APPENDIX F

RECREATION AMENITY STANDARDS

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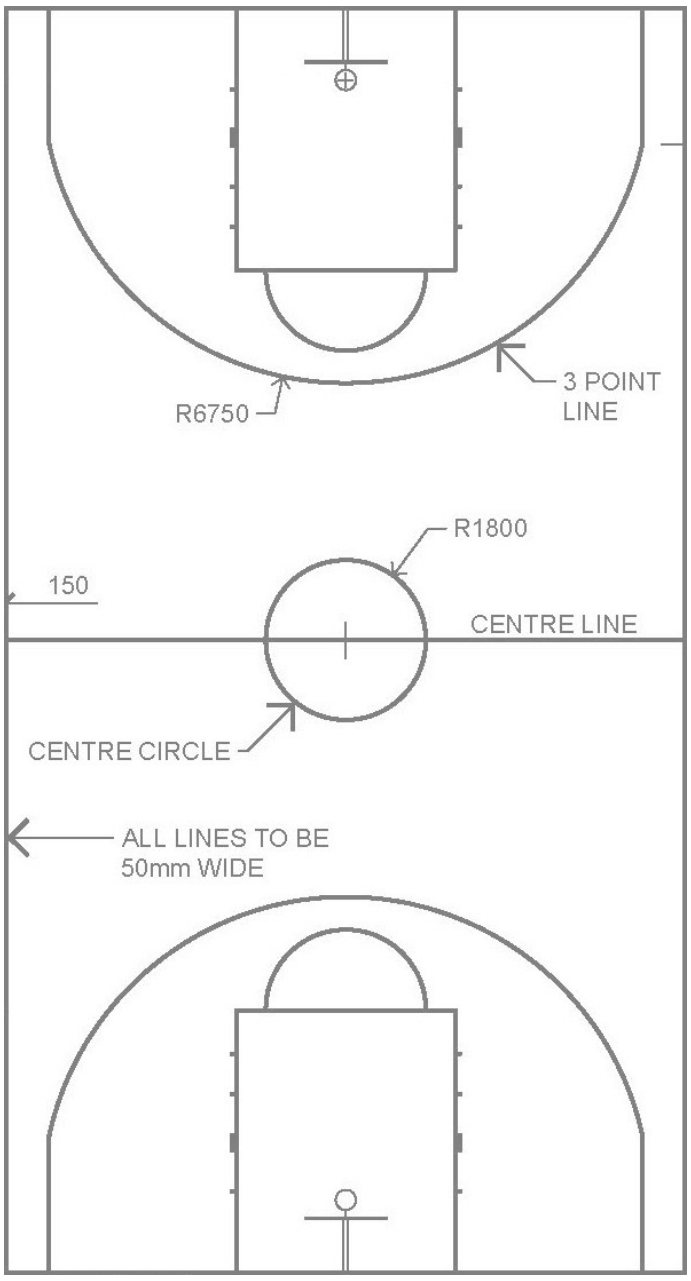
CITY OF ST. ALBERT RECREATION AMENITY STANDARDS

JANUARY 2021



STANDARD DRAWINGS

RECREATION AMENITY AND SPECIFICATION NUMBER AND NAME	DETAIL NUMBERING
12 93 00 SITE FURNISHINGS	
12 93 01 Site Furnishings - Founders Walk	12 93 01
12 93 11 Bicycle Racks	12 93 11
12 93 13 At Grade Fire Rings and Raised Fire Grills	12 93 13A, 13B, 13C, 13D
32 18 00 OUTDOOR SPORTS FIELDS	32 18 00
32 18 01 Natural Turf Sports Fields	
32 18 02 Irrigation System For Sports Fields	
32 18 03 Infill Artificial Turf Sports Fields	32 18 03A + 03B
32 18 04 Soccer Layouts	32 18 04A, 4B, 4C, 4D + 4E
32 18 05 Soccer Goals and Flagposts	32 18 05
32 18 06 Football Layout	32 18 06
32 18 07 Football Goals	32 18 07A, 07B
32 18 08 Baseball Diamond Layouts	32 18 08A, 08B, 08C, 08D, 08E, 08F, 08G + 08H
32 18 09 Fast Pitch and Slo-pitch Diamond Layouts	32 18 09A, 09B, 09C +09D
Multi-Use Ball Diamond Layouts No Spec	32 18 09E + 09F
32 18 10 Ball Diamond Shale Infields and Warning Tracks	32 18 10
32 18 11 Ball Diamonds Chain Link Backstops, Fences and Gates	32 18 11A, 11B, 11C, 11D +11E
32 18 12 Ball Diamond Foul Poles	32 18 12
32 18 13 Ball Diamond Dug-outs	32 18 13A, 13B, 13C, 13D + 13E
32 18 14 Ball Diamond Players Benches	32 18 14
32 18 15 Sports Fields Bleachers	32 18 15
32 19 00 OUTDOOR SPORTS COURTS	
Asphalt Surface as per Standards	
32 19 02 Painted Line Marking	32 19 02
32 19 03 Rubberized Surface Courts	32 19 03
32 19 04 Tennis and Pickleball Courts and Nets	32 19 04A , 04B, 04C, 04C2, 04D, 04E, 04F + 04G
32 19 05 Tennis Court and Pickleball Fencing, Windscreening and Practice Boards	32 19 05A, 05B, 05D
32 19 06 Basketball Courts, Posts, Backboards and Goals	32 19 06A, 06B +06C
32 19 07 Sand Volleyball Courts, Posts and Nets	32 19 07A, 07B, 07C, 07D, 07E + 07F
32 19 08 LONG JUMP PIT	
32 20 01 OUTDOOR RINKS	32 20 01A
32 36 01 PLAY EQUIPMENT AREAS	32 36 01A, 01B + 01C
32 38 01 PORTABLE RESTROOMS	32 38 01A + 01B

1.0 GENERAL

1.1 Description

.1 This section specifies the supply and installation of site furnishings for Founders Walk only.

.2 For other site furnishings refer to Section 14.0 Landscaping Standards – Site Amenities and Fencing.

1.2 Submittals

.1 Provide all submittals in accordance with the city's submittal procedures.

.2 Submit manufacturer's product data.

.3 Submit Shop Drawings where requested.

.4 Submit templates, and directions for installing anchor bolts and other anchorages.

.5 Submit colour samples from manufacturer's standard range of colours for selection and approval by the City. Printed or electronically transmitted versions of the manufacturer's product literature indicating available colour range shall not satisfy this requirement.

1.3 Delivery, Storage, and Handling

.1 Deliver to location as instructed by the City in manufacturer's package showing no signs of damage to package or product.

.2 Investigate delivered packages and if product is damaged, the City will not accept the product and the product must be returned and replaced. Store boxed products on flat surface and protect from water exposure.

1.4 Warranty

.1 Warranty all assembly and installation work of this section for one (1) year from approval of the Construction Completion Certificate.

2.0 PRODUCTS

2.1 Manufacturer

.1 Picnic Table: DuMor Site Furnishings or approved equal

.2 Bench: Green Acres Series Backed Benched as manufactured by Urban Park Site furnishings or approved equal.

.3 Backless Bench: Green Acres Series Backed Benched as manufactured by Urban Park Site furnishings or approved equal.

.4 Trash Receptacle: Manufactured by Maglin Site Furniture or approved equal.

2.2 Manufactured Items

.1 Items not mentioned here, but shown on city approved drawings: if the information shown appears to be incomplete or inconclusive, advise the city prior to ordering these products:

.1 Picnic Table:

.1 Dumor 76-34PL (4 seats)

.2 Powder coat color: Black

.3 Table and seat surfaces: Recycled plastic material: Cedar color

4. Installation: Surface mount, as per manufacturer's instructions.

.2 Bench:

.1 Back Bench. Green Acres Series Bench with Back

.2 All components to be prepainted and all metal components to be pre-drilled.

.3 Powdercoat Colour: Black

.4 Installation: Surface mount, as per manufacturer's instructions.

.3 Backless Bench:

.1 Backless Bench. Model Green Acres Series Backless Bench with no armrests

.2 All components to be prepainted and all metal components to be pre-drilled.

.3 Powdercoat Colour: Black

.4 Installation: Surface mount, as per manufacturer's instructions.

.4 Trash Receptacle:

.1 Trash Receptacle. Model Number 'MLWR200-32 Series with standard lid configuration.

.2 Trash receptacle for specified locations to include Ash Receptacle, Model MLAU200.

.3 All components to be prepainted and all metal components to be pre-drilled.

.4 Powdercoat Colour: Black

.5 Installation: Surface mount, as per manufacturer's instructions.

3.0 EXECUTION

3.1 Verification of Conditions

.1 Verify that concrete surfaces are completed as per specified requirements and are ready to receive site furnishings.

3.2 Installation — General

.1 Install all items, in accordance with manufacturer's written directions.

.2 Mount all items in positions indicated, adjusting connection points as required to align materials of differing construction. All furnishings should be mounted plumb and level and be aligned suitably: flush, square or perpendicular with indicated or identified edges and lines.

.3 All exposed mounting hardware shall be painted to the approval of the City. Colour to match the furnishing.

.4 Field paint with two (2) coats, any cosmetic damage resulting from installation. Match paint to type originally used by furniture manufacturer.

3.3 Protection

.1 Protect all site furnishings immediately following installation from damage during the construction period with temporary protective coverings approved by the City. Remove protective covering at the time of Construction Completion.

3.4 Clean-up

.1 Remove excess material from site.

.2 Keep roadway, walkway, and surrounding areas free of soil and debris as a result of work done under this section at the end of each working day or as directed by the City.

- END OF SECTION 12 93 01 -

1.0 GENERAL

1.1 Description

.1 The site grading, subgrade preparation, granular base course, cast-in-place concrete slab and surface mount bicycle racks.

1.2 Related Specifications

.1	Concrete Forming and Accessories	Section 03 10 00
.2	Concrete Reinforcing	Section 03 20 00
.3	Cast-in-Place Concrete	Section 03 30 00
.4	Aggregate Materials	Section 31 05 17
.5	Site Clearing	Section 31 10 00
.6	Excavation and Fill	Section 31 23 00
.7	Subgrade Preparation	Section 31 24 14
.8	Cement Stabilized Subgrade	Section 31 32 15
.9	Aggregate Base Courses	Section 32 11 23
.10	Landscape Grading	Section 32 91 19
.11	Turf & Grasses	Section 32 92 00

1.3 Standard City Asphalt Surfaces

.1 Asphalt Surfaces as per City of St. Albert Municipal Engineering Standards for Section 3.0 Roadways and Section 10 Pathways and Trails, or the current revised version.

1.4 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.5 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per each bike rack slab, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of a granular base course shall not exceed 150 mm, or as directed by the City Representative. The required percentage of maximum density of the granular base course is 98% unless specified otherwise.

.3 Slump, Air Content, Nuclear Density Test, Air Void Examination, Strength Test and Acceptance Criteria in accordance with Section 03 30 00- Cast-in-Place Concrete.

2.0 PRODUCTS

2.1 Granular Base Course

.1 As per current City of St. Albert Municipal Engineering Standards Class 20 Application GBC.

2.2 Cast-in- Place Concrete

.1 Flexible forms to form radii.

.2 Reinforcement bars Grade 300 primed rebar sizes as detailed.

.3 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

2.3 Bicycle Racks

.1 Powder coated steel bike rack modified for surface mount installation. Colour to align with the current City of St. Albert Visual Identity Guidelines. Submit specifications and drawings for approval.

.2 Hot dipped galvanized steel modified for surface mount installation hot dipped galvanized zinc-coated at minimum 550 g/m2.

.3 Mounting Hardware: Tamperproof high strength stainless steel 1/2” X 7” long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for slab to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

.3 Minimum grade away from slab edge 1.0% slope.

3.2 Granular Base Course

.1 Install one compacted lift of granular base course compacted to 98% standard proctor density to extend 300 mm past outside edge of slabs.

3.3 Cast-in-place Concrete

.1 Install true to lines and levels on compacted granular base course, compacted to 98% standard proctor density.

.2 If radii are too tight for plywood forms use steel.

.3 Overlap horizontal bars minimum 300 mm.

.4 Use mechanical vibration during pour.

.5 Broom finish to provide best drainage off the slab.

.6 Continuous pour preferred without construction joint. If required submit for approval.

.7 Sawcut crack control joints 40 mm depth, maximum spacing 3.0 m on centre.

.8 Backfill after 7 days curing.

.9 Pour concrete samples for each truckload. Contractor to pay for and submit tests.

3.4 Bicycle Racks

.1 Install each surface mounted bicycle rack into deepened slab, ensure unit is plumb and level.

.2 Mounting hardware to be tamperproof and only two threads bare if nut and washer system is approved.

3.5 Construction Completion

.1 Bicycle Racks will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.6 Maintenance During Warranty Period

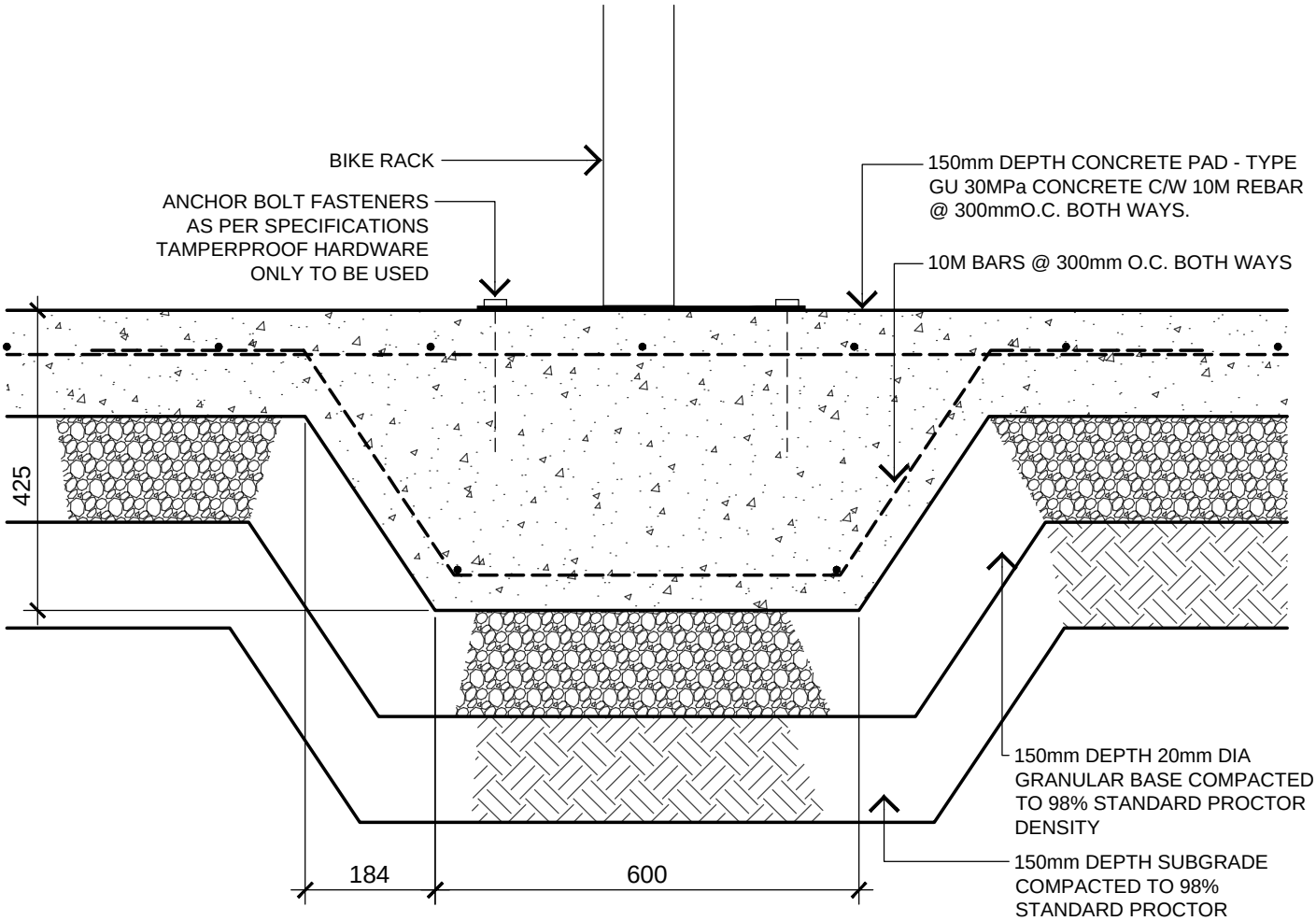
.1 Maintenance of the bicycle racks is to be provided by the Contractor.

3.7 Final Acceptance

.1 Bicycle Racks will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

.2 All product tools are to be handed over to the City.

- END OF SECTION 12 93 11 -



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

BIKE RACK

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 12 93 11

1.0 GENERAL

1.1 Description

.1 The site grading, subgrade preparation, granular base course, cast-in-place concrete slab and at grade fire ring, cast-in-place concrete slab and raised fire grills.

1.2 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.3 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per each slab, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of a granular base course shall not exceed 150 mm, or as directed by the City Representative. The required percentage of maximum density of the granular base course is 98% unless specified otherwise.

1.4 Location Setbacks

.1 Centre of fire ring and fire grills to be a minimum of 10.0 m from buildings and overhead tree canopies for trees full mature size.

2.0 PRODUCTS

2.1 Granular Base Course

.1 As per current City of St. Albert Municipal Engineering Standards Class 20 Application GBC.

2.2 Cast-in-place Concrete

.1 Flexible forms to form radii.

.2 Reinforcement bars Grade 300 primed rebar sizes as detailed.

.3 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

2.3 At Grade Fire Ring

.1 Custom fabricated fire ring 8 mm steel plate 457 mm in height above slab, outside diameter, air holes and mounting brackets to be determined during design. Submit shop drawings for approval.

2.4 Raised Fire Grill

.1 Dumor, Inc. Grill 22-00 (or City approved equal). Hot dipped galvanized steel modified for surface mount installation hot dipped galvanized zinc-coated at minimum 550 g/m2. Submit shop drawing for approval.

2.5 Mounting Hardware

.1 Mounting Hardware: Tamperproof high strength stainless steel 12.7 mm X 178 mm long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

3.0 EXECUTION

3.1 Layout and Grading

.1 Attention should be paid to overhead tree canopies and proximity to combustible features such as buildings and a layout setback of at least 10.0 m should be adhered to.

.2 Subgrade for slabs to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.3 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

.4 Minimum grade away from slab edge 1.0% slope.

3.2 Granular Base Course

.1 Install one compacted lift of granular base course compacted to 98% standard proctor density to extend 300 past outside edge of slabs and through the centre of the at grade fire ring.

3.3 Cast-in-place Concrete

.1 Install true to lines and levels on compacted granular base course, compacted to 98% standard proctor density.

.2 If radii are too tight for plywood forms use steel, wall width should not vary.

.3 Overlap horizontal bars minimum 300 mm.

.4 Use mechanical vibration during pour.

.5 Broom finish to provide best drainage off the slab.

.6 No chamfer for at grade fire ring inside edge.

.7 Continuous pour preferred without construction joint. If required submit for approval.

.8 Sawcut crack control joints 40 mm depth.

.9 Backfill after 7 days curing.

.10 Pour concrete samples for each truckload. Contractor to pay for and submit tests.

3.4 At Grade Fire Ring

.1 Install surface mounted fire ring into deepened centre of slab, ensure unit is plumb and level.

.2 Mounting hardware to be tamperproof and only two threads bare if nut and washer system is approved.

3.5 Fire Grill

.1 Install surface mounted fire grill into deepened centre of fire grill slab, ensure unit is plumb and level.

.2 Mounting hardware to be tamperproof and only two threads bare if nut and washer system is approved.

3.6 Construction Completion

.1 At grade fire pits and raised fire grills will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.7 Maintenance During Warranty Period

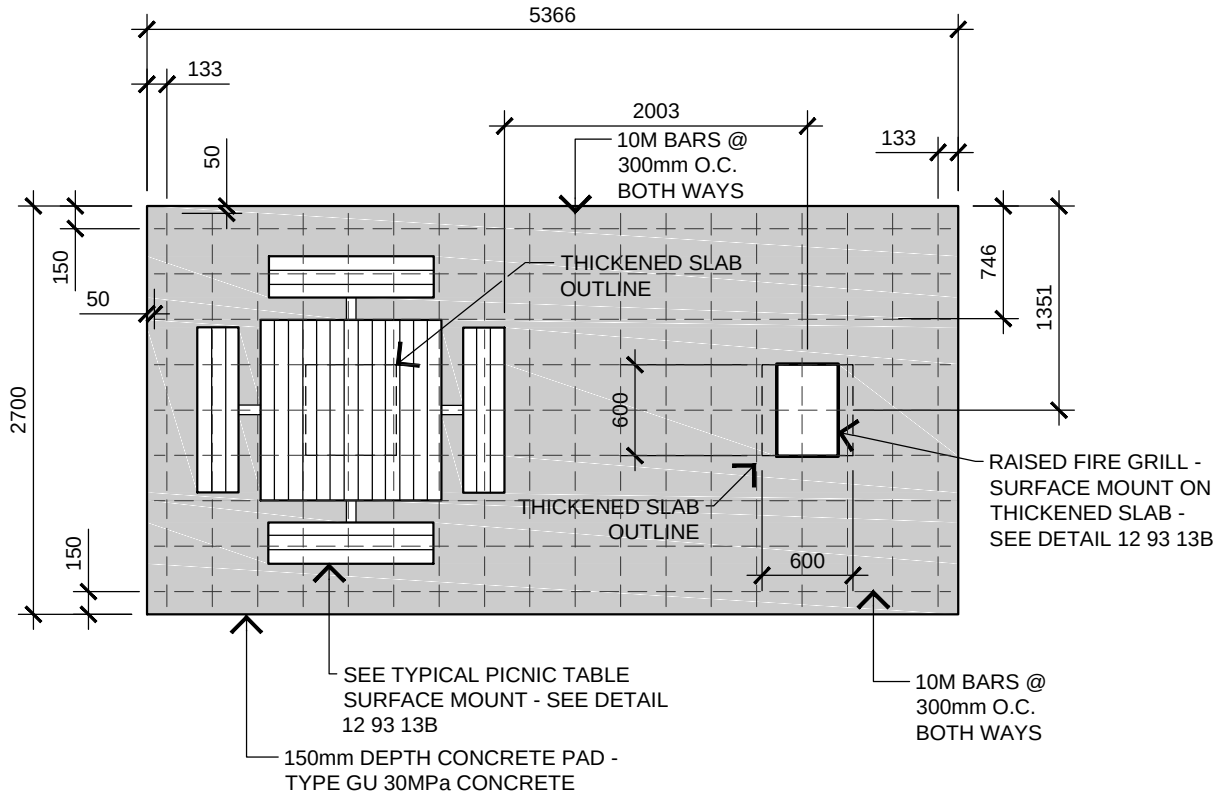
.1 Supply of fire wood and removal of ashes will be performed by others.

.2 Maintenance of at grade fire pits and raised fire grills is to be provided by the Contractor.

3.8 Final Acceptance

.1 At grade fire pits and raised fire grills will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 12 93 13 -



NOTES:

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PLAN VIEW

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

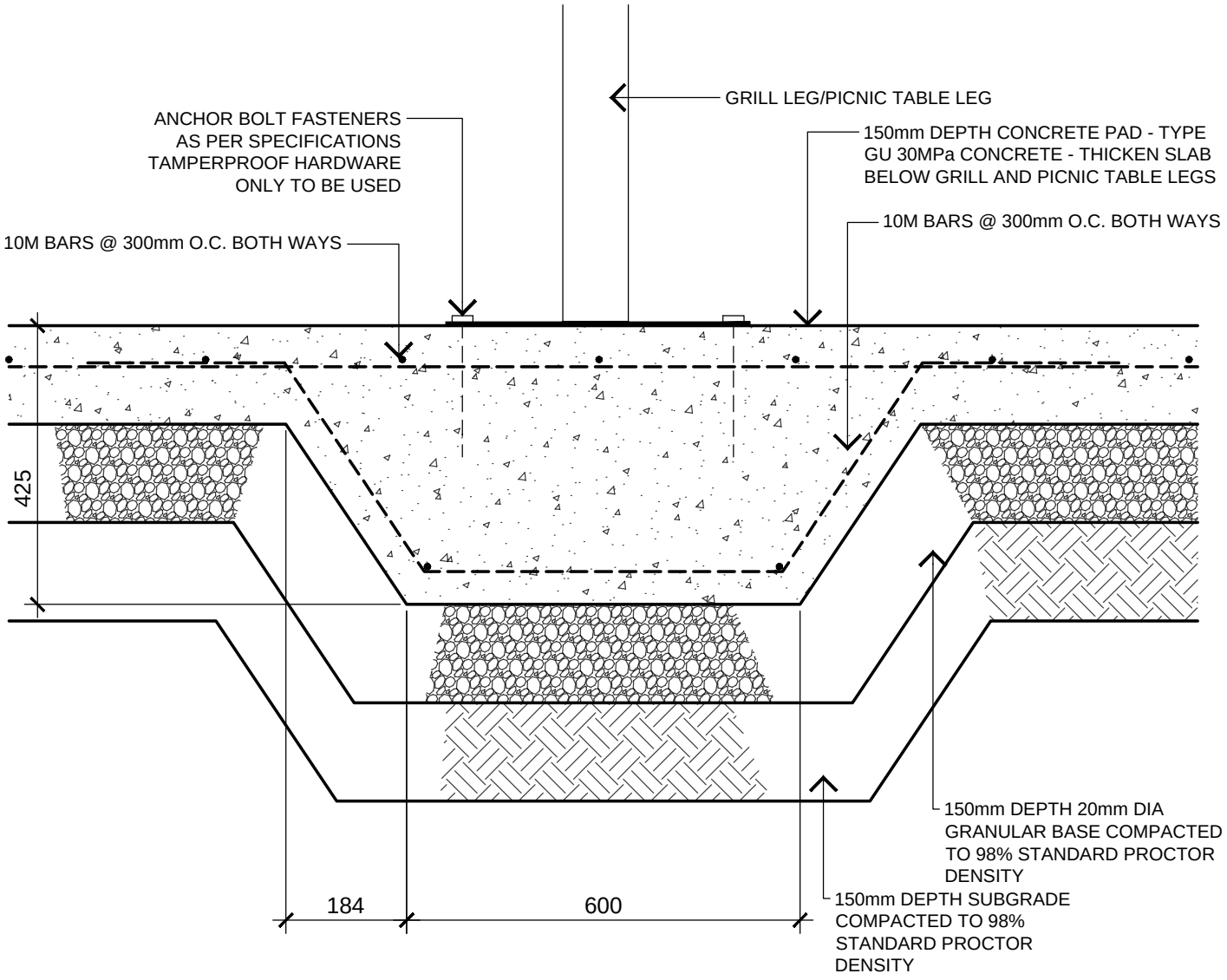
RAISED FIRE GRILL
LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

12 93 13A



SECTION

SCALE: 1:10

NOTES:

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DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

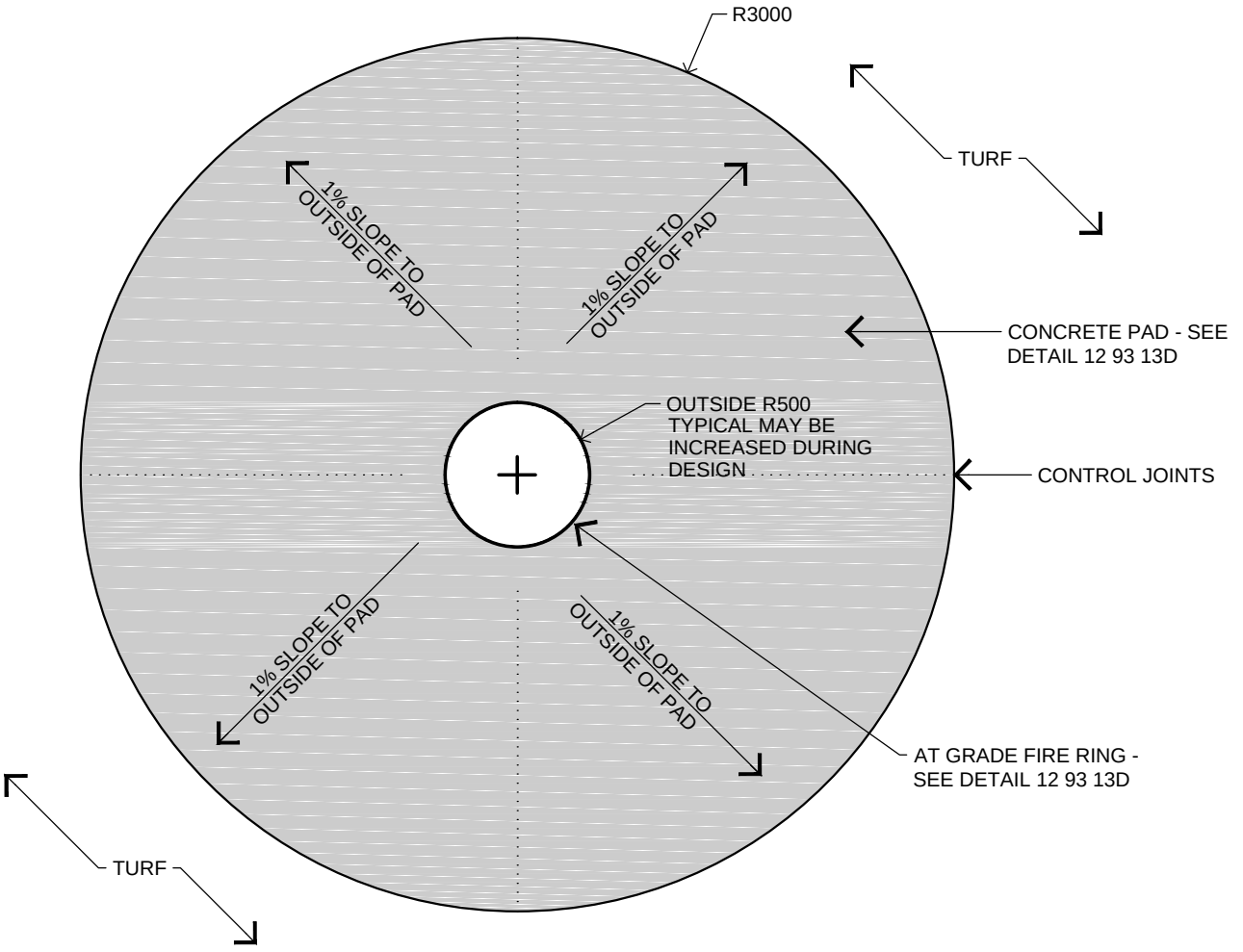
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

RAISED FIRE GRILL SECTION

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 12 93 13B



PLAN VIEW

SCALE: 1:50

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REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

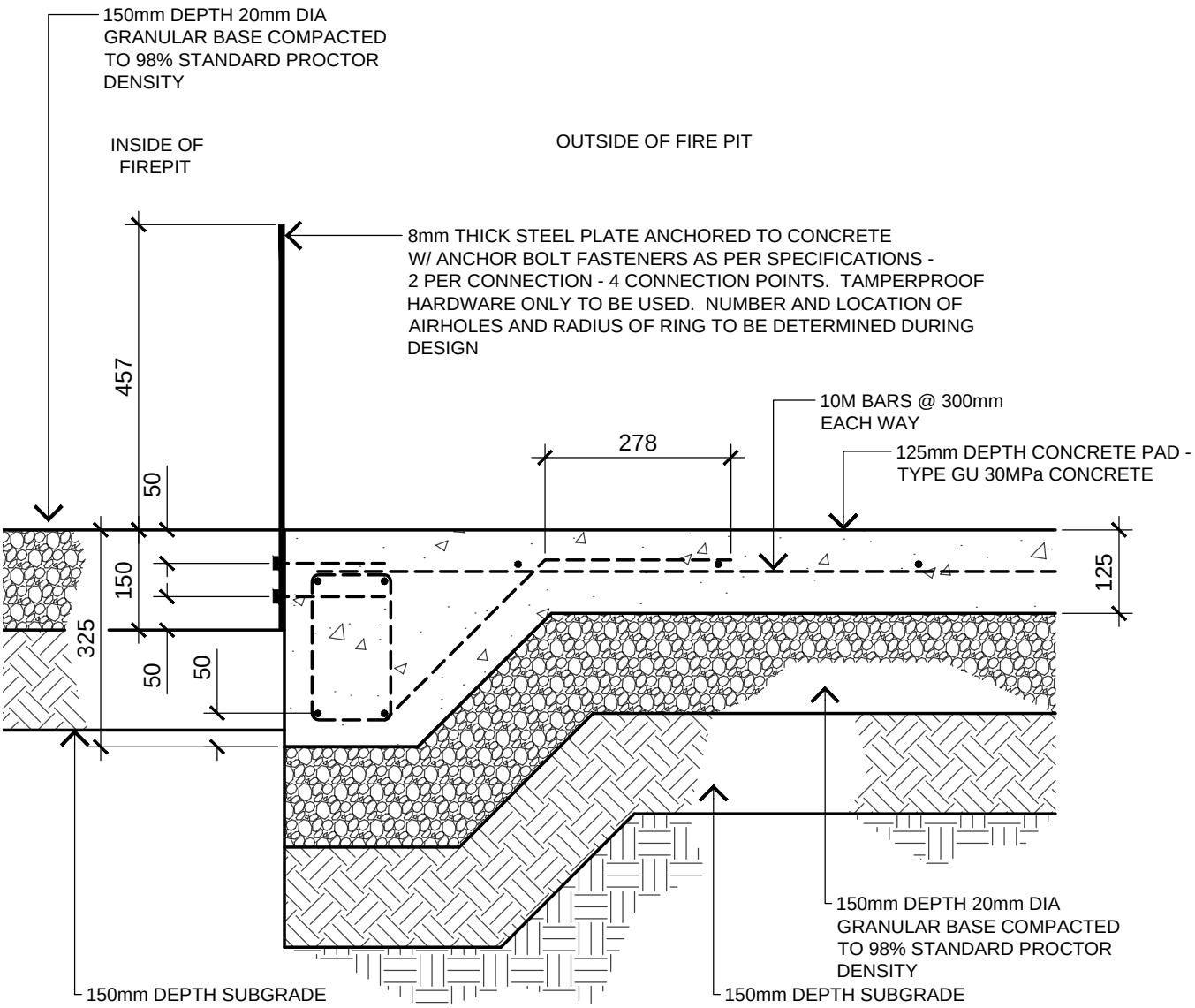
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

AT GRADE FIRE PIT PLAN

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 12 93 13C



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SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

AT GRADE FIRE PIT SECTION

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 12 93 13D

1.0 GENERAL

1.1 Description

.1 This section is an introduction to the outdoor sports fields standards for St. Albert including natural turf fields, irrigated and non-irrigated and artificial turf fields.

.2 The sports to be accommodated include soccer, football, baseball, fast pitch and slo-pitch.

1.2 Municipal Engineering Standards

.1 The current City of St. Albert Municipal Engineering Standards identify the planning, submission and approval process, and provide specifications and requirements for the design, materials and construction relating to all work in the City of St. Albert including road construction, land development, underground utilities and landscaping. The standards also identify materials testing, construction completion, maintenance during the warranty period and final acceptance of infrastructure projects which would apply to outdoor sports fields.

1.3 32 18 01 to 32 18 15 Specifications

.1 32 18 01 Natural Turf Fields

.2 32 18 02 Irrigation System for Sports Fields

.3 32 18 03 Infill Artificial Turf Sports Fields

.4 32 18 04 Soccer Layouts

.5 32 18 05 Soccer Goals, Players Benches and Flagposts

.6 32 18 06 Football Layout

.7 32 18 07 Football Goals

.8 32 18 08 Baseball Diamond Layout

.9 32 18 09 Fast Pitch and Slo-pitch Diamond Layout

.10 32 18 10 Ball Diamond Shale Infield and Warning Tracks

.11 32 18 11 Ball Diamond Chain Link Backstops, Fences and Gates

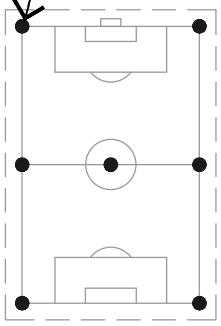
.12 32 18 12 Ball Diamond Foul Poles

.13 32 18 13 Ball Diamond Dug-outs

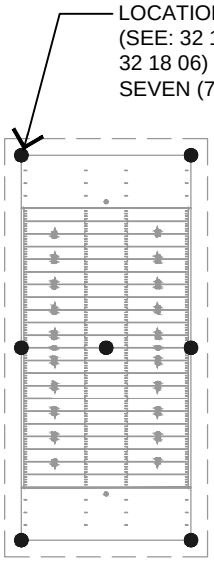
.14 32 18 14 Ball Diamond Players Benches

.15 32 18 15 Sports Fields Bleachers

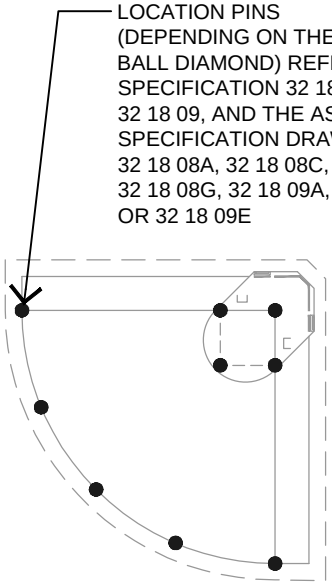
- END OF SECTION 32 18 00 -



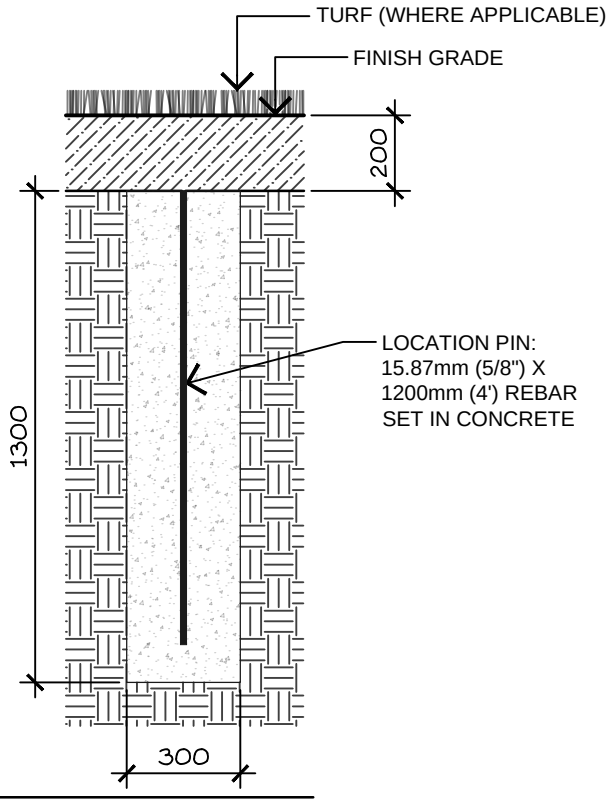
SOCCER FIELD REFERENCE PLAN (NTS)



FOOTBALL FIELD REFERENCE PLAN (NTS)



BALL DIAMOND REFERENCE PLAN (NTS)



SECTION

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REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
20/05/21	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

SPORTS FIELD
LOCATION PIN

Engineering Department

Date: 2021 05 20 | Scale: 1:20

Drawing Number:

32 18 00

1.0 GENERAL

1.1 Description

.1 This section specifies typical requirements for site preparation, grading, topsoiling, seeding, sodding, fertilizing, watering, mulching, maintenance, and inspection to construct natural turf sports fields such as football fields, soccer fields and ball diamonds.

1.2 Related Specifications

.1 Section 31 10 00 Site Clearing

.2 Section 32 18 02 Irrigation System for Sports Fields

.3 Section 31 23 00 Excavation & Fill

.4 Section 31 23 33 Trenching & Backfilling

.5 Section 32 91 19 Landscape Grading

.6 Section 32 92 00 Turf & Grasses

1.3 Submission Requirements

.1 The design drawings and specifications are to be completed and submitted to the City by a landscape architect registered with the Alberta Association of Landscape Architects (AALA).

.2 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

.3 Submit test results for horticultural purposes (including weed seed test) and sample for approval by the City Representative, of the topsoil(s) to be utilized

.4 Submit evidence in writing for approval of the fertilizer compositions and suppliers analysis to be applied to the topsoil(s).

1.4 Equipment

.1 Provide a list and specifications including ground pressure ratings for all of the equipment to be utilized including maintenance equipment for approval before mobilization.

1.5 Materials and Compaction Testing Requirements

.1 The Contractor is to provide subgrade compaction testing by an approved testing firm in 10 locations for each field as located by the City Representative.

1.6 Maintenance Log

.1 Submit monthly logs of the maintenance activities undertaken to include date, time spent, products utilized, any damages or concerns including photographs to the City Representative.

.2 The maintenance log for the two years grow-in is to also include all volumes of irrigated water, fertilizer amounts, over seeding amounts and areas.

2.0 PRODUCTS

2.1 Supplied Topsoil

.1 Supply approved Sandy Loam to Loam texture topsoil (ideally 40% to 70% sand and 5% to 20% clay, texture test by hydrometer, weed seed test, N, P, K, S and micro-nutrients, pH, EC test).

2.2 Fertilizer

.1 The fertilizer supplied shall eliminate any chemical deficiencies as indicated by a soils analysis report of both the salvaged topsoil and the imported topsoil. A recognized testing laboratory shall test the topsoil for N, P, K, and minor element values, soluble salt contents, organic matter content and pH value. Fertilizer to meet test result deficiencies and the City Representative's approval.

2.3 Seed Mix

Alternate seed mixes may be approved at the discretion of the City.

.1 The “City of St. Albert Irrigated Sports Field Mix” or a City approved equal, shall meet the requirements of the Seeds Act for Canada No. 1 Seed, and be mixed to the following mixture by weight:

Jumpstart KB 15%
Bewitched KB 15%
Award KB 20%
Right KB 20%
Aberdeen CRF 20%
IQ PRG 10%

.2 The “City of St. Albert Non-irrigated Mix” or a City approved equal, shall meet the requirements of the Seeds Act for Canada No. 1 Seed, and be mixed to the following mixture by weight:

Jumpstart KB 15%
Bewitched KB 15%
Gazelle II Tall Fescue 20%
Aberdeen CRF 20%
Shadow II Chewing Fescue 15%
Silver Dollar PRG 10%

.3 The City Representative may test the seed for purity and germination at its’ own expense.

.4 All seed shall be stored in a dry weatherproof storage place and shall be protected from damage by heat, rodents or other causes.

2.4 Sod

.1 Seeding is preferred but if circumstances exist to require sodding, meet the requirements of 32 92 00 Turf & Grasses, and submit the sod specifications and sources for approval by the City.

3.0 EXECUTION

3.1 Pre-Grading Work

.1 Mobilization and Demobilization.

.2 Install 1524 mm minimum height wire mesh perimeter safety fencing and keep maintained until field opening minimum 9.0 m beyond the work area.

.3 Apply glyphosate and wait ten days to take effect before removing existing grass.

.4 Remove grass and sod layer with Rotospic, grader, loader and truck and dispose off-site.

.5 Remove and stockpile existing topsoil for re-use with a Rotospic and grader to existing topsoil depth only, supervised by a City Representative.

3.2 Grading

.1 Regrade the subsoil to a 1% minimum crossfall and ensure surface runoff is not impounded.

.2 Decompact the subsoil and regrade if required.

.3 Final subsoil on the sports field to be a smooth surface to a tolerance of 10 mm in 3000 mm, Contractor to supply straightedge on site.

.4 Contractor to provide survey topo sheet on a minimum 10 m grid to confirm 1% crossfall of the subsoil before spreading topsoil.

3.3 Backstops, Fences, Dug-Outs, Site Furnishings, Shale Infield, Shale Warning Track and Irrigation

.1 For football/soccer fields construct the irrigation before topsoiling – permanent goalposts will be installed after grow-in.

.2 For ball diamonds construct the backstops, fences, dug-outs, site furnishings, shale infield, shale warning track and irrigation before topsoiling.

.3 Decompact the subsoil and regrade if required.

3.4 Topsoil

.1 Spread the salvaged topsoil on non-sportsfield areas only as designated on the drawings. Do not compact or rut the subsoil.

.2 Spread the approved imported topsoil on the playing field area. Do not compact or rut the subsoil.

3.5 Seeding

.1 The fertilizer shall be spread on the seeding area at specified rates and cultivated into the seedbed not more than 48 hours before seeding.

.2 The surface shall be floated to achieve the design elevations after the fertilizer has been spread and cultivated.

.3 The seeding shall be carried out during calm conditions when the wind is less than 8 km/hour.

.4 The grass seed shall be applied by Brillion seeder capable of passing and projecting larger seed sizes in two passes with half the seed in two opposite perpendicular directions at a total rate of 200 kg/hectare.

.5 The seeded area shall be floated and rolled to a smooth surface to a tolerance of 7.5 mm in 3000 mm when measured in any direction. The Contractor shall supply a 3000 mm straight edge on site.

.6 Supply and broadcast a granular PAM (polyacrylamide) erosion control polymer, as per manufacturer's specifications.

3.6 Sodding

.1 Supply and install pre-approved sod in accordance with 32 92 00 Turf & Grasses.

3.7 Construction Completion

.1 The Contractor shall notify the City Representative in writing that the seeding or sodding has been completed and ready for an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.7 Maintenance of Seeded and Sodded Areas During Grow-In

.1 Maintenance of seeded and sodded areas to include all measures necessary to grow-in and maintain grass in a healthy and vigorous growing condition including, but not limited to, the following measures.

.2 Weed Control on a programmed basis to ensure no weeds are present in the turf. When herbicides are used, they shall be applied in accordance with the manufacturer's recommendations.

.3 Damage from the Contractors use of herbicides is his sole responsibility.

.4 Mowings of seeded and sodded areas when it reaches a height of 100 mm to an 80 mm height. Lower mowing height to 70 mm just before turn-over at Final Acceptance.

.5 Fertilizing to be carried out three times annually and once with the seeding.

.6 Submit a detailed maintenance log monthly for the two years grow-in including all volumes of irrigated water, fertilizer amounts, over seeding amounts and areas.

.7 During the warranty period areas showing deterioration, bare spots or thin areas to be re-seeded or re-sodded at the Contractor's expense.

.8 Install 7 location pins for each football/soccer field 150 mm below final turf elevation at four corners, two mid side points and two centre field.

.9 Install 5 location pins per ball diamond 150 mm below final shale elevation for four bases, and pitcher's mound at the front. Submit an as-built drawing which indicates diagonal cross check dimensions.

.10 Submit an Autocad as-built drawing in accordance with the City standard coordinate system.

3.8 Final Acceptance Certificate

.1 Seeded areas to be acceptable when:

.1 Turf is uniformly established to 100% grass cover and free of ruts, rills, gullies, bare spots and weeds.

.2 All deficiencies to be remedied at the Contractor's own expense.

.3 All grass areas have been maintained including watering, weed control, fertilizing and mowing for two full years from approval of the construction completion certificate.

- END OF SECTION 32 18 01 -

1.0 GENERAL

1.1 Description

.1 Supply and installation of water supply line tie in, complete with water meter, valves, backflow preventer, pressure gauges, irrigation mainlines, laterals, quick coupling valves, isolation valves, irrigation heads, field controller and power supply and all related items necessary to provide a properly operating irrigation system to cover sports fields.

1.2 Related Specifications

.1 Section 31 10 00 Site Clearing

.2 Section 32 18 01 Natural Turf Sports Fields

.3 Section 31 23 00 Excavation & Fill

.4 Section 31 23 33 Trenching & Backfilling

.5 Section 32 91 19 Landscape Grading

.6 Section 32 92 00 Turf & Grasses

1.3 Submission Requirements

.1 The irrigation design drawings and specifications are to be completed and submitted to the City by a landscape architect registered with the Alberta Association of Landscape Architects (AALA). This specification is considered to be a general performance specification and many other factors will need to be considered in the design.

.2 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

1.4 Contractor Qualifications

.1 The trade contractor performing this work shall be a Certified Irrigation Contractor as certified by The Irrigation Association having experienced, trained and insured personnel qualified for the scope of work.

.2 A written guarantee of the installed irrigation system shall be provided to the City Representative covering workmanship and materials for a minimum of two (2) years from the date of construction completion. The contractor shall provide warranty and maintenance on the system for a minimum of two (2) years.

1.5 Submittals

.1 The Contractor shall submit shop drawings, product literature, specifications and samples of irrigation heads, quick couplers and swing joint assemblies for approval by the City Representative prior to construction.

.2 A suitably scaled as-built drawing prepared in AutoCAD version to be determined by City of St. Albert. shall be submitted. All components of the irrigation system shall be shown as installed, with clear measurements from an identifiable reference point to the location of the water line tie-in, mainline, sleeves, main water connection, blow-out fittings, pipe drains and any other similar features. Show all other deviations from the irrigation design drawing provided to the Contractor.

.3 The as-built drawing shall be submitted prior to issue of the Construction Completion Certificate. The Contractor shall maintain the as-built record throughout the maintenance and warranty period and issue a revised As-Built Plan at Final Completion.

.4 As-built drawing shall be updated daily and be made available upon request by the City Representative.

1.6 Operation and Maintenance Manuals

.1 Prepare and deliver to the City Representative within ten (10) calendar days prior to completion of construction two (2) hard copies of the following information bound in 3-ring cover binders and one (1) digital copy. A Construction Completion Certificate will not be issued until such time as the maintenance manuals are received and accepted. The manual is to include:

.1 Index sheet stating Contractor's address and telephone number, list of equipment with name and addresses of local manufacturer's representatives.

.2 Catalogue and parts sheets on every material and equipment installed under this Contract.

.3 Guarantee statement.

.4 Complete operating and maintenance instructions on all major equipment.

.5 Construction details from the project.

.6 Complete trouble-shooting guide to common irrigation problems.

.7 Winterization and spring start up procedures.

.2 Maintenance materials to be furnished with:

.1 Two (2) quick coupler keys and matching hose swivel for each type of quick coupling valve installed.

.2 The above-mentioned equipment shall be turned over to the City Representative prior to final inspection.

1.7 Site Conditions

.1 Verify the existence and location of all underground utilities and services prior to commencement of the work.

.2 Consult with the City Representative to adjust the design, if necessary, to suit existing site conditions and grades prior to commencement of the work.

.3 Protect from damage, existing landscape features, plant material, structures, irrigation work in progress, and the work of other trades.

.4 Ensure that sequencing of this work is carried out in coordination with the work of other trades and that sleeves are installed when appropriate.

1.8 Regulations

.1 The Contractor shall be responsible for obtaining all permits and licenses applicable to the work to be done and shall include costs for such permits and licenses in the tender and contract prices.

.2 Ensure that there is compliance with the relevant codes and regulations during the conduct of the work involved in the project.

1.9 Notification of City Representative

.1 Report to the City Representative, in writing, any conditions or defects encountered on the site during or prior to construction upon which the work of this section depends and which may adversely affect its performance.

.2 Notify the City Representative and obtain approvals for inspection and testing of the irrigation system as specified in this section. Provide the City Representative a minimum of 48 hours prior notice to the required inspections or meetings.

1.10 Power Supply

.1 Provide a 120 V 20 Amp service for the controller. Electrical servicing request and metering to be determined during design phase and determined by the City.

2.0 PRODUCTS

2.1 Polyethylene Pipe

.1 150mm and 100 mm diameter mainlines High Density Polyethylene Pipe PE4710 Pressure rating 200 psi DR 11.0. No fusion saddles permitted on these pipe sizes.

.2 75 mm and 50 mm diameter laterals Polyethylene Pipe PE pipe shall be virgin, high-impact polyethylene (PE) pipe, having a minimum working pressure rating of CSA Series 75. Fusion saddles allowed on these pipe sizes.

.3 All joints to be heat fusion by qualified personnel. External and internal beads shall not be removed. Fusion shall not be made between pipes of un-like wall thickness.

2.2 Polyvinylchloride (PVC) Pipe (Considered For Swing Joints and Unions Only)

.1 Polyvinylchloride pipe shall conform to CSA B137.3. All pipe shall be in new condition, extruded from virgin materials and continuously and permanently marked with the manufacturers name, material, size, pressure rating and CSA approval.

.2 Pipe pressure rating, sizing, and jointing methods shall be as per drawings.

.3 Jointing methods: Solvent welds for 50mm diameter sizes and smaller. Gasket joint for pipe sizes larger than 50mm.

.4 Fittings for PVC pipe shall be as per the drawings. Use Schedule 80 PVC for all unions, ells, tees and caps and nipples.

.5 Threaded connections of PVC to metal shall have male threads on the PVC and female threads on the metal.

.6 PVC pipe cement and primer combination shall be as recommended by the manufacturer to be suitable for the materials and application, when used as directed, and meet local codes.

2.3 Valve Boxes

.1 Valve boxes to have a polymer concrete lid 775 mm (30.5 inches) long by 445 mm (17.5 inches) wide with a skid resistant surface. The cover is to be compliant with AASHTO and current ASTM C 857 Design load of A-16 7,258 kg (16,000 lb.). The polymer concrete valve box body to be 610 mm (24 inches) in total depth. Valve boxes to be black in color with green lids.

.2 Valve boxes shall be sized to allow minimum 100 mm between valve and inside of the valve box.

.3 Valve boxes shall be sized to allow minimum 50 mm between bottom of valves and top of washed filter aggregate and 50 mm minimum between lid and top of valves.

.4 Provide valve box extensions to increase the depth where required.

.5 Valve boxes shall be installed with minimum 200 mm depth washed filter aggregate at bottom of box.

.6 Valve boxes shall have a locking lid.

.7 Valve boxes to be set on continuous 100mm x 100mm PWF pressure treated wood leveling base.

2.4 Washed Filter Aggregate

.1 20 mm Washed Rock:

.1 Gradation to be within the following limits.

Sieve Size	% Passing By Weight
20.0 mm	100
14.0 mm	90 - 100
10.0 mm	45 - 75
5.0 mm	0 - 15
2.5 mm	0 - 5

.2 Submit sieve test for approval.

2.5 Sleeving

.1 Piping under a future or existing hard surface and as indicated on the drawings must be sleeved with HDPE pipe with a minimum size increase of 25 mm inside diameter for supply mainlines, irrigation mainlines and laterals.

.2 Conduit for future wiring to future fields to be minimum 100 mm HDPE pipe.

2.6 Backfill Material

.1 Native Excavated Material: Clean native excavated soil, free from organic matter, stones larger than 25mm, building debris, and other foreign substances.

.2 Sand: Natural coarse sand.

.3 As per the Geotechnical Report recommendations.

2.7 Quick Couplers, Swing Joints and Anchors

.1 Quick couplers to be minimum 25mm diameter two-piece brass winged anti-rotation construction.

.2 The 1-inch swing joint assembly for the quick-coupler valves shall be comprised of: two (2) 25 mm X 300 mm (1-inch by 12-inch) galvanized nipple and three (3) 25 mm (1-inch) galvanized street elbows.

.3 Galvanized swing joints shall be assembled with Teflon ® tape or sealant completely covering all threads of all components used. Assemblies shall be tightened to the point at which no leakage shall occur and swing joint is still able to pivot and absorb any shock or pressure which it is designed for.

.4 Supply and submit to the City Representative two (2) swivel ell keys and matching hose swivel for each type of quick coupling valve installed.

.5 Quick couplers to be installed with a stainless steel anchor on each of the wings securely fastened to the valve box.

2.8 Isolation Valves

.1 Sized to the same diameter as the pipe, 225 psi rating, wafer style butterfly valve suitable for isolation with 125/150 flanges, cast iron body, 316 stainless steel disc shaft, and EPM seat complete with gear operator.

2.9 Block Valves

.1 Sized to the same diameter as the laterals piping.

.2 Electric valve to be normally closed by internal water pressure. A 450 mm to 600 mm solenoid lead wire to be attached to a removable 24 V.A.C., 50/60 Hz solenoid with a waterproof coil. The valve to have a self-cleaning, stainless steel metering pin to protect bleed ports and purge contaminants.

.3 The valve to be a globe/angle configuration with a female threshed inlet and outlet, with a stainless steel valve seat, the diaphragm to be a fabric reinforced solid piece component.

.4 The valve to be a forward flow design with an external downstream bleed/flush. The valve to be a manual flow control with a hand-operated, rising type flow control stem with a control wheel/handle.

.5 Friction loss for 50 mm (2 inch) valves at 681 LPM (80 GPM) not to exceed 48 kPa (7.0 Psi).

2.10 Adjustable Full and Part-Circle Sprinklers

.1 The adjustable full and part-circle sprinklers shall have a rubber cover, interchangeable nozzles as required to fit site conditions, gear-driven rotary, in-ground type and designed with an integral hydraulic valve for remote electrical actuation from a block valve system. The sprinkler shall be capable of covering a 16.7m (55 foot) radius at 345 kPa (50 Psi) pressure with a discharge rates of 71.8 LPM (18.8 GPM) depending on size of main nozzle. Pop-up height 100 mm (4 inches), exposed rubber cap maximum diameter 56 mm (2.2 inches). Rotation shall be accomplished by a sealed oil packed gear assembly isolated from the water supply.

.2 The sprinkler arc of throw shall be either full 360° uni-directional or fully adjustable from 40° to 330° in 1° increments.

.3 The sprinkler trajectory shall be adjustable from 7° - 30° in 1° increments.

.4 The sprinkler shall incorporate a solenoid for actuation of the integral control valve. The solenoid operator shall be suitable for 24-V.A.C., 60-cycle service with an inrush at 0.12 amps and holding of 0.10 amps at 24 V.A.C.

.5 The sprinkler shall have positive spring retraction.

.6 The sprinkler housing shall be of high-impact molded plastic with 25 mm (1 inch) I.P.S. connection. The sprinkler shall have a large strainer so as to prevent nozzle clogging. The sprinkler shall be so constructed that the drive assembly and screen are accessible through the top of the sprinkler without disturbing case installation.

.7 All 32 mm (1¼") swing joint assemblies for sprinkler heads shall be pre-assembled units manufactured of Schedule 80 PVC material. Swing shall consist of (4) 90-degree elbows and (1) twelve-inch-long riser nipple with 90-degree bend on two end.

.8 All connections shall consist of Buttress Threads and double "O" Rings providing leak-free 360-degree adjustment. Wall construction shall be Schedule 80+ with special emphasis at inside corners on change of direction fittings.

.9 Swing joint assemblies shall be made from virgin PVC Type 1, Cell Classification 12454-B material listed for potable water conveyance by NSF. Working pressure shall be 1379 kPa (200 Psi) combined static and surge.

.10 All PVC swing joints shall be factory assembled by an approved factory. Submit qualifications for approval.

2.11 Irrigation Control System

.1 The irrigation control system to be a satellite style network system capable of 64 stations in 8 station increments. Submit shop drawings for approval. Provide all software required for a fully operational system and train City staff in the use of the system.

.2 Control system to have the capability to be upgraded to a hand-held radio interface in the future, without having to be replaced.

.3 To be fitted with a fully functioning rain sensor system mounted on top of the building where the controller is located.

.4 Power supply 120 V, 20 Amp GFCI circuit.

2.12 Wire

.1 All controller power wiring shall be two or three conductor cables with a ground wire, type UF, UL listed having polyvinyl chloride (PVC) insulations and a sunlight-resistant PVC overall jacket.

.2 All solenoid control and common wiring shall be a single, solid copper conductor, UL listed type PE 600-volt direct burial irrigation wire. Control wires shall be #14 AWG red in color and common wire shall be #12 AWG white. Each controller shall have separate common-wires.

.3 All wiring shall be UL listed and OSHA acceptable in accordance with local code requirements. Type UF cables may be used for underground feeder or branch circuit wiring for installation above or below ground, including direct burial, and in wet corrosive locations.

.4 Cable shall conform to the following standards: UL-83 for Thermoplastic Insulated Underground Feeder and Branch-Circuit Cables, UL-719 for Non-metallic-Sheathed Cables.

.5 Conductors for multiconductor cables, sizes 14-8 AWG shall be solid, annealed bare copper. Sizes 6-4 AWG shall be concentric, compressed stranded (Class B).

2.13 Wire Splices

.1 Wire spicing kits for single UF wire connections shall be Direct Burial kits consisting of sealant which shall not set up hard, allowing splices to be reworked without cutting wires.

.2 Direct Burial kits shall have an application temperature range of 32 to 120 degrees Fahrenheit and service 600-VAC maximum.

.3 D.B.Y. kits shall allow connections of two to five #18 AWG or two #12 AWG solid or stranded copper wires.

.4 D.B.R. kits shall allow connections of two to five #16 AWG or three #10 AWG solid or stranded copper wires.

2.14 Concrete Thrust Blocks on All Mainline Fittings

.1 Miscellaneous concrete 30 MPa concrete in 28 days, slump 75 mm maximum, aggregate size 25 mm maximum, air entrainment 5% to 7%. Use type GU cement.

2.15 Irrigation Tie-In, Backflow Preventer and Pressure Gauges

.1 Mainline connection, water meter, isolation valve and drain pit as per current City Construction Standards.

.2 Backflow preventer valve, blow-off valve and gauges as per these specifications.

.1 Double backflow prevention valve for all potable water supply connections sized to match mainline supply line and limit friction loss.

.2 Blow-off valve system to be comprised of quick connection valve and manual drain valve, to allow complete blow out of the irrigation system from the isolation valve and all components downstream.

.3 Pressure gauges shall be 2.5” (63mm), 316 stainless steel case, glycerine filled with a range of 0-160 PSI +/- 1.6% accuracy.

.4 Submit shop drawings for approval.

3.0 EXECUTION

3.1 Recycling And Protection of Existing Work

.1 Protect existing and proposed landscape features, elements, and sites from damage or contamination. Coordinate with the work of other trades to reduce waste, mixing of waste, soil compaction or erosion, overspray, or run-off from cleaning operations.

3.2 Layout

.1 Stake out the location of all valves, piping and principal fittings for approval by the City Representative prior to construction. All staking and measurements shall be taken from permanent objects, buildings, or survey bench markers and not from objects such as turf boundaries, which are subject to change.

.2 As staking progresses, all additions, changes, or equipment locations, shall be noted on the copy of the "working drawings" from which the "as-built" drawings will be prepared.

.3 Layout changes necessitated by unforeseen conflicts or changes to the site conditions shall be approved in writing by the City Representative.

3.3 Excavation

.1 Keep excavation free of water.

.2 Depths of mainline and laterals to be minimum 500 mm below final grade.

.3 Bed trench with suitable material to the proper depth and compact. The contractor shall repair any settlement of the trenches.

.4 Trenching, lying of pipe and backfilling shall be continuous so that no trench remains open at the end of each work day. Any open trench during the day or other excavations shall be barricaded and marked with high visibility flagging tape.

3.4 Pipe Laying and Plowing

.1 All piping not trenched and backfilled shall be installed to a consistent depth of 500mm minimum between finish grade and top of pipe by vibrating plow method.

.2 Lay the mainline pipe in a straight line between fittings, placing it on firm soil at all points in the trench.

.3 Prevent dirt from entering exposed ends of pipe.

.4 Provide concrete thrust blocking on all mainline fittings 22.5 degrees and greater.

.5 Thrust block shall support the fitting only, not the pipe.

3.5 Backfilling

.1 Backfill excavated sub-grade and base course material in 150 mm lifts, placing and compacting with an approved device to minimum 98% S.P.D. Compaction of trenches with trucks or machinery is not acceptable.

.2 Allow for depth of topsoil 200 mm on sports fields and 150 mm on non-sports fields.

.3 Contractor shall be careful to not mix sub-grade and finish grade topsoil in excavation or backfilling procedures.

.4 All valve boxes shall be adjusted and set flush with final grade.

3.6 Sprinkler Heads

.1 Heads MUST be set a minimum of 10 mm below the final compacted seeded grade to prevent injury to players.

3.7 Tie-In to Municipal Water Supply

.1 Tie into existing City services in accordance with City of St. Albert Municipal Engineering Standards.

.2 A typical multi-field supply might include 150 mm double backflow preventer, a 150 water meter, 150 mm isolation valve, a 150 mm drain and a pressure gauge that reads both imperial and metric which might be located in an approved precast concrete vault with a galvanized checker plate lockable cover or an above ground lockable small self-framing metal shed type building on a cast-in-place concrete slab.

3.9 Block System Valves

.1 A typical block valve box on a 50 mm lateral line may house a 50 mm isolation valve, three 50 mm electronic block valves and a quick coupler valve with Schedule 80 PVC unions.

3.10 Controller

.1 Mount the controller with an independent electrical connection in a lockable cabinet, vault or building.

3.11 Water Line Flushing

.1 Flush all piping in the presence of the City Representative to remove all accumulation of dirt and other foreign materials.

3.12 Valves and Valve Boxes

.1 All valve boxes shall be installed flush with final grade as indicated on the drawings.

.2 Valves shall be installed vertically and stacked in the box so as to be easily accessible for servicing.

.3 Valve boxes shall be installed with adequate clearance above the pipe and on a firm base so as not to contact the pipe with settlement or upon being depressed. Valve boxes shall be supported and able to support the weight of expected traffic.

.4 Install aggregate filter rock in bottom of valve box. Provide minimum 100mm clearance between bottom of valve and top of gravel. Depth of gravel shall be minimum 200mm.

.5 Quick couplers shall be installed in each block valve box and in a valve box at the terminus of the mainline.

.6 Quick couplers shall be with a stainless steel anchors in each valve box.

3.13 Clean Up

.1 The job site shall be kept in a neat, clean and orderly condition at all times during the irrigation installation.

.2 All scrap and excess materials shall be regularly removed from the site and not buried in trenches.

3.14 Inspections and Testing

.1 Inspections of the work shall be scheduled and conducted with the City Representative. The Contractor shall provide the City Representative with minimum 72 hours' notice prior to scheduled inspections.

.2 Leave joints, fittings, valves and accessories exposed for inspection by the City Representative. Wait seven days minimum for standard concrete backing to cure and two days minimum for early strength concrete backing to cure.

.3 All testing requirements are to be paid for by the Contractor.

3.15 Pressure and Leakage Test

.1 The Contractor shall request in writing the presence of the City Representative at least 48 hours in advance of testing.

.2 Subject water pipe to hydrostatic pressure 50% greater than operating pressure at lowest point of system or 90% of rated pipe capacity whichever is less, after irrigation mainline has been filled with water for period of 24 hours and air has been expelled.

.3 Supply pumps, connections, gauges and required apparatus for this test.

.4 Test for 2 hours.

.5 Apart from visual inspection, leakage test will consist of monitoring drop from test pressure in 2 hours. Pipe installation will not be accepted when pressure drop is greater than 5% of test pressure.

.6 Replace defective material.

.7 Contractor will supply water for testing.

.8 Prevent water line from freezing.

.9 Ensure minimum disruption to existing water supply during testing.

3.16 Construction Completion

.1 The irrigation system will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.17 Winterization

.1 When the system is to be closed down for the first winter season, the Contractor shall completely drain and winterize the system with City Public Works Staff on site to train them on the winterization..

.2 The Contractor shall not leave drain valves and test cocks open for the winter.

3.18 Spring Start-Up after Winterization

.1 In the following spring after Construction Completion, the Contractor shall set the system in operation by May 15 or as weather permits. A City staff person shall be in attendance.

.2 The Contractor shall perform all maintenance and repair procedures necessary to ensure system is completely functional and operating as designed.

.3 Replace and compact topsoil in trenches that settle. Reseed or sod as necessary this is not to be undertaken by the irrigation sub-contractor but by the general contractor.

3.19 Maintenance

.1 Train City Representative's maintenance personnel in operation and maintenance of system including spring start-up and winterization. Provide City Representative with manufacturer's manuals, sprinkler repair tools, two replacement heads of each type installed and detailed instructions for winterization and spring start-up of system.

.2 Protect & maintain the entire irrigation system for two (2) years from Construction Completion Certificate (CCC) approval. Include replacement of any defective materials, making all repairs due to faulty workmanship, and conducting winterization and spring start-up of system. Irrigation system is required to be operated through two (2) full year's cycle, including above winterization and start-up procedures.

.3 Submit maintenance logs to the City on a monthly basis.

.4 Update and submit the as-built drawings as required.

.5 The Maintenance Period shall be two years from approved CCC.

3.20 Final Acceptance

.1 Irrigation system will be inspected by the City Representative at the completion of the Maintenance Period.

.2 Where it is found that during the Maintenance Period, the irrigation system has been poorly maintained, or there has been a failure to rectify deficiencies within a reasonable time, issuance of Final Acceptance Certificate may be withheld or the maintenance period may be extended or made conditional upon completion of repairs or improvements at the discretion of the City Representative.

- END OF SECTION 32 18 02 -

1.0 GENERAL

1.1 Description

.1 The section specifies the complete installation of an infilled artificial turf football, soccer and field lacrosse field including but not limited to:

.1 Furnish all labor, materials, tools and equipment necessary to install spined and/or ridged monofilament artificial grass as indicated on the plans and as specified herein; including components and accessories required for a complete installation.

.2 Acceptance of prepared base.

.3 Subgrade preparation, base systems, drainage systems and edge design will be determined by the Landscape Architect and the Geotechnical Engineer based on the existing site conditions. The important criterion is to create a base that is not subject to frost heaving. The specification for these components is not specified in this section.

1.2 Related Specifications

.1 Section 31 10 00 Site Clearing

.2 Section 31 23 00 Excavation & Fill

.3 Section 31 23 33 Trenching & Backfilling

1.3 Submission Requirements

.1 The design drawings and specifications are to be completed and submitted to the City by a landscape architect registered with the Alberta Association of Landscape Architects (AALA).

.2 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

.3 The overall layout plan will include considerations to reduce dust blowing on to the fields.

1.4 Artificial Turf Fields Reference Standards

.1 FM Factory Mutual

.1 P7825 - Approval Guide; Factory Mutual Research Corporation; current edition

.2 ASTM – American Society for Testing and Materials

.1 D1577 - Standard Test Method for Linear Density of Textile Fiber

.2 D5848 - Standard Test Method for Mass per Unit Area of Pile Yarn Floor Covering

.3 D1338 - Standard Test Method for Tuft Bind of Pile Yarn Floor Covering

.4 D1682 - Standard Method of Test for Breaking Load and Elongation of Textile Fabrics

.5 D5034 - Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test)

.6 F1015 - Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces

.7 D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity

.8 D2859 - Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials

.9 F355 - Standard Test Method for Shock-Absorbing Properties of Playing Surfaces.

.10 F2117 – Standard Test Method for Vertical Rebound Characteristics of Sports Surface Systems: Acoustical Measurements (Soccer)

.11 BS7044, Section 2.2 Methods for Determination of Person/Surface Interaction Method 1: Determination of Traction (Rotational Resistance)

.12 F1551-03 Suffix: DIN 18-035, Part 6: Water Permeability of Synthetic Turf Systems

.13 F355-10, Procedure A: Testing Services Inc test number TSI 1202

1.5 Submittals

.1 Shop Drawings required 6 weeks before delivery:

.1 Indicate field layout; field marking plan and details for CFL markings, soccer markings and field lacrosse markings; roll/seaming layout; methods of attachment, field openings, below ATF infrastructure coverings and perimeter conditions.

.2 Show installation methods and construction indicating field verified conditions, clearances, measurements, terminations, drainage.

.3 Provide detail drawings for installation of sport team logo if required.

.2 Product Data to be submitted with the tender submission:

.1 Submit manufacturer's catalog cuts, material safety data sheets (MSDS), brochures, specifications; preparation and installation instructions and recommendations; storage, handling requirements and recommendations.

.2 Submit fiber manufacturer's name, type of fiber and composition of fiber.

.3 Submit data in sufficient detail to indicate compliance with the specifications.

.4 Submit manufacturer's instructions for installation.

.5 Submit manufacturer's instructions for maintenance for the proper care and preventative maintenance of the synthetic turf system, including painting and markings.

.6 Submit a sample copy of insured, non-prorated warranty, maintenance and insurance policy information.

.7 Submit substantiation that proposed system does not violate any other Manufacturers' patents, patents allowed or patents pending.

.3 Samples to be submitted with tender submission:

.1 Submit samples in a wooden box minimum 300 mm x 300 mm, illustrating details of the finished product.

.4 Product Certification to be submitted with the tender submission:

.1 Submit manufacturer's certification that products and materials comply with requirements of the specifications.

.2 Submit certified copies of independent (third-party) laboratory test reports on ASTM testing indicating compliance with Reference Standards.

.1 Pile Height, Face Weight & Total Fabric Weight, ASTM D5848.

.2 Primary & Secondary Backing Weights, ASTM D5848.

.3 Tuft Bind, ASTM D1335.

.4 Grab Tear Strength, ASTM D1682 or D5034.

.5 Water Permeability, ASTM D4491

.3 Submit list of existing installations across Canada including respective supplier's representative and telephone number.

.4 Sample insurance policy as per 1.9 Warranty and Guarantee must be provided at time of tender submission to prove that policy is in force. A letter from an agent or a sample Certificate of Insurance will not be acceptable.

.5 Project Record Documents to be submitted 2 weeks before final construction inspection:

.1 Record actual locations of seams, drains and other pertinent information in accordance with Specifications.

.6 Warranties to be submitted 6 weeks before delivery:

.1 Submit warranty and ensure that forms have been completed in City of St. Albert's name and registered with approved manufacturer.

1.6 Quality Assurance

.1 Manufacturer Mandatory Qualifications to be met:

.1 To be experienced in the manufacture and installation of specified type of infill spined and/or ridged monofilament grass system for a minimum of five (5) years. This includes use of a spined and/or ridged monofilament fiber, backing, the backing coating, and the installation method.

.2 To have ISO 9001, ISO 14001 and OHSAS 18001 certifications demonstrating its manufacturing efficiency with regards to quality, environment and safety management systems.

.3 To have 10 fields in play for at least two years in Canada with a spined and/or ridged monofilament fiber. Fields to be 6,038 m2 or more.

.4 To have a minimum of 3 fields that are at least 8 years old, which is equal to the respective warranty period, with the same infill system.

.5 To have a minimum of 2 installations in the Province of Alberta north of the City of Red Deer.

.6 To have a minimum Labosport FPI score in 2017 of 80.

.7 Manufacturer must provide proof that its turf systems have been subject to long-term independent, epidemiological and peer reviewed studies proving its ability to provide for a safe surface.

.8 To provide third party certification confirming minimum requirement of 8 lbs. tuft bind.

.2 Installer Mandatory Qualifications to be met:

.1 The designated Supervisory Personnel on the project to be certified, in writing by the turf manufacturer, as competent in the installation of specified spined and/or ridged monofilament material, including sewing seams and proper installation of the infill mixture.

.2 Installer to be certified by the manufacturer and licensed and have a documented performance history of installing a minimum of 3 fields in Canada of a minimum 6,038 m2.

.3 The installer supervisor to have a minimum of 5 years, experience as either a construction manager or a supervisor of synthetic turf installations.

.3 Pre-Installation Conference on-site 4 weeks prior to delivery to review methods and procedures related to installation including, but not limited to, the following:

.1 Inspect and discuss existing conditions and preparatory work performed under other contracts.

.2 In addition to the Contractor and the installer, arrange for the attendance of installers affected by the Work and the City Representatives. The Contractor to verify special conditions required for the installation of the system. The Contractor to notify the City Representative of any discrepancies.

1.7 Delivery, Storage and Handling

.1 Prevent contact with materials that may cause dysfunction.

.2 Deliver and store components with labels intact and legible.

.3 Store materials/components on site, in a safe place, under cover, and elevated above grade.

.4 Protect from damage during delivery, storage, handling and installation. Protect from damage by other trades.

.5 Inspect all delivered materials and products to ensure they are undamaged and in good condition.

.6 Comply with manufacturer’s recommendations.

1.8 Sequencing and Scheduling

.1 Coordinate the Work with installation of work of related trades as the work proceeds.

.2 Sequence the Work in order to prevent deterioration of installed system.

1.9 Warranty and Guarantee

.1 The Contractor to provide a warranty to the City of St. Albert that covers defects in materials and workmanship of the turf for a period of *eight (8)* years from the date of substantial completion. The turf manufacturer must verify that their representative has inspected the installation and that the work conforms to the manufacturer's requirements. The manufacturer's warranty to include general wear and damage caused from UV degradation. The warranty to specifically exclude vandalism, and acts of God beyond the control of the City of St. Albert or the manufacturer. The warranty to be fully third party insured; pre-paid for the entire 8 year term and be non-prorated. The Contractor to provide a warranty to the City of St. Albert that covers defects in the installation workmanship, and further warrant that the installation was done in accordance with both the manufacturer's recommendations and any written directives of the manufacturer's representative. Prior to final payment for the synthetic turf, the Contractor to submit to the City of St. Albert notification in writing that the field is officially added to the annual policy coverage, guaranteeing the warranty to the City of St. Albert. The insurance policy must be underwritten by an “AM Best” A rated carrier and must reflect the following values:

.1 Pre-Paid 8-year insured warranty.

.2 Insured Warranty Coverage must be provided in the form of one (1) single policy.

.3 Maximum per claim coverage amount of *fifteen million dollar ($15,000,000)* per product defect.

.4 Minimum of fifteen million dollar ($15,000,000) annual aggregate.

.5 Policies that include self-insurance or self-retention clauses will not be considered.

.6 Policy cannot include any form of deductible amount.

.7 Sample insurance policy must be provided at time of tender submission to prove that policy is in force. A letter from an agent or a sample Certificate of Insurance will not be acceptable.

.8 The artificial grass system must maintain a G-max of less than 200 for the life of the Warranty as per ASTM F1936.

1.10 Maintenance Service

.1 Contractor to train the City of St. Albert's facility maintenance staff in the use of the turf manufacturer's recommended maintenance equipment.

.2 Manufacturer must provide two hard copies and one digital operations and maintenance manual to the City.

1.11 Description of Work

.1 The complete installation of an artificial turf football/soccer/field lacrosse combo field complete with all applicable permanent line markings for each sport.

.2 All designs, markings, layouts, and materials to conform to all currently applicable CFL rules and are to be white in colour.

.3 Permanent line markings for soccer are to be yellow in colour, thickness as per FIFA Laws of the Game.

.4 All designs, markings, layouts to conform to all currently applicable Canadian Lacrosse Association field lacrosse rules and are to be red in colour.

.5 All designs, markings and layouts must first be approved by the City Representative in the form of approved shop drawings. All markings will be installed in full compliance with those drawings.

.6 The Manufacturer will undertake all design, installation and quality control work related to the artificial surfacing system including preparation of shop drawings showing roll layout, seaming details and location of all factory installed, inlaid and painted field lines, pre-delivery testing, onsite testing, installation, modification of system components to conform to the field dimensions, and other related work.

1.12 Interpretation of the Work

.1 The Installer is to be fully acquainted with the existing site and to fully understand the difficulties and restrictions attending the execution of the work under this contract. Interpretations by the Installer of the meaning of any section of the contract drawings and specifications herein prior to submitting a price for the Work does not remove the responsibility of completing the Work as per the directions of the City Representative, including all costs associated with that Work, should the Installer's interpretation be incorrect. Prior to submitting a price for the Work, the Installer must seek clarification from the City Representative for any items within the drawings and specifications that may appear to be unclear or conflicting.

1.13 Hours of Use

.1 Intended uses on the artificial turf field directly is up to 2000 hours/year including usage during the winter season.

.2 This intended use will not have any impact on the warranty and guarantee.

1.14 Imperial Measurements

.1 Normal measurement for the standards in the turf field industry is in imperial units as included in this specification.

2.0 PRODUCTS

2.1 Artificial Grass

.1 The installed artificial grass spined and/or ridged monofilament fiber for the field to have or exceed the following specifications:

.1 ASTM D1577 Fiber Denier 14,500

.2 ASTM D2256 Yarn Breaking Strength 18 lbs.

.3 ASTM D1577 Fiber Thickness 380 Microns

.4 HALS UV Stabilizer 10,000 ppm

.5 ASTM D5823 Pile Height 2.50 inches

.6 ASTM D5793 Stitch Gauge ¾ inch

.7 ASTM D5848 Pile Weight 42 oz./square yard

.8 ASTM D5848 Primary Backing 7+oz/square yard

.9 ASTM D5848 Secondary Backing 14+oz/square yard

.10 ASTM D5848 Total Weight 63+oz/square yard

.11 ASTM D1335 Tuft Bind (Without Infill) 8+ lbs.

.12 ASTM D5034 Grab Tear (Width) 200 lbs./force

.13 ASTM D5034 Grab Tear (Length) 200 lbs./force

.14 ASTM D4491 Carpet Permeability >40 inches/hour

.15 ASTM F1936 Impact Attenuation (Gmax) <200

.16 Infill Material Depth 1.75 inches

.17 Sand Infill Component 6.20 lbs./square foot

.18 SBR Rubber Infill Component 3.00 lbs./square foot

.19 Total Product Weight 1388oz/square yard

.2 Carpet to consist of spined and/or ridged monofilament fibers tufted into a primary backing with a secondary backing. Stitch gauge of less than 3/4" is deemed to be unacceptable.

.3 Carpet Rolls to be 15’ wide rolls.

.4 Rolls to be long enough to go from field sideline to sideline.

.5 All perimeter soccer/football lines to be yellow/white lines tufted into the individual sideline rolls.

.6 Primary backing to be a double-layered polypropylene fabric.

.7 Secondary backing to consist of an application of porous, heat-activated urethane to permanently lock the fiber tufts in place.

.8 Perforated (with punched holes), backed carpet, while not prohibited, is considered less desirable than alternate systems.

.9 Infill to consist of a resilient layered granular system, comprising selected and graded sand and cryogenically hammer-milled SBR rubber crumb. Artificial Grass products without cryogenically processed rubber or a finish application of straight rubber cryogenically processed may be considered.

.10 The sand component of the infill must represent a minimum of 51% or more of the total infill, by weight and to comply within the following characteristics:

.1 Average Particle size between 20 and 30 mesh [calculated based on summing the midpoint of sieve pan fractions times the % retained on given screen fractions].

.2 Average Particle shape > 0.4 on the Krumbein scale.

.3 Particle structure predominantly single grain

.4 Produce < 0.4%, -50M in API crush test at 80psig

.11 Non-tufted or inlaid lines and markings to be painted with paint approved by the synthetic turf manufacturer.

.12 Thread for sewing seams of turf to be as recommended by the synthetic turf manufacturer.

.13 Glue and seaming fabric for inlaying lines and markings to be as recommended by the synthetic turf manufacturer.

.14 Manufacturer to possess the ability to manufacture its own logos to client specifications in-house.

2.2 Quality Control in Manufacturing

.1 The manufacturer to have full-time certified in-house inspectors at the manufacturing plant that are experts with industry standards.

.2 Primary backing to be inspected by the manufacturer’s full-time certified in-house inspectors before tufting begins.

.3 The manufacturer's full-time in-house certified inspectors to verify "pick count", yarn density in relation to the backing, to ensure the accurate amount of face yarn per square inch.

.4 The manufacturer's full-time, in-house, certified inspectors to perform turf inspections at all levels of production including during the tufting process and at the final stages before the turf is loaded onto the truck for delivery.

.5 The manufacturer to have its own, in-house laboratory where samples of turf are retained and analyzed, based on standard industry tests, performed by full-time, in-house, certified inspectors.

.6 The manufacturer must have ISO 9001, ISO 14001 and OHSAS 18001 certifications demonstrating its manufacturing efficiency with regards to quality, environment and safety management systems.

2.3 Quality Control in Fiber Manufacturing

.1 Synthetic turf fiber must perform in a uniform manner or manufacturer quality control issues in the extrusion processes will be suspected. Linear Low Density Polyethylene Polymer ("LLDPE") and batch additives obtained from a reputable manufacturer are required to manufacture superior quality monofilament yarn. The master batch formula must include a UV stabilizer package added to its polymer base.

.2 The LLDPE used to make the artificial grass fiber needs to be a "C6" LLDPE which contains 6 carbon atoms and 13 hydrogen atoms; A C6-based LLDPE produces strong and resilient artificial grass fibers over prolonged periods and thus should provide the basis for long term performance of the system.

.3 Provide adequate UV protection to ensure the long-term durability of any artificial grass fiber. Typically, stabilizer packages for polyethylene fibers have three components that protect the fibers from degradation: (1) primary antioxidants; (2) secondary antioxidants; and (3) UV stabilizers (i.e., hindered amine light stabilizers ("HALS")). HALS are a particularly important aspect of the stabilizer package. A typical HALS concentration is 10,000 ppm. More developed HALS molecules are methyl stabilized to prevent from degradation.

.4 Streaking refers to color variation in a field due to different degrees of fiber relaxation. Fiber in one row stands up, while fiber in an adjacent row lies flat. The inconsistent relaxation causes differences in the reflection of light off of the fiber, and results in the field having a streaked or striped appearance. Adequate UV protection minimizes the appearance of streaking and other visual flaws during the warranty period.

2.4 Field Groomer and Sweeper

.1 Full-size Field Groomer supplied to include a towing attachment compatible with a field utility vehicle will be part of this Contract.

.2 Full-size Field Sweeper supplied to include a towing attachment compatible with a field utility vehicle will be part of this Contract.

2.5 Maintenance

.1 The artificial turf Manufacturer will train City field maintenance personnel in proper care maintenance procedures of the artificial turf system including spring start-up and winterization, prior to issuance of a Construction Completion Certificate (CCC).

.2 Artificial turf maintenance equipment in the form of a full sized groomer and a full sized sweeper designed to be used for maintenance of artificial turf sports fields will be provided as part of the Contract. The artificial turf Manufacturer will train City field maintenance personnel in proper operation, care and maintenance of the equipment.

2.6 Goal Post Cover

.1 Submit a shop drawing for approval and construct a storable and removable cover for the goal posts, that is removable without major disruption and the need for repair to the artificial turf surface and that does not affect or impact playability.

2.7 Flagposts

.1 Submit a shop drawing for approval and construct a sleeve to insert the soccer flagposts that does not affect or impact playability.

3.0 EXECUTION

3.1 Installation Responsibilities

.1 Subgrade preparation, base systems, drainage systems and edge design will be determined by the Landscape Architect and the Geotechnical Engineer based on the existing site conditions. The important criterion is to create a base that is not subject to frost heaving.

.2 Inspection - the artificial turf installer to inspect substrate for contamination, dryness and planarity tolerances and report any discrepancies to the City Representative in writing. All work required to put the substrate in acceptable condition to be the responsibility of the City Representative.

.3 All materials to be delivered in Manufacturer’s container to maintain clean and dry conditions.

.4 The Contractor to provide a secure, clean, dry location for storage of materials. Materials stored outside must be fully protected from moisture with 10 mil polyethylene barrier and tarpaulin. All material stored outside to be inspected by Installer for moisture contamination before application.

.5 Turf installer to perform tests for moisture and adhesion prior to application and report adverse conditions to the City Representative in writing.

.6 The installation to be performed in full compliance with approved shop drawings and Manufacturer’s installation guidelines.

.7 All work to be performed by Manufacturer's technicians and comply with the Manufacturer's guidelines for the complete placement and installation of artificial turf, markers and graphics, sand and rubber infill.

.8 Only trained technicians, skilled in the installation of athletic caliber artificial turf systems working under the direct supervision of the approved Installer Supervisors, to undertake any cutting, sewing, gluing, shearing, and topdressing or brushing operations.

.9 Any damage to existing asphalt, concrete, fence, sub-drains, drainage system, watering system, site lighting system, plant material or any other existing features created by artificial turf Installer work will be the responsibility of artificial turf Installer to repair the damage to pre-installation condition, to the satisfaction of the City.

.10 Clean Up Jobsite - upon completion of installation, the Installer to remove all unused materials, tools, equipment, rubbish and dispose of empty containers in accordance with federal and local guidelines.

.11 Safety - no smoking, open flames or sparks from electrical equipment to be permitted during the application of materials.

.12 Construction Completion Certificate Inspection: request an inspection in writing when the field is not snow-covered and have the Supervisor of Installation available throughout the inspection process.

3.2 Examination

.1 Verify that all base leveling and compaction is complete prior to installation.

.2 The artificial turf supplier and installer to examine the surface to receive the synthetic turf and accept the base planarity in writing to the City Representative at least one (1) week prior to the beginning of installation.

.1 Acceptance is dependent upon the artificial turf supplier and installer independent test results indicating compaction and planarity are in compliance with specifications.

.2 The surface to be accepted by Installer as "clean" as installation commences and to be maintained in that condition throughout the process.

.3 Contractor to not proceed until unsatisfactory conditions are corrected.

.4 Beginning of installation by the artificial turf installer means acceptance of existing conditions.

.5 Dimensions of the field and locations for markings to be measured by a registered surveyor to verify conformity to the specifications and applicable standards. A record of the finished field as-built measurements to be made.

3.3 Installation

.1 The installation to be performed in full compliance with approved Shop Drawings.

.2 The designated Supervisory personnel on the project must be certified, in writing by the turf manufacturer, as competent in the installation of this material, including sewing seams and proper installation of the infill mixture.

.3 Designs, markings and line layouts to first be approved by the City Representative in the form of final shop drawings. All markings will be in full compliance with final shop drawings.

.4 The Installer to strictly adhere to specified procedures. Any variance from these requirements to be provided in writing, by the manufacturer's on-site representative, and submitted to the City Representative, verifying that the changes do not in any way affect the Warranty. Infill materials to be approved by the manufacturer and installed in accordance with the manufacturer's standard procedures.

.5 Full width rolls to be laid out across the field:

.1 Turf to be of sufficient length to permit full cross-field installation from sideline to sideline.

.2 No cross seams will be allowed between the sidelines.

.3 Each roll to be attached to the next roll utilizing standard state-of-the-art sewing procedures.

.4 When all of the rolls of the playing surface have been installed, the sideline areas to be installed at right angles to the playing surface.

.6 Artificial turf panel seams to be sewn along the selvedge edging flap of the turf roll. Seams secured by other means including gluing are unacceptable. Installation to be 99% sewn:

.1 Minimum gluing only to be permitted to repair problem areas, corner completions, and to cut in any logos or inlaid lines as required by the specifications.

.2 Seams to be flat, tight, and permanent with no separation or fraying.

.3 In the case of all lines and logos, turf carpet/field fibers must be sheared to the backing (do not cut the backing) and adhered using hot melt adhesives.

.7 Infill Materials:

.1 Infill materials to be applied in numerous thin lifts. The turf to be brushed as the mixture is applied. The infill material to be installed to a depth determined by the manufacturer.

.2 Infill to be installed in a systematic order.

.3 Infill materials to be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional. The Infill installation consists of sand and rubber. The infill weight must exceed 8 pounds per square foot and the infill process must be specified at the tender stage.

.8 Non-tufted or inlaid lines and markings to be painted in accordance with turf and paint manufacturers' recommendations. Number of applications to be dependent upon installation and field conditions.

.9 Artificial turf to be attached to the perimeter edge detail in accordance with the design drawings.

.10 Upon completion of installation, the finished field to be inspected by the installation crew, installation supervisor, Artificial Turf Consultant and the City Representative.

3.4 Field Markings

.1 Field markings to be installed in accordance with approved shop drawings. Balance of markings will be inlaid or painted in accordance with the Drawings. All football 5 yard lines to be tufted in.

3.5 Field Maintenance

.1 Perform regularly scheduled periodic maintenance twice per year. The maintenance to include, but not be limited to, a complete inspection and repair including all materials and cleaners of all areas of the field including:

.1 Fiber fibrillation analysis

.2 Seam analysis

.3 Perimeter anchoring

.4 Excessive wear analysis

.5 UV fade inspection

.6 Infill – consistency in depth

.7 Infill – migration analysis

.8 Glued inlay analysis

.9 Base stability analysis

.10 Painted marking inspection

.11 Debris removal

.12 Brushing, aerating, grooming and removal of weeds and moss

.13 Removal of stains

.14 Keeping the infill level.

.2 The inspection and maintenance will be performed by the Turf Company Authorized Maintainer, if the person is not the same as the previous visit, then credentials will be submitted for approval before the visit.

.3 Number of times is 2 times per year for 8 years through the warranty period.

.4 The maintenance activities will include the use of manufacturer approved detergents, static control and gum removal products.

.5 Field performance testing by an approved agency will be undertaken once per year for 8 years by the same agency and those results will be forwarded to the City Representative for retention. Any deficiencies will be repaired immediately.

3.6 Adjustment and Cleaning

.1 Do not permit traffic over unprotected surface.

.2 The installer to provide the labor, supplies, and equipment, as necessary, for final cleaning of surfaces and installed items.

.3 All usable remnants of new material to become the property of the City.

.4 The Contractor to keep the area clean throughout the project and clear of debris.

.5 Surfaces, recesses, enclosures, and related spaces to be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the City.

3.7 Protection

.1 Protect installation throughout construction process until date of final approval for the Construction Completion Certificate.

3.8 Recycling

.1 Manufacturer must commit to a “take back” program once the useful life of the turf surface has lapsed. Upon removal of the turf surface, at least 75% of the turf surface must be recycled.

3.9 Construction Completion

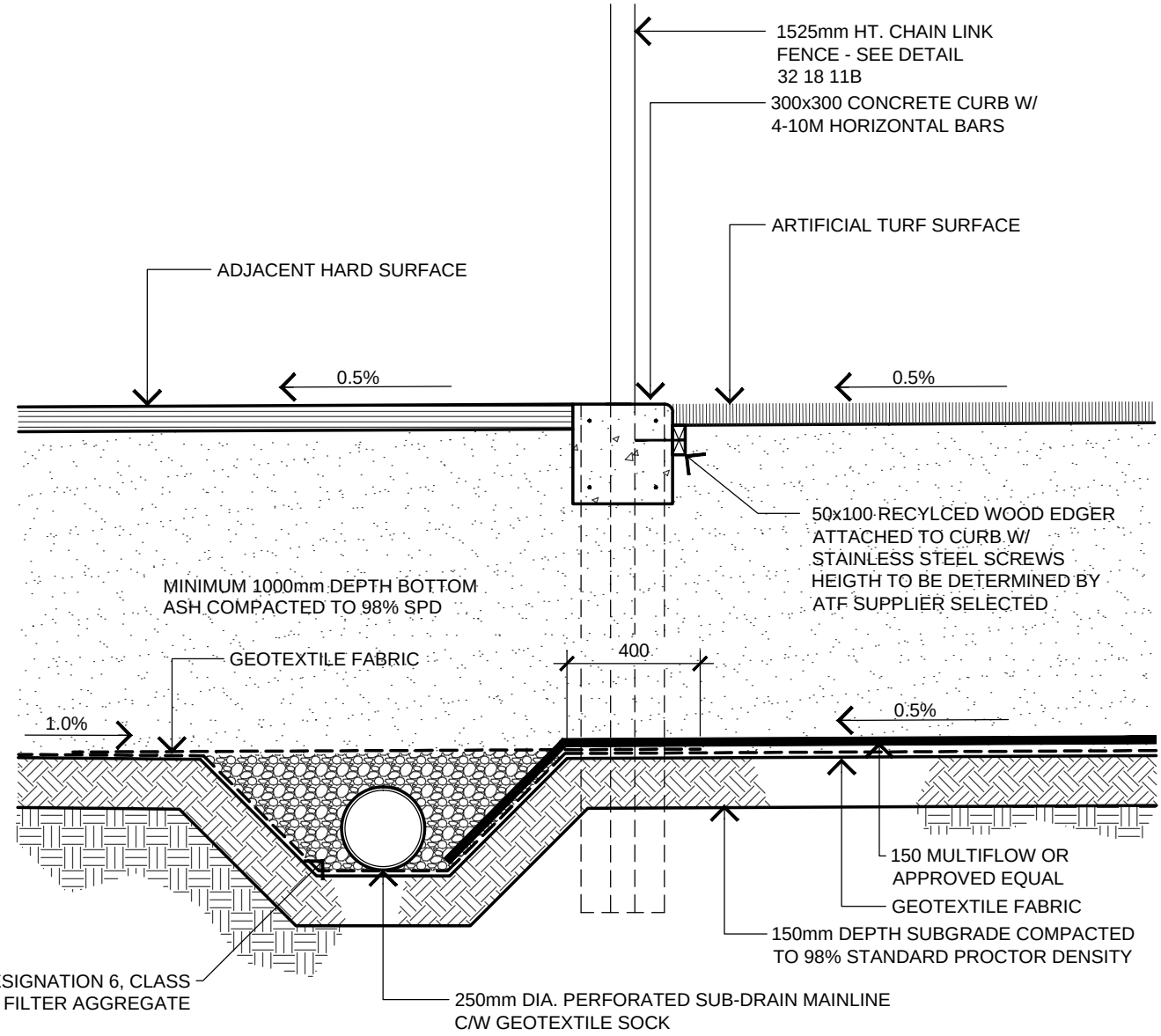
.1 The artificial turf field will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.10 Final Acceptance

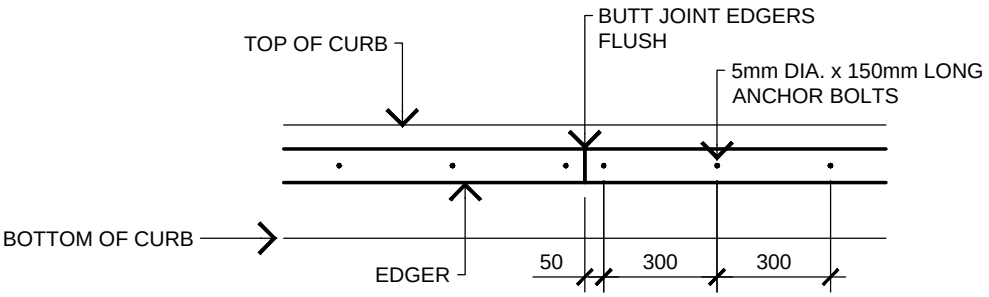
.1 The artificial turf field will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

.2 The warranty is for eight years after construction completion as per 1.9.1.

- END OF SECTION 32 18 03 -



SECTION



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

ELEVATION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

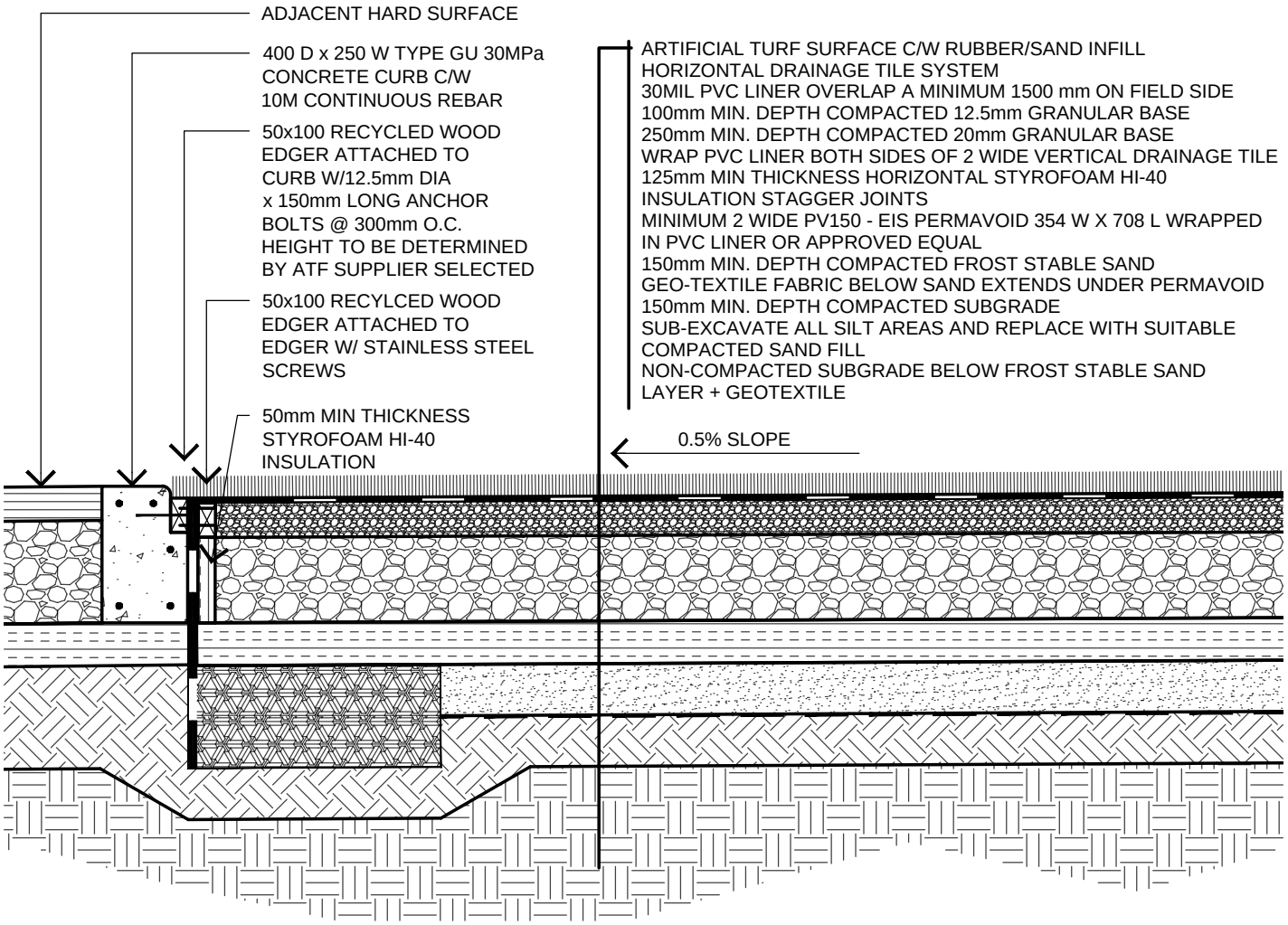
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

ATF - BOTTOM ASH

Engineering Department

Date: 2017 08 25 | Scale: 1:20

Drawing Number: 32 18 03A



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

ATF - W/ LINER

Engineering Department

Date: 2017 08 25 | Scale: 1:20

Drawing Number:

32 18 03B

1.0 GENERAL

1.1 Description

.1 This section defines soccer field layout standards for St. Albert including natural turf fields, irrigated and non-irrigated and artificial turf fields.

1.2 Field Layout

.1 The Fédération Internationale de Football Association (FIFA) are the international body that annually updates "The Laws of the Game". Included in this rule book is the size of the field of play for soccer.

.2 Field sizes for adult play must be on a rectangular field with the following sizes where the touchline (sideline) must be longer than the goal line:

Touchline (m)	Goal Line (m)
Minimum 90	Minimum 45
Maximum 120	Maximum 90

.3 Field sizes for international matches must be on a rectangular field with the following sizes where the touchline (sideline) must be longer than the goal line:

Touchline (m)	Goal Line (m)
Minimum 100	Minimum 64
Maximum 110	Maximum 75

.4 Minor soccer is currently identified according to the following categories by age, so for example U7 includes players younger than 8 for the calendar year by the St. Albert Soccer Association, the following are various categories related to field sizes:

.1 Minis Programs U4, U5, U6, U7 see the U7 field layout drawing.

.2 Youth Programs U9 Recreational, U9 Development, see the U9 field layout drawing.

.3 Youth Programs U11, see the U11 field layout drawing.

.14 Youth Programs U13, U16/18 and Adult, see the U13-Adult field layout drawing.

.5 The goal sizes vary for the age categories as well as identified in the specification 32 18 05 Soccer Goals, Players Benches and Flagposts.

.6 A non-encroachment zone of 6.0 m is recommended and this may be reduced for an artificial turf field.

.7 Line markings for soccer are typically yellow on infill artificial turf fields and painted white on natural turf fields.

1.3 Field Orientation

.1 The best soccer field orientation is north/south.

1.4 Field Grading

.1 The highest calibre natural turf soccer fields are usually designed with a 1% slope from a longitudinal mid-point centreline from centre of the goal to centre of goal out to the touchlines.

.2 Artificial turf fields are usually designed with a 0.5% slope from a longitudinal mid-point centreline from centre of the goal to centre of goal out to the touchlines.

.3 All other turf fields are designed to drain at greater than 1% and less than 2% slope and this might be a cross slope for the full width. A cross slope from one goal to the other is discouraged.

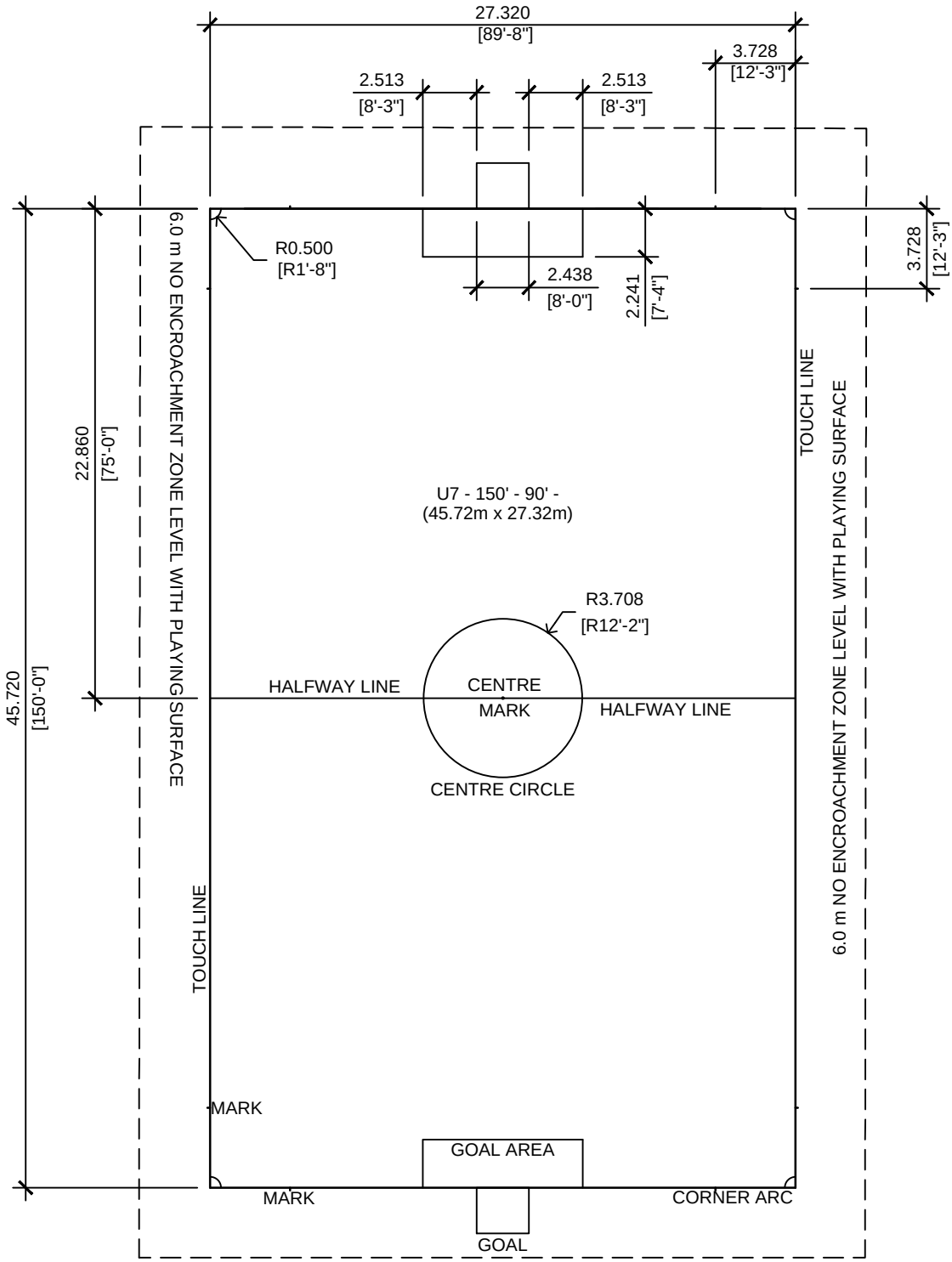
.4 An overall grading plan must be designed to ensure all of the surface run-off either between fields or at the edge of several fields is moved to lower points on the site or to a piped storm sewer system to the approval of the City in accordance with City Municipal Engineering Standards.

1.5 Field Pinning

.1 Install seven (7) location pins for each soccer field 150 mm below final turf elevation at four corners, two mid side points and two centre field.

.2 Submit an Autocad as-built drawing in accordance with the City standard coordinate system.

- END OF SECTION 32 18 04 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

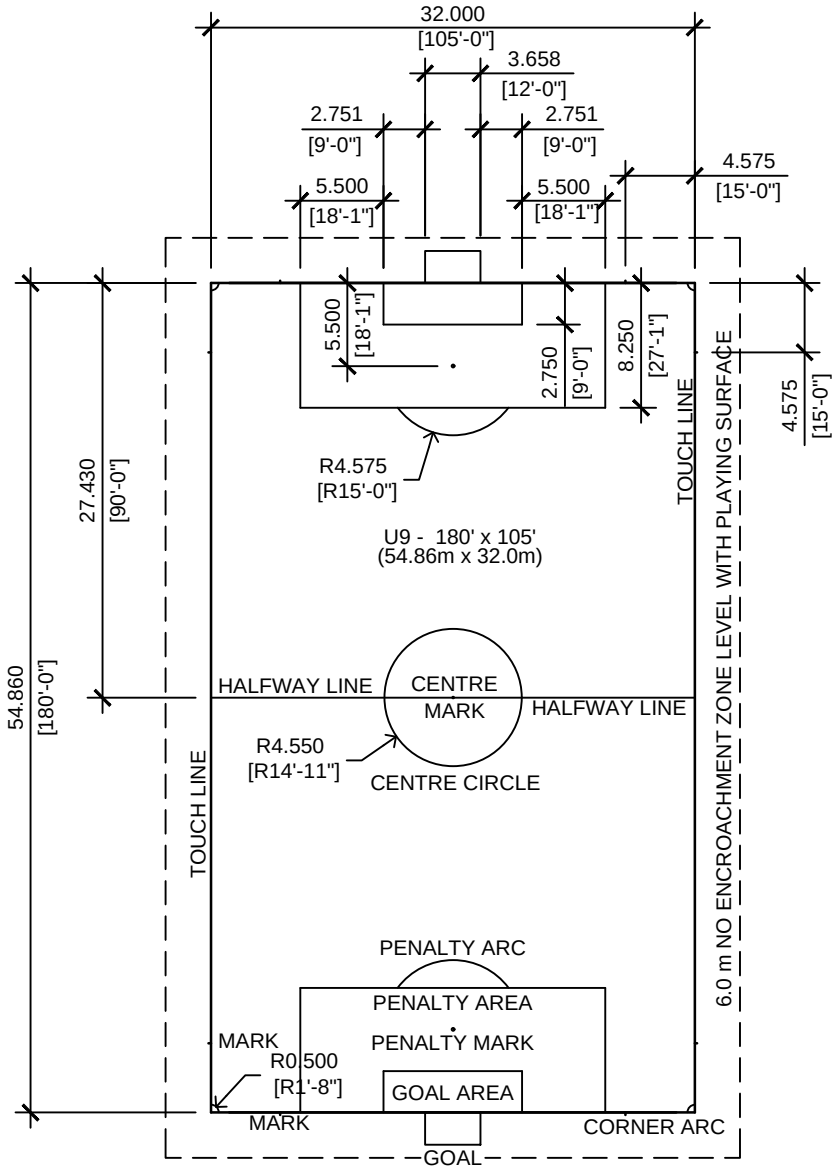
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

U7 - SOCCER FIELD

Engineering Department

Date: 2017 08 25 | Scale: 1:300

Drawing Number: 32 18 04A



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

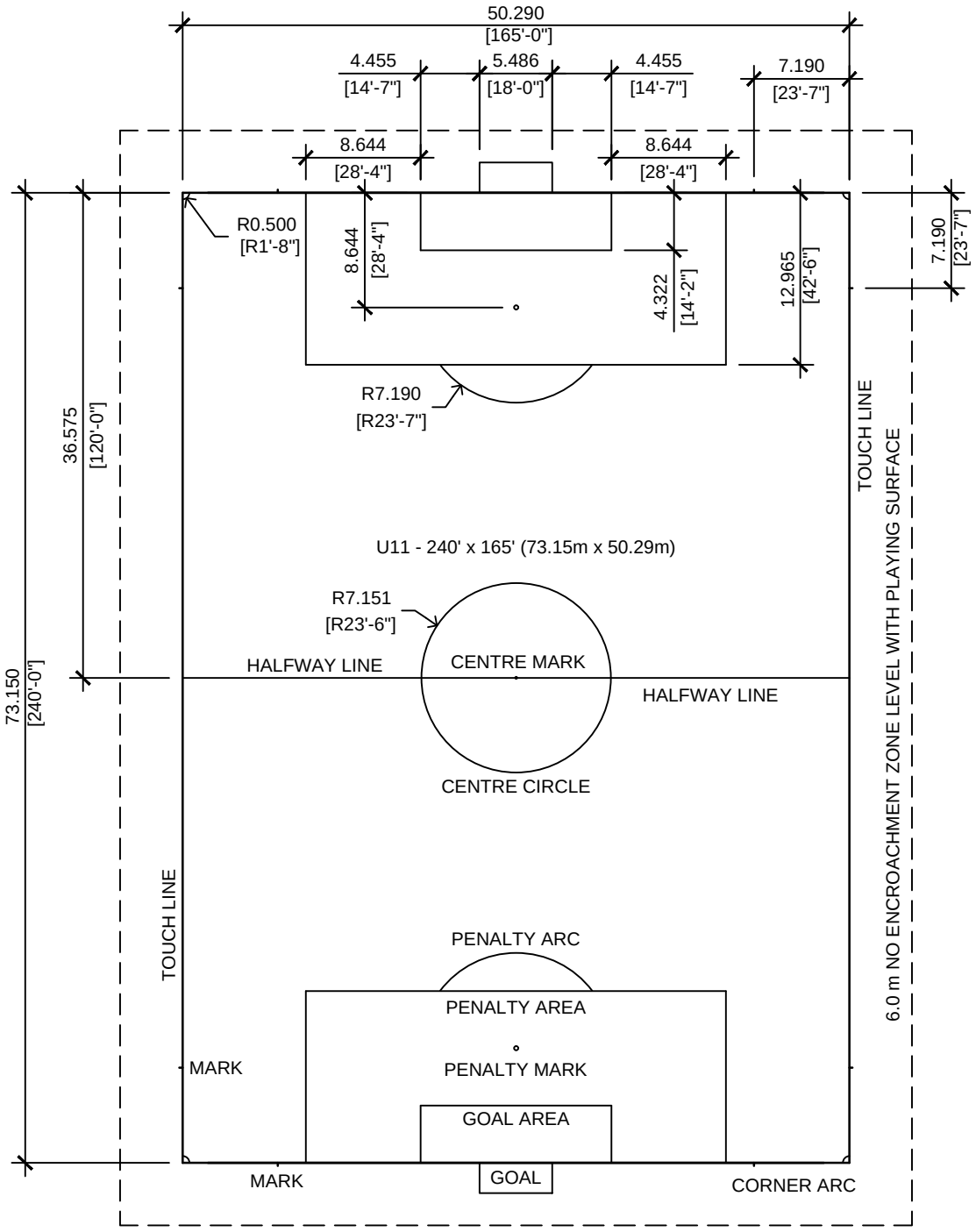
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

U9 - SOCCER FIELD

Engineering Department

Date: 2017 08 25 | Scale: 1:500

Drawing Number: 32 18 04B



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

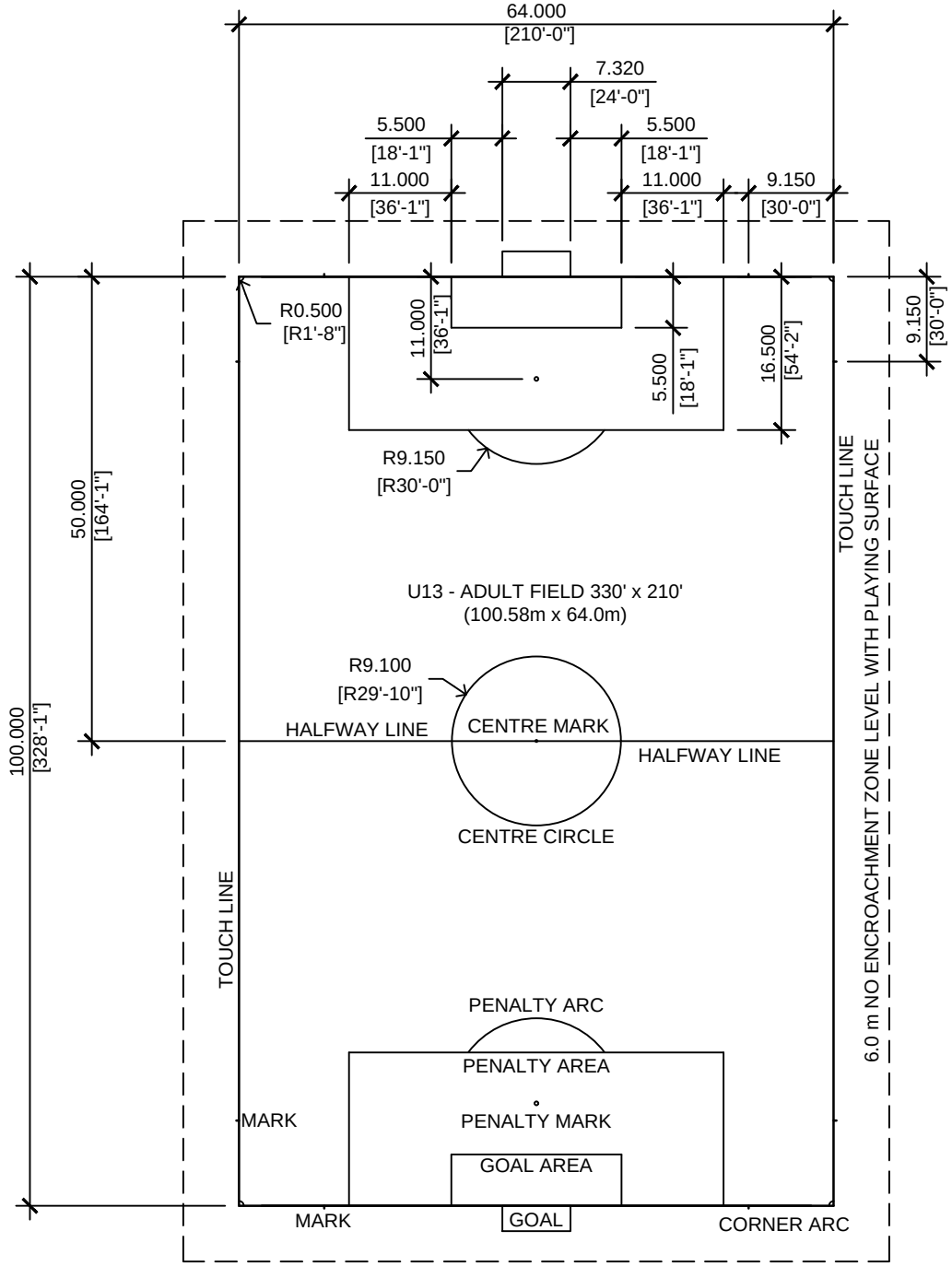
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

U11 - SOCCER FIELD

Engineering Department

Date: 2017 08 25 | Scale: 1:500

Drawing Number: 32 18 04C



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

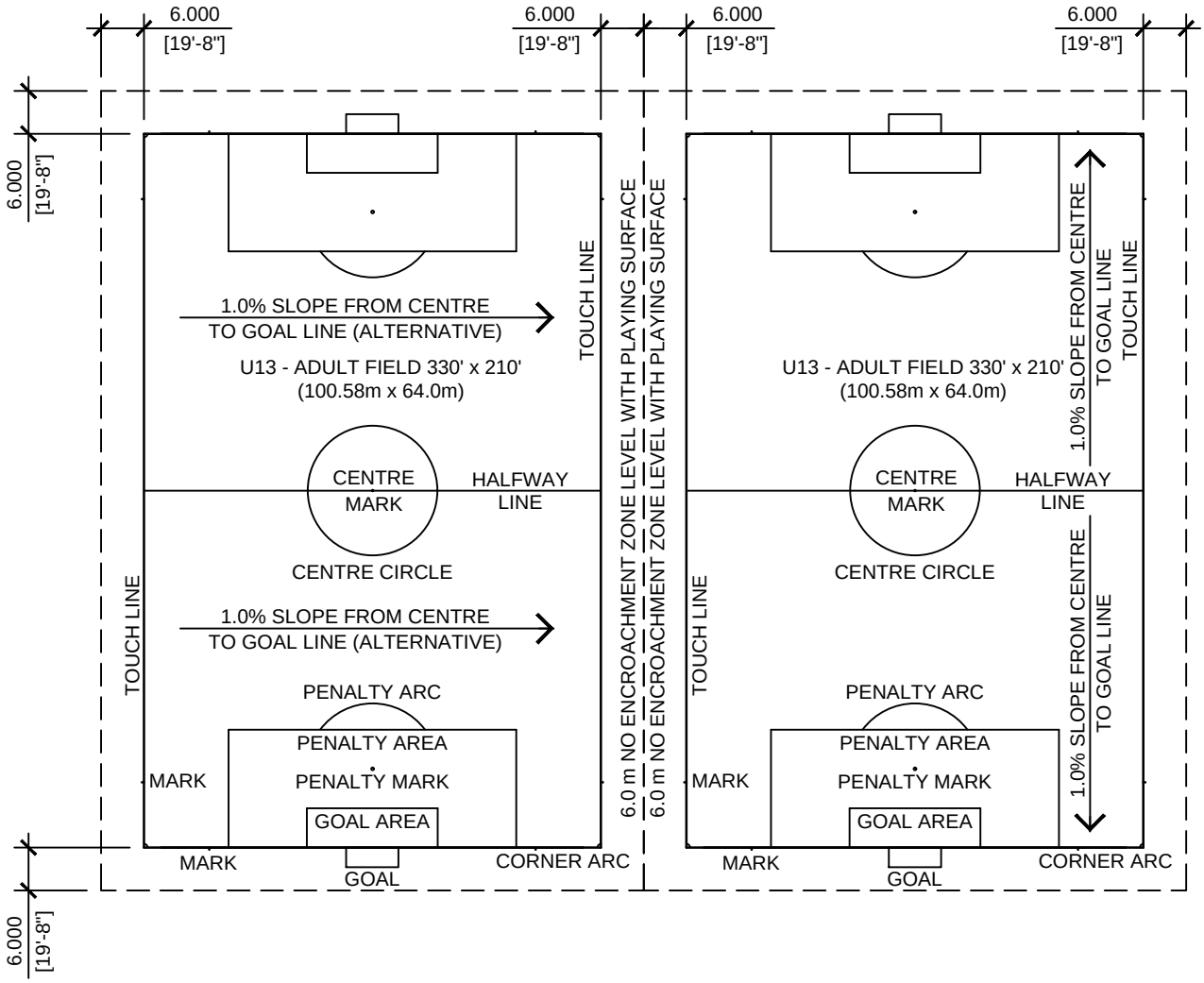
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

U13 - ADULT SOCCER FIELD

Engineering Department

Date: 2017 08 25 | Scale: 1:750

Drawing Number: 32 18 04D



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

U13 - ADULT
MULTIPLE SOCCER FIELDS

Engineering Department

Date: 2017 08 25 | Scale: 1:1000

Drawing Number:

32 18 04E

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of soccer goals, soccer flagposts and pop-up turf anchors for a high caliber natural turf field or artificial turf field.

.2 This section also covers the supply and installation of soccer goals not permanently installed (portable) for lower caliber natural turf fields.

2.0 PRODUCTS

2.1 High Caliber Soccer Fields

.1 Sonotube: heavy cardboard designed for concrete pouring purposes. Submit product data to the City Representative for approval seven days in advance of pile drilling and pouring.

.2 Concrete Piles: Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

.3 Official size soccer goals for high caliber fields 8'H X 24'W X 3'D X 9'B with removable swivel wheels, all aluminum, 4 3/8" elliptical posts and crossbar, 4" x 2" elliptical base and back bottom bar, 2" round tube backdrop. Anchor goals with cast-in-place anchors set in 200 mm x 1800 mm deep concrete piles. Submit shop drawing for approval.

.4 Soccer Flagposts for high caliber fields at four corners and at the two midfields which are 1000 mm offset from the touchline. Flags complete with ground sleeve only to the top of the turf infill, set in 200 mm x 1800 mm deep concrete piles. Submit shop drawing for approval.

.5 Pop-up turf anchors (1 set equals 4 anchors) for high caliber fields, set in 200 mm x 1800 mm deep concrete piles. Submit shop drawing for approval.

2.2 Lower Caliber Soccer Fields

.1 U14-Adult soccer full size portable with anchors 8'H X 24'W X 3' Top Depth X 9' Bottom Depth with non-removable wheels, 4 3/8" elliptical posts and crossbar, 4" x 2" elliptical base and back bottom bar, 2" round tube backdrop..

.2 U-11 Soccer goals portable 6.5’H X 18’W X 2’ Top Depth X 7.5’ Bottom Depth without wheels 4" x 5" elliptical posts and crossbar, 4" x 2" elliptical base and back bottom bar, 2" round tube backdrop.

.3 U-9 Soccer goals portable 6’H X 12' W X 2’ Top Depth X 7' Bottom Depth without wheels 3" round post-entire frame.

.4 U-7 Soccer goals portable 5’H X 8' W X 2' Top Depth X 7' Bottom Depth without wheels 3" round post-entire frame.

.5 Portable goals are to be anchored as per manufacturers' specifications.

2.3 Common Specifications

.1 All metal finishes to be powder-coated white or approved equal by the City.

.2 All fasteners to be tamper proof.

.3 Mounting Hardware: Tamperproof high strength stainless steel 1/2" X 7" long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

.4 All nets to be white.

3.0 EXECUTION

3.1 Installation

.1 Survey layout for line and level (ACCURACY IS PARAMOUNT), auger, reinforce and pour concrete piles for soccer flag posts and turf anchors and do not extend above the shock pad underside of artificial turf carpet or 100 mm below the final grade of the topsoil.

.2 Fill pile excavations with concrete to elevations as indicated. Place concrete in one continuous pour and do not over vibrate.

.3 Steel trowel finish top of pile or pile cap to final elevation of ground sleeve or final grade as specified.

.4 Provide sonotube casing if required due to slumping.

.5 Install permanent soccer goals once seeding has been completed and accepted.

3.2 Construction Completion

.1 Soccer goals will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

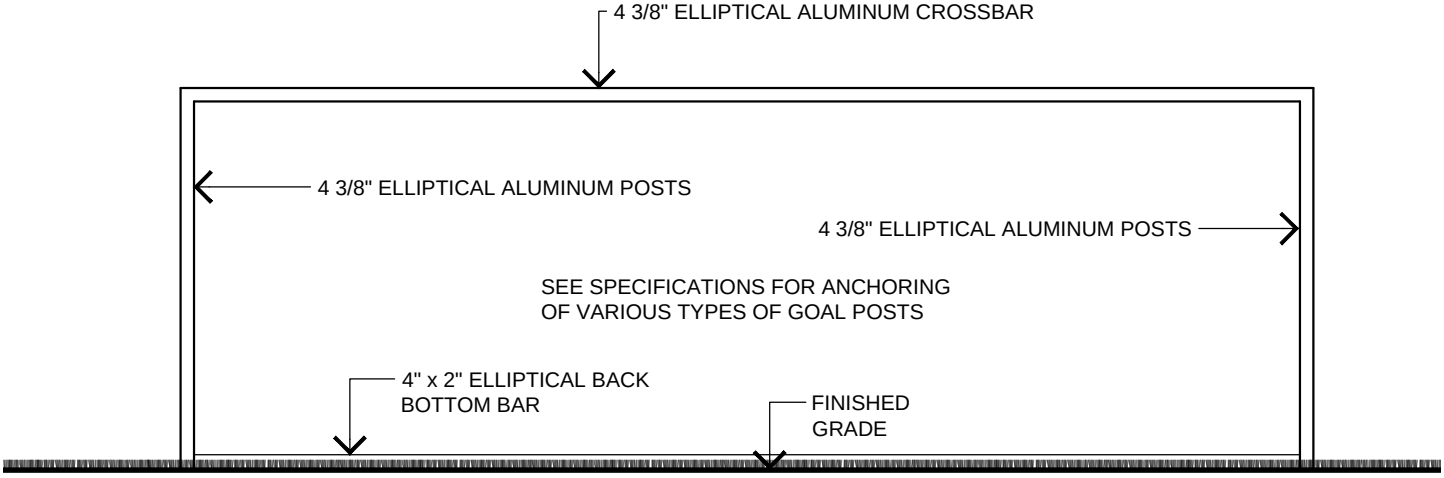
3.3 Maintenance During Warranty Period

.1 Maintenance of the soccer goals is to be provided by the Contractor.

3.4 Final Acceptance

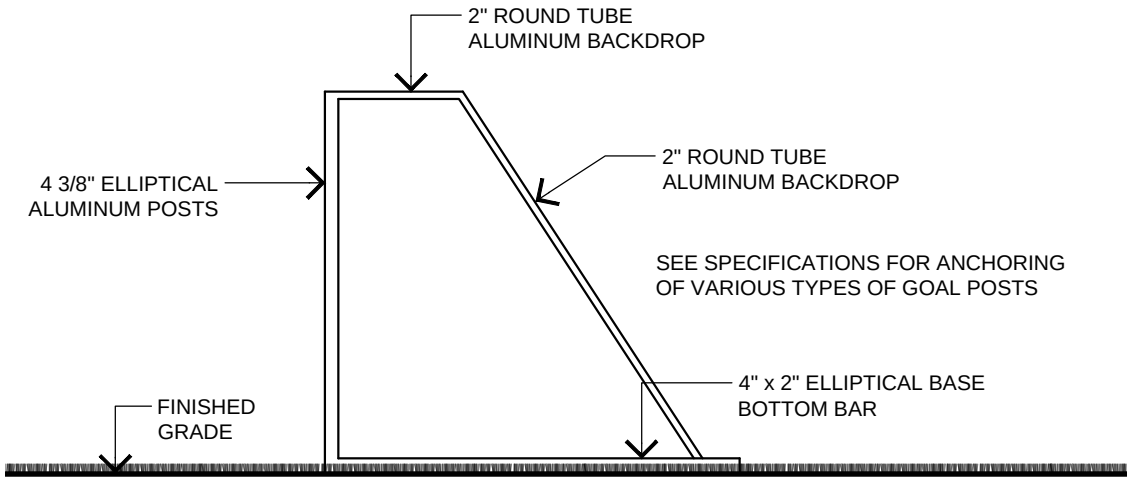
.1 Soccer Goals will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 18 05 -



FRONT ELEVATION

SCALE: 1:50



SIDE ELEVATION

SCALE: 1:50

SEE SPECIFICATIONS FOR VARIOUS GOAL SIZES

ALL DIMENSIONS ARE IN INCHES

REVISIONS	
Date	Details
DD/MM/YY	
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

SOCCER GOALS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 05

1.0 GENERAL

1.1 Description

.1 This section defines football field layout standards for St. Albert including natural turf fields, irrigated and non-irrigated and artificial turf fields.

1.2 Field Layout

.1 The Canadian Football League (CFL) defines the field sizes and layout for all football games played in Canada. Historically minor football and high school teams play on the same field as the professionals.

.2 Football fields can be combined with fields utilized for other sports such as soccer and field lacrosse.

.3 A non-encroachment zone of 6.0 m is recommended and this may be reduced for an artificial turf field.

.4 Line markings for football are typically white.

1.3 Field Orientation

.1 The best football field orientation is north/south.

.2 If a football field has the potential for converts and field goal kicks to leave the field and park area and enter into adjacent land uses including but not limited to residential properties and roadways then a catchment net behind the end zone may need to be included in the development of the field.

1.4 Field Grading

.1 The highest caliber natural turf football fields are usually designed with a 1% slope from a longitudinal mid-point centreline from centre of the goal to centre of goal out to the sidelines and deadlines.

.2 Artificial turf fields are usually designed with a 0.5% slope from a longitudinal mid-point centreline from centre of the goal to centre of goal out to the sidelines and deadlines.

.3 All other turf fields are designed to drain at greater than 1% and less than 2% slope and this might be a cross slope for the full width. A cross slope from one goal to the other is discouraged.

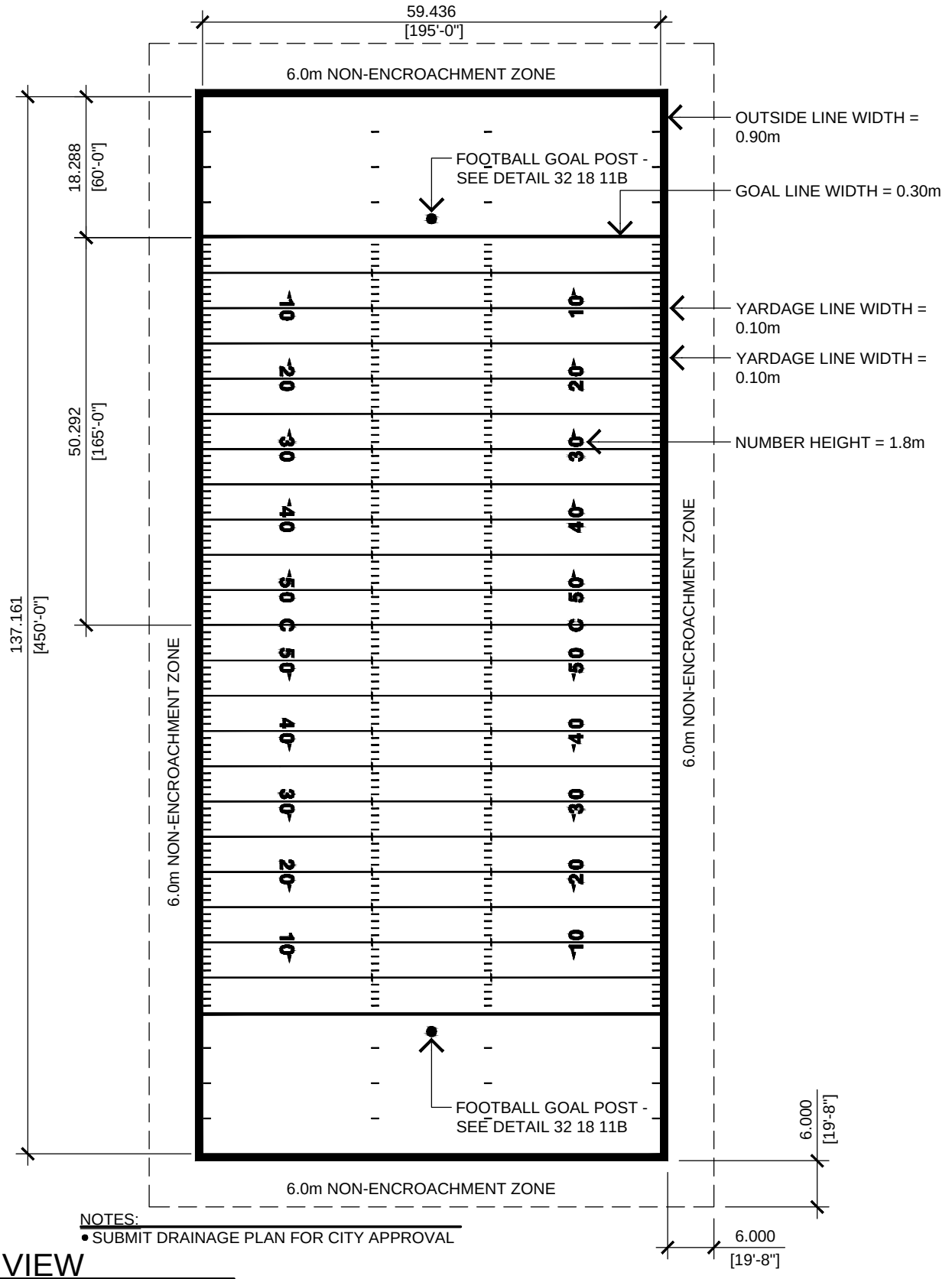
.4 An overall grading plan must be designed to ensure all of the surface run-off either between fields or at the edge of several fields is moved to lower points on the site or to a piped storm sewer system to the approval of the City in accordance with City Municipal Engineering Standards.

1.5 Field Pinning

.1 Install seven (7) location pins for each football field 150 mm below final turf elevation at four corners, two mid side points and two centre field.

.2 Submit an Autocad as-built drawing in accordance with the City standard coordinate system.

- END OF SECTION 32 18 06 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

FOOTBALL FIELD

Engineering Department

Date: 2017 08 25 | Scale: 1:750

Drawing Number: 32 18 06

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of football goals complete with a ground sleeve for the football goals on a high caliber natural turf field or artificial turf field.

.2 This section also covers the supply and installation of combination football and U14 and Adult soccer goals permanently installed in a lower caliber natural turf field.

2.0 PRODUCTS

2.1 High Caliber Natural Turf Field or Artificial Turf Field Goals

.1 Concrete Piles: 500 O.D. X 5000 mm deep pile, concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45, complete with 4-15M rebar verticals and 10M ties at 300 mm on centre, sonotube sleeve the top 1000 mm minimum.

.2 Adjustable rotating football goal post. 1 set equals 2 goal ends for each field 3048 mm height (10’) x 5639 mm wide (18.5’) x 2819 mm football gooseneck depth (9.25’), weight 540 lbs., crossbar 125 mm (5") round aluminum, upright 76 mm 3" round aluminum, gooseneck post 141 mm (5 9/16") round steel, finish powder-coated yellow, uprights 6096 mm (20') high spaced 2819 mm(18'6") apart, specially designed crossbar extrusion, pre-stressed crossbar to ensure a level crossbar and parallel uprights, anti-spin device to prevent post from turning, one piece gooseneck. Custom fabricate 19 mm weep hole and pipe to outside of the concrete at the bottom of the sleeve. Submit shop drawings for approval.

.3 Football Post Pads: black wrap around pads 2134 mm high (7’) made with Velcro for easy installation. Covering is made of 18 ounce heavy duty vinyl and internal pads are made with 100 mm (4”) thick high density urethane foam.

2.2 Lower Caliber Natural Turf Field or Artificial Turf Field Goals

.1 Concrete Piles: 300 O.D. X 3000 mm deep pile, concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45, complete with 3-15M rebar verticals and 10M ties at 300 mm on centre, sonotube sleeve the top 500 mm minimum.

.2 Combination Football / Soccer Goal permanent in-field mounting. 1 set equals 2 goal ends for each field. Soccer uprights are constructed of 4" square tubing. Two piece crossbar is made of 2" square tubing, soccer opening is 8' high x 24' wide, football uprights are made of 2" square tubing and extend to a height of 20' above the field. Sand blasted and powder coated white.

3.0 EXECUTION

3.1 Installation

.1 Survey layout for line and level **(ACCURACY IS PARAMOUNT)**, auger, reinforce and pour concrete piles for each football gooseneck rotating goal as per shop drawings and pile detail.

.2 Survey layout for line and level **(ACCURACY IS PARAMOUNT)**, auger, reinforce and pour concrete piles for each football combination football/soccer goal as per shop drawings and pile detail.

.3 Install goals once seeding has been completed and accepted and ensure the posts remain plumb and square to the field of play.

.3 Remove and dispose of all excavated material off-site.

3.2 Construction Completion

.1 Football goals will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

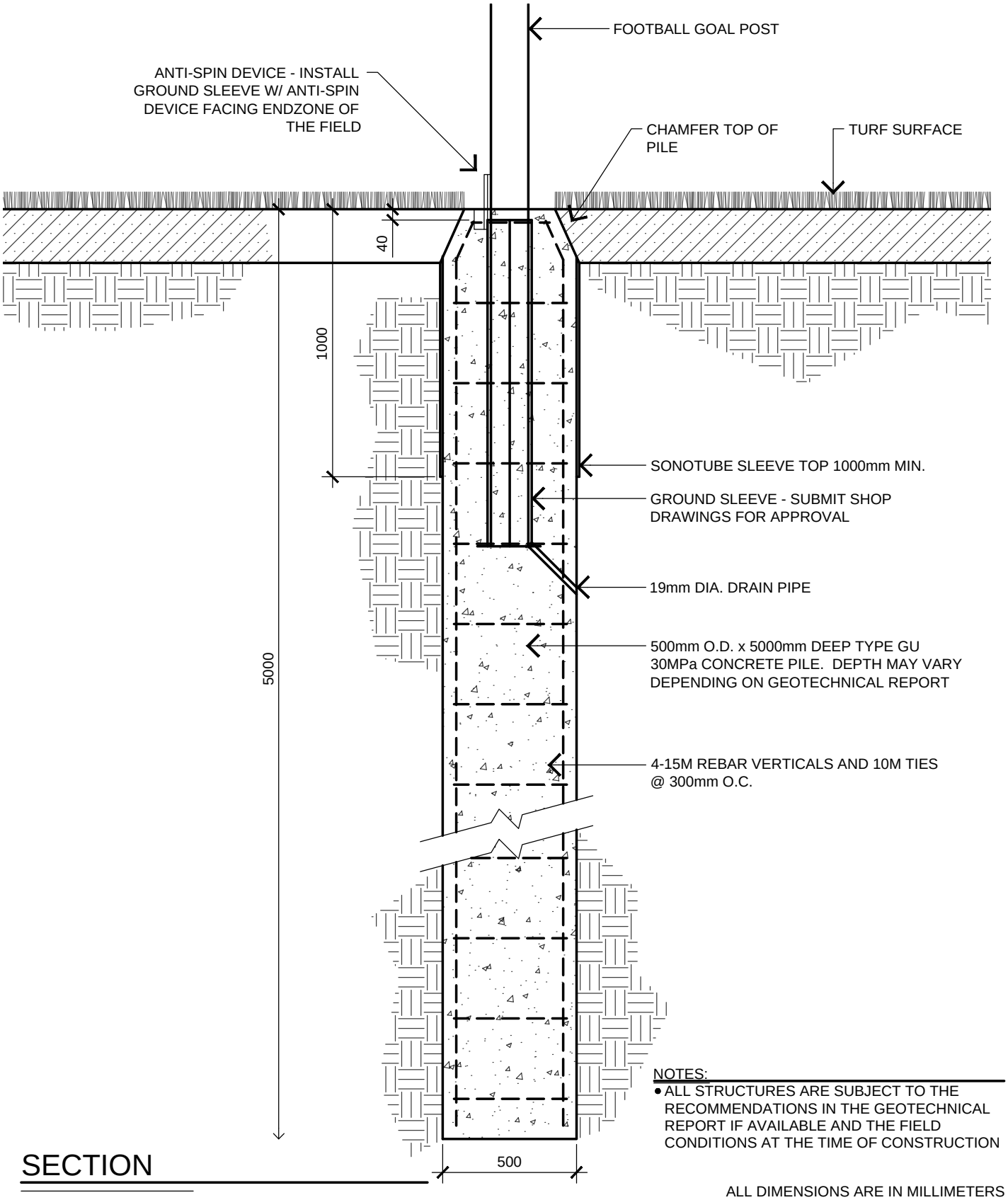
3.3 Maintenance During Warranty Period

.1 Maintenance of the football goals is to be provided by the Contractor.

3.4 Final Acceptance

.1 Football Goals will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 18 07 -



SECTION

NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

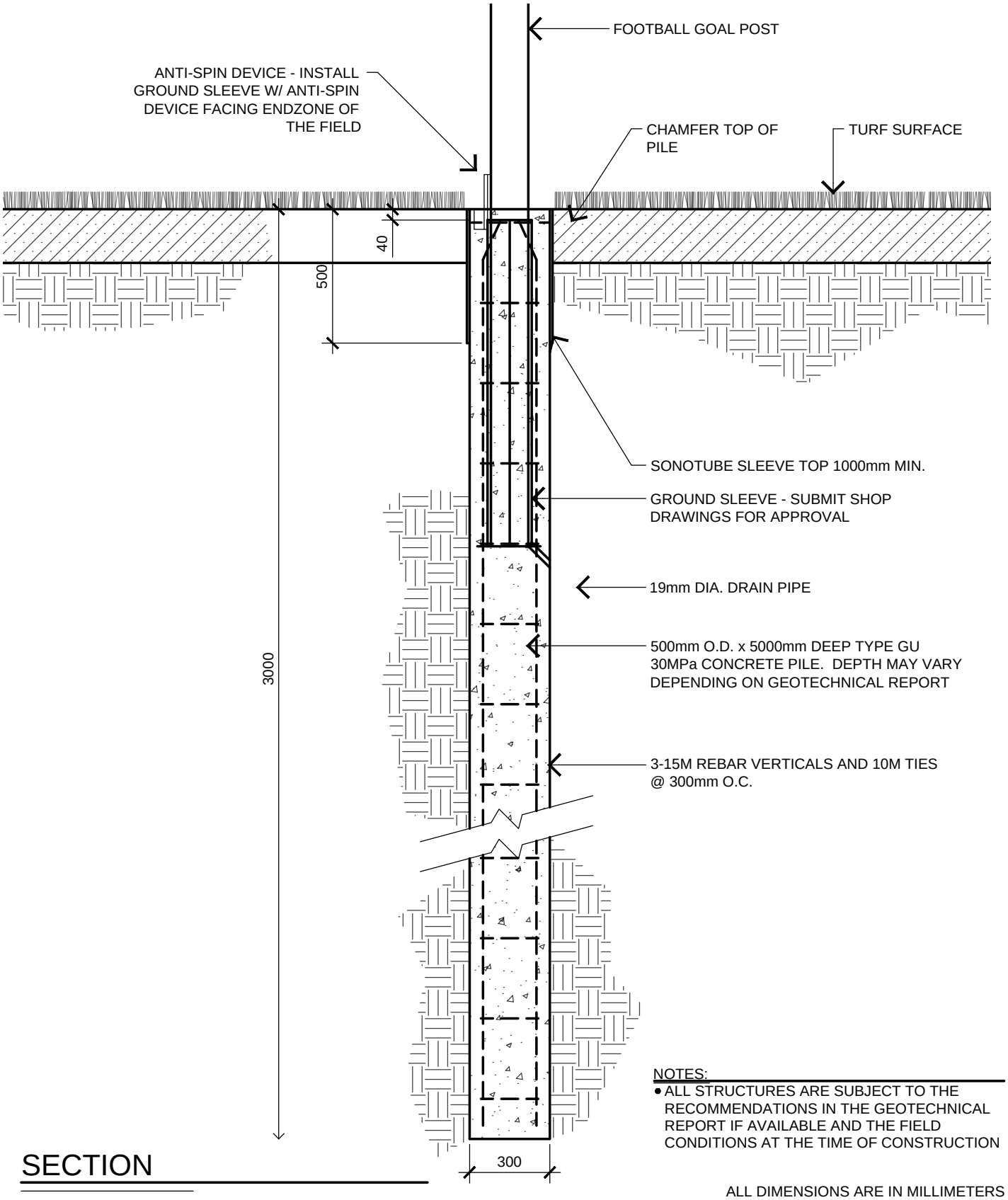
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

FOOTBALL GOAL POST

Engineering Department

Date: 2017 08 25 | Scale: 1:20

Drawing Number: 32 18 07A



SECTION

NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

FOOTBALL GOAL POST

Engineering Department

Date: 2017 08 25 | Scale: 1:20

Drawing Number: 32 18 07B

1.0 GENERAL

1.1 Description

.1 This section defines baseball diamond layout standards for St. Albert including natural turf fields, irrigated and non-irrigated and artificial turf fields.

1.2 Diamond Layout

.1 Baseball Alberta is the governing body for Alberta that defines the field sizes and layout for all baseball games played in Alberta (multi-use diamond preferred 32 18 09E). They have the following categories based on age for the calendar year as reflected in this chart for 2016:

.1 Rally Cap Ages 4 to 7, Rookie 10U, Mosquito 11U.

.2 Peewee 13U.

.3 Bantam Boys 15U, Bantam Girls 16U.

.4 Midget Boys 18U, Midget Girls Under 21U, Junior 21U, Senior 19 and up, Twilite 35 and up.

BASEBALL ALBERTA **2016 HANDBOOK**

BASEBALL DIAMOND DIMENSIONS

Dimension	Rally Cap, Rookie, Mosquito	Pee Wee	Bantam		Midget, Junior, Senior, Twilite	
Base Lines	18.29 m 60 ft.	19.81 m 70 ft.	22.86 m 80 ft.		27.43 m 90 ft.	
Pitching Distance	13.41 m 44 ft.	14.63 m 48 ft.	16.46 m 54 ft.		18.44 m 60 ft. 6 in.	
Centre Field Boundary	*Minimum* 60.96 m 200 ft.	*Preferred* 68.58 m 225 ft.	*Min.* 76.2 m 250 ft.	*Pref.* 79.25 m 280 ft.	*Min.* 76.2 m 250 ft	*Pref.* 122 m 400 ft.
Foul Line Boundary	*Minimum* 54.86 m 180 ft.	*Preferred* 60.96 m 200 ft.	*Min.* 64 m 225 ft.	*Pref.* 68.58 m 240 ft.	*Min.* 76.2 m 250 ft	*Pref.* 97.54 320 ft.
Backstop Setback	7.62 - 12.19 m 25 - 40 ft.	10.67 - 13.72 m 35 - 45 ft.	12.18 - 15.24 m 40 - 50 ft.		18. 3 m 60 ft.	
Fence Setback	7.62 m 25 ft.		15.24 m 50 ft		18.29 m 60 ft.	
Coach's Box	2.44 m x 3.66 m 8 ft. x 12 ft.		2.44 m x 4.88 m 8 ft. x 16 ft.		3.05 m x 6.1 m 10 ft. x 20 ft.	
Coach's Box Setback	3.05 m 10 ft.				4.57 m 15 ft.	
Batter's Box	0.91 m x 1.82 m 3 ft. x 6 ft.	1.22m x 1.83m 4 ft x 6 ft.				
Batter's Box to Home Plate	4 inches				6 inches	
Pitcher's Plate	0.10 m x 0.46 m 4 in. x 18 in.		0.15 m x 0.61 m 6 in. x 24 in.			
Max Height of Pitcher's Mound	0.15 m 6 in.		0.25 m 10 in.			
Bases	0.38 m (square) - 15 inches (square)					
Home Plate	0.43 m (wide) - 17 inces (wide)					

.5 This chart may be revised from time to time – it is best to check the website for the current edition before designing baseball diamonds.

.6 A non-encroachment zone between diamonds of 6.0 m is recommended.

.7 Line markings for ball diamonds are typically white.

1.3 Diamond Orientation

.1 The best baseball diamond orientation is homeplate to centre field is aligned southwest.

1.4 Diamond Grading

.1 The highest calibre natural turf baseball diamonds are usually designed with a 1% slope centred from pitcher's mound.

.2 Artificial turf baseball diamonds are usually designed with a 0.5% slope centred from the pitcher's mound.

.3 All other turf baseball diamonds are designed to drain at greater than 1% and less than 2% slope and this might be a cross slope for the full extent of the diamond.

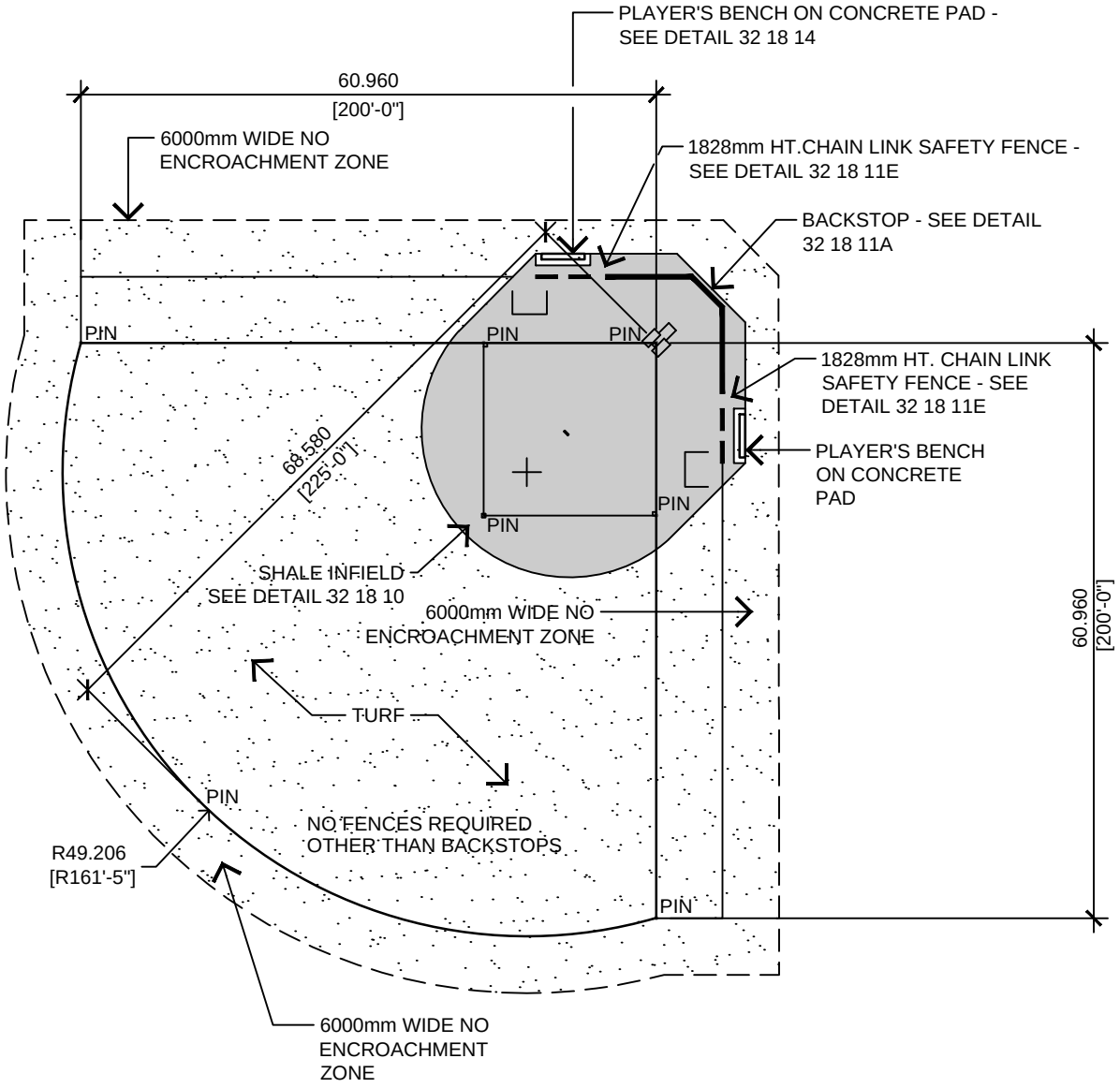
.4 An overall grading plan must be designed to ensure all of the surface run-off either between fields or at the edge of several fields is moved to lower points on the site or to a piped storm sewer system to the approval of the City in accordance with City Municipal Engineering Standards.

1.5 Diamond Pinning

.1 Install five (5) location pins per baseball diamond 150 mm below final shale elevation for (4) four bases, and pitcher's mound at the front. Submit an as-built drawing which indicates diagonal cross check dimensions.

.2 Submit an Autocad as-built drawing in accordance with the City standard coordinate system.

- END OF SECTION 32 18 08 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:750

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

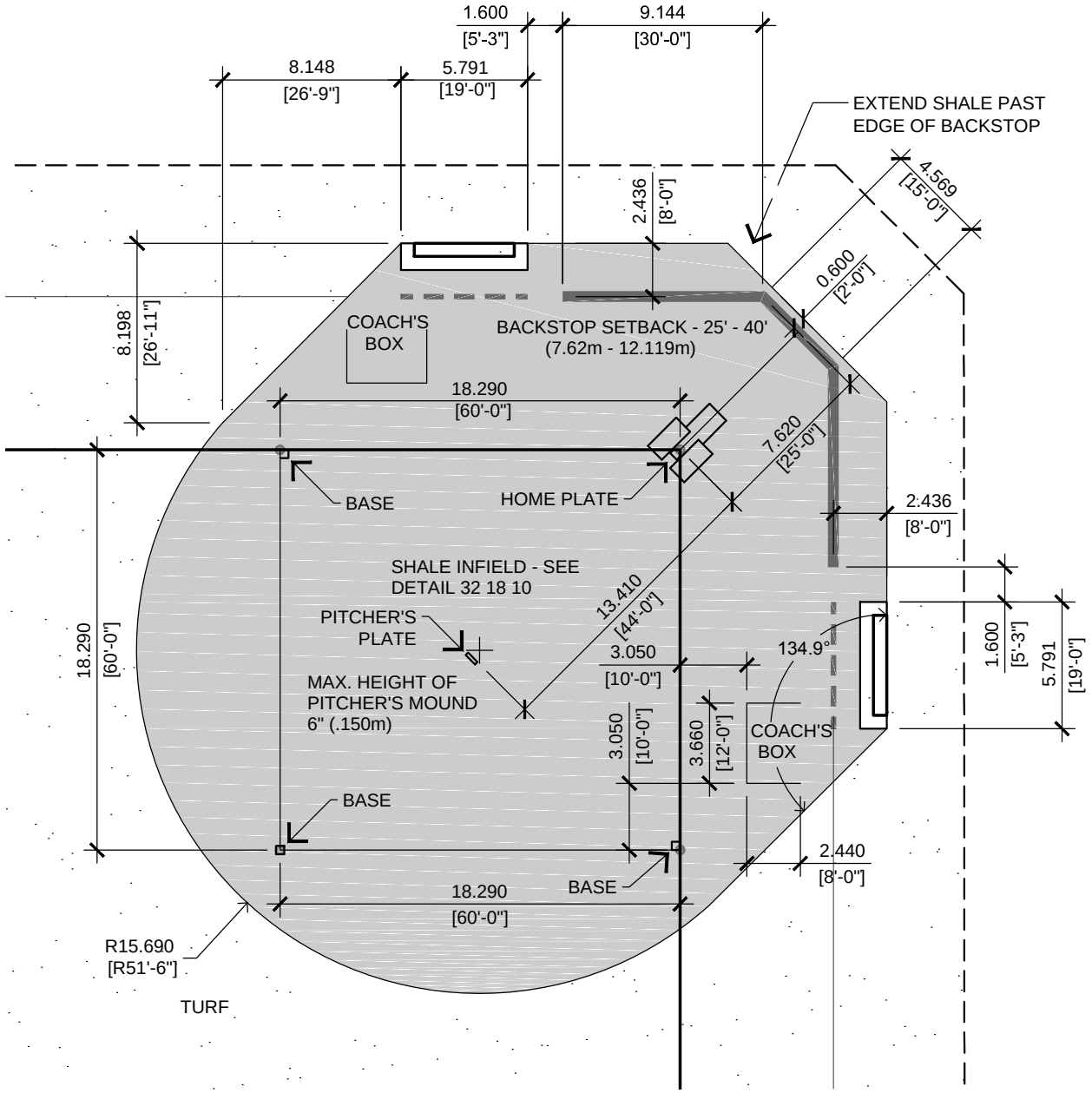
BALL DIAMOND LAYOUT
RALLY CAP, ROOKIE,
MOSQUITO BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08A



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

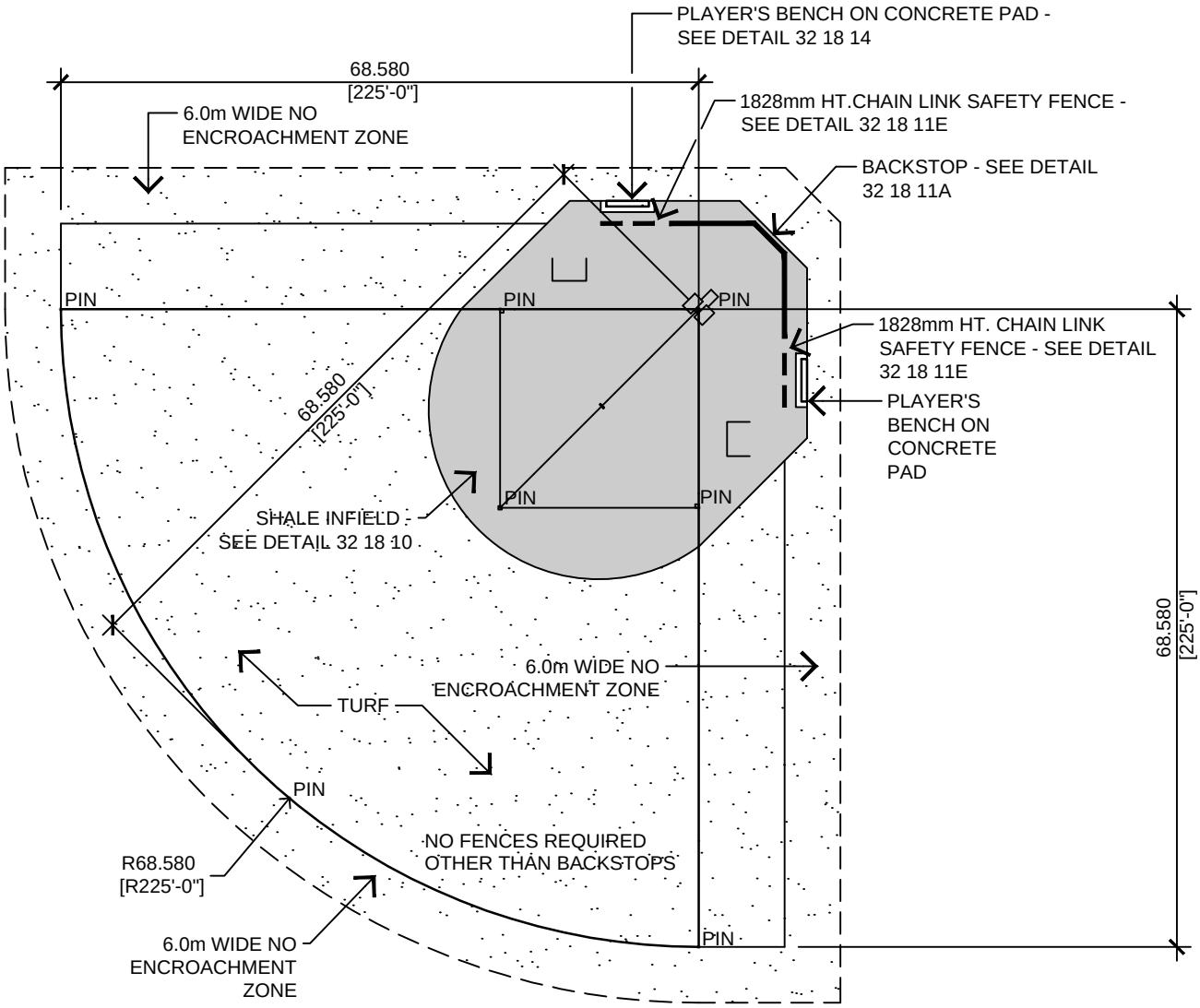
BALL DIAMOND INFIELD LAYOUT
RALLY CAP, ROOKIE,
MOSQUITO BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08B



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:750

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

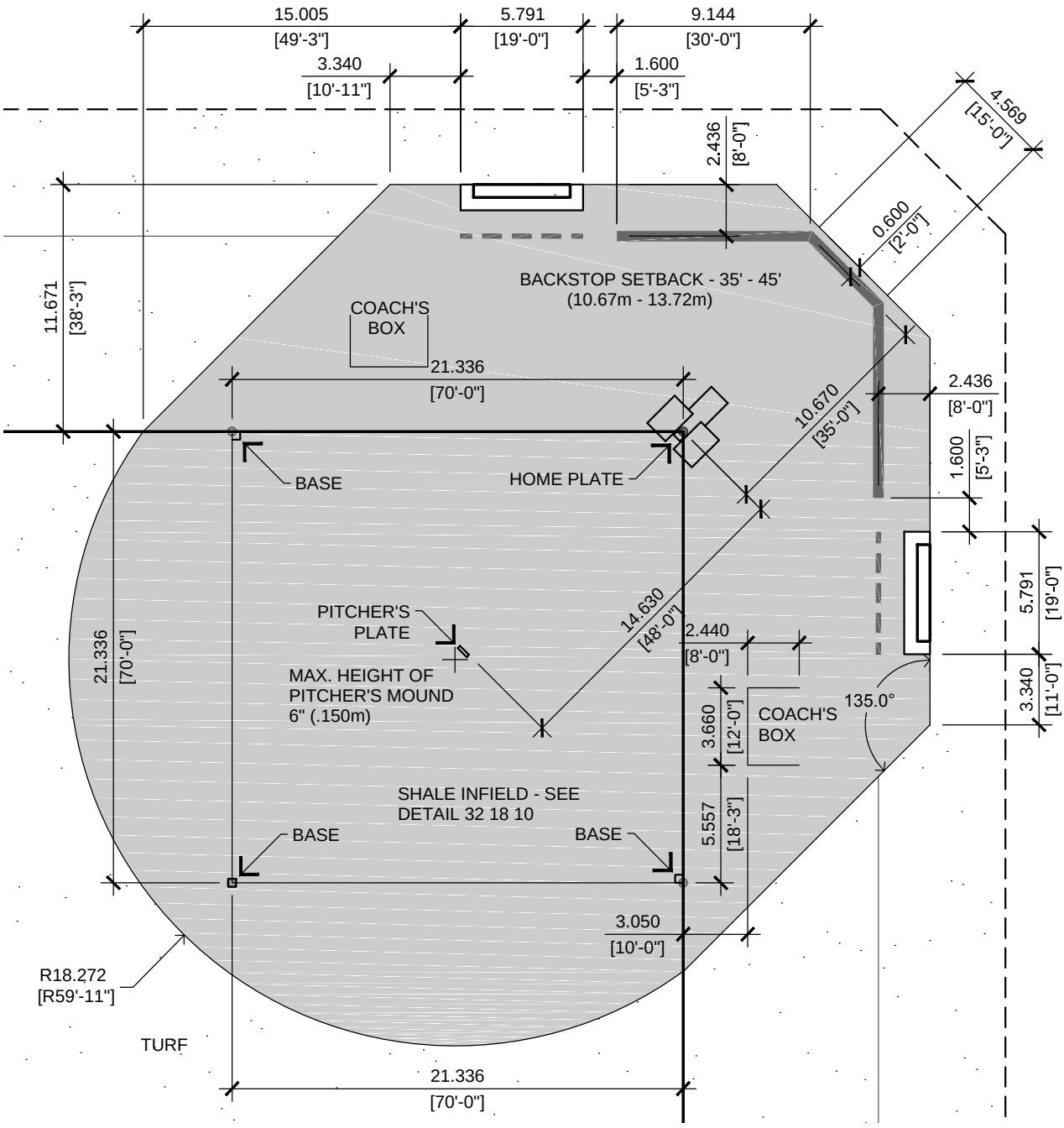
BALL DIAMOND LAYOUT
PEE WEE BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08C



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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City of St. Albert — Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

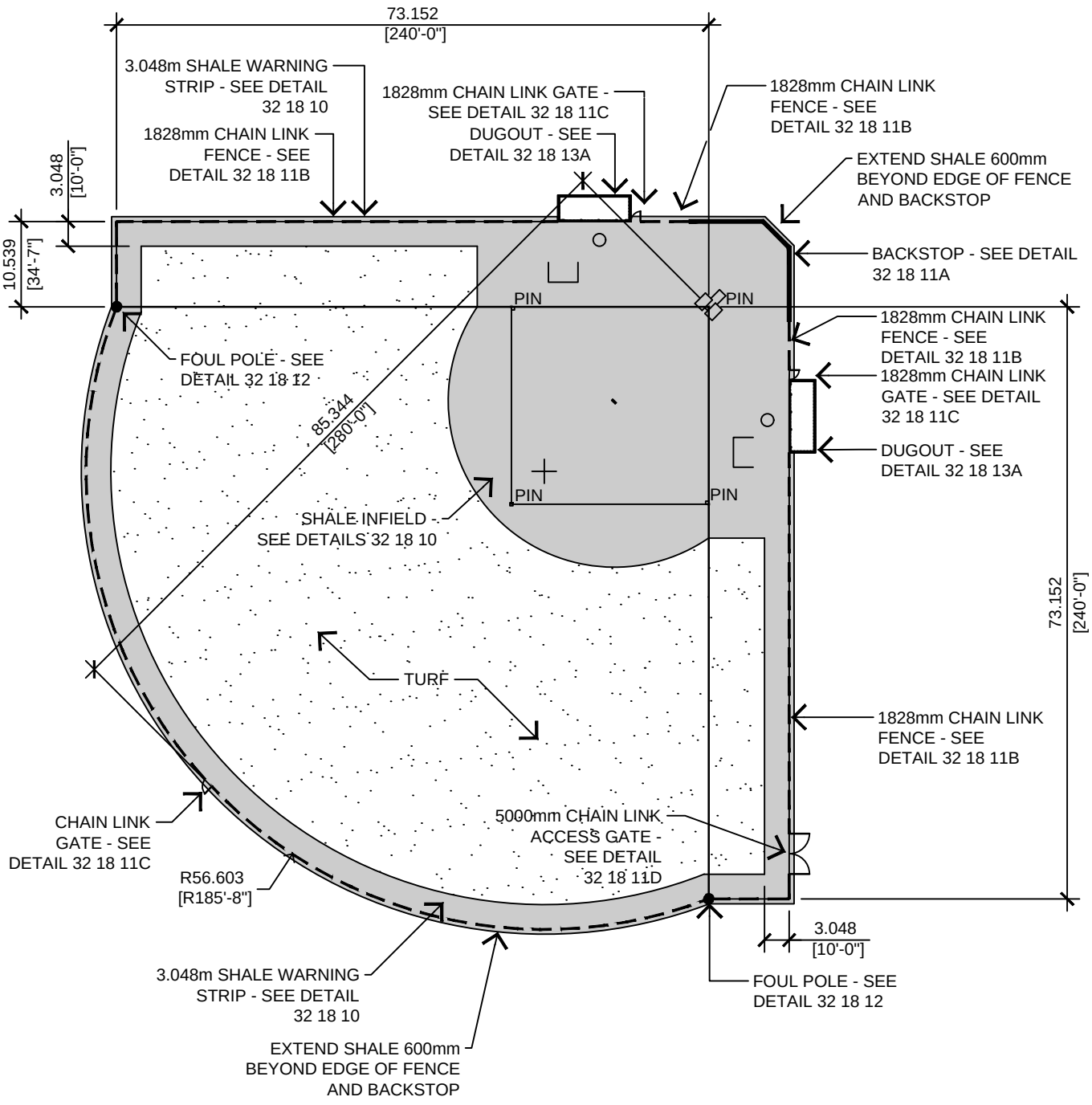
BALL DIAMOND
INFIELD LAYOUT
PEE WEE BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08D



NOTES:
- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:750

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

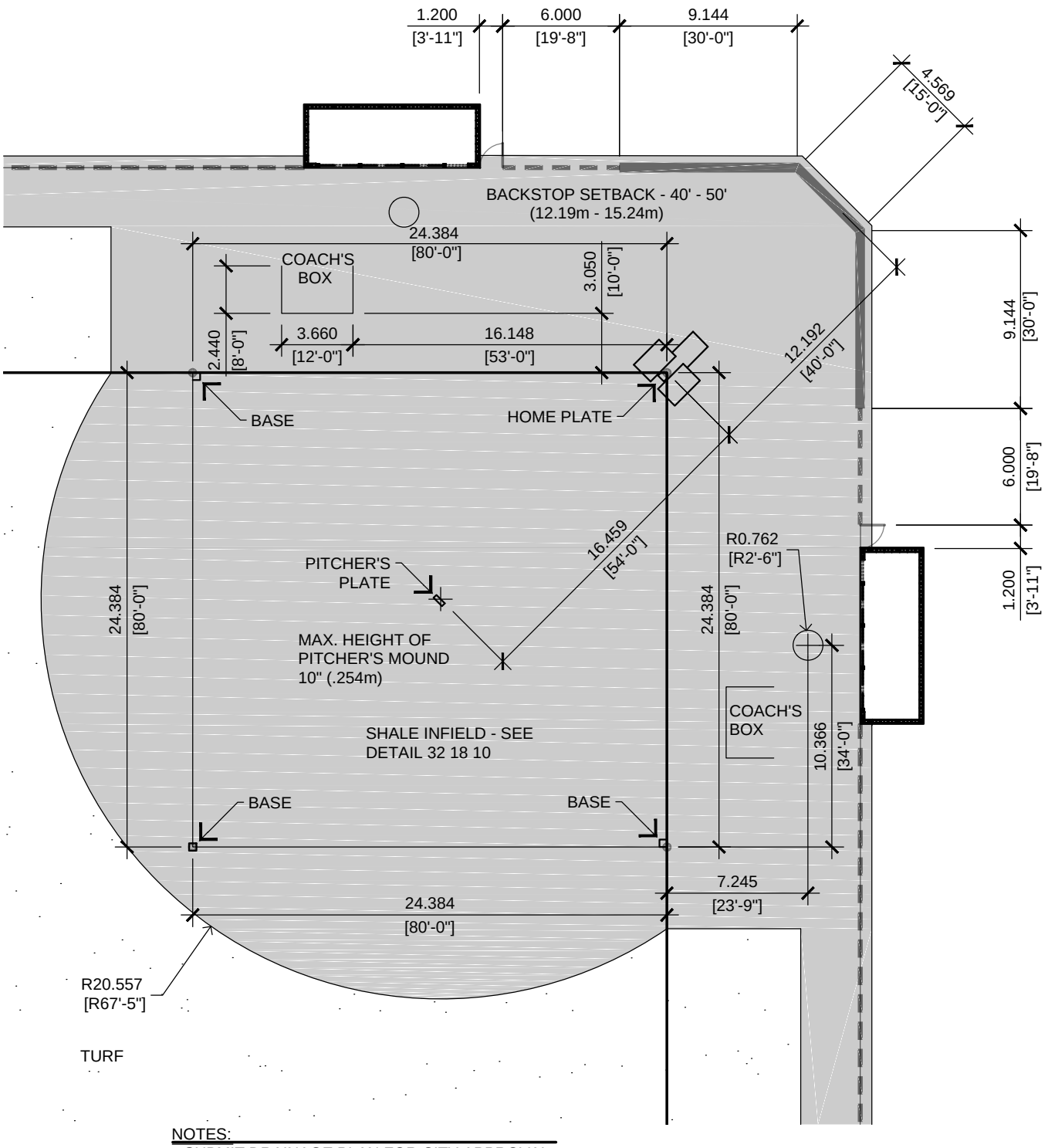
BALL DIAMOND LAYOUT
BANTAM BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08E



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert — Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

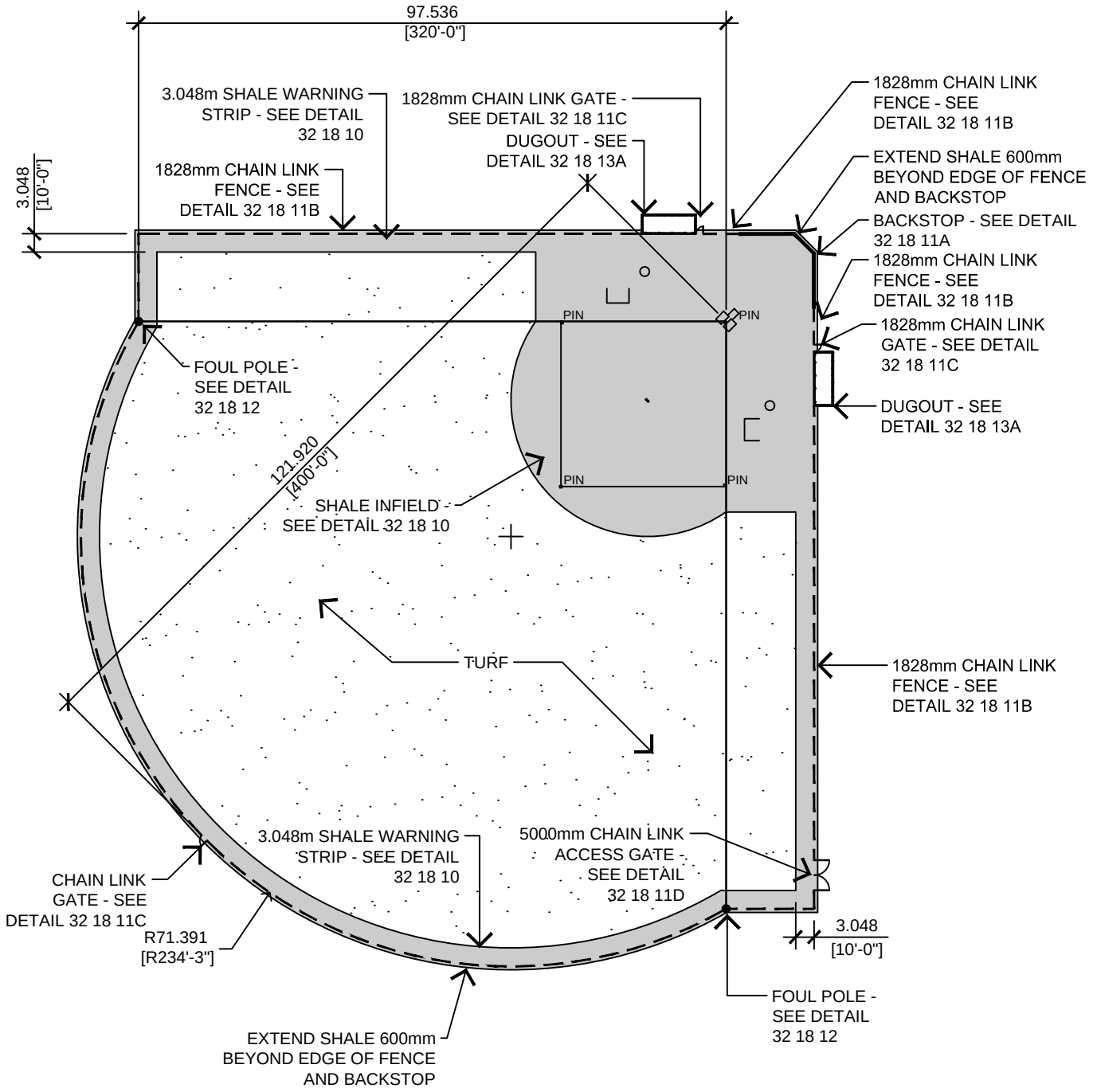
BALL DIAMOND
INFIELD LAYOUT
BANTAM BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08F



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:1000

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

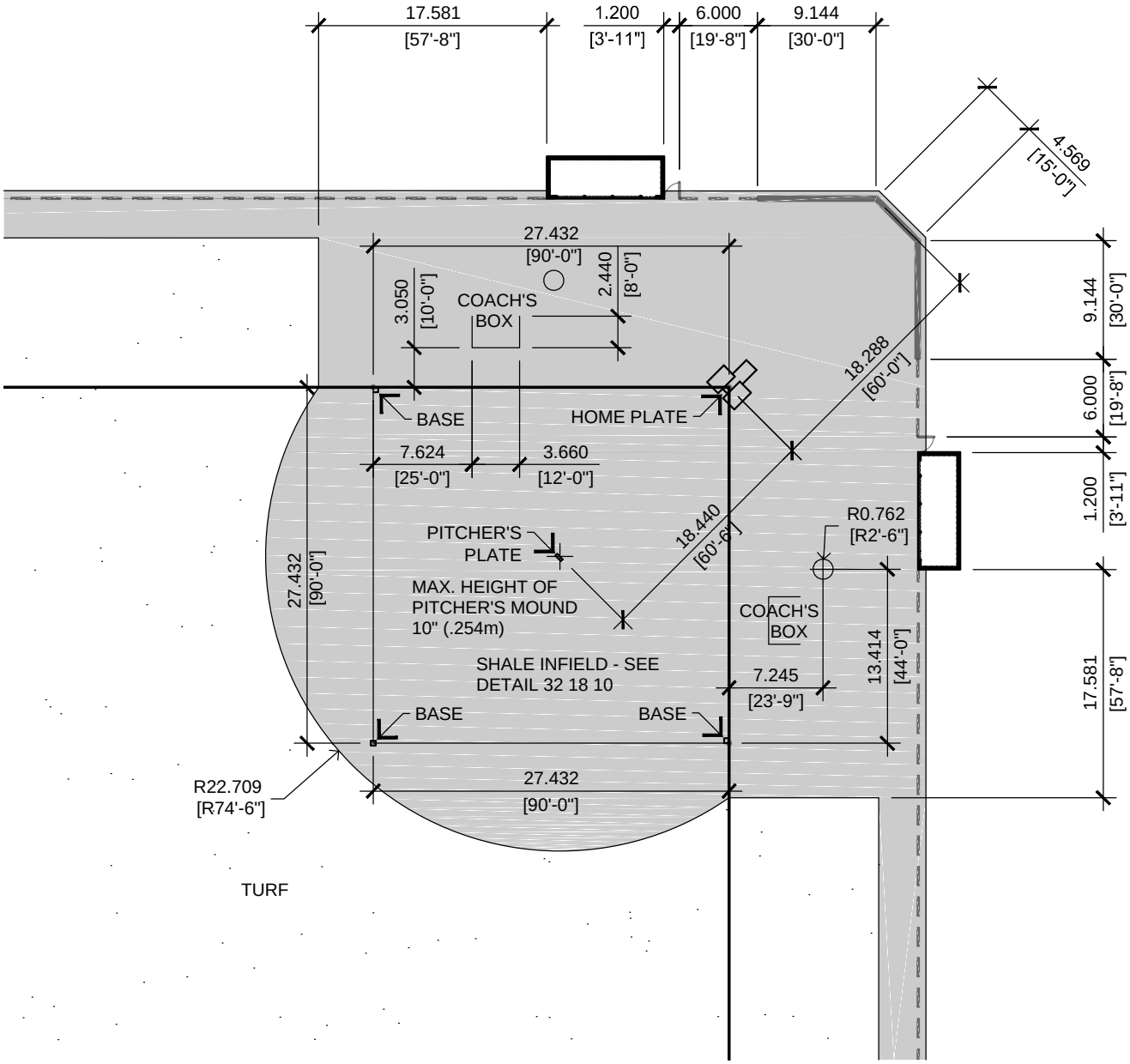
BALL DIAMOND LAYOUT
MIDGET, JUNIOR, SENIOR
TWILITE BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08G



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:500

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

BALL DIAMOND INFIELD LAYOUT
MIDGET, JUNIOR, SENIOR &
TWILITE BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 08H

1.0 GENERAL

1.1 Description

.1 This section defines fast pitch and slo-pitch diamond layout standards for St. Albert including natural turf fields, irrigated and non-irrigated and artificial turf fields.

1.2 Diamond Layout

.1 Softball Alberta is the governing body for Alberta that defines the field sizes and layout for all fast pitch and slo-pitch games played in Alberta (multi-use diamond preferred 32 18 09E). They have the following categories based on age for the calendar year as reflected in these two charts for 2016:

CANADIAN FAST PITCH CHAMPIONSHIP PLAY
AGE CATEGORIES & DISTANCE TABLE (FAST PITCH)

CATEGORY	AGE (prior to January 1st of the current year)	BALL	PITCHING	BASELINES	FENCES Min	FENCES Max.
MALE						
Masters*	40 or over	30.5 cm (12")	14.0 m (46')	18.3 m (60')	68.6 m – 81.0 m (225' - 265')	
* In Master Men's Slo-Pitch the minimum age limit will be 40 years of age in the year of the event.						
Senior		30.5 cm (12")	14.0 m (46')	18.3 m (60')	68.6 m – 81.0 m (225' – 265')	
U21	Under 21	30.5 cm (12")	14.0 m (46')	18.3 m (60')	68.6 m – 81.0 m (225' – 265')	
U18	Under 18	30.5 cm (12")	14.0 m (46')	18.3 m (60')	68.6 m – 81.0 m (225' – 265')	
U16	Under 16	30.5 cm (12")	12.8 m (42')	18.3 m (60')	68.6 m – 81.0 m (225' – 265')	
U14	Under 14	30.5 cm (12")	12.2 m (40')	18.3 m (60')	64.0 m – 76.2 m (210' – 250')	
U12	Under 12	27.95 cm (11")	10.67 m (35')	16.76 m (55')	51.8 m – 68.6 m (170' – 225')	
U10	Under 10	27.95 cm (11")	9.14 m (30')	13.7 m (45')	48.5 m – 68.6 m (160' – 225')	
U8	Under 8	27.95 cm (11")	9.14 m (30')	13.7 m (45')	48.5 m – 68.6 m (160' – 225')	
U6	Under 6	27.95 cm (11")	9.14 m (30')	13.7 m (45')	48.5 m – 68.6 m (160' – 225')	
FEMALE						
In Masters Women's Fast Pitch the minimum age limit will be 35 years of age in the year of the event.						
Senior		30.5 cm (12")	13.1 m (43')	18.3 m (60')	67.1 m – 71.6 m (220' – 235')	
U21	Under 21	30.5 cm (12")	13.1 m (43')	18.3 m (60')	67.1 m – 71.6 m (220' – 235')	
U18	Under 18	30.5 cm (12")	13.1 m (43')	18.3 m (60')	61.0 m – 64.0 m (200' – 210')	
U16	Under 16	30.5 cm (12")	12.2 m (40')	18.3 m (60')	54.9 m – 64.0 m (180' – 210')	
U14	Under 14	30.5 cm (12")	11.58 m (38')	18.3 m (60')	51.8 m – 64.0 m (170' – 210')	
U12	Under 12	27.95 cm (11")	10.67 m (35')	16.76 m (55')	48.5 m – 64.0 m (160' – 210')	
U10	Under 10	27.95 cm (11")	9.14 m (30')	13.7 m (45')	45.7 m – 64.0 m (150' – 210')	
U8	Under 8	27.95 cm (11")	9.14 m (30')	13.7 m (45')	45.7 m – 64.0 m (150' – 210')	
U6	Under 6	27.95 cm (11")	9.14 m (30')	13.7 m (45')	45.7 m – 64.0 m (150' – 210')	
Orthodox						
MALE Sr		30.5 cm (12")	12.8 m (42')	18.3 m (60')	68.6 m – 81.0 m (225' – 265')	
FEMALE Sr		30.5 cm (12")	12.2 m (40')	18.3 m (60')	61.0 m – 64.0 m (200' – 210')	
MIXED Sr		30.5 cm (12")	12.8 m (42')	18.3 m (60')	68.6 m – 81.0 m (225' – 265')	

Notes: Minor/Youth age categories refer to all categories up to U18 inclusive.

CANADIAN SLO-PITCH CHAMPIONSHIPS
AGE CATEGORIES & DISTANCE TABLE (SLO-PITCH)

CATEGORY	AGE (prior to January 1st of the current year)	BALL	PITCHING	BASELINES	FENCES Min Max.
MALE					
Masters*	35 or over	30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 99.1 m (275' – 325')
Masters*	40 or over	30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 99.1 m (275' – 325')
* In Master Men's Slo-Pitch the minimum age limit will be 35 (or 40) years of age in the year of the event.					
Senior		30.5 cm (12")	15.2 m (50')	21.34 m (70')	91.4 m – 114.3 m (300' – 375')
U21	Under 21	30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 91.4 m (275' – 300')
U18	Under 18	30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 91.4 m (275' – 300')
U16	Under 16	30.5 cm (12")	14.0 m (46')	19.81 m (65')	83.8 m – 91.4 m (275' – 300')
U14	Under 14	30.5 cm (12")	14.0 m (46')	19.81 m (65')	76.2 m – 83.8 m (250' – 275')
U12	Under 12	27.95 cm (11")	12.2 m (40')	18.29 m (60')	53.3 m – 61.0 m (175' – 200')
U10	Under 10	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
U8	Under 8	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
U6	Under 6	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
FEMALE					
Masters	35 or over	27.95 cm (11")	15.2 m (50')	19.81 m (65')	68.6 m – 83.8 m (225' – 275')
Senior		27.95 cm (11")	15.2 m (50')	19.81 m (65')	68.6 m – 83.8 m (225' – 275')
U21	Under 21	27.95 cm (11")	15.2 m (50')	19.81 m (65')	68.6 m – 83.8 m (225' – 275')
U18	Under 18	27.95 cm (11")	15.2 m (50')	19.81 m (65')	68.6 m – 83.8 m (225' – 275')
U16	Under 16	27.95 cm (11")	14.0 m (46')	19.81 m (65')	68.6 m – 83.8 m (225' – 275')
U14	Under 14	27.95 cm (11")	14.0 m (46')	19.81 m (65')	68.6 m – 83.8 m (225' – 275')
U12	Under 12	27.95 cm (11")	12.2 m (40')	18.29 m (60')	53.3 m – 61.0 m (175' – 200')
U10	Under 10	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
U8	Under 8	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
U6	Under 6	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
CO-ED					
Senior		30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 99.1 m (275' – 325')
U21	Under 21	30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 91.4 m (275' – 300')
U18	Under 18	30.5 cm (12")	15.2 m (50')	19.81 m (65')	83.8 m – 91.4 m (275' – 300')
U16	Under 16	30.5 cm (12")	14.0 m (46')	19.81 m (65')	83.8 m – 91.4 m (275' – 300')
U14	Under 14	30.5 cm (12")	14.0 m (46')	19.81 m (65')	76.2 m – 83.8 m (250' – 275')
U12	Under 12	27.95 cm (11")	12.2 m (40')	18.29 m (60')	53.3 m – 61.0 m (175' – 200')
U10	Under 10	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
U8	Under 8	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')
U6	Under 6	27.95 cm (11")	10.67 m (35')	16.76 m (55')	45.7 m – 53.3 m (150' – 175')

Notes: Minor/Youth age categories refer to all categories up to U18 inclusive.

.2 These charts may be revised from time to time – it is best to check the website for the current edition before designing fast pitch and slo-pitch diamonds.

1.3 Diamond Orientation

.1 The best fast pitch and slo-pitch diamond orientation is home plate to centre field is aligned southwest.

1.4 Diamond Grading

.1 The highest caliber natural turf fast pitch and slo-pitch diamonds are usually designed with a 1% slope centred from pitcher's mound.

.2 Artificial turf fast pitch and slo-pitch diamonds are usually designed with a 0.5% slope centred from the pitcher's mound.

.3 All other turf fast pitch and slo-pitch diamonds are designed to drain at greater than 1% and less than 2% slope and this might be a cross slope for the full extent of the diamond.

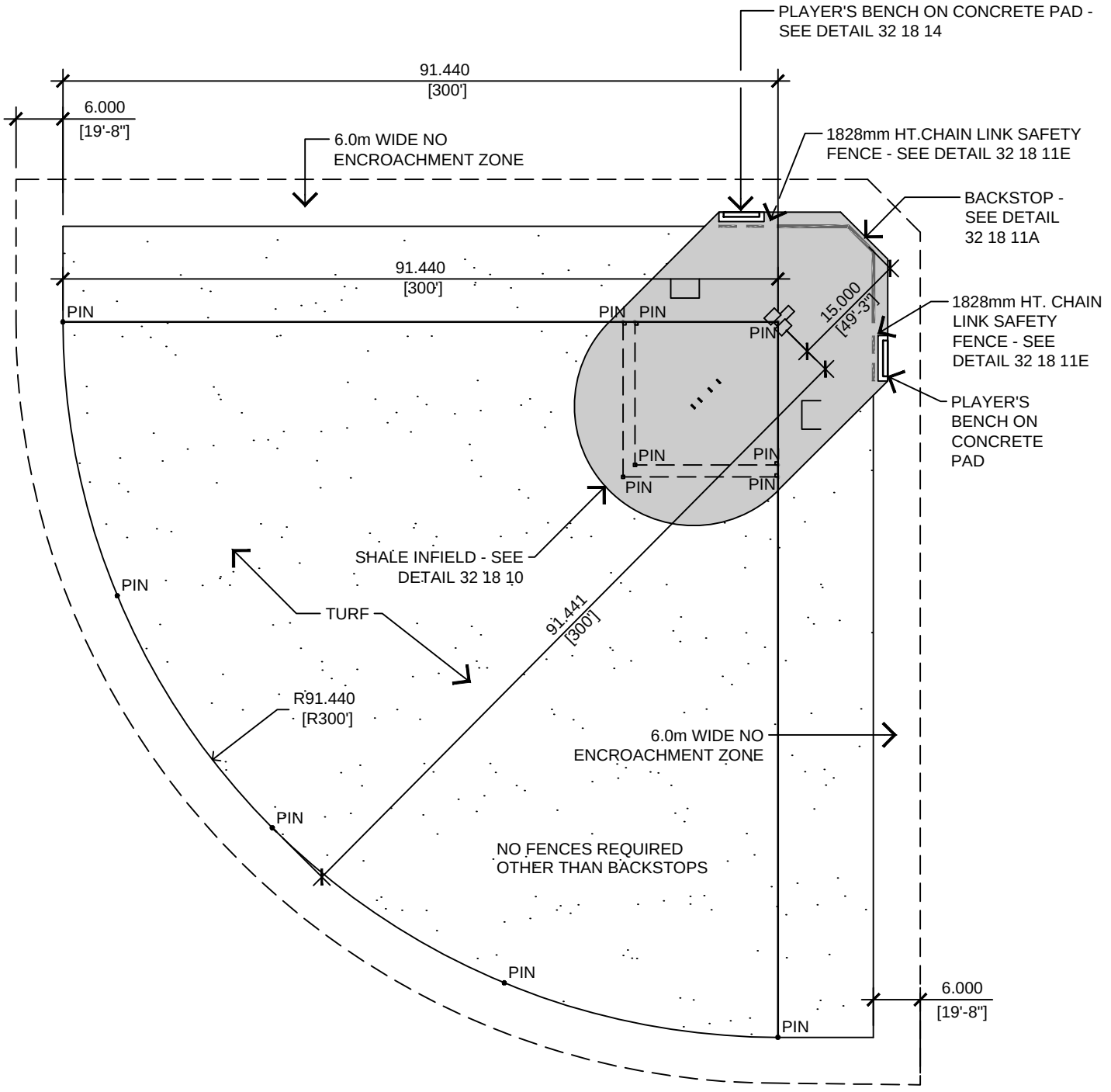
.4 An overall grading plan must be designed to ensure all of the surface run-off either between fields or at the edge of several fields is moved to lower points on the site or to a piped storm sewer system to the approval of the City in accordance with City Municipal Engineering Standards.

1.5 Diamond Pinning

.1 Install five (5) location pins per diamond 150 mm below final shale elevation for four (4) bases, and pitcher's mound at the front. Submit an as-built drawing which indicates diagonal cross check dimensions.

.2 Submit an Autocad as-built drawing in accordance with the City standard coordinate system.

- END OF SECTION 32 18 09 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:750

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

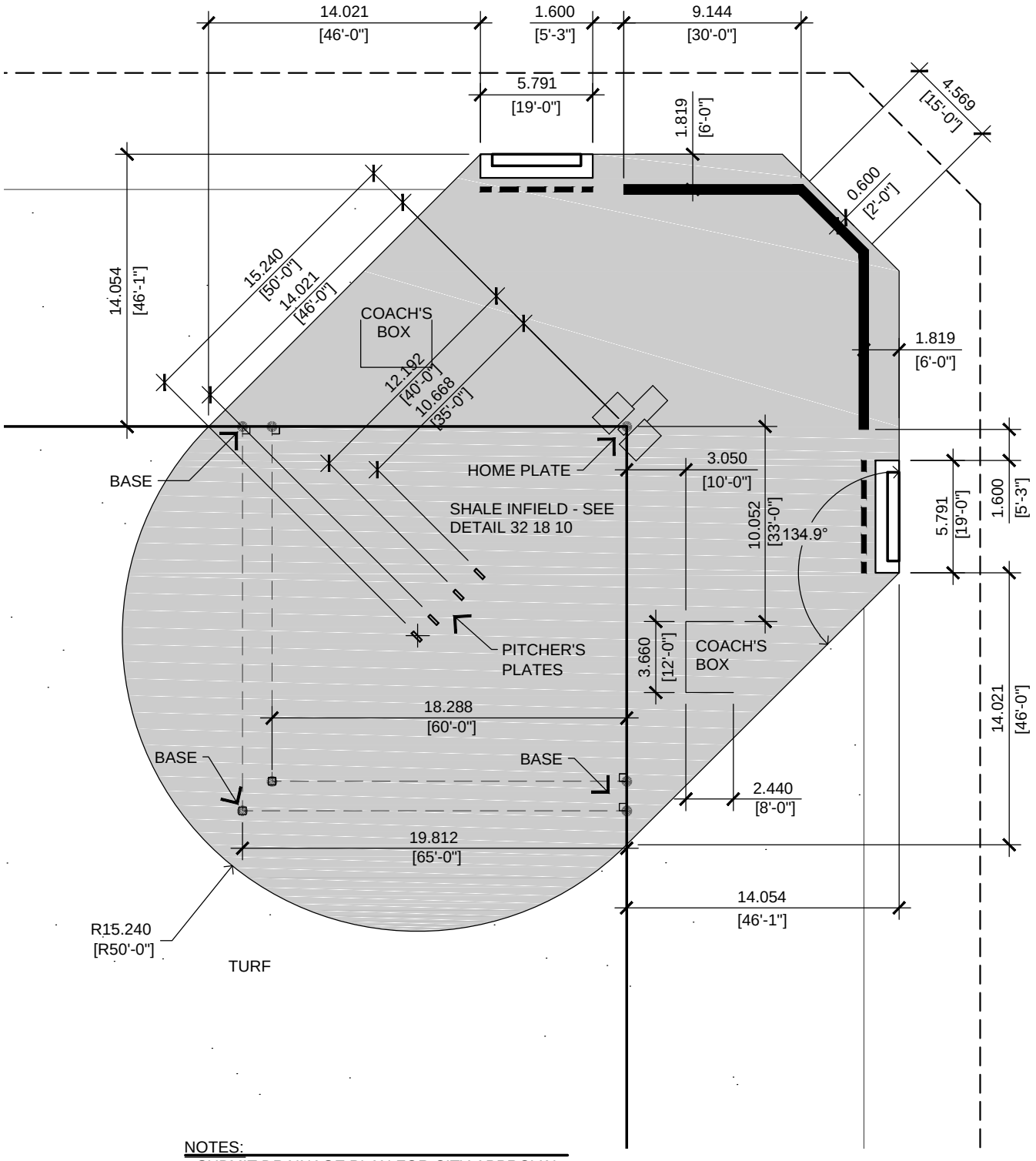
BALL DIAMOND LAYOUT
FAST PITCH & SLO-PITCH
BASEBALL - NO FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 09A



NOTES:
- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

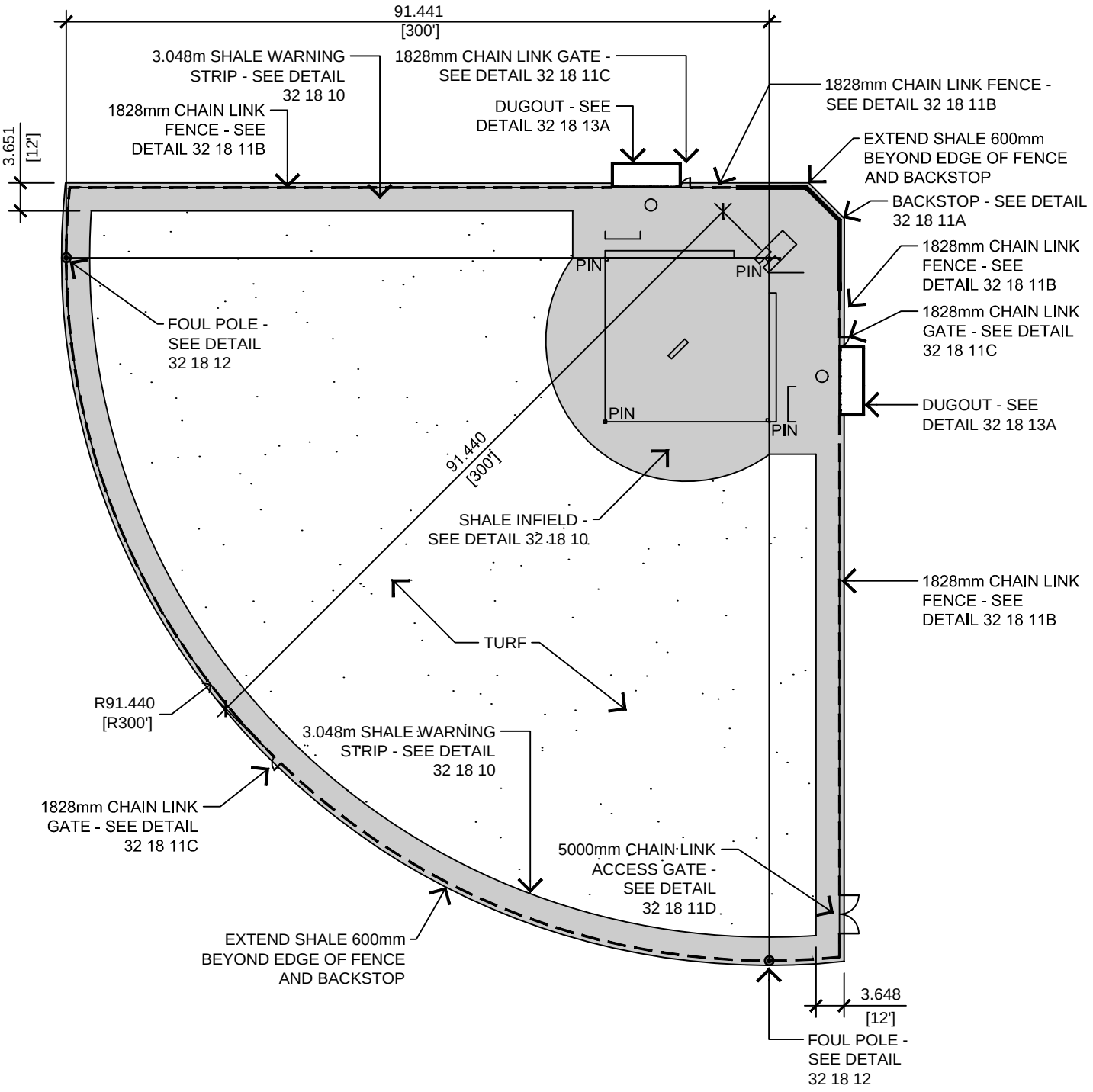
BALL DIAMOND INFIELD LAYOUT
FAST PITCH & SLO-PITCH
BASEBALL - NO FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 09B



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:750

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
08/06/21	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

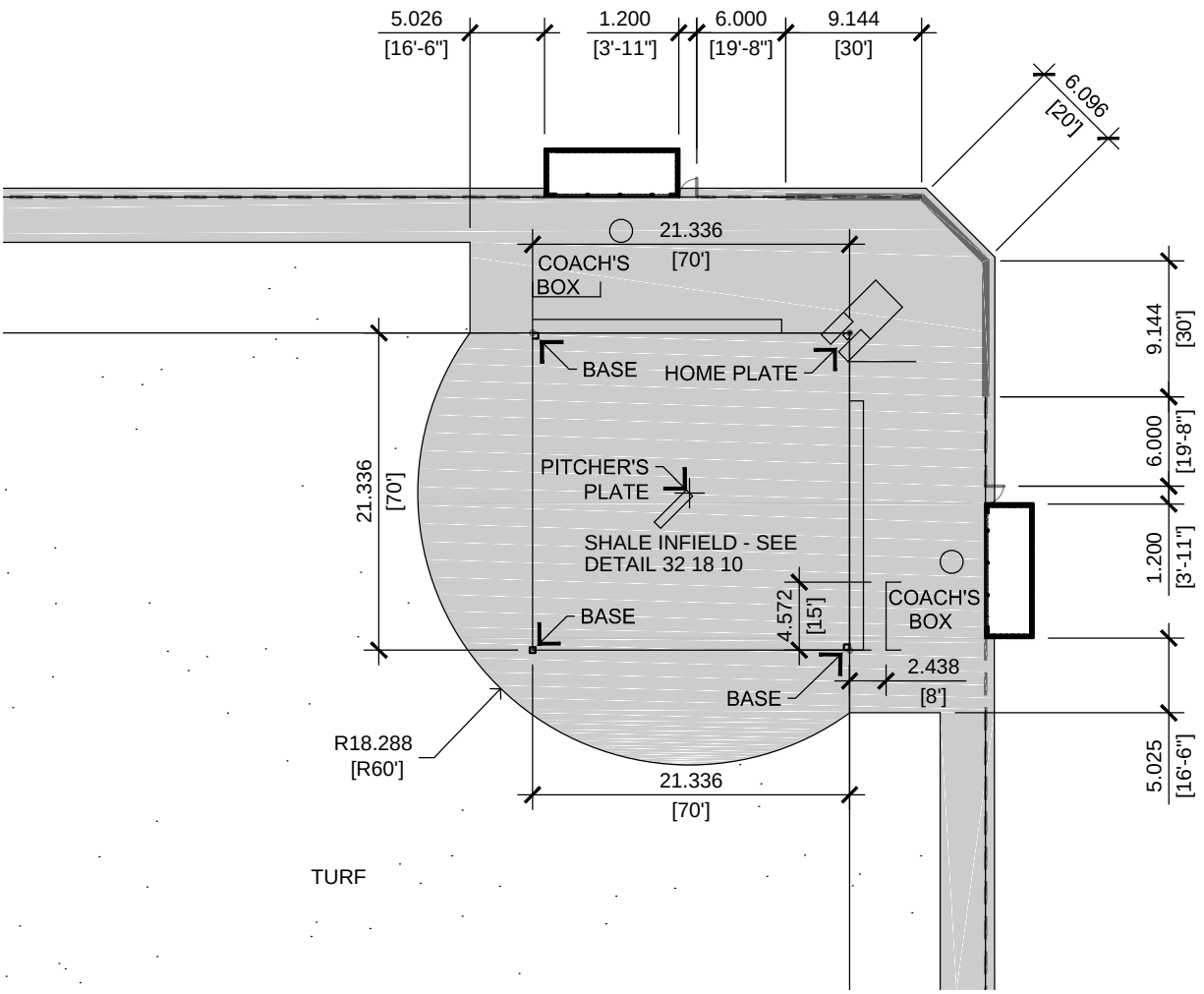
BALL DIAMOND LAYOUT
FAST PITCH & SLO-PITCH
BASEBALL - W/ FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 09C



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:500

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

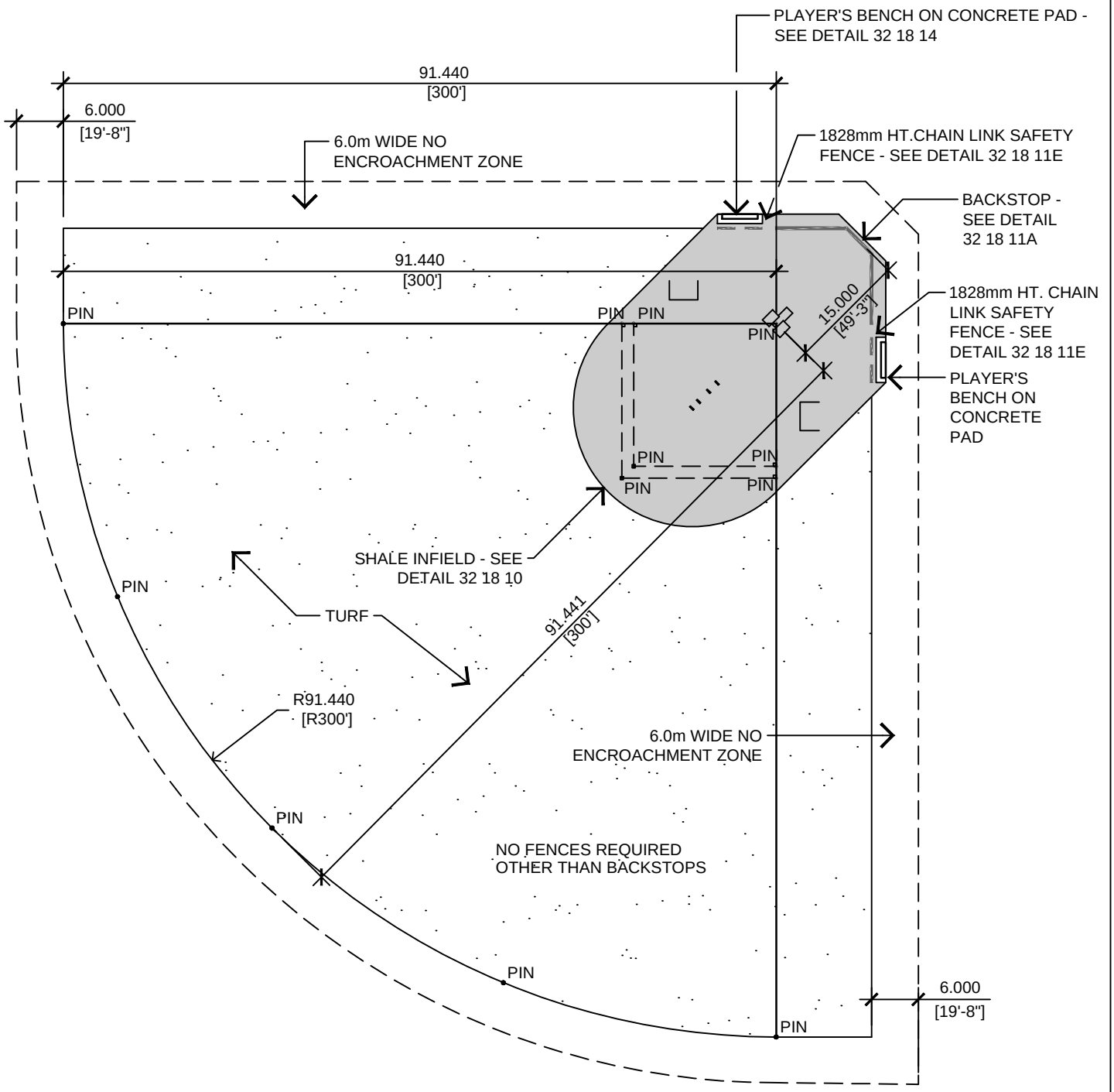
BALL DIAMOND INFIELDLAYOUT
FAST PITCH & SLO-PITCH
BASEBALL - W/ FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 09D



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:750

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
07/05/21	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

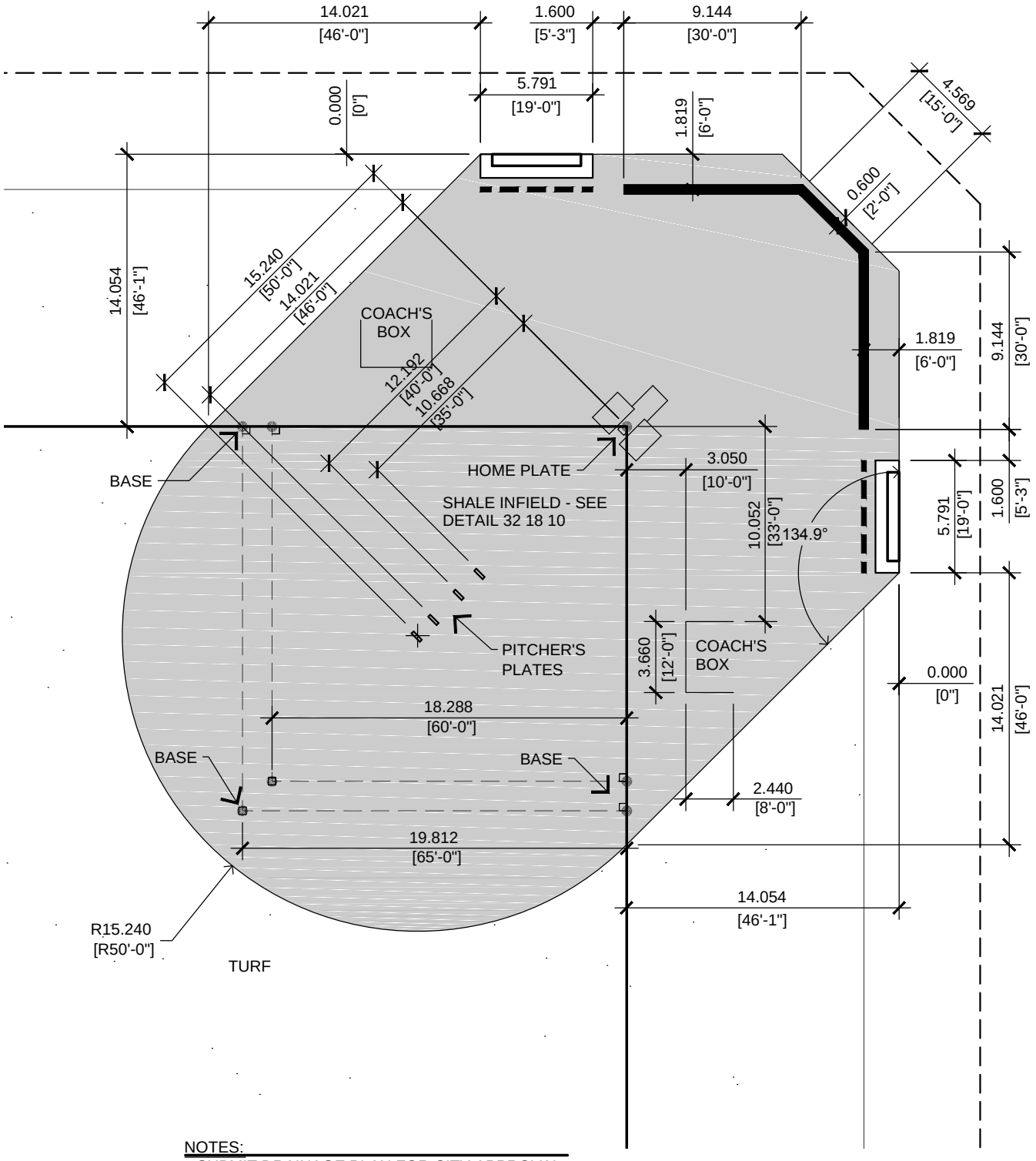
BALL DIAMOND LAYOUT
MULTI-USE BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 09E



NOTES:
- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert — Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

BALL DIAMOND INFIELD LAYOUT
MULTI-USE BASEBALL

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 18 09F

1.0 GENERAL

1.1 Description

.1 The work to be done under this section consists of supplying all labour and materials and performing all work necessary for the installation, spreading and compacting shale surface course materials for ball diamond infield and warning tacks areas.

1.2 Related Specifications

.1 Section 31 23 00 Excavation & Fill

.2 Section 32 18 01 Natural Turf Sports Fields

.3 Section 32 18 08 Baseball Diamond Layouts

.4 Section 32 18 09 Fast Pitch and Slo-pitch Diamond Layouts

1.3 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.4 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per 600 square metres, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of a shale surface course shall not exceed 200mm, or as directed by the City Representative. The required percentage of maximum density of the shale surface course is 95% unless specified otherwise.

2.0 PRODUCTS

2.1 Materials

.1 Crushed Shale: 10.0 mm minus screened material. Submit test results and sample for approval.

2.2 Filter Fabric

.1 Medium weight non-woven geotextile ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

2.3 Equipment

.1 Equipment: Graders, rollers and other equipment of adequate design and capacity to produce a surface course as specified.

3.0 EXECUTION

3.1 Subgrade Preparation

.1 The prepared subgrade shall be inspected and approved by the City Representative before placing the filter fabric and surface course.

.2 Compact the subgrade to 98% Standard Proctor Density.

.3 Overlap filter fabric joints by a minimum of 150 mm.

3.2 Surface Course Material

.1 Deposit uniformly in two 100 mm compacted lifts, ensuring that materials are uniform in consistency for each lift, rototill if necessary.

.2 Float surface to achieve a smooth surface that surface drains as designed to meet the designed drainage grades for the diamond.

3.3 Compaction

.1 Bring the moisture content of the shale to new optimum and compact to 95% Standard Proctor Density.

.2 Non-compliance: If a density test result is less than the required density, that test result is discarded and 3 retests shall be performed on the area represented by the failed test. The average of the 3 retests performed on the area shall represent the density of that area. If this average is less than the required density, the area shall be reworked to the full depth of the lift, the shale moisture content altered as necessary and re-compacted to the required density. If the area is not retested but is reworked and re-compacted the area shall be tested at normal testing frequencies.

.3 Any re-tests and reworking will be at the Contractor’s expense.

3.4 Construction Completion

.1 The shale infields and warning tracks are to be completed prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.5 Maintenance

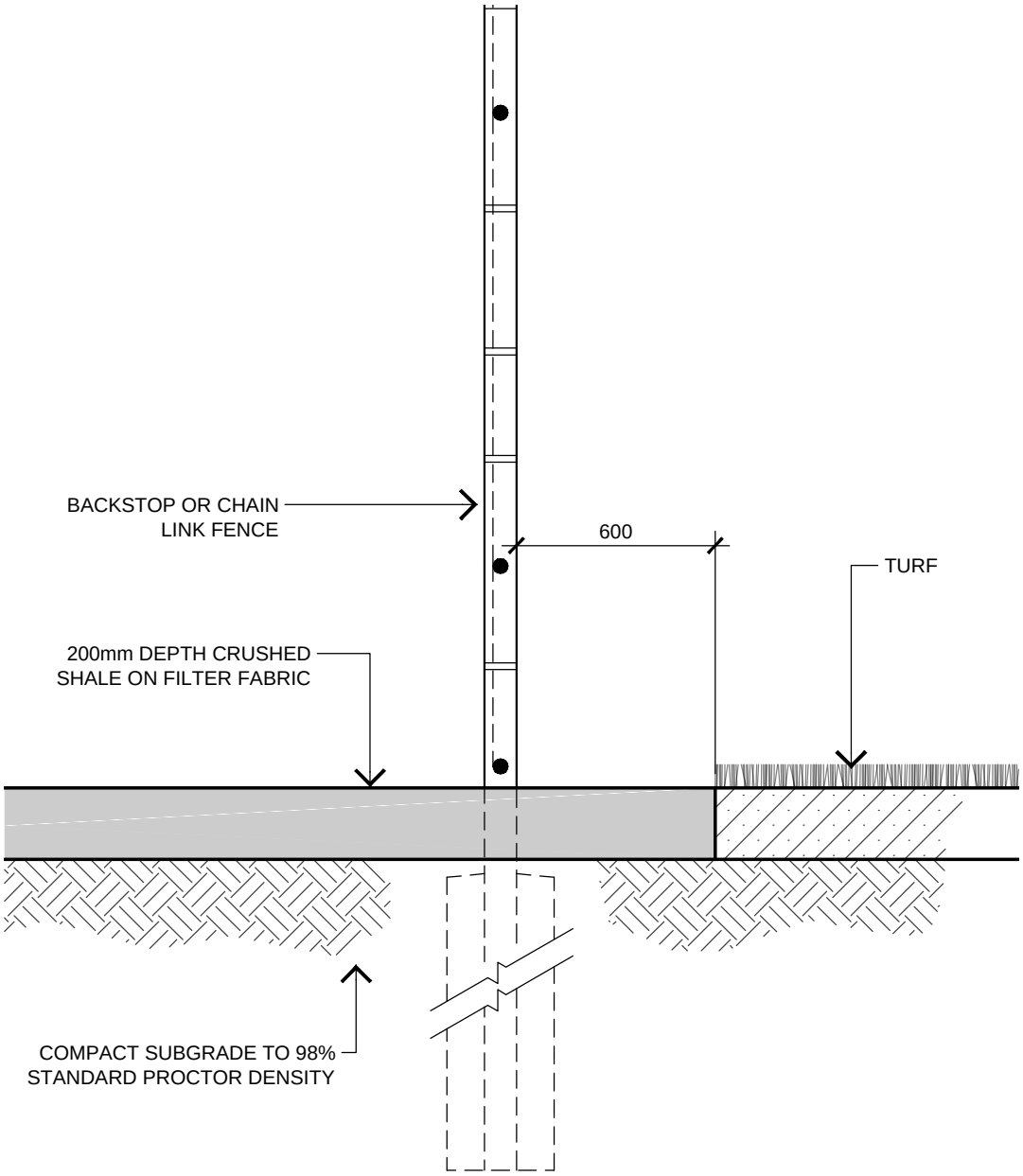
.1 Day to day floating and line markings will be done by others, the Contractor will be responsible for topping up shale levels and re-compacting during the two year warranty period.

.2 Submit maintenance logs monthly for two years recording volumes supplied and installed.

3.6 Final Acceptance

.1 Following the two year warranty period the shale infields and warning tracks will be inspected. If approved the Final Acceptance Certificate (FAC) will be issued.

- END OF SECTION 32 18 10 -



SECTION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS

Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

SHALE INFIELD

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 10

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of chain link backstops, fences and gates.

1.2 Related Specifications

.1 Section 31 23 00 Excavation & Fill

.2 Section 32 18 01 Natural Turf Sports Fields

.3 Section 32 18 02 Artificial Turf Sports Fields

.4 Section 32 18 08 Baseball Diamond Layouts

.5 Section 32 18 09 Fast Pitch and Slo-pitch Diamond Layouts

.6 Section 32 18 10 Ball Diamond Shale Infields and Warning Tracks

1.3 Submittals

.1 Submit shop drawings, manufacturer's product data and samples for approval.

2.0 PRODUCTS

2.1 Chain Link Fabric: conforming to CGSB CAN2-138.1M.

.1 Type 1 steel fabric, medium style: class A zinc-coated, grade 1 at minimum 490 g/m2.

.2 Nominal wire diameter: 4.88 mm (6 gauge) and 3.76 mm (9 gauge).

.3 Mesh size: 50 mm.

.4 Fabric Height: 1200, 1525, 1828 mm and 2438 mm heights.

.5 Selvage: twisted top and knuckle bottom.

2.2 Fence Framework: conforming to CGSB CAN2-138.2M.

.1 Backstop: as per detail hot dipped galvanized welded steel pipe, standard weight (schedule 40), (ASTM A120), zinc-coated at minimum 550 g/m2 to the following dimensions:

.1 Line post outside diameter (OD) 89 mm.

.2 Terminal Post (end, gate securing, corner, straining) OD 100 mm.

.3 Top, centre and bottom rails OD 42.2 mm.

.2 Posts and Rails 1525 mm High Fence: hot dipped galvanized welded steel pipe, standard weight (schedule 40), (ASTM A120), zinc-coated at minimum 550 g/m2 to the following dimensions:

.1 Line post outside diameter (OD) 48.2 mm.

.2 Terminal Post (end, gate, gate securing, corner, straining) OD 73.0 mm.

.3 Top, centre and bottom rails OD 42.2 mm.

.3 Posts and Rails 2438 mm High Fence: hot dipped galvanized welded steel pipe, standard weight (schedule 40), (ASTM A120), zinc-coated at minimum 550 g/m2 to the following dimensions:

.1 Support pipe diameter (OD) 89 mm x 4.8 mm thickness.

.2 Top, centre and bottom rails OD 42.2 mm.

2.3 Fittings:

.1 Fittings to conform to ASTM F626.

.2 Post Cap & Rail End: pressed steel or cast iron minimum zinc coating 366 g/m2.

.3 Top Rail Sleeve: 2.0 thick X 175 long round steel tubing minimum zinc coating 366 g/m2.

.4 Tie Wire and Clip: 3.5 diameter (9 gauge) minimum zinc coating 366 g/m2.

.5 Tension and Brace Bands: 2.0 thick X 19 wide pressed steel minimum zinc coating 366 g/m2.

.6 Tension Bar: 5.0 thick X 16 wide steel strip minimum zinc-coating 366 g/m2.

.7 Turnbuckle: size varies steel minimum zinc coating 366 g/m2

2.4 Gate

.1 Gate Fabric: to match fence fabric.

.2 Gate Frame: to match fence rails minimum 42.2 mm outside diameter; to be electrically welded at all joints and hot-dip galvanized after welding. If braces are required, use truss rod and turnbuckle adequate for gate size.

.3 Gate Fittings: malleable iron hinges, latch and latch catch zinc-coated at minimum 490 g/m2. Latch catch to have provision for a padlock that can be attached and operated from either side of gate. Hinges to permit gate to open 90° in inward direction only.

.4 Double Gate: to have centre rest with drop bolt for closed position and chain hook to hold gates open to posts, galvanized to minimum zinc coating of 490g/m2.

.5 Zinc-pigmented paint: submit sample for approval prior to use.

2.5 Safety Guard on 1525 mm High Chain Link Fence

.1 Safety Guard for 1525 mm High Chain Fence located adjacent the baseball diamond to be UV Stabilized plastic D-shaped 76 mm Wide x 114.3 mm High x 2438 mm Long x 2.54 mm wall safety yellow colour c/w 200 mm long UV-resistant tie-downs at every 600 mm. Submit sample for approval.

2.6 Concrete for Post Footing

.1 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

3.0 EXECUTION

3.1 Posts

.1 Line posts shall be not more than 3000 mm apart measured parallel to the ground surface.

.2 Backstop Posts: 300 OD x 2000 mm deep from bottom of shale.

.3 1525 high fence line post holes 250 OD x 1528 mm deep includes the depth of shale or topsoil.

.4 1525 high fence terminal posts including, corner posts where alignment changes by more than 20°, gate posts on both sides of gate, gate securing posts on inward side of double gate post holes 300 OD x 1528 mm deep.

.5 2438 mm high dugout fence posts secured with bottom base to concrete slab

.6 Broom finish outside concrete for post holes to 150 mm below final grade and crown to post at 1%. Brace posts true to line and level. Let concrete cure for minimum 5 days before proceeding with further work.

3.2 Top, Centre and Bottom Rails

.1 The fence to follow final grade around sports fields smoothly without sharp changes in grade.

.2 Support top rail at each post with a line post cap so that a continuous brace is formed between terminal posts.

.3 Support bottom rails at each post with rail ends.

.4 Join top rails with sleeve to allow for expansion and contraction.

.5 Securely fasten rails to terminal posts using rail ends and brace bands.

3.3 Terminal Post Bracing

.1 Install brace from end and gateposts to nearest line post at mid-panel and parallel to top rail.

.2 Install braces on both sides of corner posts in similar manner.

3.4 Chain Link Fabric

.1 Place backstop and perimeter fence fabric inside (facing to the inside of the diamond) of the area enclosed.

.2 Place dug-out fabric outside (facing to the infield side of the dug-out) of the area enclosed.

.3 Bottom of fabric to be 50 mm above finished grade.

.4 Stretch fabric to tension recommended by manufacturer and fasten to end, gate and corner posts using tension bands at 300 mm spacing.

.5 Secure fabric to the line posts, top and bottom rail at 300 mm intervals. Tie wires to have a minimum of two (2) twists, and to be folded inward.

.6 Installed wire to have a smooth uniform appearance free of sag, dent and bulge.

3.5 Gates

.1 Ensure a centre rest for the double gate has been set in concrete.

.2 Install gates true and plumb in a closed position.

3.6 Touch-Up

.1 Clean damaged surfaces with wire brush to remove loose and cracked galvanized coatings.

.2 Field paint with two (2) coats, any cosmetic damage resulting from installation. Match paint to type originally used by fence manufacturer.

3.7 Construction Completion

.1 The chain link backstops, fences and gates are to be completed prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.8 Maintenance

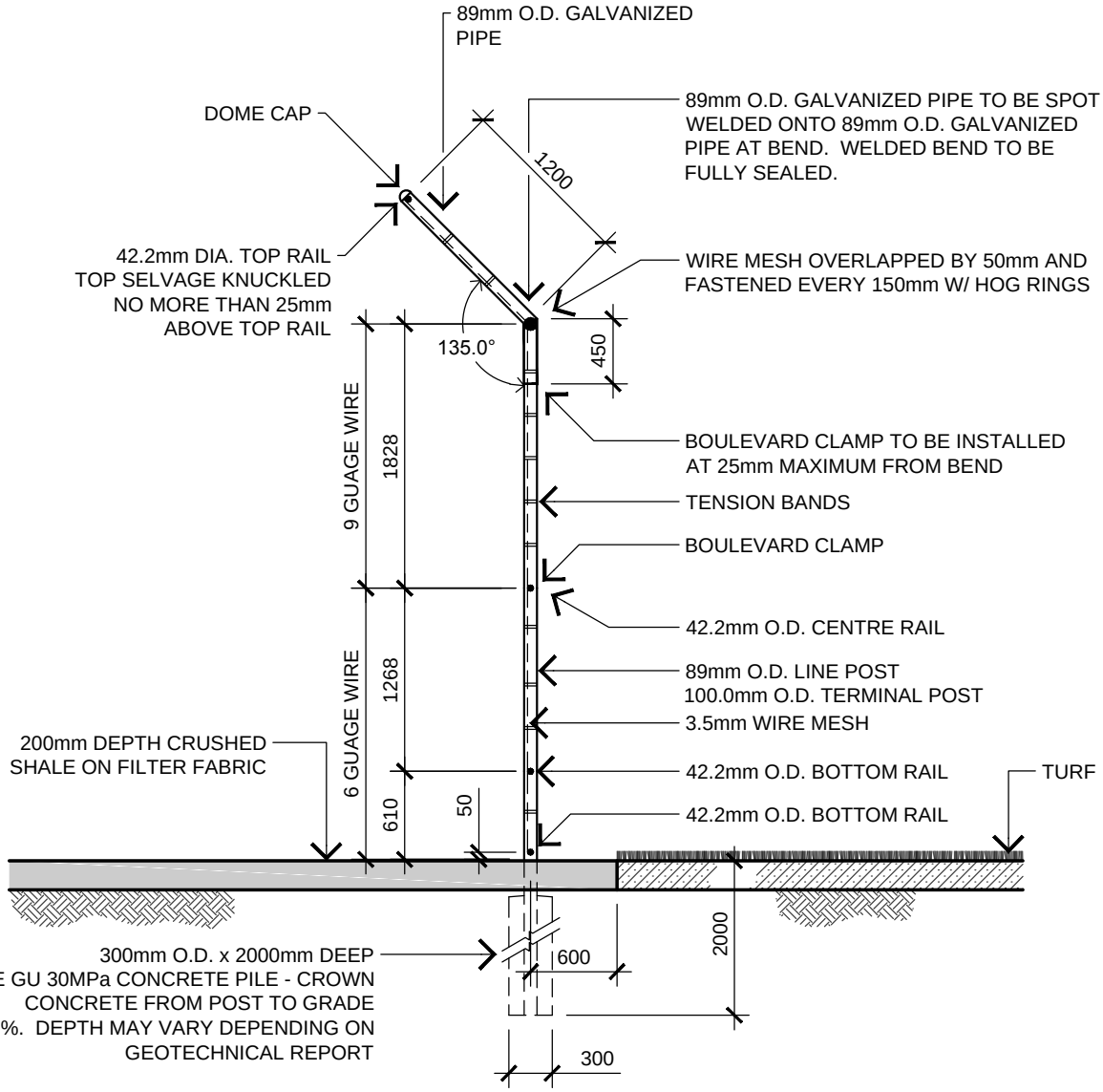
.1 The Contractor will be responsible for repairing all deficiencies in the products and execution during the two year warranty period.

.2 Submit maintenance logs monthly for two years recording all deficiencies supplied and installed.

3.9 Final Acceptance

.1 Following the two year warranty period the chain link backstops, fences and gates will be inspected. If approved the Final Acceptance Certificate (FAC) will be issued.

- END OF SECTION 32 18 11 -



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

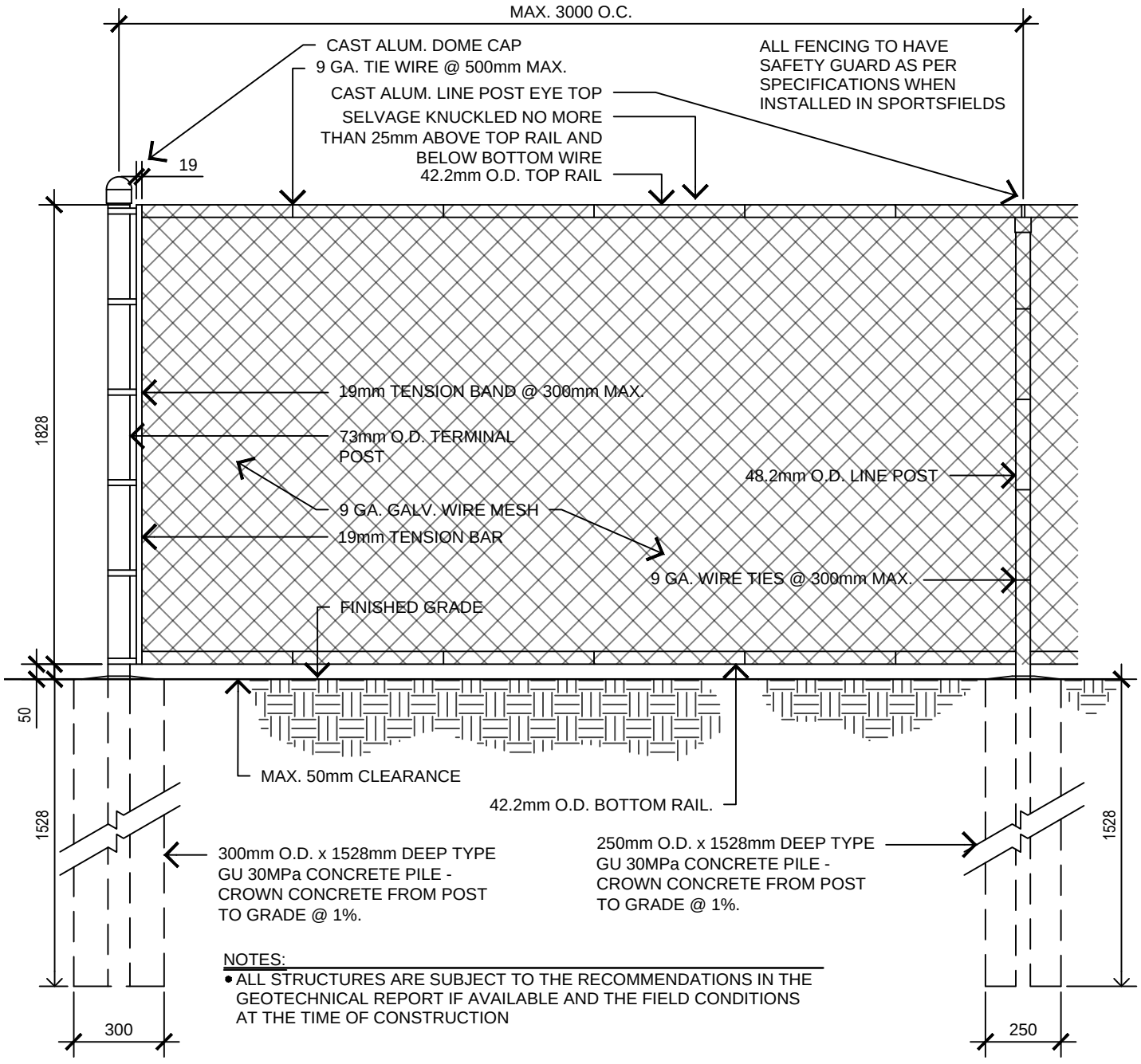
BACKSTOP

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 11A



ELEVATION

SCALE: 1:20

NOTES:

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ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert — Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

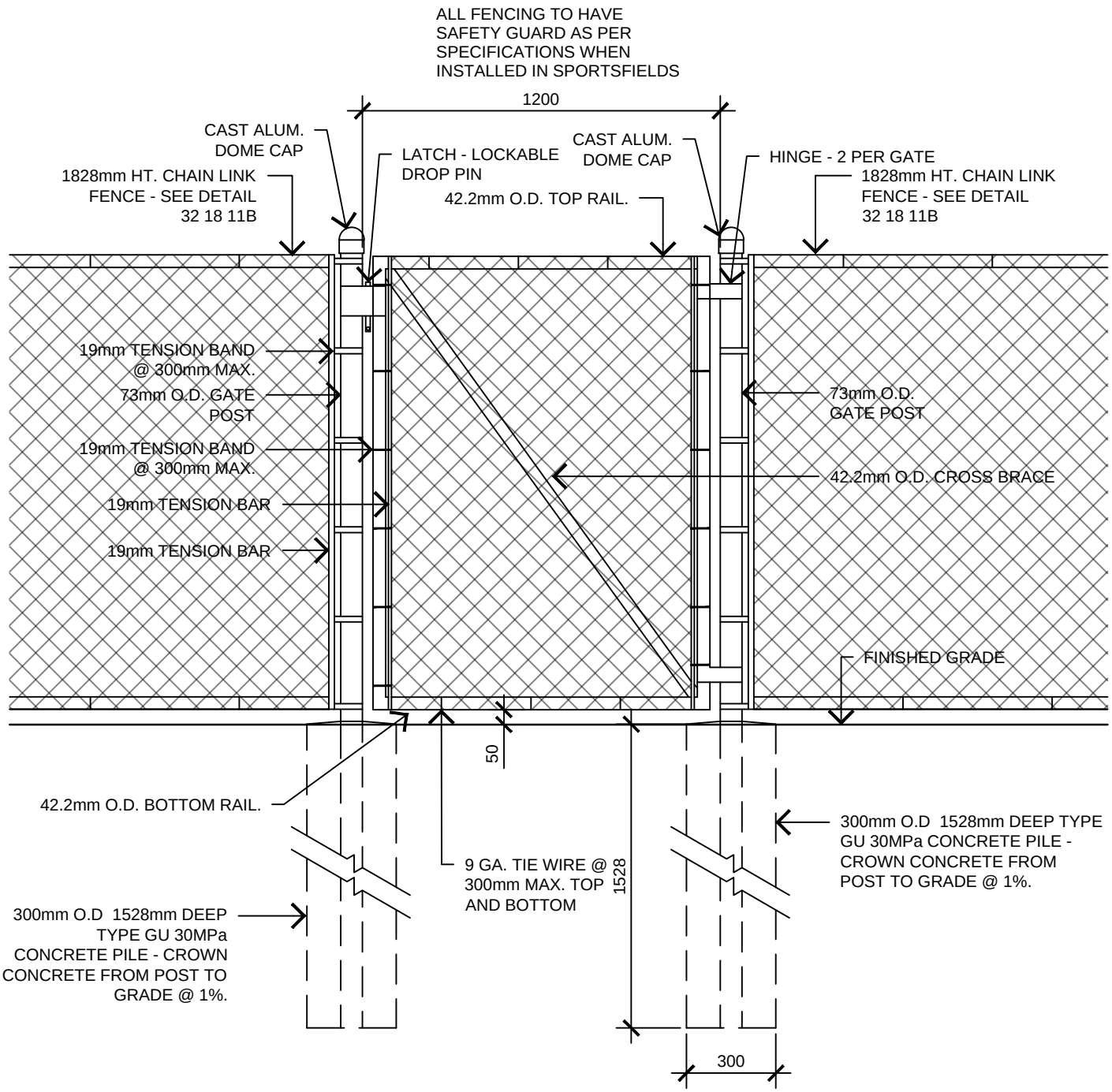
1828mm HT.
CHAIN LINK FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 11B



NOTES:

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ELEVATION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
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DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

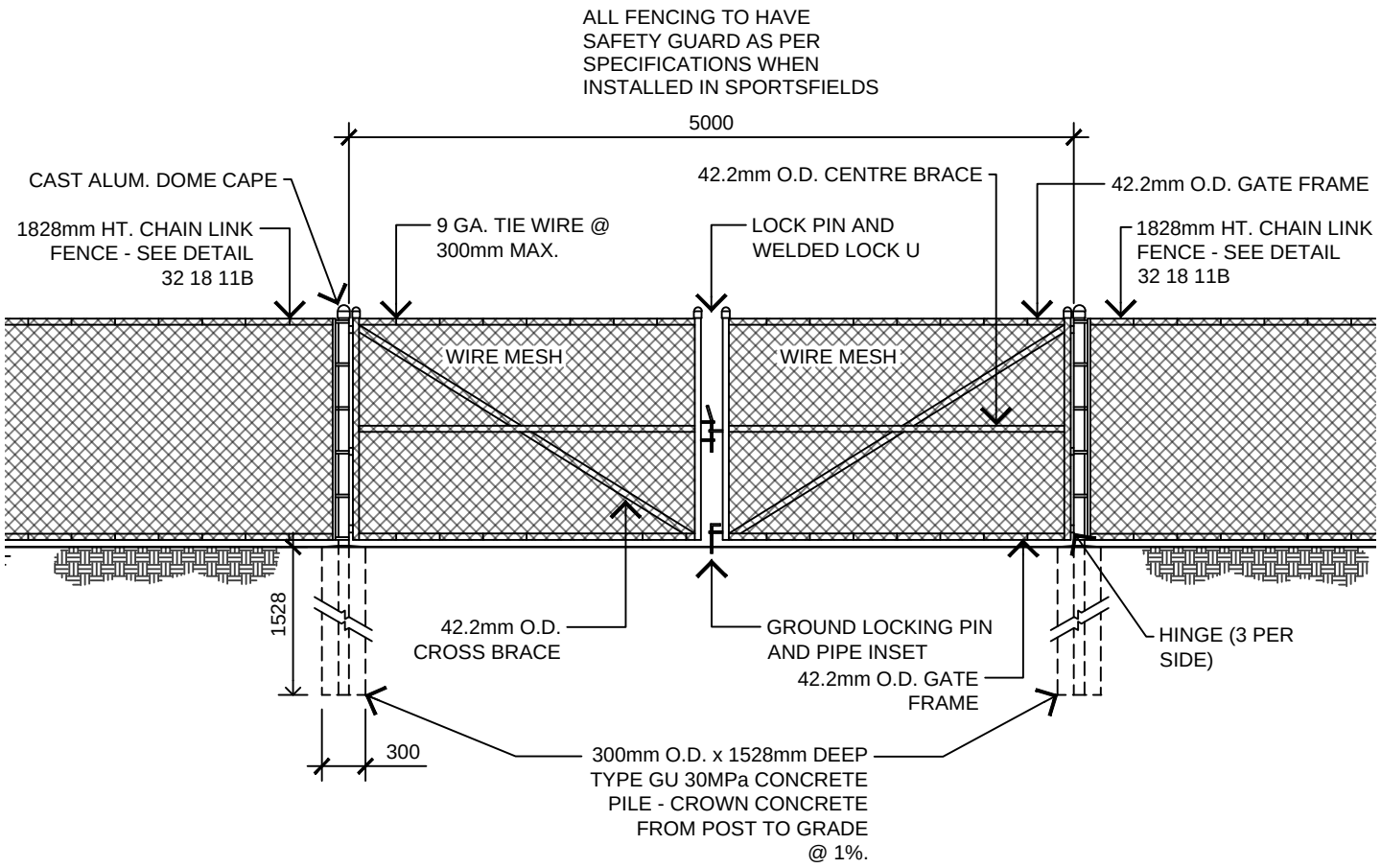
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

1200mm WIDE CHAIN LINK GATE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 18 11C



NOTES:

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ELEVATION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

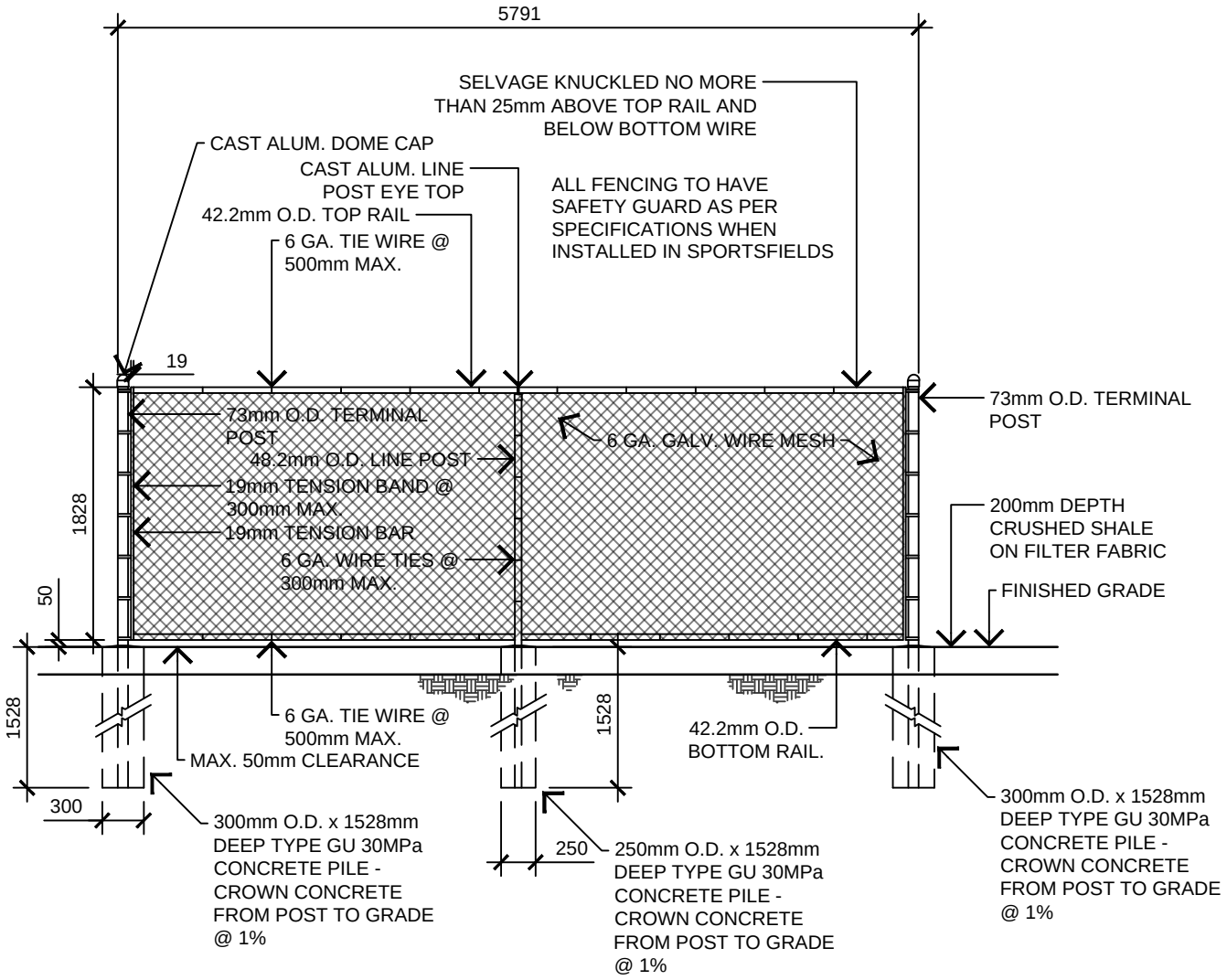
5000mm WIDE CHAIN LINK ACCESS GATE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 11D



NOTES:

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ELEVATION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
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DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

1828mm HT.
CHAIN LINK SAFETY FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 11E

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of foul poles with wing.

2.0 PRODUCTS

2.1 Foul Pole with Wing

.1 Pole 7315 mm long 101.6 mm diameter x 3.2 mm wall aluminum pole that inserts into a 109.22 mm x 1220 mm long ground sleeve complete with an anti-rotational stop bolt at the bottom.

.2 Custom fabricate 19 mm weep hole and pipe to outside of the concrete at the bottom of the sleeve. Submit shop drawing for approval.

.3 Stamped aluminum upper wings 3657 mm high x minimum 300 mm wide 3.2 mm diameter holes with double reinforced bends and framing.

.4 All exposed components powder coated bright yellow.

.5 Wings to be oriented to be inside of the play facing the in-play area, if the ball hits the wing it is fair.

.6 Concrete for ground sleeve to be type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

.7 Reinforcement 4 – 10M rebar verticals with ties at 300 mm centres.

.8 Submit shop drawings for approval.

3.0 EXECUTION

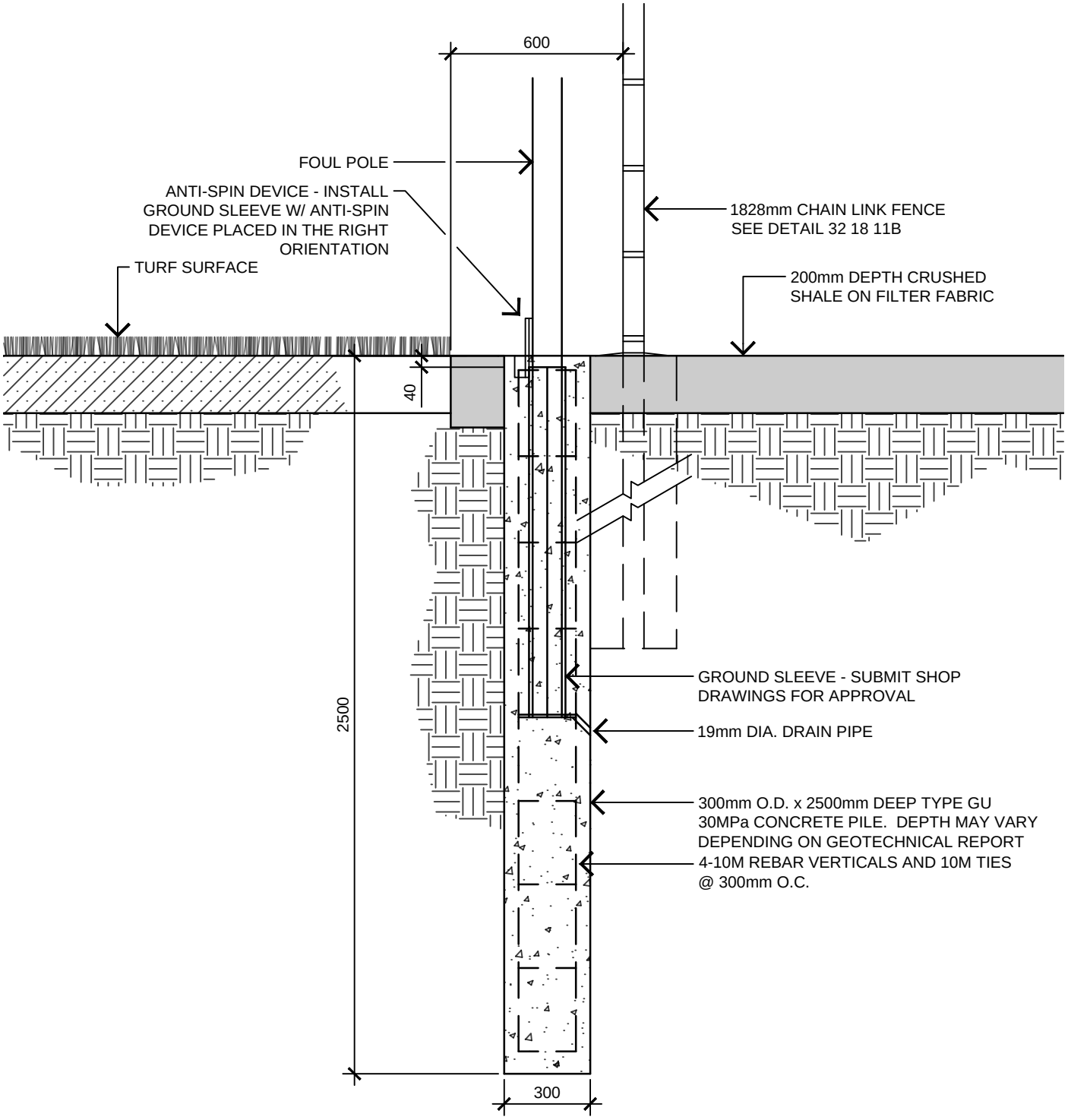
3.1 Installation Foul Pole with Wing

.1 Survey layout for line and level **(ACCURACY IS PARAMOUNT)**, auger, reinforce and pour concrete piles 300 mm diameter x 2500 mm deep with supplied ground sleeve installed to 40 mm below final grade of natural turf surfacing and with the anti-rotational stop bolt placed in the right orientation.

.2 Install on the outside of the perimeter chain link fence.

.3 Remove and dispose of all excavated material off site.

- END OF SECTION 32 18 12 -



NOTES:

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SECTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
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DD/MM/YY	
16/06/21	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

FOUL POLE

Engineering Department

Date: 2017 08 25 | Scale: 1:20

Drawing Number: 32 18 12

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of concrete block ball diamond dug-outs.

1.2 Related Specifications

.1 Section 31 23 00 Excavation & Fill

.2 Section 32 18 01 Natural Turf Sports Fields

.3 Section 32 18 02 Artificial Turf Sports Fields

.4 Section 32 18 08 Baseball Diamond Layouts

.5 Section 32 18 09 Fast Pitch and Slo-pitch Diamond Layouts

.6 Section 32 18 10 Ball Diamond Shale Infields and Warning Tracks

.7 Section 32 18 11 Ball Diamond Chain Link Backstops, Fences and Gates

1.3 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.4 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per each dug-out, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of the granular base course shall not exceed 150 mm, or as directed by the City Representative. The required percentage of maximum density of the granular base course is 98% unless specified otherwise.

2.0 PRODUCTS

2.1 Granular Base Course

.1 Designation 3 Class 20 Granular Base as per the table below.

Designation	1		2	3			
Class	12.5	25	20	20	63A	63B	80
	ACR		Soil	Granular	Granular	Granular	Granular
Application	and ACO	ACB	Cement	Base	Base	Base	Sub-Base
80 000							100
63 000					100	100	
25 000		100			70 - 95	55 - 75	45 - 90
20 000		80 - 95	100	100			
14 000							
12 500	100		60 - 96		50 - 80	40 - 60	
10 000				65 - 86			
5000	60 - 80	40 - 60	36 - 75	45 - 68	32 - 62	20 - 45	25 - 50
2500							
2000			26 - 60				
1250				46 - 45	17 - 43	14 - 33	
800							
630				19 - 38	12 - 34		5 - 30
400			12 - 43				
315				14 - 30	8 - 26	7 - 22	
160	7 - 12	9 - 14	6 - 20	5 - 18			
80	4 - 8	4 - 8	2 - 10	2 - 10	0 - 10	0 - 10	1 - 10

2.2 Cast-in-place Concrete

.1 Flexible forms to form radii.

.2 Reinforcement bars Grade 300 primed rebar, sizes as detailed.

.3 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

.4 Concrete Block Infill: Type GU, 10 MPa at 28 days.

2.3 Concrete Blocks

.1 Concrete Blocks: standard “grey” 20 cm blocks with the following dimensions 190 mm deep, 190 mm high and 390 mm wide.

.2 Mortar: standard “grey” mortar.

2.4 Steel

.1 Beam and Posts: sizes as indicated hot dipped galvanized zinc-coated at minimum 550 g/m2.

.2 Header: size as indicated hot dipped galvanized zinc-coated at minimum 550 g/m2.

.3 Mounting Hardware: High strength stainless steel 1/2” X 7” long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

2.5 Roof

.1 20 gauge galvanized steel decking minimum 610 mm panel widths to meet CSA specifications S136-07 or current edition, front and back fascia, and side flashing, silver colour. Submit shop drawings.

2.6 Anti-Graffiti Coating

.1 Semi-gloss and volume solids 72% Cured at standard conditions for 7 days Durometer Hardness ASTM D2240, Shore A 35 points and Tensile Strength ASTM D412 14kg/cm2. Submit shops drawings.

2.7 Chain Link Fence Front Guard

.1 1829 mm high chain link fence panels with side rails, bottom rail, top rail and intermediate vertical framing at every 1220 mm on centre as per section 32 18 11. 1308 mm wide opening furthest from home plate to increase safety.

2.8 Fixtures for Dug-Out

.1 Aluminum bench minimum 6000 mm long with back secured to slab and back wall of dug-out, submit shop drawings for approval.

.2 Equipment hanger – 100 x 7315 x 2.5 mm steel band attached to wall with 5 mm dia. anchor bolts at 600 mm O.C. 10M rebar hangers welded to steel band at 300 mm O.C. Assembly to be galvanized.

.3 Aluminum bat rack for 30 bats secured to wall panel by opening to infield, submit shop drawings for approval.

3.0 EXECUTION

3.1 Concrete Slab

.1 Subgrade compact upper 150 mm to 98% of standard proctor density.

.2 Granular base course 150 mm depth compacted to 98% of standard proctor density.

.3 Forming and release agents submit specification sheets for approval.

.3 Rebar horizontal 15M at 300 each way.

.4 Rebar vertical 15M in every third block minimum 750 high.

.5 Slab thickness as per detail.

.6 Slab slope to front opening at 1%, with broom finish following slope.

3.2 Concrete Block Walls

.1 Do not install in weather less than 5° C no cold weather installation is allowed.

.2 10 mm wide rodded joints.

.3 Extend 15M for full height of blocks where indicated.

.4 Fill all openings in all concrete blocks with concrete flush to top of upper block.

.5 Clean off excess mortar and smears and fully protect slab, steel header and door.

.6 Clean and wash masonry surfaces with masonry manufacturer's approved solution using only fibre brushes.

.7 Let mortar cure for 7 days before applying anti-graffiti coating.

3.3 Roof

.1 Install steel support structure to slab.

.2 Install roof decking, fascia and flashing with the overlap of the block walls as indicated.

.3 Install continuous edge on all four sides of the roof so no cuts are visible.

3.4 Chain Link Fabric

.1 Install as per Section 32 18 11.

3.5 Anti-Graffiti Coating

.1 Apply as per Manufacturers' specifications.

3.6 Touch-Up Galvanized Surfaces

.1 Clean damaged surfaces with wire brush to remove lose and cracked galvanized coatings.

.2 Apply two (2) coats of approved zinc paint.

3.7 Construction Completion

.1 The dug-outs are to be completed prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.8 Maintenance

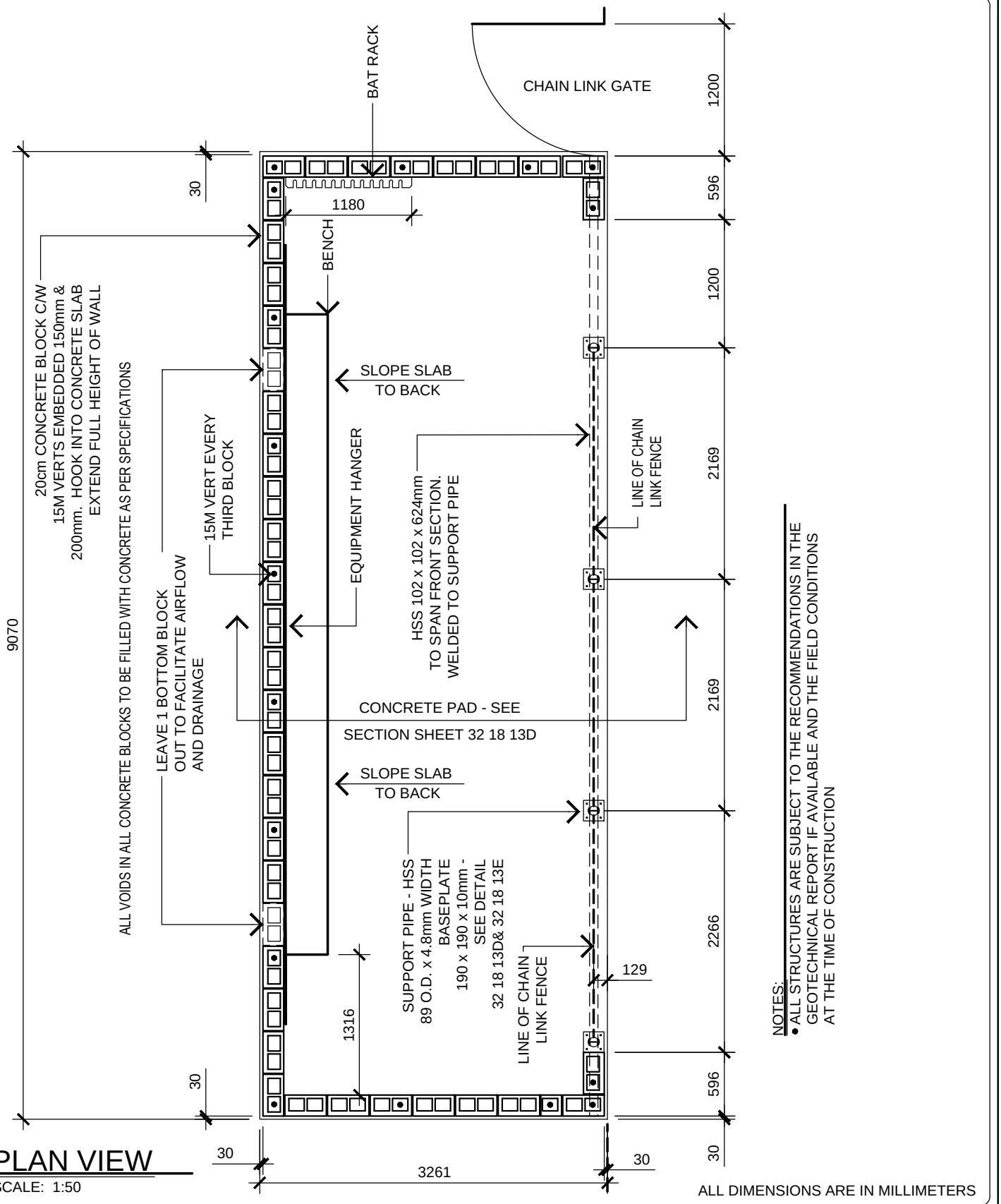
.1 The day to day cleaning of the dug-outs will be by others. Contractor will be responsible for repairing all deficiencies in the products and execution during the two year warranty period.

.2 Submit maintenance logs monthly for two years recording all deficiencies supplied and installed.

3.9 Final Acceptance

.1 Following the two year warranty period the dug-outs will be inspected. If approved the Final Acceptance Certificate (FAC) will be issued.

- END OF SECTION 32 18 13 -



PLAN VIEW

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

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Date	Details
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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

DUGOUT -
PLAN VIEW

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 13A

NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

FRONT ELEVATION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
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City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

DUGOUT -
FRONT ELEVATION

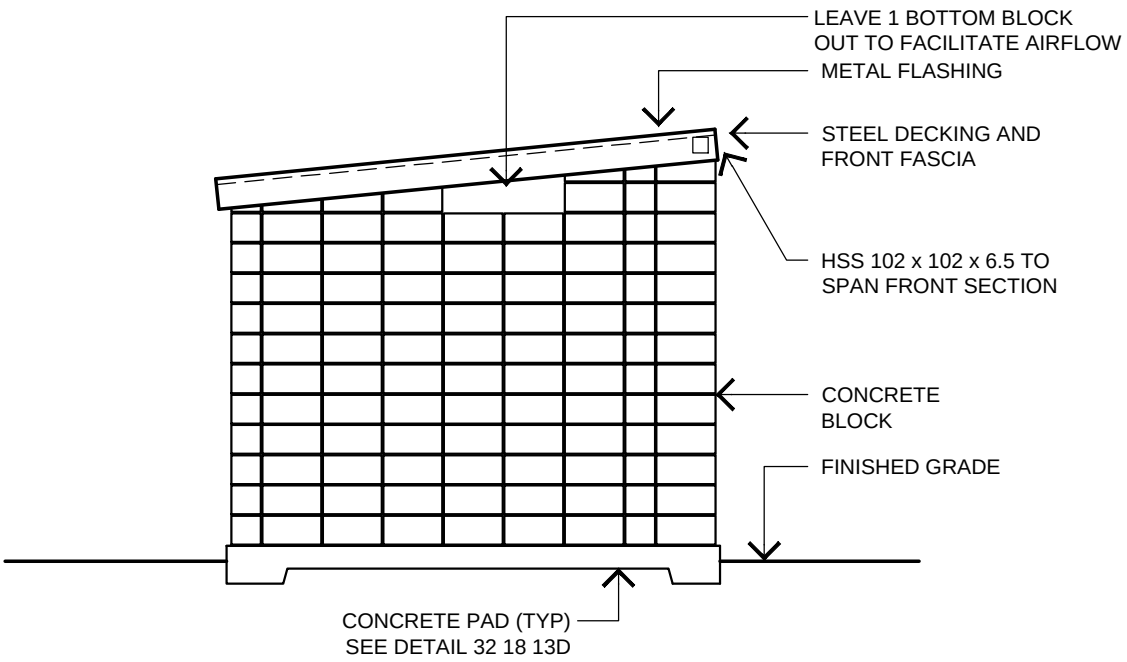
Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 13B

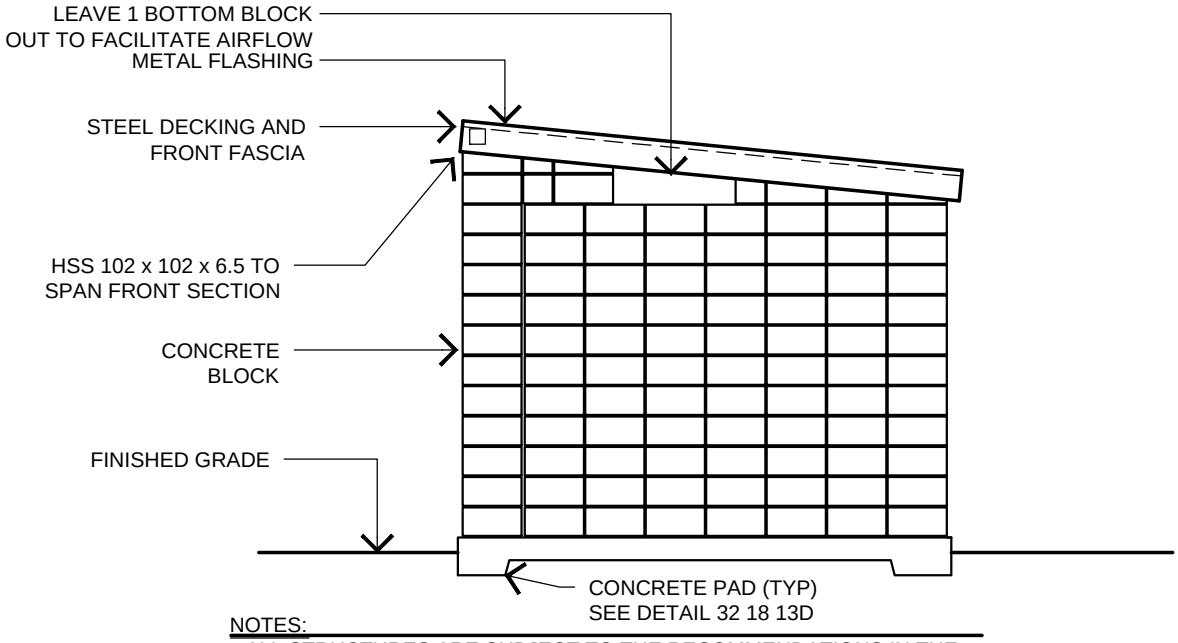
ALL VOIDS IN ALL CONCRETE BLOCKS TO BE FILLED WITH CONCRETE AS PER SPECIFICATIONS



SIDE ELEVATION

SCALE: 1:50

ALL VOIDS IN ALL CONCRETE BLOCKS TO BE FILLED WITH CONCRETE AS PER SPECIFICATIONS



NOTES:

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SIDE ELEVATION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

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City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

DUGOUT -
SIDE ELEVATIONS

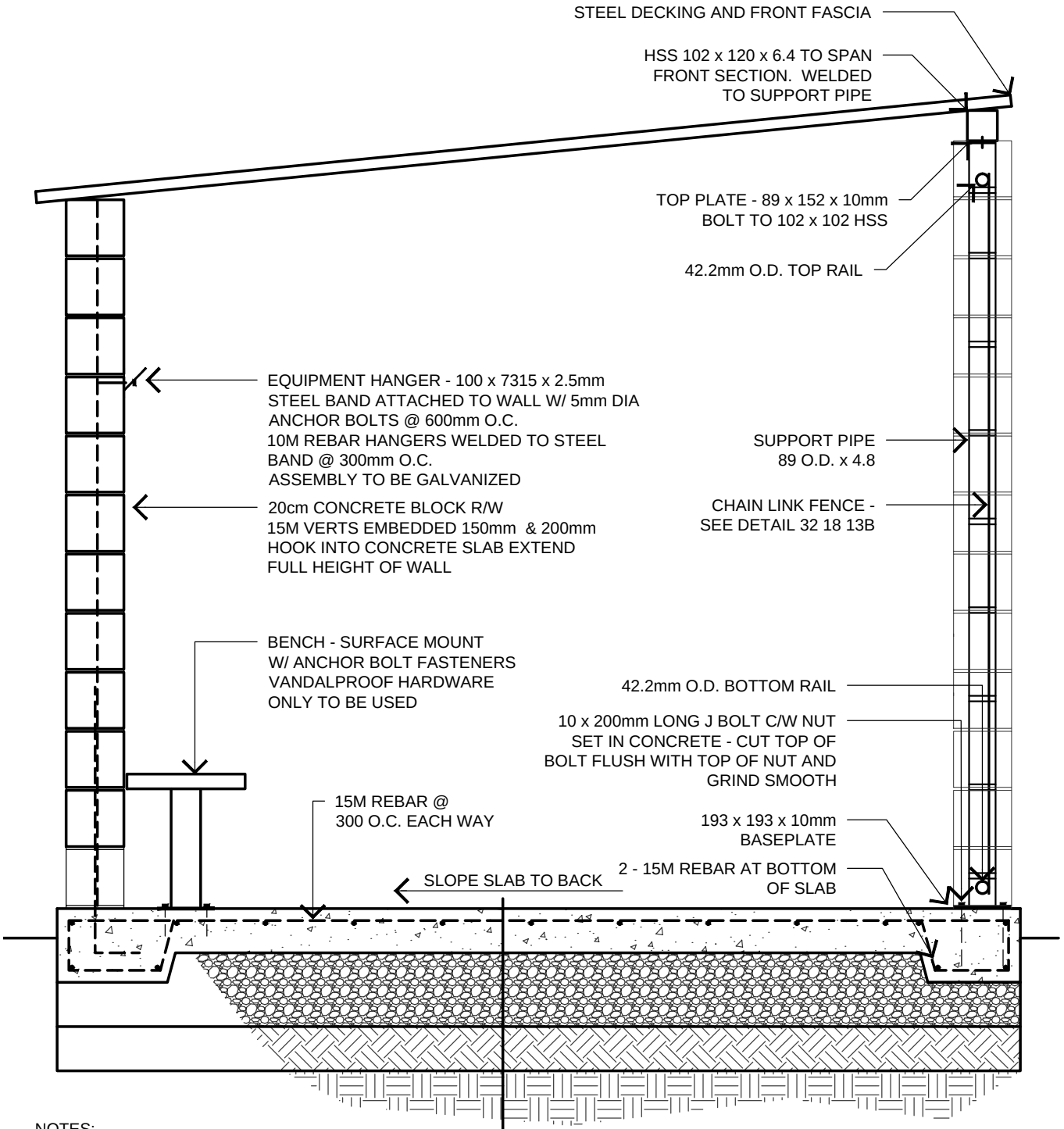
Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 13C

ALL VOIDS IN ALL CONCRETE BLOCKS TO BE FILLED WITH CONCRETE AS PER SPECIFICATIONS



NOTES:

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CONCRETE PAD - TYPE GU, 30 MPa AIR ENTRAINED 4-6%. BROOM FINISH IN THE DIRECTION OF SLOPE
150mm DEPTH OF 20mm ROAD CRUSH GRAVEL BASE COMPACTED TO 98% STANDARD PROCTOR DENSITY
150mm DEPTH COMPACTED SUBGRADE - 98% STANDARD PROCTOR DENSITY

SECTION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

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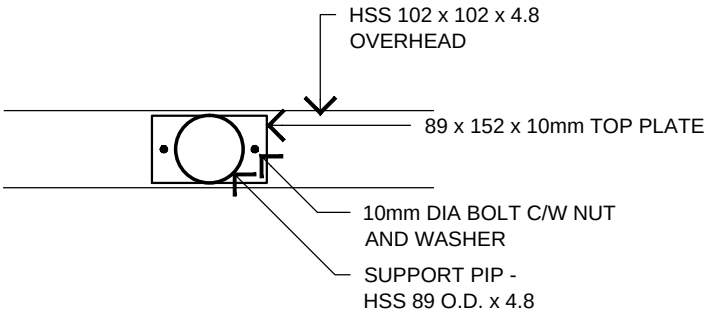
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

DUGOUT - SECTION

Engineering Department

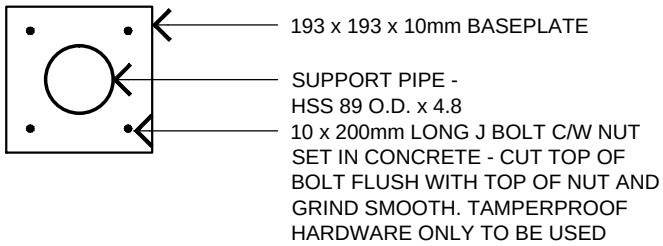
Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 18 13D



TOP PLATE - CONNECTION DETAIL

SCALE: 1:10



BASE PLATE

SCALE: 1:10

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DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
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DUGOUT - DETAILS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 13E

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of players benches.

1.2 Related Specifications

.1 Section 32 91 19 Landscape Grading

.2 Section 32 92 00 Turf & Grasses

.3 Section 31 23 00 Excavation & Fill

.4 Section 31 23 33 Trenching & Backfilling

.5 Section 32 18 11 Chain Link Backstops, Fences and Gates

2.0 PRODUCTS

2.1 Granular Base Course

.1 As per current City of St. Albert Municipal Engineering Standards Class 20 Application GBC.

2.2 Cast-in-place Concrete

.1 Flexible forms to form radii.

.2 Reinforcement bars Grade 300 primed rebar.

.3 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

2.3 Players Benches

.1 Backless extruded aluminium 10 micron anodized finish seatboard 4572 mm long X 254 mm wide, end caps, three galvanized HSS 50 mm X 50 mm tubing posts, galvanized steel surface mount brackets, tamper proof hardware.

.2 Mounting Hardware: Tamperproof high strength stainless steel 1/2” X 7” long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for slab to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

.3 Minimum grade away from slab edge 1.0% slope.

3.2 Granular Base Course

.1 Install one compacted lift of granular base course compacted to 98% standard proctor density to extend 300 mm past outside edge of slabs.

3.3 Cast-in-place Concrete

.1 Install true to lines and levels on compacted granular base course, compacted to 98% standard proctor density.

.2 If radii are too tight for plywood forms use steel.

.3 Overlap horizontal bars minimum 300 mm.

.4 Use mechanical vibration during pour.

.5 Broom finish to provide best drainage off the slab.

.6 No contractor name and date mark locations allowed on concrete slabs.

.7 Continuous pour preferred without construction joint. If required submit for approval.

.8 Sawcut crack control joints 40 mm depth, maximum spacing 3.0 m on centre.

.9 Backfill after 7 days curing.

.10 Pour concrete samples for each truckload. Contractor to pay for and submit tests.

3.4 Players Benches

.1 Install true to lines and levels.

.2 Install with approved bolt assemblies into concrete slabs as approved shop drawings.

.3 Mounting hardware to be tamperproof and only two threads bare if nut and washer system is approved.

.4 Install according to Manufacturer’s specifications.

.5 Slab to be flush to adjacent turf, ensure positive drainage.

3.5 Construction Completion

.1 Ball diamond players benches will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

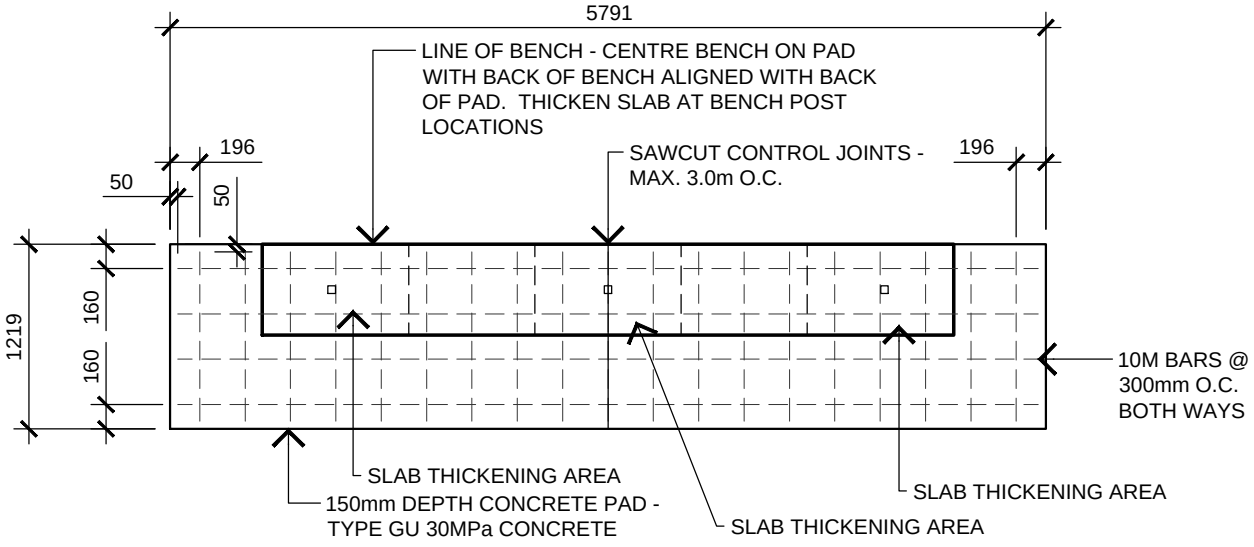
3.6 Maintenance During Warranty Period

.1 Maintenance of ball diamond players benches is to be provided by the Contractor.

3.7 Final Acceptance

.1 Ball diamond players benches will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

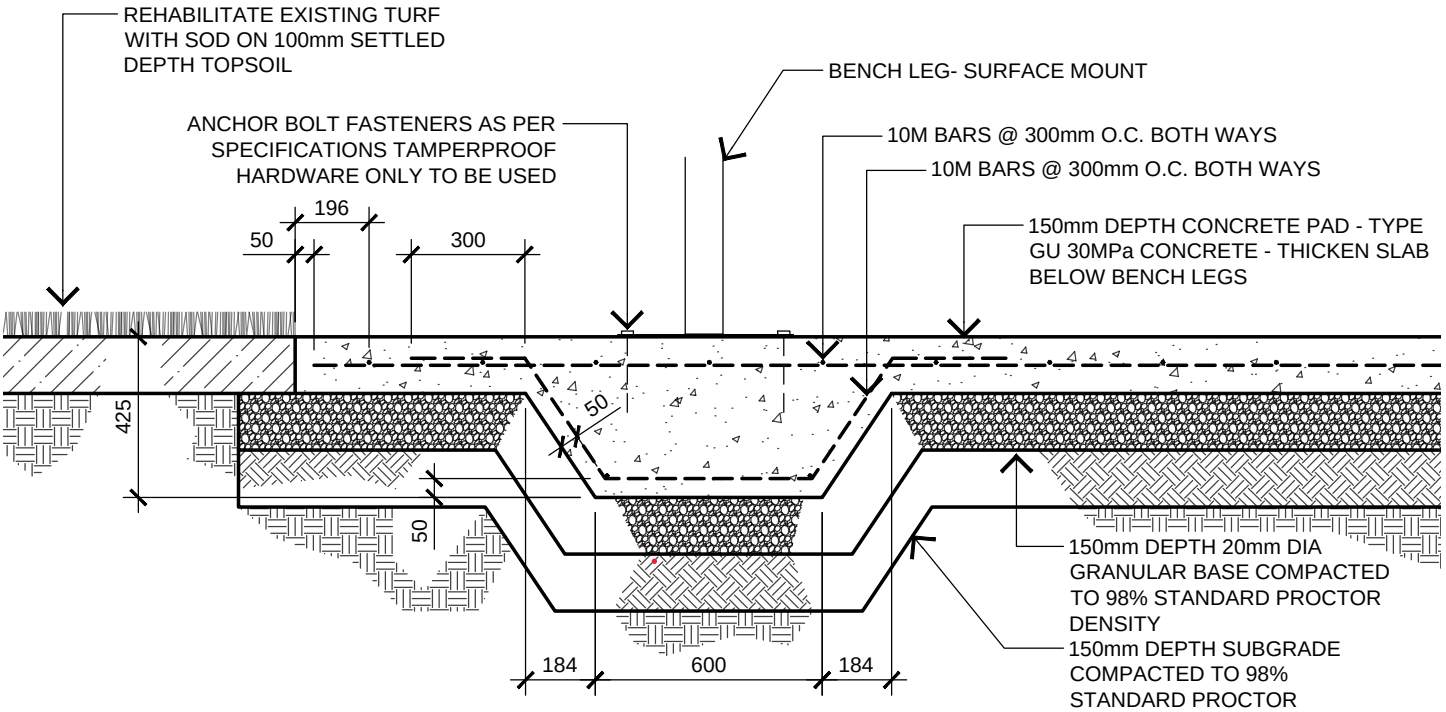
- END OF SECTION 32 18 14 -



TOP OF CONCRETE PAD TO BE FLUSH WITH EXISTING TURF GRADE INSURING POSITIVE DRAINAGE AWAY FROM PAD

PLAN VIEW

SCALE: 1:50



NOTES:

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SECTION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

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DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

PLAYERS BENCH & CONCRETE PAD

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 18 14

1.0 GENERAL

1.1 Description

.1 This section covers the supply and installation of sports field bleachers.

1.2 Related Specifications

.1 Section 31 23 00 Excavation & Fill

.2 Section 32 18 01 Natural Turf Sports Fields

.3 Section 32 18 02 Artificial Turf Sports Fields

.4 Section 32 18 04 Football Field Layouts

.5 Section 32 18 05 Soccer Field Layouts

.6 Section 32 18 08 Baseball Diamond Layouts

.7 Section 32 18 09 Fast Pitch and Slo-pitch Diamond Layouts

1.3 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.4 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per 300 square metres, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of a granular base course shall not exceed 150mm, or as directed by the City Representative. The required percentage of maximum density of the granular base course course is 98% unless specified otherwise.

1.5 Submission Requirements

.1 The bleacher drawings and specifications are to be completed and submitted to the City by a structural engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

.2 Wind loading calculations are to be completed in the submission.

.3 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

2.0 PRODUCTS

2.1 Granular Base Course

.1 Install one compacted lift of granular base course compacted to 98% standard proctor density to extend 300 past outside edge of slabs.

2.2 Cast-in-place Concrete

.1 Flexible forms to form radii.

.2 Reinforcement bars Grade 300 primed rebar, sizes as detailed.

.3 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

2.3 Bleachers up to 5 Seats High

.1 Extruded aluminum 10 micron anodized finish seatboards and mill finish footboards, aluminium end caps, all structural posts and cross bracing galvanized steel, galvanized steel surface mount brackets, tamper proof hardware. Submit shop drawings and CSA approvals.

.2 Mounting Hardware: High strength stainless steel 1/2" X 7" long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

.3 Model, net seating persons and sizes in imperial and metric:

Model	Net Seating	Length x Depth x Height (in)	Length x Depth x Height (m)
3 High 12 Feet	24	144" x 58" x 30-1/2"	3.66 x 1.47 x .775
3 High 15 feet	30	180" x 58" x 30-1/2"	4.57 x 1.47 x .775
3 High 18 feet	36	216" x 58" x 30-1/2"	5.49 x 1.47 x .775
3 High 21 Feet	42	252" x 58" x 30-1/2"	6.40 x 1.47 x .775
4 High 18 Feet	48	216" x 82" x 38"	5.49 x 2.08 x .965
4 High 21 Feet	56	252" x 82" x 38"	6.40 x 2.08 x .965
5 High 18 Feet	60	216" x 106" x 45-1/2"	5.49 x 2.69 x 1.16
5 High 21 Feet	70	252" x 106" x 45-1/2"	6.40 x 2.69 x 1.16

2.4 Bleachers Higher than 5 Seats High

.1 These bleachers will require a full drawing and specification submission to obtain a City of St. Albert Building Permit.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for slab to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

.3 Minimum grade away from slab edge 1.0% slope.

3.2 Granular Base Course

.1 Install one compacted lift of granular base course compacted to minimum 98% standard proctor density to extend 300 mm past outside edge of slabs.

3.3 Cast-in-place Concrete

.1 Install true to lines and levels on granular base course, compacted to minimum 98% standard proctor density.

.2 If radii are too tight for plywood forms use steel.

.3 Overlap horizontal bars minimum 300 mm.

.4 Use mechanical vibration during pour.

.5 Broom finish to provide best drainage off the slab.

.6 No contractor name and date mark locations allowed on concrete slabs.

.7 Continuous pour preferred without construction joint. If required submit for approval.

.8 Sawcut crack control joints 40 mm depth, maximum spacing 3.0 m on centre.

.9 Backfill after 7 days curing.

.10 Pour concrete samples for each truckload. Contractor to pay for and submit tests.

3.4 Bleachers Installation

.1 Install true to lines and levels.

.2 Install with approved bolt assemblies into concrete slabs as per the approved shop drawings.

.3 Install according to Manufacturer’s specifications.

3.5 Landscaping

.1 Landscaping around concrete must be flush to the top of the slab to ensure no tripping hazards.

3.6 Construction Completion

.1 Sports field bleachers will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

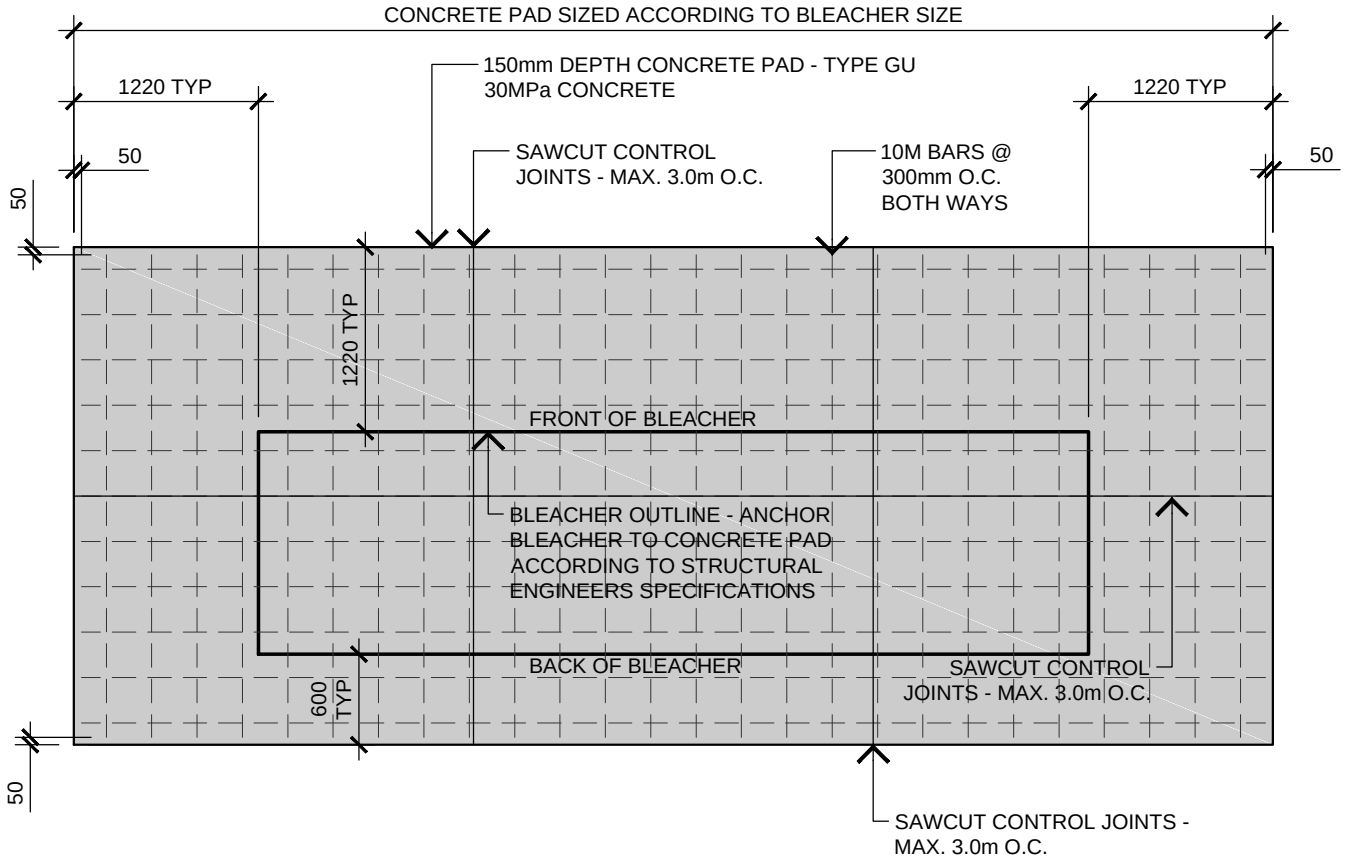
3.7 Maintenance During Warranty Period

.1 Maintenance of the sports field bleachers is to be provided by the Contractor.

3.8 Final Acceptance

.1 Sports field bleachers will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 18 15 -

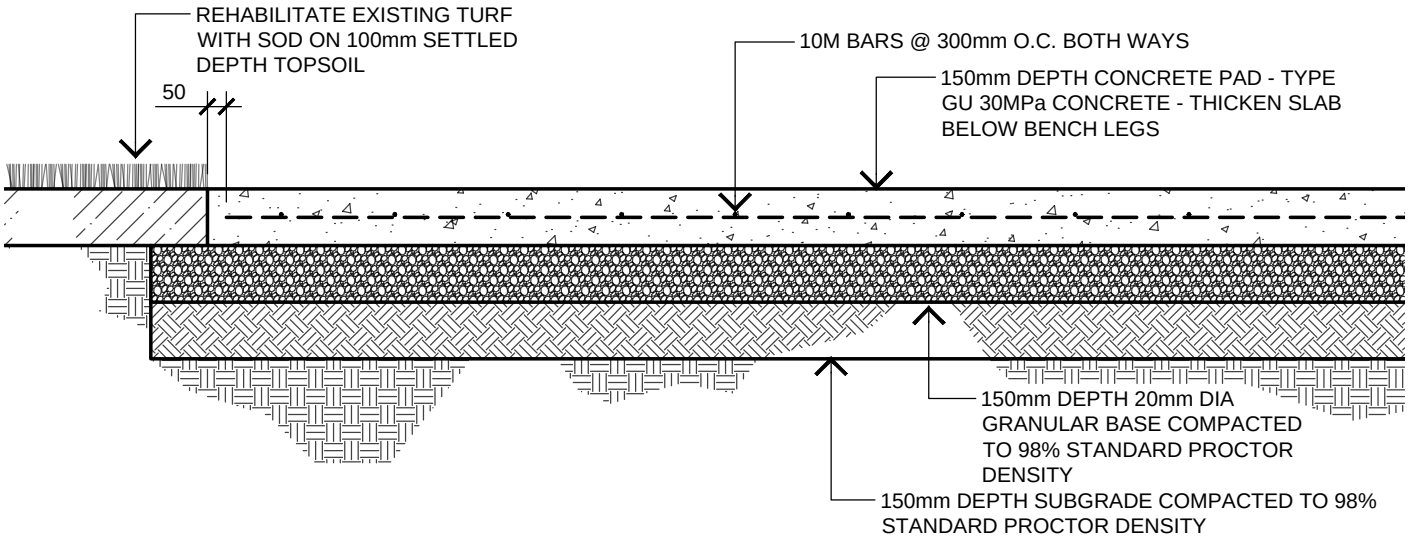


PLAN VIEW

SCALE: 1:50

NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION



SECTION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

SPORTS FIELD
BLEACHER LAYOUTS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 18 15

1.0 GENERAL

1.1 Description

.1 This section is an introduction to the outdoor sports courts standards for St. Albert including asphalt surfaces with painted lines and asphalt surfaces with rubberized surfaces.

.2 The sports to be accommodated on hard surface courts either on asphalt and rubberized surfaces include tennis, basketball, and pickleball.

.3 Sand Volleyball is also a court game but not on a hard surface and has been included in this series of specifications.

.4 Some courts are stand alone and others are arranged as multiple courts in the same location.

1.2 Municipal Engineering Standards

.1 The current City of St. Albert Municipal Engineering Standards identify the planning, submission and approval process, and provide specifications and requirements for the design, materials and construction relating to all work in the City of St. Albert including road construction, land development, underground utilities and landscaping. The standards also identify materials testing, construction completion, maintenance during the warranty period and final acceptance of infrastructure projects which would apply to outdoor sports fields.

1.3 Related Specifications

.1 Section 31 10 00 Site Clearing

.2 Section 31 23 00 Excavation & Fill

.3 Section 31 23 33 Trenching & Backfilling

.4 Section 32 91 19 Landscape Grading

.5 Section 32 92 00 Turf & Grasses

1.4 Submission Requirements

.1 The design drawings and specifications are to be completed and submitted to the City by a landscape architect registered with the Alberta Association of Landscape Architects (AALA).

.2 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

1.5 Standard City Asphalt Surfaces

.1 Asphalt Surfaces as per City of St. Albert Municipal Engineering Standards for Section 3.0 Roadways, or the current revised version.

1.6 32 19 02 to 32 19 07 Specifications

.1 32 19 02 Painted Line Marking

.2 32 19 03 Rubberized Surface Courts

.3 32 19 04 Tennis and Pickleball Courts and Nets

.4 32 19 05 Tennis and Pickleball Court Fencing, Windscreening and Practice Boards

.5 32 19 06 Basketball Courts and Goals

.6 32 19 07 Sand Volleyball Courts, Posts and Nets

.7 32 19 08 Long Jump Pit

- END OF SECTION 32 19 00 -

1.0 GENERAL

1.1 Description

.1 The work to be done under this Section consists of supplying all labour and materials and performing all work necessary to paint lines for outdoor sports courts.

1.2 Standard City Asphalt Surfaces

.1 Asphalt Surfaces as per City of St. Albert Municipal Engineering Standards for Section 3.0 Roadways, or the current revised version.

2.0 PRODUCTS

2.1 Paint

.1 White Paint as per City of St. Albert Municipal Engineering Standards for pavement marking Section 3.0 Roadways, or the current revised version.

.2 Other colours at the discretion of the City.

3.0 EXECUTION

3.1 Installation

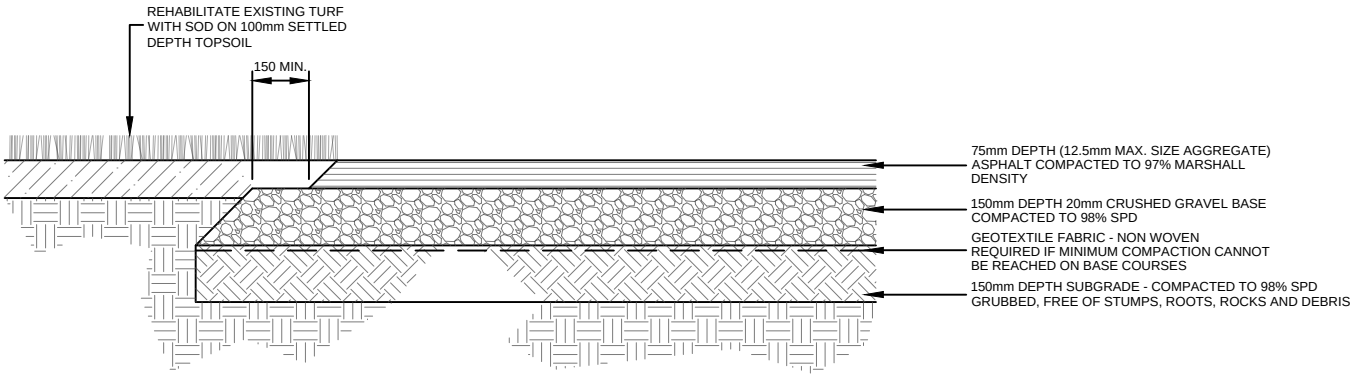
.1 Ensure the pavement cleaning and sweeping equipment does not overload the sports court asphalt pavement structure design, smaller equipment is acceptable. Completely clean the pavement before painting.

.2 Ensure the painting equipment does not overload the sports court asphalt pavement structure design, smaller equipment is acceptable.

.3 Install lines true to widths and layouts indicated in the outdoor sports courts layout drawings.

.4 Uneven and inaccurate line markings will not be accepted and any un-approved lines will need to be completely removed before re-painting.

- END OF SECTION 32 19 02 -



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

ASPHALT SURFACE COURTS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 02

1.0 GENERAL

1.1 Description

.1 The site grading, subgrade preparation, granular base course, asphalt tack coat, hot-mix asphalt paving, supply and installation of rubberized surface course for play courts including tennis, pickleball and basketball.

2.0 PRODUCTS

2.1 Granular Base Course, Tack Coat, Hot-mix Asphalt

.1 To meet current City of St. Albert Municipal Engineering Standards, designed to withstand service vehicles weights.

.2 LT asphalt surface course minus 12.5 mm aggregate is preferred to create a tight surface.

2.2 Rubberized Surface Course Systems

.1 Rubberized base cushion for tennis and pickleball courts.

.2 Acrylic latex colour surface system for tennis and pickleball courts.

.3 Acrylic latex standard texture court surface for basketball courts.

.4 Submit detailed shop drawings, performance and product specifications, warranties and manufacturer’s installation and application recommendations for approval.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for rubberized surface areas to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

3.2 Granular Base Course, Tack Coat, Hot-mix Asphalt

.1 To meet current City of St. Albert Municipal Engineering Standards.

.2 Final asphalt cross court cross-slope optimum 0.8%, minimum 0.7% and maximum 0.9%.

.3 Tennis and pickleball not to be designed to slope from netlines to back court.

.4 Basketball can be designed to slope from centerline to endlines at 0.8%.

3.3 Colours and Lines

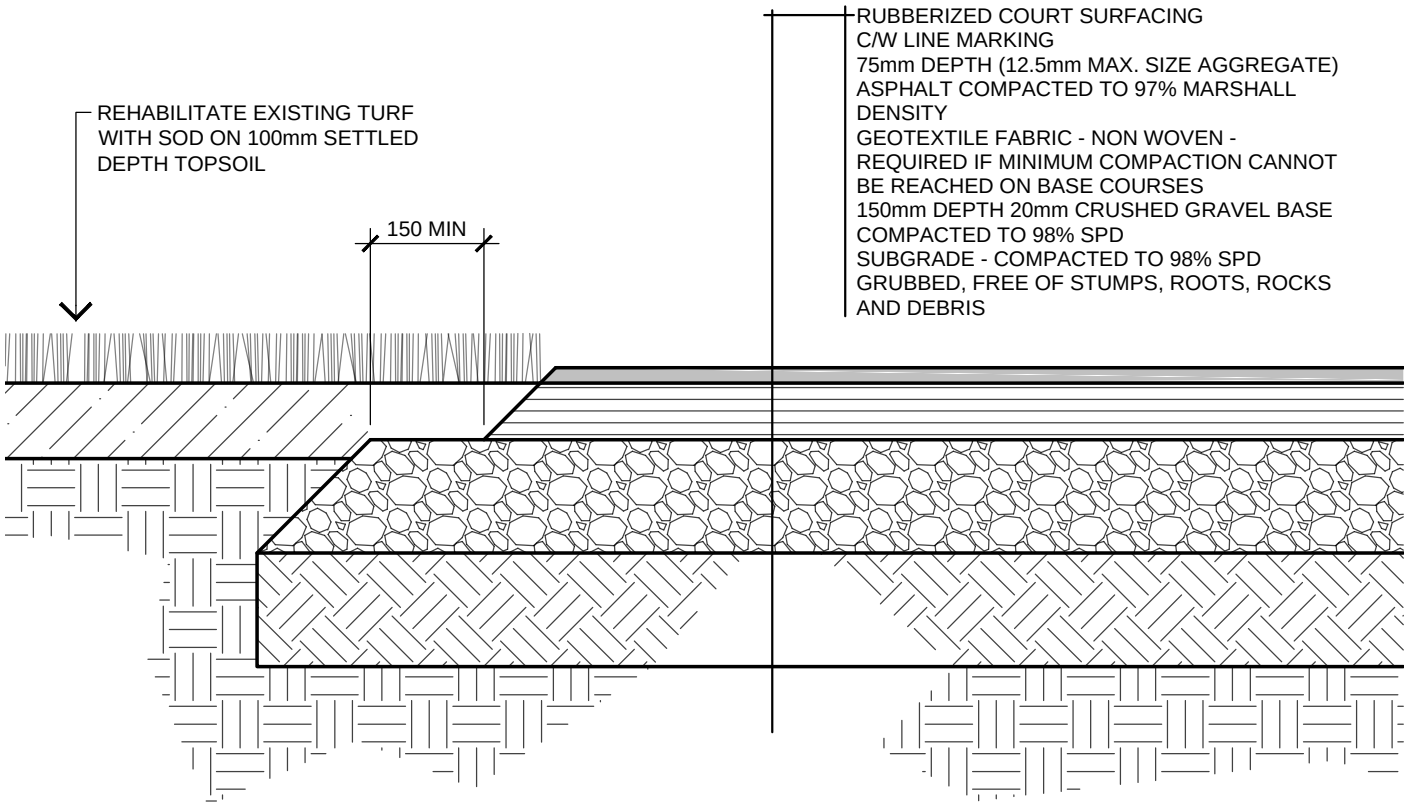
.1 Colours to be selected during design as approved by the City Representative.

.2 Layout court lines as per dimensions on the drawings.

3.4 Rubberized Surface

.1 Install surfaces as per the manufacturer’s specifications.

- END OF SECTION 32 19 03 -



NOTES:

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SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

RUBBERIZED SURFACE COURTS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 03

1.0 GENERAL

1.1 Description

.1 The final grading and supply and installation of tennis and pickleball posts and nets.

1.2 Related Specifications

.1	Concrete Forming and Accessories	Section 03 10 00
.2	Concrete Reinforcing	Section 03 20 00
.3	Cast-in-Place Concrete	Section 03 30 00
.4	Aggregate Materials	Section 31 05 17
.5	Site Clearing	Section 31 10 00
.6	Excavation and Fill	Section 31 23 00
.7	Subgrade Preparation	Section 31 24 14
.8	Cement Stabilized Subgrade	Section 31 32 15
.9	Aggregate Base Courses	Section 32 11 23
.10	Landscape Grading	Section 32 91 19
.11	Turf & Grasses	Section 32 92 00

2.0 PRODUCTS

2.1 Tennis and Pickleball Posts and Nets

.1 Tennis posts round steel powder coated Black, complete with high quality tennis net and all required accessories including ground sleeves and centre net tie anchors.

.2 Pickleball posts round steel powder coated Black, complete with outdoor pickleball net and all required accessories including ground sleeves and centre net tie anchors.

.3 Custom fabricate 19 mm weep hole and pipe to outside of the concrete at the bottom of the sleeves.

.4 Submit detailed shop drawings, specifications, warranties and manufacturer's application recommendations for approval.

.5 Nets shall have tension adjuster to allow for multiple sports with one net set up.

2.2 Cast-in-place Concrete

.1 Surface Mounts Concrete (preferred option) Concrete type GU, 30 MPa at 28 days, 25mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

.2 In Ground Mounts Pile (at the discretion of the City)

.1 Reinforcement bars Grade 300 primed rebar as detailed. 3-15M verticals full height 10M ties at 300 O.C.

.2 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

3.0 EXECUTION

3.1 Final Grading

.1 Final asphalt cross court cross-slope optimum 0.8%, minimum, 0.7% maximum 0.9% slope. Tennis courts not to be designed to slope from netlines to back court.

3.2 Posts and Nets

.1 Install true to lines and levels.

.2 Concrete piles 300 mm diameter x 2500 mm deep, 3-15M verticals full height 10M ties at 300 O.C., flush to finished asphalt, cover with rubberized surface.

3.3 Construction Completion

.1 Tennis and pickleball courts will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.4 Maintenance During Warranty Period

.1 Periodic cleaning will be performed by others.

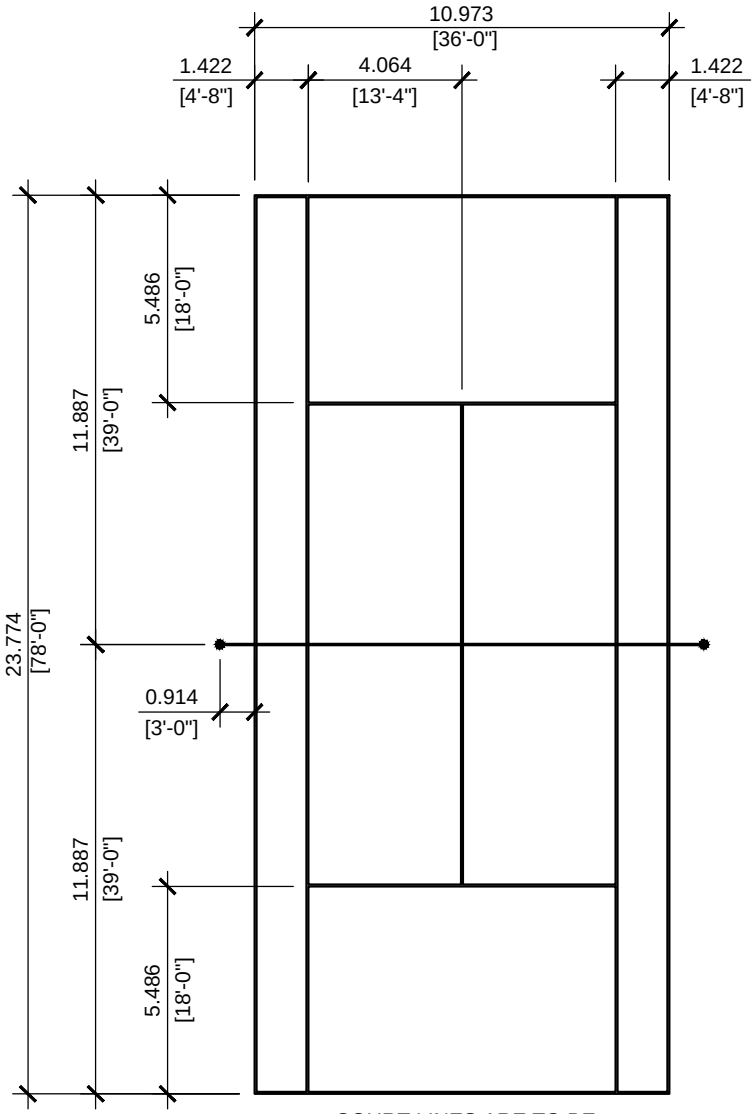
.2 Other maintenance of the surfaces is to be provided by the Contractor.

.3 Submit monthly maintenance logs to the City.

3.5 Final Acceptance

.1 Tennis and pickleball courts will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 19 04 -



COURT LINES ARE TO BE PAINTED - LINES TO BE 50.8mm (2") WIDTH

NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:200

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

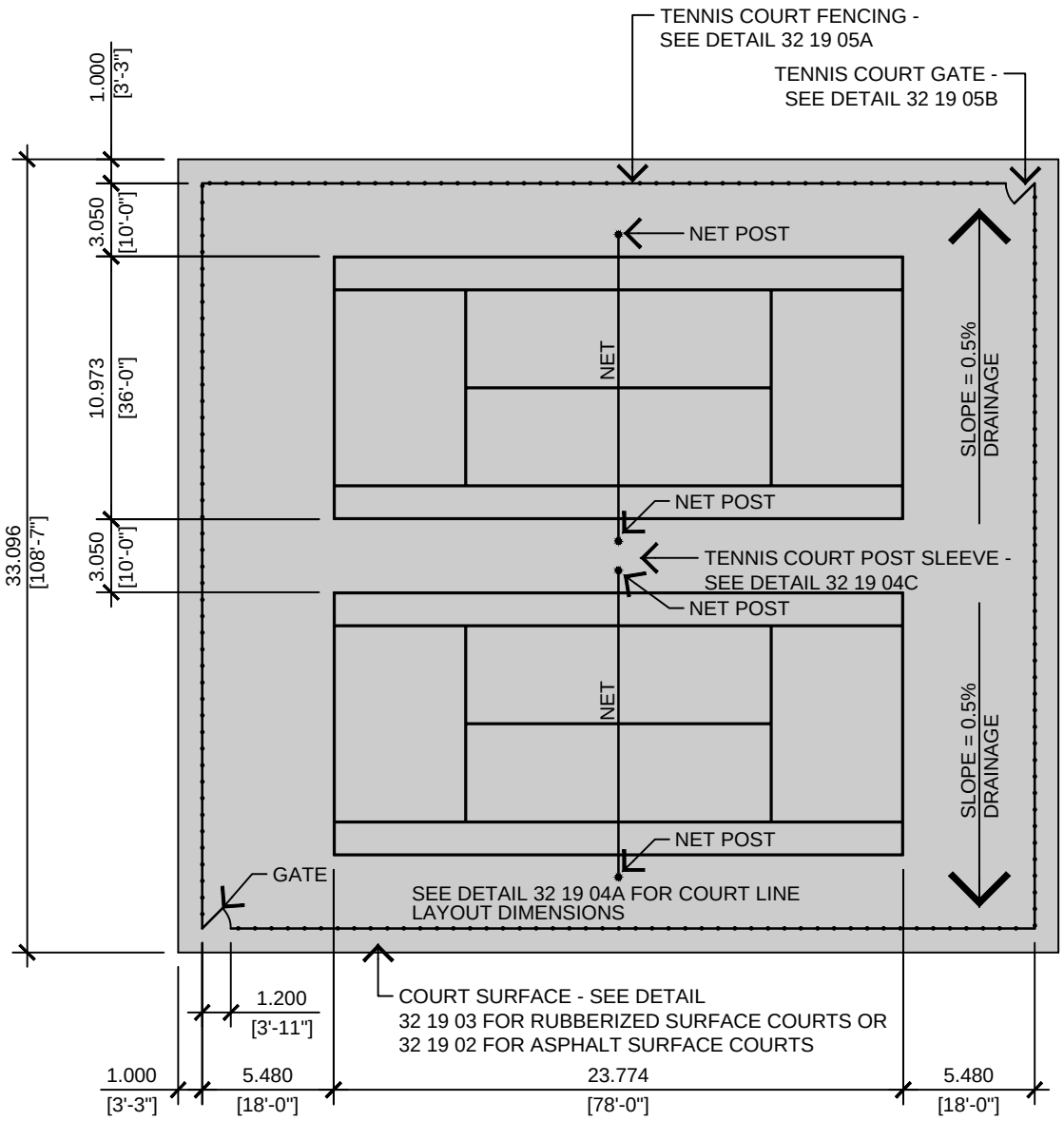
TENNIS COURT LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 04A



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
19/05/21	Engineering Municipal Standards Update

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

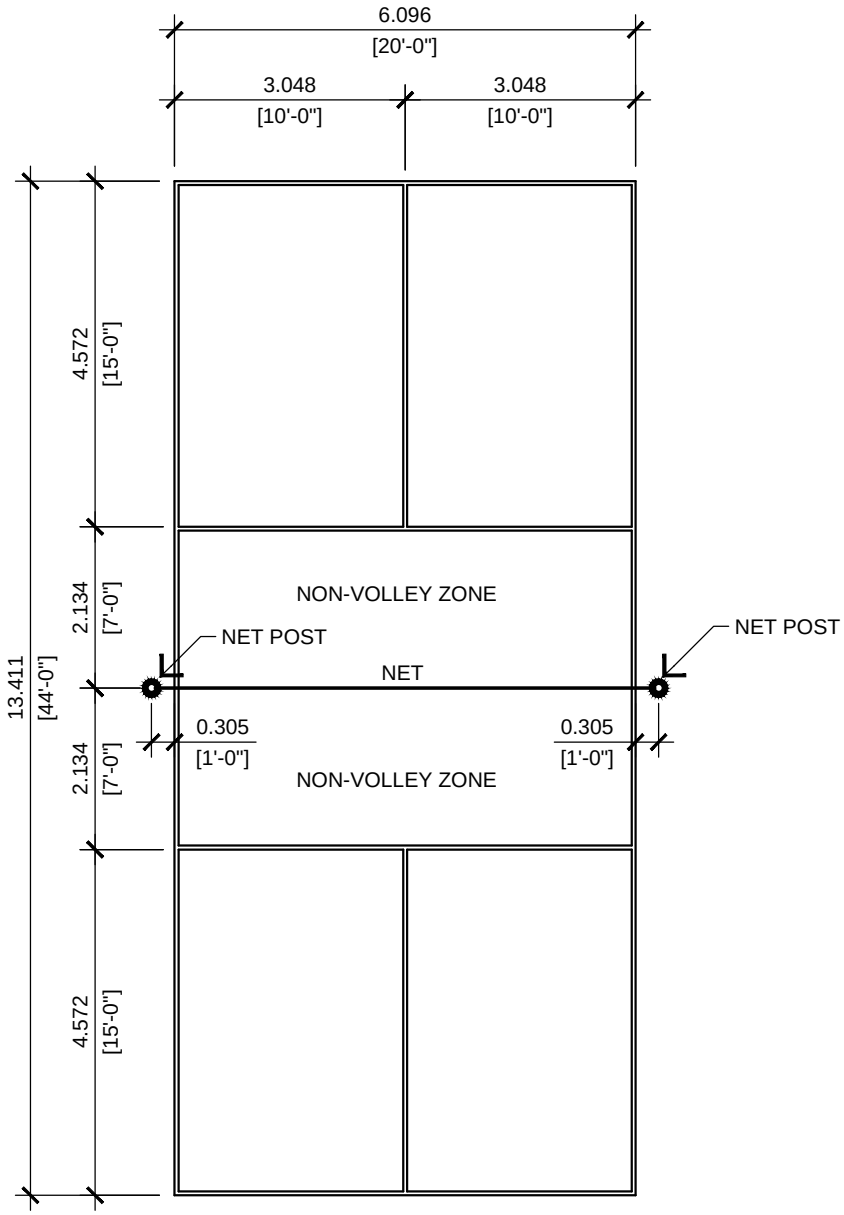
TENNIS COURT LAYOUT
MULTIPLE COURTS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 04B



COURT LINES ARE TO BE PAINTED - LINES TO BE 50.8mm (2") WIDTH

NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:100

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

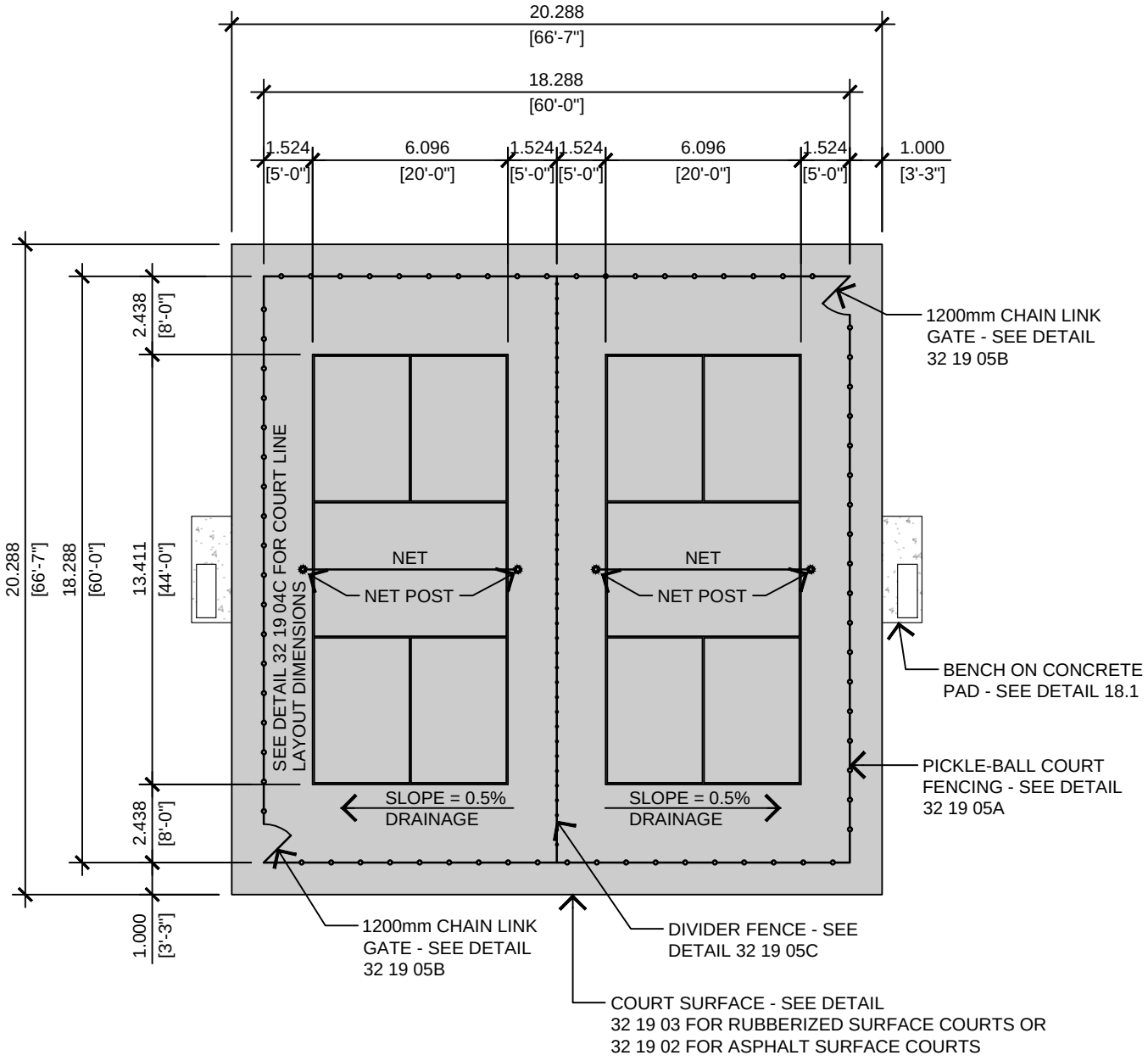
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

PICKLE-BALL COURT LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 04C



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:100

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
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DD/MM/YY	
19/05/21	Engineering Municipal Standards Update

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

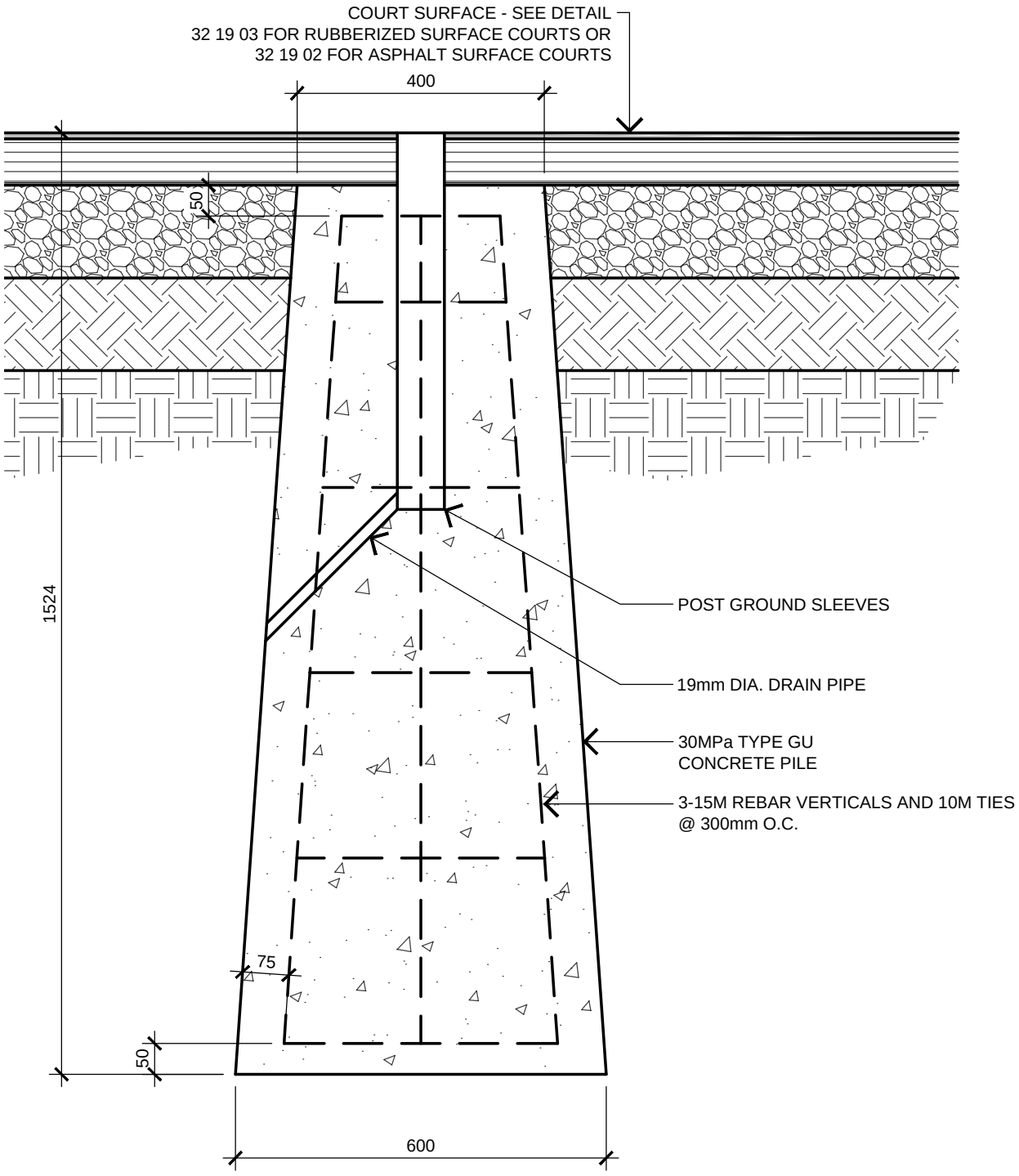
PICKLE-BALL COURT LAYOUT
MULTIPLE COURTS

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 04C2



NOTES:

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SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
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DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

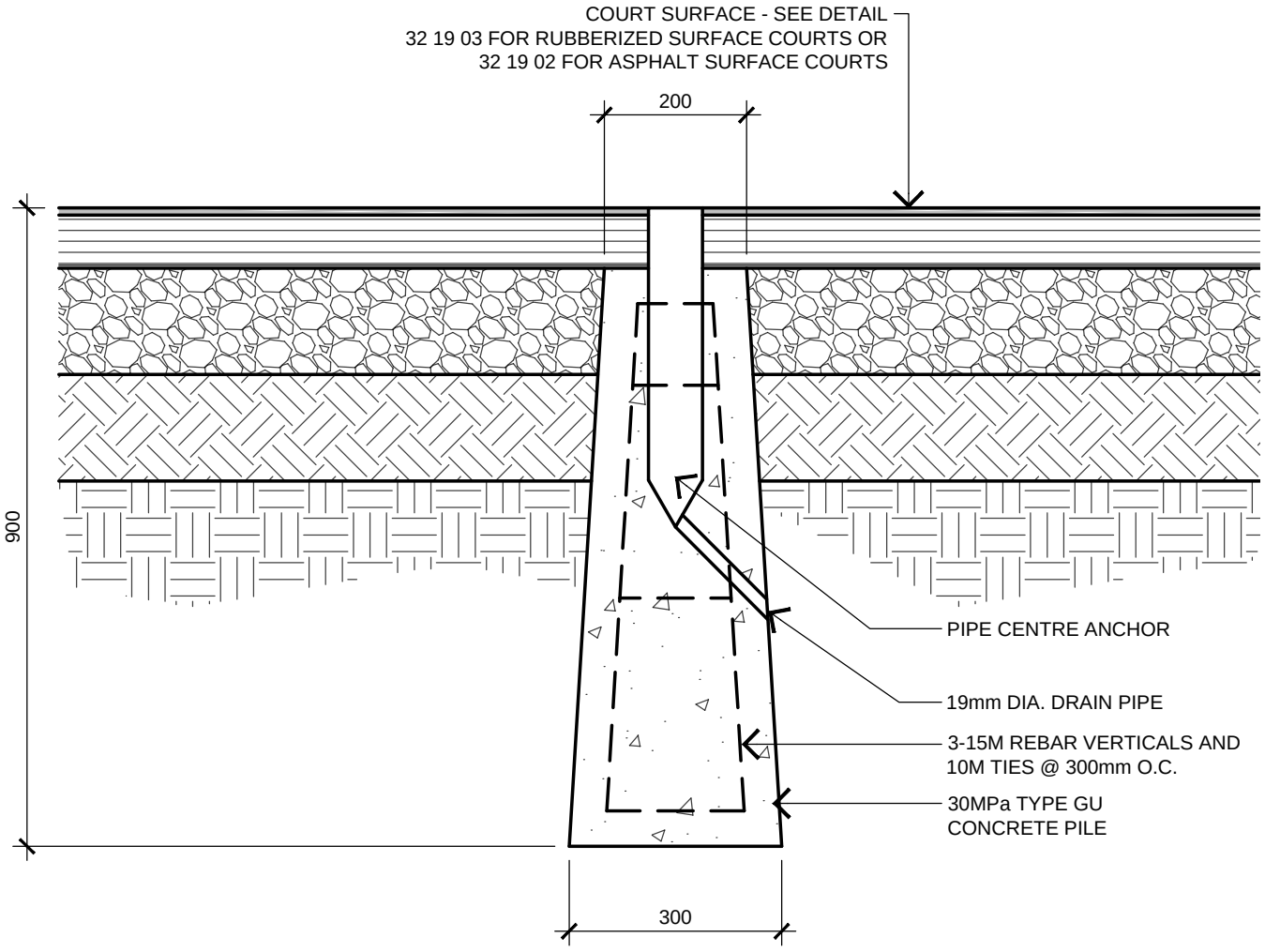
TENNIS/PICKLE BALL COURT
POST SLEEVE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 04D



NOTES:

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SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

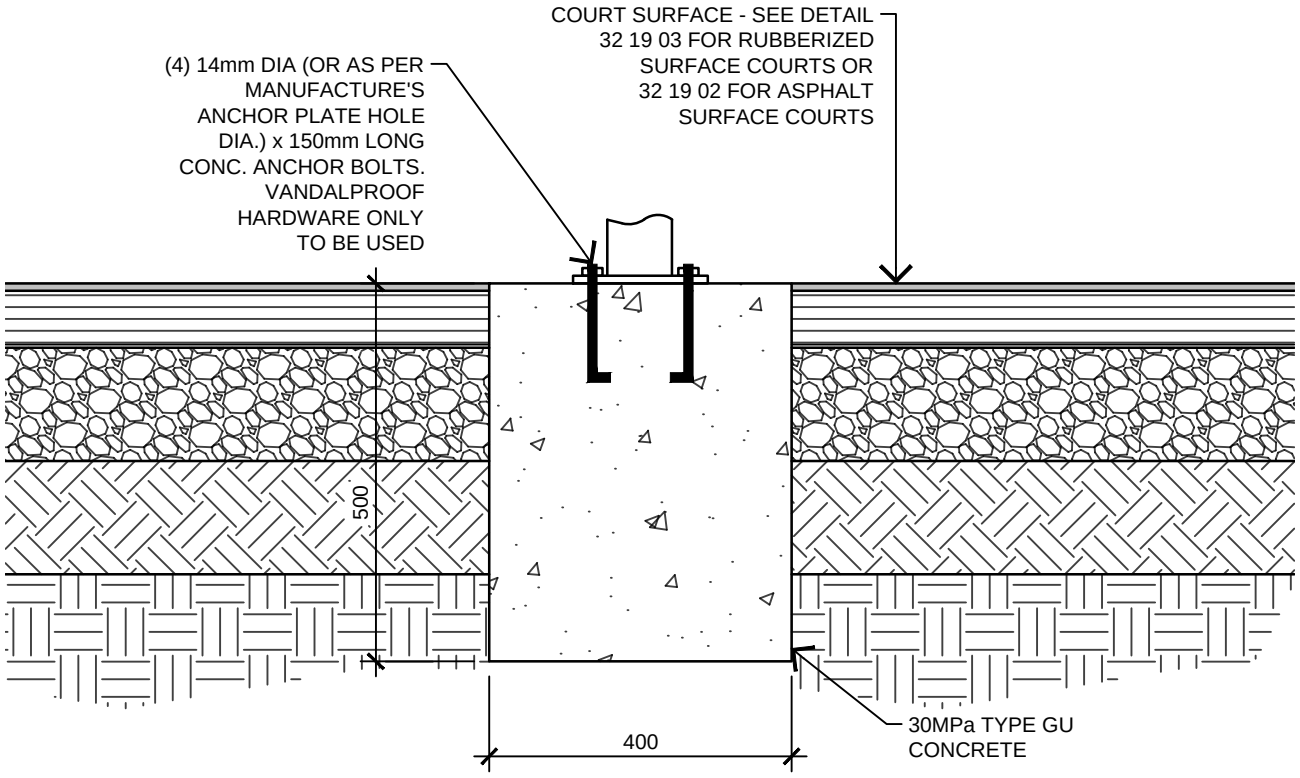
TENNIS/PICKLE BALL COURT CENTRE ANCHOR

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 04E



NOTES:

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SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

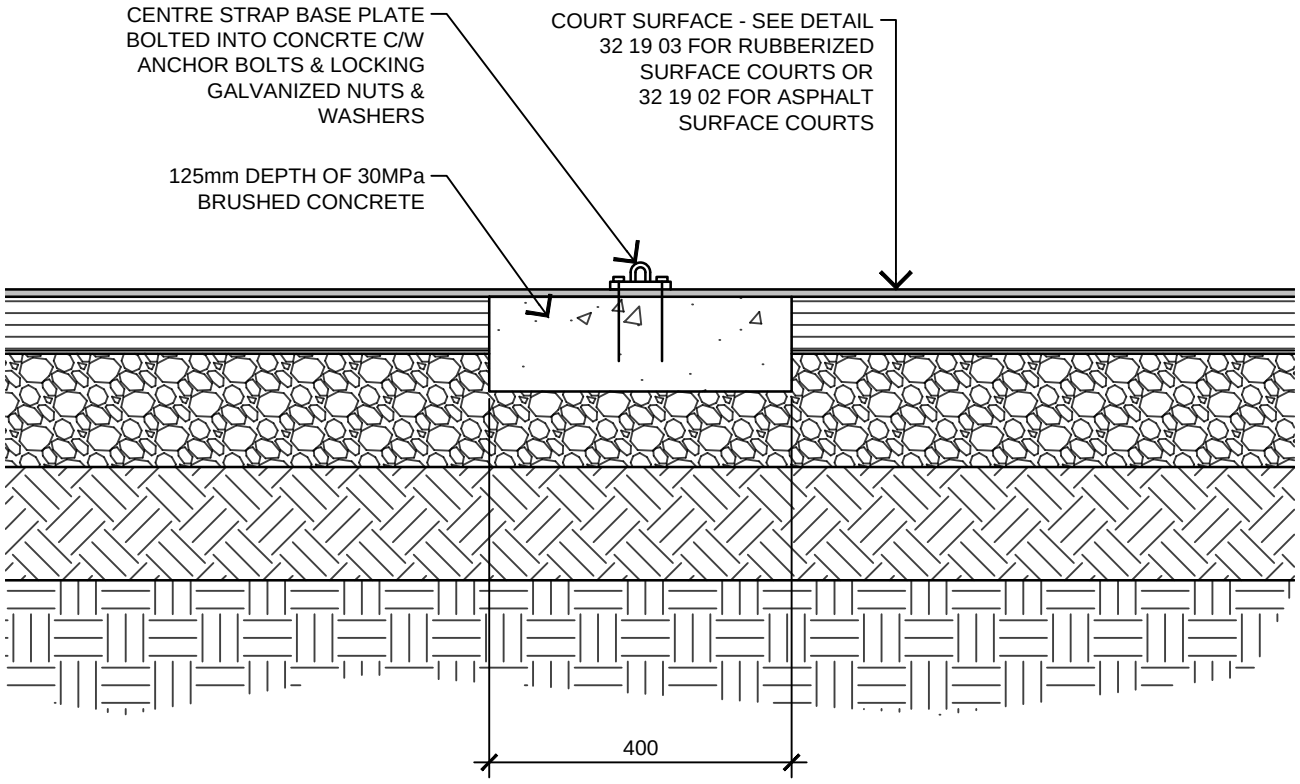
TENNIS/PICKLE BALL COURT
POST SURFACE MOUNT

Engineering Department

Date: 2021 05 19 | Scale: AS NOTED

Drawing Number:

32 19 04F



NOTES:

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SECTION

SCALE: 1:10

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

TENNIS/PICKLE BALL COURT
CENTRE ANCHOR
SURFACE MOUNT

Engineering Department

Date: 2021 05 19 | Scale: AS NOTED

Drawing Number:

32 19 04G

1.0 GENERAL

1.1 Description

.1 The supply and installation of tennis and pickleball court fencing, windscreening and practice boards.

1.2 Related Specifications

.1	Concrete Forming and Accessories	Section 03 10 00
.2	Concrete Reinforcing	Section 03 20 00
.3	Cast-in-Place Concrete	Section 03 30 00
.4	Aggregate Materials	Section 31 05 17
.5	Site Clearing	Section 31 10 00
.6	Excavation and Fill	Section 31 23 00
.7	Subgrade Preparation	Section 31 24 14
.8	Cement Stabilized Subgrade	Section 31 32 15
.9	Aggregate Base Courses	Section 32 11 23
.10	Landscape Grading	Section 32 91 19
.11	Turf & Grasses	Section 32 92 00

2.0 PRODUCTS

2.1 Chain Link Fabric: conforming to CGSB CAN2-138.1M.

.1 Type 1 steel fabric, medium style: class A zinc-coated, grade 1 at minimum 490 g/m2.

.2 Fabric: 9 gauge, 50 mm, full height selvage knuckle top and bottom.

2.2 Chain Link Fence Framework: conforming to CGSB CAN2-138.2M.

.2 Posts and Rails: hot dipped galvanized welded steel pipe, standard weight (schedule 40), (ASTM A120), zinc-coated at minimum 550 g/m2 to the following dimensions:

.1 Corner, end, gate posts: 100 mm OD X 3658 mm exposed X 3000 mm bury.

.2 Line posts: 89 mm OD X 3658 mm exposed X 2500 mm bury.

.3 Rails: continuous 42.2 mm OD at bottom, mid-height and top.

2.3 Chain Link Fittings:

.1 Fittings to conform to ASTM F626.

.2 Post Cap & Rail End: pressed steel or cast iron minimum zinc coating 366 g/m2.

.3 Top Rail Sleeve: 2.0 mm thick X 175 mm long round steel tubing minimum zinc coating 366 g/m2.

.4 Tie Wire and Clip: 3.5 mm diameter (9 gauge) minimum zinc coating 122 g/m2.

.5 Tension and Brace Bands: 2.0 mm thick X 19 mm wide pressed steel minimum zinc coating 366 g/m2.

.6 Tension Bar: 5.0 mm thick X 16 mm wide steel strip minimum zinc-coating 366 g/m2.

.7 Turnbuckle: size varies steel minimum zinc coating 366 g/m2

.8 Gate Latch: to be lockable with master lock.

2.4 Chain Link Gate

.1 Gate Fabric: to match fence fabric.

.2 Gate Frame: to match fence rails minimum 42.2 mm outside diameter; to be electrically welded at all joints and hot-dip galvanized after welding. If braces are required, use truss rod and turnbuckle adequate for gate size.

.3 Gate Fittings: malleable iron hinges, latch and latch catch zinc-coated at minimum 490 g/m2. Latch catch to have provision for a padlock that can be attached and operated from either side of gate. Hinges to permit gate to open 270° in outward direction only.

.4 Double Gate: to have centre rest with drop bolt for closed position and chain hook to hold gates open to posts, galvanized to minimum zinc coating of 490g/m2.

.5 Zinc-pigmented paint: submit sample for approval prior to use.

2.5 Windscreening

.1 Black Vinyl Coated Polyester windscreen with grommets vents. Height to be determined by site specific conditions.

.2 The chain link fence posts and fittings must be engineered to withstand the wind effects utilizing the windscreening.

2.6 Concrete for Footings

.1 Type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm ± 25, maximum water ratio 0.45.

3.0 EXECUTION

3.1 Tennis and Pickleball Court Fencing

.1 Corner, end, gate posts footing: 300 mm OD X 3000 mm bury.

.2 Line posts: 300 mm OD X 2500 mm bury maximum spacings 3000 mm.

.3 Finish top of concrete flush to top of asphalt, to be covered with rubberized surface.

3.2 Windscreening

.1 The overall plan must take into account the windscreening needs.

.2 Secure to all posts and chain link fence fabric according to manufacturer's specification and drawings.

3.3 Practice Board

.1 Install in permanent location as per contract drawings confirmed by City of St. Albert according to manufacturer's specification and drawings.

3.4 Rubberized Surface

.1 Install rubberized surfaces on top of fence posts as per the manufacturer's specifications.

3.5 Construction Completion

.1 Tennis and pickleball courts will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.6 Maintenance During Warranty Period

.1 Periodic cleaning will be performed by others.

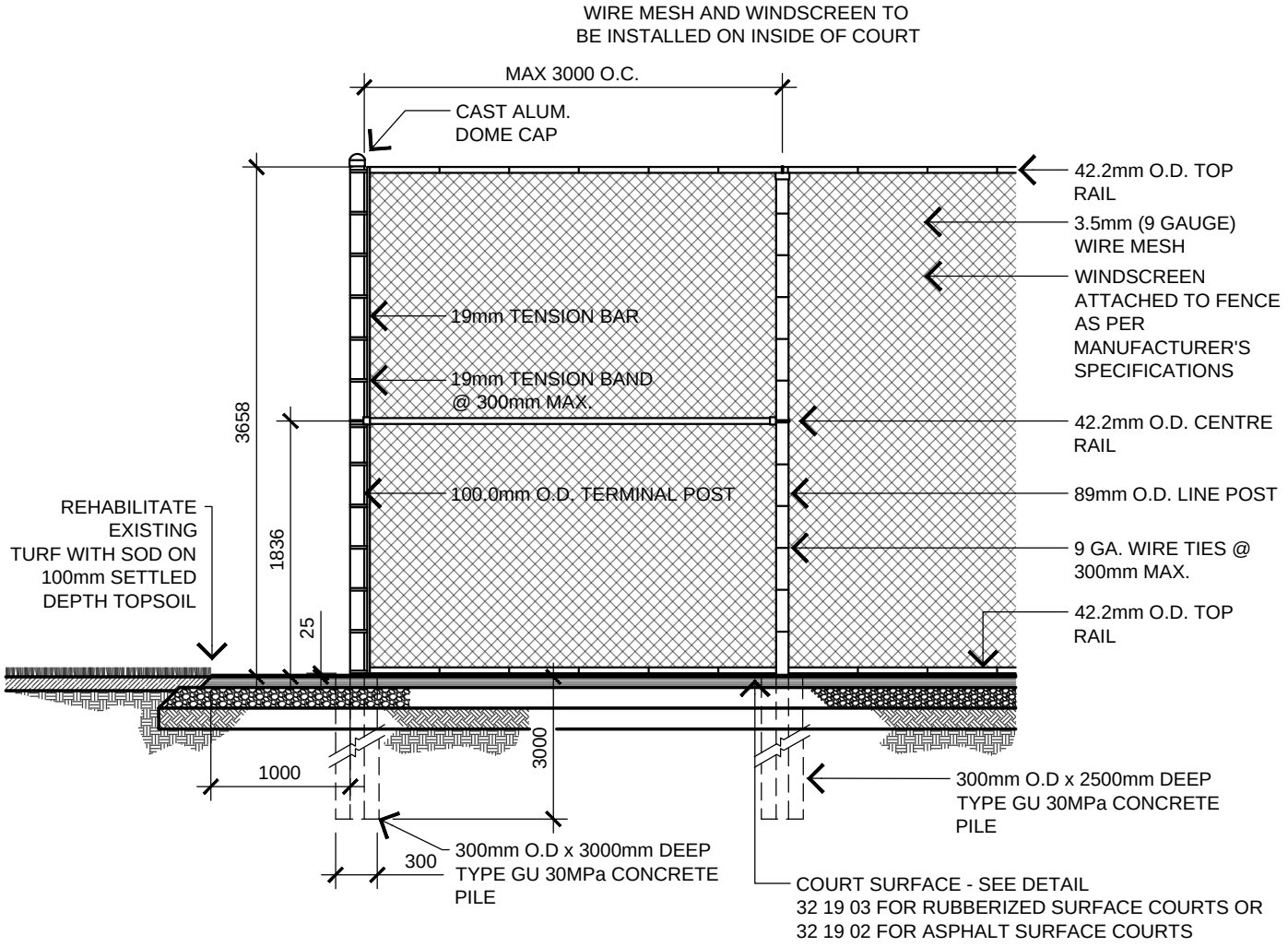
.2 Other maintenance of the surfaces is to be provided by the Contractor.

.3 Submit monthly maintenance logs to the City.

3.7 Final Acceptance

.1 Tennis and pickleball courts will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 19 05 -



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

ELEVATION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

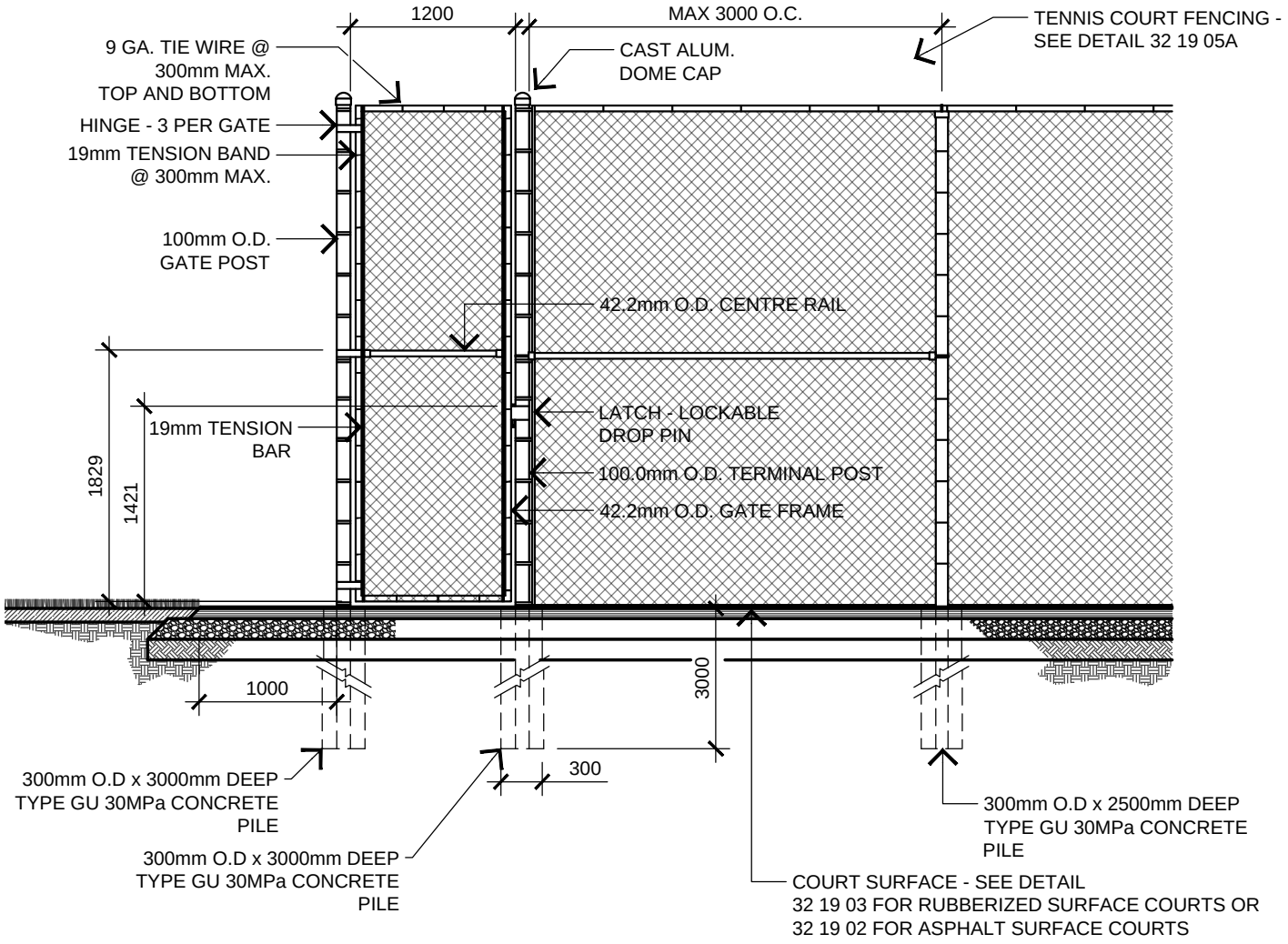
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

TENNIS/PICKLE BALL COURT FENCE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 05A



NOTES:

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ELEVATION

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

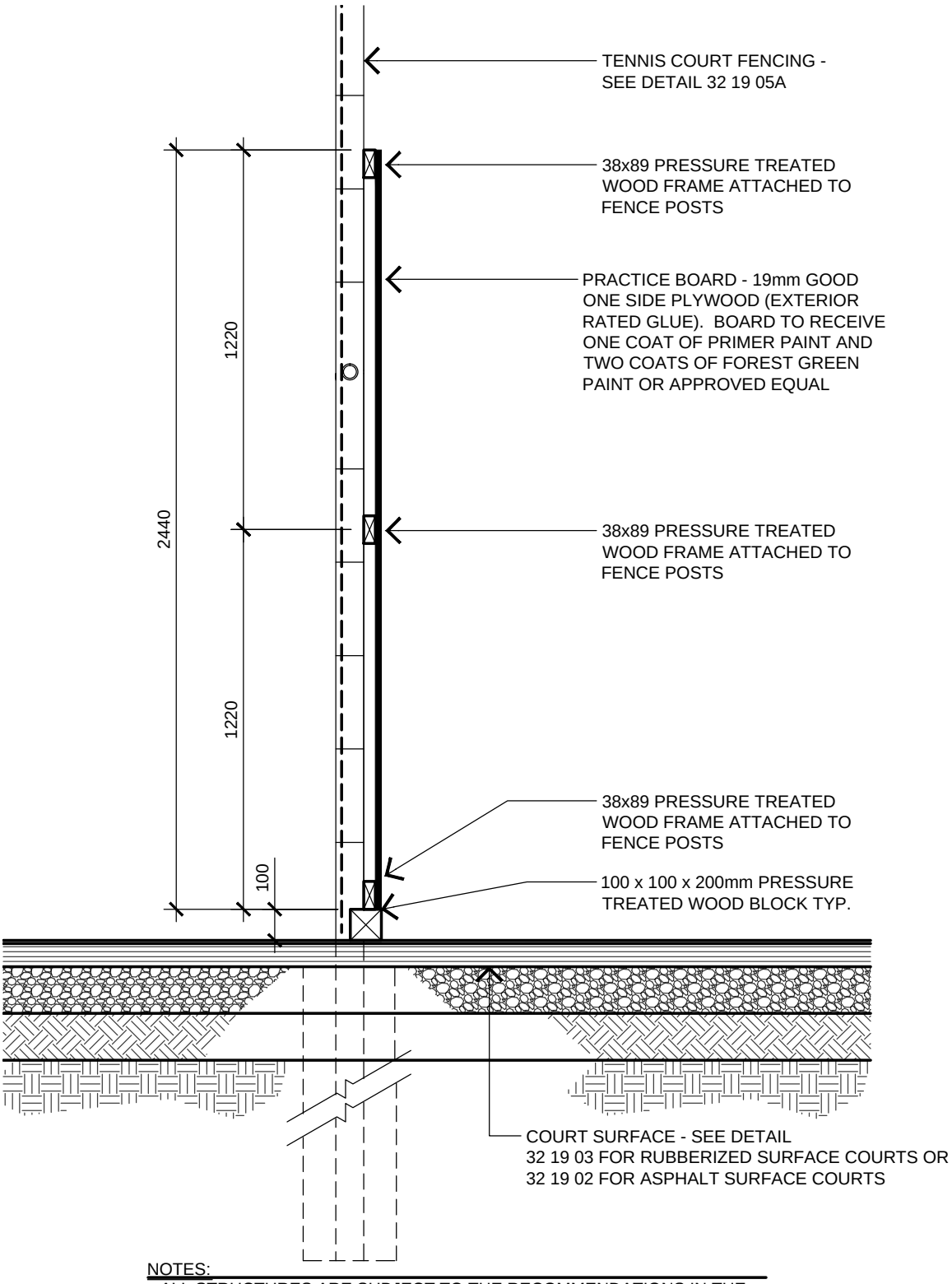
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

TENNIS/PICKLE BALL COURT GATE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 05B



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

SCALE: 1:20

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

TENNIS/PICKLE BALL COURT PRACTICE BOARD

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 05D

1.0 GENERAL

1.1 Description

.1 The final grading of basketball courts and supply and installation of basketball posts, backboards and goals.

1.2 Related Specifications

.1	Concrete Forming and Accessories	Section 03 10 00
.2	Concrete Reinforcing	Section 03 20 00
.3	Cast-in-Place Concrete	Section 03 30 00
.4	Aggregate Materials	Section 31 05 17
.5	Site Clearing	Section 31 10 00
.6	Excavation and Fill	Section 31 23 00
.7	Subgrade Preparation	Section 31 24 14
.8	Cement Stabilized Subgrade	Section 31 32 15
.9	Aggregate Base Courses	Section 32 11 23
.10	Landscape Grading	Section 32 91 19
.11	Turf & Grasses	Section 32 92 00

1.3 FIBA Guide to Basketball Facilities

.1 Court line marking in accordance with the current guidelines except the court dimensions can be smaller than the designated 28 m x 15 m.

2.0 PRODUCTS

2.1 Basketball Posts, Backboard and Goal

.1 Post 139.7 mm OD schedule 40 with 6 mm wall thickness, 2903 mm offset, 6 mm triangle upper plate, 6 mm top cap, fan-shaped 6 mm steel backboard 889 mm x 1372 mm, 6 mm goal frame, goal rim, all hot-dipped galvanized.

.2 Goal netting white nylon.

.3 Submit shop drawings for approval before fabrication.

2.2 Cast-in-place Concrete Pile

.1 Reinforcement bars Grade 300 primed rebar, 3-15M verticals full height 10M ties at 300 mm O.C..

.2 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

3.0 EXECUTION

3.1 Final Grading

.1 Final asphalt cross court cross-slope optimum 0.8%, minimum 0.7%, maximum 1.0% slope. Basketball courts can be designed to slope from centreline to goals if required for proper drainage.

3.2 Posts

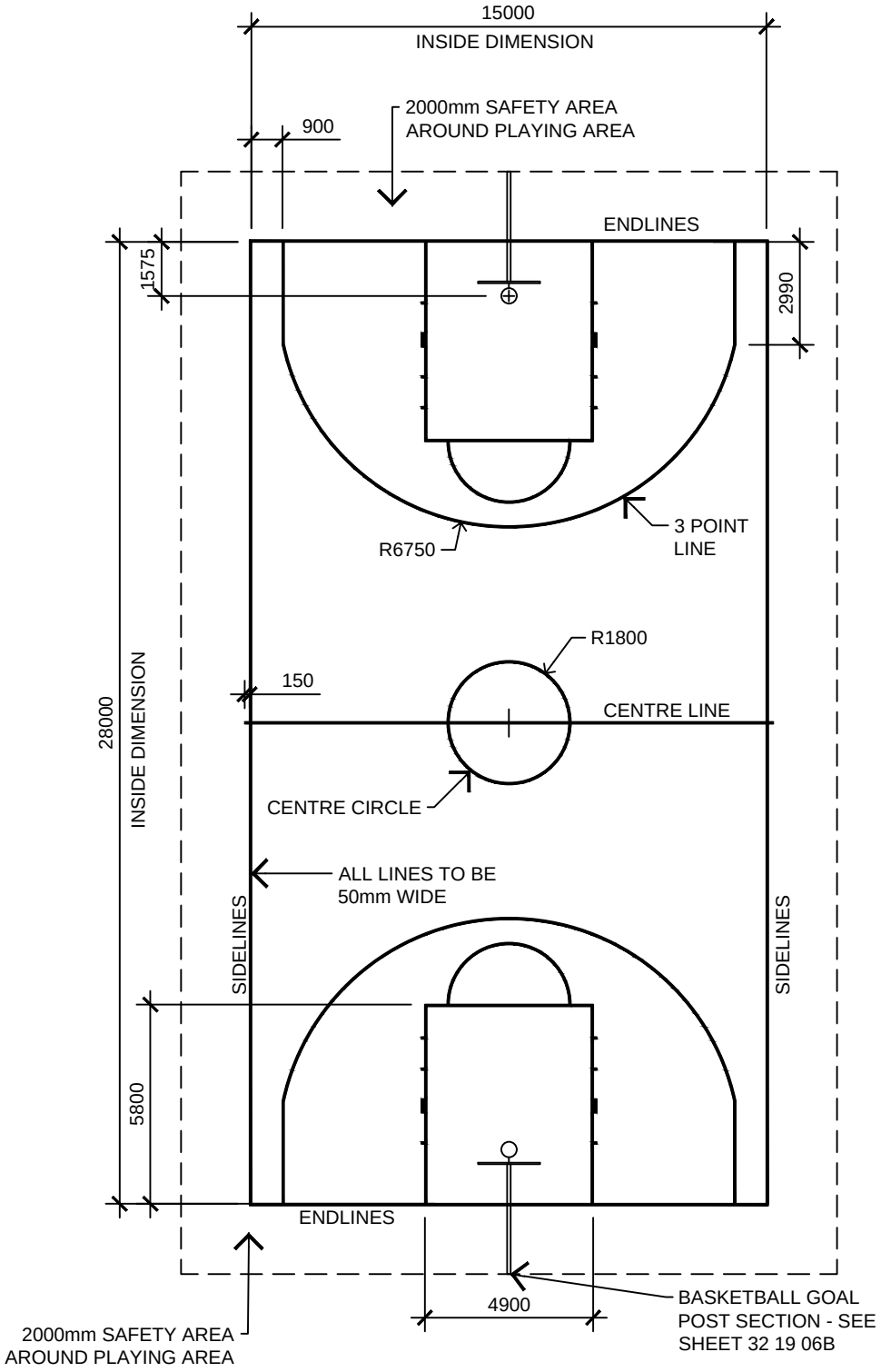
.1 Install true to lines and levels.

.2 All welds continuous, ground smooth.

.3 All steel hot dipped galvanized zinc-coated at minimum 550 g/m2.

.4 Basketball concrete piles 300 mm diameter x 2500 mm deep, 3-15M verticals full height 10M ties at 300 mm O.C., flush to finished asphalt, cover with rubberized surface.

- END OF SECTION 32 19 06 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:200

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
21/05/21	Engineering Municipal Standards Update

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

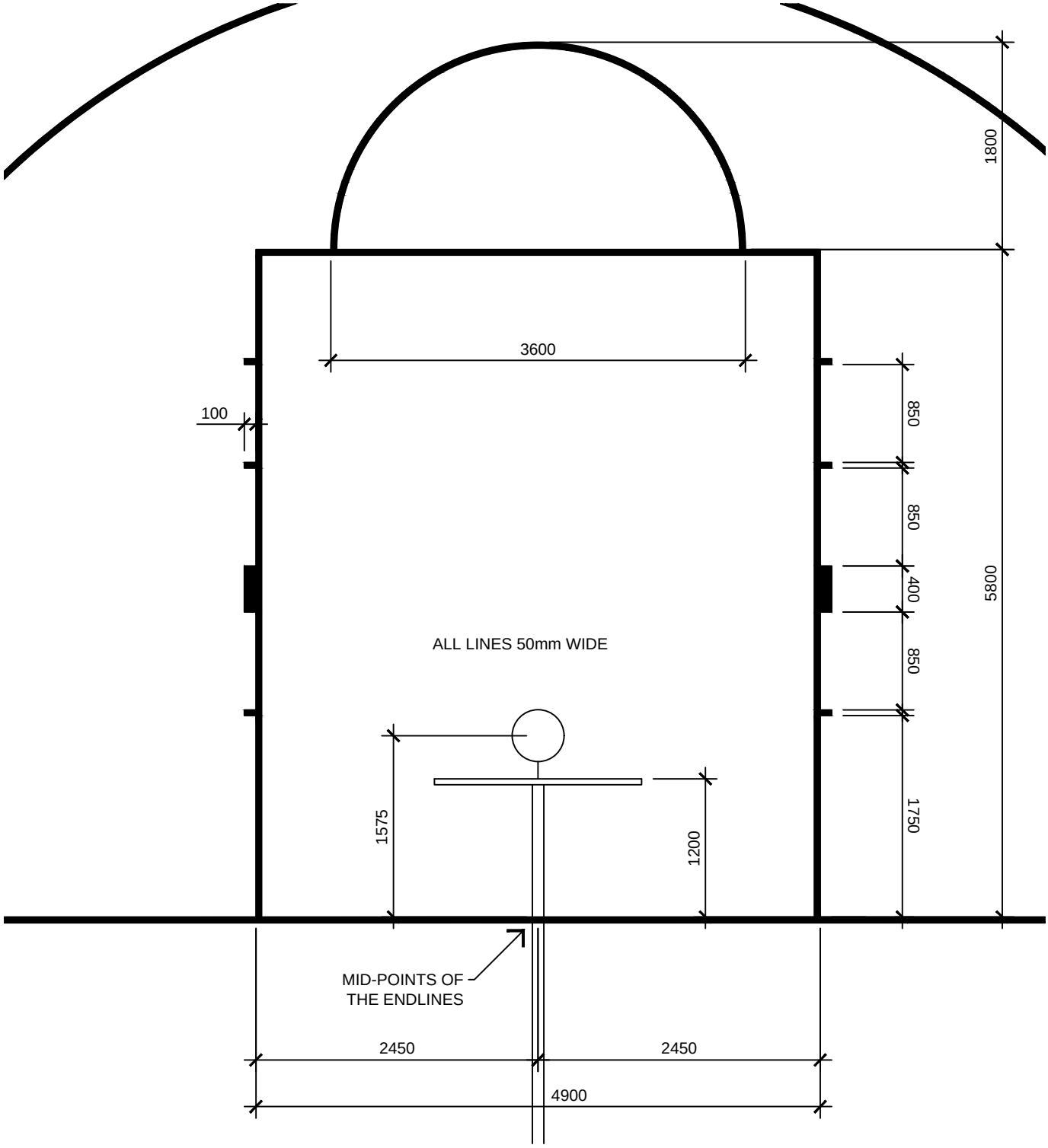
BASKETBALL COURT
PLAN VIEW

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 06A



PLAN VIEW

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
17/05/21	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

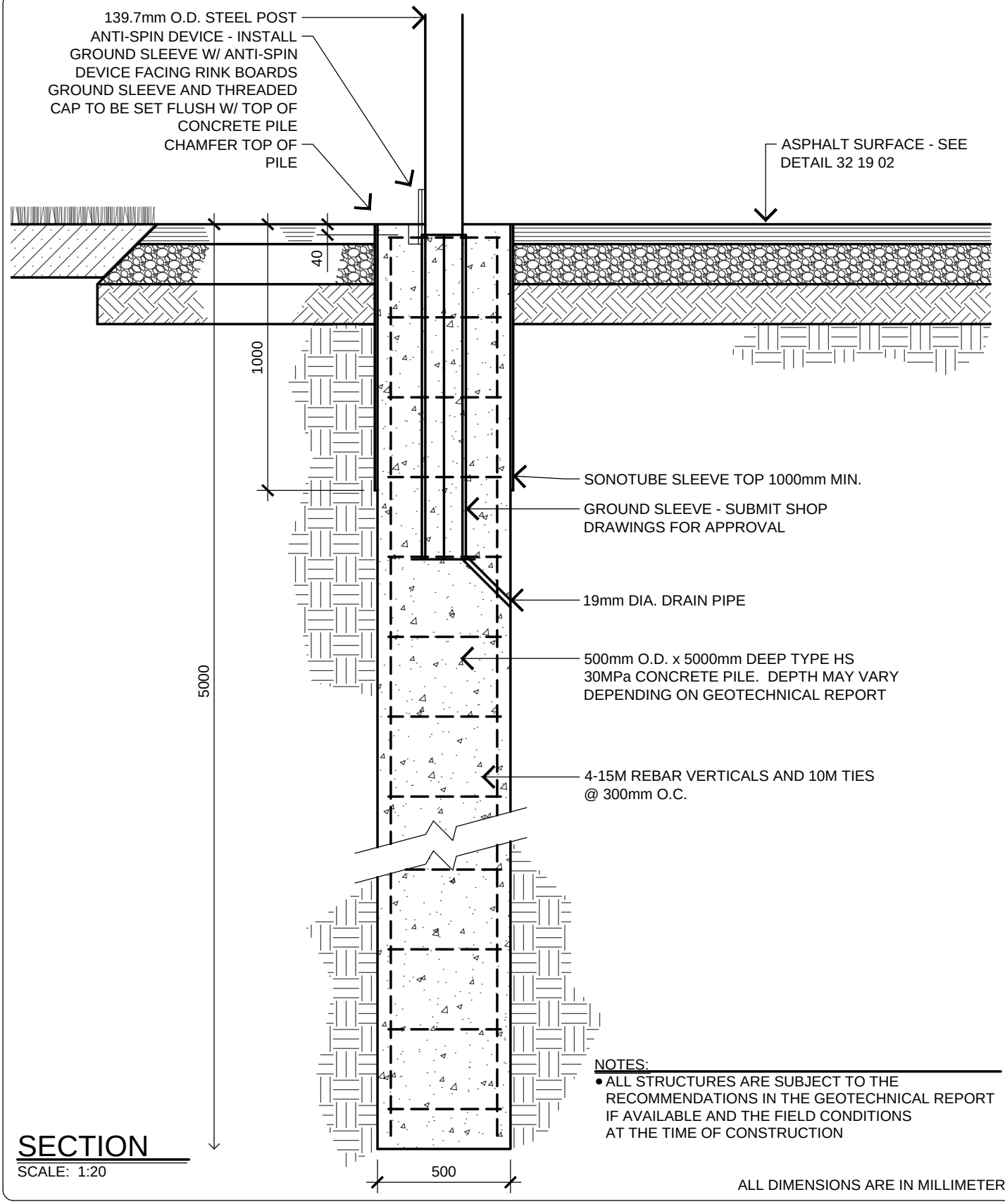
BASKETBALL COURT
KEY LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 06B



SECTION

SCALE: 1:20

NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

BASKETBALL GOAL PILE SECTION

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 19 06C

1.0 GENERAL

1.1 Description

.1 The site grading, subgrade preparation, supply and installation of subdrains, curbs, sand surface course, posts and nets, boundary marking tape and storage shed for sand volleyball courts.

1.2 Related Specifications

.1	Concrete Forming and Accessories	Section 03 10 00
.2	Concrete Reinforcing	Section 03 20 00
.3	Cast-in-Place Concrete	Section 03 30 00
.4	Aggregate Materials	Section 31 05 17
.5	Site Clearing	Section 31 10 00
.6	Excavation and Fill	Section 31 23 00
.7	Subgrade Preparation	Section 31 24 14
.8	Cement Stabilized Subgrade	Section 31 32 15
.9	Aggregate Base Courses	Section 32 11 23
.10	Landscape Grading	Section 32 91 19
.11	Turf & Grasses	Section 32 92 00

2.0 PRODUCTS

2.1 Subdrains

.1 Perforated Pipe and Fittings within volleyball court footprint: High Density Polyethylene (HDPE) 200 mm (8”) Double walled Dual Wall Corrugated perforated, 320 kPa stiffness, certified to CSA B182.8, complete with couplers, end outlets, wyes as required with a mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

.2 Solid Pipe and Fittings outside volleyball court curb: High Density Polyethylene (HDPE) Double walled Dual Wall Corrugated non-perforated, 320 kPa stiffness, certified to CSA B182.8, complete with couplers, end outlets, wyes as required in sizes 200 mm (8”) 250 mm (10”) and 300 mm (12”) mainlines with couplers, end outlets, wyes, caps as required.

.3 Follow manufacturer’s specifications for joints.

.4 Flushing port boxes to be high strength molded plastic green irrigation boxes 12" X 20" X 12" deep (300 mm X 500 mm X 300mm deep) rectangular complete with extensions as required for best fit.

.5 Boxes shall be installed with minimum 200 mm depth 20 mm washed subdrain aggregate at the bottom of box. Submit test results and sample of washed subdrain aggregate for approval.

.6 Boxes shall have a locking lid.

.7 The priority will be to tie the subdrain mainline into the City's storm water system as per the City of St. Albert Municipal Engineering Standards. It cannot daylight unless approved by the City. If approval is given for an alternative the following may apply:

1 Rodent Screen on solid pipe daylight end. Submit product sheet for approval.

.2 Rocks to surround daylight end, minimum diameter 300 mm rip rap.

.8 Geotextile Fabric: mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

2.2 Washed Filter Aggregate

.1 20 mm Washed Rock:

.1 Gradation to be within the following limits.

Sieve Size	% Passing By Weight
20.0 mm	100
14.0 mm	90 - 100
10.0 mm	45 - 75
5.0 mm	0 - 15
2.5 mm	0 - 5

.2 Submit sieve test for approval.

2.3 Curbs

.1 Timber: Alkaline Copper Quaternary (ACQ) Pressure treated 150 mm X 150 mm accordance with CSA-080. 2 timbers required to have a total dimension of 150mm wide x 300mm deep, see drawing for reference.

.2 Pins: Grade 300 20M rebar 900 mm long, primed.

.3 Predrilled, countersunk and dowelled.

2.4 Sand

.1 Coarse White Beach Volleyball Sand:

.1 double washed and free of silt and clay.

.2 particle size between .5 and 1.0 mm.

.3 particle shape sub-angular to resist compaction.

.4 tan to white coloured.

.5 granite based (non-calcareous – no calcium or limestone).

.2 Submit test results and sample for approval.

.3 Geotextile Fabric: mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

.4 Equipment: Graders, loaders, rollers and other equipment of adequate design and capacity to produce a sand surface course as specified.

2.5 Posts and Nets

.1 Outdoor volleyball system complete sets, including but not limited to: posts, sand safety pads complete with City of St. Albert logo (artwork to be provided), sand anchors, sand ratchets, crank handles, sand nets, tight right net tension gauges, net antennae and ribbons. Submit shop drawings for approval.

2.6 Boundary Line Marking Tape

.1 Tape 51 mm (2 inch) premium boundary lines 1 set red for 9 m X 18 m court for triples, fours and sixes and 1 set green for 8 m X 16 m for doubles for each court complete with rings at all corners and centerlines with bungee cords to tie down to corner and centerline anchors.

.2 Corner and centerline anchors: Hot Dipped Galvanized Ground Screws 66 mm diameter X 550 mm long.

2.7 Storage Shed if Deemed to be Necessary

.1 In some locations the City will require a storage shed in close proximity to the sand volleyball courts – in other locations a storage shed will not be required.

.2 Self-framing Metal Storage Shed 2.4 m (8') W x 3.1 m (10') L x 2.4 m (8') H cottage roof. Submit shop drawings with lockable solid metal insulated door, crash bar, skylight, no power hook-up. Colours to be selected by City.

.3 Obtain building permit.

2.8 Concrete

.1 Type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

2.9 Rebar

.1 Piles grade 300 primed rebar, 4-15M verticals full height 10M ties at 300 mm O.C.

.2 Building slab grade 300 primed 15M bars at 300 grid set at 75 mm from top surface and 75 mm from edges.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for curb, subdrains, sand and storage shed areas to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

3.2 Subdrains

.1 Trench and pipe minimum grade 1%. Minimum trench width 400 mm. Minimum subdrain aggregate cover 50 mm.

.2 Geotextile to fully overlap 300 mm at top of trench.

.3 All valve boxes shall be installed flush with final grade as indicated on the drawings.

.4 Valve boxes shall be installed with adequate clearance above the pipe and on a firm base so as not to contact the pipe with settlement or upon being depressed. Valve boxes shall be supported and able to support the weight of expected traffic.

.5 Install aggregate subdrain rock in bottom of valve box. Provide minimum 100mm clearance between bottom pipe opening and top of gravel. Depth of gravel shall be minimum 200mm.

.6 Ensure the pipe properly enters the City’s storm system.

3.3 Curbs

.1 Install true to lines and levels on compacted subgrade, compacted to 98% standard proctor density.

.2 Install curbs with pin spacings of 600 mm.

.3 Ensure the pins are countersunk a minimum of 20 mm below the top of the curbs and the dowel is full depth and trimmed smooth.

3.4 Posts and Nets

.1 Install true to lines and levels.

.2 Concrete footing 500 mm diameter x 4000 mm deep, 4-15M verticals full height 10M ties at 300 O.C., sonotube upper 1000 mm. Top of footing at 425mm below final sand elevation. Cast-in anchor system.

.3 Install sand anchor and volleyball post.

.4 Supply padding to City for storage.

.5 Install nets to men's height and check height from final sand elevation.

.6 Install antennae on nets.

.7 Provide training to City staff on operations.

3.5 Sand

.1 Once the subgrade is approved install the geotextile with minimum 150 mm overlaps on seams.

.2 Deposit uniformly in multiple 150 mm compacted lift, ensuring that materials are uniform in consistency, rototill if necessary.

.3 Float surface to achieve a smooth surface.

.4 Bring the moisture content of the sand to new optimum and compact to 95% Standard Proctor Density.

3.6 Boundary Line Marking Tape

.1 Corner anchors screwed in flush to final subgrade elevation with offset calculated to keep tape tight with bungees for doubles court size. Submit shop drawing for approval.

.2 Centreline anchors screwed in flush to final subgrade elevation without an offset to keep tape tight with bungees for doubles court size. Submit shop drawing for approval.

.3 Install line marking colour selected by the Owner.

3.7 Storage Shed if Deemed to be Necessary

.1 Poured-in-place concrete slab sized for the storage shed, 200 mm full depth concrete 15M bars at 300 grid set at 75 mm from top surface and 75 from edges. No sump required. Steel trowelled finish. No sawjoints.

.2 Let concrete cure for at least 5 days then erect building according to the manufacturer's specifications.

3.8 Construction Completion

.1 Sand volleyball courts will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.9 Maintenance During Warranty Period

.1 Marking tape change-outs and sand floating will be performed by others.

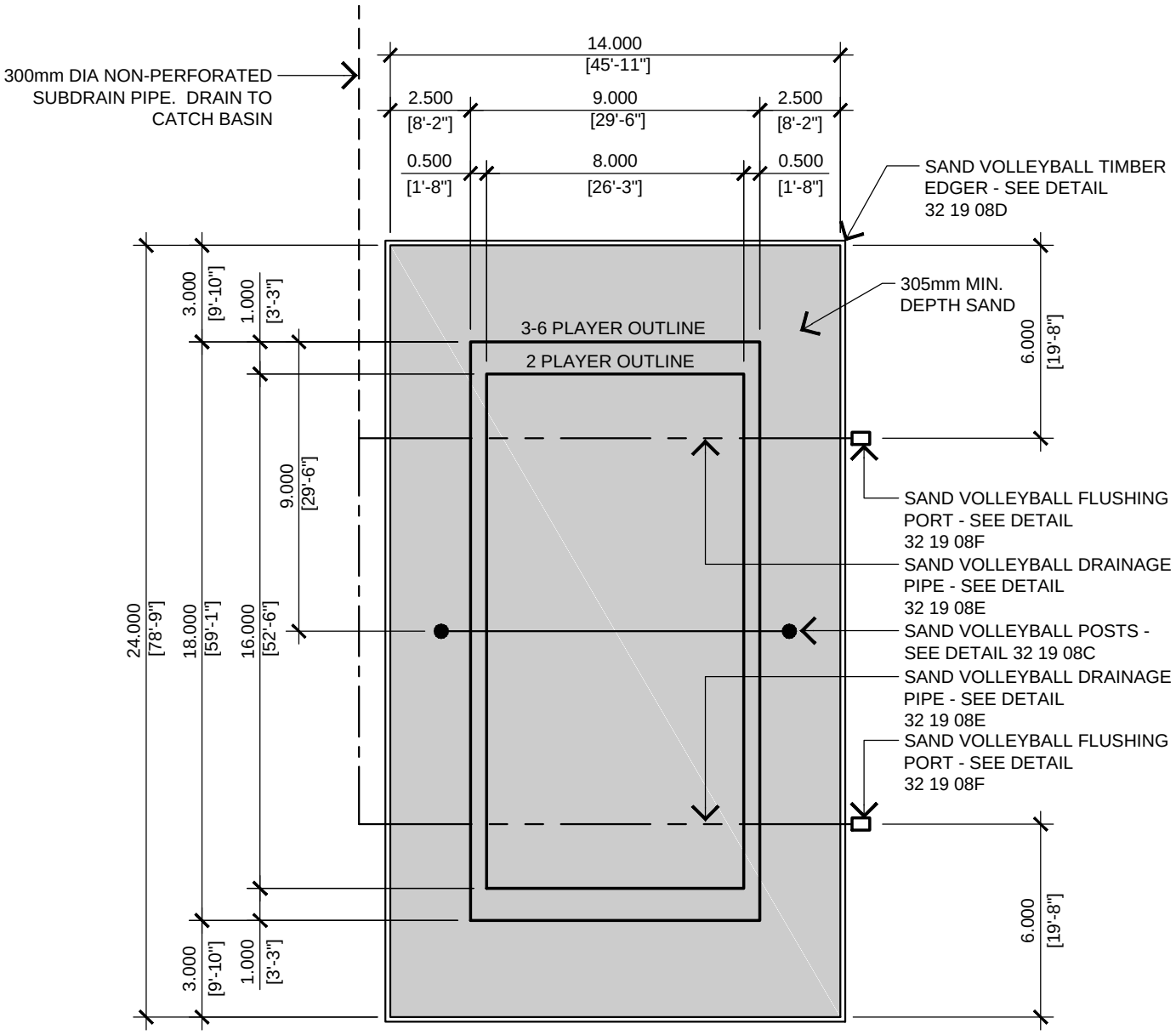
.2 Other maintenance including topping up sand depths is to be provided by the Contractor.

.3 Submit monthly maintenance logs to the City.

3.10 Final Acceptance

.1 Sand volleyball courts will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 19 07 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

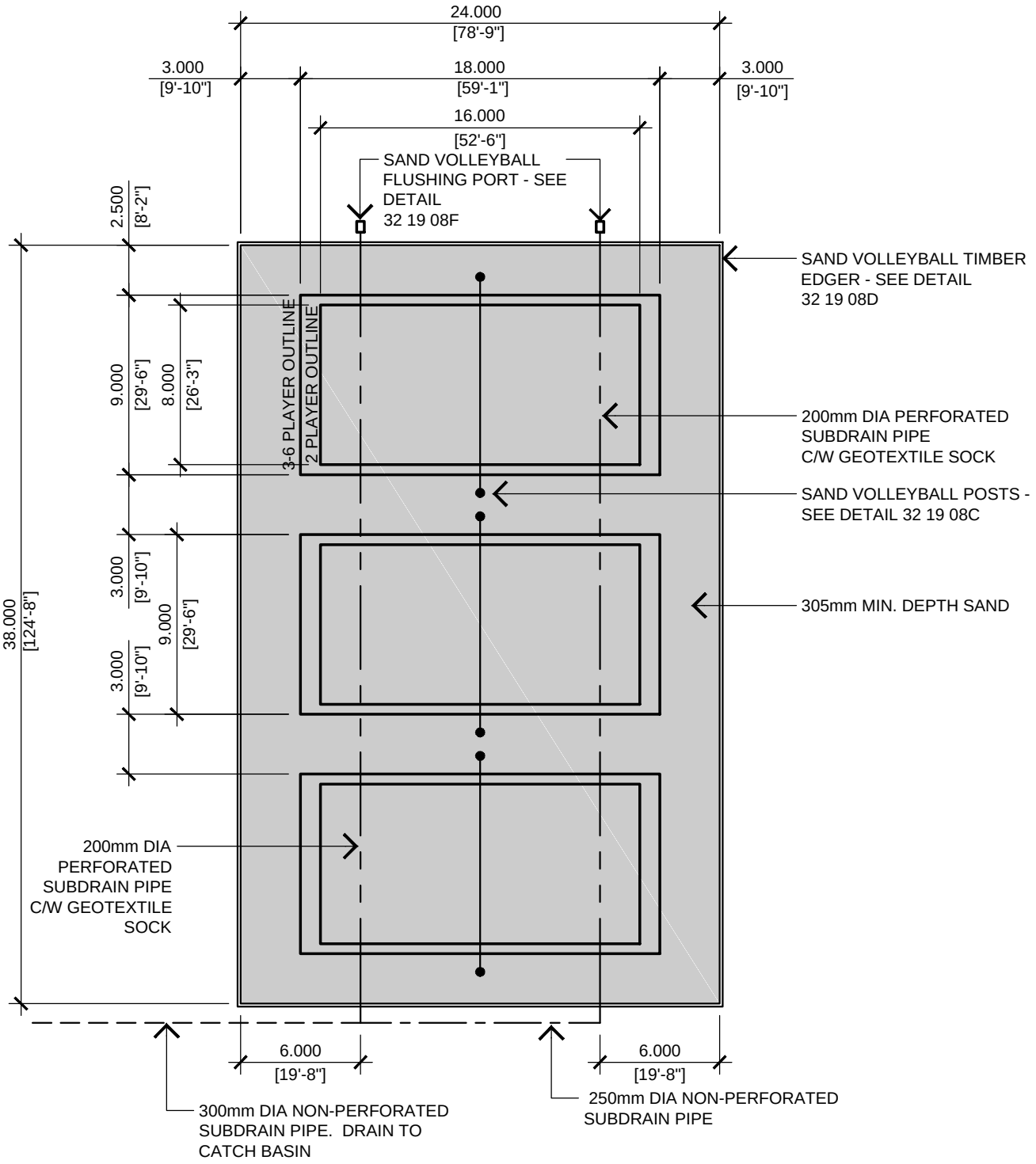
SAND VOLLEYBALL
SINGLE COURT LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: 1:200

Drawing Number:

32 19 07A



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

ALL DIMENSIONS ARE IN METERS (ALTERNATE UNITS IN IMPERIAL)

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

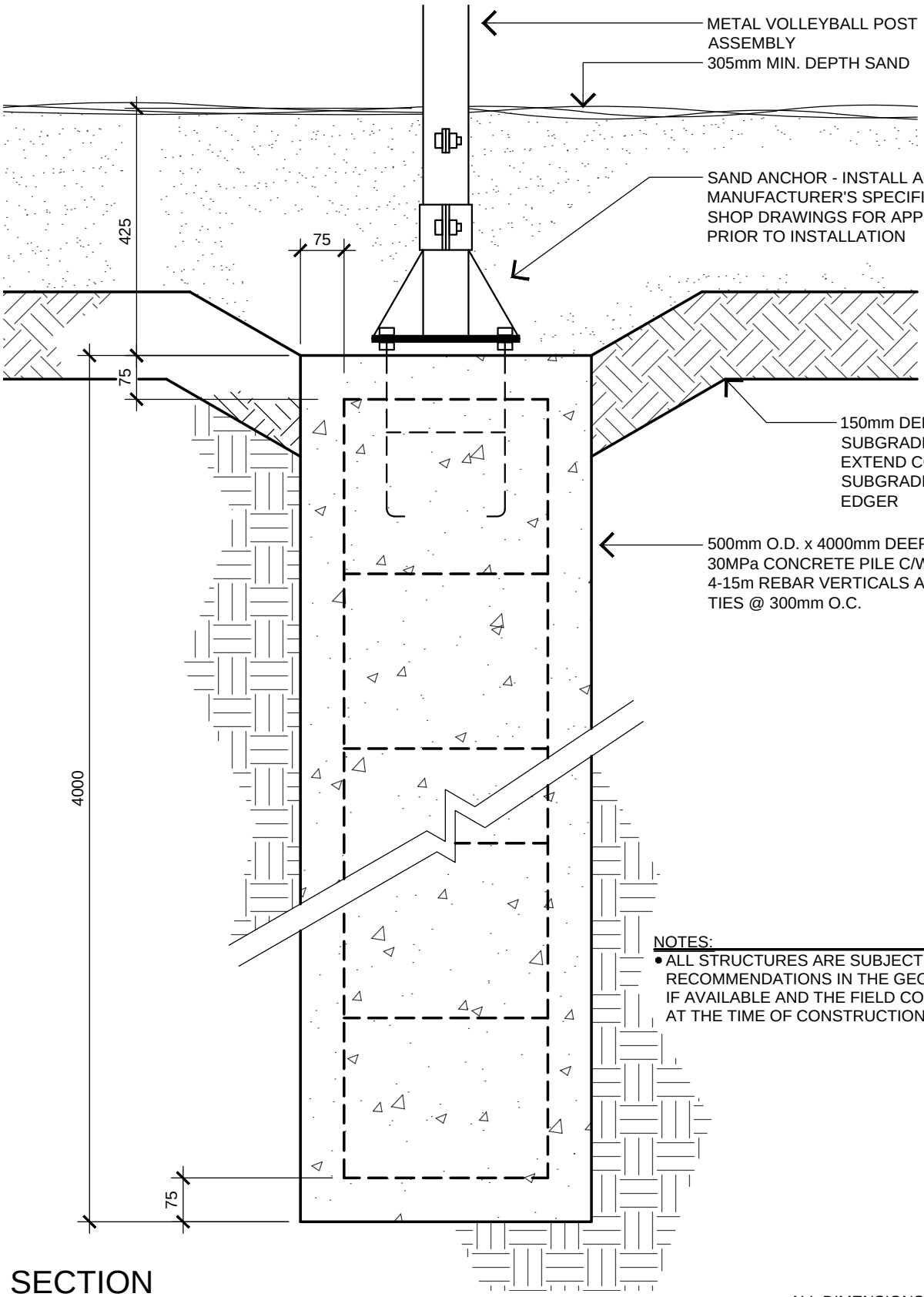
City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

SAND VOLLEYBALL MULTIPLE COURT LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: 1:300

Drawing Number: 32 19 07B



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

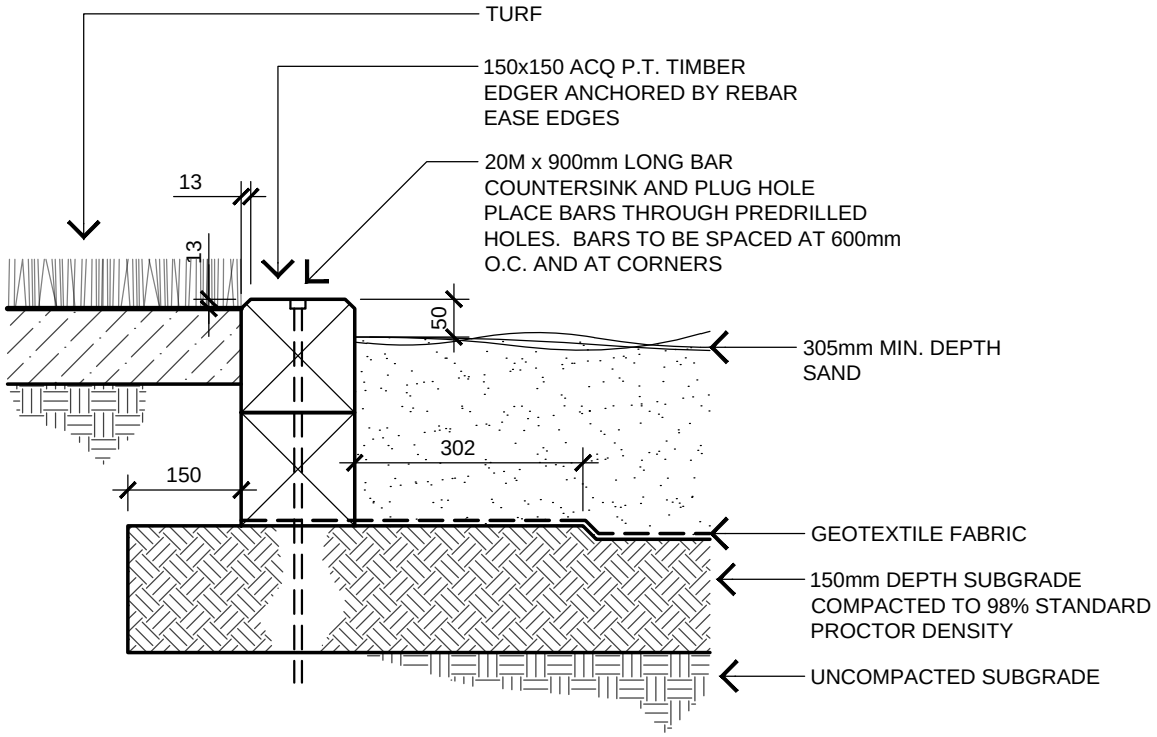
SAND VOLLEYBALL POSTS

Engineering Department

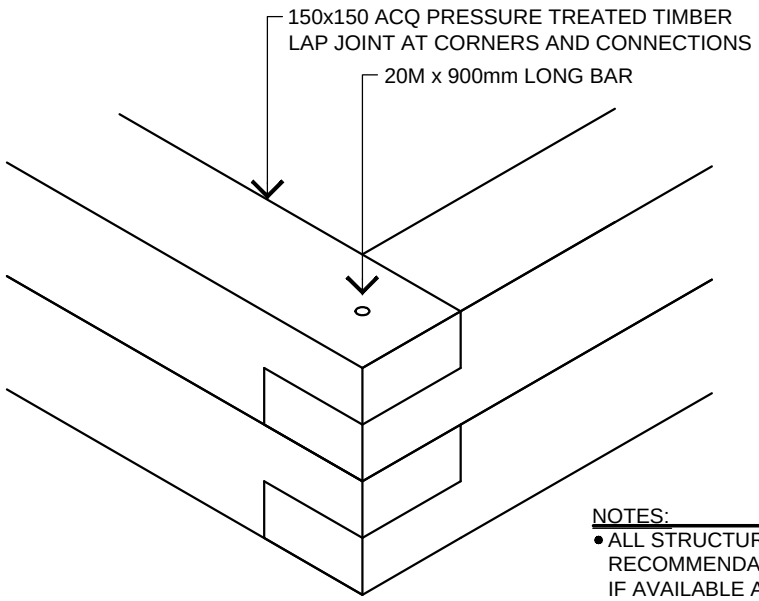
Date: 2017 08 25 | Scale: 1:10

Drawing Number:

32 19 07C



SECTION



ISOMETRIC

NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

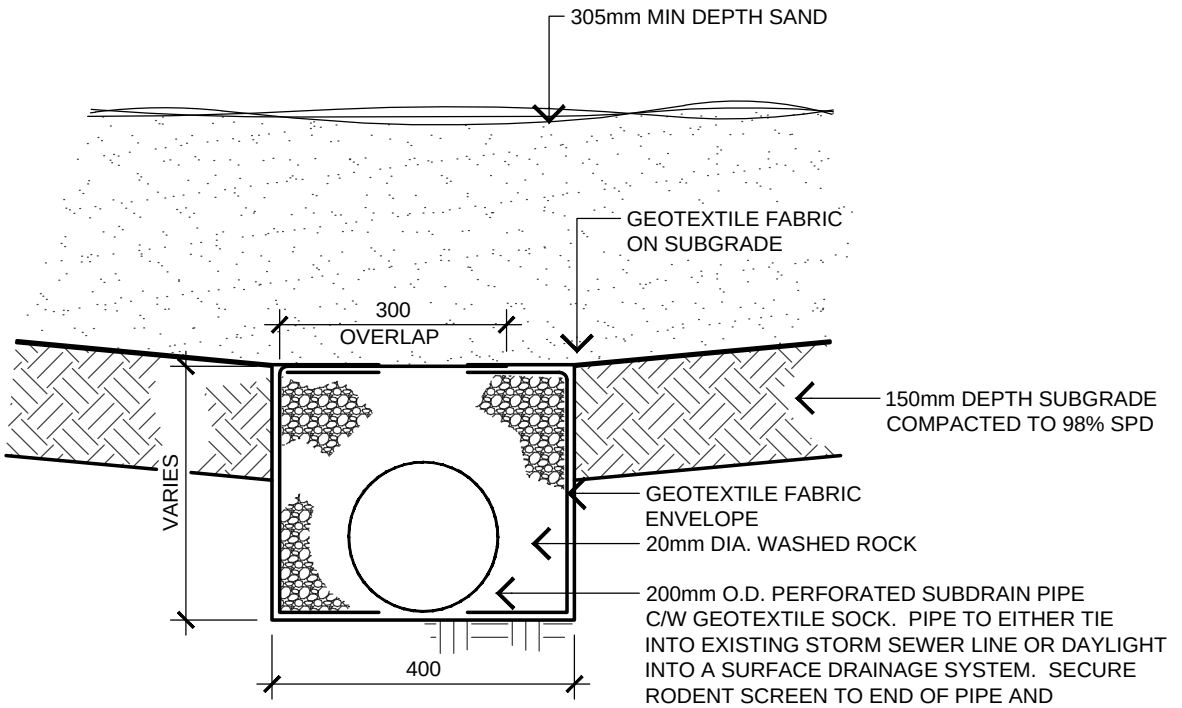
SAND VOLLEYBALL
TIMBER EDGER

Engineering Department

Date: 2017 08 25 | Scale: 1:10

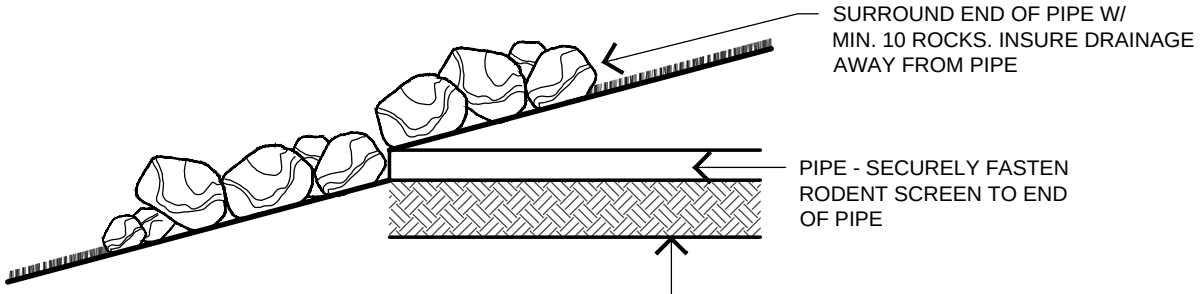
Drawing Number:

32 19 07D



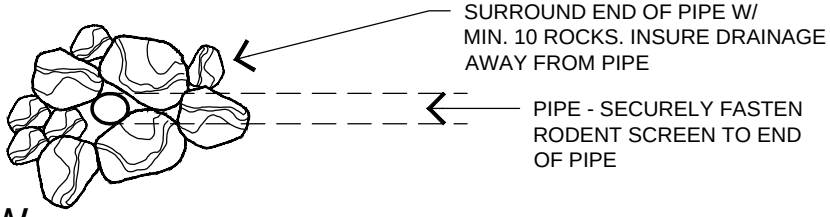
SECTION

SCALE: 1:10



SECTION

SCALE: 1:50



PLAN VIEW

SCALE: 1:50

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

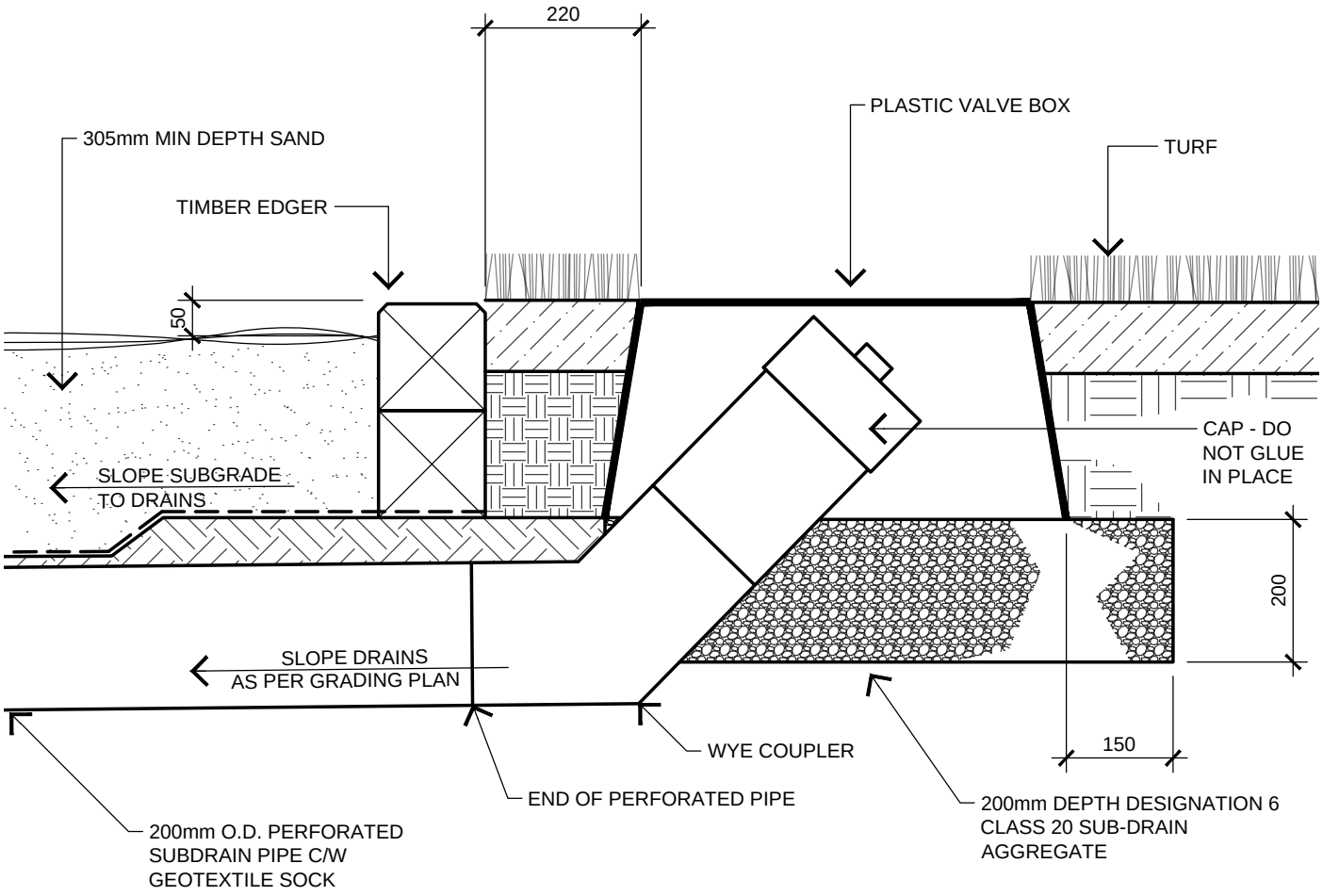
SAND VOLLEYBALL
DRAINAGE PIPE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 19 07E



SECTION

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

SAND VOLLEYBALL FLUSHING PORT

Engineering Department

Date: 2017 08 25 | Scale: 1:10

Drawing Number: 32 19 07F

1.0 GENERAL

1.1 Description

.1 The site grading, subgrade preparation, supply and installation of subdrains, curbs, sand surface course for sand jump pits.

1.2 Related Specifications

.1	Concrete Forming and Accessories	Section 03 10 00
.2	Concrete Reinforcing	Section 03 20 00
.3	Cast-in-Place Concrete	Section 03 30 00
.4	Aggregate Materials	Section 31 05 17
.5	Site Clearing	Section 31 10 00
.6	Excavation and Fill	Section 31 23 00
.7	Subgrade Preparation	Section 31 24 14
.8	Cement Stabilized Subgrade	Section 31 32 15
.9	Aggregate Base Courses	Section 32 11 23
.10	Landscape Grading	Section 32 91 19
.11	Turf & Grasses	Section 32 92 00

2.0 PRODUCTS

2.1 Subdrains

.1 Perforated Pipe and Fittings within jump pit footprint: High Density Polyethylene (HDPE) 200 mm (8”) Double walled Dual Wall Corrugated perforated, 320 kPa stiffness, certified to CSA B182.8, complete with couplers, end outlets, wyes as required with a mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

.2 Solid Pipe and Fittings outside jump pit curb: High Density Polyethylene (HDPE) Double walled Dual Wall Corrugated non-perforated, 320 kPa stiffness, certified to CSA B182.8, complete with couplers, end outlets, wyes as required in sizes 200 mm (8”) 250 mm (10”) and 300 mm (12”) mainlines with couplers, end outlets, wyes, caps as required.

.3 Follow manufacturer’s specifications for pipe joints.

.4 The priority will be to tie the subdrain mainline into the City's storm water system as per the City of St. Albert Municipal Engineering Standards. It cannot daylight unless approved by the City. If approval is given for an alternative the following may apply:

1 Rodent Screen on solid pipe daylight end. Submit product sheet for approval.

.2 Rocks to surround daylight end, minimum diameter 300 mm rip rap.

.8 Geotextile Fabric: mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

2.2 Washed Filter Aggregate

.1 20 mm Washed Rock:

.1 Gradation to be within the following limits.

Sieve Size	% Passing By Weight
20.0 mm	100
14.0 mm	90 - 100
10.0 mm	45 - 75
5.0 mm	0 - 15
2.5 mm	0 - 5

.2 Submit sieve test for approval.

2.3 Curb Alternatives

.1 Timber Edge

.1 Timber: Alkaline Copper Quaternary (ACQ) Pressure treated 150 mm X 150 mm accordance with CSA-080.

.2 Pins: Grade 300 20M rebar 900 mm long, primed.

.3 Predrilled, countersunk and dowelled.

.2 Cast-in-place Concrete Curb

Normal Portland cement, Type 10, 200 mm wide X 400 mm deep, 4-15M bars grade 300 primed rebar, concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm + 25, maximum water ratio 0.45.

2.4 Sand

.1 Coarse White Sand

.1 double washed and free of silt and clay.

.2 particle size between .5 and 1.0 mm.

.3 particle shape sub-angular to resist compaction.

.4 tan to white coloured.

.5 granite based (non-calcareous – no calcium or limestone).

.2 Submit test results and sample for approval.

.3 Geotextile Fabric: mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

.4 Equipment: Graders, loaders, rollers and other equipment of adequate design and capacity to produce a sand surface course as specified.

3.0 EXECUTION

3.1 Grading

.1 Subgrade (for curb, subdrains, & sand) compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas compacted to 95% of Standard Proctor Density.

3.2 Subdrains

.1 Trench and pipe minimum grade 1%. Minimum trench width 400 mm. Minimum subdrain aggregate cover 50 mm.

.2 Geotextile to fully overlap 300 mm at top of trench.

.3 Ensure the pipe properly enters the City's storm system, if not previously approved by the City to daylight.

3.3 Curbs

.1 Install true to lines and levels on compacted subgrade, compacted to 98% standard proctor density.

.2 Install curbs with pin spacings of 600 mm.

.3 Ensure the pins are countersunk a minimum of 20 mm below the top of the curbs and the dowel is full depth and trimmed smooth.

3.5 Sand

.1 Once the subgrade is approved install the geotextile with minimum 150 mm overlaps on seams.

.2 Deposit uniformly in multiple 150 mm compacted lift, ensuring that materials are uniform in consistency, rototill if necessary.

.3 Float surface to achieve a smooth surface.

.4 Bring the moisture content of the sand to new optimum and compact to 95% Standard Proctor Density.

3.8 Construction Completion

.1 Long Jump Pit will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.9 Maintenance During Warranty Period

.1 Marking tape change-outs and sand floating will be performed by others.

.2 Other maintenance including topping up sand depths is to be provided by the Contractor.

.3 Submit monthly maintenance logs to the City.

3.10 Final Acceptance

.1 Long Jump Pit will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 19 08 -

1.0 GENERAL

1.1 Description

.1 This section specifies the supply and installation of outdoor rinks for St. Albert including rink lighting, water shack and rink boards.

.2 An architect and a structural engineer have been involved in the design and detailing of the current standard water shack – any modifications will need to be reviewed by the City.

.3 A geotechnical engineer and a structural engineer will need to be involved to design the lighting system pole base footings, water shack footings and slab, the rink board post footings and scoreboard post footings.

.4 Snowbank rinks can be flooded and ice made on natural turf surfaces and these may or may not have lighting and will need a water supply.

.5 An electrical engineer will need to be involved in the design of power supply, lighting distribution, sound system, security system and scoreboard (if any of these are required) and the water shack electrical.

1.2 Municipal Engineering Standards

.1 The current City of St. Albert Municipal Engineering Standards identify the planning, submission and approval process, and provide specifications and requirements for the design, materials and construction relating to all work in the City of St. Albert including road construction, land development, underground utilities and landscaping. The standards also identify materials testing, construction completion, maintenance during the warranty period and final acceptance of infrastructure projects which would apply to outdoor sports fields.

1.3 Related Specifications

.1 Section 31 10 00 Site Clearing

.2 Section 32 18 01 Natural Turf Sports Field

.3 Section 31 23 00 Excavation & Fill

.4 Section 31 23 33 Trenching & Backfilling

.5 Section 32 91 19 Landscape Grading

.6 Section 32 92 00 Turf & Grasses

1.4 Submission Requirements

.1 The design drawings and specifications are to be completed and submitted to the City by a landscape architect registered with the Alberta Association of Landscape Architects (AALA) with structural and electrical engineering sub-consultants registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

.2 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

1.5 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.7 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per each slab, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of a granular base course shall not exceed 150 mm, or as directed by the City Representative. The required percentage of maximum density of the granular base course is 98% unless specified otherwise.

2.0 PRODUCTS

2.1 Surface

.1 The intent is to have a natural turf inside and outside of the rink.

.2 Natural turf is preferred, alternate surfaces may be considered for multi-use / four season use at the discretion of the City such as concrete or asphalt.

2.2 LED Rink Lighting

.1 Pre-Engineered Rink Lighting system shall include the following minimum components:

.1 Two 50’/15m galvanized steel poles. Stress analysis and safety factors of poles shall comply with 2009 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (LTS-5);

.2 Concrete foundation base pilings sufficient to support each light pole for horizontal and vertical force at ground level. Pilings to be designed based on the soil parameters as outlined in the geotechnical report. Piling design must be certified by a Professional Engineer;

.3 Minimum 5 LED light fixtures per pole. Illumination and aiming to provide sufficient lighting levels to IESNA requirements for outdoor rink lighting. Minimum 200lux (Class IV) for recreational outdoor ice/roller hockey;

.4 Required electrical shall include remote electrical component enclosures and full pole length wiring harnesses. Enclosures shall be mounted near base of poles for accessibility and maintenance;

.5 Installation of contractor lighting cabinet including required contactors. Location of contractor cabinet to be placed inside water shack next to breaker panel;

.6 Lighting control to include manual/automatic switch as well as timer control. Location of switch and control to be inside water shack.

.2 Performance Requirements shall include the following:

.1 Lighting levels to minimize glare and control spill levels. Light spill to terminate at no greater than 25m from rink perimeter;

.2 All fixtures shall utilize glare and spill control devices including, but not limited to internal or external shields, and/or louvers. Fixtures shall also contain protection to minimize vandalism;

.3 All light fixtures to be LED;

.4 Contractor must agree to warranty light fixtures for a minimum of 10 years, unless otherwise approved by the City. Warranty to cover all parts and labour required to remove and replace fixtures including the fixtures themselves. Warranty does not cover any vandalism, repairs, or alterations by unauthorized persons;

.5 Upon substantial completion of the project, illumination measurements shall be taken and verified by the contractor and provided to the City. The illumination measurements shall be conducted in accordance with IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations).

2.3 Water Shack

.1 Water shack to match size requirements determined by the City of St. Albert.

.2 Shack must be sufficiently insulated for winter usage and heating to minimize heat loss as per detail drawing.

.3 Water shack and concrete slab must comply with all applicable local building code requirements.

.4 Contractor is to submit a shop drawing of the work for review by the City that must be certified by a Professional Engineer.

.5 Contractor to complete all required permitting and associated inspections as required for construction and/or on behalf of the City.

.6 Shack equipment shall include the following components:

.1 Door lock to be sliding barrel style with bolt latch. City will provide padlock and keying;

.2 Electric heat tracing and insulation to be installed on the 50mm waterline from surface level to a depth below frost level;

.3 Electric heater to be high-mounted. Must be a minimum of 5kW. Acceptable products include Ouellet brand or otherwise approved by City. Include thermostat control to be mounted on wall. Heater to be deactivated when entrance door is opened via a door switch.

.4 Interior lighting to be single weatherproof 2xT8 Fluorescent with guard or approved alternate;

.5 Exterior lighting to be installed on door side. Photocell control, LED, 30-50W fixture; acceptable products include Kenall FN9L or approved alternate;

.6 Ventilation fan to be installed and thermostatically controlled as identified in related items;

.7 Flood hose rack to be installed as per City of St. Albert detail. To be fabricated out of steel and painted as approved by City;

.8 Flood hose to be 25mm multi-purpose, rated to 200psi. 50mm Shut-off valve to be installed on water service, upstream of flood hose;

.9 Hose length shall be a minimum of 45m in order to reach from inside of rink shack to furthest rink corner plus 5.0m;

.10 Hose nozzle to be included as approved by City;

.11 All water transition fittings, elbows, couplings, to be brass or stainless steel as approved by City;

.12 Shack to be equipped with Fire Extinguisher;

.13 Equipment list to be included in shop drawing submission for review and approval of all items.

2.4 Water Shack Electrical Requirements

.1 Electrical equipment shall include the following components:

.1 Provide 240V, 200 Ampere utility service, provide riser and secondary conduits as required by utility;

.2 Coordinate with Utility to provide metering on Exterior of shack or pad mounted transformer, location to be determined in field;

.3 Provide a 200A Service Rated Breaker panel, 42 Circuits, 22 KAIC:

.1 Acceptable products are Schneider Electric, Eaton Cutler Hammer, Siemens or otherwise approved by City;

.2 15A, 1 pole breaker for interior shack lighting (switched). Single weatherproof 2xT8 Fluorescent with guard;

.3 15A GFI breaker and inclusion of 4 receptacles;

.4 30A, 2 pole breaker for heater (provide with thermostat Set to on @ 16°C, and off at 20°C);

.5 20A, 1 pole breaker for heat trace;

.6 15A, 1 pole breaker, exterior light (photocell, LED, 30-50W fixture; acceptable products include Kenall FN9L.

.7 15A breaker for Exhaust Fan (controlled by thermostat, set to 21°C)

.8 60A, 2 pole, 240V for Rink Lighting Control Panel, Control Panel provided by lighting vendor.

.2 All wiring and installation must comply with CEC and Alberta Standata requirements.

.3 Electrical requirements include installation of a new 200A, 240V, 3 wire electrical service line to the proposed water shack building location. Minimum bury depth to be 900mm or as required by service provider.

.4 Supply and install transformer, mounting or pad location to be confirmed in the field as approved by the City;

.5 Contractor to complete all required permitting and associated inspections as required for construction and/or on behalf of the City as required.

2.5 Rink Boards

.1 Rink boards to meet the following criteria with locations as shown on the drawings:

.1 25.64 lineal meters of 1.2 m high, dasher boards designed specifically for outdoor use. Overall rink dimensions 175’ (53.34m) x 75’ (22.86m) ;

.2 3 each – 30” (76.2cm)wide access gates with wear resistant latches, push button ice-side openers, self-lubricating lift-off hinges;

.3 2 each – Gates equipped with heavy duty adjustable hinges, double self-contained sliding closure bars, and plastic covered steel threshold. Threshold height to be confirmed by City prior to fabrication;

.4 Gate access includes installation of exterior access ramp to threshold height as approved by City:

.1 120” (3.04m) – double 60” (1.52m) leaf straight sections

.2 Hinges are heavy duty plated steel with incorporate grease ports, manufactured to allow easy adjustability of the gate leafs

.6 Official line markings on dasher boards with colour matched zinc plated fasteners;

.7 All hardware including but not limited to nuts, bolts and washers to be stainless steel.

.8 Concrete pilings to support the dasher system and chainlink fencing. Piling design must be certified by a Professional Engineer;

.9 Rink package including dasher board system to be installed by an approved manufacturer/supplier;

.10 Entire rink package including fencing and players boxes to be fully warrantied for a period of 2 years to cover defects, installation, and all other items except ` vandalism.

.2 Supply and Installation of rink fencing to meet the following criteria:

.1 12’ (3.65m) high x 6 gauge chain link fence for the corners and ends of the dasher system. Total length to be at least 33m on each end of the rink to ensure coverage around both rink corners;

.7 Supply and Installation of players boxes to meet the following criteria:

.1 Shall include two 24’ x 5’ (7.31m x 1.52m) player’s boxes with fully covered top and rear side, including open ends for walkthrough access. Player’s boxes to allow for gate access direct to ice;

.2 Roof design must be sufficiently tapered upwards from front to back to mitigate snow loading and must be minimum 7ft at lowest taper;

.3 Player’s boxes to be fabricated from wood and painted to approved colour by City;

.4 Player’s boxes must be attached to dasher board system as per manufacturers’ requirements;

.5 Floor of boxes to be raised and covered with ½” vulcanized black rubber support matting. Boxes to be installed on prepared subgrade;

.6 Player’s boxes to include bench seating and water bottle rack. Water bottle rack may be incorporated into dasher board system;

2.6 Rink Board System Thresholds and Ice Dams

.1 Gate thresholds shall be manufactured from high-density stress relieved, polyethylene. Thickness shall be 1” x 6” (25mm x 150mm) wide, in accordance with specifications. Thresholds cover the entire width of the gate opening. Fasteners are countersunk 0.500” (12 mm) deep and the front edge of the threshold has a radius of 0.375” (9mm).

.2 Ice dams are 1” (25 mm) wide x the width of the dasher board system. Height is optional dependent upon rink design and circumstances.

2.7 Rink Board System Hardware

.1 Fasteners are zinc plated 0.250” x 20” (6.53mm x 508mm) machine screws color-matched to the board surface.

.2 All steel hardware is hot dip galvanized or electroplated as required.

.3 Access gate latches are fabricated from 0.375” x 2” (9mm x 50mm) strap steel, easily opened by a player’s gloved hand with downward movement.

.4 Access gate hinges are self-lubricating lift off type.

.5 Machine gate hinges are zinc plated or galvanized heavy-duty adjustable type.

.6 Ice side opener devices shall be installed at all locations where protective shielding is present.

.7 Heavy duty spring loaded castor wheels of the phenolic or pneumatic type are to be installed at all gate locations exceeding 48" (1220 mm) in width.

.8 Closure bars are to be sliding type manufactured from 1.5" x 3" x .100" (37mm x 75mm x 2.5mm) H.S.S. tube secured to one leaf of the machine gate. This slide bar will slide into custom brackets located on opposite leaf. Two closure bars per gate will be used.

2.8 Rink Board System Spectator Protective Shielding

.1 All mesh is to be installed to specified height, 6 gauge 1.75" x 1.75" (45mm x 45mm) galvanized steel fabric.

.2 All protective mesh and accessories to be galvanized to CSA-G-164.

.3 Vertical support stanchions to be constructed of 2.375" (60mm) diameter .083" wall galvanized pipe.

.4 Vertical support stanchions to be inserted through center of top sill and rest on galvanized steel clip fastened to center stringer of dasher board.

.5 Spacing of vertical support stanchions not to exceed 96" (2440mm) O.C on straight areas of rink, and not to exceed 72" (1830mm) in radius of rink.

.6 Horizontal frame members and continuous top rail to be 1.625" (40mm) diameter .083" wall galvanized pipe.

.7 Radius top rail is to be rolled and installed in an uninterrupted manner using swedge ends.

.8 Intermediate support tube to be installed in back straights of rink @ 24" (610mm) above sill.

.9 9 gauge aluminum tie wires to be used to fasten mesh to support system.

.10 All hardware and accessories to be galvanized steel (aluminum is not an acceptable substitute, excluding tie wires).

2.9 Rink Board System Players' Boxes

.1 Interior of boxes are to be of similar construction as ice-side of dasher boards, utilizing 0.375" (9mm) U.V stabilized HDPE. Framing is to be of similar construction as the dasher boards.

.2 Players' boxes are to be 24' long by 5' deep (7200mm x 1220mm). Access will be through two gates per box on ice side.

2.10 Rink Board System Players' Benches

.1 Players' and penalty bench construction will be as follows:

.1 Benches will be 24' (8.53 m) long and full width of penalty boxes;

.2 Benches are to be a nominal 9.5" (241 mm) deep, and 20" (508 mm) above finished floor;

.3 Bench supports will be constructed with 3" x 1.5" x .100" (76mm x 38mm x 2.5mm) H.S.S. galvanized tube;

.4 Bench supports will not exceed 6'8" (2032mm) on center and will be attached to bench tops with .0375" (9mm) lag bolts (4 per plate);

.5 Bench supports to be fastened to PWF subfloor with 0.375" (9mm) lag screws, and to concrete slab with 0.375" (9mm) wedge anchors;

.6 All hardware to be zinc plated or galvanized.

2.11 Rink Board System Flooring For Players' Boxes

.1 Raised PWF subfloors constructed using 2"x 4" (50mm x 200mm) lumber and 0.750" (19mm) sheathing will be furbished in all required players', penalty and time keeper's boxes.

.2 Install 0.500" (12mm) recycled rubber matting to be fitted and secured into all players', penalty, and time keepers' boxes.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for the outdoor rink should have a high centreline between goals and grade at minimum of 1% to the boards and compacted to 95% of Standard Proctor Density.

3.2 Underground Services

.1 From a constructability perspective it is easier to install underground lines and conduits before hard surfaces are constructed.

3.3 Rink Board Posts, Base Footings and Piles

.1 Both the geotechnical engineer and structural engineer are responsible to specify the foundation system and piling to be utilized for the rink board system for this specific site.

3.4 Rink Lighting System Installation

.1 Both the geotechnical engineer and structural engineer are responsible to specify the foundation system and piling to be utilized for the rink lighting for this specific site.

.2 The system as designed and approved is to be installed by qualified tradespeople.

.3 The lighting levels to be taken after burn-in and recorded and provided on an as-built drawing.

3.5 Water Shack

.1 The water shack including electrical requirements to be constructed and inspected for all permit requirements, submit all inspection reports to the City.

3.6 Rink Board System Delivery and Installation

.1 Manufacturers shall construct, fabricate and deliver all materials to the job site as per plans and specifications. Installations shall be in strict conformance with manufacturer's requirements and instructions.

.2 Installation of the dasher board system shall be completed in one of three following ways:

.1 Complete installation by the manufacturer;

.2 On-site supervision by the manufacturer;

.3 By an experienced dasher board contractor who is approved by the manufacturer.

3.7 Construction Completion

.1 Outdoor rinks will be fully operational prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.8 Maintenance During Warranty Period

.1 Ice making will be performed by others.

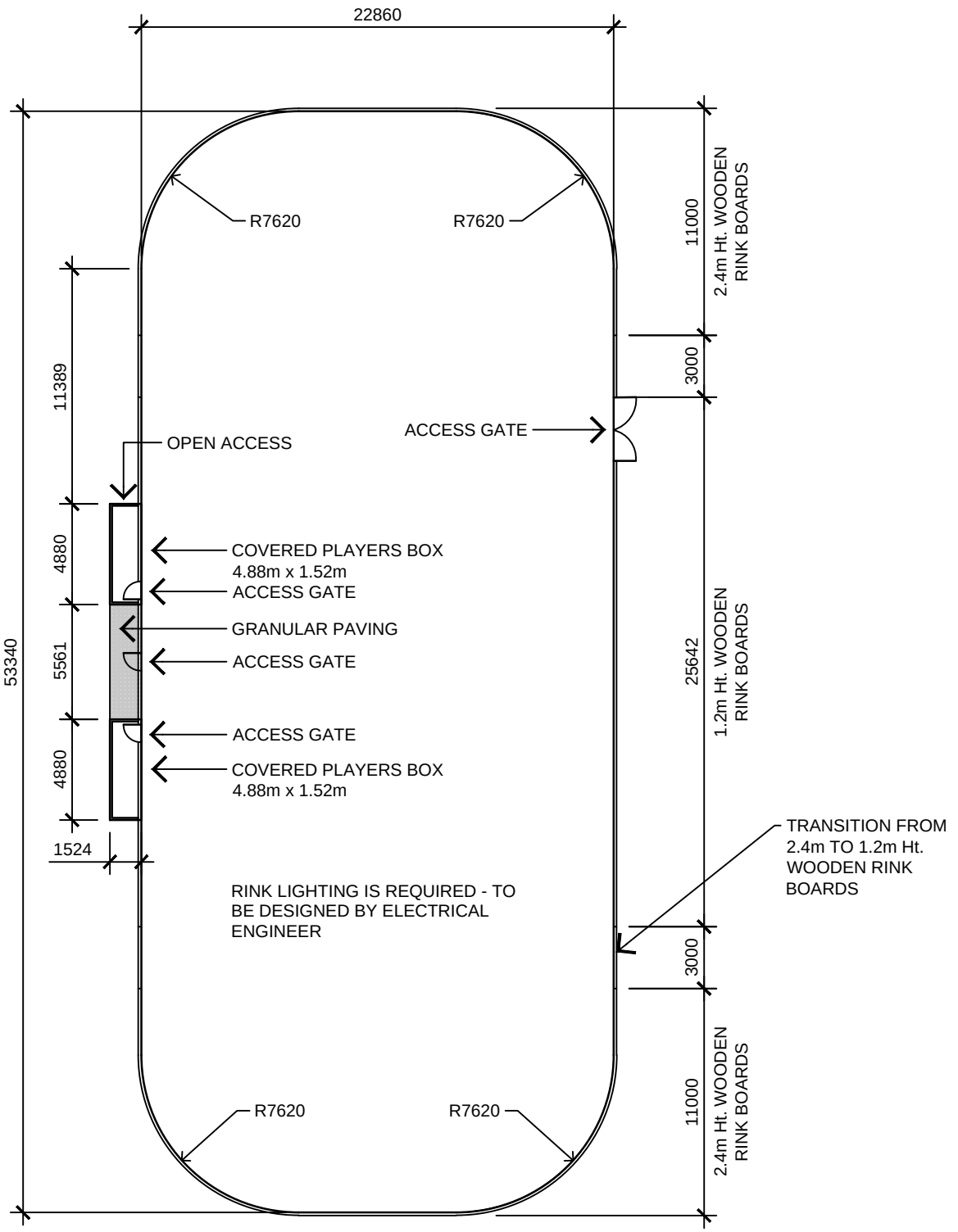
.2 Other maintenance of the surfaces, lighting system and rink board system is to be provided by the Contractor.

.3 Submit monthly maintenance logs to the City.

3.9 Final Acceptance

.1 Outdoor rinks will be inspected after two years from the CCC. If approved a Final Acceptance certificate will be issued.

- END OF SECTION 32 20 01 -



NOTES:

- SUBMIT DRAINAGE PLAN FOR CITY APPROVAL

PLAN VIEW

SCALE: 1:300

ALL DIMENSIONS ARE IN MILLIMETERS

REVISIONS	
Date	Details
DD/MM/YY	
DD/MM/YY	
DD/MM/YY	Engineering Municipal Standards

City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

OUTDOOR RINK
PLAN VIEW

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 20 01A

1.0 GENERAL

1.1 Description

.1 The site grading, subgrade preparation, supply and installation of subdrains, curb alternatives, play equipment, wear mats, protective surfacing alternatives, and signage for play equipment areas.

1.2 Quality Control

.1 Play equipment and fitness equipment installed 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 The manufacturer of the climbing net structure to provide engineering data to confirm the adequacy of the anchoring system and structural design under load as defined in Clause 9 7.3 of the CAN/CSA-Z614-14 or current standard.

.3 Site Plan

.4 Drainage Plan

1.3 Inspections

.1 Notify City Project Manager for inspection of:

.1 Layout of support posts, before excavation of footings.

.2 Play area sub grade before installation of play surfacing material.

.3 Completed construction area.

.4 Drainage system layout.

1.4 Shop Drawings

.1 Before start of work submit:

.1 Two (2) sets of play equipment shop drawings.

.2 Two (2) sets of product data sheets.

.3 One (1) digital layout (AutoCAD format) of play equipment structures, drainage plan, encroachment zones, surfacing, edge treatment, and adjacent areas.

.4 Provide full information on safety setbacks, materials and construction of components demonstrating compliance with Children's' Playspaces and Equipment Standard: CAN/CSA-Z614-14 (or most current edition).

.5 Include dimensioning for support post and concrete footing installation details.

.2 City Project Manager's 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 two (2) sets and one (1) digital copy of maintenance kits provided by Supplier two (2) weeks before final inspection of play equipment.

2.0 PRODUCTS

2.1 Subdrains

.1 Perforated Pipe and Fittings within playground curb footprint: High Density Polyethylene (HDPE) Double walled Dual Wall Corrugated 100 mm (4") perforated, 320 kPa stiffness, certified to CSA B182.8, complete with couplers, end outlets, wyes as required with a mid-weight non-woven geotextile sock ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

.2 Solid Pipe and Fittings outside playground curb footprint: High Density Polyethylene (HDPE) Double walled Dual Wall Corrugated non-perforated, 320 kPa stiffness, certified to CSA B182.8, complete with couplers, end outlets, wyes as required in sizes 200 mm (8") 250 mm (10") and 300 mm (12") mainlines with couplers, end outlets, wyes, caps as required.

.3 Follow manufacturer's specifications for pipe joints.

.4 Drainage aggregate: Designation 6 Class 20 Sub-Drain Rock as per the table below.

Designation	4		5		6		7	
Class	2.5	10	5	80	20	25	10	
Application and Sieve	Unit Pavers Joint Sand	Unit Pavers Bedding	Grout Sand	Culvert Bedding	Sub-Drain Rock	Sewer Rock	Sewer Backfill	Culvert Backfill
80 000				100				
63 000								
25 000						100		
20 000				85 - 100	100			
14 000					90 - 100			
12 500								
10 000		100			45 - 75		100	
5000		95 - 100	100	70 - 90	0 - 15	10 max	70 - 100	30 - 60
2500	100	80 - 100			0 - 5			
2000								
1250	85 - 100	50 - 85						
800				40 - 80				
630	50 - 90	25 - 60						
400								
315	25 - 60	10 - 30	50 - 95					
160	12 - 30	5 - 15					5 - 20	
80	10 - 15	0 - 10	25 max	0 - 15		2 max	0 - 12	0 - 15

.5 The priority will be to tie the subdrain mainline into the City's storm water system as per the City of St. Albert Municipal Engineering Standards. It cannot daylight unless approved by the City. If approval is given for and alternative the following may apply:

1 Rodent Screen on solid pipe daylight end. Submit product sheet for approval.

.2 Rocks to surround daylight end, minimum diameter 300 mm rip rap.

.6 Geotextile Fabric: mid-weight non-woven geotextile ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

2.2 Curb Alternatives

.1 Timber Edge

.1 Pressure Treated Alkaline Copper Quaternary (ACQ) Timber: SPF minimum size 150 X 150mm in accordance with CSA-080. Construction grade cedar, pine, fir or hemlock structurally sound, uniform appearance and size, free of splints, cracks and open knots.

.2 All cut surfaces to be treated with wood preservative to CAN/CSA standard.

.3 Pins: 20M rebar 900 mm long Grade 300 primed rebar.

.2 Cast-in-place Concrete Curb

Normal Portland cement, Type 10, 200 mm wide X 400 mm deep, 4-15M bars grade 300 primed rebar, concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm + 25, maximum water ratio 0.45.

.3 Other options with City approval

2.3 Play Equipment

.1 To comply with Children's Playspaces and Equipment Standard CAN/CSA-Z614-14 (or most current edition).

.2 All play structures and equipment to be installed according to the manufacturer's or designer's instructions.

.3 Submit maintenance kit for equipment.

2.4 Protective Surfacing Sand

.1 Coarse Playground Sand: Portland washed sand Type 9345 Inland Aggregate or approved equivalent to meet the following:

.1 double washed and free of silt, clay, vegetation, shale, loam, and organic matter.

.2 particle size between .5 and 1.0 mm.

.3 particle shape sub-angular to resist compaction.

.4 tan to white coloured.

.5 granite based (non-calcareous – no calcium or limestone).

.2 Submit test results and sample for approval prior to installation.

.3 Geotextile Fabric: mid-weight non-woven geotextile ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster, as required or specified.

.4 Equipment: Graders, loaders, rollers and other equipment of adequate design and capacity to produce a sand surface course as specified.

2.5 Protective Surfacing Engineered Wood Fiber

.1 Shock attenuation not to exceed 200 g and 100 HIC for a 2.438 m (8') drop height as per current ASTM F 1292 and ASTM F 2075 testing.

.2 Must pass testing for current ASTM F 2075 particle size (sieve analysis) test and contamination (magnetic tramp metal) test.

.3 Must pass testing for current ASTM F 1951 handicapped accessibility test.

.4 Submit test results, CSA approvals and sample for approval.

.5 Geotextile Fabric: mid-weight non-woven geotextile ASTM D4362 Grab Tensile Strength 534 N or higher, ASTM D4491 Water Flow Rate 5704 l/min/m2 or faster.

2.6 Protective Surfacing Rubber Surfaces

.1 Segmental rubber surfaces will not be accepted.

.2 Poured-in-place rubber surfaces require detailed drawings, design and installation specifications, and a proposed testing program to be submitted for approval.

2.7 Wear Mats

.1 Wear mats manufactured from recycled rubber materials to be designed and installed at heavy wear and impact areas such as but not limited to slide exits 2.0 m2, swing centres 2.5 m2, concentrated drop zones minimum 2.0 m2.

.2 Anchor hardware: 4 per mat area 40 duckbill style anchors with cable clamps and fasteners.

.3 Submit test results and sample for approval.

2.8 Components and Finishes

.1 Mountings, clamps and fastenings must be of adequate strength and installed to prevent movement or slippage, positioned to avoid entanglement and be tamper proof.

.2 All hardware to be stainless steel.

.3 Finishes:

.1 Metals that are subject to structural degradation such as rust or corrosion to be galvanized, or otherwise treated.

.2 All paints or other similar finishes to be non-toxic.

.3 Steel component coating to be electrostatic, non-toxic, lead free baked-on polyester powder coat finish over clean galvanized steel components.

.4 All finishes to meet or exceed current edition CSA guidelines.

2.9 Playground Identification and Information Signage

.1 Install playground warning and age use signage appropriate for the intended use and design. Submit shop drawings for approval as per CSA guidelines.

3.0 EXECUTION

3.1 General

.1 Playground design to provide suitable separation from adjacent trails, houses and other structures to ensure the safe flow of pedestrian traffic and minimize any potential conflict between users of the park and playground.

.2 Protective surfacing to be installed immediately upon approval of curb and play equipment installation.

.3 Existing grade and drainage of site must not be negatively impacted.

.4 Entire top surface of timber curb to be eased and sanded smooth, free of splinters and sharp edges and treated in accordance with CSA guidelines.

.5 Footings to be designed to reduce frost heave, with smooth sides and no flare at the top.

.6 The depth of protective safety surfacing must meet the Critical Fall Height requirements and current CSA standards for energy absorbency.

3.2 Layout

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

.2 Contractor is responsible for layout accuracy and verification of all measurements.

.3 Layout to be approved before excavation of footings.

.4 Ensure proper setbacks from play area edges as required by play equipment manufacturer.

3.3 Grading

.1 All playground developments must include a subgrade graded for positive drainage at a minimum of 1% and up to a maximum 2.0% grade.

.2 Subgrade for curb, subdrains and the contained footprint to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.3 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

.4 Minimum grade to subdrains trench edge within the footprint is 1.0% slope.

.5 Playground sub grade must be graded to accept a minimum of 12” (300mm) play surfacing material.

3.4 Subdrains

.1 Trench and minimum pipe grade 1%. Minimum trench width 300 mm. Minimum subdrain aggregate cover 50 mm.

.2 Geotextile to fully overlap 300 mm at top of trench.

.3 Ensure the pipe daylights complete with a securely fastened rodent screen in the existing turf area and protect the daylight end by surrounding the pipe end with 10 rocks minimum which still allows drainage to exit the subdrain yet protects the outlet from mowers.

3.5 Timber Edge

.1 Install true to lines and levels on compacted subgrade, compacted to 98% of Standard Proctor Density. Minimum of 2 timbers must be used.

.2 Install curbs pin hole spacings of a minimum of 600 mm. Use butt joints at ends and overlap joints between ends.

.3 Countersink pins 25 mm and fill with a dowel cut smooth to the upper surface.

.4 Provide 15 mm, 45 degree chamfer on exposed edges.

.5 Treat all pin holes, chamfers, dowels and cut ends with two coats of clear ACQ in accordance with CSA-080.

3.6 Cast-in-place Concrete Curbs

.1 Install true to lines and levels on compacted subgrade, compacted to 98% of Standard Proctor Density.

.2 If radii are too tight for plywood forms use steel, width should not vary.

.3 Overlap horizontal bars minimum 300 mm.

.4 Use mechanical vibration during pour.

.5 Steel trowel finish on the top and 50 mm tooled radius on the inside (play equipment side) edge.

.6 Continuous pour preferred without construction joint. If required submit for approval.

.7 Sawcut crack control joints 40 mm depth at 3.0 m intervals.

.8 Backfill and place surfacing after 7 days curing.

3.7 Play Equipment

.1 Install play equipment using manufacturer's installer or recognized representatives.

.2 Install true to lines and levels.

.3 Co-ordinate Work of different trades to ensure play equipment is accurately positioned, plumb, level and secure.

.4 All hardware on posts to be recessed, or button head. Nuts to be T-nut or sleeve nut. Fastening devices to be tamper resistant.

.5 Apply Loctite (red) to the threads of the bolts.

.6 Concrete footing design and installation is the responsibility of the manufacturer and installer. The design should reduce frost heave, with smooth sides and no flare at the top, Footings to be located below the full depth of the surfacing.

.7 Submit stamped geotechnical and structural engineering design for anchoring systems for climbing net structures.

.8 Do not impact subdrain system, bridge over trenches if required.

3.8 Geotextile

.1 Once the play equipment is installed and approved and the subgrade is approved install the geotextile with minimum 150 mm overlaps on seams.

3.9 Wear Mats

.1 Install the wear mats above the geotextile for sand and fiber protective surfacing applications.

3.10 Protective Surfacing Sand or Engineered Wood Fiber

.1 Only pre-approved suppliers based on Article 2.4 and 2.5 specifications are to supply either surfacing sand or engineered wood fiber.

.2 Deposit uniformly in multiple 150 mm compacted lifts, ensuring that materials are uniform in consistency, rototill if necessary.

.3 Float surface to achieve a smooth surface.

.4 Bring the moisture content of the sand to new optimum and compact to 90% Standard Proctor Density.

.5 Install additional depths of sand or engineered wood fiber as required to allow for settlement during the warranty period and maintain a minimum depth of 300 mm.

.6 Engineered wood fiber to be 2” above curb to allow for settlement.

3.11 Prevention of Use

.1 Prevent play structure use until equipment has been inspected.

.2 Install temporary construction safety fence along perimeter of play area.

.3 Install “Park Under Construction” and “Do Not Enter” signs on construction safety fence.

.4 Do not install chains or swings seats until after inspection.

.5 Area to remain secured from public access at all times until Construction Completion Certificate (CCC) is issued and all deficiencies identified are rectified.

3.12 Clean Up

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

.2 Remove materials not required off site.

3.13 Construction Completion

.1 Play equipment areas will be fully operational prior to an inspection of Construction Completion. If approved a CCC will be issued.

.2 Do not remove construction fencing until the playground has been fully approved for CCC.

3.14 Maintenance During Warranty Period

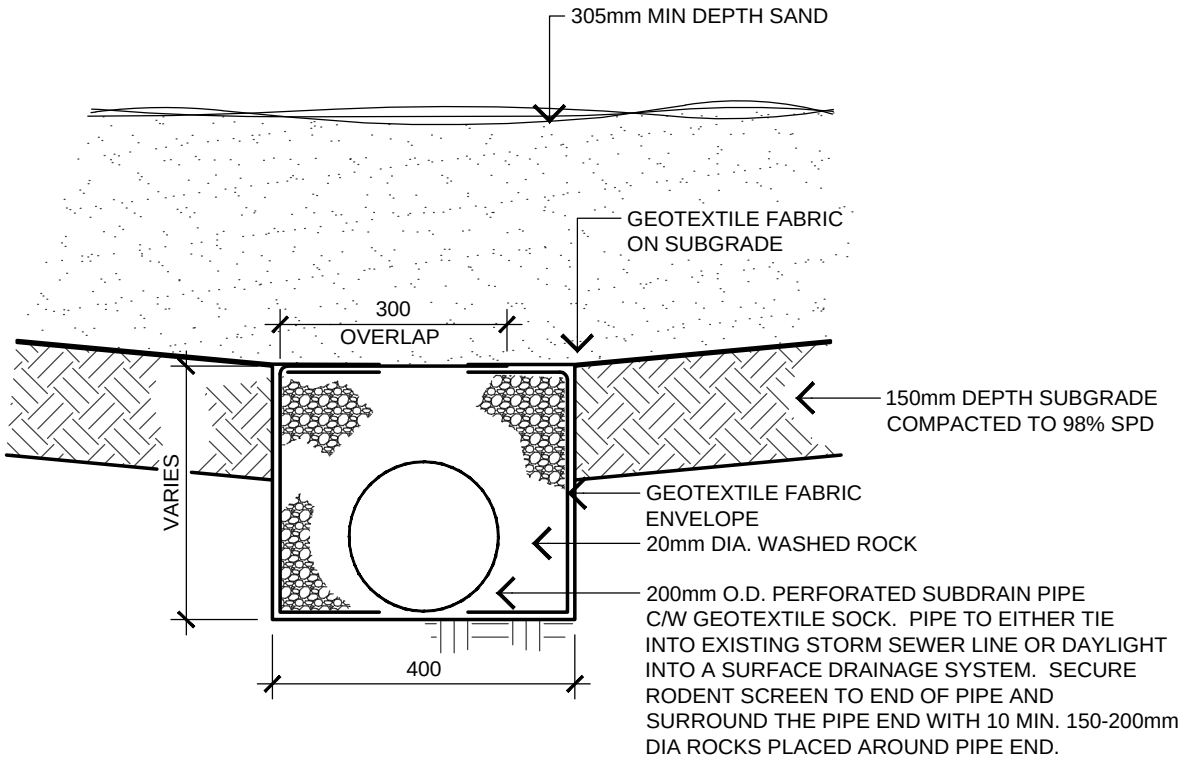
.1 Provide weekly inspections, monthly reporting logs and maintenance of the play equipment area during the two year warranty period until approval of the Final Acceptance Certificate (FAC).

.2 Due to settlement, all protective surfacing must be topped up after year one.

3.15 Final Acceptance

.1 Play equipment areas will be inspected after two years from the CCC. If approved a FAC will be issued.

- END OF SECTION 32 36 01 -



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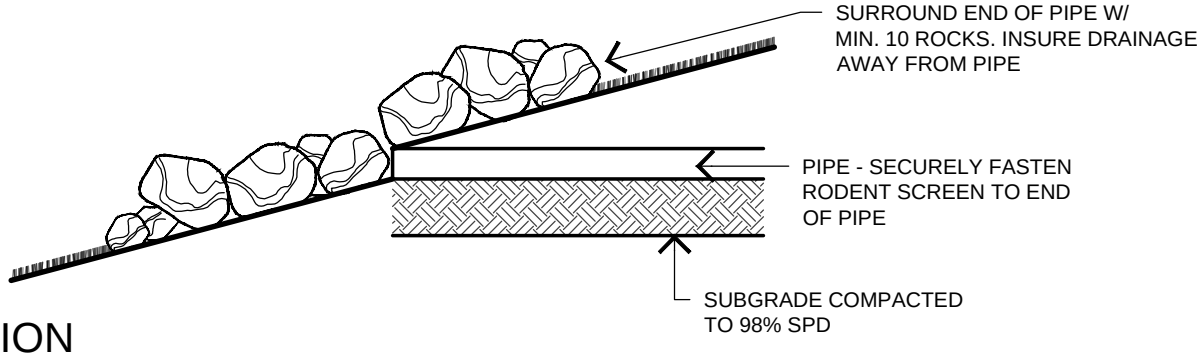

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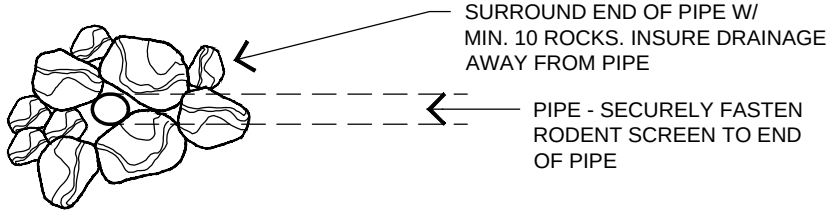

PLAN VIEW

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Date	Details
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City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

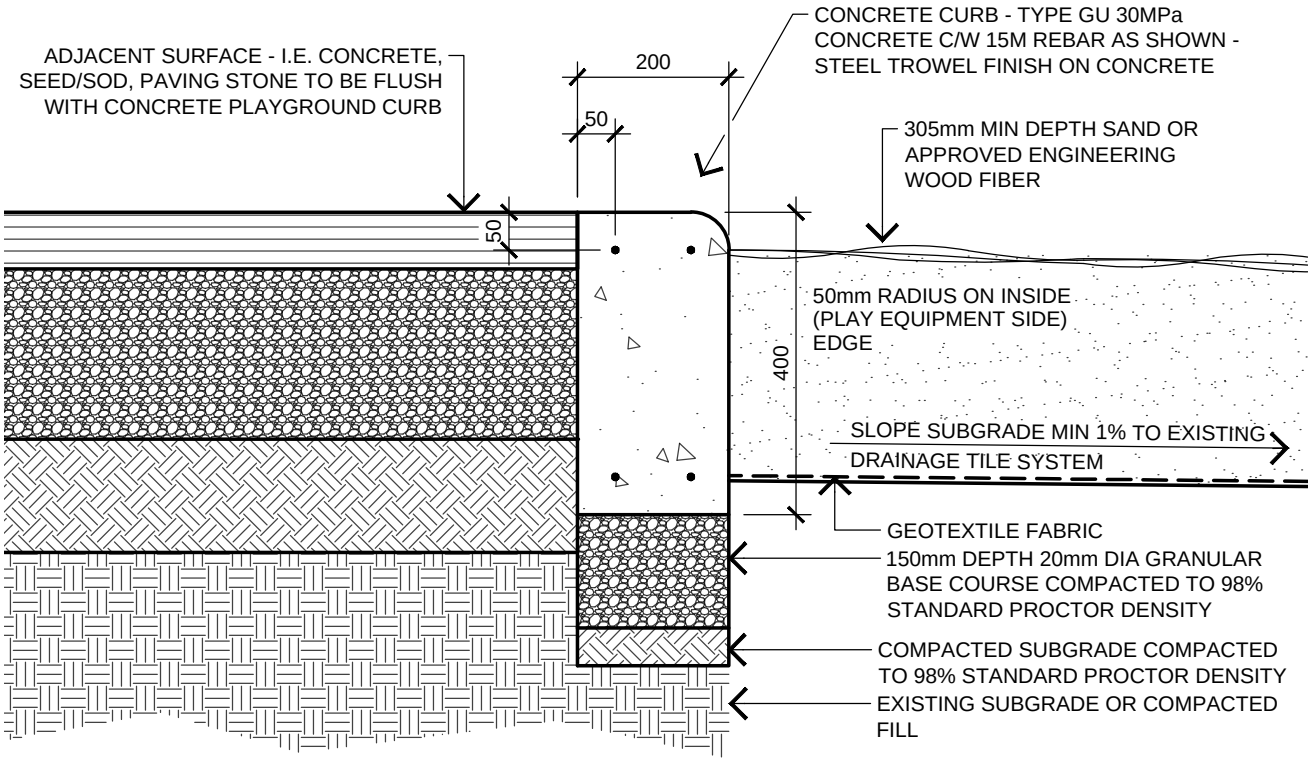
PLAYGROUND
DRAINAGE PIPE

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number:

32 36 01A



NOTES:

- ALL STRUCTURES ARE SUBJECT TO THE RECOMMENDATIONS IN THE GEOTECHNICAL REPORT IF AVAILABLE AND THE FIELD CONDITIONS AT THE TIME OF CONSTRUCTION

SECTION

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City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

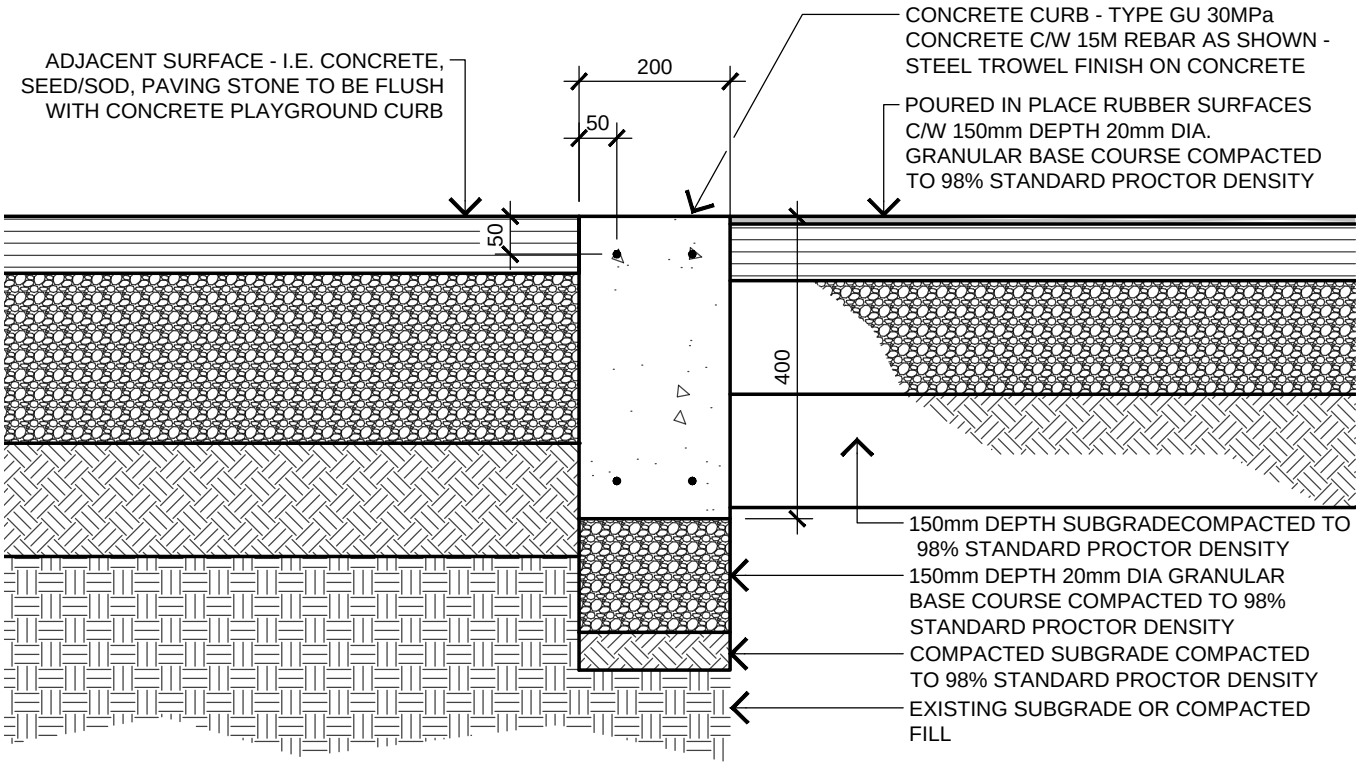
CONCRETE EDGER W/ SAND OR ENGINEERING WOOD FIBER

Engineering Department

Date: 2017 08 25 | Scale: 1:10

Drawing Number:

32 36 01B



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City of St. Albert Engineering Services

5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

CONCRETE EDGER W/ SAFETY SURFACE

Engineering Department

Date: 2017 08 25 | Scale: 1:10

Drawing Number: 32 36 01C

1.0 GENERAL

1.1 Description

.1 The installation of site grading, subgrade preparation, granular base course, cast-in-place concrete slab, perimeter chain link fence and gates and surface mounted portable restrooms.

1.2 Municipal Engineering Standards

.1 The current City of St. Albert Municipal Engineering Standards identify the planning, submission and approval process, and provide specifications and requirements for the design, materials and construction relating to all work in the City of St. Albert including road construction, land development, underground utilities and landscaping. The standards also identify materials testing, construction completion, maintenance during the warranty period and final acceptance of infrastructure projects which would apply to portable restrooms.

1.3 Related Specifications

.1 Section 31 10 00 Site Clearing

.2 Section 31 23 00 Excavation & Fill

.3 Section 31 23 33 Trenching & Backfilling

.4 Section 32 91 19 Landscape Grading

.5 Section 32 92 00 Turf & Grasses

1.4 Submission Requirements

.1 The design drawings and specifications are to be completed and submitted to the City by a landscape architect registered with the Alberta Association of Landscape Architects (AALA).

.2 The City also requires a Geotechnical Report be completed and submitted to the City by an engineer registered with the Association of Professional Engineers and Geoscientists of Alberta (APEGA).

1.5 Standard City Asphalt Surfaces

.1 Asphalt Surfaces as per City of St. Albert Municipal Engineering Standards for Section 3.0 Roadways, or the current revised version.

1.6 Definition

.1 Maximum Density: The dry unit mass of a sample at optimum moisture content as determined in the laboratory to ASTM D698 Method A.

1.7 Quality Assurance

.1 Testing Frequency: the quality assurance laboratory retained by the Contractor will take field density tests on compacted granular lifts at one test per each slab, according to ASTM D1556, ASTM D2167, or ASTM D2922 for comparison with a maximum density determined according to ASTM D698 Method A.

.2 The compacted lift thickness of a granular base course shall not exceed 150 mm, or as directed by the City Representative. The required percentage of maximum density of the granular base course is 98% unless specified otherwise.

2.0 PRODUCTS

2.1 Granular Base Course

.1 As per current City of St. Albert Municipal Engineering Standards Class 20 Application GBC.

2.2 Cast-in-place Concrete

.1 Flexible forms to form radii.

.2 Void form HS-40 minimum thickness 50 mm.

.3 Reinforcement bars Grade 300 primed rebar, sizes as detailed.

.4 Concrete type GU, 30 MPa at 28 days, 25 mm maximum aggregate size, air entrained 4% to 6%, slump 125 mm $\pm$ 25, maximum water ratio 0.45.

2.3 Portable Restrooms to be Provided, Serviced and Maintained by Other

.1 Plastic fabricated wheel chair accessible portable restroom structures, with self-closing doors and integral grab rails. Interior dimensions: 57"L x 57"W x 90"H (1.44m L x 1.44m W x 2.28m H). Exterior dimensions: 62"L x 62"W x 91"H (1.57m L x 1.57m W x 2.31m H). Submit shop drawings for approval. Applies to seasonal & semi-permanent portable restrooms placed in public parks.

.2 Colours to meet City Visual Identity Guidelines.

.3 Mounting Hardware: Tamperproof high strength stainless steel 1/2” X 7” (12.7mm X 177.8mm) long expanding wedge anchor bolt style with washers and nut. Submit shop drawings.

2.4 Chain Link Fabric: conforming to CGSB CAN2-138.1M.

.1 Type 1 steel fabric, medium style: class A zinc-coated, grade 1 at minimum 490 g/m2.

.2 Nominal wire diameter: 3.76 mm (9 gauge).

.3 Mesh size: 50 mm.

.4 Fabric Height: 1829 mm heights.

.5 Selvage: twisted top and knuckle bottom.

2.5 Coloured Slat Inserts

.1 High Density Polyethylene (HDPE) tubular centre with Ethyl Vinyl Acetate (EVA) wings 1779 mm long x 38 mm wide, with bottom locking feature or approved equal. Privacy factor approximately 90%. Submit shop drawings for approval.

.2 Colours to meet City Visual Identity Guidelines.

2.6 Chain Link Fence Framework: conforming to CGSB CAN2-138.2M.

.2 Posts and Rails 1828 mm High Fence: hot dipped galvanized welded steel pipe, standard weight (schedule 40), (ASTM A120), zinc-coated at minimum 550 g/m2 to the following dimensions:

.1 Line post outside diameter (OD) 73.0 mm, with 150 X 150 X 6.3 mm base plate, continuous weld, pre-drilled holes before galvanizing.

.2 Terminal Post (end, gate, gate securing, corner, straining) OD 100.0 mm, with 150 X 150 X 6.3 mm base plate, continuous weld, pre-drilled holes before galvanizing.

.3 Top, middle and bottom rails OD 42.2 mm.

2.7 Chain Link Fittings:

.1 Fittings to conform to ASTM F626.

.2 Post Cap & Rail End: pressed steel or cast iron minimum zinc coating 366 g/m2.

.3 Top Rail Sleeve: 2.0 mm thick X 175 mm long round steel tubing minimum zinc coating 366 g/m2.

.4 Tie Wire and Clip: 3.5 mm diameter (9 gauge) minimum zinc coating 122 g/m2.

.5 Tension and Brace Bands: 2.0 mm thick X 19 mm wide pressed steel minimum zinc coating 366 g/m2.

.6 Tension Bar: 5.0 mm thick X 16 mm wide steel strip minimum zinc-coating 366 g/m2.

.7 Turnbuckle: size varies steel minimum zinc coating 366 g/m2

2.8 Chain Link Gate

.1 Gate Fabric: to match fence fabric.

.2 Gate Frame: to match fence rails minimum 42.2 mm outside diameter; to be electrically welded at all joints and hot-dip galvanized after welding. If braces are required, use truss rod and turnbuckle adequate for gate size.

.3 Gate Fittings: malleable iron hinges, latch and latch catch zinc-coated at minimum 490 g/m2. Latch catch to have provision for a padlock that can be attached and operated from either side of gate. Hinges to permit gate to open 270° in outward direction only.

.4 Double Gate: to have centre rest with drop bolt for closed position and chain hook to hold gates open to posts, galvanized to minimum zinc coating of 490g/m2.

.5 Zinc-pigmented paint: submit sample for approval prior to use.

3.0 EXECUTION

3.1 Grading

.1 Subgrade for slab to within 15 mm of design grade, and compacted to 98% of Standard Proctor Density.

.2 Subgrade for all other perimeter areas to within 25 mm of design grade and compacted to 95% of Standard Proctor Density.

.3 Minimum grade away from slab edge 1.0% slope.

3.2 Granular Base Course

.1 Install one compacted lift of granular base course compacted to 98% standard proctor density to extend 300 mm past outside edge of slabs.

3.3 Cast-in-place Concrete

.1 Install true to lines and levels on compacted granular base course, compacted to 98% standard proctor density.

.2 If radii are too tight for plywood forms use steel.

.3 Overlap horizontal bars minimum 300 mm.

.4 Use mechanical vibration during pour.

.5 Broom finish to provide best drainage off the slab.

.6 Continuous pour preferred without construction joint. If required submit for approval.

.7 Sawcut crack control joints 40 mm depth, maximum spacing 3.0 m on centre.

.8 Backfill after 7 days curing.

.9 Pour concrete samples for each truckload. Contractor to pay for and submit tests.

3.4 Chain Link Posts

.1 Posts spaced as per drawings.

.2 Secure each post with four anchor bolts.

3.5 Chain Link Top, Middle and Bottom Rails

.1 Support top rail at each corner and gate post with rail ends and brace bands.

.2 Support top rail at line post with a line post cap so that a continuous brace is formed between terminal posts.

.3 Support bottom and middle rails at each post with rail ends and brace bands.

.4 Join top rails with sleeve to allow for expansion and contraction.

3.6 Chain Link Fabric

.1 Place fabric on the outside of the area enclosed.

.2 Bottom of fabric to be 50 mm above finished grade.

.3 Stretch fabric to tension recommended by manufacturer and fasten to end, gate and corner posts using tension bands at 300 mm spacing.

.4 Secure fabric to the line posts, top and bottom rail at 300 mm intervals. Tie wires to have a minimum of two (2) twists, and to be folded inward.

.5 Installed wire to have a smooth uniform appearance free of sag, dent and bulge.

3.7 Chain Link Gates

.1 Ensure a centre rest for the double gate has been set in concrete.

.2 Ensure a latch is connected to the middle rail on the outside of the fence to allow the gates to be locked in an open 270° position when restrooms are open for use.

.3 Install gates true and plumb in a closed position.

3.8 Coloured Slat Inserts

.1 Install the inserts according to manufacturer’s specifications.

3.9 Chain Link Touch-Up

.1 Clean damaged surfaces with wire brush to remove loose and cracked galvanized coatings.

.2 Field paint with two (2) coats, any cosmetic damage resulting from installation. Match paint to type originally used by the manufacturer.

3.10 Portable Restroom Structures

.1 Install single restroom structures and anchors in four locations into deepened slab with washer to protect restroom base, ensure unit is plumb and level.

.2 Install a minimum of two units side by side with a minimum separation between units of 400 mm, anchor each unit in four locations into deepened slab with washer to protect restroom base, ensure unit is plumb and level.

3.11 Construction Completion

.1 The portable restrooms are to be completed prior to an inspection of Construction Completion. If approved a Construction Completion Certificate (CCC) will be issued.

3.12 Maintenance

.1 For the portable restroom structures day to day cleaning, supply of products and pump-outs will be provided by others under Contract to the City.

.2 The Contractor will be responsible for repairing all deficiencies in the other products and execution during the two year warranty period such as concrete, fences and anchoring.

.3 Submit maintenance logs monthly for two years recording all deficiencies supplied and installed.

3.13 Final Acceptance

.1 Following the two year warranty period the portable restrooms will be inspected. If approved the Final Acceptance Certificate (FAC) will be issued.

- END OF SECTION 32 38 01 -

NOTES:

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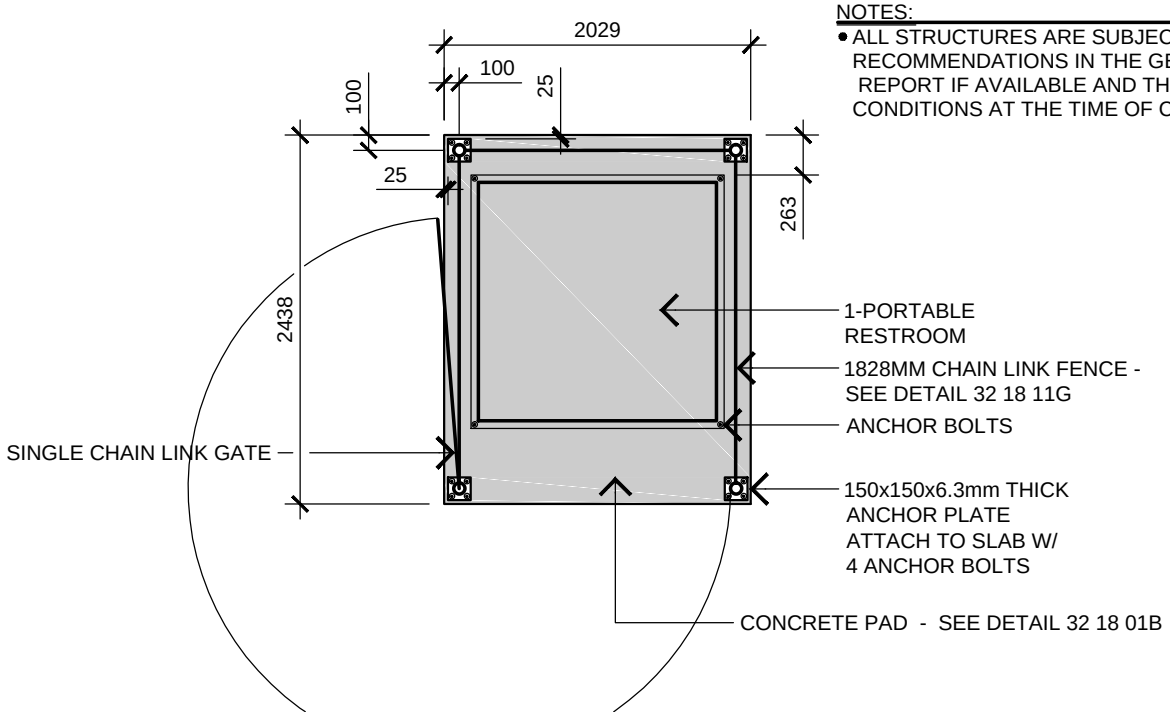

PLAN VIEW - SINGLE RESTROOM

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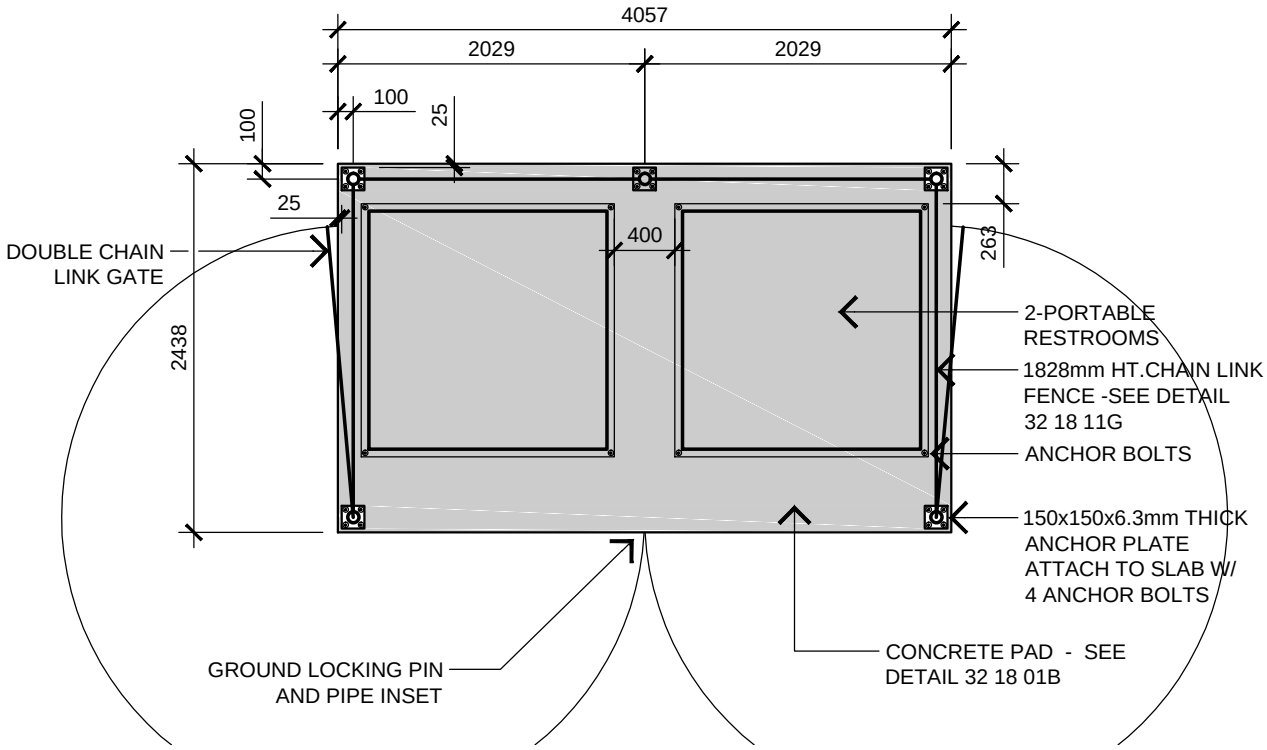

PLAN VIEW - 2 RESTROOMS

SCALE: 1:50

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5 ST. ANNE STREET, ST. ALBERT
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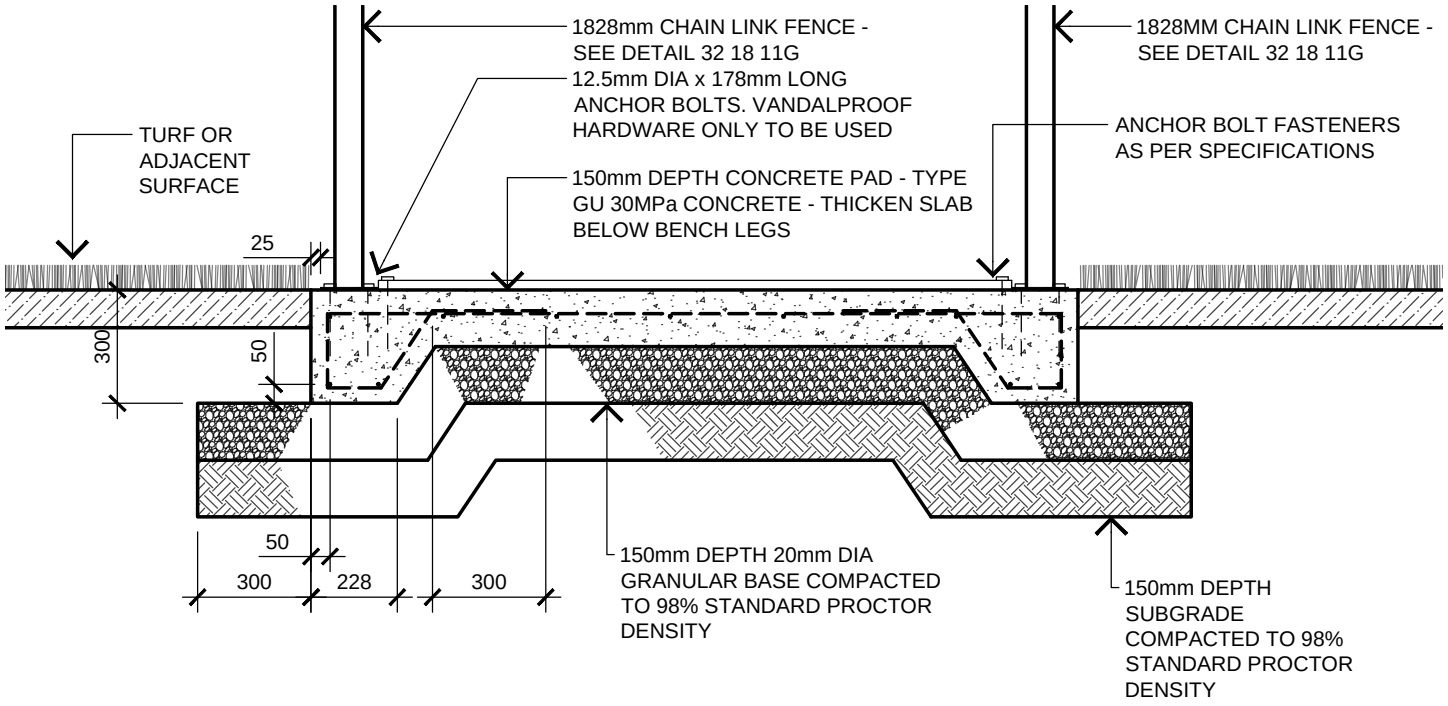
PORTABLE RESTROOM LAYOUT

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 38 01A



SECTION - SINGLE RESTROOM

SCALE: 1:20

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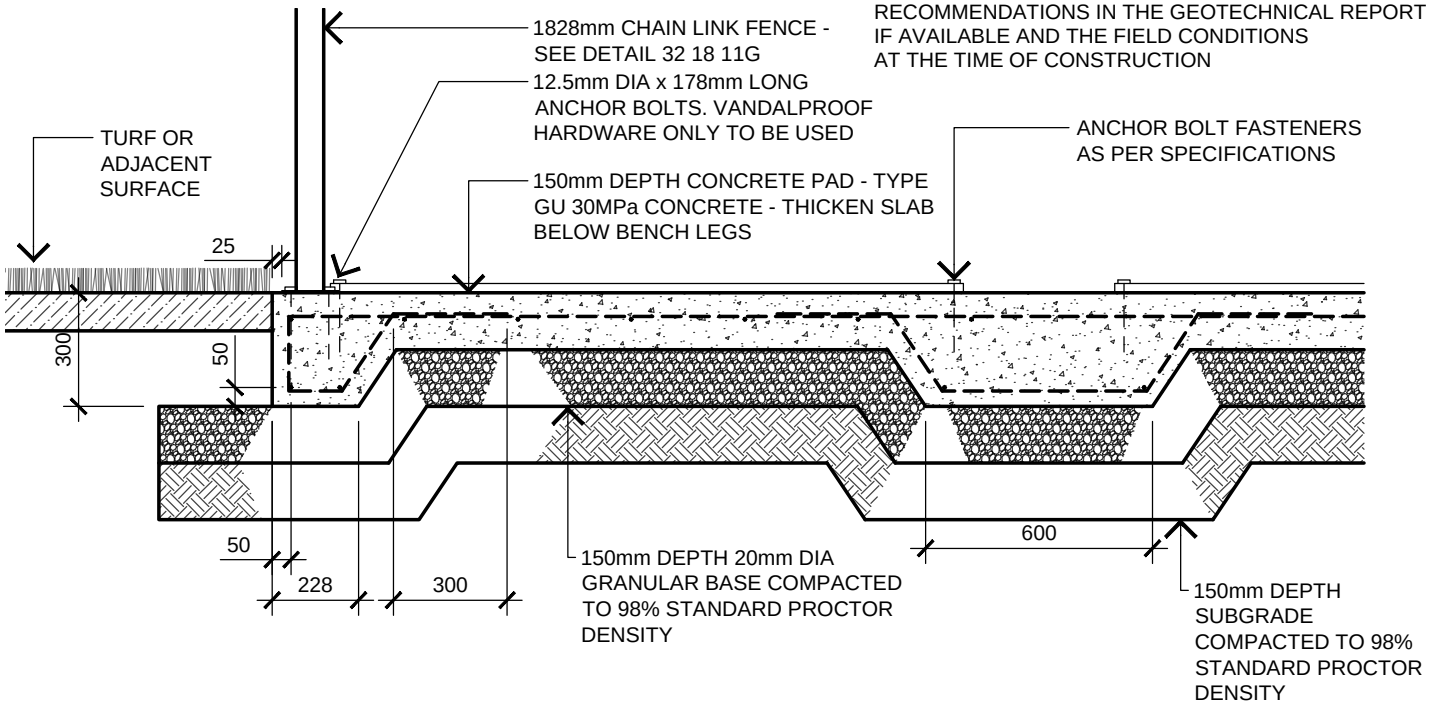

SECTION - 2 RESTROOMS

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City of St. Albert Engineering Services
5 ST. ANNE STREET, ST. ALBERT
Alberta, T8N 3Z9, CANADA

PORTABLE RESTROOM SECTION

Engineering Department

Date: 2017 08 25 | Scale: AS NOTED

Drawing Number: 32 38 01B