



Parcs
Canada

Parks
Canada

HIGHWAY 430 NORTH (KMS 39.9 TO 88.5) RECAPITALIZATION GROS MORNE NATIONAL PARK ROCKY HARBOUR, NL

PCA PROJECT NO. 1350

DRAWING LIST

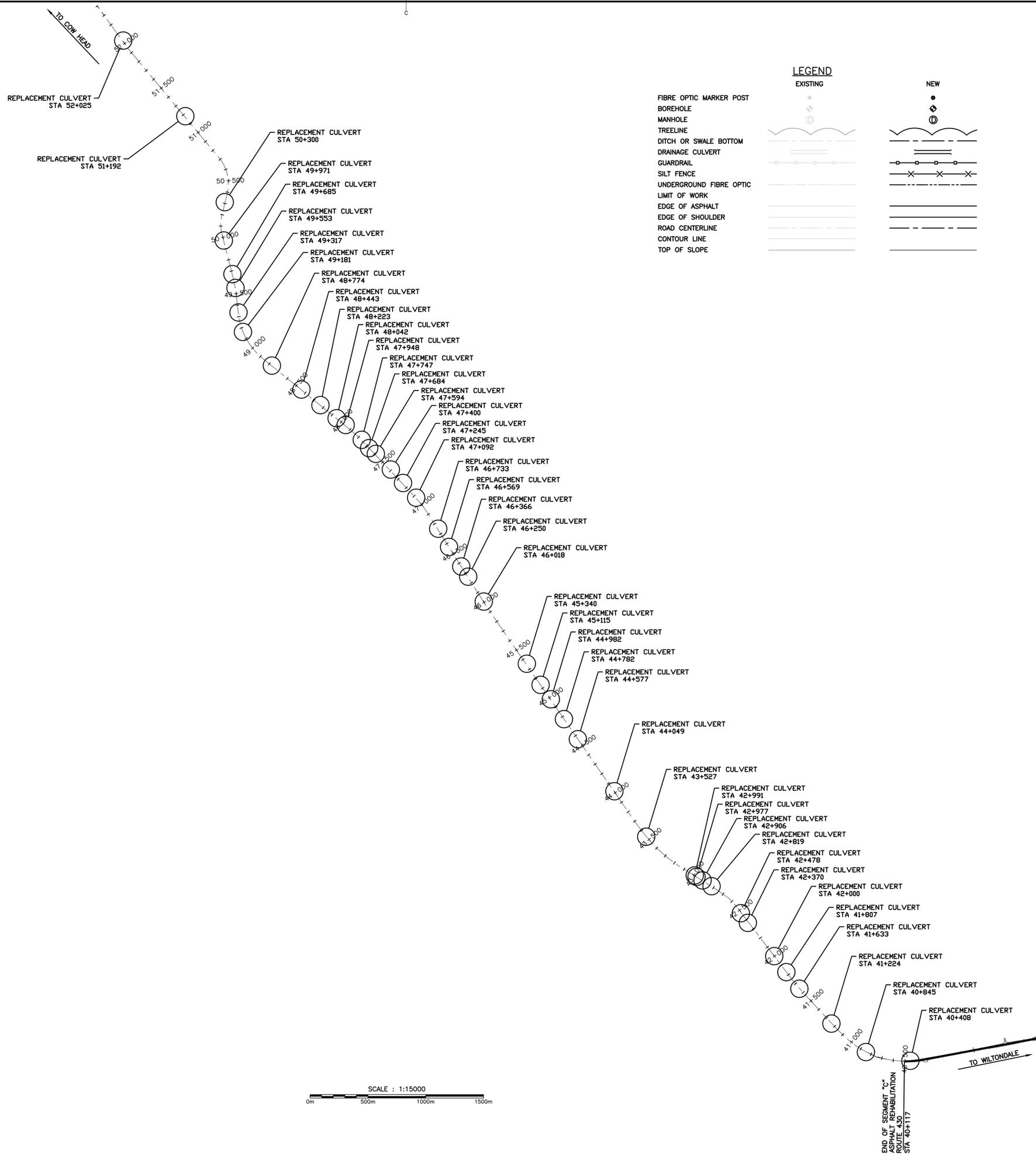
CIVIL / CULVERT UPGRADES

C01	REPLACEMENT CULVERT LOCATION PLAN STA. 40+408 TO 52+025
C02	REPLACEMENT CULVERT LOCATION PLAN STA. 52+220 TO 62+290
C03	REPLACEMENT CULVERT LOCATION PLAN STA. 63+320 TO 67+900
C04	REPLACEMENT CULVERT LOCATION PLAN STA. 82+446 TO 88+515
C05	CULVERT PROFILE AND SECTION VIEW STA. 42+000
C06	CULVERT SECTIONS STA. 40+408 TO 42+478
C07	CULVERT SECTIONS STA. 42+819 TO 44+782
C08	CULVERT SECTIONS STA. 44+982 TO 46+733
C09	CULVERT SECTIONS STA. 47+092 TO 48+042
C10	CULVERT SECTIONS STA. 48+223 TO 49+971
C11	CULVERT SECTIONS STA. 50+300 TO 58+281
C12	CULVERT SECTIONS STA. 58+432 TO 60+830
C13	CULVERT SECTIONS STA. 61+016 TO 63+530
C14	CULVERT SECTIONS STA. 63+700 TO 67+900
C15	CULVERT SECTIONS STA. 82+446 TO 85+400
C16	CULVERT SECTIONS STA. 85+525 TO 88+515
C17	CULVERT DETAILS AND CROSS SECTIONS

STRUCTURAL DRAWINGS

S01	CULVERT AT STA 42+000 FOUNDATION PLAN SECTIONS AND DETAILS
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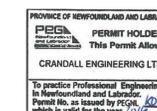
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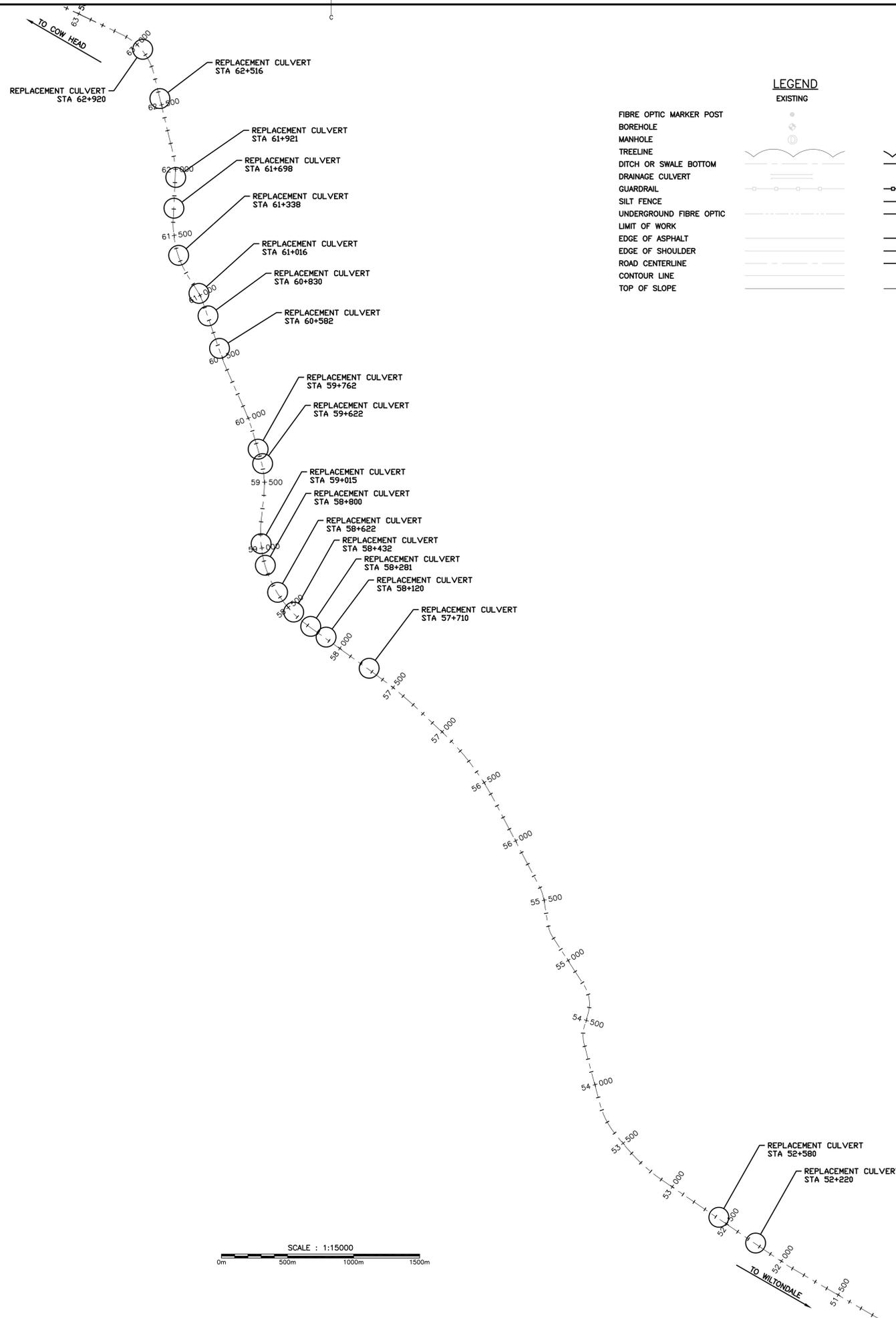
project project

**HIGHWAY 430 NORTH
(KMS 39.9 TO 88.5)
RECAPITALIZATION**

drawing dessin

**CULVERT REPLACEMENT
LOCATION PLAN
40+408 TO 52+025**

designed G. FLANAGAN	conçu
date OCTOBER 23, 2015	
drawn A.CALDWELL	dessiné
date OCTOBER 23, 2015	
approved J.BABIN	approuvé
date OCTOBER 23, 2015	
Tender	Soumission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet
PCA NO.: 1350	
drawing no.	no. du dessin
C01	

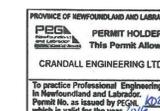


LEGEND

	EXISTING	NEW
FIBRE OPTIC MARKER POST		
BOREHOLE		
MANHOLE		
TREELINE		
DITCH OR SWALE BOTTOM		
DRAINAGE CULVERT		
GUARDRAIL		
SILT FENCE		
UNDERGROUND FIBRE OPTIC		
LIMIT OF WORK		
EDGE OF ASPHALT		
EDGE OF SHOULDER		
ROAD CENTERLINE		
CONTOUR LINE		
TOP OF SLOPE		



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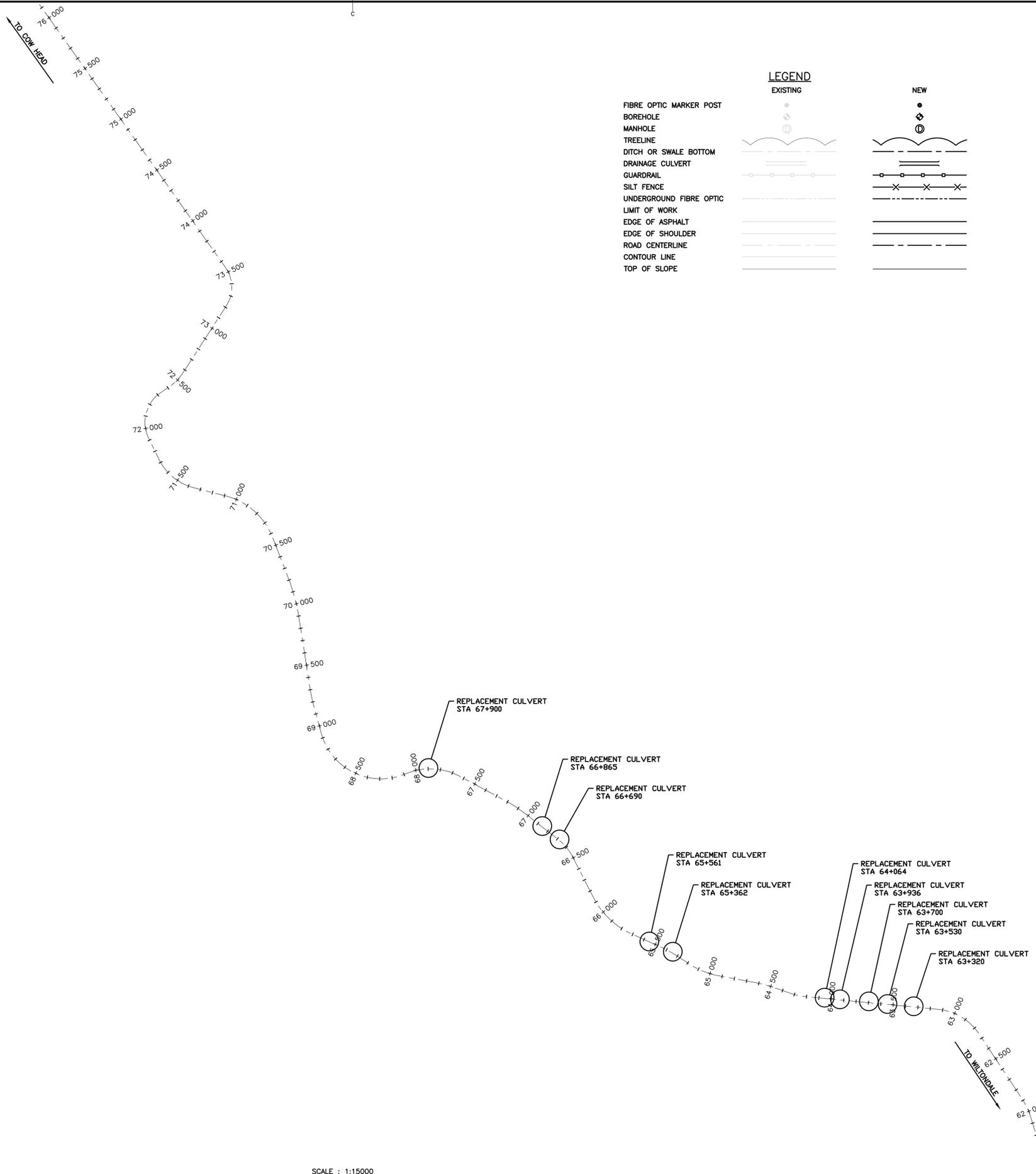


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project projet
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

drawing dessin
**CULVERT REPLACEMENT
 LOCATION PLAN
 52+220 TO 62+920**

designed G. FLANAGAN	conçu
date OCTOBER 23, 2015	
drawn A.CALDWELL	dessiné
date OCTOBER 23, 2015	
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date OCTOBER 23, 2015	
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PCA Project Manager	Administrateur de projets APC
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PCA NO.: 1350	
drawing no.	no. du dessin
C02	



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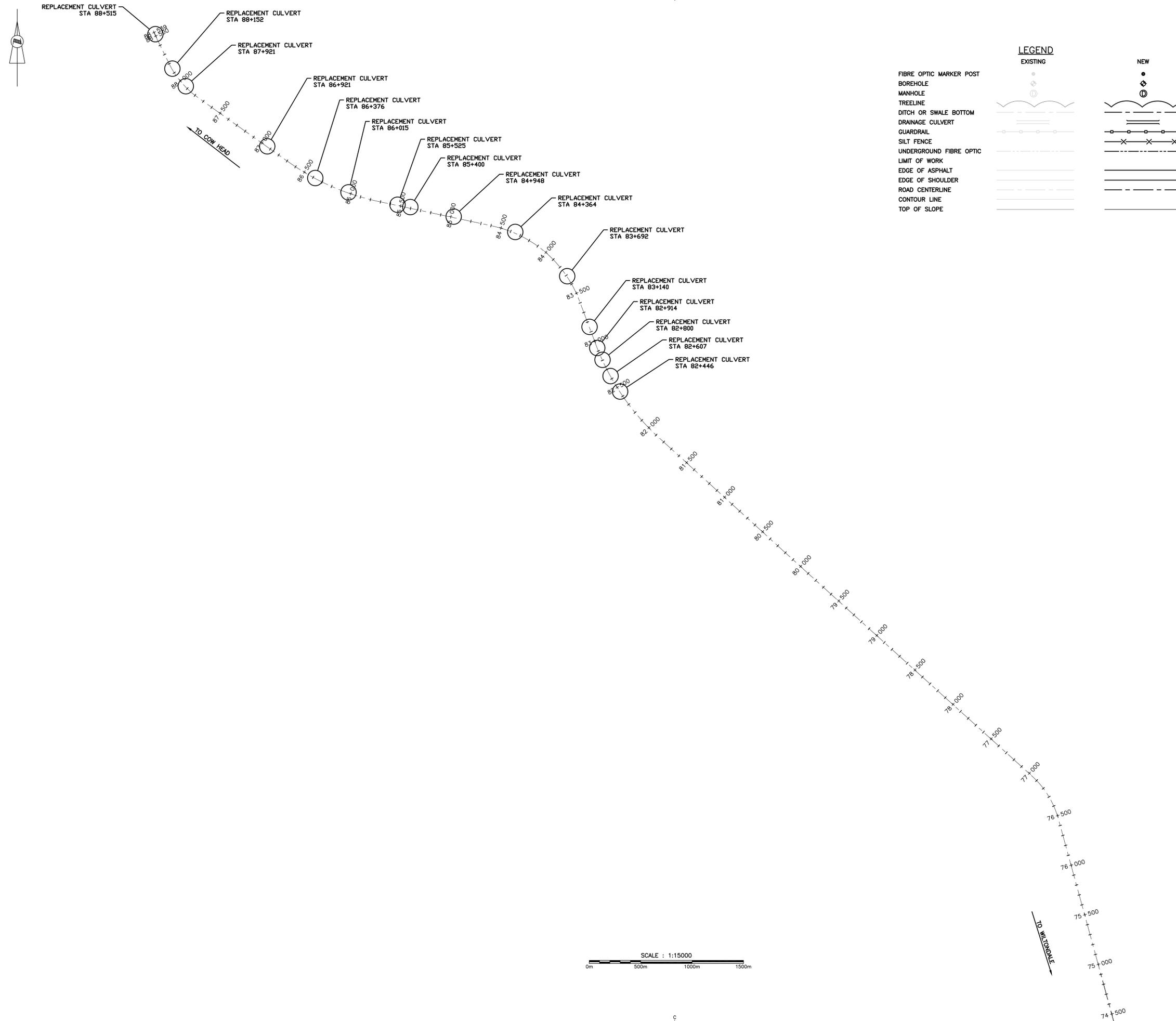
project project
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

drawing dessin
**CULVERT REPLACEMENT
 LOCATION PLAN
 63+320 TO 67+900**

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date OCTOBER 23, 2015	
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date OCTOBER 23, 2015	
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PCA Project Manager	Administrateur de projets APC
project number	no. du projet
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drawing no.	no. du dessin
C03	



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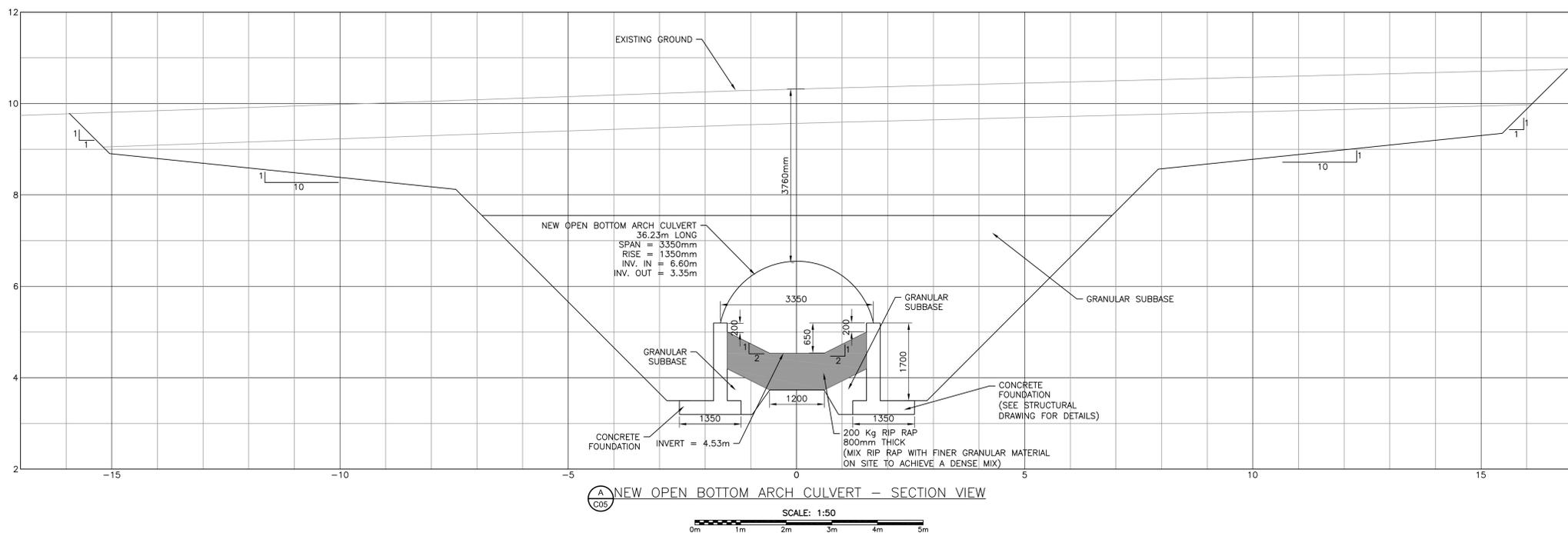
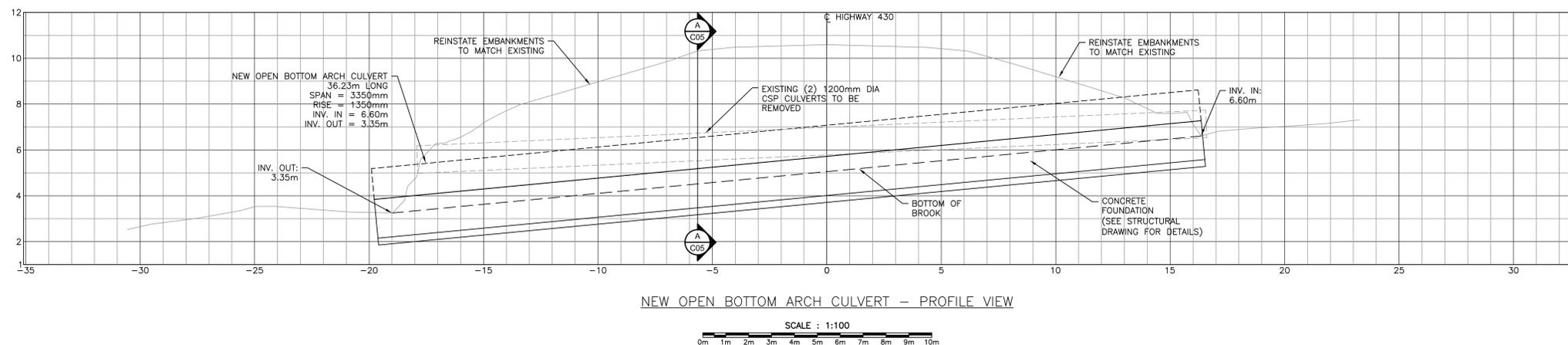
project project
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

drawing dessin
**CULVERT REPLACEMENT
 LOCATION PLAN
 82+446 TO 88+515**

designed G. FLANAGAN	conçu
date OCTOBER 23, 2015	
drawn A.CALDWELL	dessiné
date OCTOBER 23, 2015	
approved J.BABIN	approuvé
date OCTOBER 23, 2015	
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PCA Project Manager	Administrateur de projets APC
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drawing no.	no. du dessin
C04	



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revisions		date

project _____ projet _____

**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

drawing _____ dessin _____

**CULVERT PROFILE AND
 SECTION VIEW
 STA. 42+000**

designed G. FLANAGAN conçu _____

date DECEMBER 04, 2015

drawn G. GALLANT dessiné _____

date DECEMBER 04, 2015

approved J.BABIN approuvé _____

date DECEMBER 04, 2015

Tender _____ Soumission _____

PCA Project Manager Administrateur de projets APC

project number no. du projet

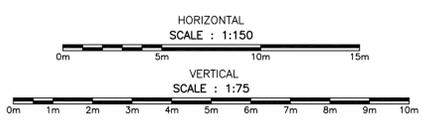
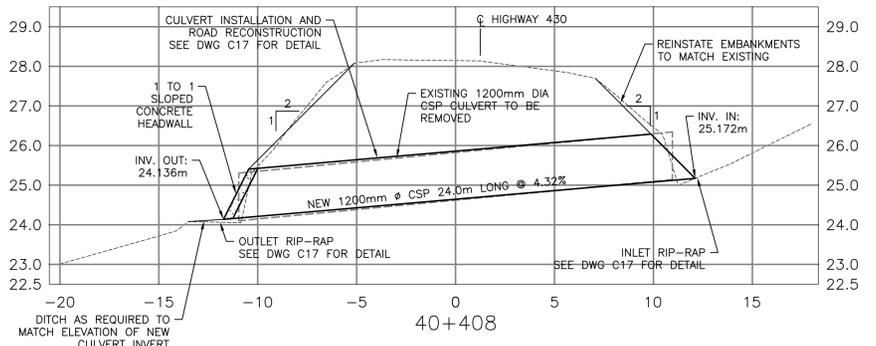
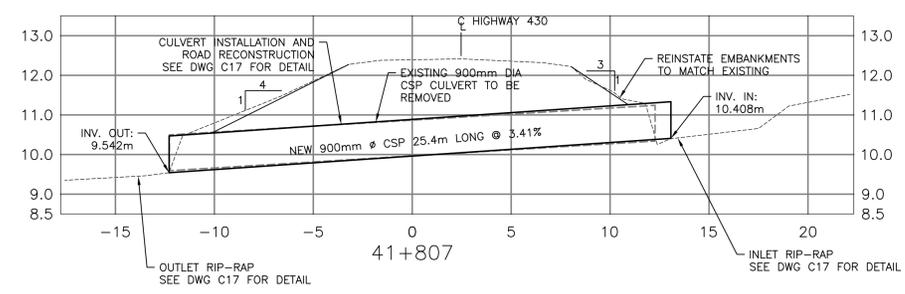
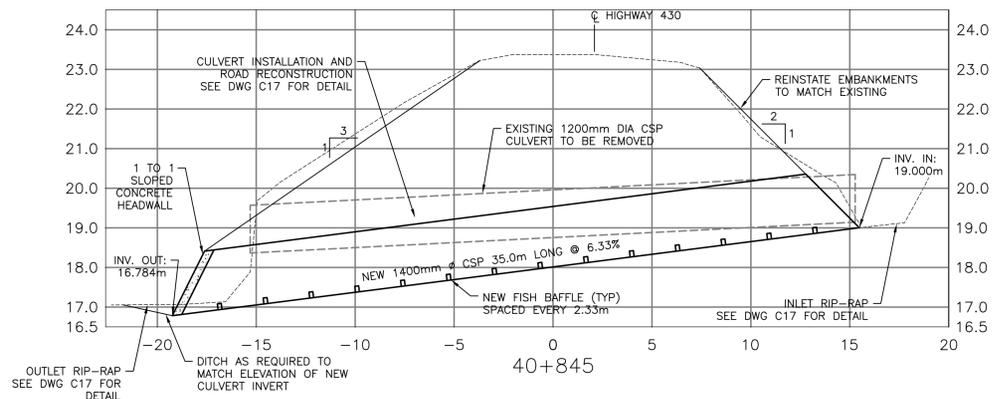
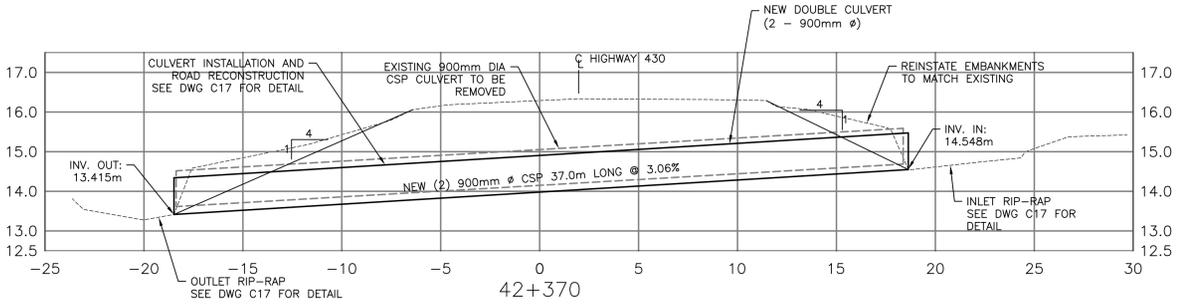
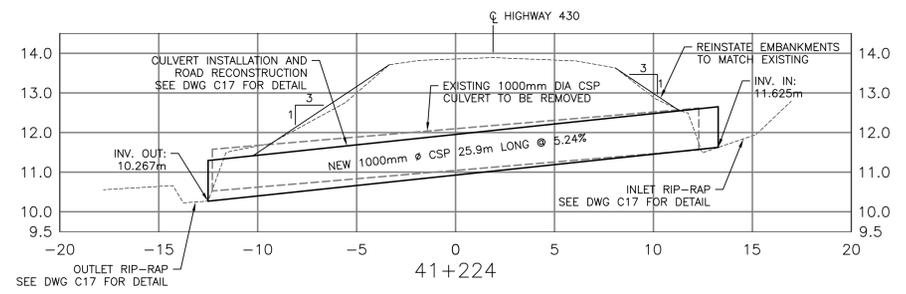
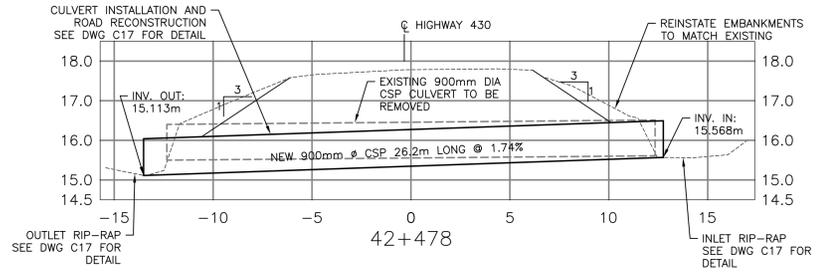
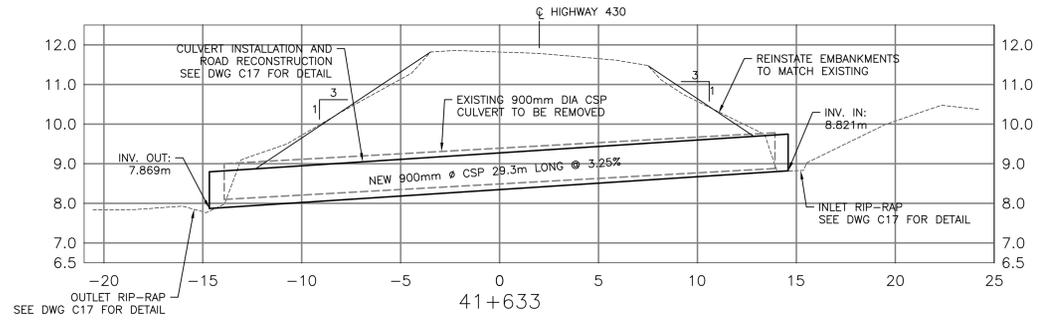
PCA NO.: 1350

drawing no. no. du dessin

C05



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 which is valid for the year **2018**



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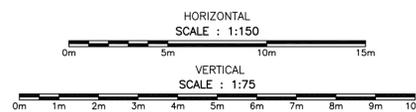
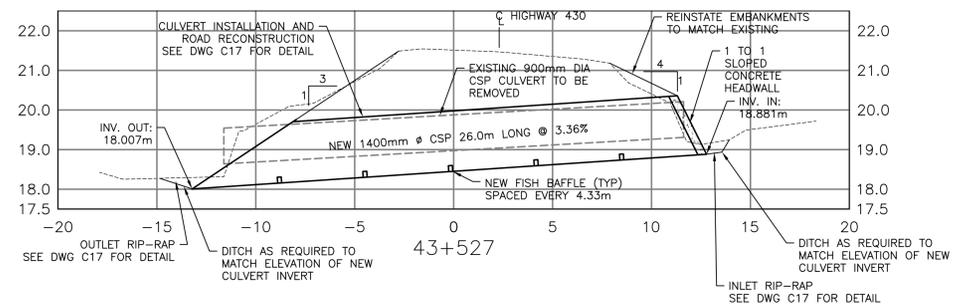
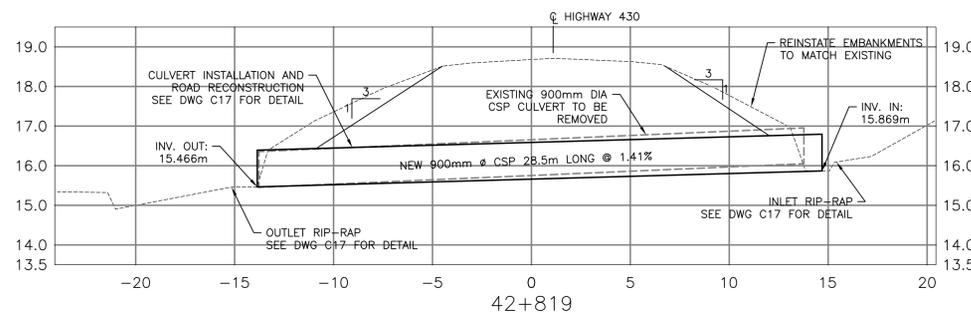
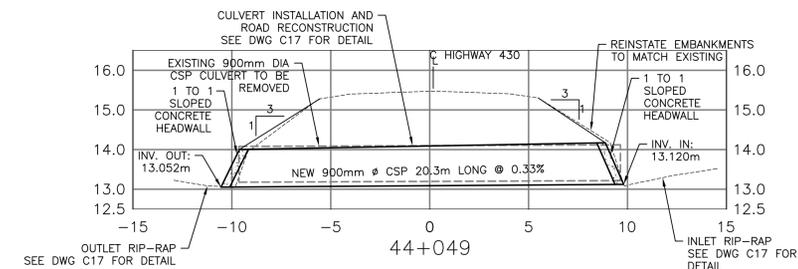
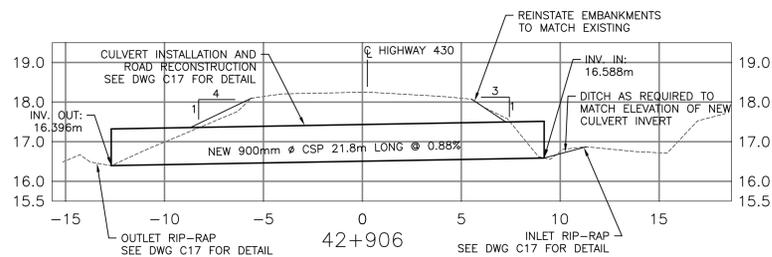
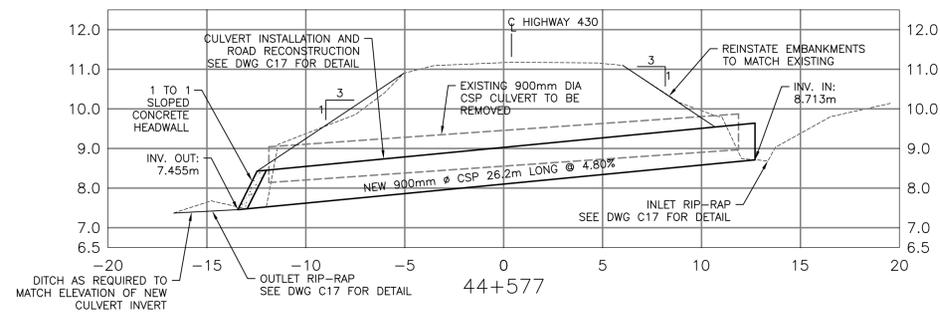
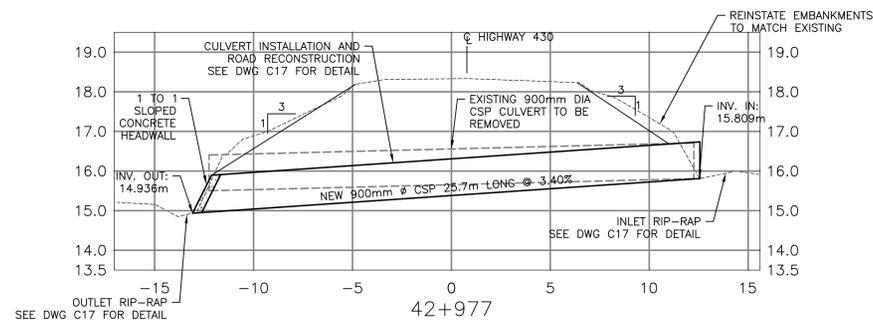
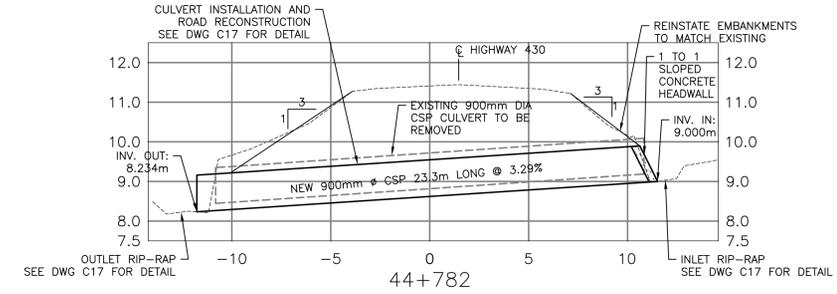
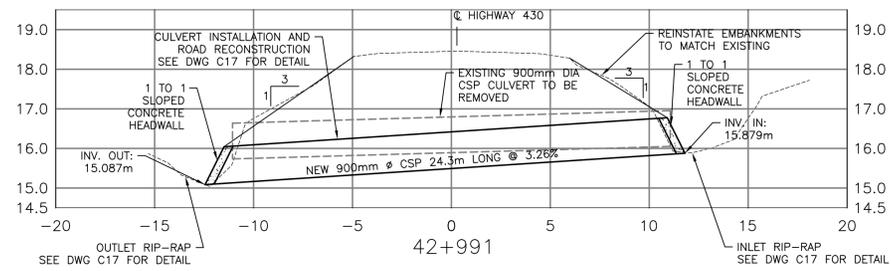
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 40+408 TO 42+478**

designed G. FLANAGAN	conçu
date DECEMBER 04, 2015	
drawn G. GALLANT	dessiné
date DECEMBER 04, 2015	
approved J. BABIN	approuvé
date DECEMBER 04, 2015	
Tender	Soumission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet
PCA NO.: 1350	
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C06	



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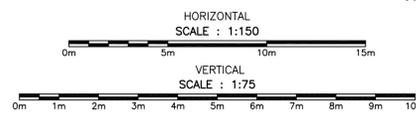
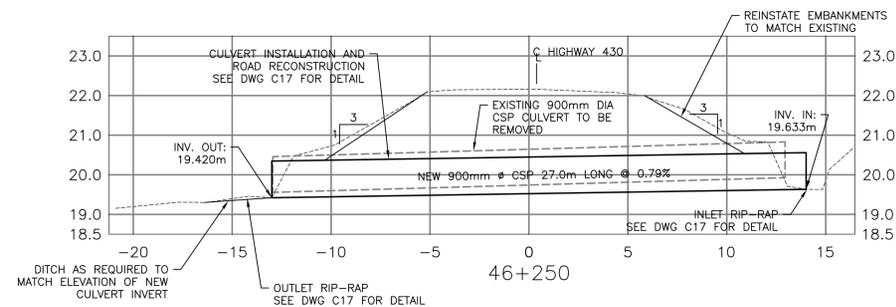
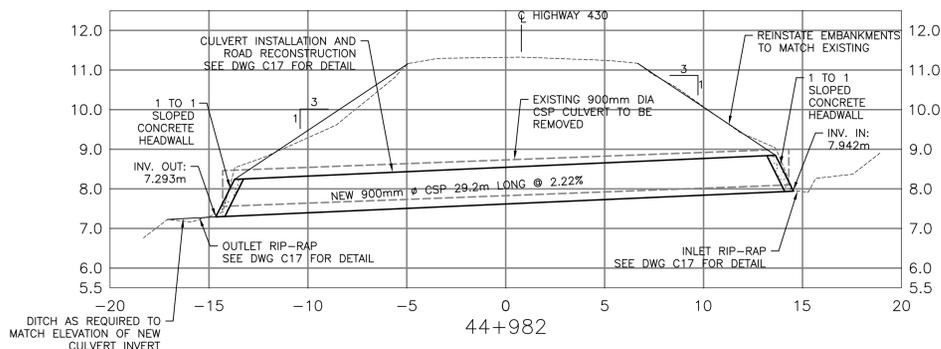
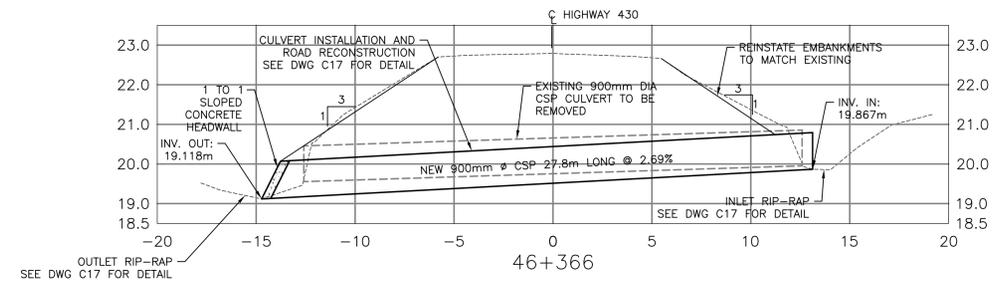
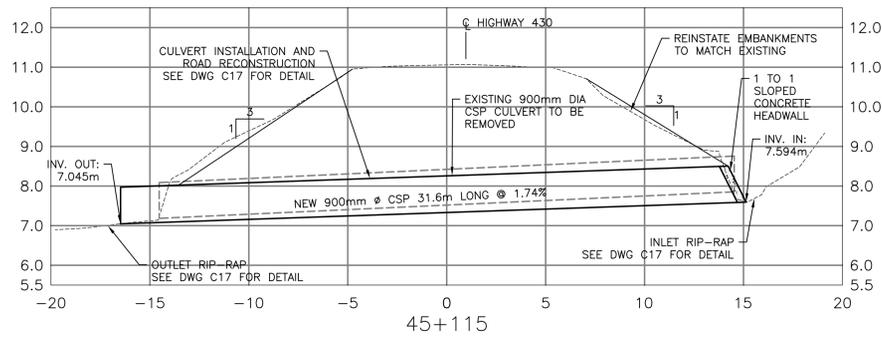
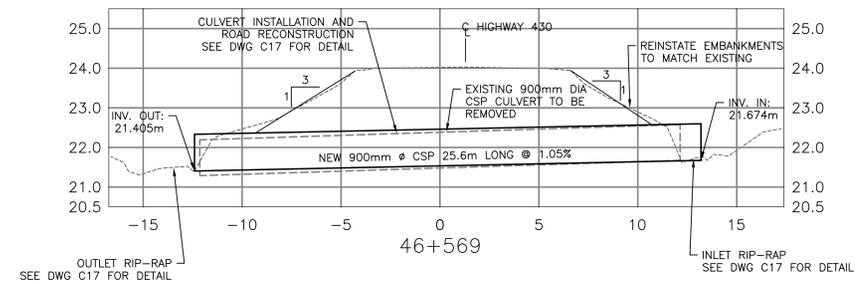
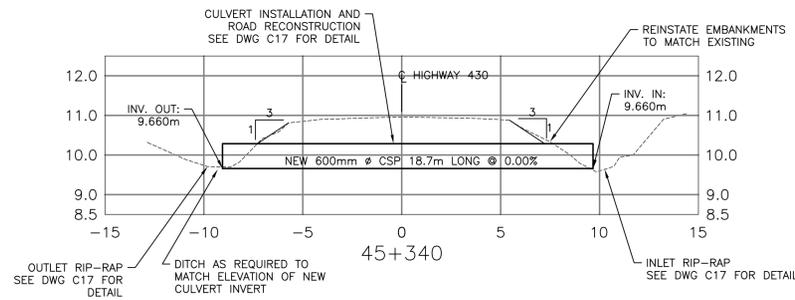
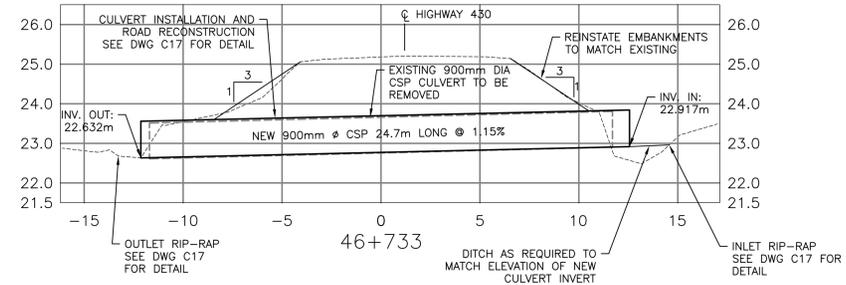
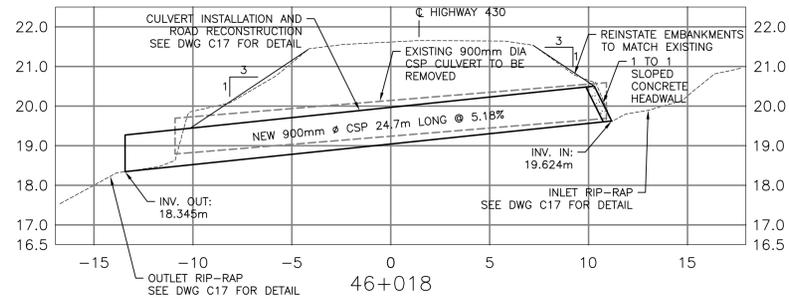
**HIGHWAY 430 NORTH
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 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 42+819 TO 44+782**

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approved J. BABIN	approuvé
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C07	



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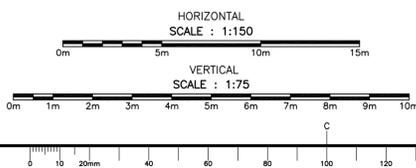
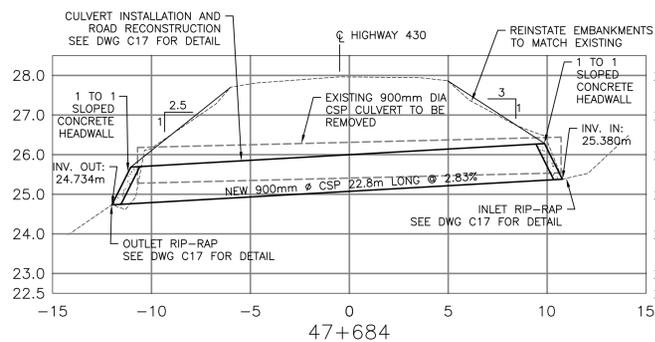
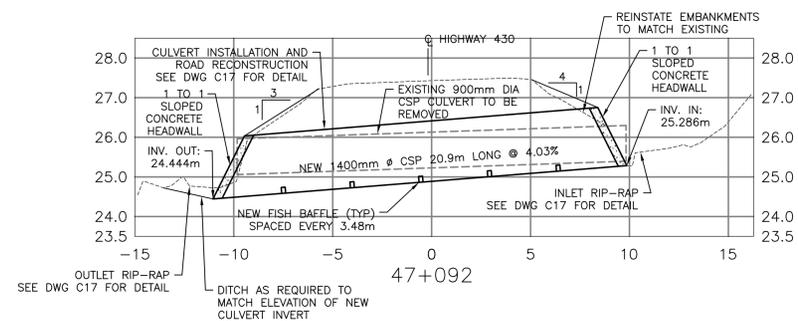
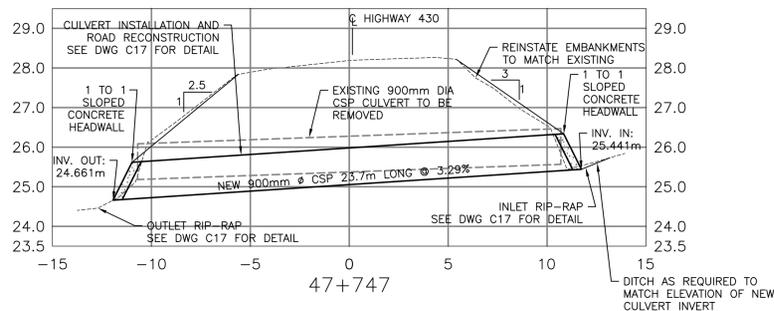
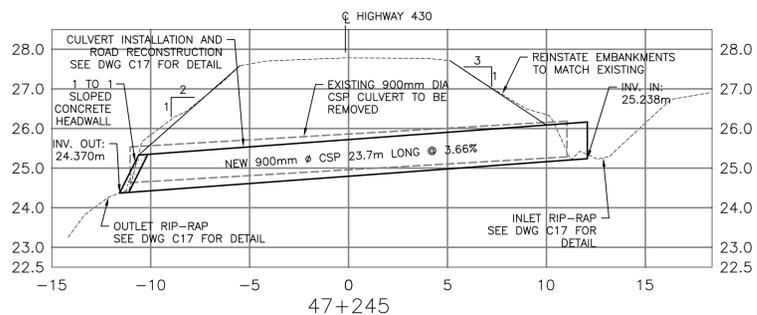
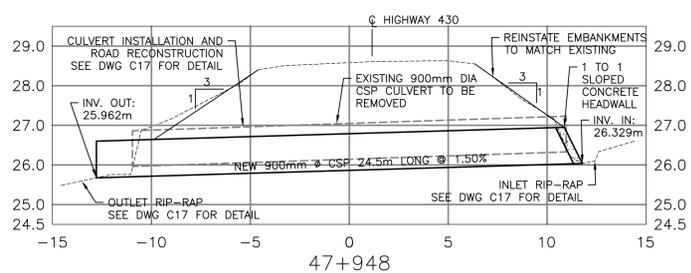
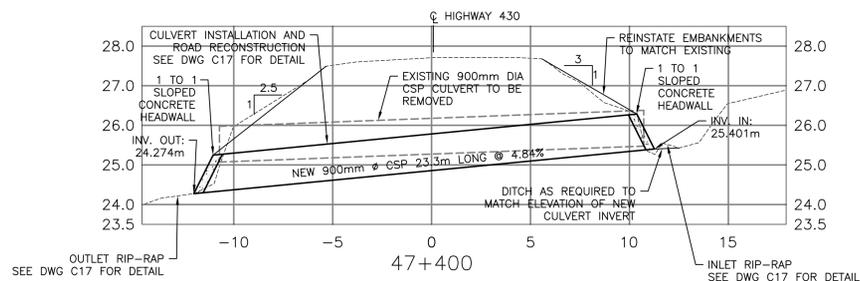
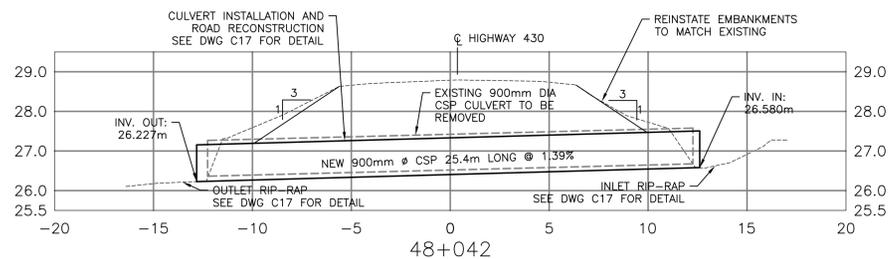
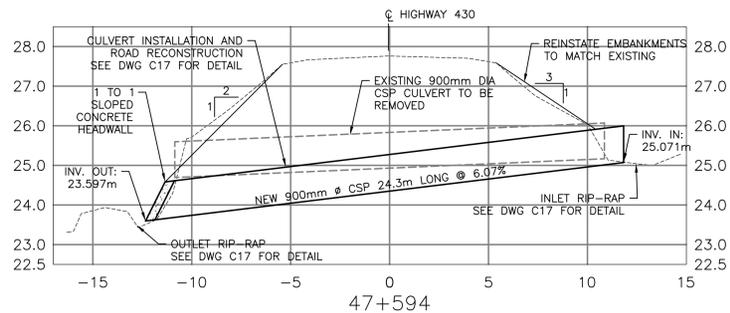
HIGHWAY 430 NORTH (KMS 39.9 TO 88.5) RECAPITALIZATION

CULVERT SECTIONS STA. 44+982 TO 46+733

designed G. FLANAGAN	comp
date DECEMBER 04, 2015	
drawn G. GALLANT	dessiné
date DECEMBER 04, 2015	
approved J. BABIN	approuvé
date DECEMBER 04, 2015	
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PCA Project Manager	Administrateur de projets APC
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PCA NO.: 1350	
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C08	



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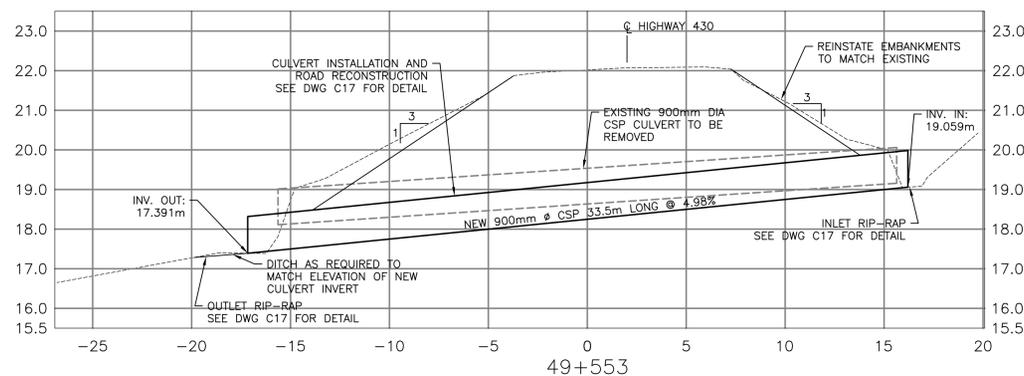
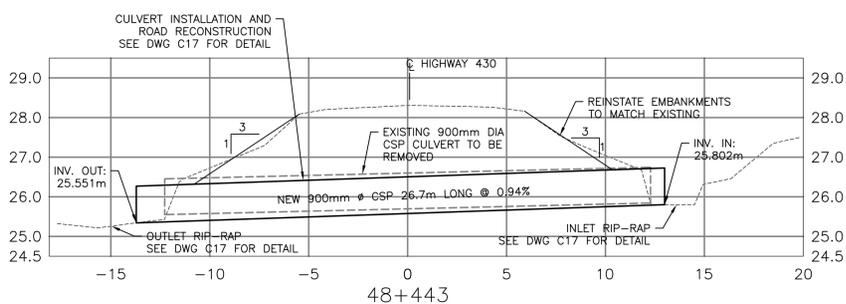
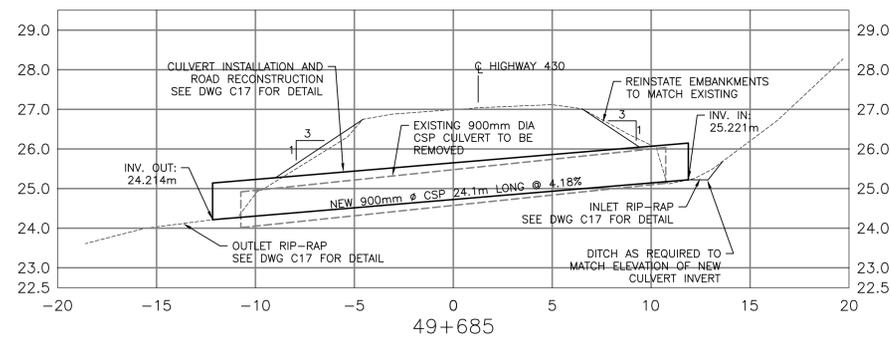
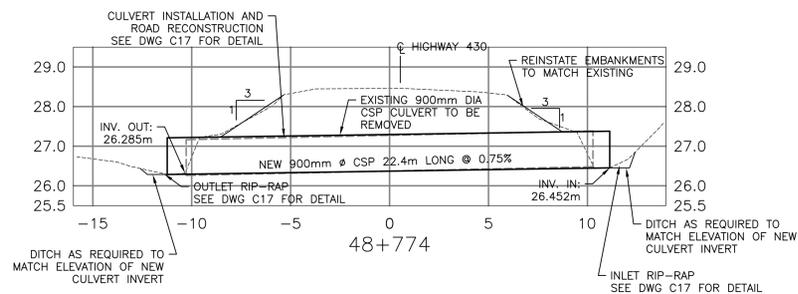
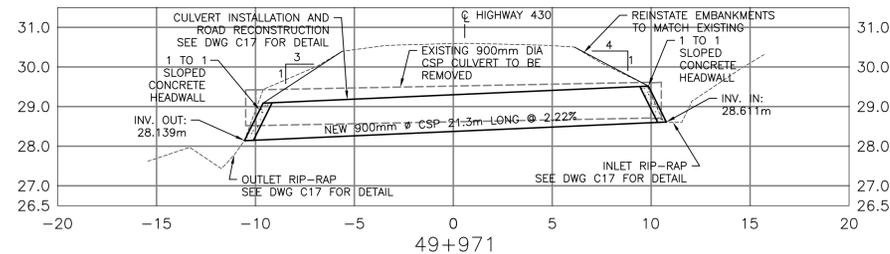
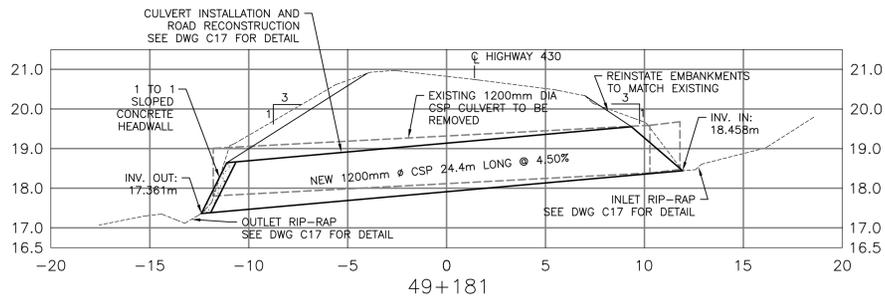
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 47+092 TO 48+042**

designed	G. FLANAGAN	conçu
date	DECEMBER 04, 2015	
drawn	G. GALLANT	dessiné
date	DECEMBER 04, 2015	
approved	J. BABIN	approuvé
date	DECEMBER 04, 2015	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number	no. du projet	
PCA NO.: 1350		
drawing no.	no. du dessin	
C09		



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revisions		date
project		project

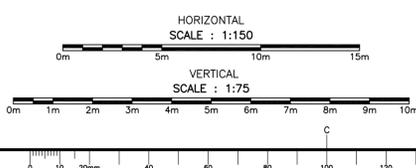
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 48+223 TO 49+971**

designed G. FLANAGAN	conçu
date DECEMBER 04, 2015	date
drawn G. GALLANT	dessiné
date DECEMBER 04, 2015	date
approved J. BABIN	approuvé
date DECEMBER 04, 2015	date
Tender	Submission

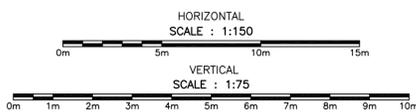
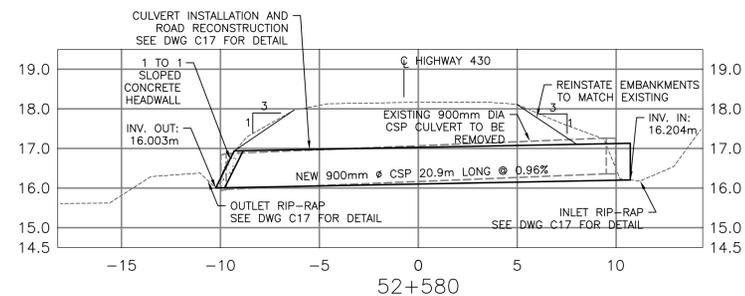
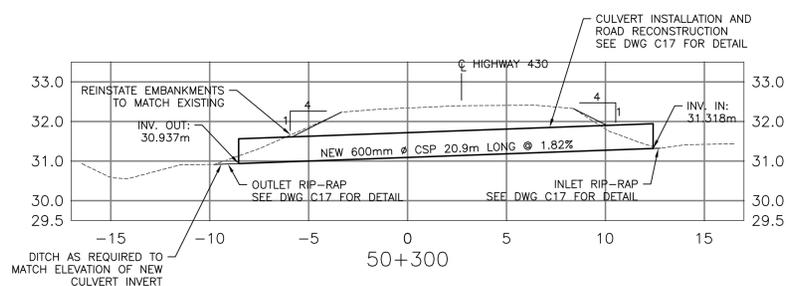
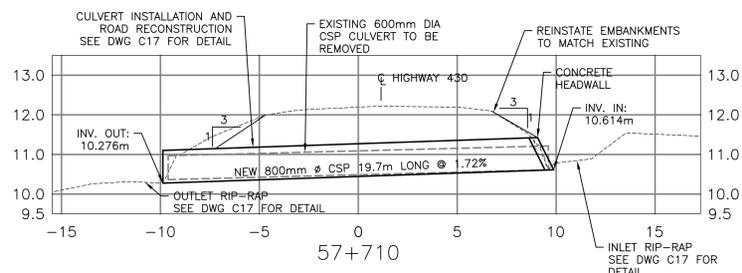
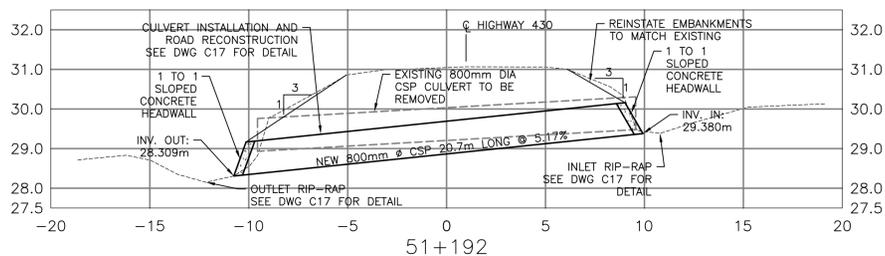
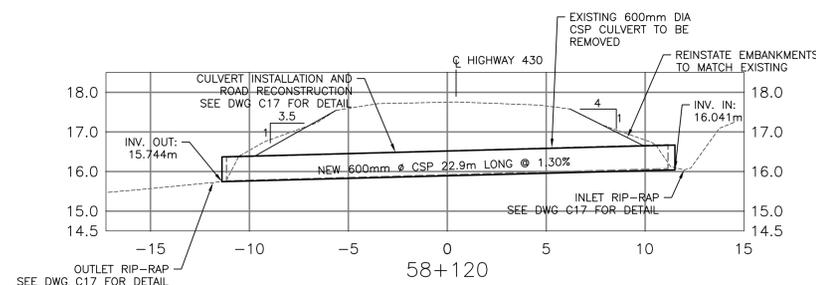
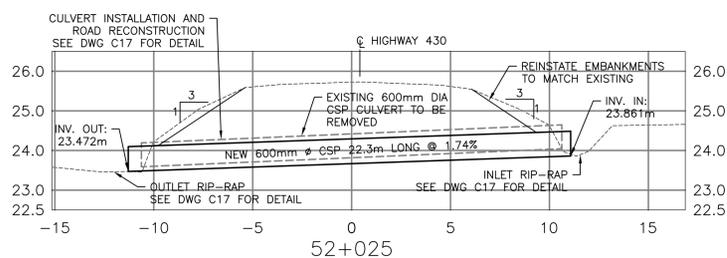
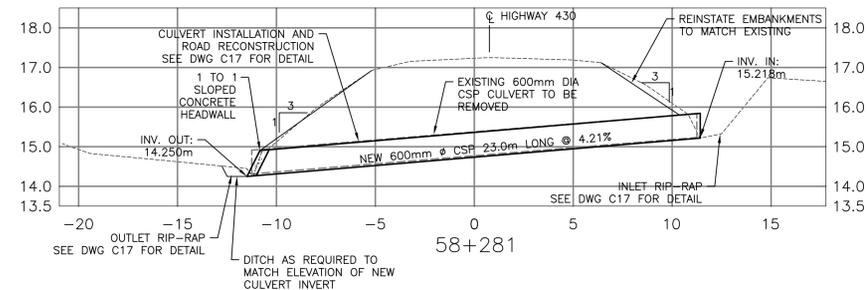
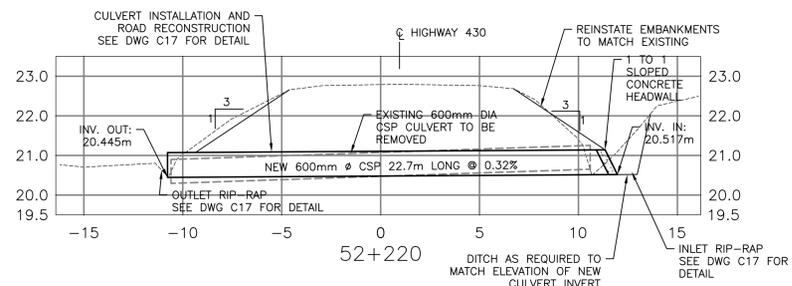
PCA Project Manager Administrateur de projets APC
 project number no. du projet
PCA NO.: 1350

drawing no. no. du dessin
C10





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revisions		date

project project

**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

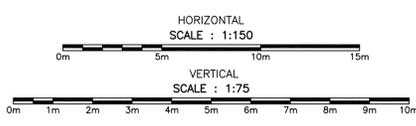
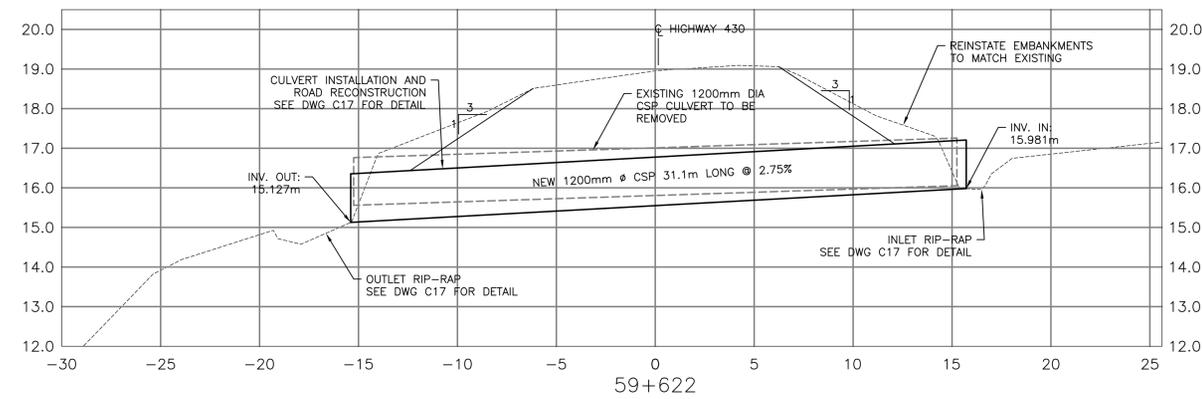
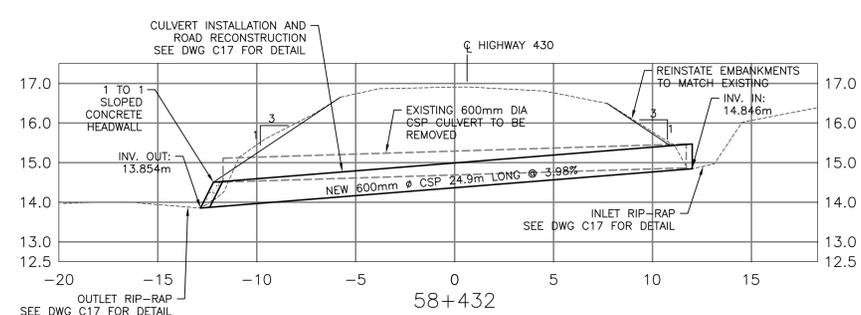
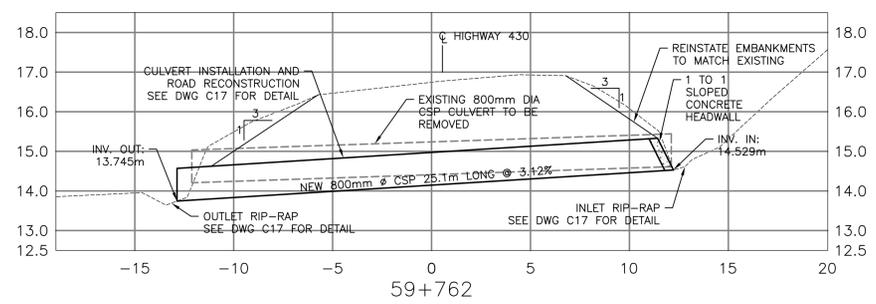
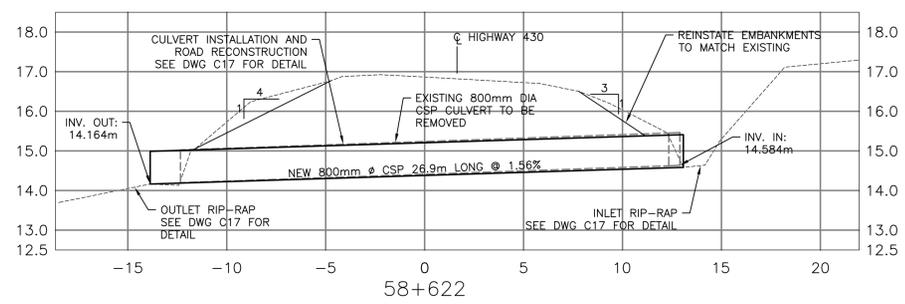
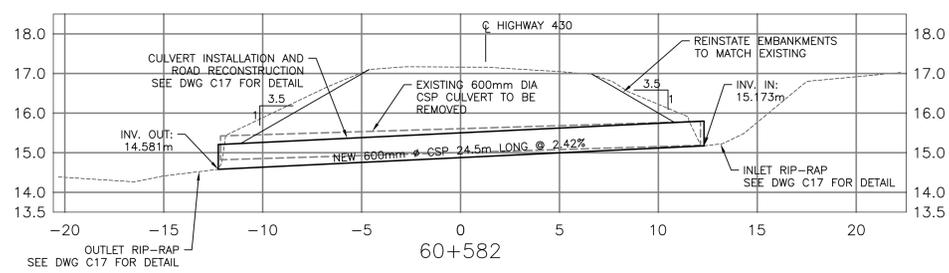
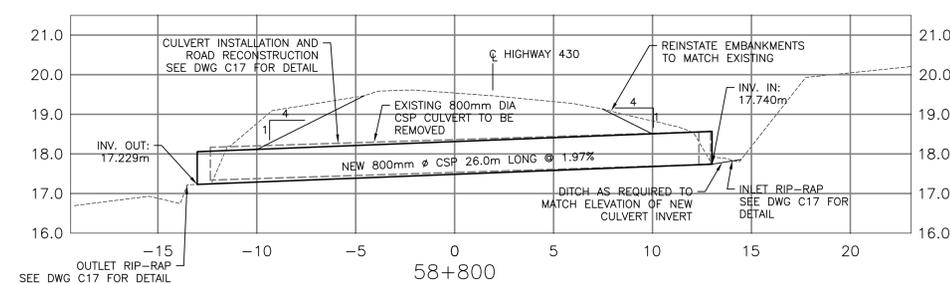
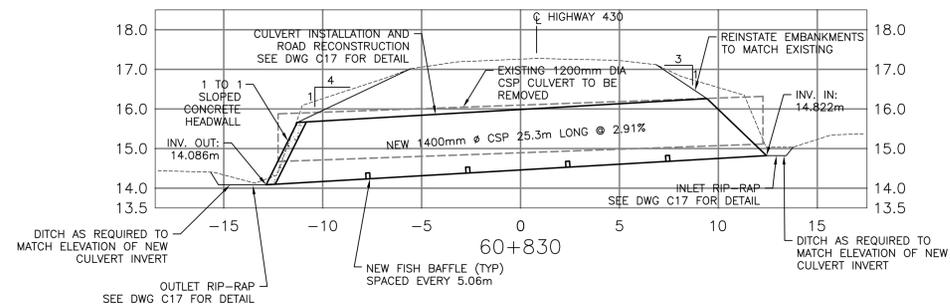
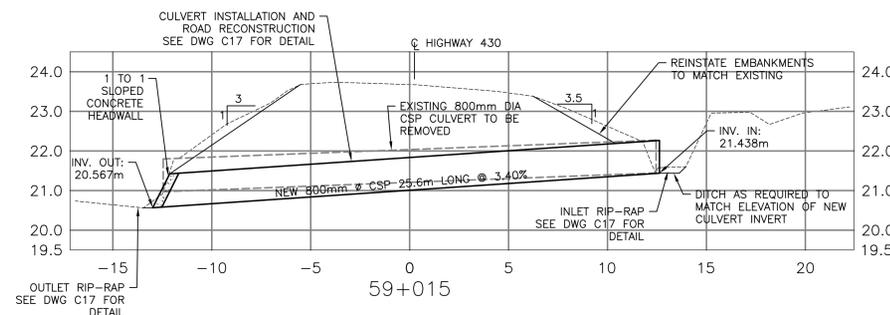
drawing dessin

**CULVERT SECTIONS
 STA. 50+300 TO 58+281**

designed G. FLANAGAN	conçu
date DECEMBER 04, 2015	
drawn G. GALLANT	dessiné
date DECEMBER 04, 2015	
approved J. BABIN	approuvé
date DECEMBER 04, 2015	
Tender	Submission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet
PCA NO.: 1350	
drawing no.	no. du dessin
C11	



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revisions		date
project		project

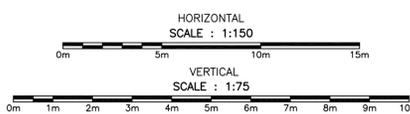
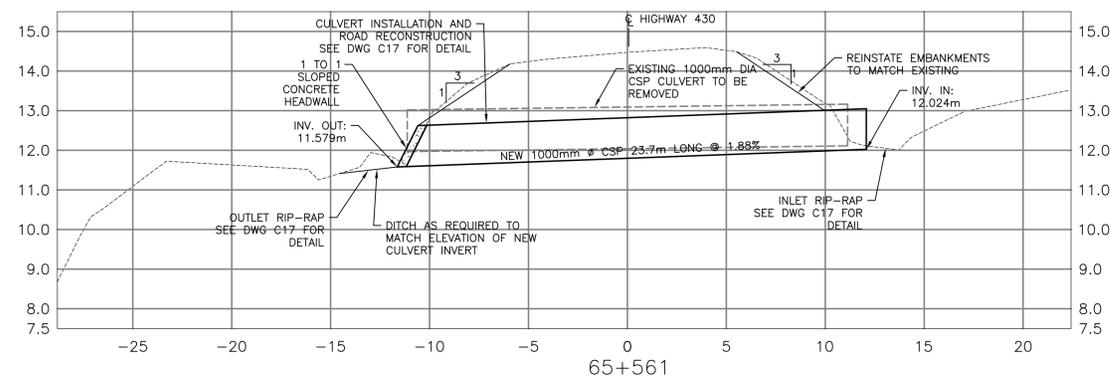
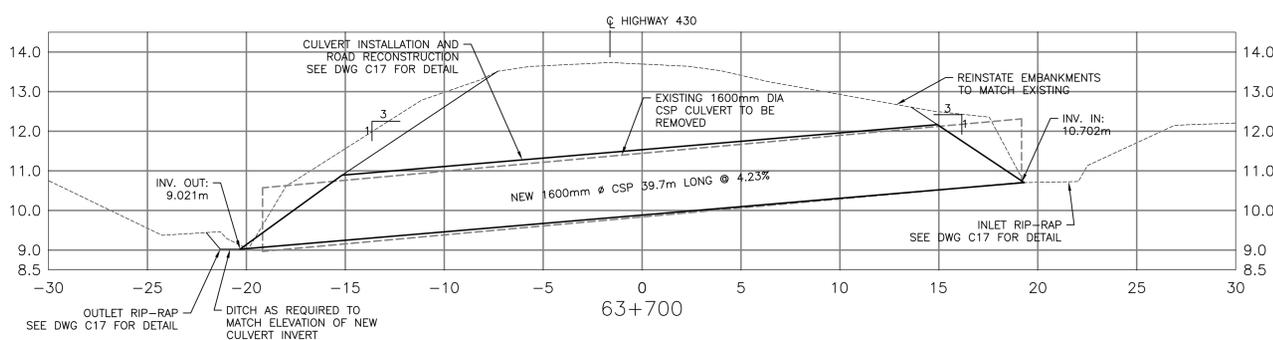
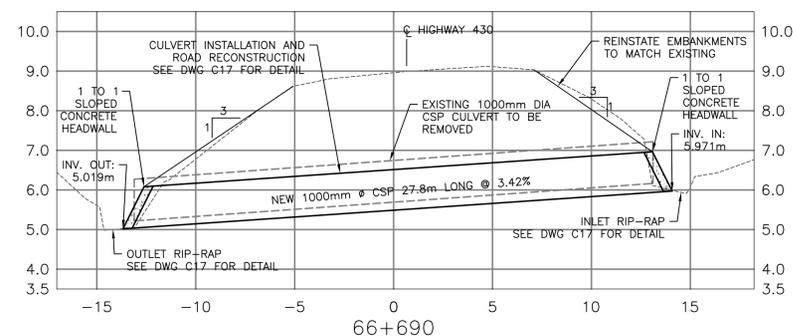
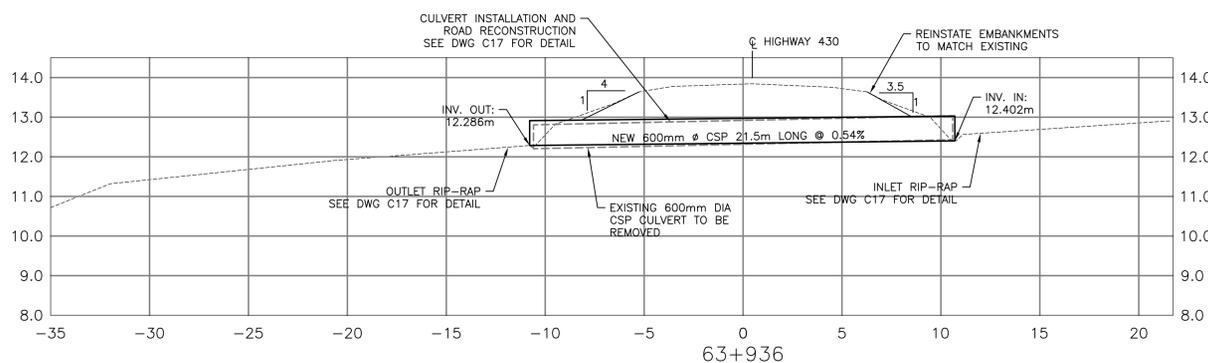
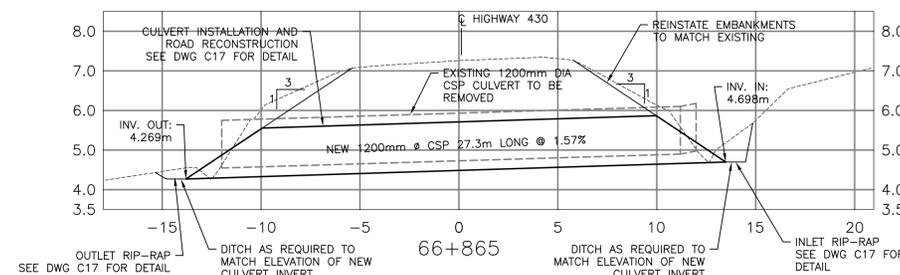
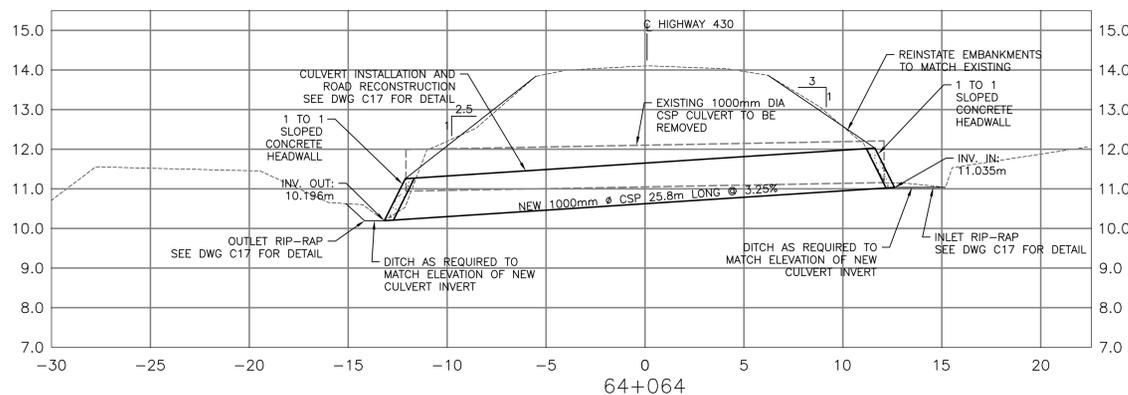
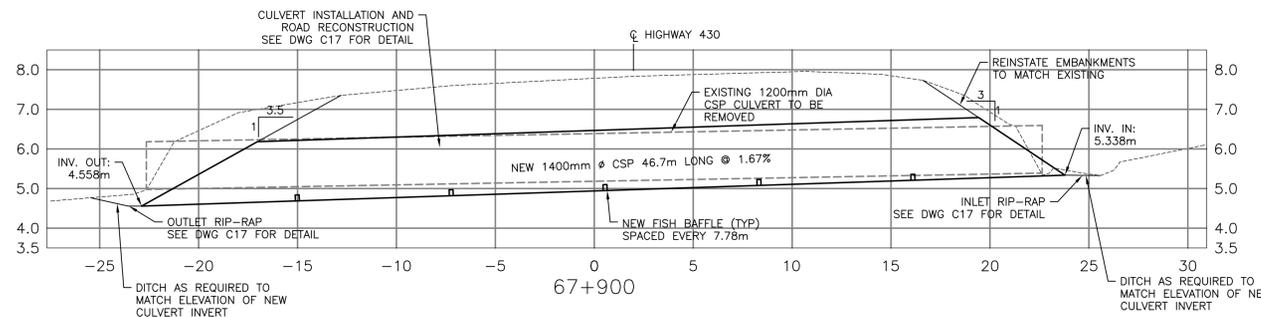
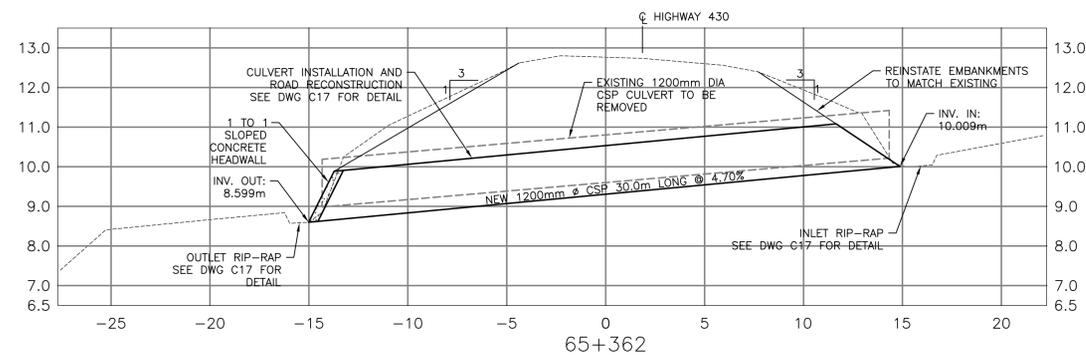
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 58+432 TO 60+830**

designed	G. FLANAGAN	conçu
date	DECEMBER 04, 2015	
drawn	G. GALLANT	dessiné
date	DECEMBER 04, 2015	
approved	J. BABIN	approuvé
date	DECEMBER 04, 2015	
Tender		Submission
PCA Project Manager		Administrateur de projets APC
project number		no. du projet
	PCA NO.: 1350	
drawing no.		no. du dessin
	C12	



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revisions		date

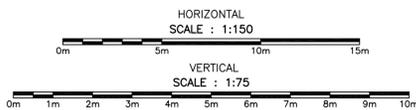
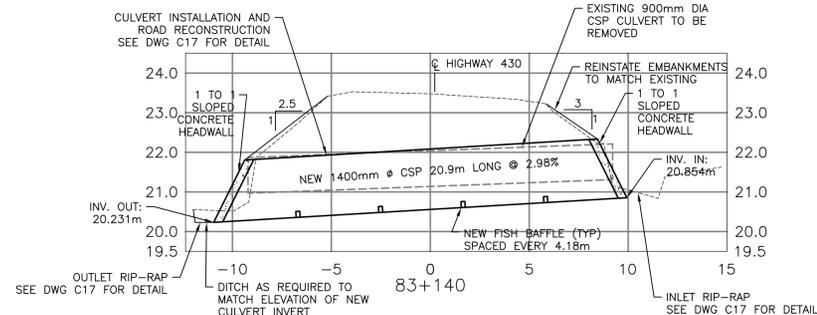
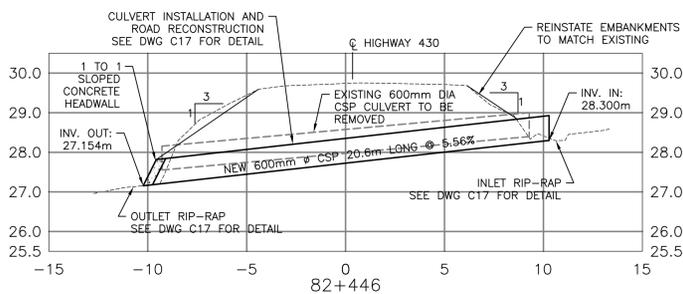
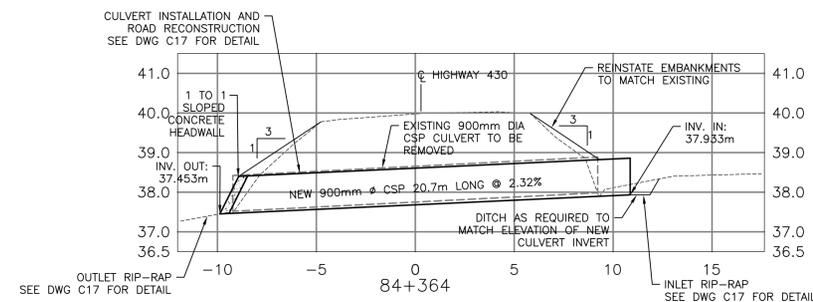
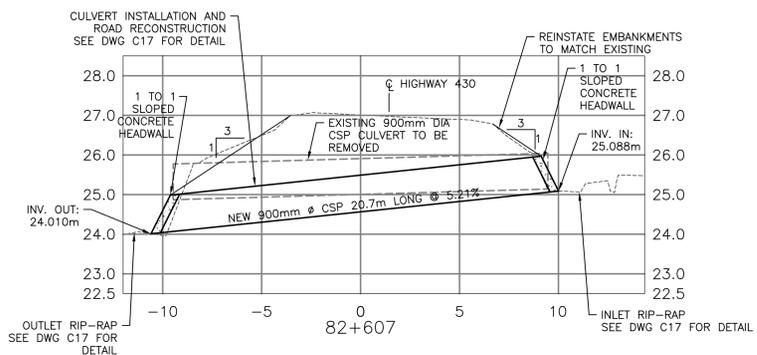
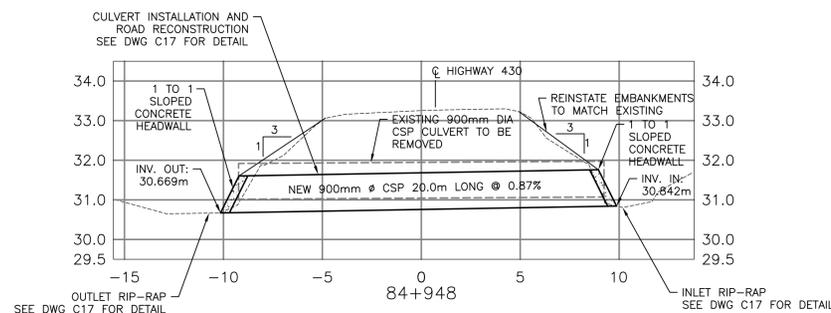
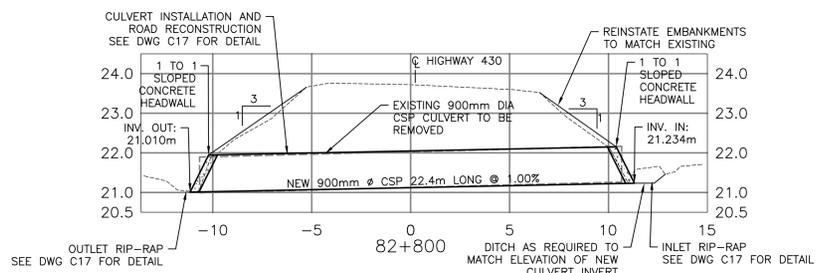
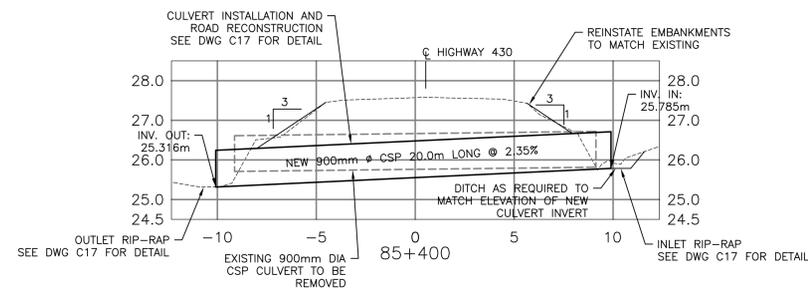
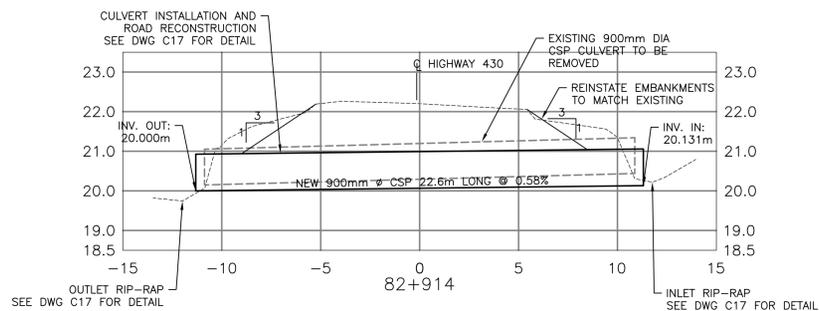
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 63+700 TO 67+900**

designed G. FLANAGAN	conçu
date DECEMBER 04, 2015	
drawn G. GALLANT	dessiné
date DECEMBER 04, 2015	
approved J. BABIN	approuvé
date DECEMBER 04, 2015	
Tender	Submission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet
PCA NO.: 1350	
drawing no.	no. du dessin
C14	



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 SAINT JOHN 123 Prince William Street 254 727, U.S. Canada
 FREDERICTON 504 Regent Street 506 727, U.S. Canada
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revisions		date
project		project

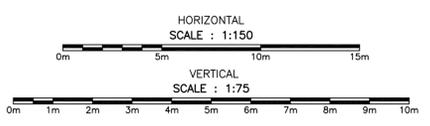
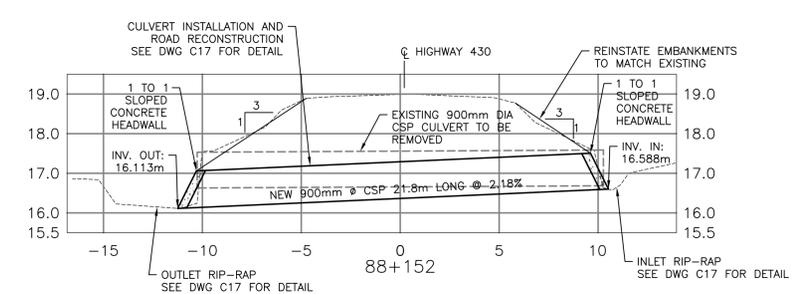
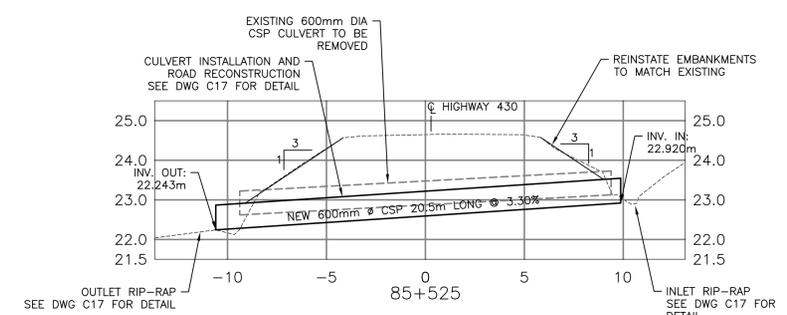
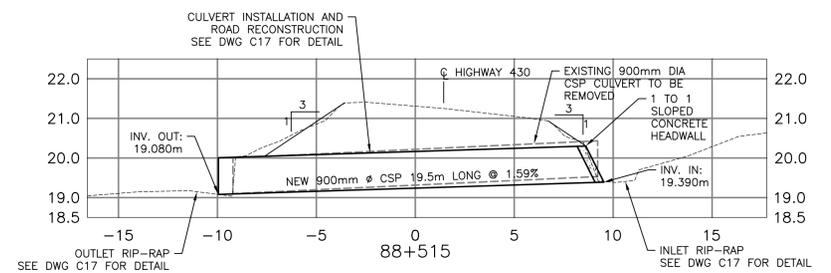
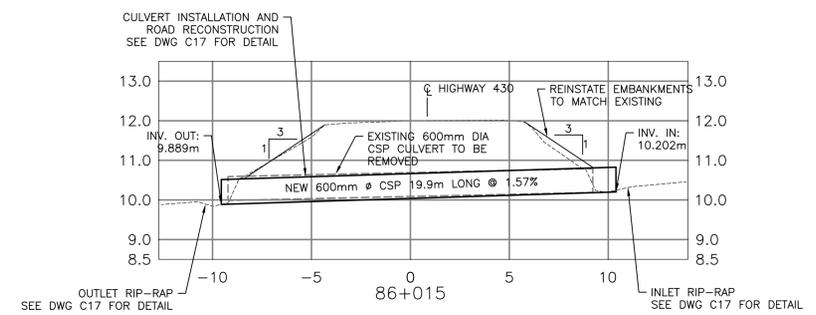
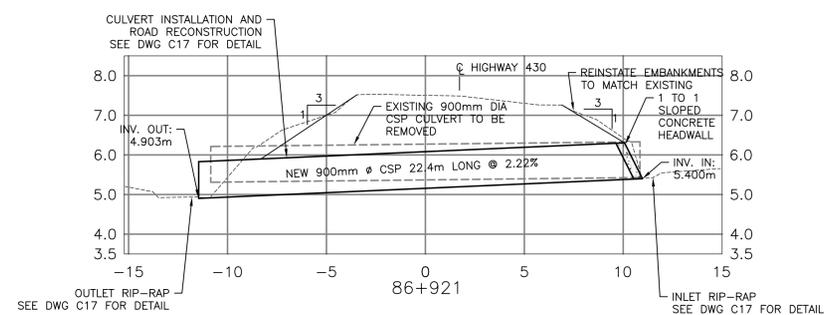
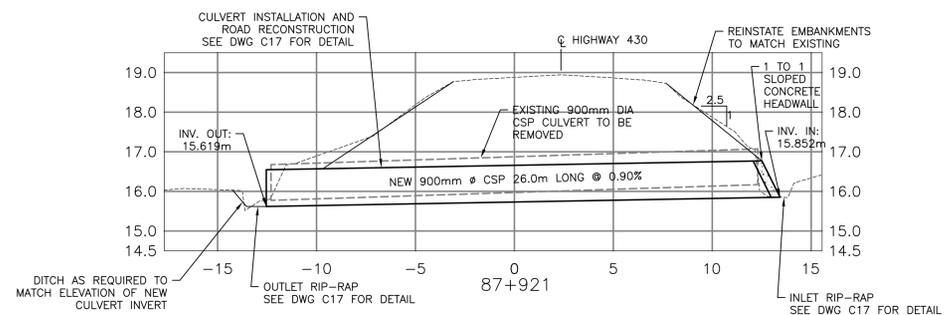
**HIGHWAY 430 NORTH
 (KMS 39.9 TO 88.5)
 RECAPITALIZATION**

**CULVERT SECTIONS
 STA. 82+446 TO 85+400**

designed G. FLANAGAN	comp.
date DECEMBER 04, 2015	
drawn G. GALLANT	dessiné
date DECEMBER 04, 2015	
approved J. BABIN	approuvé
date DECEMBER 04, 2015	
Tender	Submission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet
PCA NO.: 1350	
drawing no.	no. du dessin
C15	



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 FREDERICTON 504 Sheppard Street 254 720-2222
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revisions		date
project		project

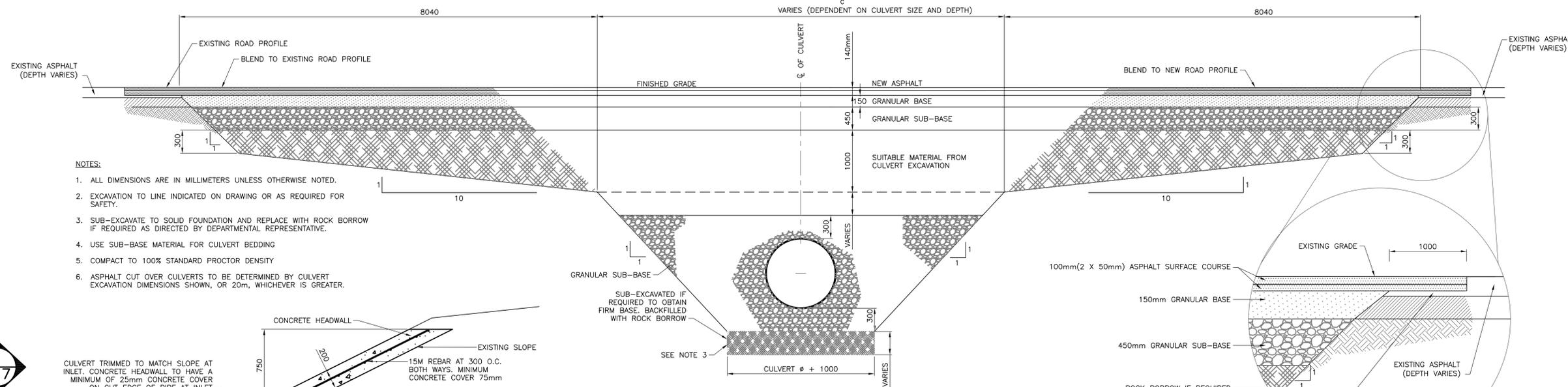
**HIGHWAY 430 NORTH
(KMS 39.9 TO 88.5)
RECAPITALIZATION**

**CULVERT SECTIONS
STA. 85+525 TO 88+515**

designed	G. FLANAGAN	conçu
date	DECEMBER 04, 2015	
drawn	G. GALLANT	dessiné
date	DECEMBER 04, 2015	
approved	J. BABIN	approuvé
date	DECEMBER 04, 2015	
Tender		Soumission
PCA Project Manager	Administrateur de projets APC	
project number	no. du projet	
	PCA NO.: 1350	
drawing no.	no. du dessin	
	C16	



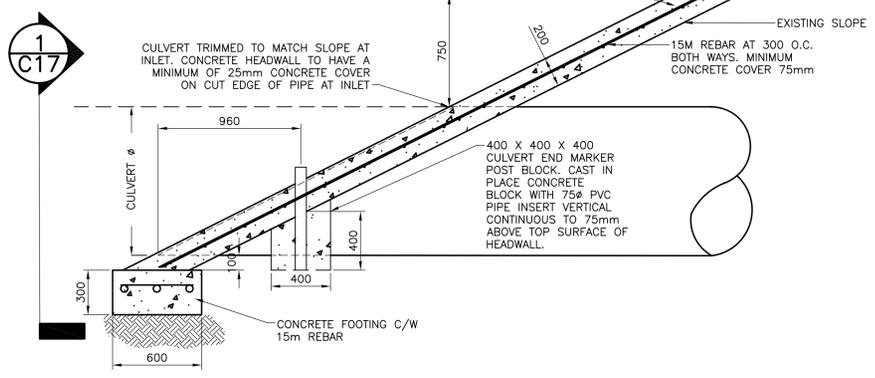
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 SAINT JOHN 123 Prince William Street 254 254, N.B. Canada Tel: (506) 852-2777 Fax: (506) 852-2778
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- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
 2. EXCAVATION TO LINE INDICATED ON DRAWING OR AS REQUIRED FOR SAFETY.
 3. SUB-EXCAVATE TO SOLID FOUNDATION AND REPLACE WITH ROCK BORROW IF REQUIRED AS DIRECTED BY DEPARTMENTAL REPRESENTATIVE.
 4. USE SUB-BASE MATERIAL FOR CULVERT BEDDING
 5. COMPACT TO 100% STANDARD PROCTOR DENSITY
 6. ASPHALT CUT OVER CULVERTS TO BE DETERMINED BY CULVERT EXCAVATION DIMENSIONS SHOWN, OR 20m, WHICHEVER IS GREATER.

TYPICAL CULVERT INSTALLATION
SCALE: N.T.S.

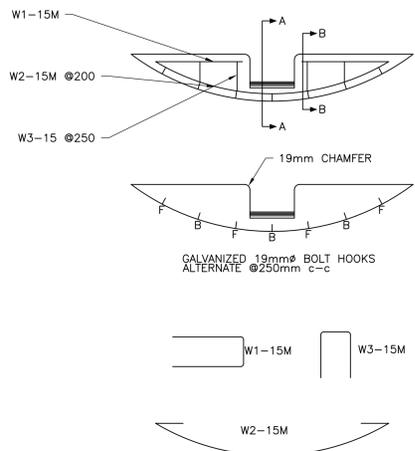
MILL 1000mm KEY WAY 50mm THICK IN AREAS OUTSIDE THE ASPHALT REHABILITATION. IN ASPHALT REHABILITATION AREA 40mm OF ASPHALT SURFACE COURSE TO THE SAME ELEVATION AS THE MILLED SURFACE OVERLAY 100mm OF ASPHALT SEAL COURSE WITH REHABILITATION OPERATIONS.



CONCRETE HEADWALL (TYP.)
SCALE: 1:20

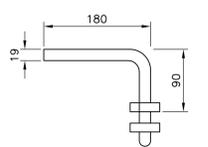


400 X 400 X 400 CULVERT END MARKER POST BLOCK. CAST IN PLACE CONCRETE BLOCK WITH 75# PVC PIPE INSERT VERTICAL CONTINUOUS TO 75mm ABOVE TOP SURFACE OF HEADWALL.

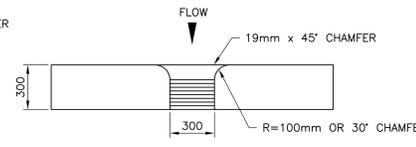


SLOTTED WEIR BAFFLE DETAILS
N.T.S.

NOTES:
CONCRETE QUALITY 30 MPa @ 28 DAYS
AIR ENTRAINMENT 6±1%



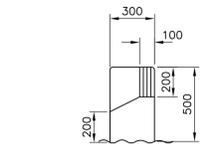
BOLT HOOK DETAIL
N.T.S.



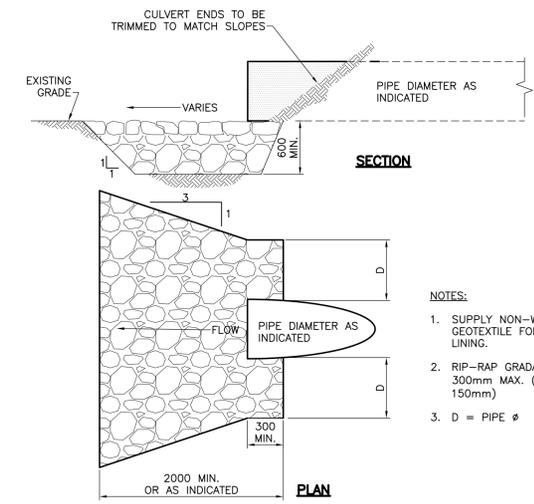
SECTION A-A



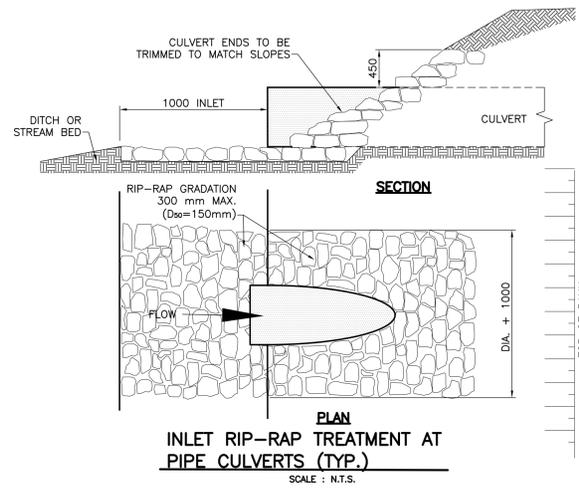
SECTION B-B



OUTLET RIP-RAP APRON AT NEW PIPE CULVERTS (TYP.)
SCALE: N.T.S.



- NOTES:**
1. SUPPLY NON-WOVEN GEOTEXTILE FOR APRON LINING.
 2. RIP-RAP GRADATION: 300mm MAX. (D₅₀ = 150mm)
 3. D = PIPE Ø



INLET RIP-RAP TREATMENT AT PIPE CULVERTS (TYP.)
SCALE: N.T.S.

TYPICAL SECTION
N.T.S.

1	ISSUED FOR TENDER	19/02 2018
revisions		date

project project
HIGHWAY 430 NORTH (KMS 39.9 TO 88.5) RECAPITALIZATION

CULVERT DETAILS AND CROSS SECTIONS

designed G. FLANAGAN	conçu
date OCTOBER 22, 2015	
drawn A.CALDWELL	dessiné
date OCTOBER 22, 2015	
approved J.BABIN	approuvé
date OCTOBER 22, 2015	
Tender	Submission
PCA Project Manager	Administrateur de projets APC
project number	no. du projet
PCA NO.: 1350	
drawing no.	no. du dessin
C17	



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 Project No. 16026

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PROVINCE OF NEWFOUNDLAND
PERMIT HOLDER
 This Permit Allows
 Valron Engineers Inc.
 To practice Professional Engineering
 in Newfoundland and Labrador.
 Permit No. as issued by APECON 30005
 which is valid for this year 2016.



0	ISSUED FOR TENDER	FEB. 18 2016
revisions		date
project		project

HIGHWAY 430 NORTH (KMS 39.9 TO 88.5) RECAPITALIZATION

GROS MORNE, NFLD
CULVERT AT STA 42+000 FOUNDATION PLAN SECTIONS AND DETAILS

designed RBV	conçu	
date FEB. 18, 2016		
drawn RK	dessiné	
date FEB. 18, 2016		
approved JMC	approuvé	
date FEB. 18, 2016		
Tender	Soumission	
PWSC Project Manager	Administrateur de projets TPSC	
project number	no. du projet	
PCA NO.: 1350		
drawing no.	no. du dessin	
S01		

NOTES:

FOUNDATION DESIGN BASED ON INFORMATION SUPPLIED BY AIL FOR BOLT-A-PLATE STRUCTURE 19A OPEN BOTTOM CSP ARCH CULVERT (3,350 m WIDE x 1,350 m HIGH x 36.124 m LONG) AND MAY VARY IF SUPPLIED BY OTHER MANUFACTURERS.
 CONCRETE FOOTING HAS BEEN DESIGNED FOR THE FOLLOWING LOADS APPLIED TO THE TOP OF THE FOUNDATION WALL.

LOAD	COVER	DEAD LOAD	LIVE LOAD
kN/m	m	F _d	F _l
UNFACTORED	4.0	193.95	38.85
FACTORED	4.0	242.43	49.81

SOIL PRESSURE ON FOUNDATION STRUCTURE WAS BASED ON A SOIL DENSITY OF 22.0 kN/m³ AND A K_a=0.26.

THE FOOTING DESIGN WAS BASED ON SLS MINIMUM SOIL BEARING CAPACITY OF 225 kPa. A COEFFICIENT OF FRICTION OF 0.50 WAS USED TO ENSURE RESISTANCE OF FOUNDATION STRUCTURE FROM SLIDING UNDER HORIZONTAL LOADS.

ANY DEVIATION FROM THE ABOVE LOADINGS ON THE CULVERT FOUNDATION WILL REQUIRE VERIFICATION BY A QUALIFIED ENGINEER REGISTERED OR LICENSED IN THE PROVINCE OF NEWFOUNDLAND AND LABRADOR. ADDITIONAL COST FOR ENGINEERING AND MODIFICATIONS TO FOUNDATION STRUCTURE WILL BE ASSUMED BY CONTRACTOR.

CONTRACTOR IS TO CONFIRM IN WRITING THAT THE SOIL BELOW FOUNDATION WAS CHECKED FOR SETTLEMENT IN ACCORDANCE WITH ARCH SUPPLIER'S DESIGN CRITERIA PRIOR TO INSTALLATION OF ARCH.

BACKFILLING AROUND INSTALLATIONS:
 DO NOT BACKFILL AROUND OR OVER CAST-IN-PLACE CONCRETE WITHIN 24 HOURS AFTER PLACING OF CONCRETE.

PLACE LAYERS SIMULTANEOUSLY ON BOTH SIDES OF INSTALLED WORK TO EQUALIZE LOADING. DIFFERENCE IN HEIGHT NOT TO EXCEED 200mm.

FOUNDATION CONSTRUCTION IS NOT TO PROCEED UNTIL CONTRACTOR HAS SUBMITTED AND CSP CULVERT ENGINEER-STAMPED DRAWINGS COMPLETE WITH REACTIONS HAS BEEN REVIEWED BY DEPARTMENTAL REPRESENTATIVE.

