

REPORT NUMBER: 3113837COQ-004C
ORIGINAL ISSUE DATE: May 1, 2007
REVISED DATE: June 6, 2007

EVALUATION CENTER
Intertek Testing Services NA Ltd.
1500 Brigantine Drive
Coquitlam, BC V3K 7C1

RENDERED TO

EXCELL RAILINGS INC
#306-12886 Anvil Way
Surrey, British Columbia V3W 8E7

PRODUCT EVALUATED: 2-½ in. Durarail Picket & Glass In-Fill Railing System
EVALUATION PROPERTY: Square-Top Rail System Qualification

Engineering Evaluation of a Durarail Square-Top Rail System as an acceptable alternate to the Round-Top Rail System when used in conjunction with a Durarail Picket and Glass In-Fill Railing System, compliant with the applicable requirements of the following criteria: 2006 International Building Code, Section 1607.7

This report is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this report. Only the Client is authorized to copy or distribute this report and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test results in this report are relevant only to the sample tested. This report by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

1 Introduction

Intertek Testing Services NA (Intertek) has conducted an engineering evaluation for Excell Railing Systems Inc, on a Durarail Picket and Glass In-Fill Railing System, to qualify square top railing systems. The evaluation was conducted to determine if the additional railing systems will maintain compliance with the *2006 International Building Code (IBC), Section 1607.7*.

2 Sample and Assembly Description

The product being evaluated is a square-top Durarail Top Rail component. This evaluation is based on two completed railing tests as detailed below.

The first 2-piece round-top railing system tested to *2006 IBC, Section 1607.7* was identified as a Durarail Welded Picket Railing System and consisted of the following materials and connections (refer to Appendix A for the assembly drawing):

Post:	2 1/2 in. x 2 1/2 in. 6063-T5 extruded aluminum post.
Base Plate (deck):	4 in. x 4 in. x 3/8 in. 6061-T6 aluminum base plate with 4 mounting holes.
Top Rails:	42 in. high, 6063-T5 aluminum rail, profiles as shown in Appendix A.
Connections:	Connection details are provided in Appendix A.
Picket Insert:	5/8 in. x 5/8 in. 6063-T5 aluminum spaced 4-1/2 in. o/c.
Glass Infill:	1/4 in. tempered glass panel.

A second test was performed in accordance with *2006 IBC, Section 1607.7* on a railing system identified as a Durarail Glass In-Fill Railing System. This railing system was identical in construction to the welded picket design except the picket inserts were replaced with a 1/4 in. tempered glass panel (see Appendix A for system drawings).

3 Reference Documents

- *2006 International Building Code, Section 1607.7*
- Intertek Report No. 481-1456 (reports 1-6 a/b/c)
- Intertek Report No. 3113837COQ-004A
- Intertek Report No. 3123232COQ-003

4 Evaluation Method

An engineering evaluation was conducted to determine if the Durarail square-top rails (see Appendix A) are equivalent to the round-top rails that were initially evaluated. The square-top system was found to be an acceptable alternate based on Moment of Inertia calculations (please refer to Intertek Reports 481-1456 (reports 1-6 a/b/c)).

The following table lists the qualified railing systems based on physical testing:

Table 1: Qualified Railing Systems


Railing System Description	Top-Rail Profile	Top-Rail Description	Qualification
Durarail Welded Picket	Round-Top	2-Piece System	Tested System
Durarail Welded Picket	Square-Top	2-Piece System	*Qualified
Durarail Glass In-Fill	Round-Top	2-Piece System	Tested System
Durarail Glass In-Fill	Square-Top	2-Piece System	*Qualified

* Qualified based on this engineering evaluation

5 Conclusion

Intertek has conducted an engineering evaluation for Excell Railing Systems Inc, on a Durarail Picket and Glass In-Fill Railing System, to qualify square top railing systems. The evaluation was conducted to determine if the additional railing systems will maintain compliance with *2006 IBC, Section 1607.7*. Based on the engineering evaluation as stated in Section 4.0 of this report, the square top-rail was found to be an acceptable alternative to the round top-rail.

INTERTEK TESTING SERVICES NA

Reported by: 
Kevin Saito, EIT
Engineer, Building Products

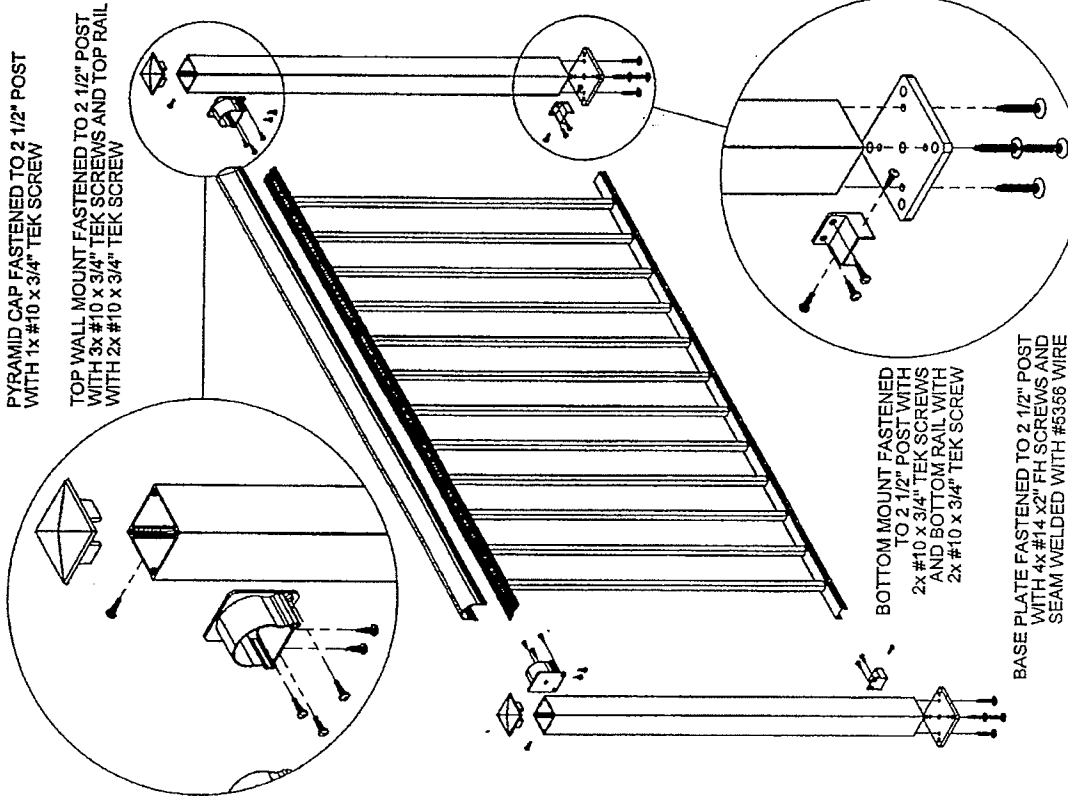
Reviewed by: 
Kal Kooner, EIT
Team Leader, Engineering Services Canada

APPENDIX A
<Durarail Railing System Drawings>

THE MATERIAL CONTAINED HEREIN IS PROPRIETARY TO EXCELL RAILING SYSTEMS LTD. AND SHALL NOT BE REPRODUCED, DISCLOSED OR USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN APPROVAL OF EXCELL RAILING SYSTEMS LTD.

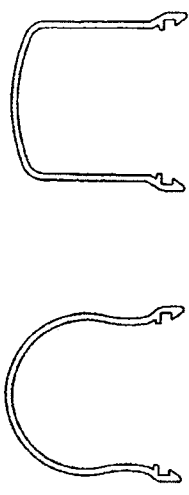
PYRAMID CAP FASTENED TO 2 1/2" POST WITH 1x #10 x 3/4" TEK SCREW

TOP WALL MOUNT FASTENED TO 2 1/2" POST WITH 3x #10 x 3/4" TEK SCREWS AND TOP RAIL WITH 2x #10 x 3/4" TEK SCREW



BOTTOM MOUNT FASTENED TO 2 1/2" POST WITH 2x #10 x 3/4" TEK SCREWS AND BOTTOM RAIL WITH 2x #10 x 3/4" TEK SCREW

BASE PLATE FASTENED TO 2 1/2" POST WITH 4x #14 x 2" FH SCREWS AND SEAM WELDED WITH #5356 WIRE



STANDARD ROUND TOP RAIL

STANDARD SQUARE TOP RAIL



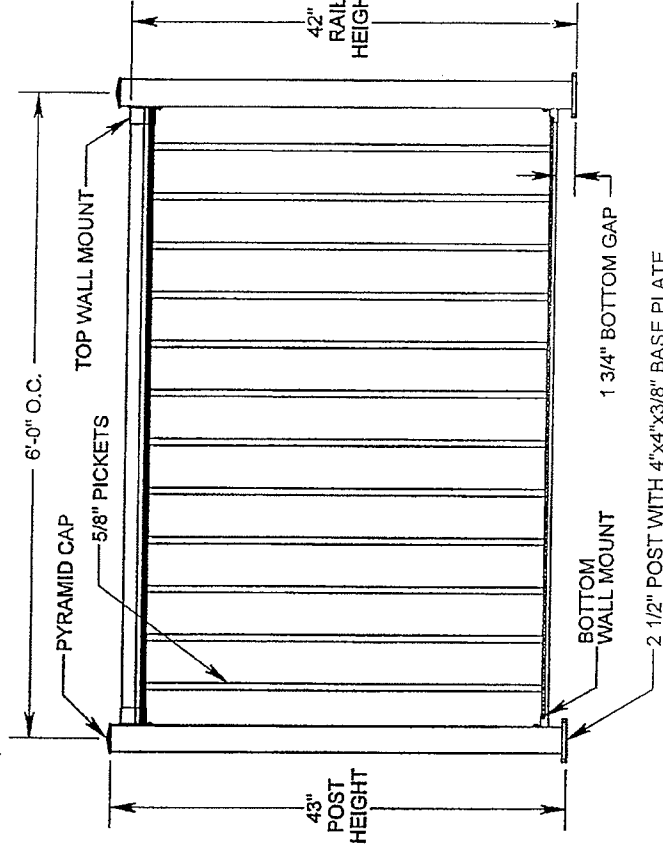
WELDED PICKET RECEIVER CHANNEL



5/8" SQUARE PICKET



WELDED PICKET BOTTOM RAIL



ALL DIMENSIONS ARE SUBJECT TO SITE MEASUREMENTS AND ARE TO BE CONFIRMED BEFORE FABRICATION OF PRODUCT

Authorization Signature	Date of Authorization
Customer: Internal Documentation	Drawing Name: Durarail Welded Picket System with 2.5 Inch Posts
Project Name: Product Engineering	Customer: Internal Documentation
Drawn By: Csaba Bezzegh	Project Name: Product Engineering
Revision No. 2	Drawn By: Csaba Bezzegh
Scale NTS	Revision No. 2
Last Update April 16, 2007	Scale NTS
Created March 16, 2007	Last Update April 16, 2007
Library: \\esl\esl\Drawing Library\Engineering\Railings Assemblies\WP Panel Style 1 with 2.5 Posts\Durarail	



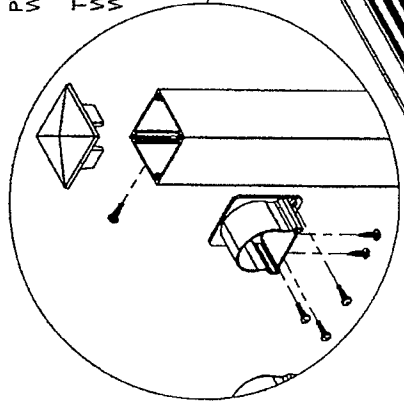
Excels Railing Systems Ltd.
 #306 - 12886 Anvil Way
 Surrey, BC Canada V3W 8E7
 Phone: 604-601-0161 Fax: 604-601-0166
 Toll Free: 1-866-999-7246

Excels Railing Systems Ltd.
 Kansas City Warehouse
 1722 Iron Street
 North Kansas City, MO 64116
 Toll Free: 1-800-338-3668
 Fax: 1-816-421-2824

THE MATERIAL CONTAINED HEREIN IS PROPRIETARY TO EXCELL RAILING SYSTEMS LTD. AND SHALL NOT BE REPRODUCED, DISCLOSED OR USED FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN APPROVAL OF EXCELL RAILING SYSTEMS LTD.

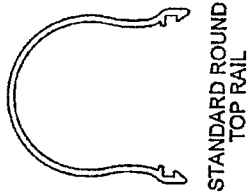
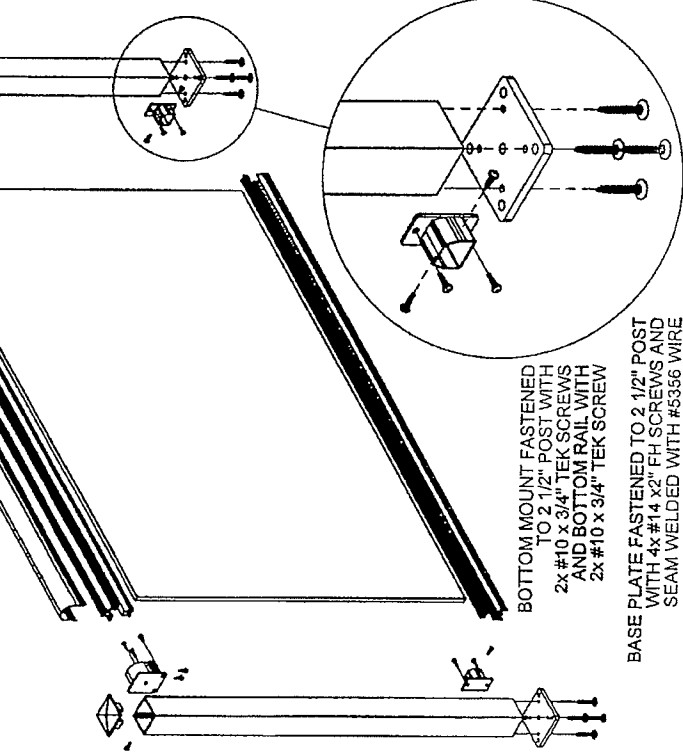
PYRAMID CAP FASTENED TO 2 1/2" POST WITH 1x #10 x 3/4" TEK SCREW

TOP WALL MOUNT FASTENED TO 2 1/2" POST WITH 2x #10 x 3/4" TEK SCREWS AND TOP RAIL WITH 2x #10 x 3/4" TEK SCREW

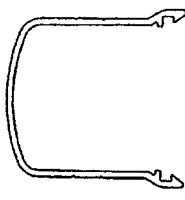


BOTTOM MOUNT FASTENED TO 2 1/2" POST WITH 2x #10 x 3/4" TEK SCREWS AND BOTTOM RAIL WITH 2x #10 x 3/4" TEK SCREW

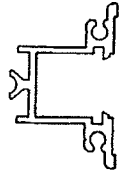
BASE PLATE FASTENED TO 2 1/2" POST WITH 4x #14 x 2" FH SCREWS AND SEAM WELDED WITH #5356 WIRE



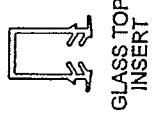
STANDARD ROUND TOP RAIL



STANDARD SQUARE TOP RAIL



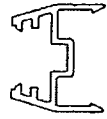
COMPONENT GLASS RECEIVER CHANNEL



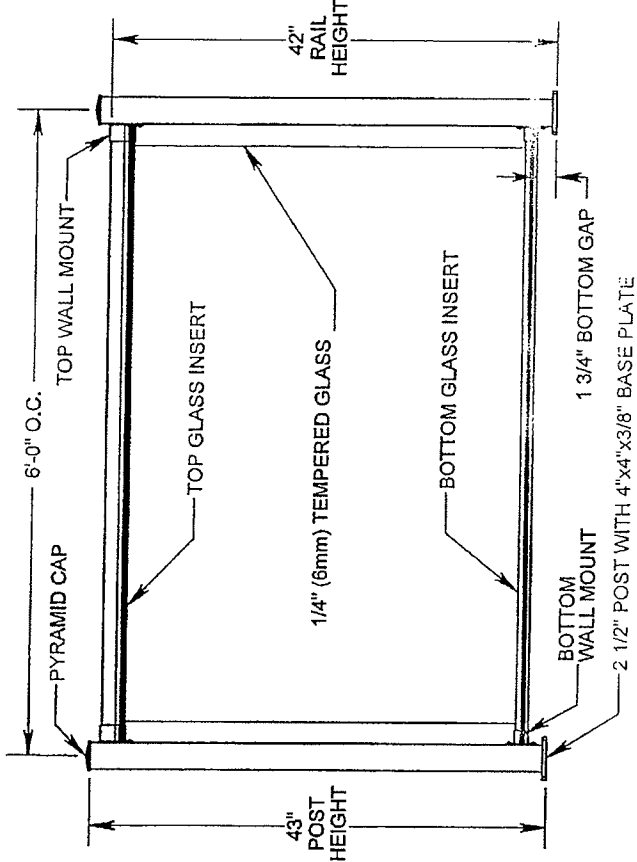
GLASS TOP INSERT



GLASS BOTTOM INSERT

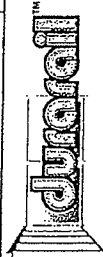


COMPONENT GLASS BOTTOM RAIL



ALL DIMENSIONS ARE SUBJECT TO SITE MEASUREMENTS AND ARE TO BE CONFIRMED BEFORE FABRICATION OF PRODUCT

Authorization Signature	Date of Authorization
Customer Internal Documentation	Drawing Name Durarail Glass System with 2.5 Inch Posts
Project Name Product Engineering	Customer Durarail Glass System with 2.5 Inch Posts
Drawn By Csaba Bezzegh	Revision No. 1
Scale NTS	Date Created April 11, 2007
Last Update April 16, 2007	Revision No. 1
Scale NTS	Last Update April 16, 2007
Library/Files Drawing Library/Engineering/Railing Assemblies/Glass Style 1 with 2.5 Posts(Durarail)	



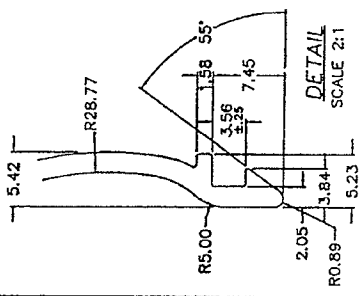
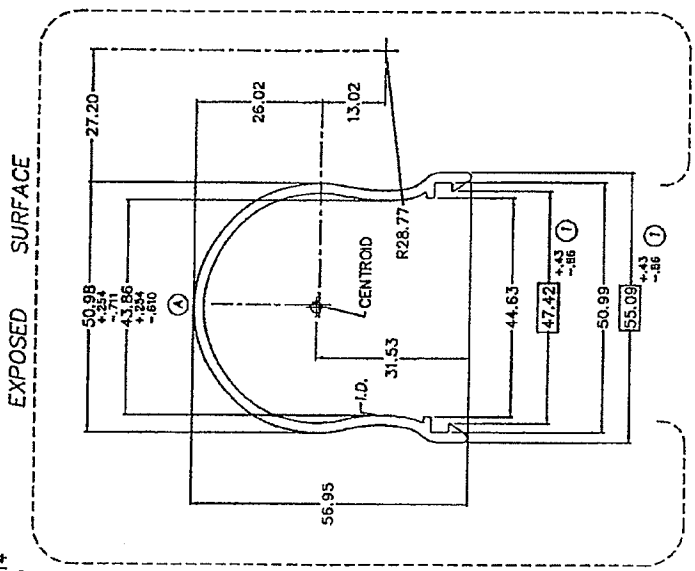
Excell Railing Systems Ltd.
 #306 - 12686 Avnil Way
 Surrey, BC Canada V3W 8E7
 Phone: 604-501-0161 Fax: 604-501-0155
 Toll Free: 1-866-999-7245

Kansas City Warehouse
 1722 Iron Street
 North Kansas City, MO 64116
 Toll Free: 1-800-338-3568
 Fax: 1-816-421-2924

IVVANC SERV\1DIE\35000135977.DWG

CUSTOMER		EXCELL RAILINGS	
DESCRIPTION	TOP RAIL	CUSTOMER PART NO.	2383
STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED		DIE NO.	VS-35977A
ALLOY	6063 T5	DASH NO.	
LOC.		BACKER NO.	9293A-1
LOC.		PROFESSAL NO.	

② Moments of inertia: X: 97531mm⁴
 Y: 131502mm⁴
 Radii of gyration: X: 18.07mm
 Y: 20.98mm



ACTUAL SIZE

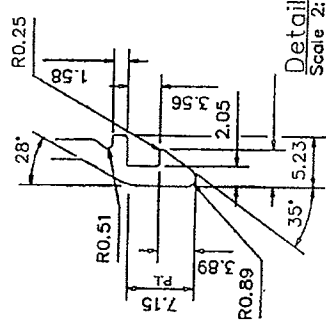
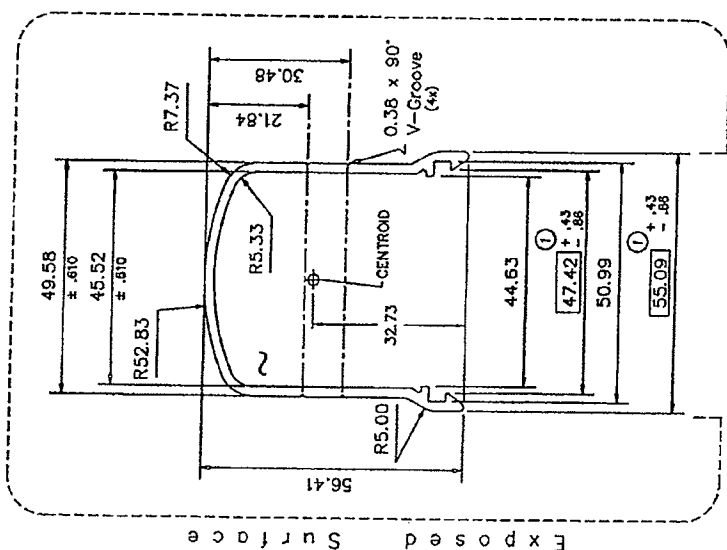
INDALEX		PLUG RATIO: 3		CRITICAL DIMENSION	
MONTREAL - CANADA		LNZ:	N/A IN	N/A MM	
EST. WT.	0.463 IN ²	OUT PER.	298.64 MM ²	WALLS - SHOWN ±.18 EXCEPT AS SHOWN	N/A MM
EST. PER	11.660 IN	C.C.D.	2.750 IN	69.85 MM	
OWN BY	WJ	CAVITIES - 2	SCALE	DATE 99/08/26	
DIE SIZE	PKT 1/2	UP	BACKER NO.	BOLSTER	
9 X 2			21507	238/19	
		DATE		DATE	BY
X	X	X	X	X	X
05/02/24	04/06/19	09/08/28			
Section properties added		Tolerances revised & Critical note added		REMOVE V-CROOVE	

CUSTOMER	EXCELL RAILINGS	CUSTOMER PART NO.	2401	DIE NO.	VS-11725A
DESCRIPTION	Square Top Rail	ALLOY	6063 T5	DRAWING NO.	
STANDARD TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED					
		BACKER		PROPOSAL NO.	9209A-4

INDALEX I.D. R0.203 x 0.203 High (2x)

Moments of inertia: X: 107120mm⁴
 Y: 145888mm⁴
 Radii of gyration: X: 18.45mm
 Y: 21.54mm

Actual Size



EST. AREA	0.488 in ² 314.53 mm ²	OUT PER.	0.000 IN 0.000 MM
EST. WT.	0.585 LB/FT 0.854 KG/M	WALLS-	2.03 ±.18 EXCEPT AS SHOWN
EST. PER	12.267 IN	C.C.D.	0.488 IN 314.53 MM
DWN BY	BW	SCALE	1:1
DIE SIZE	PKT LIP	BACKER NO.	BOLSTER
9 x 2"	1/2"	11494	1007(JS)

CRITICAL DIMENSION

DIE NO.
VS-11725A

XX	X	X	X	X	X	X
XX	X	X	X	X	X	X
HU	X	X	X	X	X	X
UT	X	X	X	X	X	X
BY	X	X	X	X	X	X

REVISION SUMMARY

DATE	SUMMARY
June 6, 2007	Updated report numbers in Section 3
June 6, 2007	Revised 2003 IBC to 2006 IBC