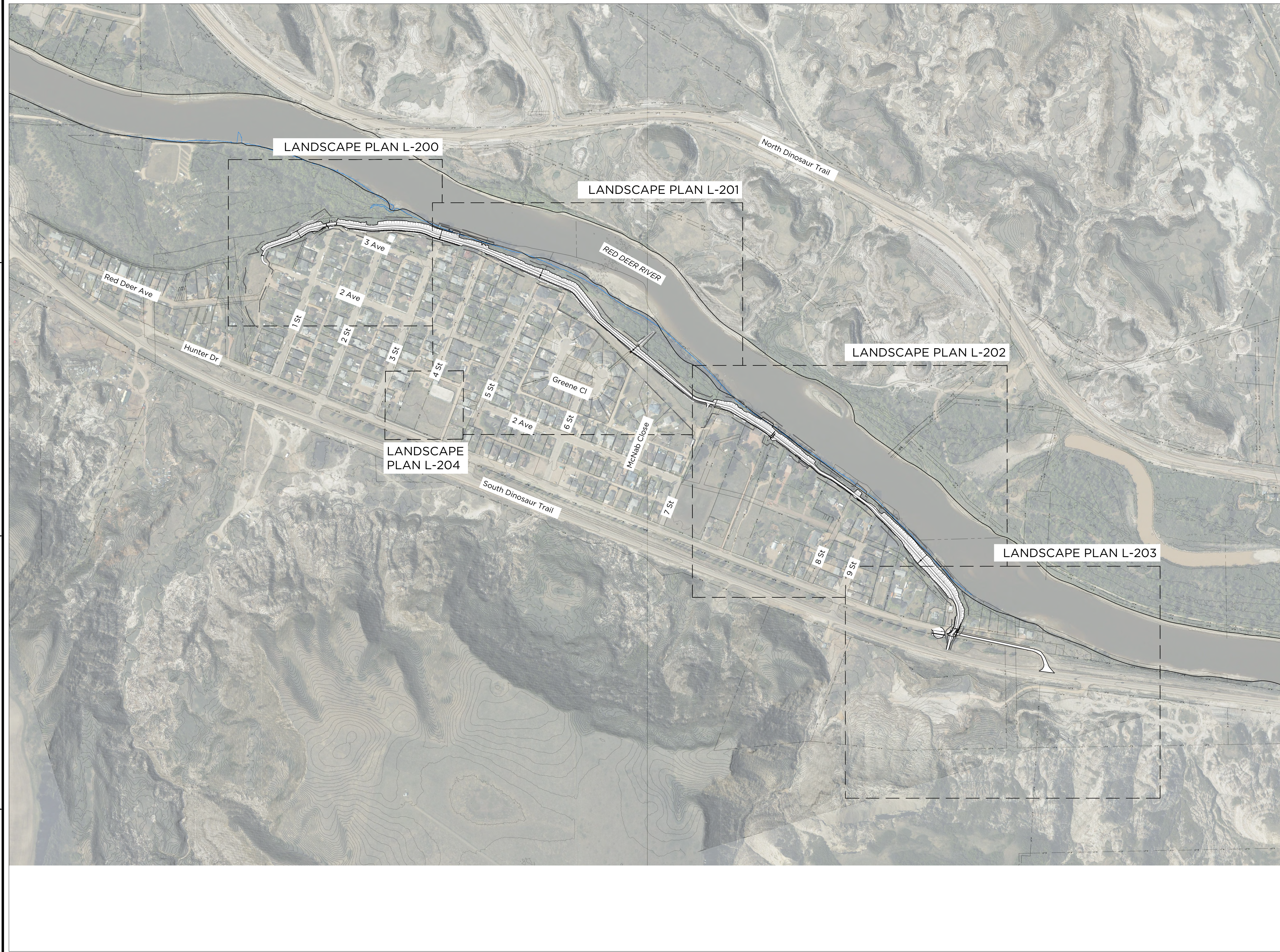


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# NACMINE BERM

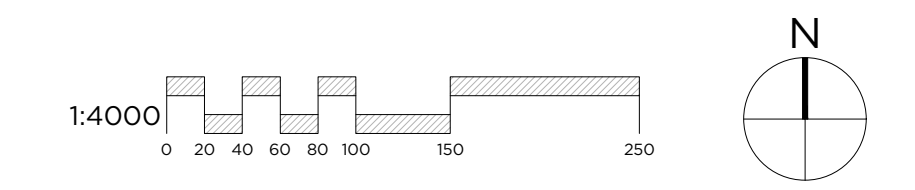
ISSUED FOR TENDER  
 23 October 2024



DRAWING LIST

Drawing Number	Drawing Name
L-000	LANDSCAPE KEY PLAN
L-001	LEGEND & NOTES
L-100	SITE PREPARATION AND SURFACE TREATMENT
L-200	LANDSCAPE PLAN
L-201	LANDSCAPE PLAN
L-202	LANDSCAPE PLAN
L-203	LANDSCAPE PLAN
L-204	LANDSCAPE PLAN
L-300	LANDSCAPE DETAILS
L-301	LANDSCAPE DETAILS

NOTE:  
 EXISTING VEGETATION LOCATION AND EXTENTS ARE BASED ON AERIAL IMAGERY AND ARE APPROXIMATE ONLY.  
 EXISTING VEGETATION IS SHOWN TO PROVIDE RELEVANT CONTEXT FOR THE FOLLOWING:  
 • PROTECTING EXISTING VEGETATION WHERE POSSIBLE; AND  
 • LOCATING PROPOSED PLANT MATERIAL.



A1 KEY PLAN  
 L-100 Scale 1:4000



Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
A	2024-10-09	G3	CS	AK	ISSUED FOR TENDER (DRAFT)						
A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER						

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

**NACMINE BERM**  
**LANDSCAPE KEY PLAN**

Project No. **CW2384** Drawing No. **L-000** Rev. **A**  
 Group **NACMINE**

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## Site + Soil Preparation Notes

### Soil Decompaction

Application: For all previously-developed or highly compacted areas, including areas formerly covered by structures, paving, heavily-used pathways, and those uses for construction staging and access.

Intent: To facilitate restoration of soil structure, enhancing the soil hydrological function and aeration that is critical to plant root system development, vegetation establishment, and successful long-term revegetation.

### References:

David Polster, NAIT, *Boreal Reclamation Program - Technical Note: Making Site Rough and Loose: A Soil Adjustment Technique*, June 2023.

Natural Resources Canada, *Silviculture Knowledge for Reclamation of Oil and Gas Disturbances: Soil Decompaction*, 2016.

Canadian Society of Landscape Architects & Canadian Nursery Landscape Association, *Canadian Landscape Standard: The Guide for Landscape Construction Projects Across Canada*, Current Edition.

### Design Criteria:

Decompact all areas that meet the above criteria to a minimum depth of 750mm throughout compacted areas.

Select a technique that is suitable for the on-site soil conditions, grades, equipment availability, and access considerations. Obtain Consultant approval prior to proceeding.

Techniques: Refer to Reference Documents for options, which include:

- Winged Subsoiler Technique
- Straight Ripper Shank Technique
- Standard Mounding Technique
- Rough and Loose Mounding Technique
- Discing Technique

Grade all areas following decompaction per Drawings and as required to suit intended application / vegetative cover prior to installation of growing media.

Finalize soil / growing media installation, grading, and preparation, as well as installation of seed, sod or other plant material, as soon as possible following subgrade and soil decompaction to minimize weed establishment.

### Soil Roughening / Texturing

Application: For all areas prepared for seed installation.

Intent: To supplement specification requirements for soil / growing media installation and fine grading, roughening the soil / growing media surface prior to seeding naturalized areas will optimize germination and vegetation establishment by improving seed - soil contact, facilitating proper seeding depth, and enhancing soil soil moisture and microclimate.

### References:

Ann Smreciu, Heather Sinton, David Walker, and Jeanie Bietz, Alberta Agriculture, Food and Rural Development, *Establishing Native Plant Communities*, 2003.

United States Environmental Protection Agency, *Stormwater Best Management Practice: Soil Roughening*, December 2021.

Government of Alberta, *Field Guide for Erosion and Sediment Control - Section 7: Erosion and Sediment Control Methods*, June 2011.

### Design Criteria:

Roughen soils after final grading has been approved by Consultant.

Select a technique that is suitable for the on-site soil conditions, grades, equipment availability, and access considerations. Obtain Consultant approval prior to proceeding.

### Technique: Grooving

- Create a series of ridges and depressions along the contour of the slope.
- Equipment options may include: disks, tillers, spring harrows, teeth on front-end loader bucket.
- Groove depth: 25-50mm
- Groove spacing: 75-150mm

Ensure soils are not compacted during soil roughening operations.

Install amendments, seed, and erosion control materials as soon as possible following soil preparation to minimize erosion, dust, and weed establishment.

## Planting Notes

Advance procurement of all sod products and plant material is required. Contractor shall source and procure/reserve all products within sixty (60 days) of contract award.

Plant material list was prepared for estimating purposes only. Contractor shall make their own quantity take-offs from Landscape Drawings and shall report any discrepancies prior to bid submission.

All construction activities within six (6) meters of existing vegetation must be supervised by an ISA (International Society of Arboriculture) certified arborist.

No bark mulch shall be used on wet side of berm construction.

All pruning of existing vegetation, if required, must be supervised by an ISA certified arborist and completed in accordance with all regulations.

Refer to Technical Specifications for detailed supply and installation requirements.

## Planting Layout Notes

Final layout of all plant material shall be reviewed on-site and approved by the Consultant prior to excavation and installation - trees locations shall be staked, planting beds shall be marked, and container plant material shall be placed.

Plant material installed without review and approval may require relocation or replacement as directed by the Consultant at the Contractor's sole expense.

Locations of all trees and shrubs shown on Landscape Plans illustrate the planting design intent and reflect the following layout criteria:

Existing Vegetation - approximate extents/types per aerial imagery:

Where existing vegetation is removed to accommodate berm footprint, construction extents, and/or construction access, new plant material may be specified and located to provide similar long-term ecosystem and/or aesthetic benefits.

Where existing vegetation is protected and will remain following berm construction, new plant material may be located to avoid conflicts with, and/or to enhance and supplement, this vegetation.

### Landowner Input

Proposed plant material located within 5m of private property or between private property and the Red Deer River may require on-site consultation with landowner to finalize location prior to installation.

For all plant material installed on private property, Contractor shall coordinate directly with landowners. Refer to specifications for additional information.

### Setbacks

Plant material shall be located relative to the setback criteria established by geotechnical engineering requirements, utility providers, and transportation safety requirements. Measurements reflect minimum dimensions and shall be made from centre of plant material.

Berm geometry setbacks - per Geotechnical Engineering requirements.

- Trees 5m from toe of berm
- Shrubs 2m from toe of berm

### Best practice setbacks

- Deciduous Trees 1m from pathway / hardscape edge
- Coniferous Trees ½ mature spread from pathway / hardscape edge
- Shrubs ½ mature spread from pathway / hardscape edge

Utility setbacks - per City of Calgary Parks and Open Spaces Development Guidelines and Standard Specifications: Landscape Construction, Current Edition.

- Trees 3m from Sanitary Line  
3m from Storm Line  
2.5m from Water Line  
2.5m from Fire Hydrant  
2.0m from Power/Electrical Line  
7.5m from Overhead Power/Electrical Line

The Contractor shall ensure compliance with all setback requirements.

## Planting Schedule

	code	botanical / common name	quantity	height	spread	size	spacing	remarks
trees	lasi	<i>larix sibirica</i> siberian larch	9	6m	3m	2m ht.	shown	ornamental
	pipu	<i>picea pungens</i> colorado spruce	9	20m	5m	3m ht.	shown	
	pisy	<i>pinus sylvestris</i> scotch pine	1	12m	5m	3m ht.	shown	

acne	<i>acer negundo</i> boxelder, manitoba maple	8	14m	15m	#15 cont.	shown	
frper	<i>fraxinus pennsylvanica</i> 'Rugby' prairie spire green ash	30	10m	5m	50mm cal.	shown	
frper	<i>fraxinus pennsylvanica</i> 'Rugby' prairie spire green ash	8	10m	5m	75mm cal.	shown	
poba	<i>populus balsamifera</i> balsam poplar	9	20m	15m	#15 cont.	shown	
poba	<i>populus balsamifera</i> balsam poplar	11	20m	15m	50mm cal.	shown	
pode	<i>populus deltoides</i> plains cottonwood	2	30m	20m	#15 cont.	shown	male variety only
pode	<i>populus deltoides</i> plains cottonwood	5	30m	20m	50mm cal.	shown	male variety only
prvi	<i>prunus virginiana</i> 'schubert' schubert chokecherry	9	5m	3m	#15 cont.	shown	ornamental
prvi	<i>prunus virginiana</i> 'schubert' schubert chokecherry	22	5m	3m	50mm cal.	shown	ornamental
sape	<i>salix pentandra</i> laurel leaf willow	1	15m	15m	75mm cal.	shown	
ulam	<i>ulmus americana</i> american elm	4	24m	15m	75mm cal.	shown	

total quantity of trees = 128

	code	botanical / common name	quantity	height	spread	size	spacing	remarks
shrubs	amal	<i>amelanchier alnifolia</i> saskatoon	60	3m	2m	#2 cont.	±1.8m o.c.	ornamental, edible fruit
	elco	<i>elaegnus commutata</i> wolf willow	36	2m	2m	#2 cont.	±1.8m o.c.	
	sain	<i>salix interior</i> sandbar willow	8	2m	2m	#2 cont.	±1.8m o.c.	reclamation planting
	syprd	<i>syringa x prestoniae</i> 'Donald wyman' donald wyman preston lilac	15	3m	1.8m	#2 cont.	shown	

total quantity of shrubs = 119

## Seed Mix Schedule

Seed Mix 4 - Multipurpose Mix

Botanical Name	Common Name	Target Cover	Seed Mix (PLS)
<i>Bouteloua gracilis</i>	Blue Grama Grass	10%	3%
<i>Elymus canadensis</i>	Canada Wild Rye	17%	39%
<i>Poa palustris</i>	Fowl Bluegrass	10%	1%
<i>Nassella/Stipa viridula</i>	Green Needle Grass	10%	16%
<i>Festuca idahoensis</i>	Idaho Fescue	10%	6%
<i>Koeleria macrantha</i>	June Grass	5%	0.7%
<i>Artemisia frigida</i>	Prairie Sagewort	5%	0.3%
<i>Festuca saximontana</i>	Rocky Mountain Fescue	15%	6%
<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	Slender Wheatgrass	18%	28%
	Total	100%	100%
Cover Crop			
<i>Lolium multiflorum</i>	Annual Ryegrass		

Application Rates:  
seed mix = 60 kg (PLS) / ha  
cover crop = 5 kg (PLS) / ha

## Legend

construction extents (approximate)  
 property lines  
 approximate limit of berm construction  
 2m offset from toe of berm  
 5m offset from toe of berm

## Existing Utilities

refer to civil engineering drawings

water line  
 storm line  
 electrical line  
 gas line

## Civil

refer to civil engineering drawings

1:2 high water mark  
 rip rap

## Subgrade & Soil Preparation

**exposed and/or steep slopes**  
 biodegradable erosion control blanket  
 for erosion control and shaded microclimate

**existing compacted areas**  
 subgrade decompaction | rough and loose  
 tracked growing medium

**all other seeded areas**  
 tracked growing medium

## Planting

**seed mix 4**

**specialty sod**

**wood mulch**

**proposed trees**

**proposed shrubs**

note: for estimating purposes, edge of construction disturbance is shown as "approximate limit of berm construction" line, +/- 2m from civil earthworks

## As-Built Documentation

The Contractor shall be responsible for documenting any on-site changes to seed and sod areas and extents.

The Contractor shall be responsible for final survey of planting beds and installed trees (location and species).



Seal:

Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
A	2024-10-09	G3	CS	AK	ISSUED FOR TENDER (DRAFT)						
A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER						

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE  
RESILIENCY AND FLOOD MITIGATION PROGRAM

NACMINE BERM  
LEGEND & NOTES

Project No. CW2384

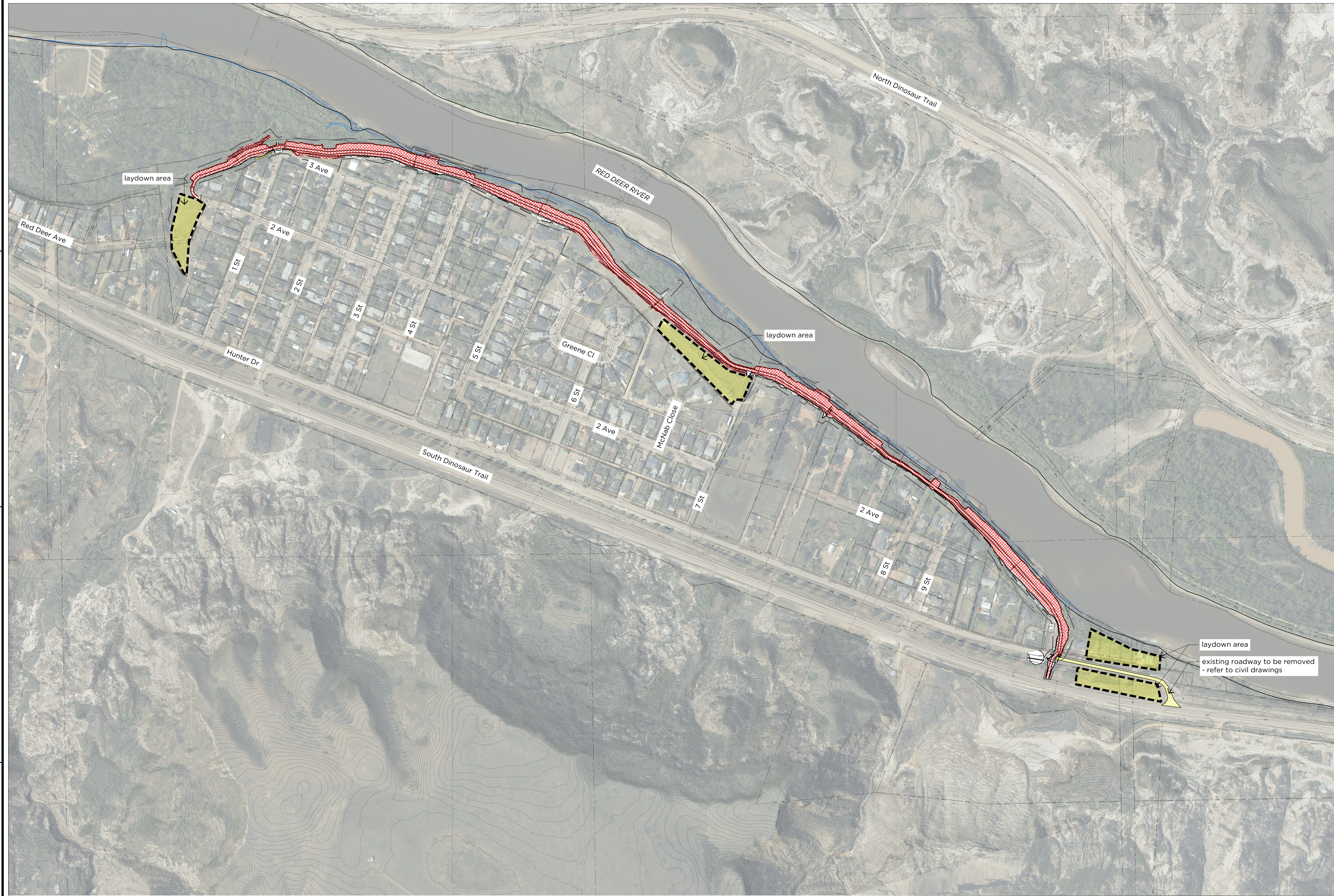
Group NACMINE

Drawing No.

L-001

Rev.

A

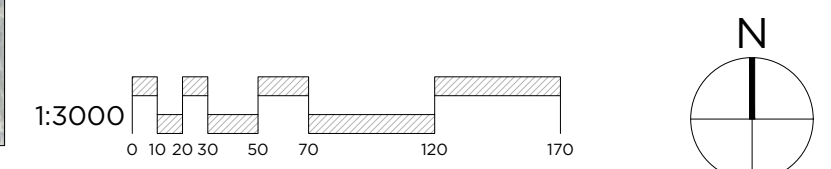


**Legend**

- construction extents (approximate)
- property lines

**Site & Soil Preparation**

- soil roughening / texturing
- soil decompaction



**A1 SITE & SOIL PREPARATION PLAN**

L-100 Scale 1:3000



Seal:

Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
A	2024-10-09	G3	CS	AK	ISSUED FOR TENDER (DRAFT)						
A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER						

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

**NACMINE BERM**  
**SITE & SOIL PREPARATION PLAN**

Project No. **CW2384** Drawing No. **L-100** Rev. **A**  
 Group **NACMINE**

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- ### Legend
- construction extents (approximate)
  - - - property lines
  - - - approximate limit of berm construction
  - - - 2m offset from toe of berm
  - - - 5m offset from toe of berm

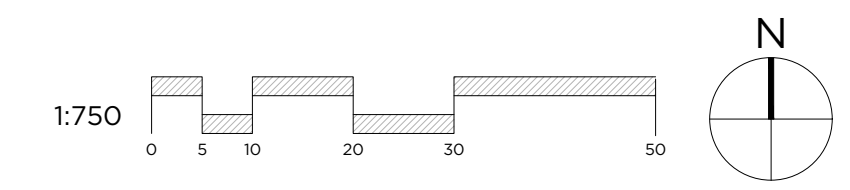
- ### Existing Utilities
- refer to civil engineering drawings
- wtr water line
  - san storm line
  - elec electrical line
  - gas gas line

- ### Civil
- refer to civil engineering drawings
- 1:2 high water mark
  - rip rap

- ### Site & Soil Preparation
- exposed and/or steep slopes - biodegradable erosion control blanket for erosion control and shaded microclimate

- ### Planting
- seed mix 4
  - specialty sod
  - wood mulch
  - proposed trees
  - proposed shrubs

note: for estimating purposes, edge of construction disturbance is shown as "approximate limit of berm construction" line +/- 2m from civil earthworks



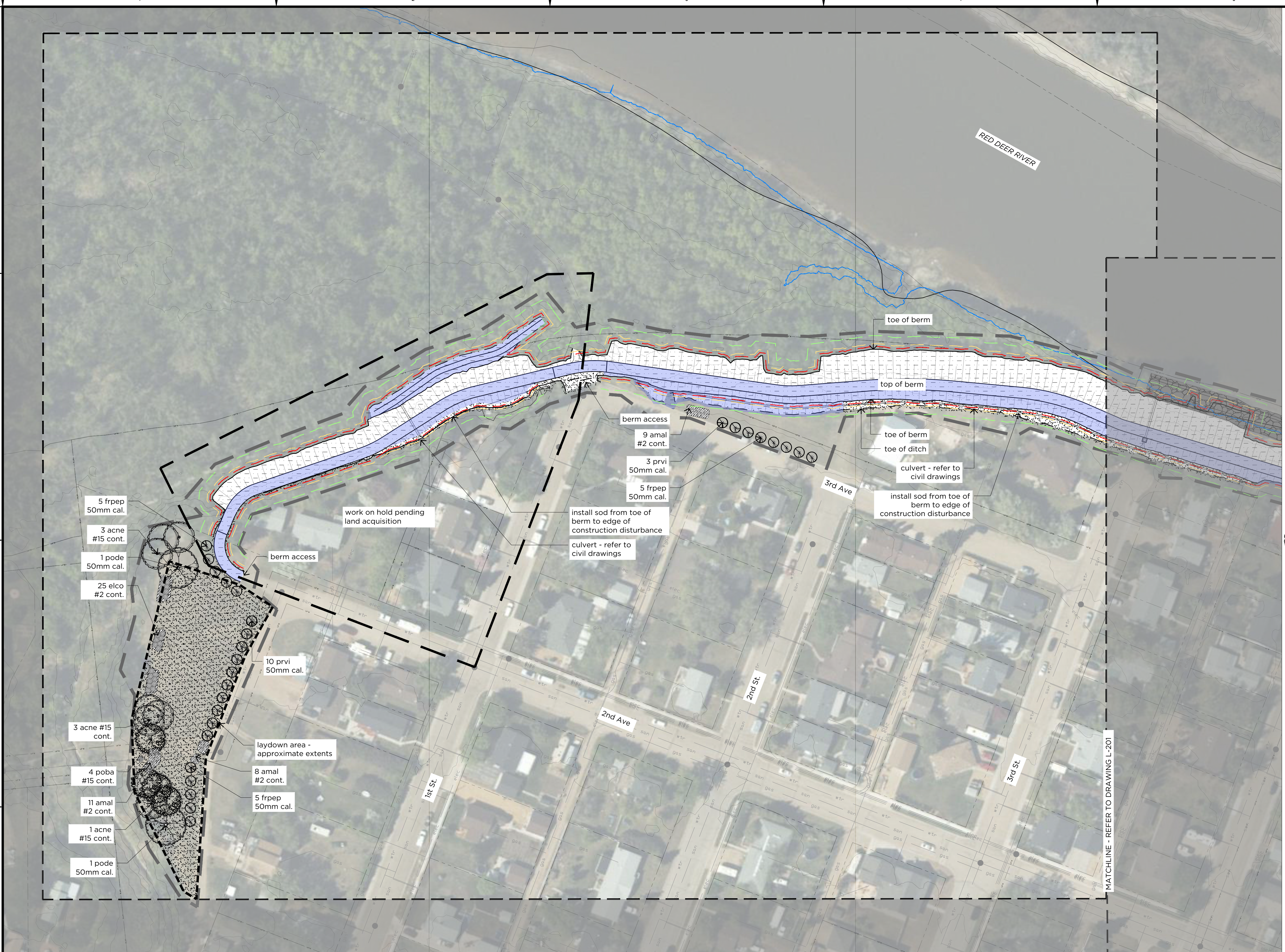
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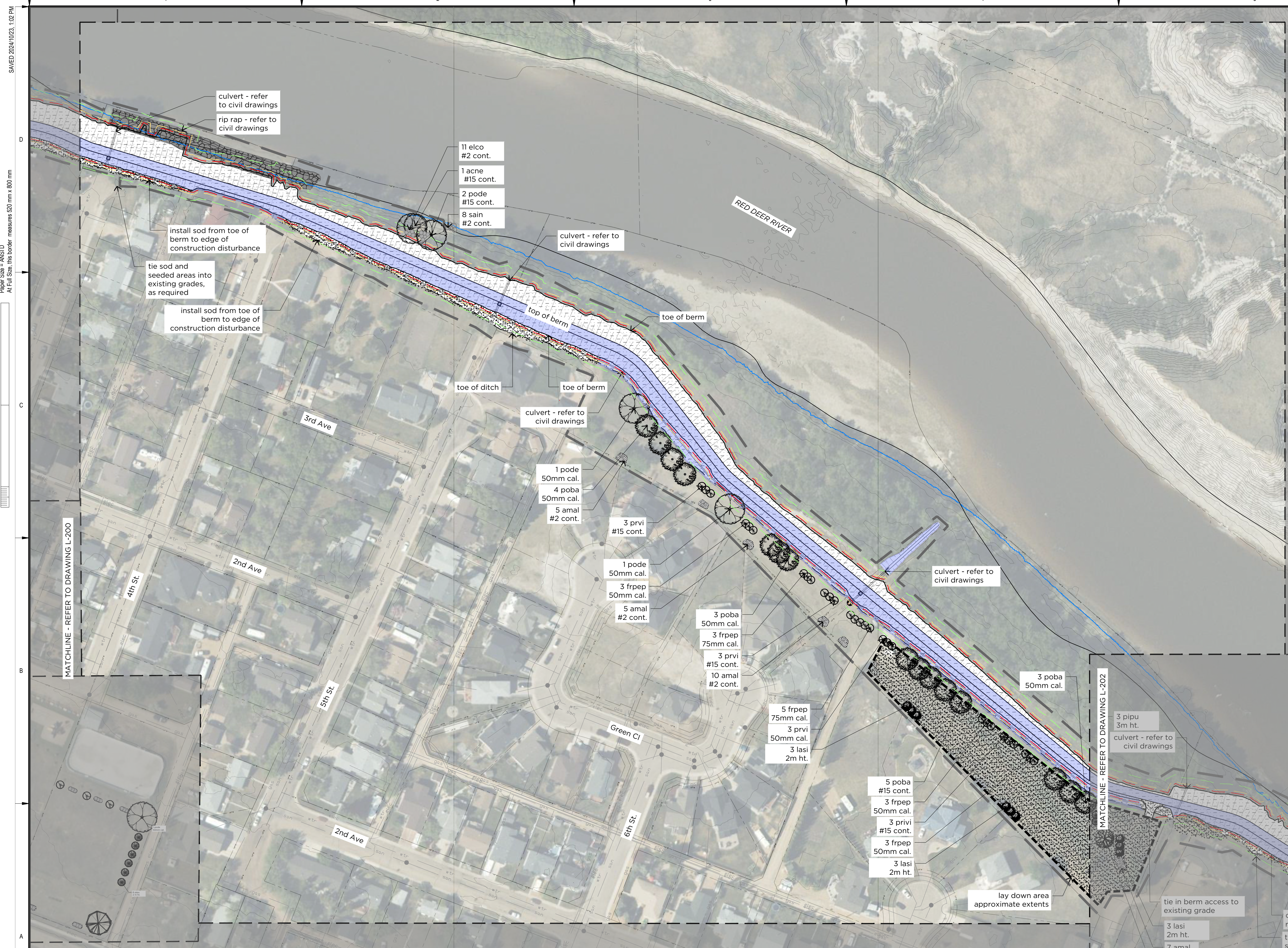
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DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE RESILIENCY AND FLOOD MITIGATION PROGRAM			
NACMINE BERM LANDSCAPE PLAN			
Project No.	CW2384	Drawing No.	L-200
Group	NACMINE	Rev.	A





- ### Legend
- construction extents (approximate)
  - property lines
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  - 2m offset from toe of berm
  - 5m offset from toe of berm

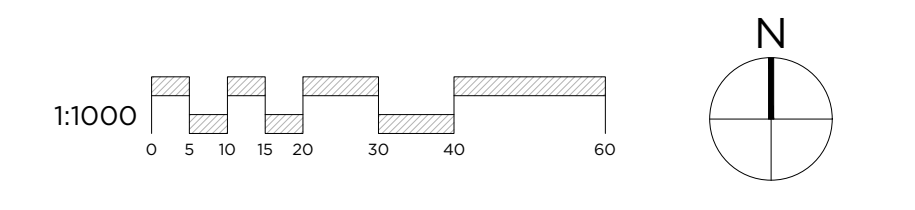
- ### Existing Utilities
- refer to civil engineering drawings
- wtr water line
  - san storm line
  - elec electrical line
  - gas gas line

- ### Civil
- refer to civil engineering drawings
- 1:2 high water mark
  - rip rap

- ### Site & Soil Preparation
- exposed and/or steep slopes - biodegradable erosion control blanket for erosion control and shaded microclimate

- ### Planting
- seed mix 4
  - specialty sod
  - wood mulch
  - proposed trees
  - proposed shrubs

note: for estimating purposes, edge of construction disturbance is shown as "approximate limit of berm construction" line +/- 2m from civil earthworks



**A1 LANDSCAPE PLAN**  
L-201 Scale 1:1000



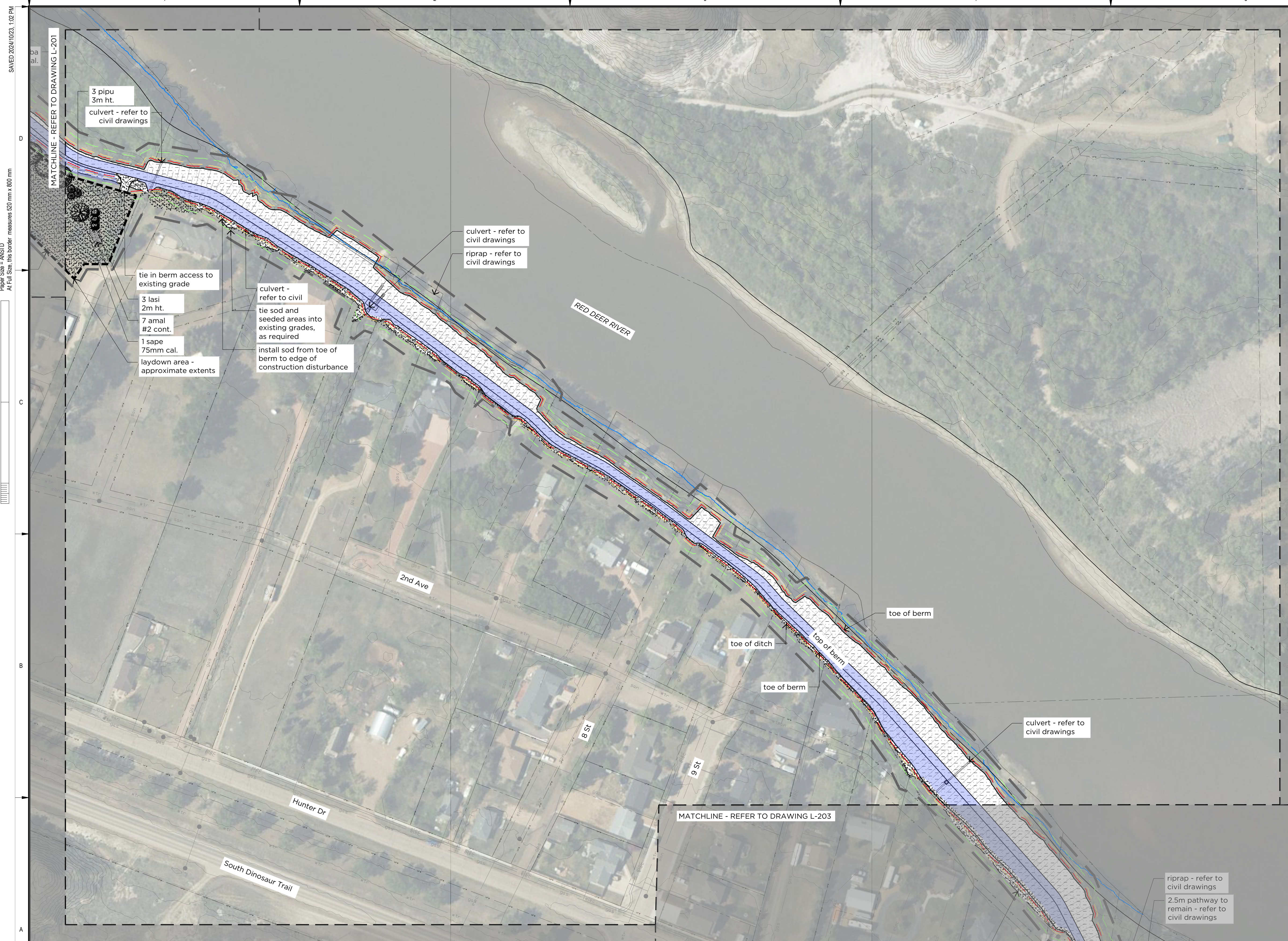
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Rev	Date	Des	Dwn	Chk	Description

**DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE**  
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**NACMINE BERM**  
**LANDSCAPE PLAN**

Project No. **CW2384** Drawing No. **L-201** Rev. **A**  
Group **NACMINE**



- ### Legend
- construction extents (approximate)
  - property lines
  - approximate limit of berm construction
  - 2m offset from toe of berm
  - 5m offset from toe of berm

- ### Existing Utilities
- refer to civil engineering drawings
- water line
  - storm line
  - electrical line
  - gas line

- ### Civil
- refer to civil engineering drawings
- 1:2 high water mark
  - rip rap

- ### Site & Soil Preparation
- exposed and/or steep slopes - biodegradable erosion control blanket for erosion control and shaded microclimate

- ### Planting
- seed mix 4
  - specialty sod
  - wood mulch
  - proposed trees
  - proposed shrubs

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**A1 LANDSCAPE PLAN**

L-202 Scale 1:1000

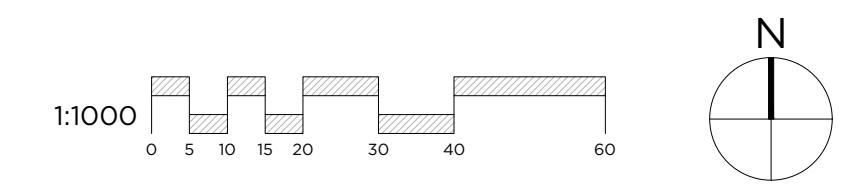


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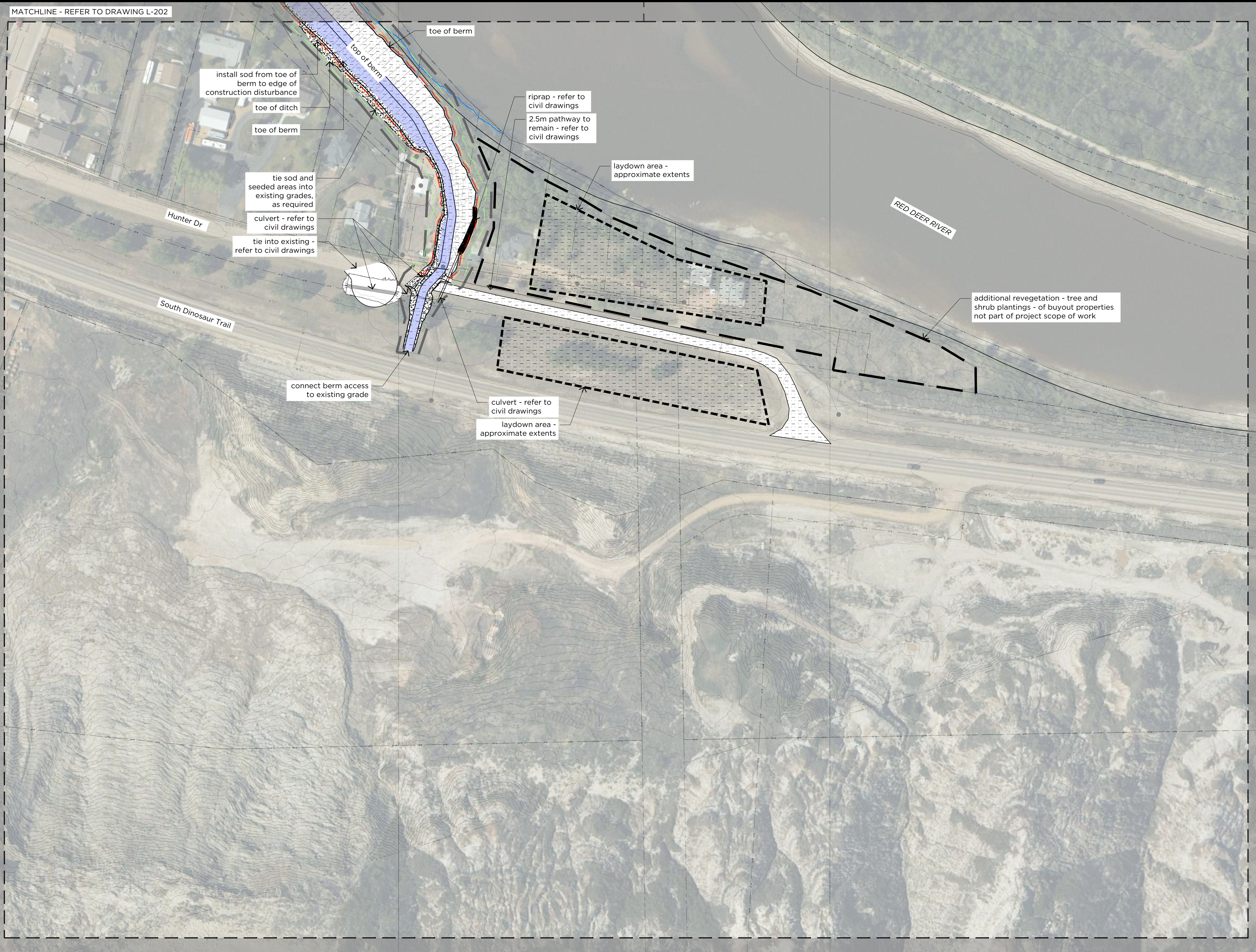
**DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE**  
**RESILIENCY AND FLOOD MITIGATION PROGRAM**

**NACMINE BERM**  
**LANDSCAPE PLAN**

Project No. **CW2384** Drawing No. **L-202** Rev. **A**  
 Group **NACMINE**



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- ### Legend
- construction extents (approximate)
  - property lines
  - approximate limit of berm construction
  - 2m offset from toe of berm
  - 5m offset from toe of berm

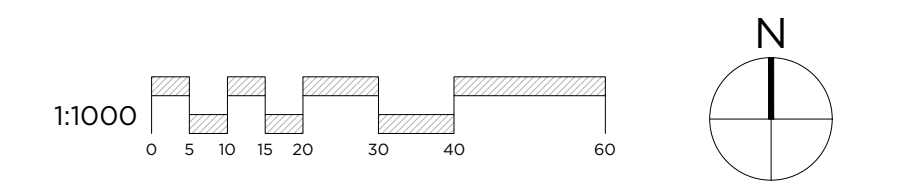
- ### Existing Utilities
- refer to civil engineering drawings
- water line
  - storm line
  - electrical line
  - gas line

- ### Civil
- refer to civil engineering drawings
- 1:2 high water mark
  - rip rap

- ### Site & Soil Preparation
- exposed and/or steep slopes - biodegradable erosion control blanket for erosion control and shaded microclimate

- ### Planting
- seed mix 4
  - specialty sod
  - wood mulch
  - proposed trees
  - proposed shrubs

note: for estimating purposes, edge of construction disturbance is shown as "approximate limit of berm construction" line +/- 2m from civil earthworks



**A1 LANDSCAPE PLAN**  
 L-203 Scale 1:1000



Rev	Date	Des	Dwn	Chk	Description	Rev	Date	Des	Dwn	Chk	Description
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A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER						

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

**NACMINE BERM**  
**LANDSCAPE PLAN**

Project No. **CW2384** Drawing No. **L-203** Rev. **A**  
 Group **NACMINE**

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MATCHLINE - REFER TO DRAWING L-204

3rd St

1 pisy  
3m ht.  
4 ulam  
75mm cal.

6 frper  
50mm cal.  
1 poba  
50mm cal.

planting on hold pending consultation with  
Nacmine Community Association

1 pode  
50mm cal.

6 prvi  
50mm cal.

15 sypr  
#2 cont.

6 pipu  
2 m ht.

Hunter Dr

**Legend**

- construction extents (approximate)
- property lines
- approximate limit of berm construction
- 2m offset from toe of berm
- 5m offset from toe of berm

**Existing Utilities**

refer to civil engineering drawings

- wtr water line
- san storm line
- elec electrical line
- gas gas line

**Civil**

refer to civil engineering drawings

- 1:2 high water mark
- rip rap

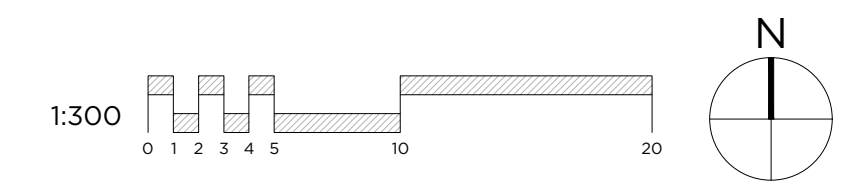
**Site & Soil Preparation**

- exposed and/or steep slopes -  
biodegradable erosion control blanket for erosion control  
and shaded microclimate

**Planting**

- seed mix 4
- specialty sod
- wood mulch
- proposed trees
- proposed shrubs

note: for estimating purposes, edge of construction disturbance is shown as  
"approximate limit of berm construction" line +/- 2m from civil earthworks



**A1 LANDSCAPE PLAN**

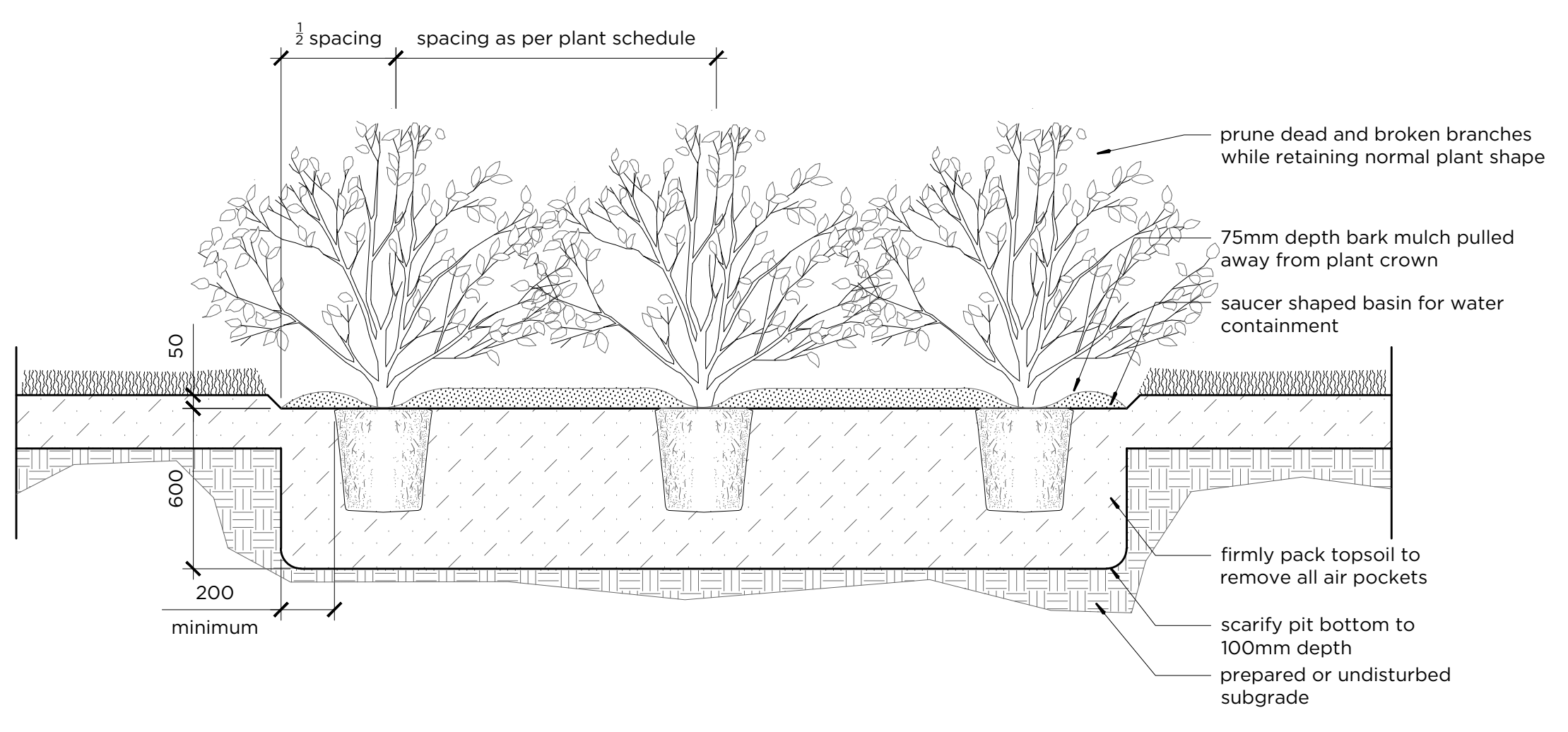
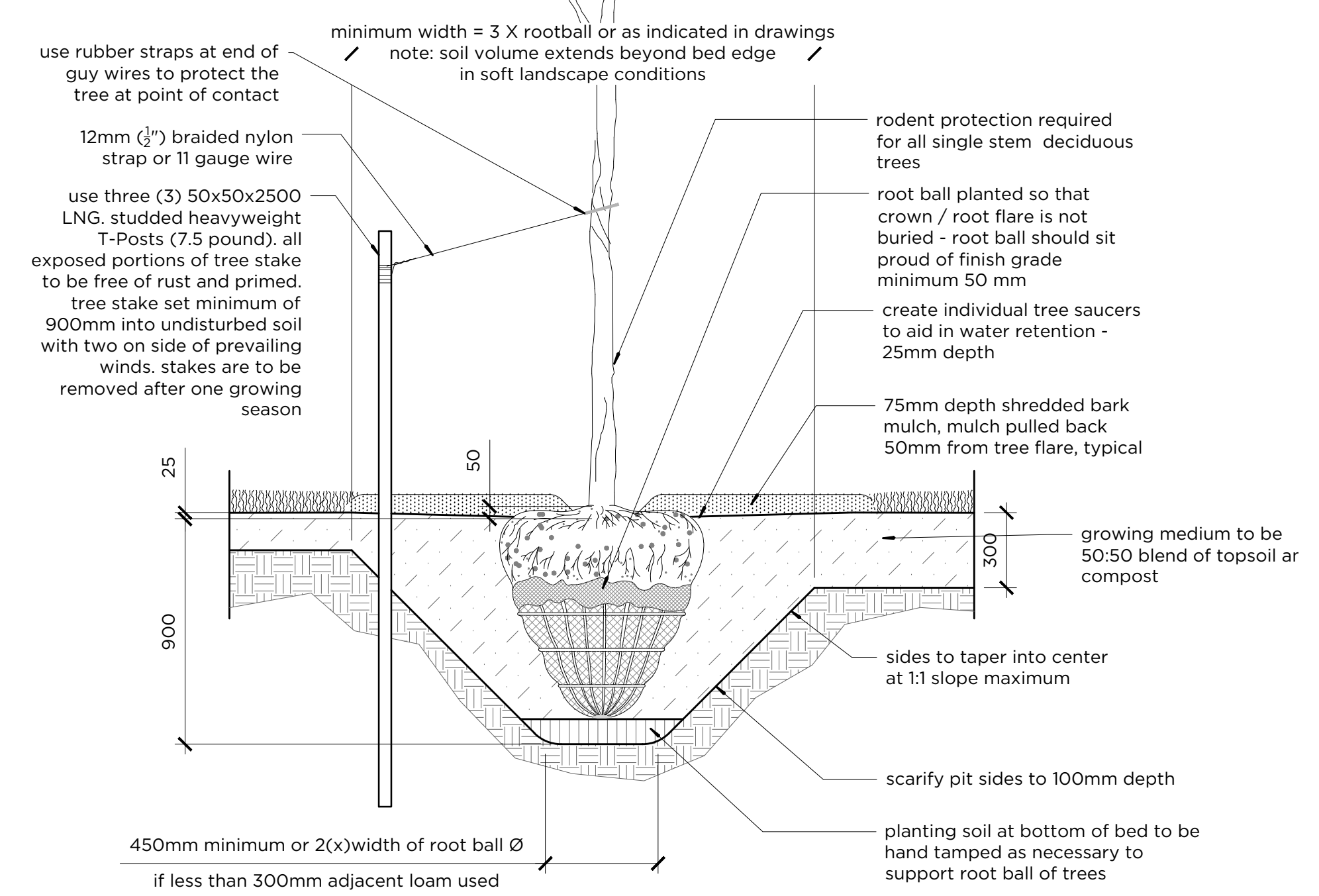
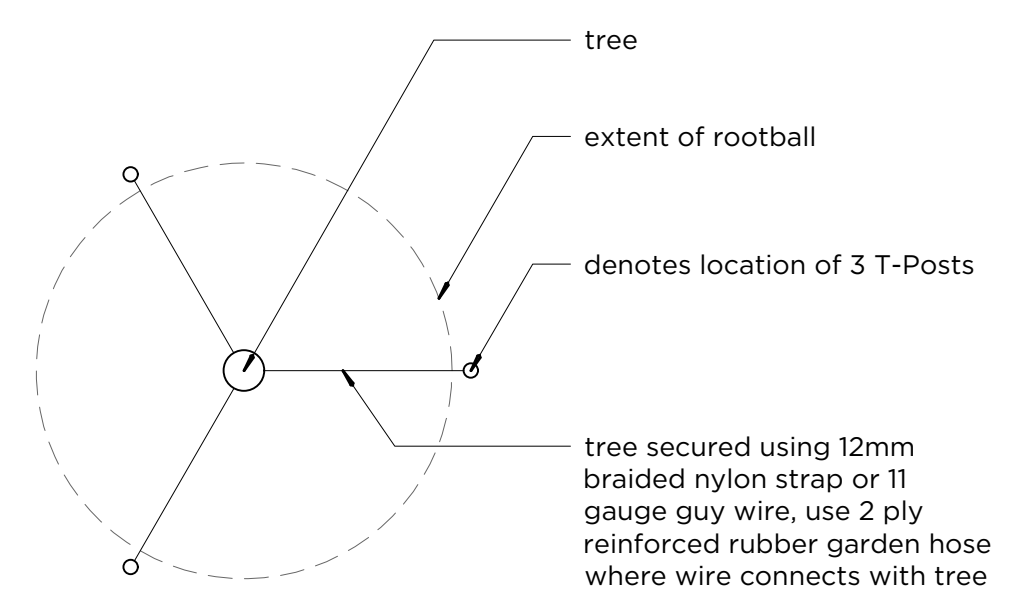
L-204 Scale 1:300



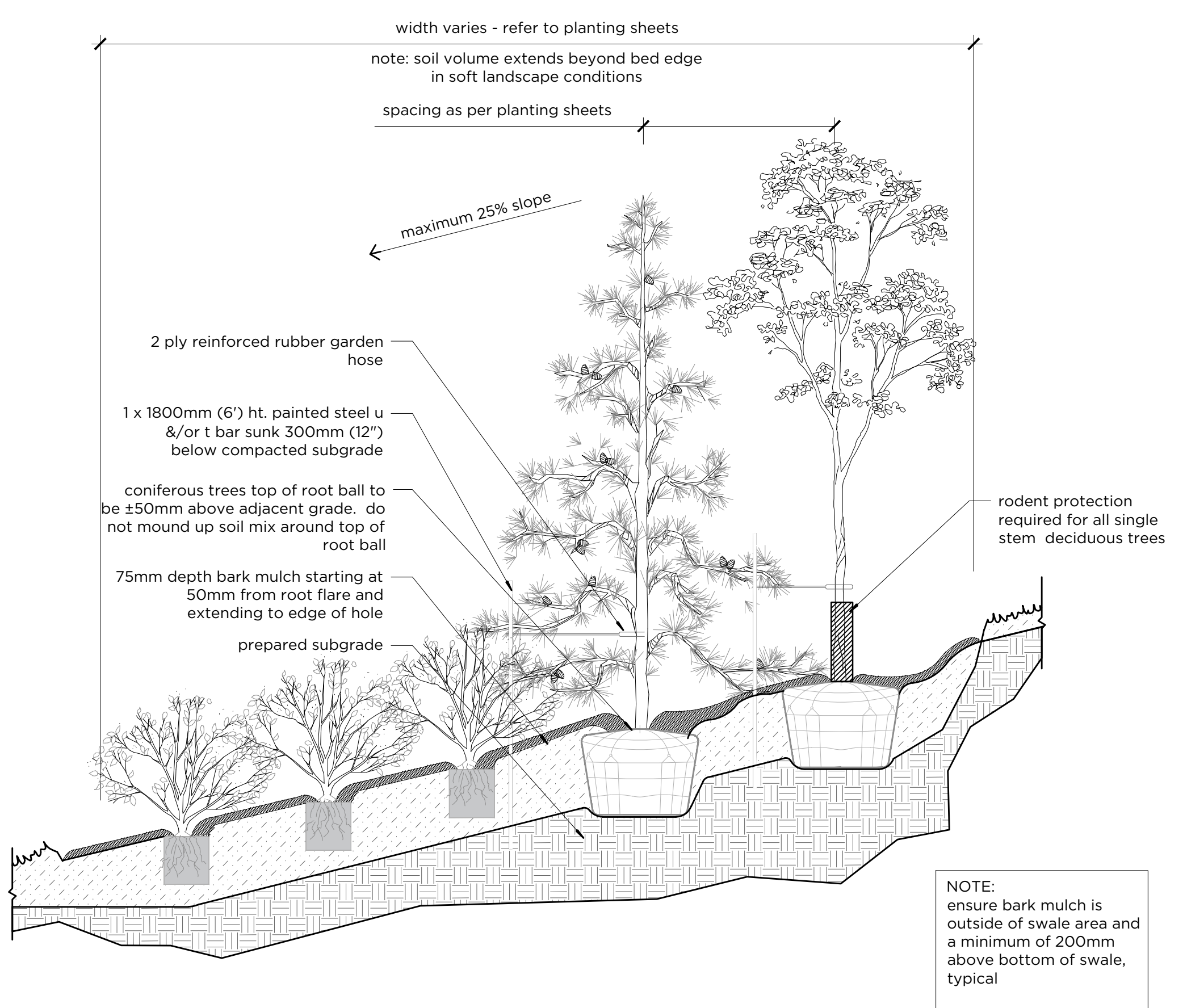
Rev	Date	Des	Dwn	Chk	Description
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A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER

DRUMHELLER RESILIENCY & FLOOD MITIGATION OFFICE RESILIENCY AND FLOOD MITIGATION PROGRAM			
NACMINE BERM LANDSCAPE PLAN			
Project No.	CW2384	Drawing No.	L-204
Group	NACMINE	Rev.	A





**C3 SHRUB PLANTING**  
L-300 Scale 1:20



**Notes**

bark mulch shall not be used for tree and shrubs plantings on the wet side of the flood protection berms.  
no bark mulch should be used in swales

**A1 TREE PLANTING DETAIL**  
L-301 Scale 1:20

**A3 PLANTING ON SLOPE DETAIL**  
L-300 Scale 1:40



Rev	Date	Des	Dwn	Chk	Description
A	2024-10-09	G3	CS	AK	ISSUED FOR TENDER (DRAFT)
A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER

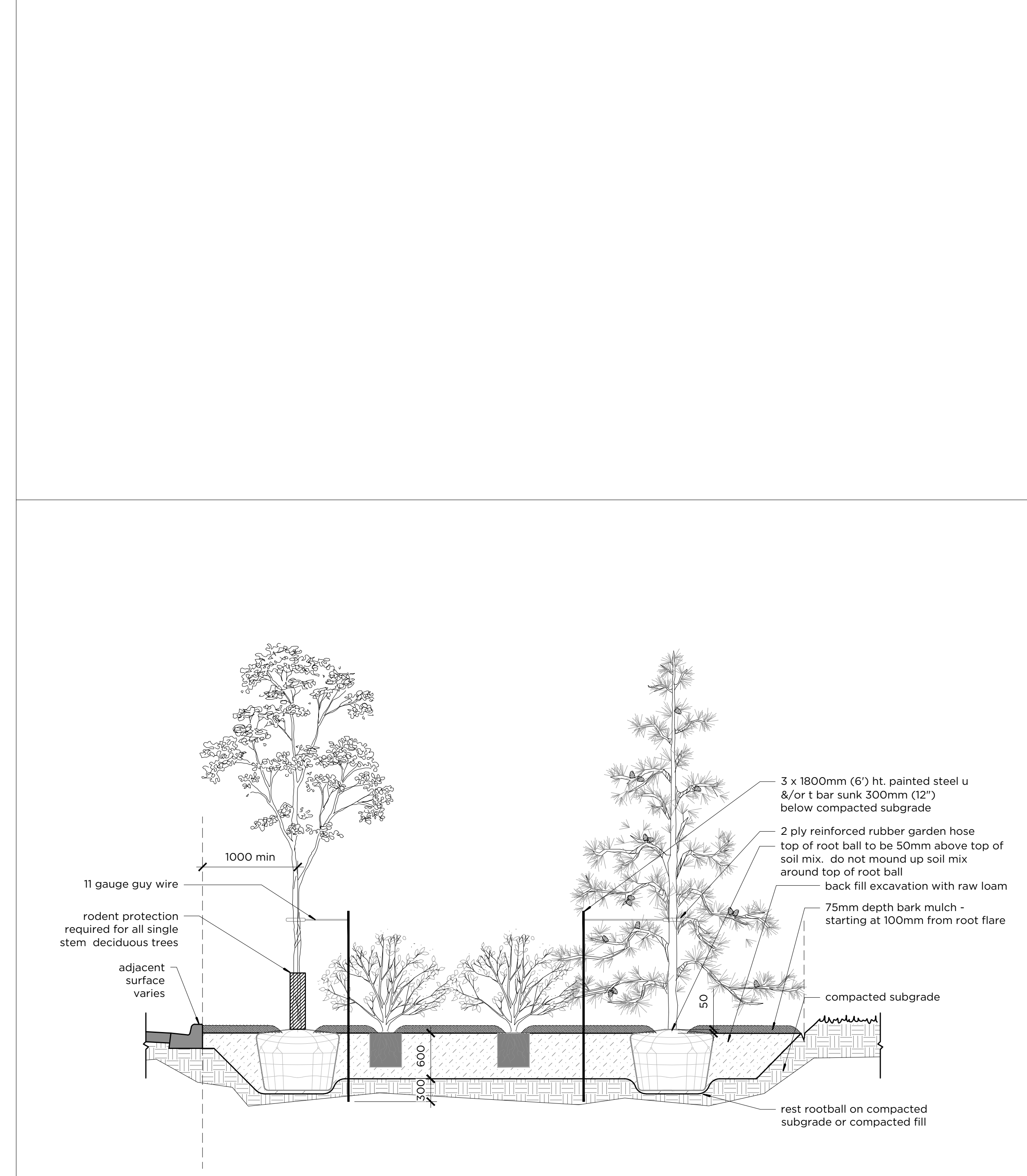
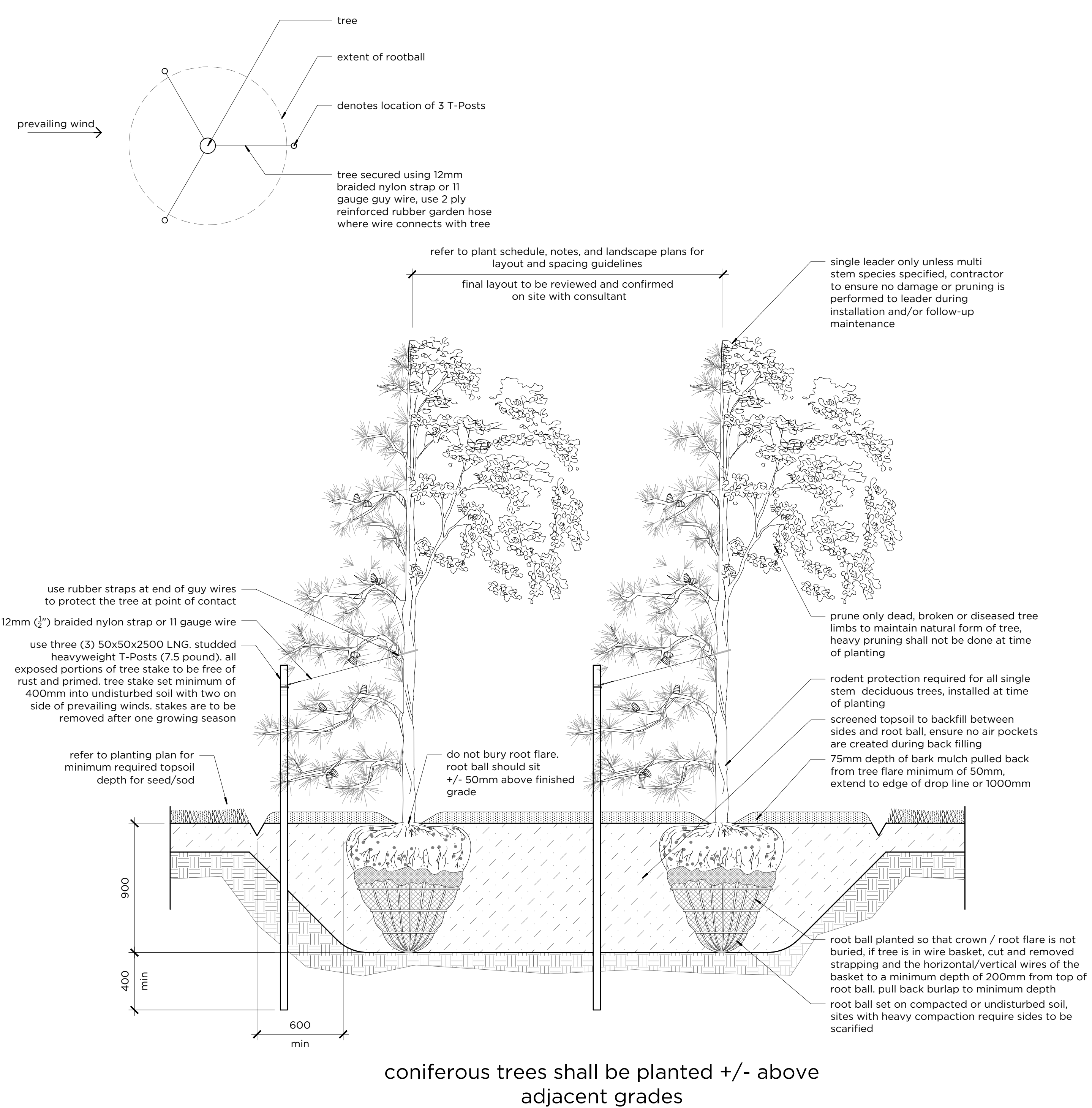
Rev	Date	Des	Dwn	Chk	Description

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

**NACMINE BERM**  
**LANDSCAPE DETAILS**

Project No. **CW2384** Drawing No. **L-300** Rev. **A**  
Group **NACMINE**

100  
 50  
 0  
 millimetres  
 100  
 Pages: Size = ANSI D  
 At Full Size, this border measures 520 mm x 800 mm  
 D  
 C  
 B  
 A



**A1** GROUPED TREE PLANTING BED  
L-301 Scale 1:20

**A4** GROUPED TREE AND SHRUB PLANTING BED  
L-301 Scale 1:40



Rev	Date	Des	Dwn	Chk	Description
A	2024-10-09	G3	CS	AK	ISSUED FOR TENDER (DRAFT)
A	2024-10-23	G3	JAB/CS	AK	ISSUED FOR TENDER

Rev	Date	Des	Dwn	Chk	Description

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

**NACMINE BERM**  
**LANDSCAPE DETAILS**

Project No. **CW2384** Drawing No. **L-301** Rev. **A**  
Group **NACMINE**