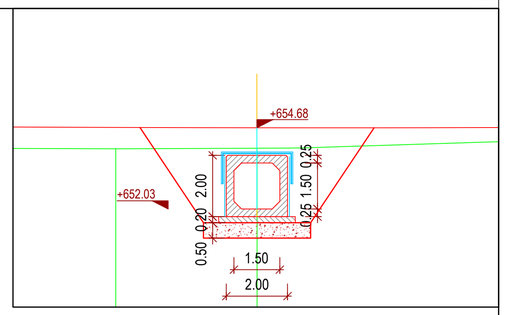
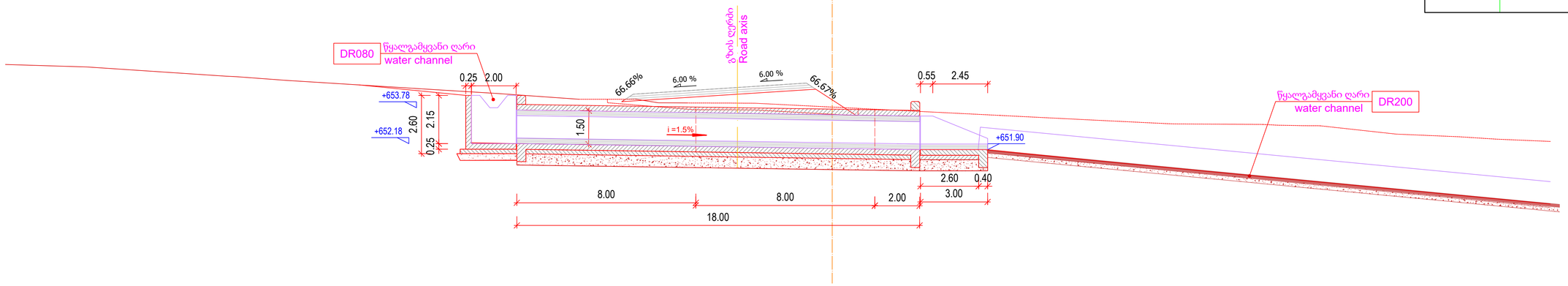
კულვერტი / BOX_CULVERT 1.50 x 1.50 LR02A / LR02A 1+020.00

SHEET 001

გრძივი პროფილი / LONGITUDINAL SECTION





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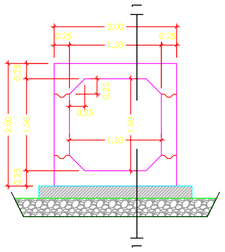
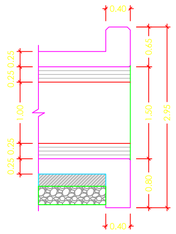
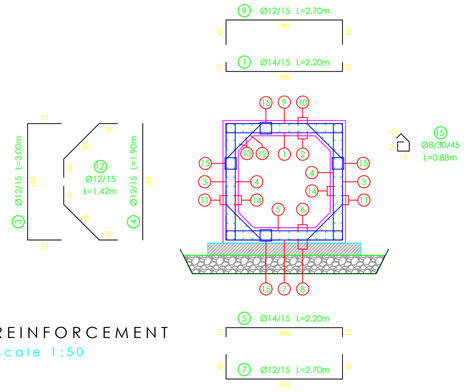
| | | |



FORMWORK
scale 1:50

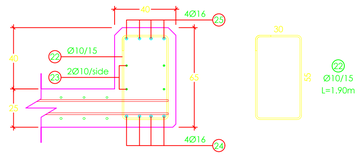


SECTION 1-1
scale 1:50



REINFORCEMENT
scale 1:50

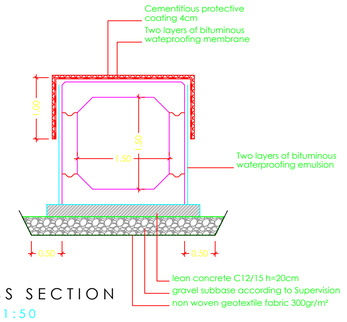
Detail of headwall
scale 1:20



CULVERT'S HEADWALL - QUANTITIES

No	SHAPE OF BAR	DIAMETER & SPACING	NUMBER OF BARS	CUTTING LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
22	0.30 0.15 0.35 0.25	Ø10/15	13	1.90	24.70	0.62	15.24
23	1.90	Ø10	4	1.90	7.60	0.62	4.69
24	0.55 1.90 0.55	Ø16	4	3.00	12.00	1.58	18.94
25	0.55 1.90 0.55	Ø16	4	3.00	12.00	1.58	18.94
		TOTAL (kg/headwall)					57.80

REINFORCED CONCRETE (m^3)	0.32



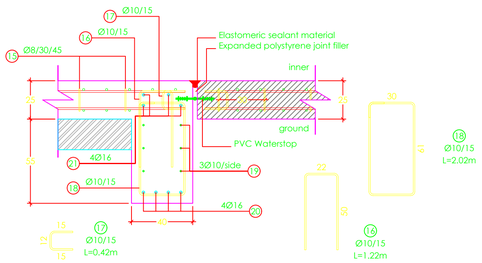
CROSS SECTION
scale 1:50

CULVERT 1.50 x 1.50 - QUANTITIES PER 1m LENGTH

No	SHAPE OF BAR	DIAMETER & SPACING	NUMBER OF BARS	CUTTING LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
1	0.15 1.90 0.15	Ø14/15	7	2.20	15.40	1.21	18.60
2	(1.00m)	Ø12/15	12	1.00	12.00	0.89	10.66
3	0.55 1.90 0.55	Ø12/15	14	3.00	42.00	0.89	37.30
4	1.90	Ø12/15	14	1.90	26.60	0.89	23.62
5	0.15 1.90 0.15	Ø14/15	7	2.20	15.40	1.21	18.60
6	(1.00m)	Ø12/15	12	1.00	12.00	0.89	10.66
7	0.40 1.90 0.40	Ø12/15	7	2.70	18.90	0.89	16.78
8	(1.00m)	Ø12/15	12	1.00	12.00	0.89	10.66
9	0.40 1.90 0.40	Ø12/15	7	2.70	18.90	0.89	16.78
10	(1.00m)	Ø12/15	12	1.00	12.00	0.89	10.66
11	(1.00m)	Ø12/15	28	1.00	28.00	0.89	24.86
12	0.42 0.82 0.42	Ø12/15	28	1.42	39.76	0.89	35.31
13	(1.00m)	Ø12	8	1.00	8.00	0.89	7.10
14	(1.00m)	Ø12/15	20	1.00	20.00	0.89	17.76
15	0.10 0.15 0.10 0.19 0.19	Ø8	48	0.88	42.24	0.40	16.68
		TOTAL (kg)					276.03

LEAN CONCRETE (m^3)	0.50
REINFORCED CONCRETE (m^3)	1.88

Detail of apron with waterstop
scale 1:20

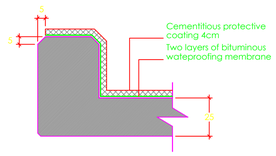


CULVERT'S APRON - QUANTITIES

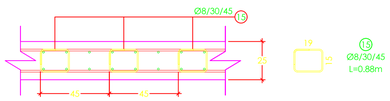
No	SHAPE OF BAR	DIAMETER & SPACING	NUMBER OF BARS	CUTTING LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
16	0.22 0.50 0.22	Ø10/15	13	1.22	15.86	0.62	9.79
17	0.12 0.15 0.12	Ø10/15	13	0.42	5.46	0.62	3.37
18	0.30 0.41 0.41 0.20	Ø10/15	13	2.02	26.26	0.62	16.20
19	1.90	Ø10	6	1.90	11.40	0.62	7.03
20	0.55 1.90 0.55	Ø16	4	3.00	12.00	1.58	18.94
21	0.55 1.90 0.55	Ø16	4	3.00	12.00	1.58	18.94
		TOTAL (kg/apron)					74.26

REINFORCED CONCRETE (m^3)	0.44

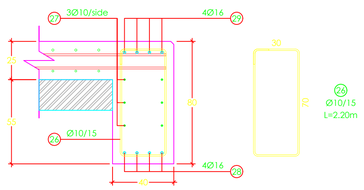
Waterproofing detail of headwall
scale 1:20



Detail of shear reinforcement
scale 1:20



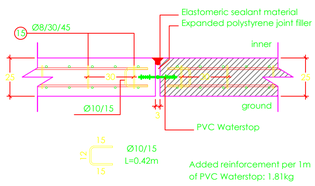
Detail of apron
scale 1:20



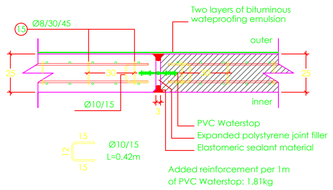
CULVERT'S APRON - QUANTITIES

No	SHAPE OF BAR	DIAMETER & SPACING	NUMBER OF BARS	CUTTING LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
26	0.30 0.70 0.70 0.20	Ø10/15	13	2.20	28.60	0.62	17.65
27	1.90	Ø10	6	1.90	11.40	0.62	7.03
28	0.55 1.90 0.55	Ø16	4	3.00	12.00	1.58	18.94
29	0.55 1.90 0.55	Ø16	4	3.00	12.00	1.58	18.94
		TOTAL (kg/apron)					62.55

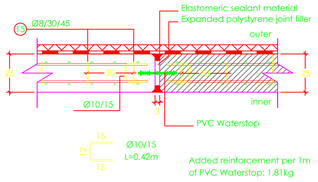
Detail of the construction joint at the bottom slab
scale 1:20



Detail of the construction joint at the walls
scale 1:20



Detail of the construction joint at the top slab
scale 1:20



STRUCTURAL NOTES

SHEET 005

MATERIALS

REINFORCED CONCRETE	C30/37
LEAN CONCRETE	C12/15
STEEL REINFORCEMENT	B500C

LOADS

REINFORCED CONCRETE SELF WEIGHT	25.00 KN/m³
SOIL UNIT WEIGHT	19.00 KN/m³
WATER UNIT WEIGHT	10.00 KN/m³
TRAFFIC LOADS: EC1991-2 / LOAD MODEL 1	
TANDEM SYSTEM (TS): WEIGHT per AXLE	300 KN
UDL SYSTEM: DISTRIBUTED LOAD	9.00 KN/m²
THERMAL ACTIONS: EC1991-5	
TEMPERATURE DIFFERENCE	+5°/-35°
CONCRETE SHRINKAGE TAKEN INTO ACCOUNT	

SEISMIC PARAMETERS

TYPE OF RESPONSE SPECTRUM	1
DESIGN GROUND ACCELERATION	a_{gR} = 0.26 g
IMPORTANCE FACTOR	γ_I = 1.00
SOIL CATEGORY	D
SOIL FACTOR	S = 1.35
BEHAVIOUR FACTOR	q = 1.00

DURABILITY

EXPOSURE CLASS	XD2
CONCRETE COVER	50 mm

SOIL PARAMETERS

MODULUS OF SUBGRADE REACTION	30.000 KN/m²

STRUCTURAL DESIGN CODES

EN1990	Basis of structural design
EN1991-1	Actions on structures - Part 1: General actions
EN1991-2	Actions on structures - Part 2: Traffic loads on bridges
EN1992-1	Design of concrete structures - Part 1: General rules and rules for buildings
EN1992-2	Design of concrete structures - Part 2: Concrete bridges Design and detailing rules
EN1997-1	Geotechnical design - Part 1: General rules
EN1998-1	Design of structures for earthquake resistance - Part 1: General rules, sesmic actions and rules for buildings
EN1998-2	Design of structures for earthquake resistance - Part 1: Bridges
EN1998-5	Design of structures for earthquake resistance - Part 5: Foundations, retaining structures and geotechnical aspects

CULVERT 1.50x1.50
(up to 3m - 0.26g)

Sc01

scale 1:50

CLIENT/დამკვეთი:
MINISTRY OF REGIONAL DEVELOPMENT AND INFRASTRUCTURE OF GEORGIA, TBILISI
ROADS DEPARTMENT OF GEORGIA
საქართველოს რეგიონული განვითარებისა და ინფრასტრუქტურის სამინისტრო, თბილისი
საქართველოს საგზაო-ბინძისლი გზების დეპარტამენტი

PROJECT/პროექტი:
UPGRADING OF TBILISI - SAGAREJO AND SAGAREJO - BAKURTSIKHE
ACTIVITY 2: PREPARATION OF DETAILED DESIGN
თბილისი - საგარეჯო და საგარეჯო - ბაკურციხის გაბასლება
აქტივობა 2: დეტალური პროექტის მომზადება

CONSULTANT/კონსულტანტი:
ILF CONSULTING ENGINEERS
AECOM

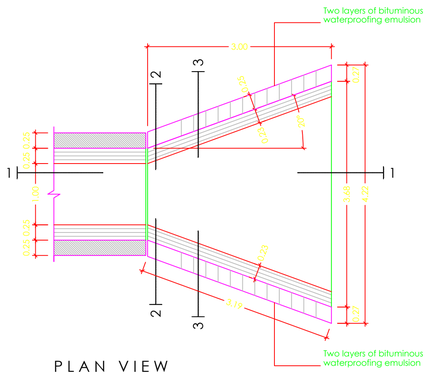
REV./ გად.	DATE/თარიღი	ISSUE, SCOPE OF REVISION / საკითხი, ცვლილების სფერო	PREP./მომზადდა	CHECK./შემოწმდა	APPR./დამტკიცდა
01	-/-2020	SECOND ISSUE / მეორე საკითხი	O.Q. /ო.ქ.	O.Q. /ო.ქ.	C.N. /ქ.ნ.
00	29/05/2020	FIRST ISSUE / პირველი საკითხი	O.Q. /ო.ქ.	O.Q. /ო.ქ.	C.N. /ქ.ნ.

TITLE:
BOX CULVERT 1.50x1.50 CL0.005
REINFORCEMENT AND CONCRETE DETAILS
LR02A 01+020.00 0.500

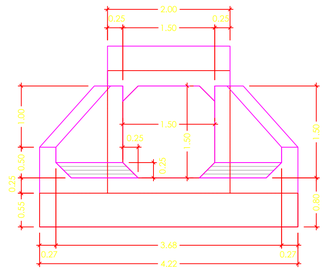
სათაური:
კვეთური 1.50x1.50 CL0.005
არმატურა და ბეტონის დეტალები
LR02A 01+020.00

SCALE/მასშტაბი		1:50 (A1), 1:100 (A3)	
DRAWING NO./ნახაზის ნომერი		CL0_HYD_01020_005	
PROJECT/პროექტი	Q290	SHEET/გვერდი	002

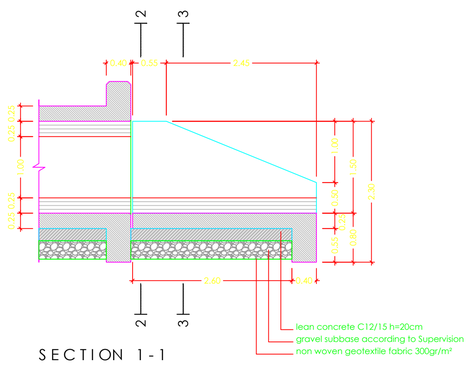
© ILF 2021 c:\users\user\box\12_mehrab_kopaleishvili\cl-0_culverts\cl-0_culverts 30-12-2020_working_files\formwork reinforcement\formwork reinforcement_1.50x1.50_layouts.dwg



PLAN VIEW
scale 1:50

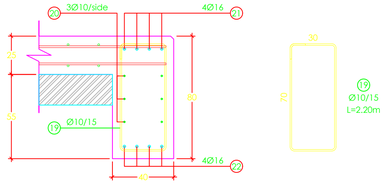


FRONT VIEW
scale 1:50



SECTION 1-1
FORMWORK
scale 1:50

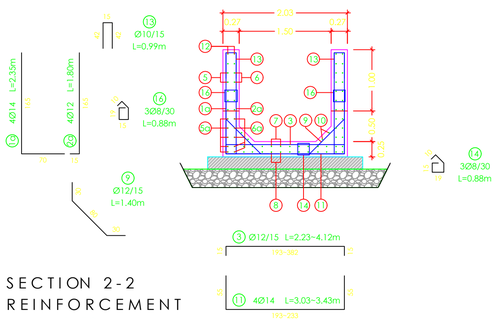
Detail of apron
scale 1:20



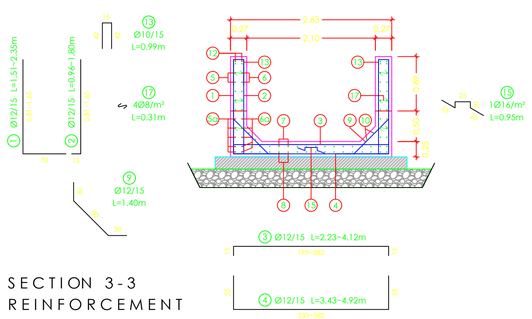
INLET STRUCTURE - QUANTITIES

No	SHAPE OF BAR	DIAMETER & SPACING	NUMBER OF BARS	CUTTING LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
1	0.81 - 1.65 (0.70)	Ø12/15	28	1.93	54.04	0.89	47.99
1a	1.65 (0.70)	Ø14	8	2.35	18.80	1.21	22.71
1b	1.20 - 1.36	Ø12	6	1.28	7.68	0.89	6.82
2	0.81 - 1.65 (0.15)	Ø12/15	28	1.38	38.64	0.89	34.31
2a	1.65 (0.15)	Ø12	8	1.80	14.40	0.89	12.79
2b	1.20 - 1.36	Ø12	6	1.28	7.68	0.89	6.82
3	0.15 / 1.93-3.82 / 0.15	Ø12/15	17	3.18	53.98	0.89	47.93
4	0.55 / 2.33-3.82 / 0.55	Ø12/15	13	4.18	54.28	0.89	48.20
5	0.25 / 0.48 - 3.09	Ø12/15	12	1.92	22.98	0.89	20.41
5a	0.25 / 3.09	Ø12	10	3.22	32.20	0.89	28.59
6	0.25 / 0.48 - 3.09	Ø12/15	12	1.92	22.98	0.89	20.41
6a	0.25 / 3.09	Ø12	10	3.22	32.20	0.89	28.59
7	0.13 / 2.90 / 0.13	Ø12/15	14	3.16	44.24	0.89	39.29
7a	0.13 / 0.94 - 2.90 / 0.13	Ø12/15	8	2.18	17.44	0.89	15.49
8	0.13 / 2.90 / 0.13	Ø12/15	14	3.16	44.24	0.89	39.29
8a	0.13 / 0.94 - 2.90 / 0.13	Ø12/15	8	2.18	17.44	0.89	15.49
9	0.25 / 0.80 / 0.25	Ø12/15	42	1.40	58.80	0.89	52.21
10	0.13 / 3.09 / 0.13	Ø12	4	3.35	13.40	0.89	11.90
11	0.55 / 1.93 - 2.33 / 0.55	Ø14	4	3.23	12.92	1.21	15.61
12	0.30 / 2.73 / 0.30	Ø12	4	3.83	15.32	0.89	13.60
13	0.15 / 0.42 / 0.42	Ø10/15	42	0.99	41.58	0.62	25.65
14	0.15 / 0.19 / 0.19 / 0.15	3Ø8/30	15	0.88	13.20	0.40	5.21
15	0.15 / 0.25 / 0.25 / 0.15	1Ø16/m²	6	0.95	5.70	1.58	8.99
16	0.15 / 0.19 / 0.19 / 0.15	3Ø8/30	24	0.88	21.12	0.40	8.34
17	0.15 / 0.15	4Ø8/m²	22	0.31	6.82	0.40	2.69
18	0.13 / 0.42 / 0.42	Ø10/15	8	0.99	7.92	0.62	4.89
19	0.20 / 0.70 / 0.70 / 0.20	Ø10/15	28	2.20	61.60	0.62	38.01
20	3.82 - 4.12	Ø10	6	3.97	23.82	0.62	14.70
21	0.55 / 3.82 - 4.12	Ø16	4	5.07	20.28	1.58	32.00
22	0.55 / 3.82 - 4.12	Ø16	4	5.07	20.28	1.58	32.00
		TOTAL (kg)					700.93

LEAN CONCRETE (m^3)	2.44
REINFORCED CONCRETE (m^3)	5.18



SECTION 2-2
REINFORCEMENT
scale 1:50



SECTION 3-3
REINFORCEMENT
scale 1:50

STRUCTURAL NOTES

SHEET 005

MATERIALS

REINFORCED CONCRETE	C30/37
LEAN CONCRETE	C12/15
STEEL REINFORCEMENT	B500C

LOADS

REINFORCED CONCRETE SELF WEIGHT	25.00 KN/m³
SOIL UNIT WEIGHT	19.00 KN/m³
WATER UNIT WEIGHT	10.00 KN/m³
TRAFFIC LOADS: EC1991-2 / LOAD MODEL 1	
TANDEM SYSTEM (TS): WEIGHT per AXLE	300 KN
UDL SYSTEM: DISTRIBUTED LOAD	9.00 KN/m²
THERMAL ACTIONS: EC1991-5	
TEMPERATURE DIFFERENCE	+5°/-35°
CONCRETE SHRINKAGE TAKEN INTO ACCOUNT	

SEISMIC PARAMETERS

TYPE OF RESPONSE SPECTRUM	1
DESIGN GROUND ACCELERATION	a_{gR} = 0.26 g
IMPORTANCE FACTOR	γ_I = 1.00
SOIL CATEGORY	D
SOIL FACTOR	S = 1.35
BEHAVIOUR FACTOR	q = 1.00

DURABILITY

EXPOSURE CLASS	XD2
CONCRETE COVER	50 mm

SOIL PARAMETERS

MODULUS OF SUBGRADE REACTION	30,000 KN/m³

STRUCTURAL DESIGN CODES

EN1990	Basis of structural design
EN1991-1	Actions on structures - Part 1: General actions
EN1991-2	Actions on structures - Part 2: Traffic loads on bridges
EN1992-1	Design of concrete structures - Part 1: General rules and rules for buildings
EN1992-2	Design of concrete structures - Part 2: Concrete bridges Design and detailing rules
EN1997-1	Geotechnical design - Part 1: General rules
EN1998-1	Design of structures for earthquake resistance - Part 1: General rules, sesmic actions and rules for buildings
EN1998-2	Design of structures for earthquake resistance - Part 1: Bridges
EN1998-5	Design of structures for earthquake resistance - Part 5: Foundations, retaining structures and geotechnical aspects

INLET STRUCTURE 1.50x1.50

Si01a

scale 1:50

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CLIENT/დამკვეთი:
MINISTRY OF REGIONAL DEVELOPMENT AND INFRASTRUCTURE OF GEORGIA, TBILISI ROADS DEPARTMENT OF GEORGIA
საქართველოს რეგიონული განვითარებისა და ინფრასტრუქტურის სამინისტრო, თბილისი საქართველოს საავტომობილო გზების დეპარტამენტი

PROJECT/პროექტი:
UPGRADING OF TBILISI - SAGAREJO AND SAGAREJO - BAKURTSIKHE
ACTIVITY 2: PREPARATION OF DETAILED DESIGN
თბილისი - საგარეჯო და საგარეჯო - ბაკურციხის განახლება
აქტივობა 2: დეტალური პროექტის მომზადება

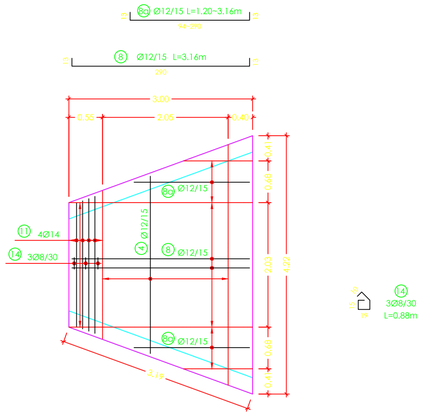
CONSULTANT/კონსულტანტი:
ILF CONSULTING ENGINEERS
AECOM

REV./გად.	DATE/თარიღი	ISSUE, SCOPE OF REVISION / საკითხი, ცვლილების სფერო	PREP./მომზადდა	CHECK./შემოწმდა	APPR./დამტკიცდა
01	-/-2020	SECOND ISSUE / მეორე საკითხი	O.Q. /ო.ქ.	O.Q. /ო.ქ.	C.N. /ქ.ნ.
00	29/05/2020	FIRST ISSUE / პირველი საკითხი	O.Q. /ო.ქ.	O.Q. /ო.ქ.	C.N. /ქ.ნ.

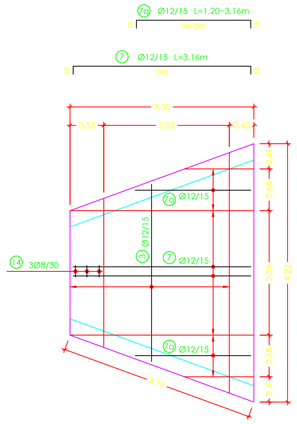
TITLE:
BOX CULVERT 1.50x1.50 CL0.005
REINFORCEMENT AND CONCRETE DETAILS
LR02A 01+020.00

სათაური:
კოლვერტი 1.50x1.50 CL0.005
არმატურა და ბეტონის დეტალები
LR02A 01+020.00

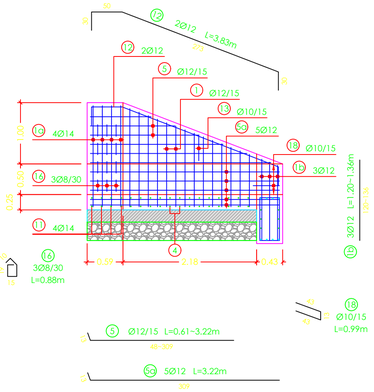
SCALE/მასშტაბი	1:50 (A1), 1:100 (A3)		
DRAWING NO./ნახაზის ნომერი	CL0_HYD_01020_005		
PROJECT/პროექტი	Q290	SHEET/გვერდი	003



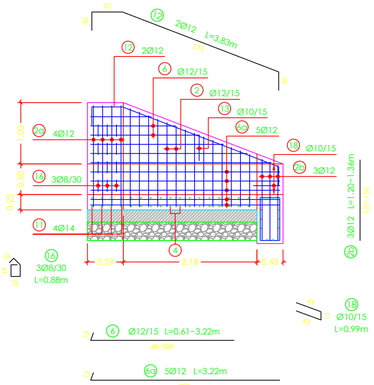
INLET STRUCTURE SLAB
BOTTOM REINFORCEMENT
scale 1:50



INLET STRUCTURE SLAB
TOP REINFORCEMENT
scale 1:50



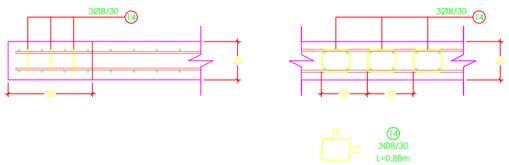
WING WALL - OUTSIDE VIEW
REINFORCEMENT
scale 1:50



WING WALL - INSIDE VIEW
REINFORCEMENT
scale 1:50

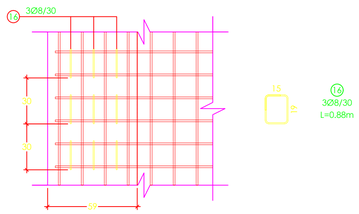
Detail of shear reinforcement at the slab

scale 1:20



Detail of shear reinforcement at the wing wall

scale 1:20



STRUCTURAL NOTES

SHEET 005

MATERIALS

REINFORCED CONCRETE	C30/37
LEAN CONCRETE	C12/15
STEEL REINFORCEMENT	B500C

LOADS

REINFORCED CONCRETE SELF WEIGHT	25.00 KN/m³
SOIL UNIT WEIGHT	19.00 KN/m³
WATER UNIT WEIGHT	10.00 KN/m³
TRAFFIC LOADS: EC1991-2 / LOAD MODEL 1	
TANDEM SYSTEM (TS): WEIGHT per AXLE	300 KN
UDL SYSTEM: DISTRIBUTED LOAD	9.00 KN/m²
THERMAL ACTIONS: EC1991-5	
TEMPERATURE DIFFERENCE	+5°/-35°
CONCRETE SHRINKAGE TAKEN INTO ACCOUNT	

SEISMIC PARAMETERS

TYPE OF RESPONSE SPECTRUM	1
DESIGN GROUND ACCELERATION	a_{gR} = 0.26 g
IMPORTANCE FACTOR	γ_I = 1.00
SOIL CATEGORY	D
SOIL FACTOR	S = 1.35
BEHAVIOUR FACTOR	q = 1.00

DURABILITY

EXPOSURE CLASS	XD2
CONCRETE COVER	50 mm

SOIL PARAMETERS

MODULUS OF SUBGRADE REACTION	30.000 KN/m²

STRUCTURAL DESIGN CODES

EN1990	Basis of structural design
EN1991-1	Actions on structures - Part 1: General actions
EN1991-2	Actions on structures - Part 2: Traffic loads on bridges
EN1992-1	Design of concrete structures - Part 1: General rules and rules for buildings
EN1992-2	Design of concrete structures - Part 2: Concrete bridges Design and detailing rules
EN1997-1	Geotechnical design - Part 1: General rules
EN1998-1	Design of structures for earthquake resistance - Part 1: General rules, seismic actions and rules for buildings
EN1998-2	Design of structures for earthquake resistance - Part 1: Bridges
EN1998-5	Design of structures for earthquake resistance - Part 5: Foundations, retaining structures and geotechnical aspects

INLET STRUCTURE 1.50x1.50

Si01b

scale 1:50

CLIENT/დამკვეთი:
MINISTRY OF REGIONAL DEVELOPMENT AND INFRASTRUCTURE OF GEORGIA, TBILISI ROADS DEPARTMENT OF GEORGIA
საქართველოს რეგიონული განვითარებისა და ინფრასტრუქტურის სამინისტრო, თბილისი
საქართველოს საავტომობილო გზების დეპარტამენტი

PROJECT/პროექტი:
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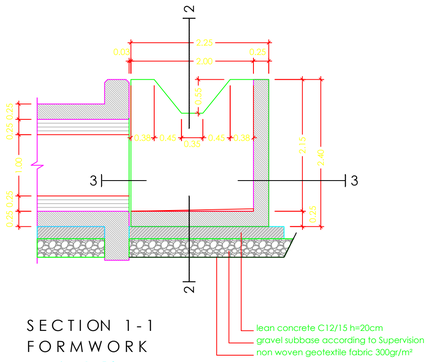
TITLE:
BOX CULVERT 1.50x1.50 CL0.005
REINFORCEMENT AND CONCRETE DETAILS
LR02A 01+020.00
0.500

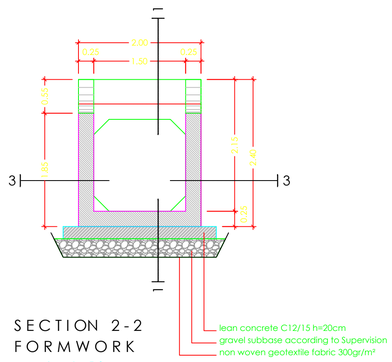
სათაური:
კოლვერტი 1.50x1.50 CL0.005
არმატურა და ბეტონის დეტალები
LR02A 01+020.00

SCALE/მასშტაბი	1:50 (A1), 1:100 (A3)
DRAWING NO./ნახაზის ნომერი	CL0_HYD_01020_005
PROJECT/პროექტი Q290	SHEET/ფურცელი 004

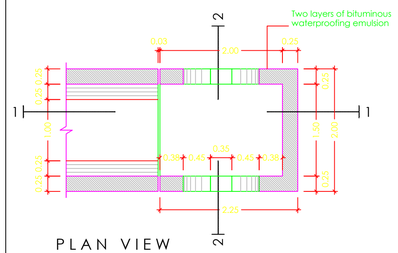
© LLF 2021 c:\users\user\box\12_mehrab_kopaleishvili\cl-0_culverts\cl-0_culverts 30-12-2020_working_files\formwork reinforcement\formwork reinforcement_1.50x1.50_layouts.dwg



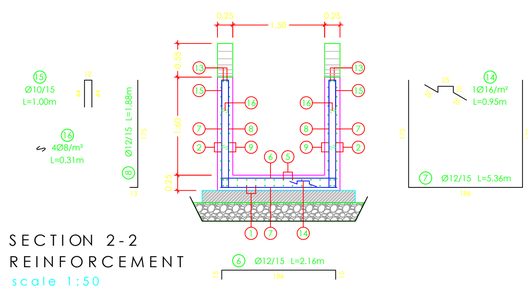
SECTION 1-1
FORMWORK
scale 1:50



SECTION 2-2
FORMWORK
scale 1:50



PLAN VIEW
scale 1:50



SECTION 2-2
REINFORCEMENT
scale 1:50

INLET SHAFT 1.50 x 1.50 - QUANTITIES

No	SHAPE OF BAR	DIAMETER & SPACING	NUMBER OF BARS	CUTTING LENGTH (m)	TOTAL LENGTH (m)	UNIT WEIGHT (kg/m)	TOTAL WEIGHT (kg)
1	2.13 / 2.28	Ø12/15	14	4.41	61.74	0.89	54.83
2	2.15 / 1.90 / 2.15	Ø12/15	11	6.20	68.20	0.89	60.56
2a	0.55 - 0.95 / 1.90 / 0.55 - 0.95	Ø12/15	4	3.40	13.60	0.89	12.08
3	2.28 / 0.13	Ø12/15	10	2.41	24.10	0.89	21.40
4	0.15 / 1.90 / 0.15	Ø12/15	14	2.20	30.80	0.89	27.35
5	2.13 / 0.13	Ø12/15	14	2.26	31.64	0.89	28.10
6	0.15 / 1.86 / 0.15	Ø12/15	15	2.16	32.40	0.89	28.77
7	1.75 / 1.86 / 1.75	Ø12/15	2	5.36	10.72	0.89	9.52
7a	1.75 - 2.30 / 1.86 / 1.75 - 2.30	Ø12/15	6	5.91	35.46	0.89	31.49
7b	2.30 / 1.86 / 2.30	Ø12/15	8	6.46	51.68	0.89	45.89
8	1.75 / 0.13	Ø12/15	4	1.88	7.52	0.89	6.68
8a	1.75 - 2.30 / 0.13	Ø12/15	12	2.16	25.86	0.89	22.96
8b	2.30 / 0.13	Ø12/15	14	2.43	34.02	0.89	30.21
9	2.15 / 0.15	Ø12/15	20	2.30	46.00	0.89	40.85
9a	0.55 - 0.95 / 0.13	Ø12/15	8	0.90	7.20	0.89	6.39
10	0.15 / 0.20 / 0.20	Ø10/15	20	0.55	11.00	0.62	6.79
11	0.15 / 0.30 - 0.71 / 0.30 - 0.71	Ø12/15	8	1.16	9.28	0.89	8.24
12	1.90	Ø12	2	1.90	3.80	0.89	3.37
13	0.29 / 0.42 / 0.52	Ø12	4	2.65	10.60	0.89	9.41
14	0.22 / 0.22 / 0.22 / 0.22	1Ø16/m²	3	0.95	2.85	1.58	4.50
15	0.12 / 0.44 / 0.44	Ø10/15	42	1.00	42.00	0.62	25.91
16	0.15 / 0.26	4Ø8/m²	48	0.31	14.88	0.40	5.88
17	0.15 / 0.35 / 0.35	Ø12/15	16	0.85	13.60	0.89	12.08
18	0.12 / 0.20 / 0.20	Ø10/15	10	0.52	5.20	0.62	3.21
19	1.90	Ø12	2	1.90	3.80	0.89	3.37
		TOTAL (kg)					509.84

LEAN CONCRETE (m^3)	1.25
REINFORCED CONCRETE (m^3)	4.13

STRUCTURAL NOTES

SHEET 005

MATERIALS

REINFORCED CONCRETE	C30/37
LEAN CONCRETE	C12/15
STEEL REINFORCEMENT	B500C

LOADS

REINFORCED CONCRETE SELF WEIGHT	25.00 KN/m³
SOIL UNIT WEIGHT	19.00 KN/m³
WATER UNIT WEIGHT	10.00 KN/m³
TRAFFIC LOADS: EC1991-2 / LOAD MODEL 1	
TANDEM SYSTEM (TS): WEIGHT per AXLE	300 KN
UDL SYSTEM: DISTRIBUTED LOAD	9.00 KN/m²
THERMAL ACTIONS: EC1991-5	
TEMPERATURE DIFFERENCE	+5°/-35°
CONCRETE SHRINKAGE TAKEN INTO ACCOUNT	

SEISMIC PARAMETERS

TYPE OF RESPONSE SPECTRUM	1
DESIGN GROUND ACCELERATION	a_{gR} = 0.26 g
IMPORTANCE FACTOR	γ_I = 1.00
SOIL CATEGORY	D
SOIL FACTOR	S = 1.35
BEHAVIOUR FACTOR	q = 1.00

DURABILITY

EXPOSURE CLASS	XD2
CONCRETE COVER	50 mm

SOIL PARAMETERS

MODULUS OF SUBGRADE REACTION	30.000 KN/m³

STRUCTURAL DESIGN CODES

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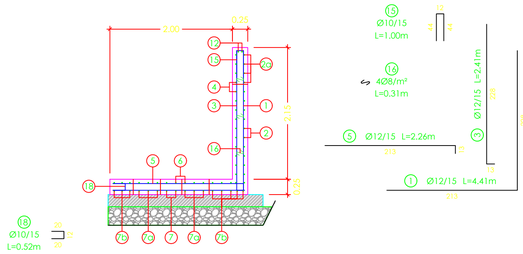
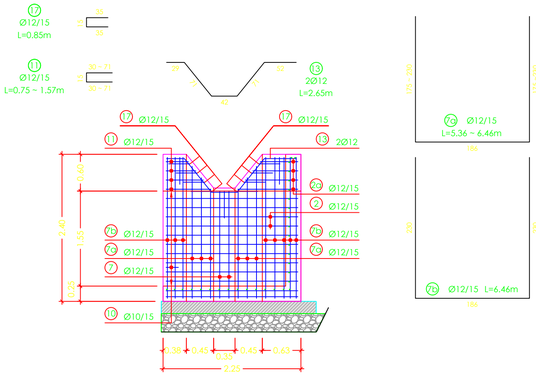
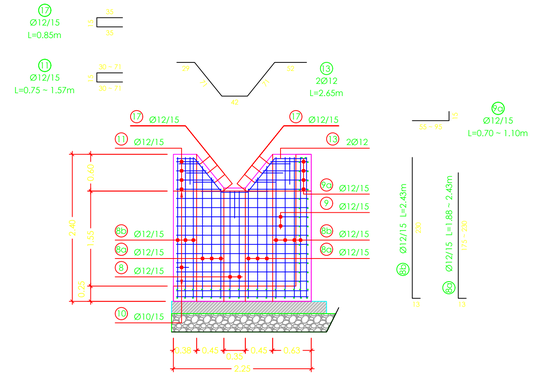


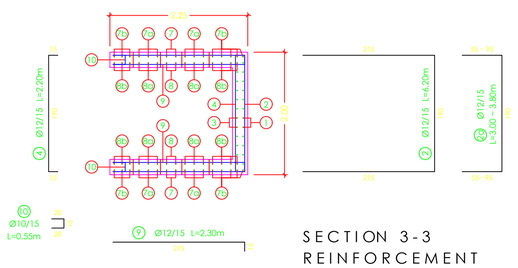
SECTION 1-1
REINFORCEMENT
scale 1:50



SIDE WALL - OUTSIDE VIEW
REINFORCEMENT
scale 1:50

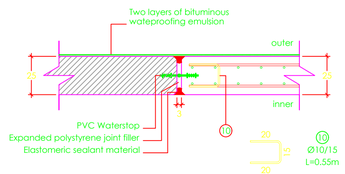


SIDE WALL - INSIDE VIEW
REINFORCEMENT
scale 1:50

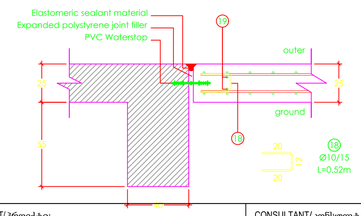


SECTION 3-3
REINFORCEMENT
scale 1:50

Waterproofing detail
at the walls
scale 1:20



Waterproofing detail
at the bottom slab
scale 1:20



INLET SHAFT 1.50x1.50

SsO1

scale 1:50

01	-/-/2020	SECOND ISSUE / მეორე საკითხი	O.Q. /ო.ქ.	O.Q. /ო.ქ.	C.N. /ქ.ნ.
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REV./გაკ.	DATE/თარიღი	ISSUE, SCOPE OF REVISION / საკითხი, ცვლილების სფერო	PREP./მომზადდა	CHECK./შემოწმდა	APPR./დამტკიცდა

TITLE:
BOX CULVERT 1.50x1.50 CL0.005
REINFORCEMENT AND CONCRETE DETAILS
LR02A 01+020.00

0.50m

საათაური:
კელვერტი 1.50x1.50 CL0.005
არმატურა და ბეტონის დეტალები
LR02A 01+020.00

SCALE/მასშტაბი	1:50 (A1), 1:100 (A3)
DRAWING NO./ნახაზის ნომერი	CL0_HYD_01020_005
PROJECT/პროექტი Q290	SHEET/გვერდი 005

CLIENT/დამკვეთი:

MINISTRY OF REGIONAL DEVELOPMENT AND INFRASTRUCTURE OF GEORGIA, TBILISI
ROADS DEPARTMENT OF GEORGIA

საქართველოს რეგიონული განვითარებისა და ინფრასტრუქტურის სამინისტრო, თბილისი
საქართველოს საავტომობილო გზების დეპარტამენტი

PROJECT/პროექტი:

UPGRADING OF TBILISI - SAGAREJO AND SAGAREJO - BAKURTSIKHE
ACTIVITY 2: PREPARATION OF DETAILED DESIGN

თბილისი - საგარეჯო და საგარეჯო - ბაკურციხის გზასალება
აქტივობა 2: დეტალური პროექტის მომზადება

CONSULTANT/კონსულტანტი:

ILF CONSULTING ENGINEERS
AECOM

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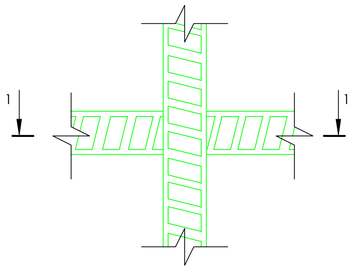
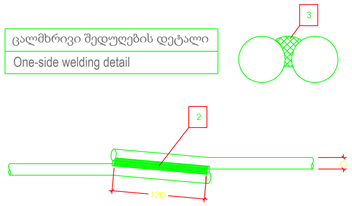
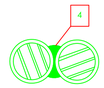


ცალმხრივი შედუღების დეტალი	
One-side welding detail	



დიაგრამა 5	
პირგადადებული არმატურის ღეროების შედუღება (მეთოდი C)	
Diagram 5	
Welding of lapping steel bars (Method C)	



1.Welding methods for welding spots of structural steel bars are shown in this drawing. All welding spots are required to be firm and no missing welding is allowed.

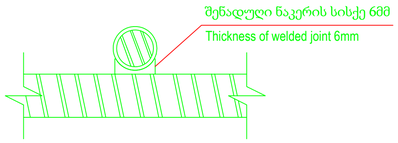
2. Intersecting steel bars shall be welded according to the welding method shown in Diagram 1. If such a welding method does not apply, the welding may be performed according to Diagram 2.

3. Lapping steel bars shall be welded according to the welding methods shown in Diagram 3 to Diagram 5.

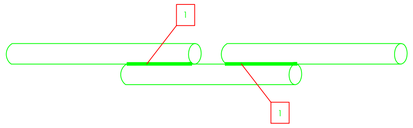
4. In the event of parallel welding, additional lapping steel bars are required and shall be welded according to the welding method presented in Diagram 6.

5. All lap welding shall be performed at both sides and no missing welding is allowed.

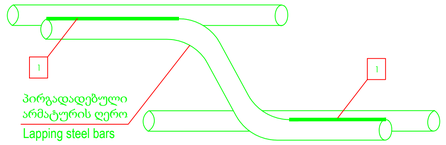
დიაგრამა 1	Diagram 1
გადაჯვარედინებული არმატურის ღეროების შედუღება (მეთოდი A)	Welding of intersecting steel bars (Method A)



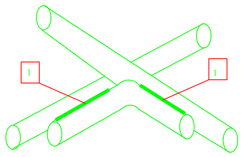
დიაგრამა 3	Diagram 3
პირგადადებული არმატურის ღეროების შედუღება (მეთოდი A)	Welding of lapping steel bars (Method A)



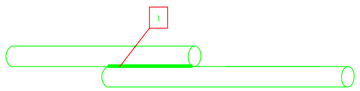
დიაგრამა 6	Diagram 6
პირგადადებული არმატურის ღეროების შედუღება	Welding of lapping steel bars



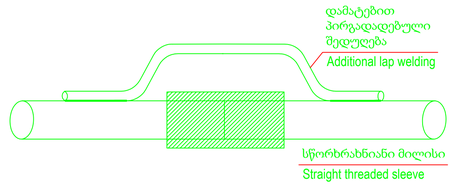
დიაგრამა 2	Diagram 2
გადაჯვარედინებული არმატურის ღეროების შედუღება (მეთოდი B)	Welding of intersecting steel bars (Method B)



დიაგრამა 4	Diagram 4
პირგადადებული არმატურის ღეროების შედუღება (მეთოდი B)	Welding of lapping steel bars (Method B)



დიაგრამა 7	Diagram 7
დამაკავშირებელი არმატურის ღეროების შედუღება ხრახრიანი მილისისთვის	Welding of connecting steel bars for threaded sleeve



1 შენადუღი ნაკერის სისქე 6მმ (შენადუღი ნაკერის სიგრძე ≥ 6 ჯერ, არმატურის ღეროს დიამეტრზე)
Thickness of welded joint 6mm (Length of welded joint ≥ 6 times of bar diameter)

2 შენადუღი ნაკერის სისქე 6მმ (შენადუღი ნაკერის სიგრძე ≥ 12 ჯერ, არმატურის ღეროს დიამეტრზე)
Thickness of welded joint 6mm (Length of welded joint ≥ 12 times of bar diameter)

3 V-ტიპის ღარის შედუღება H=6mm შენადუღი ≥ 12 ჯერ, არმატურის ღეროს დიამეტრზე
V-shaped groove welding H=6mm Length ≥ 12 times of bar diameter

4 V-ტიპის ღარის შედუღება H=6mm შენადუღი ≥ 6 ჯერ, არმატურის ღეროს დიამეტრზე
V-shaped groove welding H=6mm Length ≥ 6 times of bar diameter

CLIENT/დამკვეთი:
MINISTRY OF REGIONAL DEVELOPMENT AND INFRASTRUCTURE OF GEORGIA, TBILISI ROADS DEPARTMENT OF GEORGIA
საქართველოს რეგიონული განვითარებისა და ინფრასტრუქტურის სამინისტრო, თბილისი საქართველოს საავტომობილო გზების დეპარტამენტი

PROJECT/პროექტი:
UPGRADING OF TBILISI - SAGAREJO AND SAGAREJO - BAKURTSIKHE
ACTIVITY 2: PREPARATION OF DETAILED DESIGN
თბილისი - საგარეჯო და საგარეჯო - ბაკურციხის გზასლება
აქტივობა 2: დეტალური პროექტის მომზადება

CONSULTANT/კონსულტანტი:
ILF CONSULTING ENGINEERS
AECOM

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TITLE:
BOX CULVERT 1.50x1.50 CL0.005
REINFORCEMENT AND CONCRETE DETAILS
LR02A 01+020.00 0.50m

სათაური:
კოლვერტი 1.50x1.50 CL0.005
არმატურა და ბეტონის დეტალები
LR02A 01+020.00

SCALE/მასშტაბი			
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PROJECT/პროექტი	Q290	SHEET/გვერდი	006

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