



GRADING, EROSION, AND SEDIMENT CONTROL (GESC) PLAN (STORMWATER MANAGEMENT PLAN) Park Meadows – Mixed Use Development

Address:

8401 Park Meadows
Center Drive
Lone Tree, CO 80124

Prepared:

March 17, 2023

Prepared for:

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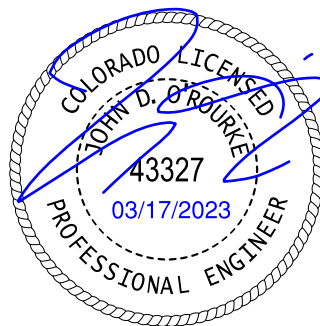


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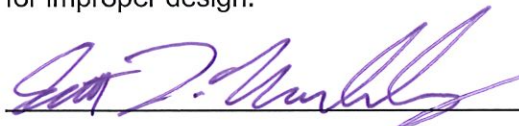
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I. Certifications

The Grading, Erosion and Sediment Control Plan included herein has been placed in the City of Lone Tree file for this project and appears to fulfill applicable City of Lone Tree and Douglas County Grading, Erosion and Sediment Control criteria, as amended. Additional grading, erosion and sediment control measures may be required of the permittee(s) due to unforeseen erosion problems or if the submitted GESC Plan does not function as intended. The requirements of this GESC Plan shall run with the land and be the obligation of the permittee(s) until such time as the GESC Plan is properly completed, modified, or voided.

DEVELOPER CERTIFICATION

Park Meadows Mall, LLC/Park Meadows Anchor Acquisition, LLC hereby certifies that the grading, erosion and sediment control facilities for the Park Meadows – Mixed Use Development shall be constructed according to the design presented in this report. I understand that the City of Lone Tree does not and will not assume liability for the grading, erosion and sediment control facilities designed and/or certified by my engineer and that the City of Lone Tree reviews GESC plans; but cannot, on behalf of the Park Meadows – Mixed Use Development, guarantee that final review will absolve Park Meadows Mall, LLC/Park Meadows Anchor Acquisition, LLC and/or their successors and/or assigns of future liability for improper design.



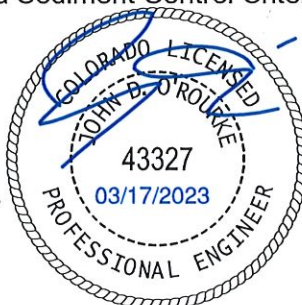
3/27/23
Date

PROJECT OWNER/REPRESENTATIVE
Park Meadows Mall, LLC/
Park Meadows Anchor Acquisition, LLC

ENGINEER CERTIFICATION

The Grading, Erosion and Sediment Control (GESC) report included herein has been prepared under my direct supervision in accordance with the requirements of the City of Lone Tree and the Douglas County Grading, Erosion and Sediment Control Criteria Manual, as amended.

John O'Rourke, P.E.
State Of Colorado Registration No 43327
On Behalf of Harris Kocher Smith



II. General Location and Site Description

A. Location

The Park Meadows Apartments (Project) lies within Lot 4-A and Lot 21, of the Park Meadows Town Center Filing 1-A, 1st Amendment. The Project is situated in Section 3, Township 6 South, Range 67 West of the 6th Principal Meridian, Douglas County, Colorado. A Vicinity Map is located in Appendix A of this report.

The Project is bounded on the north by East County Line Road, on the west by South Yosemite Street, and the south by State Route 470 and on the east by Interstate Highway 25. Numerous developments immediately surround the site, which includes hotels, restaurants, and retail stores.

B. Nature of Construction Activity

The existing Park Meadows Mall consists of approximately 102 acres of existing parking, roadway, and building area. In the area of the proposed project, the existing site is an asphalt paved parking lot with small areas of landscaping.

The Project will be developed as multi-family residential housing, retail, and structured parking in three main buildings. The proposed development will include several courtyards and numerous vehicle and pedestrian access pathways. In general, project stormwater flows will be routed to a series of proposed inlets and storm sewer, which will connect to the existing storm sewer in the area, and discharge to the existing Detention Basin A south of the Project.

C. Sequence of Major Activities

The proposed sequence for major activities is described in detail in the Stormwater Management Considerations section below.

D. Estimates of Site Area

The Site disturbance is approximately 14.18 acres. The entire Site is expected to be disturbed by clearing, excavation, grading, and other construction activities. The exact limits of disturbance are shown on the Grading, Erosion, and Sediment Control Plans located in Appendix D.

The Site earthwork is anticipated to generate approximately 1,481 cubic yards of cut and 24,364 cubic yards of fill; therefore, the approximate net earthwork consists of 22,883 cubic yards of import to be transported on-site. Truck routes for the export sites will be submitted to the County after they have been determined by the Contractor. The earthwork volumes listed above do not take into account volumes associated with utility spoils and foundations. The earthwork numbers are approximate and should be independently verified by the contractor prior to construction.

Land disturbances will include existing asphalt paved parking lots with small areas of landscaping within the construction area.

E. Summary of Existing Data

Existing soil data from the Preliminary Geotechnical Engineering Study & Proposed Mixed-Use Development Soil Report for Park Meadows Mall was used in the development of the Site construction plans and Grading, Erosion, and Sediment Control Plan (GESCC). Soil conditions from both sources are described in more detail in the Soils section below.

F. Existing Vegetation

Existing vegetation includes only small areas of landscaping within the proposed construction site. There are no known wetlands within the Site limits of disturbance.

G. Potential Pollution Sources

The location and description of all potential pollutant sources including ground surface disturbing activities, vehicle fueling, and storage of fertilizers or chemicals, etc. is detailed below in the Potential Pollution Sources section.

H. Potential Non-Stormwater Discharges

Non-Stormwater components of discharge, such as underground springs, groundwater dewatering, permitted dewatering activities, and landscape irrigation return flow are not anticipated to occur with this development. However, the contractor shall be responsible to monitor for such discharges, and notify the engineer in such an event.

I. Receiving Water(s)

All runoff from the sub-basin will drain through roof drains and tie to the proposed and existing storm sewer system and is ultimately routed to the existing Detention Pond A that is located to the southwest of site.

III. Drainage Patterns

The proposed project area will collect runoff from a series of detention basins located on top of completed building rooftops and proposed grade areas within the completed project site. Rooftop runoff will drain from downspouts to a designated basin design point that is located by a stormwater inlet. Runoff from proposed grade areas within the completed project site are also designed to flow to a designated basin design point by a stormwater inlet. Inlets are then designed to lead runoff to proposed and existing storm sewer lines located on the north and south ends of the completed project site. The stormwater ultimately discharges to the Existing Detention Pond A, via existing storm sewer systems

A review of the Flood Insurance Rate Map (FIRM), Community Panel Number 0835-0034 G, 0053G, 0061H, the Site/Project does not lie within a FEMA designated floodplain as shown on the attached FIRMette Map in Appendix A.

IV. Soils

A. Soils

The Site generally slopes from Park Meadows Ring Road down to the west towards the Park Meadows Mall, with grades ranging from 1% to 4%. According to the Natural Resources Conservation Service's (NRCS) – Web Soil Survey for the Park Meadows area, the underlying soils are primarily RmE Renohill-Buick compiles which are classified as Hydrologic Group C/D. A copy of the Soil Survey is included in Appendix B.

B. Geotechnical Engineering Report

A Geotechnical Engineering Study was prepared by Kumar & Associates dated December 11, 2020 for Brookfield Properties. The report contains results of laboratory soils testing, boring logs, and geotechnical recommendations needed to aid in the design and construction of this building expansion. These recommendations were used to aid in the engineering design process for this building expansion.

V. Erosion and Sediment Control Measures (BMP's)

The following BMP's shall be implemented as indicated, prior to and during construction activities on the Site. This plan indicates the purpose of and estimated timing of implementation of such BMP's. The contractor's representative shall be vigilant in ensuring that additional BMP placement is implemented immediately in the event of deficiencies or any unforeseen erosion conditions.

A. Silt Fence

Silt fence is utilized along the limits of construction (in areas of acceptable grade) to filter Site runoff, prior to reaching the adjacent channel or slope. Silt fence shall be placed along the contour, at the base of any disturbed area, as shown on the Initial GESC Plan. When silt fence is not installed along the contour, a "J-Hook" installation may be appropriate to ensure that the BMP does not create concentrated flow parallel to the silt fence. The contractor shall also install new silt fence if the initial GESC Plan shows existing silt fence and the fence is no longer in place.

B. Inlet Protection

All storm sewer inlets that are made operable during construction or previously exist adjacent to, or located within the Site, must be protected to prevent sediment-laden runoff from entering the storm sewer system. Inlet protection locations are indicated on the GESC Plan. Different types of inlet protection are required (before and after paving), in accordance with the details shown on the plan. Inlet protection measures may be removed after upstream areas are stabilized. The contractor shall inspect all existing inlet protection and replace if necessary. The contractor shall install new inlet protection on all existing inlets that show existing inlet protection that is no longer in place.

C. Stabilized Staging Area

One stabilized staging area (used for equipment storage, parking, and a loading /unloading zone) is identified on the GESC Plan.

D. Vehicle Tracking Control

The vehicle tracking control locations are identified on the GESC Plan, to prevent the transport (by vehicles) of mud and dirt onto the paved surface. Whenever sediment is transported onto a roadway, the road shall be cleaned at the end of each day, or at the frequency requested by the governing municipality. Sediment shall be removed by shoveling, sweeping, or other approved methods. Street washing shall not be allowed until after sediment has been removed (in an approved manner).

E. Concrete Washout Area

A concrete washout area is identified on the GESC Plan. This area shall be combined with a vehicle tracking control pad to minimize mud transport.

F. Seeding and Mulching

All disturbed areas shall be seeded and mulched within 30 days of initial exposure, or 7 days after grading is substantially complete in a given area.

Seed shall be applied using a mechanical drill, to a depth of ¼-inch, with row spacing not more than 6 inches. Seed mixes shall conform to the GESC Plan Standard Notes and Details.

Mulch shall be applied within 24-hours of seeding. Mulch shall be weed and seed free, long-stemmed straw. At least 50% (by weight) shall be 10-inches or more, in length. Mulch shall be applied at a rate of 4000 pounds per acre and be mechanically anchored to a minimum depth of 2-inches.

G. Dust Mitigation

The contractor shall have measures on-site during overlot grading to mitigate airborne dust pollutants. Two recommended methods are water trucks and surface roughening. Water trucks will be used to moisten soil access drives to reduce the amount of dust created by wind and on-site construction traffic. Surface roughening will be provided on all disturbed surfaces within 2-days of disturbance.

H. Surface Roughening

Surface roughening provides temporary stabilization of disturbed areas from water and wind erosion. The soil surface is considered to be roughened if depressions are created 2 to 4-

inches deep and are spaced approximately 4 to 6-inches apart. Surface roughening shall be performed on all disturbed, graded areas of the Site (except in areas where buildings, pavement, or sod are to be placed within 7-days). Surface roughening should follow along the contours of the slope. Care should be taken not to allow vehicles on treated slopes, as tire tracks will smooth the roughened surface and encourage runoff to collect into channels.

I. Temporary Soil Stockpile

A temporary soil stockpile is shown on the GESC Plan. The stockpile shall have perimeter protection that shall consist of silt fence (particularly on the downhill side of the stockpile) and rock socks, or sediment control logs (on the upslope side of the stockpile). The stockpile surface shall be stabilized with surface roughening, temporary seeding and mulching, erosion control blankets, or soil binders. Soils that will be stockpiled for more than 60 days should be seeded and mulched with a temporary grass cover once the stockpile is placed (within 14 days). If the perimeter protection must be moved to access the soil stockpile, the perimeter controls shall be replaced by the end of the workday.

J. Construction Fence

Construction fence is used to delineate all limits of construction around a site. Proposed construction fence locations can be viewed within the GESC Plans.

VI. SWMP Administrator

The stormwater management plan (SWMP) administrator shall be the Site superintendent. The Site superintendent is responsible for implementing and maintaining the Grading, Erosion and Sediment Control Plan. The SWMP administrator shall contact the engineer of record for development and revisions of the GESC.

VII. Construction Schedule

Construction operations are anticipated to begin in May of 2022. The following schedule outlines the expected construction schedule:

Preliminary Construction Schedule	
Install Initial BMPs	August 2023
Site Grading	August 2023 – October 2023

Install Interim BMPs	October 2023
Site Construction	October 2023 – November 2024
Final Site Stabilization	November 2024

VIII. Stormwater Management Considerations

Stormwater management for the Site will be accomplished by a 3-Phase process of BMP installation. Specific BMPs are indicated on the Grading, Erosion and Sediment Control Plan.

A. Phase One

Installation of the vehicle tracking control, downhill silt fence, construction fence, stabilized staging area, stockpile protection, concrete washout area, sediment control log, and inlet protection for existing inlets will take place at this time. The contractor shall verify what existing BMPs are in place and replace any that have been removed or are no longer functioning properly.

B. Phase Two

Grading operations will commence, and soil will be imported offsite. Diversion ditches will be removed where no longer necessary and graded in where necessary. Utility installation including landscape drain, sanitary sewer services (inlet protection will now be placed around proposed storm sewer inlets), fire hydrant and building water service installation will also commence. Curb, gutter, concrete, and asphalt paving activities will follow utility work. Concrete sidewalk work will follow paving activities. All landscaping work will follow the completion of the exterior finishes.

The contractor shall have measures on-site at all times to mitigate airborne dust pollutants. Temporary measures will be taken to control runoff during this phase by a continuation of downhill silt fence. Maintenance of all previously installed erosion control measures shall be ongoing throughout this phase.

C. Phase Three

Permanent seeding/mulching of non-formally landscaped areas will take place at this time. A request for final inspection shall be made. After final Site stabilization has been reached, temporary BMP measures can be removed.

IX. Potential Pollution Sources

A. Disturbed and Stored Soils

Disturbed and stored soils are a potential pollution source for the Site. The disturbed and stored soils will be controlled by implementing a silt fence, sediment control logs, along with seeding and mulching.

B. Vehicle Tracking of Sediments

Vehicle tracking of sediments is a potential pollution source for the Site and will be controlled by vehicle tracking control pads located at all construction entrances.

C. Contaminated Soils

According to the geotechnical report provided by Kumar and Associates (December 11th, 2020), it is not anticipated that contaminated soils will be a potential pollution source for the Site. The contractor shall be responsible to monitor for contaminated soils and notify the engineer if discovered.

D. Loading and Unloading Operations

Loading and unloading operations is a potential pollution source for the Site. Loading and unloading operations shall take place within the stabilized staging area.

E. Outdoor Storage Activities

Outdoor storage activities are a potential pollution source for the Site. Materials are sometimes used at a construction site that present a potential for contamination of stormwater runoff. These may include, but are not limited to: building materials, fuel, oil, lubricants, paints, solvents, concrete curing compounds, pesticides, fertilizers, chemicals, and herbicides, etc. The contractor shall designate an area where these products should be stored in an enclosure, container, or lined earthen dike, constructed to prevent discharge of these materials in runoff from the Site. These barriers will also function to contain spilled materials from contact with surface runoff. Standard Operating Procedures for material spill containment and cleanup are provided in Appendix C.

F. Vehicle and Equipment Maintenance and Fueling

Vehicle and equipment maintenance and fueling is a potential pollution source for the Site. Measures shall also be taken to prevent spills or leaks of fuel, oils, lubricants, antifreeze, and other contaminant fluids from construction vehicles to protect groundwater and stormwater runoff. All equipment maintenance shall be performed in a designated area, and measures such as drip pans shall be used to contain petroleum products. Spills of construction materials should be cleaned up immediately and disposed of properly. The contractor shall routinely inspect equipment for leaks that could lead to discharge of petroleum products into surface runoff.

G. Dust or Particulate Generating Processes

Significant dust or particulate generating processes are not a potential pollution source for the Site; however, minor dust or particulate may be generated during the grading process. Dust mitigation, surface roughening, and seeding and mulching shall be implemented to mitigate airborne dust pollutants.

H. Routine Maintenance Activities

Routine maintenance activities are a potential pollution source for the Site. Refer to Outdoor Storage Activities in Section E for specific implementation criteria.

I. On-site Waste Management Practices

On-site waste management practices (waste piles, liquid wastes, dumpsters, etc.) are a potential pollution source for the Site. The contractor shall designate an area where these practices occur and shall routinely inspect and maintain the areas to eliminate the pollution source.

J. Concrete Truck/Equipment Washing

Concrete truck and equipment washing is a potential pollution source for the Site and should only occur at the designated Concrete Washout Area shown on the Grading, Erosion, and Sediment Control Plan.

K. Non-Industrial Waste Sources

Non-industrial waste sources such as worker trash and portable toilets are a potential pollution source for the Site. The contractor shall designate an area where these practices occur and shall routinely inspect and maintain the areas to eliminate the pollution source.

L. Other Areas or Procedures Where Potential Spills Can Occur

Other areas or procedures where potential spills can occur are not a potential pollution source for the Site.

M. Training

All contractor's employees and subcontractor's employees shall receive orientation training in "Spill Prevention and Response Procedures". Training will cover responsibilities and procedures to be followed in the event of an on-site material spill. Periodic training shall be conducted during weekly or monthly safety meetings. All training records shall be maintained in the construction trailer. The contractor is responsible for preparing and training Site personnel for procedures on potential spills.

X. Final Stabilization and Long-Term Stormwater Management

The post-construction condition of the Site shall have all disturbed areas from construction paved, built upon, or re-vegetated, in some manner in conformance with the approved landscape plan. It is anticipated that these areas will have sod, trees, and shrubs installed throughout the Site. Final stabilization is reached when all soil-disturbing activities at the Site have been completed, and uniform vegetative cover has been established with a density of at least 70% of pre-disturbance levels or equivalent permanent, physical erosion reduction methods have been employed.

Stormwater runoff from the Site will drain to several proposed stormwater inlets. The runoff will drain via overland flow, proposed storm sewer, and existing storm sewer. The stormwater ultimately discharges to the Detention Basin A, via existing storm sewer systems. The installation of silt fence and inlet protection will also contribute to particulate removal from the flows before the Site reaches final stabilization.

XI. Inspection and Maintenance

Inspection and maintenance of all erosion control devices is the responsibility of the contractor. Inspection of all erosion control devices should occur at the beginning and end of each construction day. The Colorado Department of Public Health and Environment (CDPHE) Stormwater Construction Permit requires that a thorough inspection of the stormwater management system be performed and documented at least every 14 days. Additionally, inspection should occur within 24 hours of any precipitation or snowmelt event that may cause surface erosion. The CDPHE permittee must document inspection results and maintain a record of the results for a period of 3-years following expiration or inactivation of permit coverage. Any erosion control devices that have been compromised or disturbed shall be replaced or reconstructed. It is the responsibility of the contractor to have all erosion control devices in place and effective, prior to a storm event.

- A. Record Keeping and Documenting Inspections
- B. The following items (at a minimum) must be documented as part of the Site inspections:
 - i. The inspection date;
 - ii. Name(s) and title(s) of personnel making the inspection;
 - iii. Location(s) of discharges of sediment or other pollutants from the Site;
 - iv. Location(s) of BMPs that need to be maintained;
 - v. Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location;
 - vi. Location(s) where additional BMPs are needed that were not in place at the time of inspection;
 - vii. Deviations from the minimum inspection schedule as provided in Section IX above;
 - viii. Description of corrective action for items iii, iv, v, and vi, above, dates corrective action(s) taken, and measures taken to prevent future violations, including requisite changes to the SWMP, as necessary; and
 - ix. After adequate corrective action(s) has been taken, or where a report does not identify and incidents requiring corrective action, the report shall contain a signed statement indicating the Site is in compliance with the permit to the best of the signer's knowledge and belief.

XII. Opinion of Probable Construction Cost

Estimated construction costs for erosion control items are outlined below:



GESC Permit

Opinion of Probable Cost

Project:				Date:		
BMP No.	BMP	ID	Unit	Installation Unit Cost	Quantity	Cost
1	Check Dam	CD	LF	\$ 24.00		\$ -
2	Compost Blanket	CB	SF	\$0.36		\$ -
3	Compost Filter Berm	CFB	LF	\$ 2.00		\$ -
4	Concrete Washout Area	CWA	EA	\$ 100.00	1	\$ 100.00
5	Construction Fence	CF	LF	\$ 2.00	3,241	\$ 6,482.66
6	Construction Markers	CM	LF	\$ 0.20		\$ -
7	Curb Sock	CS	LF	\$ 8.00		\$ -
8	Dewatering	DW	EA	\$ 600.00		\$ -
9	Diversion Ditch	DD	LF	\$ 1.60		\$ -
10	Erosion Control Blanket	ECB	SY	\$ 5.00		\$ -
11	Inlet Protection	IP	LF	\$ 20.00	280	\$ 5,600.00
12	Reinforced Check Dam	RCD	LF	\$ 36.00		\$ -
13	Reinforced Rock Berm	RRB	LF	\$ 9.00		\$ -
14	RRB for Culvert Protection	RRC	LF	\$ 9.00		\$ -
15	Sediment Basin	SB	AC (1)	(2)		\$ -
16	Sediment Control Log	SCL	LF	\$ 2.00	175	\$ 349.60
17	Sediment Trap	ST	EA	\$ 600.00		\$ -
18A	Seeding and Mulching - Mobilization	SM	EA	\$ 1,000.00		\$ -
18B	Seeding and Mulching - Installation	SM	AC	\$ 750.00	1.3	\$ 937.50
19	Silt Fence	SF	LF	\$ 2.00	1,324	\$ 2,647.08
20	Stabilized Staging Area	SSA	SY	\$ 2.00	7,970	\$ 15,940.40
21	Surface Roughening	SR	AC	\$ 600.00		\$ -
22	Temporary Slope Drain	TSD	LF	\$ 30.00		\$ -
23	Temporary Stream Crossing	TSC	EA	\$ 1,000.00		\$ -
24	Terracing	TER	AC	\$ 600.00		\$ -
25	Vehicle Tracking Control	VTC	EA	\$ 1,000.00	3	\$ 3,000.00
26	VTC with Wheel Wash	WW	EA	\$ 1,500.00		\$ -
27	Temporary Batch Plant Restoration		AC	\$ 5,000.00		\$ -
(1) Upstream Tributary Acre				SUB-TOTAL		\$ 35,057.24
(2) SB Cost = \$1000 +\$200(Upstream Tributary Acres)				15% CONTINGENCY		\$ 5,258.59
				GESC SURETY TOTAL (1)		\$ 40,315.83

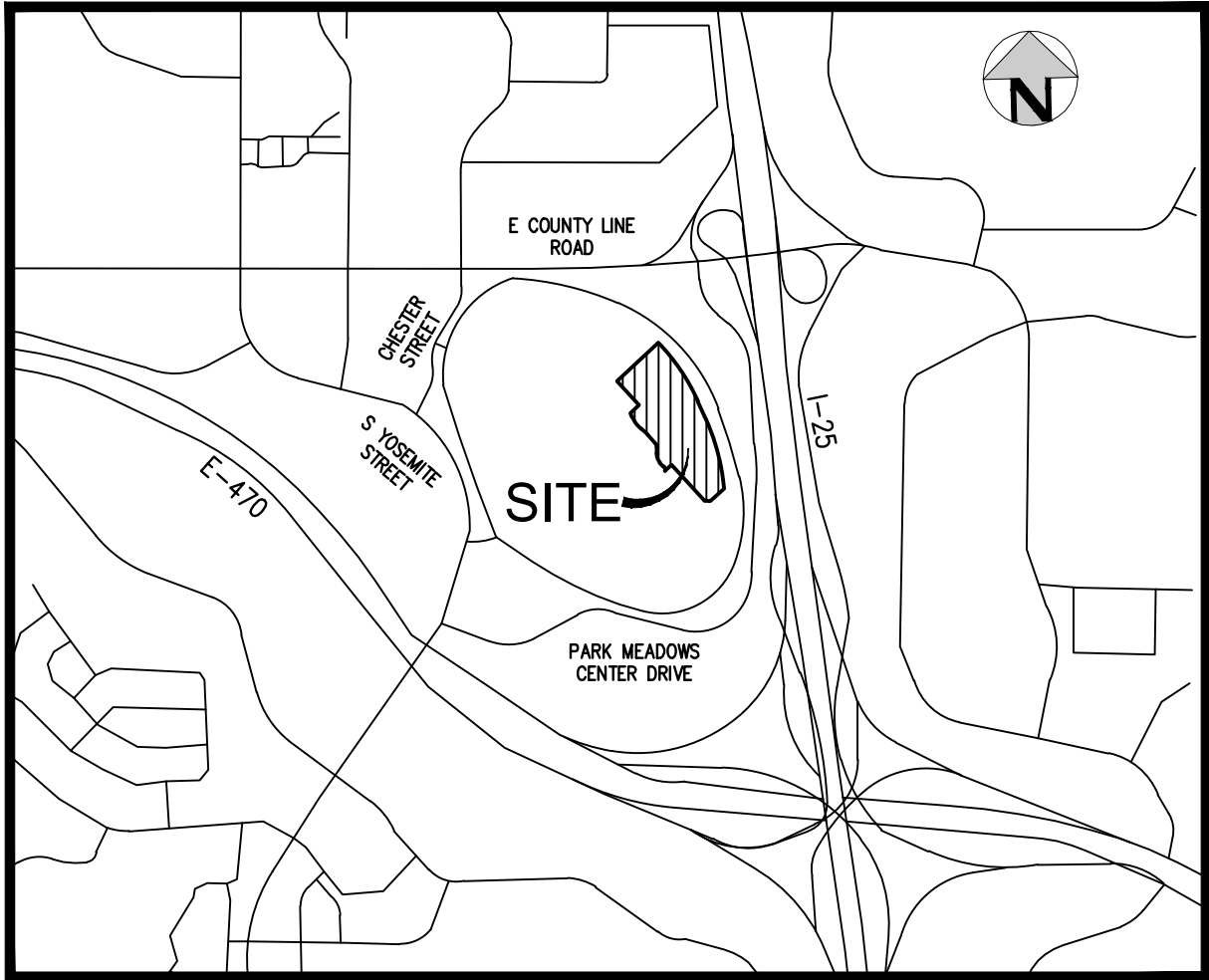
NOTE: (1) **MINIMUM SURETY shall be \$2,500.00** (Per Section 16-31-110 of City Zoning Code)

XIII. References

1. Grading, Erosion and Sediment Control Manual (GESM), July 2019, Douglas County.
2. Urban Storm Drainage Criteria Manual, Vol. 1, 2 and 3, October 2019, Urban Drainage and Flood Control District.
3. Preliminary Geotechnical Engineering Study, Proposed Mixed-Use Development, Park Meadows Apartments, Project No. 20-1-664, December 11, 2020, Kumar & Associates, Inc.
4. Phase III Drainage Report for Park Meadows by Paller-Roberts Engineering, revised in April 1995.
5. Drainage Report for Park Meadows Mall Expansion, Douglas County, Colorado by National Survey and Engineering as revised November 2006.
6. Flood Insurance Rate Map No. 0835-0034G, 0053G, 0061H, September 30, 2005, Federal Emergency Management Agency.
7. Colorado Department of Public Health & Environment Construction Guidance Document, July 1994, Colorado Department of Public Health & Environment Water Quality Control Division.

Appendix A

Vicinity Map & FIRMette



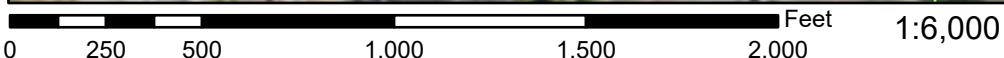
Vicinity Map

SCALE: 1"=1000'

National Flood Hazard Layer FIRMette



104°52'54"W 39°34'1"N



Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>

GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **11/7/2022 at 1:30 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



Appendix B

Soils Information



Kumar & Associates, Inc.®
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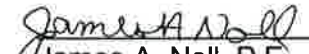
Office Locations: Denver (HQ), Parker, Colorado Springs, Fort Collins, Glenwood Springs, and Summit County, Colorado

PRELIMINARY GEOTECHNICAL ENGINEERING STUDY
PROPOSED MIXED-USE DEVELOPMENT
PARK MEADOWS MALL
LONE TREE, COLORADO

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Prepared For:

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Attention: Mr. Lee Ferguson, VP, Development

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FIG. 1 – LOCATIONS OF EXPLORATORY BORINGS

FIG. 2 – LOGS OF EXPLORATORY BORINGS AND LEGEND & NOTES

FIGS. 3 through 5 – SWELL-CONSOLIDATION TEST RESULTS

FIG. 6 – GRADATION TEST RESULTS

TABLE I – SUMMARY OF LABORATORY TEST RESULTS

SUMMARY

1. The borings encountered hard to very hard claystone and sandstone bedrock within about 1 to 2 feet of the ground surface. The bedrock was overlain directly by either an asphalt pavement section or by less than one foot of fill overlain by an asphalt pavement section. The fill encountered in the borings consisted of moist, brown to gray, processed claystone and sandstone bedrock.

The bedrock encountered in the borings consisted of thick zones of either sandstone or claystone. The sandstone was clayey in places but generally fine to coarse grained with some silt and isolated gravel, and the claystone was generally fine grained but sandy in places. Based on sampler penetration resistance, the bedrock was generally hard to very hard.

Ground water was encountered in three of the borings during drilling at depths ranging from about 13 feet to 18 feet below top of pavement. Measurements taken two days after completion of drilling encountered groundwater in all five borings at depths ranging from about 13 feet to 19 feet below top of pavement.

2. Due to the presence of shallow bedrock and the anticipated relatively high foundation loads, we recommend considering straight-shaft piers drilled into bedrock be used as the primary foundation alternative for support of the proposed structure. Depending on foundation loads and subgrade support approach, shallow spread footing foundations may be feasible.
3. Slab-on-grade construction should be feasible provided floor slabs and movement-sensitive hardscape are underlain by a zone of non-expansive engineered fill likely ranging in thickness from about three to four feet.
4. Full-depth or layered composite asphalt pavement sections, and concrete pavement sections, should be feasible at the site depending on site subgrade conditions. Depending on traffic loading conditions, the design thickness of full-depth asphalt sections will probably range from 6 to 7 inches, and composite sections will probably consist of consist of 4 to 5 inches of asphalt over 6 to 8 inches of compacted aggregate base course material. Concrete pavement should be at least 6 inches thick, with 7 inches recommended for truck-turning areas.

PURPOSE AND SCOPE OF STUDY

This report presents the results of a preliminary geotechnical engineering study for the proposed mixed-use development to be constructed at the Park Meadows Mall in Lone Tree, Colorado. The project site is shown on Fig. 1. The study was conducted to characterize the general site subsurface conditions and provide preliminary geotechnical engineering recommendations to be used for planning purposes. The study was conducted in general accordance with the scope of work in our Proposal No. P-202-808 to Brookfield Properties, dated October 14, 2020.

A field exploration program consisting of exploratory borings was conducted to obtain information on general subsurface conditions. Samples of the soils and bedrock obtained from the exploratory borings were tested in the laboratory to determine their classification and general engineering characteristics. The results of the field exploration and laboratory testing programs were used to evaluate site geotechnical considerations and develop preliminary geotechnical engineering recommendations.

This report has been prepared to summarize the data obtained during this study and to present our conclusions and preliminary recommendations based on our understanding of the proposed construction and the subsurface conditions encountered. Preliminary geotechnical design parameters and a discussion of geotechnical engineering considerations related to construction of the proposed development of the site are included in the report.

PROPOSED DEVELOPMENT

We understand the development, as currently planned, will likely consist of four or five multi-story, buildings primarily consisting of rental apartment units with ground-level amenity and possible retail spaces. The buildings structures are anticipated to consist of two, possibly three, above-grade parking levels topped by residential levels. The project will include at-grade parking and other surface amenities and will cover most, if not all, of the northeast portion of the overall mall parking areas. We assume the parking levels will be of reinforced, cast-in-place concrete and the residential levels will be of wood or light-gauge steel framing constructed on a podium. Foundation loads are anticipated to be moderately heavy to heavy.

Site redevelopment will include demolishing the existing pavements and abandonment and/or removal of existing buried utilities. Site grading is anticipated to generally require excavations of about 5 feet or less, although deeper excavations for new utilities may extend deeper.

If the proposed development varies significantly from that generally described above or depicted throughout this report, we should be notified to reevaluate the preliminary recommendations provided herein.

SITE CONDITIONS

The site is currently occupied by asphalt-paved surface parking located between the mall building and Park Meadows Center Drive. The parking area also includes occasional landscape areas at the ends of some of the parking strips and other areas north of the food court, sidewalks, and buried utilities. The site is essentially flat, with a maximum grade differential of about 5 feet.

SUBSURFACE CONDITIONS

Information on the subsurface conditions was obtained by drilling five exploratory borings at the approximate locations shown on Fig. 1. Graphic logs of the borings are presented on Fig. 2, along with a legend and notes describing the subsurface conditions encountered.

The borings generally encountered an asphalt pavement section generally of a few inches of asphalt over a few inches, generally, of aggregate base course material. At two of the boring locations, the pavement section was underlain by a foot or less of fill extending to bedrock; at the remaining three locations, the pavement section was underlain directly by bedrock. The fill encountered in the borings consisted of moist, brown to gray, processed claystone and sandstone bedrock.

The bedrock encountered in the borings consisted of thick zones of either sandstone or claystone. The sandstone was clayey in places but generally fine to coarse grained with some silt and isolated gravel, and the claystone was generally fine grained but sandy in places. The sandstone was slightly moist to moist and varied from brown to gray to orange-brown, and the claystone was moist and varied from gray to dark gray to gray-brown. Based on sampler penetration resistance, the bedrock was generally hard to very hard.

Ground water was encountered in three of the borings during drilling at depths ranging from about 13 feet to 18 feet below top of pavement. Measurements taken two days after completion of drilling encountered groundwater in all five borings at depths ranging from about 13 feet to 19 feet below top of pavement. In borings drilled almost entirely in sandstone, the measured groundwater

depths were either at or slightly above the depths encountered during drilling, which suggests that stabilized groundwater at the site may occur at depths of around 15 feet, generally. The presence and depth to groundwater elevations may vary seasonally and fluctuate up or down slightly.

Representative samples of the fill and bedrock obtained from the exploratory borings were tested in our laboratory to evaluate classification properties, swell-consolidation characteristics, and concentration of water-soluble sulfates. The results of these tests are shown adjacent to the boring logs on Fig. 2 and summarized in Table I. The results of the swell-consolidation tests on samples of the claystone and sandstone bedrock are presented on Figs. 3 through 5 and indicate the tested samples exhibited nil to low swell potential when wetted while under a constant surcharge pressure of 1,000 psf. The results of gradation tests performed on samples of the sandstone bedrock are presented on Fig. 6.

GEOTECHNICAL ENGINEERING CONSIDERATIONS

Based on our experience at the Park Meadows Mall, including the mall buildings and the outlying buildings to the east and north of the site, the east-southeast portion of the mall building and the outlying buildings are believed to be pier-supported with soil-supported floor slabs underlain by about 3 feet of structural fill. It is our understanding the existing buildings, and particularly the floor slabs, have generally performed as designed.

Based on the subsurface conditions encountered in the borings, we believe a similar foundation and slab support approach should be feasible for the proposed buildings. We have included a discussion and preliminary recommendations for spread footing foundations supporting heavy building loads and soil-supported slabs for consideration. Final selection of foundation and floor slab support systems should be based on the results of a design-level geotechnical study.

FOUNDATIONS

Due to the presence of very shallow bedrock and the anticipated relatively high foundation loads, we recommend considering straight-shaft piers drilled into bedrock be used as the primary foundation alternative for support of the proposed structures. Drilled piers have a very high success rate in the general metropolitan Denver area and provide high supporting capacity with little movement. Although the bedrock underlying the site exhibits low swell potential, using a drilled pier foundation system would put the bottoms of the piers a sufficient depth into a zone of

bedrock with relatively stable moisture content to help provide resistance to potential uplift related to swelling soils and bedrock.

Based on the limited explorations performed for this preliminary study, we anticipate allowable end-bearing soil pressures ranging from 50,000 psf to 70,000 psf may be used for design of straight-shaft piers drilled at least 10 feet into bedrock. We anticipate allowable side shear ranging from 3,000 psf to 6,000 psf may be used for the portion of the pier in bedrock. Piers should also be designed for minimum dead load pressures between 5,000 and 10,000 psf. We anticipate minimum pier lengths will be in the range of 20 to 30 feet, depending on final site grades, foundation levels, drilled pier size, and foundation compressive and uplift loads. The presence of groundwater within that depth range indicates that pier holes may require dewatering, and pier holes extending below groundwater in sandstone may encounter poorly-cemented sandstone and that may require casing.

Given the anticipated relatively heavy foundation loads and relatively low swell potential of the underlying bedrock, shallow spread footing foundations designed for high dead load pressures may be feasible. This alternative should be further evaluated in a design-level geotechnical study. It should be noted that a shallow foundation system would be more susceptible to total and differential movement than a drilled pier foundation system.

We anticipate allowable soil bearing pressures for spread footing foundations bearing directly on undisturbed bedrock of 4,000 psf to 6,000 psf should be feasible, with minimum dead loads equal to at least one-half of the maximum allowable bearing pressure.

SEISMIC DESIGN

Based on conditions encountered in the borings, the site soil profile to a depth of 100 feet following construction is anticipated to consist generally of about less than 10 feet of structural fill underlain by generally hard to very hard bedrock. Overburden soils will classify as IBC Site Class D soils, and, based on our experience, the bedrock underlying the site should classify overall as IBC Site Class C soils. Based on our experience on sites with similar soil profiles, the site subsurface profile is considered to correspond to Site Class C. Based on the subsurface profile, site seismicity, and the anticipated depth of ground water, liquefaction is not a design consideration.

FLOOR AND GARAGE SLABS

Slab-on-grade construction at the site carries a risk of heave-related movement should underlying expansive bedrock experience moisture change subsequent to construction. If slab movement is not acceptable, structural slabs supported by drilled piers and grade beams should be used, particularly for architectural floor slabs. Note that slab-on-grade construction would likely be the preferred alternative for floor slabs if the building is supported on shallow foundations. With the exception of architectural floor slabs in stairwells or elevator vestibules, garage slabs can generally tolerate more movement than architectural floor slabs, making a slab-on-grade approach more feasible for garage slabs.

Considering the relative expense of a structural slab, slab-on-grade construction may be considered as an alternate to a structural slab for areas relatively tolerant of slab heave risk, provided the increased risk of distress resulting from slab movement is accepted by the owner and precautions are taken to reduce the effects of movement. Movement of slab-on-grade floors can be mitigated by placing a zone of stabilizing fill below the slab and constructing slab-supported elements designed to accommodate movement. For slab-on-grade construction, bedrock should be removed and replaced with properly compacted, non-expansive to low swelling structural fill, or site grades should be raised sufficiently with structural fill to avoid excavating the bedrock.

The thickness of replacement fills will depend on the swell profile of the bedrock underlying the slab, as determined during the design-level geotechnical study, but is expected to range between three and four feet for floor slabs and two to three feet for garage slabs where movement is less of a concern. at the site, depending on subsurface conditions.

A design-level geotechnical study should provide detailed recommendations for fill placement where extensive grading and/or replacement fills are planned. The recommendations should include evaluation of the use of the existing fill materials, where present, and processed bedrock as moisture-conditioned fill beneath soil-supported slabs and the construction and placement of underdrains to limit moisture increases in the fill and underlying bedrock.

Design of slab-on-grade floors will need to incorporate typical precautions, including isolating slabs from the building foundations, providing slip joints below slab bearing walls, constructing slab control joints to reduce the potential for cracking and isolation joints around utilities

penetrating the slab. Design of slab-on-grade floors may also need to consider inclusion of a sub-slab capillary break consisting possibly of free-draining gravel, and a vapor barrier.

WATER-SOLUBLE SULFATES

Based on the results of testing, the bedrock samples had concentrations of water-soluble sulfates of 0.00%. This concentration represents a Class S0 severity of exposure to sulfate attack on concrete. The degree of attack is based on a range of Class S0 (not applicable), Class S1 (moderate), Class S2 (severe), and Class S3 (very severe) severity of exposure as presented in ACI 201.2R-16.

Based on the laboratory test results, we believe special sulfate resistant cement will generally not be required for concrete exposed to the on-site bedrock or fill consisting of processed on-site bedrock.

SITE GRADING

Based on our understanding of the proposed construction and observed site topography, site grading for at-grade construction is expected to consist of minor to moderate cuts and fills for foundation and slab subgrade preparation. In our opinion, excavation of the existing fill and bedrock during site grading should be possible with heavy-duty, conventional earth-moving equipment. Excavation of bedrock in confined areas such as utility trenches is typically more difficult than excavation in open areas.

Temporary excavations should be constructed in accordance with OSHA requirements, as well as state, local and other applicable requirements. Site excavations will generally encounter some existing fills in places, but mostly claystone and sandstone bedrock. Existing fills will classify as OSHA Type C soils. Claystone and sandstone bedrock will generally classify as Type A soils, although fractured and weathered bedrock may classify as Type B, and non- to weakly-cemented sandstone, if present, may classify as Type C. Excavations encountering groundwater seepage could require much shallower side slopes than those allowed by OSHA and/or temporary shoring.

Excavated slopes in the site subsurface materials may soften due to construction traffic and erode from surface runoff. Measures to keep surface runoff from excavation slopes, including diversion berms, should be considered.

Permanent unretained cuts in the bedrock and fill slopes up to 15 feet high should be constructed at a 2H:1V (horizontal to vertical) or flatter inclination for stability purposes, and at a 3H:1V or flatter inclination for limiting the potential for erosion. If groundwater seepage is encountered during or prior to slope excavation, a stability evaluation should be conducted to determine if the seepage would adversely affect the cut.

On-site excavated sandstone, processed to a soil-like condition, should be suitable for use as site grading fill and as structural fill beneath soil-supported slabs and hardscape. On-site existing fill materials and claystone, also processed to a soil-like condition, should be suitable for use as site grading fill outside of building areas provided these materials are properly moisture conditioned. As previously mentioned, use of the on-site materials as compacted fill beneath the structure and movement-sensitive hardscape would need to be evaluated further prior to use.

UNDERDRAIN CONSIDERATIONS

Underdrain systems will be required in areas where subslab fill zones extend below top of bedrock as a result of overexcavation. An underdrain system would be required to prevent accumulation of perched water in the fill zone and reduce the potential for moisture increases in the underlying bedrock, which could adversely affect the performance of shallow foundations and slab-on-grade construction.

At a minimum, we recommend installing subdrains along the perimeter of the base of fill zones extending into bedrock. Depending on the extent of the replacement fill area extending into bedrock, a system of lateral subdrains extending across the base of the fill zone may also be necessary.

Discharge of collected groundwater may require permitting by the Water Quality Control Division (WQCD) of the Colorado Department of Public Health and Environment. Ideally, temporary and permanent groundwater management can be performed such that off-site discharge of groundwater is not necessary. However, the Owner should be prepared to have to meet permitting requirements of the WQCD, which may include temporary and/or permanent treatment of groundwater leaving the site.

SURFACE DRAINAGE

The ground surrounding the exterior of the buildings should be sloped to drain away from the buildings in all directions. For preliminary planning, a slope of at least 12 inches within the first 10 feet of the buildings should be assumed for unpaved areas and at least 6 inches in 10 feet in areas covered by pavement or impervious hardscape. The probability of shallow foundations, if constructed, and slab-on-grade floors remaining stable for the life of the buildings will be significantly increased by planning a well-drained site without excessive irrigation or storm water accumulation adjacent to the buildings.

PRELIMINARY PAVEMENT DESIGN

A pavement section is a layered system designed to distribute concentrated traffic loads to the subgrade. Performance of the pavement structure is directly related to the physical properties of the subgrade soils and traffic loadings. Soils are represented for pavement design purposes by means of a soil support value for flexible pavements and a modulus of subgrade reaction for rigid pavements.

Subgrade Materials: Based on the results of the field exploration and laboratory testing programs, the subgrade materials anticipated to be at or near the pavement subgrade are assumed will generally classify as A-7-6 or A-6 soils, or better, in accordance with the AASHTO soil classification system. For preliminary design purposes, a resilient modulus value of 3,025 psi was selected for flexible pavements and a modulus of subgrade reaction of 34 pci was selected for rigid pavements bearing on site grading fill consisting of on-site materials. If, as a result of the design-level study, it is determined that pavements are to be supported on subgrade materials providing better support, higher modulus may be used.

Design Traffic: Because anticipated traffic loading information was not available at the time of report preparation, an equivalent 18-kip daily load application (EDLA) of 5 was assumed for areas restricted to automobile traffic areas and an EDLA of 10 was assumed for combined automobile and truck traffic areas, driveways, loading and delivery areas and fire lanes. If it is determined that actual traffic is significantly different from that estimated, we should be contacted to reevaluate the pavement thickness design.

Preliminary Pavement Thickness Design: Preliminary asphalt and concrete pavement sections were determined in accordance with the 1993 AASHTO pavement design procedure. Based on this procedure, we believe that pavement thicknesses in the range of 6 to 7 inches of full-depth asphalt pavement, or a composite pavement section consisting of 4 to 5 inches of asphalt over 6 to 8 inches of compacted aggregate base course material, are feasible. In lieu of an asphalt pavement section, a 6.0-inch portland cement concrete pavement section should be feasible, although concrete pavement used in delivery or trash collection areas may need to be at least 7 inches in thickness. Concrete pavement will be more sensitive to settlement- or heave-related differential movement than flexible pavement.

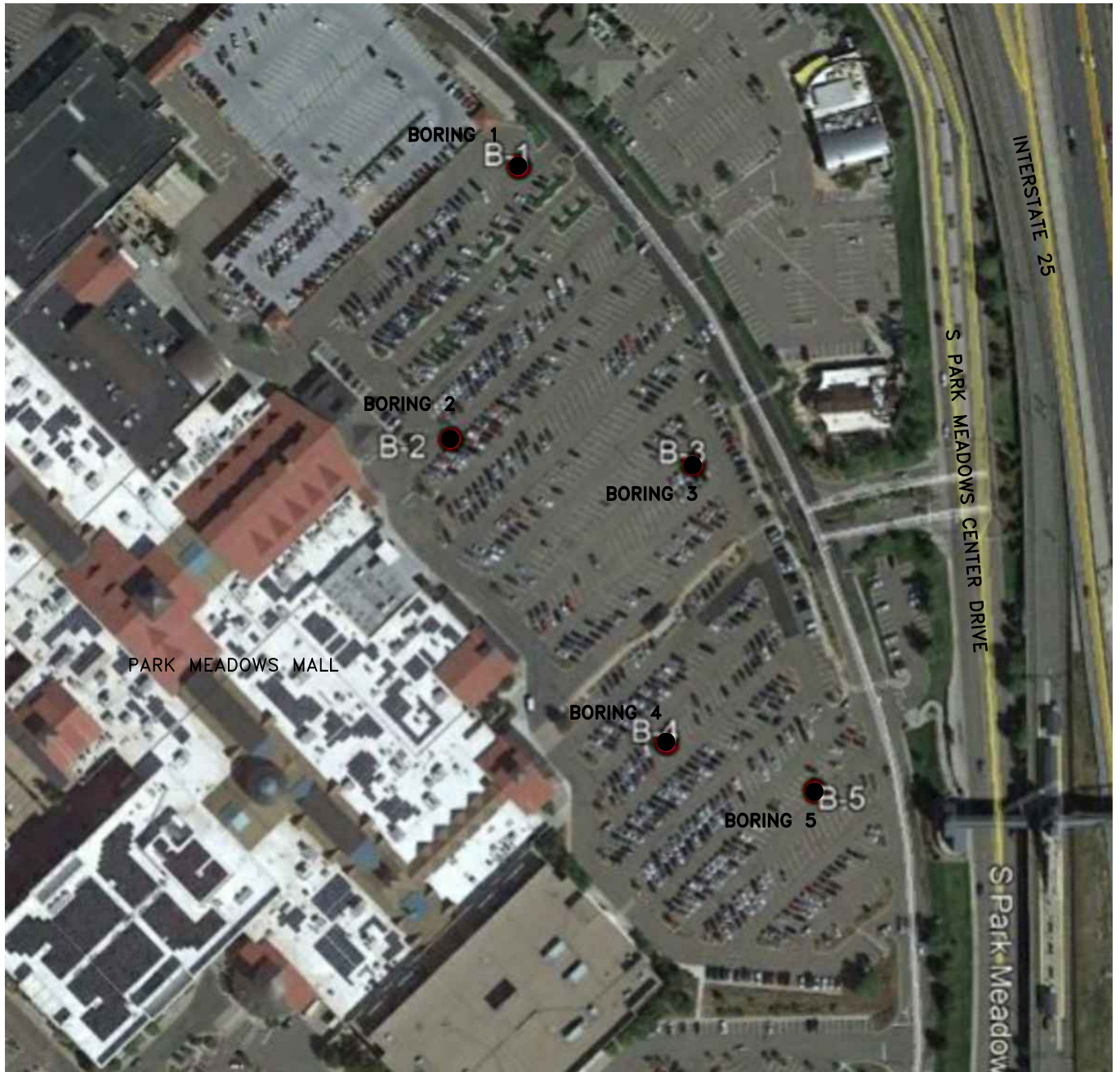
Subgrade Preparation: In areas where the pavement subgrade consists of existing fill, it may be necessary to remove, moisture-condition, and recompact the upper one to two feet of the existing fill prior to placing new site grading fill or the pavement section. Where the exposed subgrade materials consist of bedrock, overexcavation of the bedrock to a depth of one to two feet, and possibly more, and replacement with site grading fill may be necessary. Prior to backfilling, the exposed subgrade materials at the base of the overexcavation should be scarified to a depth of at least 12 inches, moisture conditioned, and compacted, followed by proofrolling to identify soft zones requiring additional preparation.

Drainage: The collection and diversion of surface drainage away from paved areas is extremely important to the satisfactory performance of pavement. Drainage design should provide for the removal of water from paved areas and prevent the wetting of the subgrade soils.

LIMITATIONS

This report has been prepared for use by the client for preliminary design and planning purposes. The preliminary conclusions and recommendations submitted in this report are based upon the data obtained from the widely-spaced exploratory borings drilled at the locations indicated on Fig. 1. Additional investigation must be conducted once building locations and floor elevations have been determined to provide final recommendations. We recommend on-site observation of site grading by a representative of the geotechnical engineer.

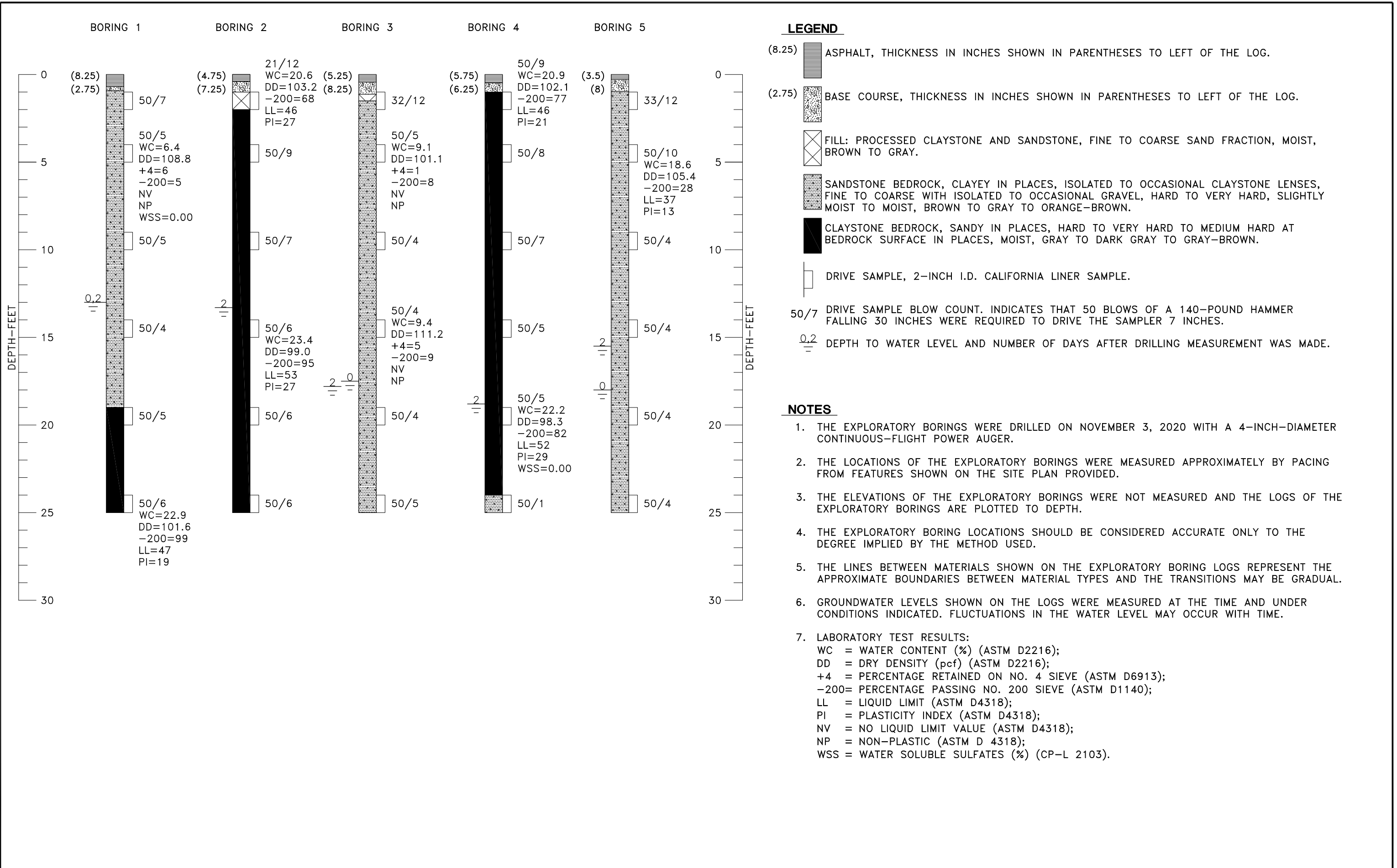
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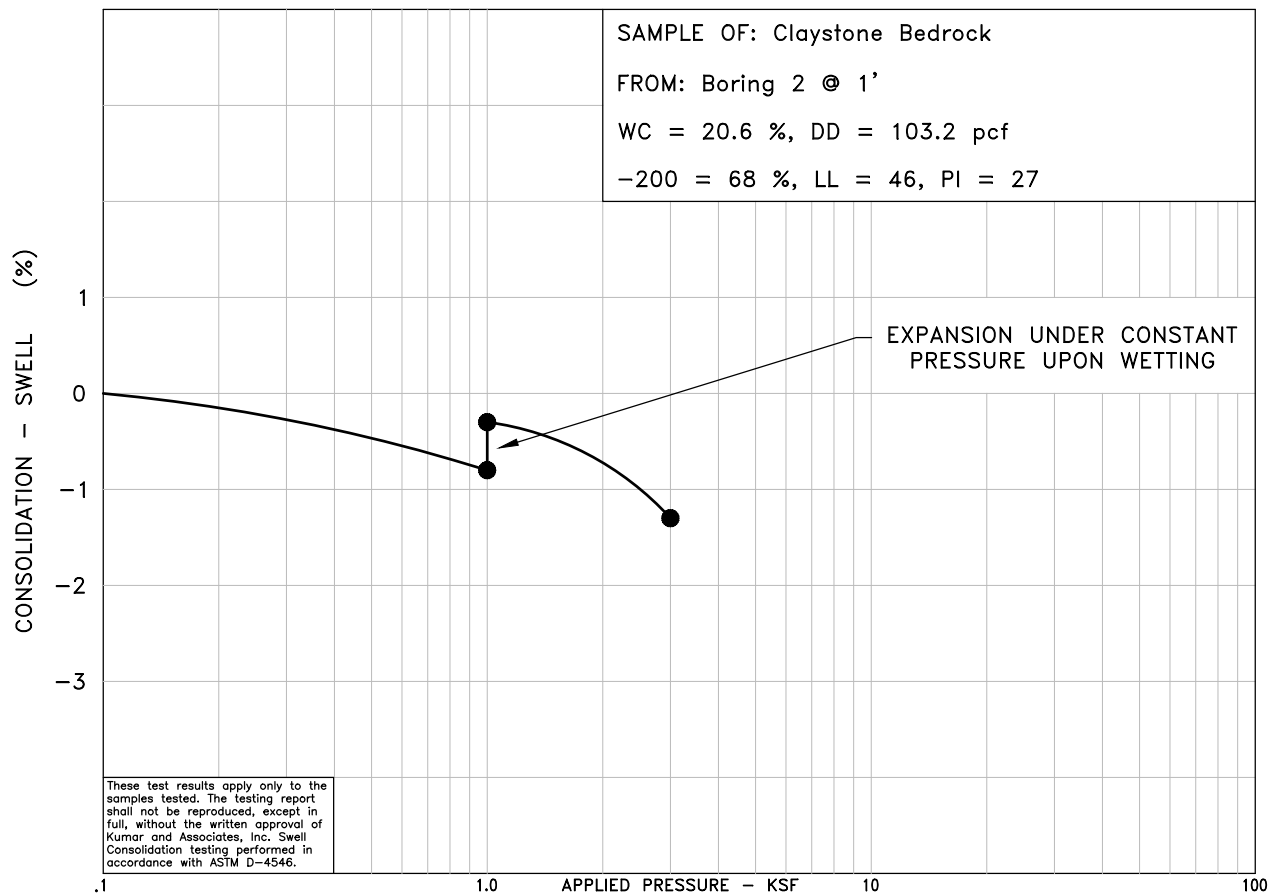
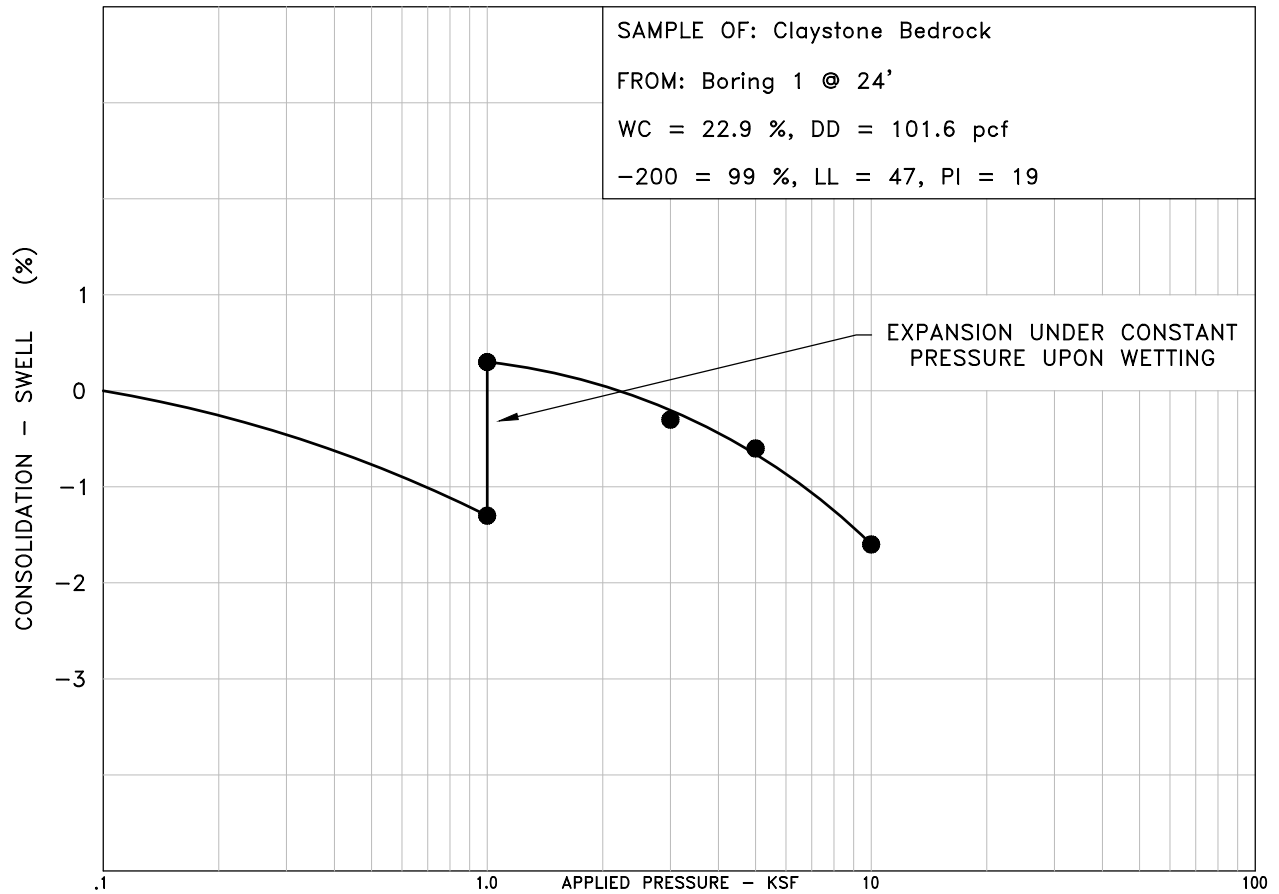
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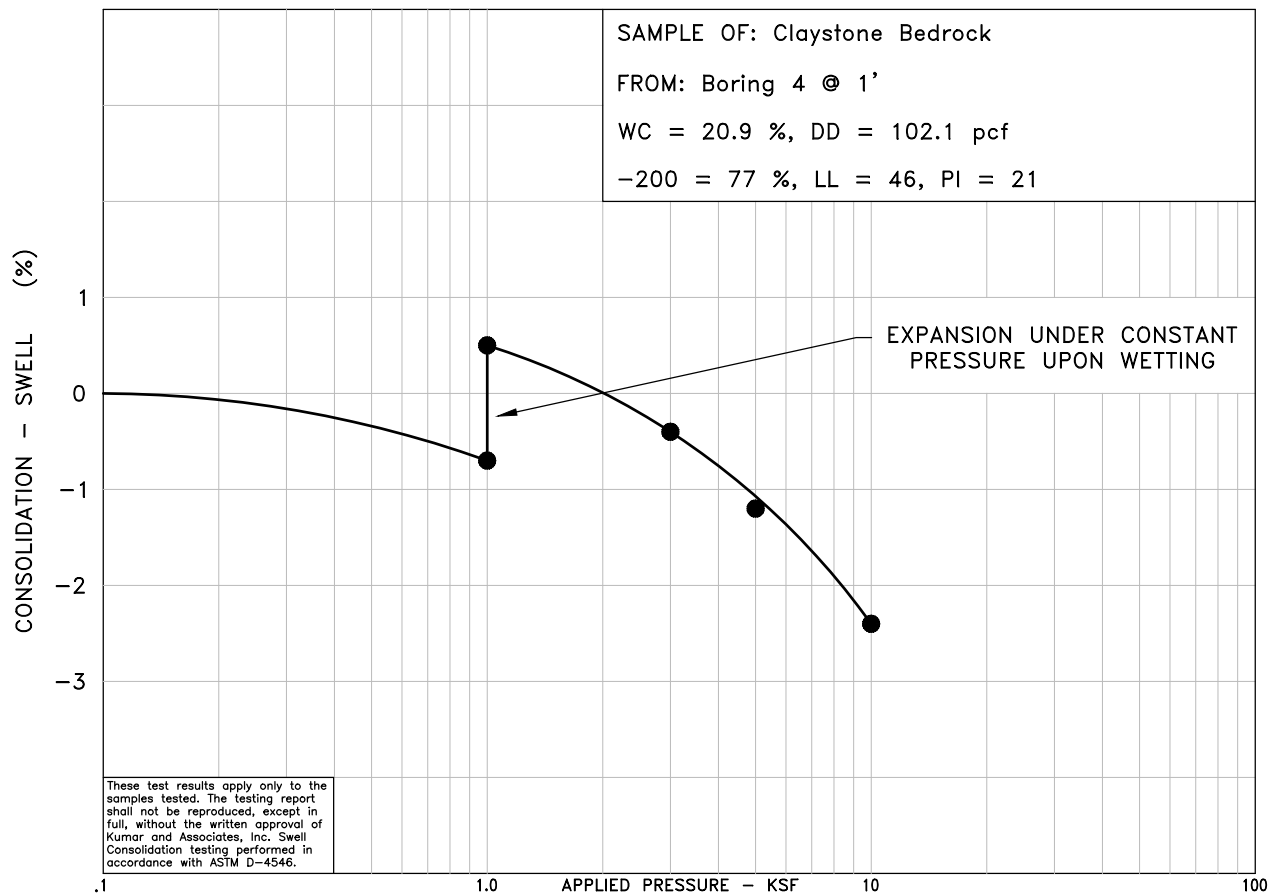
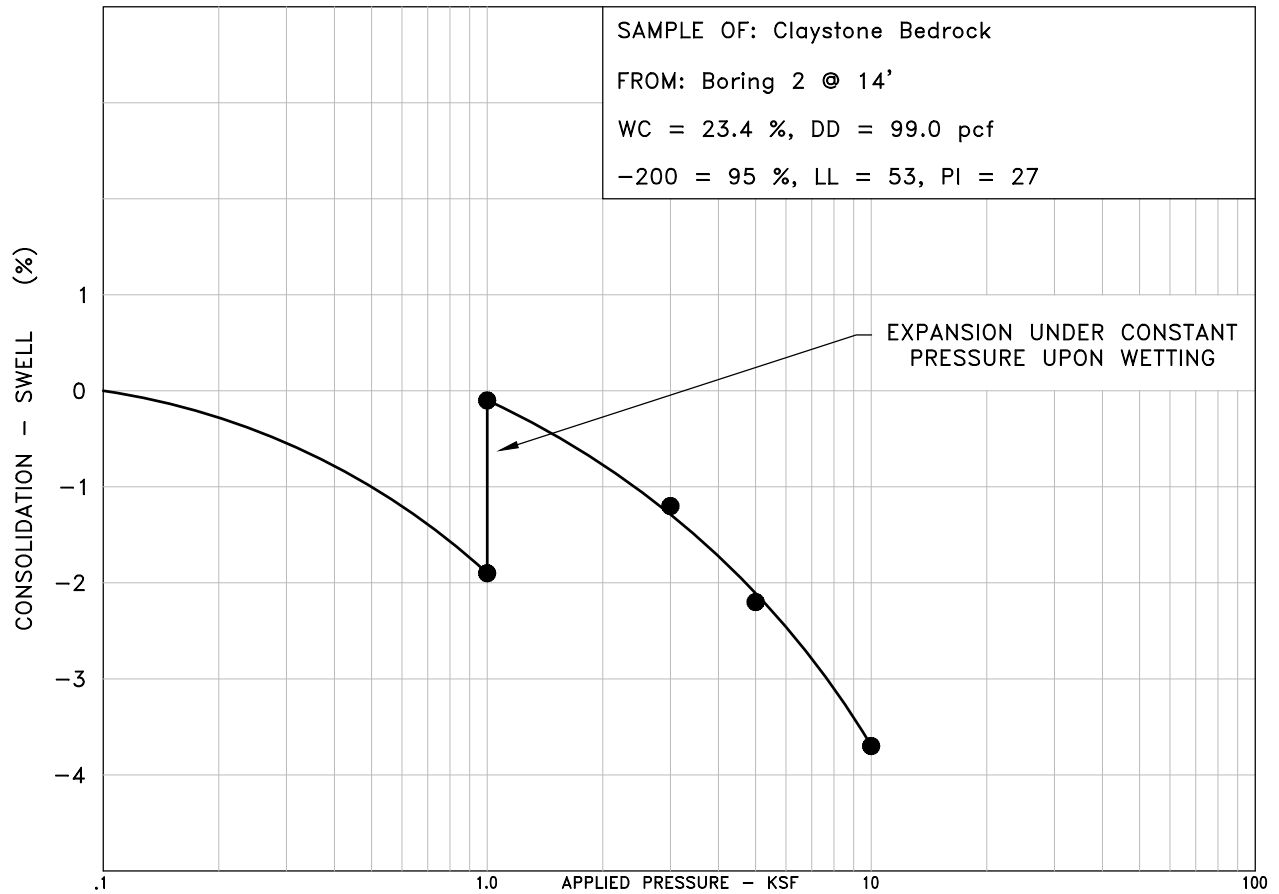
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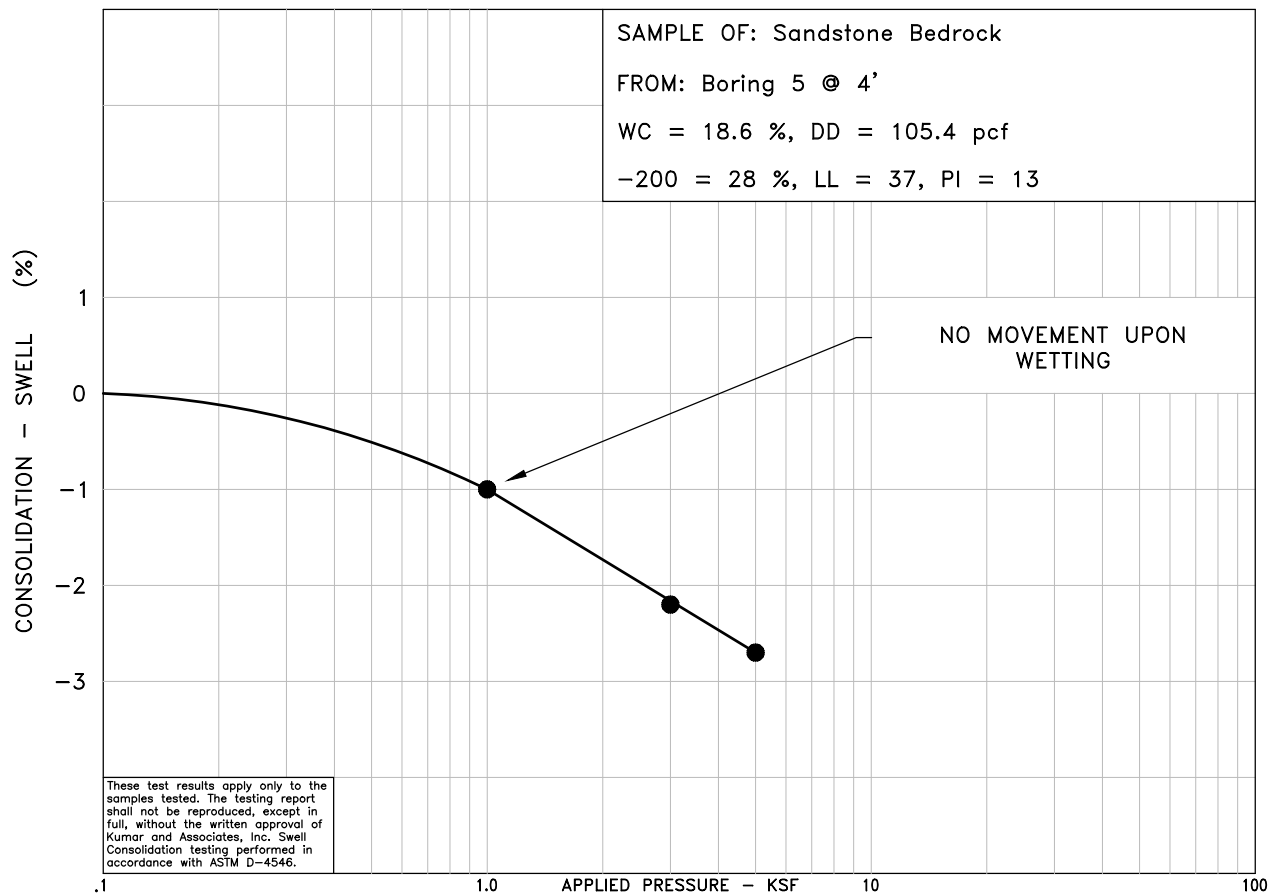
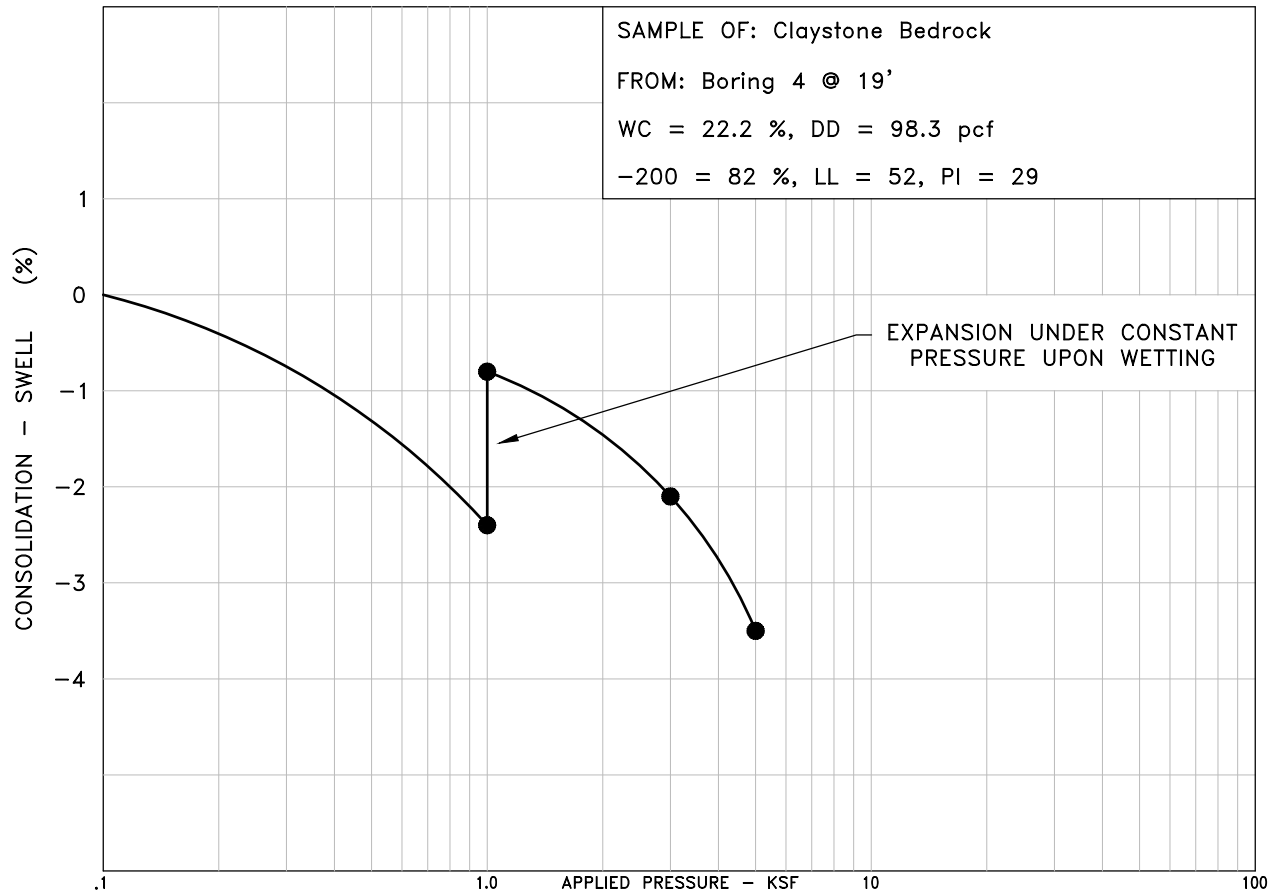


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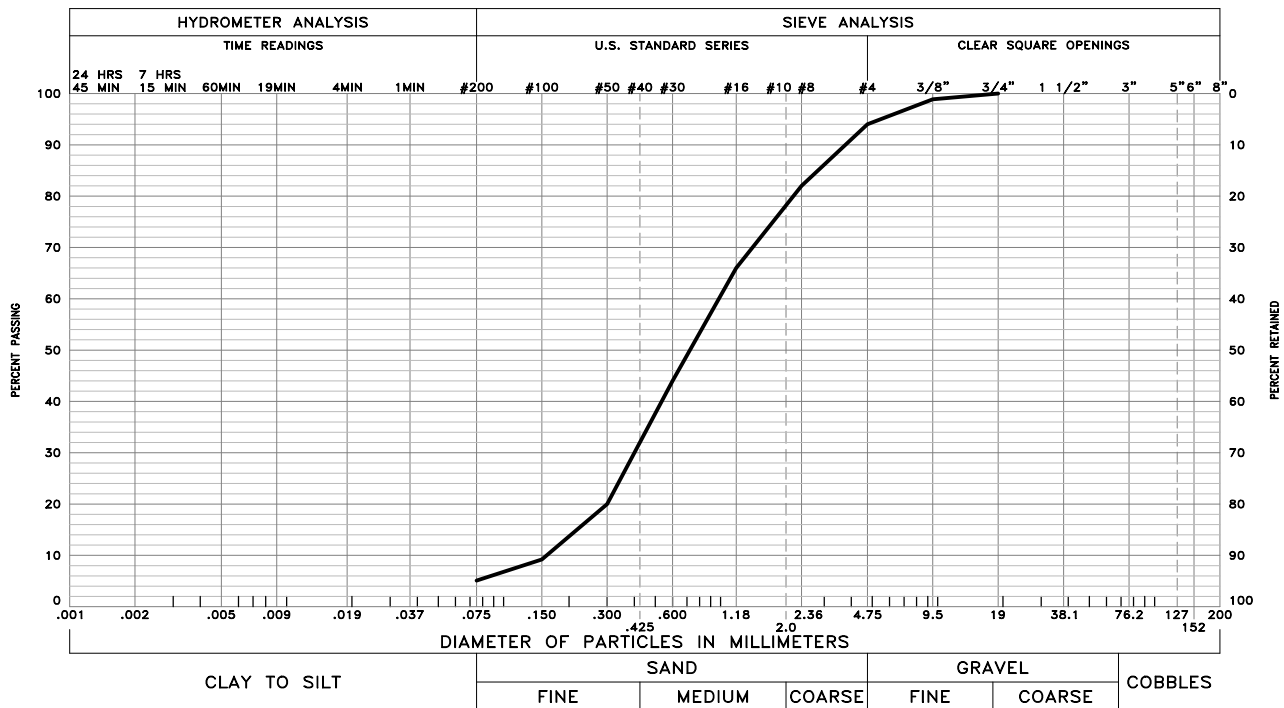




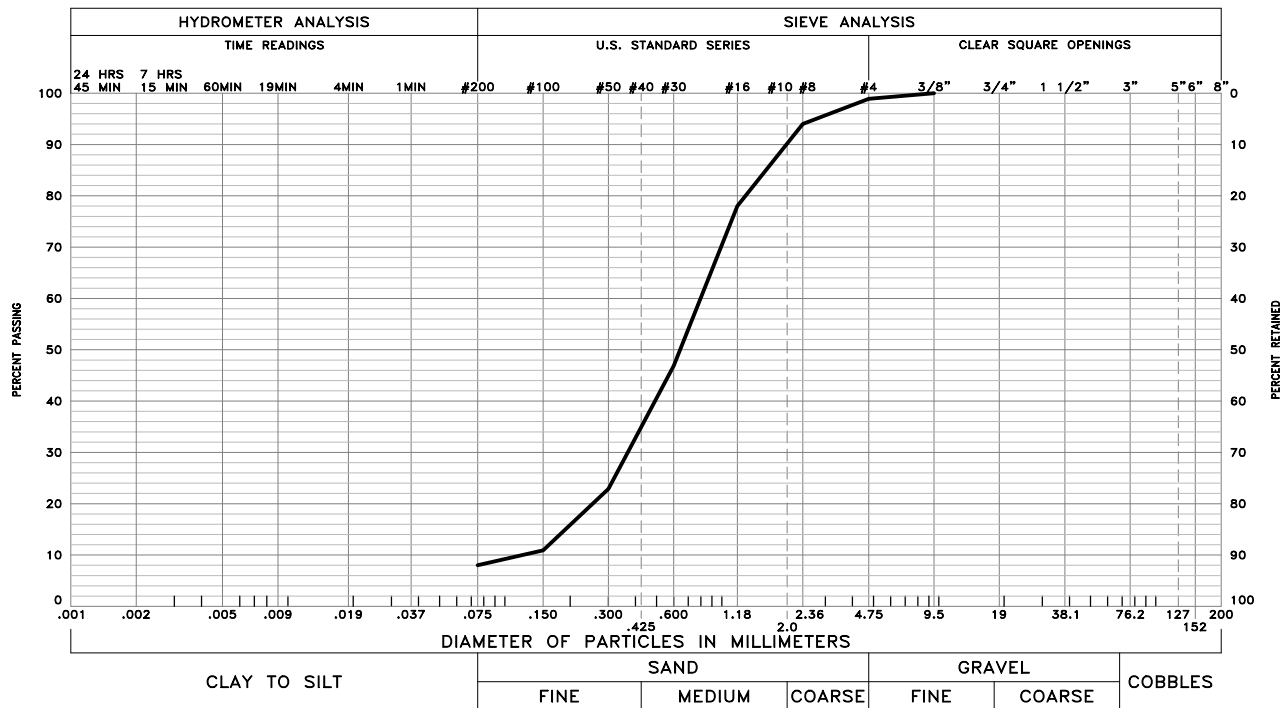
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GRAVEL 6 % SAND 89 % SILT AND CLAY 5 %
 LIQUID LIMIT NV PLASTICITY INDEX NP
 SAMPLE OF: Sandstone Bedrock FROM: Boring 1 @ 4'



GRAVEL 1 % SAND 91 % SILT AND CLAY 8 %
 LIQUID LIMIT NV PLASTICITY INDEX NP
 SAMPLE OF: Sandstone Bedrock FROM: Boring 3 @ 4'

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TABLE I
SUMMARY OF LABORATORY TEST RESULTS

PROJECT NO.: 20-1-664
 PROJECT NAME: Park Meadows Mall
 DATE RECEIVED: 11-6-2020

SAMPLE LOCATION		DATE TESTED	NATURAL MOISTURE CONTENT (%)	NATURAL DRY DENSITY (pcf)	GRADATION		PERCENT PASSING NO. 200 SIEVE	ATTERBERG LIMITS		WATER SOLUBLE SULFATES (%)	SOIL OR BEDROCK TYPE
BORING	DEPTH (feet)				GRAVEL (%)	SAND (%)		LIQUID LIMIT (%)	PLASTICITY INDEX (%)		
1	4	11-13-20	6.4	108.8	6	89	5	NV	NP	0.00	Sandstone Bedrock
1	24	11-13-20	22.9	101.6			99	47	19		Claystone Bedrock
2	1	11-13-20	20.6	103.2			68	46	27		Claystone Bedrock
2	14	11-13-20	23.4	99.0			95	53	27		Claystone Bedrock
3	4	11-13-20	9.1	101.1	1	91	8	NV	NP		Sandstone Bedrock
3	14	11-13-20	9.4	111.2	5	86	9	NV	NP		Sandstone Bedrock
4	1	11-13-20	20.9	102.1			77	46	21		Claystone Bedrock
4	19	11-13-20	22.2	98.3			82	52	29	0.00	Claystone Bedrock
5	4	11-13-20	18.6	105.4			28	37	13		Sandstone Bedrock



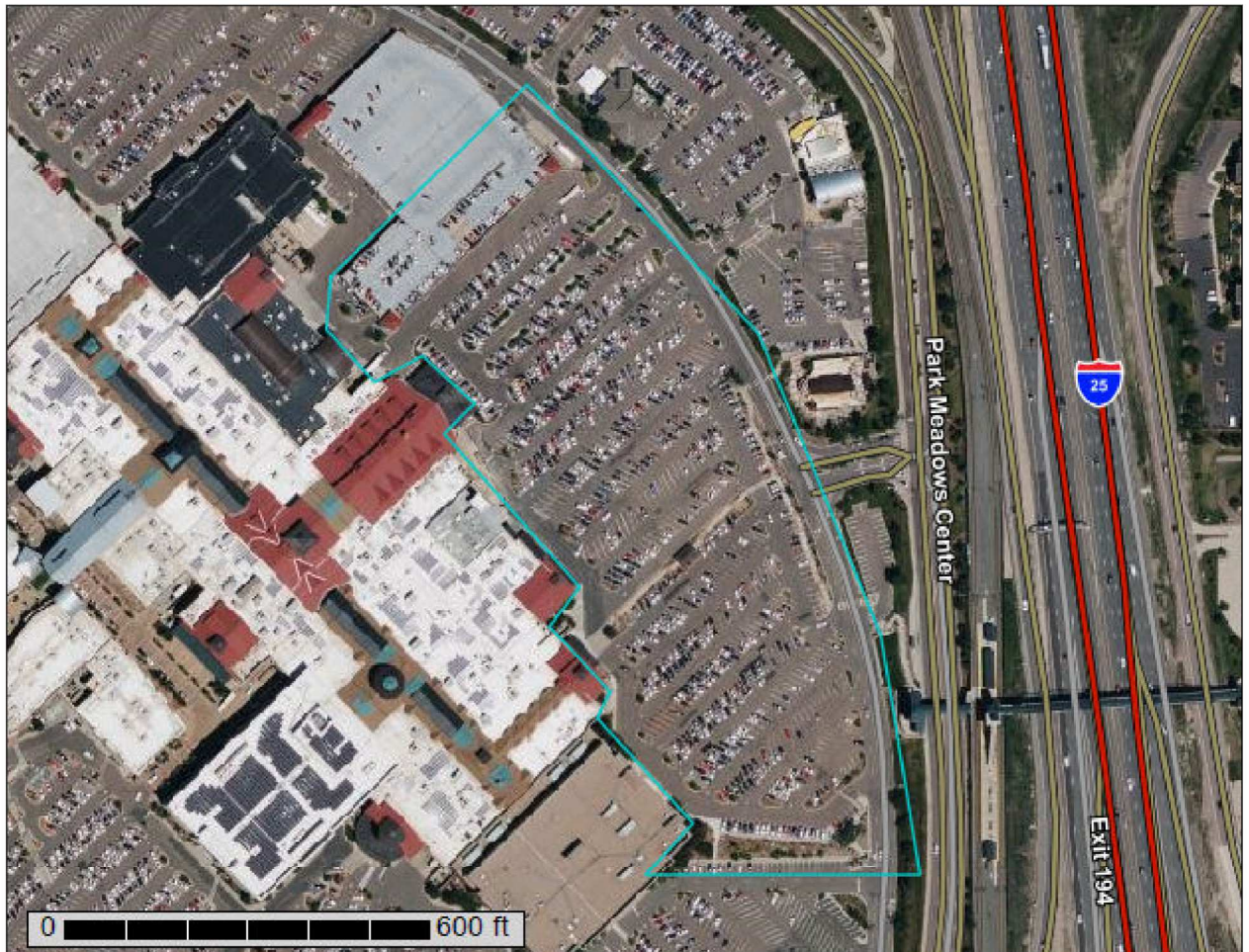
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Castle Rock Area, Colorado

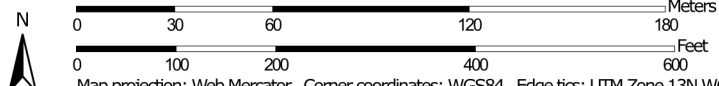


Custom Soil Resource Report Soil Map



Soil Map may not be valid at this scale.

Map Scale: 1:2,310 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

Castle Rock Area, Colorado

FoD—Fondis clay loam, 3 to 9 percent slopes

Map Unit Setting

National map unit symbol: jqyp
Elevation: 5,500 to 6,800 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Fondis and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fondis

Setting

Landform: Ridges, buttes, mesas
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over coarse-silty outwash derived from arkose

Typical profile

H1 - 0 to 7 inches: clay loam
H2 - 7 to 24 inches: clay
H3 - 24 to 60 inches: sandy clay loam

Properties and qualities

Slope: 3 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
***Hydrologic Soil Group:* C**
Ecological site: R049XB208CO - Clayey Foothill
Hydric soil rating: No

Minor Components

Kutch

Percent of map unit: 5 percent
Hydric soil rating: No

Englewood

Percent of map unit: 5 percent
Hydric soil rating: No

Denver

Percent of map unit: 4 percent
Hydric soil rating: No

Aquic haplustolls

Percent of map unit: 1 percent
Landform: Swales
Hydric soil rating: Yes

RmE—Renohill-Buick complex, 5 to 25 percent slopes

Map Unit Setting

National map unit symbol: jqzy
Elevation: 5,500 to 6,200 feet
Mean annual precipitation: 15 to 17 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 120 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Renohill and similar soils: 50 percent
Buick and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Renohill

Setting

Landform: Hills
Landform position (three-dimensional): Side slope, base slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Weathered, calcareous clayey shale

Typical profile

H1 - 0 to 3 inches: clay loam
H2 - 3 to 12 inches: clay loam
H3 - 12 to 24 inches: clay loam
H4 - 24 to 28 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 25 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Custom Soil Resource Report

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: R049XC202CO - Loamy Foothill 14-19 PZ
Hydric soil rating: No

Description of Buick

Setting

Landform: Hills
Landform position (three-dimensional): Base slope, side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over silty alluvium

Typical profile

H1 - 0 to 4 inches: loam
H2 - 4 to 15 inches: silty clay loam
H3 - 15 to 22 inches: loam
H4 - 22 to 60 inches: sandy clay loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: High (about 9.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: R049XC202CO - Loamy Foothill 14-19 PZ
Hydric soil rating: No

Minor Components

Manzanola

Percent of map unit: 6 percent
Hydric soil rating: No

Satanta

Percent of map unit: 6 percent

Custom Soil Resource Report

Hydric soil rating: No

Fondis

Percent of map unit: 6 percent

Hydric soil rating: No

Aquic haplustolls

Percent of map unit: 2 percent

Landform: Swales

Hydric soil rating: Yes

Appendix C

Standard Operating Procedure (SOP)

Standard Operating Procedure (SOP)

Minor Spill of Material (Paint, Stain, Solvent, Glue) (Less than Reportable Quantity)

A. Purpose

The purpose of this Standard Operating Procedure is to establish uniform procedures for clean up and disposal of material from a minor accidental spill of paint, stain, solvent, or glue. The procedures outlined in this SOP are applicable to all personnel working on the Park Meadows – Mixed Use Development construction site. Clean up and proper disposal of spilled material into the soil or onto the ground surface is required to ensure the material or contaminated soil does not enter or impact the waters of the state or the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled material from impacting waters of the state and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical make-up, safety hazards, first aid, fire fighting, and spill cleanup measures, handling, storage, and disposal methods

D. Health and Safety Warnings

Many construction materials may be flammable, cause skin and eye irritation, and may be harmful or fatal if swallowed. Caution should be used during clean up operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovels, brooms)
3. Waste containers (5 gallon buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Quickly control the spill by stopping or securing the spill source. This could be as simple as up-righting a tipped container or shutting down a piece of equipment producing the spill.
3. Contact the Responsible Person on site to enact the emergency response contact procedure.

- a. Responsible Person shall consult the MSDS for proper spill procedures and determination of Reportable Quantity for a spill. In the event the spilled quantity exceeds the reportable quantity the Responsible Person shall contact:
 1. Call 911 for fire control if necessary.
 2. Douglas County (303-660-7490)
4. Prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread across the spill and along the downhill side to stop any flow.
5. If necessary to prevent the material from entering a storm inlet or manhole a dam of absorbent material should be placed in the gutter upstream from the inlet.
6. Begin cleanup of the spilled material and absorbents by placing the materials in 5 gallon, plastic buckets with lids or into a provided drum.
7. Continue cleanup until all spilled material and contaminated absorbents are removed. On a hard surface this should include sweeping of the area. Material spilled on dirt should be removed down to a level where discoloration of the soil has been removed. Water shall never be used to flush material off a surface.
8. All material shall be properly stored in a location designated by the Responsible Person on site.
9. The Responsible Person shall contact the Site Contracted Emergency Response and Disposal Co. to collect and properly dispose of the material.
10. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
11. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifests, shall be maintained at Park Meadows Mall, LLC/Park Meadows Anchor Acquisition, LLC 8401 Park Meadows Center Drive, Lone Tree, CO 80124 – Ph: (303) 595-7000 for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data shall be documented. All findings from the debriefing should be discussed at the next Safety Meeting. Douglas County shall be notified.

Standard Operating Procedure (SOP)

Minor Fuel or Oil Spill (Less than 5 Gallons)

A. Purpose

The purpose of this Standard Operating Procedure is to establish a uniform procedure for clean up and disposal of material from a minor accidental spill of fuel (gasoline or diesel) or oil (hydraulic or motor). The procedures outlined in this SOP are applicable to all personnel working on the Park Meadows – Mixed Use Development construction site. Clean up and proper disposal of spilled fuel or oil into the soil or onto the ground surface is required to ensure the material or contaminated soil does not enter or impact the waters of the state or the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled fuel or oil from impacting waters of the state and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical make-up, safety hazards, first aid, fire fighting, and spill cleanup measures, handling, storage, and disposal methods

D. Health and Safety Warnings

Fuels and fuel oils may be extremely flammable, cause skin and eye irritation, and may be harmful or fatal if swallowed. Caution should be used during clean up operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovels, brooms)
3. Waste containers (5 gallon buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Quickly control the spill by stopping or securing the spill source. This could be as simple as up-righting a tipped container or shutting down a piece of equipment producing the spill.
3. Contact the Responsible Person on site to enact the emergency response contact procedure.

- a. Responsible Person shall consult the MSDS for proper spill procedures and determination of Reportable Quantity for a spill. In the event the spilled quantity exceeds the reportable quantity the Responsible Person shall contact:
 1. Call 911 for fire control if necessary.
 2. Douglas County: (303-660-7490)
4. Prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread across the spill and along the downhill side to stop any flow.
5. If necessary to prevent the material from entering a storm inlet or manhole a dam of absorbent material should be placed in the gutter upstream from the inlet.
6. Begin cleanup of the spilled material and absorbents by placing the materials in 5 gallon, plastic buckets with lids or into a provided drum.
7. Continue cleanup until all spilled material and contaminated absorbents are removed. On a hard surface this should include sweeping of the area. Material spilled on dirt should be removed down to a level where discoloration of the soil has been removed. Water shall never be used to flush material off a surface.
8. All material shall be properly stored in a location designated by the Responsible Person on site.
9. The Responsible Person shall contact the Site Contracted Emergency Response and Disposal Co to collect and properly dispose of the material.
10. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
11. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifests, shall be maintained at Park Meadows Mall, LLC/Park Meadows Anchor Acquisition, LLC 8401 Park Meadows Center Drive, Lone Tree, CO 80124 – Ph: (303) 595-7000 for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data will be recorded. All findings from the debriefing should be discussed at the next Safety Meeting. Douglas County shall be notified.

Standard Operating Procedure (SOP)

Small Fuel or Oil Spill (5 Gallons to Less than 25 Gallons)

A. Purpose

The purpose of this Standard Operating Procedure is to establish a uniform procedure for clean up and disposal of material from a small accidental spill of fuel (gasoline or diesel) or oil (hydraulic, or motor). The procedures outlined in this SOP are applicable to all personnel working on the Park Meadows – Mixed Use Development construction site. Clean up and proper disposal of spilled fuel or oil into the soil or onto the ground surface is required to ensure the material or contaminated soil do not enter or impact the waters of the state or the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled fuel or oil from impacting waters of the state and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical make-up, safety hazards, first aid, fire fighting, and spill cleanup measures, handling, storage, and disposal methods

D. Health and Safety Warnings

Fuels and fuel oils may be extremely flammable, cause skin and eye irritation, and may be harmful or fatal if swallowed. Caution should be used during clean up operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovels, brooms)
3. Waste containers (5 gallon buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Contact the Responsible Person on site to enact the emergency response contact procedure.
 - a. The Responsible Person begins contacting Emergency Response Agencies.
 1. For gasoline or diesel spill call 911 for fire control
 - b. Responsible Person shall consult the MSDS for proper spill procedures and determination of Reportable Quantity for a spill.

In the event the spilled quantity exceeds the reportable quantity the Responsible Person shall contact:

1. Call 911 for fire control if necessary.
2. Colorado Environmental Release and Incident Reporting Hotline (1-877-518-5608)
3. Douglas County: (303-660-7490)
3. Attempt to control the spill by stopping or securing the spill source. This could be as simple as up-righting a tipped container or shutting down a piece of equipment producing the spill.
4. Prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread across the spill and along the downhill side to stop any flow.
5. If necessary to prevent the material from entering a storm inlet or manhole a dam of absorbent material should be placed in the gutter upstream from the inlet.
6. Begin cleanup of the spilled material and absorbents by placing the materials in 5 gallon, plastic buckets with lids or into a provided drum.
7. Continue cleanup until all spilled material and contaminated absorbents are removed. On a hard surface, this should include sweeping of the area. Material spilled on dirt should be removed down to a level where discoloration of the soil has been removed. Water shall never be used to flush material off a surface.
8. All material shall be properly stored in a location designated by the Responsible Person on site.
9. The Responsible Person shall contact the Site Contracted Emergency Response and Disposal Co. to collect and properly dispose of the material.
10. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
11. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifests, shall be maintained at Park Meadows Mall, LLC/Park Meadows Anchor Acquisition, LLC 8401 Park Meadows Center Drive, Lone Tree, CO 80124 – Ph: (303) 595-7000 for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data will be recorded. The CDPHE shall be notified of a major spill by a written follow up within five days of the incident. All findings from the debriefing should be discussed at the next Safety Meeting. Douglas County shall be notified. Douglas County will require one copy of any documents that are sent to the state.

Standard Operating Procedure (SOP)

Significant Fuel or Oil Spill (25 Gallons or More)

A. Purpose

The purpose of this Standard Operating Procedure is to establish a uniform procedure for clean up and disposal of material from a significant accidental spill of fuel (gasoline or diesel) or oil (hydraulic or motor). The procedures outlined in this SOP are applicable to all personnel working on the Park Meadows – Mixed Use Development construction site. Clean up and proper disposal of spilled fuel or oil into the soil or onto the ground surface is required to ensure the material or contaminated soil does not enter or impact the waters of the state or the sanitary sewer system.

B. Summary of the Method

This procedure outlines the steps to be taken to prevent spilled fuel or oil from impacting waters of the state and disposal of the resulting contaminated cleanup material.

C. Definitions

1. Material Safety Data Sheet (MSDS). The standard industry list for a product detailing the chemical make-up, safety hazards, first aid, fire fighting, and spill cleanup measures, handling, storage, and disposal methods

D. Health and Safety Warnings

Fuels and fuel oils may be extremely flammable, cause skin and eye irritation, and may be harmful or fatal if swallowed. Caution should be used during clean up operations. The MSDS for the spilled material should be consulted to ensure personnel safety during cleanup operations.

E. Equipment and Supplies

1. Absorbent pads and booms
2. Hand equipment (shovels, brooms)
3. Waste containers (5 gallon buckets, drums)
4. Personal Protective Equipment

F. Procedural Steps

1. Shut down all equipment operating in the area to prevent ignition of the spill.
2. Ensure the safety of personnel in the area. If necessary, evacuate the area and wait for Emergency Response Personnel.
3. Contact the Chain of Command on site to enact the emergency response contact procedure.
 - a. Responsible Person begins contacting Emergency Response Agencies.
 1. Call 911 for fire control

2. Colorado Environmental Release and Incident Reporting Hotline (1-877-518-5608)
3. Douglas County: (303-660-7490)
 - b. Responsible Person consults the MSDS for spill procedure
4. If it can be safely accomplished, attempt to control the spill by stopping or securing the spill source.
5. If it can be safely accomplished, attempt to prevent migration of the spill by using an absorbent. This could include absorbent pads or booms, floor dry, cat litter, or dirt. The absorbent should be spread along the downhill side to stop any flow.
6. If it can be safely accomplished, attempt to prevent the material from entering a storm inlet or manhole by constructing a dam of absorbent material in the gutter upstream from the inlet.
7. Emergency Response Personnel should handle stabilization of the spill and initial cleanup.
8. Final cleanup and disposal of contaminated material should be handled by the Site Contracted Emergency Response and Disposal Co.
9. Location of the spill will be documented on the Stormwater Maintenance Plan (SWMP) in the construction trailer.
10. Inspection of materials and equipment shall occur daily.

G. Record Management

All documentation from the incident, including incident report and incident disposal manifests, shall be maintained at Park Meadows Mall, LLC/Park Meadows Anchor Acquisition, LLC 8401 Park Meadows Center Drive, Lone Tree, CO 80124 – Ph: (303) 595-7000 for a period of 3 years from the date of the spill.

H. After Incident Briefing

All personnel involved in the incident shall attend a debriefing to determine the cause of the spill, procedures followed, and corrective actions to prevent future spills. All pertinent data will be recorded. The CDPHE shall be notified of a major spill by a written follow up within five days of the incident. All findings from the debriefing should be discussed at the next Safety Meeting. Douglas County shall be notified. Douglas County will require one copy of any documents that are sent to the state.

Appendix D

Grading, Erosion, and Sediment Control Plan

LEGAL DESCRIPTION:

LOT 3, PARK MEADOWS TOWN CENTER FILING NO. 1-A, 5TH AMENDMENT, COUNTY OF DOUGLAS, STATE OF COLORADO AND LOT 4-B, PARK MEADOWS TOWN CENTER FILING NO. 1-A, 6TH AMENDMENT RECORDED AUGUST 29, 2002 AT RECEPTION NO. 2002087418, COUNTY OF DOUGLAS, STATE OF COLORADO, AND LOT 4A-1, PARK MEADOWS TOWN CENTER FILING NO. 1-A, 6TH AMENDMENT AS DESCRIBED ON THAT LOT LINE ADJUSTMENT MAP LAND SURVEY PLAT RECORDED JANUARY 12, 2011 AT RECEPTION NO. 201103006, COUNTY OF DOUGLAS, STATE OF COLORADO.

BASIS OF BEARING:

BEARINGS ARE BASED ON THE SOUTHEAST LINE OF LOT 3, PARK MEADOWS TOWN CENTER FILING NO. 1-A, 5TH AMENDMENT, AS MONUMENTED BY NAIL WITH BRASS DISK PLS 16401 AT EACH END, AS BEARING NORTH 47°09'19" EAST PER SAID PLAT.

BENCHMARK:

BENCHMARK IS DOUGLAS COUNTY CONTROL POINT 2113021 STAMPEP* 2.113021 DC GIS* WITH A PUBLISHED ELEVATION OF 5914.49 FT (NAVD88).

PROJECT ADDRESS:

8405 PARK MEADOWS DRIVE
LONE TREE, CO 80124

ABBREVIATIONS

BOP	BOTTOM OF PIPE
BS	BOTTOM OF STEP
BW	BOTTOM OF WALL (FG)
CONC	CONCRETE
DIA	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DOOR
DS	DOWNSPOUT
E	EAST, EASTING
EGL	ENERGY GRADE LINE
EL	ELEVATION
EOA	EDGE OF ASPHALT
EOC	EDGE OF CONCRETE
EOP	EDGE OF PAVEMENT
ESMT	EASEMENT
EX	EXISTING
FES	FLARED END SECTION
FF	FINISHED FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FL	FLOW LINE
GB	GRADE BREAK
GV	GATE VALVE
HC	HANDICAP
HGL	HYDRAULIC GRADE LINE
HORZ	HORIZONTAL
HP	HIGH POINT
INV	INVERT
LP	LOW POINT
LSD	LANDSCAPE DRAIN
MAX	MAXIMUM
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
N	NORTH, NORTHING
PR	PROPOSED
PVC	POLYVINYL CHLORIDE
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT OF WAY
SAN	SANITARY
SS	SANITARY SEWER
STA	STATION
STM	STORM
TB	THRUST BLOCK
TBC	TOP/BACK OF CURB
TOP	TOP OF PIPE
TS	TOP OF STEP
TW	TOP OF WALL (FG)
TYP	TYPICAL
VERT	VERTICAL
WAT	WATER

PARK MEADOWS - MIXED USE DEVELOPMENT

SITUATED IN THE NORTH HALF OF SECTION 3, TOWNSHIP 6 SOUTH, RANGE 67 WEST OF THE 6TH P.M.

CITY OF LONE TREE, COUNTY OF DOUGLAS, STATE OF COLORADO

GRADING, EROSION AND SEDIMENT CONTROL (GESC) PLAN

EROSION CONTROL NOTES:

IF A SEPARATE GRADING, EROSION, AND SEDIMENT CONTROL PERMIT (GESC) IS REQUIRED FOR THIS PROJECT, THE PERMITEE MUST IMPLEMENT AND COMPLY WITH AN APPROVED GESC (EC PERMIT) AND ASSOCIATED DOCUMENTS FOR THIS PROJECT.

IF A SEPARATE GESC (EC PERMIT) IS NOT REQUIRED, THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL ENSURE THAT ALL POTENTIAL POLLUTANTS GENERATED DURING DEMOLITION OR CONSTRUCTION WORK ASSOCIATED WITH THIS PROJECT, BE PREVENTED FROM DISCHARGE TO STORMWATER CONVEYANCE SYSTEMS IN THE VICINITY OF THIS PROJECT SITE IN ACCORDANCE WITH THE FOLLOWING:

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL PREVENT SEDIMENT, DEBRIS AND ALL OTHER POLLUTANTS FROM ENTERING THE STORM SEWER SYSTEM DURING ALL DEMOLITION, EXCAVATION, TRENCHING, BORING, GRADING, OR OTHER CONSTRUCTION OPERATIONS THAT ARE PART OF THIS PROJECT. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL BE HELD RESPONSIBLE FOR REMEDIATION OF ANY ADVERSE IMPACTS TO THE MUNICIPAL SEPARATE STORM SEWER SYSTEM, RECEIVING WATERS, WATERWAYS, WETLANDS, AND OR OTHER PUBLIC OR PRIVATE PROPERTIES, RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
2. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO OR ACCUMULATE IN THE FLOW LINES STORM DRAINAGE APPURTENANCES, AND PUBLIC RIGHTS OF WAYS OF THE CITY AND COUNTY OF DENVER AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS PROJECT. ALL REMOVALS SHALL BE CONDUCTED IN A TIMELY MANNER.
3. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL INSURE THAT ALL LOADS OF CUT AND FILL MATERIAL IMPORTED TO OR EXPORTED FROM THIS SITE SHALL BE PROPERLY COVERED TO PREVENT LOSS OF THE MATERIAL DURING TRANSPORT ON PUBLIC RIGHTS OF WAY. THE USE OF REBAR TO ANCHOR BEST MANAGEMENT PRACTICES, OTHER THAN PORTABLE TOILETS, IS PROHIBITED.
4. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL IMPLEMENT THE FOLLOWING BEST MANAGEMENT PRACTICES (BMPs) ON SITE DURING CONSTRUCTION:
 - I. VEHICLE TRACKING CONTROL: VEHICLE TRACKING CONTROL: THIS BMP IS REQUIRED AT ALL ACCESS POINTS FOR INGRESS/EGRESS FROM OFF-SITE IMPERVIOUS SURFACES TO CONSTRUCTION SITE PERVIOUS AREAS THAT ARE USED BY VEHICULAR TRAFFIC OR CONSTRUCTION EQUIPMENT.
 - II. INLET PROTECTION: THIS BMP IS REQUIRED ON ALL EXISTING OR PROPOSED STORM SEWER INLETS IN THE VICINITY OF THE CONSTRUCTION SITE THAT MAY RECEIVE SITE RUNOFF. THE BMP MUST BE APPROPRIATE TO THE TYPE OF STORM INLET AND APPROPRIATE FOR THE GROUND SURFACE AT THE INLET.
 - III. INTERIM SITE STABILIZATION: THIS BMP IS REQUIRED TO PROVIDE A MEASURE FOR PREVENTING THE DISCHARGE OF SEDIMENT FROM CONSTRUCTION SITES WHERE OVERLOT GRADING OR OTHER SITE DISTURBANCE HAS OCCURRED. THIS BMP IS PARTICULARLY NECESSARY ON SITES WHERE CONSTRUCTION ACTIVITIES/DISTURBANCE WILL BE LIMITED TO SMALL AREAS OF THE PROJECT SITE. ACCEPTABLE BMPs INCLUDE:
 - a. PRESERVING EXISTING VEGETATION
 - b. SEEDING AND PLANTING
 - c. MULCHING
 - d. MULCHING AND SEEDING
 - e. TEMPORARY/PERMANENT RE-VEGETATION OPERATIONS
 - f. CHEMICAL SOIL STABILIZER APPLICATION (REQUIRES WMD APPROVAL)
 - IV. WASTE MANAGEMENT/CONTAINMENT: THIS BMP REQUIRES THAT ALL CONSTRUCTION WASTES, FUELS, LUBRICANTS, CHEMICAL WASTES, TRASH, SANITARY WASTES, CONTAMINATED SOILS OR DEBRIS SHALL BE CONTAINED ON SITE, PROTECTED FROM CONTACT WITH PRECIPITATION OR SURFACE RUNOFF, PERIODICALLY REMOVED FROM THE CONSTRUCTION SITE, AND PROPERLY DISPOSED OF.
 - V. SPILL PREVENTION /CONTAINMENT: THIS BMP DEFINES THE MEASURES PROPOSED FOR PREVENTING, CONTROLLING, OR CONTAINING SPILLS OF FUEL, LUBRICANTS, OR OTHER POLLUTANTS; AND PROTECTING POTENTIAL POLLUTANTS FROM CONTACT WITH PRECIPITATION OR RUNOFF.
 - VI. CHUTE WASHOUT CONTAINMENT: WATER USED IN THE CLEANING OF CEMENT TRUCK DELIVERY CHUTES SHALL BE DISCHARGED INTO A PREDEFINED, BERMED CONTAINMENT AREA ON THE JOB SITE. THE REQUIRED CONTAINMENT AREA IS TO BE BERMED SO THAT WASH WATER IS TOTALLY CONTAINED. WASH WATER DISCHARGED INTO THE CONTAINMENT AREA SHALL BE ALLOWED TO INFILTRATE OR EVAPORATE. DRIED CEMENT WASTE IS REMOVED FROM THE CONTAINMENT AREA AND PROPERLY DISPOSED OF.
 - a. SHOULD A PREDEFINED BERMED CONTAINMENT AREA NOT BE AVAILABLE DUE TO THE PROJECT SIZE, OR LACK OF AN AREA WITH A SUITABLE GROUND SURFACE FOR ESTABLISHING A CONTAINMENT AREA, PROPER DISPOSAL OF READY MIX WASHOUT AND RINSE OFF WATER AT THE JOB SITE SHALL CONFORM TO APPROVED TECHNIQUES AND PRACTICES.
 - b. THE DIRECT OR INDIRECT DISCHARGE OF WATER CONTAINING WASTE CEMENT TO THE STORM SEWER SYSTEM IS PROHIBITED.
 - VII. SWEEPING: THIS BMP REQUIRES THAT IMPERVIOUS SURFACES WHICH ARE ADJACENT TO OR CONTAINED WITHIN CONSTRUCTION SITES BE SWEEPED ON A DAILY BASIS OR AS NEEDED DURING THE DAY WHEN SEDIMENT AND OTHER MATERIALS ARE TRACKED OR DISCHARGED ON TO THEM. EITHER SWEEPING BY HAND OR USE OF STREET SWEEPERS IS ACCEPTABLE. STREET SWEEPERS USING WATER WHILE SWEEPING IS PREFERRED IN ORDER TO MINIMIZE DUST. FLUSHING OFF PAVED SURFACES WITH WATER IS PROHIBITED.
 - VIII. PERIMETER CONTROL: THIS BMP REQUIRES THAT A CONSTRUCTION SITE INSTALL A PERIMETER CONTROL MEASURE ALONG THE EDGE OF THE CONSTRUCTION SITE, TO PREVENT OR FILTER THE DISCHARGE OF SURFACE RUNOFF FROM THE CONSTRUCTION SITE. THE TYPE OF PERIMETER CONTROL USED SHALL BE DETERMINED BASED ON SITE CONDITIONS AND LOCATION. MAINTENANCE AND REPAIR OF THE CONTROL MEASURE SHALL OCCUR AS NEEDED, IN A TIMELY MANNER.
 - IX. STOCK PILES: SOILS THAT WILL BE STOCKPILED FOR MORE THAN THIRTY (30) DAYS SHALL BE PROTECTED FROM WIND AND WATER EROSION WITHIN FOURTEEN (14) DAYS OF STOCKPILE CONSTRUCTION. STABILIZATION OF STOCKPILES LOCATED WITHIN 100 FEET OF RECEIVING WATERS, OR WITH SLOPES 3 TO 1 OR GREATER SHALL BE COMPLETED WITHIN SEVEN (7) DAYS FOLLOWING STOCKPILE CONSTRUCTION. STABILIZATION AND PROTECTION OF THE STOCKPILE MAY BE ACCOMPLISHED BY ANY OF THE FOLLOWING: MULCHING, TEMPORARY/PERMANENT REVEGETATION OPERATIONS, CHEMICAL SOIL STABILIZER APPLICATION, OR EROSION CONTROL MATTING/GEOTEXTILES. IF STOCKPILES ARE LOCATED WITHIN 100 FEET OF RECEIVING WATERS, A DRAINAGEWAY OR THE SITE PERIMETER, ADDITIONAL SEDIMENT CONTROLS SHALL BE REQUIRED.
 - X. SAW CUTTING OPERATIONS: "THE CONTRACTOR SHALL PROTECT ALL STORM SEWER FACILITIES ADJACENT TO ANY LOCATION WHERE PAVEMENT CUTTING OPERATIONS INVOLVING WHEEL CUTTING, SAW CUTTING, OR ABRASIVE WATER JET CUTTINGS ARE TO TAKE PLACE. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE OF ALL WASTE PRODUCTS GENERATED BY SAID CUTTING OPERATIONS ON A DAILY BASIS OR AS NEEDED THROUGHOUT THE WORK DAY. THE DISCHARGE OF ANY WATER CONTAMINATED BY WASTE PRODUCTS FROM CUTTING OPERATIONS TO THE STORM SEWER SYSTEM IS PROHIBITED."
 - XI. STRUCTURAL CONTROLS: DEVELOPMENT SITES THAT ARE REQUIRED TO PROVIDE DETENTION AND WATER QUALITY ENHANCEMENT FACILITIES FOR STORM RUNOFF NEED TO INSTALL THE DETENTION FACILITIES EARLY IN THE CONSTRUCTION BUILD-OUT OF THE SITE. PROJECTS THAT ARE USING UNDERGROUND DETENTION ARE REQUIRED TO INSTALL A PRETREATMENT STRUCTURE OR SEDIMENTATION BASINS AS A MEANS OF TREATING POTENTIALLY POLLUTED STORM WATER PRIOR TO ENTERING THE DETENTION STRUCTURE. USE OF THESE STRUCTURES IS REQUIRED FOR ENTRAPPING SEDIMENT AND CONSTRUCTION DEBRIS DURING THE ACTIVE CONSTRUCTION PHASE OF THE PROJECT. THE NARRATIVE SECTION OF THE MANAGEMENT PLAN IS ALSO REQUIRED TO ADDRESS OPERATION AND MAINTENANCE OF THE STRUCTURAL CONTROLS BEING USED AS AN ACTIVE CONSTRUCTION BMP.
6. EROSION AND SEDIMENT CONTROL "BEST MANAGEMENT PRACTICES" SHALL BE MAINTAINED AND KEPT IN EFFECTIVE OPERATING CONDITION FOR THE DURATION OF THIS PROJECT. ALL NECESSARY MAINTENANCE AND REPAIR SHALL BE COMPLETED IMMEDIATELY UPON DISCOVERY OF ANY DEFICIENCY OR DEFECT.



VICINITY MAP
SCALE: 1" = 1000'

SHEET INDEX

EC1	COVER SHEET
EC2	DEMOLITION PLAN - EXISTING BELOW-GRADE UTILITIES
EC3	DEMOLITION PLAN - EXISTING ABOVE-GRADE IMPROVEMENTS
EC4	INITIAL GESC PLAN
EC5	INTERIM GESC PLAN
EC6	FINAL GESC PLAN
EC7	GESC PLAN STANDARD NOTES AND DETAILS
EC8	GESC PLAN STANDARD NOTES AND DETAILS
EC9	GESC PLAN STANDARD NOTES AND DETAILS

NOTE:

THE GRADING, EROSION AND SEDIMENT CONTROL PLAN INCLUDED HEREIN HAS BEEN PLACED IN THE CITY OF LONE TREE FILE FOR THIS PROJECT AND APPEARS TO FULFILL THE APPLICABLE LONE TREE GRADING, EROSION, AND SEDIMENT CONTROL CRITERIA, AS AMENDED. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE PERMITEES. DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED, THE REQUIREMENTS OF THIS PLAN SHALL RUN WITH THE LAND AND BE THE OBLIGATION OF THE PERMITEES, UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED, OR VOIDED.

CERTIFICATION

THE GRADING, EROSION AND SEDIMENT CONTROL PLAN INCLUDED HEREIN HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE GRADING, EROSION, AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL OF DOUGLAS COUNTY AS AMENDED.

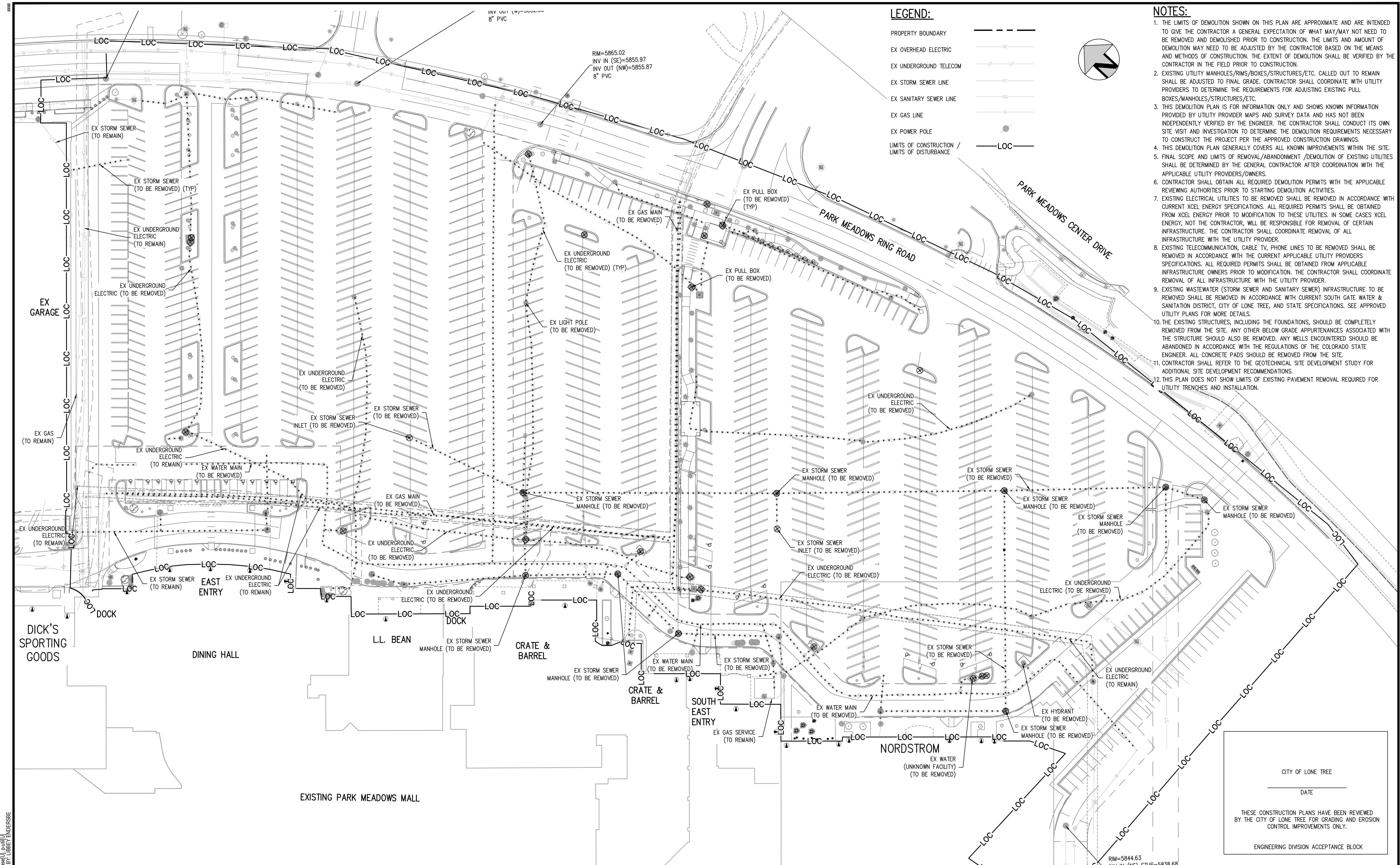


CITY OF LONE TREE	
DATE	
THESE CONSTRUCTION PLANS HAVE BEEN REVIEWED BY THE CITY OF LONE TREE FOR GRADING AND EROSION CONTROL IMPROVEMENTS ONLY.	
ENGINEERING DIVISION ACCEPTANCE BLOCK	

ISSUE DATE: 11-17-2022	PROJECT #: 220407
DATE	REVISION COMMENTS
03-17-2023	ISSUED FOR CONSTRUCTION

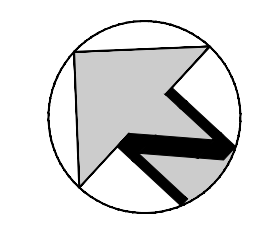
HKS HARRIS KOCHER SMITH
1120 Lincoln Street, Suite 1000
Denver, Colorado 80203
P: 303.623.6300 F: 303.623.6311
HarrisKocherSmith.com

811
Know what's below.
Call before you dig.



LEGEND:

PROPERTY BOUNDARY	---
EX OVERHEAD ELECTRIC	—
EX UNDERGROUND TELECOM	—
EX STORM SEWER LINE	—
EX SANITARY SEWER LINE	—
EX GAS LINE	—
EX POWER POLE	●
LIMITS OF CONSTRUCTION / LIMITS OF DISTURBANCE	LOC



- NOTES:**
1. THE LIMITS OF DEMOLITION SHOWN ON THIS PLAN ARE APPROXIMATE AND ARE INTENDED TO GIVE THE CONTRACTOR A GENERAL EXPECTATION OF WHAT MAY/MAY NOT NEED TO BE REMOVED AND DEMOLISHED PRIOR TO CONSTRUCTION. THE LIMITS AND AMOUNT OF DEMOLITION MAY NEED TO BE ADJUSTED BY THE CONTRACTOR BASED ON THE MEANS AND METHODS OF CONSTRUCTION. THE EXTENT OF DEMOLITION SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD PRIOR TO CONSTRUCTION.
 2. EXISTING UTILITY MANHOLES/RIMS/BOXES/STRUCTURES/ETC. CALLED OUT TO REMAIN SHALL BE ADJUSTED TO FINAL GRADE. CONTRACTOR SHALL COORDINATE WITH UTILITY PROVIDERS TO DETERMINE THE REQUIREMENTS FOR ADJUSTING EXISTING PULL BOXES/MANHOLES/STRUCTURES/ETC.
 3. THIS DEMOLITION PLAN IS FOR INFORMATION ONLY AND SHOWS KNOWN INFORMATION PROVIDED BY UTILITY PROVIDER MAPS AND SURVEY DATA AND HAS NOT BEEN INDEPENDENTLY VERIFIED BY THE ENGINEER. THE CONTRACTOR SHALL CONDUCT ITS OWN SITE VISIT AND INVESTIGATION TO DETERMINE THE DEMOLITION REQUIREMENTS NECESSARY TO CONSTRUCT THE PROJECT PER THE APPROVED CONSTRUCTION DRAWINGS.
 4. THIS DEMOLITION PLAN GENERALLY COVERS ALL KNOWN IMPROVEMENTS WITHIN THE SITE.
 5. FINAL SCOPE AND LIMITS OF REMOVAL/ABANDONMENT /DEMOLITION OF EXISTING UTILITIES SHALL BE DETERMINED BY THE GENERAL CONTRACTOR AFTER COORDINATION WITH THE APPLICABLE UTILITY PROVIDERS/OWNERS.
 6. CONTRACTOR SHALL OBTAIN ALL REQUIRED DEMOLITION PERMITS WITH THE APPLICABLE REVIEWING AUTHORITIES PRIOR TO STARTING DEMOLITION ACTIVITIES.
 7. EXISTING ELECTRICAL UTILITIES TO BE REMOVED SHALL BE REMOVED IN ACCORDANCE WITH CURRENT XCEL ENERGY SPECIFICATIONS. ALL REQUIRED PERMITS SHALL BE OBTAINED FROM XCEL ENERGY PRIOR TO MODIFICATION TO THESE UTILITIES. IN SOME CASES XCEL ENERGY, NOT THE CONTRACTOR, WILL BE RESPONSIBLE FOR REMOVAL OF CERTAIN INFRASTRUCTURE. THE CONTRACTOR SHALL COORDINATE REMOVAL OF ALL INFRASTRUCTURE WITH THE UTILITY PROVIDER.
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 10. THE EXISTING STRUCTURES, INCLUDING THE FOUNDATIONS, SHOULD BE COMPLETELY REMOVED FROM THE SITE. ANY OTHER BELOW GRADE APPURTENANCES ASSOCIATED WITH THE STRUCTURE SHOULD ALSO BE REMOVED. ANY WELLS ENCOUNTERED SHOULD BE ABANDONED IN ACCORDANCE WITH THE REGULATIONS OF THE COLORADO STATE ENGINEER. ALL CONCRETE PADS SHOULD BE REMOVED FROM THE SITE.
 11. CONTRACTOR SHALL REFER TO THE GEOTECHNICAL SITE DEVELOPMENT STUDY FOR ADDITIONAL SITE DEVELOPMENT RECOMMENDATIONS.
 12. THIS PLAN DOES NOT SHOW LIMITS OF EXISTING PAVEMENT REMOVAL REQUIRED FOR UTILITY TRENCHES AND INSTALLATION.

FILE PATH: K:\220407\ENGINEERING\CD - DEMO PLAN DWG LAYOUT.LAYOUT
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SCALE: 1" = 40'

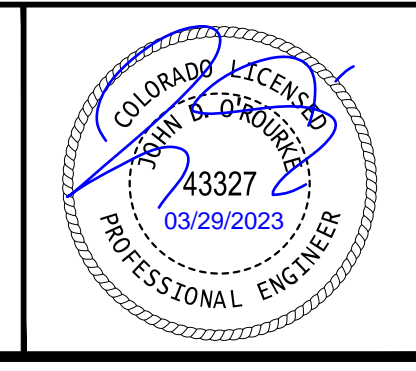
DESIGNED BY: LME
CHECKED BY: JDO
DRAWN BY: LME

ISSUE DATE: 08-30-2022	
DATE: 03-17-2023	REVISION COMMENTS: ISSUED TO CONSTRUCTION

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 HarrisKocherSmith.com

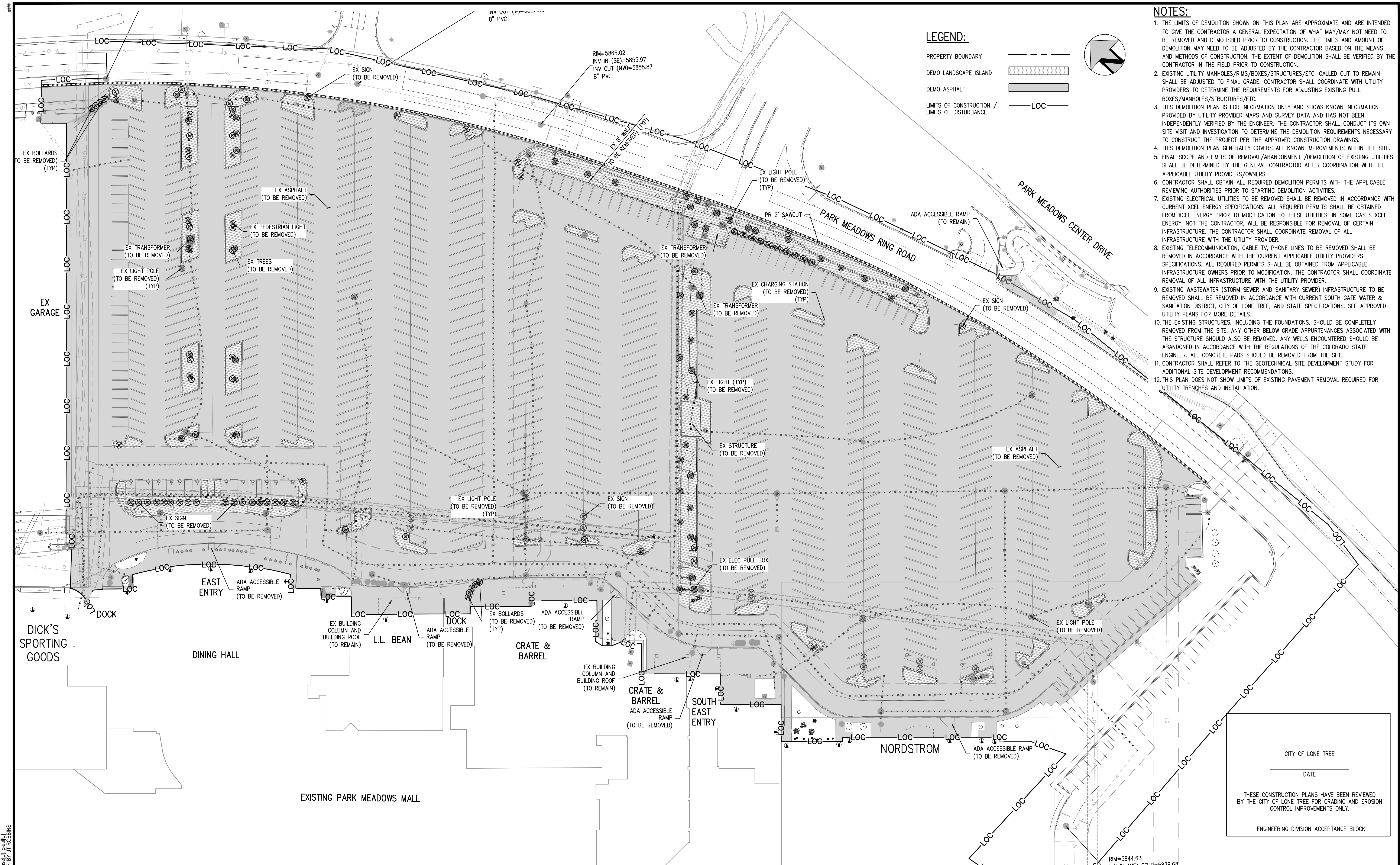
**PARK MEADOWS MALL, LLC /
 PARK MEADOWS ANCHOR ACQUISITION, LLC**

**PARK MEADOWS - MIXED USE DEVELOPMENT
 DEMOLITION PLAN - EXISTING BELOW-GRADE UTILITIES**



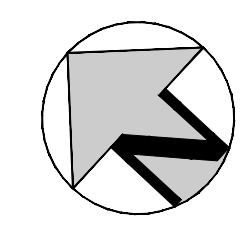
CITY OF LONE TREE
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 ENGINEERING DIVISION ACCEPTANCE BLOCK

PROJECT #: 220407
 SHEET NUMBER
EC2
 2 OF 9



LEGEND:

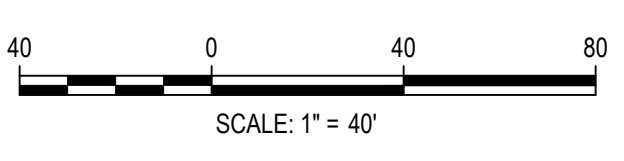
- PROPERTY BOUNDARY ———
- DEMO LANDSCAPE ISLAND [Hatched Box]
- DEMO ASPHALT [Solid Grey Box]
- LIMITS OF CONSTRUCTION / LIMITS OF DISTURBANCE — LOC —



- NOTES:**
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 ENGINEERING DIVISION ACCEPTANCE BLOCK

FILE: K:\220407\ENGINEERING\CD - DEMO PLAN.DWG LAYOUT: LAYOUT (2)
 PLOTTED: WED 03/15/23 12:57:10P BY: JT ROBBINS



ISSUE DATE: 08-30-2022	
DATE	REVISION COMMENTS
03-17-2023	ISSUED TO CONSTRUCTION

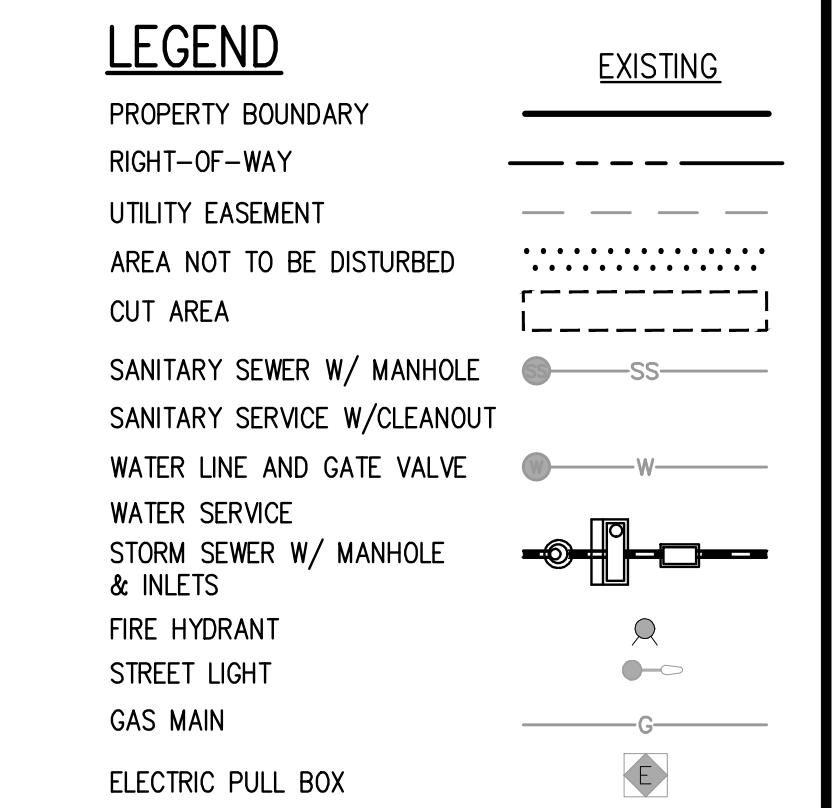
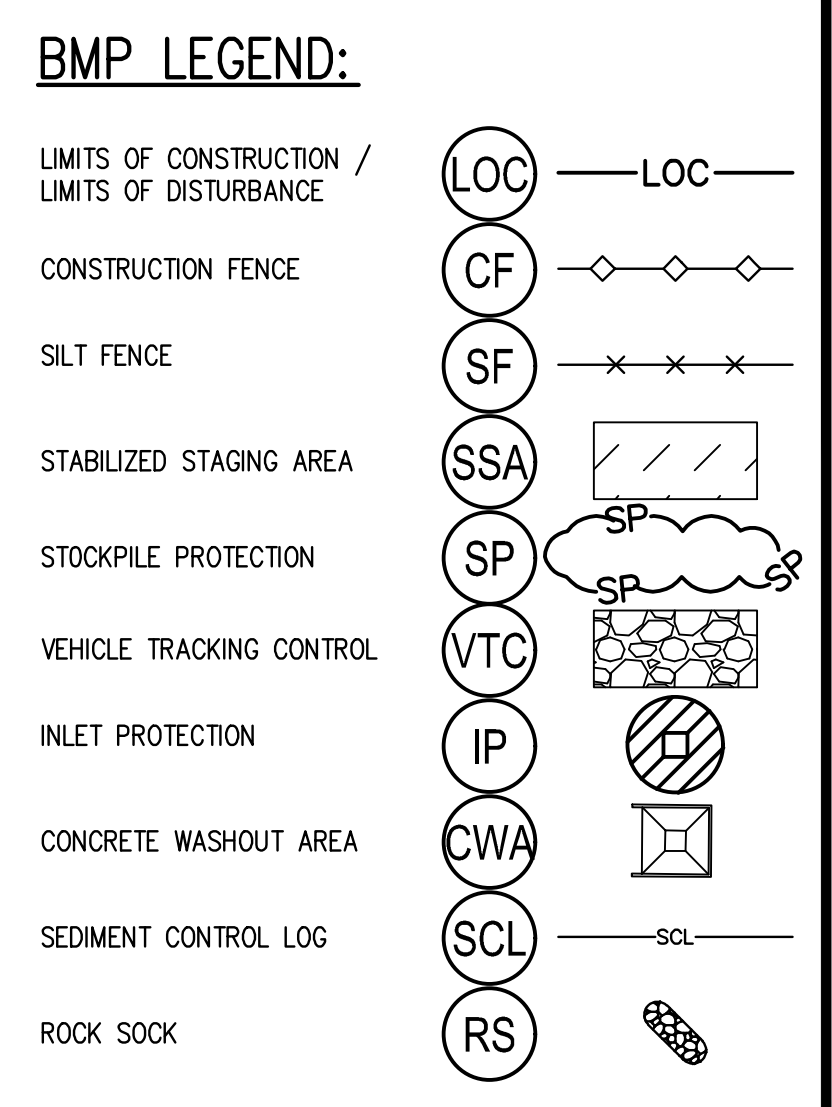
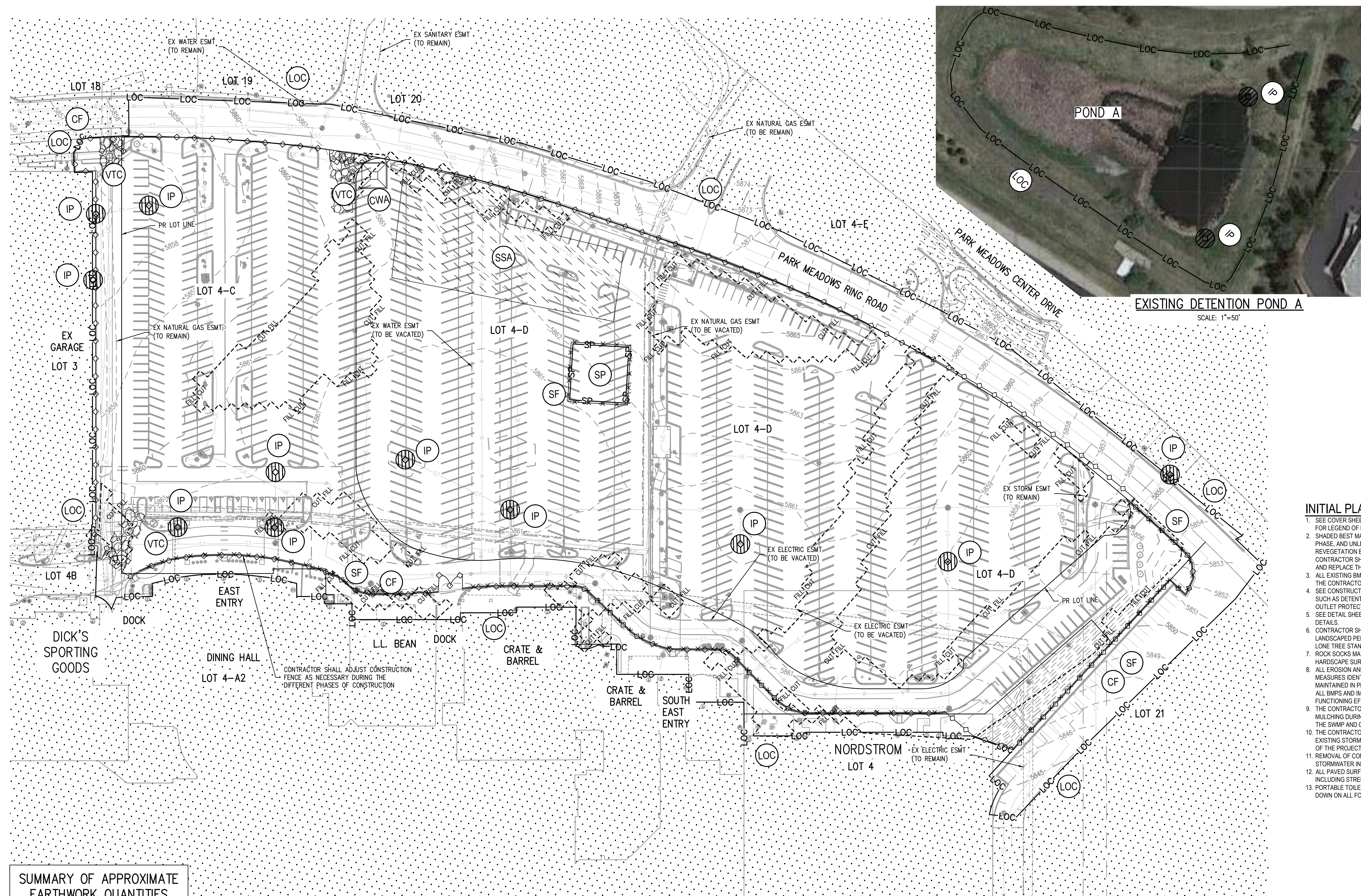
HKS HARRIS KOCHER SMITH
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 Denver, Colorado 80203
 P: 303.623.6300 F: 303.623.6311
 HarrisKocherSmith.com

**PARK MEADOWS MALL, LLC /
 PARK MEADOWS ANCHOR ACQUISITION, LLC**

**PARK MEADOWS - MIXED USE DEVELOPMENT
 DEMOLITION PLAN - EXISTING ABOVE-GRADE IMPROVEMENTS**



PROJECT #: 220407
 SHEET NUMBER
EC3
 3 OF 9



- INITIAL PLAN**
- SEE COVER SHEET OF LONE TREE STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS.
 - SHADED BEST MANAGEMENT PRACTICES (BMPs) WERE INSTALLED IN AN EARLIER PHASE, AND UNLESS OTHERWISE INDICATED SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY THE CITY OF LONE TREE. CONTRACTOR SHALL VERIFY THE CONDITION OF ALL EXISTING BMPs AND REMOVE AND REPLACE THEM AS NECESSARY.
 - ALL EXISTING BMPs WILL NEED TO BE PROPERLY REFRESHED OR REINSTALLED BY THE CONTRACTOR TO FUNCTION AS ORIGINALLY DESIGNED.
 - SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
 - SEE DETAIL SHEET EC7-EC9 FOR EROSION CONTROL MEASURE CONSTRUCTION DETAILS.
 - CONTRACTOR SHALL SEED AND MULCH ALL DISTURBED AREAS NOT FORMALLY LANDSCAPED PER THE APPROVED LANDSCAPE PLAN SEED MIX OR THE CITY OF LONE TREE STANDARD SEED MIX.
 - ROCK SOCKS MAY BE SUBSTITUTED FOR SILT FENCE AS PERIMETER CONTROL ON HARDSCAPE SURFACE AREAS.
 - ALL EROSION AND SEDIMENT CONTROL PRACTICES AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THE STORMWATER MANAGEMENT PLAN (SWMP) MUST BE MAINTAINED IN PROPER FUNCTIONING CONDITION. CONTRACTOR SHALL MONITOR ALL BMPs AND IMMEDIATELY CORRECT OR REPLY ANY THAT ARE NO LONGER FUNCTIONING EFFECTIVELY.
 - THE CONTRACTOR SHALL PROVIDE SURFACE ROUGHENING AND SEEDING & MULCHING DURING THE DEMOLITION AND EARTHWORK PHASES AS REQUIRED BY THE SWMP AND COUNTY INSPECTOR.
 - THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING INLET PROTECTION ON ALL EXISTING STORM SEWER INLETS IMMEDIATELY ADJACENT TO AND DOWNSTREAM OF THE PROJECT SITE.
 - REMOVAL OF CONTROL MEASURES SHALL NOT OCCUR WITHOUT THE APPROVAL OF STORMWATER INSPECTOR.
 - ALL PAVED SURFACES MUST REMAIN FREE OF SEDIMENT AND REQUIRE CLEANING, INCLUDING STREET SWEEPING, AS NEEDED.
 - PORTABLE TOILETS SHALL BE PLACED ON A PERVIOUS SURFACE AND STAKED DOWN ON ALL FOUR SIDES.

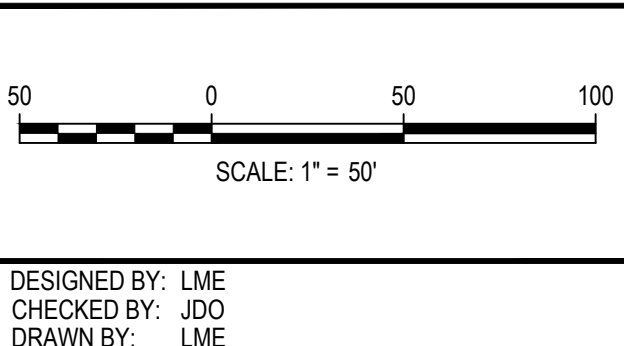
SUMMARY OF APPROXIMATE EARTHWORK QUANTITIES

CUT VOLUME (CU YD)	1,481
FILL VOLUME (CU YD)	24,364
NET (CU YD IMPORT)	22,883
AREA OF DISTURBANCE	14.18 ACRES

NOTE: EARTHWORK VOLUMES ARE UNADJUSTED AND DO NOT ACCOUNT FOR UTILITY SPOILS, PAVEMENT SECTION, SOIL COMPACTION/SWELL, ETC.

BENCHMARK
 BENCHMARK IS DOUGLAS COUNTY POINT 2113021 STAMPED "2.113021 DC GIS" WITH A PUBLISHED ELEVATION OF 5914.49 FT (NAVD88).

FILE: H:\K12247\ENGINEERING\GESC\INITIAL GESC PLAN.DWG LAYOUT: LAYOUT1
 PLOTTED: WED 03/15/23 12:57:20P BY: JI.ROBBINS

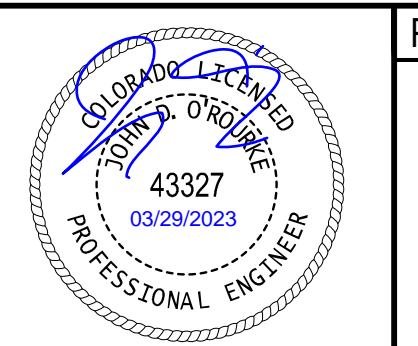


ISSUE DATE:	11-17-2022
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03-17-2023	ISSUED TO CONSTRUCTION



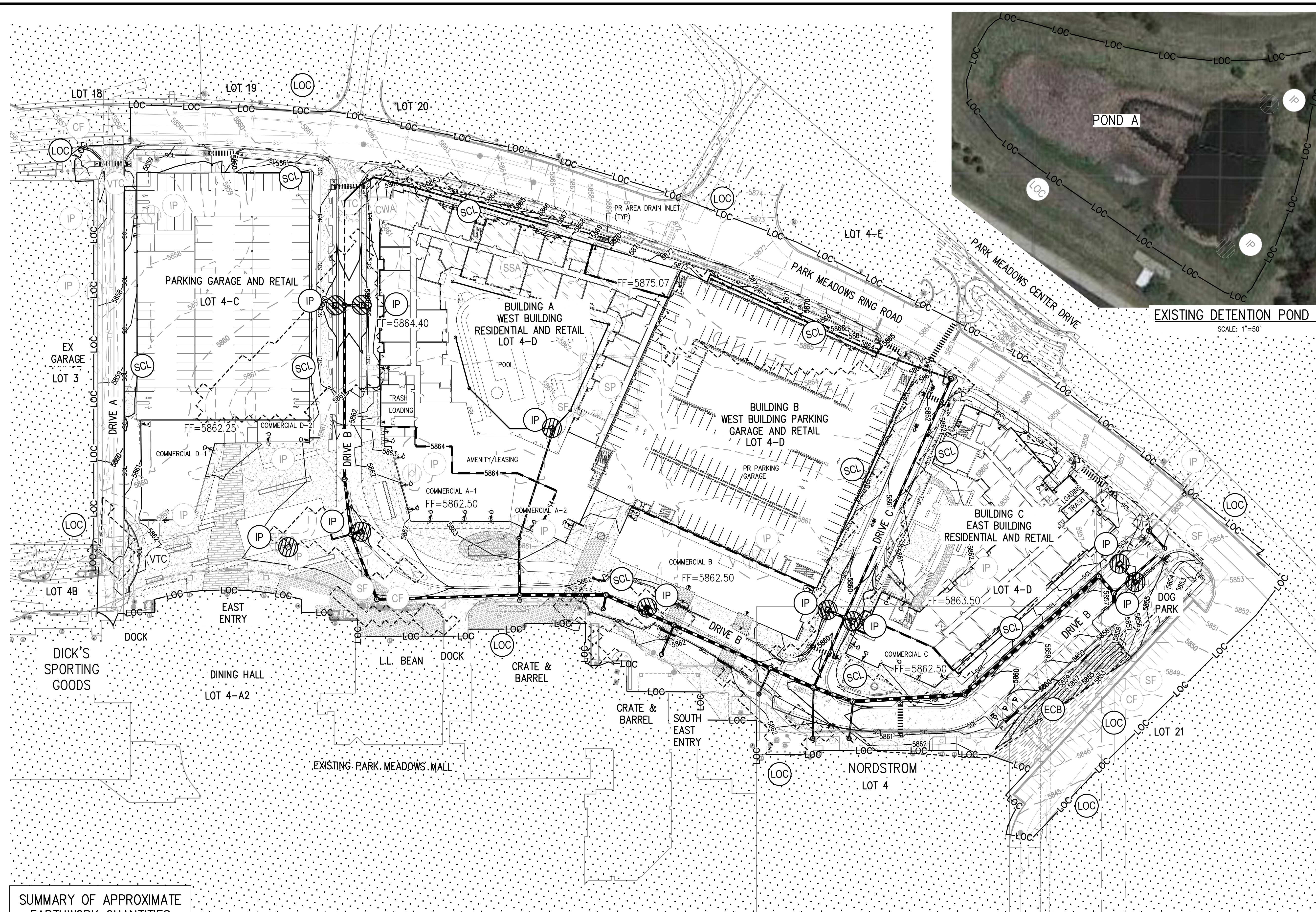
PARK MEADOWS MALL, LLC /
 PARK MEADOWS ANCHOR ACQUISITION, LLC

PARK MEADOWS - MIXED USE DEVELOPMENT
 INITIAL GESC PLAN



PROJECT #: 220407
 SHEET NUMBER
EC4
 4 OF 9

CITY OF LONE TREE
 DATE _____
 THESE CONSTRUCTION PLANS HAVE BEEN REVIEWED BY THE CITY OF LONE TREE FOR GRADING AND EROSION CONTROL IMPROVEMENTS ONLY.
 ENGINEERING DIVISION ACCEPTANCE BLOCK



- BMP LEGEND:**
- LIMITS OF CONSTRUCTION / LIMITS OF DISTURBANCE (LOC)
 - CONSTRUCTION FENCE (CF)
 - SILT FENCE (SF)
 - STABILIZED STAGING AREA (SSA)
 - STOCKPILE PROTECTION (SP)
 - VEHICLE TRACKING CONTROL (VTC)
 - INLET PROTECTION (IP)
 - CONCRETE WASHOUT AREA (CWA)
 - SEDIMENT CONTROL LOG (SCL)
 - ROCK SOCK (RS)
 - EROSION CONTROL BLANKET (ECB)

- LEGEND**
- PROPERTY BOUNDARY
 - RIGHT-OF-WAY
 - UTILITY EASEMENT
 - AREA NOT TO BE DISTURBED
 - CUT AREA
 - SANITARY SEWER W/ MANHOLE
 - SANITARY SERVICE W/CLEANOUT
 - WATER LINE AND GATE VALVE
 - WATER SERVICE
 - STORM SEWER W/ MANHOLE & INLETS
 - FIRE HYDRANT
 - STREET LIGHT
 - GAS MAIN
 - ELECTRIC PULL BOX

- INTERIM PLAN**
1. SEE COVER SHEET OF LONE TREE STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS.
 2. ALL LANDSCAPE DRAIN AREA INLETS SHALL HAVE INLET PROTECTION UNTIL THE UPSTREAM AREA HAS BEEN FORMALLY LANDSCAPED AND ESTABLISHED. REFER TO THE PRIVATE STORM SEWER PLANS FOR EXACT LOCATIONS OF ALL AREA INLETS.
 3. SHADED BMPs INSTALLED IN THE INITIAL STAGE SHALL BE LEFT IN PLACE IN THE INTERIM STAGE.
 4. ALL INTERIM BMPs, INCLUDING SEEDING AND MULCHING OF DISTURBED AREAS, MUST BE COMPLETED PRIOR TO ISSUANCE OF ANY CURB AND GUTTER PERMITS.
 5. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
 6. PORTABLE TOILETS SHALL BE PLACED ON A PERVIOUS SURFACE AND STAKED DOWN ON ALL FOUR SIDES.

SUMMARY OF APPROXIMATE EARTHWORK QUANTITIES

CUT VOLUME (CU YD)	1,481
FILL VOLUME (CU YD)	24,364
NET (CU YD IMPORT)	22,883
AREA OF DISTURBANCE	14.18 ACRES

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BENCHMARK
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FILEPATH: K:\220407\ENGINEERING\GESC\INTERIM GESC PLANNING LAYOUT LAYOUT: 11-17-2022
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SCALE: 1" = 50'

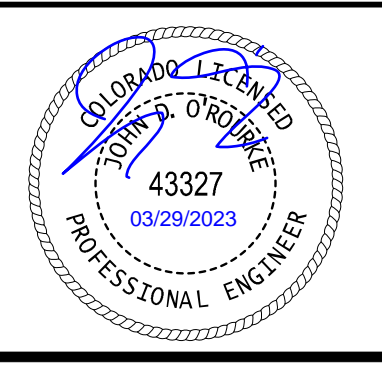
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DATE	REVISION COMMENTS
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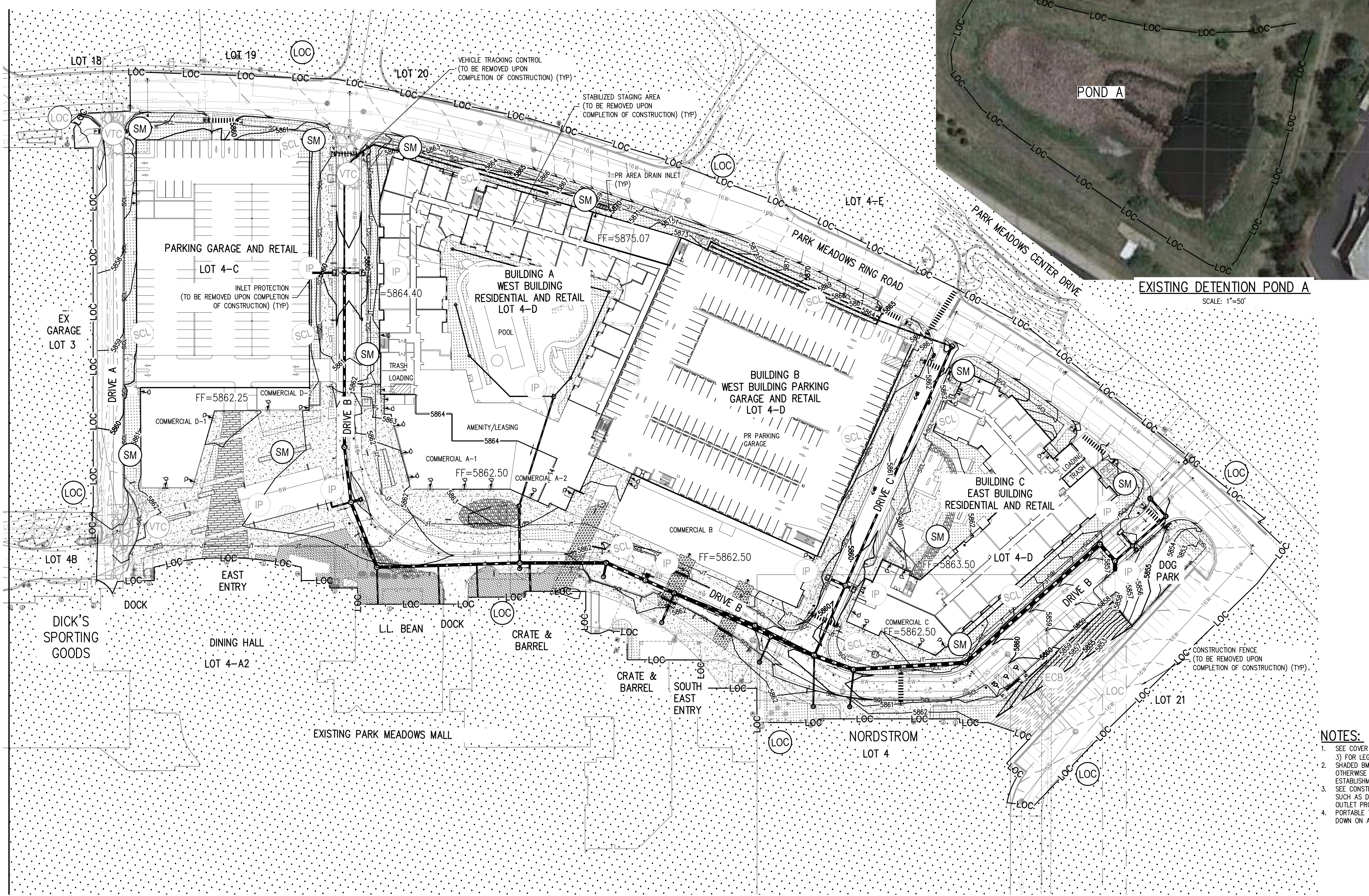
HKS HARRIS KOCHER SMITH
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PARK MEADOWS MALL, LLC /
 PARK MEADOWS ANCHOR ACQUISITION, LLC

PARK MEADOWS - MIXED USE DEVELOPMENT
 INTERIM GESC PLAN



PROJECT #: 220407
 SHEET NUMBER
EC5
 5 OF 9



BMP LEGEND:

LIMITS OF CONSTRUCTION / LIMITS OF DISTURBANCE	(LOC) — LOC —
CONSTRUCTION FENCE	(CF) — — — —
SILT FENCE	(SF) — — — —
STABILIZED STAGING AREA	(SSA) — — — —
STOCKPILE PROTECTION	(SP) — — — —
VEHICLE TRACKING CONTROL	(VTC) — — — —
INLET PROTECTION	(IP) — — — —
CONCRETE WASHOUT AREA	(CWA) — — — —
SEDIMENT CONTROL LOG	(SCL) — — — —
ROCK SOCK	(RS) — — — —
EROSION CONTROL BLANKET	(ECB) — — — —
SEEDING & MULCHING	(SM) — — — —

LEGEND

PROPERTY BOUNDARY	— — — —	EXISTING
RIGHT-OF-WAY	— — — —	
UTILITY EASEMENT	— — — —	
AREA NOT TO BE DISTURBED	
SANITARY SEWER W/ MANHOLE	— — — —	
SANITARY SERVICE W/CLEANOUT	— — — —	
WATER LINE AND GATE VALVE	— — — —	
WATER SERVICE	— — — —	
STORM SEWER W/ MANHOLE & INLETS	— — — —	
FIRE HYDRANT	— — — —	
STREET LIGHT	— — — —	
GAS MAIN	— — — —	
ELECTRIC PULL BOX	— — — —	
FLOW ARROW	— — — —	

- NOTES:**
- SEE COVER SHEET OF LONE TREE STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS.
 - SHADED BMPs INSTALLED IN THE INITIAL AND INTERIM GESC PLANS, UNLESS OTHERWISE INDICATED, SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY THE CITY.
 - SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
 - PORTABLE TOILETS SHALL BE PLACED ON A PERVIOUS SURFACE AND STAKED DOWN ON ALL FOUR SIDES.

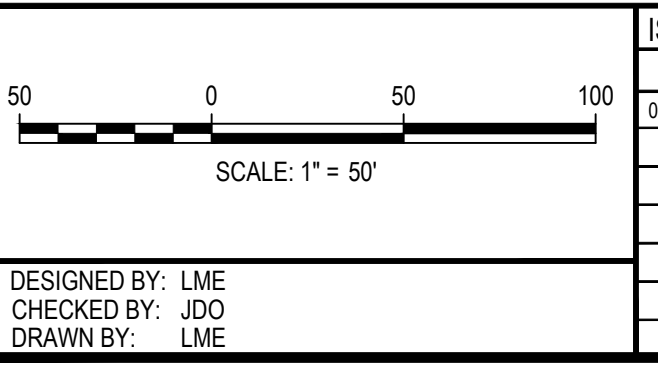
CITY OF LONE TREE

DATE _____

THESE CONSTRUCTION PLANS HAVE BEEN REVIEWED BY THE CITY OF LONE TREE FOR GRADING AND EROSION CONTROL IMPROVEMENTS ONLY.

ENGINEERING DIVISION ACCEPTANCE BLOCK

BENCHMARK
 BENCHMARK IS DOUGLAS COUNTY POINT 2113021 STAMPED "2.113021 DC GIS" WITH A PUBLISHED ELEVATION OF 5914.49 FT (NAVD88).



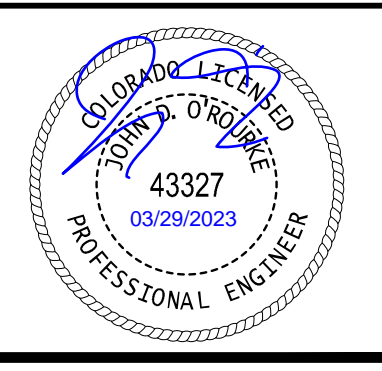
ISSUE DATE: 11-17-2022	
DATE: 03-17-2023	REVISION COMMENTS: ISSUED TO CONSTRUCTION

HKS HARRIS KOCHER SMITH

1120 Lincoln Street, Suite 1000
 Denver, Colorado 80203
 P: 303.623.6300 F: 303.623.6311
 HarrisKocherSmith.com

PARK MEADOWS MALL, LLC /
 PARK MEADOWS ANCHOR ACQUISITION, LLC

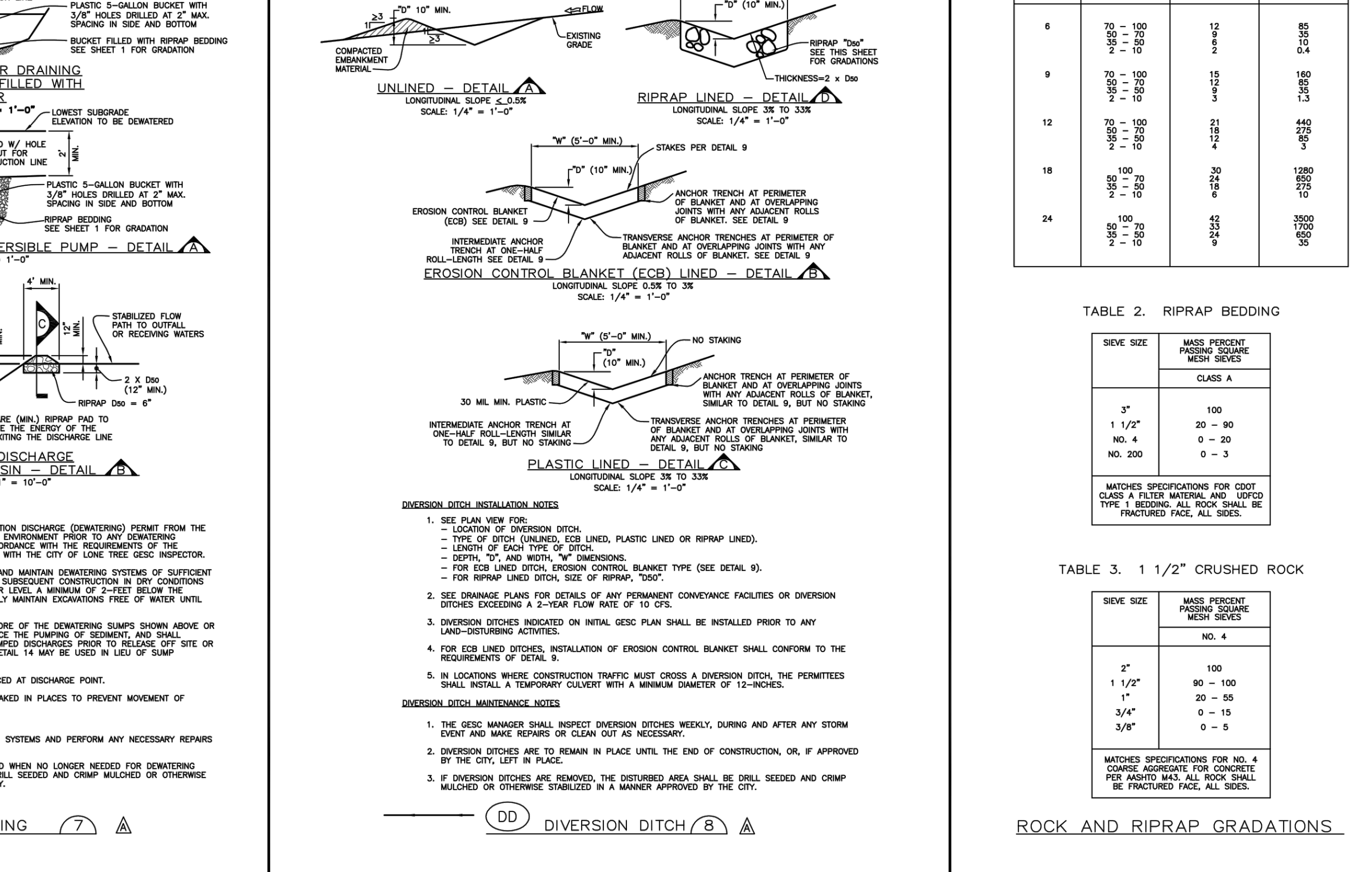
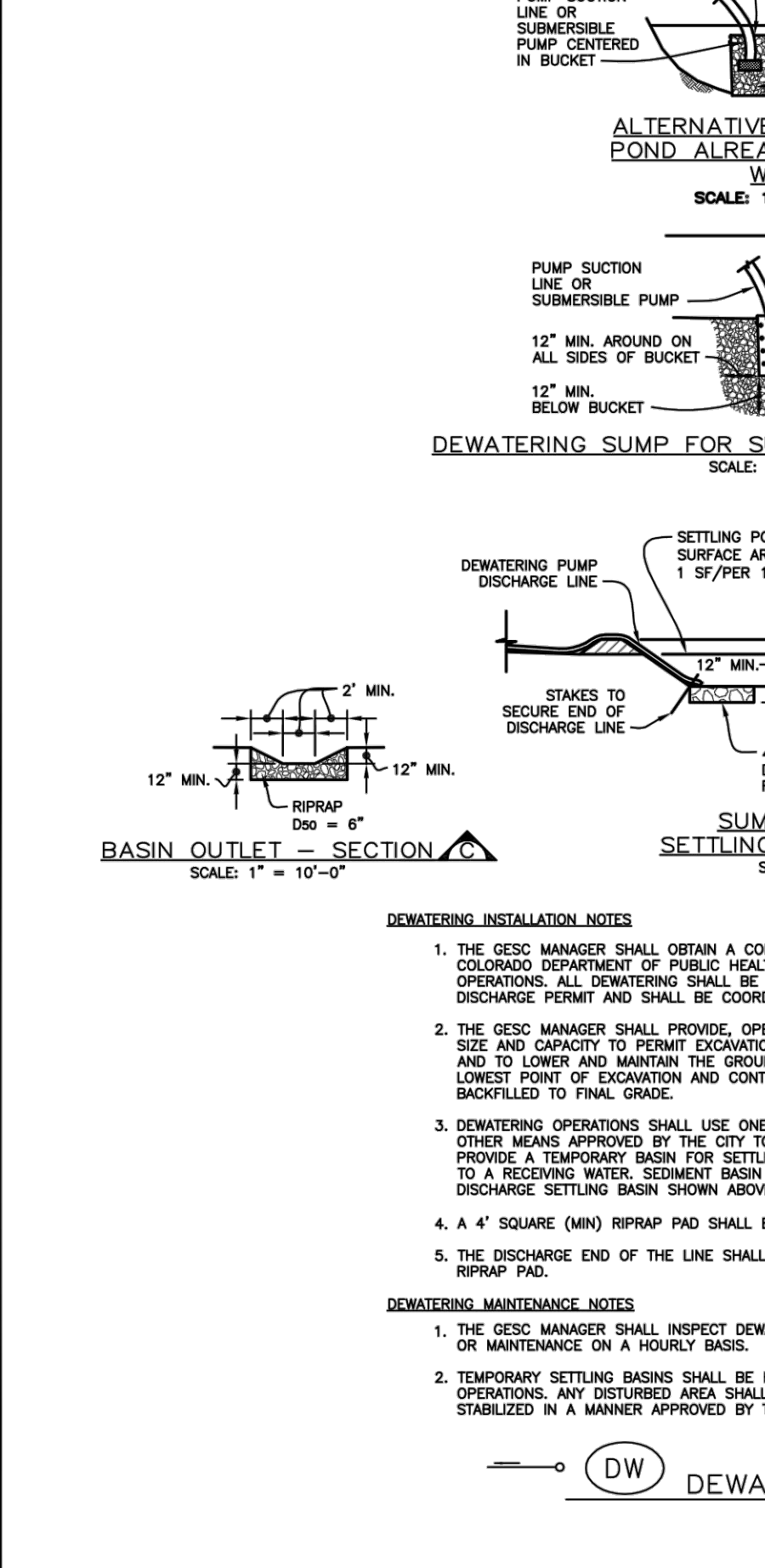
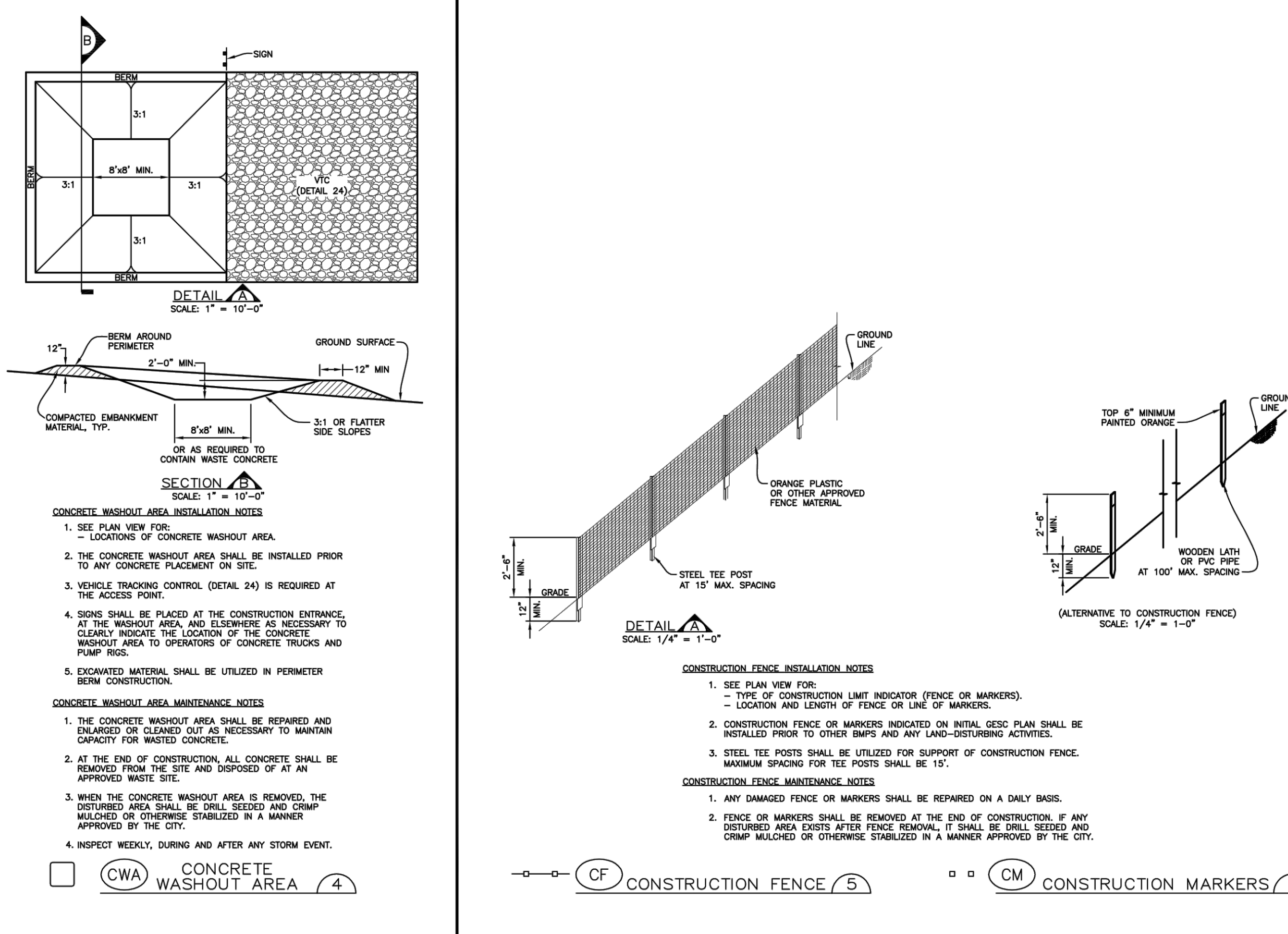
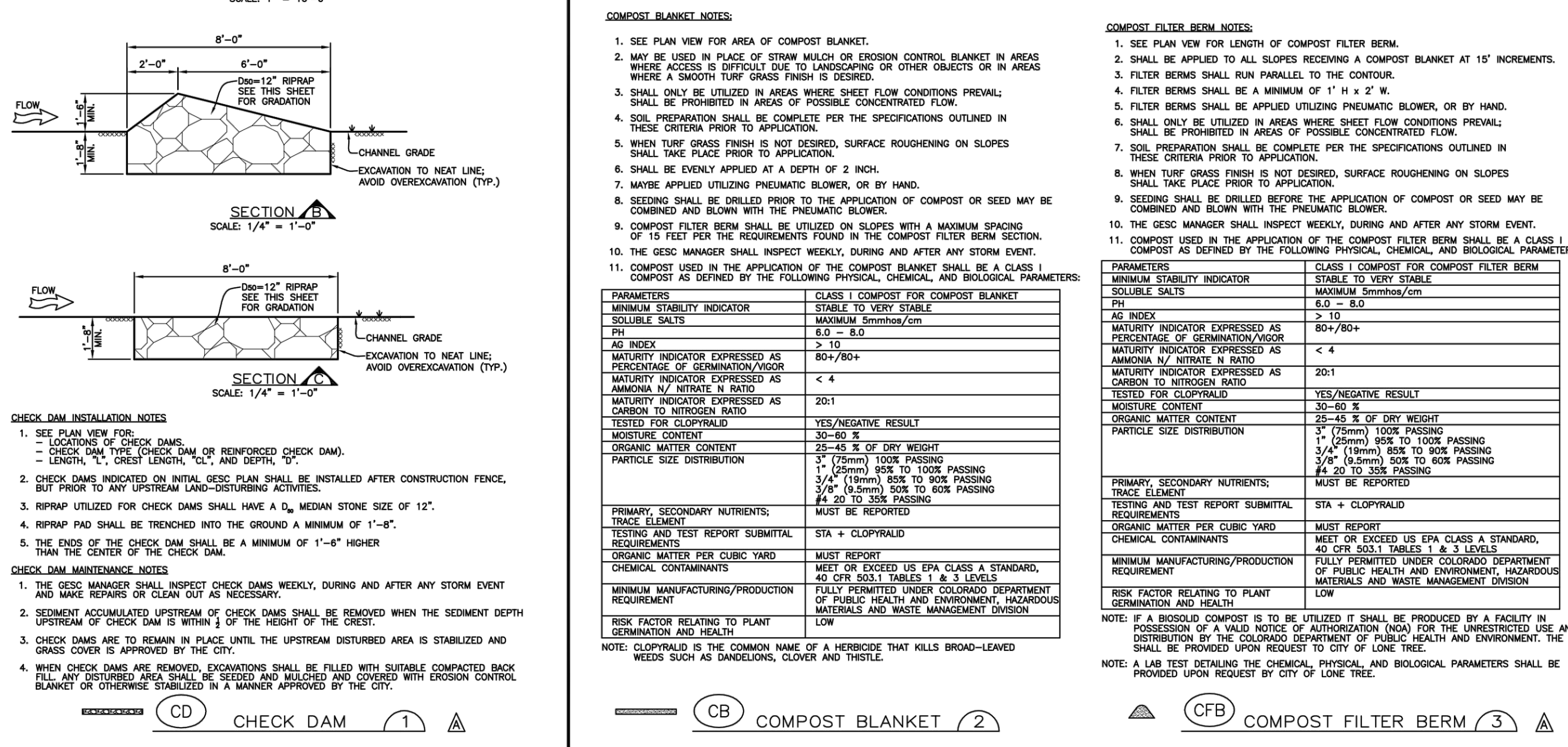
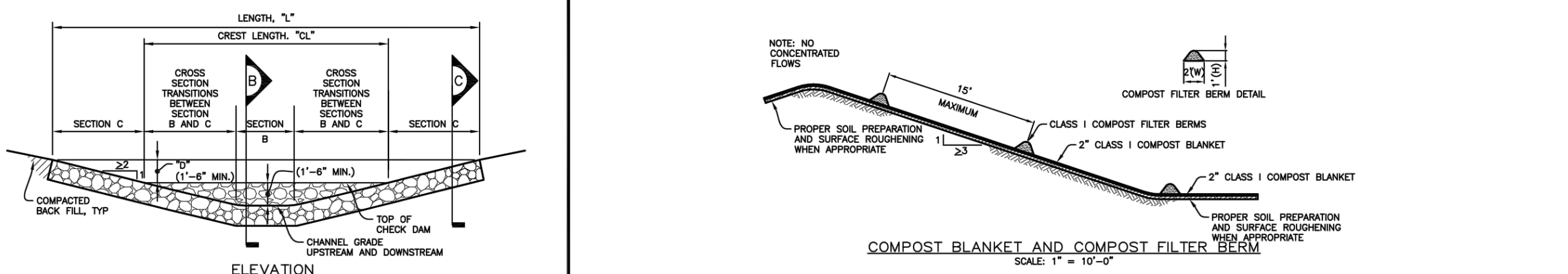
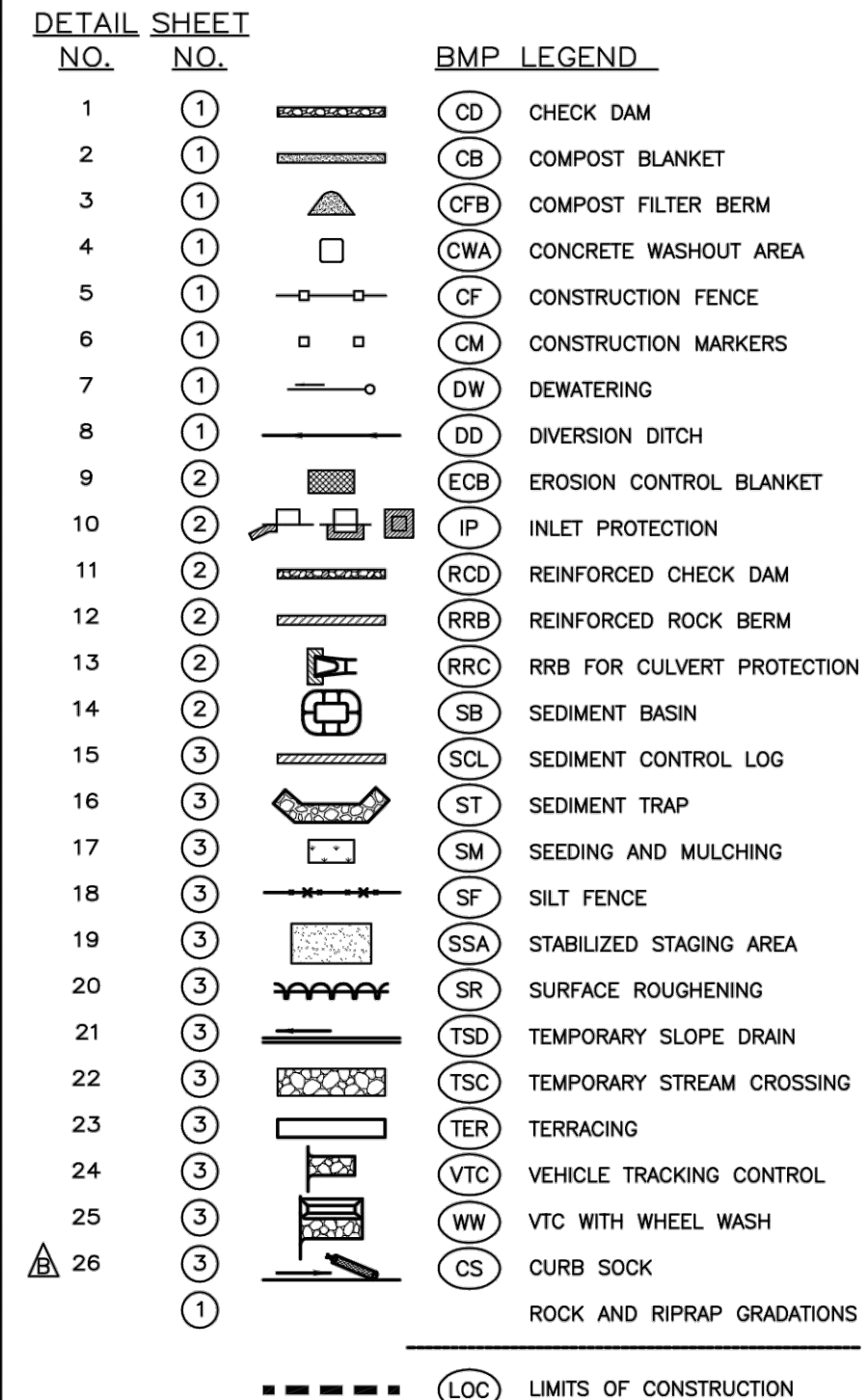
PARK MEADOWS - MIXED USE DEVELOPMENT
 FINAL GESC PLAN



PROJECT #: 220407
 SHEET NUMBER
EC6
 6 OF 9

GRADING, EROSION, AND SEDIMENT CONTROL (GESC) GENERAL NOTES

- 1. THE CITY OF LONE TREE ENGINEER'S SIGNATURE AFFIXED TO THIS DOCUMENT INDICATES THE CITY OF LONE TREE PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION, HAS REVIEWED THE DOCUMENT AND FOUND IT IN GENERAL COMPLIANCE WITH THE CITY OF LONE TREE SUBVERSION REGULATIONS AND/OR THE GRADING, EROSION AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL. THE CITY OF LONE TREE ENGINEER, THROUGH ACCEPTANCE OF THIS DOCUMENT, ASSUMES NO RESPONSIBILITY (OTHER THAN AS STATED ABOVE) FOR THE COMPLETENESS AND/OR ACCURACY OF THESE DOCUMENTS.
- 2. THE ADEQUACY OF THIS GESC PLAN LIES WITH THE ORIGINAL DESIGN ENGINEER.
- 3. THE GESC PLAN SHALL BE CONSIDERED VALID FOR TWO (2) YEARS FROM THE DATE OF ACCEPTANCE BY THE CITY OF LONE TREE. THE GESC PLAN SHALL BE VOID AND WILL BE SUBJECT TO RE-REVIEW AND RE-ACCEPTANCE BY THE CITY OF LONE TREE.
- 4. ALL MATERIALS AND WORKMANSHIP SHALL BE SUBJECT TO INSPECTION BY THE CITY OF LONE TREE ENGINEERING DIVISION. THE CITY OF LONE TREE RESERVES THE RIGHT TO ACCEPT OR REJECT ANY SUCH MATERIALS AND WORKMANSHIP THAT DOES NOT CONFORM TO THE GESC MANUAL, GESC PLAN OR GESC PERMIT.
- 5. THE PLACEMENT OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPs) SHALL BE IN ACCORDANCE WITH THE CITY OF LONE TREE - ACCEPTED GESC PLAN AND THE CITY OF LONE TREE GESC MANUAL.
- 6. ANY VARIATION IN MATERIAL TYPE OR LOCATION OF EROSION AND SEDIMENT CONTROL BMPs FROM THE CITY OF LONE TREE - ACCEPTED GESC PLAN WILL REQUIRE APPROVAL FROM AN ACCOUNTABLE REPRESENTATIVE OF THE CITY OF LONE TREE ENGINEERING DIVISION.
- 7. AFTER THE GESC PLAN HAS BEEN ACCEPTED, THE GESC PERMIT APPLICANT FOR FEES AND FISCAL SECURITY SUBMITTED TO THE CITY, AND THE GESC FIELD MANUAL OBTAINED AND REVIEWED, THE CONTRACTOR MAY INSTALL THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMPs INDICATED ON THE ACCEPTED GESC PLAN.
- 8. THE FIRST BMP TO BE INSTALLED ON THE SITE SHALL BE CONSTRUCTION FENCE, MARKERS, OR OTHER APPROVED MEANS OF DEFINING THE LIMITS OF CONSTRUCTION, INCLUDING CONSTRUCTION LIMITS ADJACENT TO STREAM CORRIDORS AND OTHER AREAS TO BE PRESERVED.
- 9. AFTER INSTALLATION OF THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMPs, THE PERMITTEE SHALL CALL THE CITY OF LONE TREE ENGINEERING DIVISION AT (303) 692-6112 TO SCHEDULE A PRECONSTRUCTION MEETING. THE MEETING SHALL BE HELD WITHIN 14 BUSINESS DAYS PRIOR TO THE REQUESTED MEETING TIME. NO CONSTRUCTION ACTIVITIES SHALL BE PLANNED WITHIN 24 HOURS AFTER THE PRECONSTRUCTION MEETING.
- 10. THE OWNER OR OWNER'S REPRESENTATIVE, THE GESC MANAGER, THE GENERAL CONTRACTOR, AND THE GRADING SUBCONTRACTOR, IF DIFFERENT FROM THE GENERAL CONTRACTOR, MUST ATTEND THE PRECONSTRUCTION MEETING. IF ANY OF THE REQUIRED PARTICIPANTS FAIL TO ATTEND THE PRECONSTRUCTION MEETING, OR IF THE GESC FIELD MANUAL IS NOT ON SITE OR THE INSTALLATION OF THE INITIAL-STAGE BMPs ARE NOT APPROVED BY THE CITY OF LONE TREE GESC INSPECTOR, THE APPLICANT WILL HAVE TO PAY A REINSPECTION FEE, ADDRESS ANY PROBLEMS WITH BMP INSTALLATION, AND CALL TO RESCHEDULE THE MEETING, WITH A CORRESPONDING DELAY IN THE START OF CONSTRUCTION. THE CITY OF LONE TREE STRONGLY ENCOURAGES THE APPLICANT TO HAVE THE ENGINEER OF RECORD AT THE PRECONSTRUCTION MEETING. FAILURE OF THE ENGINEER OF RECORD TO ATTEND MAY BE CAUSAL IN A RECORD OF THE START OF CONSTRUCTION.
- 11. CONSTRUCTION SHALL NOT BEGIN UNTIL THE CITY OF LONE TREE GESC INSPECTOR APPROVES THE INSTALLATION OF THE INITIAL-STAGE EROSION AND SEDIMENT CONTROL BMPs AND THE APPROVED GESC PERMIT IS PICKED UP FROM THE CITY AND IS IN-HAND ON THE SITE. THE COMPLETED PERMIT WILL BE AVAILABLE WITHIN 24-HOURS AFTER THE INSTALLATION OF THE INITIAL BMPs ARE APPROVED.
- 12. THE GESC MANAGER SHALL STRICTLY ADHERE TO THE CITY OF LONE TREE-APPROVED LIMITS OF CONSTRUCTION AT ALL TIMES. THE CITY OF LONE TREE ENGINEERING DIVISION MUST APPROVE ANY CHANGES TO THE LIMITS OF CONSTRUCTION AND, AT THE DISCRETION OF THE ENGINEERING DIVISION, ADDITIONAL EROSION/SEDIMENT CONTROLS MAY BE REQUIRED IN ANY ADDITIONAL AREAS OF CONSTRUCTION.
- 13. THE MAXIMUM AREA OF CONSTRUCTION SHALL BE LIMITED TO 40 ACRES (70 ACRES IF APPROVED FOR SOIL MITIGATION OPERATIONS) TO REDUCE THE AMOUNT OF LAND DISTURBED AT ANY ONE TIME. LARGER SITES SHALL BE DIVIDED INTO PHASES THAT ARE EACH 40 (OR 70) ACRES OR LESS IN SIZE. THESE PROJECTS SHALL CONDUCT GRADING ACTIVITIES IN ACCORDANCE WITH THE ACCEPTED GESC PLAN. BMP INSTALLATION AND APPROVAL BY THE CITY OF LONE TREE, AT THE START AND COMPLETION OF EACH PHASE SHALL BE CONDUCTED IN ACCORDANCE WITH THE PROCEDURES OUTLINED IN THE GESC MANUAL AND/OR GESC FIELD MANUAL.
- 14. PRIOR TO ACTUAL CONSTRUCTION, THE PERMITTEE SHALL VERIFY THE LOCATION OF EXISTING UTILITIES. FOR INFORMATION, CONTACT THE DENVER RETAIL-UTILITY GROUP AT 1-800-922-1987 OR FAX AT (303) 534-6700.
- 15. NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED WHEREVER POSSIBLE. EXPOSURE OF SOIL TO EROSION BY REMOVAL OR DISTURBANCE OF VEGETATION SHALL BE LIMITED TO THE AREA REQUIRED FOR IMMEDIATE CONSTRUCTION OPERATIONS.
- 16. THE GESC PERMIT SHALL BE VALID FOR A PERIOD OF ONE (1) YEAR, UNLESS EXTENDED.
- 17. A COPY OF THE GESC PERMIT, ACCEPTED GESC PLANS AND THE GESC FIELD MANUAL SHALL BE ON SITE AT ALL TIMES.
- 18. THE GESC MANAGER SHALL BE RESPONSIBLE FOR ENSURING THAT THE SITE REMAINS IN COMPLIANCE WITH THE GESC PERMIT AND SHALL BE THE PERMITTEE'S CONTACT PERSON WITH THE CITY FOR ALL MATTERS PERTAINING TO THE GESC PERMIT. THE GESC MANAGER SHALL BE PRESENT AT THE MAJORITY OF THE TIME AND SHALL BE AVAILABLE THROUGHOUT A 24-HOUR CONTACT NUMBER. IN THE EVENT THAT THE CONTRACTOR'S GESC MANAGER IS NOT ON SITE AND CANNOT BE REACHED DURING A VIOLATION, THE ALTERNATE GESC MANAGER SHALL BE CONTACTED. IF NEITHER THE GESC MANAGER NOR ALTERNATE GESC MANAGER CAN BE CONTACTED DURING ANY VIOLATION, A STOP WORK ORDER SHALL BE ISSUED.
- 19. ALL CONSTRUCTION TRAFFIC MUST ENTER/EXIT THE SITE THROUGH THE CITY OF LONE TREE-APPROVED ACCESS POINT. A VEHICLE TRACKING CONTROL PAD IS REQUIRED AT ALL ACCESS POINTS ON THE SITE. ADDITIONAL STABILIZED CONSTRUCTION ENTRANCES MAY BE ADDED WITH AUTHORIZATION FROM THE CITY OF LONE TREE ENGINEERING DIVISION.
- 20. THE GESC MANAGER IS RESPONSIBLE FOR CLEANUP OF SEDIMENT OR CONSTRUCTION DEBRIS TRACKED ONTO ADJACENT PAVED AREAS. PAVED AREAS INCLUDING STREETS ARE TO BE KEPT CLEAN THROUGHOUT BUILD-OUT AND SHALL BE CLEANED WITH A STREET SWEEPER OR SIMILAR DEVICE, AT FIRST NOTICE OF ACCIDENTAL TRACKING OR AT THE DISCRETION OF THE CITY OF LONE TREE GESC INSPECTOR. STREET WASHING IS NOT ALLOWED. THE CITY OF LONE TREE RESERVES THE RIGHT TO REQUIRE ADDITIONAL MEASURES TO ENSURE AREA STREETS ARE KEPT FREE OF SEDIMENT AND/OR CONSTRUCTION DEBRIS.
- 21. APPROVED EROSION AND SEDIMENT CONTROL BMPs SHALL BE MAINTAINED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THIS PROJECT. AT A MINIMUM, THE GESC MANAGER SHALL INSPECT ALL BMPs IN ACCORDANCE WITH THE GESC PERMIT AND GESC PLAN AND GESC MANUAL. ALL NECESSARY MAINTENANCE AND REPAIR ACTIVITIES SHALL BE COMPLETED WITHIN 48 HOURS FOR LEVEL III VIOLATIONS, AND IMMEDIATELY FOR LEVEL II VIOLATIONS, OR AS DIRECTED BY A CITY OF LONE TREE GESC INSPECTOR. ACCUMULATED SEDIMENT AND CONSTRUCTION DEBRIS SHALL BE REMOVED AND PROPERLY DISPOSED.
- 22. STRAW BALES ARE NOT A GESC-ACCEPTED SEDIMENT CONTROL BMP.
- 23. TOPSOIL SHALL BE STRIPPED AND STOCKPILED IN THE LOCATION SHOWN ON THE ACCEPTED GESC PLAN. THE GESC MANAGER SHALL SCHEDULE AN INSPECTION WITH THE CITY OF LONE TREE GESC INSPECTOR AS SOON AS TOPSOIL STRIPPING IS COMPLETED. FAILURE TO SCHEDULE SUCH INSPECTION OR FAILURE TO STOCKPILE TOPSOIL SHALL RESULT IN ISSUANCE OF A STOP WORK ORDER. THE STOP WORK ORDER SHALL REMAIN IN PLACE UNTIL TOPSOIL IS STOCKPILED ON SITE OR APPROPRIATE SOIL AMENDMENTS ARE STOCKPILED ON SITE.
- 24. THE ACCEPTED GESC PLAN MAY REQUIRE CHANGES OR ALTERATIONS AFTER APPROVAL TO MEET CHANGING SITE OR PROJECT CONDITIONS OR TO ADDRESS DIFFERENCES IN DESIGN OR INSTALLATION. THE GESC MANAGER SHALL OBTAIN PRIOR APPROVAL FROM THE DESIGN ENGINEER AND THE CITY OF LONE TREE ENGINEERING FOR ANY PROPOSED CHANGES.
- 25. LINING OF TEMPORARY SWALES AND DITCHES SHALL BE IN ACCORDANCE WITH THE GESC CRITERIA MANUAL.
- 26. NO PERMANENT EARTH SLOPES GREATER THAN 3:1 SHALL BE ALLOWED.
- 27. ANY SETTLEMENT OR SOIL ACCUMULATIONS BEYOND THE LIMITS OF CONSTRUCTION DUE TO GRADING OR EROSION SHALL BE REPAIRED IMMEDIATELY BY THE GESC MANAGER. THE GESC MANAGER SHALL BE HELD RESPONSIBLE FOR OBTAINING ACCESS RIGHTS TO ADJACENT PROPERTY, IF NEEDED, AND REMEDIATING ANY ADVERSE IMPACTS TO ADJACENT WATERSHEDS, WETLANDS, PROPRIETIES, ETC. RESULTING FROM WORK DONE AS PART OF THIS PROJECT.
- 28. A WATER SURVEY SHALL BE AVAILABLE ON SITE DURING EARTHWORK OPERATIONS AND UTILIZED AS REQUIRED TO MINIMIZE DUST FROM EARTHWORK EQUIPMENT AND WIND.
- 29. SOILS THAT WILL BE STOCKPILED FOR MORE THAN THIRTY (30) DAYS SHALL BE SEEDED AND MULCHED WITHIN FORTY-EIGHT (48) HOURS OF STOCKPILE CONSTRUCTION. NO STOCKPILES SHALL BE PLACED WITHIN ONE HUNDRED (100) FEET OF A DRAINAGE WAY UNLESS APPROVED BY THE CITY OF LONE TREE ENGINEERING DIVISION.
- 30. ALL CHEMICAL OR HAZARDOUS MATERIAL SPILLS WHICH MAY ENTER WATERS OF THE STATE OF COLORADO, WHICH INCLUDE BUT ARE NOT LIMITED TO, SURFACE WATER, GROUND WATER AND DRY GULCHES OR STORM SEWER LEADING TO SURFACE WATER, SHALL BE IMMEDIATELY REPORTED TO THE COE PER CRS 26-9-601, AND THE CITY OF LONE TREE. RELEASES OF PETROLEUM PRODUCTS AND CERTAIN HAZARDOUS SUBSTANCES LISTED UNDER THE FEDERAL CLEAN WATER ACT (40 CFR PART 116) MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER AS WELL AS THE COE. THE APPLICABLE CONTACT INFORMATION (SEE APPENDIX A DOUGLAS COUNTY GESC MANUAL - SUBJECT TO CHANGE) IS: COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT TOLL-FREE 24-HOUR ENVIRONMENTAL EMERGENCY SPILL REPORTING LINE 1-877-518-5068; NATIONAL RESPONSE CENTER (24-HOUR NATIONAL SPILL RESPONSE) 1-800-424-8802; CITY OF LONE TREE PUBLIC WORKS (303) 692-8112. SPILLS THAT POSE AN IMMEDIATE RISK TO HUMAN LIFE SHALL BE REPORTED TO 911. FAILURE TO REPORT AND CLEAN UP ANY SPILL SHALL RESULT IN ISSUANCE OF A STOP WORK ORDER.
- 31. ALL WORK ON SITE SHALL STAY A MINIMUM OF ONE HUNDRED (100) FEET AWAY FROM ANY DRAINAGE WAY, WETLAND, ETC. UNLESS OTHERWISE NOTED ON AN ACCEPTED CITY OF LONE TREE GESC PLAN.
- 32. ALL PROJECTS SHALL BALANCE EARTHWORK QUANTITIES ON SITE. IN THE EVENT A VARIANCE IS GRANTED BY THE CITY ENGINEER TO ALLOW IMPORT OR EXPORT OF MATERIAL, THE PERMITTEE SHALL HAVE A GESC PERMIT IN HAND FOR THE IMPORT OR EXPORT SITE PRIOR TO ANY TRANSPORTING OF EARTHEN MATERIAL. THE GESC MANAGER SHALL NOTIFY THE CITY OF LONE TREE GESC INSPECTOR OF THE LOCATION AND GESC PERMIT NUMBERS OF BOTH THE EXPORTING AND IMPORTING SITES PRIOR TO ANY IMPORT/EXPORT OPERATIONS.
- 33. THE USE OF REBAR, STEEL STAKES OR STEEL FENCE POSTS FOR STAGING OR SUPPORT OF ANY EROSION OR SEDIMENT CONTROL BMP IS PROHIBITED (EXCEPT STEEL TEE-POSTS FOR USE IN SUPPORTING CONSTRUCTION FENCE).
- 34. THE CLEANING OF CONCRETE DELIVERY TRUCK CHUTES IS RESTRICTED TO APPROVED CONCRETE WASH OUT LOCATIONS ON THE JOB SITE. THE DISCHARGE OF WATER CONTAINING WASTE CONCRETE TO THE STORM SEWER SYSTEM IS PROHIBITED. ALL CONCRETE WASTE SHALL BE PROPERLY CLEANED UP AND DISPOSED AT AN APPROPRIATE LOCATION.
- 35. ALL DEWATERING ON SITE SHALL BE COORDINATED WITH A CITY OF LONE TREE GESC INSPECTOR AND BE FREE OF SEDIMENT IN ACCORDANCE WITH THE GESC CRITERIA MANUAL.
- 36. ALL PERMANENT INSTALLATIONS OF PIPES FOR STORM SEWERS, SLOPE DRAINS, AND CULVERTS, TOGETHER WITH RIPRAP APPROX OR OTHER INLET AND OUTLET PROTECTION, REQUIRE INSPECTION BY THE CITY OF LONE TREE ENGINEERING (SEPARATE FROM GESC INSPECTIONS).
- 37. ALL DISTURBED AREAS SHALL BE DRILL SEEDED AND CRIMP MULCHED IN ACCORDANCE WITH THE DOUGLAS COUNTY GESC MANUAL CRITERIA AND THE CITY OF LONE TREE SEEDING AND MULCHING DETAIL (#17) INCLUDED HEREIN WITHIN THIRTY DAYS OF INITIAL EXPOSURE OR WITHIN SEVEN DAYS OF SUBSTANTIAL COMPLETION (AS DEFINED BY THE CITY OF LONE TREE) OF AN AREA, WHICHEVER IS LESS. THIS MAY REQUIRE MULTIPLE MOBILIZATIONS FOR SEEDING AND MULCHING.
- 38. HYDRAULIC SEEDING AND HYDRAULIC MULCHING ARE NOT AN ACCEPTABLE METHOD OF SEEDING OR MULCHING IN THE CITY OF LONE TREE.
- 39. NO CURB AND GUTTER PERMITS SHALL BE ISSUED UNTIL ALL DISTURBED AREAS ARE DRILL SEEDED AND CRIMP MULCHED.
- 40. NO PAVING PERMITS SHALL BE ISSUED UNTIL ALL INTERIM INLET PROTECTION IS INSTALLED AND APPROVED BY THE GESC INSPECTOR.
- 41. A FINAL GESC INSPECTION SHALL BE CONDUCTED A MINIMUM OF TWO WEEKS PRIOR TO THE ANTICIPATED REQUEST FOR CERTIFICATE OR TEMPORARY CERTIFICATE OF OCCUPANCY OR INITIAL ACCEPTANCE.



Sheet Revisions

6/30/05	ADOPTED FROM DOUGLAS COUNTY GESC PLANS	MLP
5/ /08	EDIT UPDATES	GAW
11/ /08	ADD CURB SOCK DETAIL (REF UJDFC, V3 FIGURE CS-23), MISC. NOTE EDITS	GAW

NOTE: SCALES SHOWN ARE FOR 24"x36" SHEETS; ADJUST ACCORDING TO SHEETS.



Appendix E

City of Lone Tree GESD Plan and Report Checklist



Project: Park Meadows - Mixed Use Development	Date: 11-17-2022
--	-------------------------

All Plan Sheets

- | | | | |
|---|-----------------------------|------------------------------|--|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 1. Title Block (consistent on all sheets) |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. Legal Name (Subdivision Name and Filing Number) |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 3. Sheet Number |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 4. Graphic and Written Scale |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 5. North Arrow |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 6. Current Date of Plan Preparation |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 7. City Acceptance Block (available upon request) |

Cover Sheet

- | | | | |
|---|-----------------------------|------------------------------|--|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 1. Project name |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. Project address |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 3. Owner (and Applicant's if different) name and address |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 4. Design firm's name and address |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 5. Plan sheet index |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 6. Original date of preparation and subsequent revisions |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 7. The following note: |

THE **GRADING, EROSION AND SEDIMENT CONTROL PLAN** INCLUDED HEREIN HAS BEEN PLACED IN THE CITY OF LONE TREE FILE FOR THIS PROJECT AND APPEARS TO FULFILL APPLICABLE LONE TREE GRADING, EROSION AND SEDIMENT CONTROL CRITERIA, AS AMENDED. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE PERMITTEES DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS PLAN SHALL RUN WITH THE LAND AND BE THE OBLIGATION OF THE PERMITTEES, UNTIL SUCH TIME AS THE PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.

- | | | | |
|---|-----------------------------|------------------------------|---|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 8. GESC Plan Designer's signature block with name, date, and Professional Engineer registration number. Signature block shall include the following note: |
|---|-----------------------------|------------------------------|---|

THE **GRADING, EROSION AND SEDIMENT CONTROL PLAN** INCLUDED HEREIN HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE **GRADING, EROSION, AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL OF DOUGLAS COUNTY AS AMENDED.**

- | | | | |
|---|-----------------------------|------------------------------|--|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 9. General Location Map (at a reasonable scale) indicating: <ul style="list-style-type: none"> a. general vicinity of the site location b. major roadway names c. north arrow and scale |
|---|-----------------------------|------------------------------|--|



GESC Drawing Index Sheet (if applicable) None Applicable

For projects that require multiple plan-view sheets to adequately show the project area (based on the specified scale ranges), a single plan-view sheet shall be provided at a scale appropriate to show the entire site on one sheet. Areas of coverage of the multiple blow-up sheets are to be indicated as rectangles on the index sheet.

Initial GESC Plan

- | | | | | |
|---|-----------------------------|---|-----|--|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 1. | Property Lines |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. | Existing and proposed easements |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 3. | Existing topography at one- or two-foot contour intervals, extending a minimum of 100 feet beyond the property line |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 4. | Location of any existing structures or hydrologic features within the mapping limits |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 5. | USGS Benchmark used for project |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 6. | Limits of construction encompassing all areas of work, including: <ul style="list-style-type: none"> • Access points, storage and staging areas, borrow areas, stockpiles, and utility tie-in locations in on-site and off-site locations • Stream corridors and other resource areas to be preserved and all other areas outside the limits of construction shall be lightly shaded to clearly show area not to be disturbed. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 7. | Location of stockpiles, including topsoil, imported aggregates, and excess material |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 8. | Location of storage and staging areas for equipment, fuel, lubricant, chemical (and other materials) and waste storage |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> | 9. | Location of borrow or disposal areas Dirt to be imported offsite |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> | 10. | Location of temporary roads Temporary roads not needed |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 11. | Location, map symbol, and letter callouts of all initial erosion and sediment control BMPs |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 12. | Information to be specified for each BMP, such as type and dimensions, as called for in the Standard Notes and Details |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 13. | The following note: <ul style="list-style-type: none"> • SEE COVER SHEET OF LONE TREE STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS. |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> | 14. | Other information as may be reasonably required by Lone Tree |



Interim GESC Plan

- | | | | | |
|---|-----------------------------|---|----|---|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 1. | Items 1, 2, and 4 through 10 from the Initial GESC Plan |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. | Existing topography at one- or two-foot contour intervals extending a minimum of 100 feet beyond the property line, as shown on Initial GESC Plan. These contours shall be screened. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. | Location of all existing erosion and sediment control measures on site, as shown on the Initial GESC Plan Sheet. These control measures shall be screened. Dimension information for initial stage BMPs shall not be shown. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 3. | Proposed topography at one- or two-foot contour intervals, showing elevations, dimensions, locations, and slope of all proposed grading |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 4. | Outlines of cut and fill areas |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 5. | Location of all interim erosion and sediment controls, designed in conjunction with the proposed site topography, but also considering the controls designed for the existing topography. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 6. | Locations of all buildings, drainage features and facilities, paved areas, retaining walls, cribbing, water quality facilities, or other permanent features to be constructed in connection with, or as a part of, the proposed work, per approved plat, SIP, RSP, or other improvement plan. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 7. | The following notes: <ul style="list-style-type: none"> • SEE COVER SHEET OF LONE TREE STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS. • SHADED BMPS INSTALLED IN THE INITIAL STAGE SHALL BE LEFT IN PLACE IN THE INTERIM STAGE. • ALL INTERIM BMPS, INCLUDING SEEDING AND MULCHING OF DISTURBED AREAS, MUST BE COMPLETED PRIOR TO ISSUANCE OF ANY CURB AND GUTTER PERMITS. • SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 8. | Summary of cut and fill volumes |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> | 9. | Other information as may be reasonably required by Lone Tree |



Final GESC Plan

- | | | | | |
|---|-----------------------------|---|-----|---|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 1. | Items 1, 2, and 5 from the Initial GESC Plan |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. | Existing topography in areas of proposed contours shall not be shown. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 3. | Existing Initial and Interim BMPs shall be shown (screened). Dimension information shall not be shown. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 4. | Directional flow arrows on all drainage features |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 5. | Any Initial or Interim BMPs that are to be removed and any resulting disturbed area to be stabilized |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 6. | Location of all Final erosion and sediment control BMPs (including seeding and mulching of any areas not stabilized in the Interim Plan), permanent landscaping, and measures necessary to minimize the movement of sediment off site until permanent vegetation can be established. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 7. | Show area of buildings, pavement, sod, and permanent landscaping (define types) per accepted improvement plan. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 8. | Show seeding and mulching (SM) everywhere except within the limits of buildings and pavement areas. |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> | 9. | Show other BMPs considered by the designer to be appropriate. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 10. | Show the following BMPs to be removed prior to end of construction: <ul style="list-style-type: none"> • Indicate dewatering (DW) to be removed. • Indicate temporary stream crossings (TSC) to be removed. • Indicate stabilized staging area (SSA) to be removed. • Indicate street inlet protection (IP) to be removed. • Indicate vehicle tracking control (VTC) to be removed. • Indicate construction fence (CF) to be removed. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 11. | Include the following notes: <ul style="list-style-type: none"> • SEE COVER SHEET OF LONE TREE STANDARD NOTES AND DETAILS (SHEET 1 OF 3) FOR LEGEND OF BMP NAMES AND SYMBOLS. • SHADED BMPS INSTALLED IN THE INITIAL AND INTERIM GESC PLANS, UNLESS OTHERWISE INDICATED, SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT IS APPROVED BY THE CITY. • SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION. |
| Yes <input type="checkbox"/> | No <input type="checkbox"/> | N/A <input checked="" type="checkbox"/> | 12. | Other information as may be reasonably required by Lone Tree |



GESC Report

- | | | | | |
|---|-----------------------------|------------------------------|-----|---|
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 1. | <u>Name, Address, and Telephone Number of Applicant(s)</u> – The name, address, and telephone number of the Professional Engineer preparing (or supervising the preparation of) the GESC Plan shall also be included, if different from the Applicant's. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 2. | <u>Project Description</u> – A brief description of the nature and purpose of the land-disturbing activity, the total area of the site, the area of disturbance involved, and project location including township, range, section and quarter section, or the latitude and longitude, of the approximate center of the project. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 3. | <u>Existing Site Conditions</u> – A description of the existing topography, vegetation, and drainage; a description of any wetlands on the site; and any other unique features of the property. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 4. | <u>Adjacent Areas</u> – A description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 5. | <u>Soils</u> – A brief description of the soils on the site including information on soil type and names, mapping unit, erodibility, permeability, hydrologic soil group, depth, texture, and soil structure (this information may be obtained from the soil report for the site, for adjacent sites if acceptable to the County, or the applicable Soil Survey prepared by the Natural Resources Conservation Service). |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 6. | <u>Areas and Volumes</u> – An estimate of the quantity (in cubic yards) of excavation and fill involved (indicating a balance onsite), and the surface area (in acres) of the proposed disturbance. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 7. | <u>Erosion and Sediment Control Measures</u> – A description of the methods presented in the GESC Criteria Manual that will be used to control erosion and sediment on the site. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 8. | <u>Timing/Phasing Schedule</u> – A schedule indicating the anticipated starting and completion time periods of the site grading and/or construction sequence, including the installation and removal of erosion and sediment control BMPs. Indicate the anticipated starting and completion time periods of individual project phases. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 9. | <u>Permanent Stabilization</u> – A brief description, including applicable specifications, of how the site will be stabilized after construction is completed. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 10. | <u>Stormwater Management Considerations</u> – Explain how stormwater runoff from and through the site will be handled during construction. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 11. | <u>Maintenance</u> – Any special maintenance requirements over and above what is identified in the standard notes and details. |
| Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | N/A <input type="checkbox"/> | 12. | <u>Opinion of Probable Cost (City Format)</u> – An opinion of probable costs for erosion and sediment control, including anticipated maintenance during the construction phase, shall be submitted with the GESC Plan. This will be reviewed by City staff and used as a basis for fiscal security. Electronic or paper copies of the spreadsheet to be used for preparing the opinion of probable costs for erosion and sediment control are available upon request. Unit costs used to develop probable erosion and sediment control costs shall be those shown in the spreadsheet. |



Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	13. <u>Calculations</u> – Any calculations made for the design of such items as sediment basins or erosion control blanket selection.
Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>	14. <u>Other Information</u> – As may be reasonably required by Lone Tree.
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	15. <u>The Following Note</u> – “This Grading, Erosion and Sediment Control Plan has been placed in the Lone Tree file for this project and appears to fulfill the applicable Douglas County Grading, Erosion and Sediment Control Criteria, as amended. I understand that additional grading, erosion and sediment control measures may be required of the Permittees, due to unforeseen erosion problems or if the submitted plan does not function as intended. The requirements of this plan shall run with the land and be the obligation of the Permittees until such time as the plan is properly completed, modified or voided.”
Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>	16. <u>Signature Page for Permittees</u> - Acknowledging the review and acceptance of responsibility, and a statement by the Professional Engineer acknowledging responsibility for the preparation of the GESC Plan (available upon request).

Raymond L Garcia
Preparer’s Signature

11-14-2022
Date

Appendix F

Submittal Form



CITY OF LONE TREE

Public Works Department

9220 Kimmer Drive
Suite 100
Lone Tree, Colorado 80124
(303) 662-8112 Email: rowpermits@cityoflonetree.com

SUBMITTAL FORM

DATE RECEIVED: _____

PROJECT OWNER

OWNER REPRESENTATIVE

Name _____
Address _____
Telephone _____
Contact _____

Name _____
Address _____
Telephone _____
Contact _____

PROJECT NAME

LEGAL DESCRIPTION

LOCATION

DRAWINGS/PLANS/REPORTS SUBMITTED:

FINAL CONSTRUCTION PLANS FOR:

- ___ Preliminary Construction Plans
___ Pavement Design
___ Plat or Development Plan Documents
___ Access Request for Public Road
___ Changes to Approved Const. Plans
___ Street Cut Request
___ Drainage Report (Phase I, II or III)
___ Signing & Striping Plan
___ Cost Estimate of Public Improvements
___ Soils Report
___ Traffic Report

- ___ Plat or Development Plan
___ Metro District
___ Other Special Purpose District
___ County Special Improvement District
___ Utility Company
___ Other (explain)

Drawings Submitted:

THIS APPLICATION IS (CHECK ONE): ___ AN INITIAL SUBMITTAL ___ A RESUBMITTAL

IF RESUBMITTAL, WHAT WAS DISPOSITION OF PREVIOUS SUBMITTAL:

___ CONDITIONAL APPROVAL ___ DENIAL ___ REVISIONS REQUESTED

SPECIFY ONE OF THE FOLLOWING FOR THIS APPLICATION:

Plat or Development Plan Area (acres) _____

Roadway Plans, Roadway Length (ft) _____

Drainage Master Plan or Storm Sewer Basin Service Area (acres) _____

ACTION REQUESTED: ___ Review & Comment ___ Information Only ___ Approval ___ Other (explain)

Submitted By _____ Date _____

ENGINEERING REVIEW & ACCEPTANCE FEE:

Fee Amount \$ _____ Date Paid _____ Verified _____