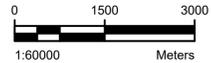


Paper Size - ANSI D
 At Full Size, this border measures 20 mm x 80 mm
 170
 50
 0
 millimeters

PROJECT SITE
Scale 1:60000



EAST COULEE PHASE 1 & 2 RESILIENCY AND FLOOD MITIGATION PROGRAM



LOCATION PLAN
NTS

DRAWING LIST	
SHEET NUMBER	SHEET TITLE
GENERAL	
G-001	EAST COULEE BERM LOCATION PLAN, PROJECT SITE AND DRAWING LIST
G-002	EAST COULEE BERM LEGEND
G-501	EAST COULEE BERM TYPICAL ACCESS RAMPS
G-502	EAST COULEE BERM TYPICAL CULVERT AND MANHOLE SECTIONS AND DETAIL SHEET 1 OF 2
G-503	EAST COULEE BERM TYPICAL CULVERT AND MANHOLE SECTIONS AND DETAIL SHEET 2 OF 2
CIVIL: EAST COULEE	
C-131	EAST COULEE BERM PLAN
C-132	EAST COULEE BERM PLAN AND PROFILE SHEET 1 OF 3
C-133	EAST COULEE BERM PLAN AND PROFILE SHEET 2 OF 3
C-134	EAST COULEE BERM PLAN AND PROFILE SHEET 3 OF 3
C-135	EAST COULEE TREE CLEARING PLAN SHEET 1 OF 2
C-136	EAST COULEE TREE CLEARING PLAN SHEET 2 OF 2
C-137	EAST COULEE MANHOLE EXTENSION AND EXISTING INFRASTRUCTURE PLAN
C-231	EAST COULEE BERM TYPICAL SECTIONS
C-232	EAST COULEE BERM ROAD AND ACCESS RAMP CULVERT SECTION
C-233	EAST COULEE BERM RESIDENTIAL DRIVEWAY CULVERT SECTION
C-234	EAST COULEE BERM CULVERT AND MANHOLE SECTIONS
C-235	EAST COULEE BERM TWIN CULVERT AND MANHOLE SECTIONS
C-331	EAST COULEE SAMPLED SECTIONS SHEET 1 OF 2
C-332	EAST COULEE SAMPLED SECTIONS SHEET 2 OF 2
LANDSCAPE DRAWINGS: EAST COULEE	
L-100	EAST COULEE BERM LANDSCAPE KEY PLAN
L-101	EAST COULEE BERM LEGEND & NOTES
L-200	EAST COULEE BERM LANDSCAPE PLAN
L-201	EAST COULEE BERM LANDSCAPE PLAN
L-202	EAST COULEE BERM LANDSCAPE PLAN
L-203	EAST COULEE BERM LANDSCAPE PLAN
L-204	EAST COULEE BERM LANDSCAPE PLAN
L-205	EAST COULEE BERM LANDSCAPE PLAN
L-206	EAST COULEE BERM LANDSCAPE PLAN
L-300	EAST COULEE BERM LANDSCAPE DETAILS
L-301	EAST COULEE BERM LANDSCAPE DETAILS
L-302	EAST COULEE BERM LANDSCAPE DETAILS



Rev	Date	Des	Dwn	Chk	Description
0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
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DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LOCATION PLAN, PROJECT SITE AND DRAWING LIST

Project No. **CW2384**
Group **EAST COULEE**

Drawing No.

G-001 **1**

GENERAL NOTES

- ALL DIMENSIONS ARE IN MILLIMETRES UNLESS NOTED OTHERWISE.
- ALL ELEVATIONS, COORDINATES AND STATIONING ARE IN METRES UNLESS NOTED OTHERWISE.
- COORDINATE SYSTEM FOR THIS PROJECT IS NAD 83 3TM MAP DATUM. ELEVATIONS ARE GEODETIC.
- EXISTING GROUND CONTOURS INFORMATION WAS DERIVED FROM LIDAR (2018) AND PROVIDED BY DRUMHELLER RESILIENCY AND FLOOD MITIGATION OFFICE (DRFMO).
- HIGH RESOLUTION AERIAL PHOTO FROM 2019 AND PROVIDED BY DRFMO.
- UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND SOME UTILITY LOCATIONS MAY NOT BE ILLUSTRATED. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL UTILITY LOCATIONS AND OWNERSHIP PRIOR TO CONSTRUCTION.
- SAMPLED SECTIONS DRAWINGS ARE PROVIDED AS A VISUAL REPRESENTATION ONLY AND ARE NOT TO BE RELIED UPON FOR CONSTRUCTION. NOT ALL PROJECT FEATURES SHOWN ON SAMPLED SECTIONS.
- CONSTRUCTION PHASE 1 OF BERM SHALL BE FROM STA 1+000 TO STA 1+860, AND CONSTRUCTION PHASE 2 SHALL BE FROM STA 1+860 TO STA 2+573.

ABBREVIATIONS

A/A	ALL AROUND	HWL	HIGH WATER LEVEL
APPROX	APPROXIMATE	MVD	MAXIMUM VIBRATED DENSITY
BC	BEGINNING OF CURVE	MIN	MINIMUM
B	BOTTOM	NF	NEAR FACE
c/c	CENTER TO CENTER	NWL	NORMAL WATER LEVEL
CL	CENTERLINE	N	NORTHING
c/w	COMPLETE WITH	PWL	PERMANENT WATER LEVEL
DIA	DIAMETER	PI	POINT OF INTERSECTION
DS	DOWNSTREAM	R	RADIUS
EF	EACH FACE	SPMDD	STANDARD PROCTOR MAXIMUM DRY DENSITY
EW	EACH WAY	SS	STAINLESS STEEL
E	EASTING	STA	STATION
EL	ELEVATION	TRM	TURF REINFORCEMENT MATS
EC	END OF CURVE	THK	THICK
EST	ESTIMATED	T	TOP
EJ	EXPANSION JOINT	TYP	TYPICAL
FF	FAR FACE	US	UPSTREAM
FSL	FULL SUPPLY LEVEL	WL	WATER LEVEL

MATERIAL HATCHING LEGEND

MATERIAL TYPE	SPECIFICATION	HATCH PATTERN
CONCRETE	STRUCTURAL CONCRETE	
STEEL	STEEL	
FILL	IMPERVIOUS	
	LOW PERMEABLE	
	COMMON	
	LOW TO MEDIUM PLASTICITY CLAY	
GRAVEL MATERIAL	ROAD GRAVEL	
	PITRUN GRAVEL	
	BEDDING GRAVEL	
VEGETATION	NATURAL VEGETATION	
RIPRAP	RIPRAP CLASS 1M	
	RIPRAP CLASS 1	
	RIPRAP CLASS 2	
	RIPRAP CLASS 3	
EARTH	UNDISTURBED GROUND	
	BEDROCK	
	TOPSOIL	

HATCHING LEGEND ILLUSTRATES TYPICAL MATERIALS ENCOUNTERED OR USED IN CONSTRUCTION. SOME MATERIALS ILLUSTRATED IN THIS LEGEND MAY NOT BE ENCOUNTERED OR USED IN THE CONTRACT. HATCH NOT ALWAYS SHOWN ON DRAWINGS

LINETYPE LEGEND

- FLOW BOUNDARY 1850 cms
- LEGAL LAND LINE
- FENCE
- SANITARY SERVICE
- POWER LINE
- WATER SERVICE LINE
- GAS BURIED (NON-ERCB REGISTERED)
- 2 YEAR WATER LEVEL
- TREE LINE
- EXISTING TREE AREA LIMITS
- GEOTEXTILE
- TOWN BOUNDARY

SYMBOL LEGEND

- 1850 cms WATER LEVEL
- SIDE SLOPE INDICATOR
- FLOW DIRECTION
- CULVERT
- ELEVATION MARKER
- WATER ELEVATION MARKER
- COORDINATE POINT
- DETAIL / SECTION MARKER (Top # Denotes Detail / Section Number) (Bottom # Denotes Reference Drawing Location)
- CURVE NUMBER MARKER
- RIVER CROSS SECTION STATION LABEL
- SANITARY MANHOLE
- LAMP POST
- WATER WELL



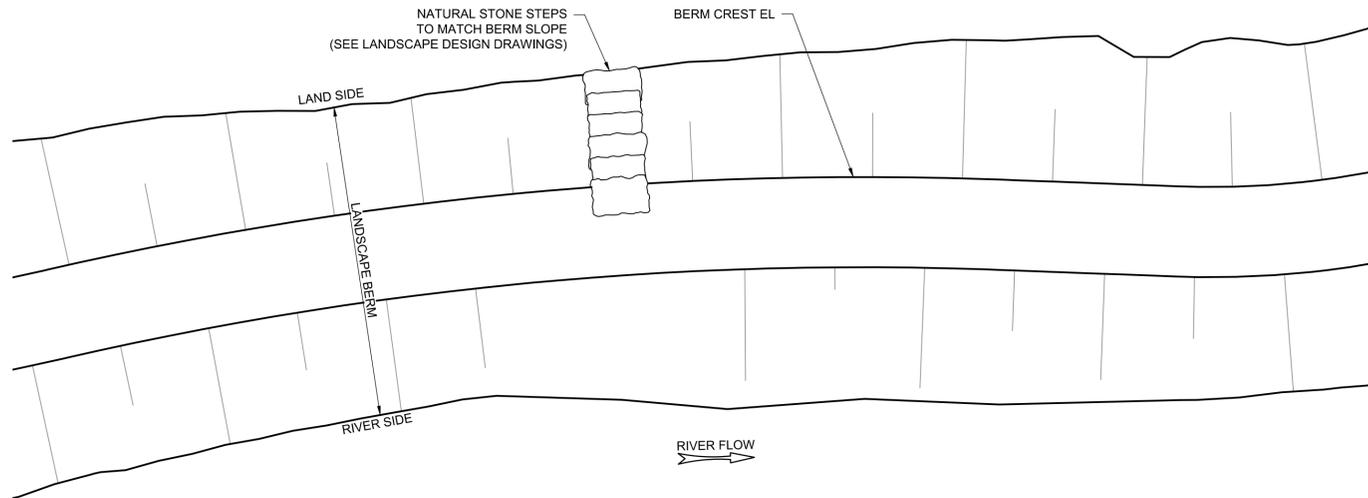
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Rev	Date	Des	Dwn	Chk	Description
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1	2023-02-16	SW	JH	LM	ISSUED FOR TENDER

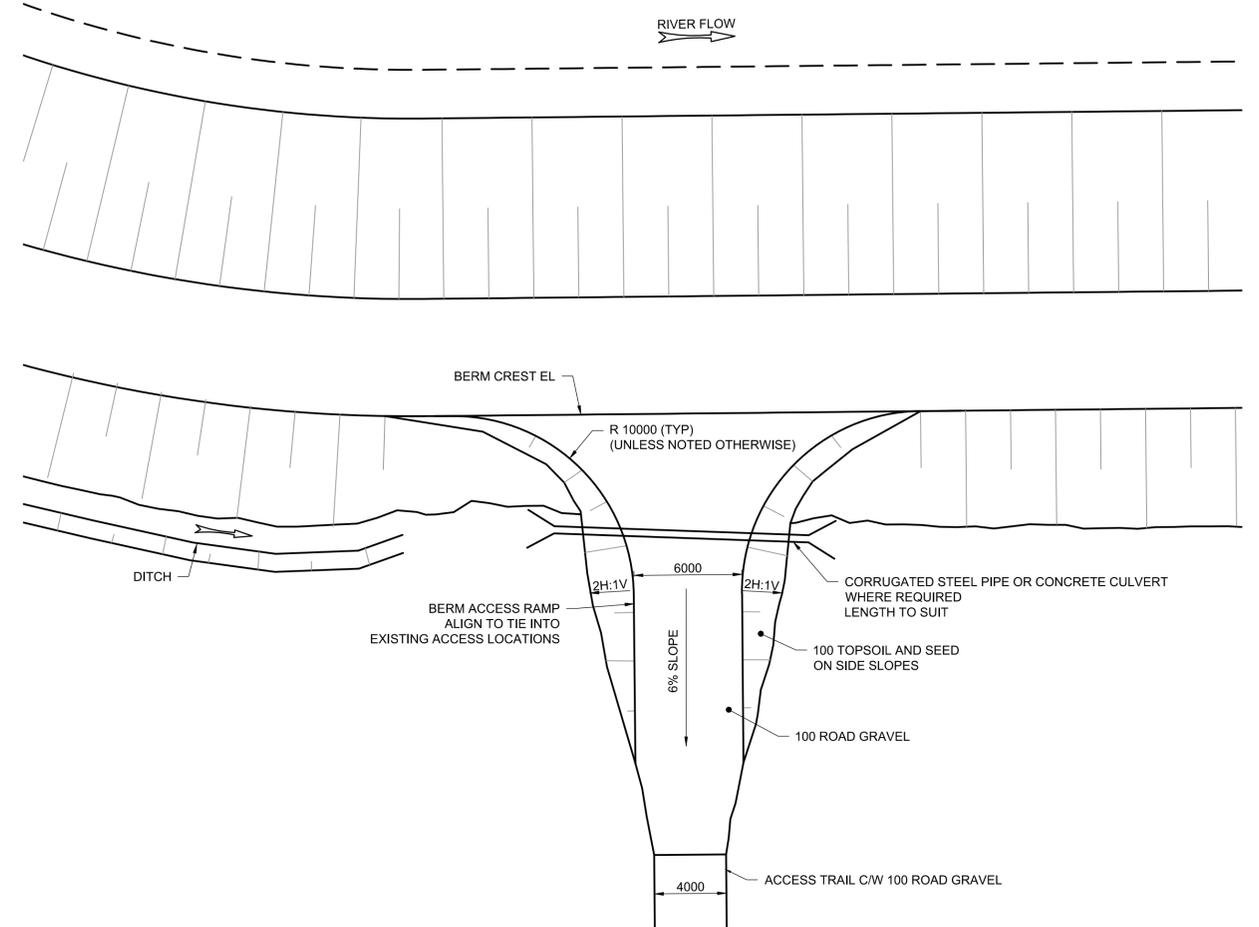
DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LEGEND

Project No. **CW2384** Drawing No. **G-002** Rev. **1**
 Group **EAST COULEE**



TYPICAL LANDSCAPE BERM CROSSING
Scale NTS



TYPICAL BERM ACCESS RAMP
Scale NTS



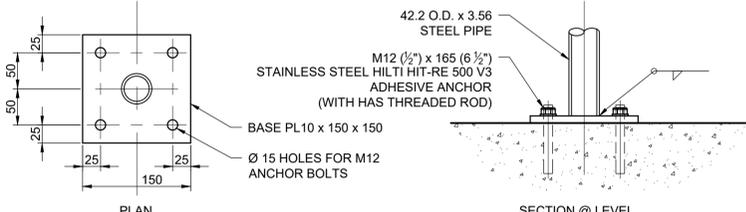
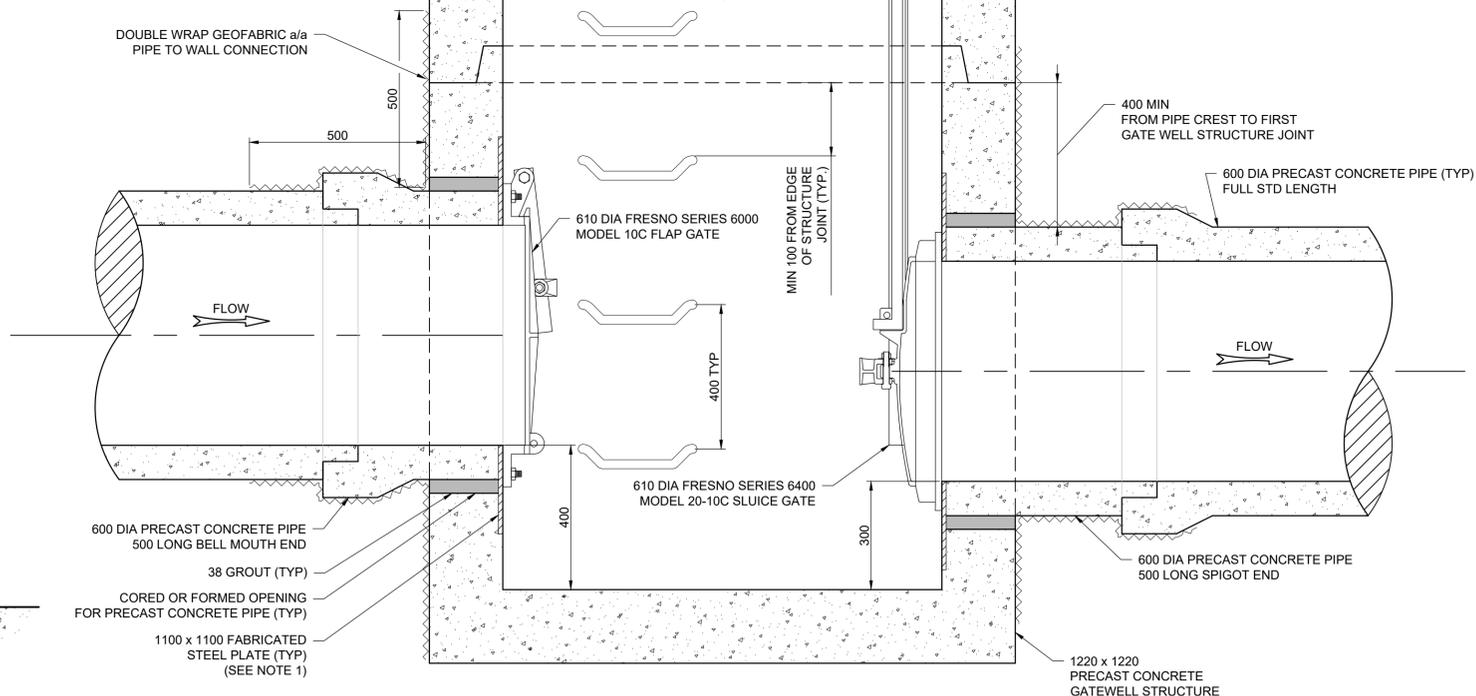
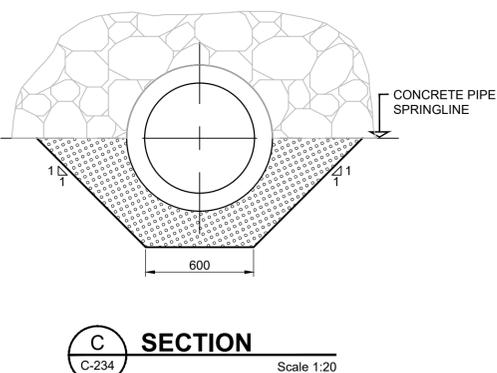
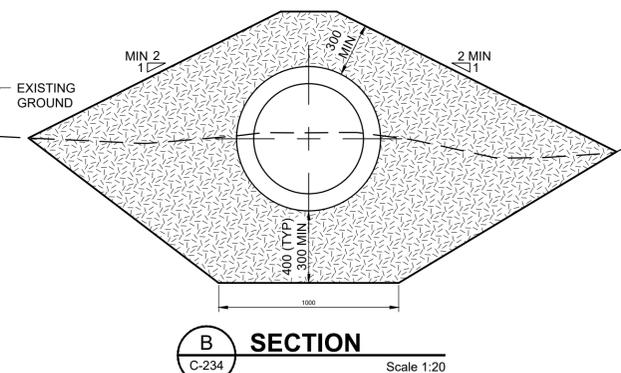
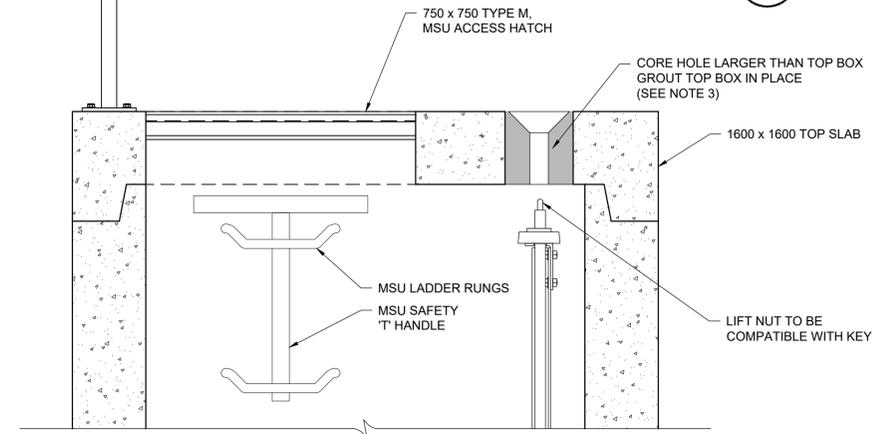
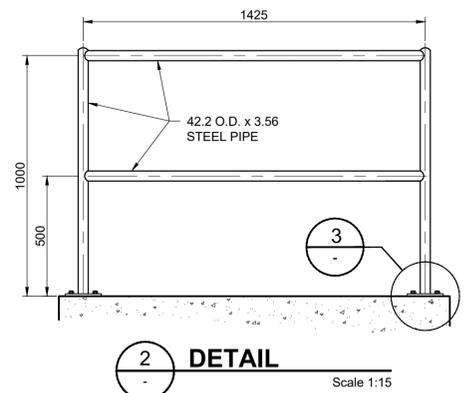
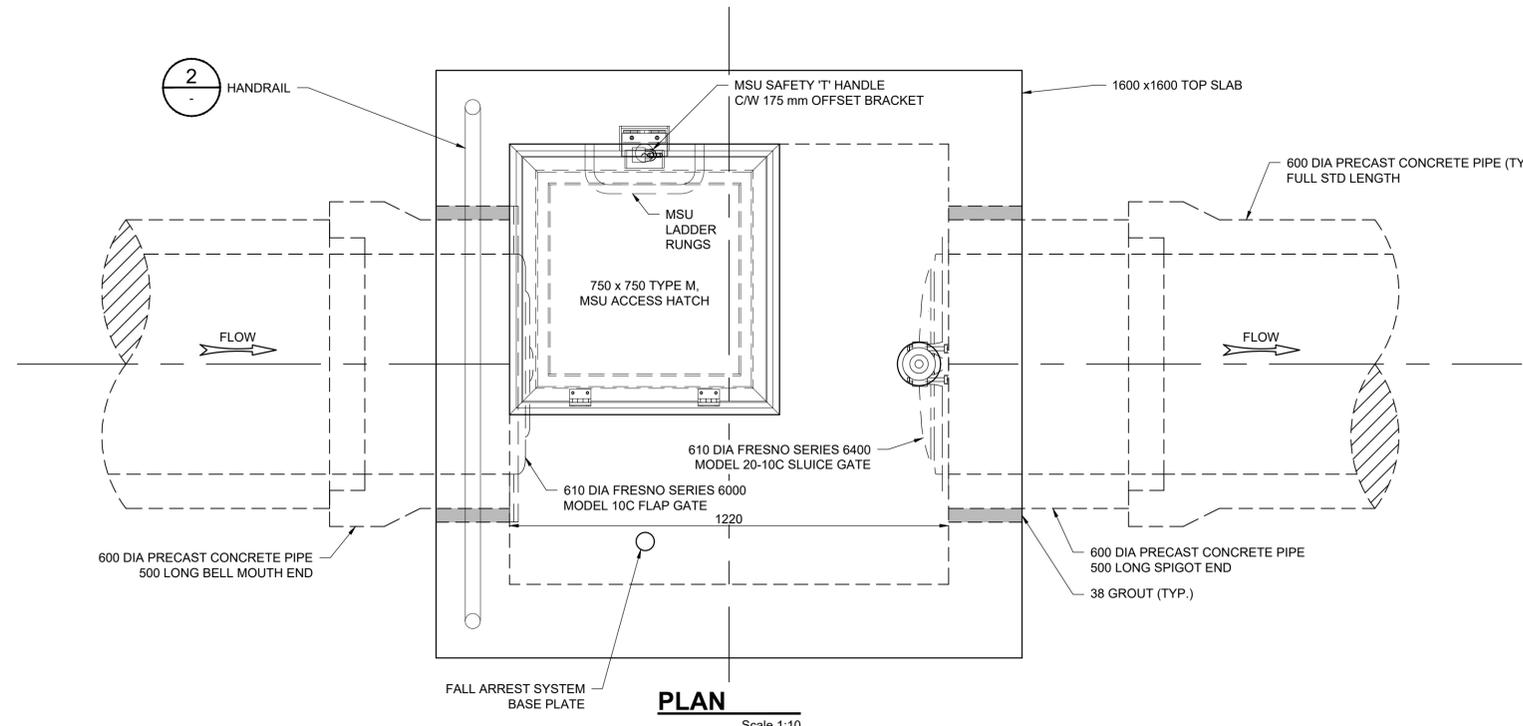
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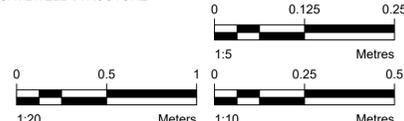
DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
TYPICAL ACCESS RAMPS

Project No. **CW2384** Drawing No. **G-501** Rev. **1**
Group **EAST COULEE**



- NOTES:**
- FABRICATED STEEL PLATE SHALL HAVE:
 - MINIMUM THICKNESS OF 12mm
 - 530 DIA ANCHOR BOLT CIRCLE
 - WELDED NELSON STUDS W/ AT LEAST 50 CENTRE TO EDGE DISTANCE
 - GATE AND LIFT SYSTEM TO BE DESIGNED FOR 26' (7.9 m) SEATING & 10' (3.1 m) UNSEATING HEAD.
 - CORED HOLE AND TOP BOX LOCATION AS SPECIFIED BY GATE AND LIFT SYSTEM SHOP DRAWINGS. NON-RISING STEM AND LIFT NUT TO BE RECESSED BELOW TOP SLAB. ACCESS TO AND OPERATION OF LIFT NUT TO BE WITH KEYED NUTS, IE. PENTAGON.
 - DRAWINGS ILLUSTRATE BASIC REQUIREMENTS. DETAILS TO BE ESTABLISHED BY CONTRACTOR AND INCLUDED ON SHOP DRAWINGS.

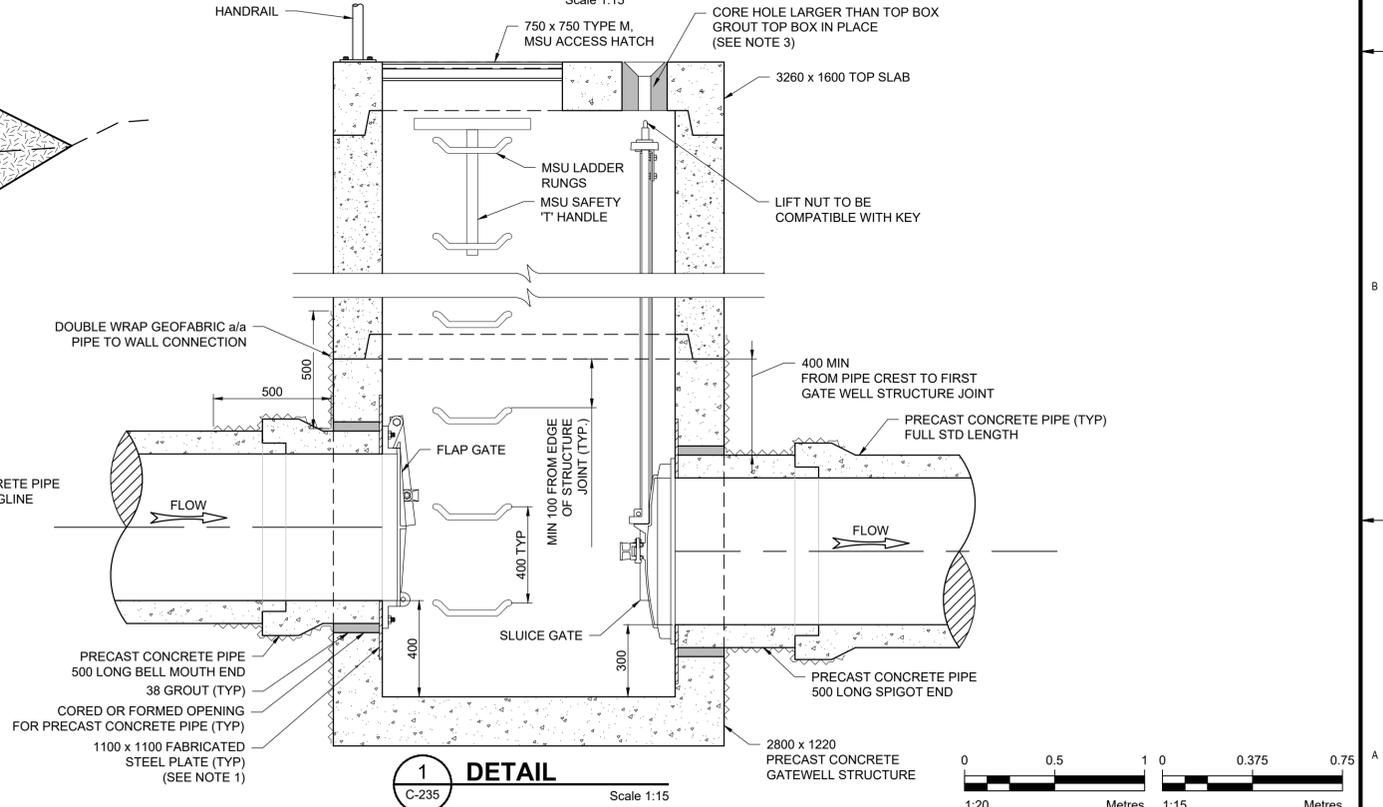
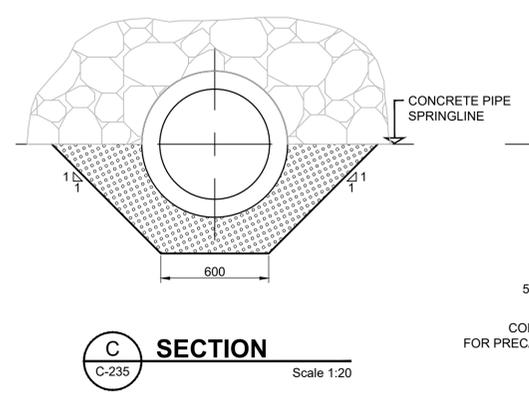
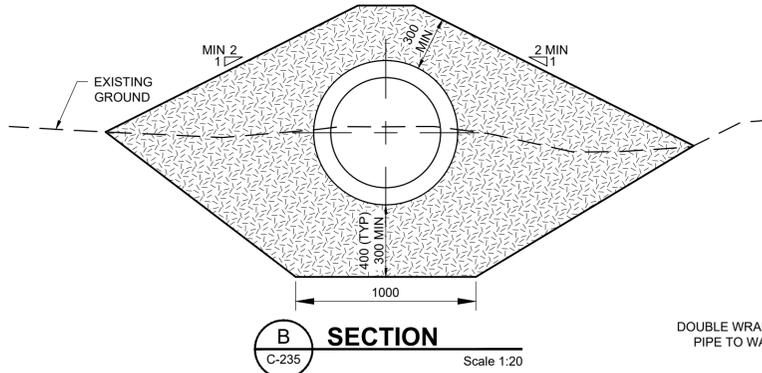
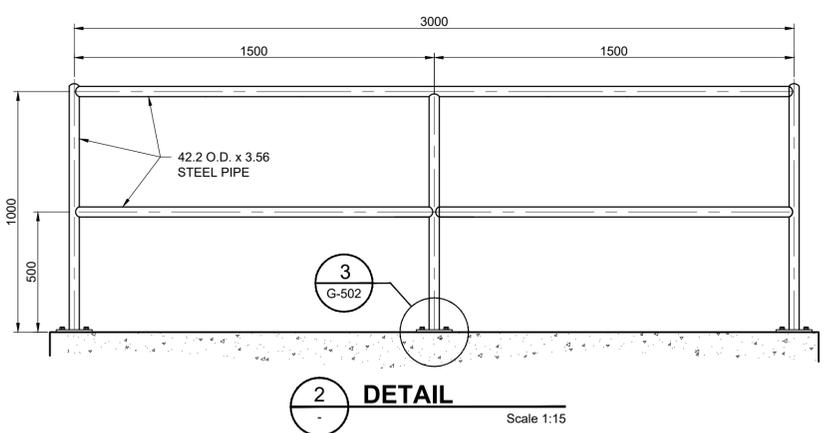
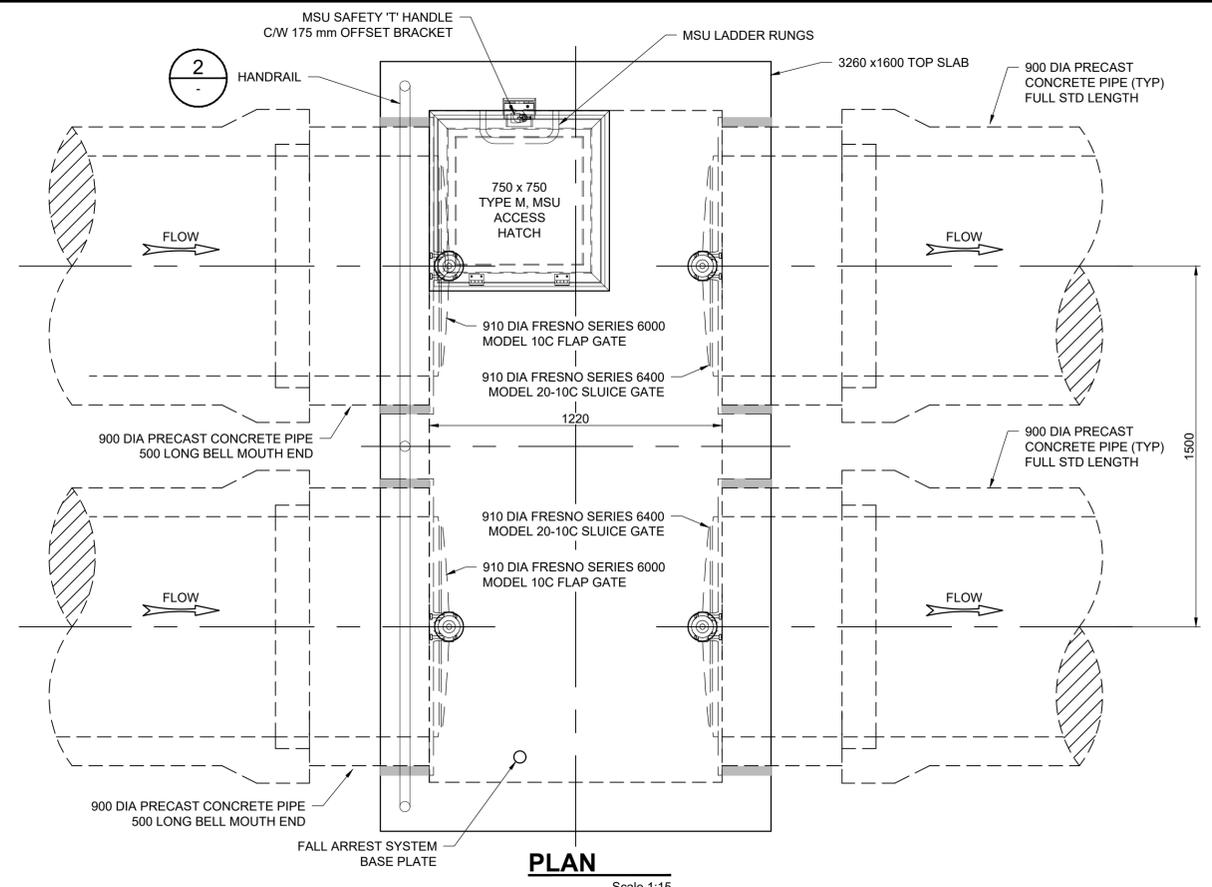
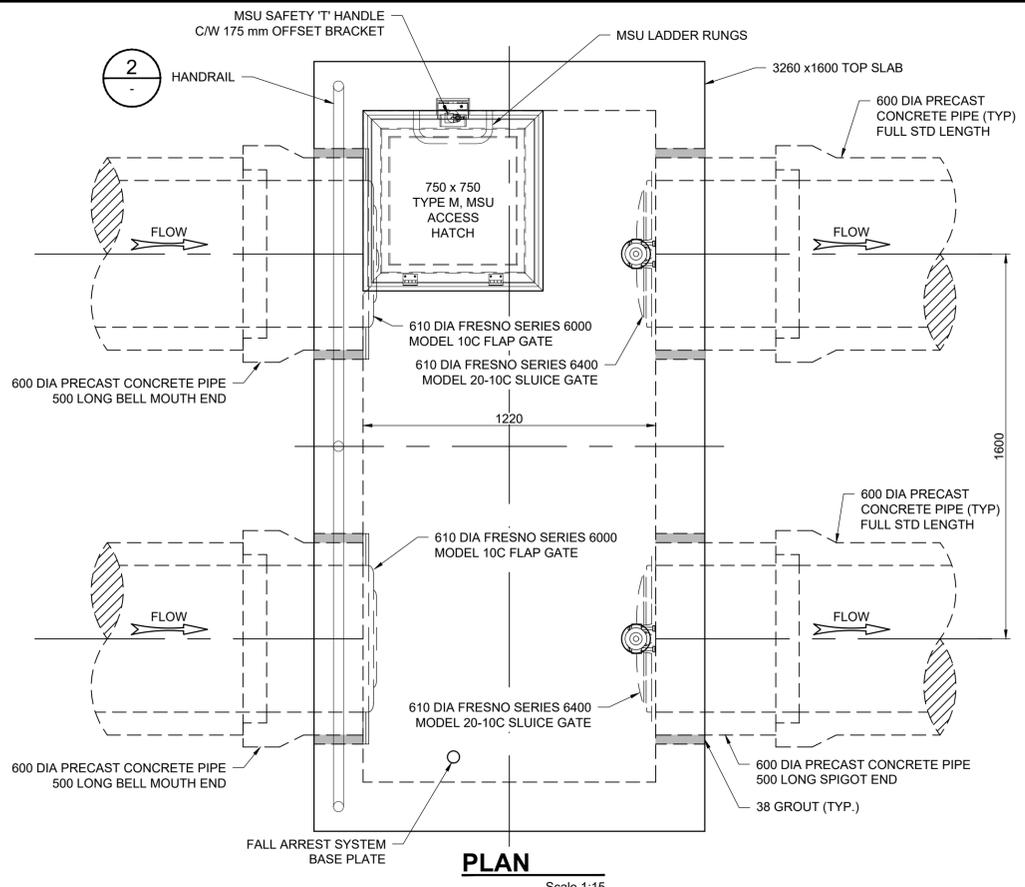


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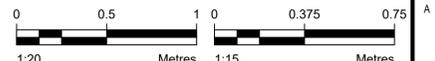
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RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
TYPICAL CULVERT AND MANHOLE
SECTIONS AND DETAILS SHEET 1 OF 2

Project No. **CW2384** Drawing No. _____ Rev. _____
Group **EAST COULEE** **G-502** **1**

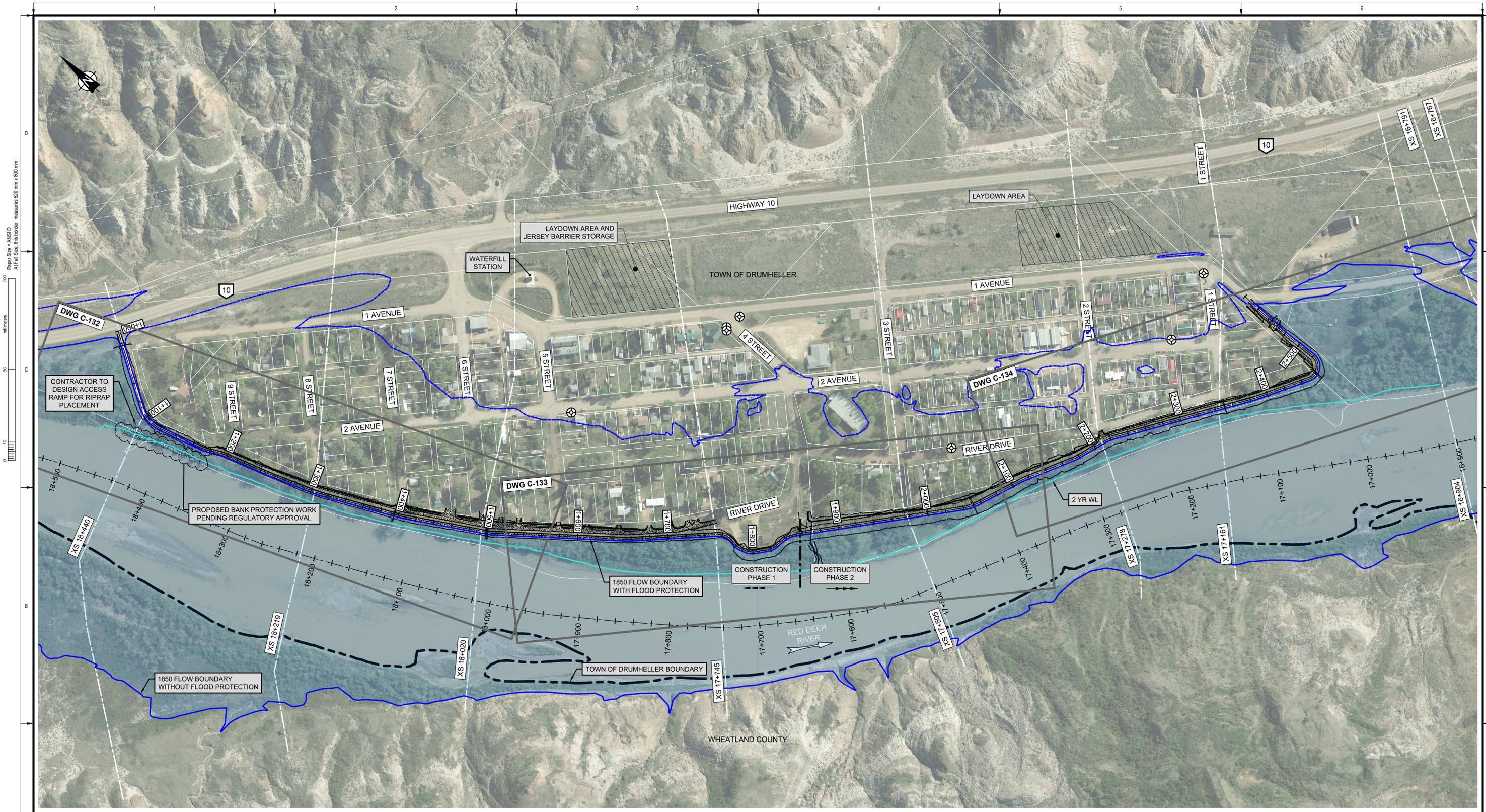


- NOTES:**
- FABRICATED STEEL PLATE SHALL HAVE:
 - MINIMUM THICKNESS OF 12mm
 - 530 DIA ANCHOR BOLT CIRCLE
 - WELDED NELSON STUDS W/ AT LEAST 50 CENTRE TO EDGE DISTANCE
 - GATE AND LIFT SYSTEM TO BE DESIGNED FOR 26' (7.9 m) SEATING & 10' (3.1 m) UNSEATING HEAD.
 - CORED HOLE AND TOP BOX LOCATION AS SPECIFIED BY GATE AND LIFT SYSTEM SHOP DRAWINGS. NON-RISING STEM AND LIFT NUT TO BE RECESSED BELOW TOP SLAB. ACCESS TO AND OPERATION OF LIFT NUT TO BE WITH KEYS, IE. PENTAGON.
 - DRAWINGS ILLUSTRATE BASIC REQUIREMENTS. DETAILS TO BE ESTABLISHED BY CONTRACTOR AND INCLUDED ON SHOP DRAWINGS.



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RESILIENCY AND FLOOD MITIGATION PROGRAM		
EAST COULEE BERM		
TYPICAL CULVERT AND MANHOLE		
SECTIONS AND DETAILS SHEET 2 OF 2		
Project No.	CW2384	Rev.
Group	EAST COULEE	G-503 1



170
100
50
0
0 10 20 30 40 50 60 70 80 90 100
millimeters
Paper Size - ANSI D
At Full Size, this border measures 320 mm x 800 mm

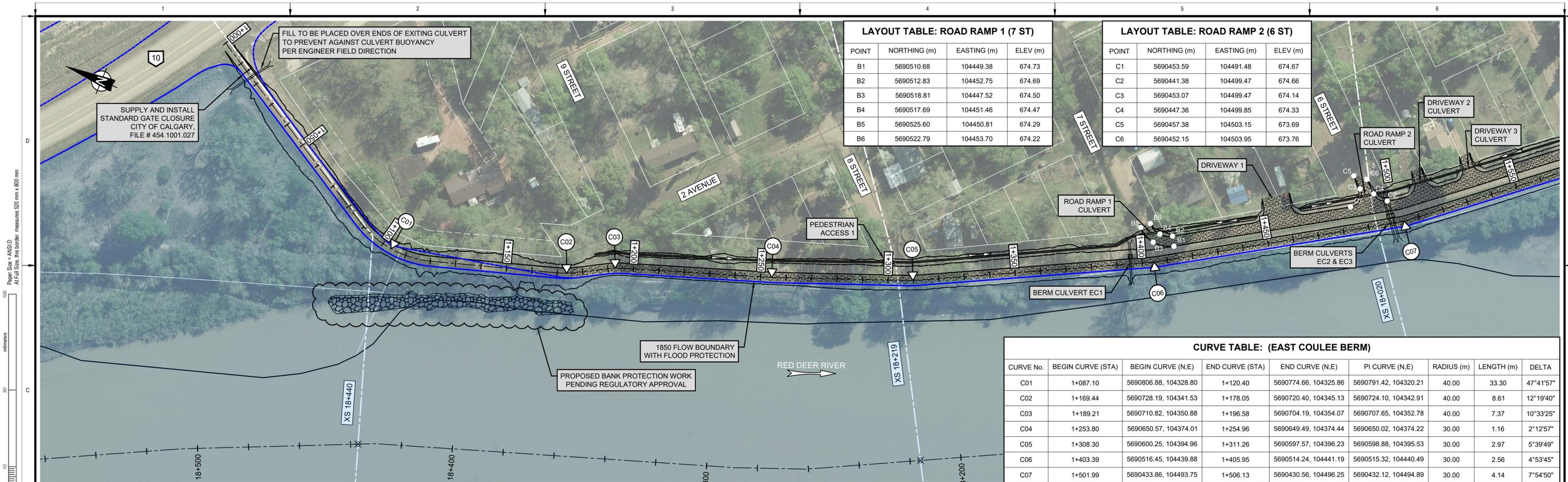
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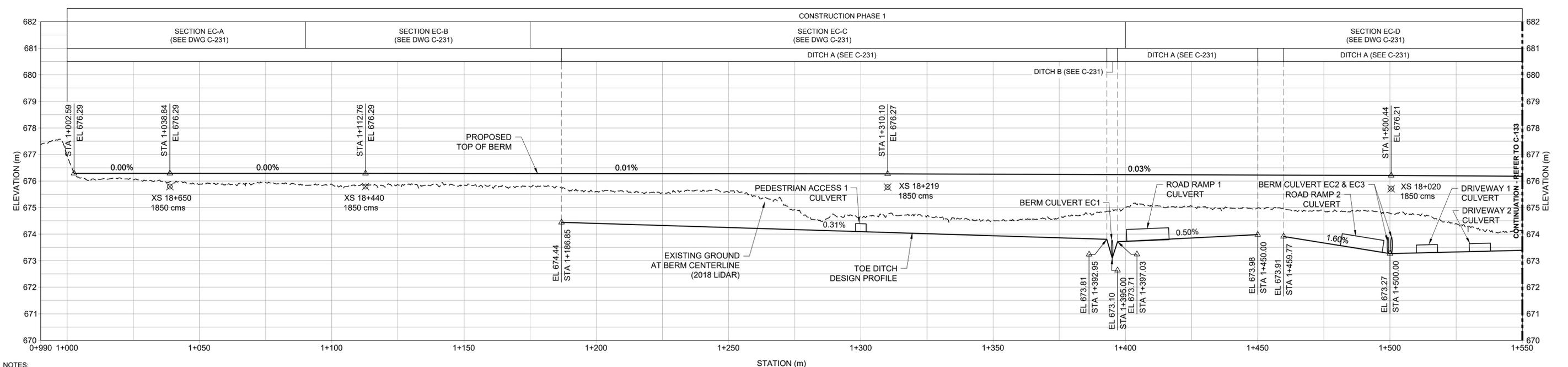
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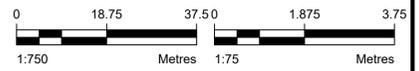
DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE	
RESILIENCY AND FLOOD MITIGATION PROGRAM	
EAST COULEE BERM PLAN	
Project No. CW2384	Drawing No. C-131
Group EAST COULEE	Rev. 1



PLAN - EAST COULEE BERM CENTERLINE
Scale 1:750



- NOTES:**
- EXISTING JERSEY BARRIERS FROM STA 1+250 TO 1+400 TO BE SALVAGED AND STORED AT THE FUTURE SNOW DUMP / LAYDOWN AREA.

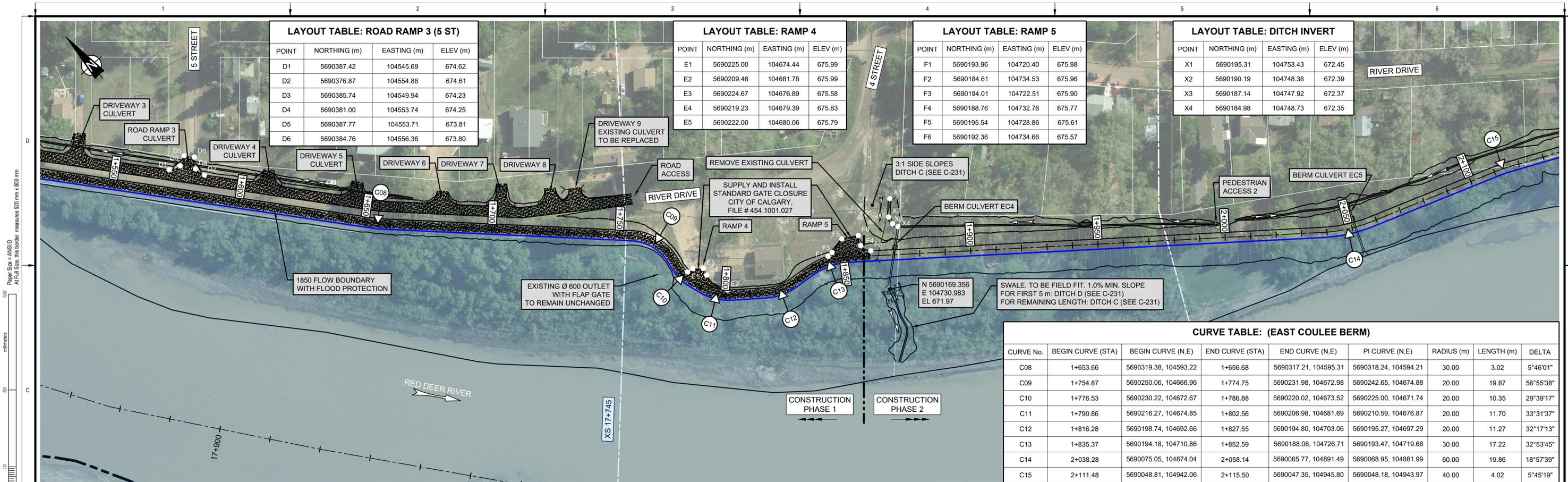


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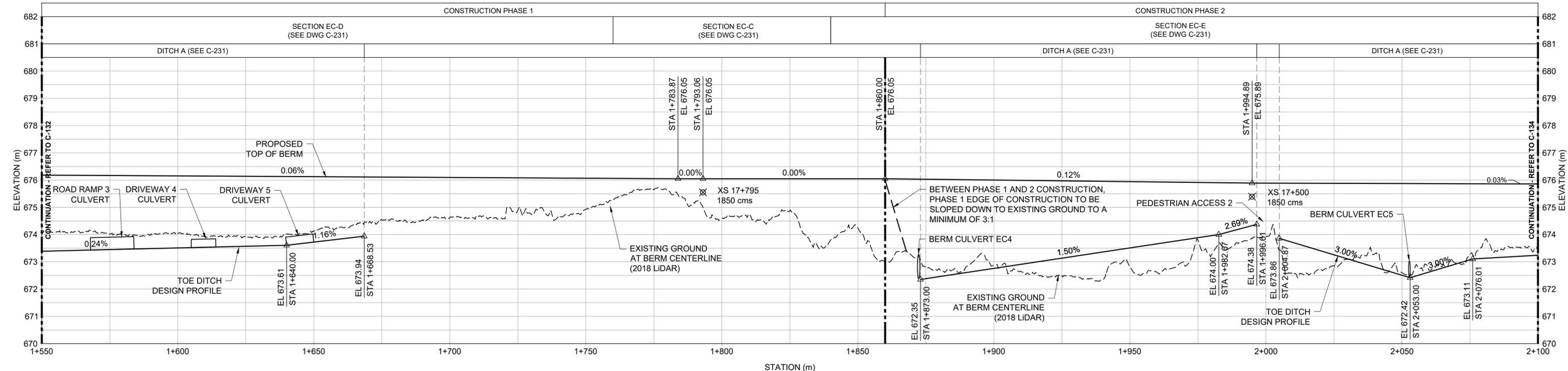
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EAST COULEE BERM PLAN AND PROFILE SHEET 1 OF 3

Project No. **CW2384** Drawing No. **C-132** Rev. **1**
Group **EAST COULEE**



PLAN - EAST COULEE BERM CENTERLINE
Scale 1:750



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EAST COULEE BERM PLAN AND PROFILE SHEET 2 OF 3

Project No. **CW2384** | Drawing No. **C-133** | Rev. **1**

Group **EAST COULEE**

LAYOUT TABLE: ROAD RAMP 6 (2 ST)

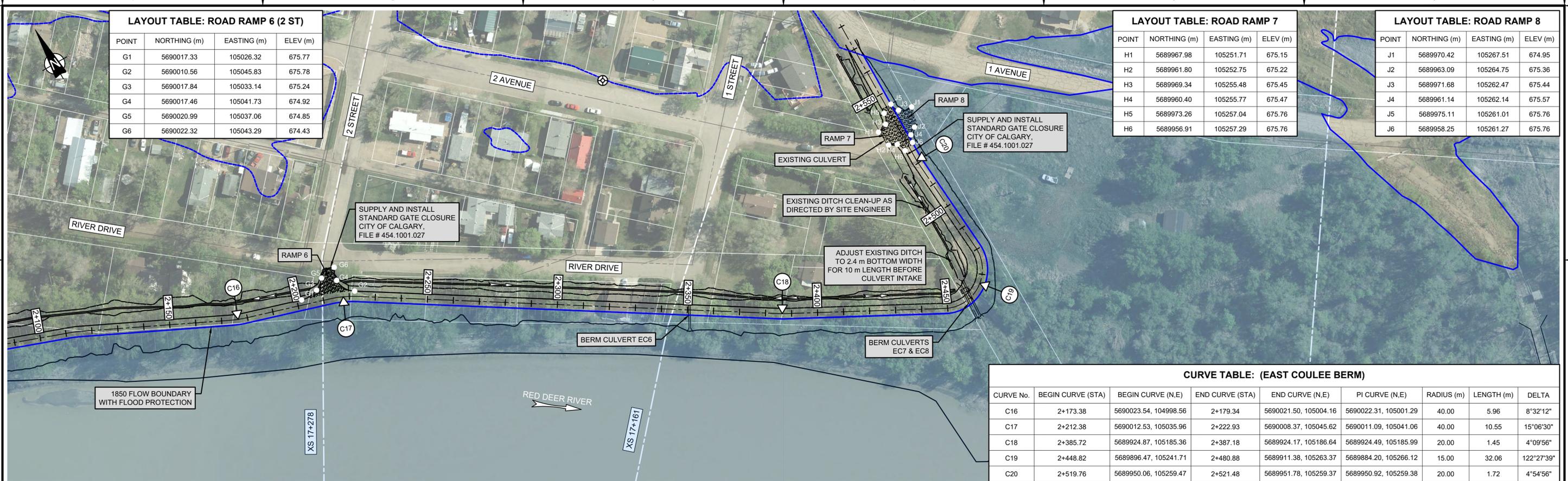
POINT	NORTHING (m)	EASTING (m)	ELEV (m)
G1	5690017.33	105026.32	675.77
G2	5690010.56	105045.83	675.78
G3	5690017.84	105033.14	675.24
G4	5690017.46	105041.73	674.92
G5	5690020.99	105037.06	674.85
G6	5690022.32	105043.29	674.43

LAYOUT TABLE: ROAD RAMP 7

POINT	NORTHING (m)	EASTING (m)	ELEV (m)
H1	5689967.98	105251.71	675.15
H2	5689961.80	105252.75	675.22
H3	5689969.34	105255.48	675.45
H4	5689960.40	105255.77	675.47
H5	5689973.26	105257.04	675.76
H6	5689956.91	105257.29	675.76

LAYOUT TABLE: ROAD RAMP 8

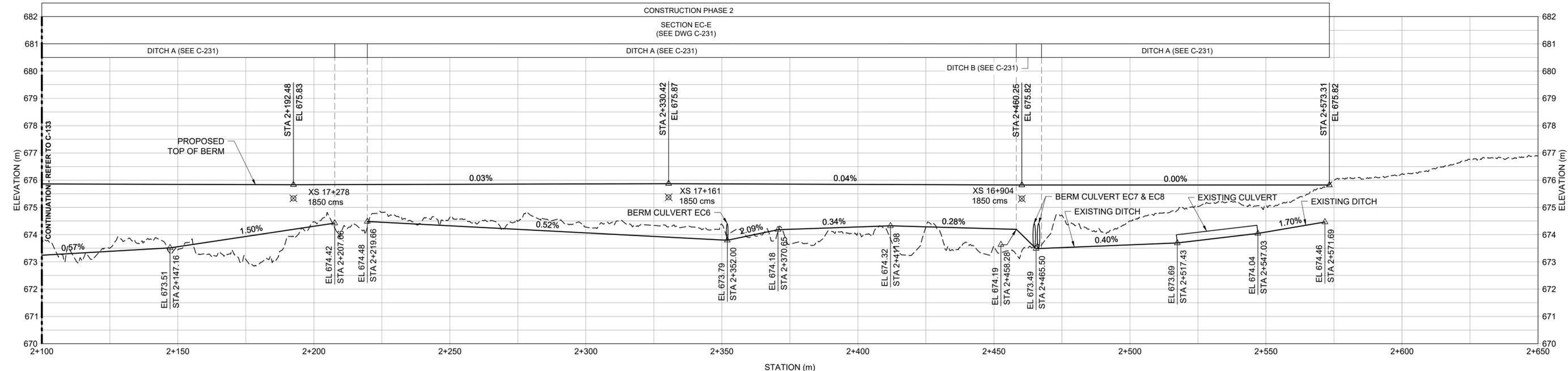
POINT	NORTHING (m)	EASTING (m)	ELEV (m)
J1	5689970.42	105267.51	674.95
J2	5689963.09	105264.75	675.36
J3	5689971.68	105262.47	675.44
J4	5689961.14	105262.14	675.57
J5	5689975.11	105261.01	675.76
J6	5689958.25	105261.27	675.76



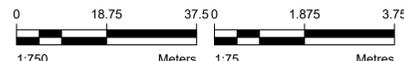
CURVE TABLE: (EAST COULEE BERM)

CURVE No.	BEGIN CURVE (STA)	BEGIN CURVE (N,E)	END CURVE (STA)	END CURVE (N,E)	PI CURVE (N,E)	RADIUS (m)	LENGTH (m)	DELTA
C16	2+173.38	5690023.54, 104998.56	2+179.34	5690021.50, 105004.16	5690022.31, 105001.29	40.00	5.96	8°32'12"
C17	2+212.38	5690012.53, 105035.96	2+222.93	5690008.37, 105045.62	5690011.09, 105041.06	40.00	10.55	15°06'30"
C18	2+385.72	5689924.87, 105185.36	2+387.18	5689924.17, 105186.64	5689924.49, 105185.99	20.00	1.45	4°09'56"
C19	2+448.82	5689896.47, 105241.71	2+480.88	5689911.38, 105263.37	5689884.20, 105266.12	15.00	32.06	122°27'39"
C20	2+519.76	5689950.06, 105259.47	2+521.48	5689951.78, 105259.37	5689950.92, 105259.38	20.00	1.72	4°54'56"

PLAN - EAST COULEE BERM CENTERLINE
Scale 1:750



PROFILE - EAST COULEE BERM CENTERLINE
Scale H 1:750 | V 1:75



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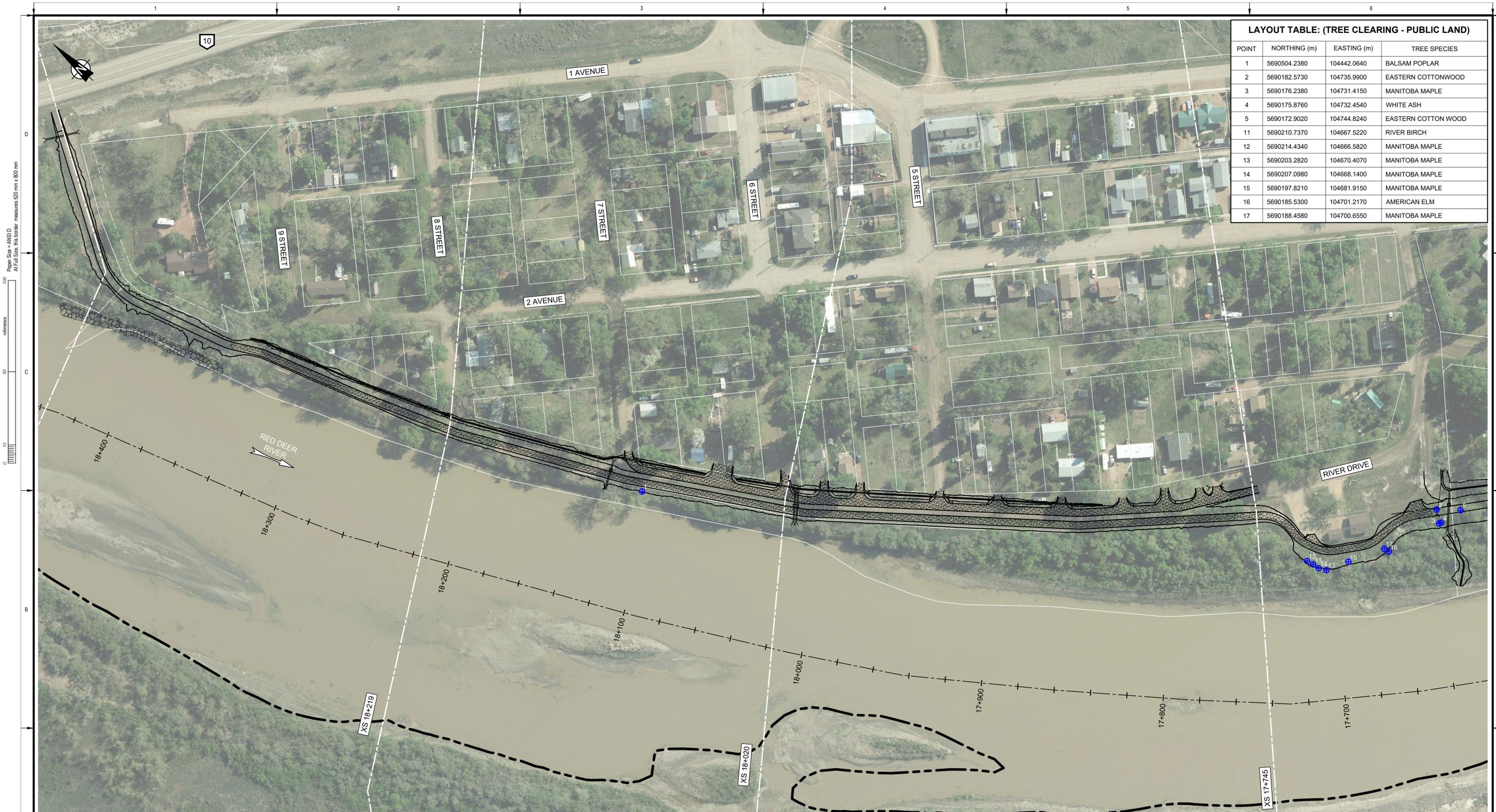
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RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
PLAN AND PROFILE
SHEET 3 OF 3

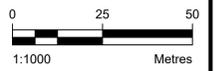
Project No. **CW2384** | Drawing No. **C-134** | Rev. **1**
Group **EAST COULEE**

LAYOUT TABLE: (TREE CLEARING - PUBLIC LAND)

POINT	NORTHING (m)	EASTING (m)	TREE SPECIES
1	5690504.2380	104442.0640	BALSAM POPLAR
2	5690182.5730	104735.9900	EASTERN COTTONWOOD
3	5690176.2380	104731.4150	MANITOBA MAPLE
4	5690175.8760	104732.4540	WHITE ASH
5	5690172.9020	104744.8240	EASTERN COTTON WOOD
11	5690210.7370	104667.5220	RIVER BIRCH
12	5690214.4340	104666.5820	MANITOBA MAPLE
13	5690203.2820	104670.4070	MANITOBA MAPLE
14	5690207.0980	104668.1400	MANITOBA MAPLE
15	5690197.8210	104681.9150	MANITOBA MAPLE
16	5690185.5300	104701.2170	AMERICAN ELM
17	5690188.4580	104700.6550	MANITOBA MAPLE



- NOTES:**
- SMALL TREES, BUSHES, AND SHRUBS TO BE CLEARED AND GRUBBED PER BERM FOOTPRINT AS REQUIRED
 - TOTAL TREES TO BE CLEARED: 102
- LEGEND:**
- TREES ON PUBLIC LAND TO BE CLEARED FOR PHASE 1 CONSTRUCTION (BY OTHERS)
 - TREES ON PRIVATE LAND TO BE CLEARED FOR PHASE 2 CONSTRUCTION



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RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
TREE CLEARING PLAN
SHEET 1 OF 2

Project No. **CW2384** Drawing No. _____
 Group **EAST COULEE** **C-135** Rev. **1**

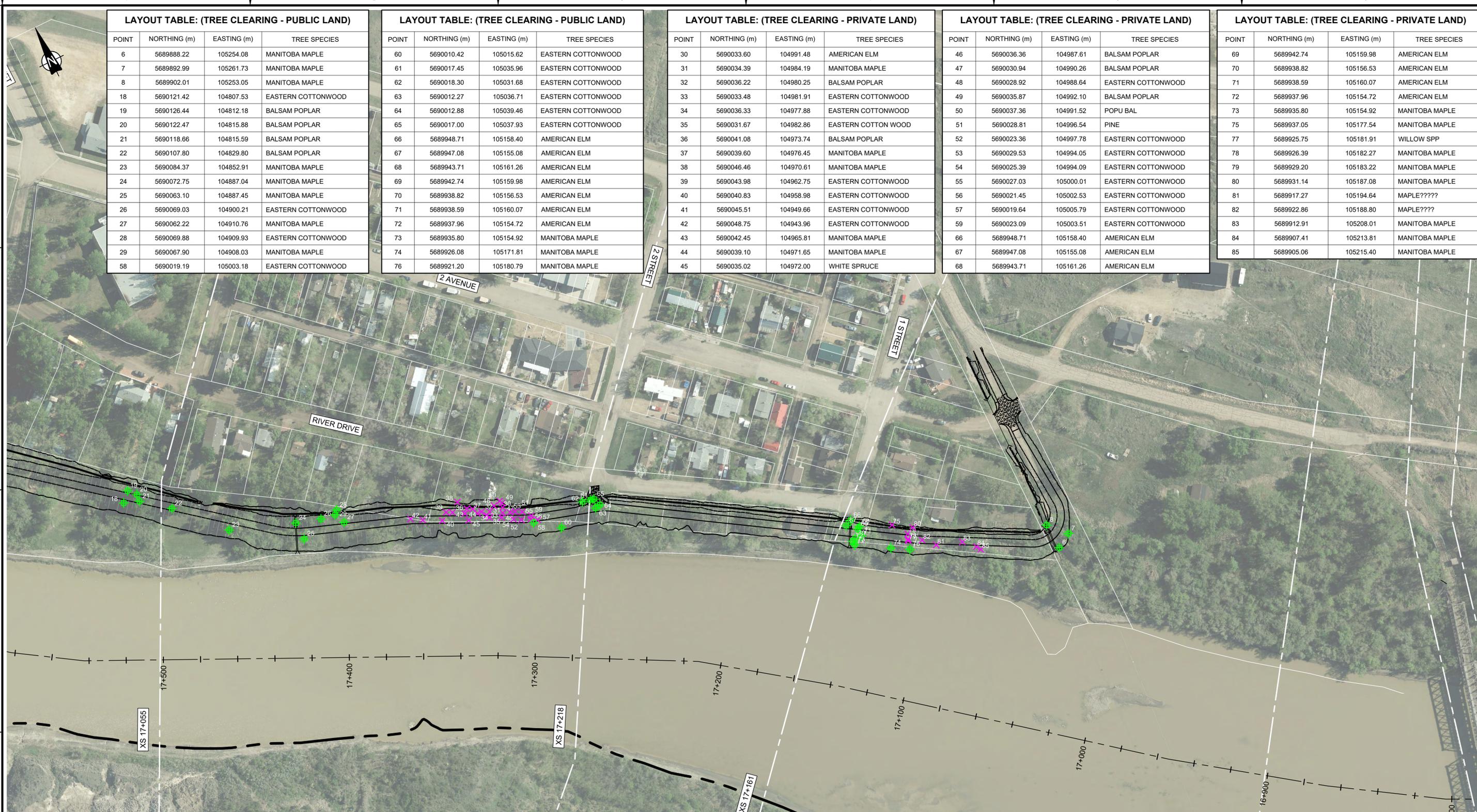
LAYOUT TABLE: (TREE CLEARING - PUBLIC LAND)			
POINT	NORTHING (m)	EASTING (m)	TREE SPECIES
6	5689888.22	105254.08	MANITOBA MAPLE
7	5689892.99	105261.73	MANITOBA MAPLE
8	5689902.01	105253.05	MANITOBA MAPLE
18	5690121.42	104807.53	EASTERN COTTONWOOD
19	5690126.44	104812.18	BALSAM POPLAR
20	5690122.47	104815.88	BALSAM POPLAR
21	5690118.66	104815.59	BALSAM POPLAR
22	5690107.80	104829.80	BALSAM POPLAR
23	5690084.37	104852.91	MANITOBA MAPLE
24	5690072.75	104887.04	MANITOBA MAPLE
25	5690063.10	104887.45	MANITOBA MAPLE
26	5690069.03	104900.21	EASTERN COTTONWOOD
27	5690062.22	104910.76	MANITOBA MAPLE
28	5690069.88	104909.93	EASTERN COTTONWOOD
29	5690067.90	104908.03	MANITOBA MAPLE
58	5690019.19	105003.18	EASTERN COTTONWOOD

LAYOUT TABLE: (TREE CLEARING - PUBLIC LAND)			
POINT	NORTHING (m)	EASTING (m)	TREE SPECIES
60	5690010.42	105015.62	EASTERN COTTONWOOD
61	5690017.45	105035.96	EASTERN COTTONWOOD
62	5690018.30	105031.68	EASTERN COTTONWOOD
63	5690012.27	105036.71	EASTERN COTTONWOOD
64	5690012.88	105039.46	EASTERN COTTONWOOD
65	5690017.00	105037.93	EASTERN COTTONWOOD
66	5689948.71	105158.40	AMERICAN ELM
67	5689947.08	105155.08	AMERICAN ELM
68	5689943.71	105161.26	AMERICAN ELM
69	5689942.74	105159.98	AMERICAN ELM
70	5689938.82	105156.53	AMERICAN ELM
71	5689938.59	105160.07	AMERICAN ELM
72	5689937.96	105154.72	AMERICAN ELM
73	5689935.80	105154.92	MANITOBA MAPLE
74	5689926.08	105171.81	MANITOBA MAPLE
76	5689921.20	105180.79	MANITOBA MAPLE

LAYOUT TABLE: (TREE CLEARING - PRIVATE LAND)			
POINT	NORTHING (m)	EASTING (m)	TREE SPECIES
30	5690033.60	104991.48	AMERICAN ELM
31	5690034.39	104984.19	MANITOBA MAPLE
32	5690036.22	104980.25	BALSAM POPLAR
33	5690033.48	104981.91	EASTERN COTTONWOOD
34	5690036.33	104977.88	EASTERN COTTONWOOD
35	5690031.67	104982.86	EASTERN COTTONWOOD
36	5690041.08	104973.74	BALSAM POPLAR
37	5690039.60	104976.45	MANITOBA MAPLE
38	5690046.46	104970.61	MANITOBA MAPLE
39	5690043.98	104962.75	EASTERN COTTONWOOD
40	5690040.83	104958.98	EASTERN COTTONWOOD
41	5690045.51	104949.66	EASTERN COTTONWOOD
42	5690048.75	104943.96	EASTERN COTTONWOOD
43	5690042.45	104965.81	MANITOBA MAPLE
44	5690039.10	104971.65	MANITOBA MAPLE
45	5690035.02	104972.00	WHITE SPRUCE

LAYOUT TABLE: (TREE CLEARING - PRIVATE LAND)			
POINT	NORTHING (m)	EASTING (m)	TREE SPECIES
46	5690036.36	104987.61	BALSAM POPLAR
47	5690030.94	104990.26	BALSAM POPLAR
48	5690028.92	104988.64	EASTERN COTTONWOOD
49	5690035.87	104992.10	BALSAM POPLAR
50	5690037.36	104991.52	POPU BAL
51	5690028.81	104996.54	PINE
52	5690023.36	104997.78	EASTERN COTTONWOOD
53	5690029.53	104994.05	EASTERN COTTONWOOD
54	5690025.39	104994.09	EASTERN COTTONWOOD
55	5690027.03	105000.01	EASTERN COTTONWOOD
56	5690021.45	105002.53	EASTERN COTTONWOOD
57	5690019.64	105005.79	EASTERN COTTONWOOD
59	5690023.09	105003.51	EASTERN COTTONWOOD
66	5689948.71	105158.40	AMERICAN ELM
67	5689947.08	105155.08	AMERICAN ELM
68	5689943.71	105161.26	AMERICAN ELM

LAYOUT TABLE: (TREE CLEARING - PRIVATE LAND)			
POINT	NORTHING (m)	EASTING (m)	TREE SPECIES
69	5689942.74	105159.98	AMERICAN ELM
70	5689938.82	105156.53	AMERICAN ELM
71	5689938.59	105160.07	AMERICAN ELM
72	5689937.96	105154.72	AMERICAN ELM
73	5689935.80	105154.92	MANITOBA MAPLE
75	5689937.05	105177.54	MANITOBA MAPLE
77	5689925.75	105181.91	WILLOW SPP
78	5689926.39	105182.27	MANITOBA MAPLE
79	5689929.20	105183.22	MANITOBA MAPLE
80	5689931.14	105187.08	MANITOBA MAPLE
81	5689917.27	105194.64	MAPLE?????
82	5689922.86	105188.80	MAPLE????
83	5689912.91	105208.01	MANITOBA MAPLE
84	5689907.41	105213.81	MANITOBA MAPLE
85	5689905.06	105215.40	MANITOBA MAPLE



- NOTES:
- SMALL TREES, BUSHES, AND SHRUBS TO BE CLEARED AND GRUBBED PER BERM FOOTPRINT AS REQUIRED
 - TOTAL TREES TO BE CLEARED: 102

- LEGEND:
- TREES ON PUBLIC LAND TO BE CLEARED FOR PHASE 1 CONSTRUCTION (BY OTHERS)
 - TREES ON PRIVATE LAND TO BE CLEARED FOR PHASE 2 CONSTRUCTION

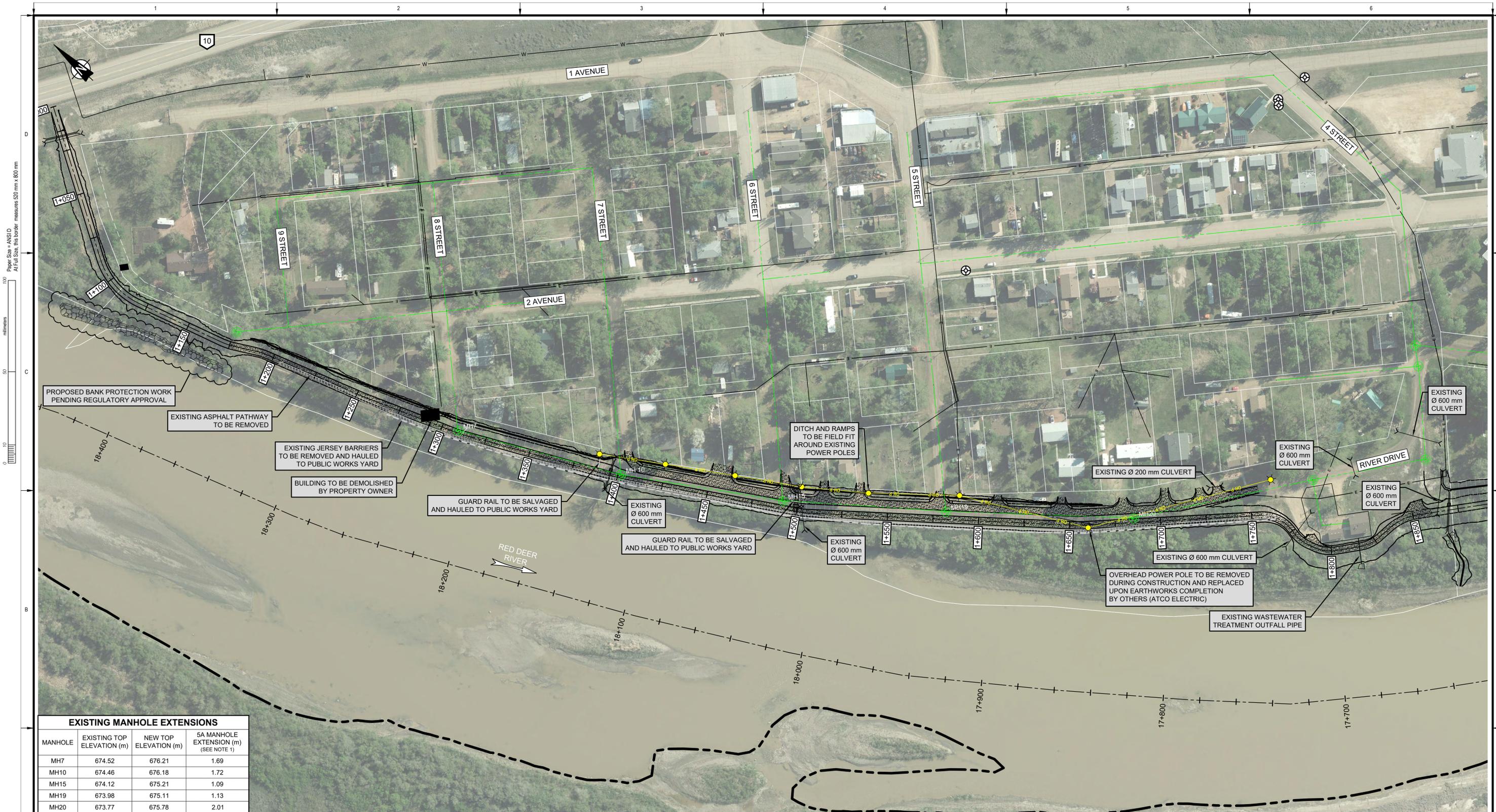


Rev	Date	Des	Dwn	Chk	Description
0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
1	2023-02-16	SW	JH	LM	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
TREE CLEARING PLAN
SHEET 2 OF 2

Project No. **CW2384** Drawing No. _____
 Group **EAST COULEE** **C-136** Rev. **1**



EXISTING MANHOLE EXTENSIONS

MANHOLE	EXISTING TOP ELEVATION (m)	NEW TOP ELEVATION (m)	5A MANHOLE EXTENSION (m) (SEE NOTE 1)
MH7	674.52	676.21	1.69
MH10	674.46	676.18	1.72
MH15	674.12	675.21	1.09
MH19	673.98	675.11	1.13
MH20	673.77	675.78	2.01

NOTES:
 1. MANHOLES TO BE EXTENDED, DISTANCE NOTED USING PRECAST CONCRETE 5A MANHOLE BARRELS AND COLLARS AS REQUIRED.

LEGEND:

- SANITARY MANHOLE
- Ø 200 mm UNDERGROUND SANITARY LINE
- WATER WELL
- LAMP POST
- OVERHEAD POWER LINE



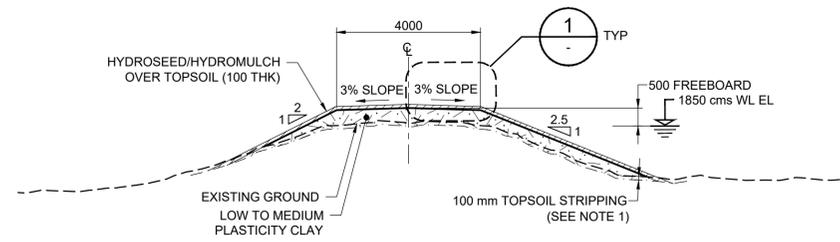
Rev	Date	Des	Dwn	Chk	Description
0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
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DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

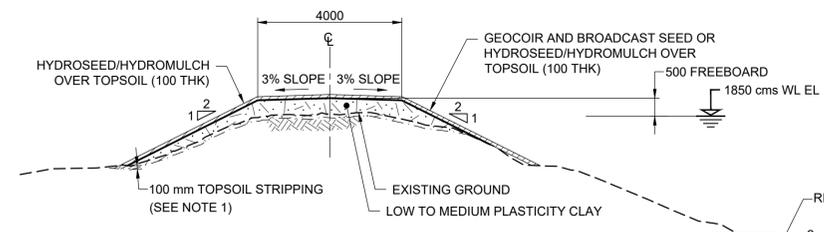
EAST COULEE BERM
MANHOLE EXTENSION AND
EXISTING INFRASTRUCTURE PLAN

Project No. **CW2384** Drawing No. **C-137** Rev. **1**
 Group **EAST COULEE**

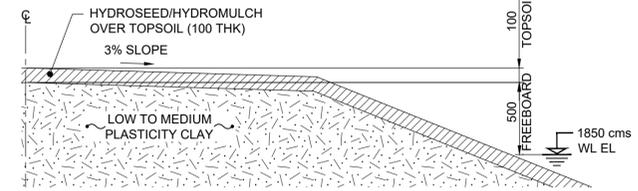
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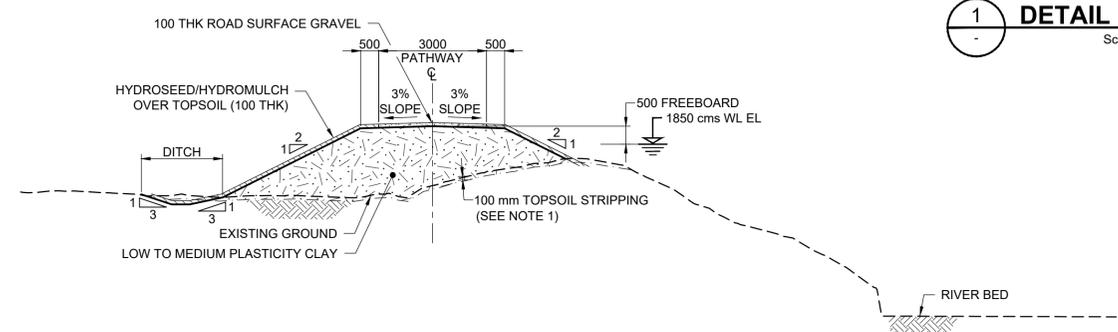
EC-A SECTION
 C-132
 C-133
 Scale 1:100



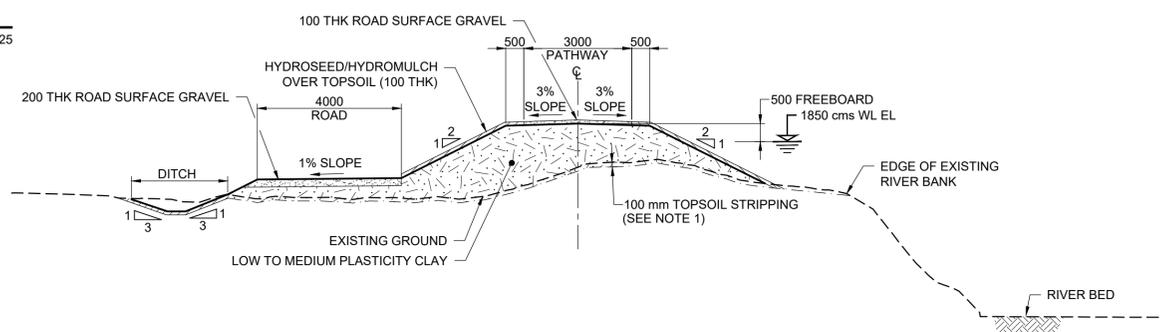
EC-B SECTION
 C-132
 Scale 1:100



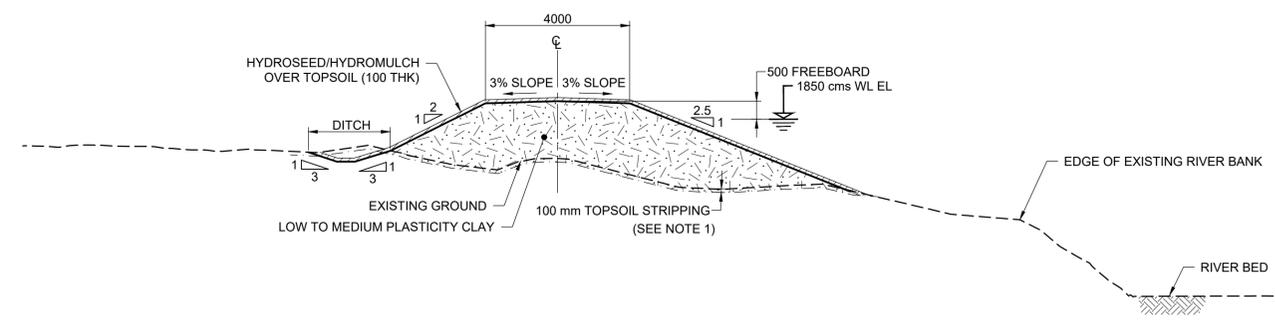
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 Scale 1:25



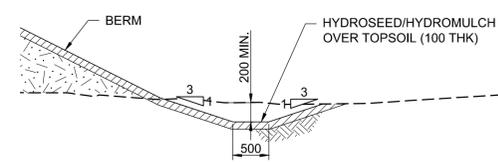
EC-C SECTION
 C-132
 Scale 1:100



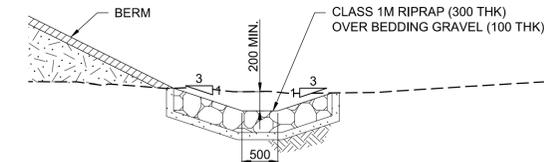
EC-D SECTION
 C-132
 C-133
 Scale 1:100



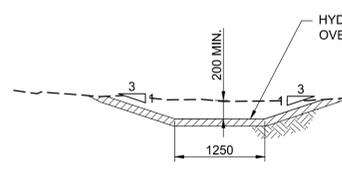
EC-E SECTION
 C-133
 C-134
 Scale 1:100



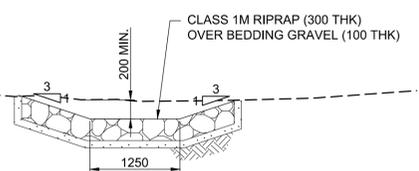
A DITCH SECTION
 C-132
 C-133
 C-134
 TYPICAL UNO
 Scale 1:50



B DITCH SECTION
 C-132
 C-134
 STA 1+393 TO 1+397
 STA 2+458 TO 2+468
 Scale 1:50

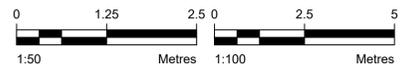


C DITCH SECTION
 C-133
 Scale 1:50



D DITCH SECTION
 C-133
 Scale 1:50

- NOTES:**
- ADDITIONAL EXCAVATION OR KEY TRENCH MAY BE REQUIRED BASED ON SITE-SPECIFIC FACTORS AS DIRECTED BY ENGINEER.
 - GEOTEXTILE ONLY PLACED AS DIRECTED BY THE CONSULTANT.

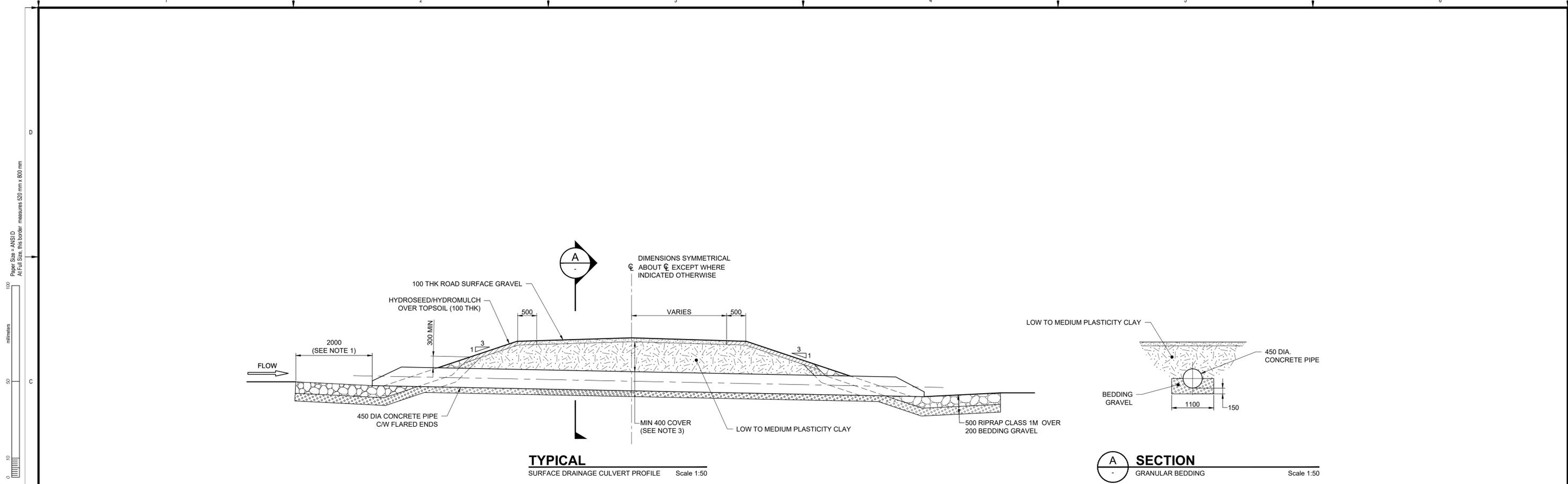


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0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
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DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
TYPICAL SECTIONS

Project No. **CW2384** Drawing No. **C-231** Rev. **1**
 Group **EAST COULEE**



EAST COULEE BERM ACCESS RAMPS - SURFACE DRAINAGE STRUCTURES LAYOUT SUMMARY										
RAMP No.	STA €	BERM CREST EL	BERM CL COORDINATE	PIPE DIA.	TOTAL LENGTH (mm)	FLARED END INLET INVERT EL	FLARED END INLET COORDINATE	FLARED END OUTLET INVERT EL	FLARED END OUTLET COORDINATE	REF DWG
1	1+406	676.240	N 5690514.056, E 104441.311	450	9000	673.743	N 5690516.585, E 104453.114	673.717	N 5690523.386, E 104447.992	C-132
2	1+491	676.213	N 5690442.950, E 104487.806	450	14000	673.466	N 5690455.498, E 104494.002	673.290	N 5690444.380, E 104501.797	C-132
3	1+579	676.162	N 5690376.279, E 104543.591	450	10000	673.470	N 5690381.232, E 104555.282	673.450	N 5690387.271, E104550.072	C-133
4	1+790	676.050	N 5690218.174, E 104674.173	NO CULVERT						C-133
5	1+857	676.033	N 5690188.361, E 104730.147	NO CULVERT						C-133
6	2+215	675.836	N 5690012.313, E 105036.699	NO CULVERT						C-134

- NOTES:**
- TRANSITION FROM UPSTREAM AND DOWNSTREAM DITCH TO CULVERT INLET AND OUTLET OVER 2000 DISTANCE. SET CULVERT INLET AND OUTLET INVERTS 100 mm BELOW UPSTREAM AND DOWNSTREAM DITCH INVERTS.
 - PROVIDE MINIMUM 400 COVER OVER CULVERT CROWN.

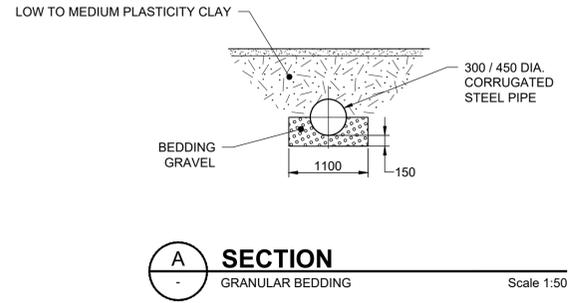
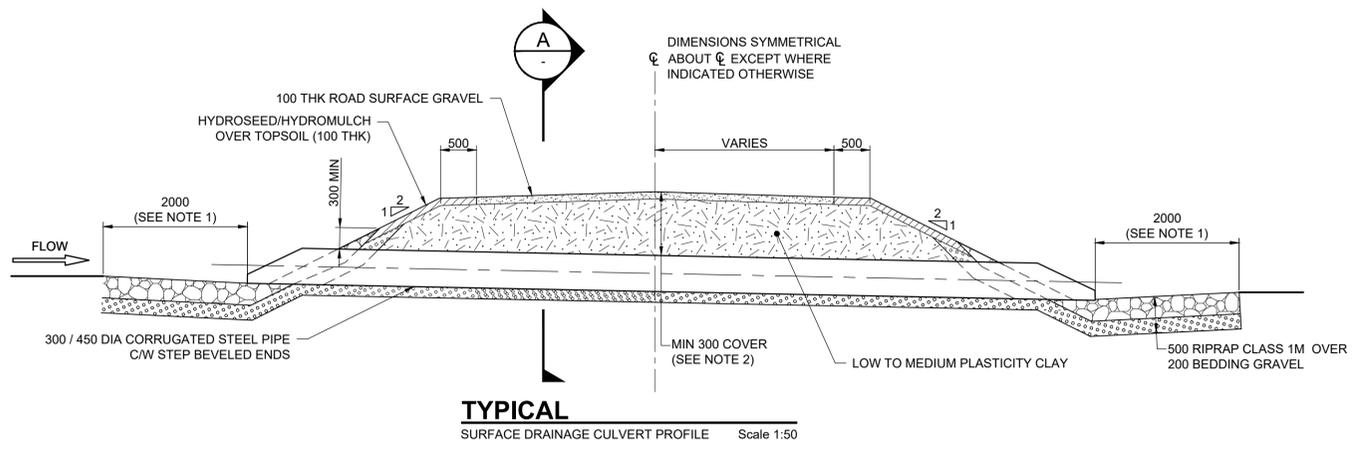


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1	2023-02-16	SW	JH	LM	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

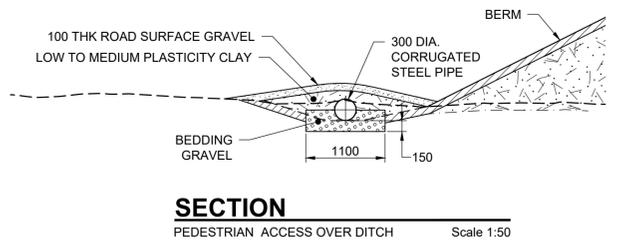
EAST COULEE BERM
ROAD AND ACCESS RAMP CULVERT
SECTION

Project No. **CW2384** Drawing No. **C-232** Rev. **1**
Group **EAST COULEE**



EAST COULEE BERM DRIVEWAYS - GRAVEL SURFACE LAYOUT DRAINAGE STRUCTURE (SEE NOTE 3)

DRIVEWAY No.	STA \pm	BERM CREST EL	BERM CL COORDINATE	PIPE DIA.	TOTAL LENGTH (mm)	FLARED END INLET INVERT EL	FLARED END INLET COORDINATE	FLARED END OUTLET INVERT EL	FLARED END OUTLET COORDINATE	REF DWG
1	1+455	676.224	N 5690473.081, E 104468.105	NO CULVERT						C-132
2	1+515	676.162	N 5690423.847, E 104502.240	450	10000	673.317	N 5690429.659, E 104513.697	673.298	N 5690435.048, E 104509.184	C-132
3	1+535	676.189	N 5690408.897, E 104515.525	450	10000	673.365	N 5690413.945, E 104527.270	673.345	N 5690421.053, E 104521.034	C-132
4	1+610	676.142	N 5690387.271, E 104550.072	300	9000	673.550	N 5690356.993, E 104576.028	673.520	N 5690363.164, E 104570.788	C-133
5	1+645	676.121	N 5690363.164, E 104570.788	300	9000	673.700	N 5690330.173, E 104598.817	673.607	N 5690330.173, E 104598.817	C-133
6	1+675	676.102	N 5690305.708, E 104610.007	NO CULVERT						C-133
7	1+705	676.084	N 5690285.471, E 104632.153	NO CULVERT						C-133
8	1+720	676.075	N 5690275.352, E 104643.226	NO CULVERT						C-133
9	1+732	675.067	N 5690267.257, E 104652.085	300	8000	673.400	N 5690281.237, E 104658.403	673.300	N 5690276.273, E 104664.863	C-133



EAST COULEE BERM PEDESTRIAN ACCESS OVER DITCH (SEE NOTE 3)

ACCESS No.	STA \pm	BERM CREST EL	BERM CL COORDINATE	PIPE DIA.	TOTAL LENGTH (mm)	FLARED END INLET INVERT EL	FLARED END INLET COORDINATE	FLARED END OUTLET INVERT EL	FLARED END OUTLET COORDINATE	REF DWG
1	1+300	676.271	N 5690607.907, E 104391.763	300	4000	674.108	N 5690612.374, E 104397.460	674.096	N 5690608.699, E 104399.042	C-132
2	1+998	676.050	N 5690098.364, E 104843.652	NO CULVERT						C-133

- NOTES:**
- TRANSITION FROM UPSTREAM AND DOWNSTREAM DITCH TO CULVERT INLET AND OUTLET OVER 2000 DISTANCE. SET CULVERT INLET AND OUTLET INVERTS 100 mm BELOW UPSTREAM AND DOWNSTREAM DITCH INVERTS.
 - PROVIDE MINIMUM 300 COVER OVER CULVERT CROWN.
 - TABLE DATA IS APPROXIMATE. DRIVEWAYS TO BE FIELD FIT ON SITE.
 - DRIVEWAYS TO HAVE MAXIMUM SLOPE OF 12% AND SIDE SLOPES TO BE 2:1.

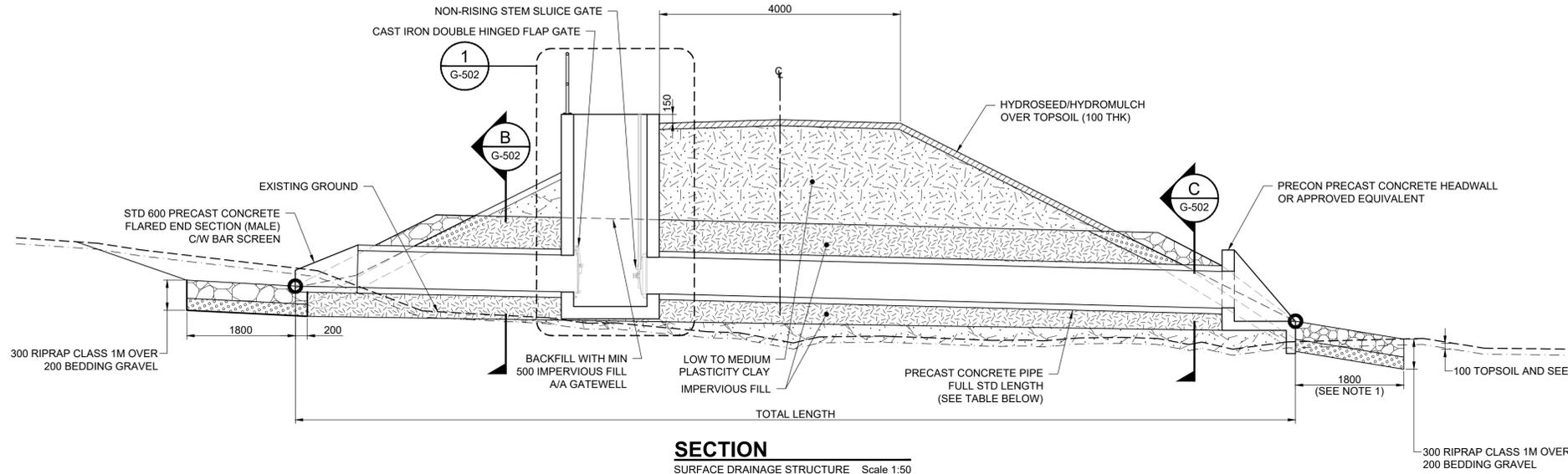


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DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
RESIDENTIAL DRIVEWAY CULVERT
SECTION

Project No. CW2384	Drawing No. C-233	Rev. 1
Group EAST COULEE		



SECTION
SURFACE DRAINAGE STRUCTURE Scale 1:50

EAST COULEE BERM SURFACE DRAINAGE STRUCTURES LAYOUT SUMMARY

CULVERT No.	STA	BERM CREST EL	BERM CL COORDINATE	PIPE DIA. (mm)	TOTAL LENGTH (mm)	FLARED END INLET INVERT EL	FLARED END INLET COORDINATE	PIPE OUTLET INVERT EL	HEADWALL INVERT EL	HEADWALL COORDINATE	GATEWELL INLET INVERT EL	GATEWELL OUTLET INVERT EL	REF DWG	DET DWG
EC1	1+395	676.240	N 5690523.504, E 104436.238	600	18000	673.107	N 5690527.326, E 104443.892	672.945	672.745	N 5690519.535, E 104428.218	673.061	673.046	C-132	C-502
EC4	1+870	676.018	N 5690177.583, E 104740.388	900	23000	672.350	N 5690184.641, E 104748.379	672.170	671.970	N 5690169.970, E 104731.505	672.300	672.288	C-133	C-502
EC5	2+053	675.873	N 5690068.327, E 104885.202	600	22000	672.416	N 5690077.089, E 104888.607	672.191	671.991	N 5690057.124, E 104880.836	672.357	672.340	C-133	C-502
EC6	2+352	675.865	N 5689942.815, E 105155.323	600	16000	673.794	N 5689948.410, E 105158.173	673.378	673.178	N 5689934.853, E 105151.267	673.721	673.677	C-134	C-502

NOTES:

- TRANSITION FROM UPSTREAM AND DOWNSTREAM DITCH TO CULVERT INLET AND OUTLET OVER 2000 DISTANCE. SET CULVERT INLET AND OUTLET INVERTS 100 mm BELOW UPSTREAM AND DOWNSTREAM DITCH INVERTS.
- PROVIDE MINIMUM 400 COVER OVER CULVERT CROWN.



Rev	Date	Des	Dwn	Chk	Description
0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
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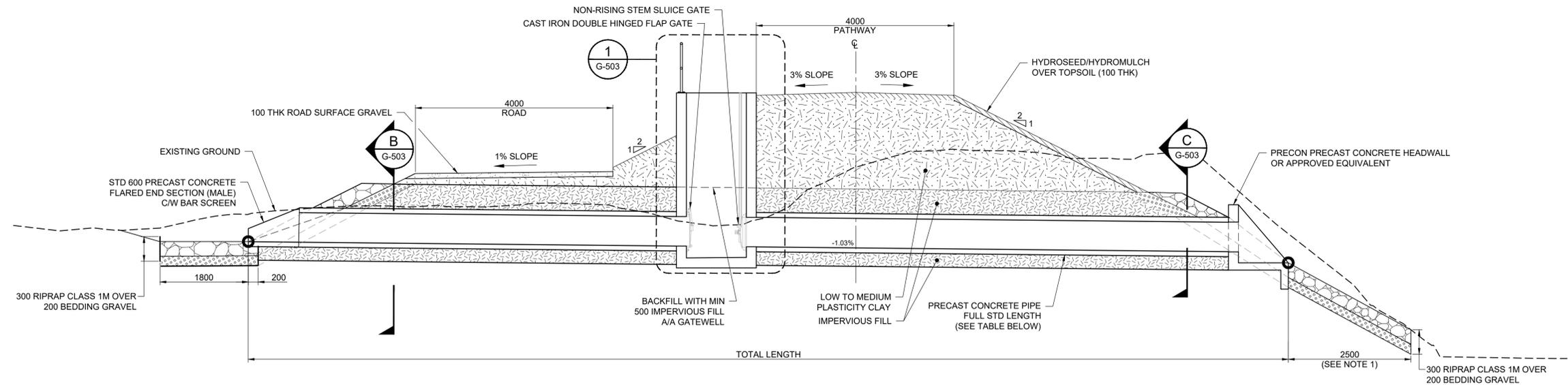
DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
CULVERT AND MANHOLE
SECTIONS

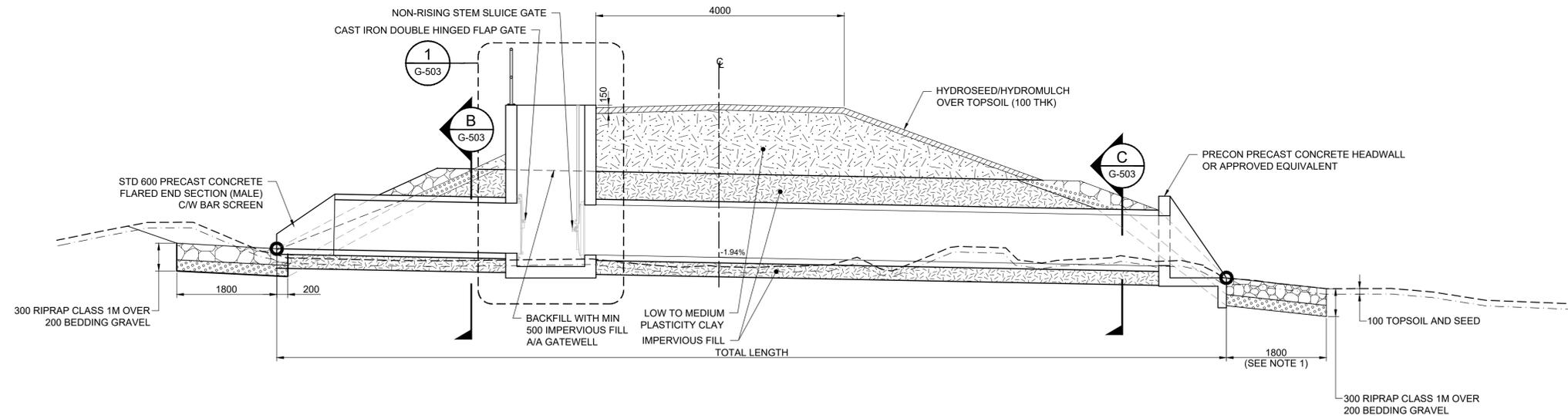
Project No. **CW2384**
Group **EAST COULEE**

Drawing No.

C-234 Rev. **1**

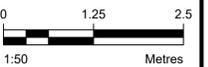


EAST COULEE BERM SURFACE DRAINAGE STRUCTURES LAYOUT SUMMARY														
CULVERT No.	STA	BERM CREST EL	BERM CL COORDINATE	PIPE DIA. (mm)	TOTAL LENGTH (mm)	FLARED END INLET INVERT EL	FLARED END INLET COORDINATE	PIPE OUTLET INVERT EL	HEADWALL INVERT EL	HEADWALL COORDINATE	GATEWELL INLET INVERT EL	GATEWELL OUTLET INVERT EL	REF DWG	DET DWG
EC2	1+500	676.210	N 5690436.560, E 104491.984	600	20000	673.275	N 5690444.497, E 104501.410	673.052	672.852	N 5690433.756, E 104488.612	673.185	673.171	C-132	C-503
EC3	1+500	676.210	N 5690435.296, E 104492.811	600	20000	673.275	N 5690443.250, E 104502.284	673.052	672.852	N 5690432.524, E104489.508	673.185	673.171	C-132	C-503



EAST COULEE BERM SURFACE DRAINAGE STRUCTURES LAYOUT SUMMARY														
CULVERT No.	STA	BERM CREST EL	BERM CL COORDINATE	PIPE DIA. (mm)	TOTAL LENGTH (mm)	FLARED END INLET INVERT EL	FLARED END INLET COORDINATE	PIPE OUTLET INVERT EL	HEADWALL INVERT EL	HEADWALL COORDINATE	GATEWELL INLET INVERT EL	GATEWELL OUTLET INVERT EL	REF DWG	DET DWG
EC7	2+465.5	675.820	N 5689895.138, E 105251.194	900	15000	673.349	N 5689901.162, E 105251.451	673.000	672.800	N 5689887.367, E 105250.852	673.269	673.237	C-134	C-503
EC8	2+465.5	675.820	N 5689895.503, E 105252.699	900	15000	673.349	N 5689902.500, E 105253.027	673.000	672.800	N 5689887.353, E 105252.295	673.269	673.237	C-134	C-503

- NOTES:
- TRANSITION FROM UPSTREAM AND DOWNSTREAM DITCH TO CULVERT INLET AND OUTLET OVER 2000 DISTANCE. SET CULVERT INLET AND OUTLET INVERTS 100 mm BELOW UPSTREAM AND DOWNSTREAM DITCH INVERTS.
 - PROVIDE MINIMUM 400 COVER OVER CULVERT CROWN.



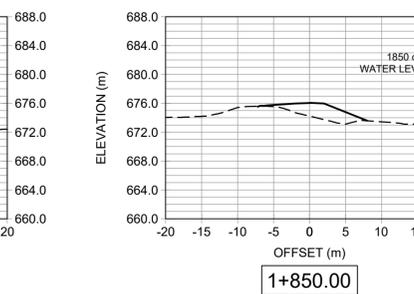
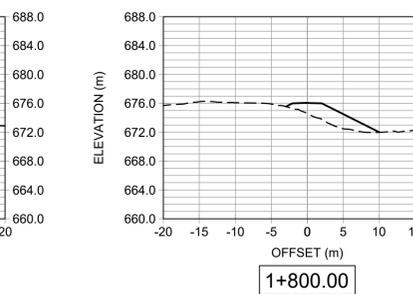
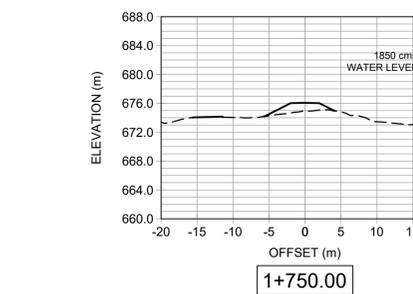
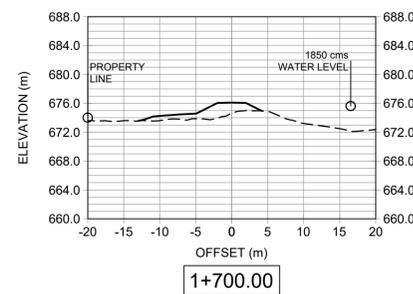
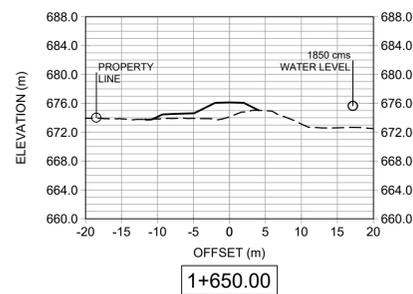
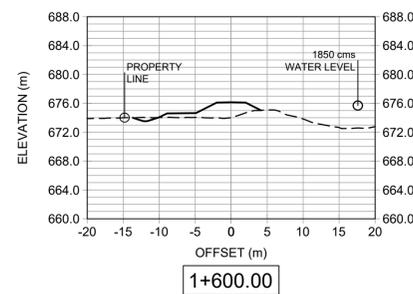
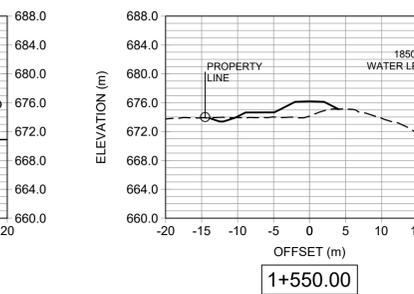
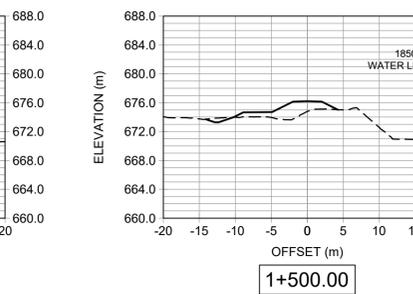
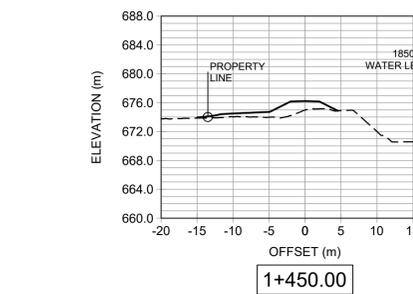
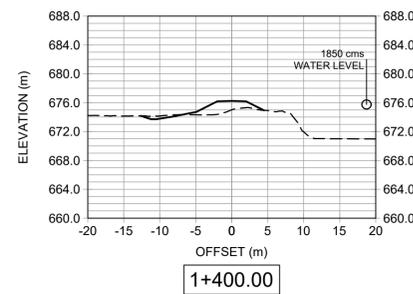
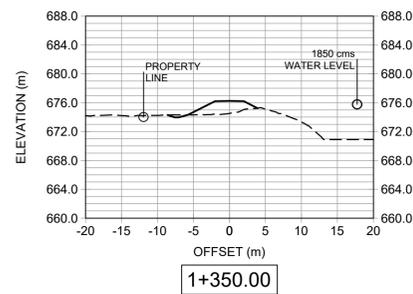
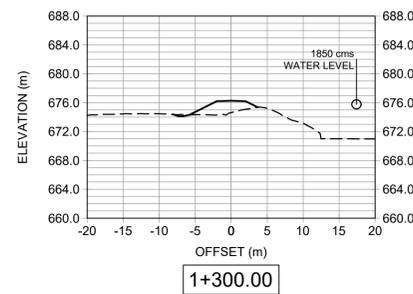
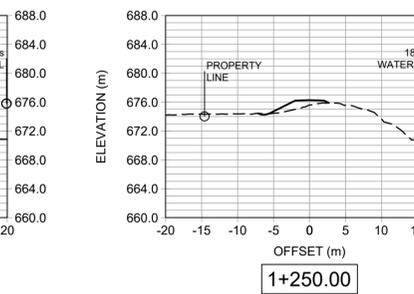
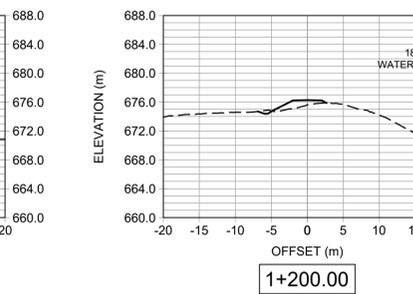
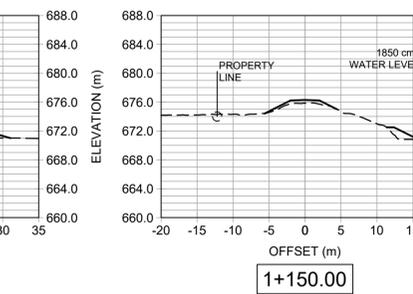
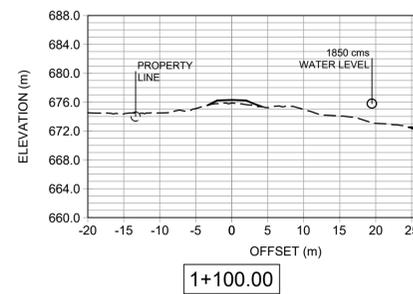
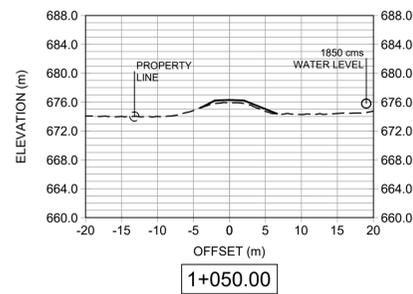
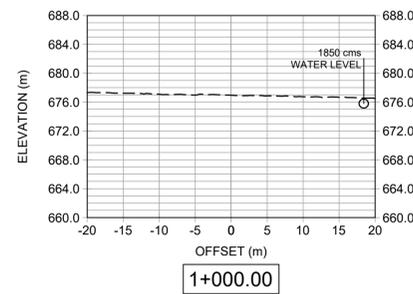
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0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
1	2023-02-16	SW	JH	LM	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
TWIN CULVERT AND MANHOLE
SECTIONS

Project No.	CW2384	Drawing No.	C-235	Rev.	1
Group	EAST COULEE				

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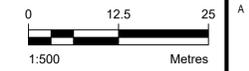
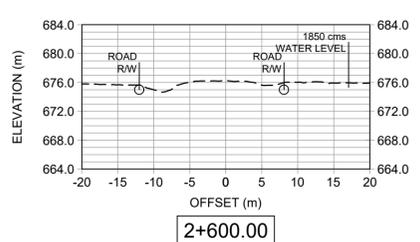
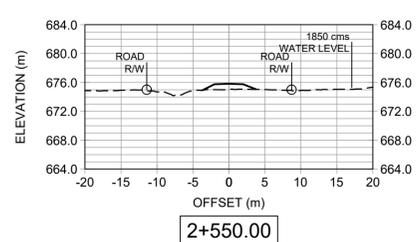
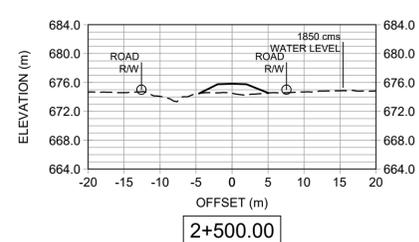
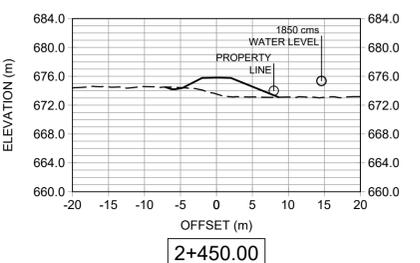
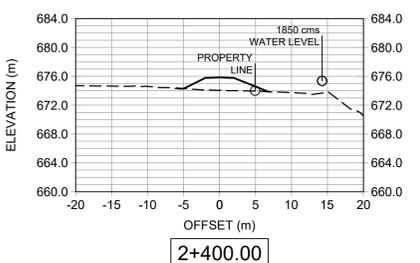
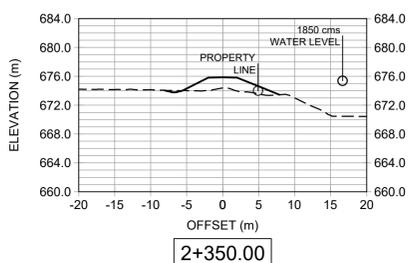
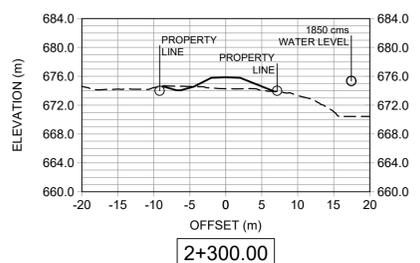
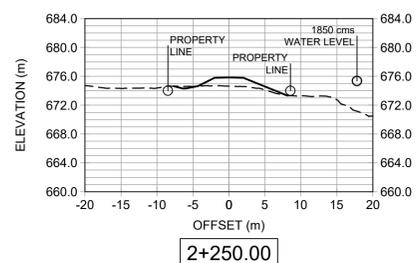
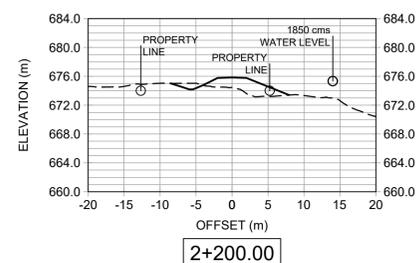
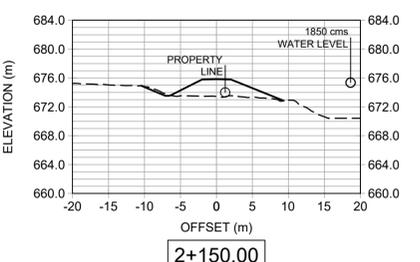
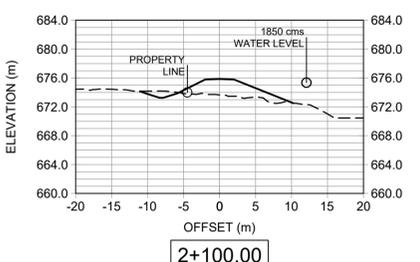
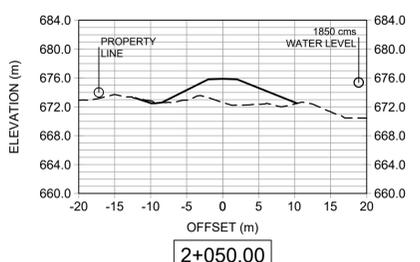
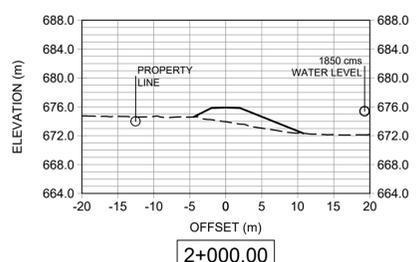
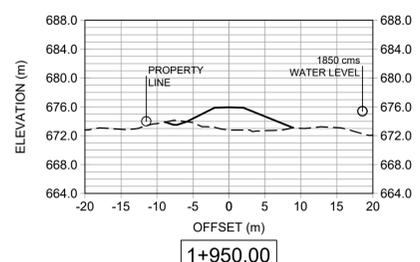
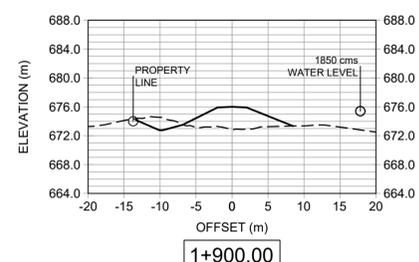
Rev	Date	Des	Dwn	Chk	Description
0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
1	2023-02-16	SW	JH	LM	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
SAMPLED SECTIONS SHEET 1 OF 2

Project No. **CW2384** Drawing No. **C-331** Rev. **1**
 Group **EAST COULEE**

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Rev	Date	Des	Dwn	Chk	Description
0	2022-12-09	SW	JH	LM	ISSUED FOR REVIEW
1	2023-02-16	SW	JH	LM	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM
EAST COULEE BERM
SAMPLED SECTIONS SHEET 2 OF 2

Project No. **CW2384** Drawing No. **C-332** Rev. **1**
 Group **EAST COULEE**

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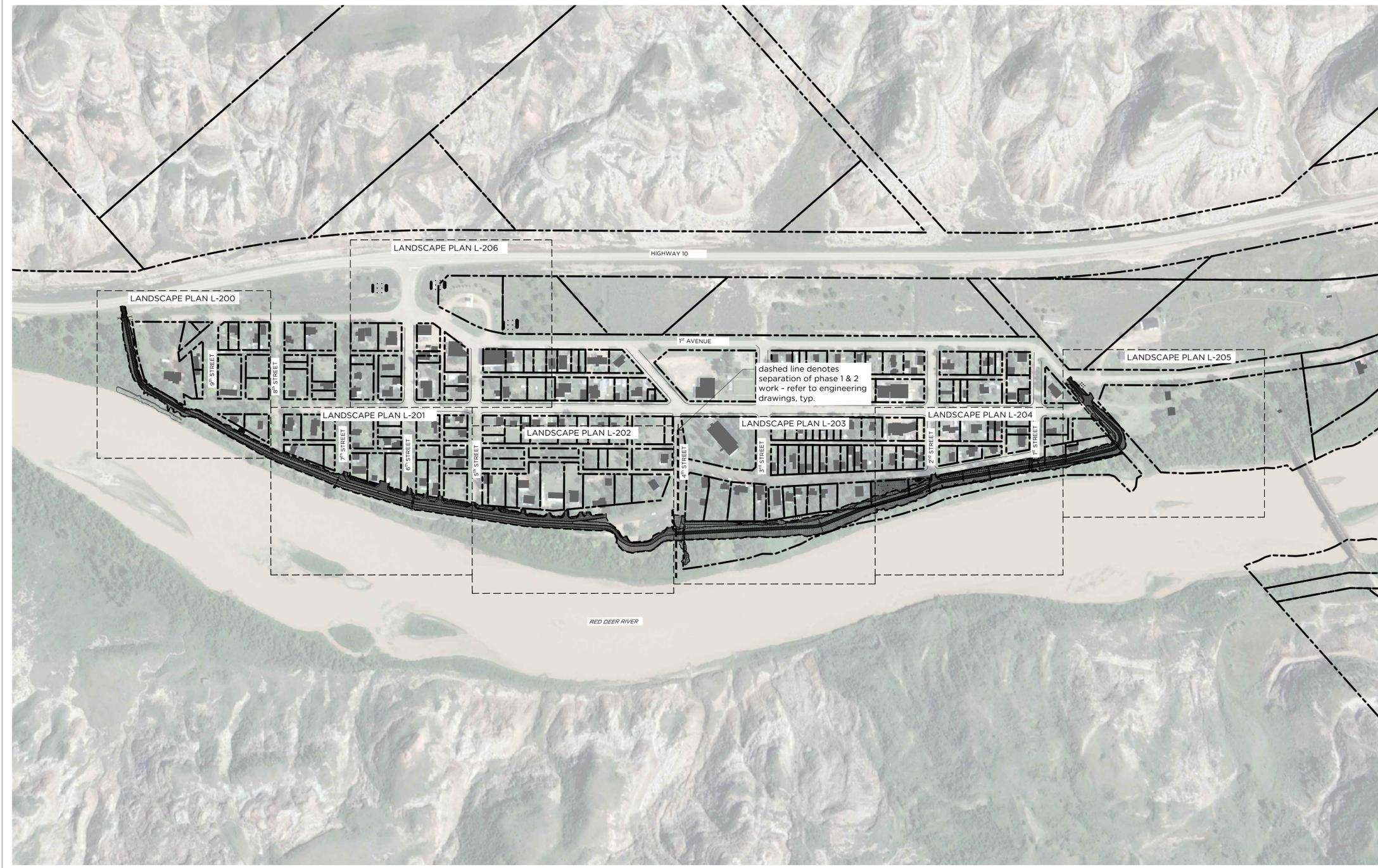
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EAST COULEE BERM PACKAGE

TREE, SHRUB & SEED
LANDSCAPE PACKAGE
ISSUED FOR TENDER

DRAWING LIST

Sheet Number	Sheet Name
L-100	EAST COULEE BERM LANDSCAPE KEY PLAN
L-101	EAST COULEE BERM LEGEND & NOTES
L-200	EAST COULEE BERM LANDSCAPE PLAN
L-201	EAST COULEE BERM LANDSCAPE PLAN
L-202	EAST COULEE BERM LANDSCAPE PLAN
L-203	EAST COULEE BERM LANDSCAPE PLAN
L-204	EAST COULEE BERM LANDSCAPE PLAN
L-205	EAST COULEE BERM LANDSCAPE PLAN
L-206	EAST COULEE BERM LANDSCAPE PLAN
L-300	EAST COULEE BERM LANDSCAPE DETAILS
L-301	EAST COULEE BERM LANDSCAPE DETAILS
L-302	EAST COULEE BERM LANDSCAPE DETAILS



A1 KEY PLAN
L-100 Scale 1:3000



Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION						
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER						

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LANDSCAPE KEY PLAN

Project No. **3446-005** Drawing No. **L-100** Rev. **1**
Group **EAST COULEE**

Seed Mix Schedule

1 Wet Tolerant Seed Mix 1 – Below 1:2 year high water mark – Application Rate of 58 kg / ha.

Site Characteristics	
Seeding Method	broadcast
Habitat Type	wetland
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5 cm to 10 cm

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Deschampsia cespitosa</i>	Tufted Hairgrass	25%	3%	1.97
<i>Pascopyrum smithii</i> / <i>Agropyron smithii</i>	Western Wheatgrass	20%	32%	18.60
<i>Bromus carinatus</i>	Mountain Brome	5%	10%	5.68
<i>Elymus trachycaulus</i> / <i>Agropyron trachycaulum</i> var.	Slender Wheatgrass	10%	11%	6.39
<i>Elymus canadensis</i>	Canada Wildrye	15%	23%	13.34
<i>Spartina pectinata</i>	Alkali Cordgrass	25%	21%	11.66

1 Cover Crop for Wet Tolerant Seed Mix 1: Add a cover crop of Beckmannia Szigachne (Slough Grass) at 5kg / ha for entirety of area Wet Tolerant areas.

1 Upland Seed Mix 2A – Upland Areas - Application Rate of 58 kg / ha.

Site Characteristics	
Seeding Method	broadcast
Habitat Type	deciduous forest
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5 cm to 10 cm

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Elymus lanceolatus</i> / <i>Agropyron dasystachyum</i>	Northern Wheatgrass	15%	16%	9.30
<i>Pascopyrum smithii</i> / <i>Agropyron smithii</i>	Western Wheatgrass	20%	30%	17.36
<i>Elymus trachycaulus</i> / <i>Agropyron trachycaulum</i> var.	Slender Wheatgrass	10%	10%	5.97
<i>Bouteloua gracilis</i>	Blue Grama	10%	2%	0.88
<i>Elymus canadensis</i>	Canada Wildrye	10%	14%	8.30
<i>Nassella viridula</i> / <i>Stipa viridula</i>	Green Needlegrass	25%	27%	15.82
<i>Koeleria macrantha</i>	Junegrass	10%	1%	0.58

1 Cover Crop for Upland Seed Mix 2: Add a cover crop of Lolium multiflorum (Annual Ryegrass) at 5kg / ha for entirety of Upland Seed Mix areas.

1 Top of Berm Seed Mix 3– Top of Berm - Application rate of 50 kg/ha.

Site Characteristics	
Seeding Method	Broadcast or manual
Habitat Type	Deciduous forest
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5 cm to 10 cm

Botanical Name	Common Name	Target Cover	% of Seed Mix (PLS)	Kg Required (PLS)
<i>Elymus lanceolatus</i> / <i>Agropyron dasystachyum</i>	Northern Wheatgrass	23%	46%	22.91
<i>Pascopyrum smithii</i> / <i>Agropyron smithii</i>	Western Wheatgrass	10%	23%	11.16
<i>Bouteloua gracilis</i>	Blue Grama	20%	6%	2.83
<i>Hesperostipa comata</i> / <i>Stipa comata</i>	Needle and Thread	2%	4%	2.13
<i>Poa sandbergii</i>	Sandberg Bluegrass	15%	6%	3.07
<i>Nassella viridula</i> / <i>Stipa viridula</i>	Green Needlegrass	5%	9%	4.24
<i>Koeleria macrantha</i>	Junegrass	23%	4%	2.13
<i>Dalea purpurea</i>	Purple Prairie Clover	2%	2%	1.02

1 Cover Crop for Top of Berm Seed Mix 3: Add a cover crop of Lolium multiflorum (Annual Ryegrass) at 5kg / ha for entirety of Top of Berm Seed Mix areas.

Seeding Notes

- Ensure seed mixture is free of any weed seeds listed as "Prohibited Noxious" or "Noxious" under the Weed Control Act and seeds of other species that will interfere with the growth of the specified seed mixture.
- Sow at the rate indicated with Seed Mixes, during calm weather and when soil moisture content is adequate for germination.
- For slopes 2:1 or flatter areas to be seeded that are easily accessible apply seed using a mechanical dry spread "Brillion" Seeder that places seed at specified depth and rate and rolls in a single operation.
- For steeper than 2:1 slopes or slopes that are not easily accessible use manually operated broadcast seeder.
- Sow seed in two directions, 50% of seed in one direction and remaining 50% of seed at right angles to first seeding pattern, using same method of seeding.
- Cover broadcasted seed by hand raking and ATV harrowing-in.
- Optimal seeding periods for native grasses:
 - Mid to late May, early June - no later than June 15th.
 - Late September - after first hard frost when plants go dormant. Do not seed near end of season until the risk of seed germination is low. Seed that germinates and does not fully establish prior to end of growing season will likely not overwinter.
- Water the seeded areas after seeding to achieve germination and a uniform stand of grass. The Owner will determine the watering schedule and will provide the Contractor with at least 24 hours advance notice to commence watering seeded areas.
- Apply water uniformly to seeded areas without causing displacement or erosion of the materials and topsoil.
- Minimize travel on seeded surfaces.
- Use watering equipment and techniques authorized by the Owner.

Planting Schedule

code	botanical / common name	qty	hght	sprd	calp	root	spcg	remarks
trees	acne <i>acer negundo</i>	10	14m	15m	#15	---	shown	
	boxelder, manitoba maple							
	pigl <i>picea glauca</i>	10	20m	4m	2m ht.	90cm	3m	evergreen
	white spruce							
poba	<i>populus balsamifera</i>	10	15m	6m	50mm	70cm	3m	
	balsam poplar							
posa	<i>populus sargentii</i>	5	30m	20m	#15 cont	---	shown	male variety only
	plains cottonwood							
posa	<i>populus sargentii</i>	10	30m	20m	50mm	70cm	shown	male variety only
	plains cottonwood							
prvi	<i>prunus virginiana</i>	20	8m	4m	40mm	60cm	2m	ornamental
	chokecherry							
sape	<i>salix pentandra</i>	10	15m	15m	40mm	60cm	3m	
	laurel leaf willow							

total quantity of trees = 75

code	botanical / common name	qty	hght	sprd	calp	spcg	remarks
Shrub	amal <i>amelanchier alnifolia</i>	20	3m	2m	#5 cont	shown	ornamental, edible fruit
	saskatoon						1.5-2.0m O.C.
	cost <i>cornus stolonifera</i> / <i>sericea</i>	20	2m	3m	#5 cont	shown	
	red osier dogwood						2.5-3.0m O.C.
	hirh <i>hippophae rhamnoides</i>	5	3m	3m	#5 cont	shown	
	sea buckthorn						2.5-3.0m O.C.
	sabe <i>salix bebbiana</i>	10	3m	2m	#5 cont	shown	reclamation planting
	bebb's beaked willow						1.5-2.0m O.C.
	sain <i>salix interior</i>	5	2m	2m	#5 cont	shown	reclamation planting
	sandbar willow						1.5-2.0m O.C.
	vitri <i>viburnum trilobum</i>	15	3m	3m	#5 cont	shown	
	highbush cranberry						2.5-3.0m O.C.

total quantity of shrubs = 75

Planting Notes

- All plant material shall be installed in accordance with the guidelines and specifications of Drumheller Valley and Preserving & Enhancing the Urban Forest: Standards & Techniques.
- Plant material list was prepared for estimating purposes only. Contractor shall make their own quantity take-offs using drawings to determine quantities - Contractor shall report any discrepancies promptly.
- Stake out locations of trees, shrubs and planting beds; all plants shall be reviewed and approved by Consultant prior to installation; plant material installed without review and approval may require transplanting or relocation as directed by Consultant at no additional cost.
- Ensure all trees and shrubs are installed outside of berm extents - refer to civil drawings for berm alignment and construction.
- Contractor shall ensure that all plant material meets utility setback requirements.
- All damage and disturbances to adjacent areas shall be repaired to the satisfaction of the Consultant.
- Slopes > 3:1 and < 2:1 - s150 straw fibre erosion control matting with biodegradable stakes. refer to manufacturers specifications for staking pattern.
- Slopes > 2:1 - s150 coconut and straw fibre erosion control matting with biodegradable stakes. refer to manufacturers specifications for staking pattern.
- All development and construction activities within 6 meters of existing vegetation must be supervised by an ISA (International Society of Arboriculture) certified arborist.
- All pruning of existing vegetation must be supervised by an ISA certified arborist.

Landscape Legend

- berm access steps - refer to A1/L-300
- seed mix 1 - wet tolerant mix
- seed mix 2A - upland mix
- seed mix 3 - top of berm mix
- 75mm depth wood mulch
- gravel surface - refer to engineering drawings
- rip rap - refer to engineering drawings
- approximate area of trees and existing vegetation to remain - shown for context - refer to engineering drawings for tree removals
- proposed trees
- proposed shrubs

100
50
0
millimetres



Seal:

Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LANDSCAPE LEGEND & NOTES

Project No.	3446-005	Drawing No.	L-101	Rev.	1
Group	EAST COULEE				

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Landscape Legend

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- proposed shrubs

LANDSCAPE NOTES

1. Final location for all berm access steps to be confirmed on site with Landscape Architect prior material procurement and installation.
2. All shrub and tree beds are to be laid out in the field after completion of the berm grading. Planting bed locations to be verified correct by the landscape architect in the field, prior to excavation of beds. Adjustments may be required depending on the location of adjacent existing mature trees and vegetation. Final Location for all plant material (trees and shrubs) to be confirmed on site with Landscape Architect prior to installation.
3. Mulch is not to be used along wet side of berm or in naturalized areas.
4. Any proposed alternate plant materials should come from plant lists provided in the document "Drumheller valley preserving & enhancing the urban forest: strategies & techniques" and be approved by the Landscape Architect prior to ordering.
5. Planting layout parameter spacing per plant material schedules.
6. Minimum 1m offset from toe of berm to tree or shrub centreline
7. Minimum 1m offset from edge of pathway or curb to tree centreline
8. Minimum offset from edge of pathway or curb to shrub centreline shall be 1/2 mature spread



A1 LANDSCAPE PLAN
L-200 Scale 1:500



Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LANDSCAPE PLAN

Project No. **3446-005** Drawing No. **L-200** Rev. **1**

Group **EAST COULEE**



Landscape Legend

- berm access steps - refer to A1/L-300
- seed mix 1 - wet tolerant mix
- seed mix 2A - upland mix
- seed mix 3 - top of berm mix
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- proposed trees
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LANDSCAPE NOTES

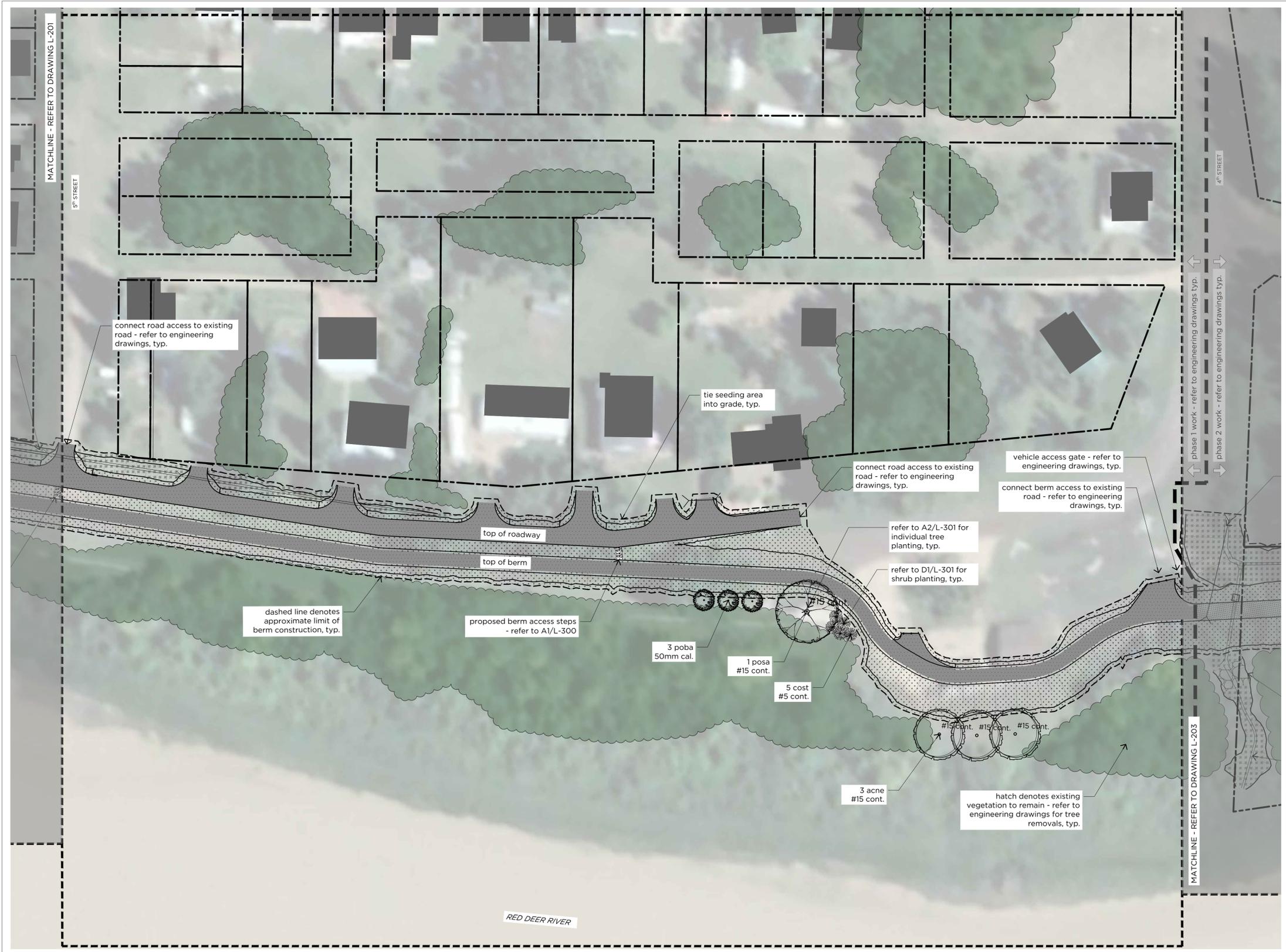
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A1 LANDSCAPE PLAN
L-201 Scale 1:500



Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE RESILIENCY AND FLOOD MITIGATION PROGRAM			
EAST COULEE BERM LANDSCAPE PLAN			
Project No.	3446-005	Drawing No.	L-201
Group	EAST COULEE	Rev.	1



Landscape Legend

- berm access steps - refer to A1/L-300
- seed mix 1 - wet tolerant mix
- seed mix 2A - upland mix
- seed mix 3 - top of berm mix
- 75mm depth wood mulch
- gravel surface - refer to engineering drawings
- rip rap - refer to engineering drawings
- approximate area of trees and existing vegetation to remain - shown for context - refer to engineering drawings for tree removals
- proposed trees
- proposed shrubs

LANDSCAPE NOTES

1. Final location for all berm access steps to be confirmed on site with Landscape Architect prior material procurement and installation.
2. All shrub and tree beds are to be laid out in the field after completion of the berm grading. Planting bed locations to be verified correct by the landscape architect in the field, prior to excavation of beds. Adjustments may be required depending on the location of adjacent existing mature trees and vegetation. Final Location for all plant material (trees and shrubs) to be confirmed on site with Landscape Architect prior to installation.
3. Mulch is not to be used along wet side of berm or in naturalized areas.
4. Any proposed alternate plant materials should come from plant lists provided in the document "Drumheller valley preserving & enhancing the urban forest: strategies & techniques" and be approved by the Landscape Architect prior to ordering.
5. Planting layout parameter spacing per plant material schedules.
6. Minimum 1m offset from toe of berm to tree or shrub centreline
7. Minimum 1m offset from edge of pathway or curb to tree centreline
8. Minimum offset from edge of pathway or curb to shrub centreline shall be 1/2 mature spread



A1 LANDSCAPE PLAN

L-202 Scale 1:500



Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM**

**EAST COULEE BERM
LANDSCAPE PLAN**

Project No. **3446-005** Drawing No. **L-202** Rev. **1**

Group **EAST COULEE**



Landscape Legend

- berm access steps - refer to A1/L-300
- seed mix 1 - wet tolerant mix
- seed mix 2A - upland mix
- seed mix 3 - top of berm mix
- 75mm depth wood mulch
- gravel surface - refer to engineering drawings
- rip rap - refer to engineering drawings
- approximate area of trees and existing vegetation to remain - shown for context - refer to engineering drawings for tree removals
- proposed trees
- proposed shrubs

LANDSCAPE NOTES

1. Final location for all berm access steps to be confirmed on site with Landscape Architect prior material procurement and installation.
2. All shrub and tree beds are to be laid out in the field after completion of the berm grading. Planting bed locations to be verified correct by the landscape architect in the field, prior to excavation of beds. Adjustments may be required depending on the location of adjacent existing mature trees and vegetation. Final Location for all plant material (trees and shrubs) to be confirmed on site with Landscape Architect prior to installation.
3. Mulch is not to be used along wet side of berm or in naturalized areas.
4. Any proposed alternate plant materials should come from plant lists provided in the document "Drumheller valley preserving & enhancing the urban forest: strategies & techniques" and be approved by the Landscape Architect prior to ordering.
5. Planting layout parameter spacing per plant material schedules.
6. Minimum 1m offset from toe of berm to tree or shrub centreline
7. Minimum 1m offset from edge of pathway or curb to tree centreline
8. Minimum offset from edge of pathway or curb to shrub centreline shall be 1/2 mature spread

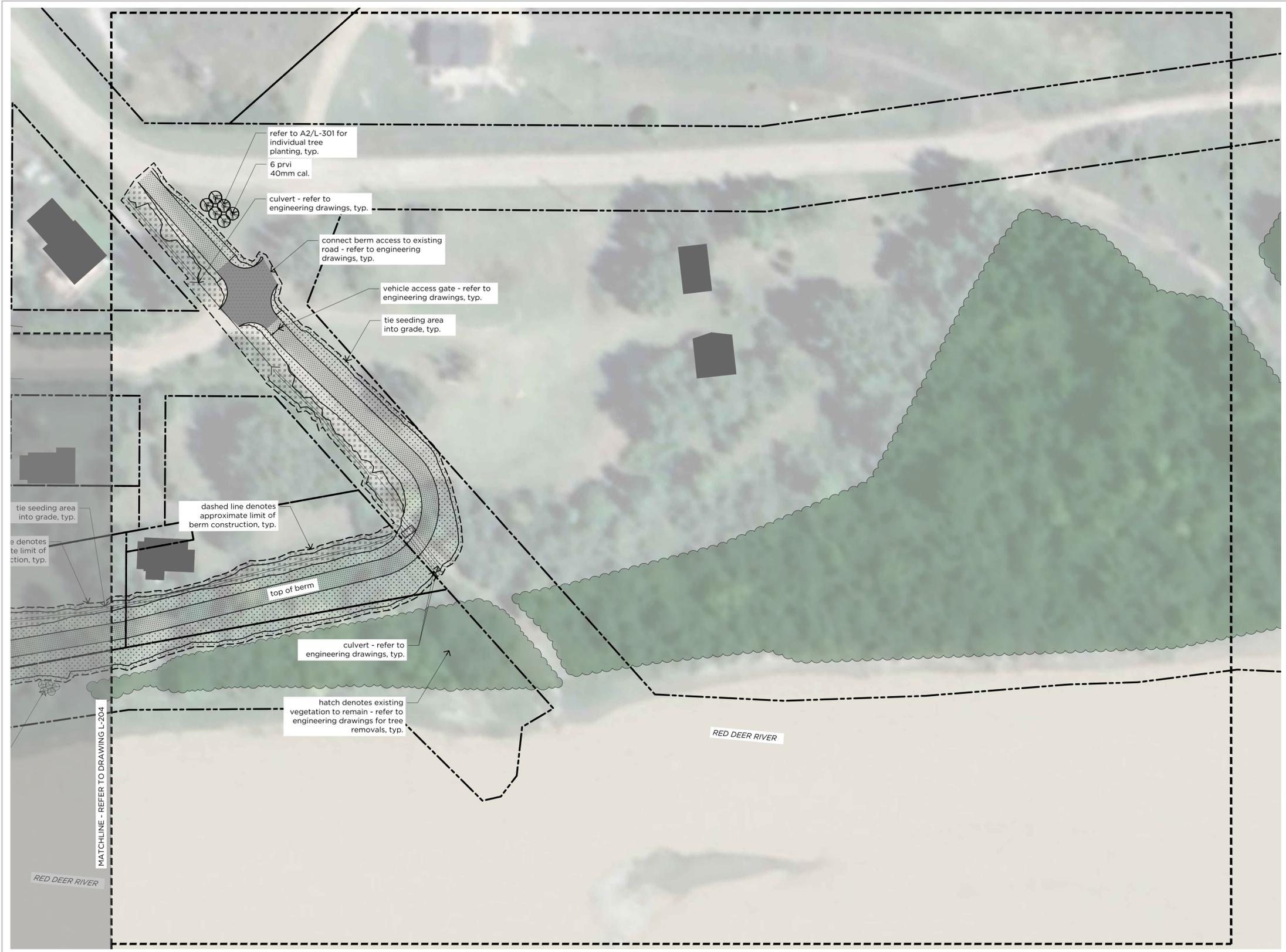
A1 LANDSCAPE PLAN

L-203 Scale 1:500

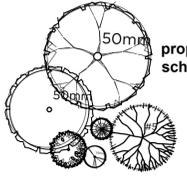


Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE RESILIENCY AND FLOOD MITIGATION PROGRAM			
EAST COULEE BERM LANDSCAPE PLAN			
Project No.	3446-005	Drawing No.	L-203
Group	EAST COULEE	Rev.	1

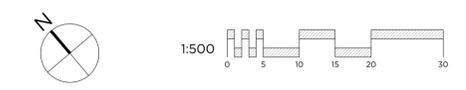


Landscape Legend

-  **proposed stackable stone boulders**
- refer to A1/L-300
-  **seed mix 1 - wet tolerant mix**
- refer to specifications
-  **seed mix 2A - upland mix**
- refer to specifications
-  **seed mix 3 - top of berm mix**
- refer to specifications
-  **75mm depth medium wood bark mulch**
-  **gravel surface** - refer to engineering drawings
-  **rip rap** - refer to engineering drawings
-  **approximate area of trees and existing vegetation to remain** - shown for context - refer to engineering drawings for tree removals
-  **proposed trees** - refer to planting schedule
-  **proposed shrubs** - refer to planting schedule

LANDSCAPE NOTES

1. Final location for all berm access steps to be confirmed on site with Landscape Architect prior material procurement and installation.
2. All shrub and tree beds are to be laid out in the field after completion of the berm grading. Planting bed locations to be verified correct by the landscape architect in the field, prior to excavation of beds. Adjustments may be required depending on the location of adjacent existing mature trees and vegetation. Final Location for all plant material (trees and shrubs) to be confirmed on site with Landscape Architect prior to installation.
3. Mulch is not to be used along wet side of berm or in naturalized areas.
4. Any proposed alternate plant materials should come from plant lists provided in the document "Drumheller valley preserving & enhancing the urban forest: strategies & techniques" and be approved by the Landscape Architect prior to ordering.
5. Planting layout parameter spacing per plant material schedules.
6. Minimum 1m offset from toe of berm to tree or shrub centreline
7. Minimum 1m offset from edge of pathway or curb to tree centreline
8. Minimum offset from edge of pathway or curb to shrub centreline shall be 1/2 mature spread



A1 LANDSCAPE PLAN

L-205 Scale 1:500



Seal:

Rev	Date	Des	Dwn	Chk	Description
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1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

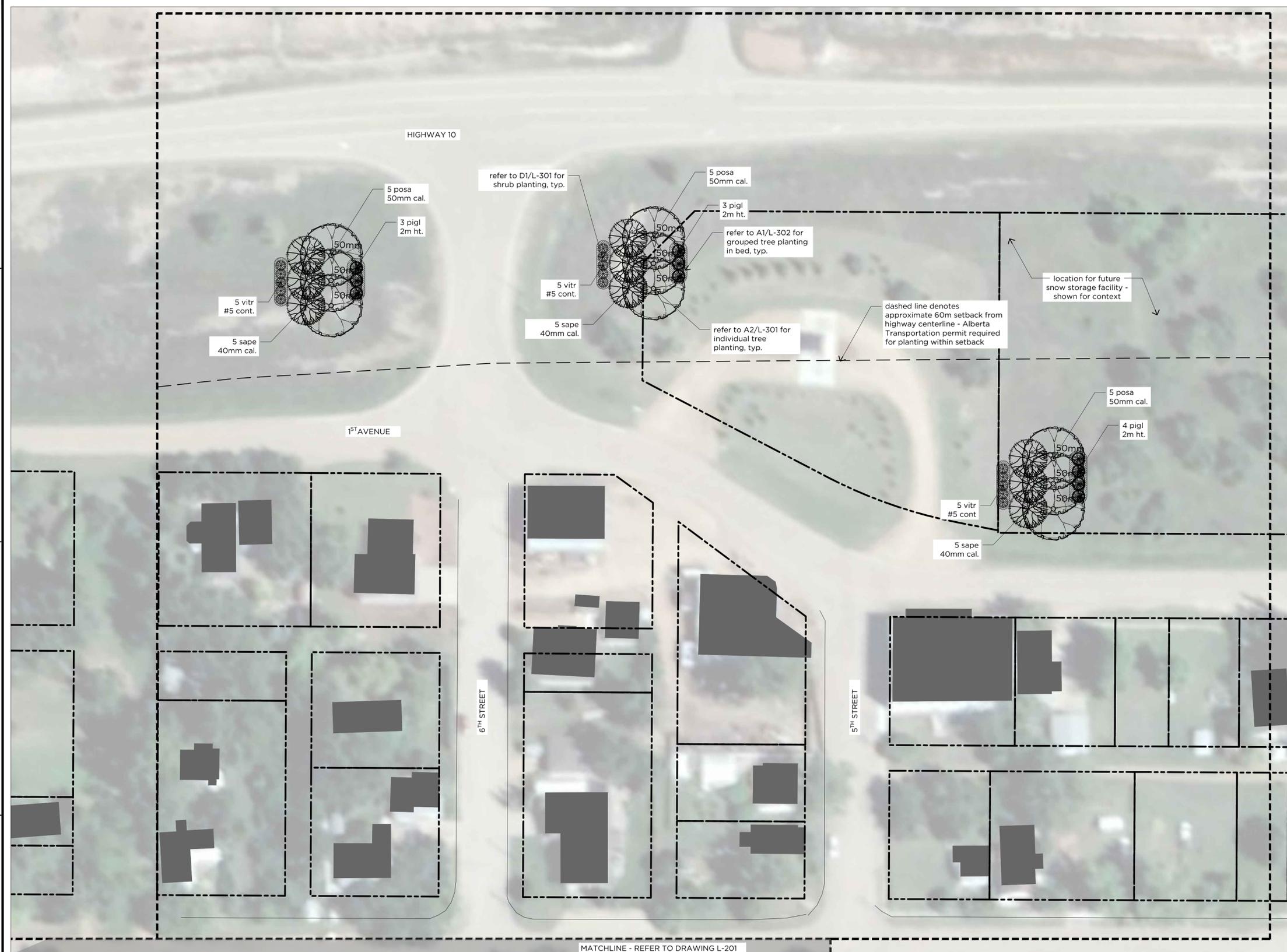
Rev	Date	Des	Dwn	Chk	Description

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LANDSCAPE PLAN

Project No. **3446-005** Drawing No. **L-205** Rev. **1**

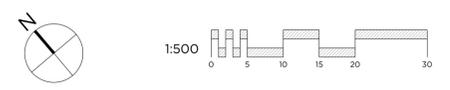
Group **EAST COULEE**



Landscape Legend

- proposed stackable stone boulders - refer to A1/L-300
- seed mix 1 - wet tolerant mix - refer to specifications
- seed mix 2A - upland mix - refer to specifications
- seed mix 3 - top of berm mix - refer to specifications
- 75mm depth medium wood bark mulch
- gravel surface - refer to engineering drawings
- rip rap - refer to engineering drawings
- approximate area of trees and existing vegetation to remain - shown for context - refer to engineering drawings for tree removals
- proposed trees - refer to planting schedule
- proposed shrubs - refer to planting schedule
- approximate 60m setback from highway centreline

- LANDSCAPE NOTES**
1. Final location for all berm access steps to be confirmed on site with Landscape Architect prior material procurement and installation.
 2. All shrub and tree beds are to be laid out in the field after completion of the berm grading. Planting bed locations to be verified correct by the landscape architect in the field, prior to excavation of beds. Adjustments may be required depending on the location of adjacent existing mature trees and vegetation. Final Location for all plant material (trees and shrubs) to be confirmed on site with Landscape Architect prior to installation.
 3. Mulch is not to be used along wet side of berm or in naturalized areas.
 4. Any proposed alternate plant materials should come from plant lists provided in the document "Drumheller valley preserving & enhancing the urban forest: strategies & techniques" and be approved by the Landscape Architect prior to ordering.
 5. Planting layout parameter spacing per plant material schedules.
 6. Minimum 1m offset from toe of berm to tree or shrub centreline
 7. Minimum 1m offset from edge of pathway or curb to tree centreline
 8. Minimum offset from edge of pathway or curb to shrub centreline shall be 1/2 mature spread

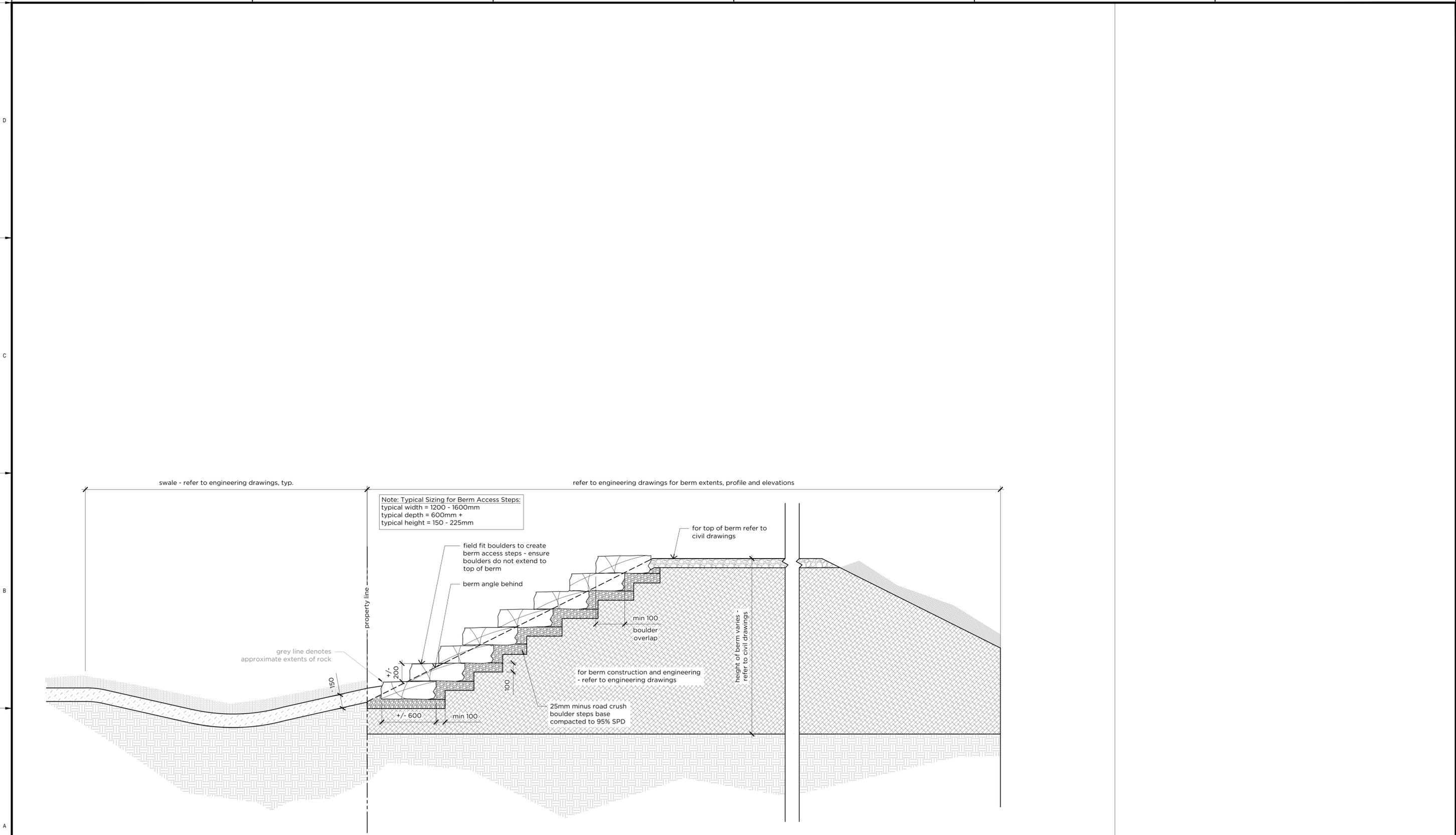


A1 LANDSCAPE PLAN
L-206 Scale 1:500



Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE RESILIENCY AND FLOOD MITIGATION PROGRAM			
EAST COULEE BERM LANDSCAPE PLAN			
Project No.	3446-005	Drawing No.	L-206
Group	EAST COULEE	Rev.	1



A1 BERM ACCESS STEPS

L-300 Scale 1:20



Seal:

Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION						
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER						

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM

EAST COULEE BERM
LANDSCAPE DETAILS

Project No.	3446-005	Drawing No.	L-300	Rev.	1
Group	EAST COULEE				

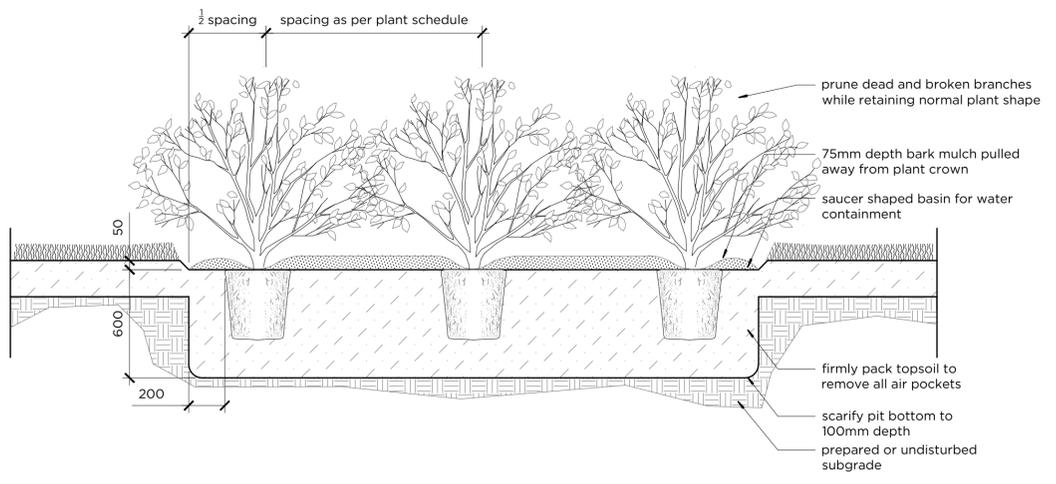
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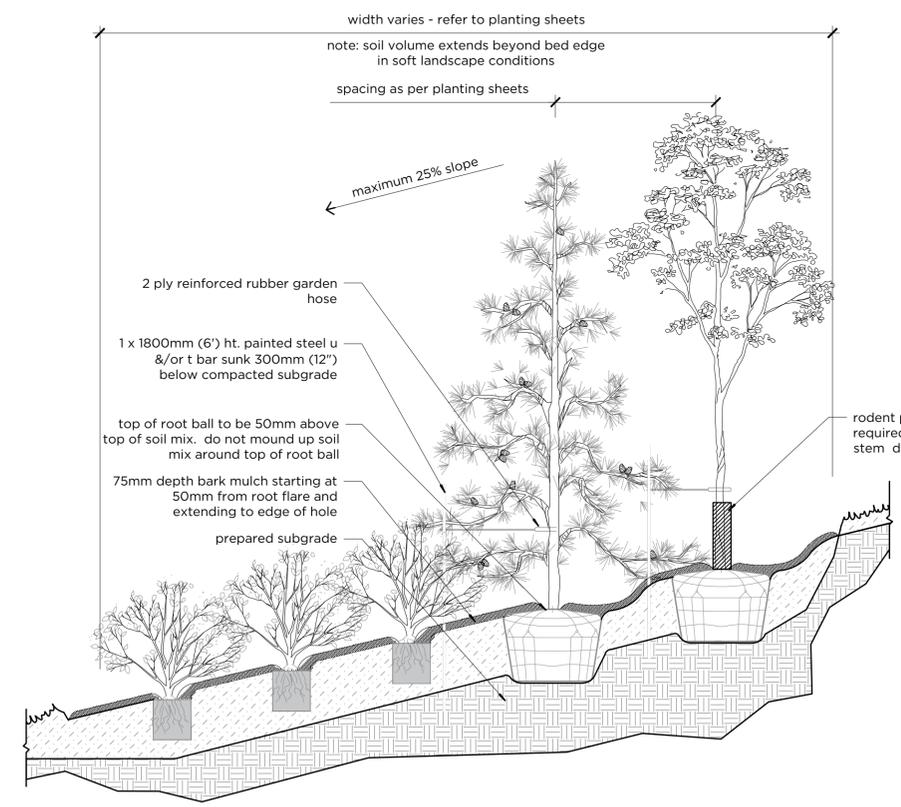
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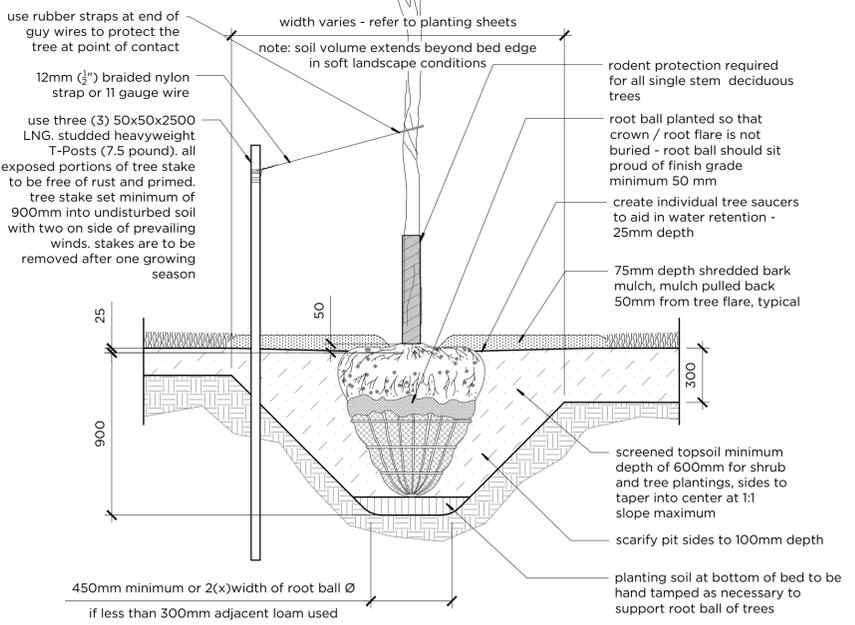
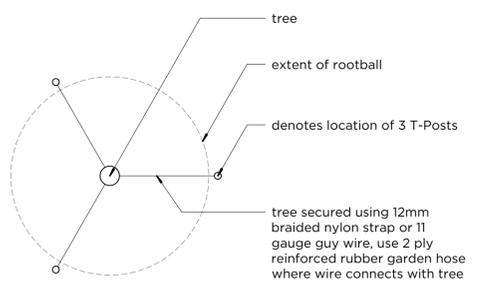


D1 SHRUB PLANTING
L-301 Scale 1:20



NOTE:
ensure bark mulch is outside of swale area and a minimum of 200mm above bottom of swale, typical

A1 PLANTING ON SLOPE
L-301 Scale 1:40

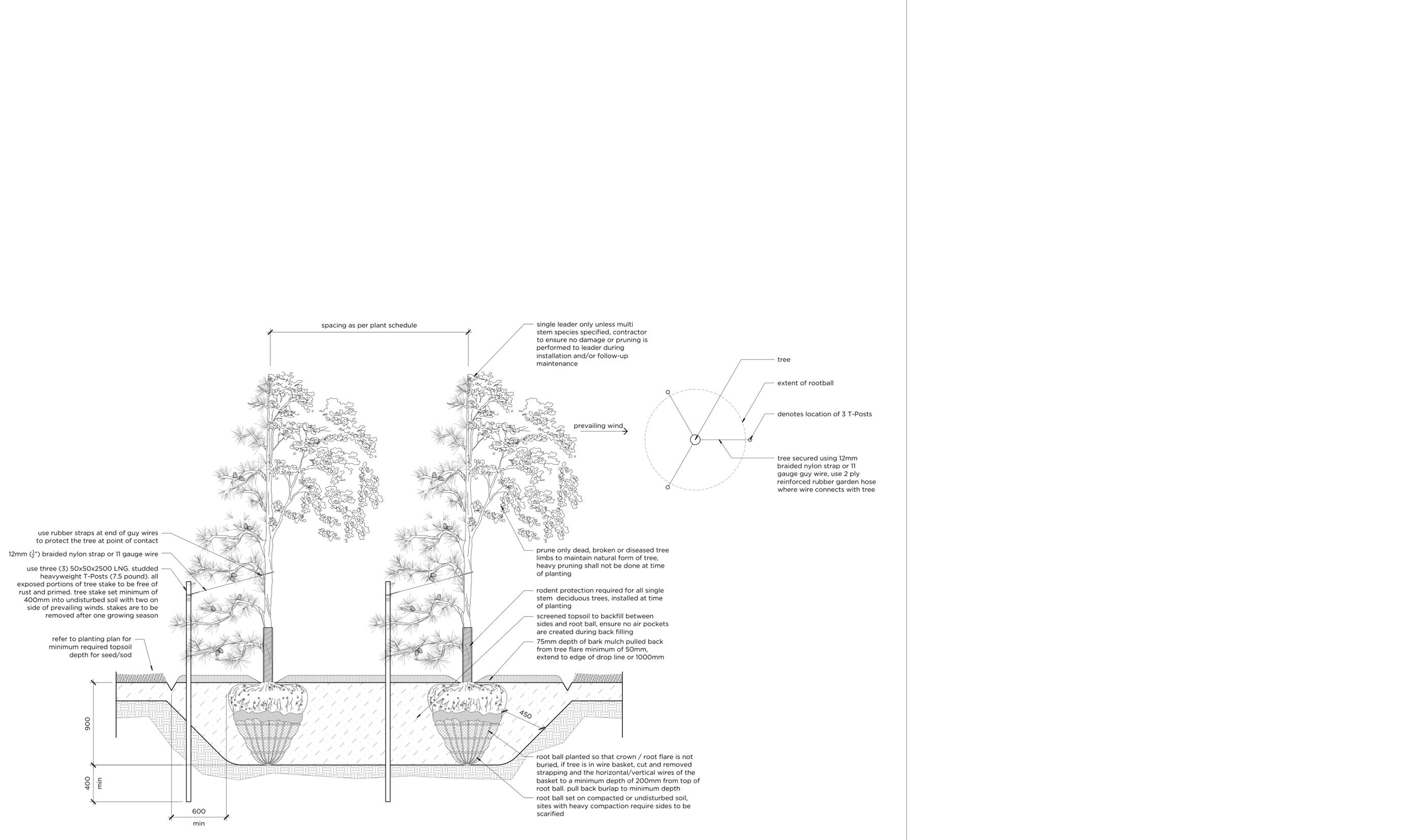


A2 INDIVIDUAL TREE PLANTING
L-301 Scale 1:20



Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE			
RESILIENCY AND FLOOD MITIGATION PROGRAM			
EAST COULEE BERM			
LANDSCAPE DETAILS			
Project No.	3446-005	Drawing No.	L-301
Group	EAST COULEE	Rev.	1



A1 GROUPED TREE PLANTING IN BED

L-302 Scale 1:20



Seal:

Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
0	2022-11-08	G3	JAB	AK	ISSUED FOR DISCUSSION						
1	2023-02-03	G3	JAB	AK	ISSUED FOR TENDER						

**DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE
RESILIENCY AND FLOOD MITIGATION PROGRAM**

**EAST COULEE BERM
LANDSCAPE DETAILS**

Project No.	3446-005	Drawing No.	L-302	Rev.	1
Group	EAST COULEE				