



PLANNING COMMISSION MEETING

7:00 PM

July 13, 2023

Planning Commission meeting packets are prepared several days prior to the meeting. This information is reviewed and studied by the Commissioners eliminating lengthy discussions to gain a basic understanding. Timely action and short discussion on agenda items does not reflect lack of thought or analysis on the part of the Planning Commission.

Public comment on agenda items may only be made in person.

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PLEASE NOTE: Public participation is NOT available through YouTube.

- 1. CALL TO ORDER**
- 2. PLEDGE OF ALLEGIANCE**
- 3. ROLL CALL**
- 4. ADDITIONS TO OR DELETIONS FROM THE AGENDA**
- 5. APPROVAL OF MINUTES**
 - A. Planning Commission Meeting Minutes - 6.08.23**
 - B. Planning Commission Meeting Minutes - 6.22.23**
- 6. CONSENT AGENDA**

7. PUBLIC HEARINGS

A. ORDINANCE TO AMEND ORDINANCE NOS. 4.52.1, SERIES OF 2004, 4.52.2, SERIES OF 2006, AND 4.52.3, SERIES OF 2008, TO AMEND THE TITLE TO CHAPTER 10.10, SUBSECTION 10.10.010(a), AND SECTIONS 13.06.070, 13.07.080, 13.07.140 AND 13.10.110 OF THE PARKER MUNICIPAL CODE CONCERNING THE PARKS, TRAILS, OPEN SPACE & STREETScape DESIGN AND CONSTRUCTION MANUAL

Applicant: Town of Parker
Location: Townwide
Department: Community Development/Parks and Recreation,
Mary MuneKata, Brett Collins

B. HIGHLANDS AT KING'S POINT PD AMD 1

Applicant: THK Associates
Location: North of Cottonwood Dr. between King's Point
Way and E470
Department: Community Development, Amber Woods
TRAKiT No.: Z22-035

8. PLANNING COMMISSION ITEMS

9. STAFF ITEMS

10. ADJOURNMENT



PLANNING COMMISSION MINUTES

June 8, 2023

Planning Commission Chairman Gary Poole called the meeting to order at 7:00 p.m.

The Planning Commission and audience joined in saying the Pledge of Allegiance.

Also present and seated were Commissioners Richard Foerster, Ruth Ann Nelson, Roxy Colette and Jane Lane.

ADDITIONS TO OR DELETIONS FROM THE AGENDA

None

APPROVAL OF MINUTES

Commissioner Ruth Ann Nelson moved to approve the May 11, 2023, meeting minutes. Commissioner Rich Foerster seconded; a vote was taken and passed unanimously.

PUBLIC HEARING OPENED: 7:02 P.M. – STROH RANCH PLANNED DEVELOPMENT 3RD AMENDMENT

Applicant: Norris Design
Location: North of Stroh Road and West of Parker Road
Department: Community Development, Julia Duncan
TRAKiT No.: Z22-016

Planning Commission Chairman Gary Poole read a statement to the commissioners and audience addressing hearing protocol and structure including staff and applicant presentations, public comment, staff and applicant response and commissioner discussion.

STAFF PRESENTATION

Julia Duncan, Associate Planner, presented the staff report proposing a PD Amendment to add 275 units to the Stroh Ranch PD and allocate them to the Mixed-Use Planning Area for Filings 14 and 15 and amend the commercial uses permitted within the same Planning Area. Ms. Duncan concluded with the determinations in the staff report that the Planning Commission recommend Town Council approve the zoning.

Commissioner discussion with staff:

- Commissioner Ruth Ann Nelson asked about the minimum amount of commercial within a community center; *(staff said the 2035 Parker Master Plan recommends a minimum of 33% within a community center).*
- Commissioner Ruth Ann Nelson asked what the percentage of commercial is in this community center; *(staff said 52.6% of the 47.7 acres).*
- Commissioner Ruth Ann Nelson asked for the definition of market rate; *(staff said it is what the market dictates, it's not covenant, or deed restricted on affordability).*
- Commissioner Roxy Colette asked if this area is currently zoned mixed use, and if it allows for medium density residential within the community center commercial; *(staff said medium density residential is within this community center commercial which has different standards than a medium density residential neighborhood).*
- Commissioner Roxy Colette asked if the three and a half dwelling units per acre of medium density is the reason for the rezoning; *(staff said no, the community center designation in the master plan allows for a higher density, that Mixed Use planning areas within the planned development allow for 22 dwelling units per acre, and what is being requested is 12 dwelling units per acre which is less and so this rezoning is specifically related to the PD and not the master plan.).*
- Commissioner Roxy Colette asked why the rezoning includes the elimination of auto uses; *(staff said that the elimination of high intensive automotive uses would be a benefit to the community and allow for higher end retail).*
- Commissioner Jane Lane asked if the dwelling units per acre that's being referenced is for the entire PD and not just the proposed amended portion of the PD; *(staff said the PD allows for a maximum density for this planning area of 22 dwelling units per acre. The amendment would allow what they're proposing. The 275 dwelling units per acre equates to 12 dwelling units per acre).*
- Commissioner Jane Lane asked if in this planning area, specifically, the number of units per acre is lower density than what was originally allowed under the PD *(staff said yes).*
- Commissioner Jane Lane asked if the staff report specifically states that there is no availability of transfer of units from one portion of the PD to this one because it was not exercised at a previous moment in time, so we're changing the density, but we're changing it within these particular filings; *(staff said yes).*
- Commissioner Jane Lane asked for an explanation about the criteria that it needs to meet engineering standards for roadway design, but the staff report does not specifically call out that it has been approved by the engineering department, but rather that it will be; *(staff said the engineering department did do a review of the traffic study. And when the actual site plan is applied for the applicant will have to either conform to those or do new studies, depending on how the development proceeds.).*
- Commissioner Richard Foerster asked if the Town is still using the 80/20 guideline referring to 80% single-family to 20% multifamily ratio; *(staff said yes).*

APPLICANT PRESENTATION

Carolyn White, land use counsel for Mill Creek Residential, Bill Mahar, Norris Design and Nick Halstead, Mill Creek Residential gave the presentation.

- The applicants provided company background, company philosophy and recent projects.
- The applicants provided an overview of the project.
- The applicants provided a summary of the PD amendment.
- The applicants provided summary of their public outreach efforts.

COMMISSIONER DISCUSSION WITH STAFF AND APPLICANT

- Commissioner Ruth Ann Nelson asked if there are height restrictions for the commercial buildings; *(staff said the building height is dictated by the mixed-use development standards in section K of the PD, which limits height to 40 feet).*
- Commissioner Ruth Ann Nelson asked if the PD was not amended what would the total allowed dwelling units be; *(staff said 221 dwelling units had been transferred and not built that would be available to the mixed uses planning areas).*
- Commissioner Ruth Ann Nelson asked if there are other property within the PD planning areas that the dwelling units could also be applied to; *(staff said no).*
- Commissioner Ruth Ann Nelson said everything is completely built out except for these units; *(staff said yes for the 221 units and the request is for 275. So they're asking for 54 additional units what would have been originally allowed by right under the PD for this area).*
- Commissioner Ruth Ann Nelson asked for clarification on the need for the 54 additional units; if the zoning change is only for the additional 54 units being requested other than the removal of some auto related uses; *(staff said that the 221 units that could have been built under the original PD or gone now, so a PD amendment would be needed to get the 221 units back, and we are proposing a total of 275 units for an increase of 54 units, but a reduction from the original proposal of 322).*
- Commissioner Jane Lane clarified that today the applicant is actually requesting an amendment to the PD for 275 units because zero units are currently allowed by the PD and the reference to an increase of only 54 units is not accurate; *(applicant agreed).*
- Commissioner Roxy Colette asked why 221 units are no longer available; *(staff said the PD allowed for approximately 2,800 units to be built, and 221 units were not built and could have been transferred to this mixed-use planning area with the caveat the 221 units needed to be transferred administratively at the time of site plan, but they weren't so they were lost).*
- Commissioner Ruth Ann Nelson asked why the units were not transferred at the time of site plan; *(staff said it would have had to been transferred by the applicant of the planning area to the mixed use area).*
- Commissioner Ruth Ann Nelson asked if the developer will retain ownership of the outlying commercial properties and who will manage the commercial property; *(applicant said the ownership and operation of these structures is still to be determined, and the management of the commercial in the mixed use properties will be managed by Mill Creek).*

- Commissioner Ruth Ann Nelson asked if the applicant has history managing the mixed-use commercial; *(applicant said yes)*.
- Commissioner Rich Foerster asked if any of the 275 units will be subsidized housing; *(applicant said no, it is all market rate)*.
- Commissioner Roxy Colette asked if Parker has mixed-use vertical building; *(staff said that downtown has ground floor retail and offices above and the hotel on Mainstreet has ground floor retail and hotel occupancy above, however they are not vertical mixed-use as proposed here tonight, but the Town does have some projects in the pipeline such as the Confluence projects downtown that will be mixed-use vertical; applicant said it may not exist in great numbers today, but it is a goal of the Town to get towards more vertically integrated mixed use)*.
- Commissioner Ruth Ann Nelson asked if the apartments on Mainstreet and Dransfeldt Rd are vertical mixed-use; *(staff said yes)*.
- Commissioner Roxy Colette asked the applicant to explain high quality retail and how it is secured; *(applicant said they work with local brokers to identify missing retail niches in Parker that can't afford standalone buildings such as coffee shops, delicatessens, service accounting firms and professional office firms)*.
- Commissioner Roxy Colette asked the applicant to provide traffic calming and traffic mitigation details; *(applicant said the project is not at that stage yet, but they are talking with neighbors, listening to their concerns and working with Town staff to make sure traffic plans align with Town requirements)*.
- Commissioner Jane Lane asked about potential traffic stacking; *(applicant said traffic will be evaluated in conjunction with Town staff as the project progresses forwarded and the applicant locate the stand alone commercial and mixed-use areas with traffic in mind)*.
- Commissioner Jane Lane asked about traffic circulation, setbacks and zoning as it relates to the proposed parking behind existing single-family residences; *(applicant said this is only a conceptual plan, but they are mindful of parking placement placed in the rear away from interior streets to preserve a family oriented and walkable neighborhood and they will landscape and buffer the setback extensively and likely exceeding code requirements.)*.

PUBLIC COMMENT

- Steven Matthews, who resides at 12971 Norway Maple St. Parker, and is the Village on the Green HOA President, said their major concerns are traffic, roads and traffic lights.
- Dan Jones who resides at 12955 Norway Maple St., Parker, said it looks like big money has come back to Parker, talked about recently built apartments, asked about the traffic study and asked that the applicant build a grocery store.
- Austin Canady, who resides at 12361 Nate Cir., Parker, thanked Commissioner Jane Lane for clarifying details, talked about crime in the area and asked what will be done when more people move in.

- Joy Overbeck, who resides at 19692 Man Creek Dr. Unit D, Parker, a Stroh Ranch HOA Board member, talked about her opposition to adding more apartments to the area, a recently added HUD complex, traffic concerns, discussed confusion regarding the number of apartments being proposed and existing zoning.
- Nick Zimmerman, who resides at 12837 Silver Plume St. Parker, said the applicant's door knocking campaign only had a 20% support for the project, asked for clarity on the Master Plan's circle, said that homeowners purchased homes with the understanding that the 221 units were not available, talked about traffic and prairie dogs, lack of consistency with the rest of Parker in regards to vertical mixed-use and does not think this is the best location for these apartments.
- Justin Scranton, who resides at 12937 Ironstone Way #301, Parker, talked about the effect this project would have on property values, congestion, density, possible future recession repercussions, adding a grocery store instead of apartments, impacts to water and sewer, views, dust control during construction, the use of local builders for the construction and the difference in elevation between existing properties and proposed apartments.
- Eric Ross, who resides at 18952 Clear Creek Dr. Parker., discussed his concerns regarding changes to the planned development document and how it impacts current owners.
- Kathleen Petrick, who resides at 18267 Michigan Creek Way, Parker, discussed education and schools as it relates to this proposal.
- Curtis Kirk, who resides at 19046 Oak Creek Pl., Parker, talked about what concessions the developer or the Town are going to give in exchange for the 275 units, potential traffic impacts, how a project such as this can be considered without final conceptual plans, engineering plans, etc.

STAFF'S RESPONSE TO PUBLIC COMMENT

- This application is a zoning request only and not a request to amend the Master Plan.
- The circle that shows the community center on the master plan map is an approximate circle. It's always been represented graphically at the cross section of a major intersection.
- Of the comments that were received through 6 pm this evening and included in the Hearing Packet, the Town received 36 resident letters of support and 17 email comments, 15 of which were in opposition and two of which were in support.
- Prairie dogs are regulated by our prairie dog ordinance. Prairie dogs have to be relocated or humanely euthanized. There is a 30 day pause after any application's approval prior to a grading permit, where the applicant must go through our prairie dog ordinance and sign an affidavit saying they've worked with local dog relocation groups.
- Construction best management practices are required, and our engineering, public works and building departments can speak more to that. For example, irrigating during excavation and grading to keep dust contaminants at low levels.

- There was an affidavit signed that notification adhered to Town standards of noticing adjacent neighbors for water.
- The property is within the Parker Water Sanitation District. All required water reviews for submission of the zoning request were submitted and included in the original application.
- Public improvements are addressed at the site plan application including traffic mitigation, traffic lights, sidewalk improvements, streetscapes, etc.

APPLICANT'S RESPONSE TO PUBLIC COMMENT

- Mill Creek Residential has their own construction company, will act as the general contractor and hire local subcontractors to perform the work.
- School capacity and education will be reviewed during the site plan review process by the school district. Also, multifamily residential typically has a lower student population than single family residential.
- Clarified that only the zoning application is being presented, not the actual project. Only zoning parameters such as uses, densities, building heights, etc. are being considered and that more detailed documentation will be included in the actual site plan.
- Town wide, region wide and statewide, there is an urgent need for more housing, particularly multifamily and alternative product types of housing compared to single family detached.
- This is the last undeveloped area in Stroh Ranch and was always intended to be developed.

ADDITIONAL COMMISSIONER DISCUSSION WITH STAFF AND APPLICANT

- Commissioner Ruth Ann Nelson asked if speed limits will be increased or decreased with the additional traffic on the collector and main roads; *(staff said they are unable to predict but will probably stay the same).*
- Commissioner Ruth Ann Nelson asked about traffic calming options; *(staff said the town does have a program, the Neighborhood Traffic Calming Partnership, and involves engineering, public works and the police department, which works in stages of escalation when a perceived speeding issue is identified.).*
- Commissioner Roxy Colette asked whether the traffic studies included the residents in the new, nearby apartments and the new residents being added along Crowfoot Valley Rd. and the two lane bridge on Stroh which is narrow; *(staff said the widening of Stroh Rd. bridge over Cherry Creek which is in the five year CIP plan is currently in the design phase and traffic studies and adjacent traffic studies were provided to the applicant's engineer).*
- Commissioner Rich Foerster asked in the absence of this application, would there be more land available for retail; *(staff said the PD currently allows both commercial and a variety of residential types and since the 221 units were not transferred, today the 23 acres could only be commercial which includes automotive uses).*
- Commissioner Ruth Ann Nelson asked for an explanation of the differences between this application and the South Range Apartments ; *(staff said the Dominion/South Range Crossings was a site plan, that the land use for multifamily already permitted by zoning*

and tonight is a proposal to amend the current Stroh Ranch PD zoning brought forward by the property owner).

- Commissioner Ruth Ann Nelson asked for an explanation on the addition of multi-use commercial to the PD which is not included in the Master Plan; *(staff said it is actually called mixed use commercial and Town staff requested the applicant to preserve specific parcels for commercial only to meet the intent of the PD in addition to the mixed-use commercial / residential).*
- Commissioner Ruth Ann Nelson asked if the changes proposed to the PD effect other areas in the PD if they were to be redeveloped; *(staff said no, that these proposed changes only affect section K of the PD which is exclusive to mixed use in filings 14 and 15).*
- Commissioner Ruth Ann Nelson asked if mixed use requires residential; *(staff said no, that the Town has two definitions for mixed use: vertical mixed use, which is a more traditional mixed use with ground for commercial and residential above and horizontal mixed use, which is just different types of commercial uses which could also be commercial adjacent to horizontal residential.).*
- Commissioner Ruth Ann Nelson asked about the elevation difference between existing homes and the proposed development; *(staff said they do not have a grading plan to evaluate and that a site plan would be evaluated with a grade plan and reviewed against the PD's building heights and setbacks).*
- Commissioner Ruth Ann Nelson asked what the required setbacks are in the PD for the homes going north and south next to Village on the Green homes; *(staff said the rear setback is 20 feet but there's a number of provisions within the PD, including what's known as a floor area ratio (F.A.R.), which limits development to 0.6 to 1. For example, if you had a thousand square foot lot, you could build a 600 square foot building. So, the floor area ratio has a very limiting effect on or limiting on the massing and build out of a building because it limits side, rear and front yards in height because you're only allowed a maximum square footage of 0.6 to 1, and the Town also requires 45% landscaping for multifamily).*
- Commissioner Jane Lane asked without a grade plan, how would the height of the proposed building be measured; *(staff said there is not a request to the change building heights and a 40 foot building could be built today by right which is measured from the grade around the building to the peak of the building).*
- Commissioner Ruth Ann Nelson asked what the difference is between multi-family residential traffic, single family residential traffic and commercial property traffic in general, not just for this site; *(staff said all of our traffic studies are required to follow the Institute of Traffic Engineering (ITE) accepted trip generation rates for a given use. For example, for a commercial use, ITE goes out and does studies on different commercial all over the country and figures out how many trips they tend to generate to come to an average and there is a difference between single (about nine trips per day per dwelling) and multi-family (about seven trips per day per unit).*

- Commissioner Jane Lane asked that the trip numbers be restated; *(staff said he doesn't have the commercial trip numbers, possibly the applicant does, but that single family is approximately nine trips per day and multi family is approximately 7 trips per day; applicant said that commercial use typically generate more traffic than residential uses, roughly a 33% reduction in average trips).*

**PUBLIC HEARING CLOSED: 8:55 P.M. – STROH RANCH PLANNED DEVELOPMENT
3RD AMENDMENT**

PLANNING COMMISSION DISCUSSION

- Commissioner Roxy Colette said he likes the design, that it appears a lot of thought went in to it, appreciates the applicant's community outreach efforts, pointed out that there is only one grocery store in the area, believed that King Soopers has a desire to expand which the area needs, noted that this proposal is adding high density at the edge of Town, believes that this project is a great design, but not at this location and would be appropriate closer to downtown, that it doesn't match the character of the existing surrounding neighborhoods such as Robinson Ranch, that these types of developments have been going in without much thought, doesn't like suburban sprawl which this is and is not in favor of this zoning amendment.
- Commissioner Ruth Ann Nelson said that Parker needs more attainable apartments, that folks that live in single family homes don't understand the need, that rental versus ownership is a growing preference among this demographic, is not sure if putting the residential into an area that is thought of as commercial is appropriate, is concerned about the addition of 275 more living units to the area, is concerned about the amount of additional trips and traffic that this project will add to the area and whether the area's roads can handle the increased traffic, talked about the Master Plan and the emphasis of mixed-use and the conceptual plans of this projects as it relates to building types and locations, that some commercial is included in this primarily residential project and will benefit the existing area's residents and the removal of automotive uses will also benefit the residents in the area, that this project would elevate that part of Town and wants to hear her fellow Planning Commissioner opinions before deciding how to vote on this zoning amendment.
- Commissioner Rich Foerster thanked the applicant for their community outreach, likes the plans presented for the project especially as the buildings are located next to Village on the Green Homes, believes that if the project were all commercial more traffic would be generated than just residential buildings, appreciates the elimination of the automotive uses, appreciates the added retail to the area which is needed for the growth in the this area and down south, likes the addition of a park to the community, talked about the 80-20 ratio as it relates to single family versus multi family homes that its just not a Stroh Ranch ratio but that it applies to all of Parker, said that Stroh Ranch was developed 35 years ago and that it is hard to predict and plan future population growth so traffic situations will need to be worked through, that traffic for this project will be less than if it

was all commercial, that the increase of units to the area is minimal at 1.9%, that the Town's nine criteria have been met and he will be in favor of the zoning amendment.

- Commissioner Jane Lane said she agrees with the last commissioner's comments, believes that the proposed zoning is needed now in the marketplace, believes there is a need in Parker for diversified types of housing, understands that it is difficult to not focus on the conceptual plans as presented, that the zoning to create additional housing type mixes is needed in the Town, that actual engineered, architectural plans are not part of the zoning amendment but will be included in a future site plan application, believes that the existing roads will handle the increased traffic, that the criteria have been met and is supportive of the zoning application.
- Commissioner Gary Poole thanked the applicant for their thoroughness with the presentation and community outreach, thanked the community who came out and provided their input, said that the Parker police chief said overall crime is down, that the school district will only sign off on projects like this if capacity exists, that student generation from apartments is traditional low, believes the addition of the apartments to existing surrounding area is a good blend, that this will bring affordable housing to the area that can possibly address the teacher shortage, likes the plan, believes it is the right use for the area, said that if zoning was left as commercial and automotive uses such as gas stations and auto repair stores were proposed, the community would not be supportive of the those uses either, that this area is not open space, but is private property and is in favor of the zoning amendment.
- Commissioner Ruth Ann Nelson said you can't have mixed-use without residential, is not particularly excited about the conceptual plans, but will vote in favor of the zoning amendment because this type of housing is needed in the Town and there is some commercial in the plans.

Commissioner Rich Foerster moved the Planning Commission recommend Town Council approve the zoning. Commissioner Jane Lane seconded; a vote was taken and was passed 4 – 1, with Roxy Colette opposing.

PLANNING COMMISSION ITEMS

None.

STAFF ITEMS

Bryce Matthews reminded the commissioners that Jeremiah Fettig sent an email that the Bike and Ped Master Plan has been posted in advance of the next Planning Commission Meeting.

ADJOURNMENT

Commissioner Rich Foerster moved that the meeting be adjourned. Commissioner Ruth Ann Nelson seconded the motion, and the motion was passed unanimously. The meeting was adjourned.

Jeff Miller
Recording Secretary

Gary Poole
Chair



PLANNING COMMISSION MINUTES

June 22, 2023

Planning Commission Chairman Gary Poole called the meeting to order at 7:00 p.m.

The Planning Commission and audience joined in saying the Pledge of Allegiance.

Also present and seated were Commissioners Richard Foerster, Roxy Colette, Ruth Ann Nelson, Erik Frandsen, Eliana Burke and Nick Metz.

ADDITIONS TO OR DELETIONS FROM THE AGENDA

None

APPROVAL OF MINUTES

None.

PUBLIC HEARING OPENED: 7:01 P.M. – A RESOLUTION TO ADOPT THE BIKE AND PEDESTRIAN MASTER PLAN AS A PART OF THE TOWN OF PARKER TRANSPORTATION MASTER PLAN

Applicant: Town of Parker
Location: Townwide
Department: Community Development, Jeremiah Fettig

STAFF PRESENTATION

Jeremiah Fettig, Associate Planner, presented the staff report proposing a resolution to adopt the Bike and pedestrian Master Plan as a part of the Town of Parker Transportation Master Plan. Mr. Fettig concluded with the determinations in the staff report that the Planning Commission recommend Town Council adopt the Bike and Pedestrian Master Plan as a Part of the Parker Transportation Master Plan.

Commissioner discussion with staff:

None

PUBLIC COMMENT

None

Additional Commissioner discussion with staff:

- Commissioner Rich Foerster said Denver recently had passed a resolution to lower speed limits by 5 miles per hour (MPH), said he notices in Parker that many vehicles travel at 10 to 20 MPH over the speed limit, that a similar lowering of the speed limit in Parker might make it safer for bicyclists; *(staff said there is no specific recommendation to lower speed limits but the Town does monitor data that relates to bike or pedestrian impacts or collisions, and gathering information from high traffic intersections will allow the Town to mitigate or slow traffic with recommended improvements found in the report).*
- Commissioner Eliana Burke appreciates the Town's efforts to completing this update, she likes what she heard such as multimodal, the report seems to be comprehensive, and that safety is the number one concern.
- Commissioner Ruth Ann Nelson asked if any one area was added to the report based on public comment; *(staff said comments concerning missing trail connections that were received from this plans mapping tool influenced the Open Space Trails and Greenways Master Plan).*

PUBLIC HEARING CLOSED: 7:17 P.M. – A RESOLUTION TO ADOPT THE BIKE AND PEDESTRIAN MASTER PLAN AS A PART OF THE TOWN OF PARKER TRANSPORTATION MASTER PLAN

PLANNING COMMISSION DISCUSSION

- Commissioner Eliana Burke said she is in favor of the proposal.
- Commissioner Rich Foerster thanked Mary Munekata and Jeremiah Fettig for their efforts on the project, and community outreach and will be recommending approval.
- Commissioner Roxy Colette said that Jeremiah Fettig and Mary Munekata have done a tremendous job on the project including the vision statement, the approach of safety first, that it will improve the character of the Town with positive impacts and is will recommend approval.
- Commissioner Ruth Ann Nelson said this is tremendous improvement over the previous 2005 document considering the amount detail that has been added including pictures of traffic calming measures.
- Commissioner Erik Frandsen agrees with his fellow commissioners, thanked staff for their efforts, that it is great document and is in favor.
- Commissioner Nick Metz agreed with his fellow commissioners and thanked staff for all their hard work.
- Commissioner Gary Poole thanked Jeremiah Fettig and Mary Munekata for the work they have put into this thorough piece of work.

Commissioner Rich Foerster moved the Planning Commission recommend Town Council adopt the Bike and Pedestrian Master Plan as a Part of the Parker Transportation Master Plan. Commissioner Ruth Ann Nelson seconded; a vote was taken and was passed unanimously.

PLANNING COMMISSION ITEMS

- Chair Gary Poole thanked Commissioner Rich Foerster and Kim Rodell for their years of

service on the Planning Commission, that they have been valuable members, he has enjoyed working with them and wished them the best of luck in the future.

- Commissioner Rich Foerster said he has served on the Planning Commission for the past seven years, has learned a lot, that he has enjoyed his experience and that he hopes more citizens will apply.
- Chair Gary Poole asked staff if there will be New Commissioner Orientation on June 29: *(staff said yes and that all current commissioners are invited to attend as well at 5:30 pm).*

STAFF ITEMS

Mary Munekata on behalf of staff and the Town recognized Rich Foerster's dedicated seven years of service to the Planning Commission, that he will be missed and presented him with a plaque.

ADJOURNMENT

Commissioner Erik Frandsen moved that the meeting be adjourned. Commissioner Eliana Burke seconded the motion, and the motion was passed unanimously. The meeting was adjourned.

Jeff Miller
Recording Secretary

Gary Poole
Chair



Planning Commission Staff Report

Planning Commission Date: 07/13/2023

Town Council Date: 07/17/2023

Meeting Type: Amend Ordinance Nos. 4.52.1, Series of 2004, 4.52.2, Series of 2006, and 4.52.3, Series of 2008, to Amend the Title to Chapter 10.10, Subsection 10.10.010(a), and Sections 13.06.070, 13.07.080, 13.07.140 and 13.10.110 of the Parker Municipal Code Concerning the Parks, Trails, Open Space & Streetscape Design and Construction Manual.

Location: Townwide

Project Planner: Mary Munekata, Senior Planner
Brett Collins, Parks Project Manager

Applicant: Town of Parker

Executive Summary: *The Parks, Trails, Open Space & Streetscape Design and Construction Manual* (the Manual) project is a follow-on to the Town's 2019 adoption of revised standards in the Land Development Ordinance (LDO) for parks, trails and open space required with new residential development. To implement these revised standards, new and clear design guidelines, illustrations, and construction specifications are needed to supplement them. Additionally, the Town's current Construction Specifications and Design Considerations for Parks, Trails and Streetscapes manual that provides technical guidance for the design and construction of these improvements also needs updating.

The Construction Specifications manual has been revised, expanded and renamed the *Parks, Trails, Open Space & Streetscape Design and Construction Manual*. The Manual will be used by applicants and Town staff to guide the planning, design, and construction of required parks, trails, and open space within new residential development.

Staff Recommendation:

Approval

RECOMMENDED MOTION

“I move the Planning Commission recommend Town Council amend Sections 13.06.070, 13.07.080, 13.07.140 and 13.10.110 of the Parker Municipal Code Concerning the Parks, Trails, Open Space & Streetscape Design and Construction Manual.”

ALTERNATIVE MOTIONS

“I move the Planning Commission deny amending Sections 13.06.070, 13.07.080, 13.07.140 and 13.10.110 of the Parker Municipal Code Concerning the Parks, Trails, Open Space & Streetscape Design and Construction Manual.”

“I move the Planning Commission vote to continue the public meeting to amend Sections 13.06.070, 13.07.080, 13.07.140 and 13.10.110 of the Parker Municipal Code Concerning the Parks, Trails, Open Space & Streetscape Design and Construction Manual.”

I. BACKGROUND/DISCUSSION

Parks, trails, and open space play a significant role in the Town of Parker residents' quality of life and have been a long-standing priority of the Town Council. In 2019, the Town updated the LDO standards for parks, trails, and open space for new residential development. These standards govern the amount of park area per household and types of parks that must be provided with new residential development as well as the types of amenities to be incorporated in the parks. The standards support the Town's goal of having new residential development incorporate adequate park, recreational, and open space opportunities and amenities.

In addition to the new design guidelines above, the Town's current *Construction Specifications and Design Considerations for Parks, Trails and Streetscapes* manual that provides technical guidance for the design and construction of these improvements needs updating. This project combines the recently updated LDO parks standards and the revision to the current technical construction manual into one comprehensive document for the design and construction of parks, trails, open space, and streetscapes.

The Manual has been developed by staff from Parks and Recreation and Community Development with the assistance of a parks design consultant and renamed the *Parks, Trails, Open Space & Streetscape Design and Construction Manual*. The proposed new and revised design guidelines will supplement the previously updated LDO standards for parks, trails and open space. The Manual will assist applicants who have submitted residential development applications by providing clarity about the Town's expectations for the planning, design and construction of parks, recreation, and open space amenities with the development. It also provides applicants with flexibility in meeting the Town's goal of achieving high quality amenitized parks within new residential neighborhoods. The Manual will also be used by Town staff to inform the design of new municipal parks and renovation of existing parks.

The Manual provides specific guidance on parks, trails and open space including:

- **Alignment** with the:
 - *Parks, Recreation and Open Space Master Plan*;
 - *Open Space, Trails and Greenways Master Plan*;
 - *Land Development Ordinance* (revised parks standards); and
 - *Parker 2035 Master Plan*
- **Clear definitions** to understand and use the Manual
- **Design principles** to establish design intent, values and important considerations for planning and designing parks, trails, open space, and streetscapes
- **Design guidelines** that provide specific design criteria and standards to achieve the identified design principles
- **Standard construction specifications** and details for implementation

As a technical guiding document, the *Parks, Trails, Open Space & Streetscape Design and Construction Manual* will continue to be updated administratively to stay current, incorporate best practices and reflect changing community needs. Applicants and the development community will benefit from improved guidance and standards with greater predictability for successful outcomes in terms of parks, recreation, and open space improvements. The new Manual is comprehensive, user-friendly, illustrative, and includes the following components:

1. **Section 01** | Introduction
2. **Section 02** | Parks, Trails, & Open Space
3. **Section 03** | Streetscape
4. **Section 04** | Parks, Trails, Open Space, & Streetscape Amenities
5. **Section 05** | Parks, Trails, Open Space, & Streetscape Materials
6. **Section 06** | Signage Standards
7. **Appendix A** | Standard Construction Details
8. **Appendix B** | Standard Construction Specifications

Planning Process & Approach

The project kicked off in June 2022. The Community Development Department Planning Division and the Parks and Recreation Department led the development of this manual along with coordination with Engineering/Public Works and Cultural. During the course of the project, the parks design consultant Hord|Coplan|Macht and staff reached out to developers, landscape architects, and land use planning firms working in the Town on residential projects for comments and professional input. Their comments helped to inform the development of the Manual. Staff provided Planning Commission updates on the project during study sessions on October 27, 2022, and April 13, 2023.

Goals

The Goals and Guiding Principles stated below provide the framework of the *Parks, Trails, Open Space & Streetscape Design and Construction Manual*. The Manual will be used in conjunction with the Town's Land Development Ordinance and other planning documents to ensure high quality park design and amenities for our residents.

- **Goal 1:** Align with the Parks, Recreation & Open Space Master Plan and the Open Space, Trails and Greenways Master Plan.
- **Goal 2:** Provide flexibility to achieve the desires and aspirations for the highest quality and amenitized parks.
- **Goal 3:** Develop a manual that can be easily revised and updated.
- **Goal 4:** Provide a manual that incorporates information in a clear and easily referenced format.

Guiding Principles

1. Promote health and wellness in the community, including active and passive recreational activities.
2. Design all parks, trails, open space and streetscapes to be accessible and inclusive.
3. Create safe communities with a ‘hometown feel’ through programs and amenities within Parker’s parks, trails and open space.
4. Create sustainable and long-lasting public spaces for generations to enjoy.

Implementation

The *Parks, Trails, Open Space & Streetscape Design and Construction Manual* is a living document that will require periodic updating to reflect current best practices to remain relevant. The manual will provide direction to applicants and consultants during the development review process and will provide consistent outcomes for Town projects.

II. PARKER 2035 MASTER PLAN

[Parker 2035 Master Plan | Town of Parker - Official Website](#)

MASTER PLAN CONSISTENCY	
Master Plan Designation	Choose an item. ☒ Consistent ☐ Inconsistent
Master Plan Character Discussion	The <i>Parks, Trails, Open Space & Streetscape Design and Construction Manual</i> is consistent with, and supports the parks and open space standards in the Land Development Ordinance. The Manual also supports existing master plans adopted by the Town including the <i>Parker 2035 Master Plan</i> , the <i>Parks, Recreation and Open Space Master Plan</i> , and the <i>Open Space, Trails and Greenways Master Plan</i> . Implementation of these existing plans work in coordination with the newly revised manual which provides the design and technical specifications for the construction of identified parks, trails and open space facilities. These master plans provide additional policy guidance and framework for the planning and design of parks, trails & open space amenities that enhance the Town’s physical built environment, character, and community connections.
Consistent Goals/Strategies	<u>Parker 2035 Master Plan</u>

The *Parks, Trails, Open Space & Streetscape Design and Construction Manual* is consistent with the *Parker 2035 Master Plan* as parks, trails and open space are highly valued and play a significant role in the Town's quality of life. The Manual supports the goals and strategies of the master plan for the development of park lands and open space amenities and provides the technical resources and specifications for construction.

Chapter 6: Land Use (Goal 1): Growth shall be appropriately directed and site-planned to sustain our community's needs as we grow.

Strategy 1.A: Strengthen the identity of Parker by encouraging a balance of land uses that supports a high quality of life and contributes to the hometown character of our community.

Strategy 1.I: Ensure that open space and parks are dedicated and made available to meet the needs of the community today and into the future.

Chapter 12: Natural Resource Protection (Goal 1): Preserve and protect significant natural areas that provide habitat essential for the conservation of plants, animals and their associated ecosystems.

Strategy 1.A: Encourage and assist efforts by private landowners and others to integrate natural areas into new development and redevelopment through Town review processes.

Chapter 13: Open Space and Recreation (Vision in part): "Parker will sustain a balanced system of open lands, natural areas, recreational spaces and parks, including trails and open areas."

Open Space, Trails and Greenways Master Plan

The *Parks, Trails, Open Space & Streetscape Design and Construction Manual* is consistent with the *Open Space, Trails and Greenways Master Plan*, as the manual supports the master plan's goal and strategies by providing critical design guidelines & principles, and construction specifications for the actual development of identified open space, trails and greenways.

Goal 1 (Trails): Improve connectivity of the trail system within the Town and to the regional

	trail system. Goal 8 (Open Spaces): Plan open space and the built environment together to allow both uses to enhance the other. <u>Parks, Recreation and Open Space Master Plan</u> The <i>Parks, Trails, Open Space & Streetscape Design and Construction Manual</i> is consistent with the <i>Parker Parks, Recreations and Open Space Master Plan</i>. This master plan is a roadmap to ensuring the Town meets the growing needs of our active community. As the technical component for the planning, design and construction of parks, trails and open space, this new manual supports the policies of the master plan by implementing its vision: “Our Parker community will respect, manage and actively seek open space resources and recreational opportunities in ways that sustain and protect the natural environment while providing recreational opportunities and unobstructed views. As such, Parker will sustain a balanced system of open lands, natural areas, recreational spaces and parks, including trails and open areas.”
Staff Analysis	The <i>Parks, Trails, Open Space & Streetscape Design and Construction Manual</i> is consistent with the Parker 2035 Master Plan. The master plan is a policy document that guides the physical development of the Town, and the new Manual supports and implements these policies. The Manual also aligns with the visions, goals and strategies of these other relevant Town planning documents. Applicants and Town staff will benefit from using the Manual along with these plans and have a greater understanding of Town expectations for parks, trails, open space and streetscape improvements, flexibility in amenity options, and better predictability for facility outcomes.

III. CONCLUSION

The *Parks, Trails, Open Space & Streetscape Design and Construction Manual* will aid in the planning, design and construction process and be part of a more efficient and beneficial process for applicants and staff by providing more clarity up front in the development process of the Town’s expectations and options for parks, trails, open space and streetscape improvements.

IV. RECOMMENDATION

Staff recommends that the Planning Commission recommend Town Council Amend

Sections 13.06.070, 13.07.080, 13.07.140 and 13.10.110 of the Parker Municipal Code Concerning the Parks, Trails, Open Space & Streetscape Design and Construction Manual.

V. ATTACHMENTS

1. Ordinance 4.52.4
2. Parks, Trails, Open Space & Streetscape Design and Construction Manual

Report Approved By: Bryce Matthews, Assistant Director - Planning

ORDINANCE NO. 4.52.4, Series of 2023

TITLE: A BILL FOR AN ORDINANCE TO AMEND ORDINANCE NOS. 4.52.1, SERIES OF 2004, 4.52.2, SERIES OF 2006, AND 4.52.3, SERIES OF 2008, TO AMEND THE TITLE TO CHAPTER 10.10, SUBSECTION 10.10.010(a), AND SECTIONS 13.06.070, 13.07.080, 13.07.140 AND 13.10.110 OF THE PARKER MUNICIPAL CODE CONCERNING THE PARKS, TRAILS, OPEN SPACE & STREETSCAPE DESIGN AND CONSTRUCTION MANUAL

NOW, THEREFORE, THE TOWN COUNCIL OF THE TOWN OF PARKER, COLORADO, ORDAINS:

Section 1. Section 10.10.010, Subsections (a) and (b), of the Parker Municipal Code is amended to read as follows:

CHAPTER 10.10

Construction Specifications and Design Considerations for Parks, Trails and Streetscapes Parks, Trails, Open Space & Streetscape Design and Construction Manual

10.10.010 Adoption of standards by reference.

(a) The Town of Parker, Colorado, Parks, Trails, Open Space & Streetscape Design and Construction Manual ~~Construction Specifications and Design Considerations for Parks, Trails and Streetscapes~~ dated ~~August, 2004, and amended on August 21, 2006, and August 18, 2008~~ July 17, 2023 ("Standards"), and prepared by the Planning Department of Public Works and Parks, Recreation and Open Space Department, ~~are~~ is hereby adopted by reference as if set forth herein. ~~Copies of those Standards are on file with the Public Works Department and may be inspected by any person and are available for sale between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, holidays excepted.~~ The Standards are available to review on the Town's website.

(b) The technical methodology may be administratively amended from time to time by the Parks, Recreation and Open Space Director in order to meet the Standards set forth herein. The Parks, Recreation and Open Space Director may also adopt rules and regulations that are in conformity with this Chapter.

* * *

Section 2. Section 13.06.070 of the Parker Municipal Code is amended to read as follows:

13.06.070 Landscape regulations.

* * *

(m) Streetscape landscaping.

* * *

(3) Streetscape plantings.

a. Streetscape and median landscaping shall be in compliance with the Town's ~~Construction Specifications and Design Considerations for Parks, Trails and Streetscapes~~ Parks, Trails, Open Space & Streetscape Design and Construction Manual, as amended.

* * *

g. Other arterial or collector streets. For other arterial or collector streets, streetscape landscaping shall be in compliance with the Town's ~~Construction Specifications and Design Considerations for Parks, Trails and Streetscapes~~ Parks, Trails, Open Space & Streetscape Design and Construction Manual, as amended.

* * *

Section 3. Section 13.07.080 of the Parker Municipal Code is amended to read as follows:

13.07.080 Final plat.

* * *

(f) Final development reports and plans. The applicant shall submit the supporting materials necessary for the review of the final plat which address the following items. As determined by the Planning Department, the applicant may be required to provide other documentation not listed in this Section to aid in the review of the plat.

* * *

(10) A final landscape plan for the subdivision prepared in accordance with the Town of Parker ~~Construction Specifications and Design Considerations for Parks, Trails and Streetscapes~~ Parks, Trails, Open Space & Streetscape Design and Construction Manual that includes road rights-of-way, landscaped tracts and common areas.

* * *

Section 4. Section 13.07.140 of the Parker Municipal Code is amended to read as follows:

13.07.140 Dedications for parks, trails, open space and schools.

* * *

(b) General requirements. The developer shall provide for the construction of, at no cost to the Town or special district, all roads adjacent to the area being platted in conformance with the Town Master Plan, all roads adjacent to publicly dedicated sites, traffic signalization to serve the site, extensions of all utilities to the site and other public infrastructure as required by the Town Council. Security needed to ensure such improvements shall be required at the time of final platting as requested by the Town Council. All park facilities shall conform to the standards set forth in the Town's ~~*Construction Specifications and Design Considerations for Parks, Trails and Streetscapes*~~ *Parks, Trails, Open Space & Streetscape Design and Construction Manual*. All trails development shall conform to the criteria as outlined in the *Open Space, Trails and Greenways Master Plan* and the standards set forth in the Town's ~~*Construction Specifications and Design Considerations for Parks, Trails and Streetscapes*~~ *Parks, Trails, Open Space & Streetscape Design and Construction Manual*.

Section 5. Section 13.10.110 of the Parker Municipal Code is amended to read as follows:

13.10.110 Tree and shrub conservation and replacement.

* * *

(f) Replacement of trees and shrubs.

* * *

(3) The adequacy of the tree conservation plan with regard to replacement and relocated trees and shrubs shall be determined based upon the following criteria:

a. Positive criteria:

* * *

12. A species that is listed as a preferred species in the Town's Preferred Plant List, as adopted in the ~~*Construction Specifications and Design Considerations for Parks, Trails and Streetscapes*~~ *Parks, Trails, Open Space & Streetscape Design and Construction Manual*, as amended.

* * *

b. Negative criteria:

* * *

1. Susceptibility to insect and disease problems, or sensitivity to air or water pollution.

2. A species that is listed as an excluded species in the Town's Excluded Species List, as adopted in the ~~Construction Specifications and Design Considerations for Parks, Trails and Streetscapes~~ Parks, Trails, Open Space & Streetscape Design and Construction Manual, as amended.

* * *

Section 6. **Safety Clause.** The Town Council hereby finds, determines and declares that this Ordinance is promulgated under the general police power of the Town of Parker, that it is promulgated for the health, safety and welfare of the public, and that this Ordinance is necessary for the preservation of health and safety and for the protection of public convenience and welfare. The Town Council further determines that the Ordinance bears a rational relation to the proper legislative object sought to be obtained. The Town Council further finds that the title to this Ordinance was posted in two public places two days before the Town Council meeting, as provided by Section 7.5e. of the Town of Parker Home Rule Charter.

Section 7. **Severability.** If any clause, sentence, paragraph or part of this Ordinance or the application thereof to any person or circumstances shall for any reason be adjudged by a court of competent jurisdiction invalid, such judgment shall not affect application to other persons or circumstances.

Section 8. This Ordinance shall become effective ten (10) days after final publication.

INTRODUCED AND PASSED ON FIRST READING this ____ day of _____, 2023.

Jeff Toborg, Mayor

ATTEST:

Chris Vanderpool, Town Clerk

ADOPTED ON SECOND AND FINAL READING this ____ day of _____, 2023.

Jeff Toborg, Mayor

ATTEST:

Chris Vanderpool, Town Clerk

APPROVED AS TO FORM:

Kristin Hoffmann, Town Attorney



PARKER
COLORADO
Parks and Recreation

**PARKS, TRAILS,
OPEN SPACE
& STREETScape
DESIGN AND
CONSTRUCTION
MANUAL
2023**

ACKNOWLEDGEMENTS

Parks, Trails, Open Space & Streetscape Design and Construction Manual Revised and Adopted: July 17, 2023

Town of Parker Council

Jeff Toborg - Mayor
Anne Barrington - Town Councilmember
John Diak - Town Councilmember
Laura Hefta - Town Councilmember
Todd Hendreks - Town Councilmember
Joshua Rivero - Town Councilmember
Brandi Wilks - Town Councilmember

Town of Parker Staff

The development of this manual was a collaboration of multiple departments within the Town of Parker and includes the following:

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Town of Parker Planning Commission

Gary Poole - Chair
Eliana Burke
Roxy Colette
Richard Forester
Erik Frandsen
Ruth Ann Nelson
Kimberly Rodell
Jane Lane (Alternate Commissioner)
Nicholas Metz (Alternate Commissioner)
Ira Shapiro (Alternate Commissioner)

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John King Arts
Kay Park Recreation Co.
Kompan
Landscape Structures
Pillar Design Studios, LLC
Playworld
POPP Public Outdoor Ping Pong
RhinoSports
Sanderson Concrete
Town of Parker
Tulpi Designs
Velosolutions USA
Victory Stanley Inc.

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SECTION 055213 - PIPE AND TUBE RAILINGS

DIVISION 10 - SPECIALTIES

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DIVISION 11 - EQUIPMENT

SECTION 116800 - PLAY EQUIPMENT AND STRUCTURES

SECTION 116833.01 - OUTDOOR ATHLETIC EQUIPMENT

DIVISION 12 - FURNISHINGS

SECTION 129300 - SITE FURNISHINGS

DIVISION 13 - SPECIAL CONSTRUCTION

SECTION 133416.53 - CONTINUOUS ELEVATED ANGLE-FRAME BLEACHERS

DIVISION 31 - EARTHWORK

SECTION 311000 - SITE CLEARING

SECTION 312000 - EARTH MOVING

SECTION 312270.01 - TEMPORARY EROSION AND SEDIMENTATION CONTROL

DIVISION 32 - EXTERIOR IMPROVEMENTS

* SECTION 321313 - CONCRETE PAVING

* SECTION 321316 - DECORATIVE CONCRETE PAVING

* SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

SECTION 321400 - UNIT PAVING

SECTION 321540 - CRUSHER FINES PAVING

- * SECTION 321723 - PAVEMENT MARKINGS
- * SECTION 321726 - DETECTABLE WARNING SURFACING
 - SECTION 321800.01 - INFIELD SURFACING
 - SECTION 321813 - SYNTHETIC GRASS SURFACING
 - SECTION 321816.13 - PLAYGROUND PROTECTIVE SURFACING
 - SECTION 321823.03 - SPORTS COURT SURFACING
 - SECTION 323113 - CHAIN LINK FENCES AND GATES
 - SECTION 323119 - DECORATIVE METAL FENCES AND GATES
 - SECTION 323129.01 - WOOD FENCES AND GATES
 - SECTION 328400 - PLANTING IRRIGATION
 - SECTION 329113 - SOIL PREPARATION
 - SECTION 329200 - TURF AND GRASSES
 - SECTION 329300 - PLANTS
 - SECTION 329600 - TRANSPLANTING

* Sections provided are supplemental to CDOT specifications. Relevant CDOT specification Divisions and Sections are provided at Appendix B Standard Construction Specifications.

An aerial photograph of a theme park, likely Six Flags Great Escape & Escape Island, taken from a high vantage point. The image shows a large crowd of people walking through the park, which is filled with various rides and structures. In the background, a large roller coaster with a circular loop is visible. The sky is overcast with grey clouds. The entire image is overlaid with a semi-transparent blue filter. The text '01' is positioned on the left side, above a horizontal line, and the word 'INTRODUCTION' is written in large, bold, white capital letters across the center of the image.

01

INTRODUCTION



01 INTRODUCTION

The Town of Parker Land Development Code states “The Town hereby finds that it is in the public interest for all developments to provide landscape improvements for the purposes of complementing the natural landscape; improving the general appearance of the community and enhancing its aesthetic appeal; preserving the economic base; improving the quality of life; delineating and separating use area; increasing the safety, efficiency and aesthetics of use areas and open space; screening and enhancing privacy; mitigating the adverse effects of climate, aspect and elevations; conserving energy; abating erosion and stabilizing slopes; deadening sound; and preserving air and water quality.” To ensure that these goals are accomplished, the Town of Parker has developed this Parks, Trails, Open Space & Streetscape Design and Construction Manual (Referred to in this document as ‘Design and Construction Manual’).

This document is intended to be used by developers, designers and contractors in the Town of Parker. It is intended to aid in the planning, design and construction process and to save time by putting forth the expectations of the Town for parks, trails, open space and streetscape design and construction improvements. The Town will not accept maintenance of improvements that do not meet these guidelines and standards. Although this material should be adapted for specific conditions, these standards are to be considered a minimal baseline for development and are subject to change.



a. Goals

The Goals of this Manual were to:

1. Align with the Parks, Recreation & Open Space Master Plan, and Open Space Trails and Greenways Master Plan.
2. Provide flexibility to achieve the desires and aspirations for the highest quality and amenitized parks.
3. Develop a manual that can be easily revised and updated.
4. Provide a manual that incorporates information in a clear and easily referenced format.

Guiding Principles:

1. Promote health and wellness within the community; including active and passive recreational activities.
2. Design all parks, trails, open space and streetscapes to be accessible and inclusive.
3. Create safe communities with a “hometown feel” through programs and amenities within Parker’s parks, trails, and open spaces.
4. Create sustainable and long-lasting public spaces for generations to enjoy.

b. Applicability

This manual provides design guidelines and standards that shall apply to all new park development, redevelopment and improvements to be maintained by the Town of Parker.

This design and construction manual is to be used in conjunction with other planning documents, both regulatory and advisory.

The standards and guidelines identified throughout this document are to be used as tools in assuring that the physical appearance of the built environment provides the guidance necessary to ensure the highest possible standards of design.

Document Navigation:

Use the hyperlinks within this Design and Construction Manual to easily navigate to an outside source.

- Clicking a [green hyperlinked reference](#) takes you to the online reference.

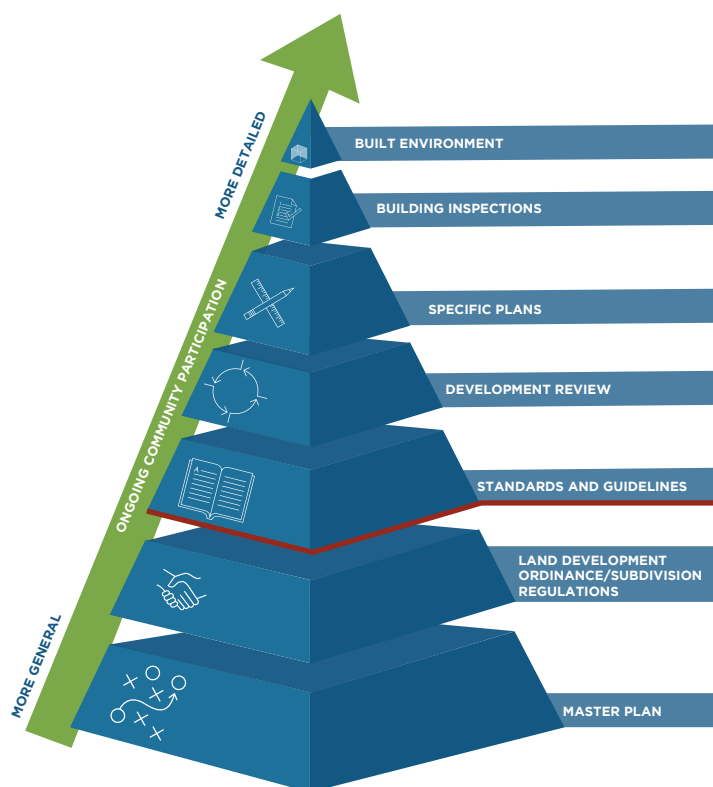
02 PURPOSE

The Town of Parker has developed this Design and Construction Manual to provide design guidance and construction specifications for the planning, design, and development of parks, trails, open space and streetscapes associated with new development and Town projects.

The Design and Construction Manual is a supplement to illustrate and provide specific guidance to the Town's parks, trails and open space Land Development Ordinance. The manual provides design guidelines, construction specifications and details for the Land Development Ordinance requirements for parks, trails, open space and streetscapes. This document shall be used in conjunction with the Town of Parker Land Development Ordinance.

a. Community Process

The pyramid graphic to the right displays how building a community is a cumulative process that involves local government, community participation, and various levels of approval. The 'Standards and Guidelines' (referring to this document) is underlined to show the relationship as part of a hierarchy of building a community and coordination with the Parker Parks, Recreation and Planning Departments.

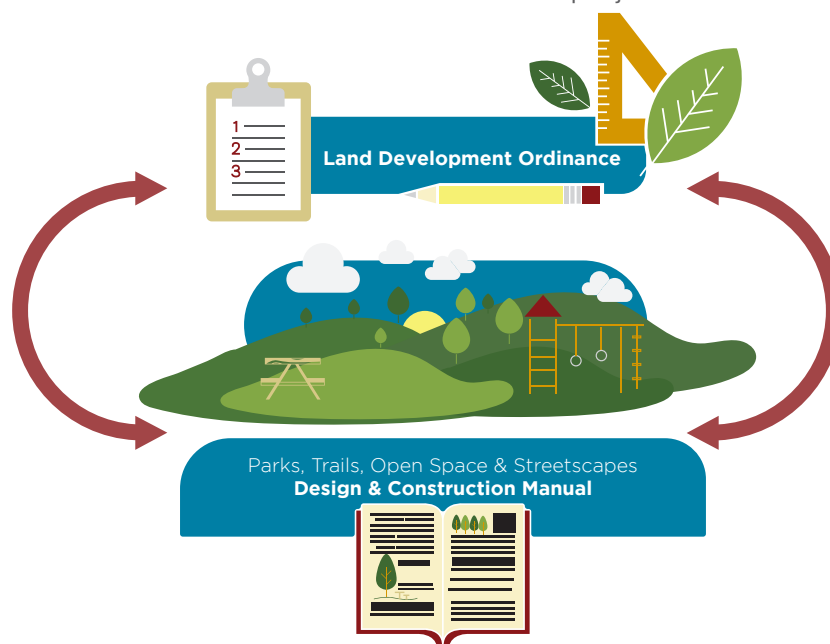




b. Planning Framework

Below is the process for development of the Design & Construction Manual.

- Step 1 - New Design Guidelines:** Develop guidelines to supplement and illustrate the Town's parks, trails and open space Land Development Ordinance standards - to assist developers and park designers in planning and designing these facilities and understanding the Town's expectations and options available. These design standards are incorporated into the Town's newly updated *Parks, Trails, Open Space and Streetscape Design & Construction Manual* (step 2).
- Step 2 - Updates:** Update the Town's current *Construction Specifications and Design Considerations for Parks, Trails and Streetscapes*, incorporating the new design guidelines, and re-title document as the *Parks, Trails, Open Space and Streetscape Design & Construction Manual*. Development of this manual was a collaborative effort between several Town departments including Parks and Recreation, Community Development - Planning, Forestry and Open Space, Cultural, Communications, Engineering and project consultant Hord Coplan Macht.



03 USING THE DESIGN GUIDELINES & CONSTRUCTION SPECIFICATIONS

The Design and Construction Manual shall be used in conjunction with the Land Development Ordinance for the design of new parks and recreational facilities, and rehabilitation of existing parks and recreation facilities within the Town of Parker.

This manual does not substitute for professional experience and sound judgment must be exercised in the design of facilities. The guidelines do not preclude the use of different methods when special conditions or site specific conditions are encountered as long as proper authorization is obtained from the Town of Parker.

The design and construction of parks and recreational facilities shall comply with standards, guidelines, details and specifications referenced in this document and all other that may apply but not explicitly referenced. If conflicts arise between the Design and Construction Manual and other governing documents, contact the Town of Parker for clarification. If deviation from this manual is necessary or desired, then a request shall be submitted to the Town of Parker for review and approval by the Town. Site Plan Amendment or Adjustment may also be required by Planning.

This manual applies to all facilities and improvements within the Town of Parker. The manual is structured to guide the design of parks, trails, open spaces and streetscapes in order for these spaces, features and amenities to provide facilities for the community that are sustainable, maintainable and safe and enjoyable for the community.

The Design and Construction Manual is a living document and will be updated periodically as needed.



Design Guidelines



Reference Resources



Details



Specifications



a. Organization

This Design and Construction Manual is organized into the following parts:



Part 1: Design Guidelines

- The design guidelines provide best practices, recommended examples, and minimum requirements for the Town of Parker's parks, trails, open spaces and streetscapes.
- The guidelines are divided into six sections of design guidelines, and two appendices that provide Town of Parker standard construction details and specifications.



Part 2: Reference Resources

- The reference resources include key Town of Parker planning documents to refer to for planning, design and construction.
- Other reference resources, codes and standards not listed may be applicable to a project. The developer/designer/contractor shall ensure all current applicable codes, standards and guidelines are followed in the design and construction of projects.



Part 3: Standard Construction Details

- Town of Parker standard details provided within this manual directly correlate to the specifications and guidelines.
- Standard construction details are provided in Appendix A and include site, irrigation, paving & surfacing, park structures, site furnishings & equipment, signage and field & court layout details.
- All details are downloadable through the Town of Parker website. [Click here for link.](#)



Part 4: Standard Construction Specifications

- The Town of Parker standard construction specifications for Parks, Trails, and Open Space are provided in Appendix B.
- All specifications can be requested from the Town of Parker.

b. Reference Resources

References:

Below is a list of additional references to be used in the development of Parks, Trails, Open Space and Streetscapes.

Guiding Documents:

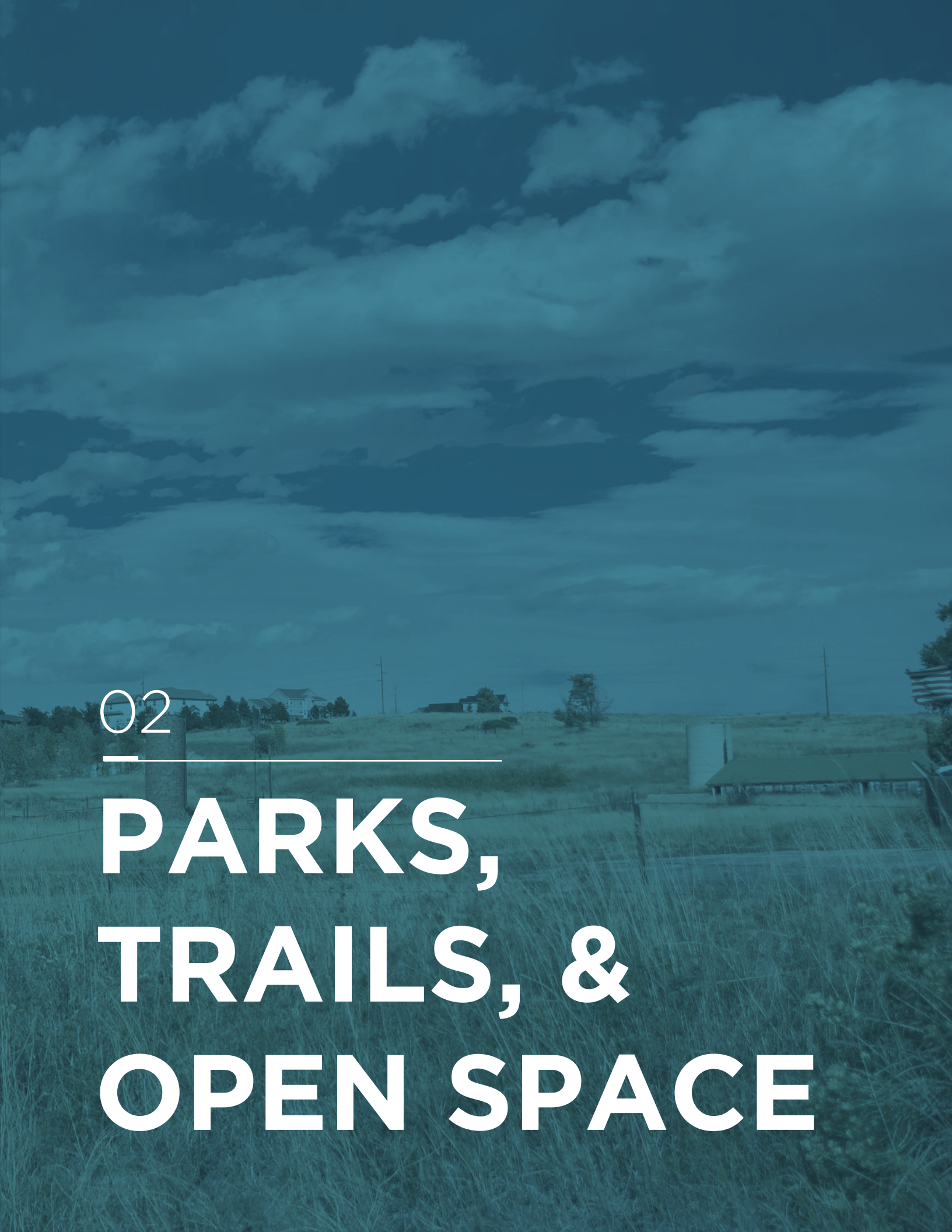
- Town of Parker Municipal Code for complete information on Town requirements and the review process. [Click Here.](#)
- Land Development Ordinance Parks Standards 13.08.030 [Click Here.](#)
- Land Development Code [Click Here.](#)
- Open Space, Trails and Greenways Master Plan [Click Here.](#)
- Roadway Design and Construction Criteria Manual [Click Here.](#)
- Storm Drainage and Environmental Criteria Manual [Click Here.](#)
- Current Town of Parker adopted building code [Click Here.](#)
- Parker Development Design Standards [Click Here.](#)
- Open Space, Trails and Greenways Master Plan (*latest version*)
- Town of Parker's Public Art Master Plan

State, County and National Standards:

- Universal Building Code (UBC)
- Douglas County Health Department (DCHD)
- American Society for Testing and Materials (ASTM)
- Americans with Disabilities Act Standards for Accessible Design (ADA)
- Public Rights-of-Way Accessibility Guidelines (PROWAG)
- American Association of State Highway Transportation Officials (AASHTO)
- American National Standards Institute (ANSI)
- Architectural Barriers Act (ABA) Accessibility Guidelines: Outdoor Developed Areas
- Current version of the ICC Accessible and Usable Buildings and Facilities
- ADA Title II Action Guide for State and Local Governments
- Consumer Products Safety Commission (CPSC)
- Manual on Uniform Traffic Control Devices (MUTCD)
- USDA Forest Service Equestrian Design Guidebook

*Other resources as referenced in this manual



A photograph of a rural landscape featuring a grassy field, a few scattered trees, and distant houses under a cloudy sky. The entire image is covered with a semi-transparent blue overlay. The text '02' is positioned on the left side, above a horizontal line.

02

PARKS, TRAILS, & OPEN SPACE

01 INTRODUCTION

Recreation and open space are critical components of a community's quality of life. They provide a variety of necessary opportunities to engage in outdoor recreation, access nature, and engage in both active and passive activities suitable for all residents.

The Town of Parker is committed to providing exceptional public parks, trail systems and open space that will meet the anticipated needs and demands of the residents. The purpose of developing standards is to ensure accessible, safe, and clearly defined options for both neighborhood and community spaces.

As described in the Town of Parker Open Space, Trails and Greenways Master Plan, "Open space and trails are an integral component of the quality of life", and are "central to our identity as a community" (*Parker Online* 4)*. For the most updated town-owned parks, open space, trails, and facilities map, refer to the [link here](#). As parks, trails, open spaces and facilities continue to expand and evolve, the guidelines set forth in this manual are meant to provide a fluid and effective means for new and improved parks, trails, open spaces and facilities that provide high quality amenities for the community.



* = "Open Space, Trails and Greenways Master Plan." *Parker Online*, July 12, 2010, <http://www.parkeronline.org/DocumentCenter/View/21717/Master-Plan-Update-2-with-Maps?bidId=>

02 DEFINITIONS & DESIGN

The words and phrases in this section provide the definitions needed to navigate the Parks, Trails, Open Space & Streetscape Design and Construction Manual.

Key Definitions:

- a. Neighborhood-Serving Parks
- b. Community-Serving Parks
- c. Open Space
- d. Recreation Facility (Indoor or Outdoor)

a. Neighborhood-Serving Parks

Neighborhood-serving parks are subdivision level or smaller parks providing essential recreation opportunities, play space, and small group gathering space to nearby neighborhoods. Amenity requirements and options for the different types of parks are provided in the Land Development Ordinance (LDO). Design of Neighborhood-Serving Parks is required to align with LDO definition and requirements.

Size & Characteristics:

- The minimum size of neighborhood-serving parks shall be one (1) acre. The maximum size shall be (9.99) acres. The preferred size of neighborhood-serving parks is one and one-half (1.5) to five (5) acres. A minimum of ninety percent (90%) of the land shall be developable for park uses.
- Refer to the [*Parker Land Development Ordinance*](#) Section 13.08.030(g)(3)d.8. for additional information regarding size, land and amenity requirements.
- Small to large, accessible park that may contain a variety of functions and activities.
- Create defined edges or boundaries of the park.
- Amenities for active use include but are not limited to playgrounds, play fields, multipurpose courts, gathering areas, or sport court games.
- Designed as outlined in the LDO.
- Park shall contain both active and passive recreational amenities.

Design requirements:

- Character is to match both the surrounding neighborhood and community aesthetic.
- All walkways are to be clearly identified, accessible, and emphasized for safety.
- Amenities are to meet the needs of the surrounding neighborhoods.

Age group requirements:

- Recreational amenities are to be provided for all age groups.
- Playgrounds must include play areas for 2 to 5 year olds, with a preference to also include play areas for 5 to 12 year olds. Allowing a play area for ages 2 to 5 years old only will be made on a case by case basis depending on the surrounding amenities in parks.



b. Community-Serving Parks

Community-serving parks are parks providing a variety of recreation opportunities and specialized uses for several neighborhoods or the entire community. These sites may support organized sports, large group gatherings, active and passive uses, and trails, while also providing access to unique landscapes and natural areas. Design of Community-Serving Parks is required to align with the LDO definition and requirements.

Size & Characteristics:

- Refer to the [**Parker Land Development Ordinance**](#) 13.08.030(g)(3)d.8. for information regarding size, land, and amenity requirements.

Design requirements:

- Refer to the [**Parker Land Development Ordinance**](#) 13.08.030(g)(4)h. for the various options for Parks and Open Space Amenities. Refer to the contents of this manual for further guidelines on these amenities.
- Improve on-site/off-site water quality and integrate water quality treatment when applicable.
- Provide both active and passive recreational amenities.

Age Group requirements:

- Recreational amenities are to be provided for all age groups.
- Provide play areas for 2 to 5 year olds and 5 to 12 year olds.



c. Open Space

Open space is private open land area set aside for the exclusive use and enjoyment of a development's residents, employees, or users. All open space should be left in its natural or existing condition except as determined by the Town. Existing trees and vegetation shall be preserved wherever possible. Refer to [**Parker Land Development Ordinance**](#) Section 13.08.030(g)(3)e.

Open Space Size & Characteristics:

- Minimum percentage recommended. The Town will determine the amount of public open space. Open space to be dedicated and/or set aside on a case-by-case basis depending upon proposed density, lot sizes and characteristics of the subject land, with the goal of achieving a minimum of twenty percent (20%) of the total development parcel as open space.
- Undeveloped land, preserved or partially preserved in its natural state. May contain a variety of environmental qualities such as wildlife corridors, geological features, waterways, scenic views, or natural habitats.
- Preservation of natural areas and resources, preservation of scenic views, greater resident access to open areas and recreation and enhancement to the quality of new development in the Town.
- Varies in size, depending on available land, function, and need.

- Environmentally-focused with minimal outdoor uses by the public. Examples of possible uses include nature trails, scenic view points, or other nature-centered activities.
- More pedestrian-focused, outdoor uses with adequate seating and focal points of activity.

Design requirements:

- Refer to the [**Parker Land Development Ordinance**](#) Sections 13.08.030(g)(4)h. for the various options for Open Space and Open Space Amenities. Refer to the contents of this manual for further guidelines on these amenities.
- Other design requirements may be negotiated between the town and the developer.



d. Recreation Facility (Indoor or Outdoor)

Recreation Facility, Indoor:

Recreation facility, indoor means a commercial recreational use within a building that provides entertainment or sport, including bowling, skating, arcade, health club, and movie theater. Accessory uses may include limited retail, concessions, and maintenance facilities.

Recreation Facility, Outdoor:

Recreation facility, outdoor means recreation and entertainment activities operated by a commercial enterprise that is mostly outdoors including picnic area, outdoor swimming pool, skateboard park, tennis court, basketball court, baseball diamond, soccer and football field, amphitheater, outdoor arena, outdoor theater, drive-in theater, golf course, golf driving range, miniature golf, batting cage, or other similar outdoor recreational uses. Accessory uses may include limited retail, concessions, and maintenance facilities.

Size & Characteristics:

- Size and function can vary depending on program and use. For Town owned facilities coordinated the required program needs, size and associated support amenities required.
- Other functions and/or support buildings and amenities may include concessions, restrooms, meeting spaces, storage, equipment, etc.
- Refer to the [**Parker Land Development Ordinance**](#) Section 13.02.010 for more clarification on recreational facilities. Table 13.05.A for more information on allowed uses and Section 13.05.030(e) for additional guidelines on commercial uses.
- Recreational facilities constructed in parks and open space shall comply with all applicable Town construction standards and specifications.

Design requirements:

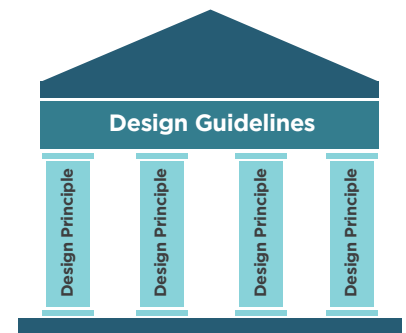
- Provide connectivity to parks, trails, and open spaces.
- Integrate public recreational facilities within or adjacent to parks and open spaces to provide opportunities for multi-use facilities and activities.
- Design and location shall be compatible with adjacent land uses, parks, open spaces, and community character.
- Include adequate parking or other means of transportation for larger events and tournaments.
- Adequate drainage and water quality treatments should be provided, and shall be compatible with adjacent land uses.
- For parking requirements for recreation facilities refer to the Parker Land Development Ordinance and Table 2.5 Community Park Parking Guidelines.

03 DESIGN PRINCIPLES

Design principles are the values and critical considerations that set the foundation for design guidelines, which are covered in section 04 of this chapter.

The design principles for the Town of Parker Parks, Trails, Open Space, and Streetscapes are as follows:

- a. Design for People and Safety (CPTED)
- b. Design for Accessibility (ADA) Compliance
- c. Design for Flexibility & Adaptability
- d. Design to Preserve & Enhance the Parks' Natural Features & Characteristic Landscape
- e. Design for Sustainability, Maintenance & Programming
- f. Design for Compatibility with Neighborhoods/Community



a. Design for People & Safety (CPTED)

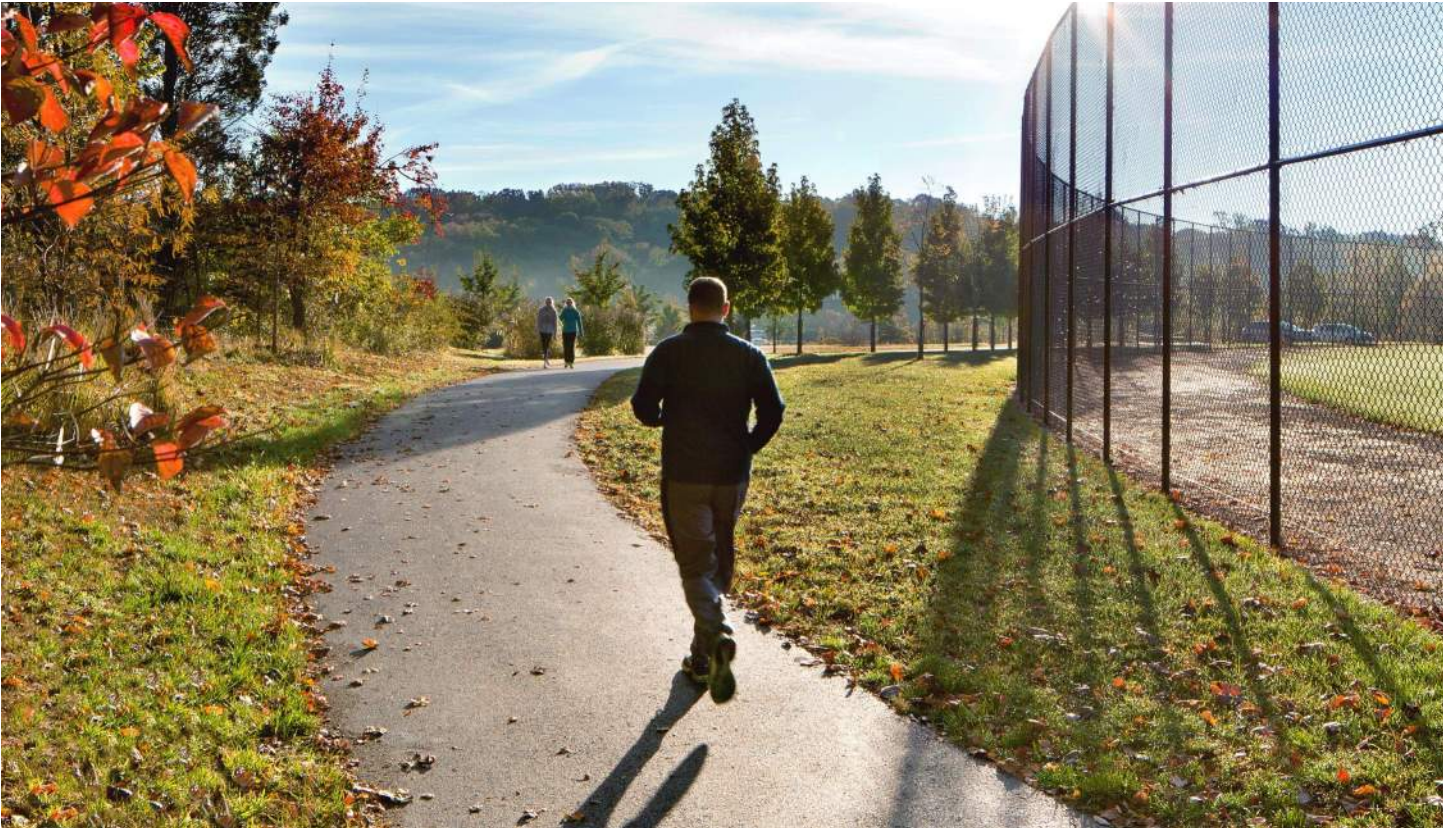
Crime Prevention through Environmental Design, or CPTED, is an approach that combines planning and design standards with crime prevention programs in communities. The design of public spaces can have a direct impact on the perception of safety within the Town of Parker, and include the following principles:

1. Encourage Safety Through High-visibility (Natural Surveillance)
2. Ensure Accessibility (Natural Access Control)
3. Clearly Define Public and Private Areas (Territorial Reinforcement)
4. Maintain and Care for Public Spaces (Maintenance and Management)



1. Encourage Safety Through High-visibility

- Maximize visibility from adjacent buildings and roads throughout open spaces and parks.
- Maximize surveillance on site by activating spaces with programming.
- Ensure views are unobstructed.
- Ensure well-defined, well-lit park entry and exit points.
- Concentrate activity areas that encourage multiple park users to congregate in designated areas for increased periods of time.
- Where applicable, provide water, shade, and seating to encourage the extended presence of visitors to parks.
- Provide security level lighting throughout the park.



2. Ensure Accessibility

- Ensure well-designed trails, landscaping, and other amenity orientation to guide visitors through a space.
- Ensure adequate bollards and/or barriers to restrict vehicles from entering public spaces.
- Ensure thoughtful design of furnishing placement to indicate pedestrian areas.
- Ensure fencing is adequately designed and placed to promote safety for children and families (prioritize play areas and recreational areas).
- Where applicable, ensure gates within fencing to help control access and promote safety.
- Establish clear signage that promotes easy wayfinding.

3. Clearly Define Public and Private Areas

- Ensure a clear distinction between Public vs. Private ownership.
- Ensure clear signage for recreational spaces.
- Where applicable, provide trees and/or formal planting to create natural barriers.
- Where applicable, provide hardscape and/or paving to create man-made indicators.

4. Maintain and Care for Public Spaces

- Indicate care and ownership over spaces to create a sense of place and pride.
- Ensure vandalism is quickly addressed to help ensure a sense of safety (paint over graffiti, within a reasonable amount of time repair/replace any damaged amenities).
- Create a visible presence.
- Trim and maintain trees and vegetation that may obscure park and open space lighting.

b. Design for Accessibility (Americans with Disabilities Act) Compliance

Accessibility and inclusion are critical to providing outdoor spaces that users of all abilities can access and enjoy safely. All public parks, trails, open spaces, streetscapes, and park amenities shall be designed to meet Americans with Disabilities Act Guidelines. Designs shall go beyond the minimum accessibility and meet universal principles as well. Refer to the below references for accessibility.

1. Accessibility References

- 2010 ADA Standards for Accessible Design (ADA)
- Public Rights-of-Way Accessibility Guidelines (PROWAG)
- ADA Title II Action Guide for State and Local Governments (parking, sport courts, fields, playgrounds etc.)
- Architectural Barriers Act Accessibility Guidelines: Outdoor Developed Areas
- United States Access Board for outdoor developed Areas Chapter 10 Accessibility standards for federal outdoor developed areas
- ICC Accessible and Usable Buildings and Facilities

2. ADA vs. Universal Design Principles

ADA and Universal Design share many of the same core design principles. ADA standards are regulations and codes enforced by federal law, whereas Universal Design goes beyond these standards by proposing ways in which designs can create spaces for all users. According to the American Society of Landscape Architects (ASLA), “Landscape Architects and designers can apply universal design principles to create more inclusive spaces for underserved communities, which include those who experience” (“Professional”)*:

- “Disabilities and/or limited mobility”
- “Aging”
- “Lack of community access”
- “Neuro-cognitive disorders”
- “Neurodevelopmental and/or Intellectual Disabilities”
- “Blindness and Low Vision”
- “Deafness and Hardness of Hearing”

ASLA also notes that “Universal landscape planning and design ensures people with disabilities can better participate in public life. These principles, which build off The Center for Universal Design’s principles, should guide the planning and design of all public spaces, regardless of intended audience” (“Professional”)*:

- Accessible
- Comfortable
- Participatory
- Ecological
- Legible
- Multi-Sensory
- Predictable
- Walkable / Traversable

By recognizing the various needs, abilities, and limitations of all community members, public spaces and recreational activities become more family friendly and inviting for all users.

3. Town of Parker ADA and Universal Design Guidelines for Parks and Open Spaces

- Accessibility to all local parks, trails, open space, streetscapes and recreation facilities is to be a priority.
- Any facilities that do not currently meet ADA accessibility design guidelines shall be updated when a renovation or improvement project occurs. This includes public parks, sports fields, outdoor courts, town pools, parking spaces, toilet facilities, spectator seating, and recreation centers.
- When possible, elements of universal design shall be included in all new construction.
- Refer to Play Space & Equipment Section 02(04)(d)(vi). for more information on how to incorporate universal design and inclusion into playground spaces and surrounding park space.

* = “Professional Practice.” ASLA, <https://www.asla.org/universaldesign.aspx>. Accessed 16 February 2023.



c. Design for Flexibility & Adaptability

Designing spaces that are flexible and adaptable to changing trends, functions, or environmental factors best ensures that public spaces continue to be well used and appreciated by the community. Designing for flexibility and adaptability in park design provides opportunities for multi-use design to accommodate a variety of uses and activities, including recreation, events, and passive uses.

The following design principles and considerations for flexible and adaptable spaces are as follows:

1. Design public spaces with diverse elements that accommodate a range of demographics and users of all abilities.
2. Design spaces that are flexible and adaptable to changing trends, functions, and environmental factors within a neighborhood or community.
3. Park design should allow for seasonal adaptability with areas designed to accommodate seasonal activities as appropriate.
4. Consideration should be given to adaptive reuse of existing buildings and structures within the park and open spaces, preserving heritage and history, while providing flexible spaces.
5. Provide multi-functional open spaces and parks to allow for various large and small scale events and activities for all ages.





d. Design to Preserve & Enhance the Parks' Natural Features & Characteristic Landscape

Designing spaces that preserve and enhance park and open spaces' natural features and characteristic landscape is essential for ensuring community value and a sense of place.

The following design principles for preserving natural features in open space and park design are as follows:

1. Use of native, adaptive and xeric plants to minimize water overuse and promote healthy ecosystems.
2. Avoid construction near wetlands, nature preserves, or other protected natural areas.
3. Provide water sensors or other irrigation devices to help minimize over-watering.
4. Do not remove topsoil from sites, to ensure the health of the soil and vegetation.
5. Preserve existing natural spaces and limit their disturbance as much as possible.
6. Limit the disturbance of fallen trees and mulch, unless it causes a public safety issue. Undergrowth is important for natural habitats.
7. Use mulch and compost for new vegetation.
8. Provide adequate seating that takes advantage of natural views for areas for the community to appreciate.
9. Encourage educational signage to be installed in areas that preserve or enhance nature, to educate the public on the value of a particular area and promote a sense of pride.
10. Promote the use of sustainable and environmentally friendly design.
11. Design spaces that include native planting and a reduction of water use.

e. Design for Sustainability, Maintenance & Programming

Sustainability is a broad term most often described as “meeting the needs of the present without compromising the ability of future generations to meet their needs.” - Brundtland Report for the World Commission on Environment and Development 1992.

The Town of Parker is committed to providing spaces that meet and support sustainable design, proper maintenance, and appropriate programming. The design principles to be considered are as follows:

1. Choose sustainable materials and construction techniques. Consider using recycled or salvaged materials, locally sourced materials, and materials that have a low environmental impact.
2. Minimize the impact of development by preserving existing vegetation, minimizing grading, and using sustainable construction methods.
3. Choose low-maintenance plants and materials that require minimal watering, pruning, and upkeep.
4. Use natural drainage systems to minimize the need for irrigation and stormwater management.
5. Design public spaces to be durable and low-maintenance by using construction techniques that minimize erosion, and resist damage from heavy use.
6. Incorporate energy-efficient lighting, heating, and cooling systems.
7. Implement sustainable water management practices such as rain gardens, bioswales, and permeable paving.
8. Reduce the amount of hard surfaces (i.e. pavement, concrete, etc.) in order to diminish air pollution caused by the heat island effect.
9. Enhance biodiversity in parks, trails, and open spaces by preserving and restoring habitats, creating wildlife corridors, and planting native species.

f. Design for Compatibility with Neighborhoods/Community

The purpose of designing public spaces that are compatible is to protect established neighborhoods and growing communities by recognizing their distinct characteristics and addressing how the design can contribute to that character.

When improving upon an existing design, or adding a new park or open space, the following design principles should be followed:

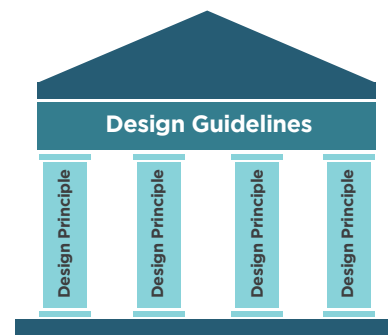
1. Assess if there is a prevalent pattern of design characteristics within a given neighborhood or area of the community, and ensure the new design adapts and maintains a similar pattern.
2. Encourage compatible designs that do not deviate substantially from the established pattern.
3. Encourage compatibility through adherence to a higher standard of design and construction, without hindering efforts to improve and upgrade neighborhoods.
4. Design spaces that are flexible and adaptable to changing trends, functions, and environmental factors within a neighborhood or community.
5. Provide multi-functional open spaces and parks to allow for various large and small scale events and activities for all age groups.
6. Neighborhood site furnishings can be flexible from the design standards set forth within this document. However, all selected furnishings must be commercial grade quality.

04 DESIGN GUIDELINES

Design guidelines are more specific applications for design that are layered with the design principles outlined in Section 03 of this Chapter. All of the following design guidelines are supported by the principles.

The design guidelines for the Town of Parker Parks, Trails, and Open Space are as follows:

- a. Natural Features
- b. Local & Regional Connectivity
- c. Sustainable Practices & Maintenance
- d. Parks and Open Space Amenities





a. Natural Features

The physical characteristics of a site, topography, natural features and viewsheds shall be considered early in the design process. The evaluation of key site characteristics will ensure the least disturbance of the existing site and protect the most valuable natural features including but not limited to vegetation and tree groves, steep slopes/topography, drainage ways and view corridors.

i. Topography/Natural Features

The design of topography and natural features shall ensure protection of significant topography and natural features, a safe design, adequate drainage, and proper maintenance.

Guidelines for topography and natural features include:

1. Protect all significant natural features including but not limited to: drainageways, groves/forests, prairies, riparian areas, rock outcroppings, wildlife corridors, native landscapes, etc.
2. Utilize the natural site topography and preserve areas with significant slopes.
3. Design to take advantage of the solar exposure of slopes by integrating amenities of the built environment into the compatible exposure.
4. Utilize existing topography that may provide buffers and barriers to surrounding uses.

5. Natural features are to remain as natural as possible with minimal maintenance, to encourage a healthy ecosystem and wildlife corridor connections.

ii. Floodplain/Riparian Areas

The Federal Emergency Management Administration (FEMA) defines a floodplain as any land area susceptible to being inundated by floodwaters from any source.

A riparian area is defined by the Colorado Department of Parks and Wildlife and U.S. Environmental Protection Agency (EPA) as “the areas alongside a river or stream. These conditions support a unique set of wildlife species” (“Riparian”)*.

Both of these areas are important for habitat conservation in and around parks and open spaces.

* = “Riparian and Wetland.” *Colorado Parks and Wildlife*, <https://cpw.state.co.us/conservation/Pages/CON-Riparian-Wetland.aspx>

The following guidelines are to be followed to maintain a healthy ecosystem and to keep the public safe:

1. Floodplain and riparian areas are to be preserved as much as possible.
2. Uses within these zones shall be restricted to those which are required by public necessity. Examples include but not limited to bridges, water pumps or control structures.
3. Use is to be restricted from public recreation. Exceptions may include activities with minimal impacts such as boardwalks, greenbelt trails, or educational signage.
4. Wildlife habitat improvements are acceptable uses within these zones as long as they have minimal impact to the surrounding ecosystem. Examples include the planting of native vegetation, installation of nesting structures, or riparian clean-up or restoration activities.
5. All use or encroachment activities must meet the approval of the Federal Emergency Management Agency and National Flood Insurance Program, and does not jeopardize the Town's participation in the Natural Flood Insurance Program.

iii. Vegetation/Soil Preservation

Preserving existing vegetation and the quality of soil and topsoil will benefit the health and microbial diversity of an ecosystem. Topsoil is the nutrient-rich, mineral-dense upper most layer of soil that contains natural organic matter essential for healthy plant growth.

Design guidelines for vegetation preservation:

- Create or preserve existing vegetative ecosystems that reflect the native conditions of the area.
- New construction designs shall avoid disturbing or preserve as much of the existing vegetation as possible.
- Where possible, existing trees are to be protected with tree protection fencing during construction.
- Consult a licensed Arborist to identify and assess any existing historic vegetation prior to project work.

Design guidelines for soil preservation:

- Native soils are to be preserved on site as much as possible. Minimize the amount of foreign soil imported from other locations.
- Improve upon local soils by providing good composition, structure, aeration, nutrients, and drainage.
- Conduct a horticultural suitability soil test for any new improvement or project work. Results and recommendations from this test shall be incorporated into the plans and specifications. Results shall determine the type and rate of soil amendments, if leaching is required, and the details of future maintenance requirements.





iv. Earthwork and Drainage

- All earthwork operations shall be executed in a manner which minimizes dust, noise, excessive accumulation of debris, danger to the public and interference with other construction.
- Positive drainage shall be provided at all times throughout the earthwork operations.
- Completed grades shall be smoothly and uniformly sloped, properly compacted, and shall provide drainage away from site improvements. All banks or slopes constructed shall be maintained in a stable condition to prevent slips, washouts or erosion, by approved methods. All maintenance shall be at the Contractor's expense until Town acceptance (typical warranty period is two (2) years. All finished grades to be within .2 feet (two tenths) of final design grade elevation.
- No area to be seeded or sodded shall be steeper than a 4:1 maximum slope (4' horizontal: 1' vertical), nor flatter than a two percent (2%) minimum cross slope. Areas where water will be likely to collect may require a steeper grade in order to drain adequately.
- Storm drainage ditches, water quality and detention ponds shall be designed to handle the appropriate design storm flows, and to provide ease of maintenance. For design of stormwater facilities refer to the Town of Parker Storm Drainage and Environmental Criteria Manual.
- Grading, storm drainage and related drawings shall clearly describe treatment of transition areas from vertical headwalls to adjacent 4:1 maximum slopes, detailed grades at pipe inlets and outfalls and similar situations. Rip rap results in difficult maintenance - its' use shall be limited except as required by the Town of Parker Storm Drainage and Evaluation Criteria Manual and consideration given toward ease of maintenance.

b. Local & Regional Connectivity

The Town of Parker trail systems are for both local and regional connectivity. A well-connected network of paths, trails, and multi-modal routes provides an effective means to accommodate all forms of multi-modal travel to neighborhoods, the town center, adjacent public uses and to and through parks and open spaces.

i. Connectivity

Bicycle trails should conform to:

Designing local and regional connectivity to parks, trails and open spaces is essential for creating accessible and enjoyable outdoor spaces for communities. The following are some guidelines to consider when designing for connectivity:

- Parks, trails, and open spaces should be designed to meet the needs of a range of users, including walkers, joggers, rollers, cyclists, families with strollers, and people with disabilities.
- Determine potential routes and connections between the park, trail or open space, including sidewalks, bike lanes, and public transportation options.
- Ensure that all routes and connections prioritize safety and accessibility for all users, including pedestrians, cyclists, and those with disabilities.
- Provide a range of connections to accommodate different modes of transportation, including bike paths, walking trails, and public transportation. This will encourage a wider range of people to access the parks, trails, and open spaces.
- Consider the potential for future growth and development in the area and plan for connectivity that can accommodate that growth.



[Refer to the link here for Existing and Proposed Town-Maintained and Owned Parks, Open Space, Trails and Facilities Overview](#)



c. Sustainable Practices & Maintenance

Parker is committed to protecting water resources via green infrastructure practices, reducing urban heat island effect with healthy tree canopies, and ensuring the materials and practices used are beneficial to the long-term health of the community. Parker is also committed to designing with sustainable and best management practices that enhance and minimize the disturbance to long term use and functionality of the surrounding ecosystems. Included with these commitments is the ability to sustain low maintenance designs and operation costs.

i. Landscape

According to the American Society of Landscape Architects (ASLA), “sustainable landscapes are responsive to the environment, re-generative, and can actively contribute to the development of healthy communities”. In addition, these landscapes “sequester carbon, clean the air and water, increase energy efficiency, restore habitats, and create value through significant economic, social and, environmental benefits” (“Designing”)*.

The term “landscaping” refers to planting trees, shrubs and ground cover, placement of boulders and decorative rock, bed edger materials, mulches and related work. Planting design shall utilize Xeriscape principles. Irrigated turf shall be used in active areas only and native and xeriscape planting shall be utilized in all other areas. Landscape plan final drawings, specifications and details shall be submitted to the Town for review and approval prior to construction.

Selecting the right plant for the right place within a site promotes health and longevity of the plant and reduces maintenance needs.

* = “What are Sustainable Landscapes?” ASLA, <https://www.asla.org/sustainablelandscapes/about.html#:~:text=What%20are%20Sustainable%20Landscapes%3F,the%20development%20of%20healthy%20communities.>

1. PLANT MATERIAL

- Refer to the [Town of Parker Recommended Plant List](#) for acceptable species. Species not listed on the “Preferred Plants” list may be submitted for consideration, provided they are not on the Towns “Excluded Species” list.
- Adequate variety (Biological Diversity) in the planting shall be provided to avoid epidemic insect or disease problems.
- Minimum average plant sizes shall be as follows:
 - » Deciduous shade trees - 2.5” caliper - measured 6” above ground, per “American Standard for Nursery Stock” ANSI Z60.1-1996.
 - » Ornamental trees - 2” caliper - measured 6” above ground, per “American Standard for Nursery Stock” ANSI Z60.1-1996.
 - » Evergreen trees - 6’ minimum height, measured to midpoint of most recent year’s growth.



- Shrubs - minimum of 5 gallon or larger, 2'-3' in height for deciduous, 18" - 24" spread for junipers, or as per "American Standard for Nursery Stock" ANSI Z60.1-1996.
- Design guidelines for landscape design:
 - » Plants shall be hardy to this area, in a healthy and vigorous state of growth, and conform in size, shape and character to the most recent edition of the American Association of Nurserymen Standards.
- All material shall be planted in accordance with the Town of Parker Details and Specifications.
- Where a screen or buffer is indicated on an approved landscape or site plan, the shrubs or other materials shall be planted and maintained to provide a continuous solid visual screen within 3 years from the time of planting.
- Installation of accepted root barriers may be considered for approval on a case by case basis.
- Refer to the [Parker Land Development Ordinance](#), Chapter 13 for other landscape requirements.
- Provide higher density planting in areas vulnerable to erosion.
- Xeriscape principles for landscape design are recommended, to meet sustainability goals. Native, xeric, and regionally adapted plants shall be used.
- Where applicable, design planting beds with shrubs and perennials.
- Plant varieties should be selected for year round interest (deciduous and evergreens, varied blooming throughout the growing season, winter berries, or ornamental grasses and low maintenance).
- Do not plant varieties that have any form of poisonous parts, thorns, or flowers that attract bees near playgrounds or other amenities that children could congregate.
- Do not locate plantings in areas that could be easily trampled in activity and social gathering areas where social paths between activities/amenities may form.
- Sizing and spacing in planting design:
 - » Shrubs and perennials should be spaced keeping mature spread and height in mind.
 - » Size perennials, shrubs and ornamental grasses at 100% mature growth. Masses of plants can be spaced at 75-80% mature growth.
 - » Group plantings with similar growth requirements for optimal growth and reduced maintenance needs.
- Separate plantings from turf areas with concrete mow bands, edging strips or sidewalks.

- Shrubs, perennials, and groundcovers should be spaced at a minimum of one-half of their mature diameter from all walkways to prevent impeding on walkways, parking lots or drives and the need for additional maintenance.
- Plant height should not obstruct visibility within sight triangles located at entries, drives, trail crossings, or at park or facility signage. Planting heights within parking lot islands shall not obstruct visibility within parking lot circulation.
- Refer to the [Parker Land Development Ordinance](#) Section 13.06.070 for other landscape maintenance requirements.
- Edging materials placed near building foundations shall allow for positive drainage away from the structures.
- Native or drought-tolerant approaches to landscaping will be considered, and are encouraged for planting in appropriate areas.
- It shall be noted that adequate permanent irrigation must be provided for establishment and maintenance, and that native grasses shall be maintained in a condition of acceptable height, free of weeds and debris, and shall not represent a fire hazard nor become a nuisance site for water or wind erosion. Native shrubs and trees, due to their drought-tolerance, are recommended in these areas.

2. GROUND COVER

- Ground covers should be spaced to ensure full coverage within two years of installation.
- Grass or other living plants shall be the primary ground cover in landscaped areas.
- Sodding is recommended but grass seeding is allowed under special circumstances.
- Vines are an acceptable ground cover in non-pedestrian areas.
- Ground covers used in lieu of grass shall be planted to present a finished appearance and complete coverage after three growing seasons.
- Other types of ground cover, e.g. bark mulches, wood chips, boulders, cobble or river rock, and similar shall be limited to small areas. Boulders, cobble, and river rock shall be placed over a suitable weed barrier or ground fabric.
- Native grasses shall have above ground temporary irrigation systems installed capable of providing head to head coverage.
- Native seed mixes shall consist of native species appropriate for the location. The seed mixes shall be established based on soil conditions and surrounding vegetation and shall utilize native and native adaptive species.
- Refer to [Section 05 Parks, Trails, and Open Space & Streetscape Materials](#) for additional information.



ii. Irrigation

Properly designed and functioning irrigation systems are beneficial both economically, environmentally, and is a sustainable practice.

An irrigation system refers to a permanently-installed (or temporary for native seed areas) automatic, underground pop-up irrigation system, which might include spray or rotor heads, bubblers, drip or trickle emitters or a variety of products. Manually operated systems are not acceptable.

1. IRRIGATION SYSTEM DESIGN

- The Contractor (or their design consultant) is requested to meet with Parks Staff to establish irrigation program requirements on a project-by-project basis prior to beginning design. Final drawings, specifications and details shall be furnished, subject to review and approval by Town Parks Staff, prior to design completion.

Design guidelines for Irrigation:

- Refer to [Appendix A for Standard Irrigation Details](#).
- Refer to [Appendix B for Irrigation Specifications](#).

- The irrigation system shall provide head to head coverage for all irrigated areas.
- Overspraying of buildings/structures, walks, trails, parking and other site features is not allowed.
- Coordinate planting and hydrozones to provide the appropriate water use.
- Meet with the local water service provider, and provide water service provider documentation (Landscape/Irrigation Worksheet and any other required documentation) to determine adequate tap size based on irrigation demand. All irrigation systems shall be approved by Parker Water and Sanitation District and Parks staff.
- Provide adequate number of zones to irrigation within the water window. Coordinate required water window with Parks staff. The design must obtain the Town's water window during the initial design phase.
- Temporary above-ground irrigation systems are acceptable only in locations of native seed establishment and must be in place for two years.



COVERAGE

1. All irrigation systems shall be designed to properly irrigate “bluegrass” type turf, regardless of whether “bluegrass” is originally seeded or sodded. “Native Seed” areas shall have irrigation designed in the same manner. Irrigation system design shall exceed minimum coverage requirements to ensure sustainability.
2. Provide pressures as needed to operate heads per manufacturer’s recommendation.
3. Regarding precipitation rate, all systems shall be capable of applying one and three-fourth inches (1-3/4”) of water per week to the irrigated area. Watering time shall not exceed eight (8) hours per day for seven days per week (design for every third day watering or similar is encouraged). Tap size (s) required shall be determined by the water service provider.
- Precipitation rates of sprinkler heads selected shall be appropriate to plant material, slope, soil, intake character and similar criteria, and the precipitation rate for sprinklers on one valve shall not vary by more than ten percent (10%) unless approved by Parks Staff.
- Areas with significantly different watering needs, i.e. slopes vs. level areas, bed areas or north-facing vs. south-facing areas shall be valved separately.
4. Head spacing shall be rated, at a minimum, for 5 mile per hour winds, per manufacturers’ recommendations. In no case shall maximum spacings exceed the following:

Triangular

S = 50% catalog diameter maximum

L = 86% of head spacing (+47%) catalog diameter maximum

Square

S = 50% of catalog diameter maximum

Rectangular

S = 45% catalog diameter maximum

L = 60% catalog diameter maximum

VELOCITY

The irrigation system shall be designed and its components selected so that the velocity in the copper service line from tap to meter does not exceed five feet per second (5 fps) and so that velocity in all other system piping does not exceed five feet per second (5 fps). Flow in gallons per minute shall not exceed 75% of the maximum safe-rated flow through the meter. Furthermore, surge pressures shall be calculated and if necessary, slower-opening and closing valves, air vent/vacuum relief valves or other components shall be specified to preclude damage from surge pressures.

DRAIN VALVES

- No automatic drains will be accepted. Mainline pipe shall be graded to drain toward manual drain valves at all low points on the mainline. The drain valve shall be as specified, and installed with valve box, gravel sump and related work. Gravel sumps shall be sized to hold the total volume of water which will drain to the sump from the pipe. Where possible, pipe shall be drained into a ditch or similar channel and water carried away.
- Adequate isolation valves and blowout connections shall be provided so that system may be conveniently blown free of water with an air compressor.

ELECTRICAL

The Contractor (or his design consultant) shall determine the electrical demand, and shall coordinate with CORE, or local service provider regarding the electrical service. All timing and costs for electrical service shall be the responsibility of the Contractor until the project is accepted by the Town, and this portion of the work is also subject to review and approval by Parks Staff. All electric service shall be independent from any other systems.

2. IRRIGATION MATERIALS

The Town has standardized irrigation equipment and materials. Refer to Appendix A and B for irrigation details and specifications. All irrigation equipment selected shall be represented by a local distributor who carries replacement parts. Install only new, non-damaged or repaired irrigation materials. Used materials will not be accepted.

SPRINKLER HEADS

- All sprinkler heads for a particular function in a system shall be of the same manufacturer in spec.
- Shrub heads, bubblers, trickle emitters and other xeric irrigation equipment shall be as approved by Parks Staff on a project-by-project basis.
- To prevent runoff and maximize sprinkler head effectiveness, maximum application rate shall be 1.25 inches per hour.

BACKFLOW PREVENTION

- Only a Reduced Pressure Backflow Preventer Assembly is acceptable. No other devices or combinations will be accepted. All devices and installations must be in accordance with the applicable water and sanitation district specifications.
- The Town follows the requirements of the Uniform Plumbing Code, latest edition, for the protection of potable water supplies. Direct specific questions to Parks Staff.

RISERS

- Risers for spray heads, gear driven rotary heads, and drip emitters should only be employed when needed due to site constraints, and only when approved by Parks Staff.

PIPE

- All pipe running from the tap and water main to the meter shall be in accordance to applicable water and sanitation district specifications and tap, meter and service line shall be the same nominal pipe size.
- All mainline elbows, tees and plugs shall be thrust blocked in accordance with the details and specifications. 3" and larger mainlines are to be gasketed and designed with pipe restraints.

VALVES

- Master shut-off valves and flow sensors should be integrated with the automatic irrigation controller.
- Each remote control valve shall irrigate a hydrozone with similar microclimate, soil conditions, slope, and plant materials with similar water demand.
- The flow control stem on a regular automatic control valve shall not be used to cut pressure by more than twenty percent (20%).
- Gate valves for use inside the meter vault or as a curb stop shall be per the Water District specifications. Gate valves on the irrigation mainline shall be in accordance with the details and specifications, and as approved by Parks Staff.

VALVE BOXES

- Cut or modified boxes are not permitted.
- Extensions shall be furnished as necessary. Design must follow specified size based on size and quantity of valves installed, and in accordance with the details and specifications.

PUMPS

- If a pump(s) is required, all materials shall be subject to review and approval by Parks Staff.



d. PARKS & OPEN SPACE AMENITIES

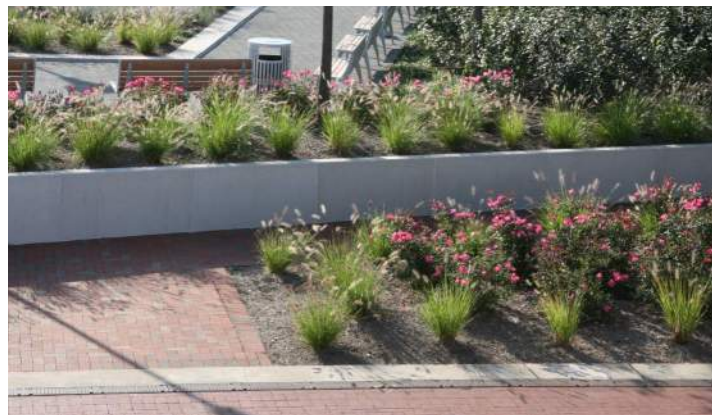
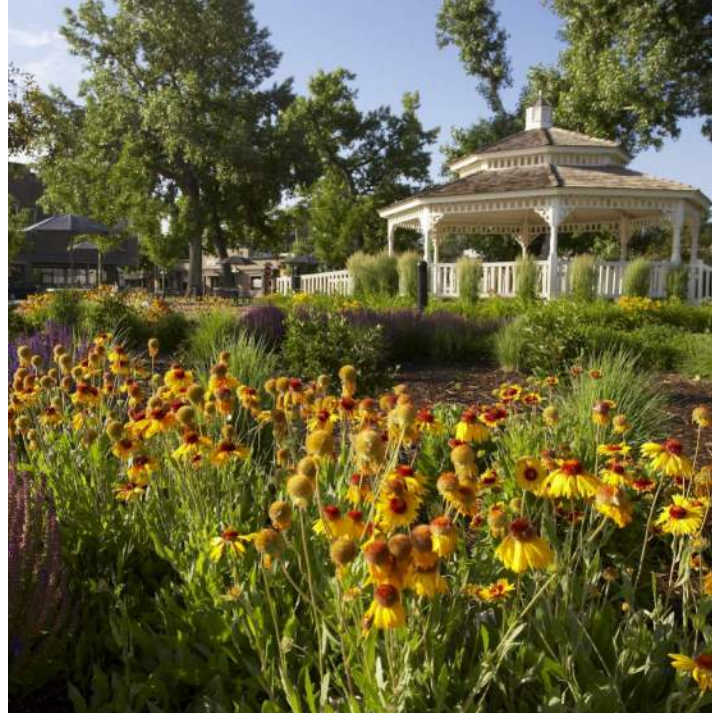
i. Gardens

1. ARBORETA/ DECORATIVE GARDEN

An arboreta and/or decorative garden is a public, botanical collection containing trees and mainly woody plants for educational and ornamental purposes.

Design Criteria:

- Sizes will vary based on site constraints and community need. Size shall be minimum 1000 square feet for a Decorative Garden and 5 acres for an Arboreta.
- A decorative garden shall include a variety of woody shrubs and perennials that provide flower from spring through fall and provide fall color.
- An arboreta shall provide a variety of low water use trees located in an area that is accessible to the public and provides space for sitting on the grass, seating on benches and educational signage.
- ADA accessible walkways are to be provided throughout.
- Educational signage and plant labels are encouraged.
- Gardens are to be highly visible and well-lit to ensure safe usage by the public.
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#) for information on minimum parking space requirements.



Amenity Guidelines:

- Provide a minimum of (2) seating areas per garden space.
- Provide a trash receptacle at the entry/exit points of the garden.
- Provide signage at the entry of the arboreta/ garden indicating rules and regulations specific to the space.
- Provide irrigation per Town standards.



2. COMMUNITY GARDEN/ RAISED GARDEN

A community garden is a piece of land where residents of the community can cultivate and maintain a garden. This type of space typically consists of at-grade and raised garden beds.

Design Criteria:

- Size is determined by the amount of space needed to support the local demand.
- Shall consist of a minimum of (12) beds, size 12'L x 4'W or 8'L x 4'W).
- Provide water hydrant at each end of the garden and within adequate hose length to all areas of the garden.
- Back-up drip irrigation is required.
- All applicable water regulations and conservation strategies shall be applied.
- Plots are to be organized to maximize efficiency.
- Do not locate gardens above septic fields or within close proximity to streams or natural water features.
- ADA accessible walkways are to be provided throughout gardens and between garden plots.
- Parking and restrooms should be located within a convenient distance from the gardens.
- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#) for information on minimum parking space requirements.
- Provide signage at the entry of the garden indicating rules and regulations specific to the space.
- Provide a 4' height ornamental transparent perimeter fence around the garden space. Must meet local fire and building codes.
- Provide adequate setbacks for vehicular pathway and double-gate entry for maintenance and emergency access.
- Provide a minimum sized storage shed of 100 square feet. Must meet local fire and building codes. Storage shed materials shall compliment adjacent community.



Amenity Guidelines:

- A minimum of (1) elevated ADA -compliant garden bed is to be provided. A shallow planting shelf or designated space for a wheelchair to easily access the planter shall be part of the design.
- Provide (1) trash & recycling receptacle at the entry/exit point of the garden.
- Provide a minimum of (1) compost bin adjacent to the garden beds.



ii. Gathering & Social Spaces

Gathering and social space design strategies are important, flexible areas that allow for a multitude of events and assemblies. A variety of sizes and amenities can be included within these spaces, depending on the expected use and direction of the town.

1. OUTDOOR PERFORMANCE SPACE/STAGE

Outdoor performance spaces/stages are open air venues that provide a unique social gathering space for the community. They shall include sloping or terraced seating. They can range in size from small, intimate spaces to large areas with freestanding structures.

Design Criteria:

- Size is determined by the amount of space needed to support the event type. Size requirement to be approved by the Town.
- Designs and style shall match the character of the neighborhood and Town.
- The amount of seating and size of stage shall be determined based on anticipated performances and event types.
- The amphitheater shall meet all ADA guidelines.
- Compatible option with Community-serving Parks only.
- Multi-use structures are encouraged when stage is not in use (eg. picnicking).

Amenity Requirements:

- Multi-use shade structure/Band shell (for stage)
- Adequate parking
- ADA Accessible walkways
- Electrical connections suitable for stage-like performances
- Permanent restroom facilities
- Signage
- Seating and/or open area for gathering
- Public drinking fountain
- Adequate lighting for evening events
- Permanent seating and/or open area to allow temporary seating.
- Refer to Section 02(04)(d) (X.) [Table 2.4 Community Park Parking Guidelines](#) for information on minimum parking space requirements.



2. FESTIVAL/ EVENT SPACE

Festival and event spaces are flexible areas that suit the needs of a variety of event types and sizes. Depending on the location, the space can function as passive park space, street, or multi-use field during non-event times, and can also occupy large crowds and temporary structures during specific events. Minimum size shall be a minimum of 30,000 square feet. Size requirement to be approved by the Town.

Design Criteria:

- Refer to the Parker Land Development Ordinance Section 5.02.840 for local festival permit requirements., and Section 13.04.210 for temporary structures and uses.
- Spaces shall meet all ADA guidelines.
- Compatible option with Community-serving Parks only.

Amenity Requirements:

- Adequate permanent or temporary parking
- ADA Accessible walkways
- Electrical connections suitable for stage-like performances
- Permanent or temporary restroom facilities
- Signage
- Emergency access.



3. OUTDOOR NATURE CLASSROOM

Outdoor nature classrooms are gathering spaces dedicated for learning opportunities in a natural setting. They shall provide a shade structure or deciduous shade trees for comfort.

Design Criteria:

- Minimum size 500 square feet. With minimum seating capacity of 20 people.
- ADA accessible route must be provided to and within classroom.
- Any structures or site furnishings are to be exterior rated and safe for public use.

Amenity Requirements:

- Shade structure or deciduous shade trees.
- Temporary shade (properly rated post and shade element) required while trees are established.
- Seating (benches, seating boulders, concrete seatwalls, etc.)
- Temporary Restroom



4. PROGRAMMABLE SPACE (INDOOR OR OUTDOOR)

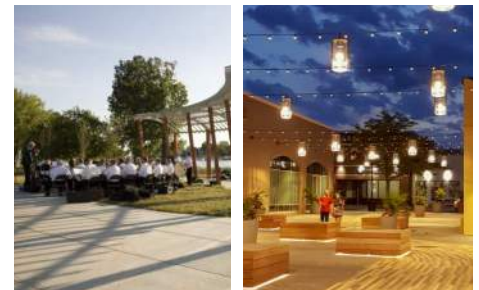
Programmable space is any usable, indoor or outdoor, urban or passive space that can serve a multitude of different functions. It could be designed as a public plaza, open lawn, pier or overlook with seating and accessible access, or other area that can be easily transformed into various activities.

Design Criteria:

- Spaces shall meet all ADA guidelines.
- Space should be flexible enough for a diverse amount of activities and experiences.
- Space should engage and reinforce the public realm of adjacent streets, trails, open space and park networks.
- Spaces shall meet the needs of the surrounding community.
- Temporary restrooms required for larger crowds.

Amenity Recommendations:

- Multiple seating opportunities
- Electricity hook-ups that can withstand generators, food trucks, sound systems, etc.
- Hardscape that can withstand pedestrian and vehicular traffic (concrete, crusher fines, artificial turf, etc.)
- Features suitable for indoor/outdoor classrooms, aerobics, yoga, concerts, farmers markets, flea markets, festivals, etc.



5. SHELTERS

For shelters refer to Section 04 Parks, Trails, Open Space, and Streetscape Support Amenities.



iii. Interpretive & Placemaking

Interpretive elements and placemaking design strategies add unique value to the experience within a space. Elements can include historical, cultural, communal, or other themes relevant to the site, and shall be negotiated between the Town and the developer.

1. INTERACTIVE, FUNCTIONAL, OR VISUAL ART

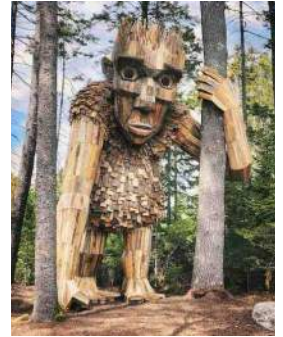
Interactive, functional, or visual art can add character and a sense of place within a park or open space. Features can range in style, size, color scheme, function, character, and level of interactivity.

Design Criteria:

- Structures must be safe for public use and installed per manufacturer's recommendations. Provide engineered stamped drawings of all structures.
- Any structures, materials, or site furnishings are to be rated for exterior use.
- All features must add to the character of the community and space in which it occupies.
- Art must be able to withstand harsh weather conditions with minimal maintenance required.
- Signage must be provided indicating rules of usage and if any age restrictions are necessary.
- Security lighting and clear sight-lines to the art is necessary to prevent misuse and/or vandalism.

Examples:

- Kinetic wind or art sculpture
- Stationary art sculpture
- Custom or visually interesting site furnishings.
- Custom or visually unique playground equipment.
- Murals
- Decorative paving or walls with integrated design (ie. sandblasting and staining, mosaic tiles, etc.)
- Refer to [Section 02 \(05\) Guidelines for Art in Parks](#) for additional ideas and examples.



2. INTERPRETIVE SIGNAGE OR ELEMENTS

Interpretive signage or elements serve an important function to enhance the visitor experience of a place. Whether it's recognizing the historical value of a location, referencing a map of surrounding trail systems, or understanding the significance of local ecosystems, interpretive signage allows for key learning opportunities for both local residents and visitors.

Design Criteria:

- Provide a minimum of two signs.
- Text and graphics should be easy to read, clear, and not overcrowded with information.
- Do not use more than three different types of font styles or sizes.
- Mount at appropriate height and angle for comfortable viewing. Refer to ADA accessibility guidelines.
- Materials should be durable, weather-proof, and safe for public use.
- Frame and posts style can vary, material shall be steel.
- Finish shall be powder coat or corten steel.
- Sign face shall be manufactured by Fossil Industries or approved equal.

Examples:

- Way-finding signage
- Educational signage
- Signage with interactive or moving pieces.
- Sandblasted elements into rock or concrete.
- Signage incorporated into play structures.



3. SITE DESIGN THEME

Site design themes are what defines places and spaces. A common theme helps unite a design and overall concept through elements such as circulation of pedestrian walkways, site furnishings, custom structures, styles, colors, and planting design.

Design Criteria:

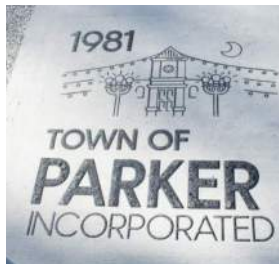
- Site design themes should tie a concept together without feeling disconnected to the community.
- Community engagement is highly encouraged in established communities to ensure the design is widely accepted and meets the needs of the users.
- Custom elements are encouraged to make a space truly unique.
- Ensure the theme is relevant to the community or space.

Examples:

- Where appropriate, themes can be inspired by principles such as historical land uses, ecological features, significant individuals of the community, or even an idea that is valued by the community.



Soda Springs Park, CO. is designed to embrace Colorado's natural ecology and geology.



O'Brien Park Playground, CO. is designed as an iconic play space honoring the Town of Parker's unique history.



Greenbriar Park, MD. is designed around the 'rustic' character of the surrounding landscape and the 'Story of a Raindrop.'

iv. Outdoor Specialized

1. PING PONG

Ping pong, otherwise known as table tennis, should meet the International Table Tennis Federation (ITTF) Handbook dimensions .

Design Criteria:

- Weatherproof
- Commercial grade, rustproof materials
- Anchor to concrete with tamper-proof hardware

Potential Manufacturers:

- Anova Site Furnishings
- Sanderson Concrete
- Stone Age Concrete Table Tennis
- POPP
- Doty & Sons Concrete Products, Inc.
- Others as approved by the Town.



2. FOOSBALL

Foosball is a table-top version of soccer.

Design Criteria:

- Weatherproof
- Commercial grade, rustproof materials
- Anchor to concrete with tamper-proof hardware
- Installed on a level surface

Potential Manufacturers:

- Anova Site Furnishings
- Sanderson Concrete
- Stone Age Concrete Table Tennis
- Doty & Sons Concrete Products, Inc.
- Others as approved by the Town.



3. CHESS TABLE

Chess is a very popular board game between two players. When incorporated into a public table, players can bring their own pieces to play in an outdoor setting. Refer to the International Chess Federation (FIDE) for board game standards.

Design Criteria:

- Weatherproof
- Commercial grade materials
- Must be surface mounted
- Must provide a minimum of (1) ADA accessible table within a park.

Potential Manufacturers:

- Victor Stanley
- Others as approved by the Town.



4. CORNHOLE

Cornhole is a game involving bean bags being thrown into the hole of an angled board. Refer to the American Cornhole Official Rules (ACO) for spacing and standards.

Design Criteria:

- Weatherproof
- Concrete materials
- Cornhole boards placed 27 feet front edge to front edge

Potential Manufacturers:

- Anova Site Furnishings
- Kay Park & Recreation
- Doty & Sons Concrete Products, Inc.
- Others as approved by the Town.



5. DISC GOLF COURSE

Minimum course size shall be nine holes. Preferred course size is 25-30 acres for 18 holes. Average hole to be 200-400 ft. Holes should not be shorter than 100ft. It is preferable to start and end the course in the same location. Locate courses away from active park areas, gathering areas and parking lots. Position tees and baskets to maximize man-made and natural features. Refer to the Pro Disc Golf Association (PDGA) for regulations and Disc Golf Course Design Goals.

Design Criteria:

- Innova Discatcher Pro 28 golf baskets or approved equal.
- Provide Tees minimum 6' x 12' concrete paved surface.
- Provide course signs and signs at each hole providing the hole number, length, par and recommended flight path.
- For safety, the course will not conflict with other park or other uses. Ensuring good visibility throughout the course is important.

Parking Requirements:

- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Spaces Guidelines](#), for more information on parking space requirements.



6. BIKE PARK, SKILLS AREA, PUMP TRACK

Bike park, skills area or pump tracks are all outdoor spaces specifically designed for both kids and adults to learn essential BMX, mountain bike and/or regular bike skills. The design is highly variable, depending on the size, age range, and level of difficulty. The minimum size shall be 0.5 acres. Preferred size is 3 acres or more.

Associations to Reference:

- International Mountain Bicycling Association (IMBA)
- International BMX Federation

Recommended Consultants:

- Velosolutions
- Alpine Bike Parks
- FlowRide Concepts
- Gravity Logic
- Others as approved by the Town.

Additional Parking Requirements:

- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Spaces Guidelines](#), for more information.



7. HORSESHOE PIT

Horseshoe pits are for the game of horseshoe, which consists of throwing a metal horseshoe onto a stake at the opposite end of a pitch. Refer to the National Horseshoe Pitchers Association (NHPA) and the Colorado Horseshoe Pitchers Association (CHPA) for rules and regulations.

Design Criteria:

- Horseshoe pits should be regulation grade.
- Backboards and stake should be outdoor rated and made of rustproof and rot resistant materials.
- Pits should be set per regulation distance and filled with sand.

Parking Requirements:

- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Spaces Guidelines](#), for more information on parking space requirements.



8. DOG OFF-LEASH AREA (FENCED)

Minimum size of off-leash area shall be (3) three acres. Preferred size is (5) five acres. Locate dog off-leash areas away from natural areas, wildlife and waterways.

Design Criteria:

- Fencing shall be a minimum 4' height metal fence matching Town of Parker fencing standards with the exception the bottom rail shall be located at the bottom of the fence panel (flat bottom). Maximum gap from finish grade to bottom rail shall be two inches. Gaps between pickets shall be a maximum of three inches.
- Provide separate lockable sections of dog park (minimum of 2) to allow for re-vegetation and maintenance. Provide a lockable 12' wide maintenance gate between areas. When possible, provide separate areas for large and small dogs.
- Provide an entry/exit point with double gates with self closing hinges. Entry/exit area shall be concrete paving from walk connection to 5' beyond double gate.
- Gates shall have commercial grade hardware and latch that is ADA accessible from both sides. All gates must meet local fire and building code.
- Surfacing options include: 70/30 sand/pea gravel mix, irrigated bluegrass, irrigated natural grass, synthetic turf (appropriate for dog parks), or crusher fines paving, and may include a mixture of multiple surfacing materials. Provide quick couplers to allow for washing down the surface. Surfacing options should be discussed with the town on a case by case basis to determine surfacing.
- Provide vegetative, berm or other screening of off-leash area.
- Provide minimum of 4 benches
- Provide shade structures and/or trees.
- Optional agility course obstacles may be included.
- Provide dog waste stations. One (1) for each acre plus one at each entry.
- Provide rules and regulations sign at each entry.
- Provide minimum (2) trash receptacles and additional as needed based on size and demand.
- Prefer inclusion of a drinking fountain with pet bowl.
- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#) for information on parking space requirements.



9. SKATEPARK

A skatepark is a built environment designed specifically for skateboards, BMX bikes, scooters, wheelchairs, and inline skaters.

Design Criteria:

- Minimum size of skate park to be 8000 SF.
- Skatepark shall be cast-in-place concrete. Design to accommodate all ages and skill levels.
- Provide separation between skatepark and playground areas of a minimum of 50 feet. Locate in close proximity to parking and restroom facilities. Account for proper flow, traffic, capacity, and speed of elements within the park.
- When possible, engage the community for feedback on difficulty, stylistic discipline, types of skate-related features and challenges.
- Design for high visibility within the skating area as well as the area surrounding the park.
- Provide benches, shade, drinking fountain, and trash receptacles.
- Provide proper drainage within the park.
- Aesthetic Appeal and surrounding landscaping to match the Town's character and aesthetic.
- Must include at least one functional skateable art feature.

Recommended Consultants:

- Grindline Skateparks
- Pillar Design Studios
- Pivot Custom Skateparks
- Spohn Ranch Skateparks
- Team Pain
- Others as approved by the town.



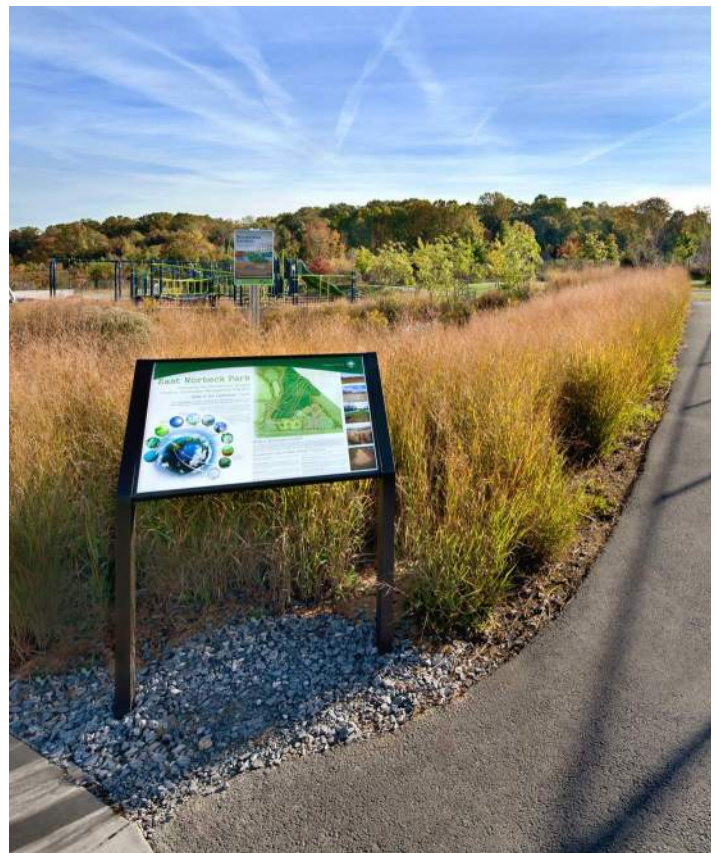
Parking Requirements:

- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#), for information on parking space requirements.

v. Paths, Trails & Trailheads

Trail Guidelines

- All local, regional and multi-use trails in the Town shall be designed and constructed to provide a safe and enjoyable experience for all citizens while providing for ease of maintenance.
- All paths, trails, and trailheads are to align with the goals, strategies, and criteria outlined within the Parker Open Space, Trails, and Greenways Master Plan.
- All Trails and associated facilities shall be designed and built in compliance with Americans with Disabilities Act (ADA), Mile High Flood District, Army Corp of Engineers, American Association of State Highway and Transportation Officials (AASHTO) Manual, Colorado Department of Transportation Roadway Design Guide: Chapter 14 Bicycle and Pedestrian Facilities, and Town of Parker Details and Specifications.
- All trails within parks or open spaces are to be designed for multi-use applications for pedestrians, bicycles, rollers or other human-powered recreational modes of transportation.
- To encourage and facilitate alternative modes of travel to parks, and open spaces, provide trail connections from the parks to public paths, streets, and bike ways.
- All walks and trails shall be designed to meet all current ADA standards and guidelines to include a minimum cross slope in the appropriate direction of one quarter inch per foot (1/4" per foot) or one and three-quarters percent (1.75%), and centerline gradient shall not exceed one foot in twenty feet or four and three-quarters percent (4.75%) (per ADA recommendations). Exceptions to these guidelines may be submitted for review.
- Trail Width:
 - » Local: Eight (8) Feet
 - » Regional: Ten (10) Feet
- Provide an unobstructed three (3) feet recovery zone/shoulder on each side of the trail where space allows.
- Trails through irrigated bluegrass are to be hard surface trails.
- Concentrated drainage shall be designed to pass under walks and trails by culvert or standard approved walk chase. Culverts or walk chases should be designed for the two- (2) year to ten- (10) year event and coordinated with surrounding drainage facilities. The minimum allowed culvert size is eighteen (18) inches RCP and is required to have a flared end section (F.E.S.). Low water trail crossings will not be allowed unless approved by the Town.
- All trails are to provide signage clearly indicating the maximum speed of uses, to ensure the safety of all recreational activities on the trail.
- Design Speed: Trails shall have a design speed of twenty (20) miles per hour. Where slopes exceed 5%, trails shall have a design speed of thirty (30) miles per hour.
- Curve Radius: The minimum curve radius shall be designed in compliance with the AASHTO manual.
- Sight Distance: Trails shall be designed with a minimum sight distance in compliance with the AASHTO manual.



Trail Material

- Trails shall be designed with a minimum thickness of six (6) inches of CDOT Class B or D Portland cement concrete.
- In rare cases, a soft surface (crusher fines) trail may be appropriate and must be approved by the Town. Soft surface trails are not appropriate as regional trails, where they are adjacent to roads or on slopes greater than five (5) percent. Slopes greater than five (5) percent need to be approved by the Town.

Trail Grade and Drainage

- The maximum trail cross slope shall be one and three-quarters percent (1.75%), the cross slope on corners and curves shall be towards the inside where drainage permits.
- The centerline gradient shall not exceed four and three-quarters percent (4.75%). Trails adjacent to roads or in topographically challenged areas may exceed five percent (5%) where approved by the Town. When trails exceed 5%, they must follow the Forest Service Outdoor Recreation Accessibility Guidelines and provide trail accessibility signage per Town of Parker standards.
- Trails shall not hold water, and if drainage is anticipated across the trail, a chase drain or other diversion method shall be provided.

Stairs

- On local trails, where topography prevents safe trail grades, stairs may be considered. When stairs are used, an alternative ADA compliant route without stairs shall be provided.
- When stairs are used, the minimum width shall be eight (8) feet and meet local building codes and ADA guidelines.

Railings

- Railings shall be required where there is reasonable risk of trail users falling down an embankment with a slope of greater than 3:1 or where there is a vertical displacement. Railings shall be a minimum of 46" in height and be Fortress Decorative Metal Fence. A 36" rub-rail shall be required at all bridges. The railing shall flare at both ends. Railings shall be no closer than 24" from the edge of the trail. Refer to [Section 05: Parks, Trails, Open Space & Streetscape Materials \(b. Pedestrian Guardrails/Railings\)](#) for more information.





Utilities

- Manholes, valve boxes and other utility appurtenances shall not be constructed in the pavement of the trail. Utility structures constructed at grade level shall be a minimum of two (2) feet from the edge of pavements. Structures constructed above grade shall be a minimum of four (4) feet from the edge of pavement.

Trail Intersections with Roads

- Trails shall intersect with roads as perpendicular as possible (no less than 70 degrees). Intersections shall be designed in accordance with AASHTO Standards and the Manual on Uniform Traffic Control Devices (MUTCD) for signs and striping. All ramp sections at the road interface shall be constructed per Town details.

Trail Intersections

- Trail intersections shall be as perpendicular as possible (no less than 70 degrees). 'T' intersections shall have a minimum radius of fifteen (15) feet.

Bridges

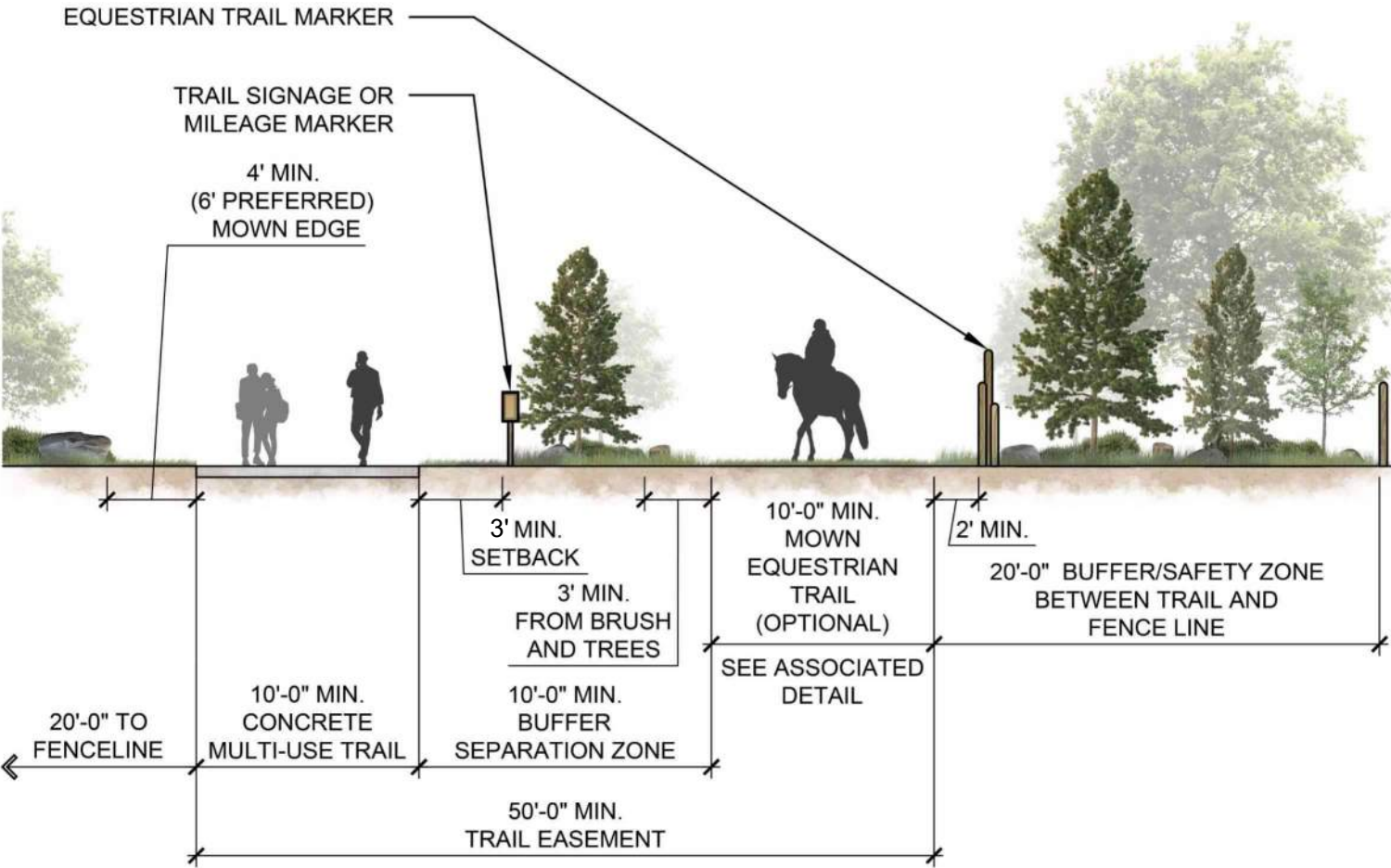
- Bridges shall have a width of ten (10) feet minimum or four (4) feet greater than the width of the interfacing trail. Bridges shall be generally straight with approaches that meet curve radius and sight distance design standards. Bridges shall be designed to accommodate maintenance vehicles, including pickups. The vehicle load shall be 10,000 pounds plus 30% impact.
- Bridge deck shall be 5" thick minimum, broom finished concrete deck and expansion joints shall be bicycle and rollerblade safe.
- Prefabricated self-weathering steel underhung truss structure.
- Provide 42" height minimum guardrail on bridges accommodating bicycle traffic, in accordance with AASHTO Guide for Development of Bicycle Facilities (section 5.2.10, Bridges and Underpass'). In addition to guardrail, provide 36" height rub-rail at all bridges.
- Provide 54" height guardrails and handrails at least 42" height per USDA Forest Service Equestrian Design Guidebook.



1. RECREATION TRAIL CORRIDORS

A recreational trail corridor is classified as a trail plus a scenic or recreational easement. These types of trails are site specific, and can vary depending on existing conditions.

Buffers, fence lines, and separation zone distances may differ due to specific site conditions and are to be reviewed and approved by the Town. Below is a cross section of a typical recreation trail corridor (*Graphic 2.1*).



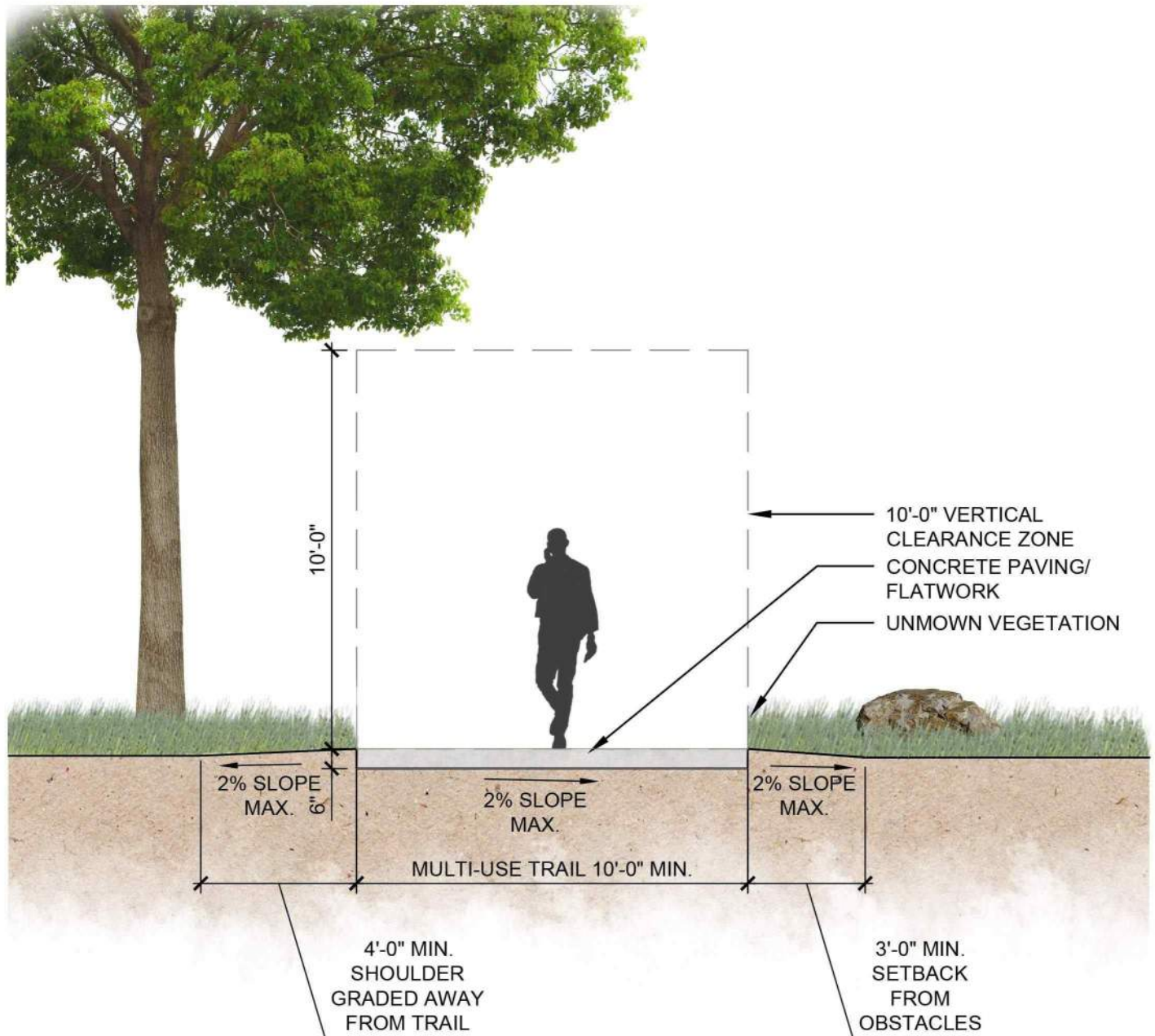
Graphic 2.1 : Recreation Trail Corridor

2. REGIONAL TRAILS

A regional trail is a public trail system that provides critical connections across regional planning areas, counties, or cities. These trails are often part of a significantly larger network of trails, all of which usually have shared-uses. The general public often use these multi-use trails for bicycling, walking, hiking, running, skating, dog walking, e-biking and other non-vehicular recreational opportunities. The trail width for regional trails shall be a minimum of ten (10) feet.

Site conditions on either side of regional trails may vary; however, tree canopies and other obstructions should be maintained to allow a clearance of ten (10) feet. Below is a cross section of a typical regional trail (**Graphic 2.2**).

Refer to Signage Standards in Section 06 for trail signage recommendations.



Graphic 2.2 : Regional Trail

3. LOCAL TRAILS

A local trail often interconnects neighborhoods, parks, and open spaces. In comparison to regional trails, local trails are often shorter in length, width, and have a lower volume of users. These trails are also multi-use trails, and utilize the same types of recreational activities as the regional trails. Site conditions on either side of regional trails may vary, however tree canopies and other obstructions should be maintained to allow a clearance of ten (10) feet. Trail width shall be a minimum of eight (8) feet. Refer to Signage Standards in Section 06 for trail signage recommendations.

Below is a cross section of a typical local trail (**Graphic 2.3**).

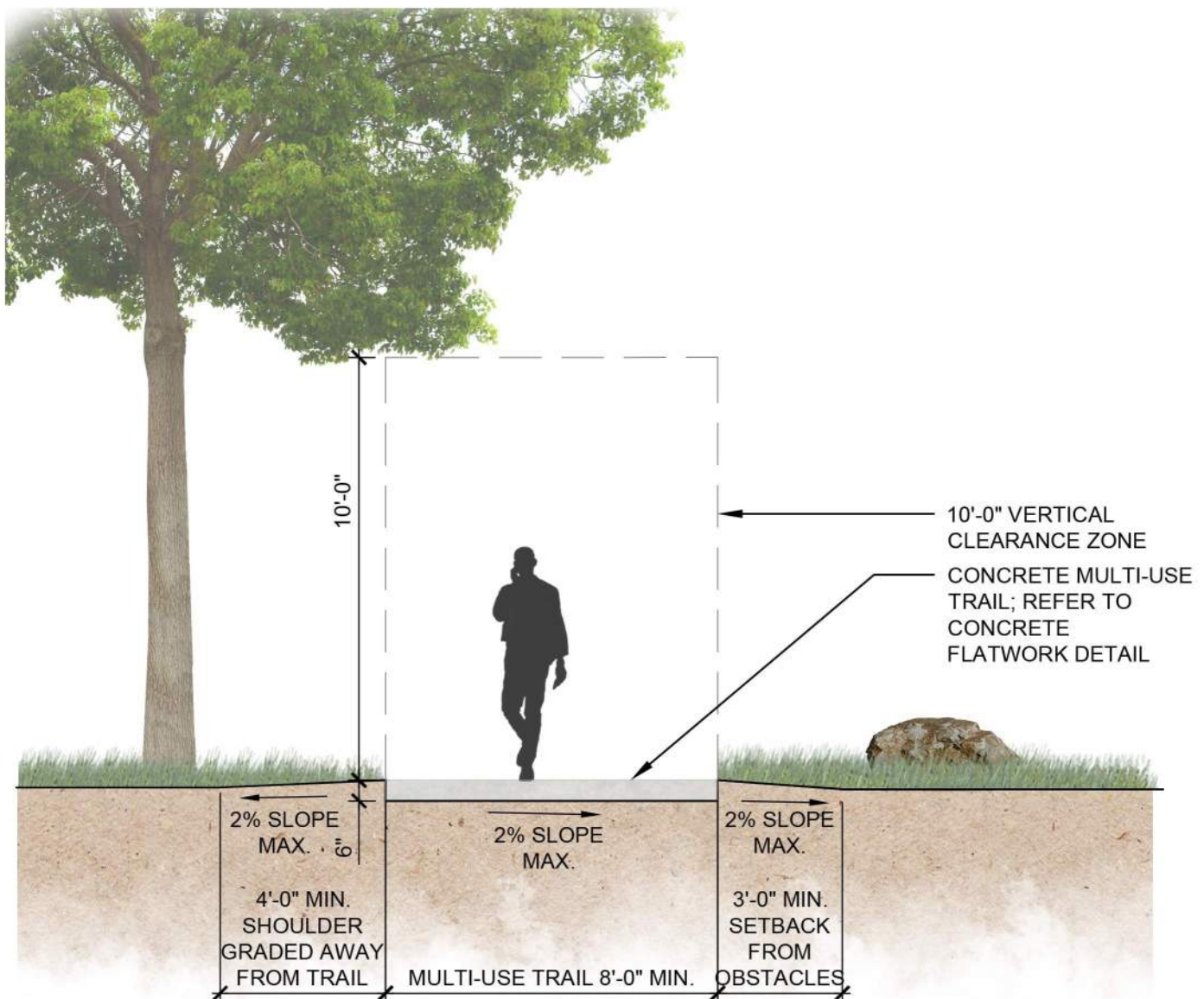
4. GREENWAY CONNECTION OR TRAILHEAD

A Greenway Connection or Trailhead is the connection or beginning of a trail that provides access to the community. It should provide trail information including a trail map, rules and regulations signage, trash receptacles, and parking (number of spaces based on type of trail and anticipated usage).

5. HARD SURFACE MULTI-USE TRAIL

Hard surface multi-use trails shall be concrete, designed specifically for various high-volume, non-motorized recreational uses.

These trails can consist of regional trails, local trails, internal access pathways, or loop pathways. They are commonly outside of the roadway right-of-way, and supply the community with a multitude of accessible, durable, low-maintenance routes.



Graphic 2.3 : Local Trail

6. INTERNAL ACCESS PATHWAY

Internal access pathways are commonly restricted to routes within a park or open space. They can also consist of accessible routes connecting smaller spaces and areas, either from residential communities to local trails, or other routes not meant for heavy loads of pedestrian traffic. Access pathways width shall be a minimum of eight (8) feet.

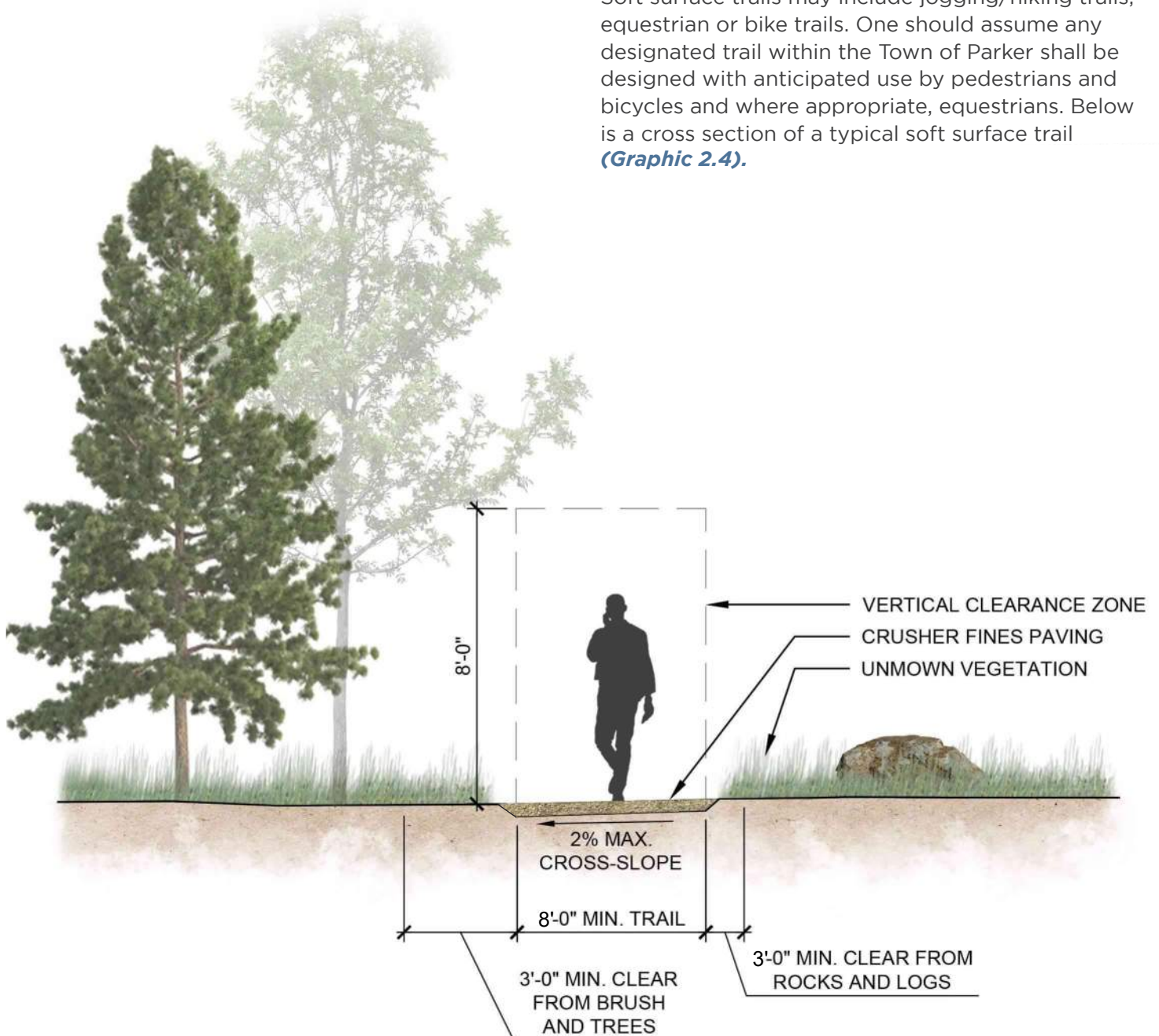
7. LOOP PATHWAY

Loop pathways are closed pathways that eventually circle back to the node where the user began. These pathways can vary in length and difficulty. Signage should be provided at the beginning of the loop to provide the user with mileage information. Loop pathway width shall be a minimum of eight (8) feet.

8. SOFT SURFACE TRAIL

Soft surface trails are alternative trail systems that are not paved. These trails shall be constructed of crusher fines for slopes less than 5% or stabilized crusher fines paving for slopes greater than 5%. Soft surface trails may include jogging/hiking trails, equestrian or bike trails. One should assume any designated trail within the Town of Parker shall be designed with anticipated use by pedestrians and bicycles and where appropriate, equestrians. Below is a cross section of a typical soft surface trail

(Graphic 2.4).



Graphic 2.4 : Soft Surface Trail

a. Jogging/ Hiking

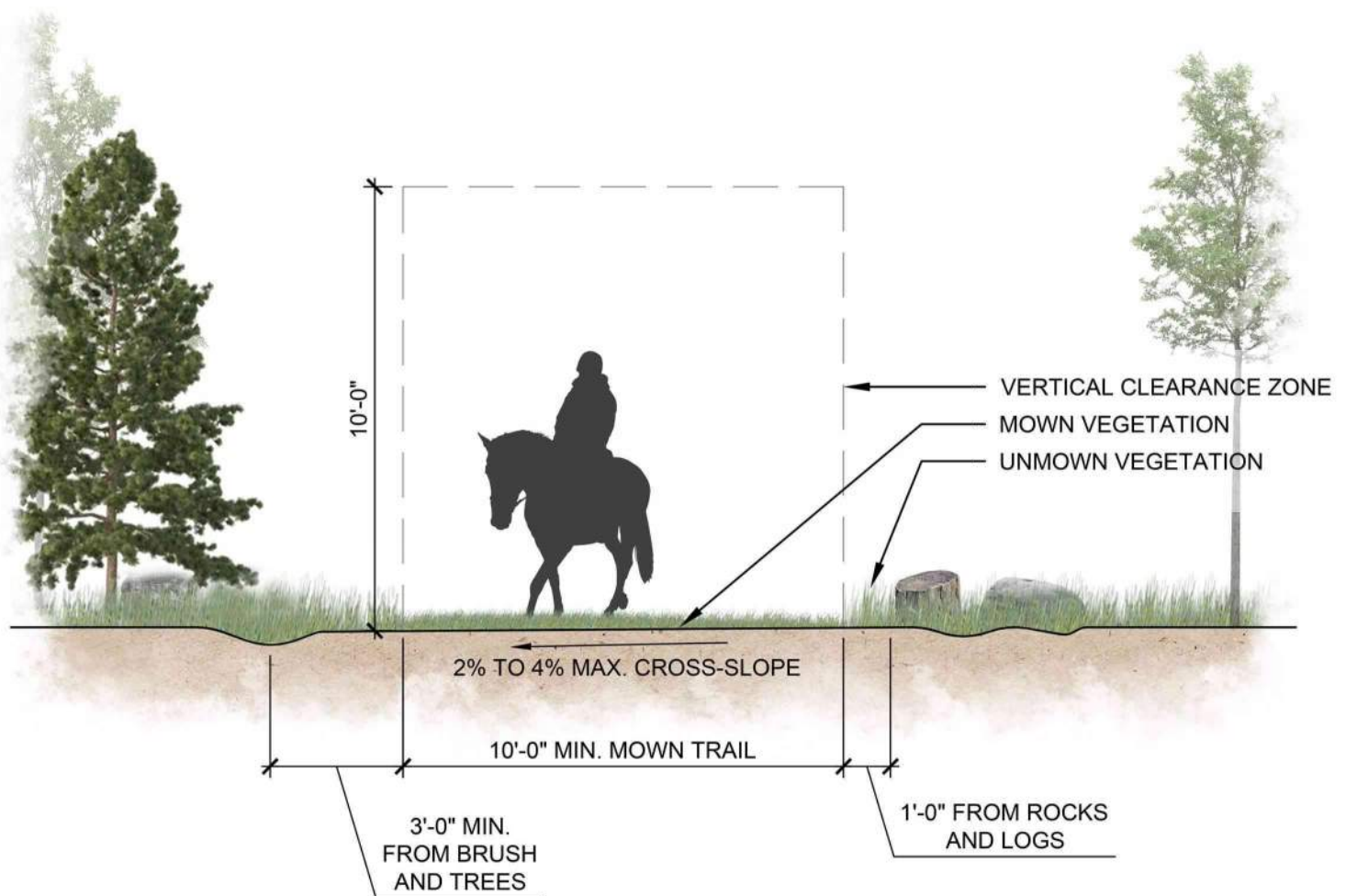
- Jogging/ Hiking trails are anticipated to be utilized by pedestrians and bicycles. These trails must be a minimum of eight (8) feet wide.

b. Equestrian/ Bike

- An equestrian trail, otherwise known as a bridle path, may be shared with bicycle users. These trails must be a minimum of ten (10) feet wide to support a horse and rider comfortably, while also having a minimum of ten (10) feet vertical clearance.
- Signage should be displayed along the trail indicated rules and etiquette for both riders and bicyclists regarding passing, speeds, and overall use.

c. Mown Equestrian Trail

- Mown equestrian trails are trails that are natural trails with soil and grass as the surface material.
- Trail shall be a minimum width of ten (10) feet.
- Signage shall be provided indicating direction of trail and allowable use (equestrian only).
- Below is a cross section of a typical mown equestrian trail (**Graphic 2.5**).

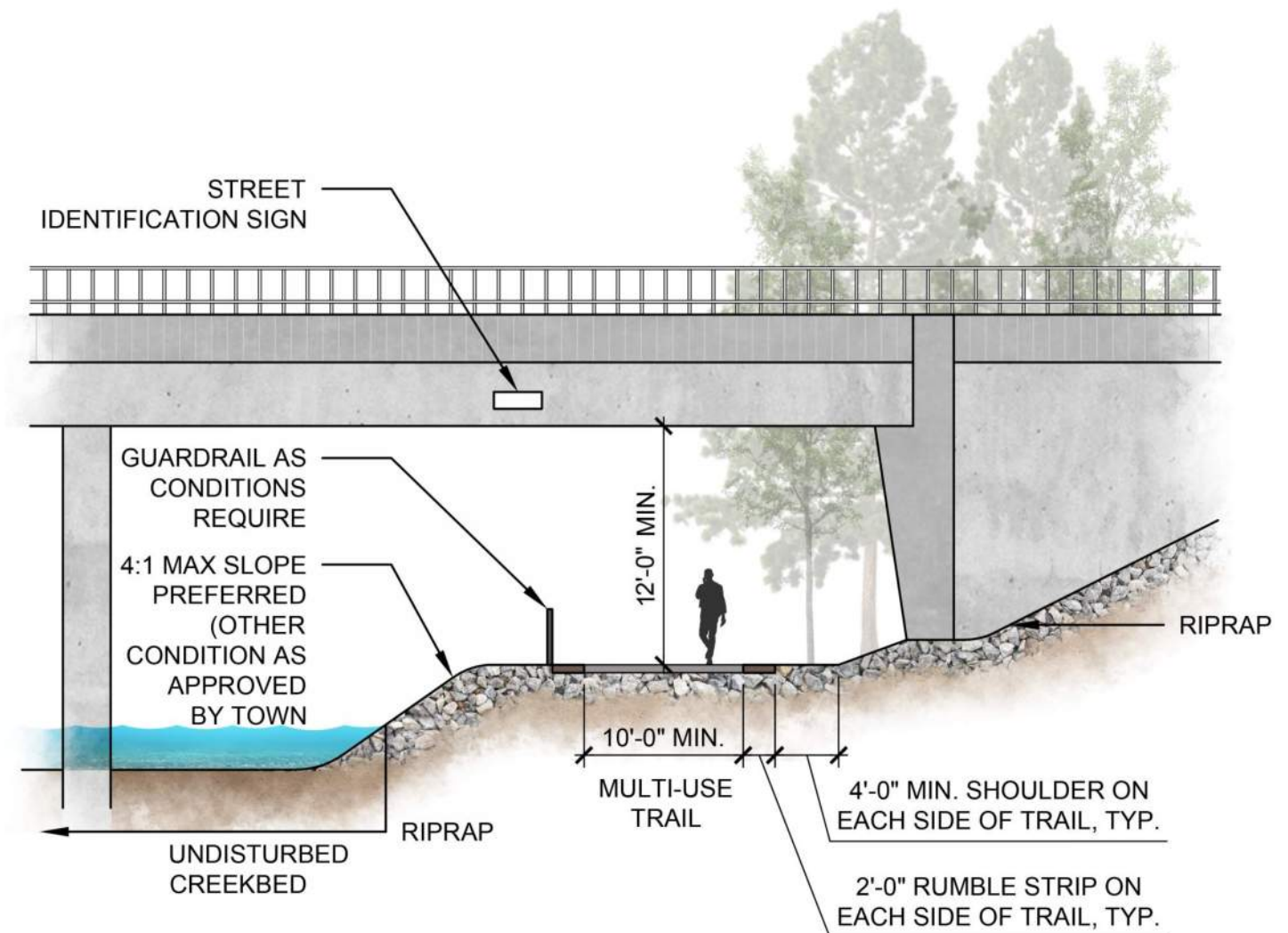


Graphic 2.5 : Mown Equestrian Trail

9. BRIDGE UNDERPASS

Bridge underpasses are defined as a “common solution to avoiding at-grade crossings of roads and active railroad tracks.”

- A minimum ten (10) foot multi-use trail with a twelve (12) foot vertical minimum clearance is required.
- Refer to (AASHTO), and USDA Forest Service Equestrian Design Guidebook for additional requirements.
- Provide adequate sight distance and lighting (natural and/or artificial) inside, outside, and at the approaches.
- Provide a two (2) foot wide rumble strip on either side of the trail.
- Where needed, provide retaining walls for grade separation.
- Below is a cross section of a typical bridge underpass (**Graphic 2.6**).



Graphic 2.6 : Bridge Underpass

Vi. Play Space & Equipment

The Town of Parker believes that safety, child development, and inclusion are high priorities for the design of playgrounds. Playgrounds are also intended to provide innovative spaces and challenging play opportunities, as well as enhancement of children's total development needs, including physical, social, creative, reflective and tactile experiences. They must also provide equal play opportunities for kids and families of all abilities, as well as being subject to the regulations of various State and Federal agencies.

1. DESIGN GUIDELINES FOR PLAY AREAS

1. Play areas shall be located next to gathering/social areas including shelters, restrooms and activity centers and adjacent to open lawn areas.
2. Play areas shall be designed as an inclusive play environment complying with/in compliance with design considerations as noted in section 04.(d). (vi).
3. Provide age-separated play areas, with playgrounds for ages 2 to 5 years and 5 to 12 years. Design of play areas that are also engaging spaces for teens and adults is encouraged. Provide unobstructed lines of sight between separate play areas for ease of supervision.
4. Maintain a minimum of 100 feet between a play area and ballfields, parking lots and streets. When it is not possible to separate play areas from parking lots and streets by 100 feet, provide fencing meeting ASTM F2049-11 for safety.
5. The play area should be sited to be visible from the street or parking lot for surveillance.
6. Develop natural barriers or features to separate play areas from conflicting or incompatible uses.
7. Incorporate shade structures and seating around the play area.
8. All play area designs shall be reviewed and approved by the Town of Parker. Plans shall include detailed design, playground equipment design and 3D renderings and surfacing design.
9. The play equipment shall meet the physical and developmental needs for a variety of users.
10. Design considerations should include durability and long-term maintenance requirements of the specific equipment, as well as the potential occurrence of vandalism and graffiti.
11. Plantings adjacent to play areas should be designed so highly bee attractant and thorny species are not located adjacent to the play area.
12. Signs and/or labels should be provided on or near play equipment or activity to provide guidance to supervisors as to the age appropriateness of the equipment and ADA requirements.

2. ACCESSIBILITY & ADA COMPLIANCE

All playgrounds shall be accessible. Accessibility is about travel, movement and approach. All play areas shall be designed to meet ADA Accessibility Standards for Play Areas. Play areas shall comply with minimum ADA standards. Each play area shall strive to exceed minimum ADA requirements to meet the needs and abilities of all users. Considerations in addition to the ADA Standards include:

1. Orient transfer decks to relate directly to the accessible play area entry and route.
2. Provide an ADA ramp into play areas with EWF. The ramp shall be designed to not impede safety zones. Refer to Surfacing Section 2.15 for acceptable locations of EWF surfacing.
3. Provide ADA access to all seating and shade structures.
4. An accessible route to play equipment should be visibly clear, with no obstructions, tripping hazards or other obstacles.



3. SAFETY STANDARDS & INSPECTIONS

All play area and equipment shall be designed to meet the following:

1. American with Disabilities Act (ADA) for Play Areas.
2. Playground equipment and design shall meet current U.S. Consumer Product Safety Commission (CPSC) guidelines; and shall meet or exceed ASTM standards.
3. All safety surfacing in playgrounds shall comply with the minimum safety standards in ASTM F 1292- "Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment."
4. Accessible safety surfacing shall comply with the minimum accessibility standards in ASTM F 1951 "Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment."
5. Playground equipment and surfacing shall meet International Play Equipment Manufacturers Association (IPEMA) standards and certifications, unless specifically approved by the Director of Parks, Recreation and Open Space.
6. All play areas prior to being open to the public shall receive an audit to be conducted by a NRPS/NPSI Certified Playground Safety Inspector to verify compliance with safety standards. A letter shall be provided to the Town that states the play equipment installation has been inspected and the equipment has been installed per manufacturer's specifications, and that it complies with the minimum playground safety regulations.

4. UNIVERSAL & INCLUSIVE PLAY

All play areas are required to provide a universal and inclusive play experience. A play area shall provide intergenerational opportunities for all to engage in play and socialization. An inclusive play area provides engaging play experiences that meet the needs of all people including those who have autism, intellectual disabilities, physical disabilities, hearing impairments, cerebral palsy, spina bifida and other disabilities as well as the needs of typical children. An inclusive play area accommodates everyone and challenges them at their own developmental level. All play area design shall be designed to be inclusive. Universal and inclusive playgrounds ensures that users of all abilities and disabilities can enjoy various play activities and provides opportunity for side-by-side play for all abilities. Design considerations for a universal and inclusive playground include:

1. Provide playgrounds that provide ample stimulation and opportunities for physical challenges for all abilities and opportunities for a variety of spaces that encourage social interaction and sensory play and stimulation.
2. Select play equipment that is specifically designed for users of various abilities to participate in, together and adjacent to one another.
3. Provide varying ranges of risk play experiences.
4. Provide areas of unstructured play to encourage open-ended and creative play.
5. Provide ease of access for varying abilities to different play features. This can be through multiple access ways to reach that play features.
6. Provide edge detection at play area edges and color delineations on the ground and play equipment for users with low vision.
7. Provide visual connectivity between spaces for ease of signing for deaf or hard of hearing.



8. Many autistic children are over or under stimulated, so it is important to provide small quite spaces and lower-level sensory activities throughout the playground as well as larger engaging areas to allow users to choose the environment that suits them.
9. Sensory play, music/ sound play is encouraged as free-standing elements and/or elements integrated into the playground equipment.
10. Provide barriers or fencing that help prevent wandering/running children from exiting the play area and give care givers peace of mind while their children play. This is a safety concern for families with small children and children with tendencies to run.
11. Provide seating throughout the play area. Provide a variety of seating including seating with backs and arm rests for additional support for users.

5. THEMATIC PLAY FEATURES

Thematic play adds character and a sense of place to a play area and is highly encouraged by the Town of Parker to incorporate into a play space. Thematic Play Features shall be a minimum of 250 square feet. Below are guidelines to follow when including thematic play features:

1. The theme should stay away from overly-used themes, such as princess castles, sunken ships, etc.
2. Depending on the location, the theme associated with a play area can be inspired by a historical event, a whimsical story, a natural landscape educational experience, or other feature that can tie into the Town's public spaces, surrounding context or overall park design.

3. Thematic play features shall provide high overall play value for a variety of users.
4. Thematic play features can incorporate art with play.
5. Examples of thematic play features can be found on page 65.

6. OPEN TURF PLAY AREA

An open turf play area will be a minimum size of 2,000 square feet.

1. The turf play area size is determined based on the usable area. Usable area includes maximum 3% slope for turf sod and 2% slope for synthetic turf.
2. Turf play area shall be within 30 feet of the playground and preference is the turf play area is immediately adjacent to the playground.
3. The turf play area will be irrigated sod. Sod species will be able to withstand high traffic use.
4. Preference is to provide synthetic turf.

7. PLAY AREA, SMALL-SCALE

A small-scale play area will be a minimum of **5,000** square feet of play area and include age separated play for 2-5 years and 5-12 years. Play areas are for play apparatus and equipment only and does not include pathways for circulation, seating and shade or any other non-play function. Approval is required by the Town for play areas that do not include age separated play. The play area will provide design requirements as listed in this section.



8. PLAY AREA, LARGE DESTINATION-SCALE

A large destination scale play area will be a minimum of 15,000 square feet and include age separated play for 2-5 years and 5-12 years and an area for teen play or social space. Play areas are for play apparatus and equipment only and does not include pathways for circulation, seating and shade or any other non-play function.

The play area will provide design requirements as listed in the Universal & Inclusive Play found within Section 02(04)(d)(vi)(4).

The destination play area will be designed to have a unique character or theme and play features that encourage a community draw of visitors to the playground.



9. SHADE SHELTER

A shade shelter is required at all play areas. A minimum of one shade shelter will be provided adjacent to the play area and will provide picnic table seating with visibility to the play area. Unique shelter design is encouraged to add architectural interest to the park. Shade shelter size depends on the size of the park and play area. Refer to the Gathering Spaces & Self-directed Group Activities category within Table 13.08.E of the [*Land Development Ordinance*](#) for requirements and standards.

10. SEATING

Provide a shaded grouped seating and individual seating for direct supervision of children in play areas.

- Provide seating for 3 people for every 1000 square feet of play area.
- Acceptable seating options include, seat walls, benches, picnic tables, swing benches and boulders.
- A minimum of 50% of seating shall have a back.
- Provide shade for 30% of seating areas.

11. PLAY EQUIPMENT

Play equipment will be commercial grade play equipment and meet all ADA, CPSC and IPEMA standards. All play equipment shall be installed in accordance with the manufacturer's specifications. All playground equipment, whether premanufactured or custom play elements, shall conform to the playground standards. The Town must approve colors and features of the play equipment. Provide 3D renderings for approval of play equipment design and colors.

1. Play equipment design should consider durability and the long-term maintenance requirements of the specific equipment, and minimize the potential for vandalism and graffiti.
2. The design and equipment should include a variety of play elements that encourage:
 - Swinging
 - Spinning
 - Hand over hand and side to side climbing
 - Balance challenges
 - Overhead activities
 - Sliding
 - Sensory development
 - Crawling
 - Imagination
 - Adventure
 - Musical play
 - Climbing
3. Wood play equipment will be considered for nature play areas with the approval of the Town.

4. Unique innovative designs that provide increased play value, thematic play, nature play, etc. are highly encouraged.
5. All proposed play equipment is expected to be in place for a minimum of twenty (20) years.
6. Swings, slides, spinning and climbing should be provided as standard elements in all play areas.
7. Provide a minimum of two feet separation from the required fall zone and play area edge.
8. Include play area signage at the entry to each play area for the age the equipment is appropriate for.
9. Orient the swing area away from the active play area to avoid conflicts in play circulation. For all swings provide a minimum of one ADA molded seat for each set of swings. Disc swings are encouraged for inclusive play areas.

a. Climbing Structure or Boulders

Climbing structures or boulders shall be a minimum size of 400 square feet (not including the fall zone). Multiple climbing structures and boulders can be play functionally linked to meet the minimum square feet requirement. Additional design criteria include:

- Climbing structures can be premanufactured reinforced concrete climbing boulders, traditional stand-alone climbing structures.
- Provide required fall zones and safety surfacing around all climbing structures and boulders.

b. Nature Play Features

Natural play features must be provided for a minimum area of 400 square feet (not including the fall zone). Nature play features must contain a variety of natural play opportunities and consists of natural elements.

1. Nature play features must be in areas of the park close to open spaces, trails or playgrounds. When located adjacent to playgrounds they must be contained separately and ideally located a minimum of 20 feet away from the play equipment areas.
2. Natural play features can include commercial premanufactured “wood look” play equipment or natural wood play elements with approval of Town including the following:
 - Premanufactured wood play structures or swings
 - Boulders
 - Balance Logs
 - Log steppers
 - Climbers
 - Natural materials for movable parts
 - Rock building areas
 - Log tunnels
 - Imaginative play area
 - Social/seating area
 - Other natural play features that encourage interactive and imaginative play





3. All wood structures and features to be sustainably harvested hard wood with a minimum rating of 1200.
4. Provide safety surfacing for all nature play features.

c. *Zip Line*

Zip lines must be premanufactured and can be integrated into play structures or separated. Zip lines shall be a minimum of 50 feet long with a rope and seat system. No hand hold only zip lines are allowed. Preferred length is 80 feet or greater.

1. Where possible design a zip line or companion zip line that has an accessible seat.
2. Zip line area shall include safety surfacing.



12. SURFACING OPTIONS

Safety surfacing materials are intended to provide the most inclusive play experience and reduce maintenance. Acceptable safety surfacing options include engineered wood fiber (at natural play areas only with approval from the Town), synthetic turf or poured-in-place rubberized surfacing (no tiles). All surfacing shall meet current ASTM Standard F1292, and ASTM Standard 1951-21.

a. *Engineered Wood Fiber*

- Shall be energy absorbing protective surfacing manufactured for playground installations. It shall be non-toxic, free of bark and organic materials, independently tested by ASTM Standard F2075-20, meet ADA requirements and Head Impact Criteria (HIC).
- Only acceptable in natural play areas.
- Must be 12" minimum compacted depth. Provide 3"-4" of freeboard (after compaction). Thickness shall be sufficient to attenuate falls per ASTM F1292.
- Needs to be compacted to meet ADA upon completion of the playground installation.

b. Poured-in-Place Rubberized Surfacing:

- Poured-in-place rubberized safety surfacing shall meet the following requirements in order to improve the durability and minimize replacement and/or repair costs:
 - Meet ASTM F2479-17 Standard
 - Minimum 10 years warranty on material and installation.
 - Binder used for the surfacing shall be aliphatic urethane type or superior.
 - A protective coat/sealant shall be provided as part of the initial installation to help protect the surface from elements.
 - The poured-in-place surfaces should be designed as follows:
 - » Poured-in-place shall be on a concrete base with weep holes and an underdrain system or similar provisions for drainage.
 - » Adjust the depth of the subsurface and poured-in-place surface to meet the needs of the critical fall heights of the play equipment.
 - » Use a combination of standardized colors (i.e. 30% black, 70% green), rather than a single solid color, so that color mixtures can be adjusted to match faded colors in the future for patching and repairs.
- » If the surface has shapes or patterns, use simple shapes or patterns that are easy to patch. Avoid any patterns or shapes under high-traffic areas like swings and the base of slides.
 - » Avoid joints in surfacing at posts, under slides, swings and under components in the areas that extend through the poured in place surfacing.
 - » Product: Surface America - Playbound or approved equivalent.





c. *Artificial Turf*

The artificial turf surfaces should be designed to include:

- Synthetic turf system (turf, shock pad, and infill) shall be selected to meet Head Impact Criteria (HIC) safety ratings.
- Select synthetic turf material that meets ADA accessibility and is antimicrobial.
- Rubber infill is not acceptable. Use coated silica sand (Envirofill) or other non-toxic, non-flammable infill.
- Shall be IPEMA certified.
- Provide shock pad to meet HIC with the complete synthetic turf system (turf, shock pad and infill).
- Provide an underdrain system per synthetic turf manufacturer recommendations
- Recommended for fall heights of 12' or under.
- Minimum 8 year warranty.

13. STANDARD PLAY

The following information provides design guidelines for play equipment and safety surfacing.

THEMATIC PLAY FEATURES

Thematic play features can add character and a sense of place within a play space. Features can be incorporated directly into the play equipment style and color scheme, surfacing material, flatwork, and free standing elements.

Description

All thematic play features should add an artistic element to the playground, create a sense of place, and meet all playground safety requirements.

Examples

- Sandblasting graphics
- Uniquely themed play structures
- Thematic climbers
- Sculptures
- Interactive play
- Interactive art



UNIVERSAL & INCLUSIVE PLAY ELEMENTS

Providing opportunities for children of all abilities and disabilities to participate in group play is an important factor for socialization and development. Universal and inclusive play elements allow for families to experience play without limitations.

Description

Play features should provide transfer stations, and consider wheelchair mobility, sensory disorders, needs for children with Autism, and other developmental conditions.

Examples

- ADA accessible play equipment
- Sensory Play
- Other, see Section 02(04)(d) (vi)(4).



CLIMBING STRUCTURE

Climbing plays a key role in early childhood motor skills development. It is also beneficial for spacial and directional awareness, and boosts physical skills such as balance, hand and foot coordination, and agility.

Description

Climbing structures can range from natural materials (wood), to artificial materials (metal, plastic, and rope). The structure can be free-standing, or linked to other play structures.

Examples

- Climbing tower with slides
- Climbing walls
- Freestanding climbers
- Net climbers
- Quad climbers
- Wood post climbers (only in nature play areas)



CLIMBING BOULDER

Climbing boulders are a great physical challenge for users of all ages, and add a very aesthetically pleasing natural element to the play space.

Description

Climbing boulders should provide adequate areas for hand holds or hand grips, and foundation installation should provide a stable climbing experience.

Examples

- Large performance boulder
- Small climbing boulder with connecting rope play
- Boulder-themed climbing wall



NATURE PLAY FEATURES

Nature play features provide a connection to nature, and an opportunity for more free and open play possibilities. Use of natural materials may be allowed with Town's Approval; however concrete or other man-made options that mimic nature are acceptable.

Potential Manufacturers

- Earthscapes
- Kompan Robinia Play Structures
- Nature's Instruments
- Natural materials selected and designed to meet CPSC Standards.
- Others as approved by the Town.

Installation

- Natural play features should be installed in safety surfacing that meets required HIC.



ZIP LINES

Zip lines offer a unique playground feature that adds a safe, thrilling, two-way challenge for users. They provide a variety of sensory, motor skills, cognitive skills, and social/emotional skills.

Description

Zip lines should allow for at least one ADA accessible seat. Zip lines can be integrated into play structures or be separated. Zip line shall be a minimum of 50 feet long.

Examples

- Cableways
- Single zip line
- Double zip line
- Sloped vs. Flat Zip line



SURFACING

Safety surfacing can be used in a variety of different playground spaces, and can transition between materials within the same play space to allow for different themes, and accessibility routes.

Acceptable Products

Engineered Wood Fiber (EWF)

Provides an accessible, natural, surfacing material. However, this material should be used minimally for ADA accessible routes to play equipment.

Suggested Uses:

- To be used in areas identified as nature play spaces.



Artificial turf

Suggested Uses:

- Hillside play
- Flat play surfaces
- Neighborhood and community parks

Poured in Place surfacing

Suggested Uses:

- Hillside play
- Flat play surfaces
- Neighborhood and community parks



14. UNIVERSAL & INCLUSIVE PLAY ELEMENTS EXAMPLES

Universal and inclusive play areas should provide a variety of opportunities to develop cognitive, sensory, physical development and social skills. Below are a variety of examples of the variety of experiences that will provide these opportunities.

BALANCE & MOTION

Balance allows children to have better control over their bodies. This is a great skill for child development, and there are several ways for this activity to be fully inclusive.

Description

Inclusive equipment designed for balance should be accessible by wheelchair, and have durable materials.

Examples

- Balance boards that move
- Group spinners
- Solo spinners
- ADA accessible trampoline
- ADA accessible merry-go-round



SWINGS

Swings help develop fine motor skills, including grip strength, and hand/arm/ finger coordination. It also has therapeutic benefits, and can easily incorporate universal and inclusive components.

Description

One inclusive swing component should be incorporated into every playground, if belt swings are to be provided in the playground.

Examples

- Disc swing
- ADA molded seat swing
- Friendship swing
- Wheelchair accessible swing



SENSORY PLAY

Sensory play is a great feature that supports language development, cognitive growth, fine and gross motor skills, problem solving skills, and social interaction.

Description

Sensory play components can be free-standing, or incorporated into other playground components.

Examples

- Sensory panels
- Sensory walls
- Roller table
- Interactive features that move and make sound



SENSORY SITE FEATURES

Sensory site features can be incorporated into a playground in other ways aside from playground equipment components.

Description

Sensory play components can be free-standing, or incorporated into other playground components.

Examples

- Sensory garden with child friendly vegetation that encourages smell and touch
- Concrete sensory walks with various patterns and textures
- Water Play



QUIET SPACES TO ALLEVIATE OVER-STIMULATION

Quiet spaces allow an area for over-stimulated kids to alleviate stress and allow them to regain control and focus.

Description

Quiet spaces shall allow for the reduction of sights, sounds, and loud noises, while also maintaining visibility for parents. Roof cover, and partial cover on 2-3 sides is required.

Examples

- Covered structures that provide solitude
- Partially enclosed spinning seats
- Partially enclosed stationary seating
- Shaded seating at the perimeter of the play area



HILLSIDE PLAY

Hillside play enables a space for users to experience a variety of play options on a sloped surface.

Description

An ADA accessible route to the top of the hill is required. A minimum of 2 hillside play features are recommended for each hillside play experience. A slope of 30-35 degrees is recommended.

Examples of Hill Features

- Slide (Standard or Roller)
- Hooped climbers
- Rope climbers
- Hand grips



MUSIC / SOUND PLAY

Music and sound play has beneficial auditory, tactile, memory, and cognitive stimulation for kids. It's also very therapeutic, and can come in a variety of different types and styles.

Description

Any mallets or additional pieces needed to play equipment shall be securely fastened to the equipment. Safety surfacing not typically needed for music/ sound play; verify with manufacturer.

Examples

- Standard music Instruments (chimes, xylophones, bells, drums, etc.)
- Talk tubes
- Interactive, electronic games



TEETER TOTTERS / ROCKERS

Teeter totters and rockers support sensory regulation, core strengthening and balance.

Description

Teeter totters should allow for wheelchair accessibility or should allow for easy transfer out of a wheelchair and into the equipment.

Examples

- Wheelchair accessible swing
- Wheelchair accessible rocker
- Teeter totter with molded seat





VII. Sports & Fitness

1. GENERAL CONSIDERATIONS

Sports and fitness facilities provide active recreation opportunities for the community. They are a critical part of the development of parks. All sports and fitness facilities shall be ADA accessible, including but not limited to the fields, courts, dugouts, and seating. Accessibility should not be limited to one field or one court but rather provide accessibility to all fields and courts.



a. Additional Parking

Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#), for information on minimum parking space requirements. Additional parking requirements are based on each field or court. Additional parking will need to be provided based on the total number of fields and courts provided in the park. The Town may require additional parking above and beyond these numbers based on programming and need.

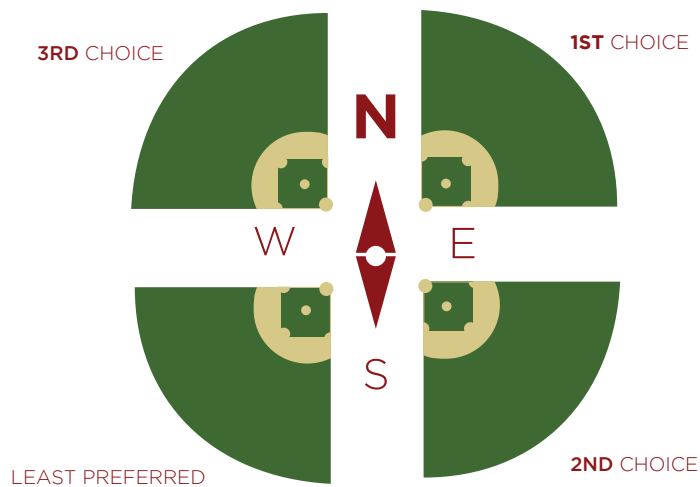
b. Layout/Orientation/Sizing - Fields

The location and orientation of recreation fields should be sited for minimal impact to natural and sensitive areas. Location of recreation fields should also be sited to minimize potential conflicts with gathering areas, play areas and other passive uses. Adequate distance between ball fields and parking should be considered to minimize parking and foul ball conflicts.

Supporting features including bleachers, dugouts, seating, other support amenities along with buffer zones should be considered when siting recreational fields.

- The preferred orientation for fields is on the long axis north/south. Other orientations may be acceptable due to specific site conditions.
- For multipurpose fields, it is recommended to use the largest field size possible to accommodate a variety of sport types. Where possible, provide two adjacent fields to allow alternate layout and seasonal field rotation.
- At multiple athletic field complexes, additional space may also be needed for buffer zones and drainage features between fields.

- Preferred field orientation of ballfields is shown in **Graphic 2.7: Ballfield Orientation** below.



Graphic 2.7 : Ballfield Orientation

Layout, orientation and sizing of fields are provided in [Table 2.1](#). Refer to Appendix A for details of the fields and courts. Refer to Appendix B for specifications relevant to these facilities.

c. Grading and Drainage

Table 2.1 Field Layout, Orientation and Sizing

Sports Field Type	Size	Preferred Orientation	Required Athletic Equipment & Support Amenities
*Multipurpose Field A	225' x 360' (20' minimum runout)	Long Axis North/South	1. Soccer Goals (refer to support amenities) 2. Lacrosse Goals
Multipurpose Field B	180' x 300' (20' minimum runout)	Long Axis North/South	1. Soccer Goals (refer to support amenities)
Multipurpose Field C	165' x 270' (20' minimum runout)	Long Axis North/South	1. Soccer Goals (refer to support amenities)
Multipurpose Field D	120' x 240' (20' minimum runout)	Long Axis North/South	1. Soccer Goals (refer to support amenities)
Baseball/Softball	200' Foul Line (with grass infield) - refer to detail	See 2.1: Preferred Orientation Diagram	1. Backstop (refer to detail) 2. Bleachers (refer to support amenities)
Baseball/Softball	250' Foul Line (with skinned infield)	See 2.1: Preferred Orientation Diagram	1. Backstop (refer to detail) 2. Bleachers (refer to support amenities) 3. Dugouts (refer to detail)
Baseball/Softball	300' Foul Line (with skinned infield)	See 2.1: Preferred Orientation Diagram	1. Backstop (refer to detail) 2. Bleachers (refer to support amenities) 3. Dugouts (refer to detail)

* = Standard size requirement, unless a smaller size is approved by the Town.

Grading and Drainage are important to ensure fields are properly graded and drained to meet play field requirements and be able to maintain as much year-round playability on the fields and courts as possible. Provide grading and drainage within specification tolerances. [Table 2.2](#) includes grading and drainage guidelines for athletic fields and court facilities.

- Grading shall comply with ADA standards.
- Do not create areas of ponding or water retention.
- Avoid building fields and courts at the bottom of a slope.

- Utility boxes and drainage grates shall not be located on playing fields.
- Consider spectator areas when grading the play field sidelines. Provide adequate level areas for spectator seating.
- Ensure soil under fields provides adequate drainage to eliminate ponding.

Table 2.2 Field and Court Grading and Drainage

Sports Field/Court Type	Grading Requirements	Drainage Requirements
Multipurpose Field	Preferred: Crowned in the center along long axis with a maximum slope of 2%. Alternate grading may be considered based on the recommendation of a professional engineer.	Provide perimeter drain at edge of runoff
Baseball/Softball	Slope to drain at 1% from home plate to the infield edge and 2% from the infield edge to the outside of the warning track.	Provide positive drainage away from home plate at all locations
Badminton	Preferred: Crowned in the center along long axis with a slope of 1.5%. Alternate grading may be considered based on the recommendation of a professional engineer.	-
Basketball	Drain end to end at 1%	-
Bocce	Provide a level playing surface	Provide underdrain system
Futsal	Preferred: Crowned in the center along long axis with a slope of 1.5%. Alternate grading may be considered based on the recommendation of a professional engineer.	Provide perimeter drain at edge of runoff
Pickleball	Court should slope end-to-end, side-to-side or corner-to-corner in one plane at 0.833% minimum and 1% maximum slope	Ensure surrounding area does not drain onto courts
Tennis	Court should slope end-to-end, side-to-side or corner-to-corner in one plane at 0.833" minimum and maximum of 1%.	Ensure surrounding area does not drain onto courts
Volleyball (Sand)	Slope end-to-end at 1.5% slope	Provide underdrain system. Drain surrounding area away from court

2. MULTIPURPOSE FIELD

1. Large turf athletic fields can be utilized for multiple sports (i.e. football, soccer, lacrosse, etc.) for all ages and provide a space for three season to year-round sports facilities for the community.
2. Multipurpose fields shall consist of natural irrigated high-use turf or synthetic turf. Synthetic turf fields are highly encouraged as a sustainable option that reduces water use and maintenance costs as well as provides more year-round opportunities for community use and programming. Refer to Alternative Surfaces section for additional information on synthetic turf. Refer to [Table 2.1](#) for multipurpose field sizing and orientation.
3. Include sports lighting where appropriate.
4. Field goals are required.
5. Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#), for information on minimum parking space requirements.



3. BALL FIELDS

Ballfields shall typically consist of irrigated turf with turf or skinned infields. However, the developer should consider using more sustainable options, such as synthetic turf. Synthetic turf may be required based on factors such as maintenance requirements, available water supply, suitability of the site for the long-term support of irrigated turf, and whether installation of synthetic turf will contribute to the Town's sustainability. Baseball and softball fields shall include the following:

- Refer to specifications for infield mix and warning track materials.
- Where mounds are required (300' foul line fields) provide All-American Sports Clay by All American Sports Material.
- Backstop to be 20' height x 20' straight section with 10' wings
- Outfield fence – Refer to Section 02 (7.0)(a).
- (2) GFCI duplex outlets (one per side)
- Aluminum Tip-n-roll bleachers (one per side with accessible seating incorporated). Bleachers shall be three row at 21 feet length for 200' foul line and 27' length for 250' and 300' foul line.
- Pro style molded bases
- Mounds for 300' foul line fields
- Scoreboard required for 300' foul line fields
- Foul ball poles
- The Town and the developer may negotiate lighting.
- Lighting may be required based on factors such as anticipated hours of programming.
- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#), for information on minimum parking space requirements.

a. Dugouts

Dugout shall be provided at all 250' and 300' foul line baseball and softball fields. Dugouts shall be chainlink fence with a solid roof. All dugouts shall comply with ADA guidelines to and within the dugout. Refer to Appendix A for details and Appendix B for specifications. Dugouts shall include the following:

- Players bench
- ADA turnaround area
- Bat racks



4. SPORT COURTS

Layout/orientation/sizing – Sport Courts

Table 2.3 indicates the size, preferred orientation and required Athletic Equipment and Support Amenities for the sport courts.



Table 2.3 Court Layout, Orientation and Sizing

Sports Court Type	Size	Preferred Orientation	Required Athletic Equipment & Support Amenities
Badminton	44' x 20' (10' Minimum Clearance)	Long Axis North / South	1. Badminton Net
Basketball	Neighborhood-Serving: 40' x 60' Community-Serving: 56' x 84'	Long Axis North / South	1. Basketball Goals 2. (2) Benches 3. (1) Trash Receptacle
Bocce	13' to 19'-6" x 78' to 92'	Long Axis North / South Flexible	1. Bocce Ball Rack 2. (2) Benches 3. (1) Trash Receptacle
Futsal	125'-138' x 66'-82'	Long Axis North / South (However can be flexible)	1. Soccer Goals
Pickleball (2 Court Minimum)	20' x 44' (10' baseline runout and 7' sideline runout minimum)	Long Axis North / South	1. Net 2. 10' Height Chainlink Perimeter Fence 3. 4' Height Chainlink Divider Fence 4. Bleachers <i>(for 2 or more courts)</i> 5. Backboard <i>(1 per set of courts)</i> 6. Windscreens 7. GFCI Duplex Outlet <i>(1 per 4 courts)</i> 8. Trash Receptacle <i>(1 per 4 courts)</i> 9. Lights as required by Town
Tennis (2 Court Minimum)	36' x 78' (10' sideline clearance and 21' end clearance)	Long Axis North / South	1. Net 2. 10' Height Chainlink Perimeter Fence 3. 4' Height Chainlink Divider Fence 4. Bleachers <i>(for 2 or more courts)</i> 5. Backboard <i>(1 per set of courts)</i> 6. Windscreens 7. GFCI Duplex Outlet <i>(1 per 4 courts)</i> 8. Trash Receptacle <i>(1 per 4 courts)</i> 9. Lights as required by Town
Volleyball	30' x 60' (10' minimum sideline clearance)	Flexible	1. Nets & Posts 2. (2) Benches 3. (1) Trash Receptacle

a. Badminton

A badminton court shall be located on irrigated turf. It can be located in an active or passive area of the park. Badminton courts shall include the following.

- Permanent posts with removable commercial grade net
- Striping for the court can be mown or painted

b. Basketball

Basketball courts provide an activity that is often enjoyed by all ages ranging from older children to active adults. Basketball courts shall include the following.

- Secure geotechnical testing and recommendations to determine required soil preparation for courts.
- Courts shall be construction of post tension concrete (depth and psi as recommended by a structural engineer).
- All markings on the playing surface shall be applied using wear resistant paint. All markings shall be a minimum of 2" width, color to be white or yellow.
- Court surfacing may consist of acrylic sport court surfacing that is wear and slip resistant.
- Basketball Goals
- Where appropriate and needed due to adjacent uses, provide 10' height chainlink fencing around the perimeter of the court.
- Field support amenities per page 77
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#), for information on minimum parking space requirements.

c. Bocce

Bocce court size may vary. Refer to refer to layout, orientation and sizing table for sizing information. Bocce courts shall include the following:

- The surface shall be flat and leveled
- Perimeter curbing shall be concrete with a wood or composite wood bumper board. All fasteners to attach the boards shall be recessed.
- Surfacing may be one of the following:
 - Stabilized crusher fines
 - Synthetic turf (appropriate pile height for Bocce)
 - Pacific Pearl Bocce Surface System (by Bocce Builders of America or approved equal)
- Provide underdrain system connected to the surrounding storm system or daylighted on site.
- Provide Bocce Ball Rack and Balls
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#), for information on minimum parking space requirements.

d. Futsal

Futsal is a variation of soccer that is played on a smaller playing surface and mainly played indoors on a hard court or outdoors on turf, synthetic turf or hard-court surfacing. Futsal can be played on a sport court surface.

- Surfacing shall be irrigated high-use turf, synthetic turf, or sport court (5" minimum thickness) or post-tension concrete paving.
- Provide two goals (one at each end of the court).
- Provide two players benches (one on each side of the court).
- Provide 6' height chainlink fencing around the perimeter of the Futsal court.
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#), for information on minimum parking space requirements.

e. Pickleball

Pickleball is a growing and active sport in the community. Pickleball courts shall be designed per the *Pickleball Courts: A Construction & Maintenance Manual*. A minimum of two pickleball courts shall be provided and additional courts as required by the Town. Pickleball courts shall include the following.

- Secure geotechnical testing and recommendations to determine required soil preparation for courts.
- Courts shall be constructed of post tension concrete (depth and psi as recommended by a structural engineer).
- Provide acrylic coating (blue court, green run out) – or other colors as acceptable to the Town.
- Perimeter Fencing shall be 10' height chainlink fencing
- Divider Fencing to be 4' height chainlink fencing
- (1) backboard for every set of courts
- Windscreens (at fencing and gates)
- Cabana or shade shelter with seating between or next to the courts
- Nets
- (1) GFCI duplex outlet for every two courts
- Provide one set of bleachers for every four courts (locate bleachers in on the side of the court that is most easily viewed for the championship match)
- Squeegee and water broom (with hardware to secure to fencing)
- The Town and the developer may negotiate lighting.
- Lighting may be required based on factors such as anticipated hours of court use.
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#), for information on minimum parking space requirements.

f. Tennis

Tennis courts shall be provided with a minimum of two courts. For competition or complexes provide a minimum of six courts with eight courts being preferred. Tennis courts shall be designed per the *Tennis Court: A construction and Maintenance Manual*. Quantity of courts required for the park may be negotiated by the Town and the developer. Tennis courts shall include the following.

- Secure geotechnical testing and recommendations to determine required soil preparation for courts.
- Courts shall be construction of post tension concrete (depth and psi as recommended by a structural engineer)
- Provide acrylic coating (blue court, green run out) – or other colors as acceptable to the Town
- Perimeter Fencing shall be 10' height chainlink fencing
- Divider Fencing to be 4' height chainlink fencing
- (1) backboard for every set of courts
- Windscreens (at fencing and gates)
- Cabana with seating between the courts
- Nets
- (1) GFCI duplex outlet for every four courts
- Provide one set of bleachers for every four courts (locate bleachers in on the side of the court that is most easily viewed for the championship match)
- Squeegee and water broom (with hardware to secure to fencing)
- The Town and the developer may negotiate lighting.
- Lighting may be required based on factors such as anticipated hours of court use.
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#), for information on minimum parking space requirements.



g. *Volleyball*

Volleyball courts shall be sand. Volleyball courts should be located in close proximity to gathering and social areas. They should be separated from play areas. Volleyball courts shall include the following.

- Neighborhood-serving: (1) court minimum
- Community-serving: (2) court minimum
- Volleyball court shall consist of a concrete wall to contain the sand.
- Sand shall be 30 mesh silica sand at a depth between 24"-42" (preferred depth).
- An underdrain system shall be provided and connect to a sump, or other biofiltration method that allows the water to infiltrate on-site.
- Volleyball posts shall be galvanized and spaced to accommodate a (32) feet wide by 3 feet tall net. Net posts shall be 8 feet above the finish playing surface. The net shall have a stainless-steel cable along the top and rope along the bottom.
- Boundary lines
- Refer to Section 02(04)(d)(X.) [**Table 2.4 Community Park Parking Guidelines**](#), for information on minimum parking space requirements.

h. *Tournament Sport Court or Multi-court Complexes*

In order to accommodate tournaments, athletic complexes with larger quantities of sport court facilities (i.e. tennis, pickleball, etc.) may be required by the Town.

- A minimum of six courts shall be provided for multi-court complexes. The addition of a seventh court allows a location for warm-up during the tournament play.
- All Tournament Sport Court/Multi-court complexes shall have court and facility lighting, restrooms, shade, parking, and seating.



5. FIELD SUPPORT AMENITIES

a. SOCCER GOALS

Provide two soccer goals for each multi-purpose field or quantity required by Town.

Model

Scoremaster (mfr)
Moveable Regulation Soccer Goals
(Size per multi-purpose field)
Or approved equal

Installation

- Freestanding / Portable



b. LACROSSE GOALS

Provide two lacrosse goals per Multipurpose Field size A.

Model

Scoremaster (mfr).
Model: #SM-L1000
Or approved equal

Installation

- Freestanding / Portable



c. PLAYERS BENCH

Provide one players bench in each dugout.

Model

PW Athletic Mfg. Co. (mfr),
Model: # 1103-21G-21' Aluminum
Bench with back with galvanized
frame. Color silver.
Or approved equal

Installation

- Surface mounted on
concrete paving.



d. FOUL POLE

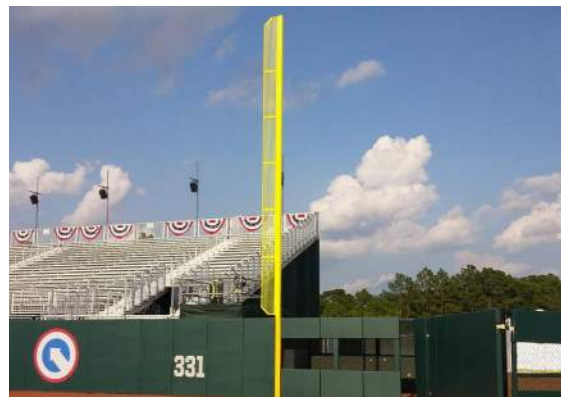
Provide a foul pole in line with foul lines.

Model

Sportsfield Specialties (mfr)
Model: #LGFP420, 20'-0" height
with mesh swing.
Color to be yellow.
Or approved equal

Installation

- In-ground mount
per manufacturers
recommendations. Provide
engineered stamped
drawings.



e. OUTFIELD FENCE GUARD

Provide fence guard along entire length of outfield fence.

Model

Beacon Athletics (mfr)
Fence Guard - Premium Thickness
Color to be Yellow.
Provide along entire length of
outfield fence.
Or approved equal

Installation

- Per manufacturers recommendations.



f. SCOREBOARD

Scoreboards shall be provided at all fields intended to be programmed.

Models (or approved equals)

Single cabinet, aluminum construction, electronic display scoreboard with the following features:

- Size: 14-foot length by 5-feet height overall minimum cabinet.
- Cabinet Finish: High performance coating, color as selected by Owner from manufacturer's full range.
- Includes Captions For: "HOME", "GUESTS", "INNING", "BALL", "STRIKE", "OUT", "H", "E". 9-inch height minimum white lettering.

- Digits: 18-inch height minimum, LED, amber color.
- Two-post mounting.
- Integrated lighting protection.
- Power: UL/ETL listed 120 VAC.
- Control console designed for wired or wireless use.
- Warranty: 5-years minimum

Installation

- Provide engineered stamped drawings and calculations for design of scoreboard assembly, including mounting and foundations.



g. BASEBALL/SOFTBALL BASES

Provide home plate and bases for each baseball/softball field.

Models (or approved equals)

Beacon Athletics (mfr)
First Base: Champro Pro-Style Double 1st Base Set.

All Other Bases: Champro Pro-Style Base Set.

Installation

- Per manufacturers recommendation.



h. PLATES AND PITCHING RUBBER

Models (or approved equals)

Beacon Athletics (mfr)
Home Plate: Home Plate with Anchor and Stanchion.

Pitcher's Rubber: Champro 3-Spike Pitcher's Rubber.
Provide at 300' foul line fields, or other distances where approved by Owner.

Installation

- Per manufacturers recommendation.



6. SPORT COURTS SUPPORT AMENITIES

a. BADMINTON NET POSTS

Provide set of posts per court.

Model

Porter (mfr)
Ultimate Outdoor Volleyball
Standards
Or approved equal

Installation

- Per manufacturers recommendation.



b. BADMINTON NET

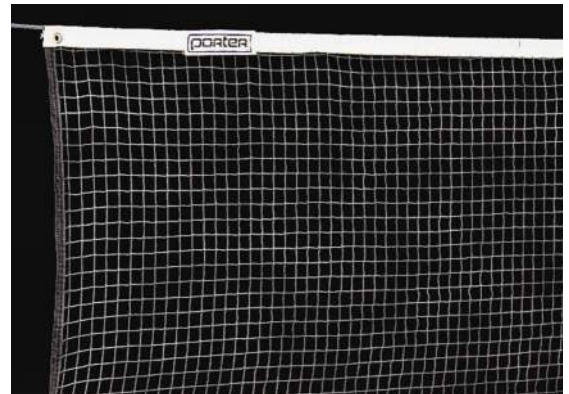
Provide one net system per court.

Model

Porter (mfr)
Badminton Net 20 x 30"
Product Code: 2236110
Or approved equal

Installation

- Per manufacturers recommendation.



c. BASKETBALL GOAL

Provide two goals for each full-size basketball court.

Model

Porter (mfr)
Heavy-Duty Basketball System
Product Code: 195580
Or approved equal

Installation

- In-ground mount.
Foundation design by
manufacturer. Design to
meet local soil conditions.



d. BOCCE

Provide one bocce ball rack per court.

Model

Boccemasters (mfr)
Bocce Ball Rack or approved
equivalent.
Or approved equal

Installation

- Anchor to concrete edge
with vandal resistant
hardware.



e. FUTSAL GOALS

Provide two futsal goals for each futsal court.

Model

Forza (mfr)
Model: 3m x 2m FORZA ALU110
Socketed Futsal Soccer Goal
110mm reinforced powder
coated aluminum
5mm thick braided goal net
Or approved equal

Installation

- Per manufacturer's recommendation.



f. PICKLEBALL NET POSTS

Provide net posts for each pickleball court.

Model

Douglas (mfr)
Model: SW-36 Deluxe Pickleball
Posts 2-7/8" OD.
Color to be Black
Or approved equal

Installation

- Per manufacturer's recommendation.



g. PICKLEBALL NET POSTS - GROUND SLEEVES

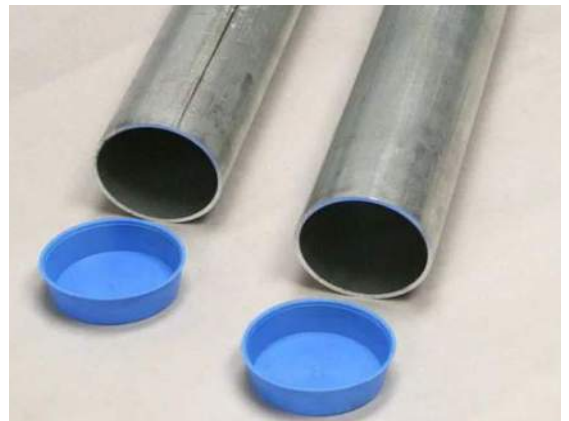
To be used with Pickleball net posts.

Model

Douglas (mfr)
Model: GS-24RD/AL Aluminum
Ground Sleeves 24" Long for
2-7/8" OD Posts
Or approved equal

Installation

- Per manufacturers recommendation.



h. PICKLEBALL NET

Provide a net for each pickleball court.

Model

Douglas (mfr)
Model: JTN-30 Pickleball Net –
36" x 21'-9"
Color to be Black
Or approved equal

Installation

- Per manufacturers recommendation.



i. PICKLEBALL / TENNIS WINDSCREENS

Provide windscreens on all perimeter fencing and gates.

Model

Douglas (mfr)
Polypro Plus Premium – 9' height
Color to be Black
Or approved equal

Installation

- Per manufacturers recommendation.



j. PICKLEBALL / TENNIS CABANAS

Provide cabanas between pickleball and tennis courts.

Model

Sun-Trends Inc. (mfr)
8' long cabana with 8' long cabana
bench (two sided flat).
Color to be Blue.
Or approved equal

Installation

- Inground mount. Provide engineered stamped drawings for installation through post tension concrete.



k. TENNIS NET POSTS

Provide net posts for each tennis court.

Model

Douglas (mfr)
SW-36 Deluxe POP Tennis Posts
2-7/8" OD.
Color to be Black.
Or approved equal

Installation

- Per manufacturers recommendation.



l. TENNIS NET GROUND SLEEVES

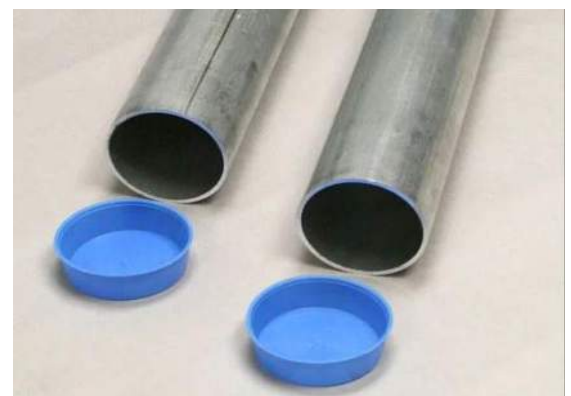
Provide one bocce ball rack per court.

Model

Douglas (mfr)
GS-24RD/AL Aluminum Ground
Sleeves 24" Long for 2-7/8" OD
Posts. Or approved equal

Installation

- Per manufacturers recommendation.



m. TENNIS NET

Provide a net for each tennis court.

Model

Douglas (mfr)
Model: PN-30 POP Tennis Net-
31" x 21'-9"
Color to be Black.
Or approved equal

Installation

- Per manufacturers recommendation.



n. VOLLEYBALL NET POSTS

Provide net posts for each volleyball court.

Model

Porter (mfr)
Model: 2219-20A Volleyball Pro
Series Competition Posts
4" Square Aluminum
Color to be Black
Or approved equal

Installation

- Per manufacturers recommendation.



o. VOLLEYBALL NET

To be used with Pickleball net posts.

Model

Porter (mfr)
Model: Ultimate Outdoor
Volleyball Net
Or approved equal

Installation

- Embed mount with ground sleeves per manufacturers recommendation.



7.0 SPORTS FIELD STRUCTURES & FENCING

a. Outfield Fence

- Shall be 8' height chainlink fence with standard fence cap (yellow). Taller heights may be warranted based on adjacent conditions.
- Provide (2) 8' wide gates to equal (1) 16' wide maintenance gate at the sideline or outfield fence.
- Provide 4' wide pedestrian gate on each side.

b. Backstop

Refer to backstop detail in Appendix A and chainlink fence specification in Appendix B.

Design requirements:

- Backstops to be designed tall and wide enough to limit foul balls hitting fans or adjacent amenity areas or parking.
- Fencing shall be galvanized or black vinyl coated chainlink fence.
- Kickboards to be Trex or equivalent composite material.

c. Dugout

Dugouts shall be designed to provide ADA accessibility to and within the dugout. Refer to dugout detail in Appendix A.

Design Requirements and Recommendations:

- Dugout shall have a solid roof.
- Dugout shall consist of chainlink fencing enclosure.
- Recommend masonry walls that match the park aesthetic when possible.

d. Concessions

Concessions shall be provided at parks with multi-field or multi-court complexes that will have tournament play.

e. Design Considerations

- Concessions building shall be sized per anticipated use and meet all local building and health codes.
- Concessions buildings shall meet ADA standards for those operating and accessing the concessions.
- Building materials shall be durable, vandal resistant and consistent with the design aesthetic of the park and surrounding community.

8.0 SPORTS FIELD/COURT LIGHTING

Sports field lighting will be required at all sports complexes and as required by the Town. All sports field and court lighting shall be designed to meet the appropriate light levels of the field or courts and the age of the users. Fields and courts with lighting shall be sited to minimize impact to the surrounding park uses (residential, commercial, etc.).

Products:

- Baseball/Softball: Musco Light Structure System LED or Cluster with TLC for LED with Musco Control-Link Control System
- Pickleball/Tennis Courts: LSI Courtsider or Courtsider XL or equal with Musco lighting control



9.0 ALTERNATIVE SURFACES

Artificial Turf shall be provided whenever possible to reduce water use and maintenance and provide a year-round playing surface. Artificial turf may be required by the Town. When using synthetic turf refer to Appendix A for details and Appendix C for specifications.

Requirements for synthetic turf include:

- Field striping required for each field shall be coordinated by the Town. Striping colors shall be as follows:
- Football – White
- Soccer – Yellow
- Girls/Women’s Lacrosse – Red
- Boys/Men’s Lacrosse – Blue
- It may be determined to utilize Boys and Girls Unified Lacrosse layouts
- Provide fencing as needed to protect synthetic turf from vehicular traffic.
- Provide quick couplers adjacent to field to allow for washing down the fields.
- Provide underdrain system with off-field drainage to storm system.



VIII. Outdoor Fitness Equipment

Outdoor fitness equipment may be located along trails or in parks at appropriate locations that allow visibility and safety to the fitness equipment area. There are multiple options available for fitness equipment that are appropriate for a variety of ages.

Consider the park and trail amenities to determine appropriate target ages for the fitness equipment. Ideally provide a variety of equipment that is suitable to meet the needs of multiple ages. Separation of fitness equipment based on targeted age may be appropriate to provide the most enjoyable experience while using the equipment.

All outdoor fitness equipment areas in a park shall be a minimum of 500 square feet (located in one location or a total if dispersed). All fitness equipment areas shall meet ADA standards and provide inclusive opportunities.

Options may include senior/active adult friendly equipment, parkour/obstacle equipment that may be age appropriate for older youth/young adult, traditional more compact fitness equipment. Equipment shall be selected to provide as much multigenerational use as possible.

Consider potential maintenance of equipment during equipment selection.

Potential acceptable manufactures may include:

- Greenfields Outdoor Fitness (multigenerational units)
- Gametime: Outdoor Fitness Equipment
- Kompan: Outdoor Fitness Equipment
- Landscape Structures
- FitCore Extreme (Ages 5-12 and 13+)
- HealthBeat Outdoor Fitness System (13+)
- TriActive : Senior Fitness Equipment
- Others as approved by the Town



IX. Specialized Facilities

1. AQUATICS & WATER ACCESS

All aquatics and water access facilities must comply with ADA standards, building codes, local health department codes, and other applicable requirements.

a. Splash Pad or Water Play

The minimum size of splash pad shall be a minimum of 2,500 square feet. Design of the splash pad shall incorporate features that are appropriate for the scale of the pad and tie into the theme and character of the surrounding park. Additional design guidelines are as follows:

- The goal is to provide a system that is long lasting and reduces required maintenance.

- Provide seating outside of the ‘splash zone’ for parental supervision. Seating may include seatwalls, benches, boulders, etc. It is preferred to provide 50% of the seating shaded with a shade structure.
- Do not plant trees near the splash pad to avoid accumulation of leaves and needles in the splash pad equipment.
- Splash pad shall have a recirculating water system meeting health and safety codes.
- Provide a combination of in-ground spray orifices and stainless-steel upright equipment as sources of the spray features.
- Surfacing shall be durable slip-resistant decorative concrete surfacing. Extend paving to provide a minimum six feet clear zone beyond the interactive spray area to allow passage without getting wet.



b. *Swimming*

Park pools provide a variety of uses including recreational swimming, competitive local and regional meets and swim programs (fitness, lessons, etc.). All pools will include appropriate ancillary pool facilities. Coordinate with the Town of Parker's aquatics department on required programming for the facility.

- Swimming pools and facilities shall meet all building codes, ADA standards, local health codes and any other applicable authority having jurisdiction codes and requirements.
- Building materials shall be durable, vandal resistant and consistent with the design aesthetic of the park and surrounding community. Drawings will be reviewed and approved through the Site Plan process.
- The pool deck shall be large enough to host competitive swim meets providing support infrastructure for meets.
- Provide shaded seating areas
- For pools that will host competitive swim meets adequate pool deck space and bleachers shall be provided.
- Deck shall be slip-resistant concrete paving.
- Provide fencing meeting local health code requirements.
- Site furnishings (tables and chairs, lounge chairs, benches, trash receptacles, etc.)
- Pool ancillary facilities and specialized features may include but are not limited to:
 - Locker rooms and restrooms
 - Concessions
 - Leisure pool features (i.e. slides, climbing walls, spray features, etc.)
 - Storage rooms and buildings
 - Lawn area



2. INDOOR FACILITIES

All aquatics and water access facilities must comply with ADA standards, building codes, local health department codes, and other applicable requirements.

a. Activity Building/Clubhouse

An activity building or clubhouse provides an indoor location for classes, fitness facilities, social gathering spaces and many other uses. Building size will be based on the program. Coordinate with the Town on building program and uses that will complement and enhance the resources of the Town and community.

Design Considerations:

- Activity Building/Clubhouse shall meet all building codes, ADA standards and any other applicable authority having jurisdiction requirements.
- Building materials shall be durable, vandal resistant and consistent with the design aesthetic of the park and surrounding community. Drawings will be reviewed and approved through the Site Plan process.
- Refer to Section 02(04)(d)(X.) **Table 2.4 Community Park Parking Guidelines**, for information on minimum parking space requirements.

b. Environmental Education Center

An Environmental Education Center provides an indoor facility that provides programming, and educational opportunities that inspire and educate the community on local, regional, national and even world-wide natural and environmental information, opportunities and issues. Building size will be based on the program of the facility. Coordinate with the Town on building program and uses that will complement and enhance the resources of the Town and community.

Design Considerations:

- The Environmental Education Center shall meet all building codes, ADA standards and any other applicable authority having jurisdiction requirements.
- Building materials shall be durable, vandal resistant and consistent with the design aesthetic of the park and surrounding community. Drawings will be reviewed and approved through the Site Plan process.



c. Recreation Center or Fieldhouse

A Recreation Center or Fieldhouse provides an indoor facility for sports, fitness, and cultural activities. Potential facility programming may include indoor turf field, gymnasium, swimming pool (lap and/or leisure), ice rinks, indoor running track, circuit and cardio equipment area, fitness classrooms, art studio/classrooms, multi-purpose rooms, offices, etc. Design of the facility should include extensive public engagement and coordination with the Town on building program and uses that will complement and enhance the resources of the Town and community. Building size will be based on need and programming.

Design Considerations:

- The Environmental Education Center shall meet all building codes, ADA standards and any other applicable authority having jurisdiction requirements.
- Building materials shall be durable, vandal resistant and consistent with the design aesthetic of the park and surrounding community. Drawings will be reviewed and approved through the Site Plan process.
- Refer to Section 02(04)(d)(X.) [Table 2.4 Community Park Parking Guidelines](#), for information on minimum parking space requirements.



X. Parking

1. GENERAL CONSIDERATIONS

For information regarding minimum required parking spaces for community parks and amenities, refer to [Table 2.4](#). A site that includes multiple park amenities will be required to provide the cumulative minimum number of parking spaces required by each amenity. Final parking requirements subject to the Town's Land Development Ordinance requirements.

Table 2.4 Community Park Parking Guidelines	
Park Amenity	Minimum Parking Spaces Required
Multipurpose Soccer/Football Field	
225' x 360' (College)	60 per field
165' x 300' (High School)	60 per field
150' x 225' (Youth)	40 per field
Multipurpose Baseball/Softball Field	40 per field
Tennis Courts	3 per court
Pickleball Courts	5 per court
Basketball Courts	5 per court
Horseshoe Pit	1 per two pits*
Bocce Ball	1 per two courts*
Trailheads	5 per mile of trail
Swimming Pool Deck	3 per 1,000 square feet
Playgrounds	1 per 1,000 square feet
Picnic Shelters	2 per picnic table
Amphitheater/Outdoor Performance Venue	1 per 100 square feet of seating area
Off Leash Dog Parks	10 per acre
Disc Golf	5 per 9 holes
Skatepark	5 per 1,000 square feet
Bike Skills Skills Area	5 per acre
Community/Decorative Garden	1 per 600 square feet
Outdoor Fitness Equipment	1 per 5 pieces of equipment
Activity Building/Clubhouse	1 per 300 square feet
Recreation Center/Fieldhouse	1 per 300 square feet
Volleyball Court	2 spaces per court
Futsal Court	5 spaces per court
Badminton	2 spaces per court
Environmental Center	1 per 300 square feet

Note:

**If less than two, no spaces are required.*

1. All parking is required to be off-street.
2. Higher parking counts may be required for locations with athletic complexes and tournament play.
3. Indoor and outdoor recreation facility parking counts may vary or need special studies. Refer to [LDO Table 13.08.F](#) for more information.

05 GUIDELINES FOR ART IN PARKS

The Town of Parker values public art as unique opportunities for cultural enhancement and a sense of pride within the community. Integrating art into public spaces helps to promote vibrant and visually stimulating spaces, enhances local character, promotes quality design, attracts citizens and visitors to public spaces, and in return helps stimulate local economy. Art comes in a variety of styles and forms, but is meant to create a deeper connection with the community in which people live, work, shop, and enjoy recreational activities.

a. Definition of Public Art

Art in the public realm includes, but is not limited to:

1. Three-dimensional: structures, sculptures, site furnishings, playground equipment, etc.
2. Two-dimensional: murals, chalk art, paintings, sandblasted graphics, paving patterns, mosaics, building facades, etc.
3. Mixed media: lighting effects, sound effects, or any combination of forms or media.



*See the Town of Parker's Public Art Master Plan for a complete list of definitions and criteria.

b. General Criteria

Art should meet the following criteria:

1. Must be suitable for the potential site:
 - Appropriate to the function of the space
 - Conceptually compatible with the surrounding design and character
 - Scale, form, context and materials to be appropriate for the site and public use
2. Structural or surface integrity must be safe for public interaction.
3. Any three-dimensional art must be securely anchored or mounted.
4. Display quality artistic craftsmanship from reputable artist or designer.
5. Must be resistant to weather damage, including wind, water, and UV exposure.
6. Must be compliant with public building and safety codes.
7. Art and location to be reviewed by the Town Cultural Director and Art in Public Places Committee during site planning process.



c. Siting & Displaying Works of Art

Site Selection to include the following criteria:

1. Location should not endanger public safety or interfere with pedestrian or vehicular sight lines or traffic flow.
2. Must not block, compete with, or cause a visual distraction from signage or other public safety indicators.
3. Art must be fully ADA accessible.
4. Art installation should not have an impact on the environment or use of the space.
5. Surrounding recreational activities should not impact or endanger individuals viewing or interacting with the art.
6. The location should not interfere with routine maintenance, landscape maintenance, snow removal, or irrigation systems.
7. Permanent installations should take into account future development plans, to avoid unnecessary relocations.
8. Locations should be thoughtfully placed in a setting that is cohesive with the overall design. Art should not be located in a space that does not fit into the overall aesthetic of the area.
9. Designs should have a mixture of public art types. Refer to the following examples for various art opportunities.



*See the Town of Parker's Public Art Master Plan for a complete list of siting and displaying works of art.

ART IN PARKS

Elements Examples



TRADITIONAL SCULPTURES/ MURALS

Traditional sculptures are three-dimensional art pieces that can be made of a variety of different materials and take various shapes and forms. Murals are painted art pieces on a wall or other flat surface.

Design Criteria

- All materials should be exterior rated.
- Provide anti-graffiti coating on all permanent flatwork art.

Examples

- Free-standing sculptures
- Painted graphically wrapped utility boxes
- Bridge or building murals
- Painted tunnels, walks or plazas



ARCHITECTURAL ART

Architectural art is either art incorporated into the building design facade or structure, or is attached to the exterior of a building, bridge or other physical structure.

Design Criteria

- Art must meet all International and Colorado Building Code requirements.

Examples

- Shade structure or overhang attached to a building
- Unique shapes and/or colors of structures, windows or roofs.
- Custom facades or art attached to the facade



PLAY AREA ART

Playground art incorporates art directly into the play structures and/or play surfacing of a playground. Various colors, styles, materials, and themes can be used to create an original play experience.

Design Criteria

- Playgrounds must meet all playground guidelines noted in Section 02 of this manual.

Examples

- Playground equipment themes
- Safety surfacing designs
- Interactive sensory play structures or equipment
- Seek-and-find scavenger hunt elements



SITE/ LANDSCAPE ART

Site and/or landscape art consists of either site furnishing elements, site or retaining walls, or planting materials used in an artistic or creative way.

Design Criteria

- Elements must be safe for public use and meet all ADA accessibility requirements.

Examples

- Custom benches or seats
- Custom skate stops
- Custom or themed bike racks
- Site walls utilizing form liners, sandblasting or inlaid impressions
- Planting & murals

*See the Town of Parker's Public Art Master Plan for a complete list.

ART IN PARKS

Elements Examples

PLAZAS, STREETSCAPES

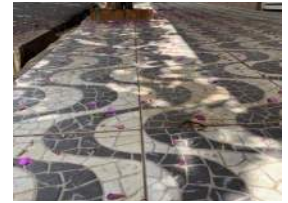
Streetscapes are the natural and built spaces in an urban setting that include the street and the public spaces adjacent to it. These public spaces include walkways, crosswalks, steps, ramps, and other spaces important to the fabric of a street environment.

Design Criteria

- All paint, site furnishings, and hardscape materials must be exterior rated, be able to withstand maintenance operations and be safe for public use.

Examples

- Patterns painted on walkways, crosswalks, or stairs
- Custom site furnishings
- Patterns displayed using hardscape materials



SHADE STRUCTURES

Shade structures provide shade for users, but can be designed to provide shade in an artful and inviting way.

Design Criteria

- All structures must meet all state and local codes.
- Drawings must be stamped by a Colorado licensed engineer.
- Final drawings shall be approved by the Town.

Examples

- Perforated patterns within roof to cast unique shade images on the ground
- Custom sculptural structures that also provide shade



GATEWAYS / SIGNAGE / BANNERS

Gateways, signage and banners can be custom designed to fit the character of a space and provide information for the user per LDO requirements.

Design Criteria

- Must be made of durable materials that are easily maintainable.

Examples

- Trail signage
- Educational signage
- Wayfinding signage
- Gateway signage over streets or park entrances
- Interchangeable banners along streetscapes
- Monument signs and rules and regulations signs



LIGHTING & SEASONAL

Lighting can provide an artistic feeling to a space, whether it is year-round lighting of a plaza, site furnishings or seasonal accents to enhance a space.

Design Criteria

- Lighting shall be coordinated with an Electrical Engineer to ensure proper installation, foot candle requirements, and power needs.

Examples

- Site furnishing lighting
- Projector lights with images
- Seasonal lighting of structures or trees



*See the Town of Parker's Public Art Master Plan for a complete list.



03

STREETSCAPE

01 INTRODUCTION

Streetscapes shall be defined as any areas landscaped along roadways within or beyond the Public Right-of-Way, and/or any median strips located within divided lane roadways. Streetscapes shall be designed to provide for visual relief along the Town's roadways and constructed for safety, cost effectiveness, and minimal maintenance.





a. Definitions

1. Streetscape / Landscape Improvements :

The sidewalk, plant material and related irrigation facilities for a Town approved landscaping plan for street, road right-of-way, parks, open space and other public places.

2. Sight Distance Triangle : Are areas at the corners of intersections of roads where views of approaching traffic should not be obstructed.

3. Trench Drain : Elongated surface for water to drain from a specific area.

4. Median Planting : The area between the lanes of opposing traffic

5. Street Tree Planting Strip : The area between the back of curb and the Right Of Way

6. Tree Lawn : The area between the back of the curb and the sidewalk

7. Ornamental Pockets : Narrow or small decorative areas of planting within a streetscape



b. Design Principles

The following design principles are to be followed when designing or improving both the commercial and/or residential streetscapes.

Streetscapes Are:

- 1. Public Spaces -** To be designed for people to interact, socialize, and feel comfortable as they move and travel throughout their community.
- 2. Safe -** To be safe for public use, meet code requirements, must be ADA accessible, provide clear and visible signage, and design for the safe interaction of pedestrians, bicycles, and vehicles when crossing paths.
- 3. Flexible -** To allow spaces within the streetscape to evolve and change to meet the needs of the community. This could involve the addition of parklets, moving curbs or redirecting traffic, adding street trees or seating spaces, providing bicycle or scooter sharing stops, or other amenities that improve the area.
- 4. Sustainable -** To improve the health of the surrounding ecosystem and natural ecology. Improvements could include the addition of planting and shade trees, the addition of bioswales and well-designed water collection designs, and the use of sustainable materials.
- 5. Functional -** To provide aesthetically pleasing, well-designed spaces that generate higher revenues for businesses and higher values for homeowners.

02 DESIGN GUIDELINES

The following standards do not necessarily apply to residential and commercial streetscapes. They do apply to all streetscapes that are intended to be owned and maintained by the Town of Parker.

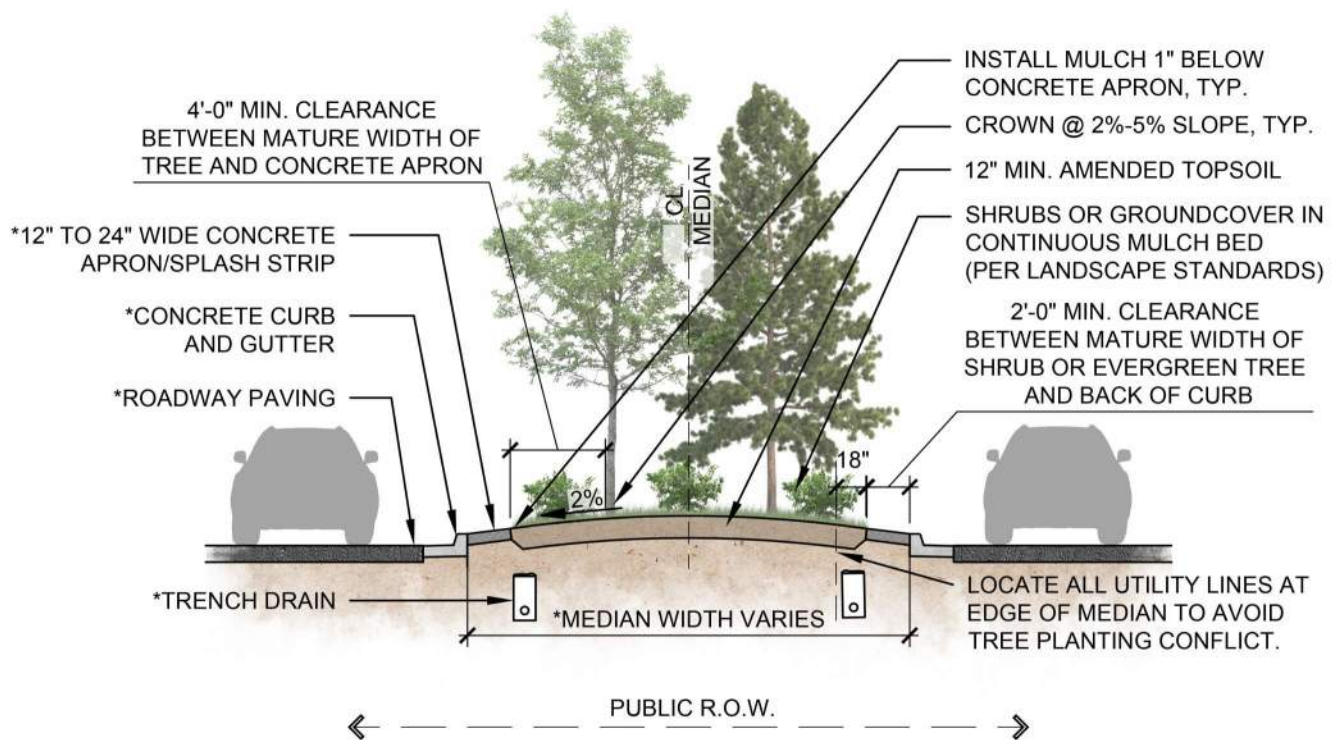
Determination as to applicability will be made during the design review process.

Maintenance of Improvements in Public Right-Of-Way; Planting, Maintaining and Removal of Trees on Public Property; Maintenance and Installation of Landscaping; Removal of Dead or Dangerous Trees, Limbs or Shrubs; Infected or Infested Trees; Obstruction of Public Property; and Determination of Hazard/Notice to Responsible Party/Assessment of Costs shall be applicable to all right-of-way in the Town of Parker, unless otherwise approved by the Town.

a. Typical Median or Landscape Island

Design Standards:

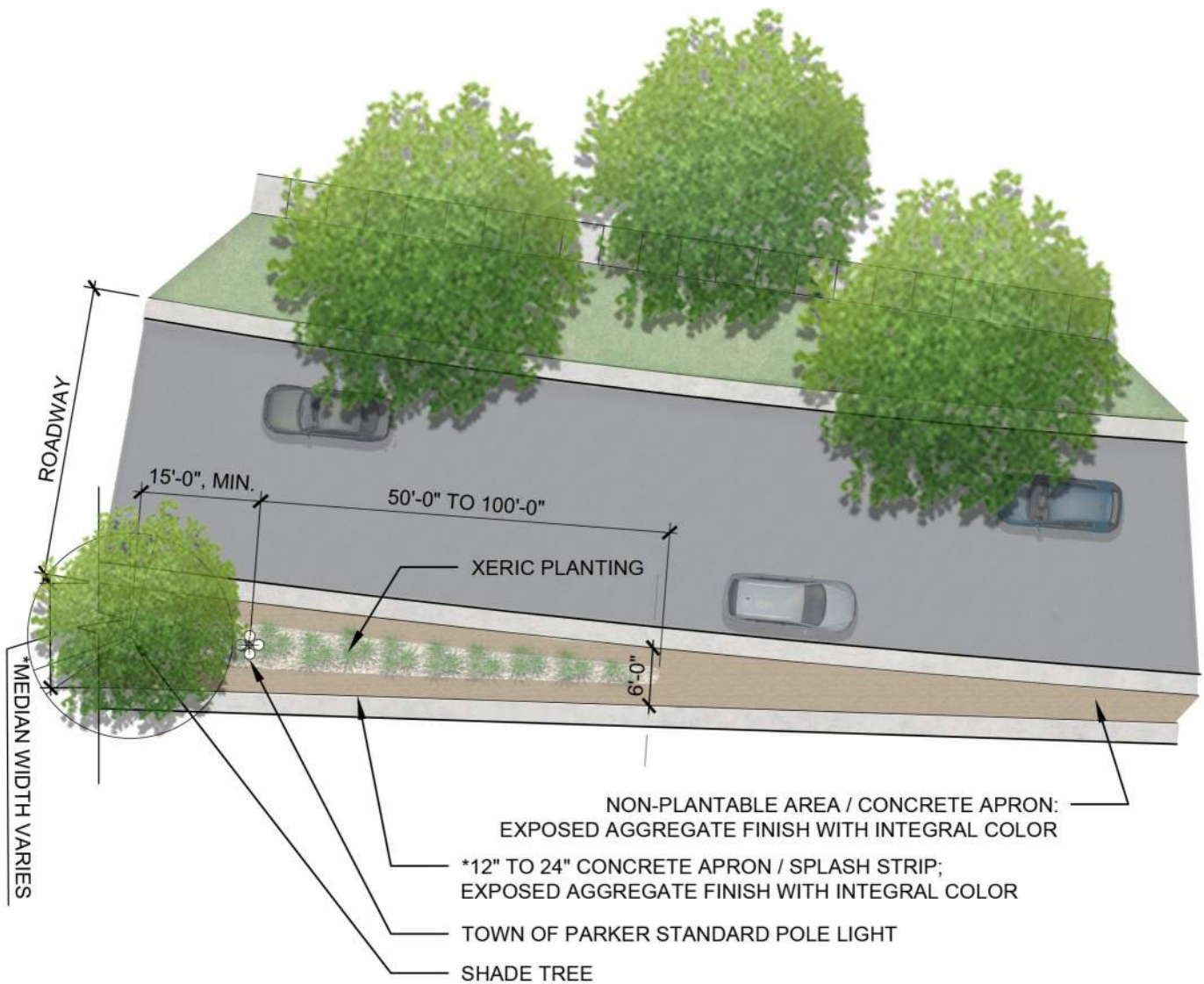
1. The first 50' to 100' of any median shall be planted with a xeric, low maintenance grass. Raised planter beds, where specified, will begin 50' to 100' from the beginning of medians, where the native grass plantings end (Refer to Graphic: Example Streetscape Plan View in this section 3.2).
2. A minimum 1' wide concrete apron shall be provided along all median edges to prevent roadway salt/sand damage in the planting area. The apron shall be sloped a minimum of 2% to allow for runoff (Refer to Graphic 3.2: Example Streetscape Plan View in this section).
3. The median planting strip shall be designed so planting areas are no less than six (6) feet wide. Non-plantable areas within medians (areas less than six (6) feet wide) shall be colored concrete (Davis Color Rustic Brown) with an exposed aggregate finish (Refer to Graphic 3.2: Example Streetscape Plan View in this section).
4. Trench Drains are required within medians at vertical curb and gutter along arterial roadways, in accordance with the Town of Parker's Roadway Design and Construction Criteria manual.



NOTES:

*REFER TO PARKER ROADWAY DESIGN AND CONSTRUCTION CRITERIA MANUAL

Graphic 3.1: Typical Median or Landscape Island



NOTE:

BASIS-OF-DESIGN FOR INTEGRAL COLOR CONCRETE: DAVIS COLORS (MFR) "RUSTIC BROWN" #6058; LIQUID MIX RATE @ 2.46 LBS PER 94 LB SACK OF CEMENT; POWDER MIX RATE @ 2 LBS PER 94 LB SACK OF CEMENT

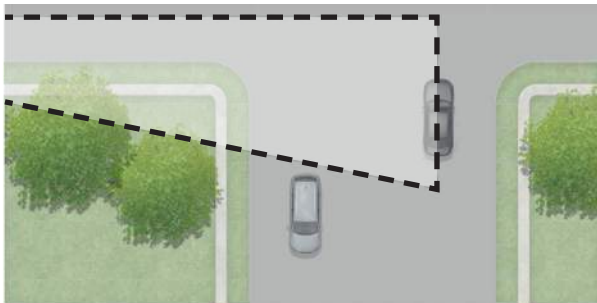
*REFER TO PARKER ROADWAY DESIGN AND CONSTRUCTION CRITERIA MANUAL

Graphic 3.2: Example Streetscape Plan View

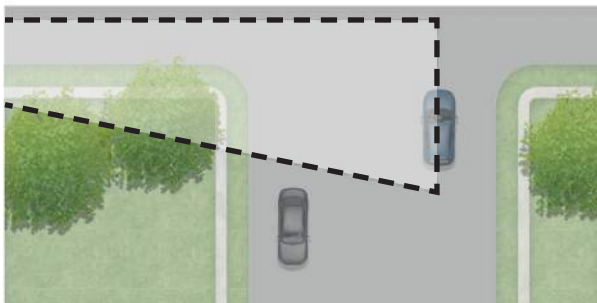
b. Sight Distance Triangles

Design Standards:

1. Sight distance triangles shall be maintained at all intersections of a private drive with a public street, and at the intersection of two public streets, their size varying by road classification, projected traffic level, and speed.
2. These sight triangle areas are to contain no obstructions to the view of the driver of a vehicle. Any landscaping placed within these areas shall allow visibility across the area.
3. All shrubs, boulders, ground covers, and similar features shall be maintained at or below a height of 24" (at maturity) above the grade of the lower of the adjacent roadways.
4. Trees may not be placed within the sight triangles at roadway intersections. Locate trees to ensure full growth does not infringe on sight distance triangle.
5. All plantings within sight triangles shall be designed and installed in compliance with the latest edition of the Town of Parker's Roadway Design and Construction Criteria manual. See detail 24 in Appendix A.



Acceptable: Trees planted outside of the site triangle.



Not Acceptable: Trees planted or branching within limits of site triangle. Increasing the demand for pruning.



SITE TRIANGLE, TYP.

Graphic 3.3: Sight Triangle Plan View

c. Conduits

Design Standards at Landscape Medians:

1. Conduits shall be placed underneath all new roadways at 500' increments.
2. Place two (2) – four (4) inch PVC conduit pipes perpendicular to the roadway for connections to water, for irrigation, and power, for electric service.
3. Conduits shall be clearly marked above proposed grade by cutting an "X" on the head of the curb with a demo saw.

d. Commercial & Mixed-Use Streetscape

Commercial and mixed-use streetscapes are the areas between businesses, retail, or office buildings and the street.

Design Standards:

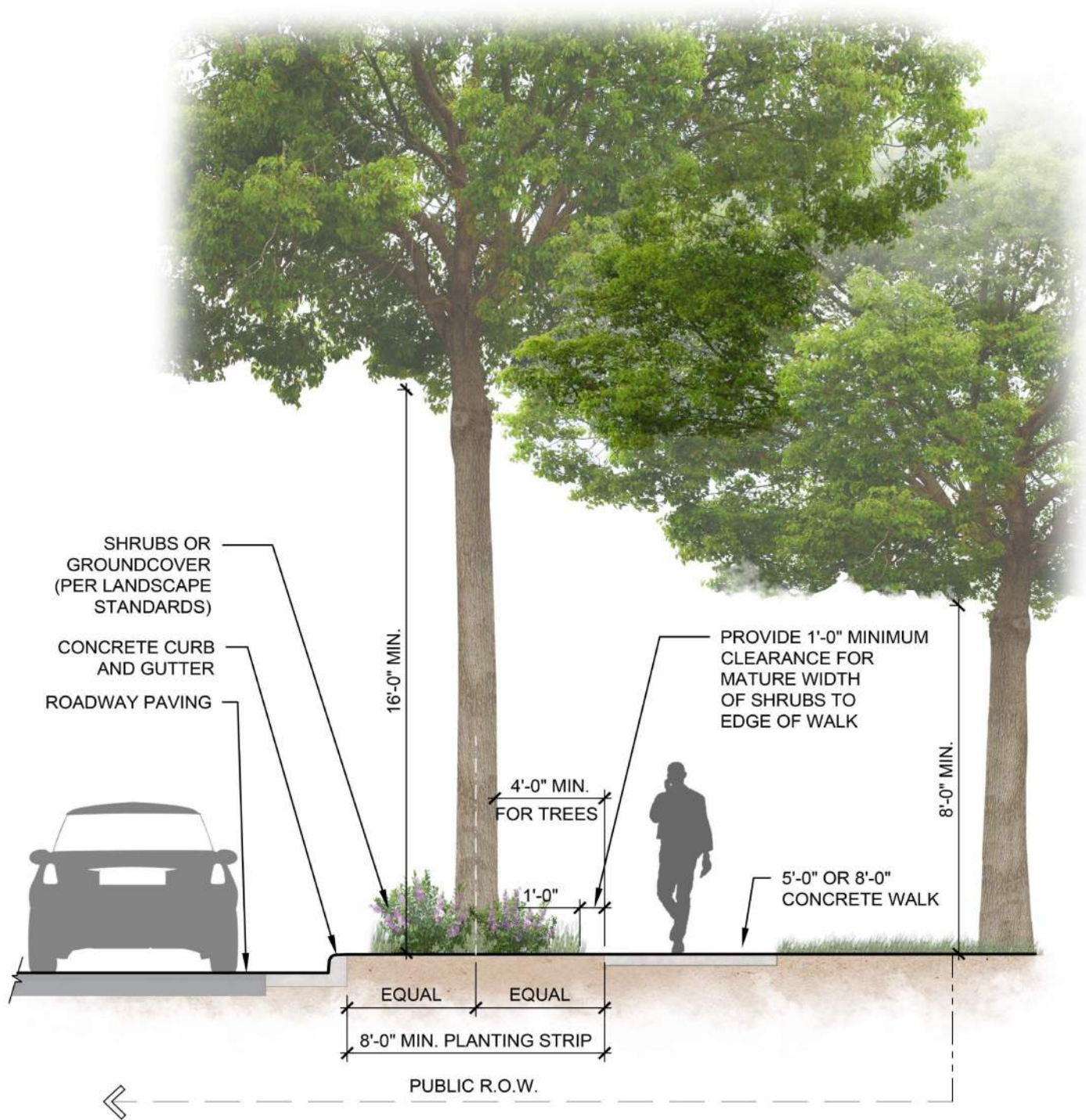
1. Paving, plantings, lighting, site furnishings, and signage are to have a unified aesthetic that matches the character and design of the surrounding area.
2. Convenient parking for vehicles and bicycles should be provided.
3. Refer to the [*LDO*](#) and the [*Roadways Design & Construction Manual*](#) for additional guidelines for commercial and mixed-use streetscape design.

e. Residential Streetscape

Residential streetscapes are the areas between single family or multi-family residential areas and the street.

Design Standards:

1. Paving, plantings, lighting, site furnishings, and signage are to have a unified aesthetic that matches the character and design of the surrounding area.
2. Convenient parking for vehicles and bicycles should be provided.
3. Refer to the [*LDO*](#) and the [*Roadways Design & Construction Manual*](#) for additional guidelines for residential streetscape design.



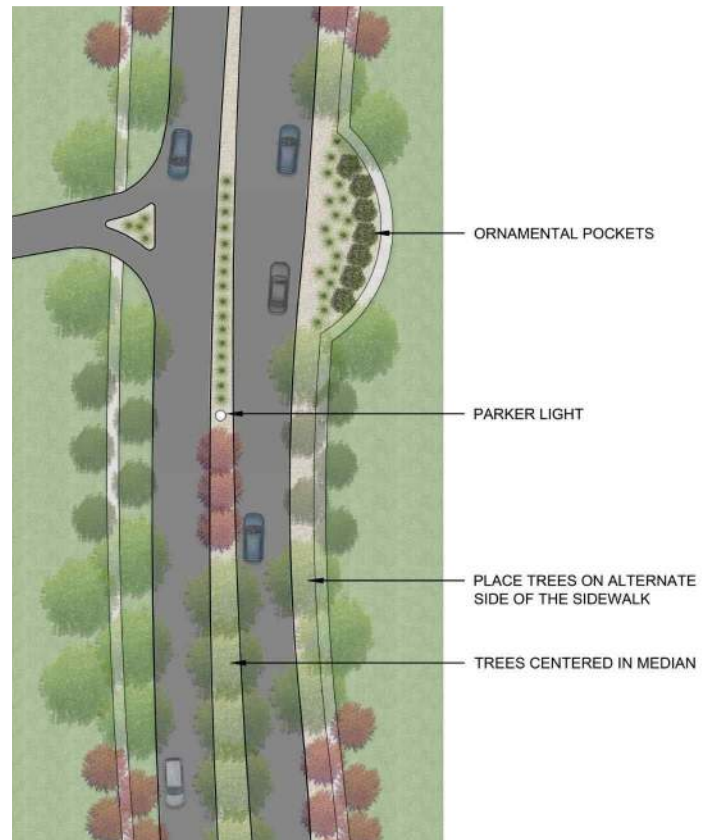
NOTE:
PRIVATE ROADWAY CRITERIA TO MATCH PUBLIC STREETScape CRITERIA.

Graphic 3.4: Typical Streetscape Cross Section with Detached Walk

f. Street Trees & Planting

i. General Plant Material Guidelines:

1. Trees and shrubs shall be selected with the mature size in mind to prevent mature plants from over-crowding each other, thus minimizing pruning. A plant's mature spread will limit its location. Refer to the "Town of Parker Recommended Plants List".
2. A Minimum Overhead Clearance shall be maintained throughout the life of all street and median deciduous trees (Refer to Graphic 3.4: Typical Streetscape Section with Detached Walk).
 - a. The branching height of all trees shall be maintained at no less than sixteen (16) feet above the street.
 - b. The branching height of all trees shall be maintained no less than eight (8) feet above the sidewalk.
 - c. Trees shall be located to allow for adequate sight distance to all traffic signs in accordance with the Town's Roadway Design and Construction Criteria Manual.
3. Spacing for all vegetation shall be 90% of the mature spread stated on the included "Town of Parker Recommended Plant List". In some instances, understory trees and shrubs shall be allowed within this 90% spacing to provide a higher density of planting, as long as the mature size (height, branching structure, etc.) of each of the plants will not hinder either plants growth.
4. Select plants that require minimal maintenance.
5. Where signs, lights, overhead or underground utilities, utility poles and fire hydrants would limit mature vegetation size, adjustments in species or location should be considered to minimize excessive pruning.
6. Create "Ornamental Pockets" where the median blocks the intersection of two roads to provide a view when traveling the intersecting road (Refer to Graphic 3.5: Example Streetscape Plan View). "Ornamental Pockets" shall also be located at intervals within the Street Tree Planting Strip to create interest and variety in the plant materials used along the streets in the Town of Parker.
7. Xeriscape plantings are encouraged to minimize water consumption.
8. Within any given street block, a maximum of five (5), and minimum of three (3), shade tree species shall be selected to limit over-use of one species. Exceptions can be submitted for consideration, and will be approved/disapproved during the Site Plan Review Process. Select plant materials with similar characteristics such as color and form to provide uniformity within the block, concentrating species with ornamental characteristics at vistas and intersections.
9. The use of some plant material is restricted, refer to the Allowed and Excluded Plants List ("Town of Parker Recommended Plant List").



Graphic 3.5: Example Streetscape Plan View

ii. Tree Placement Guidelines:

1. Median Planting

- a. Place Shade Trees in the center of the raised planter bed to maximize the amount of area available for root growth for each tree. Provide utility placement at the edges of the medians to allow for proper tree placement in the center.
- b. Medians that are wider than standard may be able to fit more than a single Ornamental Tree within the width of the median. Size shall be the determining factor in addition to whether the location of the tree will necessitate excessive pruning to keep the tree out of the roadway.

2. Street Tree Planting Strip

- a. The Design Intent for tree placement within the Street Tree Planting Strip is to provide a continuous tree canopy over the street space as well as the pedestrian space. This canopy may be achieved by placing trees on alternate sides of the sidewalk (Refer to Graphic 3.5: Example Streetscape Plan View). Other design proposals may be submitted for consideration during the plan review process
- b. At street intersections, the tree closest to the intersecting street shall be located on the side of the sidewalk away from the street to maintain adequate visibility (Refer to Graphic 3.3: Sight Triangle Plan View)

3. Evergreen Trees

- a. Evergreen trees shall not be placed where they will obstruct the visual line of sight on a public right-of-way, or where they will project winter shade onto a public street causing ice on the roadway.
- b. A maximum of five (5) evergreen trees shall be allowed in one grouping to prevent snow-drifts.
- c. Evergreen trees shall be placed at least ten (10) feet from the edge of pavement, curbs or sidewalks, or far enough to permit clearance of the tree's mature spread.
- d. Other design proposals may be submitted for consideration during the plan review process, with an explanation for placement noted on the plan (i.e. topography, suitability for the area due to special circumstances, etc.)

iii. Shrubs, Ornamental Trees and/or Ground Cover

1. Shall be used throughout the median plantings to provide under story growth, which maximize screening between the traffic corridors and helps keep mulch in place.
2. Shrubs shall be used within the "Ornamental Pockets" in the Street Tree Planting Strips (Refer to Graphics 3.6 and 3.7 for acceptable and non-acceptable Ornamental and Shade Tree planting).



***Graphic 3.6: Not Acceptable:
The Ornamental & Shade Trees are not
able to co-exist and grow to full potential.***



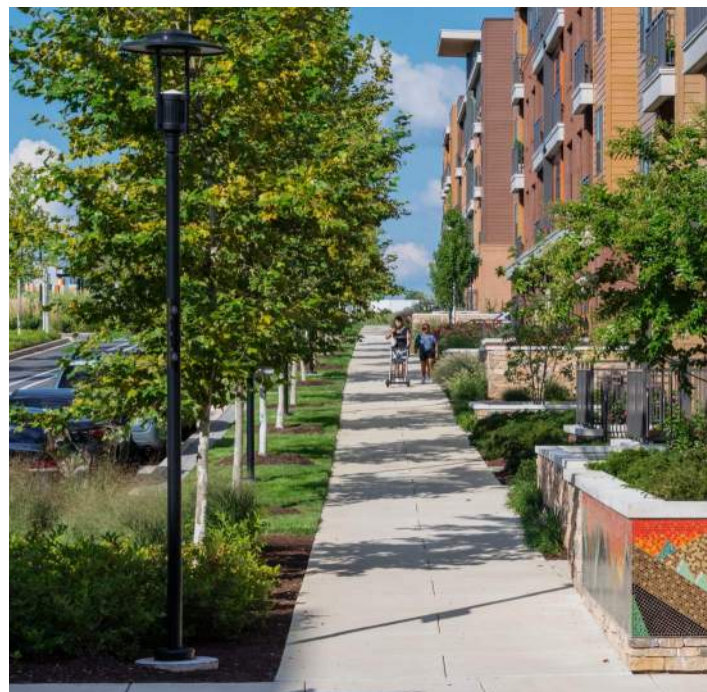
***Graphic 3.7: Acceptable:
The Ornamental & Shade Trees are to co-ex-
ist and grow to full potential.***

iv. Perennials

1. General Guidelines:
 - a. Shall be used at high visibility areas within the Median plantings and the “Ornamental Pockets” in the Street Tree Planting Strip to provide additional interest. Size and maintenance requirements shall be the determining factors for the location and use of any perennial plant material. Perennial planting areas shall be clearly labeled as such on any landscape plans submitted for Site Plan Review. When perennial plantings are used, they shall adhere to these standards:
 - Large groupings of same species plants shall be used for greater visual impact.
 - Select plants so that visual impact is maintained through all seasons.

v. Annual Bedding Plants

- a. The use of annual bedding plants is discouraged in planting beds to be maintained by the Town due to their high maintenance demands. Only upon direct approval through the Site Plan Review shall annual plantings be allowed. However, the Town may make direct requests for annual planting beds where they deem appropriate. Annual planting areas shall be clearly labeled as such on any plans submitted for Site Plan Review.



vi. Optional Residential Tree Lawn Guidelines:

1. General Guidelines:
 - a. In lieu of traditional turf grass, xeric landscapes can be installed within a portion of the tree lawn or in its entirety.
 - b. The Town does not require review and approval of individual tree lawn areas if the species are consistent with the Town’s plant list, except for deciduous shade trees. Please check with your HOA for any additional approvals.
 - c. Planting in this area should provide: species diversity, visual interest by using various colors, textures, growth habits, and plants with winter interest.
 - d. When installing plant material other than traditional turf grass, water conserving xeric plants shall be used.
 - e. It will take 1 to 2 growing seasons of regular deep watering to grow the kind of extensive root system these plants need to withstand dry conditions. Water deeply and infrequently once established.
2. Plant Material
 - a. A minimum coverage of 75% live xeric plant material shall be used including: ornamental grasses, perennials, deciduous and evergreen shrubs, groundcover, vines, etc. Artificial plant material shall not be allowed.
 - b. Seed mixes shall not be used in tree lawns with the exception of Buffalo Grass, Blue Grama or a blend of the two.
 - c. No more than 20% of the plant material will be over 2’ in height at maturity with the maximum height of 4’ for any plant, with the exception of trees. The total height is measured from the sidewalk level.
 - d. A deciduous shade tree shall only be planted in a tree lawn (by the adjacent property owner) with the review and approval by the Town. The Town shall determine the species on a site-by-site basis. Deciduous shade trees shall be 2.5” caliper trees at planting. Evergreen trees and ornamental trees shall not be allowed.

e. All plant material shall be selected from the Town's plant lists. Other plants may be proposed for consideration/approval by the Town, prior to planting.

3. Coverage

a. A maximum exposed coverage of 25% organic wood mulch, rock mulch, and/or stepping-stones shall be allowed.

b. The mature plant size shall be considered when determining plant area coverage and exposed areas.

4. Site Distances

a. The site distance setback at intersections and driveways must not be obstructed. (All site distance requirements are referenced in the Town of Parker's Roadway Design and Construction Criteria manual.) The total height is measured from the sidewalk level.

b. All plants, boulders, etc. shall be less than 2' in height within 10' of any driveway.

c. All plants, boulders, etc. shall be less than 2' in height within 25' of a local/local or local/collector intersection, as measured from the flow line.

5. Existing Trees

a. A one-foot radius per inch of trunk diameter shall be undisturbed for planting or any other site modification around the base of the tree.

b. New plants around the base of existing trees shall be one-gallon size or smaller to reduce the amount of damage to the tree roots.

c. Mulch shall be installed and maintained so as to be a minimum of 3" away from the trunk of trees.

6. Water, Soil, and Irrigation

a. Water shall be applied in a manner that allows maximum soil penetration and minimum runoff and evaporation.

b. Existing irrigation shall be modified to accommodate the new landscape design and promote water conservation.

c. Only water conserving drip or subsurface irrigation shall be used.

7. Design, Installation and Maintenance:

a. The design, installation, and maintenance shall promote: water conservation, creative designs with appropriate and diverse plant selection, and sound horticultural practices.

b. Successful xeriscape requires proper soil preparation. It is recommended that 6 cubic yards per 1,000 square feet of organic matter be incorporated into the soil to a depth of 6", prior to planting.

c. Avoid the use of landscape fabric under mulched plant material, as it will inhibit the spread of the plant.

d. Spacing for all vegetation shall be 90% of the mature spread. All plant material shall be appropriately spaced to accommodate the natural mature plant habit.

e. Avoid rows of larger plants.

f. Plants shall not obstruct any sidewalk or street.

g. A 40' separation shall be maintained between street trees and approximately the same distance for street trees and front yard trees.

h. The adjacent property owner is responsible for maintenance including: proper pruning, weeding, plant replacement, supplemental mulching, and watering.

i. Identify all utilities prior to digging.



g. Sustainable Maintenance Guidelines

THE FOLLOWING SECTIONS APPLY TO ALL RIGHT-OF-WAY (STREETSCAPE) IN THE TOWN OF PARKER, UNLESS OTHERWISE APPROVED BY THE TOWN:

i. Maintenance of Improvements in Public Right-Of-Way:

1. It shall be the duty of the owner, occupant or lessee of any real property abutting a constructed right-of-way (the “Responsible Party”) to provide for the continuing care, maintenance, repair and replacement of all improvements installed in any right-of-way area between their property line and the curb line adjoining their property, which includes, but is not limited to, trees, shrubs, turf, groundcover plantings, irrigation, sidewalks, driveways, planters, benches, lighting and trash receptacles (the “Improvements”). Such maintenance shall include, but is not limited to, mowing, weeding, watering, pruning of trees and shrubs, insect and disease control of plant material, repair and adjustment of irrigation systems, repair and/or replacement of concrete walkways and clearing walkways and driveways of snow and ice.
2. Areas created prior to the enactment of the ordinance from which this section was derived may be subject to these requirements, as part of a Town approved landscape plan for the subject real property.

ii. Planting, Maintaining & Removal of Trees on Public Property:

The Town Forester shall establish rules and regulations for the planting and maintaining of trees on any public right-of-way or other public place in the Town and it shall be unlawful for any person to plant trees upon any public right-of-way or other public place in the Town except as prescribed in such rules and regulations. The rules and regulations shall contain:

1. Spacing requirements for trees on the public right-of way and other public places;
2. The standards that are to be followed when planting trees on the public right-of-way;

3. The types of trees which are prohibited on any public right-of-way or other public place;
4. Requirements for maintenance and removal of such trees upon the public right-of-way or other public place.

iii. Maintenance and Installation of Landscaping

1. It shall be the duty of the Responsible Party that owns, leases or occupies any real property located within the Town to provide for regular weeding, pruning, mowing, watering and other maintenance required for a neat appearance and healthy condition of all plantings located on said real property. Said maintenance shall be done at the expense of the Responsible Party. Plant materials which exhibit evidence of pests, disease, or damage shall be appropriately treated, and dead plant materials shall be removed and replaced with the approval of the Town.
2. It shall be the duty of the Responsible Party that owns, leases or occupies any real property abutting a public right-of-way located within the Town to provide for landscaping of any right-of-way area between his property line and the curb line or the edge of the roadway and between the property line and the center line of any alley. Areas created prior to the enactment of the ordinance from which this section was derived may be subject to these requirements, as part of a Town approved landscape plan for the subject real property.



iv. Removal of Dead or Dangerous Trees, Limbs or Shrubs:

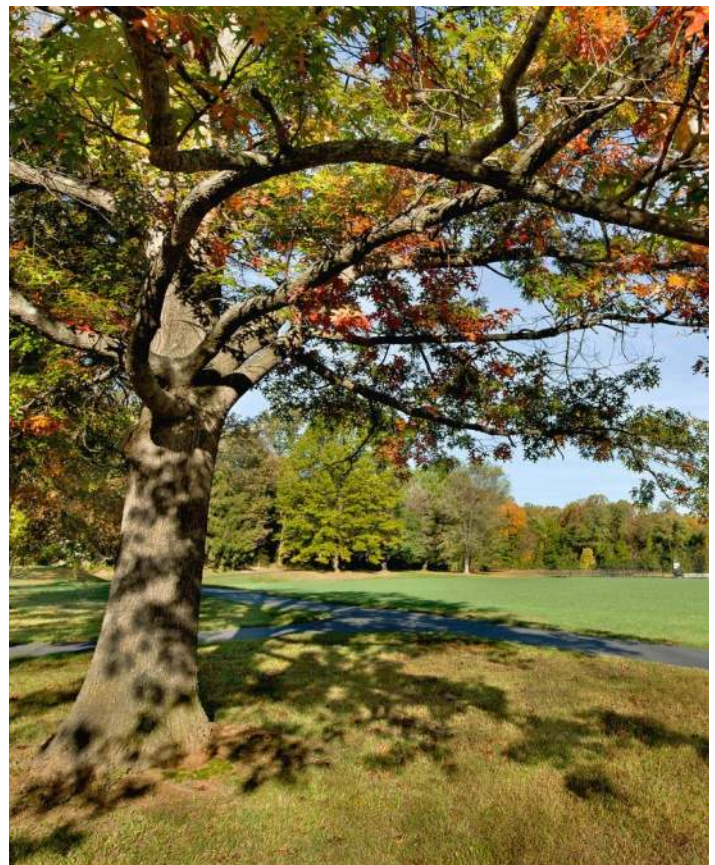
1. The Responsible Party shall remove any dead, dying or structurally unsound trees, limbs or shrubs from the real property owned, occupied or leased by the Responsible Party or the public right-of-way abutting said property, when said dead, dying or structurally unsound trees or limbs are dangerous to life, limb, or property.
2. When a dead, dying or structurally unsound tree, limb or shrub has the potential to affect adjacent property, and is dangerous to life, limb or property, the responsible party shall remove such tree or limb so as to avoid injury or damage to or on the adjacent property.
3. The responsible party shall remove any live, dead or dying tree, limb or shrub that is blocking a sight triangle or traffic sign causing a potential traffic hazard, as determined by the Town. The Town authorized representative may order the property owner to remove any such tree, limb or shrub.

v. Infected or Infested Trees

1. The Town authorized representative may inspect any tree or tree part, including logs or branches existing or growing upon any property within the Town. The Town shall conduct surveys to determine if any destructive or communicable disease, or other pestilence exists which may be detrimental to or endanger the good health and well being of trees in the Town.
2. Upon discovery of any destructive or communicable disease, breeding place of the disease, or pestilence that endangers the good health and well being of trees, or is capable of causing an epidemic spread of communicable disease or insect infestation, the Town or authorized representative shall at once notify in writing the Responsible Party, of the condition thereof and order such Responsible Party to eradicate, remove, or otherwise control such condition within a specified time.

vi. Obstruction of Public Property

1. The Responsible Party shall maintain and care for the trees upon the property owned, leased or occupied by the Responsible Party and upon the public right-of-way abutting said property so that said trees do not interfere with, obstruct, or in any way endanger the safe public use of streets, alleys, sidewalks, or other public places. Stumps are not permitted on the public right-of-way or other public place.
2. A Minimum Overhead Clearance shall be maintained throughout the life of all street and median deciduous trees (Refer to Graphic 3.3: Sight Triangle Plan View). The branching height of all trees shall be maintained at no less than sixteen (16) feet above the street, and no less than eight (8) feet above the sidewalk.
3. When the Town or authorized representative determines that a tree is in such a condition that it interferes with, obstructs, or in any way endangers the safe public use of streets, alleys, sidewalks, or other public places, the Town shall direct the Responsible Party to prune, remove, or otherwise take such action as is necessary to eliminate the interference, obstruction, or dangerous condition of the tree.



vii. Determination of Hazard/ Notice to Responsible Party/ Assessment of Costs

1. When the Town Forester or authorized representative determines that the Improvements described herein are in a state of disrepair, a notice to repair shall be sent to the Responsible Party described herein.
2. Service of the notice described above shall be made by either serving such notice on the person named in the notice, or by sending such notice by first class mail to the residence or place of business of the person named in the notice and by posting such notice in a conspicuous place on the property abutting or adjacent to the Improvements described herein. If the notice is served on one other than the owner of the property that is in disrepair or adjacent to or abutting the subject public right-of-way that is in disrepair, a copy of the notice shall also be mailed to the owner at the address contained in the Douglas County Assessor's records.
3. The notice described herein shall contain:
 - a. A description of the required care, maintenance, repair or replacement;
 - b. A statement of the Improvement that requires care, maintenance, repair or replacement;
 - c. A statement advising of the right to an administrative hearing to appeal the notice to the Public Works Director, if requested within fifteen (15) days; and
 - d. A requirement that notification of intent to comply shall be made to the Town Foresters office within thirty (30) days from the date of issuance of the notice; and this notice shall also indicate that failure to make the repairs described in the notice within sixty (60) days shall be unlawful, and the failure to comply with the notice may result in work being done by the Town at the expense of the party to whom the notice is issued.
4. If the person to whom the notice is directed fails to comply within the time specified in the notice, the Town Forester or authorized representative may order the care, maintenance, repair or replacement of the Improvements by or on behalf of the Town, and the procedures outlined

herein for collection of costs and expenses shall apply.

- a. When work has been performed by the Town, the Town Forester shall bill any or all Responsible Parties for the costs and expenses necessary to provide care, maintenance, repair or replacement.
- b. If the Responsible Party shall fail within thirty (30) days after billing to pay the costs and expenses of work by the Town, such costs and expenses may be collected by the Town in a civil action or assessed and filed as a lien against the real property owned, leased or occupied by the Responsible Party.
- c. If the costs of care, maintenance, repair or replacement have not been otherwise collected, the Finance Director shall prepare a statement enumerating the actual costs plus fifteen percent (15%) of the costs for inspection and other additional administrative costs. The costs enumerated in this statement shall be a first and prior lien upon the property owned, leased or occupied by the Responsible Party relating back to the date upon which the care, maintenance, repair or replacement was performed. A copy of this statement shall be deposited in the United States mail or personally hand-delivered to the Responsible Party. The Responsible Party may request a hearing before the Public Works Director to contest the amount of the costs. Such request must be made in writing and be filed with the Finance Director within thirty (30) days of the date of mailing or service of the first statement to the Responsible Party. The Responsible Party shall be given at least two (2) weeks' written notice of the date, time and place of any hearing scheduled before the Public Works Director. The decision of the Public Works Director shall be final. If the statement remains unpaid, the amount shall be certified by the Finance Director to the Douglas County Treasurer. The Douglas County Treasurer, upon receipt of the certified statement, is hereby authorized to place the amount upon the tax list for the current year and to collect that amount in the same manner taxes are collected with a ten-percent penalty thereon.

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04

PARKS, TRAILS, OPEN SPACE & STREETSCAPE SUPPORT AMENITIES

01 INTRODUCTION

Providing support amenities in the park, open space and streetscape designs support and enhance the user experience. The location, quantity, and style of support amenities should be appropriate to the context and use of the public space.

Support amenities within this section include the following categories:

- Site Furnishings
- Structures & Parking
- Lighting
- Safety Barriers and Flagpole

Site furnishings accepted by the Town of Parker are designed to complement each other in color, materials, form and style, and have been tested for durability and maintenance.

General guidelines for support amenities:

- All support amenities must be ADA accessible.
- Any specialty site furnishings will be reviewed with the same criteria as approved furnishings.
- Site furniture and amenities shall be designed or permanently secured per manufacturer's recommendations.
- Site furnishings shall be oriented to discourage skateboard activity to the greatest extent possible.
- Neighborhood park site furnishings can be flexible from the design standards within the following support amenities. However, all selected furnishings must be commercial grade quality.

Park Definition:

Park is a public or private land used for active or passive recreational uses that may include facilities for organized activities, including playing fields, playgrounds, and ball courts. Accessory uses may include group picnic shelters, hard-surfaced pathways, restrooms, parking lots, and similar facilities.

Open Space Definition:

Open Space is a public or private land and aquatic areas without visible evidence of residential, commercial, or industrial development that are regulated or managed to protect the natural environment and significant cultural, historical, geological, and ecological resources. Such areas may include natural, cultural, and visual resources, trail corridors, community buffers, greenways, and environmental hazard areas, such as floodplains and steep slopes.

Streetscape Definition:

Streetscapes shall be defined as any areas landscaped along roadways within or beyond the Public Right-of-Way, and/or any median strips located within divided lane roadways. Streetscapes shall be designed to provide for visual relief along the Town's roadways and constructed for safety, cost effectiveness, and minimal maintenance.



a. Organization

There are several instances where parks, open space and streetscapes all share the same amenity type.

The following Support Amenity Standards (subsection b) includes support amenities that are identified as being used in either parks, streetscapes, or in both locations.

The Support Amenity Standards Tables are divided into categories with various options and requirements from each category. These include:

1. Applicability
2. Description & Placement
3. Model and/or Features
4. Installation

Applicability is shown in the form of a 2-column table adjacent to the amenity. A check mark indicates that the amenity is compatible in a park and open space location, or a streetscape application. An example of this is shown below.

PARKS & OPEN SPACE	STREETSCAPE
✓	✓

Graphic 4.1: Example of Amenity Compatibility Table

b. Support Amenity Standards

i. Site Furnishings

PARKS & OPEN SPACE	STREETSCAPE	1. BENCHES		
		Provide benches along primary walkways and adjacent to activity centers.		
✓	✓	Model Victor Stanley (mfr). Model RB-28 (backed) / RB-12 (backless) Backed: 6'-0"L x 2'-0"W x 1'-5"H (seat)/2'-7"H (back)Backless: 6'-0"L x 1'-8"W x 1'-5"H (seat)	Installation Surface-mount using self-tapping concrete screws. Bench must be anchored to concrete; if unit pavers, crusher fines, or other surface material is being used, provide appropriate detailing of concrete foundations below finish grade. Provide space on bench pad for accessible seating adjacent to the bench.	
		Color: Black		
✓	✓	2. CHAIRS		
		Option for limited space or where design requires individual seating. Offers many options for various seating configurations.		
		Model Victor Stanley (mfr). Model NRS-24 with bolt-on armrest. 24" steel scroll seating.	Installation Surface-mount using stainless steel vandal resistant anchors.	
		Color: Black		
✓	✓	3. PICNIC TABLE		
		<i>a. Square</i> Locate picnic tables in shade, close to parking and within activity centers. For each grouping of tables of up to four tables, provide one 3-seat accessible table. If only one table is provided, provide an accessible table.		
		Model (STANDARD) Victor Stanley (mfr). Model: CRPR-4 48" square top (4 seat) (ADA) Victor Stanley. Model: CRPR-3 48" square top (3 seat)	Installation Surface-mount using stainless steel vandal resistant anchors.	
		Color: Black		
✓	✓	<i>b. Rectangle</i>		
		Locate picnic tables in shade, close to parking and within activity centers. For each grouping of tables of up to four tables, provide one 3-seat accessible table. If only one table is provided, provide an accessible table. 8' tables are to be used where larger crowds are expected, and if site conditions allow for it.		
		Model (STANDARD) Victor Stanley (mfr). Model FRST-6 6' long table with (2) 6' bench. (ADA) Victor Stanley. Model FRST-6 accessible 8' long table with (1) 6' bench and (1) 8' bench.	Color: Black	
			Installation Surface-mount using stainless steel vandal resistant anchors.	

PARKS & OPEN SPACE	STREETSCAPE	4. TRASH/RECYCLING RECEPTACLE		
		Provide trash receptacles in easily accessible areas and in locations for ease of pickup. Space trash receptacles a minimum of 10 feet away from benches. Model Victor Stanley (mfr). Model Rb-45. 45 Gal, standard tapered formed lid. Trash receptacle lids to have no lid or flat top. Recycling receptacle lid to have a flat top “recycling” lid. Color: Black Installation Surface-mount using self-tapping concrete screws in size as recommended by manufacturer.		
✓	✓			
		5. DOG WASTE STATION		
		Provide at all pedestrian access points into the park, open space, with a minimum of three per park. Waste station dispenser to include sign, dispenser, and receptacle mounted on pole. Model (Trash Receptacle) Pet Waste Eliminator (mfr). Model SKU #E44 - 22 Gallon Waste Receptacle (Dog Bag Dispenser) Model 2100 - Padlock Way. (Sign) American Sign (mfr). Or approved equal Color: Hunter Green Installation Install dispenser, trash receptacle and sign on an 8'-0", 4" x 4" cedar post (24" below finish grade). Receptacle and bag dispenser must meet ADA standards. Bag dispenser to include Master Lock 0536 and Town of Parker sticker.		
✓				
		6. DRINKING FOUNTAIN		 
		Every park should include at least one drinking fountain adjacent to play areas, gathering spaces and sports fields and integrated into restrooms. Locate in close proximity to high activity areas. Model Most Dependable Fountains, Inc. (MDF) Product #2240 SMSS with bottle filler and two-season fountain covers. (Image 1) Option to include pet fountain. (Image 2) Color: Black Installation Pad and drinking fountain height must meet ADA standards. All connections must be double clamped.		
✓				

Image 1

Image 2

PARKS & OPEN SPACE	STREETSCAPE	7. BICYCLE RACK Provide bicycle racks adjacent to building entrances, park entrances, activity centers and sports fields. <table><tr><td>Model MADRAX (mfr) Model: U200 2" square tube, 18-5/6" W X 34" H" Or approved equal</td><td>Installation Surface mount with tamper resistant concrete anchors (4 spikes per rack). Spikes to be mushroom head spikes 3/8" X 3".</td></tr><tr><td colspan="2">Color: Black; Powder Coat</td></tr></table>	Model MADRAX (mfr) Model: U200 2" square tube, 18-5/6" W X 34" H" Or approved equal	Installation Surface mount with tamper resistant concrete anchors (4 spikes per rack). Spikes to be mushroom head spikes 3/8" X 3".	Color: Black; Powder Coat		
Model MADRAX (mfr) Model: U200 2" square tube, 18-5/6" W X 34" H" Or approved equal	Installation Surface mount with tamper resistant concrete anchors (4 spikes per rack). Spikes to be mushroom head spikes 3/8" X 3".						
Color: Black; Powder Coat							
✓	✓	9. BICYCLE REPAIR STATION Locate bicycle repair station in an area that provides ample room to work on a bike. Provide paved surface under and around bike repair station. <table><tr><td>Models (or approved equals) Dero Bike Rack Company (mfr) <i>Fixit-H:</i> Surface mount, powder coated, green RAL 6016, Configuration: EPX Color: Green Style:FT <i>Air Kit Frame:</i> Fixit Mount, REV. B, powder coated, green RAL 6016, Size: FX Rev B, Configuration: EPX Color: Green</td><td><i>Assembly Tools:</i> Tamper-resistant tools for installation Air Kit Prime FX, A Size: AK PR FX A Installation Surface-mount using self-tapping concrete screws.</td></tr></table>	Models (or approved equals) Dero Bike Rack Company (mfr) <i>Fixit-H:</i> Surface mount, powder coated, green RAL 6016, Configuration: EPX Color: Green Style:FT <i>Air Kit Frame:</i> Fixit Mount, REV. B, powder coated, green RAL 6016, Size: FX Rev B, Configuration: EPX Color: Green	<i>Assembly Tools:</i> Tamper-resistant tools for installation Air Kit Prime FX, A Size: AK PR FX A Installation Surface-mount using self-tapping concrete screws.			
Models (or approved equals) Dero Bike Rack Company (mfr) <i>Fixit-H:</i> Surface mount, powder coated, green RAL 6016, Configuration: EPX Color: Green Style:FT <i>Air Kit Frame:</i> Fixit Mount, REV. B, powder coated, green RAL 6016, Size: FX Rev B, Configuration: EPX Color: Green	<i>Assembly Tools:</i> Tamper-resistant tools for installation Air Kit Prime FX, A Size: AK PR FX A Installation Surface-mount using self-tapping concrete screws.						

ii. Structures & Parking

PARKS & OPEN SPACE	STREETSCAPE	1. RESTROOMS		
		a. Permanent		
✓		Permanent restrooms are to be provided at all Community-Serving Parks. Permanent restrooms are desirable at all parks and open space facilities. Permanent restrooms should be designed per current Building Codes and the architectural design should be contextual to the site and surrounding community. Design of restroom facilities will be reviewed and approved through the Site Plan or Final Plat Review process.		
		Features • Sink: Penal-Ware 1652LRB Series 18" Lavatory with Rectangular Bowl - ADA Compliant, or approved equal • Toilet: Penal-Ware 1675 Series Blowout Jet Toilet, Off Floor, or approved equal • Hardware: 45HOL 15 H 626 - Best Privacy Lever with Securitron, M32 Magnalocks, or approved equal • Soap Dispenser: Bobrick Model B-2111 Surface Mounted Soap Dispenser, or approved equal • Toilet Tissue Dispenser: Bobrick Surface-Mounted Twin Jumbo Roll Model B-2892, or approved equal • Hand Dryer: Global Industrial High Velocity Automatic Hand Dryer Model 641164, or approved equal • Indoor/Outdoor Traffic Control: Securitron M32 Magnalock, or approved equal • Digital Timer: Securitron DT-7 Prime Time Digital Timer, or approved equal • Alarm: Securitron PZ1 Piezo Sounder, or approved equal • Flush Valve: Zurn Z6143AV AquaVantage 'AV' Concealed Closet Flush Valve, or approved equal • ADA Accessible drinking fountain located on outside of building • Provide vandal resistant lighting • Provide motion sensors for exterior and interior lighting • Provide heating for year-round use • Provide anti-graffiti coating to all interior, publicly accessible painted surfaces		

PARKS & OPEN SPACE	STREETSCAPE		
✓		<i>b. Portable</i> Portable restrooms are to be used for temporary events. If a portable restroom is used for a park, an enclosure shall be provided. Locate away from gathering areas and accessible for delivery/pickup and routine maintenance. Features Model Archolet (mfr) ADA Model #481003 restroom enclosure. Size 8'-1"L x 7'4 1/2" W x 9' 1-1/2"H Or approved equal Provided by MZI mzi.marty@gmail.com Color Dark Green Installation In-ground mount. Provide engineered shop drawings for design of foundation and shelter.	 
✓		<i>c. Vault</i> Vault Restrooms are only acceptable in open spaces where water is not available and upon approval of the Town. Recommended vault Restroom Manufacturer's: -Public Restroom -Biological Mediation Systems -CXT -Other as approved by the Town	
✓		2. SHADE STRUCTURE <i>a. Medium and Large</i> Shade structure with minimum 1100 SF roof for medium shelters and 1500 SF for large shelters accommodating more than (10) users. Locate in area central to park and providing ease of access to other high-use program elements. Model Recommended manufacturers: • Classic Recreation Systems • Icon Shelter Systems • Polygon • Others as approved by the Town Frame: Steel, TGIC powder-coat finish. While steel is preferred, final frame material may be negotiated by the Town and the developer. Roof: Standing seam over tongue & groove wood roof deck. Columns: Where possible provide decorative masonry columns consistent with Park design aesthetic and materials. Color: Black; other colors may be considered and require Town of Parker approval. Anchor bolts: Internal to column. Other: Provide duplex convenience outlets, (2) min., integrated into columns. Provide security level lighting in shade structure. Wood structures are allowed with approval by the Town.	

PARKS & OPEN SPACE	STREETSCAPE	<i>b. Small</i> Shade structure with minimum 800 SF roof, accommodating (5) to (10) users. Locate adjacent to high-use program elements, where shade and rest may be desired. Model Potential manufacturers: • Classic Recreation Systems, • Icon Shelter Systems • Poligon • Others as approved by the Town Color: Black; other colors may be considered and require Town of Parker approval. Anchor bolts: Internal to column. Other: Provide duplex convenience outlets, (1) min., integrated into columns. Provide security level lighting in shade structure. Wood structures are allowed with approval by the Town. Frame: Steel, TGIC powder-coat finish. Roof: Shed roof, standing seam, over tongue & groove roof deck. Alternate roof designs such as shed roofs, clearstory, and hip are encouraged to create interest.	
✓	✓	3. PARKING <i>a. Off-street</i> Where required, provide in accordance with Town of Parker Land Development Ordinance (chapter 13.06) Site Plan Standards and Procedures. Refer to Table 2.4 Community Park Parking Guidelines, for more information on off-street parking requirements per park amenity.	
	✓	<i>b. On-street</i> Where required, provide in accordance with Town of Parker Land Development Ordinance (chapter 13.06) Site Plan Standards and Procedures.	

iii. Lighting * Refer to Sports & Fitness in Section 02 for Sports Field and Court Lighting.

PARKS & OPEN SPACE	STREETSCAPE	1. LIGHTING <i>a. General</i> All lighting shall conform to Town of Parker Land Development Ordinance and per standards and guidelines of the Illuminating Engineering Society (IES). Lighting shall utilize LED fixtures and best practices in designing for dark-sky compliance. Lighting requirements set forth within these specifications may not apply to master planned communities. This will be determined during the design.	
✓	✓		
✓		<i>b. Trail, Park & Natural Area Lighting</i> Lighting is to reside within the boundaries or adjacent to trails, parks, or natural areas only. Conforming to Town of Parker Land Development Ordinance and per Illuminating Engineering Society (IES), provide pedestrian lighting along major circulation routes and gatherings areas at a minimum. For more remote applications, where power supply may limited or cost prohibitive, solar powered lighting should be considered. Photovoltaic panels may be provided at individual poles or in a centralized array. Trail Light Model Architectural Area Lighting PROV2-36L-295-4K7-2-BLS-STND_MNT-UNV This is type 2, directional for trail = 3596 lumens Or approved equal Park Light Model Architectural Area Lighting PROV2-36L-295-4K7-5W-BLS-STND_MNT-UNV This is type 5, symmetric for park = 3529 lumens Or approved equal Trail Pole Pole without GFI_Architectural Area Lighting PR4-4R12-226-BLS Or approved equal Park Pole Pole with GFI_Architectural Area Lighting PR4-4R12-226-GFI MOD (10" FROM TOP OF POLE)-BLS Or approved equal	
✓	✓	<i>c. Roadway & Parking Lot Lighting</i> Lighting is to reside within the boundaries or adjacent to roadways or parking lots outside of the limits of Downtown and/or Sulphur Gulch. Conforming to Town of Parker Land Development Ordinance and per Illuminating Engineering Society (IES), provide lighting for comfortable and safe environment. Model Gardco (mfr), P26-64L-600-NW-G2-AR-4-UNV-BK, "Pure Form" model, P26 Medium Area Light. Housing: Providence Medium 2.0 house - LED Qty: 64 LEDs - CCT/CRI: 4,000K, 70CRI Or approved equal Color: Black - Pole Mount: Arm Mount - Voltage: Universal 120-277V Pole Black Pole by Lytepole, 401-4011-20-20'-AB-D1-TBK-CO, 20' ht. x 4" dia., 11 ga., straight round, medium gray finish. Or approved equal	

d. Parker Style Streetscape Lighting

Parker Style Streetscape Lighting is to reside within the boundaries of Downtown Parker and/or Sulphur Gulch only. Placement of Parker Style Streetscape lighting will be determined during the design.

Conforming to Town of Parker Land Development Ordinance and per Illuminating Engineering Society (IES), provide lighting for comfortable and safe environment.

Downtown Streetscape Light 22A-1046

All Parker Streetscape Lights are to have the outlet located on the base for use to light the median trees during the Holiday Season.

Model

Architectural Area Lighting PROV2-36L-615-4K7-4W-BLS-TRA57-5-UNV-DB35F16-188-MOD GFI-T-FINAL

Parker Five Globe Lights

All Parker Five Globe Lights are to have the outlet located on the base for use to light the median trees during the Holiday Season.

Model

Niland (mfr), VP-103-TF-9.2-VP4-5C-3012-TRWP-GFI-IUC

Placement

Locate one (1) "Parker Globe Light" every 100-150 linear feet within the median planter beds on all arterial roadways. All other medians are subject to design review. These standards may not pertain to master-planned communities. A determination on applicability will be made during the design review process.

Proximity to Trees

Trees shall not be located within fifteen (15) feet of any light measured from the center of the tree (Figure 1). Trees adjacent to lights (but beyond fifteen (15) feet) shall be deciduous shade trees only. Ornamental trees are not allowed next to lights because they block visibility of the light.

Placement within Median

Utilities, electrical lines, and light poles in medians are to be placed at the edges to allow for tree planting.



PARKS & OPEN SPACE	STREETSCAPE	<i>e. Pedestrian Lighting</i> Pedestrian Lighting is any lighting along pedestrian areas that do not reside within the boundaries of Downtown Parker, Sulphur Gulch, trails, parks or natural areas. Conforming to Town of Parker Land Development Ordinance and per Illuminating Engineering Society (IES), provide along major circulation routes and gatherings areas at a minimum.	
✓	✓	Model Architectural Area Lighting (mfr), “Providence” model, or approved equal - Housing: Providence Medium 2.0 house - LED Qty: 36 LED - Lumen Output: 295 - CCT/CRI: 4,000K, 70CRI Color: Black Gloss 2 Pole Mount: Standard Mount Voltage: Universal 120-277V Pole Hubbell Lighting (mfr.), model PR4-4R12-226-BLS, 12’ height, with GFIC duplex outlet in weather proof enclosures.	
✓	✓	<i>f. Catenary Lighting</i> Where appropriate to provide overhead, suspended lighting and where it may be desirable to eliminate the clutter of poles or provide a unique ambiance. Lighting should conform to Town of Parker Land Development Ordinance.	
✓	✓	<i>g. Accent / In-Ground Lighting</i> Where appropriate to highlight features such as art installations, or provide accents to architectural and landscape elements such as walls, planters, flag pole, seating, etc. Lighting should conform to Town of Parker Land Development Ordinance. In-Ground Light Model KIM LTV82-RG-XX-12L-RGBW-UV-XX-XX Or approved equal. Distribution, color temperature, and lens options per specific project needs.	
✓		<i>h. Architectural Lighting</i> Per Illuminating Engineering Society (IES) standards and as required to meet applicable building codes and Town of Parker Land Development Ordinance.	
✓		<i>i. Shelter Lighting</i> Conforming to Town of Parker Land Development Ordinance and per Illuminating Engineering Society (IES), provide shelter lighting for shelters located within populated gathering areas, along circulation routes, and near playgrounds, at a minimum. Model Kenall MS15FL-PP-XX-15L35K-XX-XX-XX Finish, options and accessories per specific project needs.	

iv. Safety Barriers and Flagpole

PARKS & OPEN SPACE	STREETSCAPE	1. BOLLARD - STEEL PIPE & CONCRETE FILLED <i>a. Steel Pipe & Concrete Filled</i> Steel Pipe Bollard filled with concrete is a security post that ensures a high level of impact protection. Primer coating is ready for additional paint and can be cut to certain depths. Bollard caps or covers can also be added.		
✓		Model R-10070-04 Steel Pipe Security Bollard (4-12"), Reliance Foundry, or approved equal Color: Black	Installation Concrete embedment. Set bollard 36" into concrete and fill with concrete. Ensure that bollard is plumb.	
✓		<i>b. Collapsible Fold-Down</i> Clean, versatile design is suitable for a variety of locations. Made of carbon steel and powder coated. Model MCSP-SS2-EZ, MaxiForce, or approved equal Color: Black	Installation Fold-down mounting.	
✓		<i>c. Decorative</i> Versatile ductile iron bollard features annular rings and a spherical top casting. A clean design as stand-alone or to cover impact-resistant security posts. Model R-7571, Reliance Foundry, or approved equal Color: Black	Installation Concrete embedment.	
✓		2. FLAGPOLE Number of poles vary depending on project and number of flags. Mounting height 30' per LDO requirements. Model Concord American Flagpole (mfr), IRW-GS. Alloy 6063-T6 Tapered Aluminum Tube. 16 Gauge galvanized steel tube at base. Or approved equal Color: Chrome; variations in color may be considered but require Town of Parker approval		Installation Foundation design should be consulted by a qualified engineer familiar with site soil conditions. Lighting Illumination of flags shall comply with the provisions of the Parker Land Development Ordinance Section 13.08.110, <i>Exterior Lighting</i>. Provide lighting per lighting standards. 



05

PARKS, TRAILS, OPEN SPACE & STREETSCAPE MATERIALS



01 INTRODUCTION

Various material types are provided in parks, trails, open spaces and streetscapes. All materials shall meet design criteria in the Town of Parker Roadway Design and Construction Criteria Manual.

a. Organization

b. Materials

1. Concrete Flatwork
2. Decorative Concrete
3. Unit Paving
4. Crusher Fines
5. Detectable Warning Surfaces
6. Drives & Parking Lots
7. Curbs & Walls
8. Fencing
9. Pedestrian Railings
10. Tree Pits and Planters
11. Recommended Plant Lists & Seed Mixes

c. Landscape Products:

1. Planting Mix (topsoil)
2. Soil Amendments
3. Irrigation
4. Barrier Fabric
5. Wood and Rock Mulch
6. Staked and Guyed Trees



a. Organization

There are several instances where parks, trails, open space and streetscapes share the same materials.

The following Materials Standards (subsection b) include materials that are identified as being used in either parks, streetscapes, or in both locations.

The Materials Standards Tables are divided into categories with various options and requirements from each category. These include:

1. Applicability
2. Description & Placement
3. Model and/or Features
4. Installation

Applicability is shown in the form of a 2-column table adjacent to the material type. A check mark indicates that the material is compatible in a parks and open space location, or a streetscape application. An example of this is shown below.

PARKS & OPEN SPACE	STREETSCAPE
✓	✓

Graphic 5.1: Example of Material Compatibility Table

b. Materials

i. Paths, Trails & Sidewalks

PARKS & OPEN SPACE	STREETSCAPE	1. CONCRETE FLATWORK	
		Concrete flatwork is a very common material used for sidewalks and plazas within a streetscape. Design Criteria • Must meet all CDOT and ADA accessibility standards. • Refer to construction details and specifications regarding strength, install, finish, reinforcement, slope, and types of joints.	
✓	✓		
		2. DECORATIVE CONCRETE	
		Decorative concrete is a type of concrete that can vary in aesthetic appeal to give a unique character to a public space. It must meet all of the design criteria of concrete flatwork, and shall not create any slipping, tripping or other accessibility hazards in order to ensure public safety. Locate and use of decorative concrete shall be approved by the Town. a. Integral Color • A coloring admixture, or concrete pigment, is added to the concrete mix to give a consistent color throughout the entire thickness of the concrete. • Colors to be approved by the Town. b. Exposed Aggregate • An exposed aggregate surface is created by removing the top layer of concrete, in order to reveal the decorative coarse aggregate beneath. • This method creates a unique and slip resistant texture. c. Stamped Patterns • Concrete that has been imprinted, patterned, textured, or embossed. • This effect can give a variety of decorative styles to a concrete surface, such as geometric paver-like patterns, stone, or other effect. • Pattern to be approved by the Town. d. Sandblasted Graphics • Graphics or lettering can be sandblasted into concrete to create specific shapes, logos, words, or other images. • Lithochrome exterior rated paint is recommended to be added to the sandblasted graphics or lettering to enhance the visibility of the effect. • Lithochrome paint colors to be approved by the Town.	  
✓	✓		

PARKS & OPEN SPACE	STREETSCAPE	3. UNIT PAVING Unit paving is aesthetically pleasing, impervious units that contain permeable joints. This type of paving can include a variety of different types, styles, sizes, and colors. a. Stone - Stone pavers are typically square or rectangle in shape, and can be arranged into a variety of patterns. - The finish of these stones can include honed or sandblasted, saw cut, flamed, chiseled, tumbled, or antiqued. - Color, type, and finish to be approved by the Town. b. Precast Concrete - Precast concrete pavers are tiles that are designed to mimic natural stone. - Their composition includes a mixture of sand, gravel, and pebbles. - The patterns and finishes can vary. - Color, type, and finish to be approved by the Town. c. Permeable Interlocking Concrete Paver (PICP) - PICP's consist of solid concrete paving units with joints that create openings in the pavement when assembled together to form a pattern. - Often installed with varying-sized stone or aggregate underneath. - Color, type, and pattern to be approved by the Town.	  
✓	✓	4. CRUSHER FINES Crusher fines paving is to be used in parks, trails and open spaces where soft surface paved conditions are desired. Provide stabilized crusher fines material per specifications.	
✓	✓	5. DETECTABLE WARNING SURFACES Unit paving are aesthetically pleasing, impervious units that are contain permeable joints. This type of paving can include a variety of different types, styles, sizes, and colors. Refer to CDOT specifications for acceptable detectable warning surface materials.	

ii. Drives & Parking Lots

PARKS & OPEN SPACE	STREETSCAPE	1. DRIVES & PARKING LOTS Drives and parking lots shall be designed to meet anticipated vehicular loads. All parking lots and drives shall provide a geotechnical report to determine pavement recommendations. Acceptable materials include concrete and asphalt. Concrete shall be provided at locations where there will be oversized vehicular traffic or heavy vehicle turning. Follow CDOT specifications for all concrete and asphalt paving for parks, trails, open spaces and streetscape projects. Refer to Appendix B for more information.	
✓	✓	a. Concrete - Refer to Details in Appendix A. b. Asphalt - Refer to Details in Appendix A.	

iii. Curbs & Walls

PARKS & OPEN SPACE	STREETSCAPE	1. CURBS & WALLS Retaining walls shall be used minimally; however, when needed walls shall be made of durable materials that match the aesthetic of the park, trail, open space and surrounding community.	
✓		Design Considerations - Wall materials shall be approved by the Town. - Retaining walls shall include structural engineered design. - Walls shall have proper underdrain system directed towards the storm system. - Walls shall be designed to discourage skateboarding and graffiti vandalism. Walls designed to avoid the need for skate stoppers are preferred. - Walls shall have an anti-graffiti coating applied. - Guardrails shall be provided at the top of walls when walls are over 30 inches in height with turf or walkways adjacent to the top. - Acceptable materials may include: a. Cast-in- Place Concrete b. Precast Concrete c. Segmental block d. Metal (with prior approval of the Town)	 

iv. Fencing & Railings

PARKS & OPEN SPACE	STREETSCAPE	1. FENCING Parks shall be designed functionally and visually to be as open as possible and limit the use of fencing. Fencing materials shall be as indicated below. a. Chainlink - Fencing shall only be provided for ballfields, multipurpose fields, sport courts, joint use areas or where there is a safety issue that cannot be reasonably addressed by some other means. - Chainlink fencing shall be galvanized or black vinyl coated and mesh size appropriate for use. - Height as appropriate for use. b. Decorative Metal Decorative metal fencing shall be used in any location where a fence is needed that is not around fields or courts. Design Considerations - Fencing shall be used between play areas and parking lots, streets or where other high volume vehicular uses occur. - Fencing, barriers, and gates adjacent to playgrounds are to follow ASTM F2049 standards. Model - Fence: Fortress Fence V2 Flat Top/Flat Bottom Three rail panel Commercial, 46" height ornamental fencing with Assurance 3" air space. Color to be black. Or approved equal. c. Wood Wood fencing is only allowed in open spaces or in other areas with approval from the town. - Provide wood fence per details and specifications pursuant to any LDO fencing standards and Development Design Standards.	  
		2. PEDESTRIAN GUARDRAILS/RAILINGS Refer to Appendix A for fencing and guardrail details and Appendix B for specifications a. Guardrails Guardrails shall be provided when potential fall height next to a pedestrian use area is 30 inches or greater. Model - Parks: Fence and Guardrail: Fortress Fence V2 Flat Top/Flat Bottom three rail panel Commercial, ornamental fencing with Assurance 3" air space. Color to be black. Or approved equal. - Trails: Guardrail: Assembly shall be delegated design and meet structural performance criteria as specified and in accordance with all applicable codes of local jurisdiction. - Guardrail standard height to be 42" at parks and trails. Guardrail height at bridges or adjacent to equestrian trails to be 54". b. Handrails Handrails shall be used in locations where steps or ramps are needed. - Handrails shall meet ADA guidelines. - Handrails shall be galvanized with two coats of high performance coatings (color to be black).	 

v. Planting & Signage

PARKS & OPEN SPACE	STREETSCAPE	1. TREE PITS & PLANTERS Tree pits and tree planters are either flush or raised planting areas that include the soil at an adequate depth for trees, as well as the surface treatment for pedestrian safety, and an irrigation system and drainage. 1. Tree Grates • Tree grates are flush with the surrounding streetscape paving, and are placed over tree pits or basis. • Recommended material: cast iron, cast aluminum or post-consumer recycled plastic. • Potential Manufacturer: PolyGrate (may be considered for parks), Ironsmith or approved equal. 2. Soil Backfill • In streetscape locations, and at planting areas confined on at least two sides by paving or walls provide CU soils backfill per standard details.	
✓	✓	2. RECOMMENDED PLANT LISTS & SEED MIXES Refer to the Parker Recommended Plant List • Seed mixes shall consist of native and indigenous species and be designed with the following existing site, location and maintenance considerations. • Assess the site conditions including soil type (provide soil test), site location, moisture levels, slope, exposure, and other factors that may impact plant growth. • Consider the purpose of the area, i.e., prairie, meadow, water quality, detention, riparian, bioretention, and design seed mixes to meet them. • Choose a seed mix that is well-suited to the maintenance resources available for the area. • Engage a plant ecologist. • Choose a seeding rate that provides overall coverage outlined in the technical specifications. • All seed mixes are to approved by Parker Parks and Recreation Department.	
✓	✓		

c. Landscape Products

i. Soils & Irrigation

PARKS &
OPEN SPACE

STREETSCAPE

1. PLANTING MIX (TOPSOIL)

An approved, imported, high quality planting mix (Topsoil) shall be used within raised medians.

a. Existing Roadway Medians

Existing roadway medians will require twelve (12) inches of an approved imported planting mix (Refer to Graphic 3.1: Typical Median or Landscape Island; Streetscape Section 03) in areas of ornamental plantings. This topsoil shall be fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 2 inches in any dimension, and other extraneous or toxic matter harmful to plant growth.

- Obtain topsoil from local sources or from areas having similar soil characteristics to that found at the project site. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth of not less than 4 inches. Do not use soil products obtained from bogs or marshes. Mountain peat moss is not acceptable.
- Roadway structural shall not be installed within 20' of trees and 5' of a planting bed.
- Decompact soils prior to installation of topsoil.

b. New Roadway Medians

New roadway medians shall be filled with existing topsoil, twelve (12) inches deep, as much as is possible by equalizing cut and fill (Refer to Graphic 3.1: Typical Median or Landscape Island; Streetscape Section 03).

If existing topsoil is not available, follow requirements of New Roadway Medians above. Existing soils, when used in the medians, shall be reasonably cleaned of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 2 inches in any dimension, and other extraneous or toxic matter harmful to plant growth. If there is not enough topsoil to fill the need, off-site topsoil shall be imported.

- Remove roadway structural fill from planting median and decompact soils prior to installation of topsoil.



i. Soils & Irrigation

PARKS & OPEN SPACE	STREETSCAPE	2. SOIL AMENDMENTS Soil Amendments shall be added to planting bed areas to promote the health and vigor of the proposed plant materials. If existing on-site topsoil is approved by the Town for use, planting bed shall be amended to a 12" depth. Refer to "Appendix B" for soil amendment specification criteria. a. CU-Structural Soil CU-Structural Soil may be required beneath sidewalks and around new tree plantings in situations where tree planting pits or vaults are utilized, or where the distance between the back of curb/paving and sidewalk is less than six (6) feet wide. Determination as to applicability will be made during the design review process. The use of CU-Structural Soil is to encourage deep root growth away from the pavement surface, minimizing upheaval of the sidewalk, as well as to promote root growth toward the sidewalk and away from the roadway. Refer to Appendix A for CU-Structural Soil Detail. Refer to the article by Cornell's Urban Horticulture Institute for a description of the system and construction specifications at this link.	 
✓	✓	3. IRRIGATION Irrigation shall be provided to all landscape plant material. a. Reference Refer to "Appendix A" for irrigation details and "Appendix B" for irrigation specifications. Irrigation materials shall meet the Town standards. Locate one (1) irrigation controller within each streetscape median.	

ii. Landscape Standards

PARKS & OPEN SPACE	STREETSCAPE	1. BARRIER FABRIC Barrier Fabric shall be used in all planting beds with rock mulch, boulders, cobble, or river rock and wood mulch. a. Placement Fabric is not to be used in areas with perennial or annual plantings so that their growth is not hindered. b. Type The filtration/separation fabric shall be a water permeable fabric of fiberglass or polypropylene fabric (Mirafi, Typar, Trevira, or approved equal).	
✓	✓	2. WOOD & ROCK MULCH A Triple Shredded Red Cedar Wood Mulch, or approved alternative, shall be used within the raised planter beds to help control weeds and conserve water. Apply wood mulch at a minimum 4" depth and rock mulch at 3" depth. All mulch shall be installed away from the trunks of all trees. Options for rock mulch include the following: • 1-1/2" to 6" angular and round as negotiated with the Town.	
✓	✓	3. STAKED & GUYED TREES Provide stakes (minimum 2" x 2") and deadmen of sound new hardwood, treated softwood, or redwood, free of known holes and other defects. Provide wire ties and guys of 2-strand, twisted, pliable galvanized iron wire, not lighter than 12 gauge. Provide manufactured fabric tree strap with grommet to protect tree trunks from damage by wires.	

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06

SIGNAGE STANDARDS

01 INTRODUCTION

Parks, trails and open space signage is required for all Town owned facilities. Provide Parker standard signage as outlined in this section. Signage for neighborhood parks not maintained by the Town may include signage design that is consistent with the development aesthetic with review and approval by the Town. Park sign information is provided in this section and details can be found in Appendix A.

02 PARK AND OPEN SPACE SIGNS - MONUMENT SIGNS

Each park and open space shall have monument signs placed at each main park and open space entrance. These locations shall be adjacent to streets and points of access. Access points may be adjacent to pedestrian or vehicular locations depending on the size and uses of the park. Monument sign locations shall be coordinated with the Town.

a. Large Monument

Large Monument signs shall be provided at all park and open space location that are five acres or larger. Refer to Appendix A for details.



Graphic 6.1: Double-Sided, Non-illuminated Large Monument Sign*

* Sign Graphics Courtesy of Yesco Sign & Lighting, Co.

b. Small Monument

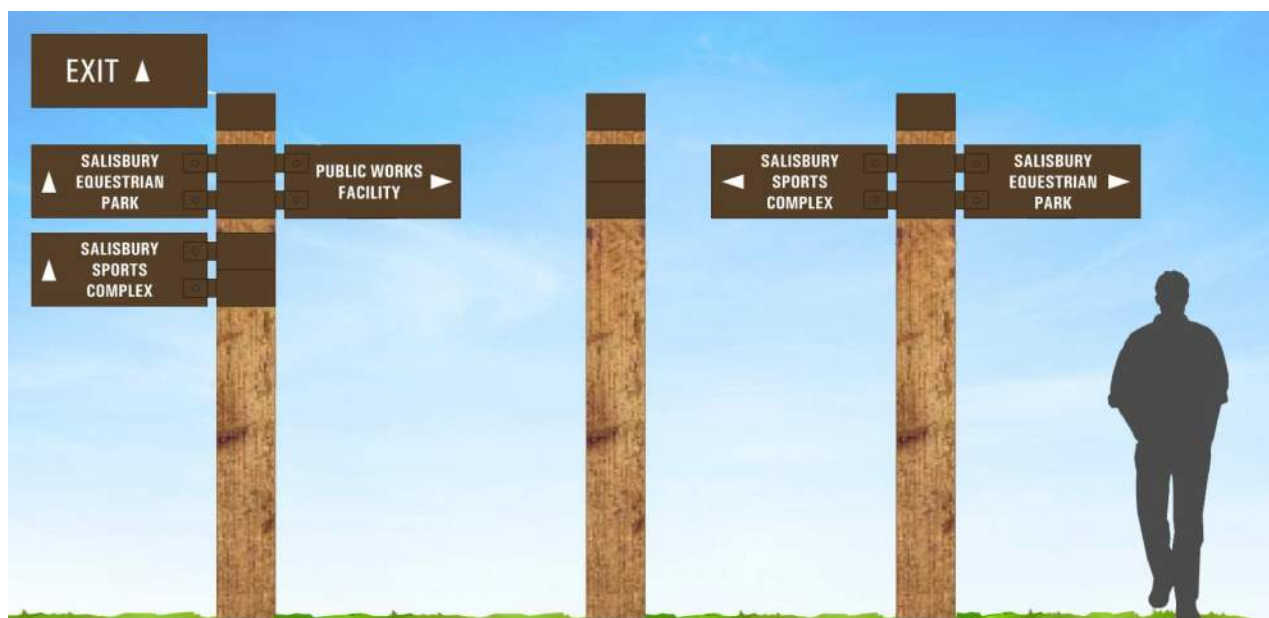
Small Monument signs shall be provided at all park and facility locations with a size of five acres or less. Refer to Appendix A for details. Town may require a large monument sign if setback necessitates a larger sign for visibility.



Graphic 6.2: Double-Sided, Non-illuminated Small Monument Sign*

03 WAYFINDING

Wayfinding signs shall be provided in parks and open spaces to direct park users to entry/exit locations, restrooms, shelters, and specialized park amenities (i.e. skateparks, disc-golf locations, etc.). Refer to Appendix A for details.



Graphic 6.3: Non-illuminated Directional Sign*

* Sign Graphics Courtesy of Yesco Sign & Lighting, Co.

04 TRAILS REGULATORY SIGNS

Trail regulatory signs shall be located along trails in locations as required adjacent trail entrances, trail connections and trail intersections and where appropriate to provide information as relevant to the trail user. Refer to Appendix A for details.

a. Trail Identification Signs

Trail signs shall be provided at all trail entrances and intersections and shall follow the Town standards. For neighborhood parks (not maintained by the Town) signs may follow the theme of the community.



b. Mileage Markers

Mileage markers shall be located along regional trails owned and maintained by the Town. Locate at half mile intervals and at trail entrances and intersections.



c. Regulatory

Trail regulatory signage shall be located in strategic locations to provide trail users adequate time to accommodate upcoming change in trail conditions. Locations shall be placed based on the fastest vehicle traveling along the trail. Potential signage may include but not be limited to curve, slow, stop, yield blind corner, to indicate separation between pedestrians and bicycles on a multi-use trail, indicating acceptable users on the trail (i.e. pedestrians, bicycles, equestrian, etc.). Signs and pavement markings should be used in conjunction with the Manual on Uniform Traffic Control Devices (MUTCD).



05 PARKS, TRAILS & OPEN SPACE REGULATORY SIGNS

Rules and regulatory signs shall be located at all specialized facilities and synthetic turf fields or play areas. Ensure that signs are placed in visible locations, such as at entrance points and key intersections within the park. Signs should be at eye level and in a location that is easy to read from a distance. Refer to Appendix A for details.

a. Rules & Regulations - Parks, Trails & Open Space

Trails rules and regulations signs shall be located at all entrances to trails and trail intersections. Trail rules and regulations signs also include the speed limit of the trail. Coordinate the speed limit with the Town. Rules and regulations signs shall follow the Town of Parker standards.

b. Rules & Regulations - Synthetic Turf

At each entrance into a synthetic turf field provide a synthetic turf rules and regulations sign. Provide Town standard sign.

c. Rules & Regulations - Fields, Court Sports & Specialized Facilities

For all court sports and specialized facilities including the following:

- Baseball/Softball Fields
- Tennis Courts
- Pickleball Courts
- Volleyball Court
- Skateparks
- Bike park, skills area or pump track
- Dog off-leash area
- Disc-Golf Courses

Coordinate specific rules required with the Town and provide signs at each entrance to the court and facilities. Follow Town sign standards.

Below is an example of Parks, Trails, and Open Space Regulatory Signs (**Graphic 6.4**).



Graphic 6.4: Parks, Trails, and Open Space Regulatory Sign Examples

06 PARKS, TRAILS & OPEN SPACE

INTERPRETIVE SIGNS

When providing educational interpretive signage, follow the Town standards for interpretive signs. The Town to review and approve all information on the interpretive sign. Provide sign details and graphic renderings for sign permit approval by the Town. Basis of design Fossil Industries graphic panels, mounting and hardware.



Graphic 6.5: Interpretive Sign Example

A photograph of a rural landscape featuring a grassy field, a barn, a silo, and a windmill under a cloudy sky. The entire image is covered with a semi-transparent blue overlay.

APPENDIX A

STANDARD CONSTRUCTION DETAILS

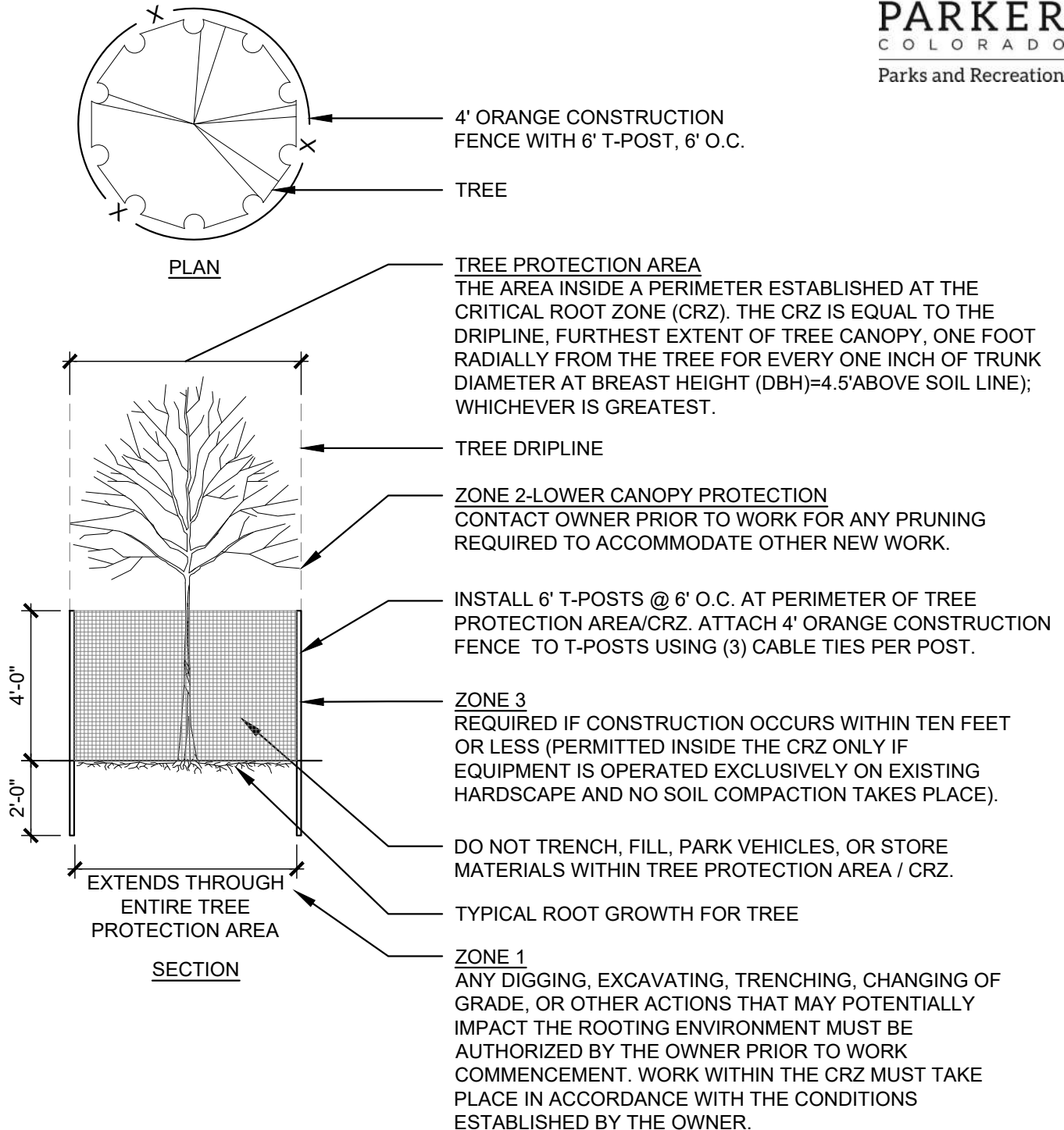
DETAILS LEGEND

SD - SITE DETAILS
IR - IRRIGATION DETAILS
PV - PAVING AND SURFACING DETAILS
ST - PARK STRUCTURE DETAILS
SF - SITE FURNISHINGS & FIXTURES DETAILS
SN - SIGNAGE DETAILS
FC - FIELD AND COURT LAYOUTS

NOTES:

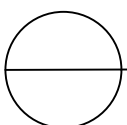
1. ALL DETAILS PROVIDED FOR GENERAL INTENT AND CONFIGURATIONS MAY VARY BASED ON SITE CONDITIONS AND RELATIONSHIPS OF ADJACENT PAVING AND SITE PROGRAM.
2. THE CONSTRUCTION DETAILS ARE PROVIDED FOR CONVENIENCE ONLY. IT IS THE RESPONSIBILITY OF THE CONSULTANT (USER) TO EDIT TO MEET THE REQUIREMENTS OF THE PROJECT AND ALL APPLICABLE CODES. THE TOWN IS NOT RESPONSIBLE FOR ERRORS, OMISSIONS, OR REGULATORY NON-CONFORMANCE AS A RESULT OF THE USE OF THESE DETAILS.

TOWN OF PARKER STANDARD DETAILS



NOTES:

1. FENCING HEIGHT MUST BE A MINIMUM OF 48".
2. ATTACH "TREE PROTECTION AREA" SIGNS TO FENCING EVERY 50 FEET.
3. CONSTRUCTION FENCE SHALL BE INSTALLED PRIOR TO OTHER BMP'S AND ANY LAND DISTURBING ACTIVITIES.
4. ANY DAMAGED FENCE SHALL BE REPAIRED ON A DAILY BASIS.
5. MULCH TO BE 'NATURAL WOOD MULCH' FROM A-1 ORGANICS.



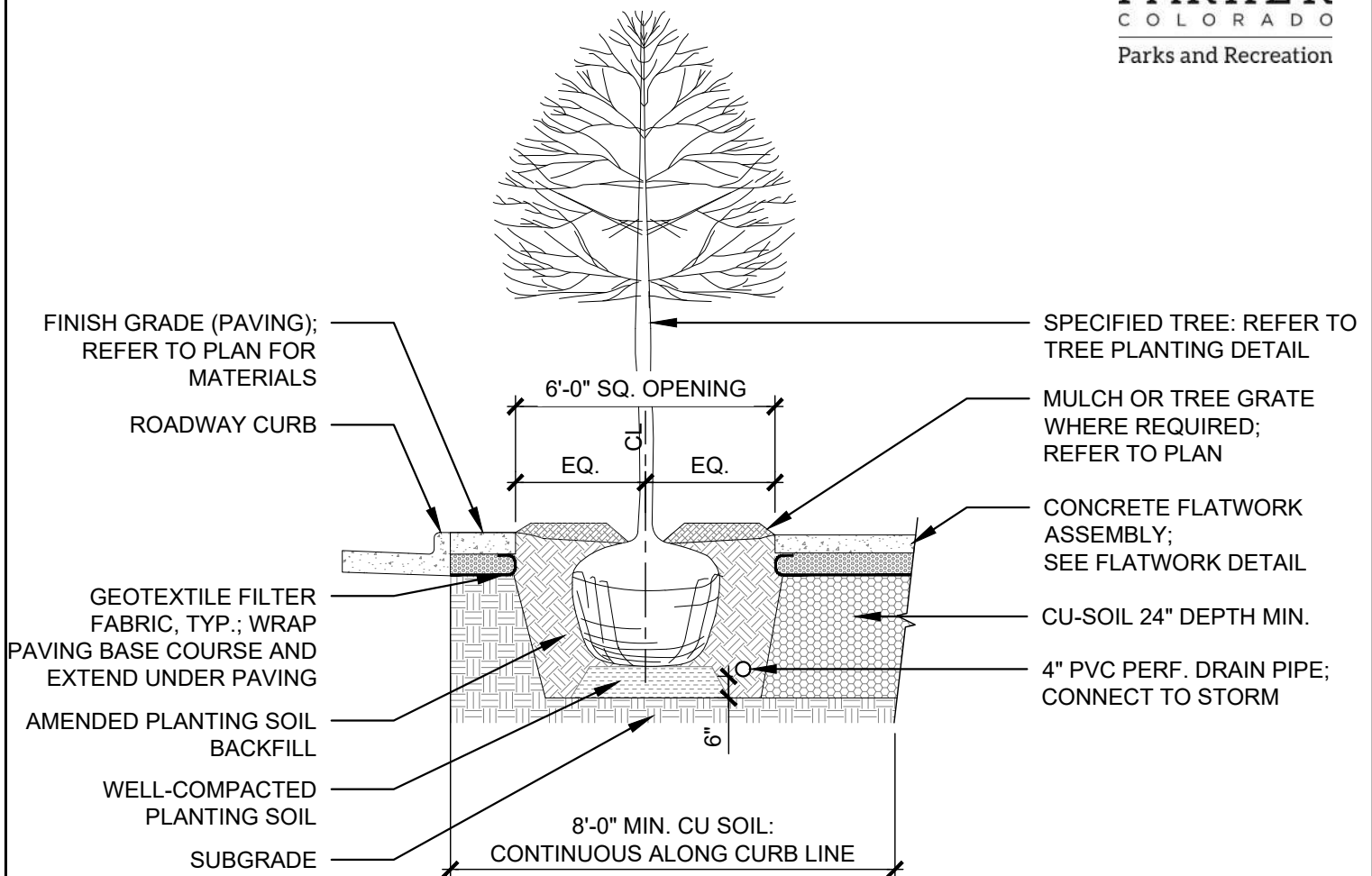
TREE PROTECTION FENCING

1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

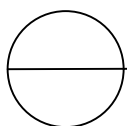


PARKER
COLORADO
Parks and Recreation



NOTES:

1. TREES SHALL BE PLANTED WITH THE ROOT COLLAR/FLARE VISIBLE ABOVE GRADE AND TWO OR MORE STRUCTURAL ROOTS LOCATED WITHIN THE TOP 1" TO 2" OF THE ROOT BALL/FINISHED GRADE MEASURED 3" TO 4" FROM TRUNK.
2. WHEN ROOT BALL WILL REMAIN INTACT, CUT OFF BOTTOM 1/4 OF WIRE BASKET BEFORE PLACING TREE IN HOLE. CUT OFF REMAINDER OF BASKET AFTER TREE IS SET IN HOLE, REMOVE BASKET COMPLETELY. AT A MINIMUM, THE TOP 2/3 OF THE BURLAP AND BASKET SHALL BE REMOVED FROM THE ROOT BALL ON ALL TREES. REMOVE ALL NYLON TIES, TWINE, ROPE AND BURLAP. REMOVE UNNECESSARY PACKING MATERIAL.
3. TREE WRAP IS NOT TO BE USED ON ANY NEW PLANTINGS, EXCEPT IN LATE FALL PLANTING SITUATIONS, AND ONLY AFTER CONSULTATION WITH THE TOWN ARBORIST.
4. RESETTING OF IMPROPERLY PLANTED TREES WILL ONLY BE ALLOWED IF IT IS DETERMINED THAT DOING SO WILL IN NO WAY COMPROMISE THE ROOT BALL, AND SHALL ONLY BE DONE WITH APPROVAL OF THE TOWN ARBORIST.



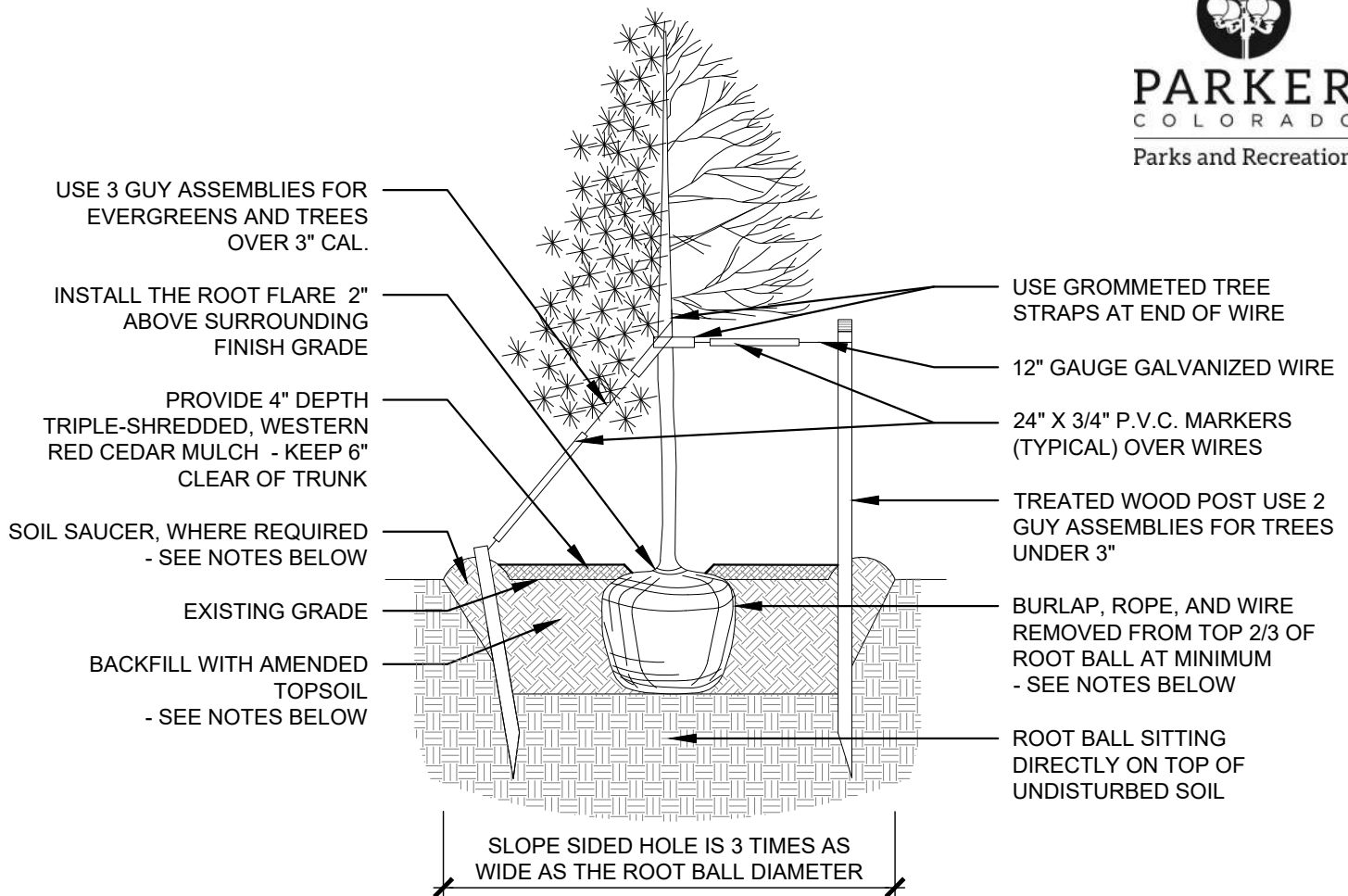
CU SOIL TREE PIT

1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

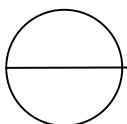


PARKER
COLORADO
Parks and Recreation



NOTES:

1. EXCAVATE PLANTING HOLES WITH SLOPING SIDES, MAKE EXCAVATIONS AT LEAST THREE TIMES AS WIDE AS THE ROOT BALL DIAMETER AND NO DEEPER THAN THE DISTANCE FROM THE TOP OF THE ROOT BALL TO ALLOW FOR SETTLING. DO NOT DISTURB SOIL AT BOTTOM OF PLANTING HOLES, BUT DO SCORE THE SIDES OF THE PLANTING HOLE. THE PLANTING AREA SHALL BE LOOSENED AND AERATED AT LEAST THREE TIMES THE DIAMETER OF THE ROOT BALL.
2. BACKFILL SHALL CONSIST OF APPROVED ON-SITE TOPSOIL BLENDED W/ COMPOST AMENDMENT. IF ON-SITE TOPSOILS ARE NOT APPROVED FOR USE, BACKFILL W/ IMPORTED TOPSOIL BLENDED WITH COMPOST AMENDMENT. REFER TO SPECIFICATION SECTION 329113 FOR ADDITIONAL INFORMATION.
3. TREES SHALL BE PLANTED WITH THE ROOT COLLAR/FLARE VISIBLE ABOVE GRADE AND TWO OR MORE STRUCTURAL ROOTS LOCATED WITHIN THE TOP 1" TO 2" OF THE ROOT BALL/FINISHED GRADE MEASURED 3" TO 4" FROM TRUNK. THIS INCLUDES TREES THAT ARE SET ON SLOPES (SEE SLOPE PLANTING DETAIL). TREES THAT DO NOT HAVE A VISIBLE ROOT COLLAR SHALL BE REJECTED. DO NOT COVER THE ROOT BALL WITH SOIL.
4. WHEN ROOT BALL WILL REMAIN INTACT, CUT OFF BOTTOM 1/4 OF WIRE BASKET BEFORE PLACING TREE IN HOLE. CUT OFF REMAINDER OF BASKET AFTER TREE IS SET IN HOLE, REMOVE BASKET COMPLETELY. AT A MINIMUM, THE TOP 2/3 OF THE BURLAP AND BASKET SHALL BE REMOVED FROM THE ROOT BALL ON ALL TREES. REMOVE ALL NYLON TIES, TWINE, ROPE AND BURLAP. REMOVE UNNECESSARY PACKING MATERIAL.
5. FORM SOIL INTO A 6" TALL WATERING RING (SAUCER) AROUND PLANTING AREA. THIS IS NOT NECESSARY IN IRRIGATED TURF AREAS. APPLY 4" DEPTH OF SPECIFIED MULCH OVER PLANTING AREA AND INSIDE SAUCERS. AWAY FROM TRUNK.
6. STAKING AND GUYING OF TREES IS OPTIONAL IN MOST PLANTING SITUATIONS. IN AREAS OF EXTREME WINDS, OR ON STEEP SLOPES, STAKING MAY BE REQUIRED TO STABILIZE TREES. STAKING AND GUYING MUST BE REMOVED WITHIN 1 YEAR OF PLANTING DATE.
7. TREE WRAP IS NOT TO BE USED ON ANY NEW PLANTINGS, EXCEPT IN LATE FALL PLANTING SITUATIONS, AND ONLY AFTER CONSULTATION WITH THE TOWN ARBORIST.
8. RESETTING OF IMPROPERLY PLANTED TREES WILL ONLY BE ALLOWED IF IT IS DETERMINED THAT DOING SO WILL IN NO WAY COMPROMISE THE ROOT BALL, AND SHALL ONLY BE DONE WITH APPROVAL OF THE TOWN ARBORIST.



TREE PLANTING

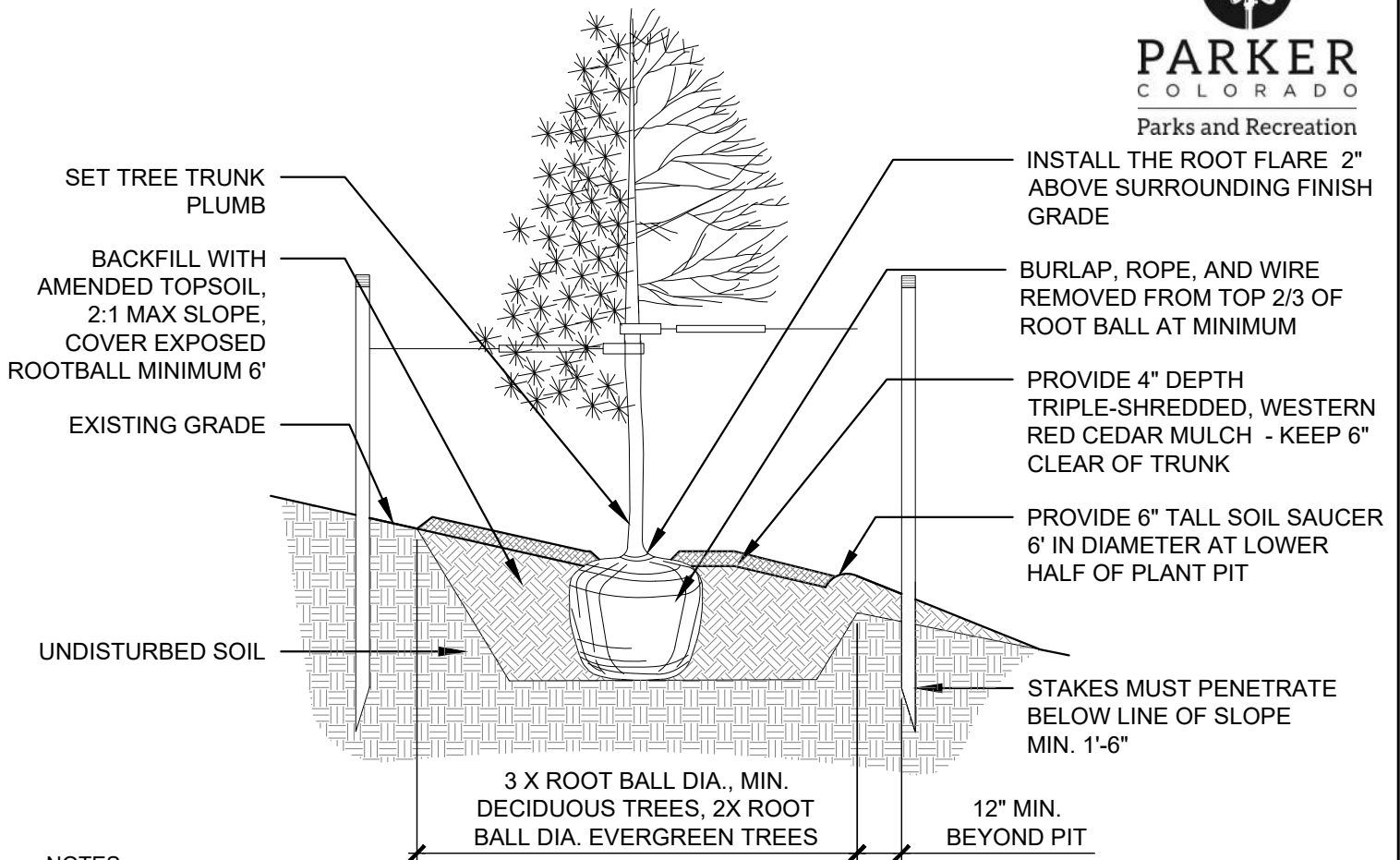
1/4"=1'-0"

TOWN OF PARKER STANDARD DETAILS



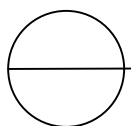
PARKER
COLORADO

Parks and Recreation



NOTES:

1. THIS INSTALLATION SHALL APPLY TO ALL TREE TYPES AND SIZES PLANTED ON SLOPES 4:1 OF GREATER.
2. EXCAVATE PLANTING HOLES WITH SLOPING SIDES, MAKE EXCAVATIONS AT LEAST THREE TIMES AS WIDE AS THE ROOT BALL DIAMETER AND NO DEEPER THAN THE DISTANCE FROM THE TOP OF THE ROOT BALL TO ALLOW FOR SETTLING. DO NOT DISTURB SOIL AT BOTTOM OF PLANTING HOLES, BUT DO SCORE THE SIDES OF THE PLANTING HOLE. THE PLANTING AREA SHALL BE LOOSENEED AND AERATED AT LEAST THREE TIMES THE DIAMETER OF THE ROOT BALL.
3. BACKFILL SHALL CONSIST OF APPROVED ON-SITE TOPSOIL BLENDED W/ COMPOST AMENDMENT. OF ON-SITE TOPSOILS ARE NOT APPROVED FOR USE, BACKFILL W/ IMPORTED TOPSOIL BLENDED WITH COMPOST AMENDMENT. REFER TO SPECIFICATION SECTION 329113 FOR ADDITIONAL INFORMATION.
4. TREES SHALL BE PLANTED WITH THE ROOT COLLAR/FLARE VISIBLE ABOVE GRADE AND TWO OR MORE STRUCTURAL ROOTS LOCATED WITHIN THE TOP 1" TO 2" OF THE ROOT BALL/FINISHED GRADE MEASURED 3" TO 4" FROM TRUNK. THIS INCLUDES TREES THAT ARE SET ON SLOPES (SEE SLOPE PLANTING DETAIL). TREES THAT DO NOT HAVE A VISIBLE ROOT COLLAR SHALL BE REJECTED. DO NOT COVER THE ROOT BALL WITH SOIL.
5. WHEN ROOT BALL WILL REMAIN INTACT, CUT OFF BOTTOM 1/4 OF WIRE BASKET BEFORE PLACING TREE IN HOLE. CUT OFF REMAINDER OF BASKET AFTER TREE IS SET IN HOLE, REMOVE BASKET COMPLETELY. AT A MINIMUM, THE TOP 2/3 OF THE BURLAP AND BASKET SHALL BE REMOVED FROM THE ROOT BALL ON ALL TREES. REMOVE ALL NYLON TIES, TWINE, ROPE AND BURLAP. REMOVE UNNECESSARY PACKING MATERIAL.
6. FORM SOIL INTO A 6" TALL WATERING RING (SAUCER) AROUND PLANTING AREA. THIS IS NOT NECESSARY IN IRRIGATED TURF AREAS. APPLY 4" DEPTH OF SPECIFIED MULCH OVER PLANTING AREA AND INSIDE SAUCERS. AWAY FROM TRUNK.
7. STAKING AND GUYING OF TREES IS OPTIONAL IN MOST PLANTING SITUATIONS. IN AREAS OF EXTREME WINDS, OR ON STEEP SLOPES, STAKING MAY BE REQUIRED TO STABILIZE TREES. STAKING AND GUYING MUST BE REMOVED WITHIN 1 YEAR OF PLANTING DATE.
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9. RESETTING OF IMPROPERLY PLANTED TREES WILL ONLY BE ALLOWED IF IT IS DETERMINED THAT DOING SO WILL IN NO WAY COMPROMISE THE ROOT BALL, AND SHALL ONLY BE DONE WITH APPROVAL OF THE TOWN ARBORIST.

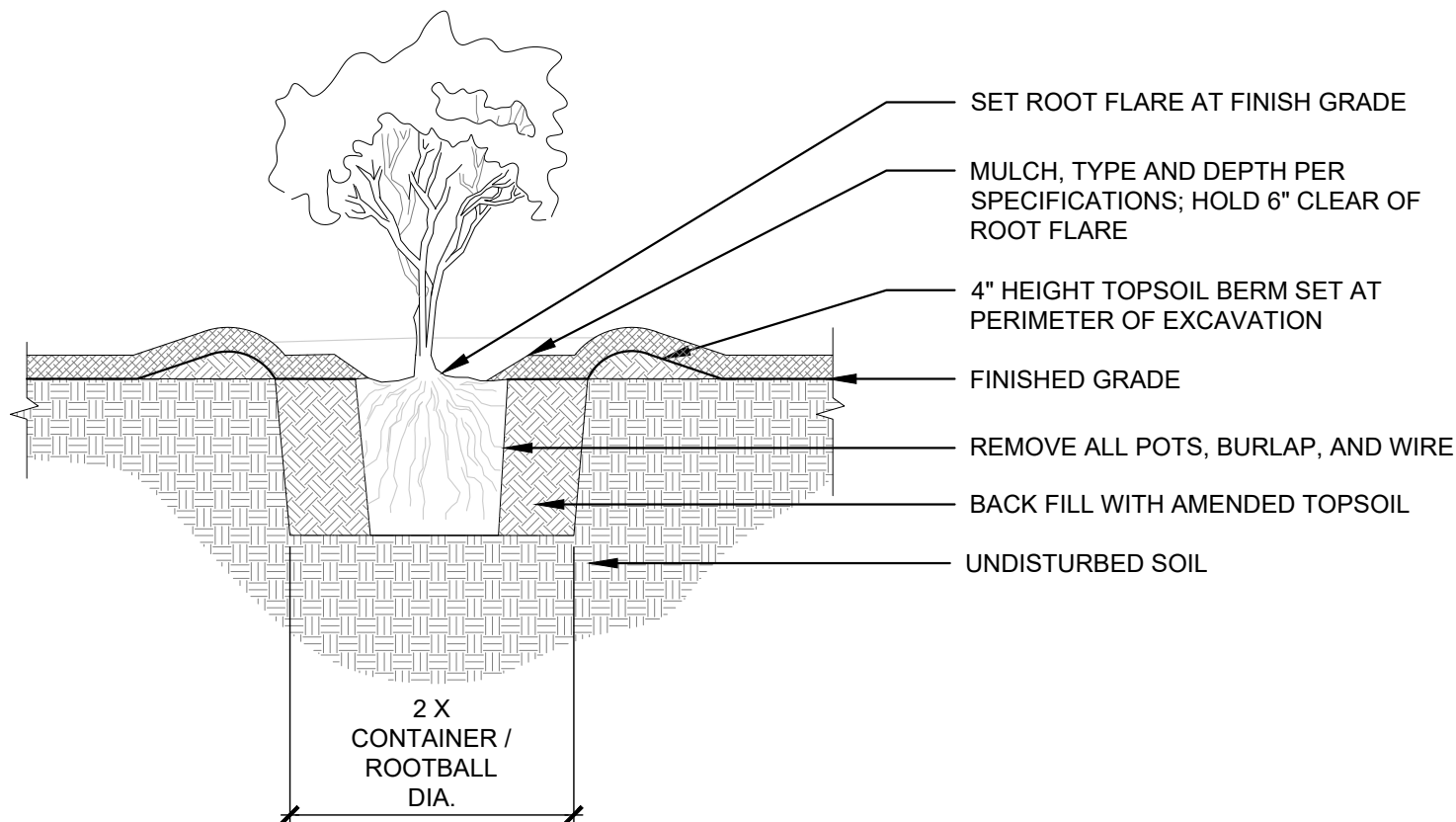


TREE PLANTING ON SLOPE

1/4" = 1'-0"

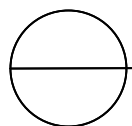
DATE: MAY 2023 | DETAIL SD-4

TOWN OF PARKER STANDARD DETAILS



NOTES:

1. PRUNE ALL DAMAGED, DISEASED OR WEAK LIMBS.
2. CLEANLY PRUNE ALL DAMAGED ROOT ENDS.
3. DO NOT ALLOW ROOTS TO DRY OUT DURING INSTALLATION PROCESS.
4. DEEP WATER AFTER PLANTING.



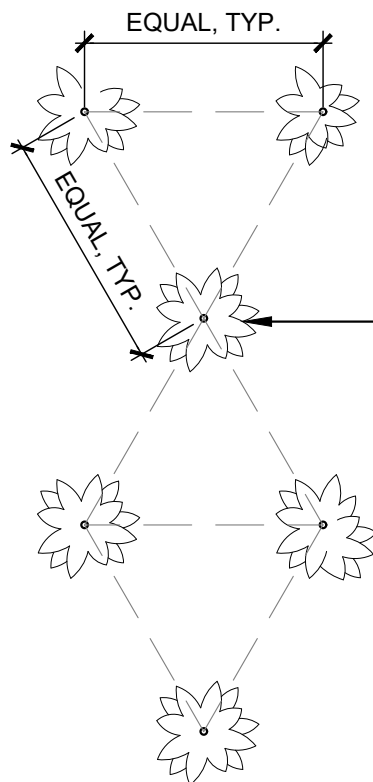
SHRUB PLANTING

1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

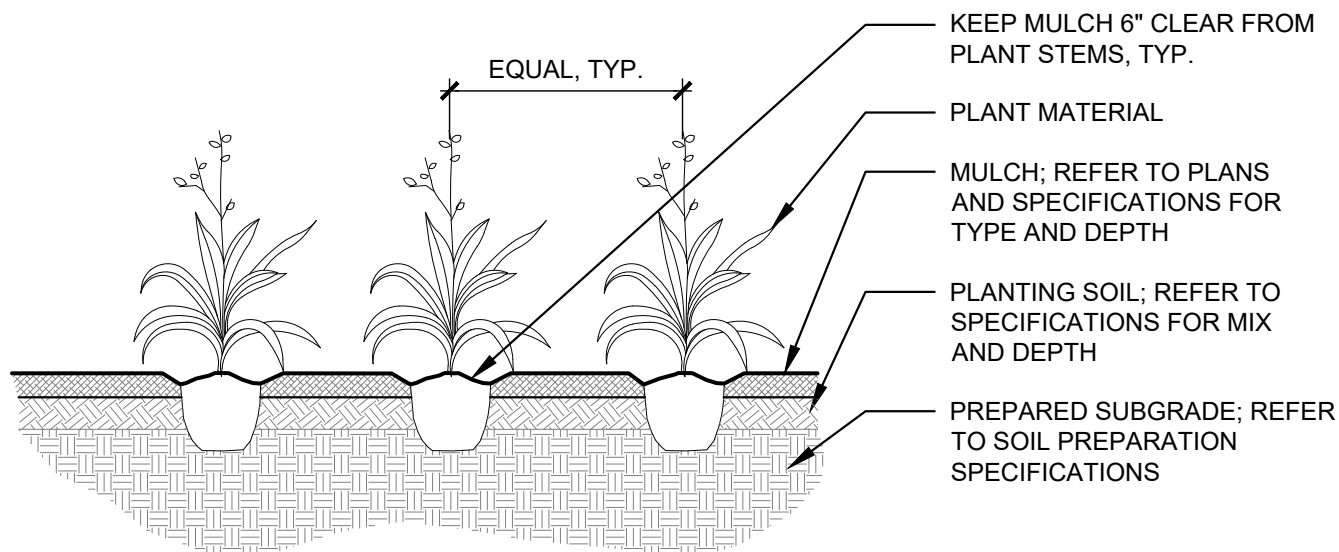


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STAGGERED PLANT LAYOUT, TYP.
SEE PLANT SCHEDULE
FOR SPACING

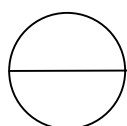
PLAN



SECTION

NOTES:

1. WHEN BACKFILLING AROUND PLANTS, DO NOT ALLOW AIR POCKETS TO FORM.
2. AFTER PLANTING, WATER THOROUGHLY.



PERENNIAL PLANTING

1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

CARSON INDUSTRIES JUMBO VALVE BOX MODEL 1324-15 WITH 15" DEEP BODY AND BOLT DOWN COVER (COLOR GREEN) FOR 1.5" AND 1" VALVES AND CARSON INDUSTRIES 1730-18 SUPER JUMBO VALVE BOX WITH 18" DEEP BODY AND BOLT DOWN COVER (COLOR GREEN) FOR 2" VALVES. ONE VALVE PER BOX CENTERED BOTH WAYS. SET TOP OF BOX AT COMPACTED THATCH GRADE OF ADJACENT TURF OR SURFACE OF MULCH.

BRAND (CONTROLLER LETTER AND VALVE STATION NUMBER) INTO VALVE BOX LID WITH 1" HIGH LETTERS MIN.

SPEARS P.V.C. UNION MODEL 898 F.I.P. DIM. TO MATCH ELECTRIC CONTROL VALVE

RAIN BIRD EFB-CP-PRS-D SERIES ELECTRIC CONTROL VALVE

SPEARS TRUE UNION BALL VALVE MODEL 1821-SR WITH STEEL REINFORCED THREADED ENDS F.I.P. DIM. TO MATCH ELECTRIC CONTROL VALVE.

ALL MANIFOLD FITTINGS TO MATCH FIP DIMENSION OF ELECTRIC CONTROL VALVE. ALL MANIFOLD COMPONENTS TO BE SCHEDULE 80 P.V.C. FITTINGS AND SCHEDULE 80 P.V.C. NIPPLES SUPPLIED AS SR STEEL REINFORCED

3/4" CRUSHED ROCK COMPACTION AND LEVELING BED COMPACTED TO 95% M.P.D. PER ASTM D-1557. EXTEND COMPACTION AND LEVELING BED 6" BEYOND PERIMETER OF VALVE BOX IN ALL DIRECTIONS.

SCHEDULE 80 P.V.C. RISER NIPPLE LENGTH AS REQ. FIP DIMENSION TO MATCH FIP DIMENSION OF ELECTRIC CONTROL VALVE.

NEW CL-200, SDR-21, P.V.C. IRRIGATION MAINLINE.

DO NOT MODIFY SIDE WALLS OF VALVE BOX. ANY MODIFIED VALVE BOX WILL BE REJECTED.

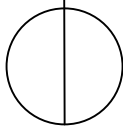
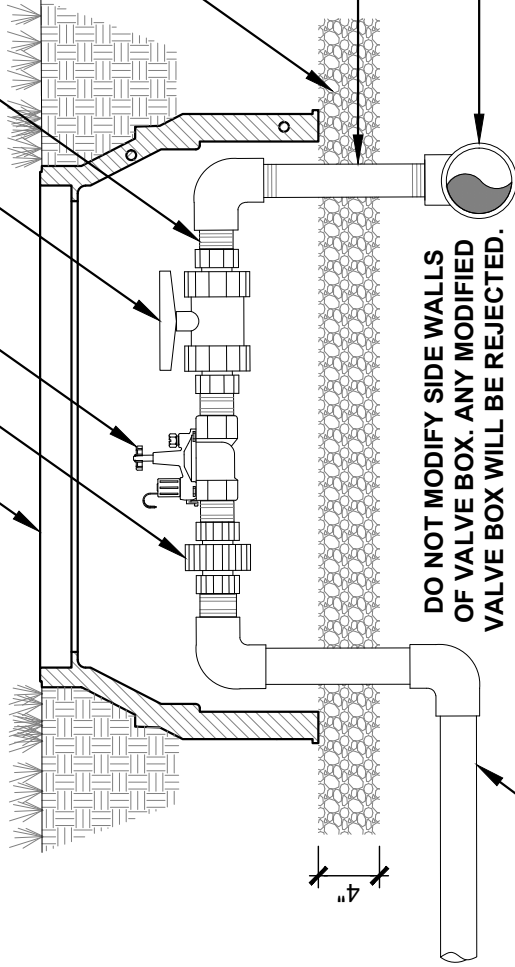
PROVIDE 2" CLEAR BETWEEN UNDERSIDE OF VALVE AND SURFACE OF COMPACTED GRAVEL.

PROVIDE 3" MINIMUM AND 6" MAXIMUM BETWEEN UNDERSIDE OF VALVE BOX LID AND TOP OF FLOW CONTROLS FULLY EXTENDED.

CL-200, SDR-21 P.V.C. SECONDARY PIPE.



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ELECTRIC CONTROL VALVE FOR SPRAY ZONES

NO SCALE

TOWN OF PARKER STANDARD DETAILS



CARSON INDUSTRIES 1730-18 SUPER JUMBO VALVE BOX WITH 18" DEEP BODY AND BOLT DOWN COVER (COLOR GREEN). ONE VALVE PER BOX CENTERED BOTH WAYS. SET TOP OF BOX AT COMPACTED THATCH GRADE OF ADJACENT TURF OR SURFACE OF MULCH.

BRAND (CONTROLLER LETTER AND VALVE STATION NUMBER) INTO VALVE BOX LID WITH 1" HIGH LETTERS MIN.

SPEARS P.V.C. UNION MODEL 898 F.I.P. DIM. TO MATCH ELECTRIC CONTROL VALVE

RAIN BIRD EFB-CP-PRS-D SERIES ELECTRIC CONTROL VALVE

SSPEARS TRUE UNION BALL VALVE MODEL 1821-SR WITH STEEL REINFORCED THREADED ENDS F.I.P. DIM. TO MATCH ELECTRIC CONTROL VALVE.

ALL MANIFOLD FITTINGS TO MATCH FIP DIMENSION OF ELECTRIC CONTROL VALVE. ALL MANIFOLD COMPONENTS TO BE SCHEDULE 80 P.V.C. FITTINGS AND SCHEDULE 80 P.V.C. FITTINGS AND SCHEDULE 80 P.V.C. NIPPLES SUPPLIED AS SR STEEL REINFORCED

RAIN BIRD 1" QKCHK-100 BASKET FILTER INSTALLED ON CONTROL VALVE MANIFOLD

3/4" CRUSHED ROCK COMPACTION AND LEVELING BED COMPACTED TO 95% M.P.D. PER ASTM D-1557. EXTEND COMPACTION AND LEVELING BED 6" BEYOND PERIMETER OF VALVE BOX IN ALL DIRECTIONS.

DO NOT MODIFY SIDE WALLS OF VALVE BOX. ANY MODIFIED VALVE BOX WILL BE REJECTED.

CL-200, SDR-21 P.V.C. SECONDARY PIPE.

PROVIDE 2" CLEAR BETWEEN UNDERSIDE OF VALVE AND SURFACE OF COMPACTED GRAVEL.

SCHEDULE 80 P.V.C. RISER NIPPLE LENGTH AS REQ. FIP DIMENSION TO MATCH FIP DIMENSION OF ELECTRIC CONTROL VALVE.

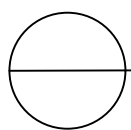
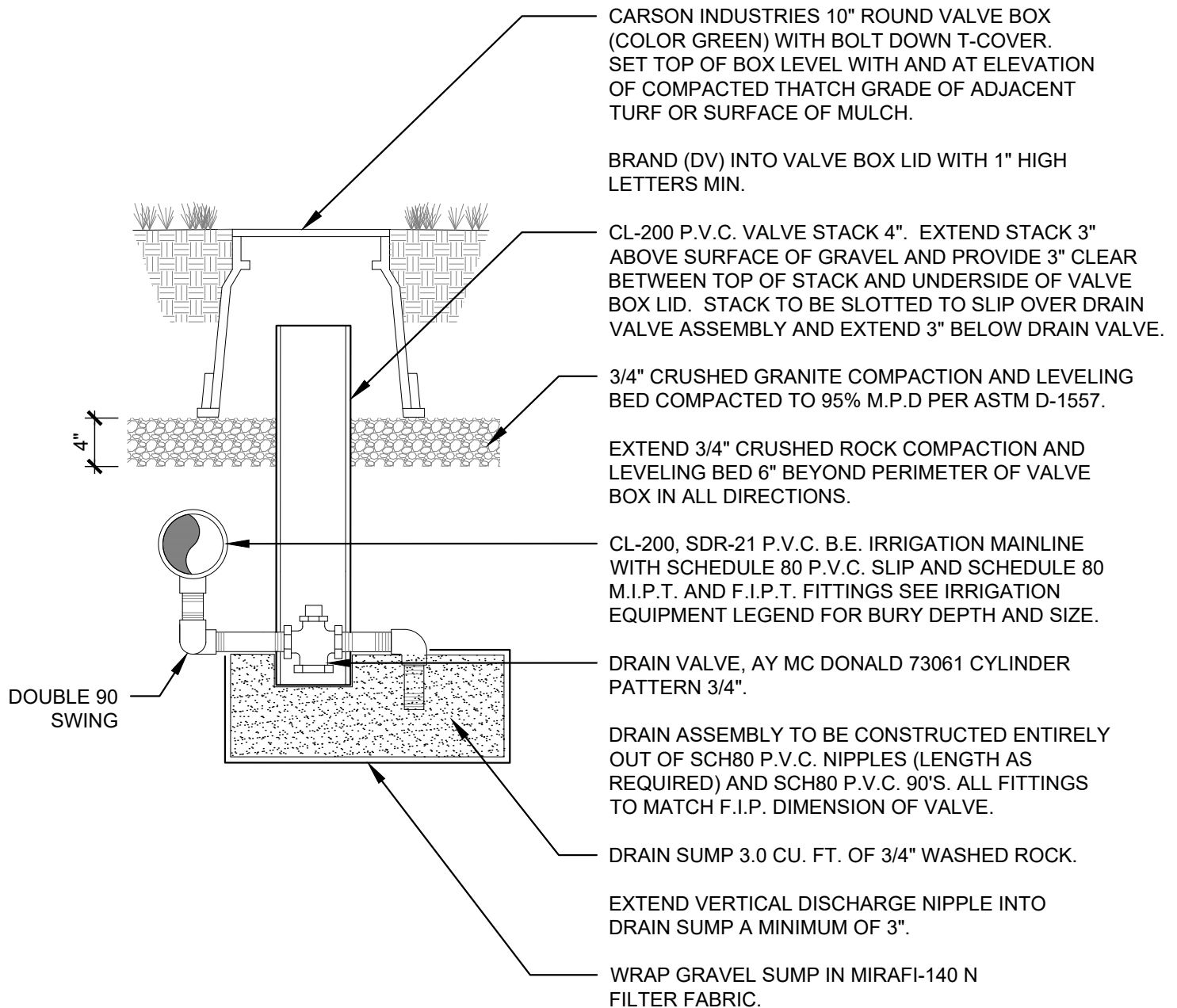
NEW CL-200, SDR-21, P.V.C. IRRIGATION MAINLINE.

PROVIDE 3" MINIMUM AND 6" MAXIMUM BETWEEN UNDERSIDE OF VALVE BOX LID AND TOP OF FLOW CONTROLS FULLY EXTENDED.

ELECTRIC CONTROL VALVE FOR DRIPPER LINE ZONES

NO SCALE

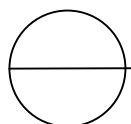
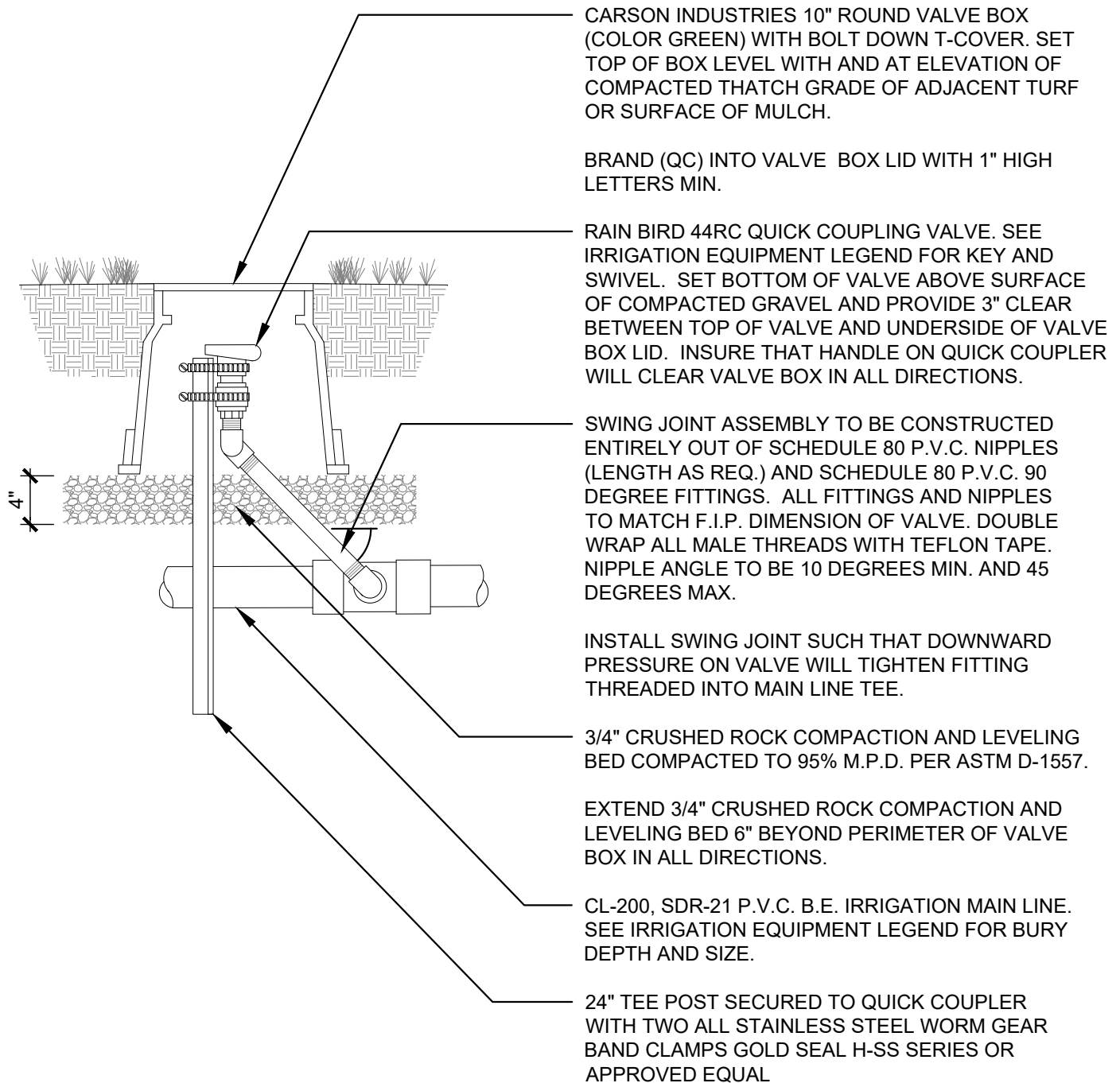
TOWN OF PARKER STANDARD DETAILS



MANUAL DRAIN VALVE

NO SCALE

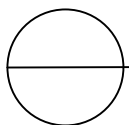
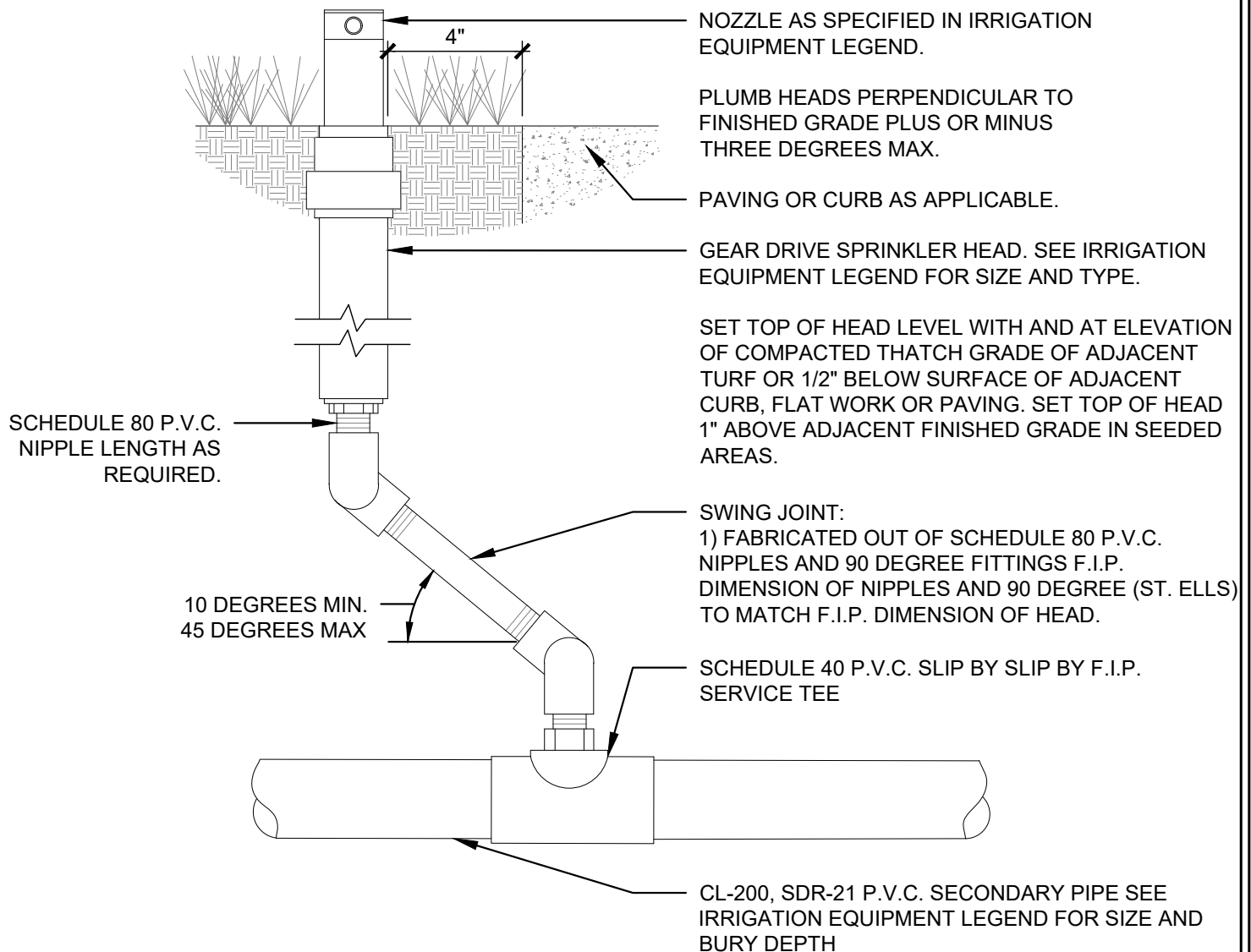
TOWN OF PARKER STANDARD DETAILS



QUICK COUPLER VALVE

NO SCALE

TOWN OF PARKER STANDARD DETAILS



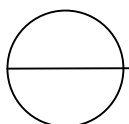
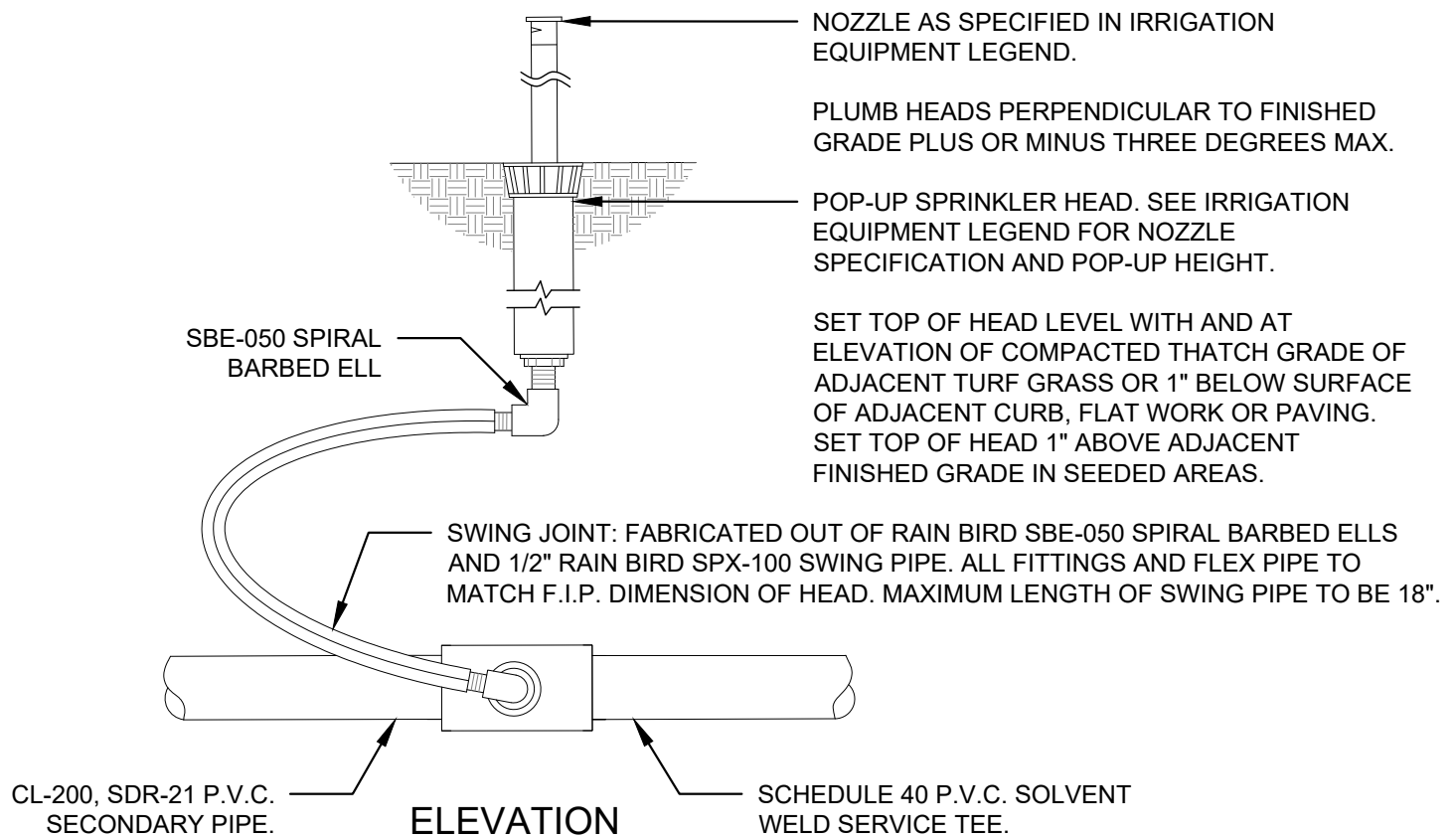
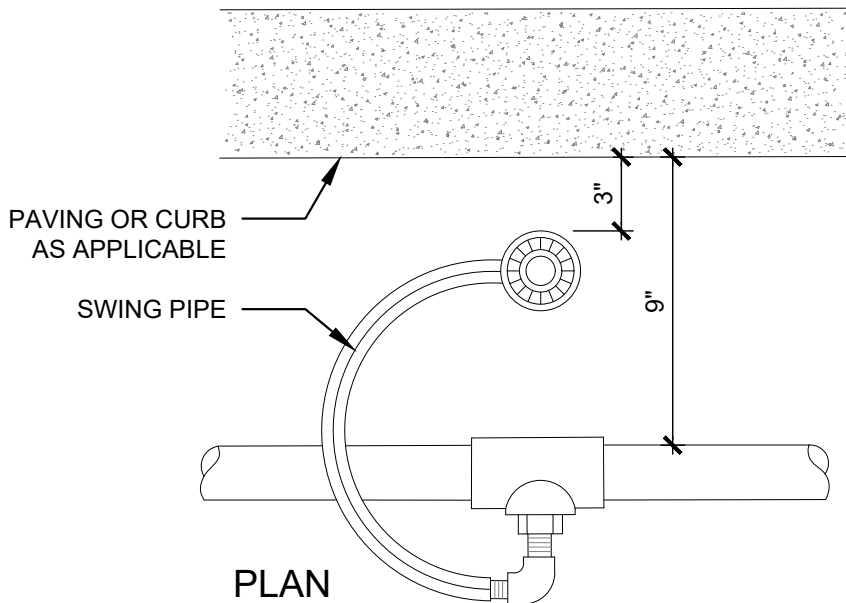
GEAR DRIVE SPRINKLER HEAD

NO SCALE

TOWN OF PARKER STANDARD DETAILS



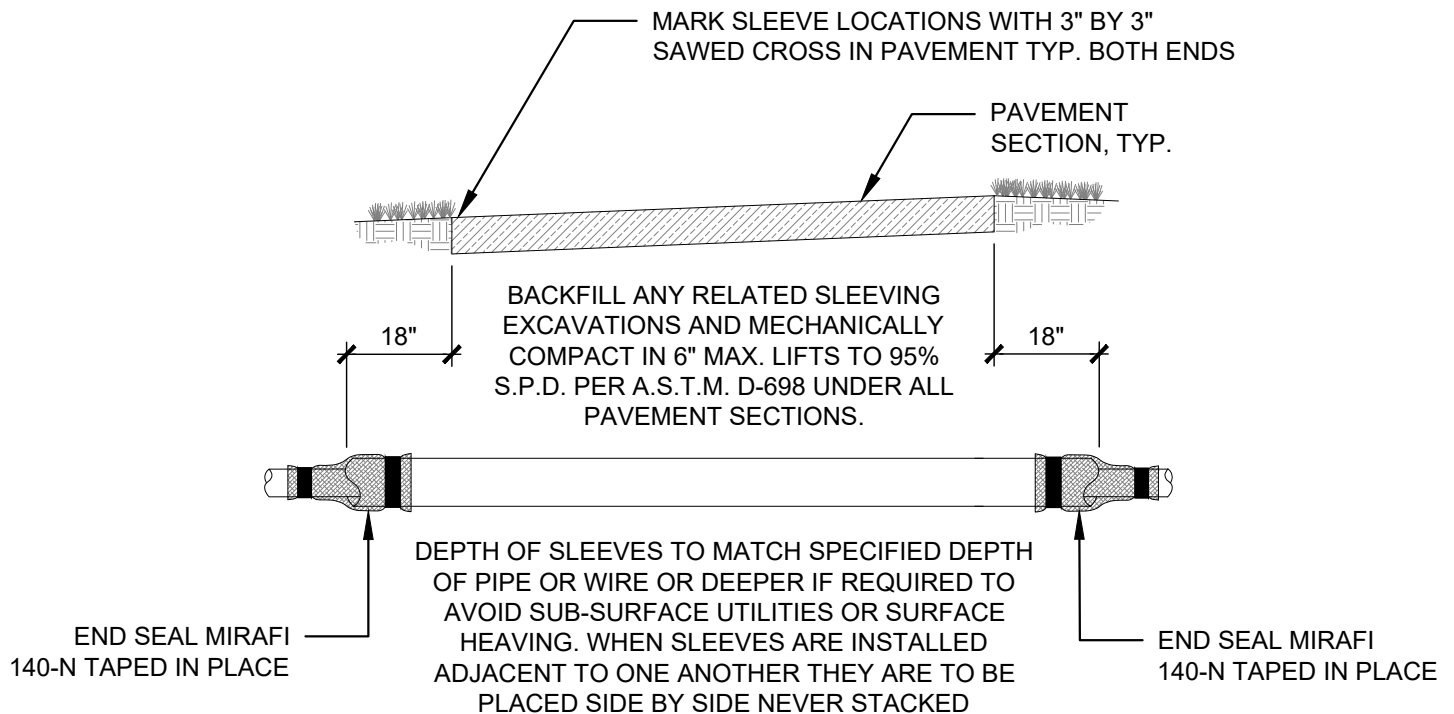
PARKER
COLORADO
Parks and Recreation



POP-UP SPRINKLER HEAD

NO SCALE

TOWN OF PARKER STANDARD DETAILS

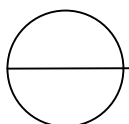


SLEEVING SHALL BE S.I.D.R.-11.5 H.D.P.E. INSTALLED BY DIRECTIONAL BORING UNDER EXISTING ASPHALT OR CONCRETE PAVEMENT IF REQUIRED AND CL-200 P.V.C. INSTALLED BY OPEN TRENCHING UNDER PROPOSED ASPHALT OR CONCRETE PAVEMENT. MAINLINE SLEEVES ARE 4", WIRE SLEEVES ARE 4" AND SECONDARY PIPE SLEEVES ARE 4".

SLEEVING WILL BE MEASURED FROM THE POINT WHERE THE MAINLINE PIPE, SECONDARY PIPE OR WIRE ENTER THE SLEEVE (AT THE SPECIFIED DEPTH) TO THE POINT WHERE THE MAINLINE PIPE, SECONDARY PIPE OR WIRE EXIT THE SLEEVE (AT THE SPECIFIED DEPTH). ANY ADDITIONAL PIPE OR BORING REQUIRED TO ACHIEVE THE SPECIFIED PIPE AND OR WIRE DEPTH AND ANY ADDITIONAL PIPE OR BORING REQUIRED TO RETURN TO THE SURFACE INCLUDING ANY AND ALL PULL PIPE WILL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONTRACT UNIT PRICE FOR SLEEVING AND WILL NOT BE PAID FOR SEPARATELY.

ALL SURFACE RESTORATION (REQUIRED BY BORING AND SLEEVING OPERATIONS) INCLUDING BACKFILL, COMPACTION, FINE GRADE AND SOD PATCH OR NATIVE SEEDING WILL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONTRACT UNIT PRICE FOR SLEEVING AND WILL NOT BE PAID FOR SEPARATELY.

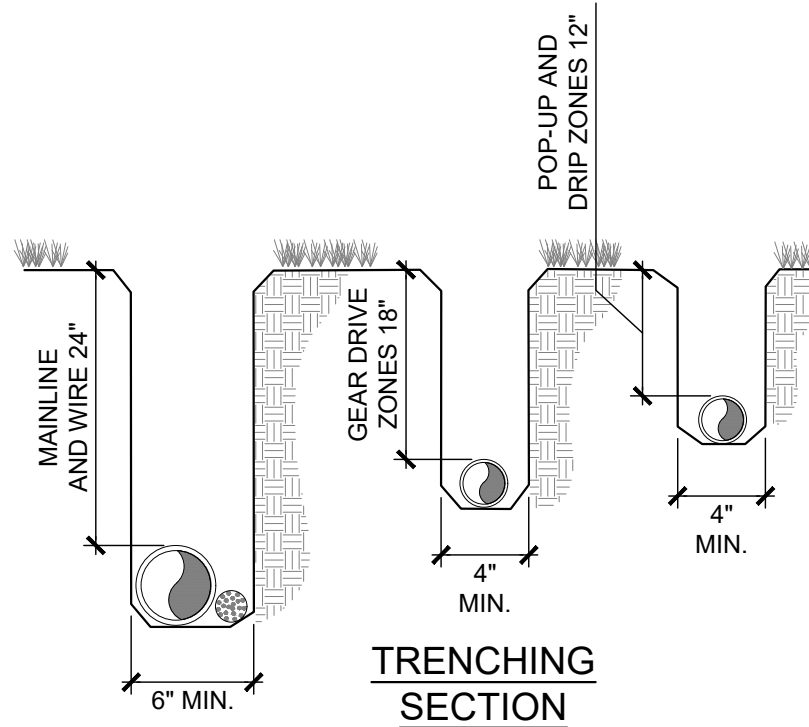
ADJUST SLEEVING DEPTH AS REQUIRED TO AVOID SUBSURFACE UTILITIES AND OR TO AVOID SURFACE HEAVING. ANY ADDITIONAL PIPE OR BORING REQUIRED TO CARRY SLEEVING DEEPER WILL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONTRACT UNIT PRICE FOR SLEEVING AND WILL NOT BE PAID FOR SEPARATELY.



IRRIGATION SLEEVING

NO SCALE

TOWN OF PARKER STANDARD DETAILS



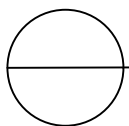
TRENCH DEPTH ARE MINIMUMS WITH A MAXIMUM OVER EXCAVATION OF 2". ALL TRENCHES ARE TO BE CLEANED WITH "CRUMBER" ATTACHMENT OR BY HAND PRIOR TO INSTALLING PIPE PROVIDING A SMOOTH AND UNIFORM BEDDING SURFACE. REMOVE ANY EXPOSED ROCK OR DEBRIS FROM TRENCH BOTTOM OR WALLS PRIOR TO INSTALLING PIPE AND OR WIRE.

ALL MAINLINE TRENCHES AND RELATED EXCAVATIONS SHALL BE MECHANICALLY COMPACTED IN 8" LIFTS MAXIMUM. TO 90% S.P.D. PER ASTM D-698 IN ALL LANDSCAPE AREAS.

SECONDARY PIPING CAN BE MECHANICALLY OR HYDRAULICALLY COMPACTED TO MATCH THE DENSITY OF ADJACENT UNDISTURBED SOIL.

BACKFILL, COMPACTION, FINE GRADE AND SURFACE RESTORATION INCLUDING FINE GRADE AND CLEAN UP MUST BE ONGOING THROUGHOUT CONSTRUCTION. NO MORE THAN THREE SECONDARY ZONES AND 200 LIN. FT. OF MAINLINE TRENCH CAN BE OPENED UP AT ONE TIME. NO ADDITIONAL SECONDARY OR MAINLINE TRENCHING WILL BE AUTHORIZED UNTIL THE BACKFILL, COMPACTION AND RESTORATION OF CURRENTLY OPEN TRENCHES AND RELATED EXCAVATIONS IS IN PROGRESS.

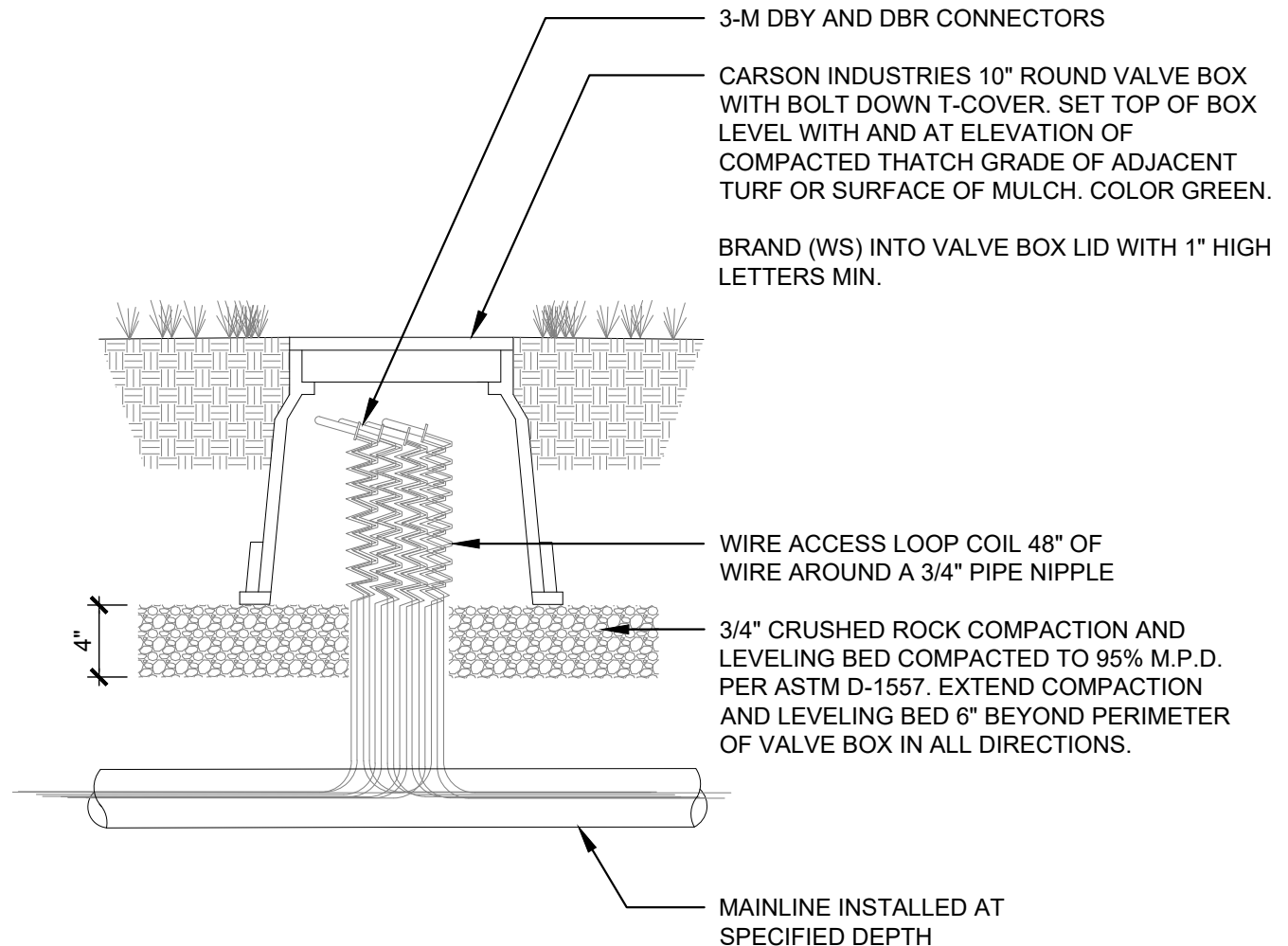
ALL OPEN EXCAVATIONS MUST BE PROTECTED IN CONFORMANCE WITH O.S.H.A. REGULATIONS.



IRRIGATION TRENCHING

NO SCALE

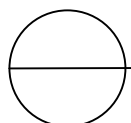
TOWN OF PARKER STANDARD DETAILS



LOOP A MIN. OF 48" OF WIRE AT ALL SPLICE CONNECTIONS AS REQUIRED TO PULL THE WIRE SPLICE DBY KIT 24" ABOVE GRADE FOR ACCESS

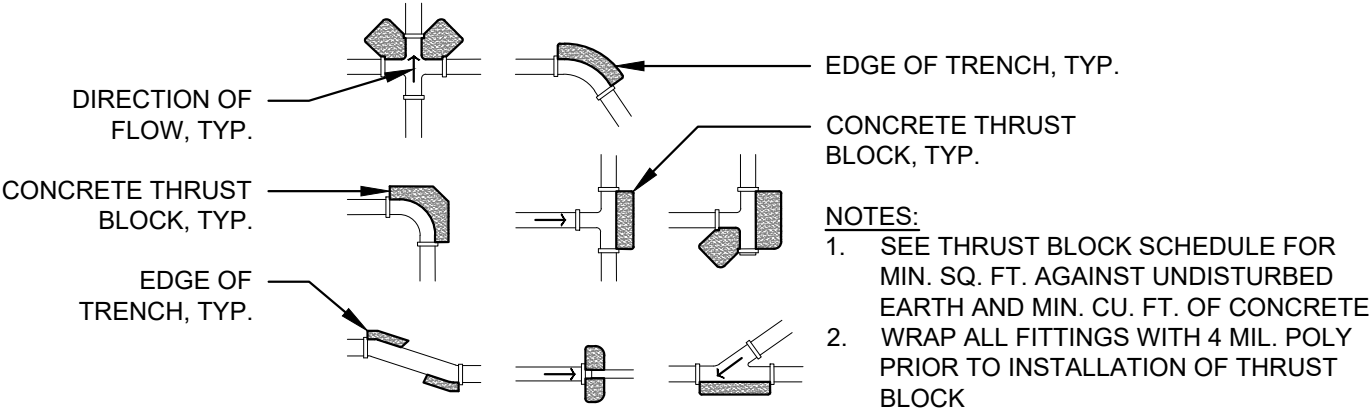
CAP ALL EXTRA/SPARE WIRE TERMINATIONS WITH DBY SPLICE KITS

USE CARSON INDUSTRIES 1419 STANDARD RECTANGULAR VALVE BOX FOR SPLICES OF MORE THAN 20 WIRES



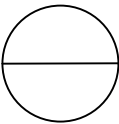
WIRE SPLICE ACCESS ROUTE

NO SCALE



**THRUST BLOCK
CONFIGURATION**

MAIN LINE THRUST BLOCK SURFACE AREA AGAINST UNDISTURBED EARTH IN SQ. FT. AND TOTAL CONCRETE VOLUME IN CU. FT. Assumes an estimated soil bearing strength of 1,000 lbs/sq. ft.					
FITTING SIZE	90 DEGREE	45 DEGREE	22.5 DEGREE	11.25 DEGREE	TEE OR CAP
2.5" & SMALLER	2 SQ. FT. 4 CU. FT.	1 SQ. FT. 2 CU. FT.	1 SQ. FT. 2 CU. FT.	1 SQ. FT. 2 CU. FT.	2 SQ. FT. 4 CU. FT.
3" & LARGER	4 SQ. FT. 8 CU. FT.	2 SQ. FT. 4 CU. FT.	2 SQ. FT. 4 CU. FT.	2 SQ. FT. 4 CU. FT.	4 SQ. FT. 8 CU. FT.
INSTALLATION NOTES: CONCRETE TO BE 3,500 P.S.I. MIN. INSTALL BOND BREAKER AROUND PIPE AND FITTING PRIOR TO POUR. DO NOT POUR CONCRETE ON TOP OF PIPE.					



MAINLINE THRUST BLOCKING

NO SCALE

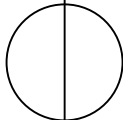
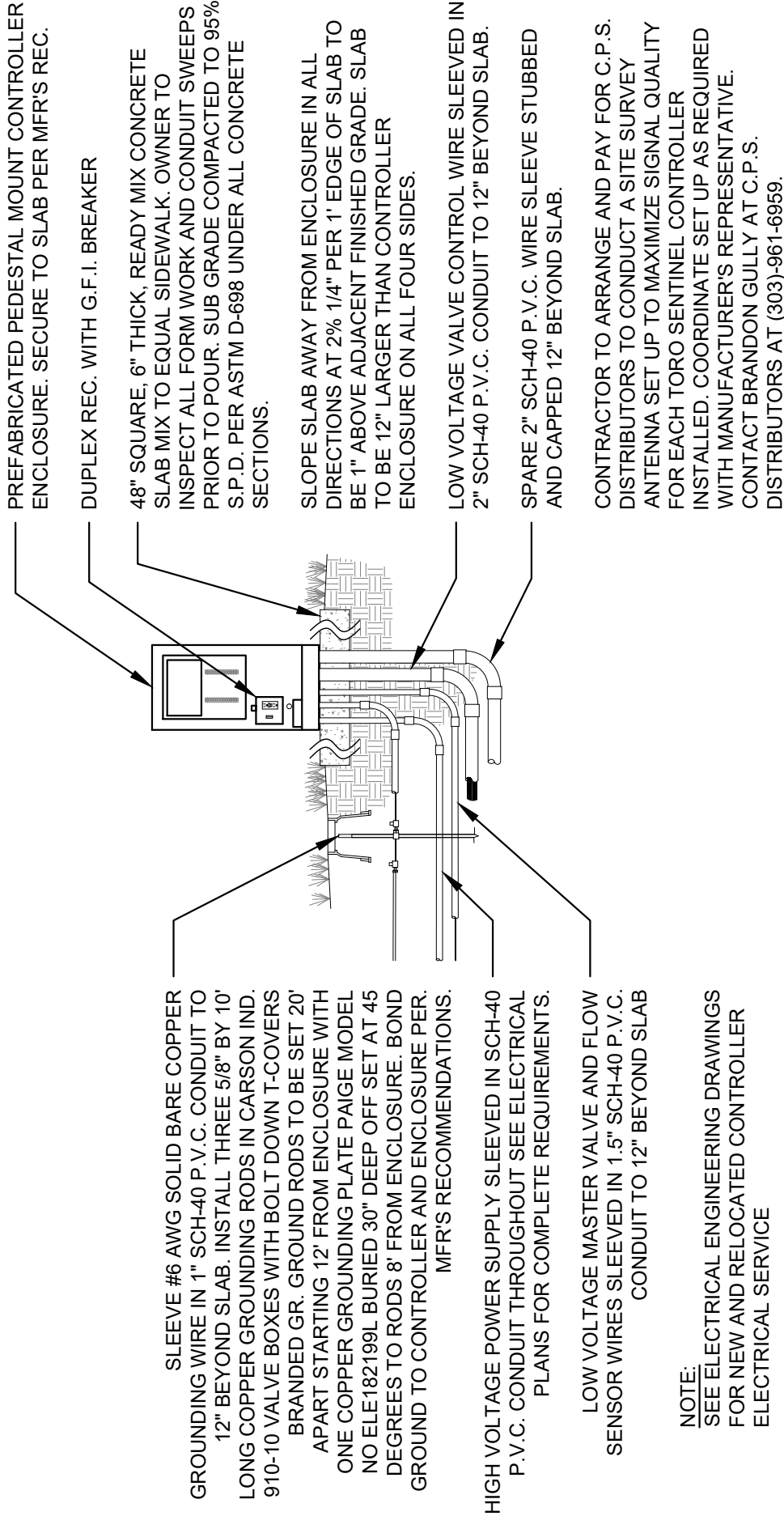
TOWN OF PARKER STANDARD DETAILS



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CONTROLLER SPECIFICATION SUMMARY:

CONTROLLER (C1) - - - - - CONTRACTOR TO SUPPLY AND INSTALL ONE NEW TORO SENTINEL SERIES
CONTROLLER MODEL NO. (SEE DRAWINGS)



CONTROLLER AND ENCLOSURE ELEVATION

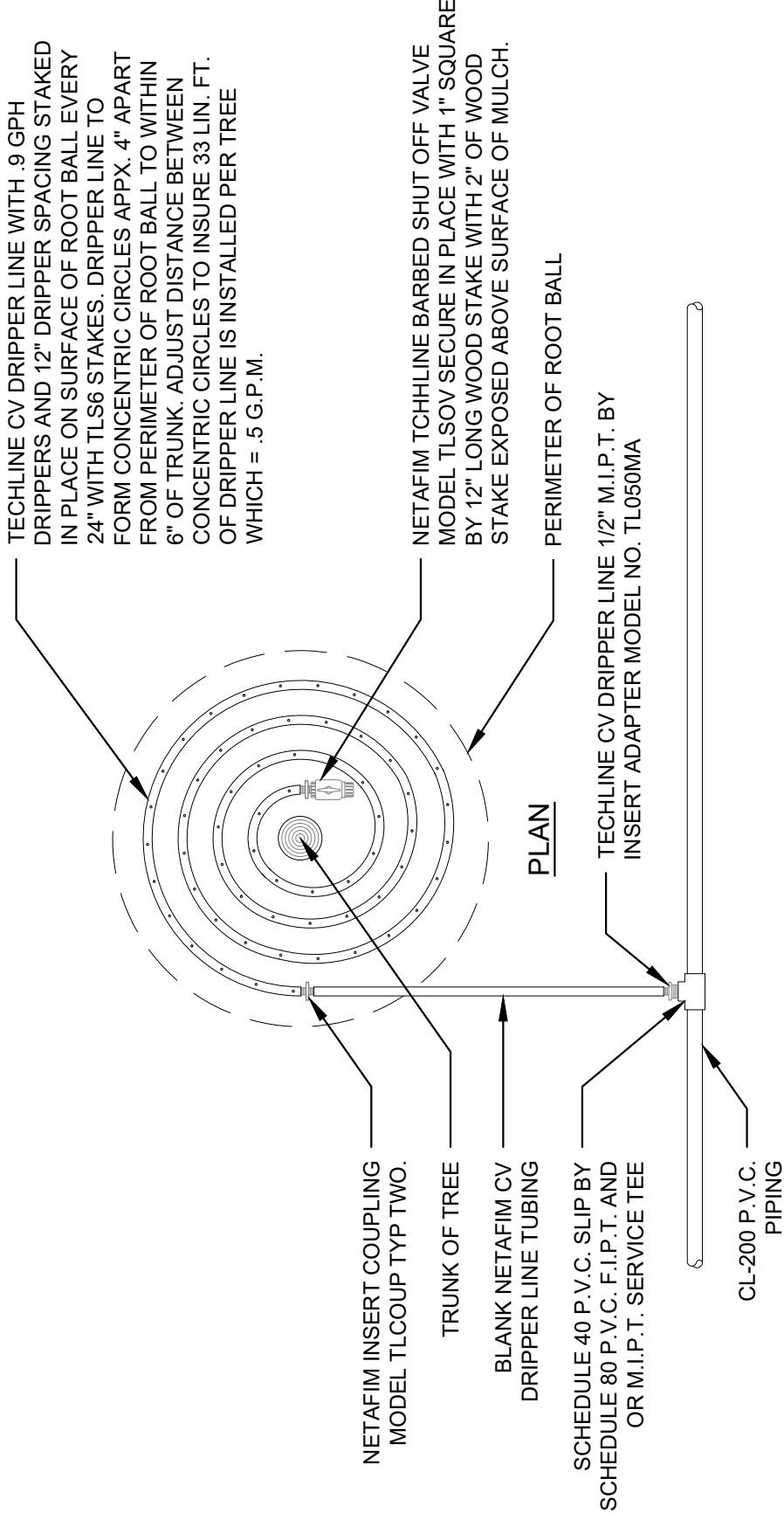
NO SCALE

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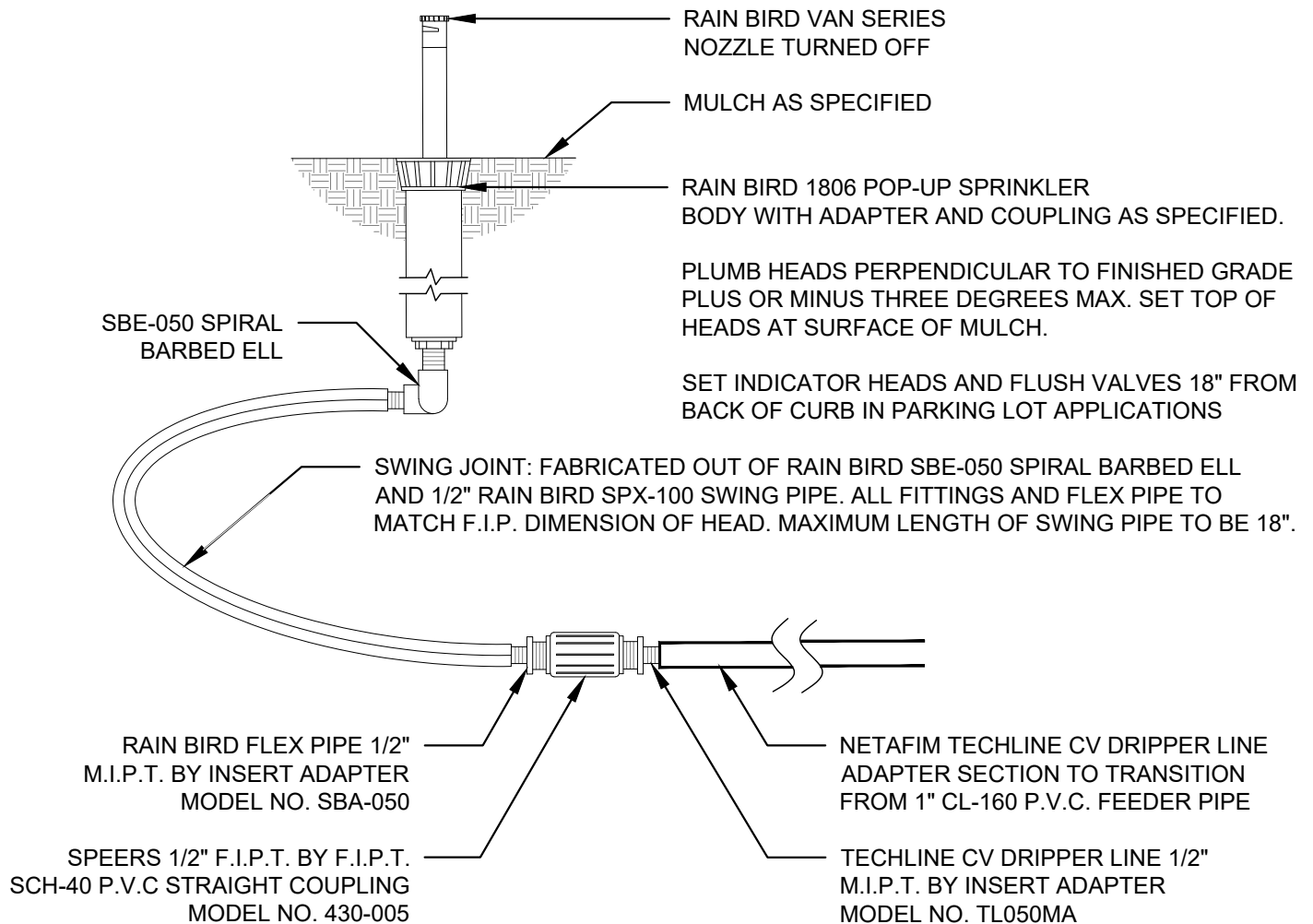
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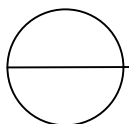
CV DRIPPER LINE WITH FLUSH VALVE INSTALLATION FOR TREE IRRIGATION IN NATIVE AREAS

NO SCALE

TOWN OF PARKER STANDARD DETAILS



INDICATOR HEAD FOR NETAFIM CV DRIPPER LINE PIPE LOOPS



NO SCALE

TOWN OF PARKER STANDARD DETAILS



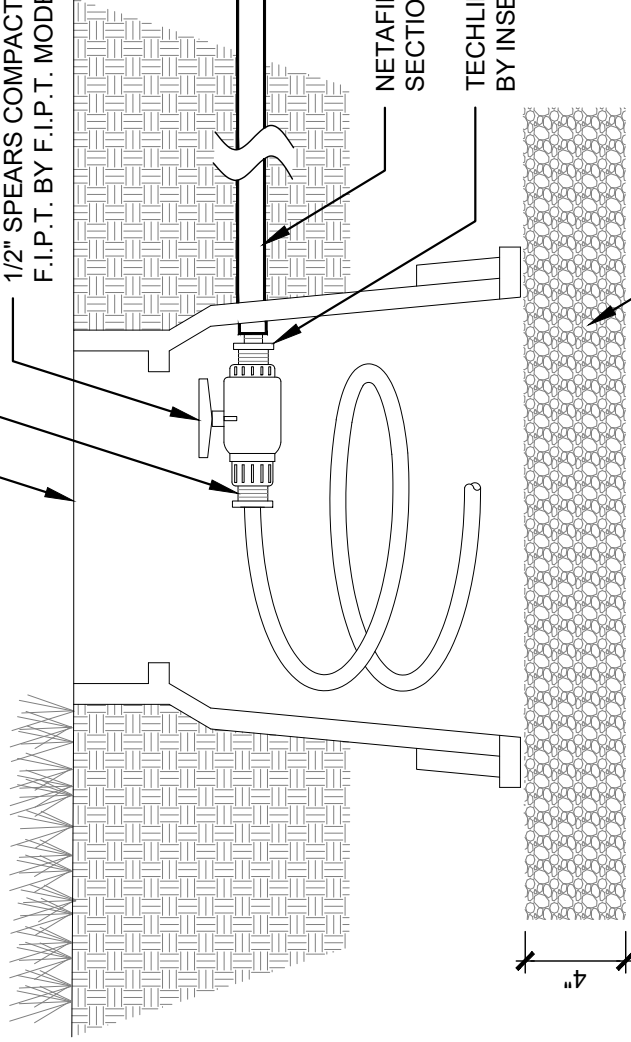
NOTES:

1. SET FLUSH VALVES AND INDICATOR HEADS 18" FROM BACK OF CURB IN PARKING LOT APPLICATIONS
2. BRAND (FV) INTO VALVE BOX LID WITH 1" HIGH LETTERS MIN.
3. INSTALL INDICATOR HEAD PER DETAIL B/IR1.8 18" UPSTREAM OF ALL FLUSH VALVES LOCATED AT THE END OF EACH DRIPPER TUBING FEEDER LOOP. INDICATOR HEADS ARE NOT REQUIRED AT EACH TREE RING.

CARSON INDUSTRIES 10" ROUND VALVE BOX WITH BOLT DOWN T-COVER. SET TOP OF BOX LEVEL WITH AND AT ELEVATION OF COMPACTED MULCH, TURF OR 1" ABOVE FINISHED GRADE IN NATIVE GRASS AREAS. COLOR GREEN.

RAIN BIRD 1/2" M.I.P.T. BY INSERT ADAPTER MODEL NO. SBA-050 AND 16" OF SPX-100 FLEX PIPE

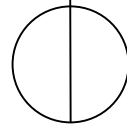
1/2" SPEARS COMPACT BALL VALVE (REGULAR STYLE) F.I.P.T. BY F.I.P.T. MODEL 2121-005



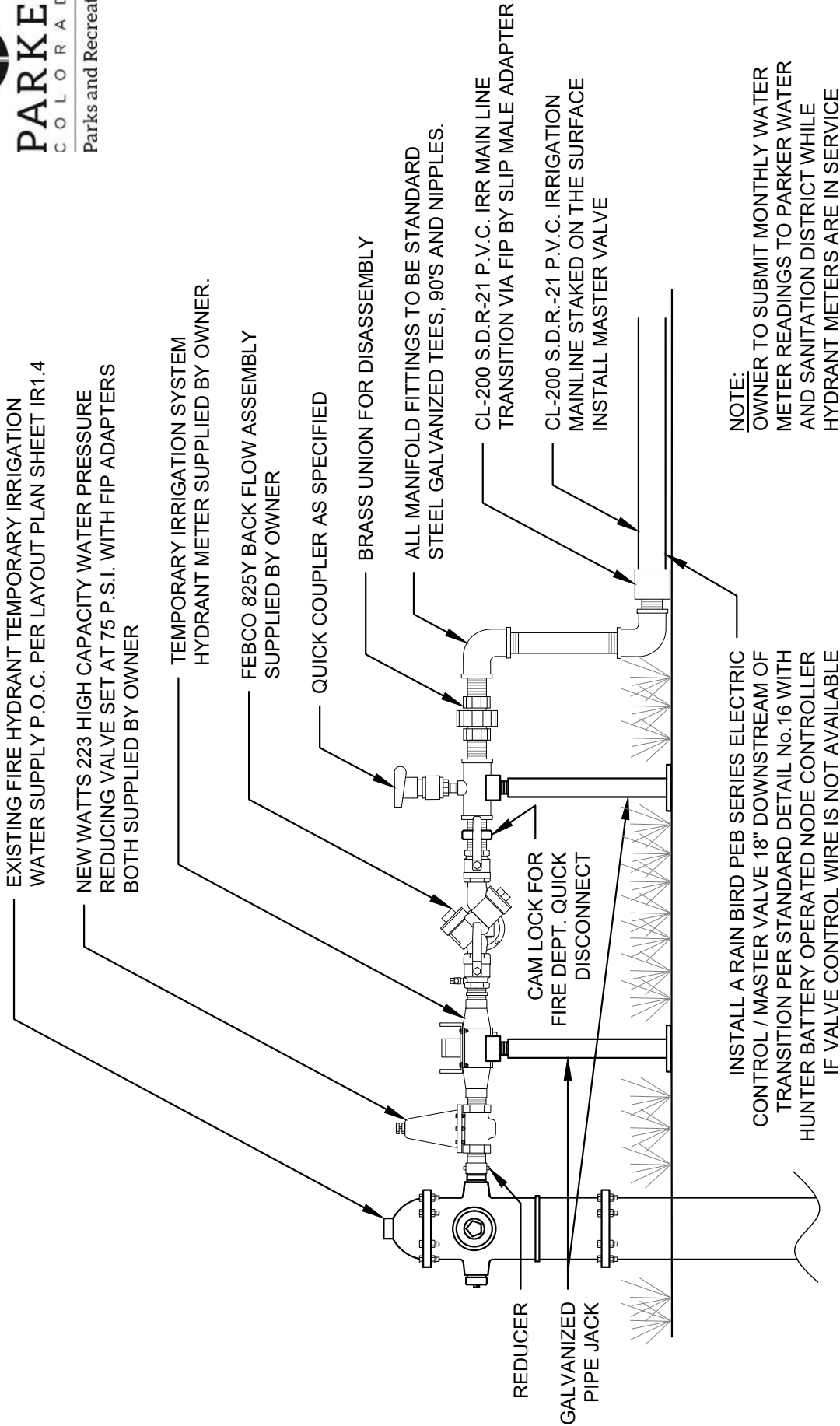
3/4" CRUSHED ROCK COMPACTED TO 95% M.P.D. PER ASTM D-1557. EXTEND COMPACTION AND LEVELING BED 6" BEYOND PERIMETER OF VALVE BOX IN ALL DIRECTIONS.

CV DRIPPER LINE FLUSH VALVE INSTALLATION AT END OF EACH DRIPPER PIPE LOOP

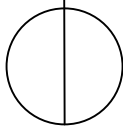
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TOWN OF PARKER STANDARD DETAILS



TEMPORARY IRRIGATION SYSTEM POINT OF CONNECTION AND BACK FLOW ASSEMBLY SECTION

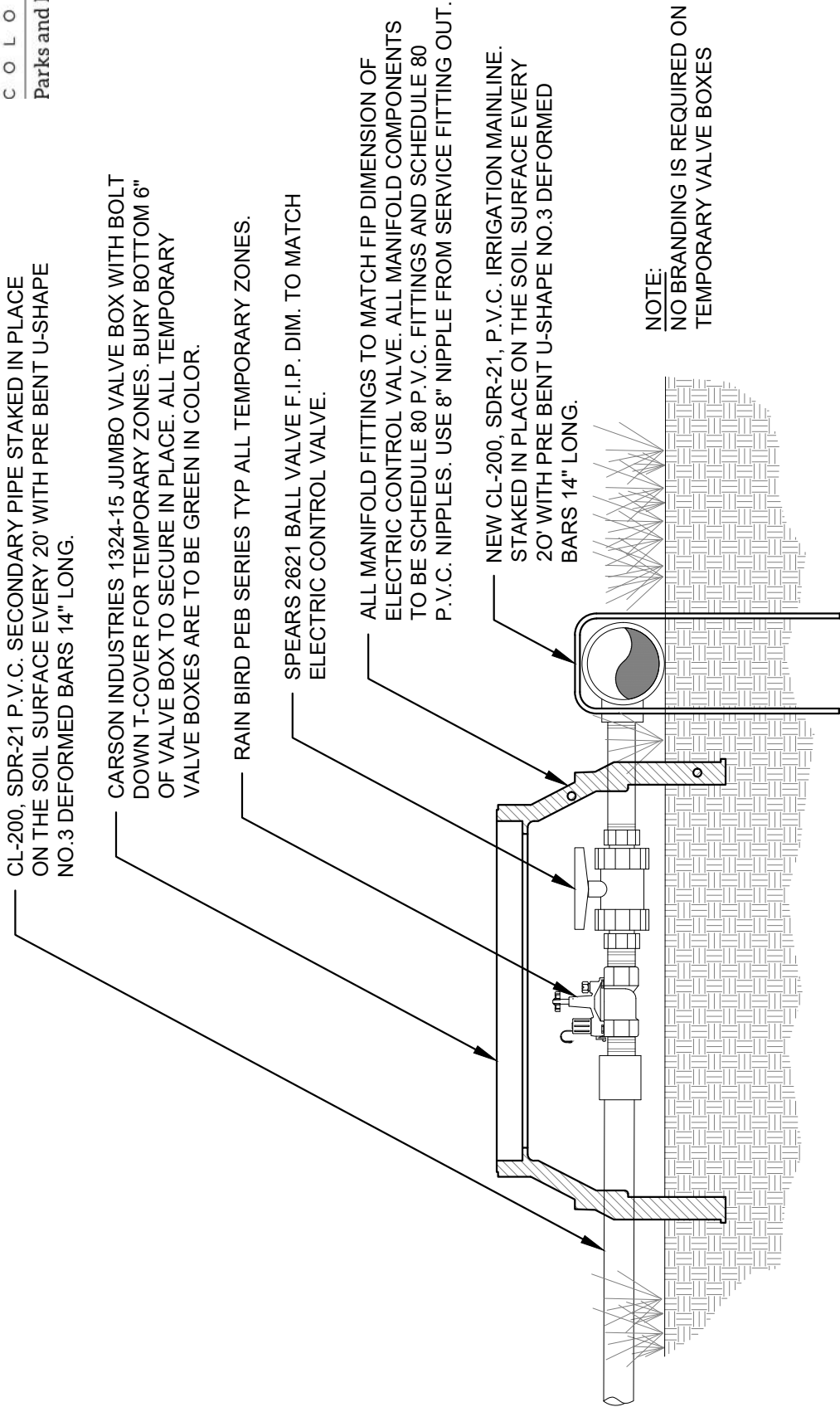


NO SCALE

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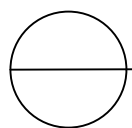
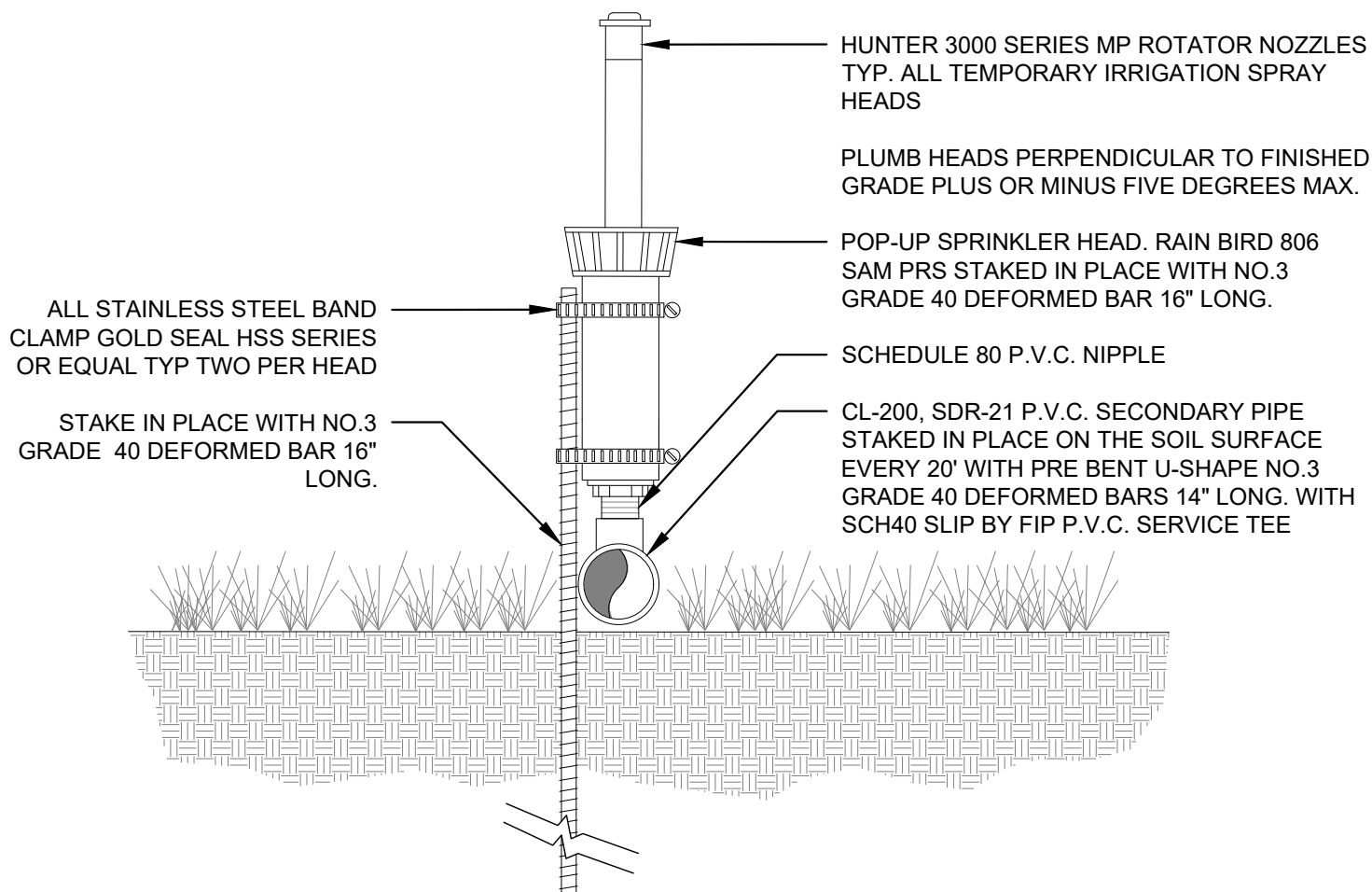
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TEMPORARY ELECTRIC CONTROL VALVE

NO SCALE

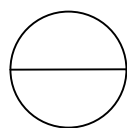
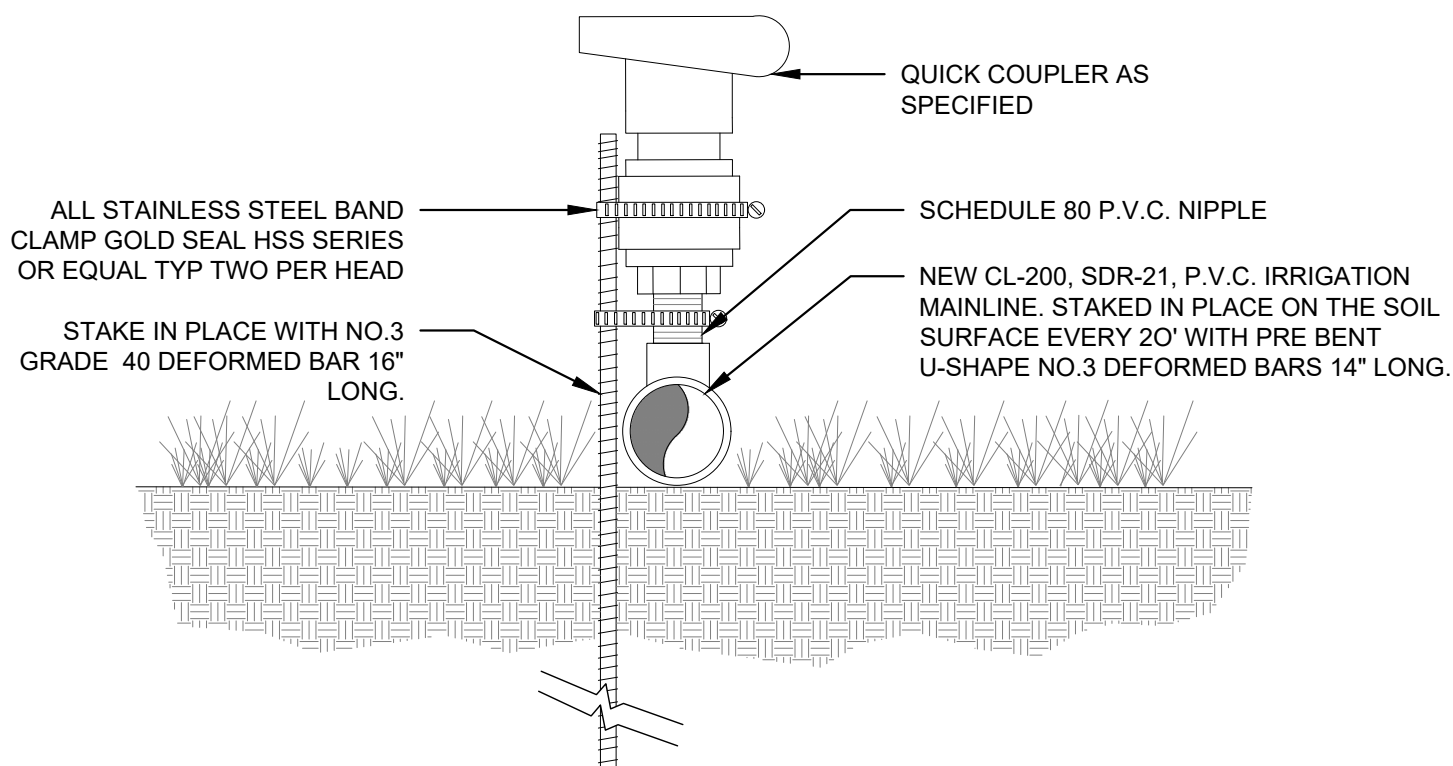
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TEMPORARY POP-UP HEAD

NO SCALE

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TEMPORARY QUICK COUPLER VALVE

NO SCALE

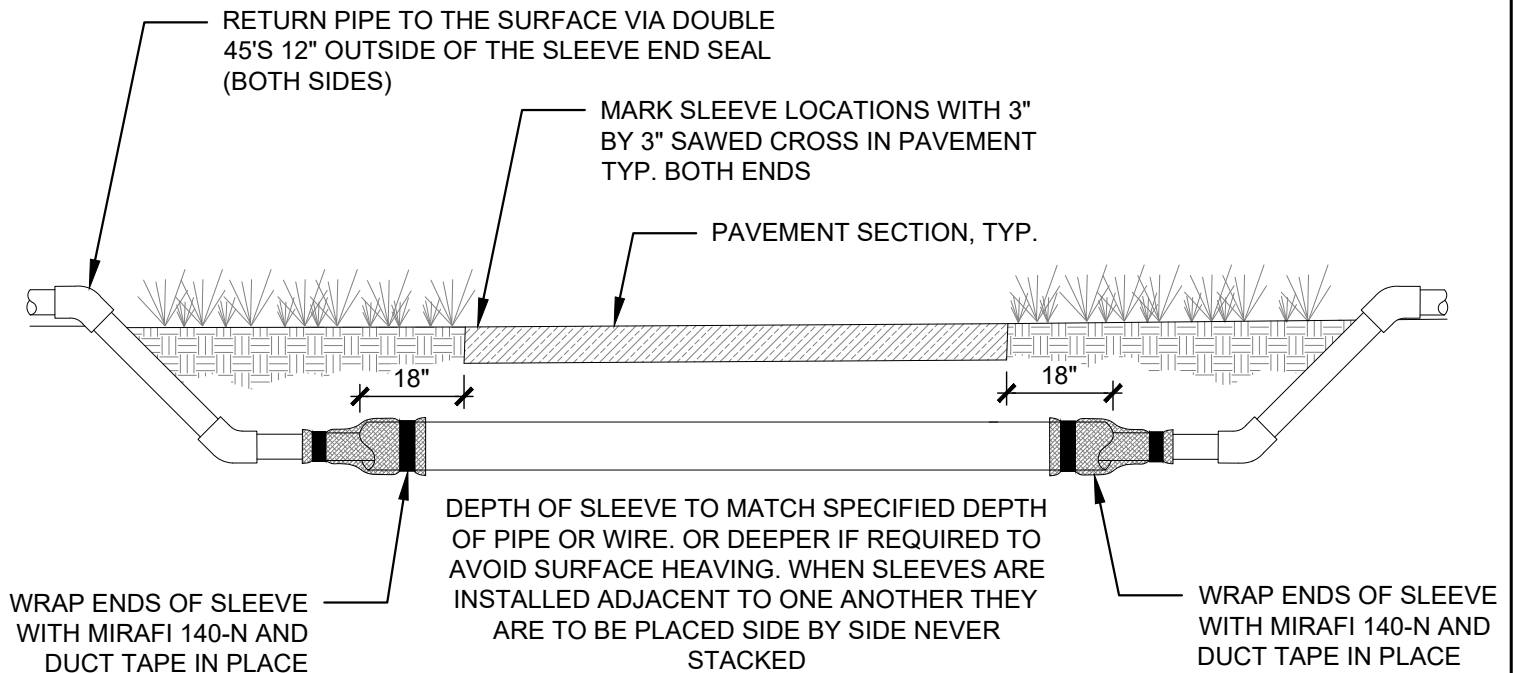
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TEMPORARY SLEEVING IS TO BE ABANDONED IN PLACE
AFTER THE TEMPORARY IRRIGATION SYSTEM IS
REMOVED

BACKFILL ANY RELATED SLEEVING EXCAVATIONS AND
MECHANICALLY COMPACT IN 6" MAX. LIFTS TO 95% S.P.D.
PER A.S.T.M. D-698 UNDER ALL PAVEMENT SECTIONS.



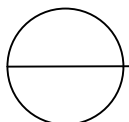
SLEEVING SHALL BE S.I.D.R.-11.5 H.D.P.E. INSTALLED BY DIRECTIONAL BORING UNDER EXISTING ASPHALT OR CONCRETE PAVEMENT IF REQUIRED AND CL-200 P.V.C. INSTALLED BY OPEN TRENCHING UNDER PROPOSED ASPHALT OR CONCRETE PAVEMENT. MAINLINE SLEEVES ARE TWO PIPE DIAMETERS LARGER THAN THE PIPE BEING SLEEVED, WIRE SLEEVES ARE 4" AND SECONDARY PIPE SLEEVES ARE 4".

SLEEVING WILL BE MEASURED FROM THE POINT WHERE THE MAINLINE PIPE, SECONDARY PIPE OR WIRE ENTER THE SLEEVE (AT THE SPECIFIED DEPTH) TO THE POINT WHERE THE MAINLINE PIPE, SECONDARY PIPE OR WIRE EXIT THE SLEEVE (AT THE SPECIFIED DEPTH). ANY ADDITIONAL PIPE OR BORING REQUIRED TO ACHIEVE THE SPECIFIED PIPE AND OR WIRE DEPTH AND ANY ADDITIONAL PIPE OR BORING REQUIRED TO RETURN TO THE SURFACE INCLUDING ANY AND ALL PULL PIPE WILL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONTRACT UNIT PRICE FOR SLEEVING AND WILL NOT BE PAID FOR SEPARATELY.

ALL SURFACE RESTORATION (REQUIRED BY BORING AND SLEEVING OPERATIONS) INCLUDING BACKFILL, COMPACTION, FINE GRADE AND SOD PATCH OR NATIVE SEEDING WILL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONTRACT UNIT PRICE FOR SLEEVING AND WILL NOT BE PAID FOR SEPARATELY.

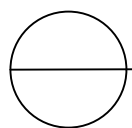
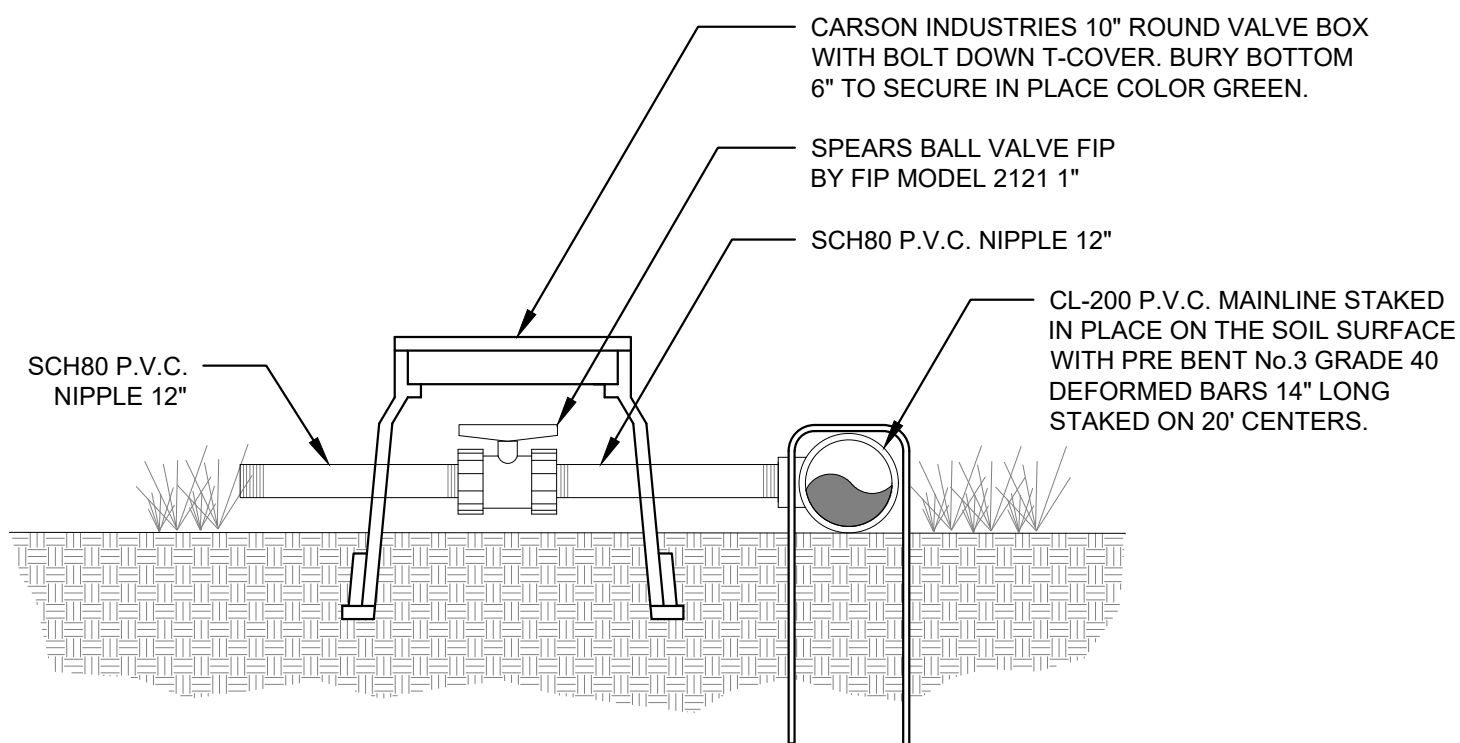
ADJUST SLEEVING DEPTH AS REQUIRED TO AVOID SUBSURFACE UTILITIES AND OR TO AVOID SURFACE HEAVING. ANY ADDITIONAL PIPE OR BORING REQUIRED TO CARRY SLEEVING DEEPER WILL BE CONSIDERED AS A SUBSIDIARY OBLIGATION OF THE CONTRACTOR UNDER THE CONTRACT UNIT PRICE FOR SLEEVING AND WILL NOT BE PAID FOR SEPARATELY.

TEMPORARY IRRIGATION SYSTEM PIPE AND WIRE SLEEVING



NO SCALE

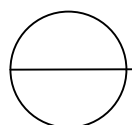
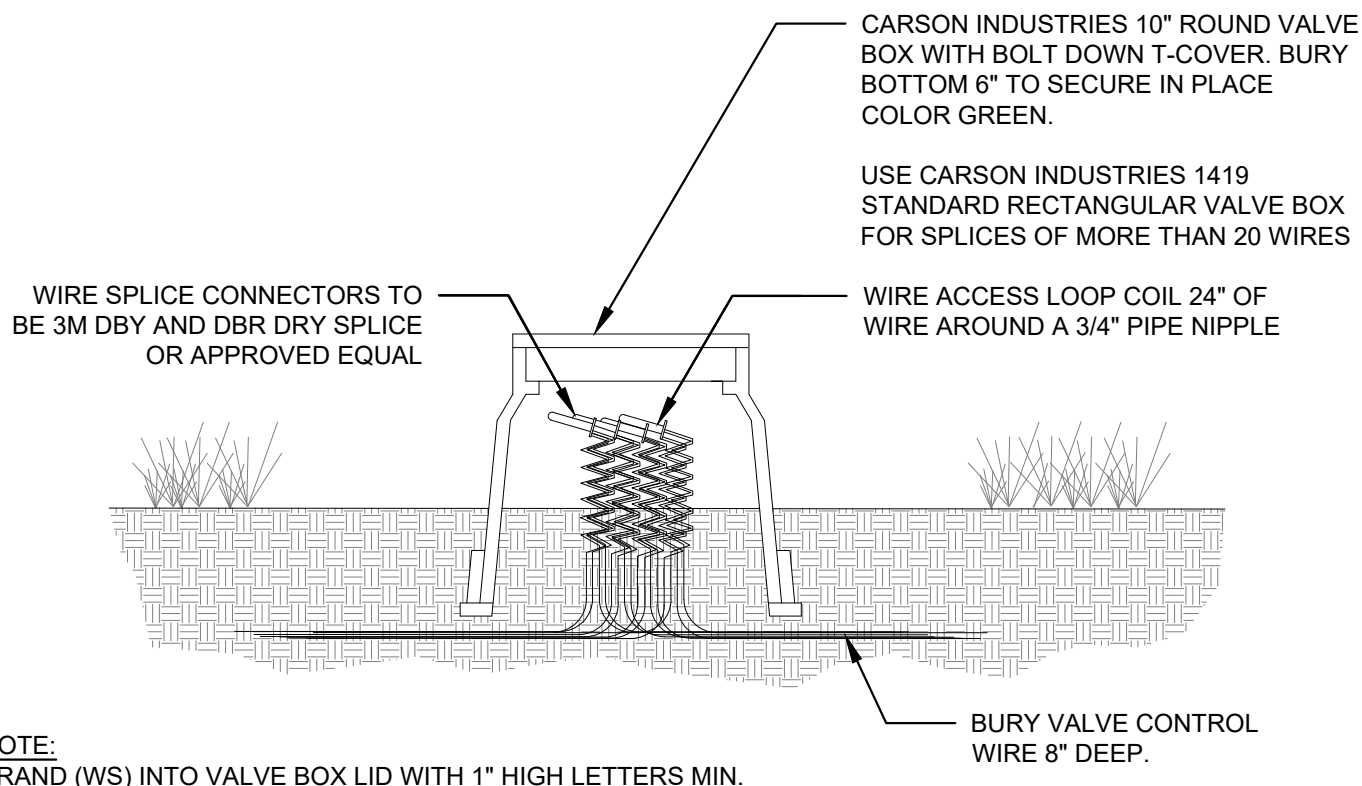
TOWN OF PARKER STANDARD DETAILS



TEMPORARY DRAIN VALVE

NO SCALE

TOWN OF PARKER STANDARD DETAILS



TEMPORARY WIRE SPLICE CONNECTION

NO SCALE

TOWN OF PARKER STANDARD DETAILS

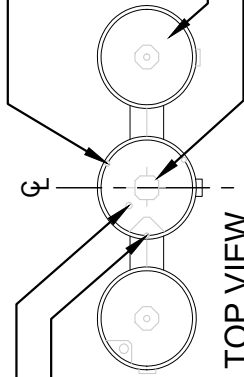


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NOTES:

1. MOST DEPENDABLE FOUNTAIN 2440 SWISS WITH BOTTLE FILLER AND TWO SEASON FOUNTAIN COVERS. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. PAD & DRINKING FOUNTAIN HEIGHT MUST MEET ADA STANDARDS.
3. ALL CONNECTIONS MUST BE DOUBLE CLAMPED.
4. COLOR TO BE DETERMINED BY OWNER.
5. REMOVE AND REPLACE EXISTING STOP AND WASTE VALVE AS NOTED.
6. 27" CLEAR MUST BE MAINTAINED FROM PAVING FINISH GRADE TO BOTTOM OF DRINKING BOWL. COORDINATE TOP OF CONCRETE PEDESTAL TO ACCOMMODATE 27" CLEARANCE.
7. FOR BACKFLOW ENCLOSURE AND SETTER SPECIFICATION: INSTALL ONE GUARD SHACK ENCLOSURE WITH SETTER AND FROST GUARD FOR DRINKING FOUNTAIN BACK FLOW ASSEMBLY. GUARD SHACK AND FROST GUARD COLORS TO BE GREEN.

ANCHORED INSIDE OF PEDESTAL



TOP VIEW

3/8" NYLON REINFORCED NYLOBRAID TUBING WITH 1/2" MIP (WATER SUPPLY)

GRAPHIC REPRESENTATION OF DRINKING FOUNTAIN ONLY. SEE PLAN VIEW FOR LAYOUT AND ORIENTATION.

90° ELBOW TIED INTO SUPPLY TUBING LINE SIZE INSERT X 1/2" FEMALE N.P.T.

ACCESS DOOR

BOLT IS CENTERED UNDER ADA ARM & ANCHORED INSIDE OF PEDESTAL

STEEL SUPPORT IN CONCRETE

FINISH GRADE

OPTIONAL INTERNAL SURFACE CARRIER

NEW PIPING BY CONTRACTOR FROM THIS POINT TO THE STOP VALVE

6 5/8" SLEEVE

NEW 3/4" PE-AL-PE Q-LINE COMPOSITE TUBING BY IPEX, CSA B137.9 AND ASTM F1282 200 PSI WITH ALL BRASS SERVICE FITTINGS PER AWWAC800. DRINKING FOUNTAIN SERVICE LINE PIPE INSTALLED 24" DEEP.

DRINKING FOUNTAIN 3/4" AY MCDONALD 76101 REGULAR PATTERN BRASS BALL (STOP ONLY) VALVE WITH 4" PVC, ACCESS STACK AND 10" ROUND CARSON INDUSTRIES VALVE BOX WITH BOLT DOWN TEE-COVER W/ 2 CF 3/4" GRANITE ROCK SUMP INSTALL LANDSCAPE FABRIC BETWEEN ROCK AND SOIL

DRINKING FOUNTAIN CROSS CONNECTION CONTROL DEVICE FEBCO 825YA ANGLE PATTERN HIGH HAZARD REDUCED PRESSURE BACK FLOW ASSEMBLY 3/4" WITH GUARD SHACK ENCLOSURE.

NEW 120 VOLT POWER SUPPLY WITH DUPLEX RECEPTACLE FOR HEAT TAPE INSTALLATION. COORDINATE WORK WITH ELECTRICAL CONTRACTOR.

6" THICK 3500 PSI CONCRETE EXTENDING 12" BEYOND NEW BACKFLOW ENCLOSURE ON ALL FOUR SIDES. SLOPE SLAB AT 1/4" PER 1' AWAY FROM ENCLOSURE ON ALL FOUR SIDES. SET TOP OF SLAB 1" ABOVE FINISH GRADE (IN LANDSCAPE). SLEEVE DROP LEGS IN CL-200 PVC. TWO PIPE DIA. LARGER THAN SERVICE LINE. PROVIDE MEDIUM BROOM FINISH.

CARSON INDUSTRIES 10" ARMOR ROUND VALVE BOX WITH BOLT DOWN TEE-COVER, ADD EXTENSIONS AS NECESSARY

TURF, TYP.

CARSON INDUSTRIES 1730 SUPER JUMBO VALVE BOX AND BOLT DOWN COVER (COLOR: GREEN); BOX DEPTH 24" IF USING 10 LF OF DISCHARGE LINE. USE 30" DEPTH BOX FOR RUNS EXCEEDING 10LF AND RISER RINGS AS NEED TO ACHIEVE CLEARANCES AND DEPTHS SHOWN.

3/4" CLEAN WASHED DRAINAGE AGGREGATE

NONWOVEN GEOTEXTILE FILTER FABRIC, TYP. AT VALVE BOXES

EXISTING WATERLINE TO REMAIN. CONTRACTOR TO VERIFY EXISTING LINE TO BE COPPER, FROM DISCHARGE SIDE OF WATER METER.

4" PVC CL 160 STAND PIPE NOTCH TO FIT AROUND BOTH PIPES

NEW PIPING AND FIXTURES BY CONTRACTOR FROM THIS POINT

DRINKING FOUNTAIN, SERVICE LINE AND DISCHARGE SUMP

NO SCALE

TOWN OF PARKER STANDARD DETAILS



BACK FLOW ENCLOSURE AND SETTER SPECIFICATION:
INSTALL ONE GUARD SHACK ENCLOSURE WITH ENCLOSURE SETTER
AND FROST GUARD FOR DRINKING FOUNTAIN BACK FLOW ASSEMBLY.

NEW 120 VOLT POWER SUPPLY WITH DUPLEX RECEPTACLE FOR HEAT
TAPE INSTALLATION. SEE E.E. PLANS FOR COMPLETE REQUIREMENTS
AND COORDINATE WORK WITH ELECTRICAL CONTRACTOR ON SITE.
TYP BOTH BACK FLOW ASSEMBLIES.

IRRIGATION SYSTEM CROSS CONNECTION CONTROL DEVICE FEBCO
825YA ANGLE PATTERN HIGH HAZARD REDUCED PRESSURE BACK FLOW
ASSEMBLY SHOWN DIAGRAMMATICALLY.

SIX INCH THICK 3500 PSI CONCRETE EXTENDING 12" BEYOND NEW BACK
FLOW ENCLOSURE ON ALL FOUR SIDES. SLOPE SLAB AT 1/4" PER 1' AWAY
FROM ENCLOSURE ON ALL FOUR SIDES. SET TOP OF SLAB 1" ABOVE
ADJACENT FINISHED GRADE. SLEEVE DROP LEGS IN CL-200 PVC. TWO
PIPE DIA. LARGER THAN SERVICE LINE. PROVIDE MEDIUM BROOM FINISH.

DRINKING FOUNTAIN CROSS CONNECTION
CONTROL DEVICE FEBCO 825YA ANGLE
PATTERN HIGH HAZARD REDUCED
PRESSURE BACK FLOW ASSEMBLY 3/4".
WITH GUARD SHACK ENCLOSURE.

CONCRETE PAD PER NOTE
THIS SHEET

NEW 3/4" PE-AL-PE Q-LINE
COMPOSITE TUBING BY IPEX PER
C903, CSA B137.9 AND ASTM F1282
200 PSI WITH ALL BRASS SERVICE
FITTINGS PER AWWAC800.
DRINKING FOUNTAIN SERVICE
LINE PIPE INSTALLED 24" DEEP.

TYPE-K RIGID COPPER TO HDPE
TRANSITION

3/4" TYPE-K RIGID COPPER

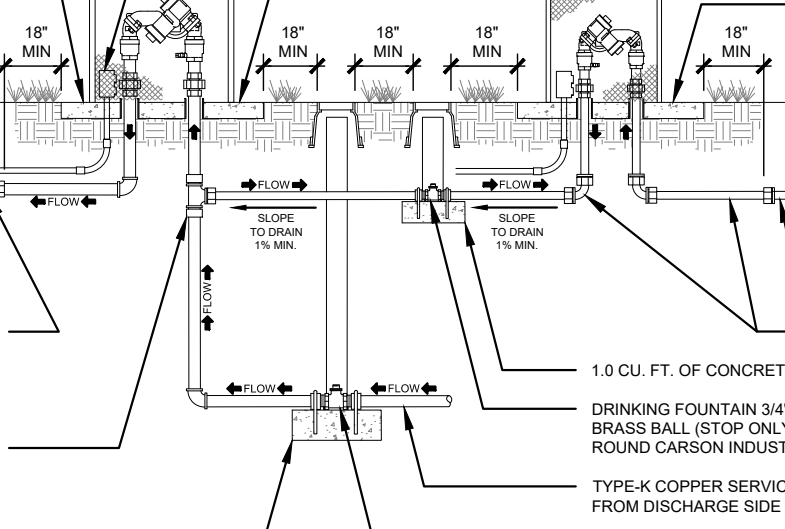
1.0 CU. FT. OF CONCRETE WITH TWO NO.4 STRAPS

DRINKING FOUNTAIN 3/4" AY MCDONALD 76101 REGULAR PATTERN
BRASS BALL (STOP ONLY) VALVE WITH 4" P.V.C. ACCESS STACK AND 10"
ROUND CARSON INDUSTRIES VALVE BOX WITH BOLT DOWN TEE-COVER.

TYPE-K COPPER SERVICE LINE WITH ALL SILVER SOLDERED FITTINGS
FROM DISCHARGE SIDE OF WATER METER.

IRRIGATION SYSTEM AY MCDONALD 76001 CYLINDER PATTERN STOP
AND DRAIN VALVE SIZED TO MATCH IRRIGATION SERVICE LINE WITH 4"
P.V.C. ACCESS STACK AND 10" ROUND CARSON INDUSTRIES VALVE BOX
WITH BOLT DOWN TEE-COVER. (SHOWN BEYOND DRINKING FOUNTAIN
SERVICE LINE).

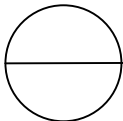
CONCRETE PAD PER
NOTE THIS SHEET



TYPE-K COPPER DISCHARGE
SIDE DROP LEG SERVING
IRRIGATION SYSTEM MAIN LINE
CONVERT TO CL-200 P.V.C. MIN.
18" BEYOND CONCRETE PAD

DRINKING FOUNTAIN POINT OF
CONNECTION ON CHARGED SIDE
DROP LEG 24" BELOW GRADE WITH
SILVER SOLDERED SERVICE TEE

1.5 CU. FT. OF CONCRETE
WITH TWO NO.4 STRAPS



DRINKING FOUNTAIN POINT OF CONNECTION

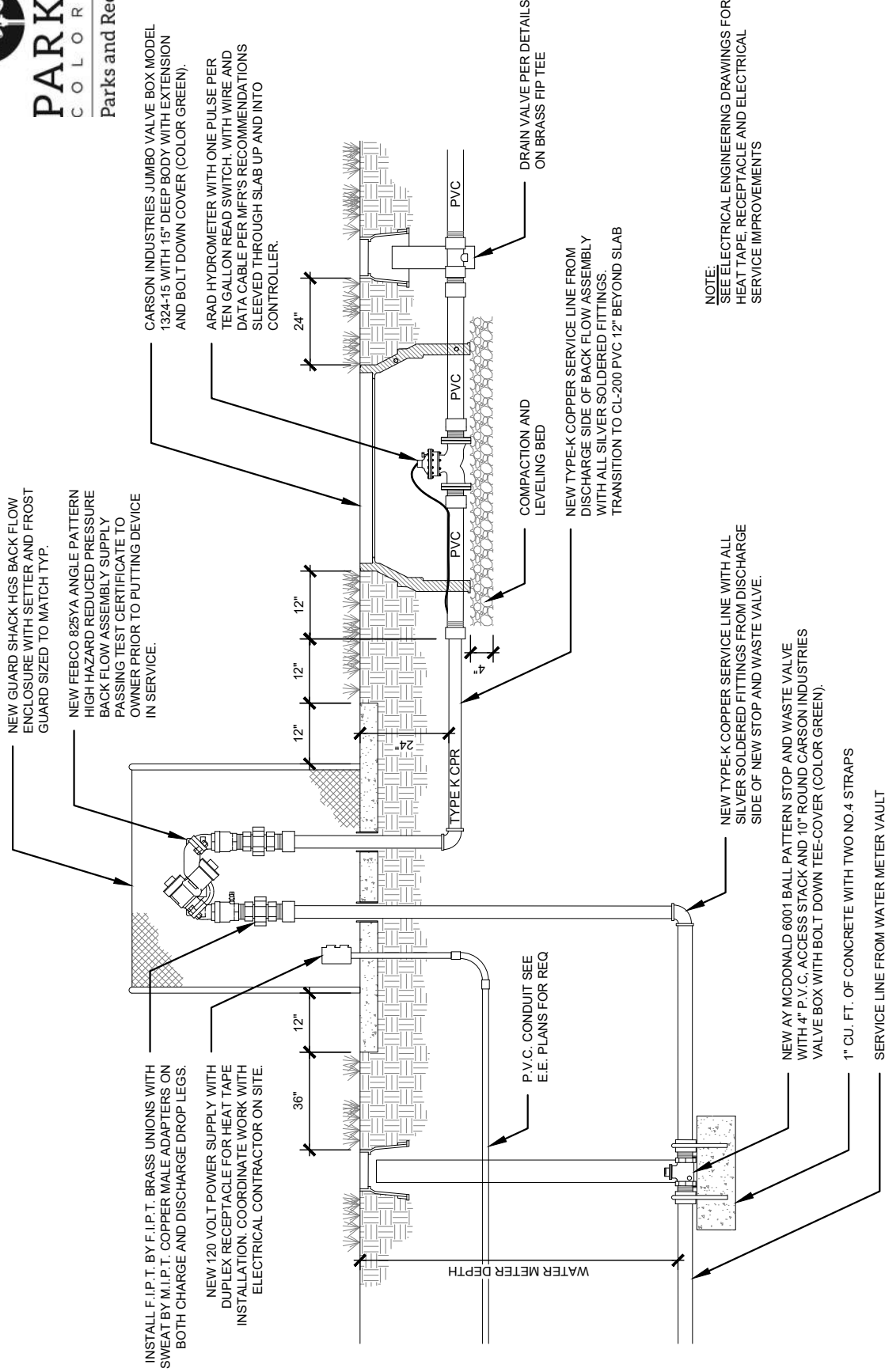
NO SCALE

TOWN OF PARKER STANDARD DETAILS



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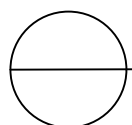
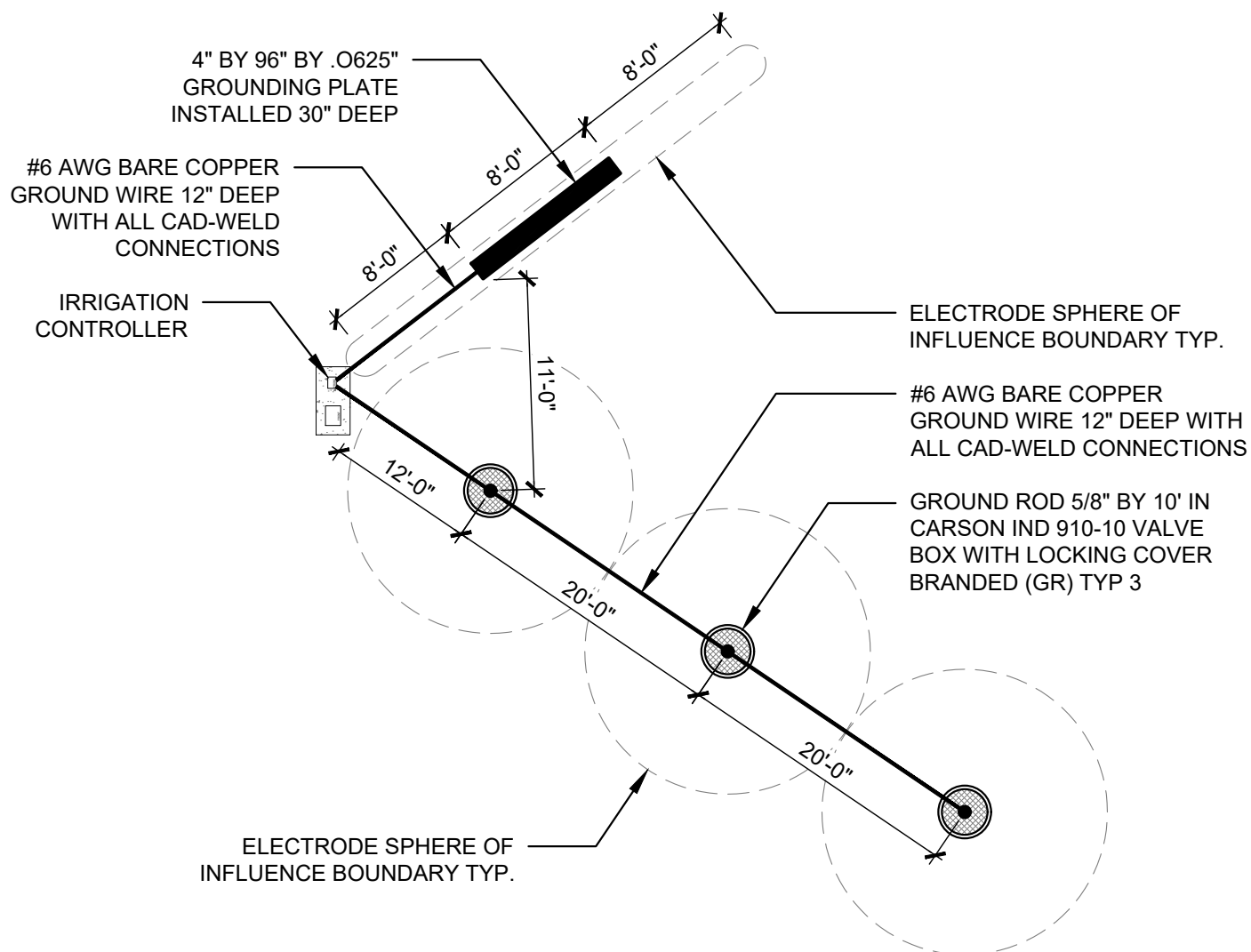


NOTE:
SEE ELECTRICAL ENGINEERING DRAWINGS FOR
HEAT TAPE, RECEPTACLE AND ELECTRICAL
SERVICE IMPROVEMENTS

IRRIGATION SYSTEM POINT OF CONNECTION AND BACK FLOW ASSEMBLY

NO SCALE

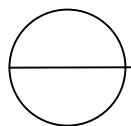
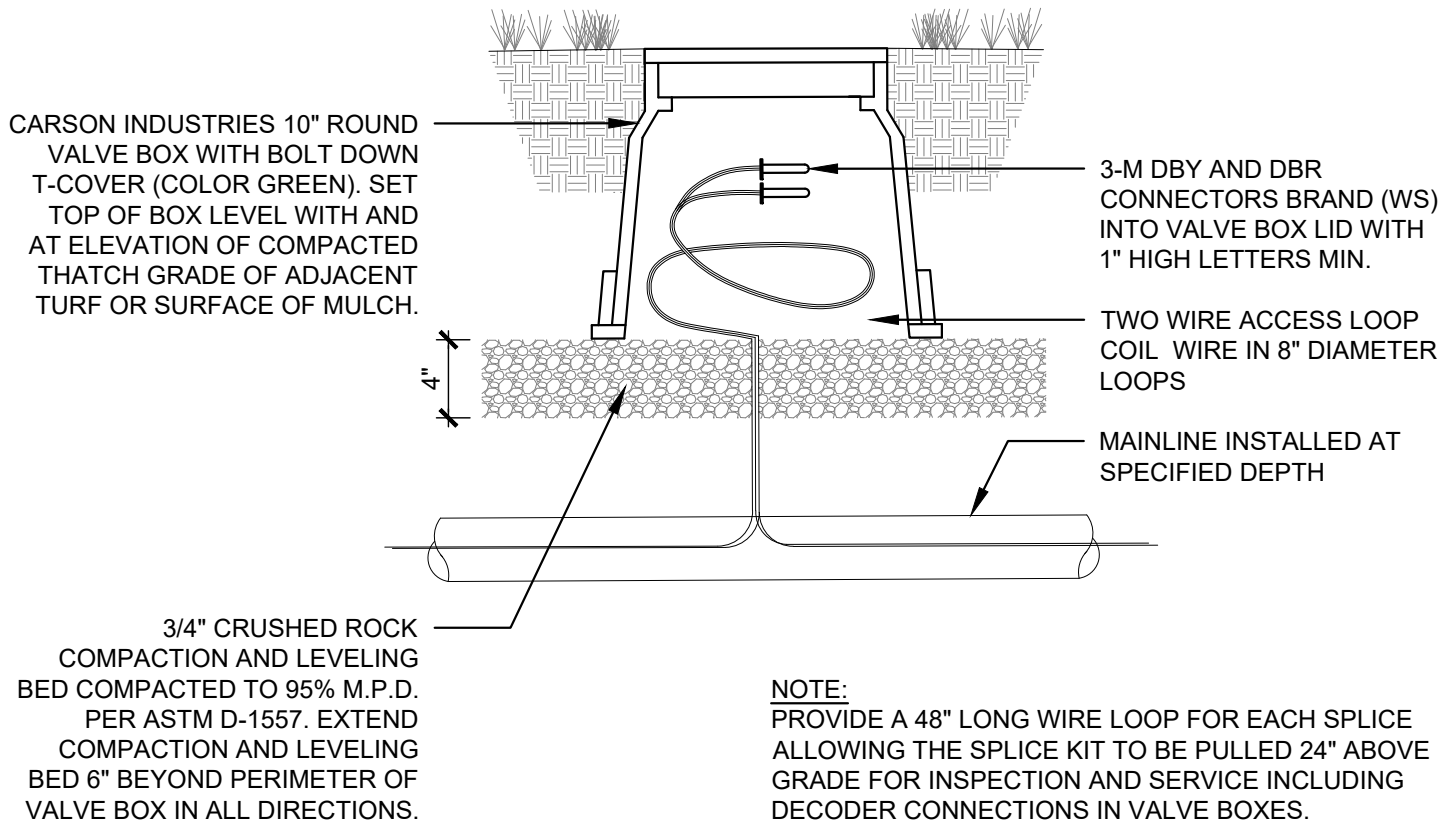
TOWN OF PARKER STANDARD DETAILS



CONTROLLER GROUNDING DIAGRAM

NO SCALE

TOWN OF PARKER STANDARD DETAILS



TWO WIRE PATH WIRE SPLICE ACCESS LOOP

NO SCALE

TOWN OF PARKER STANDARD DETAILS



CARSON INDUSTRIES JUMBO VALVE BOX MODEL 1324-15 WITH 15" DEEP BODY AND BOLT DOWN COVER (COLOR GREEN) FOR 1.5" AND 1" VALVES AND CARSON INDUSTRIES 1730-18 SUPER JUMBO VALVE BOX WITH 18" DEEP BODY AND BOLT DOWN COVER (COLOR GREEN) FOR 2" VALVES. ONE VALVE PER BOX CENTERED BOTH WAYS. SET TOP OF BOX AT COMPACTED THATCH GRADE OF ADJACENT TURF OR SURFACE OF MULCH.

BRAND (CONTROLLER LETTER AND VALVE STATION NUMBER) INTO VALVE BOX LID WITH 1" HIGH LETTERS MIN.

SPEARS P.V.C. UNION MODEL 898 F.I.P. DIM. TO MATCH ELECTRIC CONTROL VALVE

RAIN BIRD EFB-CP-PRS-D SERIES ELECTRIC CONTROL VALVE

SPEARS TRUE UNION BALL VALVE MODEL 1821-SR WITH STEEL REINFORCED THREADED ENDS F.I.P. DIM. TO MATCH ELECTRIC CONTROL VALVE.

ALL MANIFOLD FITTINGS TO MATCH FIP DIMENSION OF ELECTRIC CONTROL VALVE. ALL MANIFOLD COMPONENTS TO BE SCHEDULE 80 P.V.C. FITTINGS AND SCHEDULE 80 P.V.C. NIPPLES SUPPLIED AS SR STEEL REINFORCED

DECODER WITH DBY CONNECTORS

TWO WIRE PATH WITH DBY CONNECTORS

3/4" CRUSHED ROCK COMPACTION AND LEVELING BED COMPACTED TO 95% M.P.D. PER ASTM D-1557. EXTEND COMPACTION AND LEVELING BED 6" BEYOND PERIMETER OF VALVE BOX IN ALL DIRECTIONS.

SCHEDULE 80 P.V.C. RISER NIPPLE LENGTH AS REQ. FIP DIMENSION TO MATCH FIP DIMENSION OF ELECTRIC CONTROL VALVE.

NEW CL-200, SDR-21, P.V.C. IRRIGATION MAINLINE.

DO NOT MODIFY SIDE WALLS OF VALVE BOX. ANY MODIFIED VALVE BOX WILL BE REJECTED.

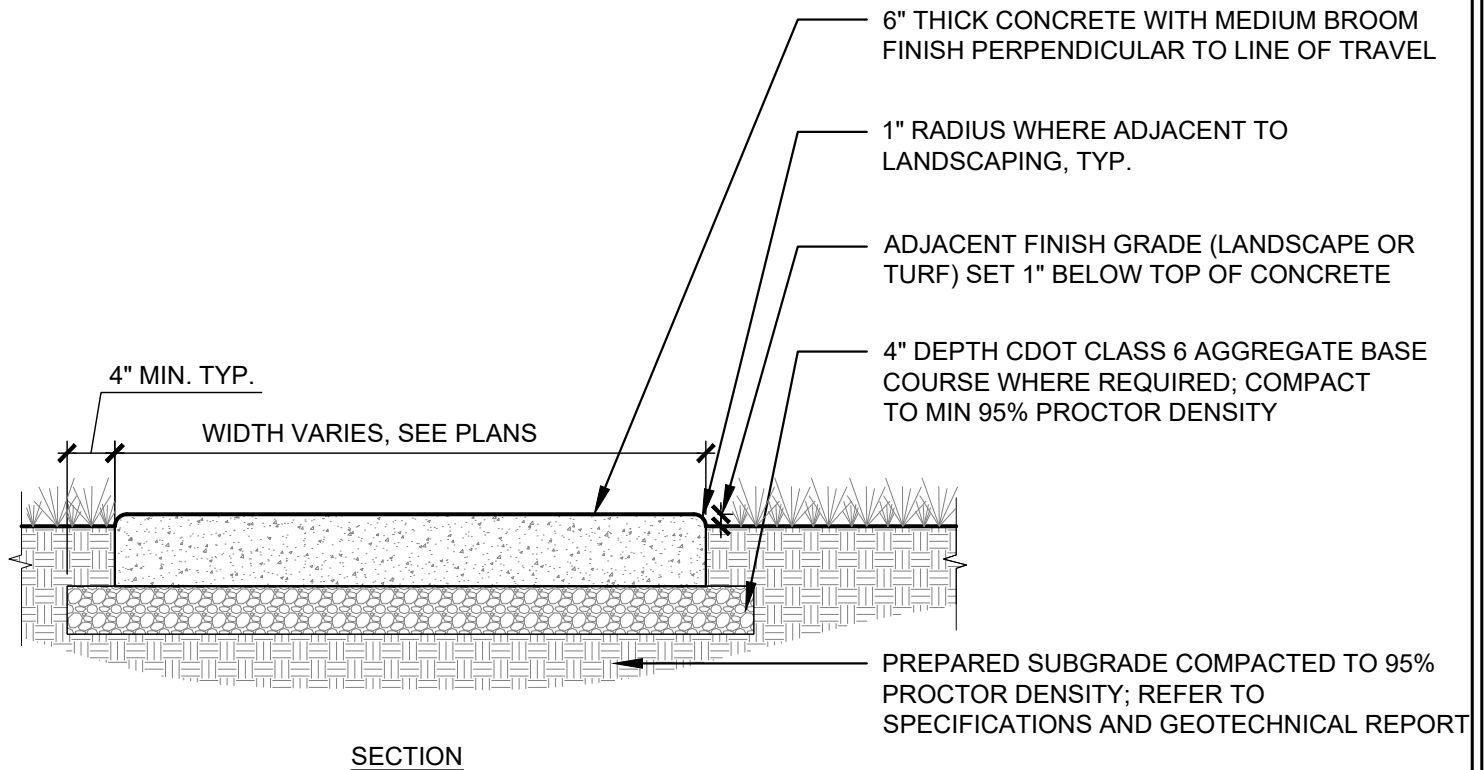
PROVIDE 2" CLEAR BETWEEN UNDERSIDE OF VALVE AND SURFACE OF COMPACTED GRAVEL.

PROVIDE 3" MINIMUM AND 6" MAXIMUM BETWEEN UNDERSIDE OF VALVE BOX LID AND TOP OF FLOW CONTROLS FULLY EXTENDED.

TWO WIRE PATH WIRE ELECTRIC CONTROL VALVE

NO SCALE

TOWN OF PARKER STANDARD DETAILS

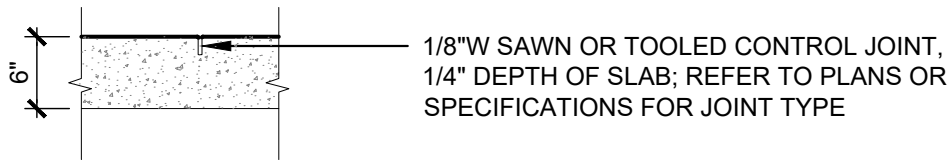


NOTES:

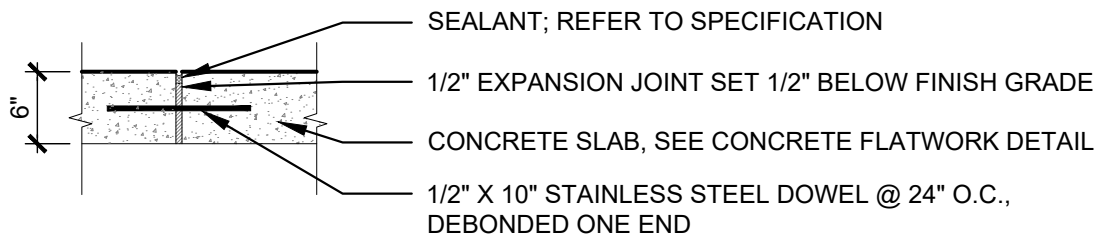
1. CONCRETE TO BE FIBER MESH REINFORCED, 4500 PSI 28-DAY COMPRESSIVE STRENGTH CONFORMING TO CDOT CLASS P PORTLAND CEMENT CONCRETE PAVEMENT.
2. PROVIDE EXPANSION JOINTS @ 60'-0" O.C. MAX., OR AS SHOWN ON DRAWINGS.
3. CONTROL JOINTS IN SIDEWALKS APPROXIMATELY WIDTH OF WALK OR 6'-0" MIN. O.C.- TYPICAL, UNLESS OTHERWISE NOTED.
4. PROVIDE NO SHINE TROWEL EDGES.
5. CROSS-SLOPE TO DRAIN AT 1.75% OR AS SHOWN ON PLANS.
6. REFER TO GEOTECH REPORT FOR ADDITIONAL RECOMMENDATIONS.



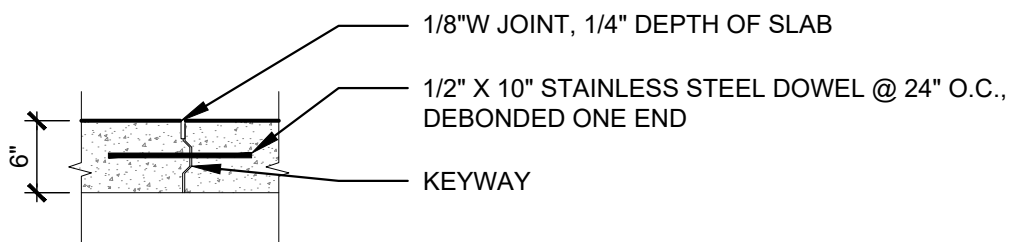
TOWN OF PARKER STANDARD DETAILS



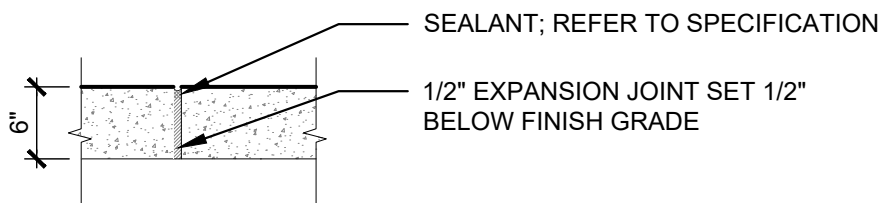
CONTROL JOINT



EXPANSION JOINT

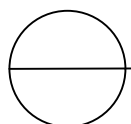


CONSTRUCTION JOINT



ISOLATION JOINT

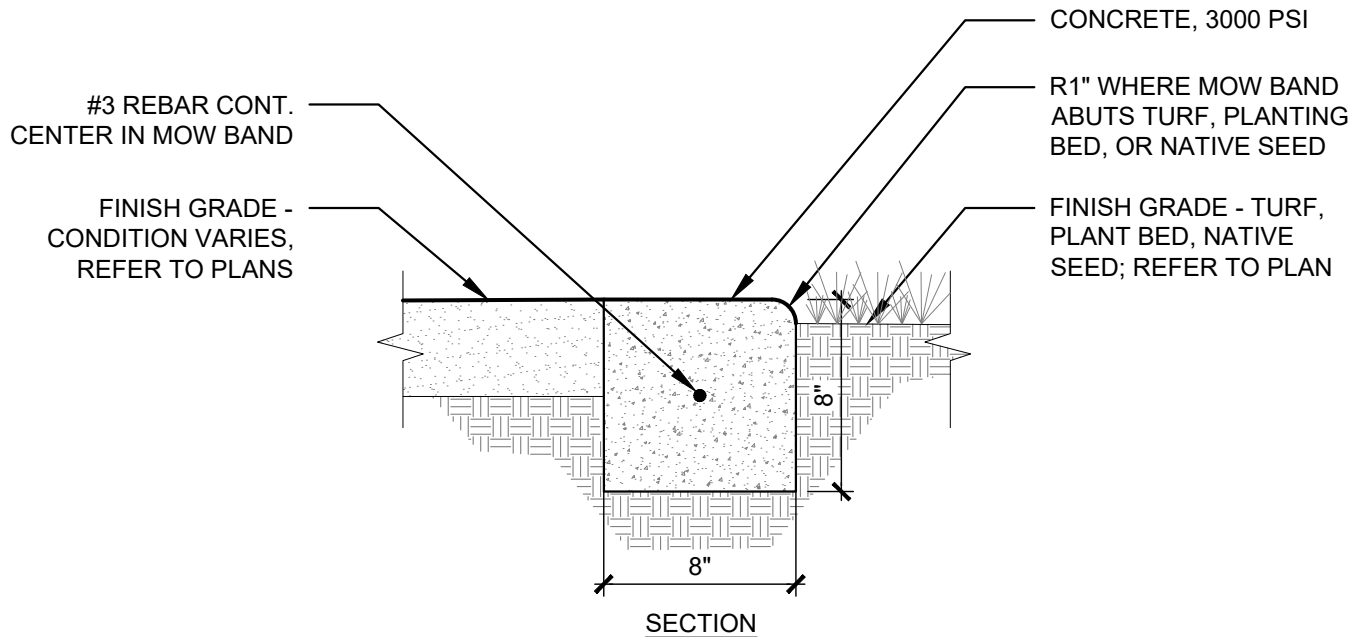
NOTE:
SAWN JOINTS ARE REQUIRED ON ALL TRAILS.



CONCRETE FLATWORK - JOINTS

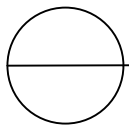
3/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

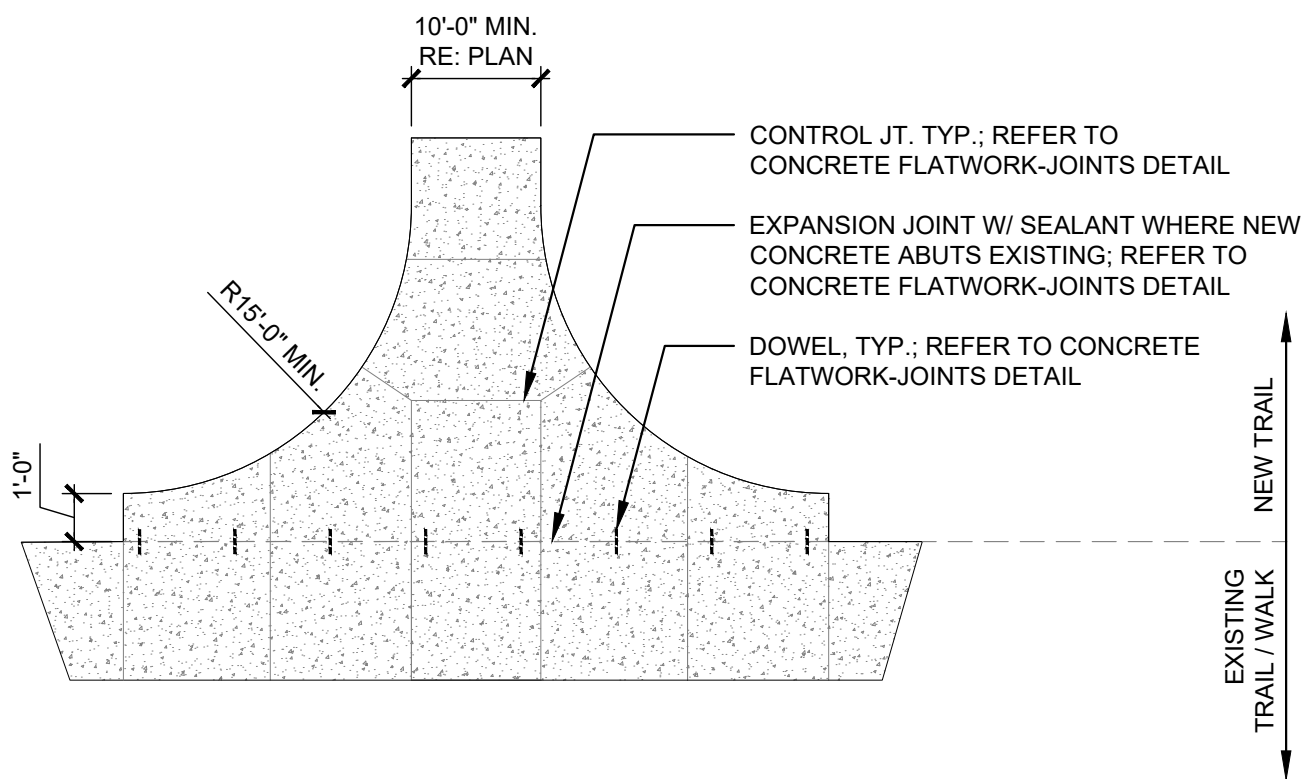
1. PROVIDE CONTROL JOINTS AT 10' O.C. MIN, TYPICAL
2. PROVIDE EXPANSION JOINT WHERE MOW BAND ABUTS FIXED STRUCTURE SUCH AS FACE OF BUILDING, WALLS, CURBS, UTILITY STRUCTURES, ETC.
3. TOP OF CONCRETE MOW BAND TO BE THE FOLLOWING DIMENSION ABOVE TOP OF ADJACENT MATERIAL:
 - 1.5" ABOVE NATIVE SEED OR PLANTING BED
 - FLUSH WITH ADJACENT PAVING



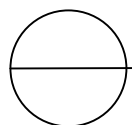
CONCRETE MOW BAND

1 1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



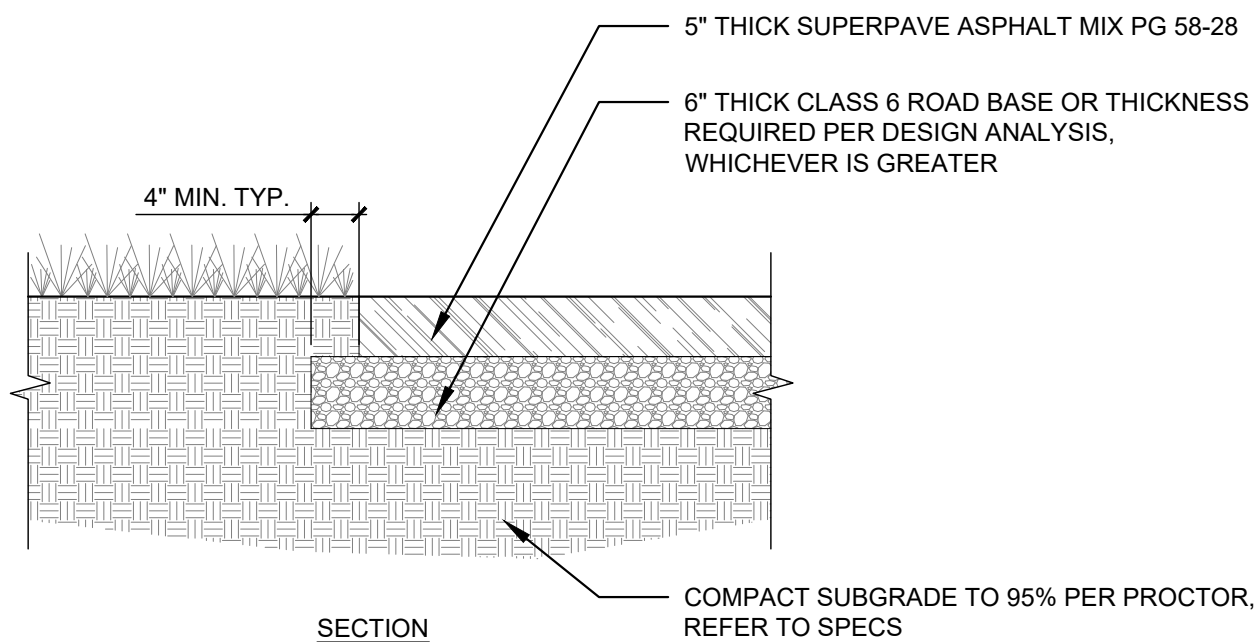
NOTE:
TRAIL INTERSECTIONS SHALL BE AS PERPENDICULAR AS POSSIBLE (NO LESS THAN 70 DEGREE).



CONCRETE TRAIL INTERSECTION

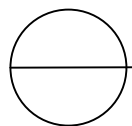
1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

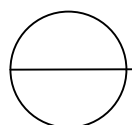
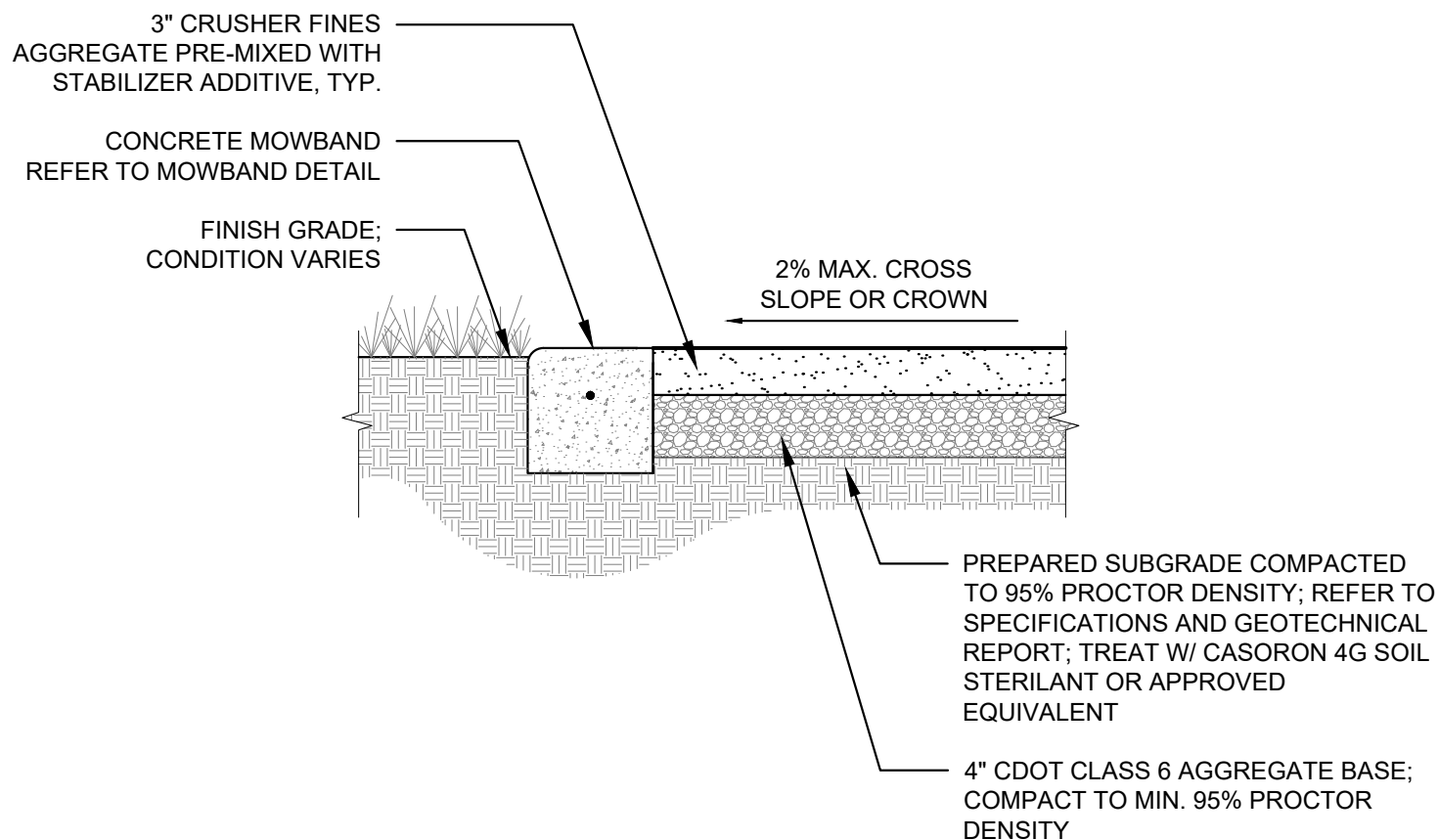
1. MATERIALS AND PROFILE TO CONFORM TO ROADWAY DESIGN AND CONSTRUCTION CRITERIA MANUAL SECTION 6.0.



ASPHALT - SINGLE LIFT

3/4" = 1'-0"

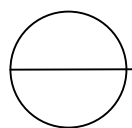
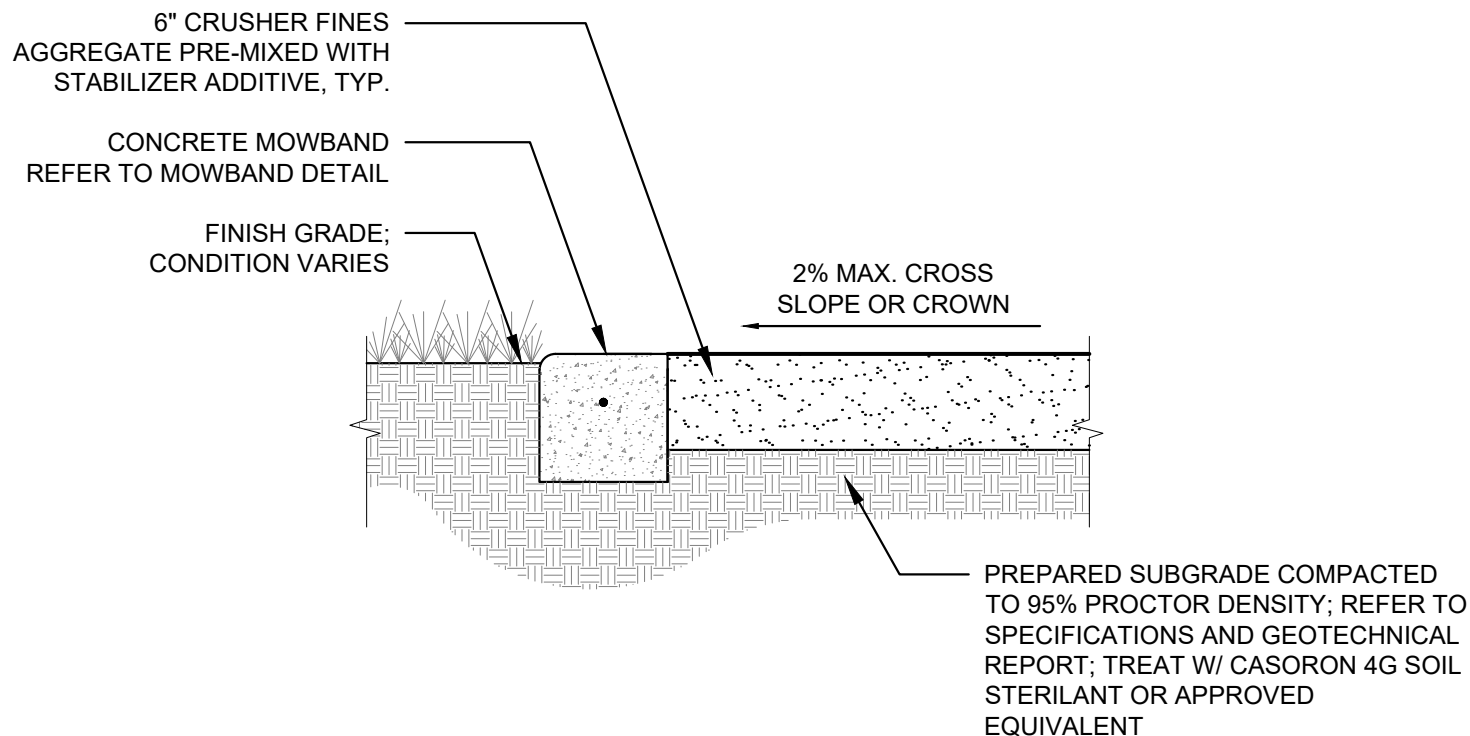
TOWN OF PARKER STANDARD DETAILS



CRUSHER FINES PAVING - ON AGGREGATE BASE

1" = 1'-0"

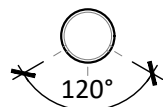
TOWN OF PARKER STANDARD DETAILS



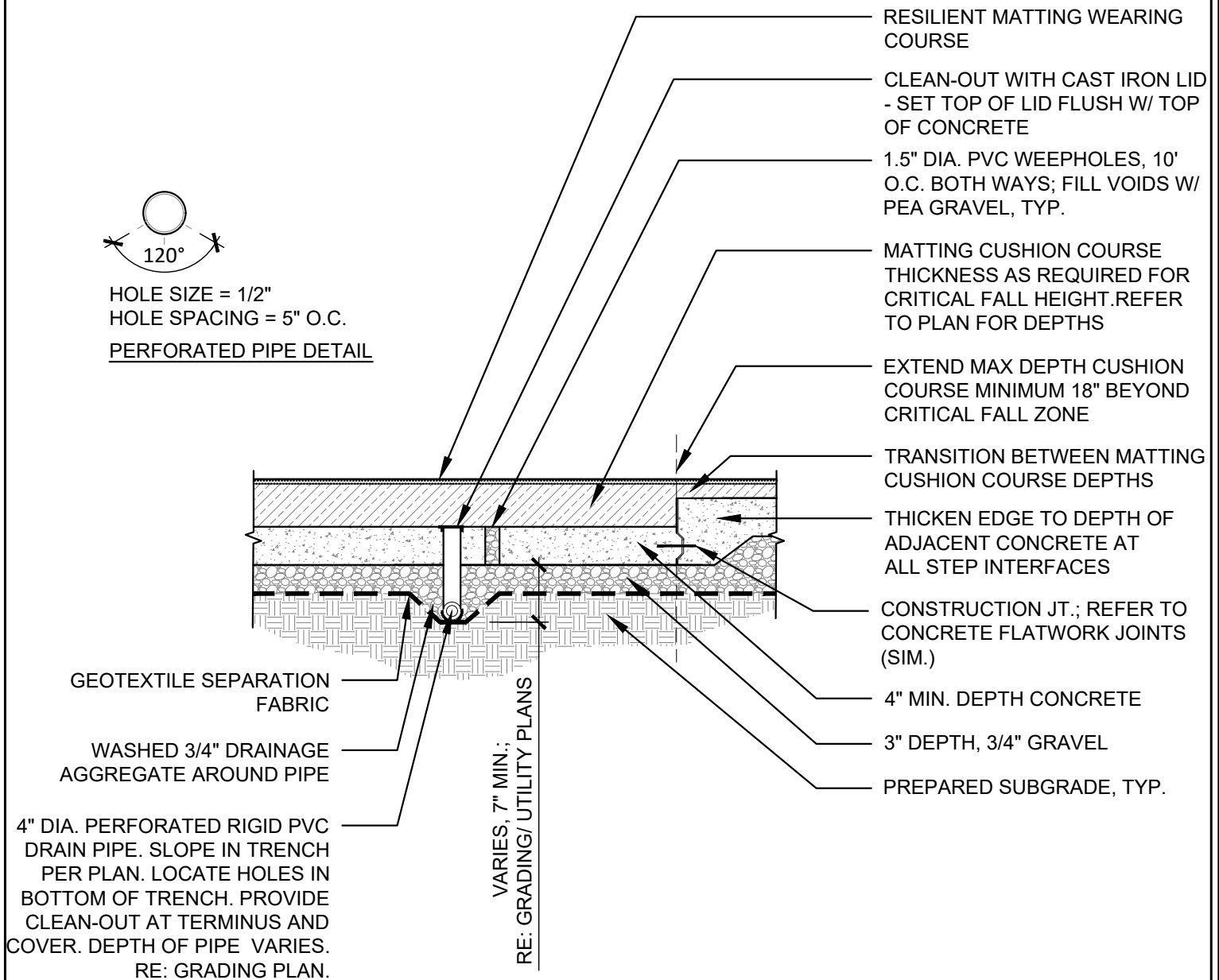
CRUSHER FINES PAVING - ON SUBGRADE

1" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

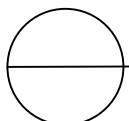


HOLE SIZE = 1/2"
HOLE SPACING = 5" O.C.
PERFORATED PIPE DETAIL



NOTES:

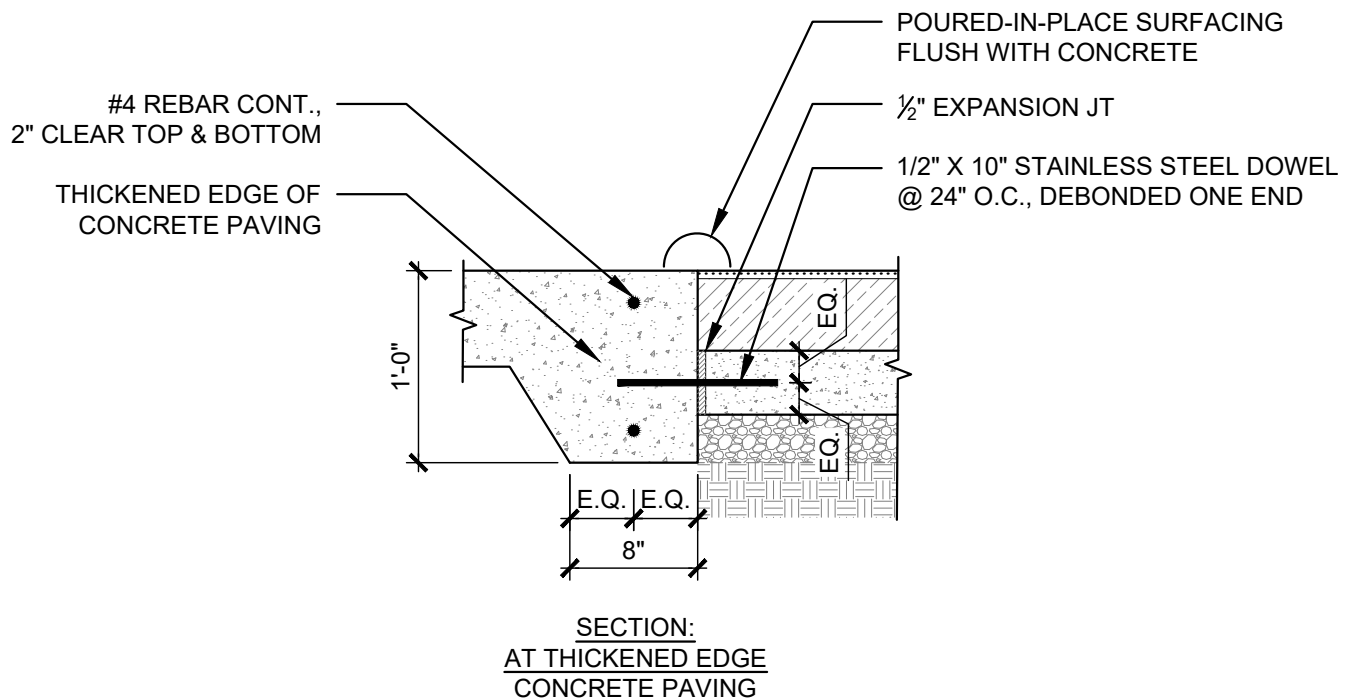
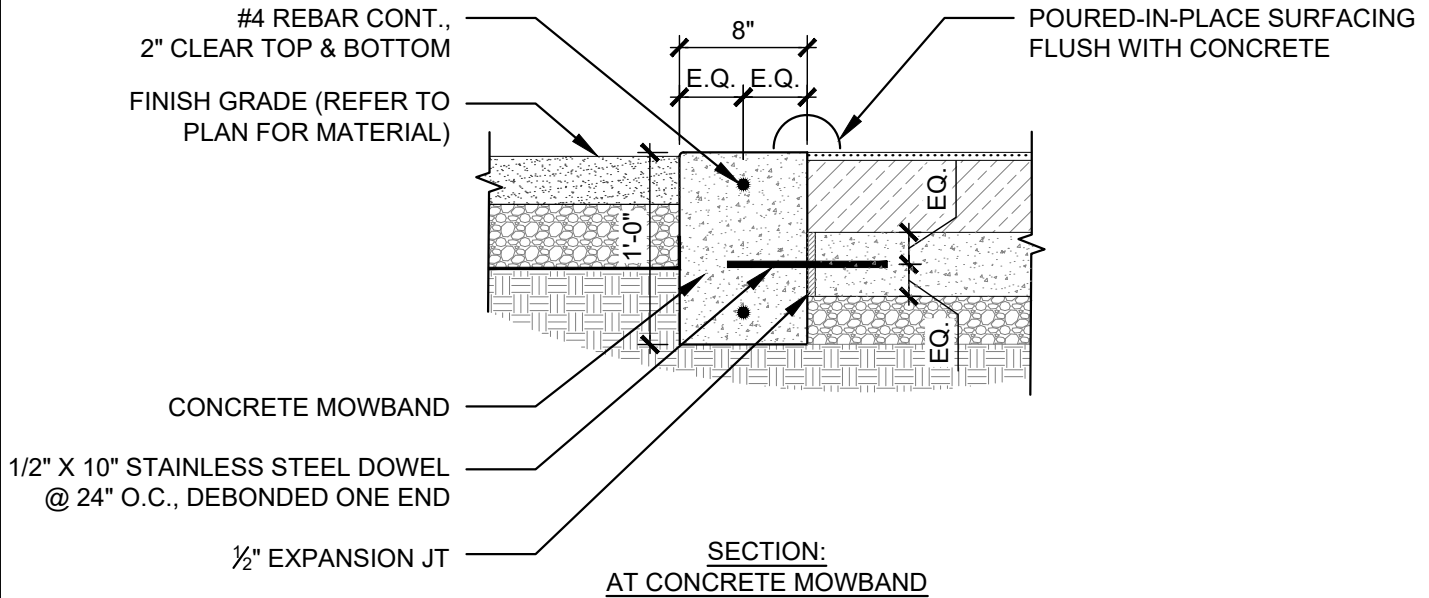
1. ALL PERFORATED PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND SHALL MEET ASTM D2729 OR ASTM F758.
2. SLEEVE ALL PENETRATIONS AT WALLS AND UNDER WALKS, MOWBANDS, ETC.



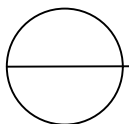
POURED-IN-PLACE PLAYGROUND SURFACING

3/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



POURED-IN-PLACE SAFETY SURFACING - EDGE RESTRAINT

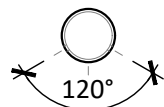
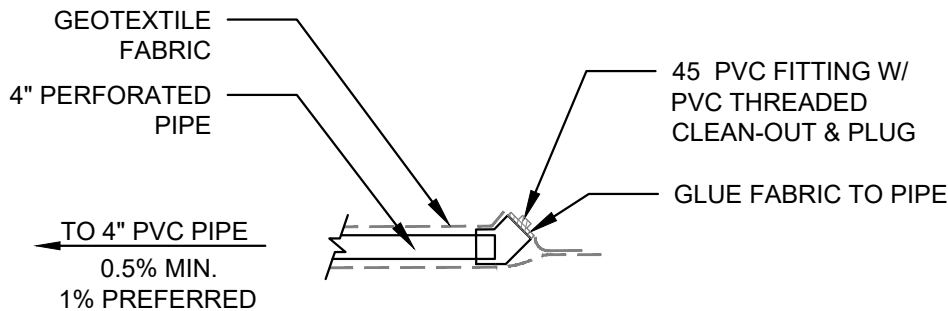


1" = 1'-0"

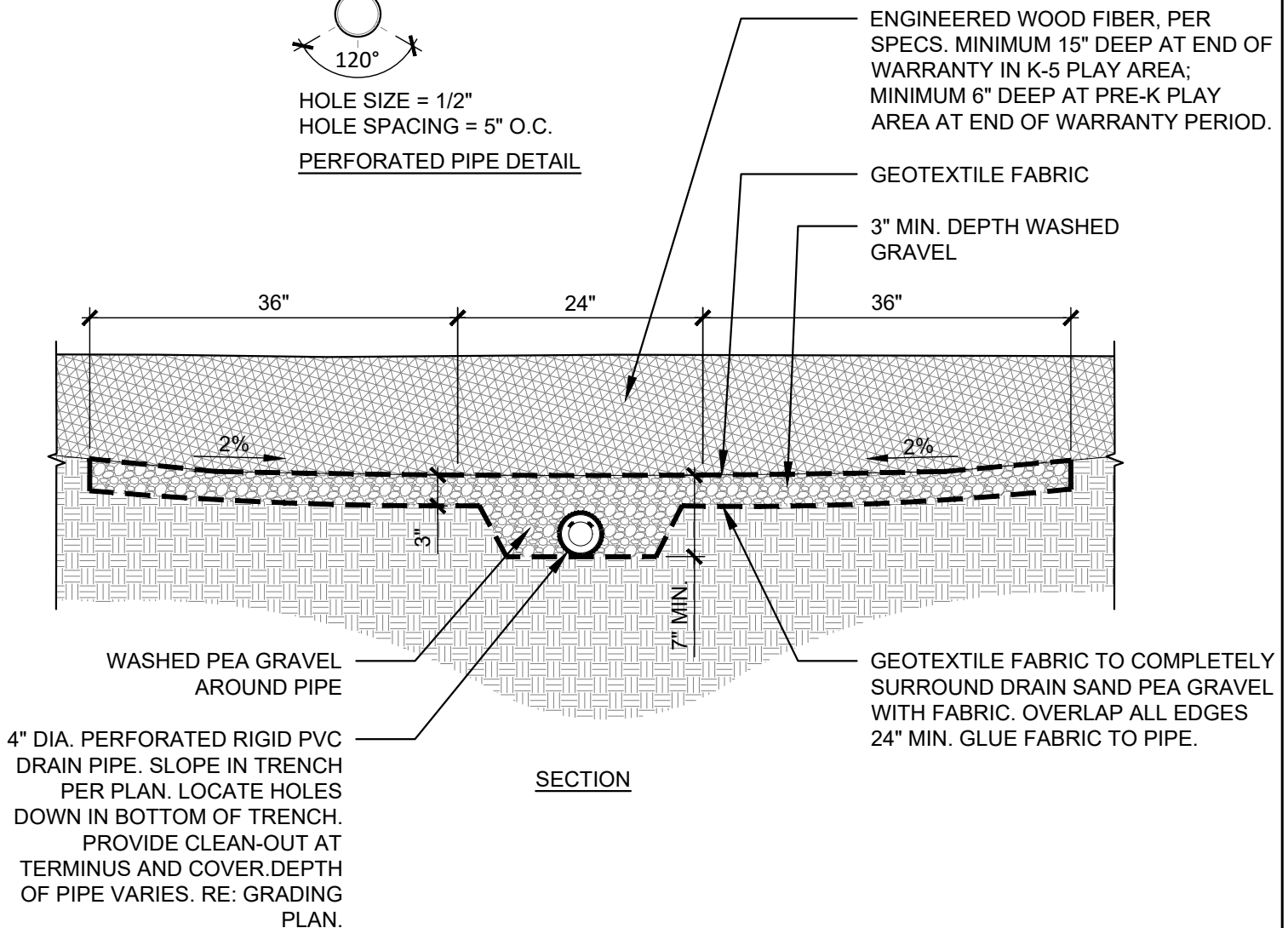
TOWN OF PARKER STANDARD DETAILS



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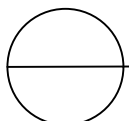


HOLE SIZE = 1/2"
HOLE SPACING = 5" O.C.
PERFORATED PIPE DETAIL



NOTES:

1. ALL PERFORATED PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND SHALL MEET ASTM D2729 OR ASTM F758.
2. SLEEVE ALL PENETRATIONS AT WALLS AND UNDER WALKS, MOWBANDS, ETC.



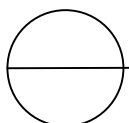
ENGINEERED WOOD FIBER (EWF) SURFACING

3/4" = 1'-0"

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Parks and Recreation



- ## PLAY AREA EDGE AT ENGINEERED WOOD FIBER SURFACING

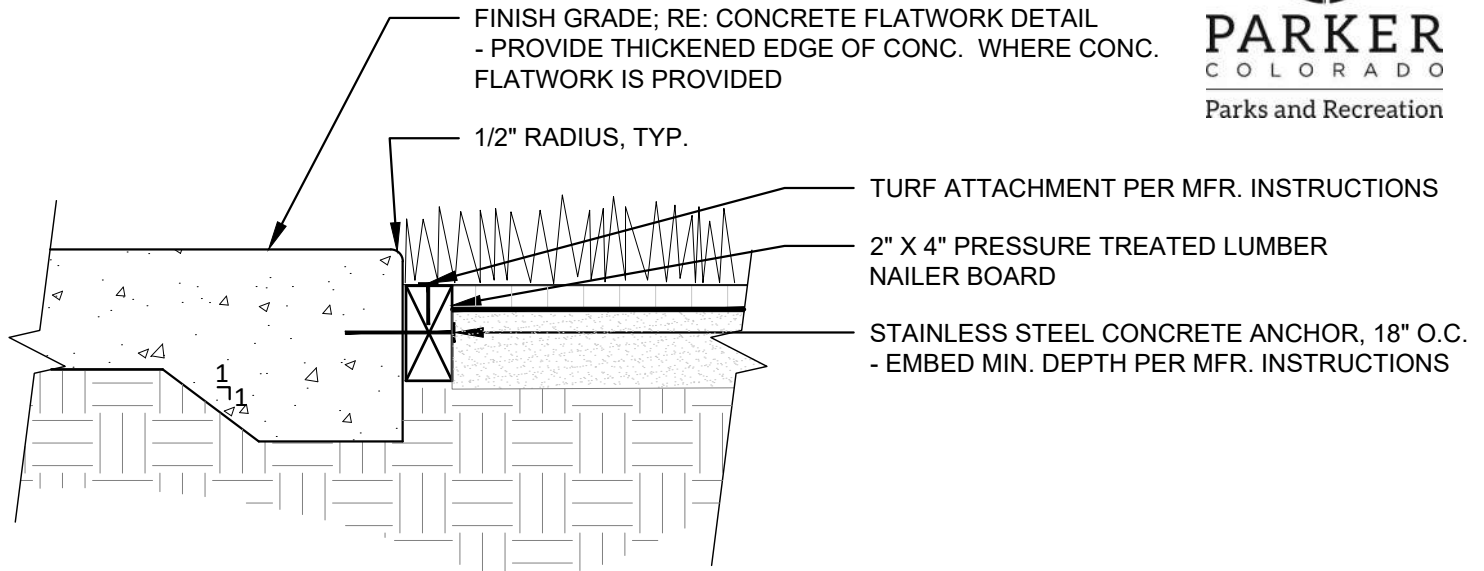


DATE: MAY 2023 | DETAIL PV-11

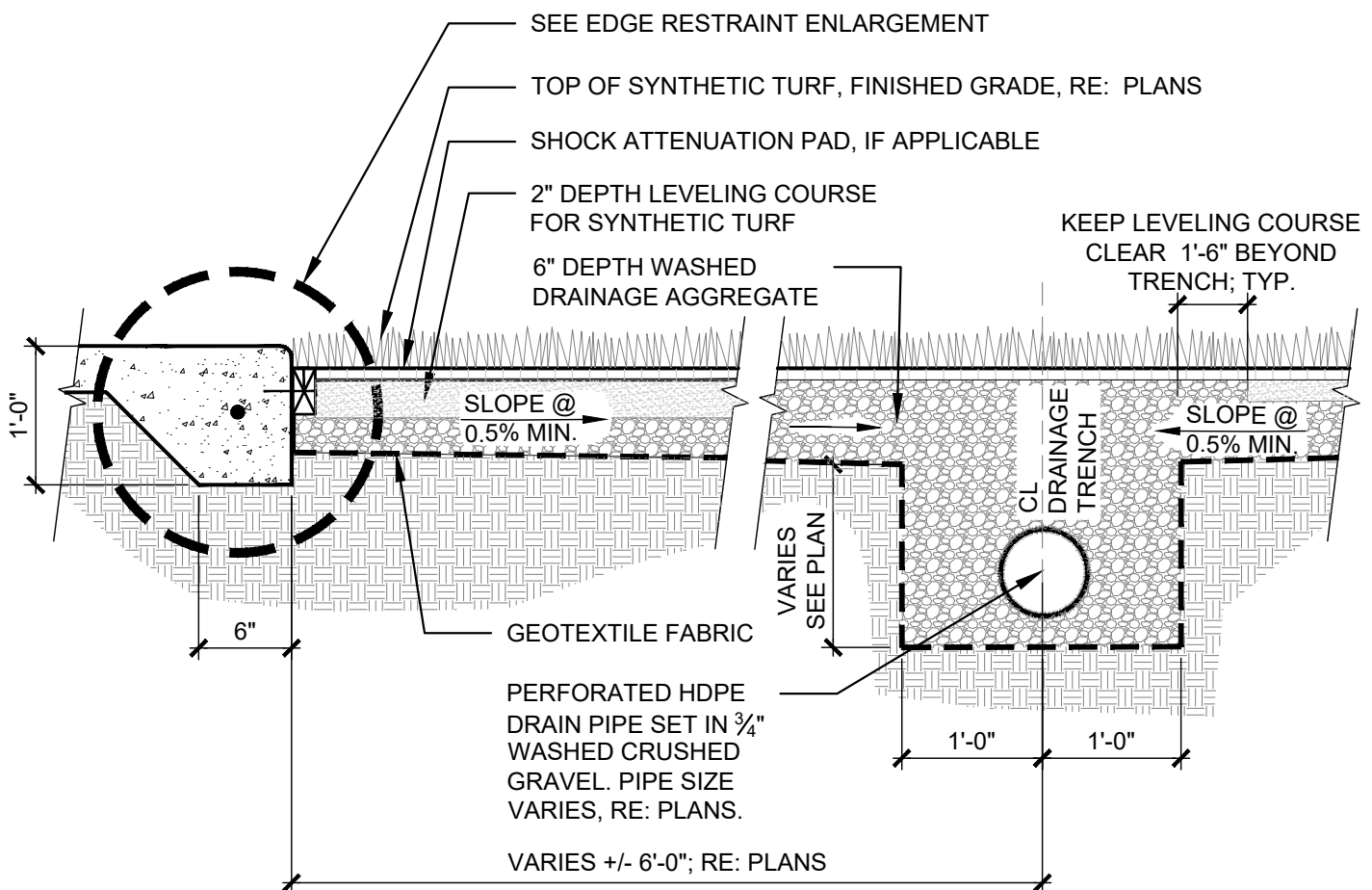
TOWN OF PARKER STANDARD DETAILS



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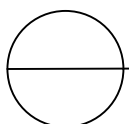


EDGE RESTRAINT ENLARGEMENT



NOTES:

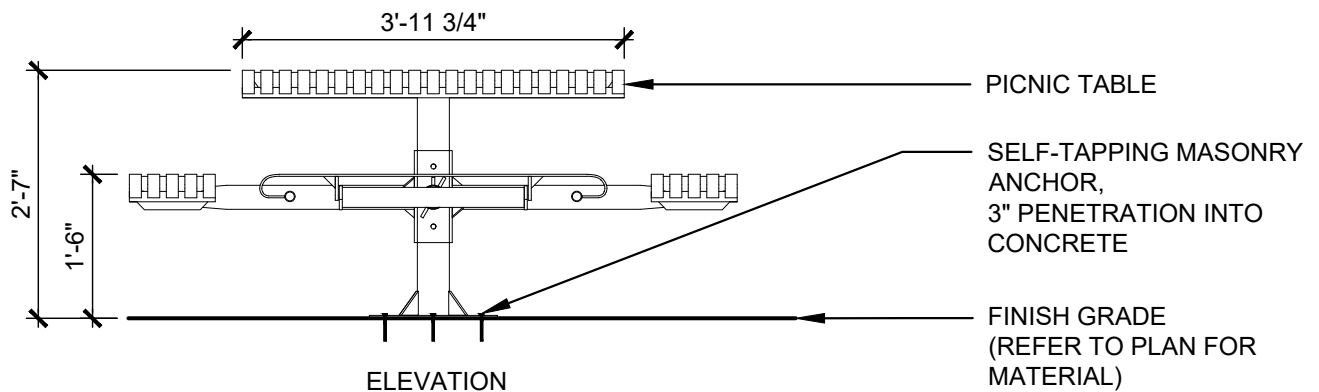
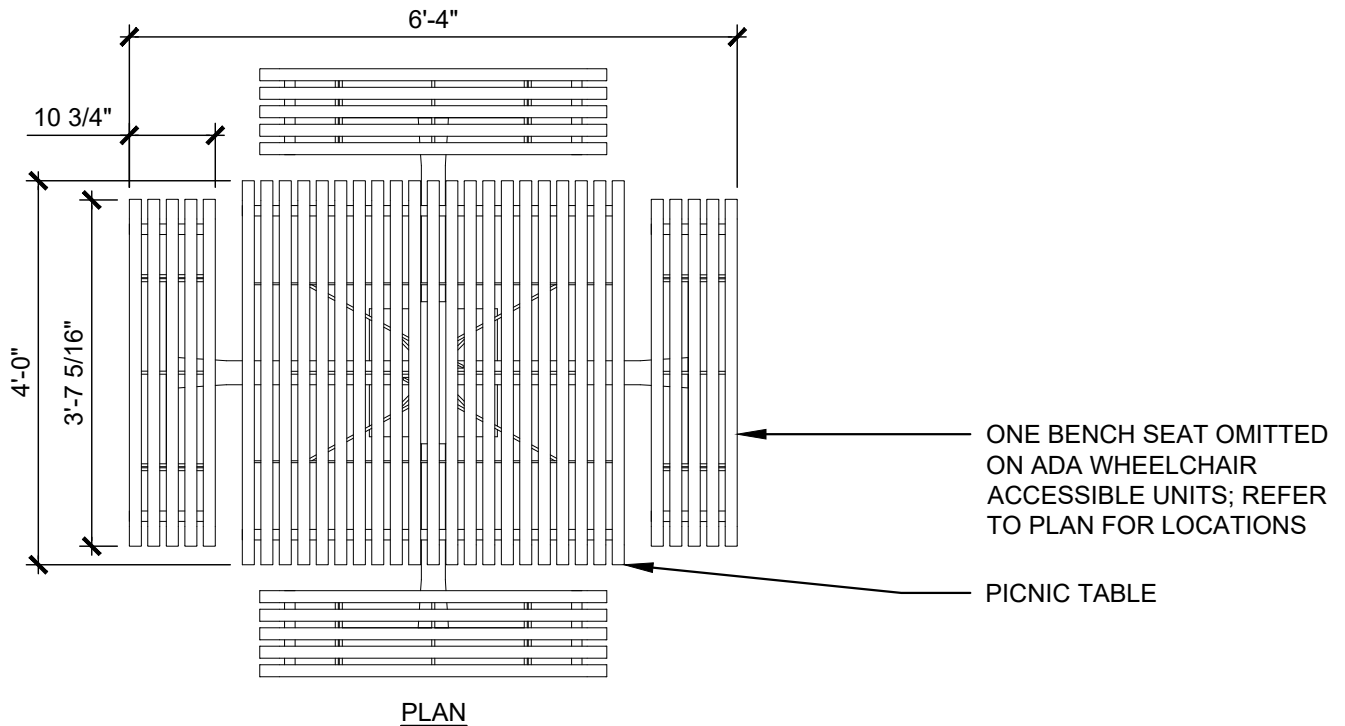
1. RE: GEOTECH REPORT FOR SUB-GRADE PREPARATION RECOMMENDATIONS



SYNTHETIC GRASS SURFACING

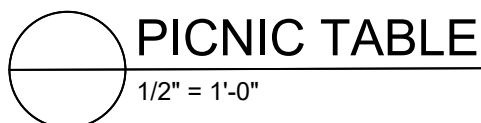
3/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

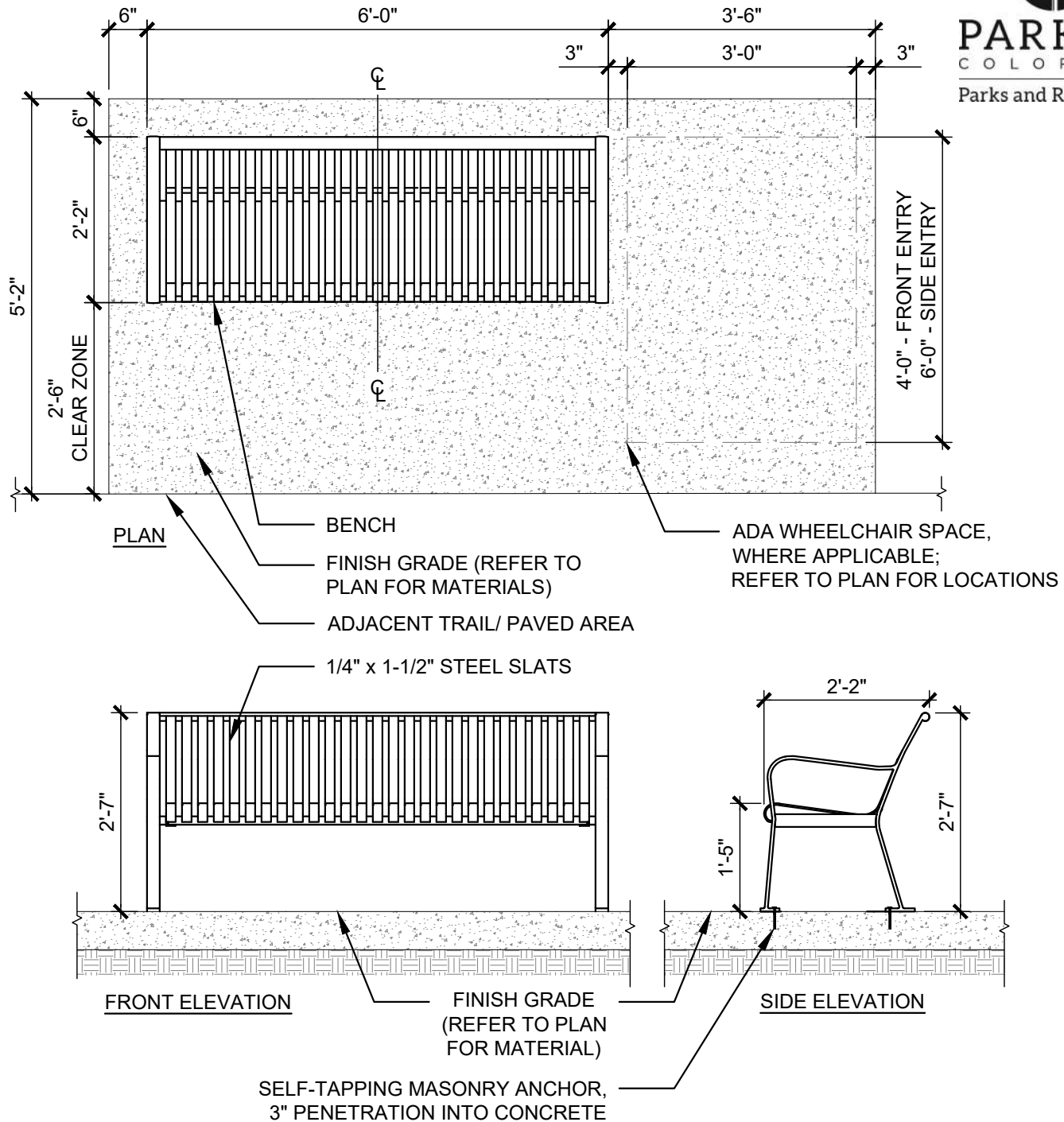
1. BASIS-OF-DESIGN PICNIC TABLE:
VICTOR STANLEY (MFR). MODEL CRPR-4 48" SQUARE TOP (4-SEAT) AND MODEL CRPR-3 48" SQUARE TOP (3-SEAT; ADA WHEELCHAIR ACCESSIBLE).
2. WHERE TABLE SITS ON UNIT PAVING OR CRUSHER FINES PAVING, MASONRY ANCHOR TO EXTEND THROUGH UNIT PAVING AND EMBED INTO C.I.P. CONCRETE SLAB OR FOOTING TO MIN. 3" DEPTH.



TOWN OF PARKER STANDARD DETAILS

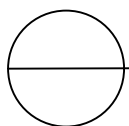


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NOTES:

1. BASIS-OF-DESIGN BENCH: VICTOR STANLEY. RB-28 (BACKED), 6'-0"L x 2'-0"W x 1'-5"H BENCH, COLOR: STANDARD BLACK, SURFACE MOUNTED; MASONRY ANCHOR SIZE AS RECOMMENDED BY MFR.
2. WHERE BENCH SITS ON UNIT PAVING OR CRUSHER FINES PAVING, MASONRY ANCHOR TO EXTEND THROUGH UNIT PAVING AND EMBED INTO C.I.P. CONCRETE SLAB OR FOOTING TO MIN. 3" DEPTH.
3. PAD THICKNESS 4" PER PLANS AND FLATWORK DETAILS.



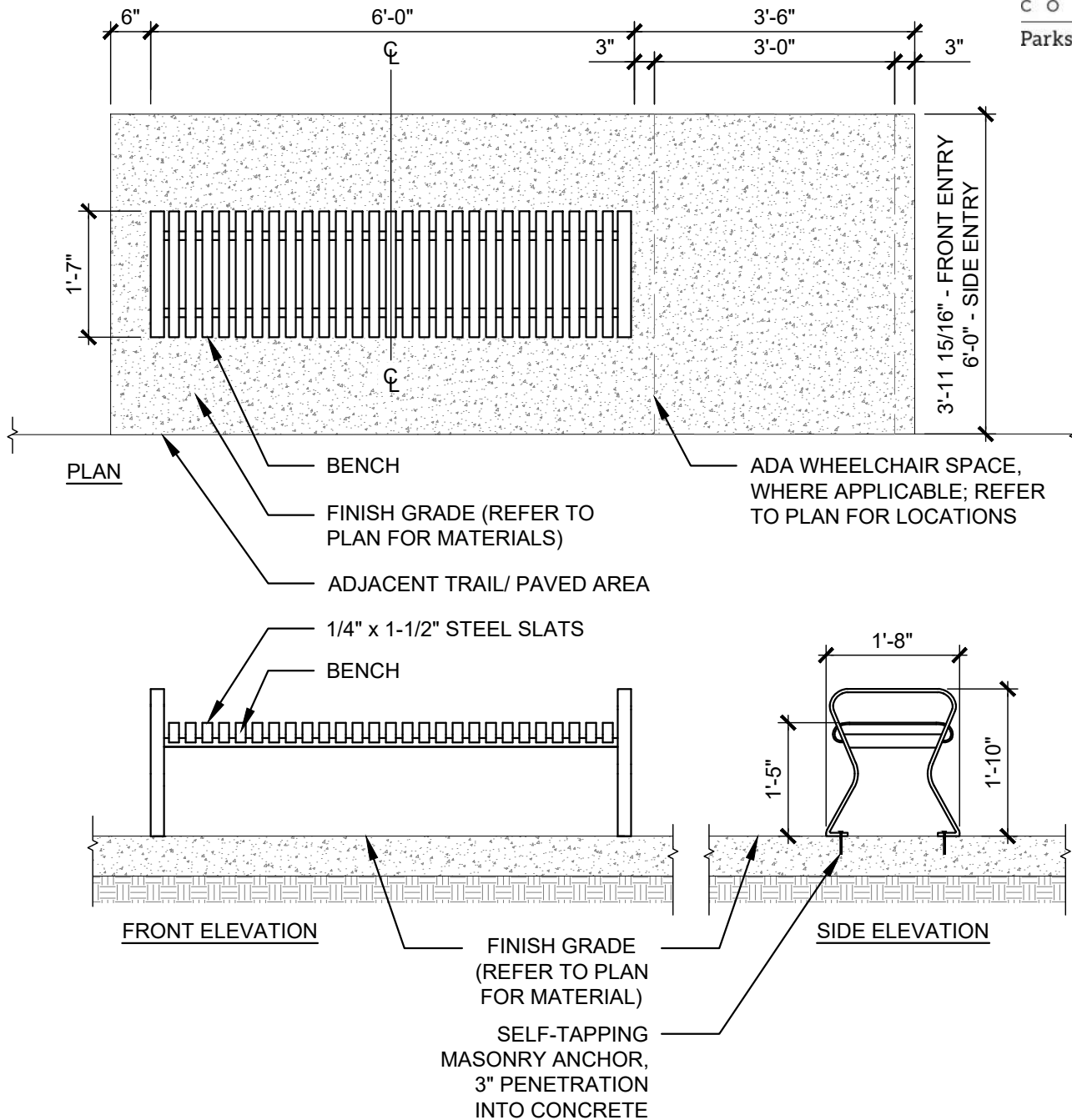
BENCH (BACKED)

1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

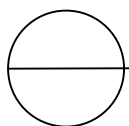


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NOTES:

1. BASIS-OF-DESIGN BENCH: VICTOR STANLEY. RB-12 (BACKLESS), 6'-0"L x 1'-8"W x 1'-5"H BENCH. COLOR: STANDARD BLACK. SURFACE MOUNTED; MASONRY ANCHOR SIZE AS RECOMMENDED BY MFR.
2. WHERE BENCH SITS ON UNIT PAVING OR CRUSHER FINES PAVING, MASONRY ANCHOR TO EXTEND THROUGH UNIT PAVING AND EMBED INTO C.I.P. CONCRETE SLAB OR FOOTING TO MIN. 3" DEPTH.
3. PAD THICKNESS 4" PER PLANS AND FLATWORK DETAILS.



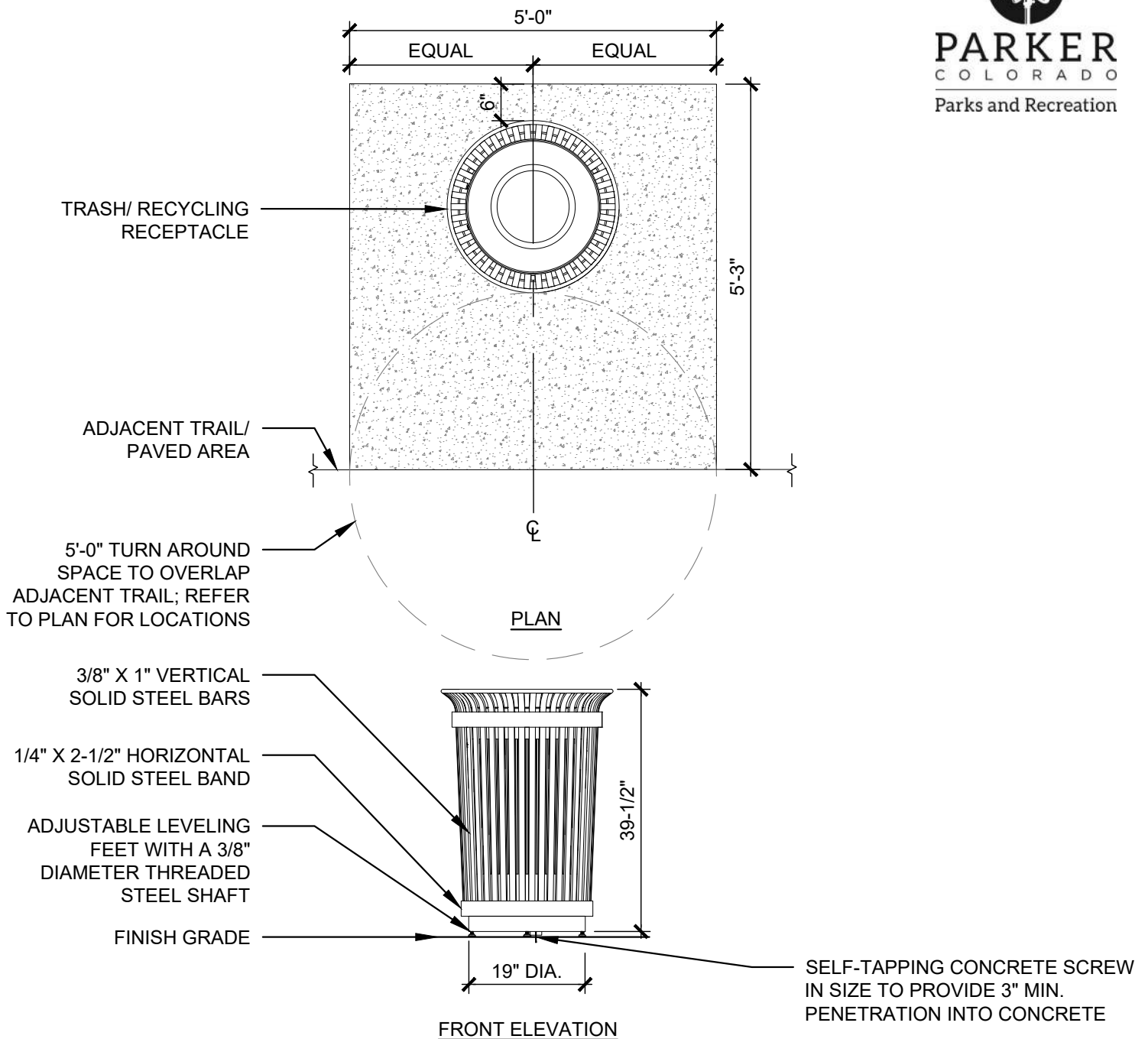
BENCH (BACKLESS)

1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

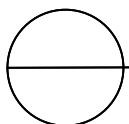


PARKER
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NOTES:

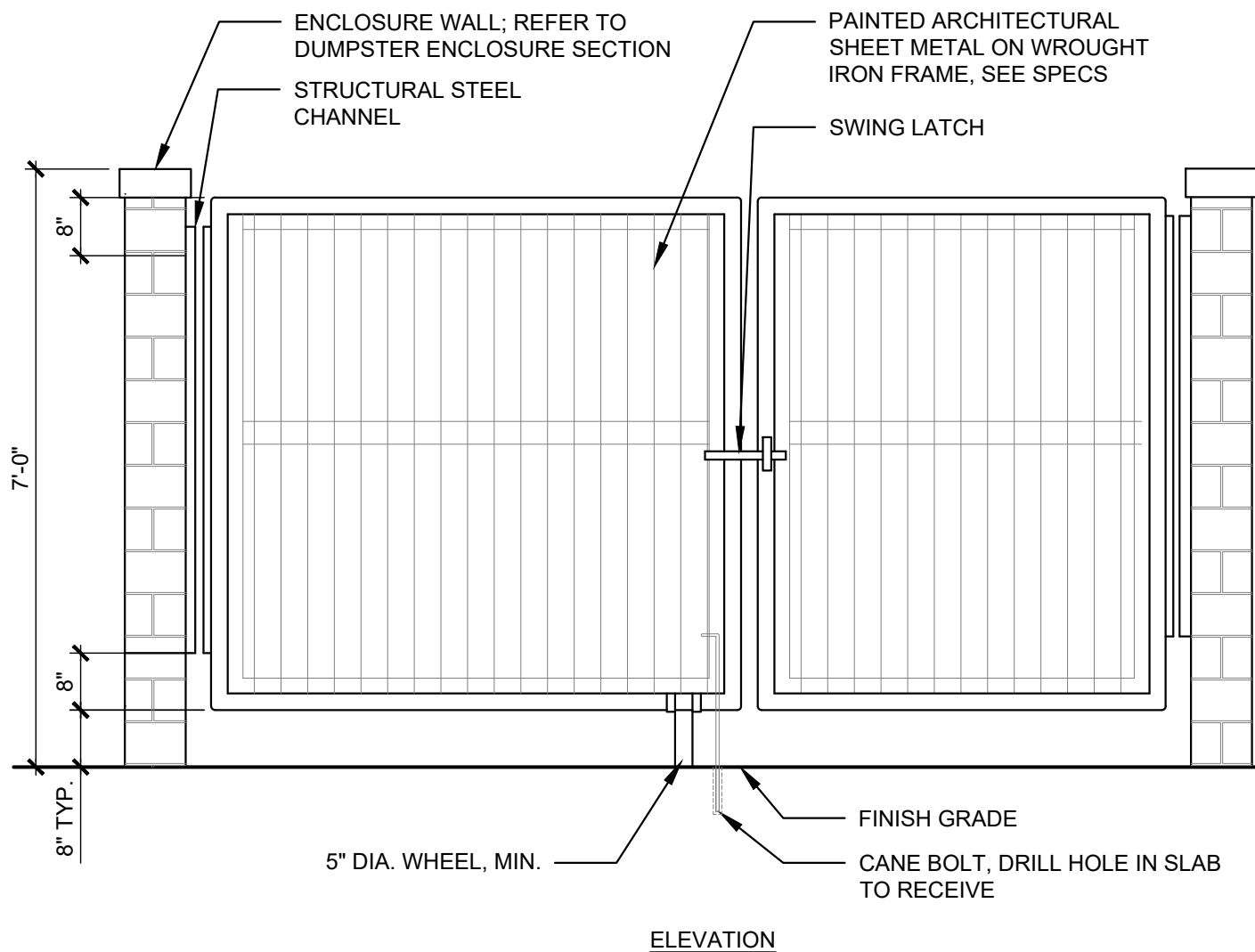
1. BASIS-OF-DESIGN: VICTOR STANLEY (MFR.) MODEL RB-45, 45 GAL., STANDARD TAPERED FORMED LID, COLOR: STANDARD BLACK; SURFACE MOUNT; PROVIDE W/ LINER.
2. WHERE RECEPTACLE SITS ON UNIT PAVING OR CRUSHER FINES PAVING, SELF-TAPPING CONCRETE SCREWS TO EXTEND THROUGH UNIT PAVING AND EMBED INTO C.I.P. CONCRETE SLAB OR FOOTING TO MIN. 3" DEPTH.
3. ADA COMPLIANT WHEELCHAIR ACCESS SHALL BE PROVIDED AS INDICATED ON THE PLANS. DETAIL PROVIDED FOR GENERAL INTENT AND CONFIGURATIONS MAY VARY BASED ON SITE CONDITIONS AND RELATIONSHIPS OF ADJACENT PAVING AND SITE PROGRAM.
4. RECYCLING RECEPTACLE TO HAVE A FLAT TOP "RECYCLING" LID.
5. PAD THICKNESS 4" PER PLANS AND FLATWORK DETAIL.



TRASH/ RECYCLING RECEPTACLE

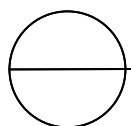
1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

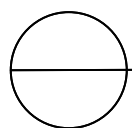
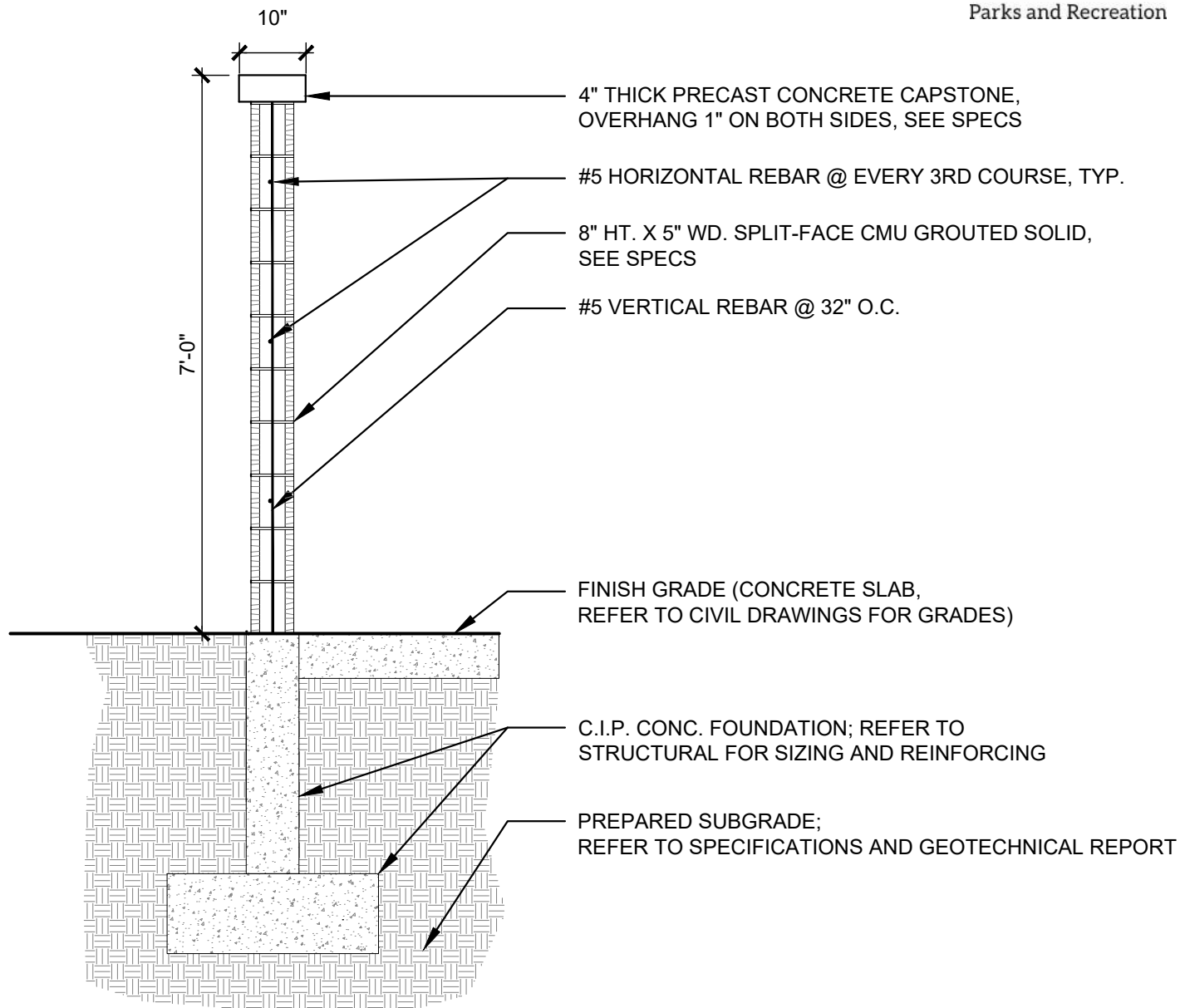
1. PROVIDE ARCHITECT MATERIAL SAMPLES FOR SHEET METAL AND WROUGHT IRON PRIOR TO INSTALLATION.
2. FINAL DESIGN TO BE COMPLIANT WITH LOCAL JURISDICTION'S DESIGN CODE



DUMPSTER ENCLOSURE - ELEVATION

1/2" = 1'-0"

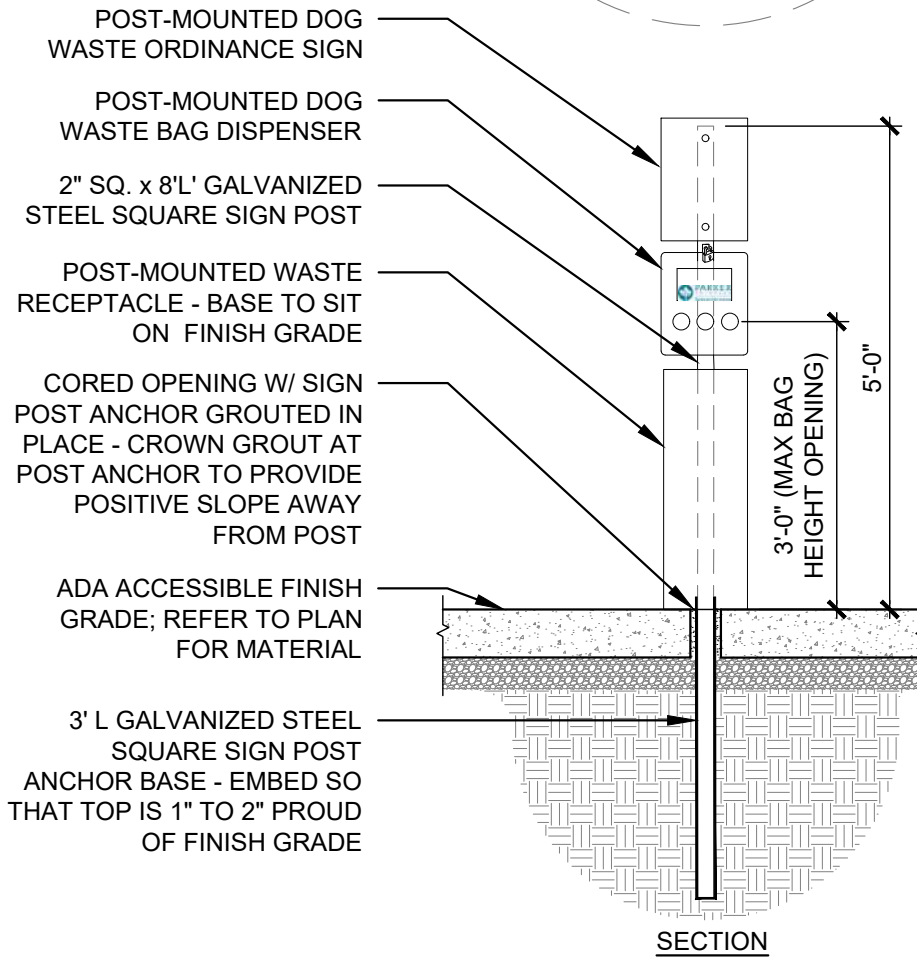
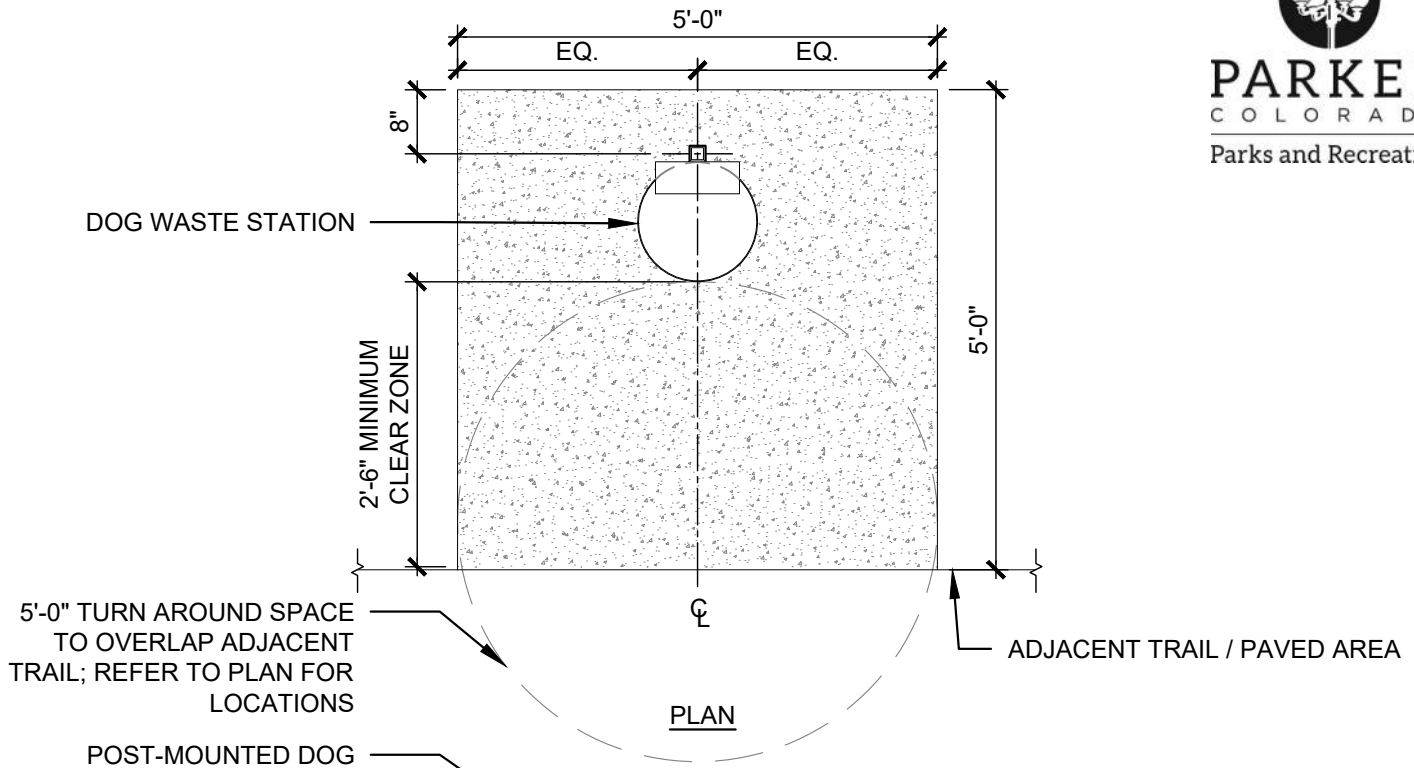
TOWN OF PARKER STANDARD DETAILS



DUMPSTER ENCLOSURE - SECTION

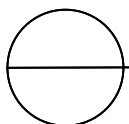
1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

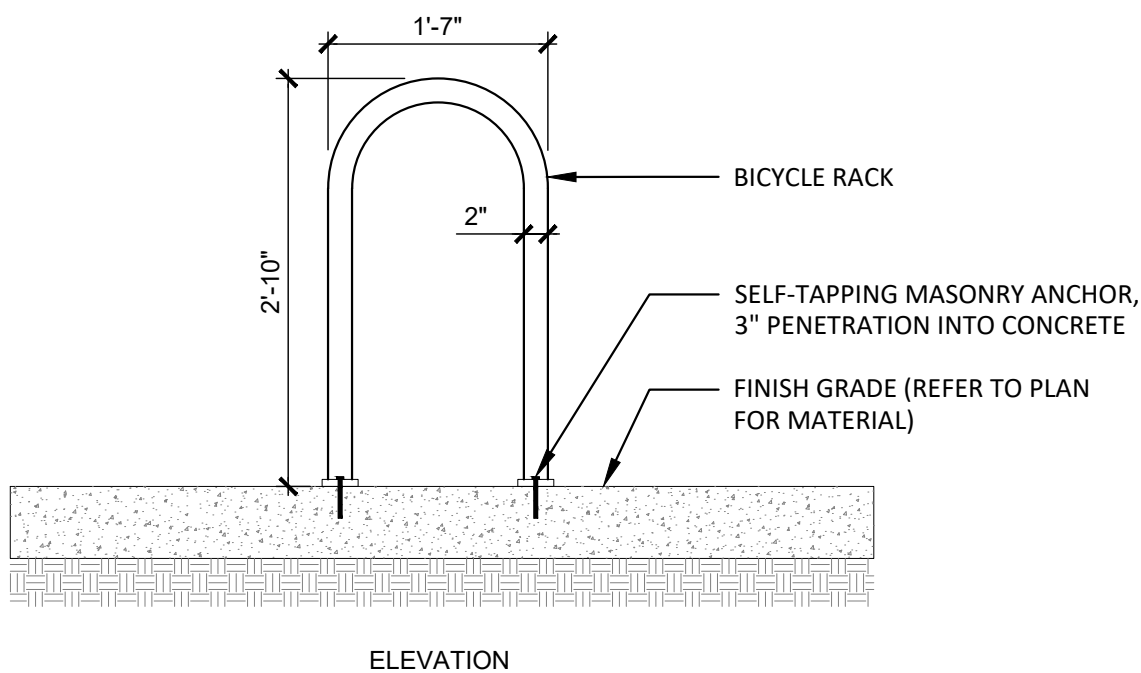
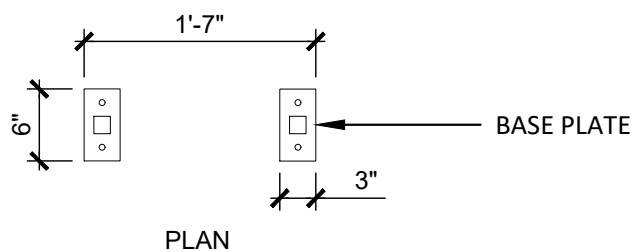
1. BASIS-OF-DESIGN:
PET WASTE RECEPTACLE:
PET WASTE ELIMINATOR (MFR)
MODEL #SKU:E44, 22 GALLON
STEEL TRASH RECEPTACLE,
COLOR: HUNTER GREEN;
2. DOG WASTE BAG DISPENSER
TO INCLUDE MASTER LOCK 0536
AND TOWN OF PARKER STICKER.
3. ADA COMPLIANT WHEELCHAIR
ACCESS SHALL BE PROVIDED AS
INDICATED ON THE PLANS.
DETAIL PROVIDED FOR GENERAL
INTENT AND CONFIGURATIONS
MAY VARY BASED ON SITE
CONDITIONS AND
RELATIONSHIPS OF ADJACENT
PAVING AND SITE PROGRAM.
4. PAD THICKNESS 4" PER PLANS
AND FLATWORK DETAIL.



DOG WASTE STATION

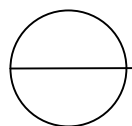
1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

1. BASIS-OF-DESIGN: BIKE RACK (MADRAX U-200), SURFACE MOUNTED, COLOR: BLACK
2. FINAL LOCATION TO BE VERIFIED IN FIELD WITH OWNER AND DESIGN TEAM COORDINATE WITH OWNER ON EXACT LOCATION.
3. WHERE BICYCLE RACK SITS ON UNIT PAVING, MASONRY ANCHOR TO EXTEND THROUGH UNIT PAVING AND EMBED INTO C.I.P. CONCRETE FOOTING TO MIN. 3" DEPTH.



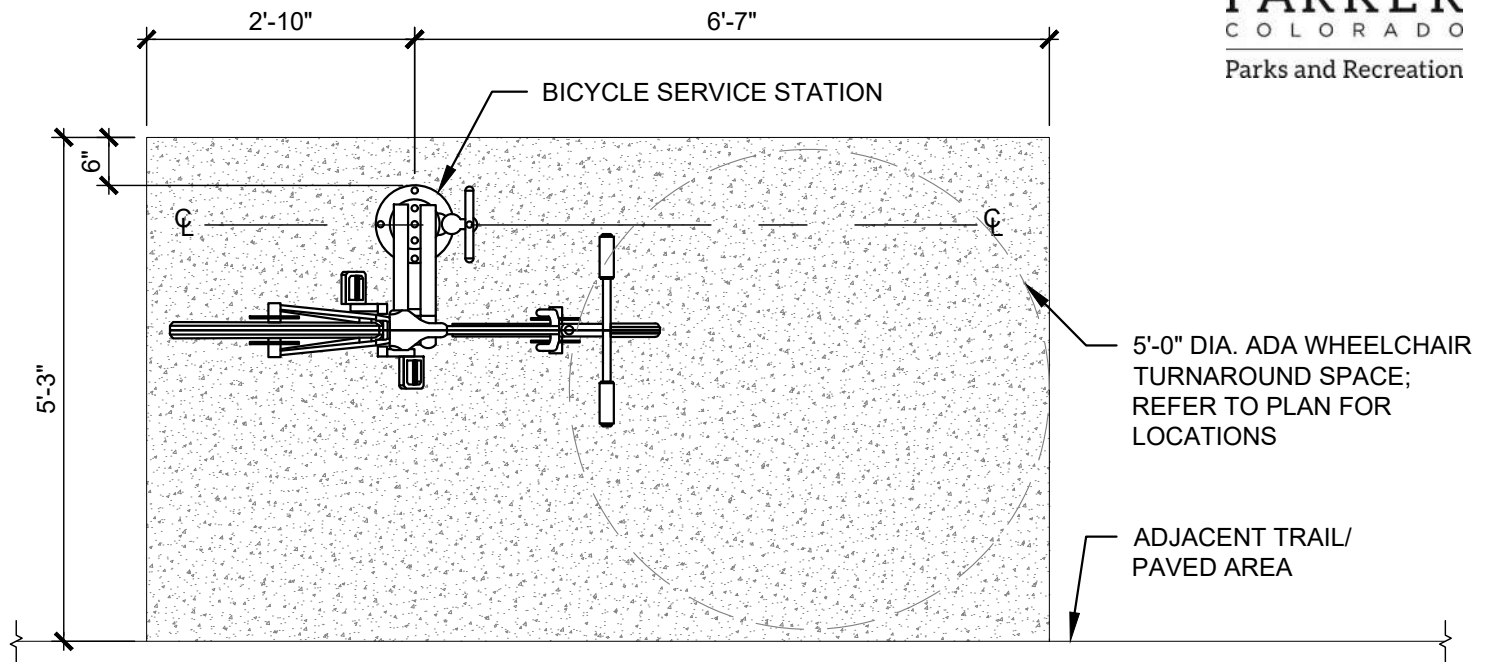
BICYCLE RACK

3/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



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Parks and Recreation



PLAN

NOTES:

1. BASIS-OF-DESIGN:

FIXIT-H: SURFACE MOUNT, POWDER COATED, GREEN RAL 6016, COLOR: GREEN STYLE: FT CONFIGURATION: EPX

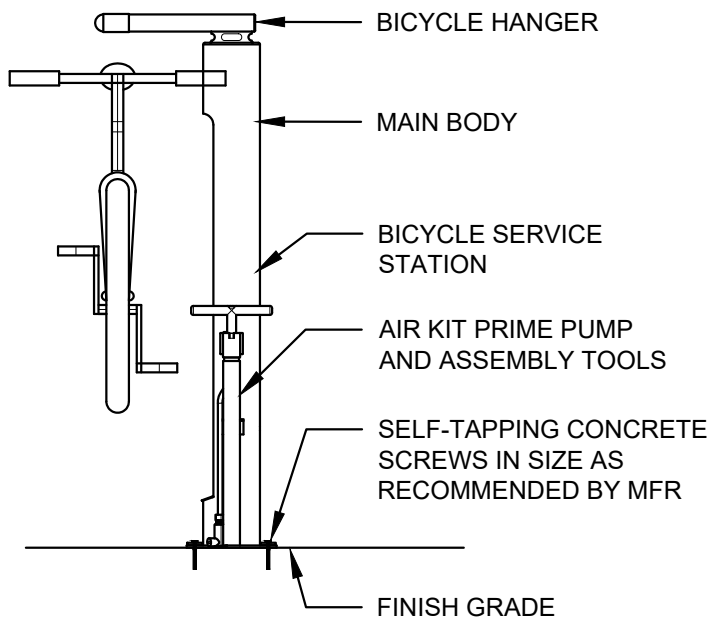
AIR KIT PRIME: FIXIT MOUNT, REV. B, POWDER COATED, GREEN RAL 6016 SIZE: FX REV B COLOR: GREEN CONFIGURATION: EPX

ASSEMBLY TOOLS: TAMPER-RESISTANT TOOLS FOR INSTALLATION AIR KIT PRIME FX, A SIZE: AK PR FX A.

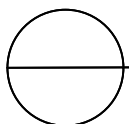
2. WHERE BICYCLE REPAIR STATION SITS ON UNIT PAVING, SELF-TAPPING CONCRETE SCREWS TO EXTEND THROUGH UNIT PAVING AND EMBED INTO C.I.P. CONCRETE FOOTING TO MIN. 3" DEPTH.

3. ADA COMPLIANT WHEELCHAIR ACCESS SHALL BE PROVIDED AS INDICATED ON THE PLANS. DETAIL PROVIDED FOR GENERAL INTENT AND CONFIGURATIONS MAY VARY BASED ON SITE CONDITIONS AND RELATIONSHIPS OF ADJACENT PAVING AND SITE PROGRAM.

4. PAD THICKNESS 4" PER PLANS AND FLATWORK DETAIL.



FRONT ELEVATION



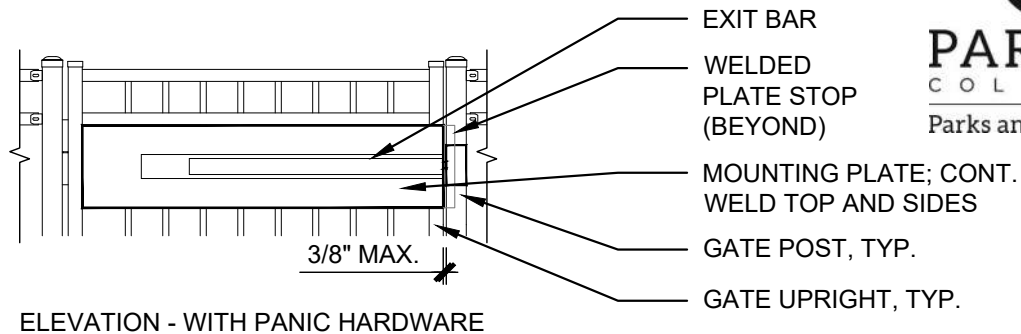
BICYCLE SERVICE STATION

1/2" = 1'-0"

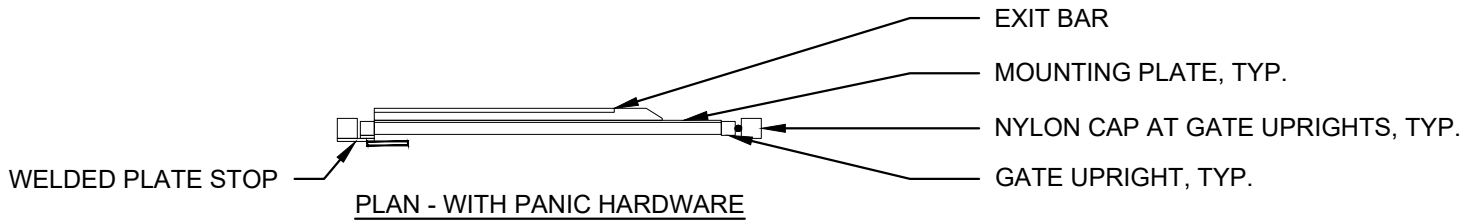
TOWN OF PARKER STANDARD DETAILS



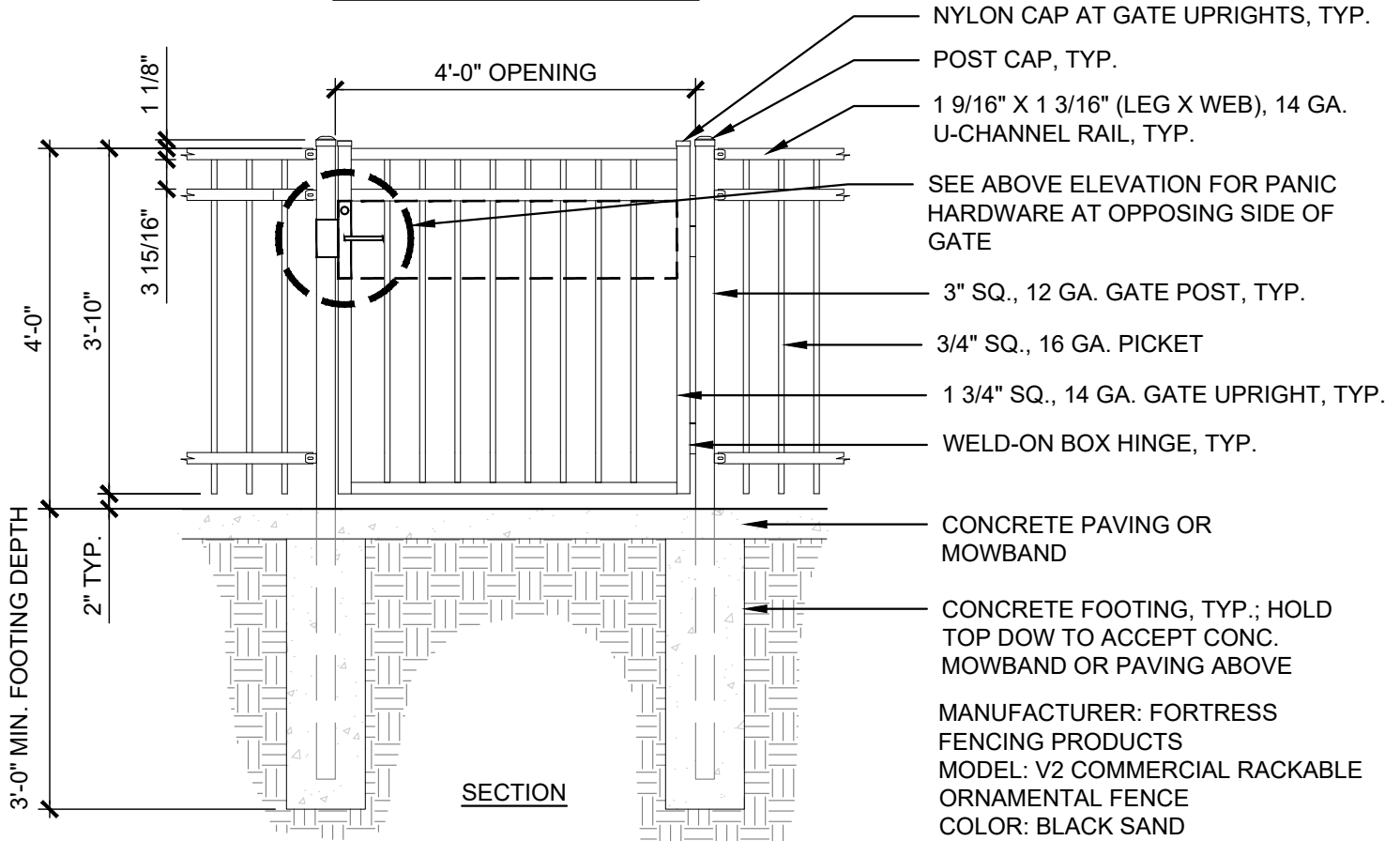
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ELEVATION - WITH PANIC HARDWARE



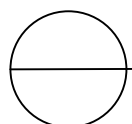
PLAN - WITH PANIC HARDWARE



SECTION

NOTES:

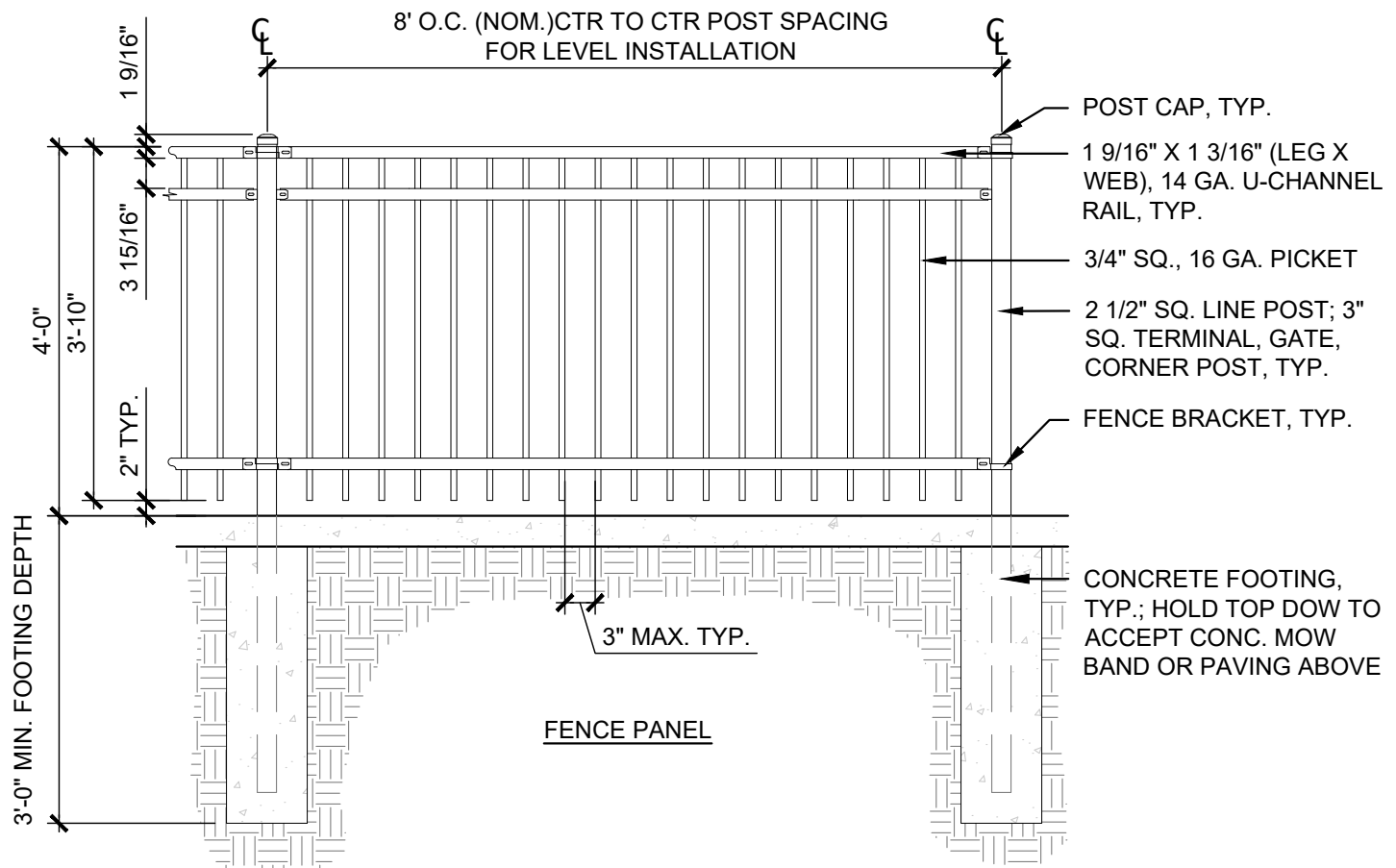
1. REFER TO MANUFACTURER'S SPECIFICATIONS FOR FENCE AND GATE INSTALLATION. ALL DIMENSIONS SHOWN ARE NOMINAL.
2. VERIFY HINGE AND LATCH CLEARANCES W/ MFR.
3. FENCE ASSEMBLY IS DELEGATED-DESIGN AND ALL POST AND COMPONENT SIZING SHALL BE VERIFIED WITH MFR. BASED ON STRUCTURAL PERFORMANCE AND LOADING CRITERIA OF LOCAL JURISDICTION. REFER TO SPECIFICATIONS.



4' WIDE SINGLE DECORATIVE GATE, PEDESTRIAN

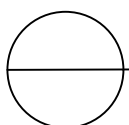
1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

1. BASIS OF DESIGN: FORTRESS FENCING PRODUCTS; MODEL: V2 COMMERCIAL RACKABLE ORNAMENTAL FENCE; COLOR: BLACK SAND
2. REFER TO MANUFACTURER'S SPECIFICATIONS FOR FENCE AND GATE INSTALLATION.
3. POST SIZING INDICATED FOR 4'-0" MAX. HEIGHT FENCE. INCREASES IN FENCE HEIGHT AND UNIQUE CONDITIONS MAY REQUIRE INCREASE IN POST SIZE AND GAUGE PER MFR'S PRE-ENGINEERED SYSTEM. FENCE ASSEMBLY IS DELEGATED-DESIGN AND ALL POST AND COMPONENT SIZING SHALL BE VERIFIED WITH MFR. BASED ON STRUCTURAL PERFORMANCE AND LOADING CRITERIA OF LOCAL JURISDICTION. REFER TO SPECIFICATIONS.



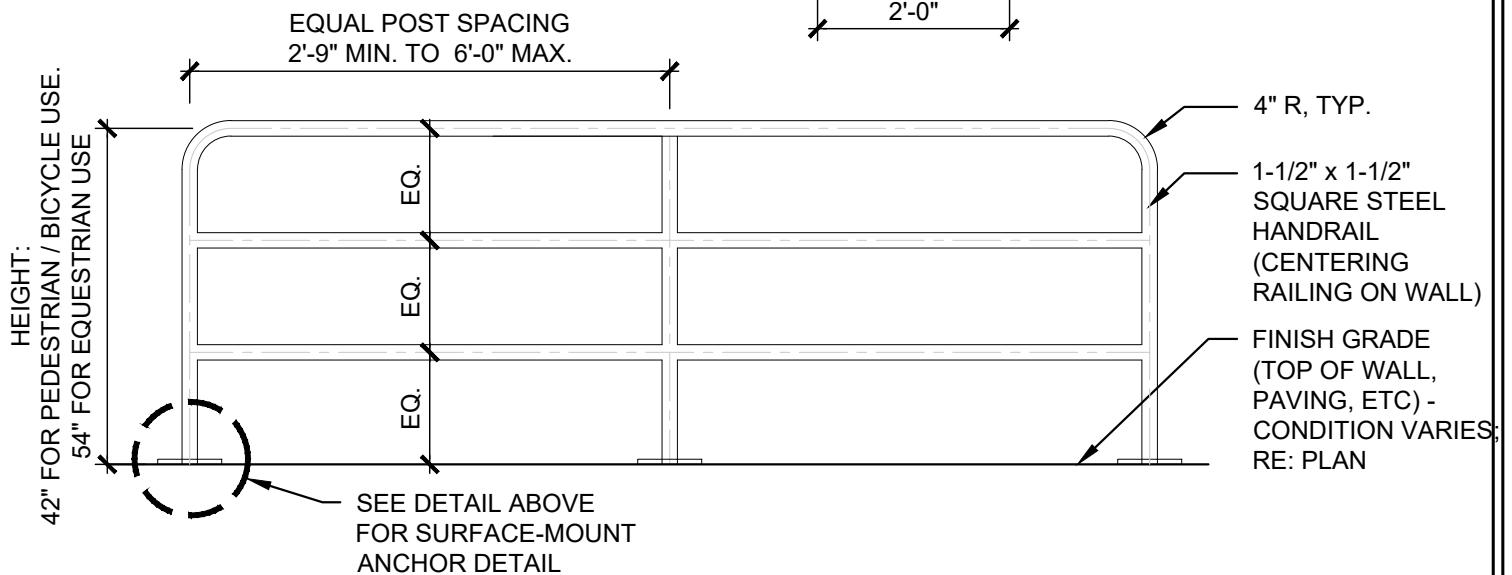
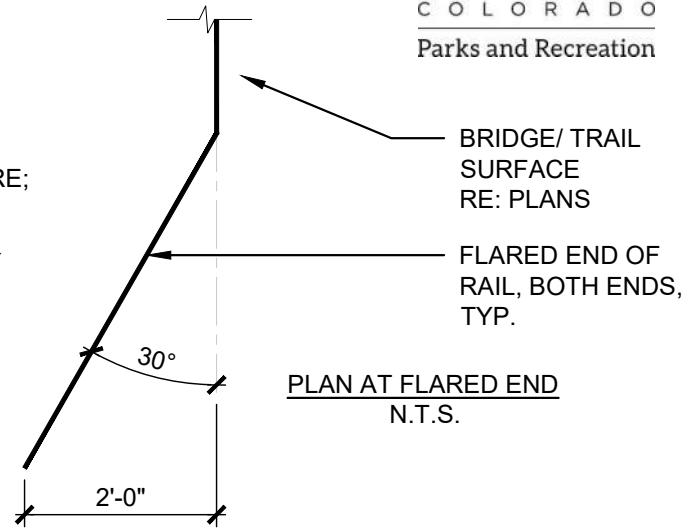
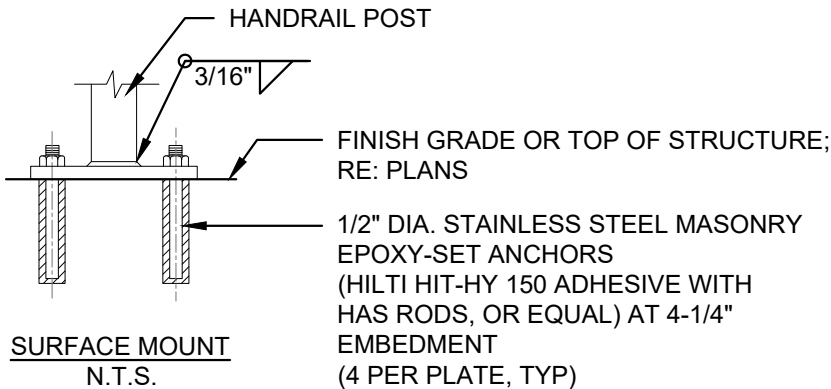
DECORATIVE FENCING

1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



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Parks and Recreation



NOTES:

1. RAIL ASSEMBLY IS DELEGATED DESIGN AND SHALL MEET STRUCTURAL PERFORMANCE CRITERIA AS SPECIFIED AND IN ACCORDANCE WITH ALL APPLICABLE CODES OF LOCAL JURISDICTION. SEE SPECIFICATION SECTION 055213 PIPE AND TUBE RAILINGS.
2. PROVIDE FLARED END RAIL CONDITION WHERE REQUIRED OR INDICATED.

RAIL AND ANCHOR COATING:

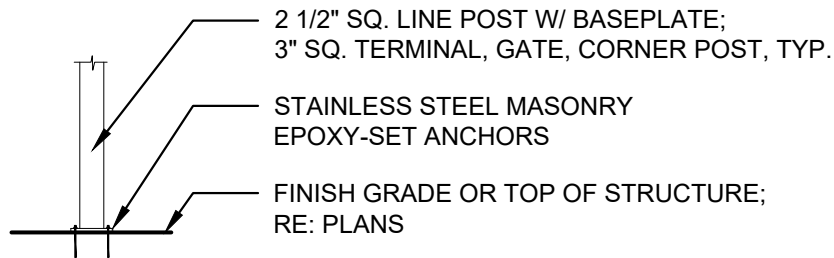
1. RAIL AND ANCHOR SHALL BE STEEL AND SAND BLASTED TO A NEAR WHITE FINISH PER STEEL STRUCTURES PAINTING COUNCIL (SSPC) SP10.
2. FIELD WELDS SHALL BE GROUND SMOOTH PRIOR TO BLASTING.
3. COAT HANDRAIL AND ANCHOR WITH TNE MEC (OR EQUIVALENT) POLYAMIDE EPOXY: 66 HI-BUILD EXPOXOLINE, GRAY - ANSI No. 61 (INO5), 4.0 TO 6.0 MILLS DRY FILM THICKNESS.
4. THE FINAL COAT OF PAINT SHALL BE TNE MEC (OR EQUIVALENT) ALIPHATIC POLYESTER POLYURETHANE: ENDURE SHIELD, PARKER BROWN (F073D3884A), 1.5 TO 2.5 MILLS DRY FILM THICKNESS.
5. PRIMER AND PAINT SHALL BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



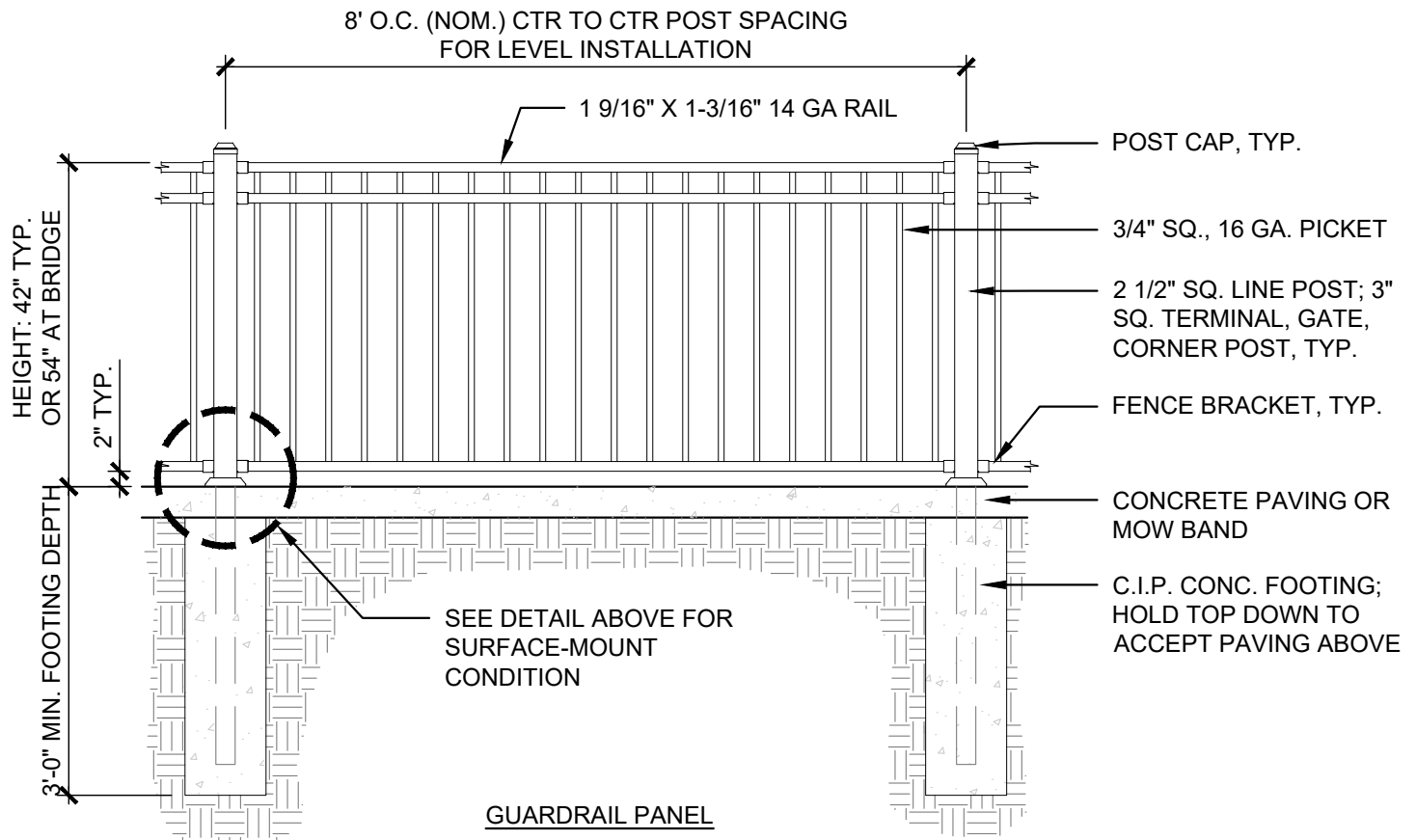
TOWN OF PARKER STANDARD DETAILS



PARKER
COLORADO
Parks and Recreation

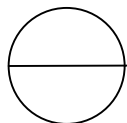


SURFACE MOUNT



NOTES:

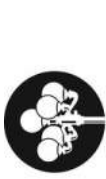
1. BASIS OF DESIGN FENCE: MANUFACTURER: FORTRESS FENCING PRODUCTS; MODEL: V2 COMMERCIAL FLAT TOP/FAT BOTTOM THREE-RAIL ORNAMENTAL FENCE W/ ASSURANCE 3" MAX. AIR SPACE; COLOR: BLACK SAND
2. REFER TO MANUFACTURER'S SPECIFICATIONS FOR FENCE AND GATE INSTALLATION.
3. POST SIZING INDICATED FOR 4'-0" MAX. HEIGHT FENCE. INCREASES IN FENCE HEIGHT AND UNIQUE CONDITIONS MAY REQUIRE INCREASE IN POST SIZE AND GAUGE PER MFR'S PRE-ENGINEERED SYSTEM. FENCE ASSEMBLY IS DELEGATED-DESIGN AND ALL POST AND COMPONENT SIZING SHALL BE VERIFIED WITH MFR. BASED ON STRUCTURAL PERFORMANCE AND LOADING CRITERIA OF LOCAL JURISDICTION. REFER TO SPECIFICATIONS.



GUARDRAIL (AT PARKS)

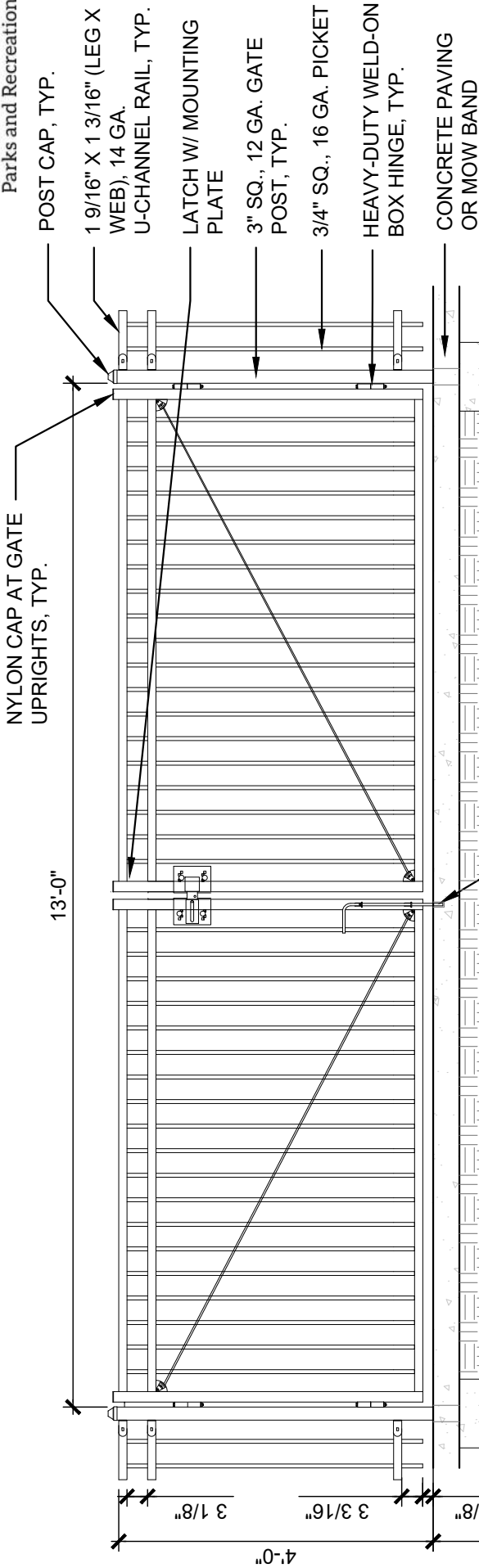
1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



PARKER
C O L O R A D O

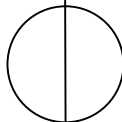
Parks and Recreation



SECTION

NOTES:

1. REFER TO MANUFACTURER'S SPECIFICATIONS FOR FENCE AND GATE INSTALLATION. ALL DIMENSIONS SHOWN ARE NOMINAL.
2. VERIFY HINGE AND LATCH CLEARANCES W/ MFR.
3. FENCE ASSEMBLY IS DELEGATED-DESIGN AND ALL POST AND COMPONENT SIZING SHALL BE VERIFIED WITH MFR. BASED ON STRUCTURAL PERFORMANCE AND LOADING CRITERIA OF LOCAL JURISDICTION. REFER TO SPECIFICATIONS.



DOUBLE LEAF GATE, VEHICULAR

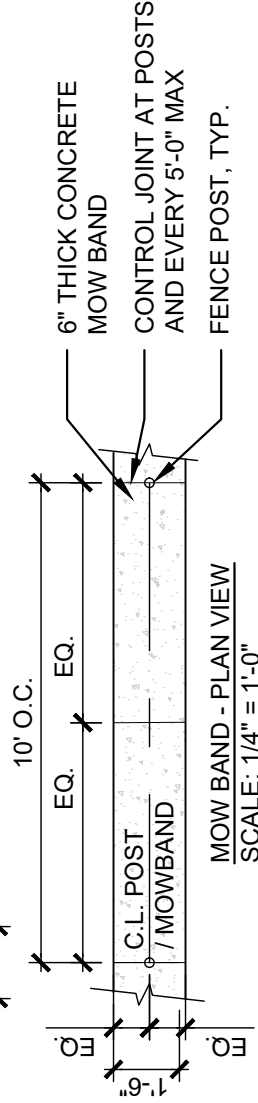
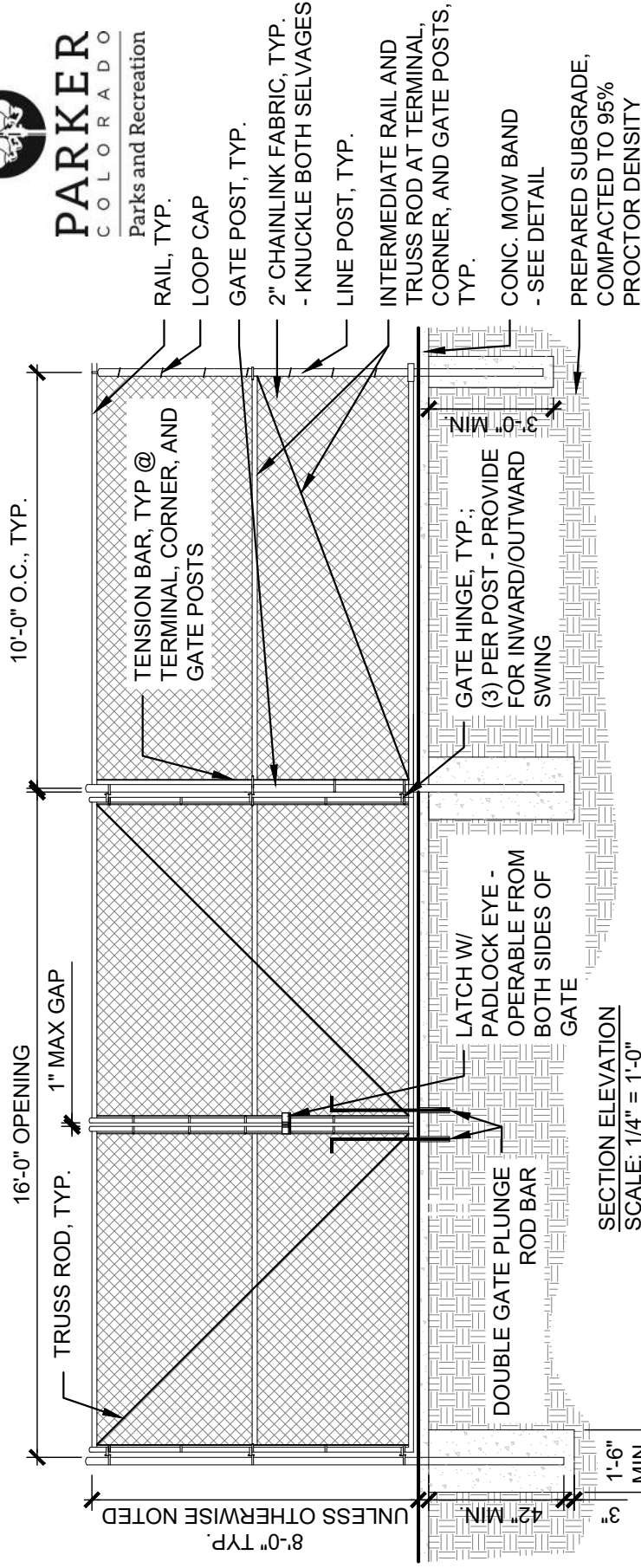
1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



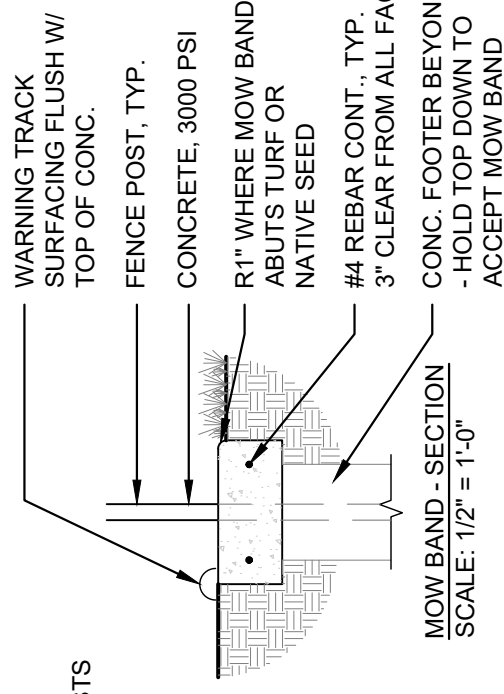
PARKER
COLORADO

Parks and Recreation



NOTES:

1. REFER TO MANUFACTURER'S SPECIFICATIONS FOR FENCE AND GATE INSTALLATION. ALL DIMENSIONS SHOWN ARE NOMINAL.
2. VERIFY HINGE AND LATCH CLEARANCES W/ MFR.
3. FENCE ASSEMBLY IS DELEGATED-DESIGN AND ALL POST AND COMPONENT SIZING SHALL BE VERIFIED WITH MFR. BASED ON STRUCTURAL PERFORMANCE AND LOADING CRITERIA OF LOCAL JURISDICTION. REFER TO SPECIFICATIONS.
4. 4000 PSI CONCRETE FOOTER, ALL POSTS.

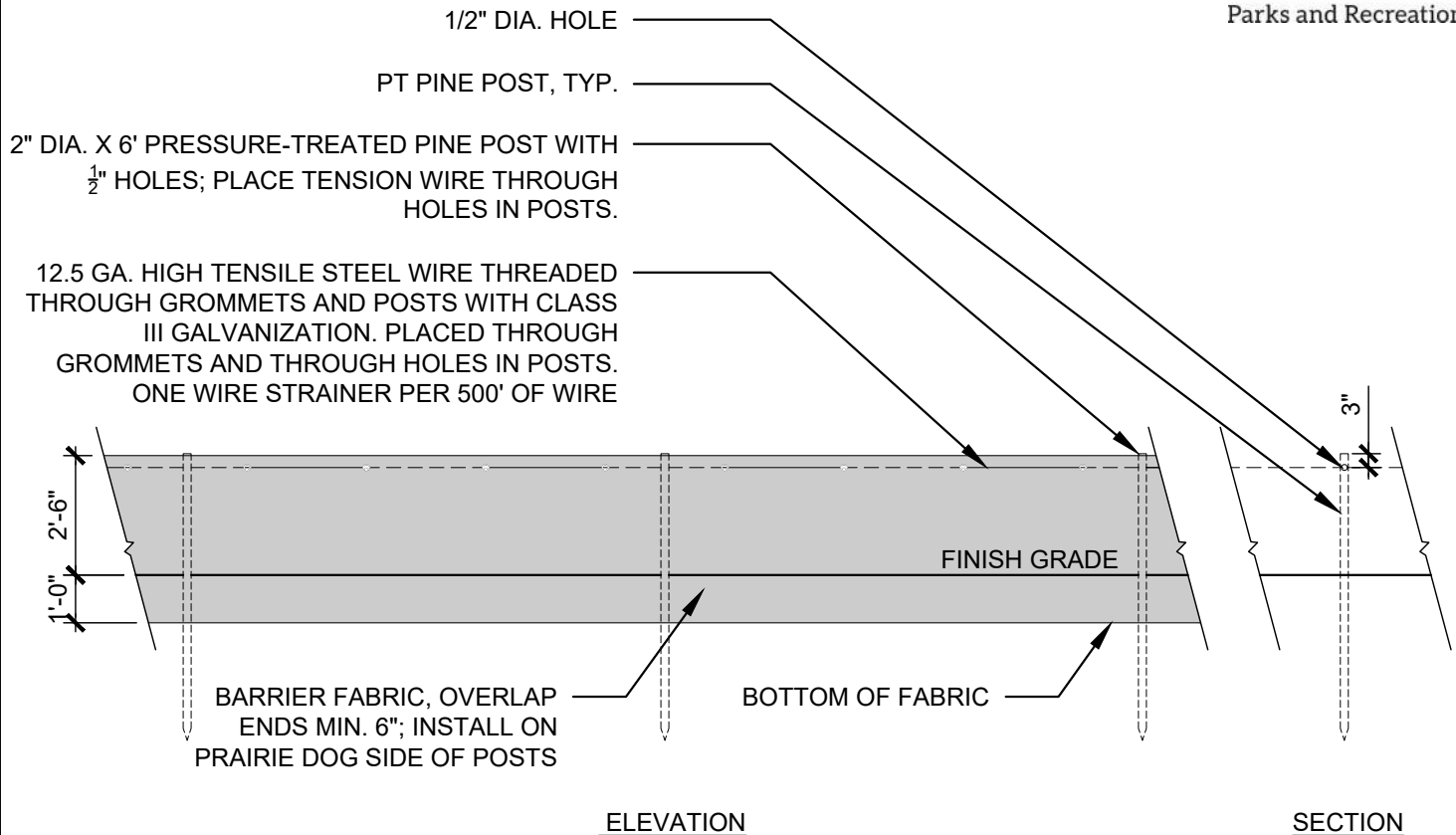


OUTFIELD FENCE AND GATE

AS NOTED

DATE: MAY 2023 | DETAIL SF-15

TOWN OF PARKER STANDARD DETAILS

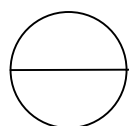
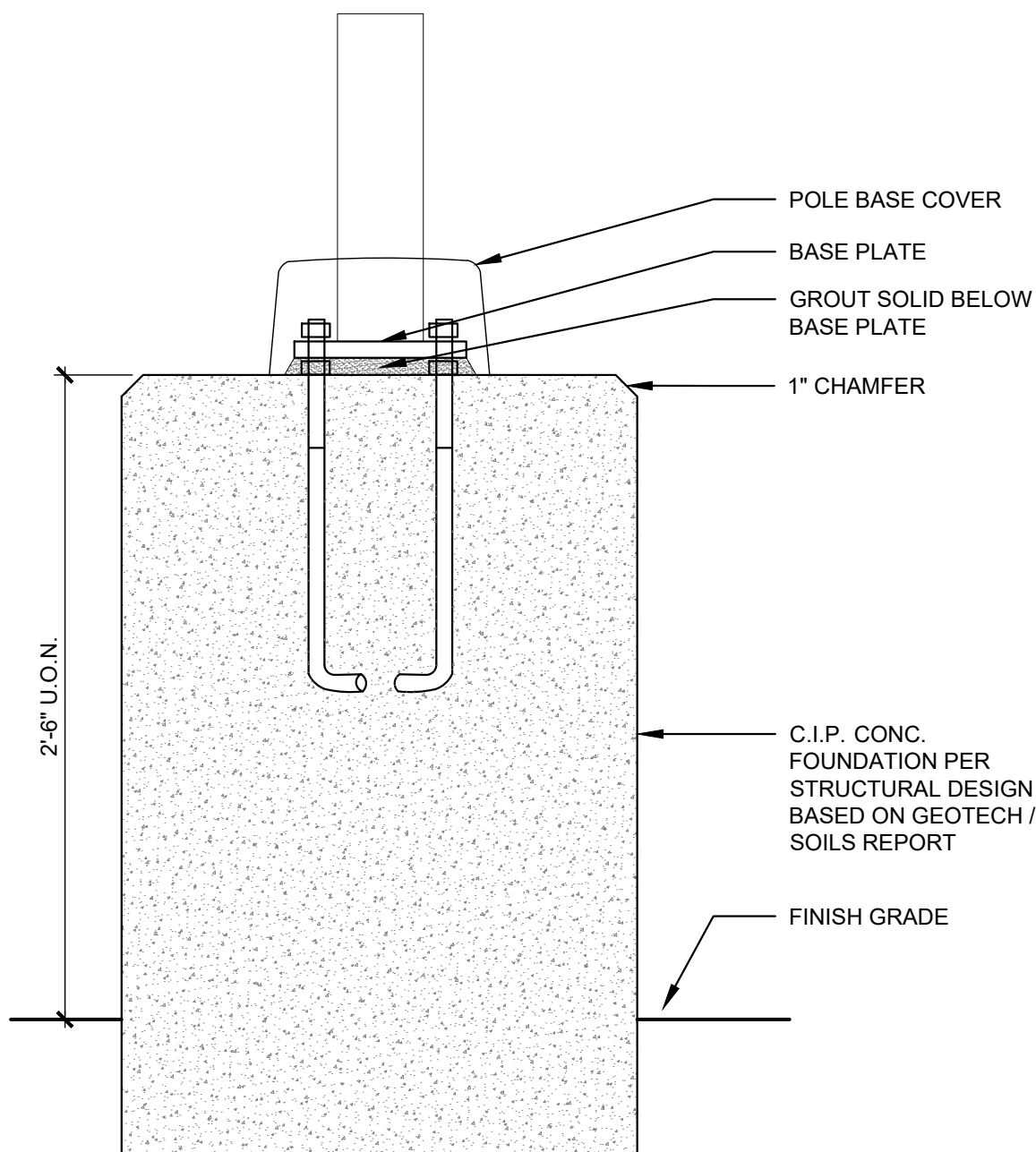


NOTES:

1. BASIS-OF DESIGN FABRIC: REEF INDUSTRIES (MFR) "AMORLON A-50" SERIES WOVEN UV STABILIZED POLYETHYLENE COATED HDPE; 42" WIDE; DARK GREEN COLOR; WITH METAL 12.5 GA. HIGH-TENSILE STEEL WIRE WITH CLASS III GALVANIZATION. PROVIDE ONE GALVANIZED HIGH-TENSILE WIRE RATCHET STRAINER PER 500 LF OF WIRE. GROMMETS AT 3" FROM TOP EDGE AND AT 30" O.C.
2. STAPLES SHALL NOT BE USED TO ATTACH FABRIC TO WOOD POSTS OR OTHER WOOD MEMBERS EXCEPT AS NOTED FOR TERMINAL POSTS.
3. AT END OF RUNS, ROLL FABRIC AROUND A PRESSURE-TREATED 2"X2" AND FASTEN TO TERMINAL POST W/ GALVANIZED FENCE STAPLES AT 6" O.C.



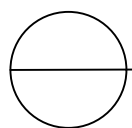
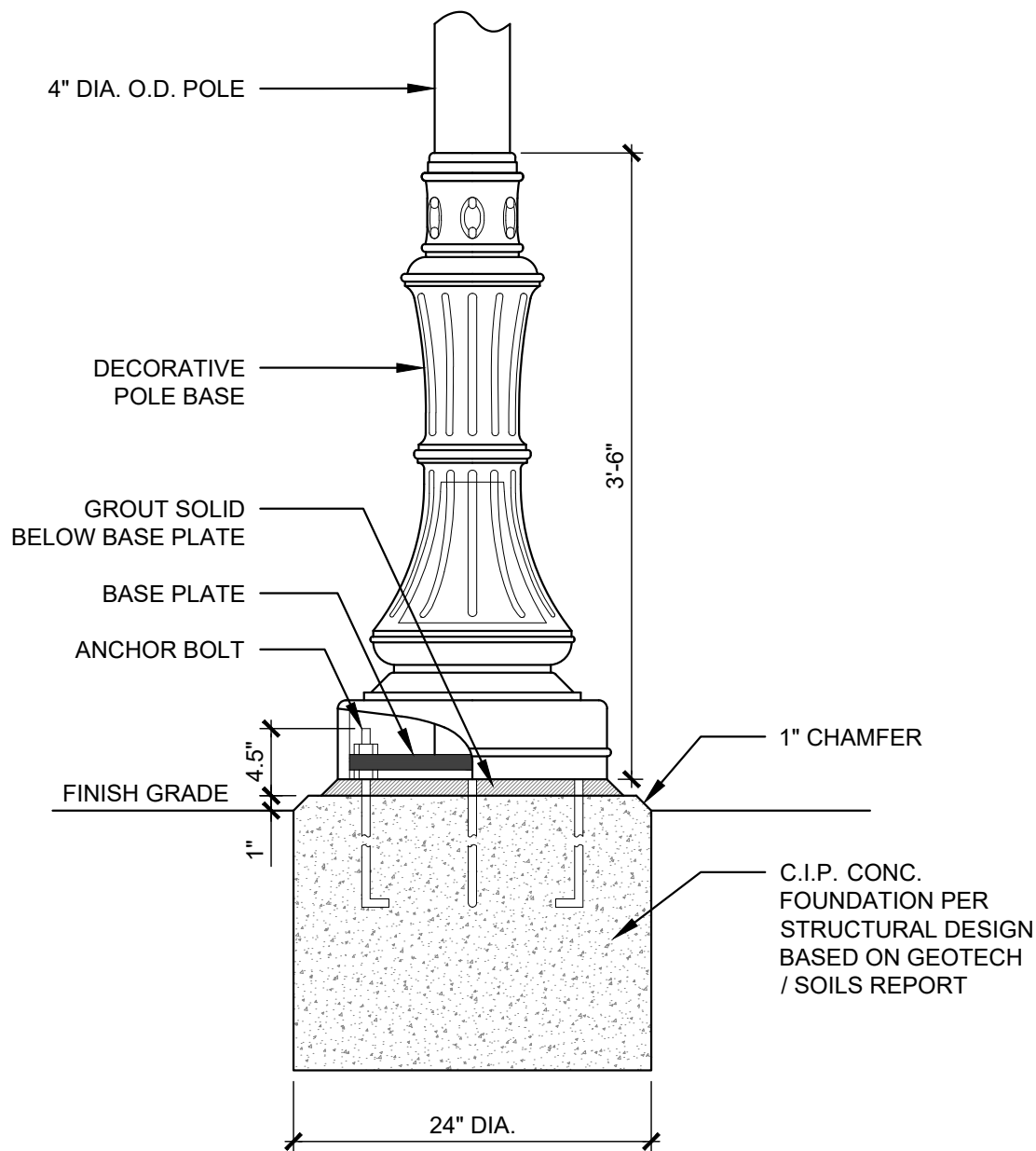
TOWN OF PARKER STANDARD DETAILS



ROADWAY PARKING LOT POLE BASE LIGHT

1 1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



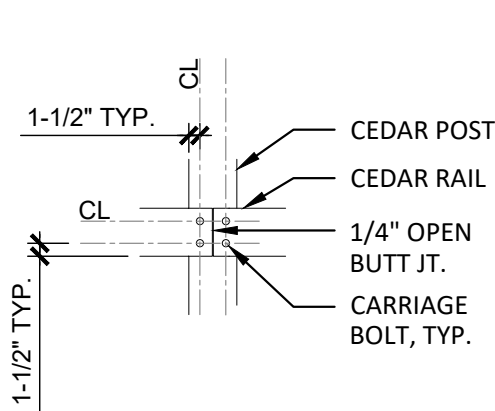
PEDESTRIAN LIGHT POLE BASE

1" = 1'-0"

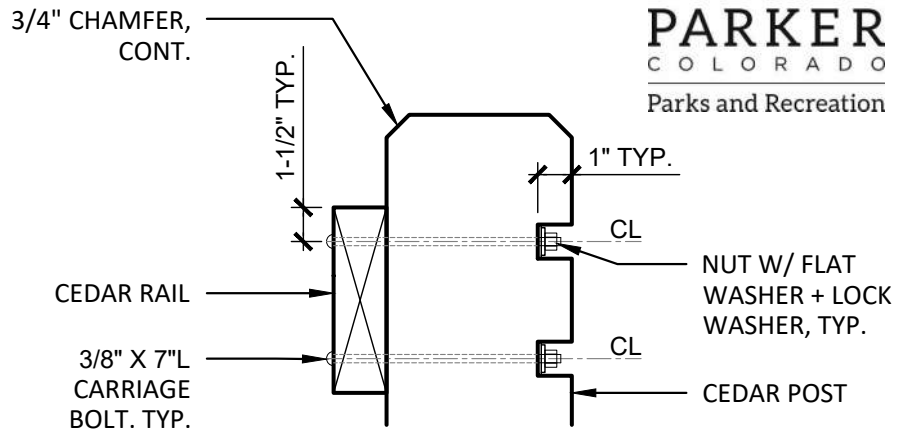
TOWN OF PARKER STANDARD DETAILS



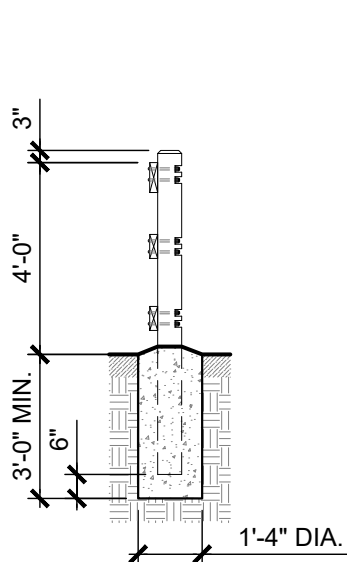
PARKER
COLORADO
Parks and Recreation



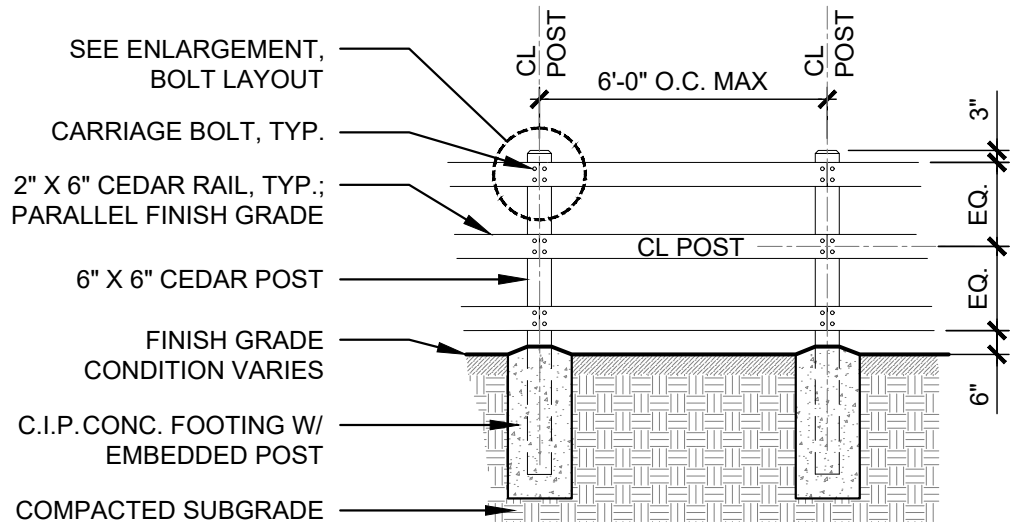
ENLARGEMENT - BOLT LAYOUT - ELEVATION
SCALE: 1/2" = 1'-0"



ENLARGEMENT - BOLT LAYOUT - SECTION
N.T.S.



4' HT FENCE - SECTION



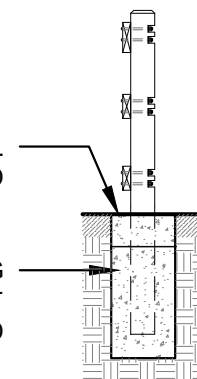
4' HT FENCE - ELEVATION

NOTES:

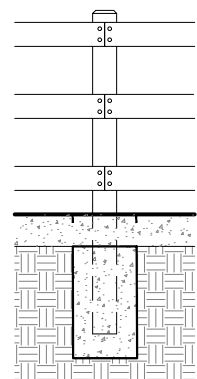
1. POSTS SHALL BE ROUGH-SAWN WESTERN RED CEDAR COMPLYING WITH THE FOLLOWING GRADING STANDARDS: NLGA 131 a,b,c; WCLIB 131 a,b,cc; WWPA 80.10, 80.11, 80.12.
2. RAILS SHALL BE ROUGH-SAWN, NO-HOLE KNOTTY APPEARANCE GRADE WESTERN RED CEDAR COMPLYING WITH THE FOLLOWING GRADING STANDARDS: NLGA 130 a,b,c; WCLIB 130 a,b,cc; WWPA 70.10, 70.11, 70.12.
3. ALL FASTENERS SHALL BE HOT-DIP GALVANIZED STEEL.

18"W x 8" TH. C.I.P. CONC. MOWBAND

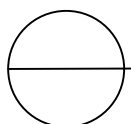
HOLD T.O. FOOTING DOWN TO ACCEPT MOWBAND



W/ MOWBAND - SECTION



W/ MOWBAND - ELEVATION



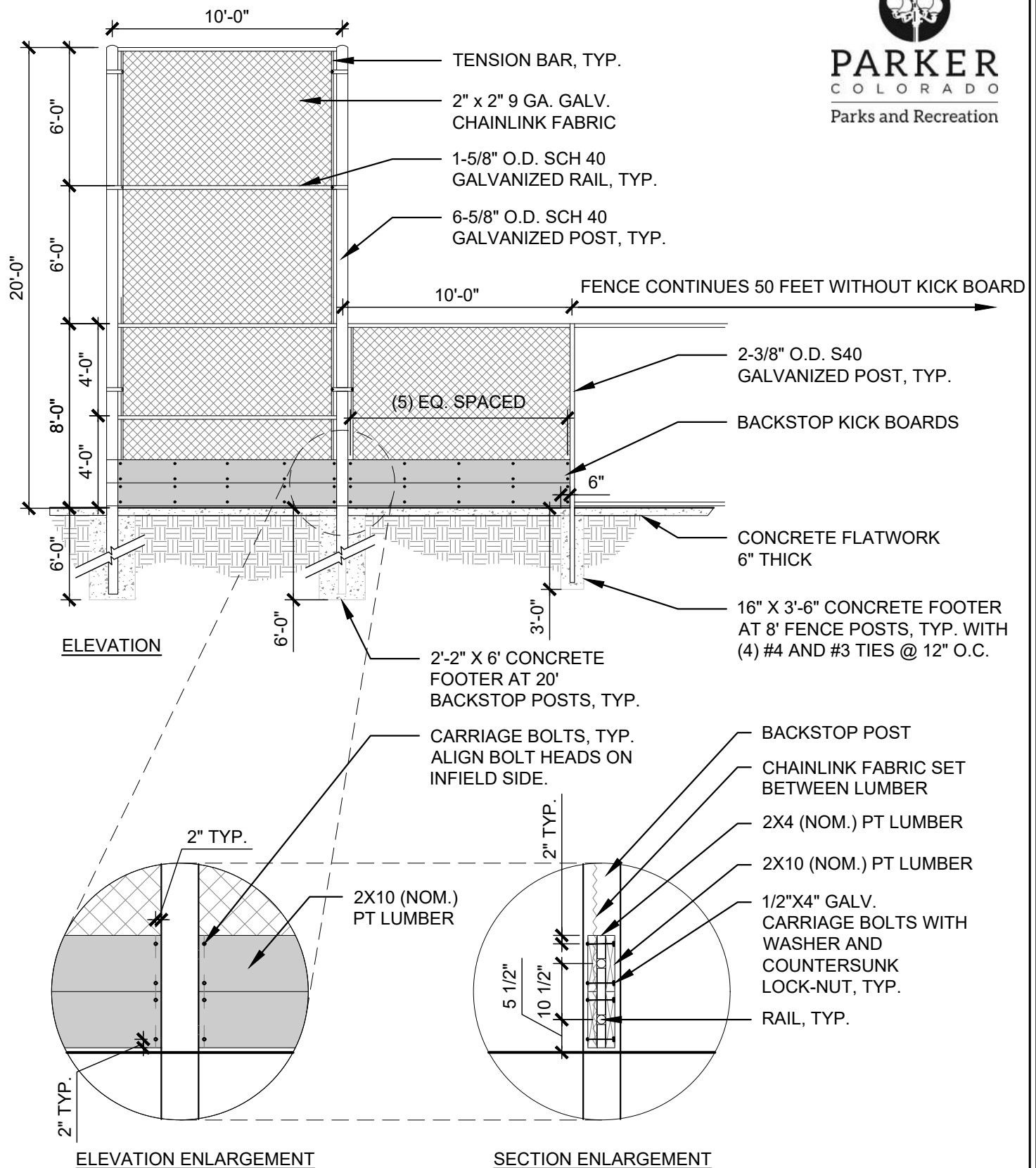
NATURAL AREA FENCE

1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

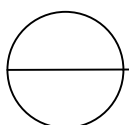


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Parks and Recreation



NOTE:

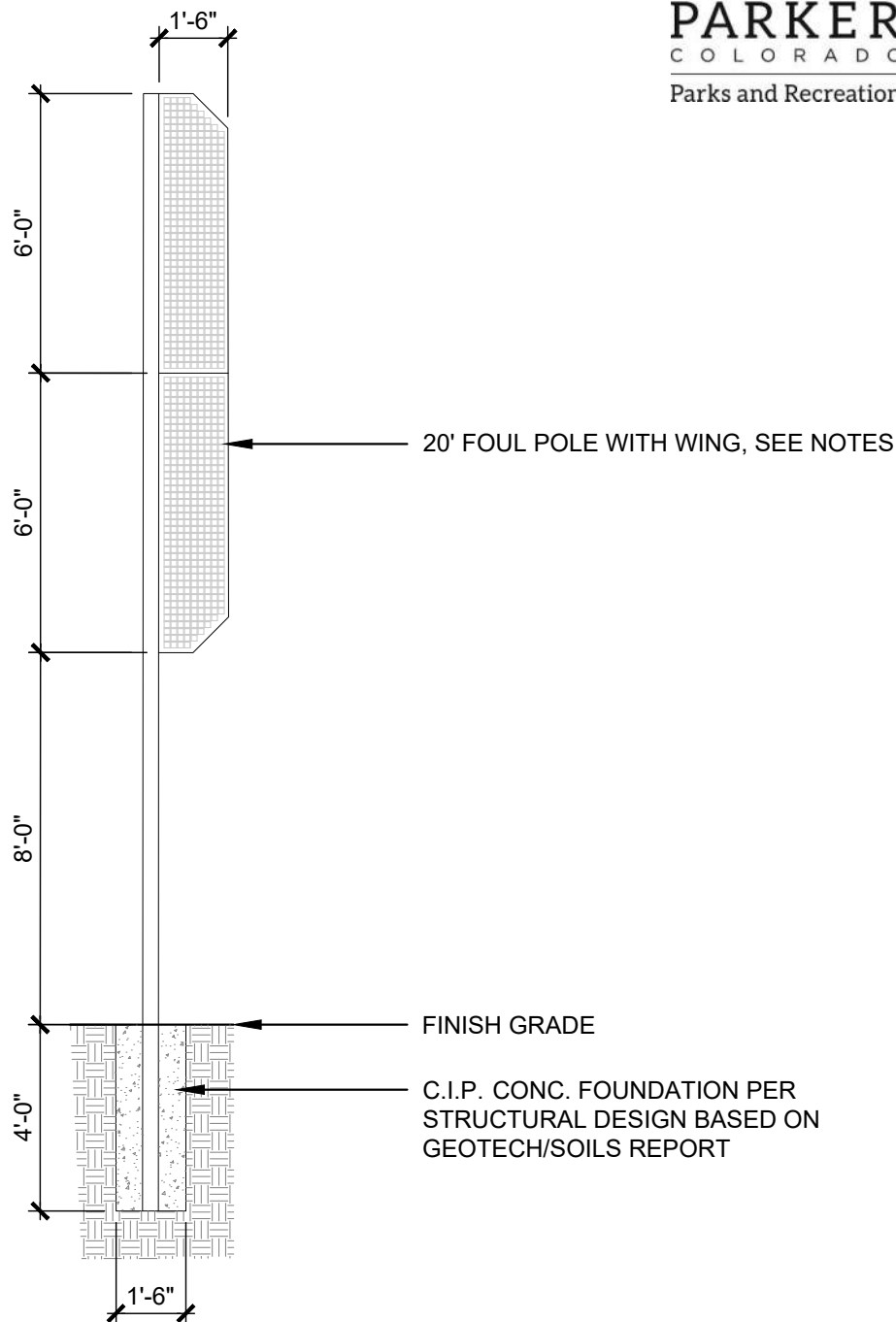
1. VERIFY THE BACKSTOP POST SPACING WITH OWNER PRIOR TO CONSTRUCTION.



BACKSTOP

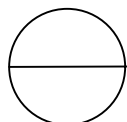
NTS

TOWN OF PARKER STANDARD DETAILS



NOTES:

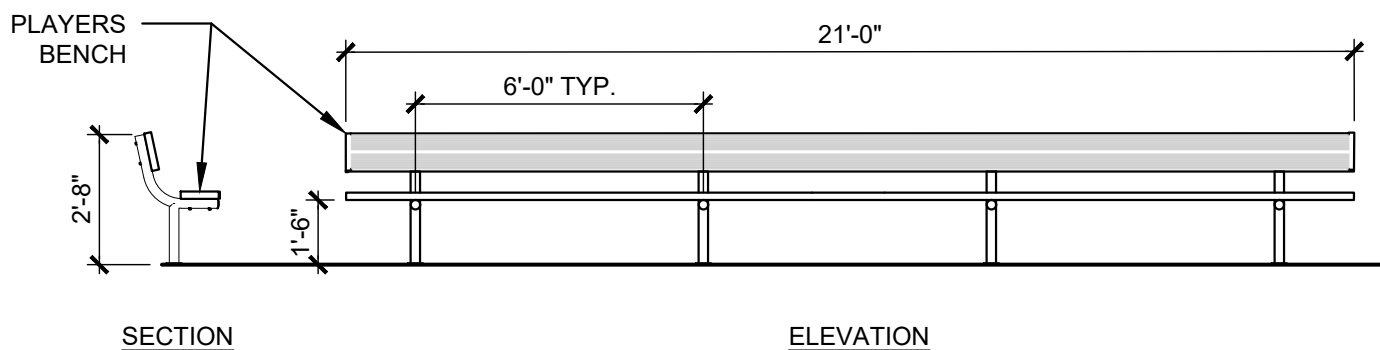
1. BASIS-OF-DESIGN: SPORTFIELD SPECIALTIES (MFR.), MODEL FPW420, 20' FOUL POLE W/ WING; GROUND SLEEVE MOUNTED.
2. INSTALL FOUL POLE PER MANUFACTURER'S RECOMMENDATIONS.



FOUL POLE

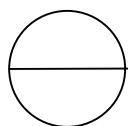
1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

1. BASIS-OF-DESIGN: PW ATHLETICS, MODEL # 1103-21G, ALUMINUM CURVED BACK BENCH, GALVANIZED FRAME, SURFACE-MOUNT.
2. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

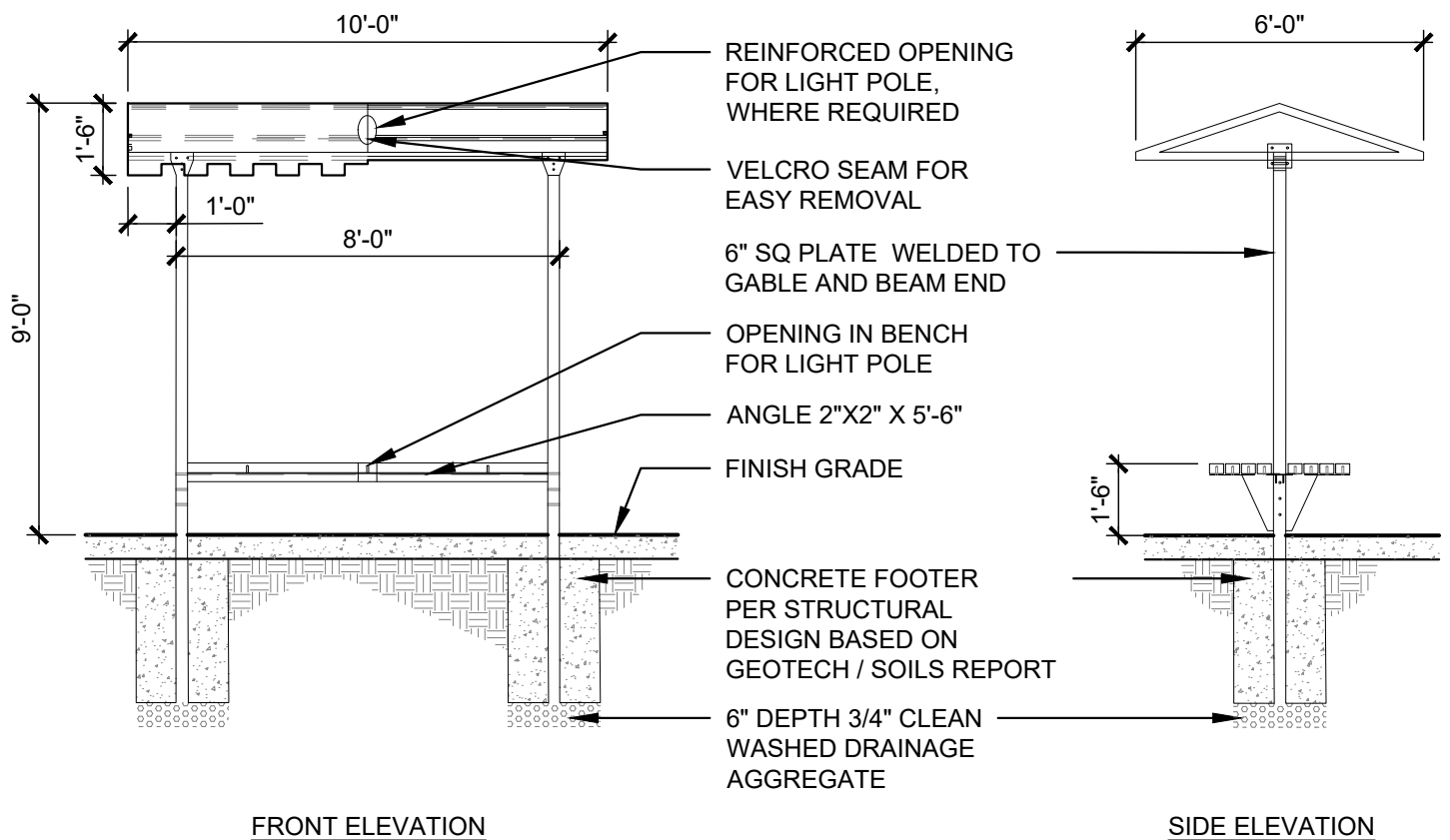


PLAYERS BENCH

1/4" = 1'-0"

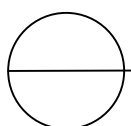
DATE: MAY 2023 | DETAIL SF-22

TOWN OF PARKER STANDARD DETAILS



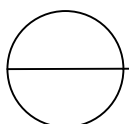
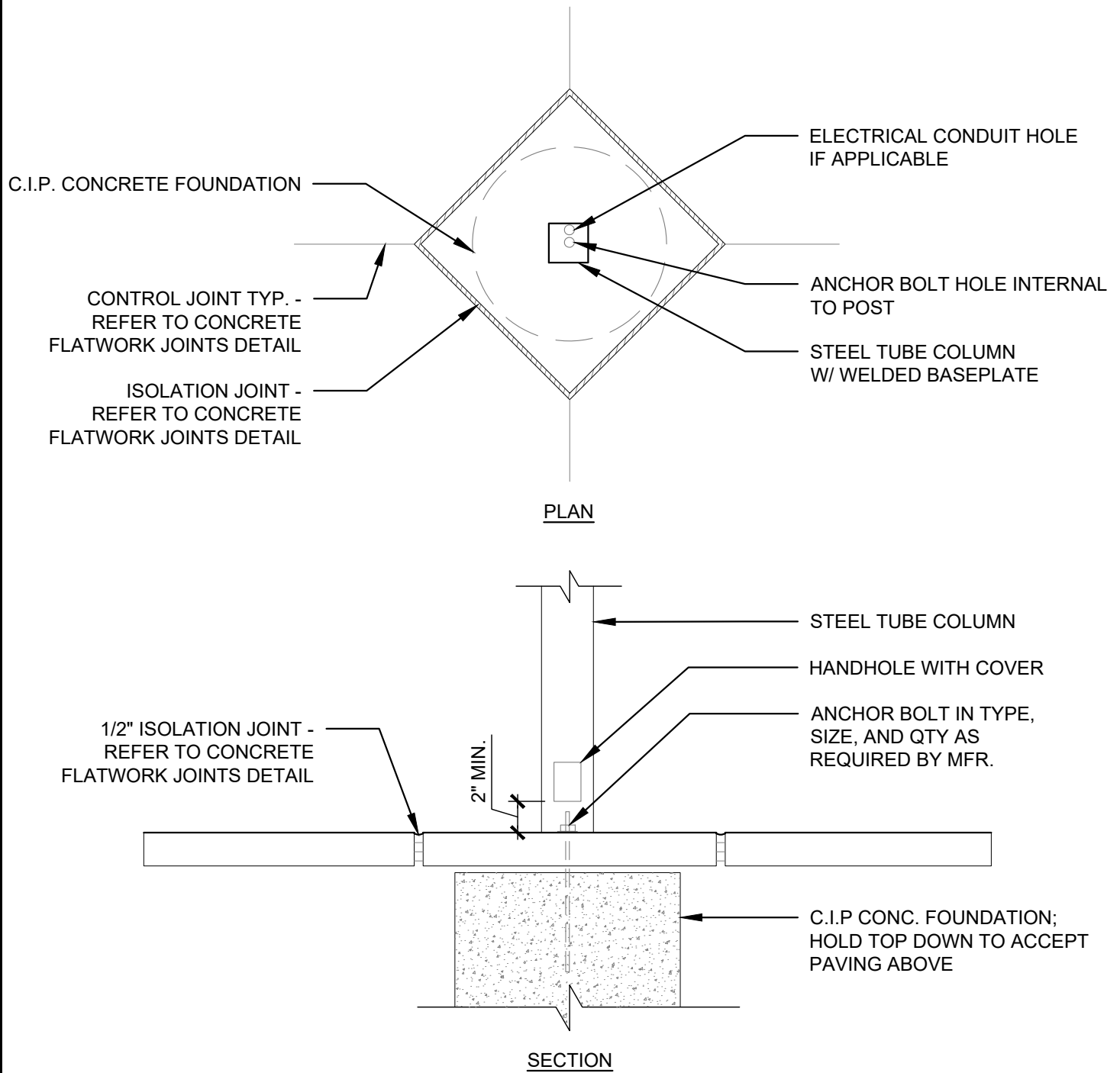
NOTES:

1. BASIS-OF-DESIGN: SUN TRENDS, INC. (MFR.) 8' LONG CABANA WITH 8' LONG 2-SIDED FLAT BENCH; IN-GROUND MOUNT W/ GROUND SLEEVE OR SURFACE MOUNT AS INDICATED.
FRAME: POWDERCOATED STEEL, BLACK.
CANOPY FABRIC COLOR: BLUE.
BENCH: DURAWOOD COMPOSITE SLATS.
2. TO BE INSTALLED BY TENNIS COURT CONTRACTOR



CABANA WITH BENCH

TOWN OF PARKER STANDARD DETAILS



SHELTER FOUNDATION

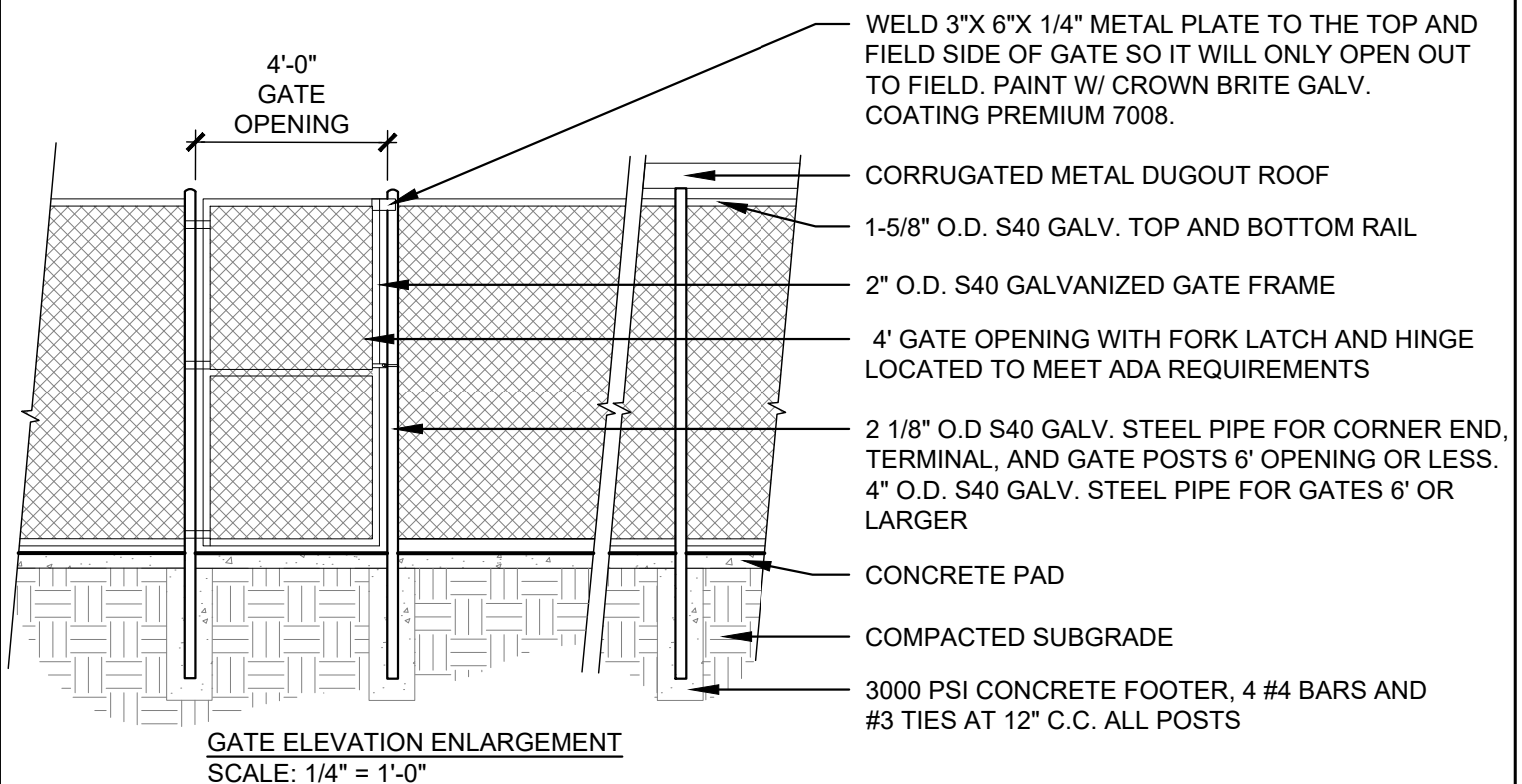
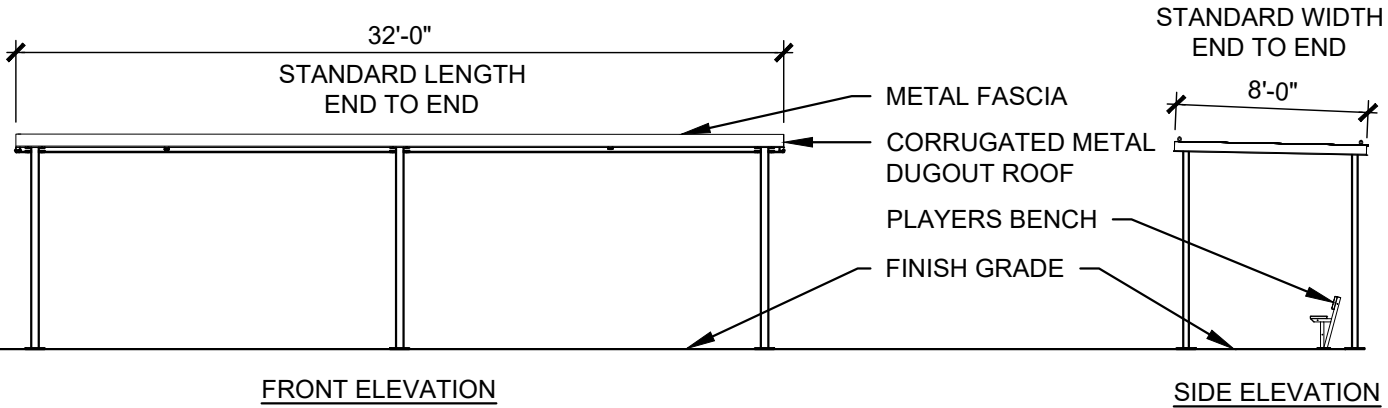
3/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



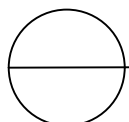
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COLORADO
Parks and Recreation

STEEL FRAME STRUCTURE:
POWDER COATED TUBULAR STEEL DESIGN
MEETS LOCAL BUILDING CODE REQUIREMENTS



NOTE:

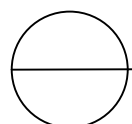
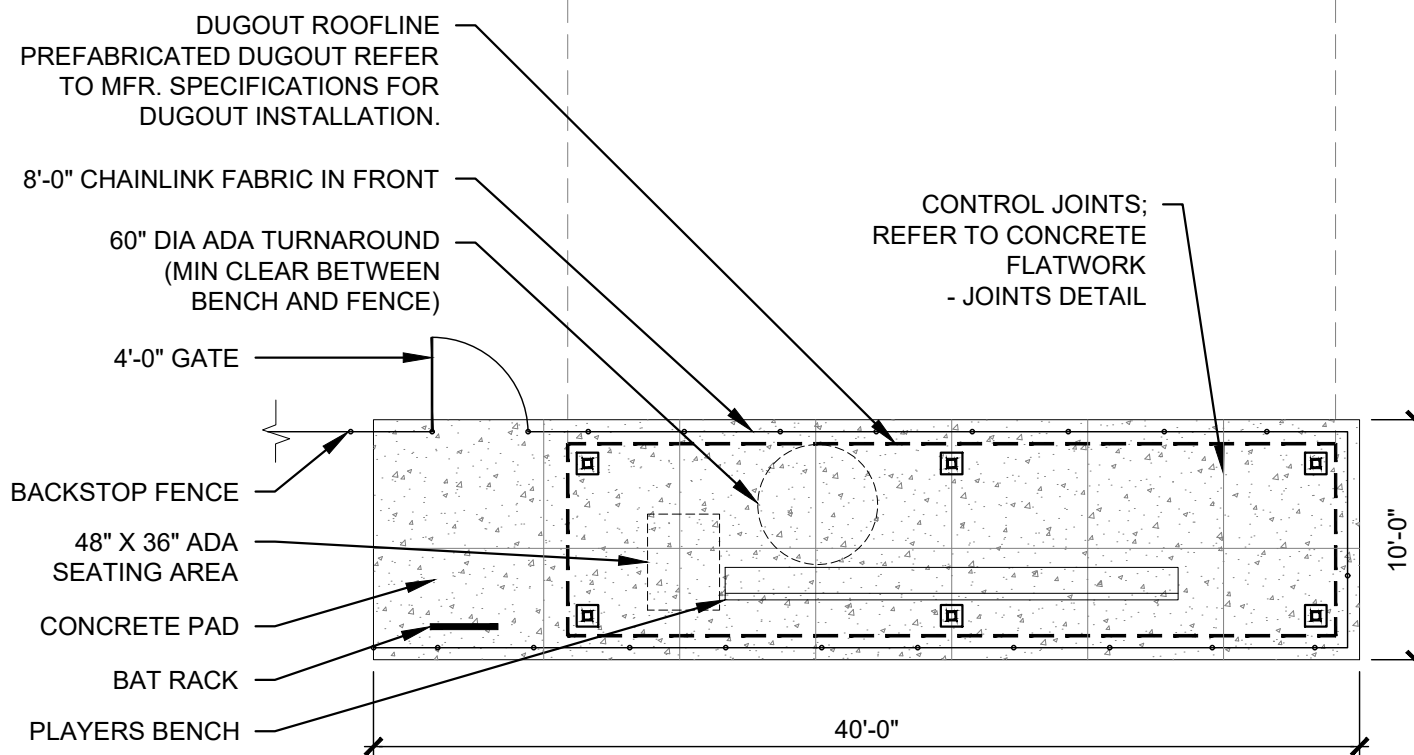
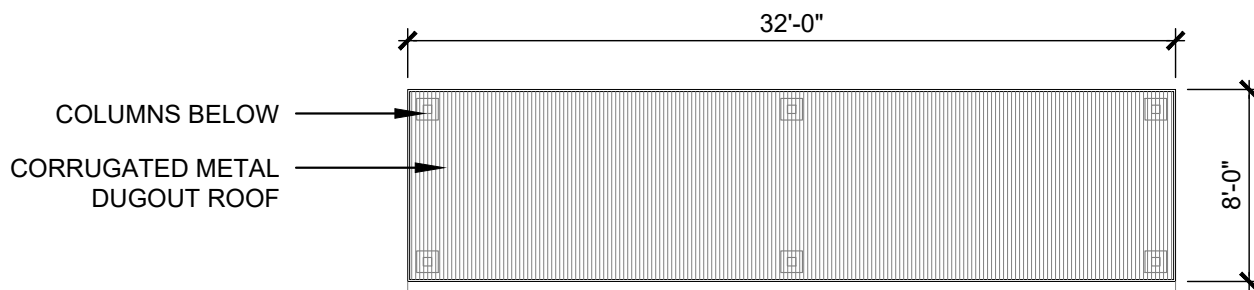
1. BASIS-OF-DESIGN: GAMESHADE DUGOUTS MODEL GD8X32 (8'W X 32'L)
2. FENCING TO BE ON THREE SIDES OF DUGOUT.
3. PROVIDE COLORADO STAMPED ENGINEERED SHOP DRAWING.
4. REFER TO MFR. SPECIFICATIONS FOR DUGOUT INSTALLATION.



DUGOUT ELEVATIONS

1/8" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



DUGOUT LAYOUT PLAN

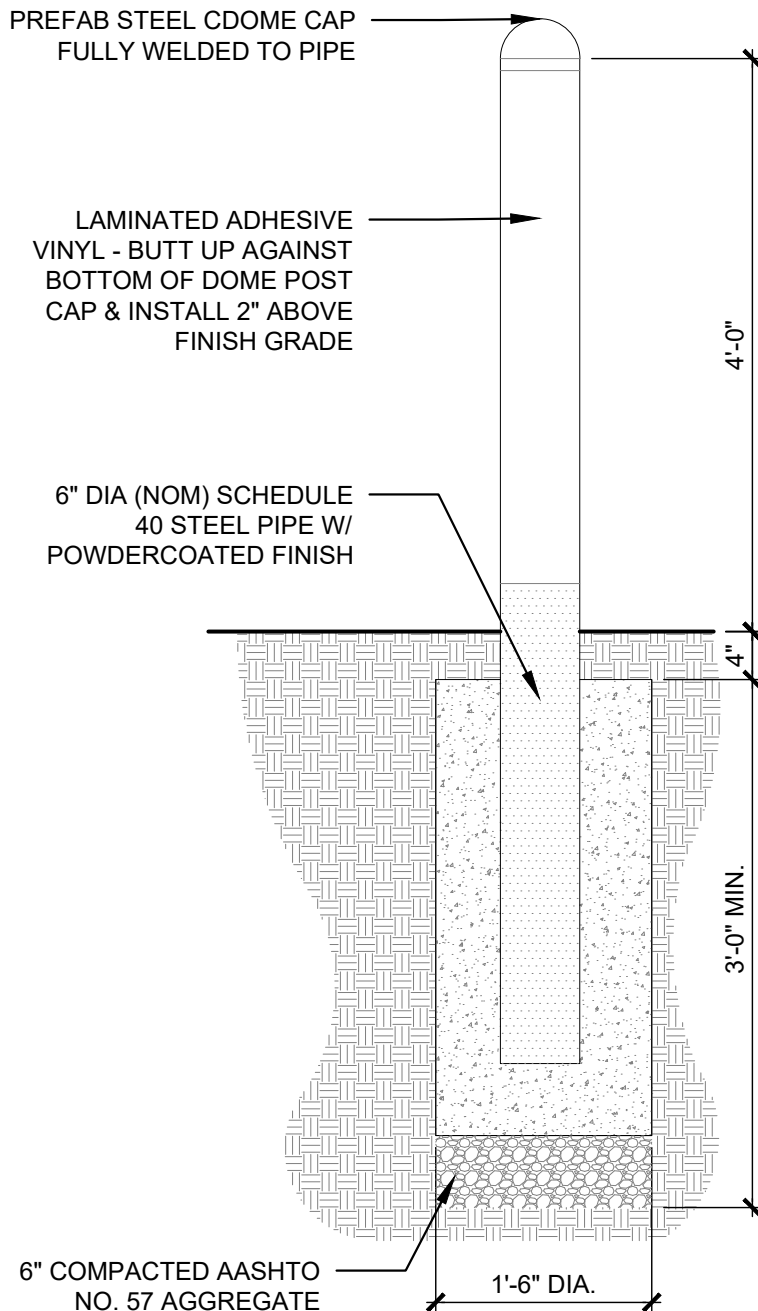
1/8" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



NOTES:

1. VINYL WRAP BASIS-OF-DESIGN:
ARLON(MFR) "DPF 6100 XLP" SERIES
ADHESIVE VINYL WRAP W/ ARLON "3350
ANTI-GRAFFITI" SERIES PVDF
OVER-LAMINATE. INK COLOR: PANTONE
3308 C, CMYK 100 0 60 72
2. PIPE AND DOME POST CAP TO BE
POWDERCOATED TIGER DRYLAC (MFR)
RAL #6005, MOSS GREEN
3. OWNER TO PROVIDE ARTWORK FOR
LAMINATED ADHESIVE VINYL
4. INSTALL TO MAINTAIN 4'-0" CLEARANCE
FROM EDGE OF TRAIL.
5. CONCRETE SHALL BE 4,000 PSI AT 28 DAYS
6. WELD PER INDUSTRY STANDARDS - GRIND
ALL WELDS SMOOTH
7. FACE GRAPHIC PERPENDICULAR TO
CENTERLINE OF THE TRAIL
8. FINAL LOCATION OF INSTALLATION TO BE
DETERMINED BY OWNER

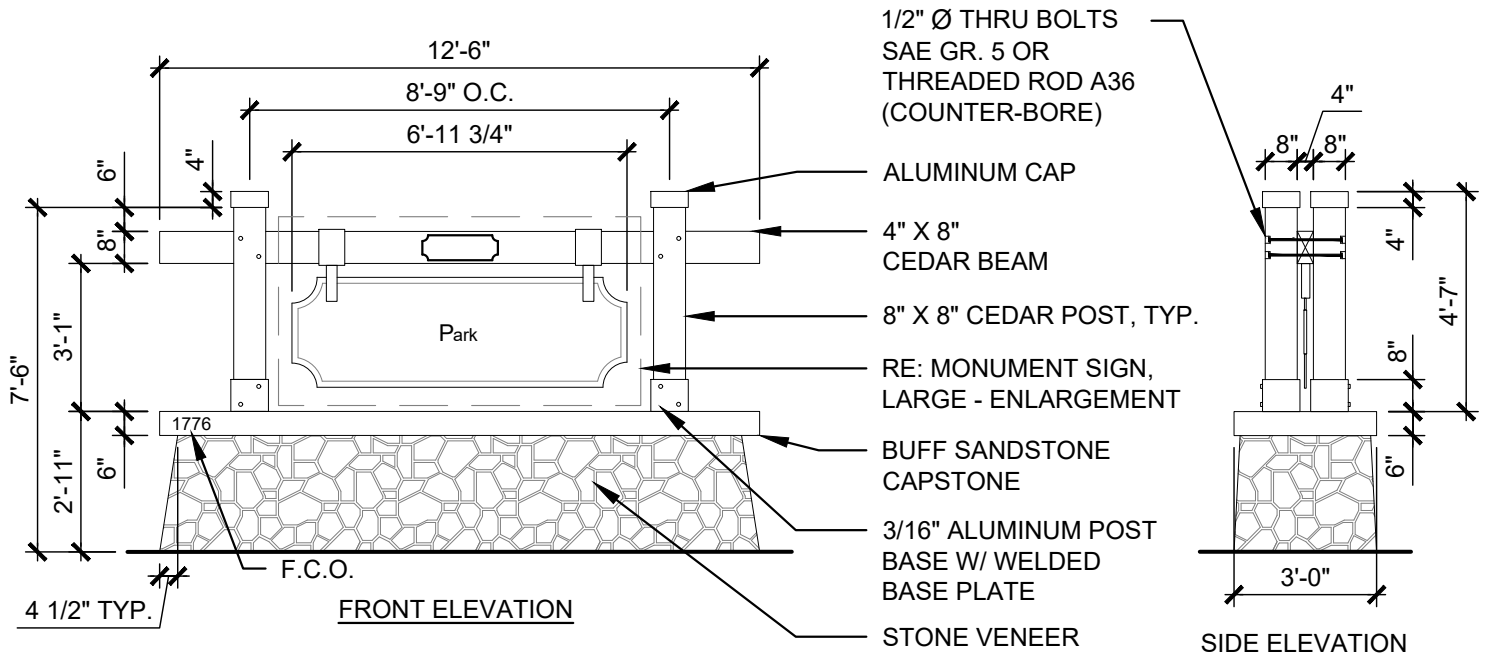
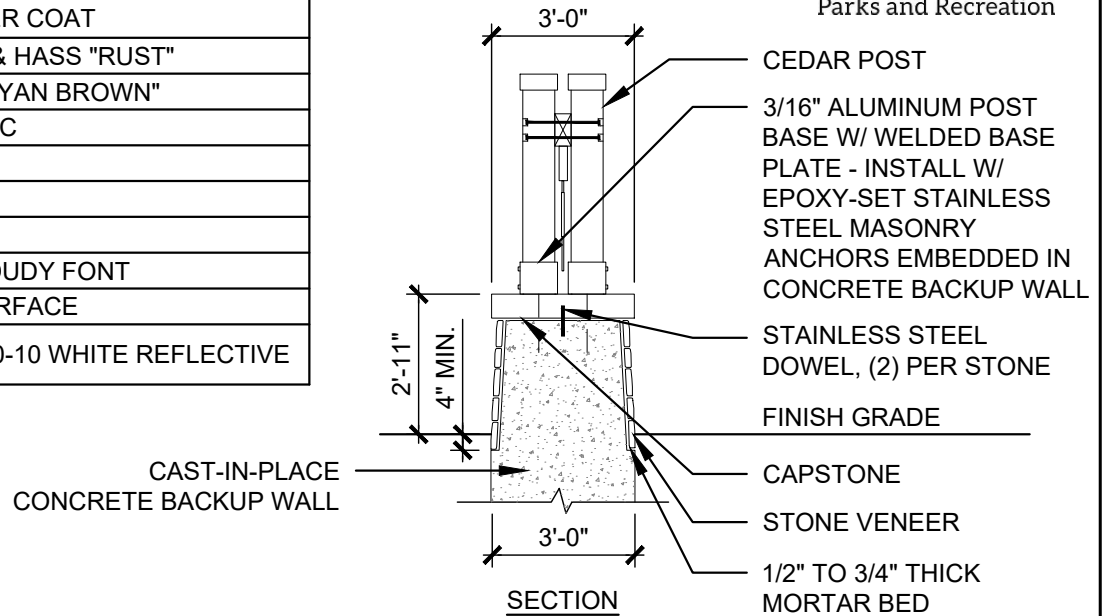


TOWN OF PARKER STANDARD DETAILS



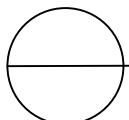
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FABRICATION SPECIFICATIONS		
CAP	MATERIAL	ALUMINUM (CUSTOM BUILT)
	THICKNESS	0'-0 3/16"
	FINISH	POWDER COAT
	COLOR	ROHM & HASS "RUST"
POST	STAIN	SW "BAYAN BROWN"
F.C.O.	MATERIAL	ACRYLIC
	THICKNESS	0'-0 1/4"
	COLOR	WHITE
	STAND-OFF	FLUSH
	TEXT	4"IN GOUDY FONT
	VINYL LAYER	1ST SURFACE
	VINYL COLOR	3M# 680-10 WHITE REFLECTIVE



NOTES:

1. POSTS AND BEAM TO BE ROUGH-SAWN WESTERN RED CEDAR COMPLYING WITH THE FOLLOWING GRADING STANDARDS: NLGA 131 a,b,c; WCLIB 131 a,b,cc; WWPA 80.10, 80.11, 80.12.
2. BASIS-OF-DESIGN STONE VENEER: CSV-2030 BUCKS COUNTY (SUPPLIER) FIELDSTONE
3. PROVIDE FOUNDATION AND REINFORCING FOR CAST-IN-PLACE BACKUP WALL PER STRUCTURAL ENGINEER'S DESIGN BASED ON GEOTECH / SOILS REPORT
4. ANTI-GRAFFITI COATING TO BE APPLIED TO THE METAL SIGN FACE AND STONE. BASIS-OF-DESIGN: VANDLTOP (MFR) SACRIFICIAL TOP COAT OR APPROVED EQUAL. APPLY PER MANUFACTURER INSTRUCTIONS.



MONUMENT SIGN - LARGE

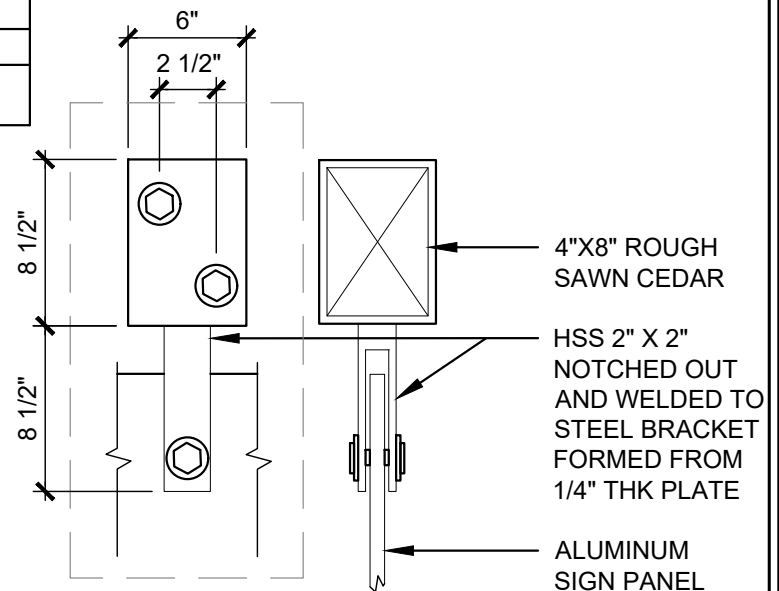
1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

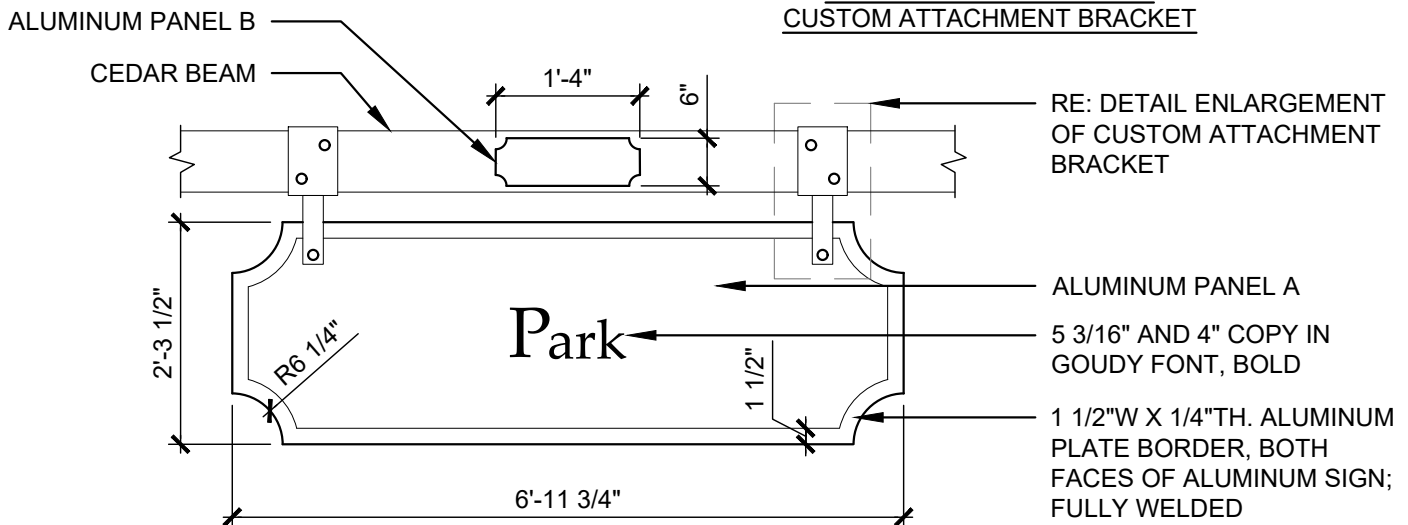


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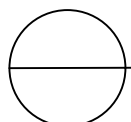
FABRICATION SPECIFICATIONS		
PANEL A	TYPE	ALUMINUM (3 LAYERS)
	THICKNESS	1/4" FACE + 1/4" BORDERS EA SIDE
	FINISH	POWDER COAT
	COLOR	ROHM & HOSS: RUST
PANEL B	TYPE	ALUMINUM
	THICKNESS	1/8"
	PAINT	MATCH DUPONT CS380 GREEN, SEMI-GLOSS
	COPY LAYER	1ST SURFACE
	VINYL COLOR	3M# 680-10 WHITE REFLECTIVE



DETAIL ENLARGEMENT OF CUSTOM ATTACHMENT BRACKET



DETAIL OF PANEL



MONUMENT SIGN, LARGE - ENLARGEMENT

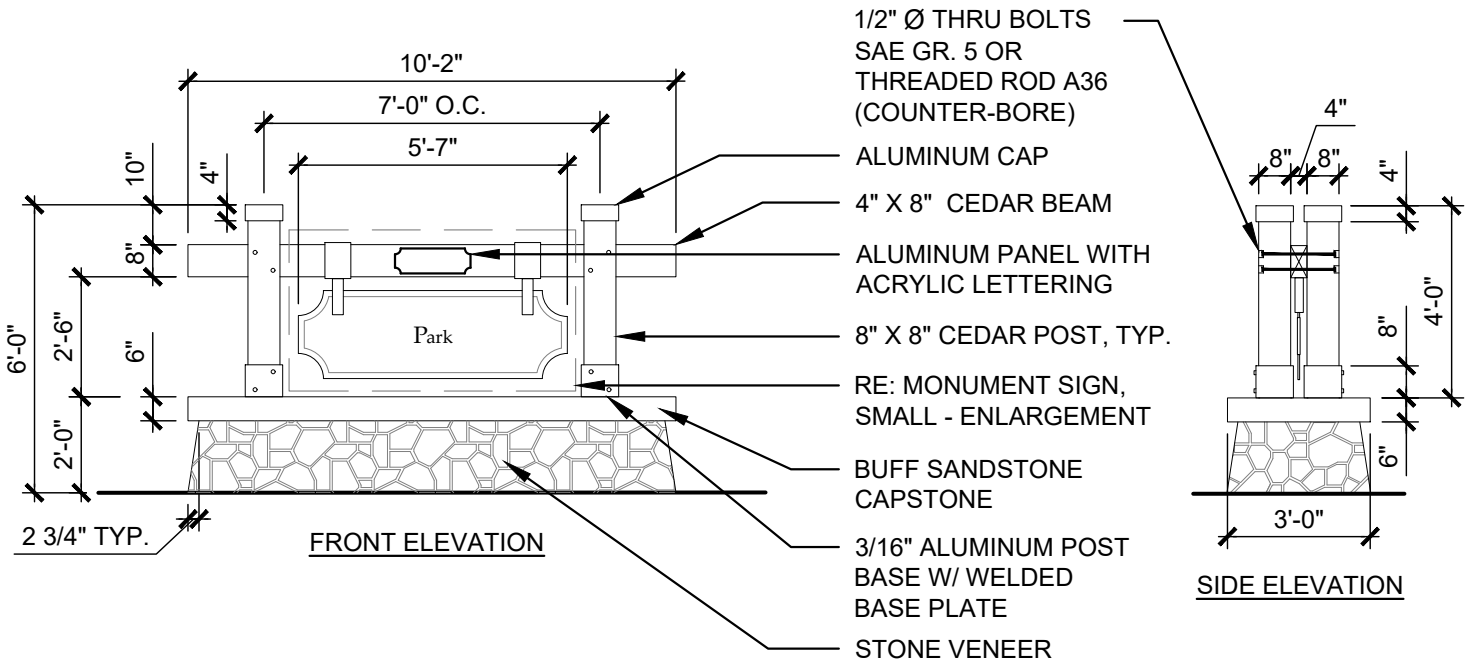
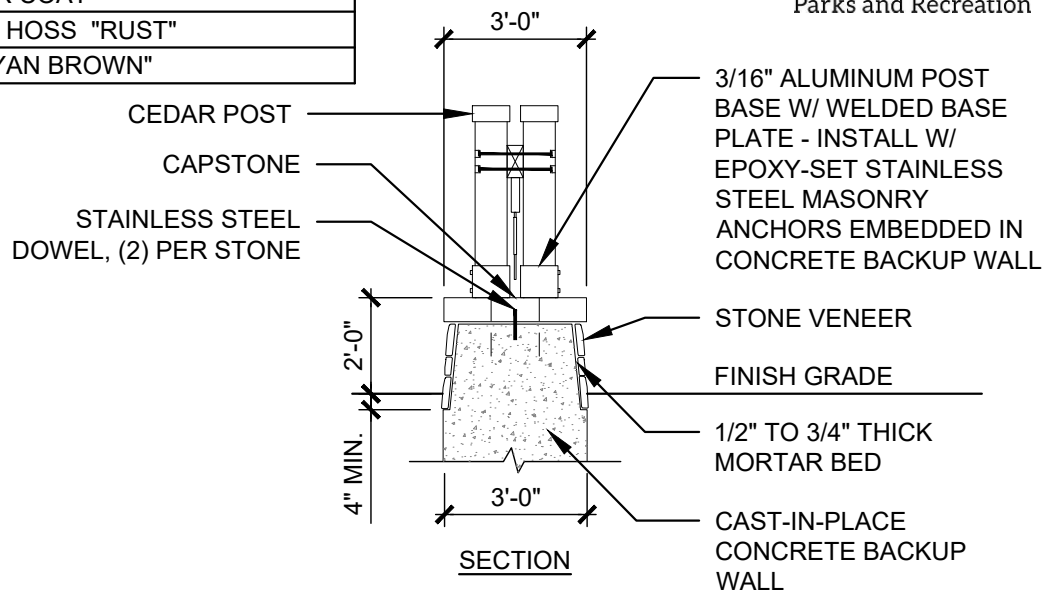
N.T.S.

TOWN OF PARKER STANDARD DETAILS



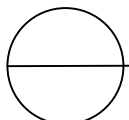
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FABRICATION SPECIFICATIONS		
CAP	MATERIAL	ALUMINUM (CUSTOM BUILT)
	THICKNESS	0'-0 3/16"
	FINISH	POWDER COAT
	COLOR	ROHM & HOSS "RUST"
POST	STAIN	SW "BAYAN BROWN"



NOTES:

1. POSTS AND BEAM TO BE ROUGH-SAWN WESTERN RED CEDAR COMPLYING WITH THE FOLLOWING GRADING STANDARDS: NLGA 131 a,b,c; WCLIB 131 a,b,cc; WWPA 80.10, 80.11, 80.12.
2. BASIS-OF-DESIGN STONE VENEER: CSV-2030 BUCKS COUNTY (SUPPLIER) FIELDSTONE
3. PROVIDE FOUNDATION AND REINFORCING FOR CAST-IN-PLACE BACKUP WALL PER STRUCTURAL ENGINEER'S DESIGN BASED ON GEOTECH / SOILS REPORT
4. ANTI-GRAFFITI COATING TO BE APPLIED TO THE METAL SIGN FACE AND STONE. BASIS-OF-DESIGN: VANDLTOP (MFR) SACRIFICIAL TOP COAT OR APPROVED EQUAL. APPLY PER MANUFACTURER INSTRUCTIONS.



MONUMENT SIGN - SMALL

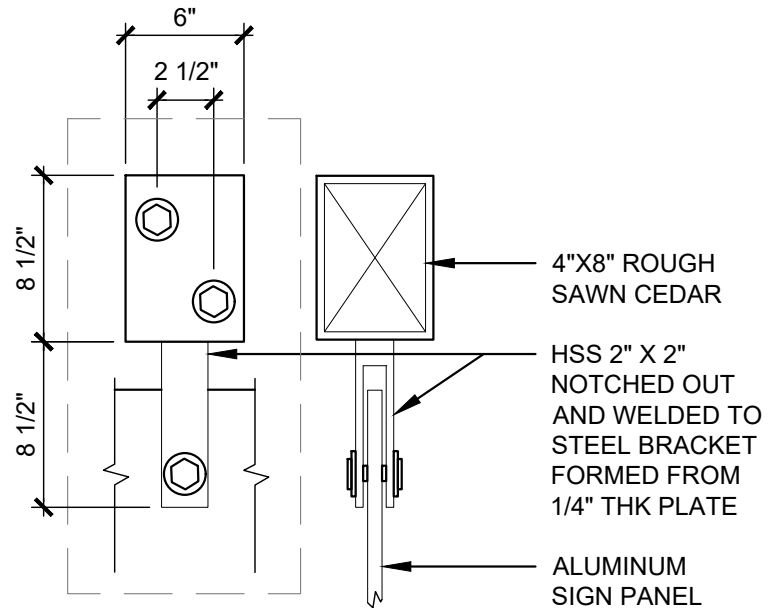
1/4" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

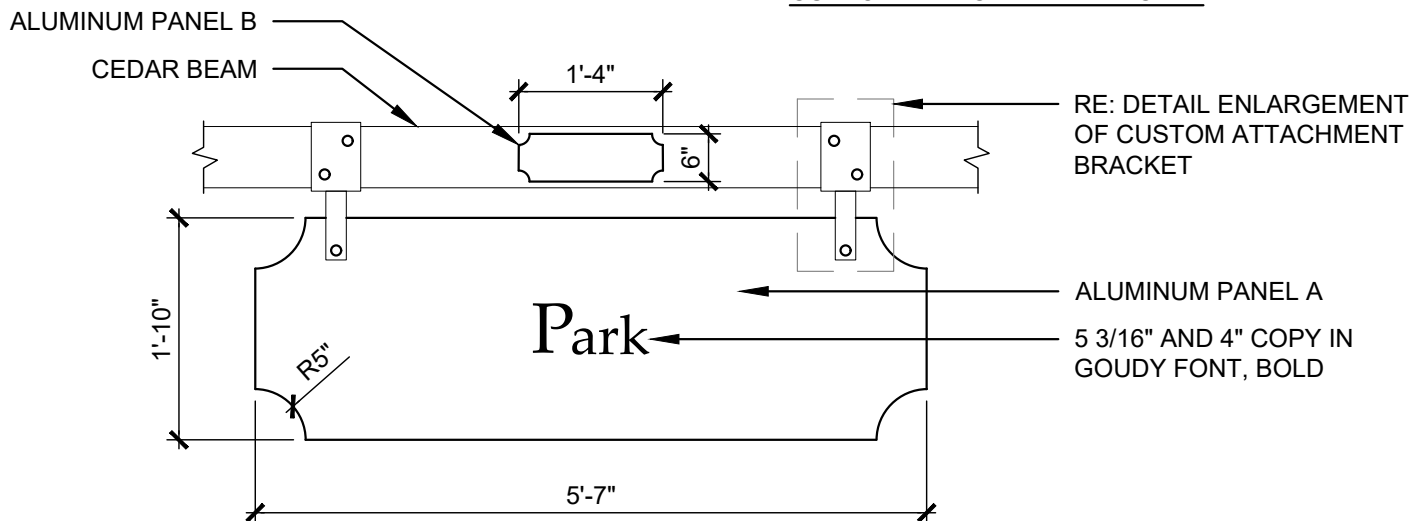


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COLORADO
Parks and Recreation

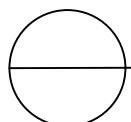
FABRICATION SPECIFICATIONS		
PANEL A	TYPE	ALUMINUM
	THICKNESS	1/4" FACE
	FINISH	POWDER COAT
	COLOR	ROHM & HOSS "RUST"
PANEL B	TYPE	ALUMINUM
	THICKNESS	1/8"
	PAINT	MATCH DUPONT CS380 GREEN, SEMI-GLOSS
	FINISH	POWDER COAT
	COPY LAYER	1ST SURFACE
	VINYL COLOR	3M# 680-10 WHITE REFLECTIVE



DETAIL ENLARGEMENT OF
CUSTOM ATTACHMENT BRACKET



DETAIL OF PANEL



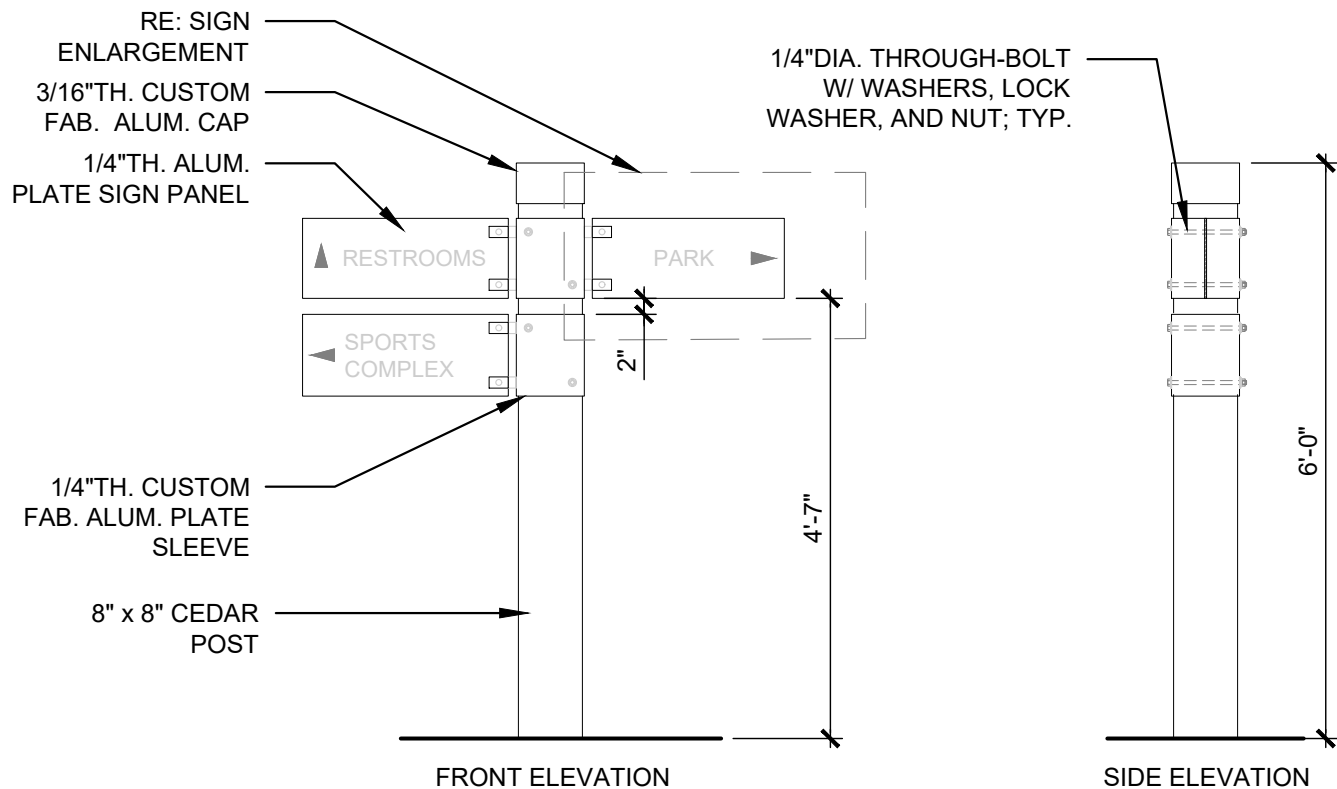
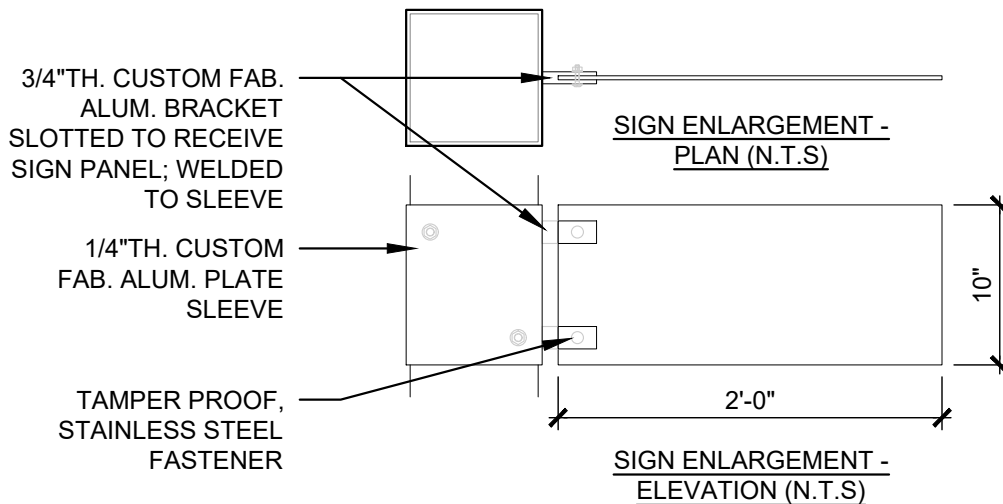
MONUMENT SIGN, SMALL - ENLARGEMENT

N.T.S.

TOWN OF PARKER STANDARD DETAILS

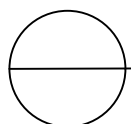


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NOTES:

1. POSTS TO BE ROUGH-SAWN WESTERN RED CEDAR COMPLYING WITH THE FOLLOWING GRADING STANDARDS: NLGA 131 a,b,c; WCLIB 131 a,b,cc; WWPA 80.10, 80.11, 80.12.
2. POSTS TO HAVE APPLIED STAIN: SHERWIN WILLIAMS "BANYAN BROWN".
3. METAL SIGN AND BRACKETS TO BE POWDERCOATED; COLOR: ROHM & HASS "RUST."
4. SIGN COPY/GRAPHICS: APPLIED VINYL; COLOR: REFLECTIVE, WHITE.
5. FASTENERS TO BE TYPE 304 OR TYPE 316 STEEL. USE NYLON WASHERS AT ALL PENETRATIONS TO ISOLATE STEEL HARDWARE FROM ALUMINUM SIGN AND BRACKETS.
6. ANTI-GRAFFITI COATING TO BE APPLIED TO THE METAL SIGN FACE. BASIS-OF-DESIGN: VANDLTOP (MFR) SACRIFICIAL TOP COAT OR APPROVED EQUAL. APPLY PER MANUFACTURER INSTRUCTIONS.



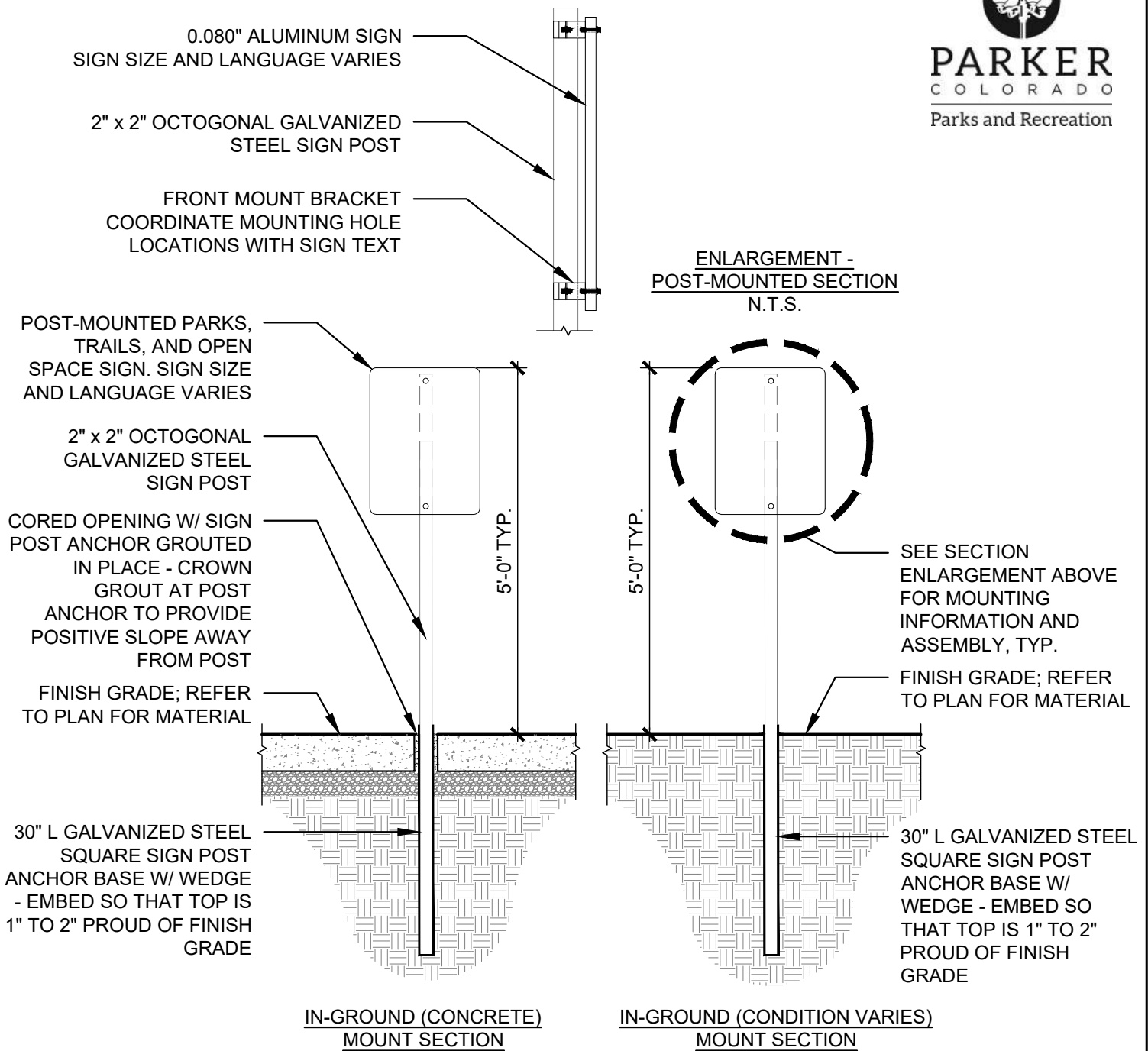
PARK DIRECTIONAL SIGNAGE

1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



PARKER
COLORADO
Parks and Recreation



BASIS-OF-DESIGN:

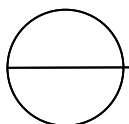
S-SQUARE TUBE PRODUCTS (MFR) "NEX SIGN POST - PLAIN", 12 GA., GALVANIZED, WITH 30" L OCTOGONAL SIGN POST. INCLUDE NEX ANCHOR BASE, WEDGE, AND FRONT MOUNT BRACKET W/ PEM NUTS.

NOTES:

1. REFER TO SECTION 06, SIGNAGE STANDARDS FOR FURTHER DESIGN CRITERIA, LANGUAGE, SIZE, AND COLOR. FOLLOW TOWN SIGN STANDARDS.
2. REFER TO PLANS FOR GROUND CONDITION
3. ALL SIGNS TO HAVE UV RESISTANT AND WATERPROOF VINYL GRAPHIC WITH PERMANENT UV PROTECTED LAMINATE FINISH (GRAFFITI PROOF COATING)

PARKS, TRAILS, AND OPEN SPACE

REGULATORY SIGNS - IN-GROUND MOUNT

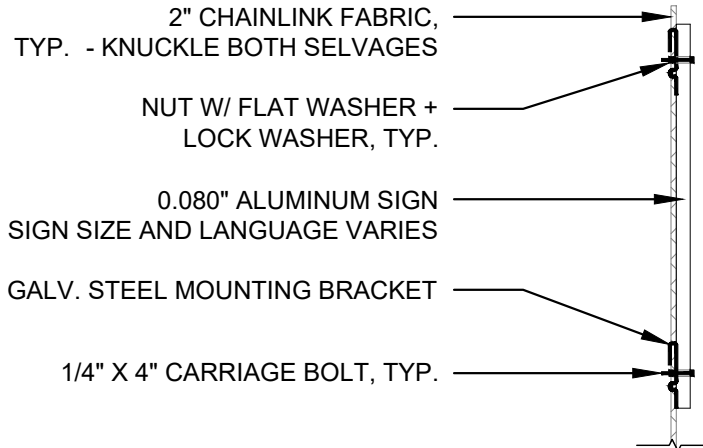


1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS



PARKER
COLORADO
Parks and Recreation



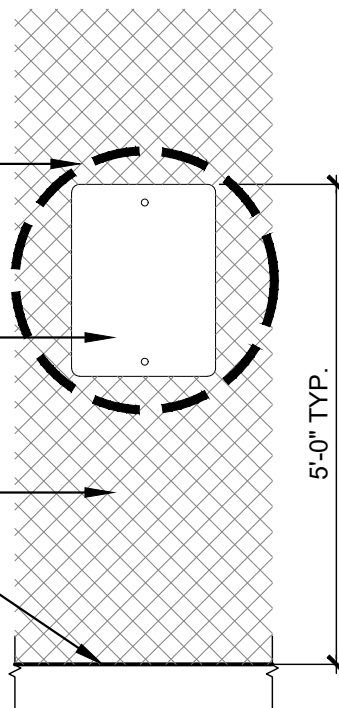
ENLARGEMENT -
FENCE-ATTACHMENT SECTION
N.T.S.

SEE SECTION ENLARGEMENT ABOVE FOR MOUNTING INFORMATION AND ASSEMBLY

FENCE-MOUNTED PARKS, TRAILS, AND OPEN SPACE SIGN. SIGN SIZE AND LANGUAGE VARIES

2" CHAINLINK FABRIC, TYP. - KNUCKLE BOTH SELVAGES

FINISH GRADE; REFER TO PLAN FOR GROUND CONDITION

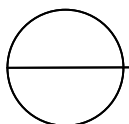


FENCE-MOUNT
ELEVATION

NOTES:

1. BASIS-OF-DESIGN: REFER TO SECTION 06, SIGNAGE STANDARDS FOR FURTHER DESIGN CRITERIA, LANGUAGE, SIZE, AND COLOR. FOLLOW TOWN SIGN STANDARDS.
2. ALL SIGNS TO HAVE UV RESISTANT AND WATERPROOF VINYL GRAPHIC WITH PERMANENT UV PROTECTED LAMINATE FINISH (GRAFFITI PROOF COATING)

PARKS, TRAILS, AND OPEN SPACE REGULATORY SIGNS - FENCE MOUNT

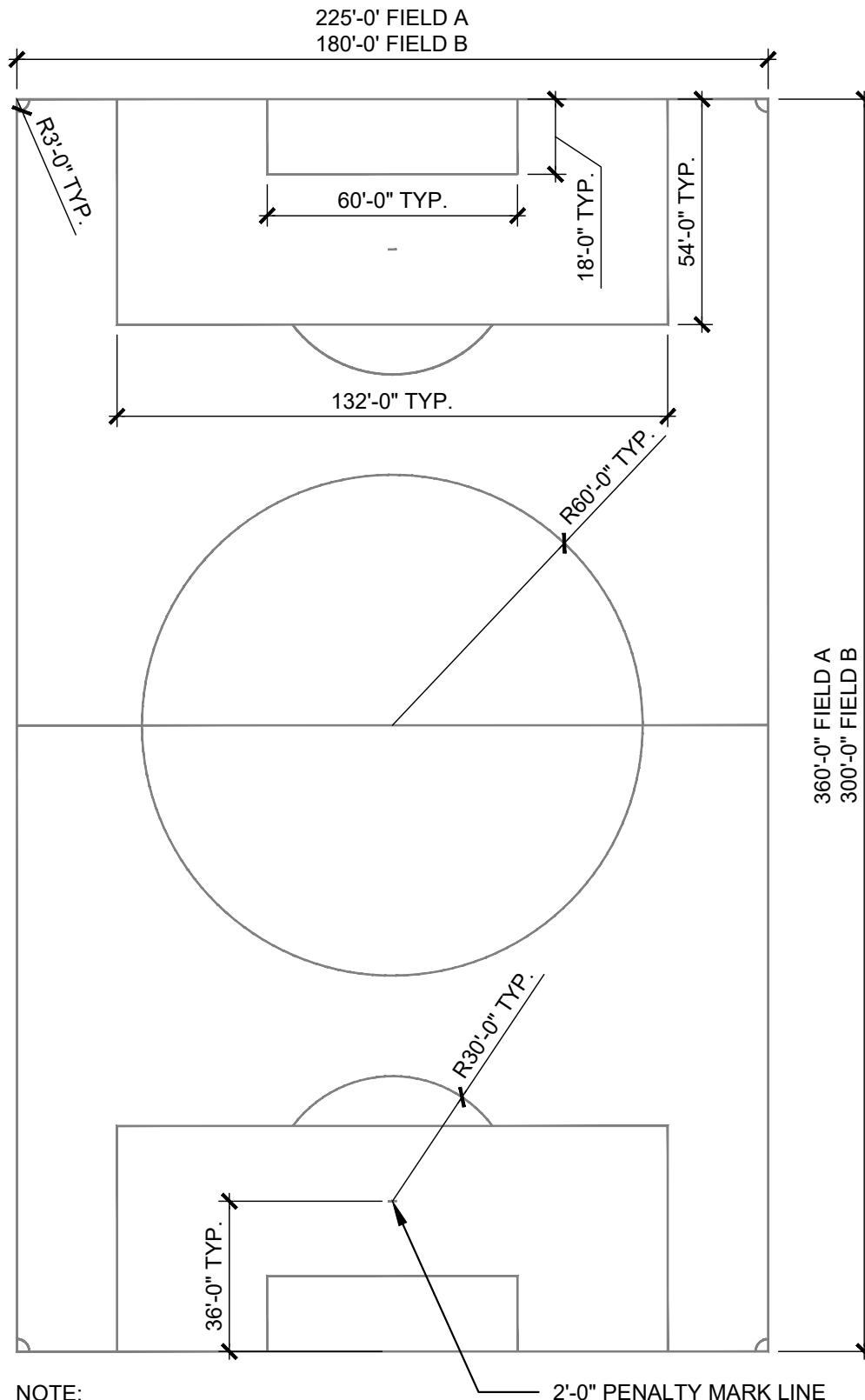


1/2" = 1'-0"

TOWN OF PARKER STANDARD DETAILS

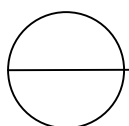


PARKER
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NOTE:

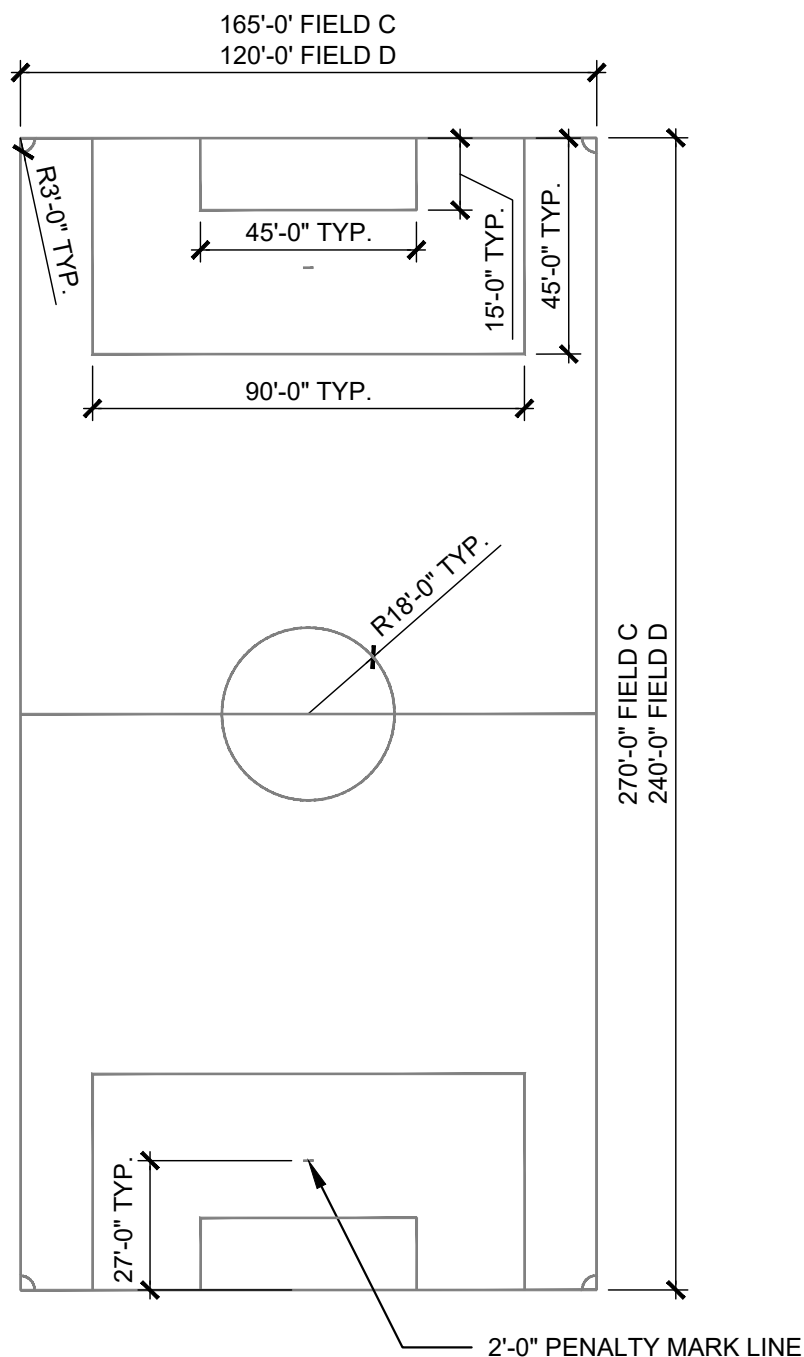
1. BLUEGRASS OR SYNTHETIC TURF; RE: PLANS
2. ALL LINE STRIPING TO BE 4" WIDTH



SOCCER FIELD LAYOUT - 360' x 225' OR 300' x 180'

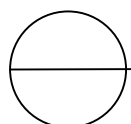
1" = 40'-0"

TOWN OF PARKER STANDARD DETAILS



NOTE:

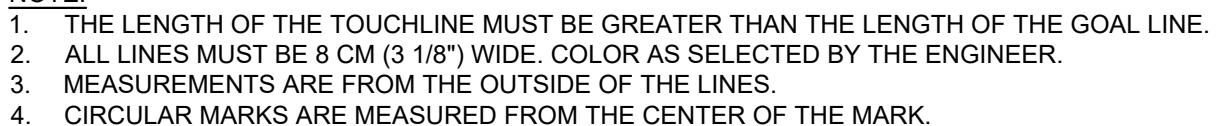
1. BLUEGRASS OR SYNTHETIC TURF; RE: PLANS
2. ALL LINE STRIPING TO BE 4" WIDTH



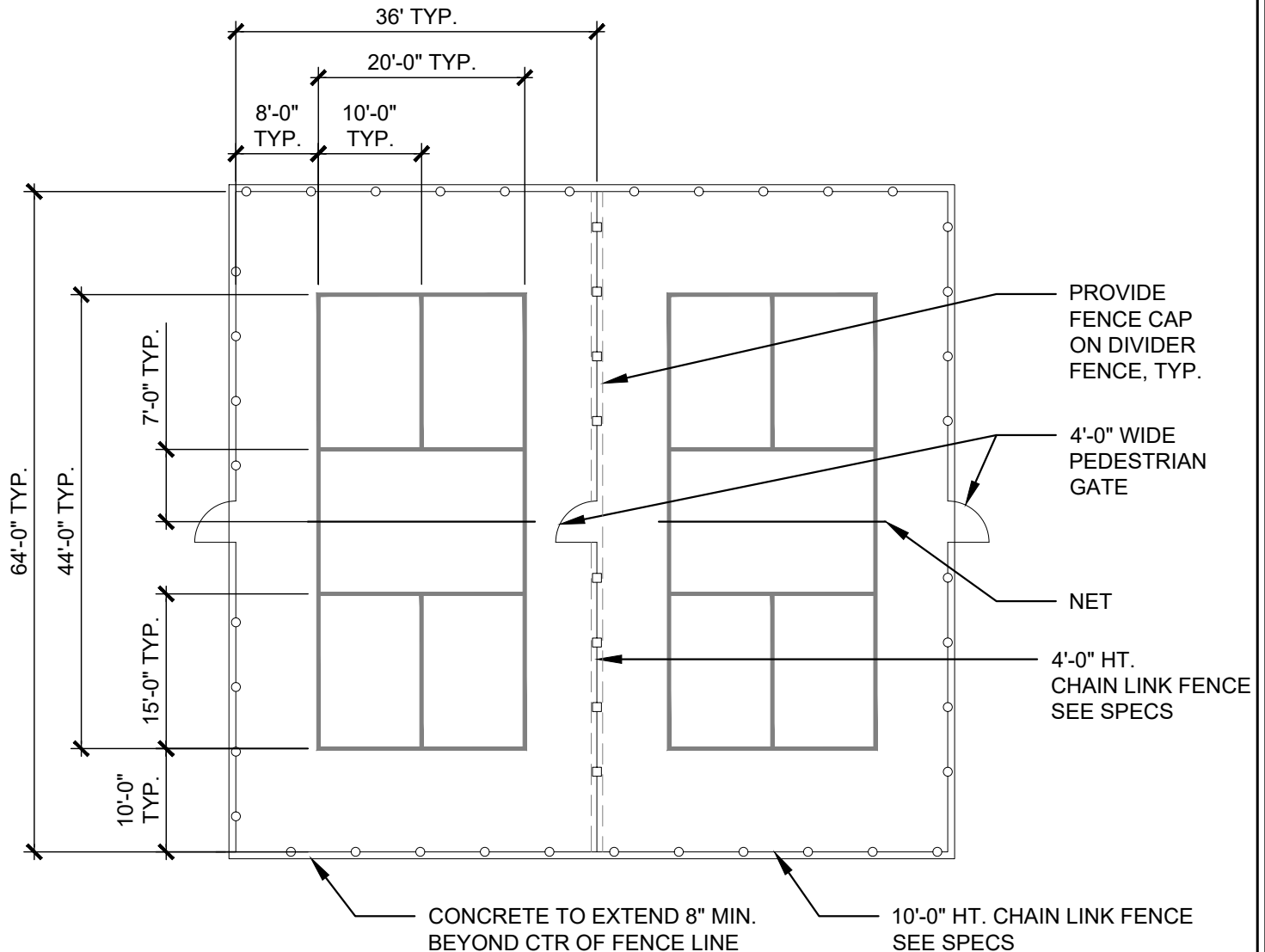
SOCCER FIELD LAYOUT - 270' x 165' OR 240' x 120'

1" = 40'-0"

PARKER
COLORADO
Parks and Recreation

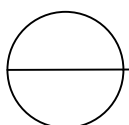


TOWN OF PARKER STANDARD DETAILS



NOTES:

1. ALL LINES SHALL BE 2" WIDE, COLOR AS SELECTED BY THE ENGINEER.
2. ORIENT COURT NORTH-SOUTH WHEN FEASIBLE TO MINIMIZE SUN IN PLAYERS' VISION.
3. GATE LOCATIONS PER SITE PLAN. SEE SPECIFICATION SECTION 323113.
4. INSTALL DARK GREEN WINDSCREEN ON ALL 10' HEIGHT FENCING. SEE SPECIFICATION SECTION 116833.

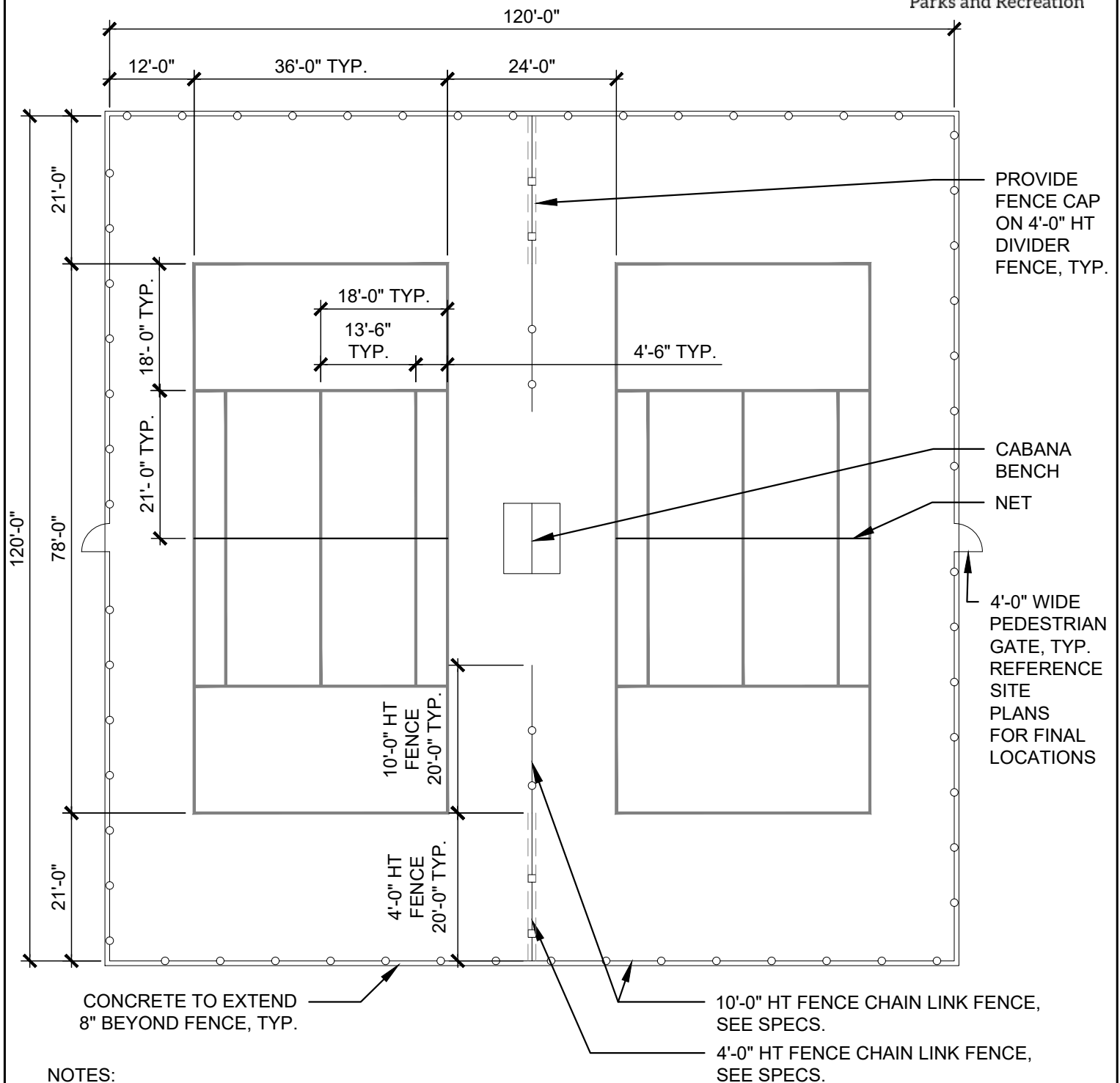


PICKLEBALL COURT LAYOUT

TOWN OF PARKER STANDARD DETAILS

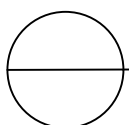


PARKER
COLORADO
Parks and Recreation



NOTES:

1. ALL LINES SHALL BE 2" WIDE, COLOR AS SELECTED BY THE ENGINEER.
2. GATE LOCATIONS PER SITE PLAN. SEE SPECIFICATION SECTION 323113.
3. INSTALL DARK GREEN WINDSCREEN ON ALL 10' HEIGHT FENCING. SEE SPECIFICATION SECTION 116833.



TENNIS COURT LAYOUT

1" = 20'-0"

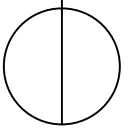
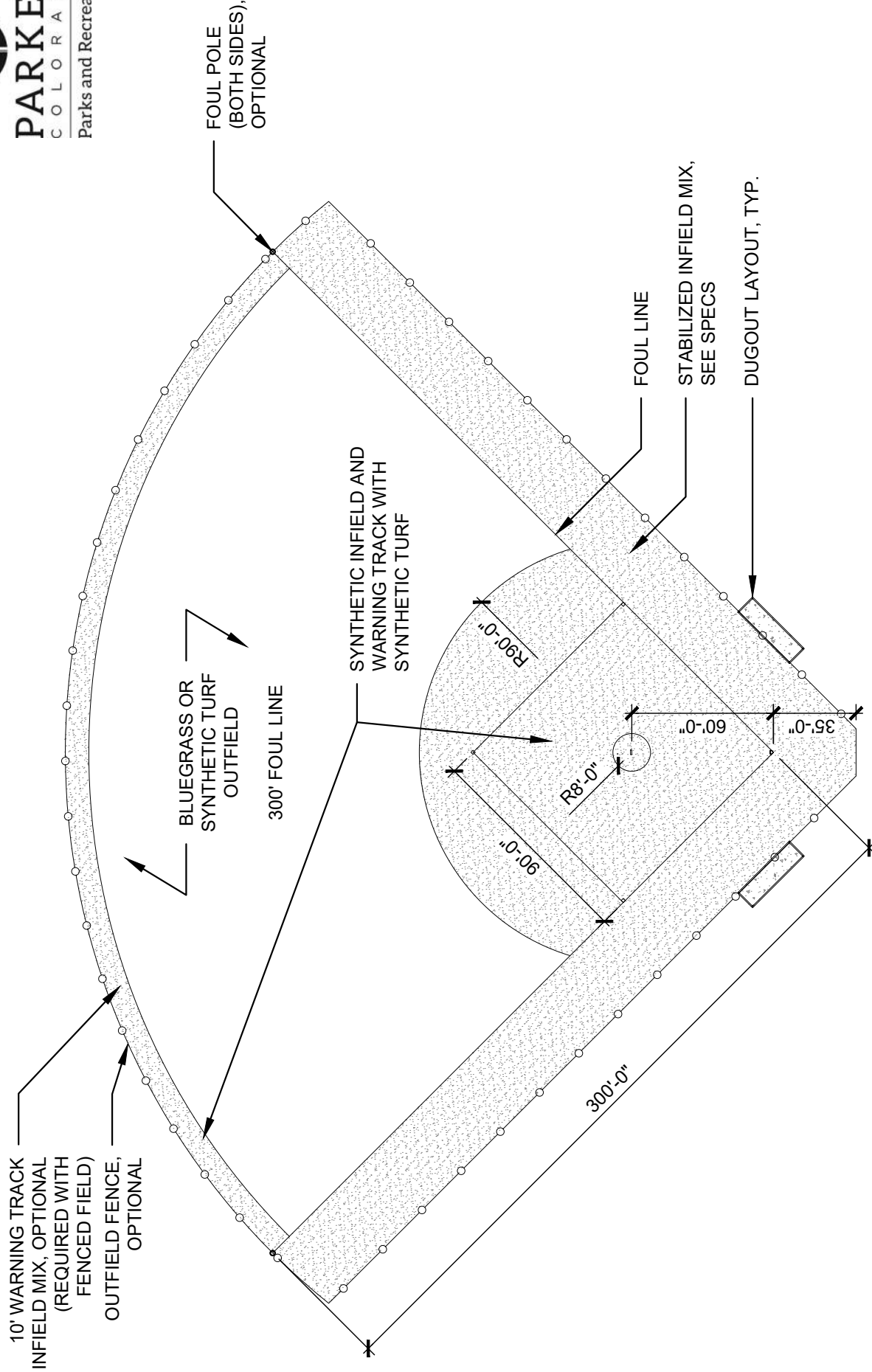
PARKER
COLORADO
Parks and Recreation



TOWN OF PARKER STANDARD DETAILS



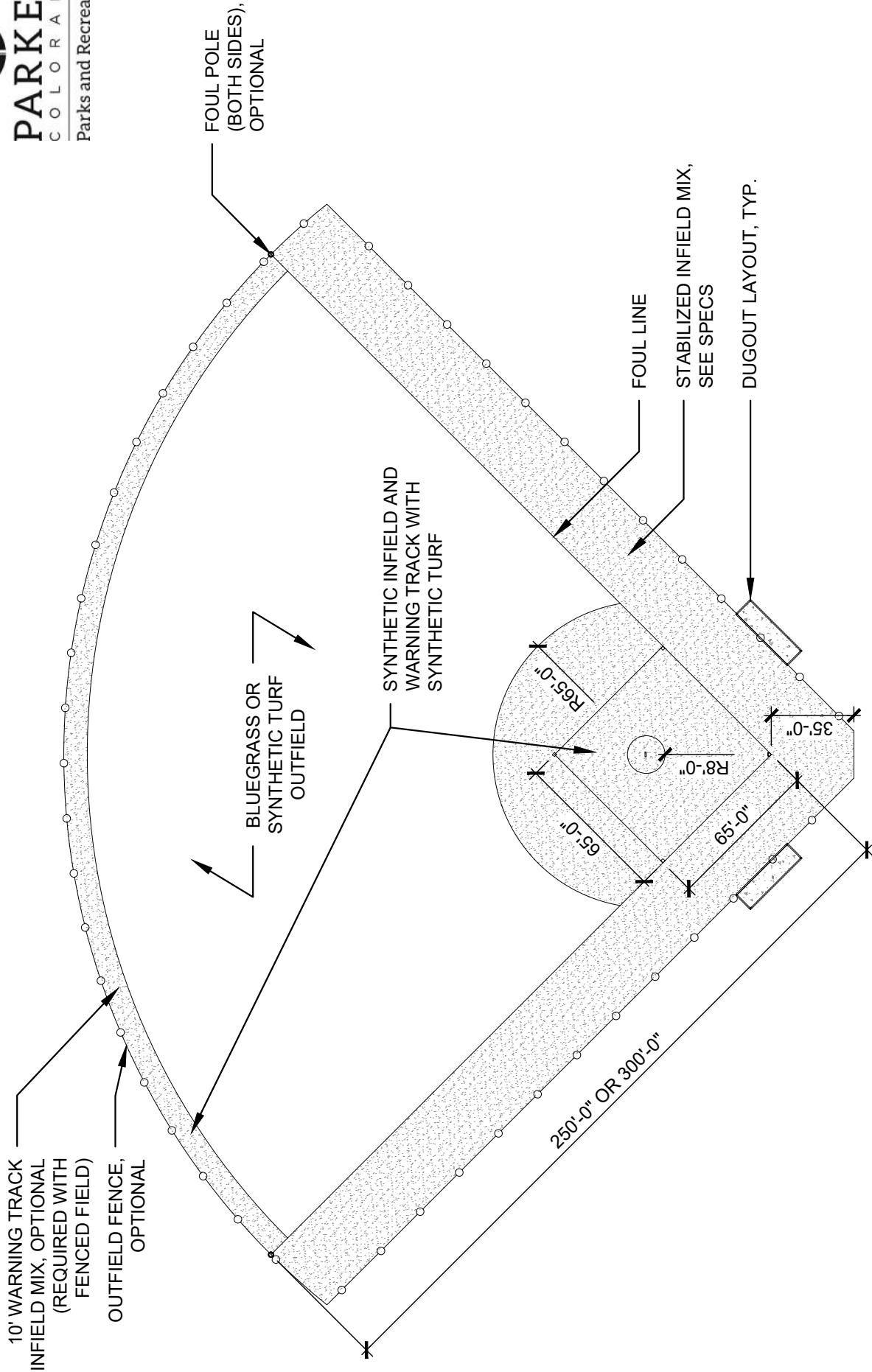
PARKER
C O L O R A D O
Parks and Recreation



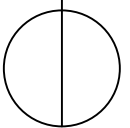
BALLFIELD LAYOUT - 90' BASES

1" = 60'-0"

TOWN OF PARKER STANDARD DETAILS



BALLFIELD LAYOUT - 65' BASES



1" = 60'-0"



APPENDIX B

STANDARD CONSTRUCTION SPECIFICATIONS

Note:

The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

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DIVISION 11 - EQUIPMENT

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SECTION 329113 - SOIL PREPARATION

SECTION 329200 - TURF AND GRASSES
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SECTION 329600 - TRANSPLANTING

*Sections provided defer to or are supplemental to CDOT specifications. Relevant CDOT specifications include but are not limited to the following:

1. Plant Mix Pavements, General: CDOT Construction Specifications, Section 401.
2. Hot-Mix Asphalt Pavement: CDOT Construction Specifications, Section 403.
3. Prime Coat, Tack Coat, and Rejuvenating Agent: CDOT Construction Specifications, Section 407.
4. Joint and Crack Sealant: CDOT Construction Specifications, Section 408.
5. Asphalt Materials: CDOT Construction Specifications, Section 411.
6. Portland Cement Concrete Pavement: CDOT Construction Specifications, Section 412.
7. Detectable Warning Surfacing: CDOT Construction Specifications, Section 608
Detectable Warnings.
8. Preparation of Design Mixes: CDOT Construction Specifications, Section 601.05.
9. Fine Aggregates: CDOT Construction Specifications, Section 703.01.
10. Coarse Aggregate: CDOT Construction Specifications, Section 703.02.
11. Portland Cement: CDOT Construction Specifications, Section 701.01.
12. Fly Ash: CDOT Construction Specifications, Section 701.02.
13. High-reactivity Pozzolans: CDOT Construction Specifications 701.04.
14. Water: CDOT Construction Specifications, Section 712.01.
15. Air-Entraining Admixtures: CDOT Construction Specifications, Section 711.02.
16. Chemical Admixtures: CDOT Construction Specifications, Section 711.03.
17. Preformed Joint Filler: CDOT Construction Specifications, Section 705.01.
18. Joint Sealant with Backer Rod: CDOT Construction Specifications, Section 705.01.
19. Curing Materials: CDOT Construction Specifications, Section 711.01.
20. Reinforcing Steel: CDOT Construction Specifications, Section 709.01.
21. Dowel Bars and Tie Bars: CDOT Construction Specifications, Section 709.03.

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SECTION 033000 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. **This section is supplemental to the most recent edition of the Colorado Department of Transportation (CDOT) Construction Specifications, Division 600 Miscellaneous Construction, Section 601 Structural Concrete. The work performed for Cast-in-Place Concrete shall be in accordance with CDOT Construction Specifications Section 601 Structural Concrete and revisions or supplemental information herein.**

1.2 SUMMARY

- A. Section includes:
 - 1. Section includes cast-in-place concrete conforming with CDOT Type B or Type D Portland cement concrete.
 - 2. Cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.
- B. The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.
- C. Related Requirements:
 - 1. Section 312000 "Earth Moving" for drainage fill under slabs-on-grade.
 - 2. Preparation of Design Mixes: CDOT Construction Specifications, Section 601.05.
 - 3. Fine Aggregates: CDOT Construction Specifications, Section 703.01.
 - 4. Coarse Aggregate: CDOT Construction Specifications, Section 703.02.
 - 5. Portland Cement: CDOT Construction Specifications, Section 701.01.
 - 6. Fly Ash: CDOT Construction Specifications, Section 701.02.
 - 7. High-reactivity Pozzolans: CDOT Construction Specifications 701.04.
 - 8. Water: CDOT Construction Specifications, Section 712.01.
 - 9. Air-Entraining Admixtures: CDOT Construction Specifications, Section 711.02.
 - 10. Chemical Admixtures: CDOT Construction Specifications, Section 711.03.
 - 11. Preformed Joint Filler: CDOT Construction Specifications, Section 705.01.
 - 12. Joint Sealant with Backer Rod: CDOT Construction Specifications, Section 705.01.
 - 13. Curing Materials: CDOT Construction Specifications, Section 711.01.
 - 14. Reinforcing Steel: CDOT Construction Specifications, Section 709.01.
 - 15. Dowel Bars and Tie Bars: CDOT Construction Specifications, Section 709.03.
 - 16. American Concrete Institutes (ACI) PRC-347.3: Guide to Formed Concrete Surfaces.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 SUMMARY

- A. Cast-in-place concrete shall conform to CDOT Construction Specifications, Division 600 Miscellaneous Construction, Section 601 Structural Concrete.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
 - a. The Engineer.
 - b. Contractor's superintendent.
 - c. Independent testing agency responsible for concrete design mixtures.
 - d. Ready-mix concrete manufacturer.
 - e. Concrete Subcontractor.
 - f. Special concrete finish Subcontractor.
 - 2. Review special inspection and testing and inspecting agency procedures for field quality control, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, steel reinforcement installation, and concrete protection.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include crystalline waterproofing admixtures.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure.
 - 1. Location of construction joints is subject to approval of the Engineer.

1.7 INFORMATIONAL SUBMITTALS

- A. Welding certificates.
- B. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Fiber reinforcement.
 - 6. Curing compounds.
 - 7. Bonding agents.
 - 8. Adhesives.
 - 9. Semirigid joint filler.
 - 10. Joint-filler strips.
 - 11. Repair materials.
- C. Material Test Reports: For the following, from a qualified testing agency:
 - 1. Aggregates.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.
- B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.
- D. Mockups for Site Walls: Cast wall section to demonstrate typical joints, surface finish, tolerances, treatments, and standard of workmanship.
 - 1. Build wall approximately six feet in length and to average height and full width of site wall design.
 - 2. Provide specified wall finish or finish options if selection is to be made from mockup.
 - 3. Reconstruct mockups as required until Engineer has provided written acceptance of mockup.
 - 4. Build wall in location that does not interfere with actual site wall work or work of other trades. Keep wall in place as a reference during course of work. Do not demolish and remove mockup until Engineer has reviewed all site wall work and authorized removal of mockup.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

- A. Cast-in-place concrete CDOT Type B or Type D Portland cement concrete conforming to CDOT Construction Specifications, Division 600 Miscellaneous Construction, Section 601 Structural Concrete.

PART 3 - EXECUTION

3.1 GENERAL

- A. Execution conforming to CDOT Construction Specifications, Division 600 Miscellaneous Construction, Section 601 Structural Concrete.

3.2 FINISHING FORMED SURFACES

- A. Conform to American Concrete Institutes (ACI) PRC-347.3: Guide to Formed Concrete Surfaces.
- B. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Steel pipe and tube railings.
- B. Related Requirements:
 - 1. Section 099600 "High Performance Coatings" for coatings applied to exterior railings.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 COORDINATION

- A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.
- B. Coordinate installation of anchorages for railings. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- C. Schedule installation so wall attachments are made only to completed walls. Do not support railings temporarily by any means that do not satisfy structural performance requirements.

1.5 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Manufacturer's product lines of mechanically connected railings.

2. Railing brackets.
 3. Grout, anchoring cement, and paint products.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
- C. Samples: For each type of exposed finish required.
1. Sections of each distinctly different linear railing member, including handrails, top rails, posts, and balusters, including finish.
 2. Fittings and brackets.
- D. Delegated-Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 QUALITY ASSURANCE

- A. Welding Qualifications: Qualify procedures and personnel according to the following:
1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

1.8 FIELD CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 FABRICATORS

- A. Source Limitations: Obtain each type of railing from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building or site construction.
- B. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
1. Handrails and Top Rails of Guards:
 - a. Uniform load of 50 lbf/ ft. applied in any direction.
 - b. Concentrated load of 200 lbf applied in any direction.

- c. Uniform and concentrated loads need not be assumed to act concurrently.
 - 2. Infill of Guards:
 - a. Concentrated load of 50 lbf applied horizontally on an area of 1 sq. ft..
 - b. Infill load and other loads need not be assumed to act concurrently.
 - C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- 2.3 METALS, GENERAL
- A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
 - B. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.
- 2.4 STEEL AND IRON
- A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
 - B. Tubing: ASTM A 500 (cold formed) or ASTM A 513.
 - C. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - 1. Provide hot dip galvanized and high performance paint finish for exterior installations and where indicated.
 - D. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- 2.5 FASTENERS
- A. General: Provide the following:
 - 1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
 - B. Fasteners for Anchoring Railings to Other Construction: Select fasteners of type, grade, and class required to produce connections suitable for anchoring railings to other types of construction indicated and capable of withstanding design loads.
 - C. Fasteners for Interconnecting Railing Components:
 - 1. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless otherwise indicated.

2. Provide concealed fasteners for interconnecting railing components and for attaching them to other work, unless exposed fasteners are unavoidable or are the standard fastening method for railings indicated.
 3. Provide tamper-resistant flat-head machine screws for exposed fasteners unless otherwise indicated.
- D. Post-Installed Anchors: Torque-controlled expansion anchors or chemical anchors capable of sustaining, without failure, a load equal to 6 times the load imposed when installed in unit masonry and 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.
1. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 stainless-steel bolts, ASTM F 593, and nuts, ASTM F 594.

2.6 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.
- C. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.
- D. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.
1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.
- E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 FABRICATION

- A. General: Fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.
- B. Shop assemble railings to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- C. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- D. Form work true to line and level with accurate angles and surfaces.
- E. Fabricate connections that are exposed to weather in a manner that excludes water. Provide weep holes where water may accumulate.

- F. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items.
- G. Connections: Fabricate railings with welded connections unless otherwise indicated.
- H. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
 - 1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
 - 2. Obtain fusion without undercut or overlap.
 - 3. Remove flux immediately.
 - 4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.
- I. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.
 - 1. Fabricate splice joints for field connection using an epoxy structural adhesive if this is manufacturer's standard splicing method.
- J. Form Changes in Direction as Follows:
 - 1. As detailed.
- K. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.
- L. Close exposed ends of railing members with prefabricated end fittings.
- M. Provide inserts and other anchorage devices for connecting railings to concrete or masonry work. Fabricate anchorage devices capable of withstanding loads imposed by railings. Coordinate anchorage devices with supporting structure.

2.8 STEEL AND IRON FINISHES

- A. Galvanized Railings:
 - 1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
 - 2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
 - 3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.
 - 4. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.
 - 5. Fill vent and drain holes that are exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.
- C. Preparation for Shop Priming: Prepare hot-dip galvanized steel railings, fabrications, and hardware in accordance with ASTM D 6386.

- D. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Primer need not be applied to surfaces to be embedded in concrete or masonry.
- E. Shop-Painted Finish: Comply with Section 099600 "High-Performance Coatings."
 - 1. Color: As selected by Architect from manufacturer's full range.
- F. High-Performance Coating: Apply epoxy intermediate and polyurethane topcoats to prime-coated surfaces. Comply with coating manufacturer's written instructions and with requirements in SSPC-PA 1, "Shop, Field, and Maintenance Painting of Steel," for shop painting. Apply at spreading rates recommended by coating manufacturer.
 - 1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine plaster and gypsum board assemblies, where reinforced to receive anchors, to verify that locations of concealed reinforcements are clearly marked for Installer. Locate reinforcements and mark locations if not already done.

3.2 INSTALLATION, GENERAL

- A. Fit exposed connections together to form tight, hairline joints.
- B. Perform cutting, drilling, and fitting required for installing railings. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.
 - 1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
 - 2. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
 - 3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.
- C. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
 - 1. Coat, with a heavy coat of bituminous paint, concealed surfaces of aluminum that are in contact with grout, concrete, masonry, wood, or dissimilar metals.
- D. Adjust railings before anchoring to ensure matching alignment at abutting joints.
- E. Fastening to In-Place Construction: Use anchorage devices and fasteners where necessary for securing railings and for properly transferring loads to in-place construction.

3.3 RAILING CONNECTIONS

- A. Nonwelded Connections: Use mechanical or adhesive joints for permanently connecting railing components. Seal recessed holes of exposed locking screws using plastic cement filler colored to match finish of railings.
- B. Welded Connections: Use fully welded joints for permanently connecting railing components. Comply with requirements for welded connections in "Fabrication" Article whether welding is performed in the shop or in the field.
- C. Expansion Joints: Install expansion joints at locations indicated but not farther apart than required to accommodate thermal movement. Provide slip-joint internal sleeve extending 2 inches beyond joint on either side, fasten internal sleeve securely to one side, and locate joint within 6 inches of post.

3.4 ANCHORING POSTS

- A. Form or core-drill holes not less than 8 inches deep and 3/4 inch larger than OD of post for installing posts in concrete. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions.
- B. If post flange indicated on the Drawings, cover anchorage joint with flange of same metal as post, attached to post with set screws.
- C. If no post flange is indicated on the Drawings, leave anchorage joint exposed with 1/8-inch buildup, sloped away from post.
- D. Install removable railing sections, where indicated, in slip-fit metal sockets cast in concrete.

3.5 ADJUSTING AND CLEANING

- A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASSTM A 780/A 780M.

3.6 PROTECTION

- A. Protect finishes of railings from damage during construction period with temporary protective coverings approved by railing manufacturer. Remove protective coverings at time of Substantial Completion.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 107360.01 - MANUFACTURED SHADE STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawing and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes:
 - 1. Manufactured steel shade structures.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for foundations related to manufactured shade structures.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of shade structure indicated. Include construction details relative to materials, individual components and profiles, and finishes.
- B. Shop Drawings: For full shade structure assembly and foundations; include plans, elevations, sections, details, coordination with electrical components, and attachments to other Work. Indicate relationship of shade structure and foundations to adjacent paving and site features.
- C. Samples: For each finish material, manufacturers standard, but not less than 3 by 4 inches.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Provide maintenance manuals.

1.6 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials.

1.7 QUALITY ASSURANCE

- A. Source Limitations: Obtain each shade structure system from a single manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Requirements:
 - 1. Unload materials with protective straps or padded forks; no hand unloading or chains.
 - 2. Store product in a dry place protected from weather and out of direct sun.

1.9 MANUFACTURER WARRANTY

- A. Provide manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design shade structure and foundations to which it is attached.
- B. Applicable Codes: Design and workmanship shall be in accordance with IBC 2018 or latest edition and all applicable codes of local jurisdiction.
- C. Minimum Design Loads: Design loads shall be in accordance with ASCE/SEI Minimum Design Loads and Associated Criteria for Buildings and Other Structures, latest edition.
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on exterior metal fabrications by preventing buckling, opening of joints, overstressing of components, failure of connections, and other detrimental effects.
 - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 MANUFACTURERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or approved substitution product by one of the following:
 - 1. Classic Recreation Systems, Inc.
 - 2. Icon Shelter Systems.
 - 3. CEAS West

2.3 FABRICATION

- A. Provide pre-cut and pre-fabricated components including all parts necessary to field-construct the shade structures.

2.4 FINISHES, GENERAL

- A. Provide manufacturer's factory installed high-performance coatings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by the Engineer.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Provide construction layout and field engineering as specified in Section 17300 "Execution."
- B. Verify locations of sub-grade utilities, lawn sprinkler systems, and underground structures prior to installation.

3.3 INSTALLATION

- A. Comply with manufacturer's written instructions for installing shade structures.

3.4 CLEANING

- A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

3.5 PROTECTION

- A. Protect finishes of shade structures from damage during construction period with temporary protective coverings approved by shade structure manufacturer. Remove protective coverings at time of Substantial Completion.

- B. Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit, or provide new units.

END OF SECTION

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SECTION 116800 - PLAY EQUIPMENT AND STRUCTURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes playground equipment as follows:
 - 1. Freestanding playground equipment.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Definitions in ASTM F1487 apply to Work of this Section.
- C. IPEMA: International Play Equipment Manufacturers Association.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of playground equipment.
 - 1. Include plans, elevations, sections, and attachment details.
 - 2. Include fall heights and use zones for playground equipment, coordinated with the critical-height values of protective surfacing specified in Section 321816.13 "Playground Protective Surfacing."
- C. Samples for Initial Selection: For each type of exposed finish.
 - 1. Manufacturer's color charts.

2. Include Samples of accessories involving color selection.

1.6 INFORMATIONAL SUBMITTALS

- A. Sample Warranty: For manufacturer's special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:
 - a. Structural failures.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain playground equipment from single source from single manufacturer.
- B. Playground equipment and components shall have the IPEMA Certification Seal.
- C. The following playground equipment and components shall have the IPEMA Certification Seal:
 1. Equipment provided on the Drawings. If playground equipment is custom and does not have an IPEMA Certification Seal, equipment shall be inspected by an independent Certified Playground Safety Inspector (CPSI) verifying play equipment meets safety requirements by the Consumer Product Safety Commission.

2.2 PERFORMANCE REQUIREMENTS

- A. Safety Standard: Provide playground equipment according to ASTM F1487.

2.3 FABRICATION

- A. Provide sizes, strengths, thicknesses, wall thickness, and weights of components as required to comply with requirements in ASTM F1487. Factory drill components for field assembly. Unnecessary holes in components, not required for field assembly, are not permitted. Provide complete play structures, including supporting members and connections, means of access and egress, designated play surfaces, barriers, guardrails, handrails, handholds, and other components indicated or required for equipment indicated.
- B. Metal Frame: Fabricate main-frame upright support posts from metal pipe or tubing with cross-section profile and dimensions as required. Unless otherwise indicated, provide each pipe or tubing main-frame member with manufacturer's standard drainable bottom plate or support flange. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
- C. Wood Frame: Fabricate main-frame upright support posts from wood. Fabricate secondary frame members, bracing, and connections from wood, steel, or aluminum.
- D. Composite Frame: Fabricate main-frame upright support posts from metal and plastic. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
- E. Play Surfaces: Manufacturer's standard elevated drainable decks, platforms, landings, walkways, ramps, and similar transitional play surfaces, designed to withstand loads; fabricated from perforated or expanded metal made into floor units with slip-resistant finish. Fabricate units in modular sizes and shapes to form assembled play surfaces indicated.
- F. Protective Barriers: Fabricate according to ASTM F1487. Extend barriers to height above the protected elevated surface according to requirements for use by age group indicated. Fabricate from one or more of the following:
 - 1. Welded-metal pipe or tubing with vertical bars.
 - 2. Steel sheet with openings for vision and ventilation.
 - 3. Metal-pipe or -tubing frame with wire-mesh infill panels.
 - 4. Transparent plastic panels with openings.
 - 5. Vertical wood balusters with metal pipe or tubing or wood frame.
 - 6. Wood panels with openings for vision and ventilation.
- G. Guardrails: Provide guardrails configured to completely surround the protected area, except for access openings. Fabricate from welded metal pipe or tubing. Extend guardrails according to requirements for use by age group indicated.
- H. Handrails: Welded metal pipe or tubing, maximum OD between 0.95 and 1.55 inches.
 - 1. Provide handrails at heights to comply with requirements for use by age group indicated according to ASTM F1487.
- I. Roofs and Canopies: Designed to discourage and minimize climbing by users.
 - 1. Fabricated from metal-pipe or -tubing-framed welded wire opaque plastic.
- J. Signs: Manufacturer's standard sign panels, fabricated from opaque plastic with graphics molded in, attached to freestanding, upright support posts.

1. Text: Minimum informational content according to ASTM F1487.
2. Colors: As indicated on the Drawings.

2.4 MATERIALS

- A. Aluminum: Material, alloy, and temper recommended by manufacturer for type of use and finish indicated.
- B. Steel: Material types, alloys, and forms recommended by manufacturer for type of use and finish indicated, hot-dip galvanized.
- C. Stainless-Steel Sheet: Type 304; finished on exposed faces with No. 2B finish.
- D. Wood: As indicated, surfaced smooth on all sides and all edges rounded.
- E. Opaque Plastics: Color impregnated, UV stabilized, and mold resistant.
- F. Transparent Plastic: Abrasion-resistant, UV-stabilized polycarbonate sheet; clear, colorless; not less than 3/16 inch thick.
- G. Suspension Chain and Fittings: ASTM A467/A467M, Class CS, 4/0 or 5/0, welded-straight-link coil chain; hot-dip galvanized; with commercial-quality, hot-dip galvanized steel connectors and swing or ring hangers.
- H. Suspension Cable: Manufacturer's standard hot-dip galvanized zinc-plated or PVC-coatedable; with commercial-quality, hot-dip galvanized or zinc-plated steel connectors and swing or ring hangers.
- I. Iron Castings and Hangers: Malleable iron, ASTM A47/A47M, Grade 32510, hot-dip galvanized.
- J. Post Caps: Cast aluminum or color-impregnated, UV-stabilized, mold-resistant polyethylene or polypropylene; color to match posts.
- K. Platform Clamps and Hangers: Cast aluminum or zinc-plated steel, not less than 0.105-inch-nominal thickness.
- L. Hardware: Manufacturer's standard; commercial-quality; corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum; of a vandal-resistant design.
- M. Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or zinc-plated steel and iron, or stainless steel; permanently capped; and theft resistant.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for earthwork, subgrade elevations, surface and subgrade drainage, and other conditions affecting performance of the Work.

1. Do not begin installation before final grading required for placing playground equipment and protective surfacing is completed.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions for each equipment type unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.
 1. Maximum Equipment Height: Coordinate installed fall heights of equipment with finished elevations and critical-height values of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.
- B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- C. Post Set on Subgrade: Level bearing surfaces with drainage fill to required elevation.
- D. Post Set with Concrete Footing: Comply with Section 033000 "Cast-in-Place Concrete" for measuring, batching, mixing, transporting, forming, and placing concrete.
 1. Set equipment posts in concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
 - a. Ensure footers do not impede safe zones or may be exposed by routine and normal play.
 - b. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
 2. Embedded Items: Follow equipment manufacturer's written instructions and drawings to ensure correct installation of anchorages for equipment.
 3. Finishing Footings: Smooth top, and shape to shed water.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections with the assistance of a factory-authorized service representative.
 1. Perform inspection and testing for each type of installed playground equipment according to ASTM F1487.
- C. Playground equipment items will be considered defective if they do not pass tests and inspections.

- D. Prepare test and inspection reports.
- E. Notify Owner 48 hours in advance of date(s) and time(s) of testing and inspection.

END OF SECTION

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SECTION 116833.01 - OUTDOOR ATHLETIC EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Supplementary Conditions and Division 01 Specification Section, apply to this Section.

1.2 SUMMARY

- 1. Soccer Goal.
- 2. Lacrosse Goal.
- 3. Baseball: Prefabricated Dugout, Players Bench, Foul Pole, Outfield Fence Guard, Bases, Home Plate, Pitching Rubber, and Scoreboard.
- 4. Badminton: Net Posts and Nets.
- 5. Basketball Goal.
- 6. Bocce Rack.
- 7. Futsal Goal.
- 8. Pickleball: Net Posts, Nets, and Windscreens.
- 9. Pickleball/Tennis Cabana.
- 10. Tennis: Net Posts, Nets, and Windscreens.
- 11. Volleyball: Net Posts and Nets.

- B. Related Requirements:

- 1. Section 033000 Cast-in-Place Concrete for foundations.
- 2. Section 323113 Chainlink Fences and Gates.
- 3. Section 329250 Synthetic Grass Surfacing.
- 4. Section 321823.03 Sports Court Surfacing.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 SUBMITTALS

- A. Product data: Submit manufacturer's technical data and installation instructions for each item of equipment required.
- B. Operations and maintenance: Provide tools, touch-up paint, maintenance recommendations, recommendations for graffiti removal and spare parts including nuts and bolts.

C. Shop Drawings for Prefabricated Dugout.

1. Include plans, elevations, sections, details, and attachments to other work. Include foundations.
2. For structural performance of assembly, foundations, and attachment of assembly to foundations, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

PART 2 - PRODUCTS

2.1 SOCCER GOAL

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Scoremaster (mfr) "Movable Regulation Soccer Goals", or approved equivalent.

1. Size in accordance with field size, or as approved by Engineer.

2.2 LACROSSE GOALS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide Scoremaster (mfr) "SM-L1000 Lacrosse Goals", or approved equivalent.

2.3 BASEBALL

- A. Prefabricated Dugout.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sportsfield Specialties, Inc. (mfr.) GD8X32 - GameShade® Dugout, 8'W x 32'L.
 - a. Powdercoated metal color: As selected by Engineer from manufacturer's full range of available colors.
 - b. Delegated Design: Include Stamped and Sealed Drawings and Calculations by a Licensed Professional Engineer of Record in the State of Colorado. Include design of full assemble, included foundations and attachments.
 - 1) Performance Requirements: Assembly and attachments shall withstand the design wind loads and stresses for under exposure conditions indicated for project location according to [ASCE/SEI 7] <Insert requirement>.

- B. Players Bench.

1. Basis-of-Design Product: Subject to compliance with requirements, provide PW Athletic Manufacturing Co. (mfr) Model: # 1103-21G-21' Aluminum Bench with back with galvanized frame, or approved equivalent.
 - a. Color: Silver.
 - b. Surface-mount, typical. In-ground mount with approval of Engineer.

- C. Foul Pole.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Sportsfeld Specialties (mfr) Model: #LGFP420, 20'-0" height, with mesh swing, or approved equivalent.
 - a. Color: Yellow.
 - b. Embed mount in ground sleeve.
 - c. Delegated Design: Provide engineer's sealed drawings and calculations for full assembly, including foundation design.
- D. Outfield Fence Cap/Guard.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Beacon Athletics (mfr) "Fence Guard - Premium Thickness", or approved equivalent.
 - a. Color: Yellow:
 - b. Provide continuous along length outfield fence.
- E. Bases.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Beacon Athletics (mfr), or approved equivalent.
 - a. First Base: "Champro Pro-Style Double 1st Base Set."
 - b. All Other Bases: "Champro Pro-Style Base Set."
- F. Home Plate and Pitching Rubber.
 1. Basis-of-Design Product: Subject to compliance with requirements, provide Beacon Athletics (mfr), or approved equivalent.
 - a. "Home Plate with Anchor and Stanchion."
 - b. Pitcher's Rubber: "Champro 3-Spike Pitcher's Rubber."
 - 1) Provide at 300' foul line fields, or other distances where approved by Engineer.
- G. Scoreboard.
 1. Manufacturer: Subject to compliance with requirements, provide products by one of the following or approved equivalent.
 - a. Fair-Play Corporation, model BA-7100-2.
 - b. Nevco, model 1600.
 - c. Electro-Mech Scoreboard Company, model LX1250-ETN.
 2. Description: Single cabinet, aluminum construction, electronic display scoreboard with the following features:
 - a. Size: 14-feet length by 5-feet height overall minimum cabinet.
 - b. Cabinet Finish: High performance coating, color as selected by Engineer from manufacturer's full range.
 - c. Includes captions for: HOME, GUESTS, INNING, BALL, STRIKE, OUT, H, E. 9-inch height minimum white lettering.

- d. Digits: 18-inch height minimum, LED, amber color.
- e. Two-post mounting.
- f. Integrated lighting protection.
- g. Power: 120 VAC.
- h. Control Console: Designed for wired or wireless use.
- i. Warranty: 5-years minimum.

2.4 BADMINTON

A. Net Posts.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Porter (mfr) "Ultimate Outdoor Volleyball Standards," or approved equivalent.
 - a. Embed mount in ground sleeves.

B. Nets.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Porter (mfr) "Badminton Net 20' x 30'", Product Code: 2236110, or approved equivalent.

2.5 BASKETBALL GOAL

A. Basis-of-Design Product: Subject to compliance with requirements, provide Porter (mfr) "Heavy-Duty Basketball System," Product Code: 195580, or approved equivalent.

- 1. Embed mount.
- 2. Delegated Design: Provide engineer's sealed drawings and calculations for full assembly, including foundation design.

2.6 BOCCE RACK

A. Basis-of-Design Product: Subject to compliance with requirements, provide Boccemasters (mfr) "Bocce Ball Rack.", or approved equivalent.

- 1. Anchor to concrete curb edge with stainless steel, vandal resistant, masonry anchors.

2.7 FUTSAL GOAL

A. Basis-of-Design Product: Subject to compliance with requirements, provide Forza (mfr) " 10ft X 6.5ft Forza ALU110 Freestanding Futsal Soccer Goal," or approved equivalent.

2.8 PICKLEBALL

A. Net Posts.

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Model Douglas (mfr) "SW-36 Deluxe Pickleball Posts 2-7/8" OD.", or approved equivalent.
 - a. Color: Black.

- b. Embed mount using "GS-24RD/AL Aluminum Ground Sleeves", 24" Long for 2-7/8" OD Posts.
 - 2. Nets.
 - a. Basis-of-Design Product: Subject to compliance with requirements, provide Model Douglas (mfr) "Model: JTN-30 Pickleball Net – 36" x 21'-9".", or approved equivalent.
 - b. Color: Black.
 - B. Windscreen.
 - 1. Douglas (mfr.) PolyPro Plus Premium, 4-ply hems with #2 brass grommets at 12-inches on center, center reinforcement with #2 brass grommets at 18-inches on center, and 8-inch by 10-inch AVR style air vents at 10-feet on center.
 - a. Size: 9-ft height (for 10-ft fence), custom length to provide continuous coverage of perimeter fence, including application for gates and transoms.
 - b. Color: black or green, as selected by Engineer.
- 2.9 PICKLEBALL/TENNIS CABANAS
- A. Basis-of-Design Product: Subject to compliance with requirements, provide Sun-Trends Inc. (mfr) 8' long cabana with 8' long cabana bench (two sided flat), or approved equivalent.
 - 1. Color: Blue
 - 2. Embed mount with ground sleeve or surface mount, as indicated on the Drawings.
 - 3. Delegated Design: Provide engineer's sealed drawings and calculations for full assembly, including foundation design, at post-tension concrete court.
- 2.10 TENNIS EQUIPMENT
- A. Net Posts At New Court Surfaces.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Douglas (mfr) SW-36 Deluxe POP Tennis Posts 2-7/8" OD., or approved equivalent.
 - a. Color: Black.
 - b. Embed mount using "Douglas (mfr) GS-24RD/AL Aluminum Ground Sleeves", 24" Long for 2-7/8" OD Posts.
 - B. Net Posts At Existing Court Surfaces
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Douglas (mfr) Premier Square Tennis Surface Mount Posts, 3" square, or approved equivalent.
 - C. Nets
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Douglas (mfr) Model: PN-30 POP Tennis Net-31"x 21'-9", or approved equivalent.
 - a. Color: Black.

- b. Include Douglas (mfr.) Deluxe ACS Adjustable Center Strap.
- D. Windscreen.
 - 1. Douglas (mfr.) PolyPro Plus Premium, 4-ply hems with #2 brass grommets at 12-inches on center, center reinforcement with #2 brass grommets at 18-inches on center, and 8-inch by 10-inch AVR style air vents at 10-feet on center.
 - a. Size: 9-ft height (for 10-ft fence), custom length to provide continuous coverage of perimeter fence, including application for gates and transoms.
 - b. Color: black or green, as selected by Engineer.

2.11 VOLLEYBALL NET POSTS

- A. Net Posts.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Porter (mfr) "2219-20A Volleyball Pro Series Competition Posts 4" Square Aluminum", or approved equivalent.
 - a. Color: Black.
 - b. Embed mount in ground sleeves.
- B. Nets.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Porter (mfr) "Ultimate Outdoor Volleyball Net", or approved equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of athletic recreation equipment where required.
- B. Unless otherwise indicated, install athletic field equipment after landscaping and paving have been completed.
- C. Install athletic field equipment level, plumb, true, and securely anchor at locations indicated on Drawings.

- D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
- E. Pipe Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between posts and sleeve with nonshrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.

END OF SECTION 116833.01

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SECTION 129300 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Benches.
- 2. Backless benches.
- 3. Tables and chairs.
- 4. Bicycle racks.
- 5. Trash receptacles.
- 6. Recycling receptacles.
- 7. Manufactured bollards.

- B. Related Requirements:

- 1. Section 033000 "Cast-in-Place Concrete" for installing anchor bolts in concrete footings or slabs.
- 2. Section 312000 "Earth Moving" for excavation for installing concrete footings.

1.3 DEFINITIONS

- 1.4 Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Initial Selection: For units with factory-applied finishes.
- C. Samples for Verification: For each type of exposed finish, not less than 6-inch- long linear components and 4-inch- square sheet components.
- D. Product Schedule: For site furnishings. Use same designations indicated on Drawings.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Protect and store site furnishings away from active work zones and equipment.
- B. Site furnishings to be protected at all times, including during and following installation. Site furnishings to be installed free of damage and protections to remain in-place until necessary to remove for inspection or substantial completion.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For site furnishings to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

PART 2 - PRODUCTS

2.1 BENCHES

- A. Products: Subject to compliance with requirements, provide the following:
 - 1. Basis-of-Design Product: As indicated on Drawings.
- B. Description:
 - 1. Size: As indicated on Drawings.
 - 2. Color: As indicated on Drawings.

2.2 BACKLESS BENCHES

- A. Products: Subject to compliance with requirements, provide the following:
 - 1. Basis-of-Design Product: As indicated on Drawings.
- B. Description:
 - 1. Size: As indicated on Drawings.
 - 2. Color: As indicated on Drawings.

2.3 TABLES AND CHAIRS

- A. Products: Subject to compliance with requirements, provide the following:
 - 1. Basis-of-Design Product: As indicated on Drawings.

B. Description:

1. Size: As indicated on Drawings.
2. Color: As indicated on Drawings

2.4 BICYCLE RACKS

A. Products: Subject to compliance with requirements, provide the following:

1. Basis-of-Design Product: As indicated on Drawings.

B. Description:

1. Size: As indicated on Drawings.
2. Color: As indicated on Drawings

2.5 TRASH RECEPTACLES

A. Products: Subject to compliance with requirements, provide the following:

1. Basis-of-Design Product: As indicated on Drawings.

B. Description:

1. Size: As indicated on Drawings.
2. Color: As indicated on Drawings

2.6 RECYCLING RECEPTACLES

A. Products: Subject to compliance with requirements, provide the following:

1. Basis-of-Design Product: As indicated on Drawings.

B. Description:

1. Size: As indicated on Drawings.
2. Color: As indicated on Drawings

2.7 MANUFACTURED BOLLARDS

A. Products: Subject to compliance with requirements, provide the following:

1. Basis-of-Design Product: As indicated on Drawings.

B. Description:

1. Size: As indicated on Drawings.
2. Color: As indicated on Drawings

2.8 MATERIALS

- A. Anchors, Fasteners, Fittings, and Hardware: Manufacturer's standard, corrosion-resistant-coated or noncorrodible materials; commercial quality, tamperproof, vandal and theft resistant.
- B. Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M; recommended in writing by manufacturer, for exterior applications.

2.9 FABRICATION

- A. Metal Components: Form to required shapes and sizes with true, consistent curves, lines, and angles. Separate metals from dissimilar materials to prevent electrolytic action.
- B. Welded Connections: Weld connections continuously. Weld solid members with full-length, full-penetration welds and hollow members with full-circumference welds. At exposed connections, finish surfaces smooth and blended, so no roughness or unevenness shows after finishing and welded surface matches contours of adjoining surfaces.
- C. Pipes and Tubes: Form simple and compound curves by bending members in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of handrail and railing components.
- D. Preservative-Treated Wood Components: Complete fabrication of treated items before treatment if possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces.
- E. Exposed Surfaces: Polished, sanded, or otherwise finished; all surfaces smooth, free of burrs, barbs, splinters, and sharpness; all edges and ends rolled, rounded, or capped.
- F. Factory Assembly: Factory assemble components to greatest extent possible to minimize field assembly. Clearly mark units for assembly in the field.

2.10 GENERAL FINISH REQUIREMENTS

- A. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.
- B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.
- C. Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.
- D. Embed-Mount: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

3.3 CLEANING

- A. Following completion of site furnishing installation, inspect all components and surfaces. Clean all surfaces with warm water using non-abrasive cleaner, as recommended by product manufacturer, and a soft non-abrasive cloth or sponge to remove all markings, dirt, or other debris.
- B. Replace any damaged components and repair damage to finishes in compliance with manufacturer's written instructions. All finish repairs to use match adjacent surface finish and color. Replace any furnishings with damage or repairs found not acceptable to the Engineer.

END OF SECTION 129300

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SECTION - 133416.53 - CONTINUOUS ELEVATED ANGLE-FRAME BLEACHERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Continuous, elevated, angle-frame bleachers.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for concrete foundations.
- C. Reference Standards:
 - 1. AAMA 2603 – Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
 - 2. AISC Steel Construction Manual.
 - 3. Aluminum Association (AA) Aluminum Design Manual.
 - 4. ASTM A 36 / A 36M – Standard Specification for Carbon Structural Steel.
 - 5. ASTM A 123 / A 123M – Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
 - 6. ASTM A 307 – Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.
 - 7. ASTM A 572 / A 572M – Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel.
 - 8. ASTM A 992 / A 992M – Standard Specification for Structural Steel Shapes.
 - 9. AWS D1.1 / D1.1M – Structural Welding Code – Steel.
- D. Research Council on Structural Connections (RCSC) Specification for Structural Joints Using High-Strength Bolts.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Convene meeting prior to installation of new concrete substrate (if any).
 - 2. Include Contractor, Architect, Engineer, installer or manufacturer's representative, concrete substrate installer, and subgrade drainage installer (if any).
 - 3. Review materials, preparation, installation, adjusting, protection, and coordination with other work.
 - 4. Review max preferred slope-to-drain requirement for bleachers.

1.5 ACTION SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including installation instructions.
- B. Shop Drawings:
 - 1. Submit manufacturer's shop drawings, including plans, elevations, sections, and details, indicating location, size, details, and quantity of steel and aluminum components and accessories.
 - 2. Indicate locations of exit stairs, ramps, seat locations, decking configurations, and overall general materials to be supplied.
 - 3. Shop drawings shall be signed and sealed by a qualified, registered professional engineer, registered in state of the installation.
- C. Samples: Submit manufacturer's color samples for selection.
- D. Delegated Design Submittal:
 - 1. Submit manufacturer's design data, including an analysis to indicate that the structural members shall have sufficient strength to support required loads and ability to resist loads subjected, without exceeding allowable stresses of the materials.
 - 2. Provide design data with seal and signature by a qualified, registered professional engineer, registered in state of the installation.

1.6 INFORMATIONAL SUBMITTALS

- A. Warranty Documentation: Submit manufacturer's standard warranty.

1.7 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 - 1. Manufacturer regularly engaged, for past 10 years, in design and manufacture of continuous, elevated, angle-frame bleachers of similar type to that specified.
 - 2. Fabricate structural steel in an AISC-certified plant; certified "STD" at time of the bid.
 - 3. Manufacturer listed by AISC as a certified fabricator.
 - 4. Certification and inspections in accordance with IBC Chapter 17.
- B. Installer's Qualifications:

1. Installer regularly engaged, for past 5 years, in installation of continuous, elevated, angle-frame bleachers of similar type to that specified.
 2. Employ persons trained and experienced for installation of continuous, elevated, angle-frame bleachers.
- C. Welder's Qualifications: AWS certified within past 12 months for each type of weld required.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
1. Store and handle materials in accordance with manufacturer's instructions.
 2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
 3. Do not store materials directly on ground.
 4. Protect materials and finish during storage, handling, and installation to prevent damage.

PART 2 - PRODUCTS

2.1 DESIGN REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design continuous elevated angle-frame bleachers.
- B. Design: Conform to AISC Steel Construction Manual and AA Aluminum Design Manual.
- C. Applicable Codes: Design and workmanship shall be in accordance with IBC 2021, or current IBC version as adopted by Town of Parker, and ICC 300 Bleachers, Folding and Telescopic Seating, and Grandstands.
- D. Design Loads:
1. Live Loads:
 - a. Uniform Loading, Structure: 100 psf.
 - b. Uniform Loading, Seats: 120 plf.
 2. Sway Loads:
 - a. Perpendicular to Seats: 10 plf.
 - b. Parallel to Seats: 24 plf.
 3. Wind Loads: As required by local building code and in accordance with IBC and ASCE 7.
 4. Snow Loads: As required by local building code and in accordance with IBC and ASCE 7.
 5. Handrail and Guardrail:
 - a. 100 plf. vertical.

- b. 200 lb. concentrated in any direction.
 - c. 50 lb. concentrated load on infill components.
- E. Shop Connections: Welded and capable of carrying stress put upon them.
- F. Welding: AWS D1.1.
- G. Concrete Foundations: Manufacturer shall design and install concrete foundations as specified in Section 033000 "Cast-in-Place Concrete".

2.2 CONTINUOUS ELEVATED ANGLE-FRAME BLEACHERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:
 - 1. CBS Constructors.
 - 2. Sturdisteel.
 - 3. Southern Bleacher Company, Inc.
- B. Size: As indicated on Drawings.
- C. Net Seating Capacity: As indicated on Drawings.
- D. Framework: Space prefabricated angle bleacher frames at 6-foot intervals and connect by crossbraces.
- E. Rise and Depth Dimensions:
 - 1. Vertical Rise per Row: 8 inches.
 - 2. Horizontal Depth per Row: 24 inches.
 - 3. Seat Above its Respective Tread: 17 inches.
- F. Risers:
 - 1. Anodized Aluminum Board: 1-inch by 6-inches ,
 - 2. Anodized Aluminum Board At Top Row: 1-inch by 12-inches or (2) boards at 1-inch by 6-inch.
- G. Seats: Anodized aluminum board with end caps: 2-inch by 10-inches.
- H. Treads: Two mill finish aluminum boards with end caps, 2-inches by 10-inches.
- I. Guardrail:
 - 1. Sides and back of bleachers, entry stairs, walkways, ramps, portals, and landings where 30 inches or more above adjacent area or grade.
 - 2. Material: Anodized aluminum pipe with end plugs at ends of straight runs or elbows at corners.
 - 3. Secure to angle posts with galvanized fasteners.
 - 4. Top Rail: Height as indicated on drawings but not less than 42 inches minimum above walkways, entrances, and any adjacent seat.
 - 5. Chain Link Fencing: 9-gauge galvanized steel, fastened in place with galvanized fittings and aluminum ties.

J. Front Walkway:

1. Width: 60 inches.
2. Elevated:
 - a. On Slabs: 30-inches high or as indicated on Drawings .
3. Deck: Mill finish aluminum boards, 2-inches by 12-inches.

K. Steps:

1. Frames: Galvanized steel.
2. Mill finish aluminum boards, 2-inches by 10-inches with 2-inch by 2-inch dark bronze contrasting nosing.

L. Entry Stairs:

1. Entry Stairs, Guardrails, and Handrails: In accordance with local code requirements.
2. Rise: 7 inches maximum, 6-inches preferred.
3. Tread: 11 inches minimum, 12-inches preferred.

M. Aisle Width:

1. Middle Aisle Width: As indicated on Drawings, but not less than 48 inches or minimum required by IBC for egress.
2. End Aisle Width: As indicated on Drawings, but not less than 36 inches or minimum required by IBC for egress.

N. Accessibility: Incorporate wheelchair spaces within bleachers to conform to applicable code and ADA.

2.3 MATERIALS

A. Framework:

1. Galvanized Steel:
 - a. ASTM A 36, ASTM A 572 Grade 50, and ASTM A 992.
 - b. Hot-dipped galvanized after fabrication in accordance with ASTM A 123.
2. Bleacher manufacturer will not be responsible for the discoloration, staining and fading of exposed mill finish aluminum surfaces due to oxidation; prior to, during or after installation. Oxidation of mill finish aluminum surfaces is a natural phenomenon and is caused by condensation or moisture during packaging, transportation and/or storage.

B. Seat Boards: Extruded aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II.

C. Riser Boards: Extruded aluminum alloy 6063-T6; clear anodized 204R1, AA-M10C22A31, Class II unless otherwise indicated on the Drawings..

D. Tread Boards: Extruded aluminum alloy 6063-T6, mill finish.

E. Guardrail: Aluminum anodized pipe, 1-5/8-inch OD.

F. Accessories:

1. Steel Bolts and Nuts: ASTM A 307, galvanized.
2. Structural Connections: Snug tight to conform to RCSC Specification for Structural Joints Using High-Strength Bolts.
3. Hold-Down Clip Assembly: Aluminum alloy 6063-T6.
4. Form-Fitted End Caps: Aluminum alloy 2024, clear anodized 204R1, AA-M10C22A31, Class II.
5. Channel End Caps: Aluminum alloy 6063-T6, clear anodized 204R1, AA-M10C22A31, Class II.

G. Concrete Foundations: Specified in Section 033000 "Cast-in-Place Concrete".

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive continuous, elevated, angle-frame bleachers.
- B. Notify Architect and Engineer of conditions that would adversely affect installation or subsequent use.
- C. Do not begin surface preparation or installation until unacceptable conditions are corrected.

3.2 PREPARATION

- A. Install concrete foundations for continuous, elevated, angle-frame bleachers as specified in Section 033000 "Cast-in-Place Concrete" and indicated on the Drawings.
 1. Coordinate preferred slope-to-drain with Contractor and new concrete substrate (if any) prior to concrete installation.

3.3 INSTALLATION

- A. Install continuous, elevated, angle-frame bleachers in accordance with manufacturer's instructions at locations indicated on the Drawings.
- B. Install bleachers plumb, level, square, straight, and secure.
- C. Anchor bleachers securely in place to concrete foundations.

3.4 ADJUSTING

- A. Inspect completed continuous, elevated, angle-frame bleachers and make necessary adjustments to ensure proper installation.
- B. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.

- C. Remove and replace with new material, damaged components that cannot be successfully repaired, as determined by Engineer.

3.5 PROTECTION

- A. Protect completed continuous, elevated, angle-frame bleachers to ensure that, except for normal weathering, bleachers will be without damage or deterioration at time of Substantial Completion.

END OF SECTION 133416.53

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SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

1. Protecting existing vegetation to remain.
2. Removing existing vegetation.
3. Clearing and grubbing.
4. Stripping and stockpiling topsoil.
5. Stripping and stockpiling rock.
6. Removing above- and below-grade site improvements.
7. Disconnecting, capping or sealing, and removing site utilities.
8. Temporary erosion and sedimentation control.

- B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for temporary erosion- and sedimentation-control measures.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- C. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil.

- D. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other nonsoil materials. Topsoil shall include O and A soil horizons as defined by the United States Department of Agriculture (USDA) Soil Survey Manual.
 - 1. O horizon: O horizons are dominated by organic soil material. It may consist of slightly decomposed to highly decomposed litter (such as leaves, needles, twigs, moss, and lichens) that was deposited on the surface of either mineral or organic soils, or consist of organic materials that were deposited under saturated conditions and have decomposed to varying stages.
 - 2. A horizon: A horizons are mineral horizons that formed at the soil surface or below an O horizon. They exhibit obliteration of all or much of any original rock structure and show one or both of the following:
 - a. An accumulation of humified organic matter closely mixed with the mineral fraction and not dominated by properties characteristic of V, E, or B horizons; and/or
 - b. Properties resulting from cultivation, pasturing, or similar kinds of disturbance.
- E. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.
- F. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated on Drawings and according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- G. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 MATERIAL OWNERSHIP

- A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.6 INFORMATIONAL SUBMITTALS

- A. Existing Conditions: Documentation of existing trees and plantings, adjoining construction, and site improvements that establishes preconstruction conditions that might be misconstrued as damage caused by site clearing.
 - 1. Use sufficiently detailed photographs or video recordings.
 - 2. Include plans and notations to indicate specific wounds and damage conditions of each tree or other plant designated to remain.
- B. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Engineer and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed trafficways if required by Engineer or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Engineer before award of Contract.
 - 1. Do not proceed with work on adjoining property until directed by Engineer.
- C. Salvageable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated or directed by Owner.
- D. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- E. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.
- F. Tree- and Plant-Protection Zones: Protect according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- G. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."
 - 1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.
- B. Antirust Coating: Fast-curing, lead- and chromate-free, self-curing, universal modified-alkyd primer complying with MPI #23 (surface-tolerant, anticorrosive metal primer).

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.

- B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- C. Protect existing site improvements to remain from damage during construction.
 - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 TREE AND PLANT PROTECTION

- A. Protect trees and plants remaining on-site according to requirements in Section 015639 "Temporary Tree and Plant Protection."
- B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.4 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.
- B. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- C. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Notify Architect and Owner not less than seven days in advance of proposed utility interruptions.
 - 2. Do not proceed with utility interruptions without Owner's written permission.
- D. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Grind down stumps and remove roots larger than 2 inches in diameter, obstructions, and debris to a depth of 18 inches below exposed subgrade.
 - 3. Use only hand methods or air spade for grubbing within protection zones.
 - 4. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
 - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to depth of 6 inches or depth required to remove O and A soil horizons, in a manner to prevent intermingling with underlying subsoil or other waste materials.
 - 1. Remove subsoil and nonsoil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Do not stockpile topsoil within protection zones.
 - 3. Stockpile surplus topsoil to allow for respreading deeper topsoil. Notify Owner and Architect of topsoil surplus. Owner may elect for respreading of surplus or relocating stockpile to offsite location as directed, for use by Owner.

3.7 STOCKPILING ROCK

- A. Remove from construction area naturally formed rocks that measure more than 1 foot across in least dimension. Do not include excavated or crushed rock.
 - 1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.
- B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.
 - 1. Limit height of rock stockpiles to 36 inches.

2. Do not stockpile rock within protection zones.
3. Stockpile surplus rock to allow later use by the Owner.

3.8 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.
 1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
 2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.9 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.
- B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Excavating and filling for rough grading the Site.
 - 2. Preparing subgrades for slabs-on-grade, pavements, turf and grasses, and plants.
 - 3. Excavating and backfilling for buildings and structures.
 - 4. Subsurface drainage course below pavements, playground protective surfacing, and synthetic grass surfacing.
 - 5. Base course for pavements.
 - 6. Subsurface drainage backfill for walls and trenches.
 - 7. Excavating and backfilling trenches for utilities and pits for buried utility structures.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 2. Section 329113 "Soil Preparation" for topsoil and planting soils.
 - 3. Section 329200 "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
 - 4. Section 329300 "Plants" for finish grading in planting areas and tree and shrub pit excavation and planting.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Backfill: Soil material or controlled low-strength material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- C. Base Course: Aggregate layer placed between the subbase course and slabs-on-grade and pavements.

- D. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- E. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- F. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water, or supporting subsurface drainage (underdrains) below pavements, synthetic grass surfacing, playground protective surfacing, and behind walls.
- G. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
 - 2. Bulk Excavation: Excavation more than 10 feet in width and more than 30 feet in length.
 - 3. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- H. Fill: Soil materials used to raise existing grades.
- I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D1586.
- J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- K. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- L. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- M. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct preexcavation conference at Project site.
 - 1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
 - a. Personnel and equipment needed to make progress and avoid delays.
 - b. Coordination of Work with utility locator service.
 - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
 - d. Extent of trenching by hand or with air spade.

- e. Field quality control.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:

- 1. Geotextiles.
- 2. Warning tapes.
- 3. Base course and bedding course.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

- 1. Classification according to ASTM D2487.
- 2. Laboratory compaction curve according to ASTM D698.

1.7 QUALITY ASSURANCE

- A. Comply with applicable codes, ordinances, regulations, references, and standards in effect at bid date.

- 1. Uniform Building Code (UBC) or International Building Code (IBC) per jurisdiction criteria.
- 2. American Society for Testing and Materials (test methods as specified hereafter) (ASTM).
- 3. State and local codes.

- B. In case of conflict between the above codes, regulations, references and standards, and these specifications, the more stringent requirements shall govern.

- C. Testing Agency: The Engineer will employ a qualified independent geotechnical testing agency. The Contractor shall furnish testing agency access to work, facilities and incidental labor required for testing. Notify the testing and inspection agency not less than 48 hours in advance of all work requiring testing.

- D. Geotechnical Engineer: All materials and operations under this section of the specifications shall be executed under the supervision of a Geotechnical Engineer who will place qualified personnel on the site during earth moving operations as necessary. The Geotechnical Engineer shall approve all foundation excavations and give written approval of the completed foundations to the Engineer at the following times:

- 1. When excavations are first open.
- 2. Just prior to placing of concrete, shall test and control the fill compaction, approve the materials and method of placing and compacting and give written approval to the Engineer that all bearing surfaces and fill requirements have been inspected.
- 3. The Contractor shall be responsible to notify the Engineer and Geotechnical Engineer when tests are to be made.

- E. For approval of imported or on-site fill material, notify the Geotechnical Engineer at least four working days in advance of intention to import material, designate the proposed borrow area, and permit the Geotechnical Engineer to sample, as necessary, from the borrow area for the purpose of making acceptance tests to prove the quality of the material. The Geotechnical Engineer report on the acceptability shall be final and binding.
- F. Reference Standards: Compaction Standard: Standard Proctor Density ASTM D698.
- G. Preconstruction Conference: Conduct conference at Project site as directed by the Engineer prior to start of construction. The Contractor is to comply with requirements, which may also be included in Division 1, Section "Project Management and Coordination."

1.8 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
 - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Engineer and authorities having jurisdiction.
 - 2. Provide alternate routes around closed or obstructed traffic ways if required by Engineer or authorities having jurisdiction.
- B. Utility Locator Service: Unless already completed for site clearing activity and in accordance with Section 311000 "Site Clearing", Notify utility locator service for area where Project is located before beginning earth-moving operations.
- C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" and Section 311000 "Site Clearing" are in place.
- D. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.
- E. The following practices are prohibited within protection zones:
 - 1. Storage of construction materials, debris, or excavated material.
 - 2. Parking vehicles or equipment.
 - 3. Foot traffic.
 - 4. Erection of sheds or structures.
 - 5. Impoundment of water.
 - 6. Excavation or other digging unless otherwise indicated.
 - 7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- F. Do not direct vehicle or equipment exhaust towards protection zones.
- G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.
- H. Remove all existing fill deemed by the Geotechnical Engineer to be unsatisfactorily placed

- I. Existing Contours and Elevations: Contours and spot elevations of existing ground elevations at the site, and approximate elevations of finish-grade cuts, fills, and excavations for the work are shown on the drawings. Contours and elevations for existing ground lines are based on information provided by others, and are believed to be correct, but may not be absolutely so. Existing contours and elevations should therefore be considered approximate and should be verified at the site prior to construction.
- J. Verification of Existing Conditions: Visit the site prior to submission of bids. Verify existing conditions, elevations, and contours. In the event of discrepancies between existing conditions and those indicated on the contract documents or survey, contact the Owner's Representative for clarification.
- K. Verification of Existing Conditions: Visit the site prior to submission of bids. Verify existing conditions, elevations, and contours. In the event of discrepancies between existing conditions and those indicated on the contract documents or survey, contact the Owner's Representative for clarification.
- L. Frost Protection: When freezing temperatures may be expected, do not excavate to the full depth indicated unless the footing or slabs are to be poured immediately after the excavation has been completed. If placing of concrete is delayed, protect the bottoms of excavations from frost until concrete is placed.

1.9 WARRANTY

- A. Settlement in backfill, fill, or in structures built over backfill or fill, which may occur within the specified project warranty period, shall be corrected at no cost to the Owner. Any structures damaged by settlement shall be restored to their original condition by the Contractor, at no cost to the Owner.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487, Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M145, or a combination of these groups as identified by the Geotechnical Engineer; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
 - 1. For athletic fields, satisfactory soils shall meet above criteria, however it shall be free rock or gravel larger than 1.5-inch in any dimension.
 - 2. Refer to section 329113 Soil Preparation for topsoil and planting soils.
- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487, Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M145, or a combination of these groups, as identified by Geotechnical Engineer.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.
- E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.
- F. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940/D2940M; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.
- G. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch sieve and zero to 5 percent passing a No. 8 sieve.
- H. Sand: ASTM C33/C33M; fine aggregate.

2.2 GEOTEXTILES

- A. Subsurface Drainage Geotextile: Nonwoven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M288 and the following, measured per test methods referenced:
 1. Survivability: Class 2; AASHTO M288.
 2. Apparent Opening Size: No. 70 sieve, maximum; ASTM D4751.
 3. Permittivity: 1.5 per second, minimum; ASTM D4491.
 4. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.
- B. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
 1. Survivability: Class 2; AASHTO M288.
 2. Apparent Opening Size: No. 60 sieve, maximum; ASTM D4751.
 3. Permittivity: 0.02 per second, minimum; ASTM D4491.
 4. UV Stability: 50 percent after 500 hours' exposure; ASTM D4355.

2.3 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility; colored as follows:
 1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.

3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:
1. Red: Electric.
 2. Yellow: Gas, oil, steam, and dangerous materials.
 3. Orange: Telephone and other communications.
 4. Blue: Water systems.
 5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

- A. Provide dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
- D. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.

3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
 - 2. Remove rock to lines and grades indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 24 inches outside of concrete forms other than at footings.
 - b. 12 inches outside of concrete forms at footings.
 - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
 - e. 6 inches beneath bottom of concrete slabs-on-grade.
 - f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or 42 inches wide.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.
 - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; ; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
 - 2. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction without exceeding the following dimensions:
 - a. 24 inches outside of concrete forms other than at footings.
 - b. 12 inches outside of concrete forms at footings.
 - c. 6 inches outside of minimum required dimensions of concrete cast against grade.
 - d. Outside dimensions of concrete walls indicated to be cast against rock without forms or exterior waterproofing treatments.
 - e. 6 inches beneath bottom of concrete slabs-on-grade.
 - f. 6 inches beneath pipe in trenches and the greater of 24 inches wider than pipe or 42 inches wide.

3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
 - 2. Pile Foundations: Stop excavations 6 to 12 inches above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
 - 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended as bearing surfaces.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
 - 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - 2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.
- B. Where required by Geotechnical Engineer or documented on the Drawings, scarify subgrade soils beneath exterior slabs, sidewalks, and pavements to a minimum depth as indicated on the Drawings or directed by the Geotechnical Engineer, moisture condition and recompact, as specified.

3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
 - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.
 - 1. Clearance: 12 inches each side of pipe or conduit unless otherwise noted on the Drawings.

- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - 1. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
 - 2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
 - 3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
 - 4. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
 - 1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- E. Trenches in Tree- and Plant-Protection Zones:
 - 1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
 - 2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
 - 3. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.8 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
 - 2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi, may be used when approved by Architect.
 - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
 - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
 - 2. Surveying locations of underground utilities for Record Documents.
 - 3. Testing and inspecting underground utilities.
 - 4. Removing concrete formwork.
 - 5. Removing trash and debris.
 - 6. Removing temporary shoring, bracing, and sheeting.
 - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches of bottom of footings with satisfactory soil unless otherwise indicated on the Drawings; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 033000 "Cast-in-Place Concrete."

- D. Trenches under Roadways: Unless otherwise indicated on the Drawings, provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase course. Concrete is specified in Section 033000 "Cast-in-Place Concrete."
- E. Backfill voids with satisfactory soil while removing shoring and bracing.
- F. Initial Backfill:
 - 1. Soil Backfill: Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch in any dimension, to a height of 12 inches over the pipe or conduit.
 - a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- G. Final Backfill:
 - 1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
- H. Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material.
 - 3. Under steps and ramps, use engineered fill.
 - 4. Under building slabs, use engineered fill.
 - 5. Under footings and foundations, use engineered fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.
 - 3. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
 - 1. Turf or Unpaved Areas: Plus or minus 1 inch.
 - 2. Walks: Plus or minus 1 inch.
 - 3. Pavements: Plus or minus 1/2 inch.
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBSURFACE DRAINAGE

- A. Subsurface Drain: Place subsurface drainage geotextile around perimeter of subdrainage trench. Place a 6-inch course of filter material on subsurface drainage geotextile to support subdrainage pipe. Encase subdrainage pipe in a minimum of 12 inches of filter material, placed in compacted layers 6 inches thick, and wrap in subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer to 85 percent of maximum dry unit weight according to ASTM D698.

- B. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches thick. Overlay drainage backfill with one layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches.
 - 1. Compact each filter material layer with a minimum of two passes of a plate-type vibratory compactor.
 - 2. Place and compact impervious fill over drainage backfill in 6-inch- thick compacted layers to final subgrade.

3.18 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
 - 1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place base course material over subbase course under hot-mix asphalt pavement.
 - 3. Shape subbase course and base course to required crown elevations and cross-slope grades.
 - 4. Place subbase course and base course 6 inches or less in compacted thickness in a single layer.
 - 5. Place subbase course and base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 6. Compact subbase course and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D698.
- B. Pavement Shoulders: Place shoulders along edges of subbase course[and base course] to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D698.

3.19 DRAINAGE COURSE UNDER CONCRETE SLABS-ON-GRADE

- A. Place drainage course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place and compact drainage course under cast-in-place concrete slabs-on-grade as follows:
 - 1. Install subdrainage geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
 - 2. Place drainage course 6 inches or less in compacted thickness in a single layer.
 - 3. Place drainage course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
 - 4. Compact each layer of drainage course to required cross sections and thicknesses to not less than 95 percent of maximum dry unit weight according to ASTM D698.

3.20 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
 - 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
 - 2. Determine that fill material classification and maximum lift thickness comply with requirements.
 - 3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- E. Testing agency will test compaction of soils in place according to ASTM D1556, ASTM D2167, ASTM D2937, and ASTM D6938, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab but in no case fewer than three tests.
 - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet or less of wall length but no fewer than two tests.
 - 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
 - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
 - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

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SECTION 312270.01 - TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Furnish, install, maintain, and remove temporary erosion and sedimentation controls as shown on the drawings or specified herein, or as required to complete the work.
- B. Related Requirements:
 - 1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 2. Section 312000 "Earth Moving" for soil materials, site excavating, filling and grading.
 - 3. Division 22 Section "Trenching" for excavating and backfilling of utilities.
- C. Permits and Fees: Obtain and pay for all permits and fees required for the work of this section, including erosion and sediment control and water quality permits required by the Colorado Department of Public Health and Environment, Water Quality Control Division.
- D. Erosion Control: The Erosion and Sedimentation Control Drawings included in the Contract Documents is the minimum requirement to be implemented. Provide additional control as necessary to meet applicable local and State criteria.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Backfill: Soil material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- C. Unclassified Excavation: Removal of all material of whatever character required for the work encountered above subgrade elevations and to lines and dimensions indicated, including boulders.

- D. Fill: Fill is all material placed to raise the grade of the site or to backfill excavation, upon which the Soils Engineer has made sufficient tests and observations to enable him to issue a written statement that, in his opinion, the fill has been placed and compacted in accordance with the requirements of these specifications.
- E. BMP: Best Management Practice. Erosion and sediment control devices, which may consist of silt fence, sediment control logs, rock socks, filter fabric, riprap, etc.
- F. SWMP: Storm Water Management Plan. Identifies BMPs, which are erosion and sediment control measures for the project.
- G. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- H. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- I. Utilities: Include on-site underground pipes, conduits, ducts, and cables, as well as underground services to buildings.

1.4 SUBMITTALS

- A. Submittal Procedures: All submittals are to be made to the Engineer. Refer to Division 01 Section "Submittal Procedures."
- B. Product Data: Submit manufacturer's published descriptive literature and complete specifications for manufactured products specified herein and utilized on the project.
- C. Storm Water Management Plan:
 - 1. The Engineer will provide a Storm Water Management Plan (SWMP) and report addressing erosion and sediment control measures for all sites with over one acre of disturbed ground. The Engineer may also assist in preparation of the General Permit application.
 - 2. The Contractor is responsible for obtaining all required permits including a General Permit application for Storm Water Discharges associated with construction activities. Permits are to be filed with the Colorado Department of Public Health and Environment, Water Quality Control Division.
 - 3. Contractor shall have the Storm Water Management Plan (SWMP) and report available on-site at all times.

1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with applicable local, State and Federal ordinances, rules and regulations concerning sedimentation control and storm water runoff.
- B. In case of conflict between the above codes, regulations, references and standards and these specifications, the more stringent requirements shall govern.

- C. Preconstruction Conference: Conduct conference at Project site as directed by Engineer prior to start of construction. Contractor to comply with requirements, which may also be included in Division 01 Section "Project Management and Coordination."

1.6 PROJECT/SITE CONDITIONS

- A. Existing Conditions: Verify all existing conditions affecting the work of this section prior to submitting bids or proposals. Additional compensation will not be allowed for revisions or modification of work resulting from failure to verify existing conditions.

1.7 WARRANTY

- A. Temporary Erosion and Sediment Control measures shall be maintained until permanent measures are in place. All damaged, disturbed or devices filled with sediment, which may occur within the specified project warranty period, shall be corrected at no cost to the Engineer. Any devices damaged by erosion or sediment shall be restored to their original condition by the Contractor, at no cost to the Engineer.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Erosion and Sedimentation Control Materials: Provide one or more of the following materials, as shown on the plans or as applicable for site conditions:
 - 1. Silt fence.
 - 2. Inlet protection.
 - 3. Sediment control logs.
 - 4. Rock riprap.
 - 5. Temporary seeding.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Determine the existing ground elevations, drainage patterns, and changes to such patterns during excavation in order to satisfactorily plan and provide materials for adequate erosion and sediment control devices.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and rights-of-way according to requirements of authorities having jurisdiction.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

- C. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.
- D. Secure grading permit from agency having jurisdiction prior to commencing grading operations.

3.3 EXAMINATION

- A. Verification of Conditions: Examine areas and conditions under which the work of this section will be performed. Do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work implies acceptance of all areas and conditions.

3.4 INSTALLATION

- A. Erosion and Sedimentation Control Devices. Erosion and sedimentation control measures to be taken during construction include, but are not necessarily limited to the following:
 - 1. Apply soil stabilization within 14 days to all disturbed areas that are to be dormant for a period longer than 30 calendar days after reaching grade. Stabilize soil with temporary seeding per criteria of authorities having jurisdiction.
 - 2. Roads and parking areas indicated to be paved may be covered with an appropriate aggregate base course. Temporary seeding or aggregate base course is not required if final pavement construction will take place within 30 days after grading to final contours.
 - 3. Soils that will be stockpiled for more than 30 days must be seeded and stabilized within 14 days after stockpile construction.
 - 4. Prevent sediment from leaving the project site by installing a silt fence or other BMPs as indicated on the plans. Protect existing storm inlets adjacent to the site by an approved inlet protection device.
 - 5. Excavate the future detention/water quality pond and construct the outlet structure/storm sewer such that the pond may function as a temporary sediment basin during development of the site. Construct the sediment basin in accordance with authority having jurisdiction's criteria. Provide temporary swales to convey site runoff to the pond.
 - 6. Locate vehicle tracking control at all points of vehicular ingress and egress to the construction site.
 - 7. Provide temporary erosion controls consisting of berms at the top of slopes and interceptor ditches at ends of berms and at those locations which will eliminate or minimize erosion during construction, along with temporary seeding, temporary diversion, chutes, and down pipes and lining of water courses.
 - 8. Temporary sedimentation controls shall consist of sediment traps, silt fence, and appurtenances at the top of spoil and borrow area slopes and where runoff water exits the site.
 - 9. Maintain the available silt holding capacity of silt fence and sediment traps until no longer needed. The sediment capacity of sediment retainage areas shall be at a minimum, the capacity shown on the plans in conformance with Urban Drainage Criteria Manual, Volume 3. Prior to removal, obtain concurrence of the Engineer.
 - 10. Remove accumulated sediment and debris from a BMP when the sediment level reaches one-half the height of the BMP, or at any time the sediment or debris adversely impacts the functioning of the BMP.
 - 11. The erosion/sediment control plan shows the minimum required for the project. If it becomes apparent that additional controls are necessary, the Engineer shall be notified and with approval of the Engineer, additional controls shall be installed.
- B. Chemicals and Pollutants:

1. Store construction materials and chemicals that could contribute pollutants to the runoff within an enclosure, container, or dike located around the perimeter of the storage area, to prevent discharge of these materials into runoff from the construction site.
2. Locate areas used for collection and temporary storage of solid and liquid waste away from the storm drainage system. Provide covering or fencing as required to prevent windblown materials; construct perimeter dike to contain liquid runoff. These measures may not be necessary if materials are immediately placed in covered waste containers.
3. Perform equipment maintenance in designated areas using measures such as drip pans to control petroleum products spillage.
4. Immediately clean up and properly dispose of spills of construction related materials such as paints, solvents, or other chemicals.

C. Final Stabilization and Long-Term Management:

1. Final stabilization shall be achieved through permanent vegetation and landscaping after construction of all buildings and paved surfaces.
2. With approval of the City of Aurora temporary erosion and sediment control measures may be removed within 30 days after final site stabilization is achieved or after temporary measures are no longer needed.
3. Inspection and Maintenance: Inspect erosion and sediment control measures weekly during construction. In addition, inspect all facilities immediately after any significant runoff or snowmelt which results in runoff. Repair or otherwise mitigate any damage to the erosion and sediment control facilities at no additional cost to the Engineer.

3.5 CLEANING

- A. Removal of Controls: Remove controls upon completion of that portion of the work for which controls were furnished. Leave the site and work area in a clean condition.

END OF SECTION 312270.01

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SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Hot-mix asphalt patching and paving shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 403 Hot-Mix Asphalt.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving" for subgrade preparation, fill material, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
 - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
 - b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include technical data and tested physical and performance properties.
 - 2. Job-Mix Designs: For each job mix proposed for the Work.

1.6 INFORMATIONAL SUBMITTALS

- A. Record of Work: maintain record of time and date of placement, temperature, and weather conditions, retain until completion and furnish copy to engineer.
- B. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.
- C. Material Test Reports: For each paving material, by a qualified testing agency.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 403 Hot-Mix Asphalt and related CDOT sections.

PART 3 - EXECUTION

3.1 GENERAL

- 1. Execution shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 403 Hot-Mix Asphalt and related CDOT sections.

END OF SECTION

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SECTION 321313 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Concrete paving shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement.
- B. Concrete paving applications include but are not limited to:
 - 1. Vehicular Concrete Paving.
 - 2. Pedestrian Concrete Paving.
 - 3. Curbs and gutters.
 - 4. Mow bands.
 - 5. Concrete base slabs for other finish surfacing.
- C. Related Requirements:
 - 1. Section 312000 "Earth Moving" for subgrade preparation, fill material, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
 - 2. Section 321373 "Concrete Paving Joint Sealants".

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 FIELD CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement and related CDOT sections.

PART 3 - EXECUTION

3.1 GENERAL

- A. Execution shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement and related CDOT sections.

END OF SECTION

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SECTION 321316 - DECORATIVE CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. **This section is supplemental to the most recent edition of the Colorado Department of Transportation (CDOT) Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement. The work performed for Decorative Concrete Paving shall be in accordance with CDOT Construction Specifications Section 412 Portland Cement Concrete and revisions or supplemental information herein.**

1.2 SUMMARY

- A. Section includes decorative concrete paving.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for general building applications of concrete.
 - 2. Section 321313 "Concrete Paving" for cast-in-place concrete paving with other finishes, curbs and gutters, and stamped detectable warnings.
 - 3. Section 321373 "Concrete Paving Joint Sealants" for joint sealants in expansion and contraction joints within decorative concrete paving and in joints between decorative concrete paving and other paving or adjacent construction.
 - 4. Portland Cement Concrete Pavement: CDOT Construction Specifications, Section 412.
 - 5. Fine Aggregates: CDOT Construction Specifications, Section 703.01.
 - 6. Coarse Aggregate: CDOT Construction Specifications, Section 703.02.
 - 7. Portland Cement: CDOT Construction Specifications, Section 701.01.
 - 8. Fly Ash: CDOT Construction Specifications, Section 701.02.
 - 9. Water: CDOT Construction Specifications, Section 712.01.
 - 10. Air-Entraining Admixtures: CDOT Construction Specifications, Section 711.02.
 - 11. Preformed Joint Filler: CDOT Construction Specifications, Section 705.01.
 - 12. Joint Sealant with Backer Rod: CDOT Construction Specifications, Section 705.01.
 - 13. Curing Materials: CDOT Construction Specifications, Section 711.01.
 - 14. Reinforcing Steel: CDOT Construction Specifications, Section 709.01.
 - 15. Chemical Admixtures: CDOT Construction Specifications, Section 711.03.
 - 16. Dowel Bars and Tie Bars: CDOT Construction Specifications, Section 709.03.
 - 17. Preparation of Design Mixes: CDOT Construction Specifications, Section 601.0

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.
- C. W/C Ratio: The ratio by weight of water to cementitious materials.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to decorative concrete paving, including but not limited to, the following:
 - a. Concrete mixture design.
 - b. Quality control of concrete materials and decorative concrete paving construction practices.
 - 2. Require representatives of each entity directly concerned with decorative concrete paving to attend, including the following:
 - a. Engineer.
 - b. Design Team Consultant.
 - c. Contractor's superintendent.
 - d. Independent testing agency responsible for concrete design mixtures.
 - e. Decorative concrete paving Installer.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of exposed color, pattern, or texture indicated.
- C. Design Mixtures: For each decorative concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- D. Jointing Plan: For all areas of work, provide plan drawn to scale indicating proposed construction, isolation, and contraction joints. Show interfacing work including but not limited to structures, walls, curbs, utility structures (manholes, etc), and site furnishings and amenities attached to work. Provide dimensions and indicate where jointing is intended to align with interfacing work. Denote joint types.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Fiber reinforcement.
4. Admixtures.
5. Curing compounds.
6. Applied finish materials.
7. Joint fillers.
8. Integral color.

1.7 QUALITY ASSURANCE

A. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of full-thickness sections of decorative concrete paving to demonstrate typical joints; surface color, pattern, and texture; curing; and standard of workmanship.
2. Build mockups of decorative concrete paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect or Engineer and not less than 96 inches by 96 inches.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect or Engineer specifically approves such deviations in writing.
4. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. Materials shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement and supplemental information herein.

2.2 INSTALLER

A. Basis-of-Design Decorative Concrete System Installer:

1. Subject to compliance with requirements, provide installation by one of the following, or other as approved by Architect or Engineer:
 - a. Colorado Hardscapes, Inc. contact John Buteyn.303-750-8200, jbuteyn@coloradohardscapes.com
 - b. Art of Concrete, contact Karen Keyes, 303-750-8200, karen@theartofconcretellc.com.

2.3 COLOR PIGMENT

- A. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
 - 1. Basis-of-Design Product for Concrete Aprons at Roadway Medians: Subject to compliance with requirements, provide the following or approved equivalent:
 - a. Davis Colors (mfr) "Rustic Brown" #6058. Liquid mix rate 2.46 pounds per 94 pound sack of cement. Powder mix rate 2 pounds per 94 pound sack of cement.
- B. Basis-of-Design Product for Decorative Concrete Paving (not including Concrete Aprons at Roadway Medians): Subject to compliance with requirements, provide products indicated on Drawings, or approved substitution by one of the following:
 - 1. Butterfield Color, Inc.
 - 2. Davis Colors.
 - 3. Scofield, a Business Unit of Sika Corporation.
 - 4. Solomon Colors, Inc

2.4 INTEGRAL COLOR FINISHING

- A. Curing and Sealing: Never use plastic sheeting or water spray to cure colored concrete, as it will mottle and streak the surface. Use manufacturer's liquid, membrane-forming compounds designed for use with approved integral color. Apply per manufacturer's written instructions.

2.5 EXPOSED AGGREGATE AND/OR SAND FINISH

- A. Surface Retarder (Surface Deactivator): Water-based, top-surface retarder designed to retard the set of fresh concrete at the surface to produce a consistent textured finish.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide the following, or approved substitution:
 - a. GCP Top-Cast Top-Surface Retarder, GRADE 25 Beige.
- B. Finishing Aid: Typically applied finishing aid during concrete finishing that densifies the surface and reduces efflorescence.
 - 1. Basis of Design Product: Subject to compliance with requirements, provide the following, or approved substitution:
 - a. Solomon Colors, Inc. Day1 Finishing Aid.

PART 3 - EXECUTION

3.1 GENERAL

- A. Execution shall conform to CDOT Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement and supplemental information herein.

3.2 INTEGRAL COLOR MIX

- A. Mix at plant in accordance with manufacturer's written instructions for approved color selection and otherwise in accordance with CDOT Construction Specifications, Division 400 Pavements, Section 412 Portland Cement Concrete Pavement.

3.3 EXPOSED AGGREGATE AND/OR SAND FINISHING

- A. Spray-apply surface-retarder using manufacturer's recommended gun technique, proceeding progressively over the entire area being finished to produce a uniform texture that matches the approved mock-up.
- B. Per manufacturer's instructions, carefully remove the retarded surface material using pressurized equipment. Avoid creating inconsistencies in the overall finish.
- C. Remove exposed synthetic fiber reinforcing by method recommended by the fiber reinforcing manufacturer. If using torching, do not scorch concrete.

3.4 PAVING TOLERANCES

- A. Comply with tolerances in ACI 117 and as follows:
 - 1. Elevation: 3/4 inch.
 - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
 - 3. Surface: Gap below 10-foot- long, unlevelled straightedge not to exceed 1/2 inch.
 - 4. Lateral Alignment and Spacing of Dowels: 1 inch.
 - 5. Vertical Alignment of Dowels: 1/4 inch.
 - 6. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
 - 7. Joint Spacing: 3 inches.
 - 8. Contraction Joint Depth: Plus 1/4 inch, no minus.
 - 9. Joint Width: Plus 1/8 inch, no minus.

END OF SECTION 321316

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SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Joint sealants and backer materials shall conform to CDOT Construction Specifications, Division 700 Materials Details, Section 705.01 Joint Waterproofing and Bearing Material.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Materials shall conform to CDOT Construction Specifications, 700 Materials Details, Section 705.01 Joint Waterproofing and Bearing Material.
- B. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Execution shall conform to CDOT Construction Specifications, 700 Materials Details, Section 705.01 Joint Waterproofing and Bearing Material.
- B. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

- C. Proceed with installation only after unsatisfactory conditions have been corrected.

END OF SECTION

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SECTION 321400 - UNIT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Brick pavers set in aggregate setting beds.
 - 2. Concrete pavers set in aggregate setting beds.
 - 3. Stone pavers set in aggregate setting beds.
 - 4. Edge restraints.
 - 5. Cast-in-place concrete edge restraints.
 - 6. Stone curbs.

- B. Related Requirements:

- 1. Section 321313 "Concrete Paving" for concrete base under unit pavers and for cast-in-place concrete curbs and gutters serving as edge restraints for unit pavers.
 - 2. Section 321443 "Porous Unit Paving" for unit paving using grid pavers or pavers with openings between them.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For materials other than water and aggregates.
- B. Sieve Analyses: For aggregate setting-bed materials, according to ASTM C 136.
- C. Samples for Verification: For full-size units.. Include Samples of the following:

1. Unit pavers, each type.
2. Exposed edge restraints.
3. Granite curbs.

1.6 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

1.7 QUALITY ASSURANCE

- A. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for materials and execution.
 1. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.

1.9 FIELD CONDITIONS

- A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

PART 2 - PRODUCTS

2.1 BRICK PAVERS

- A. Brick Pavers: Light-traffic paving brick; ASTM C 902, Class SX, Type I, Application PX. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.
 1. Thickness: 2-1/4 inches.
 2. Face Size: 3-5/8 by 7-5/8 inches.
 3. Color: As selected by Architect from manufacturer's full range.
- B. Efflorescence: Brick shall be rated "not effloresced" when tested according to ASTM C 67.

- C. Temporary Protective Coating: Precoat exposed surfaces of brick pavers with a continuous film of a temporary protective coating that is compatible with brick, mortar, and grout products and can be removed without damaging grout or brick. Do not coat unexposed brick surfaces; handle brick to prevent coated surfaces from contacting backs or edges of other units. If, despite these precautions, coating does contact bonding surfaces of brick, remove coating from bonding surfaces before setting brick.

2.2 CONCRETE PAVERS

- A. Concrete Pavers: Solid interlocking paving units complying with ASTM C 936/C 936M and resistant to freezing and thawing when tested according to ASTM C 67, made from normal-weight aggregates.
 - 1. Sizes and shapes as indicated on the Drawings.
 - 2. Color: As selected by Architect from manufacturer's full range.

2.3 STONE PAVERS

- A. Granite Pavers: Rectangular paving slabs made from granite complying with ASTM C 615/C 615M.
 - 1. Sizes and shapes as indicated on the Drawings.
 - 2. Match Architect's samples for stone type, color, finish, and other stone characteristics relating to aesthetic effects.

2.4 CURBS AND EDGE RESTRAINTS

- A. As indicated on the Drawings.
- B. Cast-in-place Concrete Edge Restraints: Comply with requirements in Section 033000 "Cast-in-Place Concrete" for normal-weight, air-entrained, ready-mixed concrete with minimum 28-day compressive strength of 3000 psi.

2.5 AGGREGATE SETTING-BED MATERIALS

- A. Graded Aggregate for Base: Sound, crushed stone or gravel complying with requirements in Section 312000 "Earth Moving" for base course.
- B. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33/C 33M for fine aggregate.
- C. Sand for Joints: Fine, sharp, washed, natural sand or crushed stone with 100 percent passing No. 16 sieve and no more than 10 percent passing No. 200 sieve.
 - 1. Provide sand of color needed to produce required joint color.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.
- B. Where unit paving is to be installed over waterproofing, examine waterproofing installation, with waterproofing Installer present, for protection from paving operations, including areas where waterproofing system is turned up or flashed against vertical surfaces.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Sweep concrete substrates to remove dirt, dust, debris, and loose particles.
- B. Proof-roll prepared subgrade according to requirements in Section 312000 "Earth Moving" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive base course for unit pavers.

3.3 INSTALLATION, GENERAL

- A. Do not use unit pavers with chips, cracks, voids, discolorations, or other defects that might be visible or cause staining in finished work.
- B. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures.
- C. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
 - 1. For concrete pavers, a block splitter may be used.
- D. Handle protective-coated brick pavers to prevent coated surfaces from contacting backs or edges of other units. If, despite these precautions, coating does contact bonding surfaces of brick, remove coating from bonding surfaces before setting brick.
- E. Joint Pattern: As indicated.
- F. Pavers over Waterproofing: Exercise care in placing pavers and setting materials over waterproofing so protection materials are not displaced and waterproofing is not punctured or otherwise damaged. Carefully replace protection materials that become displaced and arrange for repair of damaged waterproofing before covering with paving.
- G. Tolerances: Do not exceed 1/32-inch unit-to-unit offset from flush (lippage) or 1/8 inch in 10 feet from level, or indicated slope, for finished surface of paving.

- H. Tolerances: Do not exceed 1/16-inch unit-to-unit offset from flush (lippage) nor 1/8 inch in 24 inches and 1/4 inch in 10 feet from level, or indicated slope, for finished surface of paving.
- I. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.
 - 1. Install job-built concrete edge restraints to comply with requirements in Section 033000 "Cast-in-Place Concrete."
 - 2. Where pavers set in mortar bed are indicated as edge restraints for pavers set in aggregate setting bed, install pavers set in mortar and allow mortar to cure before placing aggregate setting bed and remainder of pavers. Cut off mortar bed at a steep angle so it will not interfere with aggregate setting bed.
 - 3. Where pavers embedded in concrete are indicated as edge restraints for pavers set in aggregate setting bed, install pavers embedded in concrete and allow concrete to cure before placing aggregate setting bed and remainder of pavers. Hold top of concrete below aggregate setting bed.
- J. Provide steps made of pavers as indicated. Install paver steps before installing adjacent pavers.
 - 1. Where pavers set in mortar bed are indicated for steps constructed adjacent to pavers set in aggregate setting bed, install steps and allow mortar to cure before placing aggregate setting bed and remainder of pavers. Cut off mortar bed at a steep angle so it will not interfere with aggregate setting bed.

3.4 AGGREGATE SETTING-BED APPLICATIONS

- A. Compact soil subgrade uniformly to at least 95 percent of ASTM D 698 laboratory density.
- B. Proof-roll prepared subgrade to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- C. Where indicated or required, place separation geotextile over prepared subgrade, overlapping ends and edges at least 12 inches.
- D. Place aggregate base, compact by tamping with plate vibrator, and screed to depth indicated.
- E. Place aggregate base, compact to 100 percent of ASTM D 1557 maximum laboratory density, and screed to depth indicated.
- F. Place leveling course and screed to a thickness of 1 to 1-1/2 inches, taking care that moisture content remains constant and density is loose and uniform until pavers are set and compacted.
- G. Set pavers with a minimum joint width of 1/16 inch and a maximum of 1/8 inch, being careful not to disturb leveling base. If pavers have spacer bars, place pavers hand tight against spacer bars. Use string lines to keep straight lines. Fill gaps between units that exceed 3/8 inch with pieces cut to fit from full-size unit pavers.
 - 1. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.

- H. Vibrate pavers into leveling course with a low-amplitude plate vibrator capable of a 3500- to 5000-lbf compaction force at 80 to 90 Hz. Use vibrator with neoprene mat on face of plate or other means as needed to prevent cracking and chipping of pavers. Perform at least three passes across paving with vibrator.
 - 1. Compact pavers when there is sufficient surface to accommodate operation of vibrator, leaving at least 36 inches of uncompacted pavers adjacent to temporary edges.
 - 2. Before ending each day's work, compact installed concrete pavers except for 36-inch width of uncompacted pavers adjacent to temporary edges (laying faces).
 - 3. As work progresses to perimeter of installation, compact installed pavers that are adjacent to permanent edges unless they are within 36 inches of laying face.
 - 4. Before ending each day's work and when rain interrupts work, cover pavers that have not been compacted and cover leveling course on which pavers have not been placed with nonstaining plastic sheets to protect them from rain.
- I. Spread dry sand and fill joints immediately after vibrating pavers into leveling course. Vibrate pavers and add sand until joints are completely filled, then remove excess sand. Leave a slight surplus of sand on the surface for joint filling.
- J. Do not allow traffic on installed pavers until sand has been vibrated into joints.
- K. Repeat joint-filling process 30 days later.

3.5 REPAIRING, AND CLEANING

- A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 321540.01 - CRUSHER FINES PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. Section Includes:

- 1. Geotextile Fabric
 - 2. Crusher Fines Paving

- B. Related Requirements:

- 1. Section 312000 "Earth Moving" for subgrade and base preparation.
 - 2. Section 329113 "Soil Preparation" for soil analysis and amendments.

- C. REFERENCES

- 1. ASTM C136 / C136M - 14, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates, ASTM International, West Conshohocken, PA, 2014, www.astm.org
 - 2. ASTM D2419 - 14, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates, ASTM International, West Conshohocken, PA, 2014, www.astm.org
 - 3. ASTM F1951 - 14, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment, ASTM International, West Conshohocken, PA, 2014, www.astm.org

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 ACTION SUBMITTALS

- A. Product Data: From the manufacturer, for each type of product, demonstrating compliance with the requirements.
 - 1. Crusher fines aggregate, including gradation (sieve analysis), color, and source of supply.
 - 2. Stabilizer additive.

3. Aggregate base, including gradation (sieve analysis), color, and source of supply.
 4. Geotextile soil separation fabric.
- B. Samples for Initial Selection: In sealed container, clearly labeled with project, date, submittal number, product source and description, and application.
1. Crusher fines material in proposed color, gradation and binder, (1) quart container.
- C. Samples for Verification: For each type of product listed.
1. Geotextile soil separation fabric, 8-inch by 8-inch.
- D. Design Mixtures: For stabilized crusher fines, in writing from the manufacturer, for the actual crusher fines aggregate being proposed.

1.5 INFORMATION SUBMITTALS

- A. Qualification Data: From the stabilizer additive manufacturer, for certification of the provider of pre-mixed, stabilized crusher fines.
- B. Material Certificates: Signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
1. Crusher Fines Material: include gradation, sieve analysis, color and source.
 2. Geotextile Fabric: manufacturer's data
 3. Stabilizer: product data

1.6 QUALITY ASSURANCE

- A. Contractor Qualifications: Install work using skilled persons, proficient in the trades required, in a neat orderly and responsible manner with recognized standards of workmanship. Contractor shall have not less than 5 years successful experience with installation of similar work. Submit lists of three projects completed in the last two years of projects in similar complexity including, owner's name and telephone number, name of project, principal project consultant and telephone number.
- B. Pre-Mix Stabilized Crusher Fines Manufacturer Qualifications: A firm experienced in pre-mixed stabilized aggregate products and certified by the manufacturer of the specified stabilizer additive product.
- C. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
1. Prepare a sample finished crusher fines paving section, including base course aggregates and concrete edge restraint, using specified materials after approval of material samples. Build mockups of full-thickness sections of paving to demonstrate typical surface color, texture, curing, edge conditions, and standard of workmanship. Build additional mockups as necessary, as directed by Architect, until aesthetic effects and set quality standards for materials and execution are found to be acceptable by Architect, as indicated in writing.

2. Build mockups of crusher fines paving in the location and of the size indicated or, if not indicated, build mockups where directed by Architect and not less than 96 inches by 96 inches. Mockups shall remain in place and available for observation until acceptance of final crusher fines work.
3. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

1.7 SITE CONDITIONS

- A. Subgrade and base: Ensure the subgrade and base are properly prepared, graded, and compacted in accordance with the specifications.
- B. Weather Limitations: Do not apply during rain events or when base is saturated. Rain within 3 to 5 days after installation will increase curing time.
- C. Grade control: Establish and maintain required lines and elevations.
- D. Protect Protect all nearby surfaces, plants, and structures from possible contamination from materials or damage by equipment.
- E. Do not install when temperature is below 40 degrees Fahrenheit.

1.8 DELIVERY, HANDLING, AND STORAGE

- A. Delivery: Delivery of Organic-Lock pre-blended with aggregate is available from select dealers. Contact your closest dealer or the manufacturer for more information.
- B. Handling: When dealing with un-blended Organic-Lock, wear appropriate respirator when ventilation is inadequate. Avoid contact with skin and eyes.
- C. Storage: Protect stabilized crushed aggregate mix from contamination. Store undercover. If the blended and hydrated aggregate is sitting for long periods of time (longer than 48 hours), or when subject to rainfall, it needs to be turned with a skid steerer or loader to ensure consistent moisture content throughout prior to installation. Verify hydration level with snowball test before installation. For any questions regarding storage, contact the manufacturer or local dealer.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Use locally available materials and gradations which exhibit a satisfactory record of previous installations.
- B. Crusher Fines Aggregate: Crushed aggregate material consisting of sound, angular, durable particles.
 1. Color: As selected by Architect or Engineer from full range of available aggregates..
- C. Gradation, in accordance with ASTM C136:

Optimal Gradation

Sieve	Sieve Size (mm)	Percent Passing
4	4.75	80 - 100 percent
8	2.36	65 - 90 percent
16	1.18	40 - 65 percent
30	0.6	25 - 55 percent
50	0.3	15 - 35 percent
100	0.15	10 - 20 percent
200	0.075	5 - 15 percent

- D. Geotextile Fabric, when indicated by the Drawings or required by Geotechnical Engineer:
1. Basis-of-Design: Subject to compliance with requirements, provide Mirafi 140n or approved substitution.
- E. Stabilizer Binder Paving Additive, when indicated by the Drawings: Stabilizer, a patented non-toxic, colorless, odorless, non-staining, concentrated organic powder that binds soil and crushed aggregate screenings, creating a natural-appearing, firm paving surface, or approved substitution.
1. Basis-of-Design: Subject to compliance with requirements, provide Envirobond "Organic-Lock" stabilizer binder; contact All-American Sports Materials, 301 Centennial Dr, Milliken, CO 80543, 970-587-7336, or approved substitution.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. As indicated in 312000 "Earth Moving" and amended below.
- B. Compact the subgrade to 95% Proctor Density.
- C. Prepare subgrade in accordance with 312000 "Earth Moving" for paving application.
- D. Excavate to subgrade elevations as required to meet finish grades indicated on the Drawings. Provide vertical clean edge to full depth of crusher fines material.
- E. Proof-roll prepared subgrade surface to check for unstable areas and areas requiring additional compaction or irregularities in the subgrade which shall be brought to a uniform grade and cross-section.
- F. When indicated on the Drawings or required by the Geotechnical Engineer, install geotextile fabric on prepared subgrade. Stake as per manufacturer's recommendations. Adhese fabric to faces of adjacent concrete edge restraints with top of fabric held below finish grade, Fabric edges exposed in finished work are not permitted and will require removal and repair or reinstallation of paving..
- G. Notify Engineer of unsatisfactory conditions. Do not begin paving work until deficient subgrade areas have been corrected and are ready to receive crusher fines material.

3.2 BASE PREPARATION

- A. Protect all work from erosion and runoff.
- B. Install aggregate base course, to depth as indicated on Drawings, in accordance with Colorado Department of Transportation (CDOT) Standard Specifications for Road and Bridge Construction.
- C. Construct the base course so that the finished surface reflects the the same slopes, cross-slopes, or crowns as intended for the finish grade condition.

3.3 BLENDING STABILIZER

- A. Thoroughly pre-blend Stabilizer with the crushed aggregate screenings, at the rate recommended by the manufacturer, prior to placing of Stabilized mix. It is essential that Stabilizer be mixed thoroughly and uniformly through crushed aggregate screenings to achieve a successful result. Crusher fines shall be pre-mixed by supplier utilizing a truck-mounted mixer prior to delivery to project site.

3.4 PLACING MIX

- A. General: Place the loose material on the prepared base and rake smooth using a steel tine rake to grade and cross section indicated. Apply in a single lift. A lift of 4-inches of loose, pre-wet stabilized crusher fines aggregate will typically compact to approximately three-inches. It is recommended to monitor and record the required lift depth during the construction of the mockup.
- B. Compaction: Compact to 95 percent Modified Proctor Density
 - 1. Make 4-6 passes using a 1-ton double or single static drum roller, or equivalent. A Foot-Traffic Pathway will typically require one lift, compacted to 3 inches.
 - 2. Compaction may vary with different aggregates due to particle shape and size. It will compact 20-25%, less if using paving machinery. The level of compaction should be monitored as early as possible (starting during the mockup) to determine the actual degree of compaction. It is better to put down too much material and to remove it from the top than to put down too little and add a layer later.
 - 3. Do not use vibratory equipment. Hand tamp with 8 or 10 inch tamp in areas adjacent to i edges inaccessible to equipment such as walls, mowbands, concrete flatwork, planting, and irrigation systems.
 - 4. Provided the moisture content of the Organic-Lock blended aggregate is adequate, additional hydration should not be necessary. On dry, sunny days, however, the surface layer may start to dry out while installing, in which case, a light misting would be appropriate to prevent surface cracks from appearing during compaction.
- C. Edges of the crusher fines paving shall be tamped to provide a straight and neat lines, or true radii where indicated.
- D. Finished crusher fines paving shall be true and even, free of low spots or humps. All areas must drain to established drainage points. No puddles will be permitted.

- E. Water: Apply a light spray to the surface of the material to give a clean, even appearance. Apply until water begins to run off of surface.
- F. Do not allow any traffic on the newly installed pathway until fully cured, a minimum of 24-72 hours.

3.5 INSPECTION

- A. Finished surface of paving shall be smooth, uniform, and solid, with no evidence of chipping or cracking. Cured and compacted paving shall be firm throughout with no spongy areas. Loose material shall not be present on the surface initially. Any significant irregularities in paving surface shall be repaired to the uniformity of entire installation.
- B. Loose gravel on the surface immediately after installation, or unconsolidated crushed aggregate screenings below the surface, is evidence of improper bonding due to poor mixing or insufficient watering. Test the loose material for adequate compaction and bonding.
- C. Repairs:
 - 1. Excavate the damaged, noncompacted, or unbonded area and scarify the adjacent aggregate. Pre-blend stabilizer additive and crusher fines aggregate at 28 to 34 lbs/ton, or as recommended by the stabilizer manufacturer. Apply the material and compact per specification. Thoroughly wet the material to achieve 8-10 percent moisture content.
 - 2. Allow newly installed aggregate surfacing to cure but not completely dry out.
 - 3. Re-compact the material per the specification, ensuring that final grade and slopes are maintained.

3.6 TOLERANCES

- A. Surface: Using a 10-foot straightedge, variation between and two contact points shall not exceed 1/4-inch.
 - 1. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowed variance from template is 1/4-inch.
- B. Width: Plan dimension, plus or minus 1 inch.
- C. Thickness: Plan dimension, plus or minus 1/2 inch.

3.7 PROTECTION

- A. Thoroughly clean all areas where work has occurred. Remove from site excess material, debris and rubbish.
- B. Protect and maintain crusher fines paving until Final Acceptance.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 321723 - PAVEMENT MARKINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Pavement markings shall conform to CDOT Construction Specifications, Division 700 Materials Details, Section 708 Paints.
- B. Section Includes:
 - 1. Painted traffic markings applied to asphalt paving.
 - 2. Painted traffic markings applied to concrete surfaces.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to marking asphalt paving or concrete surfaces including, but not limited to, the following:
 - a. Asphalt-paving or concrete-surface aging period before application of pavement markings.
 - b. Review requirements for protecting pavement markings, including restriction of traffic during installation period.

1.5 ACTION SUBMITTALS

- A. Product Data: Include technical data and tested physical and performance properties.
 - 1. Pavement-marking paint, latex.
- B. Shop Drawings:

1. Indicate pavement markings, colors, lane separations, defined parking spaces, and dimensions to adjacent work.
2. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Materials shall conform to CDOT Construction Specifications, Division 700 Materials Details, Section 708 Paints.
- B. Accessibility Standard: Comply with applicable provisions in the USDOJ's "2010 ADA Standards for Accessible Design", the ABA standards of the Federal agency having jurisdiction ICC A117.1.

PART 3 - EXECUTION

3.1 GENERAL

- A. Materials shall conform to CDOT Construction Specifications, Division 700 Materials Details, Section 708 Paints.

3.2 EXAMINATION

- A. Verify that pavement-marking substrate is dry and in suitable condition to begin pavement marking in accordance with manufacturer's written instructions.
- B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 321726 - DETECTABLE WARNING SURFACING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Detectable Warnings Surfacing shall conform to CDOT Construction Specifications, Division 600 Miscellaneous Construction, Section 608 Detectable Warnings.
- B. Detectable Warning Surfacing applications include but are not limited to:
 - 1. Detectable warnings at curb ramps and other street crossings.
 - 2. Detectable warnings at passenger loading zones.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each type of tactile warning surface, in manufacturer's standard sizes unless otherwise indicated, showing edge condition, truncated-dome pattern, texture, color, and cross section; with fasteners and anchors.

PART 2 - PRODUCTS

2.1 DETECTABLE WARNING SURFACING, GENERAL

- A. Materials shall conform to CDOT Construction Specifications, Division 600 Miscellaneous Construction, Section 608 Detectable Warnings.
- B. Accessibility Requirements: Comply with applicable provisions in The Americans with Disabilities Act (ADA) Standards for Accessible Design, latest edition, for tactile warning surfaces.

1. For tactile warning surfaces composed of multiple units, provide units that when installed provide consistent side-to-side and end-to-end dome spacing that complies with requirements.
- C. Source Limitations: Obtain each type of tactile warning surfacing from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.2 DETECTABLE WARNING TILES

- A. Cast-in-Place Detectable Warning Metal Tiles: Accessible truncated-dome detectable warning metal tiles configured for setting flush in new concrete walkway surfaces, with slip-resistant surface treatment on domes and field of tile.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Advantage Tactile Systems.
 - b. EJ (formerly known as East Jordan Iron Works).
 - c. Neenah Foundry Company.
 - d. ADA Solutions.
 - e. TufTile Inc.
 2. Material:
 - a. Cast Iron: Gray iron, ASTM A 48/A 48M, CL 35.
 3. Shapes and Sizes:
 - a. Rectangular panel, 24 by 24 inches or sizes as indicated on the Drawings.
 - b. Radius panel, nominal 24 inches deep by outside radius indicated on Drawings.
 4. Dome Spacing and Configuration: Complying with ADA Standards for Accessible Design, latest edition.
 5. Mounting:
 - a. Permanently embedded detectable warning tile wet-set into freshly poured concrete.

2.3 ACCESSORIES

- A. Fasteners and Anchors: Manufacturer's standard as required for secure anchorage of tactile warning surfaces, noncorrosive and compatible with each material joined, and complying with the following:
 1. Furnish Type 316 stainless-steel fasteners for exterior use.
 2. Fastener Heads: For nonstructural connections, use flathead or oval countersunk screws and bolts with tamper-resistant heads, colored to match tile.
- B. Sealant: As recommended by manufacturer for sealing perimeter of tactile warning surfacing unit.

PART 3 - EXECUTION

3.1 GENERAL

- A. Execution shall conform to CDOT Construction Specifications, Division 600 Miscellaneous Construction, Section 608 Detectable Warnings.

3.2 EXAMINATION

- A. Verify that pavement is in suitable condition to begin installation according to manufacturer's written instructions. Verify that installation of tactile warning surfacing will comply with accessibility requirements upon completion.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

END OF SECTION 321726

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NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 321800.01 - INFIELD SURFACING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Construction Contract, and Division – 01 Specification sections, apply to this section.

1.2 SUMMARY

- A. This section covers work necessary for baseball and softball infield and warning track areas.
- B. Related Sections:
 - 1. Section 310000 "Earthwork" for earthwork and drainage.
 - 2. Section 311000 "Site Clearing" for site clearing.
 - 3. Section 329113 "Soil Preparation" for soil analysis and amendments.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 SUBMITTALS

- A. Submit laboratory sieve analysis and plasticity index of proposed surface mix. Report to be labeled with source and description of material, and dated. Report shall be no older than 6-months preceding date of submittal. .
- B. Samples: Provide in [1-quart] [sealed container labeled with content, source, and date obtained. Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Do not deliver surfacing materials to the site until finish grading is completed and surfacing may be immediately applied.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Infield Mix, Basis-of-Design: Subject to compliance with requirements, provide the following or approved equivalent.
1. Golf and Sport Solutions (mfr) Classic Infield Mix.
 - a. Color: Gold or Red, as approved by Engineer.
- B. Description: An engineered blend of 70-75% sand and 25-30% combined silt and clay, conforming to ASTM F2107 Standard Guide for Construction and Maintenance of Skinned Areas of on Baseball and Softball Fields, and within the following gradation ranges:

Sand Sieve Analysis (ASTM F-1632-03)	Percent Retained
Gravel (>2.0 mm)	≤3%
Very Coarse Sand (2.0 - 1.0 mm)	≤15%
Coarse Sand (1.0 - 0.5 mm)	>50% of coarse & medium sand total
Medium Sand (0.5 - 0.25 mm)	
Fine Sand (0.25 - 0.10 mm)	≤20% of fine & very fine sand total
Very Fine Sand (0.10 - 0.05 mm)	
Silt (0.05 - 0.002 mm)	
Clay (<0.002 mm)	≥13%
	25-30% combined
	Silt to clay ratio (SCR) 0.5-1.0

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify layout of areas to be covered as indicated on the drawings prior to start operations. Verify that fine grading is within tolerances specified in Section 31000 "Earthwork".
- B. Finish grade shall be reviewed by Engineer prior to installation.

3.2 PREPARATION

- A. Fine grade all areas to receive soil or rock cover. Remove all sticks, stones or clods over 1-inch in diameter and grade soil smoothly and evenly.
- B. Apply pre-emergent herbicide to areas to receive infield mix, following manufacturer's directions.

3.3 INSTALLATION

A. Infield Mix:

1. Delivery shall be in truck beds that have been completely cleaned of gravel or any other matter. Any loads of material delivered which contains gravel or contaminants will be rejected.
2. Subgrade shall have been prepared to a depth of 4 inches to receive the infield surfacing material. Compacted and laser graded according to plans and specifications. The cavity shall have vertical sides so not to "dilute" the surfacing material.
3. Surfacing Material to be pre-mixed off- site by supplying vendor. Surfacing Material shall be dumped and spread to the depth of 4 inches. Great care must be taken so not to allow contamination of the surfacing when it is delivered and spread.
4. Laser grading equipment will be used in order for the grade and elevation of the surfacing material to be true to line, grade and cross section. When tested with an eight foot straight edge, it shall have no deviation from the face of the straight edge in excess of one-fourth (1/4") inch at any point with a maximum slope of 2% for drainage, evenly across the field. Any point of the surface not meeting these requirements shall be corrected.
5. Compaction: Apply a light water spray to surfacing material. Follow with a heavy (1 ton minimum) small rider, after having initially used a lawn roller, to obtain the desired final dense smooth, uniform texture. Do not use rammer/jumping-jacks or vibratory rollers.

3.4 FIELD QUALITY CONTROL

- #### A.
- Provide Engineer with at least 48-hours advance notice for review and inspection of finished work. The Engineer reserves the right to reject work containing but not limited to the presence of excessive heavy aggregate forms at the surface, high or low spots of finish grade, pooling water, and unconsolidated material. Work shall be corrected, as directed by the Engineer, at the expense of the Contractor.
1. Rejection of work based on excessive presence of heavy aggregate forms at the surface of work or issues due to the the integrity or composition of the infield mix, as determined by the Engineer, must be removed and new material brought in at the expense of the Contractor.

3.5 CLEANING

- #### A.
- Sweep and wash paved and finished surface areas soiled as a result of this work. Remove debris and excess materials from project site.

END OF SECTION 321800.01

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SECTION 321813 - SYNTHETIC GRASS SURFACING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes synthetic grass surfacing.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving" for preparation, compaction, and grading of granular base.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For synthetic grass surfacing.
 - 1. Include sections and details.
 - 2. Show locations of seams and method of seaming.
 - 3. Show layout of game lines, numbers, and letters. Indicate application method of each line and marking.
 - 4. Show location and layout of team logo/graphics.
- C. Samples: For each type of synthetic grass surfacing indicated.
 - 1. Turf Fabric: 12 inches square.
 - 2. Game Line Turf Fabric: 12 inches long by actual width.

3. Infill Material: 4 oz. of each type.
4. Seam Sample: 24 inches square with seam centered in sample.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.
- B. Product Test Reports: For each synthetic grass surfacing assembly.
- C. Field quality-control reports.
- D. Sample Warranties: For special warranties.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For synthetic grass surfacing, including maintenance cleaning instructions, to include in maintenance manuals.

1.8 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Turf Fabric: Minimum of 300 sq. ft. for each type indicated.
 2. Infill: Minimum of 5 percent of total infill installed provided on palletized 50lb. bags or bulk sacks, of each type.
 3. Seaming Tape and Adhesive: One roll of seaming tape and one gallon of adhesive.
 4. One new set of maintenance tools, of type recommended by synthetic grass surfacing manufacturer for installation.

1.9 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in location and manner to allow installation of synthetic grass surfacing without excess disturbance of granular base.

1.11 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace synthetic grass surfacing that fails in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Deterioration and excessive wear.
 - b. Deterioration from UV light.

- c. Excessive loss of shock attenuation.
 - d. Seam separation, including game lines and markings.
- 2. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Turf Fabric: Turf fabric tested according to the following methods, with additional test method conditions for each method according to ASTM F 1551.
 - 1. Tuft Bind: Not less than 10 lbf according to ASTM D 1335.
 - 2. Breaking Strength: Minimum 250 lbf in warp direction and minimum 250 lbf perpendicular to warp direction, according to ASTM D 5034.
- B. Synthetic Grass Surfacing: Assembly tested according to the following methods, with additional test method conditions for each method according to ASTM F 1551.
 - 1. Shock Attenuation: No greater than 120 G(max) at time of installation according to ASTM F 355. A range of 90 to 120 G(max) should be provided.
 - 2. Abrasiveness Index: 30 +/- 2 according to ASTM F 1015.
- C. Permeability: 10 in./h of rainfall capacity according to ASTM F 2898 or EN 15330-1.
- D. Durability: Minimum of 20,000 wear cycles according to EN 15306 (Lisport test).

2.2 SYNTHETIC GRASS SURFACING

- A. Synthetic Grass Surfacing: Complete surfacing system, consisting of synthetic yarns bound to water-permeable backing and infill indicated, suitable for multipurpose sport playing fields.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide Shaw Sports Turf or approved substitution.
- B. Backing: Manufacturer's standard woven or nonwoven polypropylene primary backing with urethane-coated secondary backing; provide perforations or drainage channels sufficient to meet permeability indicated.
- C. Infill: Manufacturer's standard sand infill.
- D. Game Lines and Markings: Provide game lines and markers in widths and colors according to requirements indicated on Drawings.
 - 1. Application Method: Tufted in to the maximum extent practicable, with remaining lines inlaid.
 - 2. Team Logo/Graphic: Provide inlaid team logo/graphic in colors and design indicated.
- E. Seaming Method: Adhesive and Sewn.

2.3 MATERIALS

- A. Sand Infill: Uniformly sized latex-coated silica sand free of silts, clays, and contaminants, and of subangular or rounder shape according to ASTM F 1632; mesh size as recommended by synthetic grass surfacing manufacturer.
 - 1. Basis-of-Design: Subject to compliance with requirements, provide USGreentech "Envirofill", or approved substitution.
- B. Seam Adhesive: One- or two-part urethane, recommended or approved by synthetic grass surfacing manufacturer, and suitable for ambient conditions at time of installation.
- C. Seam Tape: Synthetic grass manufacturer's recommended seam tape, minimum 15 inches wide, or 18 inches wide for inlaid game lines.
- D. Seaming Cord: Seaming cord or thread, recommended by the synthetic grass surfacing manufacturer.
- E. Game Line Paint: Permanent paint as recommended or approved by synthetic grass surfacing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine base and other conditions, with Installer present, for compliance with requirements for installation tolerances, permeability, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Avoid disturbance of base during installation of turf fabric.
- B. Shock-Attenuation Pad Installation: Roll out pad and allow to relax a minimum of six hours prior to final fit and trim. Stagger head seams between adjacent rows. Fit seams snugly without stretching or forcing.
- C. Roll out turf fabric and allow to relax at least four hours prior to seaming.
- D. Provide seams flat and snug, with no gaps or fraying. Remove yarns that are trapped within seams. Attach turf fabric to perimeter restraint system as recommended by the manufacturer.
- E. Install inlaid game lines and markings by cutting through turf fabric and installing snugly fitting game line turf fabric. Provide seaming tape that extends minimum 6 inches beyond seam.
- F. Repair loose seams and bubbles formed due to expansion of turf fabric prior to installation of infill.

- G. Evenly broadcast and groom infill by machine in proportions and depth after settling as recommended by the manufacturer, and to meet indicated performance requirements. Rake fibers trapped by infill to surface.
- H. Painted Game Lines: Apply lines and markings as recommended by the game line paint manufacturer.

3.3 FIELD QUALITY CONTROL

- A. Testing Agency: Engineer will engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections:
 - 1. Permeability: 10 in./h of rainfall capacity according to ASTM F 2898 or EN 15330-1.
 - 2. Shock Attenuation: No greater than 120 G(max) at time of installation according to ASTM F 1936.

3.4 DEMONSTRATION

- A. Train Owner's maintenance personnel in proper maintenance procedures for synthetic grass surfacing.

END OF SECTION 321813

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SECTION 321816.13 - PLAYGROUND PROTECTIVE SURFACING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Unitary, seamless surfacing.
- 2. Organic loose-fill surfacing.
- 3. Synthetic turf surfacing.

- B. Related Requirements:

- 1. Section 321813 - Synthetic Grass Surfacing.
- 2. Section 31200 - Earth Moving for excavating and subsurface drainage course.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Definitions in ASTM F 2223 apply to Work of this Section.
- C. Critical Height: Standard measure of shock attenuation according to ASTM F 2223; same as "critical fall height" in ASTM F 1292. According to ASTM F 1292, this approximates "the maximum fall height from which a life-threatening head injury would not be expected to occur."
- D. SBR: Styrene-butadiene rubber.
- E. Unitary Surfacing (Poured-in-Place Rubberized Surfacing): A protective surfacing of one or more material components bound together to form a continuous surface; same as "unitary system" in ASTM F 2223.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For each type of protective surfacing.

1. Include plans, sections, placement and penetration details, and attachment to substrates.
2. Include accessories and edge terminations.
3. Include patterns made by varying colors of surfacing and details of graphics.
4. Include fall heights and use zones for equipment and structures specified in Section 116800 "Play Field Equipment and Structures," coordinated with the critical heights for protective surfacing.
5. Include depths of safety surfacing and indicate transitions to varying depths, corresponding to required depth for play equipment fall heights and impact attenuation.
6. Include seaming plan for synthetic turf surfacing.

C. Samples for Initial Selection: For each type of exposed finish.

1. Include Samples of accessories involving color selection.

D. Samples for Verification: For each type of protective surfacing and exposed finish.

1. Include Samples of accessories to verify color and finish selection.
2. Unitary, Seamless Surfacing: Minimum 6 by 6 inches.
3. Loose-Fill Surfacing: Minimum 1 quart.
4. Stabilizing Mats: Minimum 12 by 12 inches
5. Drainage/Separation Geotextile: Minimum 12 by 12 inches.
6. Synthetic Turf Surfacing:
 - a. Turf Fabric: Minimum 12 by 12 inches.
 - b. Infill Material: 4 oz.
 - c. Shock-Attenuation Pad: 12 by 12 inches.
 - d. Seam Sample: 24 inches square with seam centered in sample.

E. Product Schedule: For protective surfacing. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer and testing agency.
- B. Product Certificates: For each type of unitary surfacing product.
- C. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For playground protective surfacing to include in maintenance manuals.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
- B. Mockups: Build mockups to verify selections made under Sample submittals and to set quality standards for materials and execution.
 1. Build mockups for protective surfacing including accessories.

- a. Size: 48 inches by 48 inches.
 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Engineer specifically approves such deviations in writing.
 3. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- C. Synthetic Turf Grass Surfacing Certifications:
1. Synthetic Turf Grass shall meet impact attenuation requirements of ASTM F1292-99-Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment.
 2. For Synthetic Turf Grass:
 - a. G-max values less than 120G for 12" system at a 12' drop height.
 - b. HIC value less than 1,000 at eight feet height (CFH).
- D. Meet requirements of ASTM F1951, Standard Specification for Determination of Accessibility of Surface Systems Under and Around Playground Equipment.
- E. Meet accessibility requirements of Access Board, Final Report.
- F. Synthetic Turf Grass surfacing shall meet ADA compaction requirements upon completion of work Contractor shall provide testing to comply with this requirement.

1.8 WARRANTY

- A. Special Warranty: Manufacturer and Installer agree to repair or replace components of protective surfacing that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
 - a. Reduction in impact attenuation as measured by reduction of critical fall height.
 - b. Deterioration of protective surfacing and other materials beyond normal weathering.
 2. Warranty Period:
 - a. Two years from date of Substantial Completion for Loose-fill Surfacing
 - b. Ten years from date of Substantial Completion for unitary seamless surfacing.
 - c. Eight years from date of Substantial Completion for synthetic turf surfacing.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Source Limitations: Obtain protective surfacing materials from single source from single manufacturer.

1. Provide geosynthetic accessories of each type from source recommended by manufacturer of protective surfacing materials.

2.2 PERFORMANCE REQUIREMENTS

- A. Impact Attenuation: Critical fall height tested according to ASTM F 1292.
- B. Accessibility Standard: Minimum surfacing performance according to ASTM F 1951.

2.3 UNITARY, DUAL-DENSITY, SEAMLESS SURFACING (POURED-IN-PLACE RUBBERIZED SURFACING)

- A. Description: Manufacturer's standard, site-mixed and applied, two-layer material with wearing layer over cushioning layer, with combined, overall thickness as required, tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.
 1. Basis-of-Design: Subject to compliance with requirements, provide products by the following. Equivalent product may only be used with written approval of the Town.
 - a. Surface America (manufacturer) "PlayBound Poured-in-Place" surfacing with "Extreme-10" aliphatic urethane binder.
 2. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 85 percent.
 3. Wearing Layer: Formulation of EPDM rubber particles, binder, and other organic and inorganic components.
 4. Cushioning Layer: Formulation of recycled SBR particles and binder.
 5. Binder: Weather-resistant, aliphatic, UV-stabilized, flexible, nonhardening, 100 percent solids polyurethane, low odor, with no solvents.
 6. Critical Height: As indicated on Drawings.
 7. Overall Thickness: Not less than as required for critical height indicated.
 8. Primer/Adhesive: Manufacturer's standard primer and weather-resistant, moisture-cured polyurethane adhesive suitable for unit, substrate, and location.
 9. Wearing Layer Color(s): As selected by Engineer from manufacturer's full range.
 - a. Design: Where graphic design is required, provide as indicated on Drawings.
- B. Leveling and Patching Material: Portland cement-based grout or epoxy- or polyurethane-based formulation suitable for exterior use and approved by protective surfacing manufacturer.

2.4 ORGANIC LOOSE-FILL SURFACING

- A. Engineered Wood Fiber: ASTM F 2075; containing no bark, leaves, twigs, or foreign or toxic materials; tested for accessibility according to ASTM F 1951.
 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Fibar Group LLC (The).
 - b. GameTime; a PlayCore, Inc. company.

- c. Sof'Solutions Inc.
 - d. Supreme Forest Products.
 - e. Zeager Bros., Inc.
- 2. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 95 percent.
- 3. Critical Height: As indicated on Drawings.
- 4. Uncompressed Material Depth: Not less than as required for critical height indicated.

2.5 LOOSE-FILL ACCESSORIES

- A. Stabilizing Mats: Water-permeable PVC or rubber mats tested for impact attenuation according to ASTM F 1292, with anchoring system designed to anchor mat securely to subgrade through loose fill, and rated for use in the following locations:
 - 1. Under and in Front of Slide Exits: Below surface of protective surfacing.
 - 2. Under and Around Swings: Below surface of protective surfacing.
 - 3. Around Transfer Stations at Accessible Perimeter: At finished grade of protective surfacing.
 - 4. At high-traffic areas and playground equipment where indicated on Drawings.
 - 5. Size: 48 by 48 inches.
 - 6. Color(s): As selected by Architect from manufacturer's full range.

2.6 GEOSYNTHETIC ACCESSORIES

- A. Drainage/Separation Geotextiles: Comply with Section 312000 "Earth Moving."

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for subgrade elevations, slope, and drainage and for other conditions affecting performance of the Work.
 - 1. Verify that substrates are sound and without high spots, ridges, holes, and depressions.
- B. Hard-Surface Substrates: Verify that substrates are satisfactory for unitary, protective surfacing installation and that substrate surfaces are dry, cured, and uniformly level or sloped to drain as indicated on the Drawings, within recommended tolerances according to protective surfacing manufacturer's written requirements for cross-section profile.
 - 1. Concrete Substrates: Verify that substrates are dry and free from surface defects, laitance, glaze, efflorescence, curing compounds, form-release agents, hardeners, dust, dirt, loose particles, grease, oil, and other contaminants incompatible with protective surfacing or that may interfere with adhesive bond. Determine adhesion, dryness, and acidity characteristics by performing procedures recommended in writing by protective surfacing manufacturer.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare substrates to receive surfacing products according to protective surfacing manufacturer's written instructions.
- B. Hard-Surface Substrates: Clean surface free of laitance, efflorescence, curing compounds, and other contaminants incompatible with protective surfacing.
 - 1. Repair: Fill holes and depressions in unsatisfactory surfaces with leveling and patching material.
 - 2. Treatment: Mechanically abrade or otherwise prepare concrete substrates according to protective surfacing manufacturer's written instructions to achieve adequate roughness.
 - 3. Terminal Edges: Saw cut concrete for terminal edges of protective surfacing.
 - 4. Treat control joints and other nonmoving substrate cracks to prevent telegraphing through protective surfacing.

3.3 INSTALLATION OF GEOSYNTHETIC ACCESSORIES

- A. Install geosynthetic accessories before edging and according to playground surface system manufacturer's and geosynthetic manufacturer's written instructions and in a manner that cannot become a tripping hazard.
 - 1. Drainage Geotextile: Completely cover area beneath protective surfacing, overlapping geotextile sides and edges a minimum of 8 inches with manufacturer's standard treatment for seams.

3.4 INSTALLATION OF SEAMLESS (POURED-IN-PLACE) SURFACING

- A. Mix and apply components of seamless surfacing according to manufacturer's written instructions to produce uniform, monolithic, and impact-attenuating protective surfacing of required overall thickness.
 - 1. Substrate Primer: Apply over prepared substrate at manufacturer's standard spreading rate for type of substrate.
 - 2. Poured Cushioning Layer: Spread evenly over primed substrate to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation, with a minimum of cold joints.
 - 3. Intercoat Primer: Over cured cushioning layer, apply primer at manufacturer's standard spreading rate.
 - 4. Wearing Layer: Spread over primed base course to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation and, except where color changes, with no cold joints. Finish surface to produce manufacturer's standard wearing-surface texture.
 - a. Design: Where graphic design is required, place colored, design material as soon as previously placed material is sufficiently cured, using primer or adhesive if required by manufacturer's written instructions.
 - 5. Edge Treatment: As indicated on Drawings. Fully adhere edges to substrate with full coverage of substrate. Maintain fully cushioned thickness required to comply with performance requirements.

3.5 INSTALLATION OF LOOSE-FILL SURFACING

- A. Apply components of loose-fill surfacing according to manufacturer's written instructions to produce a uniform surface.
- B. Loose Fill: Place loose-fill materials to required depth after installation of playground equipment support posts and foundations. Include manufacturer's recommended amount of additional material to offset natural compaction over time.
 - 1. Loose fill to be blown in unless otherwise approved by Engineer.
- C. Stabilizing Mats: Coordinate installation of mats and mat anchoring system with placing and compacting loose fill.
- D. Grading: Uniformly grade loose fill to an even surface free from irregularities.
- E. Finish Grading: Hand rake to a uniformly smooth finished surface and to required elevations.

3.6 INSTALLATION OF SYNTHETIC TURF SURFACING

- A. Avoid disturbance of base during installation of shock-attenuation pad and turf fabric.
- B. Shock-Attenuation Pad Installation: Roll out pad and allow to relax a minimum of six hours prior to final fit and trim. Stagger head seams between adjacent rows. Fit seams snugly without stretching or forcing.
- C. Provide seams flat and snug, with no gaps or fraying. Remove yarns that are trapped within seams. All Seams shall be flat, tight, and permanent with no separation or fraying. Seams shall be hot melt glued; two part glued or sewn in accordance with manufacturer's directions (minimum of 12 in. wide seaming tape). All sewn seams shall be sewn using double bagger stitches and polyester thread or cart sewer method with polyester thread. Remove fibers from the stitch line prior to sewing the carpet panels to avoid trapping fiber in the sewn seam. It is recommended that cart sewn seams also be reinforced with additional seaming tape and high-grade adhesive (per the manufacture's standard procedures). Seams shall be flat, tight, and permanent with no separation or fraying.
- D. Attach turf fabric to perimeter restraint system: Connection to the treated wood shall be done with industrial staples (non. depth embedment is one inch (1") at maximum 2 inch (2") on center staple spacing as recommended by the manufacturer.
- E. Repair loose seams and bubbles formed due to expansion of turf fabric prior to installation of infill.
- F. Evenly broadcast and groom infill by machine in proportions and depth after settling as recommended by the manufacturer, and to meet indicated performance requirements. Rake fibers trapped by infill to surface.
- G. Painted Game Lines: Apply lines and markings, where indicated on the Drawings, as recommended by the game line paint manufacturer.

3.7 PROTECTION

- A. Prevent traffic over seamless surfacing for not less than 48 hours after installation.

END OF SECTION

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SECTION 321823.03 - SPORTS COURT SURFACING

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Multi-purpose sport court surfacing and court markings/stripping.
- B. Related Requirements:
 - 1. Section 033800 "Post-Tensioned Concrete Paving" for paving substrate under tennis court surfacing.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 REFERENCES

- A. Post Tensioning Institute (PTI).
- B. American Concrete Institute (ACI).
- C. United States Tennis Association (USTA).
- D. American Sports Builders Association (ASBA).
- E. International Tennis Federation (ITF).

1.5 ACTION SUBMITTALS

- 1. Product Data: For all products and accessories.
 - a. Include current Material Safety Data Sheets (MSDS).

2. Shop Drawings: including Plans, details and court markings/stripping.
3. Samples: Color samples.

B. INFORMATIONAL SUBMITTALS

1. Manufacturer's Certification: Submit manufacturer's certification that materials comply with specified requirements and are suitable for intended application.
2. Qualification Data: For Installers.
 - a. Certificate: Authorized Applicator Certificate from the surface system manufacturer.
 - b. Project References: Submit applicator's list of successfully completed concrete basketball, tennis, & multi-purpose court surface color coating system projects, including project name, location, type and quantity of color coating system applied, and date of application.
3. ITF Pace Classification Certificate for the system to be installed.
4. Warranty Documentation: Submit manufacturer's standard warranty.
5. Weather Conditions Reports: For days that temperature or weather limitations prevent installation of scheduled work and within 24-hours of completed installation.
 - a. Note Contractor's name, product scheduled for installation and description of work, date, wind direction and speed, and temperature. Indicate whether work was completed or postponed.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery and Acceptance Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling Requirements:
 1. Store and handle materials in accordance with manufacturer's instructions.
 2. Keep materials in manufacturer's original, unopened containers and packaging until application.
 3. Store materials in clean, dry area indoors.
 4. Store materials out of direct sunlight.
 5. Keep materials from freezing.
 6. Protect materials during storage, handling, and application to prevent contamination or damage.
 7. Close containers when not in use.
 8. Retain manufacturer batch codes on each container and application dates, for warranty purposes.

1.7 LIMITATIONS

- A. Do not apply when air or surface temperatures are below 50°F during application or within 24 hours after application.
- B. Do not apply when air or surface temperatures are above 130°F during application or within 24 hours after application.

- C. Provide a weather conditions report for days that temperature or weather limitations prevent installation of scheduled work, and for date that work was completed. See Information Submittals requirements herein.

1.8 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Member of the American Sports Builders Association.
 - 2. Certified Tennis Court Builder.
 - 3. A qualified installer that has been approved by the tennis or sport court surfacing manufacturer.
 - 4. A qualified installer that has successfully installed not less than five (5) tennis or multi-purpose sport court surfaces of size and scope comparable to this Project.

1.9 WARRANTY

- A. The contractor shall guaranty their respective work against defective materials or faulty workmanship for a period of one (1) year from the date of completion, and that the colored surface will not wear through for a period of two (2) years.

PART 2 - PRODUCTS

2.1 GENERAL

- 1. Provide 100 percent acrylic products. Asphalt emulsion products are not permitted.
- 2. Provide products for a single system from a single manufacturer.

2.2 INSTALLERS

- A. Subject to compliance with requirements, provide installation by one the following, or by a comparable installer that is also approved by the Product manufacturer.
 - 1. General Acrylics Inc., 22222 N 22nd Avenue, Phoenix, AZ 85027.
 - 2. Renner Sports Surfaces, 775 Canosa Court Denver, Colorado 80204 (303) 825-3435.

2.3 PRODUCTS

A. PRIMER

- 1. Prime coat if required shall consist of a mixture of 100 percent acrylic latex, diluted 1:4 with water.

B. CRACK SEALANT

- 1. 100 percent acrylic emulsion elastomeric crack sealant.
- 2. Seals cracks and expansion joints up to 1/2 inch wide in concrete pavement.
- 3. Weight per Gallon at 77 Degrees F: 8.8 lbs., plus or minus 0.5 lbs.

4. Non-Volatile Material: 61 percent, plus or minus 5 percent.

C. CRACK FILLER

1. 100 percent acrylic emulsion trowel-grade crack filler..
2. Fills cracks in concrete pavement up to 1 inch wide.
3. Chemical Characteristics, by Weight, Minimum:
 - a. Acrylic Emulsion: 10.0 percent.
 - b. Hiding Pigment: 0.2 percent.
 - c. Mineral Inert Fillers: 78.0 percent.
 - d. Film Formers, Additives: 1.8 percent.
 - e. Water: 8.5 percent.
 - f. Weight per Gallon at 77 Degrees F: 15.2 lbs., plus or minus 1.0 lbs.
 - g. Non-Volatile Material: 80 percent, plus or minus 5 percent.
 - h. Color: [Green] [Neutral] [Red] [Blue].
 - i. 100 percent acrylic emulsion liquid binder.

D. PATCH BINDER

1. 100 percent acrylic emulsion liquid binder.
2. Mix on-site with sand and cement.
3. Levels and repairs low spots and depressions up to 3/4 inch deep in concrete pavement.
4. Weight per Gallon at 77 Degrees F: 8.8 lbs., plus or minus 0.5 lbs.

E. FILLER COURSE

1. 100 percent acrylic emulsion resurfacer.
2. Mix on-site with silica sand.
3. Apply to adhesion promoter or previously colored acrylic surfaces in preparation of color coating system.
4. Chemical Characteristics, by Weight, Minimum:
 - a. Acrylic Emulsion: 44.0 percent.
 - b. Hiding Pigment: 2.0 percent.
 - c. Mineral Inert Fillers: 5.0 percent.
 - d. Film Formers, Additives: 0.2 percent.
 - e. Water: 45.0 percent.
 - f. Weight per Gallon at 77 Degrees F: 8.5 lbs., plus or minus 0.5 lbs.
 - g. Non-Volatile Material: 27.5 percent, plus or minus 5.0 percent.
 - h. Color: Black or Neutral.

F. ADHESION PROMOTER

1. Acrylic emulsion primer.
2. Primes concrete surface and promotes adhesion of color coating system materials.
3. Weight per Gallon at 77 Degrees F: 8.7 lbs., plus or minus 0.5 lbs.

G. COLOR COATING

1. 100 percent acrylic emulsion coating.

2. Mix on-site with silica sand and water.
3. Color coats basketball and multi-purpose courts.
4. Weight per Gallon at 77 Degrees F: 9.2 lbs., plus or minus 0.5 lbs.
5. Color: As selected by Engineer from manufacturer's full range of available colors.

H. LINE MARKINGS PRIMER

1. 100 percent acrylic emulsion primer, clear drying.
2. Primes line markings and prevents bleed-under for sharp lines.
3. Chemical Characteristics, by Weight, Nominal:
 - a. Acrylic Emulsion: 38.0 percent.
 - b. Hiding Pigment: 0.0 percent.
 - c. Mineral Inert Fillers: 7.0 percent.
 - d. Film Formers, Additives: 1.5 percent.
 - e. Water: 50.0 percent.
4. Weight per Gallon at 77 Degrees F: 8.9 lbs., plus or minus 0.5 lbs.
5. Non-Volatile Material: 29 percent, plus or minus 5 percent.

I. LINE PAINT

1. Pigmented, 100 percent acrylic emulsion line paint.
2. Line marking on concrete basketball and multi-purpose courts.
3. Chemical Characteristics, by Weight, Nominal:
 - a. Acrylic Emulsion: 25.89 percent.
 - b. Pigment: 14.90 percent.
 - c. Mineral Inert Fillers: 13.12 percent.
 - d. Additives: 4.73 percent.
 - e. Water: 41.36 percent.
4. Weight per Gallon at 77 Degrees F: 10.65 lbs., plus or minus 0.75 lbs.
5. Non-Volatile Material: 45.17 percent, plus or minus 5 percent.
6. Color: White.

2.4 ACRYLIC COLOR

- A. Provide two (2) coats of acrylic color, to be selected by Engineer from manufacturer's full range of standard colors.
 - a. Include washed silica sand in proportion required by manufacturer.
 - b. Include potable water, in proportion required by manufacturer.

2.5 PLAYING LINES

- 1. Paint playing lines using white, acrylic latex line paint recommended by the sport court surfacing manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Concrete Substrates: Allow not less than 28 days minimum curing time before the installation of surfacing. Concrete curing compounds are not permitted.
- B. Verify paving substrate for dimensional accuracy, strength, and surface preparation. Notify Engineer of any deficiencies.
 - 1. Finish Surface Tolerance: Finish and measure surface so gap at any point between concrete surface and an unlevelled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
 - 2. Slope for Drainage: Provide minimum 1 percent positive slope for drainage.
- C. Water flood the surface of the paving with the use of a water truck or other potable water source. If after 30 minutes on a 70 degree Fahrenheit day, ponding is evident to a depth more than 1/8 inch, prime and patch all affected areas.
 - 1. Prime area with acrylic primer and install patching material. Feather patch edges.
 - 2. After curing, water flood the court again to verify that no ponding remains. Grind patches flush.
- D. Notify Engineer of conditions that would adversely affect application or subsequent use.
- E. Do not begin surface preparation or application until unacceptable conditions are corrected

3.2 SURFACE PREPARATION

- A. Protection of In-Place Conditions: Protect adjacent surfaces and landscaping from contact with concrete basketball and multi-purpose court surface color coating system.
- B. Prepare surfaces in accordance with manufacturer's instructions.
 - 1. New Concrete:

- a. Cure new concrete surfaces a minimum of 28 days before application of concrete basketball and multi-purpose court surface color coating system.
 - b. Provide medium broom finish or similar roughened texture.
 - c. Do not steel trowel finish.
 - d. Acid etch with phosphoric or muriatic acid and rinse thoroughly prior to application of color coating system.
 - 2. Existing Concrete:
 - a. Sandblast, shotblast, or scarify smooth concrete surfaces to roughened texture similar to medium broom finish. If shot blasting, a shot blast profile of CSP3 or CSP4 is recommended.
 - b. If existing concrete is uncoated, acid etch with phosphoric or muriatic acid and rinse thoroughly prior to application of color coating system.
 - C. Remove dirt, dust, debris, oil, grease, sealers, curing compounds, vegetation, loose coatings, loose materials, and other surface contaminants which could adversely affect application of concrete sport court surface color coating system. Pressure wash entire surface.
 - D. Keep paving free of excess dirt, oil, grease or any other foreign matter.
 - E. Repair cracks, depressions, and surface defects in accordance with manufacturer's instructions before application of color coating.
 - F. Repair spalled areas and level depressions 1/8 inch and deeper with patch binder in accordance with manufacturer's instructions.
 - G. Apply adhesion promoter over entire concrete surface in accordance with manufacturer's instructions.
 - H. Apply 1 coat of filler course to provide smooth underlayment for application of color coating.
 - I. Ensure surface repairs are flush and smooth to adjoining surfaces.
- 3.3 APPLICATION
- A. Apply concrete sport court surface color coating system in accordance with manufacturer's instructions at locations indicated on the Drawings.
 - B. Mix materials in accordance with manufacturer's instructions.
 - C. Apply Filler Course and Color Coating with a 50-60 durometer, soft rubber squeegee.
 - D. Filler Course:
 - 1. Apply 1 coat on new concrete or existing acrylic surfaces with minimal repairs.
 - 2. Apply 2 coats on existing acrylic surfaces with extensive cracks or low spot repair.

- E. Apply a minimum of 2 coats of color coating to prepared surfaces in accordance with manufacturer's instructions.
- F. Allow material drying times in accordance with manufacturer's instructions before applying other materials or opening completed surface to foot traffic.

3.4 LINE MARKINGS

- A. Lay out court line markings in accordance with appropriate governing body:
 - 1. USTA Rules of Tennis unless shown otherwise on the Drawings.
 - 2. NBA Official Rules for professional basketball unless shown otherwise on the Drawings..
 - 3. NFHS Rules for high school basketball unless shown otherwise on the Drawings..
 - 4. NCAA Rules for college basketball unless shown otherwise on the Drawings..
 - 5. Other required game layout.
- B. Apply line markings primer, after masking tape has been laid, to seal voids between masking tape and court surface to prevent bleed-under when line paint is applied.
 - 1. Playing lines shall be two inches (2 inches) wide unless noted otherwise on the Drawings.
- C. Apply a minimum of 1 coat of line paint in accordance with manufacturer's instructions.
- D. Line paint will be applied to provide a uniform line. The lines shall have clear definition. Lines with bleeding or nonuniform geometry will not be accepted.

3.5 PROTECTION

- A. Allow a minimum of 24 hours curing time before opening courts for play.
- B. Protect applied concrete basketball and multi-purpose court surface color coating system to ensure that, except for normal weathering, coating system will be without damage or deterioration at time of Substantial Completion.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Chain-link fences.
 - 2. Swing gates.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for cast-in-place concrete post footings.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Inspect and discuss electrical roughing-in, equipment bases, and other preparatory work specified elsewhere.
 - 2. Review sequence of operation for each type of gate operator.
 - 3. Review coordination of interlocked equipment specified in this Section and elsewhere.
 - 4. Review required testing, inspecting, and certifying procedures.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Fence and gate posts, rails, and fittings.

- b. Chain-link fabric, reinforcements, and attachments.
 - c. Gates and hardware.
 - B. Shop Drawings: For each type of fence and gate assembly.
 - 1. Include plans, elevations, sections, details, and attachments to other work. Include foundations.
 - 2. Include accessories, hardware, gate operation, and operational clearances.
 - C. Delegated-Design Submittal: For structural performance of chain-link fence and gate frameworks, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- 1.6 INFORMATIONAL SUBMITTALS
 - A. Product Certificates: For each type of chain-link fence and gate.
 - B. Sample Warranty: For special warranty.
- 1.7 CLOSEOUT SUBMITTALS
 - A. Operation and Maintenance Data: For gate operators to include in emergency, operation, and maintenance manuals.
- 1.8 QUALITY ASSURANCE
 - A. Emergency Access Requirements: According to requirements of authorities having jurisdiction for gates with automatic gate operators serving as a required means of access.
- 1.9 FIELD CONDITIONS
 - A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.
- 1.10 WARRANTY
 - A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to comply with performance requirements.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - c. Faulty operation of gate operators and controls.
 - 2. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design chain-link fence and gate frameworks.
- B. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to ASCE/SEI 7.
 - 1. Design Wind Load: [As indicated on Drawings] <As required by local jurisdiction>.
 - a. Minimum Post Size: Determine according to ASTM F 1043 for post spacing not to exceed 10 feet for Material Group IA, ASTM F 1043, Schedule 40 steel pipe.
- C. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

2.2 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
 - 1. Fabric Height: As indicated on Drawings.
 - 2. Steel Wire for Fabric: Wire diameter of 0.148 inch (9 gauge) .
 - a. Mesh Size: 2 inches.
 - b. Zinc-Coated Fabric: ASTM A 392, Type II, Class 2, 2.0 oz./sq. ft. with zinc coating applied before weaving.
 - c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.
 - d. Provide knuckle at both selvages, regardless of height.

2.3 FENCE FRAMEWORK

- A. Posts and Rails : ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
 - 1. Fence Height: As indicated on Drawings.
 - 2. Light-Industrial-Strength Material: Group IC-L, round steel pipe, electric-resistance-welded pipe.
 - a. Line Post: 2.375 inches in diameter.
 - b. End, Corner, and Pull Posts: 2.875 inches.

3. Horizontal Framework Members: Top and bottom , and intermediate rails according to ASTM F 1043.
 - a. Top Rail: 1.66 inches in diameter.
4. Metallic Coating for Steel Framework:
 - a. Type A: Not less than minimum 2.0-oz./sq. ft. average zinc coating according to ASTM A 123/A 123M or 4.0-oz./sq. ft. zinc coating according to ASTM A 653/A 653M.

2.4 SWING GATES

- A. General: ASTM F 900 for gate posts and single or double swing gate types.
 1. Gate Leaf Width: As indicated.
 2. Framework Member Sizes and Strength: Based on gate fabric height as indicated.
- B. Pipe and Tubing:
 1. Zinc-Coated Steel: ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framework.
- C. Frame Corner Construction: assembled with corner fittings.
- D. Hardware:
 1. Hinges: 360-degree inward and outwardwing.
 2. Latch: Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.
 3. Padlock and Chain: Provided by Engineer.

2.5 FITTINGS

- A. Provide fittings according to ASTM F 626.
- B. Post Caps: Provide for each post.
 1. Provide line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: For each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
 1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
 2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate bottom rails to posts.
- E. Tension and Brace Bands: Pressed steel.

- F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
 - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:
 - a. Hot-Dip Galvanized Steel: 0.148-inch- diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.
- I. Finish:
 - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.

2.6 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a certified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.
 - 1. Install fencing on established boundary lines inside property line.

- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- C. Post Setting: Set posts in concrete to indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.
 - b. Concealed Concrete: Place top of concrete below grade as indicated on Drawings to allow covering with surface material.
- D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more. For runs exceeding 500 feet, space pull posts an equal distance between corner or end posts.
- E. Line Posts: Space line posts uniformly at 10 feet o.c. unless otherwise noted on the Drawings.
- F. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
 - 1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- H. Intermediate and Bottom Rails: Secure to posts with fittings.
- I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.
- K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

- L. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

3.5 GROUNDING AND BONDING

- A. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Fence and Gate Grounding:
 - 1. Ground for fence and fence posts shall be a separate system from ground for gate and gate posts.
 - 2. Install ground rods and connections at maximum intervals of 1500 feet.
 - 3. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.
 - 4. Ground fence on each side of gates and other fence openings.
 - a. Bond metal gates to gate posts.
 - b. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.
- C. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a ground rod located a maximum distance of 150 feet on each side of crossing.
- D. Fences Enclosing Electrical Power Distribution Equipment: Ground according to IEEE C2 unless otherwise indicated.
- E. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.
 - 1. Make grounding connections to each barbed wire strand with wire-to-wire connectors designed for this purpose.
 - 2. Make grounding connections to each barbed tape coil with connectors designed for this purpose.
- F. Connections:
 - 1. Make connections with clean, bare metal at points of contact.
 - 2. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 3. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - 4. Make above-grade ground connections with mechanical fasteners.
 - 5. Make below-grade ground connections with exothermic welds.

- 6. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- G. Bonding to Lightning Protection System: Ground fence and bond fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor according to NFPA 780.
- H. Comply with requirements in Section 264113 "Lightning Protection for Structures."

3.6 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

END OF SECTION

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SECTION 323119 - DECORATIVE METAL FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Decorative metallic-coated-steel tubular picket fences.
 - 2. Swing gates.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for concrete post foundations.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.
 - 1. Include diagrams for power, signal, and control wiring.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.

1.7 WARRANTY

- A. Manufacturer's Special Warranty: 20 year Finish System warranty.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Design decorative metal fences and gates, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- B. Structural Performance: Fence and gate framework shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7 or latest edition.
- C. Minimum Post Size and Maximum Spacing: Provide as required to meet the following:
 - 1. Wind Loads: As indicated on Drawings.
 - 2. Fence Height: As indicated on Drawings.

2.2 DECORATIVE METALLIC-COATED-STEEL TUBULAR PICKET FENCES

- A. Decorative Metallic-Coated-Steel Tubular Picket Fences: Comply with ASTM F 2408 for commercial application (class) unless otherwise indicated.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings.
 - 2. Line Posts: As indicated on the Drawings.
 - 3. Terminal, Corner, and Gate Posts: As indicated on the Drawings.
- B. Post Caps: Aluminum castings.
- C. Rails: Square tubes.
 - 1. Size: As indicated on the Drawings.
- D. Pickets: Square tubes.
 - 1. Size: As indicated on the Drawings.
- E. Fasteners: Manufacturer's standard concealed fastening system.
- F. Interior surface of tubes formed from uncoated steel sheet shall be hot-dip zinc coated same as exterior.
- G. Galvanizing: For components indicated to be galvanized and for which galvanized coating is not specified in ASTM F 2408, hot-dip galvanize to comply with ASTM A 123/A 123M. For hardware items, hot-dip galvanize to comply with ASTM A 153/A 153M.

- H. Finish: Powder coating.

2.3 SWING GATES

- A. Gate Configuration: As indicated on the Drawings.
- B. Gate Frame Height: Matching adjacent fencing, or as indicated on the Drawings.
- C. Gate Opening Width: As indicated on the Drawings.
- D. Additional Rails: Provide as indicated, complying with requirements for fence rails.
- E. Infill: Comply with requirements for adjacent fence.
- F. Picket Size, Configuration, and Spacing: Comply with requirements for adjacent fence.
- G. Hardware: Latches permitting operation from both sides of gate, hinges, and keepers for each gate leaf more than 5 feet wide. Provide center gate stops and cane bolts for pairs of gates. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.
- H. Cane Bolts: Provide for inactive leaf of pairs of gates. Fabricated from 1/2-inch- diameter, round steel bars, hot-dip galvanized after fabrication. Finish to match gates. Provide galvanized-steel pipe strikes to receive cane bolts in both open and closed positions.
- I. Finish exposed welds to comply with NOMMA Guideline 1, Finish #2 - completely sanded joint, some undercutting and pinholes okay.
- J. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A 123/A 123M. For hardware items, hot-dip galvanize to comply with ASTM A 153/A 153M.

2.4 STEEL AND IRON

- A. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Bars (Pickets): Hot-rolled, carbon steel complying with ASTM A 29/A 29M, Grade 1010.
- C. Tubing: ASTM A 500/A 500M, cold-formed steel tubing.
- D. Bar Grating: NAAMM MBG 531.
 - 1. Bars: Hot-rolled steel strip, ASTM A 1011/A 1011M, Commercial Steel, Type B.
 - 2. Wire Rods: ASTM A 510.
- E. Uncoated Steel Sheet: Hot-rolled steel sheet, ASTM A 1011/A 1011M, Structural Steel, Grade 45 or cold-rolled steel sheet, ASTM A 1008/A 1008M, Structural Steel, Grade 50.
- F. Galvanized-Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 50, with G90 coating.
- G. Aluminum-Zinc, Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50, with AZ60 coating.

H. Castings: Either gray or malleable iron unless otherwise indicated.

1. Gray Iron: ASTM A 48/A 48M, Class 30.
2. Malleable Iron: ASTM A 47/A 47M.

2.5 MISCELLANEOUS MATERIALS

- A. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Section 033000 "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch maximum aggregate size or dry, packaged, normal-weight concrete mix complying with ASTM C 387/C 387M mixed with potable water according to manufacturer's written instructions.
- B. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M and specifically recommended by manufacturer for exterior applications.

2.6 METALLIC-COATED-STEEL FINISHES

- A. Surface Preparation: Clean surfaces with nonpetroleum solvent so surfaces are free of oil and other contaminants. After cleaning, apply a zinc-phosphate conversion coating suited to the organic coating to be applied over it. Clean welds, mechanical connections, and abraded areas, and repair galvanizing to comply with ASTM A 780/A 780M.
- B. Powder Coating: Immediately after cleaning and pretreating, apply two-coat finish consisting of zinc-rich epoxy prime coat and TGIC polyester topcoat, with a minimum dry film thickness of 2 mils for topcoat. Comply with coating manufacturer's written instructions to achieve a minimum total dry film thickness of 4 mils.
1. Color and Gloss: As selected by Architect from manufacturer's full range.
 2. Comply with surface finish testing requirements in ASTM F 2408.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.
 - 1. Construction layout and field engineering are specified in Section 017300 "Execution."

3.3 DECORATIVE FENCE INSTALLATION

- A. Install fences according to manufacturer's written instructions.
- B. Install fences by setting posts as indicated and fastening rails and infill panels to posts.
- C. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth as indicated on the Drawings.
- D. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 2 inches above grade. Finish and slope top surface to drain water away from post.
 - b. Concealed Concrete: Top set below grade as indicated on Drawings to allow covering with surface material. Slope top surface of concrete to drain water away from post.
 - 3. Posts Set in Concrete: Extend post to within 6 inches of specified excavation depth, but not closer than 3 inches to bottom of concrete.
 - 4. Space posts uniformly at on center spacing as indicated on the Drawings.

3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's personnel to adjust, operate, and maintain gates.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 323129.01 - WOOD FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Wood fences and gates.
- B. Related Requirements:
 - 1. Section 033000 "Cast-in-Place Concrete" for concrete used for fence post footings.
- C. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.3 REFERENCES

- A. National Lumber Grades Authority (NLGA).
- B. West Coast Lumber Inspection Bureau (WCLIB).
- C. WWPA – Western Wood Products Association

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Fence and gate posts, and rails. Include wood species, grade, finish, and actual dimensions.
 - 2. Fence hardware.
 - 3. Gate hardware.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work. Include foundations. Show accessories, hardware, gate operation, and operational clearances.
- C. Samples:

1. Finishes: For each type of exposed finish required, samples of manufacturer's standard size.

D. Product Schedule: Use same reference numbers as those on Drawings.

1.5 INFORMATIONAL SUBMITTALS

A. Qualifications: For installer.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver fence materials wrapped or crated to provide protection during transit and Project-site storage.

1. Store under cover in an enclosed environment at Project site.

1.7 PROJECT CONDITIONS

1. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.8 WARRANTY

A. Special Warranty: Manufacturer's standard form in which Installer agrees to repair or replace components of wood fences and gates that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 POST AND RAIL FENCE (NATURAL AREA FENCING)

A. Line posts.

1. Species: Western Red Cedar.
2. Surface: Rough Sawn.
3. Size: 6 inches by 6 inches full sawn unless otherwise noted on the Drawings.
4. Grade: Appearance Knotty.
5. Grading Agency: NLGA 130c, WCLIB 130cc.
6. Moisture Content: Green.

B. Rails.

1. Species: Western Red Cedar.
2. Surface: Rough Sawn.
3. Size: 2 inches by 6 inches full sawn unless otherwise noted on the Drawings.
4. Grade: Appearance Knotty.
5. Grading Agency: NLGA 130c, WCLIB 130cc.
6. Moisture Content: Green.

2.2 FASTENERS

- A. General: Hot-dip zinc-coated (galvanized) steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.
- B. Provide the following: Hot-dip galvanized steel carriage bolts, nuts, and washers in sizes as indicated on the Drawings or as necessary to achieve configuration shown on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION

- A. General: Set all fencing as indicated on Drawings. Notify Design Team and Engineer of any proposed deviations from the plan layout and obtain approval prior to construction. Provide fence that is plumb and straight, both in-line and transverse to the fence.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- C. Post Setting: Set posts in concrete to indicated spacing into firm, undisturbed soil.
 - 1. Concrete: Set all posts in concrete designed to have a minimum compressive strength of not less than 3,000 psi at 28 days. Allow concrete footings to set not less than seven (7) days before rails and wire fabric are installed.
 - 2. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 3. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect above ground portion of posts from concrete splatter.
 - a. Exposed Concrete, where indicated on the Drawings: Extend 2 inches above grade; shape and smooth to shed water.
 - b. Concealed Concrete, where indicated on the Drawings: Top set below grade, as indicated on Drawings, to allow covering with surface material.

- D. Line Posts: Space line posts uniformly at 6-feet on center unless otherwise noted on the Drawings.
- E. Rails: Set rails parallel to the finish grade, unless otherwise noted on the Drawings, and parallel to each other. Secure to posts with hardware.
 - 1. Drill posts and rails to receive hardware uniformly and perpendicular to face of lumber. Use a template or jig to ensure uniform pattern and relationship of drilled holes/hardware to edges of lumber.
 - 2. Use sharp bits and ensure holes are drilled cleanly. Use scrap wood set firmly against back of lumber being drilled to prevent blowout of lumber. Remove any splintering and ease exposed edges (nut side) of drilled holes.
 - 3. Tighten hardware for snug fit. Do not over-torque causing washer to bend or exposed head of carriage bolt to draw into face of lumber. Re-tighten periodically during course of work and as required accommodate wood shrinkage or thermal movements.

3.4 CLEANING AND PROTECTION

- A. During fence construction, keep adjacent paving and construction clean and work area in an orderly condition. .
- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Engineer's property.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 328400 - IRRIGATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Work of this section includes installation of temporary and permanent irrigation systems, including:
 - 1. Piping.
 - 2. Encasement for piping.
 - 3. Manual valves.
 - 4. Pressure-reducing valves.
 - 5. Automatic control valves.
 - 6. Manual drain valves.
 - 7. Transition fittings.
 - 8. Dielectric fittings.
 - 9. Miscellaneous piping specialties.
 - 10. Sprinklers.
 - 11. Quick couplers.
 - 12. Drip irrigation specialties.
 - 13. Controllers.
 - 14. Boxes for automatic control valves.
- B. Related Sections.
 - 1. Section 220519 "Meters and Gages for Plumbing Piping" for water metering requirements, where applicable.
 - 2. Section 221113 "Facility Water Distribution Piping" for water supply from exterior water service piping, water meters, protective enclosures, and backflow preventers; where applicable
 - 3. Section 230923.14 "Flow Instruments" for water metering equipment, where applicable.
 - 4. Section 312000 "Earth Moving" for excavating, trenching, and backfilling for irrigation lines and equipment.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.

1.4 REFERENCES

- A. Conform to requirements of reference information listed below except where more stringent requirements are shown or specified in Contract Documents.
 - 1. American Society for Testing and Materials (ASTM): Specifications and test methods referenced in this section.
 - 2. Underwritten Laboratories (UL): UL wires and cables.
 - 3. National Sanitation Foundation (NSF): Piping and backflow prevention.
 - 4. American Water Works Association: Piping and backflow prevention.

1.5 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Circuit Piping: Downstream from control valves to sprinklers, specialties, and drain valves. Piping is under pressure during flow.
- C. Drain Piping: Downstream from circuit-piping drain valves. Piping is not under pressure.
- D. ET Controllers: EvapoTranspiration Controllers. Irrigation controllers which use some method of weather based adjustment of irrigation. These adjusting methods include use of historical monthly averages of ET; broadcasting of ET measurements; or use of on-site sensors to track ET.
- E. Main Piping: Downstream from point of connection to water distribution piping to, and including, control valves. Piping is under water-distribution-system pressure.
- F. Low Voltage: As defined in NFPA 70 for circuits and equipment operating at less than 50 V or for remote-control, signaling power-limited circuits.

1.6 PERFORMANCE REQUIREMENTS

- A. Irrigation zone control shall be automatic operation with controller and automatic control valves.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards. Maintain 100 percent irrigation coverage of areas indicated.

1.7 ACTION SUBMITTALS

- A. Product Data: For each type of product, material, and equipment to be used.
 - 1. Provide material summary list that include manufacturer, model name, and description.
 - 2. Provide manufacturer's product data sheets that include rated capacities, operating characteristics, electrical characteristics, dimensions, details, and furnished specialties and accessories.

1.8 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installer demonstrating compliance with Quality Assurance requirements herein.
 - 1. List a minimum of three (3) projects completed within the previous three (3) years similar in scope and complexity to specified work. Include the following:
 - a. Name of project
 - b. Location.
 - c. Owner.
 - d. Brief description of work.
 - e. Project cost.
 - f. Date of completion.
 - 2. Associated Landscape Contractors Association of Colorado (ALCC), Certified Irrigation Technician certificate for one or more persons that will be on site for entirety of work.
- B. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.
- C. Field quality-control reports.

1.9 CLOSEOUT SUBMITTALS

- A. Prepare and provide in accordance with requirements of Division 01 Closeout Procedures.
- B. Record Drawings (As-builts).
 - 1. At onset of irrigation installation, secure printed copy of original irrigation design drawings from Engineer. At the end of each day, revise prints for work accomplished that day in red ink. As-built drawings shall be brought up-to-date at the close of the working day each Friday by a qualified draftsman. A print of record plans shall be available at the Project Site. Indicate zoning changes and non-pressure pipe changes on weekly as-built drawings. At the completion of Project, prior to installation of water meters, secure digital copy of irrigation design drawings from Engineer and record as-built information in AutoCAD compatible format. Provide digital as-built drawings saved as PDF format files to Engineer. Dimension from (2) permanent points of reference (building corners, sidewalk, road intersections, permanent structures, etc.), location of following items:
 - a. Point of connection.
 - b. Routing of irrigation pressure lines. Provide dimensions for each 100 linear feet (maximum) along each routing and for each change of direction.
 - c. Irrigation control valves.
 - d. Quick coupling valves.
 - e. Drain valves.
 - f. Wire splice boxes.
 - g. Control wire routing if not with pressure mainline.
 - h. Gate valves.
 - i. Sleeves.
 - j. Flush valves.
 - k. Other related equipment as directed.

2. Make dimensions accurately at the same scale used in the original drawings, or larger. Notes and dimension lettering must be legible.
 3. The irrigation legend must be changed to accurately reflect the irrigation equipment installed, if such equipment is not the same as originally specified on the Contract Documents. This includes flow rates, effective spray diameter/radius, and operating pressure of all irrigation heads.
 4. Engineer will not certify any pay request submitted by the Contractor if the as-built drawings are not current, and processing of pay request will not occur until as-builts are updated.
- C. Products and Materials: Provide electronic set of complete list of products and materials indicating manufacturer, model number, and description. Use of manufacturer cut sheets and product data from approved submittals may be used.
- D. Operation and Maintenance Data: For sprinklers, controllers and automatic control valves to include in operation and maintenance manuals. Submit (3) copies.
1. Start-up procedures.
 2. Winterization procedures.
 3. Controller Charts:
 - a. Prepare controller charts based on reviewed as-built drawings, incorporating changes requested by Architect and Engineer.
 - b. Provide on controller chart for each automatic controller installed.
 - 1) Chart shall be a reproduction from Record Drawings. Scale as necessary and to maximize size feasible, to fit controller door and ensure legibility.
 - 2) Chart shall depict all areas covered by controller in which it is located.
 - c. Identify area of coverage of each remote control valve, using a distinctly different pastel color drawing over entire area of coverage.
 - d. Following review of charts by Consultant, they shall be hermetically sealed between two layers of (3)-mil thick plastic sheet.
 - e. Charts shall be completed and reviewed prior to final review of irrigation system.
 4. Coordinate and provide scheduling/precipitation instructions with Town's maintenance personnel.
- 1.10 MAINTENANCE MATERIAL SUBMITTALS (EXTRA STOCK)
- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents. Provide to the Town prior to Final Acceptance.
1. One (8) foot valve key for operation of manual drain valves.
 2. One key and one hose swivel compatible with quick couplers installed.
 3. Padlock and keys for controller enclosure.
- 1.11 MAINTENANCE SERVICES
- A. Start-Up Winterization: Include start-up and winterization of complete system during full term of warranty period.

1. Start-up: Reopen, operate, and adjust system accordingly following during April. Provide Town with at least (7) days notice of scheduled work, or perform within (3) days notification by Town.
2. Winterization: System shall be voided of water using compressed air or similar method reviewed and accepted by Engineer.

1.12 QUALITY ASSURANCE

A. Installer Qualifications:

1. An employer of workers that include a Professional Technical Class member of the American Society of Irrigation Consultants.
2. Installer to supply one or more persons on-site at all times of irrigation installation that is an Associated Landscape Contractors Association of Colorado (ALCC), Certified Irrigation Technician.
3. Installer shall have considerable and experience in the installation of commercial grade irrigation system(s) comparable in size, complexity, and scope of specified system in accordance with recognized standards for professional workmanship.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Special Requirements:

1. Work involving substantial plumbing for installation of ductile iron or copper piping, backflow preventer(s), and related work shall be executed by licensed and bonded plumbers.
2. Tolerances: Specified depths of mains and laterals and pitches of pipes or minimums. Settlement of trenches is cause for removal of finish grade treatment, refilling, compaction, and repair of finish grade treatment.
3. Coordination with other Contractors: Protect, maintain, and coordinate work with work of other sections.
4. Damage to other improvements or work: Contractor shall replace or repair damage to grading, soil preparation, seeding, sodding, or planting done under other sections during work associated with installation of irrigation system at no cost to the Town.
5. Water delivery interruption: When working on an existing irrigation system, the Irrigation Contractor shall contact the Engineer and inform them at least (72) hours in advance of any water interruption that is required.
6. Work requiring high voltage electrical wiring, grounding, and related work shall be executed by licensed and bonded electrician(s). Contractor shall secure a permit for work at least (48) hours prior to start of installation.

D. Pre-construction Conference:

1. Contractor shall schedule and conduct a conference to review in detail, quality control and construction requirements for equipment and materials used to perform the Work. Conference shall be scheduled not less than (10) days prior to the commencement of Work. All parties required to be in attendance shall be notified not less than (7) days prior to the date of the conference. Contractor shall notify qualified representatives of each party concerned with Work, including but not limited to:
 - a. Engineer.
 - b. Contractor's Superintendent.

- c. Installing Contractor.
 - d. Other trades required to coordinate with work or may be impacted by work.
- 2. Minutes of conference shall be recorded and distributed by Contractor to all parties in attendance within (5) days of conference.

1.13 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, unload, store, and handle materials, packaging, bundling, and products in dry, weatherproof condition and in manner to prevent damage, breakage, deterioration, ignitio, and vandalism. Deliver in original, unopened packaging prominently displaying manufacturer's name, volume, quantity, contents, instructions, and conformance to local, state, and federal law. Remove and replace cracked, broken, or contaminated items or elements prematurely exposed to moisture, inclement weather, snow, ice, temperature extremes, fire, or jobsite damage.
- B. Piping: Exercise care in handling, loading, and storing of piping.
 - 1. All piping shall be transported in a vehicle that allows length of pipe to lie flat so as not to subject it to undue bending or concentrated external loads.
 - 2. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.
 - 3. Store plastic piping protected from direct sunlight. Support to prevent sagging and bending.
 - 4. All sections of pipe that have been damaged shall be discarded. Any damaged pipe that has been installed shall be replaced with new pipe.

1.14 PROJECT CONDITIONS

- A. Interruption of Existing Water or Electrical Services: Do not interrupt service to facilities occupied by Engineer or others unless permitted under the following conditions and then only after arranging to provide temporary water and/or electric service according to requirements indicated:
 - 1. Notify Engineer no fewer than seven (7) days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of service without Engineer's written permission.
 - 3. Temporary water and electrical service shall be provided at no cost to the Town and until permanent service is restored.
- B. Protection of Property:
 - 1. Preserve and protect all adjacent existing and new features including but not limited to trees, plants, monuments, and paved areas from damage due to work of this section. In the event damage does occur, all damage to inanimate items shall be completely repaired or replaced to satisfaction of the Town, and all injuries to living plants shall be repaired or replaced by the Town. All costs of such repairs shall be charged to and paid by the Contractor.

2. Protect buildings, walks, walls, and other property from damage. Erect and maintain barricades, warning signs and lights, and provide guards as necessary or required to protect all persons on the site. Damage to asphalt, concrete, or other building material surfaces shall be repaired or replaced at no cost to the Town. Restore disturbed areas to original condition.

C. Existing Trees:

1. All trenching or other work under limb spread of any and all evergreens or low-branching deciduous material shall be done by hand or by other methods so as to prevent damage to limbs or branches.
2. Where it is necessary to excavate adjacent to existing trees, use all possible care to avoid injury to trees and tree roots. Excavation in areas where 2-inch in diameter and larger roots occur shall be done by hand. Roots 2-inches and larger in diameter shall be tunneled under and heavily wrapped in water-soaked burlap to prevent scarring or excessive drying. Where a trenching machine is operated close to trees having roots smaller than 2-inches in diameter, roots exposed through the wall of trench adjacent to tree shall be hand-trimmed, using sterile and sharp pruning shears, making clean cuts through roots. Trenches adjacent to trees shall be closed within (24) hours, and when this is not possible, shall be kept shaded with moistened burlap or canvas. Open trenches shall be protected at all times from injury to persons.

D. Protection and Repair to Underground Lines:

1. Request proper utility company to stake exact location, including depth, of all underground utilities including but not limited to electric, gas, sewer, and telecom lines before proceeding with excavation. Take all precautions necessary to protect underground utilities from damage. If damage does occur, damage shall be repaired by utility owner. All costs of such repairs shall be paid by Contractor unless other arrangements have been made.
2. Request Town, in writing, to locate all private utilities (i.e. electrical service to outdoor lighting) before proceeding with excavation. If, after such request and necessary staking, private utilities which were not staked are encountered and damaged by installer, they shall be repaired by the Town at no cost to the installer. If Contractor damages staked or located private utilities, they shall be repaired by Utility Owner at Contractor's expense unless other arrangements have been made.

E. Replacement of Paving and Curbs: Where trenches and lines cross existing roadways, paths, curbing, etc., damage to these shall be kept to minimum and shall be restored to original condition.

1.15 WARRANTY/GUARANTY

A. Manufacturer shall warrant materials against defects for a period of (2) year from date of Substantial Completion. Installer(s) shall guarantee workmanship for same period.

1. The Contractor shall promptly furnish and install, at no cost to the Town, any and all parts which prove defective in material or workmanship.
2. Settling of backfilled trenches occurring during the warranty period shall be repaired at no cost to the Town, including complete restoration of damaged property and surface conditions.
3. Expenses due to vandalism before Substantial Completion shall be borne by the Contractor.

4. The Town reserves the right to make temporary repairs during the warranty period, as necessary to keep systems in operating condition, without voiding the Contractor's warranty, nor relieving the Contractor of their responsibilities.
5. The Contractor shall make repairs and replacements promptly when notified.
6. The Contractor shall provide hand-watering of any plant material that cannot be watered by the irrigation system. Hand-watering shall continue through winter season for plants unable to receive irrigation during system operation.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

- A. Comply with requirements in the piping schedule for applications of pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.
- B. General Piping.
 1. Pressure supply lines (downstream from backflow prevention units): ASTM D 2241, Class 200, PVC pressure pipe, BE (bell end), 2-inch and 2.5-inch diameter. Size as indicated on the Drawings.
 2. Non-pressure lines: ASTM D 2241, Class 200, SDR-21, PVC, 1-inch minimum diameter. Size as indicated on the Drawings.
 3. PVC sleeving:
 - a. Open trench applications: ASTM D 2241, Class 200, SDR-21, PVC. Size as indicated on the Drawings.
 - b. Direction boring applications: ASTM D-2239, HDPE, SDR-7, 200 psi.
- C. Brass Pipe and Fittings.
 1. Brass Pipe: 85% red brass, ANSI schedule 40, threaded pipe.
 2. Fittings: Medium brass, class 125 (125 pound), threaded.
- D. Copper
 1. Soft Copper Tube (below-grade applications): ASTM B88, Type K, water tube, annealed temper.
 - a. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
 2. Hard Copper Tube (above-grade applications such as backflow prevention device, etc.): ASTM B88, Type K, water tube, drawn temper.
 - a. Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper solder-joint fittings. Furnish wrought-copper fittings if indicated.
- E. PVC Pipe and Fittings.
 1. Identify all pipe with the following indelible markings:
 - a. Manufacturer's name.
 - b. Nominal pipe size.

- c. Schedule of class.
 - d. Pressure rating.
 - e. National Sanitation Foundation (NSF) seal of approval.
 - f. Date of extrusion.
- 2. Bell end pipe: Manufactured from polyvinyl chloride compound in accordance with ASTM D2241 and ASTM D1784; cell classification 1254-B, Type 1, Grade 1.
 - a. All fittings and service tees: Schedule 40 PVC slip by slip, and schedule 80 PVC MIPT and FIPT.

2.2 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick unless otherwise indicated; full-face or ring type unless otherwise indicated.
- B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.
- C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
- D. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- E. Solvent Cements for Joining PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
- F. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer unless otherwise indicated.

2.3 QUICK COUPLING VALVES

- A. Brass two-piece body designed for working pressure of 125 psi; operable with quick coupler. Provide with rubber cover on quick coupler. Key size and type as indicated on the Drawings.

2.4 VALVE BOXES

- A. Isolation valves, quick coupling valves, drain valves, flush valves, wire splices, and ground rods: Carson Industries (mfr) 10-inch round valve box with bolt-down T-cover, as indicated on the Drawings.
- B. Electric control valves (1-inch and 1.5-inch): Carson Industries (mfr) Super Jumbo 1324-15 with bolt-down lid.
- C. Electric control valves (2-inch): Carson Industries (mfr) Super Jumbo XL 1730-18 with bolt-down lid.

2.5 ELECTRICAL CONTROL WIRING

- A. Low Voltage.

1. Electrical Control Wire: AWG, UFUL approved, No. 14, direct burial, solid conductor copper wire.
2. Common Wire: AWG, UFUL approved, No. 14, direct burial, solid copper wire.

B. Wire Colors:

1. Control/Hot Wires: Red.
2. Extra Control/Hot Wires: Black.
3. Common Wire: White.
4. Extra Common Wire: Yellow.
5. Data Wire: Shielded Cable.

C. High Voltage: Type required by local codes and ordinances, of proper size to accommodate needs of equipment being serviced.

2.6 ELECTRIC CONTROL VALVES

- A. Description: Brass body, normally closed, diaphragm type with manual-flow adjustment, manual bleed nut, and operated by 24-V ac solenoid.
- B. Valves with flows above 5 GPM: Rainbird (mfr.) EFB-CP-PRS-D.
- C. Valves with flows less than 5 GPM: Rainbird (mfr.) PED-PRS-D.

2.7 MANUAL DRAIN VALVES

- A. Manual Drain Valves: Manufacturers: Subject to compliance with requirements, provide products as indicated on the Drawings.
 1. Description:
 - a. Standard: AWWA C800.
 - b. NPS 1 and Smaller Pressure Rating: 100 psig minimum.
 - c. NPS 1-1/4 to NPS 2 Pressure Rating: 80 psig minimum.
 - d. Body Material: Brass with ground-key plug.
 - e. End Connections: Matching piping.
 - f. Stem: With wide-tee head.
- B. Shutoff Rods for Manual Drain Valve Casings: Furnish steel, tee-handle shutoff rod(s) with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve for Project.

2.8 PRESSURE-REDUCING VALVES

- A. Pressure Reducing Valves: Subject to compliance with requirements, provide products as indicated on the Drawings.
 1. Description:
 - a. Standard: ASSE 1003.
 - b. Body Material: Bronze for NPS 2 and smaller; cast iron for NPS 2-1/2 and NPS 3.

- c. Pressure Rating: Initial pressure of 175 psig.
- d. Temperature Rating: At least 140 deg. F.

- B. Water Control Valves: Subject to compliance with requirements, provide products as indicated on the Drawings.

2.9 AUTOMATIC CONTROL VALVES

- A. Manufacturers: Subject to compliance with requirements, provide products as indicated on the Drawings.
- B. Description: Brass body, normally closed, diaphragm type with manual-flow adjustment, and operated by 24-V ac solenoid

2.10 AUTOMATIC DRAIN VALVES

- A. Description: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig.

2.11 SPRINKLERS

- A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure. All heads of a particular function (i.e. spray vs rotor) shall be of the same manufacturer and marked with manufacturer's name and model in a such a way that components can be identified without removal from the system.

- 1. Pop-up Sprinkler Heads: Rainbird (mfr.) 1800 SAM PRS.
- 2. Rotary/Gear Drive Sprinkler Head: Hunter Industries (mfr.) I-20 SS and I-25 SS.

2.12 DRIP IRRIGATION

- A. Provide fabricated riser units as indicated on the Drawings, with riser nipples of the same size as riser opening in sprinkler body.

- 1. Drip Irrigation for Beds: Netafim (mfr.) CV Techline Dripline.
- 2. Drip Zone Indicator Heads: Rainbird (mfr.) 1800 SAM PRS.

2.13 CONTROLLERS

- 1. Toro (mfr.) Sentinel series, model as indicated on the Drawings.
- 2. Exterior Control Enclosure: Prefabricated, NEMA 250, Type 4, weatherproof, stainless steel pedestal enclosure with locking cover, as indicated on the Drawings.

2.14 RAIN SENSOR

- A. Hunter (mfr.) Wireless Rain Click.

PART 3 - EXECUTION

3.1 LANDSCAPE PLAN REVIEW AND COORDINATION

- A. Contractor will be held responsible for coordination between landscape and irrigation system installation. Landscape materials locations shown on the Drawings (i.e. Landscape Plan, Planting Plan, etc) shall take precedence over the irrigation system equipment locations. If irrigation equipment is installed in conflict with the landscape material locations shown on the Drawings, the Contractor will be required to relocate the irrigation equipment, as necessary, at the Contractor's expense.

3.2 STATIC PRESSURE VERIFICATION

- A. Contractor shall field verify the static pressure at the project site, prior to commencing work or ordering irrigation materials, and submit findings, in writing, to the Engineer. If Contractor fails to verify static water pressure prior to commencing work or ordering irrigation materials, Contractor shall assume responsibility for all costs required to make system operational and the costs required to replace any damaged landscape material. Damage shall include all required material costs, design costs, and plant replacement costs.

3.3 INSPECTION

- A. Examine areas and conditions under which work of this section is to be performed. Do not proceed with work until satisfactory conditions have been corrected.
 - 1. Grading operations with the exception of final grading, shall be completed and approved by Engineer before staking or installation of any irrigation system equipment begins.

3.4 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Section 312000 "Earth Moving."
- B. Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

3.5 PREPARATION

- A. Staking shall occur as follows:
 - 1. Mark, with paint, routing of pressure supply line and secondary feeder pipe. Contact Engineer (48) hours in advance and request review of staking. Engineer will advise installer as to the amount of staking to be prepared. Engineer will review staking and direct changes if required.
 - 2. If project has significant topography, free-form planting beds, or other amenities which could require alteration of irrigation equipment layout as deemed necessary by Engineer, do not install irrigation equipment in these areas until Engineer has reviewed equipment staking.

- B. Install sleeving under asphalt paving and concrete walks, prior to concrete and paving operations, to accommodate piping and wiring. Compact backfill around sleeves to 95% Standard Proctor Density within 2% of optimum moisture content in accordance with ASTM D698 under all pavement.
- C. Trenching: Trench excavation shall follow, to the extent possible, layout shown on the Drawings. Dig trenches straight and support pipes continuously on bottom of trench. Trench bottoms shall be clean and smooth with all rock and organic debris removed.
 - 1. Clearances:
 - a. Main Pressure Line: Make trenches of sufficient width, 6-inches minimum, to properly assemble and position pipe in trench.
 - b. Secondary Pipe: Trenches shall have a minimum width of 4-inches.
 - c. Line Clearance: Provide not less than 6-inches of clearance between each line, and not less than 12-inches of clearance between lines of other trades.
 - 2. Pipe and Wire Depth to Finish Grade:
 - a. Pressure Supply Piping: 24-inches minimum from top of pipe.
 - b. PVC Sleeving: At specified pipe or wire depth, or 18-inches minimum under pavement.
 - c. Non-pressure Piping (rotor): 18-inches minimum from top of pipe.
 - d. Non-pressure Piping (pop-up or drip): 12-inches minimum from top of pipe.
 - e. Control Wiring: Side of pressure mainline or 24-inches minimum from top of wire bundle where installed separately from mainline trench(es).
 - 3. Boring will be permitted only where pipe passes under obstruction(s) which cannot be removed. In backfilling bore, final density of backfill shall match that of surrounding soil. It is acceptable to use sleeves of suitable diameter installed by directional boring, with pipe installed through sleeve. No pipe joints are allowed within sleeves under 18 linear feet. Observe same precautions as though pipe were installed in open trench.
 - 4. Vibratory Plow: Not permitted unless authorized in writing by Engineer.

3.6 INSTALLATION

- A. Locate other equipment as near as possible to locations designated on the Drawings. Deviations shall be reviewed by Engineer prior to installation.
- B. PVC Piping: Snake pipe in trench to extent possible to allow for expansion and contraction. Do not install pipe when air temperature is below 40 degrees (F). Place manual drain valves at low points and dead ends of pressure supply piping to ensure complete drainage of system. When pipe laying is not in-progress, or at end of each day, close pipe ends with tight plug or cap. Perform work in accordance with best practices prevailing in piping trades.
 - 1. Solvent-weld PVC pipe: Lay pipe and make all plastic-to-plastic joints in accordance with manufacturer's recommendations.
 - 2. Gasketed end pipes:
 - a. RT pipe: None required.
 - b. Thrust blocking: Located, sized, and configured as indicated on the Drawings.

- c. Flexible Plastic (polyethylene) pipe: None required.

C. Joint Construction.

1. Ream ends of pipes and tubes and remove burrs.
2. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
3. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - a. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - b. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
4. Flanged Joints: Select rubber gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
5. Copper-Tubing Brazed Joints: Construct joints according to CDA's "Copper Tube Handbook," using copper-phosphorus brazing filler metal.
6. Copper-Tubing Soldered Joints: Apply ASTM B 813 water-flushable flux to tube end unless otherwise indicated. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy (0.20 percent maximum lead content) complying with ASTM B 32.
7. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
 - a. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
 - b. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
 - c. PVC Nonpressure Piping: Join according to ASTM D 2855.

D. Control Wiring.

1. Low Voltage Wiring:
 - a. Bury control wiring between controller and electric valves in pressure supply line trenches.
 - b. Bundle all 24 volt wires at 10-foot intervals and lay with pressure supply line pipe to one side of the trench.
 - c. Provide an expansion loop at every pressure pipe angle fitting, every electric control valve location (in valve box), and every 500 linear feet. Form expansion loop by wrapping wire at least (8) times around a 3/4-inch pipe and withdrawing pipe.
 - d. Make all splices and E.V.C. connections using 3M DBY and DBR connectors or similar UL listed dry-splice method.

- e. Install all control wire splices not occurring at a control valve in a separate Carson Industries (mfr) 10-inch round valve box with bolt-down T-cover. Brand lid with WS in 1-inch high letters minimum.
 - f. Install one control wire for each control valve.
 - g. Run (4) spare #14 AWG UFUL control wires and one spare common wire from controller pedestal to the end of each and every leg of mainline. Label spare wires at controller and wire stub box.
 - h. Cap all spare wire terminations with DBY dry-splice kits.
- 2. High Voltage Wiring for Automatic Controller:
 - a. See electrical drawings for complete requirements.
- E. Valves
 - 1. Pressure-Reducing Valves: Install as specified and indicated on the Drawings.
 - 2. Drain Valves: Install in underground piping in boxes for automatic control valves, and as indicated on the Drawings.
 - 3. Electrical Control Valves: Install as specified and indicated on the Drawings.
 - 4. Quick Coupling Valves: Install as specified and indicated on the Drawings.
 - 5. Gate/Isolation Valves: Install as specified and indicated on the Drawings.
 - 6. Air Release Valves: Install as specified and indicated on the Drawings.
 - 7. Valve boxes: Install one valve box for each valve required. Install gravel after compaction of subgrade and prior to setting of valve box.
- F. Sprinklers.
 - 1. Install as specified and indicated on the Drawings.
 - 2. Install sprinklers after hydrostatic test is completed.
 - 3. Install sprinklers at manufacturer's recommended heights.
- G. Drip Irrigation.
 - 1. Install as specified and indicated on the Drawings.
- H. Controller.
 - 1. Equipment Mounting: Install exterior freestanding controllers, where indicated on the Drawings, in prefabricated enclosure secured to concrete pad.
 - a. Verify in field with Engineer, final location for controller.
 - b. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - c. Install anchor bolts to elevations required for proper attachment to supported equipment.
- I. Install control cable in same trench as irrigation piping and at least 2 inches below piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

- J. Backfilling: Do not begin backfilling until required system tests have been completed. Backfilling shall not be done in freezing weather except with review and approval of Engineer. Leave trenches slightly mounded to allow for settlement after backfilling is completed. Trenches shall be finish graded prior to walk-through of system by Engineer.
 - 1. Material: Excavated material is generally considered satisfactory for backfill purposes. Backfill material shall be free of rubbish, vegetable matter, frozen materials, and stones larger than 1-inch in maximum dimensions. Do not mix subsoil with topsoil. Material not suitable for backfill shall be hauled away. Contractor shall be responsible for providing suitable backfill if excavated material is unacceptable or not sufficient to meet backfill, compaction, and final grade requirements.
 - 2. Do not leave trenches open for a period of more than (48) hours. Open excavations shall be protected in accordance with OSHA regulations.
 - 3. Compact backfill to 90% Standard Proctor Density, determined in accordance with ASTM D698 in landscape areas utilizing the following methods:
 - 4. Mainline pipe: Mechanical compaction only in 8-inch maxim lifts.
 - 5. Secondary pipe: Mechanical compaction or puddling.
- K. Water meter and all associated improvements are to be installed as specified and indicated on the Drawings, and in conformance with Town of Parker and Parker Water and Sanitation District standards and specifications.
- L. Sleeving Under Paving:
 - 1. Provide for a minimum cover of 18-inches between top of sleeve and the bottom of the aggregate subbase for all pressure and non-pressure piping installed under asphalt or concrete paving.
 - 2. Sleeving located under areas where asphalt or concrete paving will be installed shall be bedded with sand, a layer 6-inches below pipe and a layer 6-inches above pipe.
 - 3. Compact backfill material in 6-inch lifts at 95% Standard Proctor Density determined in accordance with ASTM D698 under pavement using mechanical compaction devices.
 - 4. Set in place, cap, and pressure test all piping under paving, in presence of Engineer prior to backfilling and paving operations.
 - 5. Sleeving under existing walks or pavements shall be done by directional boring. Where cutting or removal of pavements is necessary, it shall be done at no cost to the Town. Obtain permission to cut or remove pavement from Engineer.
- M. Identify system components. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."
- N. Equipment Nameplates and Signs: Install engraved plastic-laminate equipment nameplates and signs on each automatic controller.
 - 1. Text: In addition to identifying unit, distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.
- O. Warning Tapes: Arrange for installation of continuous, underground, detectable warning tapes over underground piping during backfilling of trenches. See Section 312000 "Earth Moving" for warning tapes.

3.7 FIELD QUALITY CONTROL

- A. Flushing: After piping, risers, and valves are in place and connected, but prior to installation of sprinkler heads, quick coupler assemblies, and hose valves, thoroughly flush piping system under full head of water pressure from dead-end fittings. Maintain flushing for (5) minutes through furthestmost valves. Cap risers after flushing.
- B. Testing: Conduct tests in presence of Engineer's Representative. Provide Engineer's Representative at least (48) hours advance notice of scheduled testing. Supply force pump and all other equipment. Conduct tests in presence of Engineer's Representative. Provide Engineer's Representative at least (48) hours advance notice of scheduled testing. Supply force pump and all other equipment.
 - 1. Leak Test: After backfilling and installation of all control valves, fill pressure supply line with water, and pressurize to 40 psi over the designated static pressure or 120 psi, whichever is greater, for a period of (2) hours.
 - 2. Test is acceptable if no loss of pressure is evident during the test period.
 - 3. Detect and repair leaks.
 - 4. Retest system until test pressure can be maintained for duration of test period.
 - 5. Before final acceptance, pressure supply line shall remain under pressure for a period of (48) hours.
 - 6. Prepare test and inspection reports.
- C. Walk-Through for Substantial Completion:
 - 1. Arrange for Engineer's Representative presence at least (48) hours in advance of scheduled walk-through.
 - 2. Entire system shall be completely installed and operational prior to scheduling of walk-through
 - 3. Operate each zone in its entirety in presence of Engineer's Representative and open all valve boxes if directed.
 - 4. Generate a punch-list of items to be corrected prior to Final Completion.
 - 5. Furnish all materials and perform all work required to correct all inadequacies of coverage due to deviations from Contract Documents.
- D. Walk-Through for Final Completion:
 - 1. Arrange for Engineer's Representative presence at least (48) hours in advance of scheduled walk-through.
 - 2. Show evidence to Engineer's Representative that the Town has received all accessories, charts, record drawings, and equipment as required prior to Walk-Through for Final Completion.
 - 3. Operate each zone in its entirety in presence of Engineer's Representative at time of walk-through to demonstrate correction of all incomplete or deficient items.
 - 4. Items deemed not acceptable by Engineer's Representative shall be reworked to complete satisfaction of Engineer's Representative.
 - 5. If after request to Engineer's Representative for walk-through for final completion of irrigation system, Engineer's Representative finds items during walk-through which have not been properly adjusted, reworked, or replaced as indicated on Punch-List, Contractor shall be charged for all subsequent walk-throughs. Funds will be withheld from final payment and/or retainage to Contractor, in amount equal to additional time and expenses required by Engineer's Representative to conduct and document further walk-throughs as deemed necessary to ensure compliance with Contract Documents.

3.8 ADJUSTING

- A. Adjust settings of controllers.
- B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- C. Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch above, finish grade.
- D. All indicator heads shall be set perpendicular to finish grade unless otherwise indicated.
- E. If it is determined that irrigation adjustments will provide proper coverage and improved water distribution as determined by Engineer's Representative, Contractor shall make such adjustments prior to Final Acceptance, as directed, at no additional cost to the Town. Adjustments may also include changes in nozzle sizes, degrees of arc, and control valve throttling.
- F. Areas which do not conform to designate operational requirements due to unauthorized changes or poor installation practices shall be immediately corrected at no additional cost to the Town.

3.9 CLEANING

- A. Maintain continuous cleaning operation throughout duration of work. Dispose of, off-site, at no additional cost to the Town, all trash, excess soil, or debris generated by installation of irrigation system.

3.10 DEMONSTRATION

- A. Train Town maintenance personnel to adjust, operate, and maintain automatic control valves and controllers, if requested.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 329113 - SOIL PREPARATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes:
 - 1. Topsoil.
 - 2. Planting soils.
 - 3. Organic Soil Amendment (Compost).
 - 4. Inorganic Soil Amendments.
- B. Related Requirements:
 - 1. Section 312000 "Earth Moving" for rough grading requirements.
 - 2. Section 311000 "Site Clearing" for topsoil stripping and stockpiling.
 - 3. Section 328400 "Irrigation" for irrigation systems to be installed in soil.
 - 4. Section 329200 "Turf and Grasses" for placing planting soil for turf and grasses.
 - 5. Section 329300 "Plants" for placing planting soil for plantings.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. AAPFCO: Association of American Plant Food Control Officials.
- C. Backfill: The earth used to replace or the act of replacing earth in an excavation. This can be amended or unamended soil as indicated.
- D. CEC: Cation exchange capacity.
- E. Compost: The product resulting from the controlled biological decomposition of organic material that has been sanitized through the generation of heat and stabilized to the point that it is beneficial to plant growth.
- F. Duff Layer: A surface layer of soil, typical of forested areas, that is composed of mostly decayed leaves, twigs, and detritus.

- G. Imported Soil: Soil that is transported to Project site for use.
- H. Layered Soil Assembly: A designed series of planting soils, layered on each other, that together produce an environment for plant growth.
- I. Manufactured Soil: Soil produced by blending soils, sand, stabilized organic soil amendments, and other materials to produce planting soil.
- J. NAPT: North American Proficiency Testing Program. An SSSA program to assist soil-, plant-, and water-testing laboratories through interlaboratory sample exchanges and statistical evaluation of analytical data.
- K. Organic Matter: The total of organic materials in soil exclusive of undecayed plant and animal tissues, their partial decomposition products, and the soil biomass; also called "humus" or "soil organic matter."
- L. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified as specified with soil amendments, and fertilizers when recommended by soil analysis and directed or approved by Engineer, to produce a soil mixture best for plant growth.
- M. RCRA Metals: Hazardous metals identified by the EPA under the Resource Conservation and Recovery Act.
- N. SSSA: Soil Science Society of America.
- O. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- P. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.
- Q. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil"; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- R. USCC: U.S. Composting Council.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Schedule meeting with GC, landscape subcontractor, irrigation subcontractor, Engineer, and landscape architect not less than two (2) weeks prior to start of Project. Meeting agenda will include the following:
 - a. Review the Project site and document initial conditions with a written description, and photographs and/or videos.
 - b. Identify areas of restoration.
 - c. Identify responsibilities by Others (if any) within and outside the project site.
 - d. Distribute the written description and images to all attendees.

1.5 FINAL COMPLETION MEETINGS

- A. Final Completion Conference: Conduct conference at Project Site.
 - 1. Schedule meeting with GC, landscape subcontractor, irrigation subcontractor, Engineer, and landscape architect not less than two (2) weeks prior to anticipated date of Final Completion. Meeting agenda will include the following:
 - a. Confirm compliance with Contract Documents.
 - b. Confirm completion of restoration responsibilities including maintaining an active irrigation system, to avoid damage to turf and planted areas that could require additional restoration work at Contractor's expense.

1.6 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include recommendations for application and use.
 - 2. Include test data substantiating that products comply with requirements.
 - 3. Include sieve analyses for aggregate materials.
 - 4. Material Certificates: For each type of imported soil before delivery to the site, according to the following:
 - a. Manufacturer's qualified testing agency's certified analysis of standard products.
 - b. Analysis of fertilizers, by a qualified testing agency, made according to AAPFCO methods for testing and labeling and according to AAPFCO's SUIP #25.
 - c. Analysis of nonstandard materials, by a qualified testing agency, made according to SSSA methods, where applicable.
- B. Samples: For each bulk-supplied material, provide in sealed containers labeled with content, source, and date obtained. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of composition, color, and texture.
 - 1. Provide (5) gallon volume for sports field and multi-purpose field applications.
 - 2. Provide (1) gallon volume for all other applications.

1.7 INFORMATIONAL SUBMITTALS

- A. Preconstruction Test Reports: For preconstruction soil analyses specified in "Preconstruction Testing" Article.

1.8 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent, state-operated, or university-operated laboratory; experienced in soil science, soil testing, and plant nutrition; with the experience and capability to conduct the testing indicated; and that specializes in types of tests to be performed.

1.9 SOIL-SAMPLING REQUIREMENTS

- A. General: Extract soil samples according to requirements in this article.
- B. A soil test of on-site topsoil is required.
- C. Sample Collection and Labeling: Have samples taken and labeled by Contractor in presence of Landscape Architect under the direction of the testing agency.
 - 1. Number and Location of Samples: Minimum of six representative soil samples where directed by Landscape Architect for each soil to be used or amended for landscaping purposes.
 - 2. Procedures and Depth of Samples: According to USDA-NRCS's "Field Book for Describing and Sampling Soils."
 - 3. Division of Samples: Split each sample into two, equal parts. Send half to the testing agency and half to Engineer for their records.
 - 4. Labeling: Label each sample with the date, location keyed to a site plan or other location system, visible soil condition, and sampling depth.

1.10 TESTING REQUIREMENTS

- A. General: Perform tests on soil samples according to requirements in this article.
- B. Physical Testing:
 - 1. Soil Texture: Soil-particle, size-distribution analysis by one of the following methods according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods":
 - a. Sieving Method: Report sand-gradation percentages for very coarse, coarse, medium, fine, and very fine sand; and fragment-gradation (gravel) percentages for fine, medium, and coarse fragments; according to USDA sand and fragment sizes.
 - b. Hydrometer Method: Report percentages of sand, silt, and clay.
 - 2. Total Porosity: Calculate using particle density and bulk density according to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
 - 3. Water Retention: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods."
 - 4. Saturated Hydraulic Conductivity: According to SSSA's "Methods of Soil Analysis - Part 1-Physical and Mineralogical Methods"; at 85% compaction according to ASTM D 698 (Standard Proctor).
- C. Chemical Testing:
 - 1. CEC: Analysis by sodium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
 - 2. Clay Mineralogy: Analysis and estimated percentage of expandable clay minerals using CEC by ammonium saturation at pH 7 according to SSSA's "Methods of Soil Analysis - Part 1- Physical and Mineralogical Methods."

3. Metals Hazardous to Human Health: Test for presence and quantities of RCRA metals including aluminum, arsenic, barium, copper, cadmium, chromium, cobalt, lead, lithium, and vanadium. If RCRA metals are present, include recommendations for corrective action.
 4. Phytotoxicity: Test for plant-available concentrations of phytotoxic minerals including aluminum, arsenic, barium, cadmium, chlorides, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, sodium, strontium, tin, titanium, vanadium, and zinc.
- D. Fertility Testing: Soil-fertility analysis according to standard laboratory protocol of SSSA NAPT WERA-103 (Western region), including the following:
1. Percentage of organic matter.
 2. CEC, calcium percent of CEC, and magnesium percent of CEC.
 3. Soil reaction (acidity/alkalinity pH value).
 4. Buffered acidity or alkalinity.
 5. Nitrogen ppm.
 6. Phosphorous ppm.
 7. Potassium ppm.
 8. Manganese ppm.
 9. Manganese-availability ppm.
 10. Zinc ppm.
 11. Zinc availability ppm.
 12. Copper ppm.
 13. Sodium ppm and sodium absorption ratio.
 14. Soluble-salts ppm.
 15. Presence and quantities of problem materials including salts and metals cited in the Standard protocol. If such problem materials are present, provide additional recommendations for corrective action.
 16. Other deleterious materials, including their characteristics and content of each.
- E. Organic-Matter Content: Analysis using loss-by-ignition method according to SSSA's "Methods of Soil Analysis - Part 3- Chemical Methods."
- F. Recommendations: Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated to produce satisfactory planting soil suitable for healthy, viable plants indicated. Include, at a minimum, recommendations for nitrogen, phosphorous, and potassium fertilization, and for micronutrients.
1. Fertilizers and Soil Amendment Rates: State recommendations in weight per 1000 sq. ft. for 6-inchdepth of soil.
 2. Soil Reaction: State the recommended liming rates for raising pH or sulfur for lowering pH according to the buffered acidity or buffered alkalinity in weight per 1000 sq. ft. for 6-inchdepth of soil.
- 1.11 DELIVERY, STORAGE, AND HANDLING
- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and compliance with state and Federal laws if applicable.
- B. Bulk Materials:
1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.

2. Stockpile material on site at a location approved by the Engineer.
3. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
4. Do not move or handle materials when they are wet or frozen.
5. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

PART 2 - PRODUCT

2.1 GENERAL

- A. Provide the following depths of topsoil or amended topsoil (planting soil) as follows:
 1. Trees: Full depth of excavation, approximately 24-inches. Backfill with approved, on-site topsoil blended with organic amendment. If on-site topsoils are not approved for use, backfill with approved, imported topsoil blended with organic amendment.
 2. Native Seed: 4-inch depth. Approved, on-site stockpiled topsoil, no amendment.
 3. Planting Beds: 12 inch depth, amended topsoil. Approved, on-site stockpiled topsoil, blended with organic amendment to create planting soil, may be used.
 4. Turf Sod (non-athletic fields): 6 inch depth, amended topsoil. Approved, on-site stockpiled topsoil, blended with organic amendment to create planting soil, may be used.
 5. Turf Sod (athletic fields): 16-inch depth. Imported, pre-blended topsoil with organic amendment (planting soil).
- B. For all applications, if on-site topsoil is unacceptable as determined by Engineer, imported topsoil is required in necessary volumes to achieve specified depths.

2.2 TOPSOIL

- A. Stockpile clean topsoil on the site. Approved, stockpiled topsoils to be prioritized for use at native seed areas and amended (to create planting soil) for use at tree plantings and planting beds, as quantity allows. Following native seed, tree plantings, and planting bed applications, surplus stockpiled topsoil may be amended (to create planting soil) for use at non-athletic fields. Import supplemental topsoil as required to achieve volume necessary for depths indicated. Spread to depth as follows:
 1. Trees: Full depth of excavation, approximately 24-inches. Backfill with approved, on-site topsoil blended with amendment. If on-site topsoils are not approved for use, backfill with approved, imported topsoil blended with amendment.
 2. Native Seed: 4-inch depth. Approved, on-site stockpiled topsoil, no amendment.
 3. Planting Beds: 12 inch depth, amended topsoil. Approved, on-site stockpiled topsoil, amended to create planting soil, may be used.
 4. Turf Sod (non-athletic fields): 6 inch depth, amended topsoil. Approved, on-site stockpiled topsoil, amended to create planting soil, may be used.
 5. Turf Sod (athletic fields): 16-inch depth. Imported, amended topsoil (planting soil).
 6. For all applications, if on-site topsoil is unacceptable as determined by Engineer, imported topsoil is required in necessary volumes to achieve specified depths.
- B. Amended Topsoil:

1. Suggested Local Source: Submit preliminary sample for approval during submittal phase, followed by pre-application verification sample originating no more than two weeks before application. Suggested local source shall be A-1 Organic, Eaton, Colorado or an approved substitution.

2.3 PLANTING SOILS

- A. General: Soil amendments, fertilizers, and rates of application specified in this article are guidelines that may need revision based on testing laboratory's recommendations after preconstruction soil analyses are performed. Amendments, fertilizers and rates of applications shall be adjusted at Engineer's reasonable discretion.
 1. Mix three-quarters (3/4) approved on-site topsoil, or approved imported topsoil if on-site topsoil is not approved, with one-quarter (1/4) compost amendment by volume.
 2. Incorporate fertilizers as recommended by soil analysis and specific to planting application, and only when directed by Engineer.
- B. Planting-Soil Type, for TURF SOD (athletic fields):
 1. Basis-of-Design: Subject to compliance with requirements, provide the following or approved equivalent.
 - a. Golf and Sport Solutions (mfr) Sandy Loam Athletic Field Topsoil.
 2. Apply at 16-inch depth.
- C. Amending in-place topsoil, where indicated and approved by Engineer: 6 cubic yards of organic compost per 1000 s.f. of turf, seed, or planting area.

2.4 CU STRUCTURAL SOIL

- A. CU-Soil® is a proprietary load-bearing growing media material patented by Cornell University and marketed under the registered trademark, CU-Structural Soil®. Media consists of gap-graded gravels which are made up of crushed aggregate, clay loam, and a hydrogel stabilizing agent. The materials can be compacted to meet pavement design loading requirements and allow for sustainable root growth. Product must be obtained through a licensed producer. Licensed vendors may include but are not limited to:
 1. C&C Sand and Stone Co., 2715 Steel Drive, Colorado Springs, CO 80907, Ph: (719) 477-1000.

2.5 ORGANIC SOIL AMENDMENTS (COMPOST)

- A. Compost: Thoroughly rotted, decomposed, stable, weed free organic matter source derived from agricultural, food, or industrial residuals; yard trimmings, or source-separated or mixed solid waste. This product should contain no substances toxic to plants and shall be reasonably free (less than 1 percent by dry weight) of man-made foreign matter. The compost shall possess no objectionable odors and shall not resemble the raw material from which it derived. The compost parameters should be as follows: Well composted, stable, and weed-free organic matter produced by composting feedstock, and bearing USCC's "Seal of Testing Assurance," and as follows:

1. Basis of of Design Product: Subject to compliance with requirements, provide the following, or approved substitution.
 - a. A1-Organics BioComp - Class 1 Compost.
 2. Source materials: Limited to leaves, grass, source-separated food waste, and brewery residuals.
 3. Soluble-Salt Concentration: Less than 4 dS/m.
 4. Moisture Content: 35 to 55 percent by weight.
 5. Organic-Matter Content: Provide percent of dry weight as recommended by soil reports from a qualified testing agency.
 6. Particle Size: Minimum of 98 percent passing through a 1-inch sieve.
 7. Stability: Stable to highly stable, providing nutrients for plant growth.
 8. Maturity/Growth Screening: Demonstrate ability to enhance plant growth
 9. Suggested Local Source: Submit preliminary sample for approval during submittal phase, followed by pre-application verification sample originating no more than two weeks before application. Suggested local source shall be A-1 Organic, Eaton, Colorado or an approved equal.
- B. No Cyanamid compounds will be permitted in mixed fertilizers.
- C. Nutrient Composition: Per soil analysis.
- D. Fertilizer shall conform to applicable State and Federal laws.
- E. Application of fertilizer should follow rates specified by manufacturer using stand application equipment and installed during amendment and soil preparation.

2.6 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
1. Class: T, with a minimum of 99 percent passing through a No. 8 sieve and a minimum of 75 percent passing through a No. 60 sieve.
 2. Class: O, with a minimum of 95 percent passing through a No. 8 sieve and a minimum of 55 percent passing through a No. 60 sieve.
 3. Form: Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, and containing a minimum of 90 percent elemental sulfur, with a minimum of 99 percent passing through a No. 6 sieve and a maximum of 10 percent passing through a No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Perlite: Horticultural perlite, soil amendment grade.
- E. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through a No. 50 sieve.

- 2.7 Sand: Clean, washed, natural or manufactured, free of toxic materials, and according to

ASTM C 33/C 33M.

PART 3 - EXECUTION

3.1 GENERAL

- A. Place planting soil and fertilizers according to requirements in other Specification Sections.
- B. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in planting soil.
- C. Proceed with placement only after unsatisfactory conditions have been corrected.

3.2 PREPARATION OF UNAMENDED, ON-SITE SOIL BEFORE AMENDING

- A. Excavation: Excavate soil from designated area(s) to a depth of 6 inches and stockpile until amended.
- B. Unacceptable Materials: Clean soil of concrete slurry, concrete layers or chunks, cement, plaster, building debris, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, acid, and other extraneous materials that are harmful to plant growth.
- C. Unsuitable Materials: Clean soil to contain a maximum of 8 percent by dry weight of stones, roots, plants, sod, clay lumps, and pockets of coarse sand.
- D. Screening: Pass unamended soil through a teh following sieve to remove large materials.
 - 1. Planting bed: 3-inch sieve.
 - 2. Non-athletic field turf: 2-inch sieve.
 - 3. Athletic field turf: 1-inch sieve maximum.

3.3 PLACING PLANTING SOIL OVER EXPOSED SUBGRADE

- A. General.
 - 1. For mixing unamended topsoil with amendments on-site: Apply and mix unamended soil with amendments on-site to produce required planting soil.
 - 2. For applying manufactured (pre-mixed) planting soil: Apply manufactured soil on-site in its final, blended condition.
 - 3. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
- B. Subgrade Preparation: Till subgrade to a minimum depth of 8 inches. Remove stones larger than 2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Engineer's property.

1. Apply, add soil amendments, and mix approximately half the thickness of unamended soil over prepared, loosened subgrade according to "Mixing" Paragraph below. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
 - C. Application, for mixing unamended topsoil with amendments on-site.
 1. Mixing: Spread unamended soil to total depth indicated on Drawings or herein for application, but not less than required to meet finish grades after mixing with amendments and natural settlement. Do not spread if soil or subgrade is frozen, muddy, or excessively wet.
 - a. Amendments: Apply soil amendments, except compost, and fertilizer, if required, evenly on surface, and thoroughly blend them with unamended soil to produce planting soil.
 - 1) Mix lime sulfur with dry soil before mixing fertilizer.
 - 2) Mix fertilizer with planting soil no more than seven days before planting.
 - D. Application, for applying manufactured (pre-mixed) planting soil.
 1. Apply approximately half the thickness of planting soil over prepared, loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil.
 - E. Lifts: Apply in lifts not exceeding 8 inches in loose depth for material compacted by compaction equipment, and not more than 6 inches in loose depth for material compacted by hand-operated tampers.
 - F. Compaction: Compact each blended lift of planting soil to 75 to 82 percent of maximum Standard Proctor density according to ASTM D 698 and tested in-place except where a different compaction value is indicated on Drawings.
 - G. Finish Grading: Grade planting soil to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- 3.4 APPLYING COMPOST TO SURFACE OF PLANTING SOIL
- A. Application: Apply compost component of planting-soil mix, at rate as indicated herein, to surface of in-place planting soil. Do not apply materials or till if existing soil or subgrade is frozen, muddy, or excessively wet.
 - B. Finish Grading: Grade surface to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- 3.5 FIELD QUALITY CONTROL
- A. Testing Agency: a qualified testing agency to perform tests and inspections.
 - B. Perform the following tests and inspections:

1. Compaction: Test planting-soil compaction after placing each lift and at completion using a densitometer or soil-compaction meter calibrated to a reference test value based on laboratory testing according to ASTM D 698. Space tests at no less than one for each 2000 sq. ft. of in-place soil or part thereof.
- C. Soil will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Label each sample and test report with the date, location keyed to a site plan or other location system, visible conditions when and where sample was taken, and sampling depth.
- F. If planting soil or subgrade is overcompacted, disturbed, or contaminated by foreign or deleterious materials or liquids, remove the planting soil and contamination; restore the subgrade as directed by Landscape Architect and replace contaminated planting soil with new planting soil.
- G. Upon completion of soil preparation work, the Contractor shall guaranty that no rock, concrete, construction materials or other rubble lie within the prepared areas, whether on the surface or below grade.
- H. Contractor shall also guaranty against settlement of one full year after initial acceptance. Any corrections required to meet this specification, including repair/replacement of seed or sod shall be at the contractors' expense.

3.6 PROTECTION

- A. Protection Zone: Identify protection zones according to Section 015639 "Temporary Tree and Plant Protection."
- B. Protect areas of in-place soil from additional compaction, disturbance, and contamination. Prohibit the following practices within these areas except as required to perform planting operations:
 1. Storage of construction materials, debris, or excavated material.
 2. Parking vehicles or equipment.
 3. Vehicle traffic.
 4. Foot traffic.
 5. Erection of sheds or structures.
 6. Impoundment of water.
 7. Excavation or other digging unless otherwise indicated.

3.7 CLEANING

- A. Protect areas adjacent to planting-soil preparation and placement areas from contamination. Keep adjacent paving and construction clean and work area in an orderly condition.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable materials, trash, and debris and legally dispose of them off Engineer's property unless otherwise indicated.

3.8 MAINTENANCE PERIOD

- A. Maintenance period: Shall begin immediately after site preparation of each area and shall continue in accordance with the following requirements:
 - 1. Protect prepared areas from erosion and traffic
 - 2. Repair and reestablish grades and reapply soil amendments in settled, eroded and disturbed areas to specified tolerances and requirements until final acceptance.
- B. Final Acceptance: Notify the Engineer for review and acceptance of soil preparation and fine grading prior to seeding or sodding.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 329200 - TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Hydroseeding.
 - 2. Turfgrass sodding.
 - 3. Native Seeding.
 - 4. Turf renovation.
 - 5. Turf Maintenance.
 - 6. Erosion-control material(s).
- B. Related Requirements:
 - 1. Section 329113 "Soil Preparation" for fertilizers.
 - 2. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants as well as border edgings and mow strips.
 - 3. Turfgrass Producer's International (TPI) "Guideline Specifications to Turfgrass Sodding."

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Finish Grade: Elevation of finished surface of planting soil.
- C. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

- E. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" and drawing designations for planting soils.
- F. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review the Project site and document initial conditions with written description, photographs, and/or videos. Verify areas of restoration, if any.
 - 2. Conduct a Final Completion review at Project end to verify conformity with specifications and restoration responsibilities, including temporary repairs to maintain an active irrigation system.

1.5 INFORMATIONAL SUBMITTALS

- A. Certification of Seed: From seed vendor for each turf or native grass-seed monostand or mixture, or perennial/wildflower, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Include identification of source and name and telephone number of supplier.
 - 2. Include proposed seeding schedule and locations for each type of seed.
- B. Bag Tags: If requested by Engineer or Landscape Architect, provide bag tags prior to or following installation.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf sod and turf or native seed establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or AmericanHort.
 - 2. Experience: Five years' experience in turf installation in addition to requirements in Section 014000 "Quality Requirements."
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
 - a. Landscape Industry Certified Technician - Exterior.
 - b. Landscape Industry Certified Lawn Care Manager.
 - c. Landscape Industry Certified Lawn Care Technician.
 - 5. Pesticide Applicator: State licensed, commercial.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.

1.8 FIELD CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Sod
 - a. Spring Planting: After April 15.
 - b. Fall Planting: Before November 01.
 - c. Adjust for weather limitations, freezing conditions and availability of turfgrass sod.
 - 2. Native Seed
 - a. Spring Planting: April 1 - June 15.
 - b. Fall Planting: September 01 - October 15.
 - c. Adjust for weather conditions, freezing conditions, or as ground condition allows for drill seed penetration.
 - 3. Turfgrass Seeding: April 1 - September 15.
 - a. Adjust for weather conditions and freezing conditions.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.
 - 1. No sodding shall take place when site is wet, or during freezing temperatures.

PART 2 - PRODUCTS

2.1 TURFGRASS SOD

- A. Turfgrass Sod: Certified, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.
- B. Sod shall be a healthy, thick turf having undergone a program of regular fertilization, mowing and weed control; free of objectionable weeds; uniform in green color, leaf texture and density; healthy, vigorous, strongly implanted root system; inspected and found free of disease, nematodes, pests and pest larvae. Each piece of sod shall be of a sandy loam that will not break, crumble or tear during installation.
- C. Turfgrass Species: Sod of grass species as follows, Colorado grown, a minimum of three cultivars per mix, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:
 - 1. Full Sun: 100% Kentucky Bluegrass (*Poa pratensis*).
 - 2. Partial Shade: 100% shade-tolerant Kentucky Bluegrass (*Poa pratensis*).
 - 3. Shade: 100% Red fescue (*Festuca rubra*).

2.2 NATIVE SEED

- A. Seed furnished shall be free from noxious weed seeds. Seed which has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable. The seed shall have a minimum germination and maximum purity of ninety (90%) percent. Seed shall not exceed .1% weed content.
- B. Native Seed: Fresh, clean, dry new seed, of mixed native species as follows:
 - 1. Provide species as informed by soil analysis per specification section 329113 Soil Preparation and recommended by Design Team.
 - 2. Species mix should be informed by indigenous, desirable species of existing or adjacent sites, as acceptable to Engineer.
- C. All seed shall be furnished in bags or containers clearly labeled top include:
 - 1. Name and address of the supplier
 - 2. Seed name
 - 3. Lot number
 - 4. Net weight.
 - 5. Percent of weed seed content.
 - 6. Guaranteed percentage of purity and germination.

2.3 MULCHES

A. Mulch for Hydroseeding.

1. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
2. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.4 EROSION-CONTROL MATERIALS

- A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- B. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of Machine-printed, permanent, with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 1. Sodding shall not begin until adjacent site improvements and pavements are substantially complete. No trucking or moving of equipment or materials will be permitted upon completed sodded areas.
 2. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 4. Any areas that have been prepared and approved for sodding, that cannot be immediately sodded due to weather, or other unforeseen conditions are subject to re-inspection and acceptance by the Owner Representative. The Contractor shall notify the Owner Representative of his intent to sod following delays because of weather, allowing the Owner Representative sufficient time to inspect and approve the prepared areas. Any areas that in the opinion of the Owner Representative require re-grading or additional soil preparation because of wind and water erosion, or require additional tillage because of compaction, shall be done at the Contractors expense.
 5. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Engineer and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation".
- B. Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.
 - 1. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- D. Before planting, obtain Engineer's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

- A. Prepare area as specified in "Turf Area Preparation" Article.
- B. For erosion-control blanket or mesh, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.
- C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.

2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

3.6 TURFGRASS SODDING

- A. Lay sod within 24 hours of harvesting unless a suitable preservation method is accepted by Engineer prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 1. Lay sod across slopes exceeding 1:3.
 2. Anchor sod on slopes exceeding 1:6 with wood pegs spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.7 TURF RENOVATION

- A. Renovate existing turf where indicated.
- B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
 1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
 2. Install new planting soil as required.
- C. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
- D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- E. Mow, dethatch, core aerate, and rake existing turf.
- F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- I. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.

1. Soil Amendment(s): Provide soil amendments according to requirements of Section 329113 "Soil Preparation".
 2. Initial Fertilizer: applied according to manufacturer's recommendations.
- J. Apply seed or sod, as indicated on the Drawings or herein.
- K. Protect seed with as required with mulch or erosion control blankets, as specified herein.
- L. Water newly planted areas and keep moist until new turf is established.

3.8 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Reduce watering to allow for mowing of turf without rutting of soil. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
1. Mow Kentucky bluegrass to a height of 1-1/2 to 2 inches.

3.9 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria, as determined to be acceptable by Engineer:
1. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.

- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.10 NATIVE SEED

- A. All seed is to be drilled. Drill at one-quarter (1/4) inch to one-half (1/2) inch into the soil at the specified pure live seed (PLS) per acre rate with a mechanical grass drill with depth bands and an agitator in the seed box.
- B. Rows shall be spaced not more than seven (7) inches apart.
- C. Drill one-half (1/2) of the required PLS per acre in one compass direction, and then drill the remaining half of the required PLS per acre in a direction ninety degrees (90°) to the first half.
- D. Areas which are too constrained to accommodate drill seeding equipment may be broadcast by hand. Apply at twice the rate of required PLS per acre used for drill seed operation.
- E. Protect seeded areas from hot, dry weather or drying winds by applying ydromulch within 24 hours after completing seeding operations. Do not apply excessive mulch which will lead to diminished germination.
 - 1. Apply hydromulch in accordance with Hydroseeding specifications herein, omitting seed from mix.
 - 2. Water newly planted areas and keep moist until seed is established.

3.11 NATIVE SEED MAINTENANCE

- A. Maintain and establish seed by watering, weeding, mowing, trimming, replanting, and performing other operations as required to establish a healthy, viable seed. Roll, regrade, and replant bare or eroded areas and remulch. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and seed damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
- B. Pest Maintenance: Apply treatments as required to keep seed and soil free of pests and pathogens or disease.
 - a. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
 - b. Use chemical pesticide treatments when necessary and only upon approval of the Owner.
- C. Weed Control: Control noxious weed growth on the site during the construction period and until the Final Acceptance.

1. Control weeds by manual removal or spot application of herbicides which have been approved by the Owner. Apply detailed applications of only the targeted weed species by wand or wick with a backpack applicator. No herbicides shall be permitted for general application (broadcast) during a time when it would cause detrimental impact to germination or establishment of the seeded grasses.
 2. Herbicides or other chemicals, if required, shall be applied using well-maintained spraying equipment by individuals appropriately licensed by the State of Colorado for such applications. Herbicide application shall be conducted by trained weed control personnel who also can recognize the targeted weed species.
 3. Herbicides and other chemicals shall not be applied during periods when wind or other physical conditions cause the herbicides or chemicals to be transported a distance of more than five (5) feet from the immediate area where they are being placed.
 4. All herbicides shall be applied at a rate and strength, and by the method recommended by the manufacturer of the product being used.
 5. Failure to properly apply herbicides (spot treatment) and the loss of native seed species, shall result in Contractor reinstalling seed at no cost to the Owner.
- D. Watering: Install and maintain temporary piping, hoses, and seed-watering equipment to convey water from sources and to keep seed uniformly moist.
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water seed with fine spray at a minimum rate of 1/2 inch per week for eight weeks after planting unless rainfall precipitation is adequate.

3.12 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.13 INSPECTION AND ACCEPTANCE

- A. Coordinate inspection and observation at specified points within the work. Provide 48 hours notice of inspections and observation. Inspection will include, but are not limited to:
 1. Prior to seeding and start-up, including visual observation of seed bags, on site, prior to loading the seeder.
 2. Substantial Completion Inspection: When seeding and mulching are complete, notify Owner and request a "Substantial Completion Inspection" for approval, to begin the Warranty Period. Reseed any areas that require additional seeding, including but not limited to washout areas, and areas tracked by construction vehicles.

- a. Reseed within 14 calendar days of Inspection.
 - 1) Comply with seeding requirements in this Section.
 - 2) The Contractor may reseed at a later date upon Owner's written approval.
 - b. Continue to maintain areas until they pass seed germination inspection.
3. Seed Progress Inspection: Conduct germination inspection at approximately mid-way through the maintenance period and within the allowed seeding period. Notify the Owner and request a "Seed Progress Inspection" for approval in order to identify areas of reseeding. Reseed and mulch any areas determined by the Owner to be lacking germination. Provide weed control manually or by chemical herbicide treatment as necessary and approved by Owner. Progress approval and the requirement to reseed areas will be as follows:
- a. If any seeded areas contain more than five percent weeds.
 - b. If any areas greater than 12 inches in diameter show no viable growth plants.
 - c. All washouts or areas tracked by construction vehicles.
 - d. Reseed within 14 calendar days of Inspection.
 - 1) Comply with seeding requirements in this Section.
 - 2) The Contractor may reseed at a later date upon Owner's written approval.
 - e. Continue to maintain areas until they pass seed germination inspection.
4. Final Seeding Inspection: At the conclusion of the warranty/maintenance period, notify Owner and request a "Final Seeding Inspection." Reseed any areas that require additional seeding. Final Seeding Inspection approval and the requirement to reseed are as follows:
- a. If any seeded areas contain more than five percent weeds.
 - b. If any areas greater than 12 inches in diameter show no viable growth plants.
 - c. Reseed within 14 calendar days of Inspection.
 - 1) Comply with seeding requirements in this Section.
 - 2) The Contractor may reseed at a later date upon Owner's written approval.
 - d. Continue to maintain areas until they pass seed germination inspection.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 329300 - PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Plants.
 - 2. Mulch.
 - 3. Tree stabilization.
 - 4. Landscape edgings.
 - 5. Weed-control barrier fabric.

- B. Related Requirements:

- 1. Section 015639 "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
 - 2. Section 329200 "Turf and Grasses" for turf (lawn) and meadow planting, hydroseeding, and erosion-control materials.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. Backfill: The earth used to replace or the act of replacing earth in an excavation.
- C. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.
- D. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of plant required.
- E. Finish Grade: Elevation of finished surface of planting soil.

- F. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.
- G. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- H. Planting Area: Areas to be planted.
- I. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. See Section 329113 "Soil Preparation" for drawing designations for planting soils.
- J. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.
- K. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.
- L. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.
- M. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

1.4 COORDINATION

- A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.
 - 1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
 - 2. Mulch.
 - 3. Tree-stabilization materials.
 - 4. Landscape edgings.
 - 5. Weed-control barrier fabric.

1.6 INFORMATIONAL SUBMITTALS

- A. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Engineer for maintenance of plants during a calendar year. Submit before expiration of required maintenance periods.

1.8 QUALITY ASSURANCE

- A. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.
 - 1. Selection of plants is made by Landscape Architect and Owner, who tags plants at their place of growth before they are prepared for transplanting.
 - 2. Engineer will inspect all plants upon delivery to site and reserves the right to reject material the does not comply with requirements herein.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.
- B. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.
- C. Deliver bare-root stock plants within 24 hours of digging. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Transport in covered, temperature-controlled vehicles, and keep plants cool and protected from sun and wind at all times.
- D. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of plants during shipping and delivery. Do not drop plants during delivery and handling.
- E. Handle planting stock by root ball.
- F. Store bulbs, corms, and tubers in a dry place at 60 to 65 deg F until planting.
- G. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.
 - 1. Engineer to review and approve applications prior to performance of work.

2. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
- H. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.
- I. Deliver plants after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.
 1. Set balled stock on ground and cover ball with wood mulch, or other acceptable material.
 2. Do not remove container-grown stock from containers before time of planting.
 3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.10 FIELD CONDITIONS

- A. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.
- B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
 1. Spring Planting: From March 15 to June 15.
 2. Fall Planting: From September 01 to October 15.
 3. Planting outside the noted Spring and Fall timeframes may be acceptable, when requested and approved by Engineer. Warranty shall still apply.
- C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

1.11 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
 - b. Structural failures including plantings falling or blowing over.
 - c. Faulty performance of tree stabilization.
 2. Warranty Periods: From date of Substantial Completion.
 - a. Trees, Shrubs, Vines, and Ornamental Grasses: 24 months.
 - b. Ground Covers, Biennials, Perennials, and Other Plants: 24 months.
 - c. Annuals: Three months.

3. Include the following remedial actions as a minimum:
 - a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
 - b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 - c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
 - d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

PART 2 - PRODUCTS

2.1 PLANT MATERIAL

- A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
 1. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
 2. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
- B. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.
- C. Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.
- D. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

2.2 MULCHES

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
 1. Type: Ground or shredded Cedar or hardwood bark, unless otherwise indicated on the Drawings.
 2. Depth: 4 inches.
 3. Color: Natural.
 4. Locations:

- a. Continuous layer at plant beds, held 6-inches clear of the crown of herbaceous plants and root flares of woody plants.
- b. Trees within turf area. A circular mulch ring, a minimum 36-inch diameter or a diameter 12-inches beyond rootball, whichever is greater, from the center of trunk.

2.3 TREE-STABILIZATION MATERIALS

A. Trunk-Stabilization Materials:

1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood lodgepole, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.

2.4 LANDSCAPE EDGINGS

A. Steel Edging: Commercial-grade steel edging, fabricated in sections of standard lengths, with loops stamped from or welded to face of sections to receive stakes.

1. Basis-of-Design Product: Green Valley (mfr) Green Pro Roll Top, 12 gauge steel edging.
2. Finish: Powdercoat, green.
3. Stakes: Tapered steel, a minimum of 15 inches long.

2.5 WEED-CONTROL BARRIERS

A. Nonwoven Geotextile Filter Fabric: Polypropylene or polyester fabric, 3 oz./sq. yd. minimum, composed of fibers formed into a stable network so that fibers retain their relative position. Fabric shall be inert to biological degradation and resist naturally encountered chemicals, alkalis, and acids.

1. Basis-of-Design Product: Mirafi (mfr) 140N, or approved equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
4. Uniformly moisten excessively dry soil that is not workable or which is dusty.

- B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations, and areas for multiple plantings per the Drawings. Stake locations of trees and other balled and burlapped materials. Place actual containerized plants in place.
 - 1. Outline plant species or mixed species massings. Where there are massings of more than (5) of an individual species in a grouping, set a representative sample of (3) or more container plantings of each species in place, within outlined areas.
 - 2. Review layout of all plantings with Landscape Architect and adjust locations when requested. Provide Landscape Architect with at least (7) days notice and have lay out complete for scheduled review.
 - 3. Obtain Owner's acceptance of layout before excavating or planting. Provide Engineer with at least (7) days notice and coordinate so that it immediately follows layout review by Landscape Architect. Make adjustments as requested by Owner.

3.3 PLANTING AREA ESTABLISHMENT

- A. General: Prepare planting area for soil placement and mix planting soil according to Section 329113 "Soil Preparation."
- B. Before planting, obtain Landscape Architect's and Owner's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

- A. Planting Pits and Trenches: Excavate circular planting pits.
 - 1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
 - 2. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.
 - 3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.

4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
 5. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
 6. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
 7. Maintain supervision of excavations during working hours.
 8. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
 9. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.
- B. Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.
- C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
1. Hardpan Layer: Drill 6-inch- diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE, SHRUB, AND VINE PLANTING

- A. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- B. Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.
- C. Balled and Burlapped Stock: Set each plant plumb and in center of planting pit or trench with root flare 1-inch to 2-inch above adjacent finish grades.
1. Backfill: For plant beds, use excavated and mixed planting and native subsoils soils for backfill. For trees, use excavated soil for backfill.
 2. After placing some backfill around base of root ball to stabilize plant, carefully cut and remove burlap, rope, and wire baskets from top 2/3 of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 4. Continue backfilling process. Water again after placing and tamping final layer of soil.
- D. Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

1. Backfill: Excavated and mixed planting soil and native subsoil.
 2. Carefully remove root ball from container without damaging root ball or plant.
 3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 4. Continue backfilling process. Water again after placing and tamping final layer of soil.
- E. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.6 MECHANIZED TREE-SPADE PLANTING

- A. Trees may be planted with an approved mechanized tree spade at the designated locations. Do not use tree spade to move trees larger than the maximum size allowed for a similar field-grown, balled-and-burlapped root-ball diameter according to ANSI Z60.1, or larger than manufacturer's maximum size recommendation for the tree spade being used, whichever is smaller.
- B. Use the same tree spade to excavate the planting hole as will be used to extract and transport the tree.
- C. When extracting the tree, center the trunk within the tree spade and move tree with a solid ball of earth.
- D. Cut exposed roots cleanly during transplanting operations.
- E. Plant trees following procedures in "Tree, Shrub, and Vine Planting" Article.
- F. Scarify sides of tree spade excavation to depth of 4-inches prior to setting of tree.
- G. Where possible, orient the tree in the same direction as in its original location.

3.7 TREE, SHRUB, AND VINE PRUNING

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Do not apply pruning paint to wounds.

3.8 TREE STABILIZATION

- A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated:
 1. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least 24 inches below bottom of backfilled excavation and to extend to the dimension indicated on Drawings above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.

2. Upright Staking and Tying: Stake trees with two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; three stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.
 3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
 4. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings. Stake and guy trees more than 14 feet in height and more than 3 inches in caliper unless otherwise indicated.
1. Site-Fabricated, Staking-and-Guying Method: Install no fewer than three guys spaced equally around tree.
 - a. Securely attach guys to stakes 30 inches long, driven to grade. Adjust spacing to avoid penetrating root balls or root masses. Provide compression spring for each guy wire and tighten securely.
 - b. For trees more than 6 inches in caliper, anchor guys to wood deadmen buried at least 36 inches below grade. Provide compression spring for each guy wire and tighten securely.
 - c. Support trees with bands of flexible ties at contact points with tree trunk and reaching to compression spring. Allow enough slack to avoid rigid restraint of tree.
 - d. Support trees with guy cable, connected to the brass grommets of tree-tie webbing at contact points with tree trunk and reaching to compression spring. Allow enough slack to avoid rigid restraint of tree.
 - e. Attach flags to each guy wire, 30 inches above finish grade.
 - f. Paint compression springs with luminescent white paint.

3.9 GROUND COVER AND PLANT PLANTING

- A. Refer to and follow layout requirements noted herein for Landscape Architect's and Owner's review and approval. Proceed only after receiving approval.
- B. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.
- C. Use excavated planting soil for backfill.
- D. Dig holes large enough to allow spreading of roots.
- E. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.
- F. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.
- G. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.
- H. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.10 PLANTING AREA MULCHING

- A. Mulch backfilled surfaces of planting areas and other areas indicated.
 - 1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 4-inch average thickness, with 18-inch radius from center of trunks or stems. Do not place mulch within 6 inches of root flares.
 - 2. Organic Mulch in Planting Areas: Apply 4-inch average thickness of organic mulch over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 6 inches of trunks or stems.

3.11 EDGING INSTALLATION

- A. Steel Edging: Where indicated, install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 inches apart, driven below top elevation of edging.
 - 1. Provide and install edging cap along top of all edgings.

3.12 WEED CONTROL BARRIER INSTALLATION

- A. Install weed-control barriers fabric in areas of unplanted, inert mulch cover such as cobble/rock mulch. Install according to manufacturer's written instructions. Completely cover area to receive mulch, overlapping edges a minimum of 12 inches and secure seams with galvanized pins.
- B. No weed barrier fabric shall be exposed to view in completed work. Correct where necessary.

3.13 PLANT MAINTENANCE

- A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.
- B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.
- C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible, to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.14 REPAIR AND REPLACEMENT

- A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Landscape Architect.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.

3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Landscape Architect.
- B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
 1. Provide new trees of same size as those being replaced for each tree of 6 inches or smaller in caliper size.
 2. Provide new tree(s) of quantity and caliper size and required by the authority having jurisdiction for each tree being replaced that measures more than 6 inches in caliper size.
 3. Species of Replacement Trees: Species selected by Landscape Architect.

3.15 CLEANING AND PROTECTION

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off Owner's property.
- C. Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.
- D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

3.16 MAINTENANCE SERVICE

- A. Provide as separate cost proposal to Owner, outlining detailed scope or services, frequency, and overall duration.
- B. Maintenance Service for Trees and Shrubs: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
 1. Maintenance Period: 24 months from date of Substantial Completion.
- C. Maintenance Service for Ground Cover and Other Plants: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:
 1. Maintenance Period: 24 months from date of Substantial Completion.

END OF SECTION

NOTE: The specifications are provided for convenience only. It is the responsibility of the consultant (user) to edit to meet the requirements of the Project and all applicable codes. The Town is not responsible for errors, omissions, or regulatory non-conformance as a result of the use of these specifications.

SECTION 329600 - TRANSPLANTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section includes transplanting existing on-site, non-nursery-grown trees by tree spade or digging and boxing.
- B. Related Requirements:
 - 1. Section 015639 "Temporary Tree and Plant Protection" for protecting, trimming, pruning, repairing, and replacing existing trees to remain that interfere with, or are affected by, execution of the Work.
 - 2. Section 329300 "Plants" for new trees from nursery-grown sources.

1.3 DEFINITIONS

- A. Engineer: Town of Parker, acting directly or through its duly authorized representatives, who is responsible for the engineering supervision of the construction.
- B. General: See definitions in ANSI A300 (Part 6) and in ANSI Z60.1 pertaining to field-grown trees, except as otherwise defined in this Section.
- C. Caliper: Diameter of a trunk as measured by a diameter tape at a height 6 inches above the root flair for trees up to, and including, 4-inch size at this height; and as measured at a height of 12 inches above the root flair for trees larger than 4-inchsize.
- D. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the root flair.
- E. Root-Ball Depth: Measured from bottom of trunk flare to the bottom of root ball.
- F. Root-Ball Width: Measured horizontally across the root ball with an approximately circular form or the least dimension for non-round root balls, not necessarily centered on the tree trunk, but within tolerance according to ANSI Z60.1.

- G. Root Flare: Also called "trunk flare." The area at the base of the tree's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to transplanting work include, but are not limited to, the following:
 - a. Construction schedule. Verify availability of materials, personnel, equipment, and unimpeded access needed to make progress and avoid delays.
 - b. Tree and plant protection.
 - c. Tree maintenance.
 - d. Arborist's responsibilities.

1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Samples for Verification: For each of the following:
 - 1. Proprietary Root-Ball-Stabilization Device: One unit.
 - 2. Slow-Release Watering Device: One unit of each size required.
- C. Pruning Schedule: Written schedule prepared by arborist detailing scope and extent of pruning each tree in preparation for and subsequent to transplanting.
 - 1. Species and size of plant.
 - 2. Location on site plan. Include unique identifier for each.
 - 3. Reason for pruning.
 - 4. Seasonal limitations on pruning.
 - 5. Preparatory Pruning: Time schedule and description of preparatory pruning to be performed.
 - a. Indicate time in months preceding the extraction of the tree.
 - b. Indicate diameter of root ball and depth of root pruning for each tree.
 - 6. Description of root and crown pruning during and subsequent to transplanting.
 - 7. Description of maintenance following pruning.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified tree-service firm and arborist.
- B. Certification: From arborist, certifying that transplanted trees have been protected during construction and that trees were promptly and properly treated and repaired when damaged.
- C. Maintenance Recommendations: From arborist, recommended procedures to be established by Owner for care and protection of trees after completing the Work.

1. Submit before completing the Work.

D. Existing Conditions: Documentation of existing trees indicated to be transplanted, which establishes preconstruction conditions that might be misconstrued as damage caused by construction activities.

1. Use sufficiently detailed color photographs or video recordings. Color shall accurately depict hue condition of foliage and bark.
2. Include drawings and notations to indicate specific wounds and damage conditions of each tree designated to be transplanted.

E. Tree-maintenance reports.

1.7 QUALITY ASSURANCE

A. Tree-Service Firm Qualifications: An experienced landscaping contractor or tree-moving firm that has successfully completed transplanting work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site during execution of the Work.

1. Arborist Qualifications: Certified Arborist as certified by ISA.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or trees.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery with appropriate certificates.

C. Protect bark, branches, and root systems from sun scald, drying, wind burn, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees in such a manner as to destroy their natural shape.

D. Completely cover foliage when transporting trees while they are in foliage.

E. Handle trees by root ball. Do not drop trees.

F. Move trees after preparations for planting have been completed, and install immediately. If planting is delayed more than six hours after moving, set trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1.9 FIELD CONDITIONS

- A. Field Measurements: Verify final grade elevations and final locations of trees and construction contiguous with trees by field measurements before proceeding with transplanting work. Perform transplanting only after finish grades are established.
- B. Seasonal Restrictions: Transplant trees during the following in-season periods:
 - 1. Spring: From March 15 to June 15. Fall dig hazard species shall only be planted in Spring.
 - 2. Fall: From September 01 to October 15. Fall dig hazard species shall not be planted in Fall.
- C. Weather Limitations: Proceed with transplanting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Do not transplant during excessively wet or frozen conditions. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
- D. Coordination with Turf Areas (Lawns): Perform transplanting before planting turf areas unless otherwise indicated.
 - 1. When transplanting after planting turf areas, protect turf areas, and promptly repair damage caused by transplanting operations.
- E. Coordination with Planting Beds: Perform transplanting before planting bedded areas unless otherwise indicated.
 - 1. When transplanting after planting bedded areas, protect bedding plants, and promptly repair damage caused by transplanting operations.

1.10 WARRANTY

- A. Installer's Special Warranty: Tree-service firm agrees to repair or replace trees and related materials that fail within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control.
 - b. Death and unsatisfactory growth is defined as more than 25 percent dead or in an unhealthy condition or failure to meet general performance requirements at end of warranty period.
 - c. Structural failures including trees falling or blowing over.
 - d. Faulty performance of materials and devices related to tree plantings including tree stabilization and watering devices.
 - 2. Warranty Periods from Date of Substantial Completion:
 - a. Trees: 12 months.

3. Include the following remedial actions as a minimum:
 - a. Remove dead trees and trees with unsatisfactory growth at end of warranty period; replace when directed.
 - b. A limit of one replacement of each tree will be required except for losses or replacements due to failure to comply with requirements.
 - c. Replace materials and devices related to tree plantings.
 - d. Provide extended warranty for period equal to original warranty period, for replaced trees.

1.11 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Provide tree maintenance by skilled employees of tree-service firm and as required in Part 3. Begin maintenance immediately after trees are installed and continue until plantings are healthy and well established but for not less than maintenance period below.
 1. Maintenance Period: 12 months from date of Substantial Completion.
- B. Continuing Maintenance Proposal: From tree-service firm to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. General Performance: Transplanted trees shall be healthy and resume vigorous growth within one year of transplanting without dieback due to defective extracting, handling, planting, maintenance, or other defects in the Work.

2.2 PLANTING MATERIALS

- A. Backfill Soil: Excavated soil of suitable moisture content and granular texture for placing and compacting in planting pit around tree, and free of stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth.

2.3 TREE-STABILIZATION MATERIALS

- A. Trunk-Stabilization Materials:
 1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
 2. Wood Deadmen: Timbers measuring 8 inches in diameter and 48 inches long, treated with specified wood preservative treatment by pressure process.
 3. Flexible Ties: Wide rubber or elastic bands or straps.

4. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch in diameter.
5. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
6. Guy Cable: Five-strand, 3/16-inch- diameter, galvanized-steel cable, fitted with zinc-coated 3/8-inch galvanized eyebolts at ends.
7. Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.
8. Proprietary Staking-and-Guying Devices: Proprietary stake and adjustable tie systems to secure each new planting by tree stem; sized as indicated and according to manufacturer's written instructions.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- 1) Anchor Tie Down Systems, Inc; Twister Tie Down.
- 2) Arborbrace; Arborbrace Tree Guying System.
- 3) Deep Root Partners, L.P; ArborTie.
- 4) J. R. Partners; Mega Stake R2 Stake U-Stake.

B. Root-Ball-Stabilization Materials:

1. Upright Stakes and Horizontal Hold-Down: Rough-sawn, sound, new hardwood or softwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated; stakes pointed at one end.
2. Wood Screws: Hot-dip galvanized or stainless steel.
3. Proprietary Root-Ball-Stabilization Devices: Proprietary at- or below-grade stabilization systems to secure each new planting by root ball; sized according to manufacturer's written instructions unless otherwise indicated.

a. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- 1) Border Concepts, Inc; Tomahawk Tree Stabilizers.
- 2) Foresight Products, LLC; Duckbill Rootball Fixing System.
- 3) Tree Staple, Inc; Tree Staples.

2.4 WATERING DEVICES

A. Slow-Release Watering Device: Standard product manufactured for drip-irrigation of plants and emptying its water contents over a period of 2 to 9 hours; manufactured from UV-light stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:

- a. Spectrum Products, Inc; Treegator (Original) Treegator Jr. Pro.
- b. Turf Chemicals Plus, Inc; Tree Ring (Regular) Tree Ring Jr.

2.5 MISCELLANEOUS PRODUCTS

A. Organic Mulch: Shredded hardwood as specified in Section 329300 "Plants."

- B. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.
- C. Burlap: Non-synthetic, biodegradable.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross transplanting areas.
- B. For the record, prepare written report, endorsed by arborist, listing conditions detrimental to transplanting work and tree protection and health.
- C. Proceed with transplanting only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, other facilities, turf areas, and other plants and planting areas from damage caused by transplanting operations.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning excavation.
- C. Locate and clearly identify trees for transplanting. Flag each tree at 54 inches above the ground.
- D. Lay out individual transplant locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Architect's and Engineer's acceptance of layout before transplanting. Make minor adjustments as required.
- E. Apply antidesiccant to trees uniformly, using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during extracting, handling, and transportation.
 - 1. If deciduous trees are moved in full leaf, spray with antidesiccant before extracting and again two weeks after transplanting.
- F. Wrap trees with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during extracting, handling, and transporting.

3.3 PREPARATORY PRUNING

- A. Root Pruning: Perform preparatory root pruning under direction of arborist as far in advance of extracting each tree as the Project Schedule allows.

1. Dig exploratory pits or trench by hand or with air spade around perimeter of tree at indicated root-ball width to determine locations of main lateral roots.
2. Root-Ball Width: Minimum 9 inches of root-ball diameter, or least dimension for non-round root balls, for each inch of tree caliper being transplanted.
3. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking.
4. Use narrow-tine spading forks to comb soil to expose roots with minimal damage to root system.
5. Cut exposed roots manually with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
6. Do not paint or apply sealants on cut root ends.
7. Backfill trench with excavated soil.

B. Crown Pruning (Tip Pruning):

1. Do not perform preparatory crown pruning (tip pruning).

3.4 EXCAVATION AND PLANTING EQUIPMENT

- A. Tree Spade: Track-mounted mechanized tree mover; sized according to manufacturer's size recommendation for each tree being transplanted.

3.5 EXCAVATING PLANTING PITS

- A. General: Excavate under supervision of the arborist.

1. Excavate planting pits or trenches with sides sloping. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil. Scarify sides of planting pit smeared or smoothed during excavation.
2. Excavate approximately three times as wide as root ball.
3. Keep excavations covered or otherwise protected until replanting trees.

- B. Subsoil and topsoil removed from excavations may be used as planting soil.

- C. Obstructions: Notify Architect and Engineer if unexpected rock or obstructions detrimental to trees are encountered in excavations.

1. Hardpan Layer: Drill 6-inch- diameter holes, 24 inches apart, into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

- D. Seepage: Notify Architect and Engineer if subsoil conditions evidence unexpected water seepage into tree-planting pits.

- E. Drainage: Fill planting pit or trench with 6 inches of water and time the infiltration rate of the soil. If the drainage rate is less than 0.25 inch per hour, notify Architect and Engineer to determine need for subsurface drainage.

- F. Saline or Sodic Soils: Completely fill excavations with water and allow to percolate away before positioning trees.

3.6 EXTRACTING TREES

- A. General: Extract trees under supervision of the arborist.
- B. Orientation Marking: Mark the north side of each tree with non-permanent paint before extracting.
- C. Root-Ball Width: Minimum 9 inches of root-ball diameter, or least dimension for non-round root balls, for each inch of tree caliper being transplanted.
- D. Root-Ball Depth: As determined by the arborist for each species and size of tree and for site conditions at original and planting locations.
- E. Digging:
 - 1. Dig and clear a pit by hand or with tree spade to the depth of the root system. Do not use a backhoe or other equipment that rips, tears, or pulls roots.
 - 2. Use narrow-tine spading forks to comb soil to expose roots with minimal damage to root system.
 - 3. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking.
 - 4. Cut exposed roots manually with sharp pruning instruments; do not break, tear, chop, or slant the cuts. Do not paint or apply sealants on cut root ends.
 - 5. Construct box tight against root system sides and bottom as pit is dug. Brace and support box to prevent breaking of root ball.
 - 6. Temporarily support and protect exposed roots from damage until they are permanently redirected and covered with soil. Cover roots with burlap and keep them moist until planted.
- F. Extracting with Tree Spade: Use the same tree spade to extract the tree as will be used to transport and plant the tree.
 - 1. Do not use tree spade to move trees larger than the manufacturer's maximum size recommendation for the tree spade being used.
 - 2. When extracting the tree, center the trunk within the tree spade and move tree with a solid ball of earth.

3.7 PLANTING

- A. Planting Standard: Perform planting according to ANSI A300 (Part 6) unless otherwise indicated.
- B. Before planting, verify that root flare is visible at top of root ball. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.
- C. Ensure that root flare is visible after planting.
- D. Remove injured roots by cutting cleanly; do not break. Do not paint or apply sealants on cut root ends.

- E. Orientation: Position the tree so that its north side, marked before extracting, is facing north in its new location.
- F. Set tree plumb and in center of planting pit with bottom of root flare 1 inch above adjacent finish grades.
 - 1. Use specified backfill soil for backfill.
 - 2. If area under the tree was initially dug too deep, add backfill to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
 - 3. After placing some backfill around root ball to stabilize plant, begin backfilling.
 - 4. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
 - 5. Redirect exposed root ends downward in backfill areas where possible. Hand-expose roots as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction and as required for root pruning.
 - 6. Place planting tablets in each planting pit when pit is approximately one-half filled; in amounts recommended by arborist. Place tablets beside the root ball about 1 inch (25 mm) from root tips; do not place tablets in bottom of the hole.
 - 7. Continue backfilling process. Water again after placing and tamping final layer of soil.
- G. Watering Pipe: During backfilling, install watering pipe 4 feet deep into the planting pit outside the root ball with top of pipe 1 inch above the mulched surface.
- H. Planting with Tree Spade: Use the same tree spade for planting as was used to extract and transport the tree. Do not use tree spade for trees larger than the manufacturer's maximum size recommendation for the tree spade being used.
- I. Slopes: When planting on slopes, set the tree so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.8 TREE STABILIZATION

- A. Trunk Stabilization by Upright Staking and Tying: Install trunk stabilization as follows unless otherwise indicated on Drawings or directed by arborist.
 - 1. Upright Staking and Tying: Stake only as required to prevent wind tip out. Use a minimum of three stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend one-third of trunk height above grade. Set stakes vertical and space to avoid penetrating root balls or root masses.
 - 2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
 - 3. Support trees with two strands of tie wire, connected to the brass grommets of tree-tie webbing at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.
- B. Trunk Stabilization by Staking and Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings or directed by arborist.

1. Site-Fabricated Staking-and-Guying Method: Install no fewer than three guys spaced equally around tree.
 - a. Securely attach guys to stakes 30 inches long, driven to grade. Adjust spacing to avoid penetrating root balls or root masses. Provide compression spring for each guy wire and tighten securely.
 - b. For trees more than 6 inches in caliper, anchor guys to wood deadmen buried at least 36 inches below grade. Provide compression spring for each guy wire and tighten securely.
 - c. Support trees with guy cable, connected to the brass grommets of tree-tie webbing at contact points with tree trunk and reaching to a compression spring. Allow enough slack to avoid rigid restraint of tree.
 - d. Attach flags to each guy wire, 30 inches above finish grade.
 - e. Paint compression springs with luminescent white paint.
 2. Proprietary Staking and Guying Device: Install staking and guying system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.
- C. Root-Ball Stabilization: Install at- or below-grade stabilization system to secure each new planting by the root ball unless otherwise indicated on Drawings or directed by arborist.
1. Wood Hold-Down Method: Place vertical stakes against side of root ball and drive them into subsoil; place horizontal wood hold-down stake across top of root ball and screw at each end to one of the vertical stakes.
 - a. Install stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation. Saw stakes off at horizontal stake.
 - b. Install screws through horizontal hold-down and penetrating at least 1 inch into stakes. Predrill holes if necessary to prevent splitting wood.
 - c. Install second set of stakes on other side of root trunk for larger trees as indicated.
 2. Proprietary Root-Ball-Stabilization Device: Install root-ball-stabilization system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.

3.9 MULCHING

- A. Organic Mulch: Apply 4-inch average thickness of organic mulch extending 12 inches beyond edge of individual planting pit and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 6 inches of trunks or stems.

3.10 INSTALLING SLOW-RELEASE WATERING DEVICE

- A. Provide one device for each tree.
- B. Place device on top of the mulch at base of tree and fill with water according to manufacturer's written instructions.

3.11 TREE MAINTENANCE

- A. Perform tree maintenance as recommended by arborist. Maintain arborist observation of transplanting work.
- B. Maintain trees by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Treat as required to keep trees free of insects and disease.
- C. From time of preparatory root pruning tree extraction measure soil moisture adjacent to edge of each root ball weekly. Record findings and weather conditions.
- D. Fill areas of soil subsidence with backfill soil. Replenish mulch materials damaged or lost in areas of subsidence.
- E. Apply treatments as required to keep tree materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.
- F. Reports: Have arborist prepare monthly inspection reports.

3.12 REPAIR AND REPLACEMENT

- A. General: Repair or replace transplanted trees and other plants indicated to remain or be relocated that are damaged by construction operations, in a manner recommended by the arborist and approved by Engineer.
 - 1. Submit details of proposed pruning and repairs.
 - 2. Perform repairs of damaged trunks, branches, and roots within 24 hours according to arborist's written instructions.
 - 3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Engineer.
- B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period or are damaged during construction operations that Architect or Engineer determines are incapable of restoring to normal growth pattern.
 - 1. Provide new trees of same size as those being replaced for each tree of 6 inches or smaller in caliper size.
 - 2. Provide new tree(s) at least 2-inch caliper in sufficient quantity so that sum of tree calipers equals or exceeds caliper size for each tree being replaced that measures more than 6 inches in caliper size.
 - 3. Species of Replacement Trees: Species selected by Architect or Engineer.

3.13 CLEANUP AND PROTECTION

- A. During transplanting, keep adjacent paving and construction clean and work area in an orderly condition.

- B. Protect trees from damage due to transplanting operations and operations of other contractors and trades. Maintain protection during transplanting and maintenance periods. Treat, repair, or replace damaged plantings.
- C. After planting and before Substantial Completion, remove tags, markings, tie tape, labels, wire, burlap, and other debris from transplanted trees, planting areas, and Project site.

3.14 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Except for materials indicated to be recycled, remove surplus soil, excess excavated material, waste materials, displaced plants, trash, and debris, and legally dispose of them off Engineer's property.
- B. Transport surplus satisfactory soil to designated storage areas on Engineer's property. Stockpile or spread soil as directed by Engineer.
 - 1. Except for materials indicated to be retained on Engineer's property or recycled, remove excess excavated material, waste materials, displaced plants, trash, and debris, and legally dispose of them off Engineer's property.

END OF SECTION 329600

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Planning Commission Staff Report

Planning Commission Date: 7/13/2023

Town Council Date: 8/7/2023

Hearing Type: Public Hearing
Highlands at Kings Point PD Amendment Rezoning
Z22-035

Location: Northeast corner of Cottonwood Drive and King's Point Way

Project Planner: Amber Wood Hicken

Applicant: Mitch Scarborough, THK Associates

Executive Summary: The applicant, THK Associates, is proposing to amend the Highlands at Kings Point PD to expand the Commercial Planning Area to include a parcel in Crown Point to the south. The site is located at the northeast corner of Cottonwood Drive and Kings Point Way.

Staff Recommendation: Approval

RECOMMENDED MOTION

"I move to continue the Highlands at King's Point rezone to a date certain to August 10th, 2023."

ALTERNATIVE MOTIONS

"I move the Planning Commission recommend Town Council approve the zoning."

"I move the Planning Commission recommend Town Council approve the zoning request subject to the following conditions:"
-List conditions

"I move the Planning Commission recommend Town Council deny the zoning as the request does not meet the following approval criteria:"
-List criteria not met (either by staff or Planning Commission)

I. BACKGROUND/DISCUSSION

The property within the Highlands at King's Point was annexed into the Town of Parker in 2017 and zoned as the Highlands at King's Point PD allowing for commercial uses. The Town and the property owner entered a pre-annexation agreement in 2016.

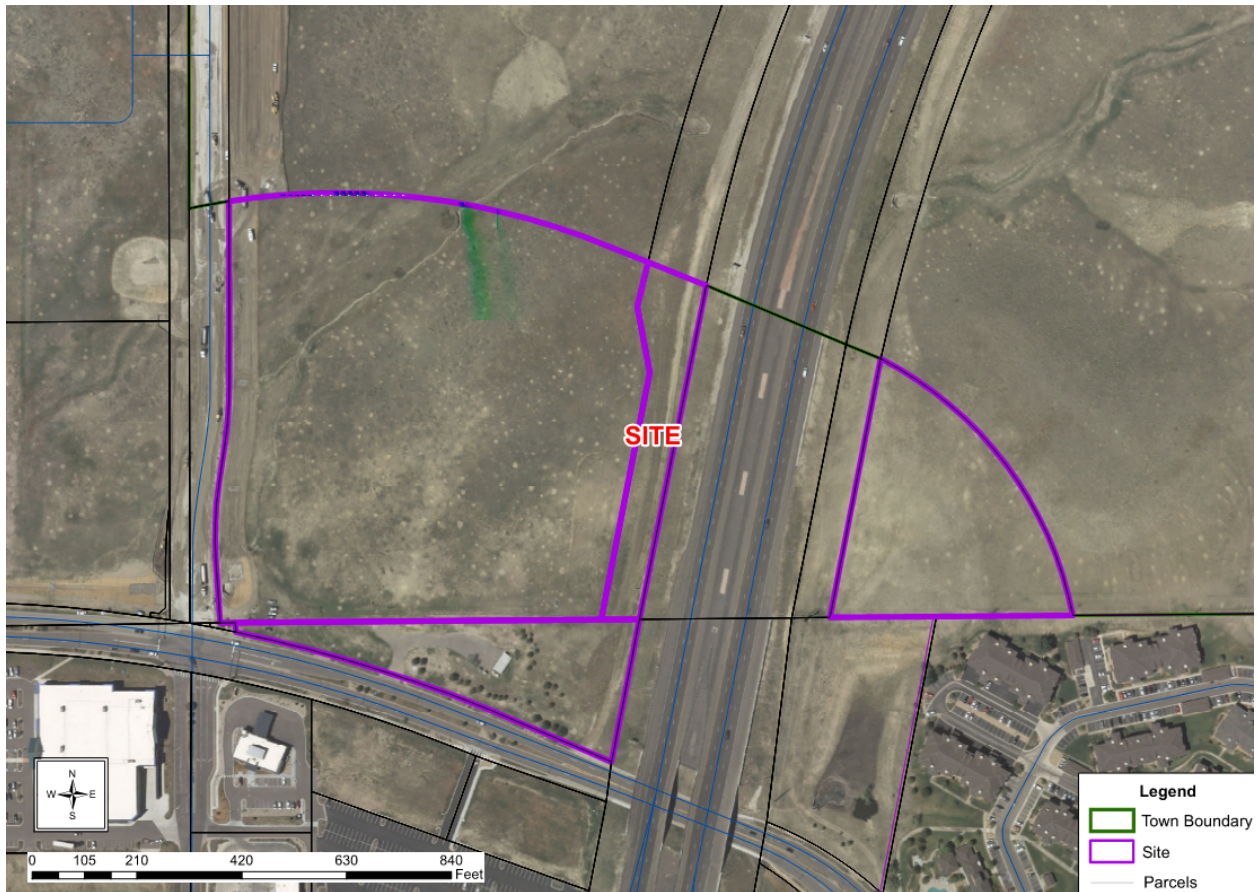
The King's Point PD has two Planning Areas. Planning Area One is zoned commercial and is currently undeveloped. Planning Area Two is zoned open space. The applicant has acquired a 2.535-acre triangular parcel to the south, Lot 1 Block 7, Crown Point Filing No. 1, which is zoned Crown Point PD for commercial, office, and hotel district uses. An existing well facility is currently located on the Crown Point Property. This triangular parcel will become part of Planning Area One, within the Highlands at King's Point PD.

The request proposes to rezone the southerly 2.535-acre property from the Crown Point PD to the Kings Point PD, Planning Area 1, creating a single commercial planning area of 17.98 acres. Planning Area Two (3.62 acres) is located on the east side of E-470 will remain zoned as open space. The applicant is requesting the zoning amendment as they recently obtained ownership of the 2.535-acre parcel and would like to create contiguous zoning.

The 2.35-acre parcel that is proposed to be added to the Highlands at King's Point PD includes a booster pump station owned by Cottonwood Water and Sanitation District, which is necessary to continue to provide water service to the Crown Point neighborhood. Cottonwood Water and Sanitation District has submitted comments to the Town in opposition to the proposed rezoning until the District is able to secure an easement over the Pump Station to ensure its continued operation.

Staff and the applicant are currently working to resolve Cottonwood's objection to a Rezoning of the property. Staff recommends that the proposed rezoning be continued to a date certain of August 10th, 2023, in order to receive approval from Cottonwood Water.

Vicinity Map



II. PRIOR ACTIONS

Date	Action
12/4/1989	Crown Point Center was annexed into the Town of Parker and zoned as a planned development.
8/7/2001	Crown Point Development Guide was approved by the Town of Parker.
10/16/2017	The property within Highlands at King's Point was annexed into the Town of Parker and zoned as a planned development.
10/16/2017	Town Council adopted the Highlands at King's Point Planned Development.

III. CURRENT SITE DATA

Existing Zoning	Planned Development
Overlay District	N/A
PD & Plan Area	Highlands at King's Point Planning Area 1, Planning Area 2; Commercial and Crown Point Planning Area 1
Master Plan Area	Mixed Use – Residential Emphasis
Site Acreage	21.6143(includes new acquisition from Crown Point)

Subdivision		Highlands at King’s Point	
Existing Use		Undeveloped	
Surrounding Uses			
	Master Plan Land Use	Zoning	Existing Use
North	City of Aurora	R1A Single Family Residential	Undeveloped
South	Regional Commercial Retail	Crown Point Planned Development	Commercial businesses, Cottonwood Drive
East	City of Aurora	R1A Single Family Residential	Undeveloped
West	Mixed Use	Vantage Point Planned Development	Undeveloped

IV. PARKER 2035 MASTER PLAN

[Parker 2035 Master Plan | Town of Parker - Official Website](#)

MASTER PLAN CONSISTENCY	
Master Plan Designation	Mixed Use – Residential Emphasis ☒ Consistent ☐ Inconsistent
Master Plan Character Discussion	The Parker 2035 Master Plan identifies Highlands at Kings Point Property and the Crown Point property as Mixed Use within the E-470 Corridor. The Mixed Use designation within the E-470 Corridor recommends higher intensity uses including multifamily, senior housing, assisted-living facilities, office, retail and restaurants. The proposed Planned Development to allow commercial sales tax generating uses is consistent with the Parker 2035 Master Plan. Commercial uses in this area are appropriate when a part of a mixed-use development, are of a scale that serves the needs of the areas residents or provides support to adjoining uses.
Consistent Goals/Strategies	Land Use 1.A Land Use 1.B Land Use 1.D Land Use 1.E Land Use 1.F Land Use 1.G Land Use 1.H Land Use 1.I Land Use 1.J
Staff Analysis	This proposal aligns with the Master Plan. The planning areas within this zoning amendment can be developed with supporting retail, office, and commercial uses. The flexibility in land uses provides the framework to combine supporting uses and allows development to

	respond to changing market conditions. The mix of retail, office, commercial and hospitality supports the goals and intent for the development of the E-470 corridor. The planning areas will help build a commercial node to service surrounding residents.
--	--

V. LAND DEVELOPMENT ORDINANCE

DEVELOPMENT POTENTIAL (Rezoning)			
Provisions	As recommended by the Master Plan	Proposed	Analysis
Units Per Acre	N/A	No proposed changes	☐ Consistent ☐ Inconsistent ☒ No Change ☐ N/A
Allowed Uses	a. Open Space b. Commercial	No proposed changes	☐ Consistent ☐ Inconsistent ☒ No Change
Height/Stories	N/A	No proposed changes	☐ Consistent ☐ Inconsistent ☒ No Change
Staff Analysis	As detailed in the analysis above, the requested rezoning is consistent with the Parker 2035 Master Plan.		

VI. ACCESS, CIRCULATION, & TRAFFIC ANALYSIS

No proposed changes to access or traffic circulation.

The King's Point West Right of Way Exemption Plat recently vacated a sliver of right of way just west of King's Point Way and granted access to Planning Area One of the Highlands at King's Point PD.

All new development on the Crown Point Property will be accessed through the Highlands at King's Point property.

VII. APPROVAL CRITERIA

Title 13.04.240.f. Approval Considerations for Rezoning Requests:

1. A need exists for the proposal.

Applicant analysis and findings:

The applicant owns both parcels described in the project narrative and both parcels are adjacent to each other. Moving the parcel that was previously in Crown Point into the Highlands at King's Point PD will create contiguous zoning.

Staff Analysis and Findings:

The project location is in an area that is already zoned for commercial uses through the Crown Point PD. Additionally, the inclusion of the 2.535 acres into the Highlands at King's Point PD creates a larger commercial development opportunity with direct visibility to Cottonwood Drive. Based on this analysis, staff has determined that this criterion has been met. Crown Point PD setbacks are 30 feet in areas abutting a perimeter and interior public streets, and the maximum building height is 60 feet. Highlands at King's Point PD setbacks are 20 feet for Cottonwood Drive, 10 feet off for E-470 ramp, 10 feet for local streets, and 10 feet for the rear, and no maximum building height exists.

2. The particular parcel of ground is indeed the correct site for the proposed development.

Applicant analysis and findings:

Merging the 2.535 acre Crown Point Parcel that borders Cottonwood Drive into the Highlands at Kings Point PD will allow for a more contiguous development and character as well as support future commercial development in this important area of Town.

Staff Analysis and Findings:

The Highlands at King's Point PD allows for the proposed use and is consistent with the Mixed Use planning area as designated by the Master Plan. This particular parcel of ground is located in a commercial area with direct visibility to Cottonwood Drive, and creates a commercial area that is consistent with the PD, LDO, and Master Plan. Staff has determined that the request meets this criterion.

3. There has been an error in the original zoning, or

Applicant analysis and findings:

N/A

Staff analysis and findings:

N/A

4. There have been significant changes in the area to warrant a zone change.

Applicant analysis and findings:

Planning Area One, Parcel Two was purchased by applicant. Additionally, multifamily residential development has commenced to the west and Aurora is reviewing the first single-family residential filing of Kings Point South located north of the proposed site. With increased residential development in the area, there is a need for additional commercial land to support this growth. In addition, Highlands at Kings Point was annexed and zoned after the smaller 2.235 acre Crown Point parcel was created.

Staff analysis and findings:

The Crown Point PD was zoned in 1989, and the Highlands at King's Point PD was zoned in 2017. Combining the proposed parcels will create cohesive zoning and development that did not exist previously due to the more King's Point zoning. The area to be included in the zoning amendment does not limit the amount of commercial uses in this area. Staff has determined that the request meets this criterion.

5. Adequate circulation exists and traffic movement would not be impeded by development.

Applicant analysis and findings:

Both parcels are vacant save for the well on the Crown Point property. No disruption to traffic or additional municipal service costs are anticipated.

Staff analysis and findings:

Roadway infrastructure exists around the property. Properties will still both have commercial services and King's Point Way and Cottonwood Drive both adjoin the site. Additional improvements to traffic and circulation will be determined at the time of platting and site plan, when a traffic study will be required. Cottonwood Drive and Kings Point Way are Town-owned collector roadways that were constructed to provide commercial access to these lots. At the time of development, internal access points will be constructed. Additionally, the zoning on the property has been restricted to Sales Tax generating uses to help pay back the cost to construct Kings Point Way. Based on this analysis, staff has determined that the request meets this criterion.

6. Additional municipal service costs would not be incurred which the Town is not prepared to meet.

Applicant analysis and findings:

Both parcels are vacant save for the well on the Crown Point property. No additional municipal service costs are anticipated.

Staff analysis and findings:

As the proposed zoning amendment does not include changes in use, no increase in municipal demand is expected. Based on this analysis, staff has determined that the request meets this criterion.

7. There are minimal environmental impacts or impacts can be mitigated.

Applicant analysis and findings:

Environmental impacts are minimal. Any environmental impacts that are discovered during the course of development will be mitigated. Planning Area Two (the eastern parcel of the property) will remain as 3.6283 acres of Open Space to be held and maintained by the owner.

Staff analysis and findings:

The Town does not anticipate significant environmental impacts. Staff has determined that the request meets this criterion.

8. The proposal is consistent with the Town Master Plan maps, goals, and policies.

Applicant analysis and findings:

The Master Plan 2035 indicates that this site is located within the Mixed Use Area of the E-470 Corridor and is within the Town's Urban Growth Area. The Mixed Use designation within the E-470 Corridor recommends higher intensity uses including multifamily, senior housing, assisted-

living facilities, office, retail and restaurants. The proposed Planned Development to allow commercial sales tax generating uses consistent with the Parker 2035 Master Plan.

Staff analysis and findings:

As detailed in Section IV of this staff report, the proposed rezoning to include the Crown Point parcel is consistent with the Master Plan.

The Parker 2035 Master Plan identifies Highlands at Kings Point Property and the Crown Point property as Mixed Use within the E-470 Corridor. The Mixed Use designation within the E-470 Corridor recommends higher intensity uses including multifamily, senior housing, assisted-living facilities, office, retail and restaurants. The proposed Planned Development to allow commercial sales tax generating uses is consistent with the Parker 2035 Master Plan.

Commercial uses in this area are appropriate when a part of a mixed-use development, are of a scale that serves the needs of the areas residents or provides support to adjoining uses.

The planning areas within this zoning amendment can be developed with supporting retail, office, and commercial uses. The flexibility in land uses provides the framework to combine supporting uses and allows development to respond to changing market conditions. The mix of retail, office, commercial and hospitality supports the goals and intent for the development of the E-470 corridor. The planning areas will help build a commercial node to service surrounding residents. Based on this analysis, staff has determined that the request meets this criterion.

9. There is adequate waste and sewage disposal, water, schools, parks, and recreation and other services to the proportional degree necessary due to the impacts created by the proposed land uses.

Applicant analysis and findings:

Future water and sewage disposal will be provided by the Cottonwood Water and Sanitation District. Combining the zoning of the two parcels does not create additional impacts for services listed above beyond what is already planned for.

Staff analysis and findings:

The property is located within Cottonwood Water and Sanitation District and infrastructure exists serving adjoining properties. Based on this analysis, staff has determined that this criterion has been met.

VIII. SUMMARY REFERRAL AGENCY COMMENTS AND CONDITIONS

Agency	Comments
Parker Engineering	No comment
Fire Life Safety	Advisory comment: There is nothing in either the adopted 2021 IBC or 2021 IFC that would prohibit or limit zoning for this application.
Parker Police	No comment

Cottonwood Water and Sanitation District	Parcel 2 (Lot 1, Block 7, Crown Point Subdivision) is proposed for rezoning as Commercial. Parcel 2 includes a Booster Pump Station owned by Cottonwood Water and Sanitation District ("Cottonwood"), which is necessary to continue to provide water service to the Crown Point neighborhood. The Booster Pump Station was constructed pursuant to a blanket easement over the entire Lot under the Crown Point Center Declaration. (Specifically, the Designation of Common Elements, recorded at Reception No. 2003023639, made the full Lot a Common Element and § 11.3 of the Declaration creates a blanket easement over Common Elements for utility purposes, including water and sewer, which the Cottonwood has never released). Cottonwood objects to rezoning of the property that does not indicate that Cottonwood has an easement for water and sewer utilities over this entire parcel. Cottonwood is willing to negotiate a narrower easement with the property owner, to provide for an easement of the booster pump station location, including its related pipelines, emergency generator, the booster pump station emergency bypass infrastructure, and all related accessories along with an access drive, and withdraw its objection if the new easement agreement is signed, recorded and noted on the rezoning map."
Urban Drainage	No comment
Xcel	No comment
IREA/CORE	Approved
CenturyLink	No comment
Comcast	No comment

IX. CONCLUSION

This zoning request is being processed to allow for contiguous zoning in the area. No changes in use are proposed, and viable commercial development will still be feasible. The application has been determined to align with the Town Master Plan and meets the zoning approval criteria of the Parker Land Development Ordinance. Based on the analysis contained in this staff report, staff recommends that Planning Commission recommends Town Council approve the zoning request.

X. RECOMMENDATION

Staff recommends that the Planning Commission continue the Highlands at King's Point rezone to a date certain, August 10th 2023.

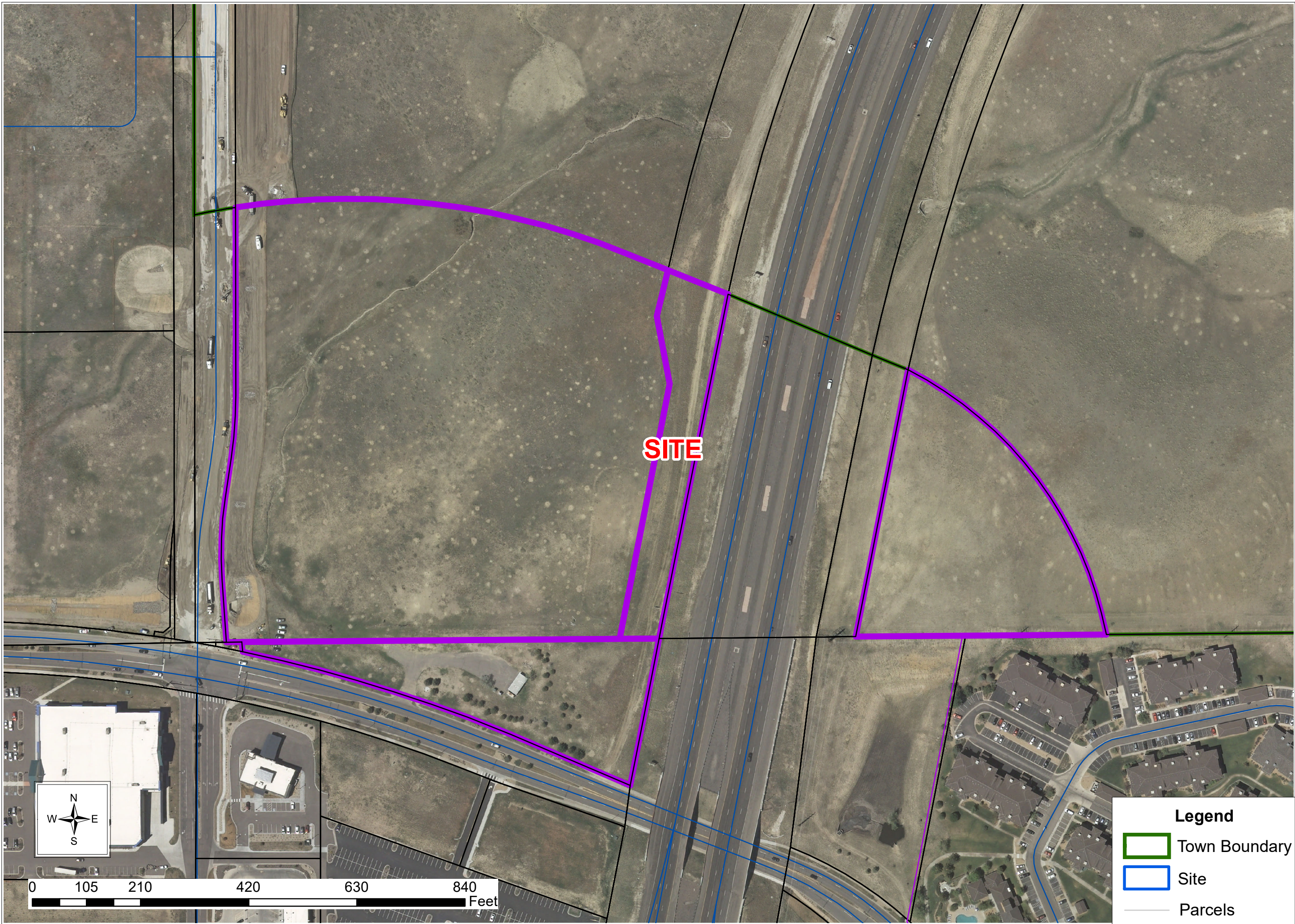
XI. ATTACHMENTS

Highlands at King Point PD Plan Amendment No. 1

Report Approved By: Bryce Matthews, Assistant Director - Planning

Highland's at King's Point

Rezone



HIGHLANDS AT KING'S POINT DEVELOPMENT PLAN AMENDMENT I

KEY MAP



PREPARED FOR: Peter Niederman
William M Moore 2014 Irrevocable Trust
50 Glenmoor Circle
Englewood, CO 80113
PH: 303.748.1100
peter@thkassoc.com

PREPARED BY: Landscape Architects/Planners
THK Associates, Inc.
2953 S. Peoria St, Suite 101
Aurora, Co 80014
PH: 303.770.7201
jgamec@thkassoc.com



Final Document
Subject To Conditions In Approval Letter

APPROVED DATE: 06/13/2023

Planning Approval By: A. Wood Hicken

	EXCEPTION PARCELS
	ACCESS EASEMENT
	R.O.W.
	UTILITY EASEMENT
	DIRT ROAD

NOTE: OWNER WILL CONVEY A 75' MULTI-USE EASEMENT TO ACCOMMODATE A 10' WIDE, "HIGH PLAINS REGIONAL TRAIL", WHEN RE-PLATTED.

LEGAL DESCRIPTION:

PLANNING AREA 1:

PARCEL ONE:

A PARCEL OF LAND LOCATED IN THE NW 1/4 OF SECTION 3, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE 6TH P.M., BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID NW 1/4 OF SECTION 3;
THENCE N89°29'59"E ALONG THE SOUTH LINE OF THE NW 1/4 OF SECTION 3, A DISTANCE OF 60.39 FEET TO THE POINT OF BEGINNING;
THENCE THE FOLLOWING FIVE (5) COURSES ALONG THE EASTERLY LINE OF A PARCEL OF LAND DESCRIBED IN SPECIAL WARRANTY DEED RECORDED AT RECEPTION NUMBER 2016072202, DOUGLAS COUNTY CLERK AND RECORDER'S OFFICE;

1. THENCE N03°55'44"W A DISTANCE OF 121.65 FEET TO A POINT OF CURVE;
2. THENCE ALONG A CURVE TO THE RIGHT HAVING A CENTRAL ANGLE OF 12°26'57", A RADIUS OF 730.00 FEET, AN ARC LENGTH OF 158.61 FEET, A CHORD BEARING OF N02°17'45"E AND A CHORD DISTANCE OF 158.30 FEET;
3. THENCE N08°31'13"E A DISTANCE OF 79.00 FEET TO A POINT OF CURVE;
4. THENCE ALONG A CURVE TO THE LEFT HAVING A CENTRAL ANGLE OF 08°38'06", A RADIUS OF 810.00 FEET, AN ARC LENGTH OF 122.07 FEET, A CHORD BEARING OF N04°12'10"E AND A CHORD DISTANCE OF 121.96 FEET;
5. THENCE N00°06'53"W A DISTANCE OF 364.78 FEET;

THENCE EASTERLY, ALONG THE ARC OF A NON-TANGENT CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 30°48'13", A RADIUS OF 1439.00 FEET, AN ARC LENGTH OF 773.64 FEET, A CHORD BEARING OF S83°17'49"E, AND A CHORD DISTANCE OF 764.36 FEET;
THENCE S67°52'58"E A DISTANCE OF 86.64 FEET TO THE WESTERLY RIGHT-OF-WAY LINE OF E-470 PUBLIC HIGHWAY (REC. NO. 1999036250);
THENCE SOUTHWESTERLY, ALONG SAID RIGHT-OF-WAY LINE THE FOLLOWING THREE COURSES:

1. THENCE S13°22'45"W, A DISTANCE OF 91.73 FEET;
2. THENCE S10°45'44"E, A DISTANCE OF 133.94 FEET;
3. THENCE S11°07'45"W, A DISTANCE OF 504.32 FEET TO THE SOUTHERLY LINE OF SAID NW 1/4 OF SECTION 3;

THENCE S89°29'59"W, ALONG SAID SOUTHERLY LINE, A DISTANCE OF 763.77 FEET TO THE POINT OF BEGINNING;
COUNTY OF DOUGLAS, STATE OF COLORADO.

PARCEL CONTAINS (673,137 SQUARE FEET) 15.4531 ACRES, MORE OR LESS

PARCEL TWO:

LOT 1, BLOCK 7, CROWN POINT, (ALSO REFERRED TO AS CROWN POINT F#1, THE PLAT OF WHICH IS RECORDED OCTOBER 17, 2000 UNDER RECEPTION NO. 2000073633,

EXCEPT THAT PORTION TAKEN AND CONDEMNED BY KINGS POINT SOUTH METRO DISTRICT NO. 1 IN RULE AND ORDER RECORDED NOVEMBER 9, 2015 UNDER RECEPTION NO. 2015081062 AND AS DEEDED IN QUITCLAIM DEED RECORDED NOVEMBER 15, 2016 UNDER RECEPTION NO. 2016082598, AND ALSO EXCEPTING THAT PORTION CONVEYED TO THE TOWN OF PARKER IN SPECIAL WARRANTY DEED RECORDED NOVEMBER 30, 2017 UNDER RECEPTION NO. 2017075435,

COUNTY OF DOUGLAS, STATE OF COLORADO

PLANNING AREA 2:

PARCEL ONE:

A PARCEL OF LAND LOCATED IN THE NW 1/4 OF SECTION 3, TOWNSHIP 6 SOUTH, RANGE 66 WEST OF THE 6TH P.M., BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHWEST CORNER OF SAID NW 1/4 OF SECTION 3; THENCE N89°29'59"E, ALONG THE SOUTHERLY LINE OF SAID NW 1/4, A DISTANCE OF 1283.62 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF E-470 PUBLIC HIGHWAY (REC. NO. 1999036250) AND THE POINT OF BEGINNING;
THENCE NORTHEASTERLY, ALONG SAID RIGHT-OF-WAY LINE THE FOLLOWING TWO COURSES:

1. THENCE N11°07'45"E, A DISTANCE OF 523.56 FEET;
2. THENCE N13°22'45"E, A DISTANCE OF 4.74 FEET;

THENCE LEAVING SAID RIGHT-OF-WAY, ALONG THE ARC OF A NON-TANGENT CURVE TO THE RIGHT, HAVING A CENTRAL ANGLE OF 52°09'34", A RADIUS OF 730.00 FEET, AN ARC DISTANCE OF 664.56 FEET, CHORD BEARING OF S36°46'53"E AND A CHORD DISTANCE OF 641.85 FEET TO THE SOUTHERLY LINE OF SAID NW 1/4 OF SECTION 3; THENCE S89°29'59"W, ALONG SAID SOUTHERLY LINE, A DISTANCE OF 486.49 FEET TO THE POINT OF BEGINNING;
COUNTY OF DOUGLAS, STATE OF COLORADO.

PARCEL CONTAINS (158,048 SQUARE FEET) 3.6283 ACRES, MORE OR LESS

SIGNATURE BLOCK BY OWNER

OWNERS / MORTGAGERS

BY: PETER NEIDERMAN,
DOUGLAS COUNTY ASSOCIATES LIMITED PARTNERSHIP, LLP

TITLE: MANAGER

WITNESS BY:
STATE OF COLORADO)
COUNTY OF)SS

SUBSCRIBED AND SWORN TO BEFORE ME THIS ____DAY OF ____, 20__

BY: _____

MY COMMISSION EXPIRES: _____

PLANNING COMMISSION ACCEPTANCE

THIS DEVELOPMENT PLAN WAS REVIEWED AND RECOMMENDED FOR APPROVAL BY

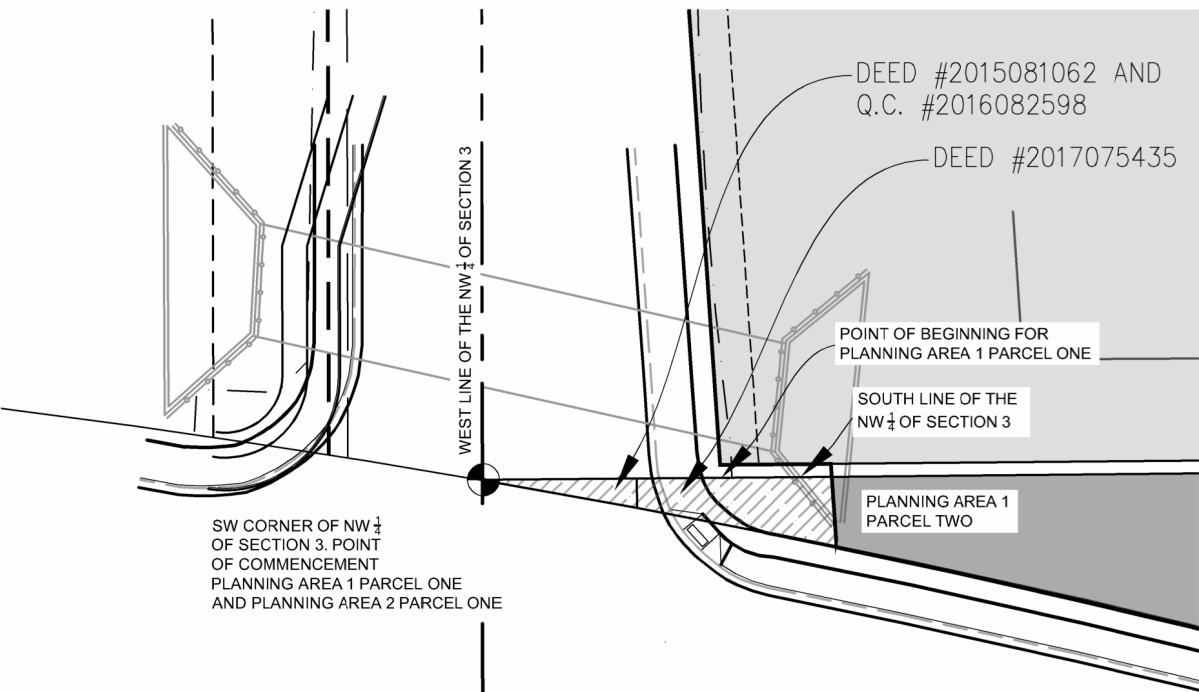
THE TOWN OF PARKER PLANNING COMMISSION FOLLOWING A

PUBLIC HEARING HELD ON THE ____DAY OF ____, 20__

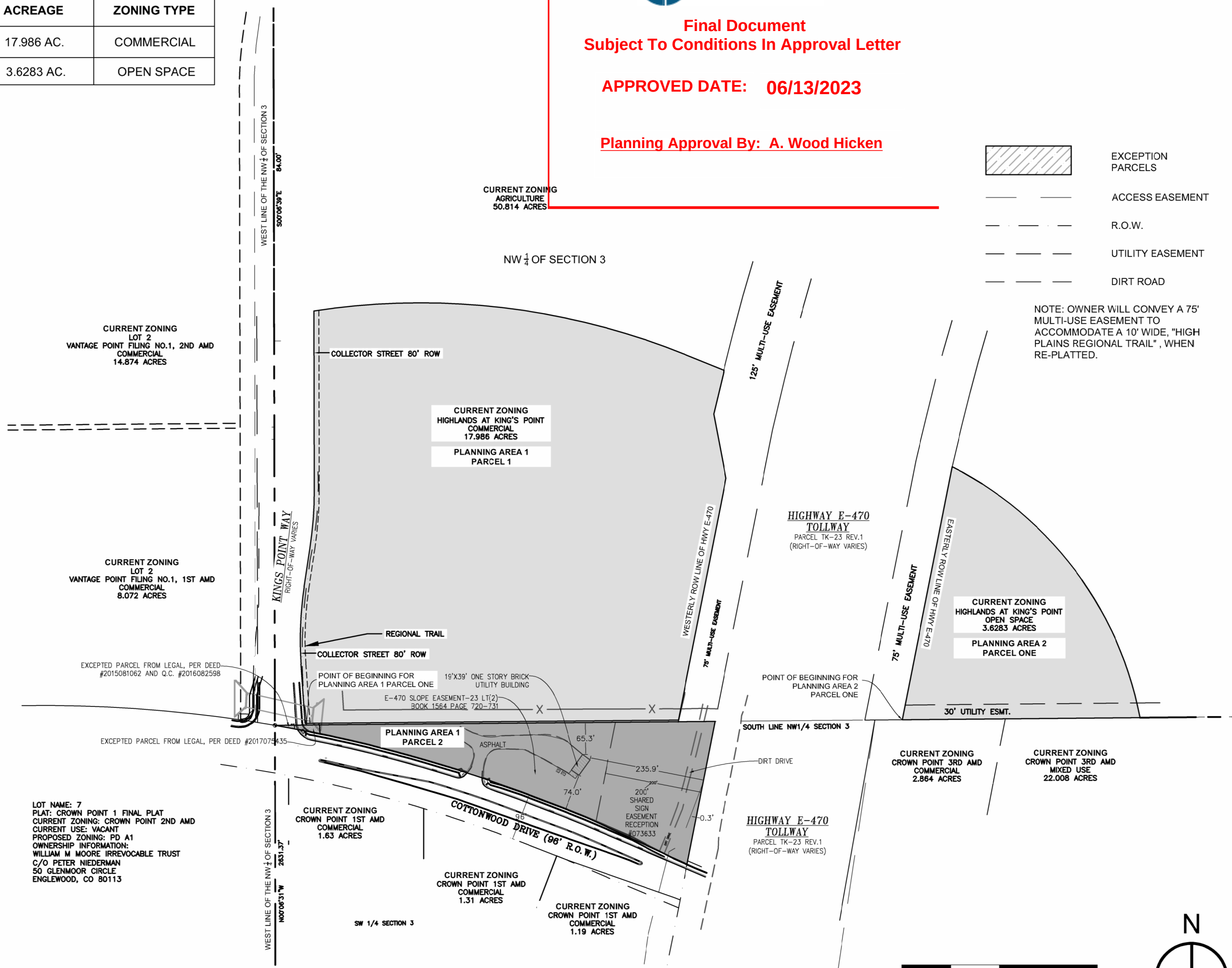
PLANNING DIRECTOR, ON BEHALF OF THE TOWN OF PARKER PLANNING COMMISSION

LAND USE TABLE

PLANNING AREA	ACREAGE	ZONING TYPE
ONE	17.986 AC.	COMMERCIAL
TWO	3.6283 AC.	OPEN SPACE



EXCEPTED PARCELS: 1" = 50'



0 100 200 400
SCALE: 1" = 200'

REVIEWS	DATE	#
SECOND SUBMITTAL	2-1-2023	1
THIRD SUBMITTAL	4-17-2023	2
FOURTH SUBMITTAL	6-7-2023	3
		4
		5
		6

PROJECT:	HIGHLANDS AT KING'S POINT DEVELOPMENT PLAN AMENDMENT I
DRAWING:	
CLIENT:	PETER NIEDERMANN
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
SCALE:	HORZ: VERT: 6-7-2023

PLANNER/LANDSCAPE ARCHITECT:
THK ASSOCIATES, INC.
2953 S. PEORIA STREET, SUITE 101
AURORA, CO 80014
P: 303.770.7201
E: JGAMEC@THKASSOC.COM

thk associates, inc.

SHEET NUMBER
L-1
SHEET 1 OF 1