

**CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS**

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

TABLE OF CONTENTS

SECTION 3.15 – CURB, GUTTER, SIDEWALKS AND INTERLOCKING PAVERS 2

3.15.1 SCOPE.....	2
3.15.2 CONCRETE.....	2
3.15.2.1 GENERAL.....	2
3.15.2.2 MATERIALS.....	2
3.15.2.2.1 PORTLAND CEMENT.....	2
3.15.2.2.2 AGGREGATES.....	2
3.15.2.2.3 WATER.....	3
3.15.2.2.4 ADMIXTURES.....	3
3.15.2.2.5 REINFORCING STEEL.....	3
3.15.2.2.6 EXPANSION JOINT FILLER.....	3
3.15.2.2.7 MEMBRANE CURING COMPOUND.....	3
3.15.2.2.8 PREFORMED EXPANSION JOINT FILLER.....	3
3.15.2.3 LEVELLING COURSE.....	3
3.15.2.4 RETEMPERING WITH AIR.....	4
3.15.2.5 RETEMPERING WITH WATER.....	4
3.15.2.6 CONSTRUCTION.....	4
3.15.2.6.1 SUBGRADE.....	4
3.15.2.6.2 PLACING CONCRETE.....	5
3.15.2.6.3 REINFORCING.....	6
3.15.2.6.4 JOINTS.....	6
3.15.2.6.5 FINISHING.....	6
3.15.2.6.6 BACKFILLING.....	7
3.15.2.6.7 CURING.....	7
3.15.2.6.8 MECHANICAL EXTRUDING MACHINES.....	7
3.15.2.6.9 HAND FORMING.....	8
Forming.....	8
Consolidation.....	9
3.15.2.7 INSPECTION.....	9
3.15.2.8 FIELD TESTS.....	9
3.15.2.9 COLD WEATHER REQUIREMENTS.....	10
3.15.2.10 PROTECTION.....	10
3.15.2.11 DEFICIENCY PENALTY FOR INSUFFICIENT CONCRETE STRENGTH.....	10
3.15.3 INTERLOCKING CONCRETE BLOCK PAVING.....	11
3.15.3.1 JOINT SAND.....	11
3.15.3.2 FINISHED TOLERANCES.....	12
3.15.3.3 DEFECTS.....	12
3.15.3.4 EDGE RESTRAINT.....	12
3.15.8 SUBGRADE PREPARATION.....	12
3.15.9 BEDDING SAND.....	12
3.15.10 CLEANUP.....	13

SECTION 3.15 – CURB, GUTTER, SIDEWALKS AND INTERLOCKING PAVERS

3.15.1 SCOPE

The work described in this section pertains to the construction of concrete curbs, gutters, sidewalks, crossings, and paving stones and is to be carried out in strict accordance with manufacturer’s recommendations unless otherwise noted.

3.15.2 CONCRETE

3.15.2.1 GENERAL

The concrete for curb, gutter, and sidewalk is to be C-2 Exposure Class Concrete.

The strength level of 32MPa is to be achieved if averages of all sets of three consecutive strength tests equal or exceed the specified strength, and no individual strength test is less than 25 MPa. When the cold weather requirements of Section 3.15.2.9 are in place, 4 cylinders is to be cast with one cured in the field. The fourth cylinder is to be field cured in the same manner as the actual concrete for 7 days and is to be broken at 7 days.

The air content of the concrete is to be maintained between the limits of 5 to 8%.

The minimum permissible slump will be that which will allow the concrete to be placed efficiently and provide a homogeneous mass. The maximum allowable slump is to be 60 mm +/- 10 mm for all hand-poured concrete and 80 mm +/- 20 mm for all machine-poured concrete.

Concrete placed after September 15 is to attain the compressive strength specified in this section within 7 days.

Unless otherwise approved, ready-mix concrete is to be used for the work.

3.15.2.2 MATERIALS

3.15.2.2.1 PORTLAND CEMENT

Portland cement is to meet the requirements of CAN/CSA Standard A3001 (current version) - Cementitious Materials for Use in Concrete and is to be Type GU (general use) or Type HS and HSb (high sulfate resistance) as determined by a Geotechnical Engineer.

3.15.2.2.2 AGGREGATES

Fine aggregate is to meet the requirements of CSA A23.1 – Table 10.

Coarse aggregate is to meet the requirements of CSA A23.1 – Table 11.

Blended aggregates should also meet the physical requirements of CSA Standard A23.1 – Table 12.

**CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS**

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

3.15.2.2.3 WATER

Water used in mixing concrete is to be clean from a potable water source and free from injurious amounts of oils, acids, alkalies, organic material, or other deleterious substances.

3.15.2.2.4 ADMIXTURES

Air-entraining admixtures are to be compliant with the requirements of ASTM C260.

Water reducing, superplasticizing and hydration stabilizer admixtures are to be compliant with the requirements of ASTM C494.

Calcium chloride or other accelerating admixture use to be determined by the structural engineer.

3.15.2.2.5 REINFORCING STEEL

Reinforcing bars are to be deformed bars in accordance with CSA Standard Specification G30.12-M1977.

Cold drawn wire or welded wire fabric for concrete reinforcement is to conform to the requirements of CSA Standard Specification G30.3-1972.

3.15.2.2.6 EXPANSION JOINT FILLER

Joint filler is to conform to CGSB Standard Specification for polyurethane sealing compound #19-GP-15 or ASTM Standard Specification for SIKA FLEX 1A.

3.15.2.2.7 MEMBRANE CURING COMPOUND

Resin-base impervious curing compound is to conform to ASTM Standard Specification C309 Type 1D-Type B. The curing compound is to contain white fugitive dye.

3.15.2.2.8 PREFORMED EXPANSION JOINT FILLER

Prefomed expansion joint filler is to conform to ASTM Standard Specification D-1752.

3.15.2.3 LEVELLING COURSE

The levelling course material is to be a maximum of 25 mm in depth and is to consist of sand, crusher screenings, or other approved material meeting the following requirements.

**TABLE 3.15.2.9a
PHYSICAL REQUIREMENTS OF LEVELLING COURSE**

SIEVE SIZE (mm)	PASSING BY MASS (%)
20.000	100
12.500	64-100
5.000	36-72
1.250	12-42

**CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS**

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

0.315	4-22
0.080	3- 8

A minimum of 60% by weight of the material retained on the 5.000 sieve is to have at least two freshly crushed faces.

Additional properties to be met are as follows:

**TABLE 3.15.2.9b
PHYSICAL REQUIREMENTS OF LEVELLING COURSE**

Liquid Limit	Maximum 25, ASTM D4318
Plasticity Index	Maximum 6, ASTM D4318
Los Angeles Abrasion Gradation "B"	35% maximum loss by mass, ASTM C131
Sand Equivalent	Minimum of 35%, ASTM D2419

3.15.2.4 RETEMPERING WITH AIR

If, due to a low air entrainment percentage, the Consultant feels it is necessary to add an approved air-entraining agent on site, placement of concrete is to stop to allow the concrete truck's drum to turn at mixing speed for a minimum of 3 minutes. Should the air content of the concrete not conform to this Section after re-tempering the concrete is to be rejected.

The Engineer has the right to withdraw permission to add an air-entraining agent to the mix and reject the concrete if, in their opinion, this practice is being abused.

3.15.2.5 RETEMPERING WITH WATER

If, due to a low slump, the Consultant feels it is necessary to add water to the mix, it is to be injected into the drum under such pressure and direction of flow that it conforms to the specifications in ASTM C-94, Appendix XI. Placement of concrete is to stop at that point to allow the concrete truck's drum to turn at mixing speed for a minimum of 3 minutes. Should the slump of the concrete not conform to this Section after re-tempering, the concrete is to be rejected.

The Engineer has the right to withdraw permission to add water to the mix and reject the concrete if, in his opinion, this practice is being abused.

3.15.2.6 CONSTRUCTION

3.15.2.6.1 SUBGRADE

Subgrade for sidewalks, curbs, and driveways is to be excavated and prepared to the lines and cross-sections on the plans or as designated by the Consultant.

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

Unsuitable material is to be removed and replaced as designated by the Consultant. The subgrade is to be uniformly compacted to provide a firm base for all concrete and paving stone work.

Subgrade, subbase, and levelling courses are to be compacted at the optimum moisture content to 98% of Standard Proctor Density.

The subgrade and sub-base elevation are to be finished to tolerances requiring zero to 25 mm of levelling course material. This material is to be compacted by means of a vibratory compactor.

Vertical or sloping faces are to be cut within 25 mm of the proposed back of curb. This cut is to be formed in material compacted to 98% Standard Proctor Density.

When curb and gutter are placed on compacted gravel, crushed gravel meeting the gradation limited presented in Table 3.15.2.9a may be used for fine grading. Any gravel fill is to be compacted near the optimum moisture content to 98% Standard Proctor Density.

3.15.2.6.2 PLACING CONCRETE

The concrete is to be placed within 1.5 hours of initial mixing at the plant. Complete discharge of concrete is not to exceed two hours. The concrete is to be transported by a method that prevents segregation and deposited on the subgrade so that as little handling as possible is required.

Concrete is to be placed continuously until a complete section between expansion joints has been poured.

Concrete is not to be placed until the condition of the subgrade satisfies Section 3.15.8. The subgrade is to be sufficiently moist to prevent absorption of water from the concrete, and free from mud or water ponding.

The concrete is to be thoroughly consolidated against and along the faces of the forms. Hand spreading is to be done with shovels, not with rakes, in order that the concrete will not be segregated. Precautions should be taken to prevent overworking of the concrete.

Concrete is to be handled from the mixer to the place of final deposit as rapidly as practicable by methods, which is to prevent the separation or loss of the ingredients. It is to be deposited in the forms as near as practicable to its final position to avoid re-handling.

The sequence of concrete placement is to be arranged so that concrete, which has partially hardened, is not to be subjected to injurious vibration.

The vertical free fall height of concrete is not to exceed 1.0m. For falls greater than 1.0m, chutes or tremies are to be used.

During placement, concrete is to be sufficiently tamped or vibrated with suitable equipment to secure a close bond with the reinforcement, eliminate entrapped air voids, and ensure a homogeneous structure with adequate consolidation.

Concrete is to be placed and vibrated to form curbs, gutters and sidewalks in accordance with the standard drawings in Section 4.

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

The rate of delivery of mixed concrete is to be such that the interval between the placing of successive truckloads are not to exceed 30 minutes. If the time exceeds 30 minutes, then a construction joint is to be formed at the end of pour.

After the initial set of the concrete, neither the forms nor the concrete structure are to be jarred and no strain is to be placed on the ends of projecting reinforcement.

Backfilling behind the curb, gutter and sidewalk is to be carried out 7 days after form removal and is to be compacted to a minimum of 95% Standard Proctor Density.

3.15.2.6.3 REINFORCING

10 M deformed reinforcing rods are to be placed as specified in the standard drawings in Section 4. Welded wire fabric is to be placed in commercial crossings as shown on the standard drawings in Section 4.

3.15.2.6.4 JOINTS

Curb, gutter and sidewalk contraction joints are to be constructed at 3.0 m intervals (as detailed on the standard drawings in Section 4) and are not to be less than 50 mm deep. Midway between each contraction joint on the sidewalk, a surface joint, 13 mm deep, is to be constructed. These joints are not to extend through the curb and gutter. Contraction joint widths are not to be greater than 5 mm.

A surface joint is to be constructed longitudinally at the location shown on the standard drawings in Section 4 and is to continue through all driveways and lane crossings.

A construction joint is to be formed at the end of every pour. This joint is to be constructed in a "V" shape, as directed by the Consultant.

The joint spacing at the end of a pour may vary from that specified by the following:

- If the end of the pour falls within 300 mm of the required joint spacing, the distance between the last two joints are to be averaged.
- If the end of the pour falls within 800 mm of the required joint spacing, the distance between the last three joints are to be averaged. In special cases, the location of the end of the pour is to be as specified by the Consultant.

When it is necessary to construct longitudinal construction joints in a walk, 10 M bars 600 mm long are to be placed transverse to the joint every meter and penetrate each slab by 300 mm.

Where a sidewalk or divider is to be constructed abutting existing curb, a 10 mm wide by 30 mm deep slot is to be formed between the back of the curb and the walk or divider. This slot is to be filled with the joint filler specified in Section 3.15.2.2.6. 10 M bars at 500 mm on center are to be dowelled and epoxied into the back of the existing curb prior to placing concrete.

3.15.2.6.5 FINISHING

Sidewalk surfaces, either separate or combined with curb and gutter, are to be struck off and screeded to the slope, cross-section and elevation shown on the drawings and as staked by the Consultant. The surface is to

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

be consolidated and smoothed using a wood float. Light-steel troweling is to be used followed by a uniform brush finish. Sidewalk is to be edged at all joints to prevent chipping of the concrete.

The exposed surfaces of concrete curbs and gutters, either separate or monolithic with sidewalks, are to be finished by means of a wood floating, light-steel troweling, and uniform brushing, and all edges are to be rounded to the required radius. No patching will be allowed.

Crossings to lanes and private property are to be struck off and screeded to the required slope and cross-section. The finished surface is to be brushed as specified above.

All edges, including contraction or surface joints, are to be tooled for a width of 50 mm and rounded to a radius of 6 mm. The brush grooves are to be transverse on the sidewalk and longitudinal on the curb and gutter. The finished surface is to have no exposed aggregate or honeycomb.

If there is evidence of excess water on the concrete surface, finishing is to be delayed until the excess water has evaporated.

Surface grooves made by the broom are not to be more than 3 mm deep. Before brushing, all surplus water is to be removed from the brush.

3.15.2.6.6 BACKFILLING

Unless otherwise directed by the Engineer, the Developer is to backfill along the back of the curb edges, to the top of the concrete after 3 days of the placing of the concrete. The backfill is to be mechanically tamped in maximum lifts of 150 mm, to a minimum of 95% Standard Proctor Density and to a distance of 300 mm from the back of the walk or curb. Where landscaping is to be carried out immediately after completion of the walks or curbs and gutters, the backfilling is to be left 100 mm low to allow for the topsoil.

3.15.2.6.7 CURING

Immediately after finishing, the concrete surface is to be protected by applying an approved membrane-curing compound. Immediately after removal of the forms, all exposed surfaces are to be thoroughly wetted with water and then sprayed with membrane curing compound. The membrane-curing compound is to be applied in accordance with the manufacturer's instructions.

The curing compound is to be applied under pressure with a spray nozzle in a manner that thoroughly and completely covers the entire surface with a uniform film at a rate which dependent on the roughness of the surface of the concrete. At no case is the rate of application to be less than 0.25 litres per square meter of concrete surface.

3.15.2.6.8 MECHANICAL EXTRUDING MACHINES

If an extruding machine is used in constructing curbs, curb and gutter, sidewalk or combined curb and sidewalk, the material excavated to accommodate the machine is to be either stockpiled at a specified location or windrowed to the center of the street with a minimal disruption to traffic. After the installation of the concrete works, the excavated material is to be replaced to the original street grade or to the elevations designated by the Consultant and compacted to not less than the specified Standard Proctor Density at

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

optimum moisture content. Any granular material, which may have existed, is to be replaced on the street. Backfill material required behind curbs or sidewalks is to be hauled in from surplus stockpiles or from a location designated by the Consultant. Appurtenances are to be located, examined for deficiencies, and staked by the prior to work beginning on a particular section, and any deficiencies noted are to be reported to the Consultant immediately.

Upon completion of a block of work, the structures are to be relocated and inspected with the Consultant.

The Developer is to repair any damage, which may have occurred during the concreting operations as well as any deficiencies not previously reported to the Consultant.

When using extruding equipment, the requirements below apply in addition to those in Section 3.15.2. Slip-form paving machines or concrete, extruding machines may be used for placing concrete provided they meet the following requirements and have received the approval of the Consultant prior to commencement of the work:

- The vibrators on the equipment are to be capable of producing a dense mass with a smooth surface, free of honeycombing.
- The equipment is to include automatic grade and line controls, which is to be used at all times.

Any special grading or preparation of the clay or gravel base required by the Developer to accommodate his equipment is to be the responsibility of the Developer, and he is to restore the roadway and boulevards to their original condition within 10 days of the initial disturbance. The Developer is to replace any gravel base contaminated by clay or other material.

Whenever possible the forming and placing of concrete by conventional methods (as may be required at corners, driveways and catch basins), is to be carried out in conjunction with the extruding machine operation. Where this procedure is not practical, the "tie-ins" are to be completed within 3 days of construction of the adjacent extruded section. The hand pours of the said "tie-ins" are to be completed in one continuous pour.

3.15.2.6.9 HAND FORMING

Forming

Forms are to be of steel or wood of sufficient strength to resist the pressure of wet concrete, and the supply is to be sufficient to permit their remaining in place until hydration has occurred, or longer if the Consultant considers it necessary. The Developer is to remove all face forms to allow for a smooth brush finish. The use of bent, twisted, battered or worn-out forms will not be permitted. The Consultant will check forms for alignment and elevation before concrete is poured, and is to ensure they are cleaned and oiled before each use.

Where required, reinforcement is to be secured in the location shown on the standard drawings in Section 4 and is to be free from mill scale, grease and rust prior to placing concrete. Forms are to be held securely by approved methods to prevent movement and bulging when the concrete is placed. The Consultant or his representative must approve forms before concrete is poured.

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

Curbs having a radius of less than 40 m are to be constructed with flexible forms. A sufficient length of form (not less than 50 meters) are to be placed and checked before concrete is poured to ensure true line and grade. The forms are to be well staked, braced, or otherwise held rigidly true to the established line and grade. The Consultant may, at any time, reject the use of any forms he considers unsatisfactory.

Consolidation

The concrete is to be consolidated by means of an approved vibrating screed or, in the case of curb and gutter only, by means of a poker or pencil vibrator not exceeding 50 mm in diameter.

Particular care is to be given to placing and tamping along the faces of the forms to ensure a dense, smooth surface.

Vibrations are to be of sufficient duration to thoroughly compact the concrete but not long enough to cause segregation. Vibrators are not to be used for moving concrete.

3.15.2.7 INSPECTION

The Developer with a 3 m straightedge is to check all exposed concrete surfaces, and any water pockets or deviations in line or grade exceeding a total of 6 mm is to be corrected immediately.

Differences in elevation at any given point from that given by the design are not to exceed 13 mm, and the maximum variation is not to be greater than 13 mm.

Deviations in horizontal alignment at any given point from that given by the design are not to exceed 25 mm, and the fluctuations in the horizontal alignment are not to be greater than 25 mm.

Concrete not meeting the above criteria is to be replaced.

3.15.2.8 FIELD TESTS

A qualified testing laboratory in accordance with the following is to perform testing:

- Samples of concrete are to be obtained in accordance with CSA Test Method A23.2-1C for sampling plastic concrete.
- Test cylinders are to be made and stored in accordance with CSA Test Method A23.2-3C for making and curing concrete compressive and flexural test specimens. No less than one strength test is to be made from samples from each 150 cubic meters of concrete placed, and in no case, is there to be less than one test from each day's pour. Each strength test is to consist of three test cylinders, 1 tested at 7 days and 2 at 28 days. All test cylinders representing concrete placed after September 15 are to be tested at 7 days. When the cold weather requirements of Section 3.15.2.9 are in place 4 cylinders are to be cast with one cured in the field. The fourth cylinder is to be field cured in the same manner as the actual concrete for 7 days and is to be broken at 7 days.
- Compressive strength determination is to be in accordance with CSA A23.2-9C.
- Compression Test Specimens: Standard method of making and curing concrete test specimens in the field in accordance with ASTM C31

CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

- Air content determinations are to be made in accordance with CSA Test Method A23.2-4C, Air content of plastic concrete by the pressure method.
- Slump: Standard method of testing slump of Portland cement concrete in accordance with CSA A23.2-5C.
- Sampling Fresh Concrete: Standard method of sampling fresh concrete in accordance with CSA A23.2-1C.

During construction start-up, every load or batch of concrete is to be tested until satisfactory control of the air content has been established. Air content tests taken with the test cylinders will be sufficient once satisfactory control has been established. Whenever a test falls outside the specified limits, the testing frequency is to revert to one test per load or batch until satisfactory control is re-established. Any concrete that falls outside specified air control levels in accordance with this Section is to be rejected from use.

Slump tests made in accordance with CSA Test Method A23.2-5C, Slump of Concrete, is to be made in conjunction with each strength test.

3.15.2.9 COLD WEATHER REQUIREMENTS

When the temperature of the surrounding atmosphere is at or below 5 degrees Celsius, the aggregate and the mixing water are to be heated. The aggregate and mixing water are to have a temperature of not less than 5 degrees Celsius and be entirely free of frozen materials. The aggregate is not to be heated to more than 60 degrees Celsius, and the concrete when deposited in the forms is to have a temperature of not less than 10 degrees Celsius nor more than 38 degrees Celsius. The concrete is to be maintained at a temperature of 10 degrees Celsius for not less than 4 days after placing.

Concrete may have to be protected from cold weather during the hydration stage. Requirements are to be determined based on expected air temperatures and wind velocity, the size and shape of the concrete element and the amount of cementitious material in the concrete mix.

3.15.2.10 PROTECTION

The Developer is to be responsible for keeping all animals and pedestrians off the newly constructed sidewalks or curb until completely set. The Developer is also to be responsible for keeping all vehicles off the work for a period of 3 days after the concrete has been finished.

3.15.2.11 DEFICIENCY PENALTY FOR INSUFFICIENT CONCRETE STRENGTH

Where there are variations from specified design strength, the following Deficiency penalty is to be assessed based on the 28-day, laboratory-cured cylinders.

- When the concrete strength of any set exceeds 95% of design strength, no deficiency penalty will be administered.
- When the concrete strength of any set is greater than 80% but less than 95% of design strength, the deficiency penalty will be administered as follows:

$$Q [P \times \underline{2(A - B)}]$$

**CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS**

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

A

Where: P = unit price

A = specified strength

B = average 28-day cylinder strength

Q = Quantity of deficient concrete

- If the concrete strength of any set is less than 80% of design strength, the work represented by that set of cylinders will be rejected and replaced by the Developer.

3.15.3 INTERLOCKING CONCRETE BLOCK PAVING

Concrete Paving Blocks: conforming to ASTM C936, solid concrete interlocking paving units and with particular requirements as follows:

- Cement: Type GU Portland Cement conforming to CSA A3001.
- Aggregates: Normal density aggregates, conforming to CSA A23.1. Source and gradation are to be submitted to the Consultant for approval prior to casting.
- Air-entraining Agent: Conforming to ASTM C260.
- Dimensional Tolerance: Manufactured blocks are to be true to shape and are not to differ from manufacturer's standard dimensions by more than +/-2 mm in length and width and +/-2 mm in thickness.
- Shape: Type A , dentated and interlocking on all four faces, resists joint spreading in either direction, and can be laid in herringbone pattern. According to manufacturer's specific shape, subject to Engineer's approval. The Engineer may also specify or accept shapes other than Type A.
- Colour: Subject to Engineer's approval.
- Size: According to manufacturer's standard size, subject to Engineer's approval.

3.15.3.1 JOINT SAND

Joint sand are to be sharp sand free of deleterious soluble salts and other contaminants likely to cause efflorescence and reduced skid resistance, graded within the following limits:

**TABLE 3.15.5.2
PHYSICAL REQUIREMENTS OF GRANULAR SUB-BASE**

SIEVE NO (mm)	PASSING BY MASS (%)
2.500	100
1.250	85-100
0.630	50-90

**CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS**

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

0.315	25-90
0.160	12-30
0.063	10-15

3.15.3.2 FINISHED TOLERANCES

Finished concrete paving stones are to conform to the following tolerances:

Maximum deviation from specified grade: +/-10 mm

Maximum deviation from under a 3m straight edge: 8 mm

Maximum differential level between two adjacent mats: 2 mm

3.15.3.3 DEFECTS

The Developer is to remove and replace defective and damaged materials.

3.15.3.4 EDGE RESTRAINT

All paving stones are to be contained within concrete headers.

3.15.8 SUBGRADE PREPARATION

The finished subgrade surface or levelling course is not to deviate by more than 15 mm from the bottom edge of a 3m straight edge laid in any direction, and is to be on correct grade or not more than 10 mm below grade. Subgrade below concrete is to be compacted to not less than 98% Standard Proctor Density.

3.15.9 BEDDING SAND

Bedding sand are to be clean, sharp sand that is suitable for concrete making, free of deleterious soluble salts and other contaminants likely to cause efflorescence, and graded within the following limits:

SIEVE NO (mm)	PASSING BY MASS (%)
10.000	100
5.000	95-100
2.500	80-100
1.250	50-85
0.630	25-60
0.315	10-30
0.160	5-15

**CITY OF WHITEHORSE SERVICING STANDARDS MANUAL
PART 3 - SPECIFICATIONS**

SECTION 3.15 - CURB, GUTTER, SIDEWALKS AND INTERLOCKING BLOCK PAVERS

0.063	0-10
-------	------

3.15.10 CLEANUP

As the work progresses, the Developer is to clean up the site. All areas in which work has been done is to be left in a neat and presentable condition. All gutters and street drainage ditches that have been blocked because of the Developer's operation is to be restored or repaired.

The Developer is to dispose of all surplus excavated material, organic soil, rock, boulders, and pieces of concrete and masonry at an approved location.