789.8
C10	157.64	4 836 816.1	298 014.2
C11	157.06	4 836 808.5	297 938.3
C12	157.40	4 836 636.9	297 750.5
C13	156.76	4 836 836.8	297 970.6
C14	156.18	4 836 882.8	298 084.9
C15	154.14	4 836 889.8	298 160.2
C16	151.97	4 836 942.6	298 225.1
C17	152.67	4 836 980.1	298 288.8
C18	154.84	4 837 117.8	298 415.0
C19	152.19	4 837 264.1	298 448.5
C20	140.60	4 837 342.1	298 542.1
C21	142.59	4 837 431.8	298 510.1
C22	149.90	4 837 481.5	298 474.4
C23	144.00	4 837 520.8	298 543.6
C24	143.59	4 837 583.9	298 523.5
C25	144.69	4 837 656.7	298 557.6
C26	158.74	4 836 721.3	297 975.8
C27	155.66	4 836 772.8	298 120.9
C28	152.20	4 836 798.7	298 241.0
C29	151.24	4 836 843.2	298 379.3
C30	153.31	4 836 934.9	298 431.5
C31	153.71	4 836 980.1	298 654.0
C32	154.35	4 837 036.1	298 619.8
C33	146.82	4 836 981.0	298 762.8
C34	139.08	4 837 089.8	298 842.3
C35	139.08	4 837 016.3	299 006.6
C36	139.81	4 837 006.9	299 099.3
C37	139.20	4 837 070.6	299 180.0
C38	152.31	4 836 798.7	298 727.1
C39	151.36	4 836 853.3	298 901.5
C40	150.05	4 836 858.4	298 940.1
C41	148.59	4 836 743.2	298 835.9
C42	148.13	4 836 530.5	298 869.1
C43	156.33	4 836 823.1	298 095.3
C44	152.64	4 836 865.5	298 436.9
C45	150.11	4 836 936.5	298 491.2
C46	150.48	4 836 915.7	298 611.9
C47	150.14	4 836 778.0	298 560.4
C48	150.00	4 896 732.2	298 661.9

Rev.			HIGHWAY 401/427 INTERCHANGE				DIST 6
	DATE	BY	DESCRIPTION		SUBM'D IC	CHECKED IC	SITE
GEOCRES No			DRAWN SL	CHECKED MF	APPROVED		DWG 1
			DATE JAN. 24, 2001				