Chapter II.5 PARKS AND TRAILS DESIGN

1. INTRODUCTION

Parks and recreation facilities are a source of community connections and quality of life. Parks and recreation facilities allow residents to engage in their community and the natural environment as well as increase the value of our neighborhoods and subdivisions in both quantitative and qualitative ways.

The City of Rio Rancho, through its rapid growth, has worked to ensure the community's current and future parks and recreation needs will be met. Toward this end, the Department of Parks, Recreation and Community Services will work with the development sector and strive to create and maintain quality spaces and activities that grow a greater sense of community and enhance the quality of life in the City of Rio Rancho. The Department has also used the Master Planning process to better identify the wants and needs of the community and has reflected these, in part, through the Design Guidelines that follow.

Parks and associated trails constructed by a Developer or their agent as part of a subdivision, that will be dedicated to the City, shall follow the process outlined in **Appendix II.5-1**, "Parks and Recreational Trails Development Process Summary."

2. DESIGN GUIDELINES

1. General Design

1.1 All Commercial, Municipal, intended Municipal and Developer construction and landscape of parks, medians, parkways, entryways, landscape improvements, or landscape projects shall be designed by a registered Landscape Architect who shall stamp the appropriate construction documents for the project. The Landscape Architect shall also observe the construction to verify design compliance. Wherever required by law or code, stamped engineered drawings shall be included. Construction work shall be done by a licensed contractor. It is the responsibility of the licensed contractor to see that all codes are met, necessary permits obtained, and inspections requested. The City of Rio Rancho (the City) will also designate a representative to oversee the project construction for any and all parks and landscape projects that will be maintained by the City.

*Note: City-funded projects shall be permitted through the State. Privately constructed projects, to be dedicated to the City, shall be permitted through the City.

1.1.1 Prior to the preparation of construction documents, a conceptual plan or site plan must be submitted to the City of Rio Rancho Parks, Recreation and Community Services Department (the Department) and appropriate committees and commissions, for review and approval.



- 1.1.2 A typical set of Construction Documents shall include all necessary plans as are needed for the permitting and construction of the project and may include, but are not limited to, the following components (See Appendix 25-2 Plan Requirements).
 - 1.1.2.1 Cover letter for project plan set with complete cost estimate for all improvements
 - 1.1.2.2 Cover Sheet
 - 1.1.2.1.1 Include project name, vicinity map, sheet index, Landscape Architect's contact information, general notes, and signature block for the plan review.
 - 1.1.2.3 Demolition Plan where appropriate
 - 1.1.2.4 Grading and Drainage Plan prepared and stamped by a registered engineer (The Contractor shall ensure that slopes within the park and paved surfaces that generate significant run-off shall have additional design and construction that conveys the run-off to appropriate street storm drains, or onsite detention basins, design and construction of improvements that will prevent site erosion and ponding on turf or paved areas of the park).
 - 1.1.2.5 Plan View / Site Plan with all property lines, easements, improvements and amenities, their descriptions and appropriate dimensions
 - 1.1.2.6 Construction Plan including utilities and lighting where appropriate
 - 1.1.2.7 Landscape and Planting Plan with legend (including plant quantities, species and size at installation and maturity)
 - 1.1.2.8 Irrigation Plan
 - 1.1.2.9 Standard Details (see Section Three, Standard Details) and engineered drawings as required for permitting (such as for shade structures)
 - 1.1.2.10 Site Traffic Plan with parking lot striping and signage as required by Federal and local codes, and the Department of Public Safety
- 1.1.3 Following the process outlined in Appendix 25-1, Construction Documents shall be developed based on the approved Schematic Design (Section 1.1.1 above) and must be submitted to the Department if funded by the City. If the project is being developed by a Developer as part of a subdivision, construction Documents shall be submitted to the City of Rio Rancho Development Services Department, to be reviewed and approved by all City departments through the Design Review Process, and Building Permitting and Inspection for all permitting and code requirements prior to construction.
- 1.1.4 The Developer and/or Contractor shall include representatives of the City of Rio Rancho Park Maintenance in inspection of all designated phases of construction as indicated in Section 2 Standard Specifications, as well as substantial completion and final acceptance reviews.
- 1.1.5 All projects shall meet local and federal requirements for accessibility and safety.
- 1.1.6 The Developer shall financially guaranty all parks and trails considered for impact fee credits prior to construction.

2. Park Design Standards

All parks must have an area designated as maintenance access. Department staff will work with the Landscape Architect to determine the best location and construction criteria



including gates, post and cable fence, and/or removable bollards for access.

Park sites vary in their topography. The contractor shall make every effort to maximize the usable park, activity and turf areas. The Department will work with the Landscape Architect to ensure that unusable, irrigated turf is *NOT* incorporated into any proposed plan. Irrigated turf will not be installed on slopes of 3% or greater. Turf play areas (fields) for neighborhood parks, whether they are to be sized to accommodate athletic competition or not, shall have a grade neither less than 1% nor greater than 2%. The grade of other turf areas within the park may vary only at the discretion of the City. All developed play, field and activity areas must be leveled at approved grade without significant holes or bumps.

- 2.1 Small Neighborhood Park Design-Guidelines
 - 2.1.1 Small Neighborhood Park Less than 5.0 acres in size.
 - 2.1.2 A typical small neighborhood park shall include the following as a minimum: Separate play equipment for ages 2-5 and 5-12 years old.
 - 2.1.3 All play equipment and surfacing must be IPEMA certified to meet all requirements of ASTM, CPSC and ADA.
 - 2.1.3.1 The play equipment for 2-5 year olds shall include the following components as a minimum.
 - 2.1.3.1.1 Six (6) elevated play components, four (4) of which must be ADA accessible.
 - 2.1.3.1.2 One (1) slide.
 - 2.1.3.1.3 One (1) transfer station
 - 2.1.3.1.4 Three (3) ADA accessible ground level components.
 - 2.1.3.1.5 Two Bay swing components.
 - 2.1.3.1.6 Playground Sign Age appropriate
 - 2.1.3.2 The play equipment for 5-12 year olds shall include the following components as a minimum.
 - 2.1.3.2.1 Six (6) elevated play components, four (4) of which must be ADA accessible.
 - 2.1.3.2.2 One (1) slide
 - 2.1.3.2.3 One (1) transfer station or ADA ramp
 - 2.1.3.2.4 Three (3) ADA accessible ground level components.
 - 2.1.3.2.5 Two (2) swings one (1) of which shall be ADA accessible.
 - 2.1.3.2.6 Two Bay swing components.
 - 2.1.3.2.7 Playground Sign Age appropriate
 - 2.1.4 Benches to accommodate eight (8) users. At least one bench shall be ADA accessible via pathways to the parking lot and neighborhood sidewalks.
 - 2.1.5 Tables to accommodate twelve (12) users. At least one table shall be ADA accessible via pathways to the parking lot and neighborhood sidewalks.
 - 2.1.6 Playground surfacing must be playground certified manufactured wood fiber. The Contractor shall provide the City with a letter from the playground manufacturer or designee stating compliance with ASTM, IPEMA, ADA, and CPSC.
 - 2.1.7 Trash receptacles, minimum of three (3) located with easy access for maintenance.
 - 2.1.8 ADA accessible pathways leading from parking lot to play structures, tables, basketball courts, etc. and to neighborhood sidewalks wherever possible.



- 2.1.9 Shade structure. Minimum 400 square feet of coverage.
- 2.1.10 ADA accessible Drinking Fountain
- 2.1.11 Quick coupler within a locking box, located centrally and near the play and shade structures.
- 2.1.12 Turf play area, not required to be sized to accommodate athletic competition.
- 2.1.13 Deciduous Shade trees. Minimum of eight (8) 2" caliper or larger trees.
- 2.1.14 Appropriate shrub planting. Minimum of twenty-five (25) 5 gallon shrubs.
- 2.1.15 ADA accessible Basketball court, minimum of one (1) goal.
- 2.1.16 Skate Park elements. Minimum of three (3) elements and minimum surface area of 4,000 square feet.
- 2.1.17 Skate Park Rules Sign.
- 2.1.18 Park Rules sign, one at main entrance of park.
- 2.1.19 ADA accessible parking lot with off street parking for eight to twelve automobiles including two handicap accessible parking spaces with signs, of which one shall be van accessible.
- 2.1.20 Additional items can be incorporated at the discretion of the Landscape Architect. (List of additional items includes but is not limited to those found in Park Improvements Specifications)
- 2.1.21 The Department and the Parks and Recreation Commission reserve the right to require additional elements in the design of the park. These requirements will be provided to the Landscape Architect by staff prior to final presentation of the schematic design, and by the Commission during a regularly scheduled Commission meeting.
- 2.2 Large Neighborhood Park Design-Guidelines
 - 2.2.1 Large Neighborhood Park 5.0 to 10.0 acres in size.
 - 2.2.2 A typical large neighborhood park shall include the following as a minimum:
 - 2.2.3 Separate play equipment for ages 2-5 years old and 5-12 years old.
 - 2.2.4 All play equipment and surfacing must be IPEMA certified to meet all requirements of ASTM, CPSC and ADA.
 - 2.2.4.1 The play equipment for 2-5 years olds shall include the following components as a minimum.
 - 2.2.4.1.1 Ten (10) elevated play components, five (5) of which must be ADA accessible.
 - 2.2.4.1.2 One (1) slide
 - 2.2.4.1.3 One (1) transfer station or ADA ramp
 - 2.2.4.1.4 Five (5) ADA accessible ground level components.
 - 2.2.4.1.5 Two Bay swing components.
 - 2.2.4.1.6 Playground Sign Age appropriate
 - 2.2.4.2 The play equipment for 5-12 year olds shall include the following components as a minimum.
 - 2.2.4.2.1 Fifteen (15) elevated play components, ten (10) of which must be ADA accessible.
 - 2.2.4.2.2 One (1) slide.
 - 2.2.4.2.3 One (1) transfer station
 - 2.2.4.2.4 Ten (10) ADA accessible ground level components.
 - 2.2.4.2.5 Two (2) swings one (1) of which shall be ADA accessible.



- 2.2.4.2.6 Two Bay swing components.
- 2.2.4.2.7 Playground sign Age appropriate
- 2.2.5 Playground Surfacing must be playground certified manufactured wood fiber. The Contractor shall provide the City with a letter from the playground manufacturer or designee stating compliance with IPEMA, ASTM, CPSC and ADA.
- 2.2.6 Benches to accommodate sixteen (16) users. At least two benches shall be ADA accessible via pathways to the parking lot and neighborhood sidewalks.
- 2.2.7 Tables to accommodate twenty-four (24) users. At least two tables shall be ADA accessible via pathways to the parking lot and neighborhood sidewalks.
- 2.2.8 Trash receptacles. Minimum of five (5) located with easy access for maintenance.
- 2.2.9 Accessible pathways leading to play structures, tables, basketball courts, etc. and neighborhood sidewalks wherever possible.
- 2.2.10 Shade structure. Minimum 600 square feet of coverage.
- 2.2.11 ADA accessible Drinking Fountain.
- 2.2.12 Quick coupler within a locking box, located centrally and near the play and shade structures.
- 2.2.13 Turf play area, to be sized to accommodate athletic competition. Grade on turf areas shall be no less that 1 % nor greater than 2%.
- 2.2.14 Deciduous Shade trees. Minimum of twenty (20).
- 2.2.15 Appropriate shrub planting. Minimum of fifty (50) 5 gallon shrubs
- 2.2.16 ADA accessible Basketball court. Minimum of two (2) goals, full court.
- 2.2.17 Skate park elements. Minimum of eight (8) elements and minimum surface area of 10,000 square feet.
- 2.2.18 Skate Park Rules Sign.
- 2.2.19 Park Rules sign, one each entrance to park.
- 2.2.20 ADA accessible parking lot with off street parking for twelve or more automobiles including two or more handicap accessible parking spaces with signs, of which one shall be van accessible.
- 2.2.21 Additional items may be incorporated at the discretion of the Landscape Architect.
- 2.2.22 The Department and the Parks and Recreation Commission reserve the right to require additional elements in the design of the park. These requirements will be provided to the Landscape Architect by staff prior to final presentation of the schematic design, and by the Commission during a regularly scheduled Commission meeting.

2.3 Regional Park

- 2.3.1 Regional Park Park Larger than 10 acres.
- 2.3.2 The City of Rio Rancho will provide a specific program for expected uses to the Landscape Architect for any Regional Parks. Uses will be intended to maximize recreation activities while optimizing water use.
- 2.3.3 The City shall work with the Developer/Contractor to identify minimum design elements for all parks meeting "Regional Park" criteria. Generally, a Regional Park will contain all elements of a neighborhood park plus a minimum 2 acres of



playing fields or courts for organized sports. Regional Parks will also have appropriate parking lot and field or court lighting to support organized sports.

2.4 Additional Elements and Improvements

2.4.1 Softball and Baseball fields, fenced dog park areas, disc golf courses, horse shoe pits, and tennis, racquetball, volleyball, cricket and bocce courts, shall be considered as additional elements or improvements, and when proposed in a park design, the City shall provide preferred construction criteria, to the Contractor prior to submission of park construction plans for Design Review.

3. Landscape Planting

Reference Section 3 – Standard Specification, Subsection 7

- 3.1 All landscaped areas shall be designed to prevent off-site run-off or overspray of irrigation water.
- 3.2 Species of trees, shrubs and ground cover intended to improve parks, trails and any other recreation facilities shall follow the list of approved and prohibited species found in the City's Landscaping Ordinance and or Vision 2020 Plan. Exceptions to this list may occur at the direction or approval of the Department.
- 3.3 All trees, shrubs, plants, seeded turf and sodded turf shall be planted in amended soil and irrigated unless otherwise approved by the Department.
- 3.4 Trees shall be planted with a tree well as described in the specifications. After planting, mulch shall be added to tree and plant wells as described in the specifications.

4. Turf Grasses

Reference Section 3 – Standard Specification, Subsection 8 or 9

- 4.1 Grass mix for *seed* areas shall be approved by the Department prior to completion of project design. Grass mixes shall be specified on the Drawings and not in the Specifications.
- 4.2 Grass mix for *sod* areas shall be approved by the Department prior to completion of project design. Grass mixes for sod shall be specified on the Drawings and not in the Specifications.
- 4.3 The Contractor shall include the Department's representatives in project inspections, reviews for substantial completion and final completion.
- 4.4 Soil shall be amended as described in Section 3 Standard Specifications, Subsections 8 or 9 prior to seeding or sodding.
- 4.5 Turf play area, when required to be sized to accommodate athletic competition, shall have a grade neither less than 1 % nor greater than 2%.
- 4.6 All grass areas shall have full head to head coverage irrigation systems.
- 4.7 All grass and landscape areas and the related irrigation systems shall be designed to prevent off-site run-off or overspray of irrigation water.
- 4.8 If seed is used to establish turf for a playfield or an athletic field, the entire area shall be fenced so as to remain out of use for a one year establishment period or at the direction of the Department. The City will reserve the right to withhold final approval/acceptance of a park until seeded fields are established.
- 4.9 No turf grass shall be planted within 8'-0" of the back of any street curbs.
- 4.10 A concrete mow strip or sidewalk shall be installed at the edge of all turf grass (See Standard Specifications and Details).



5. Irrigation System

Reference Section 3 – Standard Specification, Subsection 10

- 5.1 Irrigation product brands and models shall be approved by the Department prior to the design of the irrigation system. The irrigation system shall use products from the approved products described in the Irrigation Specifications. Contractor must obtain written approval from the Department to use any irrigation products not described or listed in the Irrigation Specifications.
 - *Note: Due to City-wide maintenance requirements, the City prefers and in some cases requires Rainbird parts.
 - 5.1.1 All irrigation systems for parks or landscape projects shall have an independent water meter, the size of which shall be determined by size of the irrigated area in the park or landscaped area. In all cases, landscape irrigation systems with large areas of plant material, such as eighteen or more rotor sprinkler zones, shall have multiple water meters. Each meter shall have a backflow preventer as required, permitted and inspected by City of Rio Rancho certified tester as described in Ordinance 51 Water and Wastewater Rules and Rates.
- 5.2 All irrigation plans shall be reviewed and approved as part of a complete set of construction plans, and shall also indicate proposed site grading and drainage.
 - 5.2.1 Irrigation systems shall be designed to prevent off-site run-off or overspray of irrigation water.
 - 5.2.2 Lines with rotors, pop-up heads and drip shall be on separate valves.
 - 5.2.3 Irrigation systems on slopes shall be designed so that heads at bottom of slope are on separate valves from heads on side and top of slope. The irrigation system shall be zoned parallel to the topography.
 - 5.2.4 Irrigation plans shall state existing static pressure at meter or point of connection. Typical minimum design pressure is 60 psi, but actual pressure must be verified prior to irrigation system design. The following statement shall appear on each irrigation plan.
 - "At the time of final acceptance, the Contractor shall demonstrate to the City, that the operating pressure at the heads has been adjusted to match the specified design operating pressure for each valve."
 - 5.2.5 All irrigation systems shall utilize a Master controller capable of being connected to the City of Rio Rancho Central Control System. The City will provide brand and model specifications to the Landscape Architect.
 - 5.2.6 All irrigation systems shall utilize a master valve and flow meter.
 - 5.2.7 Each irrigation control valve shall be labeled numerically.
- 5.3 Each irrigation plan shall have a System Performance Information Chart that provides the following information for each control valve:
 - 5.3.1 Control valve Number.
 - 5.3.2 Valve brand, model number and size.
 - 5.3.3 Irrigation head brand and model number.
 - 5.3.4 Irrigation head nozzle size.
 - 5.3.5 Irrigation head spacing.



- 5.3.6 Irrigation head gallons per minute.
- 5.3.7 Total gallons per minute.
- 5.3.8 Design operating pressure at the head.
- 5.3.9 Precipitation rate at design operating pressure.
- 5.3.10 Length of time required to operate valve in order to apply 0.33 inches of water.
- 5.4 Irrigation systems shall be designed so that the system has the capacity to place 2 inches of water per week on high water use grasses and 1 inch of water per week on low water use grasses. This water shall be applied in a six day period during a watering window from 10:00 p.m. to 10:00 a.m. as per City of Rio Rancho Water Conservation Ordinance Chapter 52. Irrigation systems shall also be designed to adequately water landscape other than turf. Landscaped areas other than turf shall generally be xeriscape in plant selection, placement and irrigation system design.
 - 5.4.1 All parks with greater than one (1) acre of turf shall pass a water audit conducted by a certified water auditor. The system shall have a minimum distribution uniformity of .70
 - 5.4.2 All grass areas shall have full head to head coverage irrigation systems.



3. STANDARD SPECIFICATIONS

International Building Code and New Mexico Administrative Code requirements are to be followed for all design, construction and improvements made to parks, trails and related facilities. It is the responsibility of the project Landscape Architect and/or Engineer, registered in the State of New Mexico, to ensure that these Codes and City of Rio Rancho adopted Codes, Ordinances and Standards are followed in the design of the facility. It is the responsibility of the Licensed Contractor to ensure these codes and standards are followed during construction, and that the project is inspected as required by any and all permits, and as described in this document.

1. PAVING

PART 1 GENERAL

1.01 SUMMARY:

A. Work under this section consists of preparing all paved areas indicated on the Drawing for parking lots, sidewalks/paths, courts, and skate parks according to the specifications, and furnishing and installing all materials as specified herein.

1.02 REFERENCE STANDARDS:

A. Paved surfaces shall follow national and local codes, and the paving standards of the Department of Public Works, unless otherwise stated herein.

PART 2 PRODUCTS

2.01 ASPHALT SURFACES:

- A. Parking lots shall follow the City Standard for "paved pedestrian trail or parking lot" through the Department of Public Work's standard sheet "Pavement Sections DWG. No. PS-01."
- B. At a minimum, Basketball Courts shall be paved with asphalt. If a Basketball Court is constructed of concrete, it shall follow the specifications for Concrete Surfaces below. Basketball Courts shall be made ADA accessible via pathways to the parking lot, and to neighborhood sidewalks wherever possible. Basketball goals and courts shall be oriented as a half court if one goal is required and oriented as a full court if two goals are required.

2.02 CONCRETE SURFACES:

- A. Sidewalks and concrete pads shall follow the City Standard for sidewalks through the Department of Public Work's standard sheet "Sidewalk and Residential Driveway DWG. NO DW-01."
- B. Skate Parks shall be made ADA accessible via pathways to the parking lot and to



neighborhood sidewalks wherever possible. The Contractor shall work with the Department and Parks and Recreation Commission to obtain public input for the final selection of components and design.

PART 3 EXECUTION

3.01 SITE PREPARATION:

A. Grading and sub grade preparations for all paved surfaces shall follow the Public Works standard specifications for concrete sidewalks and asphalt paving, or the Department's standard specifications herein. All paved surfaces shall account for run-off and shall comply with local codes for storm water run-off.

3.02 INSTALLATION:

- A. All paved surfaces shall be designed to ensure that surface ponding is negligible. Contractor will submit concrete pads, courts and skate parks to a ponding test where water will be sprayed on the surface and runoff and/or ponding observed.
- B. Parking lots: shall follow the City Standard as shown on the standard sheet "Pavement Sections DWG. No. PS-01," where a minimum 3 inches of asphalt type C, over 6inches of base course/sub-grade prep (95% minimum compaction), over fill or undisturbed earth (90% compaction).
- C. Asphalt and concrete basket ball courts: Asphalt shall be 2" thick with a smooth finish. Surface shall be leveled, smoothed and finished to prevent ponding of water. Asphalt shall be laid over a prime coat applied over six inch prepared sub grade compacted to 95%. Finish grade of either asphalt or concrete to match finish grade of surrounding area. Court shall have a 2% slope. Courts shall be sized and striped to meet High School or College court dimensions. Concrete basketball courts pad shall be 4" thick, 4000 psi with 6" x 6" welded wire mesh (WWM). WWM to be supported by 2" high chairs and tied at all intersections, over 95% compacted sub grade.
- D. Sidewalks and concrete pads: shall follow the City Standard for sidewalks through the Department of Public Work's standard sheet "Sidewalk and Residential Driveway DWG. NO DW-01." These standards indicate the use of 3000 psi Portland Cement Concrete on 6" prepared sub grade, compacted to 95% ASTM D 1557. Sidewalks / ADA paths shall be a minimum of 5' wide within the park.
- E. Skate Park Pads: All Skate Parks will have a concrete skate pad. The concrete pad shall be 4" thick, 4000 psi with 6" x 6" welded wire mesh (WWM). WWM to be supported by 2" high chairs and tied at all intersections, over 95% compacted sub grade. The 4000 psi concrete will have a hard trowel finish (12 passes), with no broom finish, unless otherwise directed by the City. Saw cut joints shall be 1/8" wide by ½" deep and shall be located as shown on the



Drawings. Expansion joints shall be placed where they will not impede skate wheels. Joints between pours in the middle of a slab shall be keyed or doweled cold joints. Finish surface shall not have deviations greater than 1/8" as measured with a 10' long straight edge. Grading is not acceptable for remedying deviations. (See Skate Park Elements under Standard Specifications for Playground Structures).

3.03 MAINTENANCE AND PROTECTION:

A. Maintenance and protection of asphalt and concrete paved surfacing shall begin immediately following the last operation of installation and shall continue until final acceptance of the park. Maintenance shall include regular use, weather and vandalism related repair and replacement, removal of debris, and such other operations as may be necessary to guarantee safe use of all paved surfaces. Replacement surfacing or City directed patching shall be with material of the same quality as that which is being replaced.

3.04 GUARANTEE:

A. All asphalt and concrete paved surfaces shall be in compliance with City specifications, and found free of any safety hazards or defects for twelve months following the date of final acceptance by the City.

3.05 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or Landscape Architect.
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Sub grade prepared prior to paving.
- 2. Asphalt and/or concrete surfaces within 48 hours of paving.
- 3. Ponding test.
- 4. Asphalt and/or concrete courts following striping.
- 5. Paved surfaces shall be inspected 6 months after completion.
- 6. Paved surfaces shall be inspected 12 months after completion.



2. TRAILS

PART 1 GENERAL, PRODUCTS AND EXECUTION

1.01 SUMMARY:

This section addresses the construction of a variety of trails and paths that may or may not be included as an improvement in a park project. These trail specifications are applicable to trails and paths that will be constructed by the City or constructed by others and dedicated to the City.

A. Paved trails

- 1. Paved trails within parks (not including sidewalks) and multi-purpose trails within subdivisions shall follow the City Standard for "paved pedestrian trail or parking lot" through the Department of Public Work's standard sheet "Pavement Sections DWG. No. PS-01." These standards indicate a minimum 3 inches of asphalt type C, over 6inches of base course/sub-grade prep (95% minimum compaction).
- 2. Paved trails shall all be prepared as stated below to meet minimum ADA accessibility requirements. Paved trails shall be a minimum of 8 feet wide within parks and 12 feet wide when used as multipurpose trails within subdivisions. In the design phase, no slope shall be greater than 8%, and wherever there is a pivot or turning point, it shall allow for a 5 foot by 5 foot level space. Based on ADA requirements, level landings shall be provided at appropriate intervals based on the designed slopes over the course of the trail.
- 3. A minimum of 2 feet of clearance between the edge of the path and any obstructions, such as bushes, trees, signs or railings shall be maintained.

B. Crusher Fine Trails

- 1. Crusher Fine Trails within parks and walking trails within subdivisions will all be prepared as stated below to meet minimum ADA accessibility requirements. Crusher fine paths will be a minimum of 8 feet wide within parks and 12 feet wide when used as walking trails within subdivisions. In the design phase, no slope will be greater than 8%, and wherever there is a pivot or turning point, it will allow for a minimum 5 foot by 5 foot level space. Based on ADA requirements, level landings shall be provided at appropriate intervals based on the designed slopes over the course of the trail.
- 2. All paths will be stabilized or solidified with a product such as PolyPavement or an equivalent approved by the Department. Grade and compact, sub grade to 95% compaction, and a 4 inch depth of crusher fines to 90% compaction at the desired alignment and elevation; spray- apply the required amount of properly diluted stabilizer onto the compact crusher fine surface as directed by the manufacturer; allow the soil to dry. If a PolyPavement equivalent is used, apply to crusher fines using manufacturer's guidelines if those guidelines vary from the directions above. Trails shall have a uniform surface free of voids.



- depressions, or raised areas greater than ½" as determined by a 10' long straight line test. All trail surfaces within parks or on trails that will be maintained by the City will be inspected for all above criteria to the City's satisfaction prior to acceptance.
- 3. Crusher fine paths in or adjacent to turf areas shall have 6 inch by 6 inch concrete mow strip between the path and turf.

A. Open Space Trails

Open space trails are defined as trails or foot paths that are located in a natural setting or mostly unimproved state, and may or may not be ADA accessible throughout their lengths.

1. <u>Improved Multi- Purpose open space trails</u>

- a. Improved Multi-Purpose open space trails shall be, wherever possible, twelve feet wide, with a minimum eight foot wide crusher fine pedestrian portion adjacent to a four foot wide uncompacted native material equine portion. The Department may determine that the crusher fine portion may or may not be compacted or stabilized. The Department may also determine that it is necessary that up to four feet on either side of the constructed trail be cleared, mowed or other wise kept free of vegetative growth. Both of these determinations will be made on a case by case basis. Minimal disturbance of the native vegetation or habitat during trail construction is allowed. All disturbed areas outside of the twenty foot expanse of the trail shall be returned to natural conditions through native reseeding or other methods approved by the Department.
- b. Improved Multi-Purpose Open Space trails as commuter connections: In addition to the above conditions, if this type of trail is intended as a commuter connection, the crusher fine portion of the trail may be asphalt at the determination of the Department. As a minimum, three inches of asphalt shall be laid over six inch sub-grade prep with 95% compaction.

2. <u>Improved Open Space Trails</u>

a. Improved Open Space Trails shall be, at a minimum, eight feet wide compacted native material. The Department may determine that it is necessary for up to four feet on either side of the constructed trail be cleared, mowed or other wise kept free of vegetative growth. This determination will be made on a case by case basis. Minimal disturbance of native vegetation or habitat during trail construction is allowed. All disturbed areas outside of the twenty foot expanse of the trail shall be returned to natural conditions through native reseeding or other methods approved by the Department.

3. Open Space Foot Paths

a. Open Space Foot Paths will be considered in open space recreation areas with varied terrain and slopes, and where a high priority exists to maintain the integrity of the existing native vegetation and habitat. Paths shall be, at a minimum, four feet wide native material. Foot paths may or may not be compacted depending on the natural condition of the path. Foot paths may not be eligible for ADA accessible designation. Both of these determinations will be made on a case by case basis. Unless noxious



vegetation is found, the areas adjacent to the paths will not be cleared or otherwise disturbed.

1.02 MAINTENANCE AND PROTECTION:

A. Maintenance and protection of trails as part of a park project shall begin Immediately, following the last operation of installation and shall continue until final acceptance of the park. Maintenance shall include regular use, weather and vandalism related repair and replacement, removal of debris, and such other operations as may be necessary to guarantee safe use of all trail surfaces. Replacement surfacing or City directed patching shall be with material of the same quality as that which is being replaced.

1.03 GUARANTEE:

A. All asphalt and trail surfaces shall be in compliance with City specifications, and found free of any safety hazards or defects for twelve months following the date of final acceptance by the City. Replacement surfacing or City directed patching of trail sections from failure of materials or due to workmanship shall be with material of the same quality as that which is being replaced.

1.04 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or Landscape Architect.
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Sub grade prepared prior to trail installation.
- 2. Surfaces treated with stabilizer within 48 hours of application.
- 4. Asphalt trails within 48 hours of paving.
- 5. Trail surfaces shall be inspected 6 months after completion.
- 6. Trail surfaces shall be inspected 12 months after completion.



3. LIGHTING

PART 1 GENERAL

1.01 SUMMARY:

This section addresses the recommended practices and design of lighting systems associated with parks, courts and recreation fields. Lighting may or may not be a required improvement in a park project. These recommendations and design requirements apply to lighting systems that will be constructed by the City, or constructed by others and dedicated to the City.

- A. The following "IESNA Recommended Practices" RP-6 (Sports), RP-20 (Parking Facilities), and RP-33 (Exterior Environment) are recommended as additional guidelines for site lighting. The City will direct the Contractor to utilize the preferred form of lighting control (timer, light sensor, etc). Lighting systems and materials shall be designed and constructed in accordance with all local codes.
 - 1. <u>Lighting requirements for park parking lots</u> (other than on-street parking): Lighting should provide for appropriate and desired night time illumination for all intended uses of the site to promote a safe environment for those using the facility. Parking lots associated with park or trail head facilities shall follow the maximum height and wattage, and all shielding requirements for fixtures as stated in Ordinance 159. Lighting shall be required for parking lots with 20 parking spaces or more. Lighting shall be designed to provide uniform lighting throughout the entire parking lot with no dark patches.
 - 2. <u>Lighting Plan.</u> If lighting is required at a facility, to light courts, fields or building envelopes in addition to a parking lot, or for the purpose of crime prevention lighting as identified by Department or Police Department staff, a complete lighting plan including the locations of all lighting fixtures, fixture descriptions, lamp type and wattage, and lighting coverage or photometric plan shall be prepared and stamped by a licensed engineer and submitted as a separate sheet in the construction plans described in section 1.1.2 of this document.
 - 3. <u>Lighting requirements for playing courts</u>. For playing courts sized less than 10,000 square feet, lighting shall comply with the Parking lot lighting requirements identified in City of Rio Rancho Ordinance 159. Courts sized greater than 10,000 square feet shall follow the approved national lighting standards required for rules for evening or lighted play for the sport intended to utilize the court (including but not limited to tennis, volley ball, racquetball, basket ball).
 - 4. <u>Lighting requirements for playing fields.</u> Playing fields greater than 10,000 square feet shall follow the approved national lighting standards required for rules for evening or lighted play for the adult and/or youth sport or sports intended to utilize the fields (including but not limited to Little League, softball, baseball, soccer, flag football, YAFL, cricket).



1.02 MAINTENANCE AND PROTECTION:

A. Contractor maintenance and protection of lighting systems as part of a park project shall begin immediately, following the last operation of installation and shall continue until final acceptance of the park. Maintenance shall include regular use, weather and vandalism related repair and replacement, removal of debris, and such other operations as may be necessary to guarantee safe use of the lighting system. Replacement shall be with materials of the same brand and quality as that which is being replaced. If a replacement brand or model is not available, the City may consider appropriate alternatives.

1.03 GUARANTEE:

A. The lighting system shall be in compliance with City specifications and local codes, and found free of any safety hazards or defects for twelve months following the date of final acceptance by the City. Materials replaced due to workmanship or mechanical failure shall be replaced with material of the same brand and quality as that which is being replaced.

1.04 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or Landscape Architect.
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Lighting system trenching and conduit.
- 2. Meter, transformer, box, wiring and connections within 48 hours of installation.
- 4. All light fixtures within 48 hours of installation.
- 5. Lighting system shall be inspected 6 months after completion.
- 6. Lighting system shall be inspected 12 months after completion.



4. FENCING

PART 1 GENERAL

1.02 SUMMARY:

- A. Work under this section consists of preparing all areas indicated on the Drawing for fencing according to the specifications, and furnishing and installing all posts, cables, fencing and gates as specified herein. Fencing may or may not be a required improvement in a park project. These specifications apply to fencing that will be constructed by the City, or constructed by others and dedicated to the City. Where ponds are part of a park facility and are required to be fenced, SSCAFCA (the Southern Sandoval County Flood Control Authority) must review and approve any proposed fencing specifications on the Drawings. The following specifications meet the Department's minimum requirements. Fencing with greater aesthetic or structural attributes will be considered by the Department on a case by case basis.
 - 1. <u>Skate Park Fencing.</u> Skate park fencing shall be 4' high, vinyl coated chain link with a bottom rail. Posts shall be steel posts with caps, installed in the skate park concrete pad. Entry points shall have a minimum width of 4' and a maximum width of 6'.
 - 2. <u>Dog Park Fencing.</u> Dog park fencing shall be 4' high chain link with a bottom rail. Posts shall be steel posts with caps, anchored in a concrete footing. Entry points shall be double gated with latching gates. Large and small dog park areas shall be separated by 4' high chain link fencing with a bottom rail. Dual park entry points shall also be separated by 4' high chain link fencing with a bottom rail and each half shall be double gated with latching gates. At a minimum an 8' wide hinged or rolling maintenance gate, shall be provided.
 - 3. Post and Cable. Post and cable shall be metal posts with caps, anchored in a concrete footing. The finished height of the post, hanging height of the cable and number of strands of cable shall be determined on a site by site basis. Wherever access is needed, the post and cable shall have a locked "drop" section where the cable has been cut, looped and terminated to allow for a lock. The cable between the cut and the next post shall have a clamp or other device that will prevent the cable from going slack or being pulled through the post.
 - 4. <u>Drainage Pond and Open Space Fencing</u>. Park fencing that surrounds a drainage pond or is indicated along open space that is adjacent to the park shall be constructed of 4"x4"x8" wooden or metal posts, set at least 3" in the ground, with 5 strands of barbless wire fencing. A pipe maintenance gate, at least 8" wide shall be provided for pond and open space access.

1.02 MAINTENANCE AND PROTECTION:



A. Contractor maintenance and protection of fencing as part of a park project shall begin immediately, following the last operation of installation and shall continue until final acceptance of the park. Maintenance shall include regular use, weather and vandalism related repair and replacement, removal of debris trapped in the fencing, fixing breaks, tightening sections, and such other operations as may be necessary to guarantee proper function of all sections of fencing. Replacement shall be with materials of the same brand or type and quality as that which is being replaced.

1.03 GUARANTEE:

A. Fencing shall be in compliance with City specifications and found free of any safety hazards or defects for twelve months following the date of final acceptance by the City. Materials replaced due to workmanship or material failure shall be replaced with material of the same brand, type and quality as that which is being replaced.

1.04 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or Landscape Architect.
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Post Installation prior to fencing installation.
- 2. Fencing and gates within 48 hours of installation.
- 5. Fencing shall be inspected 6 months after completion.
- 6. Fencing shall be inspected 12 months after completion.



5. PLAYGROUND STRUCTURES

PART 1 GENERAL

1.01 SUMMARY:

- A. Work under this section consists of preparing all areas indicated on the Drawing for playground structures according to the specifications and furnishing as specified herein.
- B. For City-built facilities, the Department and the Parks & Recreation Commission shall hold public meetings with youth and residents to select all play equipment prior to issuance of final construction plans.
- C. For facilities built as part of a subdivision by a Developer, the Contractor shall make every effort to ensure community input in the selection of all play equipment prior to submission of construction plans. The Department will work with the Contractor to expedite the process.

1.02 REFERENCE STANDARDS:

- A. All play equipment and surfacing must be IPEMA certified to meet all requirements of ASTM, CPSC and ADA.
- B. All equipment shall be installed according to the manufacturer's instructions, by a certified NPSI and Manufacturer-Certified Installer. The Contractor shall provide the City with a letter attesting to this. Any constructed playground must have and pass a playground audit. The Contractor shall provide the City with a letter and backup documentation attesting to this.

PART 2 PRODUCTS

2.01 PLAYGROUND EQUIPMENT:

- A. Separate play equipment for ages 2-5 year olds and 5-12 year olds are a requirement for all parks. The City may consider installation of combined, 2 12 year old play equipment, and the number and types of play components, at its discretion.
- B. Both 2 5 and 5 12 year old structures must have a clamp post system. Posts must be 5" posts. Pre-installed flanges are acceptable on the 2- 5 year old structures. Decks must have holes 3/8" or smaller, but shall pass water, playground surfacing and other common park materials. Bridges in perforated metal shall not be larger than 5/16".
- C. Permaline panels are preferred. Metal panels are acceptable, but must be painted.



- D. Age-appropriate playground signs from the manufacturer of the playground equipment shall be installed, one each for the 2-5 and 5-12 year old structures. The 2-5 year old structure shall have a yellow sign with red lettering. The 5-12 year old structure shall have a red sign with yellow lettering. The signs shall be surface mounted to posts provided by the manufacturer and direct-bury installed.
- E. Playground Surfacing must be playground certified manufactured wood fiber. The Contractor shall provide the City with a certification letter from the manufacturer.

2.02 ADDITIONAL PLAY STRUCTURES:

- A. Play structures and stand alone units must be approved by City, installed according to manufacturer's instructions, and carry a minimum 5 year warranty. Play structures and stand alone units must be placed over playground surfacing as recommended by manufacturer. Play ground surfacing must be playground certified manufactured wood fiber. The Contractor shall provide the City with a certification letter from the manufacturer.
- B. <u>Climbing structures:</u> Climbing structures may include walls, boulders, webs, nets, and independent climbers, and must be manufactured for outdoor use with no protective cover.
- C. <u>Swings</u>: Swings should be from the same manufacturer, unless otherwise authorized by the City, and should have a similar color and design as other playground equipment at the job site for continuity in appearance. Swings may have two or three legged frames. Swings must be direct-bury installation.

2.03 UNALLOWABLE PLAYGROUND EQUIPMENT

- A. The following materials and criteria are prohibited for use in City of Rio Rancho parks.
 - 1. Mirror or window panels
 - 2. Wooden components or structures
 - 3. Steel and tube slides
 - 4. Tile Safety Surfacing
 - 5. Expanded Metal Decks
 - 6. Decks with holes larger than 3/8"
 - 7. Structures with decks that do not use a clamping system
 - 8. Structures with decks higher than 48" with posts smaller than 5"
 - 9. Rotationally molded plastic panels
 - 10. Any other products that do not conform to ASTM and CPSC Standards
 - 11. Vendor Representative shall be local (Greater Albuquerque Metro Area)

PART 3 EXECUTION



3.01 SITE PREPARATION:

- A. The playground area shall be graded and compacted to meet manufacturer's requirements for site preparation. The area shall be graded to ensure level placement and installation of playground equipment, and to prevent any collection or pooling of water.
- B. The playground area shall be sized and shaped to adequately allow for the manufacturer's determined use zone for each of the pieces of equipment to be installed. Overlap of fall zones shall only be allowed if recommended and approved by the manufacturer and the City.
- C. Border: The playground area shall have a concrete strip molding or standard concrete sidewalk perimeter that will be installed flush to the concrete ADA accessible ramp and path associated with the playground area, as defined by ASTM and CPSC. Alternatively, the City will consider the use of Playground Manufacturer's borders on a site by site basis.

3.02 INSTALLATION:

- A. All playground equipment components and hardware shall be delivered to the job site on the day of installation, or to a prior approved location identified by the City, or a storage facility on the job site approved by the City. All equipment shall be inspected by installer to ensure that all components and hardware are accounted for and free of defect from shipping.
- B. All playground structures shall be installed as per manufacturer's instructions.

3.03 MAINTENANCE AND PROTECTION:

A. Maintenance and protection of play structures and surfacing shall begin immediately following the last operation of installation and shall continue until final acceptance of the park. Maintenance shall include regular use, weather and vandalism related repair and replacement, removal of debris, tightening and adjusting of bolts as needed, and such other operations as may be necessary to guarantee safe use of the equipment. Replacement equipment and hardware shall be from the same manufacturer and of the same quality as that which is being replaced at the time of acceptance.

3.04 GUARANTEE:

- A. All equipment shall be in compliance with a playground audit, and found free of any safety hazards or defects for twelve months following the date of final acceptance by the City.
- B. The following warranties (manufacturer or otherwise) shall be provided for specified equipment unless state otherwise herein. Letters or warranty certificates



for installed equipment shall be provided to the City for the following minimum periods of time, at the time of final acceptance of the facility.

- 1. Posts 75 year warranty
- 2. Plastic and Steel Components 15 year warranty
- 3. Play Equipment Coatings 15 year warranty
- 4. Moving Parts 3 year warranty
- C. The Contractor shall obtain and provide Certificates of Liability Insurance for the following amounts, to the City to be placed on file, prior to the start of work.
 - 1. Playground Manufacturer \$5,000,000
 - 2. Playground Sales Representative/Distributor \$1,000,000
 - 3. Playground Installer \$1,000,000

3.05 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or City Designee (i.e. Landscape Architect, NPSI Inspector).
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Play area border.
- 2. Structures shall be inspected after completion, a playground audit performed and all issues addressed.
- 3. Playground/Play structure surfacing.
- 4. Structures shall be inspected 6 months after completion.
- 5. Structures shall be inspected 12 months after completion.



6. PARK AMENITIES

PART 1 GENERAL

1.01 SUMMARY:

A. Work under this section consists of preparing all areas indicated on the Drawing for amenities and structures according to the specifications and furnishing and installing all paving, hardware and equipment as specified herein.

1.02 REFERENCE STANDARDS:

A. Skate Park components shall be installed by Skate Park Manufacturer – Certified Installer. The Contractor shall provide the City a letter attesting to this.

PART 2 PRODUCTS

2.01 ADDITIONAL PARK AMENITIES:

- A. <u>Benches</u> shall be expanded, vinyl coated or perforated metal, concrete or recycled plastic. At new parks, benches shall be from the same manufacturer as tables and trash cans for continuity in appearance. Benches shall be in-ground mounted models.
- B. <u>Tables</u> shall be expanded, vinyl coated or perforated metal, aluminum, concrete or recycled plastic. At new parks, tables shall be from the same manufacturer as benches and trash cans for continuity in appearance. Single pedestal / leg tables will not be accepted by the City. Tables and their associated benches shall be inground mounted models.
- C. <u>Trash receptacles</u> will be located where most park activities are intended to occur (such as a shade structure, tables, playgrounds) and near the parking lot. Trash receptacles shall be expanded, vinyl coated or perforated metal, aluminum, concrete or recycled plastic. Trash receptacles shall have dome lids, unless otherwise approved. The City will not accept trash receptacles with locking doors. At new parks, trash cans shall be from the same manufacturer as tables and benches for continuity in appearance. Trash receptacles shall be in-ground or models.
- D. <u>Dog Waste Stations</u> shall be a single, plastic dispenser/receptacle unit on a metal post. The unit shall be able to dispense bags that are 8" x 13" on rolls, and the waste collection receptacle shall accommodate a 10 gallon bag or larger. The unit shall be lockable.
- E. <u>Shade structures</u> shall be purchased from NPSI certified playground or shade structure manufacturer or their representative, and shall not be constructed with raw materials on-site. The following shade structures are acceptable if they can be



justified for our region with an Evaluation Service Report or a registered, State of New Mexico Engineer's structural calculations. Steel post and roof construction shade structures are preferred, and must be installed on a concrete pad as per manufacturer's instructions. Shade structures should have colors that complement the other park amenities and play ground.

- F. <u>Drinking Fountains</u> units must be ADA accessible. The manufacturer and model shall be reviewed and approved by the City. A drainage sump shall be installed per a detail on the plans.
- G. <u>Skate & Bike park elements</u> may be concrete or modular. All elements must be constructed for weather, UV radiation and other conditions of outdoor use without a cover. Modular elements should have metal frames and metal panels. The City will consider use of recycled plastic panels. Actual elements should be chosen with City staff and community input. Anti-vandal hardware is required and anti-vandal surfacing is preferred wherever possible.
- H. <u>Skate Park Rules sign</u> shall be from the manufacturer of the equipment, and have exterior grade plastic, surface mount sign attached to direct-bury aluminum posts. Sign text shall have name of park and at a minimum, hours of operation, required protective equipment, prohibited activities and "Skate at your own risk" statement. The City's Representative will work with the contractor to determine appropriate sign language on a site by site and manufacturer basis.
- I. <u>Fitness stations</u> shall be purchased from certified playground or outdoor sport manufacturer, and will not be constructed with raw materials on-site. Stations must be highly durable and intended for outdoor use. Each station must be accompanied by instructional signage.

PART 3 EXECUTION

3.01 SITE PREPARATION:

- A. Installation locations for all amenities shall be prepared as required by the manufacturer as shown on the Drawings. Concrete pads for tables, chairs, benches, trash receptacles, and shade structures shall follow the concrete paving standards of the City's Public Works Department. Concrete pads for Skate Parks shall follow the Standard Specifications for Paving; subsection on Skate Parks.
- B. Water fountain site preparations shall follow local codes and ensure proper drainage if the fountain drain should be clogged and the trough overflow. The concrete pad providing accessibility to the fountain shall follow the concrete paving standards of the City's Public Works Department.

3.02 INSTALLATION:

A. All amenities shall be installed as per manufacturer's instructions, as described in the Drawings, and as permitted.



- B. ADA accessible amenities shall be properly oriented and made accessible via paths from the parking lot.
- C. Tables, benches and trash receptacles shall be in-ground mounted in dirt or turf, or vandal proof surface mounted when located on concrete pads.
- D. Shade structures shall be installed on a concrete pad and made ADA accessible. Engineered drawings are required for permitting and inspection of shade structures or similar structures 120 square feet or larger. These drawings shall include structural calculations justifying the structure for this region. Shade structures and their pads shall not be constructed without a permit.
- E. Drinking fountains shall be installed as per local codes. Drinking fountain installation shall include a sump suited to accommodate the level of anticipated fountain use. Any unpaved area surrounding the base of the drinking fountain, shall be filled with 1" gravel, 3" deep and made level to adjacent concrete paving.
- F. Modular Skate Park elements and signs shall be installed by Manufacturer-certified installer. The Skate Park job site shall be enclosed with construction fence prior to construction, and until all components are installed and accepted by the City. Component locations shall be determined prior to delivery of materials to the job site. All materials and hardware shall be inspected for damage after shipping, prior to installation.
- G. Fitness stations shall be direct-bury installed and shall have playground certified manufactured wood fiber in the activity zone. All stations shall be leveled and erected as intended by the manufacturer. Activity zones for fitness stations installed near each other shall not overlap.

3.03 MAINTENANCE AND PROTECTION:

A. Maintenance and protection of park amenities and surfacing shall begin immediately following the last operation of installation and shall continue until final acceptance of the park. Maintenance shall include regular use, weather and vandalism related repair and replacement, removal of debris, tightening and adjusting of bolts as needed, and such other operations as may be necessary to guarantee safe use of the equipment. Replacement equipment and hardware shall be from the same manufacturer and of the same quality as that which is being replaced at the time of acceptance.

3.04 GUARANTEE:

A. All equipment shall be in compliance with a play ground audit where applicable, and all equipment shall be found free of any safety hazards or defects for twelve months following the date of final acceptance by the City.



- B. The following warranties (manufacturer or otherwise) shall be provided for specified equipment unless state otherwise herein. Letters or warranty certificates for installed equipment shall be provided to the City for the following minimum periods of time, at the time of final acceptance of the facility.
 - 1. Skate Park Modular Components and hardware 15 year warranty
 - 2. Tables, benches and trash cans -15 year warranty
 - 3. Steel shade structure 10 year warranty
 - 4. Steel frame and cloth topper shade structure 10 year warranty steel frame, 5 year warranty on fabric.
- C. The Contractor shall obtain and provide Certificates of Liability Insurance for the following amounts, to the City to be placed on file, prior to the start of work.
 - 1. Manufacturer \$5,000.000
 - 2. Sales Representative/Distributor \$1,000,000
 - 3. Installer \$1,000,000

3.05 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or City Designee (i.e. Landscape Architect, NPSI or City Building Inspector).
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, a minimum 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Amenity (including shade structures and water fountains) installation area including dirt or concrete pad prior to amenity installation.
- 2. Installed amenity within 48 hours of installation.
- 3. Activity area surfacing (such as for fitness stations).
- 4. Amenities shall be inspected 6 months after completion.
- 5. Amenities shall be inspected 12 months after completion.



7. LANDSCAPE PLANTING

PART I GENERAL

1.01 SUMMARY:

A. Work under this section consists of the planting of trees, shrubs and ground covers, including the furnishing of all labor, equipment, and materials and performing all work in connection therewith in accordance with the Drawings and Specifications.

1.02 PLANT NAMES:

A. The botanic and common names used for the plants called for on the Drawings are generally in conformity with standardized plant names, or in conformity with the names accepted in the nursery trade.

1.03 PLANT MATERIAL SUBSTUTIONS:

- A. Plant material substitutions shall not be made without the written permission of the City. The use of materials differing in kind, quality or size from that specified will be allowed only after the City is convinced that all means of obtaining the specified materials have been exhausted.
 - 1. For City-built facilities, at the time bids are submitted, the Contractor is assumed to have located the materials necessary to complete the job as specified. All requests for substitutions must be submitted no later than five (5) days prior to the opening of bids.
 - 2. For facilities built as part of a subdivision by a Developer, the Contractor is assumed to have located the materials necessary to complete the job as specified by the time of the preconstruction meeting.

PART 2 PRODUCTS

2.01 PLANT MATERIALS:

- A. Complete plant list, including quantities, sizes and other requirements are shown on the Drawings. In the event that discrepancies occur between quantities of plants indicated in the plant list and on the Drawings, the plant quantities indicated on the Drawings shall govern.
- B. All shade trees shall be 2"caliper or larger. Any trees 3" caliper or larger shall be staked. All ornamental trees (flowering pear, flowering plum, etc.) shall be 2" caliper or larger.
- C. The following trees and shrubs shall not be planted in City park property:



Green Ash (Fraxinus pennsylvanica)

White Ash (Fraxinus Americana)

Elms (*Ulmus* species - some types acceptable with advanced approval).

Hackberry (Celtis occidentalis)

Black Locust (*Robinia pseudoacacia*)

Sugar Maple (*Acer saccharum*)

Silver Maple (Acer saccharinum)

Box Elder (*Acer negundo*)

Poplars (Most *Populus* species) including Aspens and the Female Cottonwood

Spruces (*Picea* species)

Weeping Willow (Salix sepulcralis)

Globe Willows (Salix matsudana)

Russian Olives (Elaeagnus angustifolia)

Pyracantha (Most *Pyracantha* species)

Ponderosa Pine (Pinus ponderosa)

Fruiting Trees

D. Species of trees, shrubs and ground cover intended to improve parks, trails and any other recreation facilities shall follow the list of native and allowed species found in the City's Landscape Ordinance and the Vision 2020 Plan. Exceptions to this list may occur at the direction or approval of the Department.

2.02 PLANT MATERIAL QUALITY:

- A. Plant material quality, size and condition shall be in accordance with American Standard for Nursery Stock, 1980, as published by the Committee on Horticultural Standards of the American Association of Nurserymen, Inc., the Drawings, and the following requirements:
 - 1. All plants shall be typical of their species or variety. All plants shall have normal, well-developed branches and vigorous root systems. They shall be sound, healthy, vigorous, and free from defects, disfiguring knots, abrasions of the bark, sunscale injuries, plant diseases, insect eggs, borers, and all other forms of infections.
 - 2. Unless otherwise stated on Drawings or approved by City, all plants shall be nursery grown and shall be tagged with nursery labels indicating species and variety.
 - 3. Container grown plant material shall have been grown in its delivery container for not less than six (6) months, but for not more than two (2) years. Any root-bound material will not be accepted.
 - 4. Balled and burlaped plant material shall have a solid ball of earth of minimum specified size and held in place securely by burlap and a stout twine or rope. Broken or loose balls will not be accepted. When inspecting trees, the City's Representative shall check for girdling roots by removing soil from top of root ball. The Contractor will also verify that all metal wire and burlap has been removed from the root ball prior to planting.
 - 5. Unless specifically noted on the Drawings, all trees shall have a single trunk



- that is strait and free of "dog legs", "crooks", "Y-crotches", or other disfiguring shapes. The central leader of all trees <u>shall not</u> have been pruned. Trees with double leaders are not acceptable.
- 6. All plant material shall have a uniform shape around its complete circumference. Plant material with irregular branching patterns or with branching patterns more highly developed on one side than on the other sides shall not be accepted.
- 7. All materials shall be inspected at the job site prior to planting and after planting. The City reserves the right to inspect all plant material at the Contractor's yard prior to delivery to the job site. The Contractor may request that the City inspect, at their convenience, plant material at a wholesale nursery of the contractor's choice prior to delivery of materials to the contractor's yard or job site.
- 8. The City shall be the judge of the quality and acceptability of all plant material. All rejected material shall be immediately removed from the site and replaced with acceptable material at no additional cost to the City.

2.03 PLANTING SOIL MIXTURE:

- A. Planting Soil Mixture to be a mixture of one part backfill amendment to three parts existing soil. The backfill amendment shall consist of:
 - 1. 70% by volume, organic compost. Compost to be screened to ½" or less, pH not to exceed 7.0, electrical conductivity (EC) of compost not to exceed 3.5 mnhos/cm. Percentage of organic matter shall be not less than 80%, tested by simple combustion. Total nitrogen (TKN+N03-N) shall not be less than I % by weight. Carbon to nitrogen ratio of compost shall not exceed 50:1.
 - 2. 30% by volume, "moisture-lite" (clean, screened, white vitric tuff, graded to 3/6" x 5/16").
 - 3. Components to be homogeneously mixed, in ten cubic yard batches to provide a uniform product, free from weed seeds, sticks, rocks, or other deleterious material.
 - 4. Variations in backfill amendment must be approved by the City.

2.04 MULCH:

A. Bark mulch shall be fresh, shredded mixture of 5" pieces of wood cambium and bark nuggets from coniferous trees, shall be free of other materials, and shall be free of obvious pests.

PART 3 EXECUTION

3.01 PLANTING OPERATIONS:

A. All landscaped areas are to be designed and executed so that there is <u>no off site</u> <u>run-off</u> of irrigation water.



- B. Planting operations as specified herein shall begin only when other work including placing of topsoil to finished grade has progressed sufficiently to permit planting and shall be performed only during favorable weather conditions in accordance with accepted practice.
- C. In any one day, only those plant materials intended to be planted that day shall be delivered to the project sites. Unless otherwise approved by City, all plant materials shall be located where shown on the plan except when adjustments due to field conditions are required.

3.02 PLANTING:

- A. All planting and backfilling shall be performed in accordance with accepted nursery practice, the Drawing, and following requirements:
 - 1. The Contractor shall take care when backfilling planters to provide adequate compaction of the fill material in order to prevent settling.
 - 2. Prepare all planting holes and install plants as shown on Drawing. Plants shall be set plumb and straight unless Drawings indicate otherwise.
 - 3. Backfill for planting holes shall be positioned in the hole and backfilled. The backfilling shall be completed, and materials tamped. When hole is nearly filled, water thoroughly and allow water to soak away. If settling of backfill occurs after watering, add more backfill to bring to finish grade.
 - 4. All trees shall have tree wells unless otherwise directed by the City. Tree wells located within hard (i.e. concrete pad) surface areas shall have a minimum interior area of 6' x 6' of bark mulch. If the tree well is within a hard surface with a narrow pedestrian corridor, the tree well shall have the same area as describe above, with a metal grate that meets surface grade. (or equal approved option). Tree wells located within soft (i.e. Turf Area) surface areas shall have a 6' diameter tree ring and minimum interior area of 6' x 6' of bark mulch.
 - 5. After completion of planting, all trees shall be pruned at the direction of the City.

3.03 MULCH1NG:

A. Mulching shall be completed as indicated on the Drawings or at the direction of the Department.

3.04 MAINTENANCE AND PROTECTION:

A. Maintenance and protection of trees, shrubs, and ground cover shall begin immediately following the last operation of installation for each plant and shall continue through the duration of the maintenance period, a minimum of thirty (30) days, or until the entire landscape project is accepted. Maintenance shall include watering, weeding, cultivating, removal and replacement of dead plant material,



removal of debris, resetting of trees to upright positions, restoration of earth basins, and such other operations as may be necessary for the health of the planted stock and the general appearance of the landscape areas: Care shall include protection of planted stock from damages resulting from trespass, erosion (including watering), weather, vandalism, disease and other hazards.

3.05 GUARANTEE:

A. All plant materials shall be guaranteed to be in a live, healthy, and normal growing condition following the date of final acceptance by the City through one twelve month growing season. Plant materials that are dead or in an unhealthy, impaired growth condition shall be removed and replaced by the Contractor as directed by the City at no additional cost. Replacement material shall be of equal quality, size, and species as that which is being replaced and shall be approved by the City prior to planting. Any plants replaced after the first six months of the guarantee period shall also be under warranty for six months after the replanting date.

3.06 INSPECTIONS:

- A. The following inspections shall be the <u>minimum</u> required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City.
- B. It shall be the responsibility of the Contractor to notify the City's representative, by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. If required by City, observe plant material at Contractor's yard prior to delivery to job site.
- 2. Observe material at the job site prior to and during planting.
- 3. Observe at end of 30-day maintenance period.
- 4. Observe 6 months after final completion.
- 5. Observation 12 months after final completion.



8. GRASS SODDING

PART 1 GENERAL

1.01 SUMMARY:

A. Work under this section consists of preparing all areas indicated on the Drawing for grass sodding according to the specifications and furnishing and installing all sod, fertilizer and soil amendments as specified herein.

1.02 REFERENCE STANDARDS:

A. ASPA (American Sod Producers Association) Guideline Specifications to Sodding.

PART 2 PRODUCTS

2.01 SOD MATERIAL:

- A. Grass Sod: Sod shall be as specified on the Drawings. The City reserves the right to require that a sample of sod and a written submittal of the seed mix shall be submitted a minimum of fifteen (15) days prior to laying sod. It shall be vigorous, well-rooted healthy turf free from disease, insect pests, weeds, other grasses, stones and other harmful or deleterious matter.
- B. Sod shall be cut by an approved mechanical sod cutter to a thickness of not more than 1" or less than ½". Sod pieces shall be cut a maximum of 18" wide. Handling of sod shall be done in a manner that will prevent tearing, breaking, drying or any other damage. Sod shall be installed in place on the site not more than 24 hours after cutting.
- C. Sod shall have no more than ½" of loose thatch. The sod shall be dense enough so that an entire strip can be lifted by the top 10% without breaking.

2.02 FERTILIZER:

A. Fertilizer shall be a granular form starter fertilizer with a guaranteed analysis of 18-24-16, unless otherwise directed by the City.

2.03 ORGANIC AMENDMENTS:

- A. Organic amendment shall consist of:
 - 1. 70% by volume, organic compost. Compost to be screened to ½" or less, pH not to exceed 7.0, electrical conductivity (EC) of compost not to exceed 3.5 mnhos/cm. Percentage of organic matter shall be not less than 80%, tested



- by simple combustion. Total nitrogen (TKN+N03-N) shall not be less than 1%, by weight. Carbon to nitrogen ratio of compost shall not exceed 50:1.
- 2. 10% by volume, "Ecolite" (clinoptilolite zeolite), screened to pass a #40 mesh screen.
- 3. 20% by volume, "Moisturelite," screened to pass a #40 mesh.
- 4. Components to be homogenously mixed, in ten cubic yard batches to provide a uniform product, free from weed seeds, sticks, rocks, or other deleterious material.

PART 3 EXECUTION

3.01 SOD BED PREPARATION:

- A. Prior to start of soil preparation all finish grades shall be established and approved as meeting the requirements of the grading plan.
- B. Apply a uniform 2" layer of organic amendment and 4lbs. of starter fertilizer per each 1,000 square feet to the entire area to be sodded. After application of organic amendment and starter fertilizer all areas to be sodded shall be ripped to a depth of twelve inches and thoroughly rototilled to a minimum depth of 6 inches. After rototilling is complete at cross directions, drag to an even grade, then roll for firmness.

3.02 SOD INSTALLATION:

- A. Before laying sod, the finish grade shall be brought to a firm, even surface, free from stones or lumps, and shaped to provide drainage. The finish grade shall be inspected and approved by the Landscape Architect prior to laying any sod.
- B. Lay sod over moistened soil, lightly raking the soil ahead of each sod strip. Sod shall be laid parallel to the direction of slope and shall have staggered joints. Pieces shall be fitted together tightly so that no joint is visible, and sod tamped firmly and evenly by hand. Stake as required on slopes.
- C. Water all sodded areas immediately after final rolling with fine spray to a depth of 4". Irrigate by means of the automatic underground irrigation system all sodded areas as often as necessary to promote healthy grass growth. Mowing during the maintenance period will be scheduled so that the grass is maintained at a height no shorter than two (2) inches and no greater than three (3) inches.

3.03 MAINTENANCE AND PROTECTION:

- A. Maintenance and protection shall continue for thirty (30) days, or until the entire landscape project is accepted. Acceptance shall occur after all sod is well rooted.
- B. The Contractor shall be the responsible for all maintenance during the maintenance period including but no limited to watering, mowing, weed removal, re-seeding, repair to damage from vandals or acts of God, and fertilizing.



3.04 GUARANTEE:

A. Sod shall be guaranteed to be in a live, healthy, and normal growing condition following the date of final acceptance by the City through one twelve month growing season. Sod that is dead or in an unhealthy, impaired growth condition shall be removed and replaced, or top dressed and seeded by the Contractor as directed by the City at no additional cost. Replacement seed or sod shall be of equal quality and species mix as that which is being replaced and shall be approved by the City prior to planting.

3.05 INSPECTIONS:

- A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City or Landscape Architect.
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

- 1. Automatic Rainbird irrigation system shall be installed, tested, and approved. (See Standard Specifications for Irrigation Systems)
- 2. Each phase of soil preparation shall be inspected in process prior to laying sod.
- 3. Finish grade shall be inspected.
- 4. Sod shall be inspected prior to laying.
- 5. Sod shall be inspected after completion.
- 6. Sod shall be inspected at end of 30-day maintenance period.
- 7. Sod shall be inspected 6 months after completion.
- 8. Sod shall be inspected 12 months after completion.



9. GRASS SEEDING

PART 1 GENERAL

- 1.01 Work under this section consists of preparing all areas indicated on the Drawings for grass seeding according to these specifications, and furnishing and installing all seed, fertilizer and soil amendments as called for by the drawings and as specified herein.
- 1.02 All soil areas, which have been prepared prior to the seeding season, shall be observed for effects of weather that have affected the quality of soil preparation. If the soil areas are unaffected, they will be seeded immediately after the opening of the current seeding season. If they have been affected, the City and Contractor shall identify the steps in Soil Bed Preparation that may need to be repeated prior to seeding.
- 1.03 All soil areas, which are prepared during the seeding season, shall be seeded that same season.

1.04 SUBMITTALS:

Submit soil analysis showing pH, soil texture analysis, soluble salts and sodium. Provide an interpretation of the soil test and recommendation of improvements or changes to the soil by a professional soil scientist certified by A.R.C.P.A.C.S.

PART 2 MATERIALS

2.01 SEED:

- A. Seed shall be as specified on the drawings.
- B. Each bag of seed shall be sealed and labeled by the seed dealer in accordance with Federal Seed Laws and New Mexico Department of Agriculture Labeling Laws. This includes: variety, kind of seed, lot number, purity, germination, percent crop, percent inert, percent weed (including noxious weeds), origin test date and net weight. Federal Seed Laws require that analysis shall be no older than 9 months for seed shipped intra-state.

2.03 FERTILIZER:

A. Fertilizer shall be granular form starter fertilizer with a guaranteed analysis of 18-24-16.

2.04 ORGANIC AMENDMENTS:

- A. Organic amendment shall consist of:
 - 1. 70%, by volume, organic compost. Compost to be screened to ½" or less, pH not to exceed 7.0, electrical conductivity (EC) of compost not to exceed 3.5 mnhos/cm. Percentage of organic matter shall be not less than 80%, tested



- by simple combustion. Total nitrogen (TKN + NO3-N) shall be not than 1%, by weight. Carbon to nitrogen ratio of compost shall not exceed 50:1.
- 2. 10%, by volume, "Ecolite" (clinoptilolite zeolite), screened to pass a #40 mesh screen.
- 3. 20%, by volume. "Moisturelite," screened to pass a #40 mesh.
- 4. Components to be homogeneously mixed, in ten cubic yard batches to provide a uniform product, free from weed seeds, sticks, rocks, or other deleterious material.

2.05 WETTING AGENT:

A. Wetting agent shall be Hydro-wet-RTA as manufactured by KALO, Inc., 4550 W 109th Street, Overland Park, KS 66211, 1(800) 255-5196, or an approved equivalent wetting agent having the same characteristics and performance abilities as Hydro-wet. Apply at a rate of 5 gallons liquid product per acre.

PART 3 EXECUTION

3.01 SEED BED PREPARATION:

- A. Prior to start of soil preparation all finish grades shall be established and approved as meeting the requirements of the grading plan. The finish grade of the area to be seeded shall be free of irregularities, humps, ridges, depressions or low areas.
- B. Apply a uniform 2" layer of organic amendment and 4 pounds of starter fertilizer per each 1,000 square feet to the entire area to be seeded. After application of organic amendment and starter fertilizer all areas to be seeded shall be ripped to a depth of 12 inches and thoroughly rototilled to a minimum depth of 6 inches. After rototilling is complete at cross directions, drag to an even grade, then roll for firmness.
- C. After applying amendments and before seeding, the finish grade shall be brought to a firm, even surface, free from stones or lumps, in excess of one-inch diameter, and shaped to provide drainage.

3.02 SEEDING

- A. The seed mix and rate shall be as specified herein or as shown on the drawings. The prescribed mix and rate shall be uniformly applied over the area to be seeded.
- B. Contractor's vehicles and other equipment shall not travel over the seeded areas. If, as determined by the City's Representative, rain or some other factor occurs over prepared surfaces prior to seeding which prevents seeding to the proper depth, the Contractor shall again prepare the seed bed without additional compensation.
- C. Time of Seeding. Unless otherwise directed by the City, turf grass seeding shall



only be accomplished in the spring from April 1 through May 30 or in the fall from August 15 through September 15. "Low water use grass" seeding shall only be accomplished in the spring from April 15 through June 1. If seeding is not accomplished during the "time of seeding" the Contractor shall accomplish the seeding at the "time of seeding" during the next calendar year. Contractor extension of the "time of seeding" shall be accomplished at no additional cost.

3.03 DRILL AND SLIT SEEDING:

All seed shall be drilled in cross directions, where practical, with 50% of the seed applied in each direction. The second pass of the seeder when seeding in cross directions shall be across the slope. In areas where seeding in cross directions is impractical, seeding shall be accomplished by drilling and shall be across the slope. Seed shall be planted approximately ¼" inch deep, with a maximum depth of ½" inch unless otherwise specified on the Drawings. The distance between the drilled furrows or slits shall not be more than 2 inches. Seeding shall be done with grass seeding equipment in good working order double disc openers, depth bands, drop tubes, packer wheels or drag chains, rate control attachments and seed boxes with agitators for trashy seed.

3.04 WATERING:

A. Watering of the seed will be the responsibility of the Contractor. All seeded areas shall be watered immediately after completion of seeding, keeping the top two inches of evenly moist until seed has uniformly germinated and grown to a height of two inches. In instances where the irrigation system is metered separately, the Contractor shall be responsible for the cost of water during seeding and maintenance of seeded turf until final acceptance.

3.05 WETTING AGENT:

A. After the seed has germinated and the grass has reached an approximate height of one-half inch, the wetting agent shall be applied in accordance with the manufactures recommendations.

3.06 MAINTENANCE AND PROTECTION:

The Contractor shall maintain the grass until a dense stand of grass is obtained.

- A. A dense stand of grass for turf grass shall be defined as having been mowed twice at a uniform height of 2", having a uniform green color, having no weeds and no bare areas on 75% of the seeded areas, and with no bare areas greater than 2" in diameter.
- B. A dense stand of grass for low water use grass shall be defined as having a uniform growth of 2", having a uniform green color, having no weeds and no bare areas on 75% of the seeded area, and with no bare areas grater than 6" in diameter.



C. The Contractor shall be the responsible for all maintenance during the maintenance period including but no limited to watering, mowing, weed removal, re-seeding, repair to damage from vandals or acts of God, and fertilizing.

3.07 GUARANTEE:

A. Seeded turf shall be guaranteed to be in a live, healthy, and normal growing condition following the date of final acceptance by the City through one twelve month growing season. Turf areas that become unacceptably bare, dead or in an unhealthy, impaired growth condition shall be removed and replaced, or top dressed and seeded by the Contractor as directed by the City at no additional cost. Replacement seed or sod shall be of equal quality and species mix as that which is being replaced and shall be approved by the City prior to planting.

3.08 INSPECTION:

- A. The following inspection shall be the minimum required inspections to seeded grass during the course of construction. Additional inspections shall be made at any time at the discretion of the City or City's Representative.
- B. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.
- C. The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

For City-built facilities, the Contractor shall attach a copy of the written reports prepared by the City's representative or the Landscape Architect to all applications for payment. Payment will not be made for items that have not been observed and approved in writing.

- 1. Automatic irrigation systems where required shall be installed, tested, and approved prior to laying sod or applying seed (Standard Specifications for Irrigation Systems).
- 2. Each phase of soil preparation shall be inspected in process.
- 3. Finish grade shall be inspected.
- 4. Seed shall be inspected prior to seeding.
- 5. Seeded area shall be inspected after seeding is completed.
- 6. Seeded area shall be inspected at the end of the maintenance period.
- 7. Seeded area shall be inspected 6 months after acceptance.
- 8. Seeded area shall be inspected 12 months after acceptance.



10. IRRIGATION SYSTEMS

PART I GENERAL

1.01 SUMMARY:

A. The work under this section consists of installing a complete underground sprinkler system as shown on the Irrigation Plan (Drawing) and as specified hereafter. The Contractor performing this work shall furnish all labor, equipment, materials, permits and additional inspections necessary for the completion of the system, unless otherwise specified or indicated on the Drawing. The construction of the sprinkler system shall include the furnishing, installing and testing of all pipe, fittings, electric valves, heads, controllers, wires, sir release valves, manual drain valves, valve boxes, water meters and all other completion of the project.

1.03 RECORD DRAWING:

- A. The Contractor shall provide and keep up to date a complete set of "record" drawings which shall be corrected daily to show all changes in the location of sprinkler heads, controllers, backflow preventers, valves, drains, meters, points of connection, pull boxes and wire splice boxes, pipe and wire routing and other changes that may have been made from the original drawings and specifications as provided to him. All straight valves, manual drains, wire splices and automatic and manual valve locations shall be shown with actual measurements to reference points so that may be easily located in the filed. Valve locations shall be shown with actual measurements to reference points so they may be located in field.
- B. At the time of final acceptance, the Contractor shall finish a complete set of As-Built Plans, prepared by a qualified draftsperson showing the entire completed system as actually installed. This is the responsibility of the Contractor and shall not be construed to be the responsibility of any other party. This plan set shall be accurate and to scale. The legend shall also be modified to designate any "record" changes. These As-Built Plans shall be drawn on/over the approved construction plans, shall be dated and clearly labeled "AS-BUILT PLANS, RECORD DRAWING."
- C. The Contractor shall also provide and install a legible reduction of the As-Built Irrigation Plan sheet, laminated in plastic, in the controller enclosure at the Job Site

PART 2 PRODUCTS

2.01 MATERIALS:

A. All materials shall be new and without flaws or defects of any type and shall be the best of their class and kind. All materials shall have a minimum guarantee of one year against material defects of defective workmanship.



- B. All materials shall be the brands and types noted on the drawings or as specified herein, or approved equal.
- C. The irrigation system will be designed around equipment manufactured by specific companies as a standard (where the City prefers Rainbird products for City-wide maintenance requirements. Approved equal equipment by other manufacturers may be used only with the approval of the City. Submission of irrigation sprinkler heads for approval, as equal shall only be considered if submitted heads match the precipitation rate, gallons per minute and spacing of specified sprinkler heads.
 - 1. For City-built facilities, requests for approval of non-specified materials must be submitted to the City a minimum of seven (5) days prior to the opening of bids.
 - 2. For facilities built as part of a subdivision by a Developer, the Contractor must indicate the use of non-specified materials prior to submission of conceptual or site plan, or as part of the submission of construction plans through the Design Review Process.

2.02 PLASTIC PIPE AND FITTINGS:

- A. Plastic Pipe: All mainline pipe, from the point of connection to the zone valve, shall be Schedule 40 PVC SDR 21; lateral line piping downstream of the zone valve which is ¾" in diameter and greater shall be Schedule 40 PVC SDR 21 and shall conform to ASTM D 2241. Solvent shall meet ASTM L 2774 and D 2855 requirements. All PVC pipe shall be continuously marked with identification of the manufacturer, type, class, and size, and shall be free of holes, foreign material, blisters, wrinkles, dents, sunburn or other sun damage.
- B. Location Tape: Irrigation line location tape shall be non-detectable water caution tape.
- C. PVC Fittings: Fittings on PVC lines shall be Schedule 40 Molded PVC pipe. All galvanized nipples shall be Schedule 40 galvanized steel pipe.
- D. Threaded Nipples: All threaded PVC nipples shall be Schedule 80 Machined PVC pipe. All galvanized nipples shall be Schedule 40 galvanized steel pipe.

2.03 VALVES AND VALVE BOXES:

- A. Valves for use in electrically controlled automatic control systems shall be diaphragm actuated and hydraulically operated solenoid valves as specified on the Drawings, and wherever possible shall be pressure regulating valves.
 - 1. Electric valves shall include true PVC union ball valve on upstream pipe and PVC union on downstream pipe.
 - 2. The City prefers and may require the use of the following:



- a. For both Master Valve and Automatic Valves:
 Rainbird PEB for 2 inch or smaller valve
 Rainbird BPE for 3 inch and larger valve
- B. Valve boxes shall be as noted on the Drawings.
- C. Note: A flow meter shall be installed before the Master Valve assembly and before the Backflow preventer. The flow meter shall be a Master Meter.

2.04 SPRINKLER HEADS AND BUBBLER5:

- A. Sprinklers heads and bubblers shall be as specified and installed as shown on the Drawings.
 - 1. The City prefers and may require the use of:
 - a. Rainbird Rotors (impacts are not acceptable)
 - b. Spray heads Rainbird 1800 Series
 - c. Bubblers Rainbird 1400 Series
 - 2. All bubblers shall be installed with flex risers.
 - 3. Bubbler heads shall be low flow pressure compensating bubblers.

2.05 CONTROLLER:

- A. Controllers shall be as specified on the Drawings.
 - 1. All irrigation systems shall utilize a controller capable of being connected to the City's Central Control System. The City will provide brand and model specifications to the Landscape Architect.
 - 2. All controllers shall be installed in a locking, stainless steel controller enclosure or clock vault.

2.06 BACKFLOW PREVENTER:

- A. The backflow prevention device shall be as specified on the Drawings and it shall be permitted and inspected by a Rio Rancho certified backflow tester to comply with the City of Rio Rancho Ordinance 51 "Water and Wastewater Rules and Rates. The backflow preventer shall also be installed as required by State Code.
- B. The Department requires Febco 825Y for meters 2" or smaller, and Febco 880 for 2.5" and larger. Substitution with a pressure backflow preventer will depend on back flow preventer location, site grading and line placement.
- C. The backflow preventer shall be located in a Hot Box insulated enclosure. Electric power shall be made available to the box for a heat source.

2.07 CEMENTS, CLEANERS / PRIMERS AND JOINT COMPOUNDS:

A. Cement shall be plastic pipe cement for use on all sizes and schedules of PVC pipe



- and fittings. Cement must be NSSF approved and meet ASTM D 2564 requirements.
- B. Cleaner/primer shall be purple cleaner/primer.
- C. All threaded connections between metal-to-metal, PVC to metal and PVC to PVC shall be made using Pipe Dope slow dry, soft set, thread sealing compound, or Teflon tape. Thread sealing compound shall not be used on thread connections between sprinkler and nipple or bubbler and nipple.

2.08 WIRE:

- A. Wire for 120 volt wiring shall be solid copper (or stranded copper in larger wire sizes), underground feeder for direct burial and PVC insulated. Size of wire shall be #12 AWG.
- B. Wire for 24 volt wiring shall be solid copper wire, PVC insulated, UL approved underground feeder wire for direct burial in ground. Common wires shall be #12, white, unless otherwise noted on Drawings. The control wires shall be #14 of any color other than white unless otherwise indicated on the Drawings.
- C. Wire Splicing. Wire shall be laid in long runs with as few splices underground as possible. Where splices occur, they must be accessible in the valve box. See additional wiring specifications.
- D. Wire Splicing Materials: All wire splices shall be made watertight using watertight connectors.

2.09 OTHER MISCELLANEOUS FITTINGS AND MATERIALS:

All other miscellaneous fitting and materials shall be specified on the Drawings and approved by the City.

PART 3 EXECUTION

3.01 GENERAL:

A. This section includes installation specifications for all items installed as a part of the sprinkler irrigation system. Certain construction procedures may have been omitted from these specifications that are necessary for the proper installation of the system. In any case, all materials and equipment shall be installed in a neat and workmanlike manner according to manufacture's recommendations and specifications, local and state codes, as shown on the Drawings and as specified herein.

3.02 PRODUCT HANDLING:

A. The Contractor shall be responsible for correct procedures in loading, unloading,



staking, transporting and handling all materials to be used in the system. The Contractor shall avoid rough handling which could affect the useful life of equipment. Pipe shall be handled in accordance with the manufacturer's recommendations on loading, unloading and storage.

3.03 EXCAVATION AND TRENCHING:

- A. The Contractor shall stake out the location of each run of pipe and all sprinkler heads and valves prior to trenching. The City shall approve each run of trenches for the system before actual installation is started.
- B. Excavation and trenching for pipelines shall be true and in line with the trench banks and as nearly vertical as practical. The width of the trenches shall not be greater than necessary to permit proper joining, tamping, backfilling, bedding or any other installation procedures that may be necessary. Trench widths shall also be wide enough so that there will be a minimum horizontal and vertical separation of 4" between pipes in the same trench.
- C. Pipelines shall not be stacked and every effort shall be made to ensure that pipelines will not cross, and verified by City review and acceptance of the Drawing. Additionally, zone design and lateral line layout should minimize the occurrence of multiple lines in the same trench.
- D. In areas where trees are present, trench lines will be adjusted on the site to eliminate any damage to tree roots.
- E. Trench depths shall be 24" deep and sufficient to provide the specified pipe cover as described elsewhere in these specifications or as noted on the Drawings. In rocky areas the trenching depth shall be 6" below normal trench depth to allow for pipe bedding as described in other portions of these specifications.
- F. Depth of Bury: Minimum cover over mainline and lateral piping shall be filled and compacted so that when the trench area is compacted, it will be compacted to the same degree and level as the surrounding soil.

3.04 PIPE AND FITTING INSTALLATION:

- A. Installation of plastic pipe and fittings shall be in accordance with the manufacturer's recommendations and procedures and as mentioned in the specifications. Manufacturer's recommended procedures for making solvent weld fitting shall be strictly adhered to. Only solvent cements, cleaners, and primers or lubricants recommended or supplied by the pipe manufacturer shall be used.
- B. Caution shall be exercised by the Contractor in handling, loading, unloading and storing of PVC pipe and fittings. All PVC pipe shall be stored and transported in a vehicle with a bed long enough to allow the pipe to lie flat without subjecting it to undue bending or concentrated external load at any point. Any section of pipe that



- has been dented or damaged or in any other way found to be defective, either before or after lying shall be replaced with sound pipe without additional expense to the City.
- C. Before installation, the inside of the pipe shall be cleaned of all dirt and foreign matter and shall be kept in a clean condition during and after lying of pipe. When work is not in progress, open ends of pipe and fitting shall be secured closed so that no trench water, earth or other foreign materials may enter the pipe or fitting until they have been connected to a valve or capped as directed on the irrigation system Drawings.
- D. All PVC pipe and fittings shall be assembled pipe label facing up, and to permit the pipe or fittings to be jointed at the true parallel position of the fittings. Placement of pipe in curving trenches, which cause excessive bending and stress on pipe and fitting, will not be permitted. No excess piping or fittings shall be permitted in the installation of the system, which may increase pressure loss or potential blockage.
- F. Before installing the pipe, all rubbish and large rocks shall be removed from the trenches. If the soil is extremely rocky, the trenches shall be bedded with dirt or sand as outlined in other portions of these specifications. The City shall approve material used for pipe bedding. The full length of each section of the pipe shall rest solidly upon the pipe bed, with recesses excavated to accommodate bells, joints and couplings.
- G. Pipe shall not be laid in water or when trench or weather conditions are unsuitable for the work. Any water, which may be encountered or may accumulate in the trenches shall be removed and trenches kept free and clear of water during the progress of the work. Pipe shall not be laid when the temperature is 32 F or below.
- H. PVC pipe will expand or contract at the rate of 1"per 100' per 10 F change of temperature. Therefore, the pipe shall be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer.
- I. The minimum horizontal and vertical clearance between lines in the same trench shall be 4". Pipelines shall not be stacked and every effort shall be made to ensure that pipelines will not cross, and verified by City review and acceptance of the Drawing. Additionally, zone design and lateral line layout should minimize the occurrence of multiple lines in the same trench.
- J. After all sprinkler piping, risers, valves, etc., have been installed and partially backfilled as specified in other parts of these specifications, the control valve shall be opened and a full head of water used to flush out the system. After the system is thoroughly flushed, risers shall be capped off and the system pressure tested in accordance with the testing section of these specifications. At the conclusion of the pressure test, the heads shall be installed and the backfill operation completed.



3.05 SOLVENT WELDING PROCEDURE:

- A. Pipes and fittings shall be welded as described below.
 - 1. PVC plastic pipe shall be squarely cut utilizing a hacksaw or approved PVC pipe cutter.
 - 2. Burrs left from cutting shall be wiped off with a clean dry cloth.
 - 3. Utilizing a cleaner/primer, thoroughly clean the mating pipe end and the fitting socket with a clean, dry cloth.
 - 4. Apply a uniform coat of primer to the outside of the pipe end with a non-synthetic brush or dauber.
 - 5. In like manner, apply a light coat of primer to the inside of the fitting socket.
 - 6. Apply a light coat of solvent cement to the pipe end and fitting socket, and quickly insert it into the fitting to the full depth of the fitting socket.
 - 7. Rotate the pipe of fitting approximately ½ turn to insure even distribution of the solvent cement.
 - 8. Hold in position for approximately 30 seconds.
 - 9. Wipe off any excess solvent cement that forms as a bead around the outer shoulder.
 - 10. Care should be taken so as not to use an excess amount of solvent cement that could cause obstructions to form on the inside of the pipe joint.
 - 11. Solvent weld joints shall be allowed to cure for at least 24 hours before pressure is applied to the system.

3.06 BACKFILL1NG:

- A. Upon completion of a particular section of the irrigation system, and after sufficient time has elapsed for the curing of solvent weld joints, partial backfilling can begin, leaving all joints, risers and connections exposed for visual inspection during the hydrostatic testing. Only upon successful testing and inspection for any one particular section, can that section then be completely backfilled.
- B. All backfill material shall be subject to approval by the City. Backfill material shall be free from rock, large stones, brush, sod, frozen material or other unsuitable substance that may damage pipe during the backfilling operations.
- C. In the event that the material from the excavation or trenching is found to be unsuitable for use in backfill by the City, it shall be removed from the site and properly disposed of by the Contractor and at his own expense. The Contractor shall then, at no additional cost to the City, arrange for, purchase, and furnish suitable backfill material consisting of earth, loam sandy clay, sand or other approved materials free of large clods of earth or sharp stones and capable of attaining the same relative density of the surrounding ground.
- D. In rocky areas, the trench depth shall be 6" below the normal trench depth to allow for 6" of suitable backfill as padding for the pipe. In like manner there shall be at least 6" of padding on all sides of the pipe as padding against the rock wall of the



trench.

- E. All mainline piping shall have irrigation line location tape installed in the trench six (6") inches above the pipe.
- F. Backfill shall be placed in horizontal layers not exceeding 6" in depth and shall be thoroughly tamped, or water compacted to near original density or so that no settling will result. Backfill shall be placed to the original ground level as previously described (Irrigation Systems 3.03 B). If settlement of trenches occurs within one (I) year from date of completion, it shall be the Contractor's responsibility to refill trenches and re-seed or sod the repaired areas.

3.07 SADDLE TAPS:

A. No saddle taps shall be permitted unless approved by the City.

3.08 THRUST BLOCKS:

A. Irrigation systems shall be designed in a manner to exclude the use of thrust blocks wherever possible.

3.09 SLEEVED CROSSING:

- A. During design every effort shall be made to avoid the need for sleeved crossings.
- B. Unless otherwise noted on plans, all piping installed under sidewalks, roadways, parking lots, etc., shall be sleeved in a Class 200 PVC pipe two (2) sizes larger than the pipe to be sleeved. Wiring shall be placed in a separate sleeve from that of the pipe crossing and shall be Class 200 PVC with 50% fill. Ends at sleeves are sealed with duct tape following installation of wire piping.

3.10 SPRINKLER HEAD INSTALLATION:

- A. Sprinkler heads shall be of the type and make specified and shall be installed providing head to head coverage as will be shown on the Drawings. Sprinkler heads shall be installed with a 4" space between the edge of the sprinkler head and curbs, walls, driveways, buildings walls, etc. Heads shall be installed in the vertical position and backfilled compacted to near original density.
- B. Sprinkler head spacing shall not exceed the spacing shown and shall be in the location and configuration as shown o the Drawings. Sprinkler heads shall be spaced to achieve uniform coverage.
- C. After all piping and risers are in place and connected and before installation of the sprinkler heads, all control valves for a given section shall be fully opened and a full head of water shall be used to flush out the system. If water pressure without



the heads installed is not sufficient to provide adequate water flow from end risers, the Contractor shall cap off enough heads closest to the water source to provide adequate flushing of the end riser assemblies.

D. Teflon tape shall be used on all sprinkler head connections.

3.11 CONTROLLER INSTALLATION:

- A. The Controller location shall be indicated on the Drawings. The Contractor shall familiarize himself with the requirements of making the power connections at the locations noted (120 volt supply to the Controller). 120 volt power shall be supplied to the Controller location by a licensed electrician. Contractor shall include this in the lump sum price for the sprinkler irrigation system.
- B. The Controller shall be mounted and wired according to the manufacturer's recommended procedures and as specified herein and on the Drawings. The controller must be GFI protected.
- C. For Controllers installed inside of vaults or other enclosures, the Contractor shall provide and install on the Controller, an electrical pigtail outlet that must be GFI protected.
- D. When Controllers are mounted outside of any building, vault or enclosure, the Contractor shall direct wire the 120-volt power to the Controller.
- E. Remote control valves shall be connected to Controller in the numerical sequences as shown on the Drawings or as directed by the City.

3.12 AUTOMATIC CONTROL VALVE INSTALLATION:

- A. All automatic control valves shall be of the type and size as indicated on the Drawings. Installation shall be according to these specifications, the Drawings and the manufacturer's recommendations.
- B. The valve boxes shall be of the size and type as shown in the detail drawings.
- C. Valve wire splices shall be waterproofed using waterproof connectors, and the Contractor shall provide a 36" wire expansion coil to facilitate raising splices to ground level without cutting wires.
- D. All connections for electric valves shall be made using Teflon tape.
- E. Flow Meter shall be installed before the Master Valve assembly and after the backflow preventer.



3.13 24 VOLT CONTROL VALVE WIRING:

- A. All wire installation procedures as described herein shall be checked to conform to local codes.
- B. The Contractor shall install the 24-volt control valve wiring in the same trench as the irrigation mainline. Only when it is not possible for the wires to be installed in the mainline trench, they shall be installed in the later pipe trench. All wires shall be laid loose in the trench and taped together at 10'- 0" intervals. When trenches used for piping are not appropriate for routing wire, Contractor shall install in a separate trench, 18" deep.
- C. Wire splices, other than at valve box locations, shall be kept to a minimum and if needed shall be made only at common splice points and placed in a wire splice boxes as shown in the detail drawings. The location of these wire splice boxes shall be made waterproof using waterproof connectors.
- D. At control wire splices, the Contractor shall provide a 36" wire expansion coil to facilitate raising splices to ground level without cutting wires.
- E. All continual wire shall be one color and in no case shall wires of different colors be spliced together.
- F. All 24 volt wiring shall be installed in PVC conduit when inside a building. All 24 volt wiring installed on exterior building walls shall be installed in metal conduit.

3.14 120 VOLT CONTROLLER WIRING:

- A. The Contractor shall familiarize himself with the work required to complete this portion of the installation. All 120 volt wiring shall be installed in accordance with local electrical codes.
- B. 120 volt power shall be supplied to the Controller location by a licensed electrician.

3.15 MANUAL DRAIN VALVES:

A. Manual drain valves shall be the size and type as indicated and at locations as shown on the Drawings. These valves shall be in a bed of ¾" gravel for drainage.

3.16 TESTING:

A. Upon completion of the irrigation system's main line, the entire mainline shall be tested for a one-hour period at 100 psi, unless otherwise noted. Prior to testing, the mainline shall be partially backfilled, leaving all joints and connections exposed



for visual inspection. All dirt shall be flushed from the system and the line filled with water to remove air. The mainline shall be brought to static pressure. A pressure gauge and temporary valve shall be installed at the end of the mainline to permit air pressure to be applied to the main. A pressure of 100 psi must be retained for a one-hour period. Any leaks resulting in the one-hour pressure test shall be repaired and the system retested until the system passes the test.

B. Upon completion of the lateral piping sections, each lateral system shall be pressure tested for one hour at 100 psi. On systems using flex risers, or swing joints, the lateral system shall be tested prior to installation of the flex risers or swing joints. Prior to testing, the lateral lines shall be partially backfilled leaving all joints and connections exposed for visual inspection. All air and dirt shall be flushed from the system and all open fittings shall be capped. The testing procedure shall be the same as used for the main line. If after one hour no visual leakage has occurred and the 100-psi pressure has been retained, the heads shall be installed, and the backfill operation completed. Any leaks resulting form the hydrostatic test shall be repaired and the system retested until the system passes the test.

3.17 ADJUSTING OF SYSTEM:

A. After completion of testing and installation, the Contractor shall adjust all valves for the proper operating pressure and adjust all sprinklers and bubblers for uniform coverage and even flow. Contractor shall wire the Controller (valve/station) as directed by the City, and the wires shall be numbered for each of the zones. The valve number will be indicated on the Controller panel for each station. Contractor will program Controller to provide optimum sprinkler system performance.

3.18 IRRIGATION AUDIT:

A. If the landscape being watered by the irrigation system has a total turf area of one or more acres, the Contractor must have a Landscape Irrigation Audit performed in order to comply with the City of Rio Rancho, Water Conservation Ordinance 52. The audit of the system must be performed prior to the installation of turf or seed.

3.19 CLEANUP:

A. The Contractor shall continuously keep a neat and orderly area in which he is installing the system. Disposal of rubbish and waste material resulting from the installation shall be continual. Upon completion of the system, the Contractor shall remove from the City's property at his own expense, all temporary structures, rubbish, waste material, tools and equipment resulting from or used in the installation of the system.

3.20 PROTECTION OF EXISTING UTILIES:



A. The Contractor shall be responsible for locating all cables, conduits, piping, and any other utilities or structures that may be encountered either above or below ground. All necessary precautions must be taken by the Contractor to prevent any damage to these existing utilities and improvements. In the event that such damage should occur from his operations, the Contractor shall repair or replace damaged utilities to their original condition at no additional expense to the City.

3.21 ROCK:

A. If the Contractor encounters rock or other unfavorable trenching conditions, no additional compensation will be paid. When material from the excavation or trenching is unsuitable for use as backfill, additional backfill material suitable for this purpose shall be brought in at the expenses of the Contractor. It shall also be the Contractor's responsibility to remove and dispose of all unsuitable materials removed from the trench that cannot be used in the backfill operation.

3.22 FINAL ACCEPTANCE:

A. When the Contractor is satisfied that the system is operating properly, that it is balanced, adjusted, has passed an irrigation audit, and that all work and clean-up is completed, he shall notify the City's Representative by phone, a minimum of 48 hours in advance, for an inspection.

At that time the Contractor shall demonstrate the operation of each system in its entirety. In judging the work, no allowance for deviation form the original Drawings and Specifications will be made unless prior approval has been obtained.

- B. Any inconsistency to the Specifications or the Drawings shall be noted by the City and a written copy of required corrections shall be given to the Contractor. Any work deemed not acceptable shall be re-worked to the complete satisfaction of the City.
- C. When the completed work and the "RECORD" drawings, certification of backflow inspection, keys and maintenance manual have been reviewed and approved by the City, the irrigation system will be considered complete and landscaping activities may begin.

3.23 OPERATIONAL INSTRUCTION:

- A. After the system has been tested and accepted as complete, the Contractor shall instruct the City or the City's representative in the operation and maintenance of the system.
- B. The Contractor shall provide the City with two (2) keys for the following:
 - 1. Manual Straight Valves.
 - 2. Manual Drain Valves.
 - 3. Valve Boxes.



- 4. Valve Markers.
- 5. Controllers.
- 6. Hot Box
- 7. Any locking assembly in need of key access.
- C. The Contractor shall provide the City with two copies of a Maintenance Manual bound in a three ring binder. The maintenance manual shall include copies of the approval Submittals, Controller operations manuals and manufacturers warranties on all irrigation products.

3.24 SYSTEM PROTECTION AND MAINTENANCE:

- A. For a period of one (1) year from final acceptance of the facility, the Contractor will promptly furnish and install damaged or inoperative materials or systems that may be defective in material or workmanship. Damage due to irrigation system line breaks shall be repaired and brought to original condition by the Contractor at no expense to the City.
- B. In the fall, at the City's request, the contractor will drain the system, and otherwise prepare the system for winter. In the spring, at the City's request, the Contractor will reactivate the system, repair any defects or damage and adjust the system. As these services are performed, the Contractor will inform and instruct the City.

3.25 GUARANTEE:

- A. For a period of one (1) year from final acceptance of the facility, the Contractor shall repair any settlement of trenches by one of the following methods as directed by the City.
 - 1. Bring to grade by top-dressing (ranking topsoil into grass).
 - 2. Bring to grade with amended topsoil and seed.
 - 3. Remove existing sod, fill depression with topsoil, and replace with new sod to match existing sod.
 - 4. Repair by any of the above methods must result in a smooth, level area. Maintenance of repaired areas shall be the responsibility of the City.

3.26 INSPECTION:

A. The following inspections shall be the minimum required inspections during the course of construction. Additional inspections shall be made at any time at the discretion of the City. It shall be the responsibility of the Contractor to notify the City's Representative by phone, 48 hours in advance of each required inspection.

The sequence of required observations shall not be changed from the sequence listed below. The Contractor shall not proceed with the work of the next sequence without written approval of the work of the previous sequence.

For City-built facilities, the Contractor shall attach a copy of the written reports prepared by the City's representative or the Landscape Architect to all applications



for payment. <u>Payment will not be made for items that have not been observed and approved in writing.</u>

- 1. Inspect stacked locations of mainline, valves, laterals, and sprinklers heads.
- 2. Inspect and pressure test mainline installation.
- 3. Inspect 24-volt control wire installation.
- 4. Inspect and pressure test automatic valves and lateral irrigation installation.
- 5. Inspect automatic controller installation and operation.
- 6. Inspect sprinkler and bubbler head placement, coverage and operating pressure, pass irrigation audit prior to planting.
- 7. Inspect at end of maintenance period.

