GENERAL CONSTRUCTION SPECIFICATIONS

PREPARED BY:

CITY OF VALPARAISO
ENGINEERING DEPARTMENT
166 LINCOLNWAY
VALPARAISO, IN 46383

219-462-1161

Last Revision December 18, 2008

These specifications are intended to cover the basic construction materials and procedures required by the City of Valparaiso for most public and certain private infrastructure improvements in residential, commercial and industrial developments. They are to be supplemented by SPECIAL CONDITIONS from both the City and the developer's engineer, which would cover the construction of the components unique to this development. For questions please call the office of the City Engineer at the telephone number listed above.

THESE SPECIFICATIONS ARE A PART OF THE APPROVED PROJECT DOCUMENTS THAT MUST BE ON THE PROJECT SITE DURING CONSTRUCTION. ALL "PUBLIC" CONSTRUCTION MUST CONFORM TO THE REQUIREMENTS OF THESE SPECIFICATIONS.

GENERAL PROVISIONS

A. General Reference to the "Standard Specifications" shall mean the latest edition of the Indiana Department of Transportation Standard Specifications. Reference herein to any specific section in the Standard Specifications shall automatically include reference to any other sections or sub-sections specified in that section. Reference to the "Standards" shall mean the City of Valparaiso's Standards for Municipal Improvements as periodically amended.

Reference to CITY shall mean the City of Valparaiso, acting through its boards or commissions. Reference to UTILITY shall mean the Valparaiso City Utilities, acting through its Sewer Division. Reference to ENGINEER shall mean any authorized representative of the City of Valparaiso's Engineering Department, Project Management Office or Public Works (Street) Department. Reference to SUPERINTENDENT shall mean the UTILITY'S Sewer Division Superintendent or his authorized representative.

B. Scope of Work The work included in this project consists of the construction of street curb and gutter and pavements; sanitary sewers, appurtenances and services; storm sewers and appurtenances; storm water detention ponds and drainage swales; sidewalks; miscellaneous earthwork and grading associated with the above items; and erosion prevention and sediment control made necessary by the construction of the above items.

C. Traffic CONTRACTOR must make provisions for safe access to the construction site at all times, and must submit to the City of Valparaiso Public Works Director a construction traffic plan and a traffic control plan for affected streets.

Warning signage per the requirements of the Standard Specifications and/or IOSHA shall be erected and maintained by the CONTRACTOR.

D. Utility Coordination CONTRACTOR shall coordinate work with all utilities involved and shall facilitate their construction efforts as necessary.

E. Scheduling Inspections At least 48 hours prior to beginning construction on any project the CONTRACTOR shall notify the office of the City Engineer at 219-462-1161. For other specific inspection requirements, see the appropriate section of these specifications.

F. Materials Certifications CONTRACTOR shall provide, when requested by the ENGINEER, certifications from materials suppliers that the materials or mixes meet the requirements of these specifications. Any material that does not meet the requirements shall be removed and replaced.

G. Final Payment Payment to the CONTRACTOR shall not be made beyond 85% of the contract price until the City officially accepts all improvements.

SEDIMENT CONTROL

A. General The erosion prevention - sediment control plan prepared for this development is specific to the anticipated approach to the construction of this project. While the plan elements may have to be revised in order to fit the specific conditions encountered during the project, no deviation from the plan is permitted without the express permission of the ENGINEER. **The importance of complying with the provisions and intent of the erosion control plan cannot be overstated.** In any event, the CONTRACTOR shall meet the requirements of the Erosion Control Ordinance of the City of Valparaiso, which is hereby established as the minimum standard for this project.

B. Stabilize Disturbed Areas All areas disturbed by construction of this project shall be stabilized as quickly as possible after the disturbance. Temporary seeding shall be used on areas that will remain exposed for 21 days or longer. Special measures shall be taken as required to stabilize the exposed areas before the cessation of construction operations for the winter.

C. Inlet Protection Protection shall be provided around inlets to block the entrance of sediment until the site is stabilized.

D. Silt Fence In general, silt fence shall be erected behind the curb back immediately upon completion of the curb construction. It is required at any location where the parkway or lots drain towards the street. It shall be maintained until a dense stand of grass is established on the disturbed areas that drain to the street.

Silt fence shall also be erected at any location where disturbed soil slopes toward an adjacent property, drainage course or other sensitive area.

Silt fence may also be required at other localized areas to control specific erosion problems as directed by the ENGINEER.

Silt fence shall be erected per the detail on the plans, using sturdy wood stakes/supports and with the bottom edge of the fabric securely bedded/anchored in the soil by trenching.

The CONTRACTOR shall maintain silt fence on a regular basis.

E. Stone Drives A stone drive entrance shall be constructed at the location(s) shown on the plans. Stone shall be a minimum thickness of 10” and shall consist of 2” to 3” slag or stone. Minimum length of the entrance is 50’

F. Cleaning Equipment All vehicles leaving the site shall be cleaned of dirt clods that might be tracked onto the street pavement.

G. Cleaning Street As required, and/or as directed by the ENGINEER, the CONTRACTOR shall clean the existing street pavement adjacent to the site to remove any accumulated dirt or debris.

ROADWAYS

A. General Reference to ENGINEER shall mean any authorized representative of the City Engineer's Office and/or the City's Public Works (Street) Department.

B. Scheduling Inspections In addition to the periodic inspections required during the course of the project specific inspections shall be made by the Public Works Director, or his authorized representative, at the following times during construction:

1. Subgrade prior to placement of geogrid and aggregate base.
2. Compacted aggregate base prior to placement of bituminous binder course.
3. Bituminous binder prior to placement of bituminous surface course.
4. Final inspection for acceptance of roads and streets.

C. Earthwork The excavation and fills for the roadway, intersections, and entrances shall be finished to reasonably smooth and uniform surfaces. All spongy and/or yielding material, which will not readily compact, shall be removed to a depth specified by the ENGINEER. The roadway shall be kept well drained at all times. Materials removed as a part of the excavation that are not suitable for use elsewhere on the project shall be removed from the site and disposed of in an acceptable legal manner.

D. Materials Materials used in the construction of fill areas shall meet the requirements for "B borrow" in the Standard Specifications, and shall be approved by the ENGINEER for use on the project. The material shall be maintained at the proper moisture content to allow the required compaction. All fill material under pavements shall be compacted to at least 95% of its maximum dry density.

E. Subgrade All subgrade material shall be shaped to within 1/2 inch of the true cross section and compacted to at least 95% of its maximum dry density for the

full width of the roadway including the curb and gutter. In lieu of performing density tests on the subgrade, the ENGINEER may verify the adequacy of the subgrade preparation by proof-rolling same with a loaded truck.

F. Base Course (Coarse Aggregate) The base course shall be constructed within 24 hours after the approval of the subgrade and shall be constructed to the depth(s) shown on the plans. No base course material shall be placed on wet or frozen subgrade. The base course shall be placed over Tensar BX 1200 (or approved equal) geogrid

Base course material shall be blast furnace slag or crushed limestone conforming to Indiana No.53 in the Standard Specifications. The material may be either type O or type P mix and shall be transported and spread with care to prevent segregation and loss of moisture. It shall be placed on the approved subgrade in uniform layers not exceeding four (4) inches in thickness and thoroughly compacted to not less than 100% of the maximum dry density as determined by Method C of AASHTO T 99, as modified in the Standard Specifications.

On local streets the compacted aggregate base course thickness shall not be less than 10 inches. On collector streets the thickness shall not be less than 12 inches. On arterial streets the thickness shall be as determined by the Board of Public Works and Safety.

The finished surface of the base course shall not deviate more than 1/2 inch from the specified cross section. The finished cross section shall be checked using a string line stretched across the tops of the curb.

Coarse aggregate base courses shall conform to the requirements of Sections 303 and 904 (Class A, B, C or D) in the Standard Specifications.

G. Tack Coat Immediately prior to the placement of the surface course an asphalt emulsion tack (AET) coat is required to be applied to the binder or any existing pavement surface intended to receive that surface course.

H. Widened or Improved Pavements When an existing pavement is widened to meet the pavement widths set by the standards or by the approved plans, the existing pavement shall be milled to the centerline (crown). The surface course for the widened pavement shall then be placed over the new binder and existing milled pavement from the edge of the gutter or pavement to said centerline (crown). The intent is to provide a smooth, uniform, finished surface for the widened half street pavement. Note that wedging of any rutted areas in the existing pavement may be required before the surface course is placed.

I. Curb and Gutter All curb and gutter shall be constructed of Portland Cement Concrete, shall be the "stand up" (vertical) configuration and shall conform to the lines and grades shown on the plans. In general the materials and methods shall meet the requirements of Section 605 in the Standard Specifications.

The water cement ratio shall not be greater than 0.532 (lb/lb) (6.0 gallons per 94 lb. sack of cement). Each cubic yard of concrete shall contain a minimum of six (6) sacks of cement (94 lbs. per sack) and shall have a seven (7) day compressive strength of 3,000 psi and a 28-day compressive strength of 4,000 psi. The air content of the concrete mix shall be not less than 5% nor greater than 8% by volume.

For machine placed concrete the slump shall be not less than 1 1/4 inches or more than 3 inches. For hand placed concrete the slump shall not be less than 2 inches nor greater than 4 inches.

Consolidation of the mix placed in forms shall be by vibration or other acceptable methods. The finished concrete shall have a broomed finish transverse to the line of the curb.

Weakened plane joints shall be made transverse to the line of the curb at 10-foot intervals. The joints shall be made by saw cutting the surface of the concrete to a depth of not less than one (1) inch after the mix has cured enough to properly receive the joint, or with the use of metal separator plates. Tooled joints are acceptable only with the approval of the ENGINEER. Expansion joints, using 1/4 inch (min.) preformed material, shall be placed at the beginning and end of curb returns, and on each side of curb inlet structures.

Concrete shall be protected against loss of moisture, rapid temperature change, and mechanical injury for at least 96 hours after placement. Curing shall be accomplished by using a spray-on white liquid membrane compound or by covering the concrete with moistened burlap or waterproof blankets per the Standard Specifications.

Unless authorized in writing by the ENGINEER, mixing and concreting operations shall be discontinued when a descending air temperature, away from artificial heat, reaches 40^0 F and not resumed until an ascending air temperature, away from artificial heat, reaches 35^0 F. When it is permitted to place concrete at or below 35^0 F, or whenever it is determined that temperature might fall below 35^0F within the curing period, the water, aggregates, or both shall be heated prior to their placement in the mixer and suitable protection provided for the placed material. Cold weather concreting shall conform to the requirements of sub-section 501.10 in the Standard Specifications. The addition of salt or any anti-freeze to the mix shall not be allowed.

As soon as practical after the initial set of the concrete soil shall be carefully banked and lightly compacted against the back side of the curb so as to provide full lateral support to the curb.

J. Bituminous Pavement Bituminous pavement shall conform to the widths and depths shown on the plans. The construction of the pavement and the materials shall conform to the requirements of Standard Specifications Section 402 for Hot Mix Asphalt (HMA) pavement. The composition limits for the binder course shall be mixture No. 8, and for the surface course shall be mixture No. 11. No cut back asphalts shall be allowed in any bituminous mixture.

All materials used in any pavement that will become the responsibility of the City to maintain shall only be obtained from INDOT approved/certified sources.

No bituminous mixture shall be placed on any aggregate base when the base is wet or when the temperature of the base is 32^0 F or below. Bituminous courses less than two (2) inches in thickness shall not be placed when the ambient temperature or the surface on which it is to be placed is 45^0 F or below.

All rolling and compaction shall be completed before the temperature of an HAC mix drops below 180^0 F or that of an HAE mix drops below 145^0 F. No vehicular traffic of any kind shall be on any lift of pavement until the mixture has hardened sufficiently so that it is not distorted or deformed. The finished surface of the pavement shall not vary more than 1/4 inch when checked with a 10-foot straight edge.

On local streets the compacted finished thickness of bituminous pavement shall not be less than 2 ½ inches of binder and 1-¼ inches of surface. On collector streets the thickness shall not be less than 3 inches of binder and 1-¼ inches of surface. On arterial streets the bituminous pavement thickness shall be as determined by the Board of Public Works and Safety.

SANITARY SEWERS (GRAVITY)

A. General Construction Requirements The following specifications and requirements apply to all sanitary sewers and/or appurtenances whether they are to be public or private sewers. Construction of sanitary sewer mains and appurtenances shall conform to the requirements and standards of the CITY and/or UTILITY. CONTRACTOR shall meet those standards and/or as directed by the ENGINEER SUPERINTENDENT. The CONTRACTOR is responsible for being knowledgeable of those standards.

B. Scheduling Inspections At least 24 hours prior to beginning construction of the sewer main(s), manholes, or service extension or connection, or performing any of the required testing, the CONTRACTOR shall notify the office of the Sewer Division at 219-464-2346 so that the necessary inspections can be scheduled. Note that the Sewer Division is open from 7:00 AM to 3:30 PM, Monday through Friday. Any sewer or appurtenances constructed prior to the notice shall be removed and reconstructed and any testing performed shall be invalid. On the day a service extension is constructed and/or the building connection is made, CONTRACTOR shall notify the Sewer Department approximately an hour before the inspection is required.

C. Sanitary Sewers, Mains All sanitary sewers 6” to 15” shall be Polyvinyl Chloride (PVC) meeting the requirements of ASTM D3034 SDR 35 with joints meeting the requirements of ASTM D3212. All sanitary sewers 18” to 48” shall be Polyvinyl Chloride (PVC) meeting the requirements of ASTM F679 with gasketed joints. Sewer mains shall be the size as shown on the plans with the minimum permissible size 8-inch diameter. The minimum permissible slope shall be that required by the “10 States Standards” for the particular diameter pipe.

Joints shall be designed such that there is minimal separation or gap between the taper of the bell and the spigot end of the pipe inserted in the bell. Nominal allowable gap shall be 3/8 inch. Any gap greater than this shall be cause for rejection of the installation.

D. Sanitary Sewer Services and Extensions All service lines and extensions shall be 6" diameter and shall meet the specifications spelled out for mains (above). The services shall be connected to the main with appropriately sized service wye fittings. The wye shall be positioned so that the service line enters the main in the upper quadrant of the main pipe. No service connections shall be made into manholes unless permitted by the SUPERINTENDENT.

Service lines and extensions shall be constructed at a slope not less than 1/8 inch per foot (1.0%). The service lines shall be constructed to the edge of the easement, the right-of-way line or the rear of the utility easement adjacent to the right-of-way line. If the service lines are to be extended to the building at a later date then the ends of the

service lines shall be tightly capped and marked with a 2" x 4" that extends above the existing grade by at least 24". The 2" x 4" shall be painted fluorescent green. The service lines shall be included in the sanitary system when it is air tested.

E. Excavation All excavation for all sewers and/or appurtenances shall be true to the line and grade shown on the plans. Excavations shall be kept dry and free from wet, sloppy conditions during the construction process. Any excavation made below the design grade shall be brought back to grade by backfilling with Class II material as specified in ASTM D 2321 and compacting in 6" maximum lifts to 95% maximum density.

F. Sewer Installation Pipe shall be installed per the requirements of ASTM D 2321 and the following: Pipe shall be inspected for damage prior to installation. No damaged materials shall be used in the construction of the system. Pipe shall be laid only in dry, stable trench bottoms and bedded according to the details on the plans. Pipe sections shall be fully joined utilizing the joint materials, lubricants, etc. as required for the particular type of pipe being used. Any pipe sections laid with a separation between the spigot end and the taper of the bell greater than 1/2 inch shall be taken up and re-laid at the CONTRACTOR'S expense.

All sewer pipe shall be laid and joined on a uniform, true alignment and grade by using a pipe mounted (interior) laser and target set to the proper alignment and slope. Prior to installing any pipe the alignment and slope shall be verified with the use of an engineer's level so as to meet the profile shown on the plans. After the pipe has been laid and the trench backfilled, the pipe shall show a full circle of light when lighted at one manhole and viewed from the next. Any pipe which is found to be out of alignment shall be taken up and re-laid at the CONTRACTOR'S cost.

G. Pipe Bedding, Haunching and Initial Backfill (Herein combined as "Bedding") All sewer pipe shall be bedded and backfilled with care so as to provide the necessary lateral support required for the structural integrity of the pipe. Bedding shall be carefully carried to at least 12" above the top of the sewer pipe before the trench itself is backfilled. Bedding material shall be Class III material as specified in ASTM D 2321. Bedding material shall be compacted in lifts not exceeding 6" to at least 95% of maximum dry density.

H. Trench Backfill Backfill of trenches and around structures located under proposed pavement or within 2 feet of the back of curb shall be backfilled with "B" borrow, as defined in the Standard Specifications, and compacted in 6" maximum lifts to at least 95% of maximum dry density.

I. Warning Tape A standard, non-degradable warning tape, labeled with the word "SEWER" or appropriate, shall be placed in the trench, centered over the sewer pipe and approximately 2' above the sewer pipe.

J. Manholes Manholes shall be constructed of reinforced concrete in accordance with ASTM C-478 and per the detail(s). They shall be constructed on the alignment and grade shown on the plans. Manholes greater than 5'(top of casting to invert) in depth shall utilize concentric cone sections above standard barrel sections. Manholes less than 5' in depth shall utilize standard barrel sections and flat top sections. Eccentric cone sections or openings are not permitted.

All joints in manholes, rings and castings shall be sealed with bituminous mastic.

Manholes shall have integral bottoms and shall utilize pipe boot connections except where otherwise permitted by the Engineer. The inverts shall be carried through the manhole structures by using pre-cast inverts with a double epoxy coating per Dyer Vault or Lowell Concrete. Any other type of manhole invert must be approved by the SUPERINTENDENT before its construction.

Steps are not allowed in manholes.

Manhole castings shall be brought to finished grade using appropriately sized concrete leveling rings. No more than 2 rings and/or 12 inches of leveling rings are permitted.

K. Manhole Castings See below. Note that all sanitary manhole lids shall be gasketed and have the word "SANITARY" formed on them as a part of the casting process.

Neenah	East Jordan	Comments
R-1712	1022-3, A	Heavy duty lid only, gasketed, "SANITARY" on lid
R-1772	1050, A	Heavy duty lid only, gasketed, "SANITARY" on lid
	1051, A	Heavy duty lid only, gasketed, "SANITARY" on lid
	1037, A	Extra heavy duty lid only, gasketed, "SANITARY" on lid

L. Chimney Seals All new and existing sanitary manholes incorporated as a part of the work in this project shall have the top "chimney" portion of the structure sealed against groundwater infiltration/inflow. The seal shall run from the concrete cone section over the riser /leveling ring(s) to the casting. The seal shall be installed only after the casting is set to final grade. Seal system shall be "WrapidSeal" manhole encapsulation system by Canusa, The Woodlands, Texas, or approved equal. Installation shall be according to manufacturer's recommendations.

Also, during the one-year warranty period for the sewers, if any manhole exhibits significant leakage from the joints in the chimney area of the structure an internal chimney seal shall be installed by the CONTRACTOR at no cost to the City.

M. Cleanouts Cleanouts are required in service line extensions at the connection to the building sewer, at distances not to exceed 100 feet and at all bends. Cleanouts shall be 6-inch diameter.

N. Testing All flexible sanitary sewer mains shall be tested for deflection by the CONTRACTOR, after the final backfill has been in place and dewatering operations ceased for at least 30 days. Deflection shall not be greater than 5.0% as determined by a go/no-go mandrel appropriately sized for the pipe in question. Prior to use all mandrels must be checked for sizing by the Superintendent with a Utility proving ring. All pipe exceeding the 5% deflection shall be replaced at the CONTRACTOR'S expense.

CONTRACTOR shall test all sanitary sewers for infiltration/exfiltration/leakage per the procedures available from the ENGINEER (low pressure air test). Infiltration shall not exceed 50 gpd per mile per inch of diameter of pipe being tested for each section of sewer run (manhole to manhole). If the infiltration/exfiltration exceeds the maximum allowable the CONTRACTOR shall make any repairs necessary to bring the sewer into compliance.

CONTRACTOR shall televise (video inspect) all sewer mains and furnish a copy of the DVD and the inspection log to the Sewer Division. The DVD shall be such that it is playable on any standard player. Any deficiencies revealed by the video inspection shall be repaired by the CONTRACTOR.

CONTRACTOR shall vacuum test all sanitary sewer manholes according to the procedures in ASTM C1244-93 “Std. Test Method for Conc. Sewer Manholes by Negative Air Pressure (Vacuum) Test”.

All testing and televising shall only be done in the presence of the SUPERINTENDENT or his authorized representative.

CONTRACTOR shall furnish all labor, materials and equipment necessary to accomplish all tests and televising.

STORM SEWERS

A. Materials Storm sewers shall be one of the following:

1. Polyvinyl Chloride (PVC) meeting the requirements of ASTM D3034, SDR 35 or ASTM F679. Joints shall meet the requirements of ASTM D3212.

2. Reinforced Concrete meeting the requirements of ASTM C76 (Class III) with gasketed joints meeting the requirements of ASTM C443.

3. HDPE, corrugated/ribbed plastic pipe with smooth wall interiors per:

A. Advanced Drainage Systems (ADS "N-12"

B. Hancor "Hi-Q" (Hancor, Inc.,Findlay, Ohio, 800-472-9557)

B. Excavation All excavation for all sewers and/or appurtenances shall be true to the line and grade shown on the plans. Excavations shall be kept dry and free from wet, sloppy conditions during the construction process. Any excavation made below the design grade shall be brought back to grade by backfilling with "B" borrow (as defined in the Standard Specifications) and compacting the material in lifts to at least 95% of the maximum dry density.

C. Installation Pipe shall be inspected for damage prior to installation. No damaged materials shall be used in the construction system. Pipe shall be laid only in dry, stable trench bottoms and bedded according to the details on the plans. Pipe sections shall be joined utilizing the joint materials, lubricants, etc. as required for the particular type of pipe being used. All sewer pipe shall be laid and joined on a uniform, true grade shown on the plans. After the pipe has been laid and the trench backfilled, the pipe shall show a full circle of light when lighted at one manhole and viewed from the next. Any pipe which is found to be out of alignment shall be taken up and re-laid at the CONTRACTOR'S cost.

D. Bedding All flexible sewer pipe shall be bedded with care so as to provide the necessary lateral support required for the structural integrity of the pipe. Bedding shall be carefully carried to at least 6" above the top of the sewer pipe before the trench itself is backfilled.

E. Backfill Backfill of trenches and around structures located under proposed pavement or within 2 feet of the back of the curb shall be backfilled with "B" borrow, compacted in lifts to at least 95% of maximum dry density.

F. Structures Manholes and drainage structures shall be constructed of reinforced concrete in accordance with ASTM C-478 and per the detail(s) on the plans. They shall be constructed on the alignment and grade shown on the plans.

Drainage structures shall utilize concentric cones or flat top slabs with concentric openings. Eccentric cones or openings are not permitted.

G. Castings Curb inlet castings shall be as specified on the plans. For other storm structures see below. Note that all solid lids shall have the word “STORM” on them as a part of the casting process.

Structure	Neenah	East Jordan	Comments
Curb Inlets			As specified on plans
CBs or	R-1712	1022-3, A	Heavy duty only, “STORM” on lid
Storm MHs	R-2502,C,D	1022-3, M1, M2	Heavy duty lid only
“	R-1772	1051, A	Heavy duty only, “STORM” on lid
“	R-2504,C,D	1051, M1 or M2	Heavy duty lid only
Bee Hives	R-2510A	1125, 02 grate	
“	R-2563		
Ditch Grates	R-4341A	6488	Use for heavy duty applications
“	R-4342	6489	Use for light duty (res.) applications

H. Testing All storm sewers shall be televised according to SANITARY SEWERS (GRAVITY), N. Testing.

RESTORATION

A. General All ground surfaces disturbed by the construction of this project shall be restored as soon as possible to a condition that will minimize the erosion from those areas.

B. Materials Materials used in the seeding restoration process shall conform to Sections 913.02, 913.03, 913.04 and 913.05 (a, c, d and e) in the Standard Specifications.

C. Seeding The areas to be seeded shall be made smooth and uniform and the seedbed shall be loosened to a minimum depth of 3 inches.

Fertilizer and agricultural limestone shall be spread uniformly over the areas to be seeded and then mixed into the soil with a disk harrow, tiller, and other approved equipment. Fertilizer shall be spread at 800 pounds per acre and limestone at 1,000 pounds per acre.

Seed may be drilled in or mixed with water but shall not be covered more than 1/2 inch. The mixture shall be sprayed over the areas to be seeded.

Mulched seeding shall be used in areas as indicated on the plans. Mulch material shall be approved by the ENGINEER and shall be appropriate for the specific location.

Agricultural limestone, fertilizer and mulching material shall be applied in accordance with Section 621.04 in the Standard Specifications.

D. Seed Mix Seed mixture shall be 50 pounds Alta Fescue or Kentucky 31 Fescue, 35 pounds perennial rye grass and 25 pounds Kentucky Bluegrass and shall be applied at the rate of 110 pounds per acre.

E. Maintenance The CONTRACTOR shall continue to maintain all seeded areas until a thick, even stand of grass has been established.

ACCEPTANCE OF IMPROVEMENTS

CONTRACTOR(S) shall be responsible for working with the CITY, UTILITY, and/or the appropriate departments of the City to obtain final acceptance of the municipal improvements constructed under this contract. Final payment should not be made until such final acceptance is obtained for the OWNER in writing.

GUARANTEE

By virtue of obtaining approval of these construction plans, CONTRACTOR/DEVELOPER/OWNER agree to guarantee all labor, materials, and workmanship for all improvements covered under this contract for a period of one year from the date of final acceptance of said improvements. An acceptable and approvable surety in the amount of 10% of the cost of the improvement(s) shall be provided the UTILITY and/or CITY before acceptance of the improvements is completed.

During the one-year guarantee period, should the CONTRACTOR/DEVELOPER/OWNER be advised by the ENGINEER or SUPERINTENDENT of any deficiency in the materials, workmanship, etc., the CONTRACTOR shall work with the appropriate agency to correct the deficiency or resolve the dispute.