

NOTICE TO POTENTIAL PROPONENTS

ADDENDUM 1

To all Bidders:

The following changes, additions, and/or deletions are hereby made a part of RFP Documents as fully and completely as if the same were fully set forth therein:

Project Name: Drumheller Downtown Dike	
Date: April 5, 2023	
Item	Detail
A1.1	<p>Landscape Drawing Package and Updated Bid Form</p> <p>As a result of the completion of the landscaping drawings for the Downtown Dike project, the following documents have been included and/or updated:</p> <ul style="list-style-type: none"> • Volume 3 – Downtown Dike Landscape Tender <ul style="list-style-type: none"> ○ The landscaping drawings have been included and attached to this addendum. • Volume 1 – Bid Form Excel Sheet – Downtown Dike – Rev1 – Addendum 01 <ul style="list-style-type: none"> ○ As a result of the landscaping drawings being completed, the excel sheet version of the bid form has been updated and attached to this addendum. This supersedes the one released in the original tender. • Volume 1 – Bid Form Rev1 – Addendum 01 – 23-04-05 <ul style="list-style-type: none"> ○ The attached bid form replaces the bid form included in 'Section 00431 – Schedule of Prices'. This has been updated to include landscaping items and reconcile other items within the form. • Volume 1 – Measurement of Payment Rev1 – Addendum 01 – 23-04-05 <ul style="list-style-type: none"> ○ The attached measurement of payment replaces 'Section 01280 – Measurement Schedule'. This has been updated to include landscaping items and reconcile other items within the form. • Volume 1 – Landscaping Specifications <ul style="list-style-type: none"> ○ Attached are specifications related to the landscaping drawings and scope of work.
A1.2	<p>Recycled Rubber Connector Trail Detail to be Deleted</p> <p>In the Downtown Dike drawing package, Detail 2A on drawing C-504 can be ignored, there are no recycled rubber connector trails within the Downtown Dike project. This detail will be deleted upon completion of the IFC drawing package.</p>
<p>Attachments:</p> <ul style="list-style-type: none"> • Volume 3 – Downtown Dike Landscape Tender – 37 pages • Volume 1 – Bid Form Excel Sheet – Downtown Dike – Rev1 – Addendum 01 – excel spreadsheet • Volume 1 – Bid Form Rev1 – Addendum 01 – 23-04-05 – 6 pages • Volume 1 – Measurement of Payment Rev1 – Addendum 01 – 23-04-05 – 10 pages • Volume 1 – Landscaping Specifications – 34 pages 	

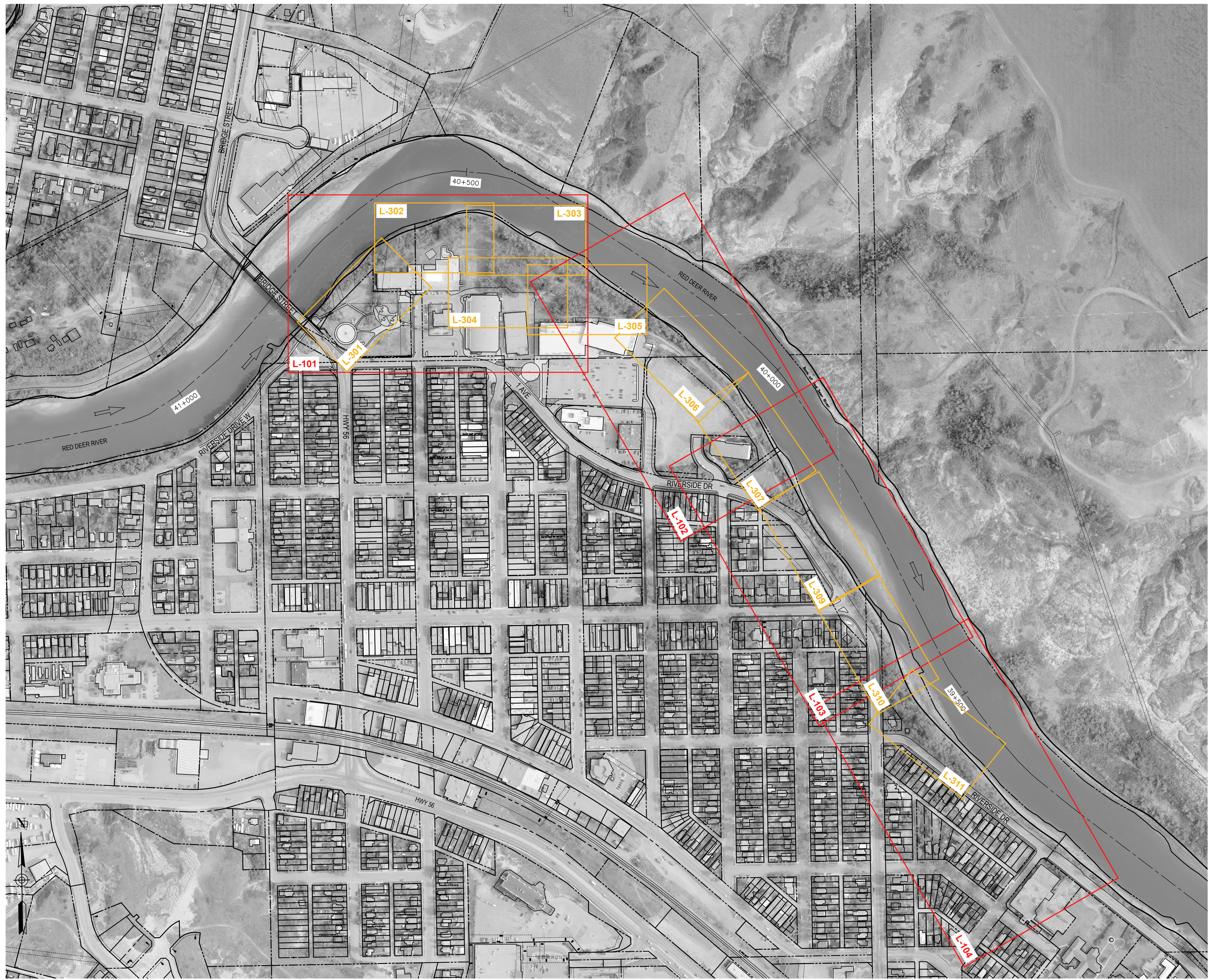
End of Addendum 1

TOWN OF DRUMHELLER

DOWNTOWN DIKE LANDSCAPE TENDER PACKAGE

DRAWING LIST

DRAWING NO.	DRAWING TITLE
L-100	LANDSCAPE COVER SHEET & KEY PLAN
L-101	LANDSCAPE MASTER PLAN
L-102	LANDSCAPE MASTER PLAN
L-103	LANDSCAPE MASTER PLAN
L-104	LANDSCAPE MASTER PLAN
L-301	LAYOUT & GRADING PLAN
L-302	LAYOUT & GRADING PLAN
L-303	LAYOUT & GRADING PLAN
L-304	LAYOUT & GRADING PLAN
L-305	LAYOUT & GRADING PLAN
L-306	LAYOUT & GRADING PLAN
L-307	LAYOUT & GRADING PLAN
L-308	LAYOUT & GRADING PLAN
L-309	LAYOUT & GRADING PLAN
L-310	LAYOUT & GRADING PLAN
L-311	LAYOUT & GRADING PLAN
L-401	PLANTING PLAN
L-402	PLANTING PLAN
L-403	PLANTING PLAN
L-404	PLANTING PLAN
L-405	PLANTING PLAN
L-406	PLANTING PLAN
L-407	PLANTING PLAN
L-408	PLANTING PLAN
L-409	PLANTING PLAN
L-410	PLANTING PLAN
L-411	PLANT SCHEDULE, SEED MIXES & NOTES
L-501	IRRIGATION PLAN
L-502	IRRIGATION PLAN
L-801	LANDSCAPE SECTIONS
L-901	LANDSCAPE DETAILS
L-902	LANDSCAPE DETAILS
L-903	LANDSCAPE DETAILS
L-904	LANDSCAPE DETAILS
L-905	LANDSCAPE DETAILS
L-906	LANDSCAPE DETAILS
L-907	LANDSCAPE DETAILS



PLAN
Scale 1:3000



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com



Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

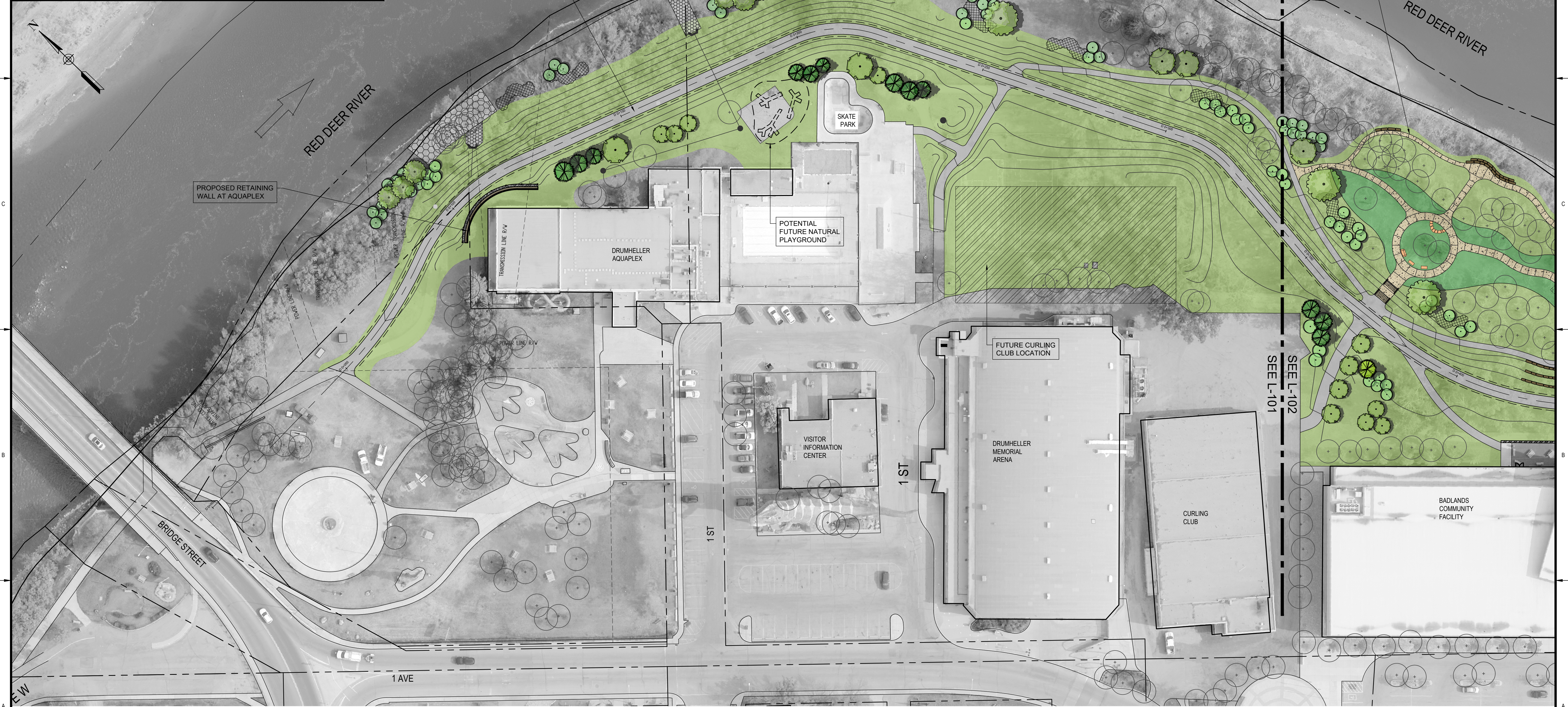
TOWN OF DRUMHELLER DOWNTOWN DIKE			
LANDSCAPE COVER SHEET & KEY PLAN			
Project No.	133142	Drawing No.	
Group	LANDSCAPE		
			Rev. L-100 0

SAVED 2023/04/04 10:09 PM

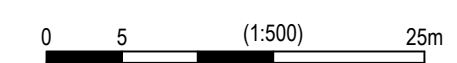
1:00
100
50
0
millimeters
Paper Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm

CONCEPT LEGEND

	ASPHALT PATHWAY		PROPOSED 60-70mm CAL. DECIDUOUS TREE
	GRAVEL PATHWAY		PROPOSED CONTAINER DECIDUOUS TREE
	CONCRETE PATH		PROPOSED CONIFEROUS TREE
	ROCK RIP RAP		PROPOSED SHRUB / SEEDLINGS
	PRECAST CONCRETE RETAINING WALL AND GUARDRAIL		MANICURED IRRIGATED SOD / OPEN LAWN
	ROCK BOULDER EDGER / BENCH WALL		NON-IRRIGATED SEEDED AREA



PLAN
Scale 1:500



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LANDSCAPE MASTER PLAN

Project No. **133142** Drawing No. **L-101** Rev. **0**
Group **LANDSCAPE**

SAVED: 2023/04/04 10:09 PM

Paper Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm

100
50
0
millimeters

CONCEPT LEGEND

- ASPHALT PATHWAY
- GRAVEL PATHWAY
- CONCRETE PATH
- ROCK RIP RAP
- PRECAST CONCRETE RETAINING WALL AND GUARDRAIL
- ROCK BOULDER EDGER / BENCH WALL
- PROPOSED 60-70mm CAL. DECIDUOUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED SHRUB / SEEDLINGS
- MANICURED IRRIGATED SOD / OPEN LAWN
- NON-IRRIGATED SEEDED AREA



PLAN
Scale 1:500



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

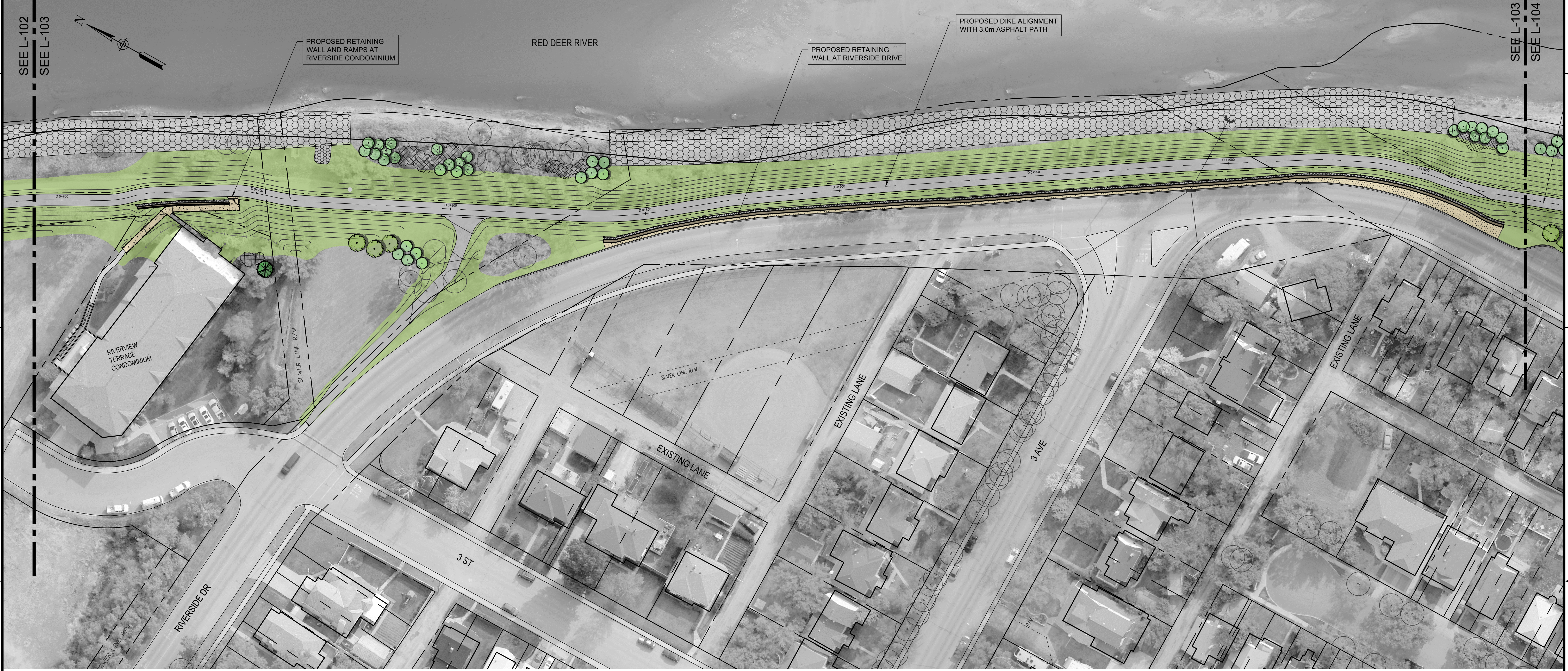
LANDSCAPE MASTER PLAN

Project No. **133142** Drawing No. **L-102** Rev. **0**
Group **LANDSCAPE**

100
 50
 0
 millimeters
 Paper Size = ANSI D
 At Full Size, this border measures 320 mm x 800 mm
 10:09 PM
 2023/04/04

CONCEPT LEGEND

	ASPHALT PATHWAY		PROPOSED 60-70mm CAL. DECIDUOUS TREE
	GRAVEL PATHWAY		PROPOSED CONTAINER DECIDUOUS TREE
	CONCRETE PATH		PROPOSED CONIFEROUS TREE
	ROCK RIP RAP		PROPOSED SHRUB / SEEDLINGS
	PRECAST CONCRETE RETAINING WALL AND GUARDRAIL		MANICURED IRRIGATED SOD / OPEN LAWN
	ROCK BOULDER EDGER / BENCH WALL		NON-IRRIGATED SEEDED AREA



PLAN
Scale 1:500



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

Seal
The Alberta Association of Landscape Architects

 Erin J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE
LANDSCAPE MASTER PLAN
 Project No. **133142** Drawing No. **L-103** Rev. **0**
 Group **LANDSCAPE**

1
2
3
4
5
6
 D
C
B
A
 100
50
0
 millimeters
 Paper Size - ANSI D
 At Full Size, this border measures 520 mm x 800 mm
 10:09 PM
 2023/04/04

CONCEPT LEGEND

	ASPHALT PATHWAY		PROPOSED 60-70mm CAL. DECIDUOUS TREE
	GRAVEL PATHWAY		PROPOSED CONTAINER DECIDUOUS TREE
	CONCRETE PATH		PROPOSED CONIFEROUS TREE
	ROCK RIP RAP		PROPOSED SHRUB / SEEDLINGS
	PRECAST CONCRETE RETAINING WALL AND GUARDRAIL		MANICURED IRRIGATED SOD / OPEN LAWN
	ROCK BOULDER EDGER / BENCH WALL		NON-IRRIGATED SEEDED AREA



PLAN
Scale 1:500



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

The Alberta Association of Landscape Architects
 Ernie J Webster

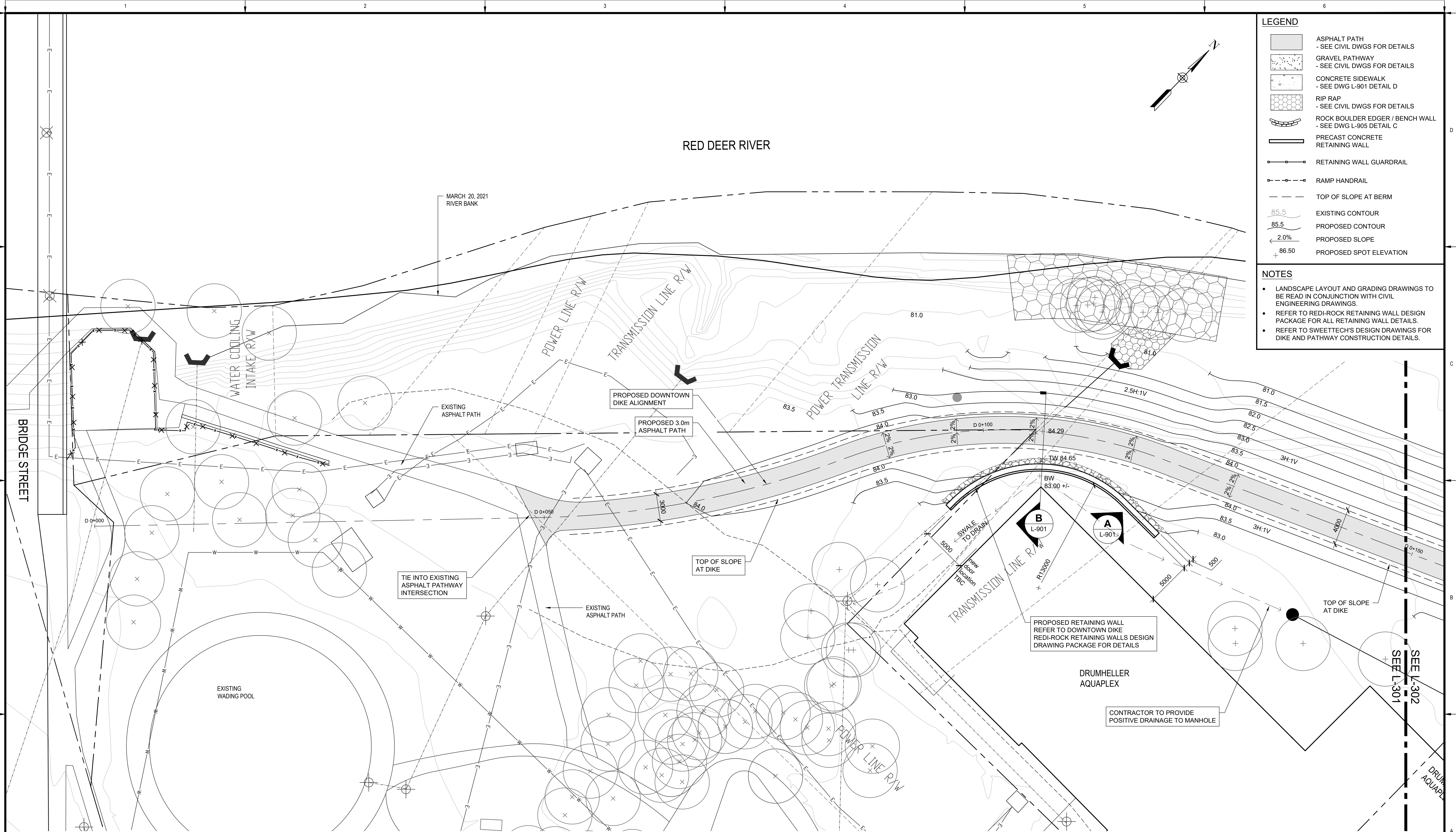
Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LANDSCAPE MASTER PLAN

Project No. **133142** Drawing No. **L-104** Rev. **0**
 Group **LANDSCAPE**



LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- 85.5 EXISTING CONTOUR
- 85.5 PROPOSED CONTOUR
- 2.0% PROPOSED SLOPE
- + 86.50 PROPOSED SPOT ELEVATION

NOTES

- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
- REFER TO RED-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
- REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

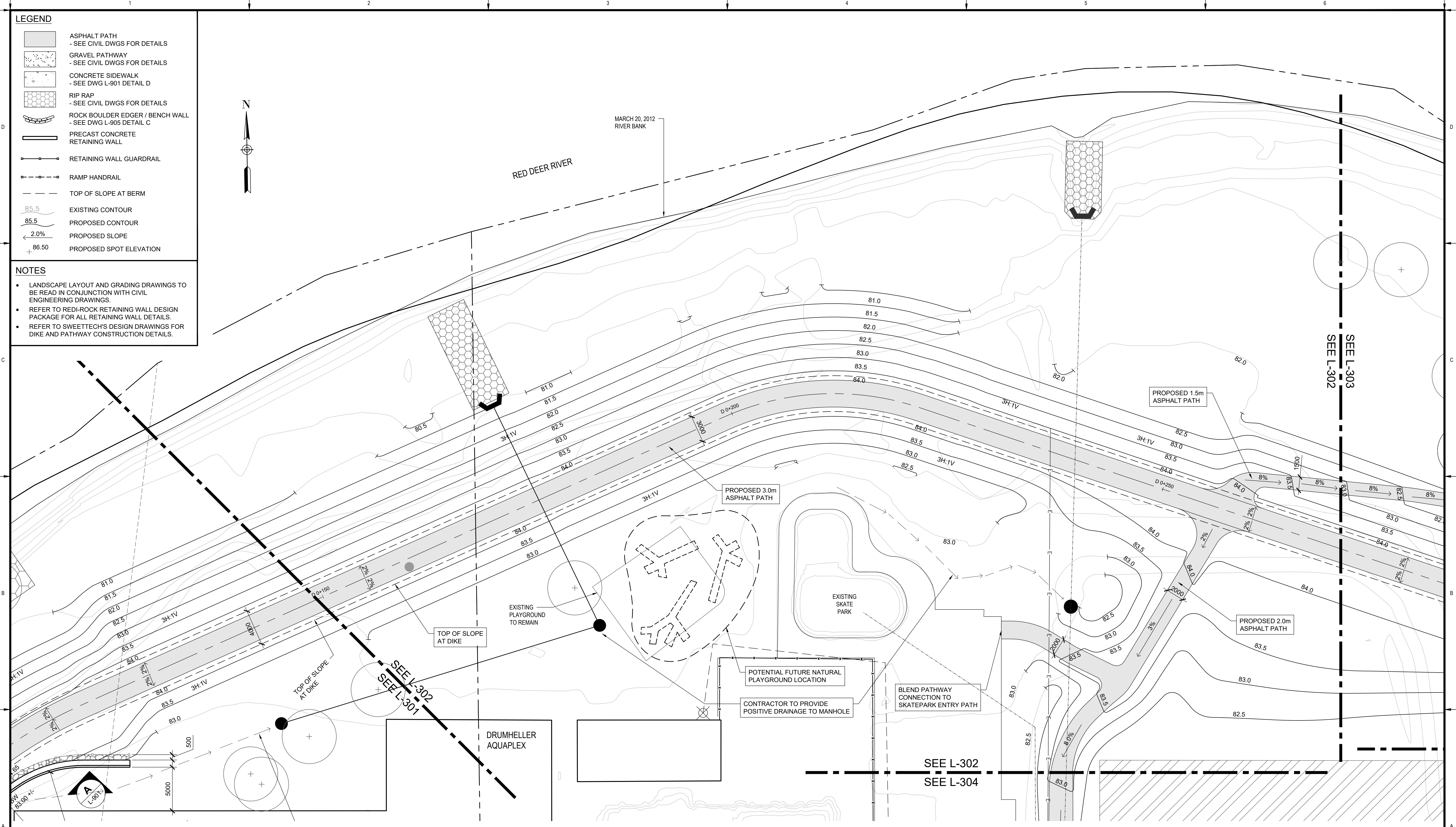
LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-301** Rev. **0**
Group **LANDSCAPE**

LEGEND

	ASPHALT PATH - SEE CIVIL DWGS FOR DETAILS
	GRAVEL PATHWAY - SEE CIVIL DWGS FOR DETAILS
	CONCRETE SIDEWALK - SEE DWG L-901 DETAIL D
	RIP RAP - SEE CIVIL DWGS FOR DETAILS
	ROCK BOULDER EDGER / BENCH WALL - SEE DWG L-905 DETAIL C
	PRECAST CONCRETE RETAINING WALL
	RETAINING WALL GUARDRAIL
	RAMP HANDRAIL
	TOP OF SLOPE AT BERM
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SLOPE
	PROPOSED SPOT ELEVATION

- NOTES**
- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
 - REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel 403 270 5600
ibigroup.com

The Alberta
Association of
Landscape
Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

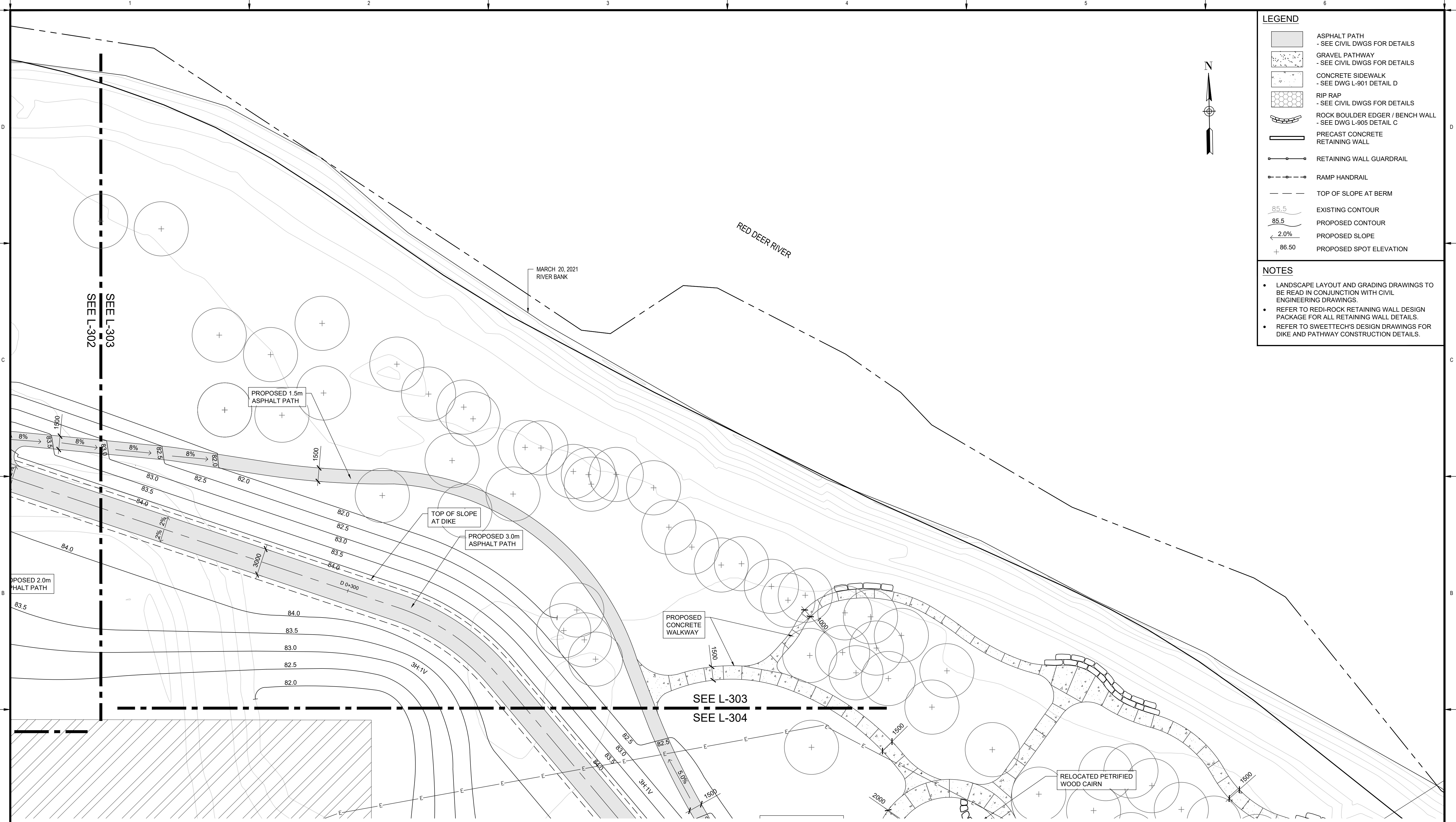
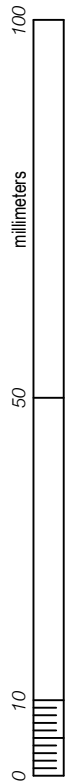
LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-302** Rev. **0**

Group **LANDSCAPE**

SAVED: 2023/04/05, 9:17 PM

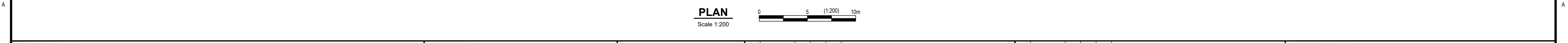
Paper Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm



LEGEND

	ASPHALT PATH - SEE CIVIL DWGS FOR DETAILS
	GRAVEL PATHWAY - SEE CIVIL DWGS FOR DETAILS
	CONCRETE SIDEWALK - SEE DWG L-901 DETAIL D
	RIP RAP - SEE CIVIL DWGS FOR DETAILS
	ROCK BOULDER EDGER / BENCH WALL - SEE DWG L-905 DETAIL C
	PRECAST CONCRETE RETAINING WALL
	RETAINING WALL GUARDRAIL
	RAMP HANDRAIL
	TOP OF SLOPE AT BERM
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SLOPE
	PROPOSED SPOT ELEVATION

- NOTES**
- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
 - REFER TO RED-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

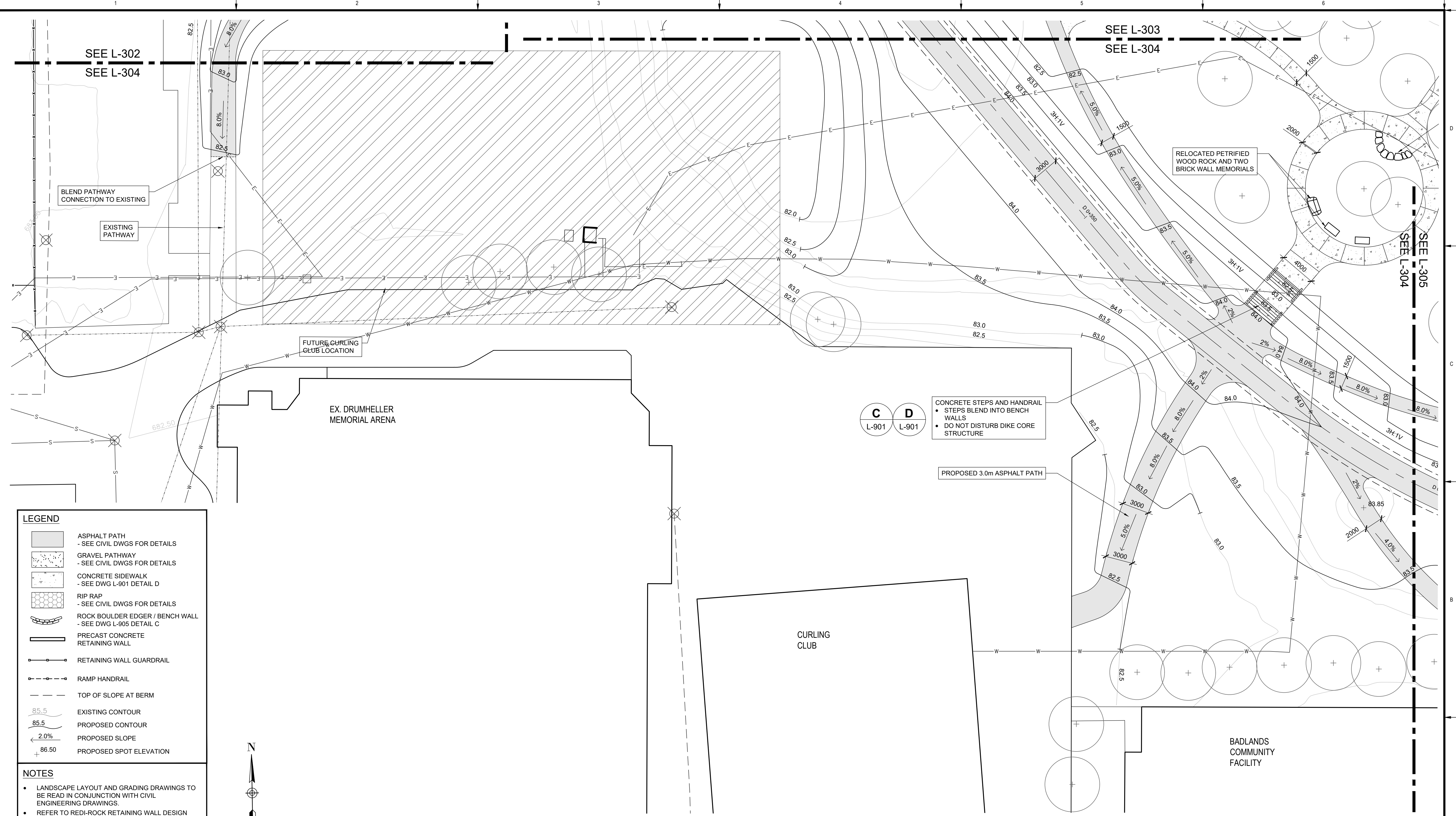
Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-303** Rev. **0**

Group **LANDSCAPE**

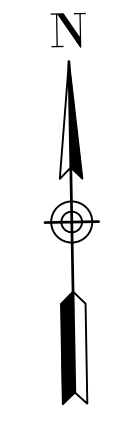


LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- 85.5 EXISTING CONTOUR
- 85.5 PROPOSED CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION

NOTES

- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
- REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
- REFER TO SWEETTTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



C D
L-901 L-901

CONCRETE STEPS AND HANDRAIL
• STEPS BLEND INTO BENCH WALLS
• DO NOT DISTURB DIKE CORE STRUCTURE

PROPOSED 3.0m ASPHALT PATH

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

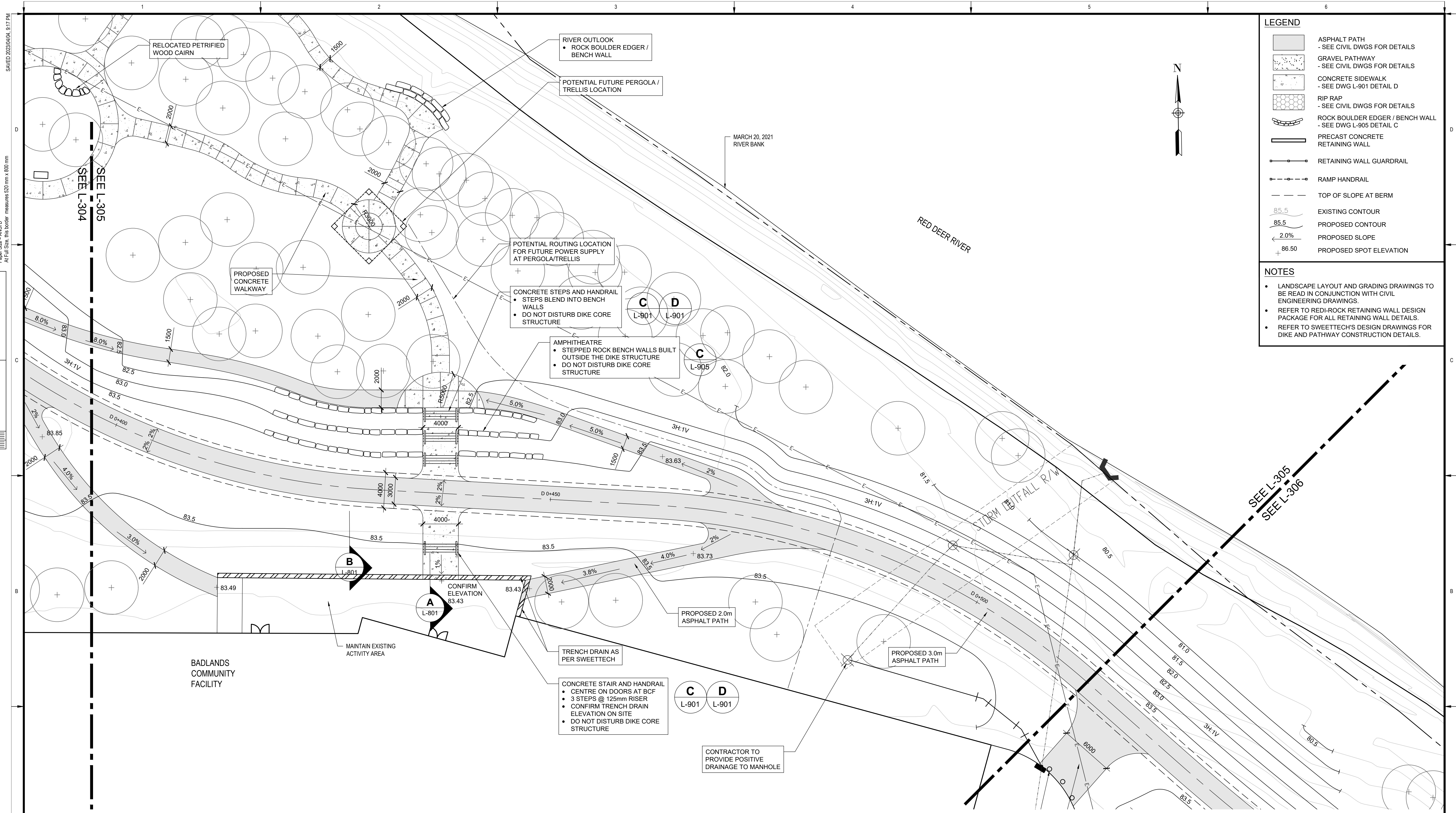
Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-304** Rev. **0**

Group **LANDSCAPE**



LEGEND

	ASPHALT PATH - SEE CIVIL DWGS FOR DETAILS
	GRAVEL PATHWAY - SEE CIVIL DWGS FOR DETAILS
	CONCRETE SIDEWALK - SEE DWG L-901 DETAIL D
	RIP RAP - SEE CIVIL DWGS FOR DETAILS
	ROCK BOULDER EDGER / BENCH WALL - SEE DWG L-905 DETAIL C
	PRECAST CONCRETE RETAINING WALL
	RETAINING WALL GUARDRAIL
	RAMP HANDRAIL
	TOP OF SLOPE AT BERM
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SLOPE
	PROPOSED SPOT ELEVATION

NOTES

- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
- REFER TO RED-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
- REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster
Ernie J Webster

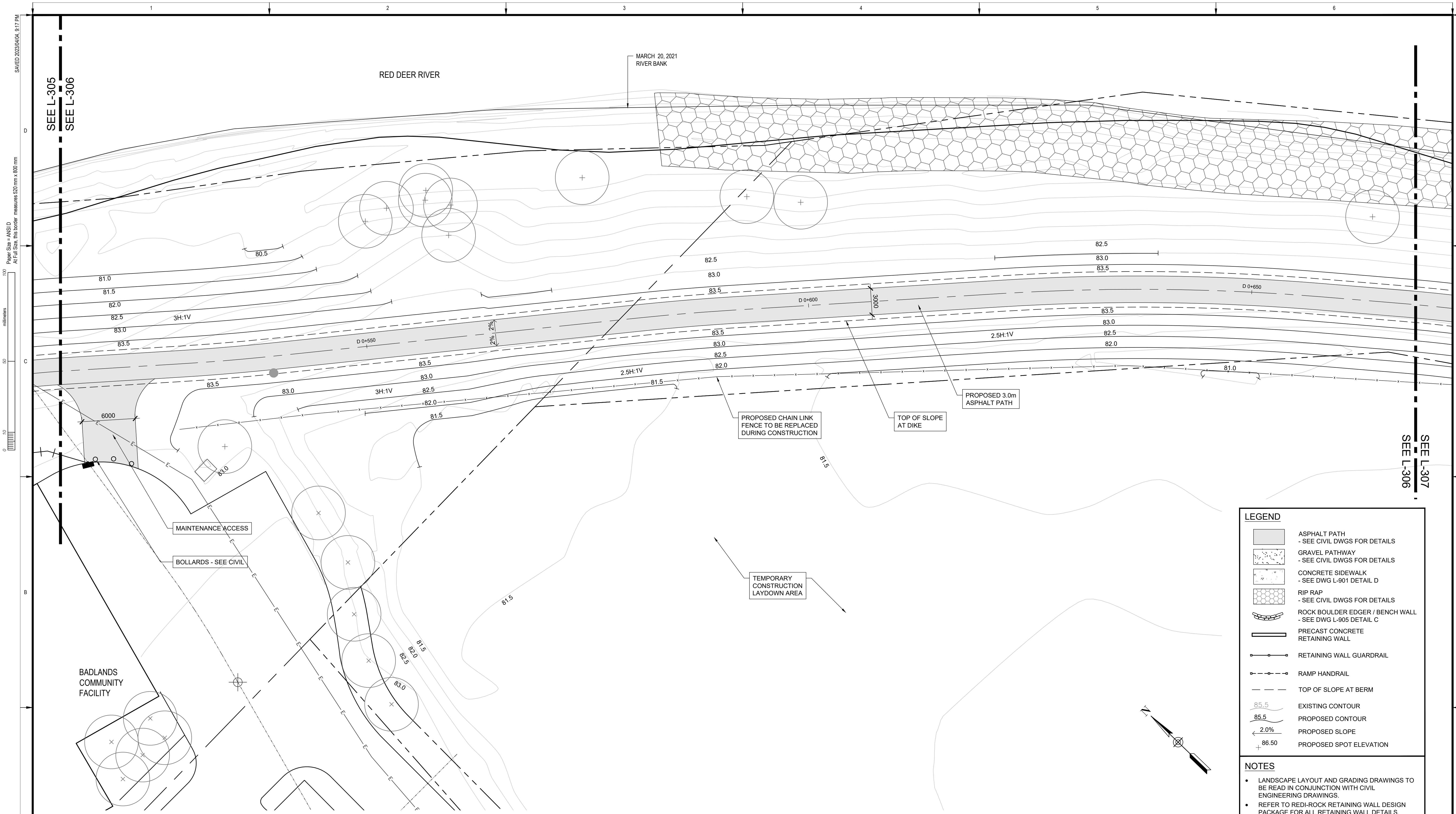
Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. 133142 Drawing No. **L-305** Rev. **0**

Group **LANDSCAPE**



SAVED: 2023/04/05, 9:17 PM

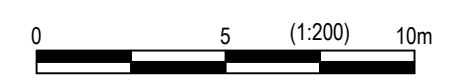
Paper Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm

170
50
0
millimeters

SEE L-305
SEE L-306

SEE L-307
SEE L-306

PLAN
Scale 1:200



LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SLOPE
- PROPOSED SPOT ELEVATION

NOTES

- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
- REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
- REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J. Webster

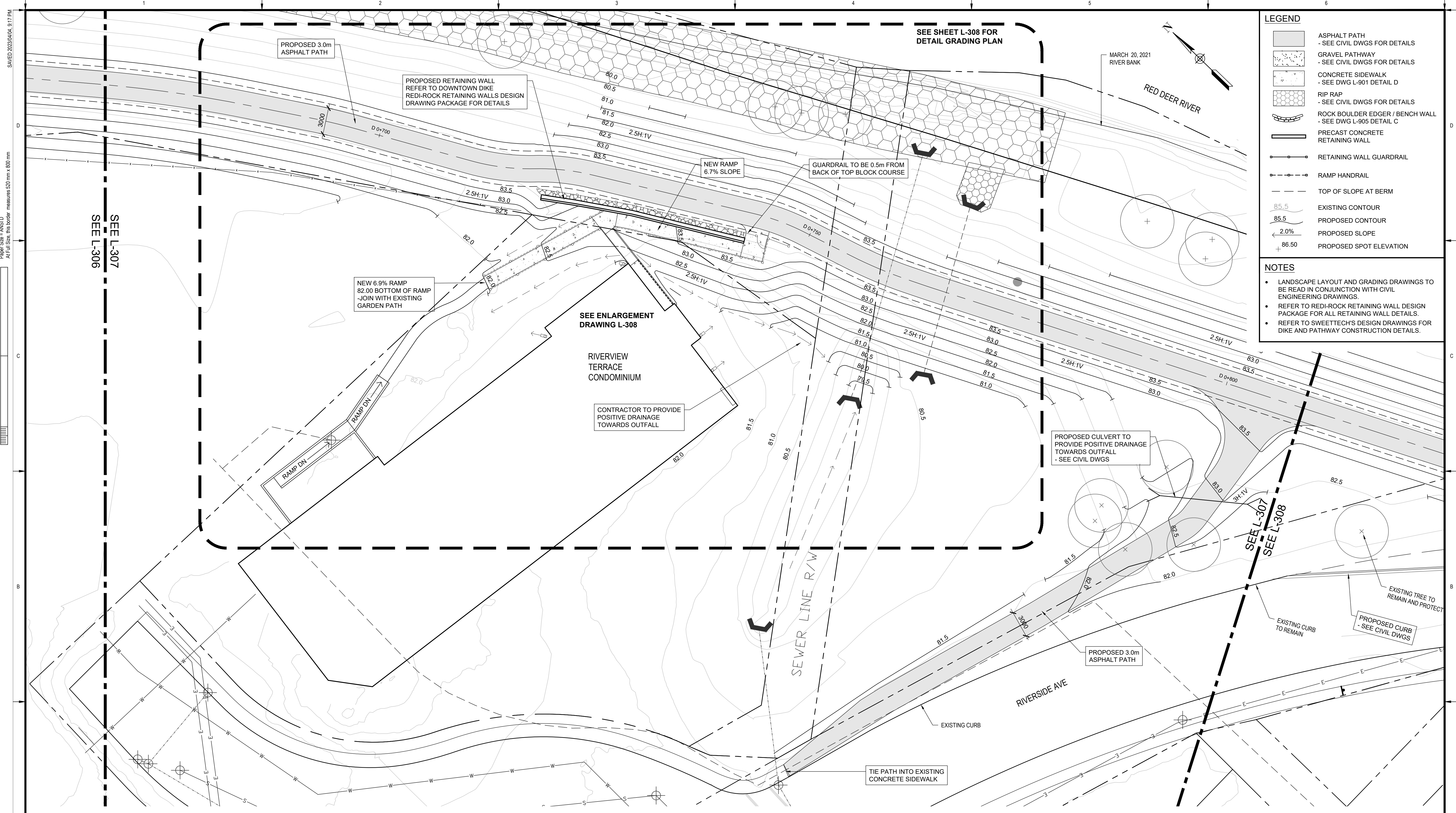
Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-306** Rev. **0**
Group **LANDSCAPE**



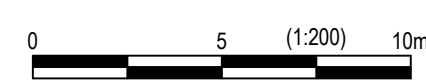
LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SLOPE
- PROPOSED SPOT ELEVATION

NOTES

- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
- REFER TO RED-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
- REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster

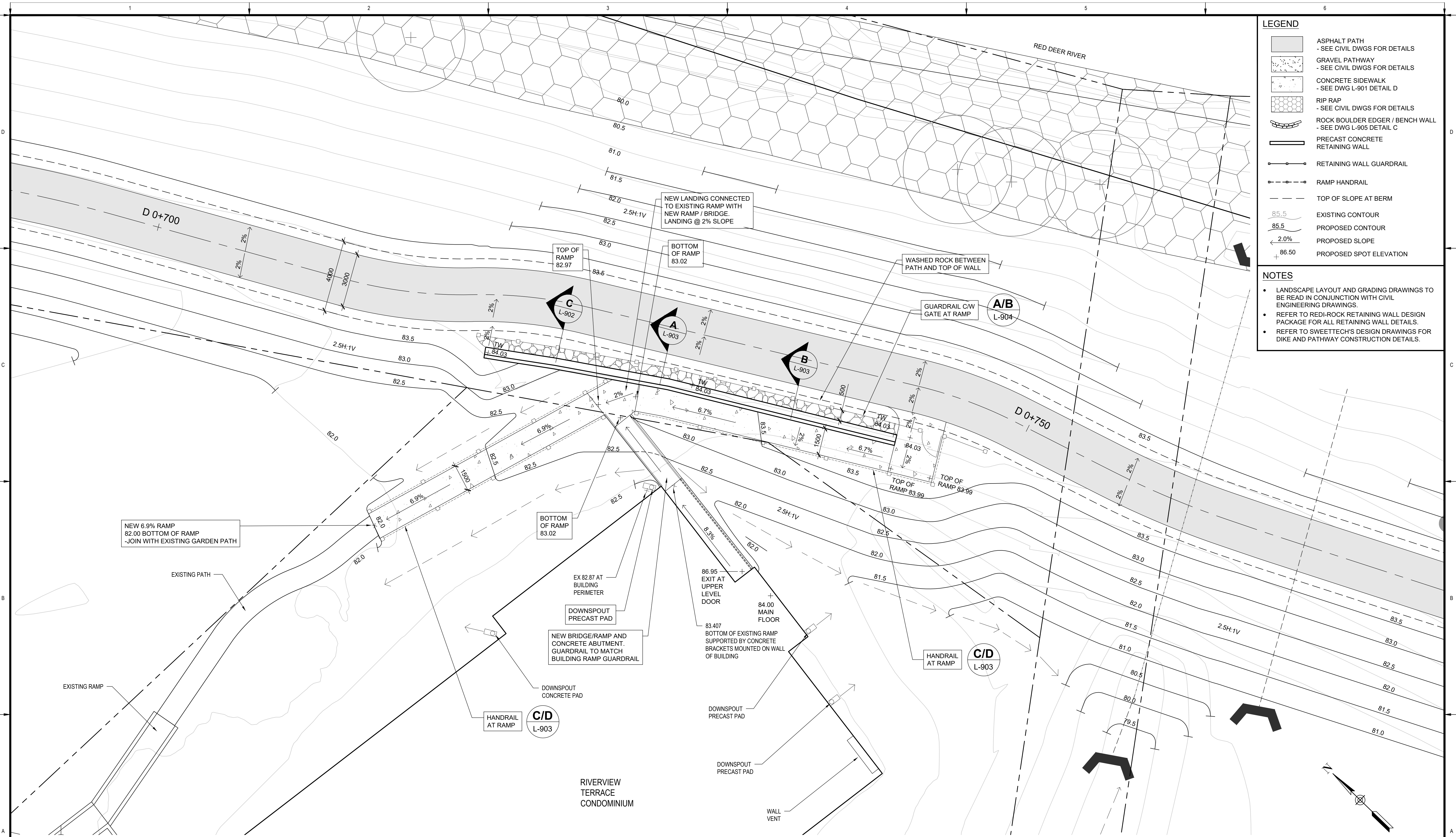
Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER						

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-307** Rev. **0**

Group **LANDSCAPE**

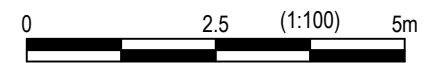


LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- 85.5
EXISTING CONTOUR
- 85.5
PROPOSED CONTOUR
- 2.0%
PROPOSED SLOPE
- 86.50
PROPOSED SPOT ELEVATION

- NOTES**
- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
 - REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

PLAN
 Scale 1:100



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com



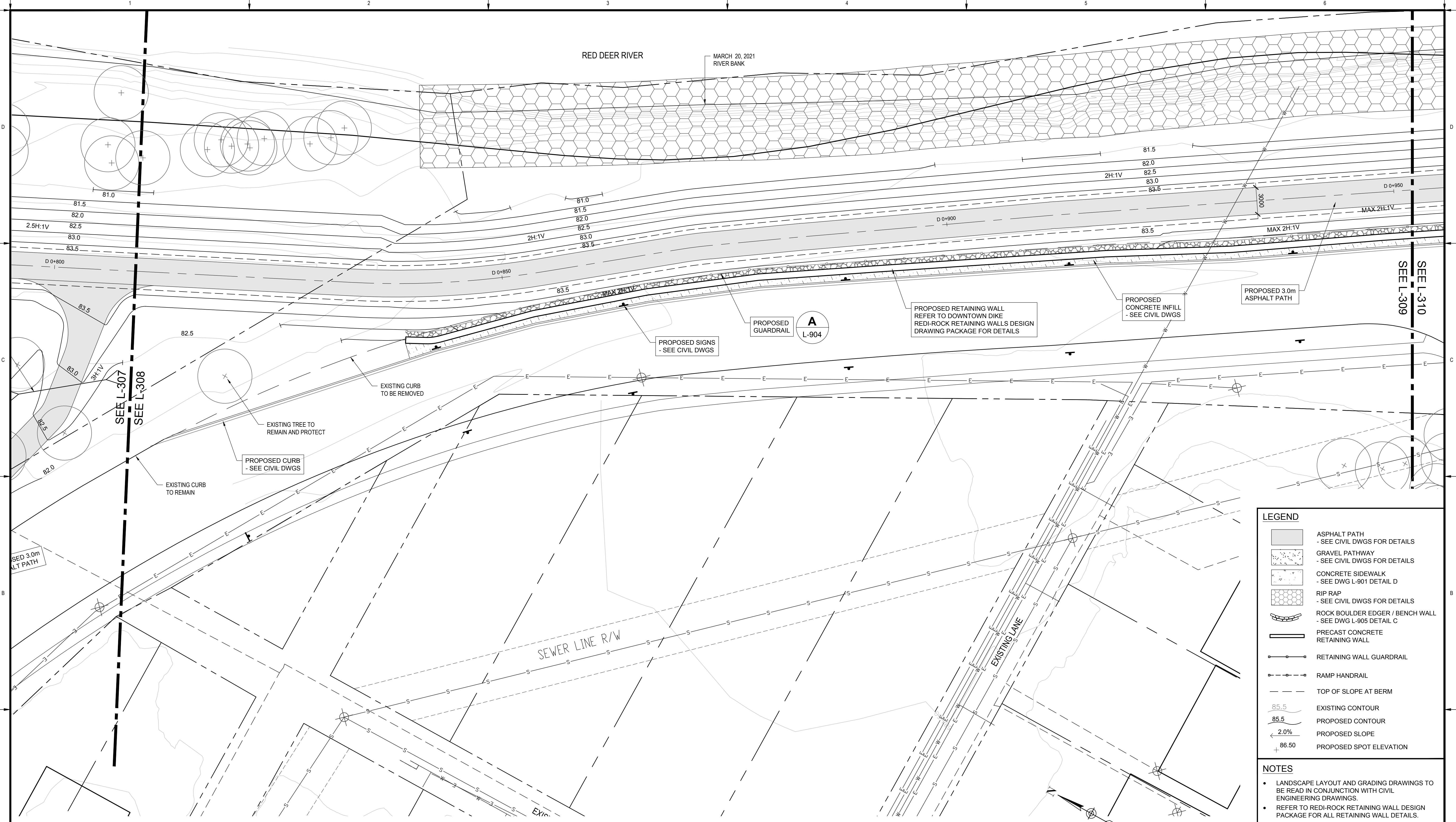
Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

LAYOUT & GRADING PLAN
RIVERVIEW TERRACE

Project No. **133142** Drawing No. **L-308** Rev. **0**
 Group **LANDSCAPE**



PLAN
Scale 1:200

LEGEND

	ASPHALT PATH - SEE CIVIL DWGS FOR DETAILS
	GRAVEL PATHWAY - SEE CIVIL DWGS FOR DETAILS
	CONCRETE SIDEWALK - SEE DWG L-901 DETAIL D
	RIP RAP - SEE CIVIL DWGS FOR DETAILS
	ROCK BOULDER EDGER / BENCH WALL - SEE DWG L-905 DETAIL C
	PRECAST CONCRETE RETAINING WALL
	RETAINING WALL GUARDRAIL
	RAMP HANDRAIL
	TOP OF SLOPE AT BERM
	EXISTING CONTOUR
	PROPOSED CONTOUR
	PROPOSED SLOPE
	PROPOSED SPOT ELEVATION

- NOTES**
- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
 - REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

The Alberta Association of Landscape Architects

 Erin Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

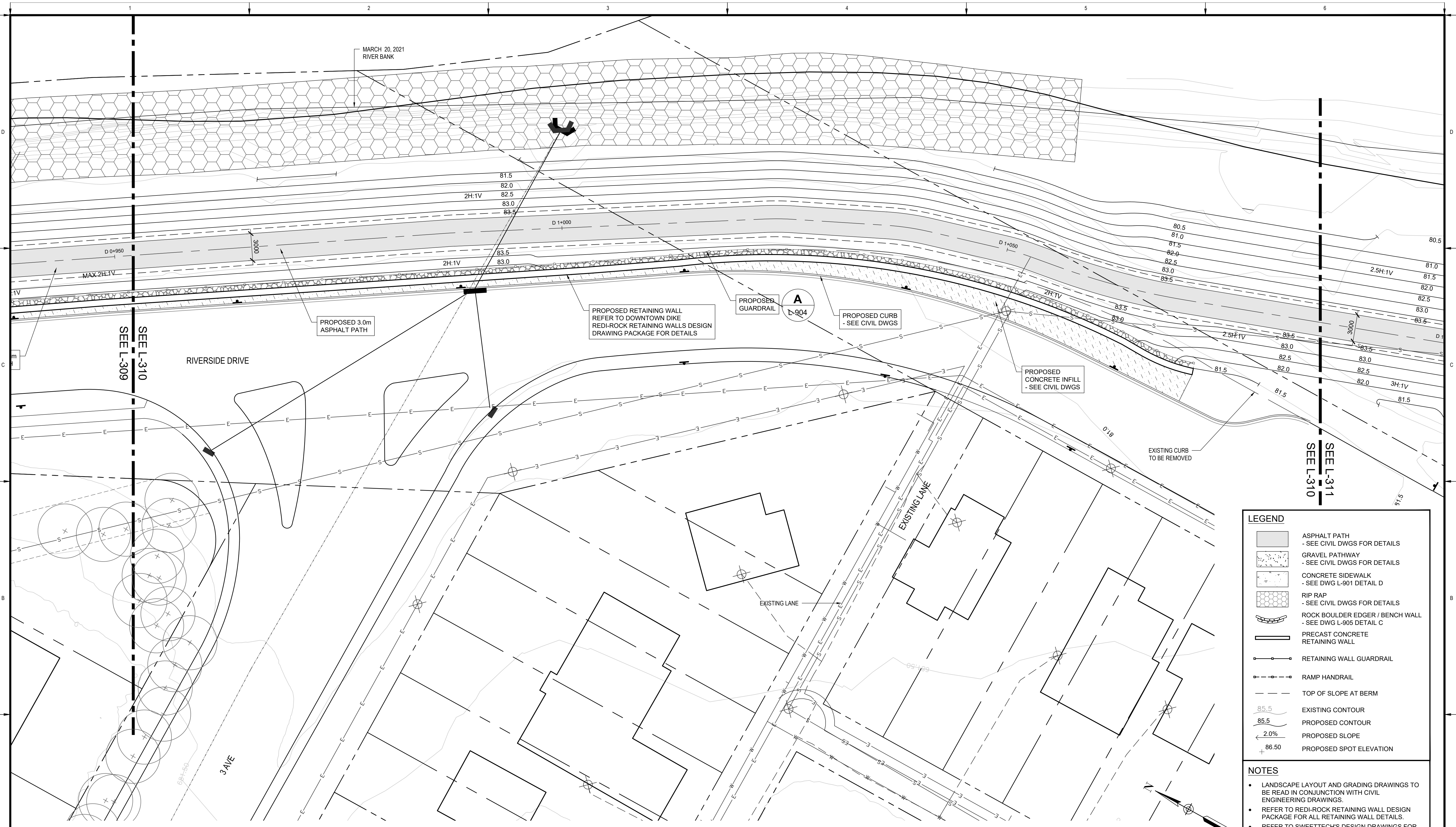
Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-309** Rev. **0**

Group **LANDSCAPE**



PLAN
 Scale 1:200

LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SLOPE
- PROPOSED SPOT ELEVATION

- NOTES**
- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
 - REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

The Alberta Association of Landscape Architects

 Ernie J. Webster

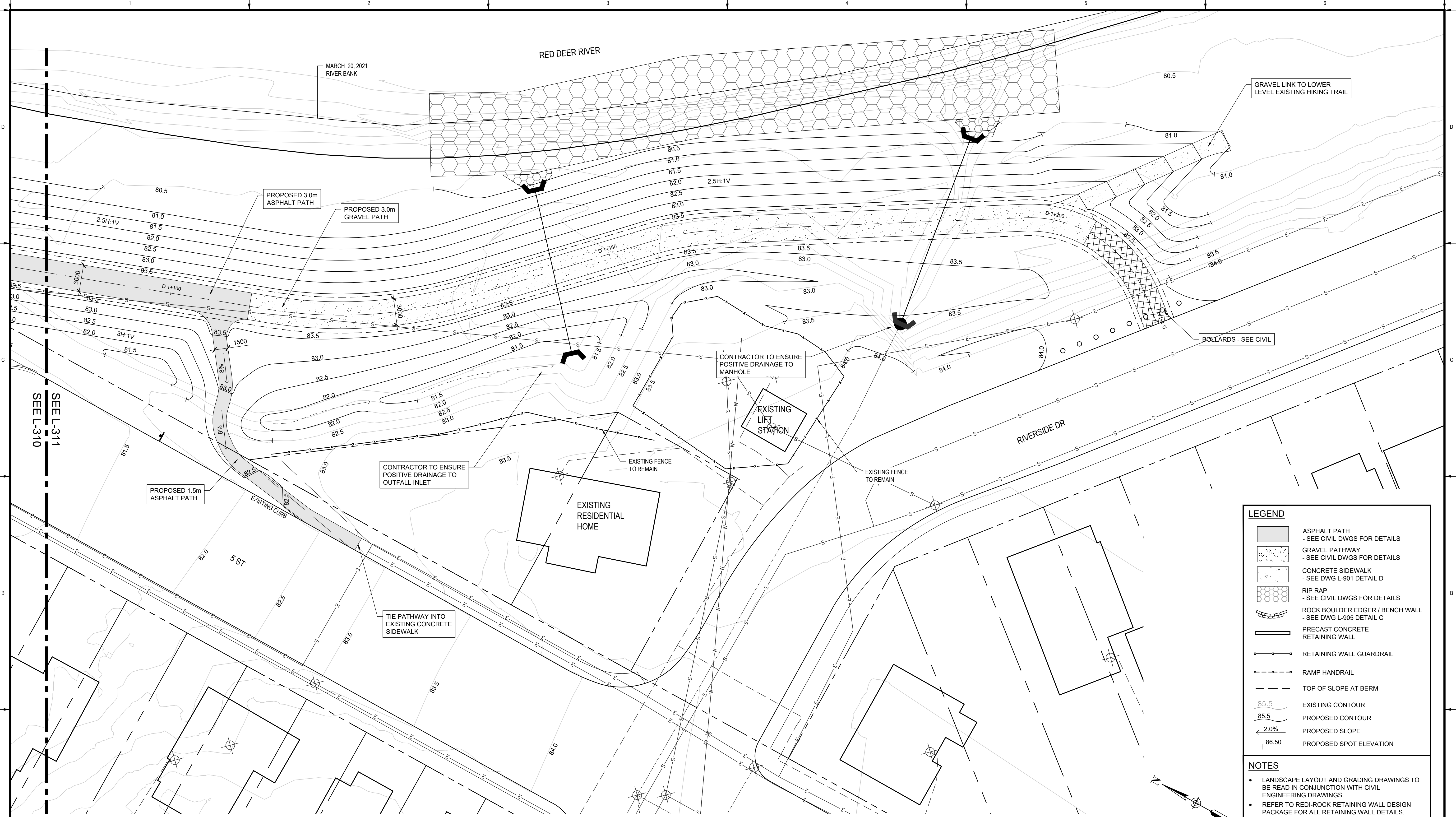
Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
 DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-310** Rev. **0**
 Group **LANDSCAPE**



PLAN
Scale 1:200

LEGEND

- ASPHALT PATH
- SEE CIVIL DWGS FOR DETAILS
- GRAVEL PATHWAY
- SEE CIVIL DWGS FOR DETAILS
- CONCRETE SIDEWALK
- SEE DWG L-901 DETAIL D
- RIP RAP
- SEE CIVIL DWGS FOR DETAILS
- ROCK BOULDER EDGER / BENCH WALL
- SEE DWG L-905 DETAIL C
- PRECAST CONCRETE RETAINING WALL
- RETAINING WALL GUARDRAIL
- RAMP HANDRAIL
- TOP OF SLOPE AT BERM
- 85.5 EXISTING CONTOUR
- 85.5 PROPOSED CONTOUR
- 2.0% PROPOSED SLOPE
- 86.50 PROPOSED SPOT ELEVATION

- NOTES**
- LANDSCAPE LAYOUT AND GRADING DRAWINGS TO BE READ IN CONJUNCTION WITH CIVIL ENGINEERING DRAWINGS.
 - REFER TO REDI-ROCK RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

The Alberta Association of Landscape Architects
 Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

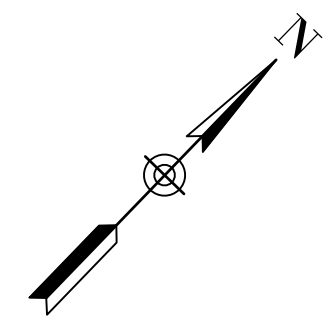
**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

LAYOUT & GRADING PLAN

Project No. **133142** Drawing No. **L-311** Rev. **0**
 Group **LANDSCAPE**

LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL



RED DEER RIVER

MARCH 20, 2021 RIVER BANK

6 MANITOBA MAPLE #15 POT
 3 BLACK COTTONWOOD 70mm CAL.
 7 EASTERN COTTONWOOD #15 POT

(32m²) SEEDLING / SHRUB MIXTURE:
 19 BLACK COTTONWOOD
 7 SASKATOON
 6 RED OSIER DOGWOOD

3 TREMBLING ASPEN #15 POT

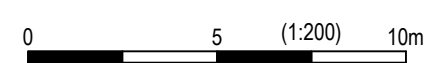
BLUE SPRUCE
 1 @ 1500mm HT.
 1 @ 2000mm HT.
 1 @ 2500mm HT.

1 PATMORE GREEN ASH 70mm CAL.

DRUMHELLER AQUAPLEX

SEE L/401
SEE L/402

PLAN
Scale 1:200



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com



Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

PLANTING PLAN

Project No. **133142**
 Group **LANDSCAPE**

Drawing No.

L-401

Rev. **0**

LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL



RED DEER RIVER
MARCH 20, 2012 RIVER BANK

- 5 TREMBLING ASPEN #15 POT
- (32m²) SEEDLING / SHRUB MIXTURE:
14 RED OSIER DOGWOOD
18 BUFFALO BERRY
- 2 MANITOBA MAPLE #15 POT
- 3 EASTERN COTTONWOOD #15 POT
- 3 BLACK COTTONWOOD 70mm CAL.
- 2 MANITOBA MAPLE #15 POT

- 2 TREMBLING ASPEN #15 POT
- 1 EASTERN COTTONWOOD 70mm CAL.
- 1 BLACK COTTONWOOD 70mm CAL.
- (32m²) SEEDLING / SHRUB MIXTURE:
10 BLACK COTTONWOOD
11 RED OSIER DOGWOOD
10 ABBOTSWOOD POTENTILLA
- 1 TREMBLING ASPEN #15 POT
- 8 MANITOBA MAPLE #15 POT

WHITE SPRUCE
1 @ 1500mm HT.
2 @ 2500mm HT.

3 SPRING SNOW FLOWERING CRABAPPLE
60mm CAL.

BLUE SPRUCE
1 @ 1500mm HT.
2 @ 2500mm HT.

1 THUNDERCHILD FLOWERING CRABAPPLE
60mm CAL.

1 PATMORE GREEN ASH
70mm CAL.

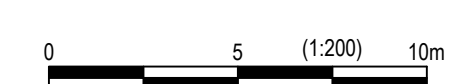
DRUMHELLER AQUAPLEX

SEE L-402
SEE L-401

SEE L-402
SEE L-404

SEE L-403
SEE L-402

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com



Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-402** Rev. **0**

Group **LANDSCAPE**

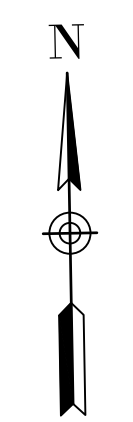
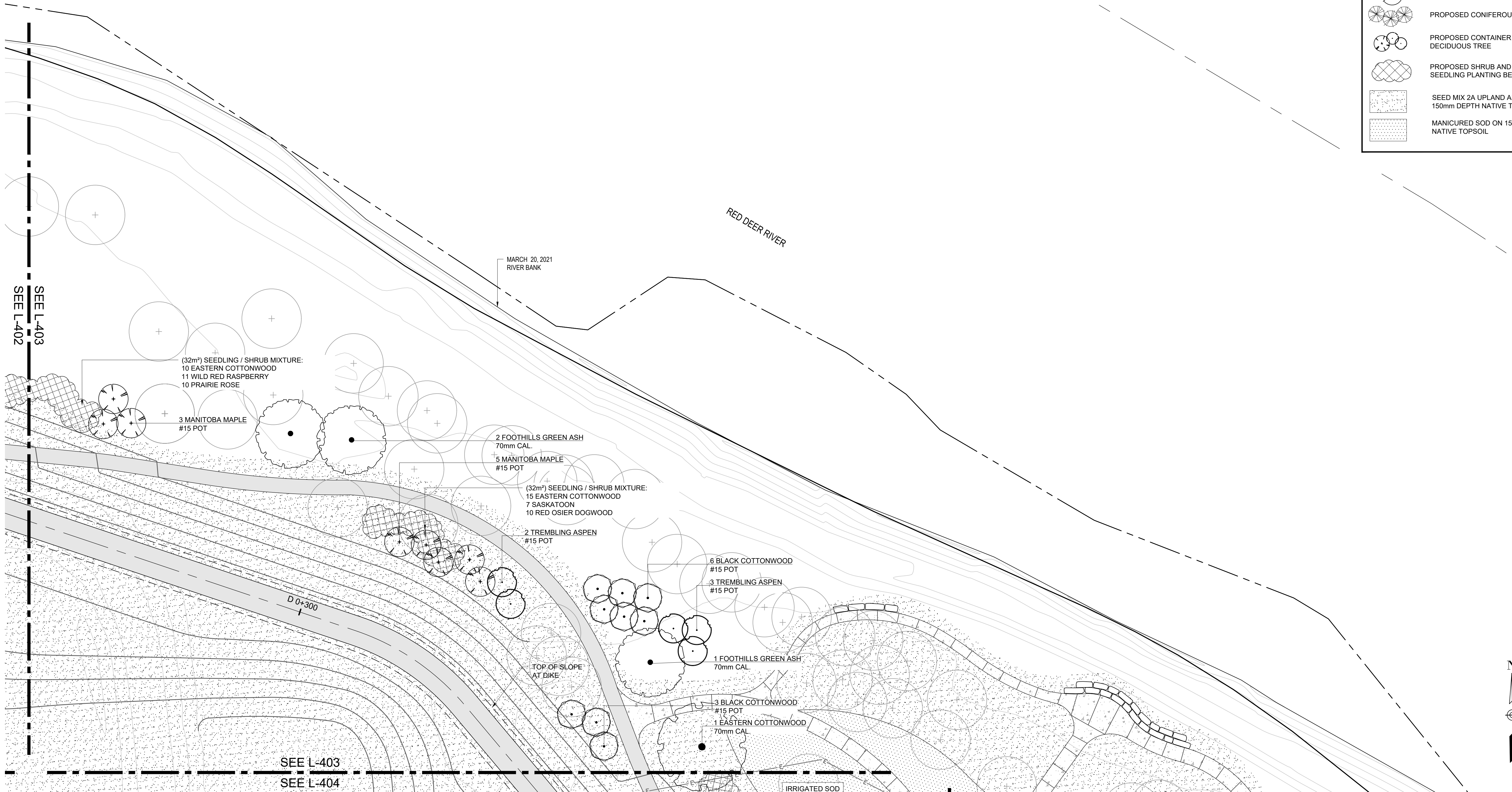
1
2
3
4
5
6

100
50
0
millimeters
Paper Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm

100
50
0
millimeters

LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL



PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-403** Rev. **0**

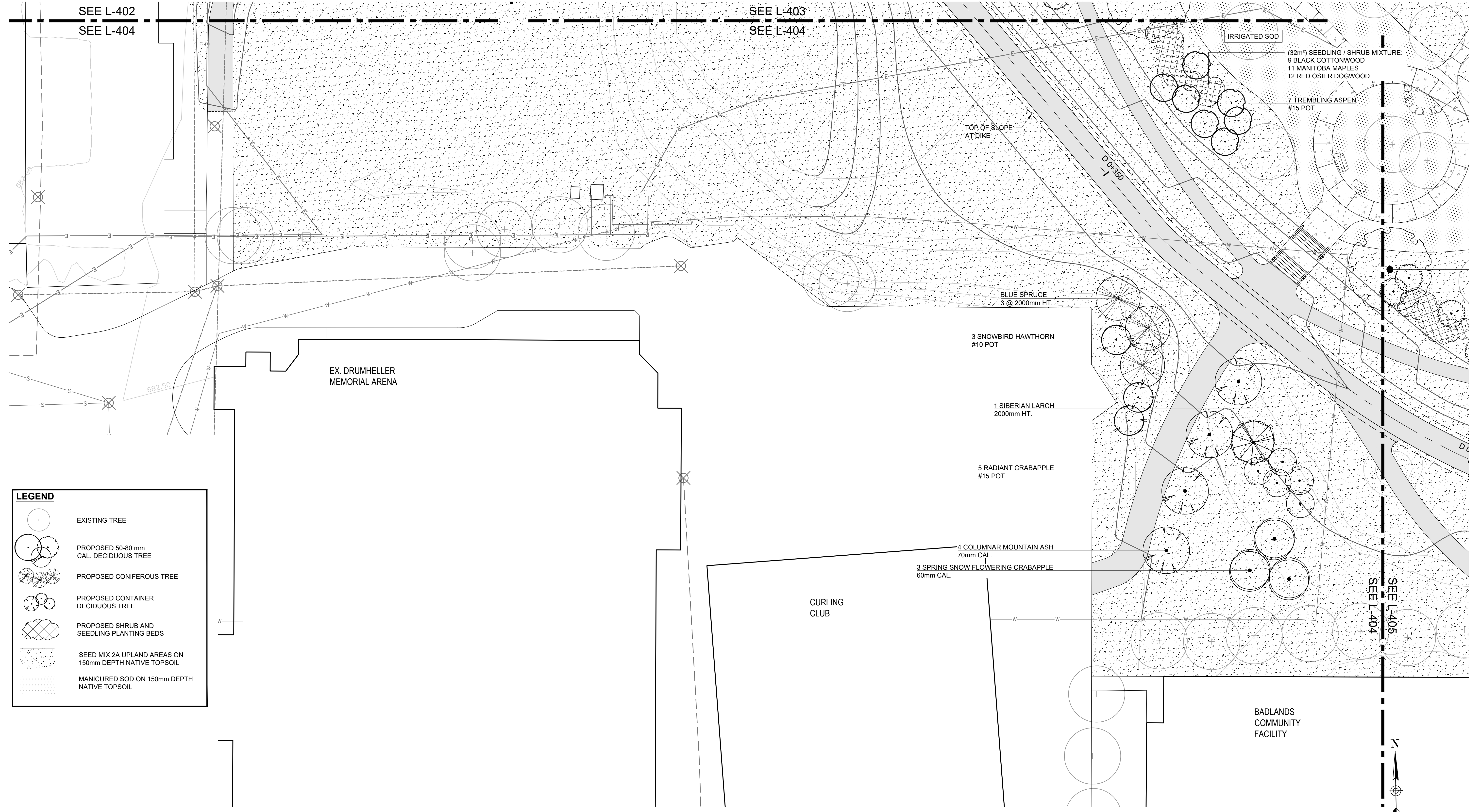
Group **LANDSCAPE**

1
2
3
4
5
6

SAVED: 2023/04/04 10:20 PM

Paper Size = ANSI D
At Full Size, this border measures 120 mm x 80 mm

100
50
0
millimeters



LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL

PLAN
Scale 1:200

0 5 (1:200) 10m



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

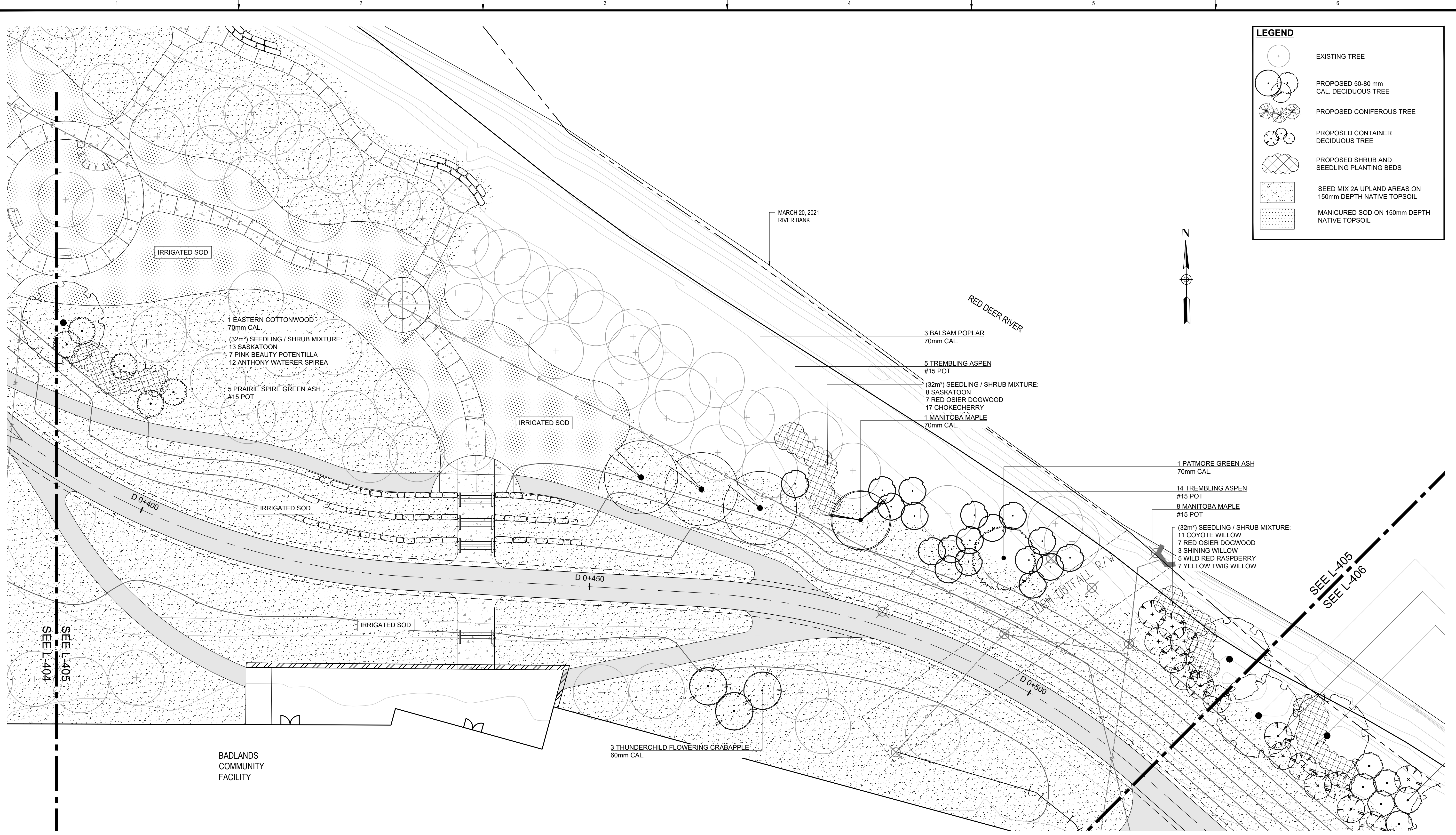
Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-404** Rev. **0**

Group **LANDSCAPE**



LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL



PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-405** Rev. **0**

Group **LANDSCAPE**

1
2
3
4
5
6

SAVED: 2023/04/04, 10:20 PM

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

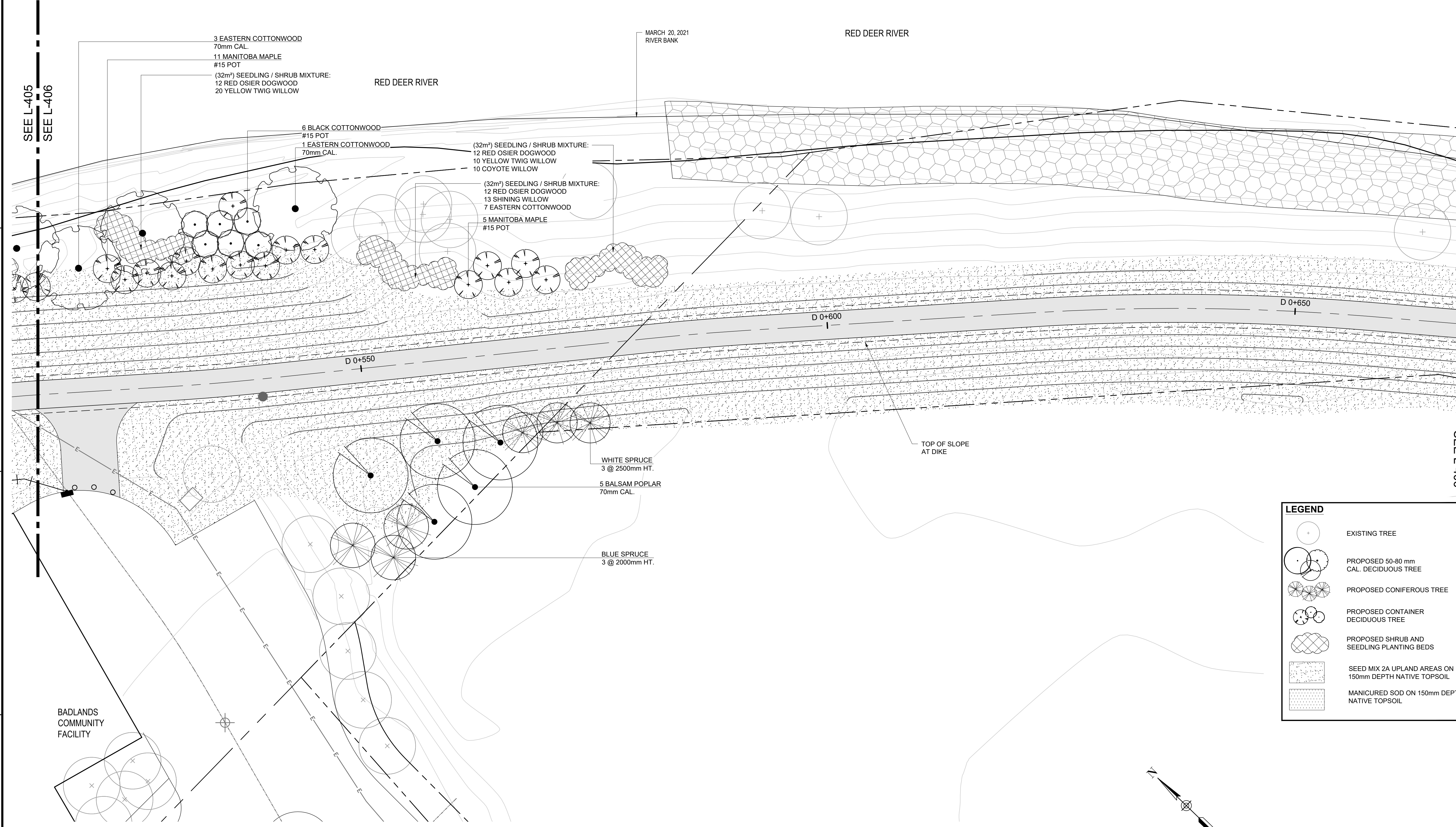
170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters

170
100
50
0
millimeters



3 EASTERN COTTONWOOD
70mm CAL.
11 MANITOBA MAPLE
#15 POT
(32m²) SEEDLING / SHRUB MIXTURE:
12 RED OSIER DOGWOOD
20 YELLOW TWIG WILLOW

6 BLACK COTTONWOOD
#15 POT
1 EASTERN COTTONWOOD
70mm CAL.

(32m²) SEEDLING / SHRUB MIXTURE:
12 RED OSIER DOGWOOD
10 YELLOW TWIG WILLOW
10 COYOTE WILLOW

(32m²) SEEDLING / SHRUB MIXTURE:
12 RED OSIER DOGWOOD
13 SHINING WILLOW
7 EASTERN COTTONWOOD

5 MANITOBA MAPLE
#15 POT

WHITE SPRUCE
3 @ 2500mm HT.

5 BALSAM POPLAR
70mm CAL.

BLUE SPRUCE
3 @ 2000mm HT.

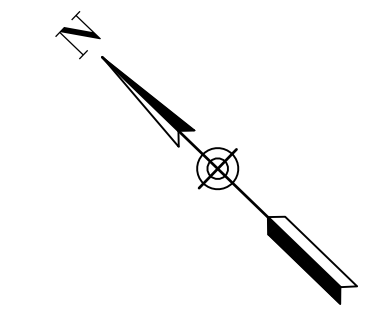
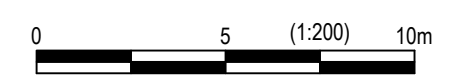
SEE L-405
SEE L-406

SEE L-407
SEE L-406

LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

Seal: **The Alberta Association of Landscape Architects**
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

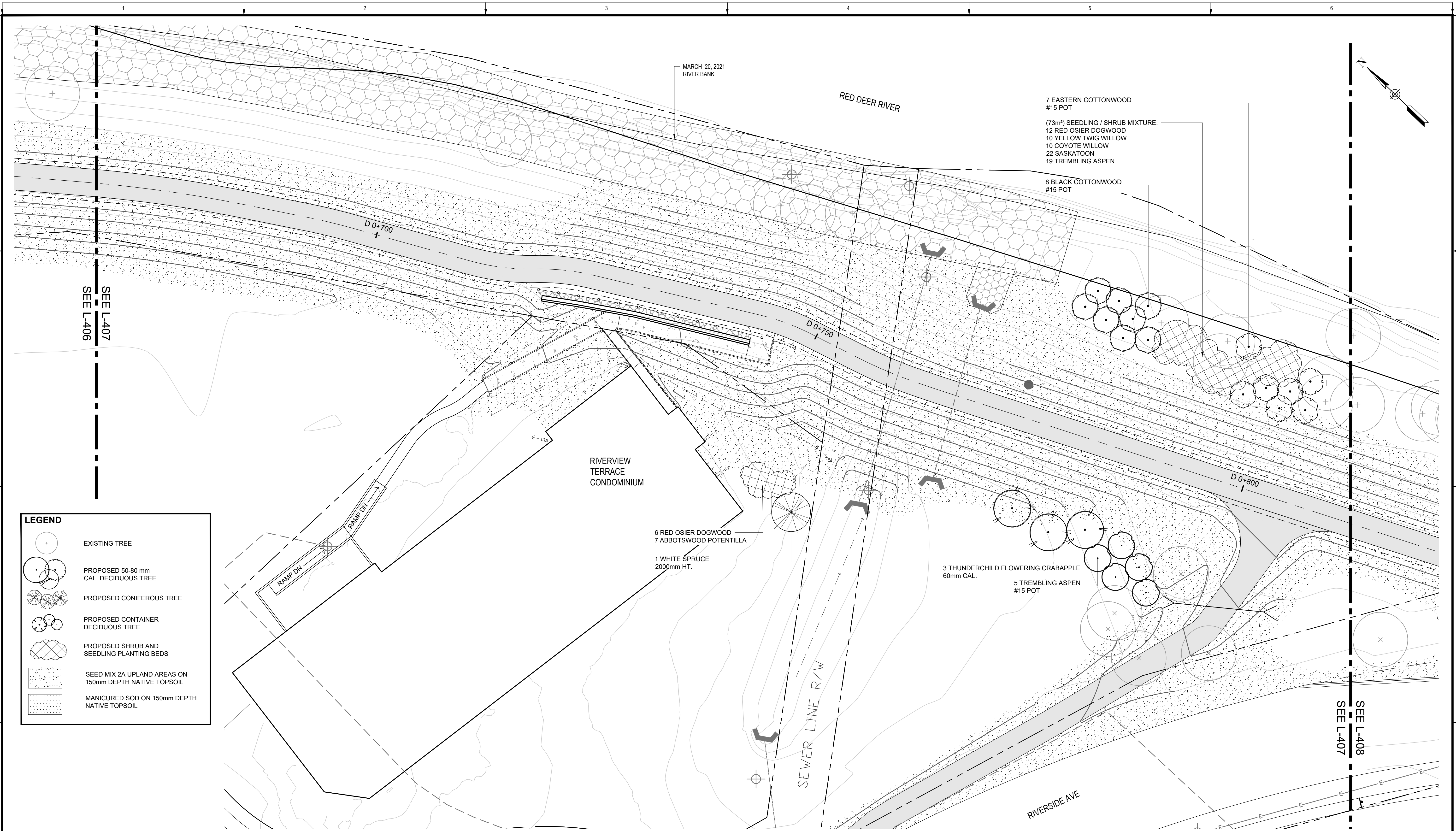
Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-406** Rev. **0**
Group **LANDSCAPE**

1:00
 Paper Size - ANSI D
 At Full Size, this border measures 520 mm x 800 mm
 0 50 100
 millimeters
 0 10 20 30 40 50 60 70 80 90 100
 meters
 10:20 PM
 2023/04/04







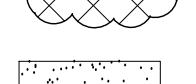
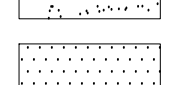

7 EASTERN COTTONWOOD
 #15 POT
 (73m²) SEEDLING / SHRUB MIXTURE:
 12 RED OSIER DOGWOOD
 10 YELLOW TWIG WILLOW
 10 COYOTE WILLOW
 22 SASKATOON
 19 TREMBLING ASPEN

8 BLACK COTTONWOOD
 #15 POT

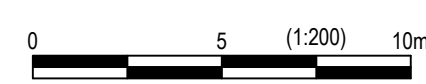
6 RED OSIER DOGWOOD
 7 ABBOTSWOOD POTENTILLA
 1 WHITE SPRUCE
 2000mm HT.

3 THUNDERCHILD FLOWERING CRABAPPLE
 60mm CAL.
 5 TREMBLING ASPEN
 #15 POT

LEGEND

-  EXISTING TREE
-  PROPOSED 50-80 mm CAL. DECIDUOUS TREE
-  PROPOSED CONIFEROUS TREE
-  PROPOSED CONTAINER DECIDUOUS TREE
-  PROPOSED SHRUB AND SEEDLING PLANTING BEDS
-  SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
-  MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL

PLAN
 Scale 1:200



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

The Alberta
 Association of
 Landscape
 Architects
 Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

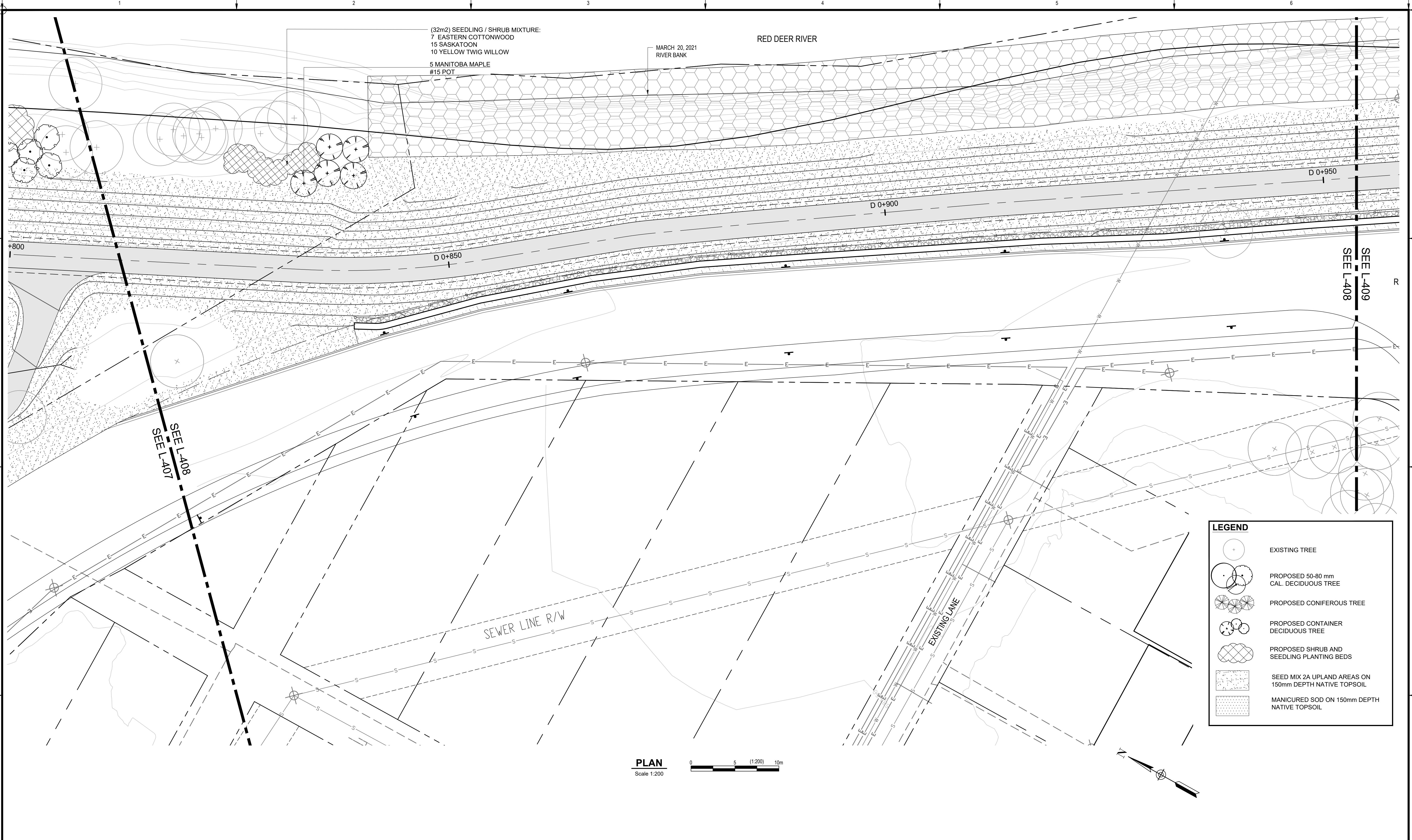
**TOWN OF DRUMHELLER
 DOWNTOWN DIKE**
PLANTING PLAN
 Project No. **133142** Drawing No. **L-407** Rev. **0**
 Group **LANDSCAPE**

SAVED:2023/04/04, 10:20 PM

Paper Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm

1:00
millimeters

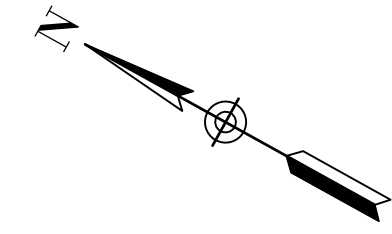
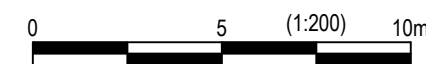
A



LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

Seal
The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

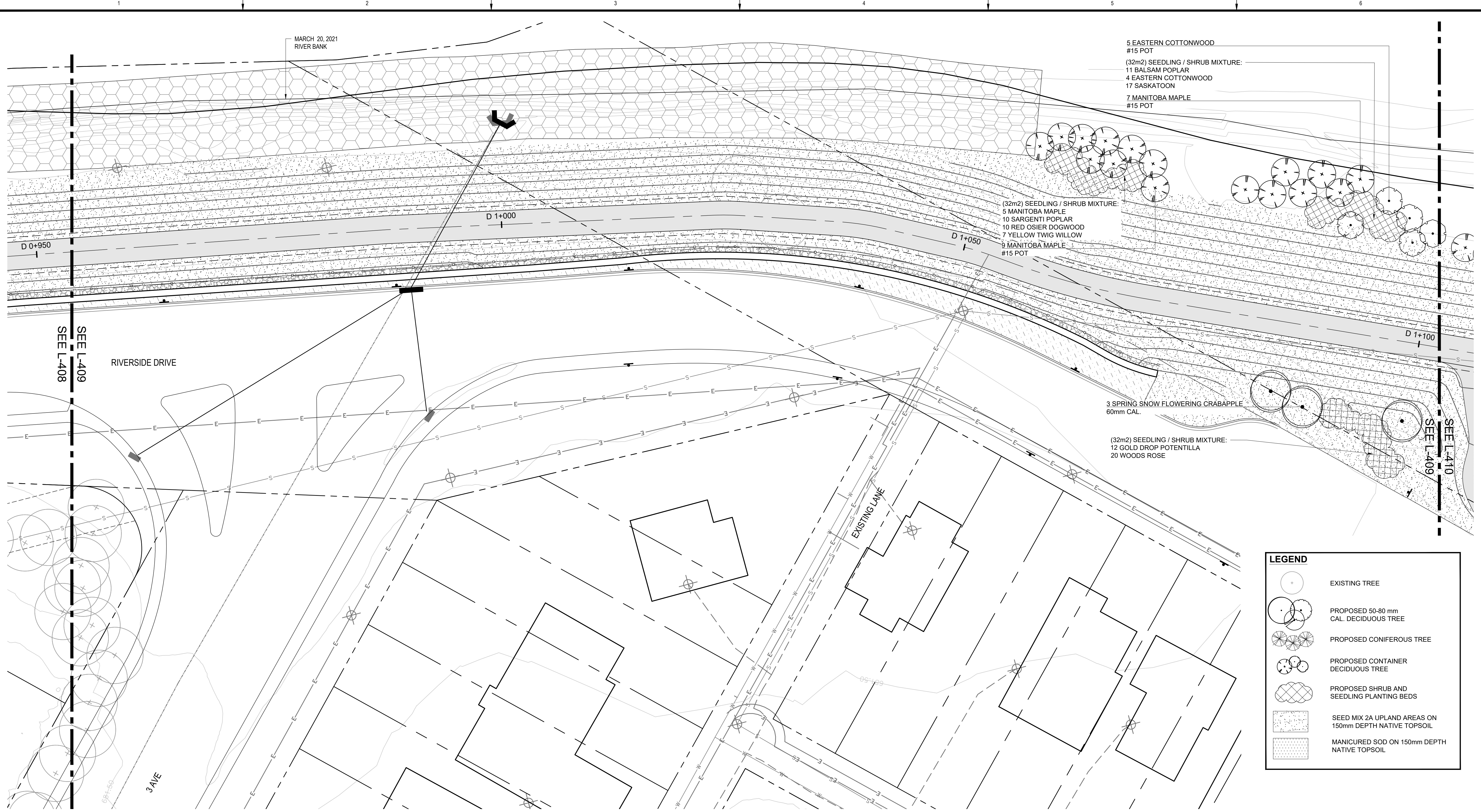
Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-408** Rev. **0**

Group **LANDSCAPE**



5 EASTERN COTTONWOOD
#15 POT
(32m2) SEEDLING / SHRUB MIXTURE:
11 BALSAM POPLAR
4 EASTERN COTTONWOOD
17 SASKATOON
7 MANITOBA MAPLE
#15 POT

(32m2) SEEDLING / SHRUB MIXTURE:
5 MANITOBA MAPLE
10 SARGENTI POPLAR
10 RED OSIER DOGWOOD
7 YELLOW TWIG WILLOW
9 MANITOBA MAPLE
#15 POT

3 SPRING SNOW FLOWERING CRABAPPLE
60mm CAL.

(32m2) SEEDLING / SHRUB MIXTURE:
12 GOLD DROP POTENTILLA
20 WOODS ROSE

LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL

PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

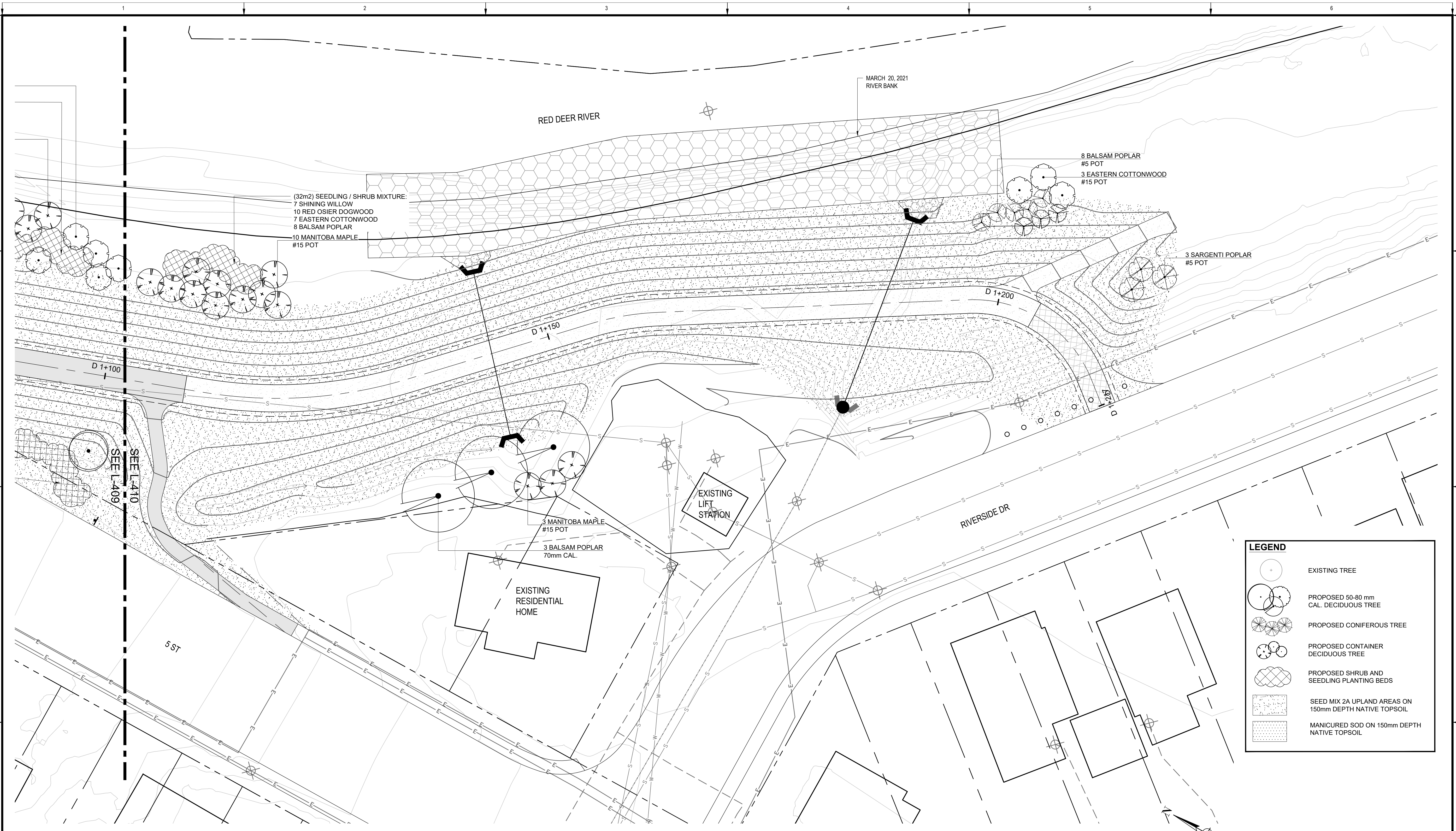
The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER						

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-409** Rev. **0**
Group **LANDSCAPE**



LEGEND

- EXISTING TREE
- PROPOSED 50-80 mm CAL. DECIDUOUS TREE
- PROPOSED CONIFEROUS TREE
- PROPOSED CONTAINER DECIDUOUS TREE
- PROPOSED SHRUB AND SEEDLING PLANTING BEDS
- SEED MIX 2A UPLAND AREAS ON 150mm DEPTH NATIVE TOPSOIL
- MANICURED SOD ON 150mm DEPTH NATIVE TOPSOIL

PLAN
Scale 1:200

0 5 (1:200) 10m



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

The Alberta Association of Landscape Architects
Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

**TOWN OF DRUMHELLER
DOWNTOWN DIKE**

PLANTING PLAN

Project No. **133142** Drawing No. **L-410** Rev. **0**

Group **LANDSCAPE**

PLANT SCHEDULE			
CONIFEROUS TREES	COMMON NAME	SIZE	QTY
PICEA GLAUCA	WHITE SPRUCE	1500MM HT.	1
PICEA GLAUCA	WHITE SPRUCE	2000MM HT.	6
PICEA PUNGENS	COLORADO SPRUCE	1500MM HT.	2
PICEA PUNGENS	COLORADO SPRUCE	2000MM HT.	9
PICEA PUNGENS	COLORADO SPRUCE	3000MM HT.	1
TOTAL: 19			
DECIDUOUS TREES	COMMON NAME	SIZE	QTY
ACER NEGUNDO	MANITOBA MAPLE	70MM CAL.	1
FRAXINUS PENNSYLVANICA 'HEUVER'	FOOTHILLS GREEN ASH	70MM CAL.	3
FRAXINUS PENNSYLVANICA 'RUGBY'	PATMORE GREEN ASH	70MM CAL.	3
LARIX SIBIRICA	SIBERIAN LARCH	2000MM HT.	1
MALUS X 'SPRING SNOW'	SPRING SNOW FLOWERING CRABAPPLE	60MM CAL.	9
MALUS X 'THUNDERCHILD'	THUNDERCHILD FLOWERING CRABAPPLE	60MM CAL.	7
POPULUS BALSAMIFERA	BALSAM POPLAR	70MM CAL.	11
POPULUS BALSAMIFERA TRICHOCARPA	BLACK COTTONWOOD	70MM CAL.	7
POPULUS DELTOIDES	EASTERN COTTONWOOD	70MM CAL.	7
SORBUS X THURINGIACA 'FASTIGIATA'	COLUMNAR MOUNTAIN ASH	70MM CAL.	4
TOTAL: 53			
DECIDUOUS TREES - CONTAINER GROWN	COMMON NAME	SIZE	QTY
ACER NEGUNDO	MANITOBA MAPLE	#15 POT	84
CRATAEGUS X MORDENENSIS 'SNOWBIRD'	SNOWBIRD HAWTHORN	#10 POT	3
FRAXINUS PENNSYLVANICA 'RUGBY'	PRAIRIE SPIRE GREEN ASH	#15 POT	5
MALUS X 'RADIANT'	RADIANT CRABAPPLE	#15 POT	5
POPULUS BALSAMIFERA	BALSAM POPLAR	#5 POT	8
POPULUS BALSAMIFERA TRICHOCARPA	BLACK COTTONWOOD	#15 POT	23
POPULUS DELTOIDES	EASTERN COTTONWOOD	#15 POT	25
POPULUS SARGENTII	SARGENTI POPLAR	#5 POT	3
POPULUS TREMULOIDES	TREMBLING ASPEN	#15 POT	46
TOTAL: 202			
DECIDUOUS TREES - SEEDLINGS	COMMON NAME	SIZE	QTY
ACER NEGUNDO	MANITOBA MAPLE	SEEDLING	27
POPULUS BALSAMIFERA	BALSAM POPLAR	SEEDLING	19
POPULUS BALSAMIFERA TRICHOCARPA	BLACK COTTONWOOD	SEEDLING	27
POPULUS DELTOIDES	EASTERN COTTONWOOD	SEEDLING	59
POPULUS SARGENTII	SARGENTI POPLAR	SEEDLING	10
POPULUS TREMULOIDES	TREMBLING ASPEN	SEEDLING	18
TOTAL: 160			
DECIDUOUS SHRUBS	COMMON NAME	SIZE	QTY
AMALANCHIER ALNIFOLIA	SASKATOON	#2 POT	89
CORNUS SERICEA	RED OSIER DOGWOOD	#2 POT	148
CORNUS SERICEA 'FLAVIRAMEA'	YELLOW TWIG WILLOW	#2 POT	64
POTENTILLA FRUTICOSA 'ABBOTSWOOD'	ABBOTSWOOD POTENTILLA	#2 POT	7
POTENTILLA FRUTICOSA 'GOLD DROP'	GOLD DROP POTENTILLA	#2 POT	18
POTENTILLA FRUTICOSA 'PINK BEAUTY'	PINK BEAUTY BUSH CINQUEFOIL	#1 POT	7
PRUNUS VIRGINIANA	CHOKECHERRY	#2 POT	17
ROSA WOODSII ULTRAMONTANA	WOODS' ROSE	#2 POT	37
RUBUS PARVIFOLIUS	NATIVE RASPBERRY	#2 POT	16
SALIX EXIGUA	COYOTE WILLOW	#2 POT	31
SALIX LUCIDA	SHINING WILLOW	#2 POT	23
SPIRAEA X BUMALDA 'ANTHONY WATERER'	ANTHONY WATERER SPIREA	#1 POT	12
TOTAL: 469			

TREE PLANTING STRATEGY

TOTAL NUMBER OF FAIR, GOOD AND VERY GOOD TREES TO BE REMOVED = 395
TOTAL NUMBER OF NEW TREES AND SHRUBS TO BE PLANTED IN LIEU OF REMOVALS = 1975

(As per the Town of Drumheller "Preserving and Enhancing The Urban Forest Standards and Techniques", where a 5:1 ratio of planting replacement is specified, for every 1 fair, good, or very good tree that is removed, 5 trees/shrubs will be planted)

TOTAL REPLACEMENT PLANTS = 903

BREAKDOWN:
MED-LARGE TREES (60-70mm CAL.) = 72 (8%)
SMALL CONTAINER GROWN TREES = 202 (22%)
SEEDLING TREES = 160 (18%)
SHRUBS = 469 (52%)

*OTHER POTENTIAL LOCATIONS FOR PLANTING TO BE COORDINATED WITH THE DOWNTOWN PLAZA PLANS

PLANTING NOTES

1. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH THE GUIDELINES AND SPECIFICATIONS OF DRUMHELLER VALLEY, THE DRUMHELLER VALLEY DOCUMENT, PRESERVING & ENHANCING THE URBAN FOREST: STANDARDS & TECHNIQUES AND AS PER PROJECT SPECIFIC PLANTING DETAILS LOCATED AT END OF DRAWING SET.
2. PLANT MATERIAL LIST WAS PREPARED FOR ESTIMATING PURPOSES ONLY. CONTRACTOR SHALL MAKE THEIR OWN QUANTITY TAKE-OFFS USING DRAWINGS TO DETERMINE QUANTITIES, REPORTING PROMPTLY AND DISCREPANCIES WHICH MAY AFFECT BIDDING.
3. THE OWNER'S REPRESENTATIVE WILL INSPECT PLANTS AT THE FOLLOWING STAGES: AT TIME OF DELIVERY PRIOR TO INSTALLATION, INSTALLED PLANTS BEFORE COMMENCEMENT OF MAINTENANCE PERIOD AND AT THE END OF MAINTENANCE PERIOD. NOTIFY OWNER'S REPRESENTATIVE 72 HOURS IN ADVANCE OF EACH REQUIRED INSPECTION. CONTRACTOR SHALL ENSURE REQUIRED PLANTS WILL BE AVAILABLE OR MEET SPECIFICATIONS BEFORE ARRANGING INSPECTION FOR SELECTION AND TAGGING OF PLANTS.
4. ALL PLANT MATERIAL TO BE DISEASE FREE AND TRUE TO FORM. SPECIMEN GRADE SINGLE STEM STOCK - UNLESS NOTED OTHERWISE, PLANTS WILL BE REJECTED IF: SOIL BALLS HAVE BEEN CRACKED OR BROKEN BEFORE OR DURING PLANTING OR WHEN BURLAP ROPES REQUIRED IN CONNECTION WITH THEIR TRANSPLANTING HAVE BEEN REMOVED. DO NOT USE PLANTS DAMAGED DURING CONTACT WITH EQUIPMENT, OR PLANTS THAT ARE WILTED, WIND BURNED OR STRESSED. CONTRACTOR TO REPLACE DAMAGED OR REJECTED PLANTS AT NO ADDITIONAL COST TO OWNER.
5. STAKE OUT LOCATIONS OF TREES, SHRUBS AND PLANTING BEDS AFTER THE COMPLETION OF THE DIKE GRADING. LOCATIONS OF ALL PLANTS SHALL BE REVIEWED AND APPROVED BY OWNER'S REPRESENTATIVE ON SITE BEFORE PLANTING. PLANTS INSTALLED WITHOUT REVIEW AND APPROVAL MAY REQUIRE TRANSPLANTING OR RELOCATION AS DIRECTED BY OWNER'S REPRESENTATIVE AT NO ADDITIONAL COST.
6. ENSURE ALL TREES AND SHRUBS ARE INSTALLED OUTSIDE OF DIKE EXTENTS - REFER TO CIVIL DRAWINGS, TYP.
7. CONTRACTOR SHALL VERIFY THAT ALL MINIMUM CLEARANCES ARE PROVIDED BETWEEN PROPOSED TREES AND UNDERGROUND AND/OR OVERHEAD UTILITIES AS DEFINED BY THE LOCAL PARKS AND PLANNING DEPARTMENT.
8. PART OF PLANT MATERIAL INSTALLATION SHALL INCLUDE SUFFICIENT PROTECTION TO PREVENT BARK AND TREE DAMAGE DUE TO FORAGING ANIMALS AND ANCHORING SYSTEM TO PREVENT ROOT BREAKAGE DUE TO STRONG WINDS. LANDSCAPE ARCHITECT NOT RESPONSIBLE FOR ANY DAMAGES THAT INCUR DUE TO IMPROPER INSTALLATION.
9. DISTURBANCES TO ADJACENT AREAS SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE.
10. EROSION CONTROL MATTING REQUIRED ON ALL SLOPES GREATER THAN 3:1 THAT ARE INDICATED TO BE SEEDED.
 - 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 :
SC150 COCONUT AND STRAW FIBRE EROSION CONTROL MATTING WITH BIODEGRADABLE STAKES. REFER TO MANUFACTURERS SPECIFICATIONS FOR STAKING PATTERN.
11. ALL DEVELOPMENT AND CONSTRUCTION ACTIVITIES WITHIN 6 METERS OF EXISTING VEGETATION MUST BE SUPERVISED BY AN ISA (INTERNATIONAL SOCIETY OF ARBORICULTURE) CERTIFIED ARBORIST.
12. ALL PRUNING OF EXISTING VEGETATION MUST BE SUPERVISED BY AN ISA CERTIFIED ARBORIST.

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

BOTANICAL NAME	COMMON NAME	TARGET COVER	% OF SEED MIX (PLS)	Kg REQUIRED (PLS)
Deschampsia cespitosa	Tufted Hairgrass	25%	3%	1.97
Pascopyrum smithii / Agropyron smithii	Western Wheatgrass	20%	32%	18.60
Bromus carinatus	Mountain Brome	5%	10%	5.68
Elymus trachycaulus / Agropyron trachycaulum var.	Slender Wheatgrass	10%	11%	6.39
Elymus canadensis	Canada Wildrye	15%	23%	13.34
Sparina pectinata	Alkali Cordgrass	25%	21%	11.66

Cover crop for Wet Tolerant Seed Mix 1: Add a cover crop of Beckmannia Syzigachne (Slough Grass) at 5 kg / ha in areas of highwater erosion prone areas.

Upland Seed Mix 2A - Upland Areas - Application rate of 58 kg / ha.

BOTANICAL NAME	COMMON NAME	TARGET COVER	% OF SEED MIX (PLS)	Kg REQUIRED (PLS)
Elymus lanceolatus / Agropyron dasystachyum	Northern Wheatgrass	15%	16%	9.30
Pascopyrum smithii / Agropyron smithii	Western Wheatgrass	20%	30%	17.36
Elymus trachycaulus / Agropyron trachycaulum var.	Slender Wheatgrass	10%	10%	5.97
Buteloua gracilis	Blue Grama	10%	2%	0.88
Elymus canadensis	Canada Wildrye	10%	14%	8.30
Nassella viridula / Stipa viridula	Green Needlegrass	25%	27%	15.82
Koeleria macrantha	Junegrass	10%	1%	0.58

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

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

BOTANICAL NAME	COMMON NAME	TARGET COVER	% OF SEED MIX (PLS)	Kg REQUIRED (PLS)
Elymus lanceolatus / Agropyron dasystachyum	Northern Wheatgrass	23%	46%	22.91
Pascopyrum smithii / Agropyron smithii	Western Wheatgrass	10%	23%	11.16
Buteloua gracilis	Blue Grama	20%	6%	2.83
Hesperostipa comata / Stipa comata	Needle and Thread	2%	4%	2.13
Poa sandbergii	Sandberg Bluegrass	15%	6%	3.07
Nassella viridula / Stipa viridula	Green Needlegrass	5%	9%	4.24
Koeleria macrantha	Junegrass	23%	4%	2.13
Dalea purpurea	Purple Prairie Clover	2%	2%	1.02

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

SEEDING NOTES

1. 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.
2. SOW AT THE RATE INDICATED WITH SEED MIXES, DURING CALM WEATHER AND WHEN SOIL MOISTURE CONTENT IS ADEQUATE FOR GERMINATION.
3. 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.
4. FOR STEEPER THAN 2:1 SLOPES OR SLOPES THAT ARE NOT EASILY ACCESSIBLE USE MANUALLY OPERATED BROADCAST SEEDER.
5. 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.
6. COVER BROADCASTED SEED BY HAND RAKING AND ATV HARROWING-IN.
7. OPTIMAL SEEDING PERIODS FOR NATIVE GRASSES:
 - 7.1. MID TO LATE MAY, EARLY JUNE - NO LATER THAN JUNE 15TH.
 - 7.2. 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.
8. 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.
9. APPLY WATER UNIFORMLY TO SEEDED AREAS WITHOUT CAUSING DISPLACEMENT OR EROSION OF THE MATERIALS AND TOPSOIL.
10. MINIMIZE TRAVEL ON SEEDED SURFACES.
11. USE WATERING EQUIPMENT AND TECHNIQUES AUTHORIZED BY THE OWNER.

SODDING NOTES

1. SEE SPECIFICATIONS.
2. ALL SODDED AREAS IN THE CENTRAL PARK AROUND BCF ARE TO BE IRRIGATED BY AN UNDERGROUND SPRINKLER SYSTEM AS PER DRAWINGS L-501 TO L-502.

Site Characteristics

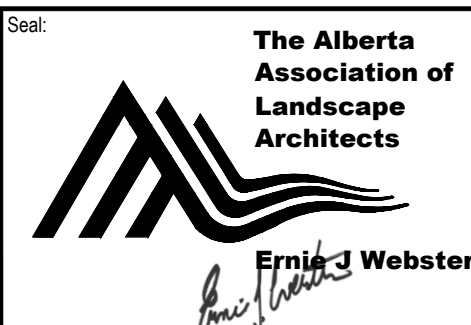
Seeding Method	Broadcast
Habitat Type	Wetland
Natural Subregion	Dry Mixedgrass
Incorporation Method	ATV Harrow or hand rake
Depth of Incorporation	5cm to 10cm

Site Characteristics

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

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	5cm to 10cm



Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

TOWN OF DRUMHELLER DOWNTOWN DIKE			
PLANT SCHEDULES, SEED MIXES & NOTES			
Project No.	133142	Drawing No.	
Group	LANDSCAPE		
			Rev.
		L-411	0

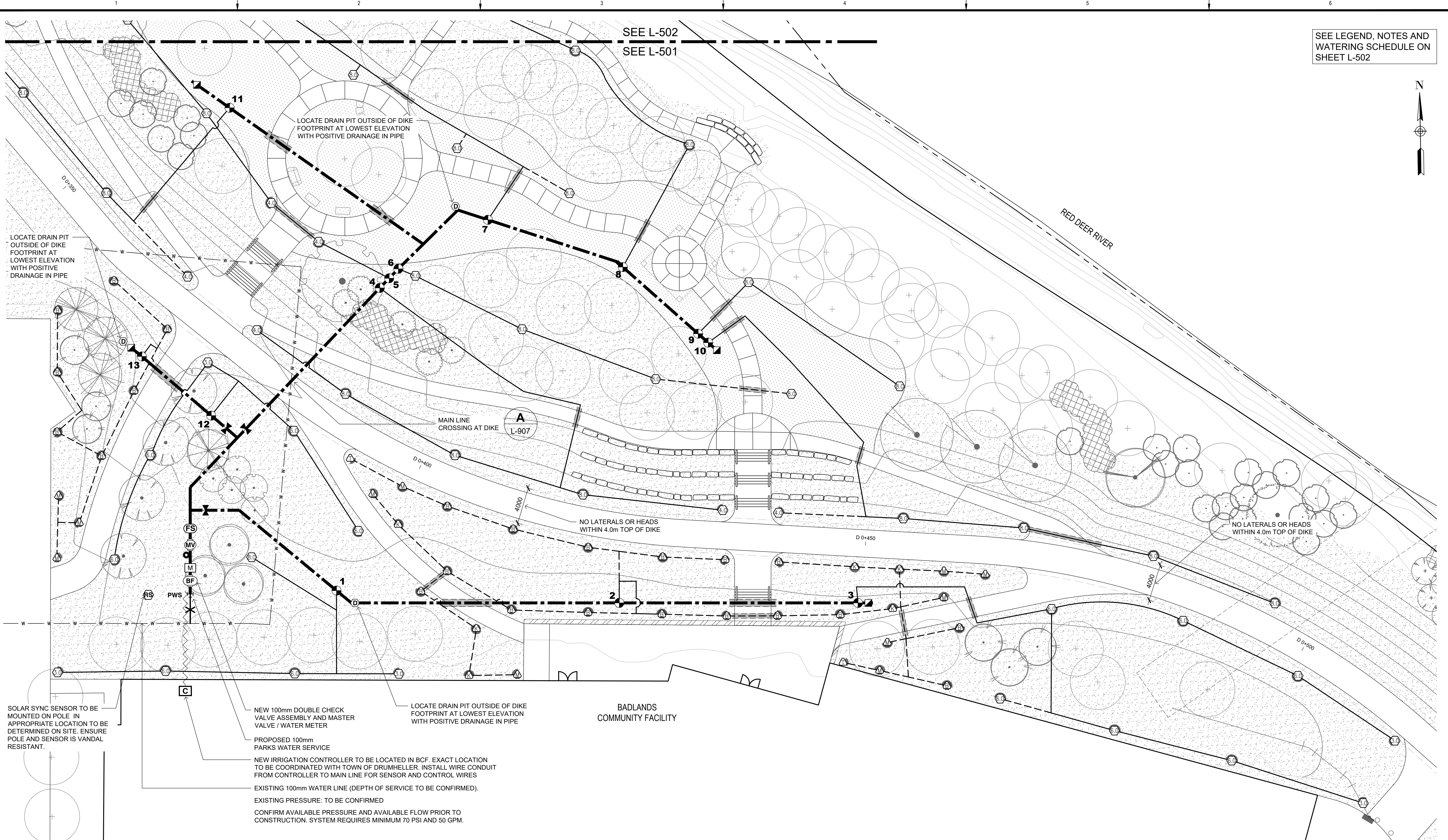
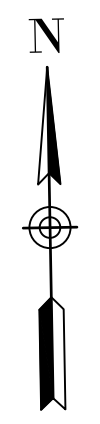
SAVED: 2023/04/05, 9:49 PM

Page Size = ANSI D
At Full Size, this border measures 520 mm x 800 mm

1:00
50
10
0
millimeters

SEE L-502
SEE L-501

SEE LEGEND, NOTES AND
WATERING SCHEDULE ON
SHEET L-502



SOLAR SYNC SENSOR TO BE MOUNTED ON POLE IN APPROPRIATE LOCATION TO BE DETERMINED ON SITE. ENSURE POLE AND SENSOR IS VANDAL RESISTANT.

NEW 100mm DOUBLE CHECK VALVE ASSEMBLY AND MASTER VALVE / WATER METER

PROPOSED 100mm PARKS WATER SERVICE

NEW IRRIGATION CONTROLLER TO BE LOCATED IN BCF. EXACT LOCATION TO BE COORDINATED WITH TOWN OF DRUMHELLER. INSTALL WIRE CONDUIT FROM CONTROLLER TO MAIN LINE FOR SENSOR AND CONTROL WIRES

EXISTING 100mm WATER LINE (DEPTH OF SERVICE TO BE CONFIRMED).

EXISTING PRESSURE: TO BE CONFIRMED

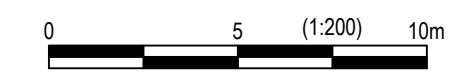
CONFIRM AVAILABLE PRESSURE AND AVAILABLE FLOW PRIOR TO CONSTRUCTION. SYSTEM REQUIRES MINIMUM 70 PSI AND 50 GPM.

LOCATE DRAIN PIT OUTSIDE OF DIKE FOOTPRINT AT LOWEST ELEVATION WITH POSITIVE DRAINAGE IN PIPE

BADLANDS COMMUNITY FACILITY



PLAN
Scale 1:200



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel: 403 270 5600
ibigroup.com

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

IRRIGATION PLAN

Project No. 133142
Group LANDSCAPE

Drawing No.

L-501 0

Rev.

SAVED: 2023/04/03, 9:49 PM

IRRIGATION SCHEDULE * PEAK LANDSCAPE ET(L) = 1.37"/WEEK

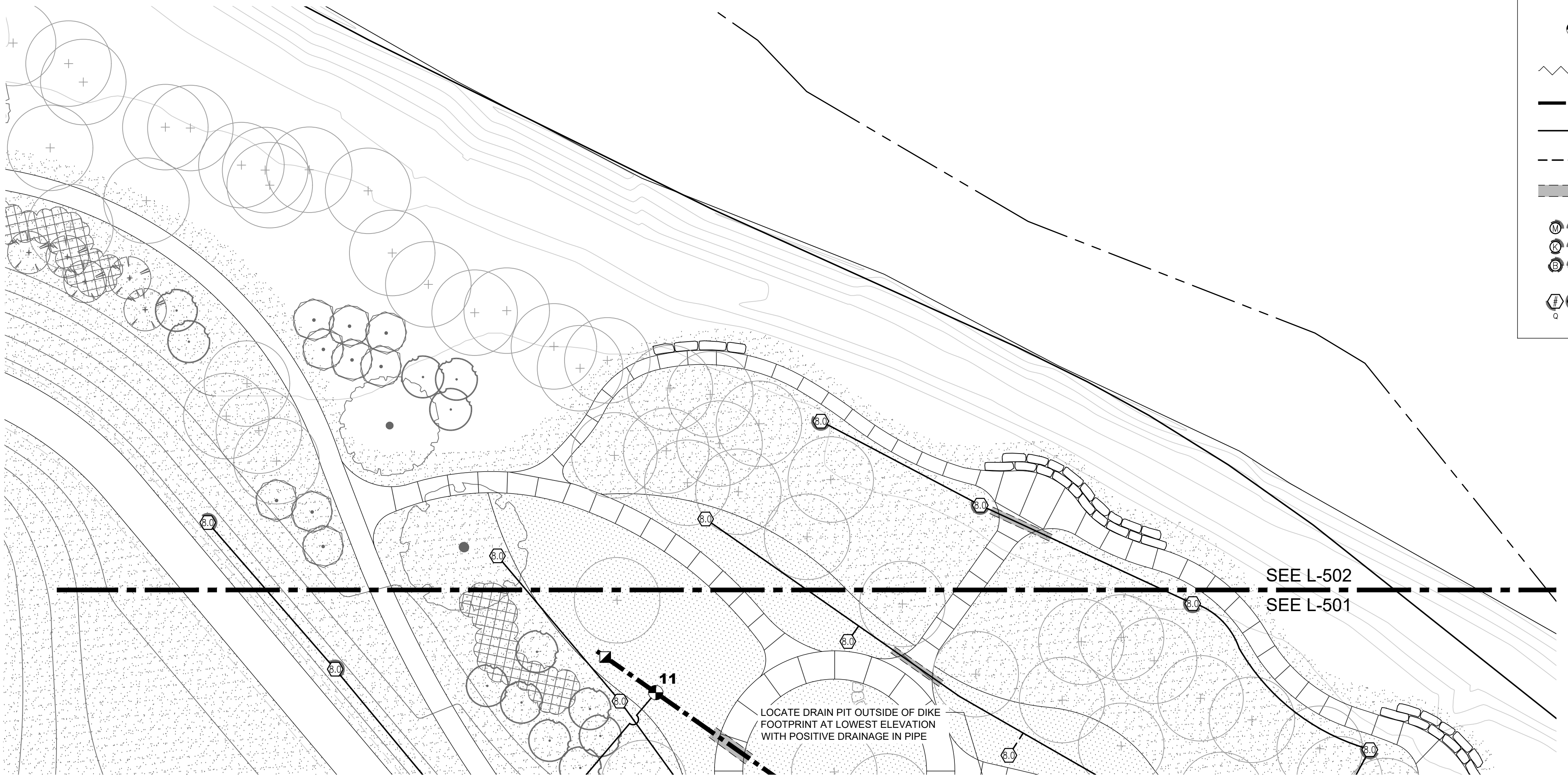
ZONE	VALVE SIZE	SPRINKLER HEAD TYPE	DESIGN PSI	PSI @ POC	FLOW (gpm)	PRECIP. RATE (in/hr)	SLOPE	DAYS OF THE WEEK	NO. OF CYCLES	CYCLE TIME (mins)	SOAK TIME (mins)
1	38mm	TURF ROTOR	50	61	27.9	0.66	4%	EVEN	2	24	30
2	38mm	TURF ROTARY	50	55	33.31	0.35	4%	EVEN	3	33	30
3	38mm	TURF ROTOR	50	69	44.7	0.75	4%	EVEN	2	21	30
4	38mm	TURF ROTOR	50	63	34.24	0.79	33%	EVEN	2	20	30
5	38mm	TURF ROTOR	50	60	25.68	0.52	2%	EVEN	2	31	30
6	38mm	TURF ROTOR	50	62	34.24	0.37	2%	EVEN	3	29	30
7	38mm	TURF ROTOR	50	62	34.24	0.37	2%	ODD	3	29	30
8	38mm	TURF ROTOR	50	64	34.24	0.76	2%	ODD	2	21	30
9	38mm	TURF ROTOR	50	60	17.12	0.40	2%	ODD	2	40	30
10	38mm	TURF ROTOR	50	66	38.52	0.78	33%	ODD	2	21	30
11	38mm	TURF ROTOR	50	65	29.96	0.74	33%	ODD	2	22	30
12	38mm	TURF ROTOR	50	63	28.69	0.65	6%	ODD	2	25	30
13	25mm	TURF ROTARY	50	51	12.06	0.35	10%	ODD	3	33	30

NOTES

- IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CONFORM TO CITY OF CALGARY PARKS STANDARD SPECIFICATIONS FOR LANDSCAPE CONSTRUCTION, CURRENT EDITION, EXCEPT WHERE NOTED ON DRAWING.
- THE IRRIGATION CONTRACTOR SHALL PERFORM A WATER PRESSURE TEST TO ENSURE MINIMUM 60PSI IS AVAILABLE. NOTIFY LANDSCAPE ARCHITECT IF PRESSURE IS NOT ADEQUATE.
- THE IRRIGATION CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES AND SERVICES PRIOR TO CONSTRUCTION.
- THE IRRIGATION PLAN IS DIAGRAMMATIC. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE PROPER SPACING AND COVERAGE. LOCATION OF IRRIGATION HEADS AND LINES ARE TO BE COORDINATED WITH TREE AND SHRUB PLANTING. TREE LOCATIONS TAKE PRECEDENCE.
- USE CAUTION WHEN INSTALLING IRRIGATION LINES NEAR EXISTING TREES. ROOTS ENCOUNTERED MUST BE PRUNED BY AN ISA ARBORIST.
- ALL SPRINKLERS SHALL BE ADJUSTED TO NOT SPRAY EXCESSIVELY ON ROADWAYS, PATHWAYS, BUILDINGS AND REAR LOTS.
- ALL IRRIGATION LINES CROSSING UNDER PATHWAYS TO BE ENCASED IN PVC C-900 SLEEVING THAT IS TWICE THE DIAMETER OF THE IRRIGATION PIPE. INSTALL ADJACENT WIRE CONDUIT WHERE REQUIRED.
- ALL SPRAY HEADS IN SHRUB BEDS ARE TO HAVE A POP-UP HEIGHT OF 300mm.
- HDPE FITTINGS TO CONFORM WITH CITY OF CALGARY SPECIFICATIONS.
- IRRIGATION CONTROLLER CABINET'S LOCATION TO BE INSPECTED AND APPROVED BY TOWN OF DRUMHELLER PRIOR TO INSTALLATION.
- EXISTING VISIBLE IRRIGATION HEADS, VALVES, PIPE TO BE REMOVED. ALL NEW EQUIPMENT TO BE INSTALLED WITH NEW IRRIGATION SYSTEM AND ANY EXISTING UNDERGROUND MAINLINE AND LATERAL PIPE TO BE ABANDONED.
- IRRIGATION PIPE INSTALLED WITHIN DIKE FOOTPRINT TO BE BURIED MAXIMUM 350mm DEPTH TO BOTTOM OF PIPE.

LEGEND

DESCRIPTION	QTY.	DETAIL
PROPERTY LINE		
PWS		
PROPOSED 100mm PARKS WATER SERVICE	1	A/L906
100mm POINT OF CONNECTION c/w DOUBLE CHECK VALVE ASSEMBLY, GATE VALVE SHUTOFF AND VALVE BOX.	1	B/L906 C/L907
WATER METER	1	
HUNTER ACC2 (A2C-1200-SS) CONTROLLER WITH 6-STATION PLUG-IN MODULES C/W ROAM XL REMOTE RECEIVER UNIT.		
• INCLUDE A2C-LTE CELLULAR COMMUNICATION MODULE FOR REMOTE MONITORING AND HIGH-FLOW ALARM NOTIFICATIONS. (REQUIRES SIM CARD & MONTHLY CELLULAR SUBSCRIPTION)	1	C/L906
• CONFIRM CONTROLLER MODEL, LOCATION AND CONFIGURATION WITH TOWN OF DRUMHELLER PARKS DEPARTMENT PRIOR TO INSTALLATION.		
HUNTER SOLAR SYNC SENSOR MOUNTED ON TIMBER POLE	1	
HUNTER FLOW-CLIK SENSOR W/ FCT-200 RECEPTACLE TEE	1	C/L907
MASTER VALVE: 75mm HUNTER IBV BRASS ELECTRIC CONTROL VALVE C/W CARSON 1324-12 VALVE BOX	1	C/L907
100mm BRASS ISOLATION GATE VALVE C/W VALVE BOX, LOCKING LID AND GRAVEL SUMP	3	E/L906
50mm COMPRESSOR CONNECTION IN VALVE BOX	1	D/L906
25mm RAIN BIRD QUICK COUPLER IN VALVE BOX	4	
MANUAL DRAIN VALVE AND DRAIN PIT LOCATED AS REQUIRED AT LOWEST RELATIVE GRADE TO ENSURE POSITIVE GRAVITY DRAINAGE	AS REQ'D	F/L906
RAIN BIRD EFB-CP ELECTRIC CONTROL VALVE C/W BRASS GATE VALVE AND CARSON 1220-12 VALVE BOX. HIDE IN SHRUB/CONIFER BED WHERE POSSIBLE AND AVOID DAMAGE TO EXISTING TREES. VALVE SIZE AS PER IRRIGATION SCHEDULE.	13	G/L906
ELECTRICAL WIRE TO POWER SOURCE. PLACE WIRES IN PVC CONDUIT WHEN ALIGNMENT DOES NOT FOLLOW MAINLINE PIPE.	AS REQ'D	
100mm HDPE PE4710 DR 11 160PSI MAIN LINE	220	
50mm HDPE PE 4710 DR 17 LATERAL PIPE	650	
25mm CSA SERIES 100 POLYETHYLENE LATERAL	310	
PVC SCH 40 SLEEVE C/W ADJACENT WIRE CONDUIT FOR MAINLINE CROSSINGS (EXCEPT AT DIKE CROSSING)	AS REQ'D	
HUNTER MP ROTATOR C/W PRS40 BODY & CHECK VALVE. 300mm POP-UP IN SHRUB BEDS. NOZZLE SIZE AS INDICATED ON DRAWING.		
- MP 1000 = M(90-210), L(210-270), O(360)	42	B/L907
- MP 2000 = K(90-210), G(210-270), R(360)		
- MP 3000 = B(90-210), Y(210-270), G(360)		
RAIN BIRD 6504-PC/FC-SS 06 ROTOR, 100mm POP-UP, STAINLESS STEEL RISER, ADJUSTABLE AND FULL CIRCLE. WITH REMOVABLE SEAL-A-MATIC CHECK VALVE. NOZZLE NUMBER AS NOTED ON DWG	50	B/L907



LOCATE DRAIN PIT OUTSIDE OF DIKE FOOTPRINT AT LOWEST ELEVATION WITH POSITIVE DRAINAGE IN PIPE

SEE L-502
SEE L-501

PLAN
Scale 1:200

CRITICAL ANALYSIS

Generated:	2023-04-03 13:52
P.O.C. NUMBER: 01	
Water Source Information:	
FLOW AVAILABLE	
Point of Connection Size:	100
Flow Available:	199.8 GPM
PRESSURE AVAILABLE	
Static Pressure at POC:	70 PSI
Pressure Available:	70 PSI
DESIGN ANALYSIS	
Maximum Station Flow:	44.7 GPM
Flow Available at POC:	199.8 GPM
Residual Flow Available:	155.1 GPM
Critical Station:	3
Design Pressure:	50 PSI
Friction Loss:	3.23 PSI
Fittings Loss:	0.32 PSI
Elevation Loss:	0 PSI
Loss through Valve:	0.94 PSI
Pressure Req. at Critical Station:	54.5 PSI
Loss for Fittings:	0.54 PSI
Loss for Main Line:	5.35 PSI
Loss for POC to Valve Elevation:	0.71 PSI
Loss for Backflow:	5.29 PSI
Loss for Master Valve:	2.5 PSI
Critical Station Pressure at POC:	68.9 PSI
Pressure Available:	70 PSI
Residual Pressure Available:	1.12 PSI



ARCADIS | IBI GROUP
ARCADIS IBI GROUP
3rd Floor - 227 11 Avenue SW
Calgary AB T2K 1R9 Canada
tel 403 270 5600
ibigroup.com



Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

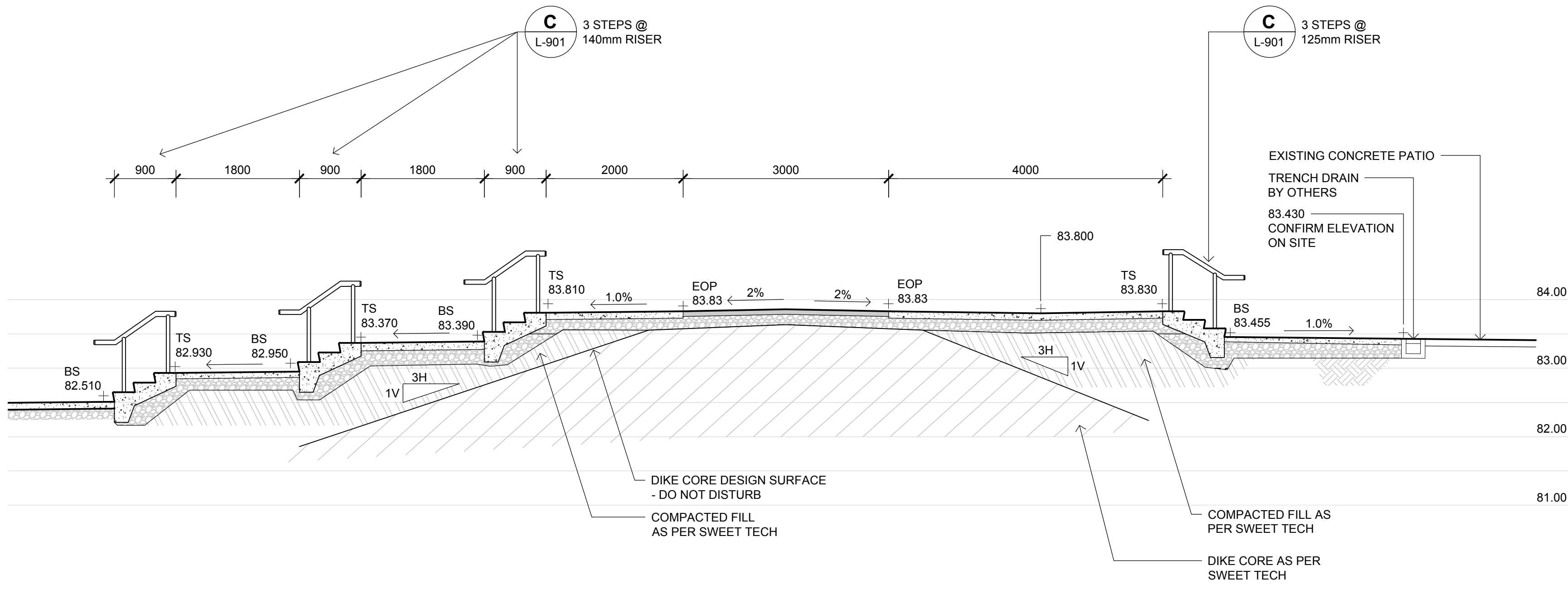
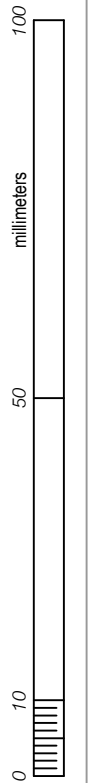
Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER
DOWNTOWN DIKE

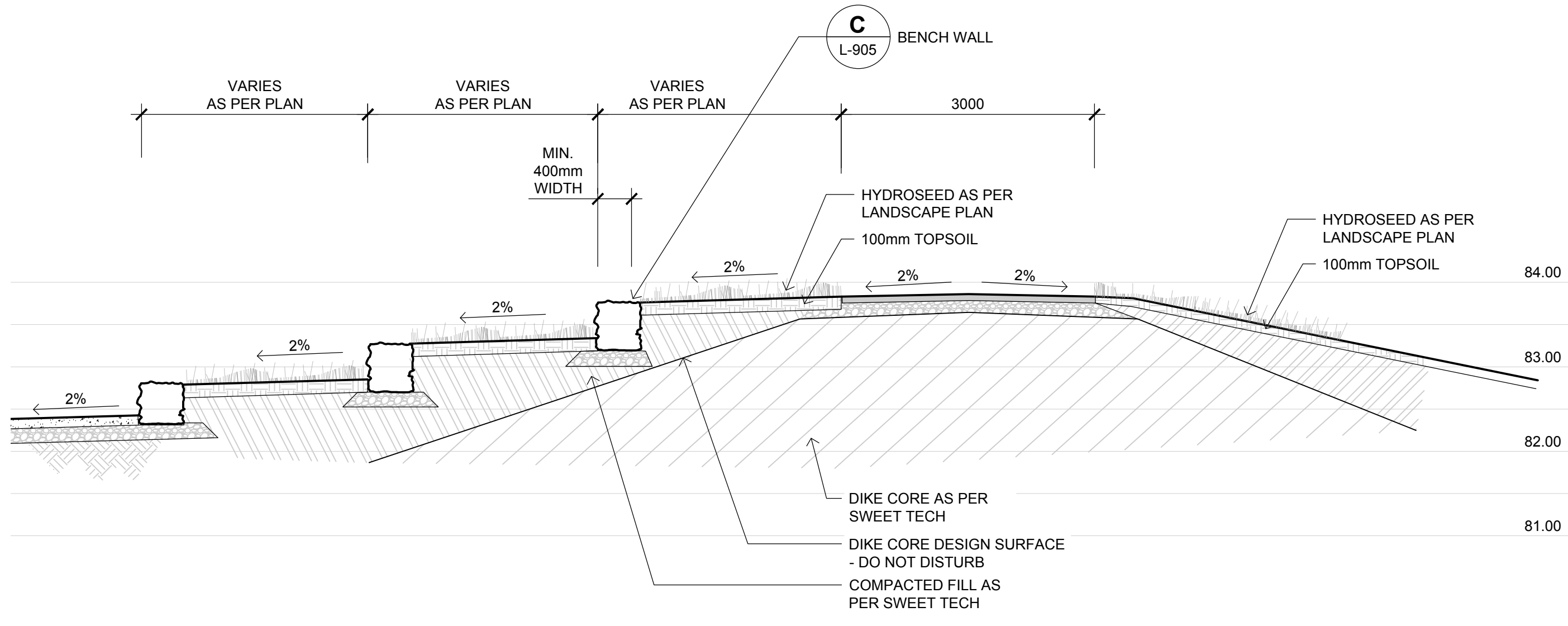
IRRIGATION PLAN

Project No: **133142** Drawing No: **L-502** Rev: **0**

Group: **LANDSCAPE**



A STAIRS AT DIKE
 L-801 1:50 SECTION



B AMPHITHEATRE AT DIKE
 L-801 1:50 SECTION



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

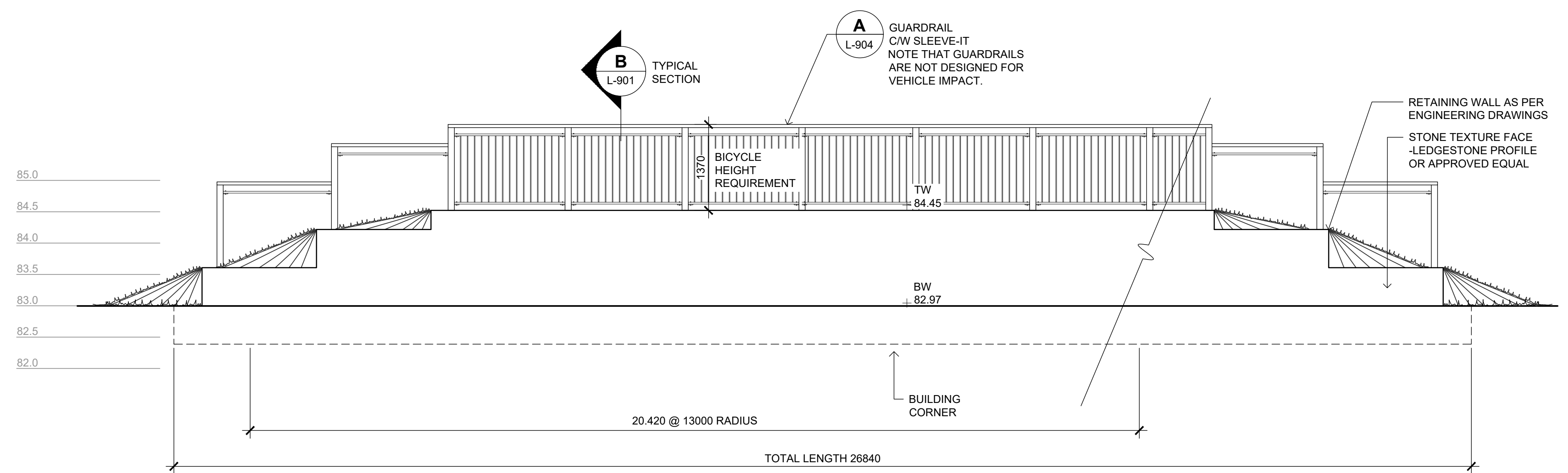
The Alberta Association of Landscape Architects
 Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

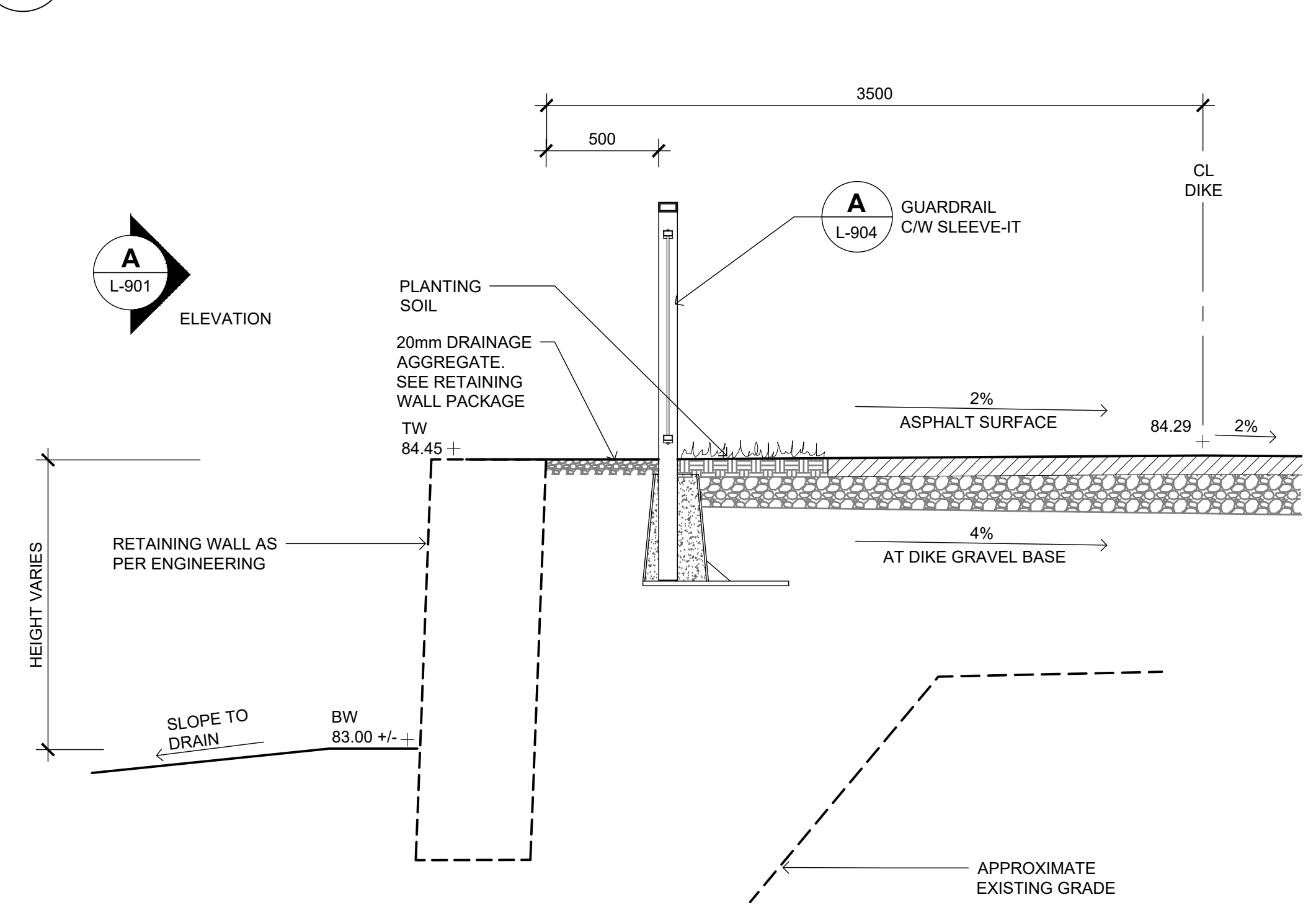
TOWN OF DRUMHELLER DOWNTOWN DIKE	
LANDSCAPE SECTIONS	
Project No. 133142	Drawing No. L-801
Group LANDSCAPE	Rev. 0

- NOTES**
- REFER TO SWEETECH RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

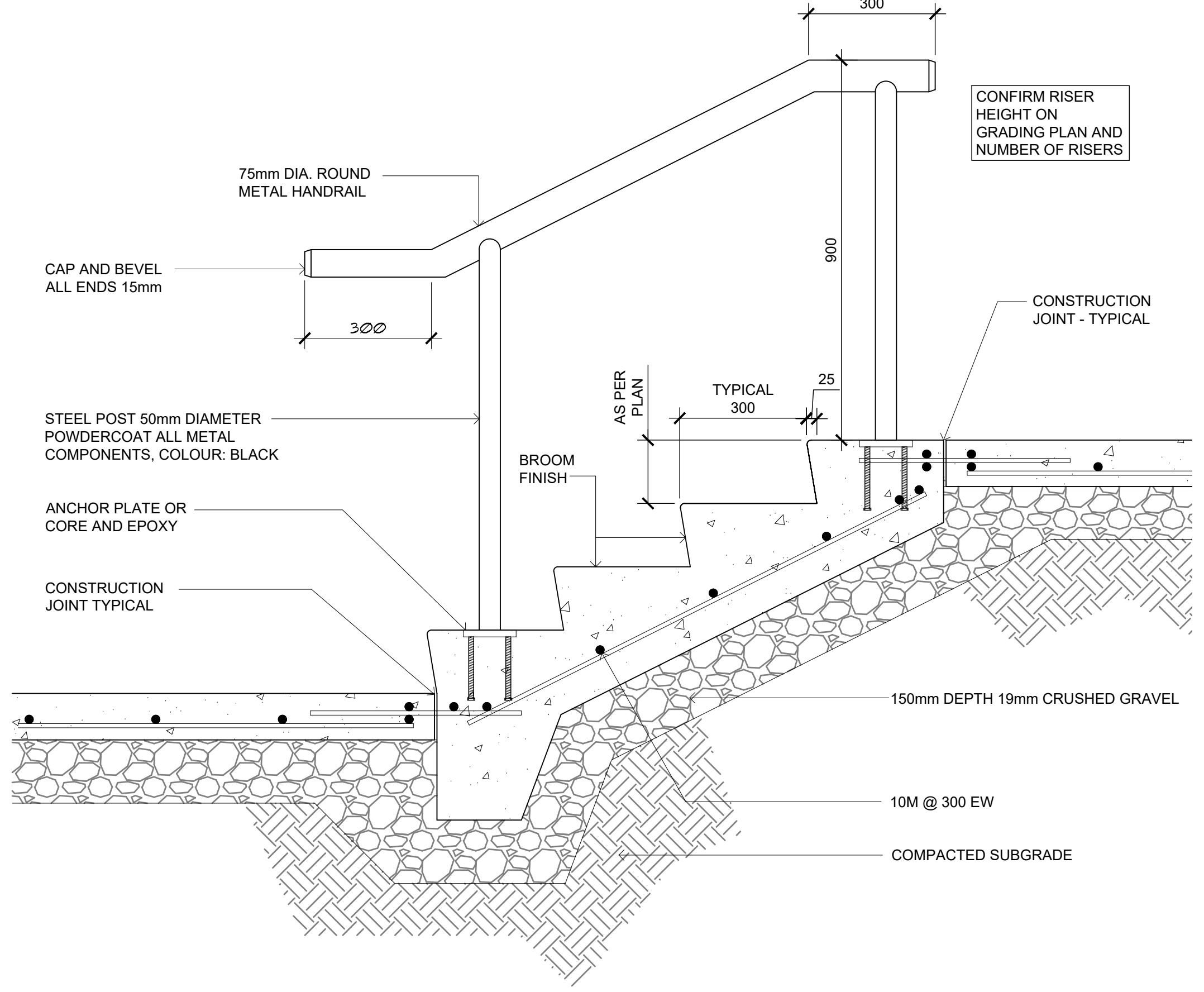


- REFER TO DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN DRAWING PACKAGE FOR DETAILS
- ALL RETAINING WALLS, DRAINAGE LAYER, AND REINFORCED BACKFILL TO BE CERTIFIED BY A PROFESSIONAL ENGINEER AND GEOTECHNICAL CONSULTANT PRIOR TO CONSTRUCTION.
- IF SITE CONDITIONS OR WALL HEIGHTS VARY FROM TYPICAL SECTIONS, THE RETAINING WALL DETAIL IS TO BE REVIEWED, PRIOR TO CONSTRUCTION.
- ALL PRECAST CONCRETE BLOCKS TO HAVE STONE TEXTURED FACE. LEDGESTONE PROFILE OR APPROVED EQUAL.
- GUARDRAILS ARE DESIGNED FOR PEDESTRIAN/ BICYCLIST SAFETY AND NOT DESIGNED FOR VEHICLE IMPACT.

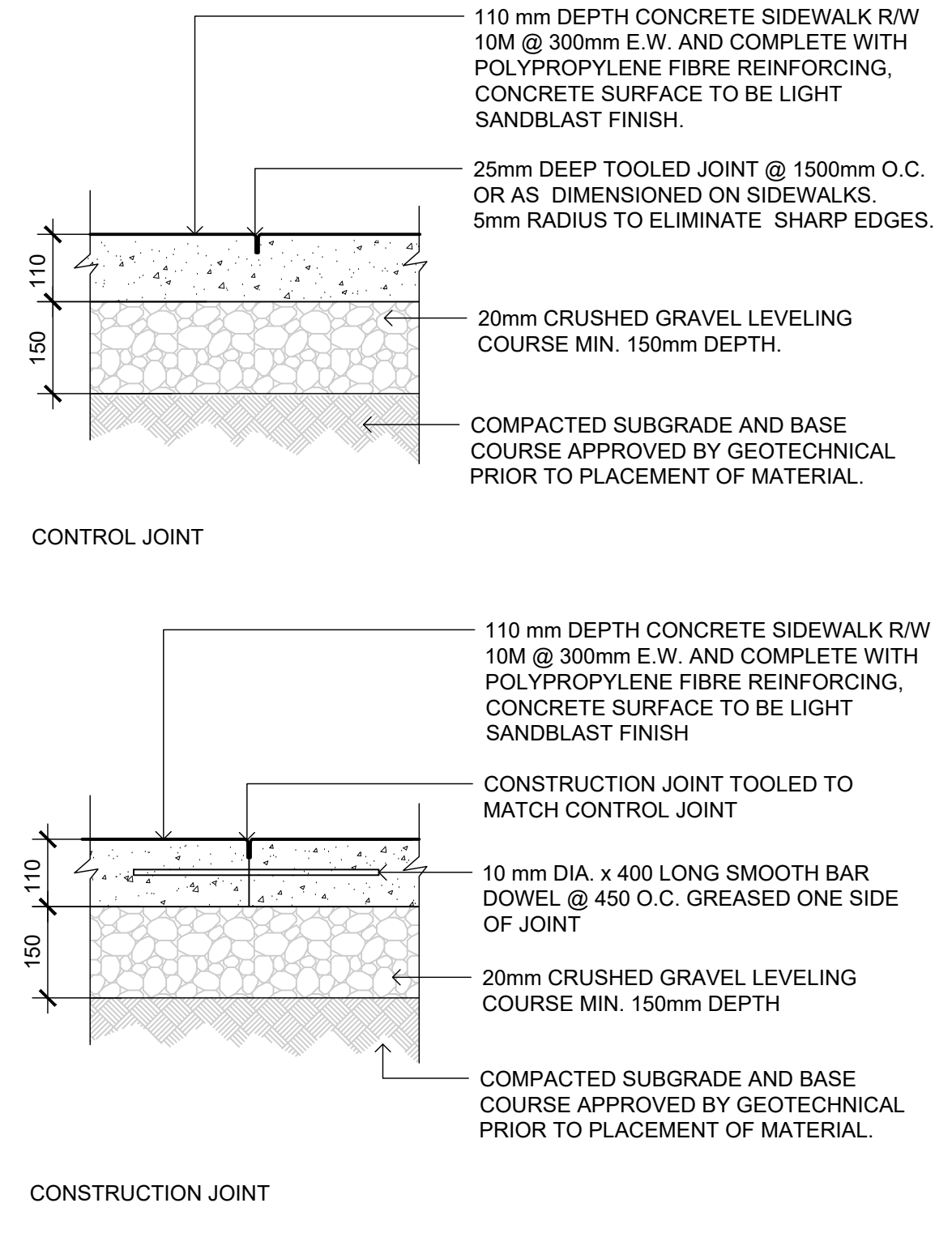
A AQUAPLEX RETAINING WALL
 L-901 1:50 EXPANDED ELEVATION



B TYPICAL WALL DETAIL AT AQUAPLEX
 L-901 1:25 SECTION



C TYPICAL CONCRETE STAIRS AND HANDRAIL
 L-901 1:10



D CONCRETE SIDEWALK
 L-901 SCALE 1:10



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel 403 270 5600
 ibigroup.com

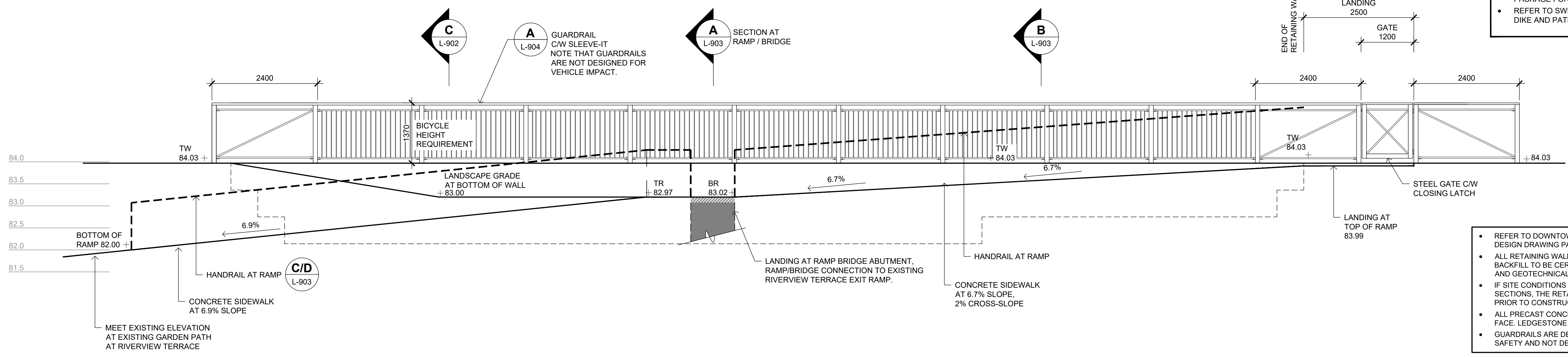
The Alberta Association of Landscape Architects
 Ernie J Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

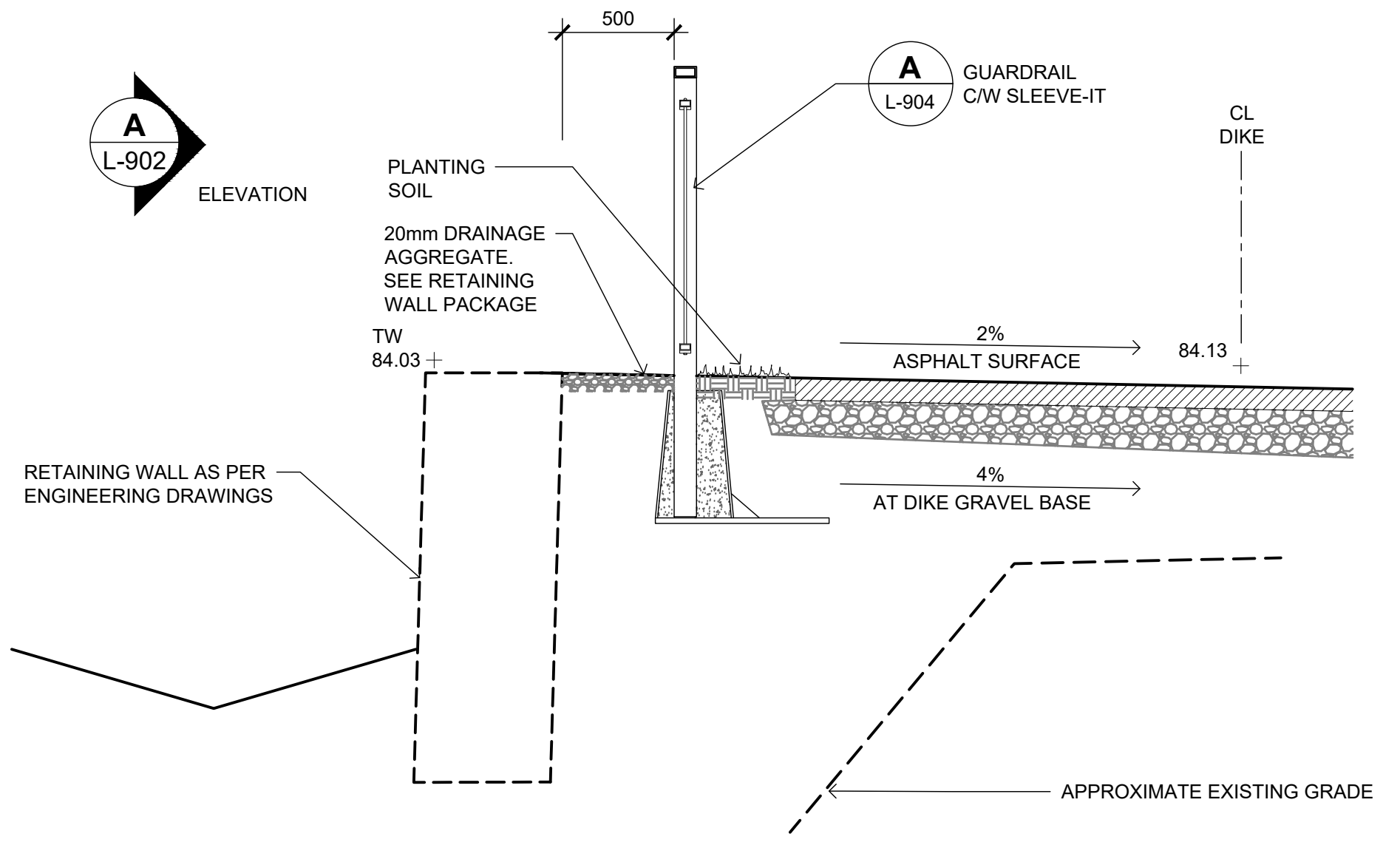
TOWN OF DRUMHELLER DOWNTOWN DIKE			
LANDSCAPE DETAILS			
Project No.	133142	Drawing No.	L-901
Group	LANDSCAPE	Rev.	0

- NOTES**
- REFER TO SWEETECH RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

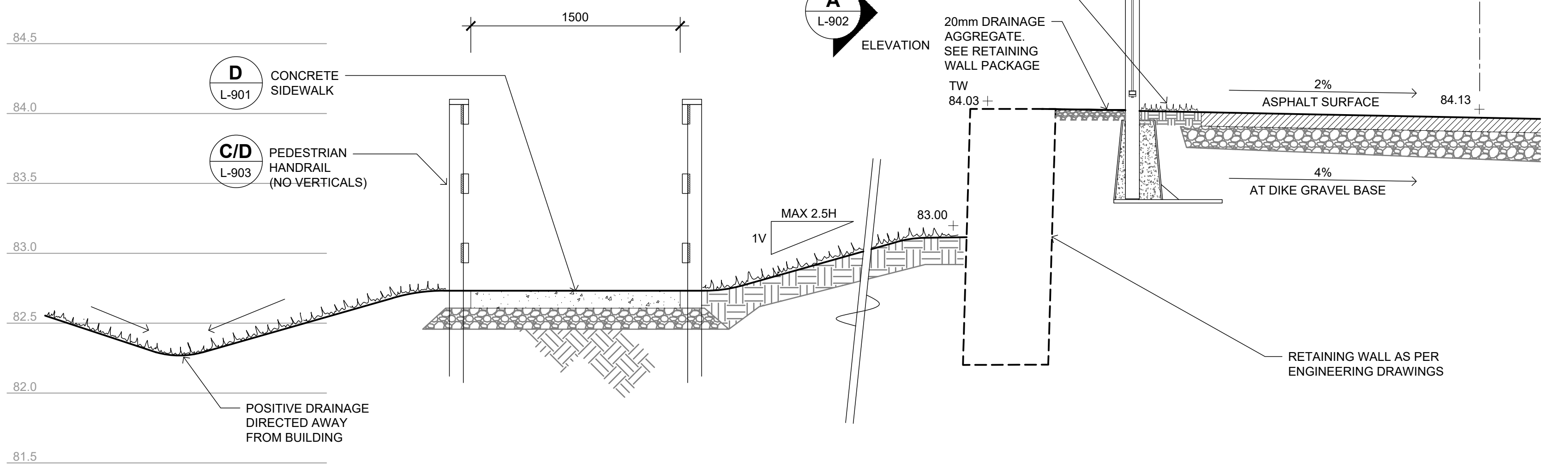


- REFER TO DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN DRAWING PACKAGE FOR DETAILS
- ALL RETAINING WALLS, DRAINAGE LAYER, AND REINFORCED BACKFILL TO BE CERTIFIED BY A PROFESSIONAL ENGINEER AND GEOTECHNICAL CONSULTANT PRIOR TO CONSTRUCTION.
- IF SITE CONDITIONS OR WALL HEIGHTS VARY FROM TYPICAL SECTIONS, THE RETAINING WALL DETAIL IS TO BE REVIEWED, PRIOR TO CONSTRUCTION.
- ALL PRECAST CONCRETE BLOCKS TO HAVE STONE TEXTURED FACE, LEDGESTONE PROFILE OR APPROVED EQUAL.
- GUARDRAILS ARE DESIGNED FOR PEDESTRIAN/ BICYCLIST SAFETY AND NOT DESIGNED FOR VEHICLE IMPACT.

A RIVERVIEW TERRACE RETAINING WALL
 L-902 1:50 EXPANDED ELEVATION



B TYPICAL WALL DETAIL AT RIVERVIEW TERRACE
 L-902 1:25 SECTION



C WALL AND RAMP AT RIVERVIEW TERRACE
 L-902 1:25 SECTION



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

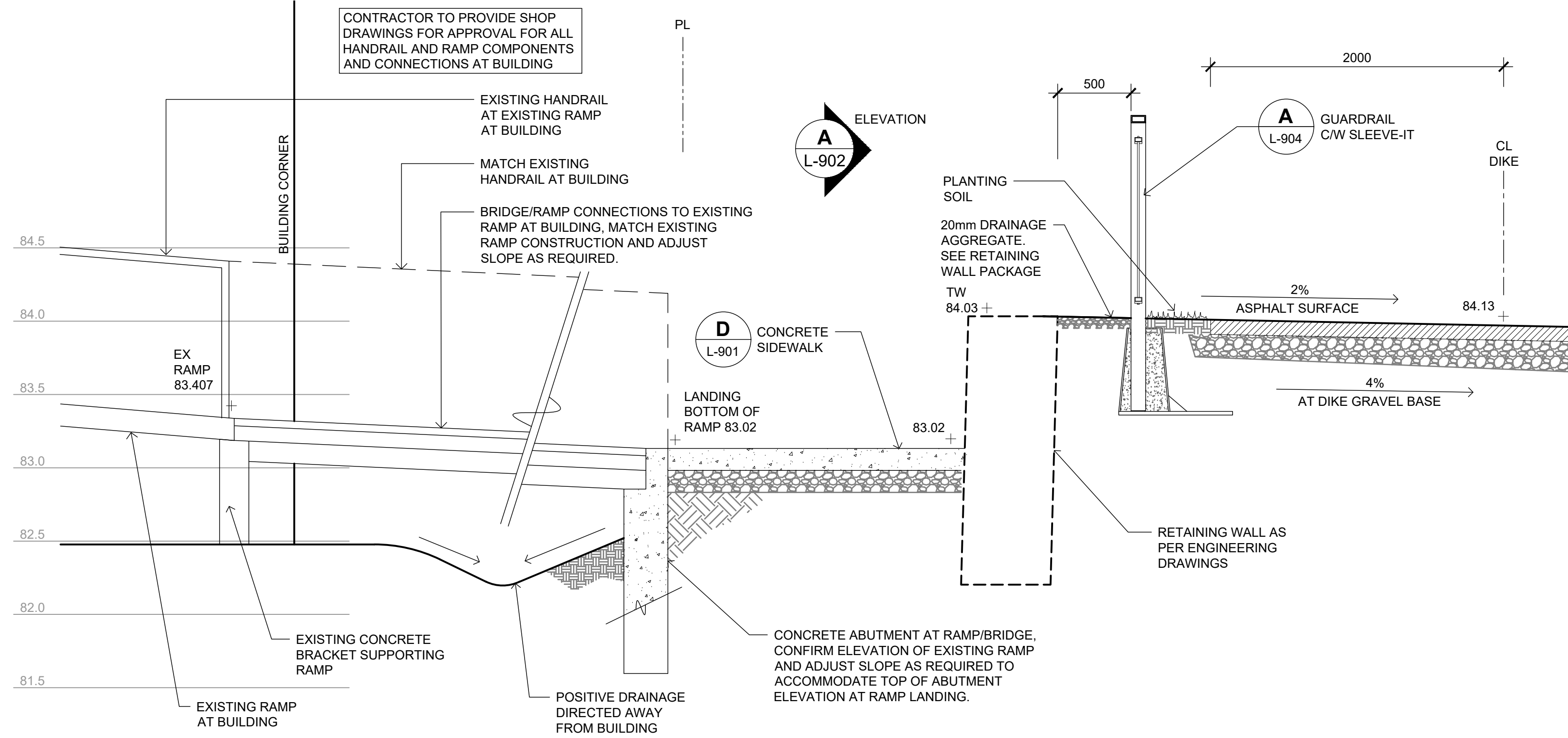
The Alberta Association of Landscape Architects
 Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

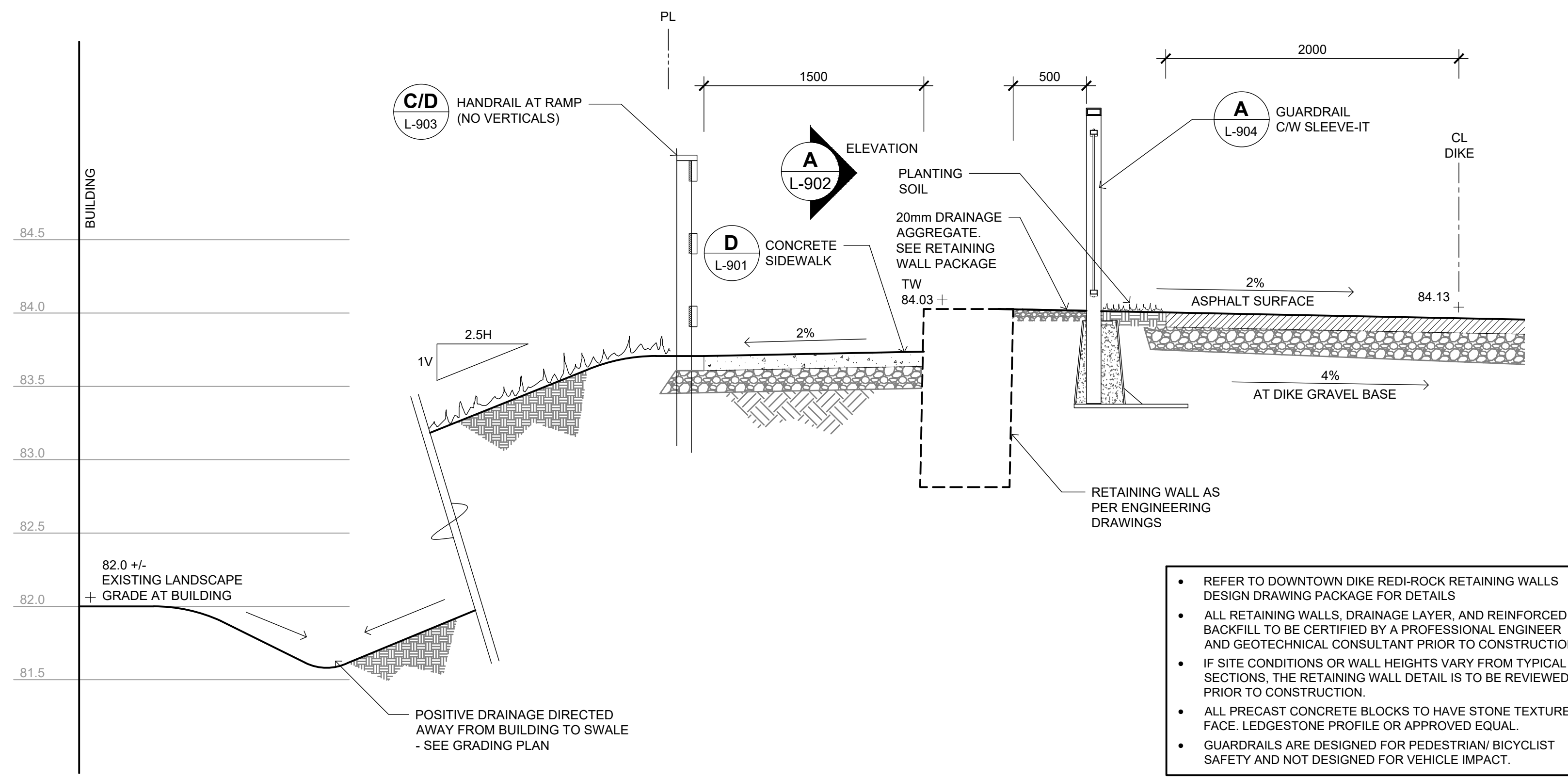
Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER DOWNTOWN DIKE			
LANDSCAPE DETAILS			
Project No.	133142	Drawing No.	L-902
Group	LANDSCAPE	Rev.	0

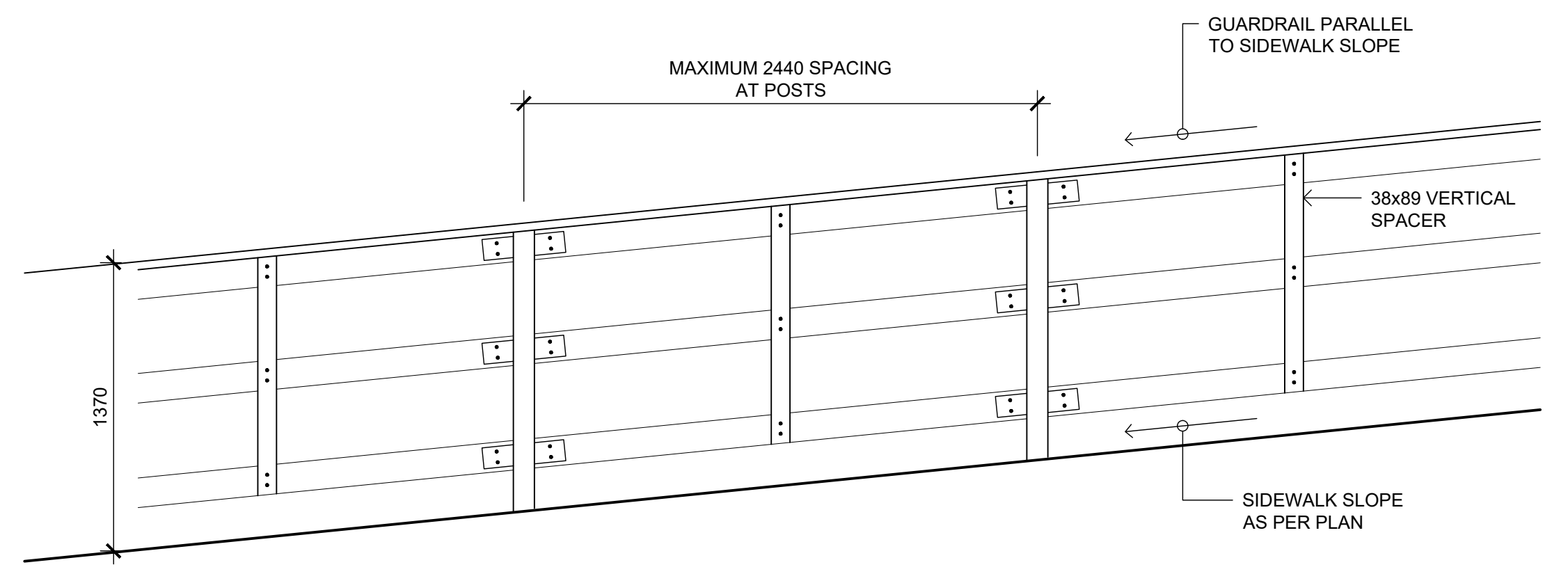
1:25 SECTION
 Paper Size = ANSI D
 At Full Size, this border measures 520 mm x 800 mm
 100
 50
 0
 millimeters



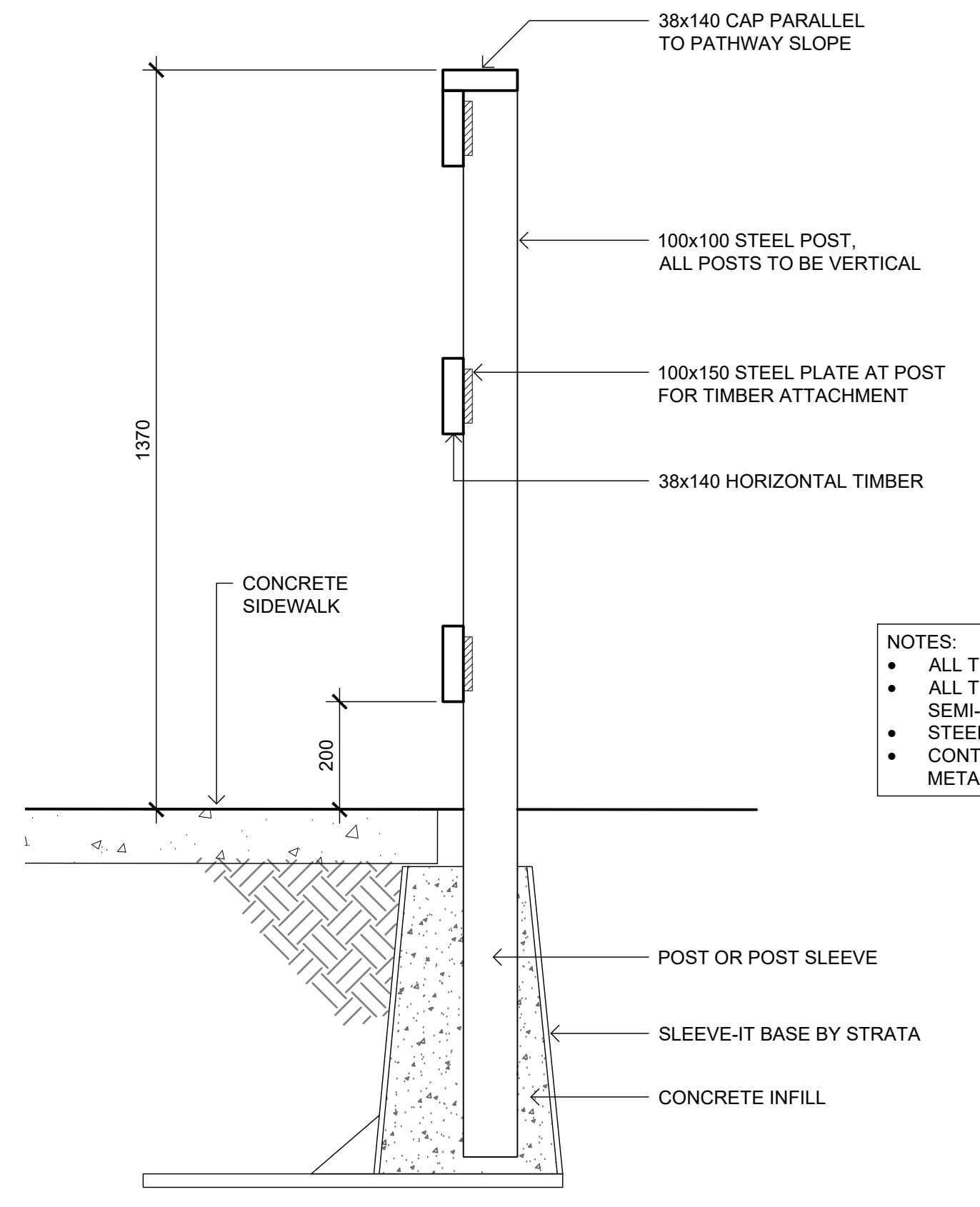
A WALL AND RAMP AT RIVERVIEW TERRACE
L-903 1:25 SECTION



B WALL AND RAMP AT RIVERVIEW TERRACE
L-903 1:25 SECTION



C HANDRAIL AT RAMP
L-903 1:25 ELEVATION



- NOTES:**
- ALL TIMBER TO BE PRESSURE TREATED
 - ALL TIMBER FINISH TO BE TWO COATS
 - SEMI-TRANSPARENT STAIN, COLOUR MEDIUM GREY
 - STEEL POSTS, POWDER COAT FINISH, COLOUR BLACK
 - CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL METAL COMPONENTS.

D HANDRAIL AT RAMP
L-903 1:10 SECTION

- NOTES**
- REFER TO SWEETTECH RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
 - REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

- REFER TO DOWNTOWN DIKE REDI-ROCK RETAINING WALLS DESIGN DRAWING PACKAGE FOR DETAILS
- ALL RETAINING WALLS, DRAINAGE LAYER, AND REINFORCED BACKFILL TO BE CERTIFIED BY A PROFESSIONAL ENGINEER AND GEOTECHNICAL CONSULTANT PRIOR TO CONSTRUCTION.
- IF SITE CONDITIONS OR WALL HEIGHTS VARY FROM TYPICAL SECTIONS, THE RETAINING WALL DETAIL IS TO BE REVIEWED, PRIOR TO CONSTRUCTION.
- ALL PRECAST CONCRETE BLOCKS TO HAVE STONE TEXTURED FACE. LEDGESTONE PROFILE OR APPROVED EQUAL.
- GUARDRAILS ARE DESIGNED FOR PEDESTRIAN/ BICYCLIST SAFETY AND NOT DESIGNED FOR VEHICLE IMPACT.



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel 403 270 5600
 ibigroup.com

The Alberta Association of Landscape Architects
 Ernie Webster
 Principal

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER DOWNTOWN DIKE

LANDSCAPE DETAILS

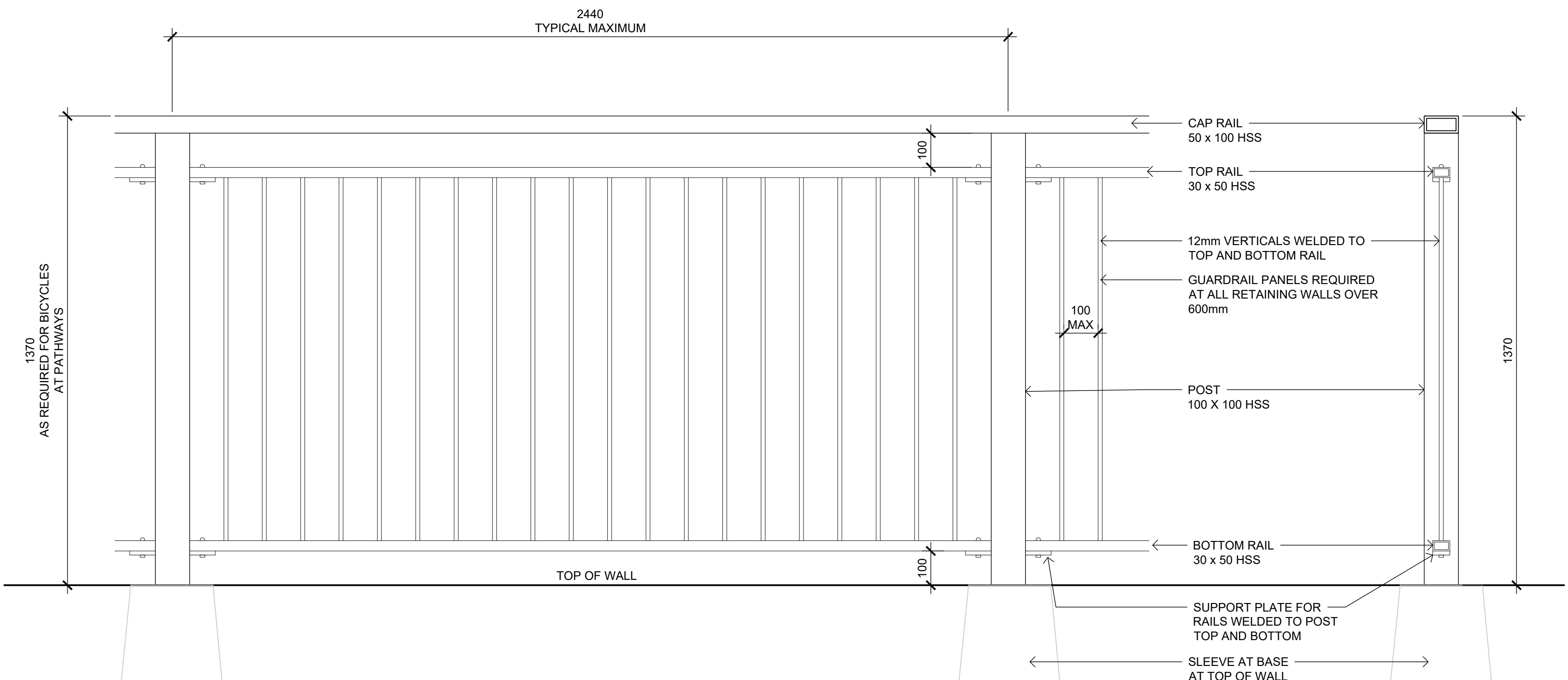
Project No. **133142** Drawing No. **L-903** Rev. **0**

Group **LANDSCAPE**

1:10
 Paper Size = ANSI D
 At Full Size, this border measures 520 mm x 800 mm
 170
 millimeters
 50
 10
 0

NOTES

- REFER TO SWEETTECH RETAINING WALL DESIGN PACKAGE FOR ALL RETAINING WALL DETAILS.
- REFER TO SWEETTECH'S DESIGN DRAWINGS FOR DIKE AND PATHWAY CONSTRUCTION DETAILS.

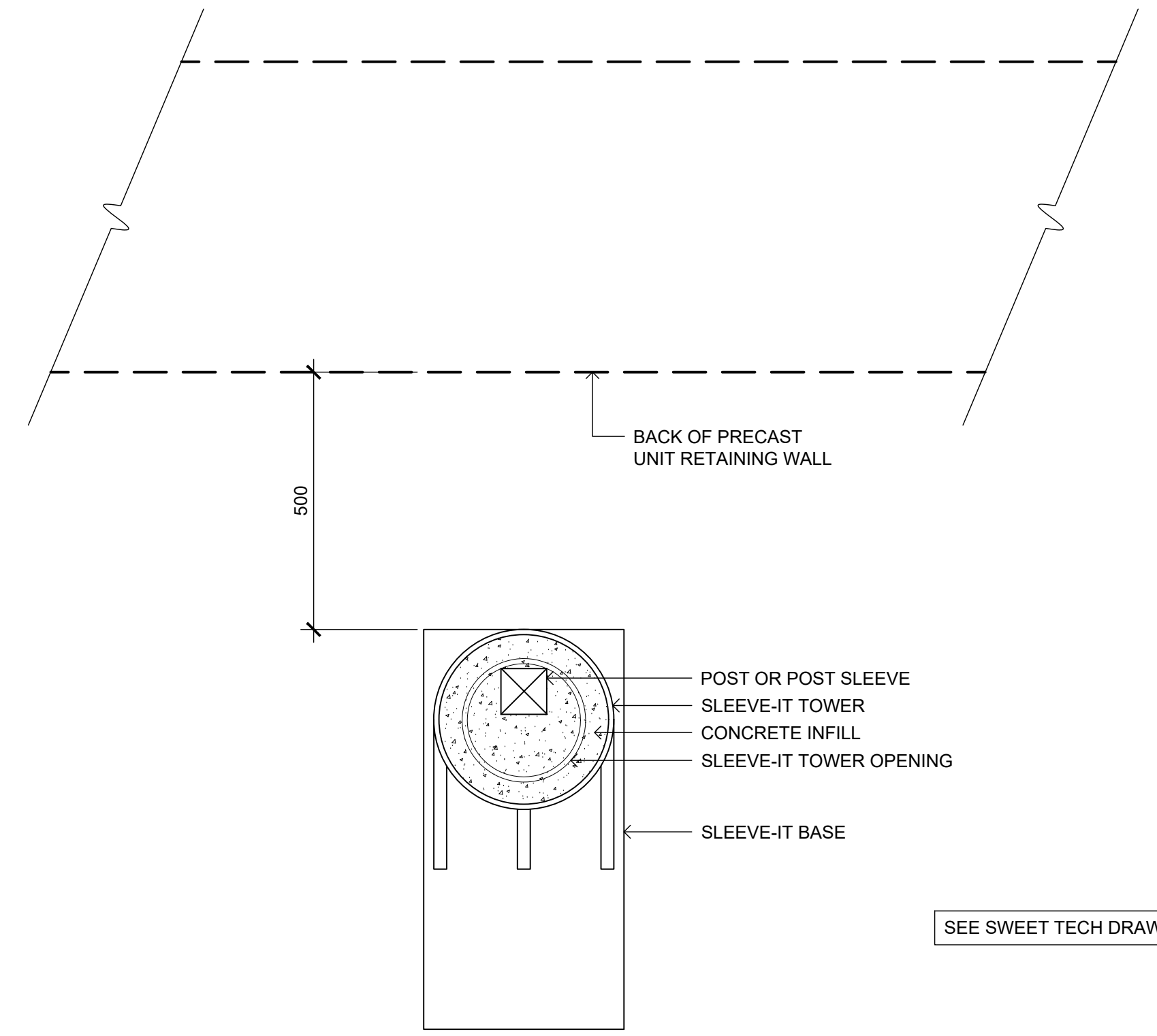
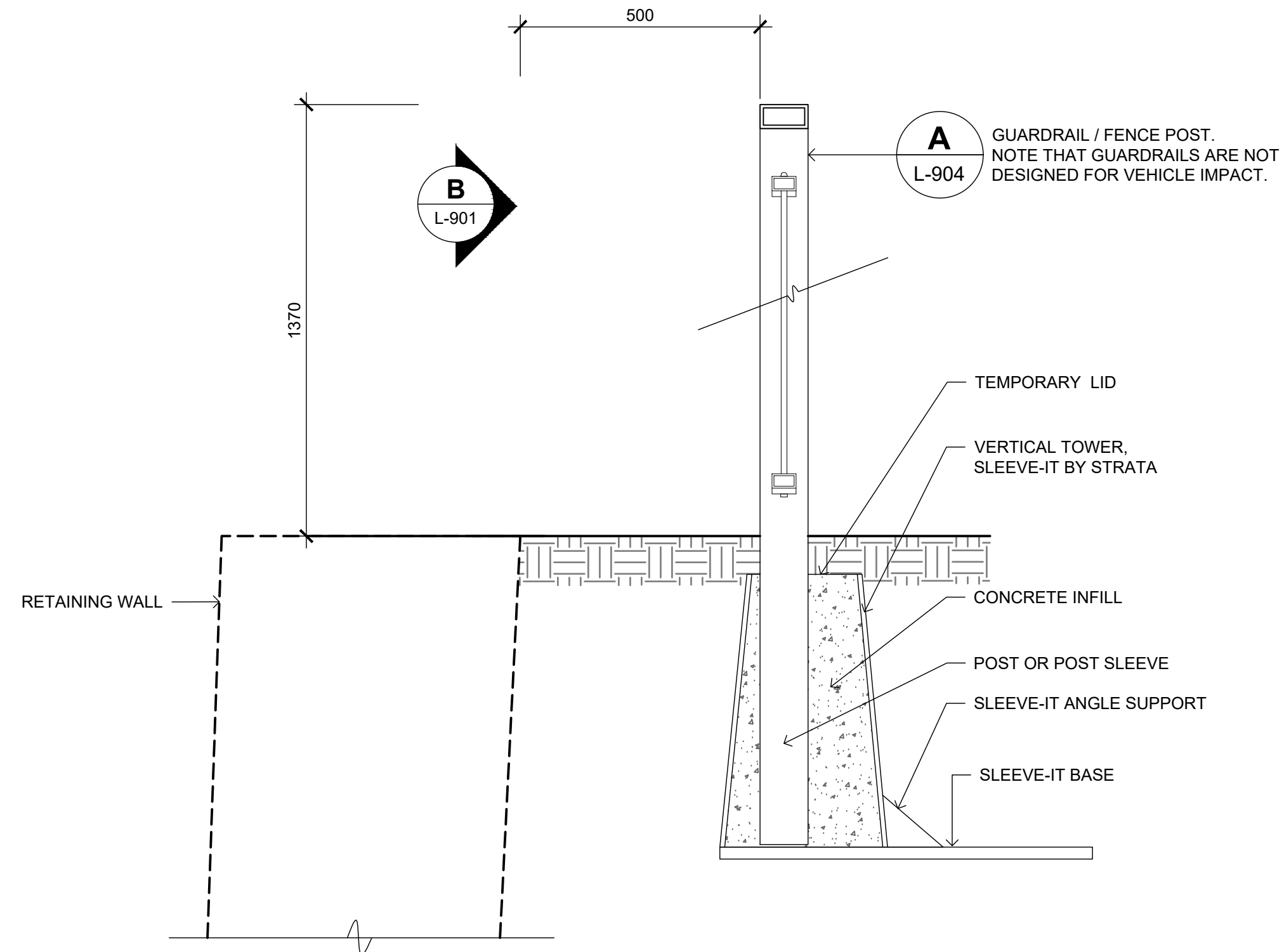


NOTES:

- ALL STEEL, POWDER COAT FINISH, COLOUR BLACK
- CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR ALL METAL COMPONENTS.

A PEDESTRIAN GUARDRAIL AT WALLS OVER 1.0m HT.
L-904 1:10 ELEVATION

B PEDESTRIAN GUARDRAIL AT WALLS OVER 1.0m HT.
L-904 1:10 SECTION



C GUARDRAIL AT RETAINING WALL OVER 1.0 m HT.
L-904 SCALE 1:10



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

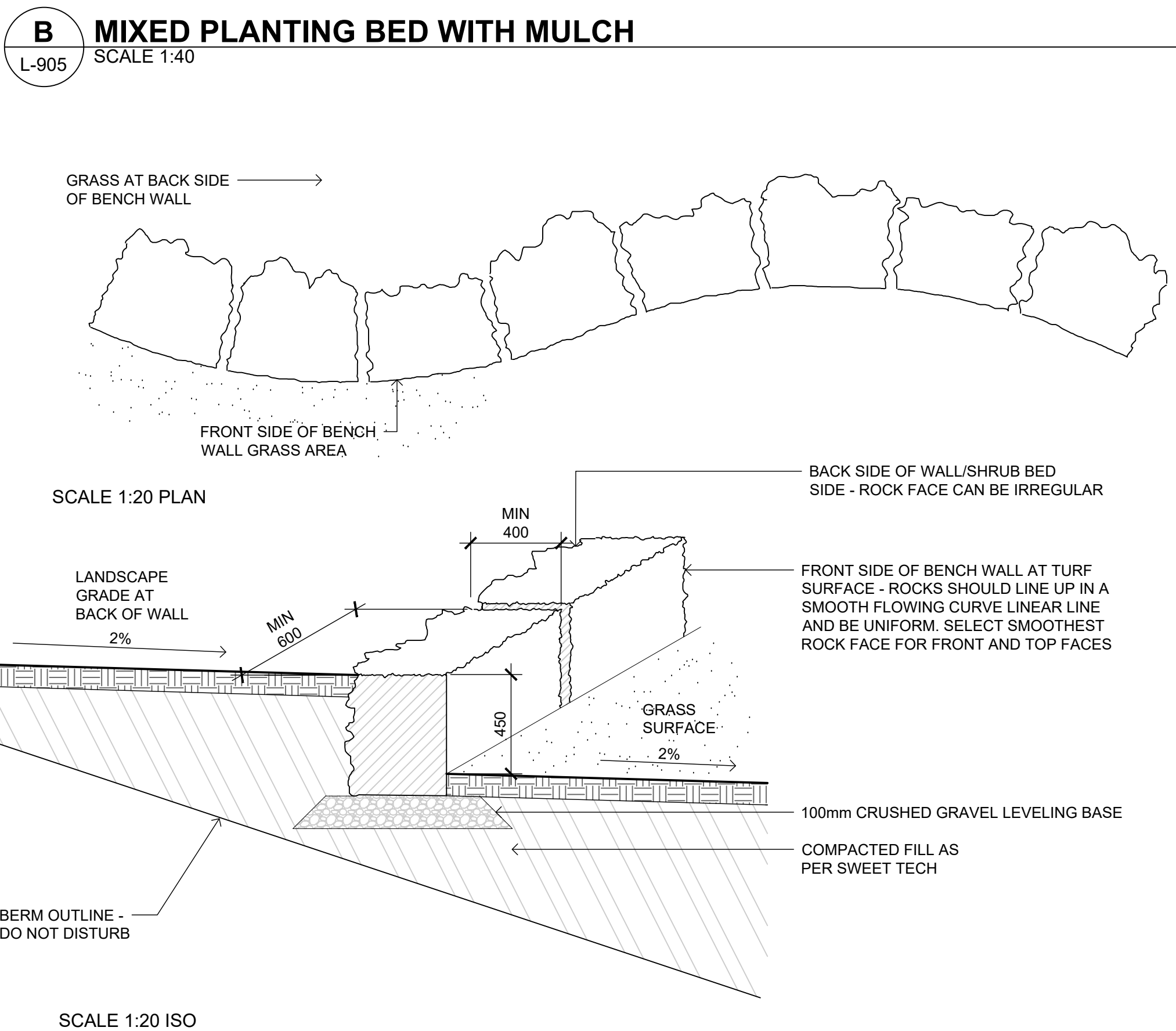
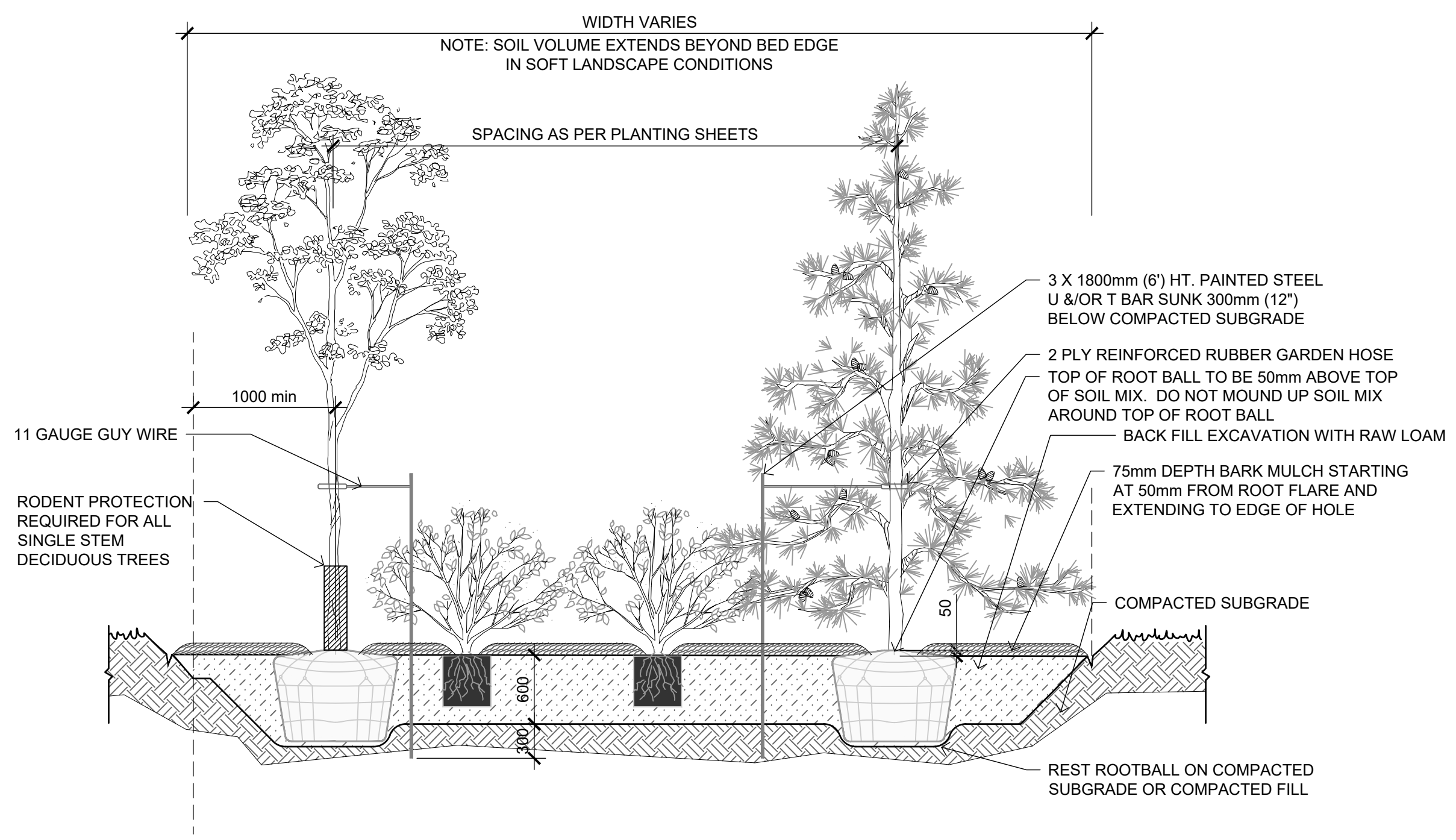
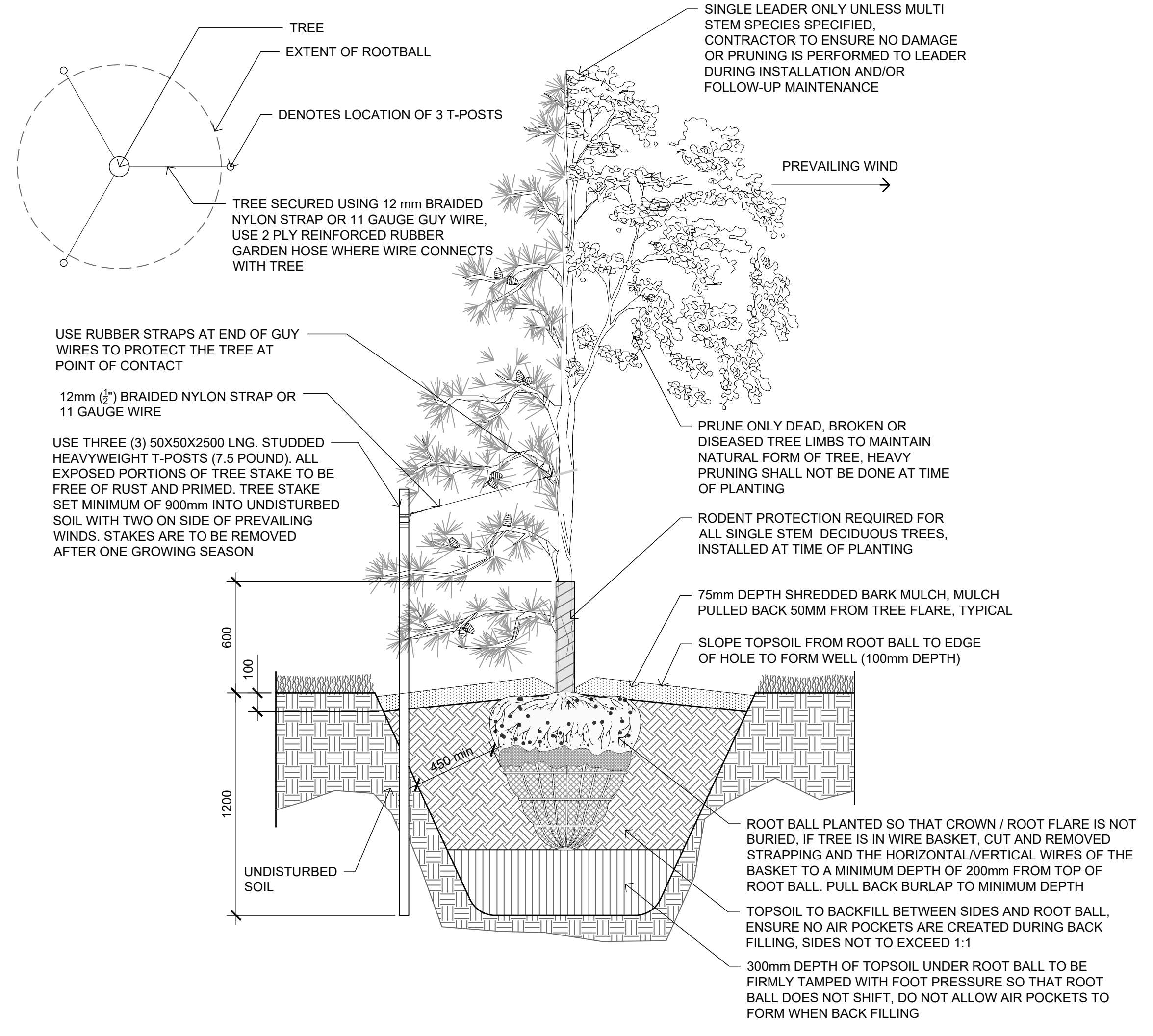
Seal
The Alberta Association of Landscape Architects

 Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER DOWNTOWN DIKE			
LANDSCAPE DETAILS			
Project No.	133142	Drawing No.	L-904
Group	LANDSCAPE	Rev.	0



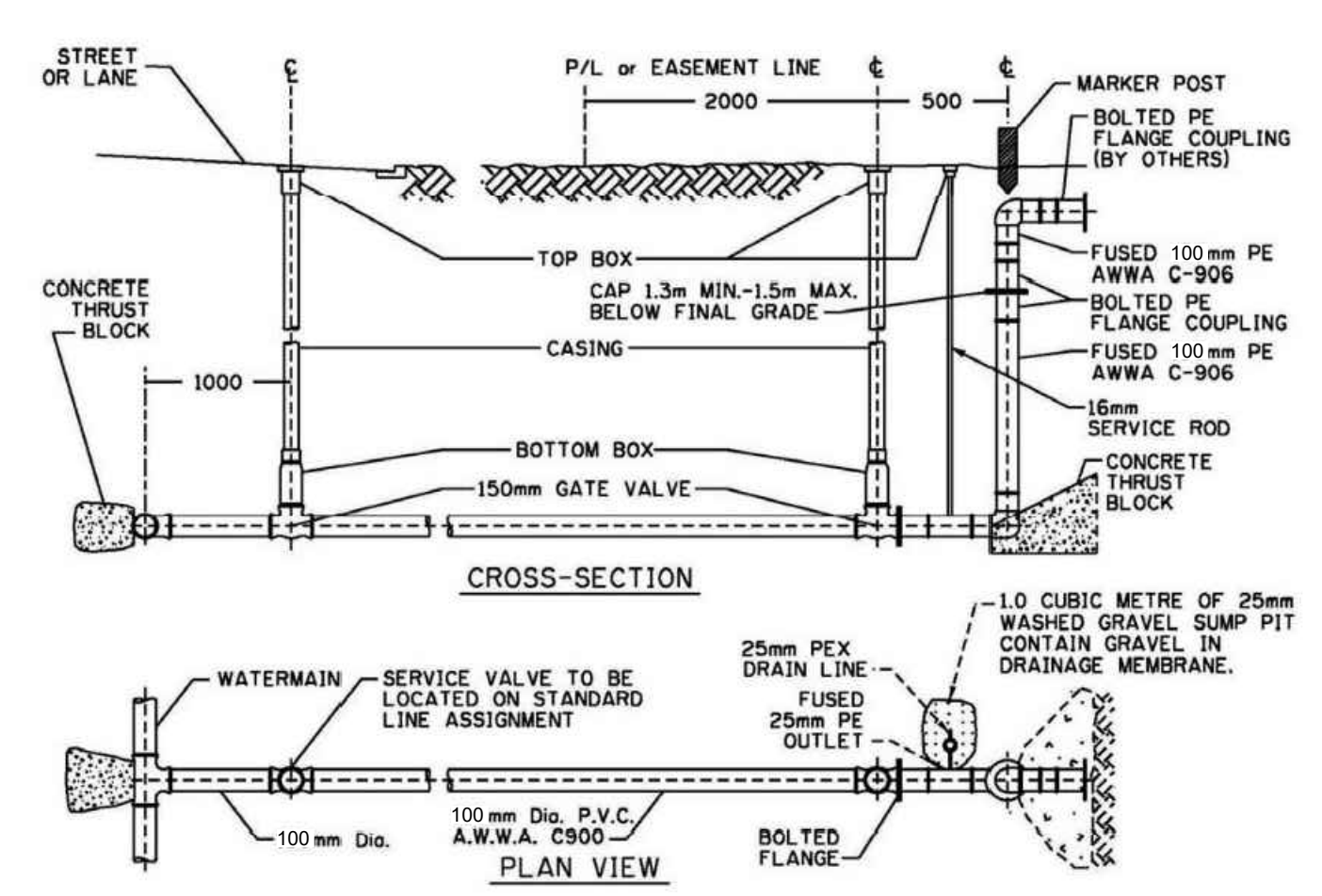
ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2K 1R9 Canada
 tel: 403 270 5600
 ibigroup.com

The Alberta Association of Landscape Architects
 Ernie J. Webster

Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER

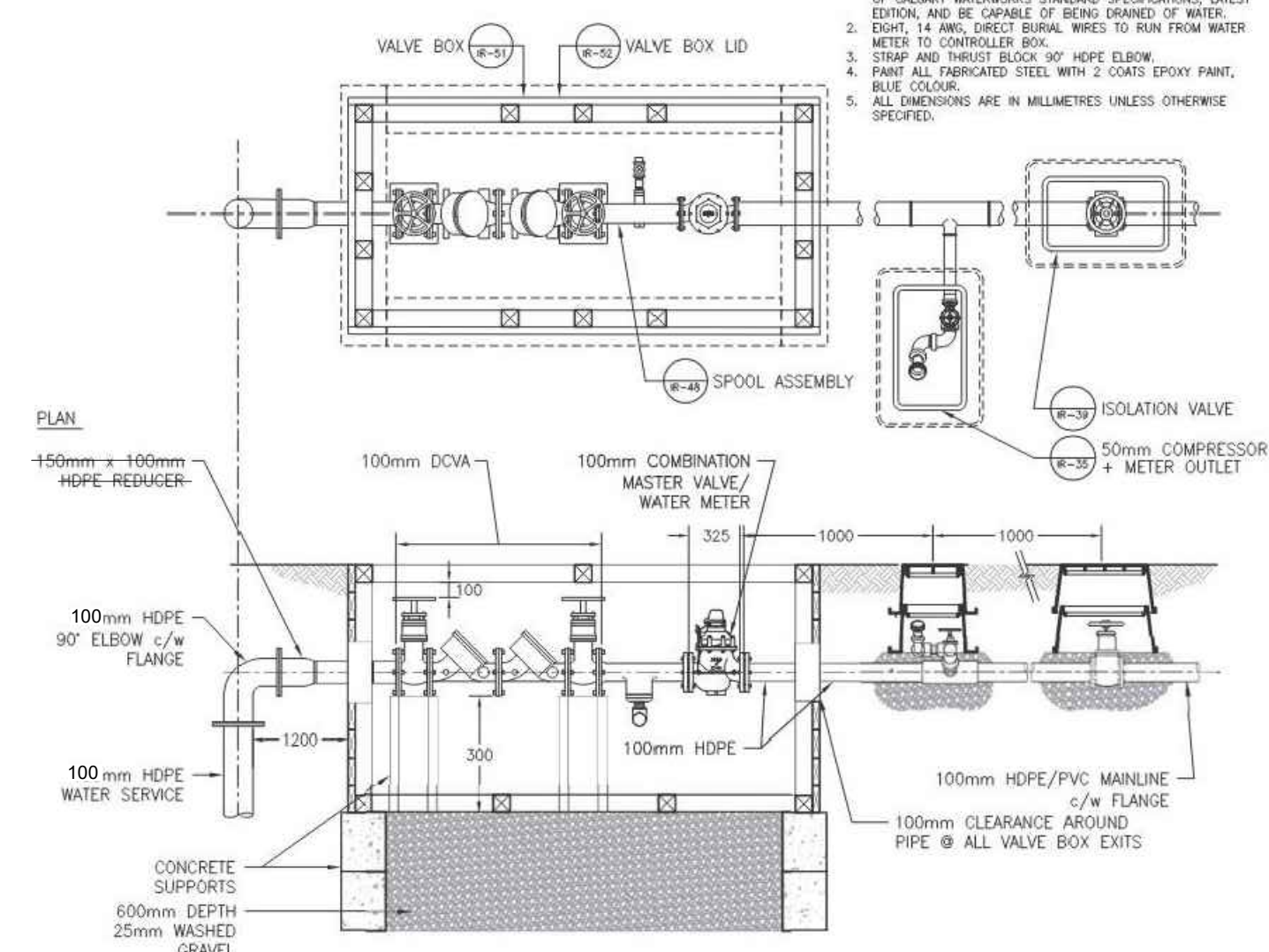
Rev	Date	Des	Dwn	Chk	Description

TOWN OF DRUMHELLER DOWNTOWN DIKE			
LANDSCAPE DETAILS			
Project No.	133142	Drawing No.	L-905
Group	LANDSCAPE	Rev.	0



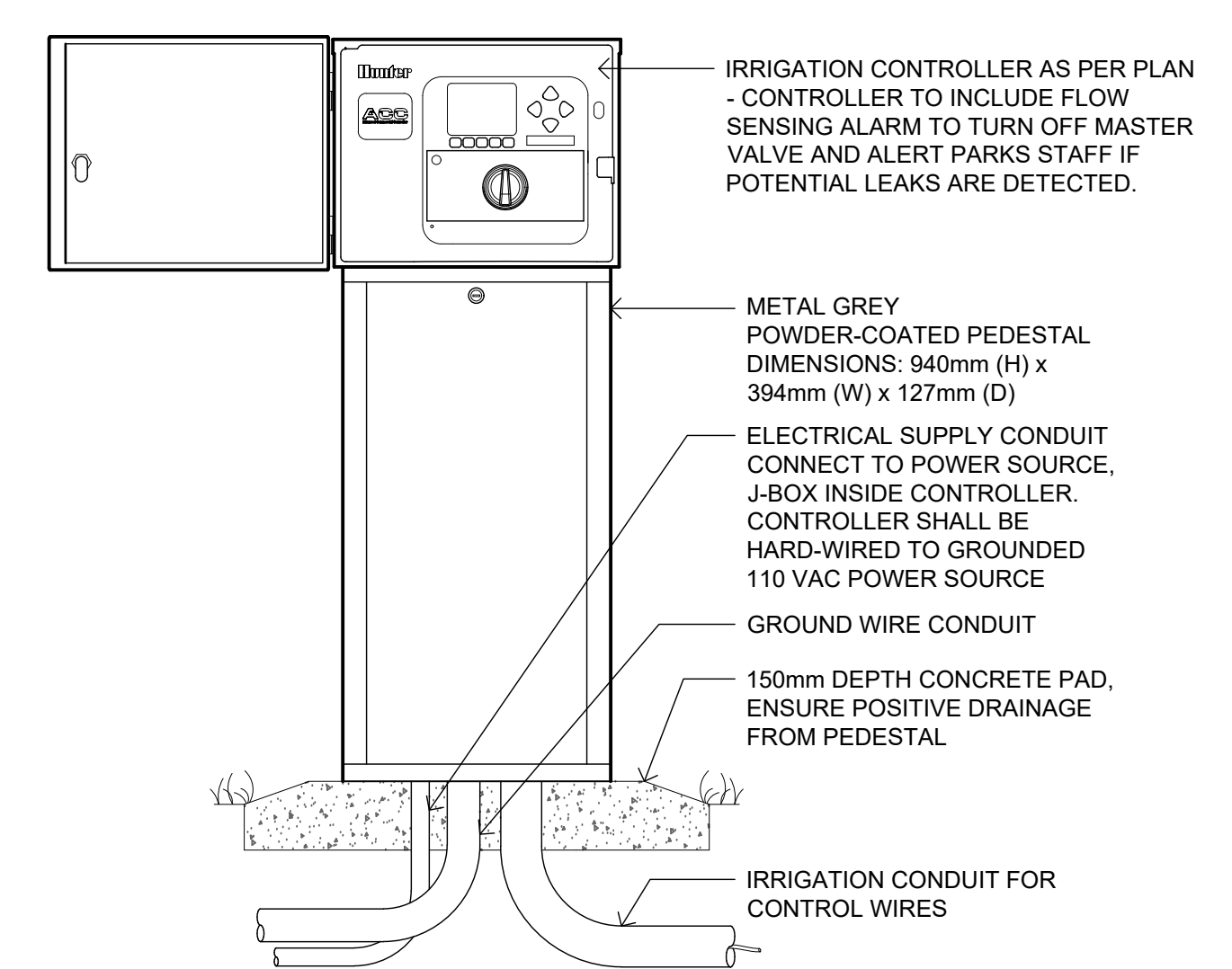
NOTES:
 1. Parks Water Service shall be installed in accordance to the City of Calgary Standard Specifications Waterworks Construction.
 2. For irrigation system design, consult latest City of Calgary, Park Development & Operations, Development Guidelines And Standard Specifications Landscape Construction.
 3. Call Park Development & Operations for inspection on Park Development & Operations Property.
 4. Drainage Membrane, see Sec. 320 Standard Specification Streets Construction.
 5. All dimensions are in millimeters unless otherwise noted.

A 100mm PARK WATER SERVICE
 L-906 NTS



NOTES:
 1. DOUBLE CHECK VALVE ASSEMBLY SHALL CONFORM TO CITY OF CALGARY WATERWORKS STANDARD SPECIFICATIONS, LATEST EDITION, AND BE CAPABLE OF BEING DRAINED OF WATER. DRAIN: 14 AWG, DIRECT BURIAL WIRES TO RUN FROM WATER METER TO CONTROLLER BOX.
 2. STRAP AND THRUST BLOCK 90° HDPE ELBOW. PAINT ALL THREADED STEEL WITH 2 COATS EPOXY PAINT, BLUE COLOUR.
 3. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

B 100mm DOUBLE CHECK VALVE
 L-906 NTS



IRRIGATION CONTROLLER AS PER PLAN - CONTROLLER TO INCLUDE FLOW SENSING ALARM TO TURN OFF MASTER VALVE AND ALERT PARKS STAFF IF POTENTIAL LEAKS ARE DETECTED.

METAL GREY POWDER-COATED PEDESTAL DIMENSIONS: 940mm (H) x 394mm (W) x 127mm (D)

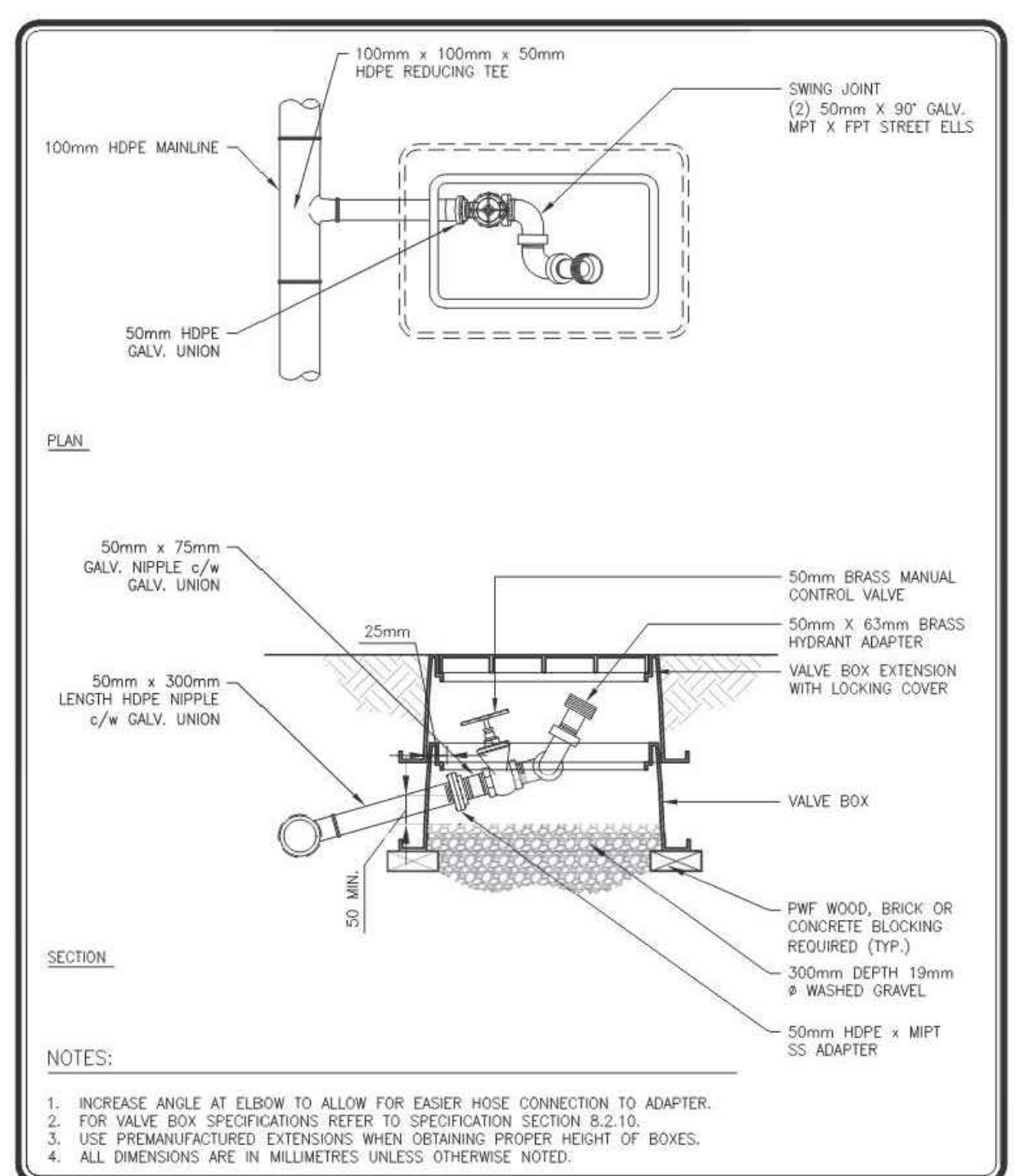
ELECTRICAL SUPPLY CONDUIT CONNECT TO POWER SOURCE. J-BOX INSIDE CONTROLLER. CONTROLLER SHALL BE HARD-WIRED TO GROUNDED 110 VAC POWER SOURCE

GROUND WIRE CONDUIT

150mm DEPTH CONCRETE PAD. ENSURE POSITIVE DRAINAGE FROM PEDESTAL

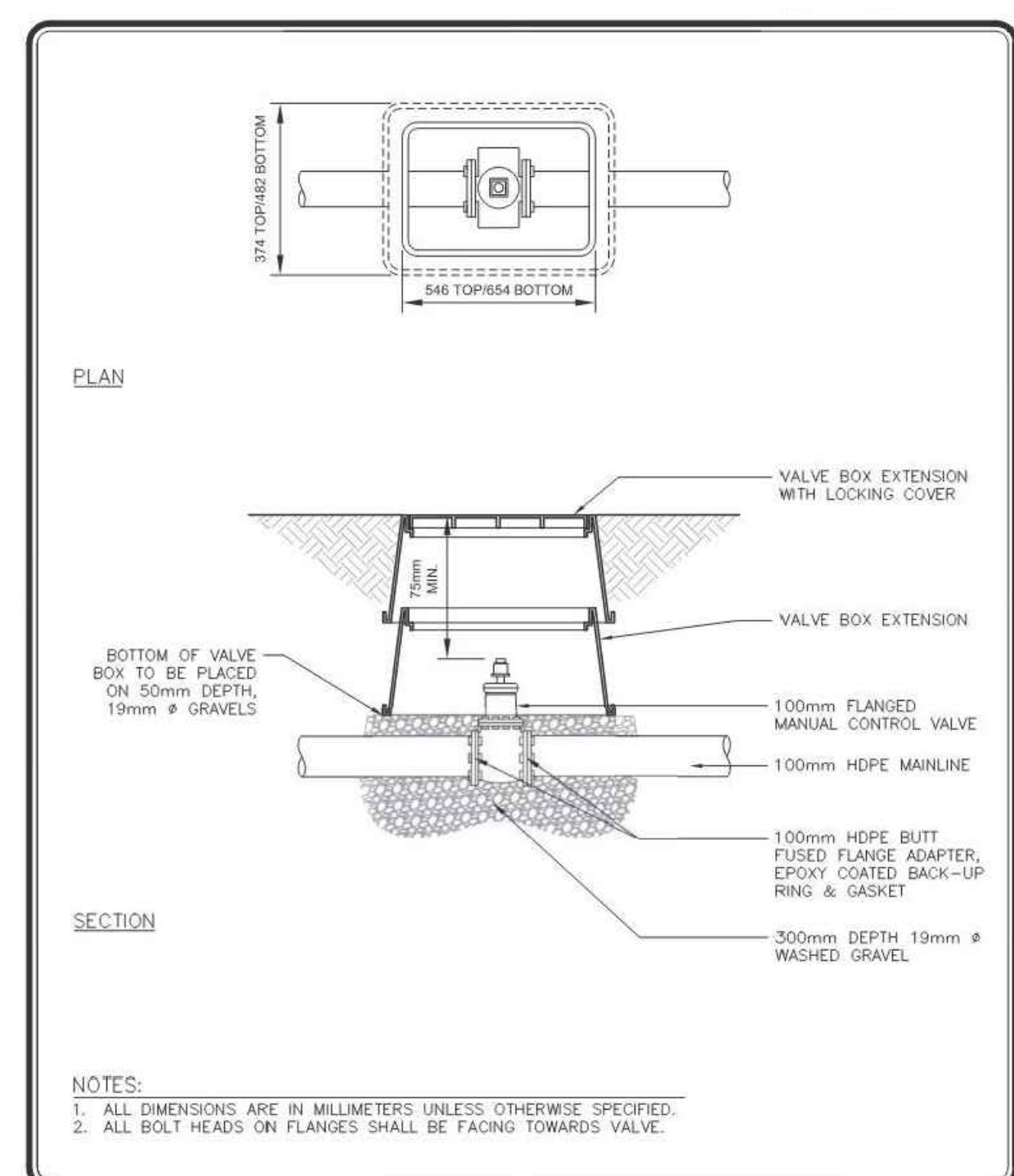
IRRIGATION CONDUIT FOR CONTROL WIRES

C IRRIGATION CONTROLLER
 L-906 SCALE 1:10



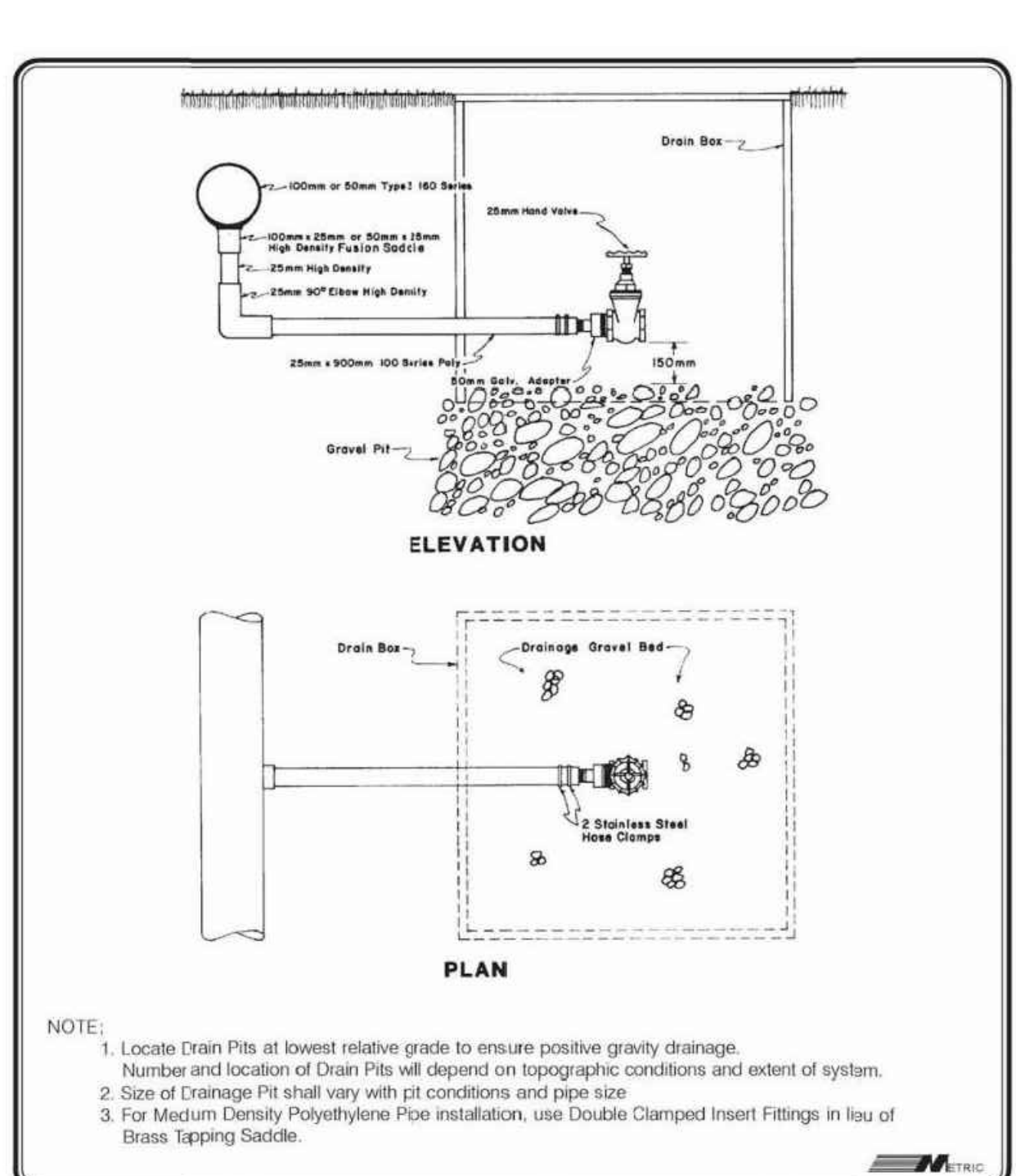
NOTES:
 1. INCREASE ANGLE AT ELBOW TO ALLOW FOR EASIER HOSE CONNECTION TO ADAPTER.
 2. FOR VALVE BOX SPECIFICATIONS REFER TO SPECIFICATION SECTION 8.2.10.
 3. USE PREMANUFACTURED EXTENSIONS WHEN OBTAINING PROPER HEIGHT OF BOXES.
 4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.

D 50mm COMPRESSOR CONNECTION
 L-906 SCALE 1:10



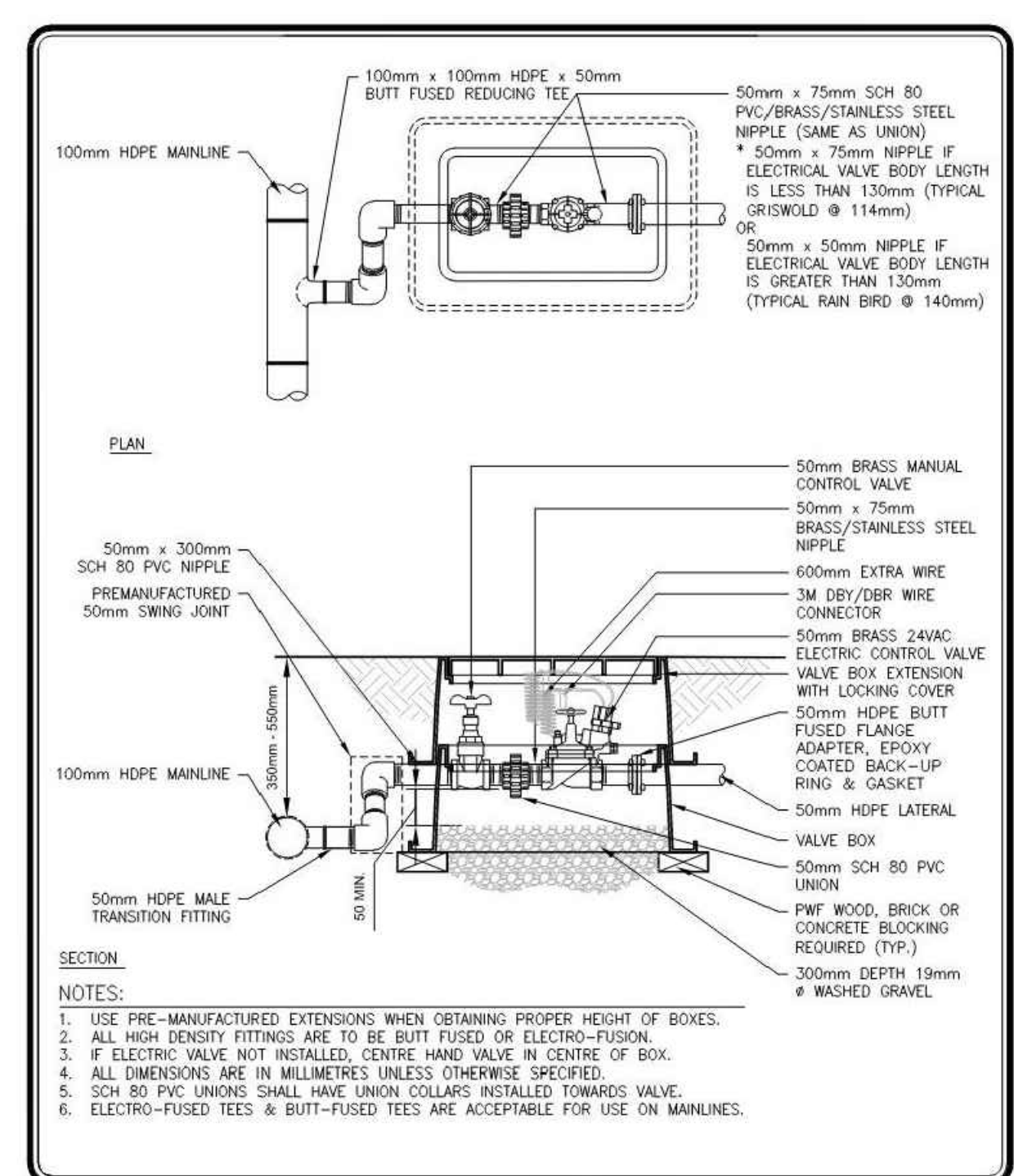
NOTES:
 1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 2. ALL BOLT HEADS ON FLANGES SHALL BE FACING TOWARDS VALVE.

E 100mm ISOLATION VALVE
 L-906 NTS



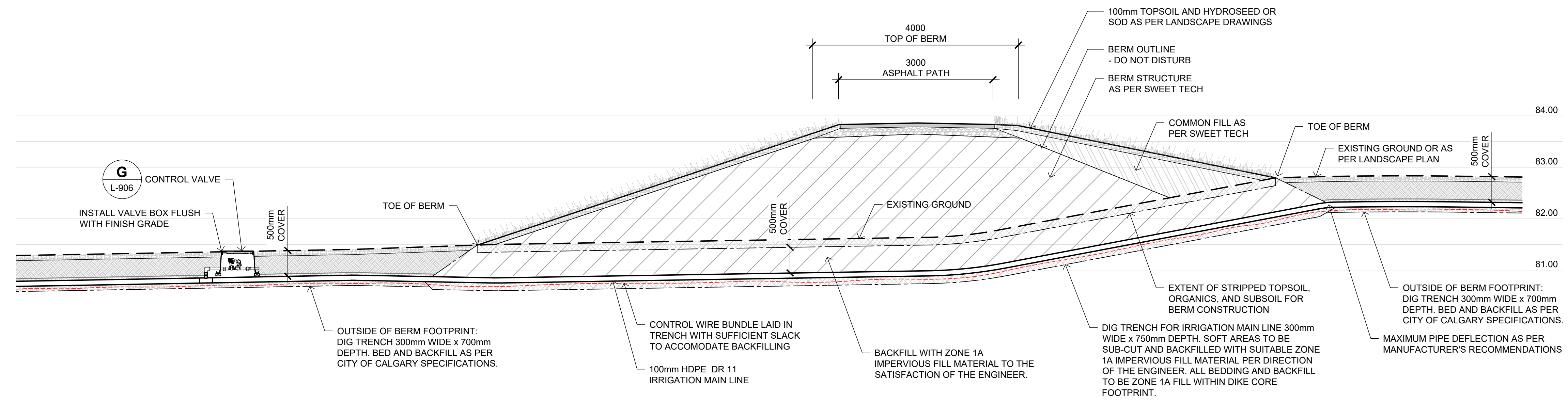
NOTE:
 1. Locate Drain Pits at lowest relative grade to ensure positive gravity drainage. Number and location of Drain Pits will depend on topographic conditions and extent of system.
 2. Size of Drainage Pit shall vary with pit conditions and pipe size.
 3. For Medium Density Polyethylene Pipe installation, use Double Clamped Insert Fittings in lieu of Brass Tapping Saddle.

F DRAIN PIT
 L-906 SCALE 1:10

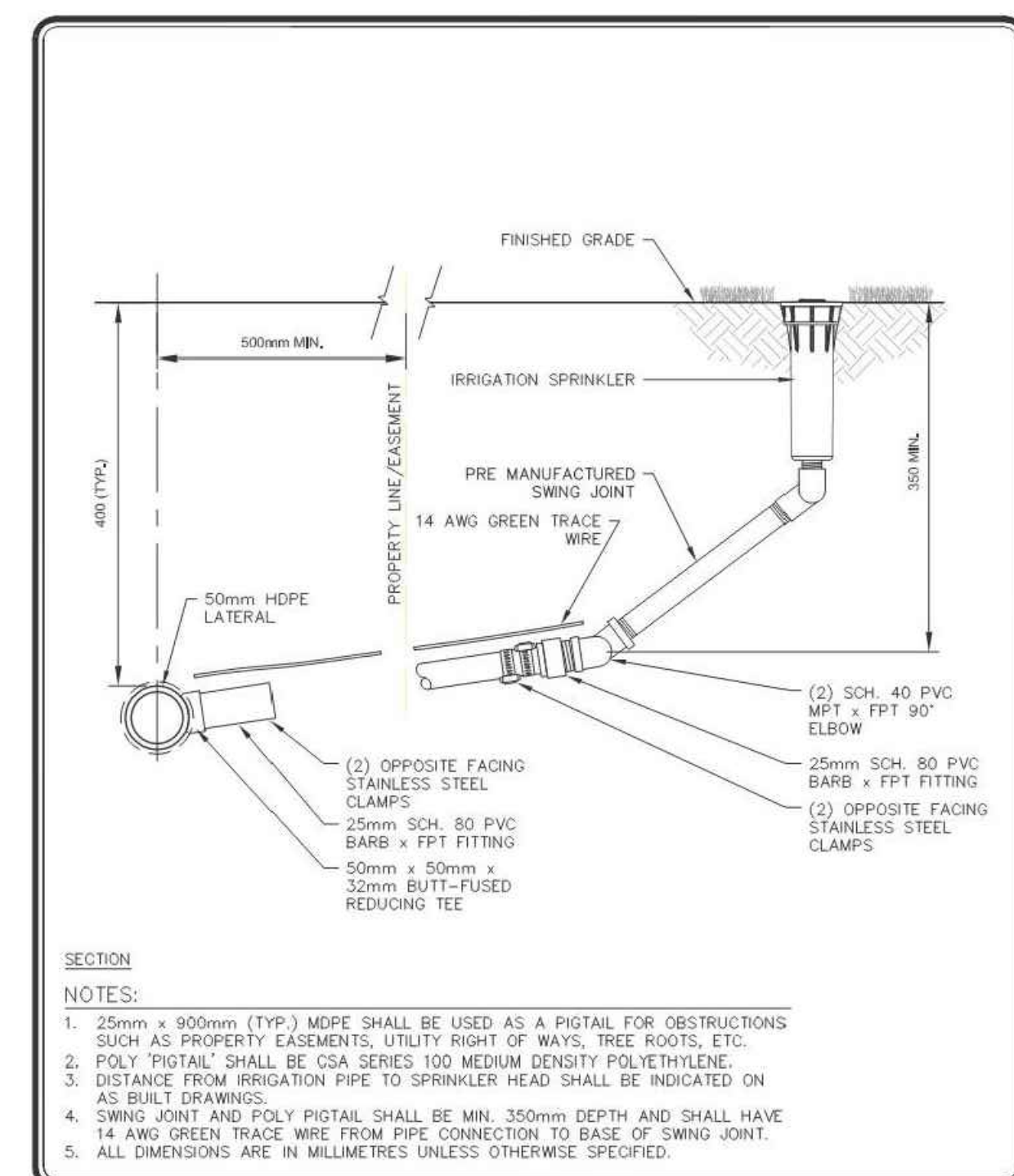


NOTES:
 1. USE PRE-MANUFACTURED EXTENSIONS WHEN OBTAINING PROPER HEIGHT OF BOXES.
 2. ALL HIGH DENSITY FITTINGS ARE TO BE BUTT FUSED OR ELECTRO-FUSION.
 3. IF ELECTRIC VALVE NOT INSTALLED, CENTRE HAND VALVE IN CENTRE OF BOX.
 4. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 5. SCH 80 PVC UNIONS SHALL HAVE UNION COLLARS INSTALLED TOWARDS VALVE.
 6. ELECTRO-FUSED TEES & BUTT-FUSED TEES ARE ACCEPTABLE FOR USE ON MAINLINES.

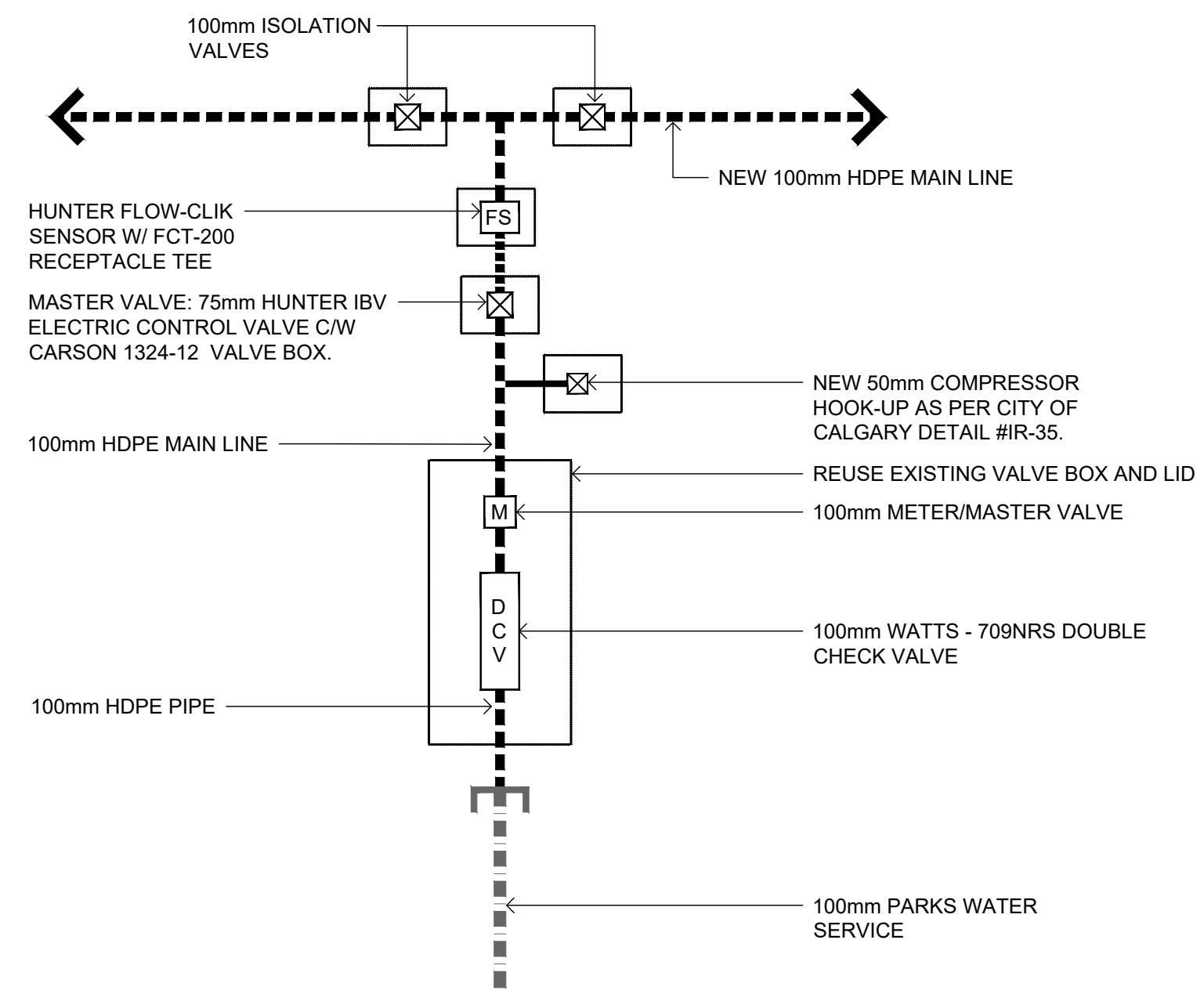
G ELECTRIC CONTROL VALVE
 L-906 SCALE 1:10



A PIPE CROSSING AT DIKE
 L-907 SCALE 1:50



	PROJECT TITLE	DRAWN BY	SCALE
	SPECIFICATIONS	TCP	N.T.S.
	SHEET TITLE	DATE	SHEET NO.
	PIGTAIL SWING JOINT FOR HDPE	2016/08	IR-11
	DESIGN BY	DATE	FILE NO.



B SWING JOINT
 L-907 SCALE 1:10

C POINT OF CONNECTION
 L-907 NTS



ARCADIS | IBI GROUP
 ARCADIS IBI GROUP
 3rd Floor - 227 11 Avenue SW
 Calgary AB T2R 1R9 Canada
 tel: 403 270 5600
 ibigroup.com



Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
0	2023-04-05	EJW	MD	EJW	ISSUED FOR TENDER						

TOWN OF DRUMHELLER DOWNTOWN DIKE			
LANDSCAPE DETAILS			
Project No.	133142	Drawing No.	
Group	LANDSCAPE		
		L-907	0

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
1. GENERAL REQUIREMENTS						
1.01	Mobilization and Demobilization	1		Lump Sum		\$
1.02	Existing and Temporary Access Roads & Trails	1		Lump Sum		\$
1.03	Quality Control	1		Lump Sum		\$
1.04	Environmental Monitoring and ESC	1		Lump Sum		\$
1.05	Warranty	1		Lump Sum		\$
2. ALLOWANCES						
2.01	Unforeseen Work Allowance	\$ 250,000		Allow		\$ 250,000
2.02	Canalta Laydown Lot 6 Month Lease	6	months	5500	\$/month	\$ 33,000
2.03	TWS Agreement with Riverview Terrace Condominium	3	months	500	\$/month	\$ 1,500
3. SITE WORK						
3.01	Demolition, Salvage, Removal, and Re-installation	1		Lump Sum		\$
3.02	Site Grubbing	1		Lump Sum		\$
3.03	Care of Water and Instream Work	1		Lump Sum		\$
3.04	Topsoil & Subsoil Stripping	2,420	m3		/m3	\$
3.05	Excavation - Common	4,900	m3		/m3	\$
3.06	Off-Site Haul & Disposal of Excess Cut	2,640	m3		/m3	\$
3.07	Zone 1A Impervious Fill - Supply, Place, and Compact	20,700	m3		/m3	\$
3.08	Common Fill - Place and Compact	2,260	m3		/m3	\$
3.09	Supply and Install Bank Stabilization	4,360	m3		/m3	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
3.10	Ø300 mm PVC Pipe - Supply and Install	33.3	m		/m	\$
3.11	Ø300 mm PVC Pipe 22.5° Elbows - Supply and Install	2	each		/each	\$
3.12	Ø300 mm CSP Culver - Supply and Install	9.8	m		/m	\$
3.13	Ø450 mm Concrete Pipe - Supply and Install	105.2	m		/m	\$
3.14	Ø450 mm Concrete Pipe Extension - Remove and Replace	5.4	m		/m	\$
3.15	Ø1050 mm Concrete Pipe - Supply and Install	19.8	m		/m	\$
3.16	Ø1200 mm Concrete Pipe Extension - Supply and Install	2.5	m		/m	\$
3.17	5A Manhole - Supply and Install	13.1	vm		/vm	\$
3.18	D0+240 Storm Tie-in	1		Lump Sum		\$
3.19	D0+500 Storm Pipe Upgrade	1		Lump Sum		\$
3.20	D0+991 Storm Infrastructure Upgrade (Details to be Confirmed)	1		Lump Sum		\$20,000
3.21	Tideflex Check-Valve (TF-1) Ø300 mm - Supply and Install	1	each		/each	\$
3.22	Tideflex Check-Valve (TF-1) Ø450 mm - Supply and Install	3	each		/each	\$
3.23	Ø450 mm Flap Gate - Supply and Install	1	each		/each	
3.24	Tideflex Check-Valve (TF-1) Ø1050 mm - Supply and Install	1	each		/each	\$
3.25	Concrete Headwall for Ø300 mm Pipe - Supply and Install	1	each		/each	\$
3.26	Concrete Headwall for Ø450 mm Pipe - Supply and Install	4	each		/each	\$
3.27	Concrete Headwall for Ø1050 mm Pipe - Supply and Install	1	each		/each	\$
3.28	Class 1 Riprap - Supply and Place	55	m3		/m3	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
3.29	Redi-Rock Retaining Wall with Guardrail - Aquaplex - Supply and Install	40.74	m2		/m2	\$
3.30	Redi-Rock Retaining Wall with Guardrail and Steel Gate - Riverview Terrace - Supply and Install	25.73	m2		/m2	\$
3.31	Redi-Rock Retaining Wall with Guardrail and Steel Gate - Riverside Drive - Supply and Install	502.77	m2		/m2	\$
3.32	Concrete Swale with Slotted Drain - Supply and Install	35.0	m		/m	\$
3.33	Pedestrian Handrail at Riverview Terrace - Supply and Install	60.0	m		/m	
3.34	Bridge/Ramp Connection at Riverview Terrace - Supply and Install	1		Lump Sum		\$
3.35	Asphalt Pathway - Supply and Install (excl. Park)	3900	m2		/m2	\$
3.36	Gravel Pathway - Supply and Install	470	m2		/m2	\$
3.37	Pathway Root Barrier - Supply and Install	470	m2		/m2	\$
3.38	Turf Reinforcement - Supply and Install	40	m2		/m2	\$
3.39	Removable Bollards - Supply and Install	11	each		/each	\$
3.40	Riverside Drive Asphalt - Supply, Place, and Compact	2,650	m2		/m2	\$
3.41	Riverside Drive Gravel Fill Zone 4C - Supply, Place, and Compact	2,650	m2		/m2	\$
3.42	Riverside Drive Base Gravel Zone 4A - Supply, Place, and Compact	2,650	m2		/m2	\$
3.43	Riverside Drive New Curb and Gutter - Supply and Install	280	m		/m	\$
3.44	Riverside Drive Concrete Buffer Infront of Retaining Wall - Supply and Install	240	m2		/m2	\$
3.45	New "No Parking" Signs Along Riverside Drive (including Sign Posts) - Supply and Install	19	each		/each	\$
3.46	New "Road Narrows" Signs Along Riverside Drive (including Sign Posts) - Supply and Stall	2	each		/each	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
3.47	New Crosswalk Painting	2	each		/each	\$
3.48	Topsoil - Supply (excl. Park)	1,895	m3		/m3	\$
3.49	Topsoil Placement (excl. Park)	2,500	m3		/m3	\$
3.50	Excavation at Shrub/Seedling Areas	530	m3		/each	\$
3.51	Planting Medium	415	m3		/each	\$
3.52	Bark Mulch, Supply and Install	690	m2		/each	\$
3.53	Trees - 3000mm Ht. Coniferous Trees	1	each		/each	\$
3.54	Trees - 2000mm Ht. Coniferous Trees	16	each		/each	\$
3.55	Trees - 1500mm Ht. Coniferous Trees	3	each		/each	\$
3.56	Trees - 70mm Cal. Deciduous Trees	36	each		/each	\$
3.57	Trees - 60mm Cal. Deciduous Trees	16	each		/each	\$
3.58	Trees - #15 Pot Deciduous Trees	188	each		/each	\$
3.59	Trees - #10 Pot Deciduous Trees	3	each		/each	\$
3.60	Trees - #5 Pot Deciduous Trees	11	each		/each	\$
3.61	Shrubs - Supply and Planting	469	each		/each	\$
3.62	Deciduous Tree Seedlings	160	each		/each	\$
3.63	Seeding (excl. Park)	24,200	m2		/m2	\$
3.64	Rolled Concrete Curb (remove and replace)	12.0	m		/m	\$

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE	TOTAL BID
4. PROVISIONAL ITEMS					
4.01	Tideflex Checkmate Ultraflex Inline Check-Valve Ø300 mm - Supply and Install	1	each	/each	\$
4.02	Tideflex Checkmate Ultraflex Inline Check-Valve Ø450 mm - Supply and Install	4	each	/each	\$
4.03	Tideflex Checkmate Ultraflex Inline Check-Valve Ø525 mm - Supply and Install	1	each	/each	\$
4.04	Tideflex Checkmate Ultraflex Inline Check-Valve Ø1050 mm - Supply and Install	1	each	/each	\$
4.05	Tideflex Checkmate Ultraflex Inline Check-Valve Ø1200 mm - Supply and Install	1	each	/each	\$
5. CENTENNIAL PARK (LANDSCAPING DRAWINGS COMING IN ADDENDUM)					
5.01	Irrigation System - Supply and Install	1		Lump Sum	\$
5.02	Concrete Sidewalk - Supply and Install (Park only)	570.0	m2	/m2	\$
5.03	Asphalt Pathway - Supply and Install (Park only)	360	m2	/m2	\$
5.04	Concrete Stairs with Handrail - Supply and Install	3.80	vm	/vm	\$
5.05	Topsoil - Supply (Park only)	270	m3	/m3	\$
5.06	Topsoil Placement (Park only)	270	m3	/m3	\$
5.07	Seeding (Park only)	1600	m2	/m2	\$
5.08	Sodding (Park only)	1100	m2	/m2	\$
5.09	Additional Common Fill at Amphitheater Stairs and Bench Wall - Place and Compact	145	m3	/m2	\$ -
5.10	Stone Bench Walls at Amphitheater	80	m	/m	\$ -

ITEM NO.	ITEM DESCRIPTION	ESTIMATED QUANTITY		UNIT PRICE		TOTAL BID
5.11	Stone Edger / Bench Wall at Riverbank	30	m		/m	\$ -
5.12	Relocate Rock Cairn, Memorials and Petrified Wood	1		Lump Sum		\$

SUMMARY

1. General Requirements Total: _____

2. Allowances Total: \$ 284,500

3. Site Works Total: _____

4. Provisional Items Total: _____

5. Centennial Park Total: _____

_____ = TOTAL AMOUNT OF BID

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
1. GENERAL REQUIREMENTS			
1.01	Mobilization and Demobilization	01390, 01391, 01510, 01520, 01552, 01580, 01742	<p>.1 Scope: Mobilization includes supplying and transporting to the Site, labour, equipment, products and incidentals; providing and maintaining temporary facilities and controls, including site offices, utilities, safety and security measures including temporary fencing, vibration monitoring, and other construction necessary for Contractor's methods carried out during the performance of the Contract and which does not remain as part of the Permanent Work; and all related work and materials for which payment is not included elsewhere.</p> <p>Demobilization includes removing and transporting from the Site, labour equipment, products, and other items not required to remain upon Total Performance of the Work; cleaning up of the Site including laydown; and all related work and materials for which payment is not included elsewhere.</p> <p>Mobilization and Demobilization include interim and partial mobilization and demobilization activities required to perform the Work of the Contract.</p> <p>.2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item.</p> <p>25% of the Lump Sum value on completion of 5% of the contract bid amount; 25% of the Lump Sum value on completion of 25% of the contract bid amount; 25% of the Lump Sum value on completion of 50% of the contract bid amount; and Final 25% of the Lump Sum value after issuance of the Construction Completion Certificate.</p>
1.02	Existing and Temporary Access Roads & Trails	01552	<p>.1 Scope: Includes all work required to design, prepare, install, maintain during construction, and post construction to restore back to original condition or better the construction access roads, pathways, trails, and parking areas required for and used by Contractor-generated traffic. Includes providing surface protection measures, barriers, detours, signage, flag persons, and other measures to safely regulate traffic; preparing submittals, obtaining approvals, and paying all levies required by The Town; conducting video surveys or other means accepted by The Owner Representative to document pre-construction conditions; providing temporary protection measures; and all other work and materials to complete this item for which payment is not included elsewhere.</p> <p>.2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item.</p> <p>50% of the Lump Sum value on completion of an approved traffic control plan and the completion of the installation of traffic regulation measures; and, 50% of the Lump Sum value after issuance of the Construction Completion Certificate and when all measures have been removed and the existing accesses restored.</p>
1.03	Quality Control		<p>.1 Scope: Quality Control includes the development, submission and revisions of a site and project specific Quality Control plan. It also includes the implementation and execution of the approved Quality Control plan necessary for the Contractor to complete the scopes of work as specified in the approved project drawings and specifications; and all related work and materials for which payment is not included elsewhere.</p> <p>.2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item.</p> <p>25% of the Lump Sum value on completion and approval of the Quality Control Plan; 25% of the Lump Sum value on completion of 50% of the contract bid amount; 25% of the Lump Sum value on completion of 75% of the contract bid amount; and Final 25% of the Lump Sum value after issuance of the Construction Completion Certificate.</p>
1.04	Environmental Monitoring and ESC		<p>.1 Scope: Environmental Monitoring and ESC (Erosion and Sediment Control) includes the development, submission and revisions of a site and project specific ECO Plan and ESC Plan. It also includes the implementation and execution of the approved ECO Plan and ESC Plan, environmental protection (excluding instream activity), and other construction necessary for Contractor's methods carried out during the performance of the Contract and which does not remain as part of the Permanent Work; and all related work and materials for which payment is not included elsewhere.</p> <p>.2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item.</p> <p>25% of the Lump Sum value on completion and approval of the ECO Plan and ESC Plan; 25% of the Lump Sum value on completion of 50% of the contract bid amount; 25% of the Lump Sum value on completion of 75% of the contract bid amount; and Final 25% of the Lump Sum value after issuance of the Construction Completion Certificate.</p>
1.05	Warranty		<p>.1 Scope: Warranty includes the maintenance and operation of all installed equipment and materials for a period of 2 years from a start date of the Construction Total Performance. The Contractor will be required to maintain all equipment and material installed as part of the scope of work, as indicated in the drawings and contract document.</p> <p>.2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item.</p> <p>25% of the Lump Sum value on the first day of the first spring, following the Construction Total Performance date and following approval of a maintenance inspection completed by the Owner; 25% of the Lump Sum value on the first day of the first fall, following the Construction Total Performance date and following approval of a maintenance inspection completed by the Owner; 25% of the Lump Sum value on the first day of the second spring, following the Construction Total Performance date and following approval of a maintenance inspection completed by the Owner; Final 25% of the Lump Sum value on the first day of the second fall, following the Construction Total Performance date and following approval of a maintenance inspection completed by the Owner;</p>

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
2. ALLOWANCES			
2.01	Unforeseen Work Allowance		.1 Scope: Provide all labour, equipment, and material to complete unforeseen work not identified on the Drawings and where payment is not included elsewhere, at the direction of the Owner. Work under this allowance will be authorized by Change Order. .2 Payment: Payment is by Change Order for completion of all unforeseen work as directed by the Owner. Completion of unforeseen work without direction and authorization from the Owner will not be compensated for.
2.02	Canalta Laydown Lot 6 Month Lease		.1 Scope: The Owner will transfer over the Canalta Laydown Agreement to the Contractor. Refer to the Laydown Agreement included in Volume 2 of the Tender. The Contractor will be responsible for the Agreement and the required payment. There is an allowance of 6 months included in this budget. If the Contractor requires additional months of the laydown, that will be at the Contractors cost. .2 Payment: Payment will be provided on a monthly basis along with confirmation that Canalta received their payment.
2.03	TWS Agreement with Riverview Terrace Condominium		.1 Scope: The Owner will transfer over the Riverview Terrace TWS Agreement to the Contractor. Refer to the Agreement included in Volume 2 of the Tender. The Contractor will be responsible for the Agreement and the required payment. There is an allowance of 3 months included in this budget. If the Contractor requires additional months of the TWS, that will be at the Contractors cost. .2 Payment: Payment will be provided on a monthly basis along with confirmation that Riverview Terrace received their payment.
3. SITE WORK			
3.01	Demolition, Salvage, Removal, and Re-installation	02220, 02232	.1 Scope: Provide all labour, equipment, and materials necessary for demolition, salvage removal, and re-installation of items identified in the Drawings, specifications, and all items incidental to complete the work and for which payment is not included elsewhere. Salvaged items to be retained at a location approved by the Owner. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 80% of the Lump Sum value on completion of demolition and salvage; and, 20% of the Lump Sum value after issuance of the Construction Completion Certificate and when all re-installations are complete.
3.02	Site Grubbing	02232	.1 Scope: Includes all labour, equipment and materials needed to grub vegetation within the construction footprint identified in the Drawings including removal of all stumps, brush, and root balls and materials for which payment is not included elsewhere. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 100% of the Lump Sum value on completion of grubbing
3.03	Care of Water and Instream Work	02240, 02242	.1 Scope: Design, supply, install, construct, operate, monitor, maintain and remove temporary care of water provisions, isolation measures such as turbidity curtains, fish salvage required to perform the work, and all related work and materials for which payment is not included elsewhere according to contractor's ECO Plan and regulatory conditions. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 50% of the Lump Sum value on completion of installation care of water measures including isolation; and, 25% of the Lump Sum value after completion of instream work and removal of instream isolations. 25% of the Lump Sum value after issuance of the Construction Completion Certificate.
3.04	Topsoil & Subsoil Stripping	02232, 02234, Drawings	.1 Scope: Includes all labour, equipment, and resources required to strip and stockpile existing topsoil and subsoil material from the dike crest and side slopes as per Drawings and specifications, storage of material, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be cubic meters of stripped soil, as determined by post-stripping surveyed area and depth. Survey to be verified by Owner's representative. .3 Payment: Unit Price per cubic meter.
3.05	Excavation - Common	02315, 02330	.1 Scope: Provide all labour, equipment and materials necessary for earthworks (excavation) to design rough grade and sub-base prep, including grading, shaping, compacting, moisture conditioning, and proof rolling as required and all items incidental to complete the work and for which payment is not included elsewhere. Applies to all site earthworks. .2 Measurement: Shall be by cubic meter of fill removed based on survey and shall be full compensation for all work related to rough grading. .3 Payment: Unit Price per cubic meter.
3.06	Off-Site Haul & Disposal of Excess Cut		.1 Scope: Provide all labour, equipment, and materials to load, haul, handle, and dispose excess cut material, and all items incidental to complete the work and for which payment is not included elsewhere. It is the responsibility of the Contractor to determine an off-site location to haul and dispose of the excess cut. .2 Measurement: Shall be by bank cubic meter for completion of all off-site haulage as identified in the Drawings. Overages in off-site haulage without the direction and authorization of the Province will not be compensated for. .3 Payment: Unit Price per cubic meter.

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
3.07	Zone 1A Impervious Fill - Supply, Place, and Compact	02315, 02330	.1 Scope: Includes all labour, equipment, and resources required to investigate, test, verify suitable quality, provide submittals and quality control, supply and place, and compact Zone 1A Impervious fill to the design lines, grades, and elevations as shown on Drawings and in the Contract Documents; and all related work and materials for which payment is not included elsewhere. It is the responsibility of the Contractor to determine a suitable fill source location. Material that does not meet requirements of Zone 1A Impervious fill delivered to site will not be compensated for. Overages in fill delivered to site will not be compensated for. .2 Measurement: Shall be cubic meters of suitable Zone 1A fill, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
3.08	Common Fill - Place, and Compact	02331, 02332	.1 Scope: Includes all labour, equipment, and resources required to investigate, test, verify suitable quality, provide submittals and quality control, supply and place, and compact common fill to the design lines, grades, and elevations as shown on Drawings and in the Contract Documents; and all related work and materials for which payment is not included elsewhere. It is the responsibility of the Contractor to determine a suitable fill source location. Material that does not meet requirements of common fill delivered to site will not be compensated for. Overages in fill delivered to site will not be compensated for. .2 Measurement: Shall be cubic meters of suitable Common fill, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
3.09	Supply and Install Bank Stabilization	C-105,C-106, C-107, C-108, C-501, C-502, C-503	.1 Scope: Includes all labour, equipment and resources required to supply and install Bank Stabilization including non-woven geotextile, 150 mm coarse riprap bedding zone 5B, and 1000 mm of riprap (50% Class 1, 50% Class 2 by weight) to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be volume bank stabilization, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
3.10	Ø300 mm PVC Pipe - Supply and Install	C-307, C-311, C-312	.1 Scope: Includes all labour, equipment, and materials required to supply and install new Ø300 mm PVC pipe, as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be meter of pipe installed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per meter.
3.11	Ø300 mm PVC Pipe 22.5° Elbows - Supply and Install	C-307, C-311, C-312	.1 Scope: Includes all labour, equipment, and materials required to supply and install new Ø300 mm PVC pipe 22.5° elbows, as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per elbow installed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per elbow.
3.12	Ø300 mm CSP Culvert - Supply and Install	C-107	.1 Scope: Includes all labour, equipment, and materials required to supply and install new Ø300 mm CSP culvert, as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be meter of culvert installed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per meter.
3.13	Ø450 mm Concrete Pipe - Supply and Install	C-308, C-309, C-317	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø450 mm concrete pipe, as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be meter of pipe placed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per meter.
3.14	Ø450 mm Concrete Pipe Extension - Remove and Replace	C-310	.1 Scope: Includes all labour, equipment, and materials required to remove existing damaged Ø450 mm concrete pipe, supply and install new Ø450 mm concrete pipe extension at existing outfall, as shown in the Design Drawings, and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be meter of pipe installed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per meter.
3.15	Ø1050 mm Concrete Pipe - Supply and Install	C-314	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø1050 mm concrete pipe, including flared end, as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be meter of pipe installed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per meter.

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
3.16	Ø1200 mm Concrete Pipe Extension - Supply and Install	C-313	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø1200 mm concrete pipe inlet extension at existing outfall, including salvage and reinstallation of existing flared end headwall as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be meter of pipe extension installed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. Headwall salvage and reinstallation to be included in price of pipe extension. .3 Payment: Unit Price per meter.
3.17	5A Manhole - Supply and Install	C-308, C-309, C-310, C-311, C-312	.1 Scope: Includes all labour, equipment, and materials required to supply and install 5A concrete manhole as shown in the Design Drawings, including excavation, base preparation, installation of barrel, backfill, risers, lid/grate, and all other and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be by vertical meter of manhole extension as inspected by The Owner Representative. .3 Payment: Unit Price per vertical meter.
3.18	D0+240 Storm Tie-in	C-310	.1 Scope: Includes all labour, equipment, and materials required to tie-in new 5A manhole to existing concrete storm system including tie in pr. manhole to existing pipes incl. gaskets as shown in the Design Drawings, and all related work and materials for which payment is not included elsewhere. Note payment for new concrete pipe, and new 5A manhole is elsewhere. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 100% of the Lump Sum value on completion of D0+240 Storm Tie-in
3.19	D0+500 Storm Pipe Upgrade	C-311, C-312	.1 Scope: Includes all labour, equipment, and materials required to upgrade the storm pipe at D0+500 including remove existing system, infill existing manhole sump with concrete, coring to facilitate new manhole connections as required, tie in pr. manhole to existing pipes incl. gaskets, and decommissioning old manhole connections, as shown in the Design Drawings, and all related work and materials for which payment is not included elsewhere. Note payment for new PVC pipe, new manhole, and manhole extension is elsewhere. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 100% of the Lump Sum value on completion of D0+500 Storm Pipe Upgrade
3.20	D0+991 Storm Infrastructure Upgrade (Details to be Confirmed)	C-315	.1 Scope: Includes all labour, equipment, and materials required to upgrade the storm infrastructure at D0+991. The detailed design will be provided, at which point the Scope will be provided. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 100% of the Lump Sum value on completion of D0+991 Storm Infrastructure Upgrade.
3.21	Tideflex Check-Valve (TF-1) Ø300 mm - Supply and Install	C-307	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø300 mm Tideflex Check-Valve (TF-1) as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø300 mm Tideflex Check-Valve (TF-1) .3 Payment: Unit Price per Ø300 mm Tideflex Check-Valve (TF-1)
3.22	Tideflex Check-Valve (TF-1) Ø450 mm - Supply and Install	C-309	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø450 mm Tideflex Check-Valve (TF-1) as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø450 mm Tideflex Check-Valve (TF-1) .3 Payment: Unit Price per Ø450 mm Tideflex Check-Valve (TF-1)
3.23	Ø450 mm Flap Gate - Supply and Install	C-310	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø450 mm Flap Gate as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø450 mm Flap Gate .3 Payment: Unit Price per Ø450 mm Flap Gate
3.24	Tideflex Check-Valve (TF-1) Ø1050 mm - Supply and Install	C-314	.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø1050 mm Tideflex Check-Valve (TF-1) as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø1050 mm Tideflex Check-Valve (TF-1) .3 Payment: Unit Price per Ø1050 mm Tideflex Check-Valve (TF-1)
3.25	Concrete Headwall for Ø300 mm Pipe - Supply and Install	C-307	.1 Scope: Includes all labour, equipment, and materials required to supply and install concrete headwall for Ø300 mm pipe as shown in the Design Drawings and specifications and all related work and materials for which payment is not included elsewhere. This includes supply and install of 20mm crushed gravel and all bedding prep work. .2 Measurement: Shall be per concrete headwall for Ø300 mm pipe .3 Payment: Unit Price per concrete headwall for Ø300 mm pipe
3.26	Concrete Headwall for Ø450 mm Pipe - Supply and Install	C-309, C-310	.1 Scope: Includes all labour, equipment, and materials required to supply and install concrete headwall for Ø450 mm pipe as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. This includes supply and install of 20mm crushed gravel and all bedding prep work. .2 Measurement: Shall be per concrete headwall for Ø450 mm pipe .3 Payment: Unit Price per concrete headwall for Ø450 mm pipe

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
3.27	Concrete Headwall for Ø1050 mm Pipe - Supply and Install	C-314	.1 Scope: Includes all labour, equipment, and materials required to supply and install concrete headwall for Ø1050 mm pipe as shown in the Design Drawings and specifications, and all related work and materials for which payment is not included elsewhere. This includes supply and install of 20mm crushed gravel and all bedding prep work. .2 Measurement: Shall be per concrete headwall for Ø1050 mm pipe .3 Payment: Unit Price per concrete headwall for Ø1050 mm pipe
3.28	Class 1 Riprap - Supply and Place	02315, 02330	.1 Scope: Includes all labour, equipment, and resources required supply and place Class 1 Riprap to the design lines, grades, and elevations as shown on Drawings and in the Contract Documents; and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be cubic meters of Class 1 Riprap, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
3.29	Redi-Rock Retaining Wall with Guardrail - Aquaplex - Supply and Install	B 101, B 301	.1 Scope: Includes all labour, equipment and resources required to supply and install Redi-Rock Retaining Wall System at Aquaplex to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. Includes excavation, installation of 28" Redi-rock blocks, geogrid, coarse gravels, perforated drain pipe, nonwoven geotextile, reworked clay till fill, hand compacted clay fill, sleeve-it fence system, guardrail, and concrete fill and all other details as shown in Drawing B-301 and guardrail details as shown in the Landscaping Drawings. .2 Measurement: Shall be by face square meters of redi-rock wall (prior to backfill of wall face) as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per face square meter.
3.30	Redi-Rock Retaining Wall with Guardrail and Steel Gate - Riverview Terrace - Supply and Install	B-102, B-301	.1 Scope: Includes all labour, equipment and resources required to supply and install Redi-Rock Retaining Wall System at Riverview Terrace to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. Includes installation of 28" Redi-rock blocks, excavation, geogrid, coarse gravels, perforated drain pipe, nonwoven geotextile, reworked clay till fill, hand compacted clay fill, sleeve-it fence system, guardrail, and concrete fill and all other details as shown in Drawing B-501 and guardrail and steel gate details as shown in the Landscaping Drawings. .2 Measurement: Shall be by face square meters of redi-rock wall (prior to backfill of wall face) as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per face square meter.
3.31	Redi-Rock Retaining Wall with Guardrail and Steel Gate - Riverside Drive - Supply and Install	B-103, B-302	.1 Scope: Includes all labour, equipment and resources required to supply and install Redi-Rock Retaining Wall System at Riverside Drive to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. Includes installation of 28" Redi-rock blocks, excavation, geogrid, coarse gravels, perforated drain pipe, nonwoven geotextile, reworked clay till fill, hand compacted clay fill, sleeve-it fence system, guardrail, and concrete fill and all other details as shown in Drawing B-501 and guardrail and steel gate details as shown in the Landscaping Drawings. .2 Measurement: Shall be by face square meters of redi-rock wall (prior to backfill of wall face) as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per face square meter.
3.32	Concrete Swale with Slotted Drain - Supply and Install		.1 Scope: Includes all labour, equipment, and materials required to construct concrete swale with slotted drain as shown in the Design Drawings, including all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be linear meter of concrete swale with slotted drain constructed, as determined by survey lines, grades, slopes, and elevations specified in the Contract Documents or as adjusted by The Owner Representative. .3 Payment: Unit Price per meter.
3.33	Pedestrian Handrail at Riverview Terrace - Supply and Install	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to supply and install pedestrian handrail at ramp to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be by linear meter of handrail as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per linear meter.
3.34	Bridge/Ramp Connection at Riverview Terrace - Supply and Install	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to supply and install handrail, bridge/ramp, and concrete abutment from existing Riverview Terrace ramp to proposed concrete sidewalk to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 100% of the Lump Sum value on completion of item

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
3.35	Asphalt Pathway - Supply and Install (excl. Park)	C-502 Details 2A and 2B, C-503 Detail 1	.1 Scope: Includes all labour, equipment and resources required to supply and install asphalt pathway including base gravels to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. This scope excludes the asphalt pathways included in Centennial Park (on the river side of the dike from station 0+250 to 0+500). The entire top of the dike pathway is included in this scope. .2 Measurement: Shall be square meters of asphalt trail surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.36	Gravel Pathway - Supply and Install		.1 Scope: Includes all labour, equipment and resources required to supply and install gravel pathway structure to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be square meters of gravel trail surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.37	Pathway Root Barrier - Supply and Install		.1 Scope: Includes all labour, equipment and resources required to supply and install root barrier under specified pathways to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be by square meters of asphalt pathway surface or gravel pathway surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.38	Turf Reinforcement - Supply and Install	C-108	.1 Scope: Includes all labour, equipment and resources required to supply and install turf reinforcement structure to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be square meters of turf reinforcement surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.39	Removable Bollards - Supply and Install	C-106, C-108, C-505	.1 Scope: Includes all labour, equipment and resources required to supply and install removable bollards as per Drawings, and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per removable bollard. .3 Payment: Unit Price per removable bollard.
3.40	Riverside Drive Asphalt - Supply, Place, and Compact	C-402, C-504, C-505, C-507	.1 Scope: Includes all labour, equipment and resources required to supply and install new asphalt roadway to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. It also includes the line painting required on the roadway. .2 Measurement: Shall be square meters of asphalt road surface with painted lines, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.41	Riverside Drive Gravel Fill Zone 4C - Supply, Place, and Compact	C-402, C-504, C-505, C-507	.1 Scope: Includes all labour, equipment and resources required to supply and install Riverside Drive Gravel Fill Zone 4C to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be square meters of gravel fill zone 4C surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.42	Riverside Drive Base Gravel Zone 4A - Supply, Place, and Compact	C-402, C-504, C-505, C-507	.1 Scope: Includes all labour, equipment and resources required to supply and install Riverside Drive Gravel Fill Zone 4A to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be square meters of gravel fill zone 4A surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.43	Riverside Drive New Curb and Gutter - Supply and Install	C-402, C-504, C-505, C-507	.1 Scope: Includes all labour, equipment and resources required to remove existing concrete curb and gutter, and supply and install new curb and gutter as indicated on the drawings and as per the City of Calgary Specification for concrete curbs, and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per linear meter. .3 Payment: Unit Price per linear meter.
3.44	Riverside Drive Concrete Buffer Infront of Retaining Wall - Supply and Install	C-402, C-504, C-505, C-507	.1 Scope: Includes all labour, equipment and resources required to supply and install new concrete buffer infront of Riverside Drive retaining wall to the lines, grades, and elevations shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per linear meter. .3 Payment: Unit Price per linear meter.

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
3.45	New "No Parking" Signs Along Riverside Drive	C-507	.1 Scope: Includes all labour, equipment and resources required to supply and install new "No Parking" signs as per Drawings, and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per sign. .3 Payment: Unit Price per sign.
3.46	New "Road Narrows" Signs Along Riverside Drive	C-505, C-507	.1 Scope: Includes all labour, equipment and resources required to supply and install new "Road Narrows" signs as per Drawings, and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per sign. .3 Payment: Unit Price per sign.
3.47	New Crosswalk Painting	C-504	.1 Scope: Includes all labour, equipment and resources required to supply and install new crosswalk painting to the lines, grades, and elevations as shown on the Drawings and in the Contract Documents, and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per completed crosswalk. .3 Payment: Unit Price per completed crosswalk.
3.48	Topsoil - Supply (excl. Park)		.1 Scope: Includes supplying additional topsoil from off-site sources, paying royalties, excavating, sorting, loading, and hauling of topsoil, per Contract Documents. It is the responsibility of the Contractor to determine a suitable topsoil source location. Material that does not meet requirements of topsoil delivered to site will not be compensated for. Overages in topsoil delivered to site will not be compensated for. This scope excludes the topsoil supply required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be cubic meters of suitable topsoil (in excess of stripped topsoil volume), as determined by survey of final bank cubic meters installed. .3 Payment: Unit Price per cubic meter.
3.49	Topsoil Placement (excl. Park)		.1 Scope: Includes all labour, equipment and resources required to prepare receiving surfaces, dump, spread, grade, compact, rake, shape, and trim Topsoil to the finished grade surface to achieve the lines, grades, and elevations shown on Drawings and in the Contract Documents. This scope excludes the topsoil placement required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be cubic meters of Topsoil placed (stripped + supplied), as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
3.50	Excavation at Shrub/Seedling Areas	Landscaping Drawings	.1 Scope: Provide all labour, equipment and materials necessary for excavating material to accomodate planting shrub and seedling areas as outlined in the landscaping drawings and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be by cubic meter of fill removed based on survey and shall be full compensation for all work related to shrub / seedling areas. .3 Payment: Unit Price per cubic meter.
3.51	Planting Medium	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to prepare receiving surfaces, dump, spread, grade, compact, rake, shape, and trim planting medium to the finished grade surface to achieve the lines, grades, and elevations shown on Drawings and in the Contract Documents. .2 Measurement: Shall be cubic meters of Planting Medium placed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
3.52	Bark Mulch, Supply and Install	Landscaping Drawings	.1 Scope: Includes all labour, equipment, supply of Bark Mulch and resources required to prepare receiving surfaces, dump, spread, grade, compact, rake, shape, and trim Bark Mulch to the finished grade surface to achieve the lines, grades, and elevations shown on Drawings and in the Contract Documents. .2 Measurement: Shall be square meters of Burk Mulch placed, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.53	Trees - 3000mm Ht. Coniferous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "3000mm Ht. Coniferous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.54	Trees - 2000mm Ht. Coniferous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "2000mm Ht. Coniferous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.55	Trees - 1500mm Ht. Coniferous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "1500mm Ht. Coniferous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
3.56	Trees - 70mm Cal. Deciduous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "70mm Cal. Deciduous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.57	Trees - 60mm Cal. Deciduous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "60mm Cal. Deciduous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.58	Trees - #15 Pot Deciduous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "#15 Pot Deciduous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.59	Trees - #10 Pot Deciduous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "#10 Pot Deciduous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.60	Trees - #5 Pot Deciduous Trees	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant trees and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. "#5 Pot Deciduous Trees" are indicated in the Tree Planting Schedule. .2 Measurement: Shall be shall be based on unit rates for complete planting of trees on-site as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree.
3.61	Shrubs - Supply and Planting	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant shrubs and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. .2 Measurement: Shall be shall be based on unit rates for complete planting of shrubs as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per shrub.
3.62	Deciduous Tree Seedlings	Landscaping Drawings	.1 Scope: Provide all labour, equipment, and materials necessary to supply and plant tree seedlings and all items incidental to complete work and for which payment is not included elsewhere as shown on Drawings and in the Contract Documents. .2 Measurement: Shall be shall be based on unit rates for complete planting of tree seedlings as specified in the drawings. Total amounts for such payment shall not exceed the amount bid for this item. .3 Payment: Unit Price per tree seedling.
3.63	Seeding (excl. Park)	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to place seeding (Seed Mix 1, Seed Mix 2A, Seed Mix 3) as shown on Drawings and in the Contract Documents. This scope excludes the seeding required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be square meters of seeded area, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
3.64	Rolled Concrete Curb (remove and replace)		.1 Scope: Includes all labour, equipment and resources required to removed existing rolled concrete curb and supply and install new rolled concrete curb as indicated on the drawings and as per the City of Calgary Specification for rolled concrete curbs, and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be per linear meter. .3 Payment: Unit Price per linear meter.

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
4. PROVISIONAL ITEMS			
4.01	Tideflex Checkmate Ultraflex Inline Check-Valve Ø300 mm - Supply and Install		.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø300 mm Tideflex Checkmate Ultraflex Inline Check-Valve, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø300 mm Tideflex Checkmate Ultraflex Inline Check-Valve .3 Payment: Unit Price per Ø300 mm Tideflex Checkmate Ultraflex Inline Check-Valve
4.02	Tideflex Checkmate Ultraflex Inline Check-Valve Ø450 mm - Supply and Install		.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø450 mm Tideflex Checkmate Ultraflex Inline Check-Valve, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø450 mm Tideflex Checkmate Ultraflex Inline Check-Valve .3 Payment: Unit Price per Ø450 mm Tideflex Checkmate Ultraflex Inline Check-Valve
4.03	Tideflex Checkmate Ultraflex Inline Check-Valve Ø525 mm - Supply and Install		.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø525 mm Tideflex Checkmate Ultraflex Inline Check-Valve, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø525 mm Tideflex Checkmate Ultraflex Inline Check-Valve .3 Payment: Unit Price per Ø525 mm Tideflex Checkmate Ultraflex Inline Check-Valve
4.04	Tideflex Checkmate Ultraflex Inline Check-Valve Ø1050 mm - Supply and Install		.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø1050 mm Tideflex Checkmate Ultraflex Inline Check-Valve, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø1050 mm Tideflex Checkmate Ultraflex Inline Check-Valve .3 Payment: Unit Price per Ø1050 mm Tideflex Checkmate Ultraflex Inline Check-Valve
4.05	Tideflex Checkmate Ultraflex Inline Check-Valve Ø1200 mm - Supply and Install		.1 Scope: Includes all labour, equipment, and materials required to supply and install Ø1200 mm Tideflex Checkmate Ultraflex Inline Check-Valve, and all related work and materials for which payment is not included elsewhere. .2 Measurement: Shall be per Ø1200 mm Tideflex Checkmate Ultraflex Inline Check-Valve .3 Payment: Unit Price per Ø1200 mm Tideflex Checkmate Ultraflex Inline Check-Valve
5. CENTENNIAL PARK (LANDSCAPING DRAWINGS COMING IN ADDENDUM)			
5.01	Irrigation System - Supply and Install	Landscaping Drawings	.1 Scope: Includes all labour, equipment and materials needed to install irrigation system as identified in the Drawings including all items for which payment is not included elsewhere. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 75% of the Lump Sum value on completion of installation of irrigation system, 25% of the Lump Sum value after issuance of the Construction Completion Certificate
5.02	Concrete Sidewalk - Supply and Install (Park only)	D-901 Detail D	.1 Scope: Includes all labour, equipment and resources required to supply and install concrete sidewalk (and staircase landings) including excavation, subgrade preparation, crushed gravel leveling course, and reinforcement to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. This scope includes only the concrete sidewalks included in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be by square meters of concrete sidewalk as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
5.03	Asphalt Pathway - Supply and Install (Park only)	C-502 Details 2A and 2B, C-503 Detail 1	.1 Scope: Includes all labour, equipment and resources required to supply and install asphalt pathway including base gravels to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. This scope only includes the asphalt pathways included in Centennial Park (on the river side of the dike from station 0+250 to 0+500). The entire top of the dike pathway is excluded in this scope. .2 Measurement: Shall be square meters of asphalt trail surface, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
5.04	Concrete Stairs with Handrail - Supply and Install	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to supply and install 4m wide concrete stairs with handrail to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be by vertical meter of stair (riser+tread) as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per vertical meter.
5.05	Topsoil - Supply (Park only)	Landscaping Drawings	.1 Scope: Includes supplying additional topsoil from off-site sources, paying royalties, excavating, sorting, loading, and hauling of topsoil, per Contract Documents. It is the responsibility of the Contractor to determine a suitable topsoil source location. Material that does not meet requirements of topsoil delivered to site will not be compensated for. Overages in topsoil delivered to site will not be compensated for. This scope only includes the topsoil supply required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be cubic meters of suitable topsoil (in excess of stripped topsoil volume), as determined by survey of final bank cubic meters installed. .3 Payment: Unit Price per cubic meter.

ITEM NO.	ITEM NAME	SECTION	SCOPE, MEASUREMENT AND PAYMENT
5.06	Topsoil Placement (Park only)	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to prepare receiving surfaces, dump, spread, grade, compact, rake, shape, and trim Topsoil to the finished grade surface to achieve the lines, grades, and elevations shown on Drawings and in the Contract Documents. This scope only includes the topsoil placement required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be cubic meters of Topsoil placed (stripped + supplied), as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
5.07	Seeding (Park only)	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to place seeding (Seed Mix 1, Seed Mix 2A, Seed Mix 3) as shown on Drawings and in the Contract Documents. This scope only includes the seeding required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be square meters of seeded area, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
5.08	Sodding (Park only)	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to place sodding as shown on Drawings and in the Contract Documents. This scope only includes the sodding required in Centennial Park (on the river side of the dike from station 0+250 to 0+500). .2 Measurement: Shall be square meters of sodded area, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per square meter.
5.09	Additional Common Fill at Amphitheater Stairs and Bench Wall - Place and Compact	02331, 02332, Landscaping Drawings	.1 Scope: Includes all labour, equipment, and resources required to investigate, test, verify suitable quality, provide submittals and quality control, supply and place, and compact common fill to the design lines, grades, and elevations as shown on Drawings and in the Contract Documents; and all related work and materials for which payment is not included elsewhere. It is the responsibility of the Contractor to determine a suitable fill source location. Material that does not meet requirements of common fill delivered to site will not be compensated for. Overages in fill delivered to site will not be compensated for. .2 Measurement: Shall be cubic meters of suitable Common fill, as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per cubic meter.
5.10	Stone Bench Walls at Amphitheater	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to supply and install the Stone Bench Walls at the Amphitheater to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be by linear meter of horizontal walls installed as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per horizontal meter.
5.11	Stone Edger / Bench Wall at Riverbank	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to supply and install the Stone Edger / Bench Walls at the Riverbank to the lines, grades, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Measurement: Shall be by linear meter of horizontal walls installed as determined by survey and the finished grade lines, grades, slopes, and elevations specified in the Contract Documents. .3 Payment: Unit Price per horizontal meter.
5.12	Relocate Rock Cairn, Memorials and Petrified Wood	Landscaping Drawings	.1 Scope: Includes all labour, equipment and resources required to salvage, relocate and install the existing Rock Cairn, Memorials and Petrified Wood to the location, and elevations as shown on Drawings and in the Contract Documents and all items incidental to complete the work and for which payment is not included elsewhere. .2 Payment: Lump Sum paid in accordance with the schedule below. The total amount of such payments shall not exceed the amount bid for this item. 100% of the Lump Sum value on completion of installation of all items.

1. GENERAL

1.1 References

- .1 Provide hydroseeding rehabilitation in accordance with the following standards (latest revision) except where specified otherwise.
- .2 Government of Canada
 - .1 Seeds Act and Seeds Regulations
- .3 Government of Alberta
 - .1 Weed Control Act and Weed Regulation.

1.2 Submittals

- .1 Provide the following submittals.
- .2 The following test results at least 15 days prior to the delivery of seeds to the Site.
- .3 Seed Certificates of Analysis for each lot of seeds to be supplied with test results prior to seed blending and procurement showing:
 - .1 germination rate, or when native seeds are specified and are not a part of the seed tables, the Tetrazolium results, and purity. Seed mix composition expressed as a percentage of each seed species by dry mass for each seed mix specified.
 - .2 Calibration certificate for the hydroseeding equipment.
- .4 Substitutions to specified seed species and variety require written approval of The DFMP's Representative before sowing. Contractor shall submit documentation from seed supplier verifying unavailability of any specified seed species and variety with recommendations.
- .5 The Contractor shall incorporate a soil amendment agent into the seeding operations. The soil amendment material/agent must be on Alberta Transportation's Product List under either Proven or Trial Products. The Contractor shall submit the product information for review prior to seeding operations commencement.

1.3 Quality Control

- .1 Retain a Registered Seed Laboratory to conduct specified seed testing.
- .2 Contractor: Experienced and knowledgeable in landscape work of contract.
- .3 Site Supervisor: Competent, experienced and knowledgeable to direct and supervise all staff and work of contract. Supervisor shall possess a Landscape Journeyman Gardner certification or other similar qualification acceptable to the Consultant.
- .4 Staffing: Experienced, competent and trained landscape personnel who will perform all tasks and services in a knowledgeable and professional manner. Workers shall act safely and professionally at all times while working on site. Contractor shall not assign any worker that the Consultant deems incompetent, careless, insubordinate, or otherwise objectionable to work on site.
- .5 Contractor shall be responsible for ensuring that contract specifications are being adhered to. Failure of the Consultant to immediately reject unsatisfactory workmanship or to notify the Contractor of their deviation from the specification shall not relieve the Contractor of their responsibility to repair and/or replace unsatisfactory work.
- .6 Contractor shall obtain approvals as required by contract for suppliers, sub-contractors, and materials.

1.4 Delivery, Storage, and Handling

- .1 Provide seed in standard containers clearly labelled with the following information:
 - .1 Name and address of manufacturer and supplier.
 - .2 Lot number.
 - .3 Net mass.
 - .4 Mixture Composition: Names and percentages of individual seed species.
- .2 Protect seed from direct sunlight, moisture, mould, and other detrimental conditions, while in transit and storage.
- .3 Provide fertilizer in standard containers clearly labelled with the following information:
 - .1 Supplier's name and address.
 - .2 Specified composition.
 - .3 Net mass.

1.5 Measurement and Payment

- .1 Unit Description: Restoration of seeded areas when damaged by work in scope to match existing conditions. This is **NOT A SEPARATE PAYMENT ITEM.**

2. PRODUCTS

2.1 Seed Mixes

- .1 The following seed mixtures shall be used on the project:
 - .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 Mixed grass
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)
Deschampsia ceaspitosa	Tufted Hairgrass	25%	3%	1.97
Pascopyrum smithii / Agropyron smithii	Western Wheatgrass	20%	32%	18.60

Bromus carinatus	Mountain Brome	5%	10%	5.68
Elymus trachycaulus / Agropyron trachycaulum var.	Slender Wheatgrass	10%	11%	6.39
Elymus canadensis	Canada Wildrye	15%	23%	13.34
Spartina pectinata	Alkali Cordgrass	25%	21%	11.66

- .2 Cover Crop for Wet Tolerant Seed Mix 1: Add a cover crop of Beckmannia Syzigachne (Slough Grass) at 5kg / ha in areas of highwater erosion prone areas.

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

Site Characteristics	
Seeding Method	broadcast
Habitat Type	deciduous forest
Natural Subregion	Dry Mixed grass
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)
Elymus lanceolatus / Agropyron dasystachyum	Northern Wheatgrass	15%	16%	9.30
Pascopyrum smithii / Agropyron smithii	Western Wheatgrass	20%	30%	17.36
Elymus trachycaulus / Agropyron trachycaulum var.	Slender Wheatgrass	10%	10%	5.97
Bouteloua gracilis	Blue Grama	10%	2%	0.88
Elymus canadensis	Canada Wildrye	10%	14%	8.30
Nassella viridula / Stipa viridula	Green Needlegrass	25%	27%	15.82
Koeleria macrantha	Junegrass	10%	1%	0.58

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

- .3 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 Mixed grass
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)
Elymus lanceolatus / Agropyron dasystachyum	Northern Wheatgrass	23%	46%	22.91
Pascopyrum smithii / Agropyron smithii	Western Wheatgrass	10%	23%	11.16
Bouteloua gracilis	Blue Grama	20%	6%	2.83
Hesperostipa comata / Stipa comata	Needle and Thread	2%	4%	2.13
Poa sandbergii	Sandberg Bluegrass	15%	6%	3.07
Nassella viridula / Stipa viridula	Green Needlegrass	5%	9%	4.24
Koeleria macrantha	Junegrass	23%	4%	2.13
Dalea purpurea	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.
- .4 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.
- .5 Fertilizers:
- .1 Do not apply fertilizers where native seed mixes are applied.
- .6 Water: Free of impurities that would inhibit or adversely affect germination and growth of the seed.

3. EXECUTION

3.1 Preparation

- .1 All areas are to be prepared prior to placement of restoration seed.
- .2 For areas with slopes steeper than 3 horizontal : 1 vertical, all Native Seed Mixes listed above to be installed at rate of 60 kg / ha.
- .3 Preparing surface prior to placement of seed or the supply and application of amendments shall be considered incidental to Work and no separation or additional payment will be made.

3.2 Mechanical And Broadcast Seeding Of Native Seed Mixes

- .1 Sow at the rate indicated with Seed Mixes, during calm weather and when soil moisture content is adequate for germination.
- .2 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.
- .3 For steeper than 2:1 slopes or slopes that are not easily accessible use manually operated broadcast seeder.
- .4 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.
- .5 Cover broadcasted seed by hand raking and ATV harrowing-in.

3.3 Optimal Seeding Periods for Native Grasses

- .1 Mid to late May, early June – no later than June 15th.
- .2 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.

3.4 Hydromulching with Cover Crop

- .1 Any of EcoAnchor, Promatric or Flexterra® High Performance-Flexible Growth Medium™ (HP-FGM™) are acceptable and commonly used hydro mulch and contain 80% wood fibers (see component below).
 - .1 Thermally Processed* (within a pressurized vessel) Virgin Wood Fibers – 80%
 - .2 *Heated to a temperature greater than 380 degrees Fahrenheit (193 degrees Celsius) for 5 minutes at a pressure greater than 50 psi (345 kPa)
 - .3 Wetting agents (including high-viscosity colloidal polysaccharides, cross-linked biopolymers, and water absorbents) – 10%
 - .4 Crimped Biodegradable Interlocking Fibers – 5%
 - .5 Micro-Pore Granules – 5%
- .2 Water: free of impurities that would inhibit germination and growth.
- .3 Application rate: As recommended by manufacturer's written technical data for the % slope upon which it is being applied.

3.5 Preparation of slurry

- .1 Refer to manufacturer's recommended procedures.

3.6 Slurry application

- .1 Hydraulic seeding equipment:
 - .1 Slurry tank.
 - .2 Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/or mechanical agitation method.
 - .3 Capable of seeding by 50 m hand operated hoses and appropriate nozzles.
 - .4 Tank volume to be certified by certifying authority and identified by authorities "Volume Certification Plate".
- .2 Before application, ensure hydro seeding/mulching truck tank is clean. Thoroughly flush the tank, pumps and hoses to remove all material.
- .3 Hydromulch slurry mixture applied per hectare.
 - .1 Only covercrop seeds are to be installed per hydromulch method.
 - .2 Hydromulch mixture: Application rate as recommended by manufacturer's written technical data for % slope.
 - .3 Recommended hydromulch application to be 5000 kg/ha to 5500 kg/ha due to limited access and inability to apply secondary slurry.
 - .4 Adjust application rate based on slope gradient, as recommended by manufacturer.
 - .5 Follow manufacturer's recommendations for application.
 - .1 Follow a two (2) application method, as directed by manufacturer, to increase germination results and enhance erosion protection.
 - .6 Blend application 500 mm into adjacent grass areas or sodded areas to form uniform surfaces.
 - .7 Re-apply where application is not uniform.
 - .8 Remove slurry from items and areas not designated to be sprayed.
 - .9 Optimal seeding periods for native grasses are:
 - .1 Mid to late May, early June – no later than June 30.
 - .2 Late September – after first hard frost, when plants go dormant.
 - .10 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 and will require re-application at no additional cost to The DFMP.
 - .11 Do not hydroseed on frozen ground, snow or during adverse weather conditions. Do not hydroseed within 24 hours of rainfall, or if rain is forecast in the next 24 hours.

3.7 Notification of Commencement of Work

- .1 Notify the DFMP at least 48 hours prior to any seeding work. Do not commence seeding operations until all areas designated for seeding have been prepared to the satisfaction of the DFMP.
- .2 Do not commence seeding operations until the DFMP has reviewed the Certificate of Seed Analysis and verified the specified seed mix composition supplied.

3.8 Weather Conditions

- .1 Do not proceed with the work when, in the opinion of the DFMP, weather conditions are unsuitable. The DFMP will not allow work to proceed when wind conditions are such that material is being carried beyond the designated work areas or that the material is not being uniformly applied.
- .2 Do not perform work under adverse field conditions such as wind speeds over 10 km / h.
- .3 Provide prepared surfaces that are free of frost and standing water.

3.9 Protection

- .1 Take care to prevent the contamination of structures, signs, guardrails, fences, utilities, and other installations from the seeding operations. Remove offending contamination using methods acceptable to the DFMP.
- .2 Protect existing work, and the Work of the Contract, and repair any damage to such Work.

3.10 Watering

- .1 Water the seeded areas after seeding to achieve germination and a uniform stand of grass. The DFMP will determine the watering schedule and will provide the Contractor with at least 24 hours advance notice to commence watering seeded areas.
- .2 Apply water uniformly to seeded areas without causing displacement or erosion of the materials and topsoil.
- .3 Minimize travel on seeded surfaces.
- .4 Use watering equipment and techniques authorized by the DFMP.

3.11 Reseeding

- .1 At locations that fail to show a uniform stand of grass due to construction activities during the calendar year following the year of seeding repair the defective locations as determined by the DFMP. A uniform stand of grass will be considered as grass that shows no deterioration or exposed soil greater than 1 square metre in size and provides a minimum of 80 percent ground cover as determined by the DFMP.
- .2 The DFMP will inspect the seeded areas during the month of May of the calendar year following the year of initial seeding. Complete any required reseeding work prior to June 15 of that year. This date will be extended if, in the opinion of the DFMP, the weather conditions prior to June 15 are not suitable for reseeding Work.
- .3 Meet all the requirements for initial seeding, including seeding method, seed compositions, [fertilizer composition], and application rates, Surface Tracking as applicable.
- .4 Contractor will not be required to reseed any area more than once.
- .5 The Contractor shall reseed as required during the warranty period to ensure uniform growth. Any costs associated with reseeding during the warranty period shall be considered incidental and no separate or additional payment will be made.

3.12 Maintenance Log Requirements:

- .1 Maintain and complete a maintenance log for each day of maintenance activity throughout maintenance period.
- .2 Submit maintenance log data to the Consultant each week for verification and approval of services performed. Contractor shall ensure maintenance log data is true and accurate. Site supervisor must complete and sign maintenance log.

- .3 Record all maintenance activities including date/time of activities, quantity of water applied on site, materials used and quantity in maintenance of sodded areas, location where activities were carried out, number of employees and name of supervisor on site.

3.13 Final Acceptance and Termination of Initial Maintenance

- .1 For final acceptance of seeded areas, the following percentages of cover must be achieved:

End of Growing Season	Percent Coverage Target	Comments
1	35 - 50%	
2	70%	<p>Required for Final Acceptance Certificate</p> <p>70% coverage with 40% native species – seeded areas</p> <p>Less than 5% noxious weeds</p>

- .2 Procedure for measuring percentage coverage:

- .1 Plant cover estimation will occur within 5% of the planting area, within randomly placed 1 m by 1 m quadrats. (e.g., 120 m² area = 6 quadrats, 80 m² area = 4 quadrats)
- .2 The area of plant cover measured is the area of ground that is occupied by the above-ground parts of each species when viewed from above, measured as a percent of the area of reference (quadrat).
- .3 To record percentage cover in a quadrat, look down on the quadrat from above and estimate the percentage cover occupied. Complete cover with no bare ground would equal 100% cover.
- .4 Quadrats will be randomly spaced throughout the seeded area and will include a range of plant coverage of the landscape, from highest to lowest plant coverage.
- .5 Document percent cover estimates with representative photos of each quadrat.
- .6 Utilize Alberta’s Range Health Assessment Guidelines – Field Worksheet for Grasslands (Alberta Sustainable Resource Development 2005) Percent Cover Examples as a guideline for estimating percent cover within the quadrat.
- .7 Volunteer species and cover crops are not acceptable substitutes in percent coverage calculations.
- .8 The DFMP will be sole judge of assessing compliance with percentage of cover requirements.

3.14 Clean-up and Repairs:

- .1 During work of contract, keep all hard and soft surfaces clean and tidy. Sweep and wash all walkways and other pavement surfaces to maintain clean appearances. Clear soil and rubble from catch basins, manholes, valves and other hard surface features.
- .2 Collect all litter and other debris from site during work of contract.
- .3 Remove and dispose of excess materials, soil, litter, debris, and grass clippings at approved disposal site. Contractor shall be responsible for all disposal costs.

- .4 Repair all damages resulting from Work of this Contract.

1. GENERAL

1.1 Submittals

- .1 Submit the following, for Town of Drumheller's review and approval as applicable:
 - .1 Name and location of sod supplier including certification for grass species.
 - .2 Site supervisor's credentials for approval. Submit information minimum two weeks prior to commencement of work.
 - .3 Work schedule showing approximate dates for commencement and completion of each item of work. Submit prior to commencement of work.
 - .4 Copies of all permits and licenses as applicable to work of this contract.
 - .5 Submit all other required information and documents as requested or specified.

1.2 Quality Control

- .1 Examination
 - .1 Contractor shall advise the Consultant, in writing, of any conditions or defects encountered on site before or during construction upon which the work of this section depends and which may adversely affect its performance.
 - .2 Do not commence work until adverse conditions or defects have been evaluated by the Consultant and corrective measures taken.
 - .3 Commencement of work shall imply acceptance of existing surfaces and conditions and no claims for damages or extras resulting from such conditions or defects will be accepted later, except where such conditions could not have been known prior to commencing work.
- .2 Delivery, Storage and Handling
 - .1 Use all means necessary to protect all materials before, during and after installation, and to protect the installed work and materials of other contractors.
 - .2 Packaged materials shall be delivered in sealed containers clearly marked with contents, weight, analysis and name of manufacturer.
 - .3 Schedule deliveries in order to keep storage at site to a minimum without causing delays.
 - .4 Protect sod during transportation with tarpaulin from drying out. Unload and store sod on pallets. Keep sod moist and cool until installed.
 - .5 Deliver sod to site within 24 hours of being harvested. Install all sod within 36 hours of being harvested.
 - .6 Dried out, damaged, deteriorated and unhealthy sod is not acceptable. Broken or irregular pieces of sod are not acceptable. Promptly remove all unacceptable sod from site.

1.3 Measurement and Payment

- .1 Unit Description: Restoration of sodded areas when damaged by work in scope to match existing conditions. This is **NOT A SEPARATE PAYMENT ITEM.**

2. PRODUCTS

2.1 Material:

- .1 Fertilizer: synthetic fertilizer, granular in composition, minimum 50% of elements derived from organic sources.
- .2 Nursery Sod: certified number one turf grass sod of premium grade. Sod shall comply with standards outlined in current edition of "Canadian Standards for Nursery Stock - (Nursery Sod)", published by the Canadian Nursery Landscape Association.
 - .1 Permeated with a strong fibrous root system; be freshly cut and in good healthy condition with no decay or bare spots; be uniform in texture and free from weeds, undesirable native grasses and foreign debris; and contain adequate moisture to maintain its vitality during transportation and placement.
 - .2 Grown on fertile topsoil, by a sod producer specializing in sod production and harvesting. Sod shall be 18 to 24 months in age prior to harvesting. Submit sod certification for grass species and location of source.
 - .3 Broken, dry, deteriorated, damaged and discoloured sod shall be rejected.
 - .4 Thickness of soil portion of nursery sod shall be 15 mm.
- .3 Water: clean, fresh, and free of substances or matter that would inhibit vigorous and healthy growth of grass.
 - .1 Contractor shall supply clean water, equipment, methods of transportation, water tanker, hoses, attachments, and other accessories as necessary to adequately apply water to all sodded areas and for other work in contract.
 - .2 All costs for supply of water incurred during the contract and maintenance period shall be borne by Contractor and will be considered incidental to the Work and no separate or additional payment will made.
- .4 Staples: u-shaped steel wire staples, 150 mm to 200 mm in length as recommended by manufacturer of geotextile fabric material.
- .5 Geotextile Fabric: biodegradable square netting for slope reinforcement.
- .6 Biodegradable Pegs: 17 mm x 8 mm x 200 mm.
- .7 Wood Pegs: of sufficient size and length to ensure anchorage of sod on slope.
- .8 Sod Type:
 - .1 Fescue Sod: sod grown from certified Canada No. 1 fescue grass seeds. Seed mixture shall be a 100% mixture of Creeping red fescue, Chewing fescue, Hard fescue and Sheep fescue grass seeds.

3. EXECUTION

3.1 Fertilizing:

- .1 Apply fertilizer prior to sodding, after final grade is approved by the Consultant.
- .2 Apply 12-51-0, 16-32-6 or other similar granular starter fertilizer evenly at 3kg/100m² using a calibrated mechanical distributor.
- .3 Lightly rake and incorporate fertilizer into topsoil.

3.2 Laying Sod:

- .1 During progress of work, the Consultant will inspect the Contractor's workmanship and performance to ensure compliance with the specifications.
- .2 Obtain the Consultant's approval of sodbed finish grades, final tilth, surface flatness and fertilizer application before laying sod.
- .3 Firm sodbed by rolling before laying sod as necessary. Lightly moisten and rake soil prior to laying sod.
- .4 Do not perform work during hot and dry conditions, or when ground is frozen or covered in snow or during times of unfavourable climatic conditions.
- .5 Lay sod smooth and even; butt sod pieces close and tight with no open joints visible. Stagger end joints minimum of 30 cm minimum between adjacent rows to avoid continuous seams. Do not stretch or overlap sod pieces.
- .6 Finish sod edges at walks, curbs, planting, tree well, mulch edges, manholes, and other vertical surface by cutting neatly and fitting tightly to edge and line.
- .7 Lay sod smooth and flush with adjoining grass areas, curbs, walk and pavement. Where new sod abuts existing turf, cut edge of existing grass with sharp tool to form a straight line. Level subgrade and butt new sod tight and flush with existing grass. Adjacent to hard surfaces, finish grade of new sod installation shall match finish grade of existing hard surface.

3.3 Protect Subgrade and Sod from Damage During Installation.

- .1 Where large rolls of sod are placed, remove reinforcement netting used to assist in harvesting and/or placement of sod roll before final sod placement.
- .2 Cut and remove all irregular, unhealthy and thin sections of sod with a sharp knife and install new replacement sod.
- .3 Water in sufficient quantities to obtain moisture penetration through sod and into upper 100 mm of topsoil immediately after laying sod.
- .4 After sod and soil have dried from initial watering, roll newly laid sod using a mechanical roller having adequate weight. Roll sod to ensure good contact with topsoil, to eliminate air pockets, remove minor depressions and irregularities, and to form a smooth even surface. Heavy rolling to correct irregularities in grade is not acceptable. Sod adjacent to existing fixtures shall be thoroughly tamped.

3.4 Laying Sod on Slopes:

- .1 On sloped areas 3:1 and steeper, lay sod perpendicular to slope and secure with wooden pegs. Place 4 to 6 wooden pegs/m², to prevent shifting of sod. Drive pegs flush with sod surface. Initiate sod installation from bottom of slope.
- .2 Prior to placing sod on steep slopes where erosion may occur, place geotextile fabric netting over graded topsoil for reinforcement. Install and securely anchor sod in place over fabric with metal staples in accordance with manufacturer's instructions.

3.5 Protection of Sodded Areas:

- .1 Contractor shall provide adequate protection to protect sodded areas from all damage, disturbance, or other construction activity after sodding operations are complete. Remove protection after sod areas are properly established or as directed by the Consultant.
- .2 Damaged sod resulting from inadequate protection shall be repaired with topsoil, fertilizer and new sod at Contractor's expense. All damages shall be repaired prior to final acceptance.
- .3 Keep site well drained and landscape excavations dry. Remove excess water from sodded areas.

3.6 Initial Maintenance Period:

- .1 Maintain sodded areas from time of sodding until minimum 8 (Eight) weeks, after Date of installation acceptable to the satisfaction of the Consultant.
- .2 Maintenance services shall be performed during the landscape growing season (May 1st to September 30th). The Consultant, however, reserves the right to determine actual date of commencement and termination of maintenance based on existing climatic conditions, soil moisture and plant health.
- .3 Any additional maintenance beyond the specified maintenance and warranty period required for Contractor to achieve final acceptance shall be provided at Contractor's own expense.
- .4 Any incomplete weeks or months of maintenance shall be carried over to the following landscape growing season.
- .5 The Consultant reserves the right to extend maintenance period and/or reduce monthly progress payments for maintenance services any time Contractor fails or neglects to provide proper and adequate maintenance services in accordance with contract specifications as determined by the Consultant.

3.7 Maintenance and Establishment (8 Weeks after Installation):

- .1 Work of maintenance period shall be performed each week and as frequently during the week to enable the proper establishment of all new sod and other landscaping installed to ensure that required services and tasks are satisfactorily completed and sustainable.
- .2 Watering: apply water with sufficient frequency to maintain adequate soil moisture, promote root development and prevent sod shrinkage during maintenance/establishment period. During hot dry weather increase frequency of watering to maintain sod health.
- .3 Provide clean water, equipment, water tanker, methods of transportation, hoses, sprinklers, and labour necessary to adequately and efficiently apply water to all sodded areas. Record quantity of water supplied and applied on site in maintenance log.
- .4 Supply all necessary equipment, accessories and labour in use of building water sources where available. Operate existing irrigation facilities, where applicable, to ensure adequate watering of sodded areas.
- .5 Cut grass at regular intervals and maintain at height of 70 mm. Do not cut more than 30% of leaf blade at any single mowing. Remove clippings.
- .6 Pick and remove all litter, debris, and animal waste from lawn areas before mowing. Dispose of collected debris off site.
- .7 Repair areas which show root growth failure, deterioration, bare or thin spots, or which have been damaged by any means or cause, including replacement operations by installing new sod. Ensure all repairs are completed prior to final acceptance.
- .8 Correct any erosion and settlement that results from faulty workmanship and/or material. Restore areas by removing sod, adding topsoil as necessary and laying new sod. Repair ruts resulting from maintenance equipment and personnel. Produce a uniformly smooth surface by removing rutted turf areas and placing new topsoil and sod.
- .9 Apply second application of 20-5-10, 24-5-11 or similar slow release granular turf fertilizer five to six weeks after sodding. Spread evenly at rate of 3 kg/100 m² and water in well after application. Postpone fertilizing until spring if application will occur after August 15th.
- .10 Apply fertile topsoil to fill all minor open joints to prevent sod edges from drying.
- .11 Control weeds, disease, insects and other pests using acceptable integrated pest management practices to reduce pesticide use. However, when necessary, apply chemical pesticides in accordance with manufacturer's instructions and government regulations.
- .12 Repeat rolling of sod as necessary to maintain a smooth grass surface.
- .13 Maintenance Inspections: during progress of the maintenance period, the Contractor and the Consultant will conduct site inspections every 30 days or less to determine whether ongoing

maintenance activities have been performed in accordance with specifications. Any maintenance not performed by Contractor in a satisfactory manner shall be immediately completed to the Consultant's satisfaction.

3.8 Maintenance Log Requirements:

- .1 Maintain and complete a maintenance log for each day of maintenance activity throughout maintenance period.
- .2 Submit maintenance log data to the Consultant each week for verification and approval of services performed. Contractor shall ensure maintenance log data is true and accurate. Site supervisor must complete and sign maintenance log.
- .3 Record all maintenance activities including date/time of activities, quantity of water applied on site, materials used and quantity in maintenance of sodded areas, location where activities were carried out, number of employees and name of supervisor on site.

3.9 Final Acceptance and Termination of Initial Maintenance:

- .1 The Consultant may accept work at end of maintenance period provided:
 - .1 Sod is properly anchored into underlying topsoil, well established, vigorously growing and healthy.
 - .2 Sod is green, even coloured, and free of weeds and other pests.
 - .3 Sod is free of bare and dead spots, visible joints, ruts, undulations and settlement.
 - .4 Sod areas have been recently mowed and thoroughly watered.
 - .5 Sod areas are clean and free of all debris.
 - .6 Sod areas have received all required applications of turf fertilization.
- .2 Contractor shall use specified materials to re-establish sod installations that do not comply with requirements for acceptance and continue with specified maintenance/establishment until deemed acceptable by the Consultant.

3.10 Clean-up and Repairs:

- .1 During work of contract, keep all hard and soft surfaces clean and tidy. Sweep and wash all walkways and other pavement surfaces to maintain clean appearances. Clear soil and rubble from catch basins, manholes, valves and other hard surface features.
- .2 Collect all litter and other debris from site during work of contract.
- .3 Remove and dispose of excess materials, soil, litter, debris, and grass clippings at approved disposal site. Contractor shall be responsible for all disposal costs.
- .4 Repair all damages resulting from Work of this Contract.

1. GENERAL

1.1 Submittals

- .1 Provide the Consultant with written documentation indicating original nursery and place of growth and sources of supply for all shrubs intended to be used when directed.
- .2 Samples of planting accessories when directed by Consultant, including product data.

1.2 Inspection by Consultant:

- .1 The Consultant will inspect plants at the following stages:
 - .1 Plants at local source of supply or place of growth in Alberta.
 - .2 Proposed plant locations before excavating.
 - .3 Installed plants before commencement of maintenance period.
 - .4 At end of maintenance period.
- .2 Notify Consultant 72 hours in advance of each required inspection. Contractor shall ensure required plants will be available or meet specifications before arranging inspection for selection and tagging of plants.
- .3 Approval of plants at source of supply does not impair the right of Consultant to inspect plants on site during project construction. Any plant that has been damaged, does not conform to specifications, or where Consultant installed tags are missing, will be rejected.

1.3 Delivery, Storage and Handling

- .1 Handle plants with reasonable care and skill to prevent injuries to trunk, branches, roots, rootballs and containers. Trees with damaged, broken or abraded trunks or branches will be rejected.
- .2 Protect plants during shipment with tarpaulin, windscreen or other suitable covering. Carefully tie in all branches before transporting. Take all precautions to prevent excessive drying from sun and wind and breakage from wind and equipment. Pad all points of contact between plant and equipment.
- .3 Provide adequate site protection to rootballs, roots, trunks, branches and leaves of plants from drying, frost, equipment, breakage, vandalism and other damage.
- .4 Install plants within 24 hours of delivery to site. Store and heel plants in with topsoil or mulch in suitable location when planting cannot be completed on time. Keep all plants moist until planted. Plants not planted within required timeframe, weather permitting, may be subject to rejection.
- .5 Do not install plants whose soil balls have been cracked or broken before or during planting or when burlap ropes required in connection with their transplanting have been removed. Do not use plants damaged during contact with equipment, or plants that are wilted, windburned or stressed.
- .6 Replace damaged or rejected plants at no cost to Consultant.
- .7 Do not transport trees in open trucks when the temperature is in excess of 25oC, or at speeds in excess of 60 km/h.

1.4 Warranty

- .1 Replace plants immediately when found dead or not in healthy and satisfactory growing condition during maintenance/warranty period specified in Exterior Landscape Maintenance Section.

1.5 Maintenance Period

- .1 Maintain plants as specified in Exterior Landscape Maintenance Section.

1.6 Measurement and Payment

- .1 Excavation + Disposal: For tree wells and planting beds, to depths specified in Drawings. Payment shall be per cubic meter and shall include all work and material incidental thereto.
- .2 Planting Medium: For tree wells and planting beds, payment shall be by the unit price per cubic meter and shall include all work and materials incidental thereto.
- .3 Trees: Payment shall be by the unit cost per tree, and shall include all costs for the supply, loading delivery and installation of the plant material and the supply and installation of guying, and all other work and materials incidental thereto.
- .4 Shrubs: Payment shall be by the unit cost per shrub, and shall include all costs for the supply, loading delivery and installation of the plant material and the supply and installation of guying, and all other work and materials incidental thereto.
- .5 Bark Mulch: For tree and shrub areas, payment shall be by the unit price per square metre for the specified depth for supply and installation and shall include all work and materials incidental thereto.

2. PRODUCTS

2.1 Plants - General

- .1 Supply nursery grown plants that are grown in Alberta or Prairie province.
- .2 Supply plants conforming to federal and provincial regulations.
- .3 Nursery Grown Plants:
 - .1 All plants shall be No. 1 Grade, nursery grown, under proper cultural practices with respect to fertile soil, ample spacing, regular cultivation, weed, pest and disease control, adequate moisture and pruning in accordance with good horticultural practices as advocated by the Canadian Nursery Trades Association and the Landscape Alberta Nursery Trades Association.
 - .2 Plants true to genus, species and variety, structurally sound, well balanced, healthy, vigorous, of normal growth habits, densely foliated and healthy well-developed root system.
 - .3 Plants free of disease – specifically including Dutch Elm Disease and Black Knot, insect infestations, insect eggs, rodent damage, sunscald, frost cracks and other abrasions or scars to bark.
 - .4 Heeled-in plants or plants from cold storage will not be accepted.
 - .5 Plants which have been top Worked, unnaturally sheared or colour treated are not acceptable.

- .6 Plants from native stands, orchards, wood lots, neglected nurseries or which have not received proper cultural maintenance are not acceptable.

2.2 Plants - Characteristics

- .1 Deciduous Trees: straight bodied trees according to their natural habit of growth. Double leaders not acceptable. Trunks clean and free of stubs, decay, splits or other damage.
- .2 Coniferous Trees: trees having straight central leaders with dense and uniform branching that begins no higher than 200 mm from base of tree. Double or broken leaders not acceptable.
- .3 Multi-stemmed Trees: with three or more main stems originating from common base at ground line.
- .4 Shrubs: natural form, typical of genus, species and variety; minimum of four canes.

2.3 Plant Measurement

- .1 All plants shall conform to measurements specified in plant list.
- .2 Measure trees and shrubs, in centimetres, with branches in their normal positions.
- .3 Height and spread dimensions, in centimetres, specified refer to main body of plant.
- .4 Caliper size, in millimetres, takes precedence over height. Take caliper measurement 30 cm above ground.
- .5 Supply container grown plant in container size indicated on plant list. Plants supplied in smaller than specified container will be rejected.

2.4 Plants – Soil Balls

- .1 Container grown plants:
 - .1 Grown in containers for minimum of three months.
 - .2 Established root system that will "hold" soil when removed from container.
 - .3 Container sized in proportion to plant size.
 - .4 Root bound plants are not acceptable.
- .2 Balled and burlapped plants:
 - .1 Soil balls tightly secured with burlap, heavy twine and rope, or burlap wire baskets and rope. Plant trunks shall be in centre of the root ball.
 - .2 Protect balls against exposure to elements.
 - .3 Deliver with firm natural ball of soil and free from pernicious perennial plants and their roots.
- .3 Minimum ball sizes for nursery grown deciduous trees:

Caliper (mm)	Min. Ball Diameter (cm)
40	60
50	70

60	70
70	80
80	90
90	90
100	100
125	120
150	150
175	175
200	200

.4 Minimum ball sizes for nursery grown coniferous trees:

Height (cm)	Min. Ball Diameter (cm)
100	45
125	50
150	60
175	70
200	80
250	90
300	122
350	127

.5 Adjust ball size according to growing habits of plants. Listed soil ball sizes are minimum and for use on nursery grown trees under proper nursery conditions. Multi-stem trees and pine trees require soil ball minimum two sizes larger.

.6 Ball size shall be sufficiently large to contain at least 75% of fibrous root system with a ball depth not less than 50% of ball diameter.

2.5 Planting Medium and Peat Moss:

.1 Planting medium: fertile natural loam, capable of sustaining healthy growth, loose and friable, free of subsoil, clay lumps, stones in excess of 20 mm, live plants, roots or any other deleterious material greater than 20 mm diameter. Planting medium shall be free of litter, foreign matter and toxic materials harmful to plant growth. Planting medium containing construction debris, sod clumps, quack grass or other noxious weeds is not acceptable. Planting medium supplied to site shall meet the following requirements:

- .1 Minimum 6% organic matter.
- .2 Acidity/alkalinity shall range from 5.9 pH to 7.0 pH.
- .3 Electrical Conductivity (E.C.) - level of soluble salts shall not exceed 1.5 dS/m.

- .4 Texture: "Loam" in accordance with Canadian System of Soil Classification. Planting medium shall fall within an allowance of $\pm 2\%$ of the values stated in the table below:

Soil	Sand (%)	Silt (%)	Clay (%)	Class
Loam	35	35	30	Loam

- .2 Peat Moss: decomposed plants, fairly elastic and homogeneous, free of decomposed colloidal residue, wood, sulphur and iron. Minimum of 80% organic matter by mass, pH value between 4.5 and 6.0. Furnished in an air-dry state, packed in standard bags or bales showing name of manufacturer.

2.6 Water

- .1 Water: clean water free of contaminants that may inhibit germination and tree growth.
.2 Water for water hauling equipment: supplied and paid for by Contractor.

2.7 Plant Accessories

- .1 Support posts: T-rail studded 40 mm x 40 mm metal stakes, minimum 2.1 m long.
.2 Guy wire: #12 or #14 pliable galvanized steel wire.
.3 Guy wire anchors: T-rail metal stakes, minimum 600 mm long.
.4 Bark protector: two ply reinforced black rubber garden hose 12 mm diameter, 75 mm wide fabric webbing or rubber belting and as directed by Consultant.
.5 Flagging: fluorescent orange flagging tape.
.6 Plant protection: materials to protect plants from rodent, animal and sun damages applied according to manufacturer's instructions:
.1 Galvanized wire mesh and fastener extending 600mm up trunk from finish grade.
.2 Chemical repellent treatment containing thiram (fungicide) mixture.
.3 Perforated spiral plastic strip extending 600mm up trunk from finish grade.
.7 Mulch material: Coniferous wood mulch: shredded mulch from cedar, fir or pine bark, varying in size from 25 to 100 mm in length. Mulch shall be free of non-organic materials, wood preservatives or diseased wood.

3. **EXECUTION**

3.1 Preparation

- .1 Locate and stake locations of electrical services, utility lines and other underground obstructions.
.2 If underground services interfere with planting plan, notify Consultant, stop Work in area and await further instructions.
.3 Stake out locations of trees, shrubs and planting beds. Locations of all plants shall be reviewed and approved by Consultant on site before planting. Plants installed without review and approval may require transplanting or relocation as directed by Consultant at no additional cost.
.4 Protect benchmarks and hubs which form part of legal site survey.

3.2 Preparation of Plant Beds and Planting Areas

- .1 Shrub Beds: excavate plant beds minimum of 600 mm deep. Utilize excavated material on site, if possible or dispose offsite according to local regulations.
- .2 Trees and Specimen Shrubs: excavate plant pits large enough for soil ball and 300 mm around and beneath soil ball. Excavate tree planting beds minimum 600 mm deep.
- .3 Do not excavate plant pits unless trees are scheduled for installation the same day. Cover and/or clearly flag all excavated plant pits left unattended for any length of time that may present a hazard.
- .4 Place soil mix in planting beds to required elevations. Slope grade away from building.
- .5 Install filter cloth over prepared plant beds only where indicated on drawing.
- .6 Install edging material according to manufacturer's instructions or detail at edge of plant beds where indicated on drawings.

3.3 Planting

- .1 Scarify sub-grade soil within tree pit to depth of 100 mm to eliminate glazed walls before placing soil. Cover bottom of each tree pit excavation with minimum of 300 mm of soil mix and firmly tamp.
- .2 Trees should not be lifted by their trunks. Lifting should be by attachment to the basket at three to four points, or by supporting the tree below the rootball. Trunks shall be supported as necessary to hold them in relation to the rootball and to prevent tearing of roots or loosening of the rootball. Support shall be such that the cambium is not damaged.
- .3 Place plants at same depth they were originally grown. Face for best appearance.
- .4 Measure minimum depth of plant pit from downward side of slope when planting on incline.
- .5 Container plants: remove containers and keep soil ball intact while placing plant in pit. Where roots have circled the container, gently loosen outside roots before planting.
- .6 Balled and burlapped plants:
 - .1 Keep burlap and twine intact while placing plant in pit.
 - .2 Tamp soil mix around ball in layers of 150 mm eliminating air voids.
 - .3 When 75% of soil mix has been placed fill hole with water.
 - .4 After water has completely penetrated soil cut and fold burlap from top third of root ball before placing final layer of soil mix.
 - .5 Remove all ropes, wires and binding from top third of root ball.
 - .6 Complete backfilling, build 100 mm high soil lip around outer edge of plant pit. Fill with water and allow it to be absorbed. In sodded areas, install trees with slight depression to create required saucer.
 - .7 Fill watering saucer with bark mulch to 75 mm depth. Keep mulch material away from trunks and stems.
 - .8 Place bark mulch to 75 mm depth over plant beds. Keep mulch material away from trunks and stems.
 - .9 Do not install any plants closer than 750 mm to edge of walkways, driveways or building foundations. Consider proximity to buildings and walks when installing trees.

3.4 Supporting Trees

- .1 Support trees immediately after installation.
- .2 For trees under 300 cm in height use two support posts. Place one support on prevailing wind side of tree and one support directly opposite.
- .3 For trees 300 cm in height and over use three support posts. Space posts equally around tree.
- .4 Anchor support post minimum 600 mm into undisturbed ground. Ensure support post is secure and vertical. Replace all damaged support posts.
- .5 Locate support posts away from trunk and branches. Height of support shall correspond with tree height.
- .6 Provide each tree support with a bark protector and tie secured at approximately 60% of tree height. Keep ties taut and tree plumb.
- .7 For deciduous trees over 100 mm in caliper and coniferous trees 350 cm in height and over with Consultant approval:
 - .1 Guy with three double guys and anchors spaced equally around plant.
 - .2 Provide guy looped around plant trunk, encased in hose or rubber belting.
 - .3 Attach guys at 60% of plant height at angle of 45 degrees.
 - .4 Top of anchor to be flush with finished grade.
 - .5 Keep guys taut and plant plumb.
 - .6 Attach flagging tape to guys as safety precaution.
- .8 Consultant reserves the right to adjust the need, method, and quantity of support posts required to adequately stake each tree.

3.5 Pruning

- .1 Perform pruning in accordance with proper practices and standards described in Pruning in Alberta. Consult with Consultant before pruning.
- .2 Prune to provide natural branching structure and to encourage healthy natural growth. Do not prune terminal leader of plant or leave protruding stubs when pruning.
- .3 All improperly pruned plants or plants pruned by Contractor without Consultant's authorization will be subject to rejection. Contractor will replace rejected plants or rectify improper pruning as determined and directed by Consultant.
- .4 Limit pruning to removal of dead or injured branches, stray branches, double leaders, watersprouts and suckers and to compensate for loss of roots as a result of transplanting.
- .5 Do not strip lower branches, raise up crown of trees, top or shear any plant. All such improper pruning will result in rejection and replacement by Contractor.

3.6 Maintenance

- .1 For maintenance during construction installation to Total Performance refer to Specification Section 32 99 00 - Exterior Landscape Maintenance.

3.7 Acceptance

- .1 Plants will be accepted by Consultant at end of maintenance period provided:

- .1 Plants meet requirements of the specifications.
- .2 Plants are alive and in healthy, acceptable growing condition.
- .3 Plants are properly planted, staked and pruned.
- .4 Plants are recently and thoroughly watered.
- .5 Plant pits and beds are cultivated and free of weeds, grass and debris.
- .6 Planting accessories are properly installed and in good condition.
- .7 All maintenance requirements have been provided.

3.8 Clean-Up

- .1 Broom clean pavement and sidewalks on daily basis or as directed by Consultant. Keep all manhole covers and catch basins free of soil and debris.
- .2 Remove from site excess materials, debris, soils, branches and equipment.
- .3 Repair any damage resulting from Work of this Contract.
- .4 Remove all tags and labels from accepted plants.
- .5 Remove all vehicles, signage, equipment, waste and other hazardous materials, as applicable, from the site.
- .6 Leave site in neat and clean condition.

1. GENERAL

1.1 Hours of Work

- .1 Perform maintenance work during regular working hours of 07:00 to 18:00, Monday to Friday, or 09:00 to 18:00 on Saturdays and Sundays, unless directed otherwise by the Consultant. No work shall be conducted on any statutory holiday.
- .2 Obtain the Consultant's approval prior to performing maintenance outside of regular working hours.

1.2 Maintenance Period

- .1 Maintain exterior landscape work for a minimum of 12 (twelve) months, over a two-year period after Date of Substantial Performance of the Work in Contract. The Contractor shall start the maintenance work one month after the Certificate of Substantial Performance is used by the DRFMO or the Consultant.
- .2 Maintenance services shall generally be performed during the landscape growing season (May 1st to September 30th). The Consultant reserves the right to determine actual date of commencement and termination of maintenance based on existing climatic conditions, soil moisture and plant health.
- .3 Any additional maintenance beyond the specified maintenance and warranty period required for Contractor to achieve total performance shall be provided at the Contractor's own expense.
- .4 Any incomplete weeks or months of maintenance shall be carried over to the following landscape growing season.
- .5 The Consultant reserves the right to extend the maintenance period and / or reduce monthly progress payments for maintenance services any time the Contractor neglects to provide adequate maintenance services in accordance with the Contract Specifications, as determined by the Consultant.

1.3 Maintenance Schedule

- .1 The Contractor shall submit a neat, legible and detailed maintenance schedule prior to commencement of maintenance period. List all daily, weekly, and monthly maintenance services and tasks to be perform.

1.4 Quality Control

- .1 Site Supervisor: competent, experienced and knowledgeable to direct and supervise all staff and maintenance work of contract. Supervisor shall possess a Landscape Journeyman Gardener certification or other similar qualification acceptable to the Consultant. Submit supervisor's credentials for the Consultant's approval prior to commencement of work.
- .2 Weekly Site Visits: provide adequate site visits each week with sufficient staff to ensure that all required maintenance services are performed and completed on schedule in accordance with specifications.

- .3 Site Security: Contractor's personnel shall carry personal identification at all times while on site. Identification shall be presented when requested. All employees must check in with the Consultant upon entering and leaving the premises where applicable.
- .4 Employee Attire/Safety Vests: all workers shall be properly attired at all times. Each employee working on site shall wear a reflective brightly coloured safety vest for safety and visibility.
- .5 Submittals: submit all required information and documents for the Consultant's approval where specified in the Contract Documents and applicable to work of the Contract and as requested by the Consultant.

1.5 Safety Precautions

- .1 The Contractor shall supply and ensure that all workers use appropriate personal protective equipment as required by Alberta's Occupational Health and Safety Act, Regulations and Code.
- .2 The Contractor shall provide training and ensure all workers practice appropriate safety measures and safe use of tools and equipment in accordance with WHMIS GHS (Workplace Hazardous Materials Information System).
- .3 The Consultant reserves the right to have the Contractor remove any employee from site if not wearing personal protective equipment or if not practicing safe work procedures.
- .4 Regulatory Requirements: perform work in accordance with all applicable laws, codes and regulations required by authorities having jurisdiction over such work and provide all permits required by local authorities.

1.6 Site Inspection / Meetings

- .1 The Contractor and the Consultant shall have a start up meeting prior to starting maintenance for each year following Construction Completion. This meeting will be held on site to review the status of the project and outline any special considerations for the upcoming maintenance period.
- .2 During the initial maintenance establishment period, site meetings and inspections shall be conducted every two weeks or less between the Contractor and the Consultant. The Contractor's workmanship and performance will be reviewed, and other landscape concerns or issues addressed and evaluated.
- .3 Subsequent site meetings and inspections shall be held every 30 days or less after landscape has adequately established, as determined by the Consultant.
- .4 The Consultant shall, at their discretion, conduct random site inspections throughout the maintenance period to evaluate work performed. The Contractor shall promptly correct all deficient work within three days of the Consultant's notification.

1.7 Maintenance Log Requirements

- .1 Maintain and complete a maintenance log for each day of maintenance activity throughout the maintenance period.
- .2 Submit maintenance log data to the Consultant each week for verification and approval of services performed. The Contractor shall ensure maintenance log data is true and accurate. Site supervisor must complete and sign maintenance log.

- .3 Record all maintenance activities including date/time of activities, quantity of water supplied and applied on site, materials used and quantity during maintenance of landscape installations, location where activities were carried out, number of employees and name of supervisor on site.
- .4 Maintenance Invoices: invoices submitted without verifiable maintenance log data to support the invoice will not be accepted. The Consultant will defer payment of the Contractor's invoice until all maintenance services are deemed acceptable and in compliance with specifications as determined by the Consultant.

1.8 Soil Analysis

- .1 The Contractor shall perform all horticultural soil tests during the maintenance period at seed, turf, and planting locations randomly selected by the Contractor. The Contractor shall arrange and pay for the services of an accredited testing laboratory subject to the approval of the Consultant.
- .2 The Contractor shall submit an original copy of each soil test to and review the results with the Consultant.
- .3 Soil analysis for horticultural use shall include results for: existing major soil nutrients; soil pH value; total soluble salts (electrical conductivity); percentage of organic matter; soil texture and percentage of sand, silt and clay; nutrient recommendations; and recommendations for soil amendments, including fertilizer type and application rate.
- .4 The Contractor shall amend soil conditions as recommended by soil analysis report and indicate all corrective measures taken, documenting final soil condition results in the maintenance log.

1.9 Delivery, Storage and Handling

- .1 Remove all equipment and materials off site each day unless on site storage is approved by the Consultant.
- .2 Store tools, equipment and materials in a secure area when not in use during period of operation and at the completion of each scheduled task.
- .3 Contractor shall be present on site to accept delivery of all equipment and/or material shipments. Acceptance of delivery by the Consultant shall not constitute acceptance or responsibility for any of the materials or equipment.

1.10 Damage to Property

- .1 The Contractor shall be held directly responsible for all damages to private and public property, the personal property of all employees, staff and visitors and the property of adjacent land. This includes damage resulting from the actions of the Contractor, the Contractor's employees, subcontractors or representatives who provide service under this Contract.
- .2 The Contractor shall immediately report all damages to the Consultant.
- .3 The Contractor shall repair, replace or restore all damaged property to its original condition or better as directed by the Consultant. Damages shall be promptly corrected within seven days of approval unless directed otherwise by the Consultant.

- .4 Scalping of turf, mechanical damage or injury to plant material, improper plant pruning, and damages resulting from improper use of chemical pesticides and fertilizers will be considered property damage.
- .5 All costs associated with the repair and replacement of damaged property shall solely be the responsible of the Contractor.

1.11 Protection

- .1 Protect landscape plantings and turf areas at all times against damage of all kinds for the duration of the maintenance period. Maintenance includes temporary protections, fencing, barriers, and signs as required for protection. If any plant material or turf becomes damaged or injured because of insufficient protection, the Contractor shall treat or replace plant material or turf at the Contractor's sole expense.

1.12 Total Performance and Termination of Maintenance

- .1 Work under this section may be accepted by the Consultant at the end of the maintenance period provided all requirements for acceptance contained within the Contract documents have been satisfactorily completed.

1.13 Maintenance Instructions

- .1 The Contractor shall provide two (2) copies of detailed written maintenance instructions identifying the maintenance and care instructions for all seed, turf areas and plant material installed in the Contract.

1.14 Measurement and Payment

- .1 Landscape maintenance shall be paid at the unit price bid per month for "Maintenance – Warranty Period". Unit price shall include for all materials, equipment, labour and incidentals necessary to complete maintenance item of work.
- .2 All associated costs for amending soil conditions will be considered incidental to the Work, and no separate or additional payment will be made.
- .3 The Consultant will have the option of extending the maintenance period, under the sole discretion of the Consultant The payment per month for additional monthly maintenance will be paid at the price bid per month for Maintenance – Warranty Period.
- .4 The Consultant will deem unacceptable any work that is determined to be improper, inadequate, incomplete and not in accordance with the Contract Specifications.

2. PRODUCTS

2.1 Fertilizer:

- .1 Synthetic Turf Fertilizer: apply a complete premium grade synthetic fertilizer, granular in composition, with over 50% of total nitrogen derived from a slow or controlled release nitrogen source to maintain turf in a healthy, vigorous, and green condition. Fertilizer shall contain all essential macronutrients plus 1%-2% iron and other micronutrients.

- .1 "Weed and Feed" fertilizers are not allowed.

- .2 Fertilizer: apply controlled or slow-release fertilizers in accordance with soil analysis where applicable.

2.2 Planting Medium and Peat Moss:

- .1 Planting medium: fertile natural loam, capable of sustaining healthy growth, loose and friable, free of subsoil, clay lumps, stones in excess of 20 mm, live plants, roots or any other deleterious material greater than 20 mm diameter. Planting medium shall be free of litter, foreign matter and toxic materials harmful to plant growth. Planting medium containing construction debris, sod clumps, quack grass or other noxious weeds is not acceptable. Planting medium supplied to site shall meet the following requirements:
 - .1 Minimum 6% organic matter.
 - .2 Acidity/alkalinity shall range from 5.9 pH to 7.0 pH.
 - .3 Electrical Conductivity (E.C.) - level of soluble salts shall not exceed 1.5 dS/m.
 - .4 Texture: "Loam" in accordance with Canadian System of Soil Classification. Planting medium shall fall within an allowance of $\pm 2\%$ of the values stated in the table below:

Soil	Sand (%)	Silt (%)	Clay (%)	Class
Loam	35	35	30	Loam

- .2 Peat Moss: decomposed plants, fairly elastic and homogeneous, free of decomposed colloidal residue, wood, sulphur and iron. Minimum of 80% organic matter by mass, pH value between 4.5 and 6.0. Furnished in an air-dry state, packed in standard bags or bales showing name of manufacturer.

2.3 Water:

- .1 The Contractor shall submit a detailed watering plan to the Consultant 30 days prior to the start of the maintenance period for review and comments.
- .2 The Contractor shall be fully responsible for all aspects of the providing watering requirements during the maintenance period.
- .3 No motorized vehicles will be allowed on private property during the maintenance periods.
- .4 Supply clean fresh water, water tanker, equipment, sprinklers, and labour necessary to adequately and efficiently apply water to all turf areas and plant materials.
- .5 Record quantity of water supplied and applied on site in maintenance log.

2.4 Plant Protection Materials - Rodent, Animal and Sun Protection:

- .1 Woven wire mesh: galvanized woven wire strands, 1.2 mm wire diameter or suitable alternative with an opening of 12.5 mm x 12.5 mm, c/w fasteners.
- .2 Plastic: perforated spiraled strip for horticultural use.
- .3 Burlap: clean, minimum 2.5 kg/m mass and 150 mm wide, and twine fastener.

3. EXECUTION

3.1 General Workmanship:

- .1 The Consultant will be the sole assessor of the Contractor's maintenance performance and workmanship.
- .2 Schedule timing of operations to growth, weather conditions and use of site. Do each operation continuously and complete within reasonable time period.
- .3 Do not perform work in any location or manner that may endanger the health and safety of the public.
- .4 Collect and dispose of excess material and debris to approved municipal disposal site following collection.
- .5 Coordinate maintenance practices with Town of Drumheller. Alter maintenance schedules, when necessary, to accommodate Town of Drumheller's site activities.
- .6 Contact the Consultant when specified maintenance requirements cannot be met for any reason.
- .7 Submit name and contact number of company representative for immediate or emergency service when necessary.
- .8 Keep a copy of contract specifications and applicable reference documents on site at all times for employee use and reference.
- .9 Contractor's site supervisor must attend all site meetings called by the Consultant to review workmanship and performance.
- .10 The Contractor shall promptly correct all maintenance deficiencies noted by the Consultant during site inspection meetings or following notification of the Consultant's own work inspection results.

3.2 Spring Clean-Up:

- .1 Complete spring clean-up by May 15th or sooner, weather permitting.
- .2 Remove and dispose of protective coverings and mulch used in winter protection.
- .3 Clean, sweep, collect and remove sand, rock chips, salt and other debris accumulated during winter months from all maintained turf and hard surface areas. Re-sweep turf and hard surface areas until completely clean and acceptable to the Consultant. Dispose of all collected debris to approved municipal disposal site.
- .4 Winter protection materials supplied by Contractor shall be removed from site.
- .5 Clean all plant beds, raised planters, tree wells, hedges and other landscaped areas of plant debris, leaves, litter, and other foreign matter. Remove collected debris from site.
- .6 Loosen and lightly cultivate non-mulched planting soil without disturbing roots of permanent plantings. Reinstall all loose plant bed edging materials and replace where necessary.
- .7 Sweep and clean hard surface areas and along curbs to remove all litter and debris to maintain clean and tidy site appearances.
- .8 Roll turf areas lightly where grass has lifted due to frost action. Repair damaged or deficient turf areas.

3.3 Seeding Turf Maintenance

- .1 Watering – Seeded and Sodded Areas:

- .1 Provide proper and adequate watering services to all seeded and sodded areas to ensure healthy vigorous growing conditions.
 - .2 Seeded Areas: provide adequate watering of seeded areas to ensure proper seed germination and turf establishment. Supply and operate a portable and mobile irrigation system to water seeded turf areas as necessary until adequately and well established.
 - .3 Sodded Areas: regularly and adequately apply water to all sodded areas. Water shall be deeply and thoroughly applied to keep new sod and underlying soil from drying out and to ensure healthy vigorous growing conditions are maintained. Apply water during early morning or evening to achieve efficient use of water.
 - .4 Water Supply: where water is not available, Contractor shall supply clean water, water truck, pumps, portable sprinkler systems and labour and apply water as necessary to maintain healthy turf conditions.
 - .5 Provide 25 to 40 mm of water weekly including natural rainfall to wet upper 100 to 150 mm of soil in maintained seed and turf areas.
 - .6 During periods of drought stress, apply additional water to maintain healthy turf conditions if necessary.
- .2 Topdressing and Reseeding:
- .1 Top-dress and reseed areas which show root growth failure, deterioration, bare, burnt and thin spots, ruts, wash outs and erosion or which have been damaged by any means or cause, including replacement operations.
 - .2 Mow grass to height of 40 mm. After mowing, rake thoroughly, removing loose and dead grass, stones and debris.
 - .3 Spread planting medium to maximum thickness of 15 mm, filling in low areas and bare spots. For severely damaged turf areas place sufficient planting medium and rake level with finish grade.
 - .4 Overseed areas with seed mixture equivalent to existing grasses and approved by the Consultant. Seed at rate of 4 kg/100 m².
 - .5 Rake seed into soil. Roll lightly.
 - .6 Water to ensure penetration of 80 mm and at frequent intervals to maintain vigorous growth.
- .3 Sod Replacement:
- .1 Cut out and remove all areas of dead, or unhealthy sod or which has been damaged by any means or cause and replace with new healthy sod. All repair areas to be square or rectangular.
 - .2 Rake existing soil before installing new sod. Add planting medium to fill uneven and low areas.
 - .3 Butt new sod tightly to adjacent existing sod. Add planting medium to open and exposed joints.
 - .4 Water to ensure penetration of 80 mm and at frequent intervals to maintain healthy growth.
- .4 Seed and Sod Establishment and Erosion:

- .1 Until seeded and sodded areas are established, the Contractor shall be responsible for replacing soils that have eroded into hard surface areas. Residual soils on hard surfaces shall be removed and if not mingled with objectionable materials may be re-used in eroded areas. In the event this is a continuous problem, the Contractor shall install "jute mat" or other methods to prevent the erosion problem until the seed and turf areas are established.

3.4 Fertilizing

- .1 The Contractor shall be responsible for determining the application type and rate for fertilizer to ensure end product specification is achieved. Prior to any fertilizing being completed, the Contractor shall submit a detailed plan for the Consultant's review and comments.
- .2 Apply fertilizer as directed by the Consultant or as indicated in soil analysis. Use only mechanical equipment to spread fertilizer. Check spreader calibration to ensure specified application rate is used.
- .3 Spread 50% of fertilizer in one direction, then 50% at right angles.
- .4 Synthetic Fertilizer: apply the following slow-release granular fertilizer unless approved otherwise by the Consultant. Indicate total quantity of fertilizer applied on site in Maintenance Log for each turf area.
- .5 The following type of fertilizer is for guidance only. The Contractor shall be required to complete Spring, Summer and Fall application as noted at a minimum.
 - .1 Spring Application: all turf areas. Apply 26-14-6 or similar slow-release granular fertilizer at rate of 3 kg/100 m² by May 20th.
 - .2 Summer Application: all turf areas. Apply 24-5-11 or similar slow-release granular fertilizer at rate of 3 kg/100 m² by July 15th.
 - .3 Fall Application: all turf areas. Apply 12-3-18 or similar slow-release granular fertilizer at rate of 2 =kg/100 m² by September 30th.
- .6 Water: apply water immediately after spreading fertilizer. Alternatively, Contractor shall time fertilizer applications prior to natural rainfall that will activate the fertilizer and produce the desired response. Ensure moisture penetration of 50 mm minimum.
- .7 Advise the County prior to any application of turf fertilizer. Upon completion of service, provide documentation along with invoice to support type and quantity of turf fertilizer applied.
- .8 Public notice, to be coordinated through the Consultant, shall be given and posted for each property prior to application.

3.5 Mowing - Maintained Areas

- .1 Mowing Height: cut and maintain turf areas at required variable minimum heights respective of the growing season. During periods of active growth turf shall be mowed at minimum required mowing height. During hot dry conditions and slow growth periods turf shall be mowed at increased or maximum heights to maintain turf health. Turf shall generally be cut and maintained as follows:
 - .1 Sodded Areas: cut and maintain turf at 60 - 80 mm height.

- .2 Seeded Native Grass: provide weed control during seed establishment by mowing weed growth to 100 mm height and remove from site. Mow native seed areas during the last two weeks of June and August or as directed by the Consultant. Mow tall growing native grass at a height of 135 to 150 mm and short growing native grass at a height of 90 to 100 mm. Do not mow native grass lower than specified. Provide an additional cut due to active and/or accelerated growth when directed by the Consultant.
- .2 Mowing Schedule: mow sodded areas on weekly intervals during periods of active growth and more frequently during accelerated growth periods to maintain sod at required height. During periods of hot dry seasonal climatic conditions and when sod growth is slow, sod shall be cut less frequently at an increased height to maintain sod health.
- .3 Mowing shall generally be performed when “one-third” of grass blade can be removed during a single cutting to achieve required turf height. Schedule and complete mowing in one continuous operation, weather permitting. Do not mow sod when insufficient growth is evident or cut sod lower than specified height.
- .4 Mow areas only when dry. Use mowers with sharp blades that will cut cleanly. Areas mowed when wet or with dull blades that tear and leaves ragged leaf edges are unacceptable.
- .5 During periods of extended moisture and excessive sod growth, increase mower blade height and pre-cut sod at an increased height. Remove clippings. After sod dries, lower blade height to specified height and mow sod a second time to achieve required height.
- .6 Remove clippings after each mowing. Small and unnoticeable grass clippings may be left on lawns that are regularly mowed at the desired height.
- .7 Remove papers, rocks, animal waste, and other foreign material before cutting.
- .8 Change direction of cut with each mowing to avoid soil compaction and sod wear or ruts from mower wheels. In the event that sod damage or ruts result, the Contractor shall immediately repair all damaged areas.
- .9 During each cutting operation, temporarily relocate movable site furnishings. Replace to approximate original location after mowing lawn.
- .10 Trimming: trim grass areas as follows:
 - .1 trim grass along fences, walls, signposts, structures, monuments and other select lawn areas not accessible to mowers using a mechanical trimmer. Trim turf at a height no lower than 60 mm. Never scalp turf or damage any plant when using trimmers. Remove resulting plant debris from site.
 - .2 use hand trimmers to trim grass adjacent to trees and other plants to prevent damage to tree trunks, plant stems and roots. Do not use string line trimmers near live plants.
 - .3 cut and neatly trim grass around irrigation equipment, manholes, valves and other surface features in lawn areas. Remove resulting plant debris from site.
- .11 Clean all sidewalks, stairs, roads, parking lots, curbs, hard surfaces, building walls and other required locations of all grass clippings after each mowing to maintain clean site appearances.

3.6 Integrated Pest Management

- .1 Manage and control pests using Integrated Pest Management (IPM) principles that utilizes regular monitoring to identify pests, considers various control options (biological, physical, cultural, mechanical and chemical) before implementing an effective, economical and environmentally acceptable solution to prevent and suppress pests.
- .2 Use IPM principles to reduce or eliminate a reliance on chemical pesticides.
- .3 The Contractor shall be knowledgeable regarding the identification of pests on site, controls to be implemented in management of pests and assessing outcome of treatment actions. Inform the Consultant of all pest concerns on site and controls to be implemented in management of pests. Record all information in the maintenance log.

3.7 Pests: Weed, Insect and Disease Control

- .1 Pest Monitoring:
 - .1 Pest Monitoring: regularly monitor and visually inspect all plants, turf and other landscape areas to identify potential pest problems and determine appropriate pest controls. Pest problems include insect, disease and weed infestations that pose a serious and on-going threat to plant life on site.
 - .2 Ensure proper, positive identification of infestations. Reference "Backyard Pest Management" for identification and control of pests.
 - .3 Indicate results of each monitoring inspection in maintenance log. Review all pest concerns with the Consultant. Record all actions taken to control pest problems in log.
- .2 General Considerations:
 - .1 Use of chemical pesticides are restricted as Town of Drumheller supports the use of IPM practices. Advise Consultant on whether IPM practices are practical in managing and controlling any existing pests on site.
 - .2 Determine susceptibility of plant species to pesticide damage before requesting chemical pesticides. Request the Consultant's approval before use, where chemical pesticides are deemed necessary in the management and control of pest infestations.
 - .3 Applications of pesticides shall be performed in accordance with Alberta Environment's current legislation. Provide the Consultant with three days advance notification of intent to apply chemical pesticides on site.
 - .4 Use equipment and containers free of harmful residues not related to specific control measures applicable to situation.
 - .5 Certified Applicator: when pesticides are deemed necessary to control pests, the application of each pesticide on site shall be performed by a certified pesticide applicator. Personnel assisting the certified applicator on site shall be thoroughly trained and knowledgeable in pesticide applications and use of all equipment in accordance with Alberta Environment's Code of Practice for Pesticides. Applicator shall maintain pesticide application record books and submit at completion of each pesticide application.

- .6 Prepare and apply pesticide according to manufacturer's specifications. Minimize drift at all times. Erect signs to notify building occupants and the public regarding pesticide use on site.
- .7 Timing: pesticides shall be applied at times, which limit any possibility of contamination from climatic and other factors. Monitor weather conditions to avoid making application prior to inclement weather to eliminate potential runoff from treated areas. Confine all applications to outside of regular site operation hours to avoid contamination from drift and its effect on surroundings, occupants of nearby buildings and site users.
- .8 Ineffective and improper application of pesticide shall be immediately terminated and corrected by Contractor. Additional application of pesticides shall be completed approximately two weeks after initial application is noted as visibly inadequate or deemed deficient by the Consultant.

3.8 Pest Control

.1 Weeds:

- .1 Provide ongoing weed control and eradication methods during active growth and establishment, by cultivation, physical removal and use of approved chemical pesticides.
- .2 Completely eliminate and remove from site all noxious weeds in accordance with government regulations.
- .3 Control and elimination of weeds within soft and hard landscaped surfaces on site on an ongoing basis. Ensure weed seed heads are removed before maturity.

.2 Insects and Disease:

- .1 Apply pesticides based on development stage of insects' life cycles to prevent loss or damage to plant material. Monitor turf areas and plants and apply pesticides, if approved, to control pest infestations.
- .3 Monitor effectiveness of each pesticide application and promptly correct any inadequate or deficient application.
- .4 Repair and pay for damage caused by application of herbicides.
- .5 Do not use soil sterilants.
- .6 Eliminate rodents using controls and methods that comply with Town of Drumheller standards.

3.9 Autumn Preparation

- .1 Leaf Removal: rake and vacuum fallen leaves weekly and remove from site to approved waste recycling depot. Continue until leaves cease to fall.
- .2 Clean all plant beds, planters, tree wells, mulched areas, and other landscaped areas on site weekly. Keep catch basins and all road and parking curbs clean and free of all debris. Remove all collected leaves and other debris to approved waste recycling depot.
- .3 Remove and dispose of annuals from plant beds and planters within one week after first killing frost or when directed by the Consultant. Deep cultivate plant beds and planters.

- .4 Cut back foliage of perennial plants within one week after killing frost. Ornamental grass shall remain intact during winter and trimmed back the following spring unless directed otherwise by the Consultant. Stake locations of cut perennials and apply organic mulch around plants for winter protection as necessary. Thoroughly water all perennial plants for winter.
- .5 Deep root water all plants between September 15th and September 30th in preparation for winter. Supply water, trucking and other necessary accessories to adequately apply water to each plant. Trees to receive minimum 40 liters of water per 25 mm of trunk diameter (measure at 300 mm above ground level). Apply water throughout tree dripline area. Saturate root area of shrubs, perennials and other plants. Record total quantity of water applied in maintenance log after each day of plant watering activities. Indicate quantity of plants watered each day and their location in maintenance log. Provide additional deep root watering services when warm dry temperatures are experienced in late fall to maintain plant warranty.
- .6 Protect plants from rodent, animal and sun damages by installing appropriate protective materials.
- .7 Sweep and clean all walkways and other hard surface areas weekly. Remove all collected debris and litter from site.
- .8 Supply and erect snow fencing, as necessary, in protection of new landscape installations and as directed by the Consultant.

3.10 Cleanliness of Grounds

- .1 Keep grounds in clean and tidy condition to ensure clean site appearances are continually maintained. Provide minimum twice monthly clean-up services as directed by the Consultant. Sweep, clean, collect and remove all debris, litter, rubbish and pests from project limits.
- .2 Provide prompt service, within 3 hours, when directed by the Consultant to correct or complete clean-up services deemed inadequate or incomplete.
- .3 Pay all costs for collecting and disposing of excess material and debris to municipal disposal site following each site clean-up. Do not dispose of any debris in Town of Drumheller disposal bins on site.
- .4 Sweep and clean all walkways and other hard surface areas weekly, or more frequently, as required. Provide mechanical power wash equipment to clean and wash paved surfaces near buildings if directed by the Consultant.
- .5 Record all cleaning services performed each week in the maintenance log.
- .6 Make weekly inspections for vandalism and damage. Immediately report vandalism and damage to the Consultant. Note all findings in the maintenance log.
- .7 Provide same day response to the Consultant's request to correct, repair, and adjust damage or defacement of plant materials caused by vandalism, accident or weather.