



INSTRUCTIONS TO PROPOSERS

**CITY AND COUNTY OF DENVER
REQUEST FOR PROPOSAL**

**CITY PARK GOLF COURSE
PARKS AND DRAINAGE IMPROVEMENTS
DESIGN-BUILD PROJECT**

DATE OF ISSUANCE: JANUARY 12, 2017

CITY AND COUNTY OF DENVER

Request for Proposals
for
Design-Build Services
for the
Platte to Park Hill: Stormwater Systems

City Park Golf Course Parks and Drainage Improvements Design-Build Project

Date of Issuance: January 12, 2017

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(1) INSTRUCTIONS TO PROPOSERS

Proposals are requested for design-build services for the Platte to Park Hill: Stormwater Systems City Park Golf Course Parks and Drainage Improvements Design-Build Project (Project). The Work included for this procurement shall include the design and construction of the City Park Golf Course, integrated detention, water quality, short game/chipping area, driving range, First Tee facilities, putting greens, irrigation, parking lots, site circulation and access, retaining walls, accessory/outbuilding structures, integration/preservation of historic defining features, and the possible demolition and reconstruction of the Clubhouse and Maintenance Facility. This Request for Proposal (RFP) is a solicitation by City and County of Denver (City) to procure a single entity to design and construct the Project.

The selection of a Proposer awarded the Project is based on a two-phase selection process: Phase 1 solicited Statements of Qualifications (SOQ) from interested teams, and resulted in the short-listing of Proposers that are invited to participate in Phase 2 of this selection process. Phase 2 requires Proposers to submit Proposals identifying their design and construction team and complying with all programmatic, design, schedule, performance, and cost criteria enumerated in this RFP.

Only the design-build teams shortlisted on basis of scores received on their SOQ submitted during Phase 1 (Proposers) are allowed to participate in the Proposal competition. Shortlisted Proposers, shown in alphabetical order, include:

- Landscapes Unlimited
- Saunders Construction Inc.
- SEMA Construction Inc.

SECTION 1 - INTRODUCTION

The City seeks to procure a Contractor to provide all required design and construction services for the Project by evaluating Proposals received from the Proposers participating in Phase 2 of this procurement against the requirements of the RFP. The RFP and its attachments detail the Project elements and include functional, program, design, schedule, performance, and cost criteria that will be the basis for subsequent design and construction services. These documents specify certain minimum requirements of the golf course reconstruction, possible Clubhouse and Maintenance Facility relocation, other site improvements, irrigation, landscaping, lighting, roadway, structures, Utilities, drainage, water quality, environmental, aesthetics, and other Project elements.

All relevant Project materials will be provided to shortlisted teams when and as they become available. The website address will be provided to the point of contact named by each Proposer in their SOQ submitted and shortlisted for this Project. Proposers are advised to routinely visit the website since new information or requirements may be posted at any time without notice.

1.1 General Description of Services and Project

The successful Proposer will be responsible for the design, construction, establishment, and Warranty of the Project. Final golf course routing, grades, hazard locations, tee box locations, path alignments, accessory/outbuilding structures, drainage, geotechnical, irrigation (including pump sizing), traffic and roadway, landscaping, possible demolition and reconstruction of the Clubhouse and Maintenance Facility, architectural features and aesthetics, and all other final design features will be the responsibility of the successful Proposer. The final design documents shall be completed in English units of measurement and language. The design and construction by the successful Proposer shall be completed in accordance with applicable Project and City Standards and Specifications identified in this RFP. The City's intent is to

permit flexibility in design and the subsequent construction to accommodate processes, procedures and innovative techniques preferred by the successful Proposer, as long as they are consistent with site conditions, good engineering practices, and other standards, guidelines, and procedures identified in this RFP.

The Project includes: the design and construction of all Project improvements, including but not limited to survey, geotechnical, foundation, drainage, structures, retaining walls, grading, roadway, golf course design, irrigation, possible demolition and reconstruction of the Clubhouse and Maintenance Facility, accessory/outbuilding structures, pavement, traffic features, lighting, aesthetics, environmental compliance, traffic control measures, permits, landscaping, warranties and establishment, standards, and specifications referenced in this RFP. Refer to the Technical Requirements for the elements comprising the Project.

This RFP outlines the design-build competitive process, and a Proposer will be selected based on a combination of technical factors, schedule, and price to define the best value.

1.2 Special Considerations

The need to accelerate Project development and delivery to meet the needs of the City and the ongoing and upcoming projects in the Work area increases Project complexity. Effective management and coordination to resolve changing conditions efficiently will be required of the successful Proposer.

1.2.1 Coordination with Adjacent Projects

Construction of the Central 70 project, Brighton Boulevard – 29th to 44th Street Phase II project, Brighton Boulevard – 44th Street to Race Court project, Globeville Landing Outfall projects, 39th Avenue Greenway and Channel Project, Park Hill Storm Phase V and VI projects, 38th Avenue and Holly Pond Improvements project, and private development, which either pass through or near the Project, will be on going during the anticipated design and construction period. Close coordination between the Contractor for the Project, the above mentioned projects, any others that may exist, and Utility Owners performing Utility relocations adjacent to and within the Project area shall be required.

1.2.2 Right of Way Availability

The Project is expected to be constructed on parklands already owned by the City or existing City right-of-way (ROW). No additional acquisition of ROW from third parties is anticipated.

1.2.3 Utility Relocations

The City is obtaining Utility Agreements with the owners of existing Utilities that may require relocation. The Contractor shall coordinate and cooperate with the City and Utility Owners to ensure that all Utility Work (whether performed or furnished by the Utility Owners or by Contractor) is performed in accordance with Utility Agreements. The successful Proposer shall be responsible for relocating or protecting in-place other Utilities affected by the Project, as depicted within the Utility Data. Utility requirements, Utility status, and Utility Agreements are contained in the RFP and will be updated with any change per addendum during the procurement, as new information is developed.

1.2.4 Colorado Open Records Act

The City considers documents submitted by Proposers in response to this RFP, during the selection process and during negotiations, confidential until a contract is executed. However, all documents submitted by Proposers are subject to the Colorado Open Records Act, C.R.S. §§ 24-72-201, et. seq. (CORA). CORA allows the City to withhold trade secrets, privileged information, and confidential commercial, financial, geological, or geophysical data. If the City receives a request for such information,

it will notify the Proposer so that the Proposer may confirm which information in its Proposal is confidential. If a suit is filed to compel disclosure of such information, the City will notify the Proposer, and the Proposer shall be responsible for taking appropriate action to defend against disclosure of confidential information.

1.2.5 Public Information

The Contractor shall develop, implement, and maintain a Public Information Plan (PIP). The PIP shall include detailed procedures to follow to communicate information to stakeholders including the public. The Contractor shall balance meeting the Project's fast-paced schedule, while also being responsive to community concerns about the impacts of design and construction of the golf course. The Contractor shall articulate an approach for engaging the public with clear, consistent and frequent communications on the progress of design and construction of the Project.

1.3 Contractual Milestone and Proposed Completion Date

The City requires two Contractual Milestones, (1) Substantial Completion which means the Work has progressed to the point that the City can beneficially occupy and utilize the Work for the purposes for which it is intended; including, without limitation the achievement of the following specific conditions: (1) the full functioning and operational status of the City Park Golf Course drainage detention system in accordance with the requirements of the Contract Documents, including the establishment requirements set forth in the Technical Specifications; (2) the full establishment of the City Park Golf Course landscaping such that all 18 holes shall be playable and safe as a fully functioning golf course subject only to routine maintenance and normal operations; and (3) the issuance of unconditional certificates of occupancy for all structural components or facilities included in the Work (including the Clubhouse, the Maintenance Facility, outbuildings, and any other structures), no later than June 30, 2019; and (2) Final Acceptance, no later than December 31, 2019. Proposals that complete this Project earlier than these Contractual Milestones will be scored more favorably than a Proposal to meet only the requirement. The Proposed Completion Date, defined as the Contractor guaranteed Substantial Completion date submitted in Exhibit 1, Proposal Form, shall be the required date for Substantial Completion. Failure to meet the Substantial Completion date provided in Exhibit 1, Proposal Form will result in the assessment of liquidated damages up to \$5,000 per day for each day beyond the Substantial Completion date.

1.4 General Information

This solicitation is issued by the City, pursuant to the authority vested in the Executive Director of Public Works by the Charter and ordinances of the City, including without limitation D.R.M.C. 20-56. As the City's best interests may appear, the City reserves the right to terminate, suspend or modify this selection process at any time; reject any or all submittals at any time; and waive any informalities, irregularities, or omissions in submittals at any time.

1.5 RFP Administration

The Executive Director has designated Public Works Administrator, Elizabeth Zollo, to serve in the capacity of Project Administrator for this selection process. The Project Administrator will be responsible for coordination of the procedures and rules specified in this RFP, managing this process and all other matters related to the selection of a design-build contractor for the Project. In conducting the process in a fair and equitable manner, the Project Administrator will serve as the primary intermediary between the Proposers, City, and the members of the Selection Committee.

1.5.1 Communication with City

Proposers are to direct all inquiries and clarification questions regarding this RFP to Elizabeth Zollo in the Public Works Department via email at Elizabeth.Zollo@denvergov.org. All questions shall be submitted in writing using the Request for Information (RFI) Form provided in Exhibit 4 of this Instructions to Proposers (ITP). The RFI form should only be used to clarify the intent of the RFP or Basis of Design Plans. RFIs marked confidential, and if the City agrees with confidentiality designation, will be answered in writing and transmitted directly to the point of contact designated by the Proposer. RFIs shall be submitted in editable Excel format to allow the entry of City responses directly on the form. RFIs submitted in PDF or password protected formats that do not allow the entry of City responses directly on the form will not be addressed. Non-confidential RFI responses will be provided in the form of an addendum to the RFP.

RFIs shall be submitted in accordance with Table 1 of this ITP.

All other questions or requests for clarification received by the deadline for submitting written questions will be answered in writing, and transmitted simultaneously to all Proposers participating in the RFP process no later than 3:00 PM, April 14, 2017.

Except for the written comment period, the scheduled One-on-One Meetings, and the question and answer process, no member of any Proposer, or any agent or representative thereof, shall have any direct or indirect contact or communication with the City or the City's consultants, or any City employee or elected official on any subject relating to this Project or the design-build procurement process. Except for the Pre-Proposal Meeting and the scheduled One-on-One Meetings, all communication from any member of any Proposer shall be in writing and submitted via e-mail pursuant to the rules set forth in this RFP. Any Proposer member that contacts the City about the Project, other than the designated contact from the date of issuance of the RFP and prior to the completion of the selection process, may be disqualified from further participation in the selection process, at the City's sole discretion.

The City will issue addendums to the RFP as the City deems necessary. RFP addendums will be posted to the Project website.

During the RFP process, communication by Proposers to property owners, Utility Owners, Denver Zoo, and Denver Museum of Nature & Science employees and officials shall not be permitted.

1.5.2 Pre-Proposal Meeting

A Pre-Proposal Meeting is scheduled for January 20, 2017 to discuss the Project scope and general RFP requirements. The meeting will be held at 2:30 PM in Conference Room 1.B.6 in the Clerk and Recorder's office, in the Webb Building at 201 West Colfax. As this represents the first opportunity to introduce your proposed team to the City, it is strongly encouraged that each Proposer ensure the attendance of their project management team representatives. The City will respond to any questions raised by participating teams at this meeting. If the City is unable to answer a question raised in the Pre-Proposal Meeting, the question shall be submitted in writing to receive a formal, written response after the meeting.

1.5.3 Conflict of Interest

The Proposer's attention is directed to 23 CFR Section 636 Subpart A, and in particular to Subsection 636.116 regarding organizational conflicts of interest. Section 636.103 defines "organizational conflict of interest" as follows:

Organizational conflict of interest means that because of other activities or relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the owner, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.

The Proposer is prohibited from receiving any advice or discussing any aspect of the Project or this procurement with any person or entity with a conflict of interest. Proposers are required to not seek information from or partner in design or construction with any firm that has worked as a subconsultant to Matrix Design Group, Inc. (Matrix) or Atkins North America, Inc. (Atkins), Design Workshop, and Livable Cities Studio for services associated with the Project. Each Proposer is required to confer with their design and construction team members to determine that there is no conflict of interest.

The Proposer agrees that if, after award, an organizational conflict of interest is discovered, the Proposer shall make an immediate and full written disclosure to the City that includes a description of the action the Proposer has taken or proposes to take to avoid or mitigate such conflicts. If an organizational conflict of interest is determined to exist, the City may cancel the award and then award the Project to the next highest-ranking Proposer or the City may cancel the design-build contract for the Project, at its discretion. If the Proposer was aware of an organizational conflict of interest prior to the award of the contract and did not disclose the conflict to the City, the City may terminate the contract for default.

The City may disqualify a Proposer if any of the Proposer's Major Participants belong to more than one Proposer organization.

1.5.4 Changes to Organization

Key Personnel or Major Participants identified in the SOQ may not be removed, replaced, or added without the written approval of the City. The City may revoke an awarded contract if any Key Personnel or Major Participant identified in the SOQ is removed, replaced, or added to without City's written approval.

Changes to organization request letters shall document how the proposed removal, replacement, or addition provides an equal to or better candidate than the Key Personnel or Major Participant provided in the SOQ. The City will use the criteria specified in the RFQ and the qualifications identified by the Proposer in the SOQ to evaluate all requests. To qualify for City's approval, a written request shall be submitted to the Project Administrator at the e-mail address referenced in Section 1.5.1. The deadline to submit requests for Key Personnel or Major Participant changes is 3:00 PM local time, April 6, 2017.

SECTION 2 - SELECTION PROCESS

This is a best-value procurement for a Fixed Contract Price in which Cost, Technical Design, Project Approach, Quality Management, and Project Coordination will form the basis of value. Exceeding the Project requirements is strongly encouraged and will be evaluated as part of the best value selection process. The Proposer ultimately awarded this Project shall provide all design and construction services for the delivery of a fully functional Project that conforms to the Proposal submitted and the Fixed Contract Price reflected in Exhibit 1, Proposal Form.

This RFP is not intended to inhibit or limit the creativity of engineers, architects, or design professionals participating in a Proposer team. Rather, it is intended to facilitate the design and construction process by providing all members of the Proposer with a clear understanding of the Project requirements and the expectations of the City. The Proposers participating in this procurement shall submit a Proposal that will result in a completed Project with design and construction quality meeting or exceeding the requirements of this RFP. Exceptions or deviations from these requirements will be allowed as authorized by RFP

addenda or approved Alternative Technical Concept (ATC) Proposals. Any qualifications, limitations, or exceptions to these requirements included in the Proposal may be cause for rejection.

2.1 Process Overview

Each Proposal will undergo a comprehensive technical and design evaluation to ensure compliance with all mandatory and minimum performance criteria and the achievement of all requirements for the Fixed Contract Price. Depending upon the Selection Committee’s findings, questions arising from these evaluations may be submitted to each team for clarification. Each Proposer shall be expected to respond to these questions promptly – within three working days of receiving the Request for Clarification. In addition, each Proposer shall present its Proposal to the Selection Committee.

The Selection Committee will consider the findings of the cost Proposal, technical evaluation and subsequent clarifications, the Proposer presentations, and all submitted material. The Selection Committee will obtain technical advice and review of the design as needed to evaluate each Proposal. The Selection Committee will select the best-value Proposal for award of the design-build Contract.

2.2 Project Procurement Schedule

Table 1 shows the proposed schedule for the design-build competition, selection, and award. This schedule will be maintained to the greatest degree possible; however, the City reserves the right to modify the schedule at any time to address changing circumstances.

Table 1 Project Procurement Schedule

Activity	Date
Issue Request for Proposals	January 12, 2017
Pre-Proposal Meeting	January 20, 2017
Agendas due and last date to submit RFIs and ATCs for One-on-One Meeting #1	February 6, 2017
Scheduled One-on-One Meeting #1	February 15 and 16, 2017
Agendas due and last date to submit RFIs and ATCs for One-on-One Meeting #2	March 17, 2017
Scheduled One-on-One Meeting #2	March 29 and 30, 2017
Last date to submit RFIs, ATCs, and requests for changes to organization	April 6, 2017
City responses to RFIs, ATCs, and requests for changes to organization	April 14, 2017
Final addendum for Proposals	May 2, 2017
Submission of design-build Proposals	May 12, 2017
Interviews/Presentations to Selection Committee	May 23, 2017
Selection Committee Recommendations	May 25, 2017
Anticipated Notice of Intent to Award	May 26, 2017
Anticipated Contract Negotiation/Execution	Early Summer
Anticipated Notice to Proceed	July 2017

2.3 Fixed Contract Price

The Fixed Contract Price is defined as the design-builder’s lump sum price to complete all Project requirements entered on Exhibit 1, Proposal Form. This Fixed Contract Price shall include, but is not

limited to: final design and construction for the Project, all labor and professional services needed to produce the design and construction, and the materials and equipment incorporated in the design and construction, all construction services necessary to complete the Project in a condition ready for meeting Contractual Milestones, and gaining Final Acceptance. Included in the Work, the selected Contractor shall provide all on-site Utilities required to complete the Work (for example, power leads and water); and necessary Project management for design and construction activities, permit acquisitions, landscaping Warranties and other Warranties, establishment period, and all documentation to satisfy the requirements of the City.

To meet City payment requirements, the Proposer recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (CPM System) for this Project. Bidders are urged, when preparing a bid, to contact the Textura® Corporation for pricing schedule and fees, as all fees associated with the CPM System are to be paid by the Contractor and subcontractor for billings for work performed.

The Contractor recognizes and agrees that it shall be required to use the Textura® Construction Payment Management System (CPM System) for this Project. All fees associated with the CPM System are to be paid by the Contractor for billings for Work performed. The Contractor is required, when preparing a Fixed Contract Price, to enter the price of the CPM service on the line provided for the service. The fee is all inclusive of all subcontractor, Project and subscription fees associated with the CPM System. The Contractor shall calculate the fee based on a percentage of their Fixed Contract Price, and then should include it on the line item provided in the Schedule of Values labeled “Textura Construction Payment Management System Fee”. This expense becomes part of the Contract Documents and billable to the City. Textura® will invoice the awarded Contractor directly. All costs including but not limited to costs associated with training, entering data or utilizing Textura® other than the Textura® CPM System Fee are overhead and shall not be reimbursed by the City. The Contractor is responsible for tax on Textura® fee. As with other taxes, the City will not reimburse Contractor for this cost and therefore this cost should be included in Contractor’s Fixed Contract Price. Textura® will invoice the Contractor directly.

Table 2 Textura® Invoicing

Project Size	Fee (% of Bid)
< \$1,000,000	0.22% (.0022)
\$1,000,001 - \$5,000,000	0.17% (.0017)
\$5,000,001 - \$20,000,000	0.12% (.0012)
\$20,000,001 - \$50,000,000	0.10% (.0010)
\$50,000,001 - \$100,000,000	0.08% (.0008)
\$100,000,001 - \$500,000,000	0.05% (.0005)
> \$500,000,000	Contact Textura® for program pricing

For more information:

<http://www.denvergov.org/content/denvergov/en/contract-administration/bidding-process.html>

2.4 Maintaining Team Integrity

The selected Proposer may not replace a Major Participant or any Key Personnel, as designated in the Contractor’s SOQ without the written permission of the City. The team may propose to add design-build subcontractors to the team with approval of the City. The Proposer may solicit competitive Proposals for

subcontractors not included on the original team and then engage and manage those subcontractors within the limits of the business terms and conditions for general conditions, general requirements, design services, fees (profit), bonds, and insurance.

2.5 One-on-One Meetings

Proposers will be provided two opportunities to meet with the City and its advisors in confidential One-on-One Meetings, lasting up to four hours each. Proposed times for One-on-One Meetings are shown in Table 3, One-on-One Meeting/Review Workshop Schedule. The purpose of these meetings is to provide Proposers an opportunity to review and discuss the Project requirements, present and discuss ATC Proposals, and obtain initial buy-in by the City technical staff before expending significant time and resources in fully developing innovative and alternative ideas. The intent is to promote open communications between the Proposer and the City, provide guidance, and ensure that any proposed ATC conform to all Project requirements and that the Project can be designed and constructed for a Fixed Contract Price within the established budget. The Proposer’s agenda for each meeting should fit the needs of their respective team. To ensure that the proper technical disciplines are available to address comments and review innovative ideas, each Proposer shall submit an agenda listing the topics for discussion to Elizabeth.Zollo@denvergov.org, in accordance with Table 1, Project Procurement Schedule, prior to each scheduled One-on-One Meeting date.

Table 3 One-on-One Meeting/Review Workshop Schedule

Workshop #1 Location: Webb Building	Date	Time
Saunders Construction Inc.	February 15, 2017	8:00 AM to 12:00 AM
Landscapes Unlimited	February 15, 2017	1:00 PM to 5:00 PM
SEMA Construction Inc.	February 16, 2017	8:00 AM to 12:00 AM
Workshop #2 Location: Webb Building	Date	Time
Landscapes Unlimited	March 29, 2017	8:00 AM to 12:00 AM
SEMA Construction Inc.	March 29, 2017	1:00 PM to 5:00 PM
Saunders Construction Inc.	March 30, 2017	8:00 AM to 12:00 AM

Oral questions raised at the One-on-One Meetings will be answered informally at the meeting, by reference to the RFP, and/or in an addendum to the RFP. Communications from the City at these One-on-One Meetings are considered informal. The Proposer shall submit oral questions, raised during the One-on-One Meetings, in writing with either an ATC Proposal or a formal RFI to receive a formal response. All questions as part of an ATC Proposal will be considered confidential.

All parties in attendance will hold in strict confidence information provided in each One-on-One Meetings. Program, technical requirements or compliance issues arising out of the workshops that affect all competing Proposers, or change the Project’s requirements or program, will be documented in written form and distributed to all participating teams in an addendum to the RFP.

2.6 Alternative Technical Concepts

Innovative ideas to enhance Project goals, reduce Project cost, and shorten schedule are encouraged. Confidential One-on-One Meetings, as discussed in this ITP, are offered for Proposers to explore and explain their ideas for ATCs and Project betterments (not scope reductions), or raise any issues regarding the Project requirements. All proposed ATCs shall be documented on Exhibit 3, Alternative Technical

Concept Proposal Form, and submitted for formal Approval by the City prior to their inclusion in a Proposal response. Proposers shall submit technical information supporting their ATC ideas in accordance with Table 1 Project Procurement Schedule prior to the One-on-One Meetings to promote a more comprehensive discussion and evaluation of the concept at these sessions.

After review of the formal ATC Proposal, the City will respond to the Proposer in writing with their position on each ATC: No Objection, No Objection with Conditions, or Rejected. Proposers shall identify all "No Objection" ATCs included in their Proposal, and outline their approach to satisfy conditional ATCs included in their Proposal. Documentation shall be attached to the technical Proposal submittal to record what Project elements are included in the Fixed Contract Price. To qualify for City's Approval, ATCs shall be submitted to the Project Administrator at the e-mail address referenced in Section 1.5.1. ATCs that will be discussed in the One-on-One Meetings shall be submitted prior to the meetings in accordance with Table 1, Project Procurement Schedule. The final deadline to submit ATCs is 3:00 PM local time, April 6, 2017.

As determined by the City, answers to questions that may reveal a Proposer's design concept or reveal insights into its proposed design-build solution or ATC Proposals that are not germane to the requirements of the RFP documents will be answered confidentially and not transmitted to other competing Proposers. A Proposer may request that a response be confidential, but the City will exercise its discretion on whether any question and answer should be held in confidence.

The City reserves the right to use all ATC concepts included in an unsuccessful Proposer's Proposal if the Proposer accepts the stipend. See Section 2.14 for additional information.

2.7 Addenda

Written addenda will be provided by the City. Each Proposer shall certify receipt of all addenda issued by the City by completing the acknowledgment space provided on the Proposal Form, Exhibit 1, Proposal Form.

2.8 Proposal Due Date and Delivery

RFP Proposal responses, including all required material, forms and drawings, shall be received no later than 10:00 AM local time, May 12, 2017 at the address shown below. Delivery by U.S. mail, hand, or overnight courier is acceptable.

City and County of Denver
Public Works Finance and Administration
Attn: Elizabeth Zollo, Project Administrator
201 West Colfax Avenue, Department 614
Denver CO, 80202

Each Proposal shall certify (see Certification section in Exhibit 1, Proposal Form) by the signature of an authorized representative or agent of the Proposer that the team will design and construct the Project to meet or exceed all of the Project requirements identified in this RFP, without exception. Each Proposal is considered a firm offer to design and construct the Project at a Fixed Contract Price in accordance with the terms and conditions specified in this RFP, as may be amended by City-authorized changes.

2.9 Proposal Opening, Acceptance, and Rejection

Proposals will be opened privately by the City following the Proposal submission due date and time.

The City reserves the right to:

1. Waive any informality or irregularity in any Proposal received;
2. Reject a Proposal if it is not in full and complete compliance with the requirements and formats specified herein;
3. Reject a Proposal that omits or fails to complete any portion of the required Proposal documents;
4. Reject a Proposal that is in any way incomplete or irregular;
5. Reject Proposals upon evidence of collusion among participating Proposers;
6. Reject a Proposal upon evidence of the Proposer submitting such Proposal having engaged in any communication, contact or other activity prohibited herein; or
7. Reject all Proposals if they do not meet the overall design and quality standards established by this RFP, are based upon otherwise inappropriate design solutions, or if it is in the best interest of the City to reject all Proposals. If all Proposals are rejected, the City may either cancel this solicitation or resolicit for new Proposals based on a revised RFP.

2.10 Scoring Criteria

Several factors will form the basis for ranking and selection. Submittal requirements are described in detail in Section 5. Selection of the successful Proposal will be based on the best value provided to the City by the Proposer. The evaluation of best value will be based on the ability of the Proposer to meet or exceed the requirements of the RFP based upon, but not limited to, the criteria listed below.

2.10.1 Mandatory Requirements

This criteria ensures that specific language or required commitments outlined in the RFP are addressed in each Proposal. These elements are outlined in the following section and in the instructions provided for Section 5, Package 6: Mandatory Requirements.

2.10.2 Cost

Cost is a significant factor in the selection of the best value Proposer. Each Proposal will be examined for its submitted Fixed Contract Price total cost (as shown on Exhibit 1, Proposal Form), and ranked and awarded points on its position relative to other Proposers.

Exhibit 2, Schedule of Values, is a required template provided for the Proposers to aid their development of their Schedule of Values. The reasonableness to industry standards of the Proposer's Schedule of Values, and fee will be evaluated as part of the Financial/Price Information factor. The Schedule of Values, shall be the tool used to determine the dollar amounts demonstrating satisfaction of the established Minority/Women Business Enterprise (M/WBE) goals of 15% of the Contract value for design and 17% of the Contract value for construction.

2.10.3 Technical Design

Proposal Plans will be reviewed for their completeness and clarity in addressing the technical requirements, standards, and specifications of the RFP and excellent design and construction practices. The Technical Plan narrative should describe an overall approach to completing the Project, including, but not limited to design, construction phasing, aesthetics, golf course routing, architecture, grading, irrigation, landscaping, maintenance of traffic during construction, mitigation of community impacts, environmental compliance, and public communications. The use of Approved ATCs in the Proposal shall

be documented so that reviewers are fully informed of the ATC Approval. Critical sub-components of the Technical Plan narrative include Project and quality management, as described below.

Provide a narrative and drawings detailing the Proposer's approach for landscaping, architectural details, aesthetics and integration into the golf course design. The Proposer's approach shall be consistent with the overall Project Proposal and demonstrate that its specific features are consistent with Section 17 Landscaping and Aesthetics of the Technical Requirements.

2.10.4 Project Approach

Provide a narrative that describes the approach and commitments to the management of the Project Management Plan which may include such topics as design and construction management, budget and schedule management, safety management, risk identification and management, dispute resolution and other management elements essential to the success of the Project.

Commitments to achieve early completion while accommodating City's budget constraints will be scored more favorably. Describe the Project controls management approach that will be used in the Project, including a schedule that identifies important milestones and their logic.

2.10.5 Quality Management

A high quality Project is required. The Proposers shall demonstrate their ability to develop and execute a quality management process that will provide a high quality Project and document that the scope and quality of the constructed Project is consistent with or exceeds all applicable standards, regulations, and laws. Describe the Proposer's approach to both quality control and quality assurance for design and construction.

2.11 Interview/Presentation

Each Proposer will present its Proposal in a confidential one hour session. Thirty minutes will be allowed for the presentation, which will be followed by approximately 30 minutes for questions and discussions. Presentations will be held May 23, 2017; the time of each team's presentation will be communicated via an addendum to be issued no later than May 17, 2017. The presentation order will be randomly selected by City. Clarification questions regarding the Proposal may be directed to the Proposer, but no modifications to the Proposal as submitted will be allowed during the presentation to the Selection Committee or during the evaluation process as a result of this discussion. Only the materials included in the submitted Proposal may be incorporated into the presentation.

2.12 Best Value Scoring

Each Proposal will be evaluated by the City to determine its compliance with the Mandatory Requirements of the RFP documents, as shown in Table 4, Scoring Criteria. Proposals may be eliminated from further consideration if they do not meet the Mandatory Requirements. Each Proposal will be evaluated based on the criteria in the Scoring Table shown below. In addition, all parts of the Proposal shall meet the minimum requirements for the Proposal to be accepted. If any one part does not meet the minimum requirements, the Proposal may be rejected.

Table 4 Scoring Criteria

Criteria	Available Points	Weighted Value
Mandatory Requirements <ul style="list-style-type: none"> • Fixed Contract Price submitted • Project complies with Technical Requirements and design standards. • Meets Section 5 Submittal Requirements • No apparent or real conflict of interest • Surety letter submitted, in accordance with Volume II, Package 6 • Commitment to insurance requirements in Transmittal Letter 	Pass/Non-Responsive	
Cost <ul style="list-style-type: none"> • Fixed Contract Price • Schedule of Values <p style="text-align: right;">Total</p>	90 10 <hr style="width: 50%; margin: 0 auto;"/> 100	50
Technical Design <ul style="list-style-type: none"> • Golf Course, Clubhouse, and Maintenance Facility – Routing, driving range, First Tee, view sheds, chipping/putting, tree preservation, Clubhouse function/outdoor spaces/aesthetics, Maintenance Facility function • General Civil – Detention and water quality, cut/fill balance, roadway/intersection, structures, O&M, aesthetics • Interview <p style="text-align: right;">Total</p>	60 30 10 <hr style="width: 50%; margin: 0 auto;"/> 100	20
Project Approach <ul style="list-style-type: none"> • Schedule • Project Understanding/Risk Identification • Project Controls – Processes • Construction Impacts – Noise, Dust, Traffic, Hauling • Interview <p style="text-align: right;">Total</p>	50 15 15 10 10 <hr style="width: 50%; margin: 0 auto;"/> 100	14
Quality Management <ul style="list-style-type: none"> • QC/QA Process • Design quality • Construction quality • Material management • Interview <p style="text-align: right;">Total</p>	30 15 25 20 10 <hr style="width: 50%; margin: 0 auto;"/> 100	10

Criteria	Available Points	Weighted Value
Public Information		
• Public Information – Design	45	
• Public Information – Construction	45	
• Interview	10	6
Total	100	
Total		100

The formula to determine the points assigned for the Project cost is:

$$\text{Assigned Points} = 90 - 90 \cdot (A - B) / B$$

where

A = Project Cost of the Proposal under Consideration

B = Lowest Project Cost Submitted by all Proposers

Proposers are advised that simply meeting the minimum requirements in a scored, non-cost category will result in an “average” score. “Exceptional” or “Very Good” scores and a high point award will occur with the documentation of a commitment to exceed minimum requirements in a systematic fashion. Proposer insights, methodologies, and firm commitments to safely deliver an aesthetically pleasing, high quality Project, including an enjoyable golf course that incorporates the unique history of the course, ahead of schedule, under budget, and by minimizing community impacts during construction, will result in additional technical evaluation points.

As the selection progresses, the Selection Committee may identify issues during the technical analysis requiring clarification. These issues will be composed as written questions and submitted to the appropriate Proposer. The Proposer shall respond with written clarifications within three business days. These Proposal clarifications will be incorporated into the Proposer’s Proposal as an attachment. Based on the written clarifications received and the total of the Proposal material received from the Proposers the Selection Committee will evaluate the technical Proposal.

2.13 Selection Committee Evaluation and Recommendation

The Selection Committee will first examine and evaluate the Proposal’s response to pass fail criteria, then review and assess the scored elements of the technical Proposals and Proposer presentations, and finish with the evaluation and assignment of points for the financial/pricing aspects of the Proposal. Based upon these evaluations, the Selection Committee will complete the Selection Committee Evaluation Score Sheet conforming to the criteria and weightings set forth in Table 4, Scoring Criteria. This evaluation process and scoring will result in the best value determination. The Selection Committee will then rank the Proposals based on this scoring and make a recommendation to the Executive Director. If the Selection Committee finds that no Proposal adequately fulfills the cost, design, technical, and overall quality standards set forth herein, it may recommend that the competition process be terminated without selecting a preferred Proposal.

2.14 Stipend

The City has determined that it is appropriate to award a stipend to the unsuccessful responsive Proposers that provide a fully responsive, but unsuccessful, Proposal that is deemed acceptable by the City. The amount of the stipend shall be \$50,000 and shall be provided to such unsuccessful responsive Proposers

within 90 Calendar Days after award of the Contract for the Project, in accordance with (2) Sample Contract Documents, Part 4 – Stipend Contract. Notwithstanding the foregoing, if the second highest ranked Proposer becomes the selected Contractor as a result of the failure of the higher ranked Proposer to comply with the award conditions set forth in this RFP, such Proposer shall no longer be entitled to the stipend.

In consideration for its agreement to pay the stipend, the City shall be entitled to use any and all concepts, ideas, and information contained in the Proposals including, without limitation, any ATCs in connection with any Contract awarded for the Project, or in connection with a subsequent procurement for the Project, without any obligation to pay any additional compensation to the unsuccessful Proposers.

In no event shall any Proposer that is selected for award but fails to satisfy the award conditions set forth in this RFP be entitled to receive a stipend.

The Proposer shall be required to complete the stipend contract, included in the Contract Documents.

2.15 Best and Final Offers

If the City determines discussions are necessary, the City may request authorization to enter into discussions with the Proposers, revise the RFP, and request Best and Final Offers (BAFO)s.

At the conclusion of the discussions, a final common cut-off date, which allows a reasonable opportunity for submission of written final revisions, will be established and those Proposers selected to remain will be notified to submit Proposal revisions. The City will consider the revised information and reevaluate and revise ratings as appropriate.

2.16 Contract Execution

After selection of the best value Proposer, any necessary negotiations regarding the contractual inclusion of Project-specific commitments, betterments, or ATCs included in the best value Proposal will occur. These negotiations are not intended to be a comprehensive recasting of the Sample Contract, but only to ensure that the Contract incorporates all of the specific elements contained in the selected best value Proposal. On completing this reconciliation, obtaining contract signatures, and City Council approval, the City will issue Notice to Proceed and the Proposer can start work on the Project. Following Final Acceptance, a Warranty period for materials and workmanship will begin.

If the City is unable, for any reason, to enter into an agreement with the best-value Proposer by the dates specified in the official competition schedule, the City reserves the right to terminate discussions with the highest ranked team and to enter into contract execution preparations with the next best qualified Proposer as determined by the City.

2.17 Insurance and Indemnification

Proposers should carefully review and take into consideration the Insurance and Indemnity requirements as set forth in RFP (2) Sample Contract Documents, Part 1 – Main Contract Form and Exhibits, Section 5 (Insurance Requirements) and attachments in preparing their Proposal. These requirements will be included in any executed agreement resulting from this selection process. Therefore, Proposers shall affirm in their Transmittal Letter that they will meet the identified insurance requirements for the Project duration.

2.18 Project Closeout Requirements

The successful Proposer will be required to assist all Project documentation and coordinate with the City on any documentation to be completed by the owner certifying the construction elements.

SECTION 3 - REVIEW OF SAMPLE CONTRACT DOCUMENTS

Upon submission of the Proposal, the Proposer understands and accepts the terms of the Sample Contract Documents (Parts 1 through 4) provided in this RFP. Each Proposer shall provide during One-on-One Meetings a list of any questions, issues, or modifications which the Proposer would like the City to review and address, should they be selected as the top ranked Proposer. This information is requested to be submitted as an Appendix to Volume II, Financial/Price Proposal. Issues not included in the Appendix to Volume II will not be considered during contract execution.

The City expects that the final Contract submitted to the selected Proposer for execution will be in a form substantially similar to the attached Sample Contract. Therefore, the City will not enter into detailed negotiations of the terms and provisions contained in the Sample Contract. Instead, the City will review the list of issues raised by the selected Proposer, address each issue at its sole discretion, and provide the selected Proposer with a final executable agreement for signature.

Should the Proposer fail to execute this final agreement, the City reserves the right to negotiate with the Proposer, terminate further negotiations, and initiate negotiations with another ranked Proposer or reject any or all Proposers, as its best interests may appear.

SECTION 4 - POLICIES AND LIMITATIONS AFFECTING THE DESIGN-BUILD COMPETITION PROCESS

1. It is the intent of the City to have the Project designed and constructed on or ahead of schedule and of the highest possible quality with minimal disruption, for the Fixed Contract Price.
2. The materials, products, workmanship, and components described in the RFP documents establish the minimum standards of required performance, function, dimension, appearance and quality to be met or exceeded by each design-build Proposal. These minimum standards are not intended to establish the final performance, function, dimension, appearance or quality levels to be proposed by each Proposer. Wherever possible within the limits of the Fixed Contract Price for this Project, each Proposer is encouraged to exceed the minimum requirements set forth herein. Any omissions from the Proposal shall, without exception, be understood as being included in the Proposal in quality equal to or exceeding the requirements of this RFP to the same extent as if those requirements had been specifically included in the Proposal.
3. These RFP documents are not, and are not intended to be, a construction specification. They are not in any manner to be interpreted as, used as, or substituted for a construction specification prepared by the Proposer's Colorado licensed professionals, including Landscape Architects and professional engineers. No direction provided in these documents shall be used for construction purposes, and no information included herein is intended for direct incorporation into construction documents prepared by the Proposer's engineer(s). It is the sole and exclusive responsibility of the Proposer to prepare all necessary construction documents that include plans and specifications, based on the exercise of its independent professional judgment and expertise, limited only by the functional, program, and performance requirements specified by the City herein.

4. Acceptance of a Proposal shall not indicate the City's acceptance of nonconforming work and work not meeting the minimum criteria set forth in the RFP documents. The burden of proof of the merit of any proposed item is on the Proposer.
5. Nothing contained in the RFP documents shall be interpreted by any party as requiring or allowing the Proposer to do anything that is not in compliance with all applicable standards, codes and regulations that is less than general standard industry quality or that results in an unsafe or dangerous condition.
6. If any provision, clause, criteria, standard, performance level or otherwise as set forth herein contradicts or conflicts with standard and acceptable professional engineering practices, or the requirements of government agencies having jurisdiction over the Project, it is the responsibility of the Proposer to bring such conflicts, contradictions, errors or omissions to the attention of the City in a timely manner to enable the City to issue appropriate addenda to this RFP.
7. The failure of the Proposer to bring to the attention of the City any ambiguities, conflicts, inconsistencies, contradictions, errors or omissions of this RFP of which the Proposer is aware, or should be aware, is at the sole and exclusive risk of the Proposer, and shall not relieve the Proposer of any further duty or obligation to bring ambiguities, conflicts, inconsistencies, contradictions, errors or omissions of this RFP of which the Proposer is aware, or should be aware, to the attention of the City in a timely manner, or relieve or absolve the Proposer and its engineers and any and all subconsultants and subcontractors of liability for their own errors and omissions.
8. The Proposer shall be professionally responsible for designing the Project in conformance with this RFP. All Project designs shall be stamped by a licensed Professional Engineer or Architect, as appropriate, in accordance with Colorado statute.
9. This RFP shall at all times be and remain the property of the City. It may not be copied or used for any purpose other than as herein stated without the written consent of the City.
10. The Project shall comply with all applicable Local, State and Federal codes, regulations and ordinances relating to the development of public works and park improvement projects.
11. Between the date when Proposals are received and the date when the City either rejects all Proposals or executes a Contract for the Project with the selected Proposer, the City will consider all Proposals to be confidential under the CORA. All reports, Proposals, ATCs, Proposal Engineering Plans, Proposal Golf Course Routing, Proposal Architectural Drawings, and other data or materials submitted with any Proposal shall become the sole property of the City, subject to copyright and patent restrictions. Following execution of the Contract with the selected Proposer, the City reserves the right to publicly display any drawings, exhibit boards, or other materials submitted by any Proposer in response to this RFP or to direct the use of the ATCs at its own discretion. Any language purporting to render all or portions of any Proposal confidential or proprietary shall not be binding on the City following selection and execution of a Contract, unless supported by copyright or trademark protection.
12. This RFP shall become part of the design-build Contract executed with the successful Proposer and shall take priority over anything to the contrary included, whether directly or indirectly, in the Proposal submitted by the Proposer, but the executed Contract shall take priority over all else as set forth in that Contract. Except as otherwise provided for in the design-build Contract, the basis for Contract award and the City's review of subsequent design and construction activities for

conformity with the Contract Documents will be this RFP. The Proposal submitted by the successful Proposer will be incorporated into the design-build Contract to the extent it is acceptable to the City and does not conflict with or contradict any of the provisions, terms, conditions or requirements of this RFP. As a condition of Contract award, the successful Proposer shall be required to make any and all necessary modifications to the proposed design, at no additional cost to the City, to bring it into conformity with all functional and program requirements, technical requirements, performance criteria, and the Fixed Contract Price. Any and all aspects of the accepted Proposal which exceed the functional and program requirements, design guidelines and performance criteria as set forth herein are binding on the Proposer and shall not be eliminated, modified or substituted for in any way unless approved in writing by the City.

13. The City will be actively involved in design review and construction observation throughout the design and construction phases of this Project. Prior to commencing any work, the City and the design-build Contractor shall agree on a design quality management plan and a separate construction quality management plan, both of which will describe in detail the procedures for review, approval, and/or acceptance of the work performed by the Proposer.
14. This solicitation does not commit the City to enter into a design-build Contract, to pay any stipend or otherwise pay for any costs incurred in preparation of any response to this RFP, or to procure or contract for services or supplies. The City reserves the right to modify, amend, reissue, or rewrite this RFP by addenda at any time prior to execution of a design-build Contract; to accept or reject any or all Proposals received as a result of this solicitation; to enter into a contractual agreement with any qualified Proposer or agent thereof; to cancel in part or in its entirety this solicitation if it is most advantageous and in the best interest of the City to do so; and to procure design and construction services by other means.
15. The City may request that any Proposer submit additional design and construction information, technical information or revisions to its Proposal as may be needed to ensure the proposed Project conforms to all published program and performance criteria and to execute a design-build Contract for the full design and construction of this Project.
16. The laws of the United States of America and the State of Colorado and the Charter and Ordinances of the City will govern the validity and interpretation of this solicitation, its award, and any contract entered into as a result hereof.
17. Any agreement or collusion among Proposers acting to illegally restrain freedom of competition will render the Proposals of such Proposers void. Disclosures of any information to any Proposer that gives that team any advantage over any other Proposer, in advance of the opening of Proposals, made or permitted by the City or any employee, representative, or elected official thereof, may, in the City's discretion, operate to void all Proposals received as a result of this solicitation.
18. Within this RFP, there may be redundancies and duplications of material. In the event there is any conflict, contradiction, discrepancy or inconsistency among any portions of the criteria set forth herein, or any addenda hereto, Proposers are instructed to inform the City of the conflicts and seek clarification as to which criteria the Project shall meet.

SECTION 5 - SUBMITTAL REQUIREMENTS

Each participating Proposer shall comply with the submission requirements and the format as outlined below. It is strongly recommended that the Proposers follow this format as closely as possible to reduce

the likelihood that the Selection Committee misses important evaluation points in your Proposal. Both hardcopy and electronic copies of the response to the RFP will be required as explained in this Section. The City assumes no responsibility for costs related to the preparation of submittals.

Volume I – Technical Proposal

Package 1 – Technical Plan

Package 2 – Proposal Engineering Plans

Package 3– Proposal Golf Course Routing

Package 4 – Proposal Architectural Drawings

Volume II – Financial/Price Proposal

Package 5 – Financial/Price Information

Package 6 – Mandatory Requirements (Completed Forms)

Appendix – Sample Contract Review Comments

All printed text, except for the front cover of each Volume, shall be in Times New Roman, 11-point font minimum. Flexibility is allowed with respect to font size and style used in exhibits and tables, but no type smaller than 10-point font should be used in these elements. All dimensional information shall be shown in English units.

The evaluation of the Proposals will be conducted by separate reviews. One will focus on the Technical Proposal and will be followed by a second evaluation of the Financial/Price Proposal. Proposers shall provide the information in Volumes, each comprised of the Packages as listed above. Each Volume and Package shall be labeled as described below and identify the name of the offering design-builder. Packages 2 through 4 may be bound separately from the Package 1 – Technical Plan. Package 5 shall be sealed to keep the confidentiality of the Financial/Price Information.

Volume I: Technical Proposal

Provide 24 bound copies of the Technical Proposal and an unbound original. The contents of this Volume shall include the following Packages and an electronic copy containing PDF files of the contents of the Technical Proposal. The Technical Proposal shall be packaged separately from the Financial/Price Proposal.

Package 1: Technical Plan

Package 1 Technical Plan text is limited to 60 pages of 8.5” x 11” inclusive of all tables, and graphic materials, with the exception of pages, as discussed in this ITP, which will not count against the 60 page limit. Graphics and tabular information may use an 11” x 17” format and count as a single page so long as the table page has a single purpose and is not used for narrative purposes. If narrative is included on an 11” x 17” page, it will be counted as two pages. There is no limit on the number of sheets for the Proposal Engineering Plans, Proposal Golf Course Routing, and the Proposal Architectural Drawings.

The Proposer is permitted discretion to provide additional plots to show Project component (Packages 2 through 4) integration and display a holistic understanding of the Project.

Part 1: Letter of Transmittal

Clearly indicate the Proposer’s single point of Project contact (Officer or authorized representative of the submitting entity), mailing address, telephone and facsimile numbers, and e-

mail address. Indicate the specific nature and relationship of any formal association or joint venture of the Proposer. If contractual relationships have changed since the submission of the SOQ, describe in the changes in the transmittal letter. Proposers shall affirm in their Transmittal Letter that they will meet the insurance requirements stated in the Contract Documents for the Project duration. Provide a certification that the authorized representative is empowered to contractually bind the Proposer to fulfill its Proposal commitments. The Letter of Transmittal is limited to two pages but will not be included in the overall page limit.

Part 2: Table of Contents

Provide a Table of Contents detailing the Proposal elements. The Table of Contents is excluded from the page limit.

Part 3: General Project Overview/Executive Summary

This part is intended to be used as the basis for discussion with non-technical decision makers with a focus on what the public will see during construction and as a final product. The executive summary shall not exceed eight pages, and is included in the page limit.

Address how the proposed design achieves the goals and technical requirements for the Project. All or part of the Executive Summary may be attached to the Contract approval package submitted to the City Council, thus a succinct but informative description is required.

The Executive Summary shall provide an overview of the proposed elements of the Project in non-technical terms. Include general descriptions of the team's approach to design engineering and architecture for the Project and coordination challenges to be overcome and the Proposer's approach to reducing cost. Describe the general construction phasing sequence, Contractor access during construction, haul routes, approach to coordination with the concurrent projects, and public information program including noise and dust mitigation, access management to existing properties, emergency management considerations, impacts to fire/ambulance/bus routes, preservation of historic elements, pedestrian/bicycle access, golf course and detention integration, water quality concerns, Clubhouse and Maintenance Facility design and architectural elements, golf course design, character, and playability, operations and maintenance of detention facilities and golf course and proposed efforts to minimize disruption to the public including traveler information.

Summarize the approved ATCs that are included as part of the Proposal.

Part 4: Project Approach, Challenges, and Plan to Meet Technical Requirements

Discuss the Proposer's overall approach to completing the Project, including design, construction phasing, maintenance of traffic during construction, mitigation of community and environmental impacts and compliance, and public information.

Use both narrative and graphic material (Proposal plans in Packages 2 through 4), to clearly convey how the proposed golf course routing, site grading, earthwork balance, tree preservation, view sheds, detention and water quality facilities, Clubhouse and Maintenance Facility comply with the Project requirements. Include in the Proposal's narrative description references to specific sections and subsections of the Technical Requirements.

If the Clubhouse and Maintenance Facility are being reconstructed as part of the Proposer's design, then provide a narrative discussing and committing to the quality of materials and furnishings that will make up the facilities.

Describe the plan to minimize impacts to the traveling public, emergency vehicle responders, access to local businesses and residential connections.

Complete the Tree List and Tree Designation Scoring Sheet provided in the Reference Documents showing the Proposer's approach to tree preservation. The Tree Designation Scoring Sheet will be used by the City to score the Proposer's commitment to tree preservation as part of its design. Include the Tree Designation Scoring Sheet in the Proposal, as part of the tree preservation discussion. Provide the completed native files for both the Tree List and Tree Designation Scoring Sheet. Native files for the Tree List and Tree Designation Scoring Sheet are not included in the page limit.

Include a discussion of each ATC Proposal that was approved by the City and selected for use on the Project. Also, list the ATCs that will not be used on the Project. The approved ATC Proposal shall be identified by its unique identifier. The purpose of this requirement is to inform the Selection Committee of the full scope of work proposed and provides a basis for the Fixed Contract Price and schedule. Any ATC approval documents submitted to meet the requirements of this Part 4 are excluded from the page limit.

The Contractor shall articulate an approach for engaging the public with clear, consistent and frequent communications, during both design and construction, to help the public understand the Project, and demonstrate how the Project will provide needed stormwater detention, water quality, as well as provide a signature golf course to the City of Denver.

The submittal shall clearly demonstrate the commitments that the Proposer is offering.

Part 5: Project Management Plan

Provide a narrative that describes the approach and commitments to the management of the Project Management Plan incorporating a detailed organization chart. Included in the narrative should be a discussion on the Project communication and management processes, including both the Project Team and all interested Stakeholders, and dispute resolution and other management elements essential to the success of the Project.

Provide a narrative describing the approach and commitments to ensuring that a high level of safety is maintained throughout the construction of the Project, for both the Project team and the public.

Identify any changes to the Proposer's team since submittal of the SOQ. Identified changes to the Key Personnel and Major Participants shall be supported by inclusion of the City's Approval of the change and agreement that the replacements are equal or superior to the former member. Approval of all proposed changes to Key Personnel or Major Participants will be at the discretion of the City. Any Key Personnel or Major Participant changes approval documents submitted to meet the requirements of this Section are excluded from the page limit.

Provide a Proposal Schedule and discuss the critical path to complete the design and construction services, starting from Proposer selection by the City through construction and Final Acceptance. The schedule, in 11" x 17" foldout format, shall identify the significant design and construction activities; their duration and completion dates; document submittal dates; permits; the City review periods for various submittals, including, but not limited to, preliminary engineering and final engineering documents, final plans and specifications, and construction documents; and regulatory agency and private review periods. Calendar dates shall be indicated.

The schedule should be sufficiently detailed to demonstrate both the Proposer's understanding of the Project requirements and an efficient plan to complete the Project. The schedule shall include all major engineering/architecture and construction disciplines, including but not limited to design, survey, urban design/landscape architecture, golf course design, Utilities, drainage, geotechnical, foundations, structures, site development, roadway, pavement, public information, quality management and project management. Proposers are to assume a NTP date of July 24, 2017 and a construction start date of November 1, 2017 to maintain a consistent start date in the schedules provided in each Proposal. This assumed date will authorize mobilization of the design, and subsequent construction site access once the City authorizes the first construction package.

Provide a narrative of the Proposer's approach to managing Project controls. This will include procedures and processes used to monitor the schedule, a full explanation of who is responsible on a day to day basis and other persons engaged in directing the overall outcome of the Project. Roles, responsibilities, lines of authority and methods of addressing the Project realities and potential problems are critical factors.

Part 6: Project Quality Plan

The Project shall be designed and constructed to the highest quality standards. In the Proposer's presentation of their commitment to a strong Quality Management Plan and outcome, the Proposer shall describe the roles and responsibilities of team members, lines of authority, powers to administer and direct the project quality program, and how the plan conforms to the requirements of the RFP. To reduce the quantity of paper consumed on the Project and the time required for design review and approval, Proposers shall provide a document control system that enables online management of design review, comment tracking, and comment resolution.

Document control processes, flow of documents, relationship with the City and other agency reviewers and design review and approval procedures should be described along with illustrations of how the quality process works (quality control and quality assurance) in both design and construction. Commitments to increase the quality of the Project beyond contract minimum requirements through documented commitments to meet higher specifications and standards will receive higher scores in this category.

Additionally, commitments made by the Proposer with respect to quality of design, construction, environmental, and historic compliance and mitigation will be factors evaluated in this category.

Package 2: Proposal Engineering Plans

Submit Proposal Engineering Plans on 11" x 17" pages bound separately to clearly depict the Proposer's intent, approach to satisfying the Technical Requirements, and the use of approved ATCs. The plans will not count toward the 60 page limit. Upon selection and approval, the Proposal Engineering Plans will be incorporated into the Contract Documents.

At a minimum, submitted plan sheets shall show the proposed layout, alignment and profile for the Project (1" = 100' horizontal scale and 1" = 20' vertical scale), sections, accesses, intersection layout(s), traffic signal design (if required), parking lot layout, sidewalk locations, drainage plans, pond grading, water quality locations and features, tree preservation, bridge and retaining wall general layouts, and Clubhouse and Maintenance Facility locations (if required), lighting, and Utility relocations.

Plans shall depict the Proposer's approach to incorporating the Technical Requirements, specifically that of Section 17 Landscaping and Aesthetics. Drawings and illustrations shall show how the Proposer's design incorporates the historic defining features of the golf course, maintains view sheds,

and incorporates aesthetic and landscaping elements into Project features (detention, water quality, Clubhouse, structures, etc.) providing an aesthetically pleasing experience for users.

Package 3: Proposal Golf Course Routing

Submit Proposal Golf Course Routing on 11" x 17" pages bound separately and roll plots to clearly depict the Proposer's intent, approach to satisfying the Technical Requirements, and the use of approved ATCs. The plans/plots will not count toward the 60 page limit. Upon selection and approval, the Proposal Golf Course Routing will be incorporated into the Contract Documents.

At a minimum, submitted plan sheets, plots, or some combination thereof, shall show the proposed routing for the golf course (1" = 200' horizontal scale), tee and green locations, drainage feature integration, grading, water quality locations and features, tree preservation, bridge and retaining wall locations, and Clubhouse and Maintenance Facility locations (if required).

Plans shall depict the Proposer's approach to incorporating the Technical Requirements, specifically that of Section 17 Landscaping and Aesthetics. Drawings and illustrations shall show how the Proposer's design incorporates the historic character of the golf course, maintains view sheds, landscaping concepts, amenities, and provides an aesthetically pleasing experience for users.

Package 4: Proposal Architectural Drawings

If reconstruction of the Clubhouse and Maintenance Facility are required by the Contractor's design, submit Proposal Architectural Drawings on 11" x 17" pages bound separately to clearly depict the Proposer's intent, approach to satisfying the Technical Requirements, and the use of approved ATCs. The plans will not count toward the 60 page limit.

Clubhouse drawings shall show the proposed plan and elevation views with program elements identified, views from and into the Clubhouse area, outdoor space layouts and amenities/furnishings, parking lot layout, and materials proposed.

Maintenance Facility drawings shall show the proposed plan and elevation views, foundation layouts, grading, functionality, parking lot layout, access into and out of the facility, storage areas, etc.

Plans shall depict the Proposer's approach to incorporating the Technical Requirements, specifically that of Section 17 Landscaping and Aesthetics. Drawings and illustrations shall show how the Proposer's design incorporates the historic character of the golf course, maintains view sheds, landscaping concepts, amenities, architectural themes, and provides an aesthetically pleasing experience for users.

Volume II: Financial/Price Proposal

The contents of this Volume are to include the following Packages. Page limitations are not applicable to this Volume and all required forms shall be filled out completely. Provide nine bound copies, an unbound original, and an electronic copy containing PDF files of the following contents sealed in a single package separately from the Technical Proposal.

Package 5: Financial/Price Package

Package 5 shall contain two documents, Exhibits 1 and 2.

Exhibit 1, the Proposal Form, shall fully document the Fixed Contract Price offer, acknowledgements of addendums, time for completion, and the certification of the Proposal and Proposal requirements.

Exhibit 2, Schedule of Values shall provide a Project cost breakdown as indicated on the form, including the Design Scope of Work and the itemized cost of bonds, insurance and other Project requirements to be paid by the City. These costs are to be included in the Schedule of Values as shown in Exhibit 2. Include an Excel copy of Exhibit 2 on an electronic copy for Volume II. The Proposer is permitted to add no greater than five additional items for any additional items required for design and construction of the Project, as determined by the Proposer.

Package 6: Mandatory Requirements

Provide a letter from a surety attesting to the ability of the successful Proposer to bond the project in the amount of the Fixed Contract Price.

FORMS

**EXHIBIT 1
PROPOSAL FORM**

PROPOSAL TO: CITY AND COUNTY OF DENVER

PROPOSAL FOR: Platte to Park Hill: City Park Golf Course Parks and Drainage Improvements Design-Build Project

FIXED CONTRACT PRICE

The undersigned, having fully examined the RFP issued January 12, 2017, any and all attachments and addenda thereto, and the property to be developed, proposes to furnish all design and construction labor, materials, furnishings, equipment, and Textura fees, and do all work in compliance with the terms and conditions of the RFP, without exception, and the herein Proposal, for a Fixed Contract Price contract amount of

_____ DOLLARS (\$_____).

(IN WORDS)

This Fixed Contract Price specifically excludes any allowances or force account items listed on Exhibit 2, Schedule of Values.

ADDENDUM

Receipt of the following Addenda is hereby acknowledged.

Number	Date
_____	_____
_____	_____
_____	_____
_____	_____

TIME FOR COMPLETION

The undersigned proposes and commits to Substantial Completion and Final Acceptance dates of the Work required by the design-build Contract resulting from this RFP and the herein Proposal shall be no later than:

Substantial Completion (latest allowed): _____

Final Acceptance (latest allowed): _____

CERTIFICATION

1. The undersigned has read and understands the RFP.
2. The undersigned has become familiar with local site conditions under which the work is to be performed and has correlated personal observations with the requirements of the RFP.
3. The Proposal submitted by the undersigned is made in accordance with the RFP and is based upon the materials, systems, and equipment specified therein that will support or exceed the minimum quality, service, utilization, performance, and other levels specified therein, without exception; and the City is not responsible for any error or omission in this Proposal or in its preparation.

4. The undersigned will design and construct the City Park Golf Course Parks and Drainage Improvements Design-Build Project and will meet or exceed all functional, program, performance, and other requirements of the City as identified in the RFP, and for the fixed contract price specified above.

5. If the Selection Committee recommends the undersigned be awarded the design-build contract, the undersigned will meet with the City to review in detail this Proposal and will make any necessary changes or revisions to the final contract scope, including project-specific commitments, betterments, or ATCs included in the Proposal, including any and all design submittals and proposed materials, systems, and equipment, to ensure delivery to the City of a fully functional facility that meets or exceeds all requirements of the City as identified in the RFP.

6. The undersigned has included on its team, at a minimum, engineers, other necessary or specified design professionals and consultants, and a general contractor, and the name and address of each has been identified in this Proposal. Substitutions of engineers or general contractors from those identified in the Statement of Qualifications previously submitted to the City, and any identified in this Proposal, will not be made without City's written consent to such substitution(s).

7. The undersigned and each of its subconsultants, contractors, and subcontractors shall, at all times during the execution of the work contemplated by this solicitation, be qualified to complete the work, and each shall comply with all applicable State of Colorado professional and business licensing and registration requirements.

8. The undersigned will not modify, amend, revoke or withdraw this Proposal, without the written permission of the City.

9. The undersigned, or any member of its team, or any agent or representative thereof, has not collaborated or communicated with, or entered into any understandings or agreements, whether written or oral, whether direct or indirect, or otherwise, with any other Proposer, or any agent or representative of such other Proposer, in the preparation of this Proposal.

10. This Proposal is genuine and is not a sham or made in the interest of, or on behalf of, any person not herein named.

11. The undersigned, or any member of its team, or any agent or representative thereof, has not engaged in any communication or contact with the City, any member of the Selection Committee, any City employee or elected official, or the City's consultants, except as specifically allowed by this RFP.

LEGAL CONTRACTING ENTITY

The name, address, and telephone number of the legal entity that will enter into a design-build contract with the City, if the undersigned is awarded this Project by the City, are as follows.

Legal Name: _____

Address: _____

Telephone: _____

Signature of Design-builder

Name and Title of Design-builder (print or type)

Address of Design-builder

City, State and Zip Code

Date

Legal Name of Firm

Telephone Number

EXHIBIT 2, SCHEDULE OF VALUES

WBS Description	Unit	Quantity	Unit Price	Dollar Value	Scope Description	M/WBE Goal
Section 2 – Project Management						
Mobilization	LS					Construction
Project Management Plan	LS					Construction
Construction Maintenance	LS					Construction
Construction Payment Management System Fee	LS					Construction
Bonds and Insurance	LS					Construction
Section 3 – Quality Management						
Drainage Design	LS					Design
Golf Course Design	LS					Design
Irrigation Design	LS					Design
Clubhouse Design	LS					Design
Snack Shack / Relief Station Design	LS					Design
Maintenance Facilities / Service Yard Design	LS					Design
First Tee Clubhouse Design	LS					Design
Civil Site / Roadway Design	LS					Design
Landscape Site Design	LS					Design
Design QA/QC	LS					Design
Construction QA/QC	LS					Construction
Section 4 – Public Information						
Public Information Plan	LS					Construction
Section 5 – Environmental Requirements						
Environmental Compliance	LS					Construction
Permits	LS					Construction
Section 6 – Third Party Agreements						
Third Party Coordination	LS					Construction
Section 7 – Utility Relocations						
Utility Coordination	LS					Construction
Utility Relocations	LS					Construction

WBS Description	Unit	Quantity	Unit Price	Dollar Value	Scope Description	M/WBE Goal
Section 9 – Survey						
Design Surveying	LS					Design
Construction Surveying	LS					Construction
Section 10 – Geotechnical, Roadway Pavements, and Structure Foundations						
Geotechnical Investigation	LS					Design
Section 11 – Earthwork						
Clearing and Grubbing	AC					Construction
Removal of Existing Utilities	LS					Construction
Removal of 102" Brick Storm Pipe	LF					Construction
Removal of Existing Building Structure	LS					Construction
Removal of Miscellaneous Structures	LS					Construction
Removal of Existing Pavement	SF					Construction
Removal of Existing Sidewalk	SF					Construction
Removal of Trees	EA					Construction
Sheet Piling/Shoring	SF					Construction
Stock Pile of Top Soil	CY					Construction
Unclassified Excavation (Cut to Fill)	CY					Construction
Muck Excavation	CY					Construction
Export Unsuitable Material to DADS	CY					Construction
Unclassified Embankment	CY					Construction
Top Soil	CY					Construction
Aggregate Base Course	CY					Construction
Structure Excavation	CY					Construction
Structure Backfill	CY					Construction
Section 12 – Drainage and Water Quality						
Erosion Control	LS					Construction
Roadway Drainage	LS					Construction
Golf Course Drainage	LS					Construction
Parking Lot Drainage	LS					Construction

WBS Description	Unit	Quantity	Unit Price	Dollar Value	Scope Description	M/WBE Goal
Outfall Headwall	EA					Construction
Special Outfall Structure	EA					Construction
Spillway - Soil Rip-Rap	CY					Construction
Sub-Drainage System	LS					Construction
Wetland Channel	LF					Construction
Wetland Channel Grade Control/Check Structure	EA					Construction
Forebay	SF					Construction
Water Quality Trash Vault	EA					Construction
Section 13 – Roadway						
Asphalt Paving	SY					Construction
Curb and Gutter	LF					Construction
Curb Ramps	EA					Construction
Sidewalk / Pathways	SY					Construction
Temporary Fencing	LF					Construction
Section 14 – Permanent Signing, Pavement Marking, Traffic Signalization, and Lighting						
Roadway / Parking Lot Signs	EA					Construction
Pavement Markings	GAL					Construction
Signalized Intersection	EA					Construction
Lighting	EA					Construction
Section 15 – Structures						
Landscape Walls	SF					Construction
Retaining Walls	SF					Construction
Golf Course Bridges	EA					Construction
Section 16 – Maintenance of Traffic						
Incident Management Plan	LS					Construction
Construction Traffic Control	LS					Construction
Section 17 – Landscaping and Aesthetics						
Non-Golf Course Landscaping/Seeding	SF					Construction
Clubhouse Landscaping	SF					Construction

WBS Description	Unit	Quantity	Unit Price	Dollar Value	Scope Description	M/WBE Goal
Drainage Channel Landscaping	SF					Construction
Large Deciduous Trees	EA					Construction
Small Deciduous Trees	EA					Construction
Coniferous Trees	EA					Construction
Tree Protection Plan	EA					Construction
Non-Golf Course Irrigation	LS					Construction
Clubhouse Irrigation	LS					Construction
Drainage Channel Irrigation	LS					Construction
Section 18 – Golf Course						
Turf	SF					Construction
Golf Course Irrigation	LS					Construction
Golf Course Irrigation Pond	EA					Construction
Golf Course Irrigation Pump Station	EA					Construction
Green Complex	EA					Construction
Tee Complex	EA					Construction
Bunkers	EA					Construction
Fairway (Par 3)	EA					Construction
Fairway (Par 4)	EA					Construction
Fairway (Par 5)	EA					Construction
First Tee Area	EA					Construction
Driving Range	EA					Construction
Cart Path	SY					Construction
Site Furnishings	LS					Construction
Wayfinding Signs	EA					Construction
Section 19 – Site Development						
Building Permits	LS					Construction
Clubhouse - Golf/Pro Shop Area	SF					Construction
Clubhouse - Administration Area	SF					Construction
Clubhouse - Dining Area	SF					Construction
Clubhouse - Food Service Area	SF					Construction

WBS Description	Unit	Quantity	Unit Price	Dollar Value	Scope Description	M/WBE Goal
Clubhouse - Support Area	SF					Construction
Clubhouse - Walls, Corridors, and Circulation Areas	SF					Construction
Clubhouse - MEP and Communication	SF					Construction
Clubhouse - Exterior Seating/Patio	SF					Construction
Clubhouse - Cart Storage Area	SF					Construction
Clubhouse - Snack Shack Area	SF					Construction
Clubhouse - Utility Services	SF					Construction
Maintenance Facility - Building 1	SF					Construction
Maintenance Facility - Building 2	SF					Construction
Maintenance Facility - Building 3	SF					Construction
Maintenance Facility - Building 4	SF					Construction
Maintenance Facility - Building 5	SF					Construction
Maintenance Facility - Walls, Corridors, and Circulation	SF					Construction
Maintenance Facility - MEP and Communication	SF					Construction
Maintenance Facility - Utility Services	LS					Construction
Permanent Fencing (Clubhouse)	LF					Construction
Permanent Fencing (Maintenance Facility)	LF					Construction
Parking Lot - Clubhouse	SY					Construction
Parking Lot- Maintenance	SY					Construction
Dumpster Areas	EA					Construction
Equipment Wash Station	EA					Construction
15'x15' Material Storage Bays	EA					Construction
FF&E (Contractor Supplied)	LS					Construction

EXHIBIT 3
ALTERNATIVE TECHNICAL CONCEPT (ATC) PROPOSAL FORM

Team Name or Prime: _____ **ATC No.** ____ **Date:** _____

This ATC Proposal is submitted for the City's for consideration

Submittal Information (all criteria shall be addressed):

1. A narrative description of the proposed modification:

--

2. List all relevant RFP requirements requesting to be amended to accommodate the proposed ATC:

--

3. A conceptual drawing of the proposed ATC (attach or insert sketch):

--

4. An explanation of why the proposed ATC is of equal to or better quality:

--

5. An estimate of likely costs or savings due to the implementation of the proposed ATC, including reference to assumptions on which such estimate is based:

--

6. An estimate of likely schedule impacts (positive or negative) of the proposed ATC, including reference to assumptions on which such estimate is based:

--

Team Name or Prime: _____ ATC No. ____ Date: _____
7. A description of potential impacts or changes to the operations and maintenance procedures as a result of the proposed ATC:
8. Identification of other projects on which the proposed ATC (or similar approach) has been implemented:
City Response:

**EXHIBIT 4
REQUEST FOR INFORMATION FORM**

CITY AND COUNTY OF DENVER		Sheet 1 of ____	
REQUEST FOR INFORMATION			
Confidential Response Yes___ No___		RFI No: _____	
Design-Build Team: _____		Contract: <u>RFP</u>	
Subcontractor: (if applicable)_____		Date: _____	
Project: City Park Golf Course Parks and Drainage Improvements Design-Build Project			
Site Location: City Park Golf Course			
Subject:		Reply Requested By:	
RFP Section/Document/Dwg./Spec. No.:			
Problem/Question:			
Proposed Solution by Contractor		By:	Date:
Response by City:			
Solution By:	Date:	Reviewed by:	Date:
Logged By:	By:	City Action: Yes ___ No ___	By:

1.0 GENERAL

1.1 PROJECT DESCRIPTION

The Project will renovate the City Park Golf Course to provide a high quality 18-hole regulation municipal golf course designed and constructed to United States Golf Association (USGA) recommendations/guidelines, modified to City and County of Denver (City) standards, that has a more efficient layout while integrating stormwater detention that provides flood protection to the downstream community, improves water quality, and provides enhanced public space and facilities. The Work included for this Project includes the design and construction of the City Park Golf Course, integrated flood control detention and water quality, short game/chipping area, driving range, First Tee facilities, putting greens, irrigation, parking lots, retaining walls, accessory/outbuilding structures, access modifications, and possible demolition and reconstruction of the Clubhouse and Maintenance Facility.

The Contractor shall be responsible for design, construction, landscaping and turf establishment, and Warranty of the Project. Final golf course routing, grades, hazard locations, tee box locations, path alignments, accessory/outbuilding structures, drainage and water quality, geotechnical, irrigation (including pump sizing), landscaping, possible Clubhouse and Maintenance Facility structural and architectural features/aesthetics, and all other final design features shall be the responsibility of the Contractor. The Project shall be designed and constructed to City Standards and Specifications, in other applicable standards and specifications as required in these Contract Documents, and comply with or exceed standards provided in the Technical Requirements, Technical Specifications, and the Request for Proposal (RFP).

1.2 PUBLIC INFORMATION

Public outreach and information is critical to the success of the Project. The City has spent considerable time and energy working with various Stakeholders including the surrounding neighborhoods, golf community, commuters, and public to determine the direction and requirements of this Project. Therefore, the Contractor shall be required to effectively and succinctly provide Project updates and construction Work impacts to the public throughout the duration of the Project, in accordance with Section 4 Public Information.

1.3 ENVIRONMENTAL

All environmental requirements are outlined in Section 5 Environmental Requirements. This Project and the Work required for it are not required to comply with the National Environmental Policy Act (NEPA) process. The historic views and character of the golf course are important to both the City and the community, therefore the Contractor shall comply with all historic preservation requirements of these Contract Documents. The Contractor shall comply with all requirements of applicable environmental laws, regulation, and requirements of Section 5 Environmental Requirements for construction Work activities impacting noise, air quality, historic preservation, vegetation, tree removal/preservation, irrigation, groundwater, hazardous materials, sustainability, erosion control and stormwater runoff water quality, and all permits, approvals, and City policies required for the Work.

1.4 RIGHT-OF-WAY

The Project is completely within City-owned parkland and right-of-way (ROW). No additional ROW is anticipated. If any additional ROW is required, the City will be responsible for the acquisition and payment of additional ROW.

1.5 DRAINAGE AND WATER QUALITY

Drainage facilities shall be designed and constructed to meet or exceed the requirements provided in Section 12 Drainage and Water Quality. Stormwater detention and water quality shall be provided and shall be integrated with the golf course design in such a way to be an aesthetic feature of the golf course.

1.6 ROADWAY

Driveway, access, and roadway requirements, if required by the Contractor's design, are included in Section 13 Roadway.

1.7 SIGNING, PAVEMENT MARKINGS, SIGNALIZATION, AND LIGHTING

The Project consists of signing and pavement marking within roadway ROW, as well as signing and pavement markings required for internal circulation and parking within the golf course for both the Clubhouse and Maintenance Facility. All requirements for both situations can be found in Section 14 Signing, Pavement Markings, Signalization, and Lighting.

Signal requirements are provided in Section 14 Signing, Pavement Markings, Signalization, and Lighting, if required by the Contractor's design.

Golf course signing shall be in accordance with Section 18 Golf Course.

1.8 STRUCTURES

The Contractor shall design and construct retaining walls, bridges, and drainage structures as required in Section 15 Structures.

Design and construction requirements for the Clubhouse, Maintenance Facility, outbuildings, shelters/restrooms, etc. are provided in Section 19 Site Development.

1.9 MAINTENANCE OF TRAFFIC

All construction Work shall have minimal impact to the efficient flow of traffic and safety of commuters, residents, pedestrians, and bicyclists around the Project as required in Section 16 Maintenance of Traffic.

1.10 LANDSCAPING AND AESTHETICS

Provide an aesthetically pleasing golf course landscaping, while maintaining or increase the existing views of the downtown skyline and mountains from the golf course, as well as the views into the golf course from the adjacent roadways and residences. An aesthetically complementary Clubhouse that complements the historic characteristics of the golf course shall be provided as described in Section 17 Landscaping and Aesthetics.

Tree preservation and protection is important to the City and shall be considered in the design and construction of the Project. Tree preservation and protection requirements are provided in Section 17 Landscaping and Aesthetics.

Landscaping required for the golf course access, Clubhouse, Maintenance Facility, memorials, and amenities are provided in Section 17 Landscaping and Aesthetics. All golf course related landscaping requirements (i.e. greens, tee box, driving range, turf, etc.) are provided Section 18 Golf Course.

1.11 GOLF COURSE

The Contractor shall design and construct a golf course that reflects the “Parkland Style” character and community significance of the existing golf course layout. The Project shall include a high quality 18-hole regulation municipal golf course, practice putting greens, short game/chipping area, First Tee facilities, driving range, and irrigation as required in Section 18 Golf Course. The golf course shall integrate stormwater detention and water quality, as required in Section 12 Drainage and Water Quality.

1.12 SITE DEVELOPMENT

The Project requires the Clubhouse and Maintenance Facility to maintain or increase the views of the downtown skyline and the mountains, while not degrading views from the adjacent roadways/residences, and increase the efficiency and operations of the golf course. The Clubhouse and Maintenance Facility shall meet or exceed all requirements provided in Section 19 Site Development.

All other outbuildings, shelters/restrooms, etc. requirements are provided in Section 19 Site Development.

Landscaping and aesthetic elements to site development Work are provided in Section 17 Landscaping and Aesthetics.

1.13 REFERENCE DOCUMENTS

The Reference Documents are provided solely for the Contractor’s reference and is without representation or warranty by the City, except to the extent it is incorporated by the Technical Requirements of these Contract Documents. Regardless of the level of completion or suitability of any portion of the Reference Documents, the Contractor shall be solely responsible for Project design, and the City shall have no liability or obligation as a result of design Work contained in the Reference Documents.

2.0 PROJECT MANAGEMENT

2.1 ADMINISTRATION

The Contractor shall be solely responsible for the management and administration of the Work, coordinating all activities necessary to perform the Work, and reporting and documenting all Work.

2.2 PROJECT MANAGEMENT PLAN

2.2.1. GENERAL REQUIREMENTS

The Contractor shall submit a Project Management Plan (PMP) that encompasses the term of the Contract, for Approval by the City, within 30 Calendar Days following the issuance of Notice to Proceed (NTP). The PMP shall provide clear detail of the Contractor's overall approach to its team organization, structure, and management processes, and shall describe the scope, goals, and objectives of Project approach and intended results and be fully compliant with all provisions of the Contract. The PMP shall identify by signature page and date, the title of the qualified professionals who are responsible for planning, reviewing, approving, reporting, monitoring, controlling, implementing, revising, and issuing the PMP, including revisions. At a minimum, the PMP shall include the following (where applicable relating to both the Contractor and its subcontractors but also, where applicable, clearly identifying the division of roles and responsibilities between the Contractor and its subcontractors):

- An organizational chart and description, indicating the Contractor's overall team structure including all Key Personnel, management staff and their reporting relationships for all Work;
- A design organizational chart and description, indicating the roles, responsibilities and structure of the Contractor's design staff including discipline leads;
- A construction organizational chart and description, indicating the roles, responsibilities and structure of the Contractor's construction staff including field superintendents;
- A quality management organizational chart and description, indicating the roles, responsibilities and structure of the respective quality management;
- A design management process, including a description of how design personnel shall interface with the City, construction, and quality management, in accordance with Section 3 Quality Management;
- A construction management process, including the Contractor's coordination plan, the Contractor's management approach, the construction management structure, identification of advanced Work, detailed delineation of work zones with identification of design and construction packages, summary of major Project phases, and how the construction personnel will interface with the City's staff;
- Process for addressing constructability, maintainability and environmental compliance in the Work;
- Description of key processes for control of the Final Project Plans, including making changes to the design during construction and ensuring engineering review of the new design and compliance with the Contract. Processes shall demonstrate how the City and the Contractor's design team are involved in the review and approval of deviations from the Final Project Plans;
- Process for construction closeout including the Contractor's approach to satisfaction of Contractual Milestone conditions, Substantial Completion conditions, Final Acceptance

conditions, As-Builts including verification of detention and water quality volumes, and management of Punch Lists;

- The Contractor shall be responsible for the establishment, control, direction, and implementation of a comprehensive safety plan that protects the safety of its personnel and the general public affected by the Project and develop a Safety Management Plan (SMP) as part of the PMP. The SMP shall fully describe the Contractor's policies, plans, training programs, site controls, and incident response plans to ensure the health and safety of personnel involved in the Project and the general public affected by the Project. The SMP shall include Work performed by any subcontractor.
- All of the Contractor's Project staff, including subcontractors and the City, must be trained on the elements of the Approved SMP prior to commencement of construction Work
- Description of key processes, and their reference location within the Contractor's Traffic Management Plan (TMP), in accordance with Section 16 Maintenance of Traffic requirements, including interface with the City;
- Description of key processes, and their reference location within the Contractor's Public Information Plan (PIP), in accordance with the Section 4 Public Information requirements, including interface with the City, Regional Transportation District (RTD), other governmental authorities, regulatory agencies, Utility Owners, other Stakeholders and the public during the Work, inclusive of the following activities: design development; progress of design and construction, workshops, partnering and Utility coordination meetings; construction engineering and inspection; construction impacts; and public involvement;
- Description of key processes, and their reference location within the Contractor's Environmental Compliance Work Plan (ECWP), in accordance with the Section 5 Environmental Requirements, including interface with the City and any other governmental authority;
- Description of key processes for the demolition of facilities and structures on the Project, including processes for the security, hazardous materials assessment, demolition, debris removal, site clearing, storm water management improvements, and clean-up of building structures, including interface with the City and any other governmental authority;
- Description of key processes for managing the Project's Minority Business Enterprise (MBE) and Women Business Enterprise (WBE) and their reference location within their respective plans, in accordance with the Contract Documents;
- Description of the Contractor's key processes and approach to the Project Schedules, in accordance with this Section 2;
- Description of the Contractor's key processes and approach to City and third-party permitting; and
- Contractor's approach to non-compliance reporting, evaluation, and resolution with each of its subcontractors and methodology on how this information shall be reported to the City.

2.2.2. PROJECT MANAGEMENT PLAN UPDATES

The Contractor shall monitor and improve the effectiveness of its PMP and resubmit the PMP, for Approval by the City, should any of the following conditions exist:

- A plan or procedure no longer adequately addresses the matters it was originally intended to address;
- A plan or procedure does not conform with the Contract Documents;
- An audit by the Contractor or the City identifies a deficiency in the PMP requiring an update;
- Organizational structure changes require revision to the PMP;
- The Contractor is undertaking, or about to undertake, activities that are not covered within the current PMP; or
- The City requires the PMP to be updated at its request.

The Contractor shall clearly identify in a cover sheet what changes were made in a PMP update to expedite the City's review. Additionally, a redline copy and a final clean copy shall be submitted to the City.

If any such condition, as mentioned above, is met, the PMP shall be resubmitted within 10 Working Days.

2.3 WORK BREAKDOWN STRUCTURE

The Contractor shall submit to the City, concurrent with its Baseline Schedule, a detailed Work Breakdown Structure (WBS) for Approval. The Baseline Schedule shall include a detailed, organized hierarchical division of the WBS to complete each element of the Work. The Approved WBS shall be the basis for organizing all Work under the Contract, and shall be used as a basis for the Project Schedules, and other cost control systems. The WBS shall conform to Exhibit 2 Schedule of Values.

2.4 COST MANAGEMENT

2.4.1. PROGRESS PAYMENT CALCULATIONS

The City shall base progress payments on a mutually agreed estimate of percent completion of the Work, not on measured quantities. The Contractor shall progress the activities identified on the Approved Baseline Schedule or Current Baseline Schedule for determining the Monthly Progress Schedule. The Approved Monthly Progress Schedule shall determine the amount of the Contractor's progress payments. Percent completion shall be calculated using Project scheduling software meeting the requirements of this Section 2, where progress is measured based on percent completion/days remaining.

Partial payment for stored materials shall only be made as allowed in the General Conditions. The Contractor's pay application shall not include a request for payment for Nonconforming Work documented by the Project Quality Manager (PQM) or the City. The payment to the Contractor shall be in the amount shown on the Contractor's Approved pay application less retainage and any deductions.

2.4.2. PAY APPLICATION SUBMITTALS

The Contractor shall submit monthly pay applications to the City each month. Each monthly pay application shall be submitted in draft form for Approval within seven Calendar Days following the prior month's end. Draft pay application submittals shall be done electronically in Microsoft Excel format.

The Contractor shall submit to the City for Approval each final monthly pay application within five Calendar Days of a progress status meeting. Final pay application submittals shall be done electronically in Microsoft Excel format and PDF format following the Payment Procedure Requirements in Section 2.4.5. The data file for the Project Schedule shall be submitted with the monthly pay application.

2.4.3. PAY APPLICATION DOCUMENT CONTENT

The requirements for the supporting documents to be included with the pay application form shall be finalized by the Contractor in consultation with the City within 30 Calendar Days following the issuance of NTP. The pay application shall incorporate an item description that relates to the Schedule of Values. After the pay application format has been Approved by the City, the format shall not change unless subsequently Approved by the City.

The pay application documents shall include:

- Pay application Cover Sheet

The Cover Sheet shall indicate the following information:

- Project number and title
- Pay application number (numbered consecutively starting with “1”)
- Period covered by the pay application (specific calendar dates)
- Total earned to date for the Project as a whole and for each WBS activity
- Identification of Nonconforming Work and amount withheld
- Authorized signature and title of signatory
- Date on which pay application was signed

- Monthly Progress Report

The Monthly Progress Report shall include the following items as appropriate for the previous month's activities:

- Brief narrative description of WBS activity and progress for the Project as a whole, including maintenance, design, and construction; identify start dates and completion dates
- Update of progress with respect to Utilities
- Identification of whether any Completion Deadlines are achieved or revised during the period
- Summary of Quality Assurance (QA)/Quality Control (QC) efforts, including result of design reviews, in accordance with Section 3 Quality Management
- Identification of problems/issues that arose during the period and remaining issues to be resolved
- Summary of resolution of problems/issues raised in previous monthly progress reports or resolved during the period
- Summary of Nonconforming Work correction status
- Summary of Project accidents (frequency and severity) and corrective actions taken
- Identification of critical schedule issues and proposed resolution
- Discussion of schedule variations from Completion Deadlines that have slipped or improved
- Summary of public information during the period
- Progress photographs, as required

- Three-month look-ahead schedule.
- Updated Monthly Progress Schedule

No pay application shall be Approved nor payment made if there is not a current Approved Monthly Progress Schedule and Current Baseline Schedule in place. The status date of the Monthly Progress Schedule, coinciding with the payment pay application date, is the last day of each month. The data date for use in calculating the Monthly Progress Schedule shall be the first Calendar Days of the following month.

The Contractor shall make all corrections to the Monthly Progress Schedule requested by the City and resubmit the Monthly Progress Schedule. If the Contractor does not agree with the City's comments, the Contractor shall provide written notice of disagreement within five Working Days from the receipt of the comments. The items in disagreement shall be resolved in a meeting held for that purpose, if necessary.
- Certification by Contractor's Quality Manager

The Contractor shall submit a certification signed by its PQM accompanying each pay application request certifying that:

 - All Contract Work—including that of designers, subcontractors, suppliers, and fabricators—has been checked and/or inspected by the Contractor's quality management staff, and all Work, except as specifically noted in the certification, conforms to the requirements of the Contract Documents.
 - The QMP, and all of the measures and procedures provided therein, are functioning properly and are being followed.
 - All safety-critical Work, in conformance with the SMP has been reviewed and sealed by the Professional Engineer of responsible charge before construction begins.

No pay application shall be Approved (payment made) if there is not completion and implementation of the QMP.

2.4.4. PROGRESS STATUS MEETINGS

A monthly progress status meeting shall be conducted each time a draft pay application submittal is made. The meeting shall be used to verify, address, and finalize the following:

- Actual start dates
- Actual and planned Completion Deadlines
- Earned value of Work that has been accepted and reported in-place, based on installed quantities and material on hand (stockpiled Materials)
- Activity percent complete
- Incorporation of Approved Change Orders
- Status of outstanding Nonconforming Work
- Work performance
- Project Schedule, including changes from previous month's schedule
- Critical Path(s)

2.4.5. PAYMENT PROCEDURE REQUIREMENTS

The Contractor shall comply with Section 2.3 of the Instructions to Proposers (ITP).

2.5 PROJECT SCHEDULES

The Project Schedules shall represent a practical plan to complete the Work within the Completion Deadlines.

The Project Schedules shall include the planned execution of the Work in accordance with the Contract Documents. The development of the Project Schedules shall include involvement and coordination with other contractors, Utility Owners, governmental persons, engineers, architects, subcontractors, and suppliers.

All Project Schedules submittals are subject to Approval by the City.

The Project Schedules shall represent the requirements of the Contract Documents. The Work shall be executed in the sequence and duration indicated in the Project Schedules with critical paths clearly identified.

All Project Schedules shall be cost loaded and developed consistent with the Approved WBS and the Completion Deadlines and shall include the design schedule with submittals. Failure to cost load schedules may result in non-payment until such schedules are cost loaded.

Project Schedules shall be defined to include the Proposal Schedule, Baseline Schedule, Current Baseline Schedule, Critical Path Schedule, Monthly Progress Schedule with 30 Calendar Day look-aheads, Recovery Schedule, and As-Built Schedule.

2.5.1. GENERAL REQUIREMENTS

Project Schedules shall be in the same master data file, including design, submittals, procurement, and construction schedules. These schedules shall all tie together logically to present a total critical path analysis in the same master data file.

The only constraints allowed to be included in the schedule are the Completion Deadlines. No intermediate completion constraints or start constraints shall be allowed unless they are included in the Contract Documents. Unless Approved by the City, all activities shall have at least one predecessor and one successor, except for NTP (no predecessor) and Final Acceptance (no successor).

All activities that start or complete out of sequence shall be rescheduled (logic corrected) to reflect the actual sequence of events.

Actual start and completion dates shall be accurately inputted. Prior to changing or correcting any previous actual dates, or dates required in the Contract Documents, a narrative shall be written to the City requesting Approval to change a date.

If any logic is changed after the Approval of the Baseline Schedule or Current Baseline Schedule, if one exists, a narrative by activity code shall accompany the Monthly Progress Schedule stating the reason the logic changed. If the City does not agree with the reason for the logic change, the Monthly Progress Schedule shall not be Approved.

All activity identification codes for a specific activity description created in any Project Schedule shall remain unchanged and connected to its original activity description through Final Acceptance. An activity description may only be changed to clarify an activity's original scope.

All Project Schedule submittals shall include the electronic output files of the schedule (Microsoft Project), with its schedule charts and graphs shall be submitted in PDF format.

2.5.2. CRITICAL PATH METHOD REQUIREMENTS

The critical path shall be determined according to CPM principles and shall be highlighted in "red" on all schedules to distinguish critical activities from other activities. A diamond, flag, or other symbol shall highlight milestones.

The critical path shall have all major procurement activities identified for any item with lead time of more than 30 Calendar Days for delivery. This includes shop drawing submittal and Approval, lead times for the fabrication and delivery of materials and equipment, and installation of materials and equipment.

The critical path shall be sufficiently detailed to accurately depict all the Work. Activity durations shall be an estimate in Calendar Days of the time required to perform each activity. The maximum individual activity duration shall be discussed and Approved by the City based on the particulars of this Project. Activities with durations of less than five Calendar Days shall be held to the absolute minimum. Each activity shall have a detailed description.

Completion Deadline dates shall be shown on the critical path. These dates shall be input as finish constraint dates and shall agree with those dates specified in the Contract Documents.

2.5.3. PROPOSAL SCHEDULE

The Proposal Schedule is defined as the initial Project Schedule for the purpose of commencing Work on the Project as provided in the Contractor's Proposal.

2.5.4. BASELINE SCHEDULE

Using the Proposal Schedule as the basis for development, the Contractor shall submit, for Approval by the City, a cost loaded Baseline Schedule no later than 30 Calendar Days following the issuance of NTP. The Baseline Schedule shall be a Critical Path Method (CPM) schedule with activity detail based on the approved WBS.

The Baseline Schedule shall be developed based upon the Proposal Schedule and shall include the dates for the Contractual Milestones and shall be incorporated into the Contract Documents (such dates for which shall not be changed except by the City Approval). The Baseline Schedule shall detail the Contractor's activities for the Project from NTP through Final Acceptance. Activities representing Work during this period shall be sufficiently detailed to plan, monitor, and evaluate the progress of the Work. The Baseline Schedule shall represent conditions of the Project at NTP.

The Baseline Schedule shall show the sequence and interdependence of activities required for complete performance of the Work – beginning with the date of the NTP and concluding with the date of Final Acceptance – and it shall comply with the following:

- The actual number of activities in the schedule shall be sufficient to assure adequate planning of the Work and to permit monitoring and evaluation of progress and the analysis of time impacts. Activity durations shall be expressed in Calendar Days. The Work calendar shall

clearly identify Holidays (Contractor to include the Holidays) and other non-Working Days, as well as Special Events, as discussed in Section 16 Maintenance of Traffic.

- The Contractor shall schedule deliverable review times by the City and governmental approvals as separate tasks logically tied to the appropriate activity. Concurrent review of multiple deliverables by one discipline must be agreed to by the City prior to inclusion in the Baseline Schedule.
- The Contractor shall schedule permit approvals by the City and governmental agencies.
- The Contractor shall schedule quality hold points.
- A graphic representation of all activities necessary to complete the Work shall be provided.
- All Completion Deadlines set forth in the Contract Documents shall be identified.
- Compliance with applicable provisions of the Contract Documents.
- The logic of the proposed CPM schedule is sound and consistently developed and demonstrates a logical sequencing and interdependence of activities required for the timely and orderly achievement of all Work activities and milestones, including completion of the Work within the Contractual Deadlines.

Once Approved, the Baseline Schedule shall be the base Project Schedule against which all progress of the Work and the Monthly Progress Schedule shall be assessed. The Baseline Schedule shall not be modified.

2.5.5. CURRENT BASELINE SCHEDULE

The Current Baseline Schedule is defined as the Baseline Schedule with cost and schedule changes from Approved change orders incorporated. It shall be updated monthly, if required, with only Approved cost and schedule changes. This schedule shall not show progress but shall maintain the original data date from the Baseline Schedule as a baseline. The Current Baseline Schedule shall be submitted to the City for Approval with each monthly Pay application.

2.5.6. CRITICAL PATH SCHEDULE

The Critical Path Schedule is defined as the schedule showing only the critical path, incorporating all CPM requirements provided in this Section 2.

2.5.7. MONTHLY PROGRESS SCHEDULE

The Approved Baseline Schedule or Current Baseline Schedule, as appropriate, shall be used as the basis to establish the Monthly Progress Schedule. It shall be updated every month to show the actual progress of Work and the earned value of Work accomplished, including Approved change orders.

The Monthly Progress Schedule shall include a detailed schedule of activities that clearly identifies the critical path, progress for the current period for all activities, and the actual start and finish dates of activities, including physical percent complete and Calendar Days remaining for activities in progress.

The Contractor shall submit, with the Monthly Progress Schedule, a short narrative that discusses the following:

- Coordination and accomplishment of Work associated with Utilities and third parties;
- Status of all Contractual Milestones as compared to the Baseline Schedule or Current Baseline Schedule planned dates;

- Physical status of all Work as of date of the update;
- Actual progress relative to planned progress, organized by WBS;
- Design activities and progress;
- Design document submittals for the upcoming period;
- All activities with 14 Calendar Days or less float;
- 60 Calendar Day look-ahead on all required the City Approvals and other applicable third party approvals;
- 30 Calendar Day look-ahead sorted by WBS and activity early start dates;
- Critical items for critical path sorted by activity early start date; and
- Time-scaled critical path network plot indicating the status of all activities as of the date of the update.

The Monthly Progress Schedules shall be submitted to the City for Approval with monthly pay applications.

The Monthly Progress Schedule shall include all information as of the data date.

For the 30 Calendar Day look-ahead component of the Monthly Progress Schedule that establishes the WBS activities, the Contractor shall provide sufficient detail to convey a schedule that provides weekly schedule control and shall specifically identify:

- Completion Deadlines, if any
- Phasing of design, construction, testing, and staging of the Work, with particular attention given to Release for Construction (RFC) dates, site availability, construction staging, maintenance, and protection of traffic requirements of the Contract Documents
- Procurement, fabrication, preparation of mock-ups, preparation of prototypes, delivery, installation, testing of materials and equipment, including factory testing and demonstration testing, and any long lead time (more than 30 Calendar Days) orders for material and equipment
- Interface coordination and dependencies with preceding, concurrent, and follow-on Contractors
- Work to be performed by other Contractors and agencies that may affect the schedule
- Public information activities

Prior to the Progress Status Meeting, the Contractor shall obtain from the design team, subcontractors, suppliers, and field staff the necessary information required to accurately reflect progress to date.

2.5.8. RECOVERY SCHEDULE

The Recovery Schedule is defined as the Contractor's program and proposed plan for the recapture of lost schedule progress and to achieve Contractual Milestones, Substantial Completion, and/or Final Acceptance by the applicable Completion Deadlines. The Recovery Schedule shall be based on the latest Approved Monthly Progress Schedule and shall include equivalent detail.

If the Work is lagging the late start cost curve in the Current Baseline Schedule for a period that exceeds the greater of 1) 15 Calendar Days in the aggregate, or 2) that number of days in the aggregate that equals five percent of the Calendar Days remaining until the Project Completion Deadline, the Contractor shall

prepare and submit to the City for Approval a Recovery Schedule within 14 Calendar Days after the Contractor first becomes aware of the schedule delay.

The City shall notify the Contractor within 14 Calendar Days after receipt of the Recovery Schedule whether the Recovery Schedule is Approved, or shall describe changes that the City believes should be made to the Recovery Schedule. The Contractor shall incorporate and fully include the Recovery Schedule (including the City's comments) into the next scheduled Monthly Progress Schedule (or, if the next scheduled Monthly Progress Schedule is due within seven Calendar Days of Approval of the Recovery Schedule, then the Recovery Schedule shall be incorporated into the subsequent Monthly Progress Schedule), and shall concurrently provide to the City a Current Baseline Schedule.

2.5.9. AS-BUILT SCHEDULE

The last Monthly Progress Schedule submitted, shall be identified by the Contractor as the As-Built Schedule. The As-Built Schedule shall reflect the exact manner in which the Contractor executed the Work (including start and completion dates, activities, actual durations, sequences, and logic), and shall be signed and certified by the Contractor's Project Manager and the Contractor's scheduler as being a true reflection of how the Work was executed with Substantial Completion dates through Final Acceptance.

2.5.10. FLOAT

Float is defined as the amount of time between the early start date and the late start date, or the early finish date and the late finish date, for each and every activity in the schedule. Float shall be for the benefit of all parties to the Contract Documents and not for the exclusive benefit of the Contractor. Suppression or consumption of float by extended activity duration, dummy activities, or preferential sequencing shall not be allowed. Critical activities shall be defined as those with a total float of zero Calendar Days.

2.6 MEETINGS

2.6.1. AGENDAS AND MEETING MINUTES

Unless notified otherwise by the City, the Contractor shall be responsible for developing meeting agendas for all Project related meetings between the Contractor and the City. All meeting agendas shall be provided to the City no less than one Working Day prior to the scheduled meeting.

Unless notified otherwise by the City, the Contractor shall be responsible for developing meeting minutes for all Project related meetings between the Contractor and the City, between the Contractor and counterparties to third party agreements, and between the Contractor and other governmental agencies and Stakeholders. All meeting minutes shall be submitted to the City within five Working Days after each meeting.

2.6.2. TASK FORCE MEETINGS

The Contractor shall conduct weekly task force meetings to coordinate the design development within the Contractor's organizations and with the City and other affected agencies. At a minimum, the Contractor shall prepare an agenda and conduct each meeting to discuss the status of the design, coordinate the design development between design disciplines, discuss constructability issues, and identify any questions associated with design requirements. At a minimum, the following disciplines shall be incorporated in the task force meetings:

- Drainage
- Roadway/Traffic

- Structures
- MOT
- Utilities
- Environmental/Geotechnical
- Public Information
- Golf Course/Clubhouse/Maintenance Facility

Task force meetings shall be held – in person – in the Webb Building, at 201 West Colfax Ave, Denver, Colorado 80202, unless otherwise Approved by the City.

2.6.3. SAFETY MEETINGS

The Contractor shall conduct regularly scheduled Project safety meetings, tool box talks, etc., as specified in its SMP.

2.6.4. QUALITY MEETINGS

The Contractor shall conduct regularly scheduled quality meetings as specified in its QMP.

2.6.5. DESIGN REVIEW MEETINGS

The Contractor shall hold design review meetings, as required in Section 3 Quality Management.

Design review meetings shall be held – in person – in the Webb Building, at 201 West Colfax Ave, Denver, Colorado 80202, unless otherwise Approved by the City.

2.7 PHOTOGRAPHS

The Contractor shall take a sufficient number of pre-construction photographs and a 1080p HD resolution, or greater, video of the Project, including roadways, structures, drainage, structures, existing trees and all areas necessary and/or anticipated to be impacted by the Work to establish a Baseline Conditions Report to resolve any disputes which may arise regarding the conditions prior to and subsequent to construction. Such preconstruction photo and video survey shall be submitted to the City within 30 Calendar Days following issuance of NTP. If a dispute arises where no or insufficient photographic or video evidence of its existing condition is available, the disputed area shall be restored to the extent directed by the City at no additional cost to the City.

At a minimum, the Contractor shall submit eight megapixel resolution or greater, aerial photographs of the Work and Project within 30 Calendar Days following issuance of NTP, every six months, and at Final Acceptance. Aerial photographs shall include all areas under construction, whether temporary or permanent, and all other areas impacted, each time they are taken.

The Contractor shall provide the City one complete set of high quality aerial photographs on a media agreed to by the City. The file format shall be .jpg, .gif, or .tiff.

2.8 FACILITIES PROVIDED BY THE CONTRACTOR

The Contractor shall make available its proposed facilities for inspection and Approval by the City prior to the City occupying any Contractor-provided facilities not later than 60 Calendar Days prior to commencement of construction Work. The Contractor shall be required to furnish the City's staff with offices that are in good and serviceable condition (condition comparable to the Contractor's office space)

on the Project site. Both parties shall participate in a facility condition inspection prior to and at the completion of occupancy. The City shall return possession of Contractor-provided facilities to the Contractor in essentially the same condition as when the City initially occupied the facilities, except for reasonable wear and tear.

The Contractor shall secure sites; obtain all site permits; install, set up, and provide Utility services; and maintain the facilities as part of the Work. The Contractor may consult with the City about availability of suitable local sites and office facilities.

In the event that office spaces or appurtenant facilities are stolen, destroyed, or damaged during the Work, the Contractor shall at its expense repair or replace those items provided to their original condition within five Working Days, or as Approved by the City, except for any loss or damage caused as a direct result of willful misconduct of the City personnel, which the actual, reasonable, and documented costs of the repair, replacement, and/or restoration will be reimbursed by the City.

The Contractor shall maintain the City offices until at least 90 Calendar Days following the Final Acceptance of the Project, unless otherwise agreed to by the City based on operations and maintenance requirements of the golf course during the landscape establishment. The City may, at its discretion, vary the number of its staff throughout the duration of the Project. However, the Contractor shall maintain the initial number and size of the City office facilities, conference rooms, reception area, break room, and filing area. The Contractor shall be responsible for disposal or removal of all the City office facilities and any site restoration Work required.

The Contractor shall provide office space and equipment for six (four full-time employees and two floating employees). City personnel as specified herein:

- Cordless telephones and telephone service with at least one line for each City office facility. A speaker phone shall be provided for the conference room.
- High-speed internet connection (50 megabyte/second or greater, synchronous transfer rate business class Ethernet system) and networking for all offices and conference rooms.
- Overhead lighting meeting Occupational Health and Safety Administration (OSHA) and code requirements for office space.
- One color laser printer/copiers/scanners capable of 45 ppm input and output at 600 x 600 dpi and at least two paper drawers accepting 8-1/2" x 11" inch up to 11" x 17" inch paper and paper weights from 16 to 24 lb. bond, including paper, toner, service and repairs. The unit shall be capable of scanning documents to 11" x 17" inch size and transmitting the scanned file to multiple email addresses.
- Office space not less than the size indicated below:
 - Four offices (with door): 120 square feet of enclosed office space per office.
 - One enclosed conference room with doors capable of accommodating a 20-person meeting, with a 15-person seating capacity at the conference table; this can be a shared conference room between the Contractor and the City.
 - Break room: sink, counter, microwave, 20-cubic foot refrigerator, and drinking water and dispenser.
 - Filing space: enclosed, with lockable door and five steel five-drawer, locking, lateral file cabinets (approximate size = 18" x 42"); the file room also shall have two 30" x 72" utility

tables with two chairs each; this space shall be of sufficient size to accommodate the requested equipment and accommodate two staff members (to typical industry standards); this space shall not be shared with any other room.

- Storage room: 120 square feet, enclosed, with lockable door

Furnishings, as follows:

- Conference Room
 - Conference table and chairs
 - Wastebasket
 - Two hanging and erasable white boards that are six feet wide, at a minimum
 - Projector and screen or Digital “Smart TV” 64 IN or larger, wifi capable
- Offices
 - Desk that is minimum size 60" x 36" with locking drawers
 - Computer workstation desk capable of holding a desktop printer, monitor, keyboard, and any accessories
 - Ergonomically correct, OSHA-approved chairs
 - Hanging, erasable white board, four feet wide at a minimum
 - Bookshelf
 - Wastebasket
- Indoor restrooms suitable to accommodate the office staff (separate men’s and women’s)
- Hard-surfaced parking, one space per employee, plus five visitor spaces
- Daily janitorial service (except weekends and Holidays), including paper towels, toilet paper, hand soap, etc.
- Maintenance of the exterior area of office, including access to parking and snow removal
- Heating, ventilation, and air conditioning/cooling systems adequate for office use
- Access 24 hours a day, seven days a week with security after normal working hours

2.9 PROJECT DIRECTORY

The Contractor shall maintain and furnish to the City a Project Directory, listing the names, addresses, and telephone numbers (office, home, cellular, etc.) of the Key Personnel and critical support staff of the Contractor and each subcontractor. The Project Directory shall be submitted to the City no later than 30 Calendar Days following issuance of NTP. The Contractor shall update the Project Directory quarterly for the duration of the Work and within any Key Personnel changes.

2.10 DOCUMENT MANAGEMENT

The Contractor shall establish and maintain its own Document Control System (DCS) to store and record all correspondence, drawings, progress reports, technical reports, specifications, Contract Documents, deliverables, calculations, and administrative documents generated under the Contract Documents. Document control, storage, and retrieval methods shall include the use of both hard copies and electronic records. The Contractor’s DCS shall handle all Project documents. Data shall be backed up every 24 hours.

The City shall have access to the DCS with sharing capabilities. The Contractor shall provide a dedicated personnel managing the DCS.

All correspondence of the Contractor to and from the City and its representatives with respect to the Contract Documents shall be serialized, and the Contractor shall maintain separate incoming and outgoing correspondence logs. At a minimum, a serialization similar to the following is required:

Figure 2-1 Example Document Serialization

DATE: _____
DBC Assigned No.: _____
DB (year): _____
Addressee: _____
Address: _____
Subject: _____
Reference: _____
Copies: _____

All correspondence shall include the Project name, Contract name and number, along with the specific subject of the letter. All replies shall refer specifically to prior correspondence to which it relates.

The Contractor shall make available, within 24 hours when requested by the City, copies of its logs indicating the City’s outstanding items and a copy of any document requested. The Contractor shall comply with Colorado Open Records Act (CORA) requests and supply information as requested by the City.

2.11 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 2-1 Deliverables

Deliverable	Information or Approval	Schedule
Project Management Plan (PMP)	Approval	30 Calendar Days following issuance of NTP
Draft monthly pay applications	Approval	Within seven Calendar Days following prior month’s end
Final monthly pay applications	Approval	Within five Calendar Days following the progress status meeting
Monthly pay application format	Approval	30 Calendar Days following issuance of NTP
Baseline Schedule	Approval	30 Calendar Days following issuance of NTP

Deliverable	Information or Approval	Schedule
Current Baseline Schedule	Approval	As required
Monthly Progress Schedule	Approval	Concurrent with the monthly pay applications
As-Built Schedule	Approval	Prior to Final Acceptance
Recovery Schedule	Approval	As required
Work Breakdown Structure (WBS)	Approval	Concurrent with Baseline Schedule
Office Facilities	Approval	60 Calendar Days prior to commencement of construction Work
Project Directory	Information	30 Calendar Days following issuance of NTP
Updates to the Project Directory	Information	Quarterly and with changes to Key Personnel
Preconstruction Photography and Video Survey (Baseline Condition Report)	Approval	30 Calendar Days following issuance of NTP
Meeting Minutes	Information	Five Working Days after each meeting

3.0 QUALITY MANAGEMENT

3.1 QUALITY MANAGEMENT REQUIREMENTS

The Contractor shall prepare and submit for the City and County of Denver (City) Approval, a Quality Management Plan (QMP) for the Work, including but not limited to, the oversight of all subcontractors and traffic control operations. The QMP will include the Design Quality Management Plan (DQMP) and the Construction Quality Management Plan (CQMP), consisting of construction quality control (QC), and construction quality assurance (QA). While the City expects that subcontractors will each have a QC program, and that subcontractors will perform QC activities, the final responsibility for overall quality management rests with the Contractor.

The QMP shall be submitted in the format recommended by the International Organization for Standardization (ISO 9001 series) and shall contain complete procedures for the implementation of the QMP.

The QMP shall include as a minimum:

- A statement of the Contractor's commitment to quality and provide a clear definition of the scope of activities and detail the methods to ensure the Work meets the requirements of the Contract.
- A discussion on how the Contractor will ensure that all disciplines, aspects, and elements of the Work shall comply with the requirements of the Contract Documents, including commitments made in the Contractor's Proposal.
- A discussion on how the Contractor will ensure that all subcontractors comply with the requirements of the QMP.
- A description of the quality management organization, including an organization chart showing relationships among the parties including the City, additional agencies (as needed) and other company organizational elements.
- The name, qualifications, resumes, duties, responsibilities, and authorities of each person assigned a quality management function or a QC or QA function.
- A requirement that all QC/QA documentation is signed by a Colorado Professional Engineer or Architect, as appropriate, in accordance with State law – as a minimum. Digital documentation is acceptable. Complete, legible copies of such records shall be furnished in full to the City within three Working Days of completed QC/QA activities, upon request.
- A list of all deliverables to the City.
- Procedures for preparing and presenting submittals, including those of subcontractors, vendors, offsite fabricators, suppliers and purchasing agents, for assuring they conform to contract requirements.
- Procedures for the Requests for Information (RFI) process, including sufficient review periods by the City, up to and including final resolution of each RFI.
- The requirement for individual Material Testing and Inspection Plans (MTIP) for each individual construction package. Specific tests required, minimum frequency of tests, and test procedures shall be in accordance with the City *Minimum Frequency of Materials Sampling and Testing Standard*.

- Procedures that address all elements of design, including but not limited to wet and dry Utilities, architectural, civil, structural, geotechnical, survey, hydraulic, golf course design, landscaping, aesthetics, environmental, traffic, safety, right-of-way (ROW), and temporary Work. The Contractor shall identify all applicable computer programs to develop and check designs.
- Requirements for both temporary and permanent components of the Work.
- Procedures for a Nonconformance Report (NCR) closeout including who needs to approve the final recommended disposition of the report.
 - All elements constructed that are not in conformance with the Contract plans and specifications shall be documented with an NCR within two Working Days of occurrence.
 - Resolution of an NCR must be completed within four Working Days of the occurrence unless agreed upon by the City and the Contractor.
- QC/QA staffing requirements, including traffic control oversight, inspectors and material testers, needed to thoroughly monitor the Work in progress at all times. The Contractor shall provide sufficient QC/QA staffing to adequately monitor the Work according to the demands of the construction schedule. If quality standards or schedules are not being met, the Contractor will provide additional QC/QA staff as requested by the City.
- The minimum quality management staff required is the Project Quality Manager (PQM), Design Quality Assurance Manager (DQAM), Construction Quality Control Manager (CQCM), Construction Quality Assurance Manager (CQAM), and a quality administration/document control clerk.

The Contractor shall update and submit to the City for Approval its QMP when its own quality management organization detects systemic or fundamental breaches of the Contract or deficiencies in the manner the Work is inspected or tested, including breaches or deficiencies that have caused or that may cause Nonconforming Work to be performed, or when the City advises the Contractor of such a problem. The Contractor shall also revise the QMP should any of the following conditions exist:

- QMP or procedure within the QMP no longer adequately addresses the matters it was originally intended to address;
- QMP or procedure within the QMP does not conform with the Contractor;
- An audit by the Contractor or the City identifies a deficiency in the QMP requiring an update;
- Organizational structure changes require revision to the QMP;
- The Contractor is undertaking, or about to undertake, activities that are not covered within the current QMP; or
- The City requires the QMP to be updated, at its request.

3.2 PROJECT QUALITY MANAGER

The Contractor shall employ a PQM for the Work. The PQM shall be responsible for the Contractor's quality program, including both QA and QC, overall design, construction, and life-cycle quality of the Project, quality personnel, quality planning, quality training, quality control activities independent of production, quality system procedures enforcement, development and implementation of the quality program objectives, total system quality and management, quality records and documentation, and review and approval of the QMP prior to submittal to the City. This position shall be independent of the Contractor's and designer's Project

management staff, reporting directly to senior principals or officers of each entity. The PQM shall be involved throughout the design and construction phases.

3.3 DESIGN QUALITY MANAGEMENT REQUIREMENTS

The Contractor shall prepare and submit, to the City Approval, a DQMP for the design Work. The DQMP shall contain complete procedures for the implementation of design QC. No design shall commence until the DQMP has been Approved by the City.

3.3.1 DESIGN QUALITY ASSURANCE MANAGER

The lead design firm in the Contractor's organization shall employ a Design Quality Assurance Manager (DQAM) for the Work. The DQAM's responsibilities shall be limited to administering contracts with the independent firms, managing and ensuring Contractor compliance with the DQMP, and resolution of quality related issues. Design QC is required at the design manager level, whether for the lead designer or design subconsultants.

3.3.2 DESIGN PACKAGING AND SCHEDULING

3.3.2.1 DESIGN SUBMITTAL AND REVIEW SCHEDULE

No later than 30 Calendar Days following issuance of NTP, the Contractor shall submit to the City for Approval, the Design Submittal and Review Schedule incorporating each submittal/deliverable of the design phase. Each submittal/deliverable package shall be identified and the Contractor shall provide information including:

- Activity number
- Explanation of plan set naming/numbering system to be used
- Submittal and/or review meeting dates
- Description of the package, its physical location and limits of activity
- Listing of engineering disciplines used in design
- Required permits
- Required Approvals
- Status of submittals

The City and the Contractor shall meet monthly to evaluate and determine the progress status of the scheduled activities. The Contractor shall provide an updated Design Submittal and Review Schedule including a tabular listing of all design submittals sorted by activity, start date and float to the City at each progress meeting. The Contractor shall provide the City notice of any changes to the Design Submittal and Review Schedule.

Any submittals to third parties, other City agencies for building permits, Utility design and relocation approvals, or other miscellaneous permits shall be the responsibility of the Contractor. The Contractor will be responsible for coordinating these submittals and adjusting the Project Schedule accordingly based on the time frame required for review and approval of any necessary submittals for permits.

3.3.2.2 DOCUMENT SUBMISSION

The Contractor shall submit all design submittals for the City review, as required in this Section 3 and as more specifically outlined in other Sections. The City will complete the design reviews (not including third

parties other City agencies for building permits, Utility design and relocation approvals, or other miscellaneous permits) within 14 Calendar Days. The review period will begin the Working Day following the submission of the design submittal. Design review meetings shall be held, at a minimum, following each design submittal to discuss comments and responses.

3.3.3 REPORTING FUNCTIONS

The DQAM shall furnish a monthly design quality report. The monthly design quality report shall be submitted each month as part of the draft monthly payment application. This monthly report shall include, as a minimum:

- Summary of design quality management activities during the month
- Design quality problems and resolutions
- Process to identify, evaluate, and implement preventative solutions to improve upon the identified quality problem

3.3.4 DESIGN DOCUMENTATION

The Contractor shall maintain records of all independent checking of calculations and independent drawing checking performed. These records shall be under the physical control of the DQAM in a form acceptable to the City.

3.3.5 DESIGN SUBMITTALS

The Contractor shall submit design submittals in accordance with this Section 3.

Comments on a submittal, by the City, shall be responded to the City's satisfaction prior to advancing future submittals. The comments and their resolution shall be recorded on the final version of the Review Comment Summary and Resolution (RCSR) form by the Contractor. These comments shall be incorporated in the subsequent submittal.

All design submittals shall incorporate the most up to date design and existing information.

3.3.5.1 INITIAL DESIGN SUBMITTAL – 30% REVIEW

Following issuance of NTP, the Contractor shall participate in Task Force Meetings to review and discuss the Contractor's proposed design that was the basis for their Technical Proposal. It is the intent of the initial Task Force Meetings that the City will provide a "over the shoulder" review and comments related to the Project design and programming.

After the City has determined the Project design and program meets the intent of the Technical Requirements, the Contractor shall submit an Initial Design Submittal to the City.

The Contractor shall participate in a presentation of the Initial Design as part of the first design public meeting to the Design Work Group (DWG) to provide Project information in accordance with Section 4 Public Information. In addition to the requirements of Section 4 Public Information, the Contractor shall submit the following plans, as part of the Initial Design Submittal, which will be included in the first design public meeting:

- Conceptual Golf Course Routing Plan
- Conceptual Golf Course Site Plan/Plot with existing remaining trees, golf course features, grading, Clubhouse, Maintenance Facility and associated parking lots/accesses, traffic signal

design (if required), bridges, retaining walls, restrooms, shelters, pump house, and any other golf course structures and detention/water quality elements shown

- Any Conceptual Clubhouse and Maintenance Facility Plans/Elevations including space programming and internal building layout, as applicable

The Initial Design Submittal shall be submitted at least 14 Calendar Days prior to a scheduled review date. The review date shall be agreed upon by the Contractor and the City. The Contractor shall submit a minimum of six sets of hard copy plans and an electronic copy in PDF format.

After Approval of the Initial Design Submittal by the City, the Contractor shall participate in a presentation of the Initial Design for the first design public meeting for concept confirmation in accordance with Section 4 Public Information.

3.3.5.2 PRELIMINARY DESIGN SUBMITTAL – 60% REVIEW

After the first design public meeting and concept confirmation of the Initial Design, the Initial Design (along with any required revisions as an outcome of the first design public meeting) shall be the basis of the Preliminary Design Submittal. It is the Contractor's responsibility to verify all elements of the Preliminary Design are in compliance with the Contract Documents. The Contractor shall prepare a Preliminary Design Submittal for the entire Project. The Preliminary Design Submittal shall be comprehensive enough such that the City can verify that the Project can be designed and constructed in accordance with the Contract Documents.

The Contractor shall participate in a presentation of the Preliminary Design as part of the second design public meeting to provide Project information in accordance with Section 4 Public Information. In addition to the requirements of Section 4 Public Information, the Contractor shall submit the following plans, as part of the Preliminary Design Submittal, which will be included in the second design public meeting:

- Preliminary Golf Course Routing Plan
- Preliminary Golf Course Site Plan with existing remaining trees, golf course features, grading, Clubhouse, Maintenance Facility and associated parking lots/accesses, traffic signal design (if required), bridges, retaining walls, restrooms, shelters, pump house, and any other golf course structures and detention/water quality elements shown
- Any Preliminary Clubhouse and Maintenance Facility Plans/Elevations including space programming and internal building layout, as applicable

The Preliminary Design Submittal shall be submitted at least 14 Calendar Days prior to a scheduled review date. The review date shall be agreed upon by the Contractor and the City. The Contractor shall submit a minimum of six sets of hard copy plans and an electronic copy in PDF format.

After Approval of the Preliminary Design Submittal by the City, the Contractor shall participate in a presentation of the Preliminary Design Submittal for the second design public meeting in accordance with Section 4 Public Information.

3.3.5.3 FINAL DESIGN SUBMITTAL – 90% REVIEW

The Contractor shall submit a Final Design Submittal for Approval to the City. The Final Design Submittal may be broken down into separate packages. Evidence of review by all required persons and proof that all necessary governmental and third party approvals have been obtained shall be attached, except for submittals which require the City Approval.

The Final Design Submittal shall be submitted at least 14 Calendar Days prior to a scheduled review date. The review date shall be agreed upon by the Contractor and the City. The Contractor shall submit a minimum of six sets of hard copy plans and an electronic copy in PDF format.

The Final Design Submittal and any resubmittal required shall include drawings, details, specifications, and supporting data to establish fully the intent of all construction Work to be accomplished. Final Design Submittals for bridges shall include the design ratings and independent check calculations, as required in Section 15 Structures. Detailed quantities for the MTIP shall be provided within 10 Working Days of a Final Design Submittal, if not included in the submittal. All material shall be prepared under the supervision of and certified by a Professional Engineer or Architect, as appropriate, licensed in the State of Colorado.

3.3.5.4 RELEASE FOR CONSTRUCTION SUBMITTALS

Following the incorporation of the City comments from the Final Design Submittal, the Contractor shall prepare RFC packages to the City for final review and “Statement of No Objection” stamp. Two half-size (11” x 17”) sets of drawings, two full size (22” x 34”) reproducible sets of drawings, two sets of the appropriate specifications, two sets of all reports and quantities for construction Work shall be submitted. The Contractor shall have a Professional Engineer, Landscape Architect, or Architect, as appropriate, licensed in the State of Colorado, stamp and sign each sheet of the full size plans. The City shall either stamp the plans and specifications:

- “Does Not Object” and return two sets to the Contractor; or
- Return the submittal with comments and stamp the submittal with a “Does Object”; or
- Return the submittal with comments and stamp the submittal with a “Does Not Object”, but conditioned as noted”.

The Contractor shall submit RFC packages four Working Days prior to the scheduled review meetings. The City, will coordinate the review meeting schedule date with the Contractor. Request for Revision (RFR) and emergency packages (one or two drawings) will be handled on a case-by-case basis.

Construction shall not proceed on any element of Work until the relevant submittal is stamped, “Does Not Object” or “Does Not Object, but conditioned as noted” by the City and all required government and third party approvals have been obtained by the Contractor, including construction permits. The City’s act of “not objecting” does not substantiate the adequacy or acceptability of the design or relieve the Contractor of its obligation to comply with all provisions of the Contract Documents. Six half-size (11” x 17”) plan sheets and specifications with the City’s “Statement of No Objection” shall be provided to the City by the Contractor within five days of receipt of the City’s determination. The signed “Statement of No Objection” does not necessarily provide the Contractor clearance to begin construction Work in the plans. The Contractor is required to use the signed plans to obtain any necessary construction permits required before beginning field work.

3.3.6 REQUEST FOR REVISION PROCESS

Any revisions to the drawings and specifications desired by the Contractor after the RFC Plans have been stamped will require a RFR. These revisions may involve changes to dimensions and layout, material changes to conform to Contract requirements and/or to computational deficiencies that necessitate adjustments to the Work. These revisions shall be resubmitted to the City for Approval and processed according to this Section 3.

All RFRs shall include the following: justification narrative, copies of pertinent correspondence, jurisdictional sign-off as necessary, any additional governmental or private approvals, index of impacted

agencies with review comments and/or acknowledgements, drawings, engineering calculations and specifications, as necessary.

The City may object or not object to any RFR. If the City does not object to an RFR, the Contractor shall finalize all pertinent documentation, including final design drawings and specifications for final review.

This process shall be followed for unanticipated field conditions. If an unanticipated field condition is discovered during construction Work, the Contractor shall notify the City, upon discovery. If the condition is considered a minor change by the City, the Contractor may document the alteration in the As-Built Plans, after documenting the revision through the RFR process.

In no event shall the RFR process be used to change the Contract Price, any Guaranteed Dates, Contractual Milestones, or the Contract Scope of Work.

3.3.6.1 FIELD INVESTIGATIONS

Concurrently with design for an element of construction, Contractor shall conduct field investigations to resolve design issues and to ensure that design submittal(s) reflect existing conditions.

3.3.7 DESIGN REVIEW MEETINGS

The Contractor shall provide the agendas, lead the meetings, record, and publish the minutes. The Design Review Meetings are required following the Initial Design Submittal, Preliminary Design Submittal, and Final Design Submittal to review the review comments and provide comment resolution. City review comments will be provided to the Contractor on the RCSR Form as shown in Appendix A of this Section 3. The Contractor shall provide initial disposition codes and responses during the Design Review Meetings. After the Design Review Meeting the Contractor shall provide the City with one copy and one electronic Excel format copy of all review comments with revised responses and final disposition codes agreed to at the Design Review Meeting.

3.3.8 FINAL PROJECT PLANS

The Final Project Plans shall be organized according to the standard City format. As the Project progresses and individual packages are under construction, the Contractor shall merge the sealed plans into a single set of Final Project Plans. A current electronic copy shall be provided to the City, available at all times.

3.3.9 AS-BUILT PLANS

As-Built Plans, including documented minor field changes in computer-aided design and drafting (CADD), shall be submitted with the final Project documentation. The As-Built Plans shall be an edited version of the Final Project Plans. As-Built Plans shall be completed as the construction Work progresses and shall be submitted prior to Final Acceptance.

Refer to the Technical Requirements for additional As-Built Plan requirements.

3.4 CONSTRUCTION QUALITY MANAGEMENT REQUIREMENTS

The Contractor shall prepare and submit for the City Approval, a CQMP for the Work. The CQMP shall contain complete procedures for the implementation of the CQMP. The CQMP shall be submitted 30 Calendar Days before the first construction package is scheduled. No construction Work shall commence until the applicable sections of the CQMP have been Approved by the City.

The Contractor shall establish and maintain procedures for inspection and material testing to assess the quality of Work and to ensure the quality of the Work meets the minimum quality levels required by these

Technical Requirements and the Contract. The procedures shall apply to all facets of procurement and construction. The procedures shall be implemented by the Contractor as CQMP procedures. The procedures shall completely describe all quality management functions and shall contain information as specified herein or required by the City.

3.4.1 CONSTRUCTION QUALITY ASSURANCE MANAGER.

The Contractor's organization shall employ a Construction Quality Assurance Manager (CQAM) for the Work, who reports directly to executive management and shall be responsible for all construction QA activities for the Project. The CQAM cannot be the same individual as the CQCM. The CQAM shall be responsible for verifying and providing confidence that the construction Work meets or will meet the contractual requirements, managing the Contractor's workmanship inspections, implementing quality planning, overseeing QA testing and inspections. Additionally, the CQAM shall ensure design intent is consistent with completed construction, which may require additional oversight and staffing of separate individuals for these associated QA activities for the Project.

3.4.2 CONSTRUCTION QUALITY CONTROL MANAGER

The Contractor's organization shall employ a Construction Quality Control Manager (CQCM) for the Work, to be assigned full time on-site during construction. The CQCM shall be responsible for verifying and providing confidence that the construction Work meets or will meet the contractual requirements, managing the Contractor's workmanship inspections, implementing quality planning, overseeing QC testing and inspections, and coordinating with the City's independent verification testing and construction independent assurance inspections

3.4.3 CONSTRUCTION QUALITY CONTROL PERSONNEL

QC is the system used by the Contractor, subcontractors, suppliers, and vendors to monitor, assess, and adjust their production or placement processes to ensure that the final product will meet the specified level of quality. QC includes sampling, testing, inspection, and corrective actions (where required) to maintain continuous control over a production and placement process (and to fulfill contract requirements). The Contractor's QC personnel shall be certified in accordance with City and industry standards.

3.4.4 CONSTRUCTION QUALITY CONTROL - DOCUMENTATION

3.4.4.1 DAILY RECORDS

The Contractor shall maintain current daily records of all QC operations performed. The Contractor shall employ a full time on-site quality administration/document control clerk. These records shall be in a form acceptable to the City and include a description of subcontractors and vendors working on the Project, the number of personnel working, the weather conditions encountered, any delays encountered, identification of Nonconforming Work, and corrective action taken on current and previous Nonconforming Work. In addition, these records shall include factual evidence that required QC activities including material testing and inspection have been performed, including but not limited to the following:

- Type and number of QC tests performed
- Results of QC tests
- Inspections performed and findings
- Nonconforming Work identified
- Corrective actions taken

Such records shall address both conforming and Nonconforming Work and shall include a signed statement that all supplies and materials incorporated into the Work fully comply with all requirements of the construction documents and the Contract Documents unless identified as Nonconforming Work. Complete, legible copies of such records shall be furnished in full to the City within three Working Days of the date of the daily record, upon request. Nonconforming Work shall be brought to the attention of the City upon discovery of the Nonconforming Work.

3.4.4.2 MONTHLY QUALITY REPORTS

In addition to the daily reports required and furnished, the Contractor shall furnish a monthly construction quality report. The monthly construction quality report shall be submitted with the draft monthly payment application. This monthly report shall include as a minimum:

- Summary of construction QC staff on site during the month
- Summary of construction QC activities during the month
- Detailed summary of all tests performed by category
- Trend analysis of QC test results
- Log of all outstanding unresolved failing tests
- Nonconforming Work status
- Construction quality problems and resolutions
- Summary of Certificates of Compliance
- Process to identify, evaluate, and implement preventative solutions to improve upon the identified quality problem

3.4.5 MATERIALS TESTING AND INSPECTION PLAN

The QMP will include an MTIP describing all of the proposed inspections and test procedures, including products provided by suppliers during the manufacturing, receiving, and installation process, to ensure the requirements of the Contract Documents are met. The MTIP will identify all inspections and tests required including, at a minimum, reference to the requirements of the Contract Documents, frequency of the inspections and tests, and the Contractor-developed QA processes. Where no inspections or test standard exists in any of the City Standards or Specifications, the MTIP will develop criteria based on the best-available industry standard information and technology.

The MTIP will include procedures for delivery, handling, and storage of finished products ensuring they are properly handled and stored to prevent damage, deterioration, or theft. It also will document procedures for stored items and materials consistent with the expected duration and type of storage, and procedures for monitoring special processes utilized in fabrication, assembly, and testing of specified products. Special processes are those requiring qualified/certified production, inspection, and test personnel to perform highly skilled Work, such as welding, brazing, soldering, non-destructive testing, machining, coating, or plating.

The MTIP will describe all QA inspection and test activities to be carried out, including QA hold-points, and establish authority within the Contractor's organization for releasing Work beyond the hold-point. While the Contractor shall notify the City when Work has progressed to a hold-point, it will be the responsibility of the Contractor's CQCM to verify that all requirements have been met prior to allowing the Work to progress.

The MTIP will include a summary of activity-specific material quantities to document that the minimum sampling, testing, and inspection requirements have been met. This summary will be performed and provided to the City monthly.

The MTIP will include processes to control, calibrate, and maintain test equipment (both field and lab equipment) to ensure it meets industry standards and other applicable requirements. Test equipment used by the Contractor will be of a quality and capacity that ensures that measurements made are to levels of accuracy and precision that are required by the test procedure.

The MTIP will:

- Identify the test required and the accuracy required, and select the appropriate test equipment.
- Define procedures to calibrate all test equipment prior to initial use and at prescribed maintenance intervals against certified equipment and measurement standards of the National Institute of Standards and Technology, or other similarly recognized technical standards customarily accepted in the industry. Where no standards exist, the basis for calibration will be developed in writing based on the best-available information and technology.
- Identify test equipment with a suitable indicator to show the calibration status of the test equipment.
- Maintain current calibration records for test equipment.
- Define procedures to ensure that environmental conditions are suitable for calibrating test equipment.
- Define procedures to ensure that the handling and storage of test equipment is such that the accuracy and fitness for use is maintained.
- Define procedures to safeguard test equipment, including test hardware and test software, from adjustments that would invalidate calibration settings.

The Contractor shall submit a list of any and all equipment to be used, with calibration dates and certifications.

3.4.6 NONCONFORMING WORK

The Contractor shall include in the QMP procedures to develop and maintain a system to identify, control, remedy, and report Nonconforming Work, including Nonconforming Work identified by the City. The QMP will include procedures to identify Nonconforming Work and to withhold progress payment requests on the monthly invoice until the Nonconforming Work is remedied. The Contractor shall remedy Nonconforming Work in accordance with the QMP. The responsibility for review and disposition of Nonconforming Work will be established in the QMP. The Contractor shall identify Nonconforming Work by completing a NCR. An NCR shall include:

- Identification of Nonconforming Work, including tagging Work products
- Evaluation of the Nonconforming Work
- Recommendation for “repair” or “use as is” dispositions
- Cause of Nonconforming Work
- Proposed corrective action to prevent recurrence

- Responsibility for accomplishing corrective action
- Schedule of Work with a date of remedy completion
- Signature lines for the QC manager and the City verifying the Nonconforming Work recommended remedy has been completed in accordance with the Approved disposition.

The Contractor's Engineer shall approve the recommended remedy for the Nonconforming Work prior to its submittal to the City. The Contractor shall not perform the recommended remedy prior to its submittal to the City for "repair" and "use as is" dispositions.

The Contractor shall develop and maintain a Nonconforming Work log to track and identify the status of Nonconforming Work. An updated log will be submitted to the City weekly and will be used by the Contractor to look for Nonconforming Work trends to determine if corrective actions are needed.

All NCRs will be recorded by the Contractor and provided to the City.

The Contractor shall include in the QMP procedures for controlling the use of Nonconforming Work, including the tagging of Nonconforming Work products. Nonconforming Work product tags will only be removed by the originator of the NCR or the originator's supervisor, and only when the Contractor demonstrates to the City that the Nonconforming Work product meets the requirements of the Contract.

The City reserves the right to withhold payments related to the Nonconforming Work until such Nonconforming Work is corrected to the satisfaction of the City.

3.4.7 CORRECTIVE AND PREVENTATIVE ACTION

The QMP will describe corrective and preventative action procedures that the Contractor will use to identify and improve processes that produce, or may produce, systemic Nonconforming Work identified by the Contractor or by the City. The Contractor's corrective and preventative action procedures will include:

- Methods to investigate the cause of systemic Nonconforming Work and to determine what corrective action is needed to prevent recurrence
- Methods to analyze all processes, Work operations, quality records, service reports, and the City assessments/testing to detect and eliminate the possibility of systemic Nonconforming Work from occurring
- Methods to prioritize corrective and preventive action efforts based on the level of risk to the quality of the Work
- Controls to ensure that effective corrective and preventative actions are taken when the need is identified
- Methods to implement and record changes in procedures resulting from corrective and preventative actions

3.4.8 GOLF COURSE CONSTRUCTION INSPECTION AND MODIFICATIONS

The Contractor and City shall be expected to coordinate and facilitate minor field adjustments, which is typical for golf course construction. The Contractor shall assume some level of regrading, shaping, contouring, routing, tee box/bunker/green size and location, etc. as included in this coordination of minor field adjustments. The intent of this coordination is to provide a golf course that maximizes playability, maintainability, maintains historic character, and is aesthetically pleasing for the public. It is not the intent to change Project elements, requirements, or plan intent.

3.4.9 PUNCH LIST WORK

The Contractor shall develop a Punch List and Punch List log, as required in the Contract Documents. The Punch List and Punch List log will be completed by QC and QA personnel. The City will be invited by the Contractor to attend walks of the Work to include items on the Punch List. The Contractor Punch List and Punch List log shall be provided to the City.

3.4.10 CONSTRUCTION QUALITY ASSURANCE

The Contractor shall contract with independent consulting firm with a permanent office within the Denver metropolitan area to provide Construction Quality Assurance (CQA) for all non-golf related CQA. The firm providing CQA services shall be American Association of State Highway and Transportation Officials (AASHTO) accredited or equal.

The Contractor shall contract with independent consulting firm to provide CQA for all golf related CQA. The firm providing CQA services shall be United States Golf Association (USGA) accredited or equal.

The firms shall not be a subsidiary of the Contractor or any of its subcontractors. Furthermore, the firms shall have no principal owners who have any ownership or part ownership in the Contractor or any of its subcontractors. The CQA firms shall not perform any other functions other than those described for the CQA firm.

CQA shall include, but not be limited to, traffic control oversight and material testing and inspection services. All portions of the Work must meet the requirements of the construction documents, the Contract Documents, and City *Minimum Frequency of Materials Sampling and Testing Standard*. Prior to Final Acceptance, a principal of the CQA firm, licensed as a Colorado Professional Engineer, must certify in writing that all Work meets or exceeds the requirements of the design documents and the Contract Documents.

As a minimum, CQA for material testing shall use the testing frequencies in accordance with City *Minimum Frequency of Materials Sampling and Testing Standard*.

3.5 INDEPENDENT ASSURANCE TESTING AND INSPECTION OVERSIGHT

Independent Assurance Testing (IAT) and inspection oversight will be performed by the City. The CQAM shall monitor the progress of the placement of materials and inform the City about an upcoming need for an IAT consistent with the IAT schedule in the City *Minimum Frequency of Materials Sampling and Testing Standard*. The City reserves the right to perform IAT and inspection oversight at any time with or without the Contractor's knowledge. The City may deviate from the IAT schedule at any time.

3.6 ADDITIONAL TESTING

The City retains the right, but not the obligation, to direct the location and timing of additional testing to be performed at the Contractor's expense. This additional testing shall be recorded as Owner Directed Testing (ODT) and such testing shall be in addition of that required by the QA schedules detailed in the City *Minimum Frequency of Materials Sampling and Testing Standard*. Such additional testing shall not exceed four percent of the total effort required by the City *Minimum Frequency of Materials Sampling and Testing Standard*. Such additional testing shall not be used by the Contractor to meet the minimum frequencies required by the CQMP or subsequent MTIPs. ODT shall be performed as soon as practical after direction by the City. ODT tests shall be included in the Contractor's quality evaluation and acceptance of the Work. However, in no case shall such testing be performed later than two hours after requested by the City. If after

a the City request for an ODT, the Contractor performs Work which makes the ODT more difficult or expensive; removal and subsequent replacement of Work to allow for testing where directed shall be solely at the Contractor’s expense.

3.7 DISCLAIMER

No review, implied acceptance or implied Approval, or “Statement of No Objection” by the City, of any report or document or other aspects of Contractor’s acts or omissions with respect to the quality of construction shall relieve the Contractor of its obligations to complete the Work in accordance with all requirements of the Contract or its obligations of warranty.

3.8 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 3-1 Deliverables

Deliverable	Information or Approval	Schedule
Quality Management Plan (QMP)	Approval	Five Working Days following issuance of NTP
Design Quality Management Plan (DQMP)	Approval	Five Working Days following issuance of NTP
Construction Quality Management Plan (CQMP)	Approval	30 Calendar Days prior to the first RFC package
Design Submittal and Review Schedule	Approval	30 Calendar Days following issuance of NTP
Material Testing and Inspection Plans (MTIP)	Approval	Submitted with CQMP
Monthly Design Quality Report	Approval	Monthly
Monthly Construction Quality Report	Approval	Monthly
Nonconforming Work log	Approval	Weekly

3.9 APPENDICES

Appendix A - Review Comment Summary and Resolution (RCSR) Form

REVIEW COMMENT SUMMARY AND RESOLUTION SHEET					
Submittal:		Designer:	Date:	<p style="text-align: center;">CODE</p> <ol style="list-style-type: none"> 1. Accept comment - correct, add, clarify 2. Delete Comment 3. Conflicts with previous direction 4. Clarify or discuss 5. Disagree with comment 6. Resolution of comment in next phase of design 	
Plan / Design:	Agency/Company:	Reviewer:	Page: 1 of 1		

Item No.	⁽¹⁾ Dwg No. or Page No.	Comments	⁽²⁾ Code	⁽³⁾ Response	⁽⁴⁾ Final Disposition	
					Code	Date

If no comment, write "NO COMMENT"	Signature of Reviewer	Agency/Company Sign-off
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*(1) Indicate Drawing No. or Page No., or use "G" for General Comment
(2) To be filled out at Review Meeting*

*(3) To be filled out by DBC
(4) To be determined in subsequent meeting/discussion*

4.0 PUBLIC INFORMATION

The City and County of Denver (City) shall be the lead agency to handle communications with the media, public, City staff, and other Stakeholders identified by the City, unless otherwise required in this Section 4. The Contractor shall develop, implement, and maintain a Public Information Plan (PIP).

The City seeks the design and construction of the Project in such a manner that protects public safety, reasonably minimizes the inconveniences of construction Work activities, and keeps the public informed of the specifics of Work while reminding them of the benefits and purpose of the Project.

The Contractor shall recommend processes and tools to be used to communicate information to Stakeholders. The Contractor shall identify additional audiences and shall recommend the appropriate communication tool for each audience and also shall identify communication protocols for the duration of the Project.

The Contractor shall balance meeting the Project's fast-paced schedule, while also being responsive to community concerns about approach/design of the Project, and impacts of construction Work. The Contractor shall articulate an approach for engaging the public with clear, consistent and frequent communications to help the public understand the Project, and demonstrate how the Project will provide needed stormwater detention, water quality, community amenities, as well as provide a signature golf course to the City of Denver. The City must first Approve all information that is to be made public.

As significant components of the PIP, there are categories of information that shall be communicated and coordinated between the City and the Contractor. These include the following:

The Vision of the Project

Answers to questions such as why the Project is needed, what Work will be done, how the Project will benefit the public, how the Project fits into the community, and how the Project fits into broader transportation plans.

The Project's Progress

The City and the Contractor shall provide ongoing messages to keep the public and other Stakeholders informed about the Project including the schedule, traffic impacts, major milestones, etc.

Coping During the Project Work

Coping information helps the public deal with inconveniences caused by the Project. The Contractor shall coordinate with the City to provide coping information to the public in accordance with Section 16 Maintenance of Traffic.

4.1 PUBLIC INFORMATION OFFICER

The Contractor shall identify a qualified Public Information Officer (PIO) for the Project, who will provide accurate and timely information on Project issues to the City and the public. The PIO and/or designated representative of the PIO shall be accessible between 8:00 am to 5:00 pm on weekdays and Saturdays, for activities associated with public information for the duration of the Project (both design and construction Work). The PIO shall also be accessible outside of these hours for special circumstances like public meetings/presentations, events as described in this Section 4, etc. The PIO shall adhere to protocols in the Crisis Communication Plan and respond quickly, if circumstances warrant (e.g. a public safety issue,

emergencies, unintended/unanticipated major disruption to businesses, a pressing media demand, or other important time-sensitive matters).

4.2 PUBLIC INFORMATION PLAN

The Contractor shall prepare, maintain, and implement a PIP, in coordination with the City, to communicate information to and from the public. The PIP shall include an approach to establish and enhance an effective working partnership with the City, public, other Stakeholders, and the Contractor. The PIP shall address the communication approach, timing/sequence of the communication tools, the frequency of employing these tools, and their coverage/extent (e.g. quantity of all audiences). A PIP shall be submitted to the City for Approval within 30 Calendar Days following issuance of Notice to Proceed (NTP).

The PIP shall include, at a minimum, the following:

- Demonstration of an understanding of the Project, including the purpose/community benefits of the Project.
- Incorporation of and approach to public meetings.
- The Project approach to construction Work that will be performed, in relation to the progress/schedule, milestones and activities, and how public information will unfold over the duration of the Work.
- Messaging to the public to describe the Project, its benefits and help them understand, anticipate and cope with impacts, and detailing the approach and communication tools/contacts used for such.
- The PIP shall include all communications required to implement and communicate the Traffic Management Plan (TMP), as described in Section 16 Maintenance of Traffic, including an approach to communication of impacts to vehicular, mass transit, pedestrian, handicap mobility, and bicycle facilities, as well as access to businesses and residences.
- Approach to communication of high noise events that will impact adjacent individual residences
- Approach to coordination with the Denver Zoo, Denver Museum of Nature & Science, and communications to the public and local residents regarding any construction Work impacting Denver Zoo and Denver Museum of Nature & Science accesses, operations, and Special Events.
- Approach to communications to the public and local residents regarding Special Events, as defined in Section 16 Maintenance of Traffic.
- Approach to specialized communications to residents, businesses and other institutions immediately adjacent to the Project area.
- Incorporation of a Crisis Communication Plan to address emergencies, outlining responsibilities and protocols as required in this Section 4.
- Approach to digital communications (online, mobile device, text messaging, etc.) to ensure easy and accurate 24/7 access to Project information.
- Media support, including assistance to the City with media relations, as requested.
- Stakeholder coordination, including initial and ongoing (monthly) coordination meetings with the City.

- Clear delineation of responsibilities for public information between the City and the Contractor.

The Contractor shall schedule and hold PIP review meetings with the City to review, assess input, and/or modify the PIP, as required. These meetings shall be held quarterly after the final PIP is Approved by the City. If changes are required as a result of the review meetings, the Contractor shall submit the revised PIP to the City for Approval within 10 Working Days of the review meeting.

4.3 STAKEHOLDERS

The City has identified Stakeholders, listed below, as audiences requiring coordinated outreach by the City and the Contractor. The Contractor shall describe its proposed approach to communication with Stakeholders.

Identified Stakeholders, other than the City, include, but are not limited to:

- Denver Zoo
- Denver Museum of Nature & Science
- Regional Transportation District (RTD)
- Utility Owners
- Emergency responders
- City Park Neighborhood Advisory Committee and Registered Neighborhood Organizations (RNO) and business groups in the area
- Area residents
- Area businesses
- Property owners and property management companies
- Commuters
- Historic Denver
- Parks and Recreation Advisory Board (PRAB)
- Design Work Group (DWG)
- Golf Advisory Board
- First Tee of Denver
- Golf course community/players
- City Park users
- Colorado Department of Transportation (CDOT)

4.4 CRISIS COMMUNICATION PLAN

As part of the PIP, a planned approach to crisis communication shall be used to address unanticipated disruption of Utilities, damage to property, flooding, environmental concerns, an accident or collision between equipment/material and the traveling public, construction employee injuries, incidents, etc. In an event of a crisis, the City will handle communication with the media, public, City staff, etc. The Contractor shall be readily available to help coordinate with the City and provide necessary information in a timely

manner to respond to the crisis. The Contractor shall coordinate this approach with the Contractor's overall Incident Management Plan (IMP) and Project Management Plan (PMP).

The Contractor shall establish and manage an emergency response contact list. All appropriate personnel shall be included on this list for immediate response in the event of an emergency, including emergency service providers. The list shall be divided into areas of expertise so the proper people are called for specific emergency situations. The Contractor shall submit the emergency response telephone list to the City for Approval prior to commencement of any field Work. This list shall be distributed to all supervisory personnel with active crews on the Project and the City. The Contractor shall keep this list complete, accurate, accessible, and current. Any changes to the list shall be immediately redistributed. No construction Work shall commence until the Crisis Communication Plan has been Approved by the City.

4.5 MEDIA RELATIONS/MEDIA COORDINATION

The Contractor shall provide information to the City to be used in traffic advisories or other media notices.

The Contractor shall submit drafts of public notices and communication to the City 10 Working Days in advance of distribution, unless otherwise stated in this Section 4.

The City will distribute the information for public notices and the media.

4.6 INFORMATION DISSEMINATION SCHEDULE AND TRACKING

4.6.1 INFORMATION DISSEMINATION SCHEDULE

The Contractor shall provide construction Work information to the City according to the following schedule, and as governed by the maintenance of traffic (MOT) and related specifications noted elsewhere in the Contract Documents:

- Ten Working Days prior to beginning of major construction Work affecting the public, including lane closures, driveway access impacts, major traffic impacts lasting six Calendar Days or less.
- Thirty Calendar Days prior to the beginning of major construction Work affecting the public, including lane closures, driveway access impacts, major traffic impacts lasting seven Calendar Days or longer, Denver Zoo and Denver Museum of Nature & Science impacts, and opening of the golf course for play.
- Once the Contractor is made aware, the Contractor shall provide the City with construction Work updates (e.g., cancellation of planned closures, additional lane closures, closure removals, major traffic shifts, etc.) that directly impact the public.

At a minimum, the Contractor shall provide the City clear information on construction Work updates:

- Nature of the construction Work, and its purpose
- Exact limits or location of the construction Work
- Duration/dates of construction Work
- Times of day/night of the construction Work
- Alternate access or routes as applicable
- Impacts to the Denver Zoo and Denver Museum of Nature & Science

- Impacts to Colorado Boulevard and York Street (as applicable)

The Contractor shall schedule and hold monthly coordination meetings with the City to address public communication, messaging, scheduled notices, etc., as required in the PIP.

4.6.2 PUBLIC CONTACT TRACKING

The Contractor shall track all public contacts made from residents, businesses, and government offices, etc. At a minimum, this shall include and document (as available) the names, organizations, addresses, email addresses, fax and phone numbers, as well as the questions, comments, concerns, date of contact, and the response provided, date provided and individual that provided it. A public contact log detailing public contacts shall be submitted to the City on a monthly basis and upon request.

4.7 TOOLS FOR INFORMATION DISSEMINATION

The Contractor shall employ a variety of tools and methods to disseminate information and communicate with the public and Stakeholders. The Contractor shall, in its PIP, describe its approach to implementing the communication tools and methods described below.

All information and communication to the public and Stakeholders shall include duplicate information and/or communications translated into Spanish, unless otherwise required in this Section 4. Information and communications include public meeting materials, informational phone line, email communications, flyers, construction fencing visuals, and all other forms of information dissemination, as described in this Section 4.

4.7.1 PROJECT IDENTIFICATION AND SIGNAGE

Public information and warning signage shall be maintained throughout the Project. The Contractor shall describe its approach to implementing variable message signs (if necessary), and static signage to notify Stakeholders of road closures, lane closures, and lane shifts, along with durations of these MOT measures. All signage shall be coordinated and comply with the requirements outlined in Section 16 Maintenance of Traffic. Signage shall be maintained to an acceptable appearance and updated as required by the City throughout the duration of the Project.

4.7.2 WEBSITE INFORMATION

The City will host the Project's public website on the City server. The Contractor shall submit for Approval, all website content throughout the duration of the Project. Website content shall include, at a minimum, construction information (e.g. lane closures, access restrictions, duration of impacts, etc.), calendar of Special Events, public meetings or Completion Deadlines, and other relevant information. Website content updates shall be provided monthly, whenever the construction Work activities impact the public (lane closures, driveway access impacts, major traffic impacts, etc.), or as requested by the City. Website content is not required to be duplicated into Spanish.

4.7.3 PUBLIC MEETINGS

Design of the golf course is important to the community and obtaining public "design support" is critical to the success of the Project. To date, the City has spent considerable time and resources on public outreach, including design input from the DWG to assist with the design criteria in these Contract Documents. Additional materials, including public input documentation, are provided in the Reference Documents. The Contractor shall plan, staff, organize, announce, and hold two public meetings during the design process.

The Contractor shall, at the first design public meeting, present the Initial Design Submittal to the DWG, as required in Section 3 Quality Management. The presentation shall include a discussion of the proposed golf course routing, play and feel of the golf course, hazard locations, First Tee facility layout, driving range layout, landscaping, preservation of trees, preservation of historic views, preservation/mitigation of historic defining features, Clubhouse functionality and character, access. The presentation shall also include a discussion of the functionality, character, location, and size of the Clubhouse and Maintenance Facility and its incorporation into the design of the golf course. The Contractor shall present how the Project incorporates previous public input and design elements. Any changes finalized or originating from this meeting shall be agreed to by both the City and the Contractor. The Contractor shall schedule and hold a follow-up meeting with the DWG confirming any changes made to the design stemming from the first design public meeting.

The second design public meeting shall consist of a similar presentation as the first design public meeting, with an emphasis on changes made to the design from the first design public meeting, incorporating the Preliminary Design Submittal as required in Section 3 Quality Management.

The Contractor shall plan, staff, organize, announce, and hold at a minimum, bi-yearly public meetings during construction, for the public, residences and other Stakeholders. All public meetings shall provide construction schedules, anticipated impacts, and traffic management strategies. Project displays and other presentation materials used at the public meetings shall be of professional quality and design to clearly convey accurate Project information to a non-technical audience.

The PIO shall attend all public meetings. The Contractor shall coordinate with the City to develop a contact/ mailing/ email list of all Stakeholders to be notified and invited. The dissemination of the invitation shall be done by the Contractor, which shall include publication in newspapers, email, inserts in local media, door-to-door flyers, and mailers. The Contractor shall provide the City announcements for the public meeting no less than 45 Calendar Days in advance of the meeting.

Materials for the design public meetings shall be submitted in accordance with Section 3 Quality Management. Materials for the bi-yearly construction public meetings shall be submitted to the City for Approval, no less than 15 Working Days prior to the scheduled meeting.

4.7.4 PERSONAL CONTACTS

The City expects and desires that personal contacts will be made with specific businesses, organizations, or residents who are immediately impacted by construction Work. Examples of such construction Work include, but are not limited to access changes, driveway impacts, street closures or Utility disruptions. Other circumstances may also warrant a personal contact. Personal contacts shall be notified when construction Work is anticipated to have direct impacts upon said personal contacts no less than 10 Working Days prior to commencement of relevant construction Work.

The Contractor shall manage and implement door-to-door flyer distribution and mailings (as necessary), email, and phone contact with the public during the duration of the design and construction Work. The City will assist the Contractor with email communications and responding to phone communications, particularly relating to shaping the overall messages. These contacts shall be conducted within a minimum three-block radius of the activity or directly affected properties. A broader distribution is expected based on the nature and extent of the impact.

4.7.5 TELEPHONE HOTLINE

The Contractor shall provide a public telephone hotline for the Project, the number of which shall appear on custom signs as well as all other written communication material distributed to the public. The hotline

shall be available in both English and Spanish, and shall be answered by a person with direct knowledge of the Project or by an answering service with current Project information. The hotline shall be available to the public 24 hours a day, seven days a week. An immediate response is preferable for all calls, although a voicemail option is permissible. Voicemail answering is only acceptable if the messages are checked at least hourly (between 8:00 am and 5:00 pm on all Working Days). All other calls shall be returned by Contractor within 24 hours, including weekends and Holidays. The hotline shall be handicap-accessible (i.e. options for text telephone shall be made available). A written record of the calls and status of providing information to the caller shall be documented and made available to the City monthly or upon request. The hotline shall be operational no later than 60 Calendar Days following commencement of NTP.

4.7.6 EMAIL COMMUNICATION

The Contractor shall offer Stakeholders and all interested parties the opportunity to receive periodic (monthly and as otherwise needed) email blasts, text alerts/updates which provide current information about the Project Work, construction impacts (closures, traffic shifts, etc.) and duration of the construction Work. The Contractor shall coordinate with the City to develop the initial email list. The messages shall be accurate, informative, and provide at least five Working Days advance notice of major traffic changes such as lane closures, lane reductions, and traffic shifts. The Contractor shall maintain the email list, and shall provide a copy quarterly, or upon request, to the City.

Email content shall be submitted to the City, for Approval, five Working Days prior to the anticipated release date.

4.7.7 SOCIAL MEDIA

Concurrent with email communication, the Contractor shall develop and provide to the City, content for dissemination through social media. Content should be similar to email communications. The messages shall be accurate, informative, and provide at least five Working Days advance notice of major traffic changes such as lane closures, lane reductions, and traffic shifts.

4.7.8 EVENTS

The City may opt to hold a Project groundbreaking, Project completion event, or other Project milestone events. The City will take the lead in planning the event details, speakers, talking points, and media releases. If such an event is held, the Contractor shall be present and prepare the Project site accordingly.

4.8 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 4-1 Deliverables

Deliverable	Information or Approval	Schedule
Public Information Plan (PIP)	Approval	30 Calendar Days following issuance of NTP
Crisis Communications Plan	Approval	Concurrent with PIP
Web site updates	Approval	Monthly, as needed, and upon request
Draft public notices and communications, email blasts, and/or media responses	Approval	As scheduled or upon request
Public Contact Log	Information	Monthly and upon request
Design public meeting content	Approval	Concurrent with design submittals
Bi-yearly construction public meeting content	Approval	15 Working Days prior to scheduled meeting
Telephone hotline	Approval	60 Calendar Days following commencement of NTP
Telephone hotline records	Information	Monthly and upon request

5.0 ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with all requirements of all applicable environmental laws and regulations issued thereunder, whether a permit is obtained by the City, or the Contractor. The Contractor shall prepare an Environmental Compliance Work Plan (ECWP) for the Project based on the requirements specified below specifically identifying all of the environmental compliance requirements for the Project, including the Contractor's approach and schedule for complying with those requirements. All post-construction monitoring requirements shall be identified.

At a minimum, the ECWP shall include or describe:

- Roles, responsibilities and communication
- All permits and approvals required to complete the Work.
- Procedures, protocols and schedule for achieving environmental compliance, including Contractor design reviews, and compliance with Applicable Law.

The ECWP shall be submitted to the City for Approval no later than 30 Calendar Days prior to commencement of any construction Work.

The Contractor shall employ and utilize on the Project an Environmental Compliance Manager (ECM), and Erosion Control Supervisor (ECS). It is acceptable for the ECM to serve as the ECS. The ECM shall lead a field review with the City to discuss environmental issues every month during active construction periods, and shall have the authority to stop construction Work if activities jeopardize environmental laws, policy, or human health and safety. The ECWP shall be updated and submitted monthly, to document any pertinent discussions that occur during the environmental field reviews or completion of environmental requirements.

5.1 ENVIRONMENTAL RESOURCES REQUIREMENTS

5.1.1 NOISE

The Contractor shall develop and submit to the City, concurrent with Released for Construction (RFC) Documents, a Noise Control Plan that outlines allowable daytime and nighttime construction, Project noise levels, and locations and types of noise abatement measures required to meet specific noise limits for the associated construction Work.

Normal construction hours (in reference to construction noise) in the City are defined as between 7:00 a.m. and 9:00 p.m. Monday through Friday, and 8:00 a.m. to 5:00 p.m. on Saturday and Sunday. If construction Work will be completed outside of these hours, the Contractor shall secure any necessary construction noise variance permits from the City prior to commencement of construction Work.

5.1.2 HISTORIC PRESERVATION

The City Park Golf Course is listed on the National Register of Historic Places (NRHP). There is a segment of an historic brick-lined sewer (SDV.11280) in the west end of the golf course and other historic properties surrounding the golf course. The City has consulted with the State Historic Preservation Officer (SHPO) regarding historic residences, pursuant to CRS 24-80.1-104. Determinations and concurrence of eligibility and findings have been included as a Reference Document.

The golf course itself and sewer pipe (SDV.11280) have been determined to be adversely affected by the Project. None of the historic residences surrounding the golf course shall be adversely affected. The Contractor shall verify each design submittal is consistent with the SHPO consultation. The Contractor

shall be responsible for coordinating any change in historic impacts and associated mitigation with the City, who will coordinate with the Colorado Department of Transportation (CDOT) and SHPO, pursuant to CRS 24-80.1-104.

The nomination form for the golf course's NRHP-listing identifies a number of key historic attributes and elements of the golf course. These include topography, trees around the perimeter and at the green and tees, and the layout of the course itself. The relevant portions of the NRHP form include the following:

- Clubhouse (1923) – Reconstructed in 2001
- Starting house – Reconstructed in 2001 (First Tee)
- Snack bar/toilet – Reconstructed in approximately 2001
- Maintenance Facility – Reconstructed in the 1950s-1970s
- Groups of Trees/Historic planting and plant material
- Historic layout/design/use
- View sheds

The Contractor shall consider in its design, at a minimum, the following:

- Spatial relationships of trees, views, Clubhouse, and golf course layout shall be considered in the redesign of the course.
- Historic layout/design/use should maintain “Parkland Style” feel.
- The natural topography of the land should be maintained to preserve the existing views of the mountains and downtown skyline into and within the golf course, in accordance with Section 17 Landscaping and Aesthetics.
- Maintain existing plantings and plant materials, perimeter trees and significant internal tree stands, in accordance with Section 17 Landscaping and Aesthetics.

The Contractor shall coordinate any design deviations from the SHPO correspondence and concurrence with the City and CDOT for further SHPO coordination.

The Contractor's ECWP shall describe the process for overseeing and documenting compliance with the SHPO consultation process and the State Register Act, Section 17 Landscaping and Aesthetics, Section 18 Golf Course, and Section 19 Site Development on related issues.

5.1.3 ARCHEOLOGICAL DISCOVERY

In the event of discovery of historic or archaeological objects features, sites or human remains, the Contractor shall:

- Immediately suspend construction Work in the vicinity (minimum 50 foot buffer around the perimeter) of the discovery if a suspected historic, archaeological, or paleontological item, feature, or site is encountered or if suspected human remains are encountered
- Notify the City verbally and in writing of the location and nature of the discovery and to assess the nature of the discovery and determine the necessary course of action.
- Protect the discovered objects or features and provide written confirmation of the discovery to the City within two Calendar Days.

- Work with the appropriate authority to determine the necessary course of action.

The Contractor shall not resume construction Work in the area until receiving formal notification from the City allowing construction Work to re-commence.

5.1.4 VEGETATION AND TREES

The Contractor shall provide a Tree Protection and Monitoring Plan as required by Section 17 Landscaping and Aesthetics.

An Integrated Noxious Weed Management Plan (INWMP) shall be submitted for Approval prior to commencement of construction Work. The Contractor shall use a weed-free native seed mix for re-vegetation of native areas.

5.1.5 AIR QUALITY

The Contractor shall submit an Air Pollution Emission Notice (APEN) to the Colorado Department of Public Health and Environment (CDPHE) Air Pollution Control Division (APCD). The Contractor shall obtain and comply with all necessary air quality permits, which may include but are not limited to a Construction Permit, Fugitive Dust Permit, or Stationary Source Air Quality Permit.

The Contractor shall prepare a Fugitive Dust Control Plan and implement a Construction Air Quality Plan for minimizing dust. The plan will be a tool to control activity and deploy Best Management Practices (BMPs) consistent with, but not limited to, the following:

- Require construction vehicle engines to be properly tuned and maintained.
- Use water or wetting agents to control dust.
- Have a wheel wash station and/or crushed stone apron (tracking pad) at egress/ingress areas to prevent dirt being tracked onto public roads.
- Use sweepers to remove dirt tracked onto roads.
- Use a binding agent for long-term excavated materials.

The Contractor shall minimize excessive idling of inactive equipment or vehicles. If construction equipment is creating excessive air quality emissions that have a potential to affect air quality for operators or persons working/living in the area, equipment will be taken out of operation until fixed or replaced. The Contractor also shall locate stationary emissions equipment with consideration of public health and environment, and minimize excessive idling of inactive equipment or vehicles.

5.1.6 WATER QUALITY

A Stormwater Management Plan (SWMP) shall be prepared during the design phase of the Project, as per CDPHE-Water Quality Control Division (WQCD) guidelines. Refer to Section 12 Drainage and Water Quality for additional requirements.

5.1.6.1 IRRIGATION SYSTEMS

The Contractor shall ensure a design that separates the recycled golf course irrigation water runoff from discharging into a watercourse. Such watercourse shall include a storm sewer that is not specifically approved by Denver Water and the regulatory authorities having jurisdiction, as required by Denver Water. Recycled water used to irrigate the golf course cannot discharge directly into the proposed open channel waterway. The fringe areas of the channel and the channel itself shall be irrigated by potable water during

the establishment period. Groundwater will function in some capacity to sustain vegetation in this fringe area.

Irrigation used for and around the Clubhouse shall be potable.

The Contractor shall be responsible for all permits and licenses, and associated fees necessary for the prosecution of the Work.

The Contractor shall inform itself of and adhere to all Local, State, and Federal laws, rules, and regulations governing the use of recycled water. All high-density polyethylene (HDPE) pipe used for recycled water shall have purple striping.

The Contractor shall incorporate principles from the Standard Environmental Management Practices of the Audubon Cooperative Sanctuary Program for Golf. The Contractor shall comply with Section 12 Drainage and Water Quality and requirements of CDPHE.

5.1.7 PROTECTION OF BIRDS

The Contractor shall comply with the Technical Specifications and Section 240 Protection of Migratory Birds Biological Work Performed by the Contractor's biologist.

Trees shall be removed outside of nesting season dates of April 1 to August 31 per the Migratory Bird Treaty Act (MBTA). If tree and shrub removal or trimming will occur between April 1 and August 31, a survey for active nests shall be conducted by a wildlife biologist within the seven days immediately prior to the beginning of construction Work in each area of tree and shrub removal or trimming. The survey shall be conducted for each phase of tree and shrub removal or trimming.

Raptor nest surveys shall be conducted to evaluate the presence of active raptor nests within the Project Limits. If an active nest is located within the Project Limits, the City, Colorado Parks and Wildlife, and U.S. Fish and Wildlife Service (USFWS) shall be contacted regarding use of seasonal buffers to prevent disturbance to nesting birds. Human encroachment is restricted to 1/3 mile radius of active red-tailed hawk nests beginning February 15 to July 15. Land clearing activities shall be timed to avoid the breeding season to avoid active bird nests.

5.1.8 THREATENED AND ENDANGERED SPECIES

The Contractor shall comply with the Endangered Species Act of 1973 at all times. The Contractor shall coordinate the Project such that any species identified during the Project are protected pursuant to Federal law. No known threatened or endangered species are known to be within the Project Limits.

5.1.9 WATERS OF THE U.S.

No jurisdictional waters of the U.S. are known within the Project Limits. If found, the Contractor shall be responsible for acquiring and implementing the conditions of any permit pursuant to Section 404 of the Clean Water Act.

5.2 HAZARDOUS SUBSTANCES

Hazardous Substances may exist on the surface, subsurface, in groundwater, or on structures to be demolished, and may be mixed with soil, water, and/or other waste materials.

A Subsurface Investigation Report has been completed for this Project and is included in the Reference Documents. It identifies low-level arsenic concentrations within the Project Limits that do not exceed

CDPHE guidance levels. Benzo(a)pyrene has been detected in one discrete sample collected from zero to five feet below ground surface at a concentration exceeding screening level. It is likely that the detection of benzo(a)pyrene is the result of incomplete combustion or the presence of coal at that location. It is possible that fill at the site may contain occasional Polycyclic Aromatic Hydrocarbons (PAH) impacts. Furthermore, as small amounts of brick were observed, it is possible that debris is present in the subsurface, particularly related to the historical backfilling operations of buried Utilities. Based on the results presented in the report, the majority of the soils within the Project Limits are expected to meet the reuse guidelines for residential areas, including City-owned parks.

Based on the evaluation of reasonably attainable information regarding the Recognized Environmental Conditions (REC)s, the following properties were identified as RECs in or near the Project Limits:

- The Denver Zoo at 2300 Steel Street due to the presence of an active Aboveground Storage Tank (AST) used to store diesel fuel.
- The City Municipal Golf Course at 2500 York Street due to its status as a Resource Conservation Recovery Act (RCRA) generator; this facility has been operating as a golf course for 74 years. This property may potentially utilize pesticides and herbicides for maintenance and upkeep of the golf course grounds.
- The City Greenhouse located at 2500 East 23rd Avenue due to the possible utilization of pesticides and herbicides associated with horticultural or agricultural activities.
- The City Park Golf Course contains an existing Transite pipe containing asbestos.

The following properties were identified as historical recognized environmental conditions (HRECs) in or near the Project Limits:

- The Denver Zoo at 2300 Steel Street because it received a No Further Action (NFA) designation in response to two separate leaking underground storage tank (LUST) events
- The property at 2590 York Street due to the NFA status of two LUST events and its operation as an automotive fueling station for more than 50 years.

Under all circumstances, the Contractor shall comply with General Condition 808.

For Hazardous Substances identified in this RFP, whether in the Technical Requirements or Reference Documents, the Contractor shall be responsible for the identification, investigation, removal, treatment, storage, transportation, management and disposal of Hazardous Substances in compliance with applicable environmental law, and applicable government approvals. The Contractor shall provide all qualified staff and equipment to respond to Hazardous Substances in accordance with and to the extent required by such requirements. The Contractor shall be responsible for all coordination and with appropriate government agencies, and for any approvals or permits required for the management, transportation and/or disposal of any Hazardous Substances. The Contractor shall haul any material required to be disposed at the Denver Arapahoe Disposal Site (DADS). Tickets for DADS will be obtained and paid for by the City.

The Contractor shall develop a Materials Management Plan (MMP) and a Health and Safety Plan (HASP) to be submitted for Approval by the City no later than 30 Calendar Days prior to commencement of construction Work. The Contractor shall comply with all provisions set forth within the MMP and HASP. A template MMP is included in the Reference Documents, with which the Contractor shall expand upon and complete. The Contractor shall maintain documentation of all activities related to the HASP during construction Work and shall make all documents available for review upon request. The Contractor shall not discuss or negotiate with any regulatory agencies or third parties on behalf of the City. The Contractor

shall notify the City within 24 hours if contacted by any regulatory agencies or third parties concerning Hazardous Substances associated or potentially associated with the Project.

The Contractor shall complete a Structure Survey for City Approval for any structures to be demolished. The survey will define the Contractor's approach and methodology for identifying the presence of asbestos containing building materials, lead-based paint, lead containing paint, and any other regulated materials. The plan shall be consistent with applicable State and City regulations regarding demolition.

5.3 GROUNDWATER

Preliminary investigations indicate the potential to encounter groundwater within the anticipated limits of excavation. The Contractor shall be responsible for designing, providing, installing, operating, monitoring, temporary and permanent dewatering solutions. The Contractor shall be responsible for controlling and disposing of all water during construction Work.

The Contractor shall provide a detailed Dewatering Plan for Approval no later than 30 Calendar Days prior to commencement of construction Work.

5.4 ENVIRONMENTAL PERMITS AND APPROVALS

The Contractor shall be responsible for identifying and obtaining and complying with all governmental and agency permits, approvals, and City policies required for the Work, as expanded in this Section 5, and for complying with all applicable environmental laws, potentially including but not limited to the environmental permits and laws found in Table 5-1.

Table 5-1 Environmental Permits

Permits/Approvals	Permitting Agency
Construction Dewatering Permit	CDPHE-WQCD
Demolition Permits	City and CDPHE
Construction Noise Variance Permit	City
CPDS Stormwater Construction Permit/CCD Construction Activities Stormwater Discharge Permit	City and/or CDPHE-WQCD
Dust Suppression	City and/or CDPHE Air Pollution Control Division
Nest Take Permit	USFWS
Tree Removal Permit	City
Threatened and Endangered Species Act	USFWS
Migratory Bird Treaty Act	USFWS
The Raptor Act	USFWS
Clean Water Act Section 404	U.S. Army Corps of Engineers
CDPHE Colorado Discharge Permit System (CDPS) Storm-water permit associated with construction activity	CDPHE-WQCD
Construction Activities Stormwater Discharge Permit (CASDP)	City

Permits/Approvals	Permitting Agency
Clean Water Act Section 402 Construction Dewatering Permit, or Individual Construction Dewatering Permit if contaminated groundwater is expected to be encountered	CDPHE-WQCD
Construction waste material and transportation of solid wastes	CDPHE Hazardous Materials and Waste Management Division
Generation of contaminated materials during construction	CDPHE Hazardous Materials and Waste Management Division
Notification as Resource Conservation and Recovery Act (RCRA) hazardous waste generator	CDPHE Hazardous Materials and Waste Management Division
Air Pollution Emission Notice (APEN) and Construction Permit	CDPHE Air Pollution Control Division
Stationary Source Air Quality Permit (Emissions from portable units, such as rock crushers, generators, asphalt plants, and cement plants, used during construction)	CDPHE Air Pollution Control Division
CCD Executive Order 115 Required use of Denver-Arapahoe Disposal Site (Landfill)	City
CCD Executive Order 123	City
State Register Act	Colorado

5.4.1 SPILL PREVENTION CONTROL AND COUNTERMEASURE PLAN

The Contractor shall prepare a Spill Prevention Control and Countermeasure Plan (SPCC), and perform all inspections per the Colorado Discharge Permit System – Stormwater Construction Permit (CDPS-SCP) and City Construction Activities Stormwater Discharge Permit (CASDP) to ensure all BMPs are appropriate and in good working condition. The Contractor shall prevent the discharge of and sediment or pollutants into any storm drains or receiving waters during the life of the permits. All documents shall be kept in the Contractor’s SWMP notebook in compliance with the SPCC. The notebook shall be kept in the Project trailer during the construction Work and kept with the SWMP administrator until the permit is closed. Upon permit closure the SWMP notebook shall be turned over to the City and become the property of the City.

5.4.2 CONSTRUCTION DEWATERING PERMIT

The Contractor shall obtain a Construction Dewatering Permit from CDPHE for any dewatering of groundwater during construction in accordance with CDPHE-WQCD requirements. The Contractor shall apply for this permit at least 90 Calendar Days prior to the start of discharge.

In addition, authorization to discharge to the City storm sewer system shall be obtained prior to any dewatering discharge.

The water quality standard that governs this discharge is that of the receiving water, as evaluated by CDPHE – WQCD. The Contractor shall provide all information needed to assist CDPHE – WQCD in their evaluation and setting of a water quality standard for this permit, which may include treatment and monitoring of the discharged water.

The Contractor shall monitor roadways for any settlement caused by dewatering. The Contractor shall survey any private property or buildings that may be affected by dewatering to establish existing conditions. The Contractor shall repair any damage to roadways, or private property or buildings caused by dewatering operations.

5.5 PROPERTY MANAGEMENT

The Contractor shall be responsible for demolition and any other associated property management functions for any existing structures for construction of the Project. The Project shall remediate environmental contamination and abate any asbestos as necessary as required by State law, and obtain all permits, or other approval documents required by State and local governments, for asbestos abatement and environmental remediation. The Contractor is also responsible to install any features required by CDPHE or others to ensure that appropriate storm water quality improvements and maintenance and inspection procedures are in place and are monitored as required. The Contractor shall be required to obtain all permits, or other approval documents required by State and local governments for all demolition, environmental, storm water quality, and related activities.

The City reserves the right to salvage existing equipment from the golf course, Maintenance Facility, and Clubhouse as described in Section 18 Golf Course.

5.6 SUSTAINABILITY

The City emphasizes a sustainable community and has adopted Executive Order 123, which includes a number of sustainable practices. The Contractor shall comply with Executive Order 123 and incorporate sustainable principles and BMPs in the design and construction of the Project, as applicable.

City Park Golf Course is certified by the Audubon Cooperative Sanctuary Program for Golf. The Contractor shall incorporate principles from the Standard Environmental Management Practices of the Audubon Cooperative Sanctuary Program for Golf to ensure the course maintains its certification.

Any new Clubhouse facilities shall be Leadership in Energy & Environmental Design (LEED) certified, as required in Section 19 Site Development.

5.7 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 5-2 Deliverables

Deliverable	Information or Approval	Schedule
Environmental Compliance Work Plan (ECWP)	Approval	30 Calendar Days prior to commencement of construction Work
Environmental Compliance Work Plan Updates	Approval	Monthly
Noise Control Plan	Approval	30 Calendar Days prior to commencement of construction Work
Construction Air Quality Control Plan	Approval	30 Calendar Days prior to commencement of construction Work
Fugitive Dust Control Plan	Approval	Concurrent with the Final Design Submittal
Spill Prevention Control and Countermeasures Plan (SPCC)	Approval	Concurrent with the Final Design Submittal
Integrated Noxious Weed Management Plan (INWMP)	Approval	Concurrent with the Final Design Submittal
RHM reports	Information	Immediately upon discovery
Materials Management Plan (MMP)	Approval	30 Calendar Days prior to commencement of construction Work
Health and Safety Plan (HASP)	Approval	30 Calendar Days prior to commencement of construction Work
Structure Survey	Approval	30 Calendar Days prior to commencement of demolition
Dewatering Plan	Approval	30 Calendar Days prior to commencement of construction Work

6.0 THIRD PARTY AGREEMENTS

The Contractor shall be responsible for obtaining all third party approvals required to complete the Work. Utility Owner approvals and other requirements are provided in Section 7 Utility Relocations.

Notification of any approvals required to complete the Work from third parties shall be submitted to the City within five Working Days of obtaining the approval.

6.1 WEATHER STATION

The existing National Oceanic and Atmospheric/Nation Weather Service weather station located near the center of the City Park Golf Course is anticipated to be removed from the golf course by commencement of construction Work and will require no Work by the Contractor.

6.2 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 6-1 Deliverables

Deliverable	Information or Approval	Schedule
Notice of approval for removal, removal and reconstruction or protection in place by affected third party	Information	Within five Working Days of obtaining third party approval

7.0 UTILITY RELOCATIONS

This Section 7 addresses Utility company (Utility Owner) requirements. This Section 7 does not apply to existing stormwater facilities, or street lighting, all of which shall be installed, removed, relocated and/or protected in place by the Contractor and/or the Utility Owners pursuant to other Sections of this Request for Proposal (RFP).

7.1 GENERAL UTILITY WORK OBLIGATIONS

The Contractor shall coordinate and cooperate with the City and the Utility Owners to ensure that all Utility Work (whether performed or furnished by the Utility Owners or by Contractor) is performed in accordance with the executed Utility Agreements. The physical limits of the Contractor's obligation for the performance of Utility Work shall extend as far as is necessary to permit construction of the Project (taking into account the requirements of the Utility Owners, governmental persons with jurisdiction, and adjacent property owners), whether inside or outside the existing City owned property. The Contractor is responsible for all Utility related construction Work performed by its subcontractors.

The Contractor shall use reasonable efforts to anticipate and avoid Utilities, and to otherwise minimize and/or mitigate the consequences of the Utility Relocations.

Replacements for any existing Utilities shall be designed and constructed to provide service at least equal to that offered by the existing Utility, unless the Utility Owner approves a lesser replacement.

Except as otherwise stated in this Section 7, the Work shall include all Utility Work related to existing Public Utilities that is necessary or advisable to accommodate or permit construction of the Project.

Except as otherwise stated in this Section 7, the Work shall include coordinating all Utility Work performed by the Utility Owner related to existing Private Utilities that is necessary or advisable to accommodate construction of the Project.

The Contractor shall perform all Utility Work necessary to maintain existing or establish new Utility services for lighting, traffic signals, landscaping, irrigation, pump stations, and all other electrical devices that, in each case, form part of the Work. All cost charges from the service provider, and all necessary materials, including meter (if required), labor, and coordination required to maintain existing or establish new Utility services shall be the Contractor's responsibility unless otherwise specified in this Section 7.

The Contractor shall be responsible for the coordination of power source work to be performed by Xcel. The Contractor shall request, and process to completion, the required coordination to establish the Utility service for lighting, ITS, traffic signals, landscaping, irrigation, pump stations, and other electrical devices that, in each case, form part of the Work. All power connections to devices shall include a quick disconnect.

The Contractor shall obtain approval of the design from the Utility service provider and coordinate and meet all requirements as specified by the Utility service provider for the complete and operational service to all required locations.

7.1.1 UTILITY WORK

The Contractor shall carry out all Utility Work in accordance with the requirements of the Utility Agreements and this Section 7. Utility Work includes, but is not limited to the following activities:

- Performance of all tasks, obligations and duties assigned to the Contractor in the Utility Agreements.

- Identification and field verification of Utility locations by investigating all Utilities located within or near the existing City owned property or otherwise affected by the Project. Potholing for field verification of Utilities is required by the Contractor prior to construction Work.
- Development and updates to the Contractor's Utility Matrix.
- Prepare and execute the Utility No-Conflict Closeout Form for appropriate Utilities.
- Cooperation with the City at the Contractor's expense, as reasonably requested by the City, in connection with negotiating and preparing of the Utility Work Order for each Utility Relocation by the Private Utility Owner, as needed. This obligation shall include preparing and providing such written information concerning the Project (such as reports, drawings, and surveys) as requested by the City.
- Review each Private Utility Relocation Design (URD), then verify and accept that each Utility Relocation by the form of DRAL that each Utility Relocation is compatible with the Project.
- Preparation of the URD for each required Public Utility Owner and obtaining design acceptance from the Public Utility Owner.
- Construction of the Public Utilities Relocations, including service lines and temporary Relocations, and obtaining the construction acceptance by the form of Construction Relocation Acceptance Letter (CRAL) from the Public Utility Owner.
- Remove abandoned existing Public Utilities. If impractical to remove, flow-fill abandoned existing Public Utilities, in accordance with City Standards and Specifications. The Contractor and its subcontractors shall coordinate their construction to minimize any delays to Utility Owners, and their Relocation subcontractors. The Contractor shall provide verification of abandonment and notification to the Public Utility Owner.
- Inspection of the Utility Relocation construction for each Private Utilities Relocation, then verification and acceptance by the form of CRAL that each Utility Relocation is compatible with the Project.
- Reimbursement to Private Utility Owners for construction costs incurred by such Utility Owners in performing Utility Work within an easement owned by the Private Utility Owner, if so required in the Work Order.
- Resurfacing and restriping of streets, parking areas and reconstruction of curb and gutter, and sidewalks where necessary due to Utility Work performed by Contractor, or performed by a Utility Owner within the City owned property or within Utility easements and permanent easements, if so required in the Work Order. All resurfacing and restriping of streets, parking areas, reconstruction of curb and gutter, and sidewalks shall comply with the requirements of Section 13 Roadway and Section 14 Signing, Pavement Markings, Signalization, and Lighting.
- Showing each Utility Relocation on the Contractor drawings, for all public and private Work Orders.
- Verification that all Utility Work performed by the Contractor or by the Utility Owner has been accomplished in accordance with the Work Order, this Section 7, and the Contractor drawings.
- Coordination and schedule verification with all Utility Owners as necessary, for all public and private Work Orders.
- Providing public information for Utility Work performed by Contractor, or performed by the Utility Owner.

- Performing traffic control for Utility Work performed by Contractor, or performed by the Utility Owner as necessary and as defined in the Work Order. All applicable traffic control permits and Method of Handling Traffic (MHT) shall be submitted in accordance to Section 16 Maintenance of Traffic.
- All necessary Work, as required in Denver Water Rule 12.
- Providing survey coordinates to the URD and in the field for construction of the Utility Relocations.
- Performing Incidental Utility Work.
- Coordination with the appropriate Utility Owners regarding service disconnects and/or removals per Utility Owners procedures as needed for demotion of existing structures.
- Performing and coordinating As-Builts for all public and private Utilities per the Utility Agreements and/or Work Order.
- All necessary Work associated with Utility Work.

7.1.2 EXCLUSIONS FROM UTILITY WORK

Utility Work excludes the following:

- Issuance of any Utility Permit to any Utility Owner.
- Provision and maintenance of any insurance in excess of the Contractor's obligations in this RFP.
- Any Work expressly required to be undertaken by the City or a Utility Owner in accordance with Utility Agreements or the terms of any Work Order.
- Construction of the Private Utilities Relocations, including service lines and temporary Relocations, unless identified as a Requested Relocation.
- Abandonment of existing Private Utilities, unless identified in the terms of the Work Order for a Requested Relocation.
- Utility removal Work outside of the Project Limits.
- Providing traffic control when Utility Work is outside of the Project Limits.
- Reimbursement to Utility Owners for, or acquisition of, replacement easement required for Utility Work as set forth in the Work Order.

7.1.3 CONTRACTOR'S RESPONSIBILITY TO PERFORM

The Contractor shall perform all efforts included in the Utility Work with respect to each impacted Utility regardless of the following:

- Whether or not the Utility was indicated in the attached appendices, or if indicated, whether or not the Utility was accurately indicated. All Utility locations in the plans are for informational purposes only. All Utility locations shall be field verified by the Contractor.
- The type of action, if any (e.g., Relocation, protection-in-place), feasibility, estimated duration of Work time or any other characteristic of any Relocation concept(s) proposed for the Utility in the attached appendices. Protection in place of all Utilities not being relocated, abandoned

or removed is the responsibility of the Contractor. The Contractor is responsible for all Utility damages caused by the Contractor and/or its subcontractors. Any repairs will be at the Contractor's expense.

The allocation of responsibility for any Utility Work to a Utility Owner pursuant to this Section 7 or to a Utility Agreement shall not relieve the Contractor of the obligation to coordinate with the Utility Owner as necessary for such Utility Work to be timely performed, or of the obligation to perform any other Utility Work not specifically assigned to such Utility Owner.

7.2 PERFORMANCE STANDARDS

Except as otherwise provided in the applicable Utility Agreement or Work Order – all URDs and construction of Relocations furnished or performed by the Contractor shall be consistent with the Utility Owner's written specifications, standards of practice (which may include design format) and construction methods, that are current at the Proposal due date. The Contractor shall obtain all such written specifications, standards of practice and construction methods from the Utility Owners. In the event of a conflict between the requirements of the Utility Owner or requirements of these Contract Documents, the City in its sole discretion, shall determine which shall govern unless otherwise set forth in the Work Order.

The Contractor shall be responsible for resolution of any unresolved ambiguity prior to proceeding with any Utility Work.

7.3 UTILITY DATA

See the Reference Documents for a list of all known Utility Owners within and/or adjacent to the existing City owned property.

The City has completed an initial Utility investigation, including some subsurface Utility engineering, and has identified the Utilities that may be impacted by the Project. The City has not performed a complete investigation of service lines. The results of the investigations are indicated in the Utility Data included in the Reference Documents. Utility Data shall not be exclusively relied upon for existing Utility location, size, and depth. The Contractor shall verify, to its own satisfaction, all information required for the design and construction of Utilities.

7.4 CONTRACTOR'S INVESTIGATIONS

The Contractor shall take all actions necessary to identify and confirm the existence and exact location, size and type of all Utilities within the City owned property, whether or not such Utilities are shown in the Utility Data, and including all potentially impacted service lines. All such information shall be transferred to the As-Built Plans. Such actions shall include making diligent inquiry at the offices of the Utility Owners, consulting public records, and conducting field studies (such as subsurface Utility engineering) as appropriate, taking into consideration the possibility that Utility Owners may provide inaccuracies or inexact information with regard to their Utilities. If the Contractor's investigations identify Utilities (excluding service lines) not described in the Utility Data, the Contractor shall create a new conflict number (matching the format and sequencing of the Utility Data provided conflict numbers) to document and track, or if the Contractor determines that any Utility was not indicated with reasonable accuracy in the Utility Data or other Reference Documents, the Contractor shall notify the City immediately upon discovery, then the information will be entered into the final As-Built submittal.

The Contractor shall determine and document the condition of all existing Utilities, in accordance with the Utility Owner's standard practice, prior to and following the commencement of construction.

The Contractor shall at least monthly, and otherwise upon the City's reasonable request, deliver to the City and, in accordance with the Utility Agreements, the applicable Utility Owners, a Contractor's Utility Matrix, which shall update and expand the Utility Matrix provided in the Reference Documents to include the following information (unless otherwise agreed between the parties):

- Meeting dates with Utility Owner for each draft Utility Work Order
- Each URD Sheet approval date
- The relevant number and execution date executed Utility Work Order
- Each Utility No-Conflict Closeout Form execution date
- Each DRAL execution date
- Each CRAL execution date
- Completed As-Built plans delivery date, to or by the Contractor, as applicable
- Identification of all changes made since the immediately prior Contractor's Utility Matrix

7.4.1 UTILITY WORK ORDERS

The Contractor may prepare a single Work Order covering more than one Relocation, Betterment, or Requested Relocation with the consent of the City and the relevant Utility Owner. Any necessary changes to the Work Order requested by the Contractor shall be submitted in writing to the Utility Owner and the City and be Approved by all parties before any change can be executed. The Contractor, Utility Owner, and the City, in that order, shall execute a Utility Work Order prior to commencement of any Utility Work.

Prior to executing any Utility Work Order, the Contractor, the City shall meet with the relevant Utility Owner to negotiate the relevant draft Utility Work Order, including the following:

- In accordance with procedures set out in the applicable Utility Agreement, the scope of work, the implementation schedule and any exhibits.
- In accordance with paragraphs below, cost and payment responsibly.

The costs for Utility Work performed by the Contractor under the Utility Work Order for Betterments or Requested Relocations shall be negotiated between the Contractor, the City and the Utility Owner. If the Utility Owner will be reimbursing the Contractor for any costs in connection with the Utility Work, the Contractor shall provide a definitive cost estimate to the Utility Owner in accordance with the Utility Owner's standard practice and with the requirements of the applicable Utility Agreements, and shall submit such estimate to the City. For Betterments and Requested Relocations, the draft Utility Work Order shall include the direct impact of such Utility Work Order on the performance of the Work and the Contractor's ability to follow the Baseline Schedule (or, as the case may be, Revised Baseline Schedule), in each case taking into account the Contractor's obligations.

On the basis of the meetings held in accordance with this Section 7 above, the Contractor shall submit each draft Utility Work Order to the City for Approval.

The City shall provide comments or a "Statement of No Objection" within 14 Calendar Days of delivery of the draft Utility Work Order by the Contractor, provided that the Contractor shall not execute or otherwise commit to enter into any Utility Work Order or perform any work in respect of any Utility Work without the prior written acknowledgement by the City.

If the City Approves the draft Utility Work Order and Approves both the cost, and the impact of such Utility Work Order on the performance of the Work, if any, then:

- The Contractor shall submit the Approved Utility Work Order to the Utility Owner, the City for execution and shall itself execute the Utility Work Order, in each case in accordance with the applicable Utility Agreement; and
- The Contractor shall thereafter perform the Utility Work for which it is responsible pursuant to such Utility Work Order as part of the Work.

The Contractor shall revise any Utility Work Order if and when necessary in accordance with the terms of the applicable Utility Agreement. Such a revised Utility Work Order shall be drafted and executed in accordance with the same procedures applicable to the drafting and execution of the original Utility Work Order under this Section 7.

7.4.1.1 DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR

The Contractor shall be responsible for any damage caused by the Contractor or its subcontractors, employees or agents, to property, Utilities, structures, or subcontractors, employees or agents of the Utility Owners. The Contractor shall immediately notify the affected Utility Owner of any Utility damaged by the Contractor during performance of the Work on the Project.

Promptly after the Contractor's discovery of such damage, or the Contractor's receipt of notice of any such damage from the Utility Owner or from any other source: (a) the Contractor shall repair the damage itself to the Utility Owner's satisfaction; or (b) at the Utility Owner's election, the Utility Owner may make such repairs at the Contractor's expense. The Contractor shall make payment to a Utility Owner within 60 Calendar Days after receipt of the Utility Owner's invoice.

7.4.2 MULTIPLE MOVES

The Contractor shall be responsible for all costs incurred by the City, the Contractor, or the Utility Owner to subsequently relocate any Utility already relocated to accommodate the Project. If the Contractor and/or their subcontractors request the Relocation of any Utility for the purpose of convenience that Relocation shall be at the Contractors expense.

7.5 UTILITY COORDINATION

7.5.1 GENERAL

The Contractor shall be responsible for coordination of all activities and coordination with the Utility Owners and the City in order to accomplish all Utility Work. In the discharge of its coordination responsibilities, the Contractor shall:

- Keep Utility Owners fully informed of schedules with regard to Utility Work. The Contractor shall provide to the Utility Owners, as soon as practicable, an estimated schedule for their respective Utility Work and shall notify the Utility Owners of any significant changes to the schedule as soon as practicable.
- Keep Utility Owners fully informed of changes that affect their Utilities.
- Consider, to the extent practicable, Utility Owners' needs for the allocation of resources to perform their respective Utility Work in a timely manner. The Contractor and/or their subcontractors shall coordinate with the Utility Owners to minimize delays.

- Keep Utility Owners involved in making decisions that affect their Utilities so Utility Owners are able to provide uninterrupted service to their customers, or to be subject to the least interruption practicable as approved by the Utility Owner.
- Avoid multiple Relocation of the same Private Utility.

7.5.2 UTILITY MEETINGS

7.5.2.1 BETWEEN THE CITY AND THE CONTRACTOR

The Contractor shall be available to meet at the request of the City, as necessary, to discuss and resolve matters relating to the Utility Work.

7.5.2.2 BETWEEN THE UTILITY OWNERS AND THE CONTRACTOR

The Contractor shall be responsible for all coordination with the affected Utility Owners to accomplish each Utility Relocation, in accordance with the applicable Utility Agreement. The Contractor shall schedule regular meetings with the relevant Utility Owner to discuss the progress of the Utility Work and any Utility Relocation being performed by the Contractor or Utility Owner. The Contractor shall not unreasonably deny any request by a Utility Owner to meet regarding any Utility Work being performed by the Contractor or Utility Owner. The Contractor shall provide the City a minimum of five Working Days' notice of any meeting with a Utility Owner.

7.5.2.3 MINUTES

The Contractor shall produce minutes of all meetings with Utility Owners and the City within five Working Days and shall distribute copies of the minutes to the attendees and individuals as requested by the City.

7.5.3 REVIEW SCHEDULES

Estimated schedules for reviews are as follows:

- 14 Calendar Days for Utility Owner or Contractor to review and accept or provide comments on the Utility Work Order developed by the other party; and
- 14 Calendar Days for the Utility Owner or Contractor to re-review any Utility Work Order that is revised by the other party.

Failure to respond to a Work Order review submittal in a timely manner does not constitute an acknowledgement.

For Utility Work performed by the Utility Owner, a reasonable schedule required for each activity shall be negotiated between the Utility Owner, Contractor, and City which shall be reflected in the Utility Work Order. The times noted in the Utility Work Order for Utility Work shall prevail over the estimated times noted in this Section 7 or in the applicable agreement. In developing its Project schedule, the Contractor shall allow for appropriate time for the performance of Utility Work assigned to the Utility Owners and/or the Contractor pursuant to the Utility Agreements.

7.5.4 COST ESTIMATES

If the City will be reimbursing a Utility Owner for any costs in connection with Utility Work, (e.g. provide power source for lighting, or other eligible Relocation costs) the Contractor shall obtain a definitive cost estimate from the Utility Owner in accordance with the Utility Owner's standard practice and with the requirements of the applicable Utility Agreement, and shall submit such estimate to the City. After Approval of the estimate by the City, the estimate shall be incorporated into the applicable Work Order.

All reimbursements shall be negotiated on a “lump sum” rather than on an “actual cost” basis, unless otherwise Approved by the City. However, no lump sum arrangement will be entered into for Utility Work if such arrangement would preclude Federal reimbursement pursuant to 23 CFR Section 645.113(f). No reimbursements shall exceed the lump sum cost excepted if submitted in writing prior to the Utility Work and Approved by the relevant parties through an executed Utility Work Order.

7.5.5 NOTICES

7.5.5.1 NOTICES TO UTILITY OWNERS

In order to maintain the Project schedules, the Contractor shall issue all notices, in writing, to the Utility Owners called for under the Utility Agreements, with copies submitted to the City.

Notice shall be given to respective Utility Owners when the Contractor is working adjacent to their Utilities. The Contractor shall be solely responsible for and liable for any damage to any Utilities that are damaged due to any activities associated with the Work.

7.5.5.2 NOTICES TO THE CITY

The Contractor shall be responsible for verifying progress of Utility Work performed by the Utility Owner, and for notifying the City shall the Contractor have cause to believe that the Utility Owner will not meet the specified time frame(s) in the Utility Work Order. The Contractor shall provide such written notice to the City immediately after discovery.

If the Utility Owner is performing Utility Work that requires a City Utility Permit, the Contractor shall verify to the City that the Utility Permit has been obtained and is being complied with. If the Contractor determines that the Utility Owner does not have the required City Utility Permit, or is in violation of the terms and conditions of such permit, the Contractor shall provide such written notice to the City immediately after discovery.

7.5.5.3 UTILITY NOTIFICATION CENTER OF COLORADO

The Contractor shall arrange for the Utility Notification Center of Colorado (UNCC) to provide software and training for the Contractor to order call tickets to have Utility field locates performed. Contractor shall make arrangements for the training. The Contractor shall call 811 and coordinate directly with non-member Utilities for Utility locations.

7.6 FAILURE OF UTILITY OWNER TO COOPERATE

The Contractor shall use reasonable efforts to obtain the cooperation of each Utility Owner as necessary for carrying out the Utility Work. The Contractor shall notify the City immediately if:

- The Contractor becomes aware that any Utility Owner is not cooperating in identifying Utilities, negotiating or executing Work Orders, performing or approving any Utility Work, or delivering DRALs or CRALs;
- A Utility Owner fails to complete design and/or construction for which it is responsible on or before the deadline established in the applicable Work Order; or
- Based on the progress made by the relevant Utility Owner, the Contractor believes that there is a possibility that the Utility Owner will not complete the Relocation of a Utility Owner-relocated Utility or any other Utility Work as required pursuant to a Utility Work Order to the extent and in the manner shown on the Utility Plans within the time limits set out in the applicable Work Order; and

- If, in each case of the items listed in this Section 7.7, the Contractor has complied in all respects with the requirements of this Section 7, including compliance with the applicable Utility Agreement and the applicable Utility Work Order with respect to the relevant portion of the Utility Work.

After delivery of such notice, the Contractor shall continue to diligently pursue the Utility Owner's cooperation and shall assist the City in any attempts to reach a solution through the dispute resolution procedure outlined in the applicable Utility Agreement. The Contractor shall document any incurred costs as a direct result of the Utility Owner's failure to cooperate or perform its obligations under the applicable Utility Work Order in a timely manner.

In the event that the City pursues legal action against a Utility Owner per the Utility Agreement, the Contractor shall cooperate as reasonably requested by the City in connection with such lawsuits, including having the Contractor and its subconsultants act as witnesses in such lawsuits and providing information, reports, graphs, photos, plans, renderings, and similar materials to the City Counsel at the Contractor's expense.

7.7 UTILITY WORK PROCEDURE

7.7.1 UTILITY AGREEMENTS

See the Reference Documents for City obtained Utility Agreements and the corresponding Utility Matrix with each Utility Owner whose Utilities are, or may be affected by the Project.

If the Contractor identifies Utility Work belonging to a Utility Owner without a Utility Agreement, the City may enter into a Utility Agreement with such Utility Owner. The Contractor shall not be a party to any agreement and shall not be responsible for negotiating such Utility Agreement. The City will be responsible for drafting and negotiating the Utility Agreement. The Contractor shall be responsible to coordinate with such Utility Owner as if it had an executed Utility Agreement.

7.7.2 UTILITY MATRIX

The Contractor shall update and expand the Utility Matrix provided in the Reference Documents. The matrix shall be up to date and current at all times, with the best information available. The Utility Matrix shall include all Utility Data and any additions from Contractor investigations for each existing Utility located within the Project Limits or otherwise potentially impacted by the Project.

7.7.3 UTILITY WORK ORDER

The Contractor shall create a Utility Work Order per this Section 7 and expand the Utility Matrix to document and track Utilities (excluding service lines).

7.7.4 UTILITY NO-CONFLICT CLOSEOUT FORM

Once the Contractor has determined that a Utility shown on the Contractor's Utility Matrix is not in conflict, the Contractor shall provide a Utility No-Conflict Closeout Form to the respective Utility Owner to review and sign. A copy shall be submitted to the City.

7.7.5 DESIGN OF RELOCATION ACCEPTANCE LETTER

The Contractor shall obtain design acceptance from the Utility Owner for each Public Utilities Relocation design prepared in the form of a DRAL.

The Contractor shall review, then accept each Private Utilities Relocation Design to verify compatibility with the Project and provide acceptance to the Utility Owner in the form of a DRAL.

7.7.6 CONSTRUCTION RELOCATION ACCEPTANCE LETTER

7.7.6.1 WORK BY CONTRACTOR

Each Utility Owner shall have the right to inspect the Utility Work performed on its Utilities by the Contractor. The Contractor shall not unreasonably refuse such Utility Owner inspection requests and shall coordinate the schedule and scope of such inspections with the Utility Owner.

The Contractor shall perform all construction of the Relocations in accordance with the executed Utility Work Order, the requirements of the Contract Documents, the Utility Agreements and the standards and construction methods of the respective Utility Owners. The Contractor shall document acceptance of the Utility Work from the Utility Owner by obtaining a CRAL and submitting a copy to the City. In the event of a conflict between the requirements of the Utility Owner or requirements of the Contract Documents, the City, in its sole discretion, shall determine which shall govern.

7.7.6.2 WORK BY UTILITY OWNER

In order to evidence its acceptance of construction of the Utility Work performed by the Utility Owner, the Contractor shall review and accept, or provide comments to the Utility Owner as appropriate, that the construction of the Relocation is compatible with the Project. The Contractor shall submit an executed CRAL to the Utility Owner and to the City. The Contractor shall immediately notify the Utility Owner and the City in writing of any noncompliance or inconsistency with the executed Utility Work Order.

7.7.7 UTILITY CONTACT LIST

A list of all known Utility Owners within and/or adjacent to the existing City owned property, including contact information is provided in the Reference Documents.

7.7.8 UTILITY PERMIT APPLICATION AND OTHER PERMITS

The Utility Owner will be responsible for obtaining all City Utility Permits for Utility Work. The Contractor shall verify that the Utility Owner has obtained these permits prior to installing traffic control. In the event the Contractor determines that a Utility Owner does not have the required permits, the Contractor shall immediately notify the City in writing.

Utilities within ROW shall follow the Utility Plan Review process. Utilities within City-owned parkland shall follow the Parks & Recreation Utility Plan Review process.

7.7.9 AS-BUILT PLANS

All As-Built information shall be surveyed to ensure accuracy of information.

Where the Utility Owner performs the Utility Work, the Utility Owner shall provide As-Built Plans of the Relocation to the City and to the Contractor as soon as practicable, but not later than 90 Calendar Days after execution of a CRAL. The As-Built Plans may be in the form of redlining changes that deviate from the Approved URD attached to the Utility Work Order. The Contractor shall show the Utility As-Built information on the final Project As-Built Plans.

Where the Contractor performs the Utility Work, the Contractor shall provide As-Built Plans of the Relocation to the City, CDOT (as applicable), and the Utility Owner as soon as practicable, but not later than 90 Calendar Days after execution of a CRAL. The As-Built Plans may be in the form of redlining

changes that deviate from the Approved URD attached to the Utility Work Order. The Contractor shall show the Utility As-Built information on the final Project As-Built Plans.

As-Built Plans shall be signed by a Professional Land Surveyor or Professional Engineer, licensed in the State of Colorado.

7.8 DELIVERABLES

All plan deliverables, as required by the Technical Requirements, shall show the most up to date and best possible Utility information.

At a minimum, the Contractor shall submit the following to the City:

Table 7-1 Deliverables

Deliverable	Information or Approval	Schedule
Utility Matrix	Approval	Monthly and upon request
Utility Work Order	Approval	Five Working Days after Utility Owner obtained signature
Utility No-Conflict Closeout Form	Information	Five Working Days after Utility Owner obtained signature
CRAL	Information	Five Working Days after Utility Owner obtained signature
DRAL	Approval	Five Working Days after Utility Owner and Contractor obtained signature
As-Built Plans	Approval	90 Calendar Days after execution of CRAL
Written notice of meeting with Utility Owner	Information	Five Working Days prior to meeting
Meeting minutes	Information	Five Working Days after meeting
Written notice of Utility Owner not meeting Work Order time frame	Information	Immediately upon discovery
Written notice of Utility Permit violation	Information	Immediately upon discovery
Written notice of failure of Utility Owner to cooperate or timely perform	Information	Immediately upon discovery

7.9 APPENDICES

Appendix A – Utility Work Order

Appendix B – Utility No-Conflict Closeout Form

Appendix C – Design Relocation Acceptance Letter (DRAL)

Appendix D – Construction Relocation Acceptance Letter (CRAL)

Appendix A – Utility Work Order

CITY PARK GOLF COURSE PARKS AND DRAINAGE IMPROVEMENTS DESIGN-BUILD PROJECT

FORM OF UTILITY WORK ORDER				
Owner: _____				
URA No.: _____		Utility Identification No.: _____		
Work Order No.: _____		Work Order Revision No.: _____		
Work Breakdown Structure No.: _____				
<u>LOCATION:</u>				
<u>DESCRIPTION:</u>				
<u>OPERATING RIGHTS:</u>				
DESIGN				
	<input type="checkbox"/>	No Design Required		
Performing Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
Responsible Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
The Project pays Owner	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Utility Owner pays The Project	Lump Sum: _____		Actual Cost Not to Exceed: _____	
The Project pays Contractor	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Comments _____				
CONSTRUCTION				
	<input type="checkbox"/>	No Construction Required		
Performing Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
Responsible Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
The Project pays Owner	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Utility Owner pays The Project	Lump Sum: _____		Actual Cost Not to Exceed: _____	
The Project pays Contractor	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Comments _____				
CONSTRUCTION INSPECTION				
	<input type="checkbox"/>	No Construction Inspection Required		
Performing Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
Responsible Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
The Project pays Owner	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Utility Owner pays The Project	Lump Sum: _____		Actual Cost Not to Exceed: _____	
The Project pays Contractor	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Comments _____				
PROPERTY ACQUISITION				
	<input type="checkbox"/>	No Property Acquisition Required		
Performing Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
Responsible Party	<input type="checkbox"/>	Utility Owner	<input type="checkbox"/>	Project Contractor
The Project pays Owner	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Utility Owner pays The Project	Lump Sum: _____		Actual Cost Not to Exceed: _____	
The Project pays Contractor	Lump Sum: _____		Actual Cost Not to Exceed: _____	
Comments _____				

<u>SCHEDULE (THIS WORK ORDER ONLY)</u>	
<u>Design</u>	<u>Construction</u>
Start Date: _____	Start Date: _____
Completion Date: _____	Completion Date: _____
Comments:	
<u>WORK ORDER TERMS AND CONDITIONS</u>	
<p>SCOPE OF WORK ORDER. This Work Order is entered into by and among Owner and City and County of Denver (City) and the Project Contractor, in order to implement in part the Utility Agreement identified herein, as the same may be amended from time to time, and which is incorporated herein by this reference. All Work undertaken pursuant to this Work Order shall be performed in accordance with the requirements of the Utility Agreement, unless otherwise set forth herein. The Work Order shall govern to the extent of any conflict between the terms of the Utility Agreement and the terms of this Work Order. Unless otherwise defined herein, all initially capitalized terms and conditions shall have the meaning prescribed to them in the Utility Agreement.</p> <p>WORK ORDER ATTACHMENTS. This Work Order and any attachments hereto contain information specific to the Relocation to be performed hereunder. Attached and/or referenced Relocation Standards are incorporated herein by this reference and shall be considered a part of this Work Order. This Work Order governs only the Utility Work specifically identified herein and shall be conclusive as to all matters represented herein.</p> <p>ORDER OF EXECUTION. This Work Order shall be executed first by Utility Owner, then by the Project Contractor, and then finally by the City.</p> <p>IN WITNESS WHEREOF, the City, the Utility Owner, and the Project Contractor have executed this Work Order, which shall be effective as of the last date signed by all Parties.</p>	
Utility Owner: By: Print Name: Title: Date:	_____ _____ _____ _____ _____
Project Contractor: By: Print Name: Title: Date:	_____ _____ _____ _____ _____
City Project Manager: By: Print Name: Title: Date:	_____ _____ _____ _____ _____

FORM OF UTILITY WORK ORDER (cont.)	
	Utility Identification No: _____
SECTION A	SCOPE
SECTION B	REQUIRED PERMITS
<u>Permit Type</u>	<u>Permit Responsibility</u>
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
SECTION C	LIST OF ATTACHMENTS
<input type="checkbox"/>	Exhibit 1: Owner Design Sheet [date & description] _____
<input type="checkbox"/>	Exhibit 2: The Project Design Sheet [date & description] _____
<input type="checkbox"/>	Exhibit 3: Cost Estimate [date & description] _____
<input type="checkbox"/>	Exhibit 4: Property Rights [date & description] _____
<input type="checkbox"/>	Exhibit 5: Other _____

Appendix B – Utility No-Conflict Closeout Form

This Utility No-Conflict Closeout Form (“No-Conflict Form”) is executed by the Owner and the Project Contractor in connection with the City Park Golf Course Parks and Drainage Improvements Design-Build Project Utility Agreement entered into by the Utility Owner and the City. Unless the context clearly otherwise requires, initially capitalized terms shall have the meaning prescribed to them in the Utility Agreement.

A fully-executed No-Conflict Form indicates the undersigned’s concurrence that, as of the Project plans dated _____, no Relocation is required for Owner’s Utility referenced herein. Owner and the Project Contractor acknowledge that future modifications to the Project plans may require Relocation of the references Utility in accordance with the Utility Agreement. Two originals shall be executed and a copy shall be forwarded to the City, by the Contractor.

Utility Owner	
Utility Identification No.	
Location	
Comments (attach pages as necessary)	

FOR UTILITY OWNER

By: _____ Date: _____

Name: _____

Title: _____

FOR PROJECT CONTRACTOR

By: _____ Date: _____

Name: _____

Title: _____

If this form is not signed by the Utility Owner, the Utility Owner shall state below its basis for disagreement with the No-Conflict designation for this Utility:

(attach pages as necessary)

Appendix C – Design Relocation Acceptance Letter (DRAL)

This DESIGN OF RELOCATION ACCEPTANCE LETTER (“DRAL”) is executed by the non-Designing Party in connection with the City Park Golf Course Parks and Drainage Improvements Design-Build Project Utility Agreement, entered into by the Utility Owner and the City. Execution of this DRAL indicates the non-Designing Party’s acceptance and approval of the design of the Relocation, as attached to this DRAL, performed and completed by the Designing Party. Unless otherwise defined herein, initially capitalized terms shall have the meaning prescribed to them in the Utility Agreement. Two originals shall be executed and a copy shall be forwarded to the City, by the Contractor.

Utility Owner:	
Utility Identification No.:	
Work Order No.:	Work Order Date:
Work Order Rev. No.:	Rev. Date:
Designing Party:	

Now, therefore, the non-Designing Party executes this DRAL to indicate that it has reviewed the design of the Relocation completed by the Designing Party and has found the design of the Relocation to have been designed in accordance with the non-Designing Party’s Relocation Standards duly provided to the Designing Party:

Non-Designing Party

By: _____

Name: _____

Title: _____

Date: _____

The non-Designing Party declines execution of this DRAL at this time for the following reasons:

(attach pages as necessary)

Appendix D – Construction Relocation Acceptance Letter

This CONSTRUCTION OF RELOCATION ACCEPTANCE LETTER (“CRAL”) is executed by the non-Constructing Party in connection with the City Park Golf Course Parks and Drainage Improvements Design-Build Project Utility Agreement entered into by the Utility Owner and the City. Execution of this CRAL indicates the non-Constructing Party’s inspection and acceptance of the construction of the Relocation performed and completed by the Constructing Party. Unless otherwise defined herein, initially capitalized terms shall have the meaning prescribed to them in the Utility Agreement. Two originals shall be executed and a copy shall be forwarded to the City, by the Contractor.

The construction of the Relocation inspected and accepted by execution hereof is described below:

Owner:	
Utility Identification No.:	
Work Order No.:	Work Order Date:
Work Order Rev. No.:	Rev. Date:
Constructing Party:	

Now, therefore, the non-Constructing Party executes this CRAL to indicate that it has inspected the construction of the Relocation completed by the Constructing Party and has found the construction of the Relocation has been performed in accordance with the Relocation Plans:

Non-Constructing Party

By: _____
Name: _____
Title: _____
Date: _____

The non-Constructing Party declines execution of this CRAL at this time for the following reasons:

(attach pages as necessary)

8.0 RIGHT-OF-WAY

The Project is expected to be constructed on City-owned parkland or existing City right-of-way (ROW), therefore no additional acquisition of ROW from third parties is anticipated.

For any Work the Contractor may perform within existing City ROW or City-operated roadways including 23rd Avenue, 26th Avenue, York Street, and Colorado Boulevard, the Contractor shall obtain a Street Occupancy or Street Cut Permit. For any Work the Contractor may perform within Colorado Department of Transportation (CDOT) ROW, the Contractor shall obtain any additional required permits and approvals.

All temporary areas required to perform the Work, including stockpiling, laydown yards, etc. shall be within the limits of the City Park Golf Course.

9.0 SURVEY

9.1 ADMINISTRATIVE REQUIREMENTS

9.1.1 STANDARDS

The Contractor shall comply with the requirements of the Contract Documents and shall meet all applicable Federal, State and City and County of Denver (City) requirements related to surveys, records, and monuments.

9.1.2 PROJECT SURVEY COORDINATOR

The Contractor shall designate a Professional Land Surveyor (PLS), licensed in the State of Colorado, as the Project survey coordinator. The Project survey coordinator shall be in responsible charge of all Contractor survey activities on the Project. The Project survey coordinator shall direct and review, and verify all City Supplied Survey Data and shall be the point of contact for all survey related activities. Contractor survey staff shall perform survey Work under the direct supervision of the Project survey coordinator.

All survey crew chiefs shall carry business cards that include their name, title, business address, and phone number while engaged in performing survey activities on the Project. These cards shall be offered to any public contacts, as defined in Section 4 Public Information, made during the performance of survey activities as a means of introduction and point of contact.

9.1.3 CITY SUPPLIED SURVEY DATA

The Reference Documents contain City Supplied Survey Data, including a Project control diagram, topographic mapping, and a digital terrain model. The Contractor shall verify and confirm the accuracy of all survey and mapping information provided to the Contractor, regardless of the source of the information. The Contractor shall document all forms of data verification and submit a City Supplied Survey Data Verification Letter including records of relevant survey data verification, to the City, no later than 60 Calendar Days following issuance of Notice to Proceed (NTP). Any discrepancies in information provided shall be reported to the City. The City Surveyor's Office will assist with survey records research; however it will be the Contractor's responsibility to obtain all necessary survey records.

9.1.4 CONTRACTOR SUPPLIED SURVEY DATA

Except as provided by the City above, the Contractor shall provide all other surveys required for completion of the design and construction Work.

9.1.5 PRESERVATION OF SURVEY MONUMENTS

The preservation of survey markers and monuments is mandatory. The Contractor shall notify the City as soon as it becomes known that a marker is in a position that will interfere with construction Work or with Contractor operations. The marker position shall be accurately referenced prior to disturbing any such marker. The Project Survey Coordinator shall be responsible to replace or reestablish all survey marker or monuments, including appropriate documentation.

The Contractor shall coordinate with the City Surveyor's Office to protect and restore monuments as required to complete the design and construction Work.

9.1.6 SURVEY RECORDS

The Contractor shall prepare and maintain supporting documentation, including but not limited to field notes, drawings, and calculations for all survey Work on the Project. All survey records shall conform to the City Standards and Specifications. Such records shall be neat, legible, accurate, and maintained by the Contractor in a neat and orderly manner.

The Contractor's Project survey coordinator shall be required to sign and seal the survey documentation in accordance with State law. All such documentation shall be transmitted to the City at the completion of the survey Work.

9.2 SURVEY REQUIREMENTS

9.2.1 DESIGN CONTROL SURVEYS

The Contractor shall plan, schedule, and perform all surveys and monumentation necessary to maintain and supplement the Project control network for the design of the Project. The Contractor shall submit to the City any revised Project control diagram showing modifications to the Project control network.

9.2.2 DESIGN SURVEYS

The Contractor shall arrange for all supplemental survey information and Utility locations necessary to complete the design. Design surveys shall provide sufficient detail to verify actual field locations of existing drainage improvements as well as for the final design of drainage and Utility improvements. Surveying shall be performed in accordance with the City Standards and Specifications. Traffic control and permits necessary to complete the survey shall be the responsibility of the Contractor. The Contractor shall deliver the data and field notes in a format mutually agreed to by the Contractor and the City upon completion of the survey. Errors and omissions found by the City shall be corrected by the Contractor and resubmitted.

9.2.3 CONSTRUCTION CONTROL SURVEYS

The Contractor shall plan, schedule, and perform all surveys and monumentation necessary to maintain and supplement the Project control network for the construction layout of the Work.

9.2.4 AS-BUILT PLANS

The Contractor shall plan, schedule and perform all surveys required to document the location of As-Built features on the Project. The As-Built Plans shall, comply with City Standards and Specifications, including all items on the As-Built Drawing Submittal checklist and, at a minimum, the following Project elements:

- Drainage facilities
- Ditch alignment, depth, and profile data
- Channel alignment and profile data
- Detention limits and volume
- Box culvert centerline and profile data
- Pipe Sizes, inverts, and flow directions (for both detention and golf course drainage)
- Driveway locations
- Roadway centerline and profiles
- Edge of pavement

- Sidewalks
- Utilities (including depths)
- Signs
- Traffic signals
- Lighting
- RTD stops
- Bridges
- Permanent Water Quality Best Management Practices (BMP's)
- Golf course features (tee boxes, greens, fairways, bunkers, hazards, water features, cart paths, restrooms, First Tee limits, driving range, tree size, type, and location, etc.)
- Golf course irrigation system and irrigation pond(s)
- Clubhouse and Maintenance Facility features (building corners, parking lots, sidewalks, fencing, patio, etc.), as necessary

As-Built survey shall be completed by a PLS, licensed in the State of Colorado.

9.2.5 ROW MONUMENTATION

The Contractor shall reset and replace with new monuments all ROW monumentation lost or destroyed during the progression of the Work. The Contractor shall submit to the City a revised ROW monumentation sheet listing all ROW monumentation reset by the Contractor and deposit the monumentation sheet or a plat per Colorado Revised Statutes. The deposited ROW monumentation sheet or plat shall be Approved by City.

9.3 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 9-1 Deliverables

Deliverable	Information or Approval	Schedule
City Supplied Survey Verification Letter	Information	60 Calendar Days following issuance of NTP
Revised Project control diagram	Approval	Prior to Final Acceptance
Construction control survey diagram	Approval	Prior to Final Acceptance
As-Built survey diagram	Approval	Prior to Final Acceptance
Final monumentation diagram	Approval	Prior to Final Acceptance

10.0 GEOTECHNICAL, PAVEMENTS, AND STRUCTURE FOUNDATIONS

The Contractor shall design and construct stable foundations for any required Clubhouse, Maintenance Facility, and any associated outbuildings or structures, bridges, retaining walls, and other structures; stable roadway embankments and excavations; and a stable foundation for all roadway, golf cart and parking lot pavements. Stable is defined to mean that foundations shall be designed and constructed to ensure that the service limits of the structure are not exceeded and foundation movement shall not result in exceedance of the performance criteria.

10.1 GEOTECHNICAL INVESTIGATIONS

A geotechnical investigation, including laboratory tests and engineering analyses has been conducted by Yeh and Associates, Inc. for the City and County of Denver (City) to define subsurface conditions and soil characteristics for the Project. The results of this investigation are contained in the Geotechnical Investigation Report provided in the Reference Documents, which is for information only. The Contractor shall conduct such additional subsurface investigations as it determines necessary to complete its designs.

The Contractor shall consider and design for the impacts of ground water and the necessary mitigation in its design.

The Contractor shall be responsible for any supplemental subsurface investigations necessary to complete the Work. Supplemental subsurface investigation(s) shall be incorporated in the Contractor's Geotechnical Investigation Report, which shall provide, at a minimum, a similar level of analysis as the City supplied Geotechnical Investigation Report.

The Contractor shall design and construct all required foundations, embankments and slopes and shall perform all required subgrade stabilization and/or removal.

Subsurface investigations and testing shall be performed by the Contractor during design to define the subsurface conditions. The investigations shall be conducted in general accordance with American Association for State Highway Transportation Officials (AASHTO) R13. All borings shall be logged in the field in general accordance with American Society for Testing & Materials (ASTM) 2488. Laboratory testing shall be conducted on representative samples to adequately classify the materials and describe the subsurface conditions and to identify any potential problems, which may exist. Classification of soil and bedrock samples tested in the laboratory shall be in general accordance with ASTM D2487 and AASHTO M145.

Geotechnical investigations for any required buildings shall also comply with the City *Building and Fire Code*.

The maximum spacing of test borings shall be no greater than 500 feet in excavation areas (detention/channel) and major site development areas. Areas of complex subsurface conditions shall require closer spacing of borings. The Contractor shall conduct subsurface investigations at each structure and embankment to completely describe subsurface conditions and to adequately delineate major changes in subsurface conditions. Subsurface investigations for structures and embankments shall be completed in accordance with AASHTO guidelines at all structure and embankment locations. The minimum number of borings are provided in Tables 10-1 and 10-2.

Table 10-1 Borings per Structure

Structure Type	Minimum Number of Borings
Retaining Walls	For walls less than 200 feet in length, minimum of two boreholes. For walls longer than 200 feet, minimum of two boreholes for the first 200 feet plus one per each additional 200 feet of retaining wall.
Concrete Box Culverts	One at each end and every 100 feet along axis
Bridge structure – single span	Two borings one at each end of span
Detention basins – including inlet, outlet, and forebay	One per structure
Buildings	As required to satisfy the requirements of the City <i>Building and Fire Code</i>

Table 10-2 Geotechnical Boring Depth and Frequency Table

Exploration Type		Recommended Minimum No. of Borings	Recommended Minimum Boring Depth
Foundations	Drilled Shaft	1 per substructure unit < 100 ft width 2 per substructure unit > 100 ft width	10 ft into bedrock ($N \geq 50$) or 3D below tip elevation
	Driven Piles		10 ft into bedrock ($N \geq 50$) or 20 ft below tip elevation
	Spread Footing		2B where $L < 2B$, 4B where $L > 2B$ and interpolate for L between 2B and 4B or 10 ft into bedrock
	Concrete Box Culvert		3H or 10 feet into bedrock ($N \geq 50$)
Walls	MSE/Cast in Place	1 at each end and every 200 ft along wall	2H or 10 feet into bedrock ($N \geq 50$)
	Tieback Anchor	1 in anchorage zone spaced every 200 ft along wall	
	Soil Nail	1 in nail zone 1H from wall every 200 ft along wall	
Landslide		3 along center of slide. Place at least one boring above and below sliding area.	10 ft below slide failure into competent stratum. Slide failure plane is rarely greater than slide width.
Pavement Settling		Determined by size and extent of distressed area	Determined by size and extent of distressed area
Pavement Heaving		Determined by size and extent of distressed area	20 ft
Material Soil Survey	Pavement realignment or widening	1 every 1,000 ft along centerline or determined by Materials Engineer	Minimum of 5 ft below the top of proposed pavement elevation or determined by Materials Engineer
	Cut sections – road widening	1 at each end of cut section and every 500 ft or determined by Materials Engineer	
	Cut sections – new alignment	1 at each end of cut section on opposite shoulders. If cut > 20 ft, 1 boring through deepest section of cut on centerline.	
	Embankment fill > 20 ft – new alignment	1 at centerline at deepest fill area	

D – Diameter B – Footing width H – Wall height L – Footing length N – Blow count values in 12 inches

Modified from *Checklist and Guidelines for Review of Geotechnical Reports and Preliminary Plans and Specifications*, Publication No. FHWA ED-88-053, Table 2: *CDOT Field Materials Manual*, Chapter 200; *AASHTO LRFD Bridge Design Specifications*, 4th Edition, Table 10.4.2-1; and *Landslides: Investigations and Mitigations*, TRB Special Report 247, Chapter 2.

Laboratory testing shall be conducted on representative samples to adequately describe the subsurface conditions and to identify any potential problems, which may exist.

A Geotechnical Investigation Report shall be prepared by the Contractor for the Project summarizing all subsurface investigations performed. The report shall provide a comprehensive written description of all the subsurface investigations and laboratory testing completed, final typewritten boring logs, description of site conditions, engineering recommendations, and construction considerations. This report shall be sealed and signed by a licensed Professional Engineer in the State of Colorado.

10.2 PAVEMENTS

10.2.1 DESIGN REQUIREMENTS

The Contractor shall be responsible for reviewing the available geotechnical information and obtaining all additional information as required for pavement design. The geotechnical information described in the Reference Documents is provided for information only.

The Contractor shall be responsible for any subsurface investigation necessary to complete the Work including design of pavements. Pavements shall comply with the requirements of the Metropolitan Government Pavement Engineers Council (MGPEC) *Pavement Design Standards*, unless otherwise stated in this Section 10.

10.2.1.1 PAVEMENT ANALYSIS AND DESIGN

The Contractor shall develop the Equivalent Single Axle Load (ESALs) required for the design of pavements. The Contractor shall use the City Standards and Specifications and MGPEC *Pavement Design Standards* for pavement design for any affected City-owned roadways adjacent to the Project and pavement within the golf course. Colorado Boulevard pavement design shall comply with CDOT standards and specifications and the CDOT *M-E Pavement Design Manual*.

The Contractor shall be responsible for Portland Cement Concrete Pavement (PCCP) pavement joint design. PCCP joint design shall comply with the City *Engineering Division Transportation Standards and Details* and the CDOT *M & S Standard Plans*, as applicable. The PCCP longitudinal and transverse joint designs shall be compatible with lane and shoulder configurations, as applicable. Longitudinal joints shall be placed adjacent to and within six inches of lane markings, as applicable. PCCP pavement joint designs shall be submitted to the City for Approval.

The Contractor shall be responsible for pavement designs for temporary pavement and any other pavement identified in the course of this Project. Any temporary pavement design by the Contractor shall be adequate for smooth travel at the posted speed limit and shall be maintained for the duration needed.

The pavement design for PCCP roadway pavements shall not include the structural component of the aggregate base course (ABC) in the pavement design, however a minimum of six inches of ABC is required. Composite hot mix asphalt (HMA) over ABC utilizing the structural component of the ABC will be considered, based on swell and other factors. Any pavement underlain by aggregate base course and subgrade soil which classifies as A-6 or A-7-6 shall have a layer of separation geotextile between the subgrade and the aggregate base course. ABC is defined in the CDOT *Standards for Road and Bridge Construction* and shall have a minimum R-Value of 78. The Contractor shall provide test data confirming the ABC meets all criteria for gradation, liquid and plastic limits, and R-Value.

Pavements shall be designed for an initial Serviceability Index of 4.5 and end of design period Serviceability Index of 2.5. Reliability of 95% is required and is already part of the required MGPEC pavement design method.

Pavement shall be designed to comply with the City *Engineering Division Transportation Standards and Details* and constructed with adequate surface drainage to prevent pavement structure problems. Drainage slopes, both cross and longitudinal, shall meet the City Standards and Specifications.

A Pavement Design Report for all pavements, including temporary pavements, shall be submitted to the City for Approval.

10.2.1.2 PAVEMENT TYPES AND THICKNESS REQUIREMENTS

Pavement type and thickness design shall be performed by the Contractor after completion of its geotechnical investigations for final pavement design that provides the actual design subgrade support criteria, subject to field placement verification.

Construction of pavements shall follow Colorado Department of Transportation (CDOT) *Standard Specifications for Road and Bridge Construction*. Rigid pavement thicknesses shall include an additional ¼-inch, after rounding up to the closest ½-inch, to accommodate grinding at year 22. Example: A calculated design of 9.8” becomes 10.25” for plan thickness.

For flexible pavement, the Contractor shall use the grading and binder for HMA as determined using the City *Engineering Division Transportation Standards and Details*.

Pavement material shall comply with MGPEC or CDOT standards and specifications, as applicable. All concrete mixtures potentially exposed to deicer chemicals shall also comply with CDOT 601.04 for Severity of Sulfate Exposure Class 2.

HMA and PCCP mix designs shall be submitted to the City for Approval.

Golf cart paths shall comply with the requirements of Section 18 Golf Course.

10.2.2 CONSTRUCTION REQUIREMENTS

The Contractor shall construct PCCP surface texture pursuant to City Standards and Specifications.

Final thickness verification of roadway pavements, whether HMA or PCCP, shall be determined in accordance with CDOT Specification 412.21. Final thickness verification of pavements within the golf course, whether HMA or PCCP, shall be determined by obtaining one random core for every 1,000 square feet of pavement.

Where pavement thickness is less than planned thickness by 0.25 inches, or more, the deficient pavement area shall be remediated by the Contractor to the satisfaction of the City to meet the design thickness requirements. When replacement of deficient PCCP is required, full panels of pavement shall be replaced.

10.2.3 PAVEMENT WARRANTY

The Project requires a Warranty for all constructed pavements including roadways, maintenance areas, and parking lots from the Contractor following Final Acceptance. Performance criteria for the Warranty is presented in Table 10-3.

10.2.3.1 ASPHALT PAVEMENT WARRANTY DEFINITIONS

Alligator Cracking means a series of interconnecting cracks caused by fatigue failure of the asphalt concrete surface under repeated traffic loading.

Bleeding means the accumulation of asphalt binder on the pavement surface.

Edge Cracking means edge cracks that are parallel to and usually within one to two feet of the outer edge of the pavement. This distress is accelerated by traffic loading and can be caused by frost-weakened base or subgrade near the pavement edge.

Longitudinal Cracking means cracks that are generally parallel to the pavement centerline, due to poor soil support, a poorly constructed paving lane joint, shrinkage of asphalt concrete, or a reflective crack caused by cracking beneath the surface course.

Overlay means the process of milling and replacing the existing surface with new asphalt concrete pavement. Should an asphalt overlay be necessary during the Warranty period, the actual thickness shall be designed by the qualified Pavement Management Consultant.

Potholes means a bowl-shaped depression in the pavement surface. Potholes generally have sharp and vertical sides near the top of the hole. Potholes most often are structurally related distresses and should not be confused with raveling and weathering.

Qualified Pavement Management Consultant means an independent, licensed Professional Engineer, contracted with and paid for by the Contractor, Approved by the City, experienced with pavement management and pavement evaluations.

Raveling means the wearing away of the pavement surface caused by the dislodging of aggregate particles due to the loss of asphalt binder.

Roughness means the measurement of vertical variance versus horizontal length; in the longitudinal direction.

Rutting means a surface depression in the wheel paths. Pavement uplift may occur along the sides of the rut, but in many instances, ruts are noticeable only after a rainfall when paths are filled with water.

Shoving means a permanent, longitudinal displacement of a localized area of the pavement surface caused by traffic loading. When traffic pushes against the pavement, it produces a short, abrupt wave in the pavement surface.

Structural Distress means distress directly related to the structural integrity of the pavement system including alligator cracking, edge cracking, longitudinal cracking, rutting, shoving, and potholes.

Transverse Cracking means cracks in the pavement perpendicular to the pavement centerline.

10.2.3.2 CONCRETE PAVEMENT WARRANTY DEFINITIONS

Scaling means a general loss of surface mortar or mortar surrounding the course aggregate particles on a concrete surface.

Spalling means the surface failure of concrete resulting in fragmentation of material.

10.2.3.3 PAVEMENT PERFORMANCE CRITERIA

The performance criteria set forth herein are to be interpreted in accordance with the definitions for cracking, rutting, raveling, and potholes as found in the *Distress Identification Manual for the Long-Term Pavement Performance Project*, 2003, FHWA-RD-03-031.

Table 10-3 depicts the minimum acceptable criteria for the performance items Warrantied.

Table 10-3 Minimum Acceptable Pavement Performance Criteria for the Warranty Period

Performance Item	
Rut depth, max. (inches)	<0.4
Cracking	
Transverse width, max. (inches)	<1/8
Transverse spacing for roadways, min (ft)	>15
Longitudinal width, max (inches)	<1/8
Longitudinal length for roadways, max	<50'/tenth lane mile
Distress	
Bleeding	none
Raveling	none
Structural Distress: Alligator Cracking, Edge Cracking and Potholes	none
Depressions and Shoving: Max. (inches) over a 10-ft length or Max. (inches) for asphalt bridge approaches	<1/4
Edge drop off for roadways (inches)	<2
PCCP Specific	
Scaling	<70 sq ft/tenth mile
Spalling	<2 sq ft/tenth mile
Broken slabs	no more than 3 pieces
No more than 2 broken slabs	per tenth mile

Notes:

1. *Within roadways, rutting shall be the average of both wheel paths over a length of one-tenth of a mile (0.1 mile) measured with a 10 foot straightedge.*
2. *Within roadways, longitudinal cracking includes joint separations.*
3. *Within roadways, evaluation of transverse cracking in HMA will be evaluated for each area. Transverse cracking is not permitted in PCCP.*

For smoothness quality testing, the finished transverse and longitudinal surface elevation of pavements shall be measured using an Approved 10 foot straightedge. Areas to be measured shall be directed by the City. The Contractor shall furnish an Approved 10 foot straightedge, depth gauge and operator to aid the City in testing the pavement surface. Areas showing high spots of more than 3/16 inch in 10 feet shall be marked and diamond ground until the high spot does not exceed 3/16 inch in 10 feet. Grinding shall not reduce the planned pavement thickness by more than 0.25 inches.

Cores shall be taken by the Contractor, within roadways, to verify minimum pavement thicknesses have been maintained. A minimum of one core shall be taken for every 100 cumulative lane-feet or fraction thereof per lane of diamond grinding, as directed by the City for roadway pavements. Where pavement thickness is less than planned thickness by 0.25 inches, or more, the deficient pavement area shall be remediated by the contractor to the satisfaction of the City to meet the design thickness requirements.

10.2.3.4 CORRECTION

If at any time during the Warranty period, the minimum acceptable criteria for any performance item is exceeded, the Contractor's Pavement Management Consultant shall evaluate and provide a written recommended Remediation Plan to the City for Approval.

After the Remediation Plan have been prepared, the Contractor shall prepare a Work Plan, which includes a Traffic Control Plan (TCP). The TCP shall meet the requirements of Section 16 Maintenance of Traffic. The Work Plan shall be submitted to the City for Approval.

The Contractor shall be responsible and pay for all remedial Work, including necessary traffic control Quality Assurance (QA) along with Quality Control (QC) testing and inspection.

10.3 STRUCTURE FOUNDATIONS

The Contractor shall perform additional geotechnical analysis as required for the design of bridges, buildings, retaining walls, and other structure foundations. Analysis shall include evaluation of external and internal stability of all retaining walls. Design recommendations and substantiating analysis shall be documented in Foundation Design Reports, in accordance with Section 15 Structures.

Driven pile foundations shall be constructed in accordance with Section 502 of the CDOT *Standard Specifications for Road and Bridge Construction*, unless otherwise noted.

Drilled caisson foundations shall be constructed in accordance with Section 503 of the CDOT *Standard Specifications for Road and Bridge Construction*, unless otherwise noted.

Building foundations shall be constructed in accordance with approved building plans and in accordance with the City *Building and Fire Code* requirements.

10.4 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 10-4 Deliverables

Deliverables	Information or Approval	Schedule
Geotechnical Investigation Report	Approval	Within 30 Calendar Days following completion of the fieldwork
Pavement Design Reports	Approval	Concurrent with Final Design Submittal
PCCP Jointing Plan	Approval	Concurrent with Final Design Submittal
PCCP mix designs	Approval	At the Pre-Paving Conference and at least 30 Calendar Days prior to the use of any PCCP on the Project
HMA mix designs	Approval	At the Pre-Paving Conference and at a minimum of 30 Calendar Days prior to the planned placement of any HMA on the Project

11.0 EARTHWORK

All Work required to be performed by the Contractor shall comply with the City and County of Denver (City) Standards and Specifications, all relevant requirements of the Technical Requirements, and Good Industry Practice.

The Contractor shall submit a Mass Grading Plan to the City for Approval, describing the Contractor's plan for general grading operations and earthwork balances.

11.1 CONSTRUCTION REQUIREMENTS

11.1.1 CLEARING AND GRUBBING

The Contractor shall be responsible for all clearing and grubbing and earthwork requirements for the Work.

The Contractor shall be responsible for clearing and grubbing including, the removal of trees, logs, limbs, stumps, brush, and trash and other unsuitable materials. Materials to be cleared and grubbed from the Project shall be removed from the Project by the Contractor. The Contractor shall haul any material required to be disposed at the Denver Arapahoe Disposal Site (DADS). Tickets for DADS will be obtained and paid for by the City.

The Contractor shall conduct a pre-clear and grub meeting with the City, including Denver Forestry, prior to the start of any construction Work to agree to the limits of clearing and grubbing, removal, replacement, or transplanting of any trees and shrubs.

The Contractor shall include clearing and grubbing limits as part of each design submittal for all construction Work in that area. Such submittals shall include provisions for the protection, removal, replacement, or transplanting of any trees.

The Contractor shall remove only those trees necessary to be removed to construct the Project. All other trees shall be marked and protected from damage during construction. The Contractor shall comply with tree protection requirements as described in Section 5 Environmental Requirements and Section 17 Landscaping and Aesthetics.

The Contractor shall take special care to preserve existing trees, shrubs, and other vegetation designated to remain. This shall include careful grading operations, slight adjustments of slopes, and placing protective fence at trees and boundaries of designated preservation areas.

11.1.2 REMOVAL OF STRUCTURES

The Contractor shall raze, remove, and dispose of all structures and obstructions which are identified on the Project, except Utilities and structures and obstructions removed under other contractual agreements, and salvageable material designated to remain the property of the City.

Substructures of existing structures, regardless of location, shall be removed to a minimum of three foot below the proposed ground surface, and to a minimum of five feet horizontally from proposed underground structures if a conflict exists.

11.1.3 EXCAVATIONS AND EMBANKMENTS

The Contractor shall be responsible for the design and construction of all embankments in accordance with the requirements of the Project. This includes pavement embankments as well as all other golf course

embankments. Grading design shall also ensure proper drainage to protect all golf course embankments and facilities.

To provide for adequate sulfate resistance in all concrete supplied, Severity of Sulfate Potential Exposure shall be Colorado Department of Transportation (CDOT) Class 2 per CDOT Specification 601.04. The Contractor may at its own expense have a certified laboratory test the subgrade as per the City *Minimum Frequency of Materials Sampling and Testing Standard*. Testing shall be at the same schedule and frequency as required for a preliminary soil survey. The Contractor may propose a different Class of Exposure for the Project based on those test results. The Class 2 level shall be used for concrete potentially exposed to deicer chemicals.

11.1.3.1 MATERIALS REQUIREMENTS

Except as required below, soil embankment material used under all pavements shall have a minimum resistance value (R-value) or Resilient Modulus (M_R) of that used in the pavement design as detailed in Section 10 Geotech, Pavement, and Structure Foundation, or other methods as Approved by the City, when tested by the Hveem Stabilometer for sand and clay subgrades as detailed in Section 5.2.3 of the Metropolitan Government Pavement Engineers Council (MGPEC) *Pavement Design Standards*.

Soil embankment material shall have a maximum dry density (MDD) of not less than 90 pounds per cubic foot when tested by American Association of State Highway and Transportation Officials (AASHTO) T-99 or AASHTO T-180 and meet all CDOT or MGPEC stability requirements, when tested, per Colorado Procedure – Laboratory 3102. Import material shall comply with the requirements of CDOT Specification 203.03 (a).

All pavement, excavation, and embankment testing shall be per City *Minimum Frequency of Materials Sampling and Testing Standard*.

Where embankment is retained by structurally designed walls (retaining walls), the retained embankment material properties shall be compatible with the soil parameters used in design of the walls. This applies to both externally stabilized and internally stabilized wall systems.

The Contractor shall conduct a supplemental soil survey confirming that the sub-grade meets the R-value and correlated M_R requirements used in the pavement design and shall conduct additional investigations and determine final pavement design according to requirements set forth in the MGPEC *Pavement Design Standards*. Test holes are required at a minimum of 500 feet. The Contractor shall provide any additional mitigation required as a result of the supplemental soil survey. The results of any supplemental soil surveys conducted by the Contractor together with any proposed mitigation measures to address identified in the surveys shall be submitted to the City before any pavement and pavement-related Work commences.

Embankments and fills shall meet the reuse guidelines for residential areas, including City-owned parks.

The Contractor shall be responsible for identifying sources of material required for the Project.

The Contractor shall be responsible and pay for disposing all surplus material outside the Project Limits.

11.1.3.2 RE-USE OF MATERIALS

The Contractor shall not be permitted to use reclaimed asphalt, concrete (that is not processed to meet CDOT backfill or base course specifications), brick materials, or materials containing Hazardous Substances in embankments or fill areas.

With Approval of the City, the existing subgrade may remain in place if it meets all other requirements herein, before any embankment or fill area, aggregate base course, pavement, and pavement-related Work commences.

11.1.3.3 COMPACTION REQUIREMENTS

Unless otherwise specified, all pavement embankment compaction and all compaction for structural foundations and walls for the Project shall be per CDOT *Standard Specifications for Road and Bridge Construction*.

Compaction for drainage structures shall comply with City Standards and Specifications.

Unless otherwise specified, Utility trench backfill compaction within the City roadways shall comply with Denver Water *Engineering Standards* for waterlines; the City *Storm Drainage and Sanitary Sewer Construction Detail and Technical Specifications* for storm and sanitary sewers; and the City *Public Works Rules and Regulations Governing Street Cuts and Roadway Excavation Specifications* for all other Utilities.

In narrow trenches where soil backfill is not practicable or not allowed per the City Standards and Specifications, removable controlled low-strength material shall be used pursuant to the City Standards and Specifications.

Compaction for building foundations shall be as required in the City *Building and Fire Code*.

Compaction for all other golf course embankments shall comply with the requirements of Section 18 Golf Course.

11.2 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 11-1 Deliverables

Deliverable	Information or Approval	Schedule
Mass Grading Plan	Approval	Concurrent with Initial Design Submittal
Results of supplemental soil survey along with any proposed mitigation measures	Approval	30 Calendar Days prior to commencement of any embankment, aggregate base course, pavement, or pavement-related Work

12.0 DRAINAGE AND WATER QUALITY

The Project shall include all Work for the modification of existing drainage facilities, construction of new drainage facilities, and construction of Best Management Practices (BMPs) that will be required to accommodate design flows, meet Project design criteria and policies, and comply with the terms and conditions of the City and County of Denver's (City) Municipal Separate Storm Sewer System (MS4) Permit.

The Contractor shall design and construct a complete storm-drainage system to intercept and remove surface runoff from the golf course, Clubhouse, Maintenance Facility, and associated parking lots/accesses, while maintaining surface, channel, and conduit flow consistent with the requirements of this Section 12, ensuring compliance with the City *Storm Drainage Design and Technical Criteria Manual*, and Urban Drainage Flood Control Districts (UDFCD) *Urban Storm Drainage Criteria Manuals*. The design shall incorporate detention and water quality features – integrated with the golf course that are consistent with the playability, aesthetics, and maintenance. The proposed regional detention basin, open channel drainage facilities, and any storm sewer outfall to open channels or ponds shall be eligible for the UDFCD Maintenance Eligibility Program (MEP).

All existing drainage facilities the Contractor intends to leave in place for continued use shall be:

- Evaluated and verified to have adequate hydraulic capacity.
- Evaluated and documented to be in acceptable existing condition suitable for the intended use.
- Evaluated and verified to be structurally adequate if subjected to additional embankment, and/or live loading.

For reference only, the Preliminary Drainage Report and Basis of Design Plans are provided in the Reference Documents.

Where the hydraulic capacity or existing conditions of drainage facilities upstream or downstream of the Project are inadequate, the drainage facilities of the Project shall still be constructed to meet Project design criteria. The Contractor shall submit all on-site related tributary basin hydrologic analyses for any proposed on-site drainage improvements and those that are connected to existing storm-drainage systems, upstream or downstream of the Project for Approval to the City.

The Contractor shall design drainage facilities compatible with existing or proposed drainage systems located on adjacent properties while maintaining existing drainage patterns. If existing drainage patterns must be changed due to design of the Project, the Contractor shall design a solution that does not create an additional adverse impact to property owners outside City right-of-way (ROW) and submit the design to the City for Approval prior to construction. During construction, the Contractor shall be responsible for drainage-related hazards within and outside the Project Limits, public inconvenience, flood damages, and water quality impacts caused by negligence by the Contractor or insufficient design. The Contractor shall be responsible for obtaining all necessary approvals, permits, and easements in locations where drainage patterns are modified, effected, within and immediately outside the Project Limits.

The *Application for Review of Plans and Specifications for the Construction or Enlargement of a Dam and Reservoir* and associated narrative have been provided in the Reference Documents. It is the responsibility of the Contractor to design and construct the Project in such a manner to obtain a non-jurisdictional dam status by the Division of Water Resources Office of the State Engineer Dam Safety Branch.

12.1 CITY ADMINISTRATIVE REQUIREMENTS

12.1.1 COORDINATION WITH OTHER AGENCIES

The Contractor shall coordinate all water-resource issues with affected regulatory agencies. The Contractor shall include the City in communications with all regulatory agencies unless otherwise directed.

12.1.2 PERMITS

The Contractor shall be cognizant of and adhere to the requirements of the various permits that will be necessary for design and construction of the Project. Unless otherwise indicated, the Contractor shall be required to obtain all permits. The listing herein is not all-inclusive and it shall be the responsibility of the Contractor to determine all permits required in order to perform and complete the Work. Fines may be incurred upon the Project for permit non-compliance by regulatory agencies at which point said fines will be passed onto the Contractor.

12.1.2.1 CONSTRUCTION ACTIVITIES STORMWATER DISCHARGE PERMIT

The Contractor shall be responsible for obtaining the Construction Activities Stormwater Discharge Permit (CASDP) and shall comply with all stormwater permit requirements until final stabilization has been achieved and until the CASDP can be closed. This includes the maintenance of all BMPs, maintenance of all seeded/landscaped areas, and removal of all BMPs once all erosion potential has been eliminated.

12.1.2.2 STORM WATER MANAGEMENT PLAN

The Contractor Stormwater Management Plan (SWMP) is required to fulfill the requirements of the CASDP and shall follow the format of the City SWMP template in accordance to the City *Construction Activities Stormwater Manual*. All existing and proposed drainage facility locations shall be shown on the SWMP site map.

The SWMP shall include detailed designs of the BMPs to be implemented for the Project and shall include a plan describing when and where each BMP shall be implemented during phases of the construction Work. Construction site stormwater runoff control shall meet the ordinance requirements of the City MS4 permit requirements.

Permanent water quality controls for on-site flows from new impervious areas shall include water quality facilities per UDFCD criteria.

Permanent water quality controls for off-site flows to be implemented shall include:

- Pre-treatment in underground vaults
- Forebay near the pipe outfall to concentrate collection of sediment and large particles

Linear channel to allow settlement of suspended fine particles

The Contractor shall update the SWMP to fulfill the requirements of the CASDP and BMP inventory maps.

12.1.2.3 BEST MANAGEMENT PRACTICES

BMPs are required to fulfill the requirements of the SWMP. The Contractor shall design, install and maintain construction BMPs for the Construction Work in accordance with the City *Construction Activities Stormwater Manual*.

12.1.2.4 MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) PERMIT

The Contractor shall be responsible for adhering to the City MS4 permit COS-000001.

Offsite flows entering the Project are not subject to MS4 requirements. Additionally, no permanent water quality features are required for golf course reconstruction, unless otherwise required by this Section 12.

The Contractor shall not include the channel water quality features as part of MS4 compliance for new facilities (i.e. Clubhouse, Maintenance Facility, and associated parking lots/accesses), if applicable. All new facilities shall comply with post-construction water quality requirements.

12.1.2.5 CONSTRUCTION DEWATERING PERMIT

The Contractor shall be responsible for permit requirements associated with dewatering during temporary construction and post construction activities. A Construction Dewatering Permit is required for temporary dewatering activities during the construction Work. A Subterranean Groundwater Permit is required if groundwater is collected and conveyed to the ground surface via sub-surface or storm drains (point source).

Refer to Section 5 Environmental for additional requirements.

12.1.2.6 U.S. ARMY CORP OF ENGINEERS SECTION 404 PERMIT

No jurisdictional waters of the U.S. are known within the Project Limits. If found, the Contractor shall be responsible for acquiring and implementing the conditions of any permit pursuant to Section 404 of the Clean Water Act.

12.1.2.7 COLORADO SENATE BILL 37-92-602

The Contractor shall be responsible for portions of the storm drainage system that are subject to permitting under Colorado Senate Bill 37-92-602 Colorado Revised Statutes (CRS). Water quality and/or detention information shall be uploaded into UDFCD/State related website.

12.2 DESIGN REQUIREMENTS

12.2.1 DRAINAGE DESIGN SOFTWARE

The most recent versions (excluding CUHP, only the version listed below is permitted) of the following software shall be used in performing drainage design calculations.

- UDFCD Generated Software-CUHP
- CUHP (version 1.4.4)/EPA-SWMM
- USACE, HEC-RAS
- Bentley, StormCAD
- Bentley, Flow Master
- Bentley, Culvert Master
- FHWA, HY-8
- FLO-2D

Other proprietary drainage design software and spreadsheets may be used if it is certified by the software developer that it meets the design requirements herein, and has prior Approval by the City. No software or spreadsheets created by the Contractor shall be used without Approval by the City. Approval of alternative software or spreadsheets shall require that the Contractor demonstrate that the proposed alternative provides analyses and results not adequately provided by already Approved software or spreadsheets. The alternative proposed software or spreadsheets results must demonstrate comparable accuracy and reliability as the

already approved software or spreadsheets. The City is under no obligation to consider alternatives to Approved software and spreadsheets and may Approve or deny the use of proposed alternatives at its sole discretion.

12.2.2 DATA COLLECTION

The Contractor shall identify all drainage-related issues, utilizing available data, including requirements imposed by Local, State, and Federal government regulations, and official documents concerning the Project. Drainage-related issues include, but are not limited to, areas with historically inadequate drainage, environmentally-sensitive areas, drainage maintenance problems, and areas known to contain Hazardous Substances in the Project as described in Section 5 Environmental Requirements.

The Contractor shall obtain existing storm-drainage improvement drawings, drainage planning studies, and drainage reports for the Project area from the City, and UDFCD.

The Contractor shall design facilities to be compatible with drainage systems, existing or proposed, on adjacent properties, with no additional adverse impacts.

The Contractor shall perform detailed mapping and surveys as required to verify locations of existing drainage features necessary for the proposed drainage design. The Contractor shall verify or identify boundaries, flow patterns, and land uses of drainage basins based on field observations.

The Contractor shall identify, record, and resolve all conflicts between Utilities and proposed drainage improvements in accordance with Section 7 Utilities Relocations.

12.2.3 SURFACE HYDROLOGY

The Contractor shall use the hydrologic existing conditions analysis developed with the Multi Agency Technical Team (MATT) memos for the Montclair Creek Basin and Park Hill Basin and update the models based on the proposed drainage improvements.

UDFCD has specifically noted that CUHP 2.0 cannot be applied to the Montclair MATT hydrology model, which has been calibrated for this watershed. Analysis of this watershed must be completed using CUHP version 1.4.4.

12.2.3.1 DESIGN FREQUENCIES

The design frequency for all drainage facilities on the Project shall be designed to the 10-year storm (minor storm) and then further analyzed with the 100-year storm (major storm) to confirm that no additional adverse impact is caused to surrounding adjacent ROW and properties. Specific requirements of the 10-year and 100-year storm frequencies are provided in the Area Specific Drainage Requirements found in this Section 12.

12.2.3.2 PRECIPITATION

Design rainfall shall be in accordance with the City *Storm Drainage Design and Technical Criteria Manual*.

UDFCD has calibrated the MATT model. Therefore, the precipitation values shall be based upon City Standards and Specifications, and the use of the newer NOAA14 rainfall values shall not be permitted in the CUHP modeling of the MATT hydrology for existing or proposed conditions.

12.2.3.3 RUNOFF COEFFICIENT

The runoff coefficient used shall be in accordance with the UDFCD *Urban Storm Drainage Criteria Manuals*.

12.2.3.4 HYDROLOGIC METHODS

The Contractor shall perform the necessary hydrologic analyses in accordance to City Standards and Specifications.

12.2.3.5 HYDROLOGIC FLOW REQUIREMENTS

The Contractor shall design the regional detention basin, at a minimum, to the flows and detention volume provided in Table 12-1. The flows provided in Table 12-1 supersede the flows provided in the City *Storm Drainage Design and Technical Criteria Manual*.

Table 12-1 10-Year and 100-Year Detention Hydrologic Requirements

Return Period	Q_{in} (cfs)	Q_{out} (cfs)	Volume (ac-ft)	Max Detention Duration (hours)
10-year	825	419	-	8
100-year	4,398	3,867	215	8

12.2.4 HYDRAULIC STRUCTURES

12.2.4.1 CLUBHOUSE AND MAINTENINANCE FACILITY

If improvements to the Clubhouse and Maintenance Facility are required by the Contractor’s design, all proposed improvements related to the Clubhouse, Maintenance Facility, and associated parking lots/accesses shall be in accordance with the City *Storm Drainage Design and Technical Criteria Manual*. The design of said facilities shall include BMPs that meet the City Standards and Specifications.

12.2.4.2 STORM SEWERS

Storm sewers shall comply with the City *Storm Drainage Design and Technical Criteria Manual*.

Hydraulic analyses and plans for storm sewers that are connected to existing storm sewer systems upstream or downstream of the Project shall be Approved by the City. The hydraulic analyses shall identify impacts to the existing storm sewer systems caused by the connections and proposed combined peak-design discharges for the overall systems.

Hydraulic Design of Storm Sewers

Storm sewers shall be designed with the hydraulic gradient in compliance with the City *Storm Drainage Design and Technical Criteria Manual*. The hydraulic gradient shall be plotted with the storm sewer profile.

The flow velocity of storm sewers shall comply with the City *Storm Drainage Design and Technical Criteria Manual*.

Storm Sewer Alignment, Profile, and Size

Proposed storm Sewers shall be designed per the City *Storm Drainage Design and Technical Criteria Manual* and the items below:

- Storm sewer alignments shall be straight between structures.
- Profiles of all storm sewers shall be straight grades between structures.
- Any deviation from the design criteria shall require the Contractor to obtain design variances as required in this Section 12.

- The use of sag pipes or inverted siphons shall not be allowed to convey stormwater.

Inlets

Inlet design, outside of the playable golf course areas, shall be in accordance with the *City Storm Drainage Design and Technical Criteria Manual*, *City Wastewater Management Division (WMD) Standards Details*, and with the following Project specific requirements and clarifications:

- Standard City inlets shall be used on all the City roadways unless otherwise Approved. Inlets shall be designed for HS-20 live loading. Bicycle and pedestrian-safe grates are required for all inlets. All inlet locations shall be shown on the SWMP site map.
- The low point of sag vertical curve inlets and the connection storm drainage system shall be designed so that the gutter depth of the 100-year return frequency peak discharge comply with the *City Storm Drainage Design and Technical Criteria Manual*. At sump locations, flanking inlets shall be constructed on each side of the sump to provide relief should the sump inlet clog. The flanking inlets shall be located so that the design criteria for ponding are met even if the sump inlet is completely clogged.
- Inlets shall be designed using the appropriate clogging factors per the *City Storm Drainage Design and Technical Criteria Manual*.

All inlets and catch basins within the golf course shall include golf-friendly grates that prevent golf balls from entering them.

Manholes and Junction Structures

Manhole and junction structure spacing, placement, and construction shall follow the requirements in the *City Storm Drainage Design & Technical Criteria* and *City Wastewater Management Division (WMD) Standards Details*.

Any manhole and junction structure that exceeds 20 feet in depth shall require a special design and be stamped by a licensed Professional Engineer, in the State of Colorado.

Outlet Structure

The detention basin outlet structure shall follow the requirements in the *City Storm Drainage Design & Technical Criteria*, *City Wastewater Management Division (WMD) Standards Details*, and *UDFCD Urban Storm Drainage Criteria Manuals*. The outlet structure shall be designed to allow flows up to the water quality capture event to pass through undetained. The outlet structure shall allow for ponding within non-golf course areas for storms greater than the water quality capture event up to the 10-year event. For storm events which exceed the 10-year event a surface spillway shall be utilized in combination with the outlet structure. The outlet structure shall be UDFCD Maintenance eligible.

Storm Sewer Outfalls

Permanent erosion protection shall be provided at all outfall locations. Outfalls shall be designed to minimize existing habitat disturbances during construction. Storm sewer outfalls shall incorporate either a headwall or end section. End sections or headwalls shall be used for drains 48 inches and smaller. A headwall with wing walls shall be used for any drain 54 inches and larger. A concrete apron shall be required when wing walls are utilized with a headwall. Saddle headwalls shall not be used.

12.2.4.3 CHANNEL REQUIREMENTS

Proposed channels shall be designed per the *City Storm Drainage Design and Technical Criteria Manual*, the *UDFCD Urban Storm Drainage Criteria Manuals*, and the below items.

- All roadside ditches (if required) and the open channel shall be designed in compliance with *UDFCD Urban Drainage Criteria Manuals* for naturalized channels. Concrete or asphalt lining is not permitted. A naturalized channel with a meandering bank-full channel is required for any area with more than 150 acres tributary. Channel sloping and benching shall conform to the *City Storm Drainage Design and Technical Criteria Manual* and *UDFCD Urban Storm Drainage Criteria Manuals*.
- Channel velocity shall conform to the *City Storm Drainage Design and Technical Criteria Manual* and *UDFCD Urban Storm Drainage Criteria Manuals*, unless otherwise specified in this Section 12.
- The channel design shall reflect the maximum possible width and length to provide the greatest retention time (minimum of five minutes with a target of 10 minutes) as the water quality event (0.6 inches of precipitation) is conveyed through the channel.
- The channel shall have a minimum slope of 0.3% and a maximum slope of 0.7%, to limit flow velocities for a mature vegetation condition during the water quality event.
- A narrow, shallow, and natural bottom low flow channel shall meander through the wide bottom of the overall channel, to accommodate an anticipated one to five cfs base flow. The low flow channel shall be designed in accordance with the *UDFCD Urban Storm Drainage Criteria Manuals*.
- The low flow channel overbank area of the channel shall convey the maximum upstream pipe flow through the golf course (e.g. the pipe capacity of the upstream 102 inch pipe at 23rd Avenue).
- Vegetated buffers shall be incorporated along the top of the channel banks to provide a natural buffer between golf activities and the water quality feature. Additionally, a vegetated buffer shall be provided between the potable irrigation systems (for the area within the channel) and recycled irrigation systems for the golf course.
- The overall channel width may be narrowed at golf cart bridge crossings in order to reduce spans but the channel water surface elevation shall not be impacted such that it effect playable golf facilities (fairways, greens, bunkers, tee boxes, chipping area, putting practice area, First Tee facilitates, etc.). The driving range may be within the channel water surface elevation.
- It is expected that the channel bottom may intersect the groundwater table and should be considered in the final design.
- A safety rack shall be provided at the existing 102 inch pipe outfall into the golf course and the outlet structure to prevent unauthorized access. The safety rack shall adhere to *UDFCD* criteria.
- Channel and detention areas within the golf course shall be designed as golf course features that are consistent with the playability, aesthetics, and maintenance of the golf course.
- Channel alignment shall be the designed to optimize performance criteria of this Section 12 and shall comply with the requirements of Section 17 Landscaping and Aesthetics and Section 18 Golf Course.
- Maintenance access shall be provided in accordance with City Standards and Specifications.

- Landscaping and plantings shall conform to the requirements of Section 17 Landscaping and Aesthetics.
- Water quality features, associated with the channel, shall be as required in this Section 12.

Approved design variances/deviations associated with channel design are discussed in this Section 12.

12.2.4.4 GOLF COURSE DRAINAGE

The golf course should be graded for positive drainage with minimum slopes of three percent everywhere, except on tees and greens (see Section 18 Golf Course for tees and greens drainage requirements). Surface water shall not travel more than 150 feet before being captured within a catch basin, inlet, pond, swale, detention area, or drainage channel.

12.2.4.5 SUB-DRAINAGE SYSTEMS

Sub-drainage systems shall discharge flows in compliance with regulations for groundwater discharge and control of water quality. See Section 18 Golf Course for golf course sub-surface drainage requirements.

12.2.4.6 WATER QUALITY FACILITIES

The City's volume based water quality treatment approach is not a regulatory requirement for the off-site Project flows. However, the Project shall provide a linear, rate based water quality BMP in the channel. The water quality feature shall provide treatment for rainfall events up to the water quality capture event (0.6 inches of precipitation), water quality flows up to 411 cfs, as well as convey the maximum pipe discharge (700 cfs) entering the golf course from the existing 102 inch pipe. The linear, rated based BMP shall attenuate flows to promote pollutant removal via the meandering channel, planted vegetation, sub-drain, select media, or other means as identified in the UDFCD *Urban Storm Drainage Criteria Manuals*.

Post-construction water quality facilities are required for any new impervious areas (Clubhouse, Maintenance Facility, associated parking lots/access, cart paths, and other proposed improvements), and permanent storm water runoff reduction practices shall be employed, minimizing directly connected impervious areas (MDCIA) or other volume reduction strategies. Impervious areas shall drain to pervious areas, where feasible, by routing runoff from impervious surfaces over permeable areas to slow runoff (increase time of concentration) and promote infiltration. The Water Quality Capture Volume (WQCV), for the new impervious areas shall be calculated using the City approved methodologies. Results from the WQCV shall be submitted to the City in written and digital formats. Credit for other water quality treatment measures, as Approved by the City, may be applied.

The regional detention facility shall not include the WQCV in order to minimize the impacts of golf course operations. The regional detention facility will provide Level 2 water quality treatment, as defined in the *P2P Site-Level Water Quality BMP Analysis*, provided in the Reference Documents. At a minimum, where the existing 102 inch pipe daylights into the golf course, a wet forebay and underground trash vault shall be provided. The trash vault shall prevent visible trash from entering the wet forebay. All stormwater detention and water quality facilities (e.g. trickle channel, maintenance access, spillway, forebay, micropool, trash rack, sloping, benching, outlet control structure etc.) requirements shall conform to the *City Storm Drainage Design & Technical Criteria* and UDFCD *Urban Storm Drainage Criteria Manuals*.

A forebay shall be required for sediment accumulation per criteria, but shall also include a permanent pool on top of the sediment accumulation area to act as an amenity pond for the golf course. Additional requirements are provided in the Area Specific Drainage Requirements found in this Section 12.

12.2.4.7 STORMWATER PUMPING STATIONS

The use of permanent stormwater pumping stations shall not be permitted.

The use of pump stations is not permitted for surface water.

12.2.4.8 TEMPORARY DRAINAGE DURING CONSTRUCTION

The Contractor shall be responsible for the design and construction of temporary drainage for the Project during construction. Temporary drainage shall be designed to provide positive drainage for each phase or stage of construction activities.

The Contractor shall submit Temporary Drainage Plans to the City for Approval.

12.2.4.9 GROUNDWATER

The existing 102 inch pipe on the southern edge of the golf course captures runoff and directs flows to the northwest corner of the golf course. Groundwater will likely be encountered during construction Work.

The Contractor shall be responsible for the design and construction of a dewatering system to prevent groundwater infiltration during construction. If a permanent dewatering systems is required by the Contractor's final design, the Contractor shall provide permanent treatment of groundwater.

No permanent groundwater pump facilities are permitted.

Refer to Section 5 Environmental for additional information and requirements.

12.2.4.10 FLOODPLAINS

No regulatory floodplain impacts are expected with the Project.

Therefore, no Letters of Map Amendment are required for this project. However, the City & County of Denver has mapped "Potential Inundation Areas" which identifies areas where flow is expected to be 12 inches or greater in depth during a 100-year event. A Potential Inundation Area is noted through City Park Golf Course.

The Contractor shall prevent adverse flood impacts to adjacent property by not causing additional flood depth or rerouting of major surface floods onto adjacent property. The Contractor shall demonstrate no adverse impact to surrounding properties through a Sewer Use and Drainage Permit with the City & County of Denver.

12.2.4.11 AREA SPECIFIC DRAINAGE REQUIREMENTS

To prevent permanent damage to the golf course, the Contractor shall design the drainage detention facility such that no ponding or adverse impacts occur, during the 10-year event, on any playable golf facilities (fairways, greens, tee boxes, bunkers, chipping area, putting practice area, cart paths, golf cart bridges, First Tee facilities, etc.). The driving range may be impacted by the 10-year event.

To prevent permanent damage to the golf course, the Contractor shall design the drainage detention facility, during the 100-year event, such that water does not inundate playable golf facilities (fairways, greens, tee

boxes, bunkers, driving range, chipping area, putting practice area, First Tee facilities, etc.) longer than specified in Table 12-1.

A pre-treatment facility shall be designed and constructed as close to 23rd Avenue as possible, for ease of maintenance access, upstream of the golf course outfall. The facility shall remove trash, large debris, pollutant solids, and floatables prior to entering the wet forebay/open channel within the golf course. The pre-treatment facility shall be a dry vault and shall provide adequate storage volume for the expected trash volume. The pre-treatment vault shall be offline and the diverted amount shall be maximized up to the point where the diversion shall not have an adverse impact on the hydraulic grade line upstream of the diversion into City Park and/or Ferril Lake. Access shall be provided to the vault(s) from 23rd Avenue and shall accommodate H-20 loaded trucks. Access roadways may also double as cart paths but must adhere to City Standards and Specifications. Provisions shall also be made in the design of the trash vault to prevent all trash from entering the forebay, channel, and golf course. A detailed maintenance plan shall be prepared and approved by the City for the trash vault(s). Refer to the *P2P Water Quality Evaluation Trash and Sediment Volume Sizing* memorandum, provided in the Reference Documents, for additional information.

A wet forebay shall be included to provide energy dissipation and allow large particle sediment to be removed prior to entering the linear, natural rated based BMP through the golf course. The forebay will improve the long term maintenance of the channel while also enabling integration to the golf course through a water hazard and pond. The forebay shall maintain a permanent pool with a depth of at least three feet, including 1.5 feet of sediment accumulation. The forebay area shall incorporate a minimum one acre footprint and shall serve as a golf/aesthetic amenity, as described in Section 17 Landscaping and Aesthetics. The forebay shall provide provisions for easy maintenance per UDFCD criteria and shall include a means of draining the forebay via gravity to facilitate sediment removal by maintenance personnel. Forebay design elements and details shall adhere to UDFCD criteria. A maintenance plan shall be prepared and approved by the City/UDFCD for the forebay which includes access and approach to dewatering for sediment removal. This maintenance plan may be included in the Water Quality Report.

Pre-treatment devices shall not count toward the overall water quality BMP. Pre-treatment BMPs shall be included only ensuring the optimal performance of rate based, greening infrastructure BMPs. Manufactured devices shall not be considered in lieu of green infrastructure BMPs.

The downstream side of the detention basin will require the use of a spillway. The spillway shall be of natural materials as required in Section 17 Landscaping and Aesthetics.

All existing and proposed structures shall have a finished floor elevation a minimum of 12 inches above the 100-year water surface elevation based on FLO 2-D modeling of the proposed condition. If the structure(s) location relative to flood paths/depth would necessitate flood proofing then an alternate location shall be required instead of dry flood proofing in order to minimize the flood damage risk to all structures.

12.2.4.12 DESIGN VARIANCES/DEVIATIONS

If the Contractor has made a reasonable effort to meet City Standards and Specifications and resolve regulatory plan review comments and a design variance is still required, the Contractor shall submit a design variance request per the Capital Project Technical Variance Process. Outside of the design variances listed in Table 12-2, the City is under no obligation to allow design variances submitted by the Contractor. All Approvals of design variances are at the sole discretion of the City.

Drainage/water quality design variances (in relation to City Standards and Specifications) may be required for the Project, documented in Table 12-2. The City acknowledges certain conflicts that exist within the design as provided, that, without alternations, require design variances to be requested by the Contractor. It shall be the responsibility of the Contractor to evaluate the design as provided, identify design conflicts,

and make appropriate alterations to the design, or request design exceptions in accordance with the Capital Project Technical Variance Process. The Contractor shall make all efforts in its design to eliminate the need for design variances, where feasible.

UDFCD has agreed to the use of design deviations, as shown in Table 12-2. The listed UDFCD design deviations may be incorporated into the Contractor’s design.

Table 12-2 Potential Drainage/Water Quality Design Variances/Deviations

Description	Design Standard	Design Variance/Deviation
UDFCD constructed wetland channel maximum flow velocity	2 feet per second	3 feet per second
UDFCD linear BMPs	2 year event	Water quality event (0.6 inches)
UDFCD maximum forebay depth	2.5 feet	4 feet
UDFCD forebay release rate	2% of the undetained 100 year peak discharge	1 to 5 cfs based on anticipated baseflow
UDFCD micropool	> 10 sf	No micropool
Denver trickle channel	concrete	soft bottom
Denver – 100-yr HGL	Below the ground surface	No additional adverse impact

12.3 CONSTRUCTION REQUIREMENTS

Drainage facilities shall be constructed in accordance with the all City Standards and Specifications and the requirements of this Section 12. Drainage facilities shall be designed to accommodate construction phasing of the Project.

Temporary drainage features shall be constructed in accordance with the Temporary Drainage Plans for each phase or stage of construction. The Contractor shall continuously maintain temporary drainage features until removal/abandonment. All temporary drainage features shall be removed when they are no longer required unless abandonment is Approved by the City. The proposed method and materials for abandonment of any temporary drainage feature shall be submitted to the City for Approval prior to implementation.

12.4 DELIVERABLES

12.4.1 DRAINAGE REPORTS

Drainage Reports shall be prepared by the Contractor and submitted to the City for Approval, in conjunction with plan submittals. Drainage Reports shall follow the report outline and content identified in the City *Storm Drainage Design & Technical Criteria*, and shall include references to relevant design criteria, circumstances influencing design, discussion of all drainage issues and drainage facilities, detailed design calculations, computer printouts, appropriate maps, figures, drawings, and all modeling files. Interim Drainage Reports shall include a detailed discussion on any design variances and/or variations. The Contractor shall provide a proposed condition FLO-2D analysis to verify no additional adverse impacts downstream.

The Final Drainage Report shall be sealed by a Professional Engineer, licensed in the State of Colorado.

12.4.2 WATER QUALITY REPORTS

Water Quality Reports shall be prepared by the Contractor and submitted to the City for Approval, in conjunction with plan submittals. Water Quality Reports shall follow the report outline and content identified in the City *Storm Drainage Design & Technical Criteria*, and shall include references to relevant design criteria, circumstances influencing design, discussion of all drainage issues and drainage facilities, detailed design calculations, computer printouts, appropriate maps, figures and drawings.

The Final Water Quality Report shall be sealed by a Professional Engineer, licensed in the State of Colorado.

12.4.3 AS-BUILTS

All plan views, profiles, details, and other information required to be prepared in accordance with this Section 12 shall be updated based on surveys of what was actually built in the field. As-Builts shall be clearly labeled with station, offsets, coordinates, and elevation information based on surveys for all drainage related elements.

12.5 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 12-3 Deliverables

Deliverable	Information or Approval	Schedule
Drainage Reports	Approval	Concurrent with plan submittals
Water Quality Reports	Approval	Concurrent with plan submittals
Temporary Drainage Plans	Approval	Concurrent with the Final Design Submittal
SWMP	Approval	Concurrent with the Final Design Submittal
SWMP Site Map Updates	Approval	As required

13.0 ROADWAY

The Contractor shall design and construct all roadways, and associated roadway items, including earthwork, pavements, curbs, medians, islands, driveways, fence, incidentals and other roadside items.

13.1 DESIGN REQUIREMENTS

Design of the roadways shall be in accordance with this Section 13, including the Roadway Design Criteria as provided in Appendix A.

Colorado Boulevard is a state highway and any temporary or permanent Work impacting Colorado Boulevard shall be in accordance with Colorado Department of Transportation (CDOT) standards and specifications.

13.1.1 ALIGNMENTS

All horizontal and vertical geometry for roadways shall meet all requirements of this Section 13 and City and County of Denver (City) Standards and Specifications. The horizontal and vertical alignments of the existing roadways surrounding the golf course shall remain unchanged.

13.1.2 CROSS SLOPE AND SUPERELEVATION

All roadways shall maintain a normal cross slope of two percent.

No superelevated roadways shall be permitted.

13.1.3 STOPPING SIGHT DISTANCE

Stopping sight distances and decision sight distances shall meet or exceed the requirements of the Roadway Design Criteria. Stopping sight distances shall be determined in accordance with the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets*.

13.1.4 ROADSIDE FILL AND CUT SLOPES AND CLEAR ZONES

For new design and construction, clear zones shall be designed in accordance with the recommendations of *AASHTO Roadside Design Guide*.

13.1.4.1 ROADSIDE SLOPES ADJACENT TO PAVEMENT

(Note: All slopes stated herein are in terms of horizontal: vertical)

The Point of Slope Selection (POSS) is defined as the location at which the roadside slope adjacent to the pavement ends, and the cut, or fill slope begins. Width and slope of the area between the edge of pavement (or sidewalk) and the POSS shall be 1.5 feet at a 50:1 slope from the curb or sidewalk.

13.1.4.2 ROADSIDE FILL SLOPES

Use 4:1 slopes or flatter for all roadside fill slopes. Where existing surface conditions cannot be matched within Project Limits, or as practical, use retaining walls.

All fill slopes shall be rounded at their tops and toes or ties to existing ground to provide for a pleasing appearance.

Fill slope areas shall be designed with ditches or storm sewer as necessary to prevent untreated roadside and slope drainage from flowing off the Project Limits to adjacent properties.

13.1.4.3 ROADSIDE CUT SLOPES

Use 4:1 or flatter slopes for all roadside cut slopes. Where existing surface conditions cannot be matched within Project Limits, or as practical, use retaining walls.

All cut slopes shall be rounded at their connection to existing ground to provide for a pleasing appearance.

Cut slope areas shall be designed with ditches or storm sewer as necessary to prevent untreated roadside and slope drainage from flowing off the Project Limits to adjacent properties.

13.1.5 CURB AND GUTTER

Replace existing and any Contractor caused damaged curb and gutter on adjacent streets to the golf course (on golf course side only).

13.1.6 CURB CUTS

Curb cuts shall be per City Standards and Specifications.

13.1.7 CURB RAMPS

Curb ramps shall be Americans with Disabilities Act (ADA) compliant and per City Standards and Specifications. Curb ramps shall be provided at all reconstructed intersections.

The Contractor shall reconstruct all existing ramps at the corners of the golf course (i.e. surrounding intersections) as necessary to meet ADA requirements.

13.1.8 DRIVEWAYS AND ACCESS DESIGN

The Contractor shall construct connecting roads, driveways and curb cuts to provide access to the Clubhouse, golf course, and Maintenance Facility, as necessary.

Appendix A provides design criteria for the accesses into the Clubhouse and Maintenance Facility, if such facilities are required by the Contractor's design.

13.1.9 PEDESTRIAN MOBILITY

The Contractor shall construct sidewalk along Colorado Boulevard in accordance with City Standards and Specifications. The existing sidewalk along York Street shall be protect-in-place. In addition, the Contractor shall seek alternatives to enhance mobility through and around the Project site with additional sidewalks or other pathways in accordance with the following criteria:

- The Contractor's design for the Project Site shall comply with the requirements of all Applicable Laws, including, but not limited to ADA;
- Pathway locations shall be designed to incorporate safety buffers and other elements to ensure user safety;
- As required by the terms of Section 17 Landscaping and Aesthetics, pathways shall not be permitted to impose any significant impact to trees currently on the Project Site;
- Pathway design shall not negatively impact view sheds with fences, berms or other similar obstructions;
- Pathways shall not interfere with the playability of the golf course; and

- Configuration of the pathways shall take into consideration multi-modal transportation patterns to and around the Project site (both existing and routes that are not formally existing but may be warranted by nearby land use pedestrian/bicycle trip generation), including nearby pedestrian pathways and bicycle connections as well as public transit routes and stops.

The Contractor shall present pedestrian mobility options consistent with the foregoing criteria to the City for its consideration.

All Regional Transportation District (RTD) stops shall have sidewalk access from existing sidewalk locations that are undisturbed by the Project. A north-south sidewalk connection, eight feet in width, shall be provided near the middle of the golf course.

Cart paths shall be designed and constructed per Section 18 Golf Course.

13.1.10 COORDINATION WITH ADJACENT PROJECTS

The Contractor shall be cognizant of and coordinate with adjacent projects that may impact construction Work.

13.1.11 INTERSECTIONS

All Work within the intersection shall comply with the requirements of Section 14 Signing, Pavement Marking, Signalization, and Lighting.

If widening is required, the cross slope shall be equal to or greater than two percent.

13.1.12 INTERSECTION TURNING MOVEMENTS

Curb returns shall be constructed to meet City Standards and Specifications.

13.1.13 PEDESTRIAN AND BIKE MOVEMENT DESIGN

The Contractor shall be responsible for the design of pedestrian movements, including crossing locations, ramps and signals along all relevant portions of the Project. It is the goal of the Project to apply context sensitive pedestrian design in order to optimize pedestrian crossing movements at intersections while not significantly degrading vehicular operations. Pedestrian movements design shall consider locations of curb ramps to provide optimal sight distance and shortest route as well as requirements for all crossings at signalized intersections to be protected, wherever possible.

If an intersection is required by the Contractor's design, provide or maintain (as applicable) bike movements through the intersection. If a traffic signal is required by the Contractor's design, bike detection equipment and associated pavement markings shall be provided, as required in Section 14 Permanent Signing, Pavement Marking, Traffic Signalization, and Lighting.

13.1.14 AMERICANS WITH DISABILITIES ACT

The Contractor shall produce ADA compliant design for Approval by the City as part of the design plans for the entire Project. The Contractor shall include a letter with each applicable Release for Construction (RFC) submittal demonstrating that the Project complies with all applicable ADA requirements.

Where curb ramps and sidewalks are to be removed and reconstructed, the Contractor shall provide and maintain an alternate ADA-compliant pedestrian access route at all times.

Additional ADA requirements are as follows:

- Within the limits of the Work, the Contractor shall reconstruct all pedestrian facilities including curb ramps, sidewalks, golf cart paths, and driveways to meet ADA requirements; and
- Any Work that disturbs any portion of an intersection shall require the entire intersection be reconstructed as necessary to meet ADA requirements. In locations outside of the Project only, the Contractor may evaluate existing conditions and provide documentation for Approval that the existing infrastructure is ADA compliant.

13.1.15 RTD BUS STOPS

The Contractor shall protect existing bus stops and bus stop amenities in place, unless relocation of an existing bus stop is required due to the final design.

The Contractor shall coordinate with RTD, through Cory Granrud, for all design and construction Work. RTD design standards shall be used for bus stop reconstruction. The Contractor shall deliver any existing RTD bus stop amenities (e.g. benches, shelters, etc.) removed during the course of the construction Work to RTD as directed by RTD. If agreed with RTD, the Contractor may reuse existing amenities at new locations in the Work or dispose of the existing bus stop amenities.

13.1.16 DESIGN VARIANCES

If the Contractor has made a reasonable effort to meet City Standards and Specifications and resolve regulatory plan review comments and a design variance is still required, the Contractor shall submit a design variance request per the Capital Project Technical Variance Process. The City is under no obligation to allow design variances submitted by the Contractor. All Approvals of design variances are at the sole discretion of the City.

13.2 CONSTRUCTION REQUIREMENTS

13.2.1 REMOVALS

The Contractor shall be responsible for the removal of all items on the Project designated for removal or found to conflict with Project design elements. Removal items shall become the property of the Contractor unless designated to remain property of the City.

Removal items shall include, but not be limited to: structures or portions of structures, signs designated for removal including billboard signs, asphalt mat, curbs, median cover material, fencing, and pavement markings. All removals shall be performed in accordance with City Standards and Specifications.

13.2.2 FENCING

13.2.2.1 TEMPORARY FENCING

The Contractor shall provide non-transparent temporary fencing to deter unauthorized access into and maintain control of the Project site, with the exclusion of two locations where views of the construction Work can be safely visible to the public. Fence height shall be a minimum of 72 inches. Temporary fence shall be installed and completely surround the golf course, behind the back of the existing curb, prior to commencing any construction Work.

13.2.2.2 PERMANENT FENCING

The Contractor shall provide wood privacy fencing to obscure views of the Maintenance Facility and dumpsters located near the Clubhouse. Except during construction, no permanent perimeter fencing is required.

Refer to Section 19 Site Development for additional requirements.

13.2.3 GATES

The Contractor shall provide gates in fences and at the entrances of the Maintenance Facility and pre-treatment facility accesses. Locations, width, and type shall be as specified by the City. All gates shall meet City Standards and Specifications for location from the roadway and/or back of sidewalk.

Refer to Section 19 Site Development for additional requirements.

13.2.4 PRE-TREATMENT FACILITY ACCESS

The Contractor shall provide access off of 23rd Avenue for the pre-treatment facility, as described in Section 12 Drainage and Water Quality.

13.3 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 13-3 Deliverables

Deliverable	Information or Approval	Schedule
Design variances	Approval	Prior to issuance of RFC documents

13.4 APPENDICES

Appendix A – Roadway Design Criteria

Appendix A – Roadway Design Criteria

Design Data	Clubhouse and Maintenance Facility Access	Remarks
Roadway Classification	Park Road	
Design Speed (MPH)	25	
Horizontal Geometry		
Radius (ft) (min)	198	Use Low-Speed Urban criteria per AASHTO
e _{max} (%)	NC	
Normal Cross Slope	2%	
Roadway Width (ft) (min)	25	Typical flowline to flowline width
Shoulder Width (Inside/Outside) (ft)	N/A	
Bike lane (ft)	N/A	
Stopping Sight Distance (ft)	155	At level grade
Vertical Geometry		
Minimum Profile Grade (%)	0.7	
Maximum Profile Grade (%)	6.0	
Rate of Vertical (K) Crest (min)	12	
Rate of Vertical Curve (K) Sag (min)	26	

14.0 PERMANENT SIGNING, PAVEMENT MARKING, TRAFFIC SIGNALIZATION, AND LIGHTING

The Contractor shall be responsible for the new permanent signing, pavement marking, traffic signalization, and lighting elements for the Project and comply with all City Standards and Specifications and the requirements of this Section 14.

All Work performed shall conform to the guidelines set forth in the City and County of Denver (City) *Traffic Signal Standards and Sign & Marking Standards*, *Denver Parks + Recreation Planning, Design + Construction Standards*, and the *Manual of Uniform Traffic Control Devices (MUTCD)*, as modified by the Colorado Supplement, unless specifically stated otherwise. The requirements of the MUTCD shall include both the standard requirements and the guidance recommendations of the manual. City Standards and Specifications shall govern in the event of conflict with the MUTCD.

14.1 DESIGN REQUIREMENTS

14.1.1 SIGNING DESIGN

The Contractor shall prepare Signing Plans for the Project. These plans shall include all necessary signs, including additions, removals, and modifications to existing signs and appurtenances.

Any non-MUTCD signs along roadways shall be submitted to the City for Approval.

The Signing Plans shall address, as determined by the City, modifications to permanent signing outside the Project that is rendered inaccurate, ineffective, confusing or unnecessary by the Project. Signing Plans shall provide layouts showing the locations of ground-mounted signs, special sign details, and structural and foundation requirements.

Park identification signs shall be removed and replaced with new signs, at the direction of the City. Park identification signs shall be in accordance with *Denver Parks + Recreation Planning, Design + Construction Standards* as manufactured by Artcraft signs.

Golf course signing shall be in accordance with Section 18 Golf Course.

14.1.2 SIGNING MATERIALS

The Contractor shall use ground sign materials in accordance with City Standards and Specifications.

For roadside ground signs, wood posts for mounting ground signs shall not be used. All roadside ground signs shall be breakaway or include breakaway devices as per City Standards and Specifications.

All roadway signs shall have Prismatic sheeting.

The Contractor may reuse any of the sign posts, structures, or ground signs panels, and their components that comply with the requirements of this Section 14. Reuse of any sign posts, structures, or ground signs panels, and their components shall be clearly delineated in the Signing Plans and shall be Approved at the sole discretion of the City.

14.1.3 PAVEMENT MARKING DESIGN

The Contractor shall prepare Pavement Marking Plans for roads, intersections, parking lots and accesses for the Project. Plans shall include all striping required as well as any modifications to permanent pavement markings required for transitions to existing pavement markings.

The Contractor shall incorporate safe and effective pedestrian and bike pavement markings into its design.

14.1.4 PAVEMENT MARKING MATERIALS

The Contractor shall utilize the following pavement marking materials, which conform to the requirements specified in the City Standards and Specifications and the MUTCD.

Table 14-1 Pavement Marking Materials

Location	Pavement Marking Type
Edge lines and Channelization lines	Epoxy Pavement Marking
Skip lines on PCCP	Preformed Plastic Pavement Marking Type II (contrast) (380 AW) (placed in a 150+/- mil groove)
Skip lines on HMA	Preformed Plastic Pavement Marking Type I (380 AW) (rolled directly into the final lift or placed in a 150 +/- mil groove)
Words/symbols/Cross Walks/Stop lines	Preformed Thermoplastic Pavement Marking – 90 mil thickness

14.1.5 TRAFFIC SIGNAL DESIGN

If a traffic signal is required by the Contractor’s design, the following requirements apply.

The Contractor shall prepare Traffic Signal Plans for the Project, including proposed intersection plan details (such as traffic signal pole locations, mast arm and signal head locations, descriptions and directions, pedestrian countdown signal head and button locations, approach striping and marking locations and types, cabinet and power source locations, meter location, conduit and pull boxes, interconnect information, detection systems and locations, signal phasing, quantities), and all other plan and component details for complete traffic signal installation.

Video detection shall be used for all permanent traffic signals.

The traffic signal shall include bike detection equipment. Bike detection equipment shall be a “Flir TrafiSense” or Approved equivalent.

Traffic signals shall be light emitting diode (LED) and metered, in accordance with City Standards and Specifications.

The new traffic signal shall be interconnected to the existing City facilities with two inch conduit and 12 strand single mode fiber optic cable between the signal cabinets.

The Contractor shall determine the number, type, and size of all laneage for the intersection through a Traffic Study, to be Approved by the City. The existing center median may be altered, as required, to obtain the necessary storage lengths.

If the existing Clubhouse remains and the access points are modified, a Traffic Study at the intersection at York Street and 26th Avenue shall be required. Reconstruction of the existing traffic signal may be necessary.

14.1.6 TRAFFIC SIGNAL MATERIALS

If a traffic signal is required by the Contractor's design, the traffic signal components shall be new. All existing components/materials shall become property of the Contractor to be disposed of off-site.

14.1.7 PERMANENT LIGHTING DESIGN

The Contractor shall prepare lighting designs and plans for modified intersections, Clubhouse and Maintenance Facility parking lots and accesses, as necessary. The Contractor shall include power design and plans for energizing all lighting, signal, powered signage, irrigation and miscellaneous roadway support systems, where required. The Contractor shall coordinate with Xcel to determine electric power requirements for the Project and to develop the Project lighting design and construction requirements.

Lighting along York Street (on golf course side) shall be replaced to meet Xcel standards.

If reconstructed by the Contractor's design, the Clubhouse, Maintenance Facility, associated parking lots, and accesses shall provide LED lighting, in accordance with the Technical Specifications. The Contractor shall perform all design required for LED lighting. All permanent lighting for the Clubhouse, Maintenance Facility, associated parking lots, and accesses shall be spaced and selected per *Denver Parks + Recreation Planning, Design + Construction Standards*. Alternate decorative lighting shall not be installed unless Approved by the City.

All permanent lighting shall be designed and constructed in compliance with City Standards and Specifications. Lighting designs and plans shall be subject to Approval of the City. High-mast lighting shall not be permitted.

The Contractor shall submit to the City, for Approval, photometric lighting calculations showing the design meets the performance criteria for roadway design to include average, maximum, minimum foot-candles, and average to minimum, and maximum to minimum luminance on the horizontal roadway plane. Foot-candle illumination contour drawings with 2.0, 1.5, 1.0, and 0.5 iso-contours shall be submitted for intersections, bridges and typical roadway sections. Lighting solely for decorative purposes need not be documented with lighting calculations or contour submittals. In addition, the Contractor shall submit voltage drop calculations for each circuit.

The plans shall address both permanent Work and shall include existing topography, right-of-way (ROW), Utilities and drainage facilities, structures, and all other existing and proposed facilities. The drawings shall include location and orientation of standards and fixtures, wiring, conduits, pedestals, power sources, and all other lighting components required to construct the lighting on the Project.

Parking lot lighting shall be reviewed by Denver Development Services.

Refer to Section 19 Site Development for additional lighting requirements.

14.1.8 PERMANENT LIGHTING MATERIALS

Lighting materials and components shall conform to the requirements specified in the City Standards and Specifications and the Technical Specifications. Roadway lighting materials and components shall be approved by Xcel.

Proposed roadway fixtures and poles shall be chosen from the standard Xcel list and submitted to the City for Approval.

Proposed Clubhouse, Maintenance Facility, associated parking lots, and access fixtures and poles shall be submitted to the City for Approval.

All lighting materials and components shall be new.

14.2 CONSTRUCTION REQUIREMENTS

14.2.1 PERMANENT SIGNING

The Contractor shall remove and dispose of all existing sign structures, ground-mounted signs and delineators within the Project Limits. All salvageable materials shall be returned to the City or reused as discussed in this Section 14. The Contractor shall be responsible for the proper disposal and/or recycling of all non-salvageable materials.

14.2.2 PERMANENT PAVEMENT MARKING

New Portland Cement Concrete Pavement (PCCP) shall be sandblasted prior to placement of any primer or pavement-marking material.

14.2.3 PERMANENT TRAFFIC SIGNALIZATION

If a signal is required by the Contractor's design, the Contractor shall submit the proposed signal equipment list, for Approval.

Traffic signal pole locations shall be staked and Approved by the City 10 Working Days prior to commencement of the relevant construction Work.

The Contractor shall operate and maintain all traffic signals affected by the Project until Final Acceptance. The Contractor shall notify City no later than 10 Working Days prior to the completion of the construction Work of the traffic signal. The City will provide to the Contractor signal timings for the permanent traffic signals prior to the initial startup.

The Contractor shall be responsible for and pay for all power and metering required for new traffic signalization until signal acceptance.

14.2.4 PERMANENT LIGHTING

Existing lighting that is removed, with this Project, shall become the property of Xcel or the City, as applicable. All lighting of a common style and wattage shall be consistent in appearance and electrical configuration for all instances, including any reused hardware.

Roadway light fixture selections shall be subordinated the City – Xcel Franchise Agreement.

All fixtures and lighting standards shall have equipment grounding conductors and bonding systems components which are distinct from neutral circuit wiring. Ground rods and bonding jumpers shall be installed at every light standard above six feet.

The Contractor shall be responsible for coordination of the removal, relocation, and/or construction of roadway lighting, in accordance with the City – Xcel Franchise Agreement.

The Contractor shall be responsible for construction of lighting required for the Clubhouse, Maintenance Facility, associated parking lots, and accesses.

The Contractor shall be responsible for and pay for all power required for the Clubhouse, Maintenance Facility, associated parking lots, and access lighting (both permanent and temporary) until Final Acceptance.

14.3 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 14-2 Deliverables

Deliverable	Information or Approval	Submittals
Lighting design and photometric calculations	Approval	Concurrent with Final Design Submittal
Staked location of traffic signalization	Approval	10 Working Days prior to traffic signal construction Work – if required
Traffic signal equipment lists	Approval	Prior to purchase
Traffic Study	Approval	Concurrent with Final Design Submittal

15.0 STRUCTURES

The Contractor shall design and construct all structures and aesthetic systems in accordance with the requirements of this Section 15, including performance requirements, standards and references, Warranties, design and construction criteria, maintenance during construction and required submittals. The Clubhouse, Maintenance Facility, shelters, restrooms, and outbuildings are not considered a structure for the purposes of this Section 15. All requirements for the above mentioned facilities can be found in Section 19 Site Development. The Project shall include the structures as follows:

- Bridges
- Retaining walls
- Drainage structures

If any additional structures are required during the final design process, the Contractor shall obtain additional structure numbers from City and County of Denver (City).

15.1 PERFORMANCE REQUIREMENTS

Design and construct all new structural components necessary to provide a complete and functional system that meets the following performance requirements:

- Provide functionality, durability, ease of maintenance, safety, and aesthetics.
- Design all permanent structures, including pedestrian bridges, retaining walls, hydraulic structures, and any other permanent structures for a 75-year service life per American Association of State Highway and Transportation Officials (AASHTO) Specifications.

15.2 STRUCTURE AESTHETICS

The Contractor shall comply with Section 17 Landscaping and Aesthetics in its design and shall comply with the specified materials and finish treatments, concepts, and details for all components of all structures.

15.3 MATERIALS

15.3.1 CONCRETE

Concrete mix design and procedures shall be submitted to the City for Approval no later than 15 Working Days prior to the anticipated concrete placement date.

15.3.1.1 STRUCTURAL COMPONENTS

For concrete in non-drainage structural components, meet the following minimum requirements of the Colorado Department of Transportation (CDOT) Standard Specification Section 601:

- Cast-in-Place Concrete: Class B or Class D
- Precast and Prestressed Concrete: Class PS
- Bridge Decks and Approach Slabs: Class D or Class H
- Bridge Piers: Class D
- Drilled Shafts: Class BZ
- All other concrete components: Class D

For concrete in drainage structural components, the Contractor shall follow City Standards and Specifications.

15.3.1.2 CONCRETE DECKS

Concrete for bridge decks shall exhibit low chloride-ion penetrability (2000 coulombs or less) when tested in accordance with the American Society for Testing and Materials (ASTM) C1202 *Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration*. Testing will be performed at 56 Calendar Days. The deck shall not exhibit a crack before 15 Calendar Days in accordance with the AASHTO T334 *Estimating the Cracking Tendency of Concrete*. Cast-in-place concrete decks shall be eight inch minimum for girder type bridges, five inch minimum for side-by-side box girder bridges, and four inch minimum above stay-in-place forms for prefabricated pedestrian bridges.

15.3.1.3 SEALING

Seal structures in conformance with CDOT *Standard Specifications for Road and Bridge Construction*.

15.3.1.4 STRENGTH

The following criteria shall be met for concrete strength:

- Minimum Specified Concrete Strengths: See CDOT Standard Specification Section 601.
- Maximum Specified Concrete Strengths for Design:
 - Cast-in-Place: $f'c = 6.0$ ksi
 - Pre-stressed: $f'c = 10.0$ ksi

15.3.2 REINFORCING STEEL

Reinforcing steel for non-drainage structures shall conform to CDOT Standard Specification Section 601.

For minimum concrete cover, comply with AASHTO *LRFD Bridge Design Specifications*, excluding cover requirements as provided in the CDOT *Bridge Design Manual* Section 8.1, Table 1 which shall supersede the AASHTO LRFD specifications.

Reinforcing steel for drainage structures shall conform to City Standards and Specifications.

15.3.3 STRUCTURAL STEEL

Structural steel be weathering steel and shall conform to AASHTO M 270, Grades 36W, 50W, or 70W.

Additional structural steel grades to be used for any pedestrian structures and architectural structures shall include ASTM A106 or A53 for pipe shapes or ASTM A500 (Grade B) for steel structural tubing shapes.

The maximum change in thickness or gross cross-sectional area of any web or flange plate at any splice is a factor of two.

Guidelines stated in CDOT *Bridge Detail Manual* shall be followed.

The Contractor shall follow the Shop Detail Drawing Review/Approval Guidelines developed by the AASHTO/NSBA *Steel Bridge Collaboration G1.1-1999* for preparation of steel shop drawings.

15.4 BRIDGE DESIGN

Design bridges in accordance with AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges*. Retaining walls and hydraulic structures shall be designed in accordance with AASHTO *LRFD Bridge Design Specifications*.

The Contractor shall provide a Maintenance Plan of post-construction yearly bridge maintenance.

15.4.1 LOADS AND FORCES

Determine all structure loads and forces in accordance with the AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges for Pedestrian Bridges* and AASHTO *LRFD Bridge Design Specifications* or the AASHTO design specifications applicable to the structure type. Loading and forces for bridge design shall be as follows:

- Live Loads: Pedestrian live load and H-10 truck for pedestrian bridges.
- Dead Loads: As required per structure.
- Uplift: the City requires bridges that avoid uplift; therefore, proportion the bridge spans to avoid uplift due to dead and live loads.
- Thermal Forces: Design for moderate climate temperatures in accordance with AASHTO *LRFD Bridge Design Specification*.
- Deflection and vibration: Design in accordance with AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges* for deflection limit and natural frequency for vibration.

15.4.2 STRUCTURE NUMBERS

Obtain from the City, a structure number for each structure that will be included on the capital project management bridge inventory. Label each structure as Approved by the City.

15.4.3 DESIGN CALCULATIONS

15.4.3.1 ORGANIZATION

The Contractor shall submit design calculations as part of the Final Design Submittal. At a minimum, design calculations shall include the following information:

- Title page with structure number, bridge name, “Design Calculations” or “Independent Design Calculations”, designer’s name and professional engineer stamp, as appropriate
- Table of contents
- List of any deviations from Project design criteria
- The appropriate standards, specifications, and code references
- References to computer programs, with appropriate output section indicated
- Computer documentation, including program name, vendor, version and release date
- Bridge Load Rating Report and calculations
- All submittals shall include electronic files

15.4.3.2 PAPER AND NUMBERING

For handwritten and computer-generated calculations and sketches, use 8.5" x 11" or 11" x 17" size paper. Number all pages with a numbering scheme that covers the entire set of calculations for each volume.

15.4.4 BRIDGE GEOMETRY

Bridge geometry shall comply with the following requirements:

- Limit the steepness of all cut-and-fill slopes adjacent to bridges to 2:1 (horizontal: vertical). Slopes 3:1 and steeper shall require concrete slope protection. For new bridges that have a vertical retaining wall in front of the abutments, provide a two foot wide berm on a 3:1 slope maximum and provide a safety feature in the form of a cable or a fence to facilitate bridge inspection. There shall be a two foot minimum dimension from top of vertical retaining wall to bottom of girders.
- All proposed bridges shall remain functional (provide vertical clearance) in the 10-year event. Bridges may be overtopped during larger storm events.
- Provide a minimum 12 foot bridge clear width.
- Where practical, the maximum bridge skew should be less than 30 degrees. Bridges skewed more than 45 degrees require either a finite element or grillage method of analysis.

15.4.5 BRIDGE TYPE

Bridge type selection and components shall comply with the following requirements:

- Wherever practical and Project goals are met, use bridge types and components that utilize prefabricated bridge elements that facilitate accelerated bridge construction practices and innovative bridge techniques.
- The Contractor shall use bridge types traditionally used by the City and Parks & Recreation Golf. The following are also acceptable bridge types:
 - Precast concrete slabs;
 - Prestressed concrete I-girders, non-spliced or spliced, with a cast-in-place concrete deck.
 - Prestressed concrete tub girders, non-spliced or spliced, with a cast-in-place concrete deck.
 - Prestressed concrete box girders, non-spliced or spliced, with cast-in-place concrete deck.
 - Prefabricated structural steel I-girders or trusses with a cast-in-place concrete deck.
 - The City will not permit experimental bridge types, timber bridges, masonry bridges, tied arch bridges and structural-plate arches.
- Bridges not traditionally used by the City and Parks & Recreation Golf may be used but only when it is shown to benefit the City. For the City to consider non-traditional bridge types, information shall be provided in the Proposal demonstrating the following for concept review:
 - Bridges shall incorporate as few joints and bearings as possible, be continuous over the supports, not use intermediate hinges, and use semi-integral or integral abutments wherever possible. When expansion joints are required, locate them at the ends of the approach slabs.

- The bridge type or element has been successfully used by other transportation authorities, as supported by specific project contact information.
- The bridge type and components will perform well under the environmental conditions of the Project.
- The design allows the bridge deck to be completely removed and replaced with minimal impact on cross-traffic.

15.4.6 BRIDGE COMPONENTS

15.4.6.1 PEDESTRIAN RAILING

The Contractor shall provide pedestrian railing. Chain link fencing is not permitted.

15.4.6.2 APPROACH SLABS

At the end of each bridge, provide an approach slab that is the same width as the bridge deck. Backfill/drainage under the approach slabs shall be as shown in the CDOT *Bridge Structural Worksheets*. Approach slabs shall be separate from and fit between cantilevered wingwalls or retaining wall wingwalls so the approach slab can freely rotate about the abutment.

Differential settlement across approach slabs shall be designed such that it will not produce a grade break that is noticeable to the user and shall not be more than one inch within one year of opening to traffic. The Contractor shall implement ground improvement techniques to the approach embankment subgrade if necessary to meet this requirement.

Drainage at the end of the approach slabs shall be in accordance with Section 12 Drainage and Water Quality.

15.4.6.3 DECKS

Bridge decks shall comply with the following requirements:

- Construct a cast-in-place deck slabs;
- Deck slab shall exhibit low chloride-ion penetrability;
- Stay-in-place metal deck forms shall be permitted;

15.4.6.4 EXPANSION JOINTS

Where possible, avoid or minimize expansion joints. Only use CDOT approved expansion devices. Design modular joints for high-cycle fatigue loading. Modular joints shall be tested for fatigue loading according to National Cooperative Highway Research Program (NCHRP) *Report 402, Fatigue Design of Modular Bridge Expansion Joints (1997)* Appendix A and Appendix B.

15.4.6.5 OVERLAYS

No overlay wearing surface is required on top of the deck.

15.4.6.6 BEARINGS

The Contractor shall design and locate bearings to allow maintenance accessibility and future replacement. Only one bearing type shall be used across the width of the bridge at any given substructure location. Elastomeric pads and steel reinforced elastomeric bearings with or without sliding surfaces are the preferred type. Sole plates, when used, shall have a minimum 0.75 inch thickness. At expansion bearings, do not permit the edge of the sole plate to slide past the edge of the elastomeric bearing. Steel-on-steel bearings

shall not be permitted. The Contractor shall reinforce pedestals taller than three inches. Bearing device types shall be those traditionally used by CDOT. Suppliers of bearings devices shall only be those on CDOT's Preapproved Product List.

15.4.6.7 ABUTMENTS

The Contractor shall provide integral or semi-integral abutments for bridge structures whenever possible. Precast concrete abutments are permitted. Bridge monuments shall be supported on separate foundations. Use wingwalls at all abutments.

15.4.6.8 PIERS

The Contractor shall make the type of pier cap consistent with the bridge system and the aesthetic requirements of Section 17 Landscaping and Aesthetics. Drop caps or integral caps are acceptable, but the City prefers drop caps.

15.4.6.9 SLOPE PROTECTION

The Contractor shall provide slope protection for slopes 3:1 and steeper under bridges, on all slopes between bridge abutment and top of retaining wall, on slopes 3:1 and steeper from shoulder to top of retaining wall, and on slopes 3:1 and steeper between tiered walls.

15.4.6.10 FOUNDATIONS

Use Approved deep foundations per the Section 10 Geotech, Roadway Pavement, and Structure Foundations. Submit Crosshole Sonic Logging (CSL) non-destructive methods for testing drilled caissons to the City for Approval.

15.4.6.11 DRAINAGE

Permanent erosion protection shall be designed and installed at all bridge locations. Backfill drainage is required at bridge abutments and retaining walls. Gutter flow at both ends of bridges shall be intercepted. Stormwater flowing toward the bridge shall be intercepted prior to the expansion device of the approach slab. Stormwater flowing away from the bridge shall be intercepted away from the bridge shall be intercepted prior to leaving the approach slab. All bridge deck-drain inlets shall be grated. Bridge deck drains shall be located so that downspouts can be taken immediately down pier columns. Bridge drain systems with "horizontal" runs shall not be permitted. The bridge deck drainage system shall be compatible with the structural reinforcement, components, and aesthetics of the bridge. Outfalls shall be positioned to avoid corrosion of structural members.

15.4.6.12 UTILITIES

The Contractor shall identify, maintain and coordinate all Utilities on or near structures. No hanging of Utilities shall be permitted under the bridge deck overhang or anywhere visible to the exterior of the superstructure. The Contractor shall submit, to the City for Approval, all Utilities supported by structures, including Utility location and methods of support.

15.4.6.13 SUPERSTRUCTURES

The Contractor shall design the superstructures for the greater requirements of the AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges*, AASHTO *LRFD Bridge Design Specifications* or the CDOT *Bridge Design Manual*.

15.4.6.14 STRUCTURAL CONCRETE COATING

For bridges, structural concrete coating (or paint for steel structures) shall be applied to surfaces in accordance with Section 17 Landscaping and Aesthetics for each structure. All other visible, exposed and

accessible concrete surfaces shall have a surface treatment of structural concrete coating. This includes all bridge rails, girders, retaining walls, coping, sound walls and slope paving.

15.5 RETAINING WALLS

The Contractor shall have sole responsibility for the type, material, performance and safety of temporary retaining structures.

All existing site retaining walls shall be removed in their entirety and shall be replaced in accordance with the Contractor's design.

15.5.1 RETAINING WALL GEOMETRY

The retaining wall layout shall address slope maintenance above and below the wall and provide returns into the retained fill or cut at retaining wall ends where possible.

Final tolerances shall be 1 to 240 for level and plumb. Negative batter (wall leaning outward) is not permitted.

Design and construction shall consider surface and subsurface drainage. A system shall be provided to intercept or prevent surface water from entering behind walls. Lengths of wall without relief joints shall be limited to lengths which control the differential settlement. A fence or pedestrian railing shall be provided at the top of walls over 2.5 feet high where access is open to the public. The fence and railing shall meet all the City Standards and Specifications for openings and appearance.

Provide a minimum clear distance of three feet between precast wall panels and bridge abutments. For retaining walls in front of bridge abutments, place concrete slope protection between the wall and abutment.

15.5.2 RETAINING WALL TYPE

All retaining wall types shall be selected from retaining wall types listed in CDOT *Bridge Design Manual*. The retaining walls foundations shall conform to the Service Limit State requirements, including the correlation of service bearing resistance to two inch total settlement, and provide a retaining wall foundation design that provides a service applied bearing pressure that does not exceed the service bearing resistance; or provide a foundation solution such as deep foundations for retaining wall heights that exceed the threshold for service bearing resistance.

Metal walls, including bin walls and sheet-pile walls, recycled material walls and timber walls shall not be permitted for permanent exposed retaining walls. Wall types, selected by the Contractor, shall have been used successfully in similar geotechnical locations and environmental conditions.

15.5.3 RETAINING WALL DESIGN REQUIREMENTS

All permanent retaining walls and their associated structural support elements constructed for the Project shall be designed to resist corrosion or deterioration for a minimum service life of 75 years and in accordance with the requirements of AASHTO *LRFD Bridge Design Specifications*. Global stability, overturning, and sliding calculations shall be performed on all retaining wall systems. All retaining wall installations shall include a positive drainage system of the backfill. The design of MSE and modular walls near or in bodies of water shall account for soft saturated soils and scour and shall prevent fines washout between facing elements. All walls near irrigation lines for landscaping shall account for any additional hydrostatic load due to a waterline break. All MSE walls with drainage lines placed within the strap zone shall account for any additional hydrostatic load due to pipe leakage. The Contractor may consider the use

of free draining backfill material and/or leak-detection devices to reduce hydrostatic loads on retaining walls.

Wall design height shall be measured vertically from the bottom of wall (top of the leveling pad) to the top of the concrete rail anchoring slab for walls with vehicle barrier railing, or to the top of the concrete coping for walls without vehicle barrier railing. For walls that are in front of a bridge abutment that is founded on a deep foundation, the design height shall be measured vertically from the top of the leveling pad to the top of the roadway carried by the bridge and the wall. Bridge approach slabs shall not be considered as reducing the overburden load depth, when considering the retaining height in the design of the MSE wall.

Temporary retaining walls (constructed of materials not Approved for permanent walls) may be abandoned and left in place. Temporary retaining walls left in place must be completely covered by soil or construction material, so they are not visible. Structural components of temporary retaining walls may be reused as part of permanent retaining wall (two-phase walls) systems, provided all of the structural-support elements and materials of the permanent retaining walls meet the requirements of this Section 15.

Retaining walls are permitted around the edge of the golf course (near the adjacent roadways) and as required for drainage structures and bridges. Other than the above mentioned locations, retaining walls are not permitted (i.e. the golf course).

15.5.3.1 STRUCTURE FOUNDATION ANALYSIS AND DESIGN

The Contractor shall perform foundation design as required for the design of retaining walls foundations. Design recommendations and substantiating analysis shall be documented in Foundation Design Reports, submitted to the City for Approval, as a part of the Initial Design Submittal for Structures as described in this Section 15.

Retaining walls foundation design shall conform to the procedures in the AASHTO *LRFD Bridge Design Specifications*. The AASHTO *LRFD Bridge Design Specifications* address retaining wall foundations in the context of external stability provisions.

15.5.4 RETAINING WALL FOUNDATION CONSTRUCTION REQUIREMENTS

15.5.4.1 FOUNDATION FOR WALLS REQUIRING FILL UNDER RETAINING WALL

Walls requiring fill under the planned bottom of wall elevation, properly placed Structure Backfill (Class 1) shall be placed from suitable subgrade, determined by a registered geotechnical engineer, up to the bottom of wall elevation, for a width equal to two times the bottom reinforcement length, and compacted to a density of at least 95 percent of maximum density according to AASHTO T 180. Alternatively, the Contractor may lower the bottom of wall elevation, as Approved by the City, and construct a higher wall, maintaining the top of wall finished elevation un-altered, and the higher wall designed with longer reinforcement length and revised reinforcement schedule.

15.5.4.2 FOUNDATION UNDER RETAINING WALL

After excavation to the bottom of wall elevation, unsuitable material, if any, shall be removed and replaced with suitable material. The Contractor shall report to the City in writing density test results for any unsatisfactory bearing material that does not meet the minimum 90 percent compaction for walls less than 16 feet high and 95 percent of T-180 for walls higher than 16 feet. If the excavation for the placement of the leveling pad exposes an unsatisfactory bearing material, the City may require removal and replacement of that material. The removed material shall be replaced with Structure Backfill (Class 1) compacted in conformance with CDOT Standard Specification subsection 206.03. The Contractor's geotechnical engineer shall determine the width, length, and depth of removal, with concurrence by the City.

The foundation soil shall be prepared by compacting the foundation soil for a width equal to the reinforcement length plus 1.5 feet on each side for MSE walls, and the footing width plus 1.5 feet on each side for reinforced concrete footing walls. After grading the bottom of wall elevation, the foundation soil shall be compacted with an appropriate vibratory roller weighing a minimum of eight tons for at least five passes, to achieve at least 95 percent density according to AASHTO T180.

15.6 DRAINAGE STRUCTURES

All drainage structures shall be designed, detailed, and constructed according to the applicable City Standards and Specifications.

Drainage structures of size and configuration not covered by the drainage related City Standards and Specifications, shall have details similar to the City drainage standards, and shall be designed in accordance with AASHTO *LRFD Bridge Design Specifications*.

15.7 SUBMITTALS AND REVIEWS

15.7.1 STRUCTURAL CONCEPT REPORT

The Contractor shall submit a Structural Concept Report concurrent with the Initial Design Submittal, for Approval by the City, for any structure type that is proposed for the Project. At a minimum, submittal contents shall include elevation views and cross sections depicting structure components (for bridges only, other structures shall include such information as the Contractor determines to be sufficient for proper review). The Structural Concept Report shall be a maximum two-page description of type, materials, strategy for lateral loads, and design-life considerations for each proposed structure.

The Contractor shall submit a Structural Concept Report prior to proceeding with the Initial Design Submittal, for Approval by the City, for any structure type that is proposed for the Project and has not historically used by the City and Parks & Recreation Golf.

Descriptions of retaining walls shall include the following information:

- A minimum one-page description of each wall type utilized on the Project.
- A description of methods of accommodating settlement and differential settlement.
- A description of the type of foundation for each type of wall.
- The location of walls and identification of wall type.

15.7.2 STRUCTURES NOT HISTORICALLY USED BY THE CITY AND PARKS & RECREATION GOLF

The Contractor shall submit an additional one-page minimum description of each structure not historically used by the City and Parks & Recreation Golf. At a minimum, descriptions shall include the following:

- An additional one-page minimum description of each structure type (or foundation type) not historically used by the City and Parks & Recreation Golf.
- A list of the transportation authorities that have used the proposed bridge type (include actual projects and references).
- Historic performance.
- Historic aging.

- Maintenance requirements

15.7.3 STRUCTURE PLANS

Provide Structure Plans that comply with the following:

- Structure Plans shall include all design details necessary to construct the structure. This includes, but is not limited to, conduit, inserts and attachments, the location of lighting fixtures attached to the structure, and approach slab drains. For structures where design details are developed and provided by a supplier (such as mechanically stabilized earth [MSE] retaining walls) include the supplier's design drawings as part of the final design submittal.
- Use the standard CDOT Structures Division Border and title block on all structures plan sheets. Supplier detailed drawings that are included in the final plan set may use the supplier's border and title block.

Structure Plans shall meet the requirements in the CDOT *Bridge Detail Manual*.

At a minimum, submittals shall include the following:

- Plans and special provisions incorporating aesthetic treatments.
- Design review and documentation in accordance with Section 3 Quality Management.
- Foundations recommendation memos.

15.7.3.1 INITIAL DESIGN SUBMITTAL

The Contractor shall submit Initial Design Plans to the City that include the following:

- Plans, elevations, and appropriate typical sections for each bridge.
- Plan views of the Project that identifies each bridge location and type.
- Plan views of the Project that identifies each wall location and type.
- Description of conceptual solutions for complex structural problems identified by the Contractor.

Description of creative or innovative ways the design, construction, and/or choice of structural types will benefit and/or enhance Project schedule and quality, while minimizing traffic impacts and cost of the Project.

15.7.3.2 PRELIMINARY DESIGN SUBMITTAL

The Contractor shall submit Preliminary Design Plans to the City that include the following:

- All components of the Initial Design Plans, incorporating all comments from the City.
- Major design elements shall be provided.

15.7.3.3 FINAL DESIGN SUBMITTAL

At a minimum, Final Design Submittals shall include the following:

- Sealed plans and special provisions with aesthetic treatments (hard copy and electronic PDF files).
- Sealed final design calculations (hard copy and electronic PDF files).

- Sealed independent design calculations (hard copy and electronic PDF files).
- Sealed bridge load rating package per CDOT *Bridge Rating Manual* (hard copy, electronic PDF files, and AASHTO BrR file).
- Electronic files of Plans (AutoCAD) and Specifications (Microsoft Word and electronic PDF files).

15.7.3.4 RELEASE FOR CONSTRUCTION SUBMITTALS

At a minimum, Release for Construction (RFC) Submittals shall include the following:

- Sealed plans and special provisions with aesthetic treatments (hard copy and electronic PDF files).
- Shop drawings approved by Contractor's Engineer (hard copy and electronic PDF files).
- Falsework and shoring drawings (sealed by Contractor's Engineer) (hard copy and electronic PDF files).

15.7.3.5 END-OF-PROJECT SUBMITTALS

At a minimum, End-of-Project submittals shall include the following:

- As-Built Plans (hard copy, electronic PDF and electronic AutoCAD files).
- All field changes and field change calculations organized by structure (hard copy and electronic PDF files).
- Final shop drawings approved by Contractor's Engineer (hard copy and electronic PDF files).

15.8 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 15-1 Deliverables

Deliverable	Information or Approval	Schedule
Concrete mix design and procedures	Approval	15 Working Days prior to the anticipated concrete placement date
Proposed non-historic bridge, foundation, or wall type not used by the City	Approval	Prior to submittal of the Structural Concept Plans/Report
Structural Concept Report	Approval	Concurrent with the Initial Design Submittal
Foundation Design Report	Approval	Concurrent with the Initial Design Submittal
Maintenance Plan	Information	Concurrent with the Final Design Submittal
Bridge load rating (including AASHTO BrR import files)	Approval	Concurrent with the Final Design Submittal
Design calculations and design-check calculations	Approval	Concurrent with the Final Design Submittal
Additional non-destructive methods for testing drilled caissons	Approval	14 Calendar Days prior to construction of drilled caissons

16.0 MAINTENANCE OF TRAFFIC

The Contractor shall conduct all Work necessary to meet the requirements associated with maintenance of traffic (MOT), including provisions for the safe and efficient movement of people, goods and services through and around the Project, while minimizing impacts and travel delays to local residents, businesses, and commuters.

16.1 TRAFFIC OPERATIONS

16.1.1 TRAFFIC MANAGEMENT PLAN

The Contractor shall prepare a Traffic Management Plan (TMP) which defines the strategic plan for traffic management for the Project, particularly the roadways adjacent to the golf course and any associated impacts to surrounding properties and property owners. The TMP shall address major aspects of the construction Work based on groupings of similar construction Work. These aspects shall include, but are not limited to: lane closures, construction phasing and staging, haul routes, construction site access, temporary pavement location and description, numbers and type of traffic shifts, traffic control personnel, device quality and maintenance requirements, contact lists, communication protocols, public information, pedestrian/bicycle access, and emergency access. The TMP shall be submitted at least 30 Calendar Days prior to commencement of construction Work for Approval by the City and County of Denver (City). The Contractor shall obtain any permits for lane closures through City or Colorado Department of Transportation (CDOT) right-of-way (ROW), as necessary. 23rd Avenue shall be considered City ROW, for the purposes of this Project. The Contractor shall have the same permit, regulation, standard, and specification obligations, for 23rd Avenue, as City ROW.

The TMP shall include a specific grouping of construction Work for the Project, as defined by the Contractor, with similar construction Work elements for the purpose of planning and executing the Work. Construction Work types shall have similar MOT phasing, traffic control personnel, devices, maintenance requirements, communication protocols, lane closure requirements (if any), etc. Each construction Work type shall have a Traffic Control Plan (TCP) in conformance with this Section 16.

The TMP shall include, at a minimum, the following:

- A detailed approach to the development of TCPs and Method of Handling Traffic (MHTs) for the Project.
- A list of known or potential lane closures, with location, time, and durations provided.
- A checklist identifying specific items that shall be provided to the Public Information Officer (PIO), both Contractor's and City's, weekly for public information data collection and management activities for the Project. The checklist shall provide the inclusion of supporting information relevant to coping messages and public awareness and shall be included in the Public Information Plan (PIP).
- Approach to public, business and residential access.
- Approach to coordination and cooperation with construction being performed by Utility Owners or other Utility relocations, as required in Section 7 Utility Relocations.
- Emergency requirements.
- Relevant portions of the Incident Management Plan (IMP), described below.
- Approach to Special Event coordination.
- Approach to addressing drainage during traffic management.

16.1.2 MAINTENANCE OF TRAFFIC VARIANCE PROCESS

The Contractor may request a MOT Variance for any closure or other restriction beyond the requirements defined within this Section 16. MOT Variance requests should be submitted when safety is a concern and/or other Project goals and criteria can be maximized.

The following information shall be included in each MOT Variance request:

- Summary of the MOT Variance request.
- Justification for the MOT Variance request including a list of the criteria which cannot be met and the reasons for not meeting those criteria.
- Schedule of planned construction Work activities during the MOT Variance.
- Public notification methods and schedule.
- List of affected emergency services and the schedule for their notification.
- List of affected agencies or private owners and the method(s) and schedule for their notification.
- Description of additional public information surveys to be performed, if required.
- List of potential safety hazards to which motorists and citizens may be exposed, if any.
- Proposed revisions to the Approved TCP or current MHT.

The Contractor shall allow the City a minimum of 10 Working Days for Approval of any MOT Variance requests. The City may extend the review time if additional public information surveys are required or if revisions are requested. MOT Variance Approvals are at the sole discretion of the City.

16.1.3 INCIDENT MANAGEMENT PLAN

The Contractor shall develop an IMP to manage traffic incidents and emergency operations within the Project Limits. The IMP shall be submitted to the City at least 30 Calendar Days, to the City, prior to commencement of construction for Approval. At a minimum, the IMP shall include the following:

- Coordination with the PIP
- Incident response
- Incident clearance
- Emergency services notification, including local area police departments, local area fire departments, ambulance services, and any other emergency response providers
- Geographic or other special constraints
- Contractor responsibilities
- Alternate routes
- Project phasing
- Available resources

No Work impacting traffic will commence until the all IMP related City comments have been addressed.

The Contractor shall inform the City of all recorded incidents located within the Project traffic control zone(s) as they occur. The incidents shall be reviewed with the City and the Contractor to identify potential problem locations and make the necessary adjustments for the safety of the workers and public.

16.1.4 CONTRACTOR INCIDENT RESPONSE

For incidents that occur along adjacent streets of the Project, within the areas of active construction Work, the Contractor shall have at least one representative on call, via cellular phone, that can respond to all incidents within 30 minutes. Upon arrival at the incident, the Contractor shall assess the situation and immediately notify the appropriate personnel to implement the IMP. Upon notification of the incident, the Contractor shall cooperate with the emergency services and immediately undertake actions necessary to restore traffic operations, as described in the IMP, in a timely and expedient manner. The Contractor is not responsible to provide the services normally provided by police and fire.

16.1.5 SPECIAL EVENTS

The Contractor shall develop a list and schedule of Special Events in coordination with the City prior to commencement of construction and prior to the commencement of each contract year thereafter. The Contractor shall identify and implement necessary changes in Work progress to accommodate traffic to and from Special Events. No lane closures shall be permitted on the day of the Special Event. Hauling and truck traffic shall not be allowed on 23rd Avenue during Denver Zoo, Denver Museum of Nature & Science, City Park Special Events, including Denver Zoo Free Days and Zoo Lights. Approaches to 23rd Avenue shall be uninhibited during Denver Zoo and Denver Museum of Nature & Science Special Events. Pedestrian and bike access shall be uninhibited during Denver Zoo Special Events.

16.1.6 PEDESTRIAN TEMPORARY ACCESS

The Contractor shall submit for Approval by the City, a Pedestrian Temporary Access Plan no later than 30 Calendar Days prior to the commencement of the construction Work. The plan shall provide asphalt or concrete pedestrian access at all times. Pedestrian detours shall be the shortest route possible and maintain access to existing sidewalks, Regional Transportation District (RTD) bus stops, Denver Zoo, and the Denver Museum of Nature & Science. The Contractor shall meet all requirements of the Americans with Disabilities Act (ADA) and Manual on Uniform Traffic Control Devices (MUTCD) for all construction Work that impacts existing pedestrian facilities or that will be used for temporary detour routes. Pedestrian access shall be provided on the opposite side of the street where construction Work is performed.

16.1.7 BIKE TEMPORARY ACCESS

The Contractor shall submit for Approval by the City, a Bike Temporary Access Plan no later than 30 Calendar Days prior to the commencement of the construction Work.

16.1.8 RTD COORDINATION

The Contractor shall coordinate with RTD to minimize any impacts to the RTD transit system as a result of the construction Work, including bus routes, bus stop locations, and other RTD services. During construction, the Contractor shall coordinate with RTD prior to disruptions to RTD service areas and schedules. Coordination with RTD shall be done far enough in advance to allow 30 Calendar Days' notifications to transit users of any closures, delays, or modifications in bus routes; and of modifications or relocation of transit stops or signage along the affected routes. The Contractor shall utilize the appropriate tools for effective communication, as described in Section 4 Public Information, to communicate changes of RTD services to RTD patrons and the public.

All RTD bus stops shall be open and operational, meeting ADA requirements.

RTD coordination for design and construction Work shall be through Corey Granrud. RTD coordination for bus operations shall be through Tim Lucero.

16.2 DESIGN REQUIREMENTS

16.2.1 TRAFFIC CONTROL PLAN

Each TCP shall describe the locations available to the Contractor for construction, no-Work locations, environmental/security/safety restricted sites (include references for information), the location of traffic, and the location of Contractor access. Each TCP shall be consistent with the TMP. The TCPs shall conform to the requirements specified herein and shall generally describe all traffic-control signing, pavement markings and traffic-control devices, and temporary signalization, lane and shoulder configurations (including widths), pedestrian/bicycle requirements necessary. All TCPs shall be sealed by a Professional Engineer, licensed in the State of Colorado. Each TCP shall be submitted at least 10 Working Days prior to the beginning of the construction Work associated with the TCP for Approval by the City. Any major revision to the TCP, as determined by the City, shall require submission of a new TCP to the City.

16.2.2 METHOD OF HANDLING TRAFFIC

In conjunction with the required Street Occupancy Permit, the MHT Plans are the detailed plans for implementing TCPs and lane closures. MHT Plans shall include, but are not limited to temporary/permanent striping, temporary signage, channelizing devices, temporary signals, locations of shifted signal heads at intersections, traffic flow arrows for each travel lane, Work zones, and affected private accesses (showing compliance with the TCP). MHT Plans shall be compatible with the Approved Street Occupancy Permit. Lane closures shall require signs on temporary portable mounts, cones or vertical panels, and do not require the adjustment of striping. Signals may be put in flash temporarily and uniformed (off-duty police) traffic control may direct traffic. The uniformed police agency officer shall have completed *The Safe and Effective Use of Law Enforcement Personnel in Work Zones* training course. The Contractor shall provide the City copies of documentation certifying the officer's successful completion of this course. MHT Plans shall be drawn to scale and appropriately sized to show the construction Work area in sufficient detail. MHT Plans shall include the dates and times they are planned to be in effect. Temporary traffic signals shall be installed in conformance with standards set forth in this Section 16. The design speed for all lane shifts shall be defined and shown on the MHT Plans. Tapers, device spacing, and the size of signs and attenuators shall be shown per the MUTCD and design speed. The American Association of State Highway and Transportation Officials (AASHTO) *Roadside Design Guide* shall be used but not limited to the design of temporary side slopes, clear zones, and barrier end treatments. All permanent traffic control devices shall be shown on every MHT covering its particular portion of the construction Work area. These permanent traffic devices shall have a note describing its role in the MHT such as "cover sign", "permanent signal in operation", "signal not operating/bag heads", etc. MHTs shall be prepared by an American Traffic Safety Services Association (ATSSA) or Colorado Contractors Association (CCA) certified Traffic Control Supervisor or Professional Engineer, licensed in the State of Colorado. Each MHT Plan shall be submitted a minimum of 10 Working Days prior to the beginning of the respective Work phase or stage for Approval by the City.

16.2.3 DESIGN SPEED AND POSTED SPEED

The Contractor shall maintain the existing posted speed for all roadways.

16.2.4 MINIMUM LANE REQUIREMENTS

Minimum lane widths shall be 11 feet. Existing on-street parking along 26th Avenue shall not be removed or reduced unless otherwise Approved by the City.

16.2.5 LANE CLOSURES AND RESTRICTIONS

No less than 10 Working Days prior to any lane closure or restriction implementation, an appropriate MHT Plan shall be Approved by the City. The City may Approve MHT's in less than 10 Working Days for construction emergencies or other reasonably unforeseen events, at the sole discretion of the City.

Lane closures are permitted on York Street, as approved by the City.

Lane closures on Colorado Boulevard shall comply with the CDOT *Region 1 Lane Closure Strategy*. Any lane closures on Colorado Boulevard shall be approved by CDOT. For any Work the Contractor may perform within the CDOT ROW, the Contractor shall obtain any additional required permits.

23rd Avenue and 26th Avenue shall maintain at least a single lane in both directions, at all times.

Traffic control performed by flaggers shall not have wait times that exceed five minutes.

16.2.6 ACCESS

All accesses shall be maintained, unless otherwise agreed to by the property owner and documented in writing. If access is being removed as part of this Project, then the access shall only be removed when there is Work that directly affects said access. At a minimum, the Contractor shall communicate and document the following information relevant to business, private, and/or public access:

- Access points impacted by a particular construction phase or stage
- All notifications of affected business and land owners
- Schedule of closures and estimated durations
- Site-specific access or delivery requirements for local business
- Proposed mitigation efforts
- Detours required to maintain access during construction

Access to the golf course shall be blocked off for use of the public until Substantial Completion.

16.2.7 STREET CLOSURES

Full street closures are not permitted.

16.2.8 DETOUR ROUTES

Vehicular detours are not permitted.

16.2.9 NIGHT WORK

Night construction Work, as defined by City Standards and Specifications, is not permitted.

16.2.10 HAUL ROUTES

Hauling vehicles shall enter the golf course from Colorado Boulevard, in the southbound direction, physically entering the golf course near the southeast corner of the Project. The Contractor shall design and construct a temporary deceleration lane, as required. The Contractor shall provide all necessary traffic control devices to permit safe entrance into the golf course, while restricting access to the traveling public. Any permits and approvals required for access off of Colorado Boulevard shall be the responsibility of the Contractor.

Large construction equipment and hauling vehicles shall exit the golf course from 23rd Avenue, near the southeast corner of the Project. The Contractor shall provide all necessary traffic control devices to permit safe exit of the golf course. The existing median in 23rd Avenue shall not be altered. If a new access into the golf course and/or Maintenance Facility is required by the Contractor's design and is operable prior to Substantial Completion, it shall not be used by construction equipment entering or exiting the site.

16.3 CONSTRUCTION REQUIREMENTS

The Contractor shall provide installation, maintenance, and complete removal of all temporary traffic control devices.

16.3.1 TEMPORARY TRAFFIC CONTROL DEVICES

All permanent and temporary traffic control devices visible to traffic for the Project shall be shown on at least one Approved and active MHT.

16.3.1.1 CONSTRUCTION SIGNING

Construction signing for the Project and all detours shall comply with the respective City Standards and Specifications and the MUTCD.

16.3.1.2 EXISTING SIGNALS DURING CONSTRUCTION

The Contractor shall be responsible to maintain existing signals within City ROW as required through a Street Occupancy Permit, if construction Work is being performed at those signals.

16.3.1.3 TEMPORARY TRAFFIC SIGNALS

Temporary Traffic Signals shall comply with Section 14 Permanent Signing, Pavement Marking, Traffic Signalization, and Lighting. The Contractor shall operate the temporary signals and respond to malfunctions during the duration of the Project. Temporary signal timing will be designed and submitted to the City 10 Working Days prior to implementation for its Approval. Maintenance of the temporary signal(s) shall be the responsibility of the Contractor. The Contractor shall be responsible to respond to and correct signal malfunctions within one of hour of notification or discovery of the signal malfunction. If the Contractor discovers a malfunction of a temporary traffic signal, the Contractor shall notify the City immediately.

The Contractor shall be responsible for and pay for all power and metering required for temporary traffic signalization.

16.3.1.4 TEMPORARY PAVEMENT MARKINGS

The Contractor shall furnish, apply and remove temporary pavement marking paint in accordance with City Standards and Specifications. Temporary paint striping shall meet the conformity of lines (including no overspray), dimensions, patterns, locations and details established in the Contractor's TMP and MHTs.

- Temporary pavement markings shall be re-striped once a month, or as required to maintain safe traffic operations. Stripes shall be sufficiently retroreflective to be visible at night during a rain storm.
- No epoxy-based paint shall be permitted on concrete pavement surfaces for temporary striping.
- Hydroblasting, or other methods that do not result in scarring of permanent pavements shall be used for removal of temporary pavement markings.

16.3.2 MAINTENANCE OF TEMPORARY TRAFFIC CONTROL DEVICES

The Contractor shall be responsible for the maintenance of all permanent and temporary traffic control devices within the Project. Temporary traffic control devices shall meet the acceptable standard as defined by the ATSSA *Quality Guidelines for Work Zone Traffic Control Devices* and the MUTCD.

16.3.3 TEMPORARY PAVEMENT

Temporary pavement locations shall be described in the TMP, designating the type and thickness of the pavement used to accommodate anticipated loadings. The Contractor shall be responsible for the complete removal and disposal of all temporary pavement.

16.3.4 TEMPORARY LIGHTING

The Contractor shall maintain temporary lighting at a level in accordance with City Standards and Specifications. Temporary wood light poles are permitted for installation of temporary lighting.

16.3.5 CONSTRUCTION TRAFFIC AND PARKING

No construction traffic is permitted within the neighborhoods surrounding the site, including staging.

The Contractor and all of its subconsultants shall park inside the limits of the City Park Golf Course or on other private property, as arranged by the Contractor. No parking is permitted on streets (including 26th Avenue) or within neighborhoods.

16.3.6 SIDEWALK MAINTENANCE DURING CONSTRUCTION

The Contractor shall keep the sidewalk adjacent York Street (on golf course side only) clean and free of snow and ice upon Notice to Proceed (NTP).

16.4 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 16-2 Deliverables

Deliverable	Information or Approval	Schedule
Traffic Management Plan (TMP)	Approval	30 Calendar Days prior to commencement of construction Work
Maintenance of Traffic (MOT) Variance request	Approval	10 Working Days prior to the requested date for variance implementation
Incident Management Plan (IMP)	Approval	30 Calendar Days prior to commencement of construction Work
Traffic Control Plan (TCP)	Approval	10 Working Days prior to implementation of the TCP
Method of Handling Traffic (MHT)	Approval	10 Working Days prior to implementation of the MHT
Uniformed traffic control certifications	Information	10 Working Days prior to implementation of the MHT
Temporary signal timing	Approval	10 Working Days prior to implementation

Deliverable	Information or Approval	Schedule
Pedestrian Temporary Access Plan	Approval	30 Calendar Days prior to commencement of construction Work
Bike Temporary Access Plan	Approval	30 Calendar Days prior to commencement of construction Work

17.0 LANDSCAPING AND AESTHETICS

The Contractor shall design and construct all landscape and aesthetic elements of the Project in accordance with the requirements of this Section 17.

Golf course turf, construction, and establishment requirements are not considered landscaping for the purposes of this Section 17. All requirements for the golf course are provided in Section 18 Golf Course.

All Work performed shall conform to the guidelines set forth in the City and County of Denver (City) Standards and Specifications, specifically the *Denver Parks + Recreation Planning, Design + Construction Standards*.

Refer to Section 18 Golf Course and Section 19 Site Development for additional requirements impacting design and construction of landscaping and aesthetics elements for the Project.

17.1 LANDSCAPING

The Contractor shall design landscaping for the golf course (excluding seeding and sodding plans for the course), the Clubhouse, Maintenance Facility and associated parking lots/accesses, restroom/shelter facilities, detention areas, ponds, and any Utilities and water features for the Project. Landscaping design shall comply with the following:

- Provide aesthetic and visual enhancement for the Project
- Consider the context of, and be compatible with, adjacent surroundings and neighborhoods
- Create and enhance usable public space
- Advocate functional and appropriate outdoor space considerations for all facilities
- Consider the appropriate use of plant materials
- Promote water conservation through the use of water-efficient landscaping
- Promote long-term, environmentally sustainable landscaping with minimal maintenance needs
- Minimize aesthetic impacts of parking areas, site lighting and mechanical equipment
- Screen/buffer undesirable objects from public view

The Project consists of multiple landscape typologies as described in this Section 17. All landscaping shall be designed and constructed in such a manner to provide a seamless transition between typologies.

17.1.1 GOLF COURSE LANDSCAPING

The City places significant importance on the high quality and visual appeal of the landscaping and aesthetics for the golf course and Clubhouse desiring landscaping integration between the golf course and the Clubhouse. Landscaping shall maintain a “Parkland Style” feel throughout.

Golf course landscaping shall consist of tree and shrubs plantings only, no perennials or non-turf grasses shall be utilized as a planting on the golf course unless Approved by the City.

Plant palettes should emphasize massing and forms rather than individual or small groupings of trees and shrubs.

17.1.2 EDGES AND ENTRANCES

On average, a minimum of two shade trees shall be planted for every 35 linear feet of access road, or fraction thereof, as measured along the centerline of the roadway. Shade trees shall be planted one for each side and no closer than six feet to the back of curb, attached walk, or pathway.

The entrance into the golf course shall utilize native plant materials.

Park identification signs shall have accent landscaping.

Additional trees and shrubs plantings shall be provided along all perimeter edges where ball flight and safety may be an issue.

All edge and entrance landscaping shall accommodate vehicle, pedestrian, and bicycle sight distances per City Standards and Specifications.

17.1.3 CLUBHOUSE AND OUTDOOR SPACES

If the Clubhouse is relocated by the Contractor's design, the Clubhouse shall be appropriately landscaped, becoming the centerpiece of the renovated golf course. All outdoor and public venue areas shall be landscaped to create a welcoming and enjoyable environment.

Areas around the Clubhouse including any outdoor spaces (cart staging areas, event lawn, patio, etc.) shall be landscaped to provide visual interest and shade to outdoor spaces while enhancing views to, from, and through the spaces.

The following requirements shall be utilized for laying out and designing the landscape around the Clubhouse and outdoor spaces:

- One shade tree shall be planted for each 1,500 square feet of building and patio space footprint, or fraction thereof.
- One ornamental tree shall be planted for each 2,500 square feet of building and patio space footprint, or fraction thereof.
- 10 shrubs shall be planted for each 1,000 square feet of building or patio space footprint, or fraction thereof.
- 20 perennials or native grasses or combination for each 1,000 square feet of building or patio space footprint, or fraction thereof.
- Turf grass may be utilized for accent purposes only and shall not be used in areas smaller than eight feet in any one direction.
- Any areas over five feet and under eight feet in any one direction shall be mulched or planted with shrubs, perennials or grasses.
- Any areas less than five feet in any direction shall be mulched. No plantings or irrigation are allowed in these areas.

Clubhouse outdoor and public venue area requirements are provided in Section 19 Site Development.

Provide adequate lighting levels for pedestrians in compliance with Illuminating Engineering Society (IES) standards and in accordance with Section 14 Signing, Pavement Marking, Signalization, and Lighting.

17.1.4 PARKING

The Clubhouse and Maintenance Facility parking lots shall have a minimum of 10% of the parking area landscaped, inclusive of maneuvering aisles.

- Parking lot landscape plantings shall be coordinated with consideration of lighting and Utility locations so that there shall be no interference when plantings reach maturity.
- Trees shall be located with a minimum twenty foot clearance from all parking lights and street lights.
- Parking lot islands shall be a minimum of eight feet in width and extend the length of the adjacent spaces.
- Accommodation shall be made for a two foot wide bumper overhang area that is clear of plant materials where landscaping is adjacent to parking.
- Concrete wheel stops may be used in lieu of the overhang when site constraints exist.
- Shrubs and groundcovers with a mature height of less than 24 inches shall be utilized to ensure the driver's visibility throughout parking lot.
- One shade tree shall be planted for each ten parking spaces or fraction thereof.
- A landscape island shall be provided for every 10 continuous parking spaces and at the end of each parking row.
- Use of bio-retention areas shall be considered and implemented where practical for design and construction of the Clubhouse parking lot. Bio-retention areas shall comply with Urban Drainage Flood Control Districts (UDFCD) *Urban Storm Drainage Criteria Manuals*.

Landscape plantings for the Maintenance Facility parking lot shall be designed as a screened landscape buffer around the perimeter with very little required maintenance.

17.1.5 SIDEWALKS

Sidewalks shall be integrated as part of the overall site plan and shall be considered a landscape feature for the Project. This excludes areas around the Clubhouse, outdoor spaces and golf course cart paths.

- One shade tree shall be planted for each 35 linear feet of sidewalk, or fraction thereof, as measured along the centerline of the walk, shall be planted not closer than six feet to the walk or pathway.
- Safety and unobstructed visual lines are critical along all sidewalks and pathways, therefore landscape treatments adjacent to sidewalks and pathways shall consist of turf grass or mulch. No shrubs, perennials, or ornamental grasses shall be permitted.
- The north-south sidewalk connection, provided in the middle of the golf course shall be designed to encourage users to stay on the sidewalk and away from the area of play.

17.1.6 DETENTION, CHANNEL, FOREBAY, AND POND AREAS

The detention, channel and pond areas shall be integrated with the golf course design, not appearing as a separate drainage or irrigation facility. The channel is anticipated to convey a base flow throughout the year, which shall be integrated into the design of the golf course as a water feature.

The detention, channel and pond areas shall be an integral part of the overall site plan and shall be considered a natural landscape feature for the Project.

- Native and wetland appropriate plant species are encouraged in detention areas.
- Within any detention area, the area designed for inundation shall be planted with species that can withstand periods of wet and periods of drought and can serve to stabilize the slopes of the pond and inundated areas.
- On average, one shade tree for each 50 linear feet of proposed pond or dry creek perimeter, or fraction thereof, as measured along the top of the bank shall be planted, consistent with golf course playability, aesthetics, and maintenance, within the detention/retention areas.
- On average, two ornamental trees for each 50 linear feet of proposed pond or creek perimeter or fraction thereof, as measured along the top of the bank shall be planted consistent with golf course playability, aesthetics, and maintenance, within the detention areas.
- On average, ten shrubs for each 50 linear feet of proposed pond or creek perimeter, or fraction thereof, as measured along the top of the bank shall be planted consistent with golf course playability, aesthetics, and maintenance, within the detention/retention areas.
- Plantings shall be planned to prevent obstruction of access to the pond area and maintenance structures by maturing trees and shrubs.
- The spillways shall be constructed of natural materials and shall be integrated into the grading of the surrounding landscape. Soil riprap with appropriate plantings shall be used in order for the spillway to be integrated into the golf course design.
- Any above ground mechanical and stormwater outfall structures related to the operation of the pond shall be identified on the landscape plan and shall be screened, with the exception of the irrigation pump station.
- Wetland plants and seeding shall be incorporated, as appropriate.
- The wet forebay shall be integrated as a natural pond feature. Edges of the wet forebay shall use plantings to provide a suitable transition with non-playable golf areas. Access to the bottom of the wet forebay shall be Approved by the City and shall be screened from playable golf areas.

17.1.7 TREES

Existing trees in the golf course are a sensitive and important element of the Project and are a contributing factor to the “Parkland Style” feel of the golf course. The City has developed an inventory of groupings of trees with varying levels of quality that shall be protected in whole or to the greatest extent possible, while considering detention grading and golf course routing. The Contractor shall integrate the preservation and protection of existing trees in its design and construction of the golf course, as required by this Section 17. The Contractor shall be responsible for obtaining all permits necessary for the removal or planting of trees.

Design shall consider the following:

- Avoid/limit/ impact to high-priority perimeter and interior stands of trees.
- All efforts should be made to protect as many trees on the golf course as feasible.

- Tree preservation and protection shall consider the existing characteristics of the golf course, grading, view sheds, contribution to the “Parkland Style” of the course and playability of the golf course.
- Tree replacement approach shall follow the City’s policy (replace impacted canopy coverage) and be Approved by the City.
- Golf course tree placement and species selection shall consider long term effects on playability and turf health.
- Tree placement around greens complexes shall not interfere with southern sun exposure in winter and morning sunlight in the spring, summer, and/or fall.
- Planting plan must account for growth/maturation of trees.

All new trees and landscape materials shall conform to the Technical Specifications and the following requirements:

- Deciduous Shade Trees – minimum three inch caliper, balled and burlap. A mix of sizes and types shall be provided.
- Ornamental Trees – minimum two inch caliper, balled and burlap. A mix of sizes and types shall be provided.
- Evergreen Trees – a mix of sizes with a minimum of eight feet in height
- Shrubs – five gallon container
- Perennials and Grasses - one gallon container
- Mulch – shredded cedar mulch

17.1.8 TREE PROTECTION AND MONITORING PLAN

Trees of varying condition and designation have been identified in the Tree Designation Plan and provided in the Reference Documents. The Contractor shall utilize this information as the basis of its Tree Protection and Monitoring Plan.

The Contractor shall submit a Tree Protection and Monitoring Plan in accordance with Technical Specifications Section 01 56 39 – Tree Retention and Protection to the City for Approval. The Tree Protection and Monitoring Plan shall include plan sheets showing all trees located within the Project Limits integrated with the final grading for the Project. The plan shall include a listing of the condition of each tree, as provided in the Tree Designation Plan. The intent of the plan is to clearly identify which trees are to be preserved and protected and which trees will be removed or relocated as part of the channel, detention, and golf course design. Trees shall be marked prior to grading and tree removal activities. After marking, the Contractor shall perform a walkthrough of the Project with the City, identifying the trees marked to be protected and those to be removed.

The Tree Designation Plan indicates three levels of trees including Trees to Remain, High Priority Trees, and Site Trees – as defined below.

- Trees to Remain – Perimeter Trees and those of significant value to the site as identified through public process and Denver Forestry.
- High Priority Trees – Clusters/groupings of sustainable trees species, possible as identified by Denver Forestry, with high growth potential and that are to be preserved to the greatest extent.

- Site Trees – Remaining trees rated “fair and above” on the course.

The Contractor shall preserve trees such that the score obtained by the Contractor’s design in the CPGC Tree Designation Scoring Sheet is not less than the minimum score required in the scoring sheet.

The Contractor shall remove trees that are dead, a stump, or a vacant site at the direction of the City.

The Tree Protection and Monitoring Plan shall include proposed methods, materials, and Work schedule for effectuating tree and other plant protection.

17.1.9 MEMORIALS

The Contractor shall carefully catalog, remove, store, and reinstall all existing memorials located on the golf course. All reinstalled memorials shall be integrated into the landscaping design with an aesthetically pleasing appearance, placed at the direction of the City. Memorials shall be visible from the cart path.

17.1.10 AMENITIES

The Contractor shall integrate into the landscaping, aesthetic, and golf course design amenities such as benches, water stations, restrooms, shelters, etc. All amenities shall be integrated into the landscaping design with an aesthetically pleasing appearance.

All amenities shall comply with the requirements provided in Section 18 Golf Course.

17.1.11 IRRIGATION

Irrigation design, construction, materials, and plans shall be in accordance with Section 5 Environmental Requirements and Section 18 Golf Course.

17.1.12 LANDSCAPING COMPLETION AND ESTABLISHMENT

The Contractor shall provide landscaping Warranty and establishment for the Project.

The Contractor shall comply with City Standards and the Technical Specifications for all landscaping completion and establishment requirements.

17.1.13 LANDSCAPE PLANS

Landscape Plans shall be prepared and sealed by a Landscape Architect, registered in the State of Colorado.

Plans shall note or specify that site-specific agronomic soils test(s) are required and test result report recommendations shall be followed for amending the soil.

Prior to Final Acceptance, the Contractor shall submit a Landscape Maintenance Plan for all landscaping on the Project.

17.1.14 IRRIGATION PLANS

All plan dimensions shall be considered approximate and shall be field verified prior to installation. Prior to commencement of the construction Work, the Contractor shall carefully check and verify all dimensions.

For purposes of clearness and legibility, the piping lines and the electrical lines are diagrammatic, the size and location of equipment shall be drawn to scale, wherever possible.

17.2 AESTHETICS

All Project aesthetics shall comply with this Section 17 and City Standards and Specifications. Aesthetic packages shall be submitted for each submittal defined in Section 3 Quality Management.

17.2.1 DRAINAGE STRUCTURES

All drainage structures should appear as natural as possible. Natural materials, such as stone, shall be used on visible surfaces where appropriate, to integrate drainage structures (e.g. outlet, headwalls, forebay, etc.) into the overall landscape and golf course appearance.

An artistic approach to the incorporation of the brick lined pipe at both outfalls shall be included and is considered an important element in the overall character of the detention, integration of the channel, and the golf course appearance. Where possible, drainage structures, including the outfall, should be as visually screened with natural materials (or naturally appearing) as possible to help minimize visual impacts to the look and feel of the course. The placement of these materials should be done so with no impacts to the function of the drainage systems (e.g. flows should not be restricted or compromised).

The Contractor shall provide mockups, as part of the Aesthetic Plans, for all proposed surface treatments showing texture, color, and quality to the City. There shall not be any visible bare or untreated concrete structures associated with headwalls and wing walls, or the forebay. All concrete surfaces shall have a structural coating.

17.2.2 BRIDGES

All bridges will have similar color and textures. In all cases, proposed bridges aesthetics, including all visible surfaces, shall be submitted to the City with the Contractor's proposed general layouts of each structure. This submittal shall include drawings illustrating form, texture, and color.

The Contractor shall provide mockups, as part of the Aesthetic Plans, for all proposed surface treatments showing texture, color, and quality for to the City. For Project consistency, bridges shall incorporate similar visual aesthetics. Bare concrete is not permitted. All concrete surfaces shall have a structural coating.

17.2.3 WALLS

Aesthetic treatments include surface treatment, pattern, texture, color, and jointing layout. If the selected retaining wall type is MSE wall, the facing shall be precast concrete panels with form-liner surface corresponding to this Section 17, and panels arranged in a configuration with vertical joints between panels that extend from bottom of wall to top of wall. Smooth faced concrete walls and block-face MSE walls are not permitted.

Wall facing shall be installed vertically (plus or minus 1/2 inch in 10 feet) and shall be capped with a cast-in-place or precast concrete cap. Wall facing and cap shall be colored in accordance with this Section 17. Construction straightness tolerances, and gaps between panel tolerances, to MSE walls, shall conform to the Colorado Department of Transportation (CDOT) *Standard Specifications for Road and Bridge Construction* and the Technical Specifications.

Wall aesthetic submittals shall include drawings illustrating form, texture and color. The Contractor shall provide mockups, as part of the Aesthetic Plans, for all surface treatments showing texture, color and quality for Approval by the City. All exposed surfaces of walls shall have a surface treatment of structural concrete coating.

Existing retaining walls, around the perimeter of the golf course, that are not removed as part of the Contractor's design do not need to be reconstructed or modified to comply with the requirements of this Section 17.

17.2.4 LIGHTING

Lights shall be designed in accordance with City Standards and Specifications for light levels and the City – Xcel Franchise Agreement.

All lighting shall comply with the requirements of Section 14 Signing, Pavement Marking, Signalization, and Lighting and Section 19 Site Development.

17.2.5 GRADING

The Contractor shall perform all finished grading to maintain an aesthetically pleasing surface.

The Contractor shall comply with all grading requirements in Section 18 Golf Course.

17.2.6 CLUBHOUSE

The Clubhouse is an important community facility placed in park setting, serving as a gateway to the golf course and as a destination for dining and attending functions. The design of the Clubhouse – its massing, materials, and architectural elements – should be of good quality and be differentiated to express its functions and site relationships. It should have features that are specifically shaped to relate to the spaces within and the features of the site. Its design should give patrons a clear understanding of its organization, having features that indicate the main entrance (as a focal point), golf shop, and food service areas. If relocated as part of the Contractor's design, the Clubhouse shall provide views of the downtown skyline and mountains – while not diminishing the overall site view sheds.

The theme of the architecture should be compatible with the architecture of the region, community, and with consideration of the context of the City Park Golf Course. The exterior design shall be compatible with the *City Park Golf Clubhouse Programming & Design Guidelines*, provided in the Reference Documents.

17.2.7 VIEW SHEDS

The City and community highly value the existing views of the downtown skyline and mountains from the golf course, as well as the views into the golf course from the adjacent roadways/residences. Protecting and/or making the views better is critical to the success of this Project.

Design and construction of the golf course, detention areas, Clubhouse, Maintenance Facilities, and associated accesses shall not reduce the existing view sheds of and into the golf course. Grading shall not exceed the elevation of the existing highpoint, which resides along the ridgeline at approximately midway in the golf course.

The City, after much public outreach and community involvement, has identified the following view sheds of significant importance.

Figure 17-1 View of Mountains and Downtown Skyline

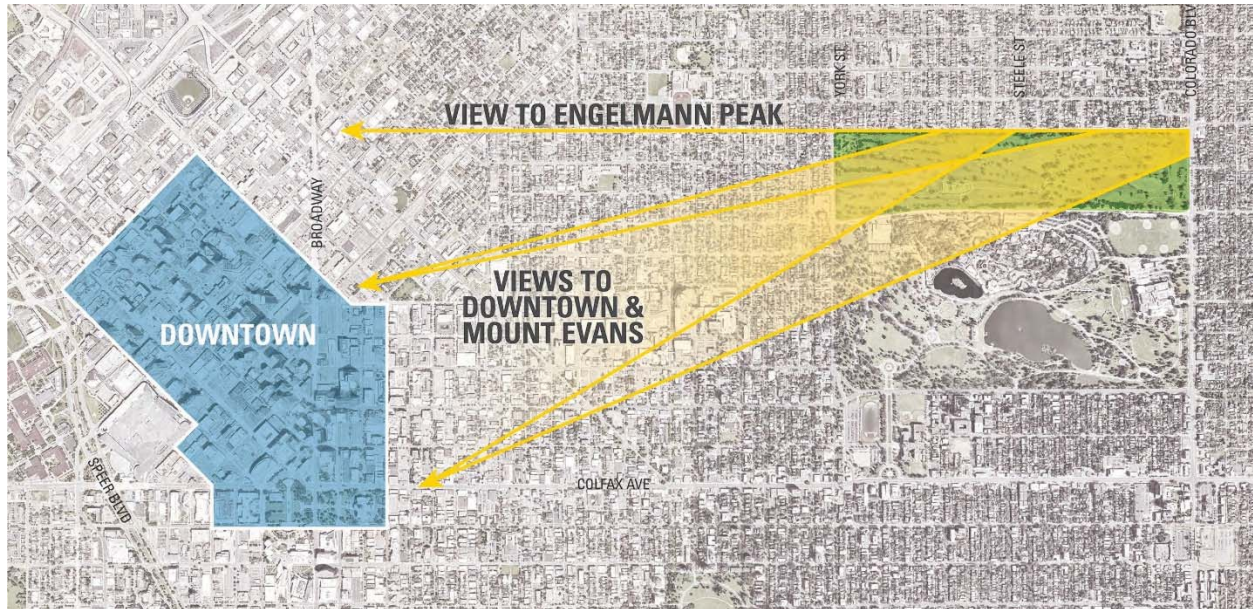


Figure 17-2 Views Into and Across the Course



The Contractor shall show in its Aesthetics Plans how existing view sheds are maintained, made better, or otherwise impacted.

17.2.8 MAINTENANCE OF AESTHETIC ELEMENTS

After Final Acceptance, aesthetic elements will be maintained by the City. Therefore, the Contractor shall carefully consider best practices that promote reduced long term maintenance requirements, availability of replacement parts, anti-graffiti features, snow removal, etc.

17.2.9 PUBLIC ART

Existing public art located within the golf course shall be protected in place. No final decisions have been made regarding new public art within the golf course, however, the Contractor may be asked to provide coordination between the public art process and this Project.

17.3 AESTHETIC PLANS

Aesthetic Plans shall consist of mockups, view shed renderings, material descriptions, details, aesthetic locations and relationships, inclusion of historic elements (as applicable), and maintenance best practices.

The Contractor shall provide sufficient detail to portray the information required in Section 3 Quality Management and Section 4 Public Information for the public meetings.

Aesthetic Plans shall be submitted concurrent with design submittals, as defined in Section 3 Quality Management.

17.4 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 17-1 Deliverables

Deliverable	Information or Approval	Schedule
Tree Protection and Monitoring Plan	Approval	Concurrent with design submittals
Aesthetic Plans	Approval	Concurrent with design submittals
Landscape Maintenance Plan	Information	Prior to Final Acceptance

18.0 GOLF COURSE

The Contractor shall be responsible for complying with the requirements provided in this Section 18, the Technical Specifications, and City Standards and Specifications. These guidelines establish technical performance criteria so that the Contractor is aware of the expectations for the Project and can focus on innovation in achieving those requirements. The Contractor shall be expected to meet or exceed these specifications for the various elements of the Project, in accordance with these Contract Documents.

18.1 GOLF COURSE REQUIREMENTS

The golf course shall be an 18-hole golf course with returning nines that reflects the 'Parkland Style' character (i.e. a typical inland course, often resembling traditional British parks, with narrower fairways, lush maintenance throughout, and many trees) and community significance of the existing golf course layout. Where feasible, it is desirable for the new layout to utilize the hole corridors of the existing golf course to help maintain the current character and minimize impact to the existing trees, as required in Section 17 Landscaping and Aesthetics. Similarly, to existing conditions, the new golf course shall be maintained 'wall to wall'. The golf course shall incorporate the following elements:

- The golf course shall maintain a Par 70, 71, or 72.
- The golf course shall maintain four sets of tees for handicaps; 0-5, 6-14, 15-24, and 25+.
- The golf course shall maintain a minimum of 6,708 yards from the back tees.
- The golf course should be challenging from the back tees, but be very playable for higher handicap golfers playing from more forward sets of tees.
- The golf course should have an interesting distribution of hole lengths with some shorter and longer holes within each par category (i.e. some relatively long and some relatively short par 3s, par 4s, and par 5s).
- The golf course shall comply with the American with Disabilities Act (ADA).
- Two par 3s per nine ideally, but a maximum of 5 par 3s would be permissible (with no more than three of them on one nine, and no consecutive par 3s).
- The Contractor shall provide an integrated stormwater detention area at the western portion of the Project and incorporate 'target' type golf holes where feasible so that the golf course can be playable within a reasonable timeframe following large storm events. Therefore, if appropriate within the overall golf course routing plan, the siting of Par 3s in this area may be desirable.
- Greens shall be built to City Standards and Specifications.
- The existing Denver Golf weather station shall be removed upon commencement of construction Work and provided to the City. A new weather station complying with the Technical Specifications shall be provided. The weather station shall be provided in an 8 feet x 8 feet chain link fenced enclosure with a gate. No power or communication lines are required. The sited location shall be placed in a low arc irrigation area so that the station itself does not get hit with irrigation water.
- Continuous cart paths are required. Cart paths shall be designed to allow the course to remain open and playable during times when "cart paths only" has been determined.
- Construct perimeter sidewalk as required per Section 13 Roadway.

- No 'blind' shots. The goal should be for the player to be able to see the ball on the ground, to the largest extent possible, from the previous shot's location.
- All requirements of Section 12 Drainage and Water Quality and Section 17 Landscaping and Aesthetics shall be integrated into the design and construction of the golf course.
- Views from the adjacent roadways and surrounding neighborhoods shall be preserved or enhanced, in accordance with Section 17 Landscaping and Aesthetics.
- Incorporate space for an ADA compliant, safe, eight foot wide pedestrian path to cross the golf course north/south somewhere near its midpoint, and as a connection to the Clubhouse.
- Preserve and protect trees, in accordance with Section 17 Landscaping and Aesthetics.
- Fully-automatic irrigation system Toro Decoder (or Approved equivalent), with recycled water capabilities, for the golf course and all support facilities—source for irrigation shall be an on-site irrigation pond that must also be an aesthetic, integrated golf course feature. A pump house shall be sited adjacent to the pond. Irrigation shall be high-density polyethylene (HDPE) pipe with isolation. The entire irrigation system shall have the ability to be readily winterized.
- Irrigation pond shall be enlarged in accordance with this Section 18.
- Restrooms/shelters, and water station with bottle fillers that can be accessed at least every five holes.
- Each set of tees shall include a ball washer with dual recycling/trash cans, and five sets of tee markers (one set for First Tee shall be provided only) and shall be submitted to the City for Approval. Hole signage equal to or better than the current Denver Golf standard sign shall be provided and submitted to the City for Approval.

18.2 CONTRACTOR AND CITY GOLF COURSE DESIGN AND CONSTRUCTION COORDINATION

The Contractor and City shall be expected to coordinate and facilitate minor field adjustments, which is typical for golf course construction. The Contractor shall assume some level of regrading, shaping, contouring, routing, tee box/bunker/green size and location, etc. as included in this coordination of minor field adjustments. The intent of this coordination is to provide a golf course that maximizes playability, maintainability, maintains historic character, and is aesthetically pleasing for the public. It is not the intent to change Project elements, requirements, or plan intent.

18.3 GOLF COURSE FACILITIES

The Contractor shall design and construct the golf course in such a way to maximize the efficiency of play and operations of the golf course with the Clubhouse, Maintenance Facility, and other miscellaneous facilities.

Refer to Section 19 Site Development for additional requirements.

18.4 PRACTICE FACILITIES

The Contractor shall design and construct practice facilities meeting the requirements of this Section 18. Practice facilities shall be efficiently integrated with the golf course and conveniently located to the Clubhouse. Practice facilities shall be sited with safety concerns fully addressed, without the use of protective netting.

18.4.1 DRIVING RANGE

At a minimum, the Contractor shall provide an irons-only driving range located adjacent to Clubhouse. A full driving range is desirable if it does not require safety netting or impede course playability/operations and does not impact views.

In the instance where an irons-only range is provided, design shall consider integration of swing simulators/warm-up nets as a supplement.

If a full driving range is included it shall provide a 350 foot wide by 925 foot long, all natural turf driving range with an approximate 25,000 square feet of turf teeing area or as necessary to accommodate a minimum of 25 hitting stations. An eight foot wide concrete area shall be provided behind the turf hitting area to accommodate space for twenty-five golf mats and dividers that can be used for winter and tournament practice. The existing Range Servant ball cleaner and dispenser equipment shall be relocated and utilized. The Contractor shall provide the necessary building, concrete pad, and all Utilities to relocate any equipment associated with the existing ball dispenser.

Safely site a total of 500 square feet practice fairway bunker(s) adjacent to the golf range teeing area.

18.4.2 PUTTING GREEN

Provide a minimum 8,000 square feet practice putting green, which reflects the character of the golf course greens.

18.4.3 CHIPPING GREEN

Provide 6,000 square feet practice green, with a minimum 3,500 square feet practice sand bunker, and 4,800 square feet of chipping area, which reflect the character of the golf course greens.

18.5 FIRST TEE FACILITIES

The City's First Tee program is one of the largest in the country and shall be relocated to accommodate the City's growing program. The First Tee facilities shall incorporate the following elements:

- Indoor space shall be incorporated as a separate facility or into the Clubhouse, in accordance with Section 19 Site Development.
- Outdoor space that is equal to or larger than existing conditions, incorporating:
 - A four hole 'short' course with hole lengths ranging from a minimum of 50 yards to a maximum of 150 yards. The course layout and bunker locations shall provide opportunities for a variety of shots and programming.
 - Greens and bunkers shall be sized to accommodate various sized groups and for their ability to be maintained to the standards of the overall golf course greens and bunkers. Minimum green size shall be 4,000 square feet.
 - Existing First Tee structures/facility shall be demolished and dispose of off-site by the Contractor.
 - First Tee facilities shall be sited in close proximity to the Clubhouse and offer safe access and bus drop off adjacent to the Clubhouse.
 - Design should consider ways to minimize noise/activity disruptions to adjacent golf course facilities.

- Incorporate the existing legacy path features in the new facilities.

18.6 INTEGRATED DETENTION AND WATER QUALITY

The Contractor shall design and construct the golf course to incorporate all the requirements of Section 12 Drainage and Water Quality and Section 17 Landscaping and Aesthetics, incorporating such elements as attractive golf strategy features.

18.7 TREES

The Contractor shall design and construct the golf course in such a manner to protect and preserve the greatest number of trees practicable, in accordance with the Tree Designation Plan. Tree preservation and protection shall consider the historical characteristics of the golf course, detention grading and integration into the golf course, view sheds, maintenance, and play of the golf course.

Golf course tree placement and species selection shall consider long term effects on playability and turf health.

Refer to Section 17 Landscaping and Aesthetics for additional requirements.

18.8 GOLF COURSE CONSTRUCTION

18.8.1 USGA ACCREDITED LABORATORY

The City will only consider physical and chemical analysis performed by United States Golf Association (USGA) accredited laboratories utilizing ASTM test methods and standards. Once the Contractor selects a laboratory, that laboratory shall be used throughout the entire duration of the Project for golf course testing. The Contractor may change laboratories only upon written Approval of the City.

Copies of each lab report shall be directly sent from the lab to the City. The City reserves the right to perform, at its own expense, and at any time, a laboratory analysis from the on-site delivered and placed drainage gravel. If materials are found to be nonconforming, the Contractor shall, at its own expense, immediately remove all nonconforming materials and replace with conforming drainage gravel.

The City prefers Turf and Soil Diagnostics of Kansas for laboratory analysis and testing of all material, gravel, soil, green mix, and bunker sand mix.

18.8.2 MATERIAL QUALITY CONTROL

The Contractor shall ensure all materials (i.e. gravel, soil, green mix, and bunker sand mix) meet Approved specifications by performing ongoing sampling of materials. The Contractor shall pull core samples from piles every 1,000 cubic yards from material prior to delivery to site and have a laboratory analysis performed to ensure material conforms to ASTM standards for particle distribution and physical properties for the intended use.

The Contractor shall incorporate its approach to material sampling, testing, and quality in the Materials Testing and Inspection Plan (MTIP), in accordance with Section 3 Quality.

18.8.3 SALVAGE

The City reserves the right to remove existing City property which includes, but is not limited to Irrigation components, satellites, heads, valves, building fixtures, etc. Anything not removed or identified for salvage shall become property of Contractor for removal and disposal. The Contractor and City shall coordinate for

the effective removal and salvage of items of value. Salvage of existing equipment by the City will not interrupt construction activities.

The Contractor shall provide six – 8' x 20' temporary Conex storage boxes for shop maintenance equipment and supplies upon issuance of Notice to Proceed (NTP). Safeguarding of the boxes, in a secured area, shall be the responsibility of the Contractor. Boxes shall be required for the duration of the Project. The City will load and unload materials into the Contractor supplied boxes.

18.8.4 CLEARING AND GRUBBING

Clearing and Grubbing shall be completed per Section 11 Earthwork and the Technical Specifications Section 31 11 00 – Clearing and Grubbing.

18.8.5 TOPSOIL CONSERVATION

The Contractor shall make every effort to conserve any and all topsoil existing on site.

Striping of top soil shall be accomplished by first using a soil preparer (Rotodarian, Blecavator, or Approved equivalent) to thoroughly mix existing topsoil and turfgrass. Mixing shall occur at a minimum depth of eight inches and screened to no less than 52 mm. Once the topsoil has been prepared it shall be stripped, stockpiled, and protected per City Standards and Specifications, with installed Best Management Practices (BMPs) until it is re-spread as specified in the plans.

Any contaminated material shall be disposed of off-site by the Contractor unless directed otherwise by the City.

18.8.6 TOPSOIL

Existing topsoil shall be tested for analysis and testing in accordance with Technical Specification Section 329113 – Soil Preparation to determine existing physical characteristic and soil fertility. Recommendations from the testing agency to improve soil structure or fertility shall be reviewed by the Contractor. Topsoil amendments, proposed by the Contractor, shall be submitted to the City for Approval

Imported topsoil shall be utilized around the Clubhouse for new landscape treatments. Minimum depth of six inches shall be utilized in all landscaped and turfgrass areas.

Imported topsoil shall conform to Technical Specification – Section 32 91 20 Topsoil.

18.8.7 GOLF COURSE SHAPING AND CONTOURING

The Contractor shall perform such surveying and staking as necessary for the construction, in compliance with Section 9 Survey and the City Standards and Specifications. The personnel involved in the greens shaping and final contouring of the greens shall be experienced in golf course shaping and final contouring. The Contractor shall coordinate all Work areas and schedules with subcontractors on the site such that no delay and/or damage is caused by lack of coordination.

The golf course area shall be cleared, and major cuts and fills completed, prior to beginning golf course shaping and contouring.

The shaping and contouring of the golf course shall begin immediately after major earthwork is completed. It is likely that various portions of the golf course will become available for shaping at different times. Therefore, the Contractor shall be prepared to Work on several different holes, scattered throughout the Project, at the same time.

To develop the finest possible golf course, the City in coordination with the Contractor, will have the right to alter the design of greens, tees, sand bunkers and fairway grades during the construction process. The golf course shall be a well-drained and playable course, therefore, additional swales or grading may be required over and above those shown on the Approved Grading Plans produced by the Contractor.

Swales shall be constructed in the approximate locations as shown on the Grading Plans. The invert of the swales shall be deep enough to intercept surface water and to direct it to the nearest catch basin, lake, or drainage outlet. Swales shall be graded smoothly to permit ease of maintenance by mowing equipment, and shall be free of all water holding pockets, depressions, etc. All areas shall be graded to a smooth condition compatible with surrounding areas. The minimum slope of all swales shall not be less than three percent.

All shaping shall be done with positive surface drainage foremost in mind, with a minimum three percent slope. Attention shall be paid to eliminating surface water crossing greens and tees, and entering bunkers. The Contractor shall use extreme care not to disturb or block existing storm drainage and/or drain lines installed in the sub-base of greens and sand bunkers after the initial shaping operations.

Refer to Schedule 12 Drainage and Water Quality for additional requirements.

18.8.8 GRAVEL MATERIAL FOR DRAINAGE

All drainage gravel shall be clean, washed, and proven by a USGA accredited laboratory to be compatible with proposed greens mix, bunker sand, and native soils (must be drainage gravel and not plug drainage gravel layer) or other proposed use.

The Contractor is responsible to perform due diligence to research and acquire a source of gravel that will perform as an excellent long-term drainage medium for this Project. The Contractor shall ensure proposed gravel withstands physical and chemical influences of this particular Project.

The City recognizes that there may be different drainage gravel sizes used on the Project depending on the application. Each drainage gravel type shall meet or exceed the standards for intended use and testing procedures, as set forth in this Section 18.

Gravel material for drainage shall be submitted to the City for Approval.

18.8.9 GOLF COURSE SUBSURFACE DRAINAGE

The Contractor shall furnish all construction design details, site engineering, materials, labor and equipment for installing and backfilling subsurface drain lines in fairway and rough depressions and swales as well as fairway traps necessary for the Work. Drainage system and subgrade shall be designed to move water and keep course playable under a one inch per hour rain event.

18.8.10 SUBSURFACE DRAINAGE PIPE

All pipe and fittings shall be new, of the best quality, and conform to ADS N-12 WT Smooth Interior Pipe, or Approved equivalent. Water tight pipe is required due to recycled water use.

Subsurface drainage pipe material shall be submitted to the City for Approval.

18.8.11 SUBSURFACE DRAIN INSTALLATION

Drain lines throughout the golf course shall be installed according to representative drawings and specifications. Operations shall be scheduled so that when a trench is opened, materials are installed, and

trench finished during the same Working Day so that no trenches or partially covered pipe lines remain open to the elements. All construction Work shall be done in a neat and orderly manner.

Once underdrains have been installed, trenches backfilled with drainage gravel, topsoil, and compacted (as appropriate), spilled and excess drainage gravel shall be removed.

Drain pipe shall be placed on a minimum four inch firm bed of drainage gravel. The same drainage gravel shall be used to backfill.

The Contractor shall prevent excess excavated subsoil from falling into the open trench before backfilling, or being mixed with drainage gravel material during backfilling.

The Contractor shall provide Subsurface Drainage Plans. A #14 wire, yellow coated, shall be placed in the trench with each four inch drain line, as well as with each discharge line, for ease of location.

The upper ends of all main drain lines shall be equipped with a tee joint or elbow to the surface grade. These joints shall be capped at their openings at the time of installation. This arrangement will enable the drain line to be flushed in the event of its becoming clogged. The cap shall be covered with a metal plate so that a metal detector may be used in locating it.

All pipe leading to sumps, streams, or lakes shall be non-perforated with a minimum of 12 inches of cover to top of pipe. Discharge lines shall be laid directly on the clean, formed and properly sloped ditch bottom. Backfill for these lines shall be material excavated from the trenches. All outlets shall be protected by a screen at the point of discharge into roughs or at other locations nearby as Approved by the City.

Trenches that settle lower than the surrounding grade within the Warranty period shall be brought to the surrounding grade by the Contractor with the same type of drainage gravel and shall be sodded or planted in accordance with City Standards and Specifications.

18.8.12 IRRIGATION

The Contractor shall provide an irrigation system, in accordance with Section 5 Environmental Requirements, which will provide 'wall to wall' irrigation.

The Contractor shall be responsible for the provision of water for irrigation and power supplies and other services required for establishment of the landscaping.

18.8.12.1 IRRIGATION PLANS

All plan dimensions shall be considered approximate and shall be field verified prior to installation. Prior to commencement of the construction Work, the Contractor shall carefully check and verify all dimensions.

For purposes of clearness and legibility, the piping lines and the electrical lines can be diagrammatic, but the size and location of equipment shall be drawn to scale, wherever possible.

18.8.12.2 IRRIGATION MATERIALS

The Contractor shall use irrigation materials in accordance with City Standards and Specifications and as modified by the Technical Specifications.

All irrigation components/materials shall be new. Any existing components/materials not identified to be salvaged by the City, shall become property of the Contractor to be disposed off-site. Any fines or costs incurred by the Contractor due to improper disposal shall be the Contractors responsibility.

All irrigation components/materials for new construction shall be of a manufacturer, type, and quality - per the Technical Specifications or Approved equivalent.

18.8.12.3 MANUALS AND DOCUMENTATION

The Contractor shall develop and furnish a comprehensive Irrigation Operations and Maintenance Manual to the City. The manual shall document all information required to allow the City to operate and maintain the irrigation system, including making future changes. The manual shall include As-Built Plans of the irrigation system. The manual shall include a complete parts list, including part numbers, descriptions, system application, and local part suppliers. The manual shall provide a maintenance plan of anticipated maintenance and anticipated dates of replacement.

The Contractor shall provide manuals in electronic Microsoft Word, PDF, and four bound instruction manuals, with tabs and an index/table of contents.

The Contractor shall coordinate with the City for a mutually convenient time to train golf course personnel in the operation, maintenance, and repair of the irrigation and computer system.

18.8.12.4 CENTRAL COMPUTER OPTIMIZATION

The Contractor shall set the initial watering schedules and programming of the controllers. Prior to hand-over, the Contractor to coordinate with the City to optimize the programming system for routine maintenance operations. Initial data base entry and hydraulic programming of the irrigation system and instructions on how to make such changes shall be the responsibility of the Contractor.

The central computer program/optimization setup shall include all database elements of central control system software in compliance with irrigation system design parameters and features of the golf course.

The central computer system shall be setup with a spacial data base for every sprinkler zone to include but not be limited to:

- Individual zone flow rates
- Head type and precipitation rate
- Area of coverage
- Turf type and crop coefficient
- Soil infiltration rate
- Rooting depth of turfgrass or plant material
- Minimum cycle period per zone
- Maximum application duration per zone
- Identification of common groups
- Distribution system hydraulic limits by node (taken from KYPIPE hydraulic analysis)
- Pumping facility capabilities
- Field unit identification
- Site definition by interface unit
- Weather station access

- Pump station interactivity “what if’s”
- Overcapacity from designed to actual flow conditions
- Power outages and reduced capacity to operate on a priority based schedule
- Following program development, data base schedules will be installed in central control system computer
- Create all necessary shape file conversions of AutoCAD record drawing for use in central mapping module
- Create final rendered image of golf course irrigation system for graphic operation by maintenance staff from aerial photograph background displayed as a geotiff layer on the golf course central computer

18.8.13 IRRIGATION POND

Provide a usable 12 acre-feet (3,260,000 gallons) pond. Irrigation storage was determined by maximum water use event (800K) multiplied by four events. This is the “usable” amount so it will need to be oversized to accommodate losses due to intake location and maintaining a proper amount of water over the intake to prevent siphoning.

Pond must be lined due to recycled water.

The Contractor shall inform itself of and adhere to all Local, State, and Federal laws, rules, and regulations governing the use of recycled water.

The existing irrigation pond is estimated to be approximately 10 acre-feet. The Contractor shall verify the existing pond volume.

18.8.14 PUMP STATIONS

Irrigation pumps station(s) shall be required for the Project.

New pump station and pumps are required for the Project meeting the following requirements:

- Pump sizing that meets a 3,000 gallons per minute specification which will deliver the max 800,000 gallon event in 4.5 hours.
- A fertigation system in the pump house for grow-in purposes; a minimum of two – 1,000 gallon tanks with spill containment.
- Gypsum Wobbler
- Frost free mainline shall be included
- A lake screen wash system for the intake in the irrigation pond.
- A P.A.C.E, or Approved equivalent, amperage monitoring system on the pump station to monitor active draw and energy ratchet.
- New pump house shall be a minimum of 1,200 square feet.

18.8.15 PUTTING GREEN CONSTRUCTION

The Contractor shall design and construct greens to meet the Technical Specifications - a modified USGA sand based design for putting green construction.

The Contractor shall provide materials and construction methods ensuring that the greens mix will not degrade when using existing recycled irrigation supply; and will not bind, plug, or compact in a manner that inhibits an effective flushing of salts through the profile.

Greens shall include a minimum of six pinable areas with slopes between one and two percent. The Project shall include 'Parkland Style' greens, varying in size, maintaining a minimum of 4,500 square feet per green. Double greens are not permitted. Each pinable area shall be approximately 300 to 500 square feet. The number and size of pinable areas shall be shown in the plans.

18.8.15.1 PUTTING GREEN MIX

Because the irrigation water source is recycled, the City has examined possible greens mix materials to ensure these greens do not lock up. Once installed, compacted, settled, and turf established, the greens mix and greens drainage system shall provide exceptional infiltration rate to accomplish rapid salt flushing. The City has used and prefers Golf and Sport Solutions of Colorado "Pro Tour" sand combined with Dakota Peat at a 90/10 ratio (by volume) for the 12 inches of root zone mix for greens. While this material may not meet USGA standards for particle distribution (too much sand), this material is desired due to the uniformity and smaller percentage of fines in the Pro Tour sand. The City also wishes to use the Pro Tour sand for topdressing during the grow-in and maintenance phase of the Project.

If the Contractor wishes to build and topdress with other USGA specified materials, the Contractor must demonstrate that the chemical composition of the Project's recycled irrigation water supply in conjunction with the physical and chemical composition of construction materials (drainage gravel, sand, and peat) ensure the long term success of the finished product that allows for exceptional flushing of salts that may accumulate in the root zone. The Contractor shall employ a reputable soil consultant to assist with the sampling and interpretation of laboratory analysis.

Green mix materials shall be submitted to the City for Approval.

18.8.15.2 PUTTING GREEN SUBGRADE

Subgrade shall conform to general shape of the finished grade. Subgrade shall be established approximately 16 inches below proposed surface grade and thoroughly compacted to prevent settling or water collecting depressions. The green subgrade shall be constructed to include pinable areas.

An impermeable HDPE plastic barrier must be installed vertically around the cavity of the green to separate putting green mix and drainage gravel layer from surrounding soils. Greens mix and surrounding soils shall not blend or interlay. Excess barrier must be trimmed sufficiently as to not interfere with routine maintenance practices.

The subgrade of the greens shall be compacted sufficiently by the use of normal earthmoving equipment to prevent any future settling and creation of any water holding depressions in the surface, and shall allow for the placement of the specified materials in the inside area, or cavity of the green.

18.8.15.3 PUTTING GREEN SUBSURFACE DRAINAGE

The Contractor shall design and install a herringbone patterned drainage system allowing natural fall along the main with lateral drains spaced as needed to ensure proper drainage and extend to the perimeter of the green. Smile type drainage pipe should be installed and placed to the extent needed to intercept any gravitational flow of water not caught by herringbone design; ensuring that low-lying areas of greens are not saturated. A #14 yellow coated, tracer wire must be used along the main with a cleanout access for the main drainage line. ADS N-12 smooth wall perforated or equivalent pipe must be used for greens subsurface drainage.

Geotextile encased tiles are prohibited.

Drainage trenches shall be at least six inches wide and eight inches deep and shall be cut into a thoroughly compacted subgrade so that drainage pipes maintain a consistent 0.5 percent slope to the outlet. Spoils from trench shall be removed from subgrade cavity and floor of trench shall be smooth.

A layer of drainage gravel shall be placed in the trench to a minimum depth of one inch and may be deeper as necessary to ensure slope requirements. All drainage pipe shall be placed on this drainage gravel bed in the trench. Once pipe is installed, additional drainage gravel must be used to backfill and care used not to displace any of the drainage pipes or collapse of the trench. The entire subgrade must be covered with a layer of drainage gravel to a minimum of four inches, conforming to proposed final grade to a tolerance of plus or minus one inch.

Once compacted, the putting green surface shall have uniformly incorporated into the top one inch several pre-plant amendments for enhanced seed establishment and germination. Amendments shall be granular and include a micronutrient package (maximum establishment rate); Pythium control; starter fertilizer at a minimum of 1#N/m and at a 1:2:1 nitrogen, phosphorus, and potassium (NPK) ratio; humates; and other amendments as deemed necessary by Contractor's soil consultant when considering greens mix physical and chemical properties.

18.8.16 BUNKER CONSTRUCTION

Bunkers shall meet or exceed the performance of the "Better Billy Bunker" style.

Bunker edges shall not be within 10 feet of a putting surface. Bunker surround and faces shall be designed and shaped so that all mowing can be accomplished by a ride-on 72 inch rotary surrounds mower. Design and shaping of grassed areas that require hand watering or hand mowing is prohibited. Bunkers shall be designed so that they can be raked mechanically (or at least keep hand raking to a very minimum).

18.8.16.1 BUNKER SAND

The City has used and prefers the bunker sand from Golf and Sport Solutions "Pro Tour". The City prefers this material because of the smaller percentage of fines so that the bunkers will not crust or plug up over their life expectancy. If the Pro Tour sand is found to be incompatible with the Better Billy Bunker style of bunker construction, the Contractor shall propose an alternative bunker sand so long as that material does not plug or crust over. The City will only consider physical and chemical analysis performed by USGA accredited laboratories utilizing ASTM test methods and standards.

Bunker sand mix shall be submitted to the City for Approval.

18.8.17 TEE CONSTRUCTION

The Contractor shall perform the fine grading of all tee subgrades and surfaces, including trenching for and installation of any subsurface drain lines; sampling, testing, placing and spreading a mix design of 80% bunker sand/20% Dakota Peat (by volume) to a compacted depth of six inch at all tees; and fine grading. The Contractor shall shape tees so that the minimum square feet of teeing space shown on the Approved Grading Plans is attainable. The shapes and angles of the tees shall be according to the plans and any field direction as provided by the City.

Tees shall be shaped so that the teeing surface is smooth and straight with no pockets, and slightly pitched (one percent) to provide surface drainage. Tee subgrades shall first be finish graded and smoothed.

Side slopes of tees shall be graded to blend smoothly with the surrounding contours and permit mowing with riding power equipment, unless otherwise indicated by the City.

Tees shall have a five foot minimum radius at all corners.

18.8.18 FAIRWAYS AND ROUGH CONSTRUCTION

Fairways and roughs shall be graded so that surface water flows off of them and/or drains as rapidly as possible. A minimum of three percent slope for positive surface drainage is required throughout, although three percent is desirable in playing areas. Fairway subgrades shall be shaped per the plans.

18.8.19 CART PATH CONSTRUCTION

The Contractor shall provide a continuous cart path for the golf course. All cart paths shall be hidden from view, to the extent feasible, especially within the landing areas and adjacent to greens. Cart path locations shall balance function and aesthetic impact.

Centerlines of cart paths should be staked on the site by the Contractor. The City and Contractor shall coordinate to revise the alignment subsequent to staking, if needed, to take best advantage of the lay of the land and completed golf course features. Cart paths shall be ADA compliant.

Cart paths shall be installed to allow the course to remain open and playable during times when “cart paths only” has been determined. Cart path width shall generally be six feet but shall consider shared maintenance paths, staging areas, turn around areas, pedestrians, and high traffic areas. Cart paths shall be four inch thick fiber reinforced concrete, with the exception of any shared maintenance paths which shall be designed, thickened, and reinforced to accommodate appropriate maintenance vehicles. Six inch curbing is required on all greenside and tee side cart paths and as needed to direct stormwater towards drainage areas.

The Contractor shall be responsible for clean-up, including hauling from the site debris and any excess materials. The Contractor shall grade each side of the cart path so that smooth and natural looking contours are achieved when blending the grade of the cart path and surrounding grades.

18.8.20 GOLF COURSE FINE GRADING

The Contractor shall prepare topsoil, clean and fine grade tees, greens, bunkers, fairways, rough, other features, and out of play areas so as to produce a proper planting bed for grassing.

Clearing, together with major root raking, rock removal, stump removal, and heavy clean-up operations, grading of fairway and rough areas including provision for adequate surface drainage, topsoil replacement and rough grading, and drain line and irrigation installation shall be complete prior to golf course cleaning and fine grading. Appropriate equipment to be used for golf course cleaning and finish grading shall be used at all times.

Areas (excluding greens and tees) to be planted shall be graded and floated to provide complete surface drainage of not less than three percent positive drainage. All water-holding depressions and pockets shall be eliminated. Undulations and unsightly variations in grade which will not permit the use of normal mowing equipment without-scalping or missing shall be removed so that proper use of such equipment may occur. Finish grade of pond edges and stream overbanks shall achieve a maximum 4:1 slope with easily maintainable transition slopes. The edge treatment of the low flow channel bank shall be constructed in accordance with the Urban Drainage Flood Control Districts (UDFCD) *Urban Storm Drainage Criteria Manuals*. The Contractor shall prepare areas to be planted as near to the water edge as possible.

Areas to be planted shall also be finish graded to meet any walkways, paths or other adjoining surfaces so that, after compaction, no water pockets or ridges remain. The drainage within 10 feet around catch basins shall have three percent or greater positive drainage.

Areas where sod will interface with other modes of planting shall be fine graded so that the sod shall be at grade with adjacent planting areas.

18.8.21 CLEANING

Following rough grading, the Contractor shall have all areas grassed thoroughly scarified and loosened by disking, harrowing, or other suitable means to a minimum depth of four inches, 16 inches on the fairways and fairway surrounds, accomplished with a verti-drain prior to fine finish grading. These areas shall be machine or hand worked as necessary to eliminate all lumps and soil clods. Tillage shall include the removal of all equipment ruts and tracks, areas of compaction or erosion, and any other undesirable soil conditions which would prevent the proper formation of a prepared seed bed planting bed.

Tillage shall be accomplished only under proper soil conditions. The City may, at their discretion, request the cessation of tillage operation during periods of severe drought, excessive soil moisture, or other unsatisfactory soil conditions.

All rocks, stones, sticks, brush, roots, and other objectionable materials which might interfere with the formation of a prepared seed bed planting bed, impair planting or create future problems of maintenance shall be removed from the soil. All stones larger than 3/4 inch in diameter shall be removed from the top four inches of planting beds. All such materials shall be disposed of by burying or dumping in areas as Approved by the City. Rock picking and debris removal shall continue after the application of fertilizer and/or lime until Final Acceptance.

18.8.22 SODDING

After the slopes, mounds, fingers and faces of bunkers have been fine graded, and drain lines installed in traps, areas to be sodded, as shown on plans and/or as otherwise agreed to by the City and Contractor, (lips and fingers of traps, grass depressions) shall have been hand raked clean of debris and tamped firm.

Fertilizer, based upon results of the soil analysis, and water, shall be spread prior to installation of sod.

Sod shall consist of live, growing plants secured from sources where the soil is fertile and shall have a healthy, virile root system of dense, thickly matted roots throughout the soil of the sod for a minimum of one inch. Sod shall be free from noxious weeds or other grasses and shall not contain any matter deleterious to growth or which might affect its subsistence or hardness when transplanted. Sod shall only be secured from sources as Approved by the City.

The Contractor shall not use sod from areas where the roots have dried because of exposure to air and sun, nor from where grass has thinned from these or other reasons.

All sodded areas shall be knitted neatly and firmly together, allowing no spaces, gaps, voids, or depressions within sodded areas. When laid on surfaces of slopes which may cause sod to slide due to the height and slope of the surface or to the nature of the soil, sod shall be stabilized to ensure proper binding and to prevent slippage. Anchoring is best achieved by using wooden pegs to anchor the sod to the slope. To avoid interference with future mowing operations, pegs shall be driven beneath the mower cutting height.

Curvilinear shapes and forms shall be cut and trimmed with a sharp cutting tool to assure proposed shape and forms.

18.8.23 SOIL PH ADJUSTMENT

Upon completion of the Work specified above, fairway and rough areas shall be pH adjusted at the rate dictated by soil test recommendations. Because soil conditions may vary from hole to hole, it is advisable that several soil samples be taken from each fairway and that those samples be mixed and tested on an individual hole basis so that proper rate of soil amendments may be applied. Green putting surfaces and surrounding areas and tees shall be pH adjusted at the rate dictated by soil test recommendations.

Ground dolomitic limestone shall have at least 98% passing a 20 mesh sieve and at least 40% passing 100 mesh sieve. Limestone shall contain from 10 to 20 percent magnesium reported as the oxide. Lime shall be worked lightly by raking, tillage or other Approved method into the top three inches of soil.

Elemental sulfur, Agri-sul or Disper-sul, or Approved equivalent may be used to lower the pH. Gypsum or sulfur shall be incorporated to a depth of six to eight inches by disking, harrowing or other Approved method within 24 hours to correct sodic or saline soils.

The Contractor shall take care that spreading materials for pH adjustment be done under favorable climatic conditions to assure uniform distribution and coverage.

18.8.24 FERTILIZATION OF FAIRWAYS, TEES AND ROUGHS

The fertilizer shall be manufactured from quality materials, be free from impurities, uniform in composition, meet recognized standards for effectiveness and be free flowing and suitable for application with appropriate equipment. Fertilizers with a urea base other than in the form of urea-formaldehyde as the nitrogen source shall not be used. The fertilizer shall be delivered to the Project in bags or other convenient containers, each fully labeled, conforming to applicable State fertilizer laws, and bearing the name, and trade name of the producer.

Immediately prior to planting, the fairway and rough areas shall be fertilized at a rate and type determined by soil analysis. The starter fertilizer shall be incorporated into the planting bed.

Care shall be taken when spreading fertilizer that there are no gaps. Fertilizer shall be applied under favorable climatic conditions and by such Approved methods as will ensure maximum uniformity of distribution. Fertilizer shall be worked lightly by raking, tillage or other Approved method into the top three inches of soil. A spring-tooth harrow, or Roseman rake, followed by a float, shall incorporate the fertilizer into the soil, smooth out the distribution and prepare the area for planting. If the ground becomes wet or cakes over before planting, it shall be reharrowed. The harrowing and floating ensure a smooth, level, and mellow plant bed.

18.8.25 GRASSING/PLANTING

The Contractor shall furnish all material, labor and equipment for adjusting soil pH; fertilizing and planting tees, fairways, roughs; sodding trap edges; grass depressions and slopes; and seeding greens,

Prior to pH adjustment, fertilization and planting, all areas shall be inspected by Contractor to assure that the planting bed has been properly prepared during fine grading. The Contractor and City shall be in agreement on the acceptability of the planting bed. Inadequate preparation of the planting bed shall result in the reworking of the fine grading in the area to the complete satisfaction of the City.

After soil pH adjustments have been made, fertilizer applied and the soil cleaned and smoothed to the satisfaction of the City and after the irrigation system has been tested and is operative, the golf course may be planted.

18.8.26 SEEDING

All seed shall be labeled in accordance with the United States Department of Agriculture (USDA) Rules and Regulations under the Federal Seed Act and State seed laws. The kind and minimum percentage by weight of pure live seed shall be those called official and tabulated in USDA Bulletin No. 480, or latest revision thereof. The City currently recommends that all new greens be established from the blue tag certified Jacklin® T-1 bentgrass.

Refer to Section 10.1.2 of the City *Golf Maintenance Standards Manual* (GMSM) for seeding and grow-in standards for greens. This Project requires for a six inch sand/peat cap on tees, therefore the Contractor shall adhere to Section 10.1.2 for bare seeding of greens and apply this standard for tees.

Seed types shall be true to name, of the latest crop, and free of all weed seed and inert matter. All seed shall be delivered to the site in sealed bags of the vendor bearing seed analysis and the date of the germination, which date shall be within a period of six months prior to commencement of planting operations. Seed shall be stored in such manner as not to impair its effectiveness.

If an inspection either during seeding operations or after seeding emergence shows that strips have been left unplanted, or other areas skipped, the Contractor may be required to sow additional seed on these areas.

Green surfaces to be seeded shall include the putting surface and a minimum three foot wide (or as shown on the plans) collar encircling the putting surface. Areas outside the collar shall be considered shoulders and slopes and may be planted as fairways or roughs. The actual green surface shall be outlined with paint, pennants or be staked by the Contractor and shall be agreed to by both the Contractor and the City.

Fairways and rough shall be seeded by Brillion seeder, or other Approved method in at least two directions, with a minimum of 30 degrees difference in direction of passes. One half of the sowing rate shall apply to each direction. Drill seeding shall be done with Approved equipment with drills not more than four inches apart. Refer to Section 10.3 of the GMSM for seeding and grow-in standards for fairway and rough.

Satisfactory survival will be evidenced when a solid stand of seedlings are produced, free of all foreign materials and erosion. Any areas that do not produce sufficient growth within fifteen days of planting shall be replanted. All areas of erosion shall be patched and replanted by the Contractor.

18.8.27 STRAW MULCH/CRIMPING

Seeded areas, with the exception of greens and tees, will be covered with straw mulch using commercial blowers. Straw mulch shall be applied at a rate of two tons per acre, on slopes greater than 5:1 straw erosion control blankets shall be used.

Straw mulch shall consist of wheat, barley, oat or rye straw, or tame hay. The mulch material shall be air-dry, reasonably light in color, and shall not be musty, moldy, caked, or otherwise of low quality. The use of mulch that contains noxious weeds is not permitted. The Contractor shall provide a satisfactory method for determining weight of mulch furnished.

Mulches shall be applied uniformly to the designated areas. They shall be applied to areas seeded not later than two working days after seeding has been performed. Straw mulch material shall be stabilized within 24 hours of application using a mulch crimper or equivalent anchoring tool. Mulch material shall be tucked two inches into the soil surface. When the mulch crimper or equivalent anchoring tool is used, it shall have straight blades and be the type manufactured expressly for and capable of firmly punching the mulch into the soil. Where the equipment can be safely operated, it shall be operated on the contour. Hand methods shall be used where equipment cannot safely operate to perform the work required.

The Contractor shall maintain the mulch and erosion control blanket areas until Final Acceptance. Maintenance shall consist of the areas damaged by water erosion, wind, or other causes. Such areas shall be repaired to re-establish the intended condition and to the design lines and grades required by the contract. The areas shall be re-fertilized, re-seeded, and re-mulched prior to the new application of the straw mulch or erosion control blankets.

All straw mulch shall be Colorado grown Certified Weed Free Mulch as described by the Colorado Department of Agriculture Division of Conservation Services.

18.8.28 POST-PLANTING RESPONSIBILITIES

All areas disturbed during planting procedures shall be repaired by the Contractor. Repair areas shall be regraded to the original grade, fertilized and grassed in accordance with green, tee, fairway and rough specifications as the situation warrants.

Immediately after completion of planting of any specific area the Contractor shall commence a regular germination watering program. It will be the Contractor's responsibility to maintain the planted areas. Maintenance of the golf course shall be required of the Contractor through germination and establishment.

The Contractor shall provide a Germination, Establishment, and Grow-In Work Plan that shall be used for grow-in and post plant processes and materials. The Contractor may provide this plan in a format of its preference but shall adhere to the Integrated Plan Management (IPM) recording standards of the GSM Section 4. The Germination, Establishment, and Grow-In Work Plan shall outline materials, methods, timelines, and milestones for the grow-in and establishment phase.

After initial watering, the planted surface shall be watered as frequently as necessary to keep soil surface sufficiently moist to ensure maximum germination and growth. The Contractor shall coordinate and implement the proper watering procedures, quantities of application of water, time periods of watering, and any other pertinent factors. These factors include, but are not limited to, a fertility program delivering sufficient NPK, micronutrients, organics, and other amendments that provide optimal growing conditions for seedling and turf establishment and specific to each particular site. A consistent topdressing and cutting program for the greens and other grassed surfaces to provide the finest possible growth and establishment of turfgrass. The Contractor assumes all direct responsibility for germination and establishment of the turfgrass, with the input of the City to achieve the best establishment possible. Fertilizer, chemical application, and water use records shall be kept by the Contractor in accordance with State regulations and GSM. All records shall be provided to the City.

The Contractor shall refer to the guidelines in the *Establishment and Management of T-1 Creeping Bentgrass*, as provided in the Reference Documents.

18.8.29 APPLICATION OF THE DENVER GOLF MAINTENANCE STANDARDS MANUAL

The Contractor shall perform all Work and provide all materials required for the successful seeding, establishment, and grow-in of all golf course areas. The Contractor shall demonstrate that Best Management Practices (BMPs) are utilized to deliver exceptional grown-in for a well-developed golf course.

The GSM shall be reviewed, in its entirety, so that the Contractor understands the context of the standards of which Denver Golf holds itself in all areas of golf course maintenance and conditioning. Many of the Sections of the GSM refer to day to day operations under playing conditions that may not apply to the Contractor during the construction Work, grow-in, and establishment. The Contractor shall meet or exceed the standards from the GSM, provided below.

18.8.29.1 SECTION 1 – GOLF COURSE CONDITIONS

Not all standards are necessarily required during the grow-in phase, but all requirements of this Section shall be met prior to Substantial Completion.

Section 1.6 regarding mowing of the driving range may be disregarded.

18.8.29.2 SECTION 4 – ENVIRONMENTAL MANAGEMENT SYSTEM

Many of the standards found in this Section are fundamental BMP's for specific to Denver Golf maintenance operations. The Contractor shall comply with standards for all record keeping in Section 4.1. These are IPM planning and recording, off-road fuel usage, and monthly water usage. The City will provide training to the Contractor on how to access and record all of these workbooks.

While the Contractor shall adhere to Audubon Cooperative Sanctuary principals, the Contractor is not required to provide documentation to Audubon International during the construction and the grow-in process. The Contractor shall provide information to the City, as requested, so that the City can maintain Audubon Certified Sanctuary status throughout the duration of the Project.

18.8.29.3 SECTION 10 – GROW-IN

Grow-in standards provided in the GSM establish a framework of processes and minimum standards used during the grow-in and establishment of seed and sod on the golf course. The Contractor shall meet or exceed these standards to provide a finished, mature, golf course on time and ready for golf play.

18.8.30 AS-BUILT PLANS

The Contractor shall provide As-Built Plans of the golf course showing locations, limits, and perimeters of tee boxes, fairways, bunkers, greens, pinable areas, cart paths, drainage features including, drain lines, cleanouts, outlets, swales, inlets, water boundaries, Utilities, and irrigation components. Irrigation components shall include the location of all sprinklers, valves (air, isolation, reducing, relief, and drain), controllers, wire routing, pipe routing, sizing pipes and mainline valves, and field controller station assignments.

As-Built shall be submitted in both hard copy and electronic copy (PDF and AutoCAD) formats.

18.8.31 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 18-1 Deliverables

Deliverable	Information or Approval	Schedule
Seeding and Sod Plan and selection	Approval	Concurrent with design submittals
Germination, Establishment, and Grow-In Plan	Approval	Concurrent Final Design Submittal
Copies of lab reports	Information	Within two Working Days following completion of the lab reports
Topsoil amendments	Approval	After analysis
Irrigation Operations and Maintenance Manual	Information	Prior to Substantial Completion
Fertilizer, chemical application, and water use records	Information	Prior to Substantial Completion
Audubon Certified Sanctuary compliance information	Information	As requested
Material selection (drainage gravel, putting green mix, bunker sand mix)	Approval	Concurrent Final Design Submittal
Subsurface drainage pipe	Approval	Concurrent Final Design Submittal
Ball washers and tee markers	Approval	Concurrent Final Design Submittal
Hole signage	Approval	Concurrent Final Design Submittal

19.0 SITE DEVELOPMENT

The Contractor shall be responsible for complying with the requirements provided in this Section 19, the Technical Specifications, and City Standards and Specifications. These guidelines establish technical performance criteria so that the Contractor is aware of the expectations for the Project and can focus on innovation in achieving those requirements. The Contractor shall be expected to meet or exceed these specifications for the various elements of the Project, in accordance with these Contract Documents.

The Project includes removal and reconstruction of existing golf course facilities, including the Clubhouse, Maintenance Facility, concessions, restrooms/shelters, and the irrigation pump house, unless all of the following conditions are met, in which case the existing Clubhouse and/or existing Maintenance Facility can be left in place and incorporated into the new golf course design:

Clubhouse

Demonstrate that if the Clubhouse is left in place, the following criteria can be met:

- Flood hazards to the existing Clubhouse building will be eliminated and comply with City Building Code and Regulatory requirements.
- The existing Clubhouse building will not require flood proofing and will comply with City Building Code and Regulatory requirements.
- The proposed detention will not impact the existing finished floor elevation (FFE) of the Clubhouse and at least one foot of freeboard is provided between FFE and flood levels.
- Detention storage configuration and location will not significantly change from what was shown in the Basis of Design Plans and Reference Documents.
- Any additional earthwork will not significantly change from what was shown in the Basis of Design Plans and Reference Documents and that impacts to existing trees will not increase and there will be no more additional impacts to views.
- Detention area can be designed and the Clubhouse can be protected from flooding without a berm or structure extending around the Clubhouse.
- The proposed spillway can be designed and constructed to allow floodwater to continue in historic drainage patterns towards 26th Avenue and York Street without impacting the neighborhood.

Maintenance Facility

Demonstrate that if the Maintenance Facility is left in place, the following criteria can be met:

- It will not impact the requirements for the golf course design and construction as outlined in Section 18, while maintaining the functionality of the Maintenance Facility.
- It will not impact the required grading and routing of the new golf course, while maintaining the functionality of the Maintenance Facility.
- It will not require retaining walls around or near the existing facility to accommodate the new grading of the golf course.
- Demonstrate that the current facility complies with current City Building Code and Regulatory requirements.
- Demonstrate that existing Maintenance Facility will meet functionality and efficiency requirements as it relates to the operations of the golf course.

19.1 SPACE AND PROGRAM REQUIREMENTS

On behalf of the City, Gensler has prepared a *City Park Golf Clubhouse, Programming & Design Guidelines*, which has been included in the Reference Documents. The purpose of the document is to define minimum criteria with regard to the programming, planning, and overall quality of the proposed facilities, if a new Clubhouse and Maintenance Facility is required by the Contractors design. In addition to providing,

at a minimum, the recommended area for each program function, the proposed facilities shall incorporate the functional area criteria provided for each space. Details of the programming requirements are included in this Section 19 and the *City Park Golf Clubhouse, Programming & Design Guidelines* shall be referred to for additional details and descriptions of the spaces. A summary of the program space requirements are included in the tables in Appendix A of this Section 19.

19.1.1 CLUBHOUSE

Development of the Clubhouse facility space program reflects the existing mix of golf supported activities, golf teaching programs (First Tee program), and food service that are available to the full range of guests. Consideration is given to the current and projected users to be served by the Clubhouse, as well as to specific uses potentially varying recreation and dining needs (such as outside tournaments, social clubs, weddings, parties, neighborhood meetings, and social dining). The size and arrangement of spaces within the facility and the siting of the building shall support and optimize the operation of the Clubhouse's activities. The primary activities of the City Park Clubhouse can be summarized as:

- Golf shop and administration for providing control of the golf course and retail support to the course users;
- First Tee Program and administration providing youth programs and training;
- Dining and food service for patrons using the golf course, coming for dining purposes, or attending special functions.
- Support and maintenance of the Clubhouse and golf course.

19.1.1.1 GOLF / PRO SHOP

The golf shop is where golfers and the community begin their access to the course: check-in, pay green fees, and arrange for other services. The Golf Shop, also referred to as the Pro Shop, also provides retail services to golfers and others including items that support golf activity, such as clothing and golfing equipment. The golf shop includes a sales floor with control counter, a secure area for receiving, holding, and working on inventory, and an area for making repairs. Areas for storing and issuing rental clubs may also be provided.

The shop should be a modest retail operation for golf equipment, providing smaller materials such as balls, tees, and accessories. The golf shop should have clothing sales for golfers and other patrons. The shop should carry lines of men's and women's clothing, which may include golf shoes, shirts, jackets, pants, hats and other incidental items.

Sales Floor

The success of the golf shop comes from supporting the golf program both by aiding it financially as well as supporting golf activities. Merchandise shall be limited to inventory that turns over reasonably well and is economical to keep in stock. While the golf shop shall provide essentials for golfers, its inventory shall be based on market demand. Items of special interest shall be considered as special orders.

The sales floor is for marketing material needed by golfers, both equipment and clothing. It shall have three kinds of goods: essentials such as golf balls, tees, gloves, golf shoes, and other accessories; clothing and souvenirs that appeal both to golfers and other visitors to the shop; and more extensive equipment, such as lines of clubs that the golf professional may use in outfitting people in the teaching programs.

The shop shall have internet access for use by staff to order a full array of items, including golf clubs. The inventory of resale clubs shall be ordered by the golf professional. Hence, provision shall be made to carry a few lines of clubs, with a fitting station and space suitable for their display.

The floor shall be arranged in zones for both good merchandising and supporting the golf activity. The desk shall provide good views of the start of the course and of control entries to the premises. Essentials and impulse purchase items shall be located in the high circulation zone, near the entrances and counters. Clothing and other merchandise shall be arranged in separate zones to enable easy comparison shopping. Equipment try out zones and fitting areas shall be available for clubs and shoes.

Relationships and Character:

- Locate the golf shop near the entrance for golfers, with views from the control counter to the start of the course and the tenth tee.
- Locate the golf shop on the path of all users of the Clubhouse, providing them with a good view of the merchandise. Glazing the wall adjacent to the Clubhouse circulation can provide added visibility the Golf Shop.
- Detail the furnishings in a consistent manner to develop a coherent appearance. Give the detailing a character that supports the theme of the whole Clubhouse.
- Have direct access to the repair area and rental club storage and good access to the inventory/receiving area.
- Provide convenient access for the manager, pro, and/or assistant pro.

Dimensions and Furnishings:

- Provide a display area of at least 900 square feet.
- Provide a minimum dimension of 16 feet, allowing for two lines of merchandise and central aisle.
- The City will furnish the sales area with display racks and tables. The Contractor will furnish all display shelving.
- The City will provide a computer based handicap posting station with extended weather forecasts (or locate outside the golf shop – either in the general circulation area or a sheltered exterior area). It is possible to provide a link on the Clubhouse website to provide these services.

Finishes/Special Requirements:

- Provide adjustable accent lighting for product display elements.
- A lighting level of 50 - 100 foot candle (FC) is recommended for display.
- Consider skylights for ambient light.
- Provide compatible and similar lighting throughout the Clubhouse to minimize need for multiple bulb types.

Control Counter

The control counter will be the central control for the golf course and for the golf shop. It will have workstations for controlling these two operations, including computers to schedule and control the use of the golf course and cash register with point of sale controls. As the control area may contain the starter's station, ensure that it is located to give good visual access to the golf cart staging area and the First Tee (and preferably, the tenth tee as well). The starter may be responsible for collecting greens fees and golf cart rentals. The starter's workstation shall be near the door to the exterior of the Clubhouse that accesses

the golf course. The retail workstation will also be a cash handling operation. Its operator shall be able to oversee the sales area and control the entrances to the golf shop.

Relationships and Character:

- Provide views from the counter to supervise the golf cart staging area, start of the course, and the tenth tee.
- Locate to supervise and be visible to the patrons of the sales area.
- Locate so that the entry to the repair area and inventory storage is immediately adjacent.
- Design the counter with details and materials to be consistent with those of the theme of the Clubhouse.
- Place adjacent to the administration office to allow for its staff to easily assist the golf shop staff during peak periods or to control the golf shop during off season or nonpeak hours.
- Locate and lay out to encourage patrons to encounter the maximum number of merchandise areas.

Dimensions and Furnishings:

- Provide adequate area with a minimum area of 120 square feet.
- Provide a minimum of 12 linear feet of counter space to face the sales area.
- Provide two workstations with the point of sale (POS), with at least 36" depth and appropriate communications connections. Provide each station/point of sale equipment with security controls (such as bar code reader, security tag demagnetizer, credit card charge recording and verification).
- Provide a durable surface on which customers can write, providing an Americans with Disabilities Act (ADA) writing surface.
- Provide a data transmission system including extended weather forecasts. It is possible to provide a link on the Clubhouse website to provide these services.

Finishes/Special Requirements:

- Assure that the finishes of the control counter match those of the larger room.
- Provide communication connections, including ones for the Clubhouse computer network, public address system, and the point of sales system.
- Lighting level: provide an average of 50 FC.

Inventory/Receiving/Storage

This area will provide a secure setting where merchandise for the golf shop can be received, logged into inventory, and processed for sales. Hence, this room will contain three kinds of support areas: (1) a work station for logging in inventory, (2) an open work space for opening parcels, spreading out, and tagging items, and (3) shelving for storing inventory.

Relationships and Character:

- Place the receiving area on an exterior wall adjacent to an area accessible by parcel delivery vehicles (if infeasible, coordinate deliveries to occur on off peak hours).
- Locate the inventory area so that it is near and conveniently accessible to the sales floor.

- Consider making this space a sub-area of a larger space that also contains the repair and rental club storage area, perhaps separated from it by an open metal divider that would allow the Inventory/Receiving area to be secure.
- Design finishes to create an area that is durable and utilitarian.

Dimensions and Furnishings:

- Size to be an area approximately 10 percent of the sales floor, with minimum area of 100 square feet.
- Design the shelving so that there is an open space at the center for processing merchandise, at least five feet wide.
- Include a work station surface of approximately 48" by 30" for tracking inventory.
- Place 12" deep shelving on the walls, allowing for some space to store vertical objects.

Finishes/Special Requirements:

- Provide resilient flooring, gypsum board walls, and an acoustic tile ceiling.
- Provide computer connections to the management system of golf shop for logging in received items and tracking inventory.
- Lighting level: provide an average of 50 FC.

Repair/Rental Golf Club Storage

In order to facilitate the rental of golf clubs and to make minor adjustments and repairs to golf equipment, primarily golf clubs, the repair shop will be the place to do such work and to store clubs for rental. The golf club storage will consist of a limited selection of rental clubs stored on horizontal racks. This program is provided through the First Tee of Denver, and can be combined with the First Tee of Denver storage.

Relationships and Character:

- Locate the repair work station and golf club storage near the counter of the sales area.
- Design finishes so that the area is utilitarian in character.

Dimensions and Furnishings:

- The overall area shall be large enough to accommodate both a workbench and rental golf club storage.
- Provide a 60 inch by 30 inch workbench, including stool or chair.
- Provide 60 inches of 10-inch shelving for tools and equipment above the work surface.
- Provide two linear feet of space next to the workbench with rails for storing golf clubs upright.
- Provide rental club storage on shelves or cubbies bag length deep, with 4 feet clear space for accessing clubs.

Finishes/Special Requirements:

- Provide resilient flooring or exposed concrete floors, masonry units or gypsum board walls, and an acoustic tile ceiling.
- The average lighting level shall be 75 - 100 FC.
- Provide adequate exhaust ventilation to support the club repair functions. PA

Indoor Driving Range Simulator

For additional revenue generation in off peak months, golf shops may offer patrons an indoor simulator. Such shops shall offer sitting areas and the ability to be served by the “grab and go” and kitchen and bar. The areas shall be large enough to try accommodate equipment including projector and computer system, and a seating area.

Relationships and Character:

- Locate the simulator directly off of the sales area for monitoring by the control desk.
- Detail shall be consistent with the quality and theme of the golf shop.

Dimensions and Furnishings:

- Provide a floor area approximately 300 sqft, with a minimum 10'-0" wide x 10'-0" high x 30'-0" long space to include a two relaxing chairs, a shared side table, and computer console (for each simulator and all shall accommodate ADA).
- Consult golf simulator manufacturers for additional requirements of equipment and spaces.
- Provide ceiling-mounted down lighting with protected acrylic lenses, with approximately 50 - 70 FC, dimmable.
- Develop a key locking system controlled by sales counter personnel.

Dressing Rooms

The golf shops will offer a large stock of clothing. As such a dressing area for customers shall be required. The areas shall be large enough to try on clothes and view prospective purchases.

Relationships and Character:

- Locate the dressing rooms directly off of the sales area.
- Detail shall be consistent with the quality and theme of the golf shop.

Dimensions and Furnishings:

- Provide a floor area approximately five feet by eight feet to include a bench and accommodate and ADA five foot turning radius.
- Furnish with a full length mirror on one wall, a bench, and clothes hooks.
- Provide ceiling-mounted down lighting of approximately 50 - 70 FC.
- Develop a key locking system controlled by sales counter personnel.

19.1.1.2 ADMINISTRATION

The administration of the golf programs will be conducted from the administrative area of the Clubhouse. The administrative area is an office suite that will serve as information center, reception area, event sales center, and central administration for golf course and Clubhouse program operations. This area will provide spaces for the manager, events coordinator, and First Tee staff. All of these spaces will be controlled by an operations center that will provide clerical and support services to the manager and events coordinator.

The administration shall be located to control the entry and activities of the Clubhouse. It shall be designed to work as an information center and hence be located near the entrance to the Clubhouse. It will also serve as the place for coordinating Clubhouse staff and shall be located to afford managerial staff access to

employees. The area shall contain the Time Management System (Time clock) station, although a second station could be located near the food service manager if requested by the owner.

Clubhouse Administrative Spaces and First Tee of Denver

The Clubhouse administrative spaces and First Tee of Denver space shall in be the front office for the Clubhouse. It shall containing a work station for a clerical assistant. It shall be used for greeting visitors, storing records, and controlling the flow of personnel. The office shall also be secure so that it can be used as a place for handling cash (although large amounts that come from the food service operations and golf shop typically shall be secured in a safe in either the manager office or the food service manager's office or both).

Relationships and Character:

- Locate the operations area near the main entrance to the Clubhouse, adjacent to and with direct access to the offices of the manager and events coordinator.
- Locate the operations office so that the managerial personnel can easily access the rest of the facility.
- Afford good visibility to this office for visitors, perhaps by glazing a good portion of the wall to the Clubhouse circulation.
- Design the space and furnishings as a good quality office complex, whose details support the theme of the whole Clubhouse.
- Locate so that the operations staff can see and aid the staff of the golf shop control counter, especially during off-season or non-peak times when the golf shop staff is limited.

Dimensions and Furnishings:

- Provide a minimum of eight feet in width.
- The City will furnish the office with a desk and chair for the operations officer, two armchairs for waiting visitors, file cabinets, and a work counter (containing computer based printing and reproduction equipment) for such activities as graphics production and document assembly.
- Install the main station for employee check-in, including a time management (time clock) system. (Consider alternate locations based on operational needs.)
- Provide a safe for cash handling operations (to be located to meet City installation security standards).

Finishes/Special Requirements:

- Provide gypsum board walls, carpet flooring and acoustical tile ceilings. The décor shall be consistent with that of the rest of the administrative area.
- Provide communications connections to the public address system, computer based golf program management records, and point of sale system.
- The average lighting level shall be 50 FC, with the ability to manually reduce lighting level for computer use.

Manager's Office

The manager's office, in combination with the operations office, will be the central administrative center for the golf program. The office shall be large enough and acoustically isolated for the manager to have private conversations with staff and visitors.

It shall be located so that the manager has convenient access to the operations staff and could also supervise the receiving and inventory handling activities.

Relationships and Character:

- Locate the manager's office near the golf shop with easy access to it.
- Locate the office adjacent to the operations center, allowing the operations clerk to control access to the manager's office.
- Consider having some of the wall to the operations area be glass, to give the office an open, hospitable character.
- If possible, provide a view of the golf shop control counter so that the manager can aid its staff, especially when golf shop staff is limited.
- Design the space and furnishings as a good quality office complex, whose details support the theme of the whole Clubhouse.
- The manager's office will contain confidential records and shall be kept secure.

Dimensions and Furnishings:

- Provide at least 120 square feet, allowing for the manager to have two guests in conference format.
- The City will provide one desk, a desk chair, two guest chairs, and file cabinets.
- Make provisions for a safe to support cash handling operations (to be located to meet City security standards).

Finishes/Special Requirements:

- Provide acoustical isolation so that the manager can have private conversations with staff and visitors.
- Provide gypsum board walls, carpet flooring and acoustical tile ceilings. The décor shall be consistent with that of the rest of the administrative area.
- Provide adequate lighting for work efficiency. The average lighting level shall be 50 FC, with the ability to manually reduce lighting level for computer use.
- Provide communications connections to the public address system, computer-based golf program management records, and point of sale system.

Events/Catering Office

This area shall house an events coordinator who is responsible for marketing and organizing functions, special events, and catering services that occur within the golf program and/or Clubhouse. The events coordinator shall also use the office to coordinate the booking of catered events and special functions.

In carrying out these tasks, the events coordinator will work frequently with the public and closely with the operations officer, manager, and other golf program personnel.

Relationships and Character:

- Locate the office adjacent to the operations center, allowing the operations clerk to control access to the events office.
- Consider having some of the wall to the operations area be glass, to give the office an open, hospitable character.
- Design the space and furnishings as a good quality office complex, whose details support the theme of the whole Clubhouse.

Dimensions and Furnishings:

- Provide at least 120 square feet, allowing for the event planner to have two guests in conference format.
- The City will provide one desk, a desk chair, two guest chairs, and file cabinets.

Finishes/Special Requirements:

- Provide gypsum board walls, carpet flooring and acoustical tile ceilings. The décor shall be consistent with that of the rest of the administrative area.
- Provide communications connections to the public address system, computer based golf program management records, and point of sale system.
- The average lighting level shall be 50 FC, with the ability to manually reduce lighting level for computer use.

Meeting and/or Break Room

In a larger Clubhouse with multiple programs (such as First Tee) a meeting room shall be provided. This room can better be utilized if it is allowed to also serve as a breakroom. While in this capacity no microwave or refrigerator can be provided, a coordinated schedule will need to be provided to all users. This would be kept by the administrative assistant at the operations front desk.

Relationships and Character:

- Locate the meeting room adjacent to the operations center, allowing the operations clerk to control access to the assistant manager's office.
- Consider having a door glass side lite, to allow others to know if the room is occupied.
- Design the space and furnishings as a good quality office complex, whose details support the theme of the whole Clubhouse.

Dimensions and Furnishings:

- Provide 270 square feet, allowing for a large table with 10 to 12 board room chairs.
- Provide credenza with under counter refrigerator.
- The character of the room and its furnishings shall match those of the administrative complex.

19.1.1.3 DINING

This area includes the indoor dining areas and their support spaces. These spaces shall include an open dining area, a closable function area, and appropriate storage spaces. These spaces are the visual focus of the Clubhouse. They also can be used as the circulation link between all of the patron activity and service areas – including the entry, golf shop, food service counter, toilets, outdoor dining patio, and golf activities.

All of the Clubhouse activities shall be tied together by the dining spaces. This space shall have an identity that is dignified, casual, and spacious. It shall provide a good atmosphere for socializing and casual dining, the quality of which is enhanced by having good views of the golf activities.

Provide ADA access by providing a flat floor throughout this area.

Dining Room

When the Clubhouse is open, the dining room will be used for open dining for all patrons. It can also be used for smaller to medium special functions, but will be open to patrons at all times, even when the largest functions are taking place.

The main activity will be casual dining, offered to both golfers and other patrons who come to the dining room. The character of the space shall be dominated by having scenic views, allowing the patrons to have one of the best quality surroundings and dining atmosphere within the community.

Relationships and Character:

- Afford good visibility to the golf course and good access to the exterior dining terrace.
- Have good access and visibility to the food service counter.
- Minimize the presence of the food service counter, not permitting it to dominate the character of the dining space. Consider having the food service counter located under a lowered ceiling, allowing the higher dining space to have its own character.
- Assure that both the entrance and toilet rooms are readily accessible to the dining spaces.
- Provide access to the golf shop, giving good views of the merchandise as much as possible to all patrons entering the facility.
- Provide storage space for added seating, buffet serving equipment, and seasonal decorations.

Dimensions and Furnishings:

- Provide circulation space in the serving counter area, at least eight feet wide so that patrons accessing the counter do not interfere with dining activities.
- Provide condiment kiosks and self-service beverage stations.
- Provide 17.5 square feet per seat in the dining area for casual dining activity.
- The City will provide a mix of movable, rectangular tables (including ones convertible to rounds) for four seats, allowing them to be reconfigured for different events.
- Provide space on the wall between the dining area and Clubhouse entrance for a computer touch screen through which records of handicaps and scores can be accessed.
- Provide access to television monitor(s).
- Consider providing a fireplace or other focal point to give a casual atmosphere (such as a lodge) to the facility

Finishes/Special Requirements:

- Provide patterned, spike resistant carpet where dining tables will be located.
- Consider non-slip tile or other impervious surfaces where there is heavy patron circulation, such as by the food service counter and in the entry areas.

- Consider providing a high ceiling, such as a cathedral ceiling, with lower ceiling areas for service spaces and possibly at entry.
- Provide durable, attractive wall finishes, such as brick, wood, or painted or gypsum wallboard with site-applied vinyl wall fabric. (Do not use prefinished wallboard.)
- Provide light emitting diode (LED) lighting, utilizing adjustable accent lighting for dramatic effect.
- Consider LED lighting in coves. An average lighting level of 30 FC is recommended.

Meet/Banquet Dining

The second dining area will serve as a place to hold special functions. To do so it shall be able to be enclosed, to afford sound isolation from the other spaces in the facility. Since much of the time it will also be serving as expansion to the dining area, it shall be primarily designed to be part of the large open space at the center of the facility.

Relationships and Character:

- Be open to and appear to be part of the other dining spaces.
- Afford views and access to the terrace, which is likely to serve as part of the tournament activity.
- Allow good access to the entry and accessibility to the toilet areas.
- Be able to be acoustically closed off from the other spaces, perhaps through a folding partition to the dining area and by having glazed walls (with curtains) separating it from other adjacent spaces (such as the golf shop and main circulation).
- Provide access to suitable storage for the banquet tables and chairs, making allowance for their stacking and transport characteristics.

Dimensions and Furnishings:

- Provide 12 square feet per seat for banquet seating.
- The City will provide tables and chairs for the programmed number of banquet patrons, either at rectangular tables or rounds, generally seating eight.
- Provide support for visual presentations such as a drop down screen and connections for video equipment (such as plasma screen television, DVD, VCR's, laptops, and video recording devices).

Finishes/Special Requirements:

- Provide finishes that match the dining space (see above).
- Provide light controlling devices such as room darkening blinds and/or draperies.
- Provide dimming controls for lighting to achieve varied lighting levels.
- Provide electric outlet and communications connections for projection capabilities.
- Provide a speaker connected to the public address system.
- Lighting level: provide 30 FC.

Function Storage

The function rooms will need to accommodate various activities: casual seating, small lectures, meetings, and parties. These varied activities will require different furnishing arrangements and meeting support

equipment, such as: buffet service, audio-visual aids, seasonal and event décor, and meeting support equipment such as easels and display pads, all of which will require storage space. The function storage shall be sized to accommodate the tables and chairs necessary to increase the capacity of the dining and function areas to serve to a maximum capacity. This area can also function as a staging area for serving functions.

Relationships and Character:

- Locate the storage area to be easily accessible to the function room and to all dining spaces.
- Provide utilitarian finishes.

Dimensions and Furnishings:

- Provide wall-mounted storage cabinets for additional storage of small serving items.
- Provide shelving on at least one wall that is 18 inches deep for storing seasonal decorations and meeting support equipment.
- Provide a mobile, flattop worktable that can be used for staging functions.
- Size the room to accommodate the full number of stacking chairs and tables required for functions.
- Allow sufficient floor space for the carts on which the stacking tables and chairs will be transported.

Finishes/Special Requirements:

- Provide resilient flooring or exposed concrete floors, masonry units or gypsum board walls, and an acoustic tile ceiling.
- The average lighting level shall be 30 FC.

19.1.1.4 FOOD SERVICE AREA

The food service shall be casual and of three types. The types will include “grab and go” (fast service permitting take out), a la carte dining (from a menu restricted to café style dining), and casual catered service. For golfers, “grab and go” service will be offered through an outside window, accessible without needing to enter the Clubhouse. For open dining, the food can be self-service, food being ordered, picked up, and paid for at a counter, both in “grab and go” and a la carte lines. Special functions will have buffet food service and may often involve on-site food preparation such as barbecue. Facilities shall also be provided for outdoor food service, particularly for tournament banquets. For such purposes, provisions shall be made for supporting large outdoor grilles and portable smoker units. Consideration shall also be given for preparing local food specialties.

Food Service Counter with Pick-up Window

The cooking and service counter with pick-up window will be the primary production area for both the “grab and go” and a la carte styles of dining. All hot food production and beverage service will be generated in this area. This can be designed as a “Display Cooking” style of service, where guests can watch their food be produced. Smaller Clubhouses, such as in the Snack Shack, could relocate cooking to the preparation area and pass food through a window into the serving area.

“Grab and go” service will be provided both at the pick-up window and at the counter inside the Clubhouse. In larger facilities, the point of sale system that serves the pickup window shall be positioned so that it

serves the inside counter as well. This arrangement will permit serving a second line inside that gives priority to the customers in need of quick service, such as the golfers who are in the midst of play.

Relationships and Character:

- Provide access to the food preparation and storage areas.
- Provide good visibility from the dining room.
- Beverage service shall be central to the grab and go pick up counter and the cooking line pick up counter. Beverages include soft drinks, draft beer and bottled beer, wine, and liquor (miniatures).
- Located adjacent to the counter shall be a condiment station. This station shall function as the area in which the customer can get any cold toppings or condiments, napkins and utensils, as well as have an area for trash and recycling.

Dimensions and Furnishings:

- Aisle width in the serving area shall be a minimum of 4'-0" and a maximum of 5'-0".
- Provide 24" wide overhang on the front counter for food placement.
- Allow a 3'-0" to 3'-6" depth for equipment, on both the cooking battery side and the service side.
- Allow a 2'-6" to 3'-0" depth for counters and under counter equipment.
- The overall length of the serving area shall be between 28'-0" to 30'-0".
- Larger facilities will require additional point-of-sale systems.
- Allow for clear counter top space for display racks for snacks, chips or other prepackaged foods.
- Provide menu boards whose design supports the dining room character. Do not use menu boards supplied to advertise commercial products.

Technical Requirements:

- Provide electric outlets along both counters.
- Provide a data port connection for the point-of-sale system.
- Natural gas for cooking is preferred.
- Soft drink conduits and lines are to be provided under the slab, originating from food storage area to bag-in-box rack is located.
- The heating, ventilation, and air conditioning (HVAC) system is to be sized for odor control and negative pressure.
- Exhaust hoods shall supply make-up air equal to 80 percent of the exhaust.
- 24-hour dedicated electrical circuit is to be provided for an alarm system.
- The lighting level shall be 70 - 100 FC.

Food Preparation

The food preparation area will be where most of the grab and go items will be prepared. Banquet and third meal (first meal is breakfast, second is lunch) will also be generated out of this area. It is also where main food items for the a la carte service will be prepped prior to storage in the cooking serving line area. All dish and ware washing functions will occur in this area along with ice production. If Banquet and third meal are to be provided, all areas of the kitchen shall be increased by a minimum of 20 percent.

Relationships and Character:

- This area shall be central to the food service counter and all storage facilities.
- There shall be access to the function areas for dishwashing purposes.
- This area shall be not be visible to the public.
- Ware-washing, soda dispensing systems, ice, and janitor's sinks shall be kept separate from the food prep areas.

Dimensions and Furnishings:

- This area shall be fairly open to allow for mobile work stations.
- Allow 2'-6" to 3'-0" depth for all work tables, sinks, and refrigerators.
- Aisle width in prep area shall be a minimum of 4'-0" and a maximum of 5'-0".
- The overall length of the prep area shall be between 28'-0" and 30'-0".
- The minimum space requirements for the dishwashing equipment are approximately 2'-0" wide by 13'-0" long.

Technical Requirements:

- Provide three-compartment sinks, as required by code, for the ware washing area.
- Provide a handwashing sink. If banqueting, catering, or lounge services that require service on dishware will be offered, the machine shall be highly considered for purchase. It is unlikely to be necessary in smaller facilities (such as a Snack Shack) that are utilizing all disposable plates and utensils. Shall a dish machine be used, a disposer shall be installed.
- Provide electrical outlets for mobile equipment.
- The HVAC system is to be sized for odor control and negative pressure. Provide an exhaust hood over cooking equipment.
- Provide 140° F incoming temperature to kitchen for dishwasher (from a dedicated water heater). Verify with Health Department for regulation.
- Provide a remote and/or fully recessed grease trap.
- Provide a light level of 70 - 100 FC.

Dry Storage

All dry goods shall be stored in this storage area. This area shall primarily be used for storing food products only, but could accommodate small wares such as disposable plates, cups and utensils.

Relationships and Character:

- This area shall be located centrally to the food preparation area and the supervisor or food service manager (also called the concessionaire manager), and delivery area. The dry storage area shall be securable with a system under the control of the food service manager.

Dimensions and Furnishings:

- Allow room for shelving and 3 feet of circulation space around each shelf.
- Allow a minimum width or depth of 7'-6" interior dimension for small facilities and 10'-0" for large and medium facilities.

- The minimum requirements to consider when designing the storage space is 24" deep shelving (length as required) and 3'-0" wide aisles. A minimum of two 5'-0" long shelves shall be considered.
- Follow code requirements for food storage, such as restrictions requiring food to be stored at least 10" above the floor.

Technical Requirements:

- Soda lines and conduits are to be located under the slab – ending in the serving line area.
- Size of the food storage area will vary according to frequency of deliveries as well as the size of the facility.
- Provide a light level of 30 FC.

Liquor Storage

All alcohol or liquor items shall be stored in this storage area. This area shall primarily be used for storing alcoholic products only, and is to be locked at all times with access only being granted by the food service manager. This area could also accommodate a beer keg cooler.

Relationships and Character:

- This area may be located centrally to the bar area and the supervisor or food service manager (also called the concessionaire manager), and delivery area. The liquor storage area shall be securable with a system under the control of the food service manager.

Dimensions and Furnishings:

- Allow room for shelving and 3 feet of circulation space around each shelf.
- Allow a minimum width or depth of 7'-6" interior dimension for small facilities and 10'-0" for large and medium facilities.
- The minimum requirements to consider when designing the liquor storage space is 24" deep shelving (length as required) and 3'-0" wide aisles. A minimum of two 5'-0" long shelves shall be considered.
- Follow code requirements for alcohol storage.

Technical Requirements:

- Beer lines and conduits are to be located under the slab – ending in the Bar service area.
- Size of the liquor storage area will vary according to frequency of deliveries as well as the size of the facility.
- Provide a light level of 30 FC.
- Liquor storage area may be divided by chain link fencing as long as it is full height to underside of deck and lockable.
- Additional security for this area shall include the use of recoded surveillance camera.

Refrigerator/Freezer

The refrigerator and freezer areas will be used to store all perishable and frozen food items. These areas shall be large enough to accommodate storage shelving and spaced to be served by rolling carts.

Relationships and Character:

- This area shall be located centrally to the food preparation area, the supervisor, and the delivery area.
- These units are to be walk-in prefabricated items located within the structure.

Dimensions and Furnishings:

- Allow room for shelving and 3 linear feet of circulation space around each shelf.
- It is preferable to have all walk-in units to be recessed into the floor to allow for a smooth entry into the walk-in with no ramp.
- Storage capacity is in direct relationship with the frequency of deliveries. Fewer deliveries will require larger storage facilities, whereas frequent deliveries will require smaller storage areas.
- For a full size walk-in refrigerator and freezer storage, allow for a minimum width or depth of 7'-6" interior dimension for refrigerators and 5'-6" interior dimension for freezers (total width or depth will be increased by 8" to allow for the walk-in panel construction).
- Smaller units may not require separate refrigerator and freezer compartments. These two functions may be built into one complex with two separate compartments. For such installations, a 7'-6" wide unit shall be considered, allowing for two aisles of food storage and one central circulation aisle for both compartments. The overall length shall range between 10'-0" to 20'-0", with 15'-0" being optimal. Requirements to consider when designing the storage space are 24" deep shelving (length as required) and 3'-0" wide aisles. A minimum of two (2) 5'-0" long shelves shall be considered.
- Walk-in heights shall be 8'-6".

Technical Requirements:

- Provide air circulation space for the compressor units.
- Provide conduits and drains for the evaporator coils.
- Provide a light level of 30 FC, or per manufacturer's standards.

Supervisor/ Food Service Manager/Deliveries

The delivery area is a gateway to the food service operation and shall be controlled by the food service manager. The manager will be responsible for tracking the inventory by overseeing deliveries and being responsible for security. Hence, the delivery area is where daily management functions will be conducted, including (for the medium and large facilities) a time management system station for employees.

Relationships and Character:

- This area shall be central to all major functions within the food service area to allow for receiving and management functions.

Dimensions and Furnishings:

- The manager shall have a lockable office, with a minimum area of 60 square feet.
- A desk, chair and filing cabinets are the primary components of this space, with furnishing provided by the City.

- A safe shall be provided for protection of money earned daily, unless the owner requires all cash to be within the Administrative office area in the Club manager's office safe.
- The area shall also have a time management system station controlled by the manager for employee check-in, unless the owner requires all check in to office in the Administrative office area.
- The delivery area in medium and large facilities shall have a lockable area for storing items that will be taken elsewhere in the Clubhouse.

Technical Requirements:

- Provide electrical outlets and telephone at the manager's office.
- Provide a data port for point-of-sale information to keep track of the inventory and linked to the system used at the serving counter.
- Provide 50 FC for lighting.
- Consider installing insect control fans at the exterior doorway.

19.1.1.5 SUPPORT SPACES

There are three types of support spaces for the Clubhouse: Toilets/lockers/changing, custodial/storage, and general circulation. The specific requirements for each of their design are described in the following sections.

Toilets/Lockers/Changing

The toilet areas of the Clubhouse shall be designed to serve both golfers and dining patrons. The toilet areas shall also contain a changing area for golfers to change into golfing apparel and have access to lockers to store their street clothes.

Relationships and Character:

- This area shall be directly accessible from the main circulation area. It shall be convenient to golfers coming to the Clubhouse from the golf course. In larger facilities that might require golfers to go a long way through the Clubhouse to reach the toilet areas, additional toilet facilities may be provided in a more convenient location, such as near the "grab and go" window.
- The toilet areas shall be furnished with durable, good quality materials in keeping with the overall quality of the Clubhouse.

Dimensions and Furnishings:

- Provide separate plumbing fixtures for men and women in quantities as required by the applicable plumbing code, including provisions for persons with disabilities.
- Provide adequate space at entrances and near fixtures for persons with disabilities to maneuver, as established by referenced accessibility standards.

Technical Requirements:

- The changing area shall be sized for the simultaneous use of one or two patrons.
- The area shall be furnished with a bench and eight to twelve lockers – each being half height and detailed with cabinetwork that reflects the overall quality of the toilet area. The lockers shall have key locks that are distributed from the golf shop control counter.

- The toilet room sinks shall be placed in a vanity counter with mirrors above the sinks. A full-length mirror shall also be provided.
- The toilet room shall have built-in towel dispensers and waste receptacles near the sinks.

Finishes/Special Requirements:

- Use ceramic tile or other hard and cleanable material (sealed stone, porcelain tile), for the wall finish from floor to ceiling (or up to 7 feet above the finished floor).
- Use non-slip ceramic tile for flooring.
- Provide ground fault interrupter (GFI)-equipped electrical outlets.
- Provide a floor drain for the area.
- Provide 70 FC for lighting, with fixtures at the mirrors to facilitate grooming.

Custodial/Storage

The custodial/storage areas serve to house supplies needed for building maintenance and upkeep. General storage shall be provided for cleaning materials and for restocking the bathrooms. The custodial area shall also contain a mop sink.

Relationships and Character:

- This area shall be located near the circulation system so that it can be accessed from most of the function areas. A prime location would be near the bathrooms, a location where plumbing connections are available and relatively frequent service is needed.

Dimensions and Furnishings:

- The mop sink and cleaning supplies require a minimum of 20 square feet, with another 20 square feet being required for building maintenance supplies.
- The cleaning area shall allow for storing vertical equipment as well having 18" deep shelving for storing cleaning solvents and other equipment.
- The building storage area shall have shelving of varying depth, ranging from 8" to 18" deep, with some vertical open space for storing tall equipment.
- The delivery area in medium and large facilities shall have a lockable area for storing items that will be taken elsewhere in the Clubhouse.

Finishes/Special Requirements:

- Provide resilient flooring or exposed concrete floors, masonry unit or gypsum board walls with either epoxy paint or FRP (fiberglass reinforced plastic), and an acoustic tile ceiling.
- Provide GFI-equipped electrical outlets.
- Provide 50 FC for lighting.
- Provide plumbing for the mop sink.

General Circulation

The elements of the general circulation space of the Clubhouse include the main entrance and the hallway that lead to the golf shop and dining/function areas. It shall be located and designed to enable the patron to understand where the major functions are and to expose the patron to the high quality and character of the facility.

Relationships and Character:

- The main entrance shall be visible from the drop-off area and shall be signified by architectural features such as a canopy and well-designed doorway.
- The main entrance shall have a vestibule, be well lighted, and have a generous amount of glass to afford the patron a view to the activities inside.
- It shall be located near the operations office whose staff can provide information to the visitor.
- The general circulation area shall give immediate access to the golf shop from the main entrance and give good access from that point to the dining areas and function rooms.
- The general circulation area shall permit good visibility to the golf shop in order to allow all patrons to be exposed to its merchandise, either through windows or display cases.

Dimensions and Furnishings:

- The general circulation space shall contain a computerized golfers' handicap station that also has extended weather forecast information and a bulletin board (secured for control by the administrative staff).
- Provide a house telephone that is readily accessible to the general circulation space. An option would be to provide a house phone in a phone room for patron privacy.

Finishes/Special Requirements:

- Provide durable, attractive wall finishes such as brick, wood, or painted or high impact gypsum wallboard that is painted or covered with Type II vinyl wall covering. (Do not use prefinished vinyl covered gypsum wallboard.)
- Provide electrical outlets.
- Provide a data port for the golfers' handicap station.
- Provide 70 FC for lighting. Consider indirect fluorescent lighting.

19.1.1.6 GOLF CART STORAGE

Adequate golf cart storage area shall be provided to store and maintain the fleet of golf carts. It can either be located far enough from the Clubhouse so that it may be built of utilitarian construction, or provided on lower level of the Clubhouse. In either case it shall be close enough to the Clubhouse so that the carts can be shuttled to the staging area by a minimal staff. As a utilitarian structure, it needs to be obscured from the sight of patrons – perhaps by taking advantage of plantings or changes in grade.

Cart storage shall be a completely enclosed space large enough to shield the carts from inclement weather and to fulfill its purpose of lengthening the life of the carts. The overall area, in square feet, can be calculated by dividing the number of carts to be stored by .014 (Example: 300 carts / .014 = 21,429 sqft). Minor adjustments can be made to add additional circulation space if needed.

The space shall contain a cart wash for cleaning the carts, charging racks (preferably overhead for easier access to charge the carts), and a secure parts storage area. It shall be furnished to maintain the fleet unless this is provided at the Maintenance Facility. The cart storage facility shall be designed to meet environmental, safety, building, and fire protection standards.

19.1.1.7 MISCELLANEOUS EXTERIOR AREAS

Parking

The peak loading time for the Clubhouse will be when golf tournaments are held. If parking is sufficient to support the Clubhouse staff and patrons at that time, it will work for most other occasions. For tournaments, parking is to be provided for golfers, dining patrons, and staff.

To calculate the amount of parking, provide one space each for 75 percent of tournament participants (assuming 72 persons per nine holes), add one space for each dining seat available for other patrons at tournament time, and add one space per Clubhouse employee.

The number of spaces that are likely to be needed will range from 190-200 spaces for a large Clubhouse, serving 18 holes. See Appendix A for more detailed, calculated parking count.

Due to the proximity of the Denver Zoo and Denver Museum of Nature & Science, parking control and management shall be addressed.

Service Court

The Golf Clubhouse will require a service court or service yard in order to receive supplies and provide a pick-up station for waste products.

The location of the court should be at a distance from the main entrance and adjacent to the food preparation areas. If visible from the course or other public way, it should be screened by fencing or planting. Its size should be sufficient to allow for the movement of the vehicles of expected installation suppliers, which could range from 18-foot vans to 55-foot trailer vehicles.

The court should contain space for a dumpster or other form of holding equipment for waste pick-up. The placement of such equipment should allow for appropriate access by pick-up vehicles.

Golf Cart Staging

The golf cart staging area will be used to park carts for access by golfers at the beginning of their play and for returning their carts at the end of play (usually after dropping off their clubs at their cars).

The golf cart staging area should be located near the control desk of the golf shop so that golfers can locate their cart after paying fees. The paved area should be accessible from cart paths, particularly those leading to the first tee. The pavement should be continuous with the entry walkway, allowing accessibility to the parking area. At the entry points to this area, provisions should be made for accommodating carry bags or pull carts as the golfers go into the golf shop.

The staging area may be one large area to accommodate setup for tournaments or a set of paths. For daily operations, the staging area should be large enough to handle between one to two hours' worth of tee times. The preferred staging area is fourteen feet wide (a combination of two foot aisles and four foot carts, in two rows). To accommodate tournament cart staging, the golf paths extending to the first and tenth tees should be widened.

Outdoor Dining

Outdoor dining can be accomplished with the use of a terrace, patio, deck, roof top deck or combination of these. This exterior Dining area is to be used by diners and golfers on a regular basis and by tournaments on a scheduled basis. The tournaments will require the most area and special features, as noted below. If a

roof top deck cannot be provided in the design of the building, necessary infrastructure for a future roof top deck shall be provided.

Relationships and Character of Outdoor Dining:

- Locate outdoor dining to serve as an extension of the internal dining and function spaces.
- Provide convenient access for golfers coming from the ninth and/or 18th hole.
- Provide storage areas just off the circulation ways by the entrances to the patio and dining areas for storing golf bags and their carts.
- Locate the outdoor dining near the food preparation areas to give convenient access for catering personnel.
- Provide access to suitable storage for the banquet tables and chairs, making allowance for their stacking and transport characteristics.
- Include devices that improve its microclimate to extend its periods of use, such as canopies, radiant heat devices, misters, fans, wind-breaks, and plantings.
- An additional approach is to provide a covered, open tournament pavilion. This provides a larger area for tournaments and expanded seating for outdoor dining.

Dimensions and Furnishings:

- Provide 12 to 15 square feet per seat for outdoor dining seating for 144 patrons for each 18 holes (72 patrons/ 9 holes). This area may also be an area to set up tents.
- Provide tables and chairs for the programmed number of casual outdoor dining seating patrons, either at rectangular tables or rounds, generally seating 6.
- Provide a space under a roof overhang for the tournament schedule and score boards (unless a tournament pavilion is provided - then these boards will be in the pavilion)
- Delineate two to four spaces for golfers to park their carts while using the Clubhouse facilities, located near access points from the course to the Clubhouse.

Technical Requirements:

- Provide good quality flooring material with minimal long term maintenance requirements.
- Define the space with plantings and furnishings (such as a continuous seating edge)
- Provide water spigots for supporting banqueting, cleaning, and landscaping operations.
- Provide public address system access.
- Provide electric outlet and other connections necessary to support entertainment, point of sales equipment, and picnic related food preparation and service.
- Provide a stationary gas hook-up for a portable charbroiler/grill.
- Provide covered and protected storage for a portable charbroiler/grill (preferably within a service yard out of sight from the patrons)

19.1.2 ADDITIONAL SUPPORT BUILDINGS

19.1.2.1 SNACK SHACK / RELIEF STATION

The current layout of the City Park Golf Course does not return to the Clubhouse on the 9th green, or 9/10 turn. Golfers on the course may want to have a quick snack or beverage after they have completed nine

holes. Golfers shall have the option to obtain convenient food service, as well as be provided with relief facilities and protection from inclement weather at mid round play. Typically a relief station is provided on the course that include restrooms as well as protection from weather. This is combined in the Snack Shack to also provide a “grab and go,” with a “pick up” window which provides a limited menu of prepared foods. A male and female restroom are provided conveniently accessible to both golfers and food service personnel.

In the case of relocation of the existing Clubhouse to a location that can accommodate the food service aspect of the Snack Shack, two on course relief stations shall be provided on the course.

Food Service Counter with Pick-up Window

The service counter with pick-up window will be the primary production area for the “grab and go”. Sandwich preparation as well as prepackaged foods and beverage service will be generated in this area. This can be designed as a “Display Cooking” style of service, where guests can watch their food be produced. “Grab and go” service will be provided both at the pick-up window. The point of sale system that serves the pickup window shall be positioned at this location as well.

Relationships and Character:

- Provide access to the food preparation and storage areas.
- Provide good visibility from the dining room.
- Beverage service shall be central to the grab and go pick up counter and the cooking line pick up counter. Beverages include soft drinks, draft beer and bottled beer, wine, and liquor (miniatures).
- Located adjacent to the counter shall be a condiment station. This station shall function as the area in which the customer can get any cold toppings or condiments, napkins and utensils, as well as have an area for trash and recycling.

Dimensions and Furnishings:

- Provide 24" wide overhang on the front counter for food placement.
- Allow a 3'-0" to 3'-6" depth for equipment, on both the service side.
- Allow a 2'-6" to 3'-0" depth for counters and under counter equipment.
- The overall length of the serving area shall be between 12'-0" to 15'-0".
- Facilities will require point-of-sale systems.
- Allow for clear counter top space for display racks for snacks, chips or other prepackaged foods.
- Provide menu boards whose design supports the character. Do not use menu boards supplied to advertise commercial products.

Technical Requirements:

- Provide electric outlets along both counters.
- Provide a data port connection for the point-of-sale system.
- Natural gas for cooking is preferred (if required).
- Soft drink conduits and lines are to be provided under the slab, originating from food storage area to bag-in-box rack is located (unless in same room then provide lines behind equipment to service location).
- The HVAC system is to be sized for odor control and negative pressure.

- Exhaust hoods shall supply make-up air equal to 80 percent of the exhaust.
- 24-hour dedicated electrical circuit is to be provided for an alarm system.
- The lighting level shall be 70 - 100 FC.

The architect shall consult with a kitchen designer to assist in the laying out and specification of kitchen equipment, coolers and freezers to comply with Department of Environmental Health (DEH).

19.1.2.2 TOILETS / RELIEF STATION

The toilet areas of the Snack Shack shall be designed to serve golfers at the 9/10 turn. The toilet areas shall also contain exterior overhangs and drinking fountains to provide a rest area or in case of inclement weather.

If relief stations are provided the toilet areas shall contain facilities for one men's toilet room and one women's toilet room, each with their own lavatory and/or sink as well as grab bars, toilet tissue dispenser, paper hand towel dispenser and trash receptacle. Women's room shall also contain accessories for feminine hygiene dispensers and disposals. The building shall be provided with overhangs and drinking fountains to provide a rest area or in case of inclement weather.

Relationships and Character:

- This area shall be directly accessible from the outside. It shall be convenient to golfers and be either at the 9/10 turn, or in the case where there are two relief stations provided they shall be provided to provide facilities at third points in the course.
- The toilet areas shall be furnished with durable, good quality materials in keeping with the overall quality of the Clubhouse.

Dimensions and Furnishings:

- Provide separate plumbing fixtures for men and women in quantities as required by the applicable plumbing code, including provisions for persons with disabilities.
- Provide adequate space at entrances and near fixtures for persons with disabilities to maneuver, as established by referenced accessibility standards.

Technical Requirements:

- The area shall be furnished with an exterior bench.
- The toilet room sinks shall be placed in a vanity counter with mirrors above the sinks.
- The toilet room shall have built-in towel dispensers and waste receptacles near the sinks.

Finishes/Special Requirements:

- Use ceramic tile or other hard and cleanable material (sealed stone, porcelain tile), for the wall finish from floor to ceiling (or up to 7 feet above the finished floor).
- Use non-slip ceramic tile for flooring.
- Provide GFI-equipped electrical outlets.
- Provide a floor drain for the area.
- Provide 70 FC for lighting, with fixtures at the mirrors to facilitate grooming.

19.1.2.3 MAINTENANCE FACILITY / MAINTENANCE YARD

The current layout of the City Park Golf Course provides a screened service yard and Maintenance Facility. It is located adjacent to a main road is separated from view from the Clubhouse by a considerable distance. Refer to Appendix A for specific areas and required in the facility.

The Contractor shall consult with a the Director of Golf, Director of Agronomy, as well as the Golf Course Superintendent to best understand the needs of this facility and yard. All equipment, tools and furnishings including storage shelves, tables, chairs, desks, and work benches shall be provided by the City.

The Clubhouse site design shall take into account the siting of ancillary uses and the several principles for siting the Maintenance Facility and service yard are as follows:

- If a separate cart barn is provided it shall be either with in the service yard or provided in as a separate building. Cart barn close enough to the golf shop and starter so that carts can be delivered to cart staging. If provided in service yard it shall accommodate charging and maintenance as well as circulation to cart staging area.
- The golf course maintenance complex can be located at any distance from the Clubhouse but shall be screened from patrons view when possible. It shall also be placed where it can best serve the golf course.

19.1.2.4 FIRST TEE CLUBHOUSE

The current layout of the City Park Golf Course provides a separate First Tee Clubhouse for the use of teaching and mentoring, as well as serving as a main launching point for the program. It is located within view of the clubhouse along a major cart path. The size requirements for the new facility shall be comparable to the size of the existing facility with the appropriate modifications to meet current building code requirement for its intended use.

The architect should consult with the Director of Golf, as well as the Director of the First Tee program best understand the needs of this facility.

Relationships and Character:

- This area should be directly accessible from the outside.
- The toilet areas should be furnished with durable, good quality materials in keeping with the overall quality of the main Clubhouse.

Dimensions and Furnishings:

- Provide separate plumbing fixtures for men and women in quantities as required by the applicable plumbing code, including provisions for persons with disabilities.
- Provide adequate space at entrances and near fixtures for persons with disabilities to maneuver, as established by referenced accessibility standards.

Technical Requirements:

- The area should be furnished with tables and chairs for class room style mentoring. Tables should be versatile to be used as work surfaces as well.
- Building should be equipped with WIFI, Data and power for workstations
- The toilet room sinks should be placed in a vanity counter with mirrors above the sinks.
- The toilet room should have built-in towel dispensers and waste receptacles near the sinks.

Finishes/Special Requirements:

- At restrooms:
 - Use ceramic tile or other hard and cleanable material (sealed stone, porcelain tile), for the wall finish from floor to ceiling (or up to 7 feet above the finished floor).
 - Use non-slip ceramic tile for flooring.
 - Provide GFI-equipped electrical outlets.
 - Provide a floor drain for the area.
 - Provide 70 FC for lighting, with fixtures at the mirrors to facilitate grooming.
- At teaching / Mentoring area:
 - Provide gypsum board walls, resilient flooring and acoustical tile ceilings. The décor should be consistent with that of the rest of the main Golf Clubhouse areas.
 - The average lighting level should be 50 FC, with the ability to manually reduce lighting level for computer use.

19.2 SITE EVALUATION AND BUILDING DESIGN

Any proposed Clubhouse shall be located in a manner that appropriately controls and supports the activities on the course, supports the activities of the golfers, and provides an amenity for the surrounding community. Parking, patron sequencing, golf cart staging and storage, outdoor dining and events, and building services are all to be addressed in a manner consistent with the *City Park Golf Clubhouse, Programming & Design Guidelines*.

As an important public building placed in a park setting, the proposed Clubhouse shall be constructed of quality materials and its massing differentiated to express its various functions and site relationships. The architecture shall be compatible with the architecture of the region, community and with consideration of the context of the City Park Golf Course and surrounding civic amenities.

The interior organization and character shall be consistent with the criteria outlined in the *City Park Golf Clubhouse, Programming & Design Guidelines* and shall be executed in durable, quality materials appropriate for the various functions.

19.2.1.1 LOCATION

The Golf Clubhouse shall be located to achieve four goals: control and support the activities on the course; support the activities of the golfers; minimize or have no impact on existing views from the neighborhood; and be an amenity for the community, especially by providing a good-quality, convenient food service option.

Golf Activity Control

The Golf Clubhouse acts as a gateway to the golf course and controls the activity on it. The most critical determinant of its location is that it be near the first tee, or at least have good line of sight to it. Since the golf shop typically houses the starter's desk, it should be located with a view of the first tee. To site the Clubhouse appropriately as an entry point, it should also give golfers access to the golf carts staging area, parking, entry drive, and golfer's drop-off.

The Clubhouse should make food service and dining conveniently accessible to golfers at mid-round between the ninth green and tenth tee and to golfers finishing their rounds, coming in from the 18th hole.

Service to the Community

The Clubhouse should be accessible to as many community patrons as feasible. If possible, it should be located on a main road with convenient access from the main City grid. It should be clearly identifiable from main circulation routes.

The golf program should be considered a key part of the community. The course and Clubhouse will be used for special events, winter programs, weddings, parties, event dinners, community meetings, etc. during winter months when golf is not played.

19.2.1.2 SITE DESIGN AND ORGANIZATION

The design of the site and its organization are dependent on several requirements:

- Relationship to the golf course
- Sequence of access required by the patrons and services
- Parking area required
- Area of site needed, including that for ancillary spaces (such as driving range, relief stations, snack shack, and maintenance complex).
- Views from the clubhouse and to the clubhouse need to be considered when siting the building. The siting should assure that there are good views of the course from the dining area. The siting should minimize impact of sight lines from the neighborhood from west, south, and east.

Patron Sequences

The Clubhouse has two principal kinds of patrons: golfers and diners. Other visitors, such as shoppers and special function guests, should also be considered. The Clubhouse layout should accommodate the sequences of activities for various types of users.

The golfers use the Clubhouse as a point of entry to the course. A common sequence for golfers is:

- drop off their passengers and clubs;
- park their cars;
- check in at the control desk (usually in the golf shop);
- pick up their clubs and carts; and
- proceed to the first tee.

In addition, at the end of their rounds, they will want to return their clubs to their cars in the parking area before returning their carts.

Golfers on the course may want to have a quick snack or beverage after they have completed nine or eighteen holes. For this purpose, they should have easy access to the food and beverage service and dining areas from the 9th and 18th holes.

Golfers should have the option to obtain convenient “grab and go” food service, which provides a limited menu of prepared foods. Such service should be available both within the Clubhouse and from outside through a window (preferably protected by a canopy). This “pick up” window should be conveniently accessible to both golfers and food service personnel. This service should be located near an area where golfers can eat outside, such as on a dining patio. (Inside, the food service area should have a service line for “grab and go” service that is separate from the a-la-carte orders that other dining patrons may be using.)

Should the course design and Golf Clubhouse siting necessitate the need, independent snack and relief facilities may be required near the transition between holes 9 and 10 (see section 19.1.2.1 Snack Shack / Relief Stations).

The main approach to the Clubhouse should work for patrons coming for dining, attending special functions, or shopping at the golf shop. The main entrance, drop-off area, and parking should be designed to serve them as well. As a marketing technique, Clubhouse patrons should be exposed to all of the activities of the facility, especially the golf shop.

19.2.1.3 OVERALL AREA AND ANCILLARY USES

The size of the site needed for the Golf Clubhouse can range from two to three acres for this larger clubhouse (defined as containing approximately 11,000 to 15,000 gross square feet) which serves an 18-hole course. These figures include the space needed for Clubhouse service area, for an entry drive and drop-off loop, for outdoor dining, and for the entry sequences and parking described above. The total does not include space for other ancillary uses, such as the driving range, practice greens, golf cart storage, or golf course maintenance complex.

The Golf Clubhouse site design should take into account the siting of these ancillary uses. Several principles for siting the Clubhouse in relationship to them are as follows:

- The driving range should be located as close to the Clubhouse as possible.
- The golf cart storage should be as close as possible to the golf shop and starter so that carts can be delivered to patrons close to the control point and first tee. (Two options are provided. One is a separate building. The other is to provide cart storage in a lower level of the Clubhouse.)
- Practice greens should be located near the Clubhouse or first tee.
- The golf course maintenance facility or complex can be located at any distance from the Clubhouse but should be screened from patrons view when possible. It should also be placed where it can best serve the golf course.

19.3 DESIGN CRITERIA

19.3.1 EXTERIOR DESIGN

The Clubhouse is an important community facility placed in park setting, serving as a gateway to the golf course and as a destination for dining and attending functions. The design of the Clubhouse – its massing, materials, and architectural elements – shall be of good quality and be differentiated to express its functions and site relationships. It shall have features that are specifically shaped to relate to the spaces within and the features of the site. For example, the massing of the building shall make visible the presence of the large dining area, and its orientation shall give access to views of the course and outdoor functions. Its design shall give patrons a clear understanding of its organization, having features that indicate the main entrance (as a focal point), golf shop, and food service areas.

The theme of the architecture shall be compatible with the architecture of the region, community, and with consideration of the context of the City Park Golf Course. Clubhouse design should be context-sensitive and authentic in use of materials (avoid faux materials where possible, do not attempt to mimic historical features with modern materials) with consideration of organic, darker, earthy tones that blend into the natural landscape. The exterior design shall be in support of the opinions gathered from the design work group and summarized elsewhere in this document.

19.3.2 INTERIOR ORGANIZATION AND CHARACTER

The Clubhouse has two main patron spaces: the golf shop and the dining/function areas. It is important that all patrons be exposed to both activities from the entry point. The golf shop will contain merchandise for both golfers and non-golfers – as such, there are commercial advantages to exposing the golf shop to non-golfing patrons. Therefore, the golf shop shall be designed for maximum visibility.

The interior character shall be consistent with exterior architecture. Specific material requirements are further outlined in this Section 19, but in general shall be of a quality and durability appropriate for a public use facility.

19.3.3 FINISHES / FIXTURES, FURNISHINGS, AND EQUIPMENT

All materials and furnishings provided in any reconstructed Clubhouse (including facilities for First Tee) shall at a minimum, match the quality of the existing facilities (at the time of existing Clubhouse construction) or be of a quality and durability standard found in similar facilities, unless otherwise required (by exceeding existing material and furnishings quality) in this Section 19 or *City Park Golf Clubhouse, Programming & Design Guidelines*. If the industry standard for quality of such materials and furnishings have increased since the design and construction of the existing Clubhouse, the Contractor shall incorporate the higher quality material or furnishing in the proposed Clubhouse. All materials and furnishings provided in any reconstructed Maintenance Facility shall meet industry standards. The Contractor shall coordinate with the City for verification of such proposed materials and furnishings. All proposed materials and furnishings shall be subject to City review, as described in this Section 19.

Building systems and FF&E shall be provided in a manner consistent with the requirements outlined in this Section 19 and the *City Park Golf Clubhouse, Programming & Design Guidelines*. In addition, the proposed Clubhouse shall be delivered in accordance with the City and County of Denver's sustainability requirements.

The Contractor shall produce a finishes schedule. Schedule shall include all finishes for walls, floors and ceilings for every room of the Clubhouse. It shall clearly identify the materials color (manufactures color name or pantone reference), material (of what the product is made), and finish (sheen or otherwise). Additionally, an equipment schedule will be furnished that differentiates the responsibility of the party to purchase said piece of equipment and to install the items indicated. This document is commonly referred to as a "diff doc" (differentiation document).

FF&E requirements includes office, workstation, and miscellaneous furnishings, equipment, and specialty items to be provided by the City. All systems furniture will be procured and installed by a vendor selected by the City. Dining and meeting room tables, seating and furniture will be specified, provided, and installed by the City. Sales racks and tables will be specified, provided, and installed by the City.

The furniture system and office equipment utilized will be combination of existing and new. The City will provide all existing and new furniture and equipment. The City will identify and inventory existing furniture and equipment that will be inventoried and relocated into the buildings.

The Contractor shall be responsible for the furniture system layout and panel arrangement. Ordering and installing furniture system workstations will be the responsibility of a furniture system installation contractor who will be selected, directed, and coordinated by the City.

The City's Communication Department will specify all low-voltage cable and installation requirements, and prepare specifications suitable for competitive bidding. The Contractor shall implement the design installation.

The City will identify any data processing and related office equipment. Information regarding size, weight, electrical, and mechanical requirements shall be developed by the Contractor. Responsibility for movement and installation of that equipment will be with the City.

All vending equipment will be specified by the City and provided and installed by the Contractor. All Utility connections shall be provided by the Contractor. The City will identify and coordinate the relocation and installation of any existing movable equipment and furniture, fixed bench equipment, and other existing equipment in shop areas.

The Contractor shall be responsible for purchasing and installing all furnishing and equipment necessary for all food preparation, serving areas and kitchen equipment. The Contractor shall also be responsible for purchasing and installing all furnishing related to any display and storage shelving, sales counters, serving counters or other fixed furnishing.

The Contractor is not responsible for furniture selection, furniture specification, ordering, procurement, or installation for general office areas and sales areas, but will be required to provide coordination and receiving during the delivery and installation of the furniture.

All equipment, tools and furnishings including storage shelves, tables, chairs, desks, and work benches related to the Maintenance Facility will be provided by the City.

The City will develop a scope of work for installation and moving contractors leading to the award of installation and relocation contracts.

The provision of electrical outlets, pigtails, and final electrical connection to the furniture system shall be the responsibility of Contractor. The Contractor shall be responsible for preparing drawings, as may be necessary to allow installation of electrical and communication outlets in walls, floors, and columns, and in making final Utility connections.

19.3.4 TECHNICAL DETAILS FOR FOOD SERVICE AREAS

19.3.4.1 ARCHITECTURAL DETAILS

Doors and Openings

- Door openings of a minimum 3'-0" by 7'-0" with flush sills are required from building delivery through to kitchen and all accesses required for food services.
- Exterior delivery access doors shall be protected with fly fans or insect screen protection.
- All doors in traffic aisles shall have vision panels, one-way doors excepted.
- Office doors in the kitchen shall have large windows.
- Doors to dining areas shall be sightline protected and acoustically treated.
- Doors require kick plates.

Floors

- Finished floor in the kitchen shall be 15 percent abrasive, non-slip quarry tile with black epoxy grout to avoid discoloration of grout from food acids. An alternate finish is poured and troweled cupric oxychloride such as Hubbellite.
- Non-slip tile is recommended for prep line floors and similar high traffic areas.
- Kitchen floor finish shall extend into walk-in and roll-in refrigerators and freezers.

Walls

- Coved bases are required to be a minimum of 4" high.
- Walls shall be smooth, easily cleaned, non-absorbent hard surfaces. Painted drywall partitions in kitchen are not recommended.
- Wet areas require a waterproof wall finish such as ceramic tile, fiberglass reinforced plastic, or smooth, epoxy-painted, skim coated masonry block.
- Installation of 42" high corner guards mounted 6" above finished floor at exposed column and wall edges is advised.
- Bumper guards mounted at 10" and 34" to center of bumper above finished floor are required for heavy cart traffic areas.
- Walls between dining rooms and kitchen/ware washing areas shall be sound attenuated.
- When stud walls are used, all walls intended to support wall shelving, wall cabinets, utensil racks, exhaust ventilators, hand sinks, etc. shall be provided with blocking consisting of a 6" headers at 4'-0" and 5'-0" above the floor.
- Construction shall support 50 pounds (25kg) per linear foot.

Ceilings

- Finished ceilings shall be a minimum of 9'-0" above the finished floor.
- Finished ceiling shall be a smooth, acoustically rated, non-absorbent, washable surface (as required by DEH).
- Walk-in refrigerators, freezers and exhaust ventilators shall be closed to the ceiling with enclosure panels.

Lighting

- Warm, white LED lights shall be used in the kitchen.
- All lighting fixtures used in foodservice areas shall be equipped with lens protectors.
- Ceiling fixtures shall be recessed.

Windows

- Minimum sill height suggested to be 48" (1220mm) to allow for equipment against wall under window.

Waste

- A central grease trap shall be provided outside the building in a vehicle accessible location.

Miscellaneous Architectural Details

- Space for the installation of remote refrigeration condensing units is needed. An exterior location is recommended.
- Provide large windows in kitchen office for control purposes.

19.3.4.2 ENGINEERING DETAILS

Water and Drains

- Water temperature at hand basins shall not exceed 110°F (43°C). Pot washing sinks, dishwashing machines and water wash exhaust ventilators require a minimum of 140°F. Verify compliance with DEH.
- If water hardness is over 6 gran per gallon (GPG), provide water softener and soft water lines to all equipment requiring a water connection. Below 2 GPG, some equipment functions can be adversely affected.
- Water wash systems in exhaust ventilators are recommended.
- Food waste disposers (garbage grinders) are required unless restricted by code.

Ventilation

- 20 to 30 air changes per hour in the kitchen are required (verify compliance DEH and IMC).
- The air supply into the kitchen shall be tempered.
- Spot cooling is required in cold food preparation and plating areas.
- Negative air pressure shall be maintained in the kitchen to control odor transfer.
- Separate fans and duct systems are required for cooking exhaust, wood fired equipment, and dishwashing exhaust.
- Exhaust hood control panels will require 24-hour uninterrupted power.
- Air cooled refrigeration equipment requires adequate ventilation of not less than 1,000 cfm per horsepower (250 cfm for water cooled).

Fire Control

- Water mist fire extinguishing systems shall be specified in sprinklered buildings unless prohibited by local codes and shall be connected to building sprinkler system.

Electrical

- Emergency power is required for exhaust hood control panel, walk-in freezer, walk-in refrigerators, and other equipment required for emergency service.
- Connect walk-ins to a central enunciator panel for temperature monitoring where available.
- Connect exhaust ventilators and/or fire protection systems to central enunciator panels.

Structural

- All foodservice storage and preparation area floor slabs shall be designed for 150 psf. Expansion joints cannot be located within prefabricated walk-in refrigerators and freezers, floor depressions or equipment raised bases.

19.3.5 BUILDING SYSTEMS

The Clubhouse is to be designed to meet prevailing economic and engineering constraints as set forth in the codes and standards adopted by the City, as well as and adopted amendments to same. These include, but are not limited to, the following:

- The amendments to the Building and Fire Code for the City

- International Building Code (IBC)
- International Fire Code (IFC)
- International Existing Building Code (IEBC)
- International Residential Code (IRC)
- International Mechanical Code (IMC)
- International Plumbing Code (IPC)
- International Fuel Gas Code (IFGC)
- International Energy Conservation Code (IECC)
- National Electric Code (NEC) or NEC version currently adopted by the State of Colorado

Architect and engineers shall contact the City at the time of design for current applicable codes. All building systems specifications shall be fully coordinated and verified with the installation and design of the civil engineering through the Civil Engineer.

Other general design issues include space, siting, and construction type:

- Preliminary floor space requirements for mechanical, electrical, plumbing (MEP)/fire protection (FP) equipment (including rooms for electrical and communications equipment) shall range from 5 to 10 percent of the gross building area. Actual floor space requirements are dependent on building size, architectural design, mechanical design and other factors. Proper ceiling space for ductwork and equipment shall be considered.
- Space for outdoor equipment (e.g. condensing units, oil tanks, transformers) shall be accommodated and coordinated with the exterior space use and landscape design. Care shall be taken to locate this and any other exterior building-mounted equipment (e.g. roof top units, etc.) away from the building entrance and to provide visual and acoustical shielding.
- While the construction type of most Clubhouse construction is Type 5-A (or 5B in some cases), a full code analysis shall be done by the Architect and validated by the City Building Department prior to defining the building systems with a design and engineering team.

19.3.5.1 STRUCTURAL SYSTEMS

Select a structural system that will achieve several architectural design goals:

- System shall allow for flexibility of floor plan in administration area, food service areas and golf shop service areas.
- System shall allow for areas to have high bay spaces specifically for the dining areas and golf shop.
- System shall allow for large openings and windows to accommodate views to the exterior from the dining areas as well as from the golf shop.
- System shall be able to accommodate overhangs, both large and small, depending on the means determined to protect patrons from inclement weather.

Select the structural system based on achieving an economical system that meets engineering standards, including consideration of:

- Projected load requirements.
- Bearing conditions including subsoil and drainage considerations.
- Prevailing and available construction practices.
- Regulatory constraints including seismic loadings, safety issues, and climatic conditions.

19.3.5.2 MECHANICAL SYSTEMS

Most Clubhouses are single story buildings designed with the majority of rooms close to the exterior walls. The rooms will have fluctuating occupant loads and will be operated on different schedules. Peak loading shall be evaluated for banquet facilities and spaces used for events and tournaments.

Design considerations to achieve an economical HVAC system include the following items:

- Load calculations shall be performed in accordance with American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standards, based on local weather conditions, and applicable energy code.
- Mechanical systems shall be designed according to City and County of Denver local code requirements.
- Mechanical systems shall be designed according to the IECC, ASHRAE 90.1 or other applicable energy code.
- Ventilation shall be provided in accordance with ASHRAE Standard 62.
- Heating and Cooling shall be provided by one of the following:
 - Boiler with separate DX system, sized as defined above.
 - Commercial geothermal heat pump, sized as defined above.
 - Commercial gas fired forced air furnace with DX cooling, sized as defined above (may only be applicable to smaller clubhouses like the Snack Shack).
- Provide direct access to the mechanical room. While outside access may be preferred in some configurations, interior access may be more readily acceptable due to climate.
- Elements of HVAC system shall be zoned by space, controlled by local thermostats. In spaces where zones are too remote, provide heating coils in overhead ductwork.
- Provide air-conditioning for all areas in the building, where authorized, including the golf shop, offices, dining room, and function spaces.
- Humidification and dehumidification is not required unless specifically directed by the owner.
- System shall be designed to meet noise criterion (NC)-35 acoustic criteria for the occupied space.
- Provide a kitchen hood exhaust fan, sized to meet the specified hood performance.
- Provide hood exhaust duct as required by National Fire Protection Association (NFPA) 96. Provide make-up air unit and heat recovery capability as required by the IECC or other applicable city codes.
- Provide dishwasher exhaust (if dishwashing machine is furnished). Dishwasher exhaust shall be aluminum or stainless steel, watertight.
- Provide exhaust system for the toilets, locker rooms and custodial space per applicable code.

19.3.5.3 PLUMBING SYSTEMS

Plumbing systems for the Clubhouse will need to support all of its functions, most notably the kitchen. Plumbing and fixture counts are to be determined by the architect by means of a full code analysis with relation of square footage and occupancy use to determine the numbers of occupants that will facilitate the appropriate fixture count per the IBC and IPC. Architect shall validate these numbers with the City Building Department.

Code Considerations to be taken into account include the following items:

- Plumbing systems shall be designed according to IPC requirements.
- Domestic hot water systems shall be designed in accordance with ASHRAE Standards and 90.1.
- Domestic hot water system temperatures shall comply with local health codes by way of the City, DEH.
- Provide floor drains in toilet rooms and food preparation areas.
- All plumbing shall be accessible and serviceable
- Provide hose bibs in food prep areas and in toilet rooms as directed by owner or as required by DEH.
- Provide wall hydrants on the building exterior.

19.3.5.4 FIRE PROTECTION SYSTEMS

The Clubhouse is a place of public assembly. Achieving appropriate fire protection conditions will include meeting the following provisions:

- Fire Protection features shall comply with IFC (Fire) and applicable City amendments.
- Provide sprinkler systems throughout the Clubhouse, designed according to IFC, IBC, and applicable City amendments. Types of systems shall be either:
 - Wet-Pipe Sprinkler System – Verify pressure from City main can facilitate the system, otherwise a pump may need to be provided.
 - Dry pipe system – room to be provided to accommodate the sprinkler riser (also referred to as the Christmas tree).
 - Split system may be used – areas in heated areas not falling below 40° can be used as wet pipe system. Those areas that fall below 40° temperatures can utilize a dry pipe system. (this is not typical as the cost tends to drive the system to a dry pipe)
- Provide wet chemical fire suppression system in the kitchen hood in accordance with IFC (Fire) and applicable City amendments.
- Fire alarm system and wiring shall comply with IFC and NFPA 72.
- Provide battery powered emergency lighting and illuminated exit signs.
- Provide ADA compliant fire alarm system consisting of a fire alarm control panel (FACP), audio/visual signaling devices, manual pull stations, smoke detectors, carbon dioxide detectors, heat detectors, and modules for fire protection devices.

19.3.5.5 ELECTRICAL SYSTEMS

The electrical system of the Clubhouse shall be designed to support the multiple activities of the Clubhouse and shall meet the following considerations:

- Electrical systems shall be designed in accordance with the NEC, City and County of Denver amendments, and regulations, including the applicable energy code.
- Electrical service shall be sized by an electrical engineer and based on the calculated loads and size of the building. Provide spare capacity for future loads, calculated as 20 percent or as directed by the owner.
- Electrical service shall be connected to the local Utility through coordination with Xcel Energy. The service shall be grounded as required by code.
- A pad-mounted transformer shall be provided (as coordinated with Xcel Energy), which will serve as the demarcation point between the exterior service and the building power; to be screened if in patron view.
- Secondary service from the transformer shall connect to a main service over current protection and disconnecting device.
- Metering shall be provided. Metering shall be on the Clubhouse for primary metering, in accordance with the local Utility (Xcel Energy).
- Secondary service voltage shall be 208/120V, 3Ø, 4 wire. Interior transformers are not required.
- The main distribution panel (MDP) shall serve the large three-phase mechanical equipment and feed branch circuit panel boards. Provide separate panel boards for the kitchen, general lighting and power, and single phase and smaller three phase mechanical equipment.
- Run all circuits in steel conduits with insulated copper conductors.
- Provide full size green insulating grounding conductor for each circuit.
- All power wiring shall run concealed.
- Recommended lighting levels are listed in this *City Park Golf Clubhouse, Programming & Design Guidelines* for the specific functional areas.
- In general, provide lay-in fluorescent fixtures in offices and back-of-house spaces; downlights and decorative, dimmable fixtures in the dining rooms; fluorescent strip fixtures in mechanical and utility spaces; lensed fixtures in food preparation and storage areas.
- Provide manual toggle switches, dimmers and automatic lighting controls (occupancy sensors, time clocks) for lighting as appropriate for the dining, kitchen, golf shop, back of house and offices. Lighting controls shall meet the requirements of the IECC.
- Provide convenience receptacles, special configuration receptacles and power for user's equipment and mechanical equipment.

19.3.5.6 EXTERIOR LIGHTING SYSTEMS

Exterior lighting systems shall be designed to include the following, in addition to light levels set by the community:

- Provide pole mounted LED lighting per City requirements for parking and LED bollards for walkways.

- Provide LED fixtures in exterior canopies and at exterior door locations.
- Provide pole-mounted LED for outdoor activities.
- Provide time clock/photocell control for all exterior lighting.

19.3.5.7 COMMUNICATION SYSTEMS

Considerations for providing appropriate communications systems support for the Clubhouse include:

- Provide provisions (boxes, raceways, power) for security, telephone, data, POS, network (WIFI), public address (PA), cable access television (CATV), internet, closed circuit television (CCTV) where applicable, and other low voltage systems.
- Communications wiring shall be brought into the building to a dedicated communications room underground in polyvinyl chloride (PVC) or rigid metal conduit to the head end equipment. Communications wiring shall be run in raceways in areas subject to damage, such as in walls or in unfinished areas. Other areas (above ceilings) may not require conduits. Wiring in plenum areas to be plenum rated if not in conduit
- Review security/privacy/interference issues with the user/operator to determine if multiple communications (low voltage) systems can be installed in the same conduit.

19.3.6 SUSTAINABLE DEVELOPMENT

Executive Order 123, first signed in October 2007, established the Greenprint Denver Office and the sustainability policy for the city. In March 2013, Executive Order 123 was updated to create the Office of Sustainability—the successor to the Greenprint Denver Office—and to establish key sustainability policies for the City and County of Denver.

19.3.6.1 SUSTAINABLE GOAL

All new City building projects (new construction and major renovation) over 5,000 square feet that are funded after March 11, 2013 shall achieve Leadership in Energy & Environmental Design (LEED) Gold Certification, with the goal of achieving LEED Platinum—the highest possible rating—where economically feasible. Building projects less than 5,000 square feet shall meet the intent of LEED BD+C (Building Design and Construction) Gold certification, with a goal of achieving LEED-NC Gold, and follow the requirements of the Greenprint Denver Construction Project Guidance documents. All General Fund agencies shall implement LEED EB: O+M best practices.

New and existing buildings that meet ENERGY STAR eligibility requirements are to achieve ENERGY STAR certification.

The Contractor shall be responsible for defining sustainable design Project goals, developing a LEED scorecard with action items and responsibilities, incorporating these action items into the design and construction process, providing Division 1 sustainability specifications, outlining contractor requirements, reviewing drawings and specifications for LEED compliance at each stage of design, coordinating

The Contractor shall be required to hire an independent commissioning agent during the early stages of design to review the drawings and specifications and review the final installation to improve comfort and energy efficiency. Energy modeling is performed early in the process to ensure the Project will meet energy goals and again at final design to determine final anticipated energy cost savings and associated scorecard

credits. Green materials analysis is performed early in the process to ensure the Project will meet materials sustainability goals and to focus efforts on the most significant materials and systems.

During construction, the sustainability consulting process entails responding to sustainability related requests for information, reviewing submittals, conducting site visits, and verifying sustainable practices during construction. The Contractor collects the required submittals during construction as defined in the sustainability specifications, develops and performs a construction waste management plan, develops and performs an indoor air quality plan, and tracks green materials by environmental properties and cost. The Contractor's Sustainability Manager, who has experience on LEED projects and/or is a LEED Accredited Professional, oversees the Contractor's conformance to environmental and LEED goals for the Project and implementing procedures for environmental protection. Responsibilities of the Sustainability Manager will include compliance with applicable Federal, State, and Local environmental regulations, including gathering and recording required LEED submittal documentation, implementation of the Waste Management Plan, implementation of the Indoor Air Quality (IAQ) Management Plan, environmental training for Contractor personnel in accordance with their position requirements.

19.4 DESIGN PROCESS AND SUBMITTALS

The Contractor shall adhere to the design review and submittal requirements in accordance with Section 3 Quality Management. Drawings and specifications shall be submitted for review at each design phase consistent with industry standard design practice. The Contractor's construction documents shall be suitable for submission to the authorities having jurisdiction, and shall be revised and resubmitted as required to obtain permits for construction. The Contractor will be responsible for developing a complete construction specification using Construction Specifications Institute (CSI) format.

The design and submittal phases shall include:

- Initial Design Submittal – 30% Review
- Preliminary Design Submittal – 60% Review
- Final Design Submittal – 90% Review
- Release for Construction Submittals
- Request for Revision Process
- Final Project Plans
- As-Built Plans

Any submittals to third parties other City agencies for building permits, Utility design and relocation approvals, or other miscellaneous permits shall be the responsibility of the Contractor. Any proposed building design and development will be subject to the City's Site Development Plan review and approval process. The Contractor shall be responsible for coordinating these submittals and adjusting the Project Schedules accordingly based on the time frame required for review and approval of any necessary submittals for permits.

The City and the Contractor will discuss and review in detail the proposed design for the purpose of making certain changes or modifications in designs, materials, finishes, colors, configurations, layouts, equipment, systems or otherwise, to improve the overall design and quality of the Project, to more fully meet the City's requirements and criteria for the Project. As a condition of executing a Contract, and at no additional cost to the City, the Contractor shall make any necessary revisions or modifications to the proposed designs to ensure conformity with all requirements of these Contract Documents.

The Contractor shall be aware of all requirements and reviews required by the City, including all information found at <https://www.denvergov.org/content/denvergov/en/denver-development-services/help-me-find-/site-development-plan-review.html>.

19.5 DELIVERABLES

At a minimum, the Contractor shall submit the following to the City:

Table 19-1 Deliverables

Deliverable	Information or Approval	Schedule
LEED Scorecard	Approval	Concurrent with Preliminary Design Submittal
Preliminary LEED Report and Documentation	Approval	Concurrent with Preliminary Design Submittal
Final LEED Report and Documentation	Approval	Concurrent with Final Design Submittal
Construction Drawings	Approval	Concurrent with all design submittals
Construction Specifications	Approval	Concurrent with all design submittals
Preliminary FF&E List	Approval	Concurrent with Preliminary Design Submittal
Final FF&E List	Approval	Concurrent with Final Design Submittal
Finishes Schedule	Approval	Concurrent with Final Design Submittal

19.6 APPENDICES

Appendix A – Program Space Requirements

Golf / Pro Shop
Sales Floor w/ Control Counter
Dressing Room
Receiving/Storage/ Inventory
Rental Golf Club Storage
Indoor Driving Range Simulator (2) if provided
Pro's Office
Assistant Pro's Office
Administration
Manager's Office
Meeting and/or Break Room
First Tee Office
First Tee Office
First Tee Office
First Tee Office/Storage
First Tee Storage
Club Repair/ Building Area
Dining
Dining Room (40 seats and 20 Bar seating area)
Meet/Banquet Dining (72 seats)
Additional Meet/Banquet Dining (72 seats)
Function Storage
Food Service Area
Food Service Counter with optional Pick-up Window
Food Preparation
Dry Storage
Liquor Storage
Refrigerator/Freezer
Supervisor/Food Service Manager/Deliveries Office
Support Spaces
Toilets / Changing Room Areas
Custodial
Storage
Clubhouse Miscellaneous Spaces
Wall, Corridors, Circulation
MEP and Building Services
Golf Cart Storage
Cart Storage (80 carts / .014)
Food & Beverage Cart (1 cart size / .014)
Ranger Cart (2 carts / .014)+ Range Picker (1.5 cart size / .014)

Parking, Clubhouse

Parking spaces

1 space per 75% of tournament (72 golfers / 9 holes=144 Golfer) = 108

1 space per dining seat = 60 ; 1 space per employee = 25

1 space per banquet seat = 72

1 space per Additional Meet/Banquet Dining = 72 seats

Outdoor Dining

Patio Dining - 12 sf /seat

72 patrons per 9 holes. Additional seating provided as inside seating or expanded Patio to

144 patrons

Snack Shack/ Relief stations

Food Preparation

Dry Storage

Janitorial Storage

Toilets Men (exterior) (2 relief stations if Snack shack removed)

Toilets Women (exterior) (2 relief stations if Snack shack removed)

Covered shelter area (2 relief stations if Snack shack removed)

Maintenance Facilities / Service Yard

Building 1

Offices (3 @ 120 sf ea)

Mechanics office

Restrooms (1-Men, 1-Women @ 150 sf ea)

Locker area(1-Men, 1-Women @ 75 sf ea)

Breakroom (17.5sf x 20 persons)

Irrigation storage

Grinding Room

Mechanic Work Area w/ internal lift

Non-Tempered Storage

Building 2 - HazMat Storage

Building 3 - Chemical Storage

Site Features

Parking 9x19 (20 Spaces)

Existing Gas tank-300 gallon

Dumpster area – (6) 4 yd containers

Equipment wash station

15' x 15' material storage bays (6 bays)

Break space and other Areas

Site Circulation

Miscellaneous Maintenance Facilities Spaces

Wall, Corridors, Circulation of conditioned space

MEP and Building Services

First Tee Clubhouse

Training/ Mentoring

Toilets (Men, and Women)

20.0 TECHNICAL STANDARDS, DATA, AND REPORTS

The Contractor's performance under this Contract shall comply with the following standards, data, and/or reports.

The Contractor shall, and shall ensure that each of its subcontractors and each of their respective subcontractors shall, monitor and familiarize themselves with changes or additions to, or replacements of, the Project standards shown in Table 20-1 List of Applicable Standards, Data and Reports. Table 20-1 is a list of known standards and specifications anticipated for the design and construction of the Project. The Contractor shall confirm the applicability and necessity of additional standards and specifications required for the completion of the Work. For the purposes of convenience only, the Contractor can generally assume the following portions of the Project comply with the following specifications:

- Major drainage – Wastewater and UDFCD
- Site drainage – Wastewater and Parks & Recreation
- Site Development – Parks & Recreation, vertical specifications (as defined by the Contractor)
- Utility Work – Denver Water, Wastewater (sanitary), and specific Utility Owner specifications, as applicable.

The Contractor shall notify the City and County of Denver (City) of any changes or additions to, or replacement of, any Project standard promptly after it becomes aware of such change, addition, or replacement.

If there is any conflict, ambiguity, or inconsistency between or among any provision(s) of the Project standards or specifications as shown in Table 20-1 List of Applicable Standards, Data and Reports, then the City standard or specification shall prevail, and if no City standard or specification exists, the most stringent standard or specification shall prevail.

References to Colorado Department of Transportation (CDOT) standards and specifications shall be in accordance with the Technical Requirements. Reference to any specifications included in the CDOT *Standard Specifications for Road and Bridge Construction* shall include all current Standard Special Provisions.

If the Contractor's Proposal standards exceed the standards of either those shown in Table 20-1 List of Applicable Standards, Data and Reports or any of the provisions of the Technical Requirements, then the Proposal standards shall prevail.

If there is any unresolved ambiguity in standards, it is the Contractor's responsibility to obtain clarification from the City before proceeding with the design and/or construction.

The Contractor shall use the most current version of each listed standard as of the final publication date of this Request for Proposal (RFP).

Availability Legend:

- NS = Document not supplied with RFP
- S = Document supplied with RFP (provided in Reference Documents)

Table 20-1 List of Applicable Standards, Data, and Reports

Originator	Title	Availability
AASHTO	All Standards/Manuals	NS
ADA	ADA Accessibility Guidelines	NS
ADA	Draft Final Accessibility Guidelines for Outdoor Developed Areas	NS
ASTM	Standards	NS
Audubon International	Audubon Cooperative Sanctuary Program for Golf Courses Recertification Handbook	S
AWS	Bridge Welding Code, D1.5M/D1.5	NS
City	Standard Specifications for Construction/General Contract Conditions (the “Yellow Book”)	NS
City	Rules & Regulations Governing Sewerage Charges and Fees and Management of Wastewater	NS
City	Rules & Regulations Criteria for Hazardous or Defective Sidewalks	NS
City	Rules & Regulations Governing Street Cuts and Roadway Excavation Specifications	NS
City	Rules & Regulations Encroachments in the Public Right of Way	NS
City	Rules & Regulations for Sidewalk and Curb Ramp Construction	NS
City	Rules & Regulations for Standard Right-of-Way Cross Sections and Utility Locations	NS
City	Rules & Regulations for the Construction of Curbs, Gutters, Sidewalks, Driveways, Street Paving, and other Public Right-of-Way Improvements	NS
City	Rules & Regulations Pertaining to the Issuance of Permits by the City Traffic Engineer	NS
City	Rules and Regulations Pertaining to Aspects of the Enforcement and Interpretation of Article VII, Chapter 20, of the Denver Revised Municipal Code: Prompt Payment	NS
City	Rules for Prequalification of Construction Contractors	NS
City	Rules and Regulations Part III – Subdivision Regulations of the Department of Public Works, City and County of Denver	NS
City	Rules and Regulations Governing the Private Designing, Planning, Construction, Reconstruction, and Remodeling of General Public Improvements	NS
City	Rules and Regulations Snow and Ice Removal from Sidewalks	NS
City	Rules and Regulations for the Maintenance of Improvements in the Public Right-of-Way	NS
City	Rules and Regulations Governing Item Placement Specifications	NS

Originator	Title	Availability
City	Rules and Regulations Housing Code	NS
City	Rules and Regulations Pertaining to the Administration of a Bicycle Parking Program by the City Traffic Engineer	NS
City	Denver Parks + Recreation Planning, Design + Construction Standards	NS
City	Denver Parks and Recreation Parks Maintenance Standards	NS
City	Denver Parks and Recreation Golf Division – Golf Maintenance Standards Manual (GMSM)	S
City	Construction Activities Stormwater Discharge Permit	NS
City	Storm and Sanitary Construction Plans / Studies General Requirements	NS
City	Aesthetically Enhanced Detention and Water Quality Ponds	NS
City	Storm Drainage Design and Technical Criteria Manual	NS
City	Storm Drainage Master Plan	NS
City	Sanitary Sewer Master Plan	NS
City	Wastewater Capital Projects Management Standard Construction Specifications Including Measurement and Payment	NS
City	Construction Activities Stormwater Manual (CASM)	NS
City	Standard Provisions, Standard Concrete Construction Details and Technical Specifications	NS
City	Wastewater Capital Projects Management General Notes	NS
City	Ultra-Urban Green Infrastructure Guidelines	NS
City	As-Built Drawing Submittal Checklist	NS
City	DES Storm and Sanitary Sewer General Project Close-out Requirements	NS
City	Transportation Standards and Details for the Engineering Division 2015	NS
City	Sanitary Sewer Design Technical Criteria Manual	NS
City	Minimum Frequency of Materials Sampling and Testing Standard	NS
City	Underground Water Quality Devices	NS
City	Approved Concrete Mix Designs	NS
City	Traffic Signal Standards Sign and Markings Standards Drawings	NS
City	Amendments to the Building Code for the City and County of Denver	NS
City	Water Quality Management Plan	NS
City	Operating Rules of the Board of Water Commissioners	NS
City	Utility Plan Review	NS

Originator	Title	Availability
City	Address Assignment Card Entrance Requirements	NS
City	Easement Relinquishment Entrance Requirements	NS
City	Guidelines and Requirements for Range Points	NS
City	Guidelines for Survey Control for Design of City Project	NS
City	Approved List of HMAP Asphalt Mix Designs	NS
City	Transportation Engineering Plan Review Submittal Requirements	NS
City	Streetscape Design Manual	NS
City	Capital Project Engineering Plans (CPEP) Review Submittal Checklist	NS
City	Construction Detour Standards for Bikeways and Multi-Use Trails	NS
City	Street Lighting/Pedestrian Lighting, Design and Review Guidelines	NS
City	Approved Street Tree List for Denver's Public Rights-of-way	NS
City	Amendments to the Building and Fire Code for the City and County of Denver	NS
CDOT	Standard Specifications for Road and Bridge Construction	NS
CDOT	Region 1 Lane Closure Strategy	NS
CDOT	Bridge Design Manual	NS
CDOT	Bridge Detail Manual	NS
CDOT	Bridge Rating Manual	NS
CDOT	Structural Worksheets	NS
CDOT	Bridge Standard Special Provisions	NS
CDOT	Bridge Technical Memorandums	NS
CDOT	M and S Standard Plans	NS
Colorado Department of Health and Environment (CDPHE)	Regulation 84: Reclaimed Water Control Regulation	NS
Denver Water	Engineering Standards including Materials Specifications and Standard Drawings	NS
Denver Water	Plan Acceptance Checklist	NS
Denver Water	Capital Projects Construction Standards, Vol's. I, II, and III	NS
Denver Water	Capital Projects CAD Standard Manuals	NS
Denver Water	General Construction and Water Notes	NS
Electronics Industries Alliance (EIA)	Standards	NS
FHWA	All Standards/Manuals	NS

Originator	Title	Availability
FHWA	Manual on Uniform Traffic Control Devices	NS
FHWA	Designing Sidewalks and Trails for Access, Part II of II: Best Practices Design Guide	NS
FHWA	University Course on Bicycle and Pedestrian Transportation, Publication No. FHWA-HRT-05-133	NS
FHWA	Drilled Shafts: Construction Procedures and LRFD Design Methods, FHWA-NHI-10-016	NS
FHWA	Drilled Shafts for Bridge Foundations, FHWA-RD-92-004	NS
FHWA	Design and Construction of Driven Pile Foundations Reference Manual, Volumes I/II, FHWA-NHI-05-042/FHWA-NHI-05-043	NS
FHWA	Design and Construction of Mechanically Stabilized Earth Walls and Reinforced Soil Slopes, Volumes I/II, FHWA-NHI-10-024/FHWA-NHI-10-025	NS
FHWA	Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines, FHWA-NHI-00-043	NS
FHWA	Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes, FHWA-NHI-09-087	NS
International Code Council (ICC)	International Building Code (IBC)	NS
ICC	International Fire Code (IFC)	NS
ICC	International Existing Building Code (IEBC)	NS
ICC	International Residential Code (IRC)	NS
ICC	International Mechanical Code (IMC)	NS
ICC	International Plumbing Code (IPC)	NS
ICC	International Fuel Gas Code (IFGC)	NS
ICC	International Energy Conservation Code (IECC)	NS
ICC	National Electrical Code (NEC)	NS
Illuminating Engineering Society of North America	Roadway Lighting, ANSI Approved RP-8-00	NS
ISO	ISO 9001	NS
Metropolitan Government Pavement Engineering Council (MGPEC)	Pavement Design Standards and Construction Specifications	NS
Metro Wastewater Reclamation District	Rules and Regulations	NS

Originator	Title	Availability
National Association of City Transportation Officials (NACTO)	Urban Street Design Guide	NS
National Electrical Manufacturers Association (NEMA)	Standards	NS
National Fire Protection Agency (NFPA)	Life Safety Code	NS
NFPA	National Electric Code	NS
National Transportation Communications for ITS Protocol Standards (NTCIP)	Standards	NS
OSHA	Standard Specifications	NS
Regional Transportation District (RTD)	RTD Bus Infrastructure Standard Drawings	S
Telecommunications Industries Association (TIA)	All standards and publications	NS
Transportation Research Board	Bridge Aesthetics Sourcebook	NS
Transportation Research Board	Highway Capacity Manual	NS
Urban Drainage and Flood Control District (UDFCD)	Urban Storm Drainage Criteria Manuals, Vols. I, II, III	NS
UDFCD	Maintenance Eligibility Program Guidelines	NS
US Army Corp of Engineers	Publications	NS
Xcel Energy	Outdoor Lighting Manual	NS