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WASTE CONNECTIONS
MATERIAL RECOVERY FACILITY
 4100 THROWITA WAY
 PLACERVILLE, CA 95667

SITE PLAN KEY:
 EXISTING TRANSFER STATION
 APPROX. 10,000 SQ/FT

NOTE:
 SITE IS 10.31 ACRES

PARKING SCHEDULE:
 CURRENT PARKING STALLS
 APPROX. 48 STALLS
 CURRENT ADA STALLS
 1 STALL
 PROPOSED STALLS (6' x 10')
 54 STALLS
 PROPOSED ADA STALLS
 2 STALLS

Date Revision

NEXUS PROJECT #: 15151
 CHECKED BY: [Signature]
 DRAWN BY: [Signature]
 DATE: Project Issue Date

EXISTING SITE PLAN

APPROVED
EL DORADO COUNTY PLANNING COMMISSION

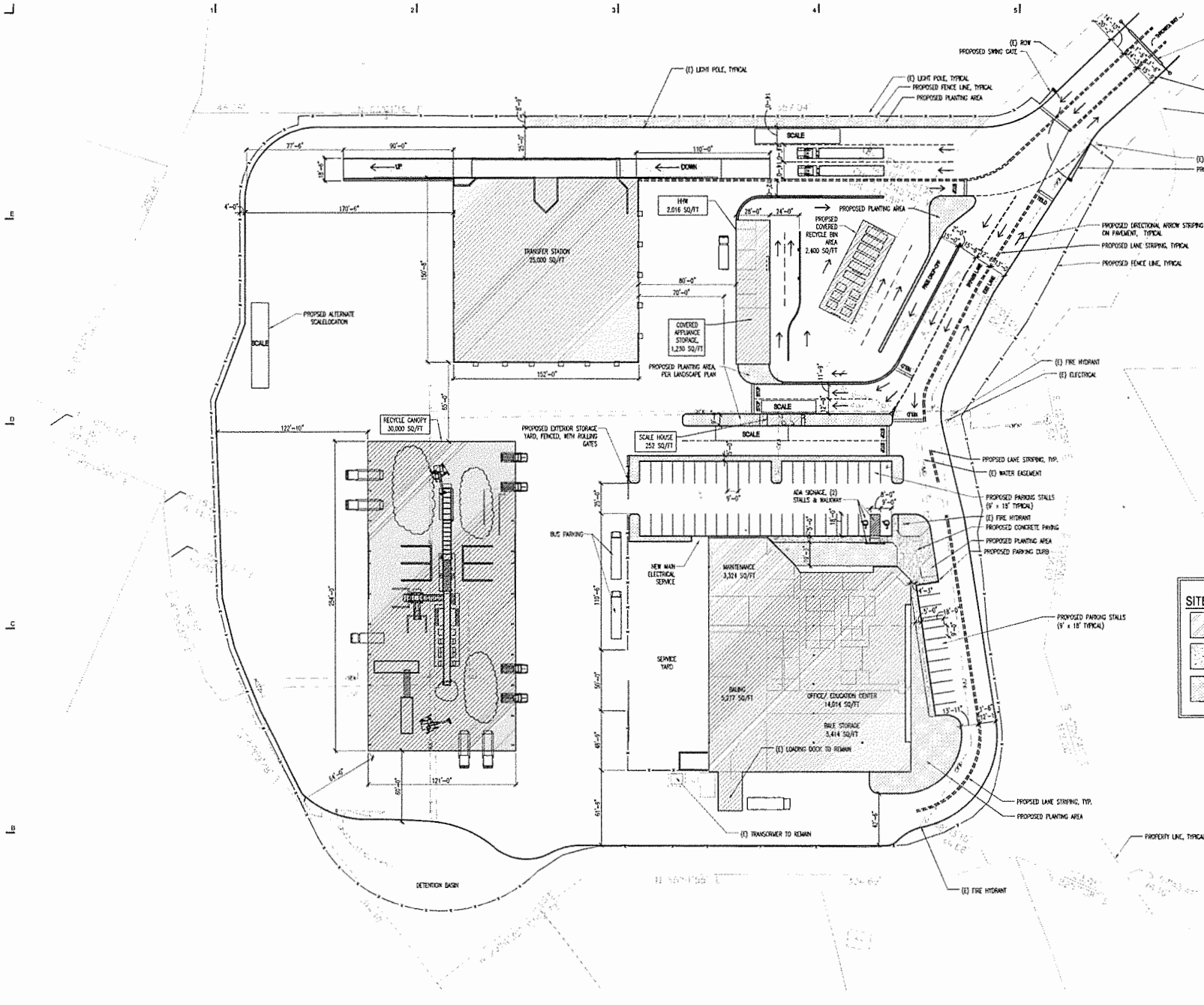
DATE November 8, 2018

BY Tiffany Schmid
 EXECUTIVE SECRETARY



Exhibit F

LS101



SITE PLAN KEY:

- PROPOSED BUILDING SQ/FT SHOWN PER PLAN
- PROPOSED CONCRETE PAVING AREA
- PROPOSED PLANTER BED/ PROPOSED DEEP IRRIGATION AREA

NOTE:
SITE IS 10.31 ACRES

PARKING SCHEDULE:

CURRENT PARKING STALLS	APPROX. 40 STALLS
CURRENT ADA STALLS:	11 STALLS
PROPOSED STALLS (5' X 18')	54 STALLS
PROPOSED ADA STALLS:	2 STALLS



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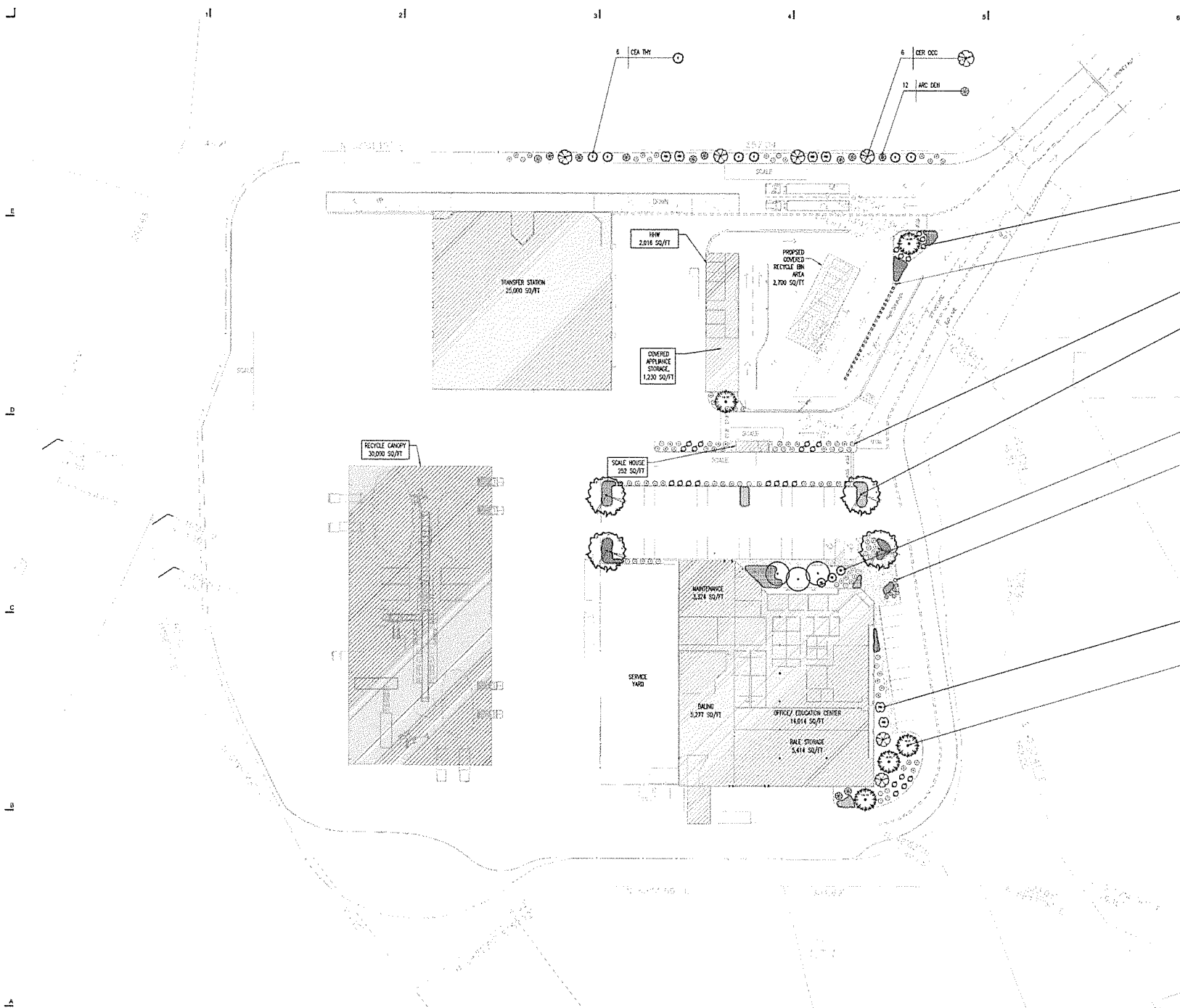
WASTE CONNECTIONS
MATERIAL RECOVERY FACILITY
4100 THROWITTA WAY
PLACERVILLE, CA 95667

Date Revision

NEXUS PROJECT #: 15151
CHECKED BY: [Signature]
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PROPOSED SITE PLAN

LS102



1 2 3 4 5 6

E

B

C

A

A

6 CER TYP

6 CER DEC
12 ARC DEC

27 RES SUN

24 PEN ALD LBF

103 MSH RG

3 RES OR

3 CAR CAL TYP

7 LW INT

6 FRE CAL DEC

5 CAL DEC

TRANSFER STATION
25,000 SQ/FT

16W
2,016 SQ/FT

COVERED APPLANCE STORAGE
1,230 SQ/FT

PROPOSED COVERED RECYCLE BIN AREA
2,700 SQ/FT

RECYCLE CANOPY
30,000 SQ/FT

SCALE HOUSE
252 SQ/FT

WAREHOUSE
3,024 SQ/FT

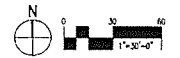
BALING
3,277 SQ/FT

OFFICE/ EDUCATION CENTER
14,014 SQ/FT

BALE STORAGE
5,414 SQ/FT

SERVICE YARD

NOTE:
SITE IS 10.31 ACRES



DATE: 01/11/11
PROJECT: 15151
SHEET: 10 OF 11



WASTE CONNECTIONS
MATERIAL RECOVERY FACILITY
4100 THROWITA WAY
PLACERVILLE, CA 95667

Date Revision

NEXUS PROJECT #: 15151
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DATE: Project Issue Date

LANDSCAPE PLAN

LP101

TREE LEGEND

ABRY.	BOTANICAL NAME	COMMON NAME	ZONE	TRUNK	MATURE SIZE HEIGHT X WIDTH	INSTALLED SIZE	QUANTITY	NATIVE	WATER WISE	DETAIL NUMBER	SPACING- FEET ON CENTER
CAI DEC	CALOCEDRUS DECURRENS	INCENSE CEDAR	2	SINGLE	75'x20'	15 GAL.	5	YES	YES	-	-
CEI DEC	CEGEDIUS OCCIDENTALIS	WESTERN REDWOOD	2	MULTI	15'x15'	15 GAL.	6	YES	YES	-	-
PII CH	PISTACHIA CHINENSIS	CHINESE PISTACHE	4	SINGLE	35'x30'	15 GAL.	4	NO	YES	-	-
QUC SUB	QUERCUS RUBER	CORK OAK	5	SINGLE	45 x 45	15 GAL.	-	NO	YES	-	-

SHRUB LEGEND

ABRY.	BOTANICAL NAME	COMMON NAME	ZONE	TRUNK	MATURE SIZE HEIGHT X WIDTH	INSTALLED SIZE	QUANTITY	NATIVE	WATER WISE	DETAIL NUMBER	SPACING- FEET ON CENTER
ARC DEN	ARCTOSTAPHYLOS DENSIFLORA 'NORWAD MORNBY'	'NORWAD MORNBY' MANZANITA	7	MULTI	5'x5'	5 GAL.	12	YES	YES	-	-
CAI CAL TFL	CARPENTERIA CALIFORNIA 'TELLAURET'	'TELLAURET' BUSH ANEMONE	5	MULTI	4'x4'	5 GAL.	3	YES	YES	-	-
CEA DRY	CELANITUS GIGAS HORZONTALIS 'HAWKEE POINT'	'HAWKEE POINT' CALIFORNIA LEUC	7	-	2' x 8'	5 GAL.	6	YES	YES	-	-
CEI SUN	CESTUS 'SUNSET'	'SUNSET' ROCKROSE	6	-	2'x6'	1 GAL.	27	NO	YES	-	-
FRE CAL DEC	FRECHOTODENDRON CALIFORNICUM 'TEJASMEANS'	'DWARF FLANNEL BUSH'	4	MULTI	5'x5'	5 GAL.	6	YES	YES	-	-

PERENNIAL LEGEND

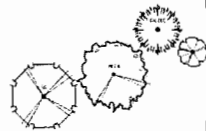
ABRY.	BOTANICAL NAME	COMMON NAME	ZONE	TRUNK	MATURE SIZE HEIGHT X WIDTH	INSTALLED SIZE	QUANTITY	NATIVE	WATER WISE	DETAIL NUMBER	SPACING- FEET ON CENTER
LDI INT	LAVANULA X INTERMEDIA 'GROSSI'	'GROSSI' LAVENDER	4	-	2-1/2'x 2-1/2'	1 GAL.	7	NO	YES	-	-

GROUND COVER LEGEND

ABRY.	BOTANICAL NAME	COMMON NAME	ZONE	TRUNK	MATURE SIZE HEIGHT X WIDTH	INSTALLED SIZE	QUANTITY	NATIVE	WATER WISE	DETAIL NUMBER	SPACING- FEET ON CENTER
ARC UNA	ARCTOSTAPHYLOS UNA-URSA	GROUNDCOVER MANZANITA	1	-	1'x1'	1 GAL.	36	YES	YES	-	10'-0" O.C.

ORNAMENTAL GRASS LEGEND

ABRY.	BOTANICAL NAME	COMMON NAME	ZONE	TRUNK	MATURE SIZE HEIGHT X WIDTH	INSTALLED SIZE	QUANTITY	NATIVE	WATER WISE	DETAIL NUMBER	SPACING- FEET ON CENTER
MUN BIG	MUNLENERGIA BIGENS	DEER GRASS	4	-	3' x 3'	1 GAL.	103	YES	YES	-	-
PEN ALB LF	PENICLETUM ALBERTI-ROEDES	LITTLE BUNNY GRASS	5	-	18" x 18"	1 GAL.	24	NO	-	-	-



PLANTING PLAN GENERAL NOTES:

1. CONTRACTOR SHALL COORDINATE PLANT PLACEMENT WITH IRRIGATION SYSTEM.
2. IRRIGATION SYSTEM SHALL INCLUDE DRIP IRRIGATION AND BE LOCATED BY EACH PLANTER OR AREA THESE PLANTINGS ARE SHOWN ON THE PLANTING PLAN.
3. LOW-WATER USE AND NATIVE PLANTS HAVE BEEN CHOSEN FOR THE PROPOSED PLANTING PLAN.
4. REFER TO SHEET LP601-PLANTING LEGEND FOR MORE INFORMATION ON PROPOSED PLANTS.
5. LOCATION, GENERAL TYPE AND SIZE OF EXISTING TREES 2" DBH IS NOT KNOWN AT THIS TIME FOR THOSE TREES BEING AFFECTED BY PROPOSED IMPROVEMENTS.



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WASTE CONNECTIONS
MATERIAL RECOVERY FACILITY
 4100 THROWITTA WAY
 PLACERVILLE, CA 95667

Date Revision

NEXUS PROJECT #: 15151
CHECKED BY: —
DRAWN BY: —
DATE: Project Issue Date

PLANTING LEGEND & NOTES

LP601

Exhibit G

PRELIMINARY DRAINAGE REPORT
WASTE CONNECTIONS
EL DORADO
MATERIALS RECOVERY FACILITY
SITE MASTER PLAN

October 18, 2017

cta  Engineering & Surveying
Civil Engineering ■ Land Surveying ■ Land Planning

APPROVED
EL DORADO COUNTY
PLANNING COMMISSION
DATE *November 8, 2018*
BY *Tiffany Schmid*
EXECUTIVE SECRETARY

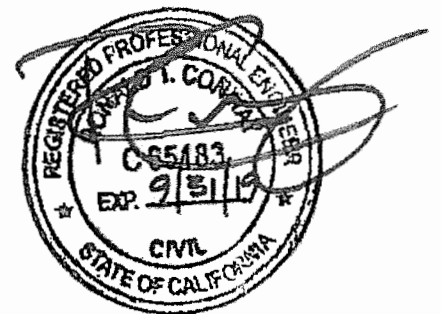


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A-1	PRE-DEVELOPMENT DRAINAGE EXHIBIT
A-2	CHANGE IN IMPERVIOUS AREA EXHIBIT
A-3	POST-DEVELOPMENT DRAINAGE EXHIBIT

**PRELIMINARY DRAINAGE REPORT
for
WASTE CONNECTIONS MRF REDESIGN**

INTRODUCTION

The Waste Connections (WC) Materials Recovery Facility (MRF) has updated its site master plan to enhance the operational conditions and provide improved services. The new site plan includes 2 new buildings and demolition of a portion of the existing building. The redesigned site will provide a more efficient traffic circulation pattern which will reduce the time customers spend on-site and operate more efficiently by minimizing the amount of materials that need to be double handled.

The existing site is 10.17 acres, 5.99 acres of the site is impervious, with the remaining 4.18 acres as pervious. The proposed site will increase the impervious area by 1.85 acres, resulting in 7.84 acres of impervious area and 2.33 acres of pervious area.

EXISTING CONDITIONS

The existing site has 3 drainage outfalls. Above each outfall is a small surface basin. Outfall A is connected to a 12" drain pipe that flows north in Throwita Way and eventually flows into Weber Creek. Outfalls B & C are located on the northwest and southwest side respectively. Both outfalls B & C flow west into an un-named tributary, the tributary then flows north to Weber Creek. See "Pre-Development Drainage Exhibit"

POST-DEVELOPMENT CONDITONS

The site was previously used as a lime production plant, with sludge settling ponds situated throughout the site. Part of the facility improvements include a soil remediation phase. As part of the remediation, the site will be required to be paved, or made impervious to prevent surface water from migrating into the ground and ultimately into the ground water. The proposed site master plan will increase the impervious area by 1.85 acres and will utilize the 3 existing drain outfall locations. See "Change in Impervious Area Exhibit" The proposed improvements will be designed to meet the requirements of both El Dorado County and the State of California's MS4 permit.

El Dorado County's drainage manual dictates that the post development flow does not adversely impact the downstream properties, typically by matching post development flow rate to the pre development flow rate.

The State MS4 permit requires projects to implement Low Impact Development (LID) measures to reduce runoff, treat storm water and provide hydro-modification measures where practicable. Typical LID site design measures might include:

- Rooftop and impervious area disconnection
- Porous pavement
- Cisterns or rain barrels
- Vegetated swales

- Bio-retention swales
- Green roofs

The pH of the lime laden soil prevents the use of LID hydro-modification measures that encourage infiltration of storm water into the site soils. Therefore, site water quality treatment design will be limited to active control measures such as a Contech CDS "vault" system instead of the passive LID measures.

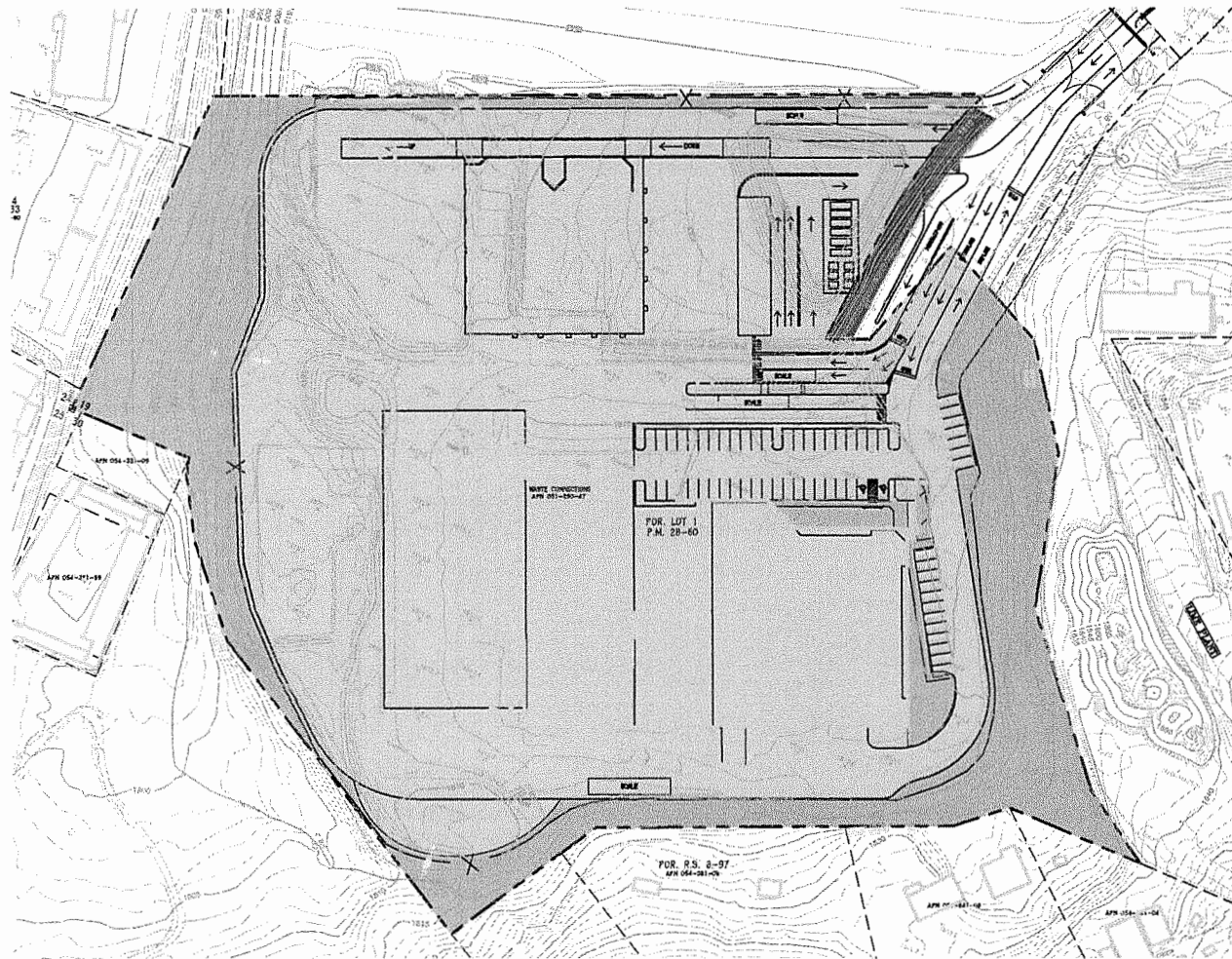
It is anticipated that the post-development drainage system will allow storm water to surface flow to drain inlets and then be conveyed through underground pipes into a "vault" system that will treat the storm water and discharge it at pre-development flow rates into the 3 existing outfall locations as identified on the pre-development drainage exhibit. See "Post-Development Drainage Exhibit".





APPENDIX

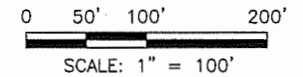
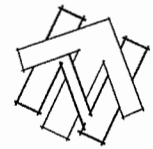
- A-1 PRE-DEVELOPMENT DRAINAGE EXHIBIT**
- A-2 CHANGE IN IMPERVIOUS AREA EXHIBIT**
- A-3 POST DEVELOPMENT DRAINAGE EXHIBIT**

WASTE CONNECTIONS - EL DORADO MRF
CHANGE IN PERVIOUS / IMPERVIOUS AREAS EXHIBIT
 EL DORADO COUNTY, CALIFORNIA

OCTOBER 18, 2017



PROPOSED IMPERVIOUS AREA		1.85 AC
(E) IMPERVIOUS AREA (TO REMAIN)		5.99 AC
(E) PERVIOUS AREA (TO REMAIN)		2.33 AC
PROPOSED IMPERVIOUS AREA(OFFSITE)		0.11 AC



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WASTE CONNECTIONS - MATERIALS RECOVERY FACILITY

PROPOSED DRAINAGE SHED MAP

EL DORADO COUNTY, CALIFORNIA

SCALE: 1"=40'

OCTOBER, 2017



0 20' 40' 80'

SCALE: 1" = 40'

L.S.
11-02
21-16

MICHEL & ROSAN MURRAY
APN 051-250-48
PARCEL A
P.M. 46-95

OUTFALL A

OUTFALL B

OUTFALL C

LEGEND

- PROPERTY LINE
- SHED BOUNDARY LINE
- SHED I.D. & AREA (IN ACRES)
- PROPOSED STORM DRAIN & STRUCTURES
- EXISTING STORM DRAIN

SHED AREAS:

- (A1) AREA=2.63 AC
- (B1) AREA=2.94 AC
- (C1) AREA=2.46 AC

PARCEL 5
P.M. 26-33
APN 054-221-51

APN 054-231-05

APN 054-221-32

APN 054-231-33

WASTE CONNECTIONS
APN 051-250-47

POR. LOT 1
P.M. 28-60

POR. R.S. 9-97
APN 054-231-09

APN 054-241-02

APN 054-241-04

cta Engineering & Surveying

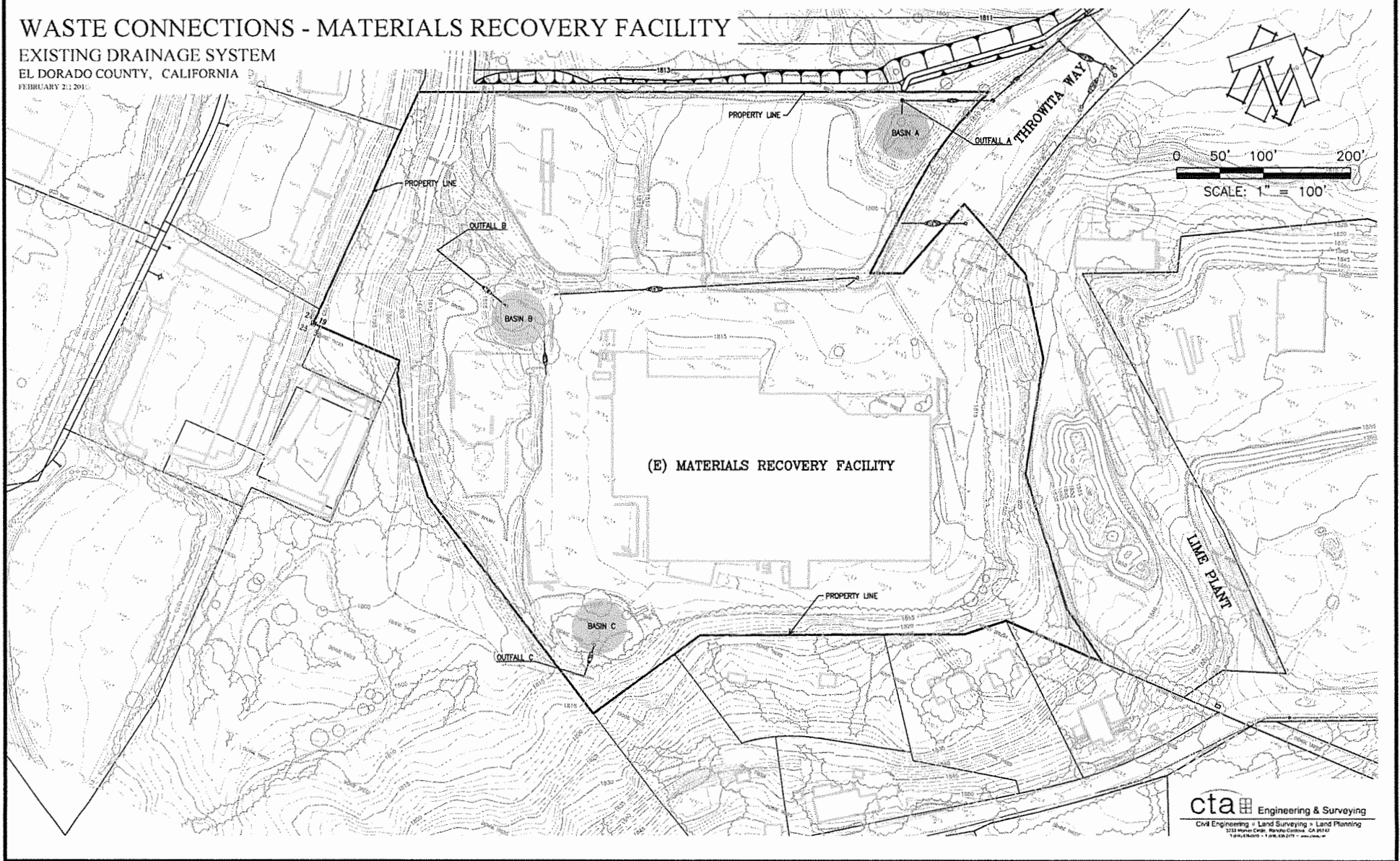
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TEL: 916-879-1119 • FAX: 916-879-1178 • www.cta.com

WASTE CONNECTIONS - MATERIALS RECOVERY FACILITY

EXISTING DRAINAGE SYSTEM

EL DORADO COUNTY, CALIFORNIA

FEBRUARY 21, 2011



cta Engineering & Surveying
Civil Engineering • Land Surveying • Land Planning
213 West Criss, Manteca, CA 95231
Tel: (209) 938-1219 • Fax: (209) 938-1220

WASTE CONNECTIONS - MATERIALS RECOVERY FACILITY

PRELIMINARY GRADING AND DRAINAGE PLAN

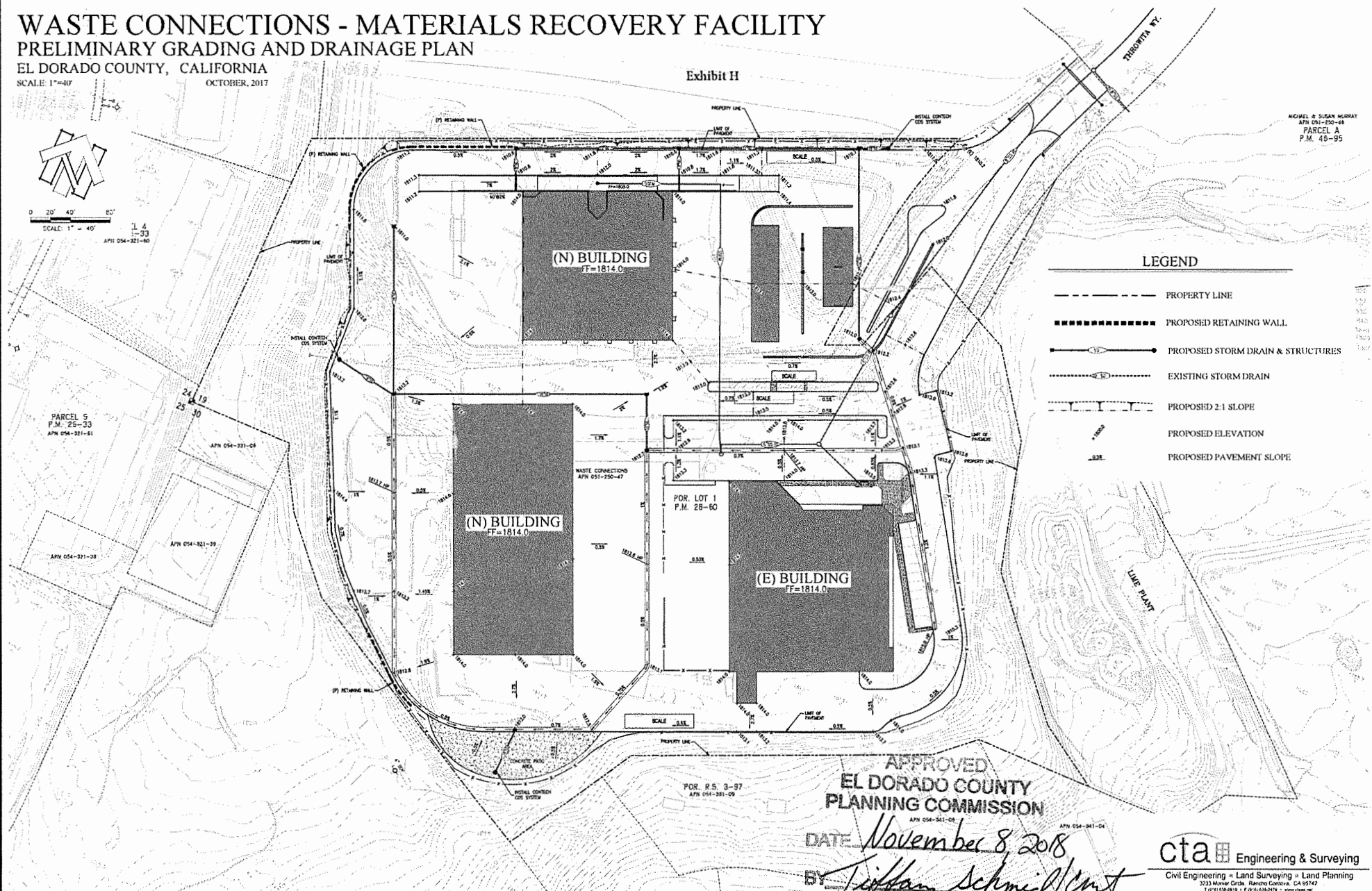
EL DORADO COUNTY, CALIFORNIA
SCALE 1"=40' OCTOBER, 2017

Exhibit II

MICHEL & SUSAN MURRAY
APN 051-250-48
PARCEL A
P.M. 45-95



0 20' 40' 80'
SCALE 1" = 40'
1 4
-33
APN 054-221-60



LEGEND

- PROPERTY LINE
- PROPOSED RETAINING WALL
- PROPOSED STORM DRAIN & STRUCTURES
- EXISTING STORM DRAIN
- PROPOSED 2:1 SLOPE
- PROPOSED ELEVATION
- PROPOSED PAVEMENT SLOPE

APPROVED
EL DORADO COUNTY
PLANNING COMMISSION
APN 054-251-04

DATE *November 8, 2018*

BY *Tiffany Schmid/Cmt*
EXECUTIVE SECRETARY

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2025 Monroe Circle, Rancho Cordova, CA 95747
TEL: 916-841-1111 FAX: 916-841-1112 WWW.CTA-ES.COM

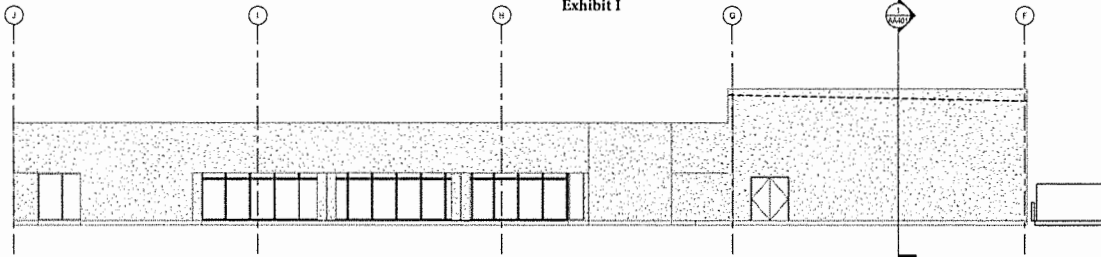


ARCH NEXUS

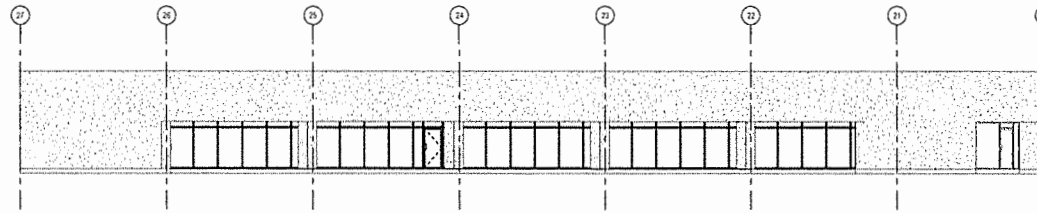
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Client/contractor to ensure the quantity of the material used to match the material shown and to ensure proper use. The responsibility for proper use of the material is on the client for a one-time use when schedule quantities are used. By the Architect
1/23/2018 11:04 AM

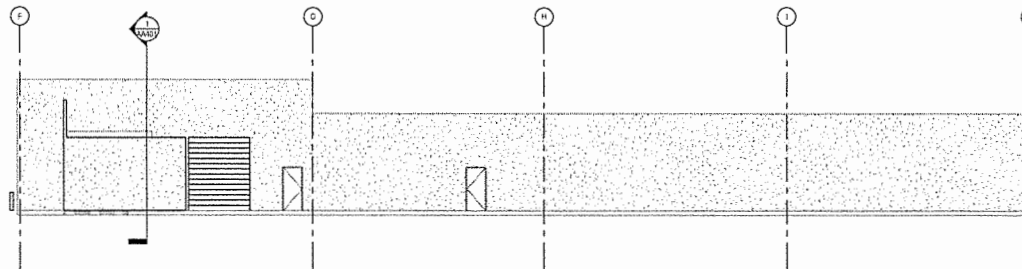
Exhibit I



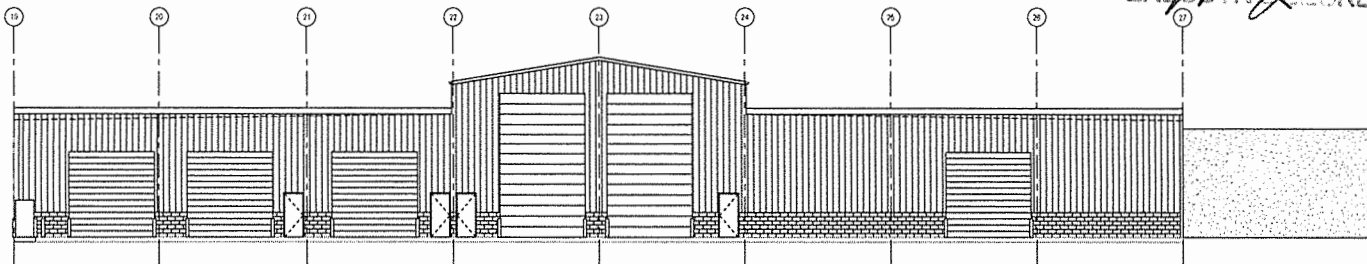
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AA701 1/8" = 1'-0"



2 ADMIN BUILDING EAST ELEVATION
AA701 1/8" = 1'-0"



3 ADMIN BUILDING SOUTH ELEVATION
AA701 1/8" = 1'-0"



4 ADMIN BUILDING WEST ELEVATION
AA701 1/8" = 1'-0"

WASTE CONNECTIONS
EL DORADO MRF RENOVATION
4100 THROVITA WAY
PLACERVILLE CALIFORNIA

APPROVED
EL DORADO COUNTY
PLANNING COMMISSION

DATE *November 8, 2018*

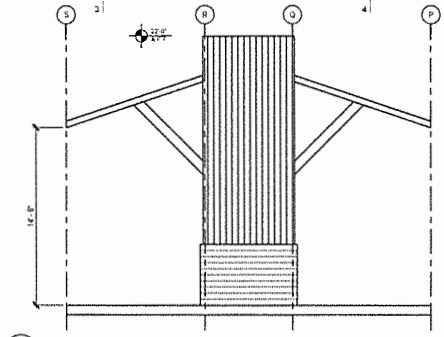
BY *Tiffany Schmid*
EXECUTIVE SECRETARY

SCHEMATIC
DESIGN

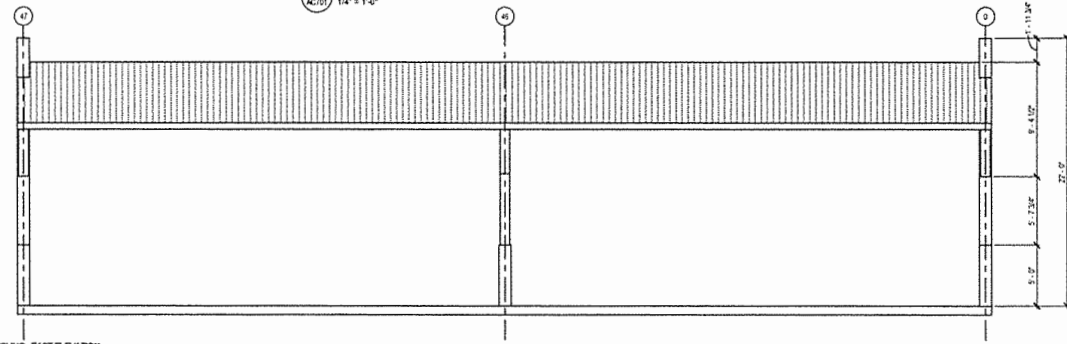
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CHECKED BY: KEJ
DRAWN BY: Auditor
DATE: 01.27.2018

BUILDING
ELEVATIONS
- ADMIN

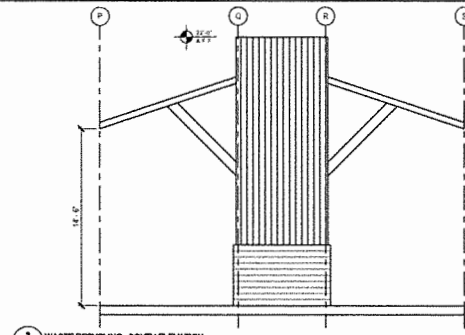
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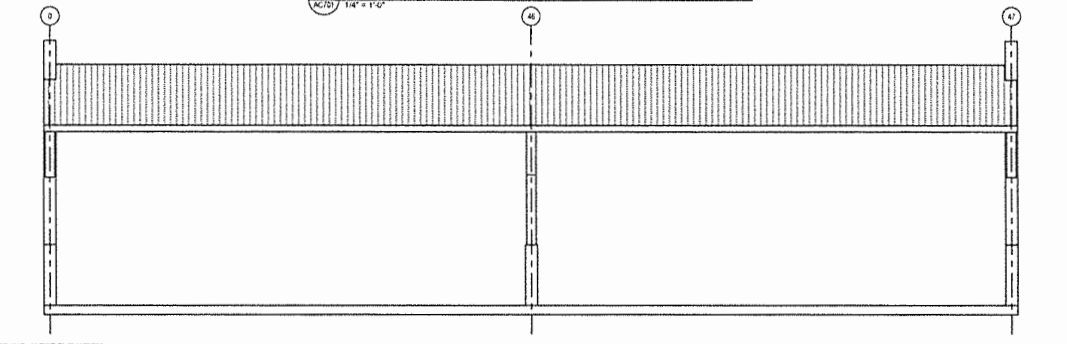
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1/4" = 1'-0"



2 WASTE RECYCLING - EAST ELEVATION
1/4" = 1'-0"



3 WASTE RECYCLING - SOUTH ELEVATION
1/4" = 1'-0"



4 WASTE RECYCLING - WEST ELEVATION
1/4" = 1'-0"



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WASTE CONNECTIONS
WASTE RECYCLING
EL DORADO MRF RENOVATION
4100 THROWITA WAY
PLACERVILLE CALIFORNIA

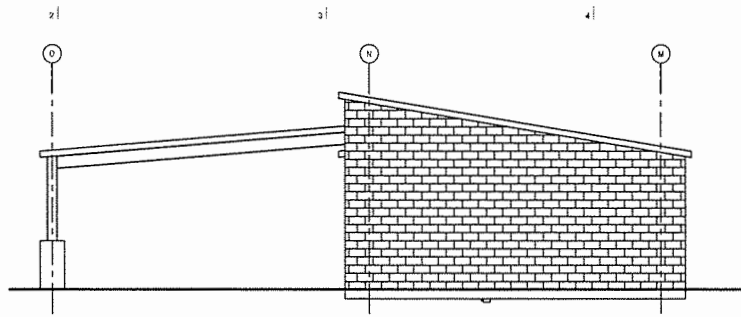
#	Date	Revision

SCHEMATIC
DESIGN

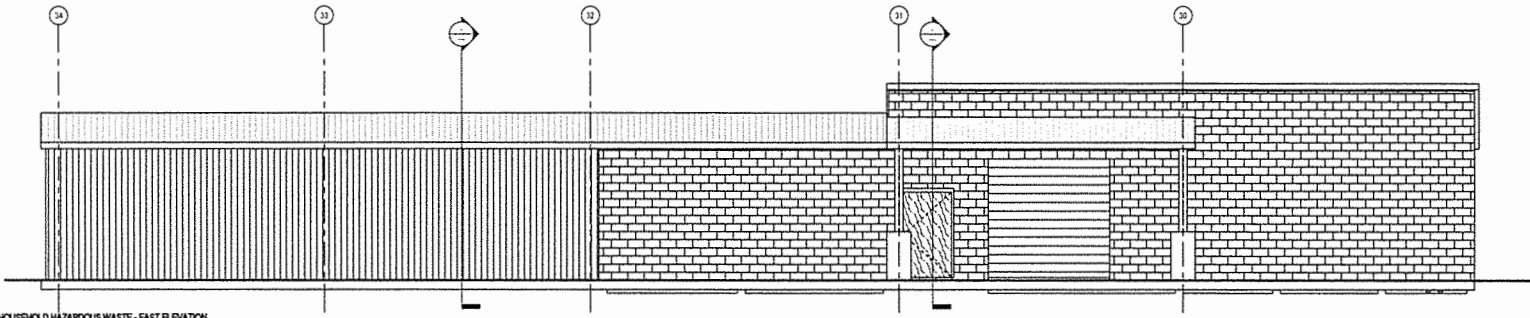
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CHECKED BY: KEJ
DRAWN BY: AUCOR
DATE: 01.27.2018

WASTE
RECYCLING -
BUILDING
ELEVATIONS

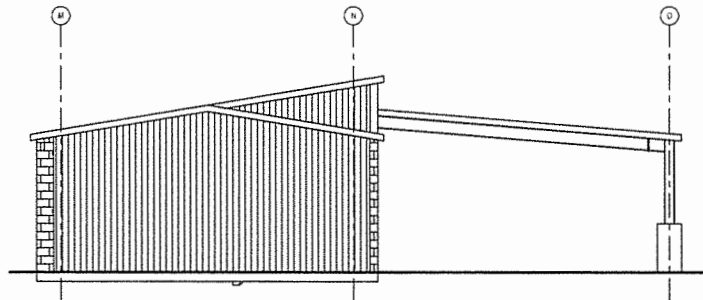
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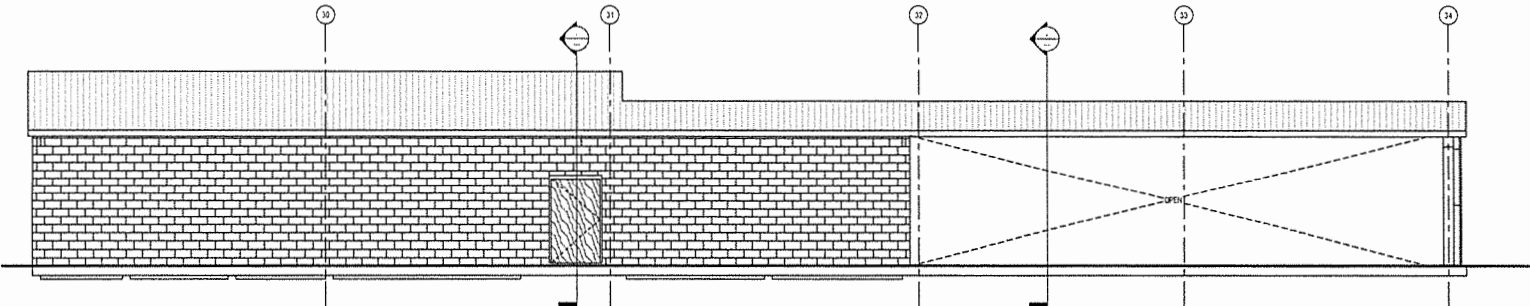
1 HOUSEHOLD HAZARDOUS WASTE - NORTH ELEVATION
1/4" = 1'-0"



2 HOUSEHOLD HAZARDOUS WASTE - EAST ELEVATION
1/4" = 1'-0"



3 HOUSEHOLD HAZARDOUS WASTE - SOUTH ELEVATION
1/4" = 1'-0"



4 HOUSEHOLD HAZARDOUS WASTE - WEST ELEVATION
1/4" = 1'-0"



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Client: El Dorado MRF Renovation
Project: El Dorado MRF Renovation
Date: 01/27/2016
Scale: 1/4" = 1'-0"
Sheet: ELEVATIONS-
HOUSEHOLD HAZARDOUS WASTE
AH701
Architect: NEXUS, Inc. 2016

EL DORADO MRF RENOVATION
 WASTE CONNECTIONS
 4100 THROWITA WAY
 PLACERVILLE CALIFORNIA

Date Revision

SCHEMATIC DESIGN

NEXUS PROJECT # 15154
CHECKED BY XEJ
DRAWN BY Auditor
DATE 01/27/2016

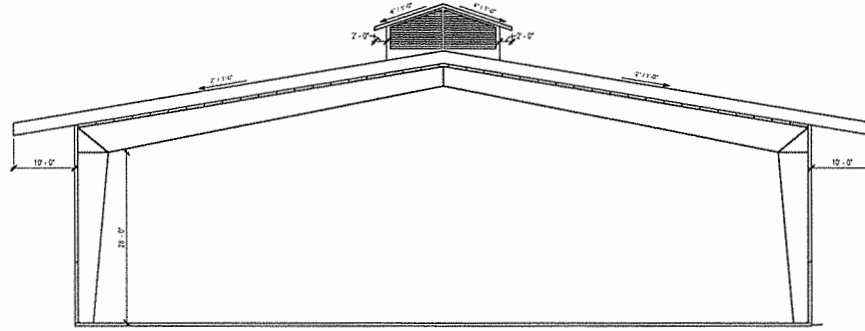
**BUILDING ELEVATIONS-
HOUSEHOLD HAZARDOUS WASTE
AH701**



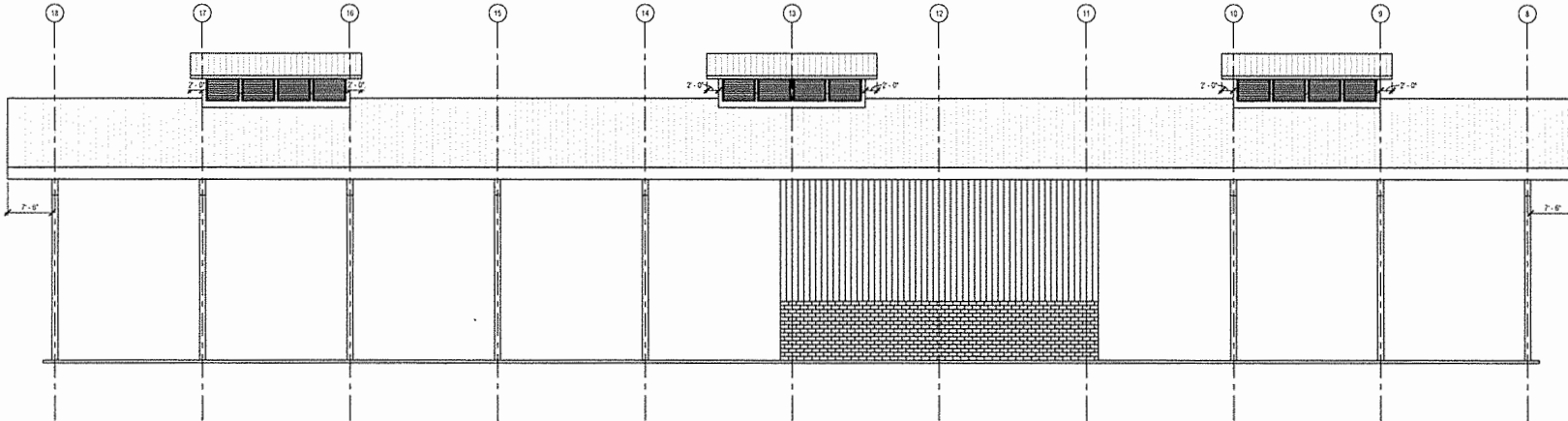
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1 RECYCLING CENTER - NORTH ELEVATION
1/8" = 1'-0"



2 RECYCLING CENTER - EAST ELEVATION
1/8" = 1'-0"

WASTE CONNECTIONS
EL DORADO MRF RENOVATION
4100 THROWITA WAY
PLACERVILLE CALIFORNIA

Date Revision

SCHEMATIC DESIGN

NEXUS PROJECT #: 15121
CHECKED BY: MEJ
DRAWN BY: AUC008
DATE: 01.27.2015

RECYCLING CENTER - BUILDING ELEVATION

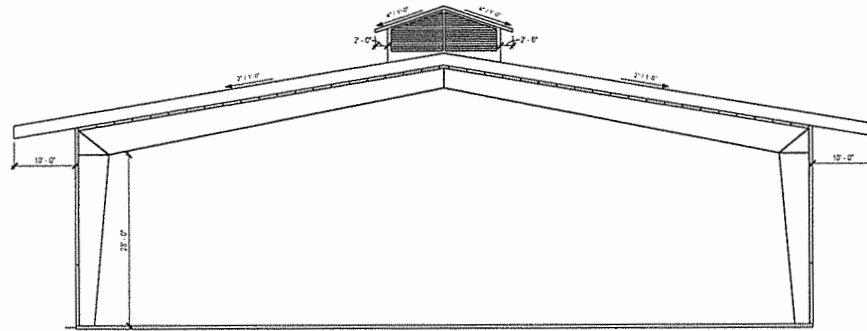
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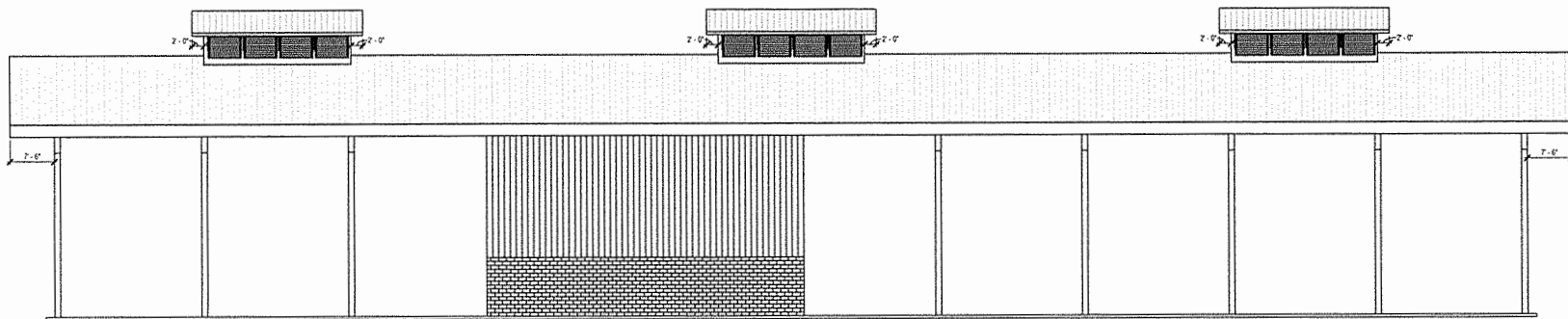
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1 RECYCLING CENTER - SOUTH ELEVATION
AR702 1/8" = 1'-0"



2 RECYCLING CENTER - WEST ELEVATION
AR702 1/8" = 1'-0"

WASTE CONNECTIONS
EL DORADO MRF RENOVATION
4100 THROWITTA WAY
PLACERVILLE CALIFORNIA

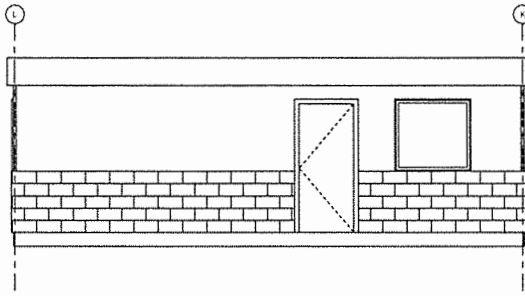
Date Revision

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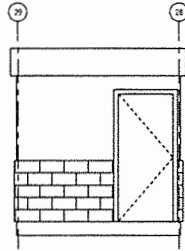
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DRAWN BY: Author
DATE: 01.27.2019

**BUILDING
ELEVATIONS
- RECYCLING
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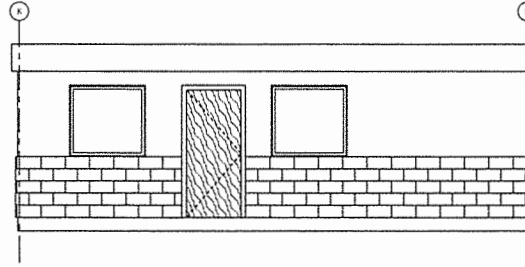
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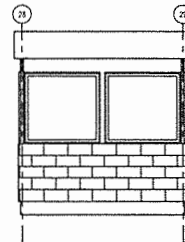
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3/8" = 1'-0"



2 SCALEHOUSE - EAST ELEVATION
3/8" = 1'-0"



3 SCALEHOUSE - SOUTH ELEVATION
3/8" = 1'-0"



4 SCALEHOUSE - WEST ELEVATION
3/8" = 1'-0"



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WASTE CONNECTIONS
EL DORADO MRF RENOVATION
4100 THROCKMORTON WAY
PLACERVILLE CALIFORNIA

Date Revision

SCHEMATIC
DESIGN

NEXUS PROJECT # 15154
CHECKED BY: PEF
DESIGNED BY: PEF
DATE: 01.27.2010

SCALE
HOUSE -
BUILDING
ELEVATION

AS701



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WASTE CONNECTIONS
EL DORADO MRF RENOVATION
4100 THROMPTA WAY
PLACERVILLE CALIFORNIA

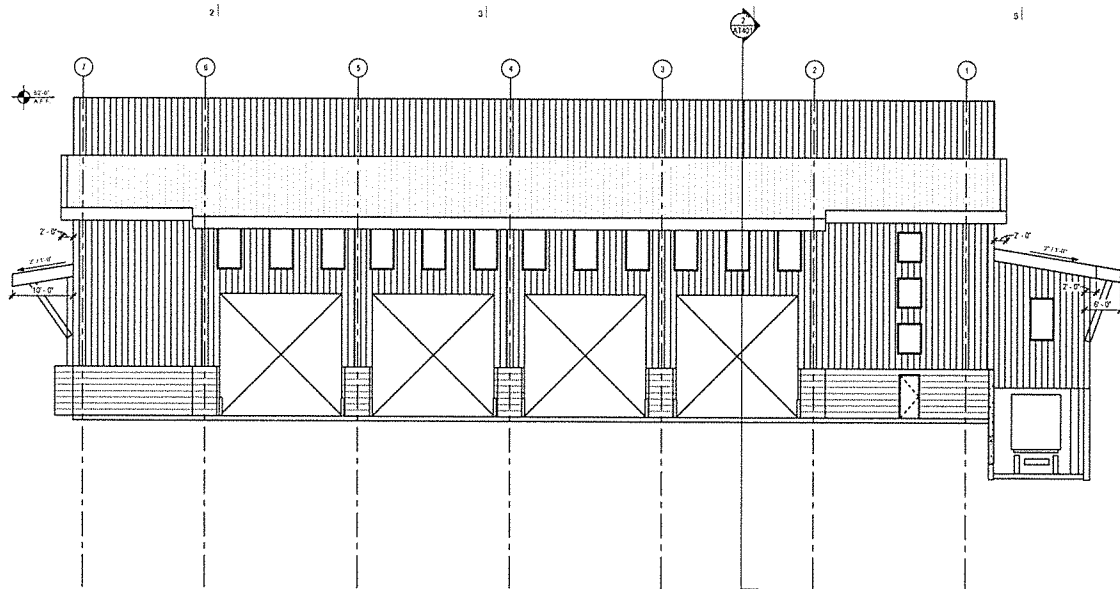
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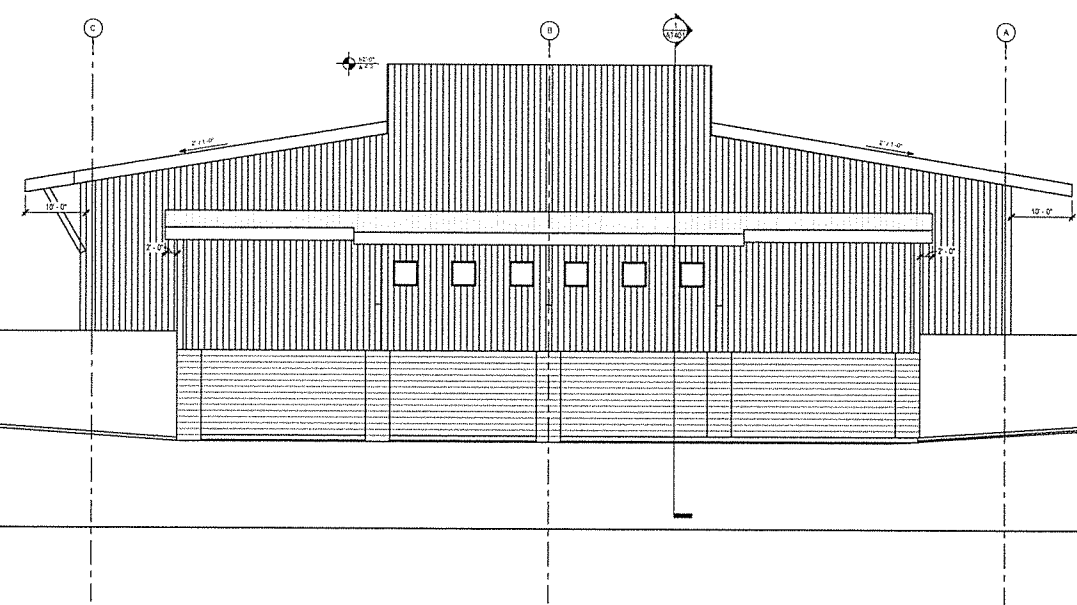
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CHECKED BY: KEJ
DRAWN BY: AUB/AR
DATE: 01.27.2016

TRANSFER
STATION -
BUILDING
ELEVATIONS

AT701



1 TRANSFER STATION - EAST ELEVATION
1/8" = 1'-0"



2 TRANSFER STATION - NORTH ELEVATION
1/8" = 1'-0"



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WASTE CONNECTIONS
EL DORADO MRF RENOVATION
4100 THROWWITA WAY
PLACERVILLE CALIFORNIA

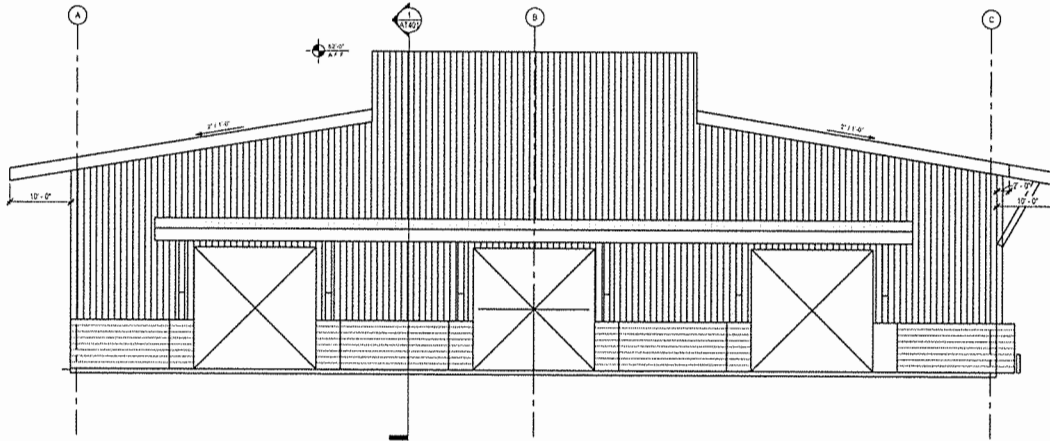
Date Revision

SCHEMATIC
DESIGN

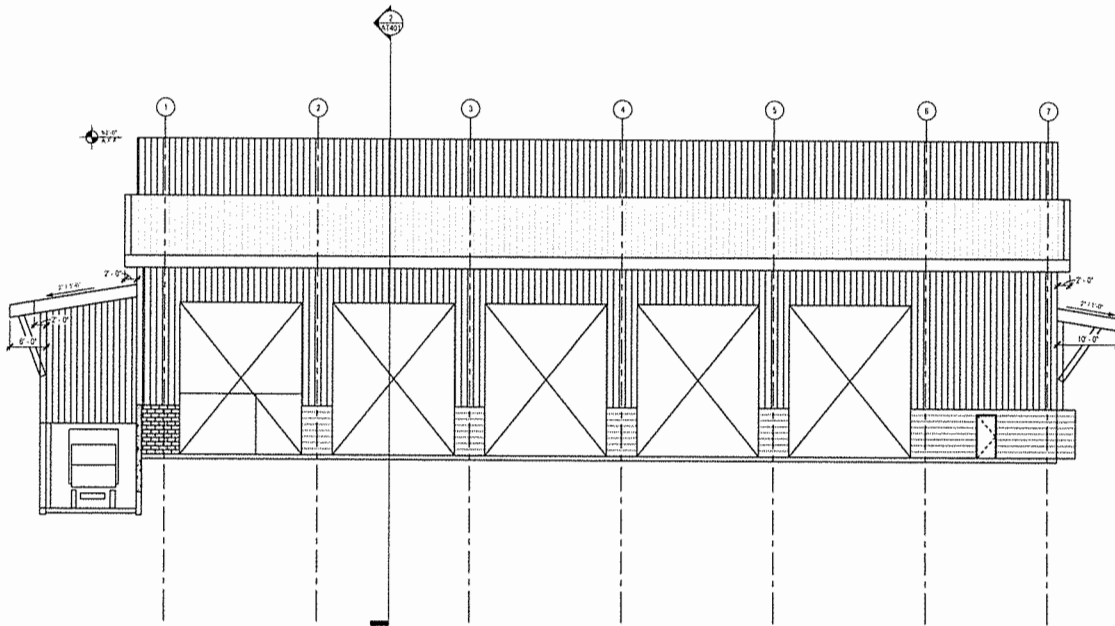
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CHECKED BY: SEE J
DRAWN BY: JAW/DP
DATE: 01.27.2016

TRANSFER
STATION -
BUILDING
ELEVATIONS

AT702



1 TRANSFER STATION - SOUTH ELEVATION
AT702 1/8\"/>



1 TRANSFER STATION - WEST ELEVATION
AT702 1/8\"/>



California Tree and Landscape Consulting, Inc.

Exhibit K

asca
AMERICAN SOCIETY of
CONSULTING ARBORISTS



Arborist Report

April 24, 2018

FirstCarbon Solutions
1350 Treat Road, Suite 380
Walnut Creek, CA 94597

Attention: Robert Carroll, Biologist

Work location
Waste Connections Recovery Facility
Throwita Way/Dimetrics Way
Placerville, CA 95667

Arborist Report for Oak Woodland Resources

APN
051-250-47

Prepared by:
Gordon Mann, Consulting Arborist

APPROVED
EL DORADO COUNTY
PLANNING COMMISSION

DATE *November 8, 2018*

BY *Tiffany Schmid / Cmt*
EXECUTIVE SECRETARY

Arborist Disclosure Statement

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like any medicine, cannot be guaranteed.

Treatment, pruning and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, and other issues. Arborists cannot take such considerations into account unless complete and accurate information is disclosed to the arborist. An arborist should then be expected to reasonably rely upon the completeness and accuracy of the information provided.

Trees can be managed, but they cannot be controlled. To live near trees is to accept some degree of risk. The only way to eliminate all risk associated with trees is to eliminate all trees.

Assignment

The subject site is an approximately 10.1 acre mostly developed commercial site surrounded by on open space to the northwest, a commercial property to the north, east, and west, commercial properties with small oak woodland growing in between to the east, and west, and a residential property with small oak woodland growing in between to the south. The property has existing large buildings and extensive paving on the site. The client contacted our office and requested we provide the information required to satisfy the County of El Dorado's Oak Woodland Resources, determining the oak woodland area, identifying all trees in the woodland area 24 inches in diameter and greater, all Heritage Trees 36 inches in diameter and greater, and any individual oak trees 6 inches and greater located outside of the oak woodland designation for mitigation for tree removal based on the County ORMP Oak Resources requirements and Ordinance No. 5061. This report is the result of onsite inspections performed on April 4, and April 18, 2018, and the use of aerial imagery provided by CTA Engineering and Survey.

Assignment limits

All the trees were observed while standing on the ground. Data collected is limited to a visual ground inspection. The aerial image was provided by CTA Engineering and Surveying. Ground inspections and measurements were used to insure the accuracy of the inspection data.

Current Existing Tree Status (general)

The site is at the end of Throwita Way. The western part of site has is relatively flat, and the eastern part of the site is a hillside. The site is an existing dump site and transfer station for refuse, green waste, and a recycle point for oils, electronics, large appliances, and other waste items. The

development is required to comply with the El Dorado County ORMP Oak Resources requirements and Ordinance No. 5061.

The oak woodland on the site is on the eastern, southern, and western edges of the property. All oaks except three individual trees are located outside the existing chain link fence. Two of the individual oak trees are proposed to be removed as part of the project. The third largest oak, a Heritage Tree is not planned to be removed east of the entrance to the site. The oak woodland is a mix of Interior Live Oaks *Quercus wislizenii*, Valley Oak, *Quercus lobata*, and non-oaks including pine, scrub, walnut and assorted large shrubs. There were larger oaks in the oak woodland areas, to the east and west, and smaller oak trees along the south, southeast and southwest edges of the property. Many of the oaks and canopy is found in trees growing outside the fence and leaning into and over the fence. The proposed grading may encroach some into the canopy, and was found to be a small enough encroachment, not to cause decline or removal of the existing trees.

One Interior Live Oak to the east of the entry station is large enough, 36.5 inches diameter, to be considered a Heritage Tree – native oak trees with diameters of 36-inches or greater. There were two other individual oak trees growing on the site. One Interior Live Oak was located to the west of the entry shack and was in fair condition and has a diameter of 13 inches. A second Valley Oak tree is growing in the pond area adjacent to the propane tank. It is a multiple trunk tree of 4, 5, and 3 inches, in poor condition. Both individual oak trees are proposed for removal and the Interior Live Oak tree will need to be mitigated for the removal. The Valley oak tree is in poor condition and will not require mitigation.

The existing oak woodland area of the project was found to be 1.3 acres. The plans propose removing no acres of oak woodland, removing two individual oak trees and retaining one Heritage Oak tree.

There is one individual oak tree in fair or better condition proposed to be removed and will require mitigation. The total diameter inches of mitigation required for the individual tree is 13 inches.

The oak woodland, 1.3 acres, covers approximately 12.87 percent of the total site acres, 10.1 acres. The amount of oak woodland proposed for removal, 0 acres, is approximately 0% of the existing oak woodland.

Technical Recommendations

It is recommended that all tree care follow specifications written in accordance with ANSI A-300 standards. Pruning of the trees should be performed in the outer edge of the canopy to reduce leverage and end weights, and allow the center of the canopies to grow and fill in with foliage. It is also recommended that when root pruning, the smallest size roots as possible be pruned, cuts be performed with handsaws, loppers, or chainsaws appropriate for the size of the root being cut. The roots should be exposed by excavating prior to cutting. Roots should be pruned prior to root removal within the tree protection area to limit the damage and tearing of roots back towards the tree. Root pruning should be overseen by a qualified arborist.

Tree planting should follow the specifications included in Appendix A.

General Tree Care and Maintenance

The appendix information is given so that an onsite landscape manager can properly take care of the retained trees, and newly planted trees. Established native oak trees do not like to have the base of the trunk or their roots and the surrounding soil disturbed or tampered with. Applying or having unintentional landscape water in the root zone can cause catastrophic and negative affects to most species of native oak trees. Newly planted oak trees do need their root balls watered until established and then may need supplemental watering during extended periods of dry or hot weather. It is, therefore, recommended that the landscape be designed using drought tolerant plants that will require little to no watering after establishment. Irrigation should be delivered using an on-surface drip type system that does not require trenching around the oak trees to install. The plants should be spaced at least 6 feet away from the trunk of native oak trees, and the drainage from irrigation should be managed so water does not flow to the trunks of the oak trees. Trees that are growing in high use areas should be inspected by a qualified arborist for tree risk on a routine basis, the frequency depending on site use and tree condition.

Observations

The site was inspected on April 4 and 18, 2018. All trees were inspected for diameter, and those oak woodland trees that were 24 inches diameter or greater were measured with a diameter tape, assessed for condition, the number of stems present, and notes explaining the tree condition were recorded. A total of 4 Oak Woodland trees were found to be 24 inches diameter or greater, and 0 of those trees was found to be 36 inches in diameter or greater and considered a Heritage Tree. The data for the 4 oak trees 24 inches and greater growing in the oak woodland is provided below:

Tree #	Species	Diameter inches	Condition	Comments
902	Valley Oak	32.2 at 1'	Poor	Co-dom at 3'; significant basal decay; SE side cavity; end weights; interior live oak (914) at base
906	Valley Oak	12.7, 11.3	Poor	Co-dom at 2'; steep slope; top side of stems buried 3' in sluff; north stem leans east
916	Valley Oak	24.6	Fair	At fenceline; co-dom stem at 6'; symmetric; Interior Live Oak (917) at base
935	Valley Oak	33.5	Fair	Co-dom at 7'; end weights; power line runs through canopy; growing on top of ridge

The individual oak trees growing outside of the oak woodland and inside the property fence were inspected for diameter, and those individual oak trees that were 6 inches diameter or greater were measured with a diameter tape, assessed for condition, the number of stems present, and notes explaining the tree condition were recorded. A total of 3 individual trees were found to be 6 inches diameter or greater, and one individual tree was found to be a Heritage Tree. The data for the 3 individual trees is provided below:

Tree #	Species	Diameter inches	Condition	Comments
901	Valley Oak	4, 5, 3, 1, 1, 1	Poor 30	Next to propane tank; growing next to a multi trunk plum; 6 stems at base; Remove for project
935	Interior Live Oak	36.5 @ 3'	Fair-45	Basal decay north side; co-dom leaders at 4'; included bark; small cavity in crotch; end weights over street and fence; retain and prune
A	Interior Live Oak	13"	Fair-45	On slope, 8' from fence; dense lower brush around trunk; Remove for project

The tree condition is a combination of vigor, structure, trunk, branches, trunk flare, live tissue, and defects and decay or pests. It is described in % and range term. The rating scale is:

Range	#	Rating	Description
Excellent	81-100		Found to have none to few defects or decay, and high vigor
Good	61-80		Found to have few defects or decay, and above average vigor
Fair	41-60		Found to have mitigatable defects, limited decay, and average vigor
Poor	21-40		Found to have significant defects, decay, and lower vigor
Very poor	120		Found to have significant defects, decay, and low declining vigor
Dead	0		Found to be dead

Plus and minus symbols are included in the rating range to show the position of the % rating in the range.

The oak canopy area was calculated by CTA Engineering and Surveying using aerial imagery calculating the area of the site considered Oak Woodland. The field inspection confirmed the location of the canopy as shown on the aerial image.

DBH is the industry standard for measuring trunk diameter. For trees with straight trunks and normal taper, the measurement is taken at 4.5 feet above grade. When a swollen trunk area, flare from branching, multiple stems, or other abnormal growth is present, the measurement is taken at the most appropriate location for determining the reasonable trunk diameter, and the height of the measurement is listed. The initial measurements were taken with a Biltmore Stick. For all oak woodland trees close to 24 inches diameter or greater, a second more accurate measurement was taken with a diameter tape. For all individual oak trees close to 6 inches in diameter or greater, a second more accurate measurement was taken with a diameter tape.

The proposed development site is 10.1 acres. The oak canopy is outside of the existing fence and 1.3 acres. The canopy shown on the aerial image was confirmed during the field visits to be an accurate representation.

Other testing or examination:

No additional testing or examination was requested at the time of the inspection or found necessary.

Mitigation Calculations:

The ORMP requires mitigation in 3 areas of a project impacting oak woodland:

- a. Acreage of oak woodland impacted
- b. Individual Oak Trees 6-inch diameter and greater growing outside of the oak woodland
- c. Heritage Trees 36-inch diameter and greater in the project area

(a) The project site is approximately 10.1 acres and contains areas of oak woodland and individual oak trees that will require mitigation if removed. The mitigation ratio is determined by 0 acres proposed for removal of the total 1.3 acres of oak woodland equals 0% of the Oak Woodland being impacted. The proposed oak woodland impact falls into the Oak Woodland Impact range of 0 - 50%. That percent woodland removal/impact requires a 1:1 mitigation ratio. The total mitigation acreage is: 1 (ratio) X 0 impacted acres = 0 total acres required for Oak Mitigation.

The mitigation ratio chart for El Dorado County ORMP is:

Percent of Oak Woodland Impact	Oak Woodland Mitigation Ratio
0-50%	1:1
50.1 – 75%	1.5:1
75.1-100%	2:1

The next mitigation required is the individual oak trees. 1 tree that requires mitigation is proposed for removal equaling 13 diameter inches. The mitigation fee is \$153 per diameter inch for a total mitigation fee of \$1,989.00.

The final mitigation requirement is the proposed removal of Heritage trees, trees 36 inches and greater. There are no Heritage Trees proposed for removal, and there is no additional mitigation fee.

The total mitigation fee for the proposed project will be \$1,989.00.

The oak woodland mitigation requirements for the project was calculated based on the following information:

- Total area of the project area: 439,956 square feet, or 10.1 acres**
- Total area of oak woodland: 56,628 square feet, or 1.3 acres**
- Total percent of existing oak woodland: 12.87%**
- Total area of total oak woodland to be removed: 0 square feet, or 0 acres**
- Total percent of oak woodland to be removed: 0%**
- Oak Woodland Mitigation Ratio: 1:1**
- Total area of Oak Woodland to be mitigated: 0 acres**
- Total number and diameter inches of individual oak trees to be removed: 1 trees, 13 diameter inches**
- Total number and diameter inches of Heritage Trees to be removed: 0 trees, 0 diameter inches**
- Total area of pre-mitigated oak canopy to be removed: 0 sq. ft.**
- Total area of oak woodland required to be mitigated: 0 acres**
- Total Oak Woodland Area Impacted Mitigation: 0 acres @ \$8,285 per acre = \$0.00**

Individual Oak tree Impacted Mitigation: 1 tree, 13 inches, \$153 per inch: \$1,989.00
Heritage Tree Impacted Mitigation: 0 trees, 0 inches, \$459 per inch: \$0.00
Total Amount of Oak Resource Mitigation: \$1,989.00

Due to previous development in the surrounding areas, there is not an existing oak corridor in the project property and adjacent properties. The proposed oak removal will not impact a continuous oak corridor. The proposed soil covering is going to cover most of the subject property and will remove most of the existing trees and one oak tree in fair condition or better on the site. The in lieu fee will meet the mitigation requirements for this project.

With the proposed mitigation, the proposed project is in compliance with the Ordinance 5061, Oak Resources Conservation.

The project is in compliance with General Plan Policy 7.4.5.2 by In-lieu fee payment to be either used by the County to acquire off-site deed restrictions and/or conservation easements or to be given by the County to a land conservation organization to acquire off-site deed restrictions and/or conservation easements.

Conclusion:

There are 0 acres of the 1.3 acres oak woodland area proposed to be impacted. The 0 percent oak woodland removal/impact requires a 1:1 mitigation ratio. The 1 ratio X 0 impacted acres = 0 total acres required for Oak Mitigation.

There is 1 individual oak tree proposed for removal, requiring 13 inches of mitigation. 13inches X \$153 per inch = \$1,989.00 mitigation fee.

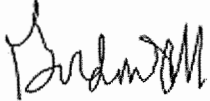
There were no Heritage Trees requiring mitigation impacted by the proposed development.

The total calculated mitigation fee is \$1,989.00. The mitigation proposed will meet the required mitigation based on the El Dorado County ORMP Oak Resources requirements and Ordinance No. 5061.

Please contact Gordon Mann, of California Tree and Landscape Consulting, Inc., if there are any questions about this report.

Disclaimer: Gordon Mann, has analyzed the situation, applied the proper method(s) utilized within the profession, and performed a reasonableness test to support the project tree related decisions. I, nor the employees or subcontractors of California Tree and Landscape Consulting, Inc., may be held liable for the misuse or misinterpretation of this report. As the author of this report, I do hereby certify that all the statements of fact in this report are true, complete, and correct to the best of my knowledge and belief, and that they are made in good faith.

Respectfully submitted,



Gordon Mann
ASCA Registered Consulting Arborist #480
ISA Certified Arborist WE- 0151AM
ISA TRAQ Qualified Tree Risk Assessor
California Tree and Landscape Consulting, Inc.
Gordon@caltlc.com
650-740-3461

Attachments:

- Appendix A Tree Planting Specifications
- Appendix B Nursery Stock and Tree Planting
- Appendix C Tree Protection
- Appendix D Avoiding Damage During Construction
- Resume for Gordon Mann
- Waste Connections Materials Recovery Facility Tree Canopy Exhibit dated April 2018

Appendix A Tree Planting Specifications

Trees shall be free of major injury such as scrapes that remove greater than 20% of the bark circumference, a broken central leader, or constrictions from staking or support. The graft, if present, shall be consistent for the production of the cultivar or species. The trunk flare shall be at grade, not buried by soil, and adventitious roots shall not be growing from above the trunk flare.

The tree shall not be root bound in the container, and the trunk diameter relative to the container sizes, within the limits of American National Standards Institute (ANSI) Z-60 Nursery Standards.

Prior to acceptance, upon delivery, trees may be pulled from the container, so the rootball can be inspected for compliance with the specifications. An agreed upon maximum percent of trees may be checked for compliance. The nursery should provide post delivery care specifications to keep the trees in optimum condition until planting.

Tree Planting

1.0 INSPECT THE TREE

- 1.1 Carefully remove the soil at the top of the container to locate the trunk flare. Check for girdling roots and damage to the root system and lower trunk.
- 1.2 Until a relationship is established with the supplying nursery, randomly select an acceptable sample for the delivery. Inspect the root system by taking the rootball out of the container, and remove all the soil from the root system. Inspect the inner roots to verify that the roots were properly pruned when moved from the initial container to the next larger size. Keep the root system moist during the check. If the roots were properly pruned during container transfer, and the roots have been kept moist, the tree can be planted as a bare root tree.
- 1.3 If the trees are acceptable, each tree shall be removed from the container prior to digging the hole, and the depth of the rootball from the trunk flare to the bottom of the rootball shall be measured. This measurement, less 1" is the depth the pedestal in the center of the planting hole shall be excavated to.

2.0 DIG THE HOLE

- 2.1 Shave and discard grass and weeds from the planting site.
- 2.2 The hole should be a minimum 3 times the diameter of the container diameter.
 - 2.2.1 Square containers shall be dug with a circular hole 3 times the container measurement.
- 2.3 Dig the hole, leaving an undisturbed pedestal in the center that the root ball will be set on.
- 2.4 The pedestal shall be excavated to the depth measurement determined above

3.0 ROOT BALL PREPARATION

- 3.1 Loosen and straighten outside and bottom roots prior to placing the rootball on the pedestal. The trunk flare (the point where the trunk meets the roots) should be 1" above ground level.
- 3.2 Winding and girdling roots shall be pruned to either the point they are perpendicular to the root ball, or a point where they can be straightened and placed perpendicular to the rootball.
- 3.3 Keep the roots moist during this process so they do not dry out.

4.0 BACKFILL

- 4.1 Hold the tree so the trunk and central leader are in a straight upright position.
- 4.2 Backfill soil with the soil you removed around the base of the pedestal and rootball no higher than 2/3, so the tree stands in the upright position
- 4.3 Tamp the soil to remove air gaps, or fill with water and allow soil to settle and drain. Continue to fill the entire hole with existing soil in layers and tamping, up to finished grade. Backfill soil shall not be placed on top of the rootball.
- 4.4 Build a berm at the outside edge of the rootball. The berm shall be a minimum 3 inches high and wide.
- 4.5 Cover the remainder of the backfill soil outside the berm with a set level of mulch (2 to 4 inches deep).

5.0 STAKING

- 5.1 Remove the nursery stake (the thin stake tied to the trunk) that is secured to the tree.
- 5.2 Install the appropriate number of stakes – for example, two stakes on the windward and leeward side of the tree, set at least 2 feet into the native soil outside the rootball.
- 5.2.1 If the area is exceptionally windy, high traffic, or when specified, install 3 or 4 stakes spaced evenly around the circumference, outside the rootball.
- 5.3 One tie per stake shall be placed at the lowest point on the trunk where the tree crown stands upright. Ties shall be placed using a “figure 8” crossing pattern wrapped around the trunk and firmly tied or attached to the stake.
- 5.3.1 Ties shall be loose enough so the tree crown moves up to 3 times the trunk diameter in the wind, and taut enough that the trunk does not rub the stakes during movement.
- 5.4 The stakes shall be cut off above the tie point so branches do not rub the stake above the tie point.
- 5.5 Check the stakes and ties periodically, removing them when the tree is able to stand on its own.
- 5.6 If a leader that should be vertical is drooping, the leader may be temporarily straightened using a bamboo or small diameter wood splint approximately 25% longer than the drooping section of stem, tied to the stem at the top and bottom of the splint to hold the stem vertical. The splint shall be removed prior to girdling or constricting the stem, and may be re-installed as necessary.

6.0 MULCH

- 6.1 Apply a set depth (2 to 4 inches) of wood chips or other organic mulch over the planting hole excavated soil.
- 6.2 Mulch may be placed inside the berm and shall be kept at least 4” away from the trunk flare.
- 6.3 The soil area of the planting hole shall be kept clear of grass and landscape plantings.

7.0 WATER/IRRIGATION

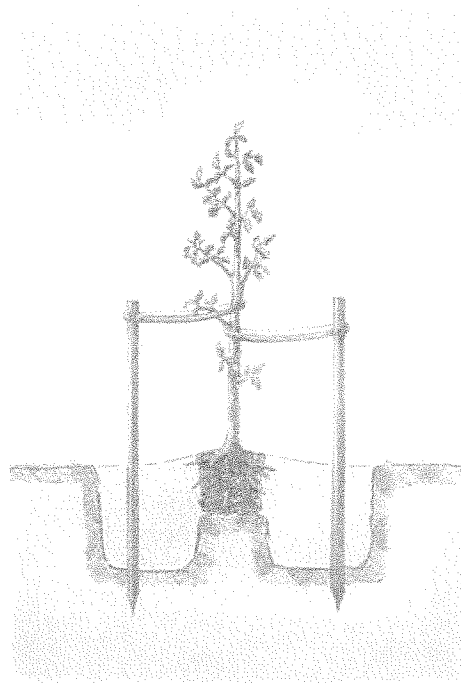
- 7.1 Apply water using a low pressure application, i.e.: trickle from a hose, soaker hose, or bubbler.
- 7.2 Use low water volume to apply the water. Add water long enough to saturate the rootball and planting area.
- 7.2.1 Lawn sprinklers shall not be considered an acceptable method of applying irrigation to newly planted trees.
- 7.3 The initial watering frequency shall be checked by monitoring the soil moisture. Based on the temperature and humidity, learn how long the soil retains the moisture.
- 7.4 After the soil is below field capacity, and before it dries out, repeat the watering process, every so determined days.
- 7.4.1 As the weather and seasons change, the irrigation frequency may change. This will be evaluated by checking soil moisture following water application.
- 7.4.1.1 For example: you may learn irrigation should be applied twice a week during the fall, except in cool or rainy weather. Irrigation may need to be applied every two days during hot dry summer periods.
- 7.5 Irrigation shall be continued for the first three years after planting.
- 7.5.1 Avoiding drying out the rootball and adjacent soil is critical for tree growth and establishment.

8.0 PROTECT THE TRUNK

- 8.1 Avoid damage from mowers and string trimmers to the tender bark of the young tree.
- 8.2 Maintain a clear area free of vegetation around the trunk in the berm or basin area.
- 8.3 Keep the set depth of mulch (2 to 4 inches) coverage of the area around the tree.
- 8.4 Retain temporary low branches along the trunk to shade and feed the trunk.

9.0 PRUNING NEWLY PLANTED TREES

- 9.1 Broken and dead branches shall be pruned.
- 9.2 A central leader shall be identified and retained if present. If co-dominant leaders are present, they shall be pruned to be shorter than the central leader by 20%.
- 9.3 All low temporary branches on the lower trunk shall be retained, and if needed shortened for clearance.



Detail for #1, #5 and #15 container planting stock

10. FUTURE CARE

10.1 During subsequent years, the berm should be enlarged or removed in order to provide water to the increasing root growth. The watering area should target new root growth and projected root growth.

10.2 Pruning should retain a dominant central leader; and retain low temporary branches until trunk bark hardens or remove before branch diameter becomes too large.

Appendix B

Nursery Stock and Tree Planting

Nursery Stock purchase

Trees purchased for the subject project shall be the Genus, species, and cultivar specified in the purchase documents. Trees shall be grown to be free of bound root systems caused by winding roots or kinked roots from a previous smaller container. As trees are moved to larger containers, circling roots shall be either pruned to a point where they can grow straight, straightened in the new container, or removed. Kinked roots shall be pruned to a point where they will grow straight outward or downward.

The trunk and branches shall be of a structure where a central leader is defined, or the central leader can be easily selected. The competing leaders have a smaller diameter, and can be pruned shorter.

Appendix C

Tree Protection

The edge of the tree canopy outside of the construction area shall be fenced off with construction fencing, either temporary orange fence or chain link fence. The fence shall be placed as far from the trees as possible, targeting outside the dripline. If the fence cannot be placed outside of the dripline, the project arborist shall determine if the distance is acceptable or some other soil protection is necessary. A certified arborist must approve the placement of the tree fence. The fence will be marked with weather appropriate signage clearly stating the area as "Protected! Do not enter! Tree preservation zone." Sign(s) will be placed on every face or direction of fence line.

No storage of supplies or materials, parking, or other construction activity shall occur within the fenced area. If a construction activity is required within the construction area, specific specifications and mitigation shall be written to cover the work, and the fencing may be entered during the necessary construction activity, then the fencing shall be replaced after the activity is completed for the day.

The construction protection shall remain in place until the project is completed, including landscape activities. Landscape activities shall have specifications that protect the trees during the landscape activities.

Any bare soil around protected trees should be covered with a 4-inch layer of mulch consisting of ground-up tree parts.

If the protected trees appear to show signs of yellowing leaves, dead leaves, or other abnormal appearance, contact the project arborist for inspection and mitigation.

Long Term Landscape Maintenance Plan and Specifications

General

This plan and specifications are intended to promote the optimum landscape growth and lifespan. Individual tree planting in specific sites in the parking lot are intended to provide a large shade canopy over time covering 50% or greater of the parking lot. The border and natural screening plantings are overplanted and intended to fill the space initially, and have the weaker trees removed over time, to create the space and site resources necessary for the remaining trees. Trees initially will be planted on approximate 10 foot centers, with the long term spacing to be approximately 20 foot centers. As trees are thinned, they may be transplanted or removed, as best suited to the remaining trees on the site.

These trees shall be pruned to establish a central leader, to provide the best structure by managing size relationships between parent and subordinate trunk and branches, and to encourage growth into a large shade canopy. These trees shall not be topped or rounded over. Trees may have competing leaders headed back to promote the strong central leader necessary to eliminate co-dominant stems and weak branching.

Design Intent

The trees planted around the perimeter and alongside the sidewalk or street are intended to replicate natural areas and to screen the project and adjacent properties. The native oaks shall be more tightly spaced at planting and thinned over time to promote the growth of the final or climax trees on the site. The thinning for spacing shall be performed as the trees get larger and their crowns begin to overlap. When the desired tree crowns are being impacted by an adjacent tree, the adjacent tree should either be pruned or removed, to provide the optimum screening while enhancing the desired tree growth. Pruning shall retain a dominant central leader and for decurrent tree structures, remove competing leaders, and maintain the appropriate size relationships between parent and subordinate trunk and branches.

Pruning Small Trees

Branches are to be pruned by either reduction, thinning, or raising cuts to achieve the appropriate clearance over the area. The smallest diameter branches should be removed, working from the branch tips towards the center, removing none to minimal interior foliage inside the final outward branch cut. Trees shall be cleaned to remove dead branches, weakly attached branches, and branches where significant damage has occurred by rubbing, animals, insects, or critical disease. All pruning cuts shall be made in accordance with American National Standards Institute (ANSI) A300 Part 1 Pruning Standards and International Society of Arboriculture (ISA) Best Management Practices for Pruning.

On trees up to six inches in diameter, all dead branches greater than one-half inch diameter shall be removed. All weakly attached branches and potential co-dominant branches shall either be reduced by at least 20% or be removed, as most appropriate for the long term structure of the tree. The weakest or most damaged branch of a pair or group of rubbing branches shall be shortened to avoid rubbing, or removed. All temporary branches along the trunk should be retained and shortened to obtain necessary clearance. When either temporary branches exceed one-inch diameter, or the trunk forms mature bark, the temporary branches should be removed.

Stakes shall be installed as necessary to support a straight growing tree, and reduce crooked growth caused by high wind. The trunk shall be supported at the lowest point to keep the crown supported straight, and the portions of the stake above the tie point cut off to avoid rubbing branches. After the tree becomes firmly rooted, and the stake is no longer necessary to support the tree, the stakes shall be removed.

Depending on the location and site needs, clearance should be performed by pruning the smallest branches inward from the branch tips until the permanent branches are in place. Clearance minimums should be set, for example: 7.5' over sidewalks, 10 feet over parking spaces, and 14.5 feet over truck traffic streets. Clearance pruning shall be carefully performed until the permanent branches are identified. Up to 25% of the total foliage on any tree should be the maximum removed during any planned pruning cycle. Follow-up pruning for structure or clearance on young trees can be performed at any time if pruning small amounts of foliage (up to 10%) and retaining the central leader and branch size relationships.

Pruning Large Trees

Branches are to be pruned by either reduction, thinning, or raising cuts to achieve the appropriate clearance over the area. The smallest diameter branches should be removed, working from the branch tips towards the center, removing none to minimal interior foliage inside the final outward branch cut. Trees shall be cleaned to remove dead branches, weakly attached branches, and branches where significant damage has occurred by rubbing, animals, insects, or critical disease. All pruning cuts shall be made in accordance with American National Standards Institute (ANSI) A300 Part 1 Pruning Standards and International Society of Arboriculture (ISA) Best Management Practices for Pruning.

On trees larger than six inches in diameter, all dead branches greater than one-inch diameter shall be removed. Long heavy branches that are either growing flat or bending down shall have approximately 15% of the end weight reduced, accomplished by a combination of pruning the downward growing branches, shortening long tips, and thinning endweights. If any structural issues are observed by the climber working in the tree, they shall notify the property manager immediately to discuss the tree's needs.

Depending on the location and site needs, clearance should be performed by pruning the smallest branches inward from the branch tips until the permanent branches are in place. Clearance minimums should be set, for example: 7.5' over sidewalks, 10 feet over parking spaces, and 14.5 feet over truck traffic streets. Clearance pruning shall be carefully performed until the permanent branches are identified. Up to 25% of the total foliage on any tree should be the maximum removed during any planned pruning cycle.

Any special site issues for utility clearance or conflicts with other objects shall be managed by early pruning to direct growth away from the target lines, overhead lights, flags, or buildings.

Thinning of Dense Planting

Many landscape plantings and natural landscape areas are over-planted by installing a greater number of plants at closer spacing than optimum for the full-sized plants. Over time, plants will grow into each other, the crowns will conflict, and the spacing will need to be corrected. Correct spacing is obtained by removing the least desirable plants to meet the final spacing target, within reasonable tolerances.

If conflicting plants are all healthy, it won't matter which plants are removed to achieve the spacing distances. Spaced thinning should be performed before the foliar crowns are intertwined or overlapping. The thinning may be performed over two or three cycles as the trees grow over time, depending on the density and desired final spacing.

The trees initially will be planted on approximate 10 foot centers, with the long term spacing to be approximately 20 foot centers. The healthiest and best specimens should be retained on site. As trees are thinned, they may be transplanted or removed, as best suits the remaining trees on the site.

Appendix D

Avoiding Tree Damage During Construction

Edited from the 's tree protection guidelines

As cities and suburbs expand, wooded lands are being developed into commercial and residential sites. Homes are constructed in the midst of trees to take advantage of the aesthetic and environmental value of the wooded lots. Wooded properties can be worth as much as 20 percent more than those without trees, and people value the opportunity to live among trees.

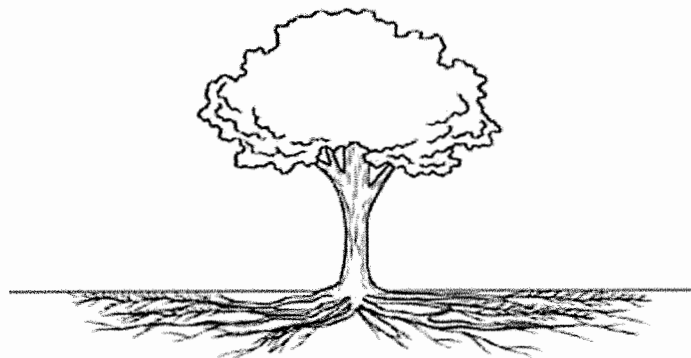
Unfortunately, the processes involved with construction can be deadly to nearby trees. Unless the damage is extreme, the trees may not die immediately but could decline over several years. With this delay in symptom development, you may not associate the loss of the tree with the construction.

It is possible to preserve trees on building sites if the right measures are taken. The most important step is to hire a professional arborist during the planning stage. An arborist can help you decide which trees can be saved and can work with the builder to protect the trees throughout each construction phase.

How Trees Are Damaged During Construction

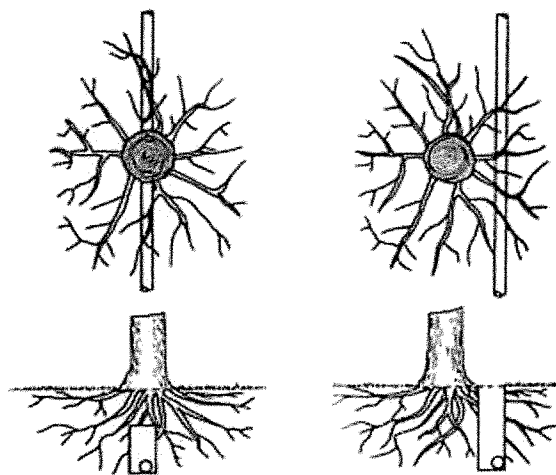
Physical Injury to Trunk and Crown. Construction equipment can injure the aboveground portion of a tree by breaking branches, tearing the bark, and wounding the trunk. These injuries are permanent and, if extensive, can be fatal.

Cutting of Roots. The digging and trenching that are necessary to construct a house and install underground utilities will likely sever a portion of the roots of many trees in the area. It is easy to appreciate the potential for damage if you understand where roots grow. The roots of a tree are found mostly in the upper 6 to 24 inches of the soil. In a mature tree, the roots extend far from the trunk. In fact, roots typically are found growing a distance of one to three times the height of the tree. The amount of damage a tree can suffer from root loss depends, in part, on how close to the tree the cut is made. Severing one major root can cause the loss of 5 to 20 percent of the root system.



The roots of a tree extend far from the trunk and are found mostly in the upper 6 to 12 inches of soil.

Another problem that may result from root loss caused by digging and trenching is that the potential for the trees to fall over is increased. The roots play a critical role in anchoring a tree. If the major support roots are cut on one side of a tree, the tree may fall or blow over.



Less damage is done to tree roots if utilities are tunneled under a tree (right, top and bottom) rather than across the roots (left, top and bottom).

Less damage is done to tree roots if utilities are tunneled under a tree rather than across the roots.

Soil Compaction. An ideal soil for root growth and development is about 50 percent pore space. These pores—the spaces between soil particles—are filled with water and air. The heavy equipment used in construction compacts the soil and can dramatically reduce the amount of pore space. This compaction not only inhibits root growth and penetration but also decreases oxygen in the soil that is essential to the growth and function of the roots, and water infiltration.

Smothering Roots by Adding Soil. Most people are surprised to learn that 90 percent of the fine roots that absorb water and minerals are in the upper 6 to 12 inches of soil. Roots require space, air, and water. Roots grow best where these requirements are met, which is usually near the soil surface. Piling soil over the root system or increasing the grade smothers the roots. It takes only a few inches of added soil to kill a sensitive mature tree.

Exposure to the Elements. Trees in a forest grow as a community, protecting each other from the elements. The trees grow tall, with long, straight trunks and high canopies. Removing neighboring trees or opening the shared canopies of trees during construction exposes the remaining trees to sunlight and wind. The higher levels of sunlight may cause sunscald on the trunks and branches. Also, the remaining trees are more prone to breaking from wind or ice loading.

Getting Advice

Hire a professional arborist in the early planning stage. Many of the trees on your property may be saved if the proper steps are taken. Allow the arborist to meet with you and your building contractor.

Your arborist can assess the trees on your property, determine which are healthy and structurally sound, and suggest measures to preserve and protect them.

One of the first decisions is determining which trees are to be preserved and which should be removed. You must consider the species, size, maturity, location, and condition of each tree. The largest, most mature trees are not always the best choices to preserve. Younger, more vigorous trees usually can survive and adapt to the stresses of construction better. Try to maintain diversity of species and ages. Your arborist can advise you about which trees are more sensitive to compaction, grade changes, and root damage.

Planning

Your arborist and builder should work together in planning the construction. The builder may need to be educated regarding the value of the trees on your property and the importance of saving them. Few builders are aware of the way trees' roots grow and what must be done to protect them.

Sometimes small changes in the placement or design of your house can make a great difference in whether a critical tree will survive. An alternative plan may be more friendly to the root system. For example, bridging over the roots may substitute for a conventional walkway. Because trenching near a tree for utility installation can be damaging, tunneling under the root system may be a good option.

Erecting Barriers

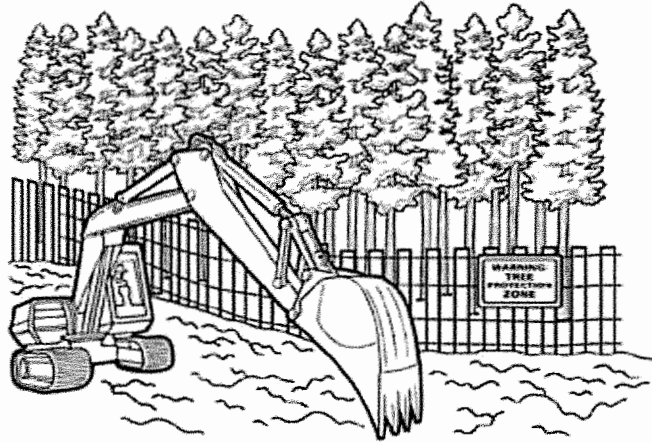
Because our ability to repair construction damage to trees is limited, it is vital that trees be protected from injury. The single most important action you can take is to set up construction fences around all of the trees that are to remain. The fences should be placed as far out from the trunks of the trees as possible. As a general guideline, allow 1 foot of space from the trunk for each inch of trunk diameter. The intent is not merely to protect the aboveground portions of the trees but also the root systems. Remember that the root systems extend much farther than the drip lines of the trees.

Instruct construction personnel to keep the fenced area clear of building materials, waste, excess soil, and equipment. No digging, trenching, or other soil disturbance such as driving vehicles and equipment over the soil should be allowed in the fenced area.

Protective fences should be erected as far out from the trunks as possible in order to protect the root system prior to the commencement of any site work, including grading, demolition, and grubbing.

Limiting Access

If at all possible, it is best to allow only one access route on and off the property. All contractors must be instructed where they are permitted to drive and park their vehicles. The construction access drive should be the route for utility wires; underground water, sewer, or storm drain lines; roadways; or the driveway.



Protective fences should be erected as far out from the trunks as possible in order to protect the root systems.

Specify storage areas for equipment, soil, and construction materials. Limit areas for burning (if permitted), cement wash-out pits, and construction work zones. These areas should be away from protected trees.

Specifications

Specifications are to be put in writing. All of the measures intended to protect your trees must be written into the construction specifications. The written specifications should detail exactly what can and cannot be done to and around the trees. Each subcontractor must be made aware of the barriers, limitations, and specified work zones. It is a good idea to post signs as a reminder.

Fines and penalties for violations should be built into the specifications. Not too surprisingly, subcontractors are much more likely to adhere to the tree preservation clauses if their profit is at stake. The severity of the fines should be proportional to the potential damage to the trees and should increase for multiple infractions.

Maintaining Good Communications

It is important to work together as a team. You may share clear objectives with your arborist and your builder, but one subcontractor can destroy your prudent efforts. Construction damage to trees is often irreversible.

Visit the site at least once a day if possible. Your vigilance will pay off as workers learn to take your wishes seriously. Take photos at every stage of construction. If any infraction of the specifications does occur, it will be important to prove liability.

Final Stages

It is not unusual to go to great lengths to preserve trees during construction, only to have them injured during landscaping. Installing irrigation systems and roto-tilling planting beds are two ways the root systems of trees can be damaged. Remember also that small increases in grade (as little as 2 to 6 inches) that place additional soil over the roots can be devastating to your trees. ANSI A300

Standards Part 5 states that tree protection shall be in place for the landscape phase of the site development. Landscape tree protection may be different than other construction process tree protection, and a conference with the landscape contractor should be held prior to the commencement of the landscape work. Careful planning and communicating with landscape designers and contractors is just as important as avoiding tree damage during construction.

Post-Construction Tree Maintenance

Your trees may require several years to adjust to the injury and environmental changes that occur during construction. The better construction impacts are avoided, the less construction stress the trees will experience. Stressed trees are more prone to health problems such as disease and insect infestations. Talk to your arborist about continued maintenance for your trees. Continue to monitor your trees, and have them periodically evaluated for declining health or safety hazards.

Despite the best intentions and most stringent tree preservation measures, your trees still might be injured from the construction process. Your arborist can suggest remedial treatments to help reduce stress and improve the growing conditions around your trees. In addition, the International Society of Arboriculture offers a companion to this brochure titled "Treatment of Trees Damaged by Construction".



California Tree and Landscape Consulting, Inc.

GORDON MANN

EDUCATION AND QUALIFICATIONS

- | | |
|-------------|--|
| 1977 | Bachelor of Science, Forestry, University of Illinois, Champaign. |
| 1982 - 1985 | Horticulture Courses, College of San Mateo, San Mateo. |
| 1984 | Certified as an Arborist, WE-0151A, by the International Society of Arboriculture (ISA). |
| 2004 | Certified as a Municipal Specialist, WE-0151AM, by the ISA. |
| 2011 | Registered Consulting Arborist, #480, by the American Society of Consulting Arborists (ASCA). |
| 2003 | Graduate of the ASCA Consulting Academy. |
| 2006 | Certified as an Urban Forester, #127, by the California Urban Forests Council (CaUFC). |
| 2011 | TRACE Tree Risk Assessment Certified, continued as an ISA Qualified Tree Risk Assessor (T.R.A.Q.). |



PROFESSIONAL EXPERIENCE

- 2016 – Present CALIFORNIA TREE AND LANDSCAPE CONSULTING, INC (CaTLC). President and Consulting Arborist.
Auburn. Mr. Mann provides consultation to private and public clients in health and structure analysis, inventories, management planning for the care of trees, tree appraisal, risk assessment and management, and urban forest management plans.
- 1986 - Present MANN MADE RESOURCES. Owner and Consulting Arborist. Auburn.
Mr. Mann provides consultation in municipal tree and risk management, public administration, and developing and marketing tree conservation products.
- 2015 – 2017 CITY OF RANCHO CORDOVA, CA. Contract City Arborist.
Mr. Mann serves as the City's first arborist, developing the tree planting and tree maintenance programs, performing tree inspections, updating ordinances, providing public education, and creating a management plan,
- 1984 – 2007 CITY OF REDWOOD CITY, CA. City Arborist, Arborist, and Public Works Superintendent.
Mr. Mann developed the Tree Preservation and Sidewalk Repair Program, supervised and managed the tree maintenance program, performed inspections and administered the Tree Preservation Ordinance. Additionally, he oversaw the following Public Works programs: Streets, Sidewalk, Traffic Signals and Streetlights, Parking Meters, Signs and Markings, and Trees.
- 1982 – 1984 CITY OF SAN MATEO, CA. Tree Maintenance Supervisor.
For the City of San Mateo, Mr. Mann provided supervision and management of the tree maintenance program, and inspection and administration of the Heritage Tree Ordinance.
- 1977 – 1982 VILLAGE OF BROOKFIELD, IL. Village Forester.
Mr. Mann provided inspection of tree contractors, tree inspections, managed the response to Dutch Elm Disease. He developed an in-house urban forestry program with leadworker, supervision, and management duties to complement the contract program.
- 1979 - Present INTERNATIONAL SOCIETY OF ARBORICULTURE. Member.
- Board of Directors (2015 - Present)
 - True Professional of Arboriculture Award (2011); In recognition of material and substantial contribution to the progress of arboriculture and having given unselfishly to support arboriculture.
- 1982 - Present WESTERN CHAPTER ISA (WCISA). Member.
- Chairman of the Student Committee (2014 - 2017)
 - Member of the Certification Committee (2007 - Present)

- Chairman of the Municipal Committee (2009 - 2014) • Award of Merit (2016) In recognition of outstanding meritorious service in advancing the principles, ideals and practices of arboriculture.
 - Annual Conference Chair (2012)
 - Certification Proctor (2010 – Present)
 - President (1992 - 1993)
 - Award of Achievement and President's Award (1990)
- 1985 - Present CALIFORNIA URBAN FORESTS COUNCIL (CaUFC). Member; Board Member (2010 - Present)
- 1985 - Present SOCIETY OF MUNICIPAL ARBORISTS (SMA). Member. e Legacy Project of the Year (2015) o In recognition of outstanding meritorious service in advancing the principles, ideals and practices of arboriculture.
- Board Member (2005 - 2007)
- 2001 - Present AMERICAN SOCIETY OF CONSULTING ARBORISTS.
Member. e Board of Directors (2006 - 2013)
- President (2012)
- 2001 - Present CAL FIRE. Advisory Position.
- Chairman of the California Urban Forestry Advisory Committee (2014 - 2017)
- 2007 – Present AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI): A300 TREE MAINTENANCE STANDARDS
- COMMITTEE. SMA Representative and Alternate.
- Alternative Representative for SMA (2004 - 2007; 2012 - Present)
 - Representative for SMA (2007 - 2012)
- 2007 - Present SACRAMENTO TREE FOUNDATION. Member and Employee.
- Co-chair/member of the Technical Advisory Committee (2012 - Present)
 - Urban Forest Services Director (2007 - 2009) e Facilitator of the Regional Ordinance Committee (2007 - 2009)
 - 1988 - 1994 TREE CLIMBING COMPETITION.
 - Chairman for Northern California (1988 - 1992)
 - Chairperson for International (1991 - 1994)

PUBLICATIONS AND LECTURES

Mr. Mann has authored numerous articles in newsletters and magazines such as Western Arborist, Arborist News, City Trees, Tree Care Industry Association, Utility Arborists Association, CityTrees, and Arborists Online, covering a range of topics on Urban Forestry, Tree Care, and Tree Management. He has developed and led the training for several programs with the California Arborist Association. Additionally, Mr. Mann regularly presents at numerous professional association meetings on urban tree management topics.

Assumptions and Limiting Conditions

1. Consultant assumes that any legal description provided to Consultant is correct and that title to property is good and marketable. Consultant assumes no responsibility for legal matters. Consultant assumes all property appraised or evaluated is free and clear, and is under responsible ownership and competent management.
2. Consultant assumes that the property and its use do not violate applicable codes, ordinances, statutes or regulations.

3. Although Consultant has taken care to obtain all information from reliable sources and to verify the data insofar as possible, Consultant does not guarantee and is not responsible for the accuracy of information provided by others.
4. Client may not require Consultant to testify or attend court by reason of any report unless mutually satisfactory contractual arrangements are made, including payment of an additional fee for such Services as described in the Consulting Arborist Agreement.
5. Unless otherwise required by law, possession of this report does not imply right of publication or use for any purpose by any person other than the person to whom it is addressed, without the prior express written consent of the Consultant.
6. Unless otherwise required by law, no part of this report shall be conveyed by any person, including the Client, the public through advertising, public relations, news, sales or other media without the Consultant's prior express written consent.
7. This report and any values expressed herein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event or upon any finding to be reported.
8. Sketches, drawings and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
9. Unless otherwise agreed, (1) information contained in this report covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing or coring. Consultant makes no warranty or guarantee, express or implied that the problems or deficiencies of the plans or property in question may not arise in the future.
10. Loss or alteration of any part of this Agreement invalidates the entire report.

Certificate of Performance

I, Gordon Mann, certify that:

I have personally inspected the trees and site referred to in this report, and have stated my findings accurately. The extent of the inspection is stated in the attached report under Assignment;

I have no current or prospective interest in the vegetation, or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved;

The analysis, opinions and conclusions stated herein are my own and are based on current scientific procedures and facts;

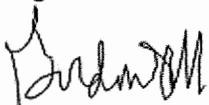
My analysis, opinions, and conclusions were developed, and this report has been prepared according to commonly accepted arboricultural practices;

No one provided significant professional assistance to me, except as indicated within the report;

My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client, or any other party, nor upon the results of the assignment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the International Society of Arboriculture (ISA) and an ISA Certified Arborist and Municipal Specialist. I am also a Registered Consulting Arborist member in good standing of the American Society of Consulting Arborists. I have been involved in the practice of arboriculture and the care and study of trees for over 39 years.

Signed:



Gordon Mann

Date: March 21, 2018