ENG.20070727.0004

	0	0	
Б	3	L	,

Design Calculation or Analysis Cover Sheet

Complete only applicable items.

1. QA: QA 2. Page 1

onfiguration for L4 mation "included with" r ps a design change 4, superseding th n for the subsurf such, does not a in the Underground	A eliminary elations for the ose cor cace rep	hip* w north e	Committed	00-KMC-SS00-002	00-000-00B	Superseded	
nation "included with" r ps a design change 4, superseding th a for the subsurf such, does not a in the Underground	A eliminary elations for the ose cor cace rep	hip* w north e	Committed	Confirmed	Cancelled/S	Superseded	
nation "included with" r ps a design change 4, superseding th a for the subsurf such, does not a in the Underground	A elations for the ose cor cace rep	hip* w north e	Committed	Confirmed	Cancelled/S	Superseded	
nation included with" r ps a design change 4, superseding th a for the subsurf such, does not a in the Underground	elations for the ose cor cace rep	hip* w north e	Committed	Confirmed	Cancelled/S	Superseded	
nation "included with" r ps a design change 4, superseding th a for the subsurf such, does not a in the Underground	elations for the ose cor face rep	hip* w north e	Committed	Confirmed	Cancelled/S	Superseded	
nation Pre "included with" r ps a design change 4, superseding th a for the subsurf such, does not a in the Underground	elations for the ose cor face rep	hip* w north e	Committed		Cancelled/S	Superseded	
Pre "included with" r ps a design change 4, superseding th n for the subsurf such, does not a in the Underground	elations for the ose cor face rep	hip* w	Committed	Confirmed	Cancelled/S	Superseded	
"included with" r ps a design change 4, superseding th for the subsurf such, does not a in the Underground	elations for the ose cor face rep	hip* w north e	ith Underground			• •	
"included with" r ps a design change 4, superseding th n for the subsurf such, does not a in the Underground	elations for the ose cor face rep	hip* w north e	ith Underground				
	dversel d Layou	respond pository y influ at Confi	This calculation has an "included with" relationship* with <i>Underground Layout Configuration</i> 800-POC-MGR0-00100-000-00E. This calculation develops a design change for the north extension of the access main and effects design reconfiguration of Panels 1, 2, 3-West, 3-East, and 4, superseding those corresponding figures and tables in the <i>Underground Layout Configuration</i> . The modified configuration for the subsurface repository resides within the design boundaries of the <i>Underground Layout Configuration</i> and, as such, does not adversely influence or rearrange waste emplacement from the design principles and constraints established in the <i>Underground Layout Configuration</i> .				
00901 Rev. 3 pro- in InfoWorks.	cedure i	is used	to document and	update specific dat	a/relationships link	as among affected	
ed in the Purpose, 0037 Rev. 8.	Section	1, and	revision bars are	used to identify thos	e sections that have	e been revised per	
Attachments Total Number of Pages							
Attachment I ULC North Ramp and Access Main Intersection 8					8		
Attachment II Design Impediment Mitigation for ULCLA					4		
Attachment III Panel 1 Optimization for ULCLA 3					3		
Attachment IV Available Emplacement Drift Length in ULCLA 6					6		
A Excavation Dim	ensions	Works	heet			10	
cation of Waste Pa	ckage E	Endpoin	t Coordinates by	an Alternative Metho	od	20	
onic MicroStation	Files (in	ncludes	two CD's)		÷	2	
	. <u>tèm</u>	RE	CORD OF REVISIO	NS			
· · · · · · · · · · · · · · · · · · ·	11	12		14	15	16.	
0. or Revision	Total #	Last	Originator	Checker	EGS	Approved/Accepted	
	of Pgs.	Pg. #	(Print/Sign/Date)	(Print/Sign/Date)	(Print/Sign/Date)	(Print/Sign/Date)	
	99	VII-2	T. Lahnalampi	J.Steinhoff	N/A	R. Saunders	
esign developed in the <i>Configuration</i> 800- 000-00A and resolve	108	VII-2	T. Lahnalampi T Lahna ang 7/27/07	J.Steinhoff 7/27/07	E. Thomas Solution 2 Theorem 7/27/07	R. Saunders 55	
	such, does not a in the Underground 00901 Rev. 3 pro- in InfoWorks. ed in the Purpose, 0037 Rev. 8. North Ramp and Ad 1 Impediment Miti 1 Optimization for able Emplacement A Excavation Dim cation of Waste Pa onic MicroStation 0. or Revision	4, superseding those corn 1 for the subsurface repsuch, does not adversel in the Underground Layou 00901 Rev. 3 procedure is in InfoWorks. ed in the Purpose, Section 10037 Rev. 8. North Ramp and Access M 1 Impediment Mitigation for ULCL. able Emplacement Drift Let .A Excavation Dimensions cation of Waste Package E onic MicroStation Files (in 0. 11. Total # of Pgs. 99 lesign developed in the Configuration 800-100-00A and resolve	4, superseding those correspond 1 for the subsurface repository such, does not adversely influ- in the Underground Layout Confi, 00901 Rev. 3 procedure is used 1 in InfoWorks. ed in the Purpose, Section 1, and 10037 Rev. 8. Attacher North Ramp and Access Main Inter 1 Impediment Mitigation for ULCC 1 Optimization for ULCLA able Emplacement Drift Length in A Excavation Dimensions Works cation of Waste Package Endpoin ronic MicroStation Files (includes RE 0. 0. 0. 0. 0. 0. 11. 12. Total # 108 VII-2 lesign developed in the Configuration 800- 00-00A and resolve	4, superseding those corresponding figures and the formation of the subsurface repository resides within such, does not adversely influence or rearrange in the Underground Layout Configuration. 00901 Rev. 3 procedure is used to document and the InfoWorks. ed in the Purpose, Section 1, and revision bars are the W037 Rev. 8. Attachments North Ramp and Access Main Intersection 1 Impediment Mitigation for ULCLA 1 Optimization for ULCLA able Emplacement Drift Length in ULCLA A Excavation Dimensions Worksheet cation of Waste Package Endpoint Coordinates by a ronic MicroStation Files (includes two CD's) RECORD OF REVISIO 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	4, superseding those corresponding figures and tables in the Under 1 for the subsurface repository resides within the design bound such, does not adversely influence or rearrange waste emplacement in the Underground Layout Configuration. 00901 Rev. 3 procedure is used to document and update specific dat in InfoWorks. ed in the Purpose, Section 1, and revision bars are used to identify thos 10037 Rev. 8. Attachments North Ramp and Access Main Intersection 1 Impediment Mitigation for ULCLA 1 Optimization for ULCLA A Excavation Dimensions Worksheet cation of Waste Package Endpoint Coordinates by an Alternative Mether onic MicroStation Files (includes two CD's) RECORD OF REVISIONS 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	4, superseding those corresponding figures and tables in the Underground Layout Con 1 for the subsurface repository resides within the design boundaries of the Und such, does not adversely influence or rearrange waste emplacement from the design in the Underground Layout Configuration. 00901 Rev. 3 procedure is used to document and update specific data/relationships link in InfoWorks. ed in the Purpose, Section 1, and revision bars are used to identify those sections that have 0037 Rev. 8. Attachments North Ramp and Access Main Intersection 1 Impediment Mitigation for ULCLA 1 Optimization for ULCLA A Excavation Dimensions Worksheet cation of Waste Package Endpoint Coordinates by an Alternative Method onic MicroStation Files (includes two CD's) RECORD OF REVISIONS 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	

DISCLAIMER

The calculations contained in this document were developed by Bechtel SAIC Company, LLC (BSC) and are intended solely for the use of BSC in its work for the Yucca Mountain Project.

Revision Number	Effective Date	Revision Description
00A	11/15/06	Initial Issue
00B	07/27/07	Revised Section 2 to reflect current format.
		In order to resolve CR 10113 the following changes have been made:
		Moved Sections 2.1.16 to Section 4.3.2. Deleted Section 2.1.17. Moved Sections 2.1.18 through 2.1.24 into Section 6.1. Moved Sections 2.2.1 through 2.2.10 and Section 2.2.12 into Table 1. Deleted the initial issue version of Section 2.2.11. Deleted Assumption 3.2.4 and moved Assumption 3.2.9 to Section 6.1.8.
		Other changes to incorporate the current turnout design include:
		Updated Section 4. Created a new Section 6.5 to include turnout design. Revised Table 3 (formerly Table 2), Table 4 (formerly Table 3), Table 5 (formerly Table 4), and Table 6 (formerly Table 5) to incorporate turnout design length. Revised Table 7 (formerly Table 6) to reflect current design parameters. Revised Table 9 (formerly Table 8) to reflect current turnout design and correct Access/Exhaust Main and Exhaust Raise Access Drift lengths. Revised Tables 11 through 15 (formerly Tables 10 through 14) to reflect elevation change due to current turnout design. Revised Attachment V to incorporate turnout design. Updated Attachment VII to reflect current turnout design.
		NOTE: In compliance with EG-PRO-3DP-G04B-00037, Section 3.6.2, Attachment VI, <i>Verification of Waste Package Endpoint Coordinates by an Alternative Method</i> , coordinates in the horizontal plane are not required to be re-verified since the waste package endpoint coordinates in the horizontal plane do not change with the inclusion of the current turnout design.

REVISION HISTORY

CONTENTS

1.	PURPOSE
2.	REFERENCES102.1PROCEDURE/DIRECTIVES102.2DESIGN INPUTS102.3DESIGN CONSTRAINTS112.4DESIGN OUTPUTS11
3.	ASSUMPTIONS123.1ASSUMPTIONS REQUIRING VERIFICATION123.2ASSUMPTIONS NOT REQUIRING VERIFICATION12
4.	METHODOLOGY144.1QUALITY ASSURANCE144.2USE OF SOFTWARE144.3DESIGN METHODOLOGY15
5.	LIST OF ATTACHMENTS
6.	BODY OF CALCULATION.196.1DESIGN CONTROLS.196.2CURRENT UNDERGROUND LAYOUT CONFIGURATION (ULC).206.3ACCESS MAIN DESIGN IMPEDIMENT RESOLUTION.236.4EMPLACEMENT PANEL 1 OPTIMIZATION.256.5TURNOUT DESIGN.276.6EMPLACEMENT PANEL COMPILATION.306.7OBSERVATION DRIFT.456.8VENTILATION INTERFACE.45
7.	RESULTS AND CONCLUSIONS
A	TACHMENT I ULC NORTH RAMP AND ACCESS MAIN INTERSECTIONI-1
A	TACHMENT II DESIGN IMPEDIMENT MITIGATION FOR ULCLA II-1
AT	TACHMENT III PANEL 1 OPTIMIZATION FOR ULCLA III-1

CONTENTS (Continued)

ATTACHMENT IV	AVAILABLE EMPLACEMENT DRIFT LENGTH IN THE ULCLA
ATTACHMENT V	ULCLA EXCAVATION DIMENSIONS WORKSHEET V-1
ATTACHMENT VI	VERIFICATION OF WASTE PACKAGE ENDPOINT COORDINATES BY AN ALTERNATIVE METHODVI-1
ATTACHMENT VII	ELECTRONIC MICROSTATION FILESVII-1

FIGURES

Figure 1.	Underground Layout Configuration21
Figure 2.	North Ramp and Access Main Intersection
Figure 3.	Section View Through #11 Frog
Figure 4.	Bypass Alternative Excavation
Figure 5.	Emplacement Panel Configuration
Figure 6.	Typical Turnout Plan View
Figure 7.	Panel 1
Figure 8.	Panel 2
Figure 9.	Panel 3
Figure 10.	Panel 4
Figure 11.	Underground Layout Configuration for LA49
Figure I-1.	North Ramp and Future North Extension of the Access Main IntersectionI-3
Figure I-2.	Section View at Common Elevation Station 00+00.00I-4
Figure I-3.	Section View at Station 00+50.00I-5
Figure I-4.	Section View at Station 00+75.00I-5
Figure I-5.	Section View at Station 01+00.00I-6
Figure I-6.	Section View at Station 01+25.00I-6
Figure I-7.	Section View at Station 01+50.00I-7
Figure I-8.	Section View at Station 02+00.00I-7
Figure I-9.	Section View at Station 02+50.00I-8
Figure II-1.	Excavation Geometry for the Bypass Alternative II-4

TABLES

Table 1.	Design Parameters	5
Table 2.	Turnout Excavation Dimensions (Typical)	3
Table 3.	Panel 1	2
Table 4.	Panel 2	5
Table 5.	Panel 3)
Table 6.	Panel 4	ł
Table 7.	Design Parameter Inclusion	5
Table 8.	Shaft Nomenclature	3
Table 9.	Overall Excavation Summary for the ULCLA)
Table 10.	Emplacement Drift Available in the ULCLA (Meters)	l
Table 11.	Panel 1 Waste Package End Point Coordinates (Meters)	2
Table 12.	Panel 2 Waste Package End Point Coordinates (Meters)	2
Table 13.	Panel 3 East Waste Package End Point Coordinates (Meters)	3
Table 14.	Panel 3 West Waste Package End Point Coordinates (Meters)	1
Table 15.	Panel 4 Waste Package End Point Coordinates (Meters)	5
Table 16.	Exhaust Shaft #1 Coordinates	5
Table I-1.	Spatial Variance Between the Access Main and the North Ramp in the ULCI-8	3
Table IV-1.	Panel 1 Available Emplacement Drift Length (Meters)IV-2	2
Table IV-2.	Panel 2 Available Emplacement Drift Length (Meters) IV-3	3
Table IV-3.	Panel 3 East Available Emplacement Drift Length (Meters) IV-4	ł
Table IV-4.	Panel 3 West Available Emplacement Drift Length (Meters)IV-5	5
Table IV-5.	Panel 4 Available Emplacement Drift Length (Meters) IV-6	5
Table V-1	Panel 1V-2	2
Table V-2	Panel 2	3
Table V-3	Panel 3	5
Table V-4.	Panel 4	3
Table V-5.	Turnout and Emplacement Drift Excavation Summary V-10)
Table VII-1.	MicroStation Files on CD	2

ACRONYMS AND ABBREVIATIONS

AREMA	American Railway Engineering and Maintenance of Way Association
BINFRA	Bechtel Infrastructure Corporation
BSC	Bechtel SAIC Company
CD	compact disc
CSA	civil structural architectural
CR	Condition Report
E	East
ECRB	Enhanced Characterization of the Repository Block
ESF	Exploratory Studies Facility
ft	Feet
IED	Information Exchange Drawing
LA	license application
m	meter
MTHM	metric tons of heavy metal
m ³ /s	cubic meters per second
Ν	North
N/A	not applicable
STA	station
TBM	tunnel boring machine
TEV	Transport and Emplacement Vehicle
TMRB	Technical Management Review Board
ULC	Underground Layout Configuration
ULCLA	Underground Layout Configuration for LA
VPT	Vertical Point of Tangency
W	West
WPEC	Waste Package Endpoint Coordinate(s)

1. PURPOSE

The purpose of the Underground Layout Configuration for LA (ULCLA) calculation is to develop a design solution to the construction interference between the North Ramp and the future north extension of the access main and to make changes to the Underground Layout Configuration (ULC) (Reference 2.2.4) that support the design solution. The reconfiguration of the ULC has received Technical Management Review Board (TMRB) technical endorsement (Reference 2.2.6, Attachment 3). Additionally, the ULCLA will include the turnout configuration developed in *Turnout Design and Configuration* (Reference 2.2.9). The ULCLA will be used for license application.

In this revision changes have taken place to the initial issue of this document that includes:

- The combination of resolving the reference errors noted in Condition Report, CR-10113, and updating Section 2, *References*, due to format change, makes significant changes to Section 2.2, *Design Inputs* and results in extensive modification to these areas.
- Section 4.1, *Quality Assurance*, has been changed to reflect the current procedure.
- Section 4.3, *Design Methodology*, includes major changes to Table 1 to incorporate current requirements and consolidates design parameters.
- The latest version of the turnout design (see Section 6.5) has been incorporated into the underground layout configuration which impacts all pertinent discussion related to the turnout, each excavation summary table, and the elevation of the individual emplacement drifts.
- Section 7, *Results and Conclusions*, discussion has been updated to include the impact of the revised turnout design that changes all the emplacement drift elevations.

The scope of this calculation includes:

- Incorporate the turnout configuration that facilitates waste emplacement with the transport and emplacement vehicle (TEV).
- The elevation of each emplacement drift will be adjusted by a vertical dimension that is a function of the turnout configuration.
- Limit changes to the *Underground Layout Configuration* (ULC) to the extent practicable.
- Effect necessary modifications to Panels 1, 2, 3-East, 3-West, and 4 that are compatible with a reconfigured ULC.
- Document excavation dimensions that reflect the ULCLA.
- Document waste package endpoint coordinates (WPEC) that reflect the ULCLA.

This calculation will closely examine the intersection of the North Ramp and the future north extension of the access main for potential construction issues that can arise by integrating the two excavations which have diverging gradients. Mitigation of the gradient interference between the two excavations leads to a relocation of Panel 1 and an optimization of the available emplacement area in the vicinity of Panel 1 and the adjoining emplacement panels. As a consequence, the waste package endpoint coordinates that are affected by a reorganization of Panel 1 and the emplacement area in the vicinity of Panel 1 are redefined in this calculation.

This calculation has an "included with" relationship with *Underground Layout Configuration*, 800-P0C-MGR0-00100-000-00E. (The "included with" relationship is used to document and update specific data/relationships links among affected engineering documents in InfoWorks.) This calculation develops a design change for the north extension of the access main and affects design reconfiguration of Panels 1, 2, 3-West, 3-East, and 4, superseding the corresponding figures and tables in the *Underground Layout Configuration*.

In doing so, this calculation invokes the design requirements from the *Underground Layout Configuration* (Reference 2.2.4, Section 7.1). This calculation does not reiterate the design parameters used to develop the *Underground Layout Configuration* pertaining to geologic setting, emplacement drift orientation, waste inventory, water table standoff, perched water standoff, fault standoff, standoff from certain geologic units, the Repository Host Horizon, and overburden cover. Also, this calculation accepts the design principles applied in the development of the *Underground Layout Configuration* (Reference 2.2.4, Section 7.2) that include the capability to operate in the higher-temperature mode, a modular design, placing surface openings outside the probable maximum flood area, preventing surface water ingress, having the subsurface water drainage directed away from the emplacement area, providing for post-closure water drainage, and recognizing a waste package standoff from quaternary faults with potential for significant displacement.

2. **REFERENCES**

2.1 **PROCEDURE/DIRECTIVES**

- 2.1.1 EG-PRO-3DP-G04B-00037, Rev. 08. *Calculations and Analyses*. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20070420.0002.
- 2.1.2 IT-PRO-0011, Rev. 5. *Software Management*. Las Vegas, Nevada: Bechtel SAIC Company. ACC: DOC.20070521.0001.

2.2 DESIGN INPUTS

- 2.2.1 AREMA (American Railway Engineering and Maintenance-of-Way Association) 2006. 2006 Portfolio of Trackwork Plans. Lanham, Maryland: American Railway Engineering and Maintenance-of-Way Association. TIC: 258536. [DIRS 177494]
- 2.2.2 BINFRA (Bechtel Infrastructure Corporation) 2002. *Yucca Mountain-MGR, Subsurface Transporter System Review*. [New York, New York]: Bechtel Infrastructure Corporation. ACC: MOL.20021030.0077. [DIRS 160685]

- 2.2.3 BSC (Bechtel SAIC Company) 2007. *Performance Confirmation Facilities*. 800-KMC-MGR0-00100-000-00B. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20070725.0003
- 2.2.4 BSC (Bechtel SAIC Company) 2003. Underground Layout Configuration. 800-P0C-MGR0-00100-000-00E. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20031002.0007; ENG.20050817.0005. [DIRS 165572]
- 2.2.5 BSC (Bechtel SAIC Company) 2004. *D&E / PA/C IED Emplacement Drift Configuration and Environment [Sheet 1 of 2]*. 800-IED-MGR0-00201-000-00B. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20040326.0001. [DIRS 168489]
- 2.2.6 BSC (Bechtel SAIC Company) 2006. Bechtel SAIC Company, LLC, Technical Management Review Board (TMRB) Meeting Minutes, August 3, 2006, 11:00 AM, Building 10 Room D150, with attachments. ACC: MOL.20061004.0160. [DIRS 177604]
- 2.2.7 BSC (Bechtel SAIC Company) 2006. *Basis of Design for the TAD Canister-Based Repository Design Concept*. 000-3DR-MGR0-00300-000-000. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20061023.0002. [DIRS 177636]
- 2.2.8 BSC (Bechtel SAIC Company) 2007. *Postclosure Modeling and Analyses Design Parameters*. TDR-MGR-MD-000037 REV 01 ACN 02. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20070613.0002.
- 2.2.9 BSC (Bechtel SAIC Company) 2007. *Turnout Design and Configuration*. 800-KMC-SSD0-00900-000-00A. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20070625.0041.
- 2.2.10 BSC (Bechtel SAIC Company) 2007. Project Design Criteria Document. 000-3DR-MGR0-00100-000 REV 006. Las Vegas, Nevada: Bechtel SAIC Company. ACC: ENG.20061201.0005; ENG.20070111.0028; ENG.20070621.0002.
- 2.2.11 IEEE/ASTM SI 10-2002. 2002. American National Standard for Use of the International System of Units (SI): The Modern Metric System. New York, New York: Institute of Electrical and Electronic Engineers. TIC: 257712. [DIRS 177651]

2.3 DESIGN CONSTRAINTS

No design constraints.

2.4 DESIGN OUTPUTS

The design output is the waste package endpoint coordinates listed in the tables found in Section 7.6 that will be used to revise *IED Subsurface Facilities Geological Data*, document number 800-IED-WIS0-01801-000-00B. The additional design output, such as the electronic file of the centerlines of the ULCLA submitted as a record in CD format, would form the basis to revise drawings, *Subsurface-Underground Layout Configuration for LA General Arrangement*

(800-KM0-SS00-00301-000-00A), Subsurface-Underground Layout Configuration for LA Panel 1 Plan (800-KM0-SS00-00302-000-00A), Subsurface-Underground Layout Configuration for LA Panel 2 Plan (800-KM0-SS00-00303-000-00A), Subsurface-Underground Layout Configuration for LA Panel 3 Plan (800-KM0-SS00-00304-000-00A), and Subsurface-Underground Layout Configuration for LA Panel 4 Plan (800-KM0-SS00-00305-000-00A).

3. ASSUMPTIONS

3.1 ASSUMPTIONS REQUIRING VERIFICATION

Not used.

3.2 ASSUMPTIONS NOT REQUIRING VERIFICATION

3.2.1 Location of Waste Package in Emplacement Drift

Assumption: The minimum standoff from first waste package in the emplacement drift to the end of the turnout is 1.5 m (5 ft) and the minimum standoff from the last waste package to the centerline of the exhaust main is 15 m (49 ft). Used in Assumption 3.2.2, and Sections 4.3.1, 6.5.1, and 7.1.

Rationale: The minimum standoff distances are consistent with the *Underground Layout Configuration* (Reference 2.2.4, Section 6.3) that establishes the location of the first and last waste packages at 1.5 m from the end of the turnout and 15 m from the centerline of the exhaust main.

Note: The basis for the rationale for 1.5 m (5 ft) standoff from the end of the turnout to the first waste package was that 1.5 m (5 ft) is required to maintain a sufficient length of emplacement drift to ensure that the waste package was not located at the edge of the elevation difference between the turnout and the emplacement drift. The revised turnout design (see Section 6.5) no longer includes an elevation differential. As a result, the cited turnout standoff no longer has any basis. However, to maintain continuity with the current emplacement drift lineal dimensioning carried throughout this calculation and the ULC, the 1.5 m (5 ft) standoff is used in this revision.

Correspondingly, the 15 m standoff on the exhaust main side has become a derived requirement (Reference 2.2.8, No. 01-18) which is used in conjunction with the aforementioned 1.5 m standoff to maintain the continuity with the current emplacement drift lineal dimensioning carried throughout this calculation and the ULC.

3.2.2 Operational Standoff and Footprint Restriction

Assumption: The operational standoff and footprint restriction for the reconstituted Panel 1 in the ULCLA will be 16.5 m (54 ft). This is the sum of minimum standoff from each end of the emplacement drift described in Assumption 3.2.1. In the ULC the "operational standoff" has the same meaning as "minimum standoff" and the "footprint restriction" refers to emplacement drift excavation outside the repository boundary (Reference 2.2.4, Attachment I). This assumption is used in Sections 4.3.1 and 7.1, and Attachment IV.

Rationale: An operational standoff and footprint restriction of 16.5 m (54 ft) for the reconstituted Panel 1 in the ULCLA is appropriate since the reconstituted Panel 1 remains in the same area between ULC Panel 1 and Panel 2 (Reference 2.2.4, Section 8.4).

3.2.3 Track Turnouts

Assumption: A No.11 track turnout is used in conjunction with 305 m (1000 ft) radius curves and a No. 6 track turnout is used in the turnout drift. This assumption is used in Section 6.2.2 and Attachment I.

Rationale: The AREMA No. 11, track turnout radius of 927 ft - 3¹/₄ inches, identified in Section 6.1.3, is appropriate to use since it is close to the minimum radius of 305 m (1000 ft) used for ramps and mains in the ULC (Reference 2.2.4, Section 6.4). The Bechtel Infrastructure Corporation (BINFRA) *Yucca Mountain MGR Subsurface Transporter System Review* (Reference 2.2.2, Section 4.3) recommended a No. 6 track turnout for the turnout drift since a No. 6 track turnout can accommodate the weight of a transporter and has the flexibility to be used with various different turnout radii. However, the TEV is noted to have an 11 foot gage (Reference 2.2.7, Section 9.9.2.2.4), but for the purposes of demonstrating turnout rail geometry the AREMA turnouts are appropriate since the TEV rail would be similar.

3.2.4 Track Turnout Positioning

Assumption: The No. 6 track turnout is north of the No. 11 track turnout and the heels of their respective frogs are adjoined. This assumption is used in Section 6.2.2 and Attachment I.

Rationale: Turnout drift #3 in Panel 1 is located immediately north of the North Ramp curve point of tangency (Reference 2.2.4, Figure 6). As a result, the No. 11 track turnout at the bottom of the North Ramp Curve and the No. 6 track turnout for turnout drift #3 are in close proximity to each other. In order to maintain a separation and prevent an overlap of the No. 11 and No. 6 track turnouts, the heels of their respective frogs are adjoined.

3.2.5 Turnout Position Relative to the Access Main

Assumption: The turnout excavation is projected at the same elevation as the access main. This assumption is used in Attachment I.

Rationale: The turnout excavation is in agreement with any design modification that might be proposed for the North Ramp curve and the north extension of the access main. This assumption is based on engineering judgment in order to facilitate the illustration of cross-sectional views. Attaching the turnout view to the access main view allows any elevation change in the design solution to be automatically incorporated into the turnout/access main interface.

3.2.6 Road Base in the Access Main

Assumption: The road base for the north extension of the access main is three feet thick. This assumption is used for illustrative purposes in the cross-sectional views in Attachments I and II.

Rationale: A finished depth of three feet for the concrete invert is appropriate for this calculation since it is within an acceptable margin for the expected depth of the concrete invert that will support TEV usage during emplacement. A different value would not change the relative vertical cross-sectional configuration at the bottom of the North Ramp and a north extension of the access main.

3.2.7 North Extension of the Access Main Offset

Assumption: The north extension of the access main offset is 80 ft to the west. This assumption is used in Section 6.3.2 and Attachment II.

Rationale: An 80-foot offset to the west is appropriate since it exceeds the three diameter minimum spacing required for non-emplacement drifts (Section 4.3.1) and provides margin for the TEV to correct its alignment after exiting a curve before entry into an adjoining curve. Moving to the west is appropriate since a westward movement distances the north extension of the access main from the North Ramp.

4. METHODOLOGY

4.1 QUALITY ASSURANCE

This calculation was prepared in accordance with EG-PRO-3DP-G04B-00037, *Calculations and Analyses* (Reference 2.1.1). The Subsurface Facility is classified as a Safety Category item (important to safety and important to waste isolation) in the *Basis of Design* (Reference 2.2.7). Therefore, the approved version is designated as QA: QA.

4.2 USE OF SOFTWARE

The inputs for software usage are given in Section 2 and the outputs from the software are given in Sections 6 and 7.

<u>Note:</u> In compliance with EG-PRO-3DP-G04B-00037 (Reference 2.1.1, Section 3.6.2), Attachment VI, WPEC in the horizontal plane are not required to be re-verified since the WPEC in the horizontal plane do not change from the initial issue of the ULCLA with the inclusion of the current turnout design.

4.2.1 General Software

This calculation uses Microsoft® Office Excel 2003 in the Microsoft Windows XP Professional Version 2002 Service Pack 2 operating environment on a Dell Optiplex GX620 computer for computation. Also, Microsoft® Excel 97 SR-2 in the Microsoft Windows 2000 5.00.2195 Service Pack 4 operating environment on a Dell WORKSTATION PWS340 computer is used for computation in Attachment VI.

In this calculation Microsoft® Excel is commercially available software used to develop spreadsheets. As such, the useage is Level 2 and the software does not need to be qualified per IT-PRO-0011, *Software Management*, Attachment 12 (Reference 2.1.2).

Excel is used in Attachment V, Table V-1 through Table V-5, to round values to the nearest whole number using the conversion factor given in Section 0 and to add up columns of numbers throughout this document. Additionally, in Attachment VI, Excel is used to perform computations using trigonometry. The Excel computations in Attachment VI are used to verify the MicroStation (Section 4.2.2) output and examples of those computations are included. The Excel computations can be confirmed using hand calculations and by visual inspection.

4.2.2 Other Software

This calculation uses MicroStation Version 07.01.04.16 Windows x86, in the Microsoft Windows 2000 5.00.2195 Service Pack 4 operating environment on a Dell WORKSTATION PWS340 to generate coordinates, graphical representations, and figures in this calculation. MicroStation is Level 2 software used in accordance with IT PRO 0011 *Software Management* (Reference 2.1.2).

The input to MicroStation is the VULCAN output file *Subsurfaceladesign_m.dxf* (Reference 2.2.4, Attachment V) and the outputs are the figures throughout the document, the table values throughout the document, and the waste package endpoint coordinates in Section 7.6. The figures in this document are verified by visual inspection.

The MicroStation output was verified by an alternate calculation in Attachment VI in compliance with EG-PRO-3DP-G04B-00037, *Calculations and Analyses* (Reference 2.1.1, Section 3.4.1).

4.3 DESIGN METHODOLOGY

Conventional, industry accepted, underground excavation design was used to generate the ULCLA in concurrence with the design parameters that were used to develop the ULC (Reference 2.2.4, Section 7). The ULC was developed with the qualified VULCAN V4.0NT software in the three-dimensional geologic model Vulcan Geologic Framework Model 3.1 (Reference 2.2.4, Section 4.2). However, plan and section views in the ULCLA that integrate design enhancements favorable to construction and redefine the waste package endpoint coordinates were developed in MicroStation (Section 4.2.2) from the VULCAN output file *Subsurfaceladesign_m.dxf* (Reference 2.2.4, Attachment V). Therefore the MicroStation output was verified in Attachment VI in accordance with *Calculations and Analyses*, EG-PRO-3DP-G04B-00037 (Reference 2.1.1, Section 3.4.1).

The redefined underground layout configuration and waste package endpoint coordinates remain within the design boundaries established in the ULC by VULCAN therefore do not adversely affect or rearrange waste emplacement. As such, this calculation does not redefine and does not re-establish the fundamental requirements pertaining to geologic setting, emplacement drift orientation, waste inventory, water table standoff, perched water standoff, fault standoff, standoff from certain geologic units, the Repository Host Horizon, and overburden cover.

Note: The ULC turnout is depicted in Figures 1, 2, and 3 in Section 6.2, and Figure 4 in Section 6.3, and Figure 5 in Section 6.4, and the corresponding support documentation in Attachment I, II, and III, since the topic of discussion in the document at that point pertains the ULC repository design preceding the introduction of the current turnout design in Section 6.5.

4.3.1 Design Parameters

This calculation accepts the design principles applied to the development of the ULC (Reference 2.2.4, Section 7.2) that include the capability to operate in the higher-temperature mode, a modular design, placing surface openings outside the probable maximum flood area, preventing surface water ingress, having the subsurface water drainage directed away from the emplacement area, providing for post-closure water drainage, and recognizing a waste package standoff from quaternary faults with potential for significant displacement.

Table 1 provides a comparative list of the design parameters, such as requirements from *Basis of Design for the TAD Canister-Based Repository Design Concept* (Reference 2.2.7), criteria from *Project Design Criteria Document* (Reference 2.2.10), and derived requirements from *Postclosure Modeling and Analyses Design Parameters* (Reference 2.2.8) with the assumptions that were used in the development of the ULC and carried forward into the ULCLA. The table lists the individual design parameter, the source location for the design parameter, and the comparable ULC section, if available, or another design document that addresses the design parameter.

Design Parameter	Source	ULC Section ¹
The vertical separation between crossing drifts shall be a minimum of 10 m (33 ft) from the crown of the lower opening to the invert of the upper opening.	Reference 2.2.10, Section 4.2.13.8.1	6.1
The minimum spacing (centerline-to-centerline) for nonemplacement drifts, running parallel, shall be three diameters, based upon the diameter of the larger drift.	Reference 2.2.10, Section 4.2.13.8.2	6.1
The access mains and ramps shall be a nominal 7.62 m (25 ft diameter) in diameter.	Reference 2.2.10, Section 4.13.8.3	8.3, 8.4, 8.6
The excavated diameter of openings that are used to dispose of waste packages shall be a nominal of 5.5 m (18 ft).	Reference 2.2.10, Section 4.2.13.8.4	8.4
Portal and shaft/raise collar openings shall be protected from the probable maximum flood by making the surface gradient at the portal openings and shaft collars shall be down gradient and away from the openings.	Reference 2.2.10, Section 4.2.13.8.5	7.2.3, 7.2.4
The emplacement drifts shall be oriented at least 30 degrees from the dominant joint set per TBV-361 <i>Resolution Analysis: Emplacement Drift Orientation.</i> (The emplacement drifts are presently located along an azimuth of 252 degrees or alternately an azimuth of 72 degrees).	Reference 2.2.10, Section 4.2.13.8.6	5.1.4
The Subsurface Facility shall be designed to accept 70,000 MTHM of SNF/HLW for disposal.	Reference 2.2.7, Section 8.2.1.1	5.3.1.2
The emplacement drift spacing (center-to-center) shall be a nominal 81 m (266 ft).	Reference 2.2.7, Section 8.2.1.8	Not addressed in ULC
Performance confirmation requirements shall be identified with the issuance of the Performance Confirmation Plan.	Reference 2.2.7, Section 8.2.1.14	5.3.1.4
Derived Requirement		
The emplacement drifts shall be located a minimum of 120 m above the water table (worst-case postulated water level, ~850 m).	Reference 2.2.8 No. 01-04	7.1.1
The emplacement drifts shall be located a minimum of 60 m from a Quaternary fault with potential for significant displacement.	Reference 2.2.8 No. 01-05	7.1.3
The overburden thickness from the emplacement area to the	Reference 2.2.8	7.1.8

Table 1. Design Parameters

topographic surface shall be a minimum of 200 m.	No. 01-06	
The emplacement drifts shall be located a minimum of 30 m from the top of the Tptpv2 (Topopah Spring Tuff Crystal-poor Vitric Zone) because perched water may occur at the base of the Tpt (Topopah Spring Tuff).	Reference 2.2.8 No. 01-07	7.1.2
The emplacement drifts will be nominally parallel and the design azimuth shall be within a range of 70° to 80°.	Reference 2.2.8 No. 01-08	5.1.4
The repository ramps, access mains, exhaust mains, and emplacement drifts shall be constructed by tunnel boring machines (TBM).	Reference 2.2.8 No. 01-09	Not addressed in ULC
The emplacement drifts shall be circular in cross section with a diameter nominally 5.5 m (-0/+10%).	Reference 2.2.8 No. 01-10	8.4
The grade of the emplacement drift shall be nominally horizontal so that overall water drainage is directly into the rock to prevent water accumulation.	Reference 2.2.8 No. 01-11	7.2.6, Attachment III
The repository non-emplacement opening shall provide a repository grade so overall water drainage and accumulation is away from emplacement areas.	Reference 2.2.8 No. 01-12	7.2.5
The subsurface facility shall be designed to locate the emplacement drifts 81 m (+/- 5%) apart to prevent thermal interaction between adjacent drifts and to allow drainage of thermally mobilized water within the rock pillars to percolate past the drifts.	Reference 2.2.8 No. 01-13	Not addressed in ULC
As boundary conditions for the thermohydrologic model in the postclosure, the emplacement drifts shall include at least a 60 m long area at one end of the drift and a 15 m long area at the other end without emplaced waste packages.	Reference 2.2.8 No. 01-18	Not Applicable (N/A)
The portal and shaft collar locations shall be situated such that they can be protected from water inflow as a result of the probable maximum flood.	Reference 2.2.8 No. 01-19	7.2.3, 7.2.4
Assumption and Design Controls		
Waste Package Position	3.2.1	6.3
Standoff and Footprint	3.2.2	8.4
Turnout Parameters ³	6.5	6.2, 6.4 ²
Ventilation ³	6.1.8	8.6

Note 1: Reference 2.2.4

2: Superseded by the *Turnout Design and Configuration* (Reference 2.2.9)
3. A design control feature in this document per CR-10113

4.3.2 Conversion Factor and Dimensioning Nomenclature

Project Design Criteria Document (Reference 2.2.10, Section 1.7) notes that the units of measure for design, fabrication, construction, component testing, and operation of procured items for the repository are to be English units and units of measure that are currently stated as metric units may remain as such and converted to English units, as necessary. Therefore, in this document measurement of rock, geologic models, and other non-procurement entities are expressed in metric units and the English units are shown in parentheses, as necessary.

The conversion factor that is used to convert metric units to the English equivalent is:

foot, U.S. survey 0.3048006 meter (Reference 2.2.11, Table A-1, p. 23).

This conversion factor is used to remain consistent with the ULC where the primary unit of measure is metric (Reference 2.2.4, Section 3). In the main body of the document, metric units are shown first, followed by an English equivalent in brackets, e.g., the minimum vertical separation between two crossing drifts is 10 m (33 ft) (Reference 2.2.4, Section 6.1).

5. LIST OF ATTACHMENTS

		Number of Pages
Attachment I	ULC North Ramp and Access Main Intersection	8
Attachment II	Design Impediment Mitigation for ULCLA	4
Attachment III	Panel 1 Optimization for ULCLA	3
Attachment IV	Available Emplacement Drift Length in the ULCLA	6
Attachment V	ULCLA Excavation Dimensions Worksheet	10
Attachment VI	Verification of Waste Package Endpoint Coordinates by an Alternative Method	20
Attachment VII	Electronic Microstation Files (Includes One CD)	2

6. BODY OF CALCULATION

6.1 **DESIGN CONTROLS**

6.1.1 Operational Standoff and Footprint Restriction

The operational standoff and footprint restriction remains the same as that stated in the *Underground Layout Configuration* (Reference 2.2.4, Attachment I) unless noted otherwise.

6.1.2 Access Main Azimuth and Gradient

The Main Drift azimuth is 183° and the grade is +1.35% to the south (Reference 2.2.4, Figure 3).

6.1.3 Railroad Frog

The American Railway Engineering and Maintenance of Way Association (AREMA) 2006 *Portfolio of Trackwork Plans, Plan No. 910-02* specifies that the lead curve for Frog No. 11 is 927 ft - 3¹/₄ inches (Reference 2.2.1).

6.1.4 Total Available Length of Emplacement Drift

The length of emplacement drift and the total available length of emplacement drift in the *Underground Layout Configuration* are 57403.2 m (188330.3 ft) and 63944.432 m (209791.0 ft), respectively (Reference 2.2.4, Tables IV-1 and IV-3). These two lengths will be compared to the equivalent lengths generated in a reconfigured underground layout design to confirm that the repository capacity is not compromised.

6.1.5 **Bounding Endpoint Coordinates**

The waste package endpoint coordinates are provided in *Underground Layout Configuration*, Table III-1 (Reference 2.2.4).

6.1.6 Available Length of Emplacement Drift

The Available Emplacement Drift Length values are provided in *Underground Layout Configuration*, Attachment I (Reference 2.2.4).

6.1.7 **Observation Drift**

The Observation Drift and the Test Alcove will be located in Panel 1. The excavation will start from the Thermal Testing Facility Alcove and run beneath, and parallel to, and 20 m (66 ft) north of Emplacement Drift 3, as described in *Performance Confirmation Facilities* (Reference 2.2.3, Section 6.1).

6.1.8 Emplacement Drift Ventilation

The *D&E/PA/C IED Emplacement Drift Configuration and Environment* (Reference 2.2.5, General Information and Table 1) indicates that waste placed in 800 m long emplacement drifts that have a nominal ventilation airflow rate of 15 m³/s supports LA design.

6.2 CURRENT UNDERGROUND LAYOUT CONFIGURATION (ULC)

The current ULC is shown in Figure 1 (Reference 2.2.4, Figures 5 and 10). The design for the ULC incorporates the existing facilities that include the Exploratory Studies Facility (ESF) and the Enhanced Characterization of the Repository Block (ECRB) (Reference 2.2.4, Section 5.1.2).

6.2.1 Exploratory Studies Facility Design Azimuth and Gradient

The North Ramp descends at approximately -2.15% on an azimuth of approximately 298.97° (Reference 2.2.4, Figure 3). At STA 21+86.960 the North Ramp begins a 305 m radius curve. The curve segment redirects the North Ramp into the access main such that at STA 28+04.323 the azimuth has changed to 183° and the gradient has become +1.35%. The access main continues on the 183° azimuth at +1.35% until STA 56+54.323, at which point the design gradient becomes approximately +2.62%. At STA 59+35.467, the access main begins turning east in a 305 m radius curve into the South Ramp. The curve segment redirects the tunnel such that at STA 64+25.206, the azimuth is 91°. The design gradient remains at approximately +2.62%.

The future north extension to the access main is on a 3° azimuth and a -1.35% gradient (Reference 2.2.4, Section 5.1.2.1 and Figure 3). The excavation will start from the tangent point of the North Ramp curve and the access main at approximately STA 28+04.323.

6.2.2 Track Turnouts in the Access Main and Turnout

In this calculation the track turnout for curves that are 305 m (1000 ft) radius is a No. 11 track turnout (Assumption 3.2.3) and the track turnout for the turnout is a No. 6 turnout (Assumption 3.2.3). At the confluence of the North Ramp, the future north extension of the access main and the turnout, the No. 6 track turnout is located north of the No. 11 track turnout and the heels of the respective frogs are adjoined (Assumption 3.2.4) as shown in Figure 2.

6.2.3 Overview of Access Main Construction Impediment

The existing North Ramp curves into the access main at a 2.15% gradient, transitions through a vertical curve to rise at +1.35% towards the south defining the repository slope (Reference 2.2.4, Figure 3). As a result, the future north extension to the access main, at 1.35%, begins to undercut the North Ramp at the intersection of the North Ramp curve and the future north extension of the access main. Refer to Attachment I for the complete set of figures and the detailed discussion.

As demonstrated in Attachment I, the invert of the future north extension of the access main is progressively lower than the invert of the North Ramp curve and is an obstacle to the railroad design and installation. The elevation differential implies that the track on the North Ramp curve would be elevated above the track in the future north extension of the access main.



Reference 2.2.4, Figures 5 and 10

Figure 1. Underground Layout Configuration



Figure 2. North Ramp and Access Main Intersection

Referring to Figure 2, at STA 01+00.00 (from Attachment I, Figure 1-5) it shows the North Ramp curve track crossing over the north extension of the access main track through the #11 frog. The frog is the common component to both tracks. The section view through the frog shown in Figure 3 clearly demonstrates the inability of the divergent excavation geometry to provide a suitable foundation for a railroad.



Figure 3. Section View Through #11 Frog

For example, the elevation of the west rail of the north extension of the access main is at least 1.07 m (3.5 ft) lower (Attachment I, Table I-1) than the elevation of the east rail of the North Ramp curve. Also, since the frog is an integral part of both tracks, it is not practical to share the frog. For example, at the frog, the wheel on one side of any rolling stock would travel over the frog while the wheel on the opposite side of the rolling stock straddles the outside rail of the north extension of the access main when moving north or the inside rail North Ramp curve when moving south.

Advancing north to STA 01+25.00 (Attachment I, Figure 1-6), the elevation difference between the two excavations has increased to about 1.34 m (4.38 ft). Also, the North Ramp curve has moved almost 2.4 m (8 ft) east, relative to the north extension of the access main. Continuation of the divergent excavations exacerbates conditions to integrate the tracks since the road base for the north extension of the access main undercuts the North Ramp curve invert. The extent of the impediment is delineated in Attachment I and a design solution that mitigates the interference is developed in Attachment II.

6.3 ACCESS MAIN DESIGN IMPEDIMENT RESOLUTION

One design alternative is modifying the existing design to obviate the elevation difference between the two competing excavations. Another design alternative is a separate departure for the north extension of the access main that will be compatible with the existing design parameters. Attachment II gives the detailed discussion for the two proposed design alternatives.

6.3.1 Modified Gradient Alternative

• Option 1: Maintain Ramp Gradient

This alternative proposes to match the grade of the north extension of the access main with the North Ramp gradient of +2.15% (Section 6.2.1). The congruent gradient would be carried through the No. 11 and No. 6 turnout arrangement, shown in Attachment I, Figure I-1. This maintains both tracks at the same elevation and precludes uneven rail placement. There are several drawbacks to this approach including: the No. 6 turnout departure is on a grade of 2.15%, the proposed design inserts a barrier into the repository drainage plane, and the proposed design could compromise the approach from access main into the Emplacement Drift by reducing the available elevation difference for turnout drainage. A complete discussion is provided in Attachment II. Also, the gradient to return the access main back to the repository plane is about 5% and this exceeds the transporter emplacement vehicle design constraint of 2.5% (Reference 2.2.7, Section 9.9.2.2.4).

• Option 2: Maintain Access Main Gradient

This option proposes to carry the access main gradient of 1.35% through the No. 11 and No. 6 turnout arrangements to STA 02+0.00, shown in Attachment Figure I-1. This approach entails the removal of the existing concrete invert and undercutting the access main excavation (since the North Ramp is rising at +2.15%) such that at STA 02+0.00 the existing North Ramp is 7-feet above the newly excavated access main invert. From STA 02+0.00, the North Ramp at +2.15% gradient would be undercut at a maximum gradient of 2.5% (Reference 2.2.7, Section 9.9.2.2.4)

until the two slopes converge. This is calculated to be a distance of approximately 2000 ft. The drawback to this approach is the extensive removal of existing concrete invert and equally extensive undercutting of the invert on both the access main and the North Ramp. Also, the concrete invert would have to be reestablished over the total affected length. Additionally, the intersection of the access main and the North Ramp would be 32-feet in height. A complete discussion is provided in Attachment II.

6.3.2 Bypass Alternative

The bypass alternative offsets the future north extension of the access main from the North Ramp while maintaining the access main slope of 1.35% to the north. The excavation geometry for the bypass alternative is shown in Figure 4. A complete discussion is provided in Attachment II.



Figure 4. Bypass Alternative Excavation

A connector drift that shifts the north extension of the access main 80-feet to the west from the existing access main is incorporated into the design (Assumption 3.2.7). A No. 6 track turnout is utilized in the crossover to maintain continuity with the existing design (Section 6.2.2). The 80-foot offset to the west is a function of a No. 6 track turnout leading into and out of the crossover drift straight section, and the minimum required spacing between nonemplacement drifts (Section 4.3.1).

The lineal extent of the crossover is bounded by the selected track turnout, a straight segment which is closely related to the overall length of the TEV (Assumption 3.2.7), and the alignment with the north extension of the access main.

The placement of the crossover in the access main takes into consideration the end of the North Ramp and the excavation low point in conjunction with the footprint of the crossover and the supportable roof span in proximity to Thermal Testing Facility Alcove.

6.3.3 Selected Resolution

Three options that can resolve the construction concern that is described in Section 6.2.3 are discussed in Sections 6.3.1 and 6.3.2. The modified gradient, Option 1: Maintain Ramp Gradient, is excluded since it would be an obstacle in the repository drainage plane. Option 2: Maintain Access Main Gradient, is excluded as a viable option since it may have a detrimental effect on the schedule due to the large amount of invert removal, invert excavation, and invert reinstallation and the resulting large intersection may present challenging ground support issues. Therefore, the Bypass Alternative is selected as the most favorable design approach to mitigate the construction concern described in Section 6.2.3 since it satisfies the design requirements and is relatively simple to construct.

6.4 EMPLACEMENT PANEL 1 OPTIMIZATION

The design optimization of Panel 1, shown in Figure 5, is a continuation of the North Ramp curve reconciliation selected in Section 6.3.3. The design optimization considers the available emplacement area and repositioning of Panel 1 in conjunction with Panel 3E and 3W and the impact to the subsurface layout as a whole. The fundamental changes to the ULC Panel 1 in the design optimization of Panel 1 for the ULCLA are:

- Incorporation of the Connecter Drift.
- Panel 1, with Exhaust Raise #1, moved four-emplacement drift positions south.

(ULC emplacement drifts 1-5, 1-6, 1-7, and 1-8 are re-numbered in the ULCLA as 1-1, 1-2, 1-3, and 1-4, respectively. And, ULC emplacement drifts 1-1, 1-2, 1-3, and 1-4 are transferred into Panel 3 West and re-numbered in the ULCLA as 3-23W, 3-24W, 3-25W, and 3-26W, respectively.)

- Adding two parallel emplacement drifts, at an 81 m center-to-center spacing and on an azimuth of 252 ° (Section 4.3.1), into the formerly unoccupied area between Panel 1 and Panel 2.
- Making Panel 1 exhaust main parallel with the access main and lengthening the emplacement drifts accordingly.
- Replacing the Vent Access to ECRB ramp (Reference 2.2.4, Table 6) with a raise of equal ventilation capacity (Section 6.6.3) since extending the emplacement drifts precludes a ramp from the ECRB to the Panel 3 Exhaust Main. This does not preclude reinstituting a ramp at an alternate location if it is determined to be advantageous for construction.



Figure 5. Emplacement Panel Configuration

NOTE: Exhaust Raise #1 will be renamed Exhaust Shaft #1 to agree with ULCLA nomenclature in Table 8.

6.5 **TURNOUT DESIGN**

6.5.1 Typical Turnout Configuration

The typical turnout configuration is shown in Figure 6 (Reference 2.2.9, Figure 1). The turnout design segments, identified by an uppercase letter, are listed in Table 2 with the corresponding lineal dimension (Reference 2.2.9, Table 5).



(Reference 2.2.9, Figure 1)

Figure 6. Typical Turnout – Plan View

Identifier	Description	Feet/Inches	Meters
А	Rail Turnout Segment	124' – 1¾"	37.840
В	Turnout Bulkhead Segment	12' – 0"	3.658
С	Launch Chamber	40' – 0"	12.000
D	Turnout Curve	126' – 6"	38.557
E	TEV Alignment Segment	60' – 0"	18.288
F	Turnout Pillar	6' – 6"	2.000
G	Launch Chamber Minimum Pillar Width	10' – 0"	3.048
Н	Radiation Sightline Intercept (minimum)	10' – 0"	3.000
R	Centerline Radius	200' – 0"	60.960

Table 2. Turnout Excavation Dimensions (Typical)

Reference 2.2.9, Table 5

The height of the turnout excavation through segment "A", "B" and "C" is 6.25 m (20.5 ft) (Reference 2.2.9, Section 6.2). Segment "A" starts from the access main and increases in width to include the 2 m (6.5 ft) wide turnout pillar and the 8.5 m (27.9 ft) wide turnout bulkhead segment which result in a maximum dimension of 10.5 m (34.4 ft) wide (Reference 2.2.9, Section 6.2). Segment "B", the turnout bulkhead segment, is 8.5 m (27.9 ft) wide and segment "C" is 7 m (23 ft) wide (Reference 2.2.9, Section 6.2). Segment "D" through "E" is a 5.5 m (18 ft) tunnel bore.

The typical turnout is measured along the turnout centerline from the PI *turnout departure* to the waste package endpoint coordinate as shown in the *Turnout Design and Configuration* (Reference 2.2.9, Section 6.3.4, Figures 3 and 4). Therefore, from STA 0+23.628 to STA 0+49.408 is 25.780 m, and STA 0+49.408 to STA 61.433 is 12.025 m, and STA 61+4.33 to STA 1+18.288 is 56.855 m. Summing the distance 25.780, 12.025, and 56.855 equals 94.660 m for the total design length of the typical turnout.

The waste package standoff of 1.5 m (Assumption 3.2.1) is subtracted from the 94.660 m design length of the turnout since the 1.5 m is already included in the emplacement drift length. Therefore, the effective length of the turnout is 93.160 m which is rounded to 93 m (305 ft). Refer to Attachment V for the rounded turnout lengths as they are applied in each emplacement drift panel.

6.5.2 Emplacement Drift Elevation Change Based on Turnout Configuration

Turnout Design and Configuration (Reference 2.2.9) developed a turnout excavation design that integrated the civil-structural-architectural (CSA) design for the TEV railroad and mechanical excavation to the extent practical with a reduced potential to radiation exposure. A typical turnout, represented by west-facing turnout 1-4 (Reference 2.2.9, Section 6.3) located in the ESF, was used to illustrate the design. The ESF gradient is +1.35 % on an azimuth of 183 ° (see Section 6.2.1), hence the design gradient selected for the turnout was also +1.35 %.

Both west-facing and the east-facing turnouts where considered in determining the location of the emplacement plane (Reference 2.2.9, Section 6.4). As a result, emplacement drifts originating from west-facing turnouts are lowered 1.345 m from the currently assigned elevations and emplacement drifts originating from east-facing turnouts are raised 0.183 m. The elevation difference is because turnouts that are west-facing approach the emplacement plane from a relatively lower elevation than a corresponding east-facing turnout (Reference 2.2.9, Section 7.2). Effectively, the emplacement drifts in Panel 1, Panel 2, and Panel 3W are lowered 1.345 m and the emplacement drifts in Panel 3E and Panel 4 are raised 0.183 m.

As noted, turnout 1-4 originates from the ESF which has a gradient of ± 1.35 % that directly influences the turnout design. Therefore a reconciliation of the ULCLA gradients throughout the repository access mains and exhaust mains remains to be conducted for those areas that might have a different starting gradient. A reconciliation of the repository gradients would require an iterative process that would compare the emplacement plane horizons and the access mains/exhaust mains gradients, with respect to the turnout, in order to determine the optimal emplacement plane location that facilitates drainage. It is beyond the scope of this calculation to reconcile the repository gradients.

6.6 EMPLACEMENT PANEL COMPILATION

The ULC shown in Figure 1 has changed and the modifications that have been made are described for each of the repository panels in the following sections. The panels are combined to construct the general arrangement centerline figure of the ULCLA.

Note: The values listed in Sections 6.6.1 through 6.3.3 have been generated using MicroStation (refer to Section 4.2.2) unless otherwise stated. The primary unit of measure is meters and the values have been converted to English units using the conversion factor given in Section 0. Also, all the lengths have been rounded to a whole number to remain consistent with ULC (Reference 2.2.4) and the arithmetic is given in Attachment V.

6.6.1 Panel 1

The subsurface openings that constitute Panel 1, including all the associated non-emplacement excavation, are shown in Figure 7. Each excavation entity has been assigned a number that corresponds to the heading description in Table 3.

- Panel 1 has six emplacement drifts, each of which are accessed by a turnout. Emplacement Drift #1 is unique to the subsurface repository since it merges into the Panel 1 Exhaust Main.
- Panel 1 Exhaust Main is the only exhaust main in the subsurface repository that is 5.5 m diameter (18 ft diameter).
- Panel 1 has an Observation Drift (Section 6.1.7) beneath the emplacement horizon. The Observation Drift starts from Thermal Testing Facility Alcove and crosses beneath the access main turning onto the same azimuth as the emplacement drift. The Observation Drift will be parallel and 20 m (66 ft) north of Emplacement Drift #3 and rises to intersect Panel 1 Exhaust Main.
- Panel 1 area has a Connector Drift. The Connector Drift is the north extension of the access main to the future Panel 3.
- Panel 1 ventilation flows down the North Ramp and upon completion of construction activity, exhausts through Exhaust Raise #1. During construction, Panel 1 receives fresh air from the Vent Raise to the ECRB, which in turn receives fresh air from a ventilation shaft.
- Panel 1 has a Cross Drift to the future Panel 4 that runs parallel to the emplacement drifts and is positioned at the mid-pillar between Panel 1 and Panel 2.
- NOTE: Exhaust Raise #1 will be renamed Exhaust Shaft #1 to agree with ULCLA nomenclature as noted in Table 8. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 3.



NOTE: For each numbered excavation refer to the corresponding number in Table 3 for the description.

Figure 7. Panel 1

No.	Non-Emplacement	Size		Plan Length	
	Development	Meters	Feet	Meters	Feet
1	Observation Drift	5 x 5	16 x 16	971	3186
2 ¹	Observation Drift Alcove	5 x 5	16 x 16	40	131
3	Connector Drift	7 x 7	23 x 23	58	189
4	Vent Raise to ECRB Access	3.7 x 3.7	12 x 12	23	75
5	Vent Raise Access at ECRB	3.7 x 3.7	12 x 12	23	75
6	Construction Vent Raise to ECRB	3.75 diameter	12 diameter	29	95
7	Cross Drift to Panel 4	5.5 diameter	18 diameter	900	2951
8	Exhaust Main	5.5 diameter	18 diameter	555	1820
9	Exhaust Raise # 1 Access	5 x 5	16 x 16	72	237
10 ³	Exhaust Raise #1	5 diameter	16 diameter	356	1167
	Turnout				
11	Turnout #1			93	305
12	Turnout #2			93	305
13	Turnout #3	Variable Size ²		93	305
14	Turnout #4			93	305
15	Turnout #5			93	305
16	Turnout #6			93	305
· · · · · · · · · · · · · · · · · · ·		•	Total	558	1830
Emplacement Drift		Size (diameter)			
17	Drift #1	5.5	18	507	1664
18	Drift #2	5.5	18	596	1955
19	Drift #3	5.5	18	597	1959
20	Drift #4	5.5	18	597	1959
21	Drift #5	5.5	18	597	1959
22	Drift #6	5.5	18	597	1959
	•	•	Total	3491	11455

Table 3.	Panel 1
1 4010 0.	i anoi i

NOTES: 1. Consistent with ULC (Reference 2.2.4)

2. Refer to Section 6.5.1 for turnout excavation size allocation and go to Table V-1 for rounded values.

3. Exhaust Raise #1 will be renamed Exhaust Shaft #1 to agree with ULCLA nomenclature in Table 8. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 3.

6.6.2 Panel 2

The subsurface openings that constitute Panel 2, including all the associated non-emplacement excavation, are shown in Figure 8. Each excavation entity has been assigned a number that corresponds to the heading description given in Table 4.

- Panel 2 has twenty-seven emplacement drifts all of which are accessed by turnouts.
- Panel 2 turnouts start from the access main except Turnouts #26 and #27 which originate from the access main Offset Drift.
- Panel 2 Exhaust Main is 7.62 m diameter (25 ft diameter) and starts at the South Ramp and turns north to intersect the Cross Drift located between Panel 2 and Panel 1.
- Intake Shaft #3 supplies fresh air to the north end of Panel 2 and the South Ramp provides fresh air for the south end of Panel 2. Return air from Panel 2 north end and south end exhausts through the ECRB Exhaust Shaft and Exhaust Shaft #3, respectively. Exhaust Shaft #3 will also be used to exhaust return air during construction.
- Panel 2 is adjacent to the Cross Drift to Panel 4 that is positioned at the mid-pillar between Panel 1 and Panel 2.
- NOTE: Intake Shaft #3 will be renamed Intake Shaft #2 and Exhaust Shaft #3 will be renamed Exhaust Shaft #2 to agree with ULCLA nomenclature as noted in Table 8. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 4.





Figure 8. Panel 2

Na	Non-Emplacement	Size		Plan Length ³	
NO.	Development	Meters	Feet	Meters	Feet
1	Exhaust Main	7.62 diameter	25 diameter	3047	9998
2	Access Main Offset Drift	7 x 7	23 x 23	143	469
3 ¹	Exhaust Shaft #3 Access Drift	8 x 8.5	26 x 28	20	66
4 ¹	Exhaust Shaft #3 ²	8 diameter	26 diameter	292	958
51	Intake Shaft #3 Access Drift	8 x 8.5	26 x 28	109	358
6 ¹	Intake Shaft #3 ²	8 diameter	26 diameter	248	814
7 ¹	ECRB Exhaust Shaft Access	8 x 8.5	26 x 28	91	299
8 ¹	ECRB Exhaust Shaft	8 diameter	26 diameter	398	1306
	Turnout				
9	Turnout #1			93	305
10	Turnout #2			93	305
11	Turnout #3			93	305
12	Turnout #4			93	305
13	Turnout #5			93	305
14	Turnout #6			93	305
15	Turnout #7			93	305
16	Turnout #8			93	305
17	Turnout #9			93	305
18	Turnout #10			93	305
19	Turnout #11			93	305
20	Turnout #12			93	305
21	Turnout #13	Variable Size ³ 93 93		93	305
22	Turnout #14			305	
23	Turnout #15			93	305
24	Turnout #16			93	305
25	Turnout #17			93	305
26	Turnout #18	93		305	
27	Turnout #19	93			305
28	Turnout #20			93	305
29	Turnout #21			93	305
30	Turnout #22	<u>93</u> 305 93305			305
31	Turnout #23				305
32	Turnout #24			93	305
33	Turnout #25			93	305
34	Turnout #26			102	336
35	Turnout #27			148	458
			Total	2575	8419

Table 4	Panel 2

(continued)

No.	Emplacement Drift ¹	Size (diameter)		Plan Length ³	
		Meters	Feet	Meters	Feet
36 ⁴	Drift #1	5.5	18	779	2557
37	Drift #2	5.5	18	779	2557
38	Drift #3	5.5	18	779	2554
39	Drift #4	5.5	18	775	2544
40	Drift #5	5.5	18	772	2533
41	Drift #6	5.5	18	769	2523
42	Drift #7	5.5	18	766	2512
43	Drift #8	5.5	18	763	2502
44	Drift #9	5.5	18	759	2491
45	Drift #10	5.5	18	756	2481
46	Drift #11	5.5	18	750	2460
47	Drift #12	5.5	18	744	2439
48	Drift #13	5.5	18	737	2419
49	Drift #14	5.5	18	731	2398
50	Drift #15	5.5	18	725	2377
51	Drift #16	5.5	18	718	2356
52	Drift #17	5.5	18	712	2336
53	Drift #18	5.5	18	706	2315
54	Drift #19	5.5	18	699	2294
55	Drift #20	5.5	18	693	2273
56	Drift #21	5.5	18	687	2253
57	Drift #22	5.5	18	680	2232
58	Drift #23	5.5	18	674	2211
59	Drift #24	5.5	18	668	2190
60	Drift #25	5.5	18	655	2150
61 ⁴	Drift #26	5.5	18	583	1914
62 ^₄	Drift #27	5.5	18	485	1591
			Total	19344	63462

Table 4. Panel 2 (Continuation)

NOTES: 1. Consistent with ULC (Reference 2.2.4).

- 2. Intake Shaft #3 will be renamed Intake Shaft #2 and Exhaust Shaft #3 will be renamed Exhaust Shaft #2 to agree with ULCLA nomenclature in Table 8. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 4.
- 3. Refer to Section 6.5.1 for turnout excavation size allocation and go to Table V-2 for rounded values.
- 4. Generated by MicroStation
6.6.3 Panel 3

The subsurface openings that constitute Panel 3, including all the associated non-emplacement excavation, are shown in Figure 9. Panel 3 has an east component and a west component that have a common access main. Panel 3 shares ventilation shafts with Panel 4 as well. Each excavation entity has been assigned a number that corresponds to the heading description given in Table 5.

- Panel 3 East has nineteen emplacement drifts and Panel 3 West has twenty-six emplacement drifts that are accessed by a turnout.
- Panel 3 mains are 7.62 m diameter (25 ft diameter).
- Panel 3 development begins as the North Construction Ramp, advancing in a southerly direction, transitioning into Panel 3 access main. The access main changes azimuth towards the Panel 1 Connector Drift in the vicinity of Panel 3 West Turnout #10.
- Panel 3 Exhaust Main is accessed from the Panel 3 Exhaust Main Access and forms the perimeter of Panel 3.
- Fresh air sources for the south, central, and north sections of Panel 3 are the North Ramp, Intake Shaft #1, and Intake Shaft #2, respectively.
- Exhaust Shaft #1 and Exhaust Shaft #2 will service both east and west sides of the central and northern areas of Panel 3.
- Exhaust Raise #2 will service the south end of Panel 3 East. Exhaust Raise #1, located in Panel 1, will exhaust the south end of Panel 3 West supplemented by an exhaust Vent Raise to the ECRB (feature number 18 in Table 5).
 - NOTE: The Vent Raise to the ECRB replaces the Vent Access to ECRB ramp (Reference 2.2.4, Table 6) discussed in Section 6.4. This does not preclude reinstituting a ramp at an alternate location if it is determined to be advantageous for construction.
- During development, Exhaust Shaft #2 will provide fresh air for construction via the Exhaust Shaft #2 Construction Access.
- NOTE: To agree with ULCLA nomenclature in Table 8. Intake Shaft #1 will be renamed Intake Shaft #4 and Exhaust Shaft #1 will be renamed Exhaust Shaft #4 (both are located in Panel 4 and serves both Panel 3 and Panel 4), Intake Shaft #2 will be renamed Intake Shaft #3, Exhaust Raise #2 will be renamed Exhaust Shaft #3S and Exhaust Shaft #2 will be renamed Exhaust Shaft #3N. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 5.





Figure 9. Panel 3

	Non-Emplacement	Size		Plan Length ³	
NO.	Development	Meters	Feet	Meters	Feet
1 ¹	North Construction Ramp	7.62 diameter	25 diameter	2884	9462
2	Access Main	7.62 diameter	25 diameter	2670	8759
3	Exhaust Main	7.62 diameter	25 diameter	6439	21127
4 ¹	Exhaust Raise #2 Access Drift	5 x 5	16 x 16	127	417
5 ¹	Exhaust Raise #2 ²	5 diameter	16 diameter	279	915
6 ¹	Intake Shaft #1 Access Drift	7.62 diameter	25 diameter	1384	4541
7 ¹	Intake Shaft #1 ²	8 diameter	26 diameter	378	1240
8 ¹	Exhaust Shaft #1 Access Drift	8 x 8.5	26 x 28	598	1962
9 ¹	Exhaust Shaft #1 ²	8 diameter	26 diameter	405	1329
10 ¹	Intake Shaft #2 Access Drift	8 x 8.5	26 x 28	770	2526
11 ¹	Intake Shaft #2 ²	8 diameter	26 diameter	350	1148
12 ¹	Exhaust Shaft #2 Const. Access	5 x 5	16 x 16	31	102
13 ¹	Exhaust Shaft #2 West Access	8 x 8.5	26 x 28	118	387
14 ¹	Exhaust Shaft #2 East Access	8 x 8.5	26 x 28	106	348
15 ¹	Exhaust Shaft #2 ²	8 diameter	26 diameter	428	1404
16	Exhaust Raise #1 Access Drift	5 x 5	16 x 16	22	72
17	Access to ECRB Raise	7 x 7	23 x 23	30	99
18	Vent Raise to FCRB	8 diameter	26 diameter	29	95
19	FCRB Access to Raise	7 x 7	23 x 23	27	88
20	ECRB Widening	7 x 7	23 x 23	318	1042
	WEST Turnout		20 x 20	010	1012
21	West Turnout #1			118	387
22	West Turnout #2			118	387
23	West Turnout #3			118	387
24	West Turnout #4			118	387
25	West Turnout #5			118	387
26	West Turnout #6			118	387
27	West Turnout #7			118	387
28	West Turnout #8			118	387
29	West Turnout #9			114	374
30	West Turnout #10			92	304
31	West Turnout #11			93	305
32	West Turnout #12			93	305
33	West Turnout #13	.,,,,,	o. 3	93	305
34	West Turnout #14	Variable	Size °	93	305
35	West Turnout #15			93	305
36	West Turnout #16			93	305
37	West Turnout #17			93	305
38	West Turnout #18			93	305
39	West Turnout #19			93	305
40	West Turnout #20			93	305
41	West Turnout #21			93	305
42	West Turnout #22			93	305
43	West Turnout #23			93	305
44	West Turnout #24			93	305
45	West Turnout #25	4		93	305
46	West Turnout #26			93	305
		I	Total	2638	8654

Table C	Denelo
i able 5.	Panel 3

(Continued)

No	WEST Emplacement Drift ⁴	Size (diameter)		Plan Length °	
NO.		Meters	Feet	Meters	Feet
47 ¹	West Drift #1	5.5	18	617	2023
48 ¹	West Drift #2	5.5	18	617	2023
49 ¹	West Drift #3	5.5	18	617	2023
50 ¹	West Drift #4	5.5	18	617	2023
51 ¹	West Drift #5	5.5	18	617	2023
52 ¹	West Drift #6	5.5	18	617	2023
53 ¹	West Drift #7	5.5	18	617	2023
54 ¹	West Drift #8	5.5	18	617	2023
55	West Drift #9	5.5	18	615	2018
56	West Drift #10	5.5	18	599	1965
57	West Drift #11	5.5	18	596	1954
58	West Drift #12	5.5	18	596	1954
59	West Drift #13	5.5	18	596	1954
60	West Drift #14	5.5	18	596	1954
61	West Drift #15	5.5	18	596	1954
62	West Drift #16	5.5	18	596	1954
63	West Drift #17	5.5	18	596	1954
64	West Drift #18	5.5	18	596	1954
65	West Drift #19	5.5	18	596	1954
66	West Drift #20	5.5	18	596	1954
67	West Drift #21	5.5	18	596	1954
68	West Drift #22	5.5	18	596	1954
69	West Drift #23	5.5	18	596	1954
70	West Drift #24	5.5	18	596	1954
71	West Drift #25	5.5	18	596	1954
72	West Drift #26	5.5	18	596	1954
Total				15686	51431

Table 5. Panel 3 (continuation)

		Size		Plan	Plan Length ³	
NO.	EAST TUINOUL	Meters	Feet	Meters	Feet	
73	East Turnout #1			119	390	
74	East Turnout #2			119	390	
75	East Turnout #3			119	390	
76	East Turnout #4			119	390	
77	East Turnout #5			119	390	
78	East Turnout #6			116	381	
79	East Turnout #7			93	305	
80	East Turnout #8			93	305	
81	East Turnout #9			93	305	
82	East Turnout #10	Variable	e Size ³	93	305	
83	East Turnout #11			93	305	
84	East Turnout #12			93	305	
85	East Turnout #13			93	305	
86	East Turnout #14			93	305	
87	East Turnout #15			93	305	
88	East Turnout #16			93	305	
89	East Turnout #17			93	305	
90	East Turnout #18			93	305	
91	East Turnout #19	1		93	305	
Total	•			1920	6296	

(Continued)

No	EAST Emplacement Drift ⁴	Size (di	iameter)	Plan Length ³	
NO.		Meters	Feet	Meters	Feet
92 ¹	East Drift #1	5.5	18	757	2484
93 ¹	East Drift #2	5.5	18	799	2621
94 ¹	East Drift #3	5.5	18	808	2651
95 ¹	East Drift #4	5.5	18	794	2605
96 ¹	East Drift #5	5.5	18	787	2582
97	East Drift #6	5.5	18	776	2547
98	East Drift #7	5.5	18	766	2512
99	East Drift #8	5.5	18	740	2429
100	East Drift #9	5.5	18	691	2266
101	East Drift #10	5.5	18	641	2102
102	East Drift #11	5.5	18	591	1938
103	East Drift #12	5.5	18	541	1774
104	East Drift #13	5.5	18	506	1659
105	East Drift #14	5.5	18	492	1614
106	East Drift #15	5.5	18	474	1556
107	East Drift #16	5.5	18	459	1505
108	East Drift #17	5.5	18	443	1453
109	East Drift #18	5.5	18	427	1402
110	East Drift #19	5.5	18	412	1350
Tota				11904	39051

Table 5. Panel 3 (Continuation)

NOTES: 1. Consistent with ULC (Reference 2.2.4).

2. To agree with ULCLA nomenclature in Table 8: Intake Shaft #1 will be renamed Intake Shaft #4 and Exhaust Shaft #1 will be renamed Exhaust Shaft #4 (both are located in Panel 4 and serves both Panel 3 and Panel 4), Intake Shaft #2 will be renamed Intake Shaft #3, Exhaust Raise #2 will be renamed Exhaust Shaft #3S and Exhaust Shaft #2 will be renamed Exhaust Shaft #3N. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 5.

3. Refer to Section 6.5.1 for turnout excavation size allocation and go to Table V-3 for rounded values.

4. Generated by MicroStation

6.6.4 Panel 4

The subsurface openings that constitute Panel 4, including all the associated non-emplacement excavation, are shown in Figure 10. Panel 4 has a section of shared exhaust main with Panel 3 West. Each excavation entity has been assigned a number that corresponds to the heading description given in Table 6.

- Panel 4 has thirty emplacement drifts that are accessed by a turnout.
- Panel 4 access main is 7.62 m diameter (25 ft diameter) starting from the North Construction Ramp, moving in a westerly direction, bypassing the northern limit of Panel 3 West, and continuing to the western boundary of Panel 4.
- The western boundary of Panel 4 access main parallels Panel 3 access Main then turns eastward to intersect the Cross Drift located between Panel 2 and Panel 1.
- Panel 4 Exhaust Main is comprised of three segments. The northern segment is a shared exhaust main with Panel 3 West up to Emplacement Drift #9. A central portion from Emplacement Drift #10 to Emplacement Drift #26 parallels Panel 3 West Exhaust Main. The south section of the exhaust main services the remaining four emplacement drifts in Panel 4 and is an exhaust conduit for Panel 3 West exhaust.
- Panel 4 shares ventilation shafts with Panel 3. Fresh air for the south end of Panel 4 is supplied from Intake Shaft #1. Intake Shaft #2 services the north end of Panel 4.
- Exhaust Shaft #2 services the north end of Panel 4. Exhaust Shaft #1 will service the central area and the ECRB Exhaust Shaft will service the south end of Panel 4.
- NOTE: In order to agree with ULCLA nomenclature as noted in Table 8, Intake Shaft #1 will be renamed Intake Shaft #4, Exhaust Shaft #1 will be renamed Exhaust Shaft #4. However, to maintain continuity for simple comparison between the ULC and the ULCLA nomenclature, the existing ULC nomenclature is used in Table 8.





Figure 10. Panel 4

	Non Employoment	Size		Plan Length ²	
No.	Development	Meters	Feet	Meters	Feet
1	Intake Main	7.62 diameter	25 diameter	4835	15862
2 ¹	Panel 3 Exhaust Main Access	7.62 diameter	25 diameter	200	656
3	Exhaust Main (Dual)	7.62 diameter	25 diameter	1516	4975
	Turnout				
4	Turnout #1			119	390
5	Turnout #2			119	390
6	Turnout #3			119	390
7	Turnout #4			119	390
8	Turnout #5			119	390
9	Turnout #6			119	390
10	Turnout #7			119	390
11	Turnout #8			119	390
12	Turnout #9			99	324
13	Turnout #10			93	305
14	Turnout #11			93	305
15	Turnout #12			93	305
16	Turnout #13			93	305
17	Turnout #14			93	305
18	Turnout #15		2	93	305
19	Turnout #16	Variable Size ²		93	305
20	Turnout #17			93	305
21	Turnout #18			93	305
22	Turnout #19			93	305
23	Turnout #20			97	318
24	Turnout #21			102	335
25	Turnout #22			102	335
26	Turnout #23			102	335
27	Turnout #24			102	335
28	Turnout #25			102	335
29	Turnout #26			102	335
30 ³	Turnout #27			102	335
<u>31 °</u>	Turnout #28			124	407
<u>32 ³</u>	Turnout #29			154	505
33 °	Turnout #30			193	633
		o : (", ()	Total	3263	10702
NO.		Size (diameter)	10	617	2022
35		5.5	10	617	2023
36		5.5	10	617	2023
37	Drift #3	5.5	10	617	2023
38	Drift #5	5.5	10	617	2023
30	Drift #6	5.5	10	617	2023
40	Drift #7	5.5	10	617	2023
40		5.5	10	617	2023
41	Drift #0	5.5	10	634	2023
+ <u></u> /2	Drift #10	5.5	10	605	1086
40	Drift #11	5.5	18	605	1986
11 15	Drift #12	5.5	18	605	1986
46	Drift #13	5.5	18	605	1986
40	Drift #14	5.5	18	605	1986
<u>+</u> 1 /8	Drift #15	5.5	18	605	1986
10	Drift #16	5.5	18	605	1986
50	Drift #17	5.5	18	605	1986
51	Drift #18	5.5	18	605	1986
U 1		0.0		000	1000

Table	6.	Panel	4
10010	۰.		

No.	Emplacement Drift	Size (dian	neter)		
52	Drift #19	5.5	18	605	1986
53	Drift #20	5.5	18	605	1985
54	Drift #21	5.5	18	594	1947
55 ³	Drift #22	5.5	18	581	1907
56 ³	Drift #23	5.5	18	569	1866
57 ³	Drift #24	5.5	18	556	1825
58 ³	Drift #25	5.5	18	544	1785
59 ³	Drift #26	5.5	18	532	1744
60 ³	Drift #27	5.5	18	544	1784
61 ³	Drift #28	5.5	18	517	1697
62 ³	Drift #29	5.5	18	462	1516
63 ³	Drift #30	5.5	18	366	1201
			Total	17490	57383

NOTES: 1. Consistent with ULC (Reference 2.2.4).

2. Refer to Section 6.5.1 for turnout excavation size allocation and go to Table V-4 for rounded values.

3. Generated by MicroStation and adjusted for 1.5 m offset (see Section 6.5.1).

6.7 **OBSERVATION DRIFT**

The observation drift remains in the same relative spatial location with the emplacement drift and retains the same features as the ULC design (Reference 2.2.4, Section 8.5) noted in Section 6.1.7. However, the observation drift is reconstituted with the repositioned Panel 1 described in Section 6.6.1.

6.8 VENTILATION INTERFACE

The ventilation strategy for the ULCLA remains the same as in the ULC except as required to accommodate the Panel 1 reconfiguration shown in Section 6.4, Figure 5. The changes to the ventilation system are:

- 1. Exhaust Raise #1 has been relocated with the reconstituted Panel 1 described in Section 6.6.1. The shaft coordinates are given in Table 16.
- 2. The Vent Access to ECRB, which is a ramp, (Reference 2.2.4, Table 6 and Section 8.6, respectively) has been replaced by ventilation raise as described in Section 6.4. This does not preclude reinstituting a ramp at an alternate location if it is determined to be advantageous for construction.
- 3. The ECRB widening identified in Section 6.6.3, Table 5, occurs between the ventilation raise and the ECRB shaft.

7. **RESULTS AND CONCLUSIONS**

7.1 INCLUSION OF DESIGN PARAMETERS, INPUTS AND ASSUMPTIONS

Design parameters listed in Section 4.3.1, Table 1, design controls from Section 6.1 and stated assumptions in Section 3.2, are applied to reconfigure the ULC to incorporate a design solution to the construction interference between the North Ramp and the future north extension of the access main (refer to Sections 6.3 and 6.4). The design solution results in a direct change to Panel 1 that results in changes to Panels 2, 3 and 4 (refer to Section 6.6). Additionally, the turnout design developed in *Turnout Design and Configuration* (Reference 2.2.9) is incorporated into a reconfigured ULC as described in Section 6.5. The combined changes are expressed as the ULCLA.

The justification and the arguments for the design parameters, design controls and assumptions noted in Table 1 are not reiterated since the ULCLA remains within the design boundaries of the ULC and, as such, does not adversely influence or rearrange waste emplacement from the design principles and constraints established in the ULC. Table 7 lists the design parameters and provides evidence of inclusion into the ULCLA.

Design Parameters ¹	Section	Example
The vertical separation between crossing drifts shall be a minimum of 10 m (33 ft) from the crown of the lower opening to the invert of the upper opening.	Section 6.4	Observation Drift consistent with the ULC (Reference 2.2.4)
The minimum spacing (centerline-to-centerline) for nonemplacement drifts, running parallel, shall be three diameters, based upon the diameter of the larger drift.	Section 6.3.2	Applied to connector drift design
The access mains and ramps shall be a nominal 7.62 m (25 ft diameter) in diameter.	Section 7.4	Used Throughout, consistent with the ULC (Reference 2.2.4)
The excavated diameter of openings that are used to dispose of waste packages shall be a nominal 5.5 m (18 ft).	Section 7.4	Used Throughout, consistent with the ULC (Reference 2.2.4)
Portal and shaft/raise collar openings shall be protected from the probable maximum flood by making the surface gradient at the portal openings and shaft collars shall be down gradient and away from the openings.	N/A	Consistent with the ULC (Reference 2.2.4)
The emplacement drifts shall be oriented at least 30 degrees from the dominant joint set per TBV-361 <i>Resolution Analysis: Emplacement Drift Orientation.</i> (The emplacement drifts are presently located along an azimuth of 252 degrees or alternately an azimuth of 72 degrees).	Section 6.6	Azimuth 252 degrees used throughout, consistent with the ULC (Reference 2.2.4)
The Subsurface Facility shall be designed to accept 70,000 MTHM of SNF/HLW for disposal.	Section 7.5.1	Consistent with the ULC (Reference 2.2.4)
The emplacement drift spacing (center-to-center) shall be a nominal 81 m (266 ft).	Section 6.4	Additional emplacement drifts in Panel 1
Performance confirmation requirements shall be identified with the issuance of the Performance Confirmation Plan.	Section 6.6.1	Consistent with the ULC (Reference 2.2.4)
Derived Requirement		
The emplacement drifts shall be located a minimum of 120 m above the water table (worst-case postulated water level, ~850 m).	Section 7.6 ⁽²⁾	Consistent with the ULC (Reference 2.2.4)

Table 7.	Design	Parameter	Inclusion
----------	--------	-----------	-----------

The emplacement drifts shall be located a minimum of 60 m from a Quaternary fault with potential for significant displacement.	(3)	Consistent with the ULC (Reference 2.2.4)
The overburden thickness from the emplacement area to the topographic surface shall be a minimum of 200 m.	N/A	Consistent with the ULC (Reference 2.2.4)
The emplacement drifts shall be located a minimum of 30 m from the top of the Tptpv2 (Topopah Spring Tuff Crystal- poor Vitric Zone) because perched water may occur at the base of the Tpt (Topopah Spring Tuff).	N/A	Consistent with the ULC (Reference 2.2.4)
The emplacement drifts will be nominally parallel and the design azimuth shall be within a range of 70° to 80°.	Section 6.4	Additional emplacement drifts in Panel 1
The repository ramps, access mains, exhaust mains, and emplacement drifts shall be constructed by tunnel boring machines (TBM).	Section 7.4	Consistent with the ULC (Reference 2.2.4)
The grade of the emplacement drift shall be nominally horizontal so that overall water drainage is directly into the rock to prevent water accumulation.	Section 7.6	Consistent with the ULC (Reference 2.2.4)
The repository non-emplacement opening shall provide a repository grade so overall water drainage and accumulation is away from emplacement areas.	Section 6.5	<i>Turnout Design and Configuration applied</i> (Reference 2.2.9)
The subsurface facility shall be designed to locate the emplacement drifts 81 m (+/- 5%) apart to prevent thermal interaction between adjacent drifts and to allow drainage of thermally mobilized water within the rock pillars to percolate past the drifts.	Section 6.4	Consistent with the ULC (Reference 2.2.4)
As boundary conditions for the thermohydrologic model in the postclosure, the emplacement drifts shall include at least a 60 m long area at one end of the drift and a 15 m long area at the other end without emplaced waste packages.	Section 6.5, and Assumption 3.2.1	Turnout design and waste package standoff to exhaust main
The portal and shaft collar locations shall be situated such that they can be protected from water inflow as a result of the probable maximum flood.	N/A	Consistent with the ULC (Reference 2.2.4)
Assumption and Design Controls		
		Design standoff used

Waste Package Position (see Assumption 3.2.1)	Attachment IV	Design standoff used throughout, consistent with the ULC (Reference 2.2.4)
Standoff and Footprint (see Assumption 3.2.2)	Attachment IV	Consistent with the ULC (Reference 2.2.4)
Turnout Parameters ⁴	Section 6.5	Turnout design
Emplacement Drift Ventilation ⁴	Section 7.5.2	Consistent with ventilation

NOTES: 1. Section 4.3.1, Table 1

- 2. The emplacement drift that has the lowest elevation is emplacement drift 3-1W, at elevation 1037.477 m (refer to Section 7.6, Table 14), which is approximately 187 m above the worst-case postulated water level of ~850 m. This exceeds the minimum required distance of 120 m above the water table. Also, the lowest elevation in the repository occurs in a non-emplacement area at Exhaust Shaft 2 (Reference 2.2.4, Table 7) presently called Exhaust Shaft #3N (Section 7.2, Table 8) that bottoms out at elevation 1022.294 m. This is approximately 173 m above the worst-case postulated water level of ~850 m and exceeds the minimum required distance of 120 m above the water table.
- 3. As stated in ULC (Reference2.2.4, Section 7.1.3), "the only Type I fault identified in the immediate area of the repository is the Solitario Canyon fault" and a 60-meter standoff from the trace of any Type I fault is adequate and the ULCLA is consistent with the ULC in this regard.
- 4. A design control feature incorporating advances in the design and CR-10113 resolution.

7.2 SHAFT NOMENCLATURE

The shaft and raise nomenclature has been revised to reflect the emplacement panel in which the shaft or raise is excavated. Also, all the vertical development that emerges on surface is called a shaft. The shaft and raise nomenclature used in the ULC and the ULCLA counterpart are provided in Table 8.

Panel	Underground Layout Configuration ¹	Underground Layout Configuration for LA	
	Exhaust Raise #1	Exhaust Shaft #1	
1	ECRB Exhaust Shaft	ECRB Exhaust Shaft	
	Construction Vent Raise to ECRB	Construction Vent Raise to ECRB	
0	Intake Shaft #3	Intake Shaft #2	
2	Exhaust Shaft #3	Exhaust Shaft #2	
	Intake Shaft #2	Intake Shaft #3	
	Exhaust Raise #2	Exhaust Shaft #3S	
3	Exhaust Shaft #2	Exhaust Shaft #3N	
	N/A	Vent Raise to ECRB ²	
	Intake Shaft #1	Intake Shaft #4	
4	Exhaust Shaft #1	Exhaust Shaft #4	
	Vent Access to ECRB ²	N/A	

Table 8. Shaft Nomenclature

NOTES: 1. Source ULC (Reference 2.2.4, Figure 10).

2. The ULCLA has reconfigured an equivalent airway in Panel 3 to replace the Panel 4 Vent Access

7.3 UNDERGROUND LAYOUT CONFIGURATION FOR LA

The ULCLA shown in Figure 11 combines the individual figures for Panels 1, 2, 3, and 4 presented in Section 6.6. The shaft nomenclature described in Section 7.2 is applied. Figure 11 represents the repository configuration technically endorsed in the TMRB Decision Proposal 2006-010 (Reference 2.2.6).



Figure 11. Underground Layout Configuration for LA

7.4 EXCAVATION SUMMARY

The individual excavation summary for Panels 1, 2, 3, and 4 are given in Sections 6.6.1, 6.6.2, 6.6.3, and 6.6.4, respectively. The summary of excavation lengths for the ULCLA is given in Table 9. Note that ULC projected 12 assembly/disassembly chambers for the large TBM (Reference 2.2.4, Table 8) are included.

	Size		Plan	Plan Length ¹	
Heading	Meters	Feet	Meters	Feet	
Emplacement Drifts	5.5 diameter	18 diameter	67915	222781	
Turnouts ²	Variable (refer t	o Section 6.5.1)	10954	35901	
North Construction Ramp ³	7.62 diameter	25 diameter	2884	9462	
Access/Exhaust Main	7.62 diameter	25 diameter	16991	55746	
Exhaust Main (Dual)	7.62 diameter	25 diameter	1516	4975	
Exhaust Main (Panel 1)	5.5 diameter	18 diameter	555	1820	
Access Main Offert Drift	7 × 7	23 x 23	1/3	469	
Connector Drift (Panel 1)	7 × 7	23 x 23	58	189	
Cross Drift to Panel 4	5 5 diameter	18 diameter	900	2951	
Observation Drift (Panel 1)	5 x 5	16 x 16	1011	3317	
	5.5	10 X 10			
Panel 3 Exhaust Main Access ³	7 x 7	23 x 23	200	656	
Exhaust Raise Access Drift	5 x 5	16 x 16	221	726	
Vent Boing to ECPP Access	27,27	12 x 12	22	75	
Vent Raise to ECRB Access	2.75 diameter	12 X 12	20	75	
Vent Raise to ECRB (Panel T)	3.75 diameter	12 diameter	29	95	
Vent Raise Access at ECRB	3.7 X 3.7	12 X 12	23	75	
Access to ECRB Raise	7 x 7	23 x 23	30	99	
Vent Raise to ECRB (Panel 3)	8 diameter	26 diameter	29	95	
ECRB Access to Raise	7 x 7	23 x 23	27	88	
ECRB Widening	7 x 7	23 x 23	318	1042	
Intake/Exhaust Shaft ³	8 diameter	26 diameter	2499	8199	
Exhaust Raise	5 diameter	16 diameter	635	2082	
				2002	
Intake Shaft #1 Access Drift ³	7.62 diameter	25 diameter	1384	4541	
Exhaust/Intake Shaft Access Drift ³	8 x 8.5	26 x 28	1812	5946	
		40.40			
Construction Shatt Access (Panel 3)	5 X 5	16 X 16	31	102	
Assembly/Disassembly Chambers	11 x 11	36 x 36	240	787	

Table 9	Overall Excavation Summary for the ULCLA
Table 3.	

NOTES: 1. Refer to Attachment V

2. Adjusted for 1.5 m offset (see Section 6.5.1)

3. Source: Reference 2.2.4, Table 8 (consistent with ULC)

7.5 AVAILABLE EMPLACEMENT LENGTH (METERS)

7.5.1 Available Emplacement Drift Length

The available length of emplacement drift for waste emplacement for each panel is given in Table 10. The total available length of emplacement drift for waste emplacement in the ULCLA repository is 65273 m. The ULC, total emplacement drift length and the available emplacement drift length are 57403.2 m and 63944.432 m, respectively (refer to Section 6.1.4). Therefore the regulatory requirement (refer to Section 4.3.1) to have the capacity to store 70,000 MTHM is satisfied. Note: Table 10 values have been generated using MicroStation (refer to Section 4.2.2).

Panel	Available Drift Length ¹	Cumulative Available Drift Length ¹
1	3392	3392
2	18876	22269
3 East	11040	33308
3 West	15246	48554
4	16719	65273

Table 10. Emplacement Drift Available in the ULCLA (Meters)

Note 1: Source is Attachment IV, values rounded to a whole number

7.5.2 Maximum Emplacement Drift Length

The 15 m^3 /s ventilation rate for emplacement drifts limits the available emplacement length to 800 m for an emplacement drift (Section 6.1.8). By inspecting the Available Emplacement Drift Length tables, located in Attachment IV, it can be verified that no single emplacement drift exceeds 800 m in length. For example, the emplacement drifts 1-5 and 1-6 have been added to design and they do not exceed the 800 m limit dictated by the design ventilation. Therefore the ventilation guideline is satisfied.

7.6 WASTE PACKAGE ENDPOINT COORDINATES (METERS)

Tables 11 through 15 give the waste package endpoint coordinates in meters and correspond to the ULCLA that is shown in Figure 11. The elevation of each emplacement drift originating from a west-facing turnout is lowered by 1.345 m and emplacement drifts that originate from east-facing turnouts are raised 0.183 m (refer to Section 6.5.2). Since Emplacement Drifts 1-5 and 1-6 are additions to the ULC (refer to Section 6.4), they have been generated by MicroStation (refer to Section 4.2.2) and the corresponding emplacement drift elevations are calculated. Coordinate values remain the same as in the ULC (Reference 2.2.4) unless identified as generated by MicroStation (refer to Section 4.2.2).

The MicroStation output in this calculation is verified by an alternative method in compliance with the Calculations and Analyses, EG-PRO-3DP-G04B-00037 (Reference 2.1.1, Section 3.4.1) and the results are located in Attachment VI.

Emplacement	East Side		West	Elevation ²	
Drift ¹	Northing	Easting	Northing	Easting	Elevation
1-1	233886.070	171240.176	233734.401	170773.388	1067.931
1-2	233799.426	171235.636	233620.394	170684.634	1069.102
1-3	233712.783	171231.095	233533.381	170678.955	1070.273
1-4	233626.138	171226.554	233446.736	170674.414	1071.445
1-5	233539.494	171222.014	233360.092	170669.874	1072.616 ³
1-6	233452.851	171217.473	233273.449	170665.333	1073.787 ³

Table 11	Panel 1	Waste	Package	End Point	Coordinates	(Meters)
1 4 6 1 6 1 1 1			1 aonago		00010110100	(11101010)

NOTES: 1. Refer to Section 6.4 for ULCLA Panel 1 numbering sequence. 2. Adjusted ULC elevations (Refer to 2.2.4) per Section 6.5.2. 3. Calculated

Table 12.	Panel 2 Wa	iste Packade	e End Point	Coordinates	(Meters)
					(

Emplacement	East Side		West	Elevation ²	
Drift	Northing	Easting	Northing	Easting	Elevation
2-1	233366.199	171212.931	233130.468 ¹	170487.425 ¹	1074.959
2-2	233279.555	171208.390	233043.824	170482.884	1076.131
2-3	233192.910	171203.849	232957.408	170479.049	1077.302
2-4	233106.266	171199.308	232871.754	170477.554	1078.473
2-5	233019.621	171194.767	232786.099	170476.058	1079.645
2-6	232932.977	171190.226	232700.444	170474.563	1080.816
2-7	232846.332	171185.686	232614.789	170473.068	1081.987
2-8	232759.688	171181.145	232529.134	170471.573	1083.159
2-9	232673.043	171176.604	232443.479	170470.078	1084.33
2-10	232586.399	171172.063	232357.824	170468.583	1085.502
2-11	232499.755	171167.522	232273.136	170470.061	1086.673
2-12	232413.110	171162.981	232188.446	170471.539	1087.844
2-13	232326.465	171158.440	232103.758	170473.018	1089.016
2-14	232239.821	171153.900	232019.069	170474.496	1090.187
2-15	232153.176	171149.359	231934.380	170475.974	1091.358
2-16	232066.531	171144.818	231849.692	170477.452	1092.53
2-17	231979.887	171140.277	231765.002	170478.931	1093.701
2-18	231893.243	171135.736	231681.102	170482.833	1094.873
2-19	231806.598	171131.195	231597.515	170487.704	1096.044
2-20	231719.953	171126.654	231513.079	170489.959	1097.215
2-21	231633.309	171122.114	231427.892	170489.905	1098.387
2-22	231546.664	171117.573	231341.922	170487.440	1099.558
2-23	231460.020	171113.032	231256.870	170487.800	1100.729
2-24	231373.375	171108.491	231172.181	170489.278	1101.901
2-25	231286.731	171103.950	231089.313	170496.360	1103.072
2-26	231188.179	171062.762	231013.008	170523.641	1104.244
2-27	231088.605	171018.429	230943.765	170572.657	1105.415

NOTES 1: generated by MicroStation 2. Adjusted ULC elevations (Refer to 2.2.4) per Section 6.5.2.

Emplacement	placement East Side West Side			Side	Elevation ²
Drift	Northing	Easting	Northing	Easting	Elevation
3-1E	236137.403	172140.248	235992.979	171695.756	1042.519
3-2E	236081.661	172230.815	235894.184	171653.820	1043.69
3-3E	236012.902	172281.320	235795.390	171611.884	1044.861
3-4E	235936.845	172309.363	235696.595	171569.949	1046.033
3-5E	235835.884	172260.760	235597.800	171528.013	1047.204
3-6E ¹	235733.817	172208.754	235499.006	171486.077	1048.375
3-7E ¹	235631.751	172156.749	235400.211	171444.142	1049.546
3-8E ¹	235529.684	172104.743	235305.976	171416.236	1050.718
3-9E ¹	235427.618	172052.738	235219.332	171411.696	1051.889
3-10E ¹	235325.552	172000.733	235132.688	171407.155	1053.06
3-11E ¹	235223.485	171948.727	235046.044	171402.614	1054.232
3-12E ¹	235121.419	171896.722	234959.399	171398.074	1055.403
3-13E ¹	235023.895	171858.695	234872.755	171393.533	1056.574
3-14E	234932.407	171839.249	234786.111	171388.992	1057.746
3-15E ¹	234837.896	171810.496	234699.466	171384.451	1058.917
3-16E ¹	234749.206	171799.660	234612.822	171379.911	1060.088
3-17E ¹	234657.945	171780.909	234526.178	171375.370	1061.26
3-18E ¹	234566.457	171761.463	234439.533	171370.829	1062.431
3-19E ¹	234474.970	171742.017	234352.889	171366.288	1063.602

Table 13. Panel 3 East Waste Package End Point Coordinates (Meters)

NOTES: 1. West coordinates are generated by MicroStation. 2. Adjusted ULC elevations (Refer to 2.2.4) per Section 6.5.2.

Emplacement	East Side		West	Elevation ³	
Drift	Northing	Easting	Easting	Northing	Elevation
3-1W	236237.413	171661.675	236052.003	171091.041	1037.477
3-2W	236138.618	171619.739	235953.208	171049.105	1038.648
3-3W	236039.823	171577.803	235854.413	171007.169	1039.819
3-4W	235941.028	171535.867	235755.618	170965.233	1040.991
3-5W	235842.233	171493.931	235656.823	170923.297	1042.162
3-6W	235743.438	171451.995	235558.029	170881.361	1043.333
3-7W	235644.644	171410.059	235459.234	170839.425	1044.505
3-8W	235545.849	171368.123	235360.439	170797.489	1045.676
3-9W ¹	235447.055	171326.187	235262.112	170756.993	1046.847
3-10W ¹	235351.990	171295.731	235172.007	170741.800	1048.018
3-11W 1	235264.306	171287.990	235085.363	170737.259	1049.19
3-12W ¹	235177.661	171283.449	234998.719	170732.718	1050.361
3-13W ¹	235091.017	171278.907	234912.075	170728.177	1051.532
3-14W ¹	235004.373	171274.366	234825.430	170723.637	1052.704
3-15W ¹	234917.728	171269.825	234738.786	170719.096	1053.875
3-16W ¹	234831.084	171265.284	234652.142	170714.555	1055.046
3-17W ¹	234744.439	171260.744	234565.497	170710.014	1056.218
3-18W ¹	234657.795	171256.203	234478.853	170705.473	1057.389
3-19W ¹	234571.151	171251.662	234392.207	170700.933	1058.56
3-20W ¹	234484.507	171247.121	234305.564	170696.392	1059.732
3-21W ¹	234397.863	171242.580	234218.920	170691.851	1060.903
3-22W ¹	234311.219	171238.040	234132.276	170687.310	1062.074
3-23W ²	234224.575	171233.499	234045.632	170682.769	1063.245
3-24W ²	234137.931	171228.958	233958.988	170678.229	1064.416
3-25W ²	234051.285	171224.417	233872.342	170673.688	1065.588
3-26W ²	233964.640	171219.877	233785.698	170669.147	1066.759

Table 14. Panel 3 West Waste Package End Point Coordinates (Me	ters)
--	-------

NOTES: 1. East coordinates are generated by MicroStation 2. Coordinates are generated by MicroStation 3. Adjusted ULC elevations (Refer to 2.2.4) per Section 6.5.2.

Emplacement	East Side		West	Elevation ³	
Drift	Northing	Easting	Northing	Easting	Elevation
4-1	236042.732	171062.509	235910.955	170656.939	1039.005
4-2	235943.937	171020.573	235759.426	170452.704	1040.176
4-3	235845.143	170978.637	235659.733	170408.004	1041.347
4-4	235746.348	170936.701	235560.938	170366.068	1042.519
4-5	235647.554	170894.765	235462.144	170324.132	1043.69
4-6	235548.759	170852.829	235363.349	170282.196	1044.861
4-7	235449.964	170810.893	235264.554	170240.260	1046.033
4-8	235351.169	170768.957	235165.759	170198.324	1047.204
4-9	235252.842	170728.461	235061.884	170140.754	1048.375
4-10	235155.124	170689.838	234973.145	170129.767	1049.546
4-11	235068.480	170685.297	234886.501	170125.226	1050.718
4-12	234981.835	170680.756	234799.856	170120.685	1051.889
4-13	234895.191	170676.215	234713.212	170116.144	1053.06
4-14	234808.547	170671.674	234626.568	170111.603	1054.232
4-15	234721.903	170667.133	234539.924	170107.062	1055.403
4-16	234635.258	170662.592	234453.279	170102.522	1056.574
4-17	234548.614	170658.052	234366.635	170097.981	1057.746
4-18	234461.969	170653.511	234279.992	170093.440	1058.917
4-19	234375.325	170648.970	234193.346	170088.899	1060.088
4-20	234288.681	170644.429	234106.823	170084.731	1061.26
4-21	234202.036	170639.888	234023.727	170091.111	1062.431
4-22 ¹	234115.392	170635.348	233940.912	170098.356	1063.602
4-23 ¹	234028.748	170630.807	233858.098	170105.601	1064.773
4-24 ¹	233942.103	170626.266	233775.283	170112.847	1065.945
4-25 ¹	233855.459	170621.725	233692.467	170120.092	1067.116
4-26 ¹	233768.814	170617.184	233609.653	170127.338	1068.288
4-27 ²	233682.170	170612.644	233526.841	170134.594	1069.459
4-28 ²	233595.525	170608.103	233448.442	170155.429	1070.63
4-29 ²	233508.881	170603.562	233378.792	170203.192	1071.801
4-30 ²	233422.007	170598.316	233321.782	170289.858	1072.973

Table 15	Danal /	Wacta	Dackada	End Doint	Coordinates	(Matare)
		vvasic	r ackaye		Coordinates	

NOTES: 1. East coordinates are generated by MicroStation

2. East coordinates generated by MicroStation are located to permit extension of Panel 4 Exhaust Main, dual section, if required.

3. Adjusted ULC elevations (Refer to 2.2.4) per Section 6.5.2.

7.7 EXHAUST SHAFT #1 COORDINATES

Exhaust Shaft #1 was reconstituted in the ULCLA design with the movement of Panel 1 as described in Sections 6.4 and 6.8. Table 16 gives the new coordinates for Exhaust Raise #1. The conversion factor from Section 0 is applied. Table 16 values have been generated using MicroStation (refer to Section 4.2.2).

Exhaust Shaft	Meters			Feet		
#1	Northing	Easting	Elevation	Northing	Easting	Elevation
Collar		170692	1425	766773	560013	4675
Station	233713		1069			3508

Table 16. Exhaust Shaft #1 Coordinates

NOTE: Values have been rounded to a whole number

ATTACHMENT I ULC NORTH RAMP AND ACCESS MAIN INTERSECTION

Attachment I describes the general arrangement of the ESF and the future extension of the access main. The ULC excavation geometry at the intersection of the North Ramp curve and the access main, with the associated turnout, are described and illustrated in a plan view and a series of cross-sectional views. A site-specific stationing format is developed for the aforementioned location to simplify the discussion.

Excavation As-built and ULC Access Main

The North Ramp descends at approximately -2.15% on an azimuth of approximately 298° 58 ft (Reference 2.2.4, Figure 3). At STA 21+86.960 the North Ramp begins to curve on a 305-meter radius. The curve segment redirects the North Ramp into the access main such that at STA 28+04.323 the azimuth has changed to 183° and the gradient has become +1.35%. The access main continues on the 183° azimuth at +1.35% until STA 56+54.323. At STA 56+54.323 the access main begins turning east in a 305-meter radius curve with an increased gradient of approximately +2.62% on the South Ramp. The curve segment redirects the tunnel such that at STA 64+25.206 the azimuth is 91°. The gradient remains at approximately +2.62%.

The future north extension to the access main is on a 3° azimuth and a -1.35% gradient (Reference 2.2.4, Figures 3 and 6). The excavation will start from the tangent point of the North Ramp curve and the access main at approximately STA 28+04.323.

Stationing Nomenclature for the North Extension of the Access Main

In this attachment the station nomenclature and the horizontal and vertical change have been performed in English units.

The deflection point in the North Ramp gradient occurs at the North Ramp vertical point of tangency (VPT) with the access main, which is at approximately STA 28+04.323. In the context of this calculation, STA 28+04.323 will be designated STA 00+00.00 and will increase in magnitude towards the north. For example, the station 50-feet north of STA 00+00.00 is identified as STA 00+50.00 and a further 50-feet north is STA 01+00.00. The plan view of this area is shown in Figure I-1. Also STA 00+00.00 will have an elevation of 0.00 feet in the context of this calculation.

Moving towards the north from designated STA 00+00.00, the gradient for the future north extension of the access main is -1.35% and the North Ramp rises at +2.15% turning to an easterly direction. Therefore, the future north extension of the access main and the North Ramp curve are diverging at the rate of 3.5-feet for every 100 feet of horizontal excavation based on the respective gradients.

Track Turnout Parameters

A No. 11 track turnout¹ is used for curves that have a 305 m (1000 ft) radius (Assumption 3.2.3). The track turnout for the excavated turnout is a No. 6 turnout (Assumption 3.2.3). At the convergence of the North Ramp, the future north extension of the access main, and the excavated turnout, the No. 6 track turnout is located north of the No. 11 track turnout. The heels of the No. 6 and No. 11 track turnout frogs are adjoined (Assumption 3.2.4) as shown in Figure I-1.

¹ The word "track" is appended to "turnout" denoting the railroad design component commonly called a "switch". AREMA (Reference 2.2.1) nomenclature for "switch" is the word "turnout" alone, however project convention uses the term "turnout" for the excavation in which the "switch" is located. Therefore, in order to distinguish the structural component from the excavation component, "track" is appended to "turnout" in this calculation.



Figure I-1. North Ramp and Future North Extension of the Access Main Intersection

I-3

Section Views Progressing North

As noted above, the combined vertical divergence between the North Ramp and the future north extension of the access main is 3.5 ft per 100 ft of horizontal travel. Concurrently, the North Ramp moves away horizontally from the access main azimuth of 3° to approximately 118° azimuth.

In order to visualize the changing spatial relationship between the future north extension of the access main and the North Ramp, a series of cross-sectional views are constructed. STA 00+00.00, shown in Figure I-2, is the origin for this perspective. STA 00+00.00 section view shows the spatial relationship amongst the three congruent excavations: turnout, North Ramp, and access main. The turnout is west of the existing North Ramp VPT separated by a pillar. Coincident with the North Ramp is the future north extension of the access main. For illustrative purposes, a road base with rail, about three feet in thickness (Assumption 3.2.6), is shown in the section views. Also, the turnout excavation is held in the same horizontal plane as the access main (Assumption 3.2.5) in order to remain in agreement with the access main projection in each section.

The ULC design for the future north extension of the access main excavation geometry is asymmetrical with the North Ramp from STA 00+00.00 to the north. As a result, an increasingly pronounced trough-shaped invert excavation develops defined by a noticeable bench in the North Ramp invert as the two excavations diverge. Concurrently, the crown of the future north extension of the access main loses elevation relative to the crown of the North Ramp Curve.

The elevation differential and the horizontal movement towards the east are illustrated in Figure I-2 through Figure I-9 and are compiled in Table I-1.



Figure I-2. Section View at Common Elevation Station 00+00.00



SECTION (LOOKING NORTH)

Figure I-3. Section View at Station 00+50.00



Figure I-4. Section View at Station 00+75.00







Figure I-6. Section View at Station 01+25.00



Figure I-7. Section View at Station 01+50.00



Figure I-8. Section View at Station 02+00.00



Figure I-9. Section View at Station 02+50.00

Table I-1. Spatial Va	ariance Between th	e Access Main and	d the North	Ramp in the ULC
-----------------------	--------------------	-------------------	-------------	-----------------

Figure	STATION	Elevation	Differential	Horizontal Offset East		
	STATION	Feet	Meter	Feet	Meter	
I-2	STA 00+00.00	0.0	0.0	0.0	0.0	
I-3	STA 00+50.00	1.75	0.53	1.38	0.42	
I-4	STA 00+75.00	2.63	0.80	2.94	0.90	
I-5	STA 01+00.00	3.50	1.07	5.12	1.56	
I-6	STA 01+25.00	4.38	1.34	7.84	2.39	
I-7	STA 01+50.00	5.25	1.60	11.45	3.49	
I-8	STA 02+00.00	7.00	2.13	20.19	6.15	
I-9	STA 02+50.00	8.75	2.67	31.73	9.67	

NOTE: Conversion factor applied is given Section 0

ATTACHMENT II DESIGN IMPEDIMENT MITIGATION FOR ULCLA

Attachment II examines several design options that can be considered for a design solution to resolve the affects of the divergent excavations described in Attachment I.

II.1 MODIFIED GRADIENT ALTERNATIVE

Option 1: Maintain Ramp Gradient

The origin has been established as STA 00+00.00 in Attachment I. The elevation of STA 00+00 is 1065.000 m (3494.09 ft) (Reference 2.2.4, Figure 3). The congruent gradient would be carried through the No. 11 and No. 6 turnout arrangements. This maintains both tracks at the same elevation and precludes uneven rail placement. Referring to Attachment I, Figure I-1, the lineal extent of adjoining No. 11 and No. 6 turnouts is approximately 160 ft from STA 00+00.00 to a point approximately 10 ft north of STA 01+50.00. In order to provide an allowance for a grade change, this study will extend the affected lineal distance by 40 ft to STA 02+00.00.

- The change in elevation from STA 00+00.00 to STA 01+50.00 plus 10 ft is equal to 3.44 ft (the product of the gradient and the horizontal distance, or 0.0215 * 160).
- The elevation at STA 01+50.00 plus 10 ft is 3497.53 ft (3494.09 + 3.44).
- The elevation at STA 02+00.00 is also 3497.53 ft since the 40 ft allowance for the vertical curve will be flat for the purposes of this study.

Moving forward from STA 02+00.00, the grade of the north extension of the access main is realigned to the design gradient of -1.35% to the north. The lineal distance available to merge the calculated elevation of 3497.53 ft at STA 02+00.00 with the projected design elevation of the north extension of the access main is 163 ft (the distance between STA 02+00.00 to the frog of the adjacent No. 6 turnout located at approximately STA 03+63.00).

- The projected elevation at STA 03+63.00 is equal to the elevation at STA 00+00.00 less the product of the horizontal distance of 363 ft and the 1.35% gradient. Which is 3494.09-363*0.0135 3489.19 ft
- The elevation difference between STA 02+00.00 and STA 03+63.00 is equal to 3497.53 ft less 3489.19 ft, or 8.34 ft.
- An elevation difference of 8.34 ft over the horizontal distance between STA 02+00.00 and STA 03+63.00 is equal to 8.34/163*100, or 5.12%.

Note that this excludes an allowance for a vertical curve, which would reduce the available alignment length and result in a larger elevation difference leading to a steeper grade.

Design Impact

- The No. 6 turnout departure is on a grade of 2.15%.
- A gradient of 5.12% to return the access main onto the repository plane exceeds the 2.5% design constraint (refer to Section 4.3.1).

- The proposed design inserts a barrier into the repository drainage plane.
- The proposed design could reduce the available elevation difference from the access main to the emplacement drift and compromise the ability to remove water from the emplacement area.

Option 2: Maintain Access Main Gradient

The origin, as established in Attachment I, is STA 00+00.00 serves as the start for this assessment since it is the common elevation.

The access main gradient of 1.35% is carried through the No. 11 and No. 6 turnouts arrangements to STA 02+0.00 as shown in Figure I-1.

Referring to Figure I-8, the elevation difference between the future north extension of the access main and the North Ramp at STA 02+0.00 is 7.00 ft and the two excavations centerlines are approximately 20 ft apart.

From STA 02+0.00 the access main remains on azimuth at a 1.35% gradient while the North Ramp commences to climb at +2.5% (refer to Section 4.3.1) in effect undercutting the existing North Ramp floor that has a gradient of approximately +2.15% (Section 6.2.1).

The difference in the actual gradient and the maximum allowable gradient is 0.35%. Converted to degrees, 0.35% is equivalent 0.20053 degrees.

The distance that the undercut would have to be carried up the North Ramp from STA 02+0.00 for convergence is approximately 2000 ft (7/sin 0.20053).

Design Impact

- Extensive removal of existing concrete invert (Assumption 3.2.6) commencing from STA 00+0.00, through STA 02+0.00, and a further 2000 ft of concrete invert in the North Ramp.
- Invert excavation from STA 00+0.00, through STA 02+0.00, and an additional 2000 ft in the North Ramp.
- Creating a large access main and North Ramp intersection that is 32 ft. in height.
- Requires that a full concrete invert be re-established.
- Based on the size of the intersection, the ground support will have to be fully reevaluated.
- Based on the need for extensive concrete invert removal and replacement, combined with the significant amount of excavation, the schedule could be impacted noticeably.

II.2 BYPASS ALTERNATIVE

The bypass alternative offsets the future north extension of the access main from the North Ramp while maintaining the access main slope of 1.35% to the north. The excavation geometry for the bypass alternative is shown in Figure II-1.



Figure II-1. Excavation Geometry for the Bypass Alternative

A connector drift that shifts the north extension of the access main 80-feet to the west from the existing access main is incorporated into the design (Assumption 3.2.7). A No. 6 track turnout is utilized in the crossover to maintain continuity with the existing design (Section 6.2.2). The 80-foot offset to the west is a function of a No. 6 track turnout leading into and out of the crossover drift straight section, and the minimum required spacing between nonemplacement drifts (Section 4.3.1).

The lineal extent of the crossover is bounded by the selected track turnout, a straight segment which is closely related to the overall length of the TEV (Assumption 3.2.7), and the alignment with the north extension of the access main.

The placement of the crossover in the access main takes into consideration the end of the North Ramp and the excavation low point in conjunction with the footprint of the crossover and the supportable roof span in proximity to Thermal Testing Facility Alcove.

ATTACHMENT III PANEL 1 OPTIMIZATION FOR ULCLA

The design optimization of Panel 1, shown in Figure III-1, is a continuation of the North Ramp curve reconciliation. The design optimization considers the available emplacement area and repositioning of Panel 1 in conjunction with Panel 3E and 3W and the impact to the subsurface layout as a whole.

Modifications to Panel 1 and Vicinity

- Panel 1 is moved south, four emplacement drift positions from its current location.
- Panel 1 will have six emplacement drifts, of which two, 1-5 and 1-6, are located in the presently unoccupied area shared with Panel 2.
- Former Panel 1 emplacement drifts 1-5, 1-6, 1-7, and 1-8 are re-numbered as 1-1, 1-2, 1-3, and 1-4, respectively (Note: current emplacement drifts 1-1, 1-2, 1-3, and 1-4 are moved into Panel 3 West).
- Panel 1 exhaust main is re-aligned parallel with the access main and the emplacement drifts are lengthened proportionately to intersect.
- The access drift from the ESF to Panel 4 is positioned at the mid-pillar between Panel 1 and Panel 2.
- Exhaust Raise #1 is moved south of its current location and reconstituted into the repositioned Panel 1 Emplacement Drift 1 and the exhaust main.
- The performance confirmation drift is reconfigured to pass below and adjacent to the third of the six emplacement drifts that constitute the revised Panel 1.
- An exhaust raise replaces the ventilation ramp from the ECRB to Panel 4 exhaust main.
- The Vent Access to ECRB ramp (Reference 2.2.4, Table 6) is replaced with a Vent Raise to the ECRB of equal ventilation capacity since extending the emplacement drifts precludes a ramp from the ECRB to the Panel 3 Exhaust Main. This does not prevent reinstituting a ramp at an alternate location if it is determined advantageous for construction.
- Panel 3 West turnouts, from 3-9 through 3-26, are shifted to the west approximately 24.4 m (80 ft).
- Panel 3 West absorbs emplacement drifts 1-1, 1-2, 1-3, and 1-4, as re-numbered emplacement drifts 3-23W, 3-24W, 3-25W, and 3-26W.
- Panel 3 East turnouts are shifted to the west approximately 24.4 m (80 ft).
- Panel 4 emplacement drifts remain unchanged except in the vicinity of Panel 1 where they have moved to accommodate the exhaust main re-alignment



Figure III-1. Emplacement Panel Configuration

ATTACHMENT IV AVAILABLE EMPLACEMENT DRIFT LENGTH IN THE ULCLA

ULCLA AVAILABLE EMPLACEMENT DRIFT TABLES

The table entries that remain unchanged for Panel 1 through Panel 4, given in Table IV-1 through Table IV-5, respectively, are obtained from the ULC (Reference 2.2.4). Table values that have changed are generated using MicroStation (Section 4.2.2) and are indicated as such. The Cumulative Available Drift Length value changes accordingly.

Table IV-1.	Panel 1	Available	Emplacement	Drift Length	(Meters)
					(

Drift	Excavated Length	Operational Standoff & Footprint Restriction ¹	Available Drift Length ²	Cumulative Available Drift Length
1-1	507.311	16.5	490.811	490.811
1-2	595.858	16.5	579.358	1070.169
1-3	597.055	16.5	580.555	1650.724
1-4	597.055	16.5	580.555	2231.279
1-5	597.055	16.5	580.555	2811.834
1-6	597.055	16.5	580.555	3392.389
Totals	3491.389	99	3392.389	

NOTES: 1. Refer to Assumption 3.2.1 and 3.2.2

2. Generated by MicroStation
| Drift | Excavated
Length | Operational Standoff &
Footprint Restriction ¹ | Available Drift
Length | Cumulative Available
Drift Length |
|--------|---------------------|--|---------------------------|--------------------------------------|
| 2-1 | 779.342 | 16.5 | 762.842 ² | 762.842 |
| 2-2 | 779.342 | 16.5 | 762.842 | 1525.684 |
| 2-3 | 778.600 | 16.5 | 762.100 | 2287.784 |
| 2-4 | 775.397 | 16.5 | 758.897 | 3046.681 |
| 2-5 | 772.196 | 16.5 | 755.696 | 3802.377 |
| 2-6 | 768.993 | 16.5 | 752.493 | 4554.870 |
| 2-7 | 765.790 | 16.5 | 749.290 | 5304.160 |
| 2-8 | 762.588 | 16.5 | 746.088 | 6050.248 |
| 2-9 | 759.385 | 16.5 | 742.885 | 6793.133 |
| 2-10 | 756.183 | 16.5 | 739.683 | 7532.816 |
| 2-11 | 749.854 | 16.5 | 733.354 | 8266.170 |
| 2-12 | 743.526 | 16.5 | 727.026 | 8993.196 |
| 2-13 | 737.196 | 16.5 | 720.696 | 9713.892 |
| 2-14 | 730.868 | 16.5 | 714.368 | 10428.260 |
| 2-15 | 724.539 | 16.5 | 708.039 | 11136.299 |
| 2-16 | 718.210 | 16.5 | 701.710 | 11838.009 |
| 2-17 | 711.881 | 16.5 | 695.381 | 12533.390 |
| 2-18 | 705.552 | 19.049 | 686.503 | 13219.893 |
| 2-19 | 699.223 | 22.616 | 676.607 | 13896.500 |
| 2-20 | 692.895 | 23.434 | 669.461 | 14565.961 |
| 2-21 | 686.565 | 21.821 | 664.744 | 15230.705 |
| 2-22 | 680.237 | 17.676 | 662.561 | 15893.266 |
| 2-23 | 673.908 | 16.5 | 657.408 | 16550.674 |
| 2-24 | 667.579 | 16.5 | 651.079 | 17201.753 |
| 2-25 | 655.358 | 16.5 | 638.858 | 17840.611 |
| 2-26 | 583.366 | 16.5 | 566.866 | 18407.477 |
| 2-27 | 485.213 | 16.5 | 468.713 | 18876.190 |
| Totals | 19343.786 | 467.596 | 18876.190 | |

Panel 2 Available Emplacement Drift Length (Meters) Table IV-2.

NOTES: 1. Refer to Assumption 3.2.1 and 3.2.2 2. Generated by MicroStation

Drift	Excavated Length	Operational Standoff & Footprint Restriction ¹	Available Drift Length	Cumulative Available Drift Length
3-1E ²	757.174	289.808	467.366	467.366
3-2E ²	798.926	192.237	606.689	1074.055
3-3E 2	808.132	104.246	703.886	1777.941
3-4E ²	793.966	16.5	777.466	2555.407
3-5E ²	786.956	16.5	770.456	3325.863
3-6E	776.367	16.5	759.867	4085.730
3-7E	765.779	16.5	749.279	4835.009
3-8E	740.438	16.5	723.938	5558.947
3-9E	690.531	16.5	674.031	6232.978
3-10E	640.625	16.5	624.125	6857.103
3-11E	590.716	16.5	574.216	7431.319
3-12E	540.810	16.5	524.310	7955.629
3-13E	505.600	16.5	489.100	8444.729
3-14E	492.075	18.648	473.427	8918.156
3-15E	474.255	26.285	447.970	9366.126
3-16E	458.581	17.231	441.350	9807.476
3-17E	442.909	16.5	426.409	10233.885
3-18E	427.237	16.5	410.737	10644.622
3-19E	411.564	16.5	395.064	11039.686
Totals	11902.641	862.955	11039.686	

Table IV-3.	Panel 3 East Available Er	mplacement Drift Le	enath (Meters)
		inplacement brint Ec	mgan (motoro)

NOTES: 1. Refer to Assumption 3.2.1 and 3.2.2 2. Refer to Section 2.2.4

Drift	Excavated Length	Operational Standoff & Footprint Restriction ¹	Available Drift Length	Cumulative Available Drift Length
3-1W ²	616.500	16.5	600.000	600.000
3-2W ²	616.500	16.5	600.000	1200.000
3-3W ²	616.500	16.5	600.000	1800.000
3-4W ²	616.500	16.5	600.000	2400.000
3-5W ²	616.500	16.5	600.000	3000.000
3-6W ²	616.500	16.5	600.000	3600.000
3-7W ²	616.500	16.5	600.000	4200.000
3-8W ²	616.500	16.5	600.000	4800.000
3-9W	614.986	16.5	598.486	5398.486
3-10W	598.937	16.5	582.437	5980.923
3-11W	595.573	16.5	579.073	6559.996
3-12W	595.573	16.5	579.073	7139.069
3-13W	595.571	16.5	579.071	7718.140
3-14W	595.571	16.5	579.071	8297.211
3-15W	595.570	16.5	579.070	8876.281
3-16W	595.571	16.5	579.071	9455.352
3-17W	595.571	16.5	579.071	10034.423
3-18W	595.571	16.5	579.071	10613.494
3-19W	595.571	16.5	579.071	11192.565
3-20W	595.571	16.5	579.071	11771.636
3-21W	595.571	16.5	579.071	12350.707
3-22W	595.571	16.5	579.071	12929.778
3-23W	595.572	16.5	579.072	13508.850
3-24W	595.571	16.5	579.071	14087.921
3-25W	595.571	16.5	579.071	14666.992
3-26W	595.571	16.5	579.071	15246.063
Totals	15675.063	429	15246.063	

Table IV-4.	Panel 3 West Available	Emplacement	Drift Lenath	(Meters)
			Dinit Longar	(101010)

NOTES: 1. Refer to Assumption 3.2.1 and 3.2.2 2. Refer to Section 2.2.4

Drift	Excavated Length	Operational Standoff & Footprint Restriction ¹	Available Drift Length	Cumulative Available Drift Length
4-1	616.500	190.059	426.441	426.441
4-2	616.500	19.407	597.093	1023.534
4-3	616.500	16.5	600.000	1623.534
4-4	616.500	16.5	600.000	2223.534
4-5	616.500	16.5	600.000	2823.534
4-6	616.500	16.5	600.000	3423.534
4-7	616.500	16.5	600.000	4023.534
4-8	616.500	16.5	600.000	4623.534
4-9	634.452	16.5	617.952	5241.486
4-10	605.393	16.5	588.893	5830.379
4-11	605.393	16.5	588.893	6419.272
4-12	605.393	16.5	588.893	7008.165
4-13	605.393	16.5	588.893	7597.058
4-14	605.393	16.5	588.893	8185.951
4-15	605.393	16.5	588.893	8774.844
4-16	605.393	16.5	588.893	9363.737
4-17	605.393	16.5	588.893	9952.630
4-18	605.393	16.5	588.893	10541.523
4-19	605.393	16.5	588.893	11130.416
4-20	605.001	16.5	588.501	11718.917
4-21	593.519	16.5	577.019	12295.936
4-22 ²	581.129	16.5	564.629	12860.565
4-23 ²	568.736	16.5	552.236	13412.801
4-24 ²	556.344	16.5	539.844	13952.645
4-25 ²	543.951	16.5	527.451	14480.096
4-26 ²	531.559	16.5	515.059	14995.155
4-27 ²	543.790	41.1	502.651	15497.806
4-28 ²	517.110	41.1	475.969	15973.775
4-29 ²	462.114	41.1	420.974	16394.749
4-30 ²	366.214	41.9	324.333	16719.082
Totals	17489.849	770.666	16719.082	

Table IV-5.	Panel 4 Availal	ole Emplacement	Drift Length (Meters)
	i anoi i / trana		Dine Longar (motoro)

NOTES: 1. Refer to Assumption 3.2.1 and 3.2.2 2. Generated by MicroStation

ATTACHMENT V ULCLA EXCAVATION DIMENSIONS WORKSHEET

	Non-Emplacement	Met	Meters		Feet	
No.	Development	Distance	Rounded	Distance	Rounded	
1	Observation Drift	971.014	971	3185.82	3186	
2 ¹	Observation Drift Alcove	n/a	40	n/a	131	
3	Connector Drift	57.70	58	189.30	189	
4 ¹	Vent Raise to ECRB Access	n/a	23	n/a	75	
5	Vent Raise Access at ECRB	22.95	23	75.31	75	
6	Vent Raise to ECRB	28.96	29	95.00	95	
7	Cross Drift to Panel 4	899.61	900	2951.48	2951	
8	Exhaust Main	554.85	555	1820.37	1820	
9	Exhaust Raise # 1 Access	72.21	72	236.91	237	
10	Exhaust Raise #1	355.73	356	1167.10	1167	
Turn	out ²					
11	Turnout #1	93.160	93	n/a	305	
12	Turnout #2	93.160	93	n/a	305	
13	Turnout #3	93.160	93	n/a	305	
14	Turnout #4	93.160	93	n/a	305	
15	Turnout #5	93.160	93	n/a	305	
16	Turnout #6	93.160	93	n/a	305	
		Total	558		1830	
Empl	acement Drift					
17	Drift #1	507.311	507	1664.403	1664	
18	Drift #2	595.858	596	1954.911	1955	
19	Drift #3	597.055	597	1958.838	1959	
20	Drift #4	597.055	597	1958.838	1959	
21	Drift #5	597.055	597	1958.838	1959	
22	Drift #6	597.055	597	1958.838	1959	
		Total	3491		11455	

Table V-1 Panel 1

NOTES: 1. Consistent with ULC (Reference 2.2.4) 2. Adjusted for 1.5 m offset (see Section 6.5.1)

	Non-Emplacement	Meters		Feet	
No.	Development	Distance	Rounded	Distance	Rounded
1	Exhaust Main	3047.28	3047	9997.62	9998
2	Access Main Offset Drift	143.10	143	469.49	469
3 ¹	Exhaust Shaft #3 Access Drift	n/a	20	n/a	66
4 ¹	Exhaust Shaft #3	n/a	292	n/a	958
5 ¹	Intake Shaft #3 Access Drift	n/a	109	n/a	358
6 ¹	Intake Shaft #3	n/a	248	n/a	814
7 ¹	ECRB Exhaust Shaft Access	n/a	91	n/a	299
8 ¹	ECRB Exhaust Shaft	n/a	398	n/a	1306
Turno	ut ²				
9	Turnout #1	93.160	93	n/a	305
10	Turnout #2	93.160	93	n/a	305
11	Turnout #3	93.160	93	n/a	305
12	Turnout #4	93.160	93	n/a	305
13	Turnout #5	93.160	93	n/a	305
14	Turnout #6	93.160	93	n/a	305
15	Turnout #7	93.160	93	n/a	305
16	Turnout #8	93.160	93	n/a	305
17	Turnout #9	93.160	93	n/a	305
18	Turnout #10	93.160	93	n/a	305
19	Turnout #11	93.160	93	n/a	305
20	Turnout #12	93.160	93	n/a	305
21	Turnout #13	93.160	93	n/a	305
22	Turnout #14	93.160	93	n/a	305
23	Turnout #15	93.160	93	n/a	305
24	Turnout #16	93.160	93	n/a	305
25	Turnout #17	93.160	93	n/a	305
26	Turnout #18	93.160	93	n/a	305
27	Turnout #19	93.160	93	n/a	305
28	Turnout #20	93.160	93	n/a	305
29	Turnout #21	93.160	93	n/a	305
30	Turnout #22	93.160	93	n/a	305
31	Turnout #23	93.160	93	n/a	305
32	Turnout #24	93.160	93	n/a	305
33	Turnout #25	93.160	93	n/a	305
34	Turnout #26	n/a	102	n/a	336
35	Turnout #27	n/a	148	n/a	458
		Total	2575	1	8419

Table V-2 Panel 2

		Meters		Feet	
No.	Emplacement Drift ¹	Distance	Rounded	Distance	Rounded
36 ³	Drift #1	779	779.342	2556.891	2557
37	Drift #2	n/a	779	n/a	2557
38	Drift #3	n/a	779	n/a	2554
39	Drift #4	n/a	775	n/a	2544
40	Drift #5	n/a	772	n/a	2533
41	Drift #6	n/a	769	n/a	2523
42	Drift #7	n/a	766	n/a	2512
43	Drift #8	n/a	763	n/a	2502
44	Drift #9	n/a	759	n/a	2491
45	Drift #10	n/a	756	n/a	2481
46	Drift #11	n/a	750	n/a	2460
47	Drift #12	n/a	744	n/a	2439
48	Drift #13	n/a	737	n/a	2419
49	Drift #14	n/a	731	n/a	2398
50	Drift #15	n/a	725	n/a	2377
51	Drift #16	n/a	718	n/a	2356
52	Drift #17	n/a	712	n/a	2336
53	Drift #18	n/a	706	n/a	2315
54	Drift #19	n/a	699	n/a	2294
55	Drift #20	n/a	693	n/a	2273
56	Drift #21	n/a	687	n/a	2253
57	Drift #22	n/a	680	n/a	2232
58	Drift #23	n/a	674	n/a	2211
59	Drift #24	n/a	668	n/a	2190
60	Drift #25	n/a	655	n/a	2150
61 ³	Drift #26	583.366	583	1913.927	1914
62^{3}	Drift #27	485.213	485	1591.903	1591
		Total	19344		63462

Table V-2. Panel 2 (Continuation)

NOTES: 1. Consistent with ULC (Reference 2.2.4) 2. Adjusted for 1.5 m offset (see Section 6.5.1) 3. Generated by MicroStation.

.

	Non-Emplacement	Meters		Feet	
No.	Development	Distance	Rounded	Distance	Rounded
1 ¹	North Construction Ramp	n/a	2884	n/a	9462
2	Access Main	2669.73	2670	8758.94	8759
3	Exhaust Main	6439.42	6439	21126.66	21127
4 ¹	Exhaust Raise #2 Access Drift	n/a	127	n/a	417
5 ¹	Exhaust Raise #2	n/a	279	n/a	915
6 ¹	Intake Shaft #1 Access Drift	n/a	1384	n/a	2713
7 ¹	Intake Shaft #1	n/a	378	n/a	1240
8 ¹	Exhaust Shaft #1 Access Drift	n/a	598	n/a	1962
9 ¹	Exhaust Shaft #1	n/a	405	n/a	1329
10 ¹	Intake Shaft #2 Access Drift	n/a	770	n/a	2526
11 ¹	Intake Shaft #2	n/a	350	n/a	1148
12 ¹	Exhaust Shaft #2 Const. Access	n/a	31	n/a	102
13 ¹	Exhaust Shaft #2 West Access	n/a	118	n/a	387
14 ¹	Exhaust Shaft #2 East Access	n/a	106	n/a	348
15 ¹	Exhaust Shaft #2	n/a	428	n/a	1404
16	Exhaust Raise #1 Access Drift	21.82	22	71.60	72
17	Access to EXRB Raise	30.27	30	99.32	99
18	Vent Raise to ECRB	28.96	29	95.00	95
19	ECRB Access to Raise	26.89	27	88.20	88
20	ECRB Widening	317.52	318	n/a	1042
WES'	T Turnout ²				
21	West Turnout #1	n/a	118	n/a	387
22	West Turnout #2	n/a	118	n/a	387
23	West Turnout #3	n/a	118	n/a	387
24	West Turnout #4	n/a	118	n/a	387
25	West Turnout #5	n/a	118	n/a	387
26	West Turnout #6	n/a	118	n/a	387
27	West Turnout #7	n/a	118	n/a	387
28	West Turnout #8	n/a	118	n/a	387
29	West Turnout #9	n/a	114	n/a	374
30	West Turnout #10	92.160	92	n/a	304
31	West Turnout #11	93.160	93	n/a	305
32	West Turnout #12	93.160	93	n/a	305
33	West Turnout #13	93.160	93	n/a	305
34	West Turnout #14	93.160	93	n/a	305
35	West Turnout #15	93.160	93	n/a	305
36	West Turnout #16	93.160	93	n/a	305
37	West Turnout #17	93.160	93	n/a	305
38	West Turnout #18	93.160	93	n/a	305
39	West Turnout #19	93.160	93	n/a	305
40	West Turnout #20	93.160	93	n/a	305
41	West Turnout #21	93.160	93	n/a	305
42	West Turnout #22	93.160	93	n/a	305
43	West Turnout #23	93.160	93	n/a	305
44	West Turnout #24	93.160	93	n/a	305
45	West Turnout #25	93.160	93	n/a	305
46	West Turnout #26	93.160	93	n/a	305
		Total	2638		8654

Table V-3 Panel 3

(continued)

		Meters		Feet	
No.	WEST Emplacement Drift ³	Distance	Rounded	Distance	Rounded
47 ¹	West Drift #1	n/a	617	n/a	2023
48 ¹	West Drift #2	n/a	617	n/a	2023
49 ¹	West Drift #3	n/a	617	n/a	2023
50 ¹	West Drift #4	n/a	617	n/a	2023
51 ¹	West Drift #5	n/a	617	n/a	2023
52 ¹	West Drift #6	n/a	617	n/a	2023
53 ¹	West Drift #7	n/a	617	n/a	2023
54 ¹	West Drift #8	n/a	617	n/a	2023
55	West Drift #9	614.986	615	2017.667	2018
56	West Drift #10	598.937	599	1965.012	1965
57	West Drift #11	595.573	596	1953.976	1954
58	West Drift #12	595.573	596	1953.976	1954
59	West Drift #13	595.571	596	1953.969	1954
60	West Drift #14	595.571	596	1953.969	1954
61	West Drift #15	595.570	596	1953.966	1954
62	West Drift #16	595.571	596	1953.969	1954
63	West Drift #17	595.571	596	1953.969	1954
64	West Drift #18	595.571	596	1953.969	1954
65	West Drift #19	595.571	596	1953.969	1954
66	West Drift #20	595.571	596	1953.969	1954
67	West Drift #21	595.571	596	1953.969	1954
68	West Drift #22	595.571	596	1953.969	1954
69	West Drift #23	595.572	596	1953.972	1954
70	West Drift #24	595.571	596	1953.969	1954
71	West Drift #25	595.571	596	1953.969	1954
72	West Drift #26	595.571	596	1953.969	1954
		Total	15686		51431

Table V-3. Panel 3 (Continuation)

	_	M	eters	Fe	eet		
No.	Turnout ²	Distance	Rounded	Distance	Rounded		
73	East Turnout #1	n/a	119	n/a	390		
74	East Turnout #2	n/a	119	n/a	390		
75	East Turnout #3	n/a	119	n/a	390		
76	East Turnout #4	n/a	119	n/a	390		
77	East Turnout #5	n/a	119	n/a	390		
78	East Turnout #6	n/a	116	n/a	381		
79	East Turnout #7	93.160	93	n/a	305		
80	East Turnout #8	93.160	93	n/a	305		
81	East Turnout #9	93.160	93	n/a	305		
82	East Turnout #10	93.160	93	n/a	305		
83	East Turnout #11	93.160	93	n/a	305		
84	East Turnout #12	93.160	93	n/a	305		
85	East Turnout #13	93.160	93	n/a	305		
86	East Turnout #14	93.160	93	n/a	305		
87	East Turnout #15	93.160	93	n/a	305		
88	East Turnout #16	93.160	93	n/a	305		
89	East Turnout #17	93.160	93	n/a	305		
90	East Turnout #18	93.160	93	n/a	305		
91	East Turnout #19	93.160	93	n/a	305		
		Total	1920		6296		

(Continued)

		Me	eters	Fe	eet		
NO.	EAST Emplacement Drift	Distance	Rounded	Distance	Rounded		
92 ¹	East Drift #1	n/a	757	n/a	2484		
93 ¹	East Drift #2	n/a	799	n/a	2621		
94 ¹	East Drift #3	n/a	808	n/a	2651		
95 ¹	East Drift #4	n/a	794	n/a	2605		
96 ¹	East Drift #5	n/a	787	n/a	2582		
97	East Drift #6	776.367	776	2547.131	2547		
98	East Drift #7	765.779	766	2512.393	2512		
99	East Drift #8	740.438	740	2429.254	2429		
100	East Drift #9	690.531	691	2265.517	2266		
101	East Drift #10	640.625	641	2101.784	2102		
102	East Drift #11	590.716	591	1938.041	1938		
103	East Drift #12	540.810	541	1774.307	1774		
104	East Drift #13	505.600	506	1658.789	1659		
105	East Drift #14	492.075	492	1614.416	1614		
106	East Drift #15	474.255	474	1555.952	1556		
107	East Drift #16	458.581	459	1504.528	1505		
108	East Drift #17	442.909	443	1453.111	1453		
109	East Drift #18	427.237	427	1401.693	1402		
110	East Drift #19	411.564	412	1350.273	1350		
		Total	11904		39050		

Table V-3. Panel 3 (Continuation)

NOTES: 1. Consistent with ULC (Reference 2.2.4) 2. Adjusted for 1.5 m offset (see Section 6.5.1) 3. Generated by MicroStation

	Non-Emplacement	N	leters	F	eet			
No.	Development	Distance	Rounded	Distance	Rounded			
1	Intake Main	4834.77	4835	15862.07	15862			
2 ¹	Panel 3 Exhaust Main Access	n/a	200	n/a	656			
3	Exhaust Main (Dual)	1516.32	1516	4974.79	4975			
Turno	ut ²				1			
4	Turnout #1	n/a	119	n/a	390			
5	Turnout #2	n/a	119	n/a	390			
6	Turnout #3	n/a	119	n/a	390			
7	Turnout #4	n/a	119	n/a	390			
8	Turnout #5	n/a	119	n/a	390			
9	Turnout #6	n/a	119	n/a	390			
10	Turnout #7	n/a	119	n/a	390			
11	Turnout #8	n/a	119	n/a	390			
12	Turnout #9	n/a	99	n/a	324			
13	Turnout #10	93.160	93	n/a	305			
14	Turnout #11	93.160	93	n/a	305			
15	Turnout #12	93.160	93	n/a	305			
16	Turnout #13	93.160	93	n/a	305			
17	Turnout #14	93.160	93	n/a	305			
18	Turnout #15	93.160	93	n/a	305			
19	Turpout #16	93.160	93	n/a	305			
20	Turpout #17	93.160	93	n/a	305			
21	Turpout #18	93.160	93	n/a	305			
22	Turnout #19	93,160	93	n/a	305			
22	Turnout #20	n/a	97	n/a	318			
20	Turnout #21	n/a	102	n/a	335			
25	Turnout #22	n/a	102	n/a	335			
20	Turnout #22	n/a	102	n/a	335			
20	Turnout #24	n/a	102	n/a	335			
20	Turnout #25	n/a	102	n/a	335			
20		n/a	102	n/a	335			
29		n/a	102		335			
30°	Turnout #27	n/a	102	n/a n/a	407			
31 °	I urnout #28	n/a	124	n/a	407			
<u>32 °</u>	Turnout #29	n/a	154	n/a	505			
33 ³	Turnout #30	11/a	193	11/a	633			
		Total	3263		10702			

NOTES: 1. Consistent with ULC (Reference 2.2.4) 2. Adjusted for 1.5 m offset (see Section 6.5.1) 3. Generated by MicroStation and adjusted for 1.5 m offset

(Continued)

	E 1 (D) % ¹	Me	eters	Feet				
NO.	Emplacement Drift	Distance	Rounded	Distance	Rounded			
34	Drift #1	n/a	617	n/a	2023			
35	Drift #2	n/a	617	n/a	2023			
36	Drift #3	n/a	617	n/a	2023			
37	Drift #4	n/a	617	n/a	2023			
38	Drift #5	n/a	617	n/a	2023			
39	Drift #6	n/a	617	n/a	2023			
40	Drift #7	n/a	617	n/a	2023			
41	Drift #8	n/a	617	n/a	2023			
42	Drift #9	n/a	634	n/a	2082			
43	Drift #10	n/a	605	n/a	1986			
44	Drift #11	n/a	605	n/a	1986			
45	Drift #12	n/a	605	n/a	1986			
46	Drift #13	n/a	605	n/a	1986			
47	Drift #14	n/a	605	n/a	1986			
48	Drift #15	n/a	605	n/a	1986			
49	Drift #16	n/a	605	n/a	1986			
50	Drift #17	n/a	605	n/a	1986			
51	Drift #18	n/a	605	n/a	1986			
52	Drift #19	n/a	605	n/a	1986			
53	Drift #20	n/a	605	n/a	1985			
54	Drift #21	n/a	594	n/a	1947			
55 ²	Drift #22	581.129	581	1906.581	1907			
56 ²	Drift #23	568.736	569	1865.921	1866			
57 ²	Drift #24	556.344	556	1825.262	1825			
58 ²	Drift #25	543.951	544	1784.606	1785			
59 ²	Drift #26	531.559	532	1743.943	1744			
60 ²	Drift #27	543.790	544	1784.084	1784			
61 ²	Drift #28	517.110	517	1696.552	1697			
62 ²	Drift #29	462.114	462	1516.119	1516			
63 ²	Drift #30	366.214	366	1201.487	1201			
		Total	17490		57383			

Table V-4.	Panel 4 (Continuation)
	,

NOTES: 1. Consistent with ULC (Reference 2.2.4). 2. Generated by MicroStation.

	Tur	nout	Emplace	ement Drift				
Panel	Meters (rounded)	Feet (rounded)	Meters (rounded)	Feet (rounded)				
1	558	1830	3491	11455				
2	2575	8419	19344	63462				
3 West	2638	8654	15686	51431				
3 East	1920	6296	11904	39050				
4	3263	10702	17490	57383				
Total	10954	35901	67915	222781				

Table V-5. Turnout and Emplacement Drift Excavation Summary

ATTACHMENT VI VERIFICATION OF WASTE PACKAGE ENDPOINT COORDINATES BY AN ALTERNATIVE METHOD

Calculations and Analyses EG-PRO-3DP-G04B-00037 allows the checker the option to verify the calculation by an alternative method. The following documentation provides an alternate method to check the MicroStation (refer to Section 4.2.2) output contained in this document.

<u>Note:</u> In compliance with EG-PRO-3DP-G04B-00037 (Reference 2.1.1, Section 3.6.2), WPEC in the horizontal plane are not required to be re-verified since the WPEC in the horizontal plane do not change from the initial issue of the ULCLA with the inclusion of the current turnout design. Therefore, the initial issue version of the verification is carried forward in this revision.

ALTERNATE ENDPOINT CALCULATION EXPLANATION

A. Process of developing the waste package endpoints found in the Underground Layout Configuration for LA (ULCLA)

The co-ordinates of the end points of the waste package presented in the Underground Layout Configuration for LA (ULC) (800-KMC-SS00-00200-000-00Aa), Table III entitled Primary Area Bounding Endpoint Coordinates, panels 1,2,3 and 4 were determined using Vulcan software. A DXF file was exported from the Vulcan software so that it could be read using Microsataion Software. Changes were made to the layout using Microstation and the resulting waste package endpoints are presented in Tables 10, 11,12, 13 and 14 of the Underground Layout Configuration for LA (ULCLA) (800-KMC-SS00-00200-000-00Aa).

B. Method of validating the waste package endpoints found in the ULCLA

The purpose the attached information is to determine if the endpoints of waste packages plotted by Microstation are valid. The validation was performed by making an alternate calculation to determine the endpoint coordinates. In some cases, the new points were validated by plotting the new locations by hand to determine if they were actually located on the drift plot of the ULCLA layout.

The alternate calculation steps are as follows:

- 1. Import the co-ordinates for waste package endpoints from the ULCLA as found in the CDIS into an Excel spreadsheet.
- 2. Import the co-ordinates for waste package endpoints from the ULC into the same Excel spreadsheet.
- 3. Arrange the co-ordinates on the spreadsheet to enable a side by side comparison of the coordinate values.
- 4. Subtract the co-ordinate values.
- If the difference in value between the co-ordinates is zero (+/- .001) and if no layout change was made as determined by inspecting the two layouts, then the correct or valid points were reported and plotted by Microstation. If the value between the co-ordinates is zero (+/- .001) and a change was intended, then the new points are not valid.
- If the difference in value between the co-ordinates is greater than zero (+/- .001) and less than 1 meter, a change may have been made but the co-ordinates reported are valid because the change is less that the tolerance required by Science.
- If the difference in value between the co-ordinates is greater than 1 meter and a change was intended, then calculate the new co-ordinate.
- Sample calculations are shown on Sheets 1 through 6.
 - Sheet 1 is a calculation of the change (delta) in elevation per emplacement drift. The calculation is based on the geometry of the repository. All of the emplacement drifts are located on a plane that strikes parallel to the emplacement drifts (azimuth 252 degrees clockwise from north) and dips uniformly at an azimuth of 342 degrees. The change in elevation per emplacement drift (81 meters on dip) is the total difference in elevation divided by the number of emplacement drifts or 1.171344828 meters per drift. The number is used to calculate the elevation of the two new drifts added to Panel 1.
 - Sheet 2 is the calculation of the change (delta) in both the easting and northing of the waste package endpoints that occurs when the access main is shifted 80 feet (24.384 meters). The access main shift is perpendicular to the azimuth (3 degrees clockwise from north) of the access main. This shift is then translated along the emplacement drift (azimuth 252 degrees clockwise from north). Since the change in waste package co-

UNDERGROUND LAYOUT CONFIGURATION FOR LA

VT - 3

800-KMC-SS00-00200-000-00A

7/16/07

ALTERNATE ENDPOINT CALCULATION EXPLANATION

ordinates occurs along the emplacement drift that is parallel to the strike of the plane, no change in elevation of the ends of the waste packages occurs. Using the values calculated works as long as the azimuth of the access main and exhaust main is 3 degrees. When the azimuth changes, the calculation is more complex because of the curves involved. To verify the new location of waste packages in areas where the azimuth of the access main (or exhaust main) is changing, the new location was plotted using a scale to verify that it did fall on the emplacement drift at the required off set.

- Sheet 3, steps 1 and 2 show a calculation to determine the change (delta) in northing and easting of that occurs between emplacement drifts when the azimuth of the access main is 3 degrees clockwise from north and the emplacement drift azimuth is 252 degrees clockwise from north. Step 3 shows how the change is used to calculate the new endpoints for the east side of drifts 4-22 and 4-23
- Sheet 4 is a sample calculation that applies to drifts 3-23, 3-24, 3-25, and 3-26. New endpoints are calculated using the shift in northing and easting established on Sheet 3.

Sheet 4 also shows the calculation for the endpoints of waste packages in drift 1-1. In this case, the calculated endpoint did not match the ULCLA endpoint. Inspection of the plot shows that the waste package endpoint was moved with respect to the end of the exhaust drift curve. The point plots on the centerline of drift 1-1. Because the exhaust main is an extension of the emplacement drift there is no actual intersection. With no intersection, there is no impact on the space available for the condensation chamber and the point as plotted is not a problem

- Sheet 5 shows the plot of the endpoints of waste packages that plotted to verify their location.
- Sheet 6 shows that the exhaust main as plotted in the ULC was changed when plotted for the ULCLA. The location of the endpoint in drift 3-14 was changed. However, the endpoint was not changed for 3-15 and 1-16. As a result, the waste package endpoint standoff exceeds the 15 meter requirement. There is no impact because the 15 meter standoff is a minimum value.
- If the difference between the newly calculated co-ordinates and the ULCLA co-ordinates is zero (+/- .001), then the points reported by Microstation are valid. If the new coordinates are not calculated, plot the new co-ordinates on the layout to determine if they are located on the emplacement drift. If they are located on the emplacement drift, valid points were reported and plotted by Microstation.

Elevations - the elevation of the waste packages does not change because all of the co-ordinate shifts are on the strike of the plane. The exception is the two new drifts in Panel 1. These drifts are parallel to, in the same plane as all of the other emplacement drifts and are at the same 81 meter spacing as off of the other emplacement drifts. As a result the elevation of these drifts can be established based on the number of drift intervals they are away from an emplacement drift with known endpoints.

UNDERGROUND LAYOUT CONFIGURATION FOR LA

VI-4

800-KMC-SS00-00200-000-00AB B 3 10131/2006 TL 7/27/67 $\frac{12.50}{12.50}$ $\frac{1$

NOTE

DETERMINE SLOPE OF REPOSITORY PLANE FROM LINDEN LAYOUT CONFIGURATION.

VERTICAL DISTANCE:

HIGHEST DRIFT IS AT EL 1106.760 m. LOWEST DRIFT IS AT EL 1038.822 m. TOTAL CHANGE FROM HIGHEST TO LOWEST = 67.938 m.

HORIZONTAL DISTANCE:

TOTAL OF 58 SPACES @ 81 m = 4698.000 m. THEREFORE THE SLOPE OF REPOSITORY PLANE

= 67.938/4698 X 100 = 1.446104725%. (0.828499226°)

DETERMINE ELEVATION CHANGE BETWEEN ADJACENT DRIFTS. = 81 m X 1.446104725 / 100 = 1.171344828 m.

PLAN SCALE: NONE CAD FILE: 800Kmkssd010542.skt YMP TECHNICAL TRIVIA REPOSITORY AZIMUTH AND SLOPE VI-S Underground Layout Configuration for LA 800-KMC-SS00-00200-000-00 B -TL V/27/27





YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT Civilian Radloactive Waste Management System

Management & Operating Contractor

CONTRACT NO. DE-AC01-91RW00134

					CALC NO: ORIGINATOR: CHECKED BY: CHECKED DATE:	
$\mathbb{D}_{4,1}$			×			
THOEL 1 2 DE((-15 56500 THYON40 3-66		and and a second se	-	م در د ا ا سرد		\$ 7115 DI 00
THE POSITION OF THE WEST END OF		ISS VIEEBR	ance Bei	DEEN INC	CALCULATED	A THE FLOT
DRIFT 3-224315 THE SAME IN DOTH UCL 2 LK	- - - 7	DArrige	SADLOG THA	+ 12 +1	STICK ZF IA	E Wige
Conjours, The A Northing 2		FREEAGE US	ATH YESPEC	1 70 1.41	= point on c	01041041
1-11 2-12 2-14 2-26 4 2-91, 10 THE		was c marg	ear,		-	
6440 M 66000 01 67502 7			,3,3	10-1	Cale - 2.337	38.526
JIME DI TRUCKI LIN JACEL	·		5 50	4,12	7	34 401
Calculate nervo as P. and points			12.6	15 0		
NORTHING	FASTING	J.	368	ŝ		
3-22W-usert 200 234 132, 276	170687.310	, Ye	173	186		
A NORTHING 2 EASTING - 86.6438	- 4.5 41	57	αι	44		
ULCLA - POINTS 3-23W 234045.632	170,682.769	H.	1			
		v	k	L'		
Plotter Co-provinates 234045.132	170 682,769	ang	а Р	ga.		
DIFF BrUD CALE 3 00	0.0	to	$\omega = \frac{4,125}{17,109}$	= 18°		
Plotled points	nja mjanajaranjami minimi majami					
		NOTE	: The call	culation.	shows that	the was
"The POSITION OF THE WEST END OF DRIFT 1-1 /	°.7.∀€	sact	AGE MOV	eel 13,31	4 M Sout	h west
same as the westend of drift 1-1 the OLD	LAYOUT	alon	g the eye	placement	it duit, 1)	nis us
EXCEPT IT IS SHIPTED 4 diats South.	al e stane provinsi para provinsi se e ane.	ACCE	athole dec	cure TU	s exhourt	main
and the second		doe	s not in	ersect	Thepaved	in a
CALCULATE THE DEUDWIP ENGLEMATS FOR D	RINT I-1 (WEGT END)	Uct	ually, F	ex ex la	Las main	alarama
HORIHING	ENSTING	Con	in wal	onof	here	Ff set
A UNDERVICE & CALOR AY 41 1 AZO	10 80 - 24 0 10 51 Dail	allt	- iper	gore 1	is is in a	
CALIFICATION TO TABLE 223 770 - 20	H(794051)	et OP	y not 0	pp y.		
Platter Conduction 327 720 AD	110 172 200	analasaa a sanade tee me o oo san X 2 2			a an	
1 rulea Courringla 200 127.441	10 11 3, 280	na naka na pananakanana na sisa sa sa si s	a construction of an operation a	τ	Jnderground Layout	Configuration for
DIFE ATLIANCALCE 4125 m	12 605	CLUB E gen C C C C C C C C C C C C C C C C C C C	999 A 20 A	5	300-KMC-SS00-002	00-000-00A B
plotted co onto	1 075					TE Trete
	24 I S 44 U	n an annih a 38 8 ° ° °				1.901

PAGE NO. ____ OF __

SHEET4

WBS NO:1.2.6. _





	D	E	F	G	н	1	K	L	M		N	0	P	Q	R	S	T	U	V	W	X	Y	Z
3	00				51													1					
5	CHANGE IN ELEVAT	ION PER EMPLACEMEN	T SPACE (81 m	1)	1.	1713 m	See sheet	1															2 E +
6	CHANGE IN THE NO	RTHING PER EMPLACE	MENT SPACE (8	81 m)	86	6438 m	See sheet	3															
7	CHANGE IN THE EA	STING PER EMPLACEM	ENT SPACE (81	m)	4.5	4081 m	See sheet	3															8 A 5
9	CHANGE IN EASTIN	G CAUSED BY 80 FOOT	OFFSET		24	.841 m	See sheet	2															0
10							_								0								
11	From Table III. Prima	ry Area Bounding Endpoi	int Coordinates, F	Panels 1,2,3 a	ind 4			From Tabl	e 10 - Panel 1 Undergroun	d Layout Configuratio	on		•)										
13	Childergi Cunia Layoug	comgatation (000-1 0C-1	MGR0-00100-000	0.000)					0 EN (000-11110-0000-000	00-000-0048							Calculated	Calculated	Calculated	New Delta	New Delta	Delta	1
14			and the second		10						-		Delta	Delta	Delta	Change	NORTHING	EASTING	Elevation	Northing	Easting	Elev	Remark
15	Label	Northing	Easting	Elevation	Panel [rift Zo	Label	Northing	Easting		Side of	Elevation	Northing	Easting	Elevation	Intended (Delta North	meters	meters	meters	meters	meters	meters	
17	۵. ا	metera	motora	metera				metara	indicional distance in the second s		Dim	inclus	(ULCLA - ULC)	(ULCLA - ULC)	(ULCLA - ULC)	Delta East only)				(Calc - ULCLA)	(Calc - ULC)	(Calc - ULC)	
18												1000 140	0.000	0.000	0.000				1	aller a literation			
19	3-22W Panel 1-1	234132.276	170687.310	1063.419	3 (1992 (1993) (197	1 Es	st 3-22W	234132.276	170687.310		East	1064.590	-8.071	-24.841	0.000	Yes	234224 575	NU CHANGE 171233 499	1064 5908	1. 0.000	0.000	0.000	a the second state of the
21	No. of the state o	234085.101	170804.246	1064.59	1	1 We	ist	234045.632	170682.769		West		-39.469	-121.477	C	Yes	234045.6322	170682.769	1001.0000	0.000	0.000	CIT STANT	service of the servic
22	Panel 1-2	234146	171253.799	1065.762	120212222	2 Ea	st 3-24W	234137.931	171228.958	Sector and the sector of the	East	1065.761	-8.069	-24.841	-0.001	Yes	234137.929	171228.958	1065.7621	-0.002	-0.001	0.001	有自己的问题就是它们把自己的问题
23	Panel 1-3	233966.91	171249.258	1065.762	Viola endres	2 We	st 3-25W	233958.988	171224.417	loseno muniti	East	1066.933	-7.922	-24.841	0.000	Yes	233958.9884 234051.286	170678.228	1066.9334	0.000	0.001	0.000	let (1) internation to know our growing
25	South an annual strategy and	233879.956	170697.118	1066.933	1	3 W	ist .	233872.342	170673.688		West		-7.614	-23.430		Yes	233872.3446	170673.688	100000000000000000000000000000000000000	0.003	0.000	PD12 409180223 (444	
26	Panel 1-4	233972.714	171244.717	1068.105	COLLEGE R	4 E	st 3-26W	233964.640	171219.877	Ser Constraints	East	1068.104	-8.074	-24.840	-0.001	Yes	233964,643	171219.876	1068.1047	0.003	0.001	0.001	[1993]
28	Panel 1-5	233886.07	171240.176	1069.276	STREAM OF	5 E	ST PANEL 1	-1 233886.070	171240.176		East	1069.276	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	1069.276	0.003	C.COU	1	a trian Lange and The Street Andreas mage
29	a provide the second second	233708.625	170594.060	1069.276	1	5 W	est	233734.401	170773.388		West	1069.276	25.776	79.328		Yes	233738.5258	170786.0828		4.125	-12.695		See sheet 4
30	Panel 1-6	233799.426	171235,636	1070.447	8.4.4.285.155	6 E8	st PANEL 1	-2 233799.426	171235.636	Section of States	East	1070.447	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	1070.4473	0.000	0.000	0.000	
32	Panel 1-7	233712.783	171231.095	1071.618	Statestad	7 E	St. PANEL 1	3 233712.783	171231.095	the state of the s	East	1071.618	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	1071.6186	-0.503	1.100	0.001	See sneet 4
33	COLUMN TO THE PROPERTY AND	233578.451	170817.667	1071.618	1	7 W	st	233533.381	170678.955	COLUMN AND ADDRESS OF ADDRESS OF ADDRESS ADDRE	West	1071.618	-45.070	-138.712		Yes	233533.3808	170678.9548	In the second second	0.000	0.000	Jan menanda and	
34	Panel 1-8	233626,138	171226.554	1072.79		8 Ea	SI PANEL 1	-4 233626.138 233446 736	171226.554		East	1072.790	0.000	0.000	0.000	No	NO CHANGE 233446 737	NO CHANGE	1072.7899	0.001	0.000	0.000	Construction of the second
36	NEW DRIFT - NOT IN	THE ULC. CO-ORDINA	TES ARE CALC	ULATED	STATE AND	8. 1 M	PANEL 1	-5 233539.494	171222.014	Benchman 2020 (HP)	East	1073.961	New Drift	STREET BEER	1073.961	N/A	233539.4954	171222.0134	1073.9612	0.001	0.001	0.000	ALL AND THE REPORT OF A CARDING
37					and the second second second		in management	233360.092	170669.874		West		New Drift	In the second state wards		N/A	233360.0932	170669.8731		0.001	0.001		
38	NEW DRIFT - NOT IN	THE ULC. CO-ORDINA	TES ARE CALC	ULATED	an states		PANEL	-5 233452.851	171217.473		West	10/5,132	New Drift	一,0月10日,00月10日,00月10日	10/5.132	N/A	233452.8504	171217.4726	1075.1325	-0.001	0.000	0.000	and the provide state of the state
40							-	200210.110									200270.4404	110000.0020	1	0.000	0.001	1	
41	From Table III. Prima	ry Area Bounding Endpoi	int Coordinates, I	Panels 1,2,3 a	and 4			From Tab	le 12 - Panel 3 Undergroun	d Layout Configuration	on												
42	Underground Layoug	Configuration (000-P0C-P	MGR0-00100-00	0-00E)				3	IOF LA (000-KMC-5500-00.	200-000-00AB			Delta	Delta	Delta	Change	Calculated	Calculated		Delta	Delta	Delta	
44	Label	Northing	Easting	Elevation	Panel (Drift Zo	ne Label	Northing	Easting		Side of	Elevation	Northing	Easting	Elevation	Intended	NORTHING	EASTING		Northing	Easting	Elev	
45		meters	meters	meters				meters	meters		Drift	meters	meters	meters	meters	(Delta North	meters	meters		meters	meters	meters	
47	the second management												(OLOLA - OLO)	(DECENT DEC)	(000004-000)	Dena Lost Only)				Crieck Sum	Check Sum	Check Sum	
48	3-1E	235992.979	171695.756	1042.336	3	1 Er	ist' 3-1E	235992.979	171695.756	10 A 10 - 16 A 8	West	1042.336	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	26.33 图的复数			自己的记忆	the management of the states
49	100 100 100 100 100 100 100 100 100 100	236137.403	172140.248	1042.336	3	1 Ea	ist 3.2E	236137.403	172140.248		East	1043 507	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	Laterate St	10			A second the second de la da all 182
51	Read of Colorador State Colorador	235081.661	172230.815	1043.507	3	2 E	ist	236081.661	172230.815		East		0.000	0.000		No	NO CHANGE	NO CHANGE	11 244 A 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4 1 4			0.1.9.6626.9.22	
52	3-3E	235795.39	171611.884	1044.678	3.00	3 Ei	ist. 3-3E	235795.390	171611.884	and the second	West	1044.678	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	en official and	ad Harrist		a. Chierd	National Science and Contraction of Sciences
53	Sportin and Raburston	235696 595	172281.32	1044.678	3 11 19 3 10 590	3 E4	st 3.4F	236012.90	172281.320		West	1045 850	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	1011111111111111111111	n Sin an that an an the			and the state of the state of the state of the
55	Control and Constanting and	235936.845	172309.363	1045.85	3	4 E4	ist	235936.845	172309.363		East	10000100000000000000000000000000000000	0.000	0.000	CONCERNING MADE IN THE OWNER	No	NO CHANGE	NO CHANGE	Steel in the activity will be the	1000 CT 10000000000000000000000000000000		e de contra en decedar	be denote a black of the state
56	3-5E	235597.8	171528.013	1047.021	3	5 E	ist 3-5E	235597.800	171528.013		West	1047.021	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	的社会的开始的			、市場社会社	·英语·文学的"自己"的"自己"的"自己"的"自己"的"自己"的"自己"的"自己"的"自己"
58	AND STREET	235497 316	171450 877	1047.021	3	B E	IST 3-6E	235499-006	172260.760		West	1048 192	1.690	5 200	0.000	N0 Yes	NO CHANGE	NO CHANGE	TIZIZI CANTRES	1 690	5 200	0.000	See sheet 5 - plotted points to verify
59	and a set the set of the set	235733.817	172208.754	1048.192	3	6 E4	ist	235733.817	172208.754		East	A STATISTICS	0.000	0.000	C SALARA MARK MOTOR PORT	No	NO CHANGE	NO CHANGE	N.21167.060000023-	(10K . 3 6 K)			Dec ander o - pioned points to runny
60	3-7E	235400.691	171445.618	1049,363	3.	7 E	151 3-7E	235400.21	171444.142	第二章 1995年(1996年) 1997年 - 1997年(1997年) 1997年 - 1997年(1997年)	West	1049.363	-0.480	-1.476	0.000	Yes	NO CHANNE		\$8577 m的影响的	-0.480	-1,476	0.000	See sheet 5 - plotted points to verify
62	3-8E	235314.047	171441.077	1049.363	3	8 E	ist 3-8E	235305.976	172156.749		West	1050.535	-8.071	-24.841	0.000	Yes	235305.976	171416 236	Contraction Party in	0.000	0.000	0.000	description and a state of the states and
63		235529.684	172104.743	1050.535	3	8 E4	ist	235529.684	172104.743		East		0.000	0.000	te - 11 - october 202 of output in	No	NO CHANGE	NO CHANGE	a construction of the second sec				Company of the control of the Company of the
64	3-9E	235227.403	171436.537	1051.706	3	9 E4	ist 3-9E	235219.33	171411.695		West	1051.706	-8.071	-24.841	0.000	Yes	235219.332	171411.696	包括主要的都行	0.000	0.000	0.000	
66	3-10E	235140.759	171431.996	1052.877	3	10 Ei	3-10E	235132.68	171407.155		West	1052.877	-8.071	-24.841	0.000	Yes	235132,688	171407.155	1976 - 16 34 ²⁴	0,000	0.000	0.000	 A A. P. Tata K. Bernet, 1995.
67		235325.552	172000.733	1052.877	3	10 Ea	st 3-10E	235325.55	172000.733		East		0.000	0.000	and the second second	No	NO CHANGE	NO CHANGE	and a set		1. 1. 2. 2. 2.		
68	3-11E	235054.115	1/1427.455	1054.049	3	11 E	3-11E	235046.04	171402.614		West	+ 1054.049	-8.071	-24.841	0.000	Yes	235046.044	171402.614 NO CHANCE	5 H N SP 1998	0.000	0.000	0.000	 Reference in the state
70	- 4			1004.040			and antic	LOULLJ.40.	11 10-10.727		-001		0.000	0.000			NO GRANGE	NO CHANGE					

Underground Layout Configuration for LA 800-KMC-SS00-00200-000-00/ B TL

VI-11

	D	E	F	G	H I	J	ĸ	L	M	N	0	P	Q	R	S	T	T 11	1 M			-	
71				2 220														V	L W	X	Y	2
72																						
73																						20 0 L I A
74							÷.															
75	1						No. 1					1				1		3	E.			r -
76	From Table III. Primary Are	ea Bounding Endpol	int Coordinates, F	Panels 1,2,3 a	nd 4		1 °	From Table 1	12 - Panel 3East Undergrou	nd Layout Configuration		× .				1						e u
77	Underground Layoug Confi	iguration (800-POC-M	MGR0-00100-000	-00E)			1	1	or LA (800-KMC-SS00-002	00-000-00Aa						1		1				
78							1									1						
79												Delta	Delta	Delta	Change	Calculated	Calculated					
80	Label	Northing	Easting	Elevation	Panel Dri	ft Zone	Label	Northing	Easting	Side of	Elevation	Northing	Easting	Elevation	Intended	NORTHING	EASTINC		Deita	Delta	Deita	(A. 1)
81		meters	meters	meters			1	meters	meters	Drift	meters	meters	meters	meters	(Deita North	meters	motors		Nonning	Easting	Elev	
82							1					(ULCLA - ULC	(ULCLA - ULC)	(ULCLA - ULC)	Delta East only)	in the second	INCIDIO		meters	meters	meters	
83	where the set of the set of the set of the						in a second second			and the the table accesses					,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1			Check Sum	Check Sum	Check Sum	
84	3+12E	234967.47	171422.914	1055.22	3	East	15%的问题的结	234959.399	171398.074	West	一般語を発表の日本語言	-8.071	-24.840	State of the second second	Yes	234959 399	171308 073	ACTIVITY OF THE PROPERTY OF TH	19 0.000	0.004	-	CODE LAND & COMMON DURING A MARKENESS
85	The second s	235121.419	171896.722	1055.22	3 1	2 East	3-12E	235121.419	171896.722	East	1055.220	0.000	0.000	0.000	No	NO CHANGE	NO CHANCE	a reference a station of the	1947 - D. O.O 2045	and anout an	Mall of the state of the	- 24月1日に、1月1日に、1月1日日の日本市営業の
86	3-13E	234880,826	171418.373	1056.391	- 3 - 1,	East	的家庭的建筑和	234872.755	171393.533	West	Contraction of the second	-8.071	-24.840	and the second of the	Stall Boo Yes	234872 755	171202 522	CALL AND A DESCRIPTION	Bathlein monorouse	0.000	No. 20 Contractory	Sec.737.2.67 vol. of the Office of Philippine and
8/		235023.895	171858.695	1056.391	3 1	B East	3-13E	235023.895	171858.695	East	1056.391	0.000	0.000	0.000	No	NO CHANGE	NO CHANCE	Trivers of Developing 258	Cherry Contraction of the second	0.001	CARGE CONTRACTOR	A STATE OF A CONTRACTOR OF A DAMAGE AND A
88	3+14E	234794.182	171413.833	1057.563	3.1.1	East	· "中心里的最高的。"	234786.111	171388.992	West		-8.071	-24.841	the set of	Yes	234786.111	171388 992	ALCONTRACTOR	1610 0 000 25 AL	0.000	and a state of the second	THE ADDRESS STOTED CONTRACTOR STOLEN
09	A CONTRACTOR OF THE OWNER	234931.743	171837.205	1057.563	3 1	East	3-14E	234932.407	171839.249	East	1057.563	0.664	2.044	0.000	no	NO CHANGE	NO CHANGE	Charles and a manufacture of the second	0.044	2044	0.000	See short 6
90	States and the second second	234/07.537	1/1409.292	1058.734	3	East		234699,466	171384.451	West	动运动地震动, 这种思想	-8.071	-24.841		Yes	234699,466	171384.451		n non	0,000	C.COU	See sheet o
31	Statute and a state of the stat	234037.090	171810.496	1058.734	3 1	East	3-15E	234837.896	171810.495	East	1058.734	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	Street county, Shirefully	Then 14 been a training	Charles of the second s	はいたいだけらいかとの	See short 6
92	3- 10E	234020.093	1/1404./01	1059,905	1-92968-920	East	S EXTERNAL PROPERTY OF STATES	234612.822	1/13/9.911	West	2011年1月1日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日		-24.840	· · · · · · · · · · · · · · · · · · ·	Yes	234612.822	171379.91	and the birth and	S	0.001	and datational	Costropological and the second process that
93	AND THE REPORT OF THE PROPERTY	234/49.200	171/99.00	1059.905	100000000000000000000000000000000000000	East	3-16E	234749,206	171799.660	East	1059.905	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	at a chilefol some of	AN AND AND AND AND AND AND AND AND AND A	COLORING MANAGER	MUNICERCOLUMNS	See sheet 6
04	service of the servic	234667 046	171780.000	1001.077	COLORIS COLORIS	East	1. District Weiling of the	234526,178	1/13/5.3/0	West	第二、公司法法保证的公式保证的公式	-8.071	-24.840		Yes	234526.178	171375.369	HP WORKSHIP	0.000	0.001	NEW CONSTRUCTION	PERSONAL PROPERTY AND ADDRESS OF THE PERSON AND ADDRESS OF THE PERSON ADDRESS OF THE PER
30	2.490	234037.843	171700.909	1001.077	Competition and	East	3-1/E	234657.945	1/1/80.909	East	1061.077	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	North Charles and Angel	Solds to T GET COMP. SPACE	All A CAR	WARD MADE OF A	and an an an an and a starting of the set of the
07	and the second	234588 457	171761 462	1002.240	0.000	East	2 4 9 5	234439.333	1713/0.829	west	有如何的目的情况的问题	-8.071	24.841	是在空间是它都会正	Yes	234439.533	171370.829	1993年1993年1993年1993年1993年1993年1993年1993	0.000	0.000	S. L. Santasa	Weigenalisticken in stransmittingen
08	3.10F	234360.96	171301 120	1063 410	DERMATCHER H	East	3-TOE	234300.457	1/1/01.463	East	1062.248	0.000	0,000	0.000	No	NO CHANGE	NO CHANGE	and the second second second	Party Manual Con-	and the other states in the		a construction of a second contraction of the second of the second s
00	Designed of the states of	234474 97	171742 017	1063 419	2012-0012000	East	2.100	234352.009	171306,288	West	(4) 他的名词复数的复数形式	-8.071	-24.841		Yes	234352.889	171366.288	Senter Constant	0.000	0.000	自由的社会的主要的	and Standard Charles Barrel and Knew
100		204414.07	171742.017	1003.413	3 10	East	3-IBE	234414.970	1/1/42.01/	East	1063,419	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	Contraction of the second	P.	241-19-19-00-00-00-00-00-00-00-00-00-00-00-00-00	NEWS CONTROL OF	and the second state in the second state of the second state of the
101							£															
102																	12					
103	From Table III. Primary Are	ea Boundino Endooi	int Coordinates. F	anels 123 a	nd 4		1	Emm Table	13 manal 3 West Llodorom	nd I mout Configuration		1										
104	Indemmund Lawoun Confi	autotion (800.00C.)	1000 00100 001	ODE				TTOIL TOOL	to parter o weat onbeigiou	no cayou consiguration		1				1		3				1
			MUMBER OF THE OF	10 APr 1					N 1 4 7 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N	111111111000												
105	chicerground carbag com	guiation (coor och	MGR0-00100-000	HOUL)					OF LA (800-KMC-SS00-002	00-000-00Aa		1										
105			MGR0-00100-000	-002)					OF LA (800-KMC-SS00-002	00-000-00Aa		Dalta				1 and 1	÷					
105 106 107	Label	Northing	Easting	Elevation	Papel Dri	t Zone	Label	Northing	Fasting	Side of	Elevation	Delta	Delta	Delta	Change	Calculated	Calculated		Delta	Delta	Delta	
105 106 107 108	Label	Northing meters	Easting meters	Elevation meters	Panel Dri	ft Zone	Label	Northing	Easting -	Side of Drift	Elevation	Delta Northing	Delta Easting	Delta Elevation	Change Intended	Calculated	Calculated EASTING		Delta Northing	Delta Easting	Delta Elev	
105 106 107 108 109	Label	Northing meters	Easting meters	Elevation meters	Panel Dri	ft Zone	Label	Northing meters	Easting -	Side of Drift	Elevation	Delta Northing meters	Delta Easting meters	Delta Elevation meters	Change Intended (Delta North	Calculated NORTHING	Calculated EASTING		Delta Northing meters	Delta Easting meters	Delta Elev meters	
105 105 107 108 109 110	Label	Northing meters	Easting meters	Elevation meters	Panel Dri	ft Zone	Label	Northing meters	Easting - meters	Side of Drift	Elevation meters	Delta Northing meters (ULCLA - ULC	Delta Easting meters (ULCLA - ULC)	Delta Elevation meters (ULCLA - ULC)	Change Intended (Delta North Delta East only)	Calculated NORTHING meters	Calculated EASTING meters	•	Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
104 105 106 107 108 109 110	Label 3- 1W	Northing meters 236237.413	Easting meters	Elevation meters	Panel Dri	ft Zone West	Label 3-1W	Northing meters 236237.413	Easting - meters	Side of Drift East	Elevation meters	Delta Northing meters (ULCLA - ULC	Delta Easting meters) (ULCLA - ULC)	Delta Elevation meters (ULCLA - ULC)	Change Intended (Delta North Delta East only)	Calculated NORTHING meters	Calculated EASTING meters		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112	Label	Northing meters 236237,413 236052,003	Easting meters 171661.675 171091.041	Elevation meters 1038.822 1038.822	Panel Dri 3. 1 3. 1	ft Zone West West	Label	Northing meters 236237.413 236052.003	Easting meters 171661.675 121091.041	Side of Drift East West	Elevation meters	Delta Northing meters (ULCLA - ULC 0.000	Delta Easting meters) (ULCLA - ULC) 0.000	Delta Elevation meters (ULCLA - ULC) 0.000	Change Intended (Delta North Delta East only) Yes	Calculated NCRTHING meters NO CHANGE	Calculated EASTING meters NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113	Label 3- 1W	Northing meters 236237.413 236052.003 236138.618	Easting meters 171661.675 171091.041 171619.739	Elevation meters 1038.822 1038.822 1039.993	Panel Dri 3 1 3 2	t Zone West West West	Label 3-1W 3-2W	Northing meters 236237,413 236052,003 236138,618	Easting meters 171661.675 171091.041 171619.741	Side of Drift East West East	Elevation meters 1038.822 1039.993	Detta Northing meters (ULCLA - ULC 0.000 0.000	Delta Easting meters) (ULCLA - ULC) 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000	Change Intended (Delta North Delta East only) Yes Yes	Calculated NCRTHING meters NO CHANCE NO CHANCE	Calculated EASTING meters NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114	Label 3, 1W	Northing meters 236052.003 236158.618 235953.208	Easting meters 171661.675 171091.041 171619.739 171049.105	Elevation meters 1038.822 1039.993 1039.993	Panel Dri 3 1 3 2 3 2	ft Zone West West West West	Label 3-1W 3-2W	Northing meters 236237,413 236052,003 236138,618 235953,208	Easting - meters 171661.675 171091.041 171619.739 171049.105	Side of Drift East East East West West	Elevation meters 1038.822 1039.993	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000	Delta Essting meters (ULCLA - ULC) 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000	Change Intended (Delta North Delta East only) Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115	Label 3. 1W 3. 2W	Northing meters 236237.413 236052.003 236138.618 235953.208 236039.823	Easting meters 171661.675 171091.041 171619.739 171049.105 171677.903	Elevation meters 1038.822 1039.993 1039.993 1039.993	Panel Dri 3 1 3 2 3 2 3 2 3 3	ft Zone West West West West West	Label 3-1W 3-2W 3-3W	Northing meters 236237.413 236052.003 236138.618 235953.208 235035.208	Easting meters 171661.675 171091.041 171619.739 171049.105 17157.603	Side of Drift East West East West East	Elevation meters 1038.822 1039.903 1041.184	Delta Northing meters (ULCLA - ULC 0,000 0,000 0,000 0,000	Delta Easting meters (ULCLA - ULC) 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000	Change Intended (Delta North Delta East only) Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANCE NO CHANCE NO CHANCE NO CHANCE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting melers Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116	Label 3. 1W 3. 2W 3. 3W	Northing meters 236052.003 236138.618 235953.208 236039.823 235854.413	Easting meters 171661.675 171091.041 171619.739 171049.105 17.1627.803 171007.169	Elevation meters 1038.822 1039.993 1039.993 1039.993 1041.164	Panel Dri 3 1 3 2 3 2 3 2 3 3 3 3	ft Zone West West West West West West	Label 3-1W 3-2W 3-3W	Northing meters 236237,413 236052,003 236138,618 235953,208 236039,823 235654,413	Easting meters 171661,675 171091,041 171619,739 171049,105 171077,803 171077,160	Side of Drift East Vest East Vest East Vest East Vest	Elevation meters 1038/822 1039/983 1041.164	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000	Delta Easting meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000	Change Intended (Delta Konth Delta East only) Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting melers Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117	Label 3. 1W 3. 2W 3. 3W 3. 4W	Northing meters 236237.413 236052.003 236138.618 235953.208 236056.413 23594.1028	Easting meters 171661675 171091.041 171619.739 171049.105 171677.803 171077.163 171077.163	Elevation meters 1038.822 1038.822 1039.993 1039.993 1041.164 1041.164	Panel Dri 3 1 3 2 3 2 3 3 3 3 3 3 3 3	ft Zone West West West West West West West	Label 3.1W 3.2W 3.3W 3.4W	Northing meters 236237,413 236052,003 236138,618 235953,208 235953,208 235954,413 235954,41028	Easting - meters 171661.675 171091.041 171619.739 171049.105 171577.603 171077.169	Side of Drift East West East West East West East West East	Elevation meters 1036.822 1039.993 1041,164 1042,336	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Easting meters (ULCA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000	Change Intended (Delta Konth Delta East only) Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117 118	Label 3 1W 3 2W 3 3W 3 4W	Northing meters 236237.413 236052.003 236138.618 236953.208 236058.23 23694.413 23594.028 23554.618	Easling meters 171661,675 171091,041 171619,739 171049,105 171657,803 17107,169 17155,867 17095,233	Elevation meters 1038.822 1038.822 1039.993 1039.993 1041.164 1042.336 1042.336	Panel Dri 3 1 3 2 3 2 3 3 3 3 3 4	ft Zone West West West West West West West	Label 3.1W 3.2W 3.3W 3.4W	Northing meters 236052.003 236052.003 236052.003 235053.208 236039.823 235054.413 235941.028 23575.618	Easting meters 171661.675 171091.041 171619.739 171047.055 171577.803 171007.169 171555.857 1710955.233	Side of Drift East West East West East West East West West	Elevation moters 1038.822 1039.983 1041,164 1042,336	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Essting meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000 0.000	Change Intended (Delta Korth Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119	Label 3-1W 3-2W 3-3W 3-4W 3-5W	Northing meters 236237.413 236052.003 236138.618 235953.208 236654.413 235954.1028 235554.618 235542.433	Easting meters 171661.675 171091.041 171619739 171049.105 171677.803 171007.169 171655.807 170965.233 171403.933	Elevation meters 1038.822 1039.993 1039.993 1041.164 1041.164 1042.336 1043.507	Panel Dri 3 1 3 2 3 2 3 3 3 3 3 4 3 4 3 5	ft Zone West West West West West West West Wes	Label 3-1W 3-2W 3-3W 3-3W 3-5W	Northing meters 236237.413 236052.003 236138.618 235953.208 235953.208 235954.413 235941.028 235941.028 235755.618 235842.233	Easting meters 171661.675 171091.041 171619.739 171049.105 17157.803 171007.169 171535.867 170965.233 1717483.331	Side of Drift East West East West East West East East East	Elevation motors 1036.822 1039.983 1041,164 1042,336 1043,507	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Easting meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Detta Elevation meters (ULCLA - ULC) 0.000 0.000 0.000	Change Intended (Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120	Label 3 1W 3 2W 3 3W 3 4W 3 5W	Northing melers 2360237.413 236052.003 236138.612 23695.108 23695.413 23595.413 23595.415 23595.616 23595.616 235942.233 235656.623	Easling meters 171661.675 171091.041 171619.739 171040.105 171677.803 171097.4677.803 171097.803 171095.233 171493.9391 170923.297	Elevation meters 1038.822 1038.822 1039.993 1041.164 1041.164 1042.336 1043.507 1043.507	Panel Dri 3 1 3 2 3 2 3 3 3 3 3 4 3 4 3 5 3 5	t Zone West West West West West West West Wes	Label 3-1W 3-2W 3-3W 3-3W 3-5W	Northing meters 236237.413 236052.003 236136.618 235653.208 236039.823 235854.413 23584.41028 235755.618 235845.6123 235656.623	Easting meters 171651675 171091041 17169179 171091041 171619.739 171049.105 17157.803 171007.169 171555.667 170965.233 171493.331 170923.297	UUUUU-UUAB Side of Drift West East West East West East West East West	Elevation meters 1038.822 1039.983 1041.184 1042.336 1043.507	Delta Northing meters (ULCA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Easting meters (ULCA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000 0.000 0.000	Change Intended (Delta North Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Galculated NCRTINING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Dette Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Chock Sum	
105 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121	Label 3-1W 3-2W 3-3W 3-4W 3-5W 3-6W	Northing meters 236052.003 236052.003 236052.003 236953.208 236954.028 236954.028 236755.618 235945.028 236755.618 235945.233 235656.823 235743.438	Easting meters 1716631675 171091.041 17167.7803 171042.105 17167.7803 171007.169 17155.867 170955.233 171493.931 17092.297 170451.995	Elevation meters 1038.822 1038.822 1039.993 1041.164 1042.336 1042.336 1042.507 1043.507	Panel Dri 3 1 3 2 3 2 3 3 3 4 3 4 3 5 3 5 3 5 3 5 3 5	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W	Northing meters 236237,413 236052,003 236138,618 236953,208 236953,208 236954,413 235954,102 23575,618 23575,618 23575,618 235564,2233 235743,438	Easting meters 171661.675 171091.041 171619.739 171049.105 17153.667 170955.233 1711493.331 170923.297 1711451.995	UUUUUUUUU Side of Drift East West East West East West East West East West East	Elevation meters 1038.822 1038.983 1041.164 1042.336 1043.507 1044.678	Delta Northing meters (ULCLA - ULC 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000 0,000	Deta Easing meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta North Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122	Label 3 1W 3 2W 3 3W 3 4W 3 5W 3 6W	Northing meters 236237.413 236052.003 236138.618 236052.003 236054.028 236054.028 235765.618 235466.023 235765.618 235666.023 235763.548 235666.023	Easting meters 1716611675 171091.041 171619.730 171007.169 17165.05 171657.803 17167.803 17163.933 17143.933 17143.933 17143.933 171451.995 17081.361	Elevation meters 1038.822 1039.993 1039.993 1041.164 1042.336 1043.507 1043.507 1044.678	Panel Dri 3 1 3 2 3 2 3 3 3 3 3 4 3 4 3 5 3 5 3 6 3 6 3 6	ft Zone West West West West West West West Wes	Label 3-1W 3-2W 3-3W 3-4W 3-5W 3-6W	Northing meters 236052.003 236052.003 236053.008 236053.008 236053.008 235054.413 235954.4028 235755.618 235656.623 235566.623 2355743.438 235556.029	Easting meters 171651675 171051041 171651675 171051041 171619.739 171049.105 17157.803 171007.169 171555.657 170965.233 171493.391 170623.297 171451.995 170841.361	Side of Drift East West East West East West East West East West East West East West East West	Elevation motors 1036.822 1039.943 1041.184 1042.336 1043.507 1044.678	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Deta Easting meters (ULCA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Della Elevation meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta North Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Delte Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Chock Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.6W 3.7W	Northing meters 236237.413 236052.003 236138.518 235053.206 236029.622 235054.41028 235056.618 235056.618 235566.623 235765.618 235566.624 235566.624 235566.4284	Easting meters 171661)675 171091.041 137619.739 171049.105 17167.169 171657.867 170965.233 171493.931 170923.297 171451.995 170881.361 171410.059	Elevation meters 1038.822 1039.93 1039.93 1041.164 1042.336 1042.336 1043.507 1043.507 1044.678 1044.578	Panel Dri 3 1 3 2 3 2 3 3 3 3 3 4 3 4 3 5 3 5 3 5 3 6 3 6 3 6 3 7	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.7W	Northing meters 236237,413 236052,003 236138,618 236039,823 236954,1028 23575,618 23575,618 23575,618 235743,438 23556,623 23556,623 23556,424	Easting	Side of Drift East West East West East West East West East West East West East West East East West East East	Elevation meters 1038.822 1036.983 1041.184 1042.336 1044.878 1044.878	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Deta Easting meters 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta Norh) Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NORTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Celta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124	Label 3-1W 3-2W 3-3W 3-4W 3-5W 3-6W 3-6W 3-7W	Northing meters 236032 0413 236052 003 236138 619 230953 208 230953 208 230953 208 230954 028 230954 1028 230956 41028 230956 41028 230956 41028 230956 4084 235558 009 235644 0844 23558 028	Easting meters 1716611675 171091.041 171619.739 171049.105 17167.803 171047.169 171535.807 170955.233 171093.237 171451.995 170681.361 171410.059 170681.361	Elevation meters 1038.822 1038.923 1038.903 1034.104 1041.104 1042.336 1042.336 1042.336 1042.336 1042.336 1042.350 1044.678 1044.678 1045.85	Panel Dri 3 1 3 1 3 2 3 2 3 3 3 4 3 4 3 4 3 5 3 6 3 6 3 6 3 7 3 7	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.7W	Northing meters 236237 413 236052 003 236138 618 235953 208 235054 413 235954 413 235954 41028 235755 618 235755 618 235656 623 235743 438 235568 029 235644 644 235450 234	Easting meters 171681675 171681675 171681675 1716181789 17168179 17168179 17168179 17168179 17168179 171681979 17168198 17168198 17168198 17168198 17168198 171681381 171481998 170681381	Side of Drift Drift East West West East West East West West West West	Elevation meters 1030.822 1039.993 1041.164 1042.336 1043.507 1044.878 1045.850	Delta Northing meters (ULCLA - ULC 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Deta Easting meters 0.000	Della Elevation meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta Norh) Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Dotta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125	Label 3. 11W. 3. 22W 3. 32W 3. 44W 3. 59W 3. 69W 3. 69W 3. 69W	Northing meters 238022-013 236052-003 236052-003 236058-018 230059-229 235054-012 230654-029 235054-029 23564-024 235056-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-024 23556-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 23564-029 2356-029 200 200 200 200 20	Easting meters 171661)675 171091.041 171619.739 171041.05 171677.803 171077.169 171055.867 170955.233 171493.931 170023.297 171451.995 170081.351 174410.059 170681.223	Elevation meters 1038.822 1039.993 1038.823 1039.993 1041.154 1042.336 1042.336 1043.507 1044.678 1044.678 1044.678 1044.585 1047.021	Panel Dri 3 1 3 2 3 2 3 3 3 4 3 4 3 5 3 7 3 7 3 7 3 7 3 7	ft Zone West West West West West West West Wes	Label 3-1W 3-2W 3-3W 3-3W 3-5W 3-5W 3-6W 3-7W 3-8W	Northing meters 236052 003 236136 618 236039 023 23654 413 23554 103 235754 618 235755 618 235755 618 235756 6823 235763 409 23564 4644 235545 024	Easting meters meters 17/661.675 17/601.041 17/663.05 17/1071.86 17/1023.287 17/002.277 17/002.277	USUUS-UKAS Side of Drift West East West East West East West East West East West East East East East	Elevation meters 1038.822 1038.983 1041.184 1042.336 1043.507 1044.675 1045.850 1047.021	Delta Northing meters (ULCLA - ULC 0.0000 0.0000 0.0000 0.000000	Defa Easting meters (ULCA-ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (UCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Data North Detta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Galculated NCRTINING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
105 106 107 108 109 110 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126	Label 3-104 3-294 3-394 3-494 3-594 3-594 3-794 3-794 3-794 3-794	Northing melers 2360237.413 236052.003 236052.003 236953.208 236953.208 235755.413 235954.123 235656.413 235756.518 235756.518 235756.56 235745.439 235566.623 235566.029 235564.034 235560.234	Easling meters 171661.675 171091.041 171616739 171049.105 17167739 171049.105 171677.803 171049.105 171677.803 171095.237 17163931 171493931 1716195 170681.361 171410.059 170693.425	Elevation meters 1038.822 1039.993 1031.041.164 1042.336 1042.336 1042.336 1042.336 1042.336 1042.336 1042.336 1042.336 1042.336 1043.507 1044.578 1045.85 1045.85 1045.85	Panel Dri 3 1 3 1 3 2 3 2 3 3 3 4 3 4 3 4 3 5 3 5 3 6 3 6 3 7 3 7 3 8 3 8	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.5W 3.5W 3.5W 3.6W 3.7W	Northing meters 236237 413 236052 003 236136 618 235953 208 236054 613 235954 1028 235954 1028 235954 1028 235954 1028 235956 823 235566 823 235568 029 235568 029 235564 644 235559 204	Easting meters meters 71/661.676 71/001.941 71/001.941 71/001.941 71/002.763 71/7075.863 71/7065.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7663.233 71/7673.689 71/7663.233 71/7673.689 71/7663.233 71/7673.689 71/7663.233 71/7673.689 71/7663.233 71/7673.689 71/7663.233 71/7673.689 71/7663.233 71/7673.689 71/7673.689 71/7673.689	USUUSUUA Side of Drift East Weat Weat Weat Weat Weat Weat Weat Wea	Elevation meters 1030.822 1039.993 1041.164 1042.336 1043.507 1044.878 1045.850 1047.021	Delta Northing meters (ULCIA - ULC 0.000	Defa Easting meters 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Delta Elevation meters (ULCA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Data North Deta East only) Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Dotta Northing meters Check Sum	Della Easting meters Check Sum	Delta Elev meters Chock Sum	
105 105 106 107 108 109 110 111 112 113 113 114 115 116 117 118 119 120 121 122 122 122 122 122 122 122	Labei 3. 104 3. 204 3. 204 3. 204 3. 204 3. 604 3. 204 3. 204 3. 204 3. 204	Northing melers 236237.413 236052.003 2364138.8120 236953.202 235953.202 235954.223 235956.623 235956.623 235956.4244 235459.234 23558.029 235544.044 235459.234	Easting meters (71651575 (71651575 (7165154) (7165154) (71555,66) (71556,66) (71566,66)	Elevation meters 1038.822 1039.993 1041.184 1042.336 1042.336 1043.507 1044.676 1044.678 1045.85 1044.678 1045.85 1047.021 1048.182	Panel Dri 3 1 3 2 3 3 3 3 3 4 3 5 3 5 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 7 7 3 7 8 8 8 9 8 9 8 9 8 9 9 9 9 9 9 9 9 9 9	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.5W 3.5W 3.5W 3.5W 3.5W 3.5W 3.5	Northing meters 236037.413 236050.003 236134.618 235653.208 235554.003 235556.002 235556.002 235556.002 235556.002 235556.00430 235545.00430	Easting mells 17464.675 17091.04 17661.739 171047.05 171071.04 170071.04 170071.05 171072.00 171072.00 171072.00 171052.297 171451.95 171652.297 171451.95 171652.297 171451.95 171652.297 171451.95 171693.05 17177.05 171693.05 17177.05 171693	USUUS-UKAS Side of Drift East West East West East West East West East West East West East West East West East West East West East	Elevation meters 1036.822 1038.933 1041.164 1042.336 1043.570 1044.670 1045.850 1047.021 1046.850	Delta Northing meters (UCLA - ULC 0.0000 0.0000 0.000000	Defa Easting meters (ULCA-ULC) 0.0000 0.0000 0.0000 0.000000	Delta Elevation meters (ULCA + ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta North Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTINING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Dette Northing meters Check Sum	Detta Easting Check Sum	Delta Elev meters Chock Sum	
105 106 107 108 109 100 107 108 109 100 110 111 1112 1113 1114 1115 1116 1117 1118 1119 120 121 122 123 124 125 126 127 128	Label 3, 109 3, 209 3, 309 3, 409 3, 509 3, 709 3, 509 3, 509	Northing melers 236237.413 236237.413 236052.003 236138.618 236953.208 236953.208 236954.23 23656.413 235941.028 235756.518 235765.618 235765.682 235765.682 235566.629 235566.629 235566.629 235566.039 200000000000000000000000000000000000	Easting meters 17/661/67/67 17/661/67/67 17/661/67/67 17/67/69 17/104/105 17/104/105 17/104/105 17/105/76/7 17/105/52/287 17/105/22/297 17/104/20/201 17/104/201 17/104/20 17/104/20 17/104/20 17/104/20 17/104/20 17/	Elevation meters 1038.822 1038.822 1039.993 1031.154 1039.993 1041.164 1042.336 1042.336 1042.336 1042.336 1042.336 1043.507 1044.678 1045.85 1045.85 1045.85 1045.85 1047.021 1048.192 1048.192	Panel Dri 3 1 3 2 3 3 3 4 3 5 3 4 3 5 5 3 5 4 3 5 5 3 5 6 3 6 3 7 3 7 3 8 9 3 8 1 1 3 7 1 3 7 2 3 7 2 3 7 3 7 1 3 7 2 3 7 3 7 1 3 7 2 3 7 3 7 1 3 7 2 3 7 3 7 2 3 7 3 7 3 7 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.7W 3.6W 3.9W	Northing meters 236237,413 236625,003 236136,605 235653,200 235565,6185565,61	Easting Easting 171691.6175 171091.041 171616.739 171042.016 171042.016 171042.016 171042.016 171042.016 171042.017 171443.016 171433.017 171443.016 171433.017 171433.007 17143	USUUS-UKA Side of Drift East West East West West East West East West East West East West East West	Elevation meters 1038.822 1039.943 1041.104 1042.338 1042.338 1045.350 1044.878 1045.850 1047.021 1048.192	Delta Northing meters (ULCA - ULC 0.0000 0.0000 0.0000 0.000000	Deta Easting meters 0.000	Delta Elevation meters (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Data North Deta East only) Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Delta Northing meters Check Sum	Delta Basting meters Check Sum	Delta Elev meters Check Sum	See Shen 5 - potted points to verify 20
105 106 107 108 109 109 109 110 109 110 111 111 1112 1113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 129 129 129 129 129 129 129 129 129	Labei 3-104 3-247 3-347 3-4474	Northing melers 236237.413 236052.003 236438.818 235953.413 235954.413 235954.413 235956.413 235956.413 235956.413 235956.423 235956.423 235956.424 23556.029 235644.044 23556.029 235644.044 23556.029 235644.044 23556.029 235644.044 23556.029 23566.029 23566.029 25560.029 2556	Easting meters (71651576 71061041 716631576 71061041 71657367 71657367 71657367 71657366 71657366 71655367 71655367 71655367 71655367 71655367 71655367 71655367 71655367 71655367 7175567 7175567 71755 7175 717	Elevation meters 1038.822 1039.993 1031.154 1034.993 1041.164 1042.336 1042.336 1043.507 1044.578 1044.678 1045.85 1047.021 1046.192 1049.353	Panel Dri 3 1 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.7W 3.6W 3.9W 3.10W	Northing meters 236237,413 236520,003 236536,200 235556,618 235556,618 235556,618 235556,618 235566,623 235547,4358 235547,4358 235547,4358 235547,4358	Easting	USUUS-UKAB Side of Drift Ukat West East West East West West West West West West West We	Elevation meters 1036.822 1036.983 1041.164 1042.336 1043.67 1044.67 1046.55 1045.850 1045.850 1045.850	Delta Northing meters (UCCA - UC 0,000000	Defta Essing meters 0 (ULCA - ULC) 0.0000 0.000000	Delta Elevation (ULCA + ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTINING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Detta Morthing metres Check Sum 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 4 3 4 3 4	Detta Easting Check Sum	Delta Elev meters Check Sum	See Sheet 3 - planted points to very year
105 106 107 108 109 108 109 108 109 110 111 112 113 114 115 116 117 118 119 120 122 123 124 127 128 129 130	Labei 3. 104 3. 204 3.	Northing meless 236237,413 236032,003 236032,003 230053,223 230053,226 230053,223 230554,413 230544,1028 235755,618 235755,618 235646,924 235755,618 235646,924 235755,618 235646,924 235565,638 235646,924 235565,638 235646,924 235562,112 235564,924	Easting meters 17 (66) 675. 17 (760) 641 17 (760) 738. 17 (760) 748. 17	Elevation meters 1038.822 1039.822 1039.903 1031.903 1041.104 1042.336 1042.336 1042.336 1042.336 1043.507 1044.676 1044.678 1045.85 1045.85 1045.85 1045.85 1047.021 1047.021 1048.192 1048.192 1049.363	Panel Dri 3 1 3 2 3 2 3 3 3 4 3 4 3 5 3 6 3 6 3 6 3 6 3 6 3 7 3 7 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8	t Zone West West West West West West West Wes	Label 3-1W 3-2W 3-3W 3-3W 3-5W 3-5W 3-9W 3-10W 3-10W	Northing meters 236027 413 236052 003 236134 618 236052 003 236134 618 236554 528 236554 528 236554 528 236556 528 236556 528 236556 528 236566 528 235566 528 23556 235566 528 235566 528 235566 528 235566 528 235566 528	Easting Easting 171641.675 171091.041 1716161.739 171043.105 171053.060 171053.060 171053.060 171053.060 171053.060 171053.050 171053.051 1710555.051 1710	USUUSSUAS Side of Drift West East West West West West East West West East West West West East West West	Elevation meters 1038.822 1039.993 1041.104 1042.336 1042.336 1045.850 1044.879 1045.850 1047.021 1048.192 1048.333	Delta Northing meters (UCLA - UCC 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Detta Easting 0 (ULCA - ULC) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Della Elevation meters (ULCA + ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta East only) Ves Ves Ves Ves Ves Ves Ves Ves Ves Ves	Calculated NORTHING Mellers NO CHANGE NO CHANG	Calculated EASTING meters NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE NO CHANGE		Detta Morthing Check Sum 7 2 3 3 1-1499 7 2 3 2 3 1-1499	Delta Easting meters Check Sum Check Sum Addition 40.815 -22.679	Deta Elev Meters Check Sum	See sheet 5 - plotted points to verify See sheet 5 - plotted points to verify
105 106 107 108 107 108 109 100 100 100 100 100 100 100 100 100	Labei 3.104 3.204 3.304 3.404 3.	Northing mellers 236022/7413 236052/003 230138.618 230953.208 230953.208 230598.228 230564.202 230544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 200544.202 20056	Easting meters 17 (66) 1672 17 (106) 1675 17 (107) 167 17 (107) 169 17	Elevation meters 1038.822 1038.822 1039.993 1039.993 1031.993 1041.194 1042.336 1042.336 1043.507 1044.678 1045.85 1047.021 1045.85 1047.021 1045.85 1047.021 1045.93 1049.353 1049.353	Panel Dri 3 1 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.5W 3.6W 3.7W 3.8W 3.9W 3.10W 3.11W	Northing meters 236237.413 236623.003 236536.205 236536.205 235556.616 235556.616 235556.616 235556.616 235547.105 23557.105 25	Easting meles meles 171648.055 171691.021 171691.021 171691.021 171691.021 171691.021 171692.021 171692.021 171692.021 171692.021 171695.025 17	USUUS-UKAB Side of Drift East West East West East West East West East West East West East West East West East West East West East West East West East East East East East East East Ea	Elevation meters 1038.022 1036.022 1036.024 1036.024 1036.024 1043.025 1046.025 1046.025 1046.025 1045.035	Data Northing ULCA-UC 0000 0.0000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Detta Easting 0.0000 0.0000 0.0000 0.000000	Delto Investion (ULCLA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended Delta East only) Ves Yes Yes Yes Yes Yes Yes Yes Yes Yes Y	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Detta Northing meters Check Sum 2 1 1469 7 269 7 269 7 269	Delta Easting meters Check Sum 4015 -22.679 -0002	Delta Einv meters Check Sum 0.000 0.0000 0.0000	See thet 5 - plotted points to verify See thet 5 - plotted points to verify
105 106 107 108 109 109 109 110 110 111 112 110 111 111 112 111 111	Labei 3. 104 3. 204 3.	Northing mellow 284000000000000000000000000000000000000	Easting meters 17 (66) 675 17 (760) 640 17 (760) 730 17 (760) 740 17 (770) 740 17 (Elevation meters 1038.822 1038.822 1039.993 1031.993 1031.104 1141.104 1042.336 1043.507 1044.678 1044.678 1045.85 1045.85 1045.85 1045.85 1047.021 1046.192 1048.192 1048.192 1049.363 1050.355 1050.555	Panel Dri 3 1 3 2 3 2 3 3 3 4 3 3 3 4 3 5 3 6 3 6 3 6 3 6 3 6 3 6 3 7 3 7 3 7 3 8 3 8 3 8 3 8 3 8 3 8 3 8 3 8	t Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.6W 3.9W 3.9W 3.9W 3.10W 3.10W	Northing meters 236027.413 236052.003 236134.618 236052.003 236134.618 236564.223 235756.618 236564.233 235756.618 236566.232 235556.029 236566.235 235566.235 235566.235 235565.235 235565.235 235565.235 235565.235 235565.235 235565.235 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 235567.2357 2355757 2355757 2355757 2355757 2355757 235575757 2355757577 2355757577577577577577757777777777	Easting Tries Art Stoll-102 Easting 171643.675 171091.041 1716161.739 171643.607 171637.808 171637.808 171638.808 171638.808 171638.808 171638.808 171638.128 171638.128 171638.128 171638.128 171638.128 171638.128 171638.128 171638.128 171638.128 171638.128 171638.128 1717678.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 171777878.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 1717778.128 17177778.128 17177778.128 17177778.128 17177778.128 17177778.128 17177778.128 171777788 17177778.128 171777788 171777778 171777778 171777778 1717777778 17177777777	USUUS-UKAS Side of Drift West West West West West West West Wes	Elevation meters 1036.022 1036.033 1041.164 1042.336 1043.507 1044.850 1044.021 1049.102 1049.102 1049.102	Delta Northing meters (UCLA - UCC 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Deta Easting (UCCA - UCC) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Della Elevation (UCLA-UCLA) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Drange Internet (Date Bot only) Pete East only) Yes Yes Yes Yes Yes Yes No No No No Yes No No Yes No No No Yes No No No No No No No No No No No No No	Galculated NCRTITING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANCE NO CHANCE		Detta Northing meters Check Sum 2 -1469 -7,399 - 0.000	Detta Easting meters Check Sum Check Sum Alters 	Deta Elev meters Check Sum 0.000 0.000 0.000	See There 5 - plotted points to verify . See There 5 - plotted points to verify .
1005 1005 1006 1007 1008 1009 110 111 111 111 111 1113 1113 1113	Label 3, 109 3, 209 3, 409 3, 409 3, 609 3, 709 3, 509 3, 509 3, 1009 3, 1109 3, 1109	Northing metics 224237 419, 224037 419, 224037 419, 224037 419, 224038 419, 224038 419, 224038 419, 224038 429, 22408 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 429, 22488 42	Easting meters 17 (66) 1672 17 (106) 1675 17 (106) 1675 17 (107) 167 17 (107) 167 17 (107) 169 17 (107) 169 1	Elevation meters 1038.822 1038.822 1038.903 1039.903 1031.104 1041.104 1042.336 1043.507 1043.507 1043.507 1044.676 1045.88 1047.021 1045.85 1047.021 1045.85 1047.021 1048.192 1049.353 1050.355 1051.706	Panel On	R Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.5W 3.6W 3.9W 3.10W 3.11W 3.12W	Northing meters 236652 (00) 236134 (13) 236652 (00) 236134 (10) 236543 (10) 236543 (10) 236543 (10) 236543 (10) 236545 (10) 236545 (10) 236545 (10) 236545 (10) 235545 (10) 235555 (10) 235555 (10) 23	Easting meles meles 1716 463 576 1716 91 521 1716 91 521 1716 91 521 1716 91 521 1716 91 525 1716 91 525 1716 91 525 1716 91 525 1716 91 525 1716 91 525 1716 93 53 1716 93 53 1716 93 53 1716 93 53 1717 95 125 1717 55 1717 55 17175	USUUSUUA Side of Drift East West East East East East East East East Ea	Elevation motors 1038.022 1039.022 1039.023 1039.023 1049.025 1045.020 1045.020 1045.020 1045.025 1045.025 1045.025 1045.025 1045.025 1045.025	Detta Northing ULCA-ULC 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Data meters meters (ULCLA-ULC) (ULCLA-ULC) (0000 0000 0000 0000 0000 0000 0000 0	Della Enston metes 0 (U.C.A.+ U.C.) 0 000 0 000	Change Intended Notate North Delta East conty) Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes	Calculated NCRTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Detta Northing meters Check Sum 2 1 1.499 7.399 7.000 0.000	Delta Easting meters Check Sum 40.015 -22.679 0.002 0.002	Delta Eirov meters Check Sum 0.0000 0.0000 0.0000 0.0000	See sheet 5 - potted points to very 2. See sheet 5 - potted points to very
105 106 107 108 109 109 109 110 111 113 113 113 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 131 133 133 135	Labei 3.109 3.207 3.207 3.207 3.207 3.207 3.207 3.207 3.1007 3.1107 3.1107 3.1107 3.1107	Northing meters 236237.418 236002.003 236338.818 236338.818 236348.818 236348.218 236448.218 236488.218 2	Easting maters 717 661 675 717 061 041 717 061 041 717 061 041 717 061 041 718 071 041 718 071 061 718 071 061 718 071 061 718 071 061 718 071 061 718 071 061 717 073 163 717 075 205 717 075 205 71	Elevation meters 1038.822 103.822 103.993 103.993 104.154 104.236 104.236 104.3507 104.4678 104.678 104.678 104.678 104.678 104.678 104.85 104.585 104.585 104.585 104.93 100000000000000000000	Panel Dri 3 1 3 2 3 3 3 3 3 4 3 5 3 4 3 5 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 6	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.6W 3.9W 3.9W 3.10W 3.11W 3.12W	Northing meters 236237,413 23652,002 235532,002 235542,002 235542,002 235544,002 235544,002 235544,002 235544,002 235544,002 235544,002 235564,002 235564,002 235564,002 235572,007 235574,002 235577,001 235574,002 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 235577,001 2355777,001 2355777,001 2355777,001 2355777,001 2355777,001 2355777,001 2355777,001 23557777,001 235577777777777777777777777777777777777	Easting	Side of Drift Drift East West East East West East West East West East West East West East West East West East West East West East West	Elevation meters 1038.022 1038.033 1041.164 1042.336 1045.850 1045.850 1045.850 1045.021 1048.152 1049.353 1050.533	Data Northing meters (ULCA - ULC 0.0000 0.0000 0.0000 0.000000	Dota mates (U.C.A U.C.) (U.C.A U.C.) (000 000 000 000 000 000 000 000 000 0	Della Elevation 4 (U.C.A U.C.) 0.0000 0.00000 0.0000 0.0000 0.00000 0.00000 0.000	Change (Bandon) Delta East only) Peta East only) Yes Yes Yes Yes Yes Yes Yes Yes No No No No No No No No No No No No No	Calculated NCRTINING Weiters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANGE NO CHANGE		Detta Northing meters Check Sum 2 1499 7,359 0.000	Detta Easting meters Check Sum 4.615 -22.679 -0,002 -0,002	Delta Elev metes Chock Sum 0.000 0.000 0.000 0.000	See Sheet 5 - plotted points to very -: See thet 5 - plotted points to very -:
1005 1005 1006 1007 1009 1100 1111 112 1113 1114 1115 1116 1117 1118 1119 120 1212 1223 1224 1226 1227 1228 1229 1300 1311 1322 1333 1345 1365	Labei 3, 109 3, 209 3, 309 3, 409 3, 509 3, 709 3, 709 3, 509 3, 509 3, 509 3, 509 3, 509 3, 5109 3, 5119 3, 7119	Northing meters 2260237.418 236062003 2012 2012 2012 2012 2012 2012 2012	Easting meters meters 17163,2026 17163,2026 17163,2027 17163,2027 17163,2027 17165,203 17165,203 17165,203 17165,203 17165,203 17165,203 17165,203 17165,203 17165,203 17165,203 17065,203 17065,203 17076,903 17076,903 17076,903 17076,903 17076,903 17076,903 17076,903 17076,903 17076,903 170774,10 171312,2026 170774,10 171312,2026 171322,206 171322,206 171322,206 171322,206 17132,206 17132,206 17132,206 17132,206 17132,206 17132,206 17142,207 17152,706 171	Local Control	Panel On 3 1 3 2 3 2 3 3 3 4 3 4 3 4 3 4 3 4 3 5 4 3 5 4 3 5 4 3 5 5 5 7 3 6 8 9 3 7 3 7 3 8 9 3 7 3 7 4 3 7 5 5 5 5 5 5 5 5 5 5 5 5 5	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.5W 3.6W 3.9W 3.10W 3.11W 3.12W	Northing meters 236652 003 236153 413 236652 003 236138 618 235653 502 235553 612 235555 612 2355555 612 2355555 612 2355555555555555555555555555555555555	Easting Easting 171691.041 171691.041 171691.041 171691.739 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171643.105 171653.105 171653.105 171765.93 171765.93 177725.93	USUUSUUSUUSUUSUUSUUSUUSUUSUUSUUSUUSUUSU	Elevation Investor 1036.022 1038.903 1041.184 1042.336 1043.507 1044.850 1044.850 1044.021 1048.850 1047.021 1048.353 1048.102	Delta Northing maters (U.C.A U.C. 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Deta metes (ULCA-ULC) 0.0000 0.0000 0.0000 0.000000	Della metes (ULA - ULC) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Intended (Delta East only) Ves Ves Ves Ves Ves Ves Ves Ves Ves Ves	Calculated NORTHING meters NO CHANGE NO CHANGE	Calculated EASTING meters NO CHANCE NO CHANCE		Detta Northing Check Sum 2 3 3.486 7.366 9.000	Della Easting meters Check Sum 46815 22.679 0,002	Delta Elev metes Check Sum 0.000 0.000 0.000 0.000 0.000	See Sheet 3 - potted points to verify a
1005 1006 1007 1008 1009 1009 1110 1111 1112 1113 1114 1115 1116 1117 1119 120 1211 1221 1231 124 1255 1266 1277 128 1291 1301 1312 1303 1314 1355 1367 1377	Labei 3-104 3-247 3-367 3-567 3-667 3-667 3-568 3-569	Northing metics 224237.41.9. 224237.41.9. 224237.41.9. 224237.41.9. 224238.21.21.21.21.21.21.21.21.21.21.21.21.21.	Easting meters meters 17 (66) (675) 17 (106) (64) 17 (106) (64) 17 (106) (106) 17 (106) (106) (106) 17 (106) (106) (106) 17 (106) (106	Elevation meters 1038.822 1039.993 1038.993 1039.993 1041.164 1042.336 1043.507 1044.676 1043.507 1044.678 1045.85 1047.021 1046.192 1049.353 1047.021 1046.192 1049.353 1049.355 1059.355 10000000000000000000000	Panel Dri 3 1 3 2 3 3 3 4 3 3 3 4 3 5 3 4 3 5 3 5 3 6 3 6 3 6 3 6 3 6 3 6 3 6 3 7 3 7 3 7 3 7 3 7 3 7 3 7 3 8 4 8 3 8 4 8 3 8 4 8 3 8 4 8 3 8 4 8 3 8 4 8 3 8 4 8 5 8 6 9 7 7 3 8 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8	ft Zone West West West West West West West Wes	Label 3.1W 3.2W 3.3W 3.4W 3.5W 3.6W 3.7W 3.6W 3.9W 3.10W 3.11W 3.11W 3.212W	Northing meters 236237,413 236552,002 235652,002 235652,002 235572,007 235764,002 235764,002 235764,002 235764,002 235764,002 235764,002 235764,002 235764,002 235764,002 235572,007 23557572,007 2355757575757575757575757575757575757575	Easting	USUUS-UKAS Side of Drift Ukas West East West East West	Elevation meters 1038.022 1035.035 1035.035 1035.035 1045.025 1046.025 1046.025 1046.025 1046.025 1046.025 1045.035 1051.706	Delta Northing meters (U.C.A U.C. 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Data meters (U.C.A U.C.) (0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	Dela metes 2 (U.C.A U.C.) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Change Interded Delta East only) Yes Yes Yes Yes Yes Yes Yes Yes Yes No No No No No No No No No No No No No	Calculated NCRTINING meters NO CHANCE NO CHANCE	Calculated EASTING meters NO CHANGE NO CHANGE		Deta Northing Check Sum 2 14690 7 4590 8 0.000	Cetta Easting Check Sum 4.845 22.879 0.002 0.002	Delta Elev metes Chock Sum 0.000 0.000 0.000 0.000	See sheet 5 - plotted points to verify See sheet 5 - plotted points to verify

Underground Layout Configuration for LA 800-KMC-8800-00200-000-000 B TL 7/27/07/10/02

	D	E	P	6	<u>n</u>		3	<u> </u>	L	M	N	0	Р	Q	R	S	Т	U	v	W	X	Y	Z
138 199 100 101 102 102 102 103 104 104 104 105 105 105 105 105 105 105 105 105 105																		-					
142 F	rom Table III. Prima Inderground Layoug	ry Area Bounding Endpoi Configuration (800-P0C-I	int Coordinates, MGR0-00100-00	Panels 1,2,3 a 0-00E)	and 4				From Table 1 Configural	3 panel 3 West - contunie tion for LA (800-KMC-SS0	d Underground Layout I0-00200-000-00Aa)		E.							1		1	
145 146 147 148	Label	Northing meters	Easting meters	Elevation meters	Panel	Drift	Zone	Label	Northing meters	Easting meters	Side of Drift	Elevation meters	Delta Northing meters (ULCLA - ULC)	Delta Easting meters) (ULCLA - ULC	Delta Elevation meters) (ULCLA - ULC)	Change Intended (Delta North Delta East only)	Calculated NORTHING meters	Calculate EASTIINO meters		Delta Northing meters Check Sum	Delta Easting meters Check Sum	Deita Elev meters Check Sum	
150 151 152	3- 13W 3- 14W	235099.088 234912.075 235012.444	171303.747 170728.177 171299.207	1052.877 1052.877 1054.049	3 3 3	13 13 14	West West West	3-13W 3-14W	235091.017 234912.075 235004.373	171278.907 170728.177 171274.366	East West East	1052.877	-8,071 0.000 -8.071	-24.840 0.000 -24.841	0.000	Yes No Yes	235091.017 NO CHANGE 235004.373	, 171278.90 NO CHANC 171274.36	6 16 16	0.000	0.001	0.000	
153 154 155	3- 15W 3- 16W	234825.43 234925.799 234738.786 234839.155	170723.637 171294.666 170719.096 171290.125	1054.049 1055.22 1055.22 1056.391	3 3 3 3	14 15 15 16	West West West	3-15W	234825.430 234917.728 234738.786 234831.084	170723.637 171269.825 170719.096 171265 284	West East West	1055.220	0.000 -8.071 0.000	0.000 -24.841 0.000	0.000	No Yes No	NO CHANGE 234917.728 NO CHANGE	NO CHANG 171269 82 NO CHANG	ЗЕ 5 ЭЕ	0.000	0.000	0.000	
157 158 159	3- 17W	234652.142 234752.51 234565.497	170714.555 171285.584 170710.014	1056.391 1057.563 1057.563	3 3 3	16 17 17	West West West	3-17W	234652.142 234744.439 234565.497	170714.555 171260.744 170710.014	West East West	1057.563	0.000 -8.071 0.000	0.000 24 840 0.000	0.000	No Yes No	234631.084 NO CHANGE 234744.439 NO CHANGE	NO CHANC 171260.74 NO CHANC	4 3 3 3 5	0.000	0.000	0.000	
160 161 162	3- 18W 3- 19W	234665.866 234478.853 234579.222 234392.207	171281.043 170705.473 171276.503 170700.933	1058.734 1058.734 1059.905 1059.905	3 3 3 3	18 18 19 19	West West West	3-18W 3-19W	234657.795 234478.853 234571.151 234392.207	171256.203 170705.473 171251.662 170700.933	East West East West	1058.734	-8.071 0.000 -8.071 0.000	-24,840 0.000 -24,841	0.000 0.000	Yes No Yes	234657,795 NO CHANGE 234571.151	171256.20 NO CHANO 171251.66	2 3E 2	0.000 0.000	0.001	0.000	
164 165 166	3- 20W 3- 21W	234492.578 234305.564 234405.934	171271.962 170696.392 171267.421	1061.077 1061.077 1062.248	3 3 3	20 20 21	West West West	3-20W 3-21W	234484.507 234305.564 234397.863	171247.121 170696.392 171242.580	East West East	1061.077	-8.071 0.000 -8.071	24.841 0.000 -24.841	0.000	Yes No Yes	234484.507 NO CHANGE 234397.863	171247.12 NO CHANG 171242.50	se 1 Se 5	0.000	0.000	0.000	in the State of State of State of States
168 169 170	3- 22W	234218.92 234319.29 234132.276	170691.851	1062.248 1063.419 1063.419	3 3	21 22 22	West West	3-22W	234218.920 234311.219 234132.276	170691,851 171238,040 170687,310	West East West	1063.419	0.000 -8.071 0.000	0.000 -24.840 0.000	00-fai 0.000	No Yes No	NO CHANGE 234314,219 NO CHANGE	NO CHANC 171238.03 NO CHANC	36 9 96 96	e.000	0.001	0.000	
172 173 174	rom Table III. Prima Inderground Layoug	ry Area Bounding Endpoi Configuration (800-P0C-F	nt Coordinates, MGR0-00100-00	Panels 1,2,3 a 0-00E)	and 4				From Table 1 Configurat	4 panel 4 West - contunie tion for LA (800-KMC-SSO	d Underground Layout 0-00200-000-00Aa)]			<			
175 176 177 178	Label	Northing meters	Easting meters	Elevation meters	Panel	Drift	Zone	Label	Northing meters	Easting meters	Side of Drift	Elevation meters	Delta Northing meters (ULCLA - ULC)	Delta Easting meters) (ULCLA - ULC	Delta Elevation meters) (ULCLA - ULC)	Change Intended (Delta North Delta East only)	Calculated NORTHING meters	Calculate EASTINO meters	3	Delta Northing meters Check Sum	Delta Easting meters Check Sum	Delta Elev meters Check Sum	
180	Panel 4-1	236042.732 235910.955 235943.937	171062.509 170656.939 171020.573	1038.822 1038.822 1039.993	4	1	East West	Panel 4-1	236042.732 235910.955 235942.037	171062.509 170656.939 171020.573	East West	1038.822	0.000	0.000	0,000	No No	NO CHANGE NO CHANGE	NO CHANG NO CHANG		8 .55579.56	$m_{ij}^{(i)} m_{ij}^{(i)} = \left[\tilde{r}_{ij} r_{ij} + c \right]$	9 17188 1	· · · · · · · · · · · · · · · · · · ·
183 184 185	Panel 4-3	235759.426 235845.143 235659.733	170452.704 170978.637 170408.004	1039.993 1041.164 1041.164	4	233	West East West	Panel 4-3	235759.426 235845.143 235659.733	170452.704 170978.637 170408.004	East West	1039.993	0.000	0.000	0.000	No No No	NO CHANGE NO CHANGE NO CHANGE	NO CHANG NO CHANG NO CHANG	ie ie ie data statisticatie	1999年1月1日日日 1999年1月1日日 1999年1月1日日	questina e i Statistica e	1 - 144 - 144 - 144	
186 187 188	Panel 4-4 Panel 4-5	235746.348 235560.938 235647.553	170936.701 170366.068 170894.765	1042.336 1042.336 1043.507	4	4	East West East	Panel 4-4 Panel 4-5	235746,348 235560,938 235647,554	170936.701 170366.068 170894.765	East West Fast	1042.336	0.000	0.000	0,000	NO NO NO	NO CHANGE NO CHANGE NO CHANGE	NO CHANG NO CHANG NO CHANG	ie E in 1997 (1997) E		8985. ¹¹ - 1	el Sofer	
189 190 191	Panel 4-6	235462.144 235548.758 235363.349	170324.132 170852.83 170282.196	1043.507 1044.678 1044.678	4 4 4	5 6 6	West East West	Panel 4-6	235462.144 235548.759 235363.349	170324.132 170852.829 170282.196	West East West	1044.678	0.000 0.001 0.000	0.000	0,000	No No No	NO CHANGE NO CHANGE NO CHANGE	NO CHANG NO CHANG NO CHANG	84 - 2010 - 2010 16 16 - 2010 - 2010 16 - 2010 - 2010		n an tha	2 9 2 9 4 9 4 2 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9 4 9	
192 193 194	Panel 4-7 Panel 4-8	235449.963 235264.554 235351.169	170810.894 170240.26 170768.958	1045.85 1045.85 1047.021	4	7 7 8	East West East	Panel 4-7 Panel 4-8	235449.964 235264.554 235351.169	170810.893 170240.260 170768.957	East West East	1045.850	0.001 0.000 0.000	-0.001 0.000 -0.001	0.000	No No No	NO CHANGE NO CHANGE NO CHANGE	NO CHANG NO CHANG NO CHANG	и Е Е			in arrest transie	n - Andreas States and S
195 196 197	Panel 4-9	235165.759 235252.842 235061.884 235165.124	170198.324 170728.461 170140.754	1047.021 1048.192 1048.192	4	6 9 9	West East West	Panel 4-9	235165.759 235252.842 235061.884	170198.324 170728.461 170140.754	West East West	1048,192	0.000 0.060 0.000	0.000 0.000 0.000	0,000	No No No	NO CHANGE NO CHANGE NO CHANGE	NO CHANG NO CHANG NO CHANG	ie Ie statistica (1995) Ie	and the second second			
199 200 201 202	and a second	234973.145	170129.767	1049.363	4	10	West	r aneo a-10	230100.124	170009,838	East . West	1049.363 1049.363	0.000	0.000	0.000	No No	NO CHANGE NO CHANGE	NO CHANG NO CHANG	ie ie	S. Constanting		11,85	

Underground Layout Configuration for LA 800-KMC-SS00-00200-0000-0000 B VJ-13 TL 7/27/57

	D	· E	F	G	I F	1	1	J 1	ĸ	L		M	N	0	, ,	P	Q	R	S			U	V	W	X	Ŷ	2	4.5
03 04 05	From Table III. Prin	ary Area Bounding En	point Coordinates	Panels 1,2	,3 and 4			1		From Table	14 panel 4 We	st - contunied	d Underground Layout	á	1			2	е 2	1				1				e _
205	Underground Layou	g Configuration (800-P	C-MGR0-00100-0	00-00E)				- 1		Conigun	ation for DA (or	10-KMC-330	0-00200-000-00Aa)		- 1	Delle	Delle	Della	Channel	Calaviated		Calculated		Della	Dalla	Delle		
07	1.000	11. dit 1.		C. Charles			0.0		Label	Mathias		Festing	Cido	of Elaur	ation	Nothing	Easter	Clouation	Change	MORTHING		EASTING		blothics	Delta	Cia		
08	Label	Northin	Easting	Fielan	on Par	iei i	Dhit	Zone	Caber	Mordining		casong	Drift	A met	lore	maters	casong	clevalori	(Delta Nesta	motor		mater		motors	casung	Elev		
09		meters	meters	meter	5			- 1		meters		melets	Ull		era	(ULCIA - LEC)	ALI CLA - LILC		Delta East only)	Inciera		metera	a	Check Sum	Check Sum	Check Sum		
10										6.872						(00001-000)	(DECENT: DEC	I TOFOLIN OFO	(Cena Last Only)	1				Post-chaone	Post-chappe	Check Sum		
11	NAME AND DESCRIPTION OF	015069	9 170685 20	1050.6	16.000	000000	- AND NO.	Fast	Danal 4.11	235068 480	and the second	70685 297	CONTRACTOR POS	1050	535	0.000	0,000	0.000	No. 11 State No.	NO CHANGE	100111-11020-01	O CHANGE	1.000-000-00540	r car change	- Manufactoria	COMPONING STREET	00-750 (Auto California)	10024030-00-00-0
12	Concernence Concernence	234886	170125 22	1050.5	35 4	ALCONT	11	West	Consideration of the second	234886 501	1	70125.226	Wes	st.		0.000	0.000	12-1250-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	No	NO CHANGE	a standard beaution	O CHANGE	Arthropology Steropology	and the second of			1934 D. HENDER Property of States of the Ale	spectrum date waters
214	Panel 4-1	234981.	170680.754	1051.7	06 4	121223	12	East	Panel 4-12	234981 835		70680.756	East East	1051	706	0.000	0.000	0.000	No	NO CHANGE	CHERRY AND REAL PROPERTY	O CHANGE	WUKSCORE MA	Stow of the own		AND DE LA COMPANY	和主义的网络国际和国际	王朝帝的行动
215	Auto-a-official dollar process	234799.8	57 170120.68	1051.7	106 4	1	12	West	CONTRACTOR DOT TROUT TO	234799.856	15	70120.685	Wes	st	-	-0.001	-0.001		No	NO CHANGE	1	O CHANGE	Protocol Protocol Colored	1				
216	Panel 4-1	3 234895.1	91 170676.21	5 1052.8	377 4	(CORE)	13	East	Panel 4-13	234895.191	6	70676.215	Eas	at 1052	.877	0.000	0,000	0.000	No	NO CHANGE	A THORNE H	IO CHANGE		Barn gabala	的政治市高高额			我的现象清偿的
217		234713.3	13 170116.14	5 1052.8	377 4	1	13	West		234713.212	13	70116.144	Wet	st		-0.001	-0.001		No	NO CHANGE	1	IO CHANGE						Contraction of the second
218	Panel 4-1	4 234808.	47 170671.67	1054.0	M9 4	网络索	14	East	Panel 4-14	234808.547	1.73	70671.674	Eas	st 1054	.049	0.000	0.000	0.000	No	NO CHANGE	的经济发展	IO CHANGE	1.1.1.2.2.4.6.2.2.4	and the second		中心的建筑的	也是这些非常问题和爱思	日本の行いたので
219		234626.5	68 170111.60	1054.0	049 4	1	14	West		234626,568	1	70111.603	Wes	st	-ave-	0.000	-0.001	-	No	NO CHANGE	The sea of the second second second	IO CHANGE	The Local Property and Street	à	 2002. C. 32 		the state of the local data and the state of the	Contraction and the second
220	Panel 4-1	234721.9	02 170667,13	3 1055.	22 18 9 9 9	1.22.23	15	East	Panel 4-15	234721.903	10-320	70667.133	Service Service Eas	1055	220	0.001	0,000	0.000	No	NO CHANG	出版的中国的43.50gg	IO CHANGE		and a state of the	いたり、代表など	也是这次的影响很多	2000年200日1月1日1月1日1日	家道明新知识的保守
221	and some and stated as	234539.	24 170107.06	3 1055.	22 4	an a	15	west	STREET, STREET	234539.924	a tata marka	70107.062	VVC:	SI SALENDER TOTALE	204	0.000	-0.001		NO PER CONTRACTOR NO.	NO CHANGE	Characteristic Analistic	O CHANGE	The Case of States Orea (States)	ALC: LOUGH		CONSCIENCES.	COPPER CONTRACTOR INCOMENTS IN	service where we
222	Panel 4-1	2346353	58, 170662.59	1000	91.000	0,67636	10 10	East	Panel 4+10	234033.230	1.2.201.000	70102.592	C NOT A CONTRACT OF CAS	A 2012 DISTANCE A 1000		-0.001	0.000	0.000	No	NO CHANG	Street Column 445	O CHANGE	N. P. S.	and the second second	and the second sec	- Trendaro Ble	(Sherry National Contention of the Contention of	South Street,
223	State And	234453	170102.52	1050.	Con a state	17521045	10	Fort	Panel 4.17	234548 614	41.7 54	70658 052	Contraction of the First	1057	583	0.000	0.000	0.000	No	NO CHANG	NEATGREET	OCHANGE	SCHOOL STREET,	125	C. Parkinger	Normal Sciences	e Romania definicione de la della	REAL PROPERTY IN THE PARTY OF THE
224	State Car Panel 4-1	234346	36 170007.08	1 1057 4	63	0.2011078/	17	West	ALCONTRACTOR	234366 635	The set	70097 981	We	st.	ALCO	-0.001	0.000	COLUMN TO COLUMN	No	NO CHANG	COLUM PATRONY (2020)	O CHANGE	m024-000-040408038	Service of the servic		- A College And A College	2.5. peerSpritt Marshopper 12.	(2)21225-221011-2014/22125
220	Dinel A	234300.	59 170653 51	1058 7	34 10	1-120703	185300	Fast	Panel 4-18	234461 969	111 1 1 2 2 3	70653.511	E State State East	1058	734	0.000	0.000	0.000	No	NO CHANG	大学的大学的	O CHANGE	STREET STREET	R.C. Darris	STATISTICS STATISTICS	anter and the second	的一边建筑和自己的公式在这	ALL CONTRACTOR OF
220	Str. of the design of the	234279	92 170093.44	1 1058.7	734 4	4	18	West		234279.992	1	70093.440	We	51		0.000	-0.001	Contraction and the second second	No	NO CHANG	and the second second	O CHANGE	NACING DIVERSION OF THE REAL PROPERTY OF	and the second of the	 1.542 (WC31662 (BWC3) 		Carlos Andreas and a state of the	0-0022448-1-998295181
228	Panel 4-1	234375	25 170648.97	1059.6	905 4	16:072	19	East	Panel 4-19	234375.325	1	70648.970	Eas	it 1059	.905	0.000	0.000	0.000	No	NO CHANG	GREET POPP	O CHANGE	2年215万月3月	國際的組織的時代	1、11年1月1日的合适	The Lordshift	网络南部市 管理学家	Contraction of the last
229	We contract of the second second	234193.3	47 170088.9	1059.9	905 4	4	19	West		234193.346	1	70088.899	We	st		-0.001	-0.001		No	NO CHANG		O CHANGE						
230	Panel 4-2	234288	81 170644.42	9 1061.0	177	1221年	20	East	Panel 4-20	234288.681	1.00	70644.429	Eas	1061	1.077	0.000	0.000	0.000	No	NO CHANG	BWC-ARE S	IO CHANGE	A PART IN STREET	Second and the	Solar General	新闻和自己 的方式	经上海政府有自然的行为。	A STATE AND
231		234106.	23 170084.73	1 1061.0	77 4	4	20	West		234106.823	1	70084.731	We	st		0.000	0.000		No	NO CHANG		IO CHANGE		and the second		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	A CONTRACTOR DE LA CONTRACTÓR DE LA CONTRACTÓR	
232	Panel 44	1 234202.1	36 170639,88	B 1062.3	248		21	East:	Panel 4-21	234202,036	一 计对关分析	70539.888	East	st 1062	2.248	0.000	0.000	0.000	No	NO CHANG	的影响和影响	IO CHANGE		·····································	1.1217 年1月11日			建立的总统和社
233		234023.	27 170091.11	1 1062.2	248 4	4	21	West		234023.727	1	70091.111	We	ST Contraction of the second		0.000	0.000	n References to be a second of the	No	NO CHANG	ALL CONTRACTOR	IO CHANGE	-	and the second of the	ni Constantine and a second	Concernance and the second	NAMES OF TAXABLE PARTY OF TAXABLE PARTY.	A NUMBER OF A DESCRIPTION
234	Panel 44	2 2341163	74 170638.05	1 1063.4	419	网络花	22	East	Panel 4-22	234115.392	231233	70635.348	的思想的问题。但是	1063	1,419	0.882	2713	0.000	Q HE 2021 HE HE TO HAR	234115.392	2015年1月1日1月1日	70635,3472	No. Construction	0.000	0.001	0.000	的政策的目的目的目的目的	国 东部(1)注目的产品的
235	NUT OUT THE ADDRESS OF	233940.	12 170098.35	5 1063.4	419 4	4 Stiellingtes	22	west	CONTRACTOR OF THE	233940.912		70098.356	VVe:	SI CIURIS I MANAGER	CENT	0.000	0.000	Sildona Anon	NO	NO CHANG	Instante and Stated	TOCHANGE	Contraction of the second s	Mel n' n con the	N DOAL	- Contra Billion Inc.	No. Neverto Activitica v Sto Sep-	ACCESS OF MANAGEMENT
236	Panel 4-a	234030	08 1701054.23	1 1064	50 Start		20	Wast	Penerazo	233858 008	he was a	70105 601	Very state of the	st		0.000	0.000	1.499/1913/191 0/000	No	NO CHANG	2 Med and A real Restoration	O CHANGE	POINTS BREED	0.000	0.001	0.000	NARTS TO BE AND AND AND A CONTRACT	PE-SPeakarconnes
231	Danal 4	2330303	15 170649.60	1065	762	Discours.	23	East	Ponel 4.24	233942 103	h Atreast	70626 266	NATO OF MARSHIELD	1065	762	7.613	-23 430	0000	water that the water	233942 104	Color Schemes	70626 2656	Same and the second	0.002	0.000	0 000	SERVICE MARKING STORE	DEPENDENCE DEPENDENCE
230	Concerns Fault As	233775	83 170112 84	7 1065	762	4	24	West	a sound sound	233775.283		70112.847	We	51		0.000	0.000	Property of the second second	No	NO CHANG	Contractor and the second	O CHANGE	INSTRUCTOR DROVIN	and the second second	CONTRACTOR	18/3 V 1838 88 (19)	S-D-D-D-D-D-HE-ORTYTE 1/2-AC-L-20	NUS-PRIMITICAL CALC
240	Panel 4	233863	71 170645.15	1066 (933	1903655	25	East	Panel 4-25	233855.459	1100.00	70621.725	East	st 1066	5.933	-7.612	-23,431	0.000	Yes	233855,460	S AN A CONTRACTOR	70621:7248	大学のないない	-0.002	0.000	0.000	新在市场和市场的目的 目的目的	
241	ac second and a second of a	233692.	67 170120.09	2 1066.1	933 4	4	25	West	No. 24645 Arrive	233692.467	1	70120.092	We	st		0.000	0.000		No	NO CHANG		O CHANGE		and and the second				and the set of a set of the
242	Panel 4-2	6 233776.	27 170640.61	5 1068.	105	4-1-20	26	East	Panel 4-26	233768.814	3	70617.184	East	st 1068	3.105	-7.613	-23.431	0.000	Yes	233768.817	0	170617.184	の変形の理論	-0.003	0.000	0.000	A CARLES AND A CARLES	A CARLEN AND A
243		233609.	53 170127.33	8 1068.	104 .	4	26	West		233609.653	1	70127.338	We	st		0.000	0.000		No	NO CHANG	E	O CHANGE		2				
244	Panel 4-	7 233689.	82 170636.07	4 1069.	276	40-25	27	East	Panel 4-27	233682.170	1. 2553	70612.644	East	st 1069	9.276	.7.612	23.430	0.000	Yes	233682.173	2	70612.6431		-0.003	0.001	0.000	A23045815.12108023	
245		233526.	41 170134.59	4 1069.3	276	4	27	West	- Account of the local data	233526.841		70134.594	We was a second se	st		0,000	0.000		No	NO CHANG	No. 11 P. INVESTOR	O CHANGE	Basaran waana	No Director States			NAMES OF STREET, STREE	and the second second second
246	Panel 4-	6 233605;	14 170640.07	6 1070.	447	4.5.1.2.5	28	East	Panel 4-26	233595,525	1.	70608.103	Tradesvill Additionant	st 10/0	3.447	-10.389	31.973	0.000	and a second second	233595.529	のうてのないない	70608.1023	经济的经济资源的制度	-0.004	0.001	0.000	「「「「「「「「「「」」」」」」」	学校学校中国的学校学校
247	Sector State And and	233448.	42 170155.42	9 1070.4	447	4	28	West	00000000	233448.442		70155.429	We	SI ANTANA ANTA	040	0.000	0.000	5-50	NO	NO CHANG		O CHANGE	NALS CONTRACTOR		0.000	- 10° 6 0000 10	Constitution and the second second	- Teranother ter the of
248	Panel 4-	9 233526.	16 170659.06	9 10/1.4	618	1012992	29 10 10	East	Panel 4-29	233008:881	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	70003.502	We We	al and the second states of th	1.010	-10.035	0.000	0.000	Sector and a sector and	233508 865	ROUND STRATE	170603.5615	114-12-12-12-12-12-12-12-12-12-12-12-12-12-	-0.005	0.000	0,000	王王王王王王王王王王王王王王王王 王王王王王王王王王王王王王王王王王王王王	Selecter in the party
249	CONTRACTOR DATA	2333/0.	50 170203.19	2 10/11	70	500000	29	Eact	Donal 4.90	233370.792	STREET C. IS	70509 316	and file and shares Fa	1073	790	20.252	62 320	0.000	interference Van of the	222402 241	Ca Successive	70509 0207	NET STREET	.0.235	0 705	0.000	C Diff of munified built	or continue to the
250	Panel 4-	233442.	82 170280.84	8 1072	79	A second from	30	West	Se and 4:30	233321.782		70289.858	We	st		0.000	0.000	1921 (1921 (1970 (197	No	NO CHANG	E -	O CHANGE	S. A. A. C.	-0.230	-3,703		Contest in Vehiled by a	inspeciality and
252	>	200021.		10/2		•								-					140	ine crimine	_							
253																												
254																						8						

Underground Layout Configuration for LA 800-KMC-SS00-00200-000-000 B VI-14 TL 7/27/07 744/07

_	D	E	F	G	н	1	J	ĸ	L	М		N	0	P	Q	R	S	TT	U	v	W	X	Y	2	
257	Table III Da	nee: Area Revedias Feder	int Coordinator	Danale 1 2 2 a	-				From To	ble 11 éssel 7 West - con	unied Underground La	mut Config	untion fact & /R		0 000 004 01			1		1			1		
250	from rable in. Phi	hary Area bounding Endp	un coordinates,	- 611015 1,2,3 6	Inu 4				Prom Pa	Die 11 parlei 2 Treat - com	oneo onoerground cay	your coming	Diation for LA (or	0-KMC-3500-0020	0-000-004a)										8
260																									
261 L	Inderground Layo	g Configuration (800-P0C	-MGR0-00100-00	0-00E)																					
262	20202	-	-	-	-	10-10-1				-			-	Delta	Delta	Delta	Change	Calculated	Calculated		Delta	Delta	Delta		A
263	Label	Northing	Easting	Elevation	Panel	Drift	Zone	Label	Northing	Easting	Sic	de of	Elevation	Northing	Easting	Elevation	Intended	NORTHING	EASTIING		Northing	Easting	Elev		
264		meters	meters	meters					meters	meters		Jan	meters	meters	meters	meters	(Delta North	meters	meters		meters	meters	Check Sum		1
265													1C	(OLODA - OLC)	(OLCLA - OLC)	(OLCENT-OLC)	Delta Last only/				Check Sum	Check Sum	Check Som		
267	Panel 2-	1 233366,199	171212.931	1076.304	2	STREET ST	East	Panel 2-1	233366.199	171212.931	CASE CONTRACTOR	ast	1076.304	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	和的短期情報	Barn Setting	いたは、法認識が	动的动物	(1) 网络金属金属金属金属金属金属金属金属金属金属金属金属金属金属金属金属金属金属金属	高级高级增长
268		233138.688	170512.724	1076.304	2	1	West		233130.468	170487.425	W	Vest	to the second states	-8.220	-25.299		yes	233130.4678	170487.4248		0.000	0.000			
269	Panel 2-	2 233279,555	171208.39	1077.476	2	200	East	Panel 2-2	233279.555	171208.390		ast	1077.476	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	·····································			得是我们的意思	的规则并是公元这些他已将任命	的名词复数
270	No. South States	233043.824	170482.884	1077.476	2	2	West	Donal 2.2	233043.824	170482.884	n National states in the second	vest	1078 647	0.000	0.000		NO NO	NO CHANGE	NO CHANGE	A CONTRACTOR CONTRACT	ASTAL CALLER	and the Shift Shandberry of	tan vdetribud	GUT IN A CONTROL OF THE OWNER	5.555222000
271	Brithly Stand C.	232957 408	170479 049	1078 647	2	NO1552322775	West	Calify 45	232957 408	170479.049	Associated and a second s	Vest	Cardening and the	0.000	0.000		No	NO CHANGE	NO CHANGE	ornansoanen en	Section and the section of the secti		0.000.000000000000000000000000000000000	ACCOUNT OF A CONTRACT OF A CONTRACT OF	AND A PROPERTY OF A PROPERTY O
273	Panel 2-	4 233106.266	171199.308	1079.818	1022	ALTERA SE	East	Panel 2-4	233106.266	171199,308	The state of the E	ast	1079.818	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	のためは開設	SE SECTO	NUMBER OF STREET	NEW CON	CARLAND AND AND AND AND AND AND AND AND AND	GARGER .
274	The second s	232871.754	170477.554	1079.818	2	4	West		232871.754	170477.554	W	Vest		0.000	0.000		No	NO CHANGE	NO CHANGE					Colorado de la Colorada de la Calendaria	
275	Panel 2-	5 233019.621	171194.767	1080.99	.2	5	East	Panel 2-5	233019.621	171194.767	的态度的正式和PPARE 编号	ast	1080.990	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	企为10.18月2日		and the state of the	这些影响了 中的	中国国际建立的管理	的的結果和
276	States States a	232786.099	170476.058	1080.99	2	distant marine	West	Dentel 2 P	232786.099	170476.058	NATION CONTRACTOR	vest	1082 161	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	Conference and the	and a second	ALL MARKES BOOT IS	W MARKEN	NATION CONTRACTOR OF CONTRACTOR	00010-0000-0
278	Panael 2	232932.977	170474 563	1082,161	2	6	West	- 4114Ci 2:0	232700 444	170474 563	No. 1995 State Sta	Vest	Stranger 100	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	3003036366966	der Services	L. DORDER MODELLA CON	4410 0050030	070 00000 042000 0222000 086	92930729998.9
279	Panel 2-	7 232846.332	171185.686	1083.332	10025	200 A 100	East	Panel 2-7	232846.332	171185.686	THE CONTRACTOR	ast	1083.332	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	NEW CONTRACTOR	in a state	unsentra Folier	The second	·2010年前日本市中国的市场中国的	(SIMPERATION)
280	And the standard second second	232614.789	170473.068	1083.332	2	7	West		232614.789	170473.068	W	Vest		0.000	0.000		No	NO CHANGE	NO CHANGE						
281	Panel 2-	8 232759.688	171181.145	1084.504	2	8	East	Panel 2-8	232759.688	171181.145	限派和法院和问题的是	ast	1084,504	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	1. 1. A. A. A.	and when the		以它们这边就是	的影响和高度影响。	655-66-06-+-
282	Startin March	232529.134	170471.573	1084.504	2	8	West	Daniel 2.0	232529.134	170471.573	NAMES OF STREET, STREE	Vest	1095 875	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	TO-OT-DENDIN	And the Street of	March 18 Buch . 103	ind month	NAL CONTRACTOR AND	CORDORATION AND IN CONTRACT
283	Panel 2-	232073.043	170470 078	1085,675	2	0	West	Caulo Seb	232443 479	170470 078	ngaaraa ahaana saaraa ah	Vest		0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	CONCERNMENT OF	Sara same tar	(SCOPE) Frisk Except	201201030538800	(2) 1011 1011 1012 1013 1013 1013 1013 1013	238-2811(2284)
285	Panel 2-	232586.399	171172.063	1086.847	2	10	East	Panel 2-10	232586.399	171172.063	C. S. DECK MANAGER	ast	1066.847	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	Contraction of the second	MC COLUMN		1453.5 633.638	ALC: THE REAL PROPERTY	品的公司的部分
286	AND COLOR CONTRACTOR	232357.824	170468.583	1086.847	2	10	West	an a	232357.824	170468.583	W	Vest	and the constants	0.000	0.000		No	NO CHANGE	NO CHANGE	The second second	Weiter is set to		114 10 101 114 1200	and could be many decision of a sur-	ARGA CIRCLES IN
287	Panel 2-	1 232499,755	171167,522	1088.018	2	2501.41	East	Panel 2-11	232499.755	171167.522	and an end of the set	ast	1088.018	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	a local states	語。自己的問		行动和新闻	1988年1989年1998年1998年1998年1	
288	The second of the descent and	232273.136	170470.061	1088.018	2	11	West	-	232273.136	170470.061	CANCERE OF THE STREET OF	Vest	1000 100	0.000	0.000	An Alteration whereas	No	NO CHANGE	NO CHANGE		Harridalanta	and the Second of	TANDATOON	LAT MINTSANA CUTAMON N	TTMP: Selandar
289	Panel 2-	232413.11	171162.981	1089,189	3	12	West	Panel 2-12	232413.110	170471 539	North Contraction of the Contrac	Vest	1069.169	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	Service Strength	all a station	oevine name in a		PROVING PROPERTY AND INCOME.	化生物化物化物化物
290	Panel 2-	232326 465	171158.44	1090.361	2/2	1255-133	East	Panel 2-13	232326,465	171158.440	AND AND AND AND A	ast	1090,361	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	5.355249.8089	Water and store		Service and the service of the servi	建设建设的建筑和 主要引起这些	的形式动物的
292	193 - 21 Aurilia - 4 1 Martin - 4 1 Aurilia - 1 Aur	232103.758	170473.018	1090,361	2	13	West		232103.758	170473.018	N	Vest	1-2	0.000	0.000	A	No	NO CHANGE	NO CHANGE	and a set of the product of	and how over 1 1 1 1		daniel Col. (Dellar	NUMBER AND	1
293	Panel 2-	14. 232239.821	171153.9	1091,532	2	14	East	Panel 2-14	232239.821	171153.900 .	E	ast	1091.532	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	TT IN DUCK	and the second second		No. Contraction	家族理想是最高大的意思	的目的
294	and research complete market	232019.069	170474.496	1091.532	2	14	West	Interior secondaria	232019.069	170474.496	No. Construction of the state	Vest	1000 700	0.000	0.000	with some same state	No	NO CHANGE	NO CHANGE	Contraction of March	and the same			The Little of the And Parket of State Arch	August August
295	Panel 2-	232153:1/6	1/1149.359	1092.703	2	15	West	Panel 2-15	232153,176	171149.359	Reports of the second of the s	Last Vect	1092.703	0.000	0.000	0,000	No. No.	NO CHANGE	NO CHANGE	30-7-14-14- 2 -16-1				AND ANAL STREET, AND AND	NAME NEWSCOCK
290	Panel 2-	231934.30	171144 818	1093.875	2	15	East	Panel 2-16	232066.531	171144,818	使用意义的问题。	ast	1093.875	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	S. Los York Market Res	10 11 12 10 VI	STREET, MARKED	TORNES	AREA AND AND AND AND AND AND AND AND AND AN	STREET, STREET
298	1910-00-01-01-01-01-01-01-01-01-01-01-01-0	231849.692	170477.452	1093.875	2	16	West	1.012312-0-45-00	231849.692	170477.452	V	Vest	111 11 11 11 11 11 11 12 D 18 D	0.000	0.000	1000000028.00000000	No	NO CHANGE	NO CHANGE	2.00 million (1997) # 2.000 (1996)				New Second Contraction Second S	And the straight
299	Panel 2-	231979.887	171140.277	1095.046	2	17 .	East	Panel 2-17	231979.887	171140.277		ast	1095.046	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	在中國有效的開始	Bin antizout				Constant Provident
300		231765.002	170478.931	1095.046	2	17	West		231765.002	170478.931	a service descent of the service of the	Vest	a line and a second	0.000	0.000	and the second states	No	NO CHANGE	NO CHANGE	A CONTRACTOR OF A CONTRACTOR	The second			And water states and a state of	Santo-Sector
301	Panel 2-	18 231893.243 231681 105	171135.736	1096.218	1000	18	East	Panel 2-18	231893.243	1/1135./36	Constitution and a second second	ast and	1096,218	0.000	0.000	0.000	NO	NO CHANGE	NO CHANGE	和政治的影響	With country		Context Sills	的人物的政治的方法的法定	San and a state of the state of
303	Panel 2-	231806 596	171131 195	1097 389	2	1000	East	Panel 2-19	231806 598	171131 195	252 (STUD) 01/00/	ast	1097-389	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	10123-0496-06	NO REAL PROPERTY			the post of the second second	经济济学校编程
304	on the second states at	231597.515	170487.704	1097.389	2	19	West	0.0.40275.640	231597.515	170487.704	V	Vest		0.000	0.000	and the second	No	NO CHANGE	NO CHANGE	ROAD THE PRACE	0.807/034006.000			Construction and an end of the design of	A CASE CONTRACTOR
305	Panel 2-	10 231719.953	171126.654	1098.56	2	20	East	Panel 2-10	231719.953	171126.654	and the second	ast	1098.560	0.000	0,000	0.000	No	NO CHANGE	NO CHANGE	國家自己當局	19 (19 Bar 19 19 19			in all the second second	
306	enter a constanting a constant	231513.079	170489.959	1098.56	2	20	West	in interaction	231513.079	170489.959	And the strength over the	Vest		0.000	0.000		No	NO CHANGE	NO CHANGE	Contractor and an and				an an an an and an	Concernment.
307	Panel 2-	231633.305	171122.114	1099.732	S15520	21	East	Panel 2-21	231633,309	1/3122.114	SHE TO BE RECEIPTION	Last	1099.732	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	的同時的政策的思想	China Source		Statistics of	而且使用的基础的问题。但是如	010-23-02830
308	Panel 2-	231546 66	171117 573	1100.903	2	22	Fast	Panel 2-22	231546.664	171117.573		ast	1100 903	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	e de agosta das	ditta la			NO TRANSFERRATION	53263330
310	ALCONTRACTOR NO.	231341.92	170487.44	1100.903	2	22	West	C. Strater Log	231341.922	170487.440	V	Vest	100 March 100 March 10	0.000	0.000	Courses and an and a start	No	NO CHANGE	NO CHANGE		(MAR) 124(200)	1810.99722 51.0.9574		2.0. 20129-002-0226/23.2012-0210	Concern de la la
311	Panel 2-	23 231460.02	171113.032	1102.074	2	23	East	Panel 2-23	231460.020	171113.032		East	1102.074	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	11-11-11-11-11-11-11-11-11-11-11-11-11-		的问题的注意的意	and the set	的國際國際部務部署主任法	Notice and
312		231256.87	170487.8	1102.074	2	23	West		231256.870	170487.800	NAL THE RELEASE AND AND A	Vest		0.000	0.000		No	NO CHANGE	NO CHANGE	and the second second	married and		The course of the	NO STATEMENT AND ADDRESS OF COMPANY	and and an and a state of the
313	Panel 2-	2313/3.3/3	171108.491	1103.246	2	24	East	Panel 2-24	2313/3.3/5	171108.491		Neet	1103,246	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE		State and Street	1.		の時期間の時間の目的にある	86-039-477 (1200)
315	Panel 2.	231172.10	171103 95	1104,417	5	25	East	Panel 2-25	231286,731	171103.950		East	1104,417	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	South Barrier	Sec. 20			100000 CONT. 24400	STATISTICS.
316	and the second second second	231089.313	170496.36	1104.417	2	25	West	11111111111111111111111111111111111111	231089.313	170496.360	V	Vest		0.000	0.000		No	NO CHANGE	NO CHANGE		"Freedown and a	the second se		COMMUNAL DISCOUNTS CONTRACT	Contract participants
317	Panel 2-	26 231188.17	171062.762	1105.589	2	26	East	Panel 2-26	231188.179	171062.762	國行動的對於此時間	East	1105.589	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	行动的正规的	國民黨黨黨	的思想的研究上的			2010年1月1日
318	NUM AND PARAMETERS	231013.00	170523.641	1105.589	2	26	West		231013.008	170523.641	her and the second second	Nest	4400 700	0.000	0.000	1	No	NO CHANGE	NO CHANGE	1000 00 405 900	in the second			the structure and the station	Participation in the second
319	Panel 2-	231088.60	171018.429	1106.76	2.25.2	27	East	Panel 2-27	231088.605	171018,429	alter alte	East	1106.760	0.000	0.000	0.000	No	NO CHANGE	NO CHANGE	10112 - 199 B	1227 Stor (15		1.1.2.2.2.2.0	ALL	会のお外部所

Underground Layout Configuration for LA 800-KMC-SS00-00200-000-000/ B VI 7/27/07 7/10/07 15 TL

Underground Layout Configuration for LA 800-KNDC-SS00-00200-00200 (1 7 L 7 27 (5)

VI-16

	2				Ŕ			N.	temark			N	a.	and a second
	- 12								E		See about the second			
	X		***			۰,		2	Detta Elev meters	(Calc - ULC)	Processon Processon		Delta Elev meters Check Sum	
	×						v		New Delta Easting melers	(Cale - ULC)	Mine Frie USD Mine Frie Mine Frie Mi		Delta Easting meters Check Sum	MOLTON CONTRACTOR
	M								lew Delta Northing meters	Ic - ULCLAT			Detta Northing metera Seck Sum	968.00 968.00 90.00 90.00 96.100 96.100
	>							-	alculated P Bevation meters	<u> </u>		4		
×	2								Calculated C EASTING E meters		MO CHANGE PR0 SHARE PR0 SH2 PR0 SH2 PR		Calculated EASTING melers	NO CHANGE NO CHA
	F								Calculated NORTHING meters		NO CANNOR ERO STATE ERO STATE ERO STATE ERO STATE ERO STATE		Calculated NORTHING meters	NO CHANGE NO CHANGE REAR NO CHANGE NO CHA
2	ø						V All and a set of the		Change Interded	(Delta North Delta East oriv)	**************************************		Change Intended (Delta North Delta East only)	<u>*************************************</u>
	æ						ang a		Detta	Inder:	1014010 14000640 140006408 140084		Delta Elevation Inters (ULCIA - ULC)	1006-003 10000000000000000000000000000000000
е ,	o							•	Delta Easting	(ULCLA - ULC)	e-MUD F10 e-MUD F10 e-MUD F20 e-MUD F20 e-MUDF		Della Easting meters (ULCA - U.C)	Experiment 201 Experime
	۵.								Della	(ULCLA - ULC)	119650 129650 129650 1295500 1295500 1295500 1295500 1295500 1295500 12955000 12955000 1295500000000000000000000000000000000000		Detta Northing meters ((ULCLA - ULC)	11,455,456 11,455,456 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556 11,555,556,556 11,555,556 11,555,556 11,555,556 11,555,556 11,5556
	0							,	Elevation	meters	0003410 000420 100420 1005275 000101 1004275 000275 0010000000000000000000000000000000000		Elevation meters	1007 200 1004 070 1004 070 1007 00 1007 00 1000 00 100000000
	z								Side of	E C	Vees Construction		Side of Drift	C. Mark C. Wash F. Wash F. Wash Mark Wash Mark K. Wash Mark K. Mark K.
	W						-	From Table 10 - Panel 1 Underground Layout Configuration	for LA (800-MMC-SS00- 00200-000-00Aa Easting	meters	IL CADA IL CONTRACTORIA IL CON	From Table 12 - Panel 3 Underground Layout Configuration	for LA (500-KMC-SS00- 00200-000-004a Easting meters	1744 766 1774 766 1774 766 1774 766 1774 766 1775 166 1776 176 1776 176 176 176 176 176 176 176 176 176 176
	1								Northing	melers	4122.276 4122.276 4122.276 4122.421 4124.421 4122.421 412		Northing	500 2017 4010 2018 2017 4010 2018 2018 2018 2018 2018 2018 2018 2018
	×		10	kee sineel 3	See sheel 3	ioe sheel 2	lee sheet 2		Label		3.22W 3.22W 3.22W 3.22W 3.22W 3.22W 5.20W 5.22W 5.20W		- Television	 3.1 3.2 3.2 3.2 3.4 3.4
	~			E	E	E	ε		Zone		East West West West East West East East West East West East West East West East West East West		Zone	
	I			86.643	4.5408	8.071	24.641		Panel	l	N		Panel Drift	
	o								Elevation	meters	(0613.119 (0613.01) (0613.		Elevation meters	002.339 003.201 004.021 004.021 004.021 004.021 004.021 005.02
	u.								Easting	melers	110,0057,11 110,0054,246 110,0054,246 110,0054,246 110,0054,246 110,0054,246 110,0054,005 110,0055,0055		Easting	171066779 17106270 171062011 171062011 171062011 1710601 1710601 1710601 1710601 1710601 1710601 1710601 1710601 1710601 1710601 171060 1710000000000
	u)								Northing	meters	an 132, 270 21253, 200 21253, 200 210, 200, 200, 200, 200, 200, 20		Northing	2012 0000 2010 2011 2010 2010 2010 2010
		N PER	HING PER	(81 m)	NG PER [(81 m)	3 CAUSED	CAUSED BY	Area dinates,	oco-coE)		NRANANANANANANANANANANANANANA O 0 0 5 1 1 1 1 1 1 1	Area dinates,	oto-ooE)	
	•	CHANGE IN ELEVATION	CHANGE IN THE NORT	EMPLACEMENT SPACE	CHANGE IN THE EAST EMPLACEMENT SPACE	CHANGE IN NORTHING BY 80 FOOT OFFSET	CHANGE IN EASTING C	From Table III. Primary Bounding Endpoint Coon Panels 1,2,3 and 4	Underground Layoug Co (800-POC-MGRR0-00100-		Accession of the second	From Table III. Primary Bounding Endpoint Coor Panels 1,2,3 and 4	Underground Layoug Co (1600-POC-MGR0-00100- Label	

EXCEL SPREADSHEET . ALTERNATIVE ENDPOINT CALCULATION -SHOW FORMULAS

Underground Layoul Conliguration 1 800-KMC-SS03-3020-000

•

						America di Americ
		Detta Elev	Context and an an analysis of the second and an analysis of the second and an analysis of the second and analysis of the sec		Delta Delta matero	One with Constant of the second seco
		Delta Easting	meters Check Sum associate		Delta Easting maters	Create Sum Create Sum
		Delta Northing	Cmetters metters autocrtos autocrtos autocrtos autocrtos autocrtos autocrtos autocrtos autocrtos autocrtos autocrtos autocrtos	2	Detta Northing	Oest sun Autor Sama Autor Sa
		Calculated EASTING	milles setter all all all all all all all all all al		Calculated EASTING	American Strength Str
		Calculated NORTHING	mens Elsista SElsista SESSA SE		Calculated NORTHING	MARKA MORENAL MOREN
		Change Interded	Data benth Data benth Search S	-	Change Intended (Data North	Laurenteenteenteenteenteenteenteenteenteent
		Deta Elevation	(ULM-ULC) +-08-05 +-08-05 +-08-05 +-08-05 +-08-05 +-08-05 +-08-05 +-08-05		Detta Elevation matera	0.003.010 9.001100 9.001100 9.001000 9.001000 9.0010000 9.0010000000000000000000000000000000000
		Delta Easting	(ULL). ULC) (ULL). ULC) PHORE FOR PHORE FOR FOR FOR FOR FOR FOR FOR FOR FOR FOR		Delta Easting melera	
		Detta	Chick An uncollege (1) Chick An uncollege (1) Second and a second a secon		Delta Northing	
-		Elevation	1065.22 1065.22 1065.301 1067.853 1061.077 1062.248 1062.248 1062.248		Elevation	200 1001 1001 1001 1001 1001 1002 1000 1000
		Side of		2 	Side of Deal	Random San
1	From Table 12 - Panel 3East Underground Layout Configuration	for LA (800-1940-5500- 00200-000-004a Easting	mates 7117081004 7116081004 7116081053 7116081053 711608105 71109810 71170810 71170810 71170810 71170820 71170800000000000000	From Table 13 panel 3 West Underground Layout Configuration	for LA (800-KMC-SS00- 00200-000-004a Easting	Reads Re
		Northing	meters 34000 209 35121 419 35121 419 35121 419 35021 859 35021 859 34021 852 34031 852 34031 852 34031 852 34031 457 34411 91 34411 91		Northing	11000000000000000000000000000000000000
		Label	3-126 3-136 3-146 3-146 3-166 3-176 3-176 3-176		Label	VILE 2010 2010 2010 2010 2010 2010 2010 201
		Zone			Zone	Mean Need Need Need Need Need Need Need Nee
		Paret Drift			Panel Drift	
		Elevation	Miles 2005 22 2005 22 2005 20 2005 20 2005 20 2010 77 2010 70 2010 70 2000 70 2000 70 2000 700 70 2000 700 700 700 700 700 700 700 700 700		Eevalion	10000000000000000000000000000000000000
		Easting	meters 171662 2014 171662 2014 171662 2014 171662 2015 171652 2015 171751 2015 2015 2015 2015 2015 2015 2015 20		Easting	1706.0125 1706.0125 1706.0125 1706.0125 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1706.012 1707.010
		Northing	malers 1990 147 1419 1990 1417 1419 1990		Northing	614 2000 2000 2000 2000 2000 2000 2000 20
	ble III. Primary Area 5 Endpoint Coordinates. 2.3 and 4	und Layoug Configuration 2:MGR0-00100-000-00E) Labet		ble III. Primary Area 1 Endpoint Coordinales, 2.3 and 4	und Layoug Configuration C-MGR0-00100-000-00E) Laber	

EXCEL SPREADSHEET -EXCEL SPREADSHEET -ALTERWATIVE ENDPOINT CALCULATION -SHOW FORMULAS

_	0			-	1.0	1 5	- N						E C	M N	R	. 5		0	V	W	X	Y		7	
138 139		Carl Constraints	10					N		2		18				· · · · ·						1.00	-	6	
140			a a				v																		
																							1		
	Bounding Endpoint Coordinates,								West - co	ntunied															
142	Panels 1,2,3 and 4								Undergrou	nd Layout							<i>\$1</i>					ν.,			
2	Understand Lances Oreforenties								Configuration	for LA (800-			60												
143	(800-POC-MGR0-00100-000-00E)								004	(a)													-		
144	< 100	Manhaire	Fastles	Florentee					-		0 1 1	-	Delta	Delta	Delta	Change	Calculated	Calculated		Delta	Delta	Delta	0 C		
146	Laber	meters	melers	meters	Panel UI	niti 20ne	Laber	meters	met	ers	Drift	meters	meters	meters	Elevation meters	(Delta North	NORTHING meters	EASTIING		Northing meters	Easting meters	Elev			
148					· · · · · · · · · · · · · · · · · · ·			a a se a		Care - Difference -	1.500		(ULCLA - ULC)	(ULCLA - ULC) (ULCLA - ULC)	Delta East only)	2 3 3 3			Check Sum	Check Sum	Check Sum			
150	Service and the service of the servi	234912.075	170728.177	1052.877	3 13	West	2-2-3-13W	234912.075	170728.177	1999-1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	West	1002.8/7	=+L150-E150 =+L151-E151	=+M150-F150 =+M151-F151	#+G150-O150	Yes	NO CHANGE	NO CHANGE		#+L150-T150	**M150-U150	=+IF(O150=",",O150-G11 =+IF(O151=",",O151-G11	50), 51)		995
153	3-14W	235012.444 234825.43	171209.207 170723.637	1054.049	3 14 3 14	West	3-14W	235004.373	171274.365 170723.637	Bara Dittoria Bib	East West	1054.049	=+L152-E152 =+L163-E153	=+M152-F152 =+M153-F153	#+G152-D152	Yes No	**E152-SIS8 NO CHANGE	=+F152-\$I\$9 NO CHANGE	MARTIN .	=+L152-T152	*+M152-U152	=+IF(0152=",",0152-G1 =+IF(0153=",",0153-G1	52)	10 1 J. S.	122
155	3-15W	234925.799 234738.766	170719.096	1055.22	3 15 3 15	West	-3-15W	234917,728 234738.786	171269.825	erve / serve	West	1055.22	=+L154-E154 =+L165-E155	#+M154-F154 =+M165-F165	#+G154-O154	Yes No	#+E154-\$1\$8 NO CHANGE	#+F154-\$I\$9 NO CHANGE	palatera (* 1994)	=+L154-T154	#+M154-U154	=+IF(0154=",",0154-G1 =+IF(0155=",",0155-G1	54)	後にやりの創	信章
156	3-10W	234839.155	1/1290-125 170714.555	1056.391	3 16 3 16	West	3-16W	234831.084	171265,284 170714.555	NARGAR SE	West	1055.391	=+L156-E156 =+L157-E157	=+M156-F156 =+M157-F157	#+G156-O156	Yes No	#+E156-SIS8 NO CHANGE	#+F156-SIS9 NO CHANGE		=+L156-T156	**M156-U156	=+IF(0156=",",0156-G1	(6)	so el signat	南省
158 159	3+17W	234752.51 234565.497	171285.584	1057,583 1057,563	3,	West West		234744,439 234565,497	171260.744 170710.014	and the second second	East West	1057,563	##L158-E158 ##L159-E159	++M158-F158 ++M159-F159	=+G158-O156	Yes	H+E158-\$I\$8 NO CHANGE	=+F158-SIS9 NO CHANGE		=+L158-T158	#+M158-U158	=+1F(O158=",",O158-G1	58)	947 - SP#G	淵靜
160	3.18W	234665.868	171281.043	1058.734 1058.734	3 18 3 18	West West	3-18W	234657.796 234478.853	171256.203	Anner 1992	East West	1058.734	=+L160-E160 =+L161-E161	**M160-F160 =+M161-F161	#+G160-O160	Yes No	E+E160-SIS8 NO CHANGE	+F160-SIS9 NO CHANGE	动物物动物的 ->	≅+L160-T160	**M160-U160	#+1F(O160=", O160-G1	50)	S. 277.978	534
162	3-19W	234579.222 234392.207	171276.503 170700.933	1059.905	- 3 19 3 19	West West	3-19W	234571,151 234392.207	171251.662 170700.933	BIERRE ARE	East West	1059 905	=+L162-E162 =+L163-E163	=+M162-F162 =+M163-F163	a+G162-O162	Yes No	=+E162-SIS8 NO CHANGE	+F162-\$I\$9 NO CHANGE		=+L162-T162	=+M162-U162	=+IF(O162=")",O162-G1	2) and solid and	an in prising	100
164	3-20W	234492.578 234305.564	171271.962 170696.392	1061.077 1061.077	3 20 3 20	West West	3-20W	234484.507 234305.564	171247,121 170696.392	Mental Printing	West	1061.077	=+L164-E164 =+L165-E165	=+M164-F164 =+M165-F165	=+G164-O164	Yes No	=+E164-SIS8 NO CHANGE	NO CHANGE	中的有效。但如何是	=+L164-T164	=+M164-U164	=+IF(O164=",",O164-G1	(4) (5)		2003
166	3-21W	234405,934 234218,92	171267.421 170691.851	1062.248	3 21 3 21	West West	3-21W	234397/863 234218.92	171242.58 170691.851	and the second of the	East West	1062.248	=+L165-E166 =+L167-E167	=+M166-F166 =+M167-F167	=+G166-O166	Yes No	E+E166-SIS8 NO CHANGE	NO CHANGE	認得受視的影响。	=+L165-T166	=+M166-U166	=+IF(O166=",",O165-G1	96) 171	1 - 5 - 7 - 6 MA	125
168 169	3-22W	234319.29 234132.276	171262.88 170687.31	1063.419 1063.419	3 22. 3 22	West West	3-22W	234311.219 234132.276	171238.04 170687.31		East West	1063,419	=+L168-E168 =+L169-E169	=+M168-F168 =+M169-F169	#+G188-O168	Yes	#+E168-SIS8 NO CHANGE	#+F168-\$I\$9 NO CHANGE	的形态。在自己	=+L168-T168	=+M168-U168	=+1F(0168=",",0158-G1	58)		and a
170							1													l,					
172							1			s			f				1			î x					
	From Table III. Primary Area								From Table	14 panel 4										6					
173	Panels 1,2,3 and 4								Undergrou	nd Layout															
	*						1997		Configuration	for LA (800-															
174	Underground Layoug Configuration (800-P0C-MGR0-00100-000-00E)	6							KMC-SS00-I	00200-000- la)															
175	Label	Northing	Easting	Elevation	Panel Dr	nit Zone	Label	Northing	East	ling	Side of	Elevation	Delta	Delta Easting	Delta	Change	Calculated	Calculated		Delta	Delta	Delta			
177		meters	melers	meters				meters	met	ers	Drift	meters	meters (ULCLA - ULC)	meters (ULCLA - ULC	(ULCLA - ULC)	(Delta North Delta Fast only)	meters	melers		meters Check Rum	meters	meters			
179	Panel 4-1	236042 732	171052.509	1038.822	4 1	East	Panel 4-1	238042.732	171062,509	5.0570.000.00	East	1038.822	=+L180-E180	=+M180-F180	=+G180-D180	No color	NO CHANGE	NO CHANGE	ende in de coge	A State State	AND	net provision of the pr	Sales Careros a	2 No. 22 August August 1994	
181 182	Panel 4-2	235910.955 235943.937	170656.939	1038.822	4 1	West East	Panel 4-2	235910.955	170656.939 171020.573		West East	1039.993	=+L181-E181 =+L182-E182	=+M181-F181 =+M182-F182	#+G182-O182	No No	NO CHANGE	NO CHANGE	an again an	Chief Street Bank	r og som en som en og som en og som en s Som en som en		910) 910	on estimation de la Constante Maria a constante de la Constant	sinter.
183	Panel 4-3	235759.426 235845.143	170452.704	1039.993	4 2 4 3	West East	Panel 4-3	235759.426	170452.704	19. N	West East	1041.164	=+L183-E183 =+L184-E184	=+M183-F183 =+M184-F184	=+G184-O184	No No	NO CHANGE	NO CHANGE	CARACTERIA	0.600.000.000	กลาย 250566020คน การขณะสุทธรรมส์ของรุ	South Carls Contraction of the		The second second	26.00
185	Panel 4-4	235659.733 235746.348	170408.004	1041.164	4 3 4 4	West	Panel 4-4	235659.733	170408.004	19	West East	1042 336	=+L185-E185 =+L186-E186	=+M185-F185 #+M186-F186	#+G186-O186	No No	NO CHANGE	NO CHANGE	k sontan larina.	Service and the service of the servi	an na manana ang a	andra and a season parts a	en andre en	non antropying	-000
187	Panel 4-5	235560.938 235647.553	170365.068	1042.336	4 4 4 5	West East	Panel 4-5	235560.938	170366.068	House Barry	West East	1043,607	=+L187-E187 =+L188-E188	=+M187-F187 #+M188-F188	+G185-O183	No No	NO CHANGE	NO CHANGE	8 1. : 1. : 1. : 1. : 1. : 1. : 1. : 1.	AU 2011 - 1994	hotostatis valias	ng transformer som			and:
189	Panel 4-6	235462 144 235548.758	170324.132	1043.607	4 5 4 6	West	Panel 4-6	235462.144	170324.132	ist - story as	West East	1044.678	=+L189-E189 =+L190-E190	=+M189-F189	=+G190-O190	No No	NO CHANGE	NO CHANGE	Gine and address	and the second sec	one of the second second	n an an the second s	ese a la composición de la composición Esta de la composición		10.03
191 192	Panel 4-7	235363.349 235449.963	170282.196 170810.894	1044.678	4 6 4 7	West	Panel 4-7	235363.349 235449.964	170282.196		West	1045.85	=+L191-E191 =+L192-E192	=+M191-F191 =+M192-F192	=+G192-O192	No No	NO CHANGE	NO CHANGE	televen and an	an and the second	naneson Staggers	en de la contra de la companya de la contra d A contra de la contra			
193 194	Panel 4-8	235264,554 235351,169	170240.28 170768.958	1045.85	4 7	Wesi	Panel 4-8	235264.554 235351,169	170240.26 170768.957	1950 67840 425	West East	1047.021	=+L193-E193 =+L194-E194	=+M193-F193 =+M194-F194	=+G194-O194	No No	NO CHANGE	NO CHANGE	e en en san saint san sa Segunda se segunda se segunda se segunda se segunda segunda segunda segunda segunda s	nen sin kener Na sin kener	and the state of the state	nan an tha shirt an ang ang an	ananan in 1916. Salaman		100
195	Panel 4-9	235165.759	170196.324	1047.021	4 8	West East] Panel 4-9	235165.759 235252.842	170198.324 170728.461		West East	1048,192	=+L195-E195 =+L196-E196	=+M195-F195 =+M190-F196	s+G196-O194	No No	NO CHANGE	NO CHANGE	2014 - Colorador - 2		ann stainistiks 2010-10 an taitean	na sente antanti en la	650.00		
197 198	Paned 4-10	235061.884 235155,124	170140.754 170689.838	1048.192	4 9 4 10	West East	Pane;14-10	235061.884	170140,754	1924 - T. AN	West	1049.353	=+L197-E197 =+L198-E198	=+M197-F197 =+M198-F108	=+G198-O198	No No	NO CHANGE	NO CHANGE		e o si sus en conserva disel	antipatione service	en ander ander ander andere andere An andere and	1993 99 - 1997 9 1997 99		
199 200		234973 145	170129.767	1049.363	4 10	West	1.0.00000000	234973.145	170129.767		West		=+L199-E199	=+M199-F199	and the second sec	No	NO CHANGE	NO CHANGE			terinting in the Re-	150 WARD DO HARDON AND D	686 (D)		1.88
201 202																				10 m			1		
-																		-							

EXCEL SPREADSHEET -ALTERNATIVE ENDPOINT CALCULATION -SHOW FORMULAS

.

Underground Layout Configuration for LA 800-KMC-SS00-00200-000-000/B VI-1/27/67

STATISTICS NO. 12 AND IN

 $V_1 - 19$ Underground Layout Configuration for LA BOO-MAC SSE0-00020-000-000 $V_1 - 120$

.

			はないになっていたい !!	State Party of the second	BREAK BOLLON		ののないであるという	國際國際部分的小市	and the production of the second	Barriston Contraction of the	「日本市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市市	のないないないというであるというという			中国語の時間になっていたというです。	「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」	市場を見たないというという	Contraction of the state of the			新聞の 高市の にってい へい				c1 m verified by inspection	
	a		17	e de la competition de la comp	1.000	and the second	1 4	and the second	の語言の学		12	No. Par			*			10	12	10			5	66	1) C Diff	-
	а А.	Deta Eev Check Sum	State Nation Stores	2010/2010/2010/2010 7.20	- Martin States and St	、工業に設定的なな思想	いたないないないのはないない	一日の日本の日本に行いたのが知	* STATEMAN STREET	二月になったというというななない	Constant of the second second	South and the second states of the second se	able hersteren bereiten ber here.	1. HARRING STREET, STR		*+IE(O236+",",O236-G23	**IF(0238=", 0238-623	*+IF(O239***, *, O239-G23	+IF(0241=",",0241-G24	* IF(0242* 0242-G24	+IF(0244=",",0244.G24	*+IF(0246=***,0246-G24	=+IF(0247=",",0247-G24	+IF(0249= 0249-024	*+IF(0260=",",0250.G25 *+IF(0261=",",0251.G25	
		Delta asting sekers ck Sum	1-change	「古田市市市	記念的なお	STRANSFORMANCE	行いたの時間に	記法がたいい	Second and	関連の時間	ないのである	市内市地の市内	Construction of the	Sectored and	14-U234	96-U236	38-U238	The Danse		12-U242	44-U244	46-U246	and the second se	45-U248	50-U250	
			nge Pos	のなななない	通び見たる	Statistics.	な法律的法的	SHOWER STORE	民ないのという	調査にはいえた	なたの日本について	ABATEL COURSE	Contraction of the second	Crement Colors	M THING	ZW+= 90	SM+=	Circles		42 =+M2	44 =+M2	2W+= 98		2W+= 95	2W+4 05	
		Delta Northin meters Check S	Post-cha	ACLARACE ST	「「「「「「「「」」」」	市政の変化の	からのないの	Stational Station	an Property	ののは彼らのな	時間記法語	Construction (Construction)	Contraction of	Very VERY NO.	#+L234-T2	=+1236-72	=+1238-72	a+1240-T2		=+L242-T2	=+L244-T2	=+1246-72		21-24271-	=+L260-T2	
			Print Contraction	「見たいと気話	日本にないたい	のないでのない	なからいというといろ	Sar Support	出たのないの	のないとの事業	ないないのないのないのない	Substantine sub	196 No. 7 . 50 C - 40 C		ないたわけのは彼	SPROBLES.		Surger Contract			ARI STAFA				gen turculu le	
		Calculated EASTIING molers	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	NO CHANGE	=+U234-SIS7	1515-9620+=	NO CHANGE	NO CHANGE	NO CHANGE	=+U242-\$157	=+U244-SI\$7	NO CHANGE	NO CHANGE	=+U248-SI\$7 NO CHANGE	
		Aculated DRTHING meters	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	CHANGE	556	500 M	CHANGE	CHANGE	SISS CHANGE	\$156	SIS6	CHANGE	CHANGE	SIS6 CHANGE	
		5 <u>5</u> -	ONICIAL	ON	ON THE PL	ON State	ON TAL	ON LOS	ON STATE	ON	ON STO STO	ON	ON ON	2 2	NO NO	+T234	a+1236	NO 1238	Q	#+T240	=+T242	=+T244	Ŷ	ON	=+ T248 NO	
		Change Intended (Delta North Delta East only	States No. 200	9 4	CLARK CONTRACT	SUSAN No.	States No. 3 al	No. No. 1916	No.	No. ON COMPANY	No No	22	2	2	No	State New York	A STATE AND A STATE OF A	No Parallel Version	2	even of the second	A Startes	Study of the study	₽;	Sec. 1	Yes	
Ÿ		Detta Elevation meters (ULCLA - ULC)	+G212:0212	=+6214-0214	=+G216-0216	=+G216-O218	+6220.0220	a+G222-O222	#+G224-0224	+6228-0228	*+G228-0228	*+G230-0230	STOCIOLOGY		=+6234-0234	=+G236-O236	=+G238-O238	CONTO240		===G242-O242	»+G244-0244	=+G246-O246	The second s	0100000000	=+G250-0250	
		Delta Easting meters (ULCLA - ULC)	+M212-F212	**************************************	+M216-F216	+M218-F218	•M220-F220	+M222+222	**************************************	+M226-F226	-+M228-F228	++M229-F229	*+M231-F231	+M233-F233	**M235-F235	+M236.F236	+M238-F238	**M239-F239	=+M241.F241	=+M242-F242 =+M243-F243	=+M244-F244	**************************************	=+M247-F247	=+M249-F249	**M250-F250 **M251-F251	
		Detta Northing meters ULCLA - ULC)	L212-E212	L214 E214	1216-E216/1 []	1216 6218	L220-E220	1222-E222	L224-E224	L226-E226	L228-E228	L220-E220	1231-6231	L233-E233	L235-E235	L236-E236	L230-E236	L240-E240	L241-E241	L242-E242	L244-E244	1246-6246	1247-E247	L249-E249	-L261-E250	
		Elevation	050.636	001 100	062.877	064 049	056.22	056.391	067,563	068.734	069.905	061.077	and and card		063,419	064.69	005.762	066 933		068.105	069.276	070.447	10	a 21011/0	et 210	
		Side of Drift	East 1 Con	East 1	East/ C	East	East of the	East 1	Kest East	East 1	West East 1	West East	West	West	West	East 1	East 1	West East	West	West	East	East	West	West	West	
m Table 14 panel 4 Vest - contunied nderground Layout	guration for LA (800- C-SS00-00200-000- 00Aa)	Easting melers	6.207 Projecto (Chicada No.	0.756	62150-501-00126-0766	1.674 3.6	THE REPORT OF STREET	2.592	8.062 07.07 40.0 10.0 10.0 10.0	3,511 (40 (40 (40 (40 (40 (40 (40	0.44 8.67	0.899 4.429	107.14	1111	15,348 18,356	209.00	02.200	12.847	20.092	87,164. 27,338	2.644	38.103	55.429	192	96.315	
5.2	Son		12061	17061	90/1	1706	10011	1706	10/1	C.R.C.R. 106	1706	1706	1700	0021	1700	1706	1706	1021	1701	1705	1706	1706	1021	1702	1705	
		Northis meter.	235068 48	234981.835	234895 191	234808.547	234721.903	234635.258	234548.614	234461.069	234375.325	234193.346	234106.823	234023 727	233940.912	234028 748	233942 103	233775.283	233692.457	233768.814 733609 663	233682.17	233595,525	233448.442	233378.792	233422.00	
		Label	Panel 4.11	Panel 4-12	Panel 4-13	Panel 4-14	Panel 4-15	Panel 4-16	Panel 4-17	Panel 4.18	Panel 4-19	Panel 4.20	Down 200		Panel +22	Panel 4-23	CPanel 4-24	Pariet 4.25		Panel 4-25	IPanel 4-27	Panel 4.26		17-14 HUR-R	Cenet 4:30	
		Zone	East	East	East	C. East	East S	East	Vest	East	West East	West	West	West	West	East	East	West	West	West	East	East	West	West	West	-
		uu n	State Const	: 2 :	NON-LINE	Contraction of the	CONSTRUCTION	10 CE 200	94	CACUSCIE (CACUSCIE)	18	19	20	21	22	0.23 COLO	124	24	31	88	12.01	28.7	28	28	88.	
	÷	on Pare	and a state	EP BASE	States and the	Self-Base	STATES	時間を行うが出	「「「「「「」」」	の時間にお	ADDARDA	4	4	4		日本の回知	SELECTION OF	COLOR NEWS	4	4.4.100	Section Section	(A. 4 (A.)) (A	4	4 4		
		Elevali meleri	1050.535	1051.706	1062.877	1054.049	1056.22	1056.391	1057,563	1068.734	1058.734	1059.905	1061.077	1062 245	1063 419	1064.59	1065.762	1065.762	1066.933	1068 105	1069.276	1070 447	1070.447	1071,618	1072.79	
145	8 •	Easting meters	170685 297	170680.756	170676 215	170671.674	170667.133	170662580	170102 522	170653.511	170093.441	170088.9	170084.731	111.160071	170038,061	170654237	170649.696	170112.847	170120.092	170640,615	170630.074	170640.076	170155.429	261 E020/1	170660.645	
		Northing meters	35068.48	34981,835	161 06046	24808.547	134721.902	34635,256	34453 28	34461,069	234279.982 134375.325	742581.081	234106.823	134023.727	234116.274	34036.36	130949.716	233775.283	133692.467	233776.427	232689.782	133606.914	733448.442	261.070002	233442,259	
Table III. Primary Area ting Endpoint Coordinates. s 1,2,3 and 4	pround Layoug Configuration PoC-MGR0-00100-000-00E)	Label	10300 Panel 4.11	All Panel A-12	Renet 4-13	Panel A-14	Panel 4-15	2000 Parel 4-16 10 10 10 10 2	Persit 417	2.1.2. Parel 4.18	Cold Parel 4:19 0	2	2	2	Panel 4.22	Panel 4.23	Panel 4.24	Contraction Scienced and and	Contraction of the second seco	Panel 4.25	Eanel 4-27	Panel 4-26		2	Parel 4-30	

EXCEL SPREADSHEET ALTERNATIVE ENDPOINT CALCULATION -SHOW FORMULAS

۰.

EXCEL SPREADSHEET -ALTERNATIVE ENDPOINT CALCULATION -SHOW FORMULAS

D	E	F	G	н	1	J	ĸ	L	,	4	N	0	P	Q	R	S	Ť	U	v	W	X	Y	Z
257 From Table III. Primary Area Bounding Endpoint Coardinates, 258 Panets 1,2,3 and 4									From Laber West - C Undergrou Configuration KMC-SS00	ontunied and Layout for LA (800- 00200-000-			ж.,			36 R	-					180 (180	0.
259						- 1											1 -			1			
34													12										
						- 3																5	
261 (800-POC-MGR0-00100-000-00E)														(45)) 10707-			10000 100 11						
262 263 Label	Northing	Easting	Elevation	Panel	Drift	Zone	Label	Northing	East	ling	Side of	Elevation	Northing	Easting	Elevation	Inlended	Calcutated NORTHING	Calculated EASTIING		Delta	Delta Easting	Delta Elev	
264	meters	meters	meters					meters	me	lers	Drift	meters	(ULCLA - ULC)	(ULCLA - ULC) (ULCLA - ULC	(Delta North Delta East only	meters	melers		Check Sum	meters Check Sum	melers Check Sum	
266 267 Panel 2-1	233366,199	171212.931	1076.304	2	241725	East	arPanel 2-1	233366.199	171212.931		East	1076 304	=+1,267-E267	=+M287-F287	*+G267-O267	to a station North the	NO CHANGE	NO CHANGE	1.000000.000	12.000000000000000000000000000000000000	CARGONAL TOPOLOGICA	ant an actual and	A DER MANDAGE AND
268 269 Panel 7.7	233138.688	170512.724	1076.304	2 1	Statistics	West	Panel 2-2	233130.468	170487.425	anna an su	West	- 1077.478	=+L268-E268 =+L269-F269	=+M288-F268 =+M289-F269	+G289.0289	Yes	=+E270+I6	=+F270+I7	Elimeter David	#+L258-T268	=+M268-U268	=+IF(O268=",",O268-G268)	story, the contract statement and
270 171	233043.824	170482.884	1077.476	2 2	restricted	West	E Parel 2.3	233043.824	170482.884	ante ante de	West	1078 647	=+L270-E270	=+M270-F270		No	NO CHANGE	NO CHANGE	esta hi visilande an	n ward warden	an a teachean the states of the second	nan senara se ante ante a senara se a senara se a senara se a senara se se a senara se se a senara se se a sen Reference esta se a senara se se a s	 A second constraint of the second s second second seco
272	232957.408	170479.049	1078.647	2 3	NO. ARCTING	West	Dennel 2 4	232957.408	170479.049	Arenterizzi	West	1070 818	=+L272-E272	=+M272-F272	- COTTOTT	No	NO CHANGE	NO CHANGE	e pare constanting	Contraction of the second	1212-2016-0422-040 04562-052-042-0440-040	CONTRACTOR AND	- 2 - Contractor allowed attacks
274 274	232871.754	170477.554	1079.818	2 4	10	West	ET and Ere	232871.754	170477.554		West	. Ioneoro	=+L274-E274	=+M274-F274	Security Security	No	NO CHANGE	NO CHANGE		P) + 0.1073 + 0.99239473	2017-0057E3/1220236302	Billion and a second second second	STATISTICS COMPANY
275 Panel 2-5	233019.821 232786.099	171194 767 170476.058	1080.99	2 5	Ed Contrait	West	Panel 2-5	232786.099	171194.707 170476.058	ogen med ogen	West	1060.89	=+L275-E275	=+M276-F276	#+G275-O275	No	NO CHANGE	NO CHANGE	and the second second	C. H. C.	(1)发展的运行的 (1)	的。 在1995年1月1日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日	E - I - I - I - I - I - I - I - I - I -
277 Pan4el 2-6	232932.977 232700.444	171190.226 170474.563	1082.161	2 6	2.72-153	West	Paniel 2-6	232932.977 232700.444	171190.226 170474.563	NUMPERSON	West	1062,161	=+L277-E277	=+M277-F277 =+M278-F278	#+G277-O271	No	NO CHANGE NO CHANGE	NO CHANGE NO CHANGE		目的短期的理解	1961.18.2.4	國際的 人名法加尔尔 计	Construction of the South State State
279 780	232846.332	171185 686	1083.332	2 7	P. Hall	East	Panel 2-7	232646.332	171185 688	教授的研究 指	East West	1083.332	=+L279-E279 =+L280-E280	=+M279-F279- =+M280-F280	=+G279-O273	No No	NO CHANGE	NO CHANGE		目的自己的意思。		Britten and Arthon Argan	なったとなり、「「「「「「」」」
281 Panel 2-8	232759.688	171181 145	1084.504	2	10日12月	East	Panel 2-8	232759.688	171181:145	建物和网络制度	East	1084.504	=+L281-E281	=+M281 F281	=+G281-O281	No	NO CHANGE	NO CHANGE	自然的时候	11/18/11/18/12	和超短期的短期	新始点、100%的保護 的保护的	一次以下以此同時國際國家
263 Panel 2-9	232673.043	171176 804	1085.675	2	Reserved.	East	Panel 2-9	232673.043	171178.604	的情况的影	East	1085.675	=+L283-E283	**M283-F283	** =+G283-O281	No	NO CHANGE	NO CHANGE	的现在分词相应的			的同意的意思。	1997年1月1日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日
285 Panel 2-10	232506.399	171172.063	1005.847	的影響的語	0	East	Panel 2-10	232506 399	171172.063		East	1086.847	=+L285-E285	=+M285 F285	=+G285-O285	No. Phi	NO CHANGE	NO CHANGE		的新闻的建筑建筑			
286 287 Panel 2-11	232357.824 232499.755	170468.583	1088,018	2010		East	Panel 2-11	232357.824 232499.755	170468.583	2510 H A	East	1088.018	=+L280-E280 =+L287-E287	=+M280-F286 =+M287-F287	=+G287-O28/	No No	NO CHANGE	NO CHANGE	8137433348	RANGE STREET	Data sector		and strengthened provident
288 289 Panel 2-12	232273.136 232413.11	170470.061	1088.018	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1	East	Panel 2-12	232273.136 232413.11	170470.061	Burging and	East	1089.189	=+L288-E288 =+L289-E289	=+M288-F288	=+G289-O283	No No	NO CHANGE	NO CHANGE		a lating a designed	TANGAR AND	and the second second	The Company of the States
290 291 Panel 2-13	232168.445	170471.539	1089.189	2 1	3	West East	Panel 2-13	232188.445	170471.539 171158.44	STREES IN THE	West East	1090,381	=+L290-E290 ++L291-E291	=+M290-F290 =+M291-F291	=+6291-0291	No No	NO CHANGE	NO CHANGE	SALES CENTRE	0025333257		BREAK STRUCT	
292 293 Papel 2-14	232103.758	170473.018	1090.361	2	3 ACE-CHARGE	West	Panel 2.14	232103.758	170473.018	odome ten	. West East	1091.532	=+L292-E292 =+L293-E293	=+M292-F292	*+6293-0293	No No	NO CHANGE	NO CHANGE	R. STREET, DESCRIPTION	ALCONTRACTOR	PARAMAN TRADUCT	RECEIPTION CONTRACTOR AND C	and the second second states of the second states
294 205 Panel 2,15	232019.069	170474.496	1091.532	2 1	4	West	Pagel 2.15	232019.069	170474.496	tana ang tang ta	West	1092 703	=+L294-E294	#+M294-F294	B40205-0203	No	NO CHANGE	NO CHANGE	Scharge, of Stated	n and a statistical	0.001799429560.0000 694660201602577,308.	alandra na sen de la serie de la serie La seguera de la serie de la	and a second
296	231934.38	170475.974	1092.703	2	15	West	Direct 2 16	231934.38	170475.974	allen and an	West	1003 875	=+L296-E296	=+M296-F296		No	NO CHANGE	NO CHANGE	ospanie natelie Opratorie natelie	AND ALL AND	17112-Cord Discourts of	Reactly and in the second second second	Contraction of the second s
298	231849.692	170477.452	1093.875	2 1	6	West	Pane 2-10	232060.531 231849.692	170477.452	Charles and	West	1093.075	=+L298-E298	=+M298-F298		No	NO CHANGE	NO CHANGE	1977 N. 1979 (M. 1979)	Participation of the second		Maker College Street Store	·····································
290 Panel 2-17 300	2319/9.88/ 231765.002	170478.931	1095.046	2 1	7	West	Panel 2-17	231979,887 231765.002	171140.277 170478.931	NERSE STREET	West	1010.046	=+L200-E300	=+M299+F299 =+M300-F300	*G294-O299	No	NO CHANGE	NO CHANGE	SUMPLY OF SUMP	國語意味相任何的	出版建筑建筑资源	signed and the states of the second	a and the station of the stationed
301 Panel 2-18 302	231893.243 231681.102	171135,736	1096.218	2	8 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	West	Panel 2-18	231893.243 231681.102	171135.738	Ward and a second	East West	1096.218	#+L301-E301	=+M301-F301 =+M302-F302	=+G301+O301	No No	NO CHANGE NO CHANGE	NO CHANGE NO CHANGE	an na shekaray she	·····································		Salahar ing Salah Print	
303 Panel 2419	231806.598	171131.195 170487.704	1097.389	2	9	East West	Panel 2-19	231808.598 231597.515	171131.105	Press and the	East West	1097.389	=+L303-E303 _=	=+M303-F303 =+M304-F304	#+6303-0303	No	NO CHANGE	NO CHANGE NO CHANGE	國法共和国法	目的修道的目的	ENAPELE M	他们们,在他们和教育。	AFA のため間間開始器的
305 Panel 2-10	231719.953	171126.654	1098.58	2	0	East	Panel 2-10	231719 953	171126.654		East	1098.56	*+L306-E306	**M305-F305	=+G305-O305	No	NO CHANGE	NO CHANGE	经济部的开始	自由的民族政治	CAR STREET	的时间,并且你们的现在的 说 。	A Horizo Managan
307 Panel 2-21	231633,309	171122.114	1099.732	2 10	1.18.48	East	Panel 2-21	231633.309	171122.114	AND NO P	East	1099.732	=+L307-E307	=+M307-F307	#+G307-O30 *	ALCOPER No. 1	NO CHANGE	NO CHANGE	19-40-32-32-32-32-32-32-32-32-32-32-32-32-32-	al and the second second			The said of the said of the
309 Panel 2-22	231540.684	171117.573	1100.903	912.8	2 20 30 20	East	Papel 2-22	231546.664	171117.573		East	1100.903	>+L309-E309	#+M309-F309	#+G309-O309	No No	NO CHANGE	NO CHANGE	galegales to 15%		THE TRANSFER	Republication and a second	STATE OF THE STATE OF THE STATE
311 311 Panel 2-23	231460.02	171113.032	1102.074	2.76	5 200 M	East	Panel 2-23	231460.02	171113.032	0.0.400,000	East	1102.074	=+L311-E311	=+M311-F311	⇒G311-O311	No No	NO CHANGE	ND CHANGE		部起来一样的时		はない。自己の意味です。	in the later of the second second
312 313 Panel 2-24	231256.87 231373 375	170487.8	1102.074	·[] 2 年 月	3	East	Panel 2-24	231256.87 231373.375	170487.8	CHRISTING STATES	Easl	1103.246	=+L312-E312 =+L313-E313	=+M312-F312 =+M313-F313	#+G313-O313	No No	NO CHANGE	NO CHANGE	能够操行机能	N. S.	The second second	Realing and the second second	11、115名出版的合成的
314 315 Panel 2-25	231172 181 231286.731	170489 278 171103 95	1103.246 1104.417	2 1	5	West East	Panel 2.25	231172 161 231286.731	170489.278		East	1104.417	=+L314-E314 =+L315-E315	=+M314-F314 =+M315-F315	#+G315-O315	No No	NO CHANGE	NO CHANGE	an Transmission	and a state	STANSO STREAMS	SERVICE INSTRUM	
316 317 Panel 2-26	231089.313 231188.179	170496.35	1104.417	2 2	85 6 51 (191)	West	Panel 2-26	231089.313 231188.179	170496.36 171062.762	525 K 65 L 3	West	1105.589	=+L316-E316 =+L317-E317	=+M316-F316 =+M317-F317	=+G317-O317	No No	NO CHANGE	NO CHANGE	C. In Electronical		THE STREET	No. De Concilio State	in the dealer of the state
316 319 Papel 2-27	231013.008	170523.641	1105.559	2	6	West	Panel 2.97	231013.008	170523.641		West	1106.78	=+L318-E318	=+M318-F318	#+G319-0319	No	NO CHANGE	NO CHANGE	And the state of the	CAUNT STORAGE	n an	na national de la serie Raise de la serie de la serie	a server the management
CONTRACTOR CONTRACTOR OF CARDING POLICY	210042 766	170572 657	1106 76	PURCHARDER.	7	Meet	Come aver	230043 765	170673 657	AND DESCRIPTION OF STREET	Masi	10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	=41 320 6320		Contraction of the second seco	No.	NO CHANCE	NO CHANGE	C. A. MARCHART	A CONTRACTOR OF THE OWNER	Nonent-Parliation / H	Mary With the Automatic and	Compared and a second contraction to a property of the party of the pa

Underground Layout Configuration for LA 800-KMC-SS00-00200-000/ B 02-1V

ATTACHMENT VII ELECTRONIC MICROSTATION FILES

The electronic file of the underground layout that has been developed in MicroStation (Section 4.2.2) for this calculation is on the CD that has been included in the record package.

The file is the centerline, two-dimensional representation of the Underground Layout Configuration for LA developed in metric units.

File	Description	File size	Date & Time
BoundaryGridAll Rev B.dgn	Coordinates	27KB	7/16/2007 9:59 AM
ESF ECRB Exist.dgn	Existing excavation	55KB	7/16/2007 9:09 AM
Panel 1 CLs Rev B.dgn	Panel 1	30KB	7/16/2007 10:00 AM
Panel 2 CLs Rev B.dgn	Panel 2	35KB	7/16/2007 10:00 AM
Panel 3 CLs Rev B.dgn	Panel 3	94KB	7/16/2007 10:00 AM
Panel 4 CLs Rev B.dgn	Panel 4	36KB	7/16/2007 10:00 AM

Table VII-1.	MicroStation	Files on CD