City of Saskatoon Standard Construction Specifications: Parks
Effective January 9, 2023

To access the current specifications, please visit the City of Saskatoon website:
https://www.saskatoon.ca/parks-recreation-attractions/parks/park-development

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00104 Document Intent

This document is titled: *Standard Construction Specifications: Parks.*

Standard Construction Specifications: Parks contains the City of Saskatoon, Parks Department construction specifications and detail drawings for particular sections of work constructed on publicly owned park or park related lands including but not limited to Parks, Buffers, Boulevards, and Medians. This document is for use by Contractors, Consultants and Developers that are involved in the development of publicly owned lands as noted.

Standard Construction Specifications: Parks forms part of the Contract Documents for work tendered.

If this document is updated, revisions will be forwarded to registered document holders. It is the responsibility of the document holder to make the necessary substitutions.

Copies of this document are available online at:
www.saskatoon.ca/parks-recreation-attractions/parks/park-development

We welcome comments on the format or content.

Direct comments to:

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Parks Department
1101 Avenue P North
Saskatoon, SK S7L 7K6
(306) 975-3300

e-mail: ParkDwgSubmissions@Saskatoon.ca

00105 Certificates

1.0 General

1.1 GENERAL

.1 November and December CCC's will be weather dependent.

.2 FAC date will be adjusted so as not to fall on a weekend or holiday.

1.2 CERTIFICATE HIERARCHY

Certificate type	Permitted	Not Permitted	Notes
Substantial Completion Certificate (SCC)	April -October	January-March November-December	
Construction Completion Certificate (CCC)	April -October	January-March	April-May CCC -FAC leaf out of following year June-October 15 CCC -FAC one calendar year later October 15-December CCC -FAC October 15, following year
Final Acceptance Certificate (FAC)	April -October	November-March	No FAC's beyond October 15

00106 Project Stages & Key Role

STAGE	KEY ROLES AND RESPONSIBILITIES		
	CONTRACTOR	**CONSULTANT**	**PARKS DEPARTMENT MAINTENANCE (PDM)**
Construction Period	-Construction -Maintenance of Existing -Completion of Work	-Inspections -Project Management	-Ongoing Inspections
SCC		-Coordinate CCC -Issue SCC	
CCC	-Submit CCC application (Developer or Consultant may also do this) -Submit Record Documents -Demobilize Construction Operations	-Coordinate CCC -Schedule CCC -CCC Inspection -Issue CCC -Report Deficiencies -Establish FAC date	-CCC Inspection (Mandatory) -Report deficiencies (that relate to your area)
Warranty & Maintenance Period	-Seasonal Maintenance -Establishment -Correct Deficiencies (Monthly) -Warranty Replacements -Repairs	-Project Management -Monthly Inspections & Reports -Monthly Inspection report will be issued within 48 hours of inspection	-Winter Maintenance **(October 15-April 15)**
Pre-FAC	-Complete Pre-FAC report deficiencies	-Inspections -Coordinate Pre-FAC -Issue Pre-FAC	-Pre-FAC Inspection (Mandatory) -Irrigation Inspection -Final deficiency reports handed in
FAC	-Complete Maintenance -Site Clean Up & Demobilize Maintenance Operations	-Coordinate FAC -Schedule FAC -FAC Inspection -Issue FAC -Report Deficiencies, Extended Warranty	-Irrigation Final Inspection (w/hydrostat test) -FAC inspection (Mandatory) -Check Pre-FAC Deficiencies (PDM)
Post FAC	-Correct deficiencies -Extended Warranty	-Corrections Inspections	-Maintenance (complete)

*Owner/Developer is responsible for winter maintenance from October 15 – April 15 up to FAC.

01150 Measurement and Payment

1.0 General

1.1 TENDER FORM

.1 Insurance and Bonding

.1 Insurance and bonding documentation per Contract requirements.

.2 Mobilization, Demobilization and Miscellaneous

.1 Mobilization: other documentation and installation of temporary facilities and offices before commencement of construction.

.2 Demobilization: removal of temporary facilities and offices, and final clean up of the place of Work.

.3 Miscellaneous: other items associated with project construction that are not included for in the other technical divisions such as:

.1 Temporary construction controls and facilities,

.2 Utility locates, survey control, and coordination,

.3 Public safety and access, occupational health and safety, and

.4 Project documents,

.5 Production, installation and maintenance of project identification signage.

1.2 GENERAL

.1 The Lump Sum and Unit prices submitted are for supply of labour and equipment and materials as specified or required to complete the Work of this Contract as intended.

.1 The prices submitted to include full compensation for supplying (if applicable), hauling, installing, cleaning and placing in service the Work as specified and detailed, together with incidental Work to complete the Contract.

.2 Measurement for Payments is calculated on the basis of a percentage of completion of the Lump Sum and Unit prices for the applicable item of Work, or at Unit rates of Force Account Rates as entered on the Tender Form.

1.3 ITEMS OF WORK

.1 Pricing Table

.1 Insurance and Bonding (lump sum) will be paid in full upon supply of appropriate insurance and bonding documentation or certificates.

.2 Mobilization/Demobilization and Miscellaneous (lump sum) will be paid as follows:

.1 50% upon satisfactory mobilization and commencement of construction provided insurance, bonds and contract documentation have been submitted.

.2 50% paid after the Construction Completion Certificate (CCC) is issued.

.3 Public safety and access control measures installation/removal (lump sum / lin.m) will be paid as follows:

.1 50% upon installation of control measures.

.2 50% upon takedown and removal of control measures.

.4 Rental of temporary fencing for public safety and access control measures:

.1 Submit “original” temporary fencing invoices without mark-up for reimbursement.

.2 Costs for overhead or profit is considered incidental to the Contract requirements and will not be measured for payment.

.5 Costs for routine inspection, repair and maintenance of public safety and access control measures is considered incidental to the Contract requirements and will not be measured for payment.

.2 Section 01410 Laboratory Testing Services

.1 Engage, coordinate and pay for services of laboratory testing as approved and required under various sections.

.1 Submit “original” laboratory testing invoice without mark-up for reimbursement, as payment for overhead or profit is deemed included in the applicable specification section.

.2 Requests for reimbursement of laboratory testing services will not be accepted, or paid, if:

.1 **Consultant** did not specify, select or approve locations of testing.

.2 Inspection and testing is required by laws, ordinances, rules, regulations or orders of public authorities.

.3 Inspection and testing is performed exclusively for Contractor's convenience.

.4 Test fails to achieve Contract requirements.

.3 Costs for uncovering and making good work that is covered before required inspection or testing is completed and approved is considered incidental to the Contract requirements and will not be measured for payment.

.3 Section 01783 Record Documents

.1 Record Documents (lump sum) including associated costs per specifications.

.2 Paid upon approval of FAC.

.4 Section 02065 Existing Plant Material

.1 Removal (lump sum / lin. m.) of existing plant material including associated costs for excavation, clearing, grinding out of stumps, and disposal of debris off site.

.2 Protection (lump sum) of existing plant material including associated costs in erecting, maintaining and removing hoardings, pruning and maintenance.

.3 Relocation (lump sum / each) of existing plant material including associated costs for staking, guying, site repair and restoration as required and maintenance.

.5 Section 02070 Demolition, Removal and Salvage

.1 Demolition and Removal (lump sum / sq. m.) including associated costs for demolition, excavation, backfilling and disposal of items off site.

.2 Salvage of Items (lump sum / each) including associated costs for salvage, backfilling, stockpiling, dismantling and clean-up of item.

.3 Strip and Stockpile of topsoil (lump sum / cu. m) including associated costs for strip and stockpile operations.

.6 Section 02210 Rough Grading

.1 Rough Grading (cu. m.) including associated costs for excavation, grading to design subgrade elevations, disposal of material, aeration, adding water and compaction for applicable surface treatments.

.1 Quantities refer to material after compaction.

.2 Imported Fill (cu. m.) including associated costs for subgrade preparation of rough graded areas.

.3 Rough Grading of subgrade boulders or other obstructions in excess of one cubic metre will be an addition to the Contract, as agreed.

.7 Section 02212 Topsoil

.1 Topsoil (sq. m.) for turf areas and shrub planting beds (not including sportsfields) including associated costs for placement and spreading.

.2 Organic amendments (sq. m.) for turf areas and shrub planting beds (not including sportsfields) including associated costs for placement and cultivation.

.3 Sportsfield Soil Mix (sq. m.) including associated costs for supply and mixing of imported topsoil, manure/compost, course sand, placement and spreading.

.1 Rebar property pins for soccer pitches is considered incidental to the soccer pitch construction and will not be measured for payment.

.4 Planting Soil Mix for individual trees and trees/shrubs in shrub planting beds is considered incidental to cost of plant material and will not be measured for payment.

.5 Structural Soil Cell Planting Medium (sq. m.) for cells installed outside of tree well including associated costs for placement and spreading.

.8 Section 02233 Granular Base

.1 Granular Base (sq. m.) including associated costs of excavation and compaction for heavy duty crusher dust, unit paving, concrete, asphalt, and pipe culvert end grates is considered incidental to cost of applicable surface treatment or item of Work and will not be measured for payment.

.2 Granular Parking Lots (sq. m.) including associated costs for excavation, compaction for granular parking lot area.

.3 Additional Pathway Structure (sq. m.) including associated costs for excavation, geogrid, geotextile, additional granular base material and compaction for pathway area.

.9 Section 02511 Crusher Dust

.1 Standard Crusher Dust (sq. m.) including associated costs for excavation and compaction of subgrade.

.2 Heavy Duty Crusher Dust (sq. m.) including associated costs for excavation, compaction of subgrade, and granular base (heavy duty).

.10 Section 02515 Unit Paving

.1 Unit Paving (sq. m.) for each type of construction including associated costs for excavation, compaction, granular base, levelling course, filler sand, tamping, edging material (lin. m.) and cutting of unit pavers.

.11 Section 02523 Miscellaneous Concrete

.1 Concrete Pads (sq. m.) including associated costs for excavation, compaction of subgrade, granular base, form work, reinforcement, hoarding if required, protection and finishing.

.2 Concrete Play Edge (lin. m.) including associated costs for excavation, compaction of subgrade, granular base, form work, hoarding if required, protection and finishing.

.3 Concrete Footings for fences, steel bollards, site furnishings, play equipment and other items of Work where concrete is specified, such as pipe culverts or irrigation, includes associated excavation and finishing costs required and as an incidental cost to that item of Work and will not be measured for payment.

.12 Section 02524 Concrete Park Pathway

.1 Concrete Park Pathway (sq. m.) including associated costs for excavation, compaction, saw cut control joints, expansion joints, evaporation retardant, etc. for concrete pathway construction.

.2 Payment adjustment for air entrainment.

Air Entrainment	Payment
5.0% - 8.0%	100%
4.5% - 4.9%	95%
4.0% - 4.4%	75%
3.5% - 3.9%	30%
Less than 3.5%	No Payment. Remove concrete. No Payment for concrete removed.

.3 Payment adjustment for concrete strength.

Actual strength divided by specified strength multiplied by unit price will now equal the price paid.

Example: Contract Price: $100.00 per square metre
Specified Strength: 32.00 MPa
Actual Strength: 28MPa

$100.00 x 28/32 = $87.50

Extent of weak concrete will be determined by coring at contractors expense.

.4 Payment adjustment for winter concrete construction.

.1 Placement of concrete after the date as determined by Section 02524, shall only occur at the discretion of the **Consultant.**

.2 Submit additional costs for e.g. winter heat, calcium, hoarding/insulation.

.3 Additional cost associated with winter concrete placement will be paid as a separate item.

.13 Section 02552 Asphalt Park Pathway

.1 Standard Asphalt Construction (sq. m.) including associated costs for excavation, compaction, granular base, and slurry seal.

.2 Heavy Duty Asphalt Construction (sq. m.) including associated costs for excavation, compaction, granular base, and slurry seal.

.3 Payment adjustment formula: Thickness (X) = actual thickness / design thickness\

Variation from design thickness	Payment
10mm thick - 5mm thin	100%
6mm thin - 15mm thin	$X^2(100)\%$
more than 15mm thin	No payment

.4 Failure to provide a satisfactory tamped and tapered asphalt edge on one or both edges as detailed will result in a payment reduction of 50% of the unit cost for the complete asphalt surface in the affected areas.

.5 Asphalt Overlay (sq. m.) including associated costs for cleaning, prepping, applying asphalt overlay and slurry seal.

.14 Section 02712 Landscape Drainage

.1 French Drain and Panel Drain (lin. m.) including associated costs for excavation, filter cloth, weeping tile and aggregate.

.2 Play Area Drainage (lump sum / lin.m.) including associated costs for excavation, filter cloth, aggregate, weeping tile, pipe, outlet structure and connection to storm sewer. Other drainage materials or structures that may be required for a playground surfacing system are also included.

.15 Section 02723 Pipe Culverts

.1 Pipe Culverts (each / lin. m.) including associated costs for excavation, installation, backfill, compaction and associated grading.

.2 End Grates / Drain Inlets (each) including associated costs for excavation, backfill, concrete splash pads, end grates, and lock installation.

.16 Section 02810 Irrigation

.1 Specified items of irrigation Work (lump sum / each / lin. m.) including associated costs, including removal and disposal of existing irrigation systems and appurtenances, as specified.

.2 Excavation or trenching of materials which cannot be excavated by normal mechanical excavation means will be an addition to the Contract, as agreed.

.17 Section 02811 Light Bases and Conduit

.1 Precast Concrete Light Bases (each) including associated costs for pickup from SL&P, delivery to site, excavation, compaction, grounding, placement, backfill and protection measures.

.2 Electrical Conduit (lin.m.) complete with pull string or tracer wire includes associated costs for trenching, compaction, backfill and protection.

.3 Excavation or trenching of materials which cannot be excavated by normal mechanical excavation means will be an addition to the Contract, as agreed.

.18 Section 02831 Chain Link

.1 Backstops (each) for specified type of backstop including associated costs for excavation and concrete, paid as follows:

.1 25% upon installation of support posts.

.2 75% upon completion of installations.

.2 Chain Link Fences (lin. m.) for specified height of fence complete with gates (if required) including associated costs for excavation and concrete.

.19 Section 02870 Site Furnishings

.1 Site Furnishing (each) for new and salvaged for re-use furnishings including associated costs for excavation and concrete.

.1 Galvanized can and security cable or chain is incidental to cost of waste receptacle and will not be measured for payment.

.20 Section 02871 Play Equipment

.1 Play Equipment (each / lump) for specified type of play equipment including associated costs for excavation, concrete and prevention of use.

.21 Section 02872 Play Surfacing

.1 Play Surfacing (sq. m.) including associated costs for excavation, subgrade preparation and compaction for play surface.

.22 Section 02875 Infields

.1 Infields (each) including associated costs for excavation, subgrade preparation and compaction for the ball diamond, paid as follows:

.1 75% upon installation of infield mix including grading and compaction.

.2 25% upon installation of sand including completion of final shaping.

.23 Section 02920 Naturalized Seeding

.1 Naturalized seeding (sq. m.) of naturalized areas for each type of seed mix including associated costs for seed mix, fertilizer, and fine grading of topsoil areas, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.3 Failure to obtain inspection of naturalized seeding operations will result in Contractor providing landscape maintenance required until satisfactory germination of seed for turf areas or a 50% deficiency holdback in the amount paid as determined by **Consultant.**

.2 Aeration, topdressing and naturalized seeding (sq. m.) including associated costs for topsoil, seed mix and water, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.3 Hydromulching (sq. m.) of seeded areas including associated costs for mulch, tackifier or binder and water, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.4 Pneumatic naturalized seeding with soil (sq. m.) including associated costs for soil, compost, seed, fertilizer and other mix amendments, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.24 Section 02933 Seeding

.5 Seeding (sq. m.) of turf areas for each type of seed mix including associated costs for seed mix, fertilizer, and fine grading of topsoil areas, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.3 Failure to obtain inspection of seeding operations will result in Contractor providing landscape maintenance required until satisfactory germination of seed for turf areas or a 50% deficiency holdback in the amount paid as determined by **Consultant.**

.6 Aeration, topdressing and seeding (sq. m.) including associated costs for topsoil, seed mix and water, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.7 Hydromulching (sq. m.) of seeded areas including associated costs for mulch, tackifier or binder and water, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.8 Pneumatic seeding with soil (sq. m.) including associated costs for soil, compost, seed, fertilizer and other mix amendments, will be paid as follows:

.1 50% upon installation.

.2 50% at FAC.

.25 Section 02938 Sodding

.1 Sodding (sq. m.) of turf areas including associated costs for nursery sod, fertilizer, fine grading of topsoil areas and slope staking/reinforcement (if required).

.26 Section 02950 Plant Material

.1 Plant Materials (each) for specified species of tree or shrub and including associated costs for excavation, planting soil, wood mulch, gravel mulch (for individually planted trees) and tree watering bags.

.2 Root Growth Structure (lin. m.) installed in each trench, and including associated costs required to complete per detail; paid upon completion of associated Work.

.3 Structural Soil Cell (lin. m.) supplied and installed in each trench, and including associated costs required to complete per detail; paid upon completion of planting and associated Work.

.4 Rigid Styrofoam (lin. m.) supplied and installed for raised planters, including associated costs required to complete per detail; paid upon completion of associated Work.

.5 Tree Support (each) for specific trees specified and including associated costs; paid upon completions of planting and associated Work.

.6 Removal of rejected plant material:

.1 If directed, remove rejected plant material that has not been replaced. Remove the plant and root basket/ball and restore the planting hole to match adjacent surfaces.

.2 Costs associated with removal of the tree/root basket and restoration of the planting hole are considered incidental to the Contract requirements and will not be measured for payment.

.7 Undersized plant material will have their payment reduced as follows:

.1 Calliper specified trees - Unit rate is reduced by 2% for every one mm under specified calliper.

.2 Height specified trees - Unit rate is reduced by 2.5% for every 5cm increment below specified height.

.3 Container specified shrubs - Unit rate will be reduced by 25% for every incremental pot size reduction from specified standard pot size (#5, #3, #2, #1 pot sizes).

.8 Wood Mulch (sq. m.) for planting beds including associated costs for placement in planting beds, and edging as specified.

.1 Wood Mulch for individual trees is incidental to cost of individual trees and will not be measured for payment.

.27 Section 02998 Landscape Maintenance

.1 Landscape Maintenance after Construction Completion (month) is for the seasonal maintenance between April 15 and October 15 of given year, from the date of Construction Completion Certificate (CCC) to the date of Final Acceptance.

.2 Failure to provide the specified Landscape Maintenance, including replacement of rejected plant material, will result in a reduced payment.

.1 The adjusted amount will be determined by the **Consultant.**

.2 Payment reductions for rejected plant material will be applied at the unit rate paid for installation.

END OF SECTION

01410 Testing Laboratory Services

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02070 Demolition, Removal and Salvage

.2 Section 02210 Rough Grading

.3 Section 02212 Topsoil

.4 Section 02214 Compost

.5 Section 02233 Granular Base

.6 Section 02511 Crusher Dust

.7 Section 02515 Unit Paving

.8 Section 02523 Miscellaneous Concrete

.9 Section 02524 Concrete Park Pathway

.10 Section 02552 Asphalt Park Pathway

.11 Section 02872 Play Surfacing

.12 Section 02875 Sports Fields

1.2 QUALITY CONTROL

.1 **Consultant** to review requirements for inspection and testing with **Contractor** before start of Contract or Work pertaining to that section.

.1 Notification is required before execution of tests performed by testing laboratory.

1.3 APPOINTMENT

.1 Appoint testing laboratory for use in this Contract.

.1 Named testing laboratory is subject to approval by **Consultant**.

1.4 TESTING REQUIREMENTS

.1 **Consultant** to approve locations and extent of testing.

.1 Submit test results for review.

.2 Furnish labour and facilities to ensure access to Work required for inspection and testing by testing laboratory.

.1 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Where materials are specified for testing, deliver representative samples in required quantity to testing laboratory.

.3 Where tests or inspections reveal work not in accordance with Contract requirements, repair the work for additional testing (unless individual sections state otherwise).

.1 Repair and testing is to continue until the Work is done in accordance with Contract requirements.

.4 Make good work disturbed by inspection and test.

2.0 Products (not applicable)

3.0 Execution (not applicable)

END OF SECTION

01783 Record Documents

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections.

1.2 DEFINITIONS

.1 Record Documents are part of the Contract and are revised Contract Documents to reflect changes made to the Work.

.2 Record Documents are considered permanent recorded changes to the Contract.

1.3 SUMMARY

.1 Record Documents consist of:

.1 Record Drawings.

.2 Record Specifications.

.2 Record Documents should be stored in the field office apart from documents used for construction.

Do not use Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition. Make documents and samples available for the Owner's inspections.

2.0 Product

2.1 SUBMITTING RECORD DOCUMENTS

.1 Record Documents are submitted by the Contractor to the **Consultant** and forwarded to ParkDwgSubmissions@Saskatoon.ca before CCC approval.

.2 As required, the Contractor shall submit revised Record Documents at no cost to the City to reflect project changes between CCC and FAC.

.3 The Record Documents submission should include:

.1 Record Drawings format per original contract drawings and clearly labelled "Record Documents".

.1 Submission media:

.1 Digital files by e-mail to Project Manager.

.2 Hard Copy original set.

.2 Digital files are required submitted in the following format:

.1 AutoCAD Version 2018 minimum.

.2 File format .dwg.

.3 Record drawings are required approved, stamped and signed by the registered Landscape Architect with current membership in SALA and CSLA, and other sub-consultants used.

.2 Record Specifications format per original contract specifications and clearly labelled “Record Documents”.

.1 Submission media:

.1 Digital files by e-mail to Project Manager.

.2 Hard Copy original set.

.2 Digital files are required submitted in the following format:

.1 Microsoft Word.

.2 File format .doc.

.3 Record Specifications are required approved, stamped and signed by the registered Landscape Architect with current membership in SALA and CSLA, and other sub-consultants used.

.3 Record Drawings and Record Specifications form integral permanent recorded changes to the Contract.

.4 Record Documents become the property of the City of Saskatoon.

3.0 Execution

3.1 PREPARING RECORD DOCUMENTS

.1 Record Documents are required prepared and maintained by the Contractor during the construction of a project. Record Documents should reflect changes, variations and modifications to the original design as the project proceeds. The Record Documents should indicate:

.1 Exact location of contract items.

.2 Generally the process and responsibility for ensuring comprehensive Record Documents begins with the **Consultant** and then transfers to the Contractor. Contract Specifications should contain the Contractor’s responsibility during construction to:

.1 Maintain Record Documents on site;

.2 Record changes in construction due to site conditions;

.3 Record approved change orders;

.4 Mark up prints and digital documents (in contrasting colour) recording changes;

.5 Maintain the marked-up print set on site;

.6 Prepare and submit Record Documents to the Owner.

.7 The form and format of development of Project Record Drawings.

.8 The responsibilities of a **Consultant** to review progress at regular intervals.

.9 The Contractor preparing the final document is required to include:

.1 The degree of completeness of record drawings relative to each construction discipline;

.2 The review procedures and acceptance of documents at completion;

.3 Deviations from contract documents;

.4 The recoded data in a clear, concise and complete manner;

.5 The recording of changes made by site instructions and change orders and that they are accurate and complete;

.6 The review and accepted submission before final payment certification to ensure work is complete;

.7 The need for record documents to specify a sub trade responsibility in developing a recording as-built conditions.

.8 The Owner's particular requirements for record drawings and document submissions.

END OF SECTION

02065 Existing Plant Material

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02070 Demolition, Removal and Salvage

.2 Section 02210 Rough Grading

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve excavations, protection methods, removal, relocation or pruning of existing trees and other plant material located on public property, before start of Work.

.1 Supply an Environmental Protection Plan before commencement of Work, to include proposed Plant Protection measures.

.2 Trees within or adjacent to the Work require a Tree Protection Zone (TPZ) during construction by a protective barrier or fencing.

.3 Activities which are likely to injure or destroy the tree are not permitted within the TPZ.

.4 Tree pruning or root cutting of trees on public City of Saskatoon property may only be done by Urban Forestry staff or a certified Arborist approved by the **City of Saskatoon, Parks Department**.

1.3 INSPECTIONS

.1 **City of Saskatoon, Parks Department** is required to inspect the site to review and verify existing plant material designated for protection, removal, and relocation, before start of Work.

.1 Photo record existing plant material (to remain) before start of Work.

.2 Notify the **City of Saskatoon, Parks Department** for inspection of:

.2 Excavations adjacent to existing trees and other plant material.

.3 Protection methods for existing plant material to remain.

.4 Removal, relocation or pruning of existing plant material to remain.

.3 Notification is required, within 48 hours of the Work commencing for emergency excavations, construction, or where repair is undertaken within the TPZ of existing tree or other plant material.

1.4 FINES AND PENALTIES

.1 Unauthorized excavations, removal, relocation or pruning in part or whole of existing plant material at or adjacent to the Work is not allowed and will result in a fine or penalty assessed against the Contractor to include:

.1 Activity that causes damage to, or results in the removal of existing tree or plant material, without before review and approval of such activity or Work.

.2 The Contractor is responsible for damages resulting from unauthorized work to existing tree per City of Saskatoon Council Policy No. C09-011, Trees on Public Property or City of Saskatoon Bylaw No. 7767, Recreation Facilities and Parks Bylaw.

.1 The Contractor is responsible to monitor Sub-Contractors as restitution for damages found is solely upon the Contractor.

.3 Restitution for damages to, or removal of, plant material is required assessed on the value of plant material as determined using formula described by the International Society of Arboriculture (ISA) Guide for Plant Appraisal, current edition.

.1 City of Saskatoon to supply a Certified Arborist, according to the International Society of Arboriculture (ISA), to perform the assessment and evaluate damages. Damages may include the cost of repair, removal and replacement as determined by such assessment.

.2 Contractor is responsible for costs to plant material resulting from the assessment.

1.5 CONSTRUCTION ACCESS, PARKING AND STORAGE

.1 Comply with requirements of the Public Service Vehicles Act.

.1 Use construction access/egress routes as approved by the **City of Saskatoon, Parks Department** and as indicated on the Environmental Protection Plan.

.2 If site access is required within the Tree Protection Zone (TPZ) of existing trees, Tree Protection Barriers and Hoarding will be required.

.1 Methods of protection are required shown on the Environmental Protection Plan and are subject to approval by the **City of Saskatoon, Parks Department** before start of Work.

.3 Pre-designate Parking areas at each Construction site.

.1 Parking of vehicles or machinery within the TPZ of trees is not permitted.

.2 Parking is allowed only where designated on the Environmental Protection Plan.

.3 Soil aeration of compacted areas is required after completion of Work.

.4 Wood mulch layer may be required to distribute weight.

.4 Equipment, topsoil or other Construction material storage within the TPZ is not permitted.

.5 Storage area(s) to meet requirements of Environmental Protection Plan.

2.0 Products

2.1 PROTECTIVE FENCING AND HOARDING

.1 A protective barrier or fencing is required to keep vehicles and equipment away from plant material.

.1 Standard snow fence: 1200mm min. height of either orange plastic mesh or wooden slats in clean and unbroken condition.

.2 Plywood sheeting: 12.5mm thick, 1200mm min. height in sound undamaged condition.

.3 Hoarding: 39 x 89 x 2400mm boards secured vertically at 300mm intervals around the tree trunk with strapping as indicated.

.4 T Post: 35mm gauge, 1800-2400mm height heavy duty steel. Extend bottom of support 450mm min. into sub-grade.

.5 Wood Post: 1800mm height min., 75 – 100mm diameter, treated with preservative (creosote unacceptable).

3.0 Execution

3.1 REMOVALS

.1 **City of Saskatoon, Parks Department** to determine extent of removals required for existing plant material as identified on drawings, or as directed.

.1 Trees that are dead, dying, diseased, and posing a hazard to public safety are required removed.

.2 Ensure adjacent plant material is protected from falling trees, stockpiled debris, or cutting of roots during removal of plant material.

.1 Remove cut waste material from site and disposal off site per regulations.

.3 Grind out stumps and roots from cleared area and remove debris from site and dispose off site per regulations.

3.2 PROTECTION

.1 Plant material not subject to removal requires protection during construction. Plant material cannot be subject to unnecessary destruction, loss and damage.

.2 Trees of historic significance or of special landscape value may require additional protection as directed by the **City of Saskatoon, Parks Department**.

.3 Construction work around unprotected trees is prohibited.

.4 Refer to the chart below for determining the Tree Protection Zone (TPZ):

Tree Protection Zones:

Trunk Diameter(DBH)[1]	Minimum Protection Distances Required[2] Whichever of the two is greater:
<100mm	The drip line[3] or 1.8m
110 – 400mm	The drip line or 2.4m
410 – 500mm	The drip line or 3.0m
510 – 600mm	The drip line or 3.6m
610 – 700mm	The drip line or 4.2m
710 – 800mm	The drip line or 4.8m
810 – 900mm	The drip line or 5.4m
910 – 1000+mm	The drip line or 6.0m

[1]Diameter of tree trunk taken at 1.4m above the ground.
[2]Tree Protection Zone distances are measured from the outside edge of tree base.
[3]Drip line is defined as the area beneath the outer most branches of a tree and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the Construction work.

.1 Some trees and site conditions may require a larger TPZ at the discretion of the **City of Saskatoon, Parks Department**.

.2 Grading change, storage of material or equipment is not permitted within the TPZ.

.3 Damage to plant material within TPZ is required reported to the **City of Saskatoon, Parks Department** within 48 hours of occurrence for assessment and decision on actions required.

.4 For construction activity within 3-5m of plant material, use a standard snow fence with T Post supports.

.5 For construction activity within 1-3m of plant material use plywood sheeting with T Post or Wood Post supports.

.6 For construction activity within 1m of trees use Hoarding.

.5 Trees within TPZ are required protected by a Tree Protection Barrier as indicated.

.1 Installation of Tree Protection Barrier is required before start of Work.

.2 Locate support posts and bracing used to secure the Tree Protection Barrier outside the TPZ.

.3 Removal of Tree Protection Barrier requires written approval from the **City of Saskatoon, Parks Department**.

.6 Enhanced Root Protection may be required at vehicle access routes and within designated parking areas.

3.3 EXCAVATIONS ADJACENT TO EXISTING PLANT MATERIAL

.1 Locate and stake line of proposed underground services/utilities or required excavations adjacent to existing plant material.

.1 Approvals for Work within TPZ of existing plant material are required from the **City of Saskatoon, Parks Department**.

.2 Excavate with extreme caution as follows:

.1 Avoid damage to anchor roots, which provide upright support for the tree and minimize damage to the tree.

.2 Roots with a diameter over 4 inches require the **City of Saskatoon, Parks Department** approval before cutting.

.3 Prune exposed tree roots immediately with a sharp tool for a clean cut.

.4 Cover exposed roots with a tarp to prevent drying.

.5 Maintain continuous soil moisture to 600mm depth within TPZ of trees affected by excavation until backfilled.

.6 Backfill excavation within 24 hours and water immediately with sufficient quantity of water.

.2 Tunnel proposed underground service/utilities at min. 600mm depth if within 3m of existing plant material TPZ.

.3 Excavations within 3m radius of existing plant material may be permitted on one side ONLY.

.1 Carefully expose tree roots by trenching to 600mm depth before excavation.

.4 Excavations closer than 3m of existing plant material are not permitted.

3.4 RELOCATION

.1 **City of Saskatoon, Parks Department** presence is required for relocation of existing plant material.

.2 Dig tree hole with same hydraulic tree spade as used to transplant plant material.

.3 Scarify wall of planting holes before relocating and remove water from planting hole before tree placement.

.4 Using hydraulic tree spade, dig plant material with a firm natural cone of root system of sufficient diameter and depth to ensure full recovery of the plants.

.1 Transplant by tree spade using the following guidelines:

Tree Spade (size)	Maximum tree caliper (DBH)[1]	Tree Height
1350mm (44")	75mm (3")	3.0 - 3.6m (10-12')
1500mm (60")	100mm (4")	3.0 - 3.6m (10-12')
1650mm (66")	150mm (6")	3.6 - 4.2m (12-14')
2100mm (84")	200mm (8")	4.2 - 4.8m (14-16')

[1]Diameter of tree trunk taken at 1.4m above the ground.

.2 Transplanting of trees greater than 8” caliper is prohibited.

.5 Install tree plumb and at locations per drawings and details.

.6 Water immediately after planting with sufficient quantity of water and continue establishment maintenance per Contract.

.7 Backfill hole left by relocated tree immediately after transplant.

3.5 PRUNING

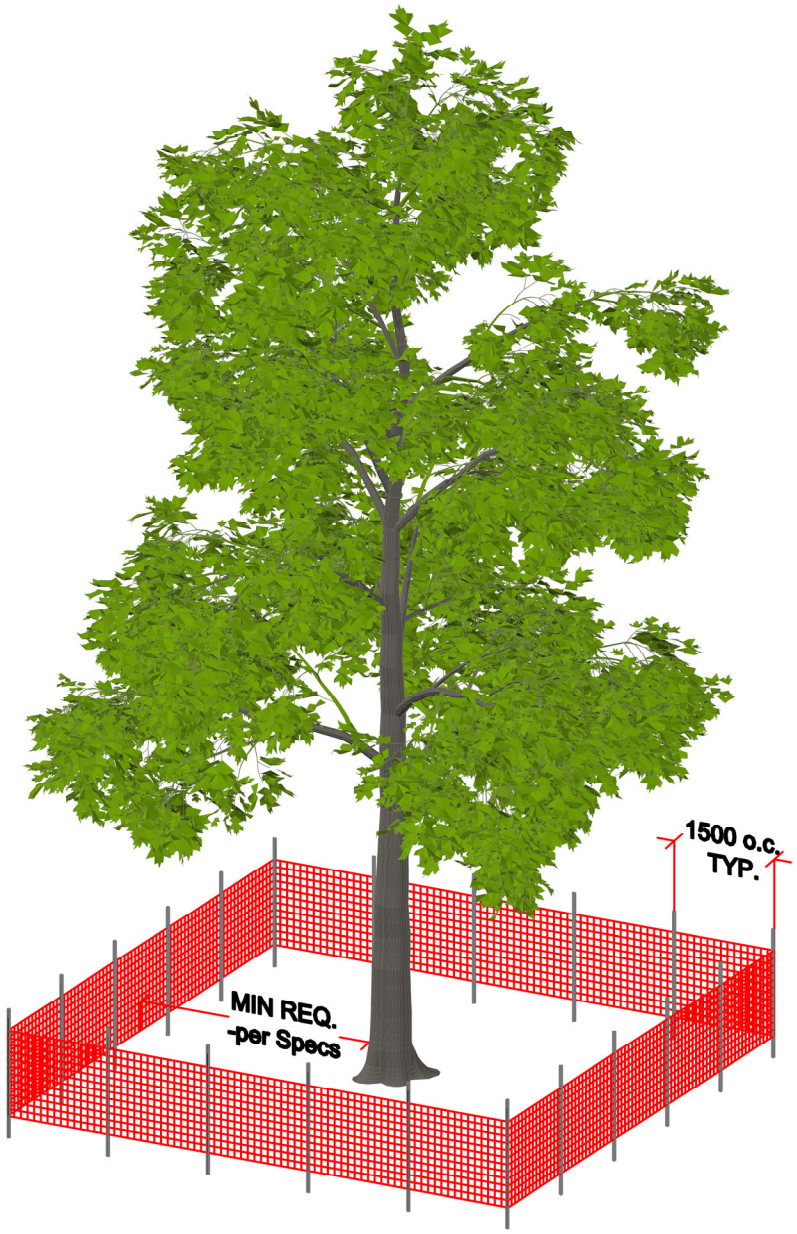
.1 **City of Saskatoon, Parks Department** to inspect existing plant material and determine extent of pruning required done by certified Arborist.

.2 Pruning of Elm trees during the annual pruning ban from April 1 to August 31 is prohibited.

.3 Dispose of Elm tree cuttings at approved waste facility per regulations.

.4 **City of Saskatoon, Parks Department** to perform pruning requirements for existing plant material posing hazard to public safety.

END OF SECTION



NOTE:

1. **Units are in millimeters U.N.O.**
2. **For tree groups, use one continuous barrier, min. required distances per specifications still apply for each tree.**
3. **Min. fence height per specifications.**

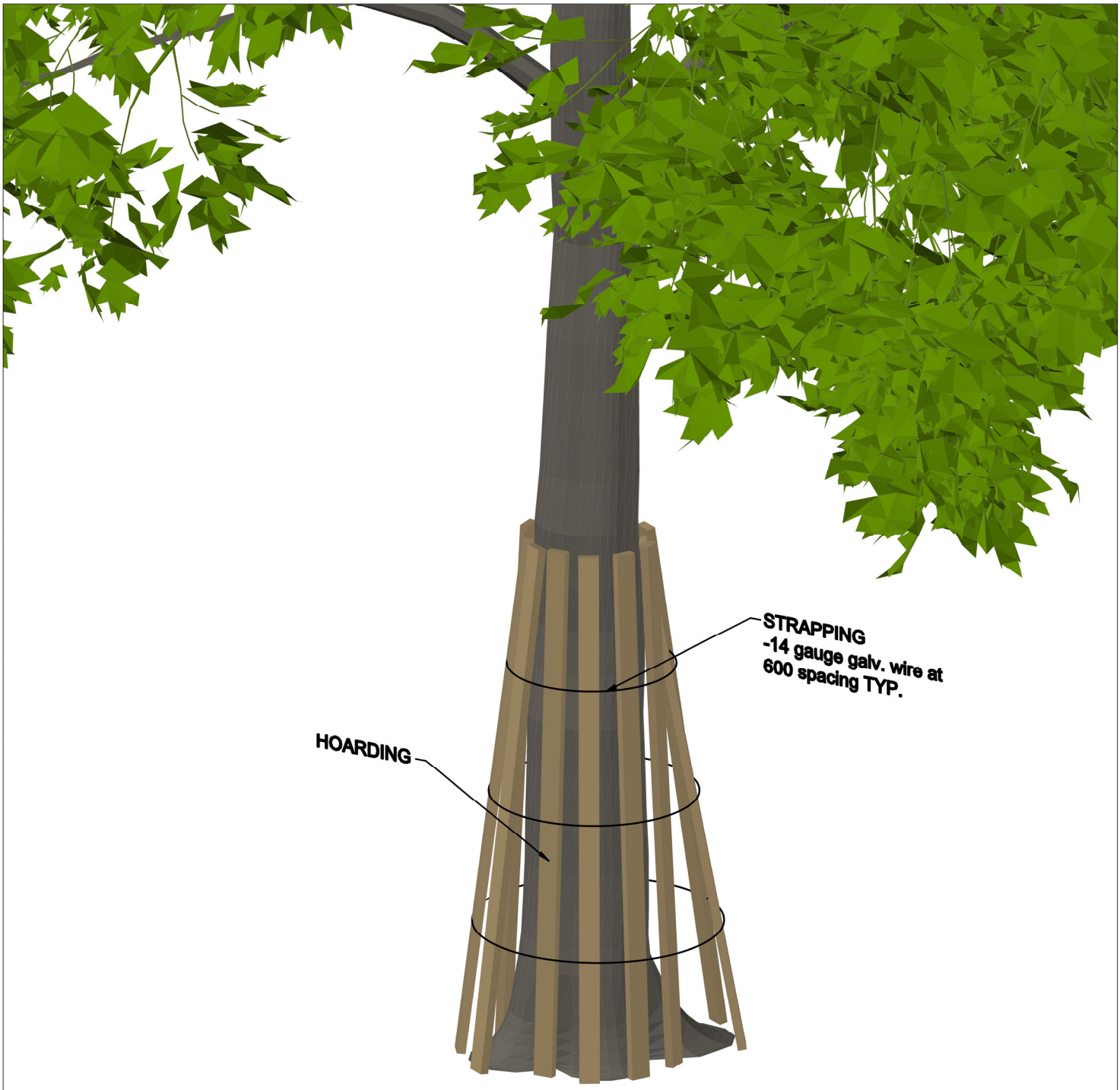
City of Saskatoon

Drawing Title: Existing Tree Protection Barrier

Drawn: HMK | Checked: BG | Revised Date Y/M/D 19/10/23 | Scale: 1:100

Drawing No. 02065-01

Parks



NOTE:

1. **Units are in millimeters U.N.O.**

City of Saskatoon

Drawing Title: Existing Tree Protection Hoarding

Drawn: HMK Checked: BG | Revised Date Y/M/D 19/10/29 | Scale: 1:20

Drawing No. 02065-02

Parks

02070 Demolition Removal and Salvage

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02065 Existing Plant Material

.3 Section 02210 Rough Grading

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve demolition, removals, and salvage of existing items located on public property.

.1 Existing topsoil located on site is required approved before strip and stockpile operations.

1.3 INSPECTIONS

.1 **City of Saskatoon, Parks Department** to inspect the site to review and verify items to remain, demolish / remove, and salvage / stockpile.

.1 Take record photographs of items identified for salvage, before start of salvage and stockpile operations.

.2 Notify **Consultant** for inspection before:

.1 Demolition or salvage operations of major items.

.2 Stockpile of items salvaged, before re-use.

.3 Stockpile of existing topsoil, stripped from site, before re-use.

1.4 TESTING

.1 Existing topsoil testing is required by an approved Environmental testing laboratory service in Saskatoon and is subject to the **City of Saskatoon, Parks Department** approval before start of work.

.1 .Required tests:

.1 PSA-2 (Particle size analysis).

.2 C-TOT-ORG (organic carbon).

.3 SAL-DETAIL+TGR (detailed salinity).

.4 Soil Analysis Package 1 (for NPKS).

2.0 Products

2.1 MATERIALS

.1 Existing site items before start of construction including:

.1 Park signs, site furnishings, play and sports equipment, fencing, irrigation components and light fixtures.

.2 Existing Topsoil: existing surface capable of supporting good vegetative growth and suitable for landscape use.

3.0 Execution

3.1 PREPARATION

.1 Before demolition, removal or salvage of irrigation, and electrical items, ensure water connection or electrical distribution system has been turned off or disconnected before start of Work.

.1 Do not proceed with portion of the Work until approval is given by Authority involved.

3.2 DEMOLITION AND REMOVAL

.1 Remove and dispose of items per drawings.

.1 Do not disturb adjacent items.

.2 Dispose of materials not for salvage or re-use off site.

.2 For removal of existing pavements, curbs and gutters:

.1 Square up adjacent surfaces to remain in place by saw cutting.

.2 Protect adjacent joints and load transfer devices.

.3 Protect underlying granular materials.

.3 For removal of pipes under existing or future pavement areas:

.1 Excavate min 300mm below pipe invert.

3.3 SALVAGE OF ITEMS

.1 Salvage items per drawings.

.1 Carefully dismantle items, protecting adjacent items.

.2 Backfill holes and repair to safe condition.

.3 Stockpile salvaged materials in locations specified.

.2 Existing features for salvage:

.1 Stockpile on site and notify **Consultant** for pick-up.

.2 Remove concrete from post footings.

.3 Salvage and stockpile of existing light fixtures:

.1 Only Saskatoon Light and Power is authorized to proceed with this Work.

.4 For salvage and stockpile of granular materials, including play sand:

.1 Excavate to subgrade. Do not mix sub soil with material salvaged.

3.4 STRIP AND STOCKPILE OF TOPSOIL

.1 Remove weeds, weed seed bed, stones, debris, and other foreign material in excess of 50mm diameter before start of Work.

.2 Strip topsoil to subgrade in areas identified on drawings to depths specified, avoid mixing with subsoil.

.3 Do not strip or handle wet or frozen topsoil. This will disturb soil structure.

.4 Stockpile topsoil per drawings.

.1 Alternative locations require approval before proceeding.

.2 Max. stockpile height 3m unless another height is approved by the **City of Saskatoon, Parks Department**.

.3 Hydroseed and protect stockpile from compaction, water saturation, contamination and erosion.

3.5 CLEAN UP

.1 Clean adjacent walks, road and other surfaces at the end of each working day.

END OF SECTION

02210 Rough Grading

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02065 Existing Plant Material

.3 Section 02070 Demolition, Removal and Salvage

.4 Section 02212 Topsoil

.5 Section 02233 Granular Base

.6 Section 02511 Crusher Dust

.7 Section 02515 Unit Paving

.8 Section 02523 Miscellaneous Concrete

.9 Section 02524 Concrete Park Pathway

.10 Section 02552 Asphalt Park Pathway

.11 Section 02872 Play Surfacing

.12 Section 02875 Sports Fields

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve rough grading and subgrade preparation for Work.

.1 Notification is required when unsuitable or waste material, artesian springs, etc. are encountered during rough grading operations.

1.3 INSPECTIONS

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Subgrade preparation, after compaction and scarification. Approval of subgrade scarification from **Consultant** is required before topsoil installation.

.2 Subgrade preparation, after compaction, before placement of granular base.

1.4 TESTING

.1 Rough grading and subgrade preparation for surface treatments including asphalt may be subject to compaction tests by an approved testing laboratory service as directed by the **City of Saskatoon, Parks Department**.

2.0 Products

2.1 MATERIALS

.1 Existing On Site Fill Material: clean subsoil material for rough grading, containing no organic matter, waste material or other unsuitable material deemed detrimental to construction of rough grades.

.1 Granular base, excavated from existing pathways, is considered acceptable fill material if buried a minimum of 1.0m below design subgrade.

.2 Sand infield material, excavated from existing ball diamond infields, is considered acceptable fill material if buried a minimum of 1.0m below finish grade.

.3 Topsoil is acceptable fill material within soft landscape areas.

.2 Imported Fill Material: clean subsoil material, as approved for rough grading, containing no organic matter, waste material or other unsuitable material deemed detrimental to construction of rough grades.

.3 Waste: materials found on site which are deemed unsuitable for fill, grading or landscaping, includes:

.1 Soil contaminated with asphalt rubble, concrete and other building waste materials.

.2 Soil containing spongy or yielding material, organic material, frozen materials, wet or saturated materials, toxic materials, alkaline material, and other unsuitable materials.

3.0 Execution

3.1 PREPARATION

.1 Ensure existing plant material and other items to remain are properly protected from damage during rough grading.

.2 Remove weeds, stones, debris, and other foreign material in excess of 25mm diameter before start of Work.

3.2 LAYOUT

.1 Approval before final excavation for layout of pathways and granular parking lots is required.

.1 Contractor is responsible for layout accuracy.

.2 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Check surface grades continuously as Work proceeds.

.2 Normal tolerance will be +/- 25mm, except where greater accuracy is specified.

3.3 ROUGH GRADING

.1 Landscaped areas shall be sloped as required to maintain positive drainage; minimum gradient shall be not less than 2.0% and maximum gradient shall be no more than 25% (deviations from these parameters are acceptable but only as approved, in writing, by the **City of Saskatoon, Parks Department**).

.2 Rough grade to subgrade elevations. Ensure same moisture content between existing ground and graded material to facilitate bonding.

.1 Burying of waste material or unsuitable material is prohibited.

.3 Rough grade to designed subgrades per drawings, allowing for the depths required for hard and soft landscape surface elevations.

.4 Backfill over excavated areas that are below designed subgrade with selected material or granular backfill.

.5 Compact subgrade to Standard Proctor Density per ASTM D698-12e2.

.1 If soil is too moist, dry top 300mm by aeration to optimum moisture content.

.2 If the soil is too dry, add water uniformly with pressure water sprayer to achieve optimum moisture content.

.3 Use sheep foot type roller or other equipment to achieve compaction.

.4 Do not over compact subgrade for the use intended.

.6 Compact subgrade to the following Standard Proctor Densities:

Type	%
Turf areas (except sports fields)	80
Sportsfield areas	80
Infield areas	95
Play Surfacing	95
Gravel Parking Lots and Crusher Dust areas	98
Unit Paving, Concrete and Asphalt areas	98

.7 Eliminate uneven or low areas, ensuring positive drainage.

.1 Re-grade areas damaged during construction of other Work.

3.4 SCARIFICATION

.1 Scarify: Loosening and roughening the surface of soil and sub soil to a depth of 200mm before installing topsoil.

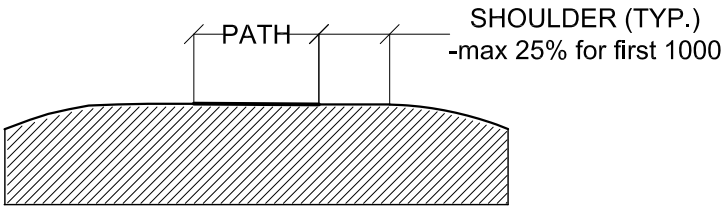
.2 Vehicular traffic, trenching or other activities compromising the rough grade is not permitted after scarification to prevent soil compaction.

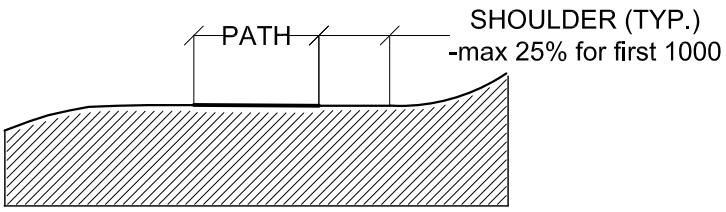
3.5 CLEAN-UP

.1 Remove and dispose of excess material, waste material and surface debris.

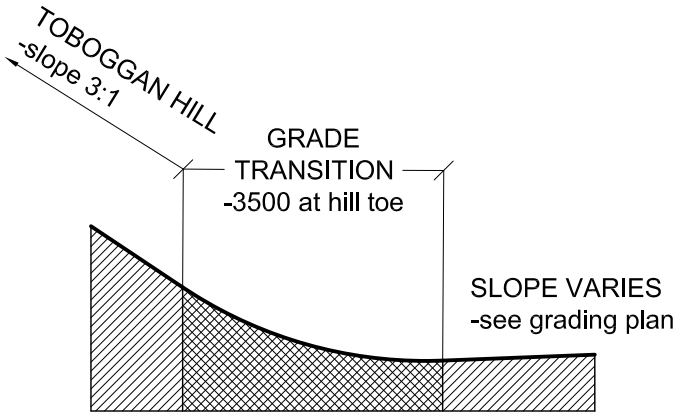
.2 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION





PATH - GRADE TRANSITIONS



TOBOGGAN HILL BASE - GRADE TRANSITION

NOTE:
1. Units are in millimeters U.N.O.
2. Refer to grading plan for elevations and grades.

City of Saskatoon

Drawing Title: Grade Transition Details

Drawn: HMK Checked: BG | Revised Date Y/M/D 16/12/09 | Scale: N.T.S.

Drawing No. 02210-01

Parks

02212 Topsoil

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02070 Demolition, Removal and Salvage

.3 Section 02210 Rough Grading

.4 Section 02214 Compost

.5 Section 02933 Seeding

.6 Section 02938 Sodding

.7 Section 02950 Plant Material

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve soil and soil mix amendments.

.1 Testing results are required submitted to the **City of Saskatoon, Parks Department** before delivery to site.

.2 **City of Saskatoon, Parks Department** to review soil requirements for the Work before final topsoil placement.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Subgrade scarification confirmation before topsoil placement.

.2 Initial topsoil placement, before placement of organic amendments.

.3 Organic amendments placement when required, before cultivation.

.4 Sportsfield soil mix placement.

1.4 TESTING

.1 Topsoil testing is required by an approved Environmental testing laboratory service in Saskatoon and is subject to the **City of Saskatoon, Parks Department** approval before start of work

.1 Soil tests required:

.1 PSA-2 (Particle size analysis).

.2 C-TOT-ORG (organic carbon).

.3 SAL-DETAIL+TGR (detailed salinity).

.4 Soil Analysis Package 1 (for NPKS).

.2 Structural Soil Cell Planting Medium tests required:

.1 PSA 1 (Particle size test).

.2 PH test (PH1:2).

.3 C-TOT-ORG (organic carbon).

.4 SAL-DETAIL+TGR (detailed salinity).

.5 Soil Analysis Package 1 (for NPKS).

.2 Soil Mix Amendment testing is required by an approved Environmental testing laboratory service in Saskatoon and is subject to the **City of Saskatoon, Parks Department** approval before start of work.

2.0 Products

2.1 TOPSOIL

.1 Topsoil A: existing on site, stockpiled and approved for use.

.2 Topsoil B: imported topsoil approved for use.

2.2 SPORTSFIELD SOIL MIX

.1 Screened soil, friable mix composed of:

.1 50% imported topsoil.

.2 25% organic amendments.

.3 25% coarse sand.

2.3 PLANTING SOIL MIX

.1 Planting soil mix for individual trees and perennial planting beds see 2.2.1.

.2 Planting soil mix is not required for trees or shrubs within shrub planting beds.

.1 Soil mix see 3.5.1.

2.4 STRUCTURAL SOIL CELL PLANTING MEDIUM

.1 Consist of 80% topsoil 20% organic amendments by volume.

.2 40-50% coarse sand, 30-40% silt, 15-20% clay.

.3 PH range of 6.0-7.5.

.4 Topsoil requirements: not be pulverized, or screened.

.5 Both the topsoil and organic amendments are required free of subsoil, roots, vegetation, debris, toxic materials and stones larger than 50mm diameter.

2.5 SOIL MIX AMENDMENTS

.1 Imported topsoil:

.1 Neither heavy clay nor of light sandy nature.

.1 35% sand, 35% silt, 30% clay.

.2 Containing a minimum of 5% organic amendments to maximum of 20% by volume.

.3 PH range of 6.0 - 7.5 pH.

.4 The topsoil is required free of subsoil, roots, vegetation, debris, toxic materials and stones larger than 25mm diameter.

.2 Organic amendments when required shall be either manure or compost.

.1 Manure to consist of well decomposed cattle excrement, rich in organic matter and humus containing balanced proportions of nitrogen, phosphorus and potash.

.1 Reasonably free of living vegetation, weed seeds, and couch grass or brome grass rhizomes.

.2 Completely free of noxious weed seeds.

.3 In pulverised, friable condition, not containing fresh or "green" manure, clay, silt, gravel or other foreign material.

.2 Compost.

.3 Course Sand requirements: hard, durable, sharp particles, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.1 Gradation within limits specified tested to ASTM C-33. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
9.5 mm	100%
4.75 mm	95 - 100%
2.36 mm	80 - 100%
1.18 mm	50 - 85%
0.60 mm	25 - 60%
0.30 mm	10 - 30%
0.15 mm	2 - 10%

0.075 mm	2 - 5%

3.0 Execution

3.1 PREPARATION

.1 Equipment used to install or grade topsoil shall be wide track or balloon tire machines rated with a ground pressure of 4 psi or less. Grading and soil delivery equipment shall have buckets equipped with 150mm long teeth to scarify soil that becomes compacted.

.2 Re-grade areas damaged during construction of other Work & ensure rough grade scarification before topsoil placement.

.3 Approval of subgrade & subgrade scarification before topsoil and soil mix placement is required.

.1 Excavate and remove excess subgrade material to depths required.

.2 Remove weeds, stones, debris, and other foreign material in excess of 25mm diameter.

.3 Scarify entire area to receive topsoil to a min. depth of 200mm with a tiller or other approved machine.

.4 Install the topsoil immediately. Protect the loosened area from traffic. DO NOT allow the loosened subgrade to become compacted.

.5 In the event that the loosened area becomes overly compacted, loosen the area again before installing the topsoil.

.6 Ensure moisture content of the topsoil allows for ease of placement. Placement or grading of saturated topsoil is unacceptable.

3.2 TOPSOIL - TURF AREAS (BOULEVARDS, MEDIANS AND MUNICIPAL BUFFERS)

.1 Place min. 250mm of Topsoil B for Dryland Mix areas.

.2 Place min. 250mm of Topsoil B for Irrigation Mix areas.

.1 Organic amendments requirement is pending soil test recommendations.

If recommended, add 50mm organic amendments and compensate increased finished grade depth at soft landscaped edges.

.2 Cultivate to blend.

.3 Final depth of topsoil is min. 250mm, unless organic amendments are required.

3.3 TOPSOIL - TURF AREAS (MUNICIPAL RESERVES / PARKS)

.1 Place min. 250mm of Topsoil A or B for Irrigation Mix, Dryland Mix and Toboggan Hill Mix areas.

.1 Organic amendments requirement is pending soil test recommendations.

If recommended, add 50mm organic amendments and compensate increased finished grade depth at soft landscaped edges.

.2 Cultivate to blend.

.3 Final depth of topsoil is min. 250mm, unless organic amendments are required.

3.4 SPORTSFIELD SOIL MIX (SOCCER PITCHES AND BALL DIAMOND OUTFIELDS)

.1 Place 250mm of Sportsfield Soil Mix for Sportsfield Mix areas.

3.5 SHRUB PLANTING BEDS

.1 Place 150mm of Topsoil A or B for shrub beds.

.1 Place 150mm organic amendments.

.2 Cultivate to blend.

.3 Final depth of topsoil and organic amendments combined is min. 300mm.

3.6 STRUCTURAL SOIL CELL AREAS

.1 Place Structural Soil Cell Planting Medium per manufacturer's specifications, drawings and details.

.1 Install in 200mm lifts (2 lifts per cell).

3.7 FINISH GRADING

3.8 PROTECTION

.1 Vehicular traffic, trenching or other activities compromising the topsoil layer is not permitted after topsoil installation to prevent soil compaction.

3.9 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION

02214 Compost

1.0 General

1.1 RELATED WORK

.1 This Section relates to the supply and placement of compost material on seeding and sodding projects.

.2 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02070 Demolition, Removal and Salvage

.3 Section 02210 Rough Grading

.4 Section 02212 Topsoil

.5 Section 02933 Seeding

.6 Section 02938 Sodding

.7 Section 02950 Plant Material

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve compost.

.1 Testing results are required submitted to the **City of Saskatoon, Parks Department** before delivery to site.

.2 **City of Saskatoon, Parks Department** to review compost requirements for the Work before final compost placement.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Compost placement, before cultivation and finish grading.

1.4 TESTING

.1 Compost testing is required by an approved Environmental testing laboratory service in Saskatoon and is subject to the **City of Saskatoon, Parks Department** approval before start of work.

.1 Soil tests required:

.1 PSA-2 (Particle size analysis).

.2 C-TOT-ORG (organic carbon).

.3 SAL-DETAIL+TGR (detailed salinity).

.4 Soil Analysis Package 1 (for NPKS).

2.0 Products

2.1 COMPOST

.1 Compost requirements:

.1 Well decomposed, stable, weed free organic matter source.

.2 Derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings; source-separated or mixed solid waste.

.3 Shall contain no substances toxic to plants and shall be reasonably free (< 1% by dry weight) of man-made foreign matter.

.4 Possess no objectionable odours and shall not resemble the derived from raw material.

.2 Compost shall be commercially prepared Compost and meet Compost Council of Canada TMECC criteria, http://www.compost.org/

.3 Compost parameters:

Parameters	Reported as (units of measure)	General Range
pH	pH units	6.5 - 8.0
Soluble Salt Concentration (electrical conductivity)	dS/m (mmhos/cm)	Maximum 10
Moisture Content	%, wet weight basis	30 – 60
Organic Matter Content	%, dry weight basis	> 25
Particle Size	% passing a selected mesh size, dry weight basis	98% pass through 3/4" screen or smaller
Stability Carbon Dioxide Evolution Rate	mg CO2-C per g OM per day	< 2
Maturity (Bioassay) Seed Emergence and Seedling Vigor	%, relative to positive control %, relative to positive control	Minimum 80% Minimum 80%
Physical Contaminants (inerts)	%, dry weight basis	< 1
Chemical Contaminants	mg/kg (ppm)	Meet or exceed US EPA Class A standard, 40 CFR § 503.13, Tables 1 and 3 levels
Biological Contaminants Select Pathogens Fecal Coliform Bacteria, or Salmonella	MPN per gram per dry weight MPN per 4 grams per dry weight	Meet or exceed US EPA Class A standard, 40 CFR § 503.32(a) levels
C:N Ratio		20:1 maximum

Organic Matter Content		> 25
Copper (ppm) Zinc (ppm) Arsenic (ppm) Cadmium (ppm) Lead (ppm)		< 1,500 < 2,800 < 41 < 99 < 300

Note: The Contractor shall meet or exceed the above compost parameters if compost material is obtained from a source other than the City of Saskatoon.

3.0 Execution

3.1 PREPARATION

.1 Re-grade areas damaged during construction of other Work before compost placement.

.2 Approval of topsoil placement before compost placement is required.

.1 Compost shall not be used as a ground cover.

.2 Place compost uniformly to depths required.

.3 Compost shall be well incorporated with topsoil to a depth of 100 to 150mm (for a 20% - 30% inclusion rate) using appropriate equipment.
Per specifications, higher inclusion rates as necessary for upgrading marginal soils.

.4 Pre-plant fertilizer and pH adjusting agents (e.g., lime and sulfur) may be applied before incorporation with topsoil, as necessary.

.5 Rake topsoil and compost surface smooth before seeding, sodding, or hydroseeding.

.6 Final topsoil and compost surface shall be reasonably free of large clods, roots, stones greater than 50mm, and other material which will interfere with planting and subsequent site maintenance.

.3 Ensure moisture content of the topsoil and compost mix allows for ease of placement. Placement or grading of saturated topsoil and compost mix is unacceptable.

3.2 FINISH GRADING

3.3 PROTECTION

.1 Vehicular traffic, trenching or other activities compromising the mixed topsoil and compost layer is not permitted.

3.4 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION

02233 Granular Base

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02511 Crusher Dust

.4 Section 02515 Unit Paving

.5 Section 02523 Miscellaneous Concrete

.6 Section 02552 Asphalt Park Pathway

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve granular base construction.

.1 Submit Name of Supplier for granular base material before delivery to site:

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout and location of granular base construction, before subgrade excavation and granular base installation.

1.4 TESTING

.1 Granular Base product information from Supplier or completion of a sieve analyses, and compaction tests by an approved testing laboratory service is required by Contractor.

2.0 Products

2.1 GRANULAR BASE AND PARKING LOTS

.1 Granular Base requirements: Crushed aggregate; hard, durable angular particles, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.1 Gradation within limits specified tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight	
	Granular Base	Parking Lots
25.0mm	100	-
18.0mm	87 - 100	100
12.5mm	72 - 93	81 - 100
5.00mm	45 - 77	50 - 80
2.00mm	29 - 56	32 - 52
0.90mm	18 - 39	20 - 35
0.40mm	13 - 26	15 - 25
0.16mm	7 - 16	8 - 15
0.071mm	6 - 11	7 - 10

.2 Geogrid requirements: Nilex Biaxial Geogrid or equivalent as approved by the **City of Saskatoon, Parks Department**.

.3 Geotextile requirements: Nilex Woven geotextile: Nilex 2002 or equivalent as approved by the **City of Saskatoon, Parks Department**.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Provide ample clearance for proper execution of the Work.

.2 Establish the layout and depth of the granular base required accurately per drawings and specifications.

.1 Contractor is required to stake layout of granular base areas and obtain approval, before placement start.

3.2 SUBGRADE PREPARATION

3.3 GRANULAR BASE AND PARKING LOTS

.1 Place geogrid & geotextile per manufacturer’s specifications.

.2 Place granular material as specified for surface treatment to compacted thickness per drawings and specifications.

.1 Supply and place in lifts not exceeding 100mm compacted thickness.

.2 Do not mix base course with underlying materials.

.3 Add and mix water to obtain optimum water content, if required.

.1 Control watering and rolling to prevent pumping of fine material to surface.

.4 Compact and adjust water content to meet the following requirements:

.1 Density test results average is 100% of Standard Proctor Density.

.2 Individual test results greater than 98% of Standard Proctor Density are required.

.3 Water contents within the range of optimum water content plus or minus 1 percent.

.5 Compact and shape surface to lines and grades specified.

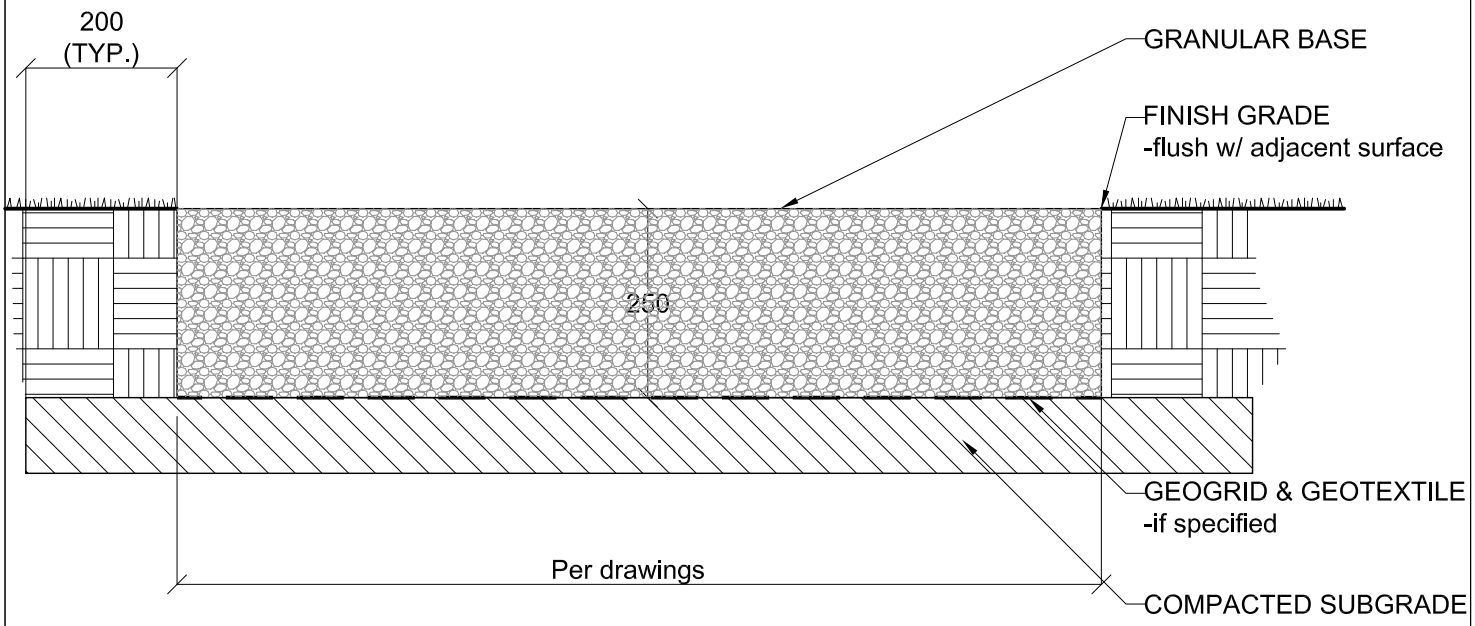
.1 Completed, compacted, granular base surface is required free of ruts, irregularities and foreign material. Variation from design grades and adjacent finish grades is maximum 15mm.

.6 Protect granular base from topsoil contamination or other foreign material resulting from Work on adjacent areas.

3.4 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

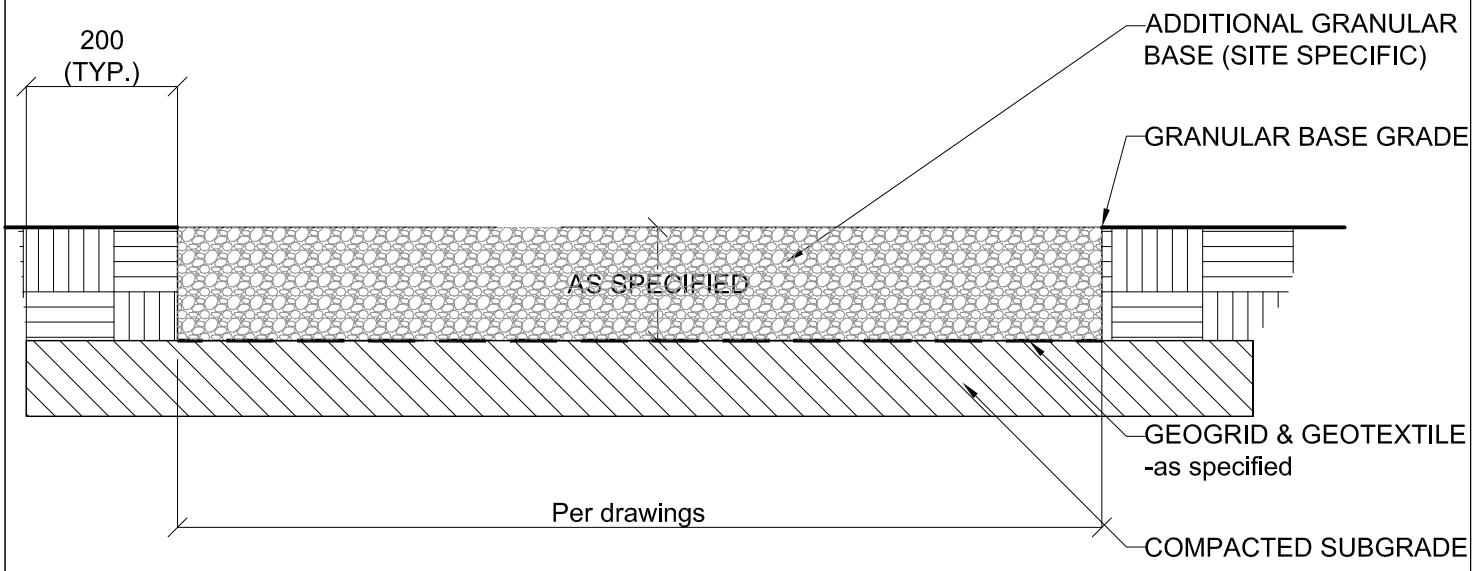
END OF SECTION



NOTE:
1. Units are in millimeters U.N.O.
2. Granular surface to have 1% crossfall in the direction of surface drainage flow (refer to grading plan).

City of Saskatoon

Drawing Title	Drawing No.
Granular Parking Lot	02233-01
Drawn: HMK Checked: BG / Revised Date Y/M/D 20/03/19 / Scale: 1:10	Parks



NOTE:
1. Units are in millimeters U.N.O.
2. Granular surface to have 1% crossfall in the direction of surface drainage flow (refer to grading plan).

City of Saskatoon

Drawing Title: Additional Pathway Structure

Drawn: HMK Checked: BG Revised Date Y/M/D 20/03/19 Scale: 1:10

Drawing No. 02233-02

Parks

02511 Crusher Dust

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02233 Granular Base

.4 Section 02875 Sports Fields

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve granular base construction for Work.

.1 Submit for crusher dust material before delivery to site:

.1 Name of supplier.

.2 One litre sample of material.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout and location of crusher dust areas before excavation & placement of crusher dust.

1.4 TESTING

.1 Crusher Dust product information from Supplier or completion of a sieve analyses by an approved testing laboratory service is required by Contractor.

2.0 Products

2.1 CRUSHER DUST

.1 Crusher Dust requirements: Crushed aggregate; hard, durable angular particles, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.2 Gradation within limits specified tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
5mm	100%
2.2mm	63 - 73%
0.90mm	40 - 50%
0.40mm	25 - 35%
0.16mm	13 - 21%
0.071mm	8 - 14%

2.2 OTHER MATERIALS

.1 Granular Base materials.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Provide ample clearance for proper execution of the Work.

.2 Establish the layout and depth of the crusher dust per drawings or specifications.

.1 Contractor is required to stake layout of crusher dust areas and obtain approval before placement start.

3.2 SUBGRADE PREPARATION

3.3 GRANULAR BASE (FOR HEAVY DUTY CRUSHER DUST)

3.4 CRUSHER DUST

.1 Place crusher dust course to compacted thickness.

.1 Supply and place in lifts not exceeding 100mm.

.2 Do not mix base course with underlying materials.

.2 Add and mix water to obtain optimum water content, if required.

.1 Watering and rolling should be controlled to prevent pumping of fine material to surface.

.3 Compact and adjust water content to meet the following requirements:

.1 Density test results minimum of 97% of Standard Proctor Density.

.2 Water contents within the range of optimum water content plus or minus 1 percent.

.4 Compact and shape the surface to the lines and grades specified.

.1 Completed, compacted, crusher dust surface is required free of ruts, irregularities and foreign material. Max. variation from design grades and adjacent finish grades is 15mm.

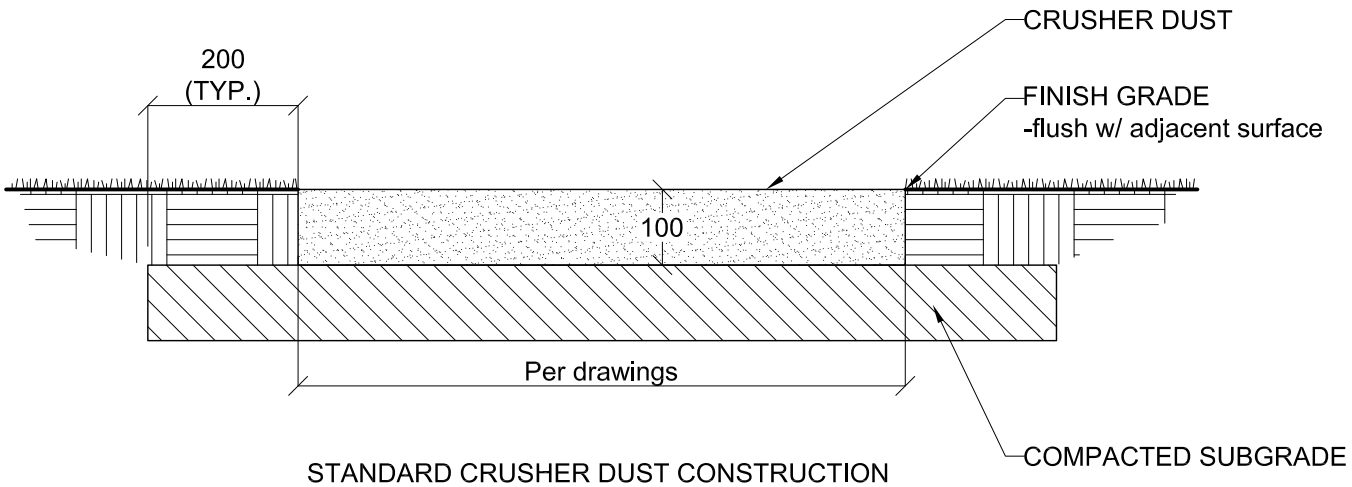
.5 Protect crusher dust from topsoil contamination or other foreign material resulting from Work on adjacent areas.

.1 Remove contaminated crusher dust and replace as required.

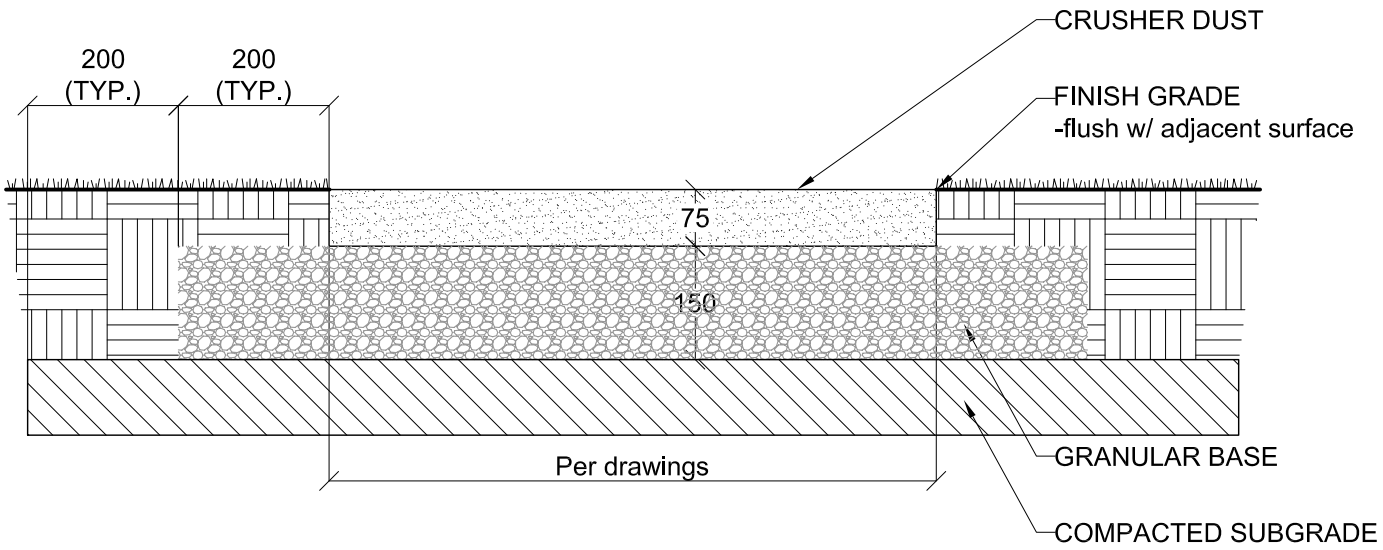
3.5 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION



STANDARD CRUSHER DUST CONSTRUCTION



HEAVY DUTY CRUSHER DUST CONSTRUCTION

NOTE:
1. Units are in millimeters U.N.O.
2. Crusher dust surface to have 2% crossfall in the direction of surface drainage flow (refer to grading plan).
3. Crusher dust path to be 2400 wide with min.1500 radius at corners unless otherwise noted (refer to layout plan).

City of Saskatoon

Drawing Title: Crusher Dust

Drawn: HMK Checked: BG Revised Date Y/M/D 21/12/09 Scale: 1:10

Drawing No. 02511-01

Parks

02515 Unit Paving

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02233 Granular Base

1.2 SAMPLES

.1 Supply **City of Saskatoon, Parks Department** with samples of full size unit pavers for each type and colour.

1.3 TESTING

.1 Sieve analysis for base and sub base.

.2 Compaction density of base and sub base surfaces.

1.4 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve unit paving construction.

.1 Submit for unit paving before delivery to site:

.1 Name of source and supplier of materials.

.2 Product information sheet for each type of unit paver.

1.5 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout and location of unit paving areas before excavation start.

.2 Granular base preparation.

.3 After base installation before unit paving placement.

2.0 Products

2.1 MATERIALS

.1 Unit Pavers requirements: uniform in material, colour, size and from one manufacturer.

.1 Pre-cast concrete pavers to meet requirements of CSA A231.1-14/A231.2-14, plain or exposed aggregate face, exposed aggregate size, aggregate type. Size, shape and colour per drawing specifications and layout.

.2 Interlocking pre-cast concrete pavers to meet requirements of CSA A231.1-14/A231.2-14. Size, shape and colours per drawing specifications and layout.

.3 Burned clay bricks to meet requirements of CSA-A82-14 and ASTM C902-15. Type I, class SX wire cut face modular. Size and colours per drawing specifications and layout.

.4 Flagstone pavers to meet requirements of CSA A231.1-14/A231.2-14. Size, shape and colours per drawing specifications and layout.

.2 Crushed Stone or Gravel requirements: Hard, durable angular particles, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.1 Gradation within limits specified tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
19mm	100%
2.52mm	70 - 100%
4.75mm	40 - 70%
2.00mm	23 - 50%
0.425mm	7 - 25%
0.075mm	3 - 8%

.3 Leveling Course requirements: Hard, durable, crushed stone particles, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.1 Gradation within limits specified tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
9.5 mm	100%
4.75 mm	80 - 100%
2.00 mm	50 - 80%
0.425 mm	10 - 50%
0.075 mm	0 - 10%

.4 Filler Sand requirements: Polymeric Sand to meet requirements of ASTM C144−11.

.1 Gradation within limits specified tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
4.75mm	95 - 100%
1.18mm	50 - 95%
0.60mm	25 - 50%
0.30mm	10 - 30%
0.075mm	0 - 10%

.5 Edging per drawings.

.1 Material requirements; SnapEdge, PaveEdge or equivalent quality.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Establish the layout and depth of the unit paving required accurately per drawings or specifications.

.1 Contractor is required to stake layout of unit paving areas and obtain approval, before placement start.

.3 Unit paving pattern layout per drawings.

3.2 SUBGRADE PREPARATION

.1 Excavate to depths required for installation per details.

.1 Remove loose material in excavations and compact with equipment suitable for the Work.

3.3 GRANULAR BASE

.1 Approval of granular base course before leveling course placement is required.

3.4 EDGING INSTALLATION (IF REQUIRED)

.1 Install edging true to grade.

.1 Edger length min 900mm.

3.5 LEVELING COURSE INSTALLATION

.1 Spread leveling course to depth per details.

.1 Correction to variations for leveling course material in subgrade or granular base is not permitted.

.2 Compact and adjust water content to meet the following requirements:

.1 Density test results minimum of 98% of Standard Proctor Density.

.2 Water contents within the range of optimum water content plus or minus 1 percent.

.3 Screen leveling course per drawings.

.4 Access to screened and leveled surface areas is not allowed.

3.6 UNIT PAVER INSTALLATION

.1 Ensure granular laying course is dry (4-8% moisture content) before placement of unit pavers.

.2 Install unit paving:

.1 Lay full units first.

.2 Fit partial pieces subsequently.

.3 Saw cut units accurately without damaging edges. Cut unit dimension less than 1/3 of original dimension is not permitted.

.4 Pre-cast concrete pavers, interlocking pre-cast concrete pavers, flagstone pavers

.1 Install pavers with butt joints as specified and not exceeding 3mm.

.2 Tamp down and level pavers using mechanical plate vibrator on min. 19mm thick plywood until pavers are true to grade and free of movement. For vehicular traffic surfaces, tamp and level pavers with rubber tired roller.

.3 Fill spaces between pavers by sweeping in filler sand per manufacturers specifications.

.4 Pass mechanical plate vibrator on sand cushion over surface course to achieve compaction of sand in joints.

.5 Surface of finished pavement is required free from depressions exceeding 3mm as measured with 3m straight edge.

.6 Sweep surface course clean.

3.7 FINISHING

.1 Abut concrete unit pavers flush with adjacent materials.

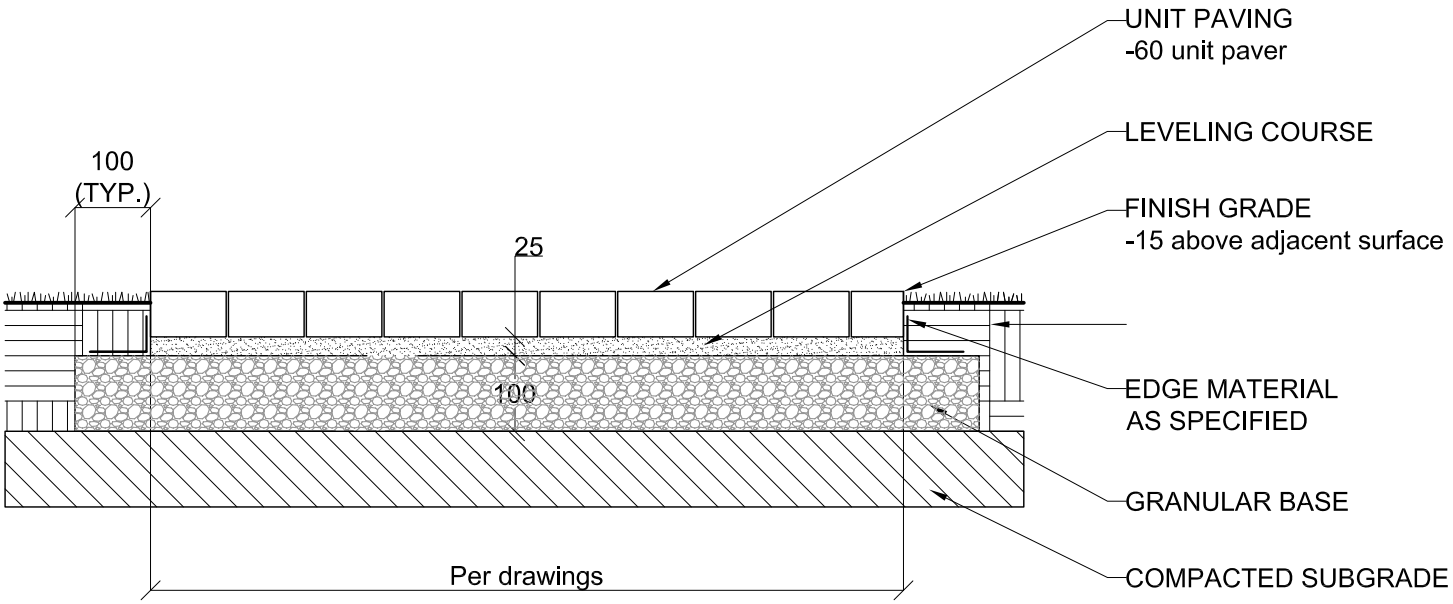
.2 Foot or vehicular traffic on or adjacent to the concrete unit paver installation area is not permitted until final adjustments are completed.

3.8 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

.2 Remove remaining construction debris from site.

END OF SECTION



STANDARD UNIT PAVING CONSTRUCTION

NOTE:
1. Units are in millimeters U.N.O.
2. Unit paving surface to have 2% crossfall in the direction of surface drainage flow (refer to grading plan).

City of Saskatoon

Drawing Title				Drawing No.
Unit Paving				02515-01
Drawn: HMK	Checked: BG	Revised Date Y/M/D 22/12/02	Scale: 1:10	Parks

02523 Miscellaneous Concrete

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02233 Granular Base

.4 Section 02723 Culvert End Grates and Drain Inlet

.5 Section 02810 Irrigation

.6 Section 02831 Chain Link

.7 Section 02870 Site Furnishings

.8 Section 02871 Play Equipment

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve concrete construction.

.1 Submit for concrete material before delivery to site:

.1 Name of supplier.

.2 Class and compressive strength of concrete.

.3 Other information requested to verify product quality.

.2 Notify the **City of Saskatoon, Parks Department** when Contractor schedules delivery of concrete and intends placement of concrete.

.1 Schedule delivery and placement of above ground concrete when outside temperature is above 2 degrees C and rising, unless hording is specified.

.2 Schedule delivery and placement of in ground concrete when outside temperature is above -5 degrees C and rising, unless approved by the **City of Saskatoon, Parks Department**. Insulation is required.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout and location of concrete work before excavation start.

.2 Granular base preparation, formwork and footing excavations.

.3 Reinforcement layout before concrete installation.

.4 Concrete installation and finishing work.

1.4 TESTING

.1 Concrete testing is required by an approved testing laboratory service in Saskatoon and is subject to the **City of Saskatoon, Parks Department** approval before start of work:

.1 Compressive Strength (3 cylinders).

.2 Slump.

.3 Air Content.

2.0 Products

2.1 CONCRETE

.1 Compressive strength requirements: 32 MPa at 28 days, per CSA A23.1-14/A23.2-14.

.2 When no preliminary strength test of concrete is made, the water-to-cement ratio not to exceed values per CSA A23.1-14/A23.2-14.

.3 Consistency of the concrete requirements; slump not to exceed 100mm or be less than 50mm.

.4 Air content of hardened concrete to conforming with CSA A23.1-14/A23.2-14

.5 High sulphate-resistant hydraulic cement, type HS is required for concrete, per CSA A23.1-14/A23.2-14.

.6 Proportions of concrete mixture to work readily into corners and angles of forms and around reinforcement.

2.2 REINFORCEMENT

.1 Concrete reinforcement to meet requirements of CSA A23.1-14/A23.2-14.

.2 Reinforcement type, size and layout per drawings and details

2.3 WATER

.1 Water used for concrete shall be clean and free from injurious amounts of acid, oil, alkali, organic matter or other deleterious substances.

2.4 CONCRETE FORMWORK

.1 Forms shall be constructed to meet requirements of shape, dimensions and tolerances per drawings and specifications.

.2 Formwork is required true to alignment and grade per drawings.

2.5 CURING COMPOUND

.1 Chlorinated rubber to meet requirements of ASTM C309 Type 1:

.1 Florseal by Sternson or approved equivalent.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Establish layout of concrete work accurately per drawings, ensuring proper depth of concrete per details.

.3 Contractor is required to stake layout of concrete work, construct formwork and obtain approval before concrete placement.

3.2 SUBGRADE PREPARATION

.1 Excavate to depths required for installation specified.

.1 Remove loose material in excavations and compact with equipment suitable for the Work.

3.3 GRANULAR BASE FOR CONCRETE PAD & SLAB CONSTRUCTION

3.4 CONCRETE DELIVERY AND INSTALLATION

.1 Equipment for transporting concrete requirements: cleaned.

.2 Areas to receive concrete requirements; free of debris and ice.

.1 Convey concrete from mixer to place of final deposits.

.2 Equipment for chuting, pumping and pneumatically conveying concrete requirements; size and design to ensure continuous flow of concrete to final destination.

.3 Re-tempered or concrete contaminated by foreign material is prohibited.

.3 Place concrete in final position to avoid segregation due to re-handling or flowing.

.1 Concrete placement rate requirements; plastic and flowing only.

.2 No interruption of concrete placement per area is allowed between start and finish.

.3 Protect concrete from hot weather or wind with windbreaks, sunshades, fog sprays or other devices as required.

.4 Protect concrete from cold and freezing temperatures with hoarding or insulation as required.

.1 Placement of concrete against frozen surfaces is not allowed.

.4 Consolidate concrete thoroughly by mechanical vibration during placement.

.1 Vibrator requirements; type and design suitable for the work.

.2 Vibration application requirements: at the point of deposit and in areas of freshly deposited concrete.

.3 Vibrators are required to move constantly in and out of concrete and applied at points uniformly spaced for optimum visible effectiveness.

.4 Vibration in one location cannot draw a pool of grout from the surrounding concrete.

.5 Apply vibration to ensure distribution of surface concrete effectively, no contact or damage to forms is allowed.

.6 Vibration directly to reinforcement or set concrete is not allowed.

.7 Vibration to make concrete flow into forms over distances causing segregation is not allowed.

.8 Spade areas inaccessible by vibrator to ensure smooth surfaces and dense concrete.

3.5 CONCRETE FOOTINGS

.1 Preparation requirements:

.1 Remove water from deposit place before concrete placement.

.2 Install accessories; support posts, anchor bolts, pipes, sleeves, frames, etc., as specified.

.3 Install plum, level and to design elevations as indicated.

.4 Support accessories during installation and curing to prevent movement.

3.6 CONCRETE PAD & SLAB CONSTRUCTION

.1 Preparation requirements:

.1 Forms; wet or oily including masonry filler units.

.2 Reinforcement material; clean of dirt, loose rust, mill scale, and other coatings.

.2 Screed and level per drawings and details.

3.7 CONTROL JOINTS

.1 Use wet diamond blade sawing 8-24 hours after concrete placement per CSA A23.1-14/A23.2-14.

.2 Saw cut per details.

3.8 FINISHING

.1 Finished concrete surface requirements: profile and cross-section of 6.0+/- mm, no depressions exceeding 3mm as measured with 3m straight edge.

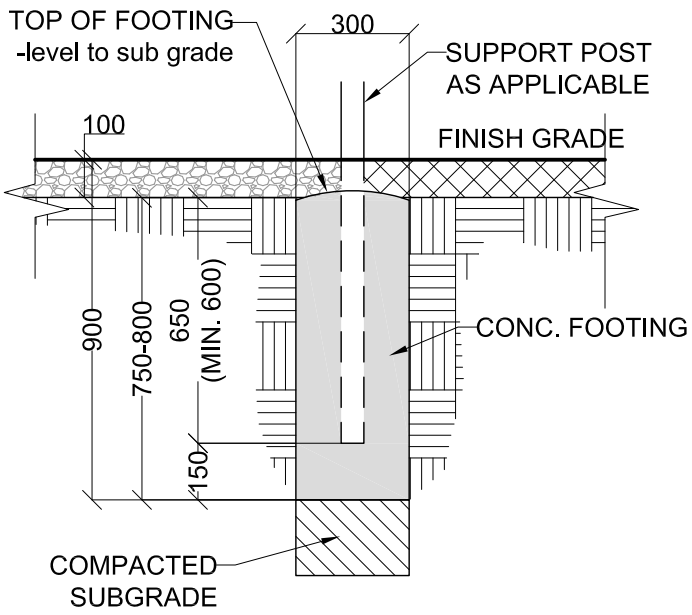
.2 Trowel concrete surface per drawings and details.

.3 Provide construction joints and saw cuts for concrete surfaces.

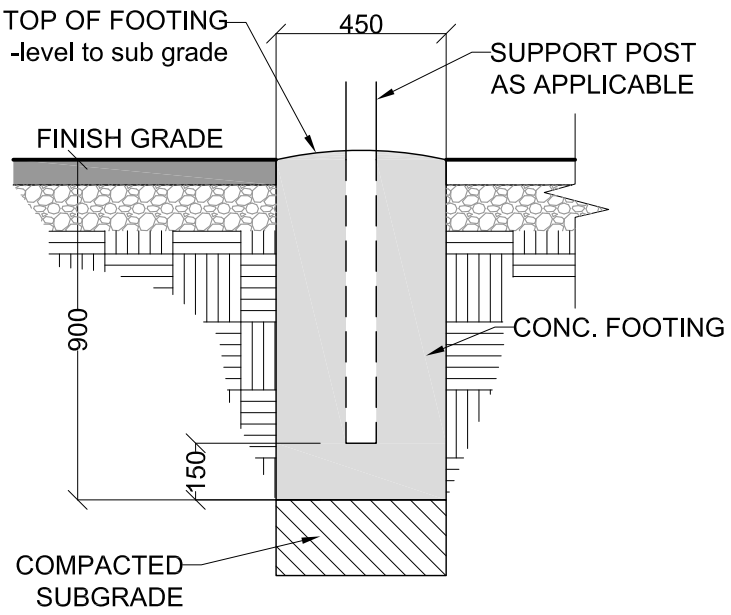
3.9 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

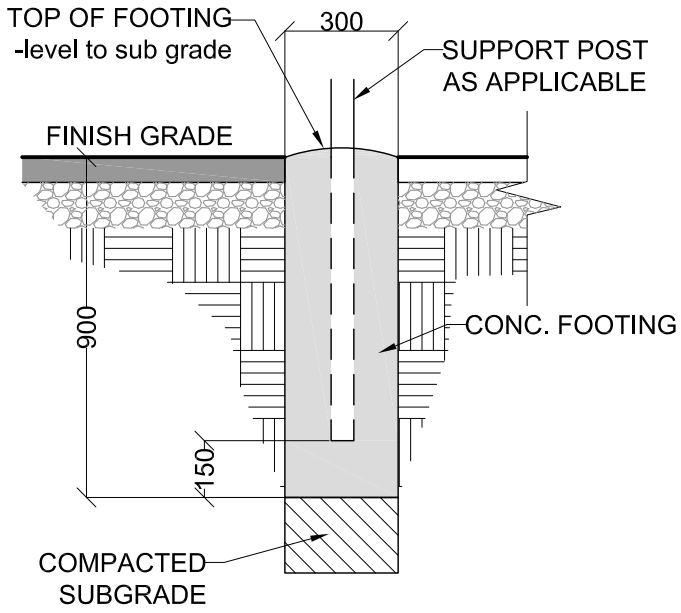
END OF SECTION



CONCRETE FOOTING CRUSHER
DUST OR PLANTING BED



PICNIC TABLE CONCRETE FOOTING
ASPHALT / CONCRETE / UNIT PAVING

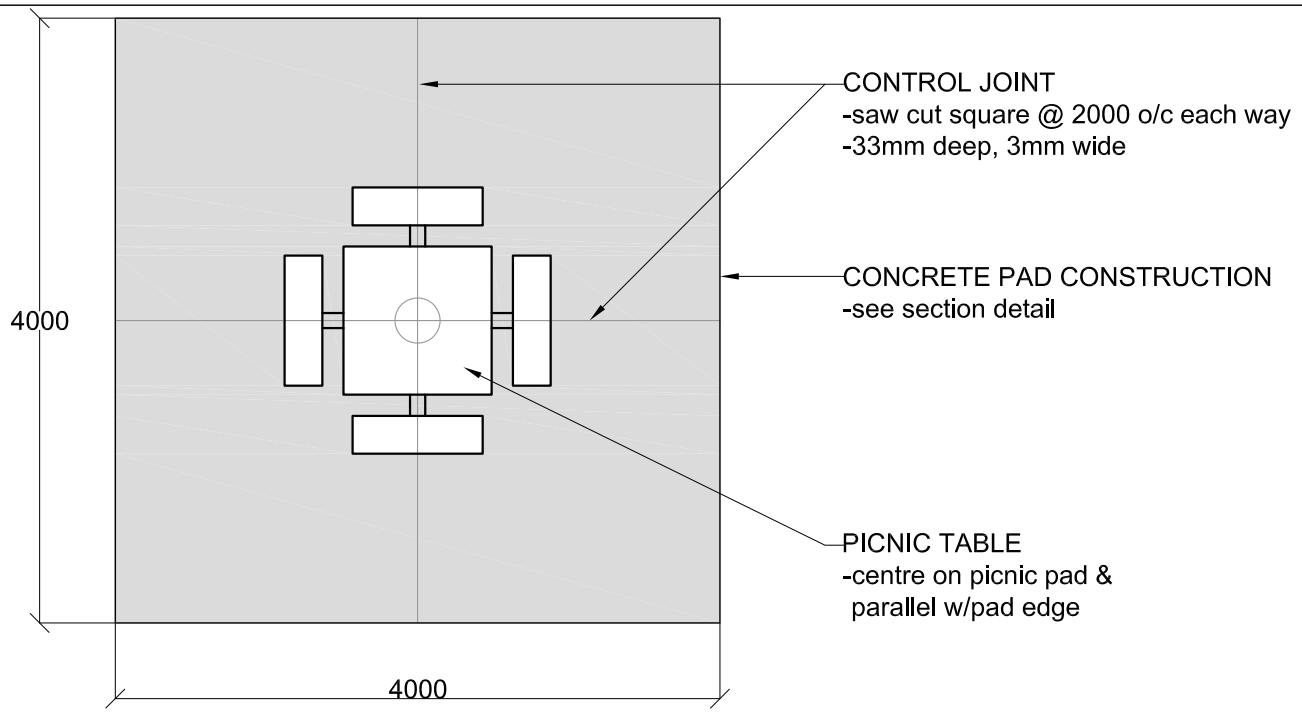


CONCRETE FOOTING
ASPHALT / CONCRETE / UNIT PAVING

NOTE:
1. Units are in millimeters U.N.O.

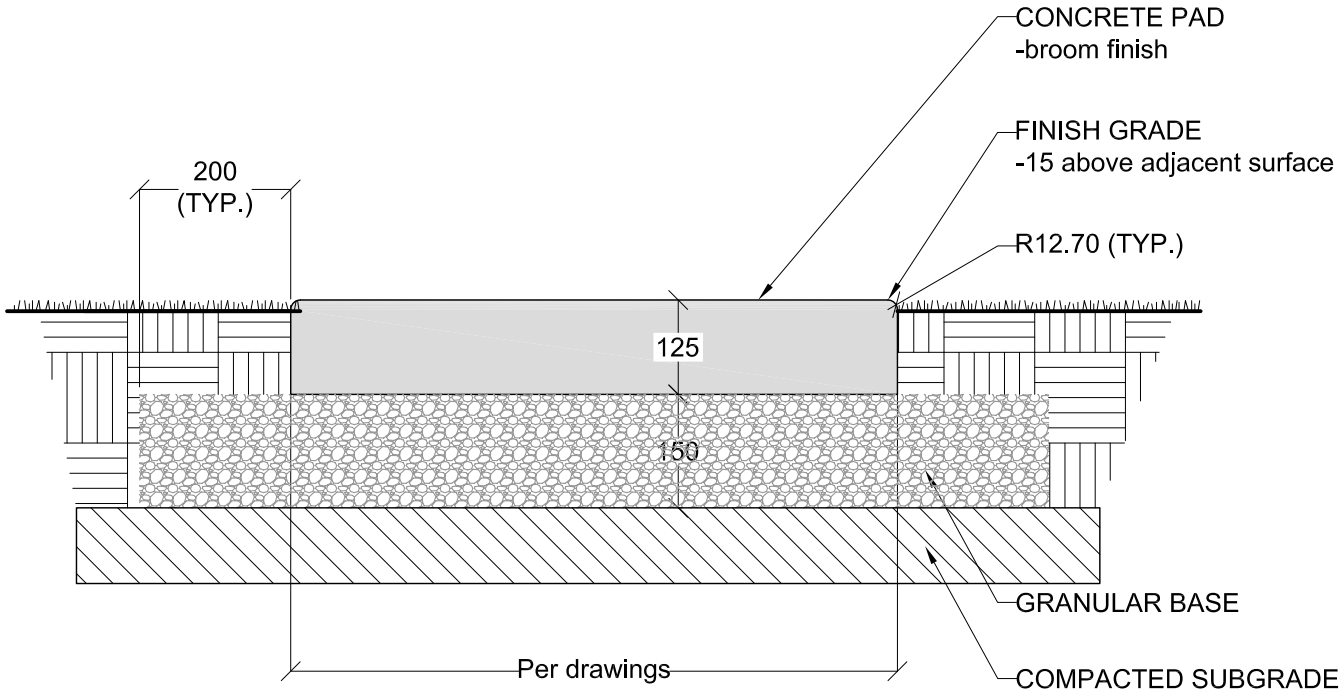
City of Saskatoon

Drawing Title	Drawing No.
Concrete Footings	02523-01
Drawn: HMK Checked: BG / Revised Date Y/M/D 16/12/15 / Scale: 1:20	Parks



CONCRETE PICNIC PAD

PLAN
1:50

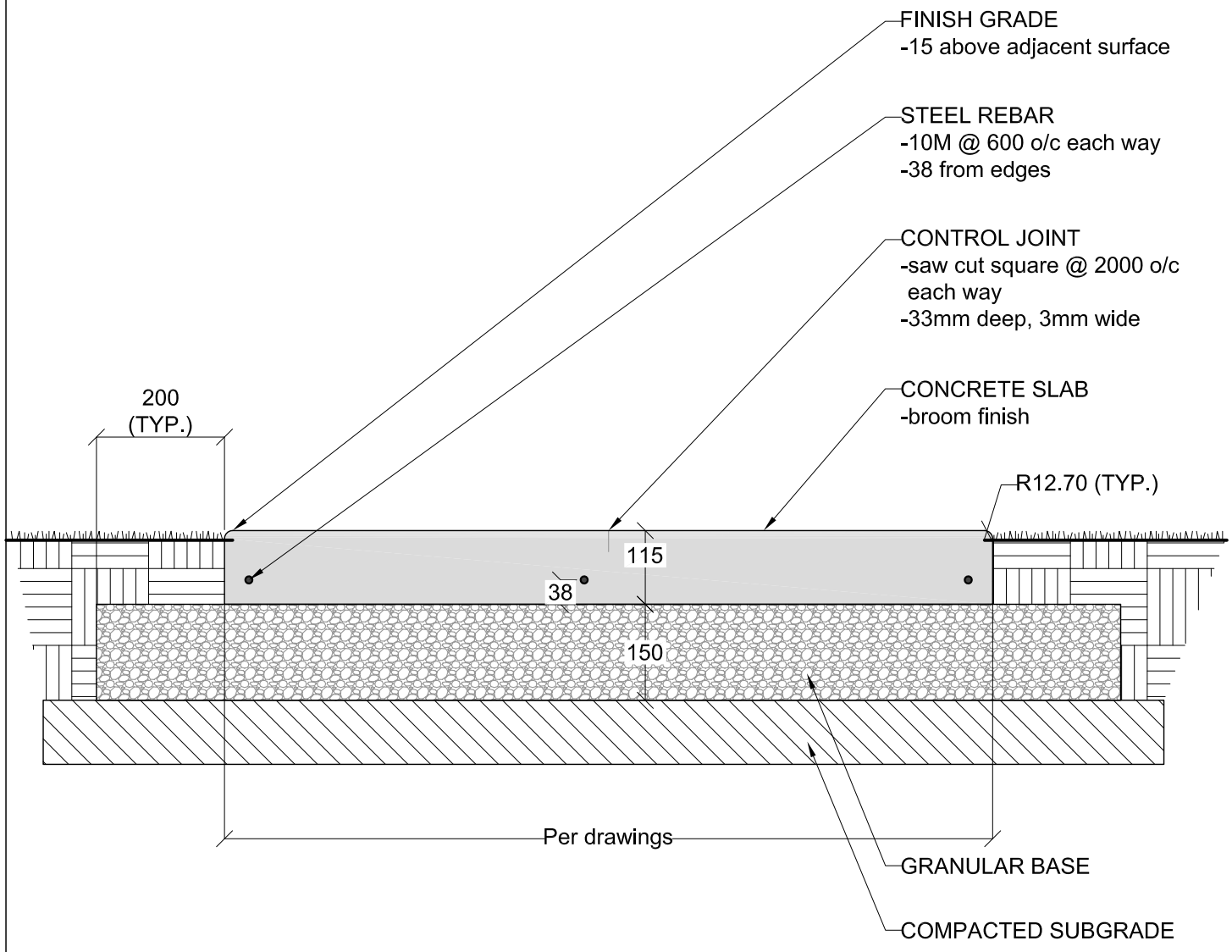


NOTE:
1. Units are in millimeters U.N.O.
2. Concrete pad to have 2% crossfall in the direction of surface drainage flow (refer to grading plan).
3. Concrete layout, refer to details and drawings.

SECTION
1:10

City of Saskatoon

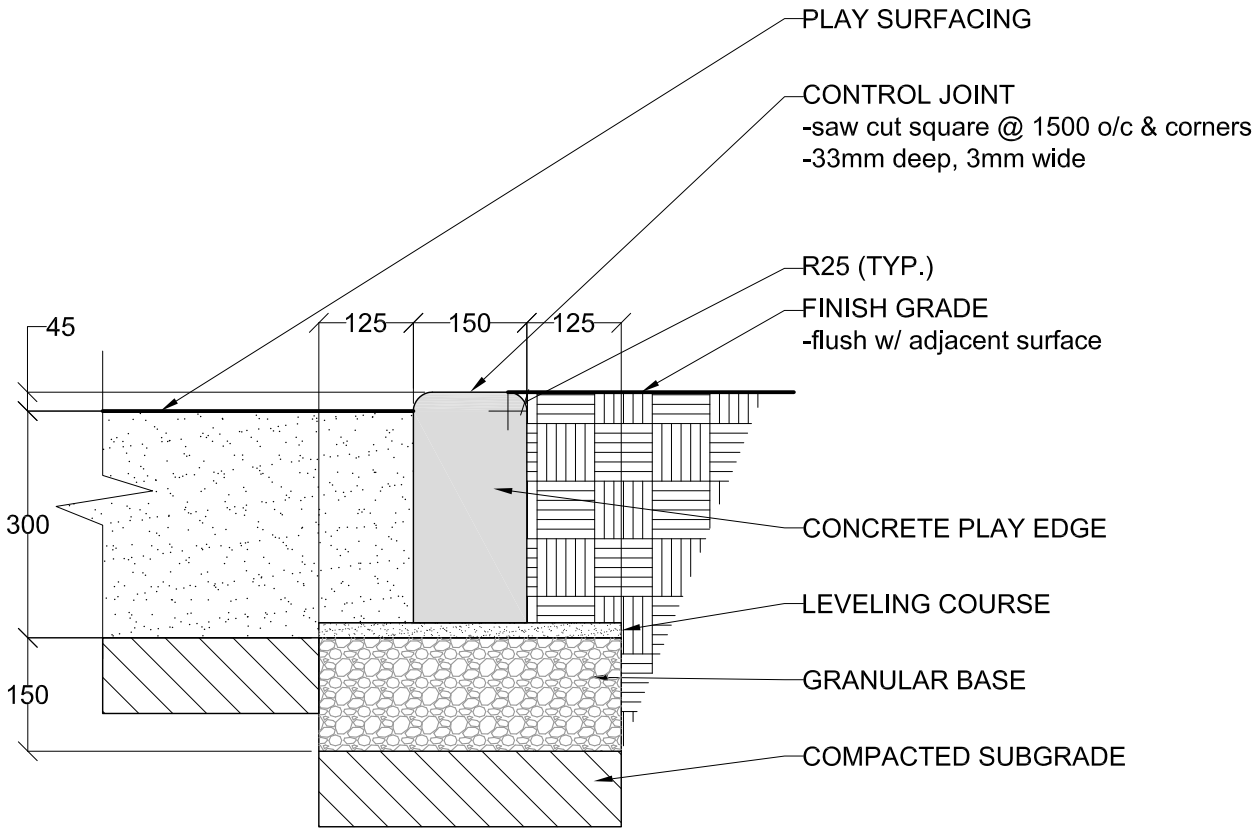
Drawing Title	Drawing No.
Concrete Pad	02523-02
Drawn: HMK Checked: BG / Revised Date Y/M/D 22/12/02 / Scale: AS NOTED	Parks



NOTE:
1. Units are in millimeters U.N.O.
2. Concrete plaza surface drainage flow (refer to grading plan).

City of Saskatoon

Drawing Title	Drawing No.
Concrete Slab	02523-03
Drawn: HMK Checked: BG / Revised Date Y/M/D 22/12/02 / Scale: 1:10	Parks



NOTE:
1. Units are in millimeters U.N.O.
2. Concrete plaza surface drainage flow (refer to grading plan).

City of Saskatoon

Drawing Title	Drawing No.
Concrete Play Edge	02523-04
Drawn: HMK Checked: BG / Revised Date Y/M/D 16/12/13 / Scale: 1:10	Parks

02524 Concrete Park Pathway

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with CSA A23.1-14/A23.2-14 and other sections including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02233 Granular Base

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve concrete construction.

.1 Submit for concrete material before delivery to site:

.1 Name of supplier.

.2 Class and compressive strength of concrete.

.2 Notify the **City of Saskatoon, Parks Department** before Contractor schedules delivery of concrete and intends placement of concrete.

.1 Schedule delivery and placement of above ground concrete when outside temperature is above 2 degrees C and rising, unless hording is specified.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout and location of concrete work before subgrade excavation.

.2 Granular base preparation.

.3 Grade preparation, formwork.

.4 Concrete installation and finishing work.

1.4 TESTING

.1 Concrete testing is required by an approved testing laboratory service in Saskatoon and is subject to the **City of Saskatoon, Parks Department** approval before start of work.

.1 Compressive Strength (3 cylinders):

.1 One 7 day test.

.2 Two 28 day tests.

.2 Slump. 25mm – 75mm.

.3 Air Entrainment Content. 5 - 8%.

2.0 Products

2.1 CONCRETE

.1 Compressive strength requirements: 32 MPa at 28 days, per CSA A23.1-14/A23.2-14.

.2 Consistency of the concrete requirements to provide a slump necessary to produce workable concrete.

.3 Air content of hardened concrete conforming with CSA A23.1-14/A23.2-14.

.4 Proportions of concrete mixture to work readily into corners and angles of forms and around reinforcement.

2.2 WATER

.1 Water used for concrete shall be clean and free from injurious amounts of acid, oil, alkali, organic matter or other deleterious substances.

2.3 CONCRETE EXTRUDING EQUIPMENT

.1 Slip form concrete extruding machines can be used provided they meet the following standards.

.1 Machine has proven performance record and has received approval by City of Saskatoon before use.

.2 Vibrators on the equipment adequate to produce a dense mass with smooth surface free of honeycombing.

.3 Equipment includes automatic grade and line control.

2.4 CONCRETE FORMWORK

.1 Forms shall be constructed to meet requirements of shape, dimensions and tolerances per drawings.

.2 Formwork is required true to alignment and grade per drawings.

2.5 CURING COMPOUND

.1 Chlorinated rubber to meet requirements of ASTM C309 Type 1:

.1 Florseal or equivalent.

2.6 FIBER BOARD

.1 Asphalt Impregnated Fiberboard to meet requirements of ASTM D 1751 - 04(2013)e1:

.1 Flex-Cell or equivalent.

.2 Required thickness of 12mm (1/2”).

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Establish layout of concrete work per drawings, ensuring proper depth of concrete.

.3 Contractor is required to stake layout of concrete work, construct formwork and obtain approval before placement start.

3.2 SUBGRADE PREPARATION

.1 Excavate to depths required for installation specified.

.1 Remove loose material in excavations and compact with equipment suitable for the Work.

3.3 CONCRETE DELIVERY

.1 Equipment for transporting concrete requirements are agitators or mixers that are clean and free of debris. Areas to receive concrete requirements; free of debris and ice.

.1 Convey concrete from mixer to place of final deposits.

.2 Equipment for chuting, pumping and pneumatic conveying concrete requirements; size and design to ensure continuous flow of concrete to final destination.

.3 Concrete arriving on the job site shall not be re-tempered if test values are within specification at time of delivery.

.4 Re-tempered or concrete contaminated by foreign material is prohibited.

3.4 CONCRETE INSTALLATION

.1 Subgrade requires pass inspection before concrete placement.

.2 Insure subgrade has been moistened enough to allow proper concrete placement.

.3 Place concrete in final position to avoid segregation due to re-handling or flowing.

.1 Concrete free fall not to exceed 600mm.

.2 No interruption of concrete placement per area is allowed between start and finish.

.3 Protect concrete from hot weather or wind with windbreaks, sunshades, fog sprays or other devices as required.

.4 Protect concrete from cold and freezing temperatures with hoarding or insulation as required.

.1 Placement of concrete against frozen surfaces is not allowed.

.4 Consolidate concrete thoroughly by mechanical vibration during placement.

.1 Vibrator requirements; type and design suitable for the work.

.2 Vibration application requirements: at the point of deposit and in areas of freshly deposited concrete.

.3 Vibrators are required to move constantly in and out of concrete and applied at points uniformly spaced for optimum visible effectiveness.

.4 Apply vibration to ensure distribution of surface concrete effectively, no contact or damage to forms is allowed.

.5 Vibration directly to reinforcement or set concrete is not allowed.

.6 Vibration to make concrete flow into forms over distances causing segregation is not allowed.

.7 Spade areas inaccessible by vibrator to ensure smooth surfaces and dense concrete.

3.5 CONTROL JOINTS

.1 Use wet diamond blade sawing 8-24 hours after concrete placement per CSA A23.1-14/A23.2-14.

.1 Saw cut path center line, per detail.

.2 Saw cut perpendicular to path edge, per detail.

3.6 EXPANSION JOINTS

.1 Install asphalt impregnated fibre board every 60m into the wet concrete per CSA A23.1-14/A23.2-14

3.7 FINISHING

.1 Finished concrete surfaces requirements: profile and cross-section of 6.0+/- mm, no depressions exceeding 3mm as measured with 3m straight edge.

.2 Steel trowel concrete surface to smooth finish.

.3 Apply uniform broom finish perpendicular to concrete edge.

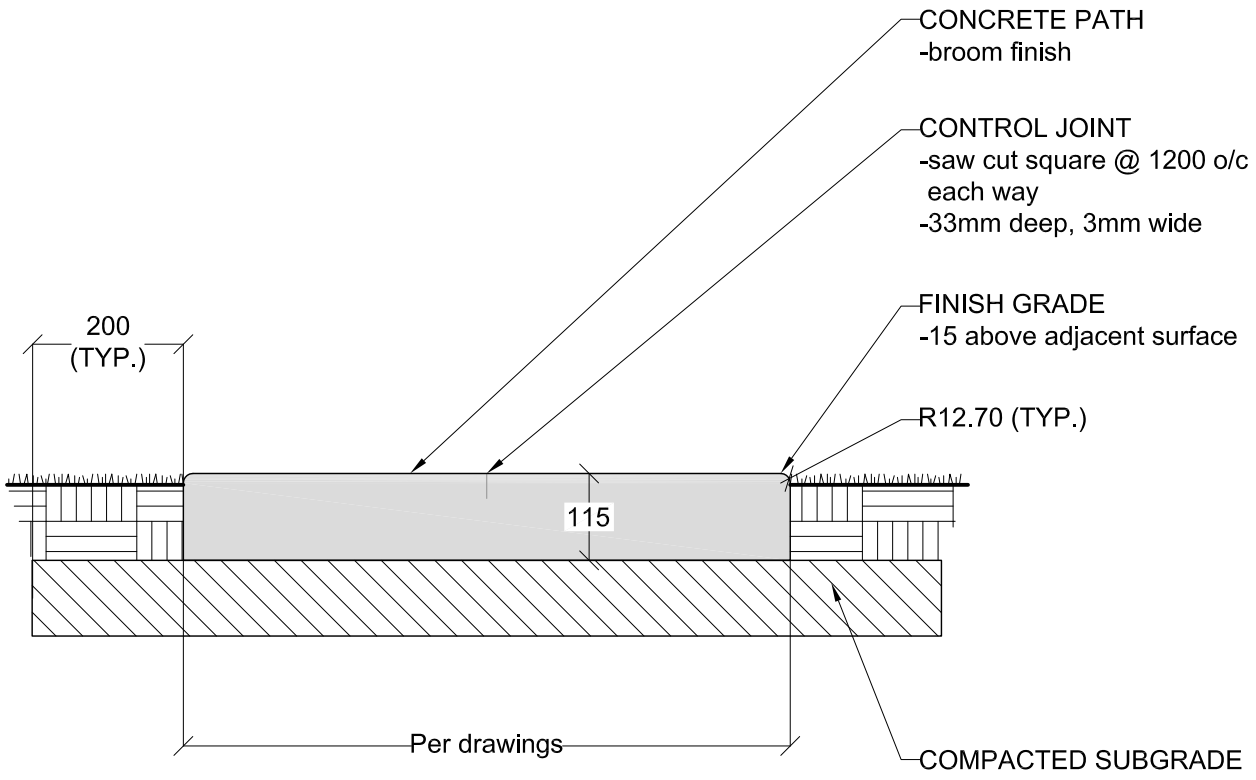
3.8 CURING

.1 Apply curing product over concrete surface to point of saturation immediately after final finishing. Apply sufficient material with roller or spray.

3.9 CLEAN-UP

.1 Clean adjacent walks, road surfaces and grounds from concrete contamination and construction debris at the end of each working day.

END OF SECTION



CONCRETE CONSTRUCTION

NOTE:
1. Units are in millimeters U.N.O.
2. Concrete surface to have 2% crossfall in the direction of surface drainage flow (refer to grading plan).
3. Concrete path shall be 2400 wide with min.1500 radius at corners unless otherwise noted (refer to layout plan).

City of Saskatoon

Drawing Title: Concrete Park Pathway

Drawn: HMK Checked: BG | Revised Date Y/M/D 16/02/02 | Scale: 1:10

Drawing No. 02524-01

Parks

02552 Asphalt Park Pathway

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02233 Granular Base

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve asphalt construction.

.1 Submit for asphalt before delivery to site:

.1 Name of supplier.

.2 Mix design of asphalt.

.3 Other information requested to verify product quality.

.2 Notify the **City of Saskatoon, Parks Department** when Contractor schedules delivery of asphalt and intends to undertake Work required.

.1 Schedule delivery and placement of asphalt when outside temperature is above 4 degrees C and rising.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Surface layout before placement of asphalt (spray painted).

.2 Granular base preparation.

.3 Asphalt placement and finishing work.

1.4 TESTING

.1 Asphalt Park Pathway is subject to analysis by an approved testing laboratory service and includes Marshall density and core samples to check design thickness tolerances.

.1 Test results that do not meet specification will be averaged with two additional core tests within two metres of the original core.

.2 Contractor is responsible for cost of these additional cores.

2.0 Products

2.1 ASPHALT

.1 Asphalt to consist of mineral aggregates and asphalt cement properly processed, compacted, and finished in accordance with these specifications and meet requirements of the thickness, grade, and cross-section specified.

.1 Asphalt Mix Type 2, per City of Saskatoon Standard Construction Specifications and Drawings: Roadways, Water and Sewer (Current Edition).

2.2 SLURRY SEAL

.1 SS-I emulsion and sand mixture with sand passing #16 sieve.

2.3 BONDING GLUE

.1 SS-1 emulsified prime coat or equivalent.

2.4 RUBBERIZED ASPHALT CRACK FILLER

.1 Meet ASTM Specification D6990. QPR 6690, Crafco Road saver 522 or approved equal.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Provide ample clearance for proper execution of the Work.

.2 Establish layout of asphalt work as required accurately per drawings.

.1 Contractor is required to spray paint edge of asphalt surfacing and obtain approval, before placement start.

3.2 SUBGRADE PREPARATION

3.3 GRANULAR BASE

3.4 ASPHALT DELIVERY AND INSTALLATION

.1 Transport asphalt to site using trucks with clean metal boxes.

.1 Cover materials to maintain temperature and eliminate contamination.

.2 Loss of temperature from plan to job to not exceed 10 degrees C.

.2 Place hot asphalt concrete after base course is compacted as specified and free from foreign matter.

.1 Immediately after spreading and screening check surface and correct and irregularities before starting compaction.

.2 Where hand-spreading is necessary, do simultaneously with machine-spreading or immediately afterwards to ensure a good bond and to receive maximum compaction.

.3 Make joints made during paving operations straight, clean, vertical, and free of broken or loose materials.

.1 Where joints occur between new courses and existing previously laid down courses cut back the existing course sufficiently to provide a clean, vertical surface.

.2 Paint vertical faces of joints with a thin, continuous coating of bonding glue to provide a tight, waterproof bond.

.4 Compact each paving course with approved rolling equipment to produce a smooth dense pavement surface and density equal to or greater than 97% of Marshall.

.5 Roll with suitable equipment as soon as possible after placing the mixture once surface can bear roller without checking or undue displacement.

.1 Each pass of the roller to overlap previous passes to ensure a smooth surface free of roller marks.

.2 Keep roller wheels sufficiently moist to not pick up material.

.6 Carry out rolling in three (3) close sequenced operations.

.1 First "breakdown" rolling as close as possible to the paver, using steel wheel rollers. Operating roller at speeds exceeding 4.8 km per hour is not approved.

.2 Second rolling with pneumatic-tired compactors to follow the first rolling as soon as possible while the paving mix is still warm enough to result in the maximum specified density. Operating compactor at speeds exceeding 8 km per hour is not approved.

.3 Final rolling with tandem roller weighing not less than 8 tonnes, while paving mixture is still warm enough for added compaction and removal of roller marks.

.7 Correct defective areas immediately to assure continuous bond appearance.

.8 Hand tamper with hot tampers in areas not accessible to the rolling equipment to achieve a density equal to machine rollers.

3.5 FINISHING

.1 Finished pavement surface to meet profile and cross-section of 6.0 +/- mm and be free from depressions or bumps exceeding 3mm as measured with 3m straight edge.

.2 Repair of excessive depressions by overlay feathered to existing surface in not acceptable.

.1 Defective areas are required marked and saw-cut through full depth of asphalt.

.2 Remove material in defective areas, paint edges of saw-cut with thin continuous coating of bonding glue to provide a tight waterproof bond, with new asphalt placement.

.3 Tamp edges directly adjacent to soft landscaping to provide clean finish.

.4 Traffic on finished surface is not permitted until pavement has cooled to atmospheric temperature.

.5 Saw cutting of asphalt edges is not acceptable.

3.6 CRACKFILL

.1 Clean loose material from crack with hot compressed air.

3.7 OVERLAY

.1 Preparation, transportation, placing, and finishing per requirements of this specification.

.2 Clean and tack existing asphalt surface before applying overlay.

.1 Apply min. 35mm thickness of asphalt.

3.8 SLURRY SEAL

.1 Distributor is required equipped with devices for accurately measuring material temperature and flow rates.

.1 Contractor is responsible for damage done to private property due to oil drifting.

.2 Clean asphalt surface of foreign matter before applying slurry seal.

.3 Apply even layer of emulsion slurry seal to asphalt surface.

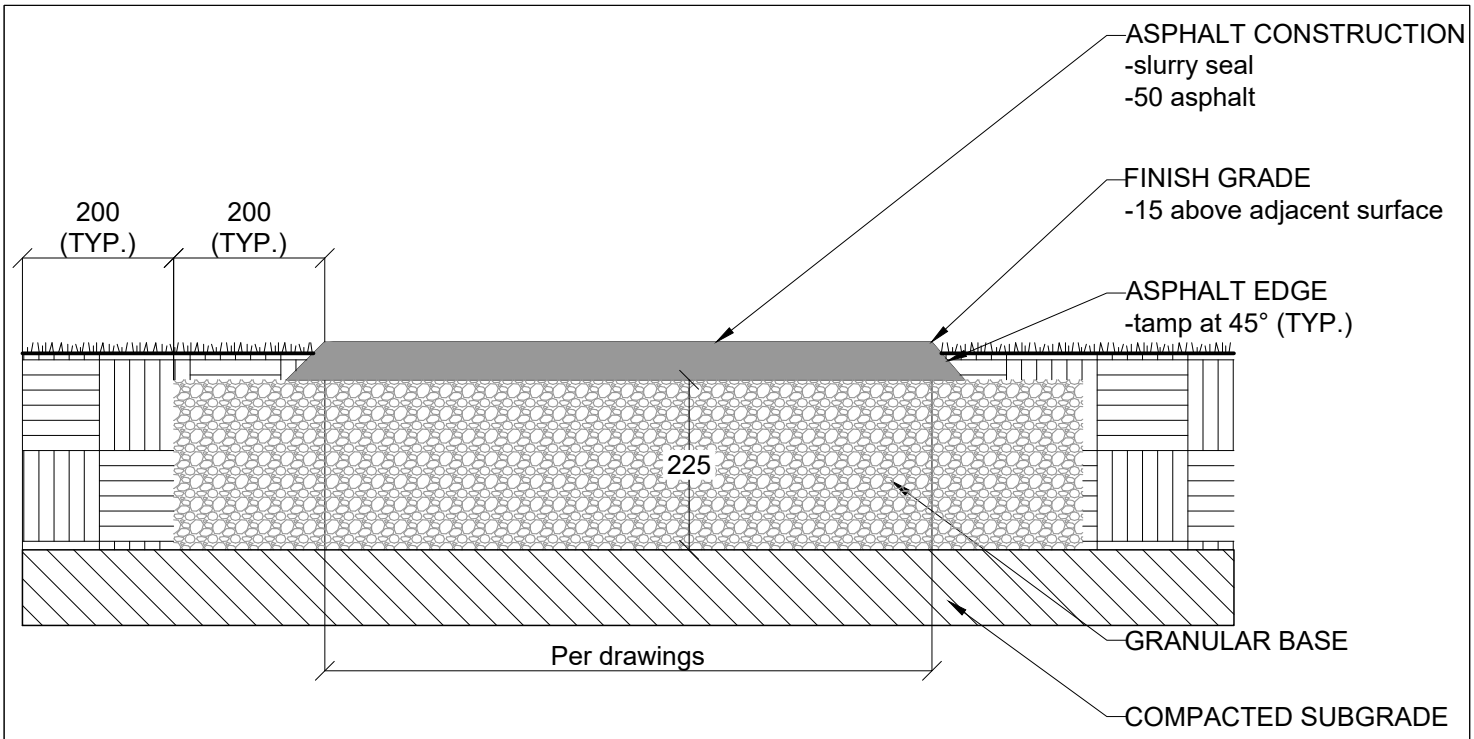
.4 Slurry seal material on top of adjacent curbs, walks, retaining walls and vegetation is not permitted.

.5 Traffic on finished surface is not permitted until slurry has cured.

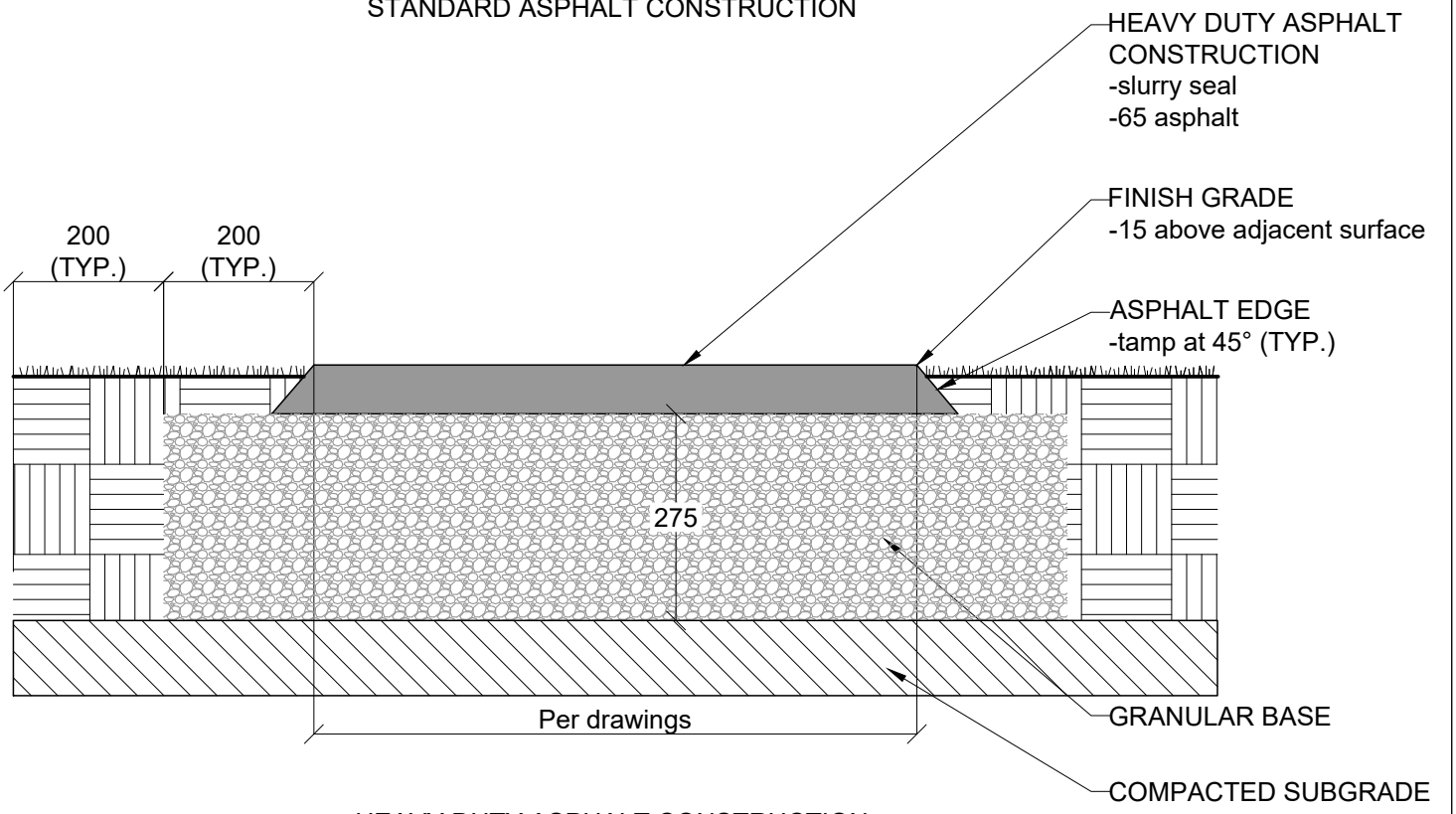
3.9 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION



STANDARD ASPHALT CONSTRUCTION



HEAVY DUTY ASPHALT CONSTRUCTION

NOTE:
1. Units are in millimeters U.N.O.
2. Asphalt surface to have 2% crossfall in the direction of surface drainage flow (refer to grading plan).
3. Asphalt path shall be 2400 wide with min.1500 radius at corners unless otherwise noted (refer to layout plan).

City of Saskatoon

Drawing Title: Asphalt Park Pathway

Drawing No.: 02552-01

Drawn: HMK Checked: BG Revised Date Y/M/D 21/12/10 Scale: 1:10

Parks

02712 Landscape Drainage

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02210 Rough Grading

.2 Section 02212 Topsoil

.3 Section 02872 Play Surfacing

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve french drain or play area drainage construction.

.1 Submit for crushed drainage rock material before delivery to site.

.1 One litre sample of drainage aggregate.

.2 **City of Saskatoon, Parks Department** to approve panel drainage system construction.

.1 Submit for very coarse sand material delivery to site.

.1 One litre sample of very coarse sand.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 French drain, weeping tile and filter cloth installation, before placing aggregate.

.2 Play area drainage subgrade filter cloth layer installation before placing drainage aggregate.

.3 Play area drainage subgrade filter cloth layer installation before placing drainage aggregate.

.4 Panel drainage system installation, before placing aggregate.

2.0 Products

2.1 FRENCH DRAIN

.1 Filter Cloth requirements: Nilex Nonwoven Environmental Geotextile: Nilex 4506E or equivalent as approved by the **City of Saskatoon, Parks Department**.

.2 Weeping Tile requirements: Polytubes, drain tile c/w filter sock or equivalent as approved by the **City of Saskatoon, Parks Department**, per drawings.

.3 Drainage Pipe requirements: PVC pipe tested to ASTM D2729 - 11, per drawings.

2.2 PLAY AREA DRAINAGE

.1 Drainage Pipe requirements: PVC pipe tested to ASTM D2729 – 11, per drawings.

.2 Filter Cloth requirements: Nilex Nonwoven Environmental Geotextile: Nilex 4506E or equivalent as approved by the **City of Saskatoon, Parks Department**.

.3 Accessories:

.1 Tuck tape

.1 Colour: Red.

2.3 PANEL DRAINAGE SYSTEM

.1 Panel drainage requirements: Nilex Multi-Flow: per drawings, as distributed by:

Nilex Inc.
#222. 2366 Avenue C N
Saskatoon, SK S7L 5X5
phone: 1-306-491-4907
toll free: 1-888-543-5454

.2 or equivalent as approved by the **City of Saskatoon, Parks Department**.

.3 Very Coarse Sand requirements: consisting of hard, durable, angular particles, free from clay lumps, cementation, organic material, frozen material and other foreign or deleterious materials.

.1 Gradations: within limits specified when tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
4.75mm	100%
2.36mm	95%
0.595mm	5%
0.300mm	1%

2.4 DRAINAGE AGGREGATE

.1 Washed Stone Aggregate requirements: 19mm washed, crushed, angular stone, hard, durable angular particles, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.1 Gradation within limits specified tested to ASTM C136/C136M-14. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
25mm	100%
19mm	91%
12.5mm	16%
9.5mm	5%
4.75mm	3.5%
2.36mm	3.5%
0.600mm	3.2%
0.075mm	1.4%

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

3.2 EXCAVATION

.1 Excavate to lines, grades and elevations per drawings.

.2 Remove waste material from trench before installing filter cloth.

.1 Establish smooth surface at the bottom of trench to permit close contact between filter cloth and prepared surface.

3.3 INSTALLATION

.1 French Drain

.1 Ensure sub-grade is smooth and free of debris.

.2 Install filter cloth subgrade layer in sections & ensure successive filter cloth sheet overlap in flow direction per detail. Tuck tape seams.

.3 Install weeping tile per drawings, detail & manufacturer's specifications, true to line and grade with inverts, smooth and free of sags or high points.

.4 Install drainage aggregate up to filter cloth top per details.

.5 Install remainder of drainage aggregate to finish grade per detail.

.6 Damage to filter cloth during weeping tile and aggregate installation is not approved.

.7 Connect weeping tile to existing/proposed drainage system (if applicable).

.2 Play Area Drainage

.1 Ensure sub-grade is smooth and free of debris.

.2 Install filter cloth subgrade layer in sections & ensure successive filter cloth sheet overlap in flow direction per detail. Tuck tape seams.

.3 Ensure filter cloth edges to play edge have overlap to join filter cloth drainage aggregate layer per detail.

.4 Install drainage aggregate.

.5 Install filter cloth drainage aggregate layer in sections & ensure successive filter cloth sheet overlap in flow direction per detail. Tuck tape seams.

.6 Install play surfacing.

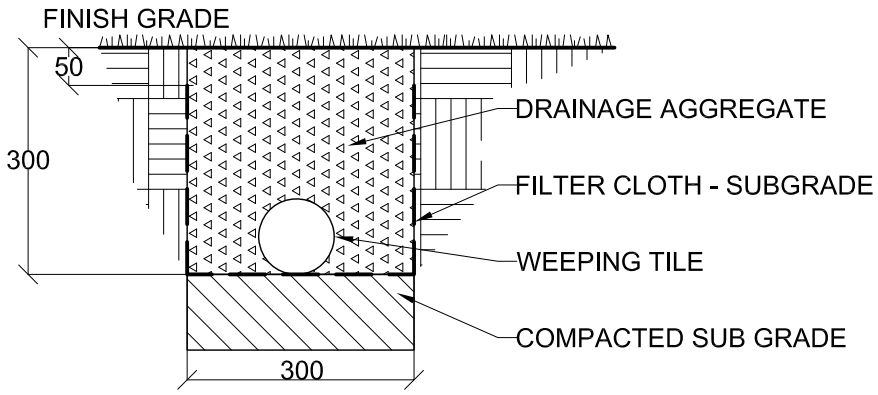
.3 Panel Drainage System

.1 Install panel drainage system per drawings, details and manufacturer's specifications.

3.4 CLEAN UP

.1 Clean adjacent areas, walks and road surfaces at the end of each working day.

END OF SECTION



NOTE:
1. Units are in millimeters U.N.O.
2. Establish positive drainage to outlet (refer to grading plan).

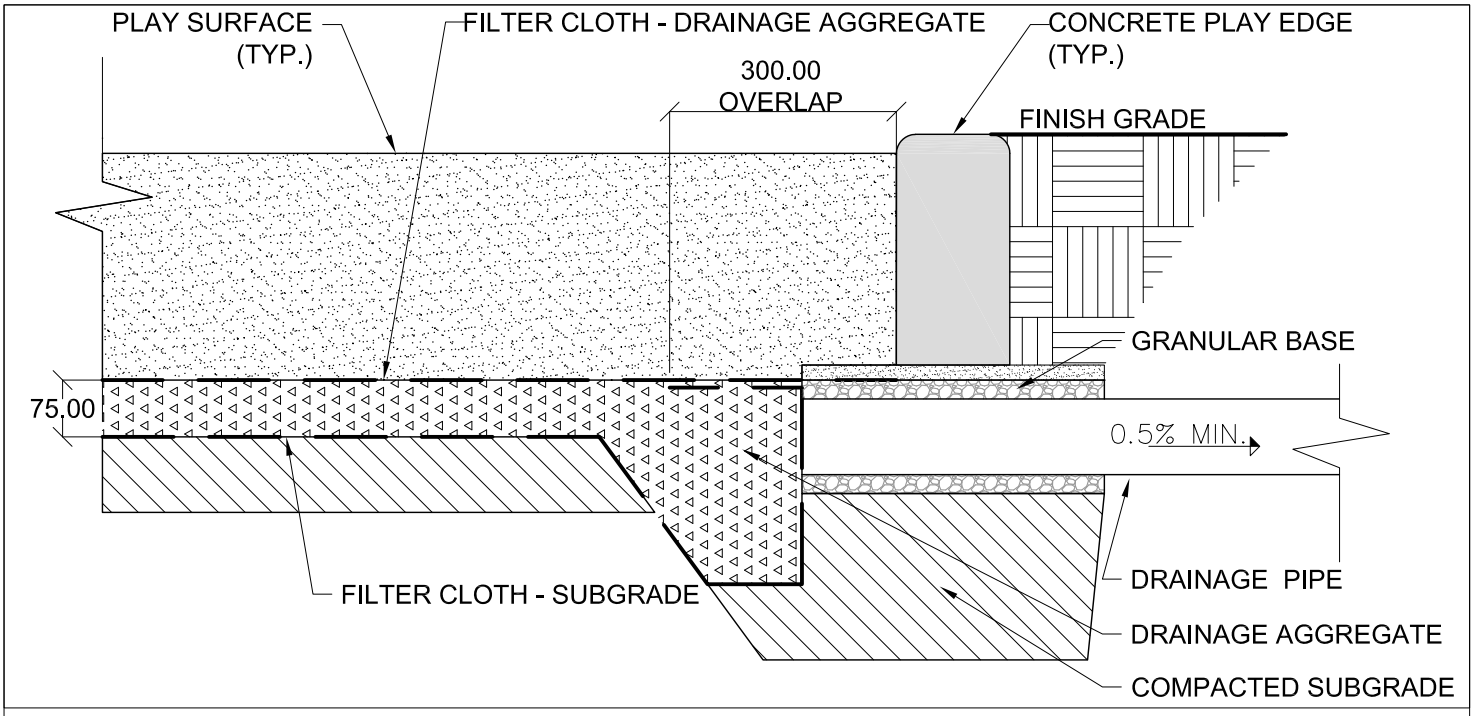
City of Saskatoon

Drawing Title: French Drain

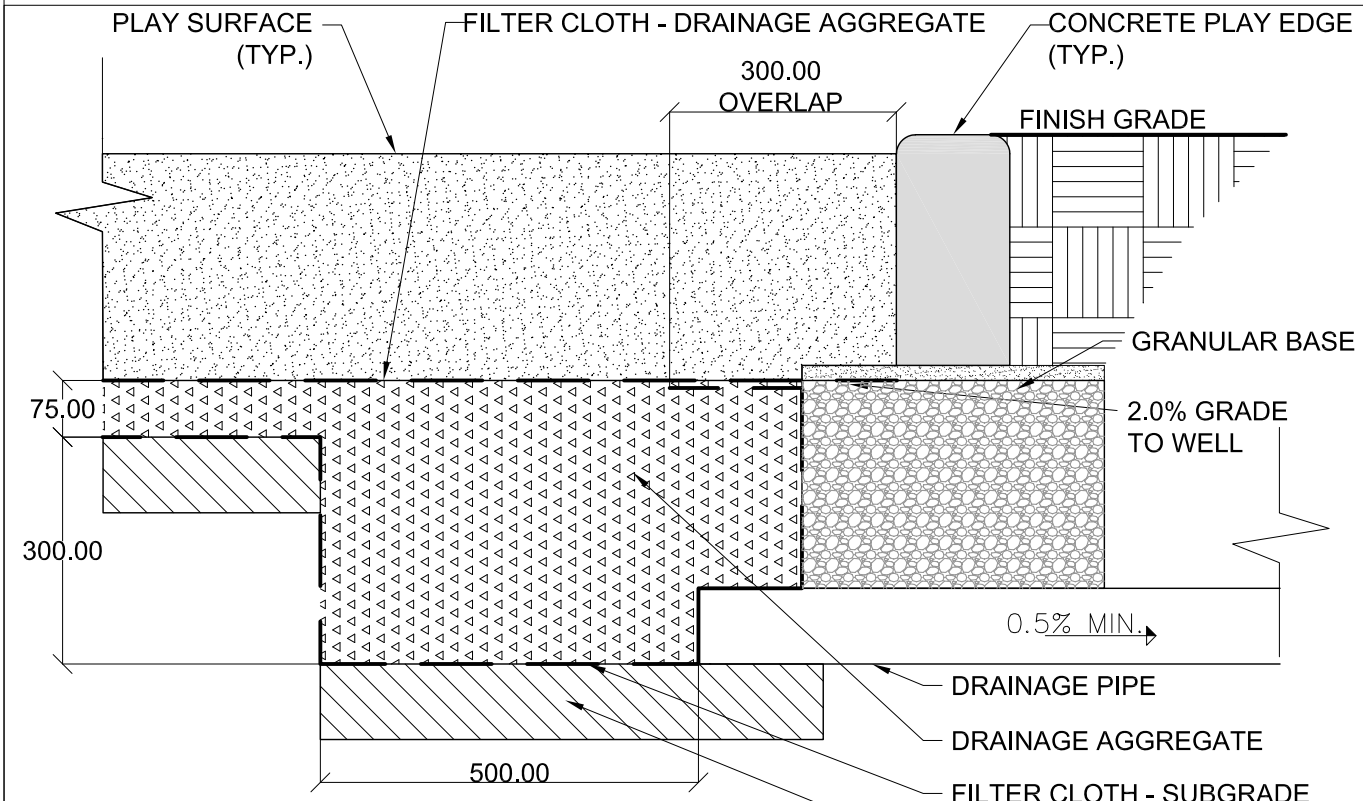
Drawn: HMK Checked: BG | Revised Date Y/M/D 16/02/02 | Scale: 1:10

Drawing No. 02712-01

Parks



SLOPED PLAY AREA



NOTE:
1. Units are in millimeters U.N.O.
2. At play edge connect perforated PVC pipe to PVC pipe leading to swale drain inlet or existing / proposed drainage structure

FLAT PLAY AREA

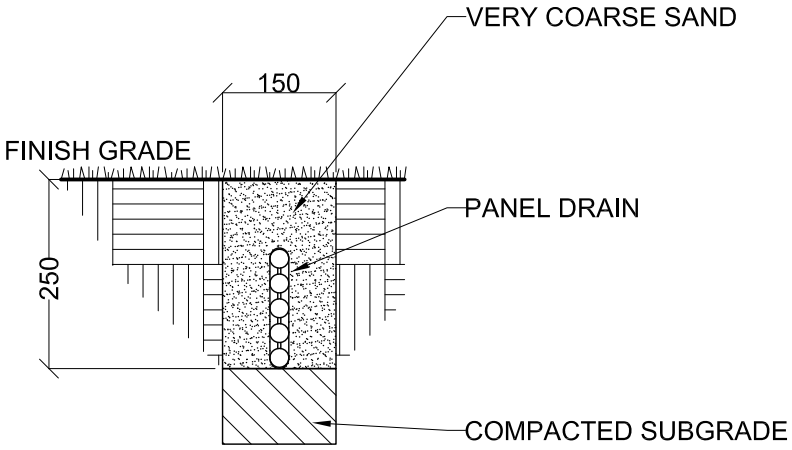
City of Saskatoon

Drawing Title: Play Area Drainage

Drawn: HMK Checked: BG Revised Date Y/M/D 16/12/13 Scale: 1:10

Drawing No. 02712-02

Parks



NOTE:
1. Units are in millimeters U.N.O.

City of Saskatoon

Drawing Title				Drawing No.
Panel Drainage System				02712-03
Drawn: HMK	Checked: BG	Revised Date Y/M/D 16/02/02	Scale: 1:10	Parks

02723 Culvert End Grates and Drain Inlet

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02210 Rough Grading

.2 Section 02523 Miscellaneous Concrete

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve pipe culvert construction.

.1 Alternate methods of construction subject to review and written approval.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Subgrade preparation, before installation of pipe.

.2 Installation of pipe before backfilling.

.3 Installation of concrete and culvert end grates.

2.0 Products

2.1 HDPE PIPE

.1 HDPE Pipe requirements: HDPE Pipe tested to CSA-B182.6-M92, per drawings.

.2 Required when specified with end grate.

2.2 CORRUGATED STEEL PIPE

.1 Corrugated Steel Pipe requirements: Pipe tested to CAN/CSA-G401-14, per drawings.

.1 Galvanized finish.

.2 16 Gauge.

.2 Material shall meet the requirements of ASTM A929 / A929M-01(2013).

.3 Fasteners shall meet the requirements of ASTM A307-14.

.4 Required when specified without end grate.

2.3 CULVERT END GRATES

.1 Provide bolting system at top of grate to allow for removal during maintenance.

.2 Standard City of Saskatoon Culvert End Grates for Work may be obtained from:

.1 Luna Metal Works

1008 20th St W

Saskatoon, Saskatchewan

.2 or approved equivalent.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

3.2 SUBGRADE PREPARATION

.1 Excavate to depths required for installation.

.1 Remove loose material in excavations and compact to 98% Standard Proctor Density.

3.3 PIPE CULVERTS

.1 Start pipe layout at downstream end.

.1 Ensure bottom of pipe is in contact with shaped subgrade bed throughout length.

.2 Lay pipe with outside circumference laps facing upstream and longitudinal laps at side of quarter points.

.2 Join pipes per manufacturer's specifications.

.3 Backfill around and over culverts as indicated.

.1 Place approved backfill material in 150mm layers to full width, alternately on each side of culvert to maintain layout.

.4 Compact each layer to 98% Standard Proctor Density taking special care to obtain required density under haunches.

.5 Protect installed culvert with min. 600mm compacted fill cover before heavy equipment is permitted to cross during construction.

.1 Width of fill at grade is required at least twice diameter of pipe. Slopes not steeper than 1:2 are required.

3.4 CONCRETE AND CULVERT END GRATES

.1 Cut ends of culvert to match slope of adjacent finished grade.

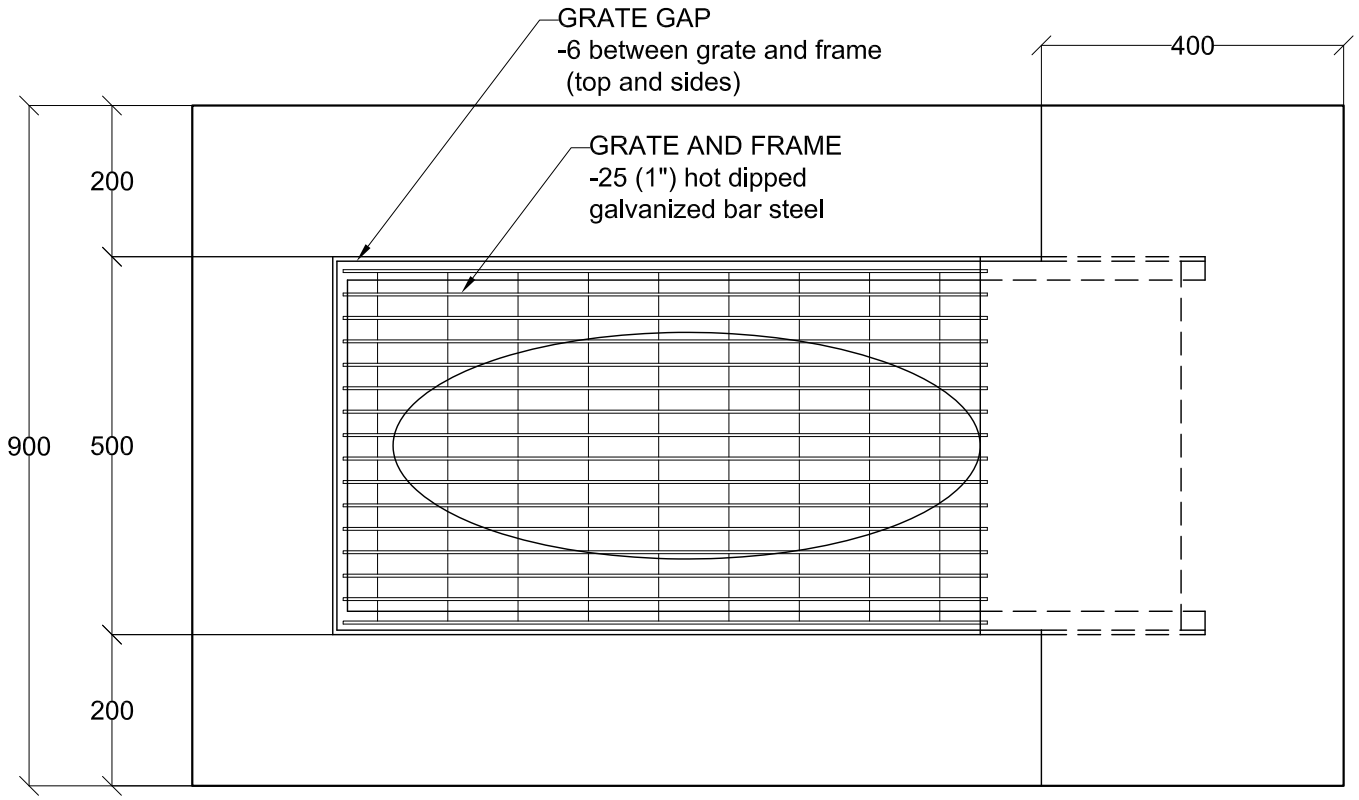
.2 Install concrete splash pads and end grates per details.

.3 Install supplied lock on grate.

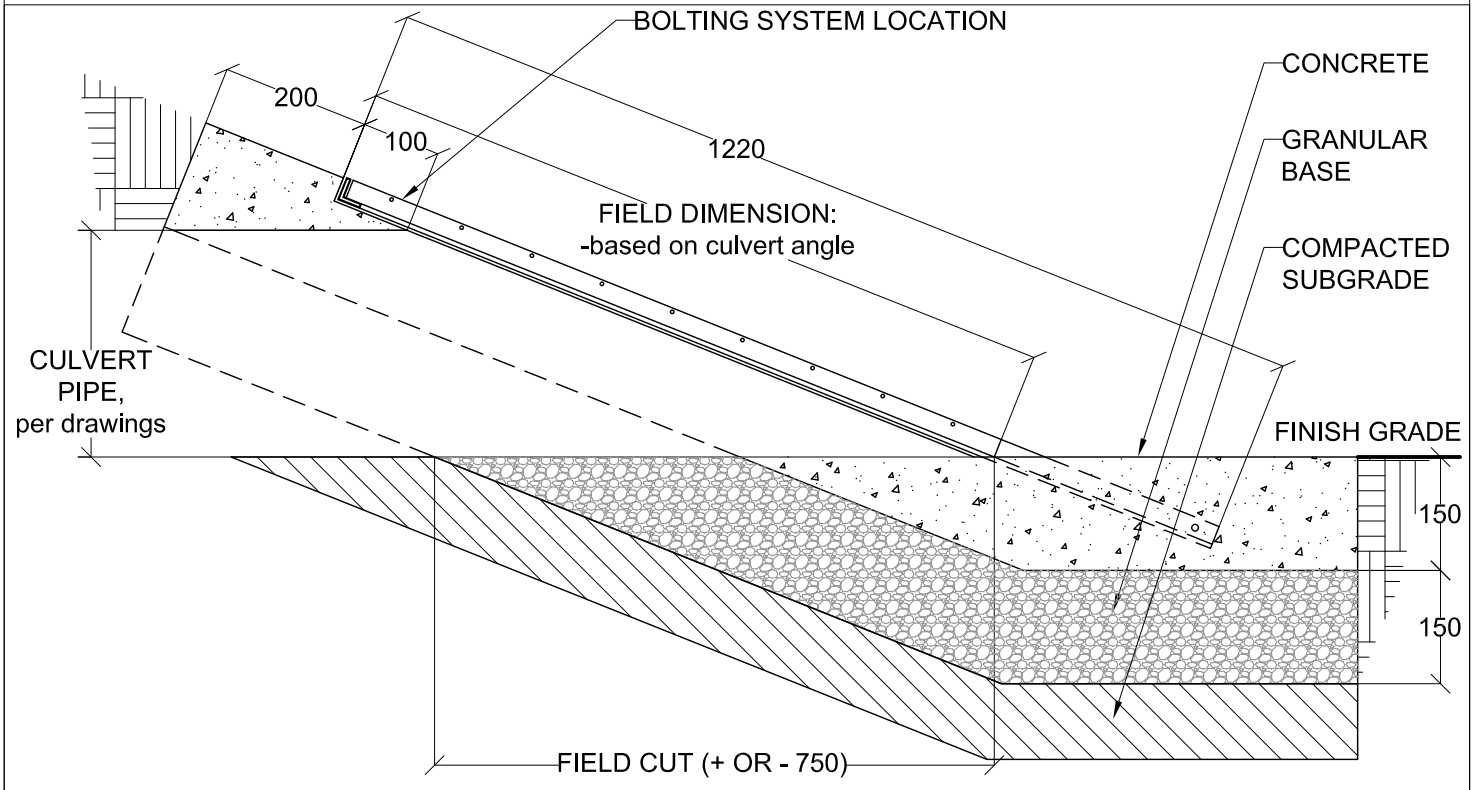
3.5 CLEAN UP

.1 Clean adjacent walks, road and other surfaces at the end of each working day.

END OF SECTION



PLAN

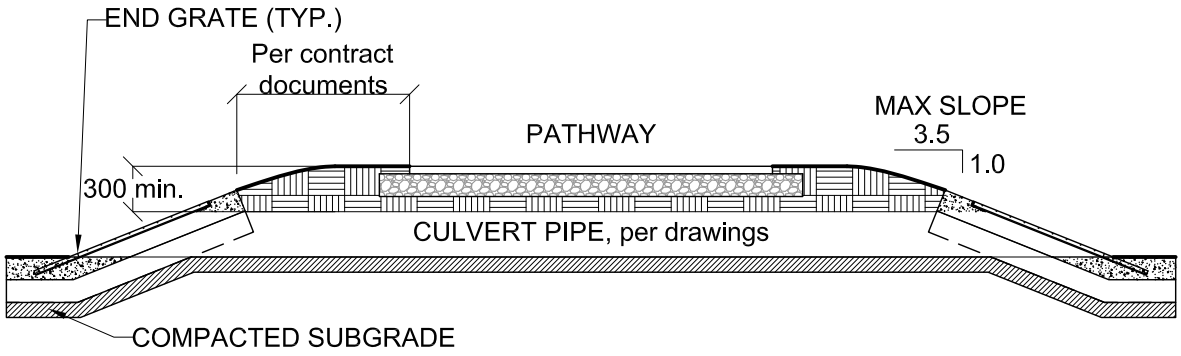


SECTION

NOTE:
1. Units are in millimeters U.N.O.

City of Saskatoon

Drawing Title	Drawing No.
Culverts/Drain Inlets	02723-01
Drawn: HMK Checked: BG Revised Date Y/M/D 16/12/09 Scale: 1:10	Parks



NOTE:
1. Units are in millimeters U.N.O.

City of Saskatoon

Drawing Title	Drawing No.
Pipe Culvert Grading	02723-02
Drawn: HMK Checked: BG / Revised Date Y/M/D 16/12/09 / Scale: 1:50	Parks

02810 Irrigation

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02212 Topsoil

.2 Section 02811 Light Bases and Conduit

.3 Section 02523 Miscellaneous Concrete

.4 Section 02933 Seeding

.5 Section 02938 Sodding

.6 Section 02950 Plant Material

.7 Section 02998 Landscape Maintenance

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve irrigation materials and construction for Work.

.1 Submit the following:

.1 Proof of Irrigation Experience (Min. 3 years).

.2 Butt Fusion and Backflow Technician Certificates.

.3 Copy of Backflow Report.

.4 Copy of Electrical Permit.

.5 As-Built Drawings (Digital).

.2 Backflow preventer testing is performed at initial system start-up and annually by qualified backflow technicians with valid registered certificate.

.3 Butt fusion work is performed by qualified butt fusion technicians with valid registered certificate.

.4 120 Volt electrical service installed by qualified journeyman.

1.3 INSPECTIONS

.1 Notify the **City of Saskatoon, Parks Department** for inspection and approval of:

.1 Main Service Connection

.2 Service Connection Flush

.3 Layout of Components

.4 Trenching depth Mainline

.5 Main Line low points

.6 Main line Butt fusion's

.7 Main Line Flush

.8 Main line City Pressure Test

.9 Trenching Depth Laterals

.10 Details (Number/Sheet)

.11 Swing Joints

.12 Saddle Hole Cuts

.13 Lateral Lines Flush (Zone)

.14 Wire tags

.15 Main Line Final Test Hydrostatic

.16 Winterization (Blow-out)

.17 Spring Start Up

1.4 TESTING

.1 Primary Test: After flushing, test main line with main line components installed at City water pressure before covering main line. Some joints may be covered to anchor main line.

.1 Testing consists of main line service connection from street curb box - service box components, fused joints and mechanical connections inclusive of main line installation.

.2 Test duration is one hour after closure of main curb box supply.

.2 Final Test: Required done between pre-FAC & FAC, hydrostatically test main line system to 687 kPa (100 psi) with components installed for a duration of one hour.

.1 Check related components for proper operation.

1.5 AS-BUILT DRAWINGS

.1 Keep one set of drawings and specifications on job site for the sole purpose of recording changes to work.

.1 Update drawing set daily as work progresses.

.2 Mark up print with changes done to the project as “As-Built drawing”.

.3 Obtain digital AutoCAD copy of drawing and drawing specifications from City of Saskatoon.

.4 Transfer marked up print information into digital AutoCAD format.

.2 Submit digital irrigation “Project Record Copy” to the **City of Saskatoon, Parks Department** to reflect total irrigation system installed. Requirements for acceptable submission include:

.1 Legend is required revised to indicate head type, flow rate, nozzle size, controller type, electric valve type and other changes.

.2 Revise wiring schematic to reflect actual installation.

.3 Water service connection: show location of service box and where city water comes up to park irrigation main line elevation.

.4 Irrigation drawing to show accurate component locations.

.5 Existing operational lin

.6 es on drawings are to remain as part of mark-up print.

.7 Indicate colours of wires.

.8 Incorporate changes made to the contract by addendum and by change order.

.9 Submit “As-Built drawings” before CCC site inspection.

1.6 WINTERIZATION

.1 Winterization of irrigation system as follows:

.1 Main curb stop should be turned off before performing work, contact Parks Irrigation to have this service performed, one weeks noticed is required. Curb box connections should be turned off no later than October 15th of each year

.2 Open main drain next to the curb stop.

.3 Open water meter drain.

.4 Open Backflow preventer.

.5 Open and activate quick coupler at end of main line.

.6 To blow out main line manually, activate electric valve furthest downstream on the main or valves in low area. Leave zone open until mainline is blown dry.

.7 Hook up an air compressor (a minimum size of 375 CFM) to 50 mm ball valve downstream of service box components. Set compressor pressure regulator at 585 kPa (85 psi). Use two 25mm hoses or one 50mm Bull hose from compressor.

.8 Install pressure gauge downstream on main line quick coupler.

.9 Blow out system, with minimum of 206 kPa (30 psi) and maximum of 520 kPa (75 psi).

.10 Visually inspect quick coupler activated in step 5. Remove key from quick coupler when discharge water begins misting. Activate zones manually in sequence, working back to main source. Deactivate when water is discharged. Continue operation until zones have been blown dry. Insure quick coupler lines have been blown dry.

.11 Run system through timer to complete final blow-out.

.12 Leave curb box drain open, blow out line, ball valve closed.

.13 Connect 1 hose to QC in service box. Close park side gate valve, clear assembly and backflow through drains, and test cocks. Open and close valves twice to remove trapped water. Close and replace plugs in openings.

.14 Close street side main gate valve in service box. Secure this valve. Tag and date blow-out. Lock service box.

1.7 SPRING START-UP

.1 Spring start-up of irrigation system as follows:

.1 Connect blow off hose to ball valve or quick coupler, street side of main shut off valve in service box.

.2 Close furthest gate valve downstream on backflow preventer assembly in service box.

.3 Check to make sure drains along main line are closed.

.4 Open and activate quick coupler at end of main line.

.5 Manually activate electric valve furthest downstream on main line.

.6 Manually activate electric valve in vicinity of service box.

.7 Close main drain on service supply to service box.

.8 Open curb stop valve very slowly to charge line between street service and service box.

.9 Remove blow-off hose in sequence.

.1 Check main drain with stethoscope to confirm its holdings.

.10 Open gate valves and throttle to maintain and not exceed a flow of 5.0 l/s (80 G.P.M.) until main line is fully charged.

.11 Close valves in sequence .5, .6, .7.

.1 Check with stethoscope in valve box to confirm main line is holding. Alternately check dial on meter.

.2 Open valves in service box fully if main line is holding.

.12 Operate each electric valve manually and adjust equipment for a smooth trouble free operation of system.

.13 Check controller operation. Leave in off position.

.14 Close main gate valve in service Box, closest to street side. Secure valve, tag and date - check out "Lock Service Box ".

1.8 EXISTING WATER DISTRIBUTION SYSTEM

.1 Notify the **City of Saskatoon, Parks Department Irrigation Maintenance** 24 hours before shutting down an existing irrigation system.

.2 Existing water distribution system on irrigation site can be turned off when working on new main line.

.1 Identify in service box with a tag attached to valve that system was locked and closed, provide contact name and phone number.

.2 Close isolation valve and install lock and chain.

.3 Integrate new installation with existing system to function as one installation.

1.9 REPAIRS (DURING WARRANTY)

.1 Contractor to correct soil depressions and defects or misalignment of part of the Work caused by settlement of bedding or backfill material within warranty period.

.2 Repairs of an emergency nature may be required to protect property or permit operation of the Work with Contractor notified by phone and follow up letter.

.1 Make repairs within twenty-four (24) hours otherwise repairs arranged by the **City of Saskatoon, Parks Department** are at Contractors expense.

.2 Notification of required non-critical repairs in writing only.

2.0 Products

2.1 WATER SERVICE BOX, FILTER, METER & MARKING POST

.1 The filter and water meter are applied for by the **City of Saskatoon, Parks Design Section**.

.1 Obtain brass turbine compatible with AMI system and filter from Meter Shop, 1101 Spadina Crescent West.

.2 Stainless steel bolts on components within service box.

.3 50 mm Service boxes – Manufactured metal above ground service box per City specifications supplied by ECCO Custom Metal Fabrication Shop.

.4 100 mm Service boxes – Manufactured metal above ground service box per City specifications supplied by ECCO Custom Metal Fabrication Shop.

.5 Marking post per detail.

2.2 WATER SERVICE VALVES

.1 Valves and components are to City of Saskatoon standards unless otherwise noted. Use suitable gate valve for underground installation and compatible with connecting pipe.

.2 Main Shut-Off Gate Valve: Manufactured in accordance to AWWA C509 and current revisions.

.1 Features are cast iron body and disc with internal epoxy coating, bronze fitted non-rising stem and nut, natural rubber resilient seat, slip joint or mechanical joint ends, 50 mm operating nut which turns counter clockwise to open.

.2 External bolts are Type 304 stainless steel.

.3 Test valves to 2760 kPa and have bubble tight 1380 kPa shut-off.

.1 McAvity Resilient Seated Gate Series 20075-0 or approved equal.

.3 Main Shut-Off Gate Valve Box: Cast iron, sectional, and telescoping, minimum 9 mm wall thickness.

.1 Supply complete with stainless steel spindle, 50 mm AWWA top nut, 50 mm thick lid, coupling for bottom attachment and asphalt varnish type finish.

.2 Suited valves for hoods over valves.

2.3 PRESSURE GAUGE

.1 65 mm diameter glycerine gauge (pressure rated to 850 kPa minimum), filled in nylon case, bronze internal components, geared brass movement, extruded brass socket 3% full scale accuracy.

.1 Use brass ball valve on pressure gauge taps meeting or exceeding valve pressure rating specified for the system.

2.4 BACK FLOW PREVENTER

.1 Wilkens Zurn Model 350 for 100mm size. Wilkens 950xl for 25 - 50mm sizes.

.2 Conbraco Model DC for 100mm size. Conbraco 40-100 series for 25-50mm sizes.

.3 Watts 709-NRS for 100mm size. Watts 007M2-QT for 50mm size.

.4 Back flow preventer valves are cast iron, internally epoxy coated, cast iron bonnet, spring loaded poppet type check, with reversible seat discs and bronze fitted non-rising stem and nut. Valve assembly rated to 1203 kPa (175 PSI) water working pressure and water temperature from 00C (320F) to 460C (1400F). Meet requirements of ASSE Standard 1015, AWWA Standard C506-78, and USC for cross connection control and hydraulic research latest edition.

.5 Back flow preventer valves supplied with ball type drain valves mounted at the base of each check valve.

2.5 FLOW SENSOR

.1 75mm and larger on High Density main line use Data Industrial Model 220SS.

.2 50mm and smaller on PVC main line use Data Industrial Model Badger 228PV.

2.6 PIPE & FITTINGS

.1 Lateral lines: Low density polyethylene pipe conforming to CSA B137.1 Series 75. Use schedule 40 PVC Type 1 elbows, tees, coupling, bushings, plugs and unions conforming to ASTM D-2464.

.2 Main lines: SDR17 high density polyethylene pipe conforming to ASTM F714-85 for 690 kPa rated pipe. Require manufacturer pre-fused socket weld fittings. CPEX fittings allowed downstream of service box.

.3 Polyvinyl chloride (PVC) nipples are Schedule 80 Type I to ASTM D-2609.

.4 PVC pipe:

.1 Water service to property line: PVC 1120 DR18 AWWAC900 pipe.

.5 Steel or galvanized steel pipe and fittings are not allowed where these pipes are buried.

2.7 CLAMPS

.1 Double Clamp - Global Fasteners or approved equal stainless steel pipe clamps with stainless steel screws. Welded backing on screw housing. Crimp clamps not acceptable. Single Clamp - Kodiak G89 Stainless Steel.

2.8 SLEEVES

.1 Use PVC pipe of grade two nominal pipe sizes larger than pipe required for that portion of system. No sleeve smaller than 100 mm (4") nominal.

.2 Sleeve for power feed at the controller is 50mm (2") PVC sceptre conduit c/w 50mm (2") PVC sceptre conduit 900 bends (6 times the pipe diameter).

2.9 AUTOMATIC CONTROLLERS AND PEDESTAL

.1 Toro Sentinel SB or Rain Bird ESP-LXMEF for conventional wiring. Toro Sentinel SB-DAC1 or Rain Bird ESP-LXDF for two wire systems.

.1 Electrical requirements are 117vac, 60Hz for primary and 26.5vac, 60Hz, 2.5 Amps for secondary.

.2 NP4000 LOPRO Antenna (Toro). External Antenna #IQ4640 GPRS (Rain Bird)

.3 30 Amp switch: Nemai TH3221 or Siemens SE221

.4 Terminal Strip: G & B or Etlin Daniels TB300-12

.5 Rain Bird controllers require IQ-GPRS cellular network cartridge.

.2 Temporary controller of contractor's choice during construction.

.3 Manufactured metal cabinet per City specifications supplied by ECCO Custom Metal Fabrication Shop.

.4 Streetscapes and Entry Ways – Hunter Node, Hunter XC Hybrid, & Toro DDCWP

.5 Two wire decoder controller is Toro Sentinel TDC with twisted pair of wires and DDC-1 decoders or Rainbird ESP-LXD-FD-101 with non twisted Maxi wire and FD-101 Turf decoders.

2.10 SOLAR PANEL AND BATTERY

.1 Panel is CS-170 – 170Watt. Racking is custom pole mount tilt racking. Wire is MC4 Solarline 2 MC cable. Charge controller is Sunsaver SS-10L-12V with LVD. Wire harness is custom 2 foot wiring harness with disconnect clip and soldered ends.

.2 Battery is AGM (Absorbed Glass Mat) 92-100amp/hour non spillable battery.

2.11 CONTROL WIRING

.1 Wires are direct burial CSA approved TWU 40 #12 wire.

.2 Flow sensing wire is 16/2 stranded shielded direct burial wire with ground.

.3 Colours:

.1 Control wire is red.

.2 Green is tracer wire. White is common wire. Spare wire is blue.

.3 Flow sensor wire is black.

.4 Ground rod is 18 mm x 600 mm copper clad ground rod with 18mm brass ground clamp

.5 Decoder wire is jacketed twisted pair 14awg.

.6 Surge protectors are Toro DEC-SG_LINE.

2.12 MANUAL VALVES

.1 Ball valves – 50 mm and smaller use bronze body, screwed ends, full port, 1380 kPa W.O.G. with chromium plated bronze ball and teflon seat. Use Kitz # 58, Newman Hatterly 1969F, Crane #9322 or RWV 5044AB.

.2 Gate valves - 50 mm and smaller use bronze, screwed ends, internal seats, 1380 kPa W.O.G. Gate valve with solid wedge disc and non-rising stem. Use Newman Hatterly 150's, Kitz #40, Crane #438 or Red and White #206F.

.3 Gate valve - 75 mm and larger use iron body, flanged ends, 1380 kPa W.O.G. gate valve with bronze trim and non-rising stem. Use Newman Hatterly 150's, Kitz #75, Crane #461 or Red and White #415.

2.13 ELECTRIC VALVES

.1 Electric valves are Hunter PGV (AC parks only) Rain Bird 200-PGA or Irritrol 217B. PVC construction, 24 vac, 1030 kPa working pressure rated, high flow, low friction losses and capable of operating under dirty water conditions and contain the following features:

.1	angle and globe design	-corrosion/contamination resistant
.2	low power requirements	-manual open/close control

.2 Master valves are globe configured, flanged, normally closed energized to open, 175 max psi. Bermad model 04-710.

2.14 VALVE BOXES

.1 Prefabricated Carson #1220-12 with12-20-00-TC-01 heavy duty lids, 1419-12 and 910 heavy duty plastic valve boxes green in colour or Rain Bird VB series.

.1 Comes with 316 stainless steel hex head bolt (3/8" x 2.5") through lid into manufacturer's pre-tapped box body.

.2 Identify valve box lids as follows:

.1	Electric valve, Controller # -	Zone # (i.e. EV-4)
.2	Quick coupler	QC-# (i.e. QC-5)
.3	Drain valve	DV-#
.4	Blow out valve	BV-#
.5	Splice box	SB-#
.6	Isolation valve	IV-#
.7	Quick coupler drain valve	QCDV

2.15 CRUSHED ROCK

.1 Use approved ¾" clean crushed drainage rock at valve boxes and meter pit.

2.16 SADDLES

.1 4 x 2 Robar or Ford brass saddles in service boxes. 45 lbs maximum torque on bolts.

.2 Use100% heavy brass saddles including for lateral pipe saddles. Size as required. Do not use saddles on pipe size 25 mm and smaller. Brass bolts are required.

.3 For high density mainline use Friatec, Central, Elofit or Frialen electrofusion saddles. No self-tapping.

2.17 IRRIGATION HEADS - ROTORS

.1 Institutional quality pop-up sprinkler heads gear driven, low angle and standard angle nozzles, part circle forty degrees to three hundred and sixty degrees arc, heavy duty retracting spring, matched precipitation, 100 mm pop-up, compatible with different nozzles and fully adjustable to allow for field adjustment.

.1 Use Hunter I-20 Ultra, Rain Bird 5000 Series or Toro T5 Series for low pressure requirements, Rain Bird Falcon, Hunter I-25 or Toro T7 series for higher pressure requirements and Toro 640, Rain Bird 8005 or Hunter I-40 for vandal risk sport fields.

.2 Sprinkler head equipped with built in check valve, rubber cover, and filter screen.

.3 Sprinkler head body and riser constructed of non-corrosive heavy duty ABS plastic.

.4 Rotors require a five (5) year unconditional, non-prorated manufacturer warranty.

2.18 IRRIGATION HEADS - SPRAYS AND BUBBLERS

.1 Institutional quality pop-up spray heads, 100 mm pop up, pressure regulating, check valve and stainless steel spring.

.1 Rain bird 1800 series, Hunter PRS40, or Toro 570Z series.

.2 Spray heads require a five (5) year unconditional non-prorated manufacturer warranty.

2.19 QUICK COUPLER VALVE

.1 Buckner No. 25000 Model #3 double slot quick coupler valves with a 25 mm inlet diameter, bronze body, stainless steel spring, brass plunger, one-piece body and positive water seal.

3.0 Execution

3.1 LAYING OUT WORK

.1 Establish and maintain line and grade controls using appropriate survey personnel and GPS survey equipment.

.1 Contractor is responsible for layout accuracy.

.2 Changes to the irrigation layout or design is required approved before changes are implemented.

.2 Stake locations of sprinkler heads and notify **Consultant** of deficiencies that may affect performance of the irrigation system so that adjustments may be made.

3.2 FLUSHING (MAIN LINE AND LATERAL LINES)

.1 Flush main line between City of Saskatoon water main and service box water meter before water meter is installed.

.2 Flush main line slowly at start to insure no debris is forced up into electric valves.

.3 Flush lateral lines before installing end head on line. Retain full line size with pipe extended above ground level.

.1 Removing end head from swing joint is not acceptable.

.4 **City of Saskatoon, Parks Department** to observe flushing and requires 24 hours notice.

3.3 EXCAVATION

.1 Notify utility and other underground service companies before undertaking Work.

.1 Notify **Consultant** of underground utilities and services including power, gas, telephones cable, traffic lights and others and have locations staked before commencing excavations.

.2 Trench 120 volt service for controller and park lights, pipes and control wiring. Excavation is unclassified and includes materials encountered except which cannot be excavated by normal mechanical excavation means.

.3 Minimum and maximum depth of cover over lateral lines and main lines:

.1 Main Lines pipe sizes -450 mm to 550 mm. (18”-22”)

.2 Lateral Lines pipe sizes -400 mm to 500 mm. (16”-20”)

.4 Backfill and tamp over excavated trenches to provide compacted bearing for pipe.

.5 Remove from backfill material rocks, stones and other unsuitable substances that could damage pipe or create unusual settling problems. Backfill in 150 mm layers and tamp each layer to prevent excessive settling with mechanical device.

.6 Equip chain trenchers with a crumber or manually clean trenches of loose material before laying pipe.

.7 Backfill mainline trench within 72 hours of excavation.

.8 Repair concrete and asphalt damaged in the course of this contract.

.9 Backfill trenches containing pipe when pipe is cool avoiding excessive stress and heaving of pipe due to expansion. Trenches are required tamped with a mechanical tamper.

.10 Install PVC sleeves where electrical wires and main line pass under roads or concrete walks. Extend sleeve a minimum 300 mm beyond edge of surfaces. Install 50 mm sleeve for wire only where it passes under asphalt walks. No butt fusions on main line where it passes under asphalt walk.

.11 Minimum width of trenches for main line pipes is required150 mm (6") wider than nominal size of the pipe in the trench. For example, a 100 mm (4") pipe requires 250 mm (10") trench width.

.12 Where trenches cross areas that are proposed for re-seeded or sodded the backfill trench is required re-compacted and re-seeded using a seed mixture that matches existing. After trench has been backfilled and re-compacted, remove trenching debris from grass on each side of the trench by hand raking or other suitable means. Water trench area until turf is established and accepted to specification standard. Repair trench settling during warranty period. Do not trench across pathways for lateral lines.

.13 Backfill pits for valve boxes, quick couplers, curb valves and isolation valves with 25mm crushed rock from undisturbed soil to required elevation.

3.4 WATER SERVICE CONNECTION AND SERVICE BOX

.1 Install water service connection in accordance with the City of Saskatoon standards.

.2 Install water service box in accordance with the City of Saskatoon standards.

.3 Install irrigation service box marking post front corner in traffic flow direction.

3.5 BACKFLOW PREVENTER / FILTER / WATER METER

.1 Install and field test the back flow preventer to manufacturer's recommendation and submit test result to the **City of Saskatoon, Parks Department**.

.2 Install filter and water meter with approved, qualified personnel only.

3.6 GAUGES

.1 Locate direct reading instruments at angle for easy reading from ground.

3.7 INSTALLATION OF PIPES

.1 Install pipes and fittings in accordance with manufacturer's instructions and proceed from point of supply connection. Install concrete thrust blocks at directional changes in pipelines in accordance with pipe manufacturer's instructions.

.2 Connect sprinkler heads to polyethylene pipe with brass saddles and insert tee.

.3 Install lateral lines by pulling in pipe.

.1 Use a vibrator type pipe plough for pull-in method with a Mole or Bullet 25 mm larger in diameter than outside diameter of the pipe.

.2 Eliminate ridge created by the vibrator plough by mechanical tamping so soil over pipe is returned to final grade.

.4 Lay 75 mm and larger main water pipe in trench. Drill saddle holes to match saddle size on High Density Polyethylene (HDPE) main line pipe with a saw cut. Do not burn holes.

.1 Leave pipe uncovered at this stage for inspection.

.2 Do not backfill until approved.

.5 Slope main lines to provide gravity drainage to local low points in the pipe.

.1 Run a survey of the main line to establish exact low points.

.6 Double clamp and stagger opposite insert fittings unless using Kodiak G89, then single clamp acceptable.

.7 Follow pipe manufacturer butt-fusion procedure for pipe and fittings.

3.8 AUTOMATIC CONTROLLER

.1 Supplied and Installed by Contractor. Automatic controller location is diagrammatic. Location is required verified.

.2 Install wiring in a neat and orderly manner in compliance with local and Canadian electrical codes, including grounding. Run outside 24-volt and 115-volt control lines in an electrical conduit from controller to outside of base.

.3 Contractor to trench or direct bury electrical service wire.

.4 Protect Automatic controllers from electric shock and lightening with electrical surge protection and proper grounding with earth ground installation as follows:

.1 Drive a 5/8" by 8' (17 mm x 2.4 m) copper-clad steel rod into well moistened soil not less than 8' (2.5m) or more than12' (3.7 m) from the satellite. The top of the ground rod should be 12" (30.5 cm) below grade level.

.2 Using a 5/8" (17 mm) clamp or "Cad weld" fastener, attach a 6 AWG (10 mmz) solid copper wire near the top of the ground rod. Avoiding wire bends of less than 8" (20.3 cm) radius and more than 90°, route the wire through conduit into the controller cabinet. Secure the wire to the large copper ground lug.

.3 Measure the ground resistance per the instructions provided with the ground test instrument. If the resistance exceeds the acceptable limit, additional ground rods) can be installed at a distance equal to twice the buried depth of the first rod; i.e., 16' (4.9 m). Interconnect the ground rods using 6 AWG (10mm2) solid copper wire and test again. If the measured ground resistance continues to read above the acceptable limit, contact your local Toro distributor for further assistance and recommendations.

3.9 ELECTRICAL WIRING

.1 Install control wires in a neat and orderly fashion in pipe trenches. Bundle wires together and tape every 2m. Test the wires for continuity before burying the wires.

.2 Assemble splices in separate 910 round boxes. Loop 610 mm (24") of electrical wire in splice box.

.1 Apply brass tag with zone number on each side of splice having wire run through tag hole.

.2 One splice allowed per leg of wire.

.3 T-splice a 450mm (18”) tail on common and attach valve wire to common tail.

.4 Install electrical wiring in accordance with existing Canadian Electrical codes.

.1 Loop 1m (5’) of common and applicable control wire in each valve box before attaching to valve. Leave 500mm of common, control, and spare wire in each valve box.

.2 Loop at 90 degree changes in direction along main line.

.5 Install tracer wire in main line trenches from service box to end of main lines and into the controller.

.1 Attach tracer wire to ground rod inside each last box on the main line.

.2 Install tracer wire on quick coupler lines that are not directly installed on the mainline.

.6 Install spare wire in main line trench with wire bundle from controller to last control valve.

.7 Place electrical service to controller in 38 mm diameter conduit.

.8 Install minimum 1500 mm of each wire in controller cabinet.

.9 Identify control wires individually with heat shrink and acid pen method in valve and splice boxes.

.10 Wire each electric valve individually back to controller. Use 3M DBR-Y connectors for #12 wire.

.11 Install 3 wires in a shielded jacket for power, flow and ground to the flow meter.

.12 Install two wire decoder control wire per manufacture’s recommendations.

.13 Install surge protectors for two wire decoder control wire per manufacture’s recommendations.

.14 Install a tracer wire on QC lines.

3.10 ELECTRIC VALVES

.1 Install valves according to manufacturer's instructions. No pipe dope or oil base lubrication on threads.

.1 Install valve in a valve box set plumb, and flush with grade.

.2 Align valve boxes perpendicular (90 degrees) to main line.

.3 Do not install valve boxes in bottom of swales.

.4 Tamp the ground around each valve box to its original grade.

.2 Min. 100mm and maximum 175mm top of valve clearance from grade.

.3 Valve box is supported by 300 mm of crushed rock and compacted soil so that it can support the weight of turf maintenance machinery without sinking.

.4 Tag zone valves with brass tags and correspond number with controller station number.

.1 Correspond valve cover identification with valve tag marking.

.5 Install single station decoder in every electric valve box if system is two wire decoder control.

3.11 SPRINKLER HEADS

.1 Follow manufacturers' directions for installation. Use four elbow swing joint.

.1 Connect swing joints on top of lateral pipe.

.2 Tamp the excavated ground around each head to its original grade.

.2 No saddles on pipes 25 mm and smaller. Use insert tee fitting with double clamps.

.3 Burn a hole matching size of saddle. Do not drill opening. Do not use steel bit.

3.12 QUICK -COUPLING VALVES

.1 Install quick-coupling valves on main line every 100 m, in valve boxes. Use four elbow swing joint.

.1 Do not install in bottom of swales.

.2 Tamp the excavated ground around each quick coupling valve to its original grade.

.2 Do not use saddles when installing quick couplers on pipe 38mm or smaller. Use insert tee fittings with stainless steel clamps.

.3 Secure the quick coupling valve free from movement when installing operating key.

3.13 DRAINS

.1 Install drains along main line in locations as approved.

.1 Install drain valve box with quick coupler valve at low points.

.2 Install where depressions occur and water is likely to collect in pipe.

.3 Do not install drains in bottom of swales or below existing water table.

3.14 SOLAR PANEL

.1 Install per manufacturer's recommendations. Install battery in controller cabinet.

3.15 BALANCING AND ADJUSTMENTS

.1 Balance and adjust various components of sprinkler system so overall operation and coverage meets the design specifications before final inspection.

3.16 END OF SEASON

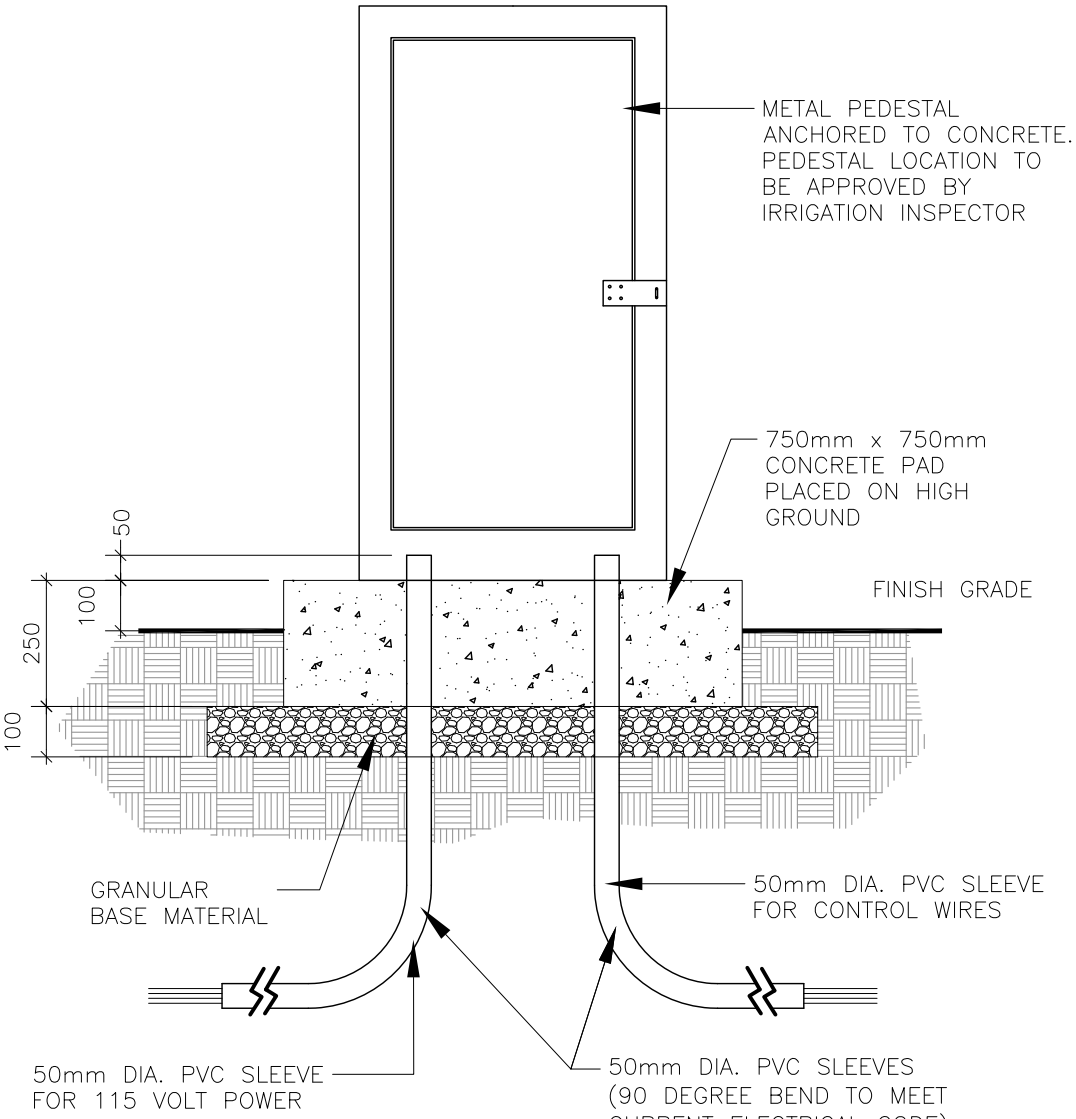
.1 If irrigation system has not had a final inspection in the current year, then blow-out irrigation water lines before October 8 and activate system in spring of the following year.

.1 Cease irrigation installation before October 15, unless otherwise approved.

3.17 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION

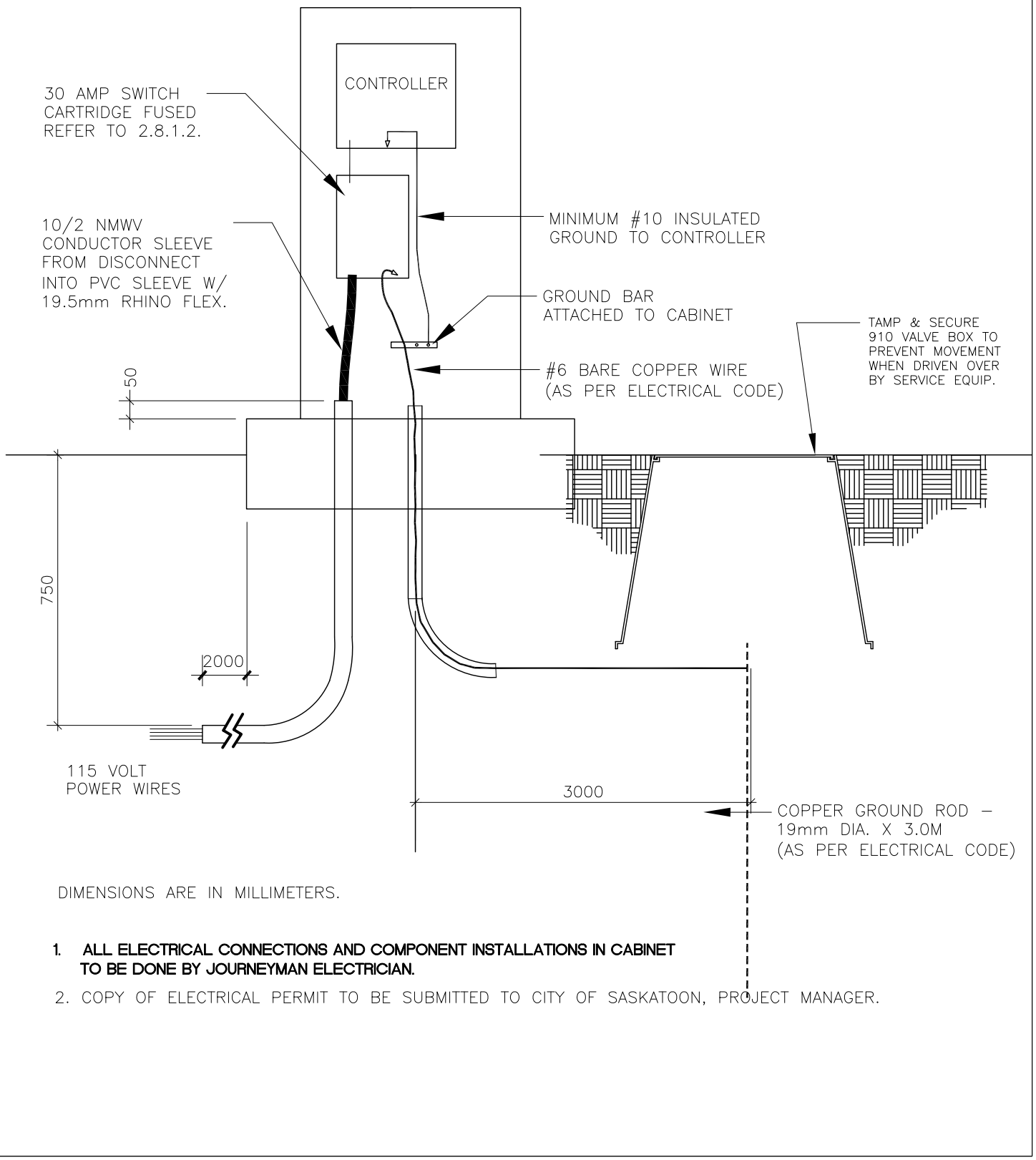


DIMENSIONS ARE IN MILLIMETERS.

DIRECTION OF BEND TO BE APPROVED BY SASKATOON LIGHT AND POWER OR IRRIGATION INSPECTOR PRIOR TO INSTALLATION (ONE FOR EACH CONTROLLER).

City of Saskatoon

Drawing Title				Drawing No.
Controller Cabinet				02810-01a
Drawn: BT	Checked: BG	Revised Date Y/M/D 13/11/08	Scale: N.T.S.	Parks

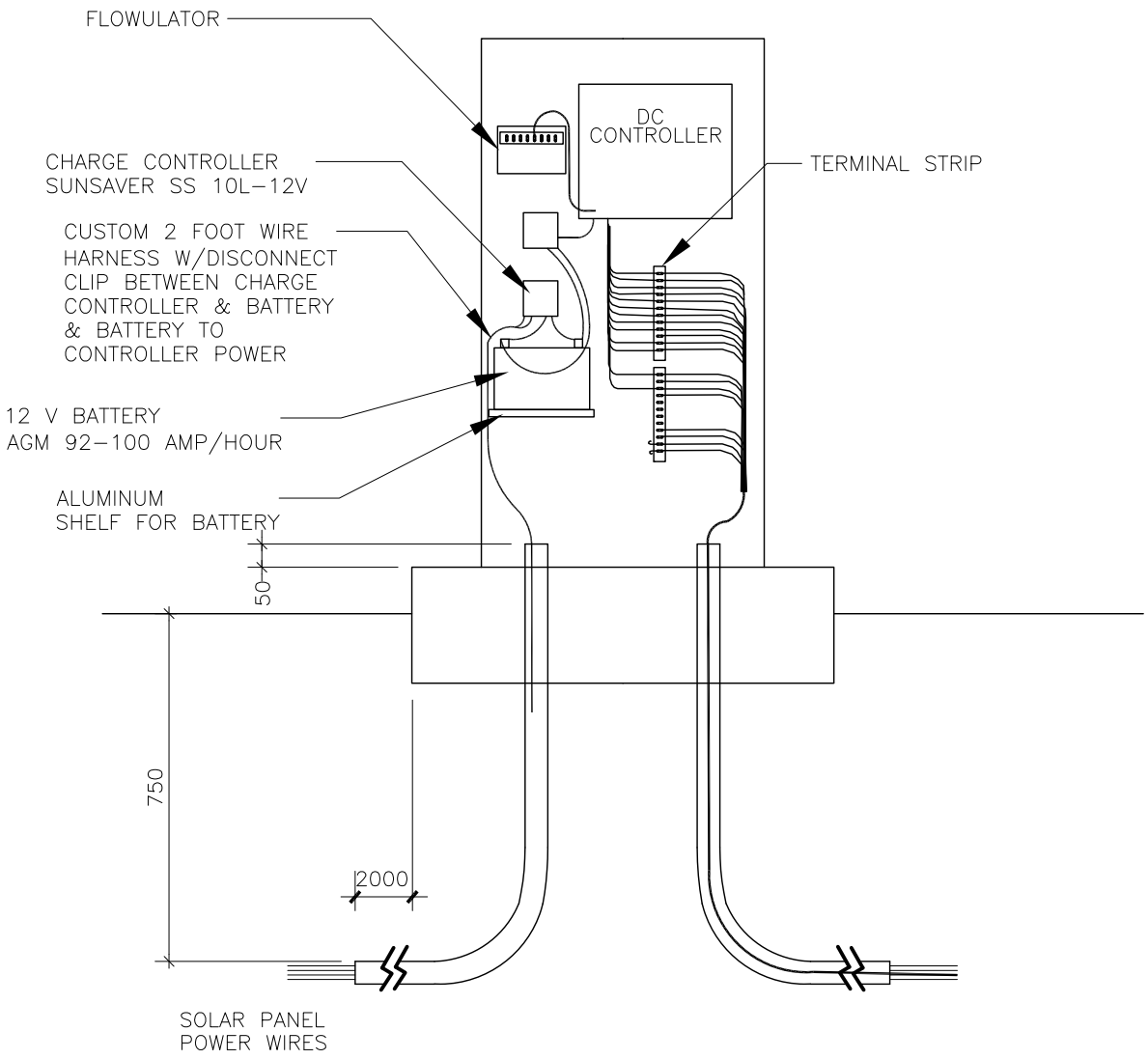


DIMENSIONS ARE IN MILLIMETERS.

1. **ALL ELECTRICAL CONNECTIONS AND COMPONENT INSTALLATIONS IN CABINET TO BE DONE BY JOURNEYMAN ELECTRICIAN.**
2. COPY OF ELECTRICAL PERMIT TO BE SUBMITTED TO CITY OF SASKATOON, PROJECT MANAGER.

City of Saskatoon

Drawing Title				Drawing No.
115 Volt Power Connection				02810-01b
Drawn: BT	Checked: BG	Revised Date Y/M/D 19/12/13	Scale: N.T.S.	Parks

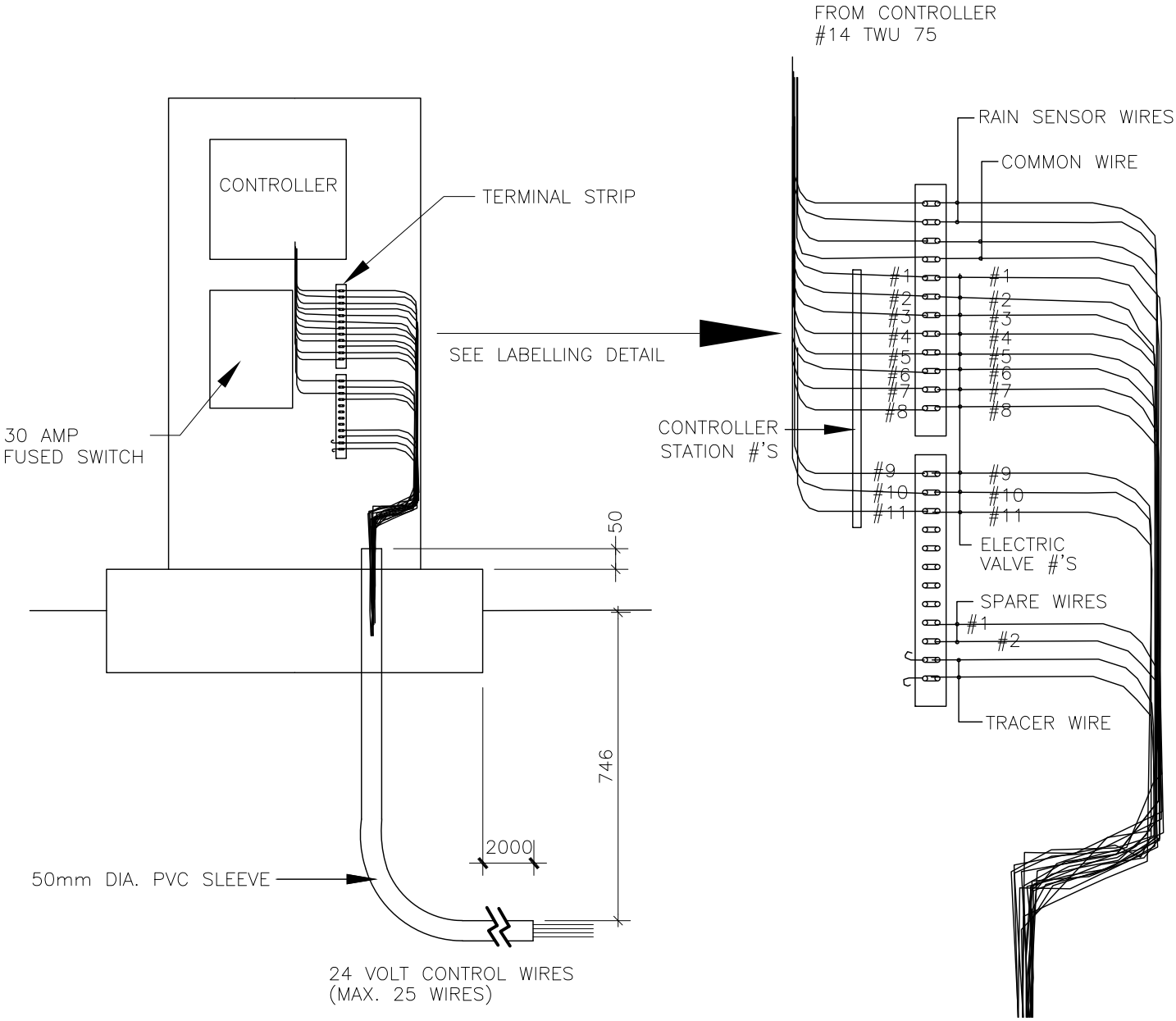


DIMENSIONS ARE IN MILLIMETERS.

1. **ALL ELECTRICAL CONNECTIONS AND COMPONENT INSTALLATIONS IN CABINET TO BE DONE BY JOURNEYMAN ELECTRICIAN.**
2. COPY OF ELECTRICAL PERMIT TO BE SUBMITTED TO CITY OF SASKATOON, PROJECT MANAGER.

City of Saskatoon

Drawing Title				Drawing No.
DC Power Connection				02810-01c
Drawn: BG	Checked: BT	Revised Date Y/M/D 19/12/13	Scale: N.T.S.	Parks



DIMENSIONS ARE IN MILLIMETERS.

1. **ALL 110 ELECTRICAL CONNECTIONS IN CABINET TO BE DONE BY JOURNEYMAN ELECTRICIAN.**
2. COPY OF ELECTRICAL PERMIT TO BE SUBMITTED TO CITY OF SASKATOON, PROJECT MANAGER.
3. ALL WIRES ARE TO BE MARKED ON EITHER SIDE OF TERMINAL STRIP WITH HEAT SHRINKING TUBING AS APPROVED BY I.S. FACILITIES BRANCH ELECTRICIAN.
4. CONTRACTOR TO CLEARLY MARK ALL WIRES TEMPORARILY WITH VALVE NUMBER.
5. ALL VALVES WIRED INDIVIDUALLY IN NUMERICAL ORDER.
5. ALL STATIONS TO BE ONE ZONE ONLY.

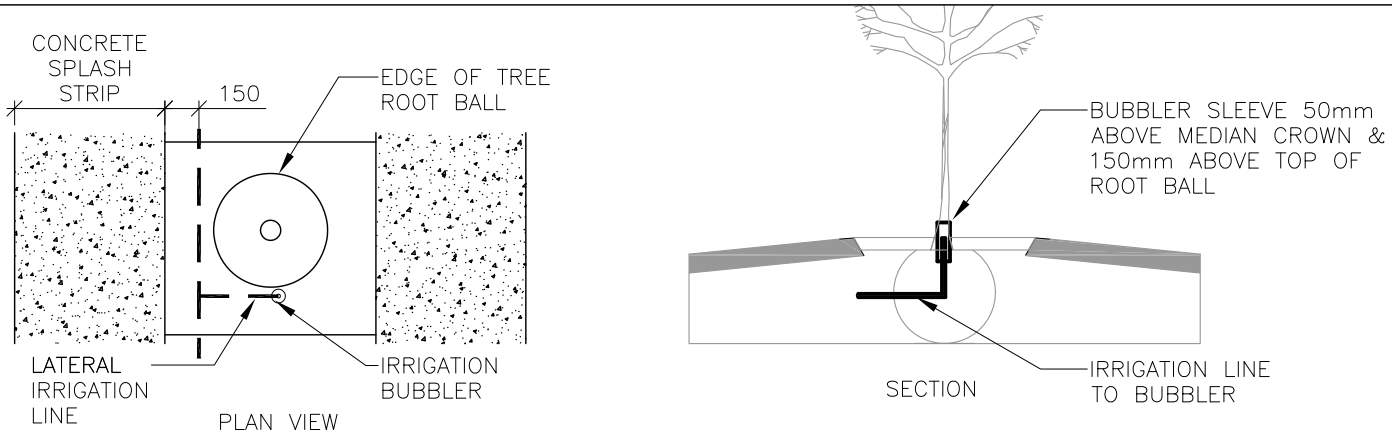
City of Saskatoon

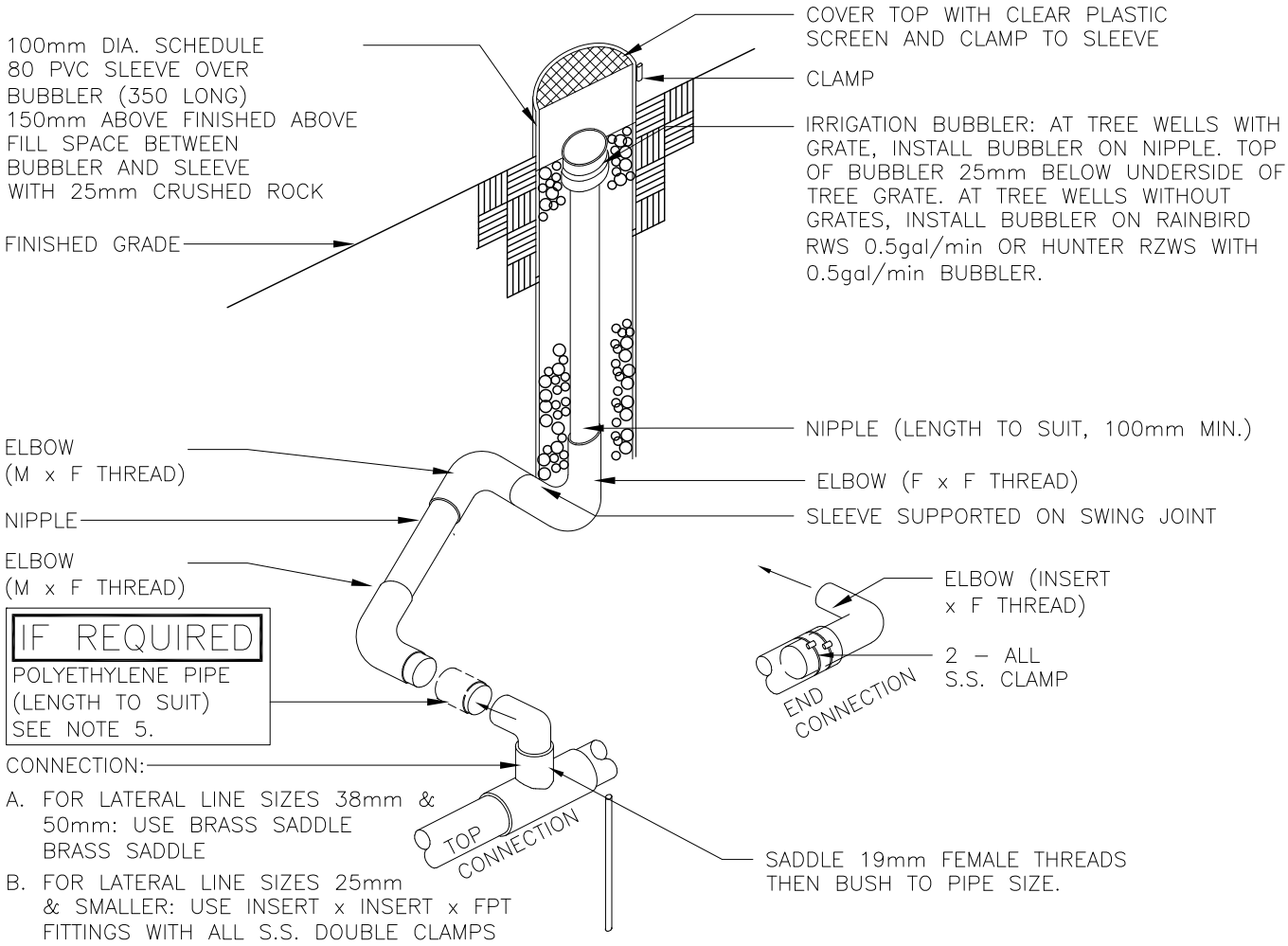
Drawing Title: Connections and Labelling

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-01d

Parks





NOTE:

1. TRIPLE SWING JOINT CONSTRUCTION TO BE

13	19	25	38

mm PVC PIPE.
2. NIPPLES TO BE SCH. 80 PVC PIPE, 150mm LONG, (UNLESS LENGTH OTHERWISE NOTED).
3. ELBOWS TO BE SCH. 40 PVC.
4. MAINTAIN POSITIVE DRAINAGE TO LATERAL LINE.
5. HORIZONTAL EXTENSION TO BE USED ONLY WHEN FIELD CONDITIONS PREVENT THE HEAD FROM BEING DIRECTLY OVER THE LATERAL LINE

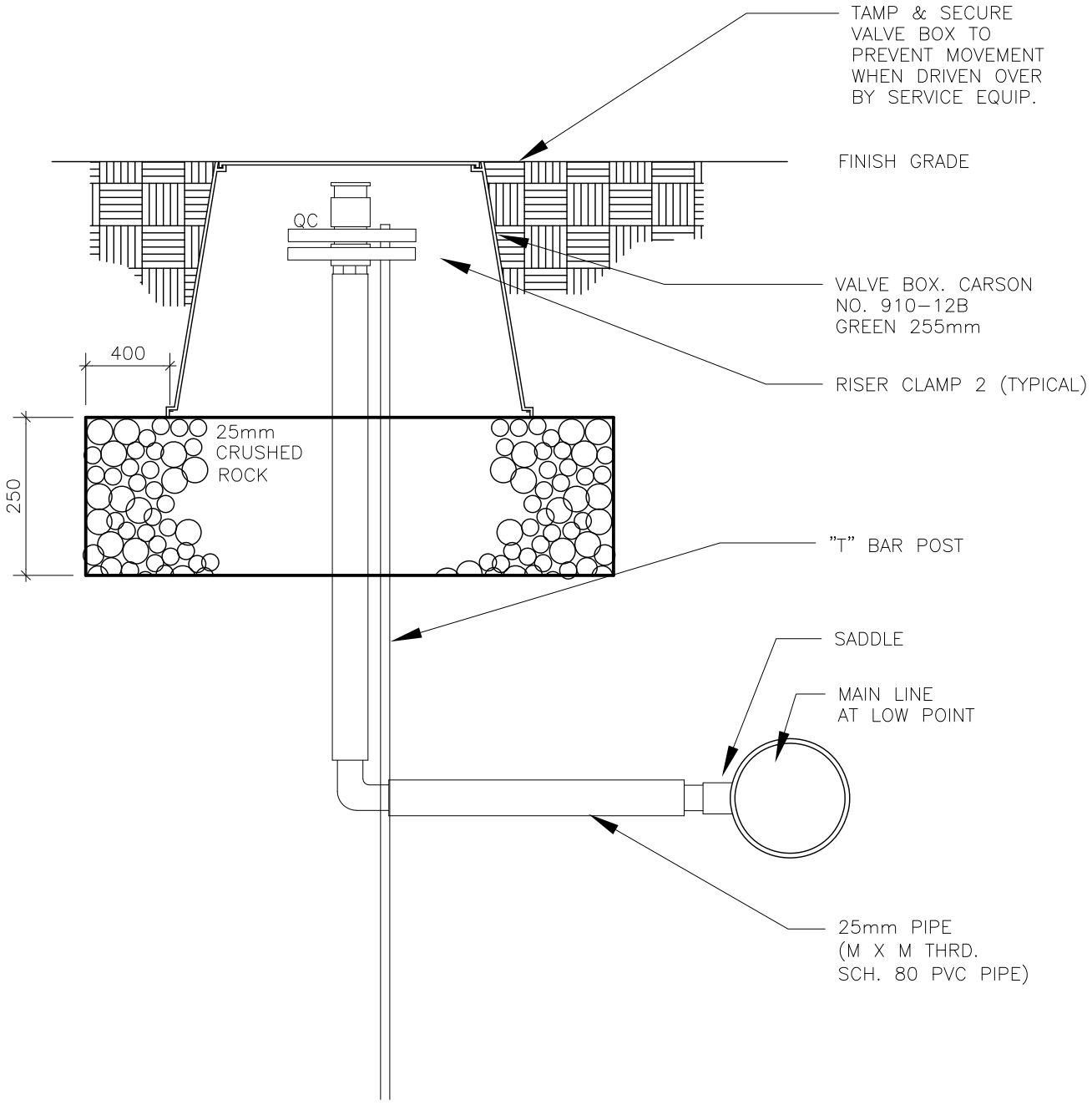
City of Saskatoon

Drawing Title: Bubbler at Tree Well

Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-02

Parks



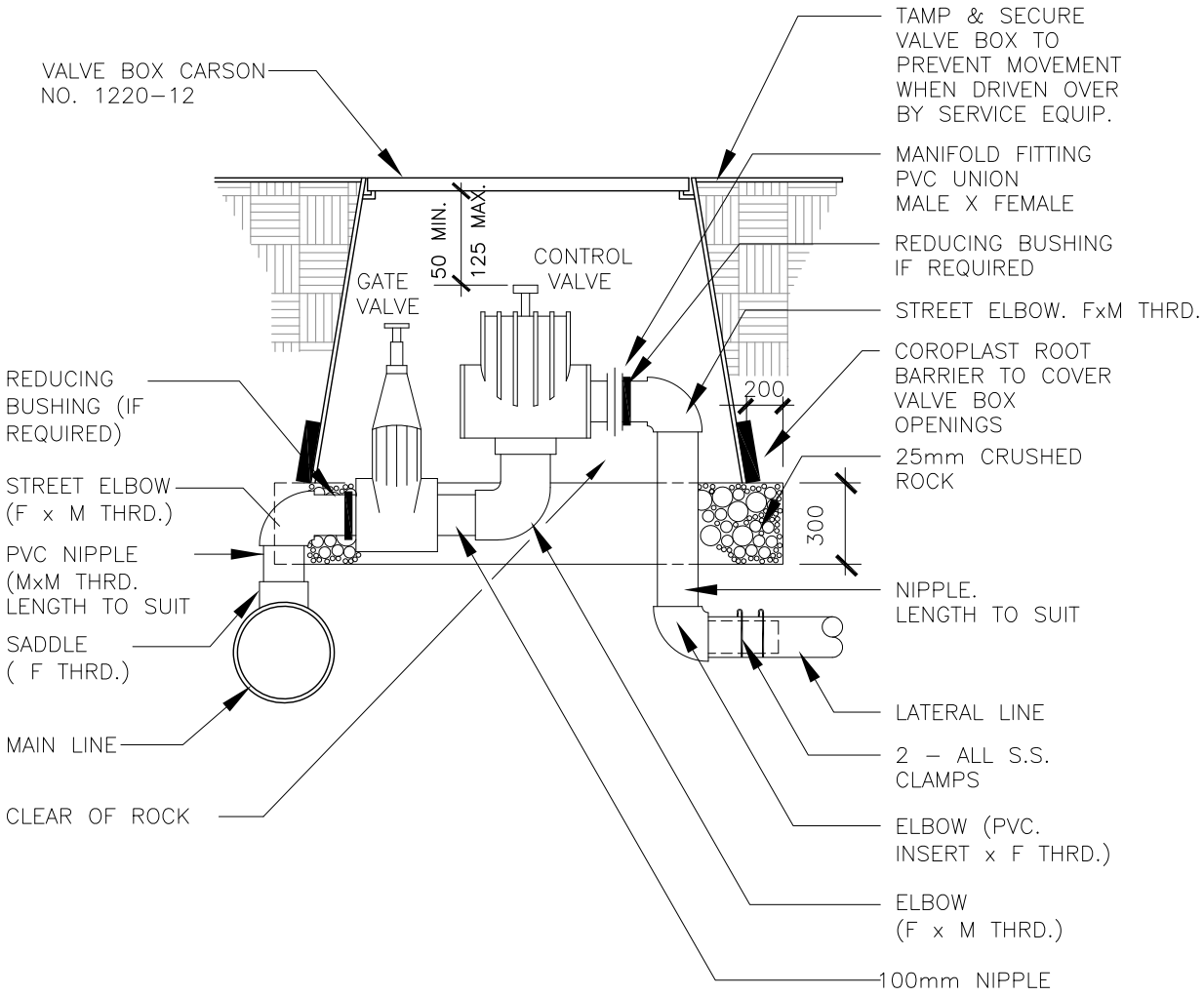
City of Saskatoon

Drawing Title: QC Drain on Main Line

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-03

Parks

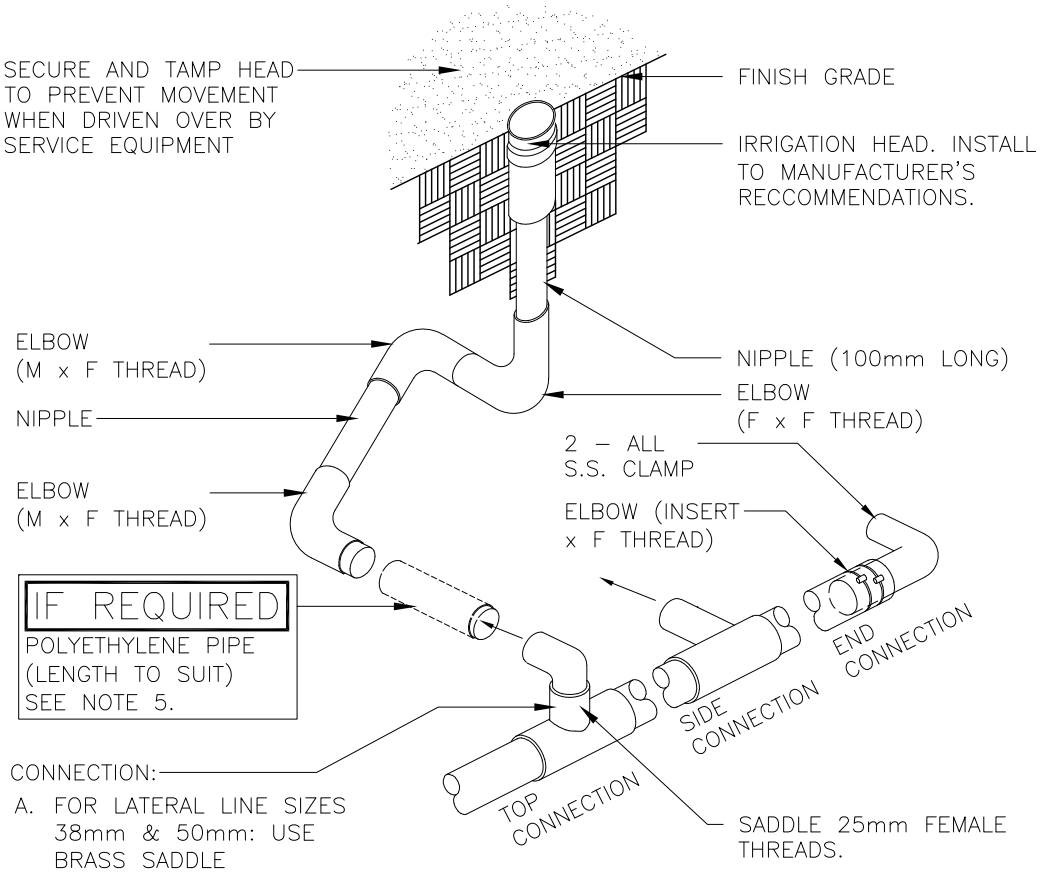


NOTE:

1. SEE PLAN FOR SIZE & CONTROL VALVE SIZE.
   GATE VALVE TO BE SAME SIZE AS THE CONTROL VALVE
2. ELBOWS SHALL BE SCH. 40 PVC.
3. NIPPLES TO BE SCH. 80 PVC PIPE, 50mm LONG, (UNLESS LENGTH OTHERWISE NOTED).
4. CLEARANCE FOR ELECTRIC VALVE IS TO BOTTOM OF 50mm LID. OTHERWISE CLEARANCE IS 100MM TO 175MM BELOW GRADE..

City of Saskatoon

Drawing Title	Drawing No.
Electric Control Valve	02810-04
Drawn: BT Checked: BG Revised Date Y/M/D 15/12/07 Scale: N.T.S.	Parks



NOTE:

1. TRIPLE SWING JOINT CONSTRUCTION TO BE

13	19	25	38

mm PVC PIPE.
2. NIPPLES TO BE SCH. 80 PVC PIPE, 150mm LONG, (UNLESS LENGTH OTHERWISE NOTED).
3. ELBOWS TO BE SCH. 40 PVC.
4. MAINTAIN POSITIVE DRAINAGE TO LATERAL LINE.
5. HORIZONTAL EXTENSION TO BE USED ONLY WHEN FIELD CONDITIONS PREVENT THE HEAD FROM BEING DIRECTLY OVER THE LATERAL LINE.

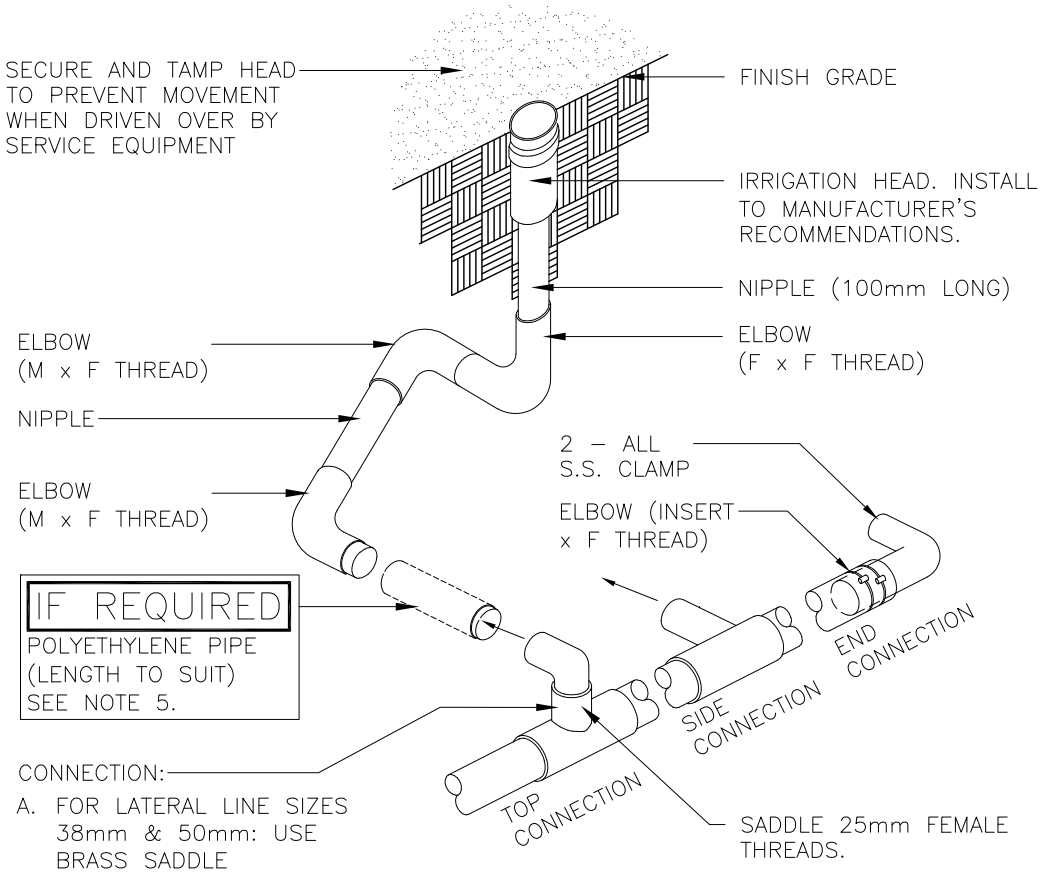
City of Saskatoon

Drawing Title: Irrigation Spray Head

Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-05

Parks



NOTE:

1. TRIPLE SWING JOINT CONSTRUCTION TO BE | 13 | 19 | 25 | 38 | mm PVC PIPE.
2. NIPPLES TO BE SCH. 80 PVC PIPE, 150mm LONG, (UNLESS LENGTH OTHERWISE NOTED).
3. ELBOWS TO BE SCH. 40 PVC.
4. MAINTAIN POSITIVE DRAINAGE TO LATERAL LINE.
5. HORIZONTAL EXTENSION TO BE USED ONLY WHEN FIELD CONDITIONS PREVENT THE HEAD FROM BEING DIRECTLY OVER THE LATERAL LINE.

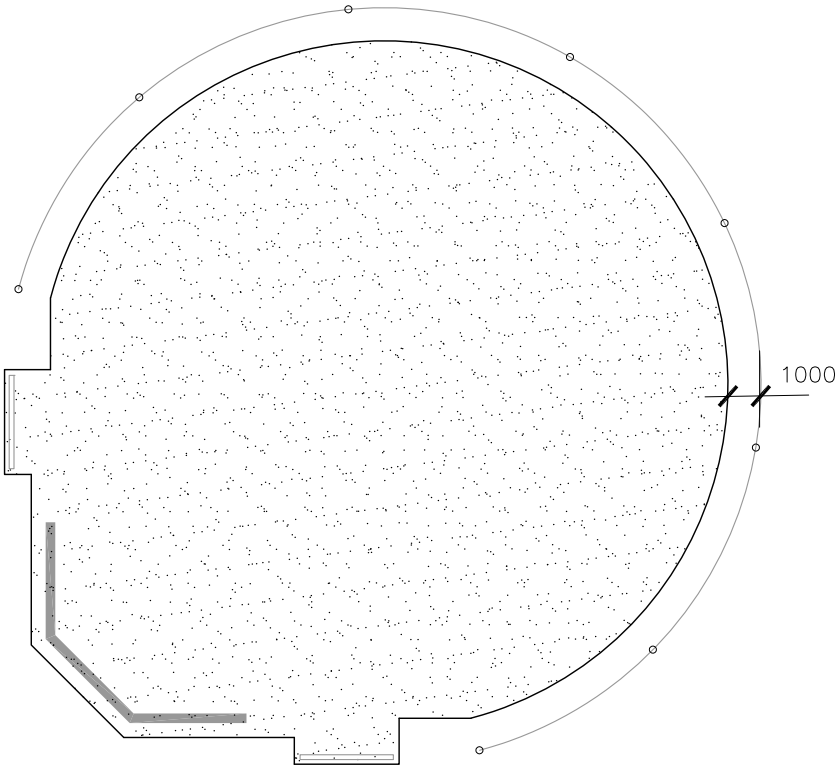
City of Saskatoon

Drawing Title: Irrigation Rotor Sprinkler

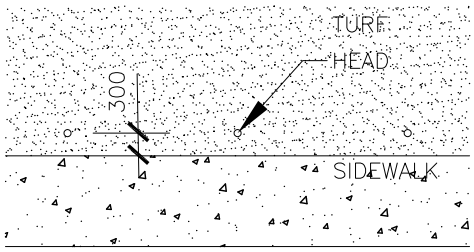
Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-06

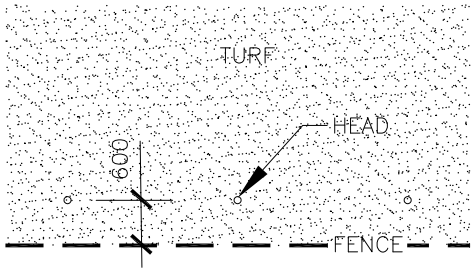
Parks



HEAD LOCATION
ADJACENT TO INFIELD



HEAD LOCATION
ADJACENT TO SIDEWALK



HEAD LOCATION
ADJACENT TO FENCE

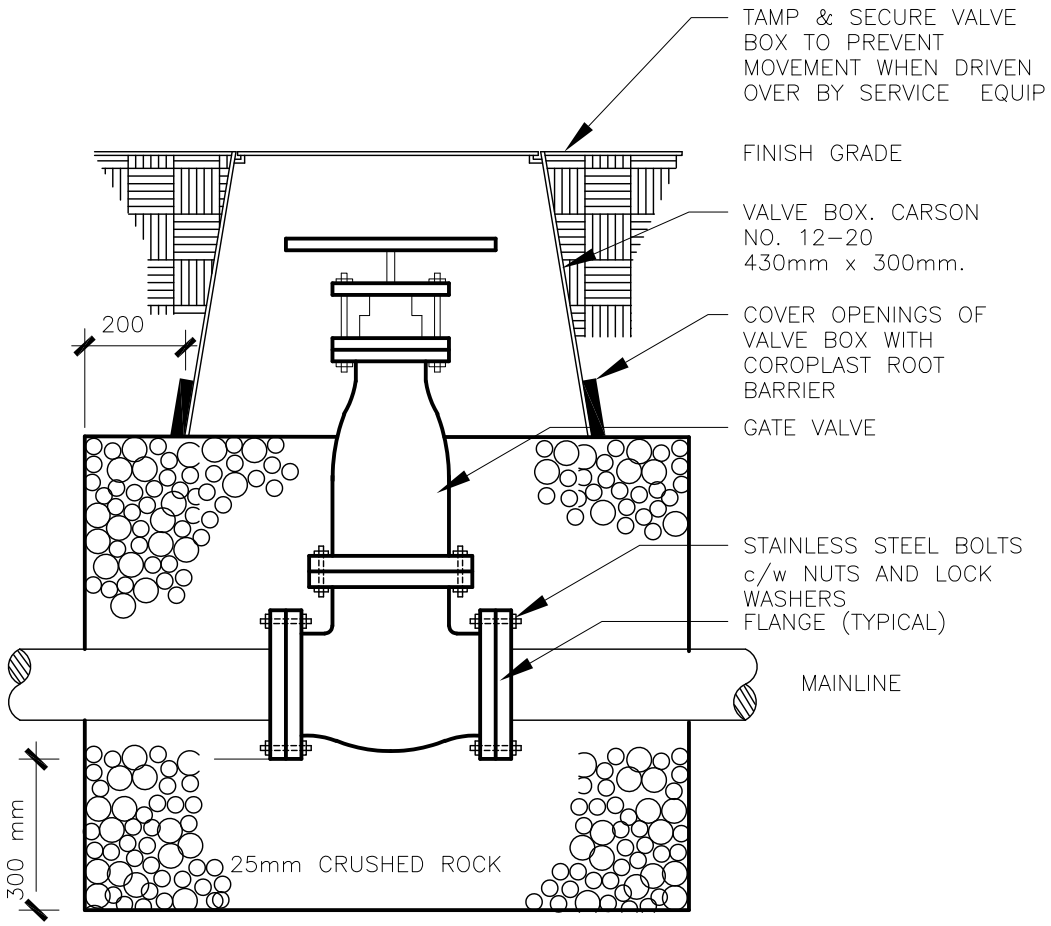
City of Saskatoon

Drawing Title: Irrigation Head locations

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-07

Parks



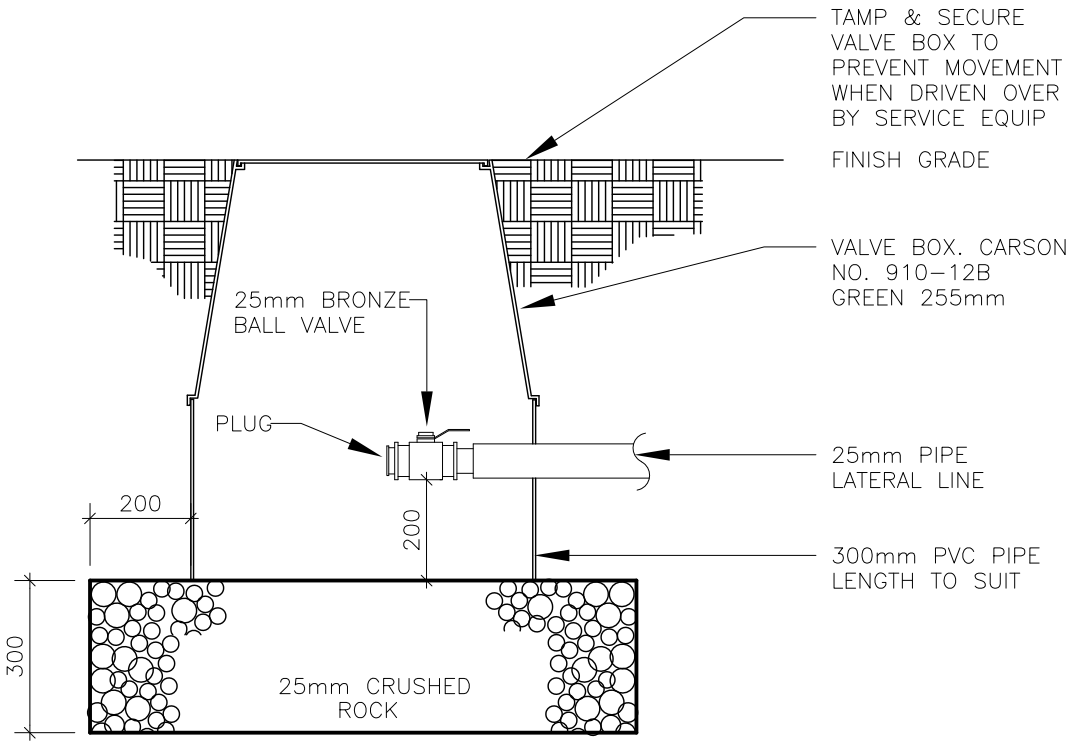
City of Saskatoon

Drawing Title: Isolation Valve: 100mm

Drawing No.: 02810-08

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Parks



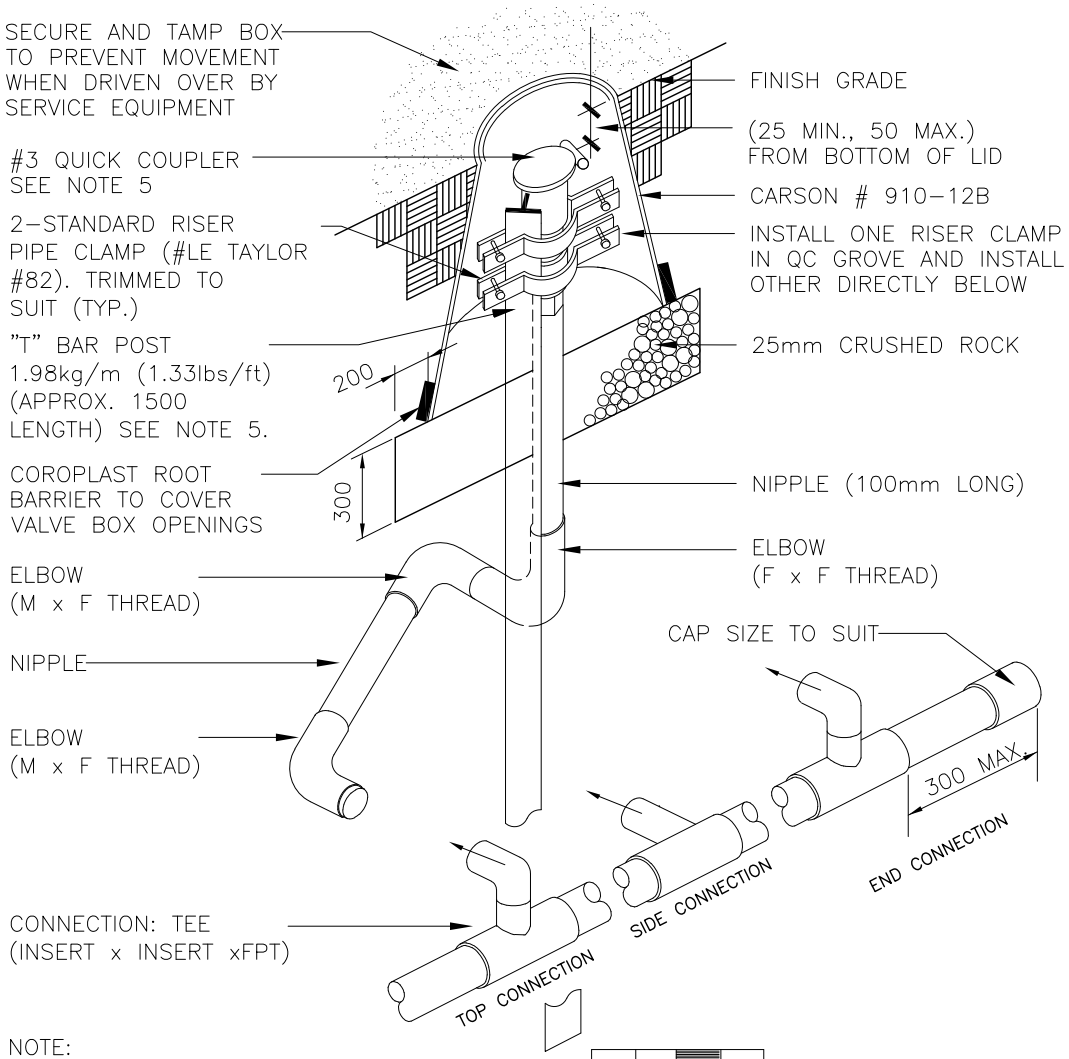
City of Saskatoon

Drawing Title: Lateral Line Median Blow Out

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-09

Parks



NOTE:

1. TRIPLE SWING JOINT CONSTRUCTION TO BE | 13 | 19 | 25 | 38 | mm PVC PIPE.
2. NIPPLES TO BE SCH. 80 PVC PIPE, 150mm LONG, (UNLESS LENGTH OTHERWISE NOTED).
3. ELBOWS TO BE SCH. 40 PVC.
4. MAINTAIN POSITIVE DRAINAGE TO LATERAL LINE.
5. QUICK COUPLER VALVE TO BE SECURED TO PREVENT MOVEMENT WHEN INSERTING VALVE KEY. INSTALL VALVE IN CENTRE OF VALVE BOX.

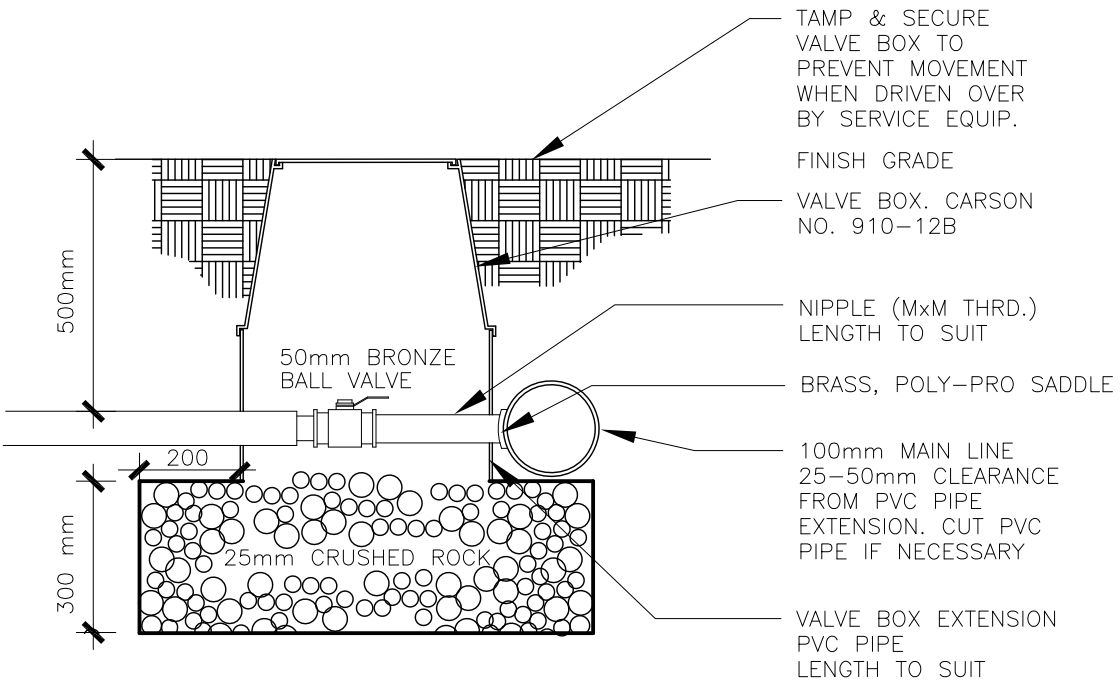
City of Saskatoon

Drawing Title: Quick Coupler Valve

Drawing No.: 02810-10

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Parks



NOTE: UNIONS TO ADDED IF QUICK COUPLERS FOR INFIELD WATERING

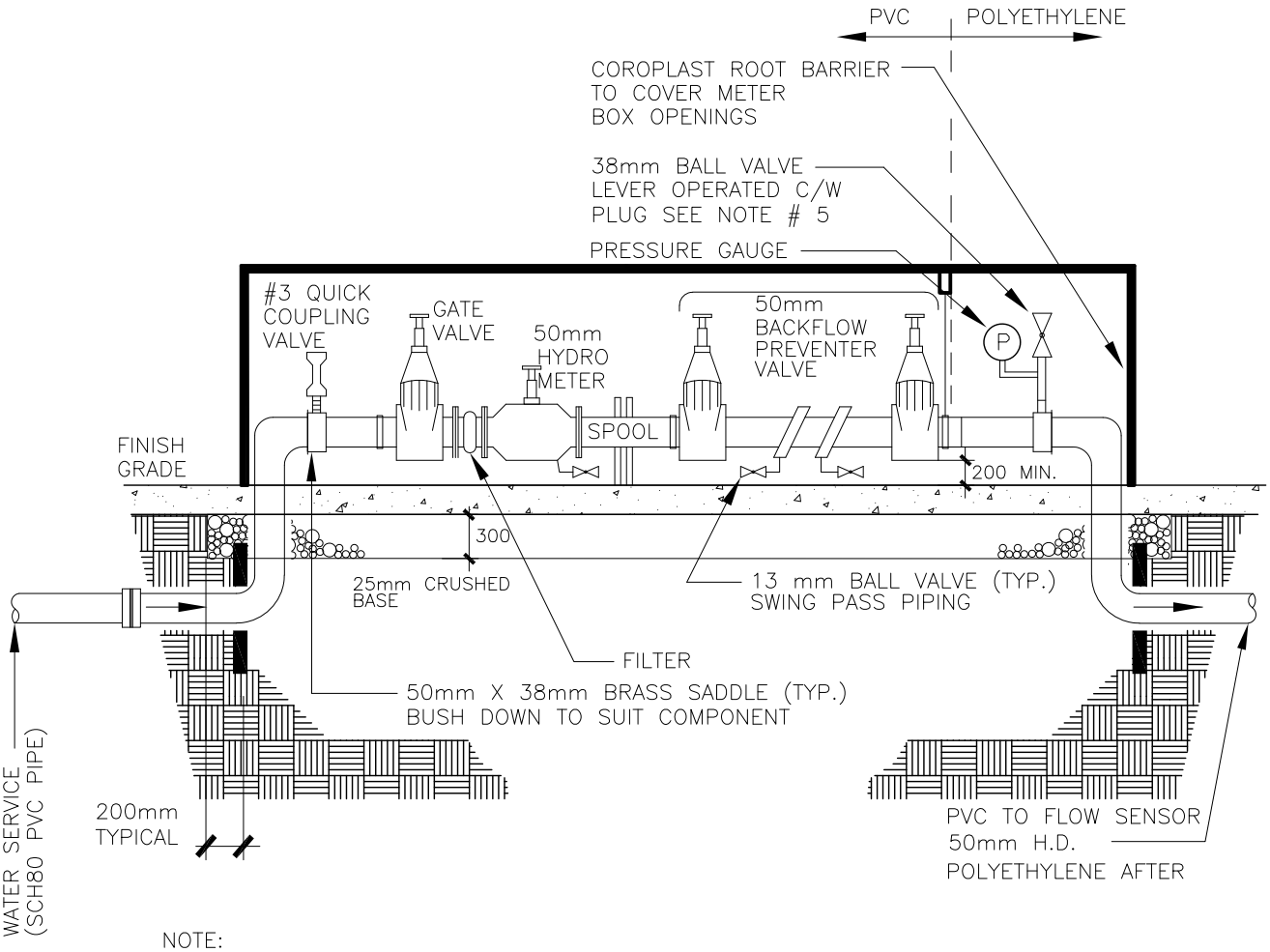
City of Saskatoon

Drawing Title: Quick Coupler Isolation Valve

Drawn: BT Checked: BG Revised Date Y/M/D 181108 Scale: N.T.S.

Drawing No. 02810-11

Parks



NOTE:

1. INSTALL AS PER CLEARANCES SUGGESTED BY THE MANUFACTURER.
2. SERVICE BOX TO BE SUPPLIED BY CONTRACTOR
3. THREADED PVC PLUGS TO BE INSTALLED IN ALL OPEN END VALVES (ie. DRAINS & TEST COCKS ETC.).
4. INSTALL ONLY BRASS SADDLES IN SERVICE BOX.
5. MAXIMUM DISTANCE AT INLET AND OUTLET OF BOX IS 300mm TO FLANGE.
6. LENGTH OF STRAIGHT PIPE BEFORE METER IS 5 X PIPE DIA. AND 3 X PIPE DIA. AFTER METER.

City of Saskatoon

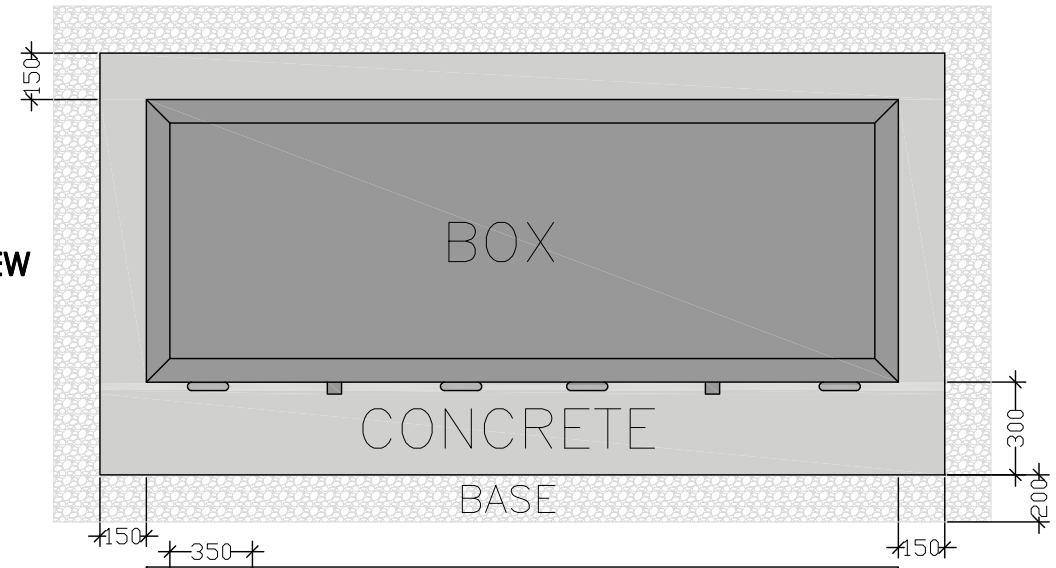
Drawing Title: Above Ground Service Box 50mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 17/12/06 | Scale: N.T.S.

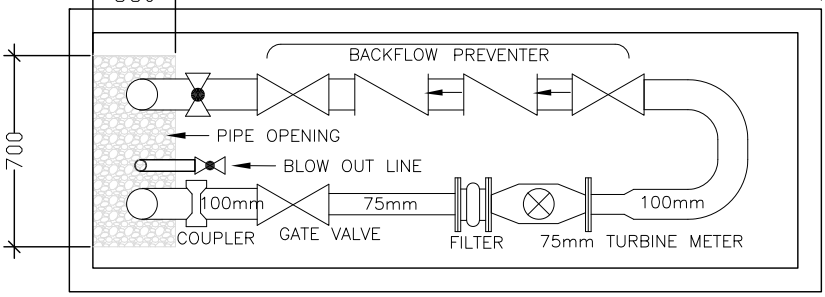
Drawing No. 02810-12

Parks

TOP VIEW



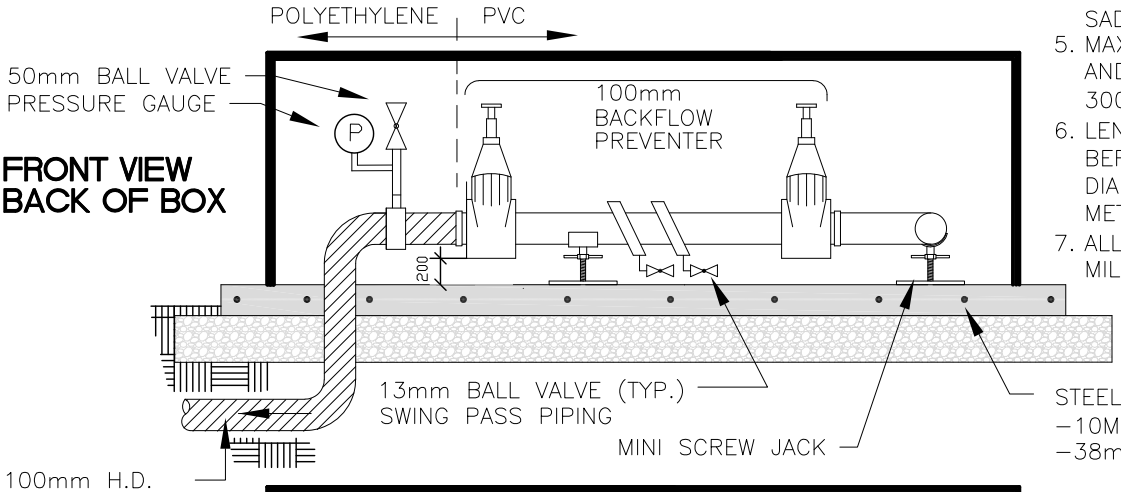
TOP VIEW



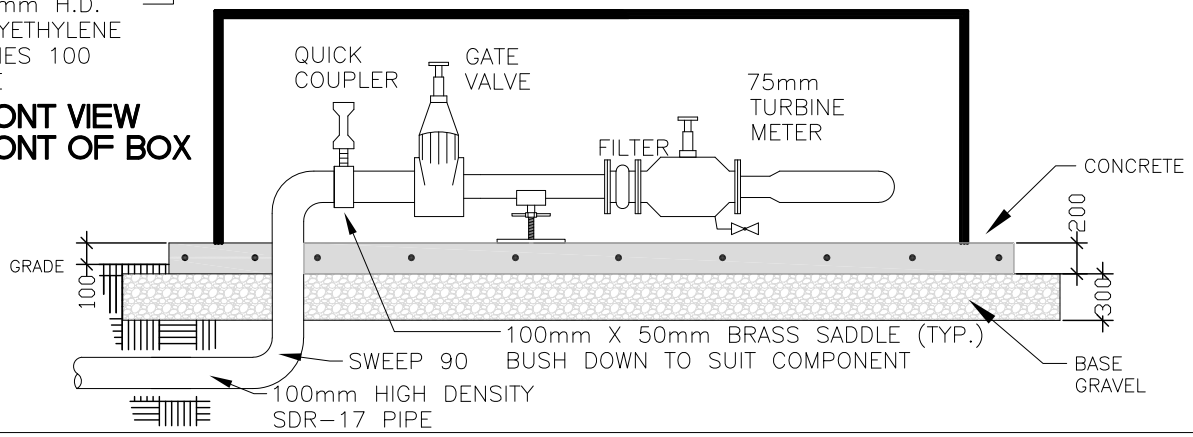
NOTE:

1. INSTALL PER CLEARANCES RECOMMENDED BY MANUFACTURER.
2. SERVICE BOX SUPPLIED BY CONTRACTOR
3. THREADED PVC PLUGS INSTALLED IN ALL OPEN END VALVES (ie. DRAINS & TEST COCKS ETC.).
4. INSTALL ONLY BRASS SADDLES IN SERVICE BOX.
5. MAXIMUM DISTANCE AT INLET AND OUTLOOK OF BOX IS 300mm TO FLANGE.
6. LENGTH OF STRAIGHT PIPE BEFORE METER IS 5 X PIPE DIA. AND 3 X PIPE DIA AFTER METER.
7. ALL DIMENSIONS ARE IN MILLIMETERS

FRONT VIEW BACK OF BOX



FRONT VIEW FRONT OF BOX



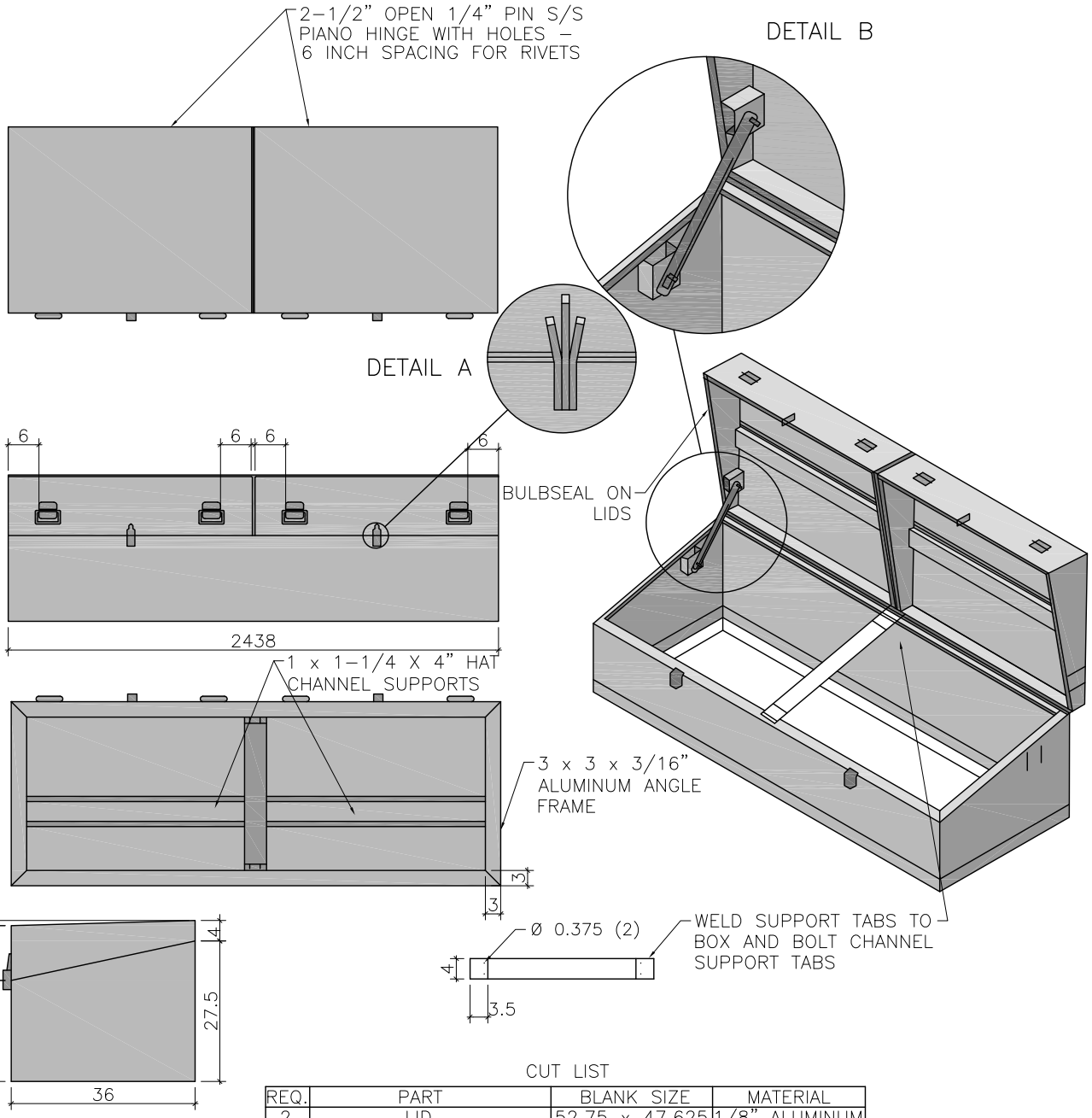
City of Saskatoon

Drawing Title: Above Ground Service Box -100mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 18/12/04 | Scale: N.T.S.

Drawing No. 02810-12a

Parks



CUT LIST

REQ.	PART	BLANK SIZE	MATERIAL
2	LID	52.75 x 47.625	1/8" ALUMINUM
4	LID END	11.75 x 36	1/8" ALUMINUM
2	BODY - SIDE	30 x 36	1/8" ALUMINUM
1	BODY - BACK	30 x 96	1/8" ALUMINUM
1	BODY - FRONT	22.25 x 96	1/8" ALUMINUM
1	CENTRE CHANNEL	4 x 36	1/8" ALUMINUM
2	SUPPORT TAB	3 - 1/2 x 4	1/8" ALUMINUM
2	LID SUPPORT CHANNEL	8.5 x 48	1/8" ALUMINUM
2	ARM SUPPORT	2 x 19.875	1/4" ALUMINUM

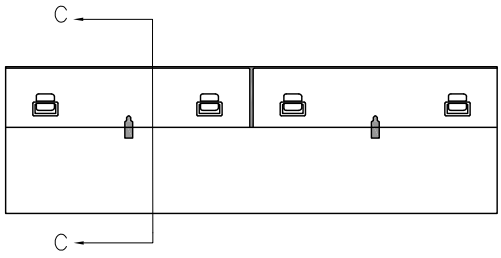
City of Saskatoon

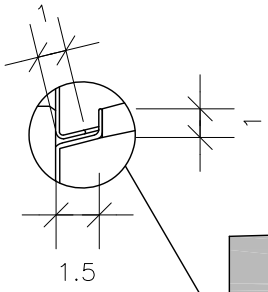
Drawing Title: Service Box Fabrication- 100mm

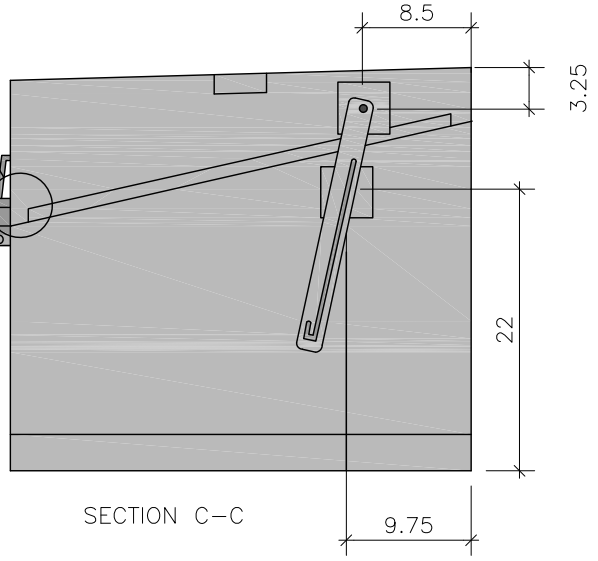
Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

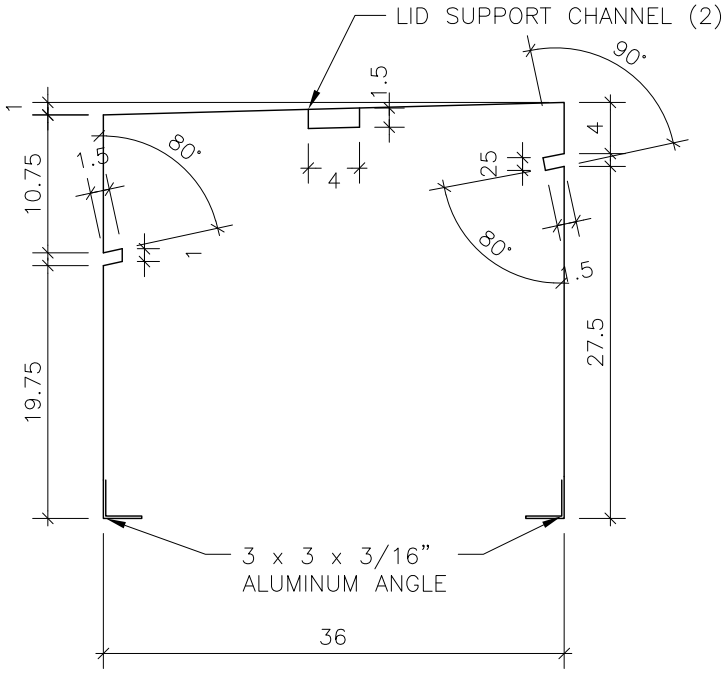
Drawing No. 02810-13a

Parks

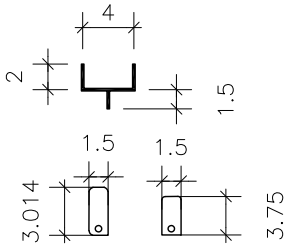




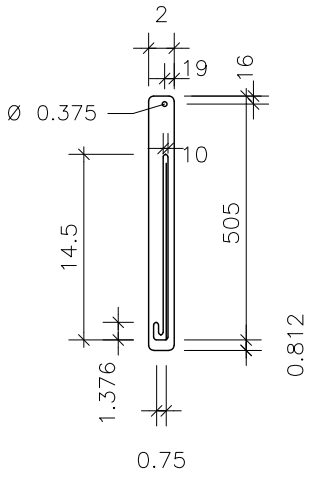




ARM SUPPORT BRACKET (4)
1/8" ALUMINUM/3/8 x 1–1/2 BOLT
3/8 NUTS/3/8 WASHERS



ARM SUPPORT (2)
1/4" ALUMINUM



City of Saskatoon

Drawing Title: Service Box Fabrication- 100mm

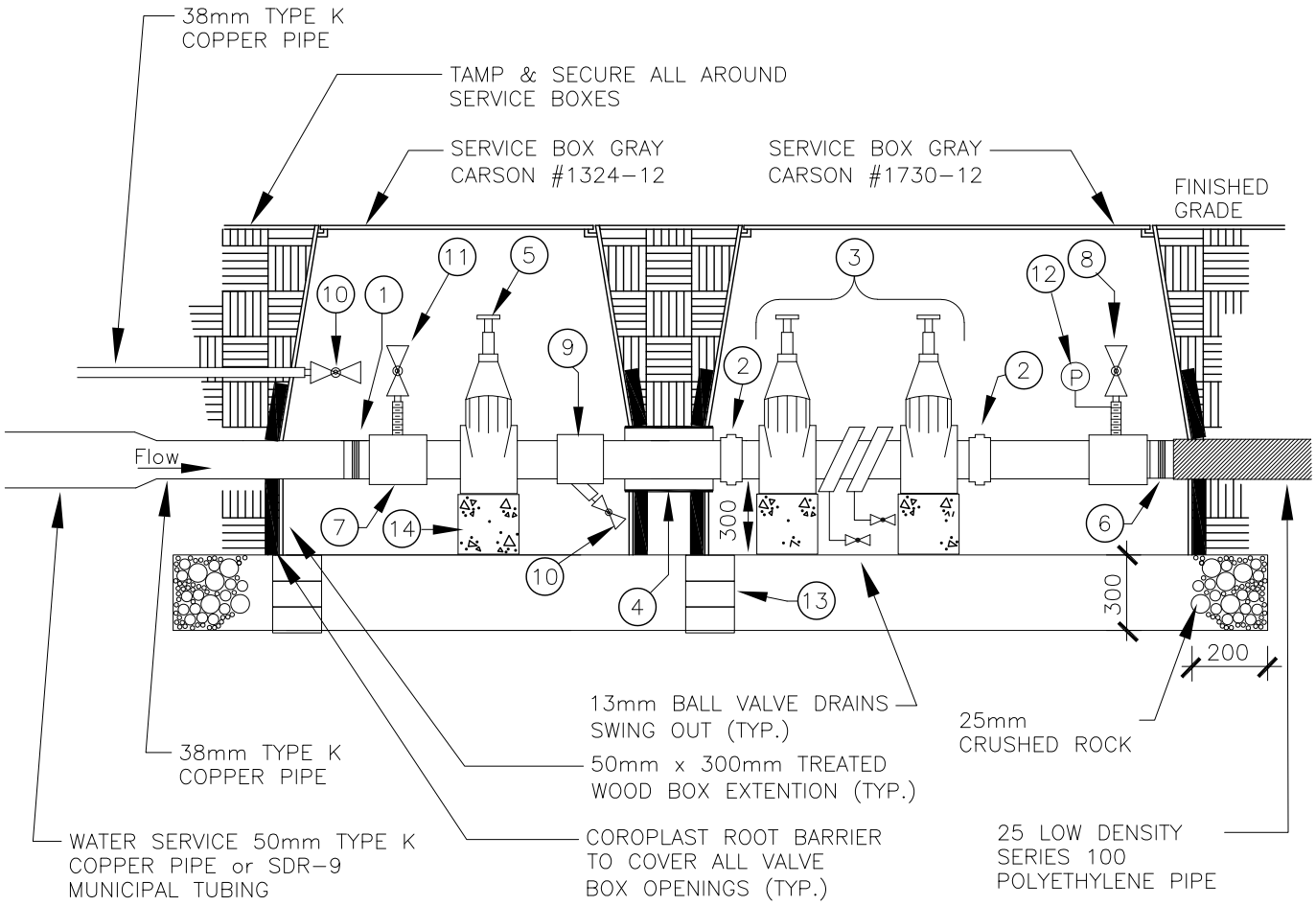
Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-13b

Parks

8.5"x11" (Letter) (215.9mm x 279.4mm)

1. BRASS FITTING SWEAT X M.I.P ADAPTER
2. BRASS UNION
3. 38mm BACK FLOW PREVENTER
4. 100mm SLEEVE
5. 38mm GATE VALVE
6. BRASS FITTING INSERT X M.I.P ADAPTER
7. 38mm BRASS TEE (TYP.)
8. 38mm BALL VALVE
9. 38mm STRAINER
10. 19mm BALL VALVE
11. 25mm BALL VALVE
12. PRESSURE GAUGE
13. FACE BRICKS. INSTALL ON EACH CORNER OF EACH BOX
14. CONCRETE BLOCK



NOTE:

1. SERVICE BOXES TO BE SUPPLIED BY CONTRACTOR.
2. ALL FITTINGS WITHIN THE SERVICE BOXES TO BE BRASS
3. THREADED PVC PLUGS TO BE INSTALLED IN ALL OPEN END VALVES (ie DRAINS & TEST COCKS ETC.)

P:\PROJECTS\4209 Landscape\2-Master Specs\2022 Park Development Guidelines and Standard Construction Specifications\11-Drawings\02810-14 Service Box for Median - 38mm.dwg

City of Saskatoon

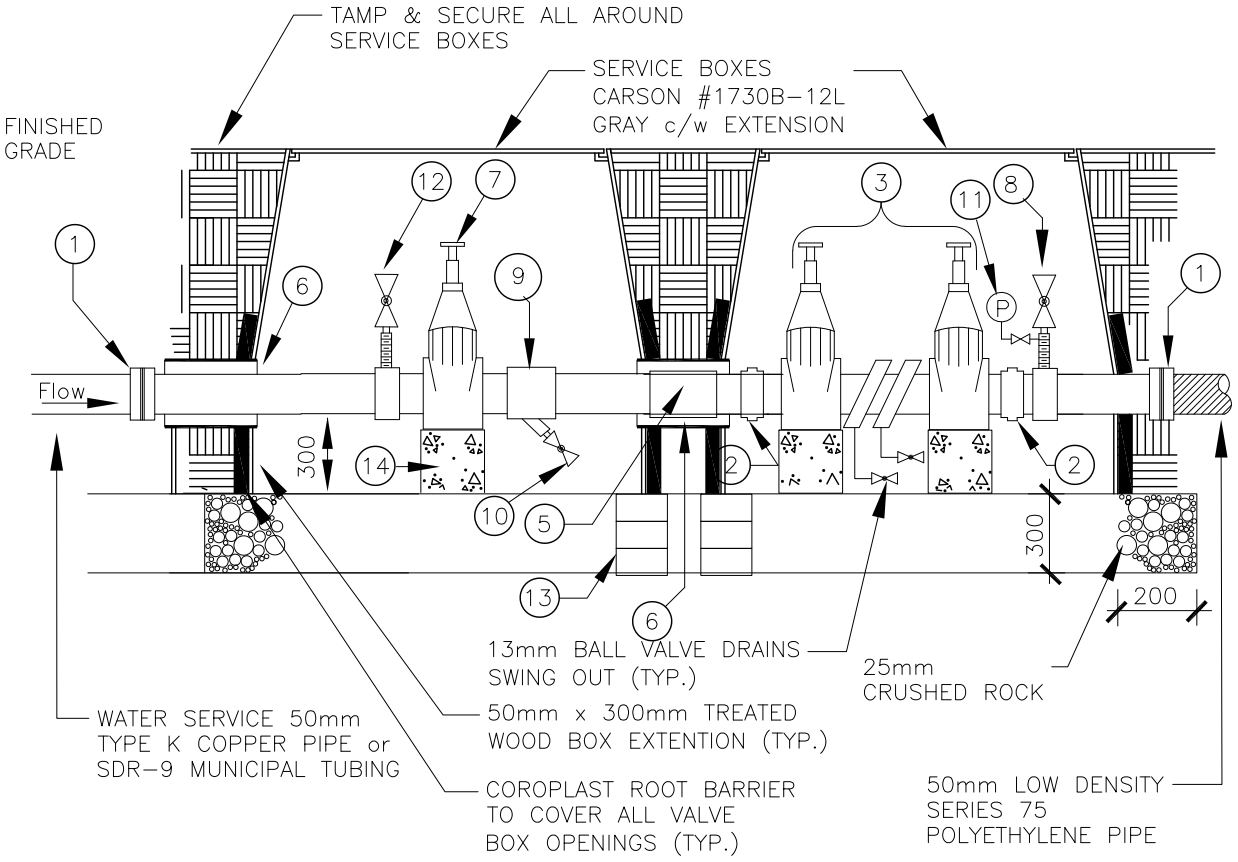
Drawing Title: Service Box for Median:38mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-14

Parks

1. BRASS FITTING SWEAT x THREAD
2. BRASS UNION
3. 50mm BACK FLOW PREVENTER
4. SPARE
5. 50mm EXPANSION JOINT OPTIONAL AT CONTRACTORS DISCRETION
6. 100mm SLEEVE
7. 50mm GATE VALVE
8. 38mm BALL VALVE
9. 50mm STRAINER
10. 19mm BALL VALVE
11. PRESSURE GAUGE C/W ISOLATION COCK
12. 25mm BALL VALVE
13. FACE BRICKS. INSTALL ON EACH CORNER OF EACH BOX
14. CONCRETE BLOCK



NOTE:

1. SERVICE BOXES TO BE SUPPLIED BY CONTRACTOR.
2. ALL FITTINGS WITHIN THE SERVICE BOXES TO BE BRASS
3. THREADED PVC PLUGS TO BE INSTALLED IN ALL OPEN END VALVES (ie DRAINS & TEST COCKS ETC.)

City of Saskatoon

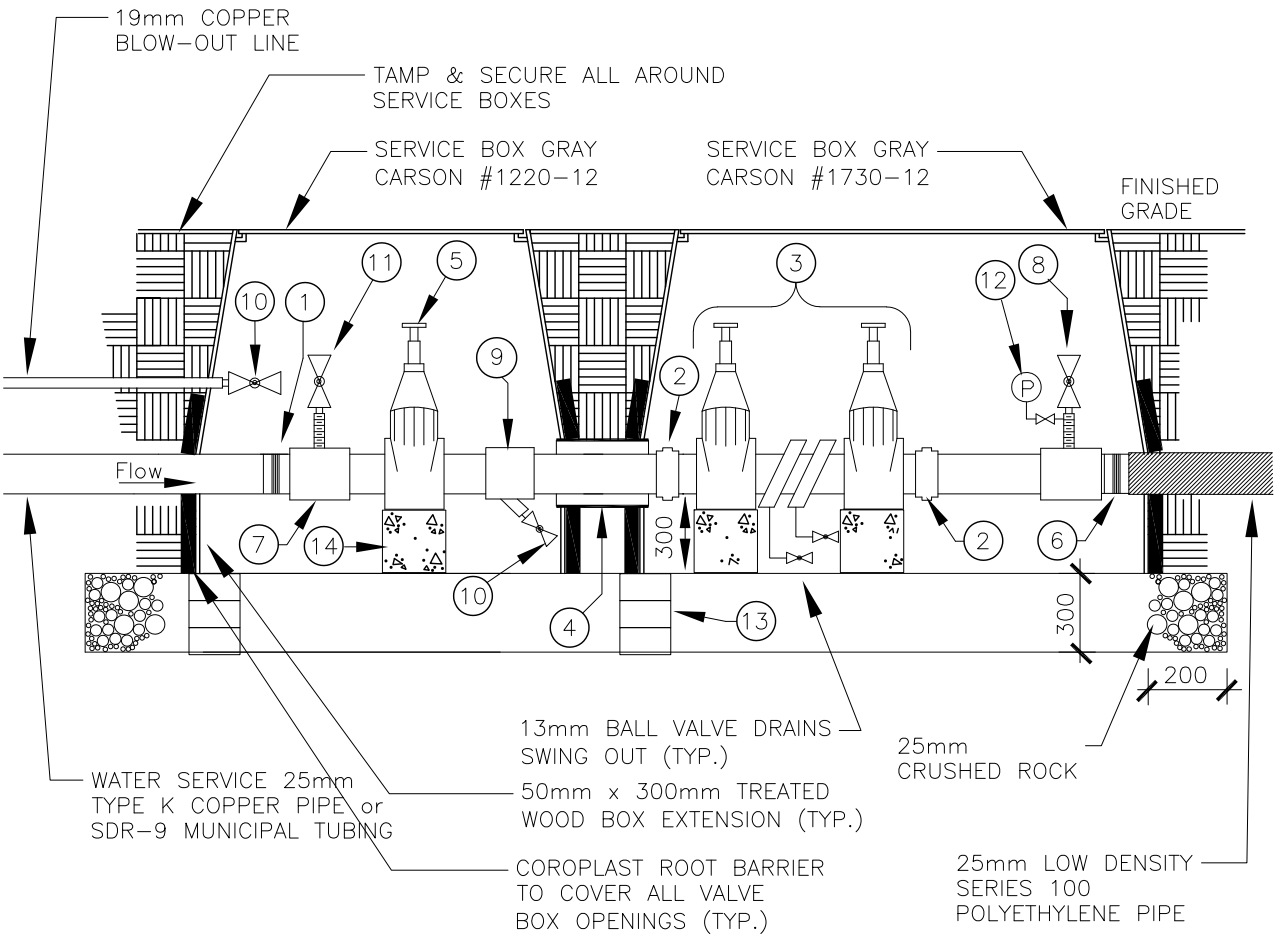
Drawing Title: Service Boxes for Median:50mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-15

Parks

1. BRASS FITTING SWEAT X M.I.P ADAPTER
2. BRASS UNION
3. 25mm BACK FLOW PREVENTER
4. 100mm SLEEVE
5. 25mm GATE VALVE
6. BRASS FITTING INSERT X M.I.P ADAPTER
7. 25mm BRASS TEE (TYP.)
8. 38mm BALL VALVE
9. 25mm STRAINER
10. 19mm BALL VALVE
11. 25mm BALL VALVE
12. PRESSURE GAUGE
13. FACE BRICKS. INSTALL ON EACH CORNER OF EACH BOX
14. CONCRETE BLOCK



NOTE:

1. SERVICE BOXES TO BE SUPPLIED BY CONTRACTOR.
2. ALL FITTINGS WITHIN THE SERVICE BOXES TO BE BRASS
3. THREADED PVC PLUGS TO BE INSTALLED IN ALL OPEN END VALVES (ie DRAINS & TEST COCKS ETC.)
4. BLOW-OUT LINE NOT APPLICABLE HERE.

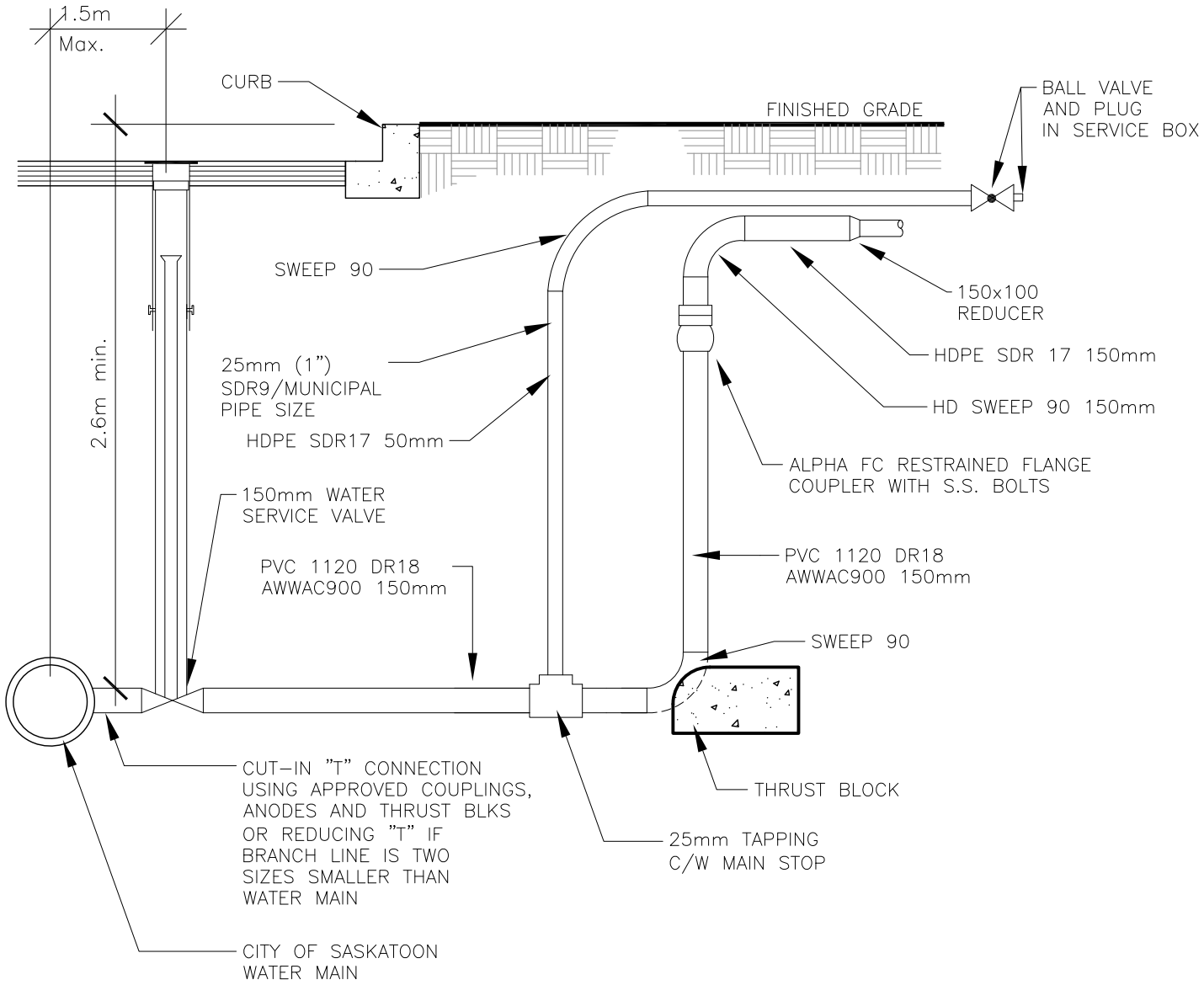
City of Saskatoon

Drawing Title: Service Box for Median:25mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-16

Parks



NOTE:

1. WATER AND SEWER CONTRACTOR RESPONSIBLE TO BRING WATER LINE AND BLOW OUT LINE STRAIGHT UP TO SURFACE ONLY. IRRIGATION CONTRACTOR RESPONSIBLE FOR SWEEP 90'S TO DIRECT THE LINES INTO THE SERVICE BOX.

2. CONSTRUCTION TO CONFORM TO WATER AND SEWER STANDARDS OF THE CITY OF SASKATOON, EXCEPT WHERE OTHERWISE NOTED.

3. BRING WATER LINES UP 1m INSIDE PROPERTY LINE.

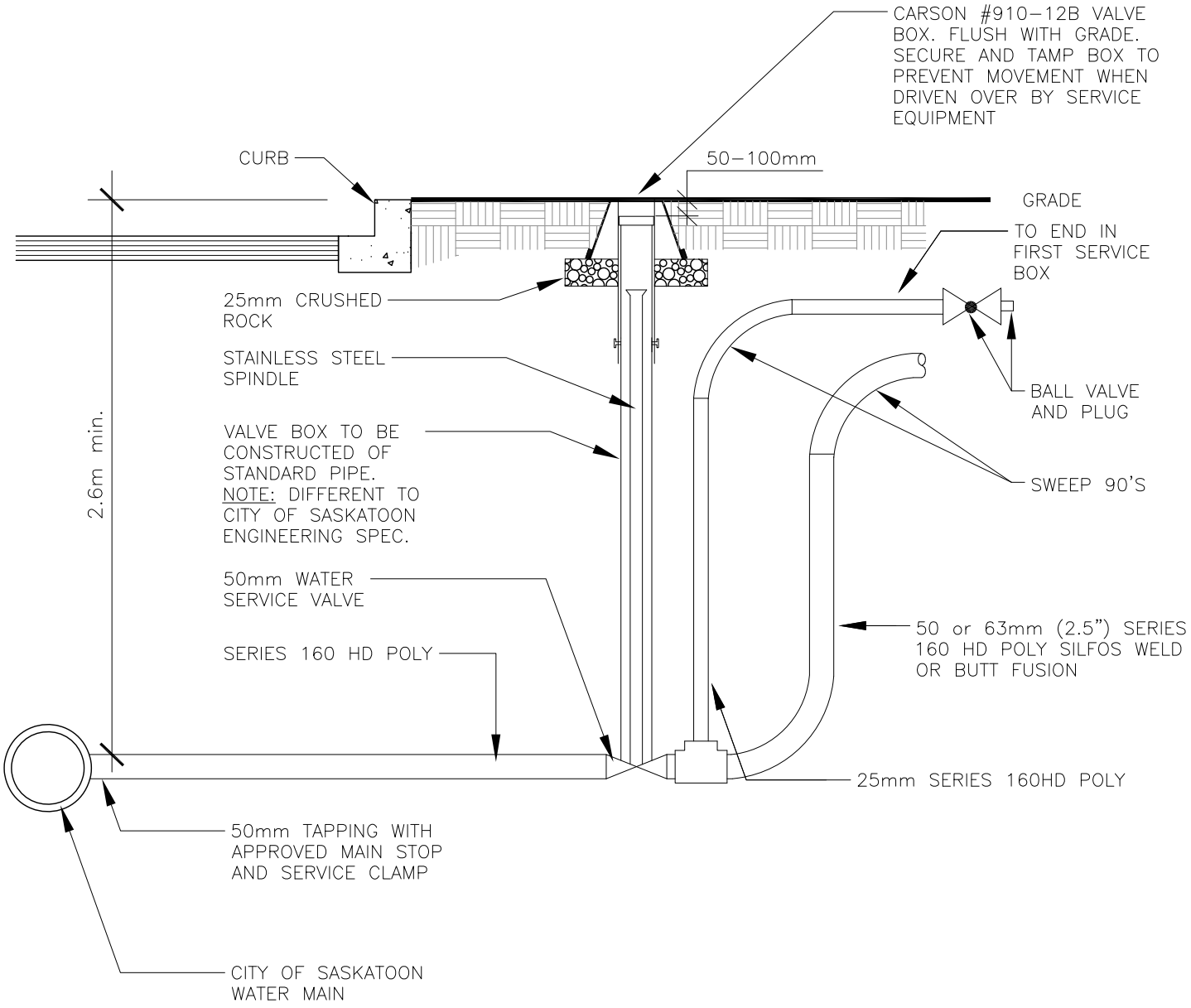
City of Saskatoon

Drawing Title: Water Service Connection:150mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 19/1/10 | Scale: N.T.S.

Drawing No. 02810-17

Parks



NOTE:

1. WATER AND SEWER CONTRACTOR RESPONSIBLE TO BRING WATER LINE AND BLOW OUT LINE STRAIGHT UP TO SURFACE ONLY. IRRIGATION CONTRACTOR RESPONSIBLE FOR SWEEP 90'S TO DIRECT THE LINES INTO THE SERVICE BOX.
2. CONSTRUCTION TO CONFORM TO WATER AND SEWER STANDARDS OF THE CITY OF SASKATOON, EXCEPT WHERE OTHERWISE NOTED.
3. BRING WATER LINES UP 1M INSIDE OF PROPERTY LINE.

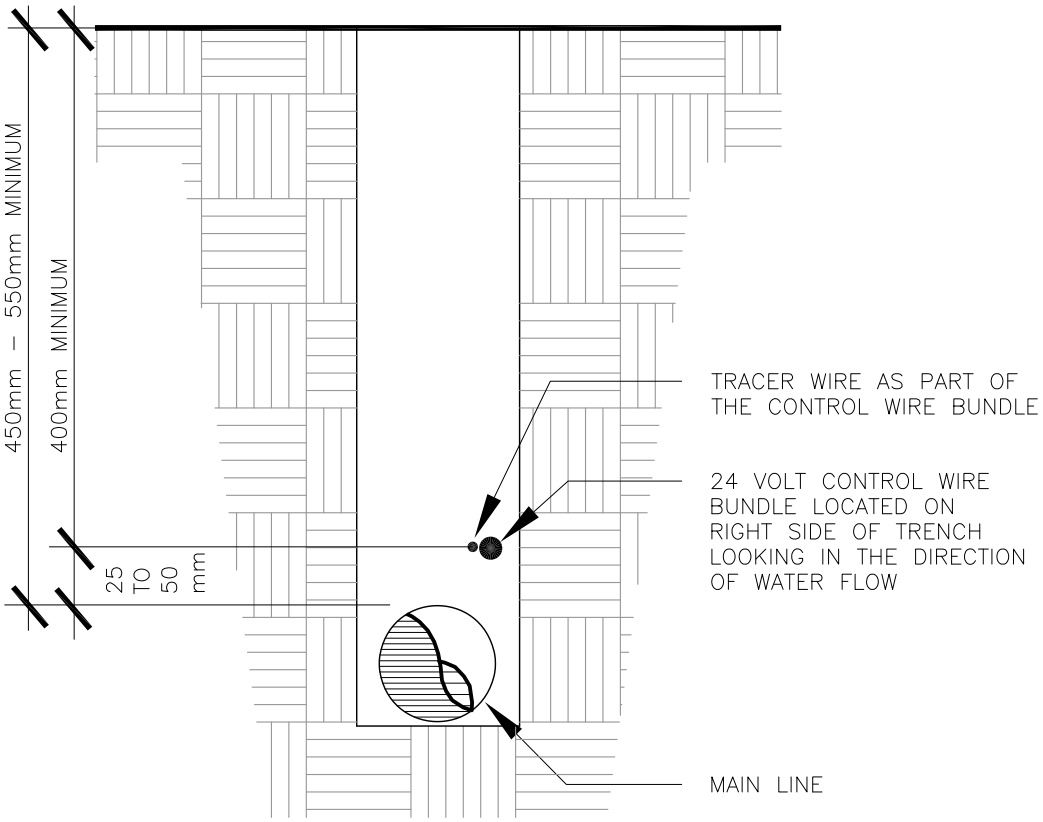
City of Saskatoon

Drawing Title: Water Service Connection:50mm

Drawn: BT | Checked: BG | Revised Date Y/M/D 19/01/10 | Scale: N.T.S.

Drawing No. 02810-18

Parks



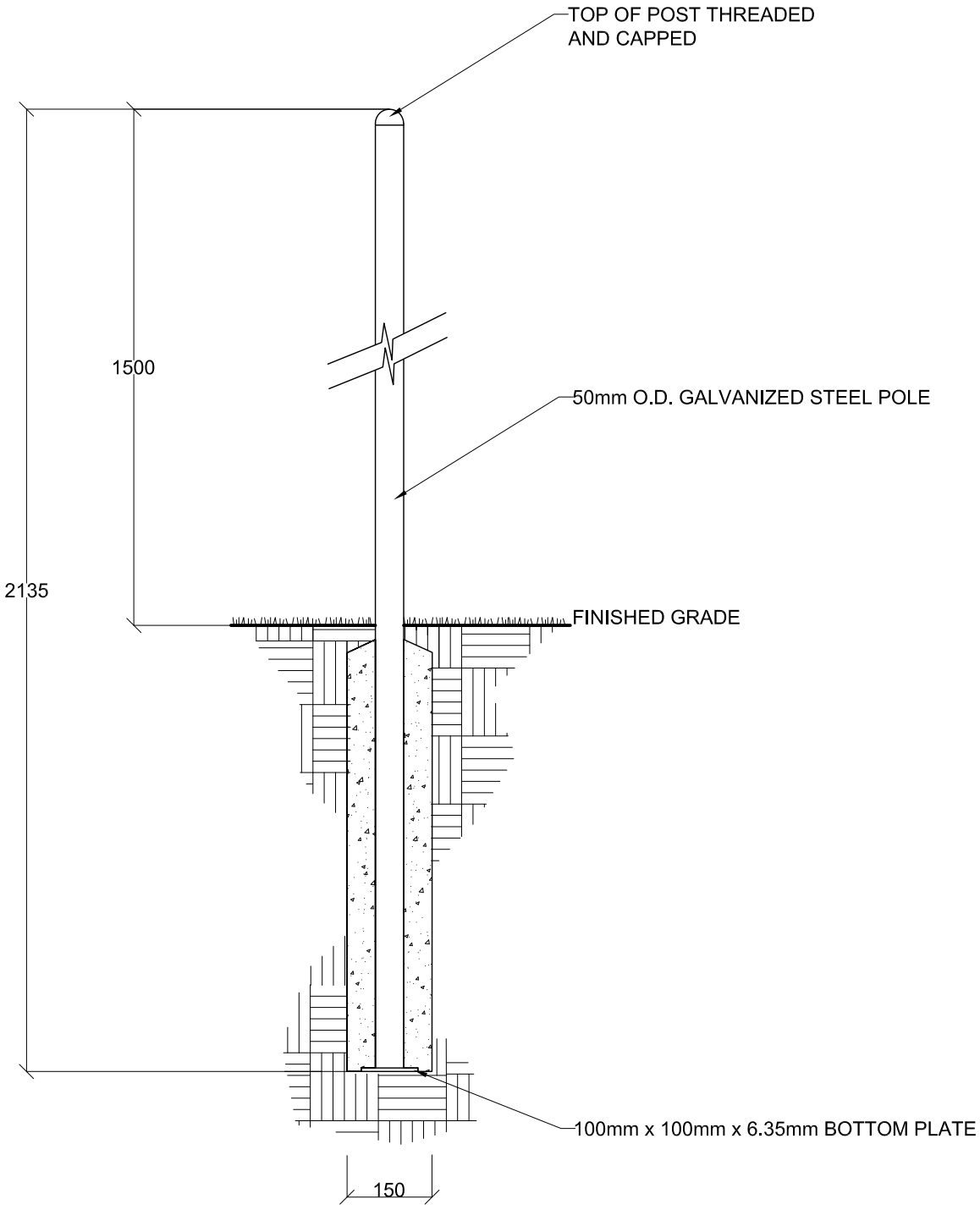
City of Saskatoon

Drawing Title: Wiring for Main Line Trench

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-19

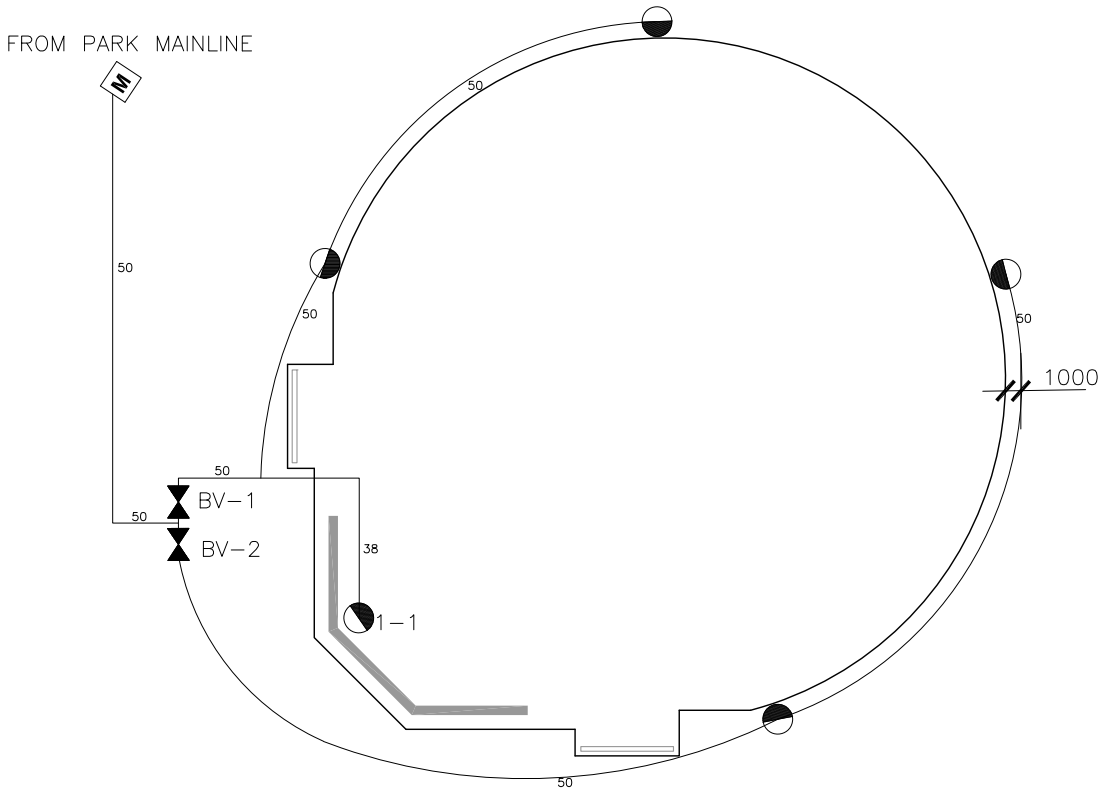
Parks



NOTE:
1. Units are in millimeters
2. Painted brown
3. Installed at street side right front corner of box.

City of Saskatoon

Drawing Title				Drawing No.
Irrigation Service Box Marking Post				02810-20
Drawn: BG	Checked: BT	Revised Date Y/M/D 13/11/08	Scale: N.T.S.	Parks



IRRIGATION LEGEND

◒	SPRINKLER HEAD, RAINBIRD FALCON 6504 S.S. HIGH SPEED ADJUSTABLE ARC 30 TRAJECTORY NOZZLE #12, 16.7m (55ft.) RADIUS, 0.68 l/s (11.0 gpm) AT 481kpa (50psi) FOR HEAD TO HEAD COVERAGE
⋈	BALL VALVE, BOTH BALL VALVES IN ONE CARSON BOX
50	LATERAL LINES, SERIES 75 CSA CERTIFIED LOW DENSITY POLYETHYLENE, LINE SIZES AS SHOWN (50mm).

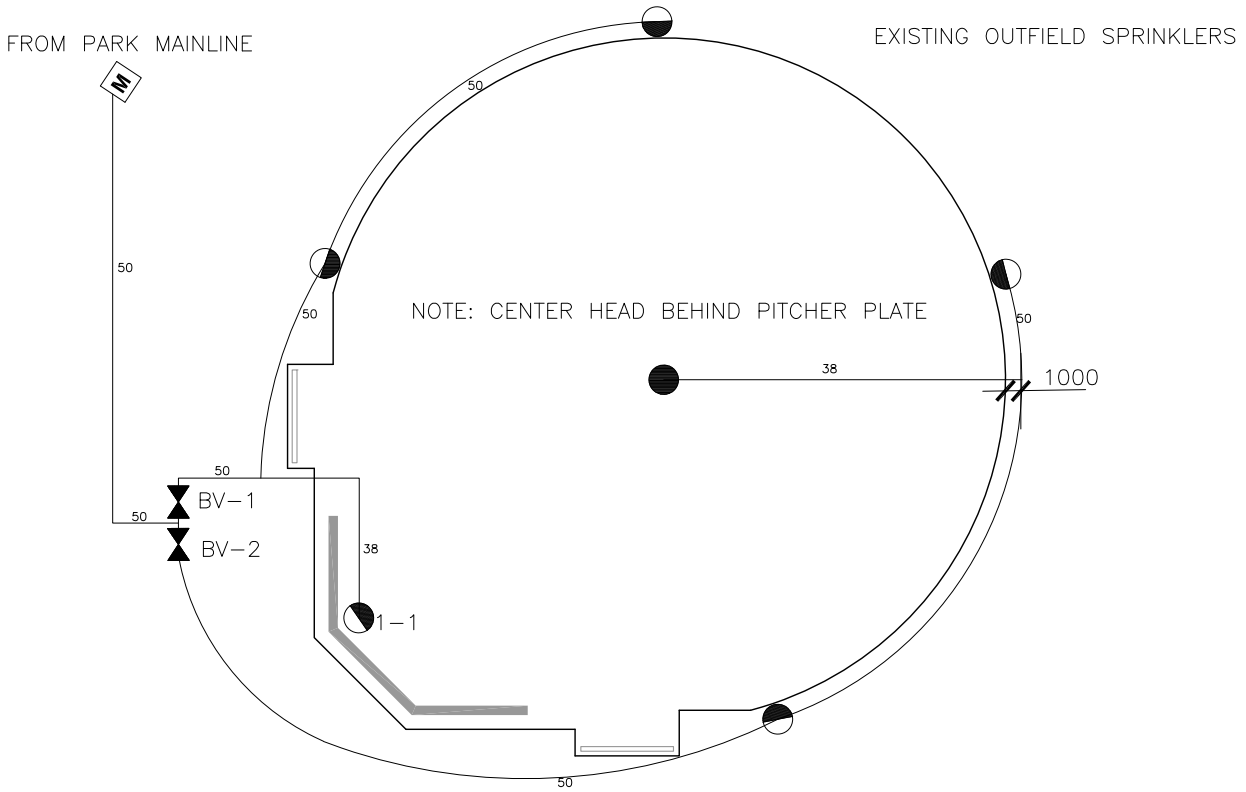
City of Saskatoon

Drawing Title: Shale Infield Watering Sprinkler Layout

Drawn: MH | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-21

Parks



IRRIGATION LEGEND

- SPRINKLER HEAD, RAINBIRD FALCON 6504 S.S. FULL CIRCLE 25 TRAJECTORY NOZZLE #12, 16.7m (55ft.) RADIUS,0.68 l/s (11.0 gpm) AT 343kpa (50psi) FOR HEAD TO HEAD COVERAGE
- SPRINKLER HEAD, RAINBIRD FALCON 6504 S.S. HIGH SPEED ADJUSTABLE ARC 30 TRAJECTORY NOZZLE #12, 16.7m (55ft.) RADIUS, 0.68 l/s (11.0 gpm) AT 481kpa (50psi) FOR HEAD TO HEAD COVERAGE
- BALL VALVE, BOTH BALL VALVES IN ONE CARSON BOX
- 50 LATERAL LINES, SERIES 75 CSA CERTIFIED LOW DENSITY POLYETHYLENE, LINE SIZES AS SHOWN (50mm).

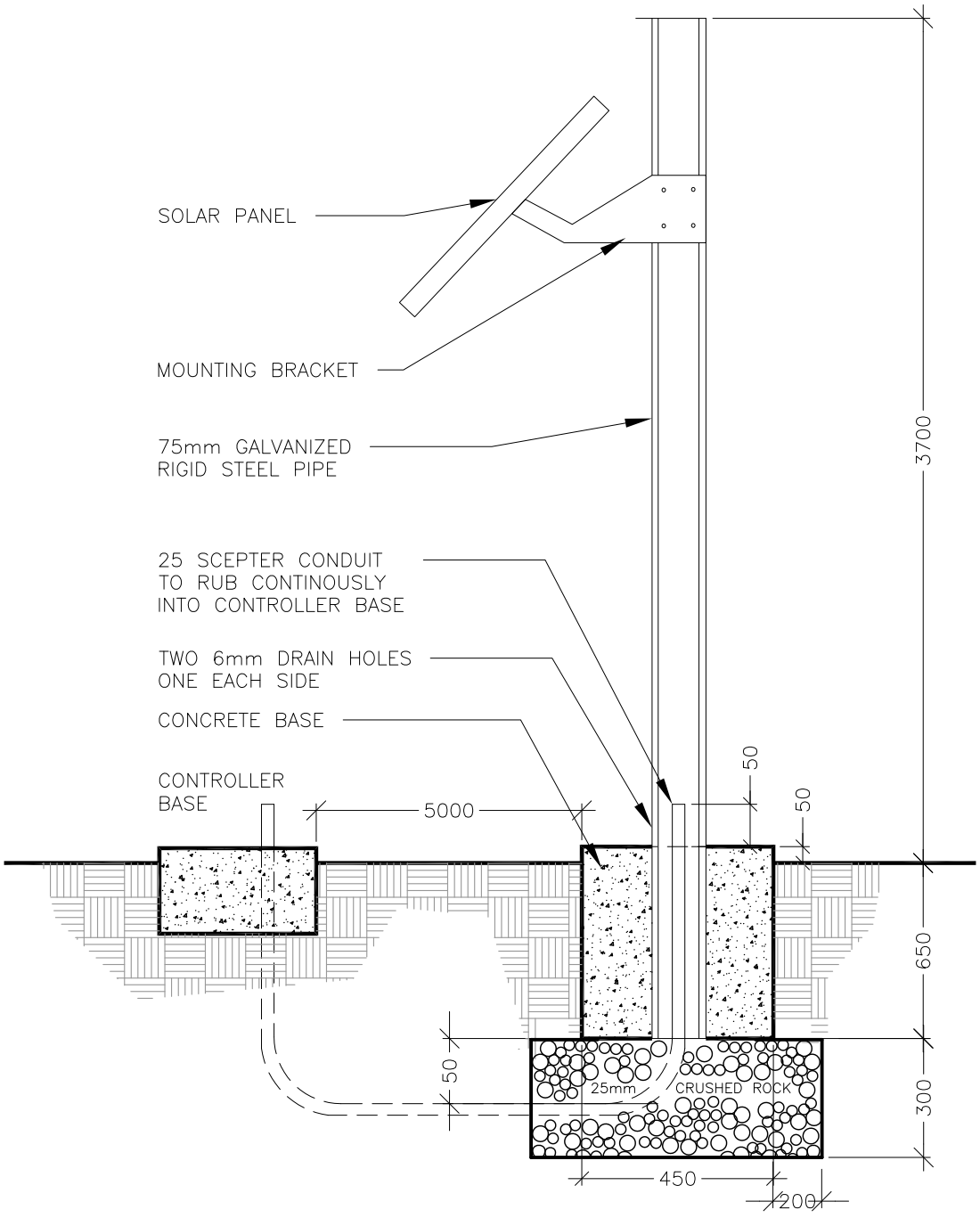
City of Saskatoon

Drawing Title: Shale Infield Watering Sprinkler Layout

Drawn: MH | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-21a

Parks



NOTE:

1. GALVANIZED POLE.
2. POLE MUST BE BONDED AT CONTROLLER USING # 6 GROUND WIRE. PROPER LUG
3. WELDED OR BOLTED THROUGH POLE WITHIN.

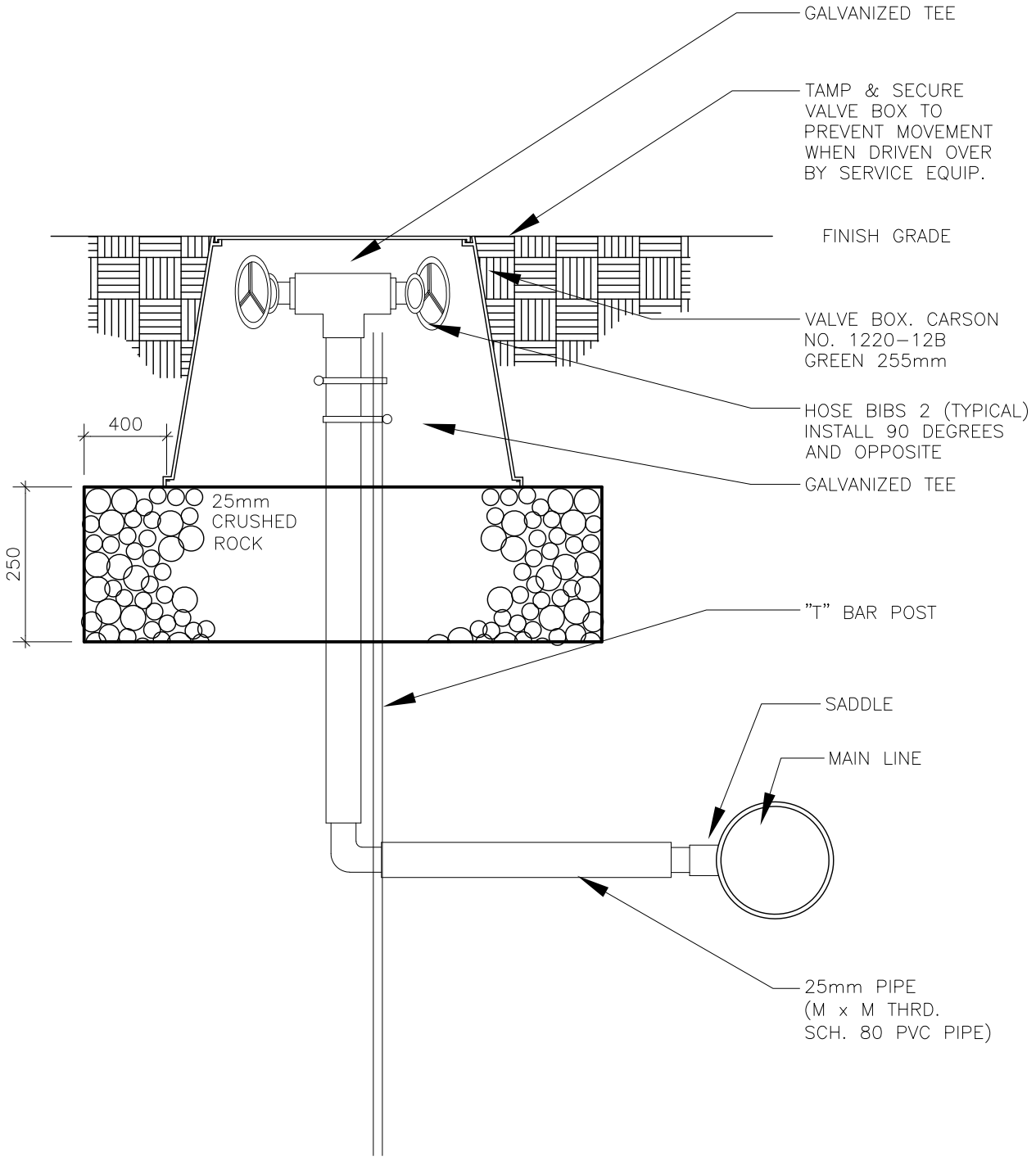
City of Saskatoon

Drawing Title: Solar Panel

Drawn: BT | Checked: BG | Revised Date Y/M/D 15/12/07 | Scale: N.T.S.

Drawing No. 02810-22

Parks



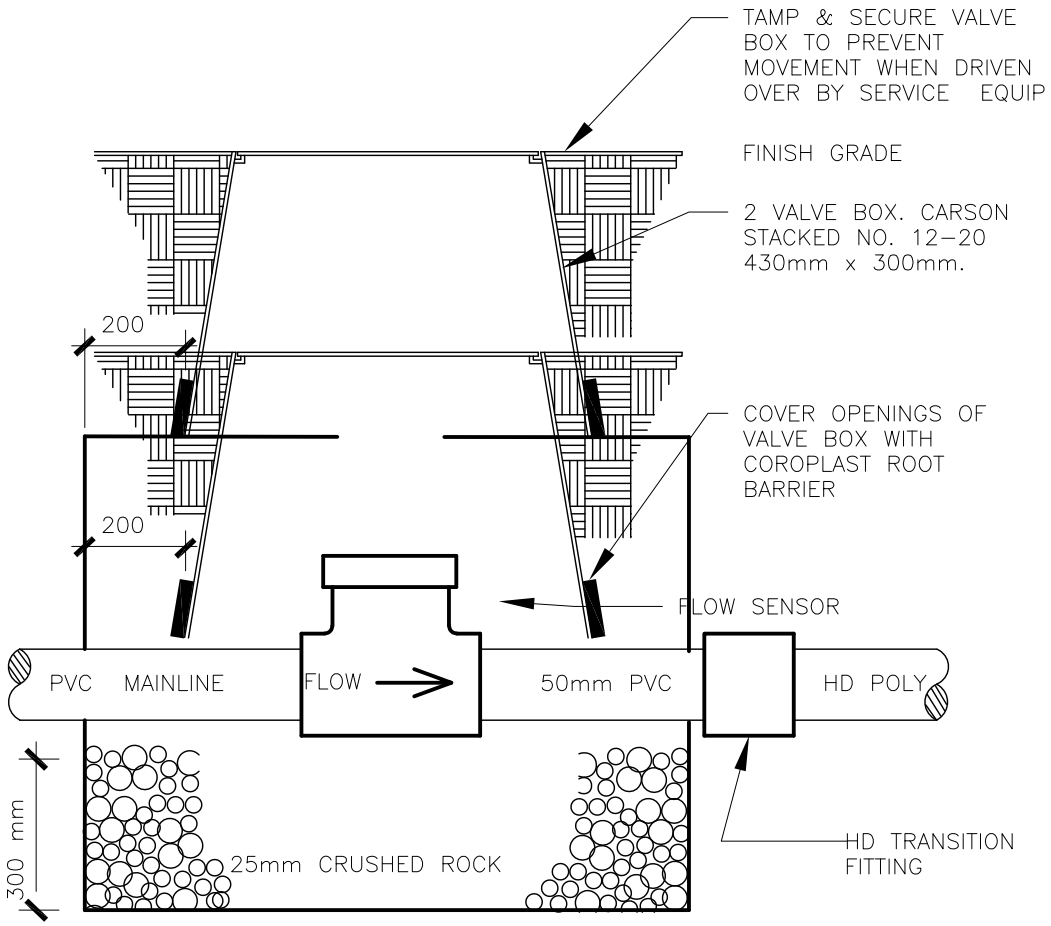
City of Saskatoon

Drawing Title: Garden Plot Hose Bibs

Drawn: BT | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02810-23

Parks



NOTE: 10 PIPE DIAMETERS STRAIGHT PIPE BEFORE FLOW SENSOR
5 PIPE DIAMETERS STRAIGHT PIPE AFTER FLOW SENSOR

NOTE: FOR 100mm HD MAINLINE
USE ELECTROFUSION SADDLE

City of Saskatoon

Drawing Title				Drawing No.
Flow Sensor				02810-24
Drawn: BT	Checked: BG	Revised Date Y/M/D 16/12/20	Scale: N.T.S.	Parks

02811 Light Bases and Conduit

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02065 Existing Plant Material

.2 Section 02210 Rough Grading

.3 Section 02810 Irrigation

.4 Section 02950 Plant Material

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve precast concrete light bases and electrical conduit specified.

.2 **Saskatoon Light & Power Department** to supply precast concrete bases for use and approve Work related to installation of precast concrete bases and electrical conduit.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout and installation of precast concrete light bases and electrical conduit.

.2 Notify Saskatoon Light & Power for inspection of:

.1 Layout of precast concrete bases.

.2 Installation of electrical conduit c/w pull string, before backfilling.

.3 Ball test.

1.4 TESTING

.1 Ball Test is required after backfilling the electrical conduit trench, and before installation of light fixtures by Saskatoon Light & Power.

.1 Contractor to ensure the electrical conduit system is free of kinks or blockage by pulling a 37mm diameter ball through electrical conduit. Repair areas blocked and repeat test until ball pulls freely from one precast concrete light base to another.

2.0 Products

2.1 PRECAST CONCRETE LIGHT BASE

.1 Precast concrete light bases: New or used, supplied by Saskatoon Light & Power. Obtain and make arrangements for precast concrete light base pick-up from:

.1 **City of Saskatoon, Transportation & Utility Division,**
Saskatoon Light & Power Department
322 Brand Road
Saskatoon, Saskatchewan

2.2 STEEL SCREW IN BASE

.1 Steel screw in base: New or used, supplied by Saskatoon Light & Power. Obtain and make arrangement for steel screw in base pick-up from:

.2 **City of Saskatoon, Utilities & Environment Division,**
Saskatoon Light & Power Department
322 Brand Road
Saskatoon, Saskatchewan

2.3 ELECTRICAL CONDUIT

.1 Electrical conduit includes polyethylene pipe c/w pull string.

.1 Polyethylene pipe or Cor-Line pipe (supplied by Saskatoon Light & Power): 50mm ID, 75 psi, slip feature.

.2 Pull string: A-D Technologies Bull-Line, BL WP 18 or approved equivalent (supplied by the Contractor).

.3 Tracer wire: CSA approved TWU 40 #12 wire (supplied by the Contractor).

2.4 GROUND ROD SET

.1 Ground Rod set includes rod, clamp and wire. Each supplied by Saskatoon Light & Power.

.1 Copper Ground Rod: 8’ x 5/8”.

.2 Clamp: 5/8”.

.3 Wire: soft, bare, Copper #4 wire, 2m per ground rod location.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Provide ample clearance for proper execution of work.

.2 Establish layout of precast concrete light bases and electrical conduit accurately per drawings (including setbacks).

.1 Stake or spray paint locations of precast concrete light bases, line of electrical conduit and obtain approval before start of work.

3.2 EXCAVATIONS AND TRENCHING

.1 Excavations and trenching includes materials encountered except materials which cannot be excavated by normal mechanical excavation means.

.1 Notify **Consultant** of materials which cannot be excavated by normal mechanical excavation means.

.2 Over excavated trenches are the responsibility of the Contractor:

.1 Backfill and tamp trenches to specified depth to provide compacted bearing for the electrical conduit.

.2 Backfill material is required free from rocks, stones and other unsuitable substances which could damage the electrical conduit or create unusual settling problems.

.3 Backfill in 150mm layers, tamping after each layer is put in to prevent excessive settling.

.4 Tamp trenches with mechanical tamper.

.3 Trenches through existing turf (if applicable):

.1 Do not leave excavated material on turf adjacent to trench for more than 72 hours.

.2 Backfill trench and compact soil to match existing soil grade.

.3 Re-establish turf to surrounding turf type and quality.

.4 Trenches across existing asphalt pathways (if applicable):

.1 Do not leave excavated material on turf adjacent to trench for more than 72 hours.

.2 Backfill trench with soil to existing subgrade and compact.

.3 Backfill gravel to match existing and compact.

.4 Repair of asphalt is by others when lighting is the prime component of the Contract.

.5 For new park construction or park upgrade projects, the Contractor is responsible for asphalt restoration.

3.3 PRECAST CONCRETE LIGHT BASES

.1 Install precast concrete light bases before irrigation to prevent damage to irrigation lines.

.2 Excavate precast concrete light base holes to depths ensuring the final elevation of precast concrete light base is 75 to 100mm above finish grade.

.3 Manually remove loose debris from the excavation before installing precast concrete light bases. Backfill with granular material and compact to 95% proctor density to prevent settling.

.4 Compact the fill around sides of precast concrete light base as it is being backfilled to prevent lateral movement.

.5 Install precast concrete light bases plumb, true, and level on compacted subgrade per drawings and details.

.1 Ensure ports and anchor bolts are in direction required for proposed light fixtures per details.

.2 Cover exposed holes in precast concrete light bases to prevent damage.

3.4 SCREW IN LIGHT BASES

.1 Install screw in light bases before irrigation to prevent damage to irrigation lines

.2 Contractor to provide adaptor to screw in steel screw in light bases

.3 Install steel screw in light base plumb, true and level.

.1 Ensure ports and anchor bolts are in direction for proposed light fixtures

.2 Cover top hole in light bases to prevent damage

.4 Set the top of the light bases between 75 to 100mm above finished grade

3.5 ELECTRICAL CONDUIT

.1 Install electrical conduit before irrigation to prevent damage to irrigation lines.

.2 Trench depth to allow for 750mm cover below finish grade.

.1 Remove debris from trenches before installing electrical conduit by equipping chain trenchers with a "crumber", or clean trenches manually.

.3 Install continuous electrical conduit trenches between precast concrete light bases.

.1 Install electrical conduit c/w pull string with no splices, ensure string extends 300mm past end of electrical conduit. Protect pull string.

.2 Bends and turns shall be gradual with a minimum radius of 0.5m to prevent kinking and blockage.

.3 Ensure electrical conduit is free of water.

.4 Ensure electrical conduit is at specified depth below finished grade elevations.

.4 Install tracer wire instead of polyethylene twine when electrical conduit is installed for future construction. Ends of tracer wire are required accessible for locaters to clamp onto.

.5 Compact trenches with electrical conduit during backfilling to prevent future settling.

.6 Cover and protect exposed electrical conduit to prevent damage.

3.6 GROUND ROD

.1 Install 8’ ground rod vertically beside precast concrete light base as specified on lighting plan.

.2 Clamp 2m of #4 copper wire to ground rod and bring #4 wire into precast concrete light base through empty port.

3.7 BALL TEST

.1 Notify Saskatoon Light & Power when installation of precast concrete light bases and electrical conduit is finished so ball test may be completed.

3.8 WORK BY CITY OF SASKATOON

.1 Notify Saskatoon Light & Power when the electrical conduit and precast concrete light bases are ready for installation of electrical conductors, poles and fixtures.

.1 Schedule work and allow site access to avoid damage to other items of Work.

.2 Repair blockage, encountered by Saskatoon Light & Power during installation of electrical conductors.

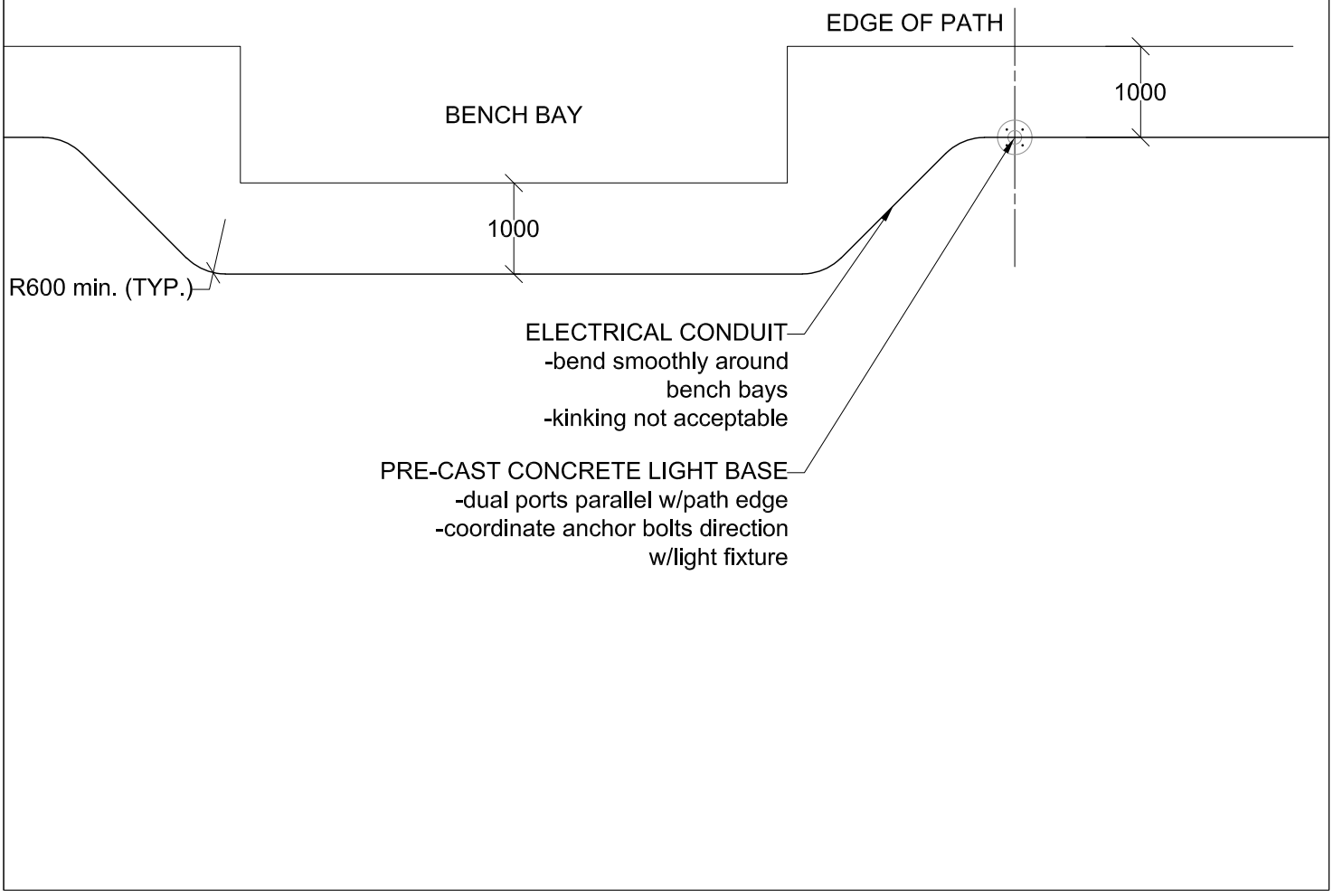
.1 Repair blockages within two working days, or;

.2 City of Saskatoon will repair blockages to the electrical conduit and **Consultant** will deduct cost of repair from payment to the Contractor.

3.9 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION



City of Saskatoon

Drawing Title: Light Base and Conduit Layout

Drawn: HMK Checked: BG | Revised Date Y/M/D 21/01/06 | Scale: 1:75

Drawing No. 02811-01

Parks

02831 Chain Link

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02511 Crusher Dust

.2 Section 02523 Miscellaneous Concrete

.3 Section 02875 Sports Fields

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve chain link construction.

.1 Chain link construction requirements: CAN/CGSB-138.3-96.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout of backstops and fencing, before excavation of footings.

.2 Support Posts, before installation of chain link fabric.

.3 Backstop construction.

.4 Fencing and gate (if applicable) construction.

2.0 Products

2.1 MATERIALS

.1 Posts and Rails: CAN/CGSB-138.1-96, galvanized steel pipe, schedule 40.

.1 Backstop sizes (refers to outside diameter):

	Junior Backstop	Senior Backstop
End / corner posts	89mm (3 1/2")	114mm (4 1/2")
Line post	60mm (2 3/8")	73mm (2 7/8")
Horizontal rails	41mm (1 5/8")	48mm (1 7/8")
Centre brace	41mm (1 5/8")	41mm (1 5/8")

.2 Overhang and Extension Components (SENIOR BACKSTOP ONLY):

Top horizontal rails	41mm (1 5/8”)
End / corner posts	89mm (3 ½”)
Line posts	73mm (2 7/8”)
Brace (Extension only)	48mm (1 7/8”)

.3 Home run fences (size refers to outside diameter):

End post	89mm (3 1/2")
Gate post	89mm (3 1/2")
Line post	60mm (2 3/8")
Foul line post	89mm (3 1/2")
Additional Components:	
Straining post	89mm (3 1/2")
Top rail	41mm (1 5/8")
Centre brace	41mm (1 5/8")
Bottom rail	41mm (1 5/8")

.4 Other fences (size refers to outside diameter):

End posts	89mm (3 1/2")
Corner posts	89mm (3 1/2")
Straining posts	89mm (3 1/2")
Top rail	41mm (1 5/8")
Centre brace	41mm (1 5/8")

.2 Gate Frames: CAN/CGSB-138.1-96, galvanized steel pipe, schedule 40.

.1 Size: 41mm O.D. (1 5/8")

.2 Joints: electric welded. Galvanize after welding.

.3 Hardware: galvanized malleable iron hinges, latch and latch catch with provision for padlock attached and operated from either side of installed gate.

.3 Chain-Link Fence fabric: CAN/CGSB-138.1-96

.1 New, galvanized, chain-link fencing, woven in 50mm mesh. Min. 0.5 kg zinc galvanize per square metre of surface. Knuckled top and bottom.

.2 Continuous vertical, see details for height.

.3 Gauge of chain link fencing:

Backstop Fencing - Vertical	6 gauge
Backstop Fencing- Overhangs	9 gauge
Other Fencing	9 gauge

.4 Tension Wire: Single strand, galvanized steel wire, #6 gauge.

.5 Tensioner is required comprised of:

.1 6mm x 25mm galvanized steel "L" bracket (100mm x 40mm).

.2 9mm (3/8") eye bolt, 100mm long, c/w two nuts.

.6 Tie wire fasteners: single strand aluminium wire, 5mm diameter.

.7 Tension bar: 5 x 20mm minimum galvanized steel.

.8 Tension bands: 3 x 20mm minimum galvanized steel.

.9 Fittings and hardware: Galvanized steel, malleable, or ductile cast iron. Post caps to provide waterproof fit, fasten securely over posts, and to carry top rail.

2.2 FINISHES

.1 Galvanizing for chain link fabric: CAN/CGSB-138.1-96 Grade 2.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Approval of layout is required before excavation of footings.

3.2 EXCAVATION

.1 Excavate to depths, see details.

.1 Remove loose material in excavations and compact with equipment suitable for the Work.

3.3 INSTALLATION

.1 Concrete Footings:

.1 Excavation: bulb bottom of holes for corner, end, gate and intermediate posts at every 60m along fence line.

.2 Brace posts in plumb position, true to line and elevation until concrete is cured.

.3 Do not install fence fabric until concrete has cured min of 5 days.

.2 Posts:

.1 End Posts: install end posts at end of fence.

.2 Line Post spacing: 3m apart, measured parallel to ground surface.

.3 Straining Posts: required where the distance between two end posts or end posts and corner posts exceeds 150m. Straining posts are required equally spaced to max. 150m.

.4 Corner Posts: install corner post where change in alignment exceeds 20 degree angle.

.5 Gate Posts: install gate posts on both sides of gate openings.

.3 Centre Braces are required at the following locations, and placed in centre of panel, parallel to ground surface:

.1 Between end posts and nearest line post.

.2 Between gate posts and nearest line post.

.3 On both sides of corner posts.

.4 On both sides of straining posts.

.5 Between posts on backstops.

.4 Top rail: Install top rail between posts.

.1 Fasten securely to terminal posts and secure waterproof caps.

.5 Do not proceed with installation of chain link fabric until approval is given.

.6 Chain Link Fabric: Install on inside face of backstop and home run fence.

.1 Stretch fabric tightly to tension recommended by manufacturer. Fasten to end, corner, gate and straining posts with tension bar.

.2 Secure fabric to posts, rails and tension wire with tie wires at 450mm intervals. Minimum two twists.

.7 Tension Bar: Install tension bar at each corner post, end post and gate post. Thread through wire mesh.

.1 Attach tension bar parallel to post with tensions bands at the following spacing:

.1 Backstop fencing: 300mm O.C. (maximum) to a height of 1.83m, and 450mm O.C. (maximum) from 1.83m height and above.

.2 Other fencing: 450mm O.C. (maximum).

3.4 FINISH GRADING

.1 Provide a smooth uniform gradient between posts.

.2 Provide clearance between bottom fence and ground surface as follows:

Backstops and home run fences	20mm
Other fencing	75mm

Gates	40mm

.1 Gate clearances are not to exceed 50mm.

3.5 TOUCH-UP

.1 Repair damaged galvanized surfaces.

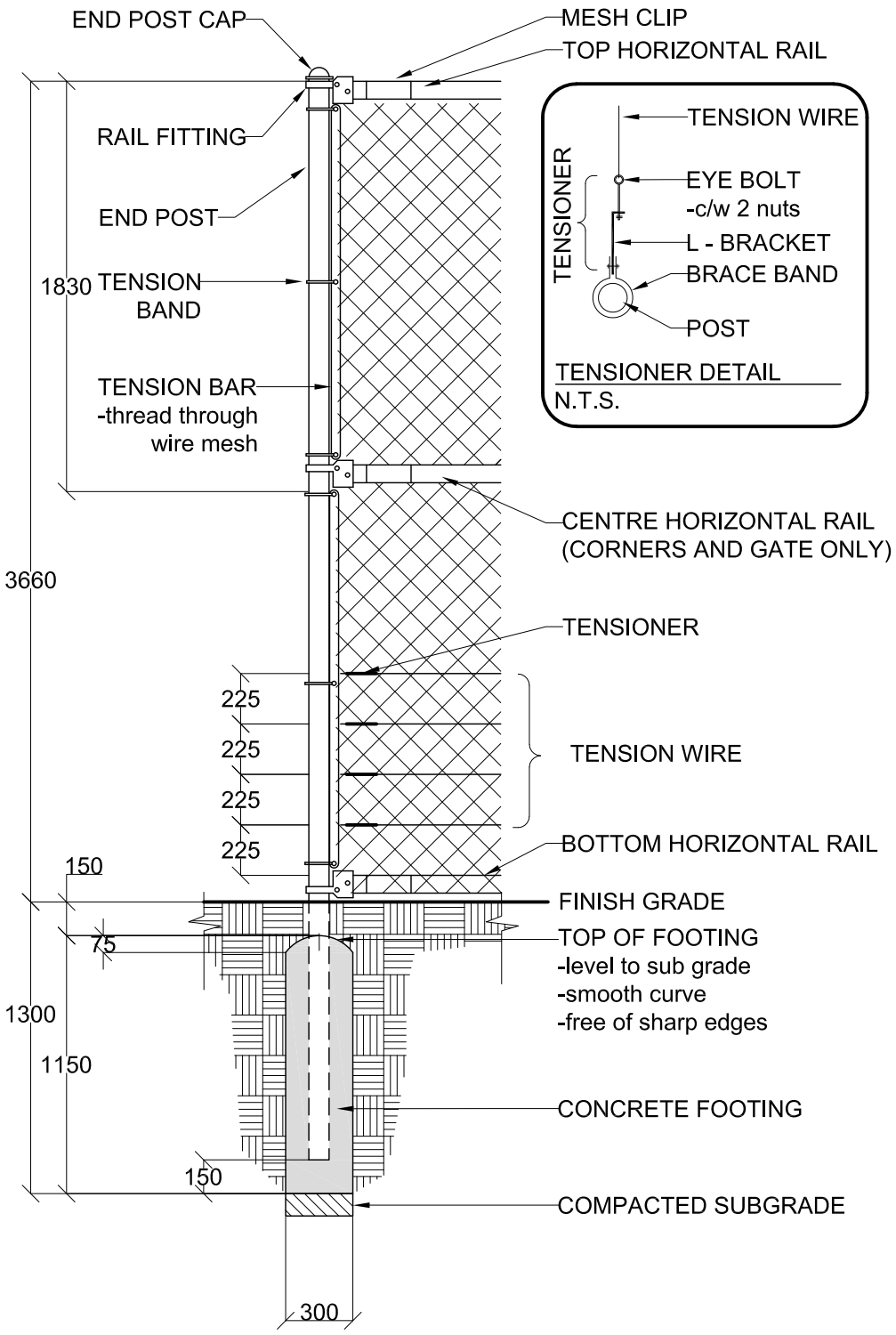
.1 Clean damaged surfaces with wire brush removing loose and cracked coatings.

.2 Apply two coats of approved zinc pigmented paint to damaged areas.

3.6 CLEAN UP

.1 Clean up and remove surplus materials and scrap after each working session.

END OF SECTION



NOTE:
1. Units are in millimeters U.N.O.

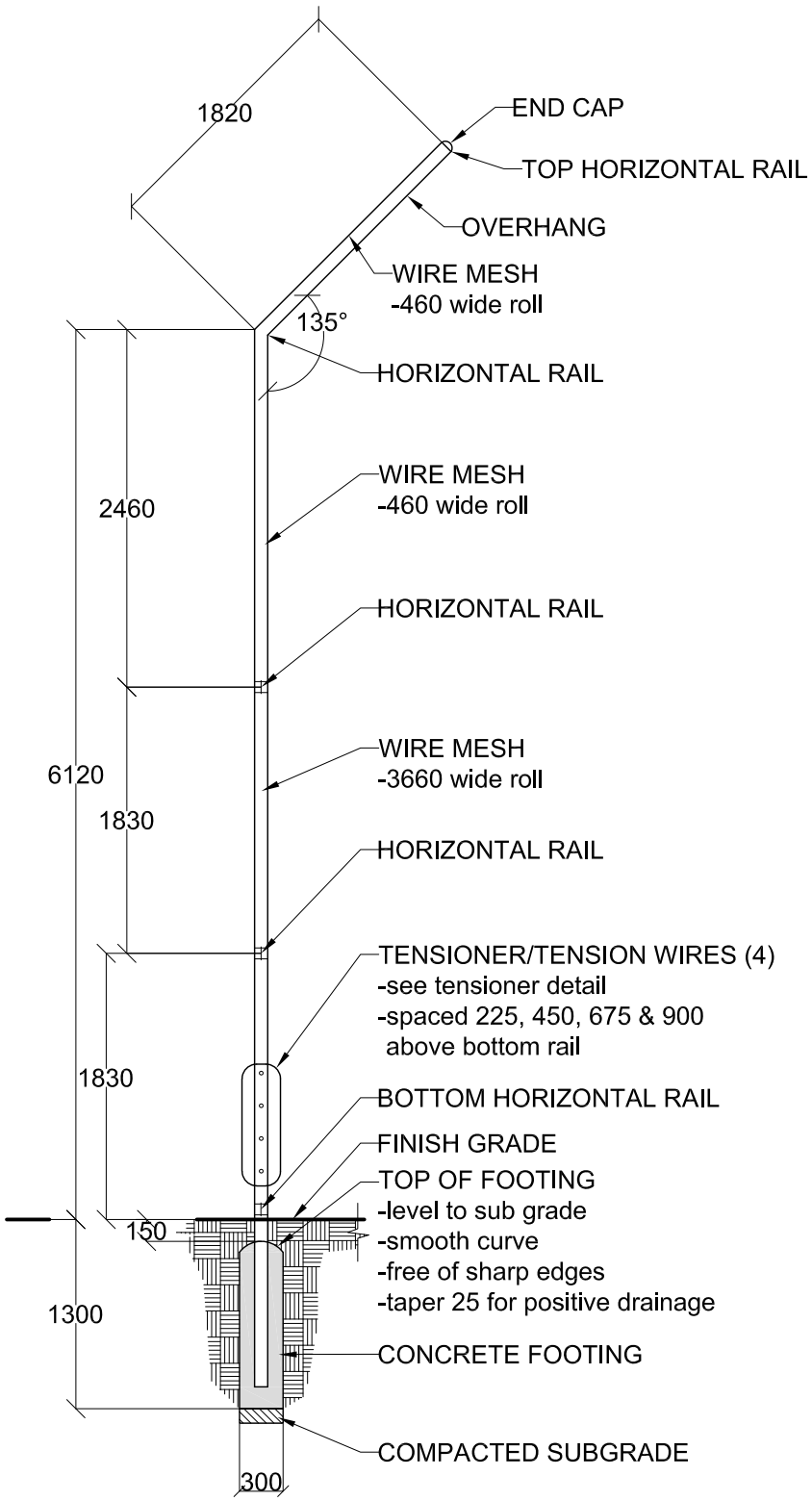
City of Saskatoon

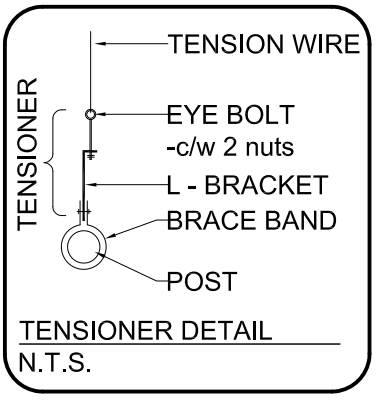
Drawing Title: Junior Backstop

Drawn: HMK | Checked: BG | Revised Date Y/M/D 16/02/02 | Scale: 1:30

Drawing No. 02831-01

Parks





NOTE:
1. Units are in millimeters U.N.O.
2. Material sizes refer to specifications

City of Saskatoon

Drawing Title: Senior Backstop

Drawn: HMK Checked: BG Revised Date Y/M/D 16/02/02 Scale: 1:50

Drawing No. 02831-02

Parks

02870 Site Furnishings

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02070 Demolition Removal and Salvage

.2 Section 02523 Miscellaneous Concrete

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to review and approve site furnishings.

1.3 INSPECTIONS

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout site furnishings, before footing excavations.

.2 Installation of specified site furnishings.

2.0 Products

2.1 SITE FURNISHINGS

.1 New site furnishings as specified.

.2 Park Signs supplied by City of Saskatoon. Sign bases per 02811 unless otherwise noted.

.3 Waste Receptacles (New and Salvaged) to have a galvanized waste can (without lid), as supplied by Contractor c/w two handles, sized to fit waste receptacle, with security cable/chain.

.1 Waste can is required connected with cable/chain from handle to waste receptacle.

.4 Junior Skateboard Fun Box, custom manufacturer:

.1 Pre-Con Ltd
3320 Idylwyld Drive North
Saskatoon, SK S7L 5Y7
phone: 1-306-931-9229

.2 or approved equal.

.5 Player Bench – BL-IGB-15, 3-leg without backrest, 15' length, in-ground mount. distributer:

.1 Sportsystems Canada Inc.
28 Industrial Dr.
Almonte, ON K0A 1A0
phone: 1-877-600-4667

.2 or approved equal.

.6 Dog By-Law sign:

.1 Install sign plumb at 2.3m from bottom sign edge to finish grade.

.2 Sign supplier:

City of Saskatoon, Community Services Division, Parks Department, Design Section
1101 Avenue P N
Saskatoon, SK S7L 7K6
contact: Project Manager

.7 Park Under Construction Sign (is required installed at Pre-Construction meeting).

.1 Sign supplier:

City of Saskatoon, Community Services Division, Parks Department, Design Section
1101 Avenue P N
Saskatoon, SK S7L 7K6
contact: Project Manager

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade per drawings.

.1 Contractor is responsible for layout accuracy.

.2 Layout approval is required before excavation of footings.

3.2 EXCAVATION

.1 Excavate to depths required for installation per details.

.1 Remove loose material in excavations and compact with equipment suitable for the Work.

3.3 INSTALLATION

.1 Install site furnishings per drawings, details and manufacturer's specifications.

.1 Review installation details requirements before start of Work.

.1 Notify **Consultant** of installation instructions conflicts or discrepancies.

.2 For site furnishings not specifying heights above finish grade per manufacturer's specifications use:

.1 450mm to top of seats for; benches, picnic table seats, and player's benches.

.3 Park signs includes precast concrete light base installation only per detail. Signs are installed by others.

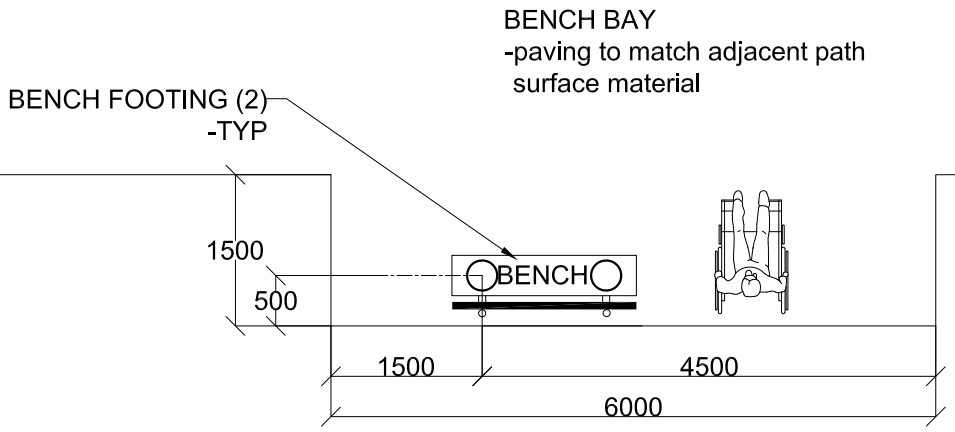
3.4 CLEAN UP

.1 Repair damaged areas of adjacent finish grade surface treatment disturbed or damaged by installation of site furnishings.

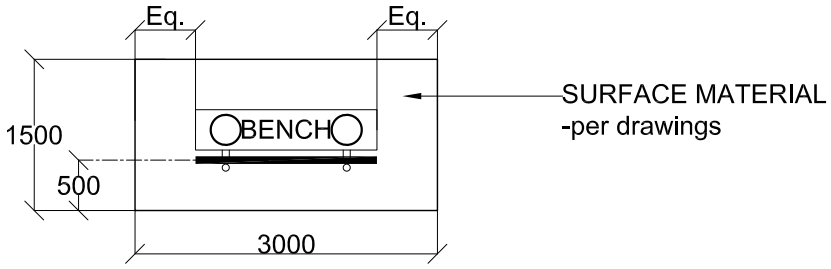
.2 Clean adjacent walks, road and other surfaces at the end of each working day.

.3 Remove temporary structures and construction debris from the area.

END OF SECTION



SINGLE BENCH BAY ADJACENT TO PATH



SINGLE BENCH BAY IN TURF

NOTE:
1. Units are in millimeters U.N.O.

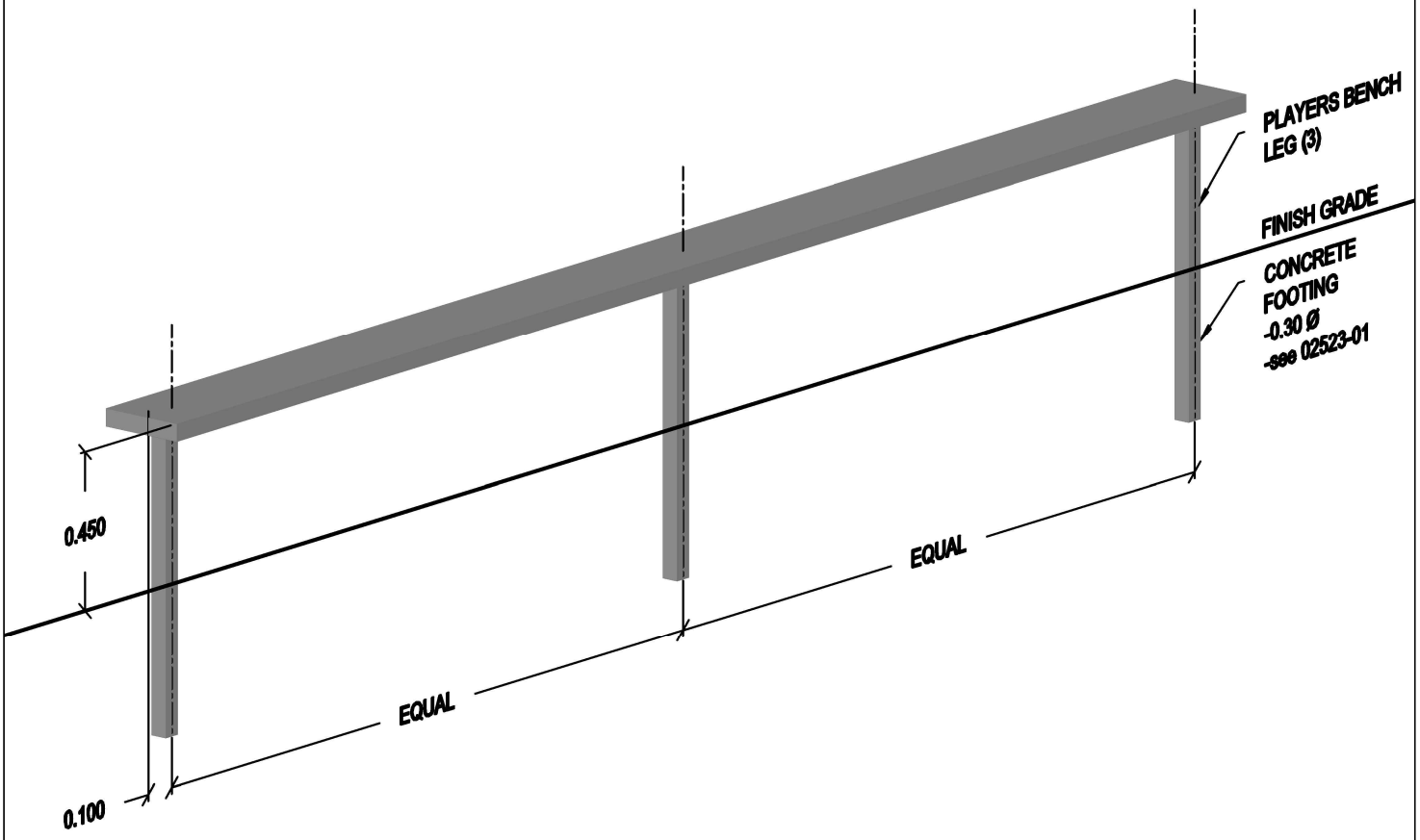
City of Saskatoon

Drawing Title: Park Bench Layouts

Drawn: MH/KD Checked: BG | Revised Date Y/M/D 20/11/27 | Scale: 1:75

Drawing No. 02870-01

Parks



NOTE:
1. Units are in meters U.N.O.

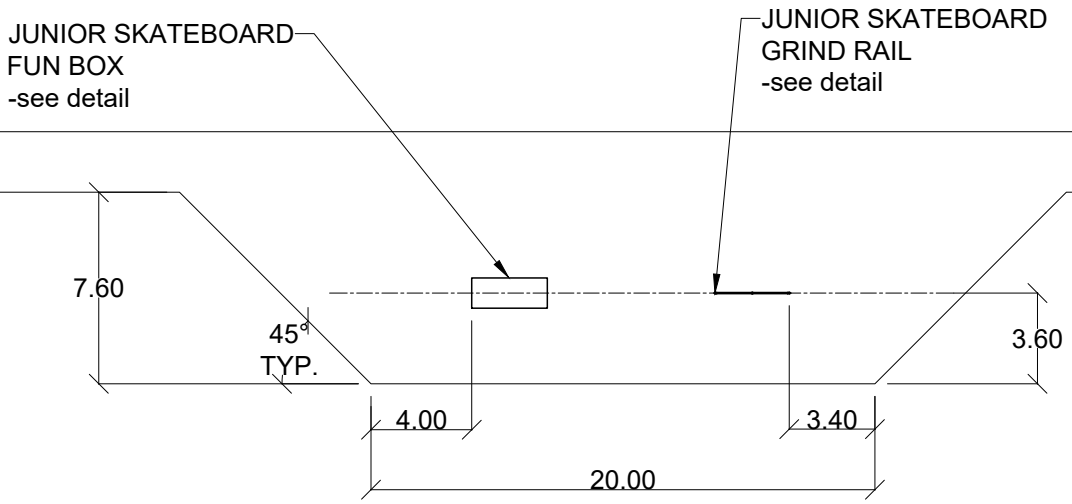
City of Saskatoon

Drawing Title: Players Bench

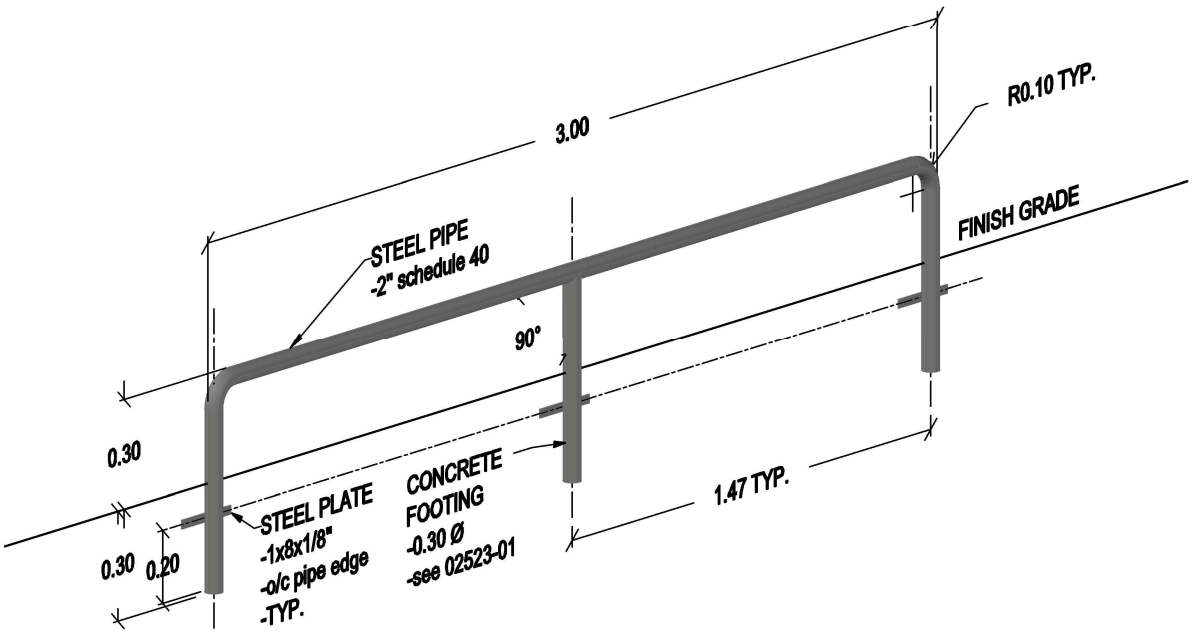
Drawing No.: 02870-02

Drawn: HMK Checked: BG | Revised Date Y/M/D 19/11/01 | Scale: 1:20

Parks



PLAN
1:75



GRIND RAIL PERSPECTIVE
1:20

NOTE:
1. Units are in meters U.N.O.

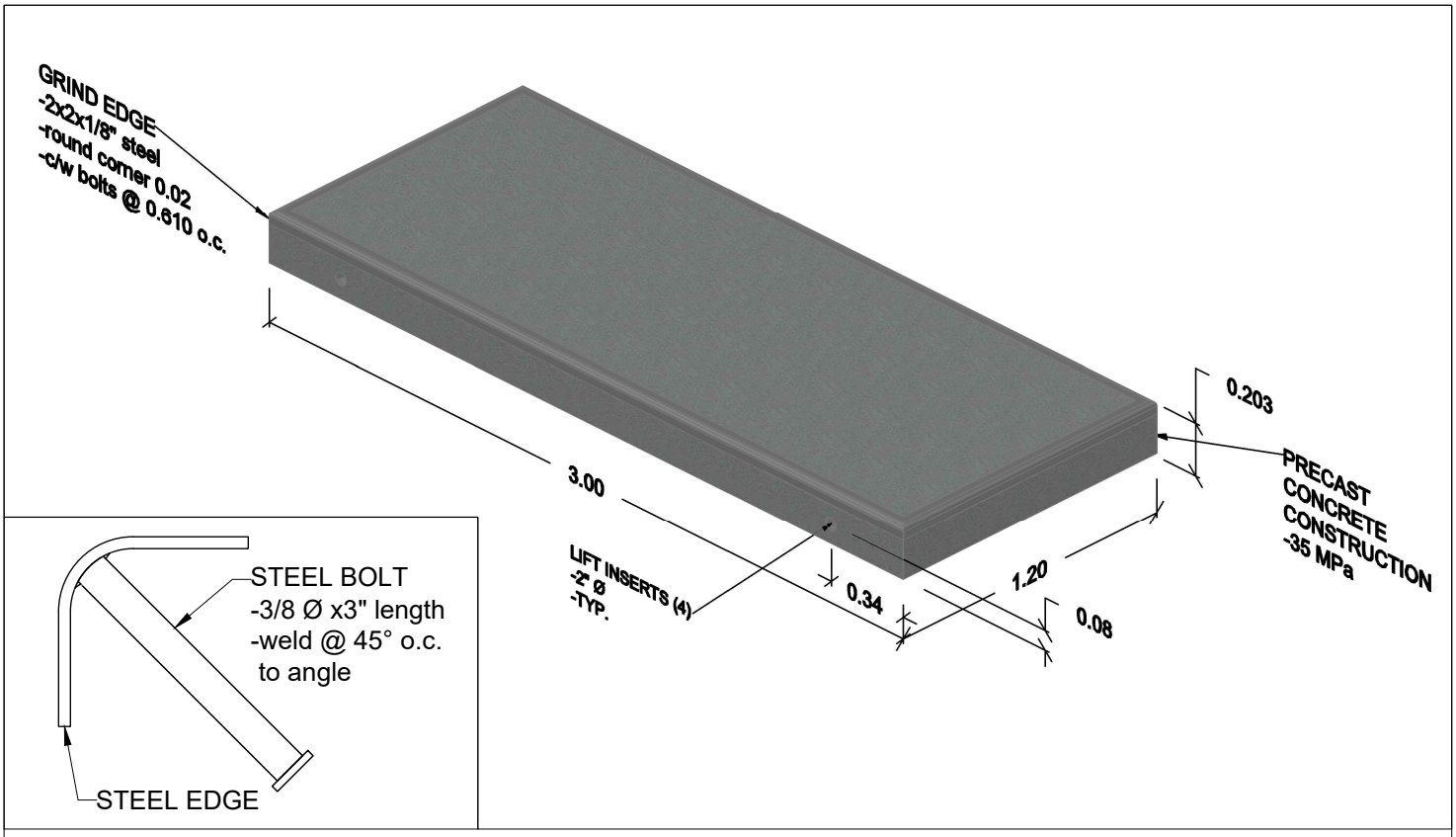
City of Saskatoon

Drawing Title: Junior Skate Pad & Grind Rail Layout

Drawn: HMK | Checked: BG | Revised Date Y/M/D 19/10/30 | Scale: AS NOTED

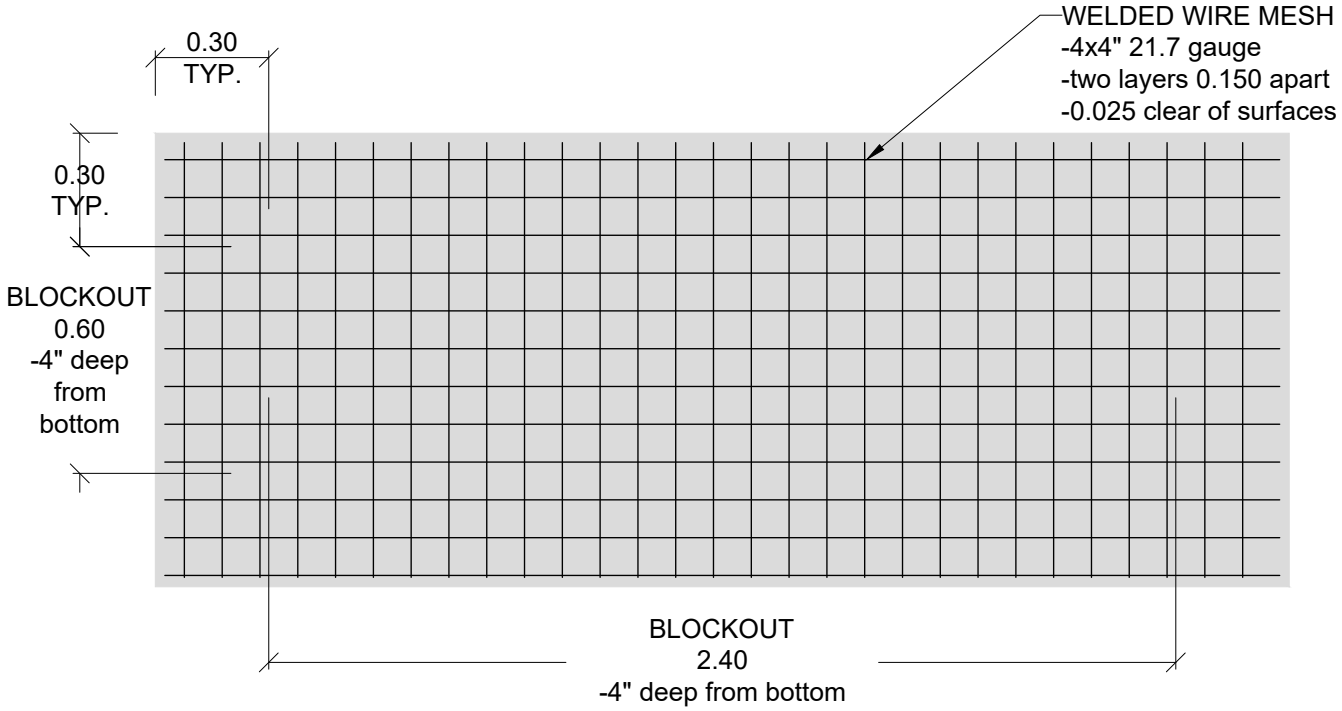
Drawing No. 02870-03

Parks



GRIND EDGE SECTION
1:2

PERSPECTIVE
1:25



PLAN
1:20

NOTE:
1. Units are in meters U.N.O.

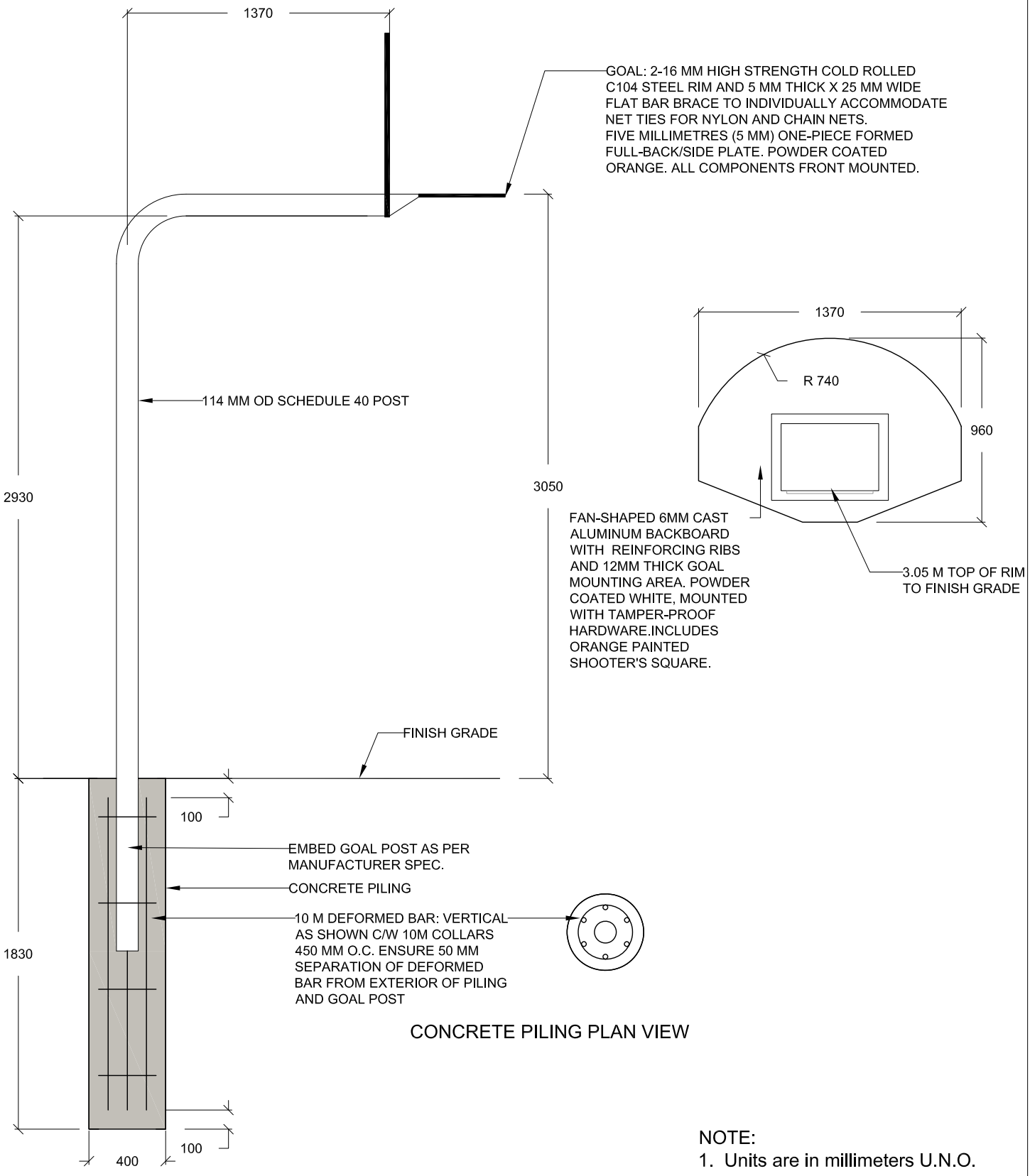
City of Saskatoon

Drawing Title: Junior Skateboard Fun Box 4x10

Drawn: HMK | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: AS NOTED

Drawing No. 02870-04

Parks



CONCRETE PILING PLAN VIEW

NOTE:
1. Units are in millimeters U.N.O.

City of Saskatoon

Drawing Title: Basketball Court Construction Goal Post Detail

Drawn: KD | Checked: BG | Revised Date Y/M/D 16/06/30 | Scale: NTS

Drawing No. 02870-05

Parks

02871 Play Equipment

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02210 Rough Grading

.2 Section 02523 Miscellaneous Concrete

.3 Section 02712 Landscape Drainage

.4 Section 02872 Play Surfacing

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve play equipment.

.1 Play equipment to comply with Children's Playspaces and Equipment Standard: CAN/CSA-Z614-14 (or most current edition).

.2 Submit for play equipment:

.1 Shop drawings.

.2 Maintenance kit.

1.3 INSPECTIONS

.1 Contractor shall have an approved set of drawings and specifications available before requesting the **City of Saskatoon, Parks Department** inspection.

.2 The design and installation of playground structures to comply with Childrens' Playspaces and Equipment Standard: CAN/CSA-Z614-14 (or most current edition).

.1 A letter of compliance to CSA standards shall be required before issuing a Construction Completion Certificate.

.2 For more information contact:

Canadian Standards Association (CSA) - Corporate Head Office
178 Rexdale Blvd.
Toronto, ON M9W 1R3
1-800-463-6727
www.csagroup.org

.3 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Layout of support posts, before excavation of footings.

.2 Prevention of play equipment use until play surfacing is installed.

.3 Completed play area.

1.4 SHOP DRAWINGS

.1 Before start of work submit:

.1 Three (3) sets of play equipment shop drawings.

.2 Three (3) sets of product data sheets.

.3 One (1) digital layout (AutoCAD format) of play equipment structures, surfacing, edge treatment, and adjacent areas.

.1 Digital playground area base file will be provided by the **Consultant.**

.4 Provide full information on safety setbacks, materials and construction of components demonstrating compliance with Childrens' Playspaces and Equipment Standard: CAN/CSA-Z614-14 (or most current edition).

.5 Include dimensioning for support post and concrete footing installation details, to ensure compliance with min. depths per 3.2.2.

.2 **Consultant** review and acceptance of shop, data & layout shop drawings does not relieve the Contractor of full responsibility for performance of the Work as specified and detailed.

1.5 MAINTENANCE KIT

.1 Submit maintenance kit provided by Supplier one (1) week before final inspection of play equipment.

1.6 WARRANTY AND MAINTENANCE

.1 The Contractor shall warranty the play equipment for one full year following date of Construction Completion.

.2 The **City of Saskatoon, Facilities Management Department** will assume maintenance responsibilities of the play structure (and play surfacing if pour in place rubber is used) when the structure/surface is complete and functional, subject to a complete inspection, approval and acceptance of the structure by a representative of **Facilities Management Department.**

2.0 Products

2.1 PLAY EQUIPMENT AND SWINGS

.1 Refer to drawings for specified manufacturer and model.

.1 Approval of acceptable equivalents is required and are to match the same components of specified play equipment and swings.

.2 Unacceptable components for play equipment / swings are as follows:

.2 Crawl tubes, tube slides, bubble panels, polyethylene slides and roofs, rope climbers or apparatus, cargo nets, pressure treated wood components, S hook fasteners, suspension bridges, chain ladders.

2.2 COMPONENTS AND FINISHES

.1 Mountings, Clamps and Fastenings are required of adequate strength and installed to prevent movement or slippage, positioned to avoid entanglement, and be tamper proof.

.2 Finishes:

.1 Steel ramp, deck, and stair coating: Oven cured, non-slip polyvinyl chloride (PVC) coating c/w UV stabilizers, colour pigments and flame retardants.

.2 Steel component coating: Electrostatic, non-toxic, lead free baked-on polyester powder coat finish over clean galvanized steel components.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Layout is required approved before excavation of footings.

.2 Ensure proper setbacks from play area edges as required by play equipment manufacturer.

3.2 INSTALLATION

.1 Install play equipment using manufacturer’s installer or recognised representatives.

.1 Install play equipment after first layer of filter cloth.

.2 Co-ordinate Work of different trades to ensure play equipment is accurately positioned, plumb, level and secure.

.2 Install support posts per manufacturer’s site specific recommendations.

.3 Install components to the following heights above finished grade (i.e., top of play surface), with an allowable tolerance of + or – 50 mm:

.1 Swings:

.1 400mm for belt swings.

.2 600mm for tot swings.

.2 Slide exits:

.1 250mm Senior and Spiral.

.2 125mm Junior.

.3 Overhead structures accessible from a 450mm high platform or a combination of two different heights to achieve a height of 450mm:

.1 1750mm Glide ride (to trolley handle).

.2 1830mm Trapeze bars (to bars).

.3 1930mm Rings (to rings).

.4 1980mm Hand over hand (to bars).

.4 Swings: Apply Loc-tite (red) to the threads of the shackles.

.5 Apply Loctite (red) to the threads of the bolts.

3.3 PREVENTION OF USE

.1 Prevent play structure use until play surfacing is installed.

.1 Install temporary construction safety fence along perimeter of play area.

.2 Install "Park Under Construction" signs on construction safety fence.

.3 Do not install chains and swing seats.

3.4 CLEAN UP

.1 Clean adjacent walks, road and other surfaces at the end of each working day.

.2 Remove materials not required off site.

END OF SECTION

02872 Play Surfacing

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02210 Rough Grading

.2 Section 02523 Miscellaneous Concrete

.3 Section 02712 Landscape Drainage

.4 Section 02871 Play Equipment

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve play surfacing material used for construction of play areas.

.2 Submit for Granular Play Surfacing material before delivery to site:

.1 One litre sample of specified play surfacing material.

.3 Submit for Engineered Wood Play Surfacing material before delivery to site:

.1 Two litre sample of wood chips.

.2 Test results for impact attenuation in accordance with ASTM F1292-13.

.3 Manufacturer’s Instructions: Strictly adhere to the manufacturer’s instructions where applicable.

.4 Contractor is required to have experience in the installation of Engineered Wood safety surfacing if applying Engineered Wood Surfacing.

.5 Engineered wood safety surface products to meet ASTM F1292-13.

.6 Provide manufacturer’s materials warranty for safety surfacing systems materials.

.7 Provide documentation showing products meet requirements for Universal Accessibility per ADA guidelines.

.4 Submit for Wear Mats before delivery to site:

.1 One 300 x 30 sample of wear mats.

1.3 INSPECTION

.1 Contractor shall have an approved set of drawings (as appropriate) and specifications available before requesting the **City of Saskatoon, Parks Department** inspection.

.2 The design and installation of play surfacing to comply with Childrens' Playspaces and Equipment Standard: CAN/CSA-Z614-14 (or most current edition).

.1 A letter of compliance to CSA standards shall be required before issuing a Construction Completion Certificate.

.2 For more information contact:

Canadian Standards Association (CSA) - Corporate Head Office
178 Rexdale Blvd.
Toronto, ON M9W 1R3
1-800-463-6727
www.csagroup.org

.3 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Play area subgrade before installation of play surfacing material.

.2 Filter Cloth and pinning before installation of play surfacing material.

1.4 TESTING

.1 For granular products, submit product information from supplier and sieve analyses.

2.0 Products

2.1 PLAY SURFACING

.1 See Specific Conditions.

2.2 WEAR MATS

.1 Wear Mats per manufacturer's specifications and recommendations.

.2 Wear Mats shall be manufactured from recycled rubber materials (Shercom Industries or equivalent).

.3 Wear Mat size and location:

.1 Slide exit requirement: one 914.4 x 1219.2 x 25.4mm (3' x 4' x 1") wear mat per slide exit.

.2 Swing set requirement: one 1219.2 x 1828.8 x 15.875mm (4'x6'x5/8") wear mat at each swing seat.

.4 Anchor hardware: four Model 40 Duckbill anchors per mat with cable clamps and fasteners format.

2.3 DRAINAGE

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Provide ample clearance for proper execution of the work.

.2 Establish the layout of the play area accurately to dimensions noted and to depth per drawings.

3.2 SUBGRADE PREPARATION

.1 Slope sub-grade at 1% to low side of site or drain.

.2 Approval of sub-grade is required before installation of play surfacing material.

.1 Remove loose material and compact with equipment suitable for the Work.

3.3 DRAINAGE

.1 Play surfacing system is required free draining to allow for positive flow of the sub-surface drainage system.

3.4 FILTER CLOTH INSTALLATION

3.5 PLAY EQUIPMENT

3.6 PLAY SURFACING

.1 Ensure required support posts and play equipment is correctly installed and inspected before placement of play surface material.

.2 Install surfacing to specified compacted depth, allowing for 25% settling and compaction.

.3 Contamination of play surfacing with foreign materials is prohibited.

.4 Evenly distribute play surfacing throughout the site.

3.7 WEAR MATS

.1 Coordinate wear mat installation with installation of play surfacing.

.2 Install wear mats 300mm below finished grade.

.3 Install eight Duckbill Anchors per mat.

3.8 CLEAN UP

.1 Clean adjacent walks, roads, and other surfaces at the end of each working day.

.2 Remove materials not required off site.

END OF SECTION

02875 Sports Fields

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 01410 Testing Laboratory Services

.2 Section 02210 Rough Grading

.3 Section 02212 Topsoil

.4 Section 02511 Crusher Dust

.5 Section 02810 Irrigation

.6 Section 02870 Site Furnishings

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Department** to approve Infield Mix (clay loam) and Granular Infield Sand used for construction of the infields.

.1 Submit for infield materials before delivery to site:

.1 One litre sample of infield mix (Clay Loam).

.2 One litre sample of Granular Infield Sand.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Field layouts.

.2 Infield mix placement and compaction, before placement of sand.

.3 Sand placement and final shaping.

1.4 TESTING

.1 Infield Mix is subject to soil analyses by an approved testing laboratory service.

.1 PSA-2 (Particle size analysis).

.2 Granular Infield Sand is subject to sieve analyses provided by an approved testing laboratory service or Contractor submitting required information from supplier.

2.0 Products

2.1 INFIELD SOIL MIX

.1 Minimum requirements: Infield mix to include acceptable soil compositions, as approved or as determined by a PSA-2 test (Particle size analysis) with an allowance of +/- 3% for each component as follows:

Classification	Sand (%)	Silt (%)	Clay (%)
Clay Loam	20	33	47

2.2 GRANULAR INFIELD SAND

.1 Sand requirements: Clean, washed torpedo sand, free from clay lumps, cementation, organic material, frozen material and other foreign materials.

.1 Gradation within limits specified tested to ASTM C136/C136M-14 and ASTM C117-13. Sieve sizes to CAN/CGSB-8.1:

Sieve	% passing by weight
10mm	100%
5mm	85 - 100%
2.5mm	80 - 90%
1.25mm	60 - 70%
0.63mm	40 - 50%
0.315mm	15 - 25%
0.16mm	5 - 10%
0.08mm	0 - 5%

2.3 PERIMETER PINS (SOCCER PITCHES)

.1 20M rebar, 350mm min. length.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Provide ample clearance for proper execution of the Work.

.2 Establish the layout of the sports field area accurately as indicated.

3.2 SUBGRADE PREPARATION

.1 Approval of subgrade is required before installation of infield soil mix or sports field mix.

.1 Remove loose material and compact surface area with equipment suitable for the Work.

3.3 BASEBALL AND SOFTBALL INFIELDS

.1 Place Infield Mix (clay loam) evenly throughout infield area.

.1 Pulverize the surface to eliminate lumps.

.2 Shape and grade as indicated.

.3 Compact to 97% of Standard Proctor Density.

.4 Eliminate high spots and low spots. The completed, compacted, clay loam surface shall not vary more than 15mm from the design grades.

.2 Do not proceed with placement of sand until approval to proceed is given.

.3 Place Granular Infield Sand evenly throughout infield area.

.1 Shape area to meet the requirements of design grades, as indicated.

.2 Finished surface requires the finished grades indicated, smooth, even and free from ruts, hollows and humps.

.3 Do not contaminate adjacent areas with sand and establish a crisp edge to infield with a turf cutter or spade or using method as approved.

3.4 SOCCER, MULTIPURPOSE AND ULTIMATE FIELDS

.1 Install rebar perimeter pins at the four corners of each field.

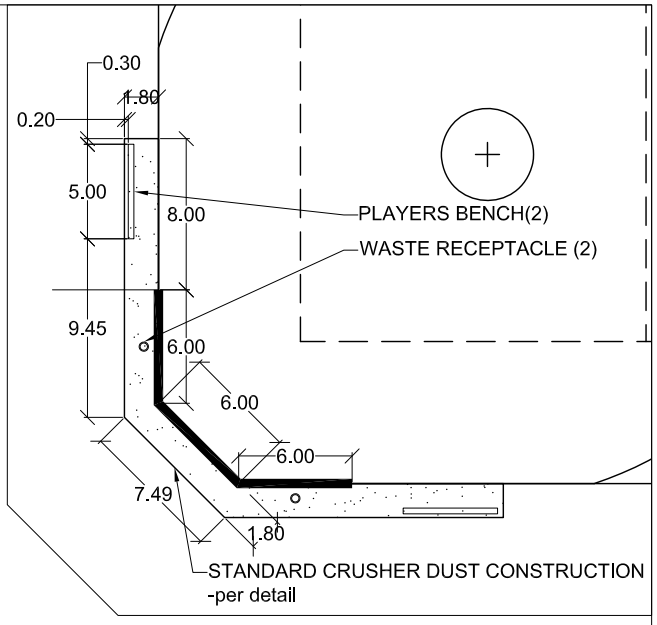
.2 Ensure top of pins is 100 - 150mm below finished grade.

.3 Place sports field soil mix.

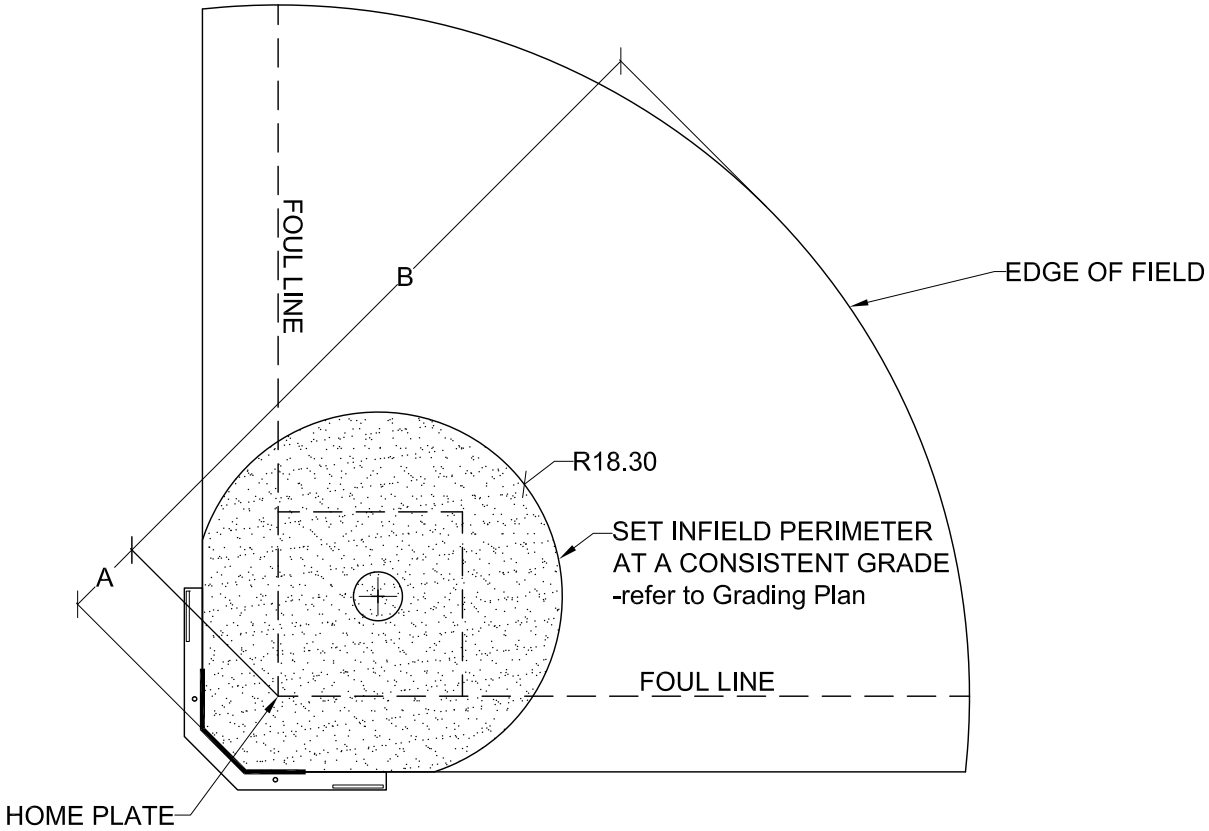
3.5 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION



PLAYERS BENCH & FENCES



FIELD DIMENSIONS:

	A	B
69.00m (225ft)	7.60	68.60

NOTE:
1. Units are in meters U.N.O.

OVERALL

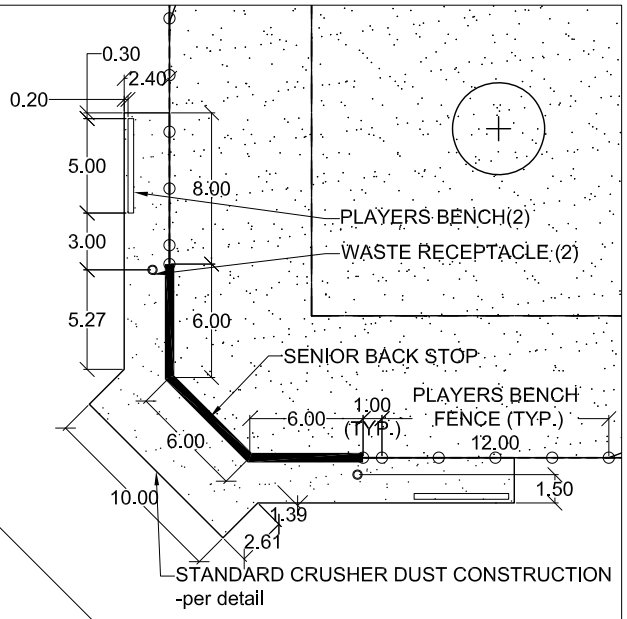
City of Saskatoon

Drawing Title: Neighbourhood Softball Layout

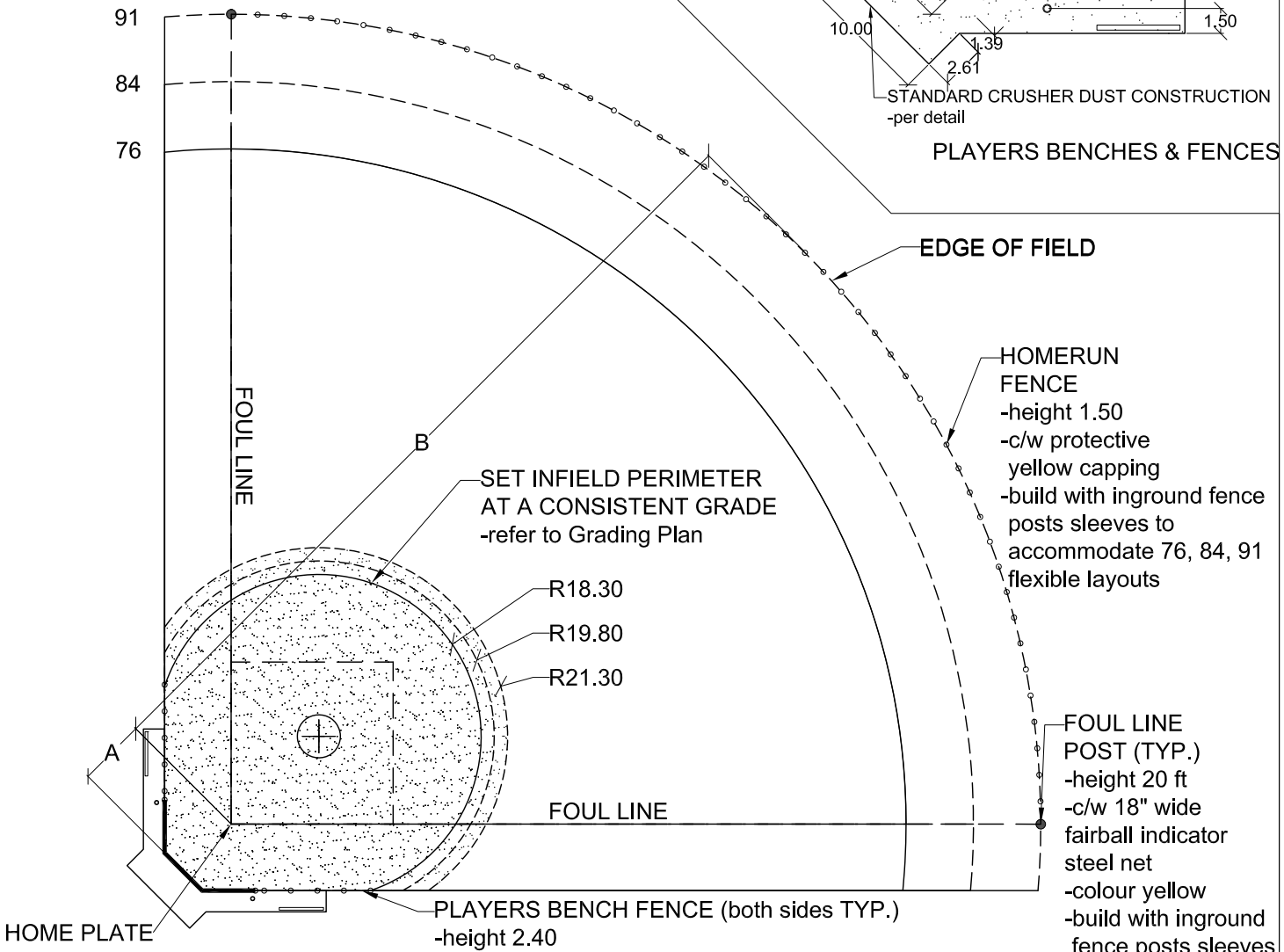
Drawn: HMK Checked: BG Revised Date Y/M/D 21/12/09 Scale: N.T.S.

Drawing No. 02875-01

Parks



PLAYERS BENCHES & FENCES



FIELD DIMENSIONS:

	A	B
76.00m (250ft)	7.60	76.20
84.00m (275ft)	7.60	83.80
91.00m (300ft)	7.60	91.40

NOTE:

1. Units are in meters U.N.O.

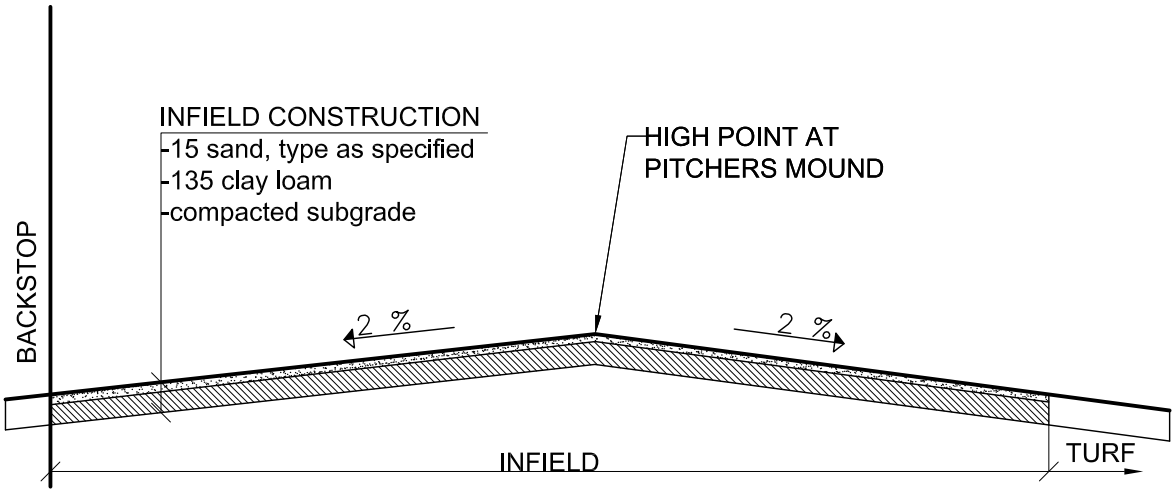
City of Saskatoon

Drawing Title: Multi District Softball (Class 1 or 2) - Layout

Drawing No.: 02875-02

Drawn: HMK | Checked: BG | Revised Date Y/M/D 22/12/14 | Scale: N.T.S.

Parks



NOTE:
1. Units are in millimeters U.N.O.
2. Vertical scale exaggerated for clarity
3. Infield layout plan, see detail

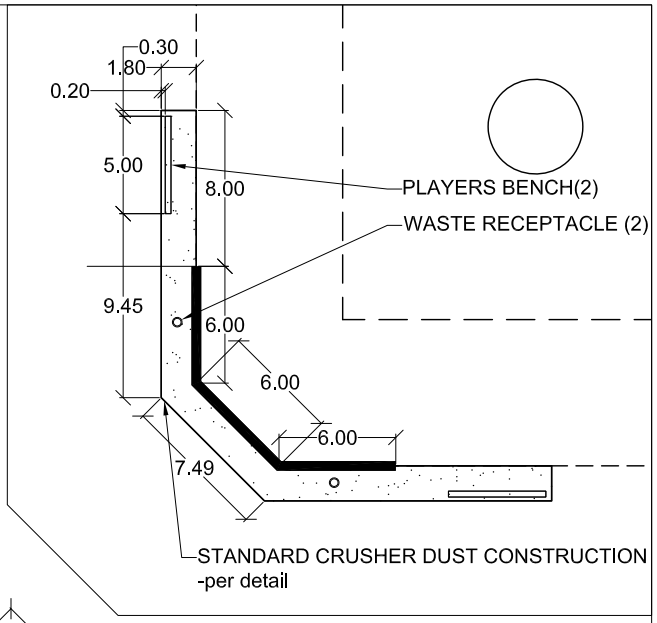
City of Saskatoon

Drawing Title: Infield Construction Section

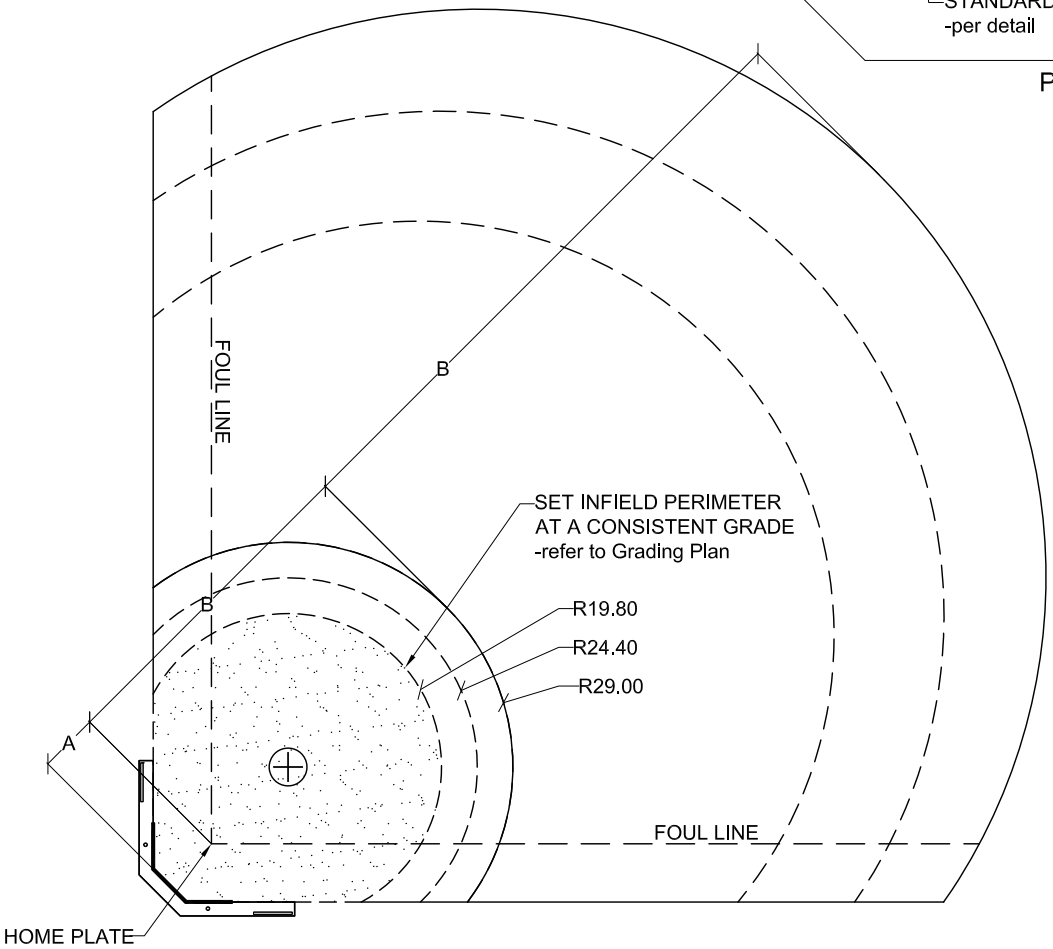
Drawn: HMK Checked: BG | Revised Date Y/M/D 16/02/02 | Scale: 1:300

Drawing No. 02875-03

Parks



PLAYERS BENCH & FENCES



FIELD DIMENSIONS:

	A	B	C
91.40m (300ft)	7.60	34.00	58.00
106.70m (350ft)	7.60	37.00	68.00
121.90m(400ft)	7.60	43.00	79.00

NOTE:
1. Units are in meters U.N.O.

OVERALL

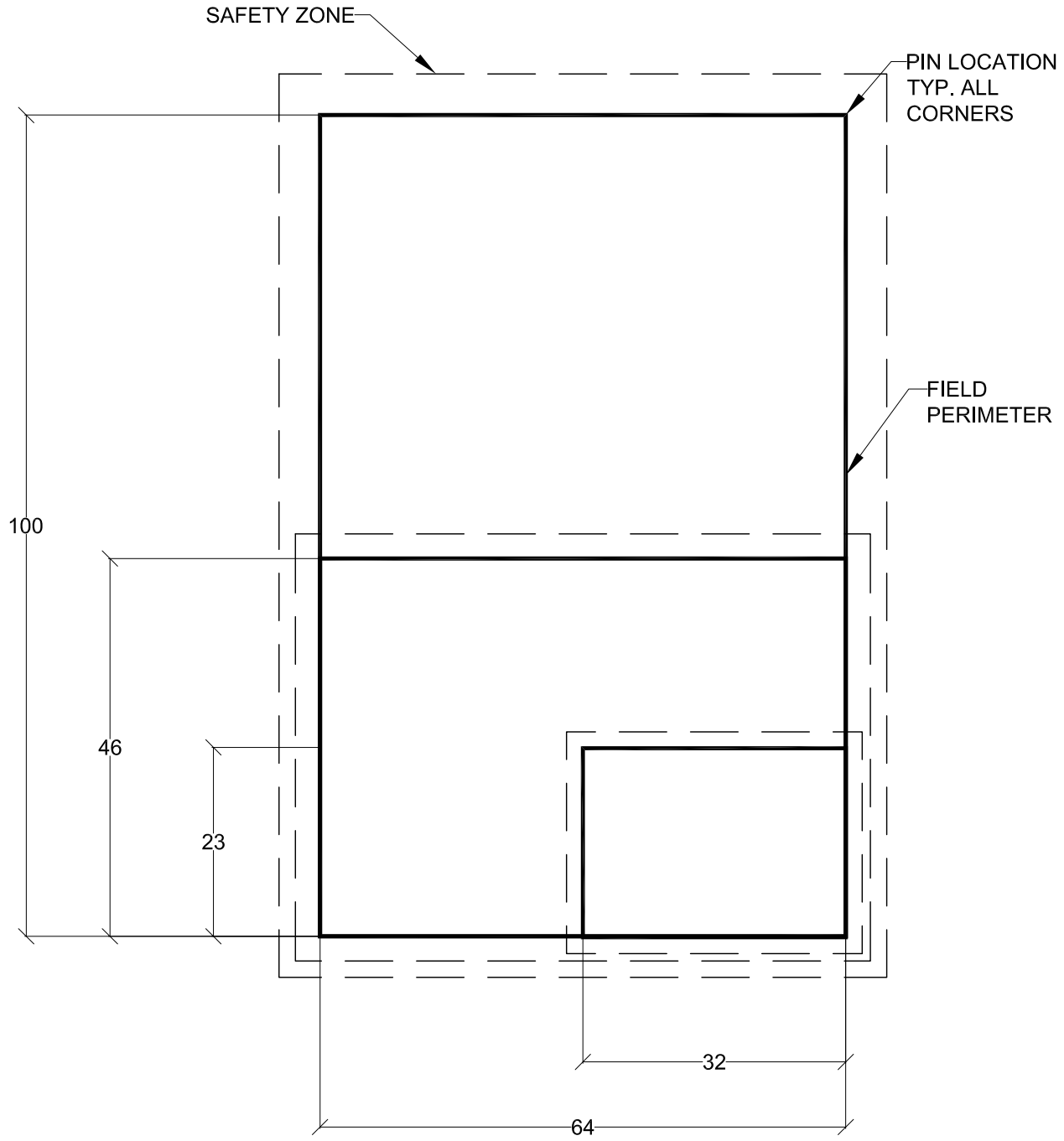
City of Saskatoon

Drawing Title: Baseball Layout

Drawn: HMK Checked: BG | Revised Date Y/M/D 21/12/09 | Scale: N.T.S.

Drawing No. 02875-04

Parks



SAFETY ZONE DIMENSIONS

FIELD	LENGTH	WIDTH
32 X 23	36	27
64 X 46	70	52
100 X 64	110	74

* NOTE: Standard safety zone for 64 x 100 field may be expanded. Refer to Specific Conditions.

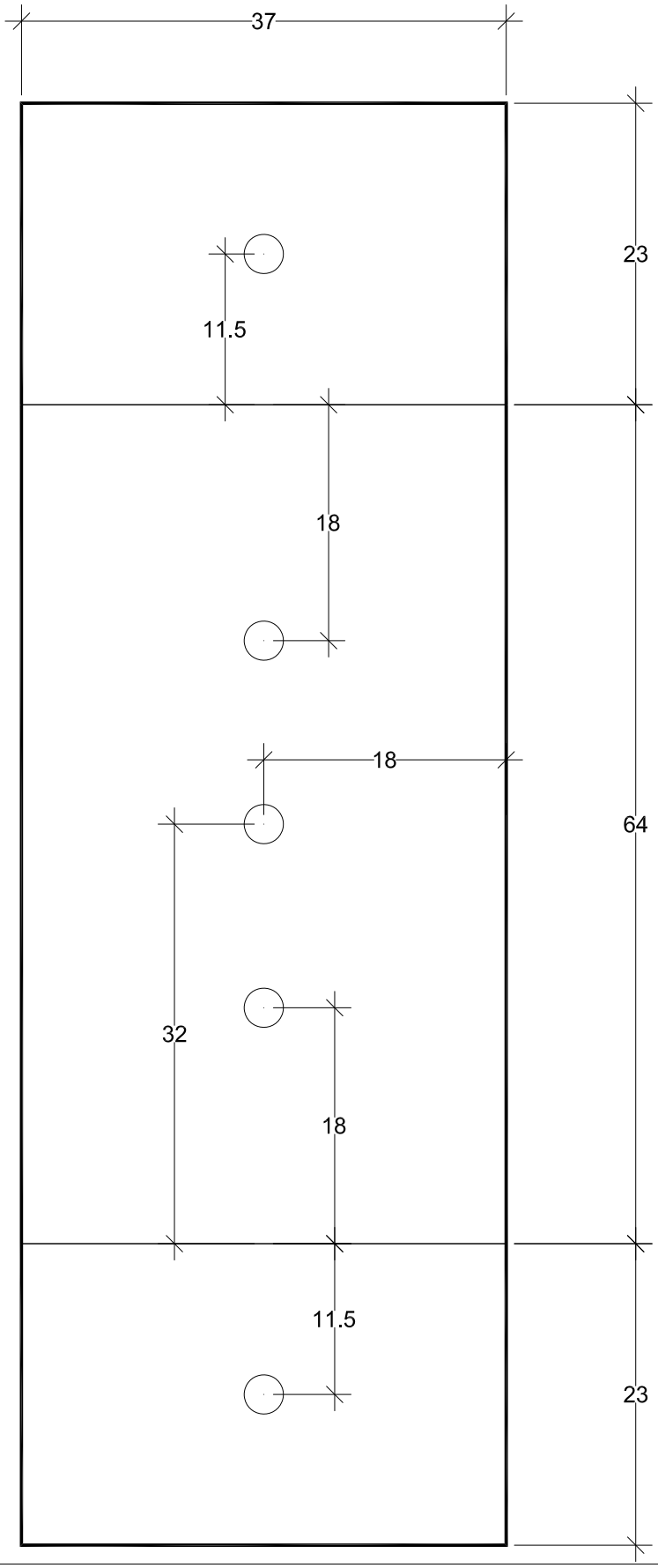
City of Saskatoon

Drawing Title: Multipurpose Field Layouts

Drawn: BG Checked: BG Revised Date Y/M/D 13/11/08 Scale: N.T.S.

Drawing No. 02875-05

Parks



FIELD MARKS:

Bricks - 18m
Reverse Brick - 11.5m
Midfield - 32m

NOTE:
1. Units are in meters U.N.O.

City of Saskatoon

Drawing Title: Ultimate Disc Layout

Drawn: BG | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: N.T.S.

Drawing No. 02875-06

Parks

02920 Naturalized Seeding

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02212 Topsoil

.2 Section 02998 Landscape Maintenance

1.2 QUALITY CONTROL

.1 Approved seed mixes for use.

.1 Submit "original" seed bag labels for each type of seed mix used to **Consultant** before seeding.

.2 Notify **Consultant** before seeding.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Fertilizer application and seed bed preparation, before seeding.

.2 Seeding.

2.0 Products

2.1 GRASS SEED AND SEED MIXES

.1 Grass seed requirements: Canada No. 1 Grade Seed, from recognized seed firm, free of disease, minimum germination of 85%, minimum purity of 97% and meet requirements of City of Saskatoon seed mixes, per below.

.2 The following seed mixes are guidelines:

.1

Vegetated Swale Mix 25 kg bag by seed count Botanical Name	Common Name	Kg
Agropyron dasystachyum	Northern Wheatgrass	5.0
Agropyron smithii	Western Wheatgrass	6.0
Bouteloua gracilis	Blue grama	5.0
Festuca hallii	Plains Rough Fescue	5.0
Leymus innovates	Hairy Wildrye	2.0
Stipa viridula	Green Needlegrass	2.0

.2

Grassy Swale/Wet Meadow Mix 25 kg bag by seed count Botanical Name	Common Name	Kg
Agropyron dasystachyum	Northern Wheatgrass	2.0
Agropyron riparium	Streambank Wheatgrass	4.0
Agropyron subsecundum	Awned Wheatgrass	6.0
Agropyron trachycaulum	Slender Wheatgrass	4.0
Elymus Canadensis	Canada Wild Rye	6.0
Poa palustris	Fowl Bluegrass	1.0
Stipa viridula	Green Needlegrass	2.0

.3

Wild Flower Mix 5 kg bag by seed count Botanical Name	Common Name	Kg
Anemone multifida	Cut-Leaved Anemone	0.375
Echinacea angustifolia	Purple Coneflower	1.000
Campanula rotundifolia	Harebell	0.500
Gaillardia aristata	Gaillardia	0.625
Heliopsis helianthoides var. scabra	Rough Heliopsis	0.375
Monarda fistulosa	Wild Bergamot	0.750
Petalostemon purpureum	Purple Prairie Clover	0.375
Rubdeckia hirta	Black Eyed Susan	0.750
Symphyotrichum laeve var.laeve	Smooth Aster	0.250

.4

Rip-Rap Mix 12 kg bag by seed count Botanical Name	Common Name	Kg
Deschampsia cespitosa	Tufted Hairgrass	10.0
Solidago missouriensis	Prairie Goldenrod	2.0
White Clover (micro)	or white Dutch(No Ladino)	0.5

2.2 OTHER MATERIALS

.1 Fertilizer: Complete synthetic, slow release max. 35% water soluble nitrogen.

.1 11-52-0, or as recommended in soils test analysis results.

.2 Water: Free of impurities inhibiting germination and growth.

.3 Hydro-Mulch: As approved, wood cellulose, containing no contaminants.

.4 Tackifier/Binder: As approved.

.5 Compost.

2.3 EQUIPMENT

.1 Manual seeding; "Cyclone" type manually operated seeder and flexible “drag mat”.

.2 Mechanical seeding; "Brillion" type mechanical landscape seeder which accurately places seed at specified depth and rate and rolls in single operation.

.3 Hydro seeding and hydro mulching; approved hydro seeder.

.4 Rollers; suitable for type of Work and seeded area.

3.0 Execution

3.1 PREPARATION

.1 Re-grade areas damaged during construction of other Work and remove weeds, stones, debris, and other foreign material in excess of 25mm diameter before seeding.

3.2 FERTILIZER

.1 Apply approved fertilizer to topsoil areas at rate of 100kg per hectare, or as recommended in soils test analysis results.

3.3 SEED BED PREPARATION

.1 Requirements:

.1 Fine grade and loosen topsoil, to achieve loose friable bed.

.2 Eliminate rough spots and low areas to ensure positive drainage.

.3 Consolidate topsoil in seeded areas leaving surface smooth, uniform, firm against deep foot printing, and with fine loose texture.

.2 Finish grade for paths crossing swales require grades 25mm below adjacent path downstream side, as indicated.

3.4 SEEDING OPERATIONS

.1 Do not perform work under adverse site conditions; frozen ground, saturated ground, or ground covered with snow, ice or standing water.

.1 Obtain approval to proceed with seeding.

.2 Calculate number of seed bags used for each seed mix type.

.3 Seed using same method as intended for other seeding operations.

.2 Authorization is required before applying seed mixes (except fall rye):

.1 Seed half of required seed amount in one direction and remainder at right angles.

.2 Seed uniformly for each seed mix type at rate of 200kg per hectare.

.3 Ensure seed does not spread to non-turf areas e.g. shrub beds, perennial beds, play areas.

.4 Blend applications into adjacent turf areas or sodded areas to achieve uniform surfaces.

.3 Ensure seed is embedded into soil to depth of 5mm within 1 hour of seeding.

3.5 AERATION, TOPDRESSING AND SEEDING

.1 Use approved equipment for existing turf areas identified for topdressing and re-seeding and proceed as follows:

.1 Mow turf adjacent to re-seeded areas to a height of 63mm.

.2 Rake thoroughly, removing loose and dead turf, stones and debris.

.3 Aerate the area and “drag mat” to break down cores.

.4 Spread clean topsoil to 12mm depth, filling in low areas and bare spots.

.5 Over seed area with seed mix matching original area and rate.

.6 Water to ensure contact between seed and soil.

3.6 HYDROMULCHING (IF REQUIRED)

.1 Immediately following seeding operations apply approved mixture of mulch, tackifier/binder and water with hydro seeder.

3.7 PNEUMATIC SEEDING WITH SOIL

.1 Seed can be applied pneumatically with compost, subject to approval by **Consultant.**

.2 Depth of pneumatic seeding with soil 25mm unless otherwise specified.

3.8 PROTECTION

.1 Protect seeded areas against damage using materials and method as approved and remove protection after turf areas have been accepted.

3.9 ESTABLISHMENT AND MAINTENANCE

3.10 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION

02933 Seeding

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02212 Topsoil

.2 Section 02998 Landscape Maintenance

1.2 QUALITY CONTROL

.1 Approved seed mixes for use.

.1 Submit "original" seed bag labels for each type of seed mix used to **Consultant** before seeding.

.2 Notify **Consultant** before seeding.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Fertilizer application and seed bed preparation, before seeding.

.2 Seeding.

2.0 Products

2.1 GRASS SEED AND SEED MIXES

.1 Grass seed requirements: Canada No. 1 Grade Seed, from recognized seed firm, free of disease, minimum germination of 85%, minimum purity of 97% and meet requirements of City of Saskatoon seed mixes, per below.

.2 The following seed mixes are guidelines:

.1

Irrigated Mix – for 25 kg/bag by seed count (Premixed)	Acceptable Alternate	Kg
Creeping Red Fescue (Garnet)	Jasper II or Boreal	7.0
Perennial Rye Grass (Fiesta 3)	Palmer V or Playmate	2.0
Kentucky Blue Grass (Touchdown)	Orfeo or Be Dazzled,	5.0
Kentucky Blue Grass (Midnight)	Quantum Leap or Rugby II	6.0
Kentucky Blue Grass (Parkland)	Brooklawn or Alene 1	5.0

.2

Dryland Parks/Sportsfields/ Boulevards/Median – For 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Kentucky Blue Grass (Alene I)	Touchdown or Brooklawn	7.0
Kentucky Blue Grass (Midnight)	Quantum Leap or Rugby	3.0
Perennial Rye Grass (Cutter)	Playmate or Citation Fore	2.5
Creeping Red Fescue (Aberdeen)	Jasper II or Boreal	5.0
Tall Fescue (Mustang III)	Watchdog or Guardian	4.0
Hard Fescue (Osprey)	Eureka II or Discovery	3.0
Transitional Rye (common)		0.5

.3

Dryland Mix (Conventional) Roadway Ditches – for 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Canada Bluegrass	Var. Ruebens or Canon	8.0
Hard Red Fescue (Osprey)	Eureka II or Discovery	4.0
Creeping Red Fescue (Aberdeen)	Jasper II or Boreal	4.0
Kentucky Bluegrass (Alene)	Touchdown or Brooklawn	3.0
Perennial Ryegrass (Cutter)	Playmate or Citation Fore	3.0
Tall Fescue (Watchdog)	Mustang III or Tomcat	2.0
White Clover (micro)	No Ladino	1.0

.4

Dryland Mix Roadway Ditches(adjacent Naturalized Areas) – for 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Rocky Mountain Fescue *(var. saximontana)*		5.0
Western Wheatgrass (*Agropyron smithii)*		4.0
Stream bank Wheatgrass *(Agropyron riparium)*	Common #1	4.0
Slender Wheargrass (*Agropyron trachycalum)*		2.0
Plains rough fescue (*Festuca Hallii)*		3.0
Tufted Hairgrass (*Deschampsia cespitosa*)		3.0
Annual Ryegrass (Diploid)		2.0
Hairy Vetch		2.0

.5

Irrigated Sportsfield Grass Seed Mix – for 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Perennial Rye (Fiesta 3)	Citation Fore or Palmer V	2.0
Creeping Red Fescue (Garnet)	Boreal or Jasper II	5.0
Kentucky Blue Grass (Quantum Leap)	Alpine or Award	6.0
Kentucky Blue Grass (BeDazzed)	Orfeo or Midnight	6.0
Kentucky Blue Grass (Brooklawn)	Parkland or Rugby II	6.0

.6

Sportsfield Repair Grass Seed Mix– 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Perennial Rye Grass (Fiesta 3)	Playmate or Citation Fore or a blend of PRG.	18.0
Kentucky Bluegrass (Touchdown)	Orfeo or Brooklawn	7.0

.7

Toboggan Hill Dryland Mix (Trail Mix) – for 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Creeping Red Fescue (Boreal)	Jasper II or Aberdeen	5.0
Streambank Wheatgrass (Common#1)	Sodar	2.0
Russian Wild Rye (Tom)	Swift or Common #1	4.0
Perennial Ryegrass (Cutter)	Playmate or Citation Fore	2.0
Sheep's Fescue (common)	Azay or Quatro	4.0
Hard Fescue (Osprey)	Eureka II or Discovery	2.5
Kentucky Blue Grass (Touchdown)	BrookLawn or Alene I	5.0
White Clover (micro)	or white Dutch(No Ladino)	0.5

.8

Alkaline Mix 25 kg bag by seed count (Premixed)	Acceptable Alternate	Kg
Slender Creeping Red Fescue (Dawson)	SeaLink or Seabreeze	7.5
Russian Wild Rye (Tom)	Swift or Common#1	5.0
Tall Fescue (Tomcat, Mustang lll)	Watch Dog or Guardian	4.5
Perennial Ryegrass (BrightStar)	Charger, Playmate.Salinas	4.0
Alkaligrass (Fults)	Oceania or Saltonsea	4.0

.9

Naturalized "Low Growing"Grass Seed – 25 kg bag. Seed is required free of noxious weeds and other undesirable species	Acceptable Alternate	Kg
Blue grama (*Bouteloua gracillis)*		4.0
Northern Wheatgrass(Canada Certified No.1 seed)		3.0
Slender Wheatgrass (Elymus trachycaulus)		2.0
Western Wheatgrass (Canada Certified No.1 seed)	Walsh	3.0
Canada Wildrye (Elymus Canadensis)		2.0
Western Porcupine grass*(Stip curtiseta)*	Alt. -Needle and thread	3.0
Prairie June grass(*Koleleria macrantha)*		5.0
Little bluestem(*Andropogon scoparium)*		3.0

.10

Fill Site (Premixed)	Acceptable Alternate	Kg
Alsike Clover (*Trifolium hybridum)*		10.0
Canada Wildrye (Mandan)		10.0
Tall Fescue (mustang lll)	Tomcat, or Blackwatch,	5.0

2.2 OTHER MATERIALS

.1 Fertilizer: Complete synthetic, slow release max. 35% water soluble nitrogen.

.1 11-52-0, or as recommended in soils test analysis results.

.2 Water: Free of impurities inhibiting germination and growth.

.3 Hydro-Mulch: As approved, wood cellulose, containing no contaminants.

.4 Tackifier/Binder: As approved.

.5 Compost.

2.3 EQUIPMENT

.1 Manual seeding; "Cyclone" type manually operated seeder and flexible “drag mat”.

.2 Mechanical seeding; "Brillion" type mechanical landscape seeder which accurately places seed at specified depth and rate and rolls in single operation.

.3 Hydro seeding and hydro mulching; approved hydro seeder.

.4 Rollers; suitable for type of Work and seeded area.

3.0 Execution

3.1 PREPARATION

.1 Re-grade areas damaged during construction of other Work and remove weeds, stones, debris, and other foreign material in excess of 25mm diameter before seeding.

3.2 FERTILIZER

.1 Apply approved fertilizer to topsoil areas at rate of 100kg per hectare, or as recommended in soils test analysis results.

3.3 SEED BED PREPARATION

.1 Requirements:

.1 Fine grade and loosen topsoil, to achieve loose friable bed.

.2 Eliminate rough spots and low areas to ensure positive drainage.

.3 Consolidate topsoil in seeded areas leaving surface smooth, uniform, firm against deep foot printing, and with fine loose texture.

.2 Finish grade for paths crossing swales require grades 25mm below adjacent path downstream side, as indicated.

3.4 SEEDING OPERATIONS

.1 Do not perform work under adverse site conditions; frozen ground, saturated ground, or ground covered with snow, ice or standing water.

.1 Obtain approval to proceed with seeding.

.2 Calculate number of seed bags used for each seed mix type.

.3 Seed using same method as intended for other seeding operations.

.2 Authorization is required before applying seed mixes (except fall rye):

.1 Seed half of required seed amount in one direction and remainder at right angles.

.2 Seed uniformly for each seed mix type at rate of 200kg per hectare.

.3 Ensure seed does not spread to non-turf areas e.g. shrub beds, perennial beds, play areas.

.4 Blend applications into adjacent turf areas or sodded areas to achieve uniform surfaces.

.3 Ensure seed is embedded into soil to depth of 5mm within 1 hour of seeding.

.4 Sportsfield mix areas, roll with approved equipment, after seeding before watering.

.5 Fall Rye apply seed at rate of 125kg per hectare during the month of August.

3.5 AERATION, TOPDRESSING AND SEEDING

.1 Use approved equipment for existing turf areas identified for topdressing and re-seeding and proceed as follows:

.1 Mow turf adjacent to re-seeded areas to a height of 63mm.

.2 Rake thoroughly, removing loose and dead turf, stones and debris.

.3 Aerate the area and “drag mat” to break down cores.

.4 Spread clean topsoil to 12mm depth, filling in low areas and bare spots.

.5 Over seed area with seed mix matching original area and rate.

.6 Water to ensure contact between seed and soil.

3.6 HYDROMULCHING (IF REQUIRED)

.1 Immediately following seeding operations apply approved mixture of mulch, tackifier/binder and water with hydro seeder.

3.7 PNEUMATIC SEEDING WITH SOIL

.1 Seed can be applied pneumatically with compost, subject to approval by **Consultant.**

.2 Depth of pneumatic seeding with soil 25mm unless otherwise specified.

3.8 PROTECTION

.1 Protect seeded areas against damage using materials and method as approved and remove protection after turf areas have been accepted.

3.9 ESTABLISHMENT AND MAINTENANCE

3.10 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION

02938 Sodding

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02212 Topsoil

.2 Section 02998 Landscape Maintenance

1.2 QUALITY CONTROL

.1 **City of Saskatoon, Parks Division** to approve type of sod used for Work.

.1 Submit name of sod source and supplier.

1.3 INSPECTION

.1 Notify **Consultant** 24 hours in advance for inspection and approval of:

.1 Fertilizer application and sod bed preparation before sodding.

.2 Sod material before placement.

.3 Sod placement.

1.4 DELIVERY AND STORAGE

.1 Schedule deliveries to minimize site storage and sod placement delays.

.1 Deliver sod to site within 24 hours of being lifted.

.2 Deliver, unload and store rolled sod on pallets only.

.3 Do not deliver small, irregular or broken pieces of sod.

.2 Store and protect sod as required to preserve quality and vitality.

.1 In wet weather allow sod to dry sufficiently to prevent tearing during lifting and Handling.

.2 Prevent sod from drying out during hot weather. Water sod as necessary to prevent dropping of soil while handling.

.1 Dried out sod will be rejected.

2.0 Products

2.1 NURSERY SOD

.1 Bluegrass and Fescue grass sod (peat sod is not acceptable) seeded and cultivated in a nursery field as turf grass crop. Containing max. 2% of other grass species or clover and maximum of two broad leaf weeds within a 40m^2 area.

.1 20mm min. thickness, 25mm max. thickness of sod portion.

.2 Sod with soil visible when mowed to 63mm (2.5") height is prohibited.

.3 Bluegrass and Fescue grass composition:

.1 Min. 40% Kentucky Bluegrass.

.2 Min. 30% Creeping Red Fescue.

.3 Max. 5% Perennial Rye Grass or 10% Red Top.

2.2 DRYLAND SOD

.1 Bluegrass and Ryegrass sod (peat sod is not acceptable) seeded and cultivated in a nursery field as turf grass crop. Containing max. 2% of other grass species or clover and maximum of two broad leaf weeds within a 40m^2 area.

.1 20mm min. thickness, 25mm max. thickness of sod portion.

.2 Sod with soil visible when mowed to 63mm (2.5") height is prohibited.

.3 Bluegrass and Ryegrass composition:

.1 Min. 54% Ridgeline Kentucky Bluegrass.

.2 Min. 8% Mallard Kentucky Bluegrass

.3 Max. 8% Monte Carlo Kentucky Bluegrass

.4 Max. 15% Integra II Perennial Ryegrass

.5 Max.15% 1G Squared Perennial Ryegrass

2.3 OTHER MATERIALS

.1 Fertilizer: complete synthetic, slow release max. 35% water soluble nitrogen.

.1 11-52-0 or as recommended in soils test analysis results.

.2 Water: free of impurities inhibiting germination and growth.

.3 Wood stakes: 17 x 17 x 300mm, treated wood not acceptable.

2.4 EQUIPMENT

.1 Rollers: suitable for type of Work and sodded area.

3.0 Execution

3.1 PREPARATION

.1 Re-grade areas damaged during construction of other Work and remove weeds, stones, debris, and other foreign material in excess of 25mm diameter before sod placement.

3.2 FERTILIZER

.1 Apply approved fertilizer to topsoil areas at rate of 100kg per hectare, or as recommended in soils test analysis results.

3.3 SOD BED PREPARATION

.1 Requirements:

.1 Fine grade and loosen topsoil, to achieve loose friable bed.

.2 Eliminate rough spots and low areas to ensure positive drainage.

.3 Consolidate topsoil in seeded areas leaving surface smooth, uniform, firm, with fine loose texture.

.2 Finish grade for paths crossing swales require grades 25mm below adjacent path downstream side.

3.4 SODDING OPERATIONS

.1 Lay sod within 24 hours of being lifted.

.2 Do not lay sod under freezing temperatures or on frozen or excessively wet soil.

.3 Install sod per drawings, to minimize trimming and waste.

.1 Begin laying sod along the straightest edge.

.2 Stagger joints.

.3 Trim excess sod along perimeter of area with sharp edging tool.

.4 Short pieces along edges are prohibited.

.5 Knit sod edges closely together.

.4 Install sod on slopes in rows at right angles to slopes:

.1 Slopes of 1.75:1 to 3:1: Secure bottom three rows of sod and every third row following with wooden stakes.

.2 Slopes steeper than 3:1: Secure each row of sod with wooden stakes. Use chicken wire if necessary.

.3 Place wood stakes close enough to prevent sod from shifting, at intervals not exceeding 600mm.

.1 Drive stakes flush with sod soil surface.

.5 Roll sodded areas lightly to provide contact between sod and soil.

.1 Heavy rolling to correct irregularities in grade is prohibited.

.2 Tamp edges smooth and flush with surface of adjoining areas.

.6 Water sod areas immediately after installation using irrigation system or other method, ensuring that erosion and compaction are not caused during watering.

.1 Apply sufficient water to ensure moisture penetration of 75 to 100mm depth.

3.5 PROTECTION

.1 Protect sod areas against damage using approved materials and method. Remove this protection after turf areas have been accepted.

3.6 ESTABLISHMENT AND MAINTENANCE

3.7 CLEAN-UP

.1 Clean adjacent walks and road surfaces at the end of each working day.

END OF SECTION

02950 Plant Material

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02210 Rough Grading

.2 Section 02212 Topsoil

.3 Section 02998 Landscape Maintenance

1.2 QUALITY CONTROL

.1 Approval from the **City of Saskatoon, Parks Department** required for proposed plant material species and sizes.

.1 Submit name of plant material source and supplier, species and quantity before shipment.

.1 Imported plant material require necessary permits and import licenses, conforming to federal and provincial regulations.

.2 Submit Letter of Certification for Elm Trees, specifying supplier.

.2 Ensure plant material complies with the current edition of Canadian Landscape Standards as published jointly by Canadian Society of Landscape Architects & Canadian Nursery Landscape Association.

.3 Dutch Elm Disease: To prevent the spread of Dutch Elm Disease (DED), importing of elm trees into Saskatoon from an area where Dutch Elm Disease has been confirmed is prohibited (governed by federal and provincial legislation).

.1 Transportation of elm trees shall comply with Provincial DED regulations.

.2 Before shipment of trees, submit a “Letter of Certification” stating that elm trees imported to the City of Saskatoon area are free of disease, and have been sprayed with Dursban Turf or another approved insecticide to control the elm bark beetle, before shipment of trees.

.4 Planting Season:

.1 Deciduous plant material

.1 Plant between April 1 and October 31.

.2 Coniferous plant material

.1 Dig during Spring dormancy only.

.2 Plant before September 1.

.3 Water frequently and consistently through October 15.

.3 Planting after the stipulated dates is subject to the approval of the **City of Saskatoon Parks Department Design Section**, and will require additional watering as directed.

.5 Approval from the **City of Saskatoon, Parks Department** required for proposed mulch:

.1 Submit name of mulch material source and supplier before shipment.

.2 Submit a 1 litre sample of mulch for review and comment/approval, before delivery to site.

.3 Acceptance of mulch material is at the discretion of the **City of Saskatoon, Parks Department**.

.6 Submit to the **City of Saskatoon, Parks Department** required Tree Watering Log from date of planting to date of CCC.

1.3 SUBSTITUTIONS

.1 Species and / or size (smaller or larger) substitutions of plant material is prohibited unless written approval is obtained from **Consultant**.

.2 No substitutions of B&B tree material to Container tree material is permitted.

1.4 INSPECTION

.1 Notify **Consultant** and the **City of Saskatoon, Parks Department, Urban Forestry** 24 hours in advance for inspection and approval of nursery plant material before planting.

.2 Notify **Consultant** 24 hours in advance for inspection and approval of layout before planting.

.3 Notify **Consultant** and the **City of Saskatoon, Parks Department, Urban Forestry** by e-mail for inspection of plant material and plant installation methods before and during planting procedures.

.4 Inspections of plant material may occur at time before, during or after planting, and during the warranty and maintenance period. Inspection and approval does not preclude rejection at a later time.

.5 Mulch installation is not permitted until a written approval from **Consultant** is given.

1.5 DELIVERY AND STORAGE

.1 Coordinate shipping of plants and site preparation to minimize time lapse between transport and planting.

.2 During shipment, protect plant material from frost, excessive heat, sun and wind with tarpaulin covering plants, to prevent loss of moisture.

.1 Protect plants from damage during shipping.

.2 Damaged trunks, branches and leaders are unacceptable. Damaged plant material will be rejected.

.3 Pack plants in damp peat moss, place in bales or boxes, and keep damp during transportation and storage until planted.

.3 If plant material cannot be planted within 4 hours of arrival on site, provide necessary protection to keep plants at optimum health:

.1 Keep roots moist and protected from sun, wind and mechanical damage.

.2 Protect root balls against sudden temperature changes and exposure to heavy rainfall.

.3 Dropping, dragging or other action that may damage the integrity of root balls during handling is not acceptable.

.4 If plants cannot be planted on same day of arrival to site, heel in plant material in shaded areas and water well. Provide extra protection from construction, sun and wind. Ensure close monitoring of plants watering needs.

1.6 WARRANTY

.1 The Contractor hereby warrants plant material will remain acceptable until Final Acceptance (FAC).

.2 The warranty of replacement plants shall extend for an additional one-year period from the date of their acceptance after replacement. In the event that a replacement plant is not acceptable during or at the end of the said extended warranty period, the **Consultant** may elect one more replacement item and take each item over. These tertiary replacement items are not protected under a warranty period.

.3 The Contractor warrants invasive or unwanted plant species shall not be imported into the site with the plant material.

1.7 REPLACEMENTS

.1 During the construction, maintenance and warranty period the project site is not to contain rejected plant material. Remove and replace rejected plant material.

2.0 Products

2.1 PLANT MATERIAL

.1 Plant material shall be nursery grown in accordance with good horticultural practices.

.2 Plant material shall meet the requirements of:

.1 Specified quantity, species and variety.

.2 Specified caliper or height:

.1 50 or larger caliper shall be B&B.

.3 Sufficient root ball size relative to caliper or height.

.4 Specified layout and spacing.

.3 Plant material shall have:

.1 A well developed, strong, fibrous root system that effectively supports the plant within the full extent of the soil mass, characteristic of the species.

.2 A root ball with a depth of a minimum 65% of its diameter (after removal of soil over the structural root / collar).

.3 Well developed and uniform trunk, branching and foliage, with a habit of growth characteristic of the species.

.4 Healthy and vigorous growth.

.5 A straight, vertical, symmetrical trunk and central leader (except where otherwise specified).

.6 A visible root collar at its base (trees).

.7 A firm and rigid, consistently moist, weed-free root ball.

.8 The trunk or plant base centered within the root ball, plus or minus 10%.

.4 Plant material shall be free of / shall not contain:

.1 Diseases and insects (adults, eggs, pupae or larvae); or pre-existing damages resulting from diseases or insects.

.2 Stress induced growth habits, including over-elongated branches.

.3 A loose, unstable or disturbed root ball.

.4 Invasive or unwanted species, including weeds.

.5 Roots growing in a circular direction within the root ball (girdling).

.6 More than 25mm of soil on top of the main structural roots.

.7 Physical damage including sunscald, frost cracks, rodent damage, or other mechanical damage.

.8 Die-back or tip-kill adversely affecting tree structure, including a damaged or dead central leader.

.9 Included bark.

.10 Sparse or under-developed foliage.

.11 Indicators of nutrient deficiencies.

.12 Excessive pruning or shearing that adversely affects the mature form.

.13 Excessive scarring from previous physical damage, including damage from poor pruning practices.

.14 Co-dominant or forked central leader.

.5 Plants dug from native stands, woodlots, Christmas tree lots, orchards or neglected nurseries, and have not received proper maintenance are designated "collected" plants.

.1 "Collected" plants are unacceptable unless inspected and approved.

.6 Deciduous Trees: Black Ash trees are required grafted on to Green Ash rootstock.

2.2 WOOD MULCH

.1 Mulch material shall meet or exceed the following criteria:

.1 Shall be clean and free from deleterious material.

.2 Cannot be treated.

.3 Shall not be derived from elm or cedar.

.4 Post peelings from Northern Saskatchewan are acceptable as source material.

.5 Shall be well shredded.

.6 Mulch less than 100mm and greater than 150mm in length are not acceptable.

2.3 GRAVEL MULCH

.1 Material requirements: pea gravel 0.5" screened and washed.

2.4 WATER

.1 Potable and free of minerals detrimental to plant growth.

.2 Non potable water:

.1 Location and source of water is required.

.2 Water test is required and test results submitted to the **City of Saskatoon, Parks Department** for approval before use.

2.5 TREE WATERING BAG

.1 Tree Watering Bag requirements: plastic tree watering bags holding a minimum of 15 gallons of water and with a slow drip hole(s) water release system, specifically designed to water establishing trees. Water should release over a several day period, not within a few hours.

.2 Tree Watering Bag shall be sized to the appropriate model for the requirements of the plant, per manufacturer's specifications.

.3 Submit manufacturer's product data for the **City of Saskatoon, Parks Department** approval.

2.6 TREE SUPPORT (FOR CONTAINER TREES ONLY)

.1 Punched Heavy-Duty Steel 'T-Post', 1800 to 2400mm long, 35mm gauge, clean, straight.

.2 Accessories: Use 14 gauge galvanized wire inserted into 2 ply reinforced 12mm diameter rubber hose. Ensure sufficient hose length to go around the tree.

2.7 ROOT GROWTH STRUCTURE

.1 Root Growth Structure will be supplied by the City of Saskatoon. The Owner will determine the limits for the installation of the root growth structure.

.2 The excavation of the trench and backfilling with sand shall be paid as Trench Excavation and Backfill – Sidewalk/Paver Area. The irrigation laterals shall be installed in one trench, and the electrical ducts shall be installed in the other trench each with root growth structure. They will be paid for at their respective unit prices.

.3 The root growth structure is required staked against the sidewall of the trench until backfill and duct installation are completed.

.4 The root growth structure shall extend into each tree well by 300mm from the inside of the tree grate support.

2.8 STRUCTURAL SOIL CELL

.1 Structural Soil Cell requirements: modular, structural systems capable of supporting loads up to and including AASHTO H-20. Soil Cells shall be open on vertical faces and horizontal planes and shall have no interior walls. Soil Cell Systems shall have a maximum width of 1295mm, a maximum height 813mm, shall have a minimum void volume percentage of 90%, and provide 0.28 cu.m. of storage per 285mm.

.2 Install per details.

2.9 RIGID STYROFOAM

.1 Required installed on raised planters.

3.0 Execution

3.1 LAYOUT

.1 Establish and maintain line and grade controls using appropriate survey personnel and equipment.

.1 Contractor is responsible for layout accuracy.

.2 Stake locations of trees and obtain approval before planting.

.3 Spray-paint edge of planting bed and obtain approval before start of planting operations.

3.2 UTILITIES AND SETBACKS

.1 Underground utilities and irrigation mainline shall be located and clearly flagged or marked within 5 metres of proposed planting sites.

.1 Identify discrepancies in existing conditions, including locations of underground utilities affecting proposed plant material locations.

.2 Trees require a set back of min. distance, measured from centre of tree trunk, from utilities and other objects.

Utility	Deciduous Trees:	Coniferous Trees:	Comment
*120-240 voltage underground streetlight or traffic light lines.	1.0m	1.0m	OH&S requires that when working within 1.0m of a buried electrical line excavations shall be done by hand. Select plant sites greater than the minimum set-backs where possible. *Setbacks from underground street light lines for residential boulevard tree planting may only be reduced to .6m when plant site is hand dug.
Buried power lines greater than 240 voltage	2.0m	2.0m	
Shaw Cable, Sasktel, SaskEnergy buried lines	2.0m	2.0m	
Overhead high voltage power lines	10.0m	6.0m	Measure from the outside overhead line. Provide greater than the minimum set-backs where possible. Trees planted less than 10m from the outside of the overhead line must have a maximum potential height of 6.0m.
Trans gas/Gas transmission lines	10.0m	10.0m	
Fiber optic lines	3.0m	3.0m	
Water and sewer service connections in new neighborhoods (typically outside Circle Drive and built after 2000)	1.0m	N/A	Note: Set-backs from new water and sewer facilities are less than set-backs from old facilities to provide more plant sites on residential lots in new neighborhoods. Trees species selected when planting less than 3.0m from water lines shall be small ornamental species (≤7.50m mature height) to offset the cost/impact of potential future removal where access to the curb box may be required.
Water and sewer service connections in older neighborhoods (typically within Circle Drive and built before 2000)	3.0m	N/A	Unless the water and sewer line have been recently replaced (not lined) the set-back of 3.0m is the minimum requirement to avoid conflict if access to the curb box is required.
Water main line	3.0m	N/A	Minimum requirement to avoid conflict when/if line is replaced.

Park irrigation main lines	3.0m	3.0m	These are typically 100mm (4") lines.
Park irrigation lateral line	1.0m	1.0m	These are typically 50mm (2") lines.
Park irrigation rotary irrigation spray heads	5.0m	5.0m	

Roadway, Sidewalk and Pathway Set-backs	Deciduous Trees	Coniferous Trees	Comment
**Local, Arterial, Collector or Median curb face.	1.0m	N/A	Coniferous trees are inappropriate for sites close to sidewalks or roadways. Where possible greater set-backs are recommended to provide more root zone area for street tree health and to reduce future maintenance costs associated with trees obstructing sidewalks or roads. Trees shall not be planted where they may obscure site-lines for traffic lights or signs. ** .9m set-back for streetscapes where trees are in cut-outs on amenity strips.
Along newly constructed Arterial streets	Per functional road design	N/A	Consult Transportation functional drawings regarding future roadway expansion plans
Roadways with speed limits over 60km/hour	10.0m	N/A	Higher speeds mean a greater likelihood of damage to trees from salt spray, roadway work, and vehicles or maintenance equipment.
Corner Visibility Triangles	10.0m	N/A	No trees shall be planted 10m from the intersection in a median or boulevard.
Where no sidewalk exists	Per sidewalk infill program	N/A	Consult Transportation Division regarding sidewalk infill placement and plans
Pedestrian Crossings	10.0m`	N/A	No tree shall be planted 10m from a pedestrian crossing midblock or at an intersection.
Driveways/private pathways	3.0m	N/A	Coniferous trees are inappropriate for sites adjacent to driveways/private pathways.
Park pathways	*2.0m	8.0m	*Poplar species shall be a minimum of 10m from pathway surfaces unless approved by the Parks Department.
Back lanes	3.0m	8.0m	
Private and Public fencing adjacent to parks	3.0m	5.0m	Providing adequate set-backs from fencing provides access for standard mowing equipment and helps reduce future maintenance costs when public trees grow into or over private property.

Front of stop signs, yield signs and street corners	10.0m	N/A	Coniferous trees are inappropriate for street tree planting adjacent to roadways or sidewalks.
Front of bus stop signs where the tree is less than 3.0m from the curb face	12.0m	N/A	Trees planted closer than 12.0m create an increased demand for maintenance as trees mature and lateral branches grow into the bus stop lane. Coniferous trees are inappropriate for street tree planting adjacent to roadways or sidewalks.
Street light poles, fire hydrants	3.0m	8.0m	
Spacing between trees in parks/	½ the maximum spread of the larger tree species	½ the maximum spread of the larger tree species	Design specific spacing may be considered on a case by case basis.
Spacing between ornamental trees on boulevards with a mature spread of less than 7.5m	6.0m	N/A	When spacing trees of varying species space according to the larger tree species.
Spacing between shade trees on boulevards with a mature spread greater than 7.5m	7.0m	N/A	

3.3 EXCAVATION

.1 B&B Tree material: Excavating the planting hole requires a tree auger with a tapered bit of appropriate dimension for root ball size & planting requirements per details.

.2 Container Grown stock: Excavating the planting hole requires appropriate equipment for container size & planting requirements per details. Auger excavation is not permitted.

.3 Tree Spade material: Dig tree hole with same mechanical equipment as used to transplant tree spade plant material.

.1 Ensure planting hole is upright.

.4 Scarify wall of planting holes to 150mm before installing plant material.

.1 Remove excess soil and water from planting hole before placing tree.

.5 Excavation left unattended by the Contractor or is further than 5 metres away from where the Contractor is presently working, is required covered up with a piece of plywood and marked with a safety cone.

.6 Excavation and planting procedures are not permitted during extreme weather conditions including high moisture, high temperatures, high winds, sub-zero temperatures or other poor conditions as directed by the **Consultant.**

3.4 PLANTING

.1 Install plant material in centre of planting hole, plumb, per drawings.

.1 Consider existing subgrade soil conditions and further settlement of newly planted material at this stage of planting.

.2 Water each plant immediately after planting.

.2 Balled and Burlapped (B&B) plant material:

.1 Examine root ball and if necessary remove excess soil up to a maximum of 75mm from top of structural root.

.2 Place top of structural root at finished grade (tolerance: +/- 25mm), allowing for future settlement.

.1 If tree location is in heavy clay soil, install main structural root 50mm above finished grade (tolerance +/- 25mm).

.3 Install root ball on undisturbed/compacted subgrade. Place topsoil at edges of excavation to support root ball.

.4 Place planting soil around root system in layers of 150mm, eliminating air voids.

.1 When planting soil is installed up to half the root ball height, cut ties, cut and remove the top 1/3 of burlap and wire basket, ensure 2 lacing loops are left intact and folded down.

.2 When 2/3 of planting soil has been placed, fill hole with water, allowing the water to settle the soil into air voids. Do not complete backfill until water has completely penetrated into soil. Complete backfilling. Do not cover root ball with soil.

.5 Apply 81 litres (18 imp. gal) of water per tree into each tree watering bag immediately after planting.

.6 Apply 45 litres (10 imp. gal) of water per tree around root ball immediately after planting only.

.3 Bare Root plant material:

.1 Ensure sub-grade is undisturbed/compacted.

.2 Position top of root system, indicated by trunk flare or dark stain on trunk, at finished grade.

.3 Spread out roots to prevent future girdling of root system.

.4 Cut back damaged or broken roots with sharp tool to living wood.

.5 Place planting soil and compact firmly around plant.

.6 Apply 81 litres (18 imp. gal) of water per tree into each tree watering bag immediately after planting.

.7 Apply 45 litres (10 imp. gal) of water per tree around root ball immediately after planting only.

.4 Container Grown stock plant material:

.1 Remove container.

.1 Slice the root ball vertically and ease apart the root ball to expose the entire root system.

.2 Remove soil on top of or below the main structural root.

.3 Do not plant if girdling roots are apparent.

.1 Prune and straighten girdling roots before planting

.2 Install root ball on undisturbed/compacted subgrade, ensure root-ball is installed on centre in tree well. Place topsoil at edges of excavation to support root ball.

.3 Position top of main structural root flush with finished grade.

.4 Place planting soil and compact firmly around plant. Do not cover root ball with soil.

.5 For vine installation along mesh fence: carefully guide branches through mesh without breaking.

.6 Apply 81 litres (18 imp. gal) of water per tree into tree watering bag immediately after planting.

.7 Apply 45 litres (10 imp. gal) of water per tree around root ball immediately after planting only.

.8 Shrubs and Vines:

.1 Apply proportionally less for plants in smaller containers.

.5 Tree Spade plant material:

.1 Using hydraulic tree spade, dig plant material with a firm natural cone of root system of sufficient diameter and depth to ensure full recovery of the plants.

.2 Refer to minimum tree spade size requirements.

.3 Dig tree hole with same mechanical equipment and size used to dig plant material.

.1 Ensure planting hole is upright.

.4 Scarify top half of planting hole to 150mm depth.

.5 Install tree plumb and per drawings

.1 Backfill crevices with planting soil, water immediately with quantity of water specified by plant size.

.2 Repeat until soil is flush with finished grade.

.6 Apply 81 litres (18 imp. gal) of water per tree into each tree watering bag immediately after planting.

.7 Apply 45 litres (10 imp. gal) of water per tree around root ball immediately after planting only.

.6 Streetscape Balled and Burlapped (B&B) plant material:

.1 Excavate and remove existing soil from tree well.

.2 Install root ball plumb on compacted planting soil mix/Silva Cell planting soil, ensure root ball is installed on centre in tree well. Place topsoil at edges of excavation to support root ball.

.3 Place top of structural root at the 50mm below tree grate, allowing for future settlement.

.4 Place planting soil around root system in layers of 150mm, eliminating air voids.

.1 When planting soil is installed up to half the root ball height, cut ties, cut and remove the top 1/3 of burlap and wire basket, ensure 2 lacing loops are left intact and folded down.

.2 When 1/2 of planting soil has been placed, fill hole with water, allowing the water to settle the soil into air voids. Do not complete backfill until water has completely penetrated into soil. Complete backfilling.

.5 Install tree grates, per contract documents. Wait five days and saturate the well again with water. Add topsoil as necessary to achieve finished grade and to accommodate mulch material. Do not cover root ball with soil.

.6 Apply 81 litres (18 imp. gal) of water per tree into each tree watering bag immediately after planting.

.7 Apply 45 litres (10 imp. gal) of water per tree around root ball immediately after planting only.

3.5 TREE SUPPORT POSTS AND WIRE

.1 B&B and Tree Spade material shall not typically require tree support, unless not stable in the root ball or as directed by **Consultant.** When needed refer to Container material tree support detail.

.2 Container Trees require tree support.

.1 Locate tree support upwind (of prevalent wind direction), up-slope (for trees on slopes), or as directed by **Consultant.**

.2 Install tree support per detail.

3.6 PRUNING

.1 Pruning of Elm trees during the annual pruning ban from April 1 to August 31 is prohibited.

.1 Dispose of Elm tree cuttings at approved waste facility.

.2 Prune dead, injured, damaged branches or branches that rub against bark.

.1 Remove projecting stubs back to branch collar.

.3 Prune suckers from the base and trunk.

3.7 WOOD MULCH

.1 Wood mulch is required installed after planting for planting beds and individual trees and shrubs.

.2 Min. mulch depth including uniform compaction:

.1 Irrigated areas 100mm.

.2 Non-Irrigated areas 100mm.

.3 Install mulch immediately after planting away from tree trunk/main stems per details.

.4 Compact mulch by spraying gently with water.

3.8 GRAVEL MULCH

.1 Pea Gravel mulch is required for streetscape tree planting per details.

.2 Install Pea Gravel mulch, filled to the bottom of the tree grate per details.

.3 Install at consistent level per details.

.4 Install mulch immediately after planting per detail.

.5 Excess Pea Gravel mulch installation in centre of tree grate hole is not permitted.

.6 Compact mulch by spraying gently with water.

3.9 PLANT BED EDGING

.1 Edging is required for planting beds.

.1 Trim planting bed edge with sharp flat spade or edging tool.

.2 Cut clean crisp edge.

.3 Remove excess material before reinstating or placing mulch.

.2 Ensure edge of planting bed has clean crisp edge and smooth continuous shape per drawings.

3.10 PLANT NURSERY IDENTIFICATION MATERIALS

.1 Retain plant identification tags on plants until Final Acceptance (FAC).

.2 Remove other nursery identification materials at time of planting.

.3 Remove plant identification tags at Final Acceptance (FAC).

3.11 CLEAN-UP

.1 Clean adjacent areas, walks and road surfaces at the end of each working day.

.2 Remove remaining shipping materials, wire, burlap, protective coverings and construction debris from planting.

.3 For trees removed and not replaced:

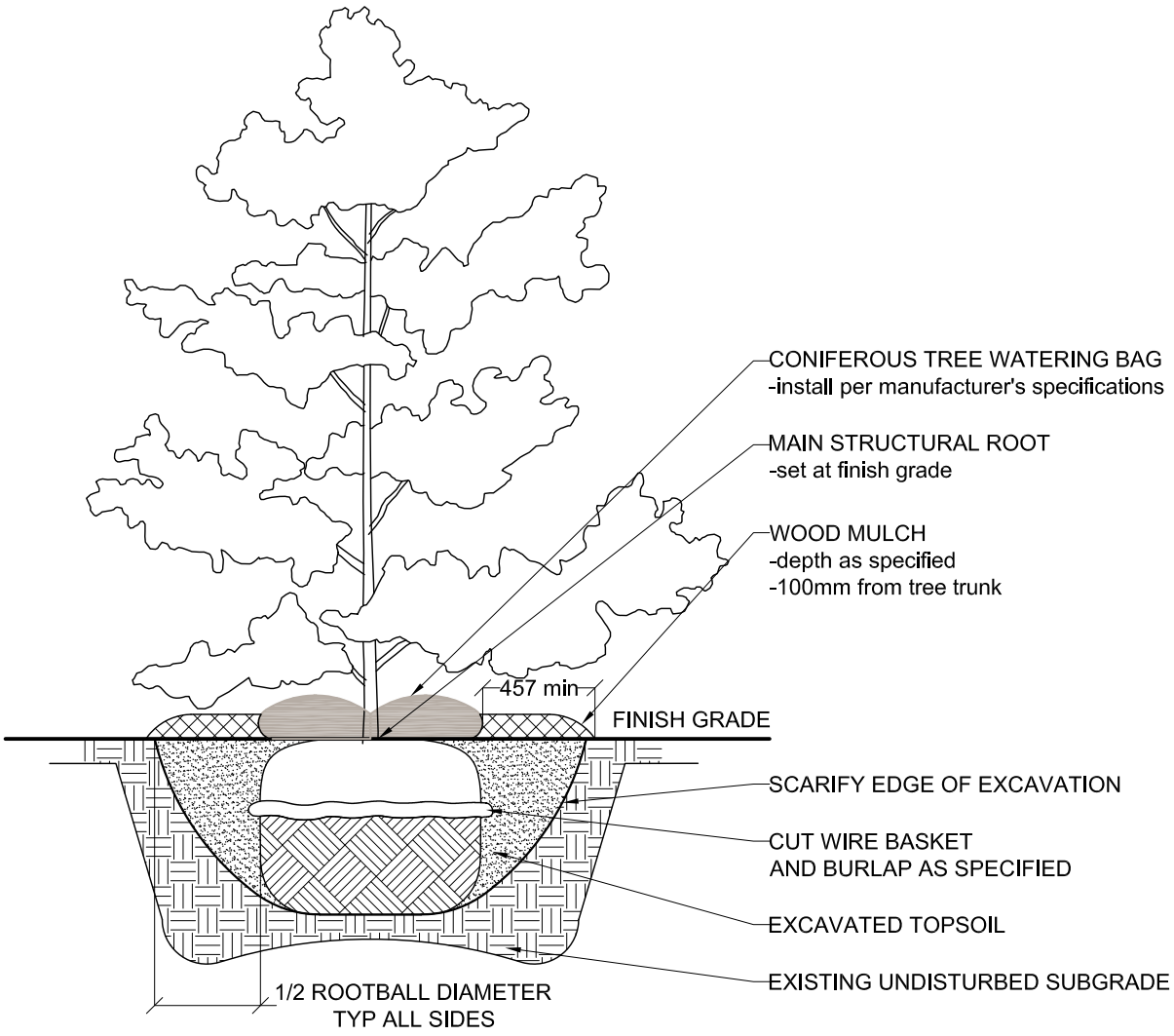
.1 Remove and dispose of the rootball and associated basket, burlap, and staking.

.2 Backfill with topsoil, compact and grade to match the adjacent area.

.3 In turf areas, seed with specified seed mixture for that area.

.4 In beds, install the specified depth of mulch.

END OF SECTION

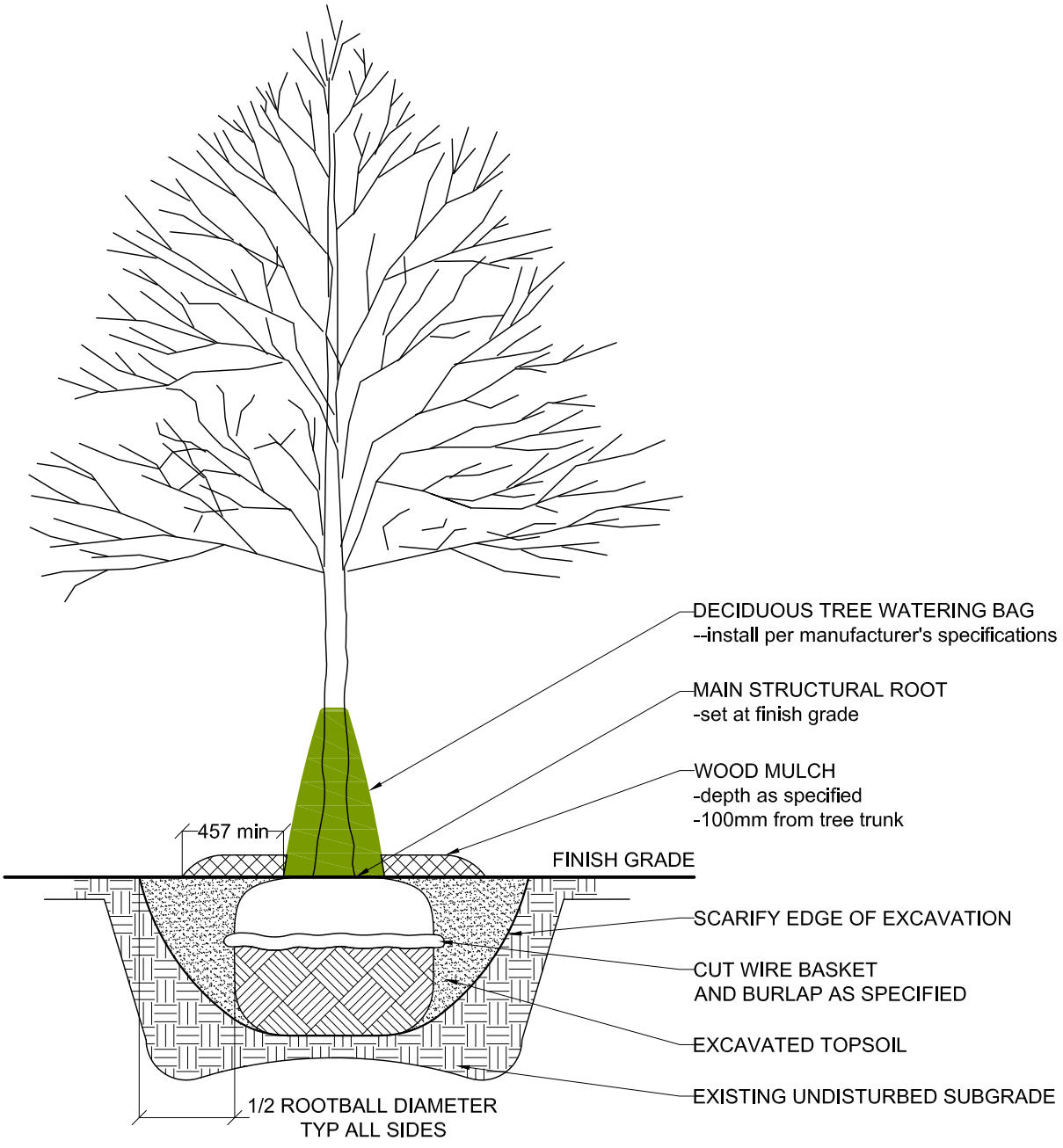


NOTE:

1. **Units are in millimeters U.N.O.**

City of Saskatoon

Drawing Title	Drawing No.
(B&B) Coniferous Trees	02950-01
Drawn: HMK Checked: BG / Revised Date Y/M/D 13/11/08 / Scale: 1:30	Parks



NOTE:

1. **Units are in millimeters U.N.O.**

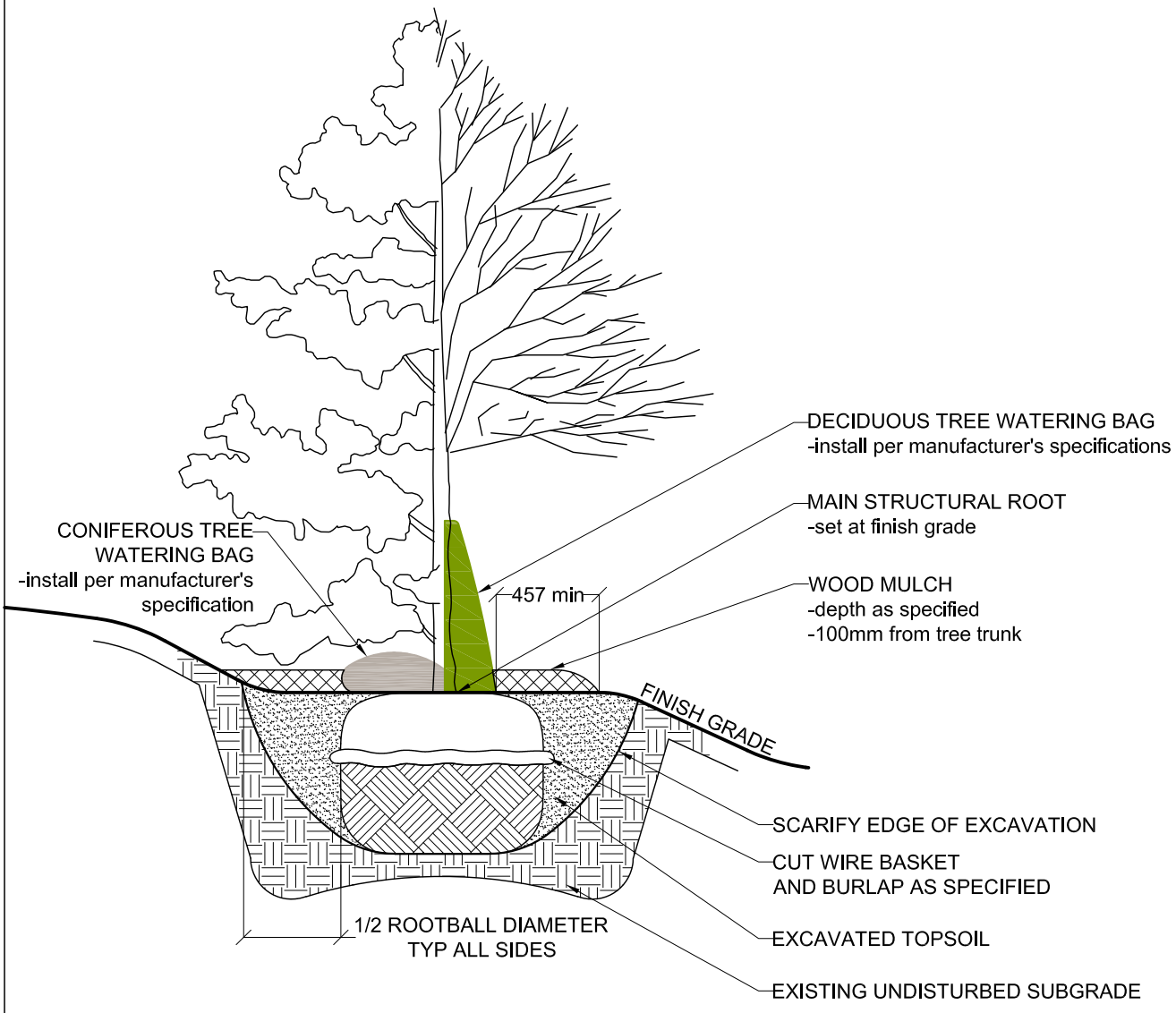
City of Saskatoon

Drawing Title: (B&B) Deciduous Trees

Drawn: HMK Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: 1:30

Drawing No. 02950-02

Parks



NOTE:

1. **Units are in millimeters U.N.O.**

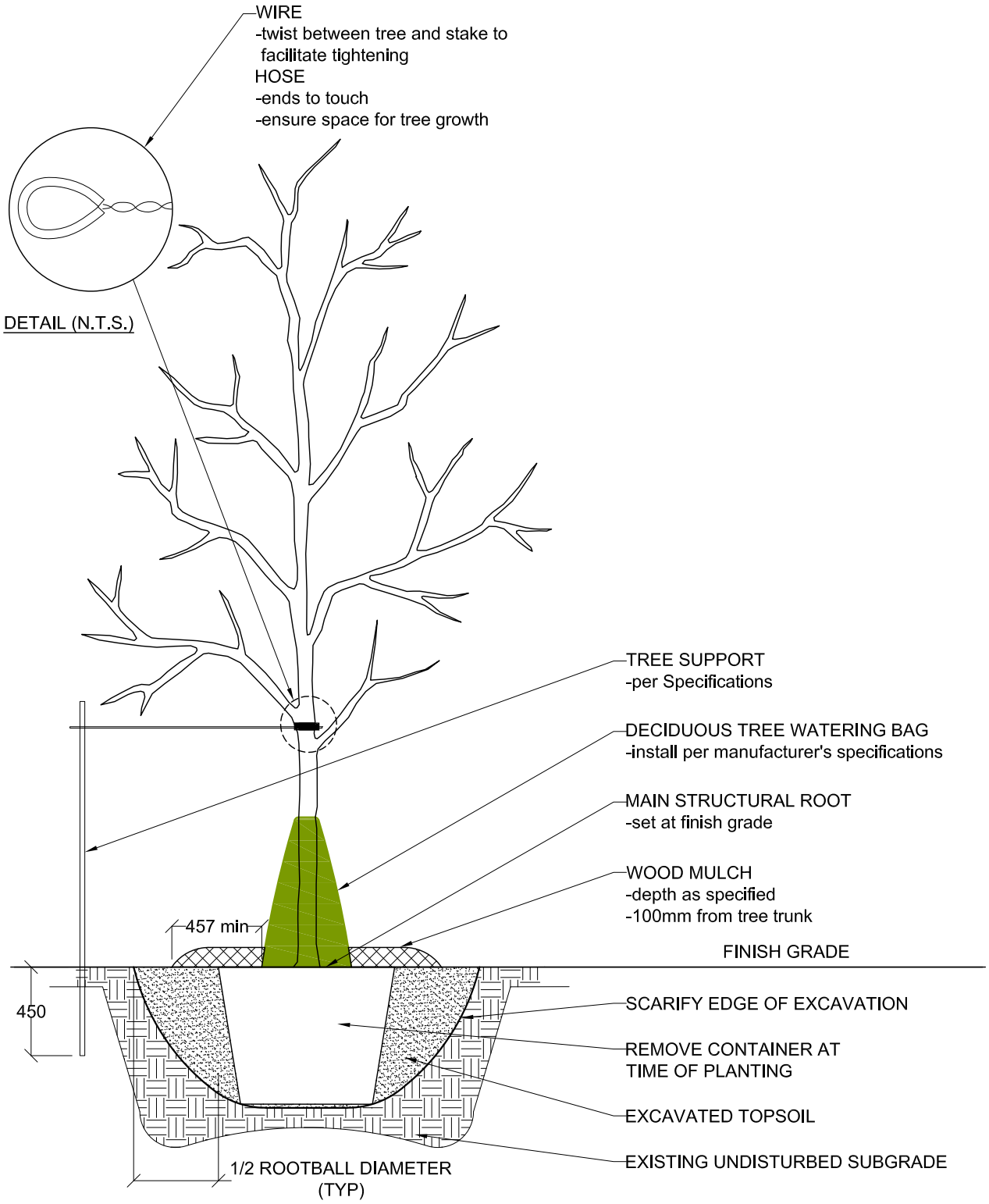
City of Saskatoon

Drawing Title: (B&B) Con/Dec Trees on slope

Drawn: HMK Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: 1:30

Drawing No. 02950-03

Parks

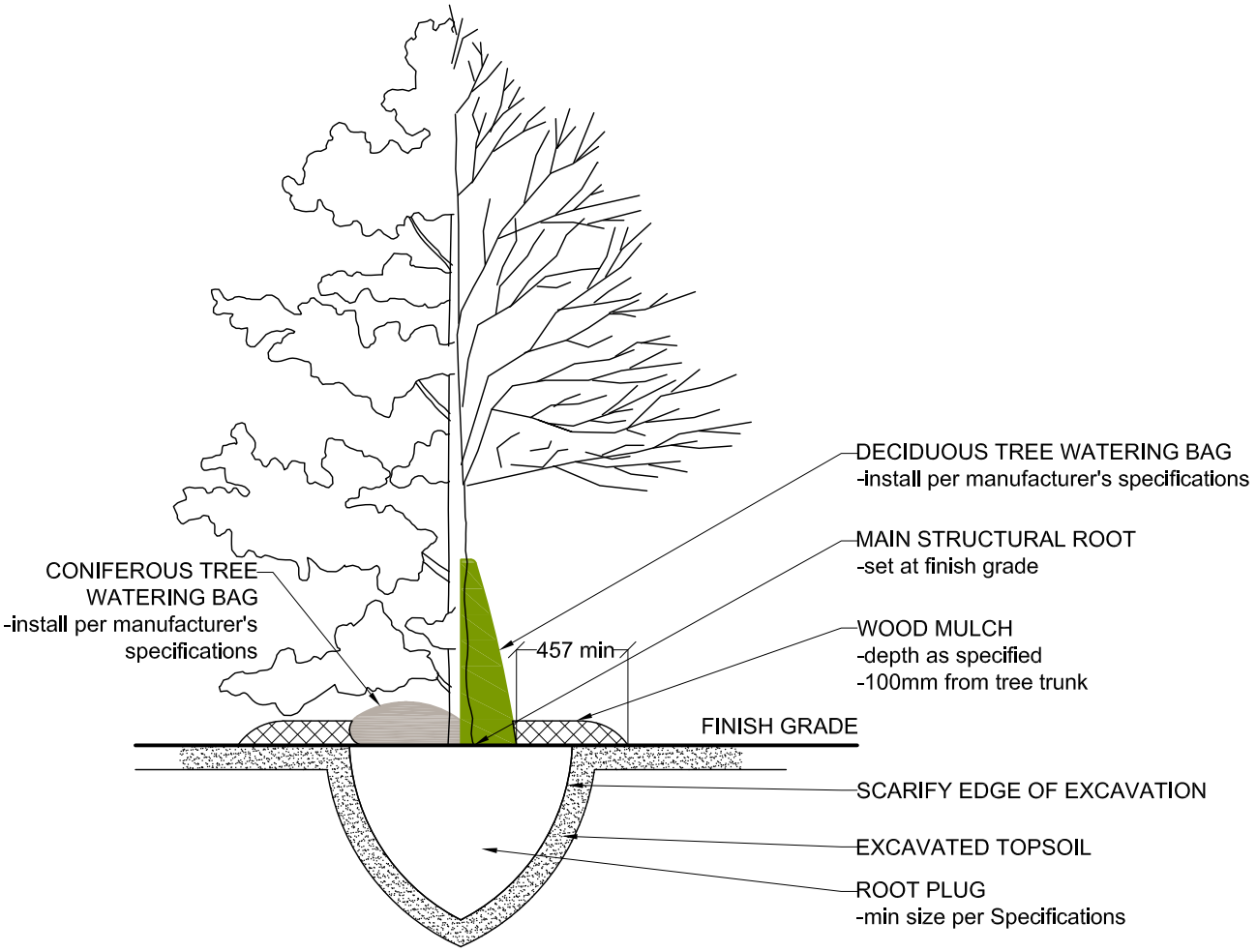


NOTE:

1. **Units are in millimeters U.N.O.**

City of Saskatoon

Drawing Title	Drawing No.
(Cont) Deciduous Trees	02950-04
Drawn: HMK Checked: BG / Revised Date Y/M/D 13/11/08 / Scale: 1:30	Parks



NOTE:

1. **Units are in millimeters U.N.O.**

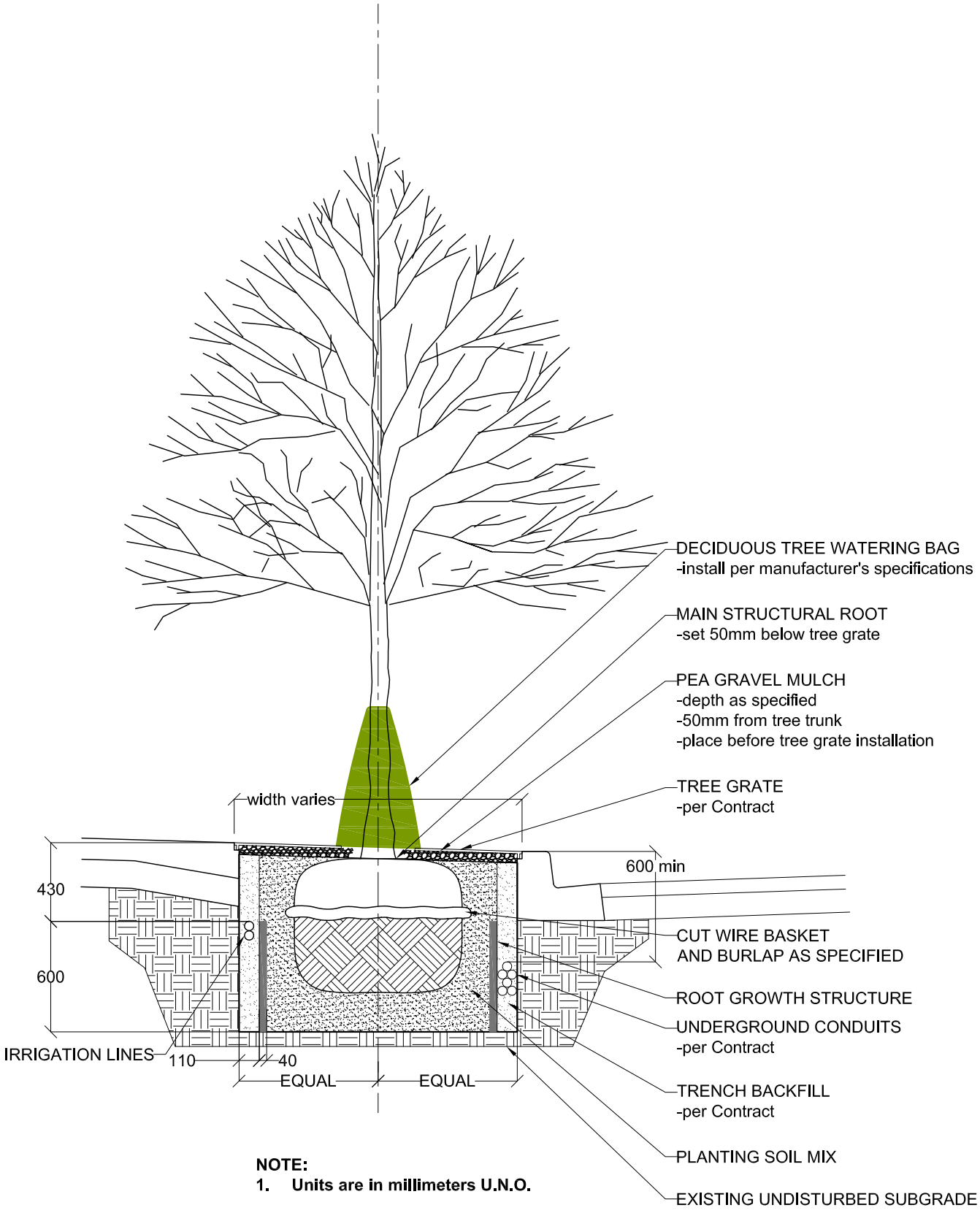
City of Saskatoon

Drawing Title: (Tree Spade) Con/Dec Trees

Drawn: HMK Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: 1:30

Drawing No. 02950-05

Parks



NOTE:
1. **Units are in millimeters U.N.O.**

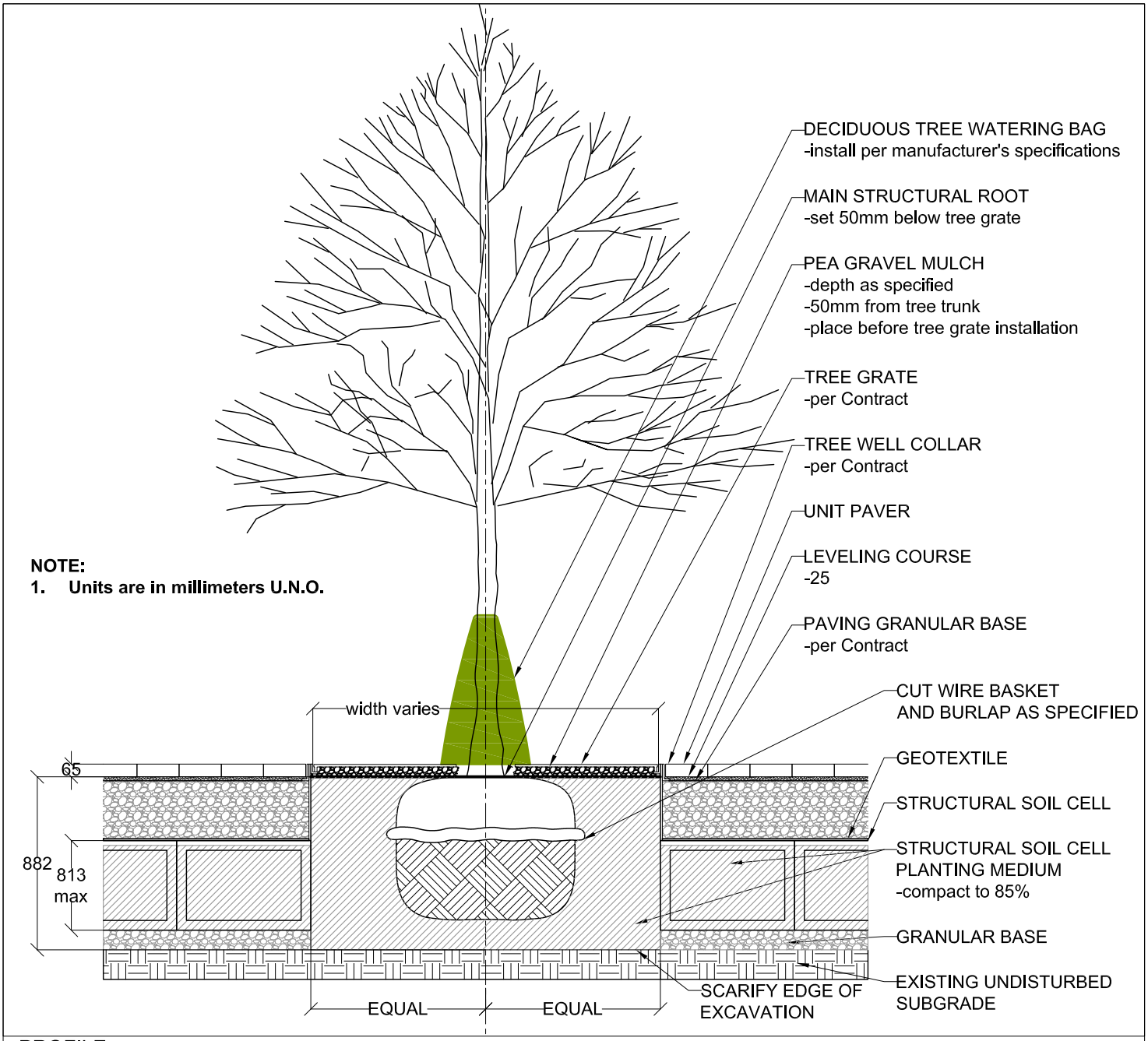
City of Saskatoon

Drawing Title: Streetscape (B&B) Deciduous Trees

Drawn: HMK | Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: 1:30

Drawing No. 02950-06

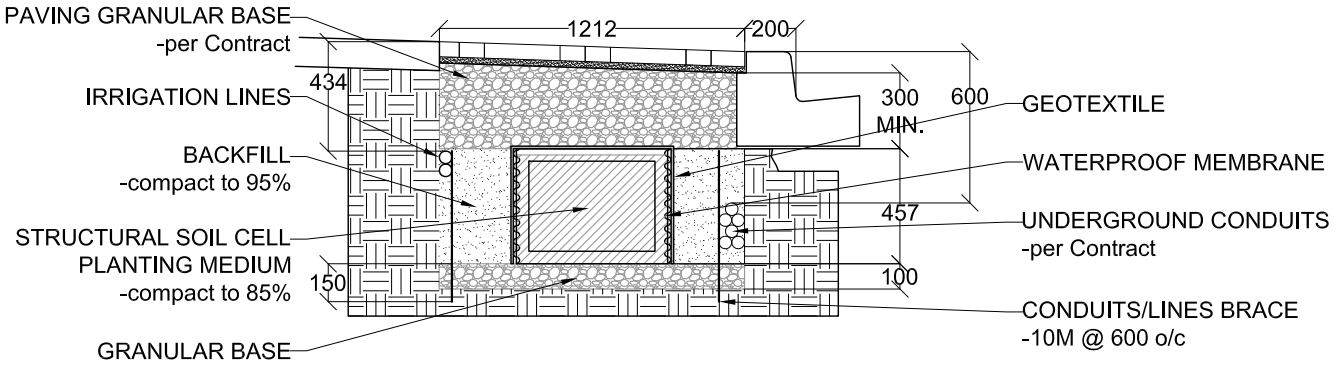
Parks



NOTE:

1. **Units are in millimeters U.N.O.**

PROFILE



SECTION

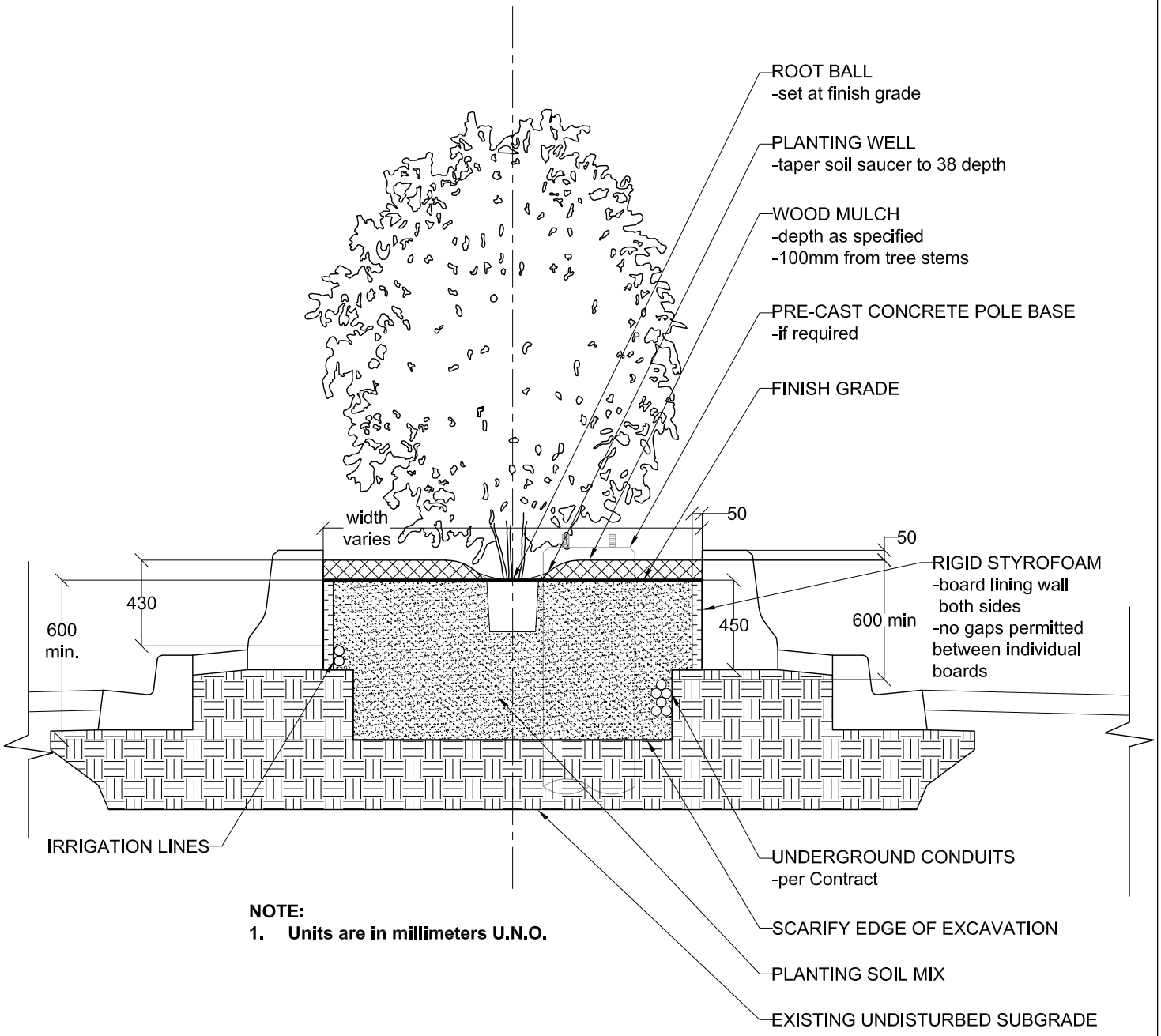
City of Saskatoon

Drawing Title: Streetscape Structural Soil Cell (B&B) Deciduous Trees

Drawn: HMK | Checked: BG | Revised Date Y/M/D 17/12/19 | Scale: 1:30

Drawing No. 02950-07

Parks



NOTE:

1. **Units are in millimeters U.N.O.**

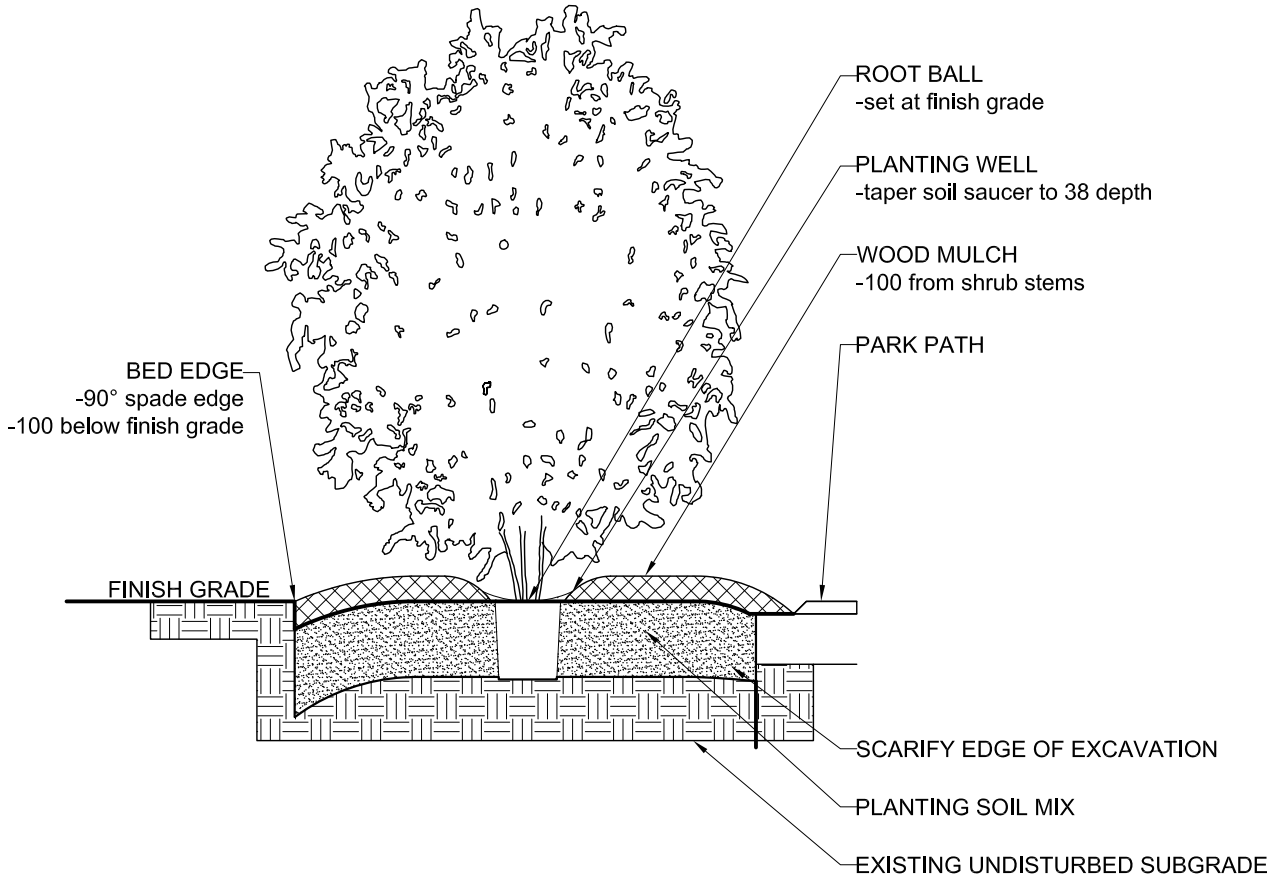
City of Saskatoon

Drawing Title: Streetscape Raised Planter

Drawn: HMK Checked: BG | Revised Date Y/M/D 13/11/08 | Scale: 1:30

Drawing No. 02950-08

Parks

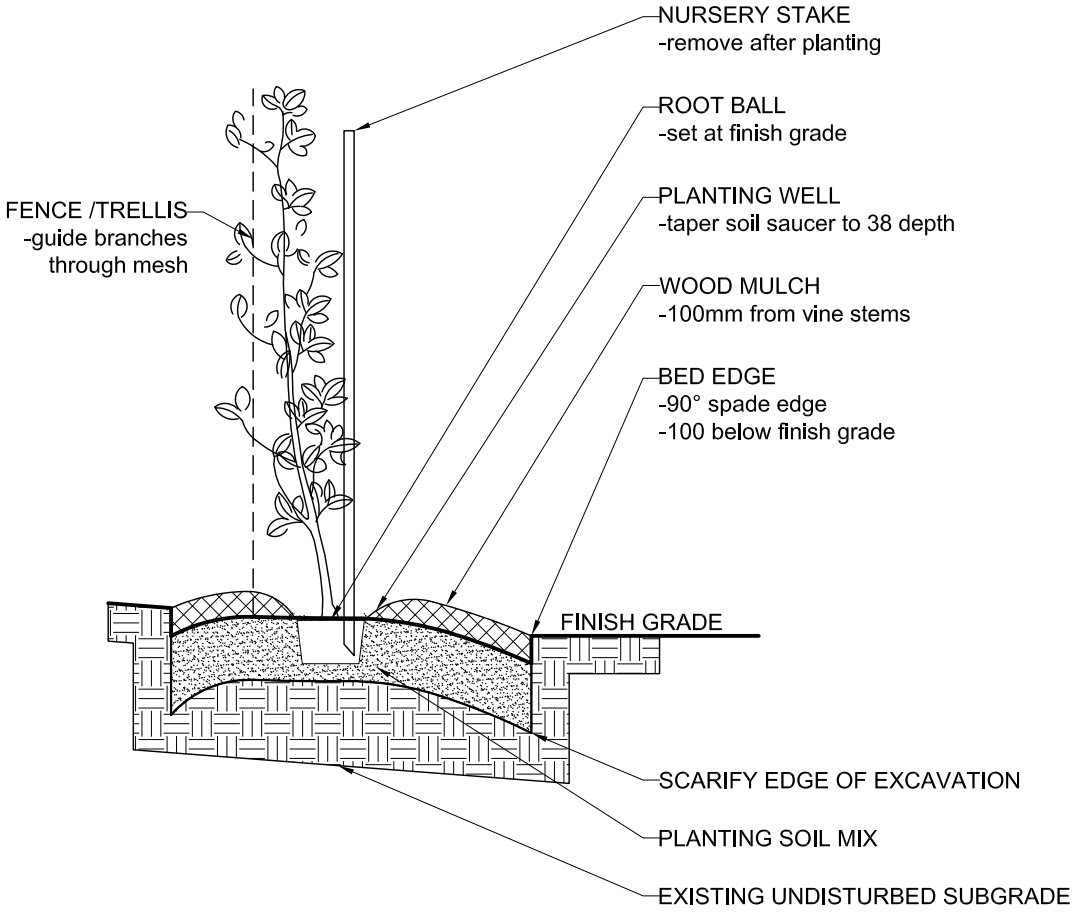


NOTE:

1. **Units are in millimeters U.N.O.**

City of Saskatoon

Drawing Title				Drawing No.
Planting Bed				02950-09
Drawn: HMK	Checked: BG	Revised Date Y/M/D 20/12/22	Scale: 1:30	Parks



NOTE:

1. **Units are in millimeters U.N.O.**

City of Saskatoon

Drawing Title				Drawing No.
Vine Planting				02950-10
Drawn: HMK	Checked: BG	Revised Date Y/M/D 14/11/21	Scale: 1:30	Parks

02998 Landscape Maintenance

1.0 General

1.1 RELATED WORK

.1 Coordinate the requirements of this section with other sections, including but not limited to:

.1 Section 02212 Topsoil

.2 Section 02511 Crusher Dust

.3 Section 02810 Irrigation

.4 Section 02933 Seeding

.5 Section 02938 Sodding

.6 Section 02950 Plant Material

1.2 QUALITY CONTROL

.1 Approval from the **City of Saskatoon, Parks Department** is required for labour, materials and equipment necessary to maintain existing and new Landscape components.

.1 Submit the following to **Consultant,** at time of CCC:

.1 Contact name of Contractors maintenance supervisor.

.2 Copy of current pesticide applicators license (Sask.) for applicable personnel.

.3 Landscape Maintenance Schedule.

.4 List of Maintenance Equipment.

.2 Initiate and Maintain a Project Maintenance Log, indicating maintenance Work performed in a chronological order. Include notes on labour, equipment, and products used and work performed.

.3 Submit to the **City of Saskatoon, Parks Department** a copy of the Project Maintenance Log at the completion of each month of maintenance for review.

.4 Submit to the **City of Saskatoon, Parks Department** the completed Project Maintenance Log at the time of Final Acceptance.

.5 Submit to the **City of Saskatoon, Parks Department** required Tree Watering Log from date of CCC to date of FAC.

1.3 INSPECTIONS

.1 Notify the **City of Saskatoon, Parks Department** 24 hours in advance for inspection and approval of:

.1 Spring Start-up

.2 Winterization

.3 Plant material removed or replaced before or during Warranty Period.

.4 End of Maintenance.

.2 **City of Saskatoon, Parks Department** will inspect the project site regularly to review maintenance status, including a review of the Project Maintenance Log.

1.4 VANDALISM

.1 Contractor is not responsible for repair or replacement of items damaged or altered as a result of vandalism or other acts that are outside the control of the Contractor.

2.0 Products

2.1 EQUIPMENT AND TOOLS

.1 Maintenance equipment and tools requirements; suitable for Work performed, in good working order and approved, including but not limited to:

.1 Portable irrigation systems, tank trucks, hoses etc.

.2 Mowers and other landscape maintenance equipment.

.3 Weed and pest control equipment.

2.2 MATERIALS

.1 Products and materials are required suitable for Work performed, including but not limited to:

.1 Products or Materials as specified in relevant sections.

.2 Weed and pest control products.

3.0 Execution

3.1 STANDARD MAINTENANCE AND ESTABLISHMENT

.1 Provide labour, materials and equipment necessary to maintain existing and new Landscape components within the project site.

.2 Provide labour, materials and equipment necessary to establish new turf and plant material.

.3 Crusher Dust, Granular surface areas and Infields:

.1 Remove weeds and vegetation, including roots.

.2 Maintain grades and layout. Add material and compact as required.

.3 Correct settlement and erosion damage.

.4 Eliminate ponding areas.

.5 Remove contaminants such as topsoil from the surface.

.6 Remove garbage and debris.

.4 Unit Paving, Concrete and Asphalt surface areas:

.1 Remove weeds and vegetation, including roots.

.2 Keep surface clean.

.3 Remove garbage and debris.

.4 Maintain design grades. Repair areas that have settling or heaved.

.5 Eliminate ponding areas.

.5 Pipe Culverts:

.1 Remove vegetation, debris and garbage from inside the culvert and grates.

.2 Ensure grates are in place and functional, including functioning locks.

.6 Irrigation:

.1 Winterize and energize as required.

.2 Adjust grades around components to maintain designed grades.

.3 Repair or adjust as required to maintain functional system.

.4 Balance and adjust irrigation system to meet design specifications of overall operation and coverage.

.5 Follow designed water window restrictions.

.7 Timber and Wood products and materials, including composites:

.1 Remove weeds and vegetation, including roots.

.2 Maintain grades and layout.

.3 Correct settlement.

.8 Site furniture, play equipment, metal products and materials:

.1 Remove garbage and debris.

.2 Ensure waste receptacles remain clean. Garbage accumulation is unacceptable.

.3 Replace garbage bags as needed.

.9 Play surfacing (Loose Fill material):

.1 Remove weeds and vegetation, including roots.

.2 Maintain grades and layout. Add material if required.

.3 Remove contaminants such as topsoil.

.4 Remove garbage, hazards and debris.

.10 Play surfacing (Unitary Synthetic material):

.1 Keep surface free of contaminants, garbage, hazards and debris.

.11 Turf areas (seeded or sodded):

.1 Maintain design grades and layout. Topdress and overseed as needed.

.2 Maintain drainage patterns. Re-grade and overseed to eliminate ponding water and erosion.

.3 Remove contaminants from the surface.

.4 Remove garbage and debris.

.5 Provide weed control as required.

.6 Provide rodent and pest control as required.

.7 Established seeded turf areas are fully germinated, mature stands of turf without bare patches, with grass composition reflective of seed mix used.

.8 Reseeding:

.1 Evaluate seeded turf areas every 30 days during the Landscape Maintenance Period as to success of germination and coverage. Use the following criteria:

.1 Reseed all areas that meet the following conditions:

.1 Areas of bare or dead grass greater 0.6x.0.6m square.

.2 Areas of weed density greater than 130 plants per sq.m.

.3 Areas with general density of specified grasses less than 130 plants per sq.m.

.2 Reseed unacceptable areas as defined above. Reseeding and soil preparation to meet requirements of specifications. Seed mixes may be revised (% of species) to better suit site conditions. If requested by the **Consultant,** mix shall be revised at no additional cost to the Contract. Where drill seeding is not feasible, hand broadcast seed and rake into the soil to achieve 63 to 127mm coverage of soil. The seed application rate shall be doubled in all areas where it is mechanically broadcast and quadrupled in areas requiring hand broad casting.

.3 Timing of reseeding shall be as specified. Upon the **Consultant**'s written approval, the Contractor may reseed at a later date mutually agreed upon.

.12 Plant material:

.1 Remove weeds and unwanted vegetation, including roots in mulch areas. Remove suckers. Do not damage Plant Material roots.

.2 Maintain grades and layout.

.3 Maintain specified depth of mulch. Add mulch if required.

.4 Keep mulch back from the base of plant material as specified.

.5 Maintain a clean edge on planting beds.

.6 Correct settlement and erosion damage.

.7 Remove contaminants from the surface.

.8 Remove garbage and debris.

.9 Maintain plant material staking and supports.

.10 Provide rodent, pest and weed control.

.13 Storm Sewer Components:

.1 Maintain operational landscape drainage and storm sewer structures and pipe.

.2 Remove garbage and debris, including sediment from structures impacted by sediment run-off from the site.

.3 Maintain sediment control products and structures.

.14 Temporary Structures:

.1 Remove temporary structures at Final Acceptance.

3.2 SPRING START UP

.1 Obtain approval for start of seasonal maintenance requirements.

.1 Perform spring start-up of irrigation system.

.2 Remove and dispose of weeds, branches, stones, refuse and other debris within project area.

.3 Inspect the site and record damages to site.

.4 Remove blockages in the storm sewer system. Dewater the site if necessary.

3.3 WINTERIZATION

.1 Obtain approval for end of seasonal maintenance requirements.

.1 Perform winterization of irrigation system.

.2 Remove and dispose of weeds, branches, stones, refuse and other debris within project area.

.3 Ensure turf areas and plant material have received final watering and other maintenance requirements for the season.

.1 One watering cycle is required in October after temperatures fall below freezing to ensure adequate moisture in root zone at freeze-up.

3.4 WATERING

.1 Water areas for establishment using existing/new irrigation system, temporary irrigation system as provided by the Contractor, or other method ensuring that compaction is not caused during watering.

.2 Monitor watering to ensure:

.1 Over watering is not acceptable. Saturated soils do not promote healthy establishment and growth:

.1 Turf areas and planting beds have very different watering needs.

.2 Areas are not eroded and materials do not contaminate adjacent areas or properties due to erosion.

.3 Adjacent properties are not otherwise adversely impacted by irrigation operations.

.3 Seeded areas:

.1 From time of seeding to 90% germination:

.1 Apply light, frequent watering to supplement rainfall to guarantee continuous 19 mm moisture penetration.

.2 Prevent erosion of soil and seeds

.2 From 90% germination to establishment:

.1 Apply water to supplement rainfall to guarantee 25mm of water per week.

.4 Sodded areas:

.1 From time of sodding:

.1 Apply sufficient water to guarantee moisture penetration of 75 to 100mm.

.5 Plant Material

.1 Water plant material using existing/new irrigation system or temporary / portable irrigation system (provided by the Contractor), preventing erosion and compaction during watering. Repair damage.

.1 Ensure adequate moisture in root zone at freeze-up.

.2 Watering requirements of plant material depend on plant species, soil type, sun, temperature, winds, rainfall and plant location.

.3 Water requirements for shrubs, vines and seedlings weekly to maintain top 200 - 300mm depth of soil moist.

.4 Fill tree watering bags in accordance with manufacturer's specifications.

3.5 TURF MOWING

.1 Do not mow until turf is well established and approaching mowing height tolerances as follows:

Type of Turf	Mowing Height Tolerance	Mow to Height
Irrigated turf areas	100mm (4.0")	76mm (3.0")
Non-irrigated (dryland) turf areas	150mm (6.0")	100mm (4.0")
Naturalized turf areas	150mm (6.0") if required	150mm (6.0")

.2 Minimum mowing frequency and extent:

.1 Irrigated turf: Mow once per week.

.2 Dryland park turf: Mow every 21 days

.3 Non Irrigated road right of ways, ditches: Mow once per month.

.4 Adjacent to new trees or beds in existing dryland turf areas: Mow a 1.0m buffer, once per month.

.5 Naturalized areas:

.1 Until established: follow dryland park turf requirements.

.2 Established: once per season between September 15th and October 1st except the following areas or conditions where dryland cutting requirements are followed:

.1 1.0m buffer on both sides of paths or sidewalks, around picnic areas, seating areas, waste receptacles, park signs, play areas, parking lots, lanes, planting beds and adjacent to irrigated turf areas and sports-fields.

.2 3.0m buffer (or as defined on the drawings) adjacent to neighbouring properties, buildings and street frontages.

.3 Areas as a means of weed control if necessary.

.6 Increase mowing frequency if growth rate exceeds normal conditions leading to excessive clipping accumulation.

.7 Refrain from mowing if the turf or soil is overly wet or saturated.

.3 Mow turf areas using equipment suitable for the work.

.1 Cut no more than 30% of grass blade in one mowing.

.2 Do each operation continuously and complete within a reasonable time period.

.3 Remove clippings that smother turf within 24 hours of mowing.

.4 Trim turf around vertical objects (e.g. bollards, fences, signs and light posts).

.4 If height of turf is greater than acceptable heights identified in 3.5.1, the **City of Saskatoon, Parks Department** to request Contractor mow turf areas within two (2) days.

.1 If Contractor fails to meet this request, the **City of Saskatoon, Parks Department** to mow turf at Contractor expense.

3.6 TURF FERTILIZATION

.1 Once per season, apply approved fertilizer to turf areas, at rate of 100kg per hectare, or as recommended in soils test analysis results. Apply within the period from mid May to late June.

3.7 TURF TOPDRESSING / RE-SEEDING

.1 Top-dress and re-seed turf areas not growing vigorously:

.1 Mow turf adjacent to areas requiring re-seeding to a height per 3.5.1.

.2 Rake thoroughly, removing loose and dead turf, stones and debris.

.3 Spread clean topsoil to 12mm depth, filling in low areas and bare spots.

.4 Mix topsoil and seed thoroughly.

.5 Water to ensure contact between seed and soil.

3.8 PLANT MATERIAL PRUNING

.1 Contractor is banned from pruning of Elm trees during the annual pruning ban from April 1 to August 31.

.2 Perform pruning requirements for new trees and shrubs.

.1 Extent of pruning:

.1 Remove tree branches overhanging pathways and sidewalks to a min. 3.0m from the ground.

.2 Remove tree branches overhanging play areas and roads to a min. 4.5m from the ground.

.3 Remove tree branches within 2.0m of structures.

.3 Pruning of existing plant material is not permitted unless specified or authorized by the **City of Saskatoon, Parks Department**.

3.9 USE OF PESTICIDES

.1 Pesticides are required applied by a licensed Pesticide Applicator.

.2 Submit requests for use of pesticides to the **City of Saskatoon, Parks Department** or **Consultant** for review and approval before use.

.3 Protect plant material within or adjacent to the application area(s).

.4 Post signage in areas where pesticides are being applied, noting Contractor's name, product used and date of application.

3.10 PLANT MATERIAL REMOVAL AND REPLACEMENTS

.1 During Warranty period, the project site is not to contain dead, diseased or rejected plant material. Remove and replace plant material as required within 30 days of Monthly Inspection. Note replacements in the Project Maintenance Log. Include location.

.2 Remove and replace sod /seed showing growth failure, deterioration or is dead.

3.11 END OF LANDSCAPE MAINTENANCE

.1 Request End of Landscape Maintenance inspection in writing and:

.1 Mow turf areas, edge planting areas and water plant material as required within 48 hours before the confirmed date of inspection.

.2 Remove tree supports, ties and guy wires.

.1 Fill post holes and repair adjacent surfaces.

.3 Tree bags are to remain installed on tree plantings and become property of the **City of Saskatoon, Parks Department** per issue of Final Acceptance Certificate.

END OF SECTION