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East Greeley Neighborhood Parks - Balsam Park Improvements
95% Construction Documents Submittal
January 22, 2021

RE: Drainage and Water Quality Memorandum

Introduction

This Memorandum is provided as a component of the 95% Construction Documents Submittal for Balsam Park Improvements to address Drainage and Water Quality Development Review submittal requirements. We believe that the limited potential drainage and water quality impacts that the proposed improvements introduce to the watershed basin are minimal, and therefore respectfully request that a formal Drainage and Water Quality Report be waived for development review and approval.

Existing Conditions

Balsam Park (13.88 acres) is an existing City Park that has been developed as irrigated turf grass athletic fields. As such, the existing athletic fields (approximately 5 soccer fields in area) are graded (2% min) to promote localized field drainage with uniform sheet flow off the fields to the northeast. Currently, athletic field drainage sheet flows to Balsam Avenue. Greeley Ditch #3 prevents off-site drainage from entering the site from the east.

Proposed Improvements

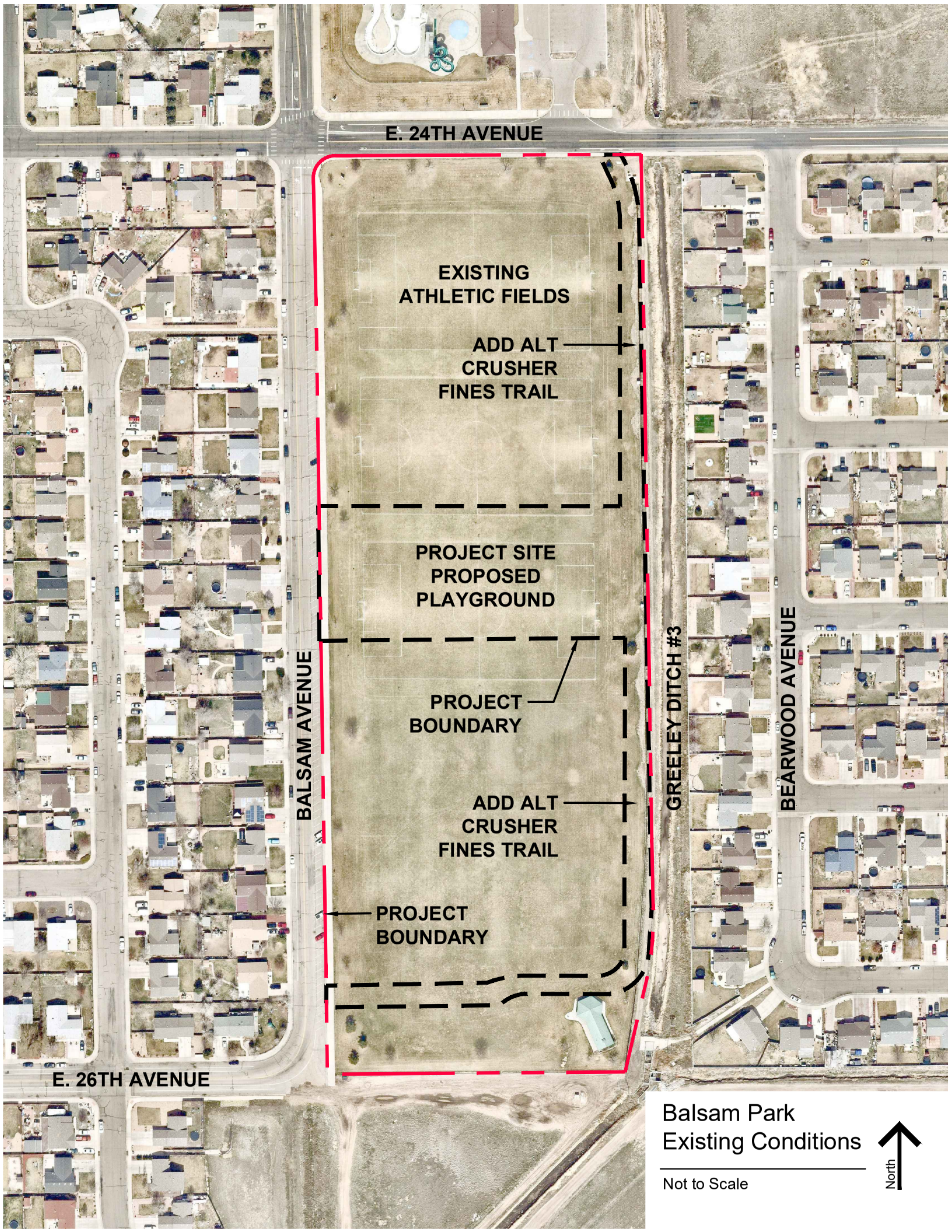
The center of the athletic fields area is proposed for redevelopment as a natural playground with crusher fines walks, a playground and four (4) picnic pavilions. A crusher fines perimeter trail is proposed on the east and south edges of the overall park site. The total project area is 3.08 Acres, including the perimeter trail. Earthwork is proposed to create two (2) vegetated earth berms with native plantings, turfgrass and trees. The berms are five feet (5') and four feet (4') in height, respectively. The earth berms surround the playground features, which are located within a 24" deep, sand area that will collect storm run-off from the adjacent sloped berms. A proposed Sand and Water Play feature is proposed in the center of the playground, served by a domestic water line, that drains into the sand area, under laid by gravel for infiltration. Proposed impervious area totals 13,000 sf, (0.3 Acres) minimizing the generation of additional storm water run-off. This minor increase in post development impervious area (less than 4% of the total site) is mitigated by the discontinuous nature of impervious improvements, in the middle of the 13.88 ac. turfgrass athletic complex. Site data is provided below.

Balsam Park Area:	604,613 SF (13.88 Ac.)	100% Site Area
Project Area:	134,165 SF (3.08 Ac.)	22% Site Area
Post Development Impervious Area	**23,087 SF (0.53 Ac.)**	**4% Site Area**

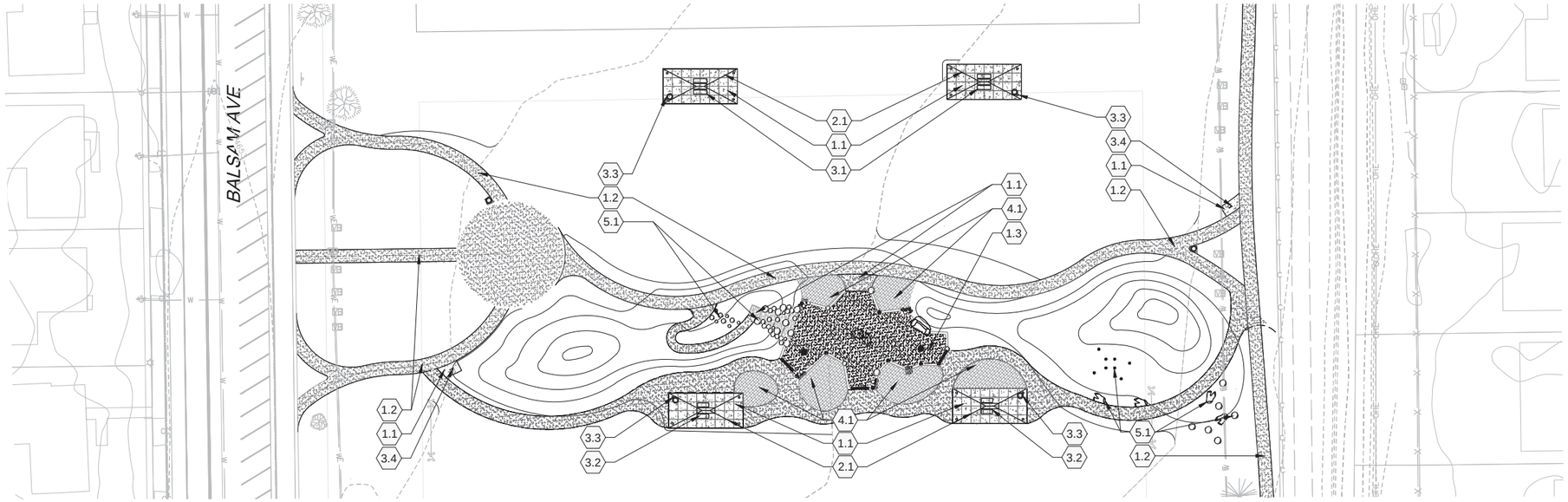
Storm Water Run-off and Water Quality Mitigation Factors

1. Proposed improvements (including the perimeter trail) are located within a gently sloping, dense turfgrass vegetated site, minimizing concentrated flows and providing vegetated filtration of run-off.
2. Post-development impervious area is 0.53 Acres, minimizing increases in storm water run-off.
3. The central Sand & Water Play area collects adjacent run-off for infiltration with 24" depth sand.
4. Proposed picnic pavilions are designed with a hip-roof configuration and no gutter/downspouts to distribute roof run-off in four-direction, with sheet flows to vegetated areas and distributing run-off to minimize flow concentration.
5. Planting beds between the south picnic pavilions are graded to accept adjacent flows from crusher fines walks (including pavilion roof run-off) to serve as localized vegetated rain gardens.

Attachments are included on the following pages to illustrate existing and proposed conditions.


E. 24TH AVENUE
EXISTING
ATHLETIC FIELDS
ADD ALT
CRUSHER
FINES TRAIL
PROJECT SITE
PROPOSED
PLAYGROUND
PROJECT
BOUNDARY
ADD ALT
CRUSHER
FINES TRAIL
PROJECT
BOUNDARY
BALSAM AVENUE
GREELEY DITCH #3
BEARWOOD AVENUE
E. 26TH AVENUE
Balsam Park
Existing Conditions
Not to Scale
North

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



LEGEND

- LIMIT OF CONSTRUCTION
- PROPOSED 1 FOOT CONTOUR
- PROPOSED 5 FOOT CONTOUR
- EXISTING 1 FOOT CONTOUR
- EXISTING 5 FOOT CONTOUR
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD ELECTRIC
- EXISTING WATER
- EXISTING TELEPHONE
- EXISTING GAS
- EXISTING FIBEROPTIC
- EXISTING CHAIN LINK FENCE
- 6" DEPTH CONCRETE PAVING
- CRUSHER FINES PAVING
- NATURE PLAY SAND SURFACING

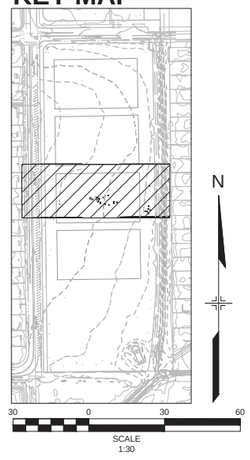
KEYNOTES

1.0	**PAVEMENTS & SURFACING**	
1.1	CIP CONCRETE PAVEMENT - (6" DEPTH. COLOR:GREY)	RE: CIVIL
1.2	CRUSHER FINES - TYPE 1 (4" DEPTH, COLOR: TAN)	L300
1.3	PLAYGROUND SURFACING - TYPE 2 (SAND)	RE: PLAY
2.0	**STRUCTURES, WALLS, STAIRS & FENCES**	
2.1	PRE-FABRICATED SHADE STRUCTURE	RE: ARCH
3.0	**SITE FURNISHINGS**	
3.1	PICNIC TABLE - TYPE 1	RE: ARCH
3.2	PICNIC TABLE - TYPE 2 (ADA)	RE: ARCH
3.3	TRASH RECEPTACLE	RE: ARCH
3.4	BIKE RACKS	RE: ARCH
4.0	**MISC. LANDSCAPE**	
4.1	MULCH TYPE 1 (COFFEE MULCH)	RE: ARCH
5.0	**NATURE PLAYGROUND COMPONENTS**	
5.1	NATURE PLAY COMPONENT	RE:PLAY

SITE FURNISHINGS MATRIX:

SITE FURNISHINGS	Manufacturer	Model	Quantity	Color	Attachment	Location
Pre-Fabricated Shade Structure	Natural Structures	"Catskill Mountain Series", 16'x34'	4	Textured Rust	Surface	Central play area. Two structures to the north & two structures to the south of the play area on the concrete pads
Picnic Table	DuMor	6' long Picnic table w backless benchs. #443-62	2	Textured Rust	Surface	2 most northern concrete pads
	DuMor	8' long Picnic table w backless benchs. #443-558-1 (ADA Accessible)	2	Textured Rust	Surface	2 most southern concrete pads
Trash Receptacle	DuMor	Receptacle 157-32	6	Textured Rust	Surface	At the outside end of each concrete pad, next to shade structure posts
Bike Rack	Madrax	U190: 2 bike capacity with 1-7/8" diameter tube	2	Silver	Surface	Located along paths on both E & W side of Central Nature Play area

KEY MAP



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DRAWN
DESIGNED
REVIEWED
PROJECT NO.
HORZ. SCALE 1" = 30'
VERT. SCALE N/A
SUBMITTAL DATE 01.22.2021

NOTES

NO.	DATE
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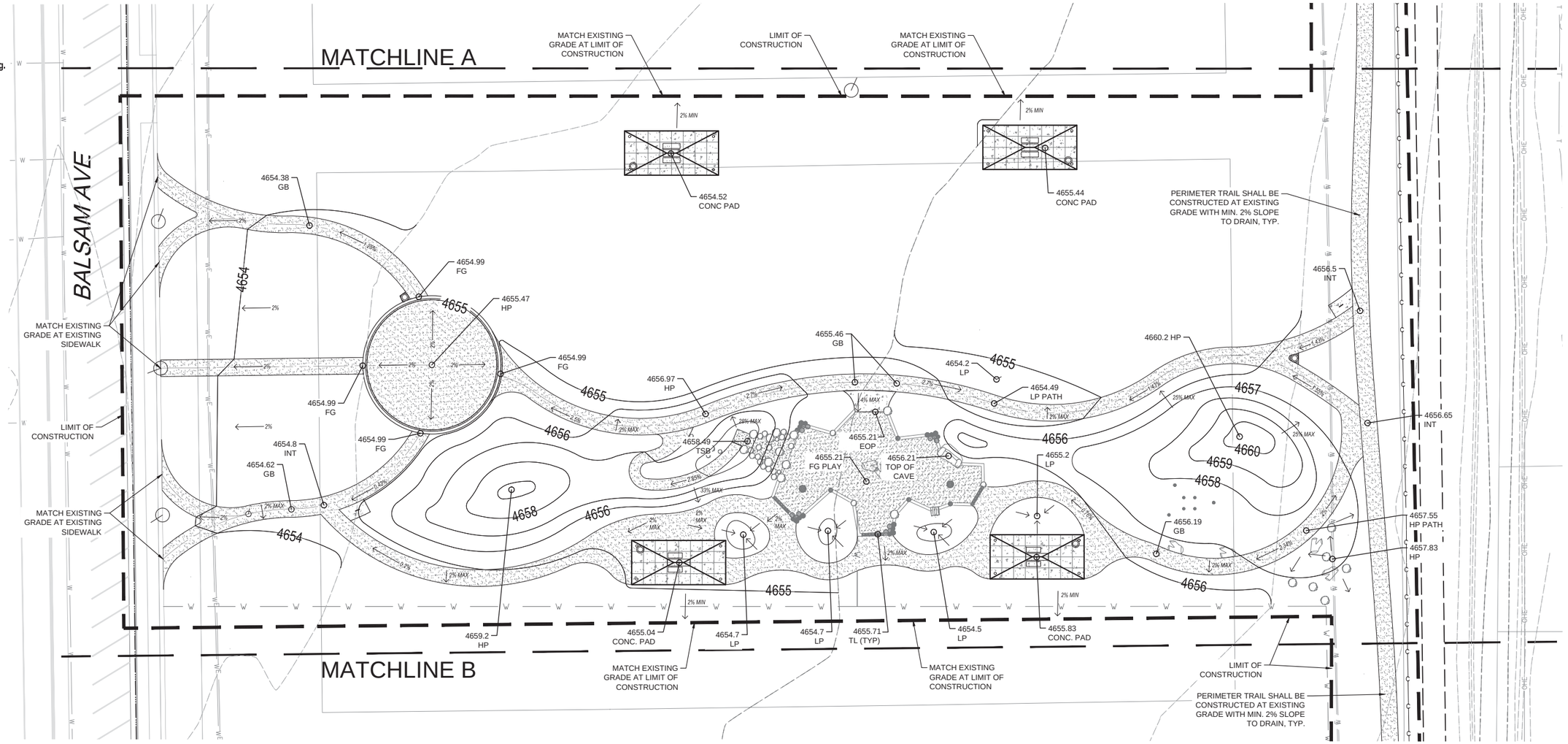
EAST MEMORIAL
NEIGHBORHOOD PARKS
SITE MATERIALS PLAN
BALSAM PARK

SHEET
SM01
SHEET X OF X

Know what's below. Call before you dig.



SPOT ELEVATION LEGEND

ABBREVIATION	DESCRIPTION
CONC PAD	FINISH GRADE OF CONCRETE SHELTER PAD
EOP	EDGE OF PAVEMENT (INCL. CRUSHER FINES)
EX CONC	EXISTING CONCRETE FINISH GRADE
FG PLAY	FINISH GRADE OF PLAY SURFACE
GB	GRADE BREAK
HP	HIGH POINT
INT	INTERSECTION
LP	LOW POINT
TL	TOP OF LOG BORDER
TOP OF CAVE	TOP OF CAVE ELEVATION
TSB	TOP OF STREAM BED

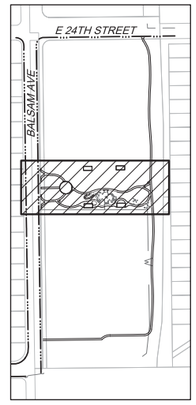
CUT / FILL CALCULATIONS

TOTAL VOLUME CUT:	352.87 CY
TOTAL VOLUME FILL:	1,492.37 CY
NET:	1,139.50 CY (FILL)

NOTE: THE ABOVE VOLUMES ARE TO FINISH GRADE AS SHOWN ON THE GRADING PLAN AND DOES NOT CONSIDER THE TOPSOIL STRIPPING OR ADDITIONAL 3' DEPTH EXCAVATION FOR THE SAND SURFACING IN THE SAND AND WATER PLAY AREA.

GRADING NOTES

1. THE SITE SHALL BE STRIPPED A MINIMUM OF 6" BELOW EXISTING GRADE. STRIPPED TOPSOIL SHALL REMAIN ON-SITE IN DESIGNATED STOCKPILE LOCATIONS, TO BE DETERMINED IN THE FIELD AT THE START OF CONSTRUCTION ACTIVITY AND INDICATED ON THE PLAN BY THE CONTRACTOR WHEN REQUIRED.
2. MAXIMUM CUT/FILL SLOPES SHALL NOT EXCEED 3:1, UNLESS OTHERWISE NOTED. ALL SLOPES MUST BE PROTECTED FROM EROSION.
3. IF DURING THE OVERLOT GRADING PROCESS, CONDITIONS ARE ENCOUNTERED WHICH COULD INDICATE AN UNIDENTIFIED SITUATION IS PRESENT, THE SOILS ENGINEER SHALL BE CONTACTED FOR RECOMMENDATIONS.
4. THE CONTRACTOR SHALL PROTECT ALL WORK AREAS AND FACILITIES FROM FLOODING AT ALL TIMES. AREAS AND FACILITIES SUBJECTED TO FLOODING, REGARDLESS OF THE SOURCE OF WATER, SHALL BE PROMPTLY DEWATERED AND RESTORED.
5. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING AND CONTROLLING EROSION DURING CONSTRUCTION ACTIVITIES AT ALL TIMES DURING GRADING AND CONSTRUCTION.
6. SPOT ELEVATIONS SHALL TAKE PRECEDENCE OVER CONTOURS AND SLOPES SHOWN. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF THE SPOT ELEVATIONS THAT DO NOT APPEAR TO BE CONSISTENT WITH THE CONTOURS AND SLOPES.
7. BENCHMARK VERIFICATION: CONTRACTOR SHALL USE BENCHMARKS AND DATUMS SHOWN HEREON TO SET PROJECT BENCHMARK(S), AND SHALL PROVIDE SURVEY NOTES OF SUCH TO PROJECT ENGINEER PRIOR TO COMMENCING CONSTRUCTION.
8. SPOT ELEVATIONS REPRESENT FINISH GRADE UNLESS OTHERWISE NOTED.
9. EXISTING AND PROPOSED GRADE CONTOUR INTERVALS ARE SHOWN AT 1 FOOT INTERVALS.
10. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND CONTACT DESIGN ENGINEER WITH ANY DISCREPANCIES.
11. SAFE EXCAVATION LIMITS FOR SLOPE STABILITY IS THE RESPONSIBILITY OF THE DEMOLITION CONTRACTOR.



KEY MAP

LEGEND

- LIMIT OF CONSTRUCTION
- 4654 — PROPOSED 1 FOOT CONTOUR
- 4655 — PROPOSED 5 FOOT CONTOUR
- EXISTING 1 FOOT CONTOUR
- EXISTING 5 FOOT CONTOUR
- E — EXISTING UNDERGROUND ELECTRIC
- OHE — EXISTING OVERHEAD ELECTRIC
- W — EXISTING WATER
- T — EXISTING TELEPHONE
- GAS — EXISTING GAS
- FO — EXISTING FIBEROPTIC
- EXISTING CHAIN LINK FENCE
- 6" DEPTH CONCRETE PAVING
- CRUSHER FINES PAVING
- NATURE PLAY SAND SURFACING

20 0 20 40
SCALE 1:20

N

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DRAWN	TJR
DESIGNED	IA
REVIEWED	RCE
PROJECT NO.	19.906.005
HORZ. SCALE	1" = 20'
VERT. SCALE	NA
SUBMITTAL DATE	01/22/2021

NO	DATE
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NOTES

EAST MEMORIAL NEIGHBORHOOD PARKS

GRADING PLAN

BALSAM PARK #

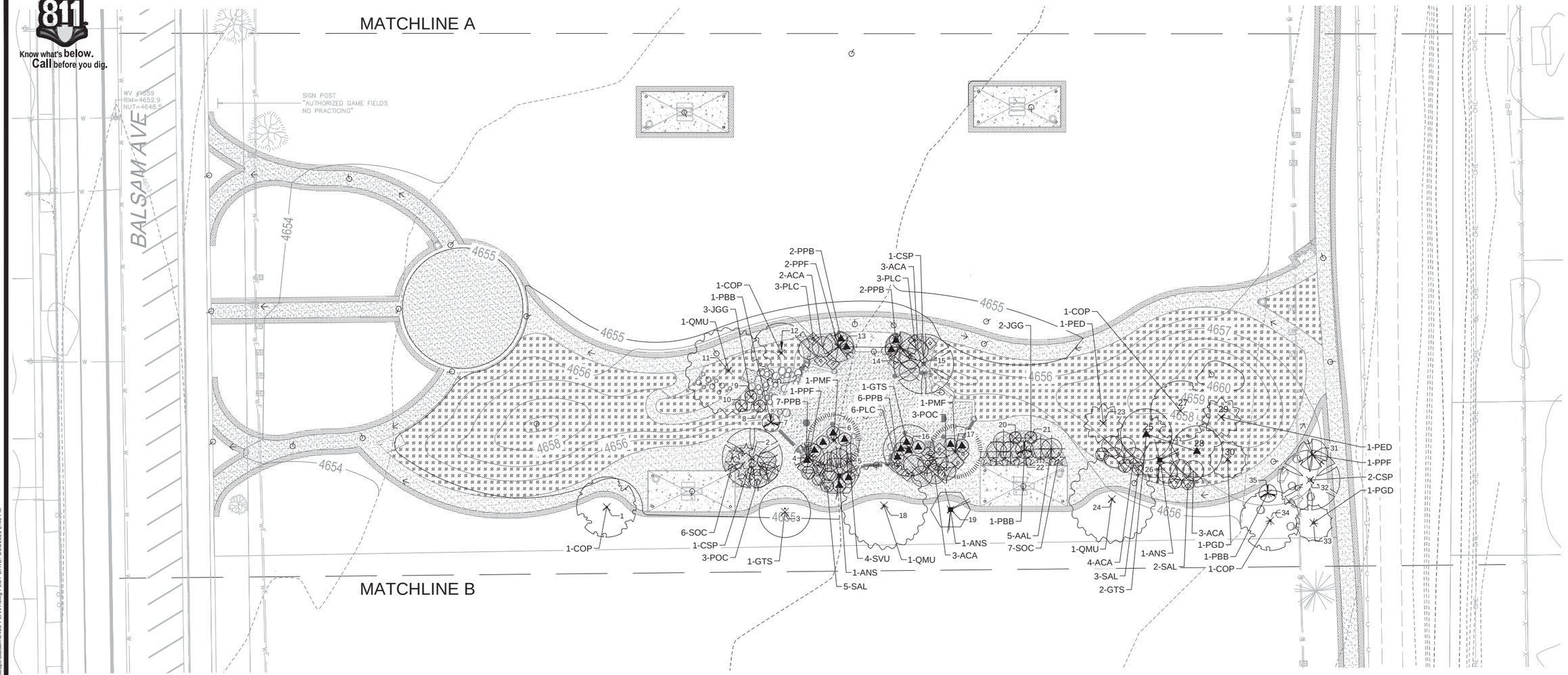
SHEET

GR01

SHEET X OF X

Know what's below. Call before you dig.

MATCHLINE A



MATCHLINE B

Point Table			
Point #	Northing	Easting	Tree
1	1389027.1215	3232675.3524	COP
2	1389046.1983	3232732.1208	CSP
3	1389025.2534	3232744.8437	GTS
4	1389046.2752	3232754.2738	PPF
5	1389039.3171	3232766.0150	ANS
6	1389053.1785	3232763.9742	PMF
7	1389060.1006	3232739.4458	PBB
8	1389066.3486	3232735.0404	JGG
9	1389070.1400	3232731.5719	JGG
10	1389066.5761	3232727.8938	JGG
11	1389080.2783	3232722.8889	QMU
12	1389087.1882	3232743.4554	COP
13	1389089.6800	3232765.8215	PPF
14	1389089.3905	3232790.0256	PPF
15	1389082.9751	3232799.0098	CSP
16	1389049.1513	3232793.2298	GTS
17	1389048.7396	3232811.3319	PMF
18	1389027.7465	3232783.5000	QMU

Point Table			
Point #	Northing	Easting	Tree
19	1389026.1236	3232809.5294	ANS
20	1389054.0392	3232834.7945	JGG
21	1389054.1451	3232840.8613	JGG
22	1389049.5536	3232838.3357	PBB
23	1389059.8035	3232869.1104	PED
24	1389030.2223	3232872.4767	QMU
25	1389055.4240	3232885.8650	GTS
26	1389045.4894	3232891.1830	ANS
27	1389064.6526	3232899.3363	COP
28	1389048.7804	3232905.6359	GTS
29	1389062.1902	3232915.1172	PED
30	1389045.6295	3232917.6356	PGD
31	1389047.5643	3232950.6018	PPF
32	1389037.6558	3232949.7275	CSP
33	1389020.9155	3232951.1152	PGD
34	1389021.8976	3232934.2315	COP
35	1389032.5091	3232933.3314	PBB

DECIDUOUS TREES

- Acer negundo 'Sensation' (ANS) Sensation Boxelder
- Catalpa speciosa (CSP) - Western Catalpa
- Celtis occidentalis 'Prairie Pride' (COP) - Prairie Pride Hackberry
- Gleditsia triacanthos inermis 'True Shade' (GTS) - True Shade Honeylocust
- Pyrus ussuriensis 'Mountain Frost' (PMF) - Mountain Frost Pear
- Quercus muehlenbergii (QMU) - Chinkapin Oak

EVERGREEN TREES

- Juniperus scopulorum 'Grey Gleam' (JGG) - Grey Gleam Juniper
- Picea x glauca 'Big Berta' (PBB) - Big Berta White Spruce
- Picea glauca 'Densata' (PGD) - Black Hills Spruce
- Picea pungens 'Fastigiata' (PPF) - Fastigiate Spruce
- Pinus edulis (PED) - Pinyon Pine

DECIDUOUS SHRUBS

- Amelanchier alnifolia (AAL) - Saskatoon Serviceberry
- Amelanchier canadensis (ACA) - Shadblow Serviceberry
- Philadelphus lewisii 'Cheyenne' (PLC) - Cheyenne Mock Orange
- Physocarpos opulifolius 'Coppertina' (POC) - Coppertina Ninebark
- Prunus pumila besseyi 'Pawnee Buttes' (PPB) -Creeping Western Sand Cherry
- Symphoricarpos albus (SAL) - White Snowberry
- Symphoricarpos occidentalis (SOC) - Western Snowberry
- Syringa vulgaris (SVU) - Common Purple Lilac

GROUNDCOVERS

- LOW GROW SEED MIX
- TURFGRASS SOD
- COFFEE MULCH

SITE KEY

LS402
LS401
LS403

N

20 0 20 40
SCALE
1:30

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EAST MEMORIAL NEIGHBORHOOD PARKS

PLANTING PLAN

BALSAM PARK

SHEET

LS401

SHEET X OF X