



CITY OF MANTECA

STANDARDS AND SPECIFICATIONS FOR LANDSCAPE DEVELOPMENT

Adopted by City Council on 9/5/17

Prepared For:

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City of Manteca Standard Landscape Construction Details

SECTION ONE | INTRODUCTION

The purpose of these Parks Department Standards and Specifications is to set a minimum standard for design and construction, to establish and maintain a high standard of design principles, sustainability and maintenance practices that will preserve and instill a unique sense of place for the residents of Manteca. These standards shall be applied to park and streetscape projects within the City of Manteca including but not limited to City maintained areas, park areas and facilities, detention and drainage basins, rights-of-way and median areas, landscape maintenance districts/community facility districts and open space landscape improvements. These standards are intended to apply to City-generated as well as developer-generated projects. To maintain consistent standards, these requirements shall be applicable to all design and engineering consultants, developers and contractors working on landscapes, streetscapes, trails, parks, and open space.

It is difficult to anticipate all situations where these Standards and Specifications may be required. The City's Representative will review each project on a case by case basis. Modifications or variances may be granted for individual cases as deemed necessary or where a specific reason is found that makes these procedures impractical. The modifications or variance must be in conformance with the intent of these standards and shall not lessen the design requirement or integrity and shall result in a level of safety service or quality equal or greater than that intended by the application. These Standards, Specifications and Details are designed to be a dynamic document that will be updated administratively to accommodate changes in the industry's products and general practices as approved by the Director of Parks and Recreation.

Several important issues are guiding the development of these standards to promote exemplary management of the City's natural resources and developed properties; water quality, water conservation and long-term maintenance management. These standards are intended to complement and not replace other applicable standards publications, such as the latest editions of the State of California Department of Transportation (Caltrans) Standard Specifications, the Uniform Building Code or the City of Manteca Department of Public Works Standard Plans and Specifications.

In the case of discrepancy between these standards and those described above, the stricter of the two shall apply. In the case of discrepancy between these standards and the approved plans, these standards shall apply. In all cases, the protection of public health, safety and welfare shall override the application of required standards.

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This document is organized into five sections:

1. The first section provides general information including conceptual design guidelines.
2. The second section details landscape architectural submittals.
3. The third section covers plan preparation and general notes.
4. The fourth section sets out the city's landscape design guidelines.
5. The fifth section covers standard landscape construction specifications as well as park and recreation area construction specifications.

City Department Key Contacts

Department	Phone Number (all 209 area code)	Fax Number (all 209 area code)
Parks Main Office	456-8600	923-8954
Parks Landscape Planning	456-8629	923-8954
Building Dept./Permits	456-8550	923-8955
Community Dev. /Planning	456-8500	923-8949
Public Works/Utilities	456-8400	923-8940
Construction Inspector(s)	639-5964 and/or 923-0528	

1.1 DEFINITION OF TERMS

Backfill	That soil which is replaced in a hole after excavation and placement of irrigation lines or plant materials.
Bioswale -	An open shallow channel with grasses on the bottom and grassy or non-grassy vegetation covering the side slopes that collects and slowly conveys runoff flow, while treating storm water runoff from driveways and parking lots and increasing natural infiltration of runoff into the soil.
Drought Tolerant Plants	Plants from California and other dry areas such as the Mediterranean that can survive on very little water, such as that which falls in Central California in normal rainfall years.
Engineer of Work	This term shall refer to the responsible designing professional of the respective project.
Erosion -	The transportation of soil particles, or mass movement of soil (mass wasting) by water, wind, front leaving, or mechanical means.
Exotic Plants -	Plants introduced to Central California from other places that have become established in wildlands without cultivation.
Friction Loss--	A quantity of pressure lost in irrigation systems as a result of friction as water passes through pipes, fittings, valves and other plumbing appurtenances. Usually calculated from standard charts based upon pipe materials and length, and used to determine design requirements, and ultimately, irrigation application rates through nozzles.
Groundcover -	Low, dense growing plants used for covering bare ground.

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Hydromodification--	The alteration of drainage patterns by development activities that can result in impairment of the quality of water bodies and associated flora and fauna ecosystems, unless low impact designs and/or mitigation measures are used during and after construction activities.
Infiltration -	The downward entry of water into the surface of the soil.
Landscape -	A combination of trees, shrubs, ground covers, perennials and/or features, arranged in such a manner as to effect a design that follows the principles of this document.
Landscape Area -	All planting areas, turf areas, and water features in a landscape design subject to the Maximum Allowable Water Allowance calculations.
LID	Low Impact Development; the application of technical design and planning tools to manage and reduce negative impacts of storm water runoff and pollution to the environment. The goal of LID is to mimic natural processes to filter drainage water, encourage better water infiltration into the ground, and improve the sustainability of the built environment.
Maximum Dry Density	When compacting soils for structural bearing, the maximum dry density is the density obtained by the compaction of the soil at its optimum moisture content. Soil testing by laboratories approved by the City may be required to determine the compaction rate achieved by contractors in the field. If required, the contractor shall obtain and pay for such testing, and if the report determines substandard compaction rates, recompaction will be required prior to further construction so as to meet the minimum requirements.
MWEL	Model Water Efficiency Landscape Ordinance; by Executive Order, in 2010 the State of California generated a Model Ordinance for water conservation in landscape irrigation use, with the intent that local agencies would utilize the language or adopt their own unique ordinance with more stringent measures. WMELO was updated in 2015 to further refine the language and broaden the scope to include greywater, onsite stormwater capture and reuse, and limiting turf areas to respond to severe drought conditions.
New Development -	Land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.
Ornamental Plants -	Plants cultivated in this area for landscaping purposes.
Parking Lot -	Land area or facility for the temporary parking or storage of motor vehicles for personal, business, or commercial.
Parkway/Streetscape -	Area of a public street that is between the curb and sidewalk or between the sidewalk and the property line of the adjacent property owner used for landscaping.

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Recycled Water -	Treated waste water that undergoes additional advanced treatment to make it safe for non-potable uses such as landscape irrigation.
Right-of-Way -	Lands within an improved or anticipated future corridor identified for a specific public use such as transportation, public and/or private utilities, upon which a legal right for usage or passage is granted to the public
Sight Distance Triangle -	A calculated limited use area used for the purpose of prohibiting or clearing obstructions in order to maintain adequate sight distances at street intersections.
Slope -	Percentage or degree change in elevation over a defined distance
Soils Agronomy Report -	Analysis and evaluation of soil samples for the purpose of determining nutrients requirements, soil amendments, infiltration rates, and backfill recommendations for new planting, irrigation and maintenance or troubleshooting of existing landscaping.
Street Trees -	Trees planted in the public right of way along City streets for beautification and benefit of the general public.
Topsoil -	Soil which is within the A-2 horizon of a soil profile, containing organic matter, nutrients, and the micro-organisms necessary for normal plant growth.
Vegetated Swale -	A broad shallow channel similar to a Bioswale except the vegetation along the bottom and sides are non-grassy
Water Quality Device -	A device used to pre-treat pollutants in runoff water as applicable prior to discharge into sanitary sewer or storm drain system.
Wildlife -	Indigenous or naturalized bird, reptilian, mammalian, fish, or invertebrate life found in the out of doors.
Water Conservation -	Proper water management procedures, including design as well as maintenance procedures by using drip irrigation, drought tolerant plant materials.
Xeriscape -	The use of drought tolerant plants, California native or Mediterranean plant species, and proper water management to reduce irrigation demands and conserve water.

1.2 ABBREVIATIONS USED

AASHTO-	American Association of State Highway and Transportation Officials
ADA-	Americans with Disabilities Act
ASTM-	American Society for Testing and Materials
BMP-	Best Management Practices
CASQA -	California Stormwater Quality Association
CD-	Construction Document(s)
CFD-	Community Funding District

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CPSC-	Consumer Product Safety Commission
CPSI-	Certified Playground Safety Inspector
CPTED-	Crime Prevention Through Environmental Design
DG-	Decomposed Granite
ESCP-	Erosion Sediment Control Plan
ETWU-	Estimated Total Water Use
FC-	Foot-candles
GPM-	Gallons per minute
HA-	Hydrozone Area
IPEMA-	International Play Equipment Manufacturers Association
LA -	Landscape Area
LED-	Light Emitting Diode
LID-	Low Impact Design
LMD-	Landscape Maintenance District
MAWA-	Maximum Applied Water Allowance
MDD-	Maximum Dry Density
MWEL-	Model Water Efficient Landscape Ordinance
NOI-	Notice of Intent
NPDES-	National Pollutant Discharge Elimination System
PCSP-	Post Construction Stormwater Plan/Manual (on Public Works Website)
PSI-	Pounds per Square Inch
PVC-	Polyvinyl chloride
RCIT-	Reactivity, Corrosivity, Ignitability and Toxicity
SWPPP -	Stormwater Pollution Prevention Plan
WUCOLS-	Water Use Classification of Landscape Species

SECTION TWO | LANDSCAPE ARCHITECTURE SUBMITTALS

2.1 INTRODUCTION

- (A) The Owner or Developer shall submit to the City the required documents for all projects where landscape maintenance districts, community facility districts or other general maintenance districts are required as a part of the project development.
- (B) All plans submitted shall be prepared under the direct supervision of a Registered Landscape Architect, Civil Engineer, and/or Architect (State of California) with all drawings bearing the appropriate professional's stamp and signature (electronic signature is acceptable).
- (C) Prior to approval for occupancy of any (not all are housing, some are public facilities) unit, the landscape tract shall be installed and accepted by the Parks & Recreation Department along with the Public Works and Community Development Departments as required.
- (D) No installations or alterations of landscape/irrigation systems on publicly owned properties, sites or rights-of-way in the City of Manteca shall be undertaken until the Parks & Recreation Department has reviewed and approved plan submittals and specifications covering the proposed developed areas. This also applies to projects performed by the City.
- (E) At a minimum, the plans should meet the following criteria:
 - 1. Proposed plant material will be suitable aesthetically, physiologically, and ecologically for the particular planting situation.
 - 2. Soil preparation recommendations are adequate as provided by a current report from a Certified Soils and Plant Laboratory.

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3. Geotechnical Investigation and Report by a licensed professional geotechnical engineer for those projects requiring structures such as retaining walls, shade structures, buildings or any construction requiring a building permit.
4. Proposed planting will meet requirements as set forth in this document.
5. Proposed irrigation systems will be adequate to properly irrigate proposed planting and are in accordance with this document, including all irrigation well design, permitting, drilling, pumps, well housing and electrical requirements. Coordinate with City to determine the possibility of future recycled water system in the vicinity of the project, to determine whether non-potable purple materials will be required for the system.
6. Improvements are permanent and of a nature and quality to ensure low maintenance efforts and costs.
7. All open space and landscaping requirements are addressed as set forth in this document and the Conditions of Approval.

2.2 PLAN CHECK PROCEDURES

Note: Per the Park and Landscape Development Design Guidelines, all preliminary plans for park and streetscape areas, including stormwater and LID features will need to be submitted and approved prior to initial Landscape Plan Review.

(A) Initial Landscape Plan Review

Submittals to City Engineer (at City Hall) shall include the following:

1. Six (6) sets of bond copies.
2. Three (3) sets Specifications (if not included in plans)
3. Three (3) sets of Irrigation Well Plans (included in Landscape Plans)
4. Two (2) sets Irrigation Calculations (if not included in plans)
5. Two (2) sets Agronomic Soil Analysis Report (Report recommendations to be included on plans but actual reports due at the time of submittal)
6. Two (2) sets stamped and signed Geotechnical Engineer's Investigation and Report (if required)
7. Two (2) sets of Preliminary Cost Estimate
8. One (1) set of Conditions of Approval
9. One (1) set of Civil and grading and drainage plans (For Parks. Additional as required by City Engineer)
10. One (1) copy City—approved Preliminary Landscape Plan
11. WELO Application Forms
12. Two (2) CD's with electronic copies of the above information in PDF format

(B) Notes on Initial Submissions:

1. All submittals for plan review shall be made at one time. Partial submittals are not acceptable.
2. Allow 6-8 weeks for initial Landscape Plan Check if the project is a stand-alone submittal.
3. Landscape plans that are part of a commercial building review shall parallel track with the building permit schedule.
4. Park improvement plan submittals – allow 6-8 weeks for initial Landscape Plan Check.
5. All improvement documents are subject to review
6. All plans are to be checked by the Engineer of Work for consistency, accuracy, clarity, and conformity with City Standard Specifications, drawings, and design criteria before submissions for approval.
7. If during initial review by the City the Plans are found to be incomplete, they will be returned unchecked to the Engineer of Work for completion.

(C) Subsequent Landscape Plan Review

Submittals to Engineering Department shall include the following:

1. Six (6) sets bond copies (corrected, if required)
2. Three (3) sets of Irrigation Well Plans (if revised)

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3. WELO Application Forms (If revised)
 4. Two (3) sets Specifications (corrected, if and if not included in plans)
 5. One (1) set of Civil and grading and drainage plans (if revised)
 6. Two (2) sets Revised Cost Estimate
 7. Two (2) Construction Document print sets with electronic copies of the above information in PDF format
- (D) Notes on Subsequent Submissions:
1. Return marked set of plans and specifications if corrections are required
 2. Allow 4-6 weeks for subsequent Landscape Plan Check for stand-alone projects.
 3. For park improvement plans, allow 4-6 weeks for subsequent Landscape Plan Check.
- (E) Landscape Plan Reviews By Others: If the project area overlays any (SSJID) South San Joaquin Irrigation District easements, plans are required to be submitted directly to SSJID for review and approval. It shall be the responsibility of the plan preparer to check with SSJID and other utilities such as Pacific Gas and Electric(PG & E) for their landscape requirements and plan review process.
- (F) Approved Drawings: Upon City approval of plans, Owner/Developer shall deliver to Engineering Department:
1. One (1) complete set of signed Mylar reproducible plans, reduced to 24" x 36" size
 2. Four (4) sets of signed/stamped bond copies to be approved and signed by the Parks & Recreation Director. One set of signed approved plans shall be returned to the owner applicant and the other three (3) shall be retained by the Parks Department and Construction Inspectors.
 3. The owner applicant shall provide the City with electronic copies of the signed approved landscape and civil plans in PDF and AUTOCAD format for their electronic files.
- (G) Notes on Approved Drawings
1. The Civil, Irrigation Well and Landscape Plans shall be approved and signed at one time.
 2. All landscape plan approvals must be accomplished prior to issuance of building permits and prior to commencing any landscape improvement work.
 3. Only approved and signed plans shall be used during construction.
- (H) Record Set of Drawings for Public Improvements. As-built Plans shall be kept at the jobsite at all times and updated daily. There will be random City inspections, checking for updates and accuracy. Prior to the City acceptance of landscape improvements within public areas (i.e., completion of a minimum of a fully successful 90-day maintenance period), Owner/Developer shall provide to the City:
1. One (1) marked up set of bond copies of "as-built" changes per Parks Department Standards and Specs
 2. One (1) electronic copy of "as-built plans" in .pdf format
 3. One (1) electronic copy of color coded irrigation legend showing each station.
 4. Two (2) laminated copies of color coded irrigation legend showing each station (11x17).
 5. All documentation and forms as required for the Model Water Efficient Landscape Ordinance
- (I) Notes on Record Set of Drawings
1. Once reviewed by the Parks Department, these prints shall be returned to the Engineer of Work and all annotations shall be transferred onto the City's set of Mylars.
 2. Return of final corrected Mylars and PDF's to the City shall be accomplished prior to project acceptance.
- (J) Revisions
1. Revisions of the landscape plan must be approved by the Parks & Recreation and Engineering Department before any work is performed that is inconsistent with the original plan. Revisions shall also be made to the irrigation water use calculations if applicable.
 2. Submit two (2) sets of the revised plans and a pdf to the Engineering Department for review.

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2.3 PRIOR TO THE START OF CONSTRUCTION WORK

(A) Product Submittals

All products for the irrigation well, landscape, streetscape and park construction must be submitted for review and approval prior to commencing with any improvement work.

1. All products used for the irrigation well construction and components must be submitted for review and approval prior to commencing with any well drilling work. The City will not give approval to the County to issue the well permit until product submittals have been approved.
2. Submittals shall be made in PDF format and submitted all at one time. Partial submittals are not permitted. The PDF's can be e-mailed, sent through a Dropbox or submitted on a CD. Allow 2-3 weeks for review of submittals. Once approved, and prior to construction a color hardcopy shall be provided to the City for the Construction Inspectors(s).

(B) Pre-Construction Meetings

The City and Parks Department must be contacted for the following on-site pre-construction meetings. The Construction Inspector(s) shall be contacted at least 48 hours in advance to schedule the meeting.

1. Pre-construction meeting prior to any irrigation well drilling work.
2. Pre-construction meeting prior to the start of any landscape work.
3. Pre-construction meeting prior to any civil work or other work that is to be performed in an existing park, streetscape or City owned and maintained property.

SECTION 3 | PLAN PREPARATION

The outline which follows summarizes Plan Preparation information for those preparing plans and detailed drawings for projects within publicly maintained areas in the City of Manteca.

3.1 GENERAL REQUIREMENTS

(A) The landscape plans being submitted in response to a City Planning Commission or City Council requirement such as those normally found as Conditions of Approval must be for the complete map area of the project. For example, if a tentative map requirement calls for a landscape plan submitted for review and approval prior to recordation of the final map, then the plan which is submitted will be for the total area covered within the final map. The landscape plan specifically cannot be submitted piecemeal as in construction or other type phasing. The landscaping can be installed in phases and/or shown in phases on the overall map, but the entire plan must be submitted.

1. Standard size sheets shall be used for all plans submitted. All plans shall be of the same size. Final signed 24" x 36" Mylars (for City Record-Set only) shall be reduced to 24" x 36".
2. Incomplete designs, details, etc., will not be accepted. Checking will be done only on plans, which are complete in all phases of design.
3. Number sheets consecutively, "Sheet ____ of ____." In addition, in the Title Block provide the name of each sheet, for example: Irrigation Plan,
4. Graphic and written scale shall appear on each sheet, i.e., Scale: 1" = 20'.
5. "North" arrow shall appear on each sheet.
6. Show all match lines clearly and label to provide easy plan reference.

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7. Location map shall appear on title sheet and identify streets within project and those directly adjacent. Label adjacent developments on location map.
- (B) The following note is required to be on the cover sheet of all landscape plans:

CITY OF MANTECA WATER EFFICIENT LANDSCAPE REQUIREMENTS

Changes to the approved plans or field substitutions shall not be permitted without written approval from the landscape architect and the city of Manteca. If the owner/contractor deviates from the plan they will be required to make any changes at his/her expense to bring the landscape back into compliance with the water efficient landscape ordinance.

Per the water efficient landscape ordinance and city of Manteca the following will need to be submitted for certificate of completion prior to final acceptance or occupancy of the project.

1. Approved construction plans for landscape irrigation and grading
 2. Soils report with verification (load tickets/receipts) that the recommendations were implemented. Load tickets shall be submitted to the City of Manteca Construction Inspector(s) for review and approval prior to planting.
 3. An independent irrigation audit and verification that recommendations were implemented.
 4. The irrigation watering schedule.
 5. The landscape maintenance and irrigation maintenance schedule.
 6. The final inspection results and certification statement by landscape architect or licensed landscape contractor that the project was installed per the approved plans.
 7. Certification that the backflow(s) have been tested and passed inspection.
 8. Water efficient landscape worksheet with hydrozone tables and water budget calculations.
 9. Completed certificate of completion form and copies listed.
- (C) The following items related to landscape and irrigation development shall appear on all plan sheets:
1. Property lines/project limits.
 2. Limit of work lines.
 3. Building areas, existing and proposed street sidewalks.
 4. All walls and fences (including gates) to be constructed by developers. Specify heights and construction materials of walls and fences.
 5. Areas of maintenance responsibility for City, homeowners' association, or private maintenance. City maintained areas must be clearly separated from privately maintained areas. Note appropriate maintenance responsibility on Title Sheet and each page.
 6. Other appropriate information (utilities, easements, street lights, fire hydrants, etc.) as they relate to landscape development.
 7. Signature block for approvals with space for City Parks & Recreation Director.
 8. Project Overall Scope Summary with total square feet of landscaped area, turf, planter/shrubs, groundcover, impervious surfaces (walkway/concrete/DG or other special surfacing), linear feet of fencing, retaining walls, and the quantity of lights.
- (D) Should revisions be made to plans after approval by the City of Manteca, such revisions shall be reviewed and approved by the City and noted on the Title Sheet prior to implementation in the field.

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3.2 TITLE SHEET

The first sheet shall be a Title Sheet and shall include:

- (A) Vicinity Map
- (B) Location Map
 - 1. Street configuration within or adjacent to the tract of project.
 - 2. Nearest arterial highway intersection, if applicable.
 - 3. Street names.
 - 4. North arrow.
 - 5. Portion of project each sheet covers, if applicable.
 - 6. Match lines, if applicable.
 - 7. Project limits.
 - 8. Identification of development directly adjacent to project site.
- (C) Sheet Index
- (D) General Notes (to be included on Title Sheet of all project submittal plans)

- 1. All work shall comply with the City of Manteca Standards for Landscape Development.
- 2. The plant material supplier and/or landscape contractor shall provide guaranteed evidence to the City Landscape Inspector that all plant material is consistent with the approved plant legend considering genus, species, cultivars, and size specified. Plants shall be tagged from the grower and the shipping invoice and approved plans shall be presented at the time of the plant inspection. All plant material not consistent with the plant legend may be rejected. The Construction Inspector shall be contacted at least 48 hours in advance to schedule the inspection.
- 3. All revisions and change orders to the approved landscape architectural plans and specifications are subject to the review and approval of the City Parks & Recreation Director, or their designee, before work may continue. Minor changes are to be transmitted via e-mail in PDF format to the City Parks & Recreation Director, or their designee. Major changes are to be done with three revised bond copies being sent to the City for signature with notification given to the City Parks & Recreation Director, or their designee.
- 4. Contractor shall notify Underground Service Alert (USA) before start of construction at (800) 422-4133. An encroachment permit is required for potholing to verify existing location of utilities.
- 5. List all utility companies with contacts and phone numbers on the title page. For example: City of Manteca Water Division. Phone Number: 209-425-3549. Contact Name: Jane Doe.
- 6. Note that the California Public Utilities Code mandates that the gas company is notified a minimum of two (2) days prior to start of construction.

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7. As-builts shall be kept at the jobsite at all times and updated daily. There will be random City inspections checking for updates and accuracy.

- (E) Signature block for approvals with space for City Parks & Recreation Director. A signature block for the water district South San Joaquin Irrigation District (SSJID) is required if the project area overlays any SSJID easement or if the project has been designed for recycled water.
- (F) For Streetscape/Landscape Maintenance Districts and park sites the following shall also apply:
 - 1. Provide square footage for the following:
 - a. Overall square footage for the project.
 - b. Total square footage of turf areas.
 - c. Total square footage of planter/shrub areas
 - d. Hardscape square footage such as sidewalks, bike path, basketball courts, etc.
 - e. Total square footage for special surfacing i.e.: DG, cobble, playground, etc.
 - f. Linear footage of soundwall, raised planters
- (G) Title Block to contain the following:
 - 1. Project title.
 - 2. Tract number and tentative tract number (if applicable) and parcel numbers if drawings reflect only a portion of the complete tract. These specific reference numbers shall conform to the approved tract map.
 - 3. Project address.
- (H) Landscape Architect's (or Engineer. or Architect) firm name, address, telephone number, date plans prepared, and signature and seal of Registered Landscape Architect.
- (I) Owner/Developer's name, address, and telephone number.
- (J) Total square footage of landscape area.
- (K) Tree total by species and by street in City maintained landscape areas.
- (L) Submittal date block with number and date of each plan submittal to City for plan check.
- (M) MWELo requirements checklist

3.3 GENERAL NOTES

The second sheet shall be a General Notes Sheet and shall include the following:

- (A) Standard General Notes
 - 1. The Contractor or Developer is required to fully maintain all landscaping until full City acceptance of all improvements within City maintained areas.
 - 2. The Contractor must schedule a Pre-Construction meeting with the City Construction Inspector and Parks Department two weeks prior to beginning construction.
 - 3. All submittals shall be submitted and approved prior to the pre-construction meeting.
 - 4. The Contractor is responsible for obtaining approved submittals and building permits prior to commencing well construction and irrigation installation, respectively.
- (B) City Standard Notes
 - 1. No City maintained areas shall have a designed slope that exceeds 4:1 gradient. Where needed, retaining walls of heights, materials and construction acceptable to the City's Authorized Representative shall be provided by the Contractor to keep slopes within acceptable ranges. These walls must prevent erosion of bark and soil and provide a drain system.
 - 2. Soils testing for agricultural suitability and fertility shall be obtained and recommendations included on the landscape plans prior to plan check review by City. Retesting may be required after mass grading to comply with MWELo Requirements.
 - 3. Landscape or Irrigation Contractor shall verify existing P.S.I. at job site prior to installing landscape irrigation system. Verification shall be made with the City of Manteca Water Division.

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4. Owner shall provide a 6" concrete mow strip between mowed turf and ground cover, to separate maintenance responsibility areas, and at permanent limits of work where no walls or fencing exist. (Refer to detail H-4 of the Parks and Recreation Standard Construction Details)
5. Work shall be done in accordance with City of Manteca Standards and Specifications for Landscape Development and any applicable City of Manteca Public Works Standards and Specifications.

(C) Construction Notes

1. It is the responsibility of the Contractor to familiarize himself with all grade differences, location of walls and utilities. The Contractor shall repair or replace all items damaged by his work per the direction and approval of the City. He shall coordinate his work with other contractors for the location and installation of pipe sleeves and laterals under roadways and paving, etc.
2. Landscape Contractor shall be responsible for locating and staking all sewer, utility, and water main lines prior to beginning work. Landscape Contractor shall be responsible for any damage or replacement of said utilities.
3. Do not willfully install the sprinkler system or drainage as shown on the drawings when it is obvious in the field that unknown obstructions, grade differences, or differences in the area dimensions exist that might not have been considered in the engineering. Such obstructions or differences should be brought to the attention of the City. In the event this notification is not performed, the Contractor shall assume full responsibility for any revisions necessary.
4. The intent of the contract is to provide 100% irrigation coverage to all planting areas, as part of the scope of work, provide any additional heads, special nozzles, or patterns to achieve proper coverage with a minimum of overspray at no additional cost to the City and to pass the irrigation audit.
5. As much as possible, plant materials should be planted during seasons when survival rates are highest.
6. Temporary fencing shall be provided by Contractor during all phases of construction.

3.4 PLAN SHEETS

(A) Plan sheets shall be submitted as follows: (see below for specific requirements)

1. Demolition (if within existing park or landscape)
2. Landscape Grading/Drainage (in addition to the Civil plans)
3. Hardscape
4. Fencing
5. Lighting
6. Irrigation Well
7. Irrigation
8. Landscape Planting
9. Graphics/Signage

(B) Demolition.

1. Demolition and restoration plans shall be required when construction work is performed within an existing park or streetscape.
2. Demolition or construction within existing City owned or maintained landscape areas shall be discussed and approved by the Parks Department prior to design.
3. Plans shall show the project limits, the extent of the demolition work and include the following notes:
 - a. Prior to any work, the general contractor (and applicable sub-contractors) shall schedule a pre-construction meeting with the City of Manteca Parks Department and Construction Inspection.

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- b. Prior to the meeting, the Contractor shall mark in the field the location, extent of all trenching or work to take place. During the meeting, they shall walk the site with the Parks Department and Construction Inspection to review the potential impact on existing irrigation equipment, hardscape, park utilities and trees.
- c. Temporary chain-link fencing shall be installed at the perimeter of the construction zone. The construction zone limits shall be determined in the field during the pre-construction meeting. No construction (including vehicles, storage and stockpiles) shall be allowed outside of the fenced construction zone.
- d. Existing trees within the construction zone are to be protected in place with orange construction fencing around the drip line. Fencing shall be maintained throughout the construction period.
- e. Trees that have been authorized for removal shall be replaced with a minimum 24" box tree (or equal value) at the Contractor's expense. Tree variety shall be per the Parks Department and planted per City details and specifications.
- f. The Parks Department shall be notified a minimum of 4 working days prior to the start of any work. The existing irrigation controller will need to be set and/or adjusted to allow for work operations. Circuits within the construction zone shall be turned off. Any adjustment of the irrigation controller shall be made by the Parks Department staff only. The contractor shall be responsible for supplemental watering of the landscape and trees within zones that are off.
- g. Prior to any trenching the contractor in conjunction with the Parks Department shall mark the location of all irrigation mainlines, wiring and laterals that run through the construction zone. The irrigation lines shall be shown on the demolition plans.
- h. Trenches near the irrigation mainline shall be dug by hand so as not to damage the mainline or existing control wiring. Should any wires be nicked, cut or otherwise damaged, the Parks Department shall be notified immediately. Wire splices and irrigation repairs shall be made by an approved C-27 contractor under the supervision of the Parks Department Irrigation Technician. Cost of repairs are at the expense of the Contractor.
- i. To the greatest extent possible, the irrigation mainline and wiring shall remain intact and shall not be cut.
- j. The existing control wires shall be protected in place by use of a 4" corrugated drain line or other protection device as approved by the Parks Department. Zip tie the control wires to the mainline if not already done.
- k. Lateral piping may be cut but it shall be a clean cut with caps placed over the ends to keep dirt and other debris out of the line.
- l. Sprinkler heads, valves and other irrigation equipment may need to be temporarily removed for construction operations. These items are to be cleaned and stored for replacement. Damaged equipment may need to be replaced with new matching equipment. City Inspector shall determine the viability of re-using existing equipment.
- m. Trench back filling shall be done in minimum 8" lifts with compaction equal to that of adjacent native soil. Back fill shall be brought level with the existing grade. Backfill shall be done under the supervision of the City Inspector.
- n. All pipes and equipment that were removed for trenching shall be replaced in the same location or as determined by the City Inspector. All irrigation work shall conform to current City Standards and Details. Work shall be performed by and approved C-27 Landscape Contractor.
- o. All irrigation circuits that were impacted by the construction activity shall be completely flushed. Filters in all sprinkler heads shall be washed clean or replaced. Sprinklers shall be adjusted as needed for proper coverage and to avoid overspray.
- p. The backfilled trench, dead areas, areas damaged by construction or lack of irrigation shall be graded smooth and replanted with new sod, seed or plant material as approved by the Parks Department.
- q. New sod shall be installed with clean, straight edges flush with the existing turf with no elevation changes. Sod and seed varieties shall be approved by the Parks Department and

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installed per specifications including tilling and fertilization. Sod and seeded areas must be established with a minimum of 2 mowings, lush and weed free until accepted by the City. Chain link fencing shall remain in place around turf areas until accepted by the City.

- r. Planter areas shall be restored to the pre-construction condition with plant material per the original plans. Planting and staking shall be per the Parks Department Standard details and specifications. Planter areas affected by construction shall receive a new layer of bark topdressing; extents as determined by the Parks Department.
- s. New landscaping, turf and irrigation work shall be subject to a minimum 90-day maintenance period. New trees as well as those existing within the construction zone shall be warrantied for 12 months.
- t. Irrigation and landscaping items shall be submitted for review and approval prior to the start of work.

(B) Grading/Drainage

- 1. Indicate existing and proposed grades with contours and spot elevations. No slope in turf or planter areas shall exceed 6:1. No slope on a drainage basin side shall exceed 6:1. When possible, provide an 8' wide flat bench between top of slope and back of walk. Where needed, retaining walls of heights, materials and construction acceptable to the City's Authorized Representative shall be provided by the Contractor to keep slopes within acceptable ranges. These walls must prevent erosion of bark and soil and provide a drain system.
- 2. Note all grades, flow lines, etc., within public right of way.
- 3. Bike Grades: 10% maximum slope.
- 4. Handicap Grades: 8.3% maximum slope as per State of California Title 24. A 5% slope is preferred where feasible.
- 5. Provide an 8' wide bench between top of basin slope and perimeter walkways. Provide a 3' wide bench between top of slope or toe, and interior walkways/hardscapes.
- 6. Minimum grade within turf and ground cover shall not be less than 2%.
- 7. Crown playing fields such as baseball, softball and soccer at a minimum of 1.5% and preferably at 2% for proper drainage.
- 8. All grading and drainage within public right of way shall be subject to approval by the City Engineer.
- 9. Where turf and overhead sprinklers are proposed adjacent to walkways or other non-permeable surfaces, the surfaces shall be designed and constructed to drain entirely to the landscape. Slope surfaces and turf so that no water ponding occurs.
- 10. Subsurface drainage (with clean outs) for median islands may be required if gradients promote concentrations of water in specific locations.
- 11. Site designs comply with irrigation water application requirements as applicable, and eliminate runoff onto paved surfaces.
- 12. Landscape berms adjacent to paved surfaces shall be graded to capture and absorb runoff or convey it to an approved design feature.
- 13. Grade so that all irrigation and normal rainfall remains within property lines and does not drain onto non-permeable surfaces.
- 14. Transitions from existing to proposed grades and from gentle to steep grades shall be gradually sloped and rounded to minimize sharp angles and contrasts in landforms.
- 15. The grading plans shall meet the MWELo requirements for allowable slopes and contain the MWELo design compliance statement.

(C) Hardscape

- 1. Walls, Structures and Foundations
 - a. Retaining walls shall be engineered and submitted to Manteca Building Department for approval.
 - b. Bridges, trellises, shelters and other related structures requiring foundations and/or building permits shall be engineered and submitted to the Manteca Building Department for approval.
- 2. Concrete walks

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- a. All concrete walks shall be constructed with a 5' minimum width if parkway is between curb and sidewalk and a 5' minimum width when adjacent to curb.
- b. Where tree wells occur within the sidewalk area, a 4' width must be maintained between tree well and back of sidewalk
- c. All concrete shall achieve minimum strength of 2,500psi at 28 days of curing; fiber mesh may be installed at a thickness of 4".
- d. Do not install welded wire mesh or steel reinforcing bars (rebar) unless specifically engineered by a geotechnical engineer or structural engineer to meet the existing subgrade soil after an investigation of local conditions has been performed.
- e. Use of stamped concrete, various enriched pavings, etc., shall require approval of City Representative.
- f. Construct walkways in accordance with Public Works standard details and specifications.

3. Concrete pads

- a. Concrete 4' x 4' pads shall be placed intermittently around the perimeter of parks. These shall be placed at the back of City sidewalk and in convenient locations (corners, street or walkway intersections, sports fields). There shall be a minimum of 1 pad per each side of park. These pads are for automated trash collection receptacles that will be placed by the City.
- b. Concrete pads for portable restroom placement may be required upon City request. These shall be placed at the back of city sidewalk in convenient locations (walkway intersections, sport fields). There shall be a minimum of one 8' x 8' pad for an ADA restroom and a minimum of one 6' x 6' pad for a standard restroom. These will provide a stable surface for restroom placement in the event of a sport tournament or special activity.

(D) Fencing

1. Ornamental Iron (tubular steel) – Preferred materials in high visibility areas, park or streetscape locations; construct per standard details.
2. Chain Link (galvanized steel) – suitable for sports fencing applications and utilitarian fencing requirements, i.e. dog park, etc.; constructed per City Standard Details.
3. Masonry - All masonry perimeter wall designs shall be engineered and submitted to the City of Manteca Building Department for approval.

(E) Lighting

1. Any lighting systems to be located within the public right of way shall be designed by a Registered Electrical Engineer. Lighting plans shall be submitted with standard landscape plans and shall be subject to approval by City Engineer and City Building Department. The electrical plans shall also include a site plan with photometric calculations of the required light levels from a lighting consultant.
2. In general, LED light illumination levels of park playgrounds, pathways and trails shall be 0.5 FC. Activation of lighting shall typically be by photocell device. Timer with an astronomic clock feature, dimmers or other controls may be required upon request.
3. In remote locations (where power is cost prohibitive) the City may accept solar-powered light fixtures. Projects will be reviewed on a case-by case basis.
4. Baseball and softball fields, soccer fields, tennis courts and other recreational field lighting shall be properly designed by a Registered Electrical Engineer. Illumination range is typically 30- 50 FC depending upon the sport. Lighting shall provide for participant and spectator safety and include a site plan with photometrics of required levels for the sport from an athletic lighting consultant. Lighting design shall include environmental control to prevent light spill and glare onto adjacent properties.
5. The City of Manteca shall be consulted for preference of lighting controls.
6. Refer also to section 112.0 LIGHTING

(F) Irrigation Wells

1. In general, parks, linear parks and large streetscapes require a non-potable well for irrigation purposes.
2. The irrigation well, pump and related equipment shall be per the Civil Plans and per the City of Manteca Public Works Standards and Specifications Section IR.

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3. The well and pump shall be designed to operate the full buildout of the park/project and water within an 8-hour maximum watering window.
4. The irrigation well and pump design shall be coordinated with the Landscape Irrigation Plans for the location of the facility within the project site and irrigation component layouts. The irrigation well shall be constructed in conjunction with the landscape irrigation system to assure conformance with the overall irrigation system requirements.

(G) Irrigation

1. Provide a complete automatic sprinkler irrigation design for all landscape areas as required as a part of the project development. The irrigation system shall be designed and installed in compliance with most recent MWELD requirements, as adopted by the City of Manteca. The installation of the irrigation water supply system (new or existing well water) shall conform to the regulations of the State Department of Water Resources, the Uniform Plumbing Code (UPC) and the details of specifications for the construction of irrigation systems within the City of Manteca.
2. The landscape irrigation system shall be designed and operated to prevent run-off and discharge of irrigation water onto roadways, driveways, adjacent properties, and all areas not under City jurisdiction.
3. The landscape irrigation system shall be designed to accommodate emergency watering in the event of a well or booster pump failure. Under emergency operation, the system shall be able to operate a minimum of one valve at a time.
4. Included on the irrigation drawings shall be a complete and comprehensive irrigation legend, indicating sprinkler head manufacturer and model number, sprinkler radius in feet, sprinkler operating pressure in P.S.I. sprinkler flow in G.P.M., and precipitation rates. All other equipment and materials utilized in the design shall also be included as a part of the irrigation legend; indicate manufacturer, model number, size, and brief description. Anticipated water schedule and hydrozones shall also be indicated, showing estimates for both the establishment period and the post-establishment period.
5. Indicate locations of irrigation water meters, irrigation points of connection, and electrical points of connection for automatic sprinkler controllers on the irrigation drawings. Indicate whether the Contractor, the owner, the utility service company, etc., will be responsible for the coordination and installation of water and service connections.
6. The following information shall be provided at each irrigation water meter or irrigation point of connection:
 - a. Location
 - b. Static and residual water pressures
 - c. Point of connection, electrical, and water
 - d. Meter size
 - e. Peak irrigation demand in gallons per minute (G.P.M.)
 - f. Finished grade at backflow unit and highest head served.
 - g. Maximum operating G.P.M. for each valve.
7. Submit pressure calculations for worst hydraulic condition at each point of connection. Water movement in system shall not exceed 5' per second for pressure main line piping and 7' for non-pressure lateral line piping.
8. All irrigation system components shall be designed to minimize vandalism and accidental damage, with special attention at schools, parks, along trails, roads, walks, etc.
9. Irrigation water system shall be designed to meet the peak moisture demand of all plant materials used within the design area, within a reasonable watering window time frame of not more than 8 hours per 24 hours.
10. Provide construction details indicating installation procedures and materials required for the installation of all major components used in the irrigation design in accordance with Standard City Details. (See Section V)
11. In an effort to provide a more efficient landscape sprinkler system with a continuing water conservation program as a prime objective, sprinkler head spacing for small sprinkler head with

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effective spray 8' to 12' in diameter shall not exceed 55% of the diameter. In no case shall sprinkler spacing exceed the manufacturer's recommendations and wind conditions shall be taken into consideration.

12. Pop-up type heads must be of sufficient height in the operating mode to be fully operational without the need for routine trimming around irrigation heads as a part of the weekly maintenance efforts.
13. Pressure loss due to friction in sprinkler lateral line piping should not exceed 20% of sprinkler head optimum operating pressure.
14. Provide check valves and/or anti-drain valves as may be required by the City and MWELO to prevent drainage of irrigation water from sprinkler system due to changes in elevation.
15. The on-site irrigation water system shall be designed and operated to meet the following conditions with respect to water application and conservation.
 - a. Irrigation water shall be applied at a rate which does not exceed the infiltration rate of the soil. Where varying soil types are present, the design of the irrigation water system shall be compatible with the lowest infiltration rate present. Soil permeability rates shall be obtained in conjunction with any geotechnical engineering investigation or soil suitability analysis that may be performed on soil samples taken at the site.
 - b. When the application rate exceeds the infiltration rate of the soil, all automatic systems shall be utilized and programmed to prevent or minimize the ponding and/or run-off of irrigation water. The sprinkler system shall not be allowed to operate for a time longer than the landscape's water requirement. If run-off occurs before the landscape's water requirements are met, the automatic controls shall be reprogrammed with additional watering cycles to meet the requirements. This method of cycle and soak operation will control and limit run-off.
 - c. Irrigation heads shall be spaced at 80% of the manufacturers' recommendations to allow for wind drift and avoid exceeding the effective radius of coverage (head-to-head).
16. Valves – provide uniform coverage and G.P.M. from control valves in each system.
 - a. Sectionalized gate valves shall be provided to allow shutting down various sections of the system independently without affecting the entire system.
 - b. Remote Control Valves should be located in shrub areas whenever possible and above high-water line in park basins or LID areas.
17. Mainlines in basin or LID areas shall be located above the high-water line and typically placed in a flat area adjacent to the back of city sidewalk. A looped system is preferred where possible. Point of connections shall be centered to the mainline length when not in a loop.
18. A hydrometer or master valve/flow sensor control valve will be required.
19. Slope Condition - Provide separate control valves for sprinkler lines operating systems at the top, toe, and intermediate areas of slopes. Sprinkler lines shall run parallel (or as close as possible) to contour lines. All valves shall be buried below grade and shall be located at the top/toe of slope as to be easily accessible for maintenance.
20. System Pressure (Well water with pump package is normal delivery system)-Design systems to the lowest static pressure available, less 20% cushion for further system fluctuations. The maximum potential pressure should be considered in the design and regulators provided if required. If water pressure exceeds 80 P.S.I., install pressure reducing valve(s) to maintain water pressure at no more than 20% higher than system design pressure. Refer to City of Manteca Standard Details.
21. Products shall be designed to operate within the manufacturer's optimum pressures to ensure maximum performance and efficiency.
22. Backflow Prevention – All systems using domestic water will be required to have a reduced pressure (RP) backflow preventer. Installation shall be a minimum of 12" above grade and shall be equipped with approved test cocks. Systems using recycled water may be required to have a backflow preventer; verify with water purveyor. All backflow devices shall be tested and approved by a city approved certified backflow device tester and the City Water Division immediately following installation. A copy of the test shall also be submitted to the Construction

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Inspector and the Parks Department. Back flows shall have an approved enclosure and frost protection blanket and shall open and close freely with frost blanket in place. It is the Contractor's responsibility to ensure the proper fit upon installation in the field. Cutting or altering the enclosure is not permitted.

23. All drinking fountains shall have an RP backflow with lead free rating.
 24. Quick Coupling Valves – Provide quick couplers every 200' on center along irrigation mainline. Provide one (1) quick coupler within 12" of paved end sections of landscaped medians (if paved ends occur). Locate quick couplers adjacent to hardscape. All quick couplers on potable water (typically in vicinity of playgrounds, picnic areas and dog parks) shall have an RP backflow with lead free rating.
 25. Allowance shall be made in sizing pipe, wiring, etc., if landscaped area requiring irrigation system does not represent the total area and future development of the remaining site is under consideration.
 26. Pop-up sprinklers shall be used (6" in turf and 12" in shrub/groundcover/now mow turf) to minimize safety hazards and vandalism. Avoid above grade sprinklers. Rigid risers are not allowed. Any item, technique, or requirement set forth in the Standard Specifications but not specifically mentioned under the Standards and Specifications should be considered in the design of irrigation systems.
 27. Irrigation plans shall contain current standard notes from appropriate water purveyor – City of Manteca Water Division.
 28. Irrigation plans shall contain all required MWELD notes, irrigation schedules, calculations, hydrozones, forms, checklists and provisions in the most current MWELD standards. Refer to www.water.ca.gov (Title 23, Chapter 2.7 of the Department of Water Resources)
 29. Irrigation plans shall have the tree locations shown lightly in the background. Design shall illustrate and note required tree clearances from irrigation components.
 30. All on-site recycled or potable water piping installed on each project shall be identified in accordance with the City of Manteca Irrigation Specifications.
 31. The objective of this document is to aid in the preparation of landscape irrigation drawings and specifications for practices and materials most commonly encountered in the field. However, any special conditions which the Landscape Architect/Owner finds during the process of design drawings, etc., not covered by these Standards and Specifications, shall be submitted to the City at the earliest possible date.
- (H) Landscape Planting
1. The planting design shall be in substantial compliance with general landscape architectural design principles and the criteria of the Landscape Architectural Plan Check Checklist. Planting plans are to be in conformance to the appropriate specific plan or design standard requirements.
 2. All ornamental planting of streetscape trees/shrubs shall be in accordance with the appropriate City ordinances and conditions.
 3. In no event shall trees or ornamental landscaping be placed so as to obstruct the vision of drivers and/or pedestrians within public right of way. See City Standards for cone of vision diagrams and requirements.
 4. In general, landscaping specifically within greenbelt areas shall receive the following tree size ratio (unless otherwise approve by the Parks and Recreation Director):
 - a. 24" Box – 15%
 - b. 15 Gallon – 85%
 - c. Deciduous – 50%
 - d. Evergreens – 50%
 5. Trees planted by the Developer as a part of the project development shall be installed as per City of Manteca Standard Details.
 6. Minimum acceptable sizes of street/parkway trees shall be 15 gallon can container size, excepting larger parkways where some larger boxed container size materials may be appropriate.

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7. Street tree spacing will vary depending on street type (arterial, collector, etc.) and application (informal groupings, formal groupings, focal point specimen, solitary planting, etc.). Provide consistent spacing with existing street tree pattern and species unless otherwise directed by City Planning or Parks Department.
 8. Trees shall be located minimum $\frac{1}{2}$ the mature diameter from irrigation mainlines, laterals, valve boxes and master valve/flow meters.
 9. All herbicides and weed control materials proposed for use within publicly maintained areas are subject to approval by City Parks Department. Substitutions will only be considered when approved by Landscape Architect and the City.
 10. Planting plans shall represent a true and accurate description of actual plant materials to be installed. On-site inspection will strictly enforce representations, types, and quantities shown on planting plans. Substitutions will only be considered when approved by the Landscape Architect and the City and revisions to the WELO could be required.
 11. Trees within five (5) feet of any hardscape surface area shall receive a root control barrier in order to minimize damage to paving from tree root growth. Barrier length per manufacturer's recommendation.
 12. Above-ground utilities shall be screened with appropriate plant material.
 13. Shrubs shall be designed with a layering effect adjacent to buildings and in public view areas. Transition from lower height shrubs in front of planting area to medium to tall height shrubs in rear of planting area. Plant shrubs in drifts, spaced to appear as filled-in masses instead of spotty placement of individual shrubs.
 14. Shrubs to be five (5) gallon minimum container size. One (1) gallon containers will be acceptable depending on plant species i.e., grasses, spreading groundcovers, or perennials.
 15. In general, dark brown decorative bark shall be spread to a 3" depth in all non-turf planting areas and around trees in turf. Other applications could include Cobble, rock blankets or decomposed granite.
 16. Edit irrigation and planting specifications to include only those items that pertain to the project.
 17. Tree ties to be Reddy Stakes or approved alternate, one (1) per tree. See City of Manteca Standard Details. Larger sizes or guying may be required as needed.
 18. Planter widths shall be sufficient to accommodate tree species at maturity. Planters (and any other landscaped areas) less than 10' wide in any direction shall be irrigated with subsurface irrigation or other means that produces no runoff or overspray. Minimum planter width is 5 feet per City code.
- (I) Graphics and Signage
1. All graphics and signing systems within public right of way for housing usage shall be subject to approval by the Planning Director and Parks Department and shall be in accordance with appropriate zoning ordinances. Refer to section 4.10 Park, Facility and Streetscape Naming Procedure for further information.
 2. Signs shall be pre-cast type with inset or engraved lettering; surface mounted signs or lettering shall not be permitted.
 3. Each park shall have a prominent sign with the park name and address. (minimum 1 sign, possibly 2) These shall typically be placed in the vicinity of the play area or at primary street intersections. Refer to Section 4.10 for park naming policy and procedure.
 4. Park regulatory signage shall be located at pedestrian entry points to the park, at each sidewalk or approach to the park site (minimum 2 signs, usually 3 or 4 signs), other locations as requested and in accordance with the Standard Construction Details. Park rules, hours of operation and a brief summary of key Manteca Municipal Ordinance rules (found in section 12 of the MMO), for example: all dogs must be kept on a 6' maximum length leash, and cleaned up after; no alcoholic beverages or consumption allowed; no smoking allowed; no camping; construction or occupation of encampments or storage of personal property allowed; golfing is prohibited; no littering; please report suspicious behavior to: 911. Shop drawings shall be submitted and approved prior to ordering and installing signs.

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5. All pedestrian and bicycle trails which cross arterial or collector streets shall receive appropriate signs, stripes, and pavement markings per State of California Standards

3.5 INSPECTION AND ACCEPTANCE OF LANDSCAPE AND PARK INSTALLATION

- (A) In general, the following meetings and inspections are required. See sections of the Landscape Standards and Specifications.

(B) Pre-Construction Meetings

The City must be contacted for the following on-site pre-construction meetings. The Construction Inspector(s) shall be contacted at least 48 hours in advance to schedule the meeting.

1. Pre-construction meeting prior to any irrigation well drilling work.
2. Pre-construction meeting prior to the start of any landscape work.
3. Pre-construction meeting prior to any civil work or other work that is to be performed in an existing park, streetscape or City owned and maintained property.

(C) Construction Inspections

In general, the following is a list of inspections the City must be contacted for during construction. Also see sections of the Landscape Standards and specifications for additional inspections, and inspections to be performed by others. The Construction Inspector(s) shall be contacted at least 48 hours in advance to schedule the inspection.

These inspections will include, but are not limited to:

1. Prior to start of irrigation well drilling operations and any subsequent inspections after as determined by Public Works
2. Following stockpiling and stripping
3. During cross ripping of storm drain basins
4. Following rough grade and staking
5. Following completion of rough grade
6. During incorporation of soil amendments and fertilizers
7. During installation of irrigation system
8. Prior to hydrostatic pressure test of irrigation lines
9. For irrigation coverage test – this is done by the Irrigation Auditor
10. For approval of final grade in planters prior to planting
11. Upon delivery of plant material and prior to planting
12. For approval of tree locations prior to planting
13. For approval of final grade prior to hydroseed or sod
14. After pre-emergent application and prior to topdressing/mulch
15. During concrete forming phase and prior to pour
16. During installation of any footings and prior to pour
17. Prior to final placement of site furnishings
18. Random inspections of the project, including product delivery tickets and documentation can occur at any time and to verify as-built plans are being recorded and updated daily.

(D) Pre-Maintenance Inspections

Owner or agent in control of the property shall maintain landscaping and irrigation systems to the satisfactions of the City Parks & Recreation Department for a minimum of ninety (90) days. Prior

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to the start of the landscape maintenance period, an inspection of the completed landscape and well installation shall be required. The owner or agent in control of the property shall refer to the Landscape Installation Inspections Checklist and perform a pre-check of all items. If they feel all is satisfactory, a Pre-Maintenance Inspection can be requested. The Construction Inspector(s) shall be contacted at least 48 hours in advance to schedule the inspection. If during the inspection it becomes evident that a pre-check was not conducted, the inspection will be concluded and must be rescheduled.

This inspection will include, but will not be limited to:

1. All documentation needed for the MWEL Certificate of Completion including the irrigation audit shall be provided to the City.
2. Irrigation inspections and controller certification to demonstrate that all irrigation system components function as designed, controllers are communicating and that system needs design pressures and flow rates.
3. Well inspection to demonstrate all components are functioning as designed and communicating with controller and meets design pressures and flow rates.
4. Booster pump inspection to demonstrate all components are functioning as designed and communicating with controller and meets design pressures and flow rates.
5. Compliance to approved landscape plans, specifications and details.
6. Any special conditions or approval attached to the project.

(E) Final Inspection and Acceptance

At the end of the maintenance period, the Owner or agent in control of the property shall contact the City for a final inspection. Final acceptance of Landscape Improvements will be made at such time as all planting is in place and established in a healthy condition, irrigation systems are installed and operational as shown and all components and amenities are per the approved plans and in accordance with Manteca City Standard Details and Specifications. All warranties, manuals and documentation must have been submitted at this time. After acceptance of improvements by the Parks & Recreation department, the City will assume maintenance responsibility. Acceptance of a park, streetscape or landscape project by the Parks & Recreation Departments does not imply acceptance of the entire project, subdivision improvements or other improvement by the City.

SECTION 4 | PARK AND LANDSCAPE DEVELOPMENT DESIGN GUIDELINES

These design guidelines contain conceptual guidance for improved park, streetscape, landscape, and trails amenities. Also refer to the City of Manteca's Standard Landscape Construction Specifications as applicable.

4.1 MINIMUM PARK PROGRAM BY CLASSIFICATION

There are three types of parks in the Manteca parks system: **Neighborhood Parks, Community Parks, and Special Use Parks**. Refer to the Parks and Recreation Master Plan for detailed definitions of each park classification. In general, Neighborhood Parks serve neighborhood residential areas within 1/4 mile radius, and are between approximately 1-acre to 10 acres in size. Community Parks serve areas of the city within approximately 2-mile radius, and are sized approximately 10 to 40 acres or more in size. Special Use Parks provide special recreational uses such as a sports or single activity, for example: tennis or skateboarding. The following guidelines apply for programming each park type:

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- (A) Neighborhood Park – A neighborhood park should include a variety of functional uses and at a minimum shall include the following:
1. Separated tot lot (ages 2-5 years) and youth (ages 5 – 12 years) playground areas
 2. One practice sports field/multi-use turf area (can be located within a drainage basin that would typically associate with the neighborhood park footprint) that would include either soccer goals or baseball/softball backstop or both per the standard details
 3. One hard court area that could include one or two basketball, tennis, pickleball, foursquare game areas, etc.
 4. A picnic area with shade structure, tables, benches, trash receptacles, drinking fountains
 5. A themed design concept that includes the imagery, colors and concepts for the details in the play areas, picnic areas, etc.
 6. Landscape features such as a focal point, interpretive or functional garden area, neighborhood gathering spot/plaza, a perimeter walking, jogging, strolling pathway, bicycle rack zone, signage and lighting per the standard details included in this document
- (B) Community Park – The Community Park should contain all the above listed elements for a Neighborhood Park, in multiple locations around the larger park site as well as on a larger scale to serve larger groups of park users, such as:
1. Multi-use turf areas which are larger in size to accommodate, for example kite flying, ultimate Frisbee pickup games, etc. as well as larger playground structures, larger group picnic shelters, landscape zones, community gardens
 2. Specialized sports uses such as tennis, volleyball, badminton, bocce, pickleball, basketball etc.
 3. Community Park sites will include restrooms and adequately sized lighted parking lots to accommodate the ultimate use pattern in concert with the anticipated scheduling of events in the park on a typical peak day demand.
 4. Community Parks could also contain specialized use facilities within them, for example: aquatics, community center, gymnasium, meeting rooms, etc.
 5. Perimeter and cross-connecting multi-use trail systems should be included, and should be lighted for safety (pedestrian and bicycle uses).
- (C) Special Use Park – The Special Use Park sites will vary greatly in program and design because of the nature of providing a specialized site that accommodates primarily single-use functions, such as a sports complex, BMX facility, skate park, etc.
1. Most Special Use Park sites will also include multi-generational facilities within them for family use, such as playgrounds, restrooms, lighted parking and trail access.

4.2 PARK DESIGN GENERAL GUIDELINES

- (A) Master Plans
1. A site master plan of each park shall be developed prior to site development or renovation. Wherever possible, a public involvement process shall be used. The residents of the park's service area may be consulted for assistance in choosing the recreation elements to be included in the park.
 2. All individual master plans for new park development shall be subject to a master plan approval process.
 3. Tentative maps/parcel maps shall also be reviewed with the master plan.
- (B) Park Design General
1. Parks are to be designed with an emphasis on conjunctive use and multi-use recreation areas and facilities to efficiently utilize park resources.
 2. Park design shall allow for large contiguous turf areas for active recreation. Ornamental turf or small unusable patches of turf shall be eliminated.
 3. Site play areas near the main circulation route and near group picnic areas and open lawn areas.
 4. Provide for the optimum orientation of sports fields.

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5. Rest areas in parks and open space shall be sited along trails where appropriate. Rest areas shall include bike racks, drinking fountains, shade and picnic facilities.
 6. A signage system shall be developed for trails, which provides users with trail information, such as safety regulations, interpretative opportunities and distance.
 7. City properties shall include signage, with a minimum five-foot clear zone from pedestrian areas.
 8. Other site furnishings shall be required including benches, trail lighting, trash receptacles, drinking fountains and other furnishings.
 9. Restroom facilities shall be provided in all community and regional parks and in heavily used neighborhood parks.
 10. Concrete pads for portable restroom placement shall be provided in all neighborhood parks to accommodate special events. There shall be one (1) 8' x 8' pad for an ADA unit and one (1) 6' x 6' pad for a standard unit. Concrete pads shall be placed at the back of the City sidewalk in convenient locations (walkway intersections, sports fields, etc).
 11. Adequate bicycle parking at activity generators shall be installed as appropriate.
 12. Adequate parking shall be provided at each community and Regional Park location to minimize parking problems on residential and arterial streets.
- (C) Park Design Aesthetic Guidelines
1. All parks and open space areas shall be designed to blend with adjacent areas, and to the degree possible, shall be organized as a continuation of existing or proposed landscape areas.
 2. The City shall strive to emphasize unique and innovative design and promote individual character in the design of each park site. Sites, facilities, structures or landscapes of historic or cultural significance within each park shall be identified and included where possible in the park design.
 3. Develop a distinct theme or unifying design concept for each park site, to establish a unique character that is consistent with the park's activities and locations. The theme shall be implemented through the use of characteristic architectural details, features, design elements, colors, materials, furnishings, play equipment and plant selection. Consideration of what amenities are installed in nearby parks shall be evaluated prior to beginning design.
 4. Provide a unified park design by providing repeated details, colors and materials throughout the park.
 5. Natural landscape features are desirable in some park designs, which include natural plantings, water features, rock features, or earth forms.
- (D) Park Location
1. Park shall be centrally located to the neighborhoods it will serve. Do not locate off in a corner.
 2. Park shall not be bounded by any major streets (larger than 50')
 3. The Parks Department shall approve a preliminary or concept plan with the park location,
- (E) Park Entry/Circulation
- At a minimum, provide one main park entry, which gives a sense of arrival, and entry to the park. Provide the following at the park entry: the City standard park name sign, in a planted area with flowering trees, special paving, and possibly drop-off seating if the park includes a parking area.
1. Provide park regulatory sign per section 3.4 (H) at parking lot entry and at perimeter entries. At a minimum, provide one sign per each perimeter street and by play/picnic areas.
 2. Where applicable, locate main entrance to park near bus stop or crosswalk.
 3. Provide a separate entry for maintenance vehicles away from the main pedestrian park entry.
 4. Create a circulation system that leads people past amenities without forcing them to stop.
 5. Outdoor fitness equipment may also be placed along the edges of parks in various stations to maximize visibility, security and encourage pedestrian circulation around the park.

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6. Provide adequate access for fire, emergency and maintenance equipment in parks and open space.
 7. Provide direct pedestrian access (including ADA path of travel) to the play area, restroom and sports fields, including those in basins.
- (F) Neighborhood Parks
1. Neighborhood parks shall not contain community centers, swimming pools, wading pools, on-site parking or field lighting.
- (G) Community Parks
1. There shall be no restrictions on recreation elements for the community or regional parks.
 2. Design community and regional parks for night use, as appropriate. Lighting at night shall provide for safety, and anticipated recreational uses, while limiting glare impacts on nearby residential areas.
 3. Concession or public/private enterprise opportunities shall be included in existing and future community and regional park plans as appropriate, and shall be accompanied with appropriately convenient restrooms and covered, screened and secured trash enclosures.
- (H) Private Parks
1. Any "private park" or any park for public use within the city limits may be subject to the same standards for installation as official City Parks. These areas could become future maintenance districts that can be acquired by the City, and to protect others who might be operating in those areas.
- (I) Safety
1. Create safer Park and facility environments through the use of CPTED (Crime Prevention through Environmental Design) principles and strategies.
- (J) Water Conservation
1. Design park facilities to minimize water use and Parks and facilities shall be designed to enhance and preserve the natural site characteristics as appropriate and to minimize water use and maintenance demands pursuant to the City's Water Conservation Ordinance, the State of California MWELO (Model Water Efficient Landscape Ordinance) and CalGreen.
 2. Promote the use of drought tolerant and salt tolerant plant material where appropriate in parks.
- (K) Hardscape
1. Any outdoor steps proposed on parks and open space properties shall be designed in accordance with the most recent edition of the California Building Code as adopted by the City, including handrails, as well as provisions for ramps as required by ADA to provide access to persons of all abilities.
 2. Place play areas a minimum of fifty feet (50') from the street or parking lot, and locate tot lot farthest away from the street. Play areas closer than fifty feet (50') shall be surrounded by a four foot (4') high decorative tubular steel fence and shall require written approval from the Parks Department prior to designing, including the design for the basin.
 3. Sports courts should be located along the edges of the park to maximize visibility for security and located so that basketball courts and backboard/nets are oriented so that balls do not roll into adjacent street or down the hill into basins, and ideally oriented with the long axis north south for optimal solar orientation. Provide some separation from the street (fifteen to twenty feet - 15' - 20') such as a low berm, low landscape buffer and a four foot (4') high decorative tubular steel fence upon request of the City.
 4. Provide satellite exercise equipment at stations along a pathway of the park
- (L) Utilities
1. Above ground utilities, pump stations wells and other facilities shall be located outside of the playground area and are subject to approval by the Parks Department.

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(M) Potable Well Site

Parks shall include a dedicated site for a future City potable well per the Public Works Department. The following criteria shall be included in the design phase and installed prior to final acceptance of the park.

1. The well site shall be at least 70' x 90', entirely on flat ground.
2. The well site shall be located on the opposite end of the park from the upland play area.
3. The area of the well site shall be in addition to the minimum upland park area size requirement, as set by the City of Manteca Parks & Recreation Department.
4. The site shall be set back a minimum of 10' from adjacent back of walks to allow for landscape planters and screening.
5. Install 7' ht. curve top wrought iron fence with continuous 12" wide x 6" deep reinforced concrete mow strip centered beneath, with 16' wide opening vehicular access gate at driveway location.
6. Construct 16' wide commercial reinforced concrete driveway (apron) per City of Manteca Standard Detail ST-8A, asphaltic concrete driveway with 12" wide flush concrete edges (total 16' wide pavement), from the edge of the concrete apron to the vehicular access gate.
7. Install a metal sign reading "FUTURE CITY OF MANTECA POTABLE WATER WELL SITE", attached to wrought iron gate; sign shall be base plate metal, minimum 24" x 48", similar to standard Manteca street signs.
8. No irrigation mainline shall be installed within 50' of the perimeter of the well site.
9. Irrigation laterals and valves used for irrigation within the 50' perimeter shall be designed so they can easily be removed from the irrigation mainline and connected to a future potable connection at the well facility when it is built. Four spare wires shall be run from the controller to these valves for installation of future hydrometer.
10. Construct 3" layer of crushed rock surfacing within the fenced well site area.
11. Provide 12" stub from water main to the well site.
12. Provide landscaping around the well site per direction and subject to approval of the Parks & Recreation Department.

(N) Non-potable Park Irrigation Well

In general, Parks and adjacent linear parks require a non-potable well for irrigation purposes. The irrigation well, pump and related equipment shall be per the Well Plans and per the City of Manteca Public Works Standards and Specifications Section IR. The well and pump shall be designed to operate the full buildout of the park/project and water within an 8-hour maximum watering window. The irrigation well and pump design shall be coordinated with the Landscape Irrigation Plans for the location of the facility within the project site and irrigation component layouts. The irrigation well shall be constructed in conjunction with the landscape irrigation system to assure conformance with the overall irrigation system requirements. The following criteria shall be included in the design phases:

1. Well, pump and equipment shall be placed within a fenced enclosure that can be within the vicinity of the park upland area but shall not be located between play structures, courts or picnic areas and the street.
2. Well enclosure should be located in a planter area of adequate width to allow plant material for screening.
3. Well location shall maintain City and County clearances from sewer, storm drain, basin high water levels, etc.
4. Enclosures shall be 7' tall curve top wrought iron fence per standard details, with 12' wide double maintenance gate and 4' wide pedestrian access gate of matching materials; provide industrial hinges, latches and lockable hardware as required in the standard details.
5. Enclosure typically houses the well and assembly (related plumbing, reduced pressure backflow device, gate valves and hydrometer), and electrical components (meter and pedestal, irrigation controller and pedestal, pump controls, lighting controls and electrical panels all in lockable enclosures).

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6. Irrigation system requires a potable connection for backup/emergency watering. The meter, connection and backflow shall be 2" minimum and sized to operate the highest GPM rotor valve station; the City shall be notified if 2" size is deficient. The meter and backflow shall be placed within a planter area and adjacent to the back of walk. See Public Works Standard Detail W-15 and related Parks Details I-2, I-4 and I-5. The backup connection shall tie into the irrigation mainline downstream of the well components and upstream of the hydrometer.
 7. The fenced enclosure shall have a minimum of 3' clearance (larger as required) between components and to the fence perimeter for ease of access.
 8. In general, the well and pump shall be designed to provide a minimum of 300 GPM and provide a minimum of 90 PSI at the service connection. Larger parks shall be upsized accordingly and smaller parks will be reviewed on a case-by-case basis.
 9. The pump shall be connected to the controller and shall have variable speed motors for maximum efficiency.
 10. Controllers shall allow for up to six stations to operate simultaneously.
 11. A tie-in for future reclaimed water may be required per the Public Works Department. The tie-in must be made a minimum of 50' downstream of the irrigation well. The parks department will require 2" conduit from the tie-in location to the irrigation controller to allow installation of future hydrometer, and 2" conduit from the tie-in location to the electrical panel for future reclaimed water booster pump. Conduit to sweep up into pull boxes at tie-in location.
 12. The well facility shall have a 16' minimum width, 6" thick natural grey concrete driveway from the street to the maintenance gates, and a 4' minimum width pedestrian walkway from the driveway to the pedestrian gate.
 13. The well shall be warrantied for a period of 1 year from the time of final acceptance.
- (O) Drainage
1. Designs in storm water detention areas shall be per the City of Manteca Storm Drain Master Plan.
 2. Parks that include a storm drain detention basin shall provide a minimum of 1 acre (square) of upland area (at street level) for the playground. Additional upland area may be required by the City, depending upon intended use, size and location of the park.
 3. The shape, size and location of the Park shall be approved by the Parks Department in the preliminary phases, prior to approval of tentative/parcel maps and finalization of the civil plans and storm detention calculations for the park.
 4. Storm drainage detention basin pumps and mechanical/electrical equipment shall be provided on a concrete pad and located at an exterior portion of the park site, at the back of walk and outside of the playground area.
 5. Drainage inlets in park basin shall be placed around perimeter and not in the field of play.
- (P) Low Impact Design (LID)
1. LID features within the City right of way or on City owned and maintained property shall be approved by Parks Department and Public Works Department in the preliminary phases, prior to approval of tentative/parcel maps and finalization of the civil plans and the storm detention calculations.
 2. LID features shall be planned and designed to consider the operation and maintenance including irrigation and plant management/maintenance. Irrigation and planting shall coordinate efficiently with Park Irrigation systems. In general, these features shall not be connected to the municipal potable water system.
 3. All projects shall conform with, and the planners and designers shall be aware and fully knowledgeable of, the requirements set forth in the Multi-Agency Post-Construction Standards Manual adopted by the City of Manteca. In addition to other design requirements, the Post-Construction Standards Manual requires that an operations and maintenance (O&M) manual be prepared and submitted for approval to the City. Along with the O&M Manual, an engineer's estimate of cost shall be provided for implementation of the O&M manual, including facilities repair and replacement through the life of the facility.
 4. All LID features shall be warrantied for a period of 3 years from the time of final acceptance.

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4.3 PARK TRAILS AND SIDEWALK DESIGN GUIDELINES

(A) Slope

1. No trail or sidewalk slopes shall exceed twelve (horizontal) to one (vertical). Sharp grade breaks shall not be allowed. Stairs shall not be allowed. Ramps with acceptable slopes shall be placed as necessary to comply with all applicable ADA requirements.
2. Trails and sidewalks shall have a cross slope of $\frac{1}{4}$ inch of slope per one foot of width to allow for proper drainage.

(B) Materials and Construction

1. Trails and sidewalks shall be constructed on natural sub-grade, compacted to 95% standard proctor density.
2. Trails, sidewalks and slabs shall be constructed of fiber reinforced concrete unless otherwise approved by the City and as engineered by a structural or geotechnical engineer specifically for the soils tested on site.
3. Alternative trail materials such as crushed granite, shoulder backing or other crusher fines may be allowed as surfacing, if approved by the City's Authorized Representative.
4. Asphalt surface trails shall be allowed only in unique situations approved by the City's Authorized Representative and shall be constructed in accordance with a soil engineer's recommendation for the proposed use, location and soil type, based upon soils tests taken throughout the length of the proposed trail at no greater than 1,000-foot intervals longitudinally. Refer to Section 39 of these Standards and specifications for related Asphalt information.
5. Alternative trail materials such as crushed granite or other crusher fines may be allowed as surfacing, if approved by the City's Authorized Representative.

(C) Width

1. Multiple use trails shall be a minimum of ten feet in width unless otherwise approved by City's Authorized Representative. They shall be designed with a preferred minimum radius of 15 feet. Provide swales, drainage pipes or other approved methods at the base of slopes above trails and along adjacent retaining wall lengths to eliminate drainage over a trail. Nuisance flows are prohibited over trails and walks.
2. Bike trails shall be twelve feet (12') wide with one two foot (2') wide decomposed granite shoulder and approved edging on each side of bike trail or one three foot (3') wide decomposed granite shoulder on one side of the path (for joggers/pedestrians) as per standard details. A lesser width on a bike trail may be approved by the Project Manager on a case by case basis.

(D) Adjacent Landscaping

1. Plant material adjacent to sidewalks and trails shall be pruned to provide eight feet of clearance above the trail surface.
2. Landscaping adjacent to sidewalks and trails shall also be in accordance with Subsection 107.11(3) of these Standards and Specifications and (CPTED) Crime Prevention Through Environmental Design Guidelines.
3. Landscaping next to a trail shall be designed with a two-foot clear zone of shoulder backing material, mulch, turf or very low ground cover so as not to interfere with foot traffic or get caught in bicycle pedals

- (E) All trails shall be designed and constructed in accordance with "Guide for the Development of Bicycle Facilities," AASHTO and signed with City approved signage.**

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4.4 PLAYGROUND DESIGN GUIDELINES

(A) General

1. In general, each playground shall have a Tot Lot and a separate School Age Lot. Locate tot lot the farthest away from the street. Where playground size is limited, a combined age structure may be permitted with the approval of the City's Authorized Representative.
2. Play equipment shall be arranged so that slides are oriented in an east or north direction. Metal slides shall not be permitted.
3. In general, enclosed slides or crawl tubes shall not be permitted. Play components and equipment shall be arranged as to provide maximum visibility to all areas.
4. A variety of elements shall be used for maximum play value and age appeal.
5. Approved equipment manufacturer is Miracle Play Equipment, or City approved alternate.
6. In general, rubberized surfacing shall be used for the playground areas.

(B) ADA

1. Each play area shall have an ADA ramp installed to provide access into the pit. See ADA Ramp Detail for related information.
2. Play equipment shall be arranged so that the transfer station is close to the ramp.

(C) Applicable Guidelines and Verification

1. All playgrounds shall comply with the Consumer Product Safety Commission Technical Guidelines for equipment, surfacing, and area requirements as related to Public Playground Safety.
2. All playgrounds shall comply with all applicable standards to include the ASTM standards for equipment and surfacing and shall comply with Americans with Disabilities Act (ADA) guidelines where applicable.
3. All playground equipment shall comply with all guidelines found within the list provided, as well as all other guidelines produced by CPSC, ASTM, and ADA.
4. The Contractor is to verify that all statements contained within the list and on plans are accurate and current prior to installation. Any discrepancies shall be brought to the attention of the City's Authorized Representative.
5. The Contractor shall provide the City with a passing playground inspection/certification, conducted by an independent auditor.

4.5 PARK AND STREETScape FURNISHINGS

(A) Site Furniture

1. Do not specify wood or plastic type furniture, except when specifically requested by the project manager or to match existing site furniture.
2. Use only in-ground mounted (direct embedment) site furniture.
3. Surface mounted furnishings are generally not permitted but will be reviewed on a case by case basis.
4. Standard color for site furnishings is black. Other colors may be permitted with prior approval by the City. Select furniture, which provides compatible colors with the play components and other site features.
5. In general, site furnishings shall be powder coated.
6. Obtain each type of unit of furnishings from a single source to ensure products and materials consistent in quality, appearance and physical properties.
7. Provide eighteen-inch (18") clearance between hardscape edges and site furnishings for ease of mowing and edging.
8. Provide 48" ADA clearance adjacent to site furnishings where applicable.

(B) Benches and Picnic Tables

1. Use only 8' benches and picnic tables to accommodate eight (8) people minimum wherever possible.

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2. Provide a minimum of one table per location, per ADA and Title 24 Standards, on an accessible surface path to ensure use by those in wheel chairs. Ensure that at least one side of the table is open with four-foot (4') clearance between picnic tables or other obstructions.
 3. Depending on project size, additional tables or furnishings may be required upon request of the City.
 4. Provide tables and benches at various locations around the park site such as: at the park entry, at regular intervals along the main circulation path, along the park perimeter away from the street, alone and grouped to support conversation and gathering, for viewing activities or pleasant views, and for direct supervision of children.
 5. Place benches at specific facilities (play areas, tennis courts, etc.)
 6. ADA companion seating shall be provided adjacent to benches and seating areas.
 7. Place benches with back toward a wall, plantings or trees to increase a sense of security.
 8. Set benches back from circulation paths so that pedestrians do not disturb bench occupants.
 9. Benches shall be placed to maximize shade in the summer and sun in the winter.
 10. Benches that have center armrests may be required by the City in certain locations to deter loitering and skateboard vandalism.
 11. Backless benches may be required by the City in certain locations to allow viewing from both sides.
 12. In general, benches and picnic tables shall have a concrete pad underneath.
- (C) Bike Rack
1. Bike Racks shall be provided near park and building entries where appropriate to allow bicycles to be parked and locked, or as required by the City.
- (D) Drinking Fountain
1. Place drinking fountain conveniently located near children's play area, group picnic areas, restroom, sports facilities, and along trails.
 2. Locate as close to POC as possible to avoid line stagnation.
 3. Drinking fountains shall be ADA complaint. (Hi Low model or current standard).
- (E) Barbecue Grills
1. Grills to be placed in Picnic areas only.
 2. Grill shall not be placed adjacent to play areas or play surfacing material. Avoid placement in the path of travel between the play area and picnic tables.
 3. Finish shall be a high-temperature nontoxic black enamel.
 4. Individual grills for small picnic areas shall be pedestal type with in-ground, direct embedment mounting.
 5. Grills for large group picnic areas shall be similarly located, and constructed of precast concrete (base) with heavy duty adjustable height steel grates, locations shall be reviewed and approved by the City on a case by case basis.
- (F) Trash Receptacles
1. Trash Receptacle shall be placed in the vicinity of all benches and tables, and at play areas and sports facilities and all high use areas.
 2. Avoid placing trash receptacles directly adjacent to benches or tables.
 3. Trash receptacles shall match site furniture.
 4. 4' x 4' concrete pads shall be placed at the back of City walk in several locations around the park perimeters. The pads are for future placement of automated pick-up receptacles provided by the City.
- (G) Bollards
1. Collapsible bollards shall be placed in locations where vehicle traffic is prohibited. Locations include: driveway entrances, trails, wide walkways and facility entrances.
 2. Bollards shall also be placed where added security or protection is needed to protect utilities or facilities.
- (H) Shade Structure
1. Small group picnic areas shall accommodate 25 to 50 people and large group picnic areas shall accommodate 50 to 100 people. Shade structures shall complement architectural or

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other design theme established for other elements of the park and shall be reviewed and approved by the City. Park developer shall include shade structure construction details and structural engineering and shall be required to obtain building permit for each structure.

(I) Other Site Features

1. Decorative boulders shall be placed only in planters, decomposed granite areas, along planter edges or in play area curbs and in play areas as appropriate. Boulders shall be 2' x 2' minimum exposed above grade and random larger sizes, arranged to form attractive naturalistic groupings.
2. All signs on public properties and park lands shall be submitted to the City for review and approval; comply with current Manteca Public Works standards, Parks and Recreation Standard Construction Details, Caltrans, Americans With Disabilities Act. Refer to section 4.10 for park naming policy in conjunction with signage graphics. Refer to Section 3 Plan Preparation (H) for specific submittal requirements.

4.6 SITE IRRIGATION DESIGNS

- (A) Employ City approved smart controllers with moisture and evapotranspiration rate sensors that automatically shut off during rain events to prevent irrigation after or during precipitation.
1. Obtain on-site soil samples and acquire laboratory analysis of agricultural suitability, soil composition and infiltration characteristics. Specifications for soil amendments shall be derived from the laboratory recommendations, and irrigation system designed precipitation rates shall be matched to the infiltration rates determined by sample analysis.
 2. Utilize flow sensors and master valves triggered by pressure drop to control water loss in the event of broken sprinkler heads or pipes.
 3. The timing and application rates of irrigation water shall be designed to prevent runoff or excess irrigation water into municipal storm drain system.
 4. Comply with best practices, state and local regulations, watering windows and temporary watering restrictions.

4.7 PARKSITE AND GENERAL LANDSCAPE AREA GRADING REQUIREMENTS

- (A) Comply with State of California Construction General Permit by developing a SWPPP, file and obtain NPDES Permit Number, manage the project under the SMARTS website, and obtain a Notice of Termination at the completion of the project in accordance with State Water Resources Control Board.
1. Comply with City of Manteca requirements for MS4 permit storm water requirements (MS4 permit).
 2. Comply with the MWELO
 3. **All landscaped areas shall have a 1 percent minimum slope.**
 4. Do not grade slopes in landscaped areas steeper than (4:1) four (horizontal) to one (vertical).
 5. Do not grade turfed slopes steeper than (6:1) six (horizontal) to one (vertical), as it cannot be easily mowed. Provide 8' wide flat bench between top of slope and back of City walks; provide 3' wide bench between top of slope and back of interior walks.
 6. Where needed, retaining walls of heights, materials and construction acceptable to the City shall be included in the design to keep slopes within acceptable ranges.
 7. Crown playing fields such as baseball, softball and soccer, at a minimum of 1.5 percent, preferably 2 percent.
 8. Hard court surfaces shall be graded at 1 percent.
 9. Consider spectator areas when grading the play field sidelines. Provide adequate level areas for spectator seating.

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10. Provide for a not-to-exceed 2 percent cross slope on walkways, unless it can be demonstrated that compliance to the 2 percent cross slope negatively impacts the usability of the park.
11. City sidewalks adjacent to parks shall have a 2% cross slope toward the park. This is too accommodate irrigation head placement while helping to avoid water runoff. The plan preparer shall coordinate with the civil engineer to ensure the slopes are included in the civil plans.
12. Longitudinal slopes on walks may vary when necessary given the site-specific terrain. Do not exceed 20:1 (5 percent) without providing handrails per the Americans with Disabilities Act (ADA) regulations and the California Title 24 Building. Ensure compliance with the ADA and California Title 24 Building Code (Title 24) and minimize the need for handrails whenever possible.
13. Grade the park site to provide topographic relief, including berms in some of the park site are desirable.
14. Toe of landscape berms shall be kept a minimum of 3' from paved surfaces.
15. Landscape berms adjacent to paved surfaces shall be graded to capture and absorb runoff or convey it to an approved design feature.
16. Grade so that all irrigation and normal rainfall remains within property lines and does not drain onto non-permeable surfaces.
17. Transitions from existing to proposed grades and from gentle to steep grades shall be gradually sloped and rounded to minimize sharp angles and contrasts in landforms.
18. The grading plans shall meet the MWELO requirements for allowable slopes and contain the MWELO design compliance statement.
19. Park site earthwork should be designed to balance cut and fill on site unless provisions are made by the developer to balance by export or import at their expense and within a reasonable distance to the site.

4.8 PARK AND LANDSCAPE AREA DRAINAGE AND SEWER

- (A) Drain clean-outs shall be located within planting areas or turf only. Clean-outs located within play areas shall not be permitted.
1. Do not locate drain inlets or cleanouts within or immediately adjacent to playing fields.
 2. Do not drain planted areas or turf areas across a paved area or walkway.
 3. Refer to Section Four STANDARD LANDSCAPE CONSTRUCTION SPECIFICATIONS and Section Five STANDARD LANDSCAPE CONSTRUCTION DETAILS for further specifications, and comply with most recent update of Uniform Plumbing Code, CalGreen requirements, MWELO and local and state requirements.
 4. Refer to Public Works Standard Specifications and Details for sanitary sewer cleanouts, connection requirements, and related requirements for restroom or concessions sanitary sewer requirements.

4.9 PLANTING DESIGN

- (A) Leave a vegetative barrier along the property boundary and interior watercourses to act as pollutant filters, where appropriate and feasible.
1. Choose plant materials that minimize or eliminate the use of fertilizer or pesticides to sustain growth.
 2. In general, choose shrubs, perennial and groundcovers that are dwarf growing or compact varieties as to minimize the need for frequent trimming.
 3. In general, shrubs shall be spaced at 1-1/2 times the mature diameter. For example, if a shrub grows 4' wide, the plant spacing should be 6' on center.
 4. Choose a variety of plant material that is mainly evergreen with some deciduous. Choose plant material with a variety of leaf textures and colors and for year round interest.
 5. Choose non-toxic plant material and plants that do not attract bees around play areas.

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6. Plants shall be non- invasive species.
7. Plants in bio swales and bio retention areas shall be appropriate to the application and LID requirements.
8. Plant legend shall include water use rating according the WUCOLS (Water Use Classification of Landscape Species) for the Manteca area.
9. Observe CPTED principals to design out safety problems and the MWELo for Water Efficiency.
10. All ornamental landscaping, both on private property and within public right of way, shall comply with City Zoning Ordinance in all respects (open space requirements, fencing, front and side yard landscaping, etc.).

4.10 PARK, FACILITY AND STREETScape NAMING POLICY & PROCEDURE

(A) Naming Criteria

The following criteria will be the primary method used to determine the naming or re-naming of a park, facility or streetscape:

1. Neighborhood Parks built as part of a new subdivision, shall be named after the subdivision and approved during the park plan approval process by the Director of Parks and Recreation. If an alternate name is proposed for a park or facility, approval by the City Council may be required.
2. If the proposed park or facility name is intended to honor an individual or family, that individual or family must have provided significant, long-term contributions to the health and wellness or quality of life of the community of Manteca and/or have demonstrated a high level of service and commitment to the community and/or have donated the parcel and/or facility that is being named, or made a substantial financial contribution to the acquisition or establishment of such facility.
3. Names will not be considered if the individual or family already has other community facilities named in their honor, unless the contributions are specific to parks and recreation and are extremely significant.
4. Parks and Recreation facilities shall not be named after a local elected official until at least one year after that official is retired from office.
5. City parks, recreational areas, and facilities may not be named after any service organizations.
6. Streetscape areas built as part of a new subdivision, shall be named after the subdivision and approved by the Director of Parks & Recreation and the Community Development Director during the plan review and approval process. Any revisions to the name shall be submitted for approval to said Department Directors a minimum of 30 days prior to start of any construction.
7. Signs shall also be included with product submittals for review and approval.

B) Exclusions

1. Names typically associated with tobacco, alcohol, contraceptives, religious organizations, and/or adjudicated felons are prohibited.
2. Use of existing, or similar, names of parks within the Manteca parks system to avoid duplication or confusion.
3. The dedication of small amenities within parks, such as benches, plaques, trees, etc., shall be addressed under a separate policy.

C) Renaming

The intent of naming a city park, recreational area or facility after an individual or family is to permanently recognize the party/parties after whom it is named; therefore, the renaming of such facilities is strongly discouraged. It is recommended that efforts to change a name be subject to the most crucial examination so as not to diminish the original justification for the name or to discount the value of the prior contributors.

D) Procedure

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1. Staff, city residents, community leaders, and organizations interested in proposing a name for a park, recreational area, or facility must submit a written recommendation for presentation to the Parks and Recreation Director or his/her designee for consideration by the City Council. The recommendation must clearly detail why the naming candidate merits such recognition. The recommendation must be accompanied by signatures of at least 50 individuals in support of the recommendation. Those signing the request must be at least 18 years of age and reside within the Manteca city limits. Signatures shall be accompanied by the individual's printed name, address, and telephone number.
 2. A completed application and letters of support must be submitted.
 3. Any costs incurred by the City as a result of the name change, including but not limited to, new or replacement signage, staff time needed to install such signage, or other incidental expenses, shall be borne by the applicant.
 4. City Council shall consider all requests.
 5. City Council will allow for public input and comment.
 6. City Council will confirm park, recreation areas and facility names by resolution.
 7. The City Council has final approval and may reject any naming or renaming request.
 8. If any park name falls out of public favor, the City Council has the authority to remove the name and make recommendations for re-naming.
- E) Notification
- Individuals submitting applications shall be notified by mail in advance of the City Council meeting considering the request, and shall be notified after the City Councils decision.

SECTION FIVE | STANDARD LANDSCAPE AND PARK CONSTRUCTION SPECIFICATIONS

Introduction

The following sections of written specifications provide the technical requirements for bidding and construction of projects in the public domain as well as private park sites within the boundaries of the City of Manteca. The MS Word files for these documents can be located on the Parks & Recreation Department website and used as a template for design professionals to utilize in the production of a specific Project Manual Technical Specifications division. These specifications are not meant to be all-inclusive of every type of park or streetscape project that may be presented, therefore supplementary sections may be necessary. It is requested that upon first submittal for a specific project, a method of tracking changes utilizing highlighter or italics be utilized so that the plan check professionals can identify modifications to the document.

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100.0 LANDSCAPE IMPROVEMENTS

100.1 PURPOSE

The purpose of these Standards and Specifications is to ensure high quality construction of water-wise, maintainable landscaped areas and outdoor environments that balance City wide design consistency. The Standards and Specifications describe how specific portions of a project must be designed, installed, cultivated, maintained and inspected.

100.2 SCOPE

Section 100 indicates the Landscape Development Standards and Specifications for City maintained areas including but not limited to trails, park areas and facilities, detention and drainage areas, rights-of-way and median areas, landscape maintenance districts and open space landscape improvements.

100.3 ALTERNATE MATERIALS AND METHODS OF CONSTRUCTION

- (A) The provisions of these Standards and Specifications are not intended to prevent the use of any material or method of construction not specifically prescribed by these procedures, provided any alternate in Section 100 is approved in writing by the City's Authorized Representative, and thus authorized by the City.
 - 1. The City's Authorized Representative shall require that sufficient evidence or proof be submitted to substantiate any request that may be made regarding the alternate method or material. The details of any action granting approval of an alternate shall be recorded and filed with the City

100.4 VARIANCES

- (A) Whenever there are practical difficulties involved in carrying out the provisions of Section 100 Standards and Specifications, the City's Authorized Representative may grant variances for individual cases, provided that a specific reason is found that makes these procedures impractical.
 - 1. The variance must be in conformance with the intent and purpose of these Standards and Specifications, and providing that such variance does not lessen any design requirement or any degree of integrity and shall result in a level of safety, service and quality equal to or greater than that intended by the application of the Standard and Specifications' minimum requirements.
 - 2. The details of any action granting modifications shall be recorded and filed with the City.

101.0 GENERAL PROVISIONS

101.1 DESCRIPTION

These Standards and Specifications apply to: all City maintained landscape areas including but not limited to trails, park areas and facilities, detention and drainage areas, rights-of-way and median areas, landscape maintenance and open space landscape improvements required by the development review process of the City, and constructed by private interests. It is anticipated that additional, more detailed specifications shall be prepared for each project, as needed.

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101.2 ORDER OF WORK

- (A) The work as shown on the plans and as specified in these special provisions shall be constructed in a sequence, which has been approved by the City's Authorized Representative.
1. Prior to commencement of work, the Contractor shall submit for approval his schedule and plans for safety signing as needed within the work areas

101.3 PERMITS AND FEES

- (A) The Contractor shall prepare applications for and obtain all the necessary and required permits for the project construction and submit copies to the City's Authorized Representative prior to commencement of work.
1. Copies of these shall be held onsite.
 2. Examples of such permits are: Building, Grading, Encroachment, MS4, etc. Developer/Owner will provide the Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) through the California State Water Resources Control Board per NPDES no. 2013-001-DWQ.
 3. Prior to construction, the Contractor shall obtain coverage under and comply with the General Permit for Discharges of Storm Water Associated with Construction Activity, and shall provide data as required by the permit until the City prepared the Notice of Termination (NOT). Comply with most recent update of CASQA California Stormwater BMP Handbook –Construction (<http://www.cabmphandbooks.com>); CALTRANS Handbook (<http://www.dot.ca.gov/hq/construc/stormwater/manuals/htm>); Public Works Bluebook Specifications.
 4. Contractor shall complete application documentation and obtain MS4 (municipal separate storm sewer system) permit and comply with all the pollution prevention measures, prevention of discharge of contaminants during construction, etc. contained in the permit.
 5. The cost for construction related permits issued for the project by the City of Manteca Public Works or Building Departments will be made available at no cost to the Contractor.
 6. All other required permits and inspection fees shall be obtained at the Contractor's expense. The cost of obtaining all necessary permit fees, application fees and other costs shall be included in the bid. Possible permits under this category could include, for example: San Joaquin County Department of Health for concessions facilities and swimming features, Building Permit for overhead structures, walls, etc.
 7. The Contractor shall be responsible in determining and verifying the extent and time limits of permits and of obtaining and complying with necessary permits.

101.4 QUALITY ASSURANCE

Comply with all applicable local, state and federal requirements regarding materials, methods of work and disposal of excess and waste materials. Submit a traffic control plan, if required, for approval by the City's Authorized Representative. The City shall not be held liable for any consequences of a contractor's noncompliance with these Standards and Specifications or any local, state, or federal regulations.

101.5 PREPARATION

Consult the records and drawings of adjacent work and of existing services and utilities, which may affect site work operations. Obtain on-site underground utilities locations prior to excavation.

101.6 FINAL ACCEPTANCE

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To obtain final acceptance of site, after the 90-day (or other agreed duration) maintenance period Developer/Contractor shall obtain and provide SWPPP Notice of Termination, closeout documentation such as operation manuals, as-built cadfiles and hard copies, keys, inspection and certification of backflow devices, controllers and playground equipment, irrigation audit documentation, proof of compliance with WELO requirements, removal of erosion control devices, establishment of groundcover, final inspection walk-through compliance, 1 year warranty, and provide request for final acceptance in formal written form to the City. A formal written response will be provided by the City stating the date of final acceptance.

102.0 SITE PREPARATION

102.1 GENERAL

- (A) The Contractor shall provide all labor, materials, and equipment necessary to complete site preparation work as shown on the drawings approved through the development review process and as stipulated in these Standards and Specifications.
 - 1. Features to be retained shall be properly protected in a manner approved by the City's Authorized Representative. The Contractor shall identify and stake all surface and subsurface features of the project area, including all property corners.

102.2 DUST CONTROL

Refer to Section 10 of the Public Works Standards and Specifications

102.3 PRESERVATION OF PROPERTY

Refer to Section 15 of the Public Works Standards and Specifications

102.4 CLEARING AND GRUBBING

- (A) Refer to Section 16 of the Public Works Standards and Specifications. The following general standards shall also apply
 - 1. When the removal of material creates an open hole, pit, trench or other depression, the Contractor shall immediately backfill and compact these areas or protective fencing or barricades shall be utilized to provide a safe construction zone.
 - 2. The Contractor shall be responsible for any damage to any existing facilities or improvements. The Contractor shall be responsible for items identified in the plans or identified in the field that are to remain. Items damaged or removed in error shall be repaired or replaced to match in equal or better construction at the Contractor's expense. It is the Contractor's responsibility to document and bring to the City's attention any pre-existing damage at the pre-construction meeting prior to the start of work,

102.5 VEGETATION STRIPPING

- (A) Refer to Section 104.3 of these Standards and Specifications for Weed Control procedures prior to any stripping and 103.7 for related inspections.
- (B) Once existing vegetation has been killed, the areas designated for removal shall be stripped to a minimum depth of two (2") inches below existing grade and disposed of off-site by the Contractor prior to beginning work. Topsoil shall be stripped to its full depth and stockpiled on

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site for later use. If topsoil shall not be used onsite the Contractor shall arrange for the removal and disposal.

102.6 GRADING OF AREAS TO BE LANDSCAPED

All landscape areas compacted during construction shall be ripped to a minimum 24" depth before site specific soil preparation, amendment and rough grading begins.

102.7 REMOVAL OF UNSUITABLE MATERIALS

Refer to Section 19 of the Public Works Standards and Specifications.

102.8 PROTECTION OF EXISTING PLANT MATERIAL

- (A) In areas with existing plant material that is to remain, a plant material protection plan shall be submitted to the City's Authorized Representative for review prior to beginning work. The existing condition of all plant material in the construction area shall be inspected and noted by the Contractor and the City's Authorized Representative.
- (B) Any activity determined to be injurious to existing plant material shall not be permitted without an approved impact mitigation plan. These activities include grading, rototilling, equipment storage, vehicle parking, stockpiling of soil, or other activities, which may cause soil compaction or disruption. Plant material damaged during construction and not included on the approved mitigation plan shall be valued toward additional replacement plant material in accordance with current industry standards as related in the latest edition of the Associated Landscape Contractors of America's "Guide for Plant Appraisal".
- (C) Trimming may be required for plant material to be saved in the work area to the extent required to permit clean and workmanlike finish grading, seeding, or sodding operation under and around plant material. The Contractor shall receive approval from the City's Authorized Representative prior to any trimming.
- (D) Plant materials to be preserved on a site shall be enclosed with protective fencing. Protective fencing shall be orange in color, a minimum four feet in height, secured with metal tee posts and signed to indicate the area is set aside for the protection of plant material. Fencing shall extend dripline to dripline or be a minimum five feet from the trunks of plant material to be protected, whichever is greater, or as directed by the City's Authorized Representative.
- (E) If authorization has been granted to excavate within the dripline of plant material, do so in a manner that will cause minimum damage to root systems. Prune the injured roots cleanly and backfill as soon as possible. Do not leave surface roots exposed. To minimize damage to the roots, boring may be required within the dripline, as directed by the City's Representative. Do not cut any root over two inches in diameter within the dripline except when approved by the City's Authorized Representative. Do not use trees for any purpose such as crane stays, guy anchors, etc.

102.9 PROTECTION FROM HARMFUL SUBSTANCES

- (A) No paint, oil, concrete, volatile materials, or any substance that might cause damage to existing or future vegetation shall be spilled or buried in the vicinity of the construction area. Any spillage shall be immediately removed and properly disposed of at the direction of the City's Authorized Representative.

103.0 SITE GRADING & DRAINAGE

103.1 GENERAL

The Responsible Party shall provide all labor, materials, and equipment necessary to complete all grading work as shown on the approved drawings and as stipulated in these Standards and Specifications. Refer to Sections 19 of the Public Works Standards and Specifications for related information. The following general design standards shall also apply:

- (A) Park site earthwork should be designed to balance cut and fill on site. All on-site and off-site areas disturbed because of grading operations shall be renovated to original conditions or suitably cleaned up for subsequent construction procedures. If it is necessary for materials to be imported to or removed from the project area, all arrangements for off-haul or import of materials are the responsibility of the developer and the costs for transport and materials are to borne outside of the budget for the park site development.
- (B) Positive drainage, at a gradient suitable for the surface material, shall be maintained into all proposed or existing drainage ways. Ponding of water shall be avoided, except in designated detention areas, in order to minimize compaction and undermining problems.
- (C) In general, no slopes within landscaped areas shall exceed (25%) or (4:1) four (horizontal) to one (vertical). In park areas, slopes shall not exceed (16.6%) or (6:1) six (horizontal) to one (vertical) for turf grass areas, as it cannot be easily mowed. Provide an 8' wide flat bench between top of slope and back of walk and a 3' wide bench between top of slope and back of interior walkways/hardscape.
 - 1. Where needed, retaining walls of heights, materials, and construction acceptable to the City's Authorized Representative shall be provided by the Contractor to keep slopes within acceptable ranges. These walls must prevent erosion of bark and soils and provide for a drain system approved by the City's Authorized Representative prior to installation.
 - 2. Transitions from existing to proposed grades, and from gentle to steep grades within the site, shall be gradually sloped and rounded off to minimize sharp contrasts in landforms and to prevent "scalping" by mowing equipment.
 - 3. Landscape berms adjacent to paved surfaces shall be graded to capture and absorb all irrigation run off or to convey it to a water quality design feature approved in the Development Permit process.
 - 4. Crown playing fields such as baseball, softball and soccer at a minimum of 1.5% preferably 2%.
 - 5. Provide for a not to exceed 2% cross slope on walks unless it can be demonstrated that compliance to the 2 percent cross slope negatively impacts the usability of the park.
 - 6. City sidewalks adjacent to parks shall have a 2% cross slope toward the park. This is to accommodate irrigation head placement while helping to avoid water runoff. The plan preparer to coordinate with the civil engineer to ensure the slopes are included in the civil plans.
 - 7. Longitudinal slopes on walks may vary due to site terrain. Do not exceed twenty to one (20:1) twenty (horizontal) to one (vertical) without providing handrails per the ADA regulations and the California Title 24 Building Code. The need for handrails shall be minimized whenever possible.
 - 8. Hard court surfaces shall be graded at 1%.

103.2 DRAINAGE

- (A) Drain clean-outs shall be located within planting areas or turf only. Clean-outs located within play areas shall not be permitted.
- (B) Do not locate drain inlets or cleanouts within or immediately adjacent to playing fields.

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- (C) Do not place inlets closer than three feet (3') to hardscapes. Allow adequate room for gradual grading and slope to inlet.
- (D) Do not use drop inlets smaller than sixteen inches (16") square or diameter for landscape areas and twenty-four inches (24") minimum for all other areas. Drop inlets shall be concrete.
- (E) For swales in planted or turf area, ensure a minimum flow line slope of 2 percent.
- (F) Do not sheet drain from planted or landscaped areas across hardscape.
- (G) For storm drain stubs or sewers to future phase of work, install a white painted 4 x 4 post to a height of 2 feet (2') above ground with "SD Stub" written on post as applicable.
- (H) Upon request by the City, a play area catch basin (per city standard) shall be provided within each play area. See section 201.4. General Piping Installation according to the following:
 - 1. PVC Sewer Pipe and Fittings, NPS 15 (DN375) and Smaller: ASTM D3034, SDR 35, for solvent-cemented or gasketed joints. Gaskets: ASTM F 477, elastomeric seals.
 - 2. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage pipe. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.
 - 3. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.
 - 4. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.
 - 5. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
 - 6. Install gravity-flow piping and connect to building's storm drains, of sizes and in locations indicated. a) Install piping pitched down in direction of low, at minimum slope of 1 percent, unless otherwise indicated.
 - 7. Extend storm drainage piping and connect to street or building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.
 - 8. Install aggregate-free interceptor 'Elgen' drains according to manufacturer's specifications and details.
- (I) Slope the play area sub grade at 1 percent minimum toward play area catch basin and locate where it will not interfere with play equipment or footings.

103.3 TESTING

- (A) All classification testing shall be performed by a qualified independent testing laboratory under the supervision of a registered Professional Engineer specializing in soils engineering at the expense of the Contractor.
- (B) The Contractor shall coordinate with and fully comply with all recommendations made by the testing agency. Test results and any recommendations shall be supplied to and approved by the City's Authorized Representative.

103.4 MATERIALS

- (A) All materials, fill materials and methods of construction shall comply with pertinent sections of these Standards and Specifications, that of the State Department of Transportation and standards of the American ASTM and the AASHTO.
- (B) On site soils shall be used whenever feasible. When necessary to import soil materials such materials shall be subject to testing, and to the approval of the City's Authorized Representative prior to bringing soil on site. Soil tests may include but not be limited to: RCIT

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(Reactivity, Corrosivity, Ignitability and Toxicity) Panel, 17- Metals, BTEX, Organo-chlorine, Pesticides, Herbicides, Semi-volatile Organic Compounds, etc....

- (C) When unacceptable materials are identified on-site, such materials shall be removed by the contractor and disposed of off-site.

103.5 EXECUTION

- (A) All applicable safety standards shall be followed for grading operations.
1. All grading operations shall be tested and inspected in accordance with these Standards and Specifications.
 2. The Contractor shall establish the horizontal and vertical limits of grading through use of stakes, properly labeled, and shall have such staking approved by the City's Authorized Representative. On turf grass areas or in detention basins intended for sports fields, laser grading shall be employed to ensure proper drainage.
 3. No grading operations shall be permitted on a soft, spongy, frozen, unstable, or otherwise unacceptable subgrade.
 4. All disturbed soils shall be periodically wetted as needed to minimize blowing dust.
 5. When filling is required to meet the desired grade, each lift of the fill material shall not to exceed six inches in loose depth. The Contractor shall thoroughly mix fill materials to secure suitable uniform moisture content and to insure uniform density and proper compaction. Each layer shall be thoroughly compacted by roller or vibratory equipment that is suitable for the type of embankment material, to densities suitable for the final surface material (a maximum 80% for planted areas and 95% minimum standard proctor density for paved areas). Any backfilling done against a building shall meet the requirements of the engineered soils report for that parcel. The City shall reserve the right to have graded areas tested at appropriate times and locations, at the Contractor's expense.
 6. Final rough grade shall allow for specified soil amendments and subsurface materials required for finished surfaces. The final rough grade shall be surveyed and staked by the Contractor, and inspected by the City's Authorized Representative, prior to soil preparation operations.

103.6 CLEANUP AND MAINTENANCE

- (A) The Contractor shall protect all graded areas from unnecessary disturbance. The Contractor shall repair all areas which may become eroded, settled or rutted during the warranty period (one year following initial acceptance of the project) to meet original specifications.

103.7 INSPECTIONS

- (A) The following inspections are required:
1. Preconstruction.
 2. Following herbicide application and prior to weed eradication.
 3. Following weed eradication.
 4. Following topsoil stripping and stockpiling.
 5. Following initial rough grading staking.
 6. During rough grading operations, at stages agreed upon by the Contractor and the City's Authorized Representative, prior to the start of grading operations.
 7. At completion of rough grading.
 8. Work deemed by the City's Authorized Representative to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be promptly corrected.

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104.0 SOIL PREPARATION - LANDSCAPED AREAS

104.1 GENERAL

- (A) The Contractor shall provide all labor, equipment, materials, and water necessary to complete soil preparation for all areas required to be landscaped, as required by the approved drawings and these Standards and Specifications.
1. Prior to soil preparation, the Contractor shall obtain representative soil samples and submit these samples to a state licensed soil testing laboratory specializing in the analysis of soil and in making recommendations for the introduction of organic amendments in landscape planting areas. The results of soil analysis and related recommendations shall be forwarded to the City's Authorized Representative for approval, along with the Contractor's recommendation for soil amendments.
 2. A weed free statement and certification for all imported soils shall be provided.

104.2 MATERIALS

(B) Organic Materials

1. Organic soil amendment for all landscape areas shall be 1% nitrogen stabilized, composted organic matter approved by the City's Authorized Representative. Material shall be screened and free from lumps, stones, plant material and debris, and other material harmful to plant life.
2. Submit a one-gallon sample to the City's Authorized Representative at least (14) fourteen days in advance to obtain approval of soil amendment prior to site delivery.
3. Submit all load tickets for approval prior to incorporation, or planting to verify source quality and quantity of material delivered to site.
4. At a minimum, composted organic matter shall be incorporated into the top (6-8") six to eight inches of the soil at the rate of (6) six cubic yards per 1000 square ft. These are minimum requirements. If the soils analysis recommends other amendments or in excess of what is listed here, the contractor shall install per the soils report but not less. Incorporation shall be by means of roto-tilling or approved equal method. Plowing or disking are not approved methods.

(B) Fertilizer

1. At a minimum, 15-15-15 fertilizer shall be incorporated into the top (6-8") six to eight inches of soil at the rate of (15) fifteen pounds per 1000 square feet. These are minimum requirements. If the soils analysis recommends other amendments or in excess of what is listed here, the contractor shall install per the soils report but not less. Incorporation shall be by means of roto-tilling or approved equal method. Plowing or disking are not approved methods.

104.3 PREPARATION

(A) Weed Control

1. Approval of Weed Control Applicator and Materials
 - a. The applicator of all weed control materials shall be licensed by the State of California as a Pest Control Advisor and a Pest Control Operator in addition to any subcontractor licenses that are required.
 - b. Prior to the installation of any weed control materials, the Pest Control Advisor shall submit to the City's Authorized Representative a list of the weed control materials and amounts per acre/square intended for use in controlling the weed types prevalent and

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expected on the site. The Pest Control Advisor shall furnish data to demonstrate the compatibility of the weed control materials and methods with the intended planting and seed varieties.

- c. No materials or method shall affect the landscape planting or hydroseeding germination. All such materials and methods must conform to Federal, State and local regulations.
- d. Weed controls shall be applied a minimum of (10) ten days prior to stripping weeds or vegetation. Weed control materials are typically applied when weeds are actively growing and when daytime temperatures are a minimum 60 degrees Fahrenheit and a maximum 90 degrees Fahrenheit, and when weather conditions will minimize wind drift. Re-apply when rain occurs within 24 hours of application. In most cases of noxious weed infestations, a minimum second application is required, as determined by the Pest Control Advisor and the City's Authorized Representative.
- e. The City's authorized representative shall be contacted after 10 days to re-inspect the site. If weeds have been adequately controlled they will authorize the contractor to proceed with stripping.

(B) Ripping of Storm Basins

1. The bottom of storm drain basins shall be cross-ripped in two directions at right angles to each other during mass grading. The ripped depth shall be a minimum of (12") twelve inches deep and spaced a minimum of (36") thirty-six inches apart O.C. Ripping shall be done prior to incorporation of soil amendments or installation of irrigation system.
2. Deeper ripping may be required if the site soil conditions require it, as determined by the Parks Department.
3. Notify City Construction inspection for verification during ripping operations.

(C) Incorporation of Amendments into Soil

1. A minimum of (6) six cubic yards per 1000 square feet of specified soil amendments shall be incorporated into the top (6-8") six to eight inches of rough grade topsoil and shall be distributed uniformly and mixed into the topsoil to achieve a minimum 25% organic matter per soil analysis.
2. Within median landscape areas, planting bed soil shall be amended to a depth of (12") twelve inches. Scarify the top (6") six inches of subgrade.
3. In the event that median soils are not suitable for planting, grading contractor must remove and replace unsuitable soils.

(D) In general, planting areas shall be graded to the desired finished grades (prior to topdressing) within a tolerance of +/- 0.1 of a foot. The landscape contractor shall confirm and coordinate with the grading contractor prior to grading operations. The finished surface shall be even and uniform and no dirt clumps, stones, sticks, residual plant material or other debris larger than one inch in diameter shall appear on the surface.

(E) When sodded areas are next to fixed surfaces such as walks, curbs, or borders, finished grade prior to sodding shall be 1½ inches below such surfaces and shall drain away from non-permeable surfaces.

104.4 INSPECTIONS

(A) Materials Inspection

The City's Authorized Representative shall inspect all organic soil amendments and fertilizer upon delivery to the site. The Contractor shall retain delivery tickets for verification of source, materials, and quantities. Unsatisfactory materials, as determined by the City's Authorized Representative, shall be removed and replaced with materials conforming to these Standards and Specifications. Inspection shall be for both quality and quantity of materials.

(B) Soil Preparation Inspection

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The City's Authorized Representative shall inspect the soil preparation for conformance to the drawings and these Standards and Specifications during and immediately following the completion of each segment of the Contractor's work. Work deemed to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be corrected at that time. The following is a list of the additional required inspections in their order:

1. During final grading.
2. After application of organic soil amendments, prior to tillage.
3. After final grade is completed, prior to seeding, sodding or planting.
4. An irrigation audit shall be submitted also at this time to verify proper coverage prior to further operations.
5. Contractor shall submit all load tags for amendments as required by these specifications and the Soils Analysis for approval prior to planting.

105.0 SEEDING SPECIFICATIONS

105.1 GENERAL

- (A) In general, grassed landscaped areas shall be sodded. In areas where sod installation of Practical Turf Areas is not desired or possible, hydroseeding shall be considered when justified by size of area, type of use, and level of anticipated maintenance, and with specific approval of the City's Authorized Representative.
- (B) Contractor shall provide for all work, materials, and labor to complete the hydroseeding of turf areas between February 15th and May 15th, or between September 1st and November 1st. These dates are guidelines based on typical weather conditions. Actual weather conditions will be taken into account when determining final hydroseeding dates and the dates shall be approved by the Park & Recreation Director or his authorized representative.
- (C) All work necessary whether incidental or temporary shall be provided to establish the turf areas in the fall or early spring, in order to obtain a healthy stand of turf for the scheduled park opening.
- (D) Additional maintenance costs for maintaining the turf area during the term of the contract shall be borne by the Contractor until the City's Authorized Representative gives acceptance and release of work.
- (E) Concrete mow strips at the edges of seeded areas shall be required to incorporate a maintained appearance to the perimeter, or to separate turf from planter areas.
- (F) A permanent, automatic irrigation system shall be provided to support establishment and maintenance of seeded areas as established in the development review process.
- (G) The major portion of the work shall not commence until the irrigation system is installed and passes an irrigation audit. This work shall include but not be limited to hydroseeding to stabilize the exposed soil areas for erosion control protection, utilizing various specialized seed mixes, soil stabilants, chemical additives, fertilizers and fibers, following the execution of weed control.
- (H) As part of the work, the Contractor shall be responsible for the areas affected by construction and/or grading. All such areas shall be cleaned up and shall have all deleterious material legally removed from the site. After cleaning, hydroseed with specified mix. Sodding may be required.
- (I) In areas where hydroseeding fails to germinate in a timely manner, sodding may be required as part of the work. Such areas may include, but not be limited to: sloped areas where erosion persists, around drainage basin inlets or outlets, in playground vicinities, etc.... See Subsection 106. of these Standards for sod information.
- (J) Coordinate the work of this section with related trades. Contractor shall verify applicable dimensions at the job site.

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105.2 QUALITY ASSURANCE

- (A) Verification of dimensions and conditions
 1. Before proceeding with any work, the hydroseeding Company shall carefully check and verify all dimensions and planting area conditions and shall immediately inform the Contractor and City's Authorized Representative for review of any discrepancies between the plans and/or actual Specification and actual conditions.
- (B) No work shall be done on any areas where discrepancies or where conditions are unsuitable for successful plant material establishment until review by the Contractor and approved by the City's Authorized Representative.
- (C) Quality of Work.
 1. The hydroseeding work shall be performed by a competently trained individual or hydroseeding company in accordance with the best standards and practices related to the trade and under the continuous supervision of a competent foreman that is capable of interpreting the plans and specifications.
 2. The City's Authorized Representative must be present at the start of hydroseeding operations.
- (D) Inspection of Work
 1. The Contractor shall examine related work including irrigation and grading before proceeding with any work and inform the City's Authorized Representative in writing on conditions that may prevent the proper execution of this work.
 2. Failure to report unsuitable conditions to the City's Authorized Representative will constitute acceptance of performing all additional corrective work caused by the unsuitable conditions.

105.3 SUBMITTALS

- (A) Seeding proposals shall be submitted to the City's Authorized Representative for review on a case by-case basis. Seeding proposals shall provide the following information:
 1. Site plan with existing and proposed grading, existing and proposed landscape and site improvements, and delineation of seeding limits. Site plan shall also list the total square footage of turf and total square footage of planter area.
 2. Irrigation plan for a permanent, automated irrigation system to be designed and installed in accordance with Subsection 110 of these specifications.
 3. A passing irrigation audit to demonstrate proper operation of irrigation and coverage.
 4. Specifications for seedbed preparation, including weed eradication, soil amendment and fertilization, seed mix composition, seeding rates, including methods and timing, mulching materials and methods, and erosion control materials and methods.
 5. Description of establishment procedures including watering, mowing, weed control, and fertilization.
 6. Written warranty for seed establishment, specifically describing a uniform plant growth, with a minimum of 80% grass coverage of the mix of the species planted, with plants at the three to five leaf stage, and no bare spots exceeding six inches in size. This can be measured by counting plants within a meter square. Noxious weeds shall not be included in the 80% minimum cover.
- (B) Approval of materials shall not be construed as authorizing any deviation from these Standard and Specifications, unless the City's Authorized Representative has been notified and given written authorization prior to any work.

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105.4 MATERIALS

- (A) Seed Mixes: These seed mixes are provided for convenience. Other mixes, appropriate to specific site conditions, shall be submitted to the City's Authorized Representative for review and approval. Per-acre seeding rate is based on 100 certified pure live seeds (PLS) per square foot, by seed weight.
1. Seed mixes shall consist of grasses that are especially tough, durable and resistant to salt, drought and disease.
 - a. Multi-use Turf Field Mix – Available from Delta Growers, Inc. (209) 969-4679 or City approved equal. See Section 100.3 for related information
 - 40% Tall Fescue – Firecracker SLS
 - 40% Tall Fescue – Raptor 3 or Spyder LS
 - 10% Ryegrass – Apple SGL
 - 10% Kentucky Bluegrass – Kentucky Ridgeline
 - Application rate of 10 lbs. per 1000 SF or 450 lbs. per acre.
- (B) For specific sports activities such as soccer, baseball or tournament level athletic fields, consult with City's project manager and Delta Growers, Inc. (209) 969-4679 (or approved alternate) to discuss preferences for athletic-use turf grass species.

105.5 EXECUTION

- (A) Weed Control
1. Approval of Weed Control Applicator and Materials
 - a. The applicator of all weed control materials shall be licensed by the State of California as a Pest Control Advisor and a Pest Control Operator in addition to any subcontractor licenses that are required.
 - b. Prior to the installation of any weed control materials, the Pest Control Advisor shall submit to the City's Authorized Representative a list of the weed control materials and amounts per acre/square intended for use in controlling the weed types prevalent and expected on the site. The Pest Control Advisor shall furnish data to demonstrate the compatibility of the weed control materials and methods with the intended planting and seed varieties.
 - c. No materials or method shall affect the landscape planting or hydroseeded germination. All such materials and methods must conform to Federal, State and local regulations.
 - d. The project timeline shall allow for a second application of weed control materials prior to hydroseeding.
- (B) Seedbed Preparation
1. Existing weed vegetation shall generally be sprayed and incorporated or manually removed and disposed of off-site to deliver a final weed free landscape.
 2. Other vegetation shall be manually removed and disposed of off-site.
 3. The prepared seedbed shall be free of debris including weed matter, weed seed, rocks, clods, and other impervious material over one inch in diameter. Seedbed shall be smooth and free of large clumps, fluffy yet firm. The City's Authorized Representative shall inspect the seedbed of all seeding projects.
 4. Water all planting areas thoroughly and continuously for (3) three consecutive days to saturate upper layers of soil prior to the hydroseeding operation.
 5. Begin the hydroseeding operation on all areas as specified in these Standards and Specifications.
- (C) Installation of Hydraulically Placed Materials
1. The Equipment:

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- a. Hydraulic equipment used for the application of the hydroseeding materials and soil stabilization materials shall be a commercial type "Hydro-seeder" approved by the seed supplier.
- b. The equipment shall have a built-in agitation system and operation capacity sufficient to agitate, suspend and homogeneously mix a slurry containing fertilizer solids for a minimum of (1000) one thousand gallons of water.
- c. Distributions lines shall be large enough to prevent stoppage and provide an even distribution of slurry over the ground. Lines shall be equipped with a set of hydraulic nozzles within sufficient priming to the areas to be seeded.
- d. The pump must be capable of exerting (150) one hundred-fifty psi. at the nozzle.
- e. The slurry tank shall have a minimum capacity of (1000) one thousand gallons of water and shall be mounted on a traveling unit which will place the slurry tank and spray nozzles within sufficient proximity to the areas to be seeded so as to provide uniform coverage without waste.

(D) Hydroseeding and Soil Stabilization

1. The hydroseeding shall be applied in the form of a slurry consisting of cellulose fiber, the designated seed mix, inorganic soil stabilant, commercial fertilizer and water. When hydraulically sprayed on the soil surface, the hydroseeding mulch forms a blotter-like matting as a groundcover impregnated uniformly with seed, fertilizer, soil stabilizing materials and fiber.
2. The blotter-like matting cover of hydroseed material must allow for the absorption of moisture by means of an irrigation system or natural rainfall and also allow for maximum circulation and air exchange to the underlying soil.
3. If multiple seed mixes are used, the Contractor shall verify with the City's Authorized Representative the composition and placement locations of each seed mix prior to the start of any hydroseeding.
4. All materials shall be standard, approved and of first grade quality and shall be in prime condition when installed and accepted. Any commercial process or packaging material shall be undisturbed and materials delivered to the sit in their original, unopened condition bearing the manufacturer's guaranteed analysis.
5. The hydroseeded areas shall be pre-soaked with water by the irrigation system to a depth of (3") three inches 48 hours prior to the hydroseeding installation. This will assure that sufficient moisture will be stored in the soil or germinating seedlings.
6. The hydroseeding shall be applied in the form of a slurry consisting of organic soil amendments, commercial fertilizer and other chemicals called for. When hydraulically sprayed onto the soil it shall form a blotter-like material.
7. The spray operation must be so directed that the slurry spray will also penetrate the soil surface as to drill and mix the slurry components into the soil, thus ensuring maximum impregnation and coverage. The impregnation and mixing of the components will help in retaining moisture while stabilizing soil surface from erosion.
8. The City's Authorized Representative shall be present at the start of hydroseeding operations.

(E) Hydroseeding Components and Additives

1. 2,000 lbs. per acre wood cellulose fiber mulch containing no germination or growth-inhibiting factors. Provide a temporary integral green dye and the following percentage property analyses:
 - a. Moisture Content – 9 plus or minus 3 o.d. basis
 - b. Organic Matter – 99.2 plus or minus 0.8
 - c. Ash Content – 0.9 plus or minus 0.5
 - d. H – 4.8 plus or minus 0.5
 - e. Water Holding Capacity – 1,150 minimum

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2. 300 lbs. per acre 16-20-0 commercial fertilizer. Fertilizer shall conform to the requirements of the California Food and Agricultural Code; shall be uniform in composition, with the above guaranteed chemical analysis
 3. 90 – 100 lbs. per acre Ecology Control “M-Binder” organic soil stabilant or approved equal.
 4. Seed mix at combined seed rate of:
 - a. Multi-use Turf Field Mix – 10lbs./1000 square feet or 450 lbs./acre
 - b. Meadow Mix – 5 lbs./1000 square feet or 220 lbs./acre
 5. Water as required
- (F) Preparation of Hydroseeding Mixture
- a. The slurry shall be prepared at the site and its components shall be mixed to the slurry rates of application as per these Standards and Specifications.
 - b. Slurry preparation shall begin by adding water to the tank with the engine at 1/2 throttle. When the water level has reached the height of the agitator shaft and good recirculation has been established, the fertilizers shall be added to the tank mixture. The tank shall be a minimum of 1/3 filled with water at this time.
 - c. The engine throttle shall be open to full speed when the tank is ½ filled with water. All organic amendments, fiber and chemicals shall then be added by the time the tank is 2/3 to 3/4 full. At this time, the seed mix shall also be added.
 - d. Spraying shall commence immediately when the tank is full and the slurry is thoroughly mixed.
- (G) Application
1. Spray with a uniform visible coat by using the green color of the mulch as a guide. Apply the slurry in a downward, drilling motion with a fan stream nozzle. It is important to ensure that all of the components enter and mix with the soil.
 2. The hydromulch has a tendency to build up on itself; therefore, it is important that the Contractor employ only experienced personnel to ensure uniformity of the hydromulch application.
 3. Hydraulic mulching shall not be performed in the presence of free surface water.
 4. Do not allow any slurry to be sprayed into any reservoir, basin or drainage ditches and channels which may impede free flow of rain or irrigation water. Clean up spilled slurry on sidewalks, concrete structures, and streets.
 5. Daily worksheets shall be required of the nozzle man , with the following information accurately recorded: Seed type and amount, seeding additive type and amount, fertilizer analysis and amount, mulch type and amount, seeding additive type and amount, number of loads and amount of water, area covered, equipment used, capacity and license number. These worksheets shall be provided to the City’s Authorized Representative at the completion of hydroseeding.
 6. After application, equipment shall not be operated over the covered area.
- (H) Time Limit
1. The hydromulching slurry components are not to be left in the hydromulch machine for more than (2) two hours for fear of destruction of the seed.
 2. If slurry components are left for more than (2) two hours in the machine, the Contractor shall add 50 % more of the originally specified seed mix to any slurry mix which has not been applied (8) eight hours after mixing.
 3. Any seeds left in the machine longer than (8) eight hours after mixing shall be rejected and disposed of legally off-site at the Contractor’s expense.
- (I) Protection
1. Special care is to be exercised by the Contractor to prevent any of the slurry from being sprayed onto hardscape areas including concrete walks, fences, walls, buildings, etc., or onto any landscape areas not intended for hydroseeding.
 2. Any slurry sprayed onto these areas shall be cleaned off at the Contractor’s expense.
 3. The Contractor shall also exercise care in avoiding spray application on the foliage of plant material.

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105.6 MAINTENANCE PROCEDURES

(A) General

1. After all work indicated or specified has been completed, observed and approved by the City's Authorized Representatives, all planted areas shall be maintained by supplemental (hand) watering as needed, weeding, fertilizing and other operations as necessary for the care and up-keep of the work. At the end of the maintenance period, all plant material shall be in a healthy, growing and vigorous weed-free condition.
2. Maintenance personnel shall be knowledgeable in all aspects of proper landscape maintenance and turf care, and shall exercise selective care for the hydroseeded seedlings during all maintenance periods.

(B) Irrigation

1. Approximately (24) twenty four hours after hydroseeding the planted areas, the watering sequence should be initiated.
2. The watering shall be in cycles long enough to moisten the soil thoroughly to a depth of the slurry mulch taking care not to over saturate or wash away the slurry and seeds.
3. Frequent, light irrigation must be performed to establish seedling germination and growth.
4. The Contractor shall repair all seed washing or erosion at this own expense.
5. The irrigation system must be observed at all times during operation.
6. The irrigation cycle times must be determined by air temperature, prevailing wind velocity, soil texture orientation and other logistical factors.
7. It is imperative that the soil be kept moist at all times during the germination period. Failure to do so will allow the seeds to become dry and result in germination failure. Light, frequent watering shall continue until the seedlings have grown beyond the germination stage. The germination phase will typically range from 45 to 60 days.
8. Once the seedlings are established, the frequency of watering can be reduced while increasing the duration of each watering.
9. All hydroseeded areas will be irrigated permanently, but adjusted (reduced) once the plants are established.

(C) Weeding and General Maintenance

1. Weed control is an important factor for grass establishment. Timely mowing operations are the most successful method of control. It shall be necessary to mow several times the first growing season, depending on when grass was seeded. It shall be necessary to mow in the second year.
2. All noxious weeds including, but not limited to, Canadian and Russian Thistle, Sandburr, Puncture vine, Morning Glory, Bindweed, Lambsquarter, Dock, Nightshade, Johnson, Bermuda, Dallas and Nut grasses, mallow, mustards, etc. shall be removed during the maintenance period
3. Weeds shall not be allowed to reach 6 inches in height or width. Weed abatement shall be performed manually or upon the approval of the Pest Control Advisor by utilizing a specific contact herbicide or pre-emergent (only after established) in strict accordance with manufacturer's recommendations and approval of the seed supplier and City's Authorized Representative.
4. Herbicide shall be selective and spot sprayed when possible. Turf plants shall be up and fairly mature, at the minimum, past the three to five leaf stage.
5. After weeds are removed, Contractor shall repair all damaged areas as specified by the City's Authorized Representative and re-hydroseed or sod same damaged areas as specified in plans and in these Standards and Specifications, without any additional cost to the City.
6. Control all harmful insects and fungi using appropriate insecticides and fungicides in strict accordance with regulating agencies and manufacturer's recommendations.

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7. Workmen are not allowed to walk on hydroseeded areas unnecessarily before, during or after hydroseeding operations. Damaged or compacted areas shall be re-contoured and re-hydroseeded at the Contractor's expense.
8. Exterminate all gophers, moles and ground squirrels within the limits of work during the plant establishment and maintenance period.
9. The turf shall receive a minimum of 2 mowings for the (90) ninety-day maintenance/plant establishment period to begin.
10. The Contractor may be relieved of the maintenance work when the final (90) ninety-day (calendar day) plant establishment work has been satisfactorily completed and accepted by the City.

(D) Fertilization

1. Follow-up fertilizing will be limited to an application applied (30) thirty days after installation, using a balanced fertilizer 16-6-8 at the rate of 300 pounds per acre. At the option of the Contractor or as required by the City's Authorized Representative, continue applications at the same rate each successive 30 days of maintenance until end of contract maintenance period.

(E) Observations

1. Maintenance observations are required as follows:
 - a. At completion of hydroseeding and beginning of (90) ninety days maintenance period.
 - b. At (45) forty-five days into maintenance period.
 - c. At the completion of the (90) ninety day maintenance period.
2. All deficiencies previously listed shall be corrected prior to the final observation.
3. Upon final acceptance, all work shall meet the approval of the City's Representative, or be rectified, by the Contractor to a condition that does meet this acceptance and at no additional cost to the City.

105.7 INSPECTIONS

(A) Materials Inspection

The City's Authorized Representative shall inspect all organic soil and seed bed amendments, and fertilizers and upon delivery to the site. The Contractor shall retain delivery tickets for verification of source, materials, and quantities of seed mixes, slurry modifications and application instructions provided by the seed supplier. Unsatisfactory materials, as determined by the City's Authorized Representative, shall be removed and replaced with materials conforming to these Standards and Specifications. Inspection shall be for both quality and quantity of materials.

(B) Hydroseeding Area Preparation Inspection

The City's Authorized Representative shall inspect the soil preparation for conformance to the drawings and these Standards and Specifications during and immediately following the completion of each segment of the Contractor's work. Work deemed to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be corrected at that time. The following is a list of the additional required inspections in their order:

1. During fine grading.
2. After final grade is completed, prior to seeding.
3. An irrigation audit shall be submitted also at this time to verify proper coverage prior to further operations.
4. Contractor shall submit all load tags for seed mixes and amendments as required by these specifications and the Soils Analysis for approval prior to planting.
5. Post-seeding after germination, to determine coverage rates and any required overseeding

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6. Post establishment period to determine if any unsuitable areas larger than 3" in any direction require further preparation and reseeded. If any areas exist, the maintenance period shall continue until hydroseeding area is approved by the City.
- (C) Refer also to Subsection 103.7 and Subsection 104.4 of these Standards and Specifications for further requirements.

105.8 WARRANTY

Provide warranty until final acceptance by the City.

106.0 SODDING SPECIFICATIONS

106.1 GENERAL

- (A) The Contractor shall provide all labor, equipment and materials necessary to furnish and install all sod or plugs as required by the drawings and these Standards and specifications. In general, Practical Turf Areas and sports fields of manageable sizes and shapes shall be sodded with appropriate grasses.
- (B) Dwarf Fescue blend shall be the Standard of turf species used to create a traditional landscape of a cultivated maintained ground plane. Turf shall be Bolero Plus – 90/10 Dwarf Fescue/Bluegrass blend. Available from Delta Bluegrass Company (800) 637-8873 or City approved equal.
- (C) Mow Free blend shall be the standard used when a "No Mow" turf is desired. Available from Delta Bluegrass Company (800) 637-8873 or City approved equal. Sod type shall contain the following seed varieties: Hard Fescue – Chariot, Sheeps Fescue – Blue Ray, Chewings Fescue – Radar and Creeping Red Fescue – Navigator II
- (D) For specific sports activities such as soccer, baseball or tournament level athletic fields, consult with City's project manager and Delta Bluegrass Company (800) 673-8873 (or approved alternate sod grower) to discuss preferences for athletic-use turf grass species.
- (E) Organic Materials and Fertilizer. All organic material and fertilizer requirements shall be as stipulated in these Standards and Specifications, Subsection 104.2.
- (F) Sod Turf grass varieties shall be selected based on site conditions, intended use, and water conservation concerns and shall be subject to the review, revision and approval of the City's Representative.
- (G) Sod shall have a vigorous and healthy root system and top growth and shall be free of insects, noxious weeds, undesirable plants, stones, and other foreign materials that shall be detrimental to proper development of the sod. Sod shall have been regularly fertilized, watered, and mowed. The sod shall be mowed to a height not to exceed two inches and thoroughly watered before the lifting of the sod.
- (H) All sod shall be cut to provide a minimum thickness of ¾ inch of soil adhering to the roots. Each sod strip shall be harvested in a minimum width of 16 inches and a minimum length of 24 inches. Sod may be supplied in wider and longer rolls.

106.2 QUALITY ASSURANCE

- (A) Verification of dimensions and conditions
 1. Before proceeding with any sod work, the Contractor shall carefully check and verify all dimensions and planting area conditions and shall immediately inform the City's Authorized Representative for review of any discrepancies between the plans and/or actual Specification and actual conditions.

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2. No work shall be done on any areas where discrepancies or where conditions are unsuitable for successful plant material establishment until reviewed and approved by the City's Authorized Representative.
- (B) Quality of Work
1. The sod work shall be performed by a competently trained individual or sod company in accordance with the best standards and practices related to the trade and under the continuous supervision of a competent foreman that is capable of interpreting the plans and specifications.
 2. The City's Authorized Representative must be present at the start of sodding operations.
- (C) Site Grading & Drainage: Subsection 103
- (D) Soil preparation: Subsection 104
- (E) Irrigation: Subsection 110
- (F) Landscape Maintenance: Subsection: 109
- (G) Inspection of Work
1. The Contractor shall examine related work including irrigation and grading before proceeding with any work and inform the City's Authorized Representative in writing on conditions that may prevent the proper execution of this work.
 2. Failure to report unsuitable conditions to the City's Authorized Representative will constitute acceptance of performing all additional corrective work caused by the unsuitable conditions

106.3 PREPARATION

Refer to Subsections 102 and 104 of these Standards and Specifications.

106.4 EXECUTION

- (A) Care and Handling
1. Care shall be exercised at all times to retain the soil on the sod roots during transportation, handling, and planting. Dumping sod from vehicles shall not be permitted.
 2. The sod shall be installed within 24 hours from the time it is cut, unless it can be stored to the satisfaction of the City's Authorized Representative.
 3. During delivery and while in stacks, all sod shall be kept moist and protected from drying, sun, or freezing. All damaged sod shall be rejected. All sod discolored due to excessive drying shall be rejected.
- (B) Transporting Sod On-site
1. Sod can be transported on or across the site on pallets by forklift, bobcat, or equivalent.
 2. Damage to the sod bed by the vehicles shall be avoided; any damage shall be repaired prior to sodding of the area. Damage caused to paving, curbs, fences, plants or other objects from sodding operations shall be remedied by the Contractor at his expense, as directed by the City's Authorized Representative.
- (C) Sodding
1. Using a water-filled lawn roller, roll the area in two (2) different directions and re-grade. Roll when soil is dry to avoid any unnecessary compaction.
 2. Two (2) days prior to sod installation the turf areas shall receive a thorough watering. Irrigation system shall also be checked and adjusted at this time to ensure even coverage and that no dry patches appear. Check for low spots where water is ponding and rectify grade.
 3. The City's Authorized Representative shall inspect the sod bed of all sodding projects. Immediately prior to sodding, obtain inspection and approval of irrigation system in operation, and watering of trees located in sod.

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4. Prior to installation, the Contractor shall check once again for settling and depressions. Re-grade to correct any unsatisfactory conditions. Finish grade of sod shall be a maximum of 1" below walks or hardscape surfaces.
5. Prior to sod installation, the site shall be lightly irrigated to alleviate 'wicking' and Plant material desiccation.
6. Start laying sod from the back of the turf area to the front along the longest straight-line boundary. If the turf is an irregular shape, run a string on a straight line through the area and lay the sod along this line.
7. Work away from the area as not to step on freshly laid sod.
8. Sod shall be laid on a firm, pre-moistened bed. Butt all edges and ends to fit tightly together. In order to prevent sod from shrinking later, do not stretch or pull sod.
9. Staggering joint as if laying bricks, with all edges touching so that no voids occur under or between strips.
10. Sod roll length shall run perpendicular to all slope fall lines, with sod staples employed on slopes, as necessary.
11. End joints shall be staggered at least 18 inches between adjacent rows. Top dress all joints with sand.
12. Sod shall be laid flush with paving, curbs and irrigation heads. All rolls terminating at the project edge shall be cut in a straight line, and the exposed edge covered with topsoil.
13. No sod shall be installed within a radius of three feet around any tree.
14. Sod placed in drainage swales shall be staked, with stakes spaced not more than 30 inches apart, driven into the ground at an angle against the flow of the water. Sodding shall begin at the bottom and progress upward, with strips laid perpendicular to the flow of the water.
15. Edges shall be trimmed with a sharp sod knife. Conform to curved boundaries and leave trim, clean edges around trees, sprinkler heads, drive, walk or mowstrip contours.
16. Avoid cutting sod too thin, in short, narrow strips. This is to prevent sod from being dislodged or drying out and failing to root properly.
17. Periodically mist sod after every 200 square feet of sod laid until finished. This will prevent the sod from dehydrating before the irrigation system can be turned on.
18. Immediately after the sod has been laid, it shall be tamped, rolled with a water-filled roller to eliminate air pockets and to provide a smooth and even surface.
19. Sufficient water shall be applied to saturate the sod completely.
20. The planting shall be protected from drying and shall be watered as often as needed to keep sod saturated for a period of (7) seven to (10) ten days. After this time the water shall gradually be reduced to a normal watering schedule.
21. Settled sod areas shall be pulled, re-graded, and re-laid. Excessively shrunken sod (over $\frac{3}{4}$ inch shrinkage) shall be replaced with new sod.

106.5 CLEANUP AND MAINTENANCE

- (A) Waste material, which has been brought onto the project site or created during installation shall be removed.
- (B) Ground area disturbed because of these operations shall be renovated to its original condition or to the required new appearance.
- (C) Protect and maintain sod until Initial Acceptance. Maintenance shall include irrigation controller programming and watering, mowing, and trimming as necessary to prevent sod from drying and shrinking, and to maintain proper soil moisture and a neat appearance. Care should be given to avoid standing water, surface wash, or erosion from over-watering. Failure of the irrigation system shall not relieve the Contractor from applying the water required during this period.
- (D) Mow in the opposite direction of that used for sod installation, so that mower wheels do not create gaps between the seams of the sod.

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106.6 INSPECTIONS

Refer to Subsection 106.3 of these Standards and Specifications.

- (A) At completion of sodding and beginning of (90) ninety days maintenance period.
- (B) At the completion of the (90) ninety-day maintenance and upon final acceptance, all work shall meet the approval of the City's Representative, or be rectified, by the Contractor to a condition that does meet this acceptance and at no additional cost to the City.

106.7 WARRANTY

Until final acceptance by the City.

107.0 PLANTING GUIDELINES AND SPECIFICATIONS

107.1 GENERAL

These Planting Standards and Specifications address the location and installation of trees, shrubs and ground covers. There shall be a pre-construction conference prior to the beginning of any work or the ordering of any materials.

107.2 SCOPE OF WORK

- (A) The work to be performed consists of installation of all plant material, furnishing of all labor, materials, equipment, supplies, transportation to the site and all services necessary to provide all planting work as shown in drawings and in these Standards and Specifications.
- (B) Work specified in this section:
 - 1. Coordinate delivery of plants
 - 2. Plant material inspection
 - 3. Planting of trees, shrubs and groundcovers.
 - 4. Fertilizing
 - 5. Weed Control
 - 6. Mulching
 - 7. Staking
 - 8. Root Control Barriers
 - 9. Edging material
 - 10. Pre-Maintenance Inspection
 - 11. Plant Warranty
- (C) Related Work Specified elsewhere
 - 1. Site Grading & Drainage: Subsection 103
 - 2. Soil preparation: Subsection 104
 - 3. Irrigation: Subsection 110
 - 4. Landscape Maintenance: Subsection: 109

107.3 TESTING

The City's Authorized Representative reserves the right to take and analyze samples of materials for conformity to specifications at any time. Contractor shall furnish samples upon request of the City's Authorized Representative and per these Standards and Specifications. Rejected materials shall be

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immediately removed from the site at the Contractor's expense. Cost of testing materials not meeting specifications shall be paid by the Contractor.

107.4 REGULATORY REQUIREMENTS

- (A) All work shall be performed in accordance with all applicable laws, codes and regulations required by authorities having jurisdiction over such work and provide for all inspections and permits required by Federal, State and local authorities in furnishing, transporting and installing materials.
- (B) Certificates of Inspection required by law for transportation shall accompany invoice for each shipment of plants. File copies of certificates with the City's Authorized Representative after acceptance of material. Inspection by Federal or State Agencies at place of growth does not preclude rejection of plants at project site.

107.5 SELECTION, TAGGING AND ORDERING OF PLANT MATERIAL

- (A) Contractor shall submit a detailed and complete identification of sources for all plant materials, including names of nursery/grower, location, phone number and contact person at the time of the pre-construction meeting.
- (B) Substitution of plant materials will not be permitted without written approval from the Landscape Architect and the City's Authorized Representative. MWELO Calculations may need revisions based on substitutions.

107.6 SUBMITTALS

- (A) Certificate of Purchase: The Contractor shall place and order for the required number of trees, shrubs and groundcover within (10) ten working days after the notice to proceed. A copy of the order showing the number of plants ordered, from whom ordered, and the anticipated time of deliveries verified by the supplier shall be submitted the City's Authorized Representative.
- (B) Furnish (3) three copies of manufacturer's literature or laboratory analytical data and samples for the following items along with soils analysis:
 - 1. Plant Fertilizers and other amendments
 - 2. Organic Matter
 - 3. Mulch/Topdressing
- (C) All submittals shall be forwarded in a single packet to the City's Authorized Representative within (30) thirty days of the award of the General Contract, and prior to any work. Allow a minimum of (2) two weeks for review.

107.7 PROJECT CONDITIONS

- (A) Furnish standard products in manufacturer's standard containers with original labels showing quantity, analysis and name of manufacturer.
- (B) Store plant materials or products with protection from weather or other conditions which could damage or impair the quality or effectiveness.

107.8 QUALITY ASSURANCE

- (A) Dimensions and Conditions
 - 1. Before proceeding with any work, the Contractor shall carefully check and verify all easements, dimensions and planting area conditions and shall immediately inform City's

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Authorized Representative for review of any discrepancies between the plans and/or actual Specification and actual conditions.

2. No work shall be done on any areas where discrepancies or where conditions are unsuitable for successful plant material establishment until review by the Contractor and approved by the City's Authorized Representative.

(B) Quality of Work

1. The landscape planting work shall be performed by a competently trained individual in accordance with the best standards and practices related to the trade and under the continuous supervision of an experienced foreman that is capable of communication and interpreting the plans and specifications.
2. All amendments shall be incorporated per the soils analysis and load tickets verified prior to planting.
3. An irrigation audit shall be performed with a passing rating to verify operation and coverage of irrigation system prior to planting.
4. Plant material and trees shall be inspected and approved by the City's Authorized Representative upon delivery and prior to planting, for quality and conformity to specifications. Provide (48) forty eight hours' notice when calling for inspections. Such approval shall not impair the right of inspection and rejection during progress of the work. Rejected materials shall be immediately removed from the site and replaced with approved material at the Contractor's expense.
 - a. Plants shall be tagged from the grower.
 - b. Local/shipping invoice shall be presented to City's Authorized Representative at time of inspection and a copy of the approved plans.
5. Final tree locations shall be approved by the City's Authorized Representative on-site in the layout phase, prior to planting. Contractor shall observe tree layout spacing in Section 107.11(B) 2

(C) Inspection of Work

1. The Contractor shall examine related work including irrigation and grading before proceeding with any work and inform the City's Authorized Representative in writing on conditions that may prevent the proper execution of this work.
2. Failure to report unsuitable conditions to the City's Authorized Representative will constitute acceptance of performing all additional corrective work caused by the unsuitable conditions.

107.9 WORK SCHEDULE

In general, the planting work shall proceed as rapidly as possible, consistent with normal seasonal limitations for planting work.

107.10 PRODUCTS AND MATERIALS

(A) Plant Materials

1. Plants shall be container grown nursery stock in accordance with good horticultural practices and grown in similar climatic conditions to those of the project for at least (2) two years. All plants shall be visually uniform, symmetrical, dense and lush in appearance.
2. Plants shall be healthy and vigorous, well-branched and densely foliated when in leaf. They shall be free of insects, pests and disease. They shall be of a size appropriate to the container size in which they are grown. They shall be free from physical damage or any adverse conditions that would prevent them from thriving.
3. Plants shall have grown in the containers in which they are delivered for at least (6) six months, but not over (2) two years. They shall not have root bound conditions existing. They shall not have cracked or broken rootballs of soil when removed from the containers. All

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stock shall be well rooted in the container in which it is grown with no circling, kinking or girdling of roots.

4. Plants shall comply with the requirements in the drawing legend as specified and shall conform to the current standards of the American Association of Nurserymen. Plants shall be grown by a licensed nursery.
5. Plants shall not be pruned before delivery. Trees which have damaged or crooked leaders or multiple leaders will be rejected. Trees with abrasions of the bark, sun scalds, disfiguring knots or fresh cut, uncalloused limbs will be rejected.
6. All trees shall have a central leader and equally spaced scaffold branches. All trees shall be standard form and matched in size unless noted otherwise.
7. See Public Works Section ST-23, 24 and 25 for City of Manteca Approved and Prohibited Tree Species and tree well plantings.
8. To support the development of a healthy urban forest by providing tree diversity, and to prevent uniform insect or disease susceptibility associated with planting a single species, a variety of trees shall be selected for planting.
9. Groundcovers shall be grown in cell flats or plugs with each plant having its own individual rootball. Solid flats will be rejected.
10. All plant material shall be clearly labeled or tagged from the grower.

(B) Planting Soils

1. Shrubs, vines, containerized groundcovers or other plant material shall have 1% Nitrogen Stabilized Organic Matter mixed 50/50 with native soil in the planting holes.
2. Trees shall be planted or spaded in Native soil only.
3. Groundcover in flats shall have 1% Nitrogen Stabilized Organic Matter incorporated into the soil as specified in Subsection 104, Soil Preparation
4. See details in these Standards and Specifications for Tree Planting, Shrub Planting, Groundcover Planting and Tree Spading.

(C) Staking and Guying Materials

1. Contractor shall use staking materials, necessary to meet that of the drawings and these Standards and Specifications and to the approval of the City's Authorized Representative.
2. Tree Staking:
 - a. Reddy Stake system, screw in auger-type steel stake with adjustable height "T" bar, UV resistant green vinyl tubing, 3 cable ties, anti-rotational tab and pin, powder-coated dark green, by Screw Tight a Division of Decorations for Generations, Inc. or City approved equal.
 - b. See Tree Staking Detail in these Standards and Specifications
3. Tree Guying Hardware:
 - a. Guying Cable: 5/16" diameter, clear plastic coated galvanized steel cable (3) Three cables minimum per tree.
 - b. Hose Chafing Guard: Reinforced rubber or plastic hose at least (½") one-half inch in diameter, black. Cut lengths as needed to protect tree trunks from damage. Quantity shall be equal to the number of cables used.
 - c. Guying Deadman: For trees up to (3') three inches in diameter/caliper (measured 12" above grade) provide Duckbill Tree Anchoring System Model # 68-RBK, or Laconia Universal System Model # LA-4-40. For trees with (3") three to (6") six inch calipers, provide Duckbill Tree Anchoring System Model # 88, or Laconia Universal System Model # LA-10-120.
 - d. Cable Safety Sleeves: (½") Half-inch diameter white PVC pipe, class 315. Cut lengths as needed to cover and add protection over cables.
 - e. Cable Turnbuckles: Galvanized Steel, (3/8") three-eighths inch by (6") six inches in length.
 - f. Cable Clamps galvanized steel, sized to fit cable.
4. Vines shall be, espaliered and securely fastened in an approved manner to trellis, wall fence or other surface next to which they are planted.

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- a. Vine Supports: Galvanized metal or plastic epoxy-type fasteners or other as approved by the City's Authorized Representative.
- b. Vine Tie Tape: Green polyethylene tape, (½") half inch wide

(D) Commercial Fertilizer

1. For organic materials and fertilizer in landscaped areas, see Subsection 104. Soil Preparation
2. Agriform 21 gram fertilizer tablets 20-10-5 or City approved equal shall be placed in the holes when planting in the following quantities:
 - 1 gallon plants 1 tablet
 - 2 gallon plant 2 tablets
 - 5 gallon plant 3 tablets
 - 15 gallon plant 5 tablets
 - Boxed Trees 1 tablet per 4 inches of box size
 - Spaded Trees 1 tablet per each 12 inches of root circumference
3. See details in these Standards and Specifications for Tree Planting, Shrub Planting, Groundcover Planting and Tree Spading.
4. A soil analysis shall be required per the MWELO. The selection of fertilizer type, materials, rate and method of application shall be based on site conditions and anticipated maximum effectiveness in aiding plant establishment.
5. Keep all fertilizer off hardscape areas and maintain a minimum ten-foot buffer zone between application area and surface water bodies.

(E) Weed Control

1. Prior to Planting: Refer to Subsections 104. for Weed Control during site preparations.
2. After Planting: Contractor shall maintain treatment of all green weeds and apply Snapshot 2.5, or as otherwise recommended by a Pest Control Advisor or City approved equal to prevent future weed germination. Pre-emergent to be applied according to the manufacturer's label instructions. All areas shall be kept weed-free during planting operations and shall be weed-free at the time of final acceptance by the City.

(F) Mulch

1. All planting beds shall be covered with Dark Brown Decorative Bark product or approved alternate, as manufactured by Recology/Blossom Valley Organics, Modesto (866) 764-5765, installed to a compacted depth of (3") three inches for the final top dressing or approved equal.
2. Sample shall be supplied City's Authorized Representative for approval at the time of the submittals and prior to any installation.

(G) Edging Material

1. In general, turf edging shall be 6"x 6" reinforced concrete "mowstrips." See Concrete Mow Strip detail in these Standards and Specifications.
2. Planting bed-edging material shall be reviewed by the City's Authorized Representative on a case-by-case basis, and shall be durable with minimal visual impact.
3. Generally wood, plastic or Trex type edgings are not permitted.

(H) Tree Root Barriers

1. All new or transplanted trees shown within (10') ten feet of any hardscape features may require that a Deep Root Barrier be installed at the time of planting. The City's Authorized Representative shall review drawings on a case-by-case basis with consideration given to the tree variety, mature size, root system, etc.
2. Root control barriers shall be a long-term root control system fully permeable to oxygen and water to sustain and direct plant growth. Root barriers shall be manufactured of an extruded, black homopolymer polyethylene plastic, with a minimum of 65% recycled material and UV inhibitors. Each root barrier system shall consist of a series of integrally-molded, self-interlocking panels, with a mean thickness of .08 inches panels.
3. Linear Style Planting Application: Deep Root Model #LB 18-2 Or City approved equal.

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4. See Tree Root Barrier Detail and Subsection 107.11 (B)2 Tree Layout in these Standards and Specifications

107.11 EXECUTION

(A) Care and Handling of Plant Materials

1. Arrange for pick-up or delivery of pre-purchased plant materials.
2. Plant material shall be protected from wind and damage during transport. Cover and secure plants with a tarp or transport in an enclosed vehicle.
3. All plant materials shall be unloaded and carried by the container. Do not lift, handle or carry the plants by the foliage, stems or trunks at any time.
4. Plants shall be divided by species into neat rows or blocks allowing easy access at the time of inspection by the City's Authorized Representative.

(B) Staking, Layout and Excavation of Planting Areas

1. Location Staking
 - a. Landscape and utility plans shall be coordinated. The Contractor shall arrange to have the locations of all utility lines (including, but not limited to, water, sewer, gas, electrical, phone, cable television, and irrigation) marked to assure safety and protection. Contractor shall confirm all easements.
2. Tree Layout
 - a. Street Tree Spacing: (28') twenty-eight feet minimum and (40') forty feet maximum. See Public Works details ST-23 AND ST-24 for related street tree and tree well information.
3. Park Tree Spacing: Large Turf Areas: Tree spacing in large turf areas shall be a minimum of (22') twenty-two feet from other trees, or fixed objects such as fences, walls, site furnishings and other above ground objects or utilities (vent pipes, enclosures, etc....)
4. Park Tree Spacing - Small Turf Areas and Playground Vicinities: In addition to tree spacing for large turf areas, maintain a minimum (10') ten foot spacing between trees and hardscape areas such as walks, play area curbs, mowstrips, picnic areas, sport courts, etc...
5. Spacing for tree placement shall be measured from the centerline of the tree. The City's Authorized Representative shall review drawings on a case-by-case basis however with consideration given to the tree variety, mature size, and overall intent of the design.
6. Locate trees 12' minimum or half mature diameter clear from irrigation mainlines, laterals, valves, master valves or flow sensors.
7. In general, trees shall be planted at the following minimum distances from other facilities:
 - a. 12'min. or half mature diameter from backflows, valves, master valves and flow sensors
 - b. 35' from the beginning of curb returns
 - c. 20' from electroliers or traffic signal standards.
 - d. 15' from edge of buildings
 - e. 10' from driveway approaches
 - f. 15' from fire hydrants, water and sewer service lines
 - g. 12' from irrigation rotors
 - h. 12' from any drain or sewer lines
 - i. 3' from the back of sidewalk
 - j. Clearances from applicable utilities and easements shall also be observed.
8. In general, all new or transplanted trees shown within (10') ten feet of any hardscape features may require that a Deep Root Barrier be installed at the time of planting. The City's Authorized Representative shall review drawings on a case-by-case basis with consideration given to the tree variety, mature size, soil type and overall intent of the design. See Tree Root Barrier Detail in these Standards and Specifications.

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9. In general, trees shall be varieties that can be easily be trained, or naturally branch out a minimum of (6') six to (7') seven feet above the finished grade of soil. Refer to CPTED (Crime Prevention Through Environmental Design) landscape guidelines.
 10. If the Landscape Architect feels that deviation from these guidelines are necessary, the City's Authorized Representative shall review drawings on a case-by-case basis. Approval may be given depending on the planting application, tree variety, mature size, future maintenance and overall intent of the design.
 11. Shrub Layout
 - a. In general, shrubs shall be planted a minimum of (4') four feet from sidewalks, planting bed edges, edge of buildings and other hardscape features or one-half their mature width, whichever is greater.
 - b. In general, other plant material such as perennials, ornamental grasses and containerized groundcovers shall be planted a minimum of 24" or one-half their mature size from sidewalks, planting bed edges, edge of buildings and other hardscape features
 - c. Spacing for plant placement shall be measured from the centerline of the plant.
 - d. In general, shrubs shall be dwarf or compact varieties that can be kept (3') three to (4') feet tall maximum with little or no maintenance. Refer to CPTED (Crime Prevention Through Environmental Design) landscape guidelines. If the Landscape Architect feels that deviation from these guidelines are necessary, the City's Authorized Representative shall review drawings on a case-by-case basis. Approval may be given depending on the planting application, shrub variety, mature size, future maintenance and overall intent of the design.
 12. Layout and arrangement of shrub material shall be as shown in the approved plans.
 13. Excavation
 - a. Container grown nursery stock holes shall be excavated to a depth equal to the depth of the rootball and 2 times the width of the rootball. The use of soil augers shall not be permitted.
- (C) Drainage, Obstructions or Detrimental Soil Conditions
1. The Contractor shall notify the City's Authorized Representative in writing of all drainage or soil conditions considered to be detrimental to the plant growth.
 2. State conditions and submit a proposal for correcting such conditions.
 3. If rock, underground construction work, tree roots or other obstructions are encountered during the excavation of planting holes, minor changes of plant locations shall be made by the contractor. Where locations cannot be changed, or plants must be omitted, the City's Authorized Representative shall be notified. The contractor may be required to submit a proposal and costs for removal of the obstructions. The Contractor may proceed with planting after the City's Authorized Representative has given approval.
- (D) Planting Operations
1. Protect plants at all times from sun or drying winds. Plants that cannot be planted immediately upon delivery shall be kept in a shady protected area and watered well. Plants that show evidence of improper care or which are molded, mildewed, excessively wilted or dried shall be rejected.
 2. If soil is not moist, planting holes shall be soaked with water prior to installing plant material. This shall prevent the surrounding soil from "wicking" moisture away from the root zone.
 3. Plant materials shall be gently removed from containers and handled by the rootball at the time of planting. Do not pull or jerk plants out of the containers by the foliage, stems or trunk. Containers shall be cut when needed for plant removal.
 4. After removing the plant from the container, scarify the sides of the rootball and fan roots out prior to backfilling to prevent rootbound conditions.

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5. Place the rootball on firm soil and roughen the sides of the planting hole. Set plant plumb and brace in position until planting soil has been added and tamped solidly around the ball and roots.
6. Use amended planting soil as per Subsection 107.10 (B) and fertilizer tablets Subsection 107.10 (D) to back fill the shrub planting holes. Tree soil shall be native.
7. Applicable trees shall have Deep Root Barriers installed. See Section 107.11(G)
8. In planters that will receive a 3" layer of topdressing, the crown of the plant shall be (2") two inches higher than the surrounding grade when planted. In all other areas, the plant shall be level with the surrounding grade.
9. Water all plants immediately after planting.
10. Remove all nursery labels, plant tags and stakes.
11. Stake trees or anchor vines. See Subsection 107.12 (C) and Tree Planting Detail. Smooth and re-grade planting areas to conform to specified grades after settling has occurred.
12. Any plants that have settled deeper than the specified grade shall be raised to the correct level.
13. Apply Snapshot 2.5 or as recommended by PCA pre-emergent herbicide. Gallery SC and Dimension 2EW shall be used upon request. See Subsection 107.12
14. Apply a 3" layer of Dark Brown Decorative Bark top dressing. Establish the top of bark one inch below pedestrian paved areas and two inches below right of-way landscape and median pavements. Lightly mulch new tree plantings within turf areas.
15. See Park Standard Details for Tree Planting and Shrub Planting

(E) Pruning

1. In general, pruning of new plant materials shall be limited to the removal of damaged or dead foliage and broken branches. Any pruning shall conform to currently approved horticultural practices as established by the International Society of Arboriculture. As necessary, each plant shall be hand pruned to preserve its natural form and character and in a manner appropriate to its particular requirements. Prune lateral branching to the branch collar, leaving collar in place. No stubbing of branches will be allowed. All pruning shall be done with clean, sharp tools.

(F) Tree Staking and Guying

1. Staking

- a. Upright Staking and Tying: In general, all trees shall be staked unless otherwise Directed by the City's Authorized Representative. Install Reddy Stake per manufacturer's specifications.
- b. Place stake (12") twelve to (14") fourteen inches on the prevailing wind side of tree.
- c. Twist stake into the ground until tab is (1") one to (2") two inches below grade and secure in place with anti-rotation pin.
- d. Orient tree with nursery stake on the same side as Reddy Stake and use the provided tree support and ties to firmly support the tree trunk and canopy.
- e. Remove nursery stake. Tree shall stand erect and plumb once Reddy Stake is installed.

2. Guying

- a. Trees exceeding (14') fourteen feet in height and more than (3") 3 inches in trunk diameter/caliper may require guying. If guying is deemed necessary by the Contractor or the City, the locations and methods shall be approved by the City's Authorized Representative prior to the installation.
- b. Securely attach no fewer than (3) three guys to stakes (30") thirty inches long, driven into the grade at equal intervals. (i.e. 120 degrees apart for 3 stakes)
- c. Guys shall be covered with black rubber hose at points of contacts with tree trunk crotches, and fastened to a deadman located below grade
- d. One (1) turnbuckle shall be provided at each guy wire. Use (2) two cable clamps at each cable terminus.
- e. Attach PVC sleeves to each wire guy (length as needed) for safety and visibility.
- f. Tree shall stand erect and plumb once wire guys are installed.

(G) Installation of Root Control Barriers

1. Linear Application

- a. Determine and choose the correct number of panels needed for the length and application. See manufacturer's Deep Root Specification and Installation Guide.
- b. Dig the trench to the depth required for the panel chosen.
- c. Place panel in trench with the vertical ribs are facing towards the tree and align in a straight manner. It is helpful to place the barrier against the hardscape, using it as a guide. Back fill against the barrier to promote a clean smooth fit to the hardscape. Position so the double top edge of the barrier is approx. (1/2") one-half inch above grade to retard potential overgrowth.
- d. Staking or and Guying shall be as per Subsection 107.11(C) of these Standards and Specifications; see also Tree Staking detail and Root Barrier Detail
- e. Water in tree immediately. Provide maintenance as per Maintenance Subsection 107.14 of these Standards and Specifications.

107.12 CLEAN UP

- (A) Keep all areas of work clean; neat and orderly at all times. Keep all paved areas clean during planting and maintenance operations. Clean up and remove all deleterious materials and debris from the entire work area prior to the beginning of the landscape maintenance period to the approval of the City's Authorized Representative.
- (B) Upon completion of the landscape installation, the Contractor shall remove all debris such as rocks, concrete, gravel, containers, wires, ropes, equipment and excess soil from the site.

107.13 INSPECTIONS

- (A) Refer to Subsection 103.7 of these Standards and Specifications.
- (B) The following inspections are required:
 1. Inspection of trees and plant materials upon delivery and prior to any planting.
 2. Inspection of tree locations prior to planting.
 3. Upon completion at the start of the (90) ninety day maintenance period.
 4. At the end of the maintenance period and prior to final acceptance by the City.
- (C) Work deemed by the City's Authorized Representative to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be promptly corrected.

107.14 MAINTENANCE OF PLANTING

- (A) From the time of planting the Contractor shall protect and maintain the landscape improvements plantings until Final Acceptance. Maintenance shall include watering, weed management, cultivating, mulching, staking, removal of dead branches, and re-setting plants to proper grade or upright position.
- (B) The Contractor shall be responsible for all repair or replacement of landscape improvements needed until Final Acceptance by the City.

107.15 WARRANTY PERIOD AND REPLACEMENT

- (A) Contractor shall provide written warranty that all trees planted under this contract will be healthy and in flourishing condition of active growth one year from date of final acceptance.
- (B) Dead plant material or all plants not in a vigorous, thriving condition at the end of the warranty period, shall be replaced at the Contractor's expense. Replacement plants shall be free of

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dead or dying branches and shall closely match the size of adjacent plant material of the same species. Plants shall be subject to all requirements of these Standards and Specifications.

108.0 TREE SPADING GUIDELINES AND SPECIFICATIONS

108.1 GENERAL

- (A) These Tree Spading Guidelines and Specifications address the process of transplanting existing trees from one location to another by means of mechanical tree spading equipment.
- (B) There shall be a pre-construction conference prior to the beginning of any work or the ordering of any materials.

108.2 SCOPE OF WORK

The work to be performed consists of furnishing of all labor, materials, equipment, supplies, transportation to the site and all services as necessary to provide all tree spading work as shown in drawings, as specified in these Standards and Specifications and per Tree Spading Details

108.3 SITE CONDITIONS

- (A) Existing tree locations and proposed new locations shall be as shown in drawings. The City's Authorized Representative shall be notified of pending excavation (1) one week prior to commencement. Confirm exact new location in field with City's Authorized Representative and mark clearly. Confirm with City's Authorized Representative if a Deep Root Barrier will be required for installation in the new location.
- (B) Upon confirmation of new location, Contractor shall identify any site conditions that may impact upon transplanting activities in both the existing and new locations. Site conditions may include available workspace for machinery and equipment, size and health of tree, tree accessibility, soil condition, ground slope and general topography, existing plant materials, public access to site and proximity to buildings and overhead utilities such as power lines.
- (C) The Contractor shall verify locations of all existing underground utilities and shall contact the respective utility companies prior to commencement of work. Contractor shall be responsible for the location, protection and preservation of all such utilities in the areas of construction and shall notify utilities forty-eight (48) hours in advance of any excavation or construction. Underground services or utilities may include electrical, water supply, irrigation, stormwater, drainage, gas and telecommunications cables.
- (D) Trees shall be planted in locations that will not interfere with utilities. Should a discrepancy arise, the City's Authorized Representative shall be notified one (1) week prior to commencement in order to approve alternate tree location, or determine if utilities should be relocated.
- (E) Contractor shall be responsible for coordinating the removal or relocation of existing utilities with respective utility companies.

108.4 QUALITY ASSURANCE

- (A) The tree spading and transplanting work shall be performed by a competently trained individual or tree spading company in accordance with the best standards and practices related to the trade and under the direction a competent foreman capable of communication and interpreting plans and specifications.
- (B) The Contractor shall provide all lights, signs, barricades, flagmen or other devices to ensure public safety during both transplanting and transporting activities.

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- (C) The Contractor shall confirm any legislation, local by-laws and regulations governing the transplanting/transporting of trees. Contractor shall identify a transport route, which is practicable and safe with regard to the size and shape of the tree.
- (D) Existing improvements, facilities, utilities and trees that are not to be removed, shall be protected from damage or injury resulting from the Contractor and Operators activities. Any expenses incurred or associated with repair or replacement of damaged items, shall be at the Contractor and Operators expense.
- (E) The Contractor shall not commence with work under adverse outdoor climatic conditions which may prevent or impede the transplanting. Such climatic conditions may include rain, hail, or extreme wind or heat.
- (F) Contractor shall check new planting location for adequate drainage. If conditions warrant a drainage system, the City's Authorized Representative shall be notified. The determination may be made that a drainage system shall be required
- (G) Contractor shall be available and on site during all digging and transplanting activities.

108.5 EQUIPMENT QUALITY

- (A) Mechanical diggers shall be in good condition to insure a successful transplant.
- (B) All blades shall be aligned, free of damage and sharpened on a regular basis.
- (C) The hydraulic system shall be leak-free to avoid damage to plants, turf and property. Contractor and Operator shall be responsible for any expenses incurred and associated with the replacement and repair of damage caused to plant material, turf, or property by hydraulic system leaks.
- (D) Should equipment malfunction or breakage occur, Contractor and Operator shall be responsible for any expenses incurred and associated with completion of tree transplanting according to proposed schedule. Trees already lifted from the hole shall be transported and transplanted without delay to prevent rootball from drying out. The City's Authorized Representative or representative shall be notified immediately if delays are anticipated.

108.6 SELECTING SIZE OF MECHANICAL DIGGER

- (A) Determine the size of the tree to be moved.
- (B) Use caliper inch as per A.N.L.A. standards to measure all trees.
- (C) Size of tree spade to be used will be based on trunk diameter, species, time of year, condition of tree and site conditions.
- (D) Use the spade that will give a root equivalent to ten inches (10") of soil per inch of trunk diameter. For example: A (4") four inch caliper tree should be dug with a (40") forty inch or (44") forty-four inch tree spade to assure proper root area during transplanting. This rule shall be applicable to trees up to (10") ten inches caliper.

108.7 TREE PREPARATION AND DIGGING

- (A) Prepare Tree
 1. Tie branches up or down to allow for good access to tree by the mechanical spade.
 2. Prune only those branches that interfere with the digging process.
 3. Prepare and protect site with regard to safety, trees to remain and environmental factors.
 4. If transplanting will occur during anticipated hot weather (over (80) eighty degrees), or if the tree will be transported over (10) ten miles, the Contractor shall notify the City's Authorized Representative (48) forty-eight hours prior to transplanting.
 5. In hot weather, a determination shall be made by the Arborist if the tree requires pre-watering or an anti-transpirant to reduce stress and moisture loss.

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6. The tree shall be transplanted without delay and planted immediately in the new location and watered thoroughly. This is to prevent the root ball from drying out.
- (B) Digging of Tree
1. For digging trees see the Mechanical Tree Spading details for sloped or level application. The Contractor and Operator shall inspect the degree of slope where the tree is existing prior to digging the cavity or hole.
 2. Prior to digging the tree, skim off any weeds and excess topsoil from the rootball. Avoid damaging any roots or the trunk. The size of the rootball shall match that of the hole excavated for the new location.
 3. Drop spades one at a time, alternating from one side to the other, to ensure even penetration and clean root cutting. Water injection may be helpful if available on the machine.
 4. Contractor shall confirm soil type and irrigation schedule. Pre-soaking the rootball area (24) twenty-four to (48) forty-eight hours prior to digging may be required.
 5. After lifting the tree from the hole, use a sharpened hand pruner to cut any roots protruding from the spades.
 6. The tree shall be transported without delay, and planted immediately in the new location and watered thoroughly. This is to prevent the root ball from drying out.

108.8 SETTING THE TREE

- (A) Plant tree facing the same direction as it was at the previous location.
- (B) Plant tree into hole dug by spade at the same elevation as the trees original grade. Up to one eighth (1/8) of the rootball can be higher than that of the original grade, but shall never be deeper. Level and adjust tree to straighten as the blades are being removed.
- (C) Should voids between the soil and rootball exist, fill with a good grade of topsoil or clean native soil from site.
- (D) Using a shovel handle, pack the excess soil tightly around the edge of the rootball.
- (E) Shave certain areas of the rootball if necessary in slope situations. Use extreme caution to minimize root disruption. See Mechanical Tree Spading detail (Sloped
- (F) Locations) in these Standards and Specifications
- (G) Create a circular saucer or watering basin around the tree as if hand planting. The basin rim shall extend approximately twelve (12) inches past the outer edge of the rootball so that the surrounding soil receives moisture. The rim shall be high enough as to prevent any run-off while watering.
- (H) Thoroughly water tree, soaking well to make sure that the rootball itself receives ample watering.
- (I) A (3") three-inch layer of Recology Brown Decorative Bark shall be applied as a mulch over the rootball, planting hole and extend twelve (12) inches past basin rim.
- (J) Tree shall be pruned conservatively. Remove broken branches or damaged limbs only. Remove any strings or tags.
- (K) Install Deep Root Barrier if required the City's Authorized Representative. See Tree Root Barrier detail in these Standards and Specifications

108.9 FOLLOW UP CARE

- (A) Upon transplanting, the tree will be totally reliant on the soil in the rootball for moisture. It is critical to maintain this moisture in order for new root growth to occur. If soil moisture content is questionable, a small profile tube shall be used to remove soil samples from rootball. Compress the soil between fingers. Ideal moisture is when the soil maintains its shape without being sticky.

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- (B) Throughout warm weather, the tree shall require watering at least two (2) times per week, or approximately one (1) gallon of water per inch of trunk diameter daily. This shall include one (1) gallon of water per square foot of surface area beyond the rootball and within the watering basin. Watering schedule to be monitored regularly using the profile tube method.
- (C) Do not apply water rapidly as to avoid any run-off. Water shall be applied slowly near base of the tree, soaking the rootball and the surrounding soil. A Ross Root Feeder or equal type-water jet is recommended under low pressure. Large trees shall receive water in several locations.
- (D) Care shall be given when mowing and weeding around newly transplanted trees.

108.10 MAINTENANCE OF TREE

- (A) The maintenance period for the tree shall be (90) ninety days or until final acceptance by the City of Manteca.
- (B) Maintenance shall include watering, mulching, staking (with approval), removal of dead branches, and resetting to proper grade or upright position.

108.11 INSPECTIONS

- (A) Inspection of tree locations prior to planting.
- (B) Upon completion of installation and at the start of the (90) ninety day maintenance period.⁶
- (C) At the end of the maintenance period and prior to final acceptance by the City.
- (D) Work deemed by the City's Authorized Representative to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be promptly corrected.

109.0 LANDSCAPE MAINTENANCE

109.1 GENERAL

The Contractor shall furnish all labor, materials and equipment needed to complete the work in this section.

109.2 SCOPE OF WORK

This section includes but is not necessarily limited to services required to maintain the landscape in an attractive and professional manner as specified herein for a period of (90) ninety days.

109.3 QUALITY OF WORK

- (A) The landscape maintenance work shall be performed by competently trained individuals in accordance with the best standards and practices related to the trade, and under the direction of a foreman with an education in Ornamental Horticulture.
- (B) All materials used shall conform to bid specifications or be approved by the City's
- (C) Authorized Representative. Monthly records shall be provided to the City's Authorized Representative indicating all herbicides, insecticides and disease control chemicals used.

109.4 MAINTENANCE PERIOD

- (A) The maintenance period shall be (90) ninety days from completion of all installations and written notice of a passing Pre-maintenance Inspection.

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- (B) The Contractor shall continuously maintain all areas involved in this project during the progress of the work and during the maintenance period until final acceptance of the work by the City. Improper maintenance or possible poor condition of any planting at the termination of the scheduled maintenance period may cause postponement of the final completion date of the contract. Maintenance shall be continued by the Contractor until all work is acceptable to the City.
- (C) In order to carry out the maintenance work, the Contractor shall furnish sufficient personnel and adequate equipment to perform the work during the maintenance period.
- (D) Maintenance period shall not begin until all elements of the construction, planting MWELO and irrigation for the entire project are in accordance with the approved drawings and these Standards and Specifications and related details.
- (E) The Contractor shall request an inspection to begin the maintenance period after all planting and related work has been completed in accordance with the contract documents. If such criteria is not met to the satisfaction of the City's Representative, corrections shall be made by the contractor who shall then request a re-inspection.
- (F) **Any day that the Contractor fails to adequately maintain plantings, replace unsuitable plants, perform weed control or other work as determined necessary by the City's Representative, will not be credited as one of the maintenance working days.** The Contractor's maintenance period will be extended if the provisions required within the approved drawings and in these Standards and Specifications are not filled. The project shall not be segmented into maintenance phases.

109.5 WARRANTY AND REPLACEMENT

- (A) Guarantee: All plant materials installed under the contract shall be guaranteed against any poor, inadequate or inferior materials and/or workmanship for a period of one year.
- (B) Replacement: Any plant materials found to be dead or in poor condition during the maintenance period shall be replaced immediately. The City's Representative shall be the sole judge as to determining the condition of the plant material. Material to be replaced within the warranty period shall be replaced by the Contractor within (15) fifteen days of written notification by the City.
- (C) Any delay in completion of the planting operations which extends into more than one planting season shall extend the warranty period correspondingly.
- (D) Contractor shall not be held responsible for failure due to neglect by the City or for vandalism, etc. during the warranty period. Such conditions shall be reported in writing to the City's Authorized Representative.

109.6 INSPECTIONS

- (A) Normal progress inspections can be requested by the Contractor or the City's Authorized Representative at least (48) forty-eight hours in advance of anticipated inspection. Mandatory Inspections are as follows:
 - 1. Upon completion of all installation and immediately prior to the commencement of work in this section
 - 2. Completion of the first (90) ninety-day maintenance period and final acceptance.

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109.7 RECORD DRAWINGS

At the time of the pre-maintenance inspection, the Contractor shall provide the City approved reproducible prints and record from the job a record set of all changes made during construction. Prints shall be labeled "Record Drawings" or "As-Built" and delivered to the City's Representative. A copy shall also be provided in PDF.

109.8 EXECUTION

(A) Maintenance shall be executed according to the following standards.

1. All areas shall be weeded and cultivated at intervals of not more than (10) ten days.
2. Watering, mowing, rolling, edging, trimming, fertilization, spraying and pest control, as may be required, shall be included in the maintenance period.
3. Street gutters shall be included within the debris/siltation removal program.
4. The Contractor shall be responsible for maintaining adequate protection of the area.
5. Damaged areas shall be repaired at the Contractor's expense.
6. Between the (15th) fifteenth and the (20th) day of the maintenance period, the Contractor shall re-sod and/or seed all spots or areas within the lawn area where normal turf growth is not evident.

(B) Tree, Shrub and Ground Care

1. Watering:
 - a. Maintain a water basin, as needed around plants so that enough water can be applied to establish moisture through the major root zone.
 - b. When hand watering, use a water wand to break the water force.
 - c. Maintain topdressing layer to reduce evaporation and frequency of watering.
 - d. Use a soil probe (especially on boxed or spaded trees) to insure rootballs and backfill soil is neither too dry nor remaining too wet.
2. Tree Pruning
 - a. The Contractor shall ensure that all pruning performed by professionally qualified and competently trained individuals using approved methods and techniques. These approved methods are outlined in the (ANSI) American National Standards Institute A300 Guide and the 1995 (I.S.A.) International Society of Arborists Tree Pruning Guidelines. It is the Contractor's responsibility to follow these guidelines.
 - b. All trees shall be pruned to maintain the natural shape and growing habits.
 - c. Prune trees
 - i. to select and develop permanent scaffold branches that are smaller in diameter than the trunk or branch which they are attached and which have a vertical spacing of from 18" to 48" and radial orientation so as not to overlay each other;
 - ii. to eliminate diseased or damaged growth;
 - iii. to eliminate narrow V-shaped branch forks that lack strength;
 - iv. to reduce toppling and wind damage by thinning put crowns;
 - v. to maintain growth within space limitations;
 - vi. to maintain a natural appearance;
 - vii. to balance crown with roots.
 - d. Under no circumstances shall the stripping or "raising up" of lower branches be approved. Lower branches shall be retained with as much foliage as possible to promote trunk diameter/caliper growth.
 - e. Lower branches can be cut flush with the trunk only after the tree is able to stand erect without staking or other support.
 - f. Pruning to remove a safety hazard shall be done immediately. Pruning should be done to eliminate any future safety hazards when and where possible.
 - g. Evergreens shall be pruned minimally, to remove dead or broken branches and needles.

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- h. Pruning of trees shall also be done as needed to achieve the following:
 - i. To shape, generally to correct mis-shaping caused by the wind:
 - ii. To remove suckers, water sprouts or other undesirable growth on trees.
 - iii. To remove dead or dying branches.
 - 3. Tree Staking
 - a. The Contractor shall maintain and replace stakes with the approved "Reddy Stake" system
 - b. Additional stakes shall be added as needed to correct mis-shaping caused by wind
 - c. Staking shall be in accordance with subsection 107.11(F) of these standards and specifications and with the Tree Staking detail.
- (C) Shrub Pruning
 - 1. The Contractor shall ensure that all pruning is performed by professionally qualified and competently trained individuals using approved methods and techniques. These approved methods are outlined in the (ANSI) American National Standards Institute A300 Guide and the latest edition of (I.S.A.) International Society of Arborists Tree Pruning Guidelines. It is the Contractor's responsibility to follow these guidelines.
 - 2. All shrubs shall be pruned to maintain the natural shape and growing habits. Do not shape into little squares or balls.
- (D) Shrub Staking
 - 1. Tall shrubs of narrow pyramidal or cylindrical shapes (Yew Pine, Italian Cypress, etc.) shall have the nursery stake removed and be re-staked as needed.
 - 2. The new stake shall have a diameter large enough to provide support without visually overwhelming the plant.
 - 3. The length shall extend past the rootball and anchor into the surrounding soil. The height shall provide support to the full height of the plant.
 - 4. The plant shall stand erect and plumb once the stake is installed, without the stake rubbing or chaffing the plant.
- (E) Groundcover Care
 - 1. Groundcover shall be pruned as needed to keep it from encroaching on walks, paths and paved areas.
 - 2. Maintain topdressing layer and replenish as needed to retain moisture and prevent weed seed germination.
 - 3. Weeding shall generally performed by hand. Herbicide use shall be as per approved weed control methods.
- (F) Fertilization
 - 1. In general, all trees, shrubs and groundcovers shall be fertilized twice each year with an urea form fertilizer such as Best-Cote 16-6-8- or Triple Pro 15-15-15 or City approved equal.
 - 2. In general, apply fertilizer in the spring and fall according to the manufacturer's label instructions.
 - 3. Fertilizer shall be distributed evenly under trees and shrubs to the drip line. Do not apply to the rootball or directly adjacent to the main stem. Avoid contact with foliage.
 - 4. At least one application shall be made at the end of the 90-day maintenance period.
- (G) Weed Control
 - 1. Keep basins and planter areas between plants free of weeds.
 - 2. Use a site-specific herbicide appropriate for the weed population and compatible with ornamental plants.
 - 3. The Contractor shall assume all responsibility for herbicide application and use.
 - 4. Hand weeding is acceptable adjacent to plant materials.
 - 5. Maintain a 3" topdressing layer and replenish as needed to retain moisture and prevent weed seed germination.

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(H) Lawn and Turf Care

1. The Contractor shall maintain all turf or meadow grass areas covered by the agreement in a healthy, growing condition by performing the following operations and other related work.
2. Mowing Turf Areas
 - a. Mowing of turf areas shall commence when the grass has reached a height of (2") two to (2-1/2") two and one-half inches. The height after cutting shall be (1-1/2") one and one-half inches to (2") two inches, unless otherwise directed by City's Authorized Representative.
 - b. Turf areas shall be mowed weekly, or as needed to maintain a neat, trim appearance. The Contractor shall remove all paper, rubbish or debris from each lawn area prior to mowing.
 - c. Mowing shall be done only by properly adjusted mowing equipment with sharp cutting edges. Bruising or rough cutting will not be accepted. Scalping of grass will not be accepted.
 - d. Grass clippings shall be picked up and disposed of off-site by the Contractor.
3. Mowing Meadow Areas
 - a. Meadow areas are generally designed to be no- mow. Areas may be mowed (2) two to (3) three times per year as needed to control growth. Height after cutting shall be (4") four to (6") six inches. If height is okay, and only seed head removal is needed, a string trimmer may be used. Trimming is generally in March and again in May.
 - b. Grass clippings shall be picked up and disposed of off-site by the Contractor.
4. Trimming
 - a. Turf areas shall be trimmed the same day as the mowing. Trimming shall include cutting all grass along walls, fences, foundations, curbs, sidewalks, paths, shrubs, poles, guy wires, or any other object or structure within or bordering the turf areas. The Contractor shall trim around shrubs and trees but take care to prevent avoid trimmer line damage (weed-eater blight) to the trunk.
 - b. Edges shall be trimmed at least twice monthly or as needed for a neat appearance. Clippings shall either be blown or vacuumed off walks.
 - c. Trimming shall be done by power edging equipment or by hand. The Contractor may be able to use selective herbicides to assist in edging some areas, with the approval of the City's Authorized Representative. The Contractor shall be responsible for any property damage resulting from herbicide use.
 - d. The contractor shall maintain all plant or turf growth around irrigation system sprinkler heads as necessary to permit maximum water coverage by the system.
 - e. The contractor shall avoid damaging tree trunks, shrubs, sprinkler heads buildings, structures and other objects during the trimming operations. Any such damage shall be immediately reported to the City's Authorized Representative.
5. Weed, Disease & Pest Control
 - a. The Contractor shall be responsible for the selection and proper use of insecticides, fungicides herbicides or rodenticides and for the specific applications for which they may be used.
 - b. Contractor will use approved methods for rodent control including but not limited to, baits and traps, in conformance with applicable local, state and federal laws and regulations. Property damage resulting from the use of such pesticides shall be the responsibility of the Contractor.
 - c. Turf and meadow areas shall be kept free of weeds. Weeding may be done manually or by the use of herbicides or pre-emergent sprays. The Contractor shall exercise extreme care when using selective herbicides so as not to damage other plants, public or private. If spraying is permitted, it shall be done only at times when spray drift will not occur, in accordance with the manufacturers label instructions and written recommendations.

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- d. The Contractor will to the best of their ability, flatten, rake or remove gopher mounds as to permit proper mowing, permit maximum water coverage by the sprinkler system, and maintain established terrain in all areas of the landscape.
- 6. Aeration
 - a. Turf areas shall be aerated at least twice each year, in the spring and fall. Aeration shall be done more frequently if required to maintain good water penetration. The soil plugs shall be removed after each aeration.
- 7. Irrigation
 - a. Sprinkler control schedule of watering days, intervals, water times, etc. will be set by the Contractor.
 - b. ET based watering option on controllers shall be utilized where possible.
 - c. Irrigation system shall be adjusted to allow water to soak in but avoid erosion, excessive ponding or water-logged soil conditions.
 - d. The Contractor shall routinely inspect irrigation systems for any malfunctions. Any malfunction not resulting from Contractor's negligence shall be reported to the City's Authorized Representative immediately. Contractor shall also submit an estimated expense for the repair of the malfunction, including the labor, materials and length of time required for the repair.
 - e. Any part of the irrigation system that is damaged or altered in any way by the Contractor shall be repaired at the expense of the Contractor.
 - f. All irrigation repairs shall be made within (48) forty-eight hours of receiving notification or approval.
 - g. All irrigation repair or replacement parts (PVC pipe and fittings, galvanized pipe, sprinkler heads, valves and controllers) shall be of the same brand, type and model as removed.

110.0 IRRIGATION SYSTEMS

110.1 LAYOUT & DESIGN CRITERIA

(A) Layout

- 1. Irrigation systems shall accommodate a delivery system based on 35-psi. (after the backflow) as per the City of Manteca Water Superintendent, including systems on domestic City water. Systems on irrigation well are generally a minimum of 90 psi. Well design, permitting, drilling, testing and startup operations are required on all park projects and large streetscape projects unless otherwise arranged with the City in advance of design submittals.
- 2. All overhead precipitation irrigation systems shall provide "head to head" coverage, using rotor and spray heads with matched precipitation rates.
- 3. Turf Areas shall be irrigated using triangular head spacing; square head spacing is not allowed.
- 4. Turf areas shall be designed large enough for rotors to be used. Small patches of turf areas and pop up spray heads in turf shall be avoided.
- 5. Cluster irrigation mechanical components together in mulched beds where possible
- 6. Ductile iron irrigation supply lines shall be sized for maximum water velocities of 7.5 PVC and polyethylene mainlines and lateral lines shall be sized for maximum water velocity of four feet per second.
- 7. Irrigation heads shall be spaced at 80% of the manufacturers' recommendations to allow for wind drift and avoid exceeding the effective radius of coverage (head-to-head).
- 8. Operating pressures for each head shall be within the mid to upper range of manufacturers' recommended operating pressures. Pressure at the base of all heads within a single zone shall not vary more than 20%.

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9. Unless specifically approved otherwise, planting beds shall be zoned and controlled separately from turf areas.
10. Sports field areas shall be on valves separate from other turf areas
11. Tree irrigation devices in turf shall be on valves separated from other irrigation valves.
12. Rotors shall be zoned and controlled separately from spray heads
13. In general, highly efficient traditional and low-flow, visible orifice emitters are encouraged and non-visible drip irrigation systems are discouraged

(B) Irrigation Design Plan Requirements

1. Location, sizing, and materials descriptions of service connection(s), backflow prevention device, Y strainer, master valve/flow sensor, automatic controller(s), mainline and lateral piping, control valves, isolation gate valves, quick coupling valves and distribution heads.
2. Tree locations shown lightly on the irrigation plan.
3. Flow calculations (total gallons per minute) for each control valve.
4. Worst case pressure loss calculation from water source to base of distribution head, in the following format:

Pressure Loss Calculation

Available Static Pressure @ P.O.C. Elev. _____ = _____ p.s.i.

(Engineering source: _____; Date: _____)

Include 20% reduction in the POC static pressure)

Pressure Losses (Worst Case - Zone#, gpm)

Elevation Change to elev. _____ +/- _____ p.s.i.

Meter - _____ p.s.i.

Service - _____ p.s.i.

Backflow Preventer - _____ p.s.i.

____" PVC Mainline (____l.f. @ ____ p.s.i. loss - _____ p.s.i. per 100 l.f.)

Control Valve - _____ p.s.i.

Gate Valves/Isolation Valves - _____ p.s.i.

Lateral Lines - _____ p.s.i.

Fittings - _____ p.s.i.

Other items such as filters, by-pass plumbing, etc. - _____ p.s.i.

Operating Pressure @ Base of Furthest Head _____ p.s.i.

Pressure Required at Base of Head _____ p.s.i.

5. If the pressure calculations indicate that the system is or will be deficient, the City's Authorized Representative shall be contacted. An evaluation shall be made by the City to determine whether a well or booster pump shall be required.
6. The design shall accommodate emergency watering of at least one valve at a time.
7. Provide suggested weekly watering schedules for spring, summer, fall and winter Seasons based on the MWELO. Schedule shall include both turf and planter/shrub areas.
8. Provide anticipated watering window.

(C) Additional Requirements

1. Electrical meters, water meters, water point of connections, irrigation controllers, mainlines and any laterals must start and stop, or be contained within each project phase and Landscape Maintenance District CFD. Future stub-outs or expansion shall be permitted only with written approval by the City's Authorized Representative, and the system shall be designed based on the completed size.
2. New irrigation Point of Connections shall be approximately every 1000 linear feet, with mainlines extending no more than 500 linear feet in each direction. These shall also be kept on the same side of the street.
3. The City's Authorized Representative will review each project on a case by case basis. Variances may be granted for individual cases, provided that a specific reason is found that makes these procedures impractical and in accordance with Subsection 100.4 of these Standards and Specifications.

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4. All irrigation systems designed for City maintained properties shall conform to the MWEL, approved drawings, these Standards and Specifications and any related details
5. Design plans, specifications and submittals shall be approved prior to the commencement of any irrigation work with all necessary information for irrigation computations shown clearly on the plans

110.2 SCOPE OF WORK

- (A) The Contractor shall furnish all labor, materials, tools, equipment, and transportation required to perform and complete the installation of a sprinkler irrigation system including all piping, sprinkler heads, connections, testing, electric valves, flow meters, low voltage wiring, all main lines, clocks, valve boxes excavation, back filling, splice boxes and any incidental work not shown or specified which can reasonably be inferred as part of the work and necessary to provide a complete and workable system. All as shown on the approved drawings, as specified in these Standards and Specifications and as directed by the City's Authorized Representative. See related Irrigation details.
- (B) The Contractor shall install the project in phases as necessitated by the City's Authorized Representative.

110.3 QUALITY ASSURANCE

- (A) Comply with current codes and standards
- (B) The Contractor shall apply for all necessary permits as required by the City or other entities prior to the beginning of any work
- (C) All irrigation systems required for City maintained properties shall conform to the MWEL, approved drawings, applicable state and local ordinances, these Standards and Specifications and any related details
- (D) Nothing in the drawings or specifications is to be construed to permit work not conforming to these requirements.
- (E) The Contractor shall verify locations of all easements and underground utilities and shall contact the respective utility companies before any excavation work is started. Contractor shall be responsible for the location and preservation of such utilities in the areas of construction and shall notify utilities and U.S.A. at (800) 642-2444 (48) forty-eight hours in advance of any excavation or construction. Contractor shall be responsible for coordinating the removal or relocation of existing utilities with the respective utility companies.
- (F) Work shall be performed in accordance with the best standards of practice relating to the various trades and under the continuous supervision of a competent foreman capable of interpreting drawings and specifications.
- (G) The Contractor shall notify the City's Authorized Representative immediately upon discovery of discrepancies between the drawings and specifications.
- (H) Omissions from the specifications or drawings, or any mis-descriptions of detail work which is absolutely necessary to carry out the intentions of the drawings or specifications, shall be executed by the Contractor as if fully set forth in the specifications and drawings.
- (I) There shall be a pre-construction conference prior to the beginning of any work or the ordering of any materials.
- (J) Install material and equipment according to manufacturer's specifications, local and State codes, as shown on drawings and specified herein. Sprinkler lines shall follow the layouts shown on the plans. Changes in pipe routing due to terrain shall be by approval of the City's Authorized Representative.
- (K) The Contractor shall exercise caution to protect and not damage existing irrigation Systems, as the Contractor is responsible for any damage done to the existing system.

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- (L) Contractor shall protect and preserve all existing facilities, site improvements, trees and turf from damage or injury during operations. Any expenses incurred or associated with repair or replacement of damaged items shall be at the Contractor's expense.
- (M) The Contractor shall have a signed copy of the approved plans with specifications and details available on-site during all phases of the irrigation construction.
- (N) Surplus material resulting from the Contractor's work shall be removed from the site by the Responsible Party. During the work, the Responsible Party shall keep the site as clean and free of rubbish as possible.
- (O) The Contractor shall guarantee all material and workmanship for a minimum period of one year commencing with the date of Final Acceptance.

110.4 SUBMITTALS

- (A) General
 - 1. Prior to starting any work, the Contractor shall present to the City's Authorized Representative the following information on their company letterhead:
 - a. Project name.
 - b. Project location.
 - c. Contractor's Representative on job and his/her title.
 - d. Proposed sate of his work
 - e. Estimated completion date of the work.
 - f. (2) Two sets of submittals and a PDF which shall consist of the manufacturer's catalog sheet on the following equipment:
 - i. All sprinkler equipment
 - ii. PVC pipe and fittings, electrical conduit.
 - iii. Controller and accessories, controller enclosure
 - iv. Remote control valves, quick couplers
 - v. Booster pumps and wells
- (B) In addition to the above submittals, Contractor to submit a list of all material to be used on the project. The list shall include model numbers, class or schedule of pipe, manufacturers of articles used on the contract, and furnish directions for items covering points not shown in the drawings or in these Standards and Specifications
- (C) Any substitutions or variances must be approved by the Landscape Architect and the City's Authorized Representative. **Substitutions may require revised MWELO calculations.**
- (D) Manufacturer's Directions
 - 1. Manufacturer's direction and detailed drawings shall be followed in all cases where the manufacturers of articles used on this contract furnish directions covering points not shown in the drawings and specifications.

110.5 WARRANTY

The Contractor shall furnish the enclosed written warranty stating that all work executed under this section shall be free from defects of materials and workmanship for a period of one year from the date of final acceptance of this work. The above party further agrees that he will at his own expense, repair and replace all such defective work and all other work damage and thereby which becomes defective during the term of the guarantee/warranty.

110.6 MATERIALS/PRODUCTS

- (A) Contractor shall use only new materials of brands and types noted on the approved drawings and according to these Standards and Specifications

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- (B) Backfill Material: Shall be clean, screened, on-site material, free from organic material, large clods of earth and/or rock or deleterious material larger than one (1) inch in diameter, trash, and debris, rubbish, tree trunks/roots, broken concrete or asphalt and other unacceptable materials.
- (C) Provide a filter on all well and potable water connections.
 - 1. For potable connections - Amiad Filtration Systems, Model 01-2021-508 w/ 200 mesh Scanaway filter.
 - 2. For wells - Amiad Filtration Super 4 Inline Steel Filter, manual flush w/30 mesh screen.
- (D) Water Tap, Meters, Backflow Prevention Units, Enclosure
 - 1. All water taps, meters, and backflow prevention units shall be approved by the City's Authorized Representative and installed in accordance with all pertinent City and State regulations and these Standards and Specifications.
 - 2. The water meter and vault will typically be provided by the City of Manteca and installed by the Contractor. The water meter and vault shall typically be installed in-ground at the back of walk.
 - 3. Backflow prevention unit
 - a. Shall be reduced pressure principle.
 - b. Shall include a "Y" Strainer located directly upstream from the backflow prevention device. See Backflow Preventer details for related information.
 - c. Backflows for Drinking Fountains and Potable Quick Couplers shall be lead free.
 - d. Models
 - i. For pipe sizes ¾" to 2" Febco 825 Y (lead free), or City approved equal
 - ii. For pipe sizes 2-1/2" and larger – Febco LF860 Flanged with support braces or City approved equal.
 - 4. Backflow Prevention Assembly Enclosure
 - a. The backflow prevention assembly shall be protected by a pre-fabricated, lockable enclosure that has a hinged gate on one side and a hinged cage on the other for easy access.
 - b. The enclosure shall be anchored to a concrete pad using an embedded frame.
 - c. The enclosure shall have a minimum of (4") four inches of clearance between the enclosure and the edge of concrete on all sides.
 - d. Provide sleeving through concrete pad for wiring.
 - e. Enclosure shall be large enough to provide 2" minimum clearance between the enclosure and any backflow components within.
 - f. All portions of the enclosure shall be powder coated with green.
 - g. The backflow assembly shall have a frost protection blanket with a minimum R-30 insulation rating.
 - h. Care shall be taken in placing the backflow so that the pad and enclosure shall have adequate clearance from the water meter, other utilities, or other items such as fencing.
 - i. Approved enclosures shall be Guardshack HGS Security Enclosure with Enclosure Setter Frame, or Placer Waterworks EIA Enclosure with embedment frame.
 - j. Care shall be taken when measuring and ordering the enclosure.
 - k. The backflow enclosure shall open and close freely without obstructions with the frost protection blanket in place.
 - l. It is the Contractor's responsibility to ensure a proper working enclosure in the field regardless of submittal as conditions and installations can vary.
 - m. Altering or cutting of enclosures is not permitted and shall result in a rejected enclosure and/or concrete pad.
- (E) Master Valve/Flow Sensor
 - 1. A master valve and flow sensor shall be used for potable water. Such applications generally include: small landscape projects, streetscapes and medians.

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2. The Master Valve and Flow Sensor shall be located in-ground directly downstream from the backflow prevention device with each enclosed it's own City approved Valve Box.
 3. Provide a minimum of one 12 gauge and one 14-gauge wire to controller. Wires shall be a different color than those used for RCV's. Wire shall be in conduit.
 4. For the Rainmaster SA6 type controller, a Superior master valve and Data Industrial flow sensor is included with the controller assembly. Contact Site One Green Tech District Sales Manager, ATTN: Greg Ireland (559) 916-1984.
 5. No trees or large shrubs within twelve feet (12') minimum of Master Valve or Flow Sensor.
- (F) Remote Control Hydrometer
1. A Remote Control Hydrometer shall be used for irrigation wells. Such applications generally include: large landscape projects, parks and trails.
 2. The Hydrometer shall be generally be located on the well discharge assembly or directly downstream from the backflow device.
 3. Provide conduit through concrete pad, conduit fittings, support clamps and weatherproof junction box.
 4. Provide two 12 gauge and two 14 gauge wires back to the controller. Wires shall be a different color from those used for RCV's.
 5. For Motorola Controllers, the Hydrometer shall be Arad 910P (1 pulse per 10 gallons) with ASCO 24 VAC Solenoid Pilot Valve or City approved equal. Size per plans. Coordinate with Central Control Systems (503) 662-6841. Provide rain sensor.
 6. For Rainmaster DX2 Controllers the Hydrometer shall be Netafim LHMDEM11A AFMEL (X = size) (1 gallon per pulse register with digital flow display) or City approved equal. Size per plans. Coordinate with Rainmaster and Dino Viale at Netafim (510) 365-5186
- (G) Irrigation Well
1. Developer/Contractor shall include irrigation well and provide coordination to obtain well permit, drilling, testing and operation of functional well.
 2. Well depth, flow and quality shall be sized to meet the irrigation demand on the site within a reasonable watering window as established by the City of Manteca.
 3. Provide well in accordance with City of Manteca Public Works Standards and Specifications.
- (H) Booster Pumps
1. Developer/Contractor shall provide a booster pump when needed to keep the irrigation system operating within the manufacturer's optimum pressures, plus an additional 20% calculated allowance for system fluctuations.
 2. Booster pumps manufactured by Watertronics, available from Phil Vangene Sales (925) 250-5885 or City approved alternate.
 3. Pumping station shall be Water Max, model #WM 5000-2
 4. Provide sizing per project plans and details.
 5. Power is typically 240 volt single phase. Contractor shall confirm prior to ordering.
 6. Unit shall be prefabricated, self-contained variable speed drive (VFD) horizontal centrifugal pump station in lockable enclosure. Horsepower as determined by project plans and details. Controls will be an operator interface with software programming specific to the project. A formed and reinforced base platform and enclosure with lockable lid shall contain all manifolds, pumps, motors and controls to provide an integral unit ready for installation and anchored to a reinforced concrete pad. Full load amps with 24 relay start configuration (disconnect mounted externally).
 7. Standard controls and equipment include:
 - a. 24 VAC start relay (installer to provide a separate lead of 24 VAC signal wires from the irrigation controller to the pump station outer disconnect box);
 - b. External mounted NEMA 3R main disconnect panel;
 - c. UL listed control;
 - d. Multi-line operator interface display featuring pressure readout and elapsed run time display;

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- e. Alarm conditions with safety shutdown: low discharge pressure shutdown, high discharge pressure shutdown, VFD fault shutdown and high pump temperature shutdown;
 - f. Overload, single phase, phase imbalance/flow voltage protection;
 - g. Surge protection for main station and solid state controls;
 - h. Variable frequency drive pressure regulation;
 - i. Hand off/auto selector switch;
 - j. Stainless steel pressure transducer;
 - k. Horizontal centrifugal pump and ODP EISA compliant motor, horsepower and RPM to be determined by project plans and details, pump to be cast iron with a bronze impeller and mechanical seal;
 - l. Silicone filled pressure gauges with isolation valve;
 - m. Station discharge with isolation valve;
 - n. MPT suction and discharge connections sized per project plans and details;
 - o. FPT x FPT check valve mounted outside the enclosure on the suction line, sized per project plans and details;
 - p. Baked and cured two-part polyurethane ultraviolet resistant paint;
 - q. Factory certified dynamic run testing of pump station up to full flow and pressure point prior to shipment;
 - r. Provide operator and maintenance manual;
 - s. One year limited warranty on mechanical and electrical components plus 2 year extended warranty for a total of 3 years.
8. Additional equipment and services to be included with pump station:
- a. Forced fan air cooled ventilation stainless steel pump station enclosure and stainless steel base, unpainted, with lockable access cover
 - b. Internal sound dampening material of 1" thick cell foam.
 - c. Dead front style external disconnect panel.
 - d. 24 volt controller start.
 - e. Full flow internal bypass piping and valves.
9. Developer/Contractor shall cover the booster pump in the one year irrigation system warranty. The date is effective for one year following the final acceptance of the project by the City. The unit shall include a 2 year extended warranty from the manufacturer for a period of 3 years total.
- (I) Fertilizer Injection System
- 1. The fertilizer injector shall be an EZ-FLO Injection System or equal that is a pressurized, non-mechanical system that operates exclusively on the differential pressure created by water flowing past inlet and outlet ports to the system storage tank. It shall require no moving parts to create fertilizer flow from the tank to the irrigation line. Fertilizer flow from the tank to the irrigation line shall be continual – pulse injection is not acceptable. Even metering shall be accomplished by creating a layering process inside the tank which separates incoming water from the fertilizer solution without requiring an internal bladder. Water entering the tank shall be directed to both the top of the tank and bottom of the tank to provide even metering and adequate agitation to accommodate the use of either liquid or water soluble fertilizers, soil supplements, water conditioners and pest control.
 - 2. The proportioning rates shall be adjustable from 400:1 to 15,000:1 and automatically adjust to changes in water pressure and water flow without the use of electronic flow meters and/or control valves.
 - 3. The system shall be constructed of materials conforming to a minimum of schedule 40 PVC.
 - 4. The system shall be connected to the irrigation main line with a minimum of two stainless steel injector probes that are connected to the injector with flexible tubing.
 - 5. The system shall be filled in accordance with the fertilizer specification for this property.
 - 6. Injection system available from Phil Vangene Sales (925) 250-5885 or City approved alternate.

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(J) Controllers

1. The power supply (120V) for all irrigation controllers shall be routed through a fused UL listed service disconnect panel and 110/120V AC power line suppressor.
2. At minimum, the irrigation controller shall be UL listed, electrically powered, solid state with LED, and capable of operating a minimum 24 volts electric solenoid zone valves.
3. A 24-volt transformer, rated at a minimum of 40VA shall be supplied and installed by the Contractor.
4. Controller shall have pump start (where applicable), separate master valve circuit, repeat cycle, dual program, manual advance, two-minute test, battery backup, remote ready, percent scaling, rain switch, and 24V lightning surge protection features.
5. Provide an eight-foot copper-clad grounding wire at controller location.
6. A rain sensor shall be connected to the controller.
7. The City's Authorized Representative shall approve all features.
8. Solar powered controllers may be allowed in limited areas where electrical connections are isolated or cost prohibitive, on a case-by-case basis at the discretion of the City Parks and Recreation Department.
9. Streetscape applications or small landscaped areas.
At a minimum, Rainmaster controller assembly SA6-RM3-XX/FSMVC-XXXP/PMR/RM-ISVC-2Y shall be used. Assembly specification includes: stainless steel enclosure, controller, communication equipment, remote control with receiver, Data Industrial flow sensor/Superior master valve, rain sensor and communication service. (the variables XX=the station number needed, XXX=the flow sensor/master valve size needed). Consult and coordinate with the City, Rain Master and Site One Green Tech 1-599-916-1984 for specific unit selection and signal transmission options.
10. Park applications or large landscaped areas.
 - (A) Provide Rainmaster DX2 Satellite Assembly sized per design requirements with extra station capacity of at least 5%, built in remote control capability, heavy duty lightning protection, in stainless steel, lockable enclosure mounted on concrete pad per standard details. Provide hard wire communication circuit board, Flow Sensor Assembly, radio receiver and five year parts and labor warranty. Call Site One Green Tech 1 (550) 916-1984 for correct model numbers and City-required optional items.
 - (B) At a minimum or upon request by the City, the drawings shall include and the Contractor provide either a Motorola Irrinet or Scorpio radio controlled, remote ready satellite control unit. A keypad shall be included for programming of Irrinet units. Consult and coordinate with the City and Central Control Systems (1-530-662-6841) for specific unit selection and signal transmission options. See Irrinet and Scorpio Controller details for related information.

(K) Controller Enclosures

1. The controller shall be housed in a lockable, manufactured, stainless steel, vandal resistant enclosure.
2. Motorola enclosures are typically Strongbox SB-24-SS or SB-18-SS with Pedestal PED-24-SS or PED-18-SS.
3. Rainmaster enclosures are typically Strongbox (16") sixteen inch slant top.
4. All enclosures shall be secured to a 6" thick concrete pad with 6" minimum clearance between the enclosure and the edge of concrete on all sides. Provide sleeving through concrete pad.
5. Non-potable Irrigation Systems
 - a. For non-potable irrigation systems an identification tag shall be placed in a visible location inside the controller.
 - b. Christy 3"x 4" Maxi tags or City approved equal. Tag # ID-MAX-P1-NP011 with # 021 Spanish translation on back

(L) Remote Control Valves

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1. The valves shall be normally closed, diaphragm type with slow opening and closing action for protection against surge pressures.
 - a. Actuation shall be by encapsulated type solenoid and rated 24 volts, 60/50 cycles, 2.0 watts unless otherwise noted.
 - b. A self-flushing type contamination filter shall be provided in the control valve to provide against sand and debris in the water. (Rainbird BPES, PESB series or City of Manteca approved equal)
 - c. Construction shall provide for convenient access to functional parts without removal of valve from system plumbing.
 - d. A manual flow control adjustment, with shut-off capability, shall be furnished on all valves. External "bleed" of diaphragm chamber shall be provided for manual operation.
 - e. For park applications containing storm water detention basins, all valves shall be located above the high water line.
 - f. Remote control valves shall be installed in standard 12" x 16" rectangular boxes with bolting cover. NDS 114 BC (Green) or NDS 213 PBCR (Purple) and NDS 113 BB Bolt kit Or City approved equal. Apply Never Seize to bolt threads. Lids shall be legibly heat stamped or engraved with the valve number 1, 2, 3, etc., with 1" tall lettering. Number sequence shall correspond with the approved plans.
 - g. For non -potable irrigation systems:
 - h. Purple flow control handles shall be used.
 - i. Non-potable valve tags shall be used to identify the valve. Christy 3"x 4" Maxi Tags # ID-MAX-P1-NP011 with 021 Spanish translation on reverse.
 - j. The purple color shall also be used for the valve box.

(M) Manual Valves

1. Shut-Off Valves – Mainlines and Laterals
 - a. Gate valves 2-1/2" and smaller shall be Class 125 of bronze construction with operation wheel and screwed connections. Nibco T-113 or City approved equal. See valve detail for related information.
 - b. Gate valves 3" through 10" shall be epoxy coated cast iron with 2" square operational nut, resilient seat, flanged connections and connections to PVC pipe. Matco 10RW-11N or City approved equal. See valve detail for related information.
 - c. Valves shall be installed in a 10" round valve box with bolting cover NDS 212 BC (Green) or NDS 211 PBCR (Purple) and NDS 111 BB Bolt kit or City approved equal. Apply Never Seize to bolt threads. Lid shall be legibly heat stamped or engraved as "GV" with 1" tall lettering. Valve installation shall also include a 10" diameter PVC pipe section for an extension, depth as required
2. Plastic Isolation Valves
 - a. Generally installed in valve box with RCV. Valves shall be used on each single valve. Sch. 80, line size. Spears # 3629 True Union Ball Valve SCO/FIPT or City approved equal. See valve detail for related information.
3. For non -potable irrigation systems:
 - a. Purple flow control handles shall be used.
 - b. Non-potable valve tags shall be used to identify the valve. Christy 3"x4" Maxi Tags # ID-MAX-P1-NP011 with 021 Spanish translation on reverse.
 - c. The purple color shall also be used for the valve box.

(N) Quick Coupler Valves

1. Quick coupler valves shall be located a minimum every 200 feet along the mainline and first downstream of backflow, adjacent to play areas, picnic areas, sport fields or as designated on the approved drawings. Additional locations maybe required upon request by the City.
2. Quick Couplers by picnic and play areas require installation on a separate potable water line having its own lead free backflow prevention device
3. Quick coupler valves shall have a brass two-piece body designed for a working pressure of 125 psi, operable with a quick coupler key.

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4. Quick Coupler Covers
 - a. Valves installed in potable water lines shall have a yellow locking cover. Rainbird 44LRC or City approved equal.
 - b. All Quick Coupler Valves shall be installed in a 10" round valve box NDS 212 BC (Green) or NDS 211 PBCR (Purple) and NDS 111 BB Bolt kit or City approved equal. Apply Never Seize to bolt threads. Lid shall be legibly heat stamped or engraved as "QC" with 1" tall lettering.
 5. For non -potable irrigation systems:
 - a. Purple non-potable locking cover shall be used. Rainbird 44NP or City approved equal.
 - b. Non-potable valve tags shall be used to identify the quick coupler. Christy 3"x4" Maxi Tags # ID-MAX-P1-NP011 with 021 Spanish translation on reverse.
 - c. The purple color shall also be used for the valve box.
- (O) Irrigation Heads
1. The selection of irrigation components shall be compatible with established adjacent City owned and maintained landscape areas, in combination and compliance with State of California MWELO requirements for efficiency, spacing, calculations, etc.
 2. Selected irrigation heads shall perform well under available water pressure, manufacturer's optimum pressure and provide "head to head" coverage.
 3. Irrigation heads installed in large areas of turf grass shall be a gear-driven rotor type. The Contractor shall provide rubber covers for installation on athletic fields.
 4. Rotor and spray heads installed in turf areas shall offer a matched precipitation rate between full circle and partial circle coverage.
 5. Rotors and spray heads installed in turf areas shall have a (6") six inch height of pop with a retraction spring. Rotor risers shall be stainless steel.
 6. Rotors shall be kept 12' min. from trees
 7. Bubbler heads, or spray heads shall be used in shrub and flowerbeds. Spray heads shall have a (6") six-inch minimum height of pop. For areas with ground cover, grasses or no-mow meadow grass and other areas requested by the City a (12") twelve inch shall be used. All bubbler components shall be pressure compensating. Spray heads shall be equipped with individual, factory installed internal pressure compensating devices. Low volume nozzles with filtration and hard-piped connections and fittings on lateral lines are acceptable "low flow" delivery type irrigation products. Individual point-source drip emitters on flexible tubing is not permitted.
 8. Irrigation heads shall have check valves to avoid low head drainage and pressure surge. Spray heads shall be equipped with individual, factory installed internal pressure compensating devices.
 9. Irrigation spray heads and bubblers shall be manufactured by Rainbird or Hunter Corp.
 10. Irrigation turf rotors to be Rainbird Falcon 6504 or 5000 plus. All rotors shall have stainless steel risers.
 11. For non-potable irrigation systems, purple identification rings/covers shall be used.
 12. Overhead irrigation heads shall be offset (2') two feet min. from drives, curbs, walks and non-permeable surfaces per the MWELO. In parks and turf areas where walks or non permeable surfaces slope to the landscape, overhead irrigation shall be offset (2") two inches .
- (P) Electrical Wire (24 Volt)
1. The control wire shall be a minimum of 14-gauge UF single strand, direct burial solid copper wire with the insulation being a consistent color throughout the entire length of the wire. Larger gauge control wire shall be provided when lengths require.
 2. Control Wire insulation shall be red, Common Wire insulation shall be white, Spare Wire insulation shall be yellow and Master Valve/Hydrometer wire insulation shall be striped.
 3. All wires shall be run continuous without splices from the controller to the valve.
 4. Three spare yellow insulated wires shall be looped through each valve box and provided to the farthest valve on each mainline branch.

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- a. All conductor connections to the solenoid on the valve, or wire splice connections shall be made with a waterproof splice connector, Dryconn DBRY-600 or City of Manteca approved equal.
 5. All connections shall be made in the valve box or pull boxes only.
 6. Wire Splices
 - a. Splices shall not be permitted in new irrigation installations. Splices may be permitted as indicated in approved drawings, or with approval from the City's Authorized Representative when future improvements or upgrades to the irrigation system is deemed necessary. Provide waterproof connectors manufactured by Dryconn DBRY-600 or City of Manteca approved equal.
 - b. All splices shall be made in the valve box or in a pull box only. Lids shall be legibly heat stamped or engraved as "SP" with 1" tall lettering.
 - c. Spliced wire runs may be required to be placed in conduit.
 7. Each 24-volt wire at the controller, R.C.V. and splices shall have a pre-printed plastic tag with the controller letter and station number stamped on it. Controller, R.C.V. and splice numbers shall match throughout the entire run. Switching of wires at the controller is not permitted.
 8. Provide 24" of wire slack above finished grade at all ends. Bundle and tape wires and coil neatly in valve box. See Splice Detail for related information. Each 24-volt wire at the controller, R.C.V. and splices shall have a pre-printed plastic tag with the controller letter and station number stamped on it. Rainbird VID or City approved equal. Controller, R.C.V. and splice numbers shall match throughout the entire run.
 9. Bundle wires together and tape at 10-foot intervals. Wires shall be placed in trench a minimum of (6") six inches under the mainline pipe. Maintain (6") six inches of clearance between pipe and wiring at all times. Provide extension loop at remote control valves by winding around 3/4" pipe 15 times. Snake wire in trench to allow for contraction. Provide minimum wire loop of (24") twenty four inches at each valve box and controller, at each 90-degree change of direction, at both ends of sleeves, and at 100-foot intervals along continuous runs of wire.
 10. Install a common 12-gauge ground wire and one control wire for each remote control valve. Multiple valves on a single control wire are not permitted.
 11. Where 24-volt wiring to R.C.V.'s is not in a common trench with mainline, it shall be placed in conduit. Use sweep ells into boxes and controller. Layout to be approved by City's Authorized Representative prior to trenching.
 12. Tracer Wire: Install one 14-gauge UF single strand, direct burial solid copper wire with yellow and black striped insulation in trench (6") six inches minimum above the mainline. The purpose of this wire is for locating all underground piping. The wire shall be looped through each valve box.
 13. Tracer wire shall also be installed above potable water lines for future location of underground piping.
 14. The Contractor shall remove discarded wire from the work site.
- (Q) Pipe and Fittings
1. Pipe shall be continuously and permanently marked showing the manufacturer's name, the size, and the class of the pipe. All pipe shall conform to the requirements of ASTM-D-2241. Provide a minimum six-inch clearance laterally between lines.
 2. Use PVC Sch. 40 pipe for all mainlines 2-1/2" size and smaller, and for the installation of all remote control valves.
 3. Use Class 315 pipe for all lines size 3" and larger.
 4. Use Class 200 pipe for all lateral lines.
 5. Use PVC Sch. 40 pipe under all hardscaping.
 6. For joining, use solvent complying with ASTM D-2564 that is recommended by the manufacturer for the size and schedule of the approved pipe.
 7. Plastic pipe identification: continuously and permanently marked with the Manufacturer's

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name, pipe size, schedule number, type of material, and code number. Assemble pipe with the above markings face up for verification during inspection.

8. Minimum pipe size of $\frac{3}{4}$ ".
9. PVC repair couplings shall be Slip-Fix by Nibco, with 1500 psi-rated O-rings With O-ring relief and pressure rating to Schedule 40, or approved equivalent, sized to pipe. No compression fittings will be allowed. No repair couplings will be allowed within five feet from other fittings or control valves.
10. Piping from lateral lines to irrigation heads shall be connected by City approved swing joint assemblies. Swing joints shall consist of Schedule 80 PVC nipples (minimum six inches long) and Schedule 40 PVC threaded elbows or street elbows, and shall be sized to the head's inlet port. When Marlex is specified, the fittings shall be Spears (no equal) See irrigation head details for related irrigation and configuration. Tree root ball locations shall be 12' clear of mainlines and laterals, where possible.
11. Sch. 80 fittings shall be used on mainlines for connections to valve or manifold up to size (4") four inch. For (6") six inch and above an IPS PUC two part hinged saddle shall be used AY McDonald # 3892.
12. For non-potable, reclaimed or recycled irrigation systems purple pipe shall be used throughout.

(R) Valve Boxes

1. All valves shall be installed in Carson valve boxes, or City approved equal. Color to be green with purple lids if non-potable, reclaimed or recycled water used.
2. Spray, rotor zone control valves shall be installed in standard 12" x 16" rectangular boxes. Carson 1419, purple non-potable as applicable
3. Master Valves shall be installed in a standard 12" x 16" rectangular box. Carson 1419. Stamp lid with "MV"; utilize purple lids for non-potable conditions as applicable.
4. A maximum of one valve shall be installed in a box and it shall be centered.
5. An inverted matching valve box shall be used as a bottom liner. Valve boxes shall have (6) six evenly spaced holes drilled in the mounting lip on each side. Boxes shall be secured together with heavy-duty nylon zip ties. See valve detail for related information.
6. Manual shut-off valves and quick coupling valves shall be installed individually in a (10") ten-inch round box. Carson 910 or City approved equal. Contractor shall provide PVC pipe sections or valve boxes for extensions as needed. See details for related information
7. All valve box lids shall be legibly heat stamped or engraved by the Contractor with 1" tall lettering. Gate valves shall be labeled GV, Meter valve or flow meter labeled MV, Quick couplers QV, Splice boxes 'SP' and Remote Control Valves shall be labeled with the valve or station number(s). Numbering sequence shall correspond with that shown in the approved plans.
8. Valve box shall include the #HDPE bolt kit.
9. For non-potable irrigation systems, the valve box color shall be Lavender.

(S) Sleeves

1. Install separate sleeve beneath hardscape areas to route each run of irrigation pipe, wiring bundle or electrical conduit. Extend sleeve ends six inches beyond edge of all paved surfaces. Bore for sleeves under obstructions that cannot be removed. Mark all sleeves with a small 'X' chiseled in hardscape directly over sleeve location.
2. Sleeving material shall be Sch.40 PVC pipe with solvent welded joints. Diameter shall be as indicated on the drawings and installation details or equal to a minimum of twice that of the pipe or wiring bundle.
3. The Contractor shall coordinate sleeve installation with the work of other trades wherever possible to prevent conflicts and future site disruption. Sleeves shall be in place prior to pouring of concrete.

(T) Identification Tags

1. Valve numbering tags shall be Rainbird VID or City approved equal.

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2. Non-potable valve identification tags shall be Christy 3"x 4" Maxi tags or City approved equal. Tag # ID-MAX-P1-NP011 with # 021 Spanish translation on back. A tag shall also be placed in a visible location inside the controller

110.7 TRENCHING

- (A) Trenches shall be of necessary width for the proper laying of the pipe and conduits. Banks shall be nearly vertical as practicable. The bottom of the trenches shall be accurately graded to provide uniform bearing and support for each section of pipe or conduit at every point along its entire length.
- (B) Potable water piping to have (30") thirty inches of cover (and include a tracer wire).
- (C) Mainline piping and 120-volt wiring (in conduit) to have (24") twenty-four inches of cover (and include a tracer wire).
- (D) Lateral piping for irrigation heads to have (16") sixteen inches of cover in turf and (12") twelve inches of cover in planters.
- (E) Sharing of common trenches is encouraged. Contractor shall maintain a minimum of 6" spacing laterally between all pipes and wires. No vertical, stacked installations will be accepted except that of the control wiring which shall be taped under the mainline.
- (F) Avoid trenching and piping within the root zone of existing trees. Irrigation shall be re-routed when possible. If the root zone cannot be avoided, the City's Authorized Representative shall be notified for approval prior to any trenching work. Trees shall be warranted by the Contractor for a period of one year.
- (G) Mainline trenches shall typically be offset (2') two feet from walkways and hardscape surfaces.

110.8 BACKFILLING

- (A) The trenches shall not be back filled until all required tests are performed and inspected by the City's Authorized Representative.
- (B) Trenches shall be carefully back filled with the excavated materials approved for back filling consisting of earth, loam, sandy clay, sand or other approved materials, free from large clods of earth or stones. Settling the backfill with water will be permitted to insure no settlement after the lawn or landscape is planted.
- (C) All trenches shall be left compacted and flush with the adjacent approved finish grade. **Any settling or damage to existing turf, groundcover or topdressing shall be repaired or replaced as part of the normal work.**

110.9 TRENCHING AND BACKFILL UNDER PAVING

- (A) Trenches located under areas where paving will be installed shall be back filled with sand (a layer 6" deep below pipe and 3" above pipe) and compacted in layers to 95% compaction, using manual or mechanical tamping devices.
- (B) Piping under paving shall be sleeved as indicated on approved drawings and Subsection 110.6 of these Standards and Specifications.
- (C) Trenches for piping shall be compacted to equal the compaction of the existing adjacent undisturbed soil and shall be left in a flush unyielding condition. All trenches shall be left flush with the adjacent adjoining grade.
- (D) The sprinkler contractor shall set in place, cap and pressure test all piping under paving prior to the paving work
- (E) Generally, under existing concrete paving, piping is done by jacketing, boring or hydraulic driving; but where any cutting or breaking of sidewalks and/or concrete work is necessary, it shall be done and replaced by the Contractor as part of the contract cost. Permission to cut or

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break sidewalks and/or concrete shall be obtained in writing from the City's Authorized Representative.

- (F) No trench shall be left open overnight without specific prior written approval by the City's Authorized Representative. Sufficient barricades to protect the public shall be provided at all times, as needed.

110.10 INSTALLATION OF PIPE

(A) Handling of PVC pipe

1. The Contractor is cautioned to exercise care in handling, loading, unloading, and storing of PVC pipe and fittings.
2. All PVC pipe and fittings shall be stored and transported in a vehicle with a bed long enough to allow the lengths of pipe to lay flat so as not to subject it to undue bending or concentrated external load at any point.
3. Any section of pipe that has been dented or damaged will be deemed unacceptable and, if installed shall be replaced with new piping.

(B) Laying of PVC Pipe

1. All rubbish and large rocks shall be removed from the trenches. Pipe shall have a firm, uniform bearing for the entire length of each pipe line to prevent uneven settlement. Wedging or blocking of pipe will not be permitted. The trenches shall be padded with dirt or sand if the soil is extremely rocky.
2. PVC pipe should never be laid where there is water in the trench. PVC pipe should never be laid when temperature is 32 degrees f. or below.
3. PVC pipe will expand 1/2" per 100' per 10 degrees f change in temperature. Therefore, pipe shall be snaked from side to side of the trench bottom to allow for expansion and contraction.
4. Bent pipe is not permitted. Fittings shall not be under pressure from pipe.
5. All foreign matter or dirt shall be removed from inside the pipe before welding.
6. If during daily construction any piping with openings is left in trenches, the openings are to be sealed to prevent the entry of foreign matter.
7. Pipe sizes shall be according to the approved drawings with no smaller substitutions. Larger substitutions may be permitted with the approval of the City's Authorized Representative.

(C) Threaded Connections

1. All threaded connections shall have Teflon tape. Two (2) wraps maximum
2. PVC Pipe and Fittings Assembly:
 - a. The pipe and fittings shall be thoroughly cleaned of dirt, dust, and moisture before installation.

(D) Glued Connections

1. Solvent Weld (Pipe Primer):
 - a. Cut pipe square using PVC saw or PVC pipe cutter. De-burr cut end, clean and dry joining surfaces.
 - b. Check dry fit. For proper interference fit, pipe should go easily into fitting 1/4 to 3/4 of the way
 - c. Use a suitable applicator recommended by the manufacturer.
 - d. Apply full even layer of primer inside fitting to socket depth (avoid excess puddling). Pipe end coating shall extend 1 inch beyond end of fitting. Use Weld-on P70 purple primer or City of Manteca approved equal). On bell end pipe, use double coat and do not coat or allow primer to run beyond socket depth or bell end.
 - e. Immediately while surfaces are wet, apply appropriate cement following the directions above.
2. Solvent Weld (Pipe Cement)
 - a. Make solvent welds in the following sequence.

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- b. Cut pipe square using PVC saw or PVC pipe cutter, and de-burr cut end.
 - c. Remove dirt, grease, and moisture from pipe and fittings to be welded. Check dry fit. For proper interference fit, pipe should go easily into fitting 1/4 to 3/4 of the way.
 - d. Use a suitable applicator recommended by the manufacturer.
 - e. Apply a full even layer of cement; Weld-on 721 blue cement or City of Manteca approved equal) on the pipe, equal to the depth of the socket. Coat the fitting socket with a medium layer, avoid puddling. On bell end pipe do not coat beyond socket depth or allow cement to run beyond bell. Put a second full even layer on the pipe. Cement layers must be without voids and sufficient to fill any gap in the joint.
 - f. Assemble without delay while cement is still wet. Use sufficient force to insure that pipe bottoms in socket. Twist pipe 1/8 to 1/4 turn as you insert.
 - g. Hold together for 30 seconds to ensure pipe is not pushed out.
 - h. With a rag, wipe off the excess cement. Avoid disturbing the joint.
 - i. Do not apply water pressure for twenty-four (24) hours.
- (E) Handling and Assembly:
- 1. Handling and assembly of pipe shall be accomplished by skilled tradesmen.
 - 2. Interior of pipe, fittings, and accessories shall be kept clean at all times.
 - 3. Openings in pipe runs shall be closed at the end of each day's work or as necessary to prevent entry of foreign materials.
 - 4. Bending of pipe will not be permitted.
- (F) Thrust Blocks
- 1. Gasketed pipe and mainline pipe (3") three inches or greater in size shall have poured in place concrete thrust blocks at all bends, tees, or crosses.
 - 2. Thrust blocks shall be at least two cubic feet in size and shall be sized larger, as needed, to withstand calculated surge pressures.
 - 3. For pipe sizes 4" in diameter and larger, refer to City of Manteca Public Works Standard Details W-4 and W-5.

110.11 INSTALLATION OF SPRINKLERS

- (A) Prior to head installation, all pipelines shall be flushed with water. Install heads of matched precipitation rates, being careful not to get dirty water or debris in the riser, and flush again prior to nozzle installation.
- (B) All sprinklers shall be checked for the proper operation and proper alignment for direction of throw.
- (C) Locate overhead irrigation (2") two inches min. and (24") inches max. from adjacent walls, fences or edges of non-permeable surfaces and paved areas. Rotors shall be kept. (12') twelve feet from trees.
- (D) All irrigation heads shall be set perpendicular to finish grade unless otherwise specified in the approved plans.
- (E) After the system is thoroughly flushed and ready for operation, each zone of sprinklers must be tested to insure proper operating pressure at the farthest head on the zone.
- (F) Contractor, as needed for optimum coverage, shall change nozzle sizes and spray patterns for all new and existing sprinklers in field.
- (G) Prior to turnover of the project, the Contractor shall flush and adjust all irrigation heads and valves for optimum coverage with minimal over spray onto concrete or play areas.
- (H) Contractor shall guarantee (100%) one hundred percent sprinkler coverage.

110.12 TESTING AND INSPECTION

- (A) Wiring Inspection

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1. Once the wiring has been installed, it shall be inspected for conformance to the approved drawings and these Standards and Specifications. No partial acceptance shall be made.
- (B) Hydrostatic Tests
 1. Make hydrostatic tests with risers capped when welded PVC joints have cured at least (24) twenty-four hours. Center load piping with backfill to prevent pipe from shifting under pressure. All couplings and fittings shall be kept exposed. Apply continuous static pressure as follows:
 - a. All piping on the pressure side of control valves shall be tested for two (2) hours at 125 psi. minimum.
- (C) Leaks resulting from tests shall be repaired and tests repeated until system passes tests.
- (D) Submit written requests for inspection to City's Authorized Representative at least forty-eight (48) hours prior to anticipated inspection. Inspection of completed installation will be made by City's Authorized Representative prior to back filling of trenches and will be made during hydrostatic testing.
- (E) Coverage Test
 1. After the irrigation heads have been installed and back filling operations are complete, the Contractor, in the presence of the City's Authorized Representative shall perform a coverage test to ensure that there is complete and uniform coverage. No partial acceptance regarding coverage or pressure test shall be made. Coverage shall be 'head to head' for all spray and rotor heads. Planting operations shall not be permitted until irrigation coverage has been approved.
 2. Irrigation Audit shall be required per the MWEL0 and to further ensure proper coverage. Planting operations shall not be permitted until irrigation coverage has been approved and the project has passed the irrigation audit.
- (F) Backflow Test
 1. Immediately after the installation of a backflow prevention assembly the Contractor shall provide for a test report conducted by a certified tester. The backflow must operate properly and a passing test report must be provided to the City. The backflow enclosure must be the correct model number, size, installed with proper clearances and so it opens and closes with no obstructions with the frost protection blanket in place.
- (G) Controller Test
 1. The contractor shall demonstrate that the valves in the field match and are wired to the corresponding stations on the controller. The stations and valves shall match the layout shown in the plans.
 2. The Contractor shall demonstrate that the Master Valve/Hydrometer is connected to the controller and is fully operational.
 3. The Contractor shall demonstrate that the controller and any satellites are programmed according to approved irrigation schedule.
 4. The Contractor shall demonstrate that all communication functions are fully operational so that the controller and any satellites are able to interface with the City's central computer software.
 5. Depending on the controller used, the Contractor shall contact Rain Master or Central Control Systems for an on-site systems test to ensure the system is installed and programmed correctly. Components and communication shall be verified as fully operational and submit written verification to the City of a satisfactory on-site test.

110.13 ACCESSORIES

- (A) Contractor shall supply and deliver to the City:
 1. Four (4) quick coupler keys with 1" by 3/4" hose swivels
 2. Two (2) sets of various special wrenches that may be required for adjustment of sprinkler heads or equipment.

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3. Any "Nozzle Trees" or component options included with the sprinklers.
4. Two (2) Control Clock/Enclosure Keys.
5. Warranty cards for irrigation controller
6. Two (2) Equipment/Operation Manuals on controllers, pumps, hydrometer, etc.
7. Color coded, laminated, and reduced copy of the irrigation system as built. This shall be sized to fit inside the controller cabinet and provided in hard copy and pdf.
8. Any salvaged sprinkler heads or components designated to be returned to the City.
9. Controller programming keypad for Irrinet units. Remote unit for Rainmaster.
10. Backflow prevention assembly test report, indicating that the unit has passed inspection.

110.14 MAINTENANCE

Sprinkler heads and other components shall be adjusted to finish grade within five (5) days following notification from owner's representative. At this time, heads shall be set to proper height.

110.15 CLEANUP

Cleanup shall be made as each portion of work progresses. Debris and excess dirt shall be removed from the site, all walks and paving shall be swept or washed down, and any damage sustained shall be repaired to original conditions.

110.16 RECORD DRAWINGS

- (A) The Owner's Representative shall supply the Contractor with a set of prints of the irrigation sprinkler plans for the purpose of recording daily any and all deviations from the plans in alignment or location of piping, valves, heads, and other indicated equipment.
- (B) The Contractor shall update the As-built drawings daily. They shall be kept on site at all times during the work. The City's Authorized Representative will be performing intermittent inspections for updated As-builts throughout the duration of the project.
- (C) The Contractor shall submit to the City's Authorized Representative "as built" drawings showing the entire complete system as installed. Hand drafting shall be done in legible manner on reproducible medium (i.e. diazo or photo). Computer drafting shall also include electronic files (AutoCAD format).
- (D) **Record drawings shall be furnished to the City prior to the start of the 90 day maintenance period.**
- (E) Specific items to be recorded shall include but not be limited to:
 1. Points of connection, with accurate measurements from a fixed point
 2. Valves of all types shall have accurate measurements from a fixed point.
 3. Piping including both supply and lateral lines;
 4. Sprinkler heads and types;
 5. 24-volt control wiring routing controllers, sensor wires, pole light wiring.
 6. Drinking fountain lines.

110.17 FINAL OBSERVATION PRIOR TO ACCEPTANCE

- (A) The Contractor shall have controller and any satellites programmed according to approved irrigation schedule. Master valve and/or hydrometer shall be connected to the controller and fully operational.
- (B) Programming of Motorola or Rain Master controllers shall be coordinated with the Parks Department Irrigation Technician. Contractor shall also provide for programming and coordination between components and others when used in conjunction with a pump or well

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- (C) Motorola or Rain Master controllers shall have communication functions fully operational so that controller and any satellites are able to interface with the central computer software.
- (D) The Contractor shall contact Central Control Systems or Rain Master for an on-site systems test to ensure that the system is installed and programmed correctly. All components and communication shall be fully operational. Contractor to submit written verification of a satisfactory on-site test.
- (E) The Contractor shall operate each system and valves in its entirety for the City's Authorized Representative at time of final observation. Any items deemed not acceptable shall be reworked to the complete satisfaction of the City's Representative.
- (F) All applicable accessories, certification or test results indicated in Section 110.12 and 110.13 shall be provided to the City.
- (G) The Contractor shall furnish the written warranty stating that all work executed under this section shall be free from defects of materials and workmanship for a period of one year from the date of final acceptance of this work. The above party further agrees that he will at his own expense, repair and replace all such defective work and all other work damage and thereby which becomes defective during the term of the guarantee/warranty.
- (H) Any keys to facilities, grounds or enclosures that were issued to the Contractor for use during the project, must be returned to the City.

111.0 SITE FURNISHINGS

111.1 GENERAL

- (A) Work Included
 - 1. This section includes all materials, labor, transportation, assembly, services and equipment necessary for and reasonably incidental to perform the installation of site furnishings as shown on the plans, and as specified in this section. The work under this section shall include but not be limited to:
 - a. Bike Rack
 - b. 6 ft. Bench
 - c. Trash/Litter/Recyclables Receptacles
 - d. Picnic Tables
 - e. Park Grill/BBQ.
 - f. Drinking Fountain

111.2 QUALITY ASSURANCE

- (A) Installer Qualifications: Engage an experienced installer with a minimum of five (5) years experience with installations similar in materials, designed to the extent indicated for this project.
 - 1. Final locations of site furnishings shall be approved by the City's Authorized Representative prior to installation.
 - 2. Single-Source Responsibility: Contractor shall obtain each type of unit of furnishings from a single source to ensure products and materials consistent in quality, appearance, and physical properties without delaying the project.
 - 3. Use only new furnishings of brands and manufacturer's as noted on plans and as specified in this section.

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111.3 SUBMITTALS

- (A) On the date of the Notice To Proceed, the Contractor shall immediately place the order to purchase all site furnishings as specified on the plans and as outlined in this section.
- (B) Proof of all orders shall be submitted to the City's Representative within ten (10) working days of the Notice to Proceed.
- (C) Contractor shall submit shop drawings to show component parts, fabrication, installation and dimensions for all units indicated in this section. Shop drawings shall be submitted to the City's Authorized Representative for approval.
 - 1. Samples:
 - a. Submit manufacturer's product data for review by the City's Representative.
 - (B) Samples of complete units or parts of units, shall be furnished, if required, to the City's Representative.
 - 2. Submit manufacturer's written certification that each product complies with specified requirements.
 - 3. Substitutions:
 - a. Units to be considered equal to those specified shall be reviewed and approved by the City's Representative prior to the bid date. Substitutions shall not be allowed after the bid date.

111.4 COORDINATION

- (A) The Contractor shall coordinate the installation of all furnishings in this section with all other related work.
- (B) The Contractor shall be responsible for verifying the dimensions and required hardware of the furnishings prior to starting installation
- (C) Contractor shall pay particular attention to footing locations and coordinate with utility locations to avoid and prevent conflicts.

111.5 STORAGE AND HANDLING

All new furnishings shall be stored as necessary to prevent damage, theft or vandalism and shall be in new condition when ready for installation. It shall be the responsibility of the Contractor to provide "factory condition" furnishings.

111.6 MATERIALS/PRODUCTS

- (A) Bicycle Rack
 - 1. Bicycle rack shall be as shown in the plans and as specified in this section. See Looped Bike Rack Detail for related information.
 - 2. Each bicycle rack shall be of a complete assembly, including the rack any manufacturer-supplied or recommended mounting hardware and anchor crosspiece.
 - 3. Bike Rack shall be of a "looped" style consisting of a minimum of five (5) loops (up and down) as to accommodate 5 bicycles.
 - 4. Bike Rack shall be two-inch (2") sch. 40 Steel Pipe. Pipe "loops" shall have a five-inch (5") min. radius and shall have smooth consistent bends.
 - 5. Bike rack shall be mounted permanently by a direct-embedment method into concrete slab, shall provide for a crosspiece at the pipe base for additional anchoring, and shall located with minimum 5' clearance in all directions, in close proximity to bike route, path, trail or access point and so as to avoid conflicts with pedestrians, vehicles and maintenance vehicle access.

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6. Contractor shall confirm length of anchor bolts and footing depths with the manufacturer.
 7. Bike rack finish shall consist of a minimum of the following:
 - a. Sand blast;
 - b. Two to three (2-3) mil. Zinc Rich Epoxy primer followed with a durable baked-on polyester powder coat finish.
 - c. Powder coat shall be a minimum of two to three (2-3) mil. thickness.
 - d. Color shall be a black gloss Black Tiger Drylac TCIC RAL 549/8888 Bengal Black or as approved by the City's Representative.
 8. Bike rack shall be Model # DBL-100-4CI as distributed and manufactured by South Bay Foundry or approved equal.
- (B) 6 ft. Bench
1. Bench shall be as shown in the plans and as specified in this section. See Park Bench Details for related information.
 2. Each bench shall be of a complete assembly, including the bench and any manufacturer-supplied or recommended mounting hardware.
 3. Bench shall be of a similar style as shown in plan details.
 4. Bench shall be six (6') feet in length and shall be Steel Cast Iron with or without backrests.
 - a. Cast sides – shall be minimum of ASTM A 536 DI 65-45-1
 - b. Seat /slats – shall be a minimum of ¼"x 2 FB slats ASTM A 36 Mild Steel
 - c. Cast arms – shall be minimum of ASTM A 536 DI 65-45-1. Cast D1 (Clamp On) with hardware.
 5. Bench shall be surface mounted. Contractor shall confirm length of anchor bolts and footing depths with the manufacturer.
 6. Bench finish shall consist of a minimum of the following:
 - a. Sand blast
 - b. Two to three (2-3) mil. Zinc Rich Epoxy primer followed with a durable baked-on polyester powder coat finish.
 - c. Powder coat shall be a minimum of two to three (2-3) mil. thickness.
 - d. Color shall be a black gloss Black Tiger Drylac TCIC RAL 549/8888 Bengal Black or as approved by the City's Authorized Representative.
 7. Bench shall be Model #PB-100 Series (with back rest) or Model #PB-100-N872 Series (without back rest) as distributed and manufactured by South Bay Foundry or approved equal.
 8. Bench shall be offset a minimum of 18" from the edge of concrete or surfacing.
 9. Bench shall be placed to allow a minimum 4' x 4' space adjacent for ADA companion seating.
- (C) Trash/Litter Receptacle
1. Trash receptacle rack shall be as shown in the plans and as specified in this section. See Hinged Trash Receptacle Detail for related information.
 2. Each trash receptacle shall be of a complete assembly, including the lid; legs and any manufacturer-supplied or recommended mounting hardware.
 3. Trash Receptacle shall be large enough to accommodate a 32-gallon rubber trash can for an inner liner. Rubber trash can shall be provided as part of the unit. Trash receptacle shall have a top lid opening that is permanently secured in place to the unit. Trash Receptacle shall have a hinged, side-opening door for access. Hardware shall be stainless steel with visible surfaces finished to match that of receptacle. Door shall be lockable by means of a padlock loop.
 4. Receptacle material shall be a minimum of ASTM A 36 Mild Steel.
 5. Receptacle shall be surface mounted. Contractor shall confirm length of anchor bolts and footing depths with the manufacturer.
 6. Receptacle finish shall consist of a minimum of the following:
 - a. Two to three (2-3) mil. Zinc Rich Epoxy primer followed with a durable baked-on polyester powder coat finish.

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- b. Sand blast.
 - c. Powder coat shall be a minimum of two to three (2-3) mil. thickness. Color shall be a black gloss Black Tiger Drylac TCIC RAL 549/8888 Bengal Black or as approved by the City's Representative.
 - d. Trash Receptacle shall be Model # DTRL-100 Hinged as distributed and manufactured by South Bay Foundry or approved equal.
7. Receptacle shall be offset a minimum of 18" from the edge of concrete surfacing.

(D) Concrete Picnic Table

- 1. Table shall be as shown in the plans and as specified in this section. See Concrete Picnic Table Detail for related information.
- 2. Minimum concrete thickness of all areas to be (4") four inch minimum.
- 3. Minimum weight to be 2,450 pounds.
- 4. Picnic table top, benches and table supports to be cast into one integral piece. No assembly shall be required.
- 5. Coloring agents are to be pure mineral oxides and shall be mixed integrally with cement. Color to be confirmed with City's Authorized Representative prior to ordering.
- 6. Concrete mix design to include 8.5 sacks of Portland cement per yard with a maximum rock size of ¾" reinforced with #4 and #5 rebar grid. Cured concrete shall attain minimum compressive strength of 7,000 psi.
- 7. All formed surfaces and edges shall be fully rounded and smooth finished. Finish typical of all exposed surfaces.
- 8. Anti-skateboard protrusions to be integrally cast with one-piece table design. Bolted, glued or otherwise attached protrusions shall not be permitted.
- 9. Table shall be (8') eight feet in length and ADA compliant. Placement shall allow for maximum accessibility. Final location and alignment shall be confirmed with City's Authorized Representative prior to placement.
- 10. Table shall be Outdoor Creations Cast Concrete, Eight foot (8') Length ADA Picnic Table with Skateboard Resistant Surface Mount Package or City approved equal.

(E) Plastisol Coated Perforated Steel Picnic Table

- 1. Table shall be as shown in the plans and as specified in this section.
- 2. Table main frame thickness shall be of 4" x 4" x 11 gauge and supported by 2 3/8 OD x 12 gauge structural steel. Cross braces shall be 1" O.D. x 15 gauge structural steel tubing. Surface mount base plates ¾" thick plate steel. Framework finish shall be powder coated and cured according to manufacturer's specifications.
- 3. Top and seats shall be 3/4" #9 expanded steel mesh, diamond pattern. Frames die formed 10 gauge mitered angles ¾" x 4", reinforced w/ 3/8" x 3" steel flat bar.
- 4. Table top shall be eight feet (8') in length with two benches 8 feet (8') in length ADA access is provided on end.
- 5. Picnic table shall include surface mount adapter package and be secured to the concrete in a minimum of 4 locations (2 per leg)
- 6. Frame and surface material color shall be black.
- 7. The table shall be assembled according to manufacturer's instructions and inspected prior to placement to insure that all parts and fasteners are in place with all nuts and bolts tightened.
- 8. Table shall be Wabash Valley DS104D - 8' ADA with portable leg option.
- 9. Anti-skateboard bench clips shall be installed on-site by Contractor. Clips shall be with threadlock and carriage option. Install a minimum of two (2) clips per bench spaced 18" in from each end. Available from Skate Stoppers 1 (619) 447-6374 Bolted, glued or otherwise attached protrusions shall not be permitted.
- 10. Table placement shall allow for maximum ADA accessibility. Final location and alignment shall be confirmed with City's Authorized Representative prior to placement.

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(F) Park Grill/ BBQ

1. Grill shall be as shown in the plans and as specified in this section. See Park Grill/BBQ Detail for related information.
2. Welded construction shall be 3/16-inch (7 gauge) minimum steel firebox with die-formed reinforcing flanges: 5/8" dia. Steel perimeter and handlebars, ½" dia. grate bars
3. Grate shall have a minimum 250 sq. inches minimum of cooking area and have 4 levels for vertical adjustment. Grate shall be capable of tipping up for fire starting and cleaning, while remaining permanently attached to the firebox.
4. Handle grips for grate shall be a minimum 1/8" x 1/2" coiled steel.
5. Grill shall be capable of rotating 360 degrees in either direction and have a theft-proof swivel attachment to post.
6. Support post shall be a minimum 2-3/8" O.D. with embedded base. Installer shall provide for a hole and # 3 rebar cross piece at base of post for additional anchoring in footing. Refer to Park Grill Detail for additional information.
7. Grill shall be finished with a high-temp. nontoxic black enamel paint.
8. Grill shall not be placed adjacent to a play area or play surfacing material. Final location and alignment shall be confirmed with City's Authorized Representative prior to placement.
9. Grill shall be Pilot Rock Model H-16 B6 with direct embedment option or City approved equal.
10. Equals:
 - a. South Bay Foundry Model SBF DBQ100 -P
 - b. Markstaar Model H-16 B6 Multilevel Park Grill
 - c. The Park Catalog 4 Level Adjustable Grill Product 136-1043
11. Grills shall be offset a minimum of (18") eighteen inches from the edge of concrete or surfacing.
12. Grill shall have a cold joint installed in concrete around base.

(G) Extra Large Community Park Grill / BBQ Station

1. Grill assembly as shown in the plans and shown on standard detail, as manufactured by Outdoor Creations model #3001AG or approved alternate.
2. Grill base shall be minimum 4" thick steel reinforced precast concrete all one casting unit with minimum ¼" thick steel ash cleanout doors (two each) on concealed hinges.
3. Grill grates shall be double-wide with minimum 1,000 square inch surface area, 3/8" laser cut one piece, no welds. Grates shall be capable of mechanical lowering with heavy duty pinch proof gear and handle crank.
4. Grill shall be mounted to slab with cold joint around base, mount per manufacturer's recommendations. Grill shall be located minimum 6' from any vertical edge in any direction and minimum of 16" clear from any adjacent pedestrian path of travel; obtain location approval from City prior to forming concrete slab.

(H) Drinking Fountain

1. Drinking fountain shall be as shown in the plans and as specified in this section. See Drinking Fountain Detail for related information.
2. Fountain shall be barrier-free, pedestal mounted and constructed of powder coated steel.
3. Bowl shall be 18 gauge stainless steel (type 304) with no. 7 high polished finish.
4. Bubbler shall be forged lead-free polished chrome plated (PCP) brass, have a concrete bubbler guard and PCP brass waste strainer.
5. Push button valve shall be recessed, adjustable and self-regulating.
6. Access panels shall be stainless steel and have vandal resistant screws, 1-1/2" O.D. tail piece and ½" IPS screwdriver stop.
7. Drinking fountain shall be ADA compliant. Contractor shall ensure that fountain is oriented and installed correctly to allow maximum accessibility.
8. Depending upon location and use, other fountain models, features and/or accessories such as jug fillers, misters, or pet water bowls may be required by the City.
9. Fountain shall be offset a minimum of 18" from the edge of concrete or surfacing.

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10. Drinking fountain shall have a cold joint installed in concrete around base.
11. Final location and alignment shall be confirmed with City's Authorized Representative prior to placement and installation.
12. Contractor shall provide components as needed for water connections, concrete pit box and gate valve for manual shut-off to unit and drainage components as part of the installation. Refer to Drinking Fountain Detail for additional Information.
13. Haws Model #3511 or #3500G Hi-lo type, pedestal mount with black powder coat finish.
No known equal
14. Drinking fountain shall include all components as needed for water connections, concrete pit box and gate valve for manual shut-off to unit and drainage components.

111.7 INSPECTIONS

Examine the areas and conditions under which site furnishings are to be installed and remedy any conditions detrimental to the proper and timely completion of the work. Do not proceed with any work until unsatisfactory conditions have been corrected in a manner acceptable to the City's Authorized Representative.

111.8 INSTALLATION

- (A) Furnishing units shall be furnished and located as shown in the plans and as approved by the City's Authorized Representative.
- (B) Erect and install all site furnishings per manufacturer's instructions and recommendations. All furnishing units shall be installed plumb, accurately and in the correct orientation in relation to other site furnishings, elements and/or paving as shown on the plans.
- (C) Install all footings, anchorage and mounting hardware, as applicable, in strict accordance with manufacture's recommendations and as on plans.
- (D) All footings shall be Class A concrete with ¾" maximum size aggregate, unless otherwise noted. Footings shall be in accordance with CalTrans Standard Specifications, Section 90 and any local ordinances. Install all footings below finish grade of surfacing material. In paved areas, install paved surface over the footing for a clean finished surface as shown on plans.
- (E) Carefully install all furnishings and equipment without disturbance to adjacent finishes. Contractor shall be responsible for the damage and any subsequent repairs of damaged finished product.
- (F) Note furnishings that call for a cold joint in concrete at base.

111.9 CLEANING AND PROTECTION

- (A) Thoroughly clean all areas where work has occurred. Remove excess material, debris and rubbish.
- (B) Protect all site furnishings and completed work against damage throughout the duration of the construction period. Areas damaged due to tire ruts, compaction failure, erosion etc.... are to be repaired immediately.
- (C) Touch-up painting (if applicable): Shall be performed immediately after installation or erection. Clean field welds, bolted connections, and abraded areas of the work. Paint exposed areas with paint or galvanizing material as supplies by manufacturer. Apply by brush, to thickness recommended by paint manufacturer. All touch-up paint shall be supplied to the City's Representative upon acceptance of the project.

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111.10 WARRANTY

- (A) Contractor shall guarantee all site amenities included under this section.
- (B) Contractor shall also provide a written guarantee covering all materials, equipment, workmanship furnished by him to be free of all defects or workmanship after installation is accepted, and all defective parts that may have been found for a period of one year.
- (C) Submit written guarantee on company letterhead addressed to the City upon final acceptance.

112.0 LIGHTING

112.1 GENERAL

- (A) This section includes all materials, labor, transportation, assembly, services and equipment necessary for and reasonably incidental to perform the installation of a complete lighting system consisting of Light Emitting Diode (LED) luminaries, lamps, photo cells and appurtenances as shown on the plans, and as specified in this section. Provide connections of all equipment as needed.
- (B) In general, security lighting shall be provided at a minimum .5 foot candle for recreational facilities as follows:
 - 1. Playgrounds.
 - 2. Park internal walkways
 - 3. Trails
 - 4. Parking areas
 - 5. Restroom buildings
 - 6. Maintenance areas
 - 7. A minimum of one 6,800 lumen LED fixture per playground shall be provided. More fixtures may be required if warranted by safety concerns, photometrics and as determined by the development review process.
 - 8. Trails
 - a. One 6,800 lumen (LED) fixture shall be required at each at-grade Trail intersection with a public or private street. (If there is no streetlight there)
 - b. In addition, fixtures shall be required along trails or sidewalks at intervals as warranted by safety concerns, photometrics, and as determined through the development review process.
 - c. A site plan shall be submitted to the City with point-by-point photometric calculations of the required light levels from a lighting consultant.
 - 9. Parks
 - a. LED lighting shall be provided in all parks, as needed for safety considerations.
 - b. Additional lighting for recreational uses may be required (for example, in remote locations where power would be cost prohibitive, the City may accept solar-powered light fixtures), and each will project be reviewed on a case-by-case basis by the City's Authorized Representative.
 - c. Activation of lighting shall typically be by a photocell device. Timer with astronomic clock feature, dimmers or other controls may be required upon request.
- (C) In general, athletic field and court lighting shall be provided in Community Parks, Special Use Parks or upon request by the City. Lighting shall provide for participant and spectator safety with plans submitted to the City with point-by-point photometric calculations of the required levels for the sport from a lighting consultant or the equipment supplier. Provide Musco athletic field lighting equipment and control systems, or approved alternate capable of providing individual user time usage recording. Provide wet stamped and signed structural engineering plans specific to the footing sizes required for each type fixture.

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- (D) Lighting Design to include environmental control to address the prevention of light spill and glare onto adjacent properties.

112.2 QUALITY ASSURANCE

- (A) Codes and Standards
1. The Contractor shall apply for all necessary permits as required by the City prior to the beginning of any work.
 2. All exterior lighting required for City maintained properties shall conform to approved drawings, applicable state and local ordinances and these Standards and Specifications.
 3. Nothing in the drawings or specifications is to be construed to permit work not conforming to these requirements.
- (B) The Contractor shall verify locations of all easements and underground utilities and shall contact the respective utility companies before any excavation work is started. Contractor shall be responsible for the location and preservation of such utilities in the areas of construction and shall notify utilities and U.S.A. at (800) 642-2444 (48) forty-eight hours in advance of any excavation or construction. Contractor shall be responsible for coordinating the removal or relocation of existing utilities with the respective utility companies.
- (C) Light shall be offset 18" minimum in from the edge of concrete and surfacing.
- (D) Light shall be offset 24" minimum from the edge of trails and paths.
- (E) Work shall be performed in accordance with the best standards of practice relating to the various trades and under the continuous supervision of an Electrical Contractor or Certified Electrician.
- (F) The Contractor shall notify the City's Authorized Representative immediately should discrepancies between the drawings and specifications be discovered.
- (G) Omissions from the specifications or drawings, or any mis-descriptions of detail work which is absolutely necessary to carry out the intentions of the drawings or specifications, shall be executed by the Contractor as if fully set forth in the specifications and drawings.
- (H) There shall be a pre-construction conference prior to the beginning of any work or the ordering of any materials.
- (I) Single-Source Responsibility: Contractor shall obtain the lighting components from one primary manufacturer to ensure products and materials consistent in quality, appearance, and physical properties without delaying the project.
- (J) All work and materials shall be in full accordance with California Occupational Safety Health Act (CAL-OSHA), California Electrical Code (CEC), State Fire Marshal, Electrical Safety Orders, National Fire Protection Association, California Building Code (CBC) California Code of Regulations and applicable State or local laws or regulations and manufacturer's specifications.
- (K) Contractor shall protect and preserve all existing facilities, site improvements, trees and turf from damage or injury during operations. Any expenses incurred or associated with repair or replacement of damaged items shall be at the Contractor's expense.
- (L) The Contractor shall have a signed copy of the approved plans with specifications and details available on-site during all phases of the lighting installation.
- (M) Surplus material resulting from the Contractor's work shall be removed from the site by the Responsible Party. During the work, the Responsible Party shall keep the site as clean and free of rubbish as possible.
- (N) The Contractor shall guarantee all material and workmanship for a minimum period of one year commencing with the date of final Acceptance.

112.3 SUBMITTALS

- (A) General

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Prior to starting any work, the Contractor shall present to the City's Authorized Representative the following information on their company letterhead:

1. Project name.
 2. Project location.
 3. Contractor's Representative on job and his/her title.
 4. Proposed state of his work
 5. Estimated completion date of the work.
- (B) Manufacturer's Product Data – (2) Two sets and one PDF shall be submitted to the City's Authorized Representative for approval, consisting of the manufacturer's catalog sheet on the following equipment:
1. Light Fixtures/Luminaries
 2. Photo-cell controllers
 3. Lighting Controller and accessories, controller enclosure
 4. Poles
 5. Electrical conduit and fittings
 6. In addition, the Contractor shall submit an accurately scaled photometric diagram of the park site. Provide a list of all material to be used on the project. The list shall include model numbers, manufacturers of articles used on the contract, and furnish directions for items covering points not shown in the drawings or in these Standards and Specifications
- (C) Shop Drawings (2) Two sets and one PDF shall be submitted to the City's Authorized Representative for approval.
1. Shop drawings shall be neat and professionally drawn. CAD (computer aided drawings) are preferred. Drawings shall have sufficient information to clearly indicate work to be performed and be complete including device/equipment locations, wire sizes, wire types and number of wires, symbol list or legend, point-to-point connections, wiring diagrams and equipment anchorage details where needed.
- (D) Samples - shall be submitted to the City's Authorized Representative for approval.
1. Samples of complete units or parts of units shall be furnished, if required.
 2. Sample quantity – as determined by the City. Generally, not to exceed (3) three.
- (E) Certifications - Submit (3) three sets of manufacturer's written certification that a product complies with specified requirements.
- (F) Substitutions – shall be submitted to the City's Authorized Representative for approval.
1. Units to be considered equal to those specified shall be reviewed and approved by the City's Authorized Representative prior to the bid date. Substitutions shall not be allowed after the bid date.
- (G) On the date of the Notice to Proceed, The Contractor shall immediately place the order to purchase lighting components as specified on the plans and as outlined in this section.

112.4 COORDINATION

- (A) The Contractor shall coordinate the installation of the lighting system with all other related work.
- (B) The Contractor shall coordinate for the installation of sleeves or conduit under concrete prior to pour.
- (C) Contractor shall pay particular attention to footing locations and coordinate with utility locations to avoid and prevent conflicts.

112.5 WARRANTY

The Contractor shall furnish the enclosed written warranty stating that all work executed under this section shall be free from defects of materials and workmanship for a period of one year from the date of final acceptance of this work. The above party further agrees that he will at his own expense,

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repair and replace all such defective work and all other work damage and thereby which becomes defective during the term of the guarantee/warranty.

112.6 MATERIALS

- (A) Park Light shall be as shown in the plans and as specified in this section. See Park Light Details for related information
1. Contractor shall use only new materials of brands and types noted on the approved drawings and according to these Standards and Specification
 2. Electrical materials shall bear the label of, or be listed by the Underwriter's Laboratories (UL) unless of a type for which no listing is available.
 3. Materials and components shall conform to Industry Standards, including: National Electrical Manufacturer's Association (NEMA), American National Standards Institute (ANSI), American Society for Testing Material Association (ASTM), Insulated Power Cable Engineer's Association (IPCEA) and the Certified Ballast Manufacturers (CBM).
 4. Single-Source Responsibility: Contractor shall obtain each type of unit from a single source to ensure products and materials consistent in quality, appearance, and physical properties without delaying the project.
 5. When discrepancies are found between Contract Documents and governing codes, the Contractor shall furnish and install the larger size or higher standard materials at no additional cost to the City.

112.7 PRODUCTS

- (A) Electrical Light Fixture/Luminaire
1. Luminaire shall be as shown in the plans and as specified in this section. See Park Light Details for the preferred LED luminaire: GE Evolve Luminaire, Dark Bronze finish, model # EPST-1-C5-40-N-I-P-DKBZ.
 2. Solar option, if approved, shall be eSHINE Park Series, model #VSH-525-T5-PX-VS-COSDD, 11-watt, 9-hour, 1269 lumens, single luminaire with solar panel and 19'-6" post. Rechargeable batteries located inside the top section of the pole.
 3. Canopy shall have a hinged stainless steel latch, and require no tools to replace lamp.
 4. Integral batteries inside panel base
 5. Contain terminal board, mogul base socket and plug-in igniter.
 6. Contain a Photo-electric receptacle.
 7. Fixture product shall be as specified on the details and plans, or City approved equal.
- (B) Light Pole/Post
1. Pole for LED luminaire shall be 20' ht. galvanized tapered steel pole by GE Lighting Systems, Inc. GE Evolve LED Post with top Salem Luminaire (Pole Ordering Number: ARTS203S5.811AGVE) with full metal base cover, RAL color #8019 dark bronze. Shall have die-cast aluminum ballast housing; pole for solar lights are integral to system.
 2. Shall have round tapered steel shaft.
 3. Galvanized Finish.
 4. Shaft length shall be 20 feet.
 5. Three-inch O.D. top for mounting single luminaire.
 6. Base shall be anchor type.
 7. All poles shall be grounded per detail ST-28 of the City of Manteca Public Works Standards and Specifications.
- (C) Photoelectric Control
- Photoelectric control shall be as shown in the plans and as specified in this section.

112.8 INSPECTIONS

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- (A) Examine the areas and conditions under which lighting is to be installed and remedy any conditions detrimental to the proper and timely completion of the work.
- (B) Do not proceed with any work until unsatisfactory conditions have been corrected in a manner acceptable to the City's Authorized Representative.

112.9 INSTALLATION

- (A) Lighting units shall be furnished and located as shown in the plans and as approved by the City's Authorized Representative.
 - 1. Erect and install all lighting per manufacturer's instructions and recommendations. All furnishing units shall be installed plumb, accurately and in the correct orientation in relation to other site furnishings, elements and/or paving as shown on the plans.
 - 2. Install all footings, anchorage and mounting hardware, as applicable, in strict accordance with manufacturer's recommendations. Refer to plans and Details M12 through M-13A of the City of Manteca Parks and Recreation Standard Details. Footing details for LED & Solar Poles are located after each of the details (refer to Details M-12A, M-12B, M-12C and M-13A).
 - 3. All footings shall be Class "B" P.C.C. Concrete unless otherwise noted. Footings shall be in accordance with the City of Manteca Parks and Recreation Standard Details. Install all footings below finish grade of surfacing material. In paved areas, install paved surface over the footing for a clean finished surface as shown on plans. Grout around base after erecting and leveling pole.

112.10 CLEANING AND PROTECTION

- (A) Thoroughly clean all areas where work has occurred. Remove excess material, debris and rubbish.
 - 1. Protect all site furnishings and completed work against damage throughout the duration of the construction period.
 - 2. Areas damaged due to tire ruts, compaction failure, erosion etc.... are to be repaired immediately.
 - 3. Touch-up painting (if applicable): Shall be performed immediately after installation or erection. Clean field welds, bolted connections, and abraded areas of the work. Paint exposed areas with paint or galvanizing material as supplied by manufacturer. Apply by brush, to thickness recommended by paint manufacturer. All touch-up paint shall be supplied to the City's Representative upon acceptance of the project.

113.0 FENCING GENERAL

113.1 GENERAL

- (A) Description of Work
 - 1. This section includes all materials, labor, transportation, assembly, services and equipment necessary for and reasonably incidental to perform the professional installation of chain link fence system, including panels and gates, concrete post foundations, concrete mow strips under fence (when specified) and any factory painting/surfacing or field touch up painting all as shown on the plans, and as specified in this section.
- (B) Order of Work

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1. The work as shown on the plans and as specified in these special provisions shall be constructed in a sequence, which has been approved by the City's Authorized Representative.
 2. Prior to commencement of work, the Contractor shall submit for approval his schedule and plans for safety signing as needed within the work areas.
- (C) Permits and Fees
1. The Contractor shall obtain an encroachment permit from the City Public Works Department before starting work. The permit will be issued at no cost to the Contractor.

113.2 QUALITY ASSURANCE

- (A) Installer Qualifications:
1. Engage an experienced installer with a minimum of five (5) years of experience with installations similar in materials, design to the extent indicated for this project.
- (B) Approval
1. Final alignment of fencing and gate locations shall be approved by the City's Authorized Representative prior to installation.
- (C) Single-Source Responsibility:
1. Contractor shall obtain the fencing from one primary manufacturer to ensure products and materials consistent in quality, appearance, and physical properties without delaying the project.

113.3 SUBMITTALS

- (A) Contractor shall submit shop drawings to show component parts, fabrication, installation and dimensions for all fencing shown in the plans and as specified in this section.
- (B) Refer to details for related information.
- (C) Shop drawings shall be submitted to the City's Authorized Representative for approval. On the date of the Notice to Proceed, the Contractor shall immediately place the order to purchase all fencing and materials as specified on the plans and as outlined in this section.
- (D) Proof of all orders shall be submitted to the City's Authorized Representative ten (10) working days of the Notice to Proceed.

113.4 PREPARATION

- (A) Consult the records and drawings of adjacent work and of existing services and utilities, which may affect installation operations. Obtain in-site underground utilities locations prior to any excavation.
- (B) Prior to fence installation, all necessary site clearing and grading shall be performed by the Contractor. An adequate clearance on both sides of the fence line is required.

113.5 COORDINATION

- (A) The Contractor shall coordinate the installation of all furnishings in this section with all other related work.
- (B) The Contractor shall be responsible for verifying the dimensions and required hardware of the fencing prior to starting installation.

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- (C) Contractor shall pay particular attention to footing locations and coordinate with utility locations to avoid and prevent conflicts.

113.6 DELIVERY, STORAGE AND HANDLING

- (A) Deliver fencing and materials, posts and any accessories to project site.
- (B) Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping.
- (C) Materials shall be handled and stored properly to protect against damage and theft at jobsite.
- (D) It shall be the responsibility of the Contractor to provide "factory condition" fencing.

113.7 CLEANING AND PROTECTION

- (A) Thoroughly clean all areas where work has occurred. Remove excess material, debris and rubbish resulting from installation of the fences.
- (B) Protect all site furnishings and completed work against damage throughout the duration of the construction period. Areas damaged due to tire ruts, compaction failure, erosion etc.... are to be repaired immediately.
- (C) Touch-up painting (if applicable): Shall be performed immediately after installation or erection. Clean field welds, bolted connections, and abraded areas of the work. Paint exposed areas with paint or galvanizing material as supplied by manufacturer. Apply by method and to thickness recommended by paint manufacturer. All touch-up paint shall be supplied to the City's Representative upon acceptance of the project.
- (D) Level any uneven areas due to excavations caused by the fence installation and clean the fence of any concrete, dirt or debris.
- (E) Touch-up painting (if applicable): Shall be performed immediately after installation or erection. Clean field welds, bolted connections, and abraded areas of the work. Paint exposed areas with paint supplied by manufacturer. Apply by method and to thickness recommended by paint manufacturer. All touch-up paint shall be supplied to the City's Authorized Representative upon acceptance of the project.
- (F) Any damage resulting from Contractor's operations shall be repaired to the satisfaction of the City's Authorized Representative.

113.8 WARRANTY

- (A) Contractor shall guarantee all fencing, hardware and workmanship included under this section.
- (B) Contractor shall also provide a written guarantee covering all materials, equipment, workmanship furnished by him to be free of all defects for a period of one year after installation is accepted, and all defective parts that may have been found.
- (C) Submit written guarantee on company letterhead addressed to the City upon final acceptance.

114.0 CHAIN LINK FENCING

114.1 CHAIN LINK FENCING MATERIALS

- (A) Wire
 1. Wire used in the fabric shall be galvanized and shall have a tensile strength of 80,000 lbs. per square inch based on cross sectional areas of the wire
 2. Samples may be required for testing by the city. One sample shall be tested without removing the bends caused by weaving of the wire with the mesh. A second test shall be

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conducted on a wire strand carefully straightened. The tensile strength is determined as the average reading between the two tests.

3. If specified, wire shall be powder coated.

(B) Fabric

1. Fabric shall be 2" mesh, 9 gauge, hot-dipped galvanized. Conform to ASTM A817 for minimum tensile strength requirements.
2. Fabric shall be knuckled top and bottom with a single width to the full height of fence.
3. If specified, fabric shall be vinyl coated after weaving

(C) Ties and Fasteners

1. Ties/ Fasteners shall be 9-gauge steel according to ASTM F 626.
2. If specified, ties and fasteners shall be powder coated.

(D) Posts and Rails

1. Line posts shall be a minimum of 1-5/8" O.D. Sch. 40 @ 2.27 lbs. per ft. Length as needed. Maximum spacing of 10' between posts.
2. Terminal posts shall be a minimum of 2-7/8" O.D. Sch. 40 @ 5.79 lbs. per ft. Length as needed. Maximum spacing of 10' between posts.
3. Gate posts shall be a minimum of 2-7/8" O.D. Sch. 40 @ 5.79 lbs. per ft. Length as needed.
4. Posts shall be installed in a concrete footing to a minimum depth of 36". Depth of footing shall be a minimum of 39". Footing width shall be a minimum of 12" or 4 times the diameter of the post. Posts shall have concrete block placed at the base to prevent earth contact.
5. Post braces shall be installed at each gate, corner pull and end post per ASTM standards.
6. Top Rail shall be a minimum of 1-5/8" O.D. Sch. 40 @ 2.27 lbs. per ft. Bottom rail shall be the same (if specified).
7. Posts and rails shall be hot-dipped galvanized per ASTM A120.
8. All posts shall be installed with a moisture-proofed cap on top.
9. If specified, posts and rails shall be powder coated.
10. Refer to fencing details for related information.

(E) Gates

1. Gate frames shall be a minimum of 1-5/8" O.D. Sch. 40 @ 2.27 lbs. per ft. Frame shall have a horizontal crosspiece at mid height. Gate frame shall be welded construction with a smooth surface free of defects.
2. Hinges and latches shall be industrial strength, heavy duty, pressed steel, fit snugly around post and comply with ASTM F 900 standards. Hinges shall be of sufficient strength to support the gate. Latches shall be lockable. Double gates shall include drop rod assembly and receiver sleeve (unless otherwise specified) with a fork or gravity latch to retain both gates in a parallel position while closed. Gates and hardware shall be ADA compliant when applicable.
3. Fabric and finish shall match fence. Stretch taught and attach with clips at a max. spacing of 12" O.C.
4. 6 ft. tall gates shall include a steel 3/8" truss rod assembly and tightener installed diagonally to prevent sagging. Truss rod and tightener shall be capable of withstanding a tension of 2000 lbs. Refer to details for related information.

(F) Miscellaneous Items

1. Fittings, clips, bolts, bands bars, post caps and other hardware necessary for a complete fence system shall be galvanized (or powder coated if specified)
2. Where fencing is shown or specified on the plans to be vinyl or powder coated, all appurtenances, including fabric, posts, rails, clips bands, fittings, etc., necessary for a complete system shall be vinyl or powder coated. Coating shall be according to the industry standard for this type of finish. Coating color shall be as specified in the plans or as approved by the City's Approved Representative.

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3. Mowstrip under fence (if specified) shall be a minimum of 12" wide and 6" deep. Fence shall be aligned in the center of mowstrip with equal distance on both sides. Concrete shall be 2500 psi. Refer to details for related information

114.2 CHAIN LINK FENCING INSTALLATION

(A) Posts

1. Set posts in concrete in holes of diameter and depth as indicated in plans or details. Under normal conditions, the diameter shall be 4 times the diameter of the post. The depth shall be a minimum of 36" with an additional 3" under base.
2. Dig or drill holes in the line of the fence. Forms are not needed.
3. Set posts in a vertical position, plumb and true to lines with the top line uniform.
4. Place a concrete block at the base of each post, as a spacer to ensure that post does not contact earth. Backfill concrete into the hole and stop the footing 2" below grade to allow for sod or other surfacing. Crown the concrete at the top to shed water and extend a minimum of 3" below the bottom of the post.
5. Where soil conditions are prohibitive or if rock is encountered, alter the post embedment to maintain stability in keeping with fence construction practices.
6. Posts shall have protective post tops or caps.
7. Install carefully as to avoid nicks and scratches on vinyl or powder coated finishes. If blemishes occur due to installation, the Contractor shall re-finish and patch damaged areas immediately.

(B) Fabric

1. Attach fabric using fabric bands or clips spaced 12" apart. Connections to top rails and connections to tension wires shall utilize wire ties spaced 24" on center.
2. For corner and vertical end connections, install stretcher bars banded to posts and gate frames at 24" apart (maximum).
3. Place fabric on the outside of the area enclosed unless otherwise specified.
4. Place fabric by securing one end, applying sufficient tension to remove all slack before making attachments. Stretch and tighten to provide a smooth uniform appearance free from sags and bulges.
5. Fabric spans shall be attached at terminal posts with stretcher bars and tension bands at 15" maximum spacing.
6. Install fabric 2" above ground level unless otherwise specified.
7. Join rolls of fabric by weaving a single picket into the ends of the rolls to form a continuous mesh.

(C) Top Rail and Tension Wires

1. Support the top rail at each post so that a continuous brace from end to end of each stretch of fence is formed. Securely fasten the top rail to the terminal post and join with sleeves or coupling to allow for expansion and contraction.
2. When the bottom rail is omitted, stretch a tension wire from end to end of each stretch of fabric. Secure the bottom tension wire within the bottom 4" of fabric. Securely fasten the tension wire to the terminal posts. Tension wire shall be taught and free of sags.

(D) Gates

1. Operational direction shall be as specified in the plans. Grade clearance and possible obstructions shall be considered in the design to ensure adequate operational clearance so that the gate can open and close freely.
2. Install gates true to opening and plumb in a closed position.

115.0 ORNAMENTAL IRON FENCING

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115.1 4 FT. PARK FENCE

- (A) Generally, Ornamental Iron Fencing height shall be 4 foot or higher, as specified on plans. Posts shall be a minimum of 11 gauge, 2-1/2" square, pre-galvanized structural steel tubing with permanently attached pressed steel dome caps.
- (B) Top and bottom rail shall be a minimum of 14 gauge, 1-1/2" square, pre-galvanized structural steel tubing. Rails shall be attached to posts with welded joints. Riveted joints or brackets shall not be accepted.
- (C) Pickets shall be a minimum of 11 gauge, 3/4" square, pre-galvanized structural steel tubing. Pickets shall be attached to rails with welded joints. Riveted joints or brackets shall not be accepted.
- (D) Gates shall be fabricated using the same materials as for the fencing system, and framework shall have the same cross sectional dimensions as the panel rails.
- (E) Hinges and latches shall be industrial strength, heavy duty, pressed steel. Hinges shall be of sufficient strength to support the gate. Latches shall be lockable.
- (F) Double gates shall include drop rod assembly and receiver sleeve (unless otherwise specified) with a fork or gravity latch to retain both gates in a parallel position while closed.
- (G) Gates and hardware shall be ADA compliant when applicable.
- (H) Shop finish coating system:
 - 1. Five-stage iron phosphate pre-treatment cleaning system to remove foreign material and prepare panel assembly for finish coat.
 - 2. Apply a minimum 2 - 4 mil. thickness of high quality TGIC polyester resin powder coating by electrostatic spray process. Bake at 450 degrees for 20 minutes. Powder coated finish shall be black or other color selected by City, and meet or exceed all pertinent ASTM testing standards
 - 3. Field touch up finish all welds by lightly sanding, priming with SSPC 15, Type 1 red oxide, or for galvanized surfaces SSPC 20, Type 1 inorganic; paint with high-quality acrylic product to match finish and sheen, and approved by manufacturer for touchup purpose.

115.2 CURVE TOP PARK FENCE

- (A) Overall Park Fence height shall be 7 foot or as shown on plans. Posts shall be a minimum of 11 gauge, 2-1/2" square, pre-galvanized structural steel tubing with permanently attached pressed steel dome caps.
- (B) Top and bottom rail shall be a minimum of 14 gauge, 1-1/2" square, pre-galvanized structural steel tubing. Rails shall be attached to posts with welded joints. Riveted joints or brackets shall not be accepted.
- (C) Pickets shall be a minimum of 11 gauge, 3/4" square, pre-galvanized structural steel tubing. Pickets shall be attached to rails with welded joints. Riveted joints or brackets shall not be accepted.
- (D) Gates shall be fabricated using the same materials as for the fencing system, and framework shall have the same cross sectional dimensions as the panel rails.
- (E) Hinges and latches shall be industrial strength, heavy duty, pressed steel. Hinges shall be of sufficient strength to support the gate. Latches shall be lockable.
- (F) Double gates shall include drop rod assembly and receiver sleeve (unless otherwise specified) with a fork or gravity latch to retain both gates in a parallel position while closed.
- (G) Gates and hardware shall be ADA compliant when applicable.
- (H) Finishing system same as for 4' Ornamental Iron Fencing, Section 115.1.
- (I) Field touch-up finish same as for 4' Ornamental Iron Fencing, Section 115.1
- (J) All posts shall be set in concrete footings a minimum of 36" deep and 12" in diameter. Posts shall have 2 to 3 inches of concrete below the base so that posts do not contact soil. Concrete shall be 2500 psi.

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- (K) Mowstrip under fence (if specified) shall be a minimum of 12" wide and 6" deep with 2 # 4 rebar at mid-depth continuous. Fence shall be aligned in the center of mowstrip with equal distance on both sides. Concrete shall be 2500 psi.
- (L) Refer to details for related information.

115.3 GENERAL FABRICATION OF ORNAMENTAL FENCING

- (A) Verify dimensions on site prior to shop fabrication.
- (B) Fabricate in accordance with drawings and details and as recommended by AISC Specification for Design, Fabrication and Erection of Structural Steel for Buildings
- (C) Fit and shop assemble sections in the largest practical sizes, easily handled through any openings.
- (D) Grind welds smooth and flush.
- (E) Thoroughly clean surfaces of rust, scale, grease and foreign matter prior to any galvanizing

115.4 INSTALLATION OF ORNAMENTAL FENCING

- (A) Layout fence alignment and post locations
- (B) Excavate holes for concrete post footings
- (C) Set steel posts in place and brace in a plumb vertical position. Keep work in alignment.
- (D) Pour concrete in holes. Allow a 3" layer under post base to prevent earth contact. Do not install fence or remove braces until concrete has set at least 7 days.
- (E) Install fence per manufacturer's recommendations and keeping items square and level, accurately fitted and free of distortion and defects.
- (F) Gate operational direction shall be as specified in the plans. Provide adequate clearance so that the gate can open and close freely. Install gates true to opening and plumb in a closed position.
- (G) Perform field welding in accordance with AWS D1.1

116.0 PRECAST CONCRETE RAIL FENCING

116.1 MATERIALS

- (A) Provide manufactured precast concrete post and rails to mimic traditional split rail fencing, as manufactured by Timbercrete or City approved equal.
- (B) Reinforcement bars to be steel #2 rebar minimum 2 per rail (3" o.c.)
- (C) Concrete mix shall have fiber reinforcement and minimum 4000 p.s.i. concrete.
- (D) Color of fencing to be selected by the City from the basic palette offered from manufacturer.
- (E) Footings to be steel reinforced 3000 p.s.i. concrete, bars minimum #3 @ 16" o.c.
- (F) Posts to be 5" x 5" square 6'-6" long with formed holes to receive two each rails. Space posts 8' on center, imbed into concrete footings 30" below finished grade.
- (G) Reinforced precast concrete rails to be 8' l. x 6"x 3" wide. Mount top rail 42" above finished grade.

116.2 INSTALLATION

- (A) Place posts in compacted subgrade where 12" diameter holes have been excavated 8' on center.
- (B) Set posts temporarily with rails in place, provide supportive wooden falsework if needed.
- (C) Install reinforcement and pour concrete footings. Allow to cure prior to removing falsework.

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- (D) Grout exposed end pieces/rails in place so they cannot be vandalized and removed. Grout color to match fence.

200.0 STANDARD PARK AND RECREATION AREA DEVELOPMENT SPECIFICATIONS

201.0 PLAYGROUNDS

201.1 QUALITY ASSURANCE

- (A) Verification of dimensions and conditions
1. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and play area conditions. The Contractor shall immediately inform the City's Authorized Representative for review of any discrepancies between the plans and/or actual Specifications or conditions.
 2. No work shall be done on any areas where discrepancies exist or where conditions are unsuitable until reviewed and approved by the City's Authorized Representative.
- (B) Quality Assurance
1. The play equipment supplier and installer shall have a minimum of five years of experience in the manufacture and installation of similar play components.
 2. The installer shall be approved/and certified by the manufacturer.
 3. Installation shall be in accordance with City approved plans and specifications and manufacturer's recommendations.
 4. Prior to final acceptance, the following shall be submitted to the City's Authorized Representative by a Certified Playground Inspector.
 5. A statement of conformance that the playground has been installed correctly and in accordance CPSC, ASTM, and ADA guidelines.
 6. A statement of IPEMA certification
 7. Single-Source Responsibility: Contractor shall obtain the playground equipment from one primary manufacturer to ensure products and materials consistent in quality, appearance, and physical properties without delaying the project.
- (C) Design Review
1. Submit color-rendered playground illustrative exhibits (equipment plans, elevations and 3D renderings and surfacing) generated by playground manufacturer, prior to ordering equipment.
 2. Plans shall show precise fall height requirements and surfacing depth or fill requirements per section 201.5 and/or 201.6.
 3. Plans shall show intended play surfacing materials and color selections.
 4. Plans shall show routes of underground drainage structures in dashed lines so as to avoid conflicts with concrete footings.
 5. Plans shall show extent and elevation of any above-equipment shade fabric or structure.
 6. Revise and resubmit color-rendered playground illustrative exhibits and obtain written approval of the designs prior to placing order for materials.

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201.2 WARRANTY

The Responsible Party shall guarantee the work against defective materials or faulty workmanship for a period of one year from the date of final acceptance. All warranties accompanying any play equipment shall be submitted to the City prior to final acceptance.

All warranties for pour in place resilient surfacing (rubberized surfacing) shall be submitted to the City prior to final acceptance.

201.3 PLAYGROUND SITE PREPARATION

(A) Description of Work

The contract work to be performed under this section consists of furnishing all required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the site preparation and grading of playgrounds in accordance with these Standards and Specifications.

(B) General Siting and Layout

1. If located in a park serving as a storm water detention basin, play areas and all amenities shall be located above the high-water line.
2. Grade and elevate play lots and amenities to avoid or minimize collection of run off from surrounding areas.
3. Materials
 - a. Subgrade Materials
After topsoil has been stripped, the existing subgrade material may be used unless aggregate fill is called for on the approved plans.
 - b. Any fill material shall be per Subsection 103 of these Standards and Specifications
4. Execution
 - a. Subgrade
 - i. Where applicable, sod and a minimum of four inches of top soil shall be removed from the site.
 - ii. The area(s) shall be graded to the required depth to accommodate the various layers of the playground subgrade depicted in the individual details on approved plans. Typically + 12" twelve inches.
 - iii. Provide a uniform 1% slope across the play lot in the prevailing direction of surrounding drainage.
 - iv. All backfill will be placed in six-inch layers and will be compacted to 95% standard density at optimum moisture.
 - v. The Contractor shall alert the City's Authorized Representative of any "soft spots" or structures that could affect the stability of the play equipment, vertical play area curb, concrete walks or flatwork.
 - vi. The site preparation shall be done to provide positive drainage away from playground areas, and if needed, to provide intercepting landscaped swales to prevent drainage into the playground areas.
 - b. Fine Grade
 - i. The base material shall be placed with equipment capable of providing a true accurate plane to plus or minus ¼ inch.

201.4 PLAYGROUND DRAINAGE SYSTEMS

(A) Description of Work

The work to be performed under this section consists of furnishing all required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the construction of the subsurface drainage systems required.

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(B) Materials

1. Subsurface Drainage Pipe. At a minimum four-inch diameter SDR drainpipe shall be installed per the plans.
2. General Piping Installation according to the following:
 - a. Sewer Pipe and Fittings, ASTM 1527, D2235 for solvent-cemented joints. or
 - b. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage pipe. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.
 - c. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.
 - d. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.
 - e. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
 - f. Install gravity-flow piping and connect to street or building's storm drains, of sizes and in locations indicated. Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise indicated.
 - g. Extend storm drainage piping and connect to street or building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.
 - h. Install aggregate-free interceptor 'Elgen' drains according to manufacturer's specifications and details.
3. Subsurface Drainage Pipe Backfill. Backfill shall be 3/8-inch clean, washed pea gravel, with a minimum four-inch depth around and over drainage pipe.
4. Drains shall have a clean out and shall have piping to daylight, or to another piped drainage outlet.

(C) Execution

1. Subsurface drainage pipe shall be oriented diagonally to prevailing slope of play lot subgrades, and shall be spaced to allow water to drain laterally along subgrade a maximum of 20 feet before being intercepted by a drainpipe.
2. Drainage pipe to avoid interference with play equipment. Drainage pipe layout shall be field adjusted as needed to best accommodate play equipment layout and for best interception of water.
3. Drainage pipe layout shall be approved by the City's Authorized Representative prior to trenching.
4. Trench drainage pipe in minimum eight-inch wide by ten-inch deep trenches.
5. Trench depth may vary greater than ten inches as needed for minimum pipe gradients. Minimum drainage pipe and trench gradients shall be ½ of 1%.
6. Backfill trenches with pea gravel. Drainage pipe shall be encased with a minimum four-inch layer of pea gravel on both sides and bottom, with minimum four-inch pea gravel cover on top. Drainage pipe shall be installed with survey transit control to ensure positive drainage and shall be inspected and approved by the City's Authorized Representative prior to backfilling.
7. The Contractor shall provide the City's Authorized Representative with a survey transit on site as needed to check drainage during inspection.

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201.5 PLAYGROUND LOOSE-FILL SURFACING

(A) Description of Work

1. The Contractor shall install loose-fill surfacing in playgrounds and other outdoor applications where safety surfacing is required, as shown on the plans.
2. The contract work to be performed under this specification consists of furnishing all of the required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the installation of the loose-fill surfacing material within the interior of the playground curb.

(B) Materials

1. Loose-fill material for all playgrounds shall consist of either Fibar recycled shredded wood mulch material or recycled shredded loose fill rubber nugget mulch by No Fault, or City approved equal, to meet CPSC guidelines, ASTM F 1292 guidelines for fall height thicknesses and G-Max and HIC fall rating testing, and IPEMA certification. All play areas shall have surfacing that meets the most recent adopted Consumer Products Safety Commission's Public Playground Safety Handbook. Current requirements (as of the time of writing these specifications): peak deceleration of no more than 200 g's and a Head Injury Criteria (HIC) value of no more than 1,000 for head-first fall from the highest accessible portion of play equipment being installed as shown on plans. Contractor shall provide proof of material certification to City
2. Material depths shall meet critical height requirements as set forth by ASTM, ADA, and CPSC after compaction.
 - a. Depths shall be indicated on approved plans, and may vary due to varying height of any play equipment installed.
 - b. The Contractor shall be responsible for the verification of depths depicted within any approved plans to conform to the critical height criteria prior to the installation of any loose-fill material.
 - c. All areas within the vertical play area curb shall conform to critical height criteria, as required by the referenced publications, with no exceptions.
 - d. The Contractor shall submit a sample of the loose fill material to be used and proof of certification for approval prior to installation.

201.6 POURED-IN PLACE RESILIENT SURFACING

(A) Description of Work

1. The Contractor shall prepare subgrade, provide and install poured-in place resilient rubberized surfacing system in playgrounds and other outdoor applications where safety surfacing is required, as shown on the plans.
2. The contract work to be performed under this specification consists of furnishing all of the required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the installation of resilient (rubberized) surfacing material within the interior of the playground curb in the locations shown on plans.

(B) Materials

1. Material for resilient rubberized surfacing shall be a two-layer system consisting of a cushioning base layer of recycled rubber materials poured over a prepared, compacted subgrade, and a ½" urethane-adhered TPV granular wearing course, to meet CPSC, ASTM F 1292 guidelines for fall height thicknesses and G-Max and HIC fall rating testing, and IPEMA certification. Contractor shall provide proof of material certification to City. All surfacing areas shall meet the most recent adopted Consumer Products Safety Commission's Public Playground Safety Handbook. Current requirements (as of the time of writing these specifications): peak deceleration of no more than 200 g's and a Head Injury Criteria (HIC)

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value of no more than 1,000 for head-first fall from the highest accessible portion of play equipment being installed as shown on plans.

2. Material depths shall be coordinated with playground manufacturer to meet resiliency and critical height requirements as set forth by ASTM 1292, ADA, ASTM F 1951, and CPSC requirements.
 - a. Depths shall be indicated on approved plans, and may vary due to varying height of any play equipment installed.
 - b. Colors shall be as specified on plans; provide representative physical color samples as well as cross-section sample of surfacing layering system for City approval prior to ordering product.
 - c. The Contractor shall be responsible for the verification of depths depicted within any approved plans to conform to the critical height criteria prior to the installation of any resilient material.
 - d. All areas within the vertical play area curb shall conform to critical height criteria, as required by the referenced publications, with no exceptions.

201.7 VERTICAL PLAY AREA CURB

(A) Description of Work

1. The contract work to be performed under this section consists of furnishing all required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the construction of a concrete vertical curb surrounding each playground.
2. The Contractor shall ensure that the surfacing is protected from all types of vehicle, equipment, and foot traffic and vandalism until the concrete or surfacing material is completely cured.

(B) Materials

1. Curbs shall be constructed of concrete reinforced with Number Four rebar spaced at 12-inch centers horizontally and vertically, or as depicted on approved plans.
2. Concrete shall meet the criteria of Section 203 of these Standards and Specifications.
3. The vertical curb shall have a minimum twelve inch (12") top width and may have variable heights as according to approved plans. A minimum of eight inches of the vertical curb shall be buried in compact subgrade. Drawings of the proposed curb section and layout shall be approved by the City's Authorized Representative prior to installation of play equipment.
4. Where curbing is adjacent to flatwork, use minimum 12" long # 3 smooth dowels to pin the concrete. Dowels shall be spaced 48" apart and shortened as needed in narrow areas. See Play Area Ring and Surfacing Detail for related information.

(C) Execution

1. Forming
 - a. Forms shall be set to the lines and grades shown on approved plans within plus or minus ¼ inch of finished grades indicated on said plans.
 - b. Forms shall be securely braced to prevent settlement or movement during placement of concrete. Forms shall remain until concrete has taken final set.
2. Reinforcement
 - a. Reinforcement shall be installed in such a manner to as to keep it a minimum of three inches above the ground by ties and/or chairs to prevent settlement or movement during placement of concrete.
3. Concrete Vertical Curb
 - a. Concrete shall be poured finished and cured in accordance with Section 203.0 of these Standards and Specifications. Control joints shall be spaced as depicted on approved plans and per City Detail.

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201.8 PLAY EQUIPMENT

(A) Description of Work

The contract work to be performed under this section of the specifications consists of furnishing all required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the installation of any play, exercise, or recreational apparatus equipment, including reinforced concrete footings and related shade structures.

(B) Design Submittal

1. The Contractor shall provide (3) three print sets and a pdf of detailed design and materials information specific to the play equipment line to the City's Authorized Representative for review and approval. Design submittal shall include the following information:
 - a. Detailed plan view of play components (with fall zones) within shown curb confines, at scale of 1/8"=1'0"; and a color rendered 3-D perspective rendering.
 - b. Ramp and transfer station locations. (shall be closest to ADA ramp)
 - c. ADA path of travel to play area
 - d. ADA accessible surfacing layout, depths, and area measured in sq.
 - e. Deck and stair heights
 - f. Fall zone delineations and dimensioning, critical fall heights, and surface material requirements.
 - g. Grab bars, stair kick plates, and railings;
 - h. Materials specifications, product cut sheets, and pictures of each component and of main frame structure.
 - i. Materials specifications, product cut sheets, and details for accessible surfacing and surfacing edge detail.
 - j. Materials specifications for all clamps, fittings, and fasteners.
 - k. Footing details and/or dimensions, including bury depths.
 - l. Color specifications and color samples for all components, mainframe, decking, post clamps, grab bars, and railings.
 - m. Warranty descriptions.
 - n. Play equipment manufacturing company and representative names, addresses, phone numbers and email addresses.
 - o. A statement of conformance with CPSC, ASTM F1487-01 and ADA guidelines as are current at the time of design submittal; and
 - p. Statement of IPEMA certification.
 - q. A copy of manufacturer's warranty in certificate format, ISO 9001 certification.

(C) Materials

1. Contractor shall supply all equipment shown on plans in the same configurations shown on said plans.
2. All equipment shall meet current ADA, CPSC, and ASTM guidelines for safety and accessibility.
3. Equipment shall not be changed or substituted without the expressed written consent of the City's Authorized Representative. Equipment shall be arranged to conform to all fall zone requirements as set forth by ADA, ASTM, and CPSC.
4. It shall be the responsibility of the contractor to verify that all designed play equipment configurations, as shown on plans, conforms to the ADA, CPSC, and ASTM guidelines.

(D) Components

1. Main Frame Posts
 - a. Shall have a 5" o.d., minimum 0.12" wall thickness, round steel tubing with yield tests complying with ASTM A-135 and ASTM A-500 Grade A.
 - b. Tubing interiors and cut ends shall be coated with a corrosion resistant compound. Exteriors shall be galvanized, coated with chromate conversion coating, and then finished with electrostatically applied, oven cured dry polyester powder coat.

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- c. Post caps shall be UV resistant, high density, injection-molded plastic, or powder coated steel or aluminum, factory riveted to post, and color matched to post.
 - d. Concrete post footings shall be the greater of manufacturer's recommendations or 12-inch diameter and 34-inch deep as measured from finished top of surfacing.
 - 2. Stairs and Stair Decks
 - a. Minimum 12-gauge steel decks, minimum 12-gauge steel stairs.
 - b. Perforated on the standing surface, flanged and braced for structural integrity and bonded vinyl clad.
 - c. Side flanges slotted for post attachment.
 - d. Modular in design.
 - 3. Main Frame Rails and Hand loops
 - a. 1-1/8" o.d. galvanized, powder coated steel.
 - b. All welds shall be smooth and free of excessive splatter.
 - 4. Climbers, Fire poles, and Horizontal Ladders
 - a. Galvanized, powder coated tubular steel, with concrete footings. Per manufacturer's recommendations.
 - b. All welds shall be smooth and free of excessive splatter.
 - c. Chain or cable climbers shall be padded for grip and comfort or have protective vinyl or nylon coating.
 - 5. Slides and Slide Hoods
 - a. Rotationally molded, linear low density, molded- in UV color stabilized polyethylene. A light color is preferred for less fading.
 - b. Slide sections shall be connected with recessed fasteners.
 - c. All steel tubing supports shall be powder coated.
 - d. All steel welds shall be smooth and free of excessive weld splatter. Hoods shall attach to slides and provide full enclosure.
 - e. Support footings shall be per manufacturer's recommendations.
 - f. Spiral slide main support footings shall be at least 16-inch diameter and 34-inch deep, as measured from top of surfacing, or per Manufacturer's recommendation, whichever is greater.
 - g. Slides shall be constructed to accommodate water drainage in the exit region so that puddling does not occur.
 - 6. Swings
 - a. Concrete post footings shall be the greater of manufacturer's recommendations or 18-inch diameter and 44-inch deep as measured from finished top of surfacing.
 - b. Pipe beam swing hangers shall be corrosion resistant with self-lubricating bearings, and double clevis chain attachment.
 - c. Chains shall be hot galvanized 4/0 straight link welded, 670 lb. working load limit.
 - d. Chain-to-seat attachment shall be by single clevis bolt link or shackle. No 'S' hooks will be allowed.
 - 7. Clamps, Fittings, and Fasteners
 - a. Clamps: Powder coated, die cast aluminum alloy, pinned to posts with solid steel pins, and recessed clamp fasteners.
 - b. Fittings & Fasteners: Tamper resistant, stainless steel or other approved non-corrosive material, free from protrusions.
- (E) Execution
- 1. The Contractor shall submit manufacturer's drawings and/or color 3-D renderings for all play equipment, layout and footings. Manufacturer's drawings shall be submitted to the City's Authorized Representative for approval before any equipment is ordered.
 - 2. Once manufacturer's drawings have been approved, play equipment shall be installed according to approved plans. Footings shall be installed below all surfacing and aggregate fill in compact subgrade.

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(F) Quality Assurance

1. The play equipment supplier and installer shall have a minimum of five years experience in the manufacture and installation of similar play components. The installer shall also be a (CPSI) Certified Playground Inspector through the NRPA (National Park & Recreation Association). Installation shall be in accordance with City approved plans and specifications and manufacturer's recommendations.
2. Prior to final acceptance, the following shall be submitted to the City's Authorized Representative by a Certified Playground Inspector/Auditor. Contractor/Installer shall comply with correction notes and requirements (if any) from Audit at no extra expense.
 - a. A statement of conformance that the playground has been installed correctly and in accordance CPSC, ASTM, and ADA guidelines.
 - b. A statement of IPEMA certification.
 - c. Prior to final acceptance the playground installation manual and parts manual along with spare parts and touch up paint shall be provided to the City.

(G) Delivery of Materials and Storage

1. Deliver materials to site undamaged. Store and protect materials on site in a manner that prevents damage.
2. Materials shall be placed and stored so that water will drain and not accumulate.

(H) Installation

1. Unless otherwise approved by the City's Authorized Representative, the following order shall be adhered to for the construction/reconstruction of any playground:
 - a. Protect existing site improvements and trees to remain with approved temporary fencing; for all installations, erect temporary (6') six foot high construction fence around the perimeter of area to prevent use of unfinished play equipment until final Audit is certified and accepted.
 - b. Removal of existing equipment (if present) and surfacing.
 - c. Surveying and staking of curb and subgrade, and subgrade finishing; rough grading as needed
 - d. Installation of new or replacement equipment and footings.
 - e. Installation of concrete play area curb.
 - f. Installation of playground sub drain system.
 - g. Installation of cast-in-place surfaces over any concrete foundations or aggregate base, as required on approved plans.
 - h. Fill playground area with fill material as required on approved plans.
 - i. Regrading to transition adjacent slopes.
 - j. Repair and/or replace sod and irrigation system around playground.
 - k. Playground areas shall be provided with a subsurface drainage system sufficient to adequately drain the playground area. Provide a cleanout in a ten-inch round Carson valve box outside of playground area.
 - l. Playground drains shall be conveyed to storm drainage systems or shall be suitably daylighted in a non-obtrusive area, away from play fields to a planting bed, as possible. Install protective concrete daylight collar as needed.
2. Inspection and Warranty
 - a. Provide written contractor and manufacturer warranty on company letterhead to following minimums:
 - i. 25 year for parts availability
 - ii. 100 year Limited Warranty for all stainless steel and aluminum posts, clamps, beams and caps
 - iii. 15 year Limited Warranty for all plastic, pvc, steel components
 - iv. 3 year Limited Warranty for all swing seats, chains/coatings, pvc belting materials
 - b. Provide certification of Compliance letter and audit from independent CPSI Certified inspector.
 - c. Provide playground Installation Manuals.

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- d. Provide Manufacturer's installation paint touch up bottles, and maintenance instruction kit.
- e. Provide warranty and maintenance instruction for rubberized surfacing.
- f. All items shall be provided to the City prior to final acceptance of the playground.

202.0 PARK AND LANDSCAPE AREA PAVING SPECIFICATIONS

202.1 CONCRETE WALKWAY

- (A) These specifications apply to walkways interior to park sites; for sidewalks adjacent to street curbs, refer to City of Manteca Public Works Standard Details and Specifications.
- (B) Standard walkway finish shall be medium broom finish perpendicular to the walkway edge, unless identified as a special paving area.
- (C) Provide at least one path of travel within a park design to all major use areas where the concrete walkway is ten feet (10') wide preferred (8' minimum) for use by maintenance and service vehicles. All curves within this route shall contain curves no smaller than ten feet (10') in radius. Walkways used for maintenance and service vehicles shall have minimum 5" depth, minimum 12" wide thickened edges 8" deep, fiber reinforcement, and include a 4" aggregate base, or comply with geotechnical engineer's design requirements specifically engineered for maintenance vehicle design loads for the soils sampled in the park site.
- (D) Secondary walkways shall be five feet (5') wide except where the walkway is not a circulation route and only surrounds the play area, which may be a twelve inch (12") wide by twelve inch (12") depth play ring.
- (E) Concrete secondary walkways and other standard flatwork applications shall be a minimum of (4") four inches thick and be made of concrete with a compressive strength of 2,500 psi at 28 days. Upon approval by the City fiber mesh, may be installed at a thickness of three and a half inches (3-1/2"). Do not include welded wire mesh or rebar, unless otherwise required.
- (F) Aggregate Base shall be installed on case by case basis as necessary.
- (G) No trail or sidewalk slopes shall exceed twelve (horizontal) to one (vertical). Sharp grade breaks shall not be allowed. Use of stairs is discouraged, and if used must include ADA accessible ramps with acceptable slopes, located as necessary to comply with all applicable ADA requirements.
- (H) Sidewalks shall have a cross slope of ¼ inch of slope per one foot of width to allow for proper drainage.
- (I) Streetscape walkways may contain alternative pavement materials, colors, finishes to complement the overall streetscape design concept, provided the designs are presented to and approved by the City prior to development of construction documents, and must comply with ADA requirements and City Public Works requirements.

202.2 PARK AND LANDSCAPE AREA CONCRETE MOW STRIPS

- (A) Reinforced Concrete mow strips a minimum of six inches (6") wide and depth shall be constructed between the edge of decomposed granite paving and turf areas.
- (B) Reinforced Concrete mow strips twelve inches (12") wide and (6") six inch depth shall be constructed along all vertical elements such as light posts, utility equipment and under fencing.
- (C) Wider widths of mow strips or decorative banding shall be reviewed on a case by case basis by the City's Representative.
- (D) No plastic or redwood header shall be used as a permanent edging within a developed park or LMD streetscape (Landscape Maintenance District)
- (E) 2x4 Redwood header may be used as a temporary edging and property line marker between phases or future expansion.

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202.3 METAL EDGING

- (A) Metal edging may be used in smaller parks for path edge or for dividers between decorative rock or mulches.
- (B) Duraedge 3/16" x 4" x 16' or City approved Equal. 6" depth may be required in certain applications.
- (C) Color shall be powder coated with thickness of 1.5 mils.
- (D) Duraedge 16" steel stakes shall be spaced approximately every 30" apart and as needed along the course. Splicers and corners to be used as required.

202.4 DECOMPOSED GRANITE (DG) PAVING

- (A) Do not install DG in areas that exceed a longitudinal slope greater than 3 percent.
- (B) Provide a minimum cross slope of 1 percent, not-to-exceed 2 percent.
- (C) Compact in 2" lifts and utilize water during compaction process.
- (D) Include a six inch (6") concrete mow strip on the outside edges of a decomposed granite jogging trail when located within a developed park.
- (E) Required edging on open space trails shall be determined on a case by case basis.
- (F) Stabilized DG is typically required but may be omitted in appropriate areas upon direction of City Representative.

202.5 ASPHALTIC CONCRETE (AC) PAVING

- (A) Refer to Public Works AC Concrete specifications and geotechnical engineer's report for pavement cross sections, thicknesses and subgrade material and compaction requirements.
- (B) Provide batch plant, base rock and aggregate material submittals to the City for review and approval prior to delivery of materials to the construction site.
- (C) Install pavements when submittals and pavement designs have been approved by the City of Manteca, and the atmospheric conditions are conducive to successful application of materials.

203.0 CONCRETE SPECIFICATIONS

203.1 DESCRIPTION OF WORK

The work to be performed under this section of the specifications consists of Furnishing all required labor, materials, equipment, implements, parts and supplies necessary for the execution of all concrete work and adjacent surfaces, including preparation, forming, placing curing and related work as indicated on the approved drawings.

203.2 QUALITY ASSURANCE

- (A) It is the Contractor's responsibility to establish the extent of the work.
- (B) Field Conditions: Verify drawings and dimensions with actual field conditions. Inspect related work and adjacent surfaces and report any conditions that would prevent the proper and timely execution of this work to the City's Authorized Representative. Failure to do so shall result in the Contractor paying for any additional work and correcting unsatisfactory conditions.
- (C) Codes and Standards: Comply with the latest edition of the following standards and regulations: (ASTM) American Society for Testing, the (CBC) California Building Code as adopted by the City, Sections of the Public Works Standards and Specifications (Section 73-1.02), and applicable subsections of these Standards and Specifications. Containment and wash-down cleanup areas

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shall comply with City of Manteca post-construction Stormwater Standards Manual for control measures during construction.

- (D) Contractor shall refer to soils reports for information concerning properties and conditions of the existing soil structure and geomorphology at the site, and comply with any recommendations of the soils report.
- (E) Contractor shall be responsible for protecting adjacent curbs, walks or other facilities from damage during the installation.
- (F) Work deemed by the City's Authorized Representative to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be promptly corrected.
- (G) The Contractor shall repair any concrete damage to edges or breaks in concrete at no cost to the City. Repairs shall be made by removal and replacement of complete sections. Patching of concrete shall not be permitted.
- (H) Concrete shall be obtained from the same source throughout the project.
- (I) Coordinate with City Inspector to schedule subgrade and formwork inspections, allow for 48 hours after issuing request; refer to City of Manteca Public Works Standard Specifications requirements.

203.3 SUBMITTALS

- (A) Submit product data for proprietary materials and items, admixtures, joint systems, curing materials and any additional information requested by the City's Authorized Representative.
- (B) Submit design mixes for each class of concrete, and any adjustments to materials as warranted by project conditions, weather, test results, or other circumstances.
- (C) Submit laboratory test reports for evaluation of concrete materials and mixing design tests, OR material certificates signed by the manufacturer and Contractor certifying that each material complies with or exceeds the specified requirements.

203.4 COORDINATION

- (A) The Contractor shall coordinate the installation of concrete with all other related work. Any irrigation sleeves or electrical conduit shall be installed prior to pouring of concrete. The Contractor shall be responsible for verifying the dimensions and required materials prior to starting installation.
- (B) Contractor shall pay particular attention to footing locations and coordinate with utility locations to avoid and prevent conflicts.

203.5 CONCRETE AND RELATED PRODUCTS

- (A) Foundations Concrete
 1. Concrete Compressive Strength: 2,500 psi at 28 days
 2. Concrete: ASTM C150 portland cement, Type I or Type II
 3. Fly Ash: ASTM C618 for Class N or Class F materials (Class C is not permitted)
 4. Minimum Cementitious Material: 5 sacks (470#) per cubic yard
 5. Maximum Fly Ash Quantity: 15% of total cementitious material by weight
 6. Aggregate – Course: ASTM C33, ¾" maximum size
 7. Aggregate – Fine: ASTM C33
 8. Water: Potable, free from deleterious amounts of acids, alkalis, salts, or organic materials
 9. Maximum Water / Cement Ratio (W/C) 0.55
 10. Admixtures: Not allowed unless specifically approved by the Parks Department
 11. Slump: 4" +/- 1"

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(B) Mow Strips & Curbs

1. Concrete Compressive Strength: 2,500 psi at 28 days
2. Concrete: ASTM C150 portland cement, Type I or Type II
3. Fly Ash: ASTM C618 for Class N or Class F materials (Class C is not permitted)
4. Minimum Cementitious Material: 5 sacks (470#) per cubic yard
5. Maximum Fly Ash Quantity: 15% of total cementitious material by weight
6. Aggregate – Course: ASTM C33, ¾" maximum size
7. Aggregate – Fine: ASTM C33
8. Water: Potable, free from deleterious amounts of acids, alkalis, salts, or organic materials
9. Maximum Water / Cement Ratio (W/C)" 0.55
10. Admixtures: Not allowed unless specifically approved by the Parks Department
11. Slump: 4" +/- 1"

(C) Sidewalks and slabs on grade

1. Concrete Compressive Strength: 2,500 psi at 28 days
2. Concrete: ASTM C150 portland cement, Type I or Type II
3. Fly Ash: ASTM C618 for Class N or Class F materials (Class C is not permitted)
4. Minimum Cementitious Material: 5 ½ sacks (517#) per cubic yard
5. Maximum Fly Ash Quantity: 15% of total cementitious material by weight
6. Aggregate – Course: ASTM C33, ¾" maximum size
7. Aggregate – Fine: ASTM C33
8. Water: Potable, free from deleterious amounts of acids, alkalis, salts, or organic materials
9. Maximum Water / Cement Ratio (W/C)" 0.50
10. Admixtures: Not allowed unless specifically approved by the Parks Department
11. Slump: 3" +/- 1"

(D) Reinforcing

1. Deformed Bars for Concrete Reinforcement: ASTM A615 Grade 60 (Fy=60,000psi)
2. Welded Wire Fabric: ASTM A185
3. Fiber Reinforced Concrete: ASTM C1116
4. Smooth Dowels: ASTM A615, Grade 40 or 60

203.6 EXECUTION

(A) Examination

1. Examine surfaces and areas to receive sidewalks, slabs or curbs to establish acceptable conditions. Do not begin installation until unsatisfactory conditions have been corrected.
2. Verify that compacted sub grade is ready to support paving and imposed loads.
3. Verify that elevations and grades of base are correct.
4. Coordinate with other trades as needed for the installation of any sleeves or conduit under concrete.

(B) Subgrade Preparation

1. Thoroughly moisten the sub grade and compact with a ground pounder, vibratory plate or roller. Preparations shall be as per subsection 73-1.02 of these Standards and Specifications.
2. Place and compact additional material until 95% compaction has been attained.
3. Test completed sub grade for grade and cross-section with a template extending the full width of the sidewalk and support between side forms.
4. Prior to pour, moisten the sub grade to minimize absorption of water from concrete operations.

(C) Forming

1. Set forms with the upper edge true to line, grade and dimensions shown on approved plans.
2. Forms shall be secured rigidly and braced in place with stakes to prevent settling or movement during placement of concrete.
3. After forms are set, check grade and alignment with a (10') ten foot straight edge.

City of Manteca
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4. Forms shall conform to line and grade with an allowable tolerance no more than ¼" per any (10') ten foot long section.
5. Forms shall have a transverse slope with the low side towards turf areas when possible.
6. Assemble form work to permit easy stripping and dismantling without damaging concrete. Place joint fillers vertical in position, in straight lines. Secure to form work during concrete placement. Coat forms with oil prior to each time concrete is placed. Wood forms may be thoroughly wetted with water before concrete is placed.
7. Forms shall remain until concrete has taken final set.

(D) Reinforcement

1. Clean reinforcement of dirt, rust and mill scale.
2. Arrange, space and tie any bars or dowels so that they are held in position during concrete placement.
3. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least (1) one full mesh and lace splices with wires. Offset laps of adjoining widths to prevent continuous laps in either direction.
4. Interrupt reinforcement at joints.
5. Reinforcement shall be installed in such a manner to as to keep it a minimum of three inches above the ground by ties and/or chairs to prevent settlement or movement during placement of concrete. **Do not allow foot traffic to crush, compact or displace the reinforcement during concrete installation.** In areas where stepping is unavoidable, any displaced reinforcement shall be pulled up and elevated back to the correct depth.

(E) Formed Joints

1. Expansion Joints
 - a. Expansion joints shall be placed in locations as shown on the construction plans, in accordance with the standard details, and at intervals no greater than 32 feet, at the correct elevation and depth.
 - b. Expansion joints shall also be placed between paving components such as interior walks and city walks, buildings or other appurtenances. When questions regarding placement arise in the field, a City Construction Inspector shall be consulted.
 - c. Fill expansion joints with ½" asphalt felt joint filler.
 - d. Place joint filler with top edge ¼" below the finish surface.
 - e. Hold in place with steel pins or other devices to prevent warping of the filler during the floating and finishing process.
 - f. Immediately after the finishing operations are completed, joint edges shall have the joint filler removed.
2. Control /Contraction Joints
 - a. Control joints in sidewalks shall be placed at regular intervals equal to the width of the walkway or every (5') five feet, whichever is less. For walks (10') ten feet in width, a longitudinal score mark shall be placed down the center.
 - b. Slab surfaces shall be divided into square areas by means of control joints at regular intervals at (5') five to (8') eight-foot maximum spacing. Joints shall match up with the joints of the sidewalk or play area curbing when possible.
 - c. Control joints shall be not less than 25% and no more than 33% of the slab thickness.
 - d. Control joint shall have a ¼" tooled radius.

(F) Concrete Placement

1. Concrete shall be placed in the forms without segregation and struckoff and compacted until a layer of mortar has been brought to the surface.
2. Concrete shall be placed in 1 layer to provide a compacted and finished sidewalk or slab of thickness indicated.
3. Contractor shall ensure that reinforcement, inserts, imbedded parts, and formed joints are not disturbed during the concrete installation.
4. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that cold joints appear.

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5. Concrete shall be mixed and poured as specified for 3500 pound concrete in this section. The surfaces shall be finished in the manner specified. Joints and edges shall be tooled.

(G) Finishing

1. When most of the water sheen has disappeared, and just before the concrete hardens, finish the surface to a smooth and uniformly fine granular or sandy texture free of waves irregularities or tool marks.
2. Finished surfaces of all slabs and walks shall be true and flat in accordance with elevations, patterns, finish specifications and slopes shown on the approved plans.
3. Sidewalks and slabs shall receive a scored surface by brooming with a fiber bristle brush in a direction transverse to that of the traffic.
4. Sidewalks and slabs shall have a medium broom finish at surfaces with less than a 5% slope and heavy broom finish for slopes greater than 5%.
5. Edges and joints shall be finished before brooming. Brooming shall eliminate the flat surface left by the face of the edging tool.
6. Special finishes and markings must be approved by the City's Authorized Representative prior to the commencement of work.

(H) Curing

1. Wet the entire exposed surface with a fine spray of water and then cover with impervious sheeting material.
2. Lay sheets directly on the concrete surface and overlap (12") twelve inches when a continuous sheet is not used.
3. Provide impervious sheeting at least (18") eighteen inches wider than the concrete surface to be cured.
4. Securely weight the sheeting down with heavy wood planks or by placing a bank of moist earth along edges and laps in the sheets.
5. Sheets shall be replaced or repaired when torn or otherwise damaged during curing.
6. The curing shall remain on the concrete for not less than (7) seven days.
7. Contractor shall maintain suitable barriers to protect the concrete from traffic, graffiti or damage to the concrete during the installation and curing process.

(I) Backfill

1. After curing, debris shall be removed.
2. Backfill, grade and compact the soil in areas adjacent to the concrete. The soil elevations shall conform to the surrounding area and be in accordance with the lines and grades indicated on the approved plans.
3. Soil shall be raked smooth and neat free of rocks and slag in a manner suitable for planting.

203.7 INSPECTIONS

- (A) The City Construction Inspector shall inspect the soil preparation and form work for conformance to the drawings and these Standards and Specifications prior to pour.
- (B) The City's Authorized Representative and the Construction Inspector shall be notified 48 hours prior to pour for inspection. Work deemed to be faulty or not in accordance with the approved drawings and these Standards and Specifications shall be corrected at that time.

203.8 CLEANING AND PROTECTION

- (A) Repair damaged concrete and clean any concrete discolored during construction.
- (B) Concrete that is damaged, vandalized, or has graffiti, shall be removed and reconstructed for the entire length between regularly scheduled joints.
- (C) Refinishing or patching of damaged portions shall not be permitted.
- (D) Concrete sections shall be removed and disposed of by the Contractor.

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Landscape Standards & Specifications

204.0 SIGNAGE

204.1 DESCRIPTION OF WORK

Provide new signage, graphic design, lettering, posts, mounting hardware, concrete footings, submittals, regulatory requirements, and installation as called for on the plans or required by other sections of these specifications or the City of Manteca Public Works Standard Specifications and Details.

204.2 QUALITY ASSURANCE

- (A) It is the Contractor's responsibility to review and be familiar with the requirements of the project as indicated in the drawings and specifications, and the code requirements governing temporary and permanent signage requirements for public safety, accessibility, regulations and current standards in force at the time of the construction.
- (B) References for the signage work include California Building Code (CBC); California Code of Regulations (CCR); Title 24, Part 2; Americans with Disabilities Act (ADA); Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG).

204.3 SUBMITTALS

- (A) Submit shop drawings for City review and written approval prior to procurement of materials, indicating design styles, lettering and locations, spacing and installation methods.
- (B) Provide samples of materials indicating sign type, color and style of each family of signs.

204.4 PRODUCTS

- (A) Restroom Doors: Acrylic plastic signs equivalent to that as detailed on the drawings; 12 inch circle and triangle with international symbol of accessibility in accordance with CBC, California Building Code, (CCR), Title 24, Part 2, Section 1115B.5 and 1117B.5.7.
- (B) Park Perimeter Signs: Aluminum sign of size indicated. Mount sign on free standing 2-inch diameter standard weight galvanized steel pipe post as indicated. Post on all sides of park adjacent to street. Sign shall indicate park hours of operations, rules and regulations, emergency information, and Manteca Municipal Code references; refer to Park Regulatory Signage Detail.
- (C) ADA Stall and Van Parking Stall: 12 inch x 18 inch aluminum sign in accordance with CBC, California Building Code, (CCR), Title 24, Part 2, Section 1129B.5 and separate 12 inch wide x 4 inch high aluminum sign with "Disabled Parking Only" or "Van-Accessible" wording in accordance with ADAAG Article 502.6 with 2 inch diameter standard weight galvanized steel pipe post; as manufactured by Flags and Banners Unlimited.
- (D) Park Entry Signs (Neighborhood Parks): Constructed of recycled plastic lumber, molded color graphics on recycled plastic lumber surfaces, reinforced concrete footings, to sizes and configurations shown on City of Manteca Standard Construction Details, and in locations shown on plans. Graphics and shop drawings to be submitted to City for approval prior to fabrication. Refer to Section 4.10 Park Naming Policy and Procedure.
- (E) Community Park Monument Signs: Constructed of reinforced, poured in place concrete and reinforced concrete masonry block in configurations, finishes and locations shown on the City of Manteca Standard Construction Details and on the plans. Graphics and shop drawings shall be submitted for approval to City of Manteca Parks Department. Refer to Section 4.10 Park Naming Policy and Procedure.

204.5 INSTALLATIONS

- (A) Install in accordance with manufacturer's instructions and Standard Construction Details; true, plumb and level and adequately secured with methods as indicated in the plans, these specifications and the Standard Construction Details.

City of Manteca
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(B) Clean and polish.

(C) Obtain on-site punchlist review from City of Manteca inspector/engineer, make corrections or modifications and obtain final approval.

(D) Provide as-built diagrams/plans and documentation submittal to City's Representative.

END OF STANDARD SPECIFICATIONS SECTION

City of Manteca



MANTECA



PARKS AND RECREATION DEPT.

CREATING COMMUNITY THROUGH PEOPLE, PARKS AND PROGRAMS

Parks and Recreation Standard Construction Details

JULY 11, 2017

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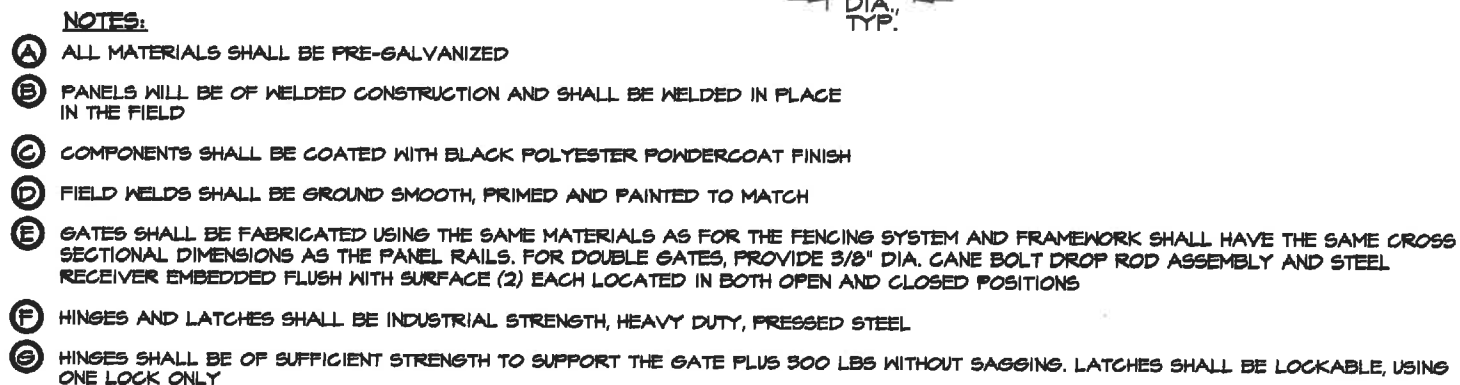
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4 FT. PARK FENCE (WITHOUT MON STRIP)	APPROVED BY: 
CITY OF MANTECA PARKS & RECREATION DEPARTMENT	PARKS & RECREATION DIRECTOR
	DRAWING NO.
	DATE: 2017
	F-1



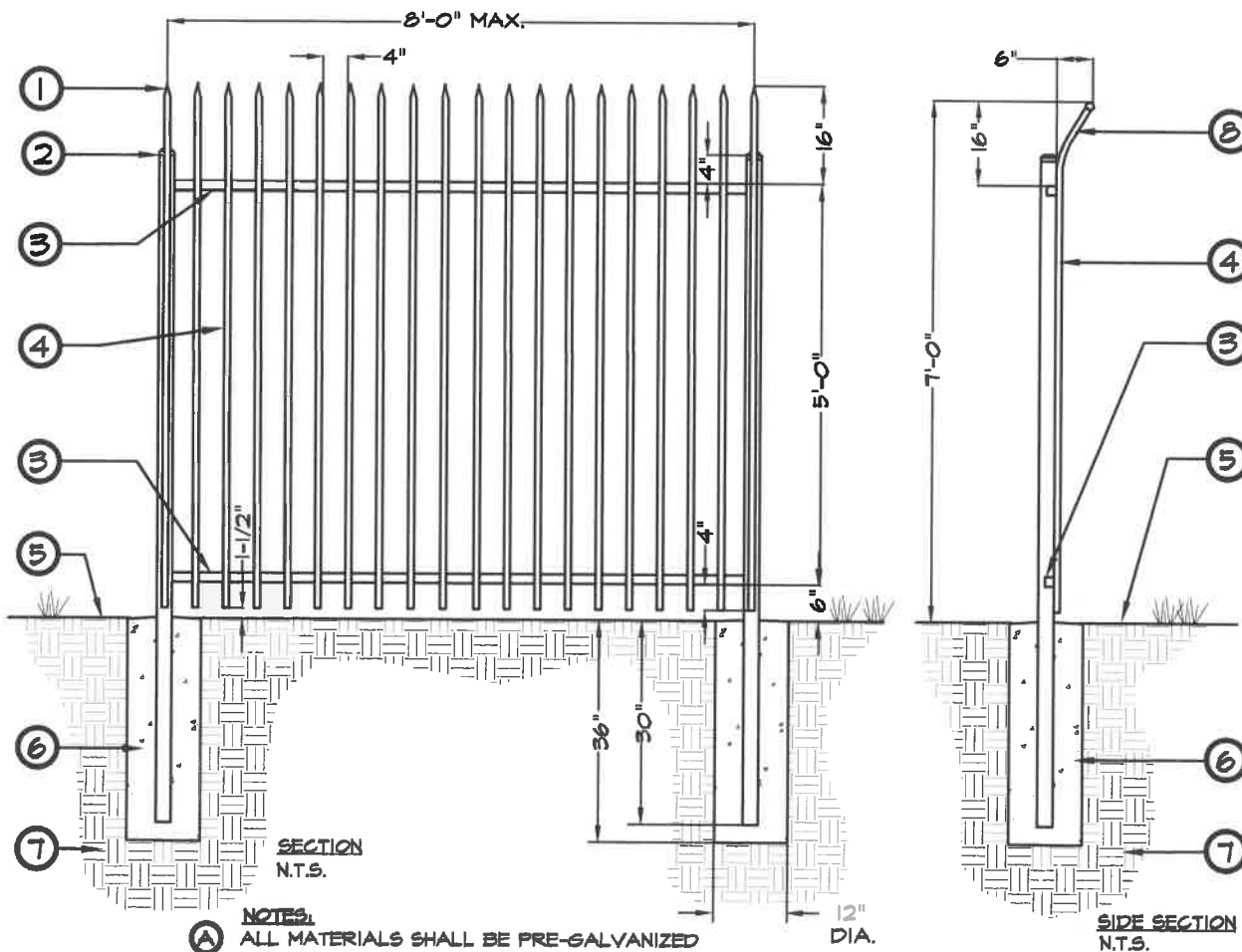
- LEGEND:**
- ① POSTS: 2-1/2" SQ. 11 GA. STEEL W/ DOMED PRESSED STEEL CAP ABOVE TOP RAIL, TACK WELDED IN PLACE
 - ② TOP AND BOTTOM RAIL 1-1/2" SQ. 14 GA. STEEL
 - ③ FINISH GRADE
W/TOPDRESSING ADDED
 - ④ 1" SQ 14 GAUGE STEEL PICKETS
 - ⑤ CONCRETE FOUNDATION,
CROWN EXPOSED SURFACE
AT 2% MIN.
 - ⑥ NATIVE SOIL OR COMPACTED
SUBGRADE @ 95% MAXIMUM
DRY DENSITY

APPROVED BY:	1C- B. [Signature]
PARKS & RECREATION DIRECTOR	
DRAWING NO.	
DATE: 2017	F-2



- (A) ALL MATERIALS SHALL BE PRE-SALVANIZED
- (B) PANELS WILL BE OF WELDED CONSTRUCTION AND SHALL BE WELDED IN PLACE IN THE FIELD
- (C) COMPONENTS SHALL BE COATED WITH BLACK POLYESTER POWDERCOAT FINISH
- (D) FIELD WELDS SHALL BE GROUND SMOOTH, PRIMED AND PAINTED TO MATCH
- (E) GATES SHALL BE FABRICATED USING THE SAME MATERIALS AS FOR THE FENCING SYSTEM AND FRAMEWORK SHALL HAVE THE SAME CROSS SECTIONAL DIMENSIONS AS THE PANEL RAILS. FOR DOUBLE GATES, PROVIDE 3/8" DIA. CANE BOLT DROP ROD ASSEMBLY AND STEEL RECEIVER EMBEDDED FLUSH WITH SURFACE (2) EACH LOCATED IN BOTH OPEN AND CLOSED POSITIONS
- (F) HINGES AND LATCHES SHALL BE INDUSTRIAL STRENGTH, HEAVY DUTY, PRESSED STEEL
- (G) HINGES SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE GATE PLUS 300 LBS WITHOUT SAGGING. LATCHES SHALL BE LOCKABLE, USING ONE LOCK ONLY

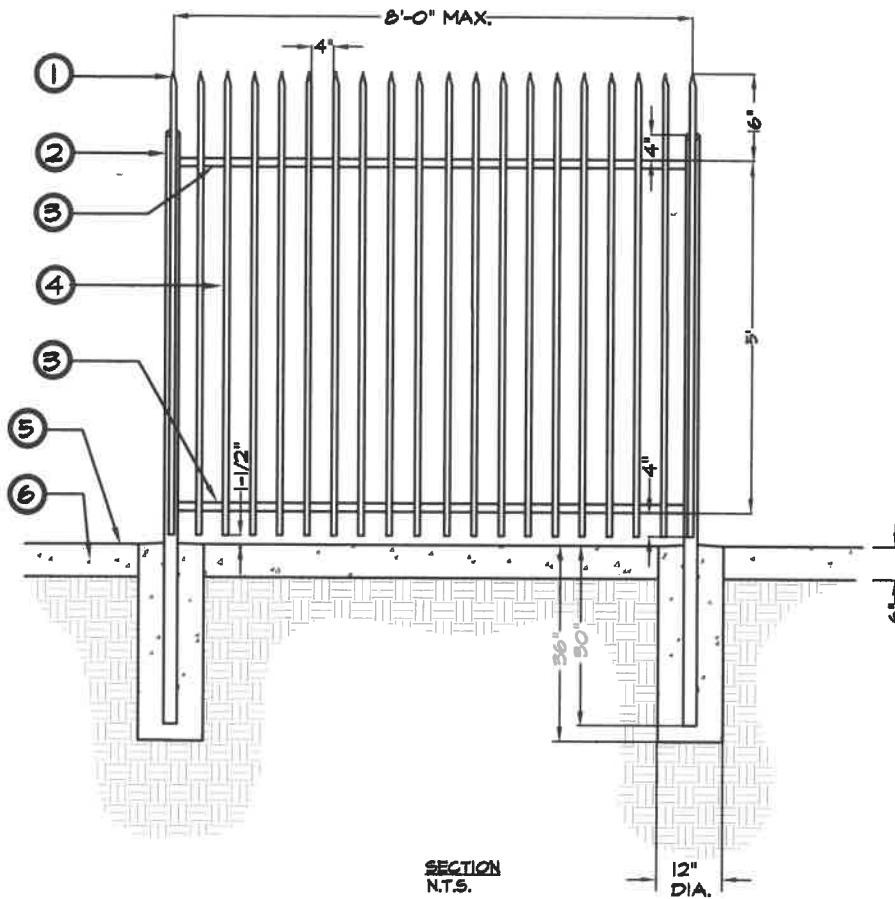
- ① POSTS: 2-1/2" SQ. 11 GA. STEEL W/DOMED PRESSED STL. CAP ABOVE TOP RAIL, TACK WELD IN PLACE
- ② TOP AND BOTTOM RAIL 1-1/2" SQ. 14 GA. STEEL
- ③ FINISH GRADE
- ④ 1" SQ 14 GAUGE STEEL PICKETS
- ⑤ CONC. MOWSTRIP PER DETAILS, 12" W. X 6" DEEP
- ⑥ MIN. 2500 PSI CONCRETE • 28 DAYS, CROWN EXPOSED SURFACE AT 2%
- ⑦ SUBGRADE COMPACTED TO 95% MAXIMUM DRY DENSITY, OR UNDISTURBED NATIVE SOIL COMPACTED TO 90% MAXIMUM DRY DENSITY



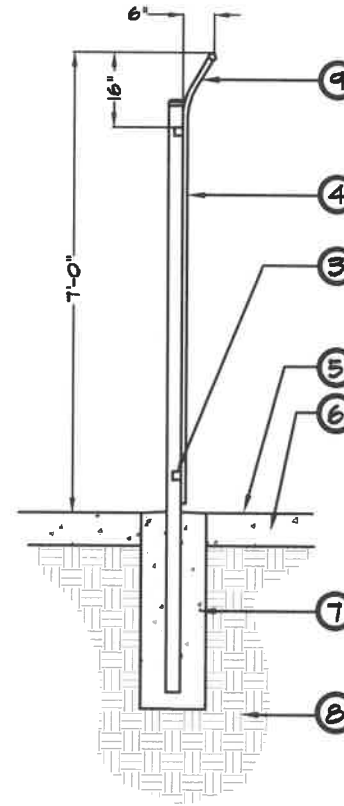
- LEGEND**
- ① CRIMP TIPS OF PICKETS TO CREATE A FLAT POINT
 - ② POSTS, 2-1/2" SQ. 11 GA. STEEL W/DOMED P.S. CAP ABOVE TOP RAIL, TACK WELD IN PLACE
 - ③ TOP AND BOTTOM RAIL 1-1/2" SQ. 14 GA. STEEL WELDED TO 2-1/2" SQ. POSTS. ALL WELDS SHALL BE GROUND SMOOTH
 - ④ 1" SQ 11 GA. STEEL PICKETS AT 4" ON CENTER
 - ⑤ FINISH GRADE (WITH TOPDRESSING ADDED)
 - ⑥ CONCRETE FOOTINGS
 - ⑦ NATIVE SOIL OR COMPACTED SUBGRADE @ 95% MAXIMUM DRY DENSITY
 - ⑧ BEND TOP PICKETS AS SHOWN WITH A SMOOTH ROUND BEND AND CRIMP TIPS TO CREATE A FLAT POINT.

- NOTES**
- (A) ALL MATERIALS SHALL BE PRE-GALVANIZED
 - (B) PANELS WILL BE OF WELDED CONSTRUCTION AND SHALL BE WELDED IN PLACE IN THE FIELD
 - (C) COMPONENTS SHALL BE COATED WITH BLACK POLYESTER POWDERCOAT FINISH
 - (D) FIELD WELDS SHALL BE GROUND SMOOTH, PRIMED AND PAINTED TO MATCH
 - (E) GATES SHALL BE FABRICATED USING THE SAME MATERIALS AS FOR THE FENCING SYSTEM AND FRAMEWORK SHALL HAVE THE SAME CROSS SECTIONAL DIMENSIONS AS THE PANEL RAILS. FOR DOUBLE GATES, PROVIDE 3/8" DIA. CANE BOLT DROP ROD ASSEMBLY AND STEEL RECEIVER EMBEDDED FLUSH WITH SURFACE (2) EACH LOCATED IN BOTH OPEN AND CLOSED POSITIONS
 - (F) HINGES AND LATCHES SHALL BE INDUSTRIAL STRENGTH, HEAVY DUTY, PRESSED STEEL
 - (G) HINGES SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE GATE PLUS 300 LBS WITHOUT SAGGING. LATCHES SHALL BE LOCKABLE, USING ONE LOCK ONLY

NO.	REVISED	BY
DRAWN BY: C. BROWN		
CHECKED BY: J. COURTNEY		
SCALES: NONE		
7 FT. CURVE TOP FENCE (WITHOUT MOM STRIP) CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:		DATE: 2017
		DRAWING NO. F-3
PARKS & RECREATION DIRECTOR		



SECTION
N.T.S.



SIDE SECTION
N.T.S.

LEGEND:

- ① CRIMP TIPS OF PICKETS TO CREATE A FLAT POINT
- ② POSTS, 2-1/2" SQ. 11 GA. STEEL W/DOMED P.S. CAP ABOVE TOP RAIL, TACK WELD IN PLACE.
- ③ TOP AND BOTTOM RAIL 1-1/2" SQ. 14 GA. STEEL WELDED TO 2-1/2" SQ. POSTS. ALL WELDS SHALL BE GROUND SMOOTH
- ④ 1" SQ 11 GA. STEEL PICKETS AT 4" ON CENTER
- ⑤ FINISH GRADE OF CONCRETE
- ⑥ 6" THICK X 12" WIDE CONCRETE MOWSTRIP UNDER FENCE.
- ⑦ CONCRETE FOOTING
- ⑧ NATIVE SOIL OR COMPACTED SUBGRADE @ 95% MAXIMUM DRY DENSITY
- ⑨ BEND TOP PICKETS AS SHOWN WITH A SMOOTH ROUND BEND AND CRIMP TIPS TO CREATE A FLAT POINT.

NOTES:

- (A) ALL MATERIALS SHALL BE PRE-SALVANIZED
- (B) PANELS WILL BE OF WELDED CONSTRUCTION AND SHALL BE WELDED IN PLACE IN THE FIELD
- (C) COMPONENTS SHALL BE COATED WITH BLACK POLYESTER POWDERCOAT FINISH
- (D) FIELD WELDS SHALL BE GROUND SMOOTH, PRIMED AND PAINTED TO MATCH
- (E) GATES SHALL BE FABRICATED USING THE SAME MATERIALS AS FOR THE FENCING SYSTEM AND FRAMEWORK SHALL HAVE THE SAME CROSS SECTIONAL DIMENSIONS AS THE PANEL RAILS. FOR DOUBLE GATES, PROVIDE 3/8" DIA. CANE BOLT DROP ROD ASSEMBLY AND STEEL RECEIVER EMBEDDED FLUSH WITH SURFACE (2) EACH LOCATED IN BOTH OPEN AND CLOSED POSITIONS
- (F) HINGES AND LATCHES SHALL BE INDUSTRIAL STRENGTH, HEAVY DUTY, PRESSED STEEL
- (G) HINGES SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE GATE PLUS 300 LBS WITHOUT SAGGING. LATCHES SHALL BE LOCKABLE, USING ONE LOCK ONLY

NO. REVISED BY

DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

SCALE: NONE

7 FT. CURVE TOP FENCE
(WITH CONCRETE MOWSTRIP)

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

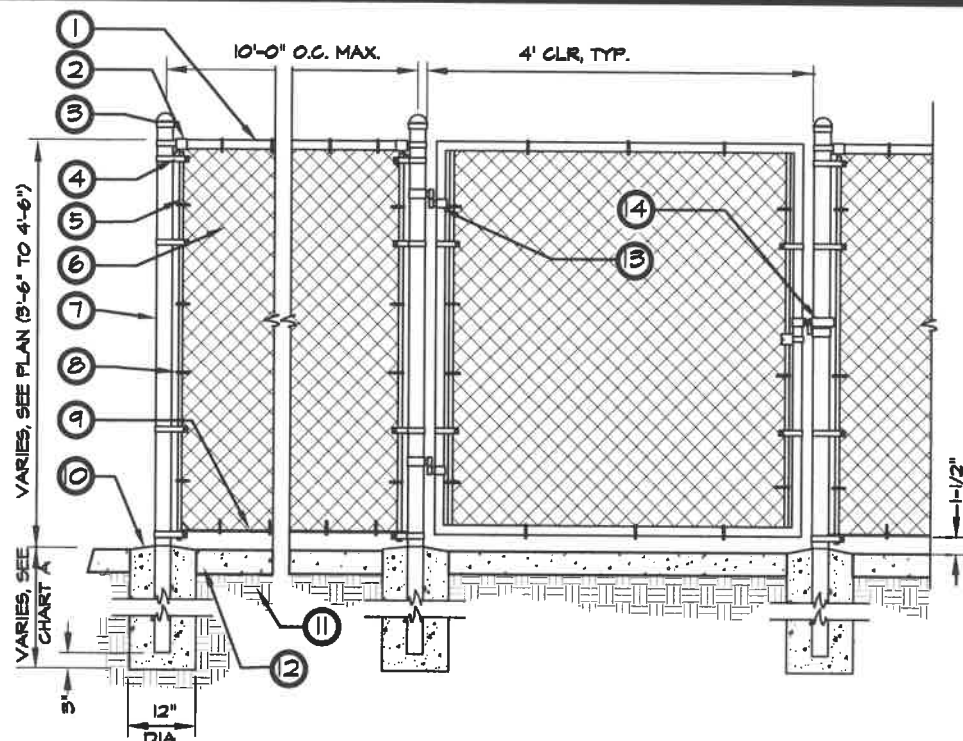
F-4

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

**3'-6" TO 4'-6" HT.
CHAINLINK FENCE**

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
DRAWING NO.	
DATE	2017
F-5	



LEGEND:

- ① TOP RAIL 1-5/8" SCH. 40 ZINC COATED, GALV. STEEL
- ② RAIL ENDS, TYP.
- ③ POST CAP, TO MATCH POST
- ④ TENSION BAND, 5/16" X 3/4", TYPICAL
- ⑤ TENSION BAR, 14 GA. X 5/4" TYPICAL. BAR AND CLIPS TO MATCH END POST
- ⑥ 2" GRID MESH, 9 GA., WITH ZINC-COATED KNUCKLED SELVAGE AT TOP AND BOTTOM.
- ⑦ SCH. 40 ZINC-COATED PIPE, TERMINAL, CORNER & GATE POSTS 2-7/8" DIA., LINE POSTS 2-3/8" DIA.
- ⑧ 9 GA. FABRIC TIES, ATTACH TO LINE POSTS @ 12" O.C., TOP RAILS, BRACES & BOTTOM RAILS WIRES @ 24" O.C. (12" O.C. @ GATES)
- ⑨ 7 GA. TENSION WIRE CABLE, OR 1-5/8" BOTTOM RAIL, CONT. AT FENCE BOTTOM
- ⑩ CONCRETE FOOTING, SEE SIZING CHART BELOW
- ⑪ SUBGRADE COMPACTED TO 90% MAX. DRY DENSITY
- ⑫ CONC. MOWSTRIP, 12" W. X 6" D. PER DETAILS, OR CONC. FLATWORK, TURF OR OTHER SURFACE PER PLANS
- ⑬ HEAVY DUTY GALV. GATE HINGE, 2 EA. PER GATE
- ⑭ GALVANIZED LOCKABLE U-LATCH

NOTES

- A CONCRETE FOOTING CHART:
- B PROVIDE CITY WITH SHOP DRAWINGS OF EACH TYPE OF FENCING AND/OR GATE FOR PROJECT. OBTAIN APPROVAL PRIOR TO FABRICATION.
- C GRIND ALL WELDS SMOOTH
- D FOR TEMPORARY APPLICATIONS, TENSION WIRE CAN BE SUBSTITUTED IN PLACE OF BOTTOM RAIL. MOWSTRIP NOT NEEDED FOR TEMPORARY APPLICATIONS.

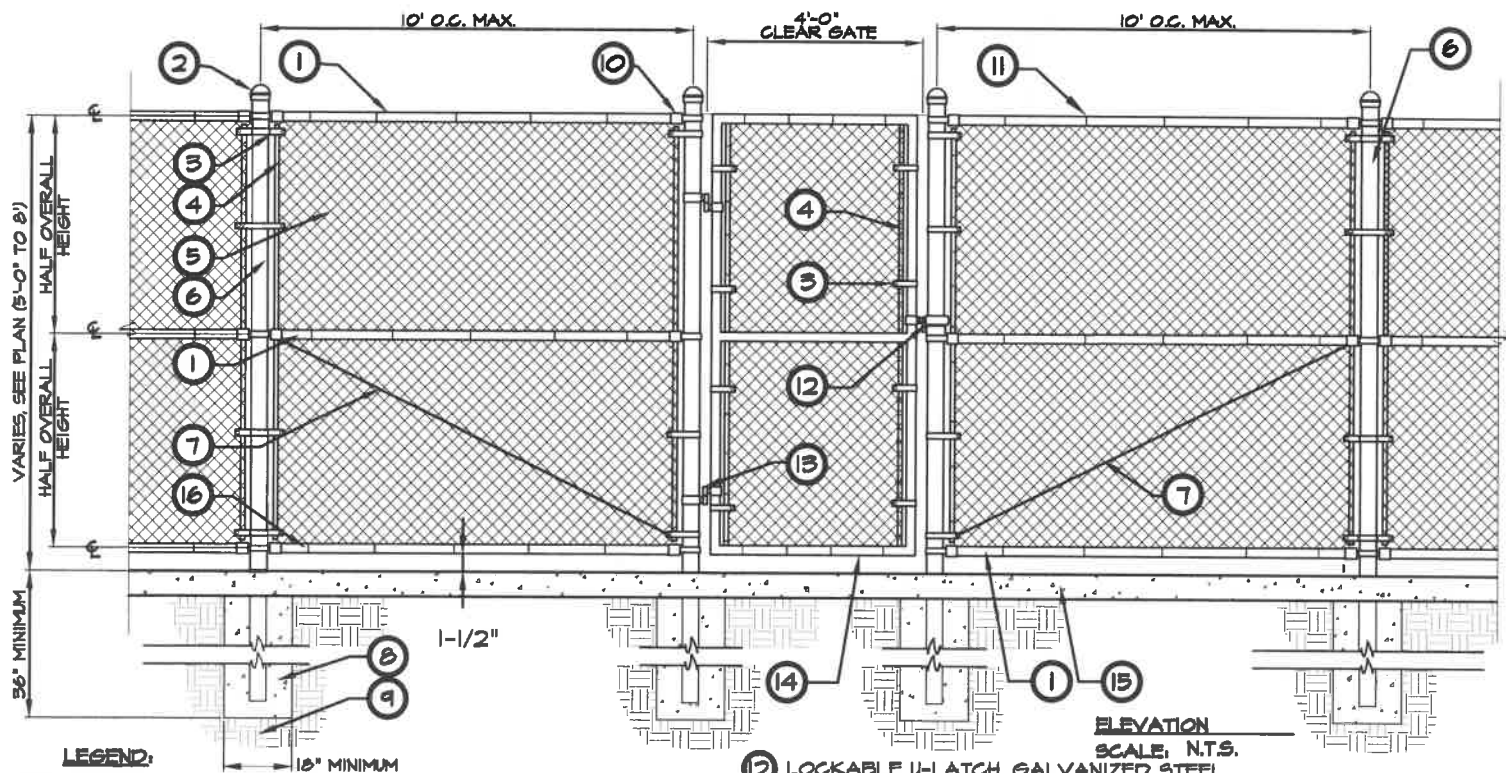
FENCE HT	3'-6"	4'-0"	4'-6"
FOOTING DEPTH	24"	28"	30"

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

**5'-0" TO 7'-0" HT.
CHAINLINK FENCING**

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
DRAWING NO.	F-6
DATE:	2017



LEGEND:

- ① TOP & MID RAIL, 1-5/8" O.D. GALVANIZED STEEL PIPE
- ② PRESSED STEEL POST CAP, TYPICAL
- ③ TENSION BAND, 14 GA. 3/4" MIN., TYP.
- ④ TENSION BAR, 3/8" X 3/4" MIN., TYP.
- ⑤ 2" GRID MESH, 4 GAUGE CHAIN LINK FABRIC WITH KNUCKLED SELVAGE AT TOP AND BOTTOM
- ⑥ 2-7/8" O.D. GALVANIZED STEEL LINE POST
- ⑦ ADJUSTABLE 3/8" MIN. DIA. TRUSS ROD WITH TURNBUCKLE AT GATE POSTS, & END POSTS AND EACH WAY @ CORNER POSTS
- ⑧ CONCRETE FOOTING, STEEL REBAR HORIZONTAL - #3'S @ 12" O.C., (3) #3 VERTICAL BARS EVENLY SPACED
- ⑨ SUBGRADE COMPACTED TO 90% MAX. DRY DENSITY OR PER SOILS REPORT.
- ⑩ GALV. RAIL END, TYP.
- ⑪ 1 GA. GALV. FABRIC TIES, ATTACH TO LINE POSTS & GATE FRAME @ 12" O.C., 24" O.C. @ TOPRAIL, BRACES & BOTTOM RAIL (12" O.C. @ GATES)

- ⑫ LOCKABLE U-LATCH, GALVANIZED STEEL
- ⑬ HEAVY-DUTY GATE HINGE, (2) PER GATE
- ⑭ GATE FRAME, 1-5/8" O.D. WELDED, GALVANIZED STEEL PIPE
- ⑮ 12" W. X 6" DEEP CONT. CONC. MONSTRIP PER DETAILS, OR CONC. FLATWORK, TURF OR SURFACE PER PLANS
- ⑯ 7 GA. TENSION WIRE CABLE, OR 1-5/8" BOTTOM RAIL, CONT. AT FENCE BOTTOM

NOTES:

- A PROVIDE SHOP DRAWINGS TO INCLUDE POST SPACING LAYOUT PLAN FOR REVIEW AND APPROVAL PRIOR TO FABRICATION, SEE SPECIFICATIONS; FENCES OVER 7' REQUIRE STRUCTURAL ENGINEERING DESIGN, CALC'S AND SUBMITTAL.
- B CONTRACTOR TO PROVIDE 18" X 18" SAMPLE OF 6 GAUGE 2" X 2" CHAIN LINK FOR CITY REVIEW AND APPROVAL PRIOR TO CONSTRUCTION
- C ALL GALVANIZED STEEL PIPE SHALL BE SCHEDULE 40
- D FOR TEMPORARY APPLICATIONS, TENSION WIRE CAN BE SUBSTITUTED IN PLACE OF BOTTOM RAIL, OMIT MID RAIL, AS NECESSARY. MONSTRIP NOT NEEDED FOR TEMPORARY APPLICATIONS.

ELEVATION
SCALE: N.T.S.

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

3'-6" TO 4'-6" HT. CHAINLINK
FENCE, VINYL COATED

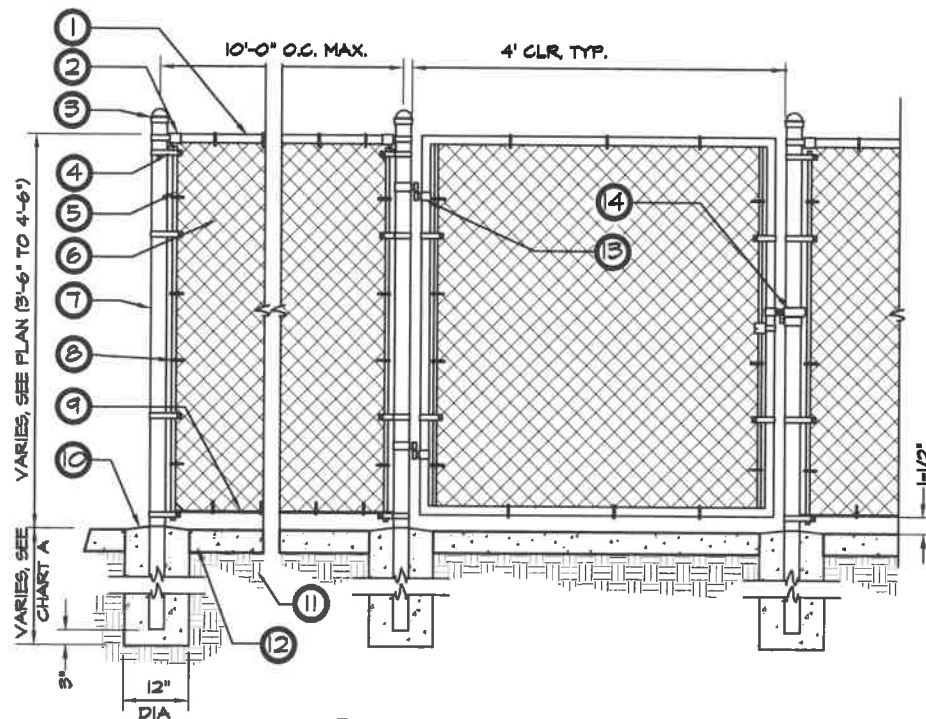
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*

PARKS & RECREATION DIRECTOR

DRAWING NO. F-7

DATE: 2017



LEGEND:

- ① TOP RAIL 1-5/8" SCH. 40 ZINC COATED, GALV. STEEL
- ② RAIL ENDS, TYP.
- ③ POST CAP, TO MATCH POST
- ④ TENSION BAND, 3/8" X 3/4", TYPICAL
- ⑤ TENSION BAR, 14 GA. X 3/4" TYPICAL. BAR AND CLIPS TO MATCH END POST
- ⑥ 2" GRID MESH, 9 GA., WITH ZINC-COATED KNUCKLED SELVAGE AT TOP AND BOTTOM.
- ⑦ SCH. 40 ZINC-COATED PIPE, TERMINAL, CORNER & GATE POSTS 2-7/8" DIA., LINE POSTS 2-3/8" DIA.
- ⑧ 9 GA. FABRIC TIES, ATTACH TO LINE POSTS @ 12" O.C., TOP RAILS, BRACES & BOTTOM RAILS/WIRES @ 24" O.C. (12" O.C. @ GATES)
- ⑨ 7 GA. TENSION WIRE CABLE, OR 1-5/8" BOTTOM RAIL, CONT. AT FENCE BOTTOM

- ⑩ CONCRETE FOOTINGS, SEE SIZING CHART BELOW
- ⑪ SUBGRADE COMPACTED TO 90% MAX. DRY DENSITY
- ⑫ CONC. MONSTRIP, 12" W. X 6" D. PER DETAILS, OR CONC. FLATWORK, TURF OR OTHER SURFACE PER PLANS
- ⑬ HEAVY DUTY GALV. GATE HINGE, 2 EA. PER GATE
- ⑭ GALVANIZED LOCKABLE U-LATCH

NOTES

- (A) CONCRETE FOOTING CHART:
- (B) PROVIDE CITY WITH SHOP DRAWINGS OF EACH TYPE OF FENCING AND/OR GATE FOR PROJECT. OBTAIN APPROVAL PRIOR TO FABRICATION.
- (C) GRIND ALL WELDS SMOOTH
- (D) VINYL COATING ON AL EXPOSED SURFACES PER ASTM F668, COLOR TO BE BLACK; SUBMIT SAMPLE TO CITY FOR APPROVAL.
- (E) FOR TEMPORARY APPLICATIONS, TENSION WIRE CAN BE SUBSTITUTED IN PLACE OF BOTTOM RAIL. MONSTRIP NOT NEEDED FOR TEMPORARY APPLICATIONS.

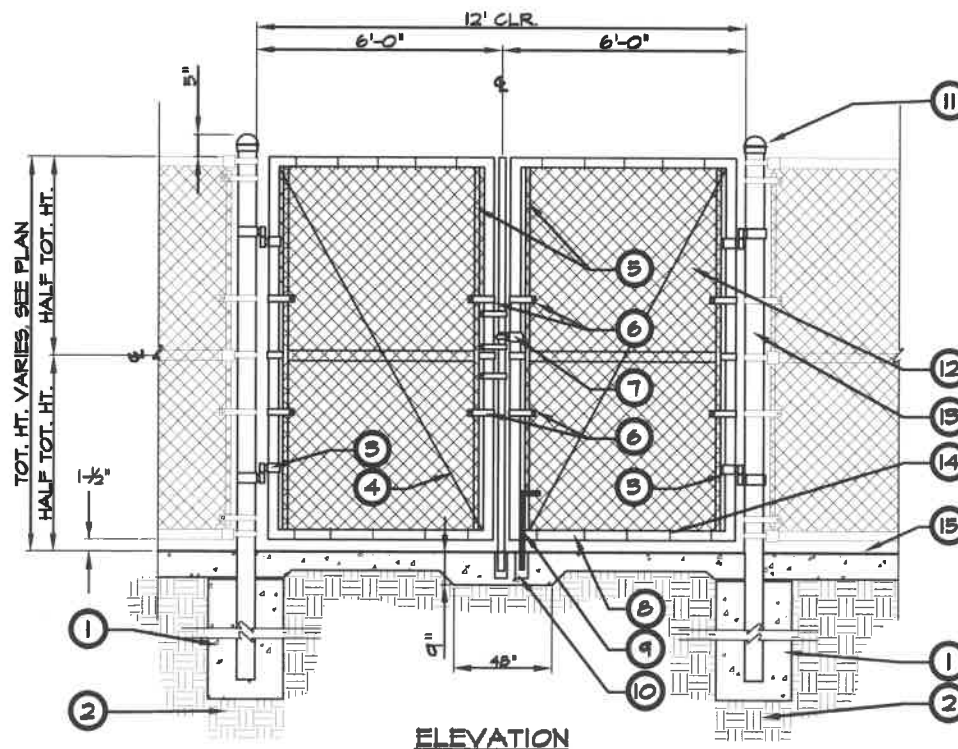
FENCE HT	3'-6"	4'-0"	4'-6"
FOOTING DEPTH	24"	28"	30"

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CHAINLINK FENCE SERVICE GATE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
PARKS & RECREATION DIRECTOR	
DRAWING NO.	
DATE:	2017
F-8	



ELEVATION

LEGEND:

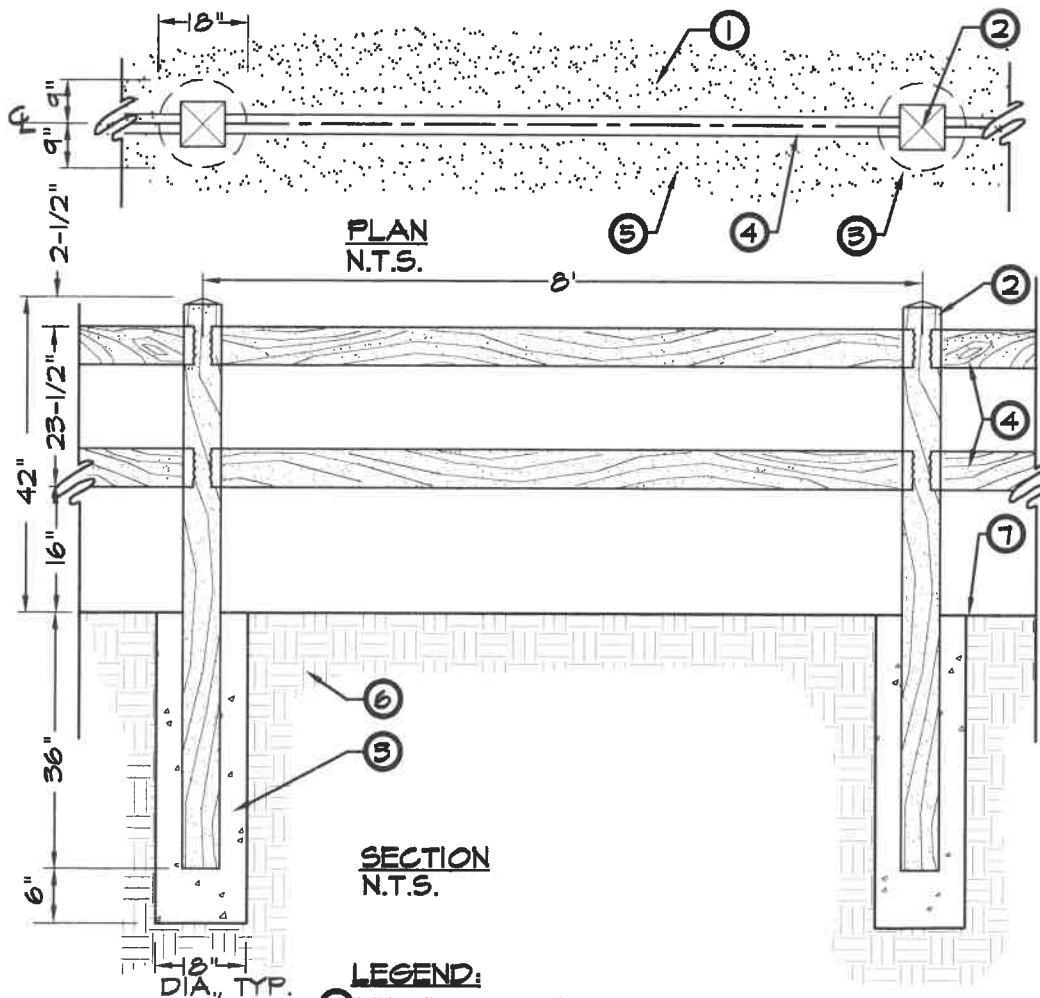
- ① CONCRETE FOOTING, SIZED PER NOTE ② BELOW
- ② COMPACTED SUBGRADE, TO 90% MAX DRY DENSITY
- ③ (2) TWO HEAVY-DUTY GATE HINGES PER GATE
- ④ 3/8" DIA. ADJUSTABLE TRUSS ROD WITH TURNBUCKLE AT GATE POSTS.
- ⑤ TENSION BAR, 3/16" X 3/4" MIN., TYP.
- ⑥ TENSION BAND, 14 GA X 3/4" MIN., TYP.
- ⑦ LOCKABLE GALVANIZED INDUSTRIAL LATCH 1-7/8" ASSEMBLY WITH PART NO. 17218. AVAILABLE FROM MASTER-HALCO (310) 694-5066.
- ⑧ GATE FRAME, 1-5/8" O.D. WELDED, GALVANIZED STEEL PIPE
- ⑨ GALVANIZED CANE-TYPE LATCH 1-3/8" X 36" ASSEMBLY. MFG. BY MASTER-HALCO PART NO. 16905 (310) 694-5066
- ⑩ PROVIDE STEEL SLEEVE RECEIVER EMBEDDED FLUSH WITH SURFACE. (2) EACH LOCATED IN BOTH OPEN AND CLOSED POSITIONS.
- ⑪ PRESSED STEEL GALV. POST CAP, TYP.

- ⑫ 9 GAUGE, 2' GRID CHAIN LINK FABRIC WITH KNUCKLED SELVAGE AT TOP AND BOTTOM
- ⑬ 2-1/8" O.D. GALVANIZED STEEL POST,
- ⑭ 9 GA. GALV. FABRIC TIES, 12" O.C., ATTACH @ TOP, BOTTOM AND MID RAIL
- ⑮ FINISH SURFACE - TOP MOW CURB

NOTES:

- A PROVIDE SCALED SHOP DRAWING OF GATE CONSTRUCTION FOR REVIEW AND APPROVAL PRIOR TO FABRICATION
- B CONTRACTOR TO PROVIDE 18" X 18" SAMPLE OF 9 GAUGE 2"X2" CHAIN LINK FOR CITY REVIEW AND APPROVAL PRIOR TO CONSTRUCTION
- C ALL GALVANIZED STEEL PIPE SHALL BE SCH. 40
- D CONCRETE FOOTING CHART

GATE HT	3'-6"	4'-0"	4'-6"	5'-0"	6'-0"	7'-0"
FOOTING DEPTH	30"	33"	36"	40"	48"	56"



NOTES:

- Ⓐ PRECAST CONCRETE SHALL BE FIBER REINFORCED, FORMED AND COLORED TO MIMIC ROUGH-HEWN CEDAR SPLIT RAIL FENCING, AS MANUFACTURED BY TIMBERCRETE OR CITY APPROVED EQUAL.
- Ⓑ A 12" W. X 6" D. CONG. MOWSTRIP MAY BE REQUIRED UNDER FENCE UPON REQUEST BY CITY, REFER TO PLAN
- Ⓒ AT TERMINUS POINTS OF FENCING, PROVIDE POST END UNIT WITH NO KNOCKOUT ON END SIDE, OR GROUT HOLE TO MATCH COLOR AND FINISH.

LEGEND:

- ① FINISHED ADJACENT SURFACE MATERIAL PER PLANS
- ② 5" x 5" PRECAST CONG. POSTS, FORMED WITH 1/2" NOTCHES TO FIT SLATS.
- ③ 2500 PSI CONCRETE FOOTING
- ④ 2-1/2" X 5-1/2" PRECAST CONG. SLATS UPPER AND LOWER INSET IN THE POST.
- ⑤ CONCRETE OR NATURAL AREA
- ⑥ NATIVE SOIL OR SUBGRADE COMPACTED TO 95% M.D.D.
- ⑦ FINISH GRADE

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

SPLIT RAIL PRECAST CONCRETE FENCE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

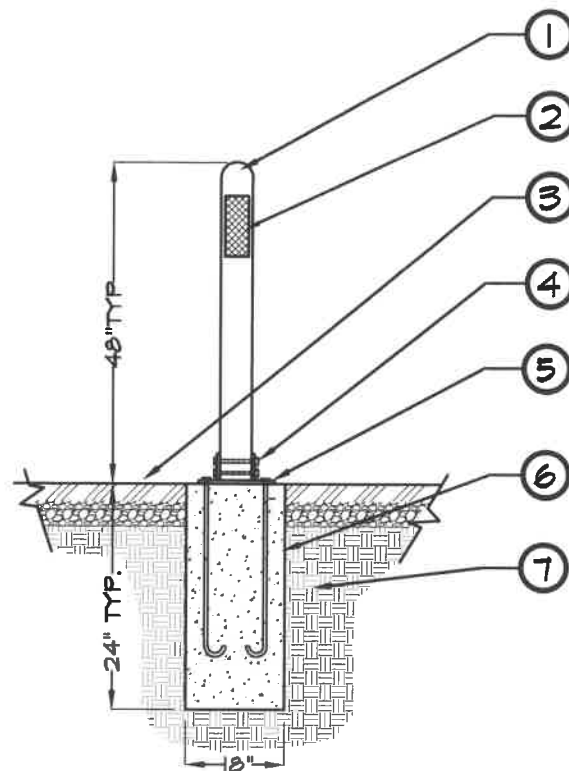
PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

F-9

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
COLLAPSIBLE BOLLARD		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.		
DATE:	2017	
F-10		



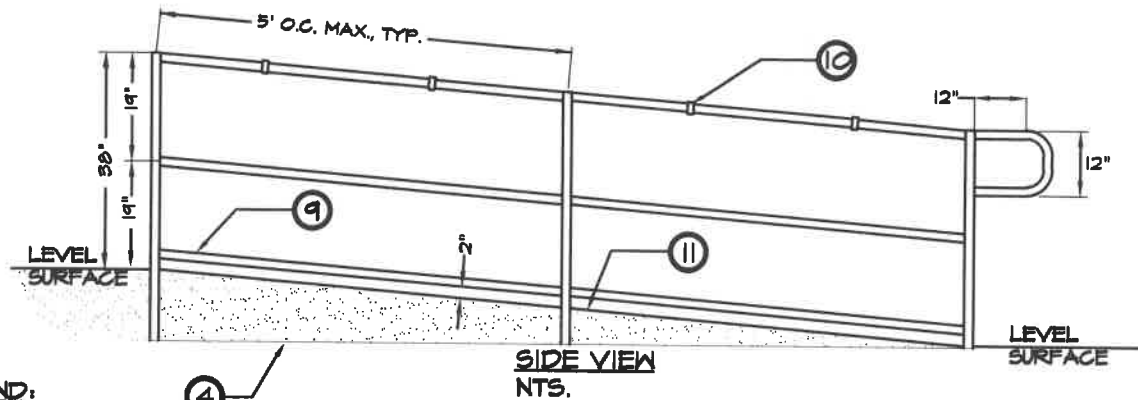
SECTION

LEGEND:

- ① 2-1/2" O.D. SCH. 40 PIPE WITH WELDED END CAPS
- ② PRESSURE SENSITIVE, HIGH INTENSITY REFLECTIVE SHEETING APPLIED DIRECTLY TO PIPE ON BOTH APPROACHES TO ALL BOLLARDS
- ③ FINISHED GRADE OF A.C. OR CONCRETE PAVING
- ④ 2 EACH 1" X 5" ST. STL. THREADED PINS WITH PADLOCK HOLES @ ONE END
- ⑤ 10" SQUARE HRP PLATE WITH WELDED HRP VERT. TABS; PROVIDE HOLES FOR 4 EACH 3/4" DIA. X 18" J BOLTS
- ⑥ 2500 PSI CONCRETE FOOTING 18" DIA. X 24" DEEP
- ⑦ NATIVE SOIL OR COMPACTED SUBGRADE TO 95% M.D.D.

NOTES:

- (A) ALL STEEL COMPONENTS SHALL BE PRIMED WITH RUST INHIBITING ZINC PRIMER AND FINISHED WITH TGIC POLYESTER POWDERCOAT OUTDOOR FINISH, RAL1028 YELLOW COLOR
- (B) ALL JOINTS SHALL BE WELDED, AND GROUND SMOOTH TO TOUCH
- (C) UNIT MANUFACTURED BY TRAFFICGUARD DIRECT, INC. (BTI) 727-7347, MODEL #HRP48 OR APPROVED ALTERNATE; WWW.TRAFFICGUARD.NET

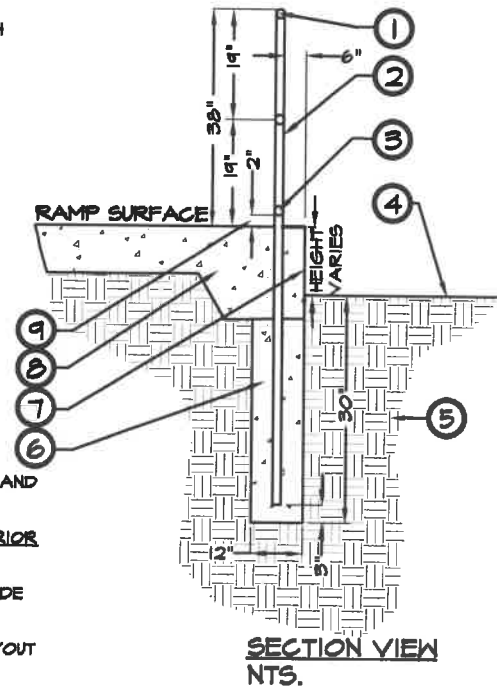


LEGEND:

- ① GALV. HANDRAIL 1-1/2" DIA., SCH. 80 (2" WALL THICKNESS), SURFACES TO BE SMOOTH WITH NO SHARP EDGES. ALL EDGES MIN. RADIUS OF 1/8"
- ② 1-1/2" DIA. SCH. 80 (2" WALL THICKNESS) GALV. POST, EQUALLY SPACED, 5' O.C. MAX., LOCATE 6" FROM VERTICAL EDGE OF RAMP
- ③ BOTTOM RAIL / WHEEL GUIDE 1-1/2" DIA. SCH. 80 (2" WALL THICKNESS)
- ④ APPROXIMATE GRADE OF PLANTER BED.
- ⑤ SUBGRADE COMPACTED TO 90% MAXIMUM DRY DENSITY
- ⑥ CONCRETE FOOTING TO EXTEND UNDER EXISTING RAMP AS SHOWN TO ENSURE THAT POST IS 6" FROM EDGE OF CONCRETE
- ⑦ EDGE OF CONCRETE RAMP
- ⑧ POURED IN PLACE CONCRETE RAMP PER PLANS AND DETAILS H-3, H-6
- ⑨ BOTTOM OF WHEEL GUIDE TO BE 2" ABOVE RAMP SURFACE AND CONFORM TO ANGLE OF RAMP. NO GAPS SHALL BE PERMITTED BETWEEN EDGE OF CONCRETE AND WHEEL GUIDE.
- ⑩ SKATESTOPPER #HPI.40 OR APPROVED ALT., 2 EA. PER 5' SECTION, INSTALL PER MFG. REQUIREMENTS, SUBMIT SAMPLE FOR APPROVAL; CONTRACTOR SHALL ENSURE PROPER FIT IN FIELD
- ⑪ RAMP SURFACE (ANGLE DIAGRAMMATIC)

NOTES:

- A HANDRAILS SHALL BE CONTINUOUS THE FULL LENGTH OF THE RAMP AND SHALL EXTEND A MINIMUM OF 1 FOOT OF LEVEL DISTANCE (PARALLEL TO LANDING AREA) BEYOND THE TOP AND BOTTOM OF THE RAMP AND THE ENDS SHALL BE RETURNED
- B CONTRACTOR RESPONSIBLE FOR FIELD MEASUREMENTS AND CHECKING SITE CONDITIONS PRIOR TO CONSTRUCTION
- C CONTRACTOR TO CONSTRUCT AND INSTALL IN COMPLIANCE WITH CURRENT CALIF. BLDG. CODE AND WITHIN ALLOWABLE SLOPES PER ADA REQUIREMENTS
- D CONTRACTOR SHALL SUBMIT SCALED SHOP DRAWINGS TO INCLUDE POST SPACING AND LAYOUT PLAN FOR REVIEW AND APPROVAL PRIOR TO FABRICATION
- E COMPONENTS SHALL BE PRE-SALVANIZED AND COATED WITH BLACK POLYESTER POWDERCOAT FINISH
- F POSTS IMBEDDED INTO CONCRETE FOOTINGS AND PAVING POURED FLUSH; SURFACE MOUNT OR CORE-DRILLED APPLICATIONS MAY BE ACCEPTABLE ONLY WHEN RETROFITTING INSTALLATION OF HANDRAIL INTO CURED CONCRETE; PROVIDE SHOP DRAWINGS OF ATTACHMENT AND FINISH DETAIL TO CITY FOR APPROVAL IN RETROFIT CONDITIONS
- G GUARDRAIL CONSTRUCTION SHALL SUPPORT LOAD OF 300 LBS AT ANY POINT IN ANY DIRECTION WITH DEFLECTION NOT TO EXCEED 1/2"



SECTION VIEW NTS.

ADA RAMP HANDRAILS SECTION & SIDE VIEW

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

F-12

NO. REVISED

BY

DRAWN BY: C BROWN

CHECKED BY: J COURTNEY

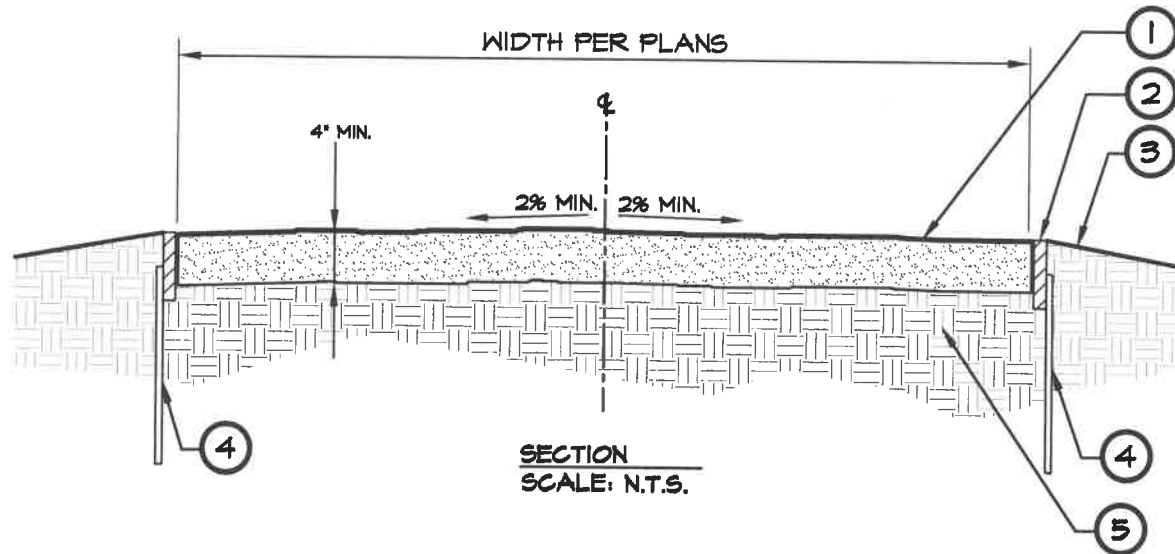
SCALE: NONE

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

DECOMPOSED GRANITE PAVING (WITH STEEL EDGE)

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:
<i>[Signature]</i>	2017
DRAWING NO.	
PARKS & RECREATION DIRECTOR	
	H-1

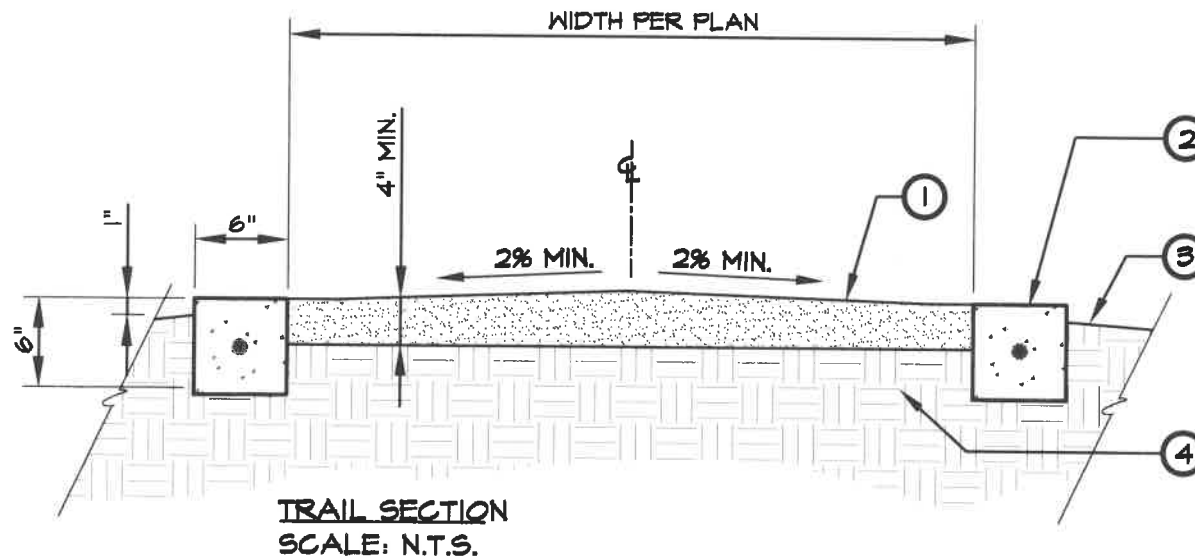


LEGEND:

- ① DECOMPOSED GRANITE, PREMIXED WITH 'STABILIZER' ORGANIC ADDITIVE @ 10 POUNDS PER TON. APPLY PER SUPPLIERS SPECIFICATIONS. AVAILABLE FROM GOLDEN VALLEY MATERIAL SUPPLY (209) 666-8907 OR APPROVED EQUAL
- ② 1/4" DURA EDGE STEEL EDGING PER SPECIFICATIONS, COLOR PER PLAN
- ③ FINISH GRADE, SLOPE AWAY FROM TRAIL AND ADJACENT STRUCTURES
- ④ 16" DEEP STEEL DURA EDGE STAKES, INSTALL 7 STAKES PER 16' LONG SECTION; INSTALL PER MANUFACTURER'S RECOMMENDATIONS
- ⑤ COMPACT SUB-GRADE TO 90% MAX. DRY DENSITY, OR PER SOILS REPORT

NOTES:

- A CONTRACTOR TO SUBMIT SAMPLE OF LIGHT TAN OR CALIFORNIA GOLD DECOMPOSED GRANITE FOR REVIEW AND APPROVAL PRIOR TO ACQUISITION AND DELIVERY
- B INSTALL AND COMPACT D.G. WITH STABILIZER IN 2" LIFTS IN LOCATIONS SHOWN ON PLANS WITH CROWNED DRAINAGE OR AS DIRECTED ON PLANS AND AS PER SPECIFICATIONS



LEGEND:

- ① DECOMPOSED GRANITE, LIGHT TAN OR CALIFORNIA GOLD COLOR PER PLANS, PREMIXED WITH 'STABILIZER' ORGANIC ADDITIVE @ 10LBS PER TON. APPLY PER SUPPLIER'S SPECIFICATIONS. MATERIAL AVAILABLE FROM GOLDEN VALLEY MATERIAL SUPPLY (209) 666-8907
- ② REINFORCED CONCRETE MOWSTRIP PER DETAILS AND PLANS; #4 BAR, CONTINUOUS
- ③ FINISH GRADE, SLOPE AWAY FROM TRAIL AND ADJACENT STRUCTURES
- ④ COMPACTED SUBGRADE @ 90% MAXIMUM DRY DENSITY OR PER SOILS REPORT.

NOTES:

- A CONTRACTOR TO SUBMIT SAMPLE OF LIGHT TAN OR CALIFORNIA GOLD DECOMPOSED GRANITE FOR REVIEW AND APPROVAL PRIOR TO ACQUISITION AND DELIVERY
- B INSTALL AND COMPACT D.G. WITH STABILIZER IN 2" LIFTS IN LOCATIONS SHOWN ON PLANS WITH CROWNED DRAINAGE OR AS DIRECTED ON PLANS AND AS PER SPECIFICATIONS

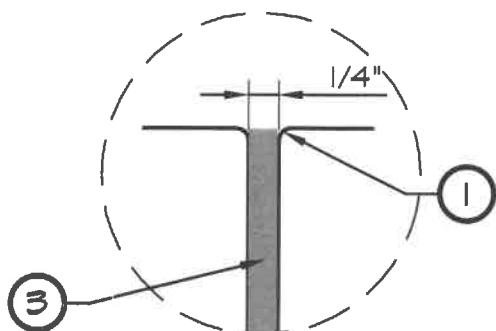
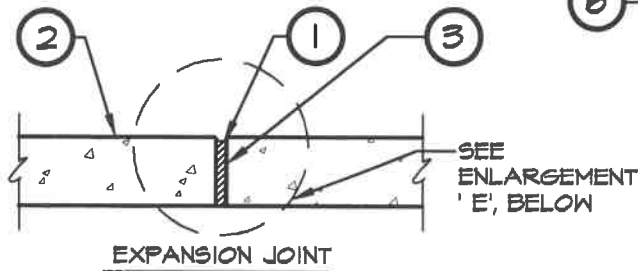
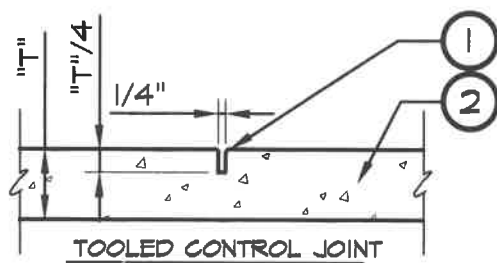
NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
DECOMPOSED GRANITE PAVING (WITH CONCRETE EDGE) CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.	PARKS & RECREATION DIRECTOR	
DATE	2017	
	H-2	

NO. _____
 REVISED BY _____
 DRAWN BY: C. BROWN
 CHECKED BY: J. COURTNEY
 SCALE: NONE

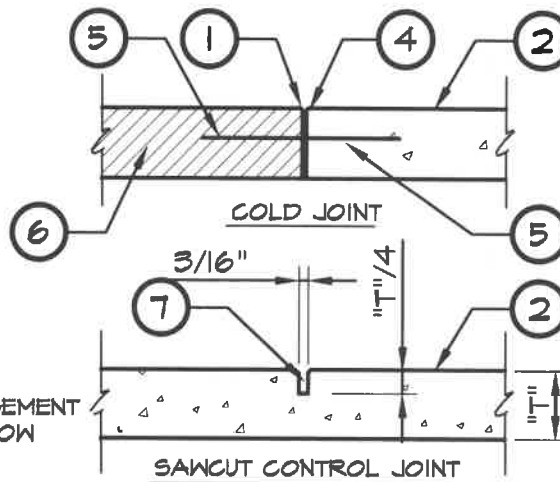
PEDESTRIAN CONCRETE JOINTS

CITY OF MANTECA
 PARKS & RECREATION DEPARTMENT

APPROVED BY: _____
 PARKS & RECREATION DIRECTOR
 DRAWING NO. _____
 DATE: 2017
 H-3



ENLARGEMENT AT EXPANSION JOINT

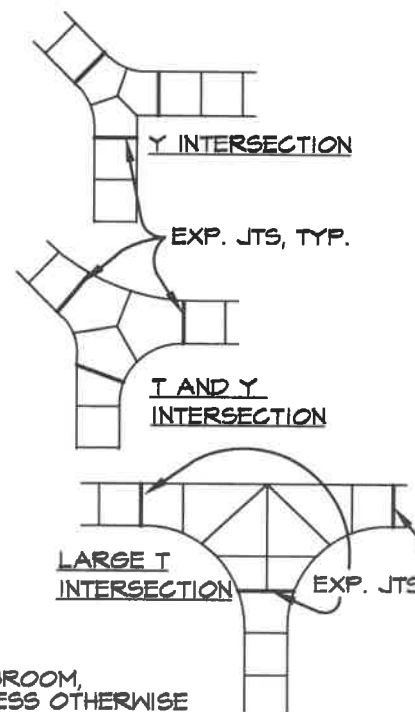


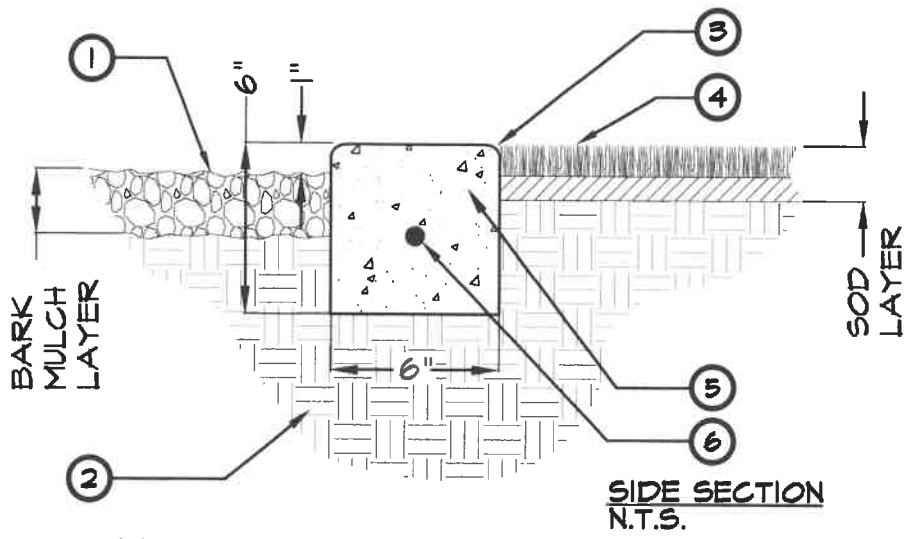
LEGEND:

- ① 1/4" RADIUS EDGE.
- ② CONC. FLATWORK, STD FINISH MED. BROOM, PERPENDICULAR TO WALK EDGE UNLESS OTHERWISE SHOWN ON PLANS.
- ③ 1/4" ASPHALT FELT, FULL DEPTH
- ④ COLD JOINT
- ⑤ #4 x 36" LONG REBAR 24" O.C. CENTERED ON COLD JOINT
- ⑥ EXISTING CONCRETE PAVING.
- ⑦ SAWCUT CONTROL JOINT. SINGLE BLADE WITH 1/16" BEVEL AND CONTINUOUS CRACK CHASER.

NOTES:

- (A) ALL OTHER JOINTS PER SPECIFICATIONS UNLESS OTHERWISE INDICATED ON PLAN.
- (B) JOINT SPACING: ALL JOINTS INSTALLED PER SPECIFICATIONS AND AS SHOWN ON PLANS; TOOLED CONTROL/CONTRACTION JOINTS SPACED AT REGULAR INTERVALS EQUAL TO WIDTH OF WALKWAY, MAX. 5' O.C. (CONC. SLABS SHALL HAVE JOINTS MIN. 5' O.C., MAX 8' O.C.); EXPANSION JOINTS SHALL BE SPACED AT REGULAR EQUAL INTERVALS NO GREATER THAN 32' O.C. AND AT ALL ADJACENT FOOTINGS, STRUCTURES, WALLS, ETC.
- (C) STD. CONC. WALKWAYS & FLATWORK SHALL BE MIN. 4" THICK EXCEPT AS NOTED AT OUTER EDGES AND UNDER SITE FURNISHINGS.
- (D) CITY SIDEWALKS WITHIN PUBLIC R.O.W. SHALL BE DESIGNED AND INSTALLED PER CITY OF MANTECA PUBLIC WORKS STANDARDS AND DETAILS





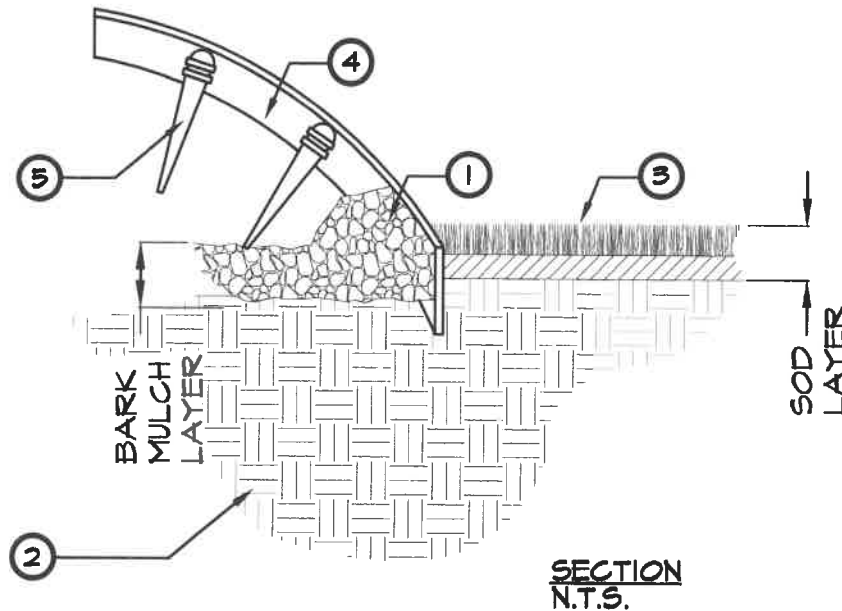
LEGEND:

- ① DARK BROWN DECORATIVE BARK TO BE 1" BELOW TOP OF MOWSTRIPS, WALKS AND CURBS - TYPICAL
- ② NATIVE SOIL 90% COMPACTION UNDER MOWSTRIPS
- ③ 1/2" RADIUS EDGE.
- ④ TURF TO BE LEVEL WITH TOP OF ALL MOWSTRIPS, WALKS, AND CURBS - TYPICAL.
- ⑤ CONCRETE
- ⑥ 1 - #4 REBAR @ MID-DEPTH, CONTINUOUS

NOTES:

- Ⓐ SIZES INDICATED ON DETAIL ARE MINIMUMS, REFER TO PLANS FOR DIMENSIONS SPECIFIC TO EACH PROJECT AND APPLICATION

NO.	REVISED	BY
DRAWN BY: C. BROWN		
CHECKED BY: J. COURTNEY		
SCALE: NONE		
CONCRETE MOWSTRIP		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY: 		
PARKS & RECREATION DIRECTOR		
DRAWING NO. H-4		
DATE: 2017		



LEGEND:

- ① DARK BROWN DECORATIVE BARK, DECOMPOSED GRANITE, DECORATIVE STONE OR OTHER SPECIFIED GROUND COVER.
- ② NATIVE SOIL 90% COMPACTION AT STEEL EDGING.
- ③ TURF/SOD LAYER
- ④ DURAEDGE STEEL EDGING, 1/4" THICK X 5" WIDE, COLOR TO BE SELECTED BY CITY REPRESENTATIVE (GREEN, BROWN, OR BLACK) OR APPROVED EQUAL. EDGING TO BE 3" ABOVE SOIL LINE ON NON-TURF SIDE. DOUBLE STAKE AT OVERLAP JOINTS.
- ⑤ 1/4" THICK STEEL EDGING STAKES, 16" MIN. LENGTH TO BE PLACED AT 30" O.C. COLOR TO MATCH SELECTED EDGING COLOR.

NOTES:

- Ⓐ INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.

STEEL EDGING

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
DRAWING NO.	
DATE:	2017

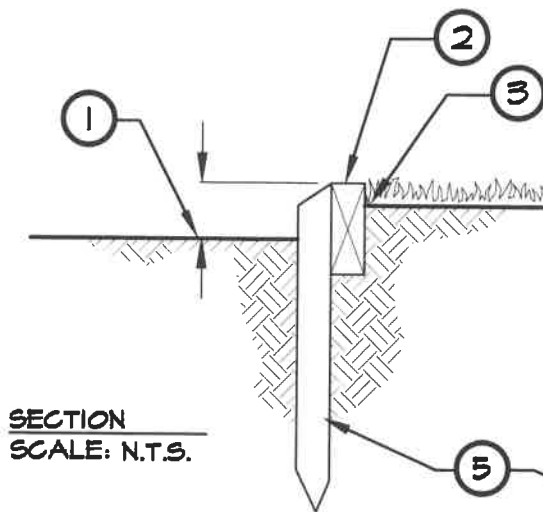
H-5

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

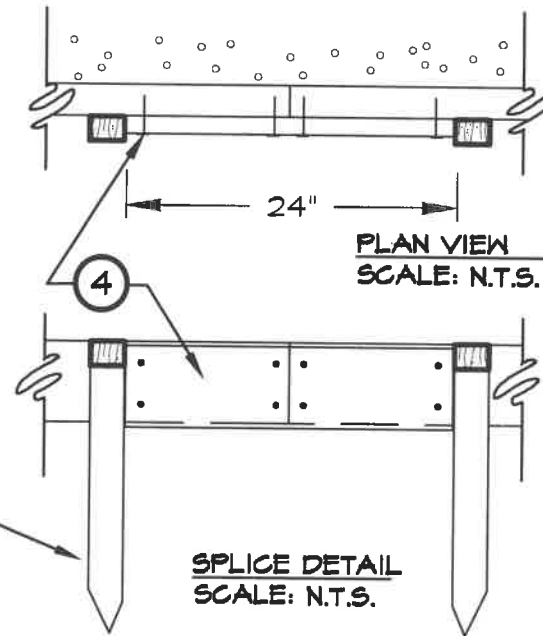
REDWOOD TEMPORARY HEADER

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
DRAWING NO.	H-6
DATE:	2017



SECTION
SCALE: N.T.S.



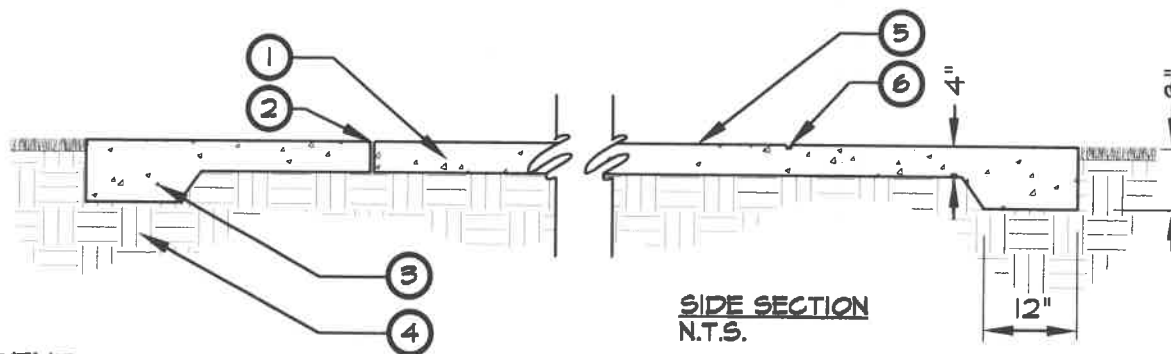
SPLICE DETAIL
SCALE: N.T.S.

LEGEND:

- ① SET HEADER 2" ABOVE FINISH GRADE IN PLANTING BEDS.
- ② 2 X 6 REDWOOD HEADERBOARD.
- ③ SET HEADER 1-1/2" ABOVE FINISH GRADE IN TURF AREAS.
- ④ 1" X 6" X 24" LENGTH REDWOOD SPLICE PLACE 1" BELOW TOP OF HEADERBOARD. BUTT JOINT ON GROUND COVER SIDE; (4) 6D NAILS EACH SIDE OF EACH SPLICE
- ⑤ 2" X 2" X 18" REDWOOD STAKES DRIVEN INTO FIRMLY COMPACTED SUBGRADE @ 4' O.C., PLACED ON GROUND COVER SIDE AND PLACED BELOW TOP OF HEADERBOARD. TWO NAILS OR SCREWS PER STAKE.

NOTES:

- (A) USE TWO 1" X 6" REDWOOD ON ALL CURVES (WHERE NECESSARY).
- (B) INSTALL ALL STAKES AND SPLICES ON PLANTING SIDE OF HEADERBOARD.
- (C) ALL NAILS AND SCREWS SHALL BE GALVANIZED.
- (D) ALL LUMBER SHALL BE REDWOOD, ROUGH CONSTRUCTION HEART GRADE IN ACCORDANCE TO CALIFORNIA REDWOOD ASSOCIATION GRADING RULES.
- (E) REDWOOD HEADER MAY ONLY BE USED AS TEMPORARY EDGING OR PROPERTY LINE MARKER BETWEEN PHASES OR FUTURE EXPANSION



LEGEND:

- ① FIBERMESH 300 REINFORCING (REBAR ONLY AS REQUIRED PER PLANS OR WRITTEN SPECIFICATIONS)
- ② EXPANSION AND CONTROL JOINTS INSTALLED PER PLANS, DETAIL H-3, AND SPECIFICATIONS
- ③ FOOTING OR SHOVEL HAUNCH. INSTALL AT ALL OUTER EDGES OF FLATWORK OR OTHER CONCRETE SURFACING.
- ④ SUBGRADE COMPACTED TO 95% MAX. DRY DENSITY
- ⑤ INSTALL CONCRETE PAVING IN LOCATIONS AND WITH SURFACING FINISH AS PER PLANS, SEE NOTE A BELOW
- ⑥ 1/4" RADIUS AT CONTROL JOINT 8'-0" O.C. MAX., TYPICAL

NOTES:

- (A) STANDARD FINISH SHALL BE A MEDIUM BROOM FINISH PERPENDICULAR TO THE WALKWAY EDGE UNLESS IDENTIFIED OTHERWISE IN THE PLANS.
- (B) STANDARD CONCRETE PEDESTRIAN WALKWAYS AND FLATWORK APPLICATIONS SHALL BE A MINIMUM OF 4 INCHES THICK EXCEPT AS NOTED AT OUTER EDGES AND UNDER SITE FURNISHINGS.
- (C) CONCRETE SHALL HAVE A CROSS SLOPE OF 1/4 INCH OF SLOPE PER ONE FOOT OF WIDTH TO ALLOW FOR PROPER DRAINAGE.
- (D) SUBGRADE COMPACTED TO 95% OR AS SPECIFIED IN SOIL ENGINEER'S REPORT.
- (E) CONSTRUCTION INSPECTION MUST VERIFY SOIL COMPACTION TEST RESULTS AND APPROVE FORMS PRIOR TO POUR.
- (F) SEE PLAN NOTES AND LAYOUT ON PLANS FOR JOINT PATTERNS
- (G) DIMENSIONS ARE TYPICAL, UNLESS OTHERWISE REQUIRED ON PLANS OR SPECIFICATIONS

CONCRETE FLAT WORK

NO.	REVISION	BY
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DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

SCALE: NONE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

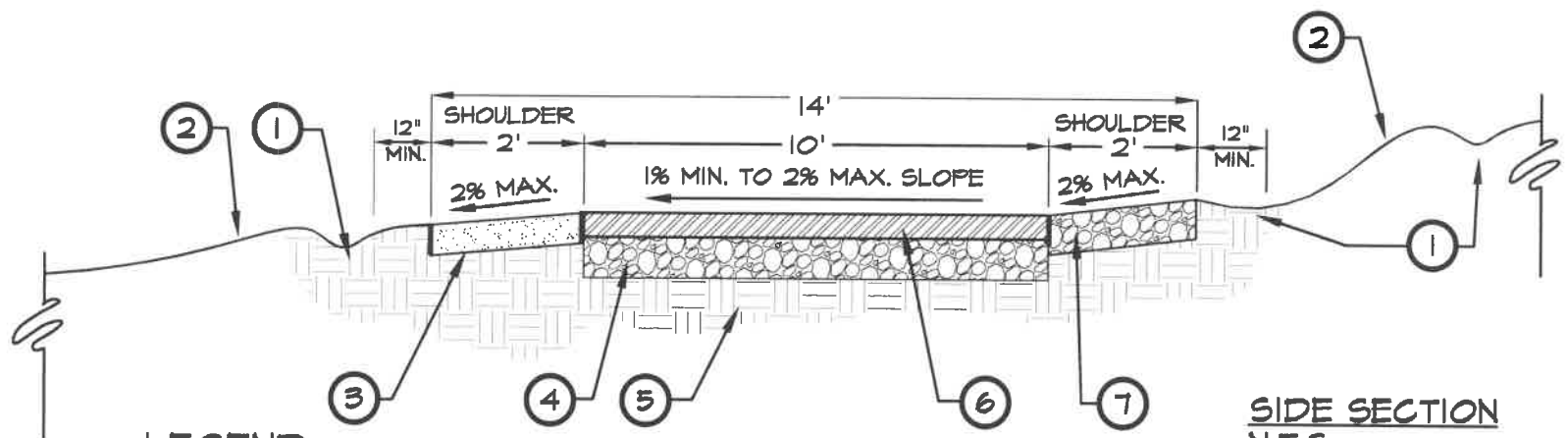
APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

H-7



LEGEND:

- ① DRAINAGE SWALE, DIMENSIONS VARY, SEE PLANS; MAINTAIN POSITIVE DRAINAGE AWAY FROM PAVED SURFACES & ADJACENT STRUCTURES, TYP.
- ② FINISH GRADE
- ③ 4" THICK DECOMPOSED GRANITE OR SHOULDER BACKING COMPACTED TO 95%, ONE SHOULDER ONLY LOCATE AT TOE OF SLOPE

- ④ 6" AGGREGATE BASE, COMPACTED TO 95% M.D.D., OR AS REQUIRED BY SOIL ENGINEER'S REPORT
- ⑤ SUBGRADE COMPACTED TO 95% M.D.D.
- ⑥ 1-1/2" ASPHALTIC CONCRETE WEARING COURSE OVER 2" ASPHALTIC CONCRETE BASE COURSE, TYPE A (SEE DETAIL H-7)
- ⑦ 6" THICK AGGREGATE BASE. ONE SHOULDER ONLY LOCATE AT TOP OF SLOPE

NOTES:

- (A) BIKE PATHS CONSTRUCTED WITHIN CUT-SLOPES SHALL HAVE A DRAINAGE DITCH OF SUITABLE DIMENSIONS ALONG THE UPHILL SIDE TO INTERCEPT THE HILLSIDE DRAINAGE. BIKE PATHS CONSTRUCTED ON TOP OF FILL SLOPES SHALL HAVE A DRAINAGE DITCH OF SUITABLE DIMENSIONS ALONG THE DOWNHILL SIDE TO INTERCEPT THE TRAIL'S DRAINAGE. PROVIDE POSITIVE DRAINAGE TO POINT OF RELIEF, DRY WELL OR UNDER-PIPE PER PLANS
- (B) MAXIMUM SLOPE RATE FOR CUT AND FILL SLOPES SHALL BE PER THE RECOMMENDATIONS OF A LICENSED GEOTECHNICAL ENGINEER IN LOCATIONS ADJACENT TO CREEKS, DITCHES, OR DOWN-SLOPES GREATER THAN 3 FEET HORIZONTAL TO 1 FOOT VERTICAL. A MINIMUM SHOULDER WIDTH OF 5 FEET FROM THE EDGE OF PAVEMENT TO THE TOP OF SLOPE IS REQUIRED
- (C) STRUCTURAL SECTION SHALL BE CAPABLE OF SUPPORTING A MINIMUM GROSS VEHICULAR WEIGHT OF 30,000 POUNDS. IF SOILS ANALYSIS IDENTIFIES AN R-VALUE LESS THAN 20. THE STRUCTURAL SECTION SHALL BE MODIFIED AS NECESSARY TO SUPPORT 30,000 POUNDS

BIKE TRAIL SECTION

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

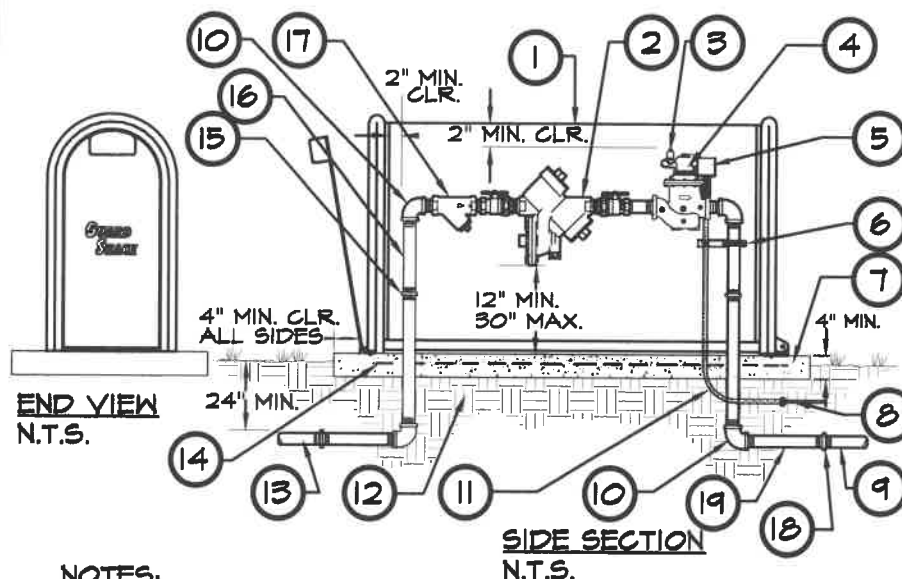
PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

H-8

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	



NOTES:

- (A) DEVICE USED MUST BE ON CITY OF MANTECA APPROVED BACKFLOW PREVENTION DEVICE LIST AND APPROVED BY PARKS DEPARTMENT.
- (B) TEST COCKS AND SHUT-OFF VALVES SHALL BE SUPPLIED.
- (C) DISCHARGE PORT MUST BE KEPT FREE OF OBSTRUCTION AT ALL TIMES.
- (D) ANY DEVIATION FROM THE INSTALLATION SHOWN MUST RECEIVE PRIOR APPROVAL.
- (E) REFER TO SECTION 203.4 OF THE CITY OF MANTECA PARKS STANDARDS AND SPECIFICATIONS FOR CONCRETE WORK.
- (F) ALL GALVANIZED PIPE BELOW GRADE SHALL RECEIVE TWO WRAPS OF 20 ML. TAPE.
- (G) BACKFLOW ENCLOSURE SHALL BE POWDER COATED WITH GREEN PAINT, HINGED ON BOTH SIDES; MFG BY PLACER WATER WORKS OR GUARDIAN, OR CITY APPROVED EQUAL.
- (H) BACK FLOW AND FLOW SENSOR SHALL BE ENCLOSED IN A FROST PROTECTION BLANKET W/ MIN. R30 RATING.
- (I) CONTRACTOR RESPONSIBLE FOR ENCLOSURE SIZE SO THAT UPON INSTALLATION, UNIT OPENS AND CLOSSES FREELY WITH FROST PROTECTION BLANKET IN PLACE. ALTERING OF ENCLOSURES NOT PERMITTED.
- (J) LOCATE BACKFLOW IN PLANTERS WHEN POSSIBLE AND SCREENED FROM VIEW WITH SHRUBBERY.
- (K) BACKFLOW SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF MANTECA STANDARDS. BACKFLOW MUST BE OPERATING PROPERLY AND A PASSING TEST BY A CERTIFIED TESTER MUST BE PROVIDED TO THE CITY.

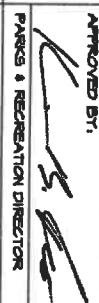
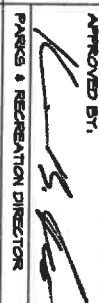
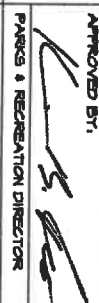
LEGEND:

- (1) CITY OF MANTECA APPROVED BACKFLOW ENCLOSURE PROVIDED BY CONTRACTOR. ENCLOSURE SHALL BE LOCKABLE AND DUAL HINGED ON BOTH SIDES. PROVIDE GUARDSHACK HGS SECURITY ENCLOSURE WITH FRAME SETTER OR PLACER WATERWORKS EIA SERIES ENCLOSURE WITH EMBEDMENT FRAME.
- (2) CITY OF MANTECA APPROVED REDUCED PRESSURE BACKFLOW PREVENTER WITH Y' STRAINER (SIZES 2" AND SMALLER)
- (3) SOLENOID PILOT VALVE FOR HYDROMETER/VALVE ASCO 24 VAC OR CITY OF MANTECA APPROVED EQUAL.
- (4) ARAD REMOTE CONTROL HYDROMETER NORMALLY CLOSED BMU-CIR MODELS AVAIL. FROM CENTRAL CONTROL SYSTEMS (530) 662-6841 (1 PULSE PER 10 GAL.) OR CITY OF MANTECA APPROVED EQUAL.
- (5) 4" X 4" METAL WEATHERPROOF JUNCTION BOX (WITH KNOCKOUTS AND BLANK COVER) FOR WIRE CONNECTIONS.
- (6) STANDARD PIPE CLAMP 1100HD (AROUND PIPE), SUPPORT CHANNEL PS100HD, AND 1100HD CLAMP (AROUND CONDUIT). SIZE ALL AS NEEDED TO PROVIDE ADEQUATE SUPPORT FOR CONDUIT AND JUNCTION BOX. POWER STRUT OR APPROVED EQUAL.
- (7) 4" THICK CONCRETE PAD OF ADEQUATE SIZE FOR ENCLOSURE WITH 4" MIN. CLEARANCE ON ALL SIDES.
- (8) WIRES FROM HYDROMETER/VALVE TO CONTROLLER (4 TOTAL) 2 - 12 GAUGE AND 2 - 14 GAUGE. WIRES SHALL BE OF A SEPARATE COLOR THAN THOSE USED FOR RCV'S.
- (9) PVC MAINLINE AND CONNECTIONS TO IRRIGATION SYSTEM.
- (10) GALVANIZED 90 DEGREE ELL
- (11) RIGID CONDUIT AND SWEEP ELL. (1" SIZE MIN.)
- (12) NATIVE SOIL
- (13) MAINLINE AND CONNECTIONS TO WATER MAIN PER CITY STANDARD W-11
- (14) IMBEDDED MOUNTING FRAME OR FRAME SETTER
- (15) GALVANIZED UNIONS (BOTH SIDES)
- (16) GALVANIZED NIPPLE (BOTH SIDES)
- (17) Y' STRAINER (SIZE TO MATCH BACKFLOW)
- (18) SCH. 80 PVC FEMALE ADAPTER, TYP.
- (19) GALVANIZED NIPPLE; LENGTH AS NEEDED TO CLEAR CONCRETE PAD, UPSTREAM AND DOWNSTREAM SIDES

BACKFLOW & HYDROMETER ASSEMBLY

FOR SIZES 3/4" TO 2"

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

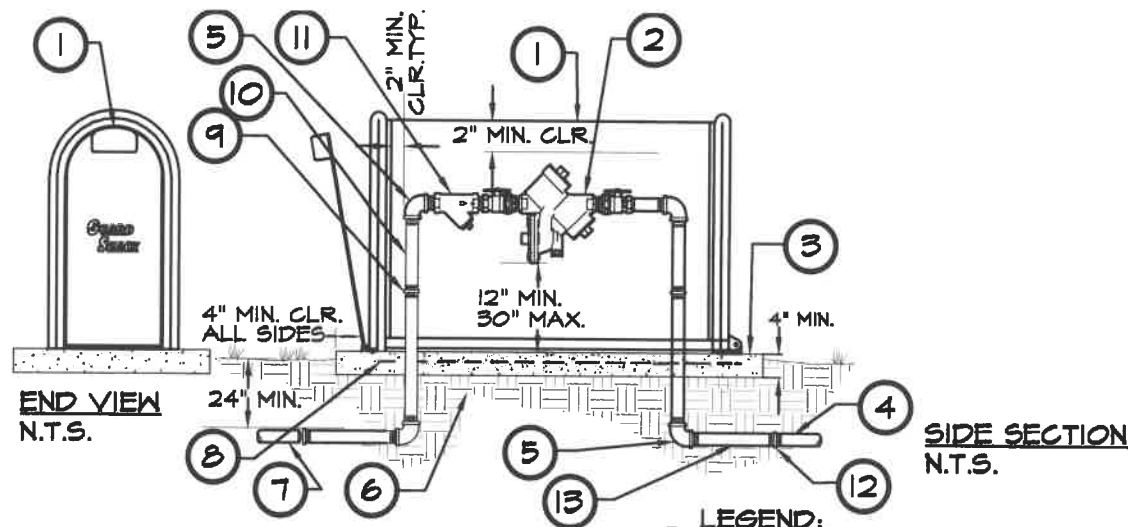
APPROVED BY: 
PARKS & RECREATION DIRECTOR
DRAWING NO. 
DATE: 2017 
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NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

REDUCED PRESSURE BACKFLOW PREVENTER
FOR SIZES 3/4" to 2"

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:
<i>[Signature]</i>	2017
PARKS & RECREATION DIRECTOR	
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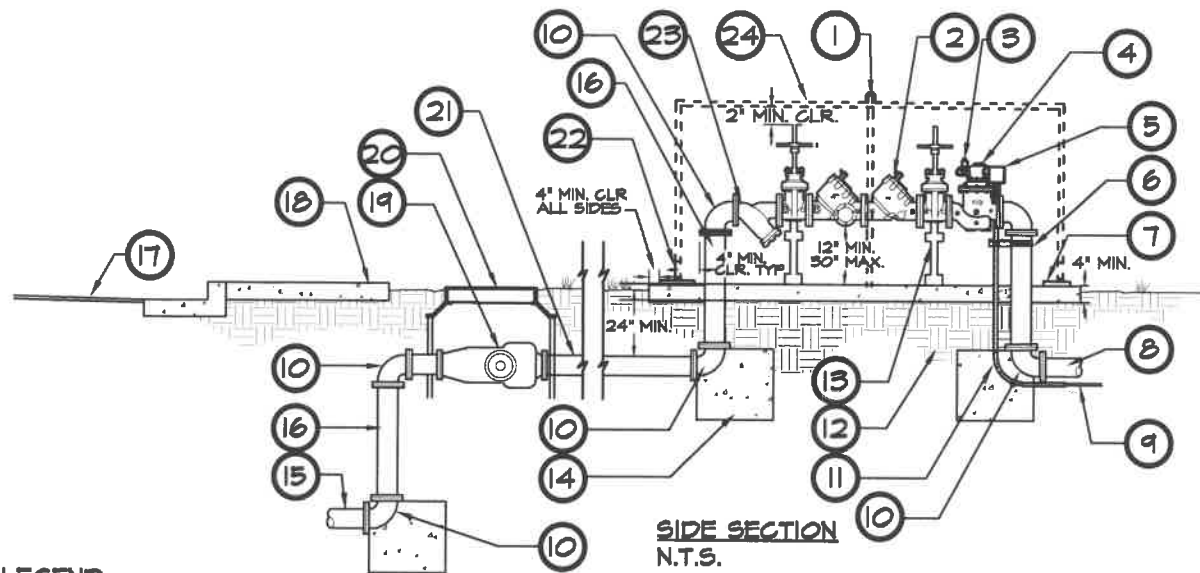


NOTES:

- (A) DEVICE USED MUST BE ON CITY OF MANTECA APPROVED BACKFLOW PREVENTION DEVICE LIST AND APPROVED BY PARKS DEPARTMENT.
- (B) TEST COCKS AND SHUT-OFF VALVES SHALL BE SUPPLIED.
- (C) DISCHARGE PORT MUST BE KEPT FREE OF OBSTRUCTION AT ALL TIMES.
- (D) ANY DEVIATION FROM THE INSTALLATION SHOWN MUST RECEIVE PRIOR APPROVAL.
- (E) REFER TO SECTION 203.4 OF THE CITY OF MANTECA PARKS STANDARDS AND SPECIFICATIONS FOR CONCRETE WORK.
- (F) ALL GALVANIZED PIPE BELOW GRADE SHALL RECEIVE TWO WRAPS OF 20 ML. TAPE.
- (G) BACKFLOW ENCLOSURE SHALL BE POWDER COATED WITH GREEN PAINT AND HINGED ON BOTH SIDES; MANUFACTURED BY PLACER WATER WORKS, GUARDIAN OR CITY APPROVED EQUAL.
- (H) BACK FLOW AND FLOW SENSOR SHALL BE ENCLOSED IN A FROST PROTECTION BLANKET W/ MIN. R30 RATING.
- (I) CONTRACTOR RESPONSIBLE FOR ENCLOSURE SIZE SO THAT UPON INSTALLATION, UNIT OPENS AND CLOSSES FREELY WITH FROST PROTECTION BLANKET IN PLACE. ALTERING OF ENCLOSURES NOT PERMITTED.
- (J) LOCATE BACKFLOW IN PLANTERS WHEN POSSIBLE AND SCREENED FROM VIEW WITH SHRUBBERY.
- (K) BACKFLOW SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF MANTECA STANDARDS, BACKFLOW MUST BE OPERATING PROPERLY AND A PASSING TEST BY A CERTIFIED TESTER MUST BE PROVIDED TO THE CITY.

LEGEND:

- ① CITY OF MANTECA APPROVED BACKFLOW ENCLOSURE PROVIDED BY CONTRACTOR. ENCLOSURE SHALL BE LOCKABLE AND DUAL HINGED ON BOTH SIDES. PROVIDE GUARDSHACK HGS SECURITY ENCLOSURE WITH FRAME SETTER OR PLACER WATERWORKS EIA SERIES ENCLOSURE WITH EMBEDMENT FRAME.
- ② CITY OF MANTECA APPROVED REDUCED PRESSURE BACKFLOW PREVENTER WITH Y' STRAINER (SIZES 2" AND SMALLER)
- ③ 4" THICK CONCRETE PAD OF ADEQUATE SIZE FOR ENCLOSURE WITH 4" MIN. CLEARANCE ON ALL SIDES.
- ④ PVC MAINLINE AND CONNECTIONS TO IRRIGATION SYSTEM.
- ⑤ GALVANIZED 90 DEGREE ELL
- ⑥ NATIVE SOIL OR COMPACTED SUBGRADE TO 95% MAXIMUM DRY DENSITY
- ⑦ MAINLINE AND CONNECTIONS TO WATER MAIN PER CITY STANDARD W-11
- ⑧ IMBEDDED MOUNTING FRAME OR FRAME SETTER
- ⑨ GALVANIZED UNIONS (BOTH SIDES)
- ⑩ GALVANIZED NIPPLE (BOTH SIDES)
- ⑪ Y' STRAINER (SIZE TO MATCH BACKFLOW)
- ⑫ SCH. 80 PVC FEMALE ADAPTER, TYP.
- ⑬ GALVANIZED NIPPLE; LENGTH AS NEEDED TO CLEAR CONCRETE PAD, UPSTREAM AND DOWNSTREAM SIDES



LEGEND:

- | | |
|--|--|
| <p>① PADLOCK LOOP</p> <p>② FEBCO LF860 REDUCED PRESSURE BACKFLOW PREVENTER WITH 'Y' STRAINER (SIZES 2-1/2" THROUGH 10") OR CITY APPROVED EQUAL.</p> <p>③ SOLENOID PILOT VALVE FOR HYDROMETER/VALVE ASCO 24 VAC OR CITY OF MANTEGA APPROVED EQUAL.</p> <p>④ ARAD REMOTE CONTROL HYDROMETER NORMALLY CLOSED (1 PULSE PER 10 GAL.) BMU-CIR MODELS AVAILABLE FROM CENTRAL CONTROL SYSTEMS (530) 662-6841</p> <p>⑤ 4" X 4" METAL WEATHERPROOF JUNCTION BOX (W/KNOCKOUTS AND BLANK COVER) FOR WIRE CONNECTIONS.</p> <p>⑥ STANDARD PIPE CLAMP 1100HD (AROUND PIPE), SUPPORT CHANNEL PS100HD, AND 1100HD CLAMP (AROUND CONDUIT). SIZE ALL AS NEEDED TO PROVIDE ADEQUATE SUPPORT FOR CONDUIT AND JUNCTION BOX. POWER STRUT OR APPROVED EQUAL</p> <p>⑦ 4" THICK CONCRETE PAD OF ADEQUATE SIZE FOR ENCLOSURE WITH 4" MIN. CLEARANCE ON ALL SIDES.</p> <p>⑧ PVC MAINLINE AND CONNECTIONS TO IRRIGATION SYSTEM.</p> <p>⑨ WIRES FROM HYDROMETER/VALVE TO CONTROLLER (4 TOTAL) 2 - 12 GAUGE AND 2 - 14 GAUGE. WIRES SHALL BE OF A SEPARATE COLOR THAN THOSE USED FOR RCV'S.</p> <p>⑩ DUCTILE IRON FLANGED 90 DEGREE ELL X M.J.</p> <p>⑪ RIGID CONDUIT AND SWEEP ELL. (1" SIZE MIN.)</p> | <p>⑫ NATIVE SOIL</p> <p>⑬ SUPPORTS (3" AND LARGER)</p> <p>⑭ THRUST BLOCKS INSTALLED PER CITY STANDARD W-4 OR W-5</p> <p>⑮ MAINLINE AND CONNECTIONS TO WATER MAIN PER CITY STANDARD W-11</p> <p>⑯ DUCTILE IRON SPOOL</p> <p>⑰ ADJACENT PAVEMENT</p> <p>⑱ COMBINATION CURB, GUTTER AND SIDEWALK</p> <p>⑲ TURBINE TYPE WATER METER</p> <p>⑳ 24" X 36" METER PIT OR VAULT</p> <p>㉑ CLASS C-900 FROM METER TO BACKFLOW</p> <p>㉒ HINGES (BOTH SIDES)</p> <p>㉓ FLANGED 'Y' STRAINER (SIZE TO MATCH BACKFLOW)</p> <p>㉔ CITY OF MANTEGA APPROVED BACKFLOW ENCLOSURE TO BE PROVIDED BY CONTRACTOR. ENCLOSURE SHALL BE LOCKABLE AND HINGED ON BOTH SIDES FOR EASY ACCESS TO BACKFLOW.</p> |
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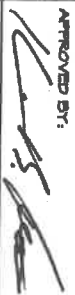
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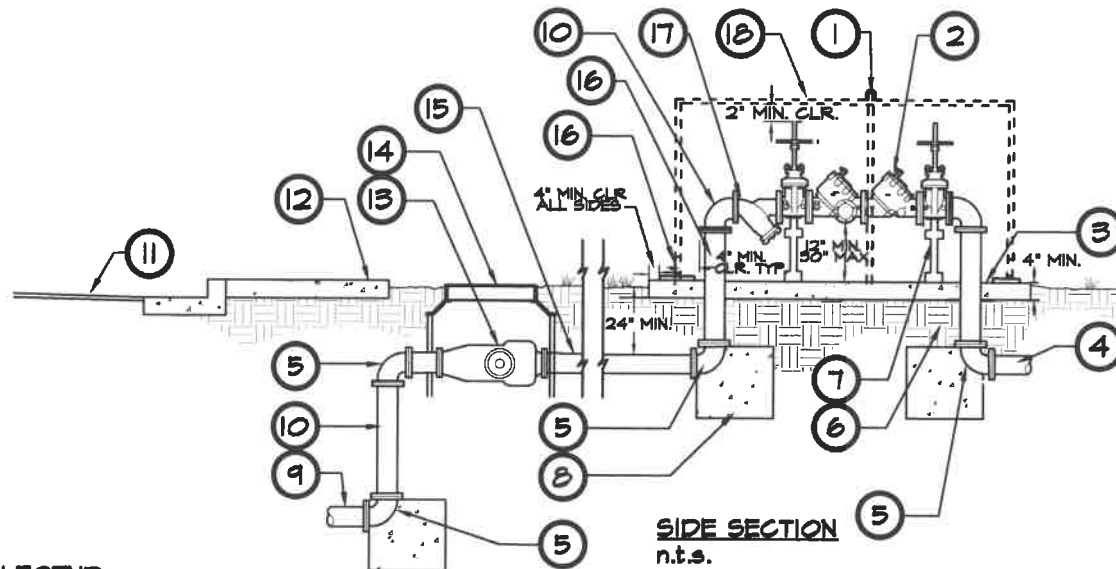
REFER TO PAGE 2 OF 2 FOR NOTES

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
BACKFLOW W/ HYDROMETER ASSEMBLY (METER AT STREET) 2-1/2" TO 10" SIZE - PARKS APPLICATION CITY OF MANTEGA PARKS & RECREATION DEPARTMENT		
DATE:	2017	
DRAWING NO.	1-3A	
APPROVED BY:		
PARKS & RECREATION DIRECTOR		

NOTES:

- ① DEVICE USED TO BE FEBCO LF860 REDUCED PRESSURE OR CITY OF MANTECA APPROVED EQUAL
- ② ALSO REFER TO MANTECA PUBLIC WORKS STANDARD DETAIL W-15
- ③ TEST COCKS AND SHUT-OFF VALVES SHALL BE SUPPLIED
- ④ DISCHARGE PORT MUST BE KEPT FREE OF OBSTRUCTION AT ALL TIMES.
- ⑤ ANY DEVIATION FROM THE INSTALLATION SHOWN MUST RECEIVE PRIOR APPROVAL
- ⑥ FOR ALL CONCRETE WORK TO BE FINISHED, CONCRETE MUST BE MIXED IN TRANSIT -NO TRAILER HAUL MIX SHALL BE PERMITTED
- ⑦ ALL GALVANIZED PIPE BELOW GRADE SHALL RECEIVE TWO WRAPS OF 20 ML. TAPE
- ⑧ BACKFLOW ENCLOSURE SHALL BE POWDER COATED WITH GREEN PAINT AND HINGED ON BOTH SIDES; MANUFACTURED BY PLACER WATER WORKS, GUARDIAN OR CITY APPROVED EQUAL
- ⑨ LOCATE BACKFLOW IN PLANTERS WHEN POSSIBLE AND SCREENED FROM VIEW WITH SHRUBBERY
- ⑩ BACKFLOW SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF MANTECA STANDARDS
- ⑪ CONCRETE PAD AND ENCLOSURE SHALL BE LARGE ENOUGH TO ACCOMMODATE ALL THE COMPONENTS SHOWN AND MAINTAIN MINIMUM CLEARANCES
- ⑫ CONTRACTOR RESPONSIBLE FOR ENCLOSURE SIZE SO THAT UPON INSTALLATION, ENCLOSURE OPENS AND CLOSES FREELY WITH FROST PROTECTION BLANKET IN PLACE. ALTERING OF ENCLOSURES NOT PERMITTED
- ⑬ BACKFLOW AND ANY FLOW SENSORS SHALL BE ENCLOSED IN A FROST PROTECTION INSULATION BLANKET WITH MIN. R30 RATING
- ⑭ WATER METER WILL BE PROVIDED BY THE CITY AND INSTALLED BY THE CONTRACTOR
- ⑮ LOCATION OF BACKFLOW ASSEMBLY TO BE SHOWN IN PLANS AND APPROVED BY CITY'S REPRESENTATIVE PRIOR TO INSTALLATION
- ⑯ BACKFLOW MUST BE OPERATING PROPERLY AND A PASSING TEST REPORT CONDUCTED BY A CERTIFIED TESTER MUST BE PROVIDED TO THE CITY PRIOR TO FINAL ACCEPTANCE

NO.	REVIEWED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
BACKFLOW WITH HYDROMETER NOTES (METER AT STREET) 2-1/2" TO 10" SIZE - PARKS APPLICATION CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.	PARKS & RECREATION DIRECTOR	
DATE	2017	
1-3B		

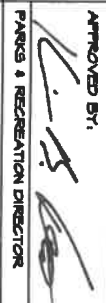


LEGEND:

- | | | | |
|---|---|---|---|
| ① | PADLOCK LOOP | ⑫ | COMBINATION CURB, GUTTER AND SIDEWALK |
| ② | FEBCO LF860 REDUCED PRESSURE BACKFLOW PREVENTER WITH Y' STRAINER (SIZES 2-1/2" THROUGH 10") OR CITY APPROVED EQUAL. | ⑬ | TURBINE TYPE WATER METER |
| ③ | 4" THICK CONCRETE PAD OF ADEQUATE SIZE FOR ENCLOSURE WITH 4" MIN. CLEARANCE ON ALL SIDES. | ⑭ | 24"X 36" METER PIT OR VAULT |
| ④ | PVC MAINLINE AND CONNECTIONS TO IRRIGATION SYSTEM. | ⑮ | CLASS C-900 FROM METER TO BACKFLOW |
| ⑤ | DUCTILE IRON FLANGED 90 DEGREE ELL X M.J. | ⑯ | HINGES (BOTH SIDES) |
| ⑥ | NATIVE SOIL OR COMPACTED SUBGRADE TO 95% M.D.D. | ⑰ | FLANGED Y' STRAINER (SIZE TO MATCH BACKFLOW) |
| ⑦ | SUPPORTS (3" AND LARGER) | ⑱ | CITY OF MANTECA APPROVED BACKFLOW ENCLOSURE TO BE PROVIDED BY CONTRACTOR. ENCLOSURE SHALL BE LOCKABLE AND HINGED ON BOTH SIDES FOR EASY ACCESS TO BACKFLOW. |
| ⑧ | THRUST BLOCKS INSTALLED PER CITY STANDARD W-4 OR W-5, TYP. | | |
| ⑨ | MAINLINE AND CONNECTIONS TO WATER MAIN PER CITY STANDARD W-11 | | |
| ⑩ | DUCTILE IRON SPOOL | | |
| ⑪ | ADJACENT PAVEMENT | | |

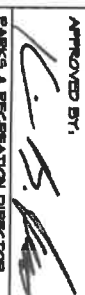
NOTES:

REFER TO PAGE 2 OF 2 FOR NOTES

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
BACKFLOW (METER AT STREET) 2-1/2" TO 10" SIZE CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.	PARKS & RECREATION DIRECTOR	
DATE:	2017	1-4A

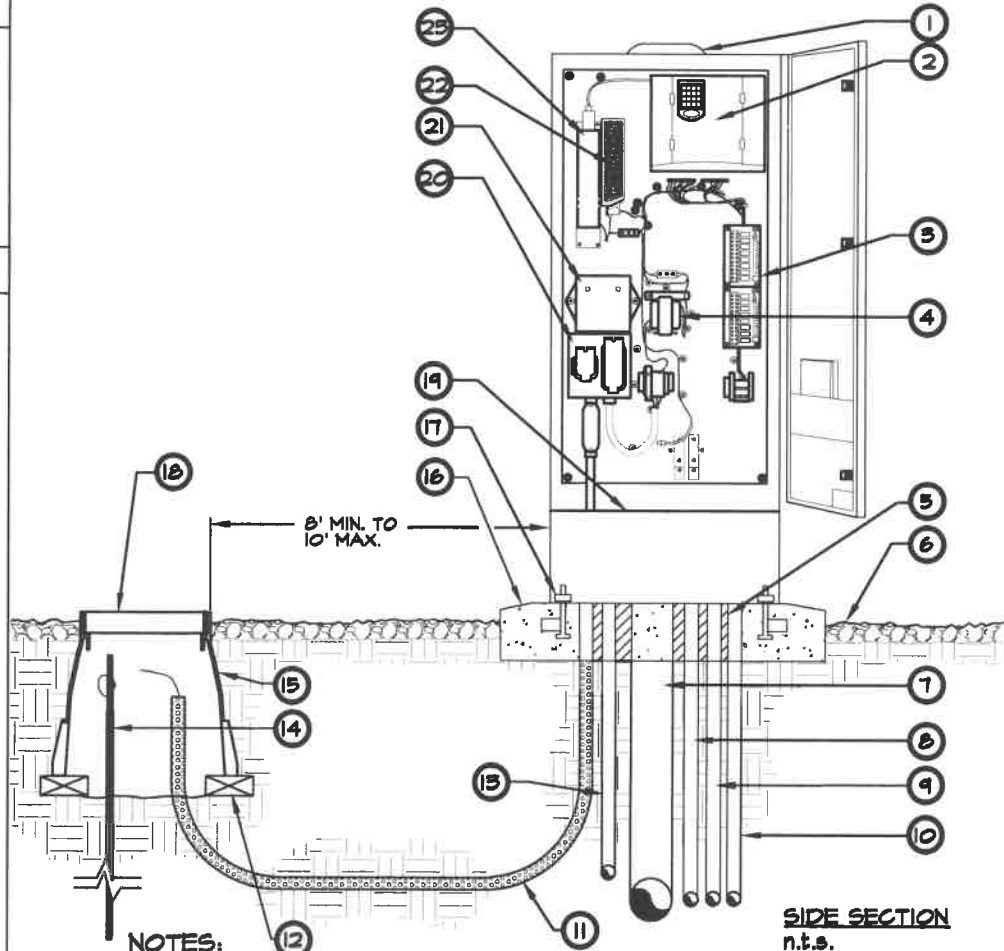
NOTES:

- ① DEVICE USED TO BE FEBCO LF860 REDUCED PRESSURE OR CITY OF MANTECA APPROVED EQUAL
- ② ALSO REFER TO MANTECA PUBLIC WORKS STANDARD DETAIL W-15
- ③ TEST COCKS AND SHUT-OFF VALVES SHALL BE SUPPLIED
- ④ DISCHARGE PORT MUST BE KEPT FREE OF OBSTRUCTION AT ALL TIMES.
- ⑤ ANY DEVIATION FROM THE INSTALLATION SHOWN MUST RECEIVE PRIOR APPROVAL
- ⑥ FOR ALL CONCRETE WORK TO BE FINISHED, CONCRETE MUST BE MIXED IN TRANSIT -NO TRAILER HAUL MIX SHALL BE PERMITTED
- ⑦ ALL GALVANIZED PIPE BELOW GRADE SHALL RECEIVE TWO WRAPS OF 20 ML. TAPE
- ⑧ BACKFLOW ENCLOSURE SHALL BE POWDER COATED WITH GREEN PAINT AND HINGED ON BOTH SIDES; MANUFACTURED BY PLACER WATER WORKS, GUARDIAN OR CITY APPROVED EQUAL
- ⑨ LOCATE BACKFLOW IN PLANTERS WHEN POSSIBLE AND SCREENED FROM VIEW WITH SHRUBBERY
- ⑩ BACKFLOW SHALL BE INSTALLED IN ACCORDANCE WITH CITY OF MANTECA STANDARDS
- ⑪ CONCRETE PAD AND ENCLOSURE SHALL BE LARGE ENOUGH TO ACCOMMODATE ALL THE COMPONENTS SHOWN AND MAINTAIN MINIMUM CLEARANCES
- ⑫ CONTRACTOR RESPONSIBLE FOR ENCLOSURE SIZE SO THAT UPON INSTALLATION, ENCLOSURE OPENS AND CLOSES FREELY WITH FROST PROTECTION BLANKET IN PLACE. ALTERING OF ENCLOSURES NOT PERMITTED
- ⑬ BACKFLOW AND ANY FLOW SENSORS SHALL BE ENCLOSED IN A FROST PROTECTION INSULATION BLANKET WITH MIN. R30 RATING
- ⑭ WATER METER WILL BE PROVIDED BY THE CITY AND INSTALLED BY THE CONTRACTOR
- ⑮ LOCATION OF BACKFLOW ASSEMBLY TO BE SHOWN IN PLANS AND APPROVED BY CITY'S REPRESENTATIVE PRIOR TO INSTALLATION
- ⑯ BACKFLOW MUST BE OPERATING PROPERLY AND A PASSING TEST REPORT CONDUCTED BY A CERTIFIED TESTER MUST BE PROVIDED TO THE CITY PRIOR TO FINAL ACCEPTANCE

NO.	REVIEWED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
BACKFLOW NOTES (METER AT STREET) 2-1/2" TO 10" SIZE CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
DATE:	2017	1-4B
DRAWING NO.	PARKS & RECREATION DIRECTOR	
APPROVED BY: 		

LEGEND:

- ① ANTENNA SELECTION TO BE DETERMINED AFTER TESTING AT SITE, OBTAIN CITY APPROVAL
- ② IRRINET-M CONTROLLER
- ③ IC-SBIO 8-OUTPUT 2-INPUT SWITCH BOARD WITH PROGRAMMABLE PUSH BUTTON.
- ④ 120/24 VAC TRANSFORMER
- ⑤ FILL VOIDS WITH CONCRETE.
- ⑥ FINISH GRADE WITH TOP DRESSING ADDED.
- ⑦ 3" X 24" R SCH. 40 SWEEP ELL AND CONDUIT FOR VALVE WIRES. CHECK PLANS AND ALLOW FOR EXPANSION AS NEEDED.
- ⑧ BOOSTER OR WELL PUMP CONDUIT
- ⑨ 1" X 18" R SCH. 40 SWEEP ELL AND CONDUIT FOR MASTER VALVE/HYDROMETER
- ⑩ 1" X 18" R SCH. 40 SWEEP ELL AND CONDUIT FOR FOR SENSORS.
- ⑪ GROUND ROD CONDUIT
- ⑫ BRICKS FOR SUPPORT. ONE EACH SIDE.
- ⑬ 1" X 18" RADIUS SCH. 40 CONDUIT SWEEP ELL FOR ELECTRICAL SERVICE.
- ⑭ 5/8" X 8' COPPER CLAD GROUNDING ROD WITH #6 WIRE AND CLAMP, 8' MIN DIST. FROM ENCLOSURE
- ⑮ 10" DIA. VALVE BOX W/ LOCKING COVER, NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) AND III BB BOLT KIT.
- ⑯ 6" THICK CONCRETE PAD W/ #4 BARS 12" EA. WAY, CENTERED IN SLAB; EXTEND 6" BEYOND OUTSIDE DIMENSION OF ENCLOSURE. PROVIDE 1% SLOPE FOR DRAINAGE AND TAPER EDGES AS SHOWN.
- ⑰ 1/2" DIA. ST. STL. WEDGE ANCHOR W/3" EMBEDMENT, HILTI KB-TZ OR SIMPSON STRONG-BOLT 2 ANCHORS
- ⑱ ELEVATION OF VALVE BOX SHALL BE 1/2" ABOVE GRADE IN TURF AND 1" ABOVE FINISHED GRADE IN PLANTERS.
- ⑲ V.I.T. #PED24-SS OR #PED18-SS STAINLESS STEEL FEDESTAL SIZE PER CENTRAL CONTROL SYSTEMS
- ⑳ GROUND FAULT PROTECTED DUPLEX BOX WITH RECEPTACLE AND SWITCH W/WATERPROOF COVERS.
- ㉑ NORTHERN TECHNOLOGIES TCS-HWR SURGE PROTECTION
- ㉒ POWER SUPPLY
- ㉓ UHF CM200 RADIO KIT



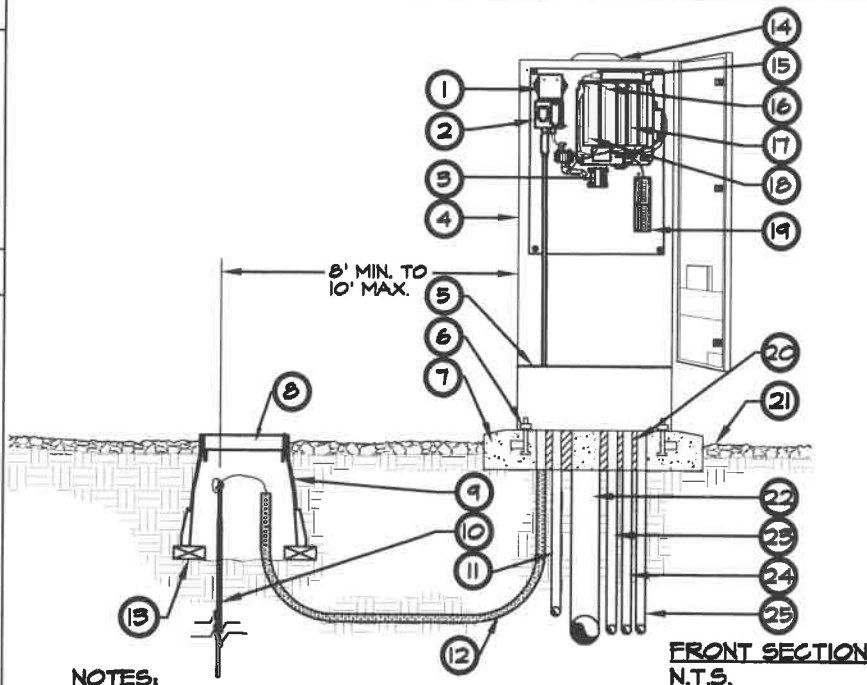
- NOTES:**
- (A) SPECIFIC UNIT SELECTION, SIGNAL TRANSMISSION OPTIONS AND MASTER VALVE/FLOW METER SELECTION SHALL BE COORDINATED WITH THE CITY AND CENTRAL CONTROL SYSTEMS (530) 662-6841
 - (B) THE CONTRACTOR SHALL INCLUDE A NETBOOK COMPUTER FOR PROGRAMMING OF IRRINET UNIT.
 - (C) THE CONTRACTOR SHALL HAVE THE CONTROLLER AND ANY SATELLITES PROGRAMMED ACCORDING TO APPROVED IRRIGATION SCHEDULE. MASTER VALVE/HYDROMETER SHALL BE CONNECTED TO CONTROLLER AND BE FULLY OPERATIONAL.
 - (D) CONTROLLER SHALL HAVE ALL COMMUNICATION FUNCTIONS FULLY OPERATIONAL SO THAT CONTROLLER AND ALL SATELLITES AND SENSORS ARE ABLE TO INTERFACE WITH THE CENTRAL COMPUTER SOFTWARE.
 - (E) THE CONTRACTOR SHALL CONTACT CENTRAL CONTROL SYSTEMS FOR AN ON-SITE SYSTEMS TEST TO ENSURE THAT THE SYSTEM IS INSTALLED AND PROGRAMMED CORRECTLY. COMPONENTS AND COMMUNICATION SHALL BE VERIFIED AS FULLY OPERATIONAL AND SUBMIT WRITTEN VERIFICATION TO THE CITY OF A SATISFACTORY ON-SITE TEST.
 - (F) CONDUIT SIZE AND RADIUS SHOWN ARE MINIMUM SIZES AND SHALL BE ENLARGED AS NEEDED.
 - (G) FOR NON-POTABLE IRRIGATION SYSTEMS AN IDENTIFICATION TAG SHALL BE PLACED IN A VISIBLE LOCATION INSIDE THE CONTROLLER. CHRISTY 3"x4" MAXI-TAGS OR CITY APPROVED EQUAL. TAG# 1D-MAX-PI-NP011 WITH # 021 SPANISH TRANSLATION ON BACK.

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

MOTOROLA Irrinet-M CONTROLLER
IN V.I.T.-B-1855/2455 ENCLOSURE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
DRAWING NO.	
DATE:	2017
	1-5



NOTES:

- (A) SPECIFIC UNIT SELECTION, SIGNAL TRANSMISSION OPTIONS AND MASTER VALVE/FLOW METER SELECTION SHALL BE COORDINATED WITH THE CITY AND CENTRAL CONTROL SYSTEMS (530-662-6841)
- (B) THE CONTRACTOR SHALL INCLUDE A NETBOOK COMPUTER FOR PROGRAMMING OF IRRINET UNIT.
- (C) THE CONTRACTOR SHALL HAVE THE CONTROLLER AND ANY SATELLITES PROGRAMMED ACCORDING TO APPROVED IRRIGATION SCHEDULE. MASTER VALVE/HYDROMETER SHALL BE CONNECTED TO CONTROLLER AND BE FULLY OPERATIONAL.
- (D) CONTROLLER SHALL HAVE ALL COMMUNICATION FUNCTIONS FULLY OPERATIONAL SO THAT CONTROLLER AND ALL SATELLITES AND SENSORS ARE ABLE TO INTERFACE WITH THE CENTRAL COMPUTER SOFTWARE.
- (E) THE CONTRACTOR SHALL CONTACT CENTRAL CONTROL SYSTEMS FOR AN ON-SITE SYSTEMS TEST TO ENSURE THAT THE SYSTEM IS INSTALLED AND PROGRAMMED CORRECTLY. COMPONENTS AND COMMUNICATION SHALL BE VERIFIED AS FULLY OPERATIONAL AND SUBMIT WRITTEN VERIFICATION TO THE CITY OF A SATISFACTORY ON-SITE TEST.
- (F) CONDUIT SIZE AND RADIUS SHOWN ARE MINIMUM SIZES AND SHALL BE ENLARGED AS NEEDED.
- (G) FOR NON-POTABLE IRRIGATION SYSTEMS AN IDENTIFICATION TAG SHALL BE PLACED IN A VISIBLE LOCATION INSIDE THE CONTROLLER. CHRISTY 5"X4" MAXI-TAGS OR CITY APPROVED EQUAL. TAG# ID-MAX-PI-NP011 WITH # 021 SPANISH TRANSLATION ON BACK.

LEGEND:

- 1 NORTHERN TECHNOLOGIES TCS-HWR SURGE PROTECTION
- 2 GROUND FAULT PROTECTED DUPLEX BOX WITH RECEPTACLE AND SWITCH W/ WATERPROOF COVERS.
- 3 120/24 VAC TRANSFORMER
- 4 V.I.T. #SB-24SS OR #SB-18SS STAINLESS STEEL ENCLOSURE. SIZE PER CENTRAL CONTROL SYSTEMS
- 5 V.I.T. #PED24-SS OR #PED18-SS STAINLESS STEEL PEDESTAL SIZE PER CENTRAL CONTROL SYSTEMS
- 6 1/2" DIA. ST. STL. WEDGE ANCHOR W/3" EMBEDMENT; HILTI KB-TZ OR SIMPSON STRONG-BOLT 2 ANCHORS
- 7 6" THICK CONCRETE PAD W/ #4 REBAR 12" O.C. EA. WAY, CENTERED IN SLAB; EXTEND 6" BEYOND OUTSIDE DIMENSION OF ENCLOSURE. PROVIDE 1% SLOPE FOR DRAINAGE AND TAPER EDGES AS SHOWN.
- 8 ELEVATION OF VALVE BOX SHALL BE 1/2" ABOVE GRADE IN TURF AND 1" ABOVE FINISHED GRADE IN PLANTERS.
- 9 10" DIA. VALVE BOX W/ LOCKING COVER, NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) AND III BB BOLT KIT.
- 10 5/8" X 8' COPPER CLAD GROUNDING ROD W/ #6 GROUNDWIRE & CLAMP, LOCATE GROUND ROD 8' TO 10' FROM ENCLOSURE.
- 11 1" X 18" RADIUS SCH. 40 CONDUIT SWEEP ELL FOR ELECTRICAL SERVICE.
- 12 GROUND ROD CONDUIT
- 13 BRICKS FOR SUPPORT. ONE EACH SIDE.
- 14 ANTENNA SELECTION TO BE DETERMINED AFTER TESTING AT SITE, OBTAIN APPROVAL FROM CITY
- 15 UHF CM200 RADIO KIT
- 16 CPU
- 17 MODULES
- 18 POWER SUPPLY
- 19 1G-SB10 8-OUTPUT 2-INPUT SWITCH BOARD WITH PROGRAMMABLE PUSH BUTTON.
- 20 FILL VOIDS WITH CONCRETE.
- 21 FINISH GRADE WITH TOP DRESSING ADDED.
- 22 3" X 24" R SCH. 40 SWEEP ELL AND CONDUIT FOR VALVE WIRES. CHECK PLANS AND ALLOW FOR EXPANSION AS NEEDED.
- 23 BOOSTER PUMP OR WELL CONDUIT
- 24 1" X 18" R SCH. 40 SWEEP ELL AND CONDUIT FOR FOR MASTER VALVE/HYDROMETER
- 25 1" X 18" R SCH. 40 SWEEP ELL AND CONDUIT FOR FOR SENSORS.

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

MOTOROLA IRRINET-ACE CONTROLLER
IN V.I.T. SB-18SS/24SS ENCLOSURE
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:
<i>[Signature]</i>	2017
PARKS & RECREATION DIRECTOR	
DRAWING NO.	1-6

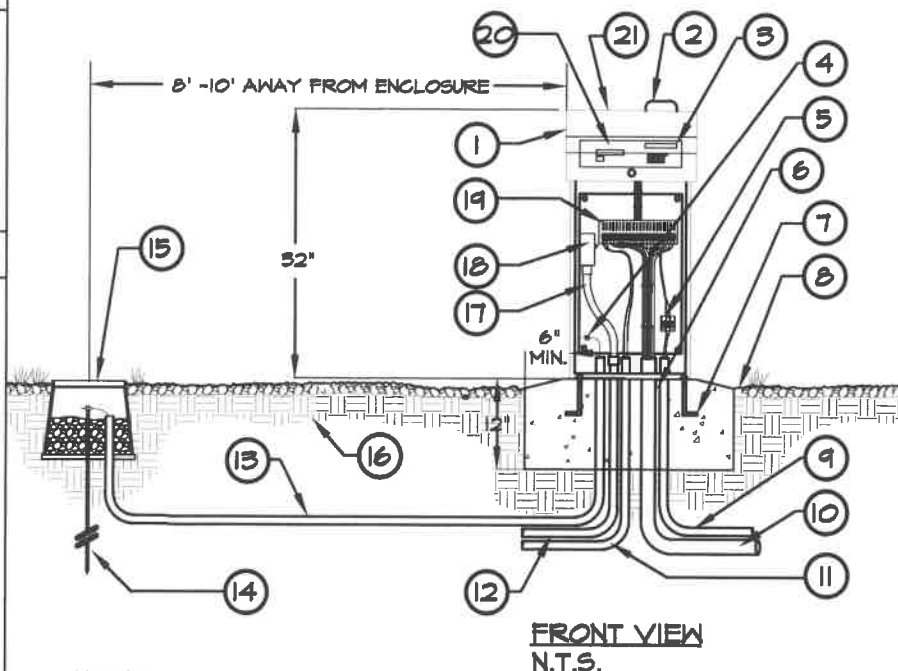
NO.	REVISED	BY	MOTOROLA PICCOLO XR SATELLITE ASSEMBLY IN TOP ENTRY ENCLOSURE	APPROVED BY:	 PARKS & RECREATION DIRECTOR
				DRAWING NO.	
DRAWN BY:	C. BROWN			DATE:	
CHECKED BY:	J. COURTNEY		CITY OF MANTECA		
SCALE:	NONE		PARKS & RECREATION DEPARTMENT	2017	1-7

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

RAINMASTER SITE ONE GREEN TECH SATELLITE
ASSEMBLY IN TOP ENTRY ENCLOSURE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
DATE: 2017
DRAWING NO. 1-8
PARKS & RECREATION DIRECTOR



NOTES:

- (A) SPECIFIC UNIT SELECTION, ASSEMBLY, ANTENNA SELECTION, AND MASTER VALVE / FLOW SENSOR SELECTION SHALL BE COORDINATED WITH THE CITY AND SITE ONE GREEN TECH DISTRICT SALES MANAGER, GREG IRELAND AT (559) 916-1984. SEE STANDARD DETAIL FOR FLOW SENSOR/MASTER VALVE.
- (B) THE CONTROLLER SHALL BE LOCATED WITHIN A PLANTER AREA AND AWAY FROM TRAFFIC AREAS WHENEVER POSSIBLE.
- (C) THE CONTRACTOR SHALL INCLUDE ANY INCIDENTAL PARTS, SERVICE CONNECTIONS AND MINOR CHANGES AS NEEDED TO COMPLETE OR MODIFY THE SYSTEM AS PART OF THE WORK. PROMAX RECEIVER SHALL BE INCLUDED.
- (D) THE CONTRACTOR SHALL REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS, SPECS. AND DETAILS FOR ADDITIONAL INFORMATION.
- (E) THE CONTRACTOR SHALL HAVE THE CONTROLLER AND ANY SATELLITES PROGRAMMED ACCORDING TO APPROVED IRRIGATION SCHEDULE. MASTER VALVE/FLOW SENSOR SHALL BE CONNECTED TO CONTROLLER AND BE FULLY OPERATIONAL.
- (F) CONDUIT AND SWEEPS SHALL BE SIZED AS REQUIRED AND ALLOW FOR ANY PROPOSED EXPANSION. WIRING SHALL NOT EXCEED 40% OF MAX. CONDUIT.
- (G) CONTROLLER SHALL HAVE ALL COMMUNICATION FUNCTIONS FULLY OPERATIONAL SO THAT CONTROLLER AND ALL SATELLITES ARE ABLE TO INTERFACE WITH THE CENTRAL COMPUTER SOFTWARE.

LEGEND:

- ① STRONGBOX 16" SLANT TOP ENCLOSURE NEMA 3R RAINPROOF STAINLESS STEEL
- ② ANTENNA SELECTION TO BE DETERMINED AFTER TESTING AT SITE.
- ③ RAINMASTER (SA6-RM2 SERIES) CONTROLLER/ SATELLITE ASSEMBLY. ASSEMBLED IN ENCLOSURE BY SITE ONE GREEN TECH.
- ④ #6 GROUNDING WIRE SECURED TO BACK BOARD GROUNDING TERMINAL.
- ⑤ TERMINAL STRIP FOR FLOW SENSOR.
- ⑥ FILL VOIDS WITH CONCRETE.
- ⑦ 12" THICK CONCRETE PAD, REINF. W/ #4 @12" O.C. EA. WAY, TOP & BOTTOM (3" CLR); EXTEND PAD 6" BEYOND OUTSIDE DIMS OF ENCLOSURE W/ 1% TAPER SLOPE TO DRAIN; ANCHOR W/ 1/2" DIA. ST. STL. WEDGE ANCHORS W/ 4" EMBEDMENT (HILTI KB-TZ OR SIMPSON STRONG-BOLT 2 ANCHORS).
- ⑧ FINISH GRADE (WITH TOPDRESSING ADDED)
- ⑨ 1" SWEEP ELL AND CONDUIT FOR FLOW SENSOR CABLE #AEF 9516-25P
- ⑩ 3" MIN. SWEEP ELL AND CONDUIT FOR CONTROL WIRES. SIZE AS REQUIRED. CHECK PLANS FOR ANY FUTURE EXPANSION.
- ⑪ 1" SWEEP ELL AND CONDUIT FOR MASTER VALVE WIRES.
- ⑫ 1" SWEEP ELL AND CONDUIT FOR 120 VAC FROM METERED POWER SUPPLY.
- ⑬ 1" SWEEP ELLS AND CONDUIT FOR GROUND WIRE. * IF APPLICABLE, ADD 1-1/4" SWEEP ELL AND CONDUIT FOR COMMUNICATION CABLE TO OTHER SATELLITES/RAIN SENSORS. (NOT SHOWN)
- ⑭ 5/8" DIA. X 8' GROUNDING ROD WITH #6 GROUND WIRE AND CLAMP. LOCATE 8'-10' FROM ENCLOSURE.
- ⑮ 10" DIA. VALVE BOX W/ LOCKING COVER, NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) AND III BB BOLT KIT.
- ⑯ NATIVE SOIL COMPACTED AROUND VALVE BOX.
- ⑰ ELECTRICAL FLEX CONDUIT
- ⑱ POWER SWITCH/ GFI RECEPTACLE
- ⑲ TERMINAL STRIP FOR VALVE WIRES
- ⑳ SATELLITE MOUNTED IN TOP TRAY
- ㉑ RSE - RAIN SENSOR

NOTES: (CONTINUED)

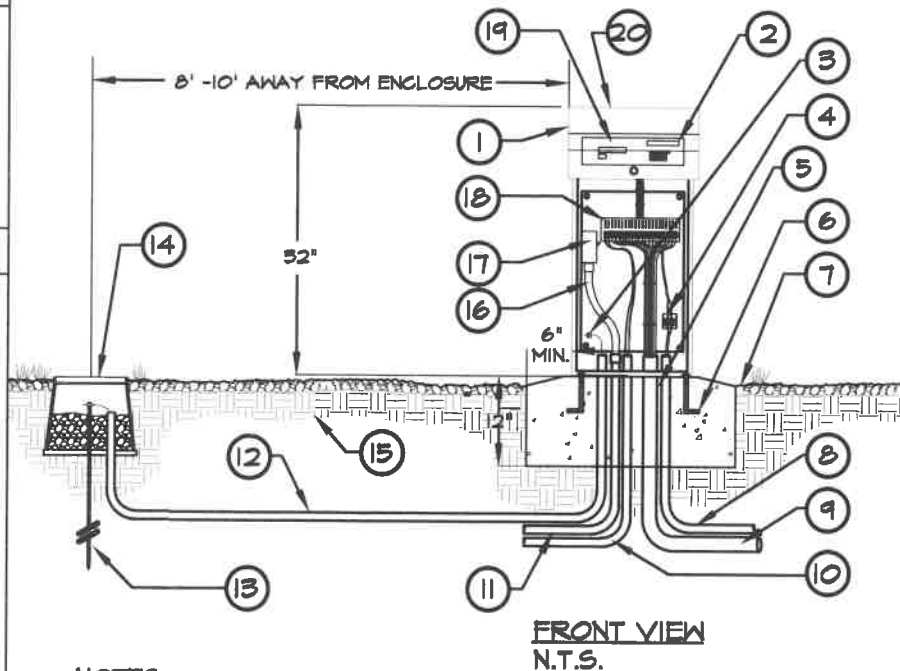
- (H) THE CONTRACTOR SHALL CONTACT SITE ONE GREEN TECH FOR AN ON-SITE SYSTEMS TEST TO ENSURE THE SYSTEM IS INSTALLED AND PROGRAMMED CORRECTLY. COMPONENTS AND COMMUNICATION SHALL BE VERIFIED AS FULLY OPERATIONAL AND SUBMIT WRITTEN VERIFICATION TO THE CITY OF A SATISFACTORY ON-SITE TEST.
- (I) FOR NON-POTABLE IRRIGATION SYSTEMS AN IDENTIFICATION TAG SHALL BE PLACED IN A VISIBLE LOCATION INSIDE THE CONTROLLER. CHRISTY 3"X4" MAXI-TAGS OR CITY APPROVED EQUAL. TAG# 1D-MAX-PI-NP011 WITH # 021 SPANISH TRANSLATION ON BACK.

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

RAINMASTER DX2 SITE ONE GREEN SATELLITE
ASSEMBLY IN TOP ENTRY ENCLOSURE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:
<i>[Signature]</i>	2017
DRAWING NO.	1-9
PARKS & RECREATION DIRECTOR	



NOTES:

- (A) SPECIFIC UNIT SELECTION, ASSEMBLY, ANTENNA SELECTION, AND MASTER VALVE / FLOW SENSOR SELECTION SHALL BE COORDINATED WITH THE CITY AND SITE ONE GREEN TECH DISTRICT SALES MANAGER, GREG IRELAND AT (559) 916-1984. SEE STANDARD DETAIL FOR FLOW SENSOR/MASTER VALVE.
- (B) THE CONTROLLER SHALL BE LOCATED WITHIN A PLANTER AREA AND AWAY FROM TRAFFIC AREAS WHENEVER POSSIBLE.
- (C) THE CONTRACTOR SHALL INCLUDE ANY INCIDENTAL PARTS, SERVICE CONNECTIONS AND MINOR CHANGES AS NEEDED TO COMPLETE OR MODIFY THE SYSTEM AS PART OF THE WORK. PROMAX RECEIVER SHALL BE INCLUDED.
- (D) THE CONTRACTOR SHALL REFER TO MANUFACTURER'S INSTALLATION INSTRUCTIONS, SPECS. AND DETAILS FOR ADDITIONAL INFORMATION.
- (E) THE CONTRACTOR SHALL HAVE THE CONTROLLER AND ANY SATELLITES PROGRAMMED ACCORDING TO APPROVED IRRIGATION SCHEDULE. MASTER VALVE/FLOW SENSOR SHALL BE CONNECTED TO CONTROLLER AND BE FULLY OPERATIONAL.
- (F) CONDUIT AND SWEEPS SHALL BE SIZED AS REQUIRED AND ALLOW FOR ANY PROPOSED EXPANSION. WIRING SHALL NOT EXCEED 40% OF MAX. CONDUIT.
- (G) CONTROLLER SHALL HAVE ALL COMMUNICATION FUNCTIONS FULLY OPERATIONAL SO THAT CONTROLLER AND ALL SATELLITES ARE ABLE TO INTERFACE WITH THE CENTRAL COMPUTER SOFTWARE.

LEGEND:

- ① STRONGBOX 16" SLANT TOP ENCLOSURE NEMA 3R RAINPROOF STAINLESS STEEL
- ② RAINMASTER (SA6-RM4 SERIES) CONTROLLER/ SATELLITE ASSEMBLY. ASSEMBLED IN ENCLOSURE BY SITE ONE GREEN TECH.
- ③ #6 GROUNDING WIRE SECURED TO BACK BOARD GROUNDING TERMINAL.
- ④ TERMINAL STRIP FOR FLOW SENSOR.
- ⑤ FILL VOIDS WITH CONCRETE.
- ⑥ 12" THICK CONCRETE PAD, REINF. W/ #4 @ 12" O.C. EA. WAY, TOP & BOTTOM (3" CLR); EXTEND PAD 6" BEYOND OUTSIDE DIMS OF ENCLOSURE W/ 1% TAPER SLOPE TO DRAIN; ANCHOR W/ 1/2" DIA. ST. STL. WEDGE ANCHORS W/ 4" EMBEDMENT (HILTI KB-TZ OR SIMPSON STRONG-BOLT 2 ANCHORS).
- ⑦ FINISH GRADE (WITH TOPDRESSING ADDED)
- ⑧ 1" SWEEP ELL AND CONDUIT FOR FLOW SENSOR CABLE #AET 9516-25P
- ⑨ 3" MIN. SWEEP ELL AND CONDUIT FOR CONTROL WIRES. SIZE AS REQUIRED. CHECK PLANS FOR ANY FUTURE EXPANSION.
- ⑩ 1" SWEEP ELL AND CONDUIT FOR MASTER VALVE WIRES.
- ⑪ 1" SWEEP ELL AND CONDUIT FOR 120 VAC FROM METERED POWER SUPPLY.
- ⑫ 1" SWEEP ELLS AND CONDUIT FOR GROUND WIRE. * IF APPLICABLE, ADD 1-1/4" SWEEP ELL AND CONDUIT FOR COMMUNICATION CABLE TO OTHER SATELLITES/RAIN RAIN SENSORS. (NOT SHOWN)
- ⑬ 5/8" DIA. X 8' GROUNDING ROD WITH #6 GROUND WIRE AND CLAMP. LOCATE 8'-10' FROM ENCLOSURE.
- ⑭ 10" DIA. VALVE BOX W/ LOCKING COVER, NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) AND III BB BOLT KIT.
- ⑮ NATIVE SOIL COMPACTED AROUND VALVE BOX.
- ⑯ ELECTRICAL FLEX CONDUIT
- ⑰ POWER SWITCH/ GFI RECEPTACLE
- ⑱ TERMINAL STRIP FOR VALVE WIRES
- ⑲ SATELLITE MOUNTED IN TOP TRAY
- ⑳ RSE - RAIN SENSOR

NOTES: (CONTINUED)

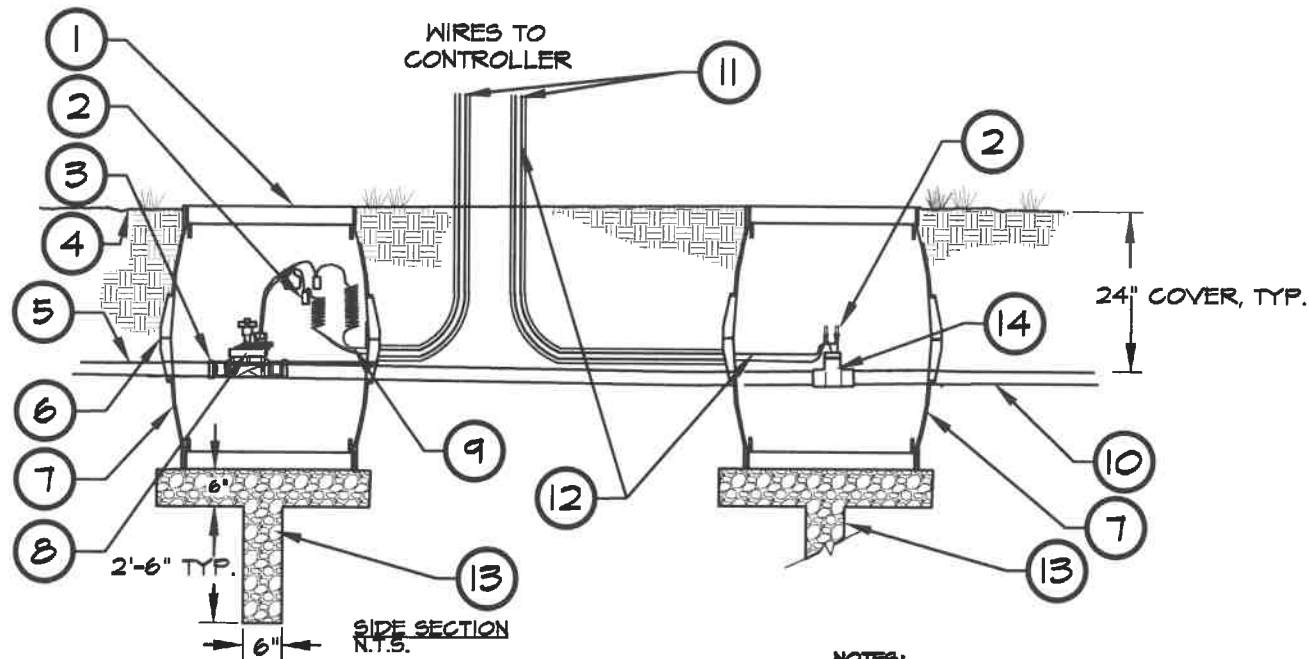
- (H) THE CONTRACTOR SHALL CONTACT SITE ONE GREEN TECH FOR AN ON-SITE SYSTEMS TEST TO ENSURE THE SYSTEM IS INSTALLED AND PROGRAMMED CORRECTLY. COMPONENTS AND COMMUNICATION SHALL BE VERIFIED AS FULLY OPERATIONAL AND SUBMIT WRITTEN VERIFICATION TO THE CITY OF A SATISFACTORY ON-SITE TEST.
- (I) FOR NON-POTABLE IRRIGATION SYSTEMS AN IDENTIFICATION TAG SHALL BE PLACED IN A VISIBLE LOCATION INSIDE THE CONTROLLER. CHRISTY 3"X4" MAXI-TAGS OR CITY APPROVED EQUAL. TAG# ID-MAX-PI-NPO11 WITH # 021 SPANISH TRANSLATION ON BACK.

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

MASTER VALVE AND FLOW SENSOR DETAIL

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:
DATE: 2017
DRAWING NO. 1-10
PARKS & RECREATION DIRECTOR



LEGEND:

- ① VALVE BOX WITH BOLTING COVER. NDS #14 BC (GREEN) OR #15 PBC (PURPLE) WITH #11 BS BOLT KIT OR CITY OF MANTECA APPROVED EQUAL. 3" MIN. CLEARANCE BETWEEN TOP OF VALVE AND COVER. LABEL TOP "MV/FS" (MASTER VALVE/FLOWSENSOR)
- ② WATERPROOF CONNECTORS DRYCONN DBRY-600 OR CITY OF MANTECA APPROVED EQUAL (1 OF 2)
- ③ SPEARS UNION, SCH. 80, LINE SIZE BOTH SIDES
- ④ FINISH GRADE
- ⑤ PVC MAIN, DOWNSTREAM OF BACKFLOW PREVENTOR
- ⑥ MOUNTING LIP; SEAL OPENINGS AT PIPE PENETRATIONS AND ALONG EDGES TO PREVENT SOIL ENTRY INTO VALVE BOX. (BOTH ENDS) USE FOAM PIPE INSULATION (LINE SIZE) AROUND PIPE PENETRATIONS. DUCT TAPE ALL OPENINGS. APPLY EXPANDING SPRAY FOAM INSULATION TO DUCT TAPE AREAS.
- ⑦ VALVE BOX PLACED UPSIDE DOWN AS A BOTTOM LINER.
- ⑧ SUPERIOR MASTER VALVE OR APPROVED EQUAL, SEE PLAN FOR SIZE
- ⑨ WIRE TO MASTER VALVE TERMINAL AT CONTROLLER, MIN #14 GAUGE, PLACED IN CONTINUOUS 1/2" CONDUIT
- ⑩ PVC MAINLINE TO REMOTE CONTROL VALVES, SEE PLANS FOR SIZE
- ⑪ TO AUTOMATIC CONTROLLER
- ⑫ FLOW SENSOR CABLE IN 1" CONDUIT
- ⑬ FEA GRAVEL SUMP 6 INCH X 3 FEET DEEP.
- ⑭ FLOW SENSOR, DATA INDUSTRIAL OR APPROVED EQUAL, SEE PLAN FOR SIZE

NOTES:

- A WITH VALVE BOXES PLACED AS SHOWN, DRILL 6 HOLES SPACED EVENLY APART THROUGH MOUNTING LIP (EACH SIDE) AND SECURE BOXES TOGETHER WITH HEAVY-DUTY NYLON ZIP TIES. DRILL 7 EA. 1/2" HOLES IN BOTTOM LID FOR DRAINAGE.
- B USE 4-6 COMPLETE WRAPS OF TEFLON TAPE ON PVC SCH. 80 NIPPLES.
- C VALVE BOX COVER TO BE 1/2" ABOVE GRADE IN LAWNS AND 5" IN PLANTERS (TO ALLOW FOR MULCH).
- D COMPACT SUBSOIL AROUND VALVE BOX TO THE SAME DENSITY AS UNDISTURBED SOIL.
- E NO CUTTING OF BOTTOM LINER IS ALLOWED.
- F VALVE BOXES SHALL BE LOCATED IN PLANTER AREAS WHENEVER POSSIBLE.
- G LOCATE TREES MIN. 12' AWAY, OR HALF THE MATURE DIAMETER FROM MASTER VALVE (AND FROM MAINLINES, LATERALS, VALVE BOXES AND ROTORS)
- H FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE FLOW CONTROL HANDLES AND VALVE BOX COLOR. TAGS SHALL ALSO BE USED TO IDENTIFY THE VALVE. CHRISTY 3"X4" MAXI-TAG #1D-MAX-PI-NFOI WITH #021 SPANISH TRANSLATION ON BACK OR CITY APPROVED EQUAL.

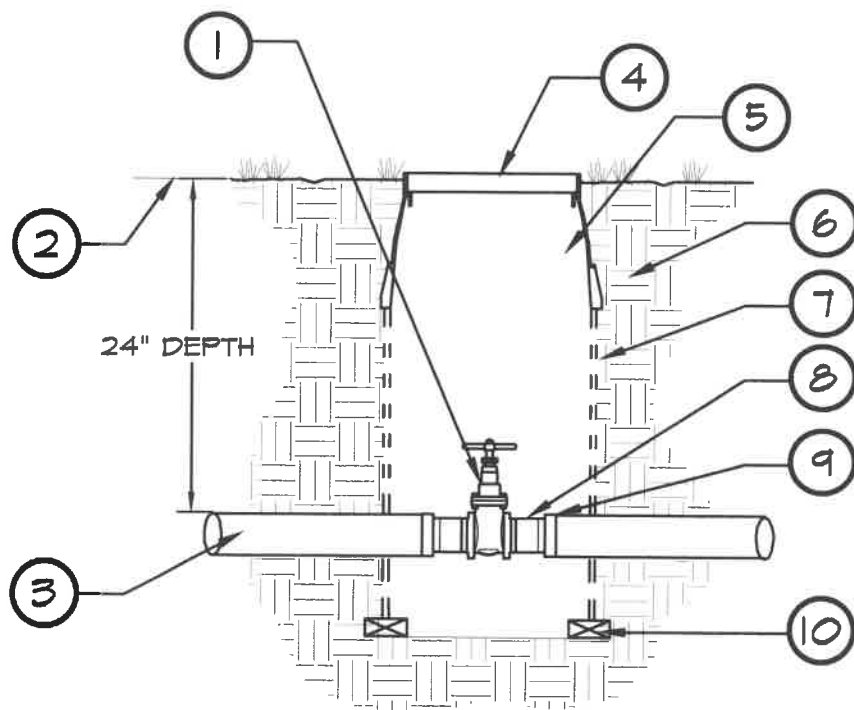


- ① BRASS BALL VALVE
- ② NIPPLE
- ③ AMIAD SCANAWAY FILTER ASSEMBLY, SIZED PER PLANS 200 MESH, PART # 1-2021-2151-5008 CALL NORMAC (209) 957-9170 OR CITY APPROVED ALTERNATE
- ④ BRASS 90 DEGREE ELL, TYP.
- ⑤ INSULATING BLANKET, MIN R-30 RATING
- ⑥ BRASS UNION
- ⑦ 4" THICK CONCRETE PAD
- ⑧ BRASS NIPPLE, LENGTH AS TO CLEAR PAD ON UPSTREAM & DOWNSTREAM SIDES.
- ⑨ BRASS COUPLING SET FLUSH WITH CONCRETE, TYP.
- ⑩ CONC. THRUST BLOCK IF NEEDED, PER DETAILS W-4 OR W-5
- ⑪ COMPACTED SUBGRADE
- ⑫ CITY OF MANTECA APPROVED ENCLOSURE, LOCKABLE AND DUAL HINGED ON BOTH SIDES; PROVIDE GUARDSHACK HGS WITH FRAME SETTER OR PLACER WATERWORKS EIA SERIES WITH EMBEDMENT FRAME

- (A) USE TEFLON TAPE ON ALL THREADED FITTINGS.
- (B) LOCATE IN SHRUB/GROUNDCOVER AREA WHENEVER POSSIBLE
- (C) PROVIDE INSULATING BLANKET OVER RECYCLED WATER FILTER
- (D) PIPE AND FITTINGS 3" OR SMALLER SHALL BE BRASS; 4" OR LARGER SHALL BE DUCTILE IRON.
- (E) CONTRACTOR RESPONSIBLE FOR ENCLOSURE SIZE SO THAT UPON INSTALLATION, ENCLOSURE OPENS FREELY WITH FROST PROTECTION BLANKET IN PLACE; ALTERING ENCLOSURES NOT PERMITTED

NO.	REVISED	BY	APPROVED BY: 
DRAWN BY: C. BROWN			
CHECKED BY: J. COURTNEY			PARKS & RECREATION DIRECTOR DRAWING NO. _____ DATE: 2017 _____
SCALE: NONE			
CITY OF MANTECA PARKS & RECREATION DEPARTMENT			

NO.	REVISED	BY	FERTIGATION SYSTEM	APPROVED BY:	
DRAWN BY: C. BROWN				PARKS & RECREATION DIRECTOR	
CHECKED BY: J. COURTNEY			CITY OF MANTECA PARKS & RECREATION DEPARTMENT	DRAWING NO.	
SCALE: NONE				DATE: 2017	1-12



SIDE SECTION
N.T.S.

NOTES:

- (A) TOP OF VALVE BOX COVER ELEVATION SHALL BE: 1/2" ABOVE GRADE IN TURF AND 3" ABOVE GRADE IN SHRUB AND GROUND COVER AREA TO ALLOW FOR BARK MULCH.
- (B) FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE FLOW CONTROL HANDLES AND VALVE BOX COLOR.
- (C) TAGS SHALL BE USED TO IDENTIFY THE VALVE. CHRISTY 3"X 4" MAXI-TAG #ID-MAX-PI-NPO11 WITH #021 SPANISH TRANSLATION ON THE BACK OR CITY APPROVED EQUAL.

LEGEND:

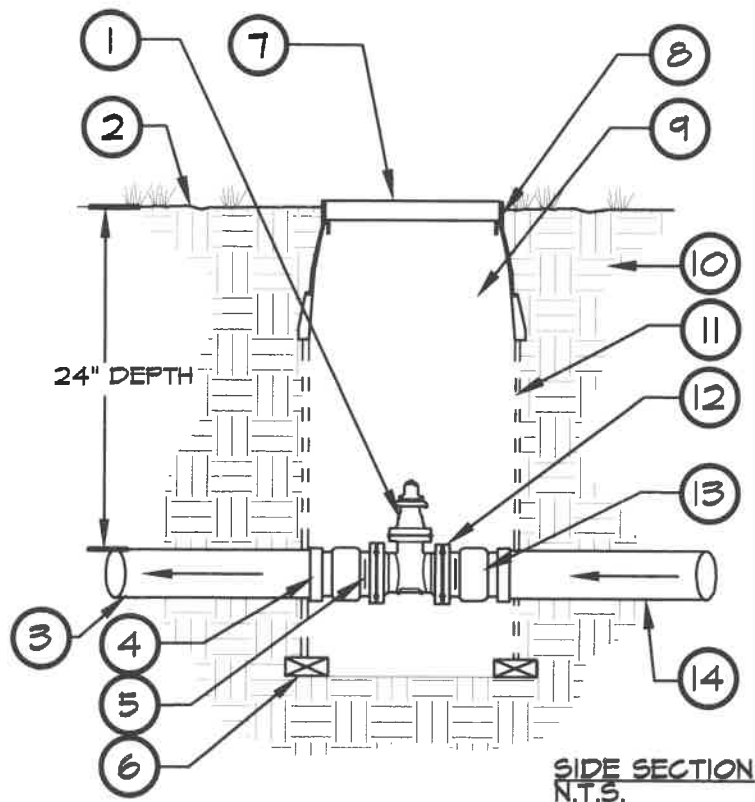
- (1) CLASS 125 BRONZE GATE VALVE NIBCO # T-113 OR MATCO #514-T (W/STAR HANDLE) OR CITY OF MANTECA APPROVED EQUAL. LINE SIZE.
- (2) FINISHED GRADE
- (3) IRRIGATION MAINLINE, SIZE PER PLANS
- (4) 10" DIA. VALVE BOX WITH BOLTING COVER, NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) WITH 111BB BOLT KIT.
- (5) 10" DIAMETER VALVE BOX WITH BOLTING COVER, NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) WITH 111 BB BOLT KIT.
- (6) NATIVE SOIL COMPACTED AROUND VALVE BOX
- (7) PVC PIPE SECTION FOR SLEEVE, MATCH DIAMETER OF BOX
- (8) PVC SCH 80 CLOSE NIPPLE (1 ON EACH SIDE OF VALVE)
- (9) PVC SCH. 80 UNIONS SXT (1 ON EACH SIDE OF VALVE)
- (10) BRICKS TYP.

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

MANUAL SHUTOFF VALVE
(2" AND SMALLER)
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:	1-13
	2017	
DRAWING NO.		
PARKS & RECREATION DIRECTOR		

NO.	REVISED	BY
DRAWN BY: C. BROWN		
CHECKED BY: J. COURTNEY		
SCALE: NONE		
MANUAL SHUT-OFF VALVE 2-1/2" SIZE AND LARGER CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY: 		
PARKS & RECREATION DIRECTOR		
DRAWING NO.		
DATE: 2017		
1-14		



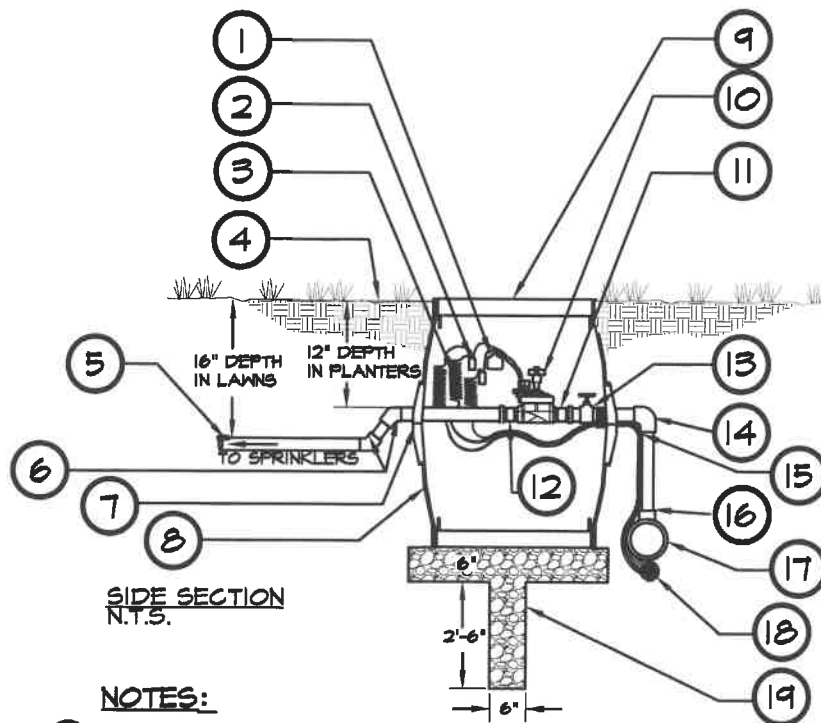
SIDE SECTION
N.T.S.

NOTES

- (A) VALVE BOX COVER SHALL BE LEGIBLY HEAT STAMPED OR ENGRAVED AS "GV" USING 1" TALL LETTERING.
- (B) FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE FLOW CONTROL HANDLES AND VALVE BOX COLOR. TAGS SHALL ALSO BE USED TO IDENTIFY THE VALVE. CHRISTY 3"x4" MAXI-TAG #1D-MAX-PI-NPO11 WITH # 021 SPANISH TRANSLATION ON THE BACK OR CITY APPROVED EQUAL.

LEGEND:

- ① MANUAL SHUT-OFF MATCO FLANGED GATE VALVE #10RW-11IN (W/2" SQ. OPERATION NUT) OR CITY OF MANTECA APPROVED EQUAL.
- ② FINISH GRADE
- ③ IRRIGATION MAINLINE LINE SIZE PER PLANS.
- ④ PVC SCH. 80 MALE ADAPTERS (1 ON EACH SIDE OF VALVE)
- ⑤ PVC SCH. 80 CLOSE NIPPLES (1 ON EACH SIDE OF VALVE)
- ⑥ BRICKS (1 OF 2)
- ⑦ VALVE BOX COVER SHALL BE LEGIBLY HEAT-STAMPED OR ENGRAVED AS 'GV' WITH 1" TALL LETTERING
- ⑧ ELEVATION OF VALVE BOX SHALL BE: 1/2" ABOVE GRADE IN TURF 3" ABOVE GRADE IN PLANTERS (TO ALLOW FOR TOPDRESSING)
- ⑨ 10" DIA. VALVE BOX WITH BOLTING COVER, NDS 212 BC(GREEN) OR 211 FBCR(PURPLE) WITH 111 BB BOLT KIT.
- ⑩ NATIVE SOIL COMPACTED AROUND VALVE BOX.
- ⑪ PVC PIPE SECTION FOR SLEEVE. DEPTH AS REQUIRED, MATCH DIAMETER OF BOX
- ⑫ SCH. 80 FLANGE FIPT (1 ON EACH SIDE OF VALVE BOLTS) SHALL BE STAINLESS STEEL.
- ⑬ PVC SCH. 80 UNIONS SXT (1 ON EACH SIDE OF VALVE)
- ⑭ IRRIGATION MAINLINE LINE SIZE PER PLANS.



SIDE SECTION
N.T.S.

NOTES:

- (A) WITH VALVE BOXES PLACED AS SHOWN, DRILL 6 HOLES SPACED EVENLY APART THROUGH MOUNTING LIP (EACH SIDE) AND SECURE BOXES TOGETHER WITH HEAVY-DUTY NYLON ZIP TIES. DRILL 7 EA. 1/2" HOLES IN BOTTOM LID FOR DRAINAGE.
- (B) USE 4-6 COMPLETE WRAPS OF TEFLON TAPE ON PVC SCH. 80 NIPPLES.
- (C) VALVE BOX COVER TO BE 1/2" ABOVE GRADE IN LAWNS AND 3" IN PLANTERS (TO ALLOW FOR MULCH).
- (D) COMPACT SUBSOIL AROUND VALVE BOX TO THE SAME DENSITY AS UNDISTURBED SOIL.
- (E) NO CUTTING OF BOTTOM LINER IS ALLOWED.
- (F) VALVE BOXES SHALL BE LOCATED IN PLANTER AREAS WHENEVER POSSIBLE.
- (G) VALVE BOX COVER SHALL BE LEGIBLY HEAT STAMPED OR ENGRAVED WITH THE STATION NUMBER USING 1" TALL LETTERING. NUMBERING SEQUENCE SHALL CORRESPOND WITH THAT SHOWN IN THE APPROVED PLANS.
- (H) FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE FLOW CONTROL HANDLES AND VALVE BOX COLOR. TAGS SHALL ALSO BE USED TO IDENTIFY THE VALVE. CHRISTY 3"x4" MAXI-TAG # 1D-MAX-PI-NP011 WITH #021 SPANISH TRANSLATION ON BACK OR CITY APPROVED EQUAL.
- (I) PROVIDE A MINIMUM OF 2 SPARE WIRES TO LAST VALVE IN EACH DIRECTION.

LEGEND:

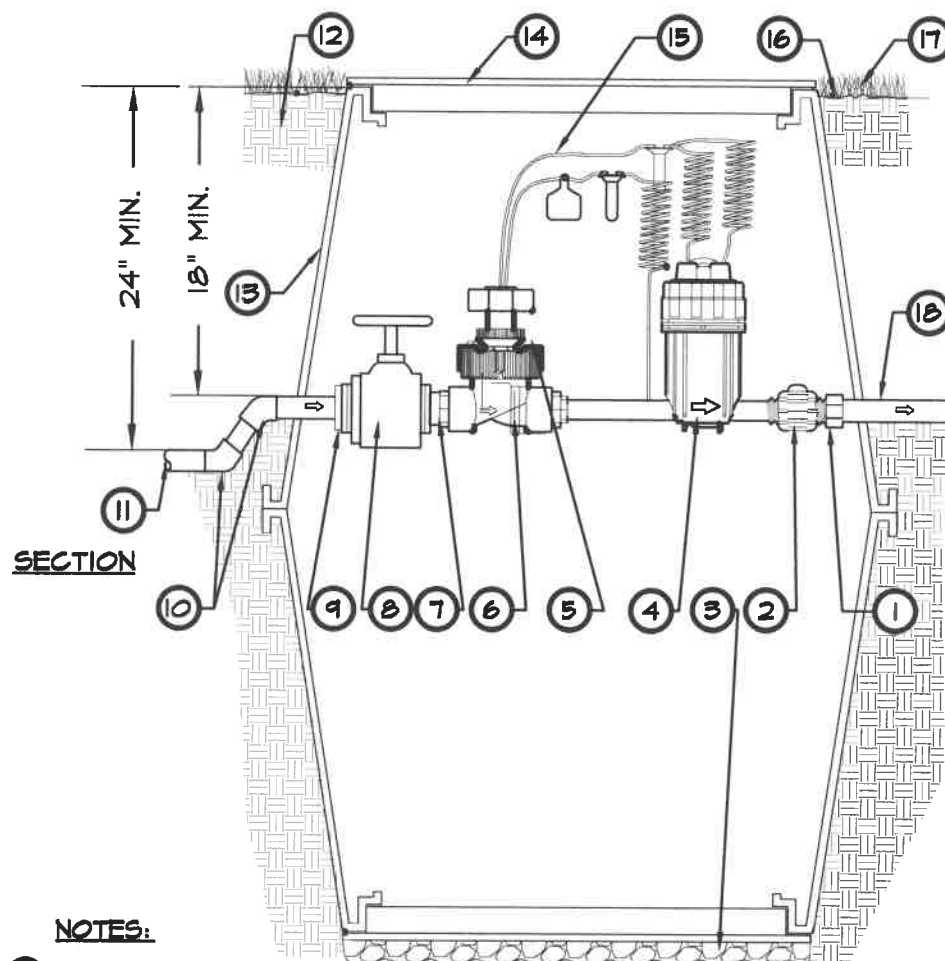
- (1) RAINBIRD VID STATION I.D. TAG OR CITY OF MANTECA APPROVED EQUAL
- (2) WATERPROOF CONNECTORS DRYCONN DBRY-600 OR CITY OF MANTECA APPROVED EQUAL (1 OF 2)
- (3) 24" LINEAR LENGTH OF SPARE WIRE - COILED.
- (4) FINISH GRADE
- (5) LATERAL LINE TO SPRINKLER HEADS
- (6) SCH. 40 ELLS 45 DEGREES
- (7) MOUNTING LIP. SEAL OPENINGS AT PIPE PENETRATIONS AND ALONG EDGES TO PREVENT SOIL ENTRY INTO VALVE BOX. (BOTH ENDS) USE FOAM PIPE INSULATION (LINE SIZE) AROUND PIPE PENETRATIONS. DUCT TAPE ALL OPENINGS. APPLY EXPANDING SPRAY FOAM INSULATION TO DUCT TAPE AREAS.
- (8) VALVE BOX PLACED UPSIDE DOWN AS A BOTTOM LINER.
- (9) VALVE BOX WITH BOLTING COVER NDS 114 BC(GREEN) OR NDS 213 PBCR(PURPLE) AND 113 BB BOLT KIT OR CITY OF MANTECA APPROVED EQUAL. 3" MIN. CLEARANCE BETWEEN TOP OF VALVE AND COVER. APPLY NEVER SEIZE TO BOLT THREADS.
- (10) ELECTRIC REMOTE CONTROL VALVE (RCV) RAINBIRD FESB OR CITY OF MANTECA APPROVED EQUAL; CENTERED IN BOX.
- (11) PVC SCH. 80 CLOSE NIPPLE ON EACH SIDE OF VALVE
- (12) SPEARS PVC SCH.80 UNIONS (DOWNSTREAM SIDE OF RCV)
- (13) SPEARS 3629 TRUE UNION BALL VALVE
- (14) PVC SCH. 80 ELL 90°
- (15) TAPE WIRES TO UNDER SIDE OF PIPE AT ENTRY TO BOX.
- (16) 4" AND UNDER SHALL BE A SCH. 80 PVC PIPE FITTING; OVER 4" SHALL BE A.Y. McDONALD HINGED BRONZE SADDLE #3892
- (17) PVC SCH. 80 OR CLASS 315 MAINLINE 24" BELOW FINISHED GRADE.
- (18) WIRE BUNDLE. TAPE TO BUNDLE EVERY 10 L.F. AND TAPE TO SECURE UNDER MAINLINE
- (19) PEA GRAVEL SUMP 6 INCH X 3 FEET DEEP.

REMOTE CONTROL VALVE
2" SIZE AND SMALLER

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:
PARKS & RECREATION DIRECTOR	2017
DRAWING NO.	1-15



LEGEND:

- ① SCHEDULE 40 PVC FEMALE ADAPTOR & SCHED. 80 PVC NIPPLE
- ② SCHEDULE 80 UNION
- ③ 6" DEPTH OF 3/8" DIAMETER FEA GRAVEL SUMP BELOW VALVE
- ④ IN-LINE PRESSURE REGULATING BASKET FILTER
- ⑤ RAINBIRD VID STATION I.D. TAG OR CITY OF MANTECA APPROVED EQUAL
- ⑥ RAINBIRD PESBR ELECTRIC REMOTE CONTROL VALVE OR CITY OF MANTECA APPROVED EQUAL
- ⑦ SCHEDULE 80 CLOSE NIPPLE
- ⑧ SPEARS TRUE UNION BALL VALVE #3620.
- ⑨ SCHEDULE 40 PVC FEMALE ADAPTOR & SCHEDULE 80 NIPPLE
- ⑩ 45 DEGREE SCHEDULE 40 ELLS
- ⑪ PVC MAIN LINE, SIZED PER PLANS
- ⑫ NATIVE SOIL OR 85% COMPACTED SUBGRADE
- ⑬ VALVE BOX WITH BOLTING COVER NDS 114 BC(GREEN) OR NDS 213 FBC(PURPLE) AND NDS 115 BB BOLT KIT OR CITY OF MANTECA APPROVED EQUAL. APPLY NEVER SEIZE TO BOLT THREADS. 3" CLEARANCE BETWEEN TOP OF VALVE AND COVER.
- ⑭ HEAT STAMP VALVE NUMBER ON BOX LID
- ⑮ CONTROL WIRE, LOOP TRACE WIRE (INSULATED), TAPE TO UNDERSIDE OF PIPE AT ENTRY TO BOX
- ⑯ FINISH GRADE
- ⑰ VALVE BOX COVER TO BE 1/2" ABOVE FINISHED GRADE IN LAWN AREAS AND 3" ABOVE FINISHED GRADE IN PLANTERS TO ALLOW FOR 3" MULCH.
- ⑱ PVC LATERAL PIPE, SIZED PER PLANS

NOTES:

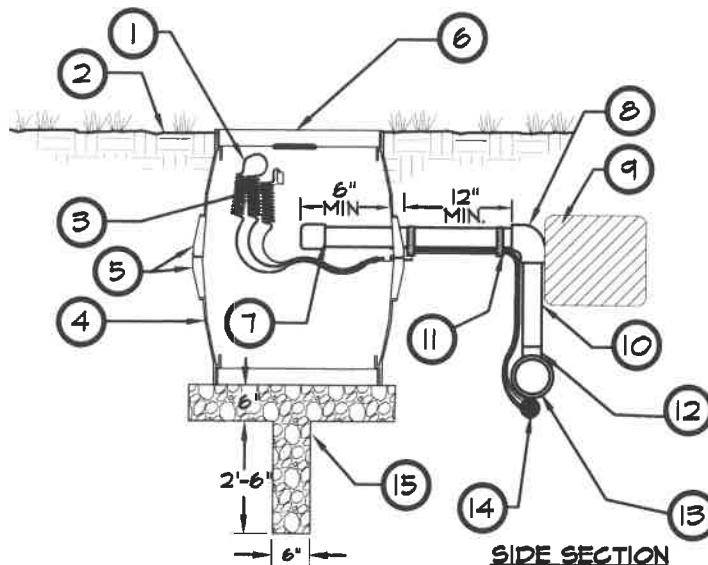
- (A) LOW FLOW VALVES TO BE USED ONLY ON BUBBLER OR LOW-FLOW ZONES WITH SMALL ORIFICE IRRIGATION DEVICES AS SHOWN ON PLANS
- (B) INSTALL VALVES A MINIMUM OF 12" FROM STRUCTURES OR HARDSCAPING.
- (C) INSTALL VALVES IN PLANTER BEDS WHEREVER POSSIBLE.
- (D) PLACE VALVE BOX AT RIGHT ANGLES TO STRUCTURES OR HARDSCAPING.
- (E) USE TEFLON TAPE ON ALL MALE THREADS.
- (F) PROVIDE SCHEDULE 80 THREADED UNION ON DOWNSTREAM SIDE.
- (G) PROVIDE MIN. 2 SPARE WIRES TO LAST VALVE IN EACH DIRECTION
- (H) VALVE BOX COVER SHALL BE LEGIBLY HEAT STAMPED OR ENGRAVED WITH THE STATION NUMBER USING 1" TALL LETTERING; NUMBERING SEQUENCE SHALL CORRESPOND WITH THAT SHOWN IN THE APPROVED PLANS.
- (I) USE FOAM PIPE INSULATION (LINE SIZE) AROUND PIPE PENETRATIONS; DUCT TAPE IN PLACE ON OUTSIDE OF BOX AND SEAL /TAPE ALL OPENINGS. APPLY EXPANDING SPRAY FOAM INSULATION TO DUCT TAPE AREAS
- (J) REFER TO SPECIFICATIONS FOR REQUIREMENTS FOR TAPING, EXPANSION COILS, WIRE CONNECTIONS, ETC.
- (K) ALL RCV'S SHALL BE TAGGED INDICATING STATION NUMBERS.
- (L) WITH VALVE BOXES PLACED AS SHOWN, DRILL 6 HOLES SPACED EVENLY APART THROUGH MOUNTING LIP (EACH SIDE) AND SECURE BOXES TOGETHER WITH HEAVY-DUTY NYLON ZIP TIES. DRILL 7 EA 1/2" HOES IN BOTTOM LID FOR DRAINAGE

LOW FLOW REMOTE CONTROL VALVE ASSEMBLY

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE: 2017
PARKS & RECREATION DIRECTOR	
DRAWING NO.	1-16



SIDE SECTION
N.T.S.

NOTES:

- (A) WITH VALVE BOXES PLACED AS SHOWN, DRILL 6 HOLES SPACED EVENLY APART THROUGH MOUNTING LIP (EACH SIDE) AND SECURE BOXES TOGETHER WITH HEAVY-DUTY NYLON ZIP TIES. DRILL 7 EA. $\frac{1}{2}$ " HOLES IN BOTTOM LID FOR DRAINAGE.
- (B) VALVE BOX COVER TO BE $\frac{1}{2}$ " ABOVE GRADE IN LAWNS AND 3" IN PLANTERS (TO ALLOW FOR TOP DRESSING).
- (C) COMPACT SUBSOIL AROUND VALVE BOX TO THE SAME DENSITY AS UNDISTURBED SOIL.
- (D) NO CUTTING OF BOTTOM LINER IS ALLOWED.
- (E) VALVE BOX COVER SHALL BE LEGIBLY HEAT STAMPED OR ENGRAVED WITH THE STATION NUMBER USING 1" TALL LETTERING. NUMBERING SEQUENCE SHALL CORRESPOND WITH THAT SHOWN IN THE APPROVED PLANS.
- (F) FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE VALVE BOX COVER. TAGS SHALL ALSO BE USED TO IDENTIFY THE PIPE STUB. CHRISTY 3"x4" MAXI-TAG # 1D-MAX-PI-NP011 WITH #021 SPANISH TRANSLATION ON BACK OR CITY APPROVED EQUAL.

LEGEND:

- (1) 24" LINEAR LENGTH (WHEN EXTENDED ABOVE GRADE) OF RCV WIRE - COILED. QTY OF WIRES PER PLANS WITH A MIN. OF 2 SPARE WIRES TO LAST RCV VALVE OR STUB IN EACH DIRECTION
- (2) FINISH GRADE
- (3) WATERPROOF CONNECTOR DRYCONN DBRY-600 OR CITY OF MANTECA APPROVED EQUAL
- (4) VALVE BOX PLACED UPSIDE DOWN AS A BOTTOM LINER
- (5) MOUNTING LIPS; SEAL OPENINGS AT PIPE PENETRATIONS AND ALONG EDGES TO PREVENT SOIL ENTRY INTO BOX, BOTH ENDS. USE FOAM PIPE INSULATION (LINE SIZE) AROUND PIPE PENETRATIONS. DUCT TAPE IN PLACE ON OUTSIDE OF BOX AND SEAL/TAPE ALL OPENINGS. APPLY EXPANDING SPRAY FOAM INSULATION TO DUCT TAPE AREAS.
- (6) VALVE BOX WITH BOLTING COVER NDS 114 BC(GREEN) OF NDS 213 PBCR(PURPLE) AND NDS 113 BB BOLT KIT OR CITY OF MANTECA APPROVED EQUAL. APPLY NEVER SEIZE TO BOLT THREADS. 3" CLEARANCE BETWEEN TOP OF VALVE AND COVER.
- (7) PVC SCHEDULE 40 CAP
- (8) PVC SCHEDULE 40 ELL 90 DEGREES
- (9) 8 X 8 X16 BLOCK CENTER TO PIPE FOR SUPPORT. FILL VOIDS IN BLOCK WITH SOIL AND COMPACT IN PLACE.
- (10) PVC SCHEDULE 40 PIPE SIZE PER PLANS.
- (11) TAPE WIRES TO UNDER SIDE OF PIPE AND AT ENTRY TO BOX.
- (12) 4" PIPE AND UNDER SHALL BE SCH. 80 PVC PIPE FITTING. PIPE OVER 4" SHALL BE A BRONZE HINGED SADDLE A.Y. McDONALD #3892
- (13) PVC SCHEDULE 40 OR CLASS 315 MAINLINE 24" BELOW FINISHED GRADE. SIZE PER PLANS.
- (14) WIRE BUNDLE; TAPE TO BUNDLE EVERY 10 L.F. AND TAPE TO SECURE IN PLACE UNDER MAINLINE.
- (15) PEA GRAVEL SUMP 6 INCH X 3 FEET DEEP.

STUB-OUT FOR REMOTE CONTROL VALVE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

1-17

NO. REVED BY

DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

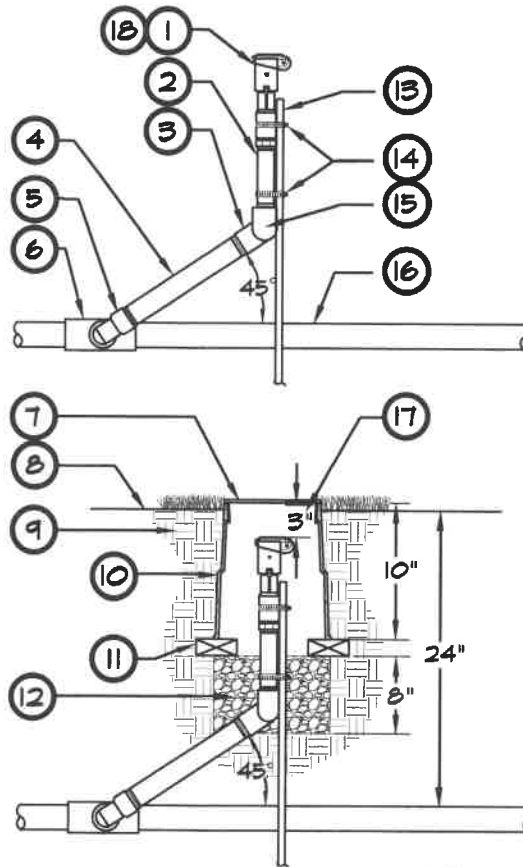
SCALE: NONE

QUICK COUPLER

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
PARKS & RECREATION DIRECTOR
DRAWING NO. *[Signature]*
DATE: 2017
1-18



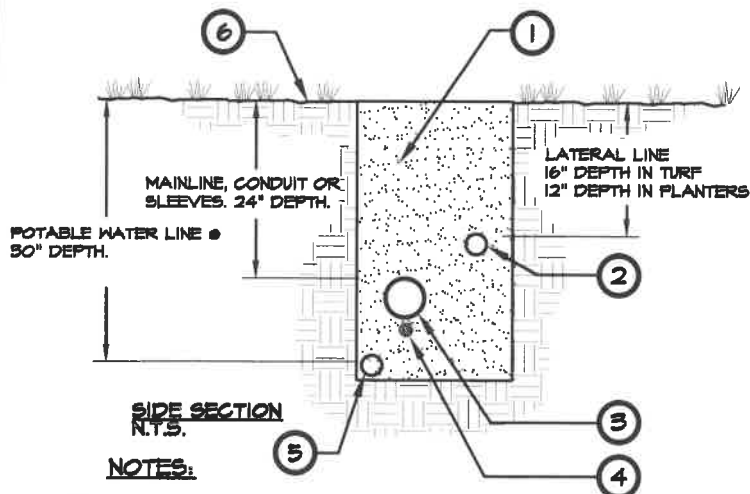
SIDE SECTION
N.T.S.

NOTES

- (A) USE 4 TO 6 COMPLETE WRAPS OF TEFLON TAPE ON ALL THREADED JOINT FITTINGS.
- (B) COMPACT SOIL AROUND QUICK COUPLER TO THE SAME DENSITY AS UNDISTURBED SOIL.
- (C) INSTALL QUICK COUPLER ASSEMBLY SO THAT THE ROTATION MOVEMENT OF NORMAL OPERATION OF SWING JOINT WILL TIGHTEN TO THREADS AND NOT LOOSEN. SEE DETAIL ABOVE.
- (D) VALVE BOX LID SHALL BE LEGIBLY HEAT STAMPED OR ENGRAVED AS "QC" USING 1" TALL LETTERING.

LEGEND:

- (1) QUICK COUPLING VALVE RAINBIRD #44LRC OR CITY OF MANTECA APPROVED EQUAL.
- (2) PVC SCH. 80 NIPPLE LENGTH AS REQUIRED.
- (3) SCH. 40 STREET ELL
- (4) PVC SCH. 80 RISER LENGTH AS REQUIRED.
- (5) SCH. 40 STREET ELL
- (6) PVC SCH. 40 TEE OR ELL
- (7) ELEVATION OF VALVE BOX SHALL BE 1/2" ABOVE GRADE IN TURF 3" ABOVE GRADE IN PLANTERS (TO ALLOW FOR TOPDRESSING)
- (8) FINISH GRADE
- (9) NATIVE SOIL OR COMPACTED SUBGRADE
- (10) 10" DIA. VALVE BOX WITH BOLTING COVER NDS 212 BC(GREEN) OR 211 PBCR(PURPLE) WITH III BB BOLT KIT.
- (11) BRICKS (1 OF 2)
- (12) 3/4" ROCK SUMP 10" DIA. X 8" DEEP
- (13) #4 REBAR DRIVEN INTO FIRM NATIVE SOIL.
- (14) STAINLESS STEEL HOSE CLAMPS
- (15) PVC SCH. 40 - 90 DEGREE ELL
- (16) SCH. 40 PVC PIPE
- (17) 3" MIN. CLEARANCE BETWEEN COVER AND VALVE WITH QUICK COUPLER KEY IN PLACE.
- (18) KEYS TO BE PROVIDED TO CITY.



LEGEND:

- ① BACKFILL TO BE CLEAN, FRIABLE SOIL WITH NO ROCKS, BRANCHES OR DEBRIS. COMPACT TO EQUAL THE COMPACTION OF ADJACENT UNDISTURBED SOIL. LEAVE IN A FLUSH UNYIELDING CONDITION. ANY SETTLING SHALL BE CORRECTED AND DAMAGE TO EXISTING TURF SHALL BE REPAIRED.
- ② PVC IRRIGATION LATERAL LINE (CLASS 200 OR SCH. 40)
- ③ PVC IRRIGATION MAINLINE (SCH. 40 OR CLASS 315) OR ELECTRICAL CONDUIT AND/OR SLEEVES. PLACE 24" BELOW FINISHED GRADE.
- ④ RCV WIRE BUNDLE. TAPE EVERY 10 L.F., TAPE IN PLACE TO UNDERSIDE OF MAINLINE
- ⑤ POTABLE WATER LINE WITH TRACE WIRE.
- ⑥ FINISH GRADE.

SIDE SECTION
N.T.S.

NOTES:

- (A) TRENCHES SHALL BE OF NECESSARY WIDTH FOR PROPER LAYING OF PIPE AND CONDUITS. BANKS SHALL BE AS VERTICAL AS PRACTICABLE.
- (B) TRENCHES LOCATED UNDER AREAS WHERE PAVING WILL BE INSTALLED SHALL BE BACK FILLED WITH SAND (A LAYER 6" DEEP BELOW PIPE AND 5" ABOVE PIPE) THE BOTTOM OF TRENCHES SHALL BE ACCURATELY GRADED TO PROVIDE UNIFORM BEARING AND SUPPORT FOR EACH SECTION OF PIPE OR CONDUIT AT EVERY POINT ALONG THE ENTIRE LENGTH.
- (C) COVER OVER LINES.
 - A. POTABLE WATER PIPING, INCLUDING TRACE WIRE TO HAVE 30" MIN. OF COVER.
 - B. MAINLINE PIPING AND 120-VOLT WIRING (IN CONDUIT) TO HAVE 24" MIN. OF COVER
 - C. LATERAL PIPING FOR IRRIGATION HEADS TO HAVE 16" MIN. OF COVER IN TURF AREAS AND 12" OF COVER IN PLANTERS.
- (D) SHARING OF COMMON TRENCHES IS ENCOURAGED. MAINTAIN A MINIMUM OF 6" SPACING Laterally BETWEEN ALL PIPES AND WIRES. NO VERTICAL STACKED INSTALLATIONS WILL BE ACCEPTED EXCEPT THAT OF THE RCV CONTROL WIRING WHICH SHALL BE TAPED UNDER THE MAINLINE.
- (E) AVOID TRENCHING AND PIPING WITHIN THE ROOT ZONE OF EXISTING TREES AND RE-ROUTE WHEN POSSIBLE. IF THE ROOT ZONE CANNOT BE AVOIDED, THE CITY'S AUTHORIZED REPRESENTATIVE SHALL BE NOTIFIED FOR APPROVAL PRIOR TO ANY TRENCHING WORK.
- (F) TRENCHES SHALL BE CAREFULLY BACK FILLED WITH THE EXCAVATED MATERIALS APPROVED FOR BACK FILLING CONSISTING OF EARTH, LOAM, SANDY CLAY, SAND OR OTHER APPROVED MATERIALS, FREE OF ANY LARGE CLODS OF EARTH, ROCKS AND DEBRIS.
- (G) ALL TRENCHES SHALL BE LEFT COMPACTED AND FLUSH WITH THE ADJACENT FINISH GRADE AND ANY SETTLING OR DAMAGE TO EXISTING TURF, GROUND COVER OR TOPDRESSING SHALL BE REPAIRED AS PART OF THE NORMAL WORK.
- (H) PIPES SHALL PASS PRESSURE TEST PRIOR TO ANY PAVING OR BACKFILL. MAKE HYDROSTATIC TESTS WITH RISERS CAPPED AND WHEN WELDED PVC JOINTS HAVE CURED AT LEAST 24 HOURS. CENTER LOAD PIPE WITH BACK FILL TO PREVENT PIPE FROM SHIFTING UNDER PRESSURE. ALL COUPLINGS AND FITTINGS SHALL BE LEFT EXPOSED. APPLY CONTINUOUS STATIC PRESSURE AS FOLLOWS:
 - A. ALL PIPING ON THE PRESSURE SIDE OF CONTROL VALVES: 6 HOURS AT 125 PSI. MIN. (860 KPA)
 - B. ALL LATERAL LINES: 2 HOURS AT 100 PSI. MIN. (690 KPA)
- (I) LEAKS RESULTING FROM TESTS SHALL BE REPAIRED AND TESTS REPEATED UNTIL THE SYSTEM PASSES. WRITTEN REQUESTS SHALL BE SUBMITTED TO THE CITY'S AUTHORIZED REPRESENTATIVE AT LEAST 48 HOURS PRIOR TO ANTICIPATED INSPECTIONS.
- (J) PIPE SHALL BE ASSEMBLED WITH MARKINGS FACE UP FOR VERIFICATION OF SIZE AND MATERIALS DURING INSPECTIONS. REFER TO SUBSECTION 110.6 AND 110.10 OF THESE STANDARDS AND SPECIFICATIONS FOR RELATED INFORMATION.
- (K) PIPING UNDER PAVING SHALL BE SLEEVED AS INDICATED ON DRAWINGS AND STANDARD SPECIFICATIONS. SECTION 110.7 - 110.9

TYPICAL TRENCH

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

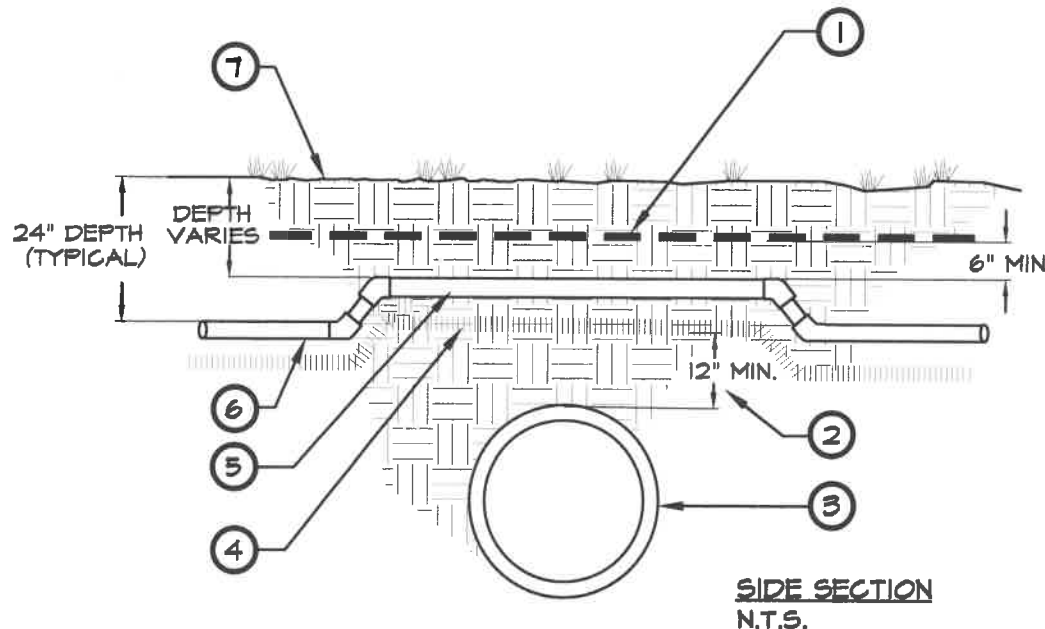
DATE: 2017

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

1-19

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	



- LEGEND:**
- ① INSTALL PLASTIC YELLOW "CAUTION" TAPE 6"-12" ABOVE IRRIGATION MAINLINE (WITHIN S.S.J.I.D. EASEMENTS)
 - ② MAINTAIN 12" MINIMUM CLEARANCE BETWEEN LINES.
 - ③ S.S.J.I.D. PIPELINE OR DRAIN (DIAGRAMMATIC) SIZE AND DEPTH VARIES.
 - ④ CONTROLLER WIRES BUNDLED AND TAPED UNDER MAINLINE
 - ⑤ ADJUST DEPTH OF MAINLINE AS NEEDED TO CLEAR EXISTING PIPES AND UTILITIES. (TYPICAL)
 - ⑥ 4" CLASS 315 IRRIGATION MAINLINE (24" BELOW GRADE TYPICAL)
 - ⑦ FINISH GRADE

NOTES:

- (A) ALL EXISTING UTILITIES WERE PLOTTED FROM RECORD INFORMATION AND FIELD TOPOGRAPHY. ACTUAL LOCATIONS MAY VARY AND ADDITIONAL CROSSINGS MAY EXIST IN THE FIELD. IT IS IMPERATIVE THAT "U.S.A." LOCATING SERVICES LOCATE AND MARK UTILITIES PRIOR TO THE START OF EXCAVATION OR TRENCHING.
- (B) CONTRACTOR SHALL VERIFY COVER OVER S.S.J.I.D. PIPELINES BY POT-HOLING PRIOR TO ANY CONSTRUCTION, GRADING OR TRENCHING.
- (C) CONTRACTOR SHALL USE EXTREME CAUTION WHEN EXPOSING EXISTING UTILITY CROSSINGS AND SERVICES.
- (D) CONTRACTOR SHALL NOT CROSS HEAVY EQUIPMENT OVER PIPELINES WITHOUT PRIOR APPROVAL OF BRIDGING METHOD BY DISTRICT.
- (E) ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- (F) CONTRACTOR SHALL CONTACT THE S.S.J.I.D INSPECTOR AT (209) 249-4656 TO REQUEST A INSPECTION AND APPROVAL PRIOR TO ANY CROSSINGS.
- (G) UPON INSPECTION, SSJID MAY REQUIRE MODIFICATIONS AS NECESSARY.

TYPICAL PIPELINE CROSSING-IRRIGATION
(SOUTH SAN JOAQUIN IRRIGATION DISTRICT)

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*

DRAWING NO. 1-20

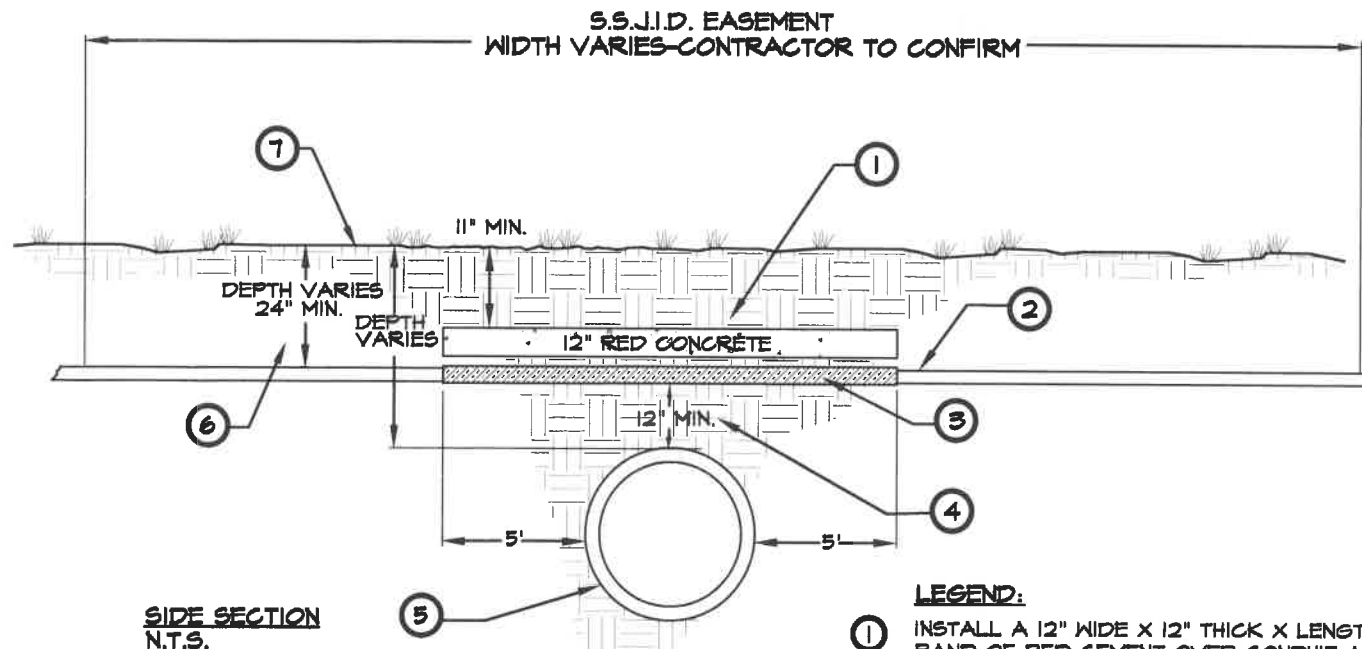
DATE: 2017

PARKS & RECREATION DIRECTOR

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

**TYPICAL PIPELINE CROSSING
ELECTRICAL
(SOUTH SAN JOAQUIN IRRIGATION DISTRICT)
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT**

APPROVED BY: *[Signature]*
PARKS & RECREATION DIRECTOR
DRAWING NO. _____
DATE: 2017
|-2|



**SIDE SECTION
N.T.S.**

NOTES:

- (A) ALL EXISTING UTILITIES WERE PLOTTED FROM RECORD INFORMATION AND FIELD TOPOGRAPHY. ACTUAL LOCATIONS MAY VARY AND ADDITIONAL CROSSINGS MAY EXIST IN THE FIELD. IT IS IMPERATIVE THAT "U.S.A." LOCATING SERVICES LOCATE AND MARK UTILITIES PRIOR TO THE START OF EXCAVATION OR TRENCHING.
- (B) CONTRACTOR SHALL VERIFY COVER OVER S.S.J.I.D. PIPELINES BY POTHOLING PRIOR TO ANY CONSTRUCTION, GRADING OR TRENCHING.
- (C) CONTRACTOR SHALL USE EXTREME CAUTION WHEN EXPOSING EXISTING UTILITY CROSSINGS AND SERVICES.
- (D) CONTRACTOR SHALL NOT CROSS HEAVY EQUIPMENT OVER PIPELINES WITHOUT PRIOR APPROVAL OF BRIDGING METHOD BY DISTRICT.
- (E) ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- (F) CONTRACTOR SHALL CONTACT THE S.S.J.I.D. INSPECTOR AT (209) 249-4656 TO REQUEST A INSPECTION AND APPROVAL PRIOR TO ANY CROSSINGS.
- (G) UPON INSPECTION, SSJID MAY REQUIRE MODIFICATIONS AS NECESSARY.

LEGEND:

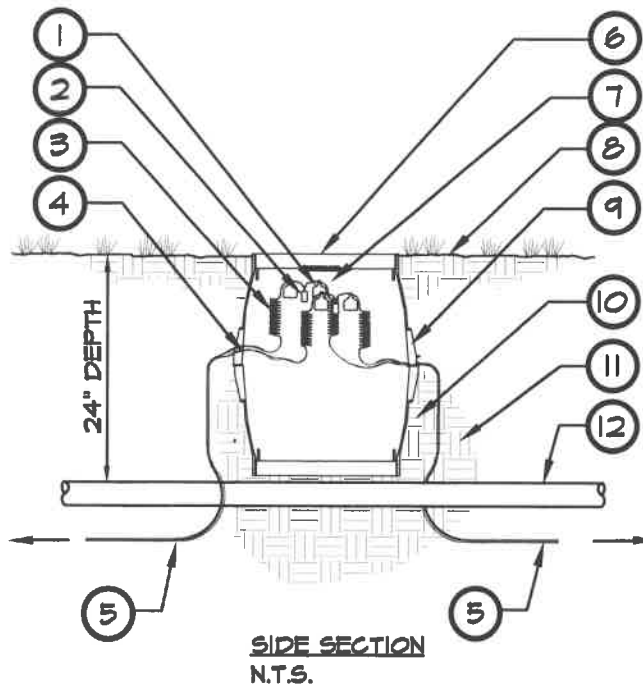
- ① INSTALL A 12" WIDE X 12" THICK X LENGTH SHOWN BAND OF RED CEMENT OVER CONDUIT AND PIPELINE FOR COVER. RED CONCRETE BAND SHALL EXTEND IN LENGTH A MINIMUM OF 5 FT. BEYOND BOTH SIDES OF IRRIGATION PIPE AS SHOWN. (TYPICAL WITHIN S.S.J.I.D. EASEMENTS)
- ② RIGID METAL OR SCH.40 PVC CONDUIT (24" MIN. BELOW GRADE - TYPICAL.)
- ③ ALL UTILITIES SHALL BE ENCASED IN A STEEL PIPE CASING OR CONDUIT OF APPROPRIATE SIZE. CASING SHALL EXTEND IN LENGTH A MINIMUM OF 5 FT. TO EITHER SIDE OF IRRIGATION PIPE AS SHOWN.
- ④ MAINTAIN 12" MINIMUM CLEARANCE BETWEEN LINES.
- ⑤ S.S.J.I.D. PIPELINE OR DRAIN (DIAGRAMMATIC) SIZE AND DEPTH VARIES.
- ⑥ ADJUST DEPTH OF CONDUIT AND STEEL CASING AS NEEDED TO CLEAR EXISTING PIPES AND UTILITIES. (TYPICAL)
- ⑦ APPROXIMATE FINISH GRADE

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

SPLICE BOX INSTALLATION

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
PARKS & RECREATION DIRECTOR
DRAWING NO. *16-15*
DATE: 2017
1-22



LEGEND:

- ① RAINBIRD VID STATION I.D. TAG OR CITY OF MANTECA APPROVED EQUAL. (BOTH ENDS OF WIRES)
- ② WATERPROOF CONNECTORS DRYCONN DBRY-600 OR CITY OF MANTECA APPROVED EQUAL
- ③ 24" LINEAR LENGTH OF SPARE WIRE - COILED.
- ④ SEAL BOXES AND WIRE PENETRATIONS PER NOTE H BELOW
- ⑤ 14 GAUGE WIRES TO RCV OR CONTROLLER. WIRES TO BE BUNDLED AND TAPED EVERY 10 L.F. AND TAPED TO SECURE UNDER MAINLINE
- ⑥ VALVE BOX WITH BOLTING COVER NDS 114 BC(GREEN) OR NDS 215 PBCR(PURPLE) AND NDS 113 BB BOLT KIT OR CITY OF MANTECA APPROVED EQUAL. APPLY NEVER SEIZE TO BOLT THREADS. 3" CLEARANCE BETWEEN TOP OF VALVE AND COVER. LID SHALL BE LESIBLY HEAT STAMPED OR ENGRAVED AS "SB" WITH 1" TALL LETTERING.
- ⑦ 5" MIN. CLEARANCE BETWEEN TOP OF VALVE AND COVER.
- ⑧ FINISH GRADE
- ⑨ MOUNTING LIP; SEAL BOXES AND WIRE PENETRATIONS PER NOTE H BELOW
- ⑩ VALVE BOX INSTALLED UPSIDE DOWN AS A BOTTOM LINER.
- ⑪ NATIVE SOIL. COMPACT AROUND BOX CAREFULLY TO AVOID COLLAPSE AND DEFORMATION OF VALVE BOX SIDES.
- ⑫ IRRIGATION MAINLINE

NOTES:

- (A) VALVE BOX SHALL BE CENTERED OVER SPLICES. SET BOX TO 1/2" ABOVE FINISH GRADE IN TURF AND 3" ABOVE GRADE IN PLANTER AREAS (TO ALLOW FOR TOP DRESSING). LOCATE IN GROUND COVER OR SHRUB AREAS WHERE POSSIBLE.
- (B) WHERE WIRING CANNOT FOLLOW THE MAINLINE ROUTE, IT SHALL BE PLACED IN CONDUIT.
- (C) ALL WIRE SPLICE CONNECTIONS SHALL BE MADE WITH A WATERPROOF CONNECTOR DRYCONN DBRY-600 OR CITY APPROVED EQUAL.
- (D) ALL SPLICES SHALL BE MADE IN A SPLICE BOX OR FULL BOX ONLY.
- (E) PROVIDE 24" OF WIRE SLACK ABOVE FINISH GRADE AT ALL ENDS. COIL NEATLY IN BOX.
- (F) EACH WIRE SHALL HAVE A PRE-PRINTED PLASTIC TAG WITH THE CONTROLLER LETTER AND STATION STAMPED ON IT. RAINBIRD VID OR CITY APPROVED EQUAL.
- (G) CONTROLLER, RCV AND SPLICE NUMBERS SHALL MATCH THROUGHOUT THE ENTIRE RUN. SWITCHING OF WIRES AT THE CONTROLLER IS NOT PERMITTED.
- (H) DUCT TAPE OPENINGS IN VALVE BOX AT WIRE PENETRATIONS AND ALONG EDGES TO PREVENT SOIL ENTRY INTO VALVE BOX. 1/2" MAX. GAP BETWEEN WIRES AND BOX. APPLY EXPANDING SPRAY FOAM INSULATION TO DUCT TAPE AREAS.
- (I) WITH VALVE BOXES PLACED AS SHOWN, DRILL 6 HOLES SPACED EVENLY APART THROUGH MOUNTING LIP (EACH SIDE) AND SECURE BOXES TOGETHER WITH HEAVY-DUTY NYLON ZIP TIES. DRILL 7 EA 1/2" HOLES IN BOTTOM LID FOR DRAINAGE
- (J) COMPACT SUBSOIL AROUND VALVE BOX TO THE SAME DENSITY AS UNDISTURBED SOIL.
- (K) SPLICES SHALL NOT BE PERMITTED IN NEW IRRIGATION INSTALLATIONS.
- (L) SPLICES MAY BE PERMITTED AS INDICATED IN APPROVED DRAWINGS, OR WITH APPROVAL FROM THE CITY'S AUTHORIZED REPRESENTATIVE WHEN FUTURE IMPROVEMENTS OR UPGRADES TO THE IRRIGATION SYSTEM IS DEEMED NECESSARY.

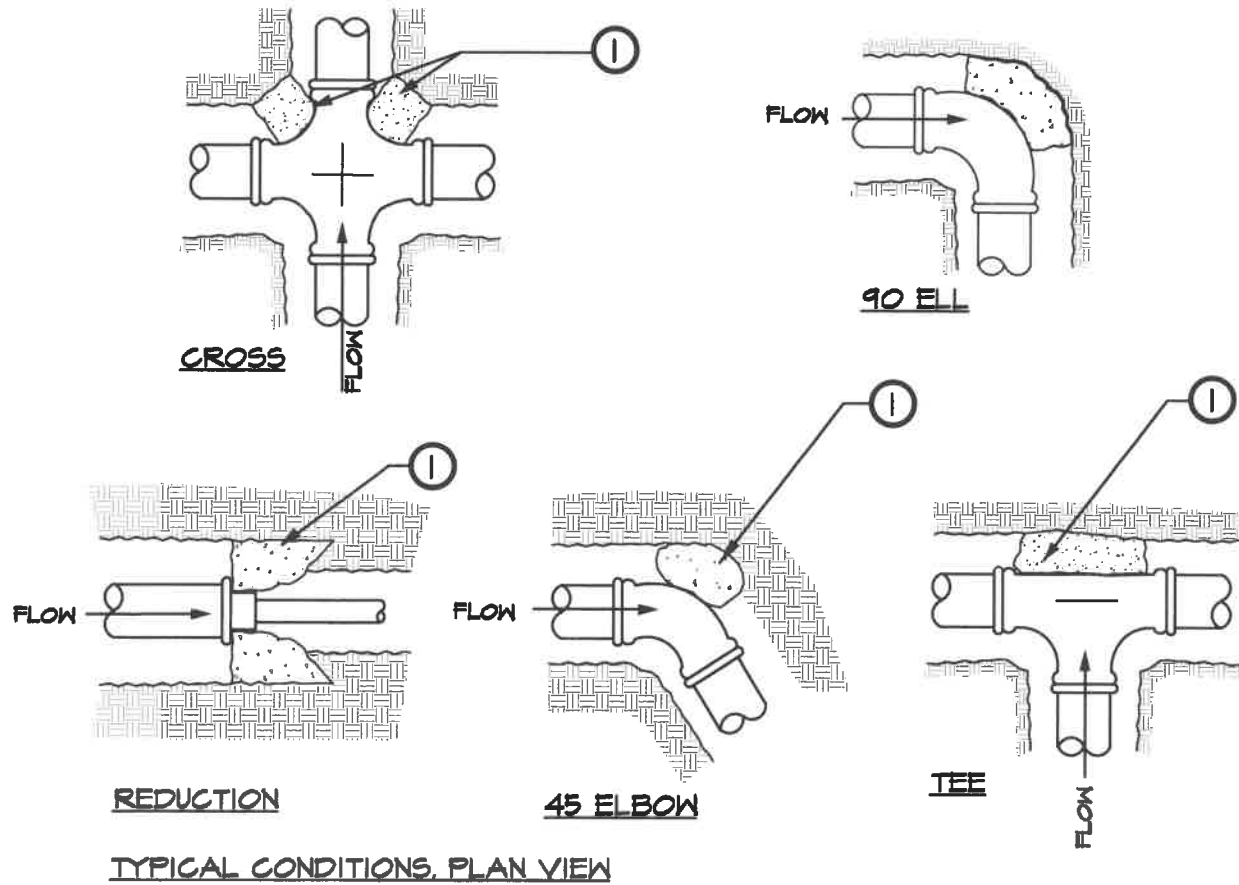
NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CONCRETE THRUST BLOCK

CITY OF MANTECA

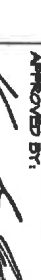
PARKS & RECREATION DEPARTMENT

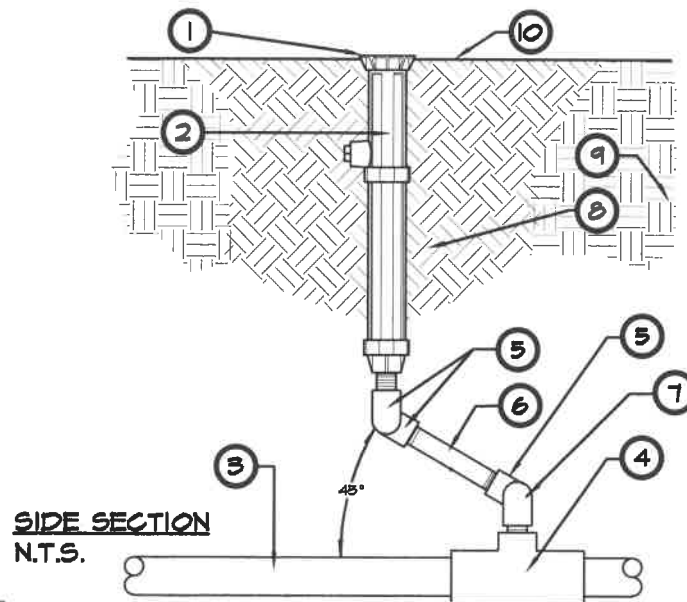
APPROVED BY:	DATE:
<i>[Signature]</i>	2017
DRAWING NO.	
	1-23



LEGEND:

- ① IN GENERAL: GASKETED PIPE AND MAINLINE PIPE 3" IN DIA. AND LARGER SHALL HAVE CONCRETE THRUST BLOCKS AT BENDS, TEES AND CROSSES. INSTALL PER MANUFACTURER'S RECOMMENDATIONS AND TO WITHSTAND CALCULATED SURGE PRESSURES. ALSO SEE PUBLIC WORKS STANDARD DETAILS W-4 AND W-5 AS IT ALSO PERTAINS TO PIPE 4" IN DIAMETER AND LARGER.

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
POP-UP SPRAY HEAD		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
		
PARKS & RECREATION DIRECTOR		
DRAWING NO.		
1-24		
DATE: 2017		



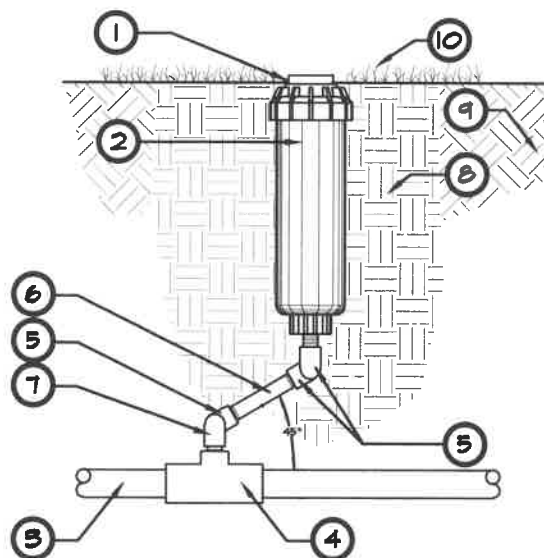
NOTES:

- (A) SPRAY HEADS SHALL BE EQUIPPED WITH INDIVIDUAL FACTORY INSTALLED CHECK VALVE
- (B) PROVIDE SPEARS MARLEX FITTINGS
- (C) LATERAL LINE FITTING WITH THREADED OUTLET HORIZONTAL
- (D) USE 4-6 COMPLETE WRAPS OF TEFLON TAPE ON ALL THREADED JOINT FITTINGS
- (E) COMPACT SOIL AROUND SPRINKLERS TO THE SAME DENSITY AS UNDISTURBED SOIL
- (F) HEAD AND RISER SHOULD BE INSTALLED SO THAT THE ROTATION MOVEMENT OF NORMAL OPERATION OF SWING JOINT WILL TIGHTEN TO THREADS, NOT LOOSEN
- (G) FLUSH SWING JOINT ASSEMBLY BEFORE INSTALLING HEAD
- (H) USE 32 MESH BLUE SCREENS WITH NOZZLES
- (I) SIZE / HEIGHT OF SPRAY HEAD SHALL BE 6" IN TURF, 6" IN PLANTERS, 12" IN GROUND COVER AND NO-MOW GRASS AREAS
- (J) FOR WATER PRESSURE CONDITIONS ABOVE THE MANUFACTURER'S RECOMMENDED OPERATING PRESSURE, A PRESSURE REGULATING DEVICE SHALL BE USED AT THE VALVE. RAINBIRD PRS OR CITY OF MANTECA APPROVED EQUAL
- (K) FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE ID RINGS / COVERS
- (L) SPRINKLERS SHALL BE OFFSET FROM PAVING PER WELO REQUIREMENTS

LEGEND:

- (1) INSTALL WITH NOZZLE TOP 1/2" ABOVE FINISHED GRADE OF TURF OR TOPDRESSING
- (2) SPRAY HEAD BODY PER PLANS
- (3) PVC LATERAL SIZED PER PLANS, DO NOT EXCEED 5 FPS FLOW IN HYDRAULIC DESIGN
- (4) PVC SCH. 40 TEE OR ELL (FACING UP)
- (5) SPEARS MARLEX STREET ELL
- (6) PVC SCH. 80 RISER LENGTH AS REQUIRED
- (7) PVC SCH. 40 STREET ELL
- (8) SOIL BACKFILL COMPACTED TO RATE MATCHING NATIVE SOIL
- (9) NATIVE SOIL
- (10) FINISH GRADE OF TURF OR TOPDRESSING

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
GEAR DRIVEN POP-UP ROTOR		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:	10.3. [Signature]	
DRAWING NO.	PARKS & RECREATION DIRECTOR	
DATE:	2017	1-25



**SIDE SECTION
N.T.S.**

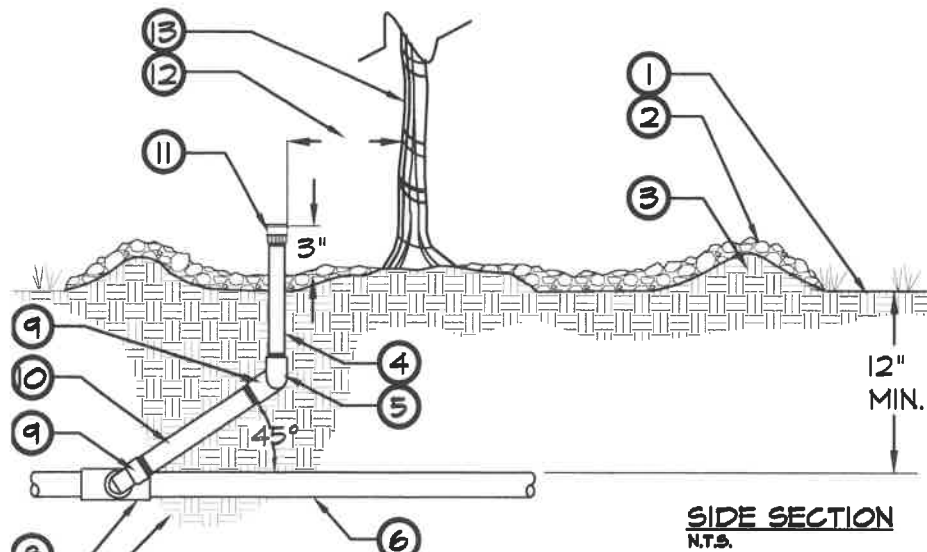
NOTES:

- (A) SPRAY HEADS SHALL BE EQUIPPED WITH INDIVIDUAL FACTORY INSTALLED CHECK VALVE
- (B) PROVIDE SPEARS MARLEX FITTINGS
- (C) LATERAL LINE FITTING WITH THREADED OUTLET HORIZONTAL
- (D) USE 4-6 COMPLETE WRAPS OF TEFLON TAPE ON ALL THREADED JOINT FITTINGS
- (E) COMPACT SOIL AROUND SPRINKLERS TO THE SAME DENSITY AS UNDISTURBED SOIL
- (F) HEAD AND RISER SHOULD BE INSTALLED SO THAT THE ROTATION MOVEMENT OF NORMAL OPERATION OF SWING JOINT WILL TIGHTEN TO THREADS, NOT LOOSEN
- (G) FLUSH SWING JOINT ASSEMBLY BEFORE INSTALLING HEAD
- (H) FOR WATER PRESSURE CONDITIONS ABOVE THE MANUFACTURER'S RECOMMENDED OPERATING PRESSURE, A PRESSURE REGULATING DEVICE SHALL BE USED AT THE VALVE. RAINBIRD PRS OR CITY OF MANTECA APPROVED EQUAL
- (I) FOR NON-POTABLE IRRIGATION SYSTEMS, USE PURPLE ID RINGS / COVERS
- (J) SPRINKLERS SHALL BE OFFSET FROM PAVING PER WELO REQUIREMENTS

LEGEND:

- ① INSTALL WITH NOZZLE TOP 1/2" ABOVE FINISHED GRADE OF TURF OR TOPDRESSING
- ② GEAR DRIVEN ROTOR HEAD PER PLAN AND LEGEND
- ③ PVC LATERAL SIZED PER PLANS, DO NOT EXCEED 5 FPS FLOW IN HYDRAULIC DESIGN
- ④ PVC SCH. 40 TEE OR ELL (FACE UP)
- ⑤ SPEARS MARLEX STREET ELL
- ⑥ PVC SCH. 80 RISER LENGTH AS REQUIRED
- ⑦ PVC SCH. 40 STREET ELL
- ⑧ SOIL BACKFILL COMPACTED TO RATE MATCHING NATIVE SOIL
- ⑨ NATIVE SOIL
- ⑩ FINISH GRADE OF TURF OR TOPDRESSING

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
PRESSURE COMPENSATING BUBBLER		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
PARKS & RECREATION DIRECTOR		
DRAWING NO.	1-26	
DATE:	2017	

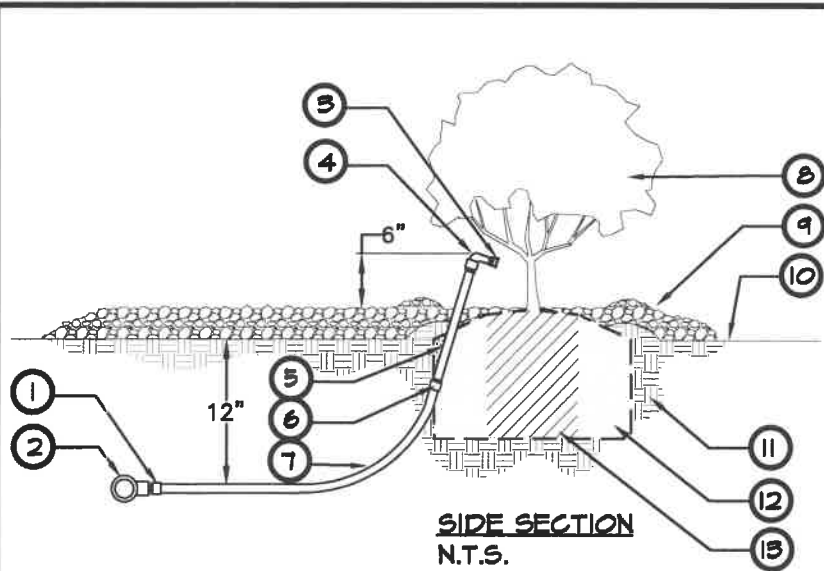


NOTES:

- (A) USE 2 BUBBLERS PER TREE AND 1 PER PLANT. GPM PER IRRIGATION PLANS. DO NOT RUN LATERAL LINES UNDER TREES.
- (B) USE 4-6 COMPLETE WRAPS OF TEFLON TAPE ON ALL THREADED JOINT FITTINGS.
- (C) MARLEX FITTINGS SHALL BE SPEARS.
- (D) COMPACT SOIL AROUND SPRINKLERS TO THE SAME DENSITY AS UNDISTURBED SOIL.
- (E) BUBBLER AND RISER SHOULD BE INSTALLED SO THAT THE ROTATION MOVEMENT OF NORMAL OPERATION OF SWING JOINT WILL TIGHTEN TO THREADS AND NOT LOOSEN. SEE DETAIL ABOVE.
- (F) FLUSH SWING JOINT ASSEMBLY BEFORE INSTALLING BUBBLER.
- (G) BUBBLER SHALL BE INSTALLED A MINIMUM OF 18" TO 24" FROM TREE TRUNK AND 6" TO 8" FROM PLANT STEM AND WITHIN THE WATERING BASIN.
- (H) BUBBLER HEIGHT SHALL BE 3" ABOVE FINISHED GRADE WITH TOP DRESSING ADDED.
- (I) REFER TO TREE PLANTING DETAIL FOR RELATED INFORMATION.
- (J) FOR NON-POTABLE IRRIGATION SYSTEMS, THE PURPLE IDENTIFICATION RINGS/COVERS SHALL BE USED.

LEGEND:

- (1) FINISH GRADE
- (2) 3" LAYER OF DARK BROWN DECORATIVE BARK OR APPROVED EQUAL
- (3) SOIL BERM FOR WATERING BASIN 3' TO 4' MINIMUM DIAMETER
- (4) 1/2" PVC SCHEDULE 80 RISER, LENGTH AS REQUIRED
- (5) 1/2" PVC SCHEDULE 40 T x T 90 DEGREE ELL
- (6) PVC LATERAL PIPE SIZED PER PLANS
- (7) NATIVE SOIL OR COMPACTED SUBGRADE
- (8) PVC SCHEDULE 40 TEE OR ELL
- (9) 1/2" SPEARS MARLEX STREET ELL
- (10) 1/2" PVC SCHEDULE 80 NIPPLE, LENGTH AS REQUIRED
- (11) PRESSURE COMPENSATING BUBBLER RAINBIRD 1400 SERIES OR CITY OF MANTECA APPROVED EQUAL.
- (12) WIDTH VARIES. SEE NOTE G.
- (13) TREE TRUNK OR PLANT STEM



LEGEND:

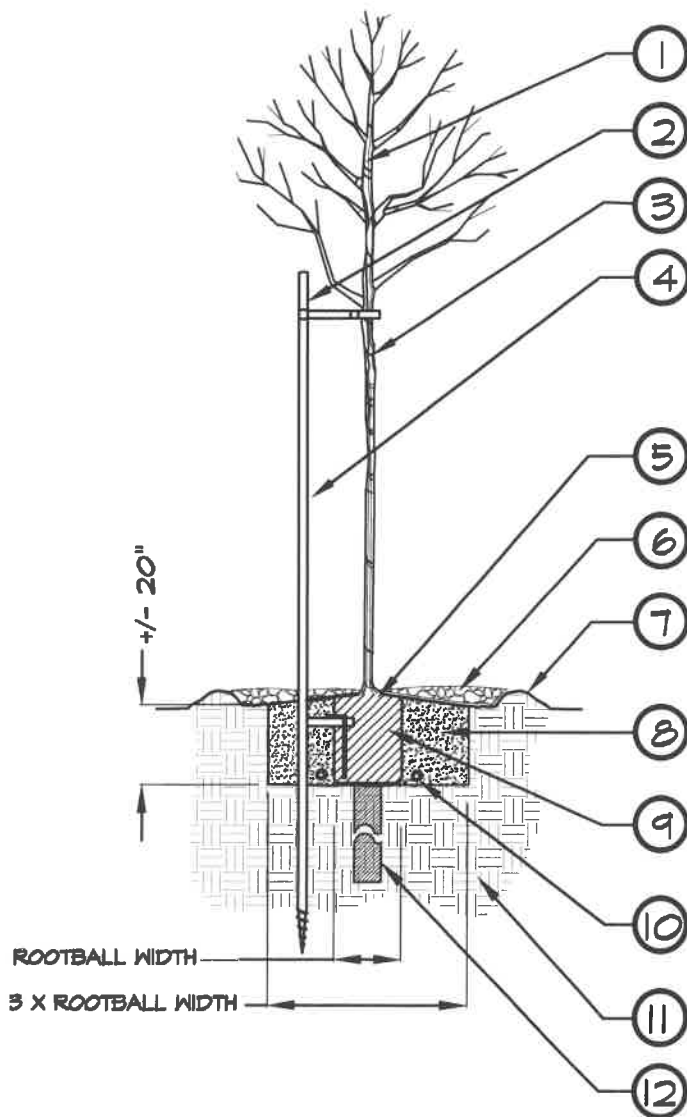
- ① PVC SCH 40 THREADED FITTING
- ② PVC SCH 40 TEE OR ELL IN LATERAL
- ③ BUBBLER PER PLANS AND PLACED OVER ROOTBALL
- ④ PVC SCH 40 ELL
- ⑤ SCH 80 NIPPLE - MIN 12" LENGTH
- ⑥ PVS SCH 40 THREADED FITTING
- ⑦ 1/2" IPS TUBING. LENGTH AS NEEDED WITH NO KINKING
- ⑧ SHRUB OR GROUNDCOVER PER PLANTING DETAIL
- ⑨ LAYER OF TOPDRESSING/MULCH PER PLANS
- ⑩ FINISH GRADE
- ⑪ NATIVE SOIL
- ⑫ BACKFILL MIX
- ⑬ PLANT OR GROUNDCOVER ROOTBALL

NOTES:

- Ⓐ BUBBLER TYPE AND GPM PER PLANS.
- Ⓑ BUBBLER SHALL BE PLACED AS SHOWN SO IT IS OVER THE ROOTBALL.
- Ⓒ BUBBLER SHALL BE INSTALLED 6" ABOVE GRADE.
- Ⓓ WHEN PLANTING ON SLOPES, THE BUBBLER SHALL BE LOCATED ON THE UPHILL SIDE OF THE PLANT.
- Ⓔ THE LATERAL LINE FITTING WITH THREADED OUTLET HORIZONTAL
- Ⓕ ALL IPS FLEX PIPES SHALL BE CEMENT WELDED TO PVC SLIP FITTINGS USING 795 GLUE
- Ⓖ COMPACT SOIL AROUND SPRINKLERS TO THE SAME DENSITY AS UNDISTURBED SOIL
- Ⓗ FLUSH PIPE ASSEMBLY BEFORE INSTALLING BUBBLER
- Ⓘ FOR WATER PRESSURE CONDITIONS ABOVE THE MANUFACTURER'S RECOMMENDED OPERATING PRESSURE, A PRESSURE REGULATING DEVICE SHALL BE USED AT THE VALVE. RAINBIRD PRS OR CITY OF MANTECA APPROVED EQUAL

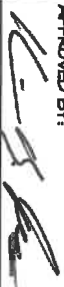
NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
SHRUB & GROUNDCOVER BUBBLERS		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
DATE:	2017	
DRAWING NO.	1-27	
APPROVED BY:		
	PARKS & RECREATION DIRECTOR	

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
TREE PLANTING CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
DATE:	2017	L-1A



LEGEND:

- ① TREE TO HAVE A CENTRAL LEADER AND EQUALLY SPACED SCAFFOLD BRANCHES.
- ② STAKE AS NOT TO INTERFERE WITH BRANCHES.
- ③ TREE SIZE AND VARIETY PER PLANS . (15 GALLON SIZE MINIMUM.). REMOVE NURSERY STAKES, LEAVE LOWER BRANCHES
- ④ "THE REDDY STAKE" SYSTEM OR APPROVED EQUAL. WITH TAB AND ANTI-ROTATION PIN. INSTALL TAB 2"-4" BELOW GRADE. LOCATE STAKE ON THE SIDE OF PREVAILING WINDS. SEE NOTES ON DETAIL L-1B FOR SIZE.
- ⑤ SET ROOT CROWN OF TREE 2" HIGHER THAN SURROUNDING FINISH GRADE WHEN MULCH IS TO BE APPLIED.
- ⑥ 3" LAYER OF TOPDRESSING. DARK BROWN DECORATIVE BARK OR APPROVED EQUAL. PLACE IN A 2' RADIUS AROUND TRUNK.
- ⑦ 6-INCH SOIL BERM FOR WATERING BASIN.
- ⑧ BACKFILL MIX - TO BE NATIVE SOIL ONLY. WATER IN BY HAND TO SETTLE.
- ⑨ TREE ROOTBALL PLACED ON FIRM SOIL. ROUGHEN SIDES OF PLANTING HOLE. BUTTERFLY ROOTBALL WHEN PLANTING. SPECIMENS WITH CIRCLING ROOTS, HOOKED ROOT OR THAT ARE ROOTBOUND WILL BE REJECTED.
- ⑩ PLANTING TABLETS, AGRIFORM OR CITY OF MANTECA APPROVED EQUAL, INSTALL PER SPECIFICATIONS AND LABEL INSTRUCTIONS.
- ⑪ UNDISTURBED NATIVE SOIL.
- ⑫ 6" AUGERED HOLE THROUGH HARDPAN AS REQUIRED TO ACHIEVE DRAINAGE, 10' MIN. DEPTH, BACKFILL WITH NATIVE SOIL

NO.	REVISED	BY
DRAWN BY: C. BROWN		
CHECKED BY: J. COURTNEY		
SCALE: NONE		
TREE PLANTING NOTES		
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:	DRAWING NO.	
	L-1B	
DATE: 2017		

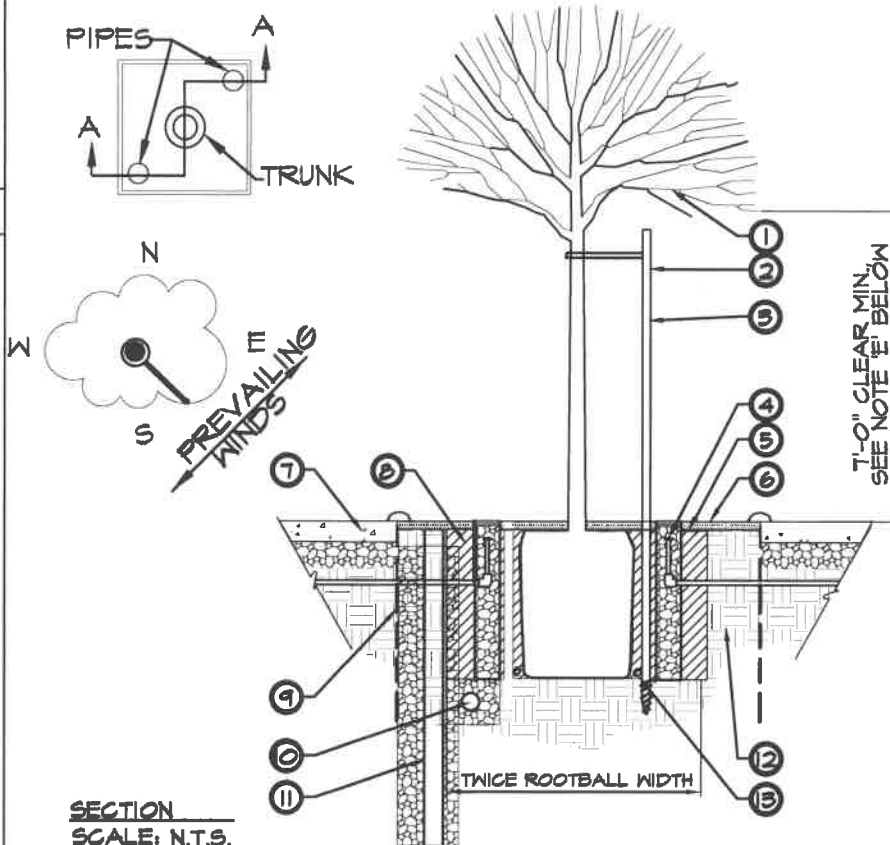
NOTES:

- (A) TREES NOTED WITHIN 10' OF HARDSCAPE TO BE PLANTED USING ROOT BARRIERS. INSTALL PER PLANS AND CITY OF MANTECA STANDARDS, SPECIFICATIONS AND ROOT BARRIER DETAIL
- (B) ALL TREES SHALL BE A 15 GALLON MINIMUM.
- (C) TREES SHALL BE INSPECTED AND APPROVED BY THE CITY'S REPRESENTATIVE UPON DELIVERY AND PRIOR TO PLANTING. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE WHEN REQUESTING INSPECTIONS.
- (D) ALL TREES SHALL HAVE THE VARIETY CLEARLY MARKED OR TAGGED FROM THE GROWER UPON DELIVERY AND PRESENT DELIVERY TAGS FOR INSPECTION.
- (E) SPECIMENS WITH CIRCLING ROOTS, HOOKED ROOT OR SPECIMENS THAT ARE ROOTBOUND WILL NOT BE ACCEPTED. SPECIMENS WITHOUT CENTRAL LEADER WILL NOT BE ACCEPTED.
- (F) WHEN PLANTING AGGRESSIVELY BUTTERFLY / SCARIFY AND SHAVE ROOTBALL TO STIMULATE LATERAL ROOT GROWTH
- (G) DO NOT LOCATE TREES OVER, ADJACENT, OR WITHIN 1/2 THE TREE'S MATURE DIAMETER FROM IRRIGATION MAINLINES, LATERALS, VALVE BOXES, FLOW SENSORS, MASTER VALVES, BACKFLOWS, BOOSTER PUMPS, ETC. .
- (H) FINAL TREE LAYOUT AND SPACING SHALL BE APPROVED BY THE CITY'S REPRESENTATIVE PRIOR TO DIGGING OF HOLES.
- (I) PRIOR TO PLANTING, CONTRACTOR SHALL PRE-SOAK ALL HOLES.
- (J) 15 GALLON TREES SHALL HAVE A 9 FT. STAKE MINIMUM. 24 INCH BOXED TREES AND LARGER SHALL HAVE AN 11 FT. STAKE MINIMUM. IN SOME SITUATIONS, TREES MAY REQUIRE GUYING.
- (K) TREES IN TURF SHALL NOT HAVE SOD OR SEED PLACED OVER ROOTBALL. HOLD TURF 2 FT. CLEAR OF TRUNK.
- (L) TREES SHALL BE TOPDRESSED WITH A 3" LAYER OF DARK BROWN DECO BARK OR CITY APPROVED EQUAL.
- (M) CONTRACTOR SHALL WATER TREE (SOAKING IN BY HAND) AT THE TIME OF PLANTING AND SHALL BE RESPONSIBLE FOR THE CARE OF THE TREE UNTIL ALL IMPROVEMENTS ARE ACCEPTED BY THE CITY.
- (N) REFER TO STANDARD SPECIFICATIONS FOR OTHER IMPORTANT TREE SPACING REQUIREMENTS

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

TREE PLANTING IN PLAZA
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
PARKS & RECREATION DIRECTOR
DRAWING NO.
DATE: 2017
L-2



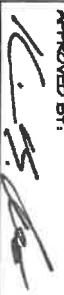
SECTION
SCALE: N.T.S.

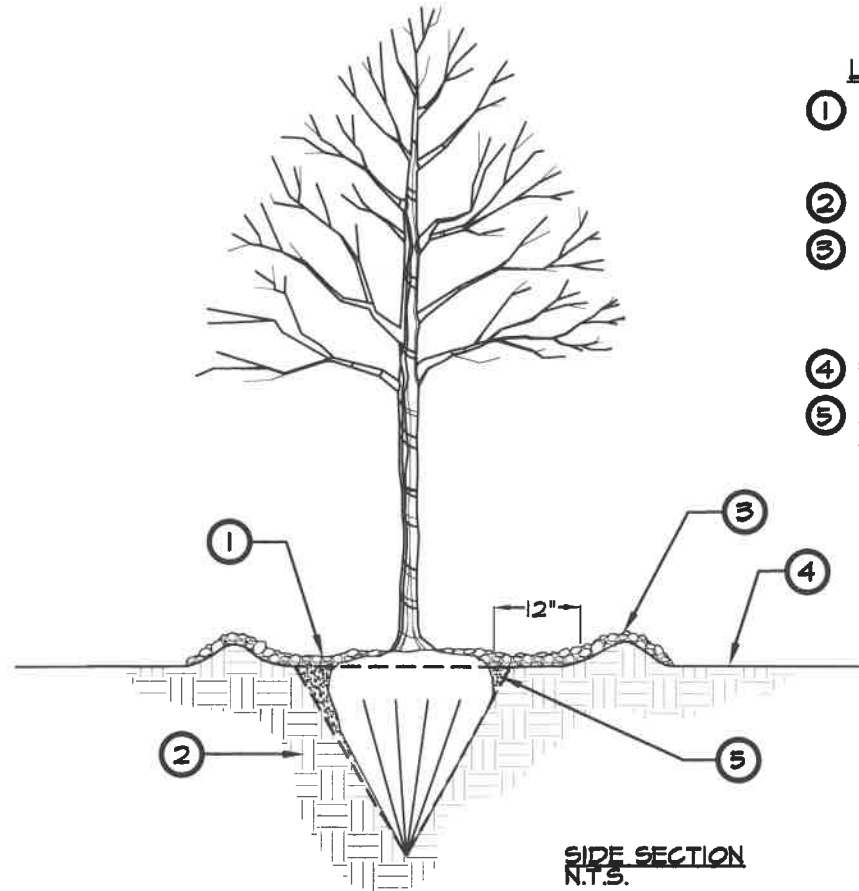
NOTES:

- (A) ADJUST STAKES IN TREE CANOPY TO AVOID DAMAGE TO BRANCHES.
- (B) POSITION TREE TIES IN UPPER CANOPY TO AVOID DAMAGE TO BRANCHES.
- (C) SCARIFY SIDES AND BOTTOM OF PLANTING PIT. SLOPE BOTTOM OF PIT TOWARDS DRAIN.
- (D) TIE IRRIGATION BUBBLER INTO NEAREST MAINLINE OR SPLICE INTO AN EXISTING LATERAL IF AVAILABLE AND IN ACCEPTABLE SERVICE.
- (E) MAINTAIN 7'-0" CLEAR MINIMUM HT AT ALL ADJACENT WALK CONDITIONS

LEGEND:

- ① TREE - CENTER IN PIT.
- ② REDDY STAKE - TYPE B 9' HT. OR APPROVED ALTERNATE
- ③ TREE TIES - REDDY STAKE OR APPROVED ALTERNATE.
- ④ IRRIGATION BUBBLER AND PVC PIPING/CONNECTORS. CENTER BUBBLER IN 6" X 24" PERFORATED PIPE, 1" BELOW FIN. GRADE FILLED W/ PEA GRAVEL. 6" GREEN PVC GRATE ATOP PIPE.
- ⑤ GEOTEXTILE BY: MIRAFI INC., MODEL NO. 600X OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S SPECIFICATIONS. (706) 693-2226.
- ⑥ STEEL TREE GRATE (PER PLANS) OR 4" STABILIZED DECOMPOSED GRANITE. SEE CONSTRUCTION PLAN FOR LOCATIONS MANUFACTURED BY STABILIZER SOLUTIONS OR APPROVED ALT. FINISH GRADE TO BE FLUSH WITH SURROUNDING CONCRETE. ACHIEVE 90% COMPACTION RATE.
- ⑦ ADJACENT CONCRETE PAVING & AGGREGATE BASE. SEE CONSTRUCTION PLAN FOR LOCATION. REFER TO DETAIL A, THIS SHEET.
- ⑧ AMENDED PLANTER MIX BACKFILL & PLANT TABLET - REFER TO SPECIFICATIONS FOR MIX, QUANTITY & PLACEMENT
- ⑨ ROOT BARRIER. EXTEND 1" ABOVE TOP OF SOIL. REFER TO SPECIFICATIONS. CORE IRRIGATION PIPE THROUGH BARRIER. SEAL HOLE W/ SILICON CAULK
- ⑩ 4" DIA. PERFORATED PIPE WRAPPED IN HERBACIDED FILTER FABRIC (ROOT BARRIER) IN 12" X 12" GRAVEL BED. REFER TO PLANS FOR DRAINLINE LOCATIONS.
- ⑪ ALTERNATIVE DRAINAGE APPROACH WHERE PIPE EXCAVATION IS NOT POSSIBLE: PROVIDE 18" DIA. 10' DEEP DRY WELL BACKFILLED WITH DRAIN ROCK AND 4" PERF. PVC OBSERVATION TUBE. INSTALL DRAINAGE AT ALL NEW OR EXISTING TREES IN THE LIMITS OF WORK.
- ⑫ NATIVE UNDISTURBED SOIL.
- ⑬ PLANTING TABLETS, ASRIFORM OR CITY OF MANTECA APPROVED EQUAL, INSTALL PER SPECIFICATIONS AND LABEL INSTRUCTIONS

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
MECHANICAL TREE SPADING		
LEVEL LOCATIONS		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.	PARKS & RECREATION DIRECTOR	
DATE:	2017	
L-3		



LEGEND:

- ① ADD A 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK MULCH. EXTEND 12" MIN. PAST OUTER EDGE OF ROOTBALL.
- ② UNDISTURBED NATIVE SOIL.
- ③ FORM A 6" TALL BERM TO CREATE A WATERING SAUCER OR BASIN. BASIN SHALL EXTEND 12" BEYOND THE OUTER EDGE OF THE TREE ROOTBALL.
- ④ FINISH GRADE OF TURF OR PLANTER.
- ⑤ ADD TOPSOIL TO FILL IN VOIDS AND PACK WELL.

NOTES

- (A) DIG CAVITY WITH BASE OF THE TREE SPADE LEVEL WITH THE UPPER SIDE OF THE ROOTBALL.
- (B) DIG ROOTBALL SAME AS THE CAVITY. PLANT WITH UPPER SIDE OF ROOTBALL AT THE ORIGINAL GRADE OR UP TO $\frac{1}{8}$ " HIGHER. NEVER PLANT DEEPER THAN ORIGINAL GRADE.
- (C) FILL VOIDS, FORM WATER SAUCER OR BERM AND MULCH WITH DARK BROWN DECORATIVE BARK; WATER PER TREE SPADING SPECIFICATIONS.

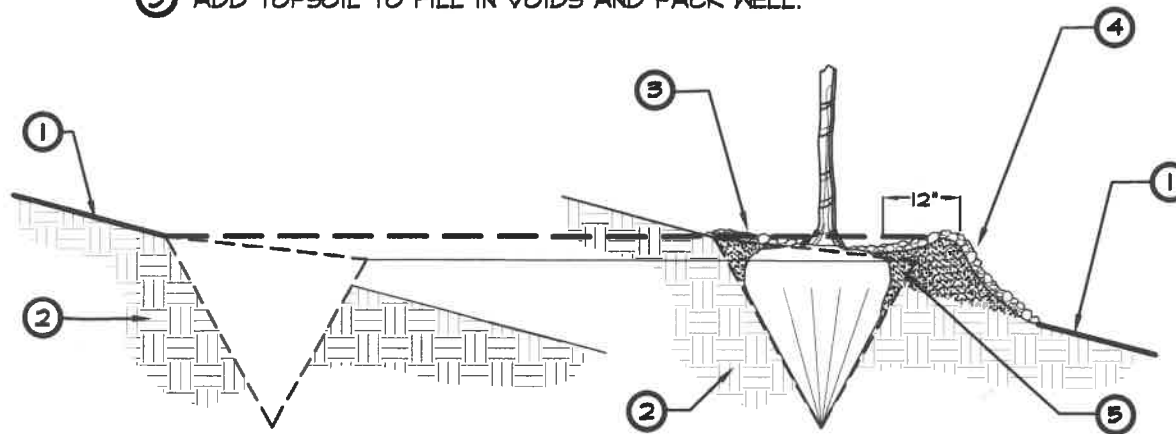
NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

MECHANICAL TREE SPADING
SLOPED LOCATIONS
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: 
PARKS & RECREATION DIRECTOR
DRAWING NO. _____
DATE: 2017
L-4

LEGEND:

- ① EXISTING GRADE OF SLOPE OR MOUND
- ② UNDISTURBED NATIVE SOIL
- ③ ADD A 2"- 3" LAYER OF DARK BROWN DECORATIVE BARK; EXTEND 12" MIN. PAST OUTER EDGE OF ROOTBALL
- ④ FORM A 6" TALL BERM TO CREATE A WATERING SAUCER OR BASIN. BASIN SHALL EXTEND 12" BEYOND THE OUTER EDGE OF THE TREE ROOTBALL
- ⑤ ADD TOPSOIL TO FILL IN VOIDS AND PACK WELL.

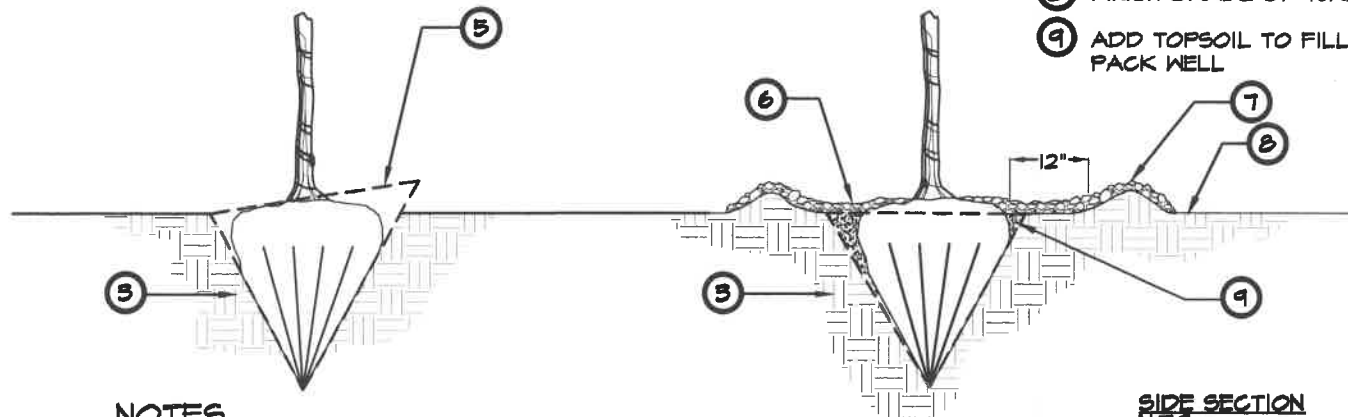


SIDE SECTION
N.T.S.

NOTES

- (A) DIG CAVITY WITH BASE OF THE TREE SPADE LEVEL WITH THE UPPER SIDE OF THE ROOTBALL.
- (B) DIG ROOTBALL SAME AS THE CAVITY. PLANT WITH UPPER SIDE OF ROOTBALL AT THE ORIGINAL GRADE OR UP TO $\frac{1}{8}$ " HIGHER. NEVER PLANT DEEPER THAN ORIGINAL GRADE.
- (C) FILL VOIDS, FORM WATER SAUCER OR BERM AND MULCH WITH DARK BROWN DECORATIVE BARK MULCH. WATER PER TREE SPADING SPECIFICATIONS.

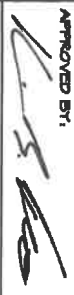
APPROVED BY:	
PARKS & RECREATION DIRECTOR	
DRAWING NO.	
DATE: 2017	
L-5	



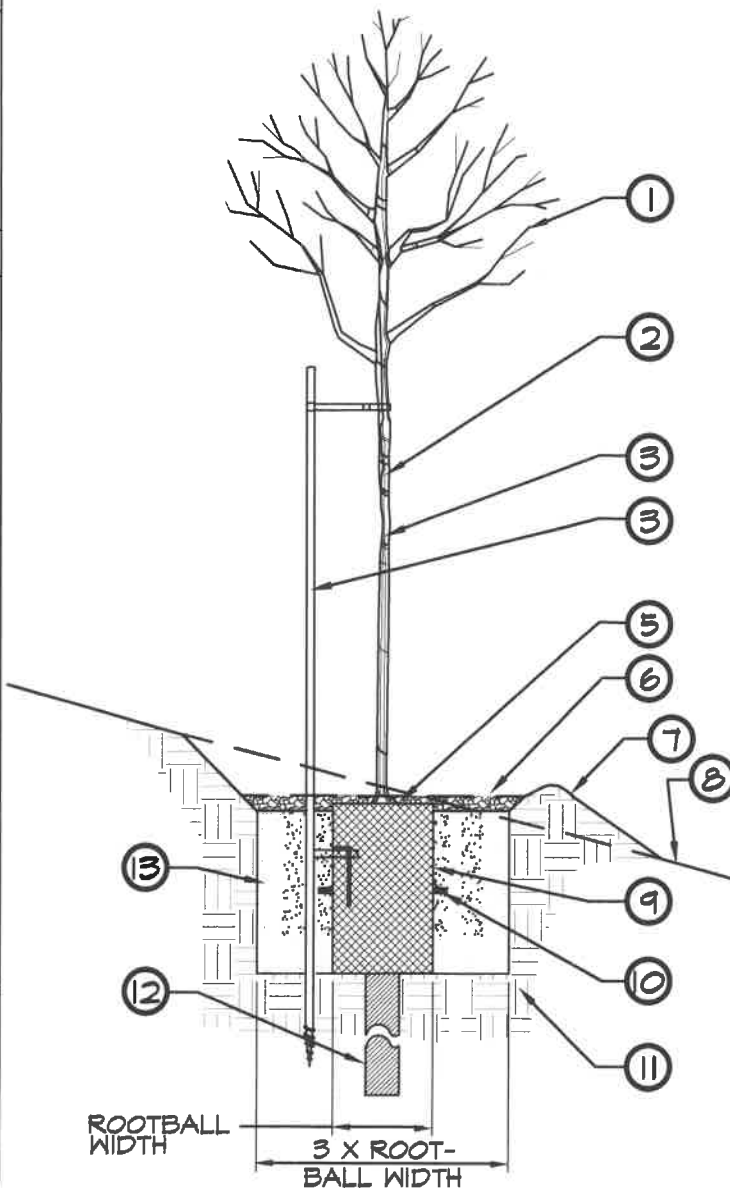
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NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE	NONE	

TREE PLANTING ON SLOPE
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: 
PARKS & RECREATION DIRECTOR

DRAWING NO. **L-6A**
DATE: 2017



SIDE SECTION
N.T.S.

LEGEND:

- ① TREE TO HAVE A CENTRAL LEADER AND EQUALLY SPACED SCAFFOLD BRANCHES.
- ② STAKE AS NOT TO INTERFERE WITH BRANCHES.
- ③ TREE SIZE AND VARIETY PER PLANS . (15 GALLON SIZE MINIMUM.). REMOVE NURSERY STAKES, LEAVE LOWER BRANCHES
- ④ "THE REDDY STAKE" SYSTEM OR APPROVED EQUAL. WITH TAB AND ANTI-ROTATION PIN. INSTALL TAB 2"-4" BELOW GRADE. LOCATE STAKE ON THE SIDE OF PREVAILING WINDS. SEE NOTES BELOW FOR SIZE.
- ⑤ SET ROOT CROWN OF TREE 2" HIGHER THAN SURROUNDING FINISH GRADE WHEN MULCH IS TO BE APPLIED.
- ⑥ 3" LAYER OF TOPDRESSING. DARK BROWN DECORATIVE MULCH OR APPROVED EQUAL. PLACE IN A 2' RADIUS AROUND TRUNK.
- ⑦ 6" SOIL BERM FOR WATERING BASIN, BLEND INTO EXISTING SLOPE
- ⑧ EXISTING SLOPE @ 2:1 MAX.
- ⑨ TREE ROOTBALL PLACED ON FIRM SOIL. ROUGHEN SIDES OF PLANTING HOLE. BUTTERFLY ROOTBALL WHEN PLANTING. SPECIMENS WITH CIRCLING ROOTS, HOOKED ROOT OR THAT ARE ROOTBOUND WILL BE REJECTED.
- ⑩ PLANTING TABLETS. AGRIFORM OR CITY OF MANTECA APPROVED EQUAL, INSTALL PER SPECIFICATIONS AND LABEL INSTRUCTIONS.
- ⑪ UNDISTURBED NATIVE SOIL.
- ⑫ 6" AUGERED HOLE THROUGH HARDPAN AS REQUIRED TO ACHIEVE DRAINAGE, 10' MIN. DEPTH, BACKFILL WITH NATIVE SOIL
- ⑬ BACKFILL MIX - TO BE NATIVE SOIL ONLY. WATER IN BY HAND TO SETTLE.

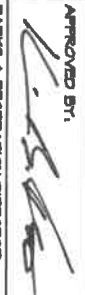
NOTES:

- Ⓐ REFER TO DETAIL L-6B FOR TREE NOTES

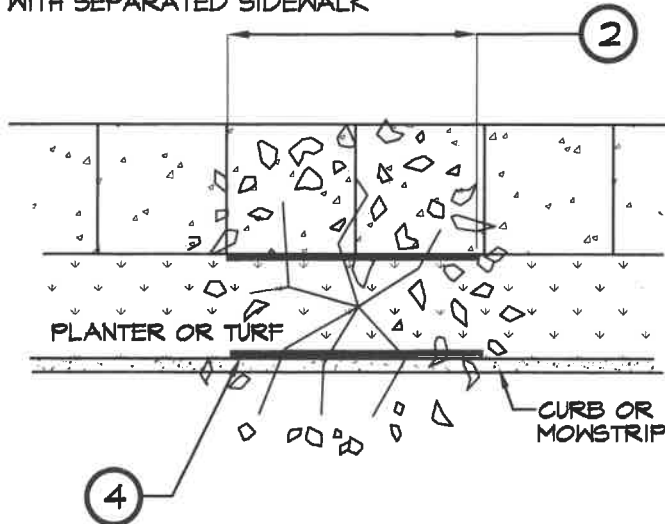
NOTES:

- (A) TREES NOTED WITHIN 10' OF HARDSCAPE TO BE PLANTED USING ROOT BARRIERS. INSTALL PER PLANS AND CITY OF MANTECA STANDARDS, SPECIFICATIONS AND ROOT BARRIER DETAIL
- (B) ALL TREES SHALL BE A 15 GALLON MINIMUM.
- (C) TREES SHALL BE INSPECTED AND APPROVED BY THE CITY'S REPRESENTATIVE UPON DELIVERY AND PRIOR TO PLANTING. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE WHEN REQUESTING INSPECTIONS.
- (D) ALL TREES SHALL HAVE THE VARIETY CLEARLY MARKED OR TAGGED FROM THE GROWER UPON DELIVERY AND PRESENT DELIVERY TAGS FOR INSPECTION.
- (E) SPECIMENS WITH CIRCLING ROOTS, HOOKED ROOT OR SPECIMENS THAT ARE ROOTBOUND WILL NOT BE ACCEPTED. SPECIMENS WITHOUT CENTRAL LEADER WILL NOT BE ACCEPTED.
- (F) WHEN PLANTING AGGRESSIVELY BUTTERFLY / SCARIFY AND SHAVE ROOTBALL TO STIMULATE LATERAL ROOT GROWTH
- (G) DO NOT LOCATE TREES OVER, ADJACENT, OR WITHIN 1/2 THE TREE'S MATURE DIAMETER FROM IRRIGATION MAINLINES, LATERALS, VALVE BOXES, FLOW SENSORS, MASTER VALVES, BACKFLOWS, BOOSTER PUMPS, ETC. .
- (H) FINAL TREE LAYOUT AND SPACING SHALL BE APPROVED BY THE CITY'S REPRESENTATIVE PRIOR TO DIGGING OF HOLES.
- (I) PRIOR TO PLANTING, CONTRACTOR SHALL PRE-SOAK ALL HOLES.
- (J) 15 GALLON TREES SHALL HAVE A 9 FT. STAKE MINIMUM. 24 INCH BOXED TREES AND LARGER SHALL HAVE AN 11 FT. STAKE MINIMUM. IN SOME SITUATIONS, TREES MAY REQUIRE GUYING.
- (K) TREES IN TURF SHALL NOT HAVE SOD OR SEED PLACED OVER ROOTBALL. HOLD TURF 2 FT. CLEAR OF TRUNK.
- (L) TREES SHALL BE TOPDRESSED WITH A 3" LAYER OF DARK BROWN DECO BARK OR CITY APPROVED EQUAL.
- (M) CONTRACTOR SHALL WATER TREE (SOAKING IN BY HAND) AT THE TIME OF PLANTING AND SHALL BE RESPONSIBLE FOR THE CARE OF THE TREE UNTIL ALL IMPROVEMENTS ARE ACCEPTED BY THE CITY.
- (N) REFER TO STANDARD SPECIFICATIONS FOR OTHER IMPORTANT TREE SPACING REQUIREMENTS

TREE PLANTING NOTES

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:  PARKS & RECREATION DIRECTOR		
DRAWING NO.	L-6B	
DATE:	2017	

LINEAR STYLE APPLICATION
WITH SEPARATED SIDEWALK



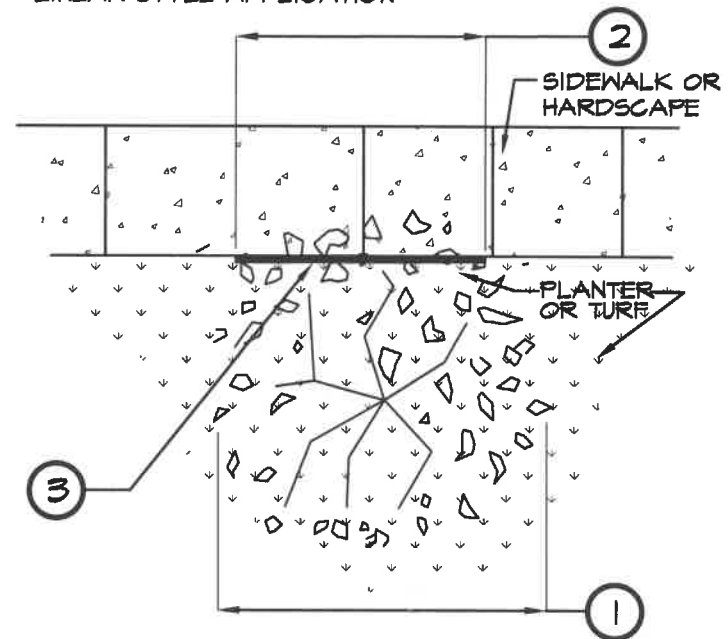
LEGEND:

- ① DIAMETER AT MATURITY
- ② LENGTH IS 3/4 OF MATURE TREE DIAMETER
- ③ DEEP ROOT #LB 18-2
- ④ DEEP ROOT #LB 18-2 BOTH SIDES OF TREE

NOTES:

- (A) ALL TREES WITHIN 10' OF HARDSCAPE TO HAVE DEEP ROOT BARRIERS INSTALLED AT THE TIME OF PLANTING
- (B) MODEL #LB 18-2 IS REQUIRED FOR LINEAR STYLE INSTALLATIONS; LENGTH SHALL BE 3/4 OF TREE DIAMETER AT MATURITY
- (C) SEE CITY OF MANTECA STANDARDS ST-23 AND ST-24 FOR STREET TREE SPACING AND TREE WELL PLANTING; SEE ST-25 FOR LIST OF APPROVED AND PROHIBITED STREET TREE SPECIES

LINEAR STYLE APPLICATION



SIDE SECTION
N.T.S.

TREE ROOT BARRIER

NO. REVISED BY

DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

SCALE: NONE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

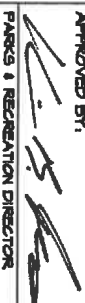
APPROVED BY:

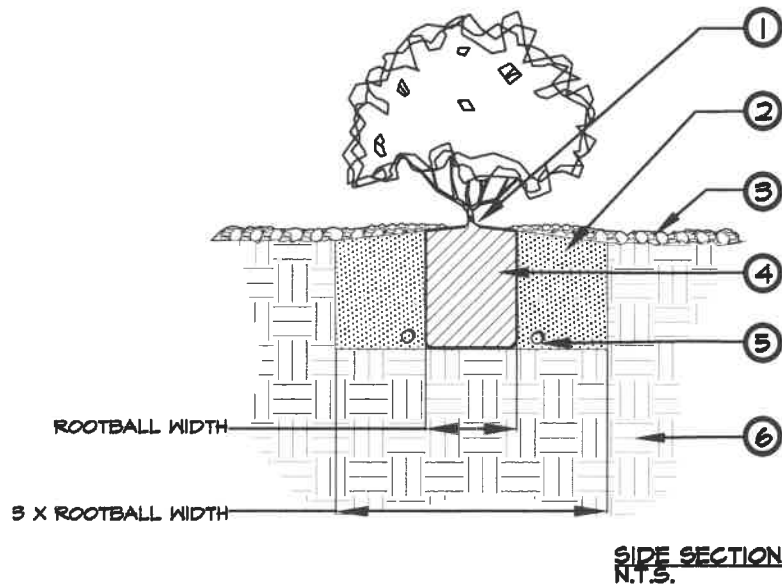
PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

L-7

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
SHRUB PLANTING CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
DATE:	2017	
APPROVED BY: 		DRAWING NO. L-8

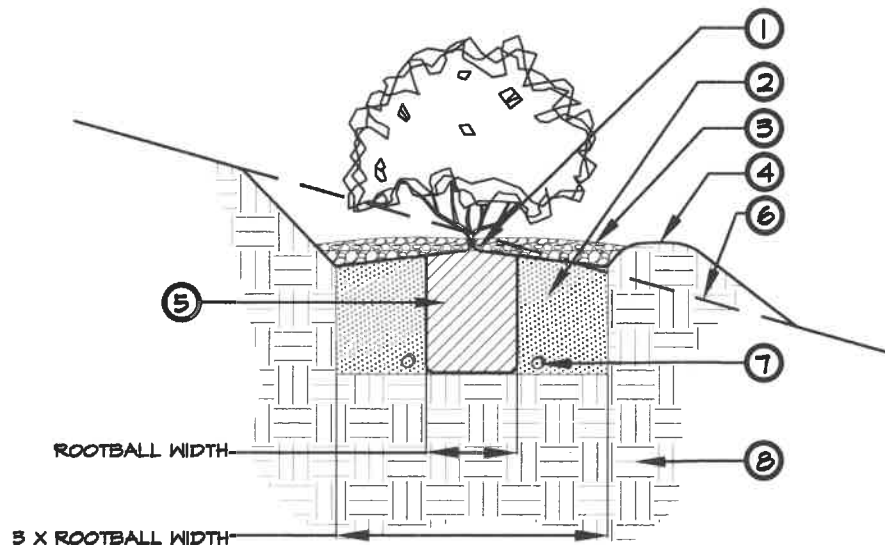


LEGEND:

- ① SET ROOT CROWN OF SHRUB 2" HIGHER THAN SURROUNDING FINISH GRADE IF BARK IS TO BE APPLIED. OTHERWISE ROOT CROWN SHALL BE SET LEVEL WITH FINISH GRADE.
- ② BACKFILL MIX - 1% NITROGEN STABILIZED ORGANIC MATTER MIXED 50/50 WITH NATIVE SOIL OR PER SOILS ANALYSIS. WATER TO SETTLE.
- ③ 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK OR CITY APPROVED EQUAL.
- ④ SHRUB ROOTBALL PLACED ON FIRM SOIL. ROUGHEN SIDES OF PLANTING HOLE.
- ⑤ PLANTING TABLETS. AGRIFORM OR CITY OF MANTECA APPROVED EQUAL, INSTALL PER SPECIFICATIONS AND LABEL INSTRUCTIONS.
- ⑥ UNDISTURBED NATIVE SOIL.

NOTES

- (A) ALL SHRUBS SHALL BE A 1 GALLON MINIMUM.
- (B) SHRUBS SHALL BE INSPECTED AND APPROVED BY THE CITY'S REPRESENTATIVE UPON DELIVERY AND PRIOR TO PLANTING. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE WHEN REQUESTING INSPECTIONS.
- (C) ALL SHRUBS SHALL HAVE THE VARIETY CLEARLY MARKED OR TAGGED FROM THE GROWER UPON DELIVERY AND PRESENT DELIVERY TAGS FOR INSPECTION.
- (D) PRIOR TO PLANTING, CONTRACTOR SHALL PRE-SOAK ALL HOLES.
- (E) CONTRACTOR SHALL WATER SHRUBS THOROUGHLY AT THE TIME OF PLANTING, TAKING CARE NOT TO COVER THE PLANT CROWN WITH WET SOIL.
- (F) ANY SHRUB THAT HAS SETTLED DEEPER THAN THE SURROUNDING GRADE SHALL BE RAISED TO THE CORRECT LEVEL.
- (G) SHRUBS TO BE TOP DRESSED WITH A 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK OR CITY APPROVED EQUAL.
- (H) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE OF SHRUBS UNTIL ALL IMPROVEMENTS ARE ACCEPTED BY THE CITY.



**SIDE SECTION
N.T.S.**

NOTES:

- (A) ALL SHRUBS SHALL BE A ONE GALLON MINIMUM.
- (B) SHRUBS SHALL BE INSPECTED AND APPROVED BY THE CITY'S REPRESENTATIVE UPON DELIVERY AND PRIOR TO PLANTING. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE WHEN REQUESTING INSPECTIONS.
- (C) ALL SHRUBS SHALL HAVE THE VARIETY CLEARLY MARKED OR TAGGED FROM THE GROWER UPON DELIVERY AND PRESENT DELIVERY TAGS FOR INSPECTION.
- (D) PRIOR TO PLANTING, CONTRACTOR SHALL PRE-SOAK ALL HOLES.
- (E) CONTRACTOR SHALL WATER SHRUBS THOROUGHLY AT THE TIME OF PLANTING, TAKING CARE NOT TO COVER THE PLANT CROWN WITH WET SOIL.
- (F) ANY SHRUB THAT HAS SETTLED DEEPER THAN THE SURROUNDING GRADE SHALL BE RAISED TO THE CORRECT LEVEL.
- (G) SHRUBS TO BE TOP DRESSED WITH A 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK OR CITY APPROVED EQUAL.
- (H) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE OF SHRUBS UNTIL ALL IMPROVEMENTS ARE ACCEPTED BY THE CITY.
- (I) BUBBLERS TO BE PLACED ON UPHILL SIDE OF SHRUB.
- (J) SCORE ROOT BALL IN VARIOUS LOCATIONS.

LEGEND:

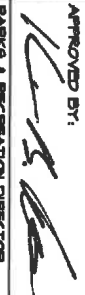
- (1) SET ROOT CROWN OF SHRUB 2" HIGHER THAN SURROUNDING FINISH GRADE IF BARK IS TO BE APPLIED. OTHERWISE ROOT CROWN SHALL BE SET LEVEL WITH FINISH GRADE.
- (2) BACKFILL MIX - 1% NITROGEN STABILIZED ORGANIC MATTER MIXED 50/50 WITH NATIVE SOIL. WATER TO SETTLE.
- (3) 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK OR CITY APPROVED EQUAL.
- (4) 4" HIGH X 2' DIAMETER PLANT BASIN COVER WITH 3" LAYER APPROVED MULCH.
- (5) SHRUB ROOTBALL PLACED ON FIRM SOIL. ROUGHEN SIDES OF PLANTING HOLE.
- (6) EXISTING SLOPE TO BE 4:1 MAXIMUM BLEND INTO EXISTING SLOPE.
- (7) PLANTING TABLETS. AGRIFORM OR CITY OF MANTECA APPROVED EQUAL PER LABEL INSTRUCTIONS.
- (8) UNDISTURBED NATIVE SOIL.

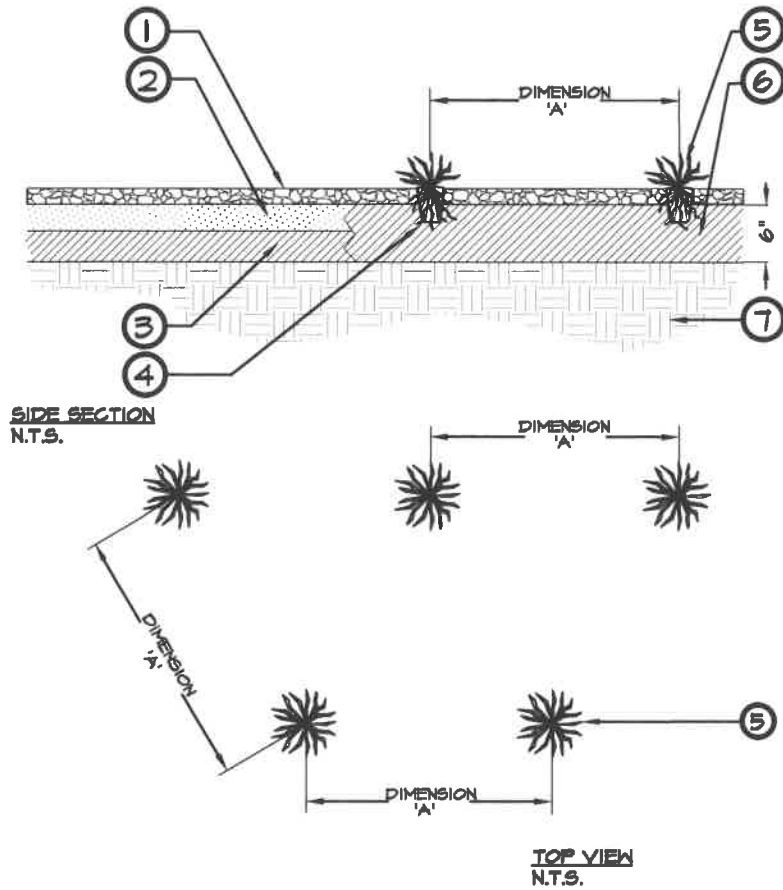
SHRUB PLANTING ON SLOPE

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

**CITY OF MANTECA
PARKS & RECREATION DEPARTMENT**

APPROVED BY:	DATE:
	2017
PARKS & RECREATION DIRECTOR	
DRAWING NO.	
	L-9

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
DATE:	2017	
DRAWING NO.	L-10	
APPROVED BY:		
GROUNDCOVERS, & ANNUAL PLANTINGS (IN CONTAINERS, FLATS, OR PLUGS)		

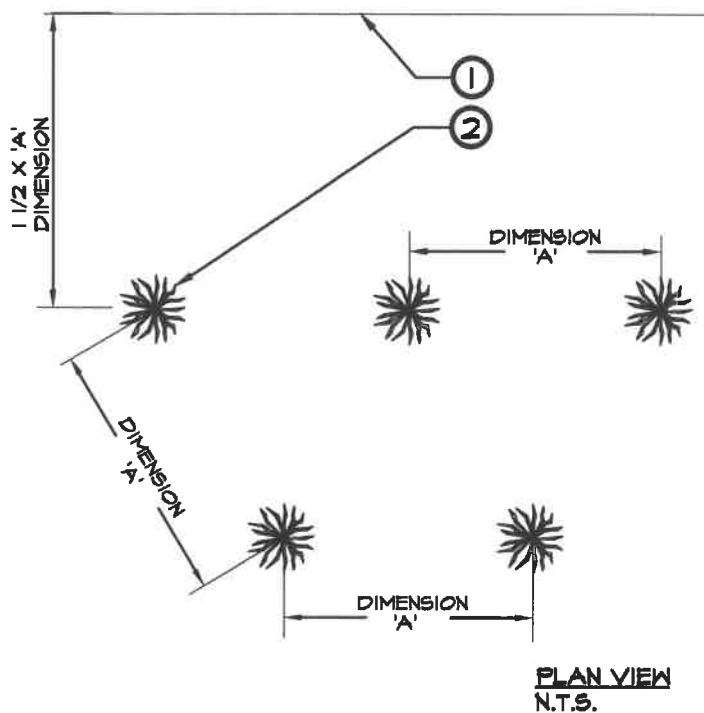


LEGEND:

- ① 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK TOPDRESSING
- ② 1% NITROGEN STABILIZED ORGANIC MATTER AT THE RATE OF 6 CU. YARDS PER 1000 SQ.FT. COMBINE WITH 12-12-12 FERTILIZER AT RATE OF 15 LBS. PER 1000 SQ.FT. OR PER SOILS ANALYSIS RECOMMENDATIONS
- ③ CLEAN NATIVE SOIL, FREE OF ROOTS, ROCKS AND DEBRIS.
- ④ PLANT ROOTBALL.
- ⑤ GROUNDCOVER PLANTED ON A TRIANGULAR SPACING.
- ⑥ AMENDED SOIL WITH ORGANIC MATTER AND FERTILIZER INCORPORATED INTO THE TOP 6" OF SOIL.
- ⑦ NON-COMPACTED NATIVE SOIL.

NOTES:

- (A) STAGGER GROUNDCOVER PLANTS IN A TRIANGULAR PATTERN AS SHOWN.
- (B) DIMENSION 'A' SHALL BE PER O.C. (ON CENTER) SPACING SHOWN ON PLANT LEGEND. PLANTS SHALL BE PLACED EQUALLY APART.
- (C) ROWS ADJACENT TO A WALL, WALK OR PLANTING EDGE, SHALL BE OFFSET BY 1/3 THE DISTANCE OF DIMENSION 'A'.
- (D) ORGANIC MATTER AND FERTILIZER SHALL BE INCORPORATED BY MEANS OF ROTOTILLING OR APPROVED EQUAL METHOD. DISKING OR PLOWING IS NOT ACCEPTABLE.
- (E) GROUNDCOVERS SHALL BE GROWN IN FLATS OR PLUGS WITH EACH PLANT HAVING ITS OWN ROOTBALL. SOLID LA TYPE FLATS ARE NOT ACCEPTABLE.
- (F) GROUNDCOVER PLANTS ARE TO BE KEPT MOIST AT ALL TIMES DURING TRANSPORTATION AND PLANTING.
- (G) GROUNDCOVER AREAS ARE TO BE PRE-MOISTENED PRIOR TO PLANTING. NO PLANT IS TO BE PLANTED IN DRY SOIL.
- (H) SET PLANTS IN CENTER OF HOLES AND TAMP FIRMLY FROM THE SIDES. ROOTBALL SHALL BE SET NOT THE AMENDED SOIL. CROWN PLANT SHALL BE SET SO IT WILL BE LEVEL WITH FINISH GRADE AFTER SETTLING OF THE SOIL.
- (I) ANY PLANTS THAT HAVE SETTLED DEEPER THAN THE FINISH GRADE SHALL BE RAISED TO THE CORRECT LEVEL.
- (J) ALL GROUNDCOVER SHALL HAVE THE VARIETY CLEARLY MARKED OR TAGGED FROM THE GROWER UPON DELIVERY AND PRESENT DELIVERY TAGS FOR INSPECTION.
- (K) PRIOR TO PLANTING, CONTRACTOR SHALL PRE-SOAK ALL HOLES.
- (L) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE OF GROUNDCOVER UNTIL ALL IMPROVEMENTS ARE ACCEPTED BY THE CITY.
- (M) HOLD BARK OR TOPDRESSING CLEAR OF STEMS TO PREVENT CROWNING ROT.



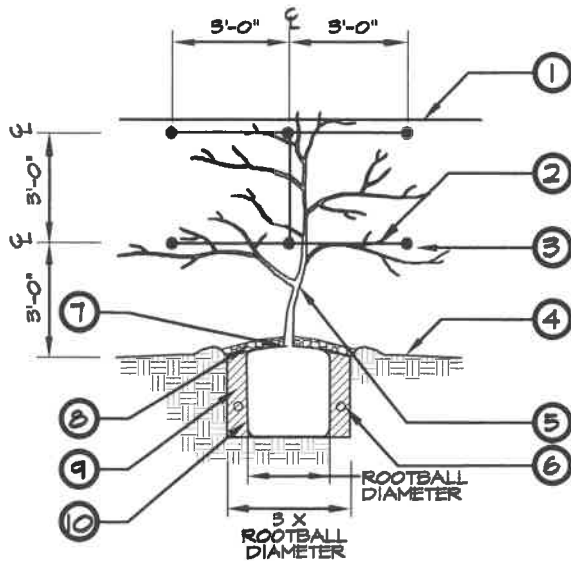
LEGEND:

- ① ADJACENT WALL, WALKWAY, OR EDGE OF PLANTING AREA
- ② LIVE PLANT MATERIAL PLANTED IN PREPARED SOIL, SEE PLANS FOR SIZE AND SPACING 'A' ON CENTER DIMENSION

NOTES:

- (A) STAGGER PLANTS IN A TRIANGULAR PATTERN AS SHOWN.
- (B) DIMENSION 'A' SHALL BE PER O.C. (ON CENTER) SPACING SHOWN ON PLANT LEGEND. PLANTS SHALL BE PLACED EQUALLY APART.
- (C) ROWS ADJACENT TO A WALL, WALK OR PLANTING EDGE, SHALL BE OFFSET BY $1\frac{1}{2}$ TIMES THE DISTANCE OF DIMENSION 'A', AND 24" MINIMUM

NO.	REVISION	BY
SHRUB AND GROUNDCOVER SPACING		
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY: 		
PARKS & RECREATION DIRECTOR		
DRAWING NO. L-11		
DATE: 2017		
DRAINED BY: C. BROWN		
CHECKED BY: J. COURTNEY		
SCALE: NONE		



LEGEND:

- ① TOP OF WALL, WIRE OR ADJACENT CLIMBING STRUCTURE PER PLAN
- ② 12 GA. GALVANIZED WIRE, WHERE REQUIRED ON ADJACENT STRUCTURE; SECURE VINE TO WIRE WITH NURSREYMAN'S TAPE
- ③ 1/2" DIAMETER EYEBOLTS IF REQUIRED FOR VINE CLIMBING STRUCTURE
- ④ FINISH GRADE WITH TOPDRESSING ADDED
- ⑤ ANGLE STALK/TRUNK BACK TOWARD WALL AND REMOVE NURSERY STAKE WHILE SECURING VINE TO WIRES; IF NO WIRES REQUIRED, LEAVE STAKE IN PLACE, TOUCHING WALL
- ⑥ PLANTING TABLETS, AGRIFORM OR CITY OF MANTECA APPROVED EQUAL, INSTALL PER SPECIFICATIONS AND LABEL INSTRUCTIONS.
- ⑦ SET ROOT CROWN OF VINE 2" HIGHER THAN SURROUNDING FINISH GRADE IF BARK IS TO BE APPLIED. OTHERWISE ROOT CROWN SHALL BE SET LEVEL WITH FINISH GRADE.
- ⑧ 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK OR CITY APPROVED EQUAL
- ⑨ BACKFILL MIX - 1% NITROGEN STABILIZED ORGANIC MATTER MIXED 50/50 WITH NATIVE SOIL OR PER SOILS ANALYSIS. WATER TO SETTLE.
- ⑩ VINE ROOTBALL PLACED ON FIRM SOIL. ROUGHEN SIDES OF PLANTING HOLE.

NOTES

- (A) ALL VINES SHALL BE 1 GALLON MINIMUM.
- (B) VINES SHALL BE INSPECTED AND APPROVED BY THE CITY'S REPRESENTATIVE UPON DELIVERY AND PRIOR TO PLANTING. CONTRACTOR SHALL PROVIDE 48 HOURS NOTICE WHEN REQUESTING INSPECTIONS.
- (C) ALL VINES SHALL HAVE THE VARIETY CLEARLY MARKED OR TAGGED FROM THE GROWER UPON DELIVERY AND PRESENT DELIVERY TAGS FOR INSPECTION.
- (D) PRIOR TO PLANTING, CONTRACTOR SHALL PRE-SOAK ALL HOLES.
- (E) CONTRACTOR SHALL WATER VINES THOROUGHLY AT THE TIME OF PLANTING, TAKING CARE NOT TO COVER THE PLANT CROWN WITH WET SOIL.
- (F) ANY VINE THAT HAS SETTLED DEEPER THAN THE SURROUNDING GRADE SHALL BE RAISED TO THE CORRECT LEVEL.
- (G) VINES TO BE TOP DRESSED WITH A 3" MIN. LAYER OF DARK BROWN DECORATIVE BARK OR CITY APPROVED EQUAL.
- (H) THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CARE OF VINES UNTIL ALL IMPROVEMENTS ARE ACCEPTED BY THE CITY.

VINE PLANTING

NO. REVISED BY

DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

SCALE: NONE

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

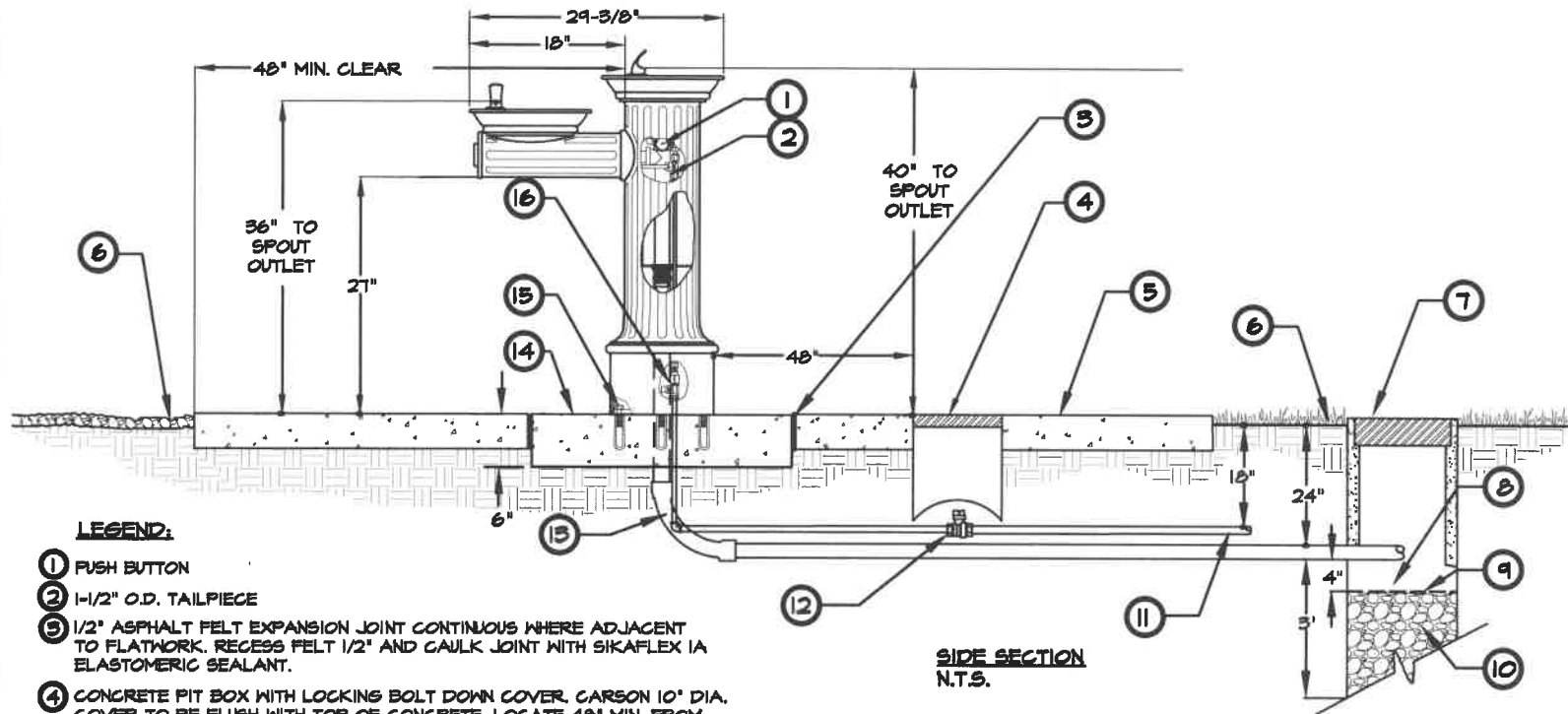
APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

L-12



LEGEND:

- ① PUSH BUTTON
- ② 1-1/2" O.D. TAILPIECE
- ③ 1/2" ASPHALT FELT EXPANSION JOINT CONTINUOUS WHERE ADJACENT TO FLATWORK. RECESS FELT 1/2" AND CAULK JOINT WITH SIKAFLEX IA ELASTOMERIC SEALANT.
- ④ CONCRETE PIT BOX WITH LOCKING BOLT DOWN COVER. CARSON 10" DIA. COVER TO BE FLUSH WITH TOP OF CONCRETE. LOCATE 48" MIN. FROM FOUNTAIN.
- ⑤ CONCRETE FLATWORK
- ⑥ FINISH GRADE OF PLANTER OR TURF
- ⑦ AREA DRAIN WITH CAST IRON COVER. LOCATE IN PLANTER OR TURF WITH TOP OF GRATE 1" ABOVE FINISHED GRADE (CHRISTY V-1 OR CITY APPROVED EQUAL).
- ⑧ PROVIDE 4" SPACE BETWEEN DRAIN LINE AND DRAIN ROCK.
- ⑨ PROVIDE FILTER FABRIC OVER DRAIN ROCK.
- ⑩ 3' ROCK WELL DRAIN WITH 1" TO 1-1/2" DIA. DRAIN ROCK FREE FROM FINES. "CONNECT DIRECTLY TO ON-SITE DRAIN LINES WHERE AVAILABLE."
- ⑪ 1/2" SCHD. 40 PVC POTABLE WATER LINE TO BACKFLOW AND P.O.C. PER PLANS
- ⑫ 3/4" FORD BALL VALVE/CURB STOP #B11-335-NL (AND ADAPTERS)
- ⑬ 1-1/2" SCHD. 40 SHEEP ELL AND PVC DRAIN LINE. SLOPE 1/4" PER FT. TO ROCK WELL.
- ⑭ 30" MIN. SQUARE CONCRETE SLAB, 6" THICK, REINF. W/ (5) #4 EA. WAY, CENTERED IN SLAB
- ⑮ 1/2" DIA. ST. STL. WEDGE ANCHORS W/ 3" EMBEDMENT. HILTI KB-TE OR SIMPSON STRONG-BOLT 2 ANCHORS
- ⑯ 1/2" NIBCO FP600 BALL VALVE

SIDE SECTION
N.T.S.

NOTES:

- (A) DRINKING FOUNTAIN SHALL BE HAWS #3511 "HI-LO" BARRIER-FREE, ANTIQUE HISTORIC STYLE, HEAVY-DUTY CAST ALUMINUM FEDESTAL TYPE WITH BLACK POWDER COATED FINISH AND LEAD-FREE WATERWAYS.
- (B) REFER TO MANUFACTURER'S INSTALLATION GUIDELINES, SPECIFICATIONS AND DETAILS FOR CORRECT ASSEMBLY AND INSTALLATION PROCEDURES.
- (C) CONFIRM LOCATION AND ORIENTATION OF DRINKING FOUNTAIN WITH CITY'S REPRESENTATIVE PRIOR TO INSTALL.
- (D) NOTE ANY ROUGH-IN DIMENSIONS
- (E) WHEN INSTALLING THIS UNIT, LOCAL, STATE, OR FEDERAL CODES SHOULD BE ADHERED TO FOR INSTALLATION HEIGHTS OTHER THAN SHOWN, DIMENSIONS MARKED MUST BE ADJUSTED ACCORDINGLY.
- (F) INSTALLER SHALL PROVIDE BALL VALVES, PIPE, FITTINGS, BOXES AND ANY ADDITIONAL ITEMS FOR PROPER INSTALLATION.
- (G) INSTALLER SHALL ENSURE PROPER ADA ACCESS AND CLEARANCES.

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

HI-LO BARRIER FREE DRINKING FOUNTAIN - FLUTED DESIGN

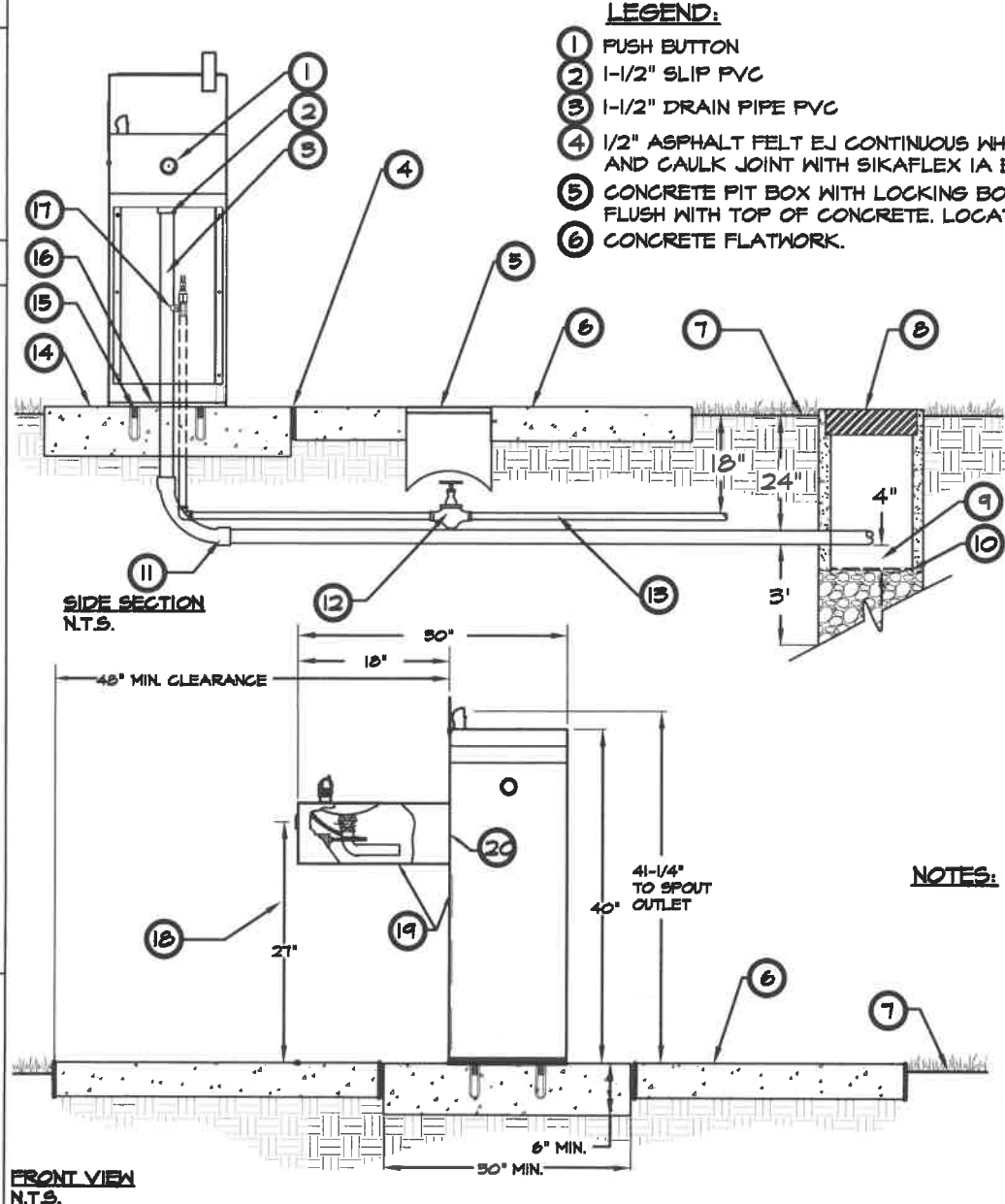
APPROVED BY:	
DRAWING NO.	M-1
DATE:	2017

PARKS & RECREATION DIRECTOR

NO. _____
 BY _____
 DRAWN BY: C. BROWN
 CHECKED BY: J. COURNEY
 SCALE: NONE

HI-LO BARRIER FREE DRINKING
 FOUNTAIN-RECTANGULAR DESIGN
 CITY OF MANTECA
 PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
 PARKS & RECREATION DIRECTOR
 DRAWING NO. _____
 DATE: 2017
 M-2

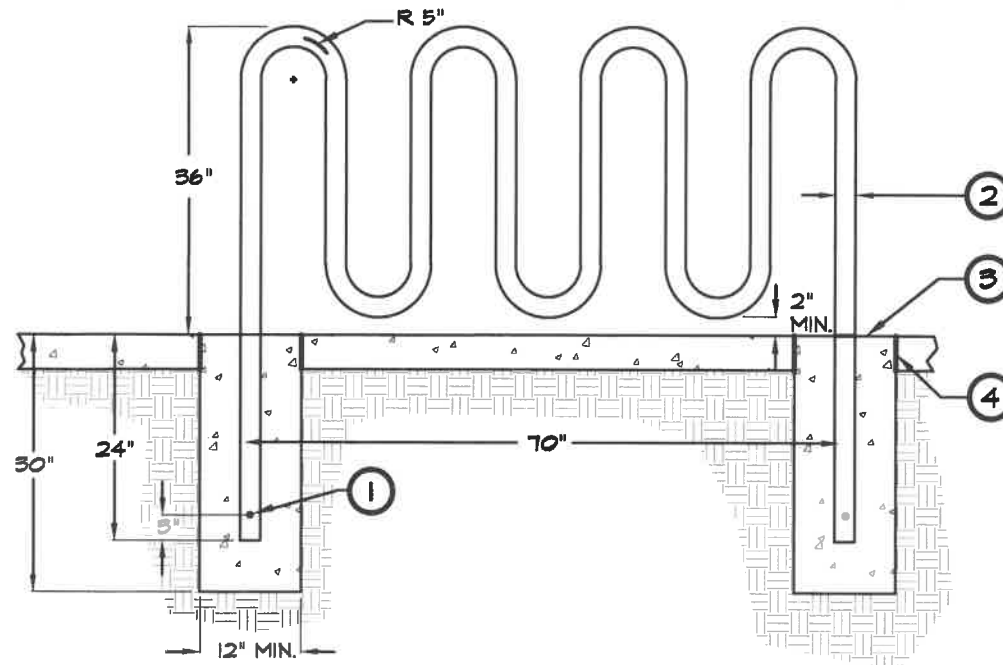


LEGEND:

- 1 PUSH BUTTON
- 2 1-1/2" SLIP PVC
- 3 1-1/2" DRAIN PIPE PVC
- 4 1/2" ASPHALT FELT EJ CONTINUOUS WHERE ADJACENT TO FLATWORK. RECESS FELT 1/2" AND CAULK JOINT WITH SIKAFLEX 1A ELASTOMERIC SEALANT.
- 5 CONCRETE PIT BOX WITH LOCKING BOLT DOWN COVER. CARSON 10" DIA. COVER TO BE FLUSH WITH TOP OF CONCRETE. LOCATE 48" MIN. FROM FOUNTAIN.
- 6 CONCRETE FLATWORK.
- 7 FINISH GRADE OF PLANTER OR TURF.
- 8 AREA DRAIN WITH CAST IRON COVER. LOCATE IN PLANTER OR TURF WITH TOP OF GRATE 1" ABOVE FINISH GRADE (CRISTY V-1 OR CITY APPROVED EQUAL)
- 9 PROVIDE 4" SPACE BETWEEN DRAIN LINE AND DRAIN ROCK
- 10 3" ROCK WELL DRAIN 1" TO 1-1/2" DIA. DRAINAGE ROCK FREE FROM FINES, FILTER FABRIC ON TOP, CONNECT TO ON-SITE DRAIN LINES WHERE AVAILABLE
- 11 1-1/2" SCHD. 40 SWEEP ELL AND PVC DRAIN LINE SLOPE 1/4" PER FT. TO SUMP
- 12 3/4" FORD BALL VALVE/CURB STOP #B11-933-NL AND FITTINGS
- 13 1/2" SCHD. 40 PVC POTABLE WATER LINE P.O.C. PER PLANS
- 14 30" MIN. SQUARE, 6" THICK CONCRETE SLAB, REINF. W/ (3) #4 E.A. WAY, CENTERED IN SLAB
- 15 1/2" DIA. ST. STL. WEDGE ANCHORS W/ 3" EMBEDMENT. HILTI KB-TZ OR SIMPSON STRONG-BOLT 2 ANCHORS
- 16 MOUNTING PLATE
- 17 1/2" NIBCO BALL VALVE
- 18 SHOWN AT ADULT HEIGHT. (REFER TO INSTALLATION MANUAL FOR MORE INFORMATION.)
- 19 RECESSED ACCESS PLATES
- 20 BRACKET

NOTES:

- A DRINKING FOUNTAIN SHALL BE HAWS #35006 HI-LO PEDESTAL TYPE WITH GALVANIZED FINISH OR CITY OF MANTECA APPROVED EQUAL
- B REFER TO MANUFACTURER'S INSTALLATION GUIDELINES, SPECIFICATIONS AND DETAILS FOR CORRECT ASSEMBLY AND INSTALLATION PROCEDURES.
- C CONFIRM LOCATION AND ORIENTATION OF DRINKING FOUNTAIN WITH CITY'S REPRESENTATIVE PRIOR TO INSTALL.
- D NOTE ANY ROUGH-IN DIMENSIONS
- E WHEN INSTALLING THIS UNIT, LOCAL, STATE, OR FEDERAL CODES SHOULD BE ADHERED TO FOR INSTALLATION HEIGHTS OTHER THAN SHOWN, DIMENSIONS MARKED MUST BE ADJUSTED ACCORDINGLY.
- F INSTALLER SHOULD PROVIDE BALL VALVES, PIPE AND ANY ADDITIONAL ITEMS FOR PROPER INSTALLATION.
- G INSTALLER SHALL ENSURE PROPER ADA ACCESS AND CLEARANCES



SIDE SECTION
N.T.S.

LEGEND:

- ① HOLE FOR # 3 REBAR (INSTALLER TO PROVIDE)
- ② 2" SCHEDULE 40 STEEL PIPE
- ③ FINISH GRADE OF CONCRETE
- ④ 1/2" ASPHALT FELT EXPANSION JOINT, CONTINUOUS BETWEEN FOOTING AND ADJACENT PAVING; RECESS FELT 1/2" AND CAULK WITH SIKAFLEX 1A ELASTOMERIC SEALANT

NOTES:

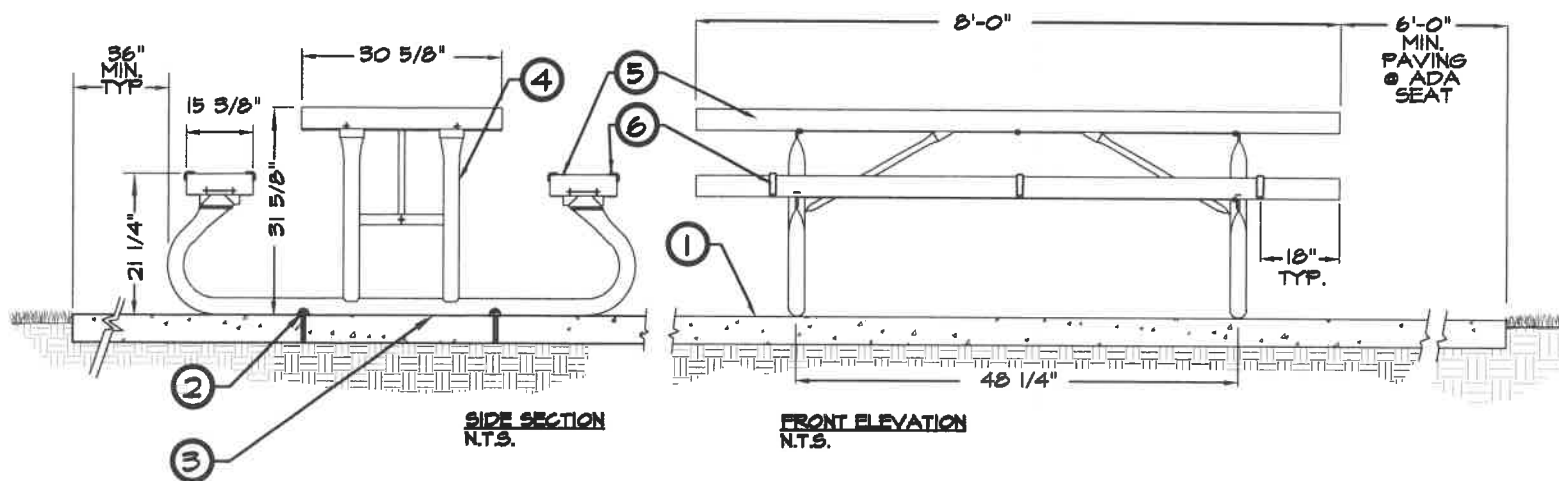
- (A) BIKE RACK SHALL BE SOUTH BAY FOUNDRY (619) 956-2780, PRODUCT #DBL-100-4C1 OR CITY APPROVED EQUAL
- (B) BIKE RACK SHALL HAVE 4 LOOPS AND BE ± 6 FEET IN LENGTH. FINAL LOCATION AND ALIGNMENT SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) BIKE RACK COLOR SHALL BE SEMI-GLOSS BLACK AND HAVE A POLYESTER POWDER COAT FINISH.

LOOPED BIKE RACK

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
PARKS & RECREATION DIRECTOR	
DRAWING NO.	
DATE:	2017
M-3	



LEGEND:

- ① CONCRETE SLAB PER PLANS, MIN. 4" THICK
- ② SURFACE MOUNTING HARDWARE PACKAGE (2 PER SIDE) PROVIDED BY MANUFACTURER, INSTALL PER MFG. RECOMMENDATIONS
- ③ FINISH GRADE OF CONCRETE.
- ④ GALVANIZED FRAME
- ⑤ POLY VINYL COATED EXTRUDED METAL TOP AND SEATS
- ⑥ ANTI-SKATING ATTACHMENTS, SEE NOTE D

NOTES:

- (A) PICNIC TABLE SHALL BE WABASH VALLEY, MODEL #DS104D, 8' LENGTH ADA PICNIC TABLE WITH PORTABLE LEG OPTION, OR CITY APPROVED ALTERNATE
- (B) LOCATION AND ALIGNMENT PER PLANS, FINAL LOCATION SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) TABLE AND BENCH COLOR SHALL BE SEMI-GLOSS BLACK AND HAVE A HEAT FUSED POLY VINYL COATING 3/16" THICK
- (D) PROVIDE AND INSTALL ANTI-SKATEBOARD CLIPS TO BENCHES, THREAD LOCK AND CARRIAGE OPTION, MIN. 2 PER BENCH. MFG BY SKATESTOPPERS 1 (619) 447-6374 OR APPROVED ALTERNATE; GLUED OR OTHERWISE ATTACHED PROTRUSIONS NOT PERMITTED.
- (E) USE SERVING TABLE #D52030M (BENCHLESS) IF TABLE IS CALLED OUT ON PLANS.
- (F) PRODUCTS AVAILABLE FROM DAVID O'KEEFE CO, (510) 558-0140

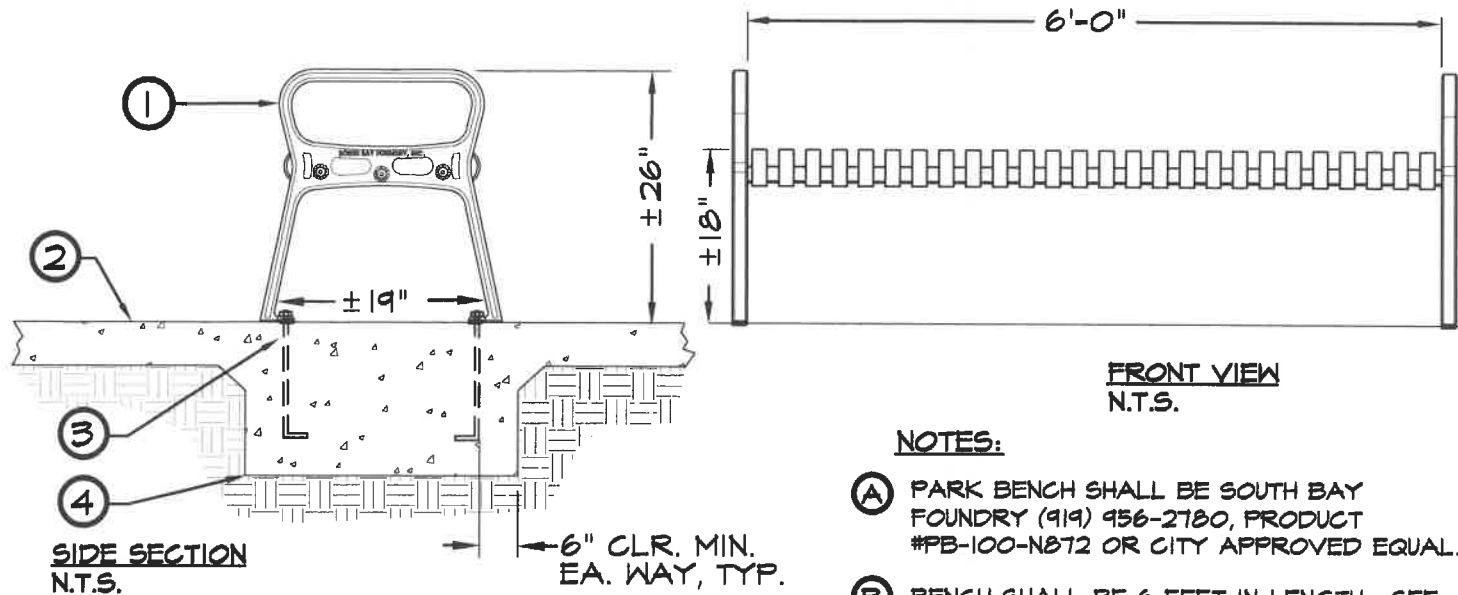
8 FT. STEEL PICNIC TABLE

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	DATE:
<i>[Signature]</i>	2017
DRAWING NO.	M-4
PARKS & RECREATION DIRECTOR	

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
6 FT. PARK BENCH WITHOUT BACK		
APPROVED BY:		
DRAWING NO.		
DATE:		
2017		
M-6		



LEGEND:

- ① CAST DUCTILE IRON LEG
- ② FINISH GRADE OF CONCRETE.
- ③ ANCHOR BOLT, WASHERS AND NUTS, BOLTS PER MFG. RECOMMENDATION. (TYP. 4 EA.)
- ④ THICKEN CONCRETE AS NECESSARY UNDER BENCH TO ACCEPT ANCHOR BOLTS OR PER MFG. RECOMMENDATION.

NOTES:

- (A) PARK BENCH SHALL BE SOUTH BAY FOUNDRY (919) 956-2780, PRODUCT #PB-100-N872 OR CITY APPROVED EQUAL.
- (B) BENCH SHALL BE 6 FEET IN LENGTH. SEE PLAN FOR LOCATION; FINAL LOCATION AND ALIGNMENT SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) BENCH COLOR SHALL BE SEMI-GLOSS BLACK AND HAVE A POLYESTER POWDER COAT FINISH.
- (D) PLACE BENCH WITH MIN. 5' CONCRETE @ ONE END TO ACCOMMODATE ADJACENT ADA COMPANION SEATING, TYP.
- (E) ALLOW 5' MINIMUM CLEARANCE ON ALL SIDES, FOR VIEWING FROM EITHER SIDE

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

STANDARD 6' PARK BENCH

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

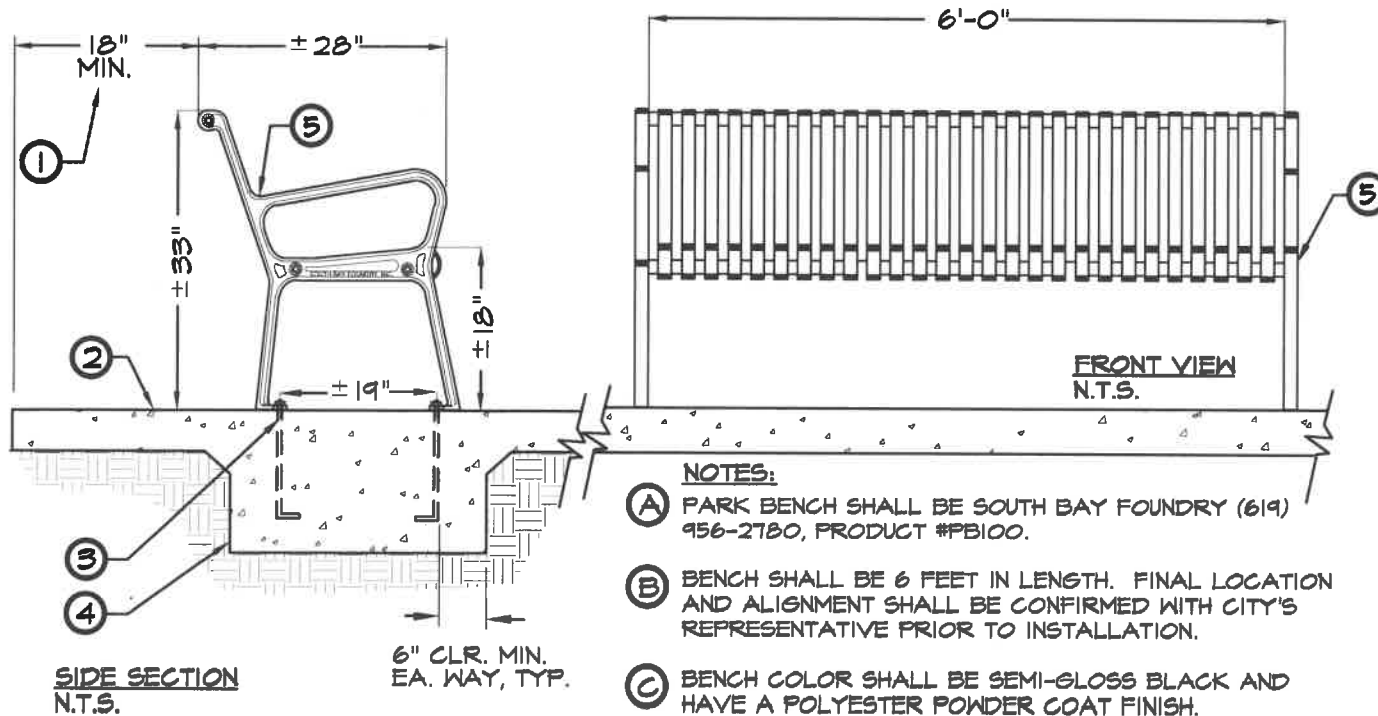
DRAWING NO.

DATE: 2017

M-7

LEGEND:

- ① 18" MINIMUM CLEARANCE BETWEEN BACK OF BENCH AND EDGE OF CONCRETE OR SURFACING
- ② CONCRETE PAVING PER PLAN AND DETAILS
- ③ ANCHOR BOLT, WASHERS AND NUTS PER MFG. RECOMMENDATIONS (TYP. 4 EA.)
- ④ THICKEN CONCRETE AS NECESSARY UNDER BENCH TO ACCEPT ANCHOR BOTS OR PER MFG. RECOMMENDATION
- ⑤ CAST DI LEG & ARM, TYP.



NOTES:

- (A) PARK BENCH SHALL BE SOUTH BAY FOUNDRY (619) 956-2780, PRODUCT #PB100.
- (B) BENCH SHALL BE 6 FEET IN LENGTH. FINAL LOCATION AND ALIGNMENT SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) BENCH COLOR SHALL BE SEMI-GLOSS BLACK AND HAVE A POLYESTER POWDER COAT FINISH.
- (D) ALLOW 18" MIN. CLEARANCE BETWEEN BENCH AND EDGE OF CONCRETE OR SURFACING.
- (E) ALLOW 5' MIN. CLEAR TO FRONT AND SIDES; REFER TO PLAN FOR LOCATION AND ADA COMPANION SIDE ZONE; OBTAIN FINAL APPROVAL OF LOCATION BY CITY.

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE	NONE	

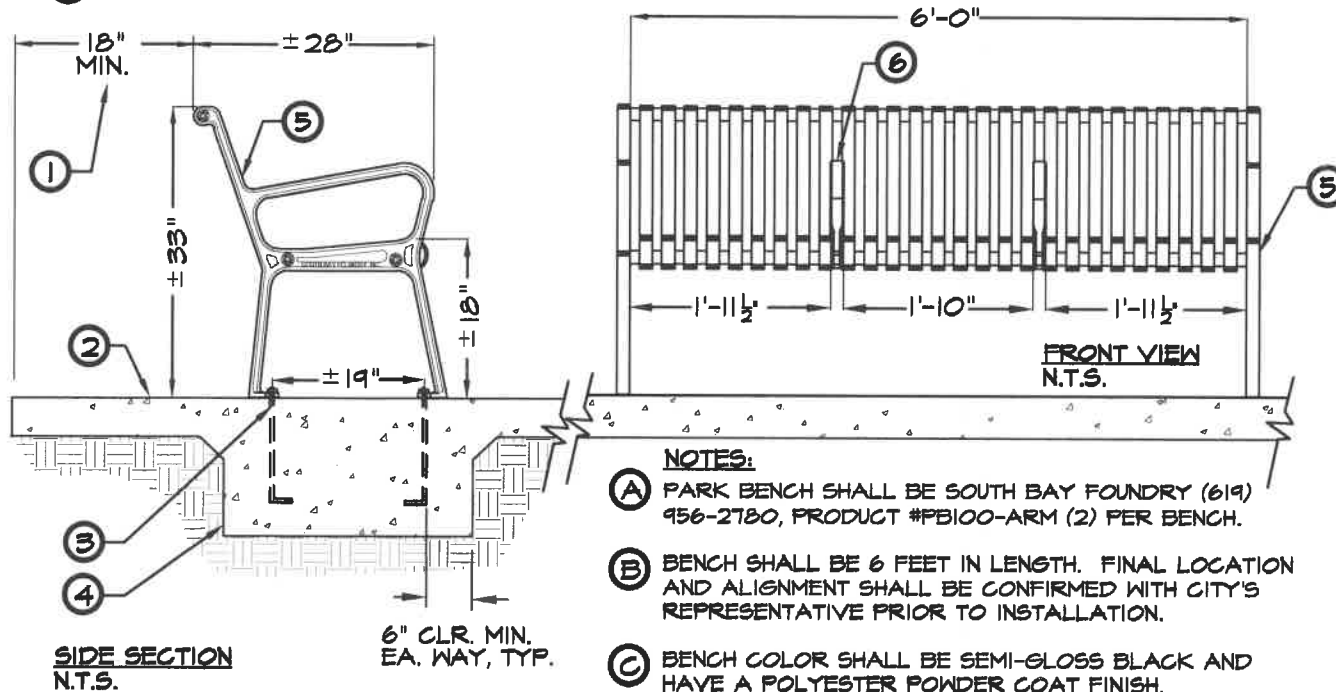
6 FT. PARK BENCH WITH ARM RESTS

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
DRAWING NO.	M-8
DATE	2017

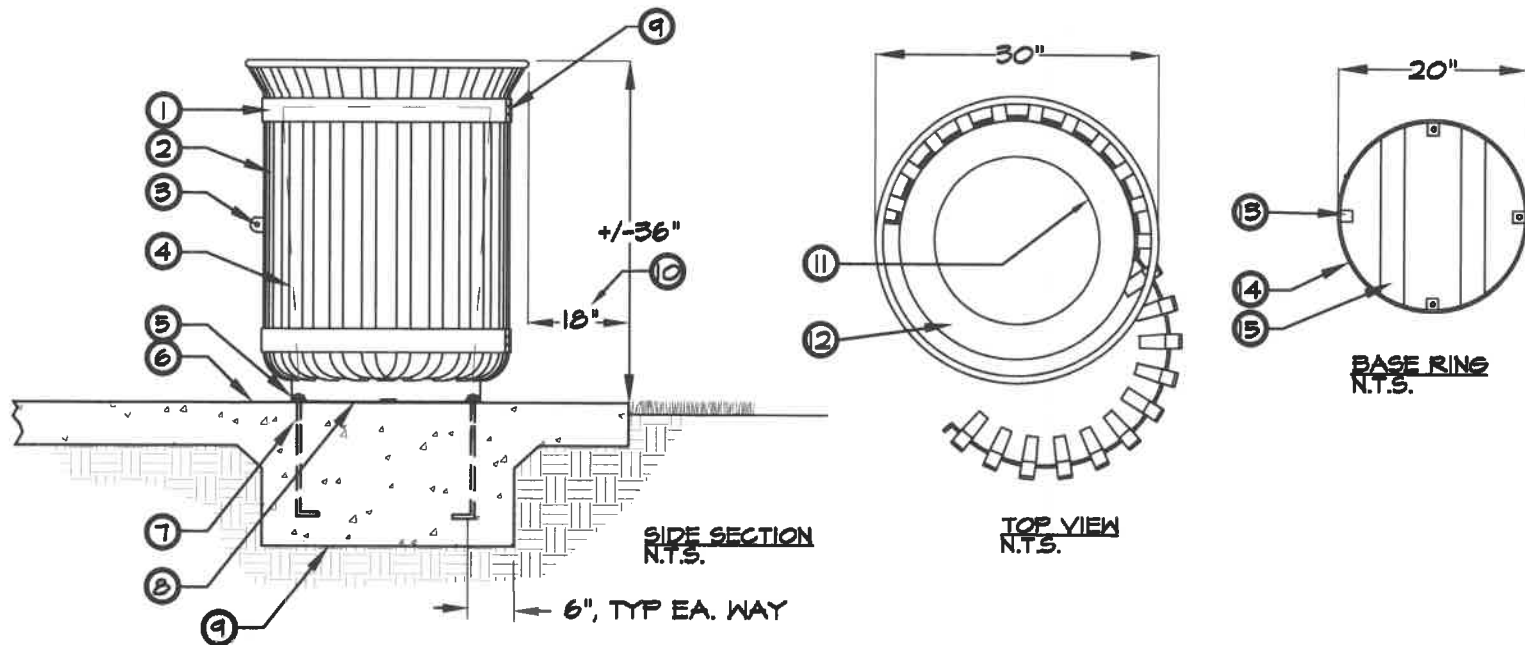
LEGEND:

- ① 18" MINIMUM CLEARANCE BETWEEN BACK OF BENCH AND EDGE OF CONCRETE OR SURFACING
- ② CONCRETE PAVING PER PLAN AND DETAILS
- ③ ANCHOR BOLT, WASHERS AND NUTS PER MFG. RECOMMENDATIONS (TYP. 4 EA.)
- ④ THICKEN CONCRETE AS NECESSARY UNDER BENCH TO ACCEPT ANCHOR BOLTS OR PER MFG. RECOMMENDATION
- ⑤ CAST DI LEG, TYP.
- ⑥ CAST DI ARM (CLAMP ON) AND HARDWARE, TYP.



NOTES:

- (A) PARK BENCH SHALL BE SOUTH BAY FOUNDRY (619) 956-2780, PRODUCT #PB100-ARM (2) PER BENCH.
- (B) BENCH SHALL BE 6 FEET IN LENGTH. FINAL LOCATION AND ALIGNMENT SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) BENCH COLOR SHALL BE SEMI-GLOSS BLACK AND HAVE A POLYESTER POWDER COAT FINISH.
- (D) ALLOW 18" MIN. CLEARANCE BETWEEN BENCH AND EDGE OF CONCRETE OR SURFACING.
- (E) ALLOW 5' MIN. CLEAR TO FRONT AND SIDES; REFER TO PLAN FOR LOCATION AND ADA COMPANION SIDE ZONE; OBTAIN FINAL APPROVAL OF LOCATION BY CITY.



LEGEND:

- | | |
|--|--|
| ① 1/4" FB BAND (TYP. 2 EA.) | ⑨ HINGE (TYP. 2 EA.) |
| ② 1/4" X 1-1/2" FB SLATS (TYP. 22 EA.) | ⑩ 18" MINIMUM CLEARANCE BETWEEN BACK OF RECEPTACLE AND EDGE OF CONC. |
| ③ PAD LOCK CLIP 1/4" X 1-1/4" W/ 1/2" HOLE | ⑪ 17-1/2" DIA. OPENING |
| ④ 32 GAL. RUBBER TRASH CAN FOR LINER. COLOR: DARK GREEN OR BLACK. (INSTALLER TO PROVIDE) | ⑫ 16 GAUGE COVER PIT |
| ⑤ BASE RING | ⑬ 1/4" X 1-1/2" X 1-1/2" BD CLIP W/ 1/2"(TYP. 4 EA.) |
| ⑥ FINISH GRADE OF CONCRETE | ⑭ 1/4"X2-1/2" FB BASE BAND |
| ⑦ ANCHOR BOLT, WASHERS AND NUTS, 1/2" X 12" OR PER MFG. RECOMMENDATIONS (TYP. 4 EA) | ⑮ LINER SUPPORT |
| ⑧ CONCRETE PAVING PER PLANS AND STANDARD SPECIFICATIONS | |
| ⑨ THICKEN CONCRETE AS NECESSARY TO ACCEPT ANCHOR BOLTS OR PER MFG. RECOMMENDATION | |

NOTES

- (A) TRASH RECEPTACLE SHALL BE SOUTH BAY FOUNDRY (619) 956-2780, PRODUCT #DTRL-100 HINGED 32-GAL OR CITY APPROVED EQUAL.
- (B) FINAL LOCATION SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) RECEPTACLE COLOR SHALL BE SEMI-GLOSS BLACK AND HAVE A POLYESTER POWDER COAT FINISH.
- (D) DO NOT PLACE DIRECTLY ADJACENT TO SEATING OR PICNIC AREAS

HINGED TRASH RECEPTACLE

CITY OF MANTENCA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

M-9

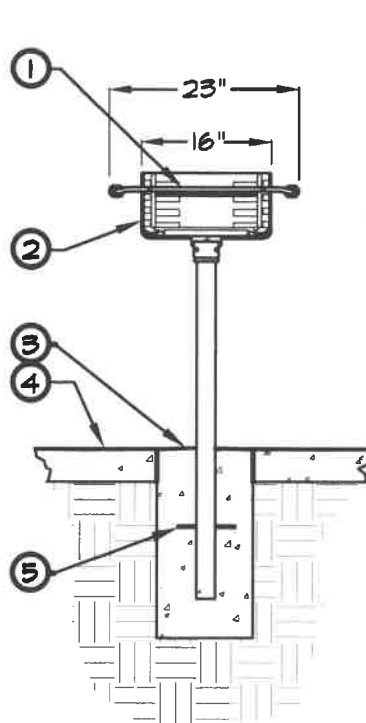
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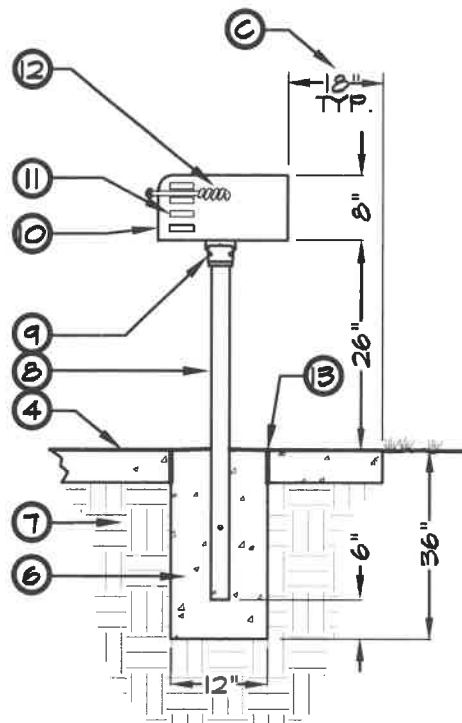
DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

SCALE: NONE



FRONT VIEW
N.T.S.



SIDE SECTION
N.T.S.

NOTES:

- (A) PARK GRILL SHALL BE PILOT ROCK MODEL H-16 B6 WITH EMBEDDED BASE OR CITY APPROVED EQUAL.
- (B) FINAL LOCATION, ALIGNMENT AND HEIGHT SHALL BE CONFIRMED WITH CITY'S REPRESENTATIVE PRIOR TO INSTALLATION.
- (C) LOCATE GRILL MIN. 18" FROM EDGE, ADJ. PATH OF TRAVEL OR ADJACENT SURFACING
- (C) ENTIRE GRILL SHALL BE FINISHED WITH A HIGH-TEMP. NONTOXIC BLACK ENAMEL PAINT.

LEGEND:

- (1) 4 LEVEL ADJUSTABLE GRATE. GRATE SHALL BE CAPABLE OF TIPPING UP FOR FIRE STARTING AND CLEAN OUT. GRATE SHALL BE PERMANENTLY ATTACHED TO FIREBOX
- (2) GRILL SHALL BE CAPABLE OF ROTATING 360 DEGREES IN EITHER DIRECTION
- (3) SLOPE CONCRETE SLIGHTLY AWAY FROM POST
- (4) FINISH GRADE OF CONCRETE
- (5) HOLE AND #3 REBAR CROSS-PEICE (INSTALLER TO PROVIDE)
- (6) CONCRETE FOOTING. HOLD BELOW CONCRETE SURACING
- (7) SUBGRADE COMPACTED TO 95%
- (8) 2-3/8" OD. SUPPORT POST WITH EMBEDDED BASE
- (9) THEFT-PROOF SWIVEL ATTACHMENT TO POST
- (10) WELDED CONSTRUCTION: 3/16" THICK (7 GA.) STEEL DRILL FIREBOX WITH DIE-FORMED REINFORCING FLANGES: 5/8" DIA. STEEL PERIMETER AND HANDLE BARS, 1/2" DIA. GRATE BARS
- (11) FOUR SIDE INDENTATION SLOTS FOR ADJUSTMENT OF GRATE LEVEL
- (12) COILED 1/8" X 1/2" STEEL BAR HANDLE GRIPS FOR CONVENIENT GRATE ADJUSTMENT.
- (13) 1/2" ASPHALT FELT EXPANSION JOINT, CONTINUOUS WHERE FOOTING ADJACENT TO FLATWORK; RECESS FELT 1/2" AND CAULK WITH SIKAFLEX 1A ELASTOMERIC SEALANT

PARK GRILL / BBQ.

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

M-10

NO. REVISED

BY

DRAWN BY: C. BROWN

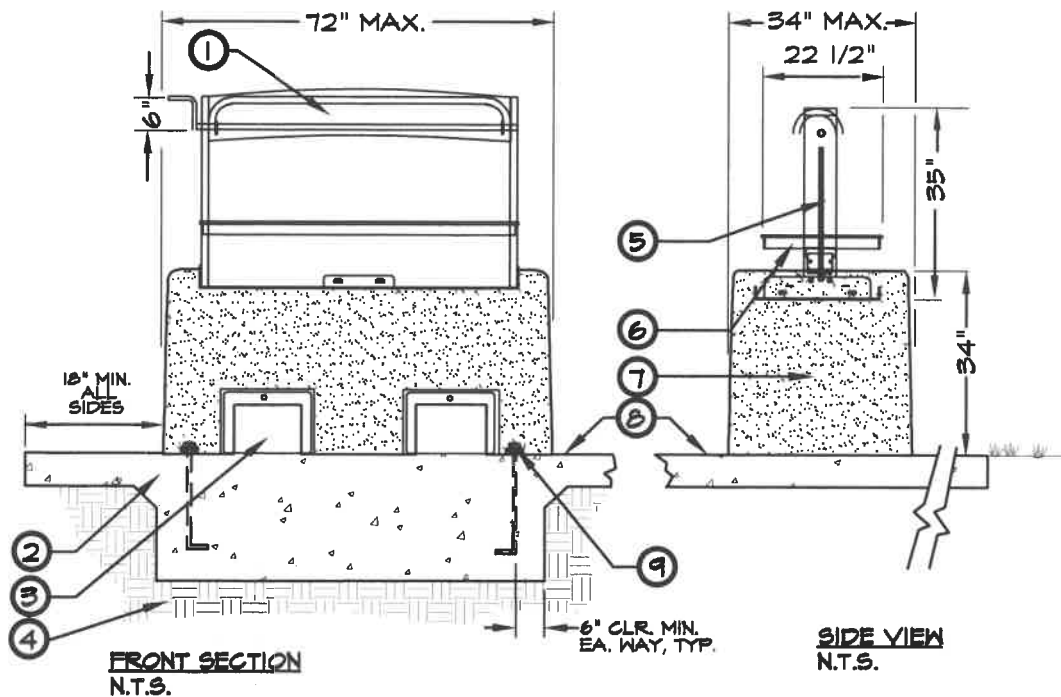
CHECKED BY: J. COURTNEY

SCALE: NONE

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

COMMUNITY PARK EXTRA LARGE
GRILL / BBQ STATION
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
PARKS & RECREATION DIRECTOR
DRAWING NO.
DATE: 2017
M-11



LEGEND:

- ① ADJUSTABLE GRATE WITH HEAVY DUTY LOWERING MECHANISM.
- ② CONCRETE FOOTING, THICKEN CONCRETE AS NECESSARY TO ACCEPT ANCHOR BOLTS OR PER MFG. RECOMMENDATION
- ③ STEEL ASH CLEANOUT ACCESS DOOR, WITH CONCEALED HINGE CAPABLE OF HOLD OPEN DURING CLEANING
- ④ SUBGRADE COMPACTED TO 95%
- ⑤ STEEL GEAR & THREADED SHAFT CRANK SCREW LOWERING MECHANISM, DIE CAST METAL PARTS
- ⑥ 5/8" LASER CUT STEEL GRATE (ONE PIECE, NO WELDS)
- ⑦ 4" THICK PRECAST CONCRETE GRILL BASE
- ⑧ ADJACENT CONCRETE, SLOPE SLIGHTLY AWAY FROM UNIT
- ⑨ STEEL ANCHOR BOLTS, WASHERS & NUTS; BOLTS 1/2" X 12" OR PER MFG. RECOMMENDATION (TYP 4 EA.)

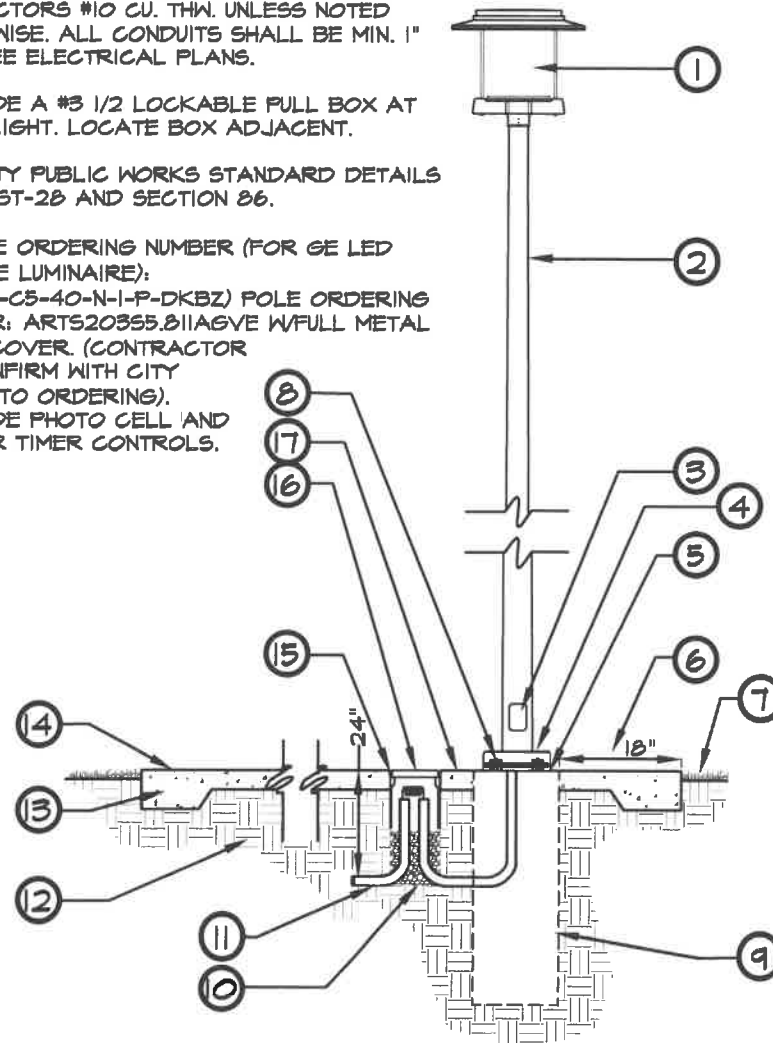
NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

NOTES:

- (A) FIXTURE WIRE THROUGH POLE TO LUMINAIRE TO BE RATED FOR 150 DEGREES CELSIUS.
- (B) ALL SITE LIGHTING FIXTURES SHALL BE BONDED WITH #10 CU. THW. ALL SITE LIGHTING CONDUCTORS #10 CU. THW. UNLESS NOTED OTHERWISE. ALL CONDUITS SHALL BE MIN. 1" DIA. SEE ELECTRICAL PLANS.
- (C) PROVIDE A #3 1/2 LOCKABLE PULL BOX AT EACH LIGHT. LOCATE BOX ADJACENT.
- (D) SEE CITY PUBLIC WORKS STANDARD DETAILS ST-27, ST-28 AND SECTION 86.
- (E) FIXTURE ORDERING NUMBER (FOR GE LED EVOLVE LUMINAIRE): (EPST-1-CS-40-N-1-P-DKBZ) POLE ORDERING NUMBER: ARTS203S5.811AGVE W/FULL METAL BASE COVER. (CONTRACTOR TO CONFIRM WITH CITY PRIOR TO ORDERING). PROVIDE PHOTO CELL AND DIMMER TIMER CONTROLS.

LEGEND:

- (1) POLE MOUNTED GE EVOLVE LED POST TOP SALEM LUMINAIRE, OR APPROVED ALTERNATE, SEE NOTE E FOR ORDERING INFORMATION
- (2) 20' ROUND GALVANIZED TAPERED STEEL POLE BY GE OR APPROVED ALTERNATE. COLOR: #8019 DARK BRONZE(RAL)
- (3) HAND HOLE.
- (4) FULL METAL BASECOVER, SECURED TIGHTLY WITH TAMPER-PROOF SET SCREWS. COLOR: #8019 DARK BRONZE(RAL)
- (5) GROUT AROUND BASE AFTER POLE IS SET PLUMB. SLOPE TO DRAIN.
- (6) ALLOW 18" MIN. CLEARANCE BETWEEN FOOTING AND EDGE OF CONCRETE. ALLOW 24" MIN. CLEARANCE BETWEEN FOOTING AND EDGES OF PATHS, DRIVES OR TRAILS.
- (7) FINISH GRADE OF TURF OR PLANTER AREA.
- (8) 4 - 1" X 36" ANCHOR BOLTS / ALL THREAD RODS W/ DBL HEX NUTS @ BOTTOM, EXTEND 30" MIN. INTO CONCRETE FOOTING
- (9) CONCRETE FOOTING. REFER TO STRUCTURAL FOOTING DETAILS AND STRUCTURAL NOTES.
- (10) DRAINAGE ROCK 6" LAYER.
- (11) SWEEP ELL.
- (12) SUBGRADE COMPACTED TO 95%.
- (13) FOOTING/SHOVEL HAUNCH AT OUTER EDGES OF CONCRETE FLATWORK.
- (14) CONCRETE AND FINISH PER PLANS AND DETAILS.
- (15) 1" RADIUS COLD JOINT ON ALL SIDES OF BOX TO PREVENT CRACKING.
- (16) CONCRETE FULL BOX. LOCATE IN CONCRETE ADJACENT TO LIGHT POST. NO.9 CHRISTY BOX W/REINFORCED CONC. LID & BOLTS. (OR CITY APPROVED EQUAL) TOP OF BOX TO BE LEVEL WITH FINISH GRADE OF CONCRETE.
- (17) FINISH GRADE OF CONCRETE.



**SIDE SECTION
N.T.S.**

PARK LIGHT LED LUMINAIRE
CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
DATE: 2017
DRAWING NO. M-12
PARKS & RECREATION DIRECTOR



PARK LIGHT POLE
FOOTING

CITY OF MANTTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: 

PARKS & RECREATION DIRECTOR

DRAWING NO. M-12A

DATE: APRIL 2017

NO.	REVISED	BY
DRAWN BY:		SG
CHECKED BY:		CP
SCALE:		NONE

20'-0" LIGHT
POLE (MAX)

"EVOLVE LED POST
TOP" LIGHT ABOVE (NOT
SHOWN)

LIGHT POLE & BASE PL
BY "GE LIGHTING
SYSTEMS, INC"

3- 3/4" ϕ x 20" MIN
EMBED (F1554 GR36)
THREADED ROD W/ DBL
NUT (PER LIGHT POLE
MANUF REQUIREMENTS)

LINE OF GRADE

20" MIN
EMBED

1 1/2"
2"
1 1/2"

5'-3" MIN

HEX HEAD OR
DBL NUTS (NO
"L" OR "J"
BOLTS ALLOWED)

3" CLR
TYP

3" CLR
TYP

2'-0" ϕ MIN

8-#5 VERTS

#3 TIES @ 10" W/ 3-
#3 TIES W/IN TOP 5"

FOR CONDUIT CHASE IN
CAISSON, ETC - REFER
TO DRWGS BY OTHERS

LIGHT POLE IN PLANTER

NO.	REVISED	BY
DRAWN BY:	SG	
CHECKED BY:	GP	
SCALE:	NONE	

PARK LIGHT POLE
FOOTING

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:
PARKS & RECREATION DIRECTOR

DRAWING NO. M-12B
DATE: APRIL 2017

GENERAL STRUCTURAL NOTES

GENERAL

- A ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE CALIFORNIA BUILDING CODE (CBC) AND ALL OTHER LOCAL CODES AND ORDINANCES THAT ARE APPLICABLE.

FOUNDATIONS

- A PER CBC TABLE 1804.2 SOIL CLASSIFICATION 5 (CLAY, SANDY CLAY, SILTY CLAY, CLAYEY SILT, AND SANDY SILT)
- 1 ALLOWABLE SOIL BEARING PRESSURE: 1000 PSF.
 - 2 ALLOWABLE LATERAL SOIL BEARING PRESSURE: 100 PCF
- B IF ANY PROBLEMS OR UNUSUAL SOIL CONDITIONS ARISE, THE CONTRACTOR SHALL CONSULT THE PROJECT ENGINEER OR THE GEOTECHNICAL ENGINEER

CONCRETE

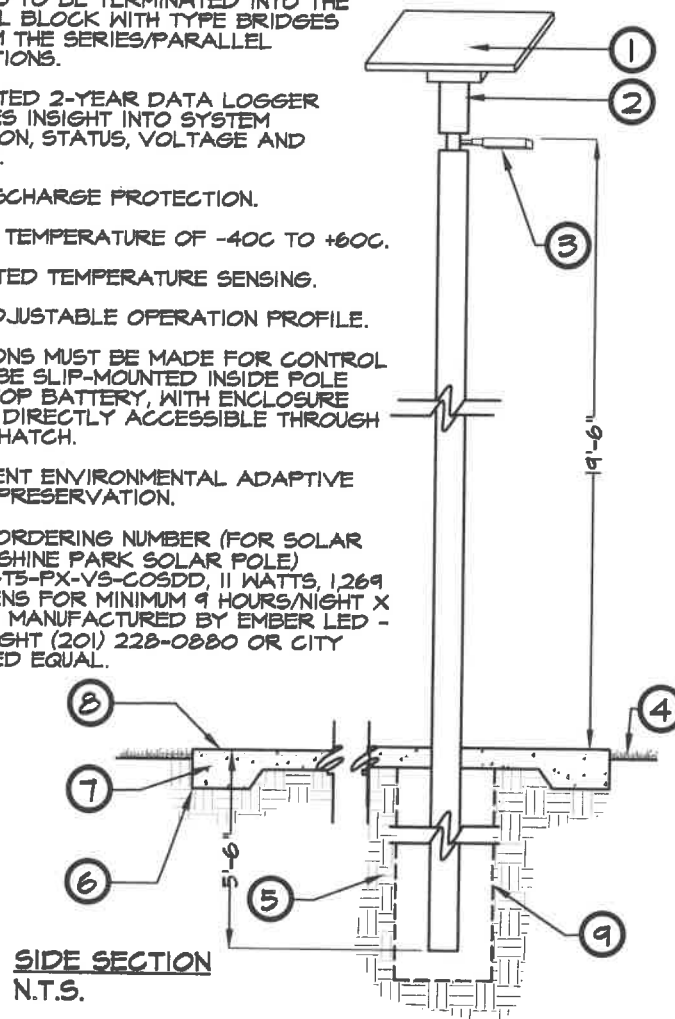
- A MATERIAL:
- 1 CEMENT: PORTLAND CEMENT, TYPE II, ASTM C-150.
 - 2 AGGREGATE: ASTM C-33.
 - 3 WATER: CLEAN AND DRINKABLE
- B CONCRETE MIX DESIGN:
- 1 3000 PSI @ 28 DAYS (5-SACK MINIMUM DESIGN MIX)
- SPECIAL INSPECTION OF CONCRETE IS NOT REQUIRED - 3000 PSI CONCRETE IS SPECIFIED AND REQUIRED HOWEVER ALL CONCRETE DESIGNS ARE BASED ON 2500 PSI (MAX) - CBC SECTION 1705.3 EXCEPTIONS 1 & 2
- 2 1 1/2" AGGREGATE (MAX)
 - 3 4" SLUMP (MAX)
- C ADMIXTURES: ONLY AS APPROVED BY THE ENGINEER

NO.	REVISION	BY	PARK LIGHT POLE FOOTING	APPROVED BY:
				PARKS & RECREATION DIRECTOR
DRAWN BY:	SG		CITY OF MANTECA PARKS & RECREATION DEPARTMENT	DRAWING NO.
CHECKED BY:	GP			
SCALE:	NONE			
				DATE: APRIL 2017
				M-12C

NO.	REVIEWED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE	NONE	
SOLAR PARK LIGHT (IN CONCRETE FLATWORK)		
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY: 		
PARKS & RECREATION DIRECTOR		
DRAWING NO.		
DATE:	2017	M-13

ELECTRONICS NOTES:

- (A) 3X2 POLE DC DOUBLE POLE CIRCUIT BREAKERS.
- (B) PRE-CONFIGURED QUICK CONNECT TERMINAL STRIP FOR LAMP, SOLAR AND BATTERIES.
- (C) LED DRIVERS LOCATED IN THE CONTROL BOARD AND NOT THE LED LAMP.
- (D) ALL BATTERY SERIES AND PARALLEL WIRING IS TO BE TERMINATED INTO THE TERMINAL BLOCK WITH TYPE BRIDGES TO FORM THE SERIES/PARALLEL CONNECTIONS.
- (E) INTEGRATED 2-YEAR DATA LOGGER PROVIDES INSIGHT INTO SYSTEM OPERATION, STATUS, VOLTAGE AND CURRENT.
- (F) DEEP DISCHARGE PROTECTION.
- (G) AMBIENT TEMPERATURE OF -40C TO +60C.
- (H) INTEGRATED TEMPERATURE SENSING.
- (I) FIELD ADJUSTABLE OPERATION PROFILE.
- (J) PROVISIONS MUST BE MADE FOR CONTROL BOX TO BE SLIP-MOUNTED INSIDE POLE ABOVE TOP BATTERY, WITH ENCLOSURE OPENING DIRECTLY ACCESSIBLE THROUGH ACCESS HATCH.
- (K) INTELLIGENT ENVIRONMENTAL ADAPTIVE ENERGY PRESERVATION.
- (L) FIXTURE ORDERING NUMBER (FOR SOLAR MODEL SHINE PARK SOLAR POLE) VSH-525-T5-PX-VS-COSDD, 11 WATTS, 1,269 MIN. LUMENS FOR MINIMUM 9 HOURS/NIGHT X 5 NIGHTS, MANUFACTURED BY EMBER LED - VALEN LIGHT (201) 228-0880 OR CITY APPROVED EQUAL.



LEGEND:

- (1) SOLAR PANELS (POWER SYSTEM: ePS-e-9/1-014), 180 DEGREE ROTATABLE, MINIMUM 11 WATTS, MOUNTED FOR MAXIMUM EFFICIENCY ORIENTATION PER MANUFACTURER RECOMMENDATION
- (2) SOLAR POLE (ePOLE-MI-18). FINISH: ePAINT-MI-PX. POLE LOAD RATING IS TO SUIT A MINIMUM OF 80 MPH WIND SPEEDS. TOP SECTION TO INCLUDE VANDAL LOCKABLE CONTROL ACCESS HATCH.
- (3) LED LUMINAIRE (VSH-525-T5) 11 WATTS, 1,269 MIN. LUMENS FOR 9 HOURS/NIGHT X 5 NIGHTS.
- (4) FINISH GRADE OF TURF OR PLANTER AREA.
- (5) SUBGRADE COMPACTED TO 95%.
- (6) THICKENED EDGE AT OUTER EDGES OF CONCRETE FLATWORK.
- (7) CONCRETE AND FINISH PER PLANS AND DETAILS.
- (8) FINISH GRADE OF CONCRETE.
- (9) SEE SOLAR LIGHT POLE FOOTING DETAILS.

BATTERIES NOTES:

- (A) BATTERIES MUST HAVE A HIGH TEMPERATURE "COMPOSITE" ELECTROLYTE CAPABLE OF -39 TO +69 DEGREES CELSIUS. LITHIUM NOT ACCEPTABLE.
- (B) AUTONOMY FOR DISCHARGE REGULATED TO 20% OF THE TOTAL BATTERY CAPACITY AFTER 1 NIGHT OPERATION.
- (C) UTILIZE 1-4 BATTERIES WIRED IN SERIES/PARALLEL.
- (D) BATTERIES ARE TO BE STORED INSIDE THE TOP SECTION OF THE POLE.
- (E) BATTERIES MUST HAVE STAINLESS STEEL TERMINALS.
- (F) BATTERIES MUST BE GEL TYPE WITH HIGH TEMPERATURE "COMPOSITE" ELECTROLYTE. LITHIUM NOT ACCEPTABLE.
- (G) BATTERIES MUST BE CONSIDERED NON-DANGEROUS GOODS, NON-SPILLABLE AND MEET AIR SHIPMENT SAFETY STANDARDS.
- (H) HIGH CURRENT RECHARGE 0.8°C-1.0°C.
- (I) HIGH CURRENT DISCHARGE BATTERY THAT CAN BE DISCHARGED AT 30°C WITHIN 8 SECONDS WITH NO DAMAGE TO THE BATTERY.
- (J) SELF DISCHARGE RESIDUAL CAPACITY IS MORE THAN 90% AFTER 90 DAYS 77°F (25°C)
- (K) NO ACID MIST EMISSION WHEN CHARGING OR DISCHARGING.
- (L) BATTERIES MUST HAVE A 5 YEAR, FULL WARRANTY. PRORATED WARRANTIES WILL NOT BE ACCEPTABLE.

20'-0" LIGHT
POLE (MAX)

LIGHT POLE BY POLE &
LIGHT MANUFACTURER -
EMBED IN CAISSON AS
SHOWN

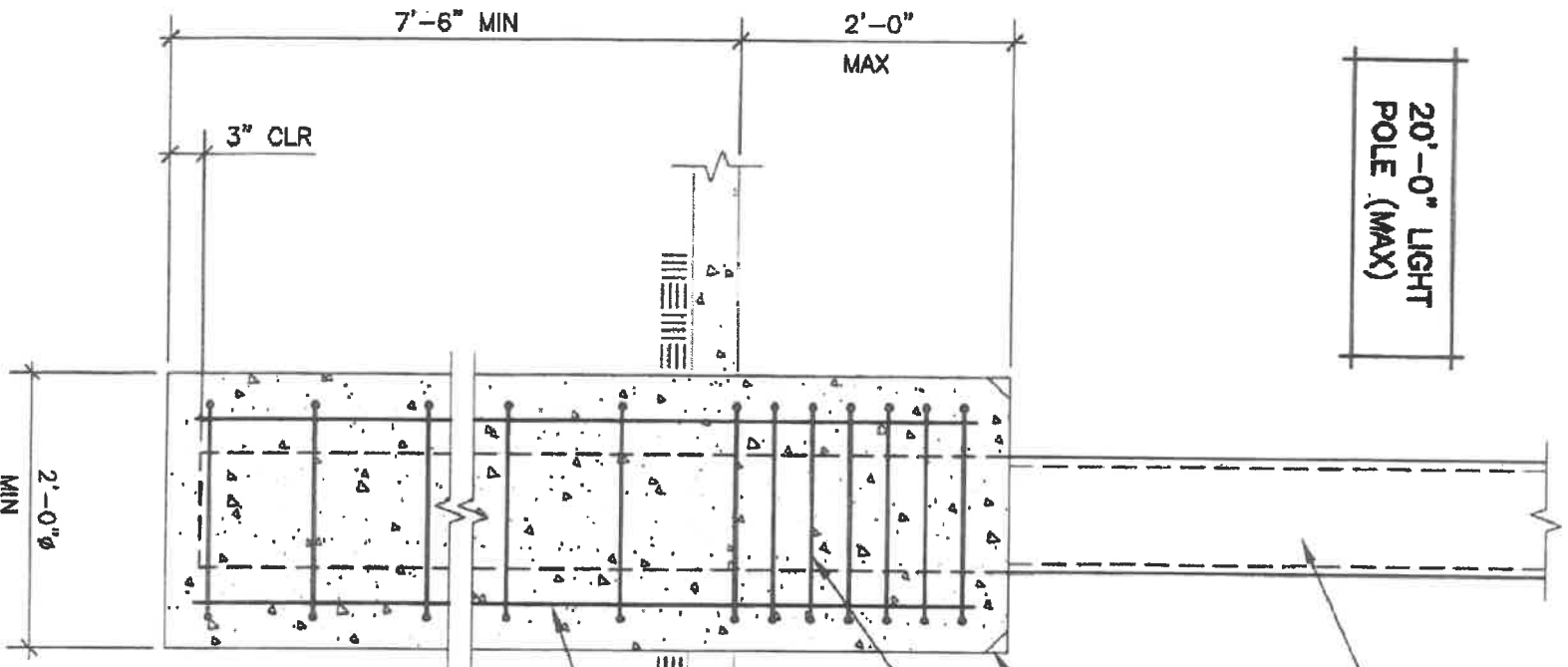
OPT: CHAMFER EDGE

#3 TIES @ 10" W/ 4
ADD'L TIES @ TOP AS
SHOWN

(E) CONC SIDEWALK -
REMOVE & REPLACE AS
REQD @ NEW LIGHT
POLE FTG

4-#5 VERTS

FOR CONDUIT CHASE IN
CAISSON, ETC - REFER
TO DRWGS BY OTHERS



NO. REVISED BY

DRAWN BY: SG

CHECKED BY: GP

SCALE: NONE

SOLAR LIGHT POLE
FOOTING

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

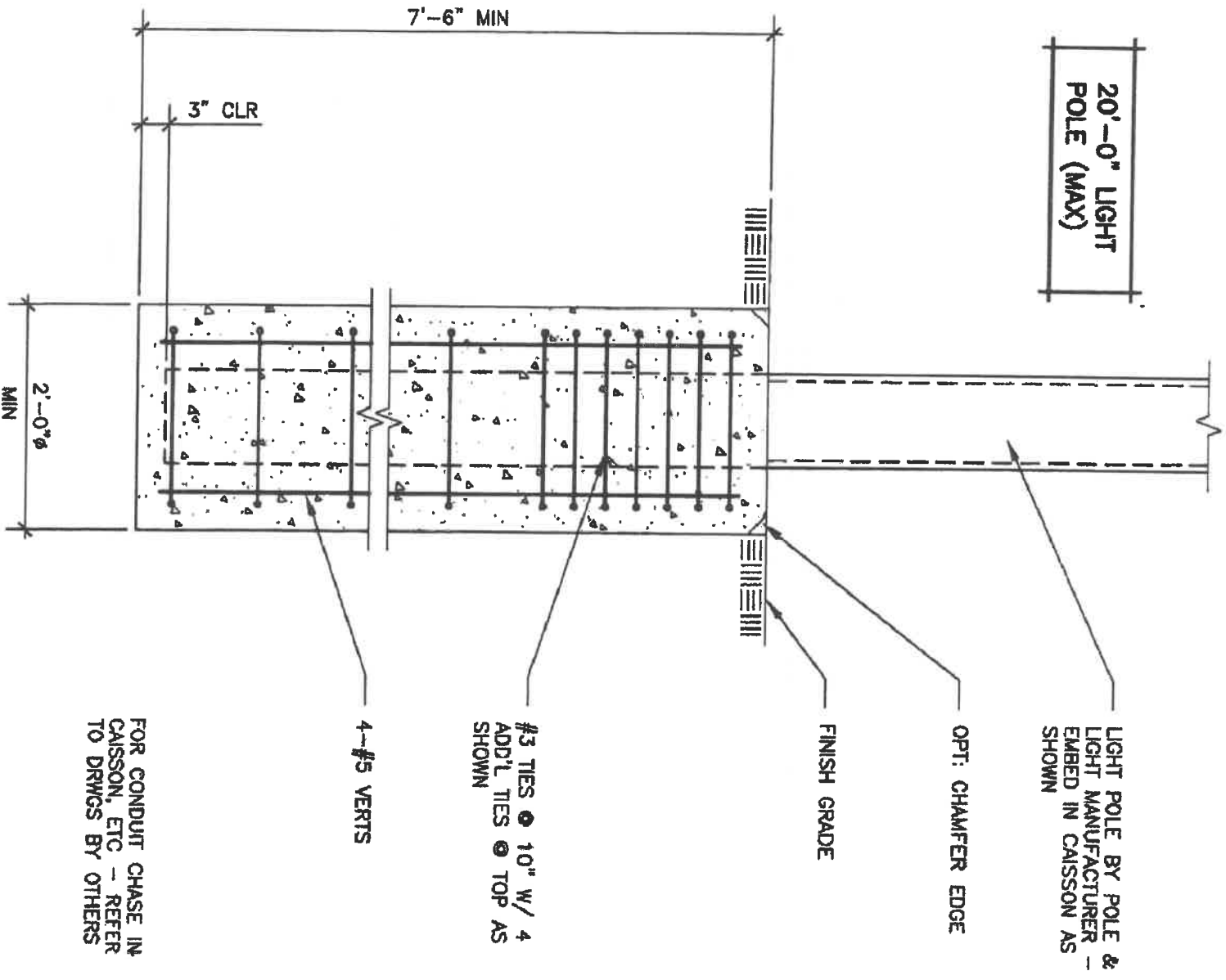
APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE MAY 2012

M-13A



NO.	REVISED	BY
-		
DRAWN BY:	SG	
CHECKED BY:	GP	
SCALE:	NONE	

SOLAR LIGHT POLE
FOOTING

CITY OF MANTTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY: *[Signature]*
PARKS & RECREATION DIRECTOR

DRAWING NO. M-13B

DATE: MAY 2012

GENERAL STRUCTURAL NOTES

GENERAL

- A ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST ADOPTED EDITION OF THE CALIFORNIA BUILDING CODE (CBC) AND ALL OTHER LOCAL CODES AND ORDINANCES THAT ARE APPLICABLE.

FOUNDATIONS

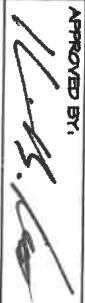
- A PER CBC TABLE 1804.2 SOIL CLASSIFICATION 5 (CLAY, SANDY CLAY, SILTY CLAY, CLAYEY SILT, AND SANDY SILT)
- 1 ALLOWABLE SOIL BEARING PRESSURE: 1000 PSF.
 - 2 ALLOWABLE LATERAL SOIL BEARING PRESSURE: 100 PCF
- B IF ANY PROBLEMS OR UNUSUAL SOIL CONDITIONS ARISE, THE CONTRACTOR SHALL CONSULT THE PROJECT ENGINEER OR THE GEOTECHNICAL ENGINEER

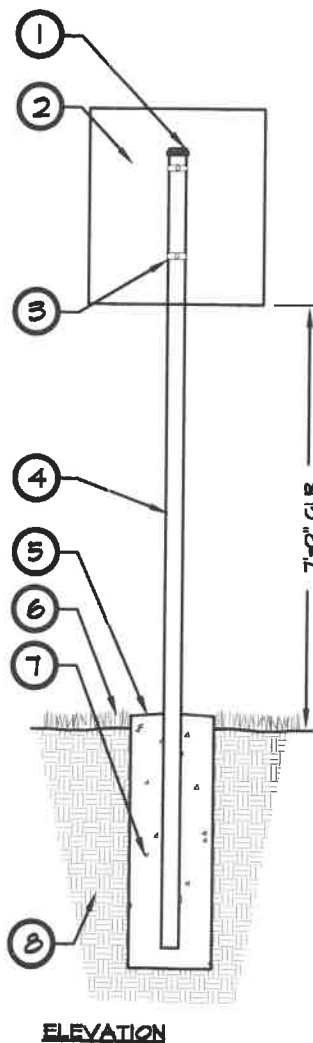
CONCRETE

- A MATERIAL:
- 1 CEMENT: PORTLAND CEMENT, TYPE II, ASTM C-150.
 - 2 AGGREGATE: ASTM C-33.
 - 3 WATER: CLEAN AND DRINKABLE
- B CONCRETE MIX DESIGN:
- 1 3000 PSI @ 28 DAYS
- SPECIAL INSPECTION OF CONCRETE IS NOT REQUIRED - 3000 PSI CONCRETE IS SPECIFIED AND REQUIRED HOWEVER ALL CONCRETE DESIGNS ARE BASED ON 2500 PSI (MAX) - CBC SECTION 1704.4 EXCEPTIONS 1 & 2
- 2 1 1/2" AGGREGATE (MAX)
 - 3 4" SLUMP (MAX)
- C ADMIXTURES: ONLY AS APPROVED BY THE ENGINEER

NO.	REVISION	BY	SOLAR LIGHT POLE FOOTING	APPROVED BY: 
				PARKS & RECREATION DIRECTOR
DRAWN BY:	SG			
CHECKED BY:	GP		CITY OF MANTECA PARKS & RECREATION DEPARTMENT	DRAWING NO.
SCALE:	NONE			DATE: MAY 2012

M-130

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
PARK REGULATORY SIGNAGE CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.	PARKS & RECREATION DIRECTOR	
DATE	2017	
	M-14	



LEGEND:

- ① PRESSED STEEL CAP, WELDED TO POST TOP
- ② ALUMINUM SIGN, 36" HT. X 30" W. X .080" THICK
- ③ TYP. 1/2" X 4" X 11 GA GALV. SIGN SADDLE WITH 3/8" STAINLESS STEEL BUTTON HEAD BOLT, NUT AND WASHERS, TACK WELD NUT INTO PLACE
- ④ 2" DIA. GALV. SCH. 40 STEEL PIPE, UNLESS OTHERWISE SPECIFIED ON PLANS
- ⑤ SLOPE CONCRETE BASE 2% FROM POST
- ⑥ ADJACENT SURFACE FINISH GRADE.
- ⑦ CONCRETE FOOTING, 24" DEEP X 8" DIA.
- ⑧ COMPACT SUBGRADE TO 90% MAX. DRY DENSITY
- ⑨ 1-1/2" R. @ CORNERS OF SIGN, TYP.

WELCOME TO _____ PARK

PARK RULES

PER MANTECA MUNICIPAL CODE SEC. 12.12

ALL DOGS MUST BE KEPT ON A 6' LEASH,
AND CLEANED UP AFTER

NO ALCOHOLIC BEVERAGES OR
CONSUMPTION ALLOWED

NO SMOKING ALLOWED

NO CAMPING, CONSTRUCTION OR
OCCUPATION OF ENCAMPMENTS OR
STORAGE OF PERSONAL PROPERTY
ALLOWED

GOLFING IS PROHIBITED

NO LITTERING

PLEASE REPORT SUSPICIOUS BEHAVIOR
TO: 911

PARK CLOSED FROM:

DUSK

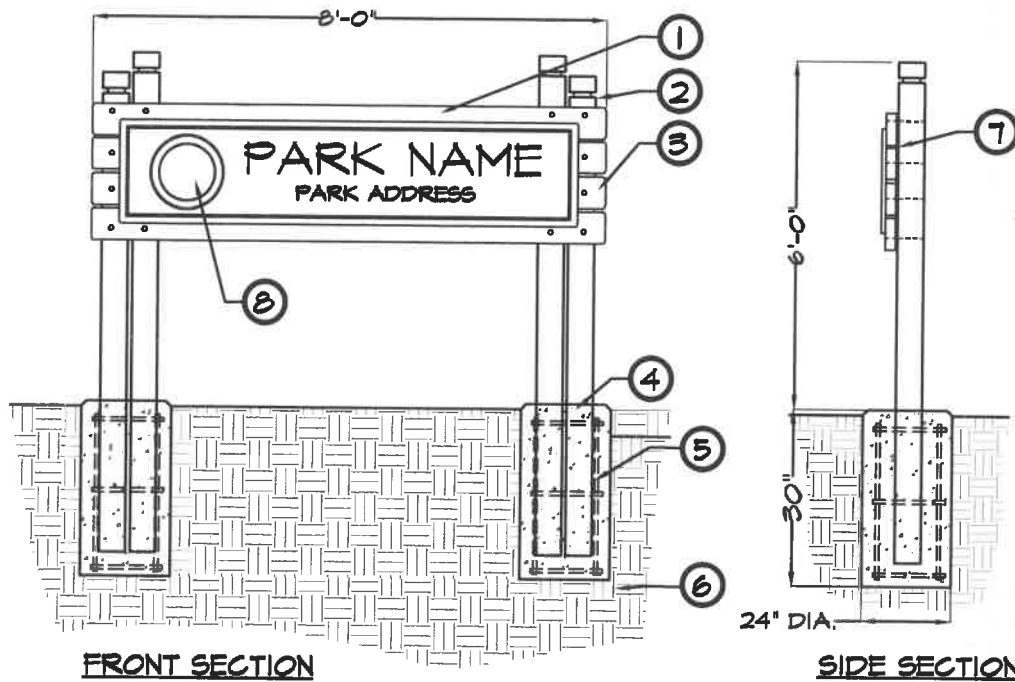
TO

DAWN

SIGN LETTERING DETAIL

NOTES:

- A PARK REGULATORY SIGNS SHALL BE INSTALLED IN LOCATIONS AND AS SHOWN ON PLANS, OR AS DIRECTED BY THE PARKS DIRECTOR, IN ACCORDANCE WITH THE HEIGHT AND LATERAL CLEARANCE AND MOUNTING DETAILS ABOVE. IF TEMPORARY SIGNS ARE CALLED FOR, THE INSTALLATION WILL BE AS SHOWN ABOVE EXCEPT THE POST HOLE SHALL BE BACKFILLED AND COMPACTED WITH SOIL.
- B UNLESS OTHERWISE NOTED, ONLY SIGNS THAT CONFORM TO THE STANDARDS AND SPECIFICATIONS OF CALTRANS SHALL BE USED. SIGN FACES SHALL BE REFLECTIVE AND PLACED ON .080 MIN. THICK ALUMINUM.
- C CONTRACTOR SHALL CONFIRM EXACT DETAILS OF SIGN AND LETTERING WITH CITY'S AUTHORIZED REPRESENTATIVE PRIOR TO ORDERING. PROVIDE COLOR SHOP DRAWING INDICATING STYLE, COLOR AND MATERIALS. OBTAIN WRITTEN APPROVAL OF SHOP DRAWING. SIGN MANUFACTURED BY BLASER BUILDING SPECIALTIES (416) 780-4242 OR APPROVED ALTERNATE.
- D INSTALL SIGN A MINIMUM OF 2'-0" FROM BACK OF PEDESTRIAN WALK. SIGNS SHOULD BE VERTICALLY MOUNTED AT RIGHT ANGLES TO THE DIRECTION OF, AND FACING, THE TRAFFIC THAT THEY ARE INTENDED TO SERVE.



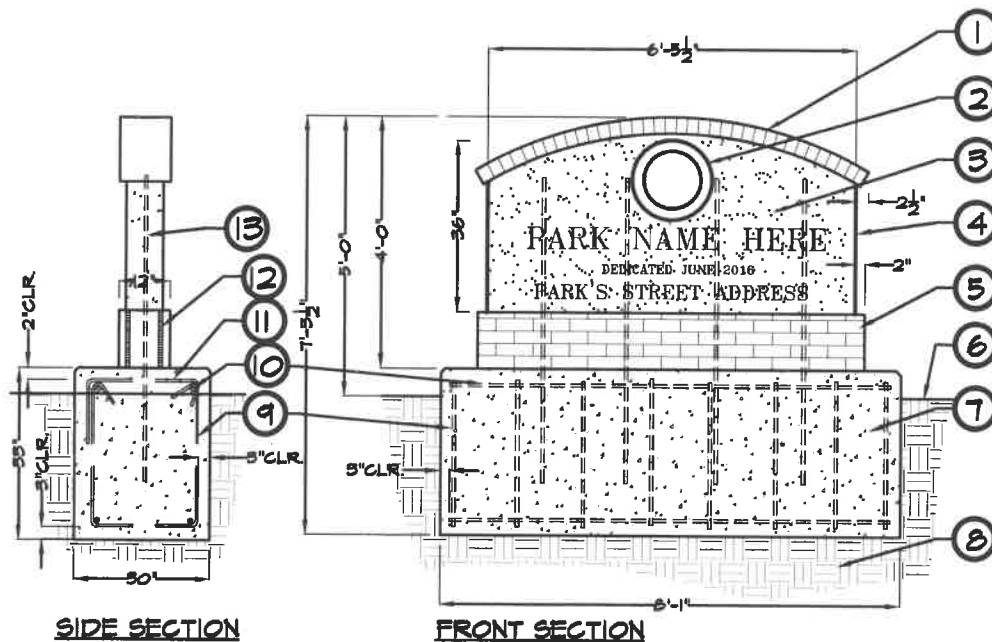
LEGEND:

- ① RECYCLED PLASTIC LUMBER SIGN MANUFACTURED BY OUTDOOR DESIGN STUDIO INC., (951) 600-4888 OR APPROVED EQUAL; SIGN FACE ROUTERED 2-TONE INLAY WITH FOUR-COLOR LEXAN INSERTS
- ② POSTS 6" X 6" DOUBLE EACH, 1" ROUTED NOTCHES, TYP.
- ③ 2" X 8" FASTENED TO POSTS WITH 1/2" ST. STL. MACHINE BOLTS, COUNTERSUNK
- ④ CONCRETE FOOTING, 1" CHAMFERED EXPOSED EDGES
- ⑤ #5 REBAR 18" O.C. EACH WAY
- ⑥ SUBGRADE COMPACTED TO 95% MAX. DRY DENSITY, OBTAIN VERIFICATION TEST FROM GEOTECHNICAL ENGINEER PRIOR TO FORMING CONCRETE
- ⑦ 1/2" ALUMINUM STRUCTURAL MOUNTING PLATE TO PREVENT SAGGING OF RECYCLED LUMBER, ATTACH LUMBER 12" O.C. MAX
- ⑧ COLOR CITY LOGO, OBTAIN GRAPHICS FROM CITY

NOTES:

- (A) LIGHTING OF SIGN MAY BE REQUIRED, REFER TO PLAN
- (B) VERIFY LOCATION LINE OF SIGHT REQUIREMENTS FROM CITY PRIOR TO FOOTING EARTHWORK, REFER TO PLAN
- (C) OBTAIN GRAPHIC DESIGN FOR MEDALLION FROM CITY, PROVIDE SHOP DRAWINGS AND COLOR PROOF PRIOR TO ORDERING

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
NEIGHBORHOOD PARK ENTRY SIGN		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:	11.13.17	
PARKS & RECREATION DIRECTOR		
DRAWING NO.	M-15	
DATE	2017	



LEGEND:

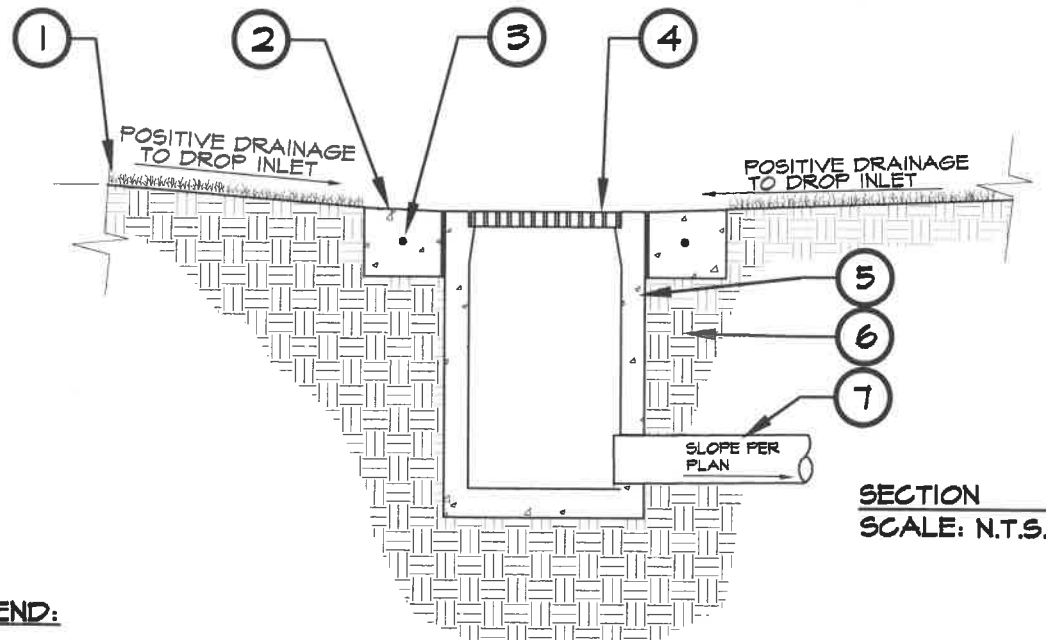
- ① BRICK DOUBLE ROWLOCK W/ WHITE MORTAR, FORM ON RADIUS (FULL BRICKS)
- ② CITY COLOR LOGO IN 18" DIA. HIGH DENSITY INTEGRAL COLOR PLASTIC MEDALLION, BRONZESTONE PRODUCT MFG. BY OREGON MEMORIALS, CALL TONY GOIBURN (530) 566-6557 OR APPROVED ALTERNATE (BOTH SIDES OF SIGN); RECESSED INTO CONC. AND EPOXY, FACE FLUSH WITH CONC. SURFACE
- ③ LETTERING ON BOTH SIDES OF SIGN, MADE IN FOAM FORMS, PLACED IN CONCRETE POUR AND REMOVED AFTER CURING, PAINT COVES BLACK TO MATCH LOGO SIGN; COORDINATE NAMES, DATES AND ADDRESS WITH CITY AND PROVIDE SHOP DRAWING FOR CITY APPROVAL PRIOR TO FABRICATION
- ④ POURED IN PLACE WHITE CONCRETE SIGN, MEDIUM SANDBLAST FINISH TO REMOVE FORM MARKS
- ⑤ BRICK VENEER BASE OVER CMU BLOCK BASE
- ⑥ FINISH GRADE OF TURF OR PLANTER AREA.
- ⑦ CONCRETE FOOTING, SANDBLAST EXPOSED 6", 1" CHAMFERED EXPOSED EDGE
- ⑧ SUBGRADE COMPACTED TO 90% MAX. DRY DENSITY, OBTAIN VERIFICATION TEST FROM GEOTECHNICAL ENGINEER PRIOR TO FORMING CONCRETE
- ⑨ #4 STIRRUPS @ 12" O.C.
- ⑩ (2) #6 REBAR @ TOP & BOTTOM
- ⑪ #4 REBAR CAP PIECES @ 12" O.C.
- ⑫ 8" X 8" X 16" CMU, FILLED WITH MORTAR
- ⑬ 3/4" DIA. DOWELS 18" O.C., EPOXY INTO FOOTING MIN. 24" DEEP

NOTES:

- (A) LIGHTING OF SIGN MAY BE REQUIRED, REFER TO PLAN
- (B) VERIFY LOCATION LINE OF SIGHT REQUIREMENTS FROM CITY PRIOR TO FOOTING EARTHWORK, REFER TO PLAN
- (C) BRICK SHALL BE, MCNEAR SANDED TUDOR FLASH, BY RUSTIC BRICK (916) 452-8114 OR APPROVED ALTERNATE
- (D) OBTAIN GRAPHIC DESIGN FOR MEDALLION FROM CITY, PROVIDE SHOP DRAWINGS AND COLOR PROOF PRIOR TO ORDERING

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
COMMUNITY PARK MONUMENT SIGN		
APPROVED BY:		
DRAWING NO.	M-16	
DATE:	2017	

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
AREA DRAIN		
CITY OF MANTENCA PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
DRAWING NO.		PARKS & RECREATION DIRECTOR
DATE:		2017
		M-17



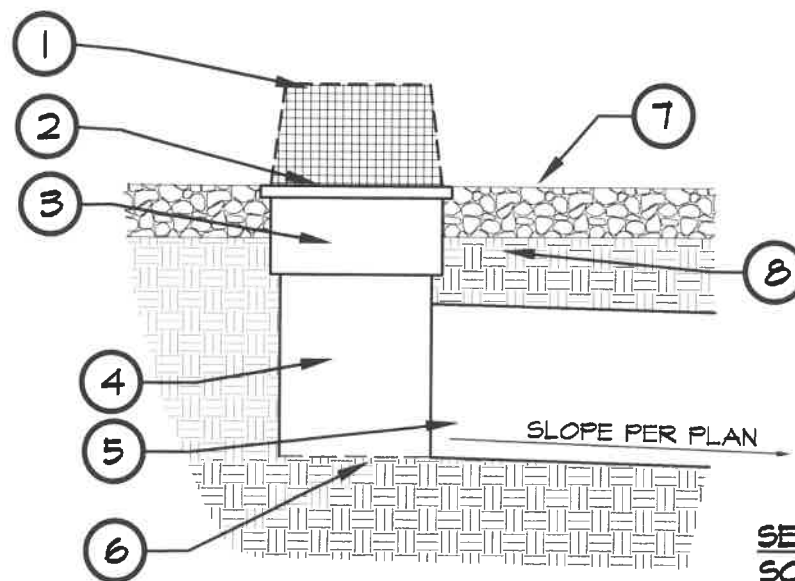
LEGEND:

- ① ADJACENT TURF SURFACE, SLOPE FINISHED GRADE OF SOIL CONTINUOUSLY AND SMOOTHLY TO FLUSH WITH COLLAR
- ② 2500 PSI CONCRETE 6" X 6" CONTINUOUS COLLAR AROUND INLET; SLOPE TOP AT 2% TOWARD GRATE; PROVIDE 1/2" ASPHALT FELT EXPANSION JOINT AND CAULK WITH SIDAFLEX 1A ELASTOMERIC SEALANT
- ③ #4 STL. REBAR, CENTERED, CONTINUOUS
- ④ HEAVY DUTY TRAFFIC RATED STEEL GRATE 1212-H WITH CAST-IN FRAME, OPENINGS SIZED FOR PEDESTRIAN FOOT TRAFFIC
- ⑤ CONCRETE DROP INLET, 12" X 12" X 24" DEEP, JENSEN PRECAST #1212-HDI (800) 843-9569 OR APPROVED ALTERNATE
- ⑥ 90% COMPACTED SUBGRADE
- ⑦ DRAIN PIPE SIZED PER PLAN, MIN. 4" DIA. ABS OR SDR PIPE, ENSURE POSITIVE DRAINAGE TO OUTLET

NOTES:

- A REFER TO GRADING PLAN FOR ELEVATIONS OF TOP OF GRATE, FLOW LINE OF PIPES AND ADJUST INLET DEPTH TO ACCOMMODATE THE INVERT ELEVATION OF OUTLET PIPE
- B AVOID CONCRETE AND SOIL BLOCKAGES OF PIPE DURING CONSTRUCTION AND TEST FLOW UPON COMPLETION TO ASSURE NO BLOCKAGES OCCUR

NO.	REVISED	BY	SHRUB AREA LANDSCAPE DRAIN CITY OF MANTECA PARKS & RECREATION DEPARTMENT	APPROVED BY:	
				PARKS & RECREATION DIRECTOR	
DRAWN BY:	C. BROWN			DRAWING NO.	M-18
CHECKED BY:	J. COURTNEY			DATE:	2017
SCALE:	NONE				



SECTION
SCALE: N.T.S.

LEGEND:

- ① 6" BLACK NDS ATRIUM DRAIN GRATE
- ② BOTTOM LIP OF GRATE TO BE LOCATED AT TOP OF LANDSCAPE MULCH
- ③ LINE SIZE ABS COUPLING, REFER TO PLAN FOR SIZES
- ④ NDS OUTLET BOX, SIZED FOR PIPES
- ⑤ DRAIN PIPE SIZED PER PLAN (MIN. 4" DIA. ABS OR SDR PIPE; ENSURE POSITIVE DRAINAGE TO OUTLET
- ⑥ 4 EA. 1/2" DIA WEEP HOLES IN BASE TO ELIMINATE STAGNATION
- ⑦ FINISHED GRADE OF BARK LAYER
- ⑧ LANDSCAPE PLANTING SOIL

NOTES:

- (A) REFER TO GRADING PLAN FOR ELEVATIONS OF GRATE, FLOW LINE OF PIPES AND ADJUST INLET DEPTH TO ACCOMMODATE THE INVERT ELEVATION OF OUTLET PIPES; MAINTAIN POSITIVE FLOW THROUGH ENTIRE SYSTEM
- (B) AVOID CONCRETE AND SOIL BLOCKAGES OF PIPE DURING CONSTRUCTION AND TEST FLOW UPON COMPLETION TO ASSURE NO BLOCKAGES OCCUR
- (C) ANY ROOF LEADERS OR DOWNSPOUTS SHALL CONNECT TO THESE DRAINS, SEE PLAN

NO.	REVISION	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

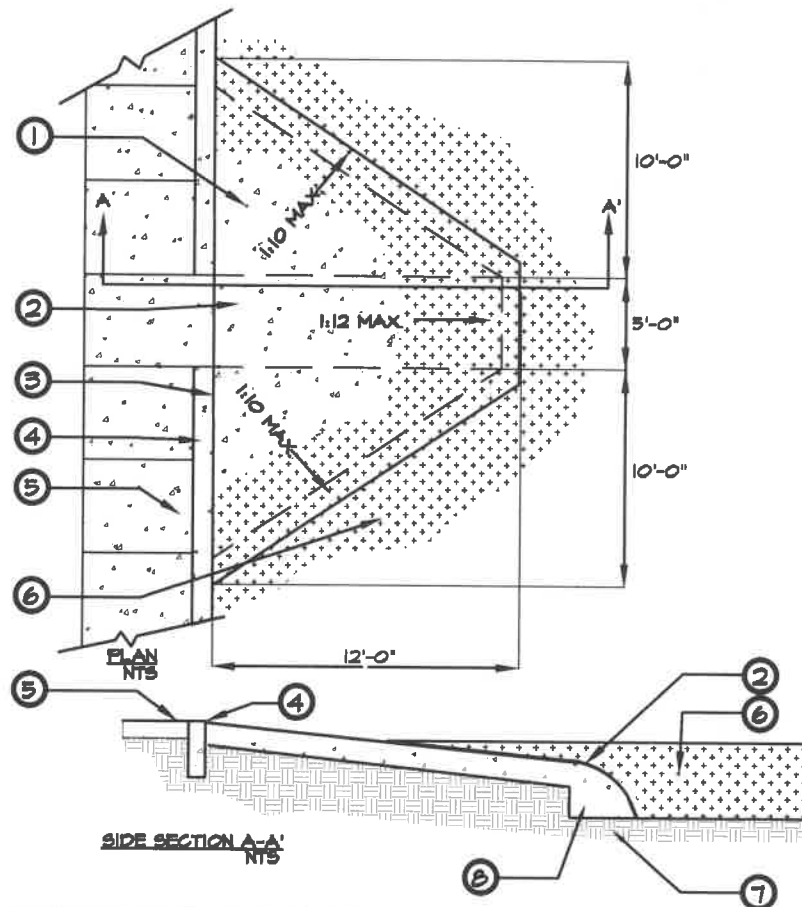
ADA PLAYGROUND RAMP

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:
[Signature]
PARKS & RECREATION DIRECTOR

DRAWING NO.
P-1

DATE: 2017



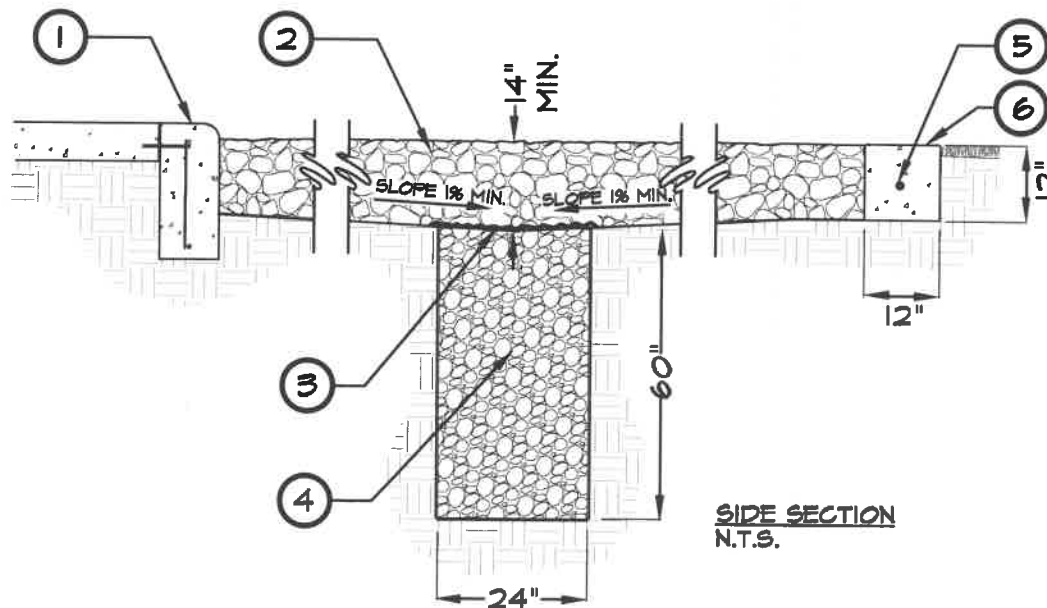
LEGEND:

- ① SLOPING CONCRETE RAMP SIDE WINGS, 10% SLOPE MAX. TYPICAL
- ② CONCRETE RAMP, 8.33% MAXIMUM SLOPE INTO PLAY AREA, SEE PLAN FOR PRECISE LOCATION AND SPOT ELEVATIONS
- ③ CONTINUOUS EXPANSION JOINT AT PLAY AREA CURB
- ④ CONCRETE PLAY CURB, PER DETAILS
- ⑤ ADJACENT FINISHED GRADE
- ⑥ "FIBAR" ENGINEERED LOOSE FILL PLAY SURFACING MATERIAL OR OTHER CPSC APPROVED SURFACING PER PLANS
- ⑦ COMPACTED SUBGRADE, OR DRAINAGE COURSE
- ⑧ 12" W. X 8" DEEP MIN. SHOVEL HAUNCH CONCRETE AT PERIMETER

NOTES:

- (A) REFER TO GRADING PLANS FOR ELEVATION REQUIREMENTS
- (B) RAMP SHALL COMPLY WITH LATEST EDITION OF ADA DESIGN MANUAL, AND CPSC PLAYGROUND SAFETY GUIDELINES
- (C) RAMP SHALL BE LOCATED AT NEAREST PATH OF TRAVEL FOR CONVENIENCE, FULLY OUTSIDE OF THE FALL ZONE OF ANY COMPONENT OF PLAY EQUIPMENT (INCLUDING BELOW-SURFACING RAMP EXTENSION), REFER TO PLAYGROUND EQUIPMENT LAYOUT PLAN AND FALL ZONE DIAGRAMS
- (D) INDEPENDENT 3RD PARTY AUDIT OF PLAYGROUND AREA UPON COMPLETION IS REQUIRED TO BE PROVIDED BY INSTALLING CONTRACTOR

NO.	REVISION	BY
PLAY AREA SURFACE AND DRAIN		
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
APPROVED BY: 		
PARKS & RECREATION DIRECTOR		
DRAWING NO. P-2		
DATE: 2017		
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	



SIDE SECTION
N.T.S.

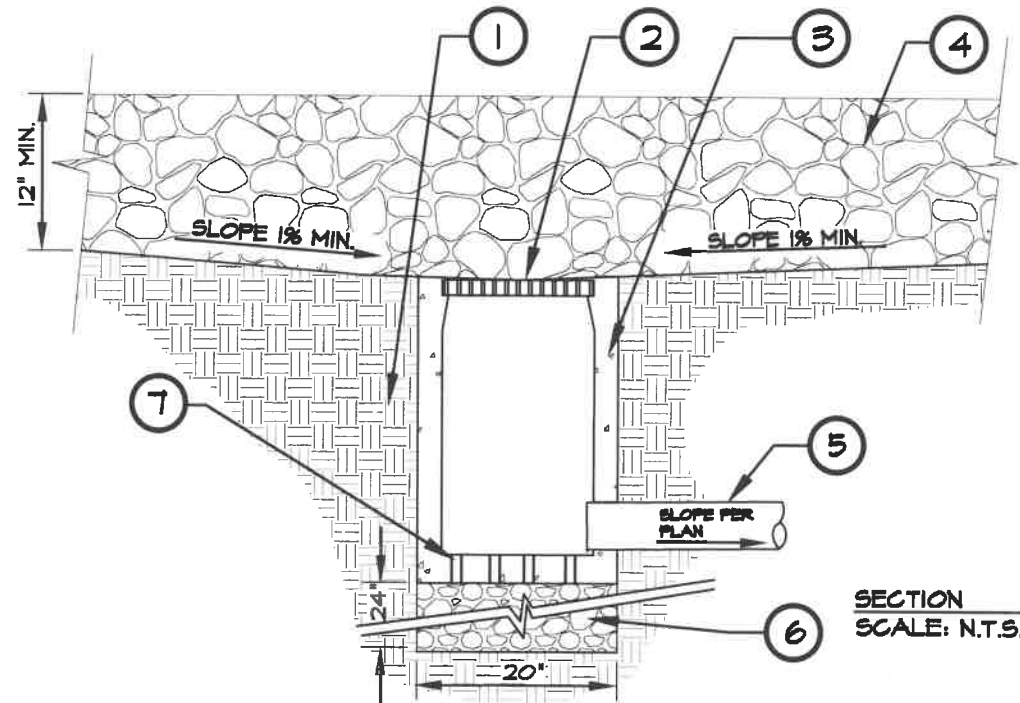
LEGEND:

- ① PLAY AREA CONCRETE CURB PER TYPICAL CITY DETAIL AND PLAN FOR AREAS ADJACENT TO CONCRETE WALKWAYS
- ② "FIBAR" ENGINEERED LOOSE FILL PLAYGROUND SURFACING MATERIAL OR APPROVED EQUAL, MIN. 12" DEEP, 14" MIN. AT DRAIN; REFER TO PLAN FOR MANUFACTURER RECOMMENDED DEPTHS OF SURFACING MATERIAL. REPLENISHED IN THE FUTURE AS NEEDED TO MAINTAIN DEPTH REQUIRED.
- ③ MIRAFI 140N FILTER FABRIC OR APPROVED ALTERNATE, PLACE OVER DRAIN ROCK
- ④ 3/4" MINUS DRAIN ROCK; IF SHOWN ON PLANS, CONNECT WITH DRAIN PIPE TO STORM SYSTEM.
- ⑤ 2 - # 4 REBAR CONTINUOUS
- ⑥ CONCRETE PLAY RINGS FOR AREAS ADJACENT TO TURF OR PLANTER, FINISH AND COLOR PER PLAN

NOTES:

- A CONCRETE PAVING FINISHED AS PER PLANS AND SPECIFICATIONS.
- B SLOPE 1% MIN. TOWARDS ROCK WELL DRAIN; LOCATE NEAR CENTER OF PLAY AREA AND AVOID INTERFERENCE WITH PLAY EQUIPMENT FOOTINGS AND POSTS, REFER TO PLAN
- C COMPACT SUBGRADE UNDER PLAY AREA TO 90% MDD, COMPACT TO 95% MDD UNDER ANY CONCRETE FLATWORK OR FOOTINGS
- D REFER TO PLAN FOR STORM DRAINAGE CONNECTION OR DRYWELL DEPTH
- E REFER TO WRITTEN SPECIFICATIONS; CONTRACTOR RESPONSIBLE FOR ACHIEVING PROPER DEPTH OF FIBAR ENGINEERED FILL IN ACCORDANCE WITH PLAYGROUND MANUFACTURER SPECIFIED DEPTHS
- F CONTRACTOR RESPONSIBLE FOR OBTAINING 3RD PARTY INDEPENDENT AUDIT OF PLAYGROUND SAFETY

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	
PLAY AREA DRAIN		
CITY OF MANTECA PARKS & RECREATION DEPARTMENT		
DATE:	2017	
DRAWING NO.	P-3	
APPROVED BY:	<i>[Signature]</i>	
PARKS & RECREATION DIRECTOR		



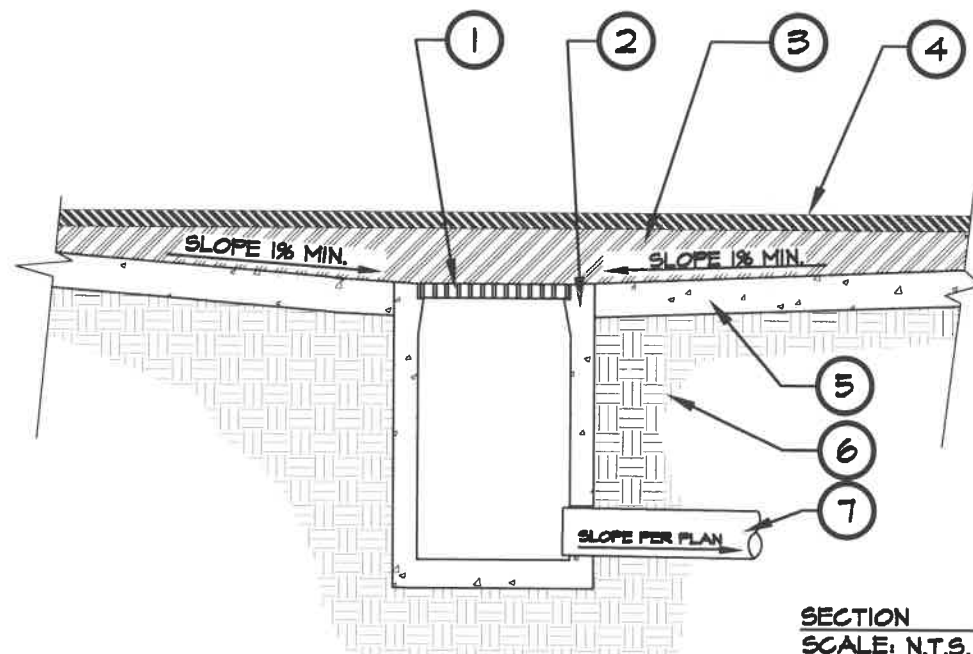
LEGEND:

- ① 90% COMPACTED SUBGRADE
- ② HEAVY DUTY STEEL GRATE WRAPPED WITH FILTER FABRIC
- ③ CONCRETE DROP INLET, 12" X 12" X 24" DEEP, JENSEN PRECAST #1212-HDI (800) 843-9569 OR APPROVED ALTERNATE
- ④ "FIBAR" ENGINEERED LOOSE FILL PLAY SURFACING MATERIAL OR OTHER CPSC APPROVED SURFACING PER PLANS
- ⑤ DRAIN PIPE SIZED PER PLAN (MIN. 3" DIA. ABS OR SDR PIPE), ENSURE POSITIVE DRAINAGE TO OUTLET
- ⑥ 3/4" DIAMETER DRAIN ROCK
- ⑦ CORE DRILL 9 EA. 1" DIA. HOLES IN BOTTOM OF D.I. BOX

NOTES:

- A REFER TO WRITTEN SPECIFICATIONS; CONTRACTOR RESPONSIBLE FOR ACHIEVING PROPER DEPTH OF FIBAR ENGINEERED PLAY SURFACING IN ACCORDANCE WITH PLAYGROUND MANUFACTURER SPECIFIED DEPTHS AND LATEST EDITIONS OF ADA DESIGN MANUAL AND CPSC PLAYGROUND SAFETY GUIDELINES
- B INDEPENDENT 3RD PARTY AUDIT OF PLAYGROUND AREA UPON COMPLETION IS REQUIRED TO BE PROVIDED BY INSTALLING CONTRACTOR
- C REFER TO GRADING PLAN FOR ELEVATIONS OF TOP OF GRATE, FLOW LINE OF PIPES, AND ADJUST INLET DEPTH TO ACCOMMODATE THE INVERT ELEVATION OF OUTLET PIPE
- D AVOID CONCRETE AND SOIL BLOCKAGES OF PIPE DURING CONSTRUCTION AND TEST FLOW UPON COMPLETION TO ASSURE NOT BLOCKAGES OCCUR

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	
RUBBERIZED PLAY SURFACE SYSTEM		
CITY OF MANTECA		
PARKS & RECREATION DEPARTMENT		
APPROVED BY:		
PARKS & RECREATION DIRECTOR		
DRAWING NO.		
DATE: 2017		
P-5		

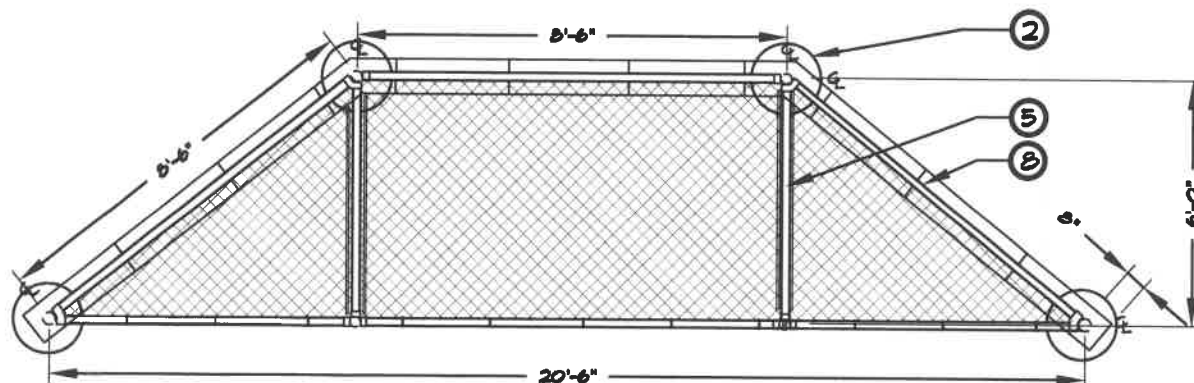


LEGEND:

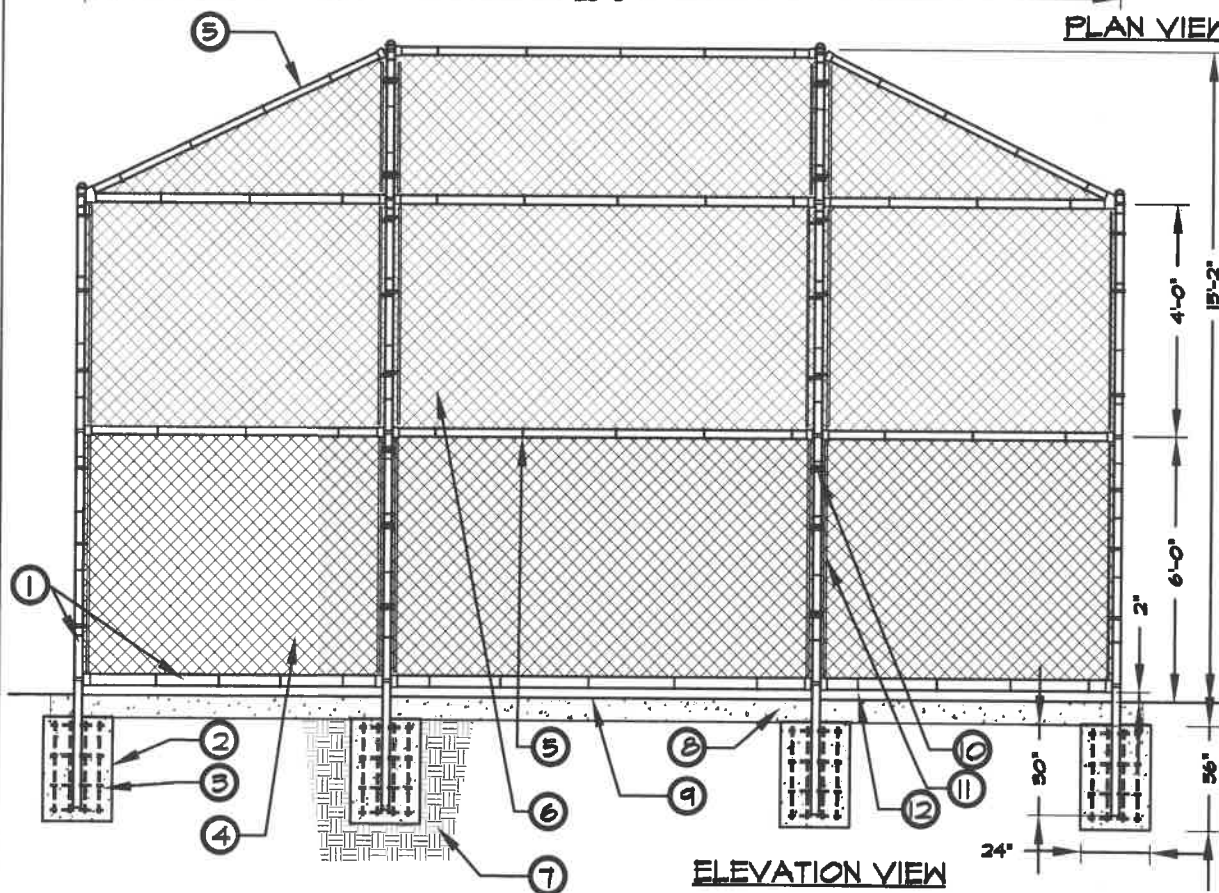
- ① HEAVY DUTY STEEL GRATE BY JENSEN PRECAST
- ② CONCRETE DROP INLET, 12" X 12" X 24" DEEP, JENSEN PRECAST #1212-HDI (800) 843-9569 OR APPROVED ALTERNATE
- ③ BASE COURSE LAYER, P.I.P RUBBERIZED RESILIENT PLAY SURFACE, THICKNESS SPECIFIED ON PLANS, SEE NOTES
- ④ WEARING COURSE LAYER, POURED-IN-PLACE RUBBERIZED RESILIENT PLAY SURFACE SYSTEM, PROVIDED AND INSTALLED BY SPECTRATURF OR CITY APPROVED ALTERNATE.
- ⑤ 4" THICK CONCRETE SLAB, SLOPE MIN. 1% TOWARD DRAIN(S) PER PLANS
- ⑥ 90% COMPACTED SUBGRADE
- ⑦ DRAIN PIPE SIZED PER PLAN (MIN. 3" DIA. ABS OR SDR PIPE), ENSURE POSITIVE DRAINATE TO OUTLET

NOTES:

- (A) REFER TO WRITTEN SPECIFICATIONS; CONTRACTOR RESPONSIBLE FOR ACHIEVING PROPER DEPTH OF POURED-IN-PLACE RUBBERIZED PLAY SURFACING IN ACCORDANCE WITH PLAYGROUND MANUFACTURER SPECIFIED DEPTHS AND LATEST EDITIONS OF ADA DESIGN MANUAL AND CPSC PLAYGROUND SAFETY GUIDELINES
- (B) INDEPENDENT 3RD PARTY AUDIT OF PLAYGROUND AREA UPON COMPLETION IS REQUIRED TO BE PROVIDED BY INSTALLING CONTRACTOR
- (C) AVOID CONCRETE AND SOIL BLOCKAGES OF PIPE DURING CONSTRUCTION AND TEST FLOW UPON COMPLETION TO ASSURE NO BLOCKAGES OCCUR



PLAN VIEW



ELEVATION VIEW

LEGEND

- ① POSTS AND BOTTOM RAIL
SCH. 40 GALV. PIPE STD.
2-5/8" DIA.
- ② MIN. 24" DIA. X 36" DEEP
CONC. FTGS
- ③ CONC. REINFORCED W/ 4 EA.
#5 CLOSED HOOPS REBAR, 4
EA. #3 VERT. REBAR, TYP @
4 FOOTINGS, KEEP STEEL 3"
CLR FROM BOTTOMS AND
SIDES OF FOOTINGS, 2" CLR
FROM TOP
- ④ GALV. CHAINLINK FENCING
W/ HEAVY DUTY 2" MESH 9
GAUGE @ ALL LOWER
PANELS
- ⑤ RAILS & TOP 1-5/8" SCH. 40
GALV. PIPE
- ⑥ GALV. CHAIN LINK FENCING
UPPER PANELS
W/COMMERCIAL 2" MESH 11
GA.
- ⑦ COMPACT SUBGRADE TO
90% MDD, TYP. ALL
FOOTINGS
- ⑧ 12" W. X 6" DEEP CONC.
MOWSTRIP SIMILAR TO
STANDARD DETAIL H-4
- ⑨ FINISH GRADE, 2" BELOW
BOTTOM RAIL
- ⑩ TENSION BAND, 14 GA. X 5/4"
MIN., TYP.
- ⑪ STRETCHER BAR, 3/8" X 3/4"
MIN., TYP.
- ⑫ WIRE FABRIC TIES, 24" O.C.
MIN.

NOTES:

- Ⓐ ALL STEEL COMPONENTS TO
BE GALVANIZED STEEL
- Ⓑ HEAVY DUTY GALV.
CLAMPS & HARDWARE, NO
FIELD WELDING

NO. REVISED BY

DRAWN BY: C. BROWN

CHECKED BY: J. COURTNEY

SCALE: NONE

BACKSTOP WITH HOOD

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:

PARKS & RECREATION DIRECTOR

DRAWING NO.

DATE: 2017

S-1

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURNEY	
SCALE:	NONE	

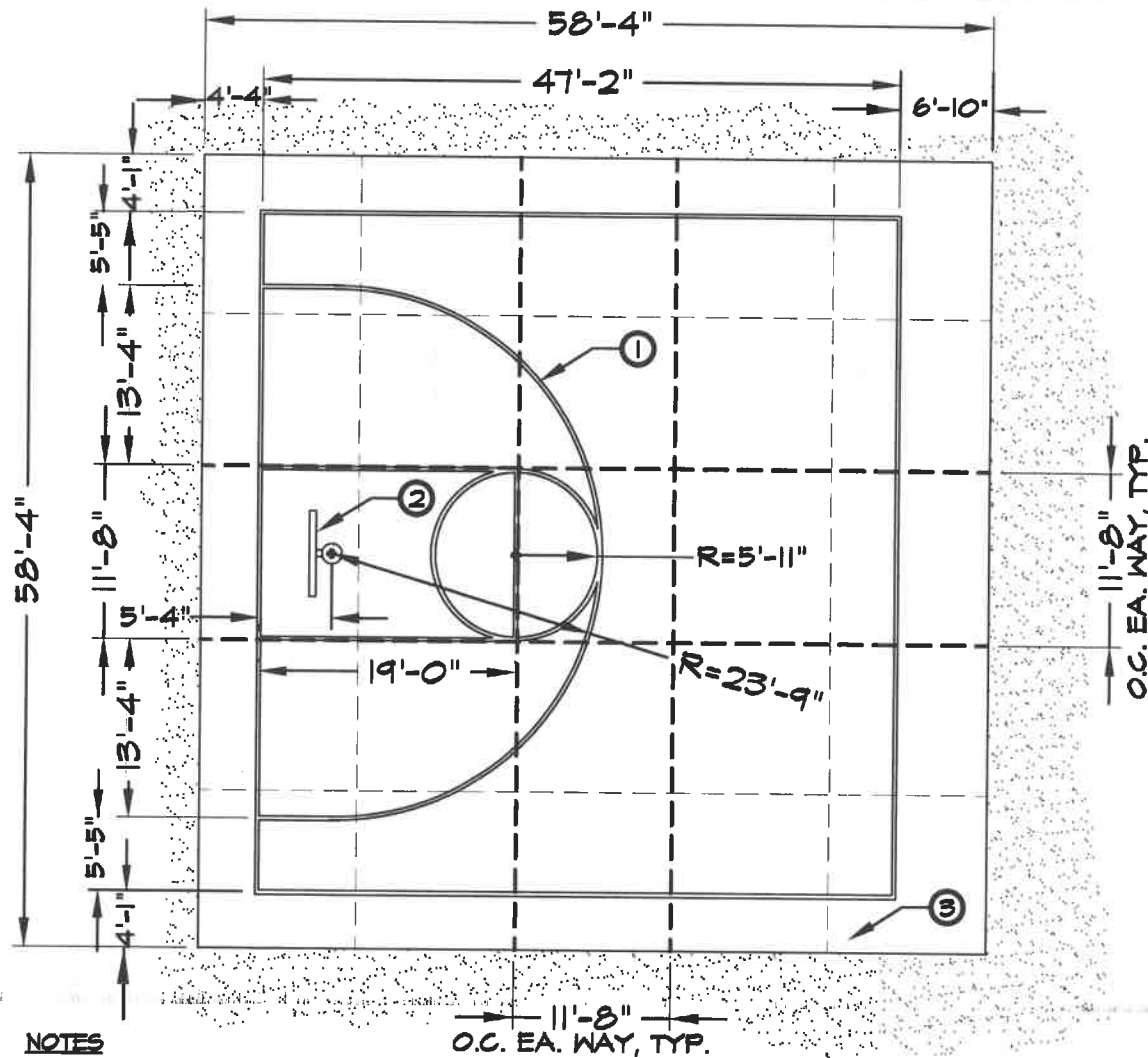
BASKETBALL HALF-COURT LAYOUT

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

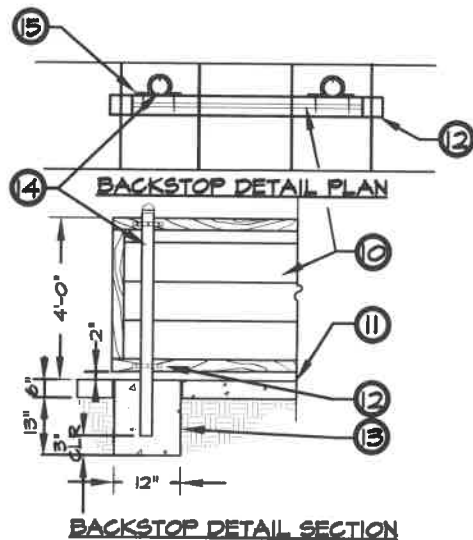
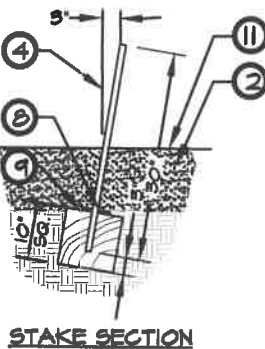
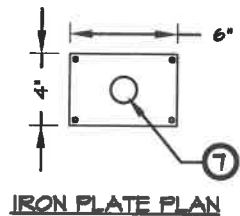
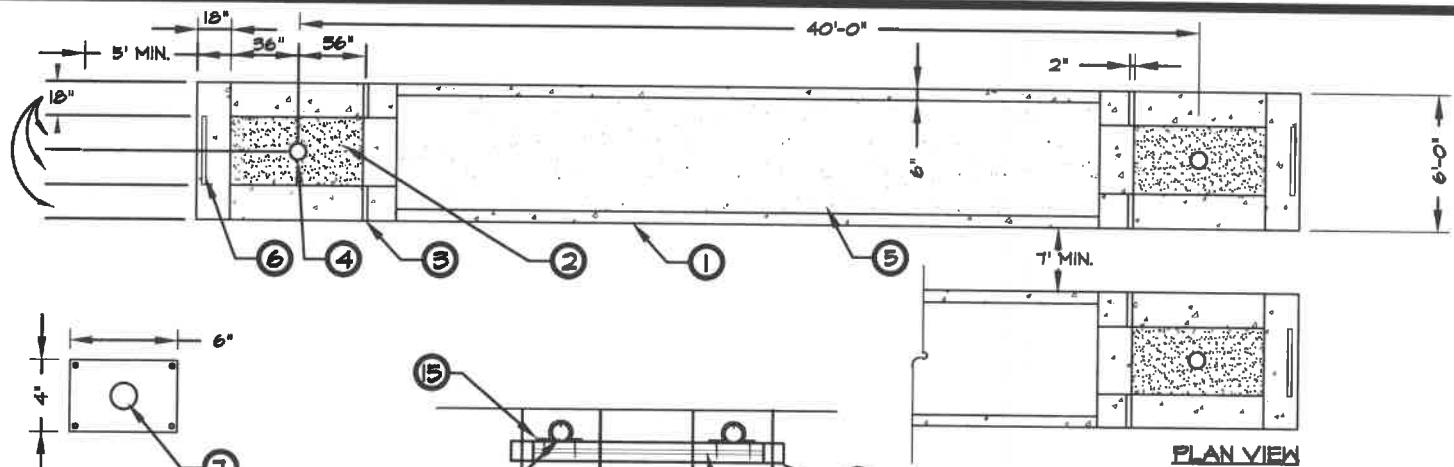
APPROVED BY:
[Signature]
PARKS & RECREATION DIRECTOR

DRAWING NO.
S-2

DATE: 2017



- NOTES**
- WHITE THERMOPLASTIC PAINTED STRIPING, MIN. 7 MIL THICK. DIMENSIONS ARE FROM CENTER OF LINES.
 - GOAL PRODUCT: STEELCRAFT #12044-03-600N WITH FAN SHAPED BACKBOARD. PROVIDE NYLON NET, INSTALL GOAL W/ REINF. CONC. FOOTINGS AND MOUNT ALL ITEMS PER MANUFACTURER'S RECOMMENDATIONS.
 - CONCRETE SLAB, BROOM FINISH, 5" THICK WITH #3 REBAR 12" O.C. EACH WAY, CENTERED IN SLABS, ON 4" THICK AGGREGATE BASE COMPACTED TO 95% MDD, OVER COMPACTED SUBGRADE TO 90% MDD. CROWN SLAB AT 1.5% SLOPE TOWARD ALL EDGES UNLESS OTHERWISE INDICATED ON GRADING PLAN.



LEGEND

- ① 6" DEEP CONC. 2500 PSI, W/ #4 REBAR CONTINUOUS
- ② DECOMPOSED GRANITE, 8" DEEP
- ③ 2" W. PAINTED FOUL LINE (YELLOW)
- ④ 1" STEEL STAKE, SEE NOTE A
- ⑤ 6" DEEP DARK BROWN DECORATIVE BARK MULCH OR OTHER SURFACING PER PLANS
- ⑥ 4' HIGH CEDAR FENCE BACKSTOP, TYP; SEE BACKSTOP DETAIL PLAN AND SECTION
- ⑦ 1-1/8" DIAMETER HOLE
- ⑧ 1/4" TH. IRON PLATE
- ⑨ 10" X 10" SOLID WOOD BLOCK
- ⑩ 1" X 12" CEDAR PLANKS
- ⑪ FINISHED GRADE
- ⑫ 4" X 4" CEDAR FRAME W/ 1" X 1" CONT. NOTCH ON INSIDE TO RECEIVE PLANKS
- ⑬ CONCRETE FOOTING, 2500 PSI MINIMUM
- ⑭ 2-1/4" GALV SCH 40 PIPE W/ PRESSED STEEL ROUNDED CAP
- ⑮ 1" X 1/4" GALV. STRAPS W/ SS TAMPER PROOF WOOD SCREWS

NOTES

- (A) STAKES SHALL BE 1" DIAMETER COLD ROLLED STEEL 30" LONG, 14" TO 15" EXPOSED ABOVE GRADE, TILT SLIGHTLY FORWARD 3"
- (B) BLOCK SHOULD BE PRESSURE TREATED DOUGLAS FIR OR APPROVED EQUAL
- (C) DRILL 1" DIAMETER BY 7" DEEP HOLE INTO BLOCK AND DRIVE PEG INTO BLOCK
- (D) SLIP IRON PLATE OVER PEG AND ATTACH WITH FOUR LAG SCREWS
- (E) USE BLUE CLAY IF POSSIBLE OR DECOMPOSED GRANITE. SUBMIT SAMPLE FOR APPROVAL.
- (F) INSTALL APPROX. 5" X 24" SIGN READING "DO NOT STAND BEHIND PIN", WITH 4" HT. LETTERING

HORSESHOE COURT LAYOUT

NO.	REVISED	BY
DRAWN BY:	C. BROWN	
CHECKED BY:	J. COURTNEY	
SCALE:	NONE	

CITY OF MANTECA
PARKS & RECREATION DEPARTMENT

APPROVED BY:	
PARKS & RECREATION DIRECTOR	
DRAWING NO.	S-3
DATE:	2017