

SCALE: 1" = 100'

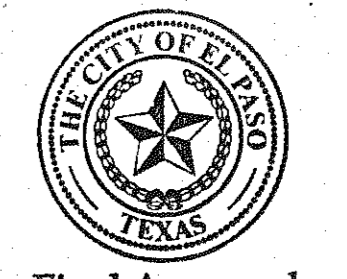


EXISTING NORTHWEST CORPORATE CENTER CONVEYANCE CHANNEL, CONCRETE LINED

EXISTING TRINC CONVEYANCE CHANNEL, CONCRETE LINED

EXISTING DUAL 60" RCP (MODIFIED)
EXISTING HEADWALL AND PORTIONS OF DUAL 60" RCP TO BE REMOVED

REFER TO SHEET 113 FOR SIGNAGE DETAIL



Final Approval

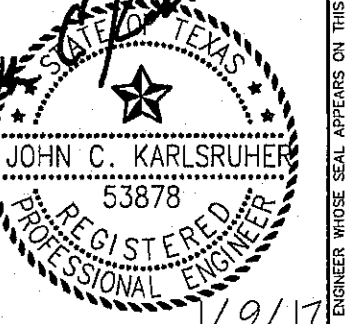
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE ELEVATION = 3978.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitted Final	JCK
2	11/20/16	2nd City Submitted	DAE
1	9/15/16	1st City Submitted	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUNDS IN PROJECT AREA

BEFORE YOU DIG - CALL
 EL PASO ELECTRIC COMPANY 562-5730
 AT&T 1-800-DIG-TESS
 TEXAS GAS SERVICE 644-6900
 TGS EMERGENCY HOTLINE 956-9411/956-2003
 AFTER-HOURS EMERGENCY (EPW) 956-9411/956-2003
 TIME WARNER (CABLE) 775-7474
 EL PASO NATURAL GAS COMPANY 1-800-944-5845
 TEXAS EVACUATION SAFETY SYSTEM 1-800-294-8272

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extension of such project or any other project. Any reuse, to include copying and/or modifying the content of this document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm E-6887
 1845 Northwestern Dr. Ste C
 El Paso, Texas 79912
 tel (915) 877.4155
 fax (915) 877.4334
 www.csaengineers.com

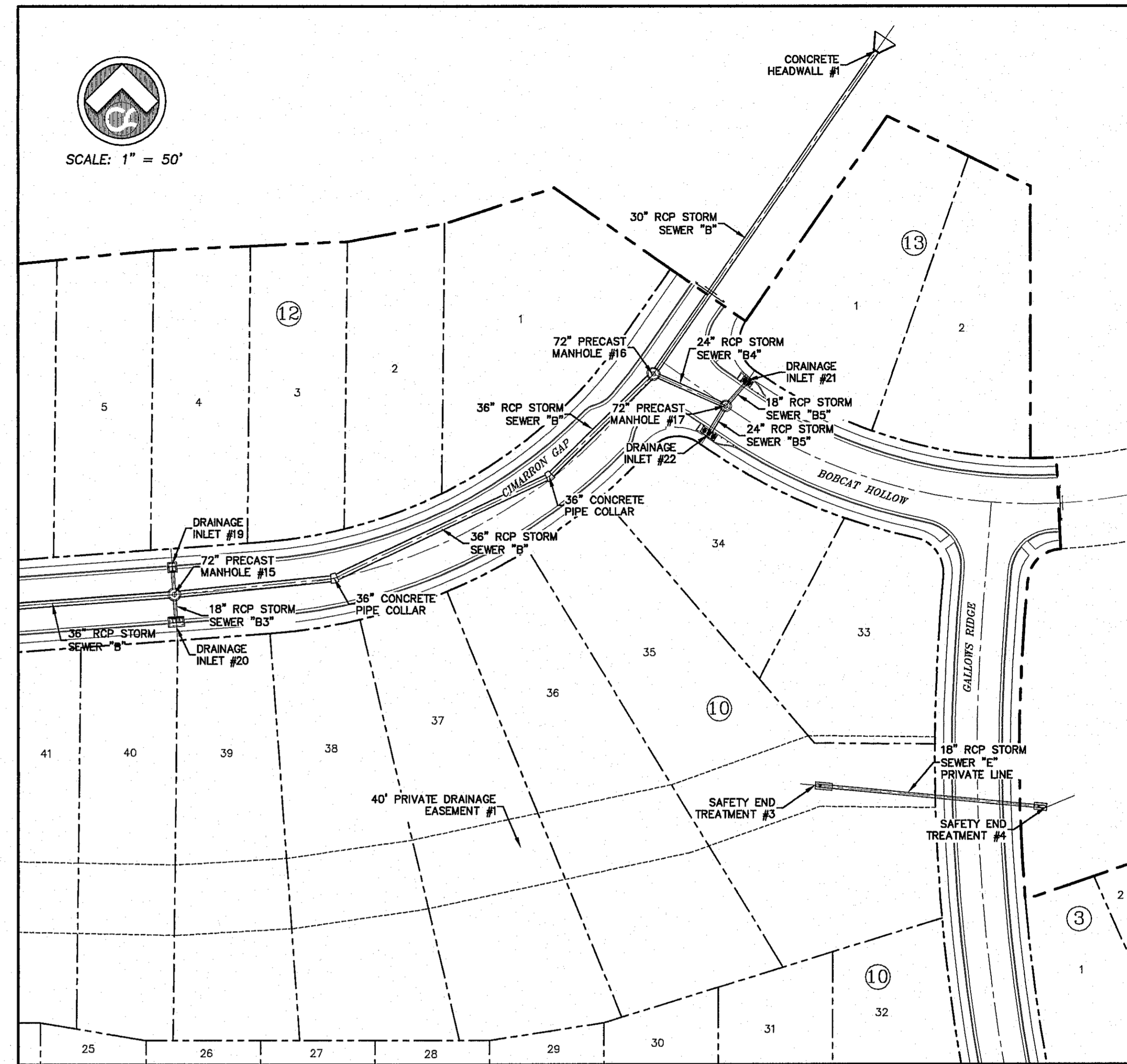
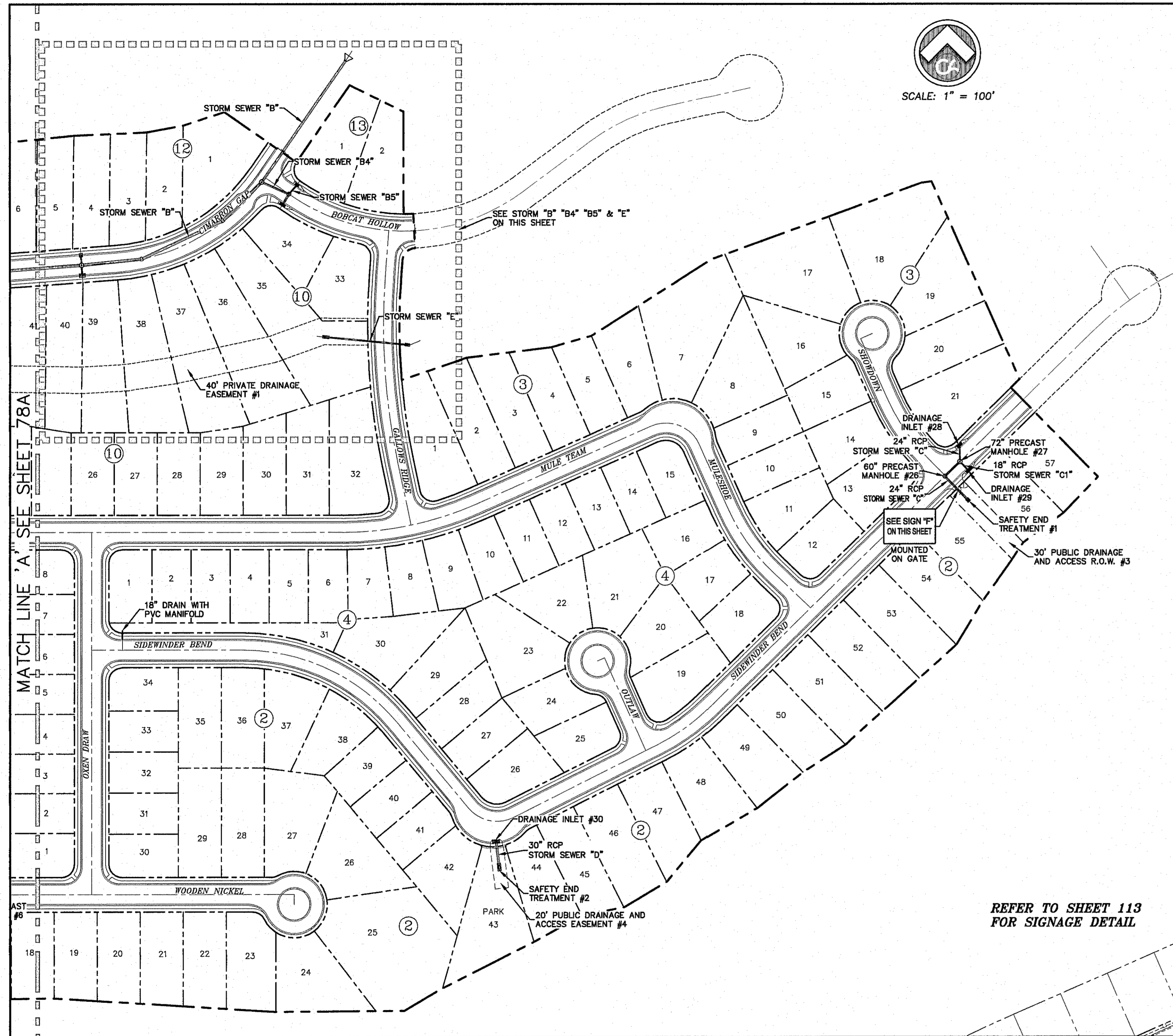


CIMARRON CANYON UNIT ONE SUBDIVISION

SHEET TITLE
STORM SEWER REFERENCE PLAN

COB	1524
DESIGN BY	AS NOTED
COB-SM-DC	9/15/16
DATE	9/15/16
DESIGNED BY	AS NOTED

78A
 81 of 131



Property of
EL PASO WATER UTILITIES
Public Service Board
PORTERHOUSE DRAINAGE R.O.W.

No Trespassing
Violators will be prosecuted.
In case of an emergency call:
594-5775

SIGN "A" PORTERHOUSE

Property of
EL PASO WATER UTILITIES
Public Service Board
BULLWHIP DRAINAGE R.O.W.

No Trespassing
Violators will be prosecuted.
In case of an emergency call:
594-5775

SIGN "B" BULLWHIP

Property of
EL PASO WATER UTILITIES
Public Service Board
HITCHING POST DRAINAGE R.O.W.

No Trespassing
Violators will be prosecuted.
In case of an emergency call:
594-5775

SIGN "C" HITCHING POST

Property of
EL PASO WATER UTILITIES
Public Service Board
CIMARRON GAP NORTH DRAINAGE R.O.W.

No Trespassing
Violators will be prosecuted.
In case of an emergency call:
594-5775

SIGN "D" CIMARRON GAP NORTH

Property of
EL PASO WATER UTILITIES
Public Service Board
CIMARRON GAP SOUTH DRAINAGE R.O.W.

No Trespassing
Violators will be prosecuted.
In case of an emergency call:
594-5775

SIGN "E" CIMARRON GAP SOUTH

Property of
EL PASO WATER UTILITIES
Public Service Board
SIDEWINDER BEND DRAINAGE R.O.W.

No Trespassing
Violators will be prosecuted.
In case of an emergency call:
594-5775

SIGN "F" SIDEWINDER BEND



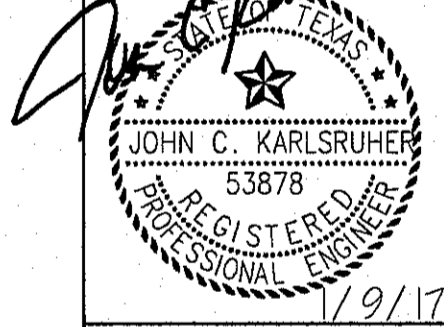
NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL

EL PASO ELECTRIC COMPANY
945-3720
544-9300
562-3411/562-2003
562-3411/562-2003
EL PASO WATER UTILITY (EPW)
1-800-335-4847
EL PASO NATURAL GAS COMPANY
1-800-335-4847
1-800-335-4847
(254-2327)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of services in respect to the street and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse to include copying and/or modifying the content of the document without expressed, written permission from C&A Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



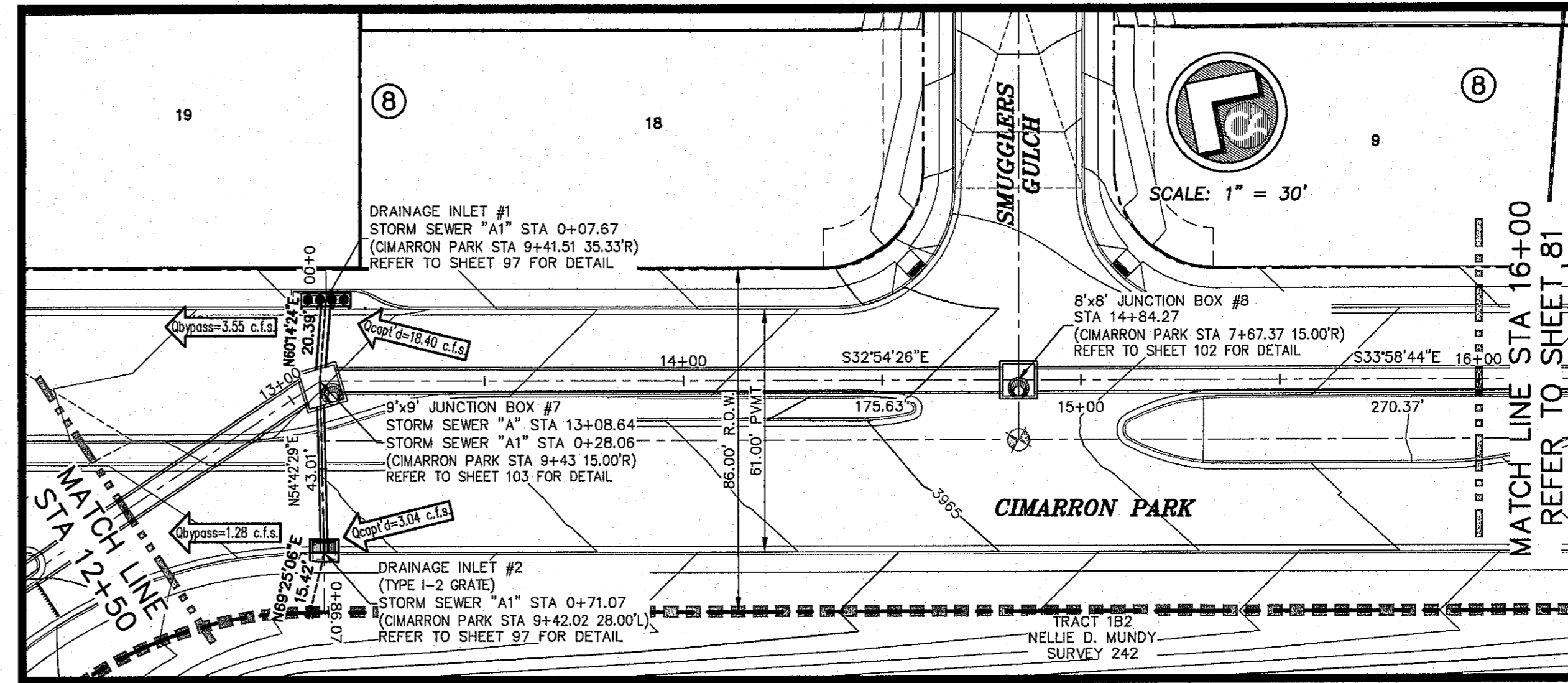
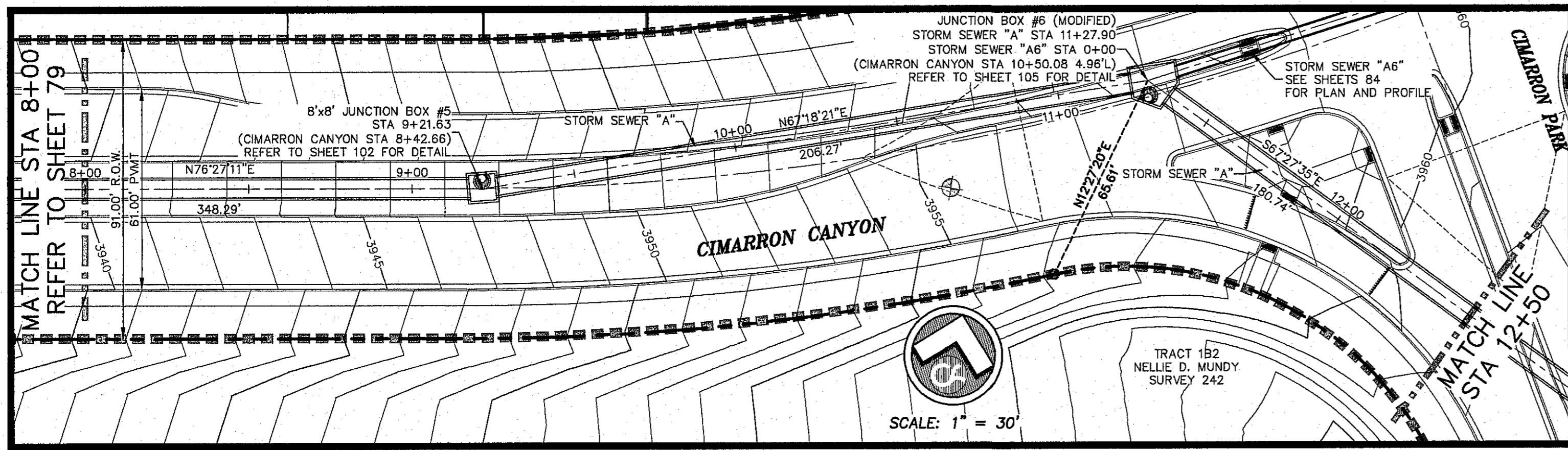
csa design group, inc.
Texas Registered Engineering Firm #997
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: (915) 877.4155
Tel: (915) 877.4334
Fax: (915) 877.4334
www.csaengineers.com



CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
**STORM
SEWER
REFERENCE
PLAN**

DOB	1524
DESIGN BY	9/15/16
DOB-SM-DG	9/15/16
DATE	AS NOTED
SCALE	AS NOTED
SHEET NO. 78B	
82 of 131	



INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN "APPROVED EQUAL" TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

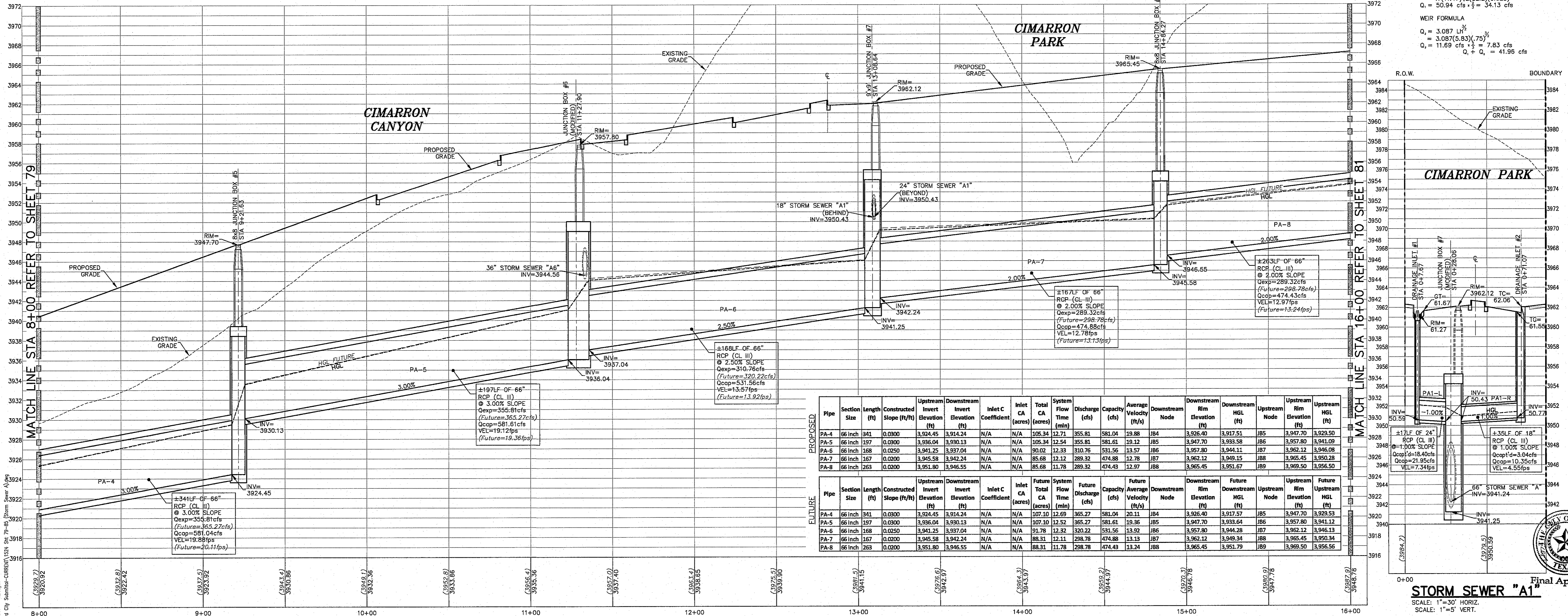
INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

ALL PROFILES SHOWN ON THIS SHEET PHASE ONE CONSTRUCTION

DRAINAGE INLET #1 (OFF-STREET INLET, 4 GRATE)
FLOW THROUGH ORIFICE FORMULA
 $Q = CA\sqrt{2gh}$
 $Q = .7(21.60)\sqrt{2(32.2)(.33)}$
 $Q = 69.70 \text{ cfs} \times \frac{1}{2} = 48.49 \text{ cfs}$

DRAINAGE INLET #2 (TYPE 1, 3 GRATE)
FLOW THROUGH ORIFICE FORMULA
 $Q = CA\sqrt{2gh}$
 $Q = .7(11.47)\sqrt{2(32.2)(0.625)}$
 $Q = 50.94 \text{ cfs} \times \frac{1}{2} = 34.13 \text{ cfs}$

WEIR FORMULA
 $Q = 3.087 L^{3/2} H^{3/2}$
 $Q = 3.087(5.83)(.75)^{3/2}$
 $Q = 11.69 \text{ cfs} \times \frac{1}{2} = 7.83 \text{ cfs}$
 $Q_1 + Q_2 = 41.96 \text{ cfs}$



Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Future Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA-4	66 inch	341	0.0300	3,924.45	3,914.24	N/A	N/A	106.34	12.71	355.81	581.04	19.88	J84	3,926.40	3,917.51	J85	3,947.70	3,929.50
PA-5	66 inch	197	0.0300	3,936.04	3,930.13	N/A	N/A	106.34	12.54	355.81	581.61	19.12	J85	3,947.70	3,933.58	J86	3,957.80	3,941.09
PA-6	66 inch	168	0.0250	3,941.25	3,937.04	N/A	N/A	90.02	12.33	310.76	531.56	13.57	J86	3,957.80	3,944.11	J87	3,962.12	3,946.08
PA-7	66 inch	167	0.0200	3,945.58	3,942.24	N/A	N/A	85.68	12.12	289.32	474.88	12.78	J87	3,962.12	3,949.15	J88	3,965.45	3,950.28
PA-8	66 inch	263	0.0200	3,951.80	3,946.55	N/A	N/A	85.68	11.78	289.32	474.43	12.97	J88	3,965.45	3,951.67	J89	3,969.50	3,956.50

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Future Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA-4	66 inch	341	0.0300	3,924.45	3,914.24	N/A	N/A	107.10	12.69	365.27	581.04	20.11	J84	3,926.40	3,917.57	J85	3,947.70	3,929.53
PA-5	66 inch	197	0.0300	3,936.04	3,930.13	N/A	N/A	107.10	12.52	365.27	581.61	19.36	J85	3,947.70	3,933.64	J86	3,957.80	3,941.12
PA-6	66 inch	168	0.0250	3,941.25	3,937.04	N/A	N/A	91.78	12.32	320.22	531.56	13.92	J86	3,957.80	3,944.28	J87	3,962.12	3,946.13
PA-7	66 inch	167	0.0200	3,945.58	3,942.24	N/A	N/A	86.31	12.11	298.78	474.88	13.13	J87	3,962.12	3,949.34	J88	3,965.45	3,950.34
PA-8	66 inch	263	0.0200	3,951.80	3,946.55	N/A	N/A	88.31	11.78	298.78	474.43	13.24	J88	3,965.45	3,951.79	J89	3,969.50	3,956.56

STORM SEWER "A"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

STORM SEWER "A1"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA1-L	24 inch	17	0.0100	3,950.59	3,950.43	0.95	0.01	3.47	10.00	18.40	21.95	7.34	J87	3,962.12	3,951.87	D1	3,961.27	3,952.13
PA1-R	18 inch	35	0.0100	3,950.77	3,950.43	0.95	0.07	0.87	20.00	3.04	10.35	4.55	J87	3,962.12	3,950.99	D2	3,961.55	3,951.43

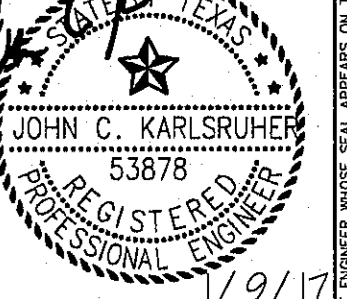
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND W. 30TH ST. (EL. PASO CITY DATUM)
ELEVATION = 3976.5

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitter Final	JCK
2	11/01/16	2nd City Submitter	DAE
1	9/15/16	1st City Submitter	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
EL PASO GAS SERVICE
TELECOM SERVICES
TELEPHONE SERVICE
CITY OF EL PASO
EL PASO NATURAL GAS COMPANY
EL PASO EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on any other project or for any other purpose without the express, written permission from CSEA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csea design group, inc.
Texas Registered Engineering Firm #997
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel (915) 877.4155
Fax (815) 877.4334
www.cseainc.com

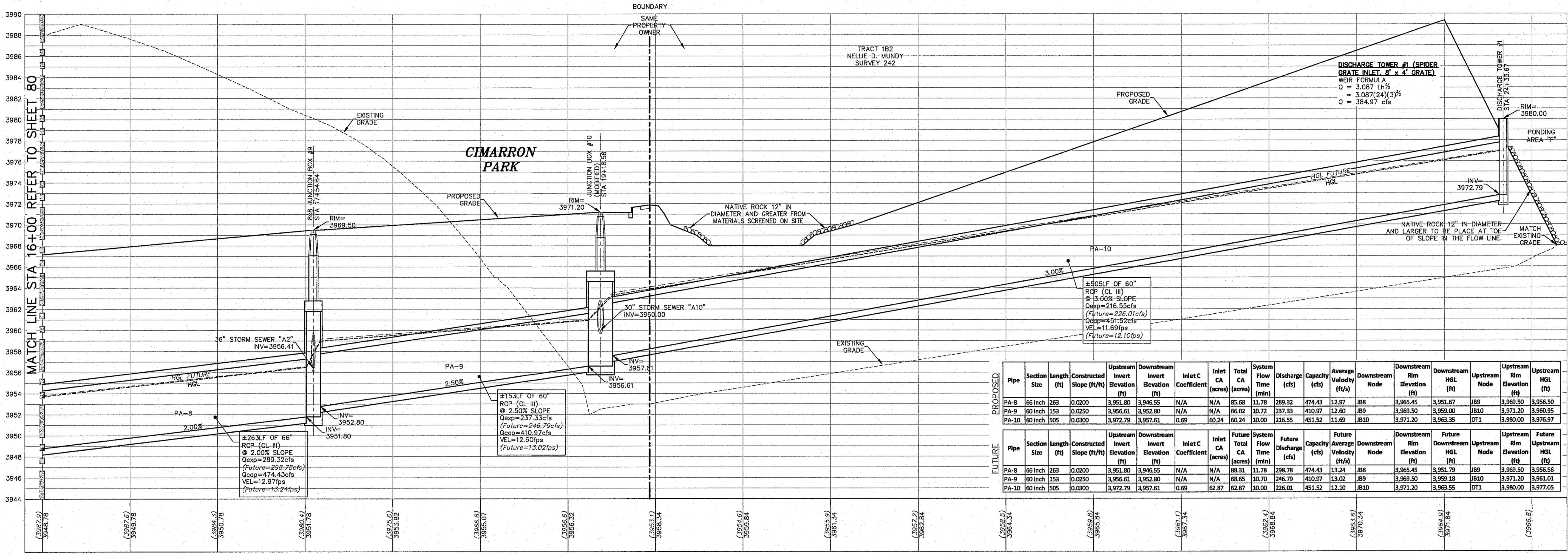
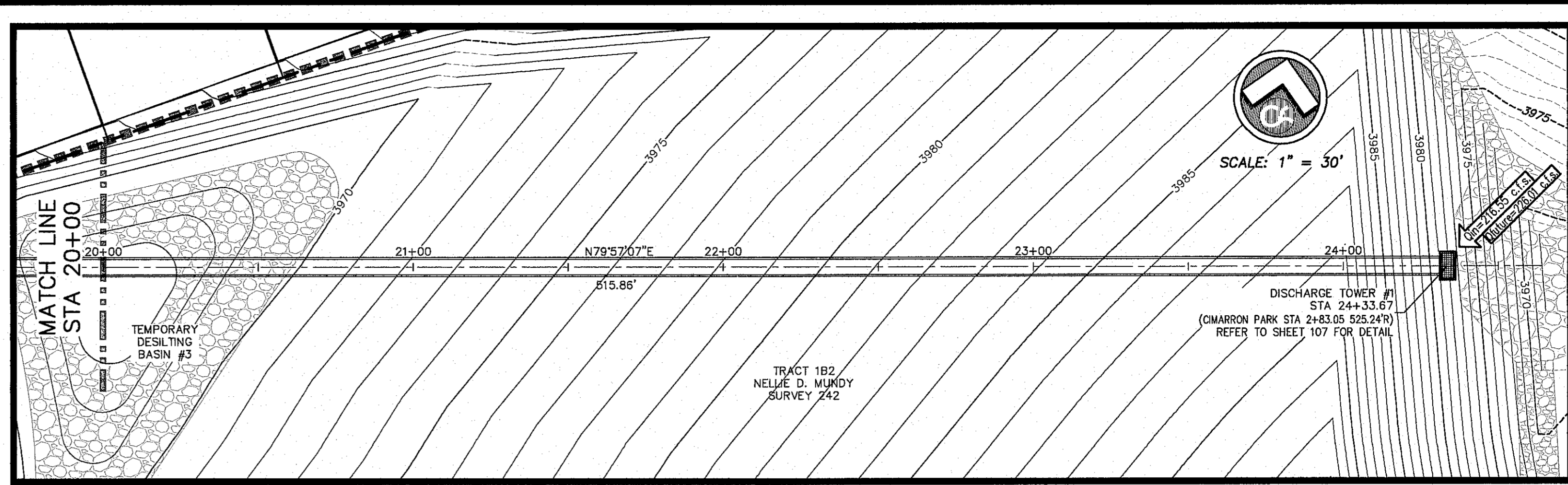
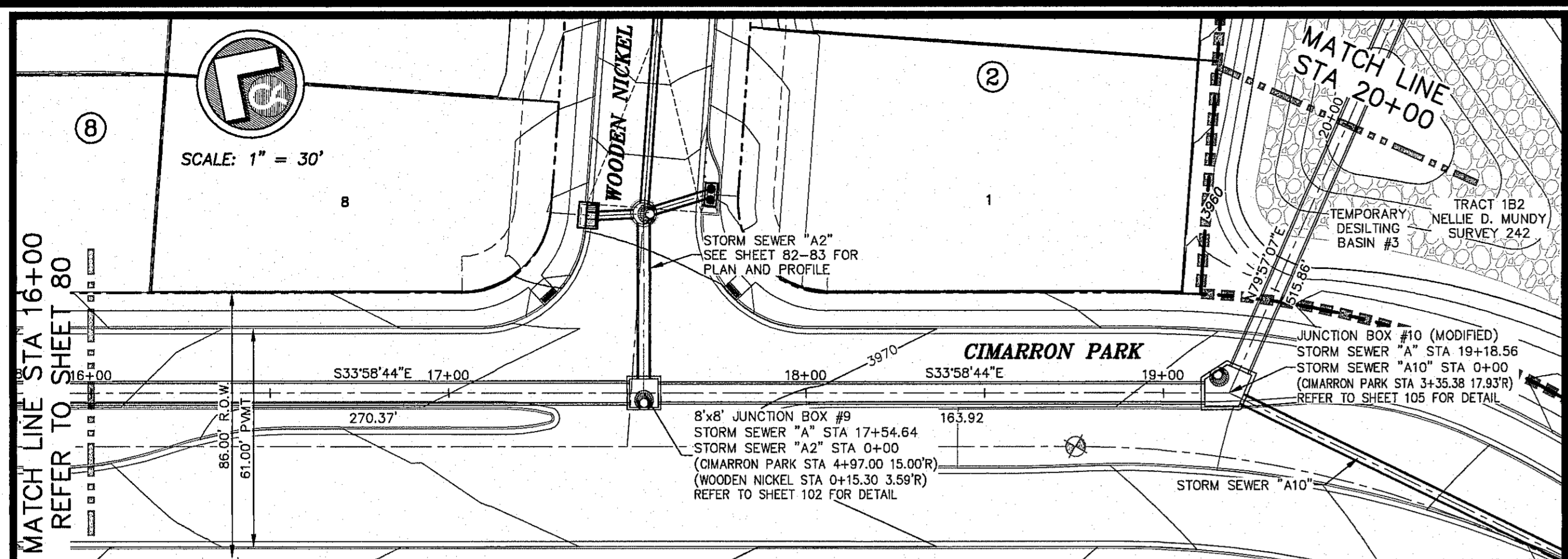


CIMARRON CANYON UNIT ONE SUBDIVISION

STORM SEWER A & A1 PLAN AND PROFILE

JOB NO.	1524
DESIGN BY	JCK
DATE	9/15/16
SCALE	AS NOTED

SHEET NO. 80
SHEET SEQUENCE 84 OF 131



Pipe	Section	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA-8	66 inch	263	0.0200	3,951.80	3,946.55	N/A	N/A	65.68	11.78	289.32	474.43	12.97	JB8	3,965.45	3,951.67	JB9	3,969.50	3,956.50
PA-9	60 inch	153	0.0250	3,956.61	3,952.80	N/A	N/A	66.02	10.72	237.33	410.97	12.60	JB9	3,969.50	3,959.00	JB10	3,971.20	3,960.95
PA-10	60 inch	505	0.0300	3,972.79	3,957.61	0.69	60.24	60.24	10.00	216.55	461.52	11.69	JB10	3,971.20	3,963.35	DT1	3,980.00	3,976.97

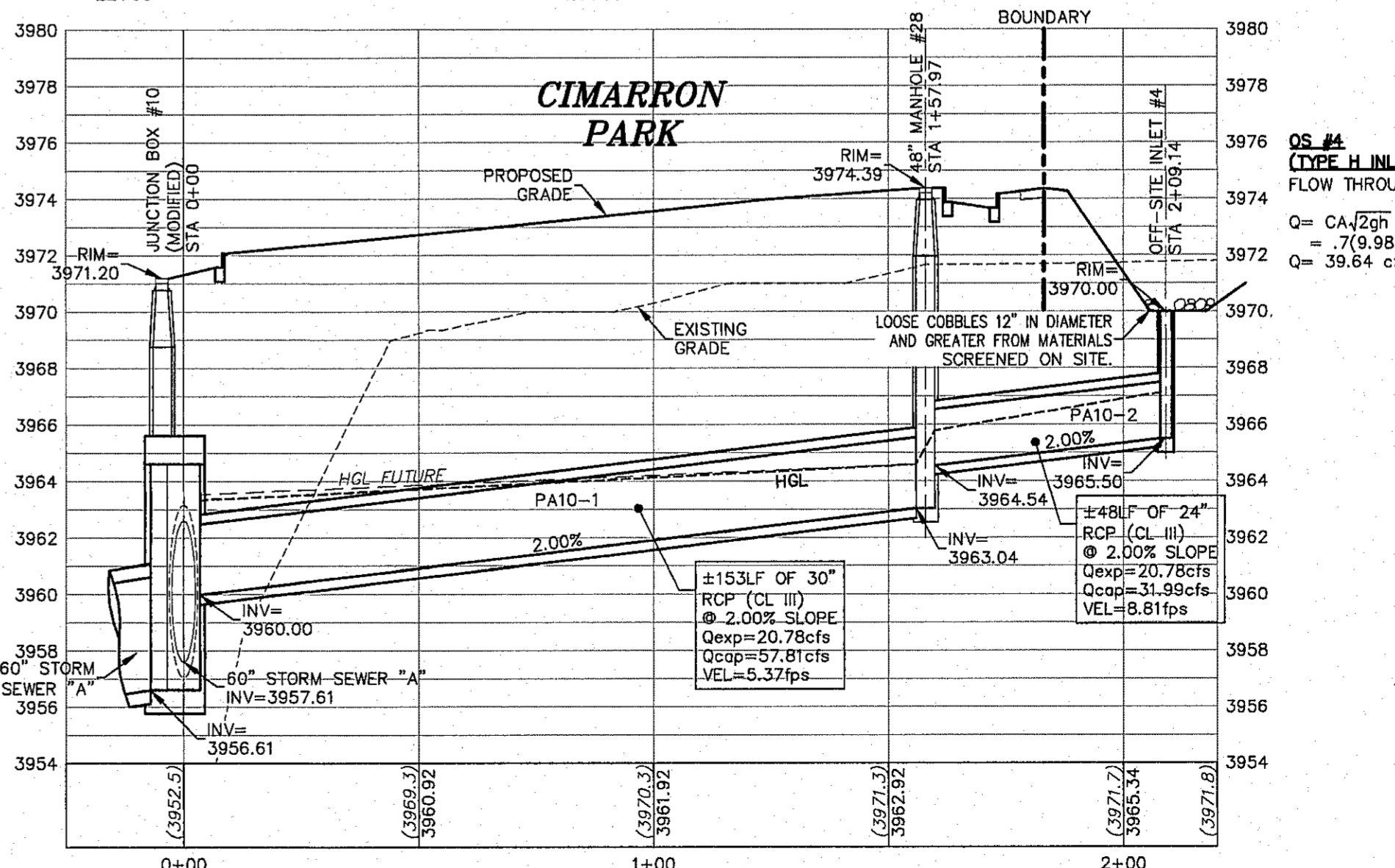
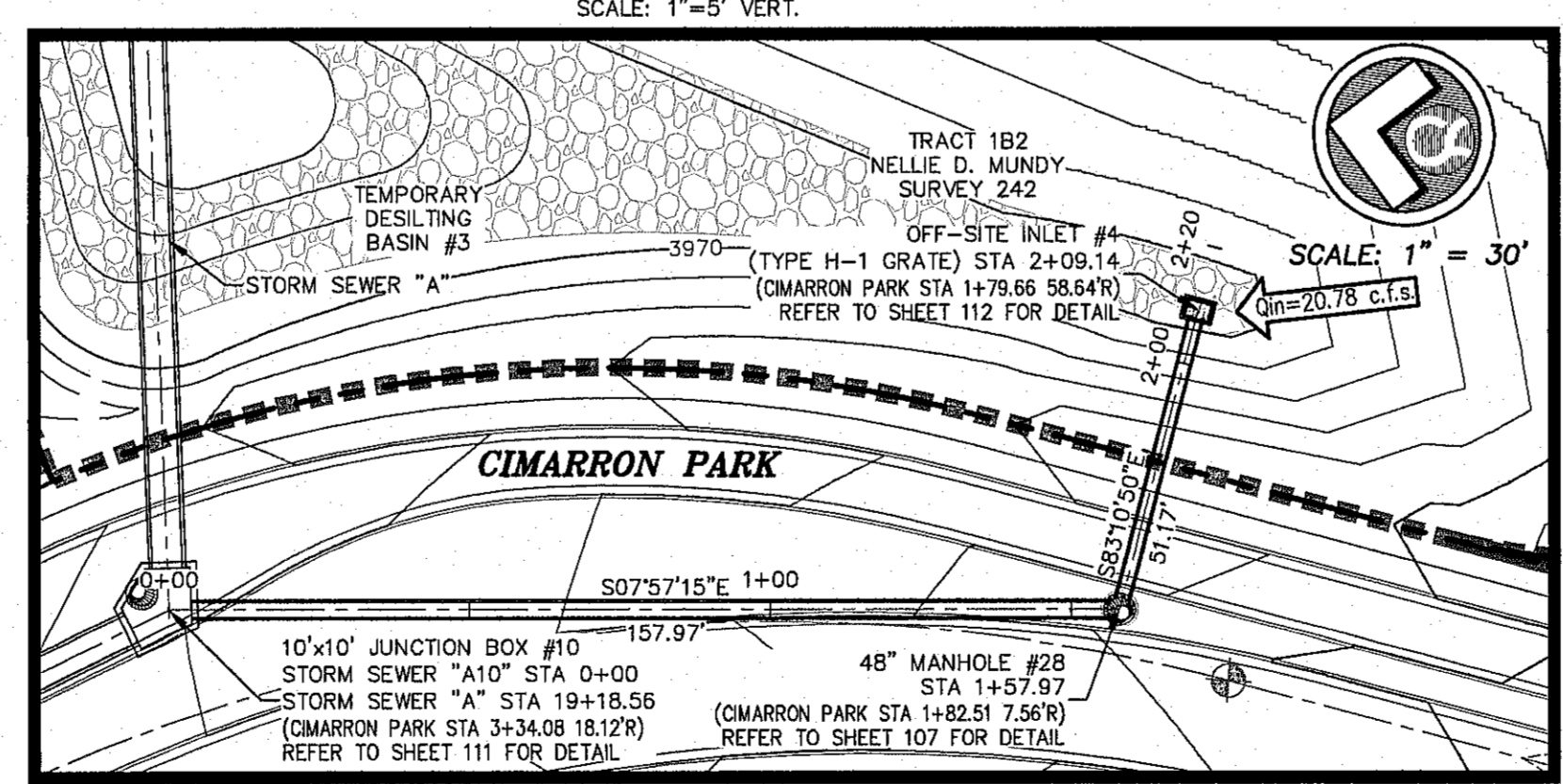
INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

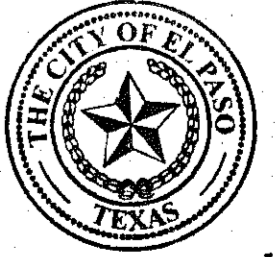
ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU FOR STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

ALL PROFILES SHOWN ON THIS SHEET PHASE ONE CONSTRUCTION



Pipe	Section	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA10-1	30 inch	153	0.0200	3,963.04	3,960.00	N/A	N/A	5.78	10.09	20.78	57.81	5.37	JB10	3,971.20	3,963.35	MH28	3,974.39	3,964.59
PA10-2	24 inch	48	0.0200	3,965.50	3,964.54	0.69	5.78	5.78	10.00	20.78	31.99	8.81	MH28	3,974.39	3,965.79	OS14	3,970.00	3,967.13



CIMARRON CANYON UNIT ONE SUBDIVISION
SHEET TITLE
STORM SEWER A & A10 PLAN AND PROFILE

JOB NO.	1524
DESIGN BY	DR
DATE	9/15/16
SCALE	AS NOTED
BY	DAE
CHECKED BY	DAE
DATE	9/15/16

81
85 of 131

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
EL PASO GAS SERVICE
TEXAS GAS SERVICE
TGS EMERGENCY HOTLINE
EL PASO WATER UTILITY
EL PASO POLICE DEPARTMENT
EL PASO FIRE DEPARTMENT
EL PASO NATURAL GAS COMPANY
TEXAS EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on a project other than the project for which it was prepared. Any reuse, to include copying and/or modifying the content of this document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.

JOHN C. KARLSRUHER
REGISTERED PROFESSIONAL ENGINEER
53878
1/9/17

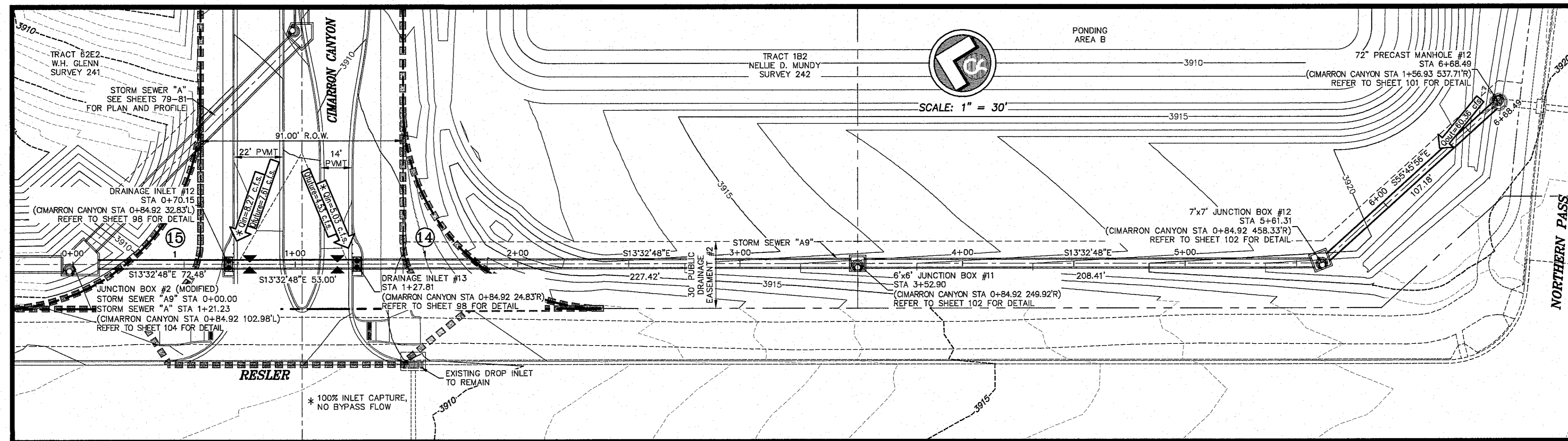
csa design group, inc.
Texas Registered Engineering Firm #997
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: (915) 877.4155
Fax: (915) 877.4334
www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

STORM SEWER A & A10 PLAN AND PROFILE

81
85 of 131



INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

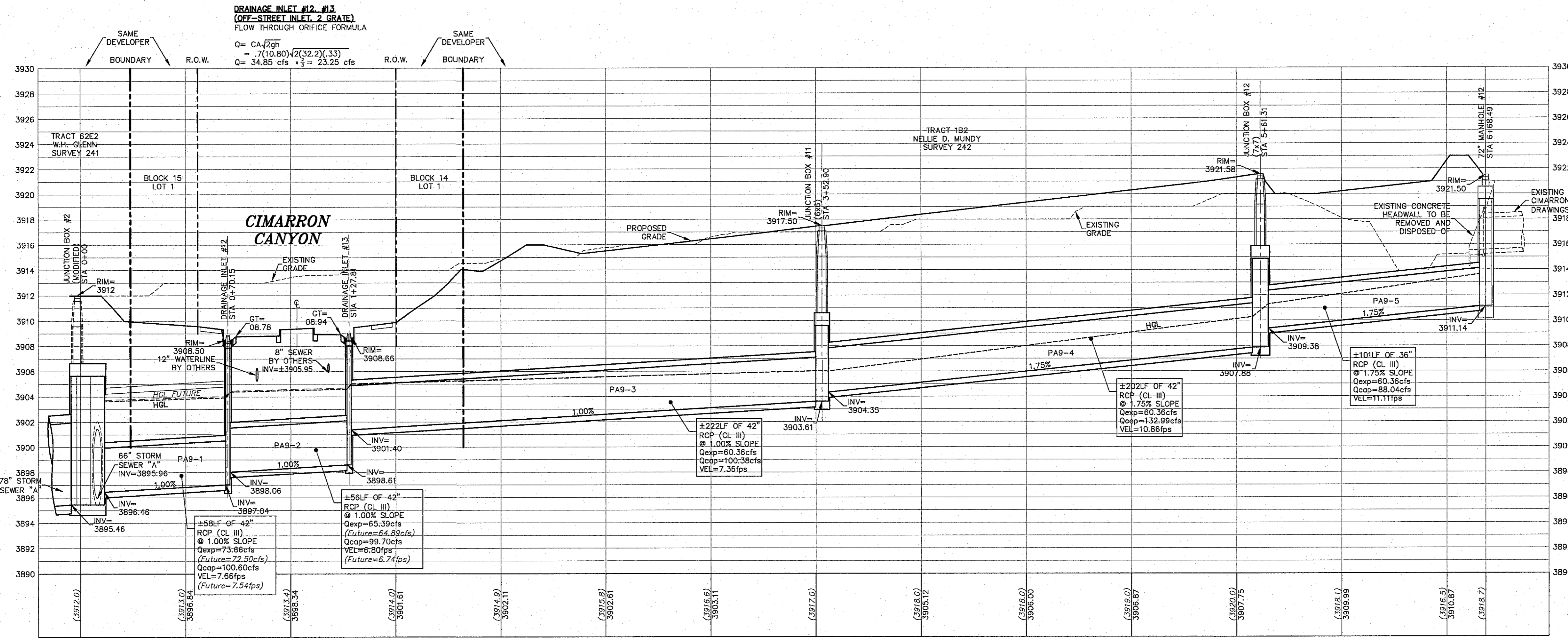
HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

ALL PROFILES SHOWN ON THIS SHEET PHASE ONE CONSTRUCTION

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPERATE REPORT TO ENGINEERING FILES ON SUBDIVISION.



STORM SEWER "A9"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

PROPOSED	Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA9-1	42 inch	58	0.0100	3,897.04	3,896.46	0.95	1.91	14.73	11.30	73.66	100.60	7.66	J82	3,912.00	3,903.66	D12	3,908.50	3,903.97	
PA9-2	42 inch	56	0.0100	3,898.61	3,898.06	0.95	0.62	12.82	10.96	65.39	99.70	6.80	D12	3,908.50	3,904.42	D13	3,908.66	3,904.66	
PA9-3	42 inch	222	0.0100	3,903.61	3,901.40	N/A	N/A	12.20	10.46	60.36	100.38	7.36	D13	3,908.66	3,904.02	J811	3,917.50	3,906.04	
PA9-4	42 inch	202	0.0175	3,907.88	3,904.35	N/A	N/A	12.20	10.15	60.36	132.99	10.86	J811	3,917.50	3,906.02	J812	3,921.58	3,910.31	
PA9-5	36 inch	101	0.0175	3,911.14	3,909.38	N/A	N/A	12.20	12.20	60.36	88.04	11.11	J812	3,921.58	3,911.30	MH12	3,921.50	3,913.65	

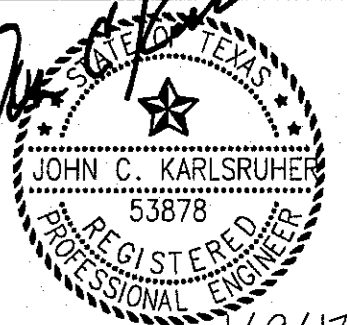
FUTURE	Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Future Total CA (acres)	System Flow Time (min)	Future Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PA9-1	42 inch	58	0.0100	3,897.04	3,896.46	0.95	1.01	14.49	11.10	72.50	100.60	7.54	J82	3,912.00	3,903.77	D12	3,908.50	3,904.07	
PA9-2	42 inch	56	0.0100	3,898.61	3,898.06	0.95	0.52	12.72	10.96	64.89	99.70	6.74	D12	3,908.50	3,904.51	D13	3,908.66	3,904.74	
PA9-3	42 inch	222	0.0100	3,903.61	3,901.40	N/A	N/A	12.20	10.46	60.36	100.38	7.36	D13	3,908.66	3,905.09	J811	3,917.50	3,906.04	
PA9-4	42 inch	202	0.0175	3,907.88	3,904.35	N/A	N/A	12.20	10.15	60.36	132.99	10.86	J811	3,917.50	3,906.02	J812	3,921.58	3,910.31	
PA9-5	36 inch	101	0.0175	3,911.14	3,909.38	N/A	N/A	12.20	12.20	60.36	88.04	11.11	J812	3,921.58	3,911.30	MH12	3,921.50	3,913.65	

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
EL PASO GAS SERVICE
TEGAS EMERGENCY HOTLINE
EL PASO WATER UTILITY
EL PASO NATURAL GAS COMPANY
EL PASO EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on an extension of such project or any other project. Any reuse to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #997
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel: (915) 877.4155
fax: (915) 877.4334
www.csaengineers.com

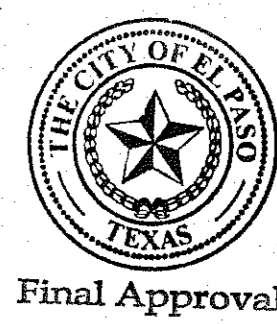


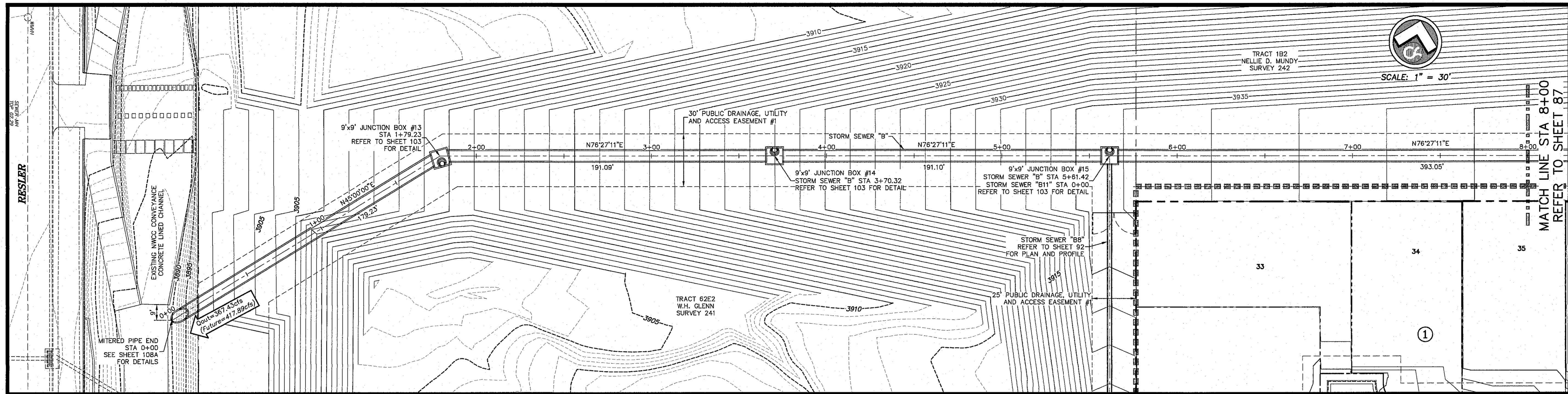
CIMARRON CANYON UNIT ONE SUBDIVISION

SHEET TITLE
STORM SEWER A9 PLAN AND PROFILE

GDB	1524
DESIGN BY	9/15/16
GDB-CM-DG	AS NOTED
DAE	DAE
THROUGHT BY	DAE

85
89 of 131





INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

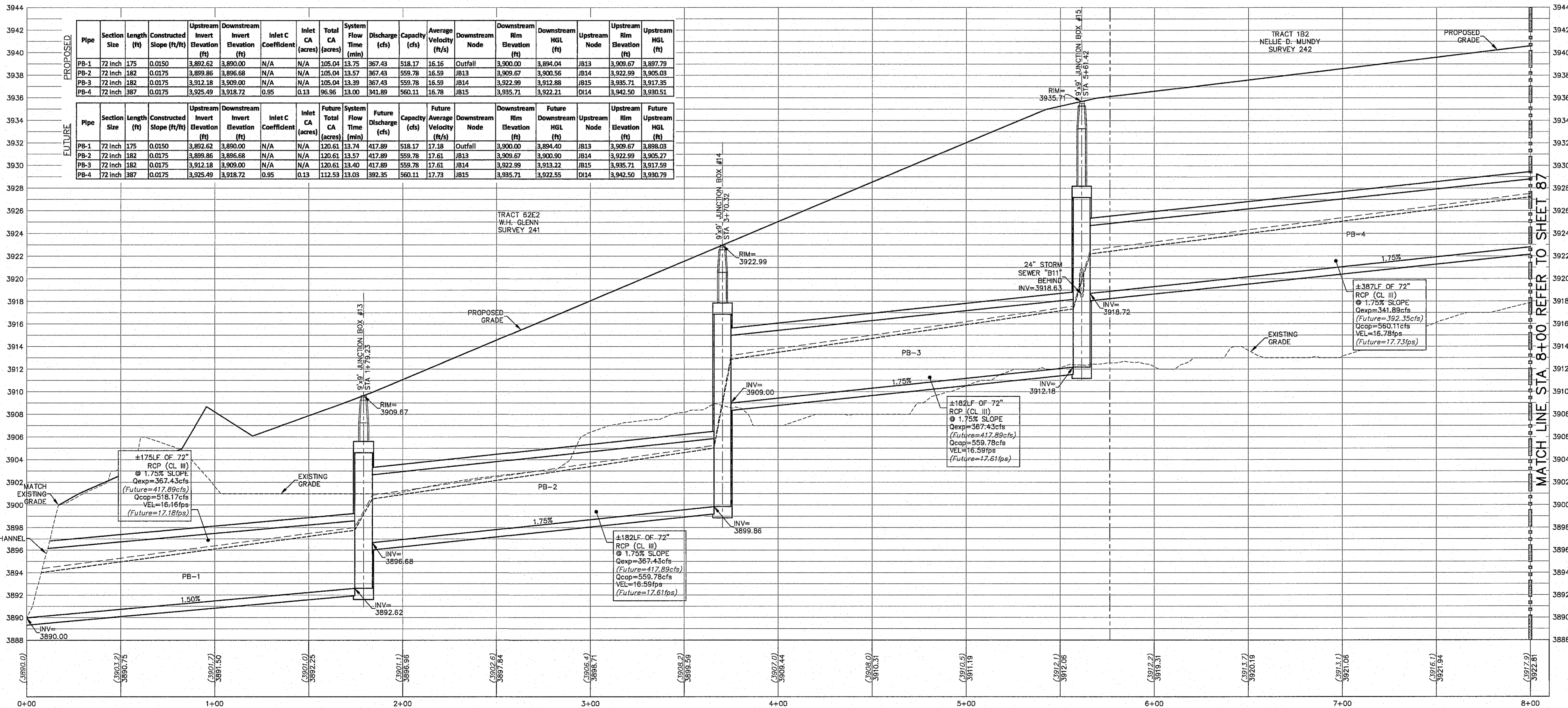
HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN "APPROVED EQUAL" TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

PROFILE SHOWN ON THIS SHEET PHASE THREE CONSTRUCTION



Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB-1	72 inch	175	0.0150	3,892.62	3,890.00	N/A	N/A	105.04	13.75	367.43	518.17	16.16	Outfall	3,900.00	3,894.04	JB13	3,909.67	3,897.79
PB-2	72 inch	182	0.0175	3,899.86	3,896.68	N/A	N/A	105.04	13.57	367.43	559.78	16.59	JB13	3,909.67	3,900.56	JB14	3,922.99	3,905.03
PB-3	72 inch	182	0.0175	3,912.18	3,909.00	N/A	N/A	105.04	13.39	367.43	559.78	16.59	JB14	3,922.99	3,912.88	JB15	3,935.71	3,917.35
PB-4	72 inch	387	0.0175	3,925.49	3,918.72	0.95	0.13	96.96	13.00	341.89	560.11	16.78	JB15	3,935.71	3,922.21	DI14	3,942.50	3,930.51

STORM SEWER "B"
SCALE: 1" = 30' HORIZ.
SCALE: 1" = 5' VERT.

BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYS LANDING DRIVE
ELEVATION = 3878.35 (E. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
646-5720
44-8300
544-8300
1-800-DIG-TESS
1-800-DIG-TESS
776-7414
1-800-334-8047
1-800-334-8047
(282-8272)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, including copying and/or modification in any form, without the express, written permission of the engineer, shall constitute a violation of Federal Copyright law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #9897
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877.4155
fax (915) 877.4334
www.csaengineers.com



CIMARRON CANYON
UNIT ONE
SUBDIVISION

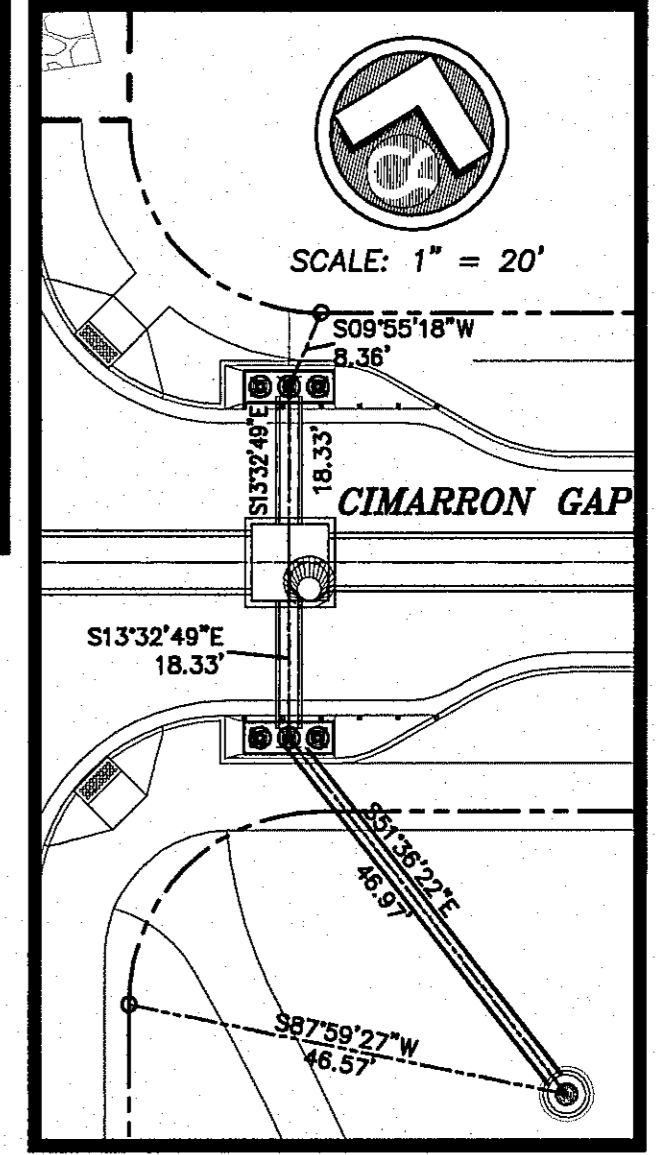
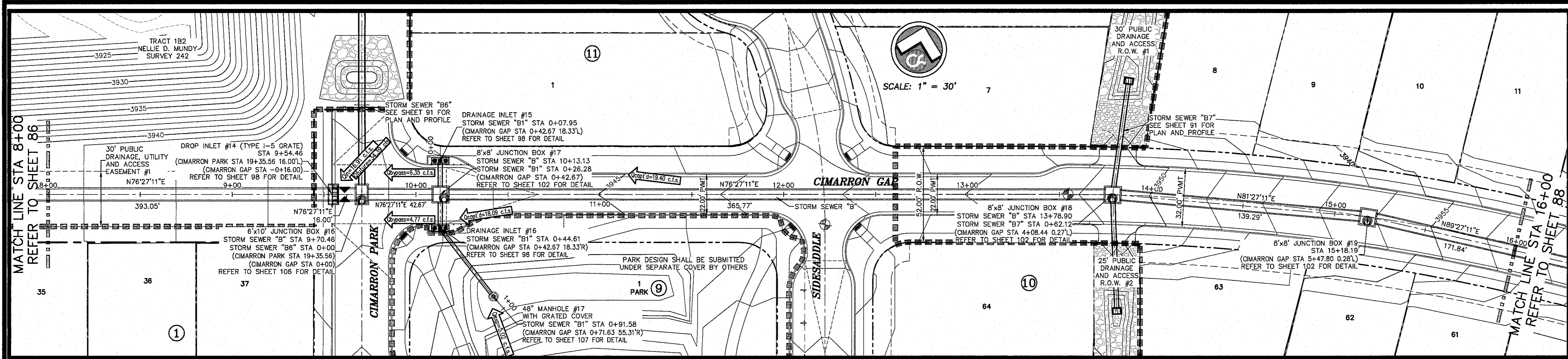
**STORM SEWER B
PLAN AND PROFILE**

DOB	1524
DOB-SM-DC	9/15/16
DAE	AS NOTED
SCALE	SCALE

SHEET NO. **86**
90 of 131



© CSA DESIGN GROUP, INC. - Jan 06, 2017 - 12:09pm
S:\Down\1524_Cimarron Canyon Unit One\1524_01a_City Submittal-CORRUM\1524_S01_86-94_Storm Sewer B.dwg

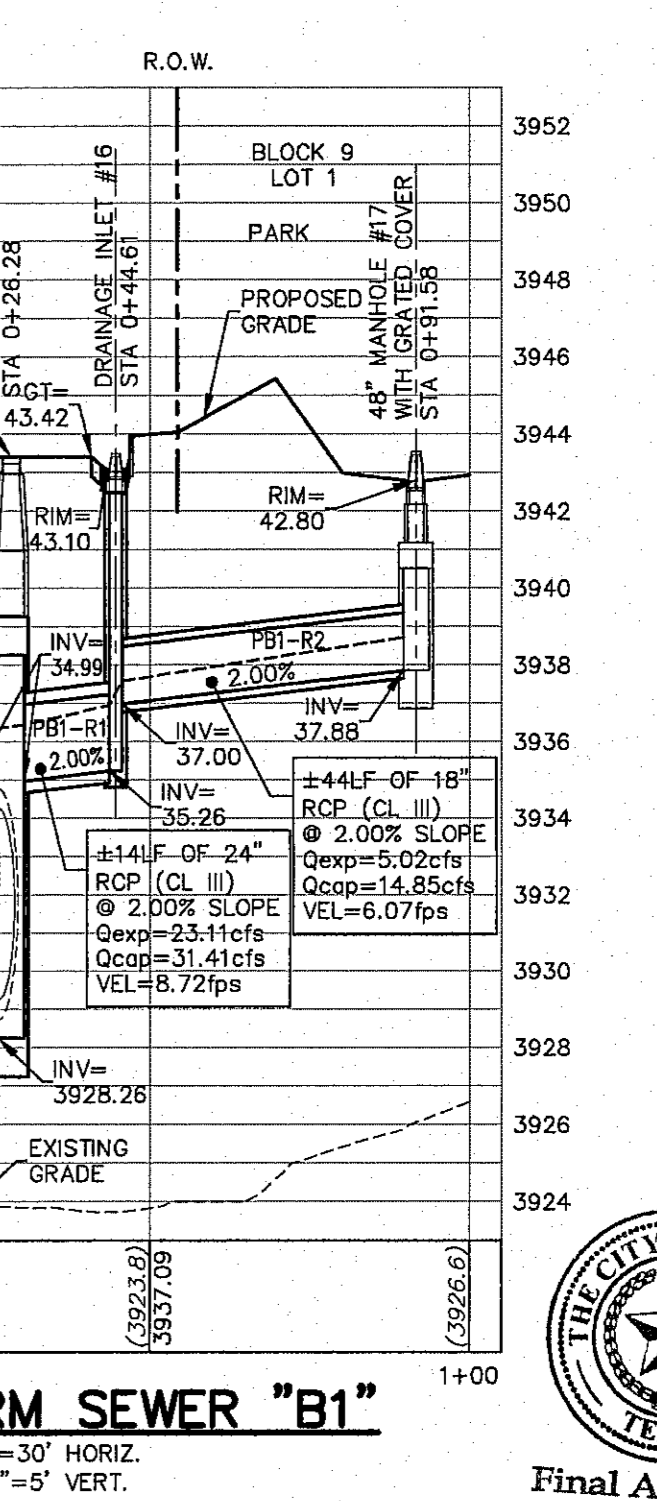
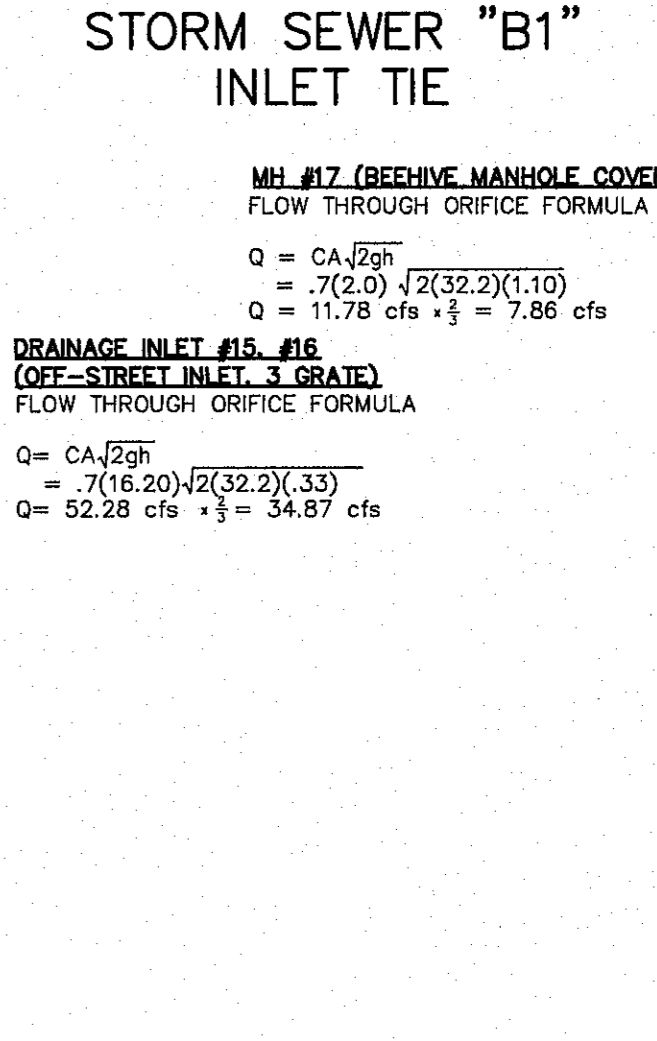
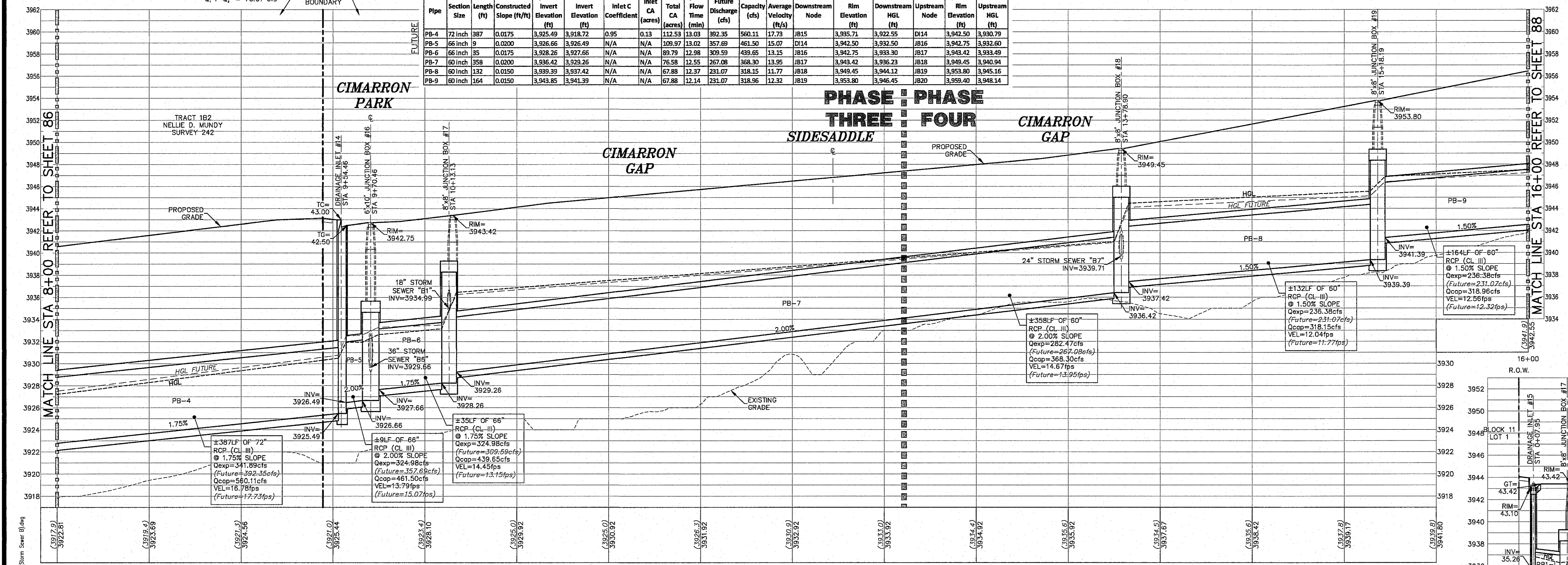


DRAINAGE INLET #14
(TYPE I-5 GRATE)
FLOW THROUGH INLET FORMULA
 $Q_i = CA \cdot Z \cdot g^{0.5}$
 $Q_i = 7(19.12) \sqrt{0.32(2)(0.625)}$
 $Q_i = 84.81 \text{ cfs } \frac{1}{2} = 42.41 \text{ cfs}$

WEIR FORMULA
 $Q_i = 3.087 L^{1.5} H^{1.5}$
 $Q_i = 3.087(9.77)(.75)^{1.5}$
 $Q_i = 19.59 \text{ cfs } \frac{1}{2} = 9.79 \text{ cfs}$
 $Q_i + Q_w = 70.01 \text{ cfs}$

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB-4	72 inch	387	0.0175	3,925.49	3,918.72	0.95	0.13	96.96	13.00	341.89	560.11	16.78	JB15	3,935.71	3,922.21	DI14	3,942.50	3,930.51
PB-5	66 inch	9	0.0200	3,926.66	3,926.49	N/A	N/A	95.44	12.99	324.98	461.50	13.79	DI14	3,942.50	3,931.93	JB16	3,942.75	3,931.94
PB-6	66 inch	35	0.0175	3,928.26	3,927.66	N/A	N/A	95.44	12.95	324.98	439.65	14.45	JB16	3,942.75	3,932.64	JB17	3,943.42	3,933.17
PB-7	60 inch	358	0.0200	3,936.42	3,929.26	N/A	N/A	82.23	12.54	282.47	368.30	14.67	JB17	3,943.42	3,936.44	JB18	3,949.45	3,941.02
PB-8	60 inch	132	0.0150	3,939.39	3,937.42	N/A	N/A	69.41	12.38	236.38	318.15	12.04	JB18	3,949.45	3,945.49	JB19	3,953.80	3,945.58
PB-9	60 inch	164	0.0150	3,943.85	3,941.39	N/A	N/A	69.41	12.14	236.38	318.96	12.56	JB19	3,953.80	3,946.93	JB20	3,959.40	3,948.18

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Future Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Future Rim Elevation (ft)	Future HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Future HGL (ft)
PB-4	72 inch	387	0.0175	3,925.49	3,918.72	0.95	0.13	112.53	13.03	392.35	560.11	17.73	JB15	3,935.71	3,922.55	DI14	3,942.50	3,930.79
PB-5	66 inch	9	0.0200	3,926.66	3,926.49	N/A	N/A	109.97	13.02	357.69	461.50	15.07	DI14	3,942.50	3,932.50	JB16	3,942.75	3,932.60
PB-6	66 inch	35	0.0175	3,928.26	3,927.66	N/A	N/A	89.79	12.98	309.59	439.65	13.15	JB16	3,942.75	3,933.30	JB17	3,943.42	3,933.49
PB-7	60 inch	358	0.0200	3,936.42	3,929.26	N/A	N/A	76.58	12.55	267.08	368.30	13.95	JB17	3,943.42	3,936.23	JB18	3,949.45	3,940.94
PB-8	60 inch	132	0.0150	3,939.39	3,937.42	N/A	N/A	67.88	12.37	231.07	318.15	11.77	JB18	3,949.45	3,944.12	JB19	3,953.80	3,945.16
PB-9	60 inch	164	0.0150	3,943.85	3,941.39	N/A	N/A	67.88	12.14	231.07	318.96	12.32	JB19	3,953.80	3,946.45	JB20	3,959.40	3,948.14



STORM SEWER "B"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB1-L	24 inch	14	0.0200	3,935.26	3,934.99	0.60	2.83	5.19	10.00	19.40	31.41	8.04	JB17	3,943.42	3,936.31	DI15	3,943.10	3,936.84
PB1-R1	24 inch	14	0.0200	3,935.26	3,934.99	0.60	3.13	8.02	10.12	23.11	31.41	8.72	JB17	3,943.42	3,936.46	DI16	3,943.10	3,936.97
PB1-R2	18 inch	44	0.0200	3,937.88	3,937.00	0.40	2.41	2.41	10.00	5.02	14.85	6.07	DI16	3,943.10	3,937.61	MH17	3,942.80	3,938.74

INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBMISSION.

© CSA DESIGN GROUP, INC., Jan. 10, 2017 - 12:58pm
1524 JWB GIG
1845 Northw. eastern Dr. Ste C
El Paso, Texas 79912
Tel: (915) 877-4155
Fax: (915) 877-4334
www.csadesigngroup.com

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitted Final	JCK
2	11/20/16	2nd City Submitted	DAE
1	9/15/16	1st City Submitted	DAE

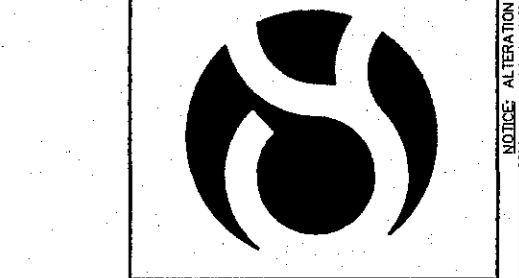
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 545-5720
1-800-DIG-TESS 544-8800
TEXAS GAS SERVICE 662-3411/662-5006
TGS EMERGENCY HOTLINE 662-3411/662-5006
AFTER HOURS EMERGENCY (EPW) 787-7416
787-7416
TEXAS NATURAL GAS COMPANY 1-800-DIG-TESS (844-8377)
TEXAS EDUCATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client's project for which it was prepared. The document is not intended or authorized for reuse by any party on extensions of such project or any other project without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended in a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

JOHN C. KARLSRUHER
53878
PROFESSIONAL ENGINEER
19/17

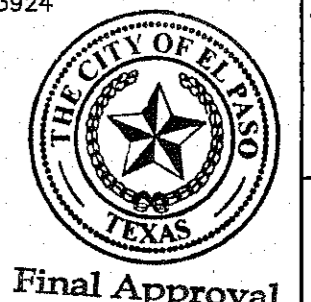
csa design group, inc.
Texas Registered Engineers Firm #897
1845 Northw. eastern Dr. Ste C
El Paso, Texas 79912
Tel: (915) 877-4155
Fax: (915) 877-4334
www.csadesigngroup.com

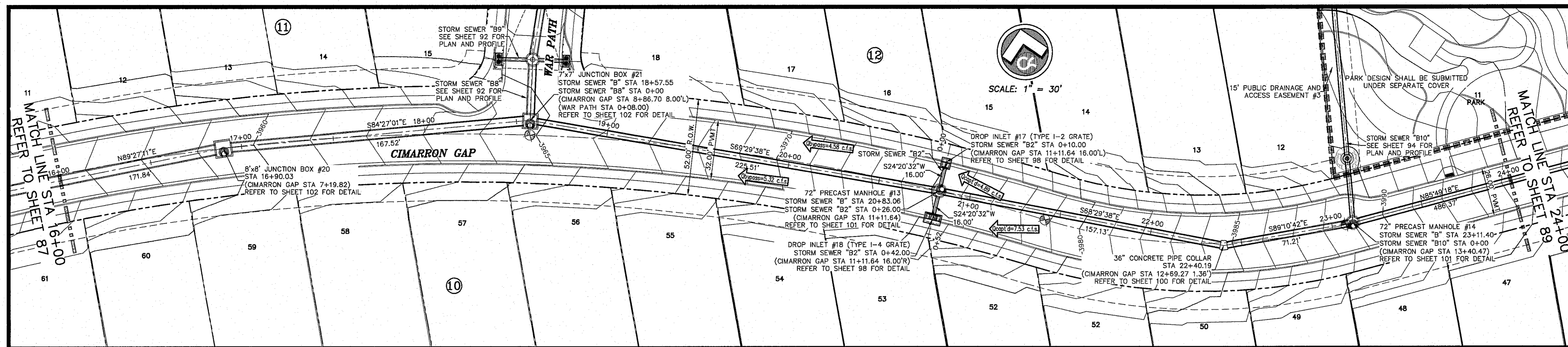


CIMARRON CANYON
UNIT ONE
SUBDIVISION

STORM SEWER B & B1 PLAN AND PROFILE

COB	1524
COB-SM-DC	9/15/16
DATE	AS NOTED
CREATED BY	SCALE
SHEET NO. 87	
91 of 131	





**ALL PROFILES SHOWN
ON THIS SHEET
PHASE FOUR
CONSTRUCTION**

INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURE. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PEOPLE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN "APPROVED EQUAL" TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

**DRAINAGE INLET #17
(TYPE 1-2 GRATE)**
FLOW THROUGH ORIFICE FORMULA
 $Q = CA\sqrt{2gh}$
 $Q = 71(7.65)\sqrt{2(32.2)(0.625)}$
 $Q = 33.97 \text{ cfs}$

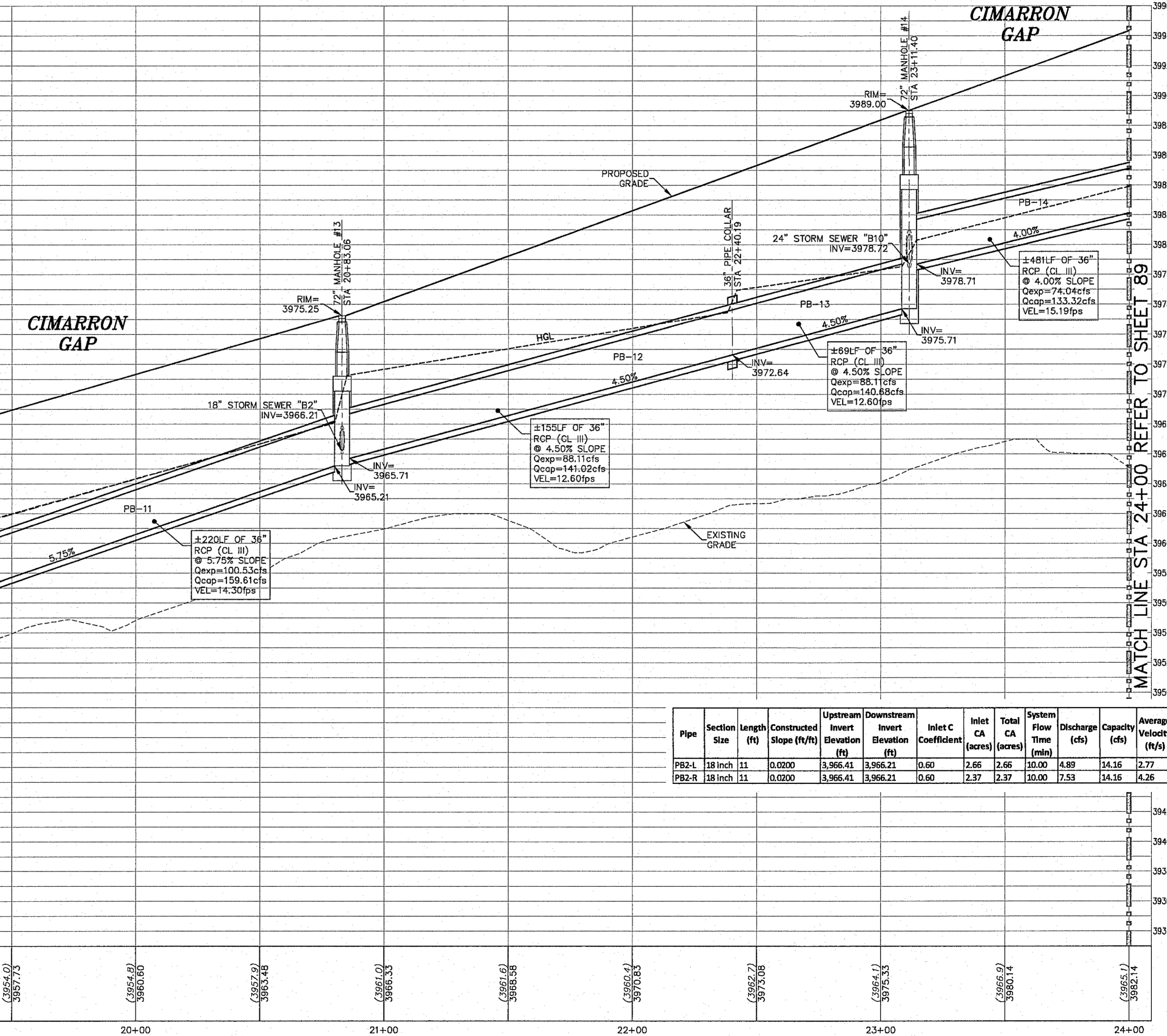
WEIR FORMULA
 $Q = 3.087 L^{1.5} \sqrt{H}$
 $Q = 3.087(3.86)\sqrt{0.75}$
 $Q = 7.74 \text{ cfs}$

**DRAINAGE INLET #18
(TYPE 1-4 GRATE)**
FLOW THROUGH ORIFICE FORMULA
 $Q = CA\sqrt{2gh}$
 $Q = 71(15.34)\sqrt{2(32.2)(0.625)}$
 $Q = 67.95 \text{ cfs}$

WEIR FORMULA
 $Q = 3.087 L^{1.5} \sqrt{H}$
 $Q = 3.087(7.80)\sqrt{0.75}$
 $Q = 15.64 \text{ cfs}$

Pipe	Section	Length	Constructed	Upstream	Downstream	Inlet C	Inlet CA	Total CA	System	Discharge	Capacity	Average	Downstream	Downstream	Downstream	Upstream	Upstream	
	Size	(ft)	Slope (ft/ft)	Invert Elevation (ft)	Invert Elevation (ft)	Coefficient	(acres)	(acres)	Flow Time (min)	(cfs)	(cfs)	Velocity (ft/s)	Node	Rim Elevation (ft)	HGL (ft)	Node	Rim Elevation (ft)	
PB-9	60 inch	164	0.0150	3,943.85	3,941.39	N/A	N/A	69.41	12.14	236.38	318.96	12.56	JB19	3,953.80	3,946.93	JB20	3,959.40	3,948.18
PB-10	60 inch	160	0.0275	3,951.64	3,947.24	N/A	N/A	69.41	11.98	236.38	431.87	16.43	JB20	3,959.40	3,950.17	JB21	3,964.78	3,955.97
PB-11	36 inch	220	0.0575	3,965.21	3,952.61	N/A	N/A	28.77	11.72	100.53	159.61	14.30	JB21	3,964.78	3,957.83	MH13	3,975.25	3,968.11
PB-12	36 inch	155	0.0450	3,972.64	3,965.71	N/A	N/A	23.74	11.52	88.11	141.02	12.60	MH13	3,975.25	3,971.32	PC1	3,985.00	3,975.47
PB-13	36 inch	69	0.0450	3,975.71	3,972.64	N/A	N/A	23.74	11.43	140.68	140.68	12.60	PC1	3,985.00	3,976.99	MH14	3,989.00	3,978.54
PB-14	36 inch	481	0.0400	3,997.93	3,978.71	N/A	N/A	20.64	20.90	74.04	133.32	15.19	MH14	3,989.00	3,980.31	MH15	4,018.21	4,000.64

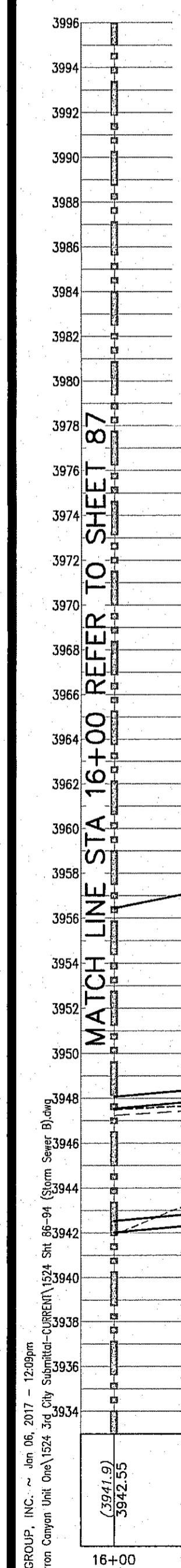
Pipe	Section	Length	Constructed	Upstream	Downstream	Inlet C	Inlet CA	Future	System	Discharge	Capacity	Future	Downstream	Downstream	Downstream	Upstream	Upstream	
	Size	(ft)	Slope (ft/ft)	Invert Elevation (ft)	Invert Elevation (ft)	Coefficient	(acres)	(acres)	Flow Time (min)	(cfs)	(cfs)	Velocity (ft/s)	Node	Rim Elevation (ft)	HGL (ft)	Node	Rim Elevation (ft)	
PB-9	60 inch	164	0.0150	3,943.85	3,941.39	N/A	N/A	67.88	12.14	231.07	318.96	12.32	JB19	3,953.80	3,946.45	JB20	3,959.40	3,948.14
PB-10	60 inch	160	0.0275	3,951.64	3,947.24	N/A	N/A	67.88	11.98	231.07	431.87	16.27	JB20	3,959.40	3,950.13	JB21	3,964.78	3,955.93
PB-11	36 inch	220	0.0575	3,965.21	3,952.61	N/A	N/A	28.77	11.72	100.53	159.61	14.30	JB21	3,964.78	3,957.74	MH13	3,975.25	3,968.11
PB-12	36 inch	155	0.0450	3,972.64	3,965.71	N/A	N/A	23.74	11.52	88.11	141.02	12.60	MH13	3,975.25	3,971.32	PC1	3,985.00	3,975.47
PB-13	36 inch	69	0.0450	3,975.71	3,972.64	N/A	N/A	23.74	11.43	140.68	140.68	12.60	PC1	3,985.00	3,976.99	MH14	3,989.00	3,978.54
PB-14	36 inch	481	0.0400	3,997.93	3,978.71	N/A	N/A	20.64	20.90	74.04	133.32	15.19	MH14	3,989.00	3,980.31	MH15	4,018.21	4,000.64



Pipe	Section	Length	Constructed	Upstream	Downstream	Inlet C	Inlet CA	Total CA	System	Discharge	Capacity	Average	Downstream	Downstream	Downstream	Upstream	Upstream	
	Size	(ft)	Slope (ft/ft)	Invert Elevation (ft)	Invert Elevation (ft)	Coefficient	(acres)	(acres)	Flow Time (min)	(cfs)	(cfs)	Velocity (ft/s)	Node	Rim Elevation (ft)	HGL (ft)	Node	Rim Elevation (ft)	
PB2-L	18 inch	11	0.0200	3,966.41	3,966.21	0.60	2.66	2.66	10.00	4.89	14.16	2.77	MH13	3,975.25	3,971.32	D17	3,974.95	3,971.34
PB2-R	18 inch	11	0.0200	3,966.41	3,966.21	0.60	2.37	2.37	10.00	7.53	14.16	4.26	MH13	3,975.25	3,971.32	D18	3,974.95	3,971.38

STORM SEWER "B"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

STORM SEWER "B2"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.



BENCHMARK CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND N. PASO DRIVE (EL. PASO CITY DATUM)
ELEVATION = 3978.63

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/7/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
ELECTRIC COMPANY
GAS SERVICE
TELEPHONE SERVICE
CITY OF PASO
EMERGENCY HOTLINE
AFTER HOURS EMERGENCY (EPW)
TIME WARNER (CABLE)
EL PASO NATURAL GAS COMPANY
EL PASO EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or electronic form, is the property of csa design group, inc. and is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, without the prior written permission of csa design group, inc. The user of this document is authorized to use the information contained herein for the specific project and site only. Any other use is prohibited.



csa design group, inc.
Texas Registered Engineering Firm #4887
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: (915) 877-4155
Fax: (915) 877-4334
www.csaengineers.com

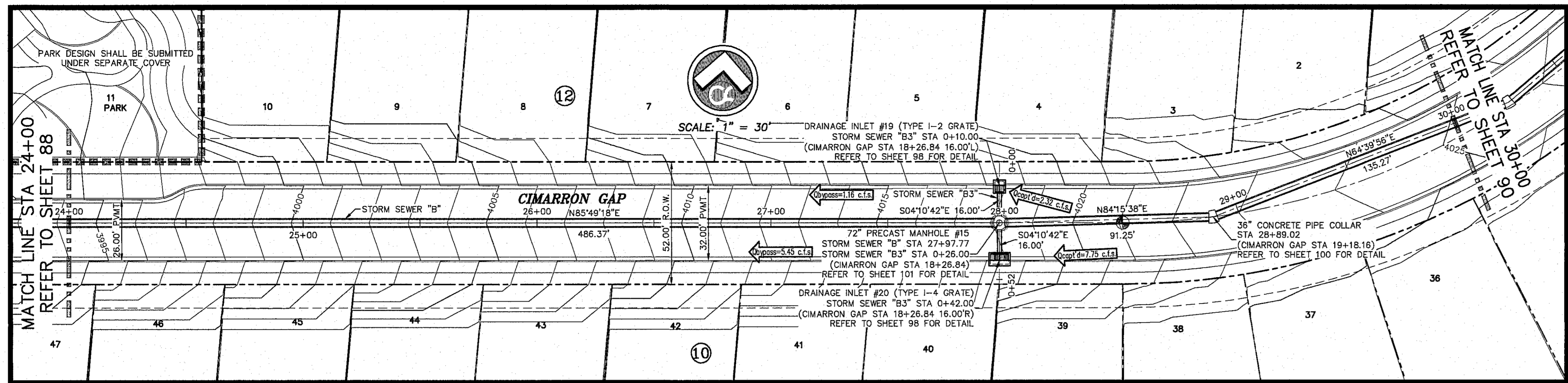


**CIMARRON CANYON
UNIT ONE
SUBDIVISION**
SHEET TITLE
**STORM SEWER
B & B2
PLAN AND
PROFILE**

COB	1524
COB-SM-DG	9/15/16
DATE	AS NOTED
DESIGNED BY	SCALE

SHEET NO.
88
SHEET TOTAL
92 OF 131





INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURE. BEARING AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

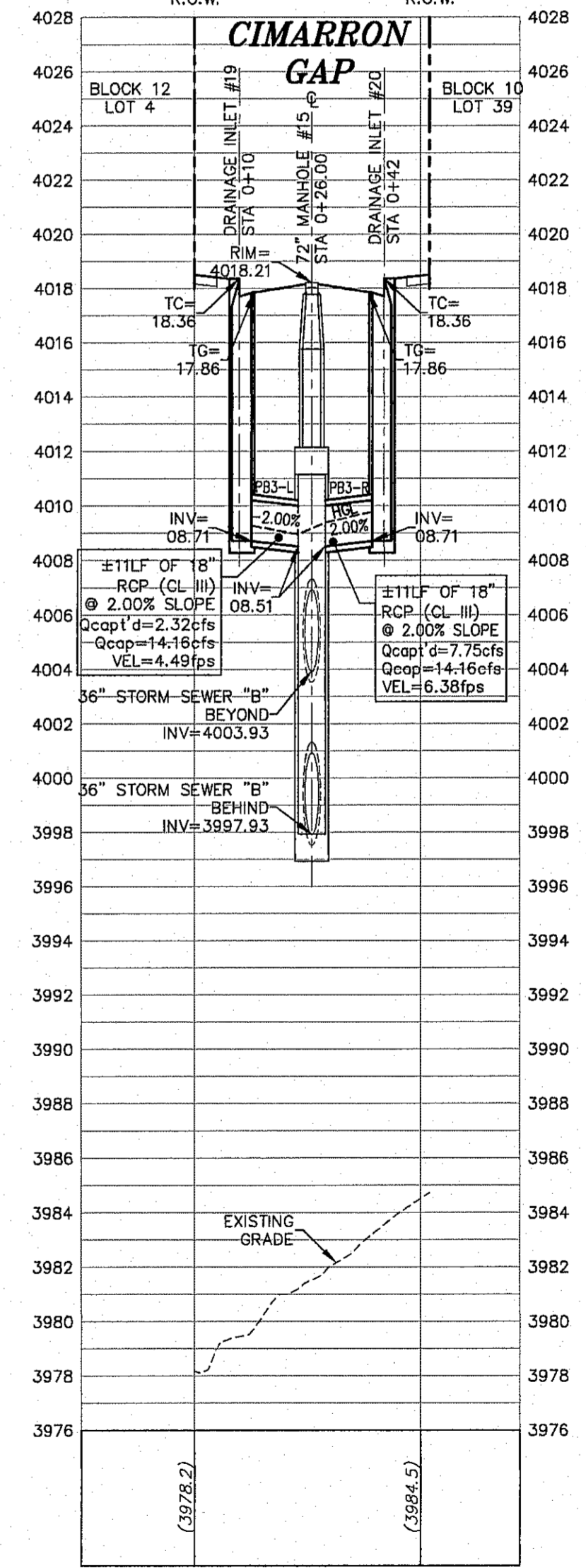
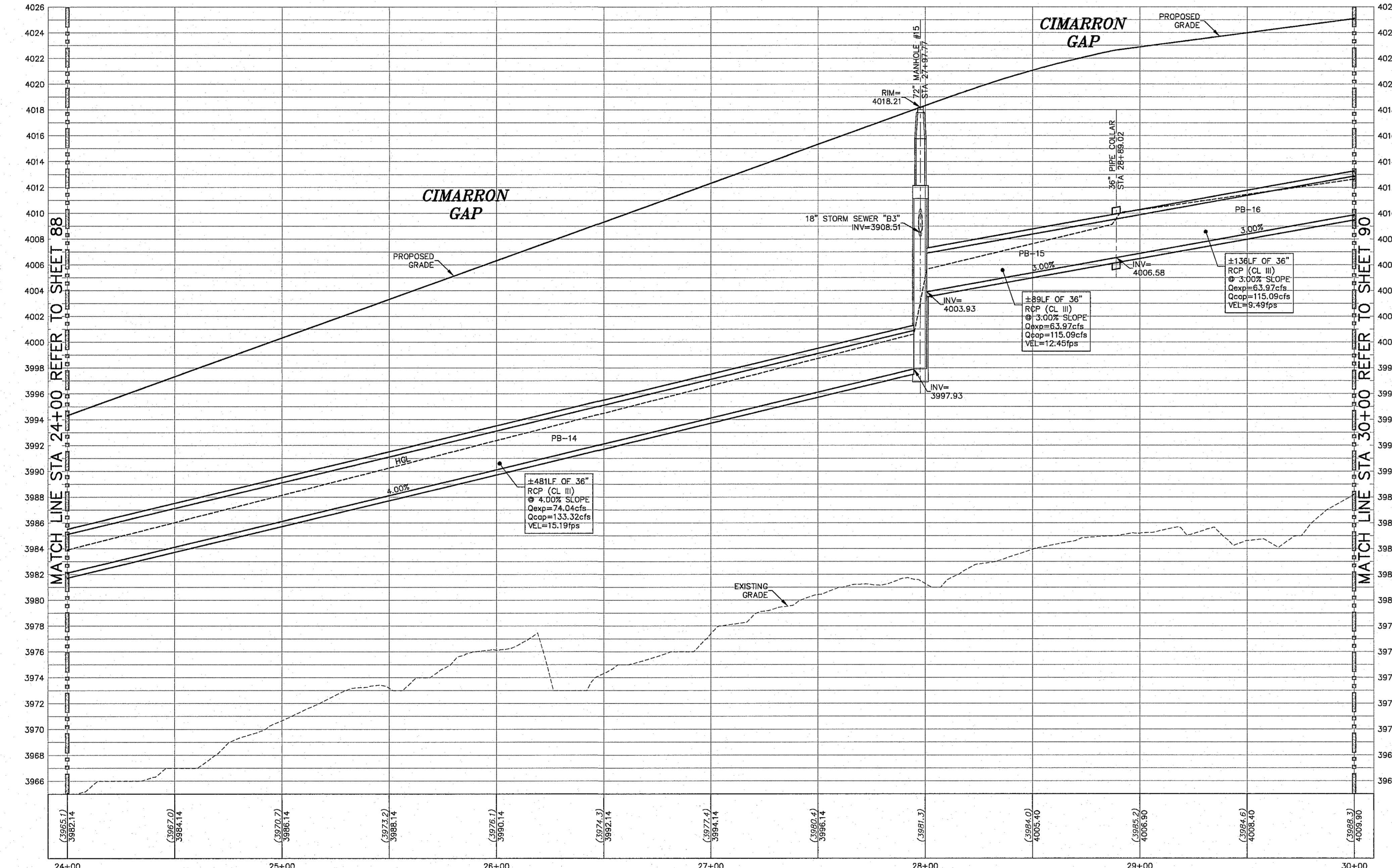
SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

ALL PROFILES SHOWN ON THIS SHEET PHASE FOUR CONSTRUCTION

DRAINAGE INLET #19 (TYPE 1-2 GRATE)
 FLOW THROUGH ORIFICE FORMULA
 $Q_i = CA\sqrt{2gh}$
 $= 7(7.65) \sqrt{2(32.2)(0.625)}$
 $Q_i = 33.97 \text{ cfs} \times \frac{1}{3} = 22.76 \text{ cfs}$
 WEIR FORMULA
 $Q_i = 3.087 L^{3/2}$
 $= 3.087(3.86)(.75)^{3/2}$
 $Q_i = 7.74 \text{ cfs}$
 $Q_i + Q_w = 27.94 \text{ cfs}$

DRAINAGE INLET #20 (TYPE 1-4 GRATE)
 FLOW THROUGH ORIFICE FORMULA
 $Q_i = CA\sqrt{2gh}$
 $= 7(15.3) \sqrt{2(32.2)(0.625)}$
 $Q_i = 67.95 \text{ cfs} \times \frac{1}{3} = 45.52 \text{ cfs}$
 WEIR FORMULA
 $Q_i = 3.087 L^{3/2}$
 $= 3.087(7.80)(.75)^{3/2}$
 $Q_i = 15.64 \text{ cfs}$
 $Q_i + Q_w = 56.00 \text{ cfs}$



STORM SEWER "B"
 SCALE: 1"=30' HORIZ.
 SCALE: 1"=5' VERT.

STORM SEWER "B3"
 SCALE: 1"=30' HORIZ.
 SCALE: 1"=5' VERT.

Pipe	Section	Length	Constructed	Upstream	Downstream	Inlet C	Inlet	Total	System	Discharge	Capacity	Average	Downstream	Downstream	Downstream	Upstream	Upstream
	Size	(ft)	Slope (ft/ft)	Invert	Invert	Coefficient	CA	CA	Flow	(cfs)	(cfs)	Velocity	Node	Rim	Rim	Node	Rim
				Elevation	Elevation		(acres)	(acres)	Time			(ft/s)		Elevation	Elevation		Elevation
PB-14	36 Inch	481	0.0400	3,997.93	3,978.71	N/A	N/A	20.64	10.90	74.04	133.32	15.19	MH14	3,989.00	3,980.31	MH15	4,018.21
PB-15	36 Inch	89	0.0300	4,006.58	4,003.93	N/A	N/A	17.75	10.78	63.97	115.09	12.45	MH15	4,018.21	4,005.68	PC2	4,022.00
PB-16	36 Inch	136	0.0300	4,010.63	4,006.58	N/A	N/A	17.75	10.54	63.97	115.09	9.49	PC2	4,022.00	4,010.07	PC3	4,025.00

Pipe	Section	Length	Constructed	Upstream	Downstream	Inlet C	Inlet	Total	System	Discharge	Capacity	Average	Downstream	Downstream	Upstream	Upstream	
	Size	(ft)	Slope (ft/ft)	Invert	Invert	Coefficient	CA	CA	Flow	(cfs)	(cfs)	Velocity	Node	Rim	Rim		
				Elevation	Elevation		(acres)	(acres)	Time			(ft/s)		Elevation	Elevation		
PB-14	18 Inch	11	0.0200	4,008.71	4,008.51	0.60	1.11	1.11	10.00	2.32	14.16	4.49	MH15	4,018.21	4,008.96	D19	4,017.86
PB-15	18 Inch	11	0.0200	4,008.71	4,008.51	0.60	1.78	1.78	10.00	7.75	14.16	6.38	MH15	4,018.21	4,009.40	D20	4,017.86

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/7/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL

BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL

BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL
 BEFORE YOU DIG - CALL



csa design group, inc.
 Texas Registered Engineering Firm #9897
 1845 Northwestern Dr., Ste C
 El Paso, Texas 79912
 Tel: (915) 877.4155
 Fax: (915) 877.4334
 www.csaengineering.com

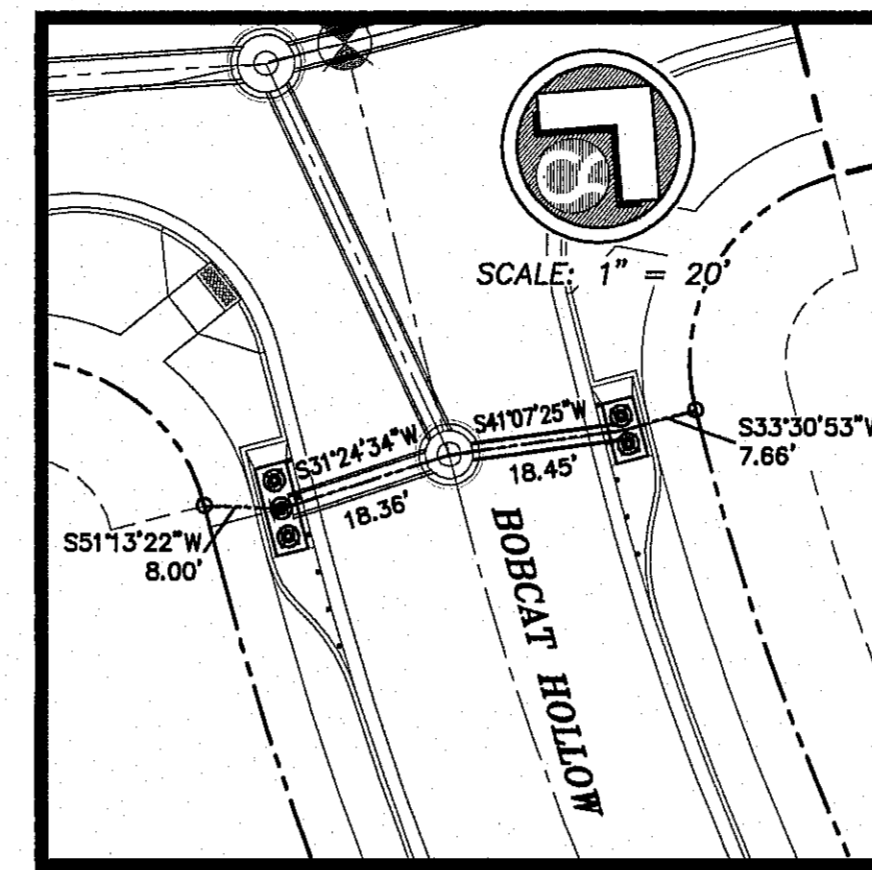
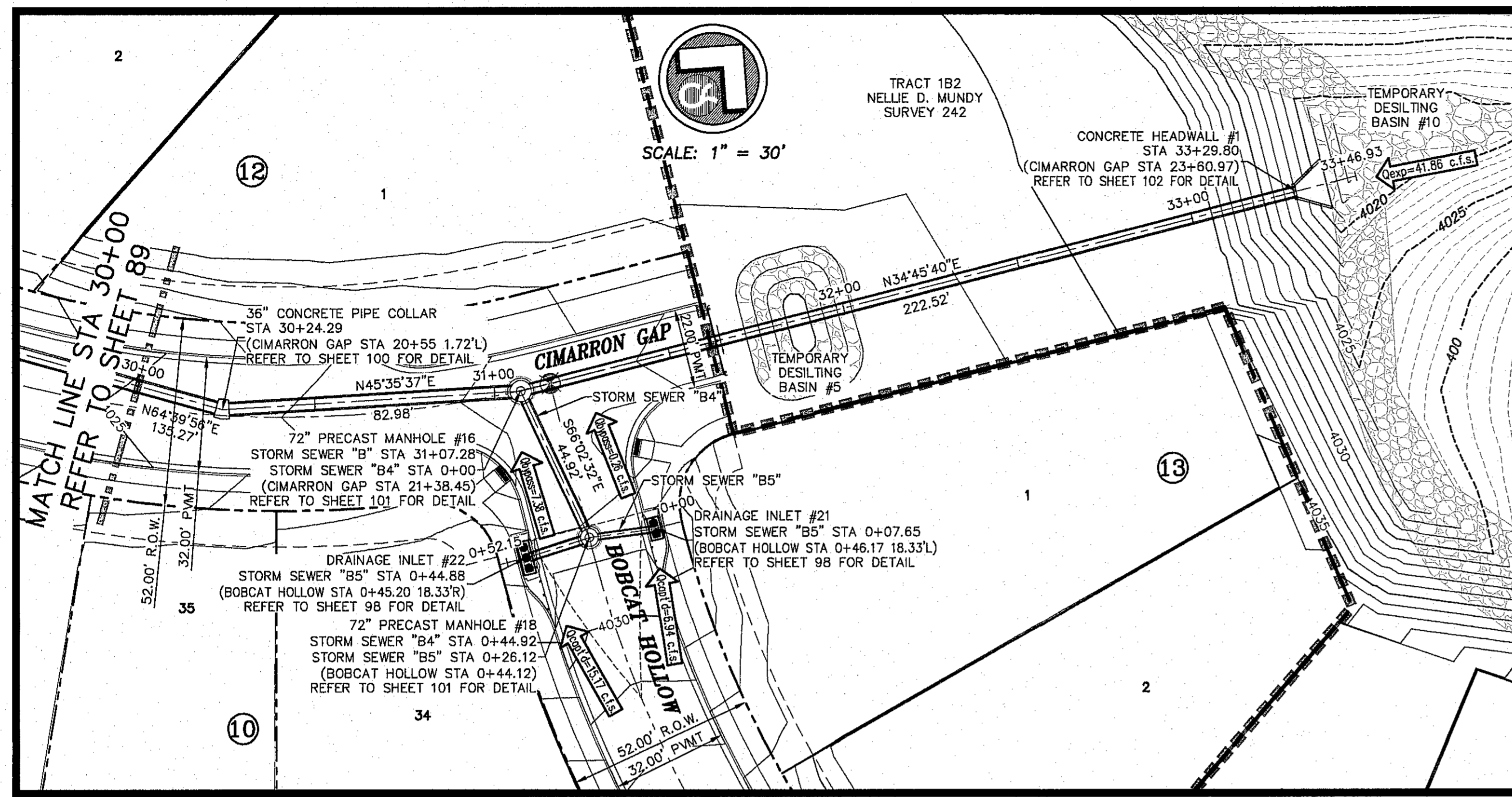


CIMAARRON CANYON UNIT ONE SUBDIVISION

STORM SEWER B & B3 PLAN AND PROFILE

DOB	1524
DOB-DM-DG	9/15/16
DATE	AS NOTED
SCALE	SCALE

93 of 131



INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

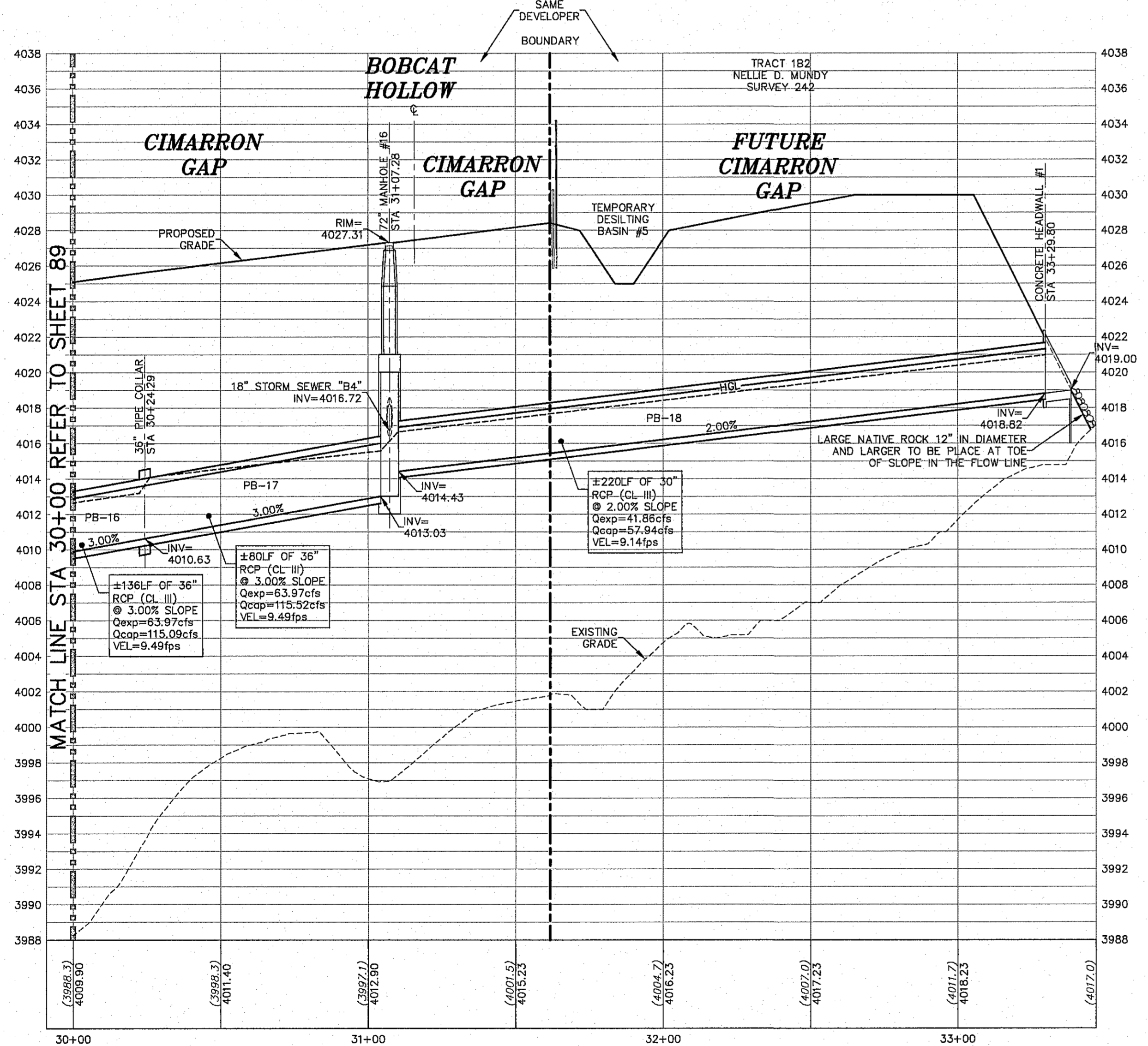
SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

ALL PROFILES SHOWN ON THIS SHEET PHASE FOUR CONSTRUCTION

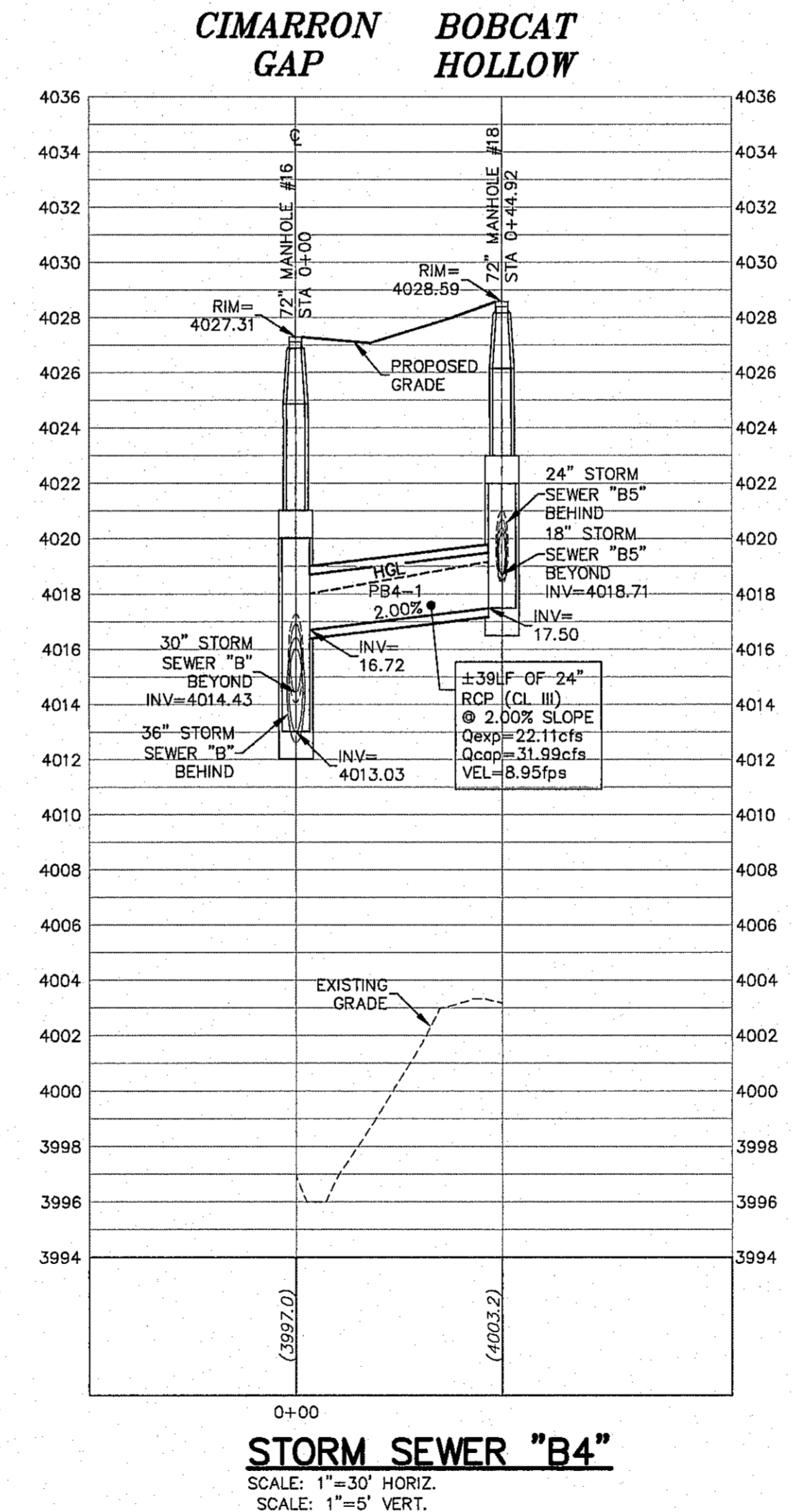
DRAINAGE INLET #21 (OFF-STREET INLET 2 GRATE)
FLOW THROUGH ORIFICE FORMULA
Q = CA√2gh
= .7(10.80)√2(32.2)(.33)
Q = 34.85 cfs * 2/3 = 23.25 cfs

DRAINAGE INLET #22 (OFF-STREET INLET 3 GRATE)
FLOW THROUGH ORIFICE FORMULA
Q = CA√2gh
= .7(16.20)√2(32.2)(.33)
Q = 52.28 cfs * 2/3 = 34.87 cfs



STORM SEWER "B"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB-16	36 inch	136	0.0300	4,010.63	4,006.58	N/A	N/A	17.75	10.54	63.97	115.09	9.49	PC2	4,022.00	4,010.07	PC3	4,025.00	4,013.20
PB-17	36 inch	80	0.0300	4,013.03	4,010.63	N/A	N/A	17.75	10.40	63.97	115.52	9.49	PC3	4,025.00	4,014.12	MH16	4,027.31	4,015.60
PB-18	30 inch	220	0.0200	4,018.82	4,014.43	0.95	8.46	8.46	10.00	41.86	57.94	9.14	MH16	4,027.31	4,016.67	HW1	4,028.00	4,020.99



STORM SEWER "B4"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB4-1	24 inch	39	0.0200	4,017.50	4,016.72	N/A	N/A	9.29	10.05	22.11	31.99	8.95	MH16	4,027.31	4,018.04	MH18	4,028.59	4,019.18

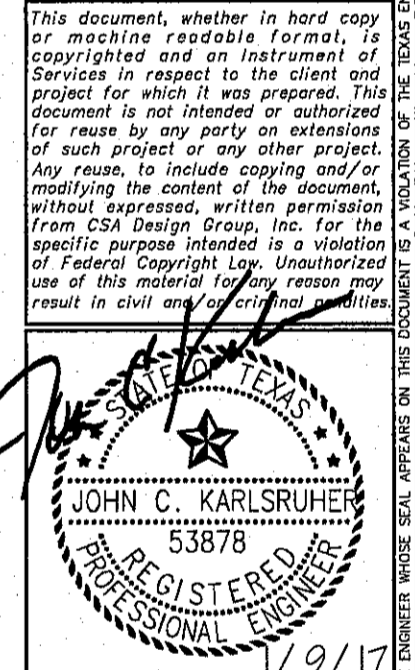
Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB5-L	18 inch	15	0.0200	4,018.00	4,018.71	0.60	2.31	2.31	10.00	6.94	14.60	4.81	MH18	4,028.59	4,020.04	D11	4,028.16	4,020.02
PB5-R	24 inch	15	0.0200	4,018.00	4,018.71	0.60	2.22	6.98	10.00	15.17	31.45	7.34	MH18	4,028.59	4,019.85	D12	4,027.25	4,020.40

STORM SEWER "B5"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitted Final	JCK
2	11/20/16	2nd City Submitted	DAE
1	9/15/16	1st City Submitted	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

CALL BEFORE YOU DIG -
EL PASO ELECTRIC COMPANY
AT&T
TEXAS GAS SERVICE
TEC EMERGENCY HOTLINE
58-5775
775-7414
EL PASO NATURAL GAS COMPANY
1-800-DIG-8877
(846-4877)



csa design group, inc.
Texas Registered Engineering Firm No. 0997
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel: (915) 877.4155
Fax: (915) 877.4334
www.csaengineering.com

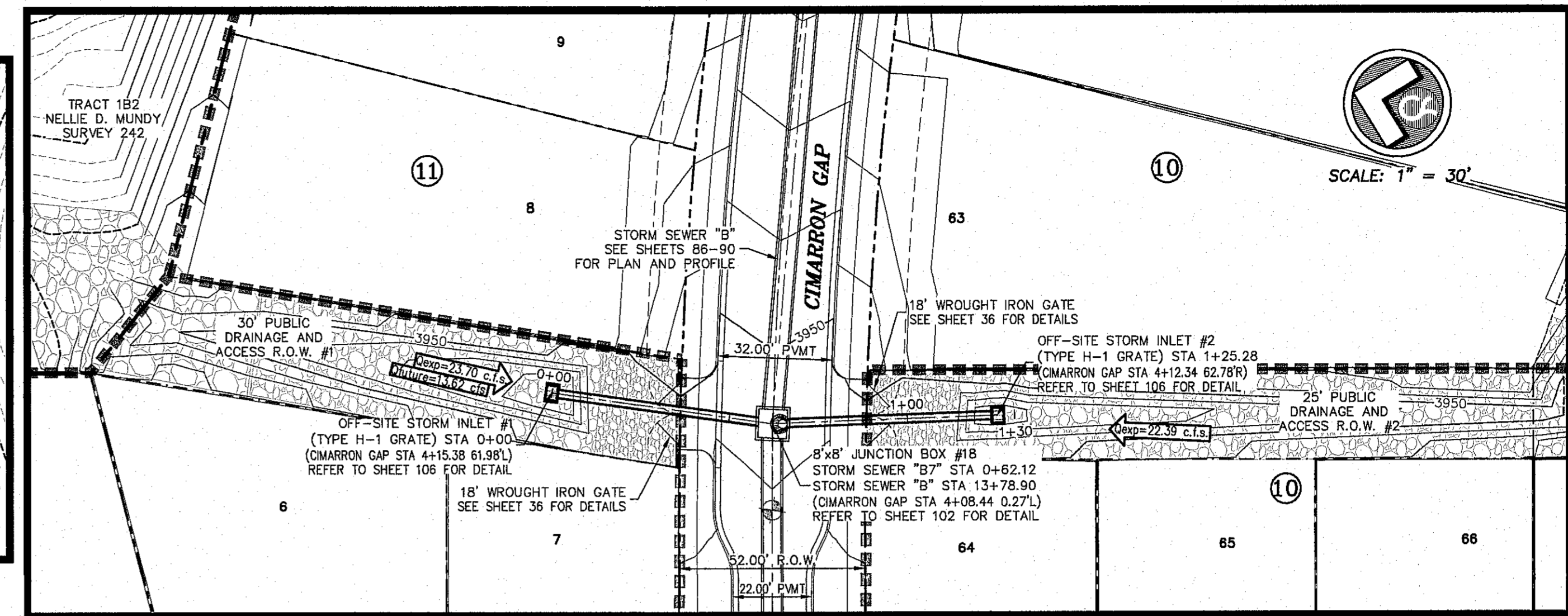
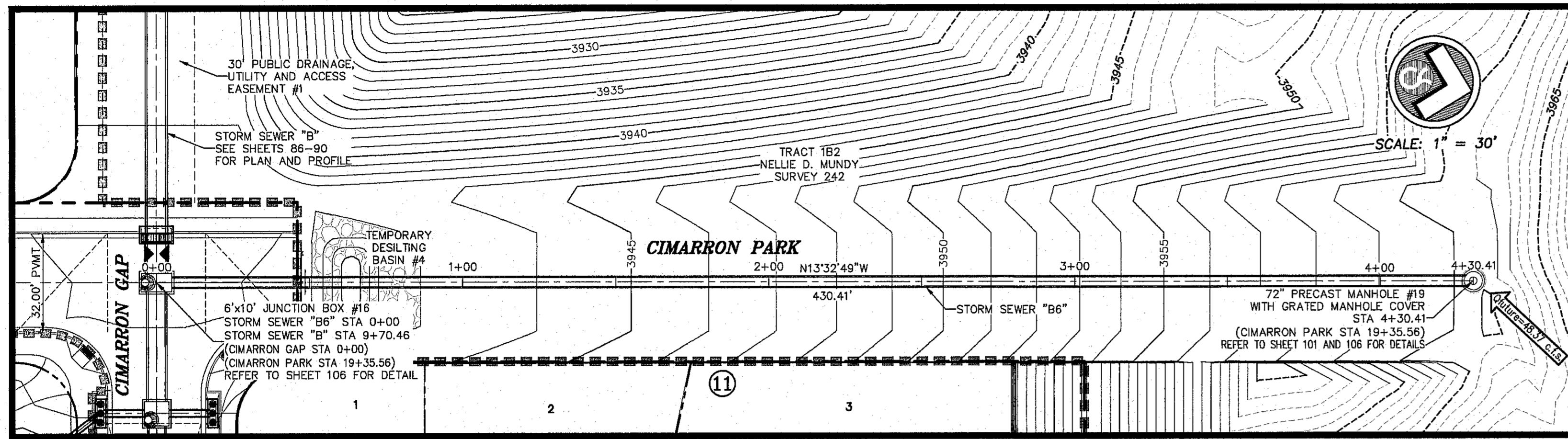


CIMARRON CANYON UNIT ONE SUBDIVISION

STORM SEWER B, B4 & B5 PLAN AND PROFILE

COB	1524
DESIGN BY	JCK
DESIGNED BY	9/15/16
DATE	AS NOTED
SCALE	SCALE
SHEET NO.	90
TOTAL SHEETS	94 OF 131

© CSA DESIGN GROUP, INC. - Jan. 06, 2017 - 12:58pm
1845 Northwestern Dr. Ste C El Paso, Texas 79912
Tel: (915) 877.4155 Fax: (915) 877.4334
www.csaengineering.com



ALL PROFILES SHOWN ON THIS SHEET PHASE THREE CONSTRUCTION

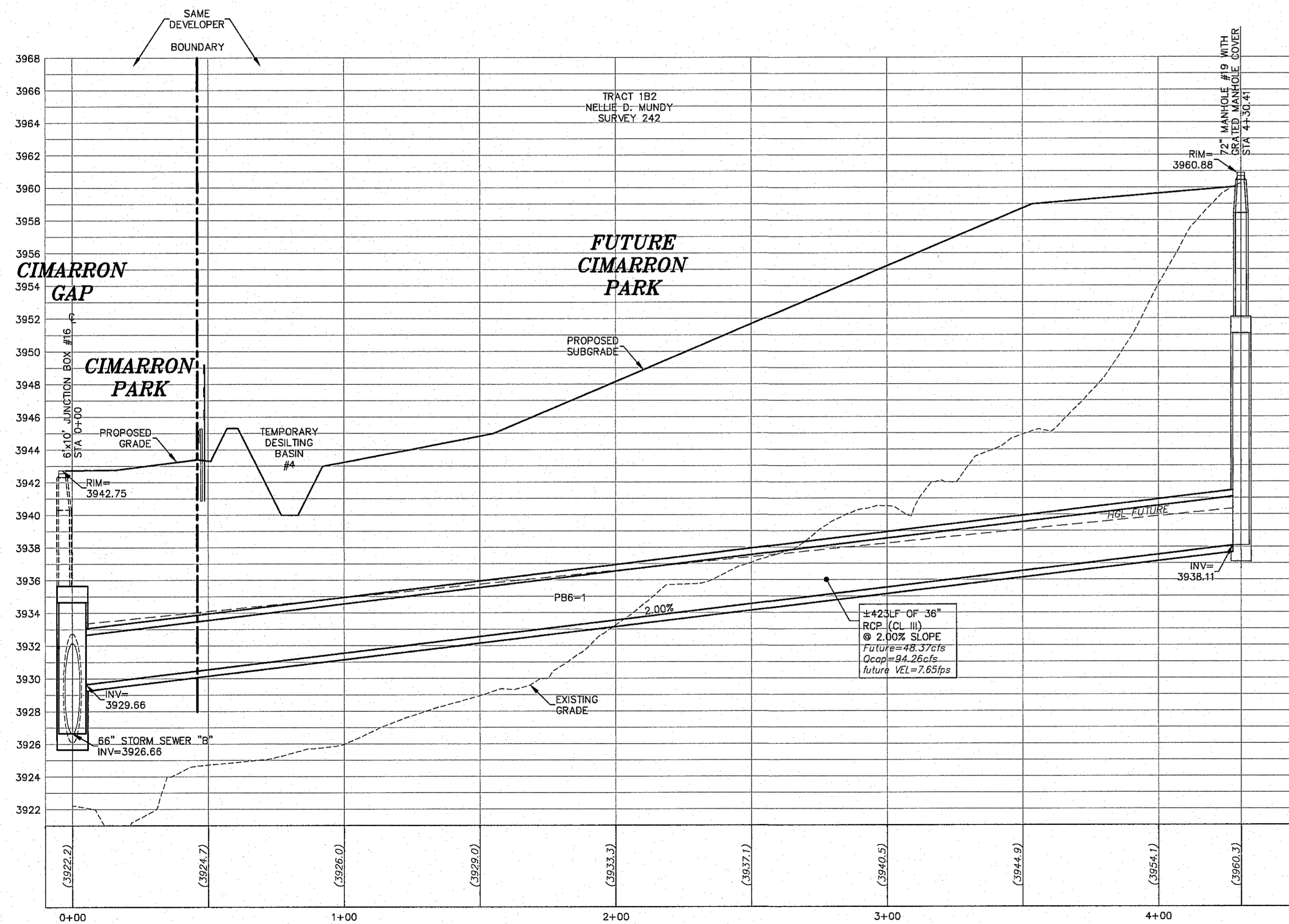
INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITTE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITTE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

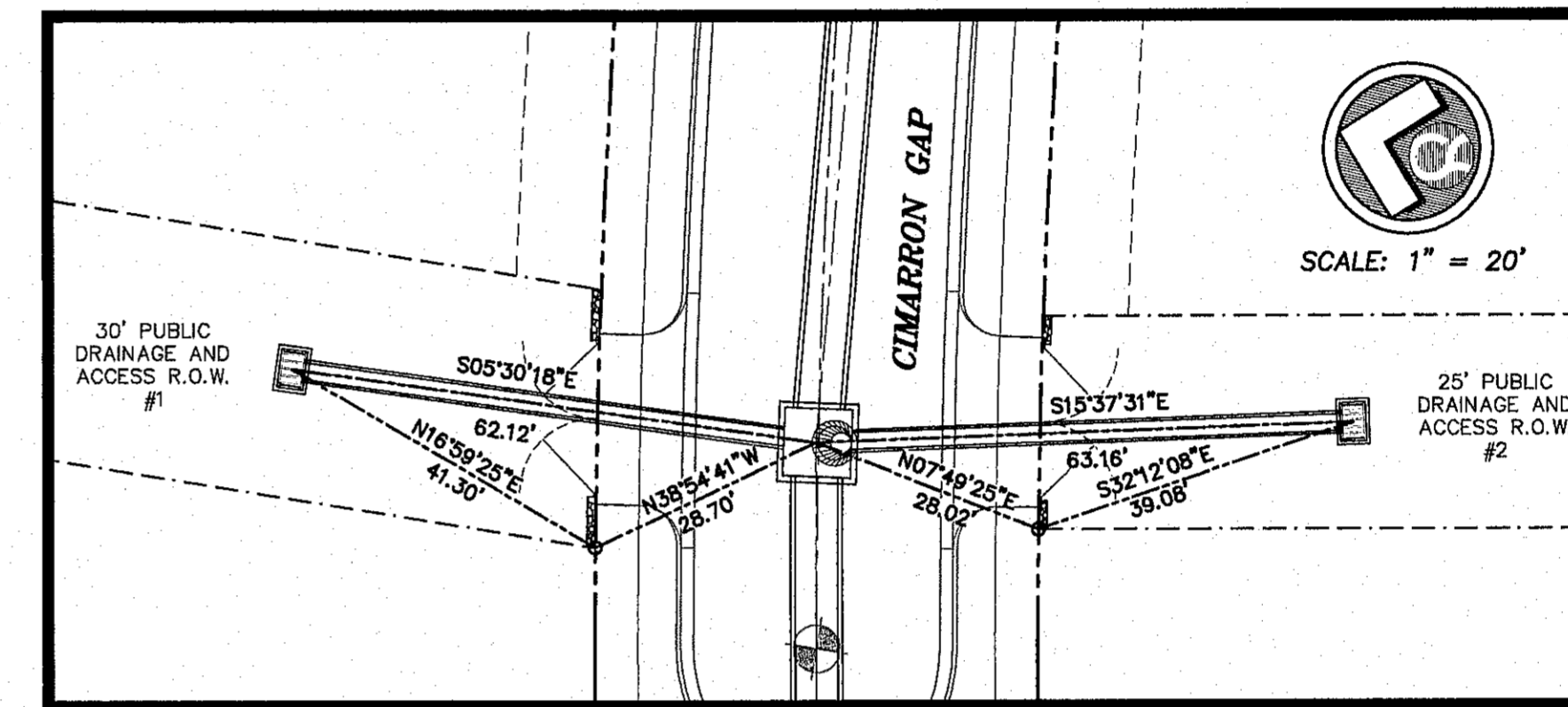
INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPERATE REPORT TO ENGINEERING FILES ON SUBDIVISION.



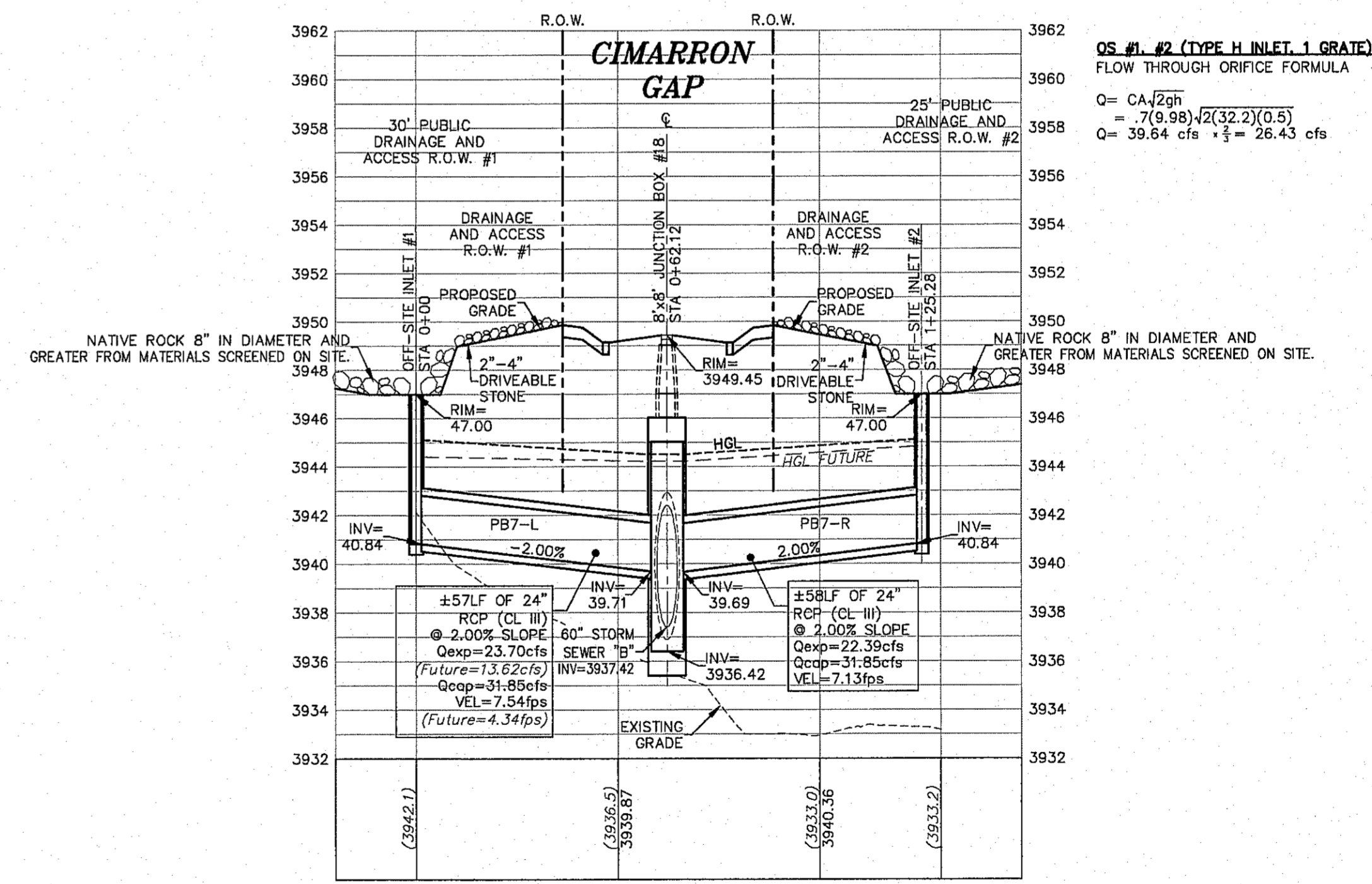
STORM SEWER "B6"

SCALE: 1" = 30' HORIZ.
SCALE: 1" = 5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Future Total CA (acres)	System Flow Time (min)	Future Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Future Rim Elevation (ft)	Future Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB6-1	36 inch	423	0.0200	3,938.11	3,929.66	N/A	20.18	20.18	10.00	48.37	94.26	7.65	JB16	3,942.75	3,933.32	MH19	3,950.88	3,940.37



STORM SEWER "B7" INLET TIE



STORM SEWER "B7"

SCALE: 1" = 30' HORIZ.
SCALE: 1" = 5' VERT.

PROPOSED	Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Future Total CA (acres)	System Flow Time (min)	Future Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Future Rim Elevation (ft)	Future Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
	PB7-L	24 inch	57	0.0200	3,940.84	3,939.71	0.69	6.59	6.59	10.00	23.70	31.85	7.54	JB18	3,949.45	3,944.49	OS1	3,947.00	3,945.12
	PB7-R	24 inch	58	0.0200	3,940.84	3,939.69	0.69	4.91	6.23	10.00	22.39	31.85	7.13	JB18	3,949.45	3,944.49	OS2	3,947.00	3,945.06

FUTURE	Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Future Total CA (acres)	System Flow Time (min)	Future Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Future Rim Elevation (ft)	Future Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
	PB7-L	24 inch	57	0.0200	3,940.84	3,939.71	0.69	3.79	3.79	10.00	13.62	31.85	4.34	JB18	3,949.45	3,944.12	OS1	3,947.00	3,944.33
	PB7-R	24 inch	58	0.0200	3,940.84	3,939.69	0.69	4.91	6.23	10.00	22.39	31.85	7.13	JB18	3,949.45	3,944.12	OS2	3,947.00	3,944.69

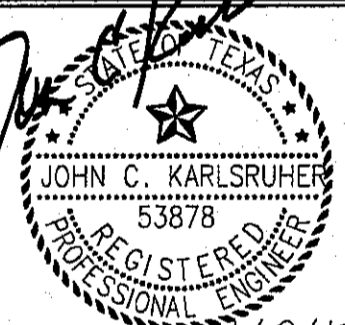
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN BLVD AND DRIVE ELEVATION = 3976.53 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/20/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND PROJECTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
EL PASO GAS SERVICE
TEAS EMERGENCY HOTLINE
AFTER HOURS EMERGENCY (EPWU)
EL PASO NATURAL GAS COMPANY
TEAS EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extension of such project or any other project without the express, written permission from CSA Design Group, Inc. for the specific purpose intended in a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #697
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel: (915) 877.4156
Fax: (915) 877.4334
www.csaengineering.com



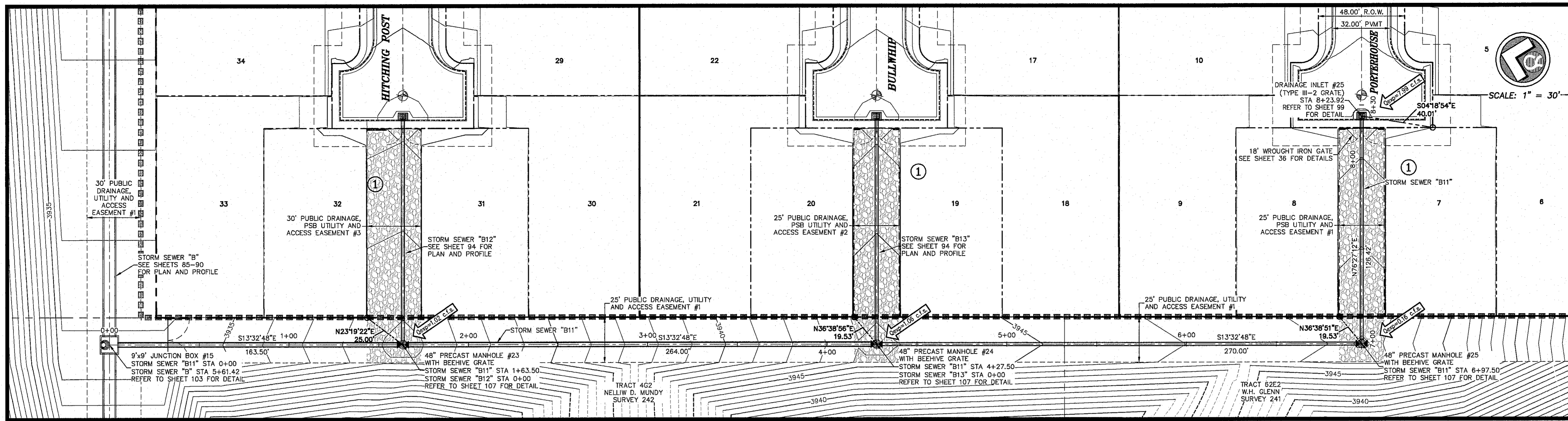
Final Approval

CIMARRON CANYON UNIT ONE SUBDIVISION

SHEET TITLE
STORM SEWER B6 & B7 PLAN AND PROFILE

COB	1524
COB-SM-DG	9/15/16
DAE	AS NOTED
CREATED BY	SCALE

SHEET NO.
91
95 of 131



INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN "APPROVED EQUAL" TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

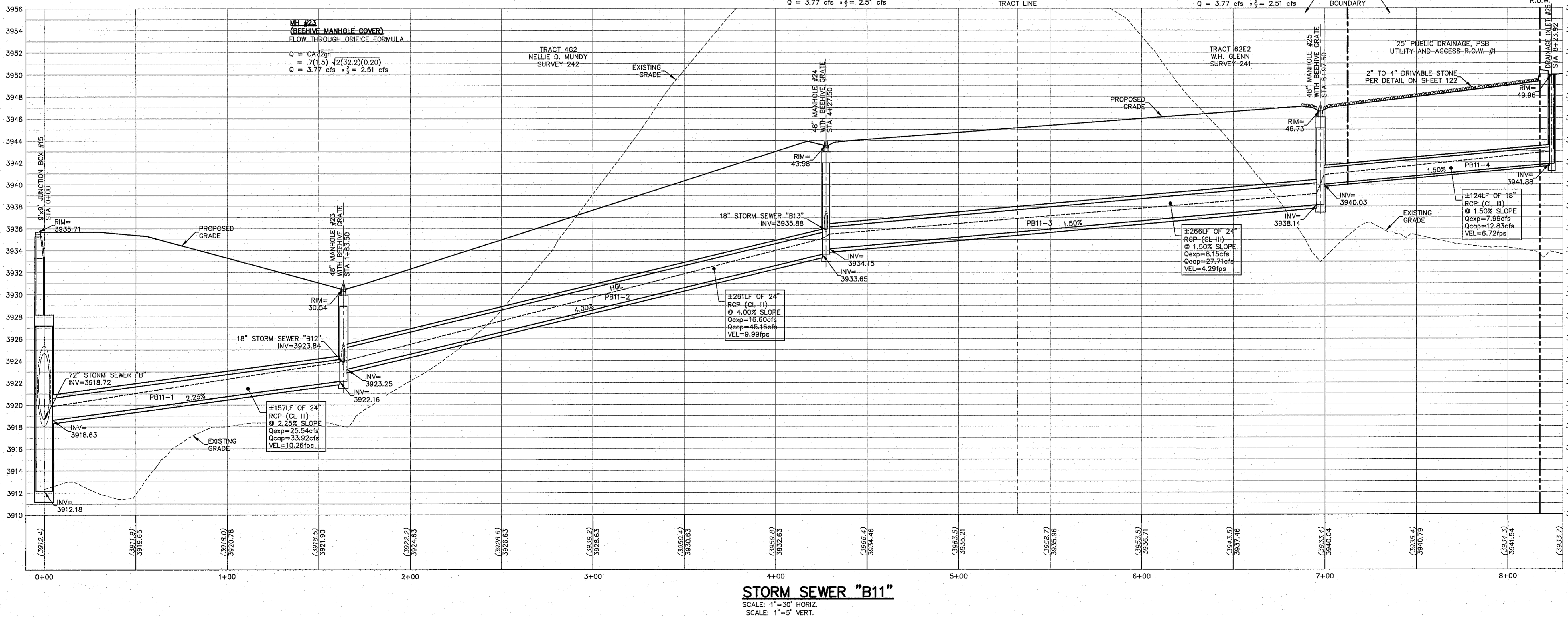
INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

ALL PROFILES SHOWN ON THIS SHEET PHASE THREE CONSTRUCTION

MH #24 (BEEHIVE MANHOLE COVER)
FLOW THROUGH ORIFICE FORMULA
 $Q = CA \sqrt{2gh}$
 $= 7(1.5) \sqrt{2(32.2)(0.20)}$
 $Q = 3.77 \text{ cfs} \times \frac{1}{2} = 2.51 \text{ cfs}$

MH #25 (BEEHIVE MANHOLE COVER)
FLOW THROUGH ORIFICE FORMULA
 $Q = CA \sqrt{2gh}$
 $= 7(1.5) \sqrt{2(32.2)(0.20)}$
 $Q = 3.77 \text{ cfs} \times \frac{1}{2} = 2.51 \text{ cfs}$

DRAINAGE INLET #25 (TYPE III-2 GRATE)
FLOW THROUGH ORIFICE FORMULA
 $Q = CA \sqrt{2gh}$
 $= 7(7.85) \sqrt{2(32.2)(0.5)}$
 $Q = 30.39 \text{ cfs} \times \frac{1}{2} = 20.36 \text{ cfs}$



STORM SEWER "B11"
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB11-1	24 inch	157	0.0225	3,922.16	3,918.63	0.50	0.39	8.07	11.78	25.54	33.92	10.26	B15	3,935.71	3,919.93	MH23	3,930.54	3,923.92
PB11-2	24 inch	261	0.0400	3,933.65	3,923.25	0.50	0.41	5.25	11.34	16.60	45.16	9.99	MH23	3,930.54	3,924.09	MH24	3,943.58	3,935.12
PB11-3	24 inch	266	0.0150	3,938.14	3,934.15	0.50	0.06	2.54	10.31	8.15	27.71	4.29	MH24	3,943.58	3,935.54	MH25	3,946.73	3,939.16
PB11-4	18 inch	124	0.0150	3,941.88	3,940.03	0.60	2.34	2.48	10.00	7.99	12.83	6.72	MH25	3,946.73	3,940.89	D125	3,949.96	3,942.98

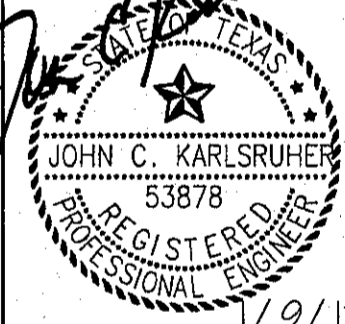
BENCHMARK: CITY MANHOLE AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYS LANDING DRIVE
ELEVATION = 3942.5 (E. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	9/15/16	1st City Submittal	DAE
2	11/01/16	2nd City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 562-5720
TEXAS GAS SERVICE 564-6300
TEXAS GAS SERVICE 564-6300
EL PASO WATER (PUB) 1-800-DIG-TESS
EL PASO WATER (PUB) 1-800-DIG-TESS
TIME WARNER (CABLE) 778-7414
TEXAS NATURAL GAS COMPANY 1-800-334-9947
TEXAS EXCAVATION SAFETY SYSTEM 1-800-427-0277

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the street and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or on any other project. Any reuse to include copying and/or modifying the content of the document, without express, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #4987
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel [915] 877.4155
fax [915] 877.4334
www.csaengineering.com



CIMARRON CANYON UNIT ONE SUBDIVISION

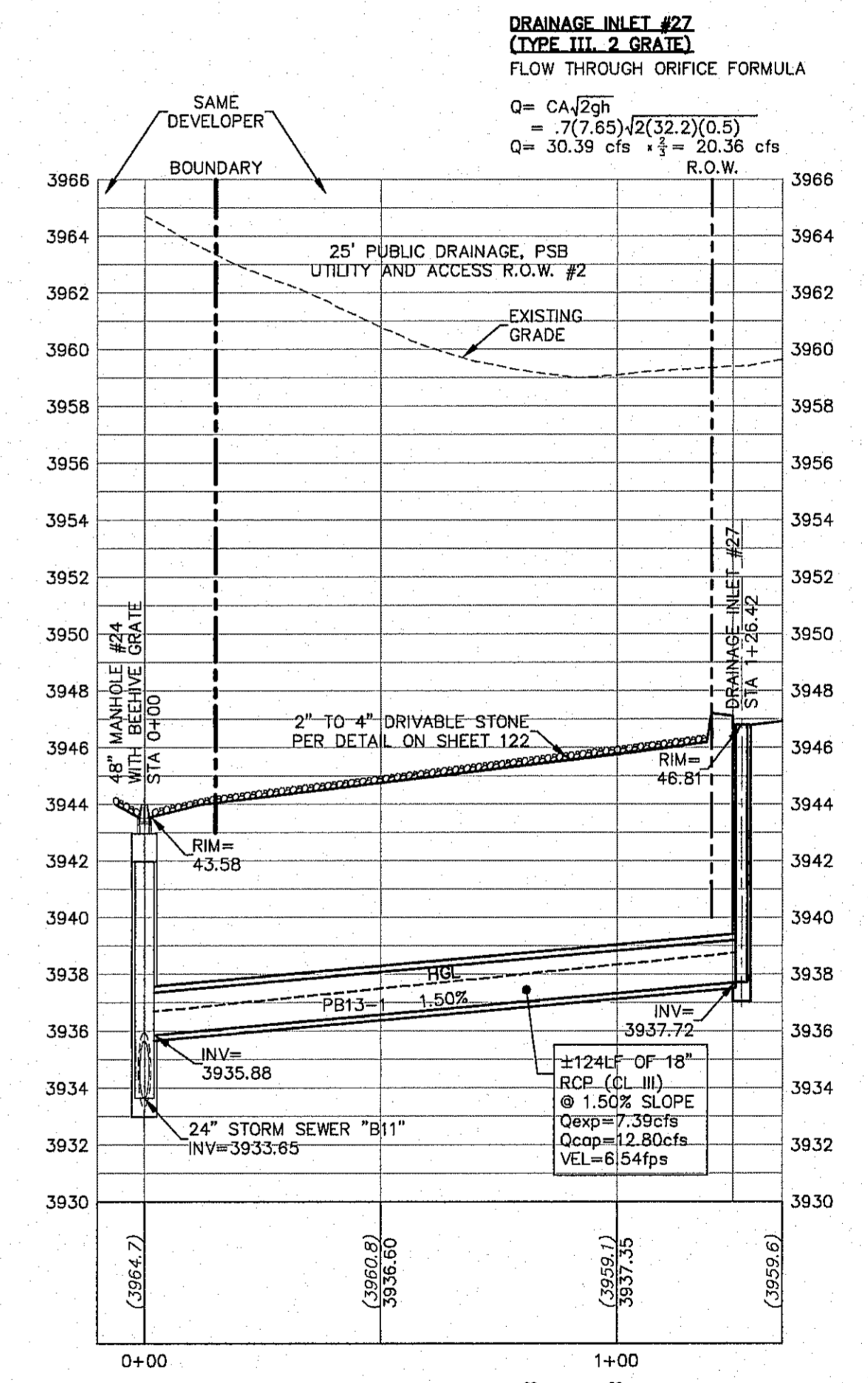
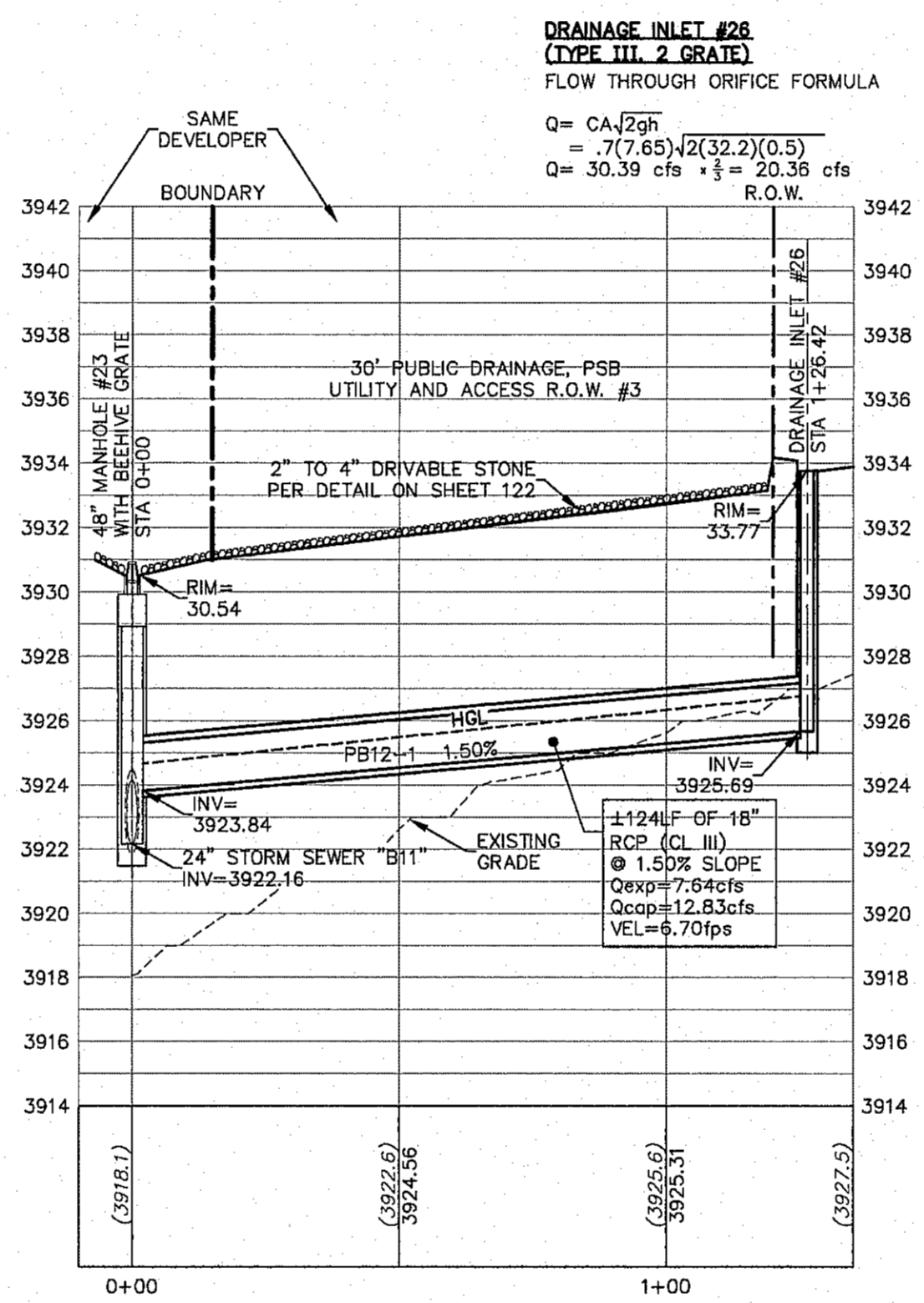
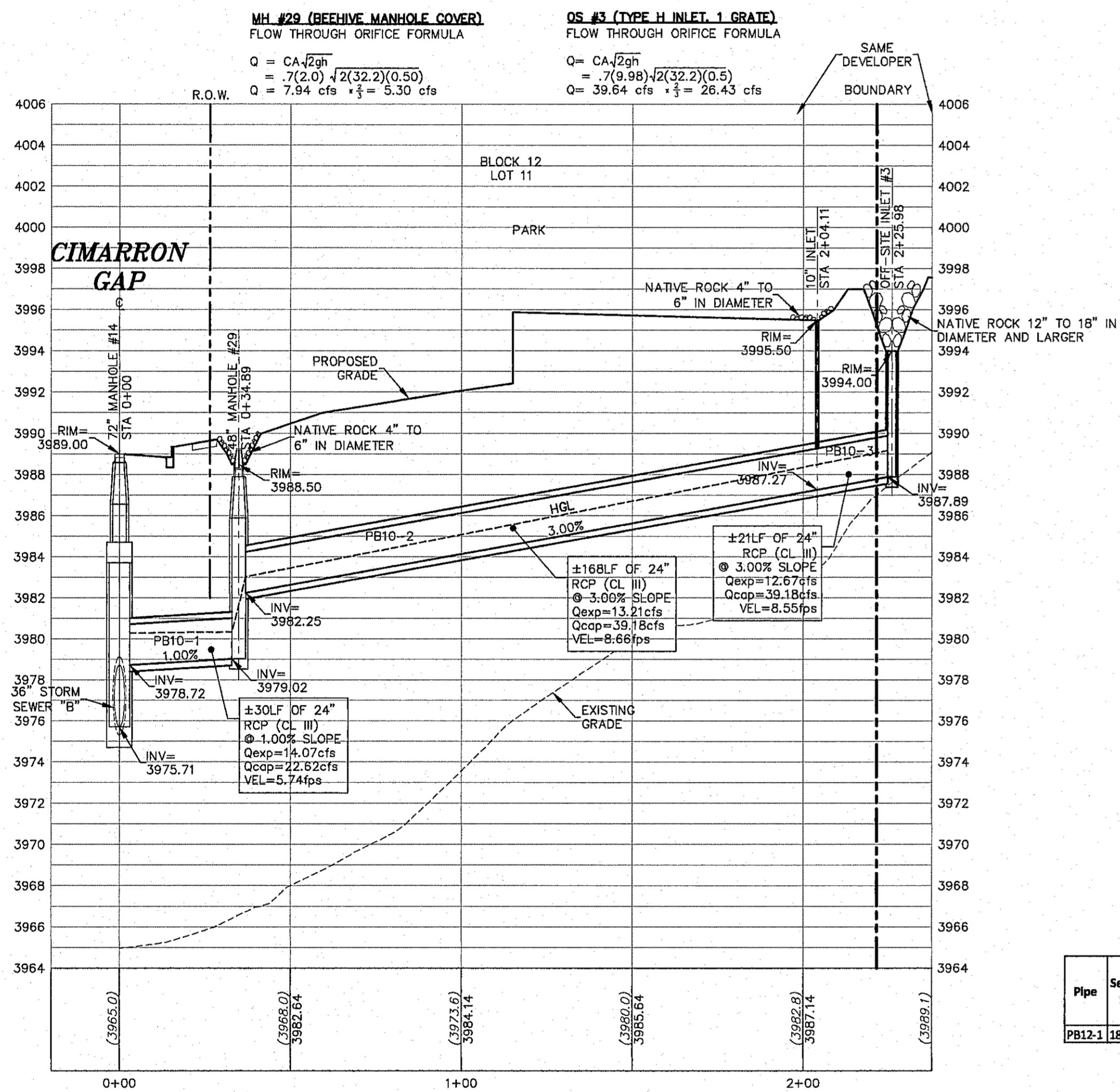
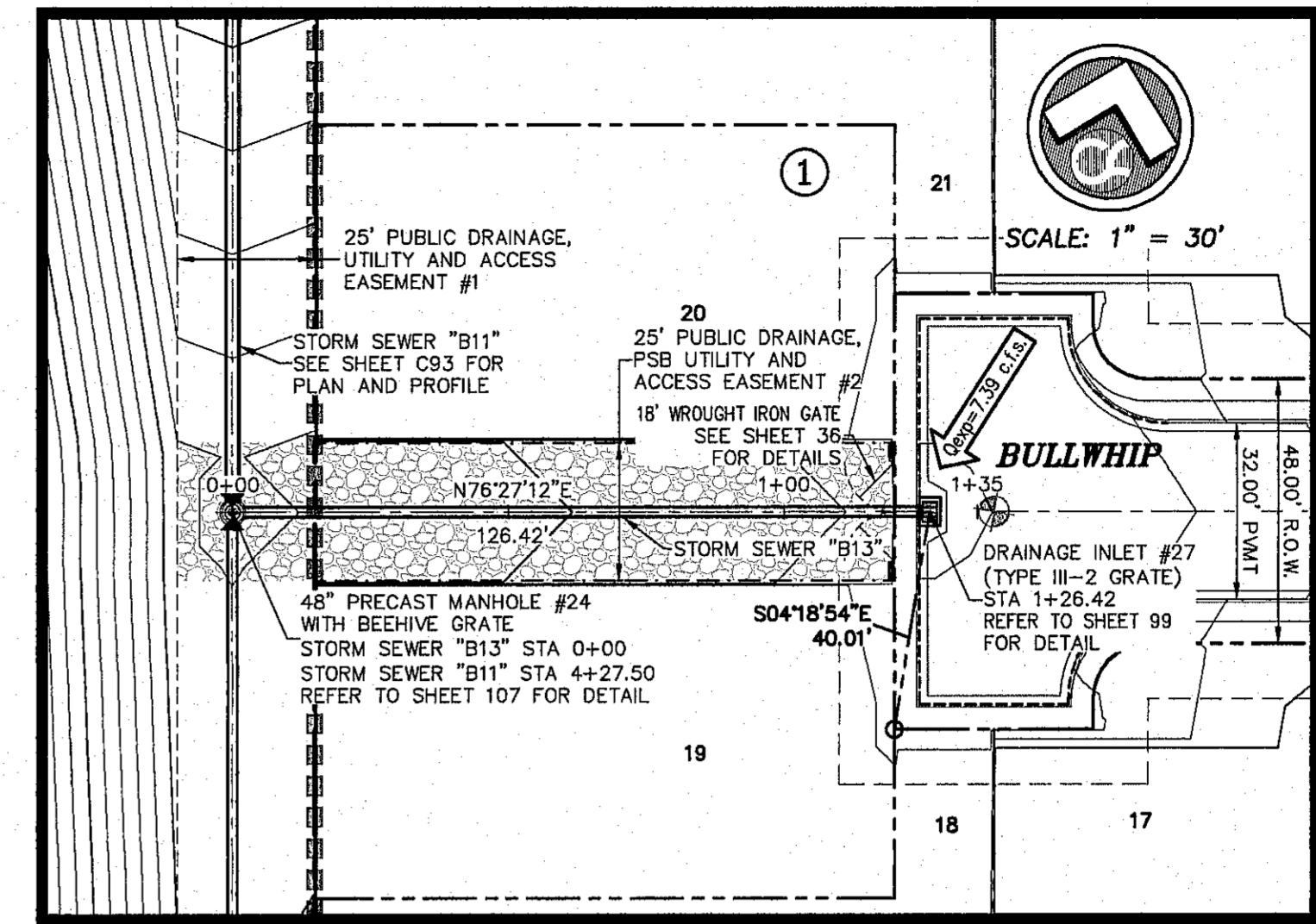
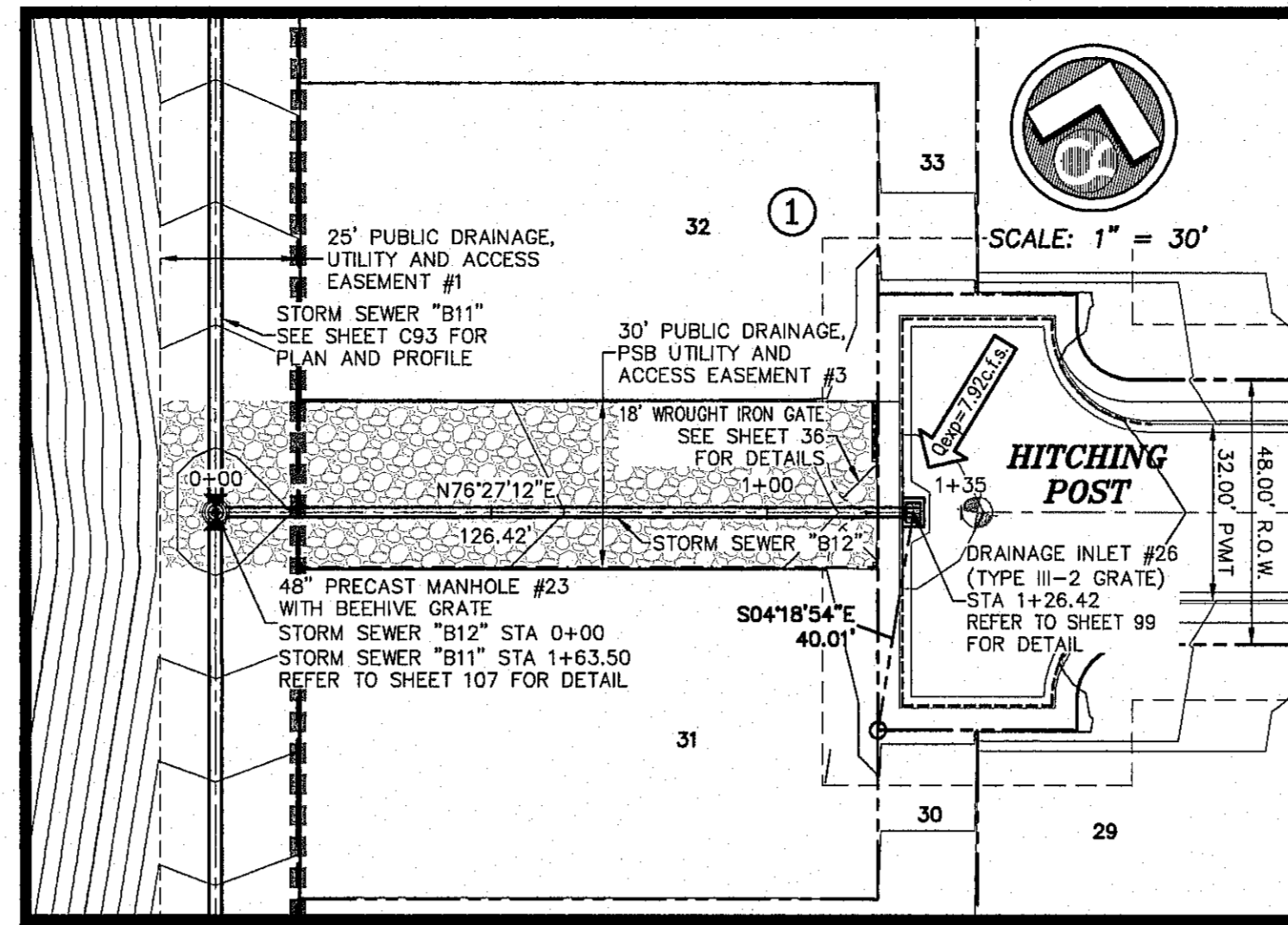
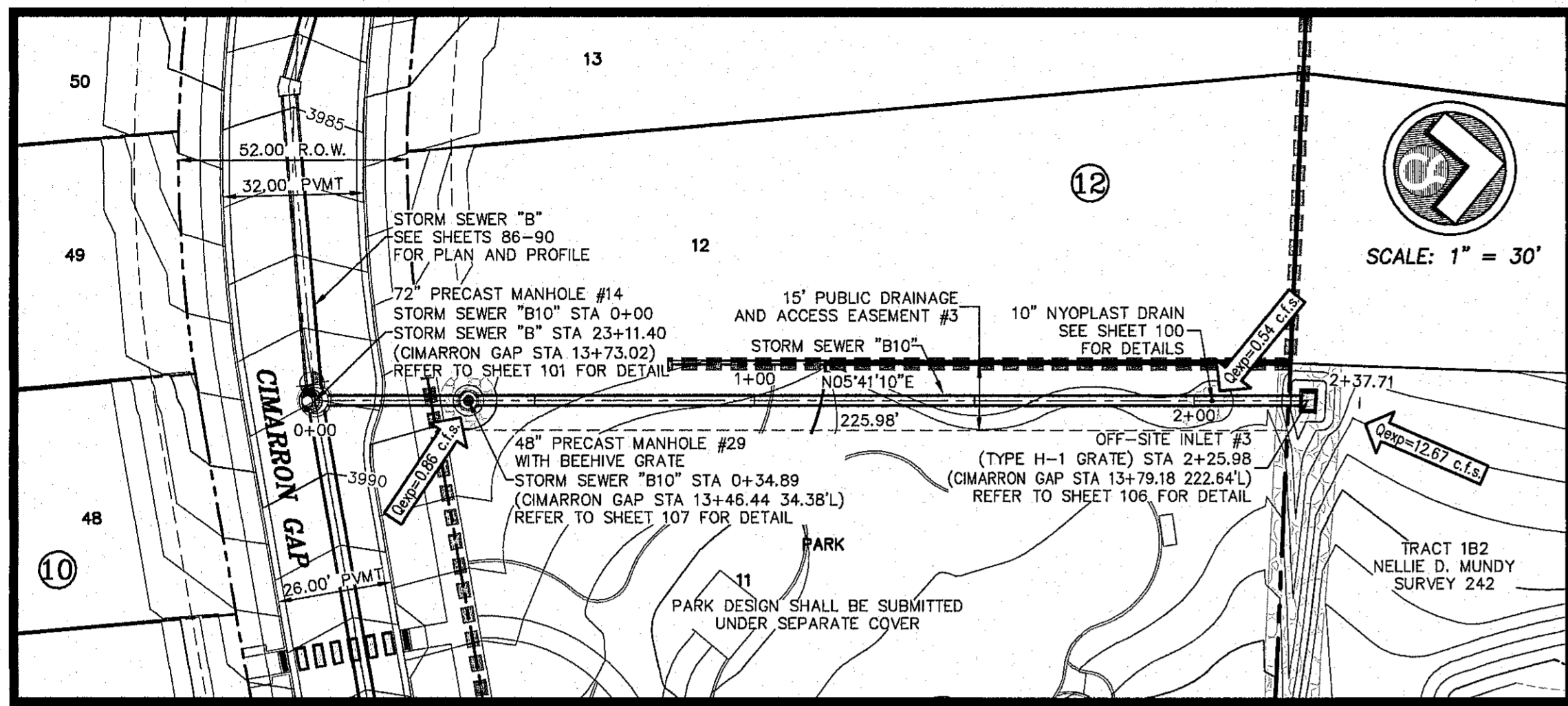
STORM SEWER B11 PLAN AND PROFILE

JOB NO.	1524
DESIGN BY	JCK
DATE	9/15/16
DESIGNED BY	DAE
CHECKED BY	AS NOTED

SHEET NO. **93**
SHEET TOTAL 131



© CSA DESIGN GROUP, INC. - Jan. 08, 2017 - 12:07pm
S:\Draw\1524\Cimarron Canyon Unit One\1524_3rd City Submittal-CORRECTED\1524_Sht 18B-91 (Storm Sewer B11).dwg



STORM SEWER "B12" & "B13" PHASE THREE CONSTRUCTION

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (squares)	Total CA (squares)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB12-1	18 inch	124	0.0150	3,925.69	3,923.84	0.60	2.27	2.44	10.00	7.92	12.83	6.70	MH23	3,930.54	3,924.69	D126	3,933.77	3,926.78

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (squares)	Total CA (squares)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PB10-1	24 inch	30	0.0100	3,979.02	3,978.72	0.50	0.33	3.10	10.36	14.07	22.62	5.74	MH14	3,989.00	3,980.31	MH29	3,988.50	3,980.37
PB10-2	24 inch	168	0.0300	3,987.27	3,982.25	0.50	0.21	2.77	10.06	13.21	39.18	8.66	MH29	3,988.50	3,983.05	NV/DRAIN	3,995.50	3,988.50
PB10-3	24 inch	121	0.0300	3,987.89	3,987.27	0.95	2.56	2.56	10.00	12.67	39.18	8.55	NV/DRAIN	3,995.50	3,988.50	OS13	3,994.00	3,989.20

STORM SEWER "B10" PHASE FOUR CONSTRUCTION

INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURE. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWJ STORMWATER MANAGEMENT AS AN "APPROVED EQUAL" TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

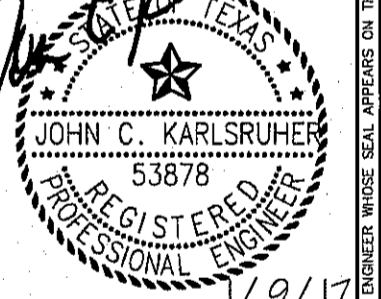
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF WARDNER AND PASO DRIVE ELEVATION = 3978.53 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	11/01/16	2nd City Submittal	DAE
2	11/01/16	3rd City Submittal	JCK
3	1/9/17	Final City Submittal	JCK

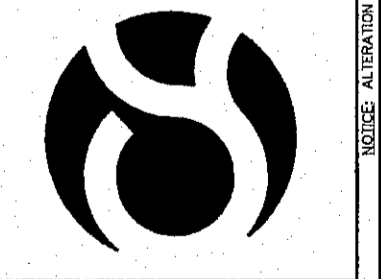
WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND PROJECTS IN PROJECT AREA

CALL BEFORE YOU DIG - EL PASO ELECTRIC COMPANY
 462-5720
 1-800-DIG-TESS
 544-8800
 TEXAS GAS SERVICE
 1-800-4-A-GAS
 594-5775
 775-7414
 EL PASO NATURAL GAS COMPANY
 1-800-244-8877

This document, whether in hard copy or machine-readable format, is copyrighted and an Instrument of Service in respect to the client and project for which it was prepared. The document is not intended for circulation for use by any party on an extension of such project or any other project. Any reuse, including copying and/or modification, without the express, written permission of the engineer is prohibited. The use of this material for any reason may result in civil and/or criminal liability.



csa design group, inc.
 Texas Registered Engineering Firm E-8897
 1845 Northwestern Dr. Ste C
 El Paso, Texas 79912
 Tel: (915) 877-4155
 Fax: (915) 877-4534
 www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

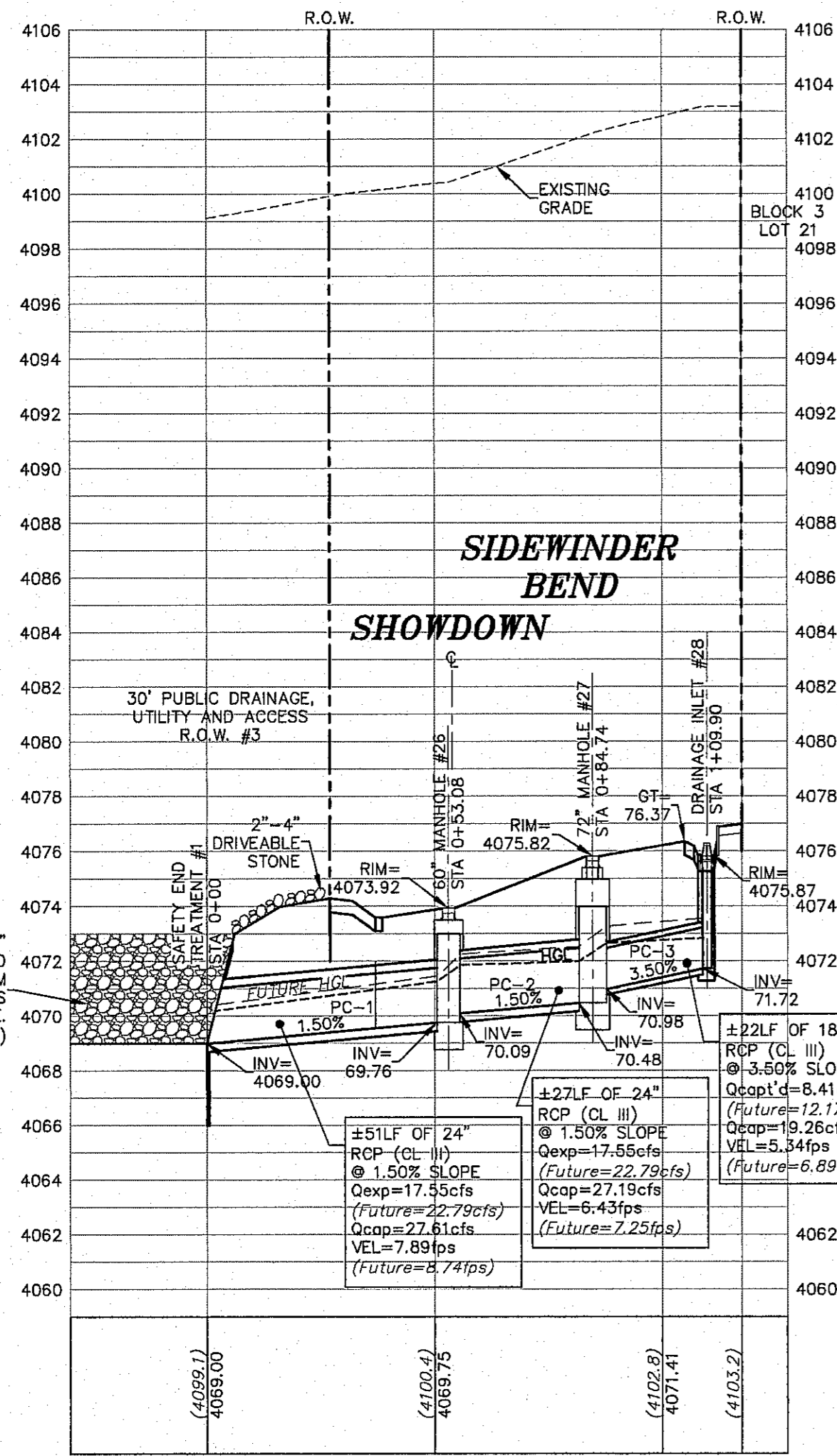
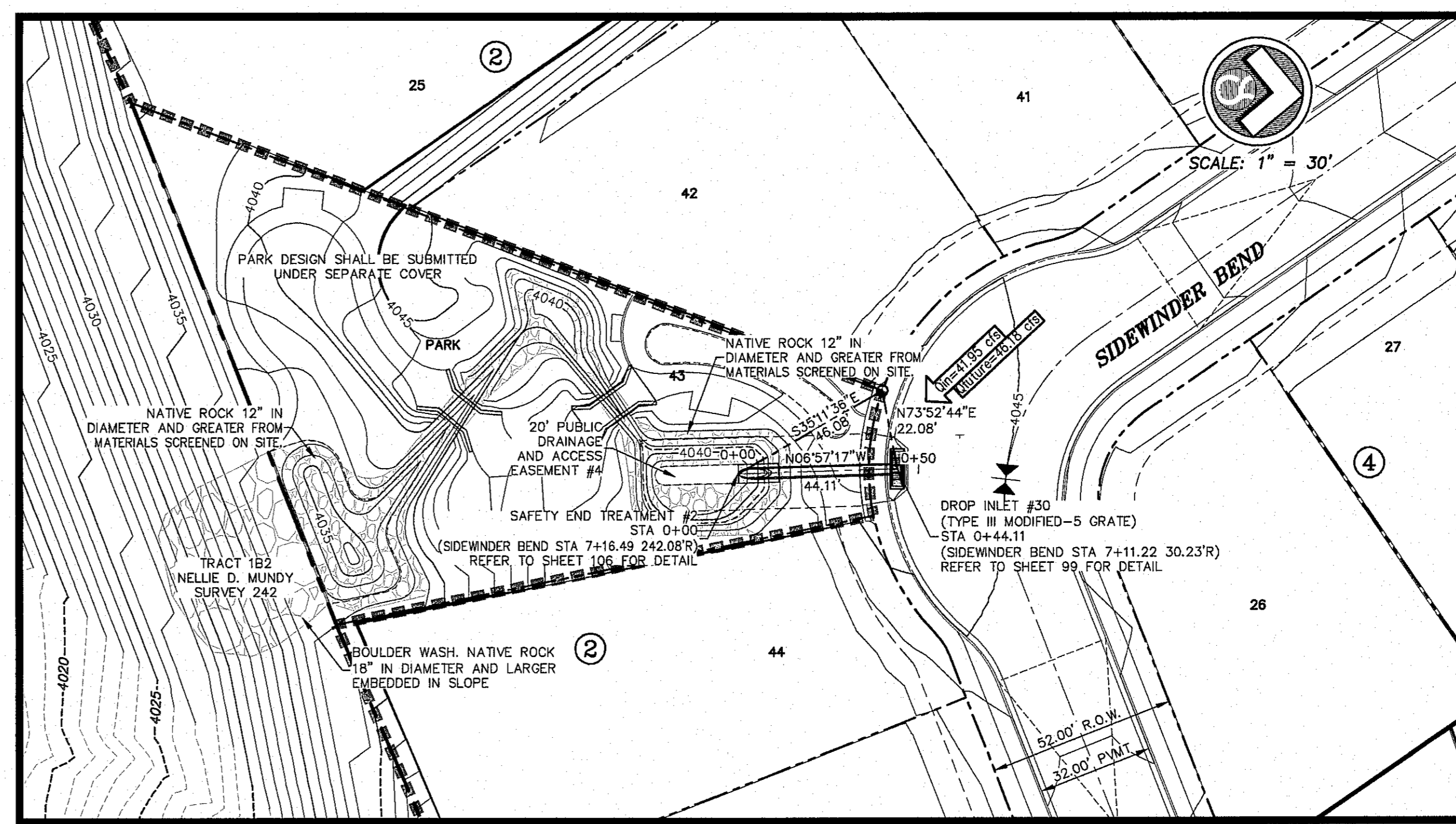
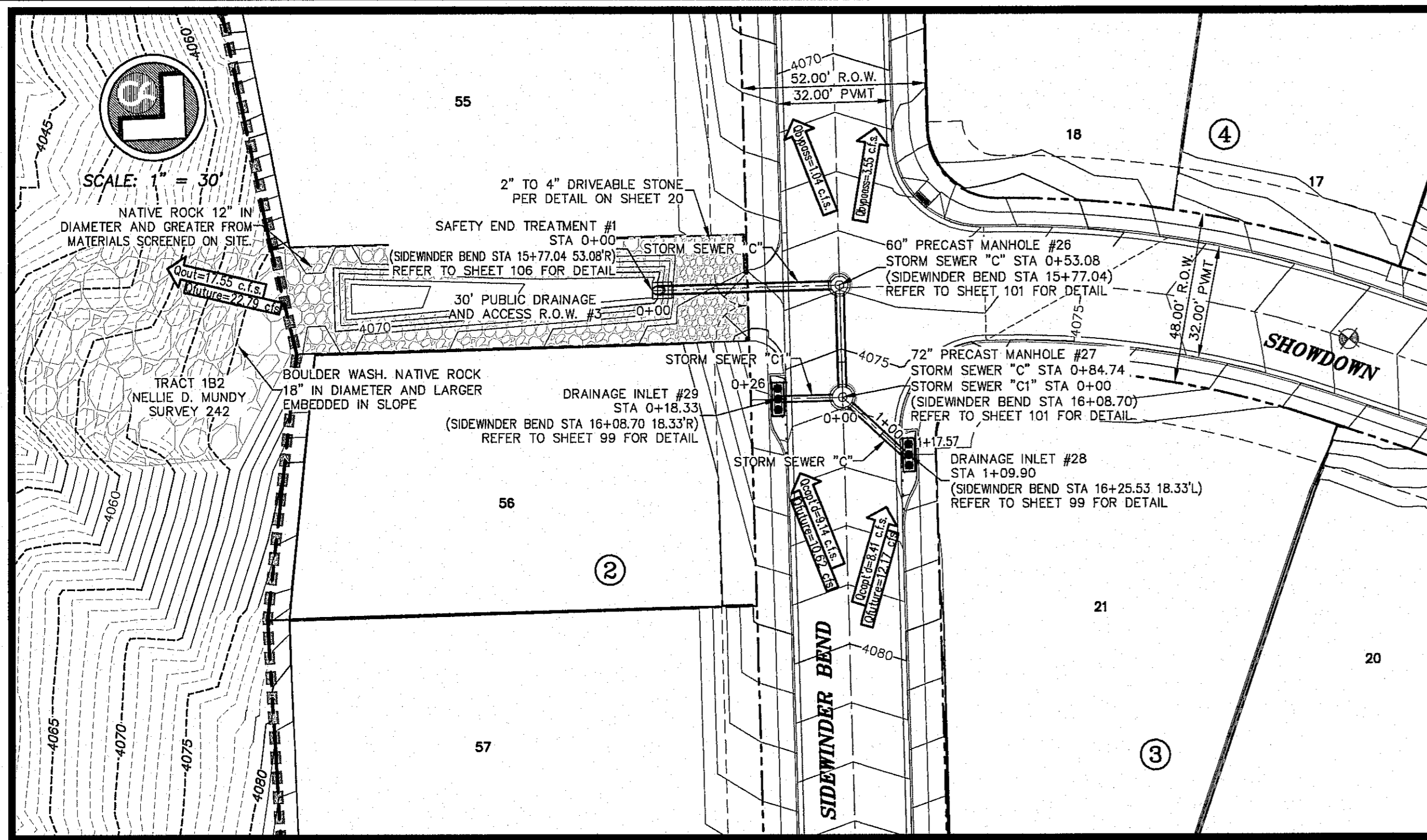
SHEET TITLE
STORM SEWER B10, B12 & B13 PLAN AND PROFILE

DOB	1524
DESIGN BY	JCK
DOB-SM-DC	9/15/16
DATE	AS NOTED
DAE	AS NOTED
CHECKED BY	JCK

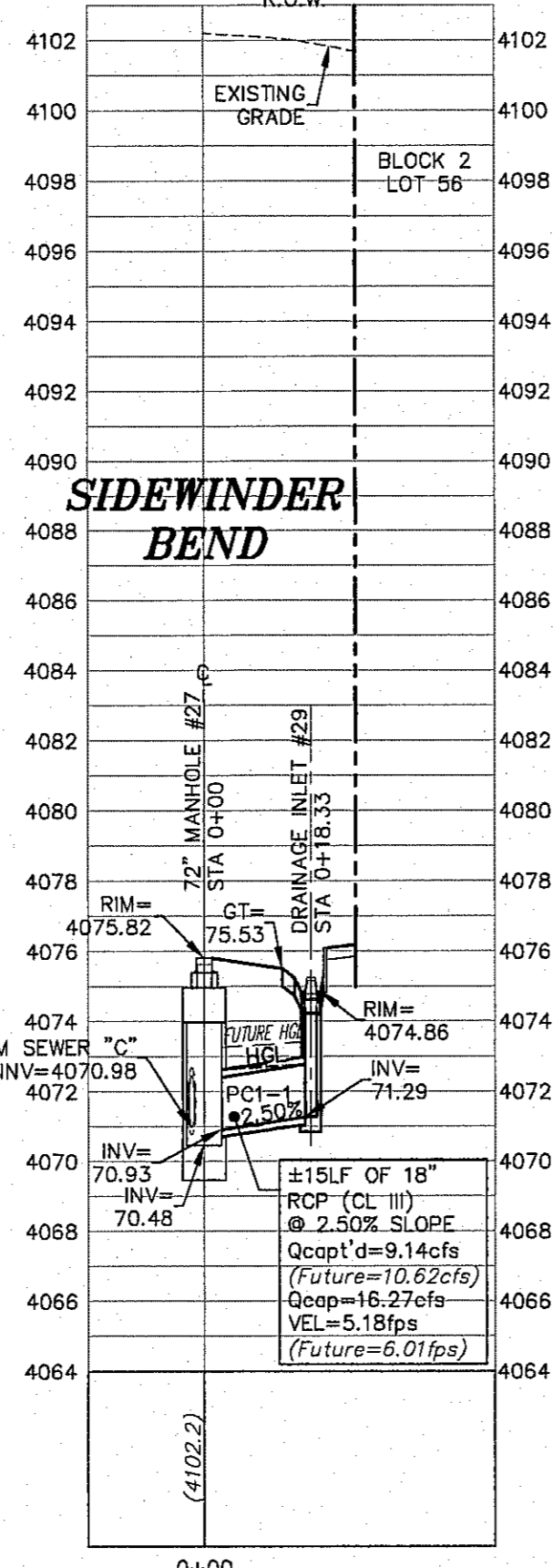
SHEET NO. **94**
 OF 131



Final Approval



DRAINAGE INLET #28, #29 (OFF-STREET INLET, 3 GRATE)
 FLOW THROUGH ORIFICE FORMULA
 $Q = CA\sqrt{2gh}$
 $Q = 52.28 \text{ cfs} \cdot \frac{1}{2} = 34.87 \text{ cfs}$



STORM SEWER "C1"
 SCALE: 1"=5' VERT.

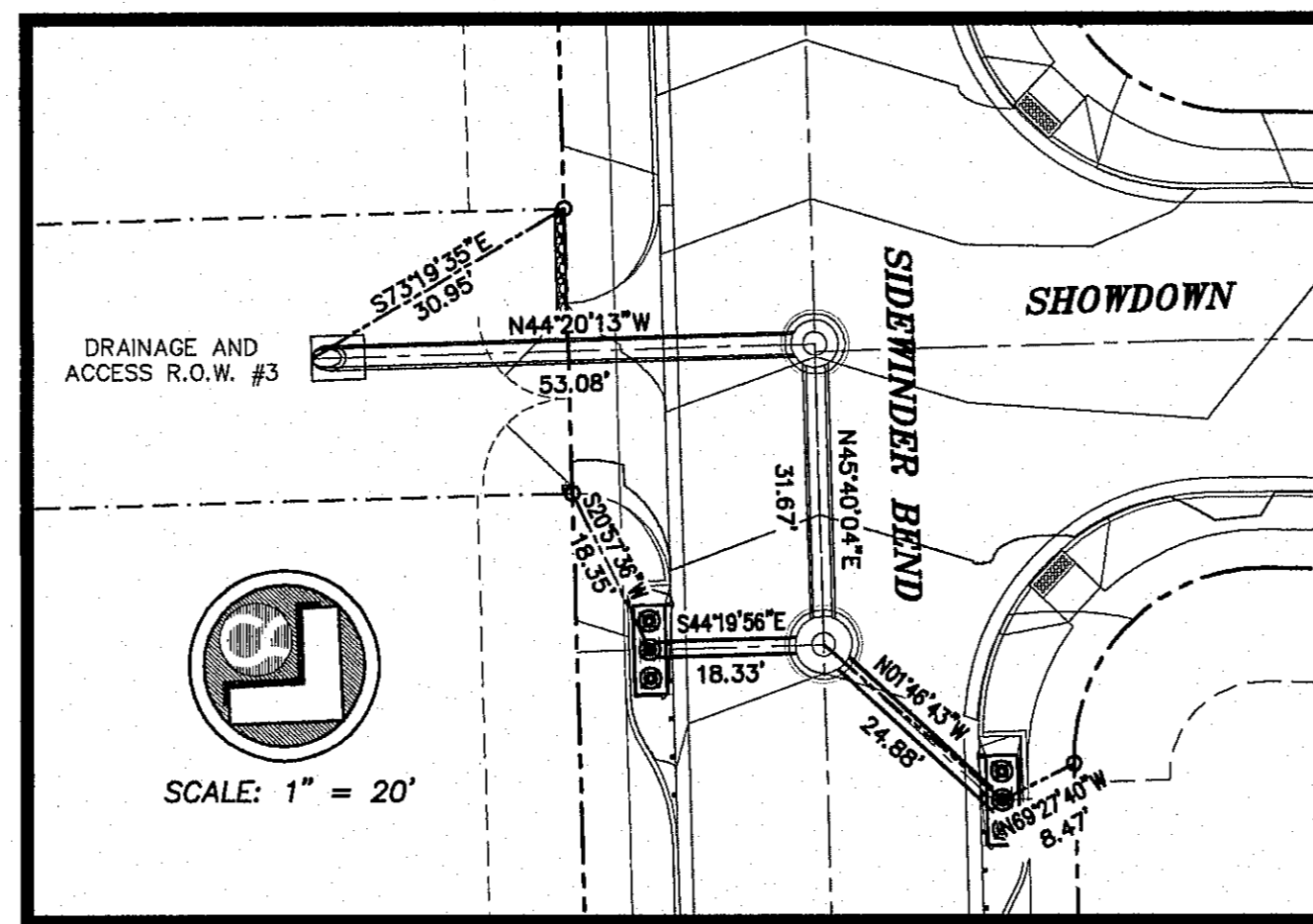
INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

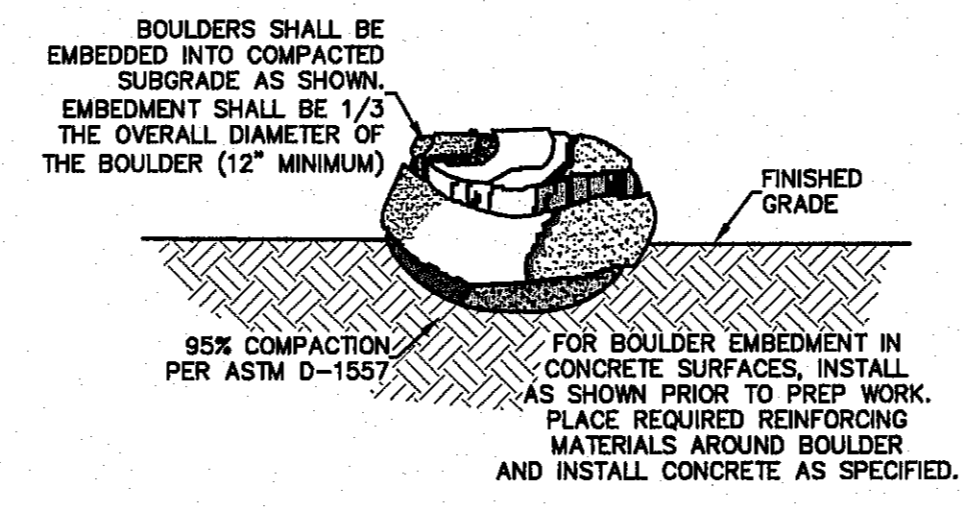
SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN "APPROVED EQUAL" TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

INLET CAPACITY AND BYPASS IS PRESENTED ON SHEET 17 AND BY SEPARATE REPORT TO ENGINEERING FILES ON SUBDIVISION.

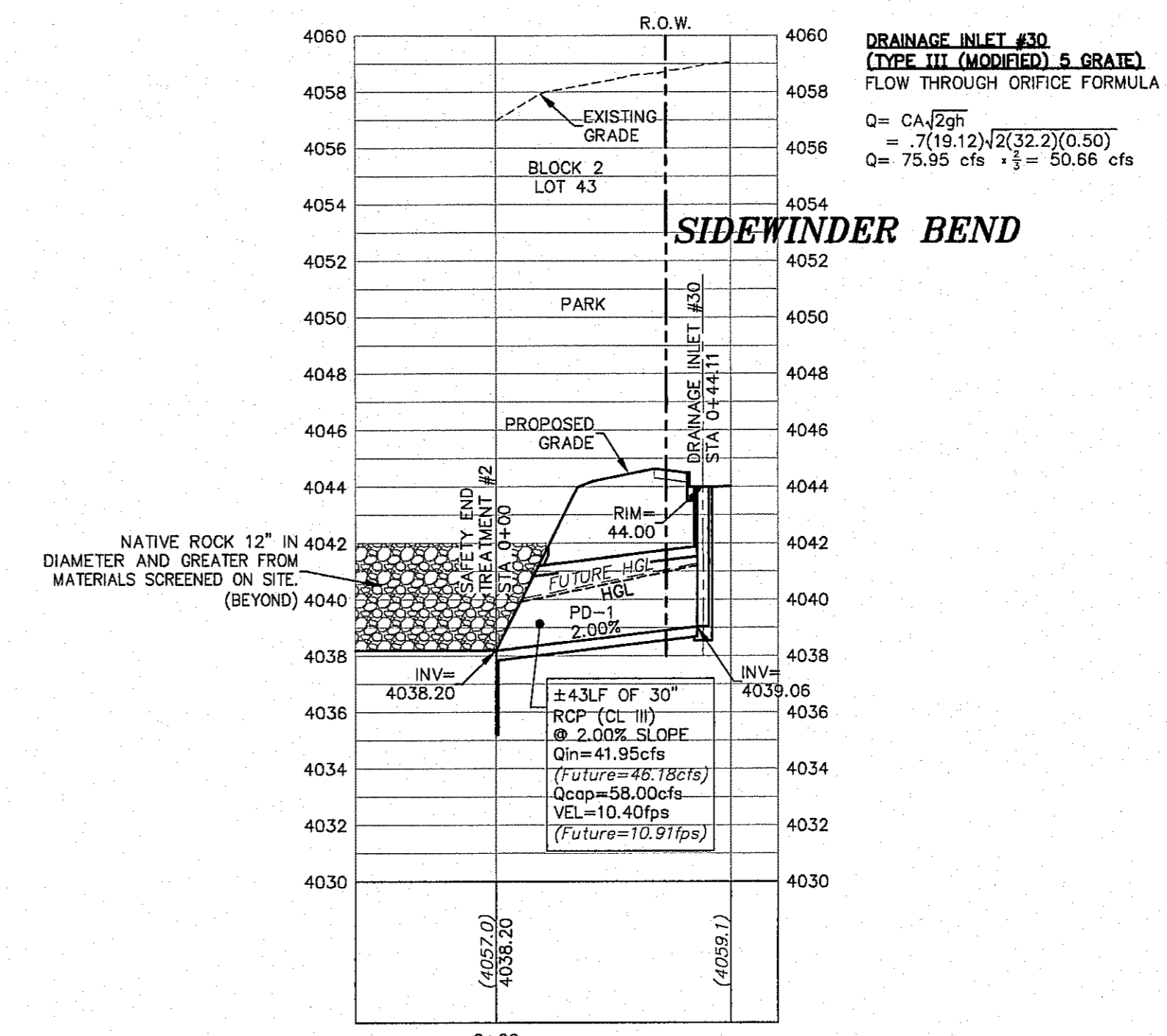


STORM SEWER "C" & "C1" INLET TIE

ALL PROFILES SHOWN ON THIS SHEET PHASE TWO CONSTRUCTION



TYPICAL BOULDER EMBEDMENT
 NOT TO SCALE



STORM SEWER "D"
 SCALE: 1"=30' HORIZ.
 SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PC-1	24 inch	51	0.0150	4,069.76	4,069.00	N/A	N/A	5.24	10.14	17.55	27.61	7.89	SE1	4,073.00	4,070.20	MH26	4,073.92	4,071.27
PC-2	24 inch	27	0.0150	4,070.48	4,070.09	N/A	N/A	5.24	10.07	17.55	27.19	6.43	MH26	4,073.92	4,071.86	MH27	4,075.82	4,071.99
PC-3	18 inch	22	0.0350	4,071.72	4,070.98	0.95	0.06	2.43	10.00	8.41	19.26	5.34	MH27	4,075.82	4,072.66	D128	4,075.87	4,072.84
PC-1-1	18 inch	15	0.0250	4,071.29	4,070.93	0.60	0.45	2.81	10.00	9.14	16.27	5.18	MH27	4,075.82	4,072.66	D129	4,074.86	4,072.77

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PD-1	30 inch	43	0.0200	4,039.06	4,038.20	0.60	0.98	13.05	10.00	41.95	58.00	10.40	SE2	4,042.00	4,039.94	D130	4,044.00	4,041.23

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/20/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

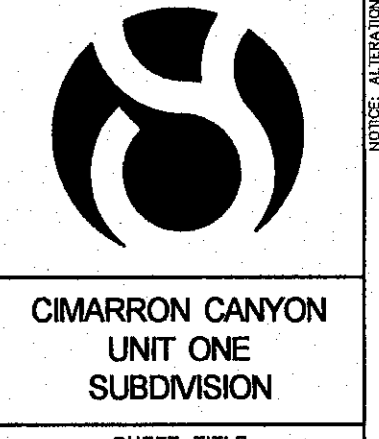
WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUNDS IN PROJECT AREA

BEFORE YOU DIG - CALL
 800 ELECTRIC COMPANY 540-4300
 800 GAS SERVICE 544-6500
 800 GAS EMERGENCY HOTLINE 562-8411/662-2008
 800 WATER EMERGENCY 684-5711
 800 NATURAL GAS EMERGENCY (EPW) 775-5414
 800 NATURAL GAS COMPANY 1-800-384-6847
 800 EXCAVATION SAFETY SYSTEM 1-800-824-4377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of any project or any other project. Any reuse, to include copying and/or modification of the content of this document, without express, written permission from C&S Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

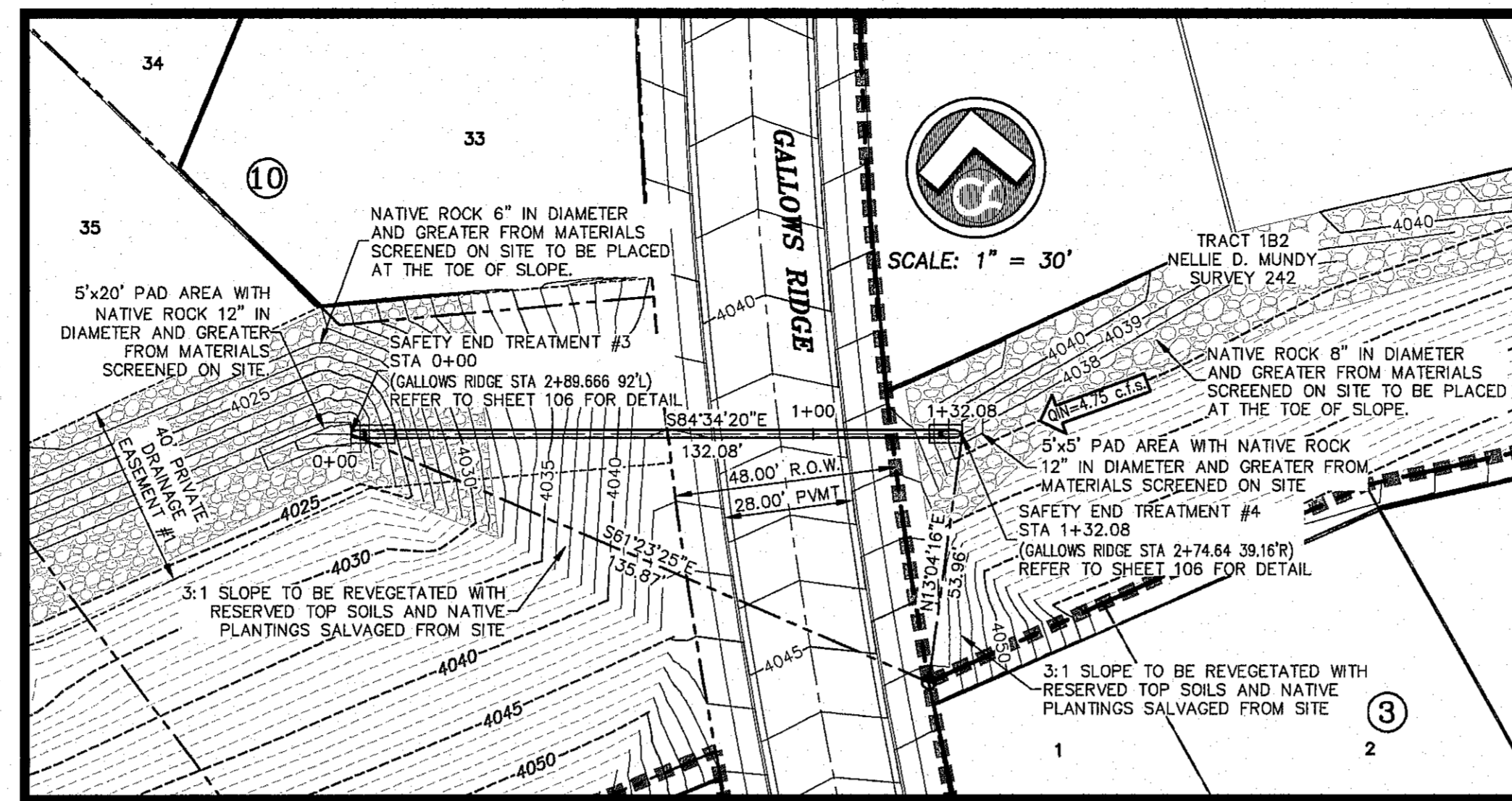


csa design group, inc.
 Texas Registered Engineering Firm #987
 1845 Northwestern Dr. Ste C
 El Paso, Texas 79912
 Tel: (915) 877.4155
 Fax: (915) 877.4334
 www.csaengineering.com



SHEET TITLE
STORM SEWER C, C1 & D PLAN AND PROFILE

COB	1524
DESIGN BY	JCK
COB-3M-DG	9/15/16
DATE	9/15/16
DAE	AS NOTED
SCALE	SCALE
SHEET NO.	95
TOTAL SHEETS	99 OF 131



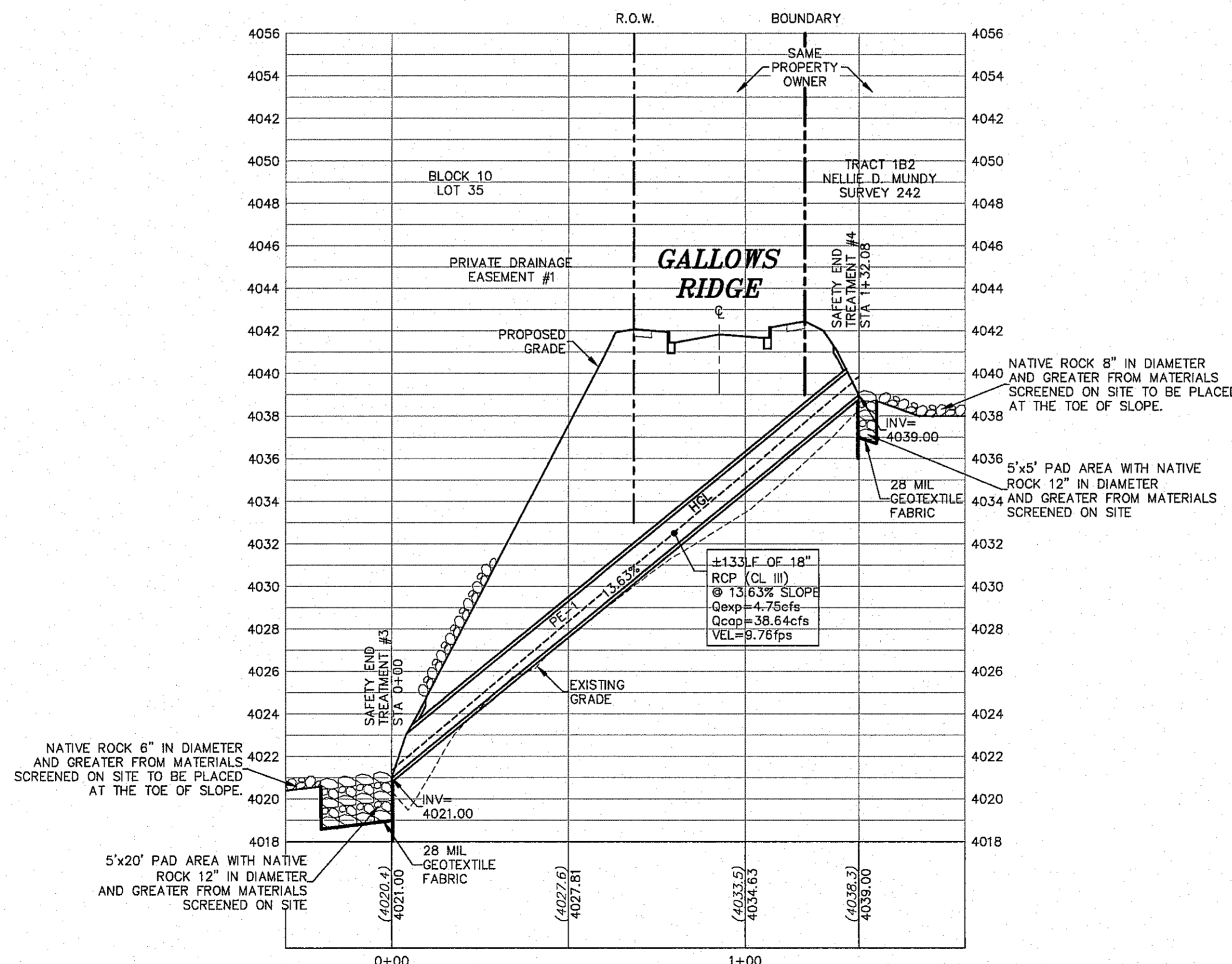
INLETS ARE STATIONED TO THE CENTER OF THE STRUCTURE AT THE CURB LINE UNLESS NOTED OTHERWISE. ALL OTHER STATIONING IS TO THE CENTER OF THE STRUCTURES. BEARINGS AND DISTANCES ARE FOR FIELD LOCATION OF STRUCTURES ONLY. REFER TO PROFILE FOR ACTUAL PIPE LENGTHS.

HYDRAULIC GRADE LINE (HGL) REPRESENTED ON THIS SHEET IS 100-YEAR EVENT.

ALL RUN OFF CALCULATIONS ARE BASED ON THE 100-YEAR STORM FREQUENCY.

SANITITE HP (PLASTIC PIPE) MANUFACTURED BY ADVANCED DRAINAGE SYSTEMS (ADS) HAS BEEN APPROVED BY EPWU STORMWATER MANAGEMENT AS AN 'APPROVED EQUAL' TO REINFORCED CONCRETE PIPE (RCP). SANITITE HP IS AVAILABLE IN DIAMETERS UP TO 60 INCHES.

ALL PROFILES SHOWN ON THIS SHEET PHASE FOUR CONSTRUCTION



STORM SEWER "E" PRIVATE LINE
SCALE: 1"=30' HORIZ.
SCALE: 1"=5' VERT.

Pipe	Section Size	Length (ft)	Constructed Slope (ft/ft)	Upstream Invert Elevation (ft)	Downstream Invert Elevation (ft)	Inlet C Coefficient	Inlet CA (acres)	Total CA (acres)	System Flow Time (min)	Discharge (cfs)	Capacity (cfs)	Average Velocity (ft/s)	Downstream Node	Downstream Rim Elevation (ft)	Downstream HGL (ft)	Upstream Node	Upstream Rim Elevation (ft)	Upstream HGL (ft)
PE-1	18 inch	133	0.1363	4,039.00	4,021.00	0.69	1.32	1.32	10.00	4.75	38.64	9.76	SE-3	4,042.00	4,021.36	SE-4	4,042.00	4,039.84

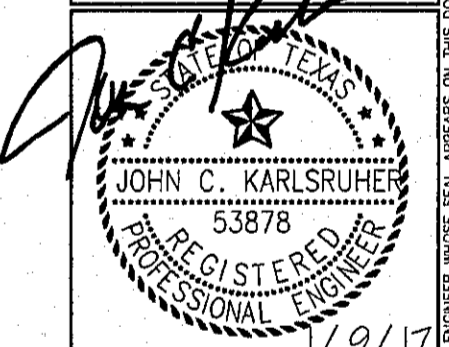
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYS LANDING DRIVE. ELEVATION = 5878.5 (E.L. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	9/15/16	1st City Submitted	DAE
2	11/01/16	2nd City Submitted	DAE
3	1/9/17	3rd City Submitted Final	JCK

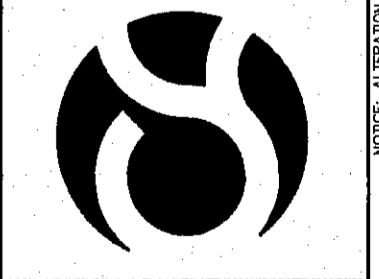
WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUNDS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 545-5720
TEXAS GAS SERVICE 544-5300
TGS EMERGENCY HOTLINE 562-8411/562-2003
EL PASO WATER (PUB) 1-800-DIG-TESS
TIME WARNER (CABLE) 776-7414
EL PASO NATURAL GAS COMPANY 1-800-334-8847
TEXAS EXCAVATION SAFETY SYSTEM 1-800-205-1555 (CSP 26277)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of Services in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm F-9977
1845 Northwestern Dr. Site C
El Paso, Texas 79912
tel (915) 877.4155
fax (915) 877.4334
www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

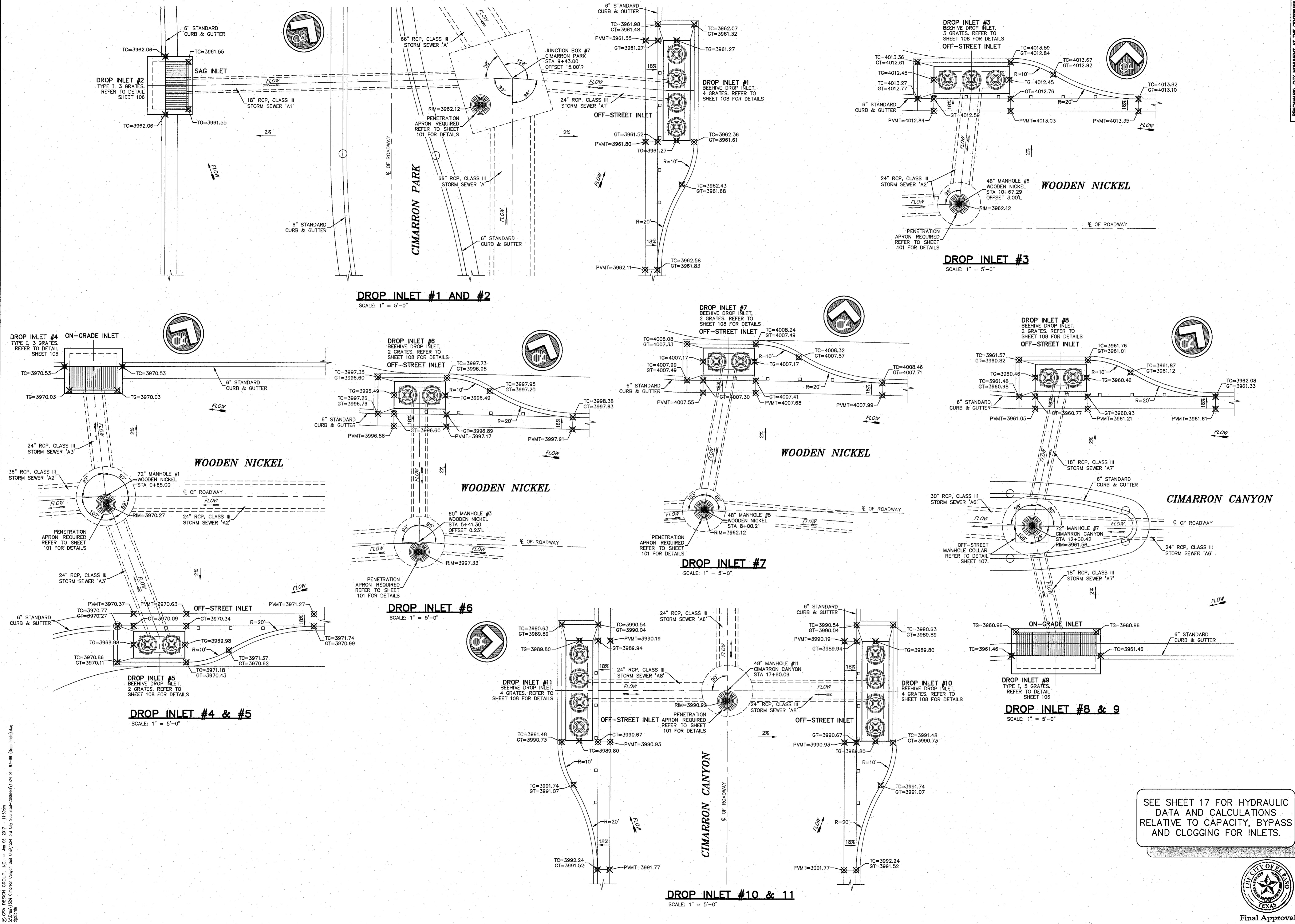
SHEET TITLE
STORM SEWER E PLAN AND PROFILE

JOB NO.	1524
DESIGN BY	JCK
DATE	9/15/16
DRAWN BY	DAE
SCALE	AS NOTED

SHEET NO. **96**
SHEET SEQUENCE **100** OF **131**



Final Approval



BENCHMARK CITY MONUMENT AT THE CENTRELINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYE LANDING DRIVE. ELEVATION = 3985.5 (E. PASS GDT DATUM)

NO.	DATE	DESCRIPTION	BY
1	11/20/16	1st City Submittal	DAE
2	1/9/17	2nd City Submittal	JCK
3	1/9/17	3rd City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL

EL PASO ELECTRIC COMPANY
1-800-DIG-TESS
454-6300

TEXAS GAS SERVICE
TGS EMERGENCY HOTLINE
562-8411 (955-2003)
AFTER HOURS EMERGENCY (EPW)
775-7414

EL PASO NATURAL GAS COMPANY
1-800-334-0047
1-800-644-8372

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project without the express, written permission from CSA Design Group, Inc. For this specific purpose intended, it is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

JOHN C. KARLSRUHER
REGISTERED PROFESSIONAL ENGINEER
53875
1/9/17

csa design group, inc.
Texas Registered Engineering Firm F5897
1045 Northwestern Dr. Site C
El Paso, Texas 79912
tel (915) 877-4155
fax (915) 877-4334
www.csaengineers.com

CIMARRON CANYON UNIT ONE SUBDIVISION

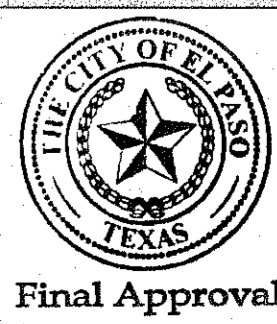
SHEET TITLE
DROP INLETS 1-11

NO.	DATE	DESCRIPTION	BY
1	11/20/16	1st City Submittal	DAE
2	1/9/17	2nd City Submittal	JCK
3	1/9/17	3rd City Submittal	DAE

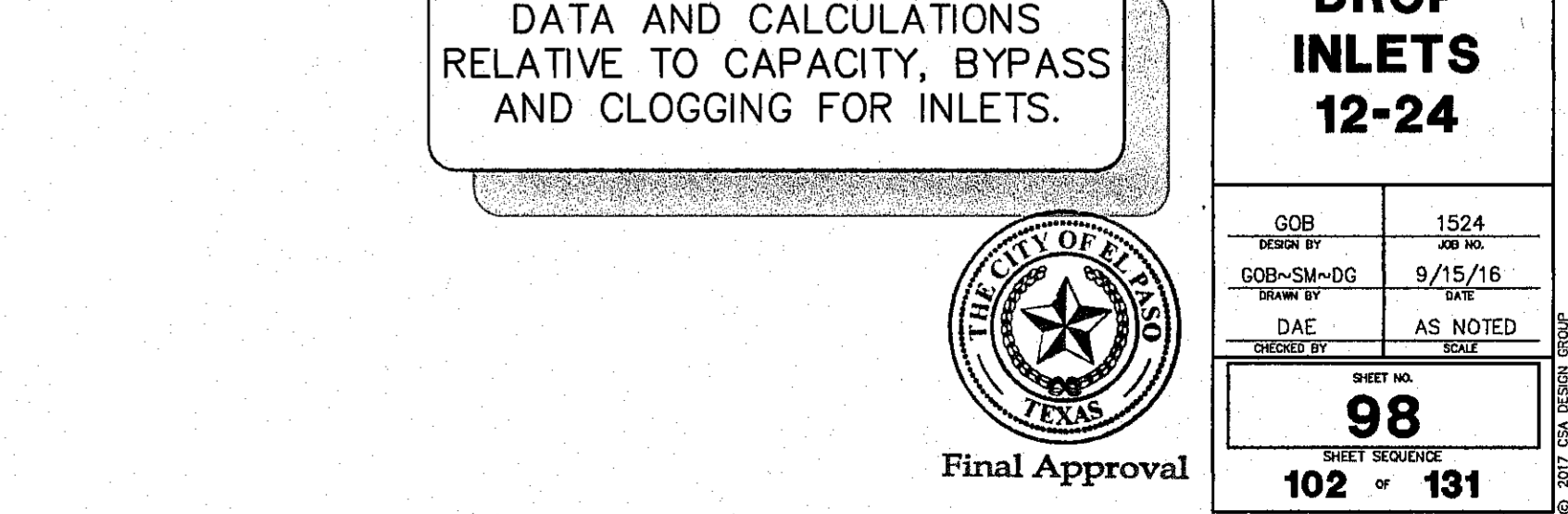
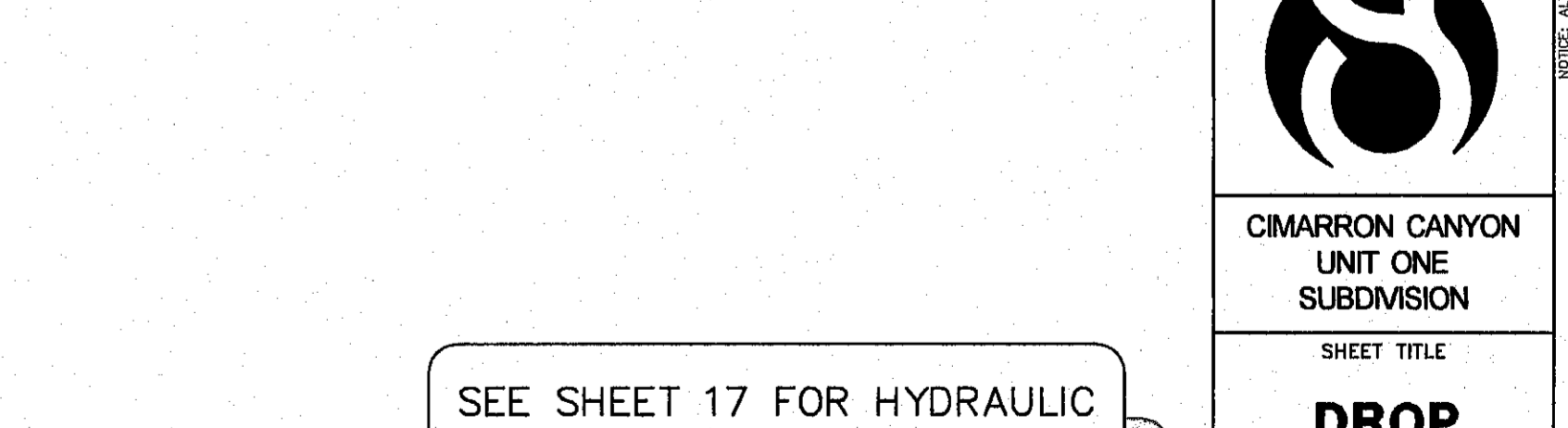
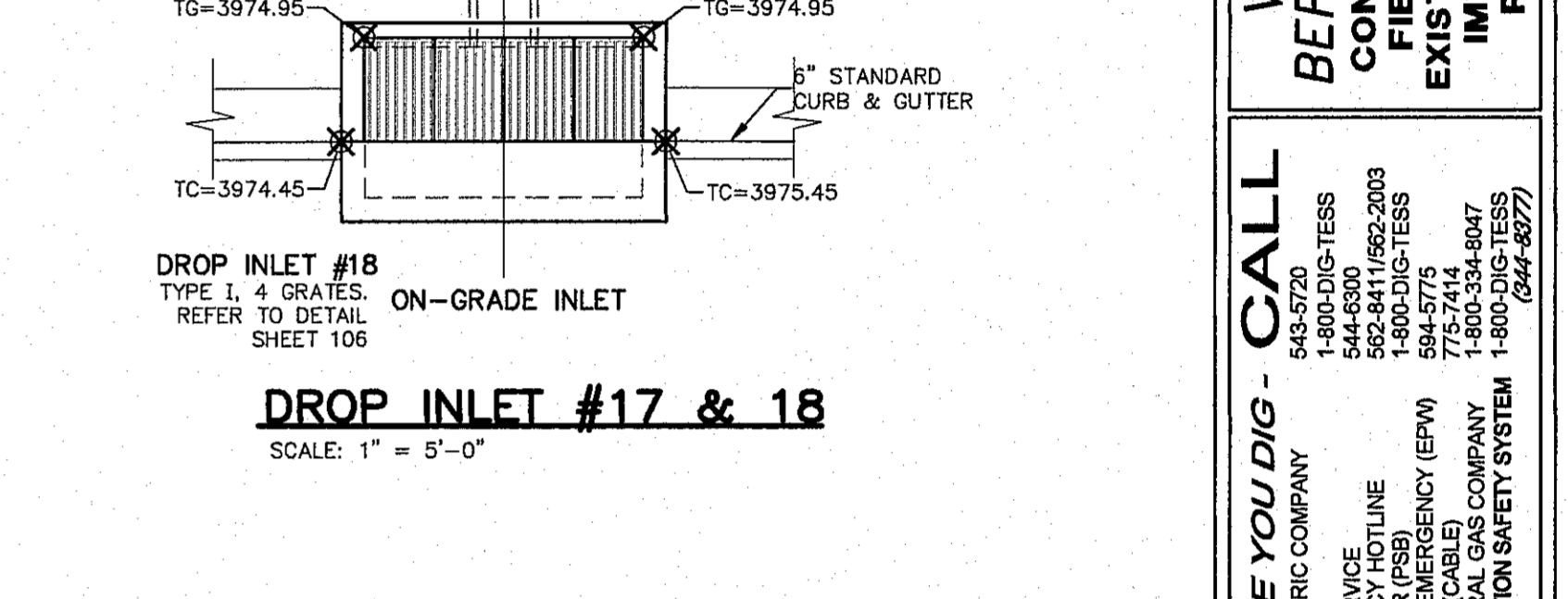
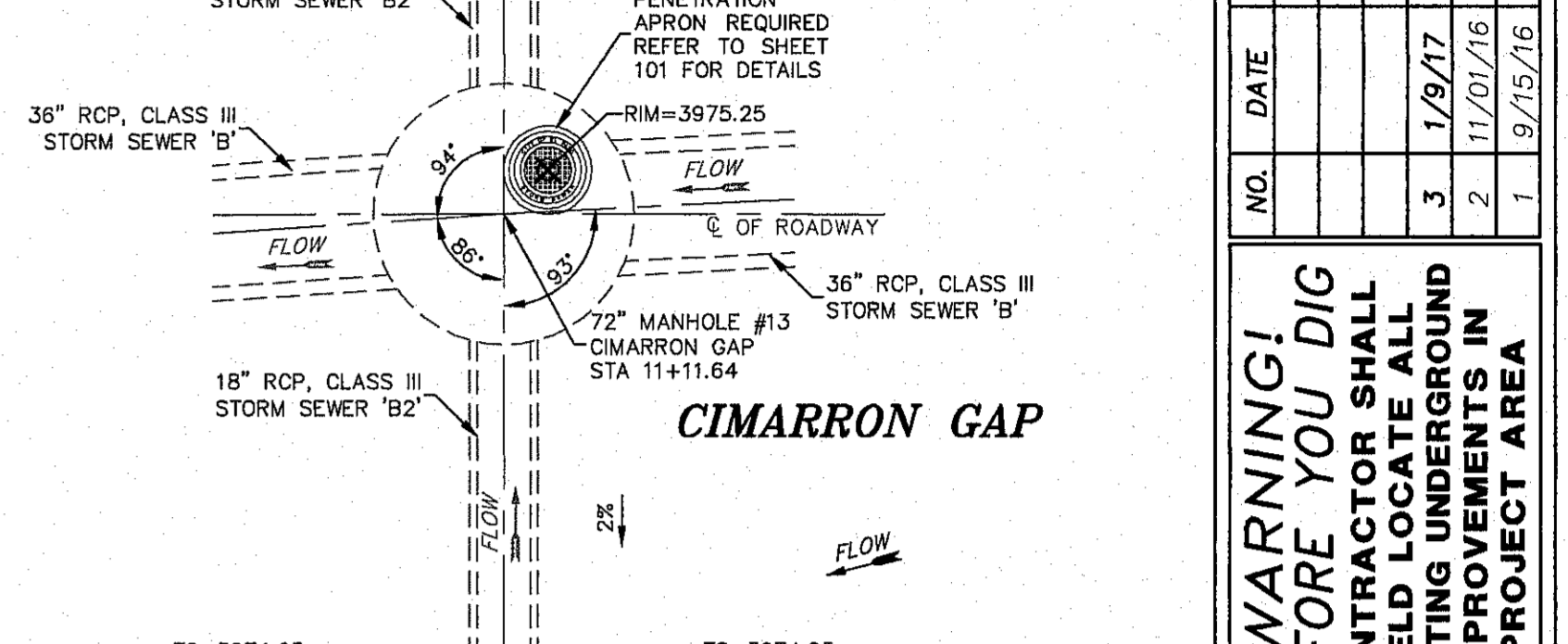
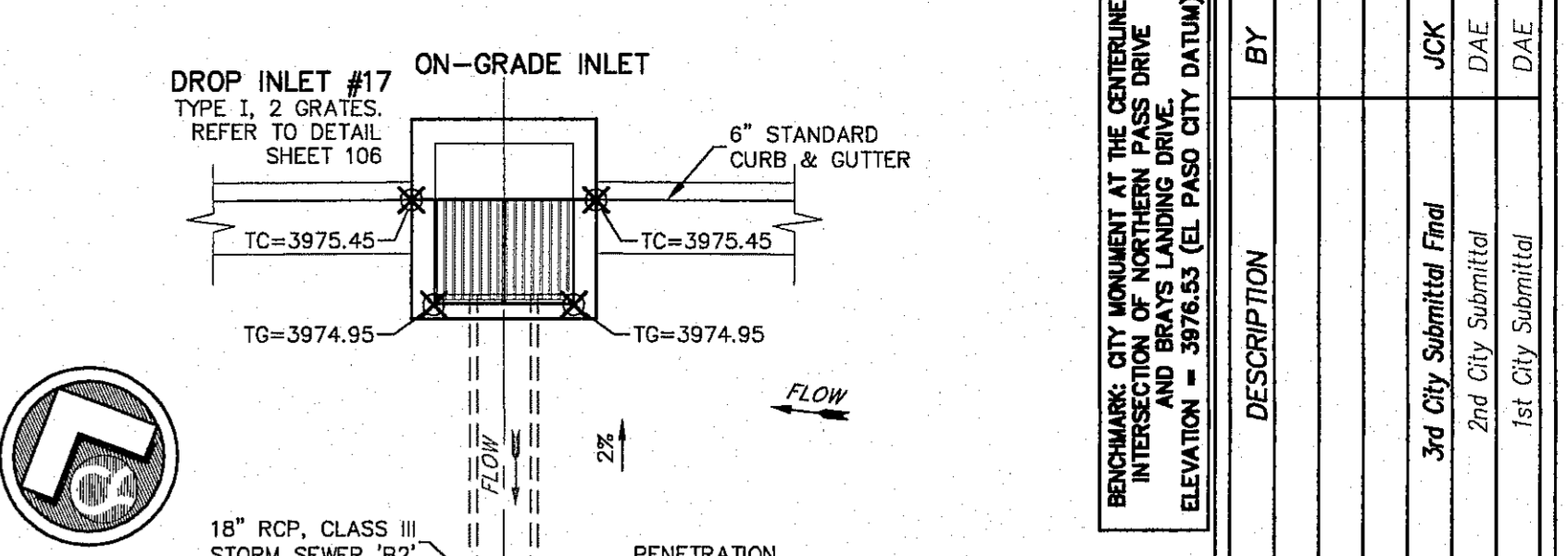
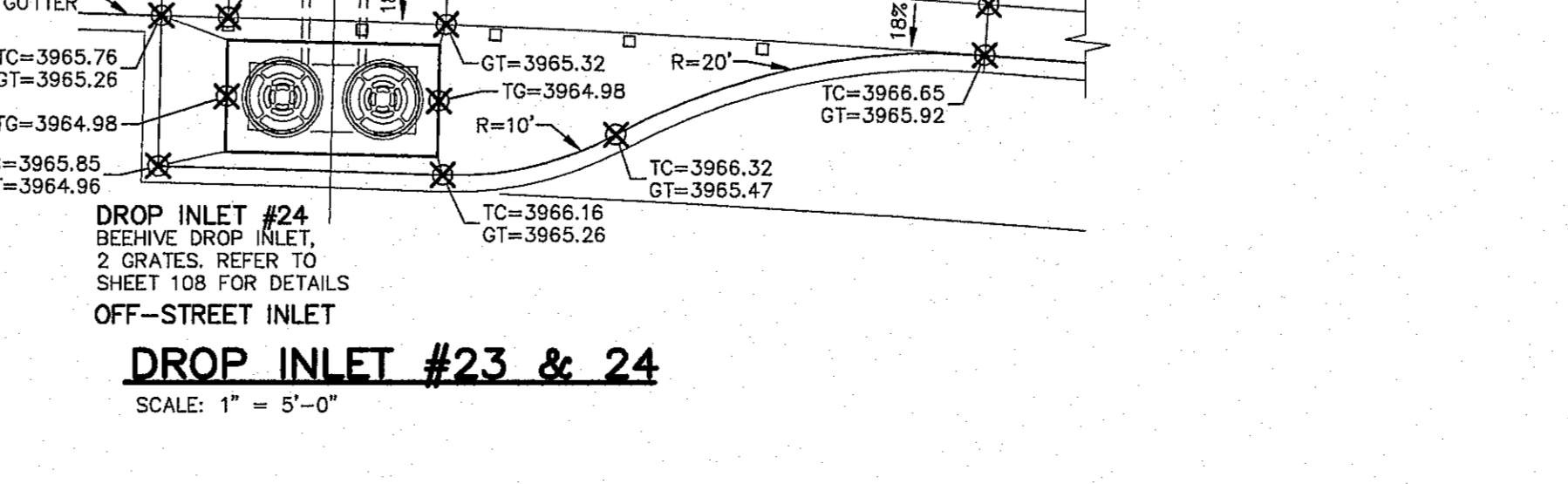
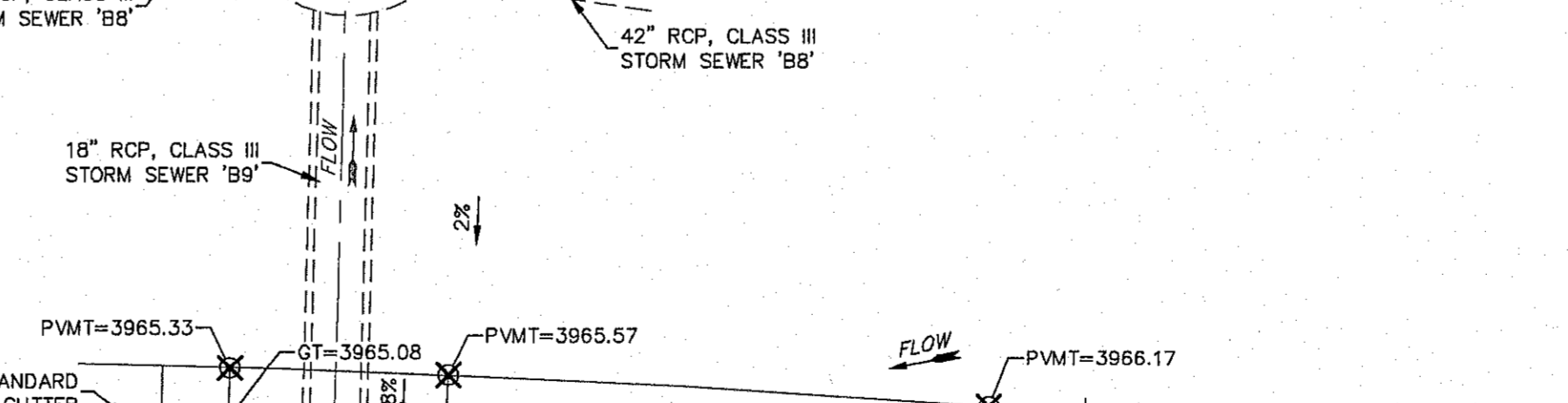
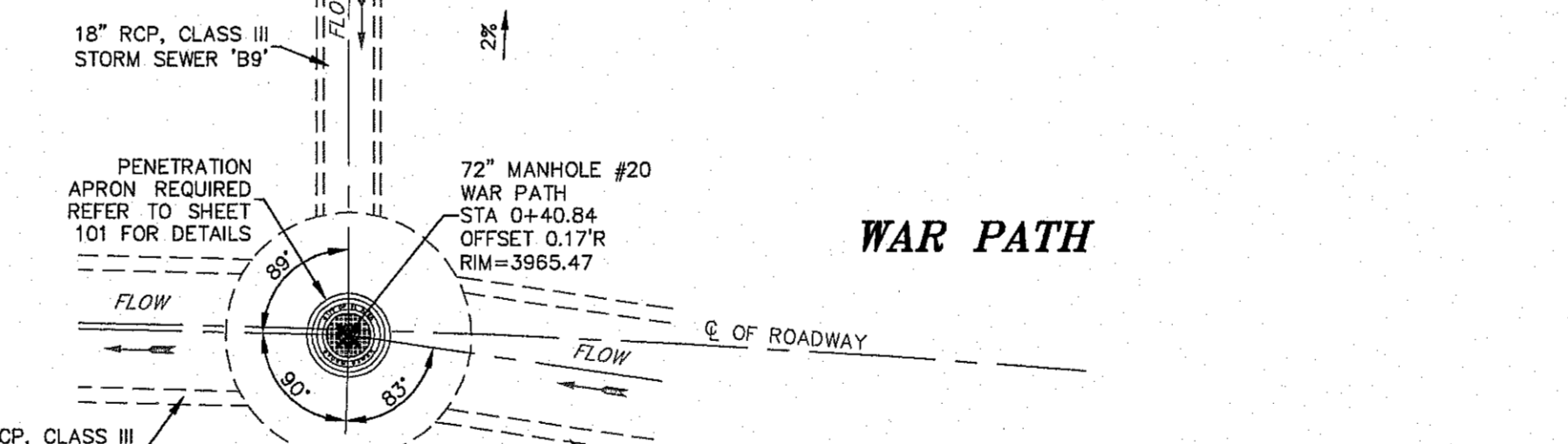
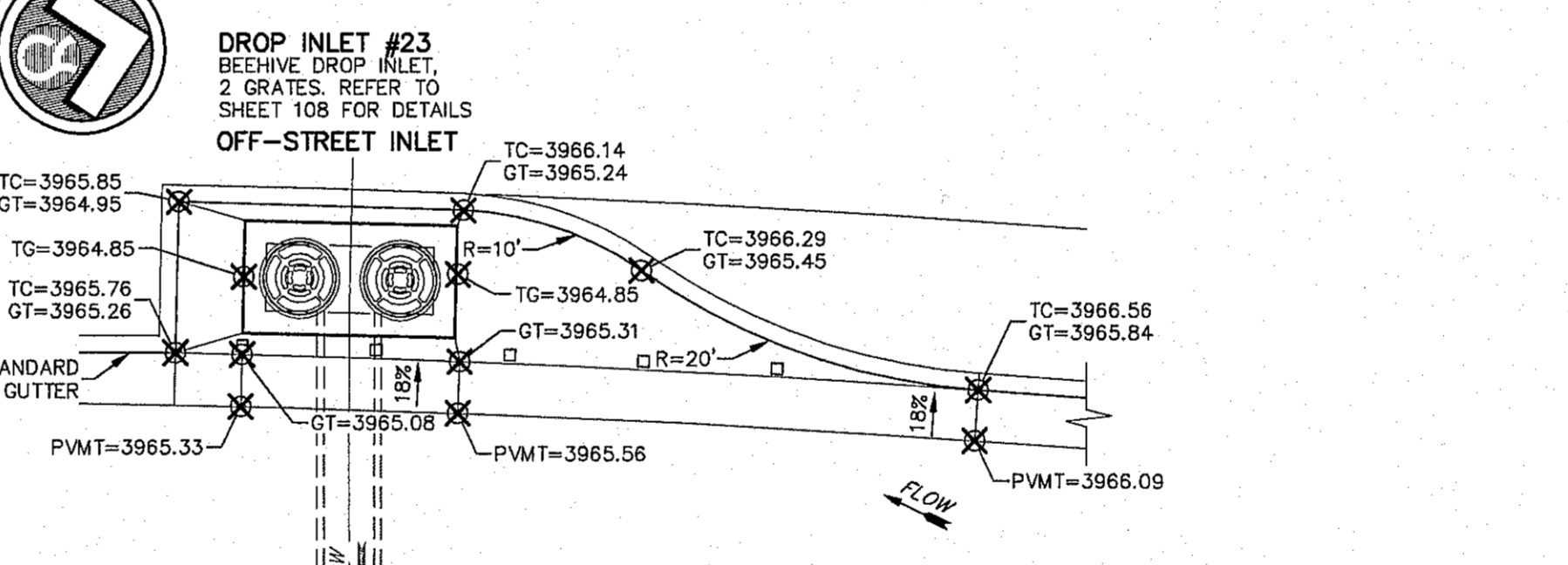
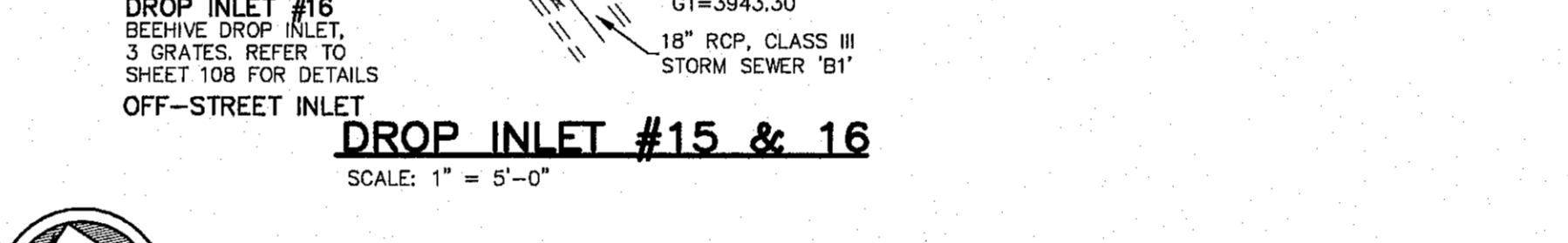
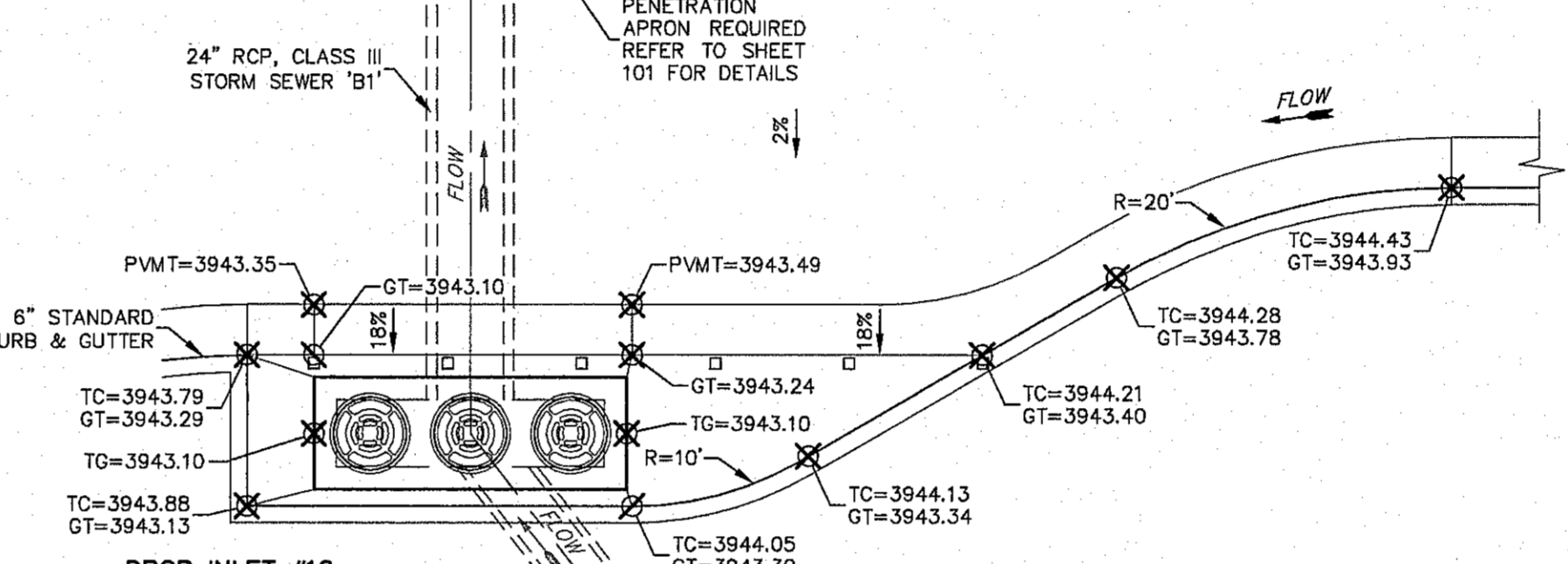
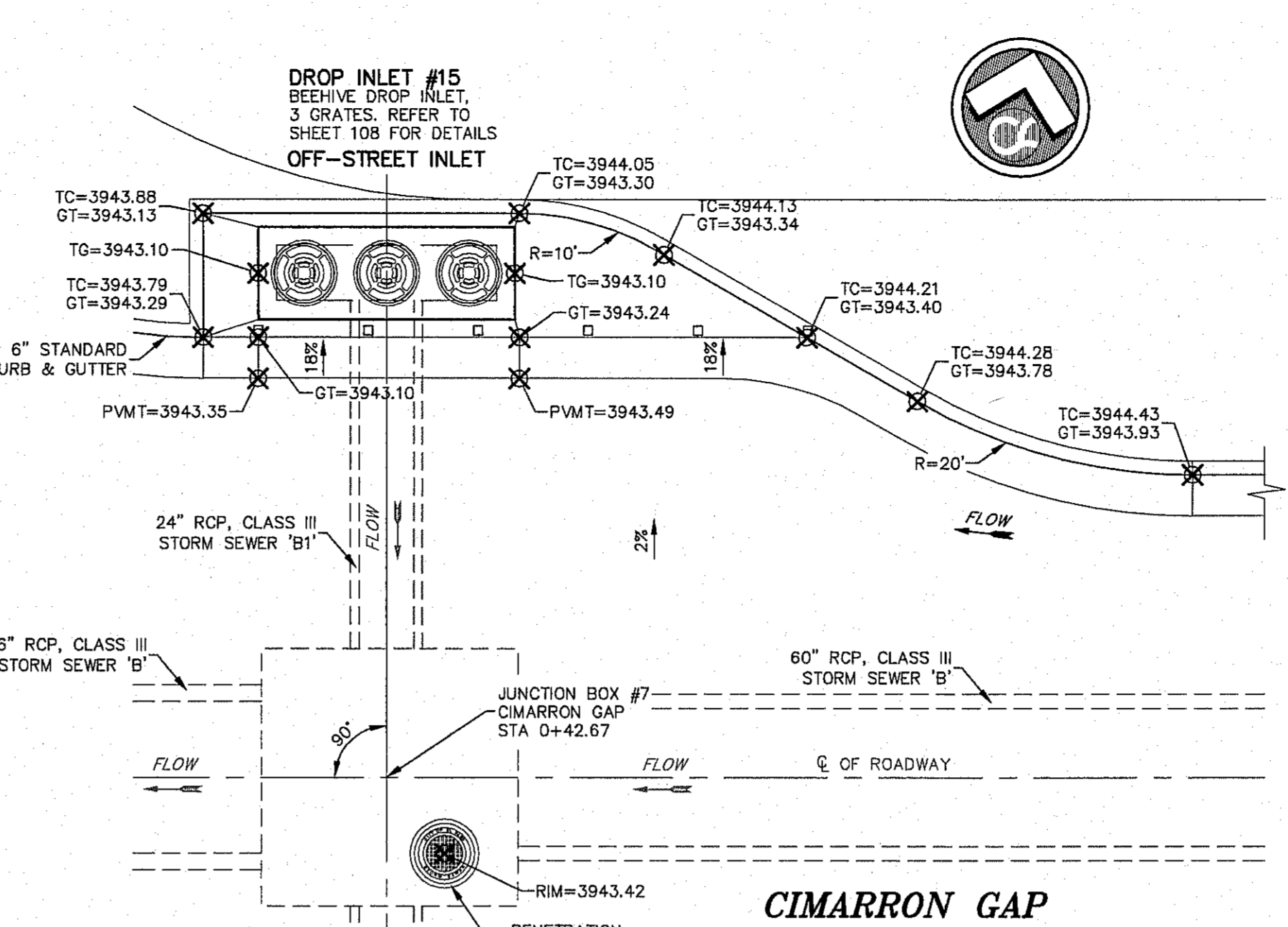
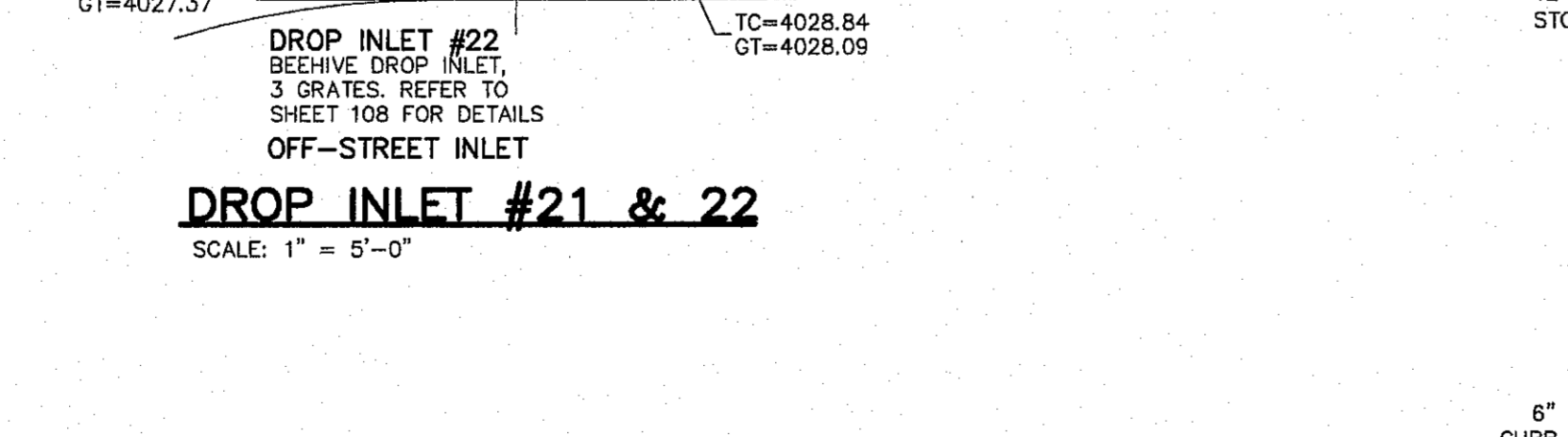
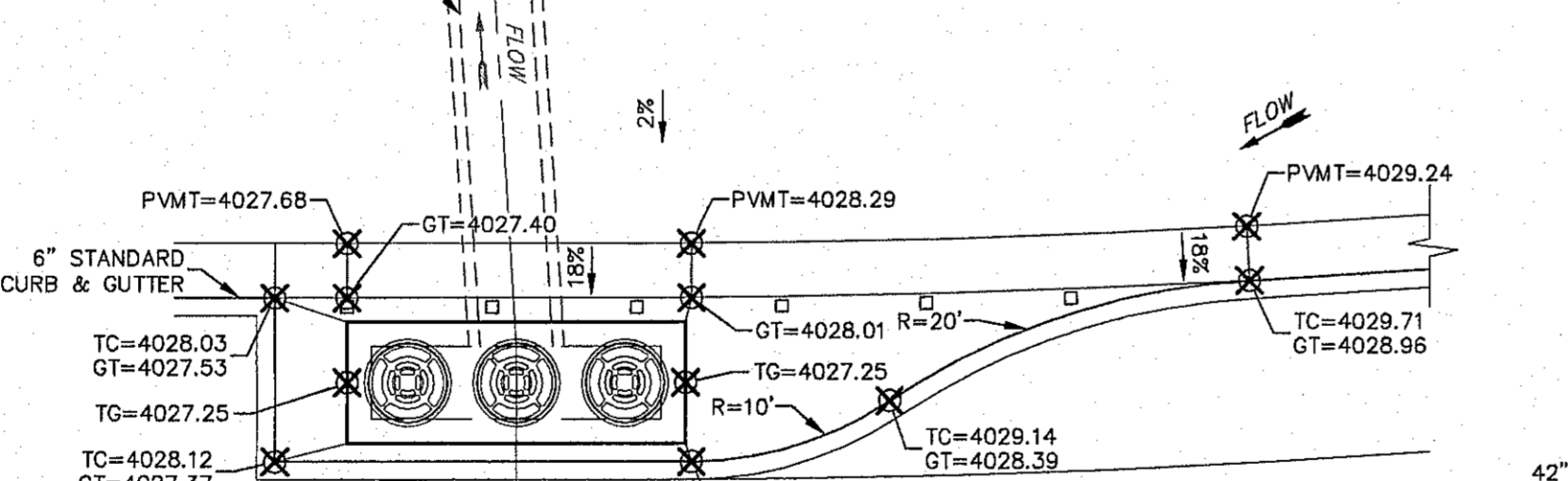
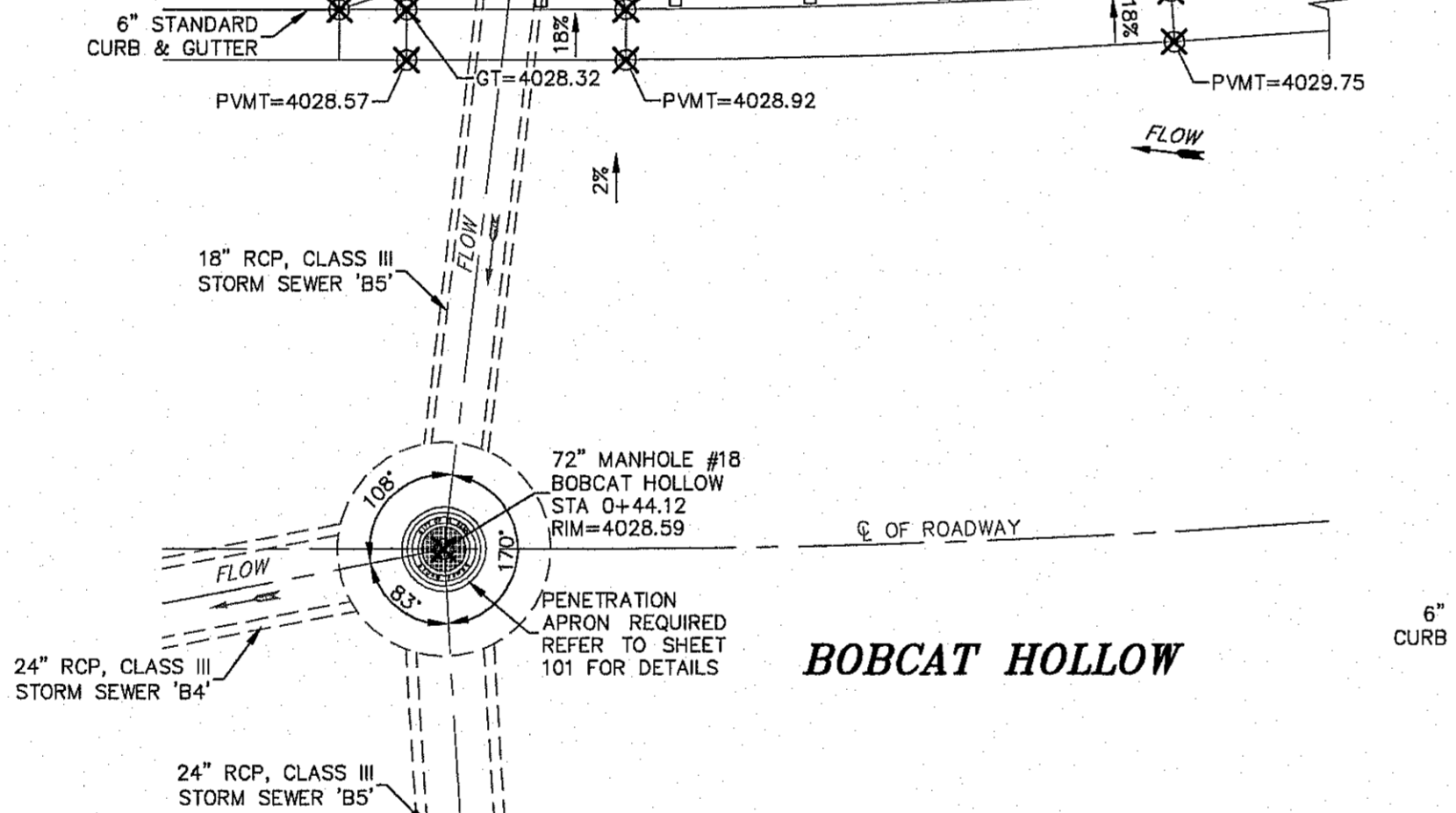
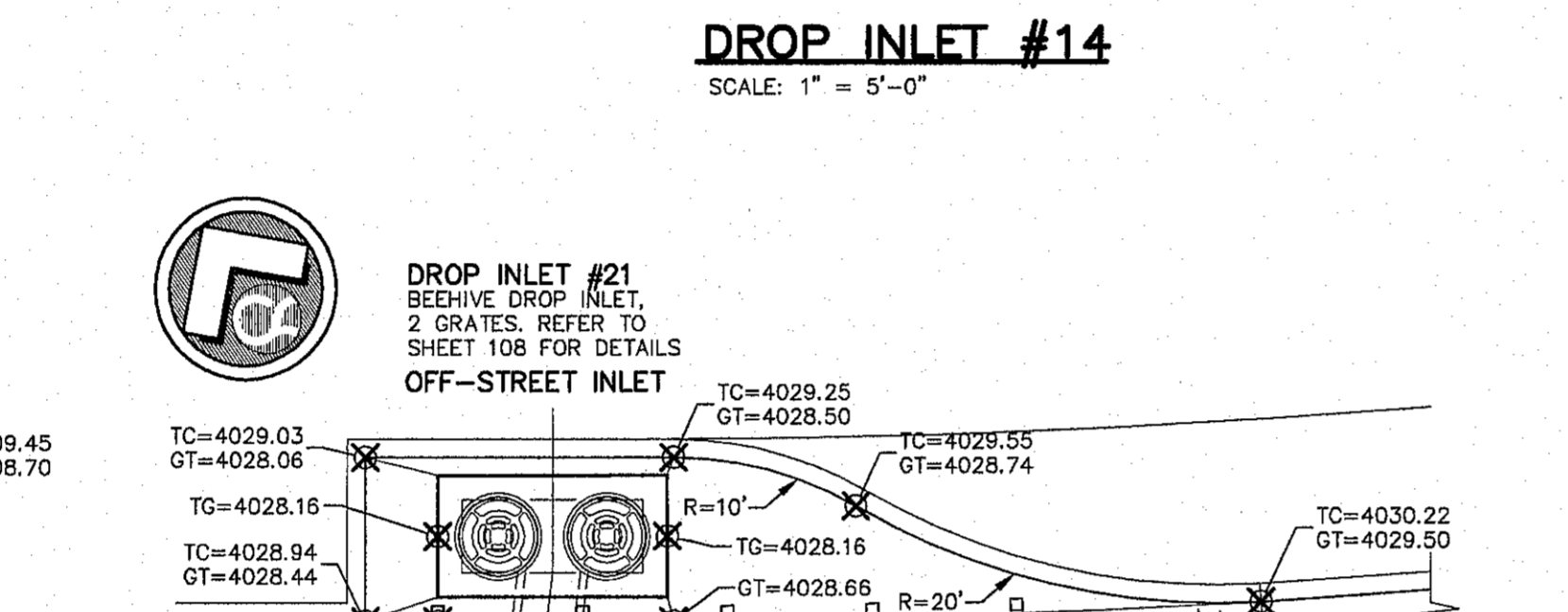
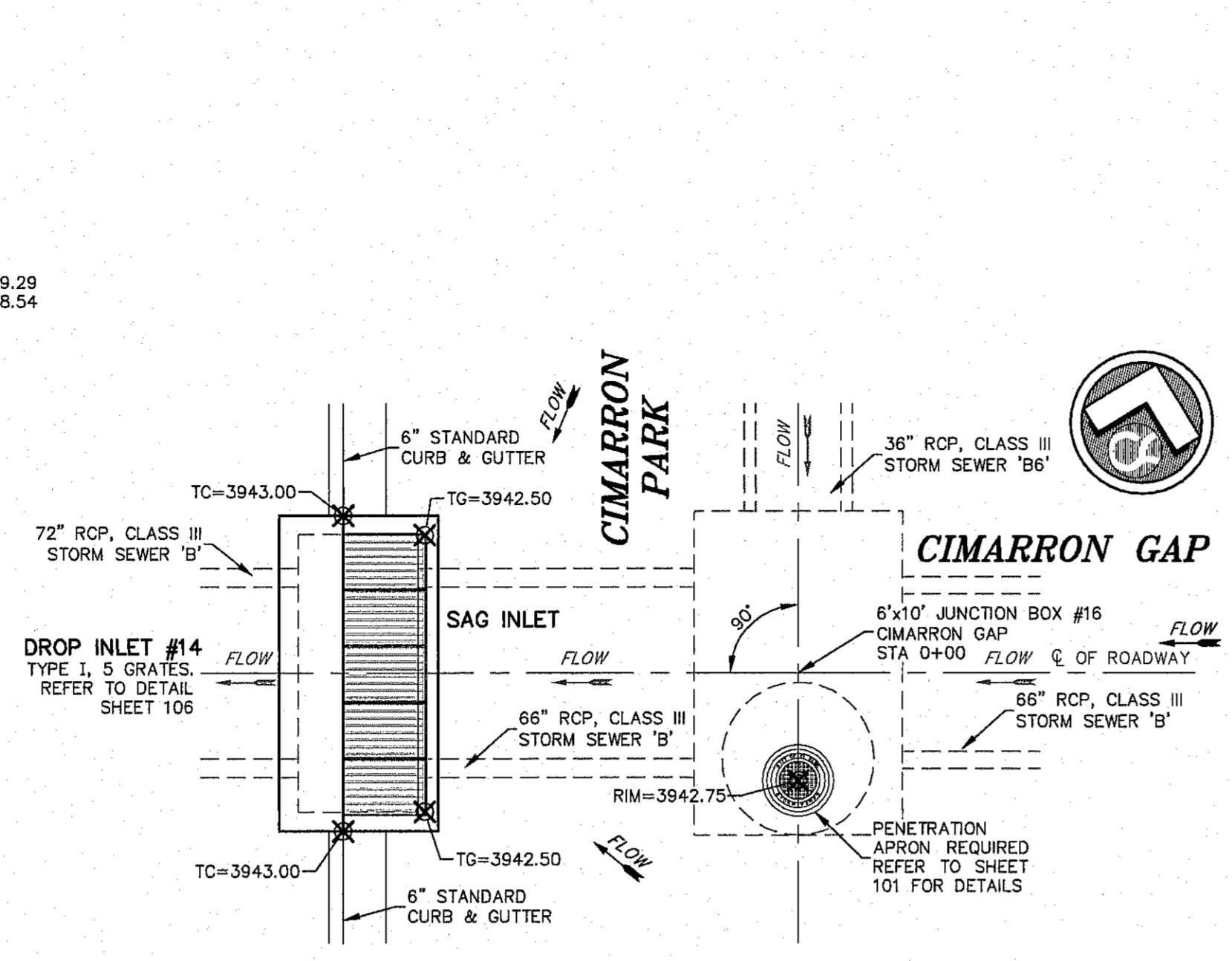
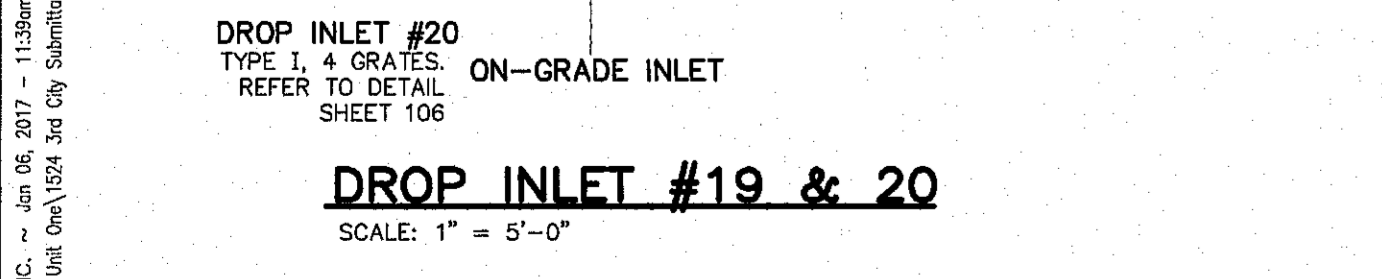
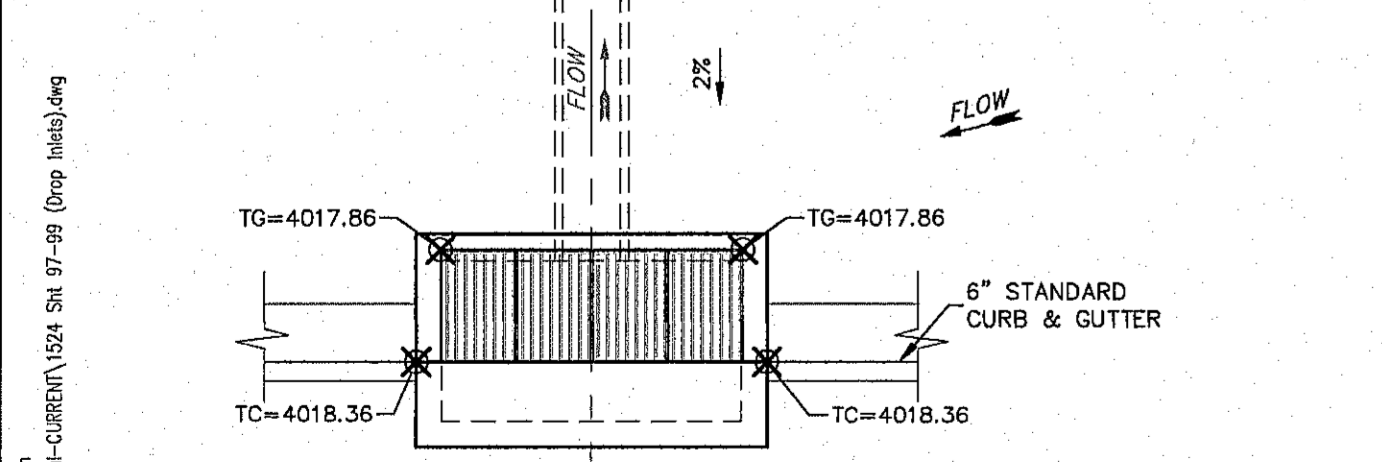
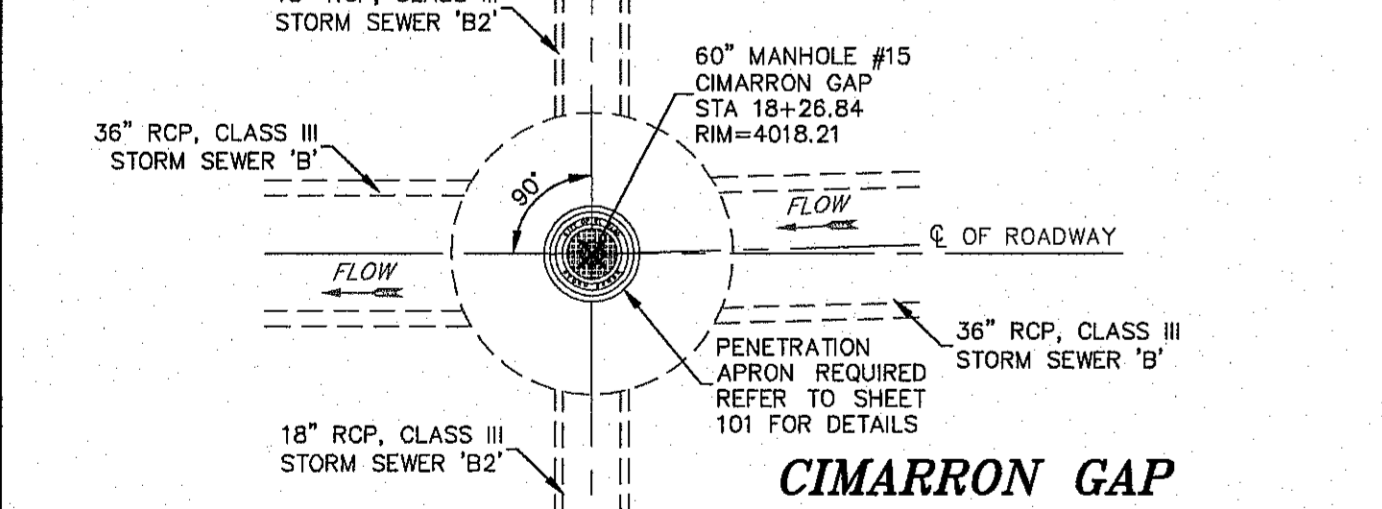
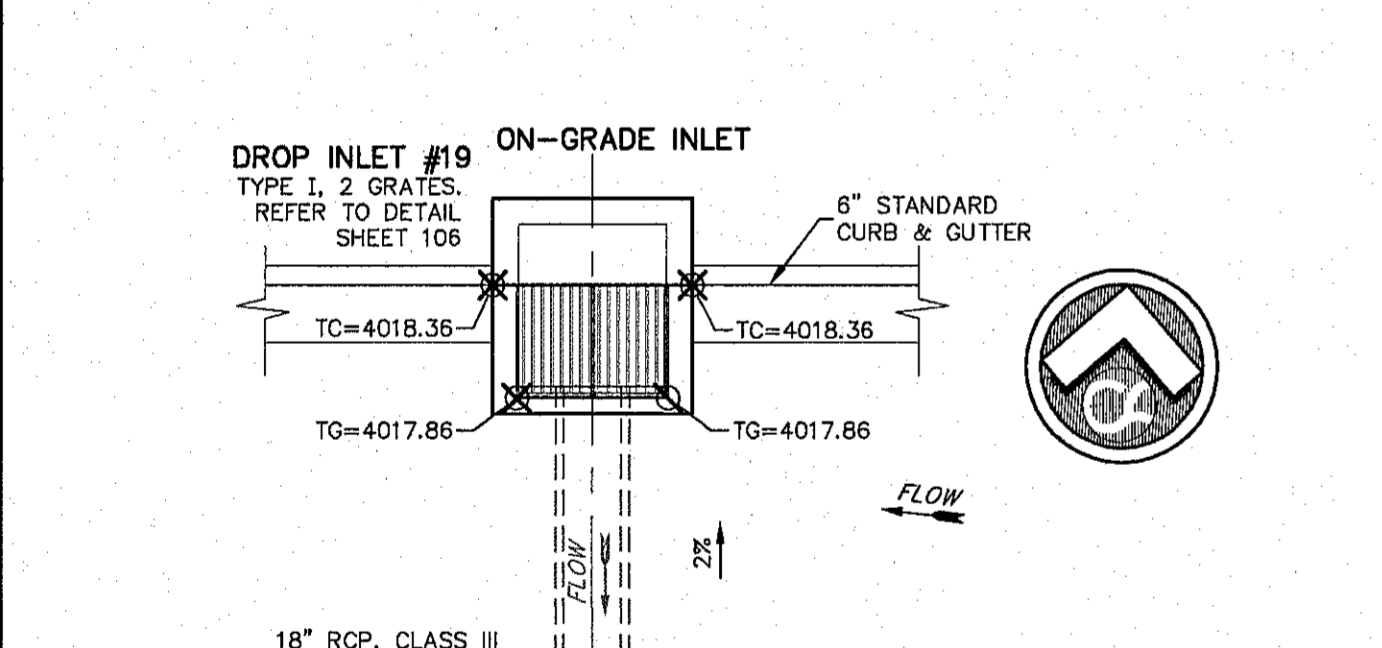
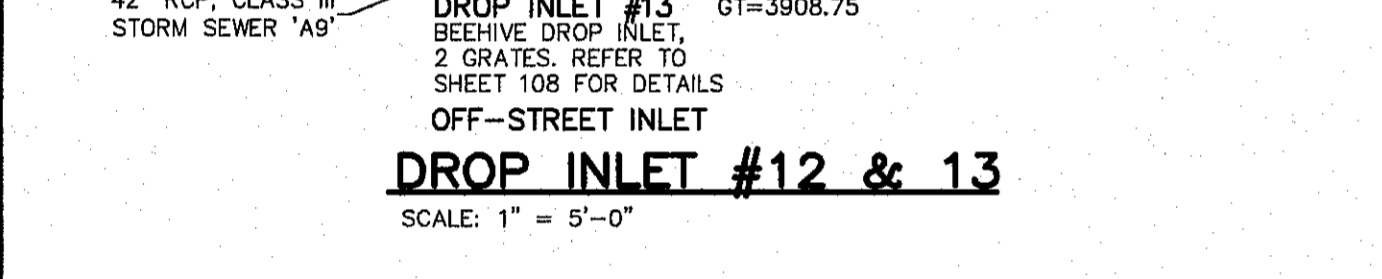
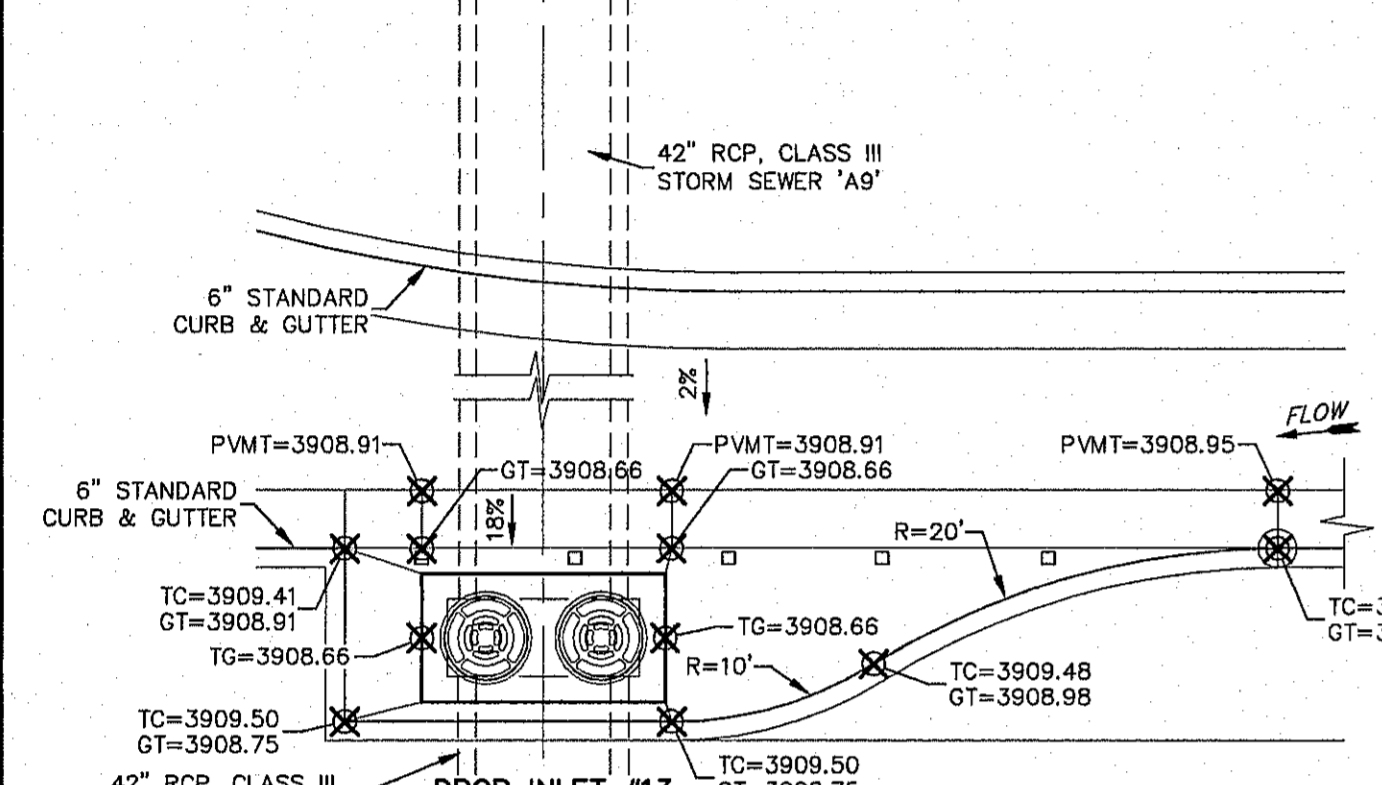
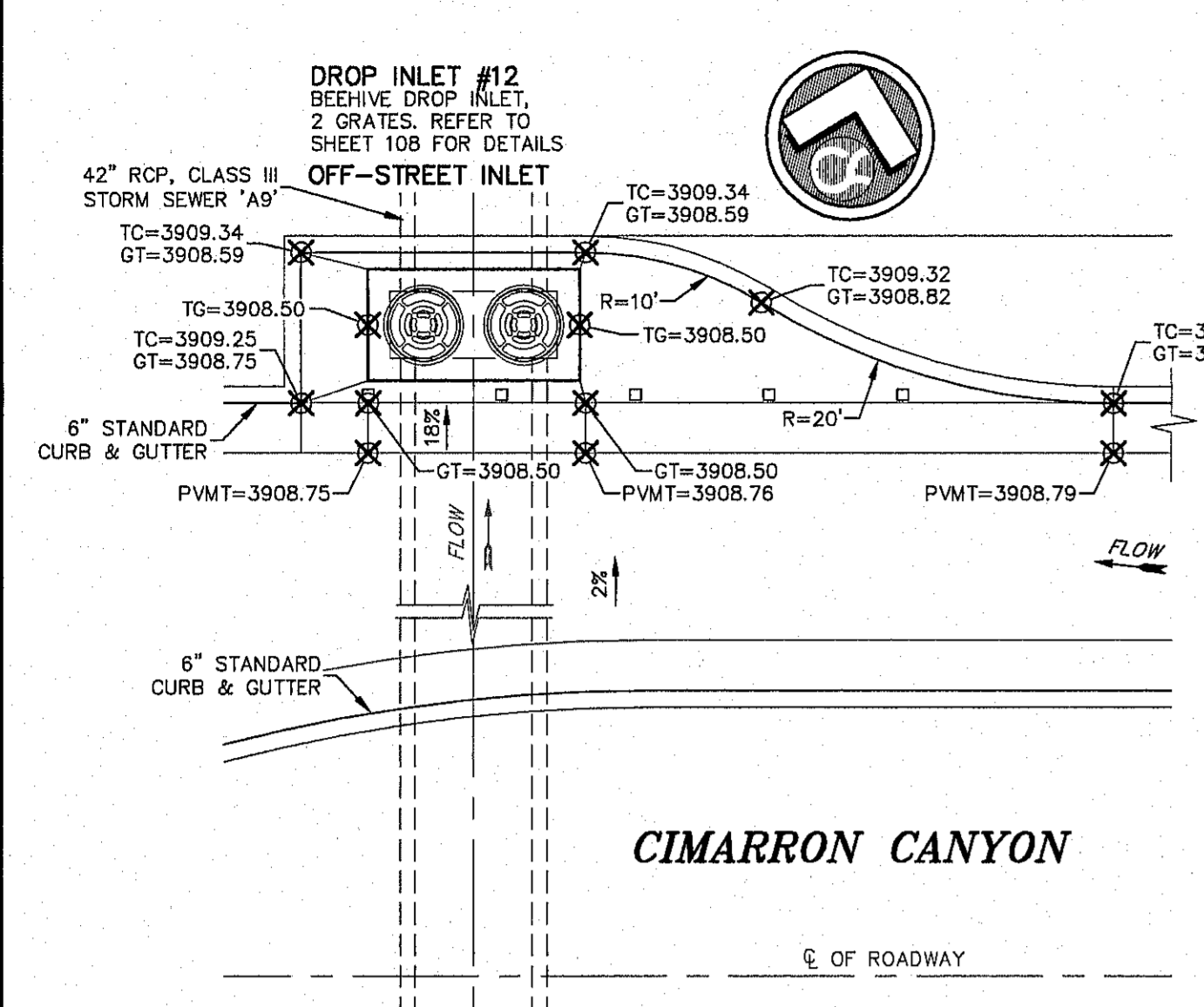
GOB 1524
DRAWN BY 08/16
GOB-SM-DG 9/15/16
DAE AS NOTED
CREATED BY SCALE

SHEET NO. **97**
SHEET SEQUENCE
101 of **131**

SEE SHEET 17 FOR HYDRAULIC DATA AND CALCULATIONS RELATIVE TO CAPACITY, BYPASS AND CLOGGING FOR INLETS.



© CSA DESIGN GROUP, INC. - Jan 06, 2017 - 11:38am
1027 Cimarron Canyon Unit One Subdivision - 08/15/16
El Paso, Texas



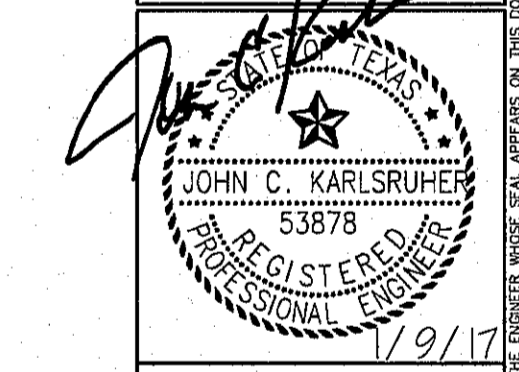
CSA DESIGN GROUP, INC. - Jan 06, 2017 - 11:30am
 S:\Draw\1524 Cimarron Canyon Unit One\1524 Unit One\DWG\1524 Unit One\Drop Inlets.dwg
 1/19/17

NO.	DATE	DESCRIPTION	BY
1	9/15/16	1st City Submittal	DAE
2	11/01/16	2nd City Submittal	DAE
3	1/19/17	3rd City Submittal Final	JCK

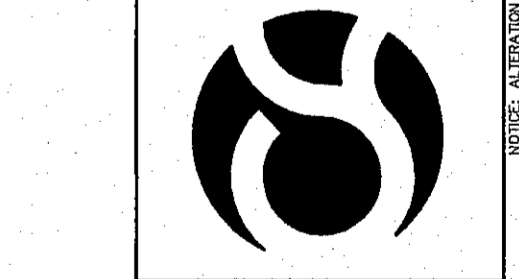
WARNING!
 BEFORE YOU DIG
 CONTRACTOR SHALL
 FIELD LOCATE ALL
 EXISTING UNDERGROUND
 IMPROVEMENTS IN
 PROJECT AREA

BEFORE YOU DIG - CALL
 EL PASO ELECTRIC COMPANY 546-7200
 TEXAS GAS SERVICE 544-9300
 TGS EMERGENCY HOTLINE 562-9411/692-2903
 TEXAS NATURAL GAS COMPANY 562-9411/692-2903
 TEXAS EMERGENCY (EPCW) 800-531-1555
 TIME WARNER (CABLE) 775-7414
 EL PASO NATURAL GAS COMPANY 1-800-334-9847
 TEXAS EXCAVATION SAFETY SYSTEM 1-800-424-9877

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of each project or any other project. Any reuse, to include copying and/or modifying the content of the document, without express, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm F-8677
 1845 Northwestern Dr., Ste C
 El Paso, Texas 79912
 Tel [915] 877.4155
 Fax [915] 877.4334
 www.csaengineers.com

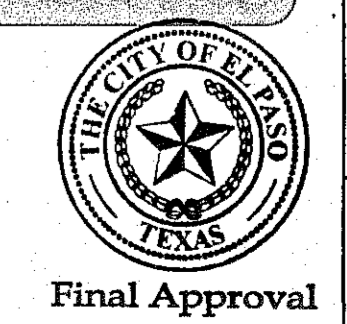


CIMARRON CANYON
 UNIT ONE
 SUBDIVISION

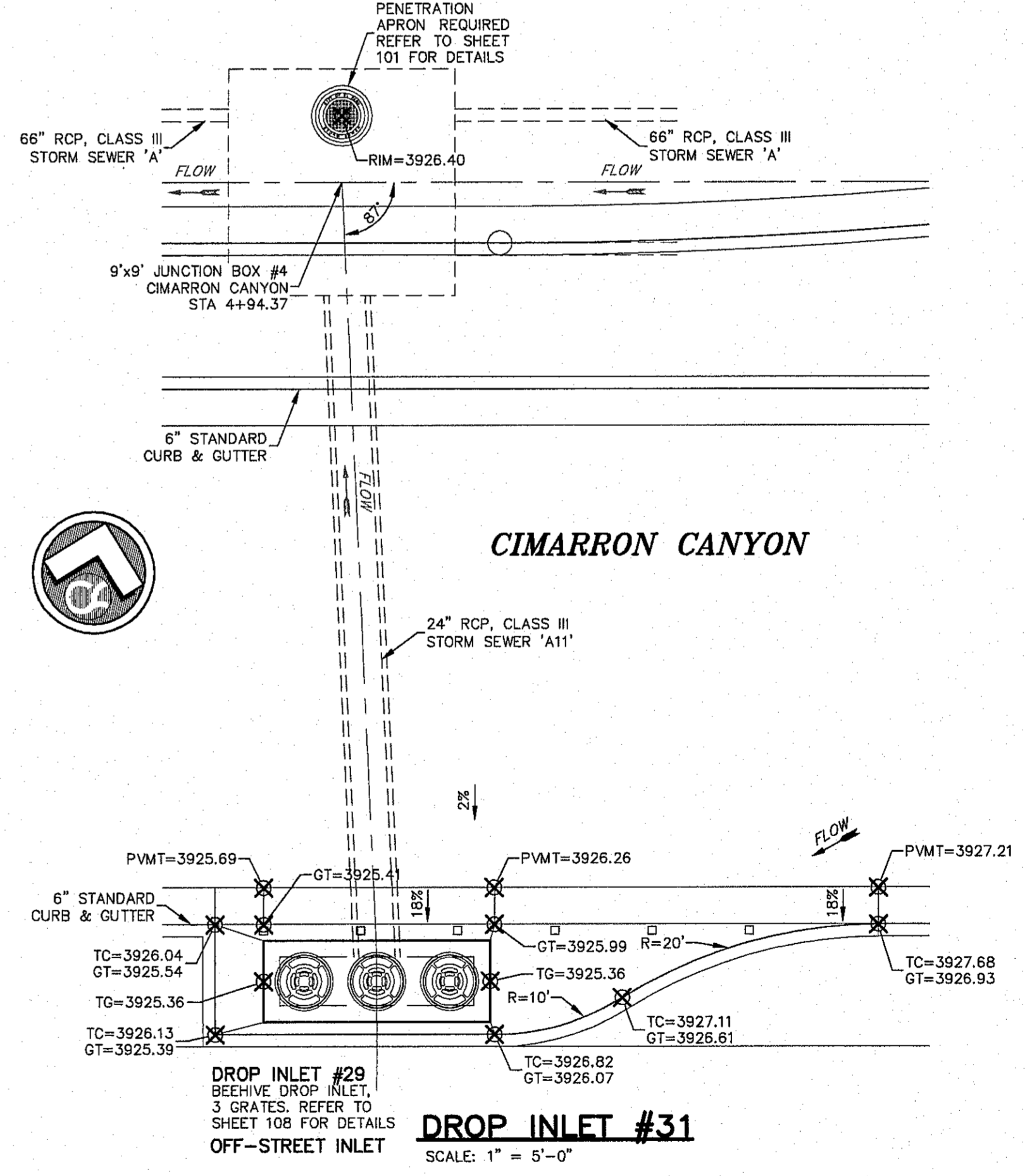
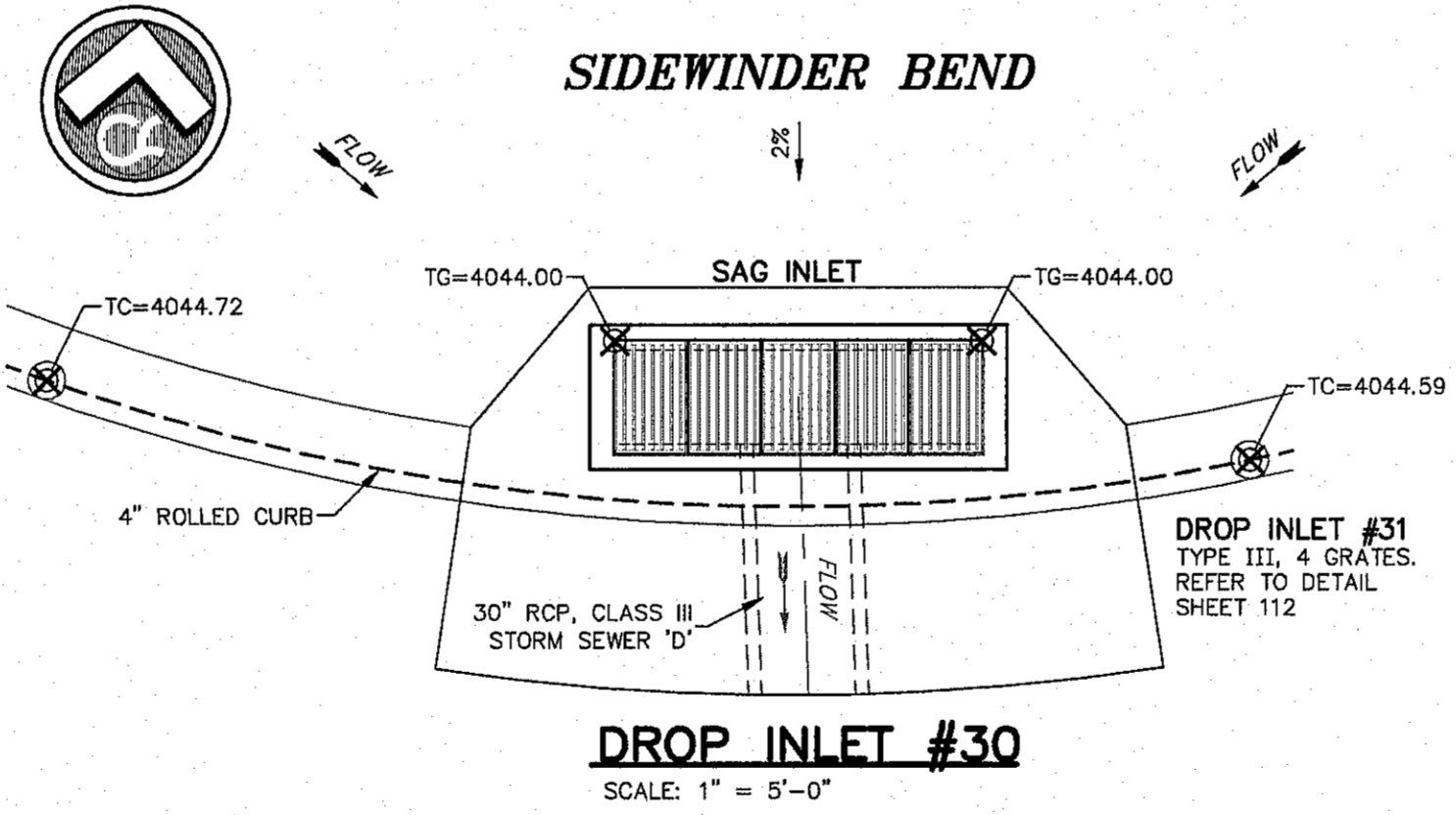
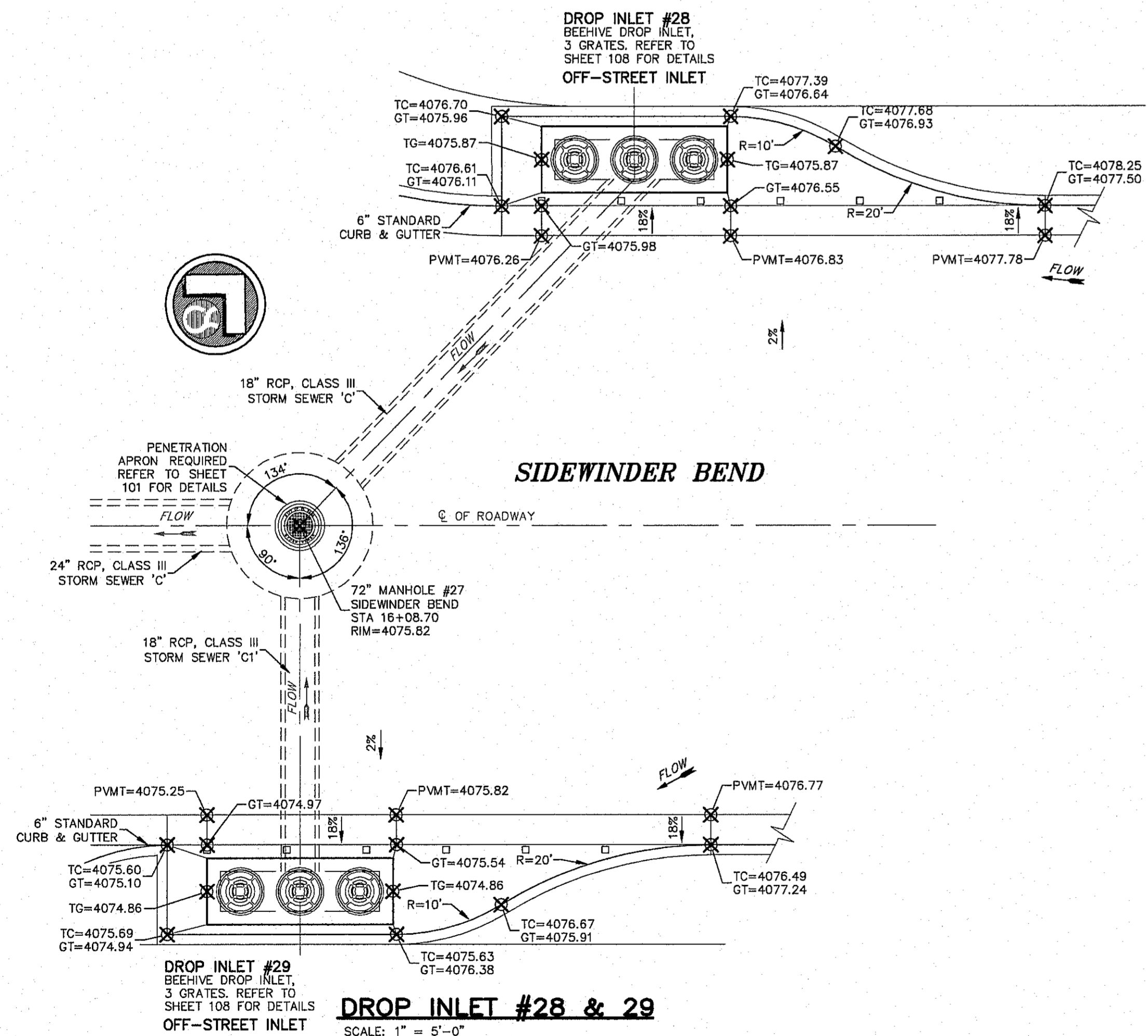
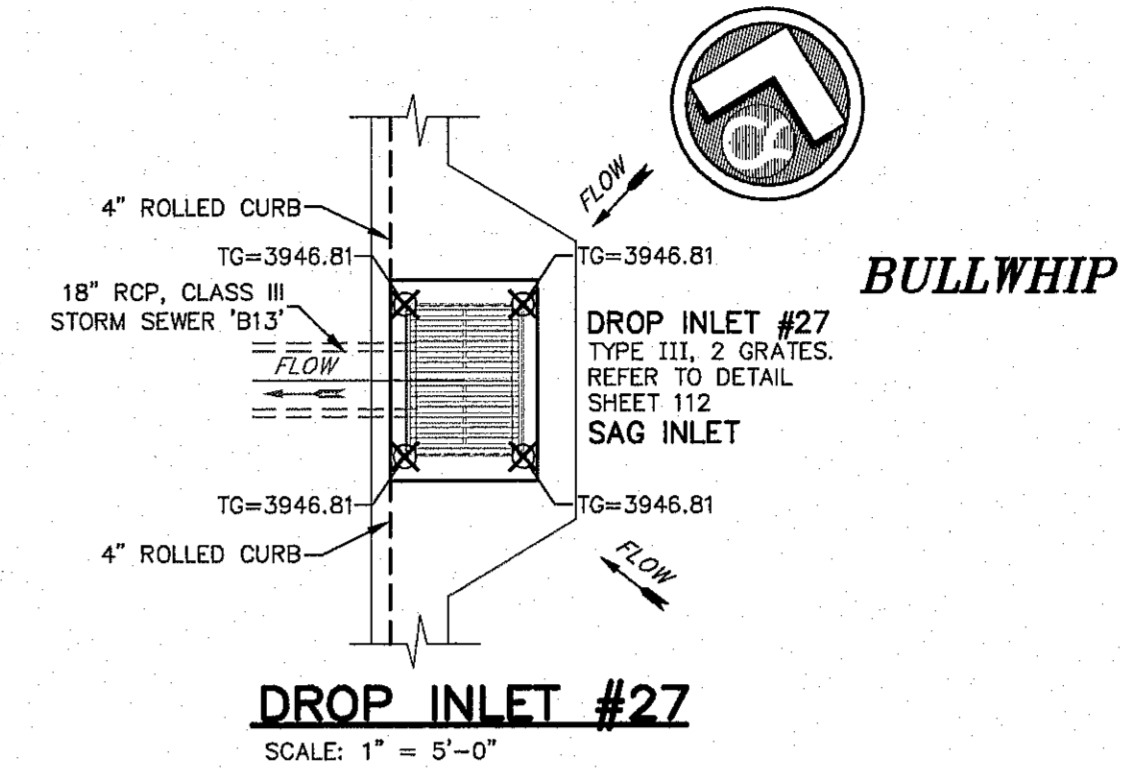
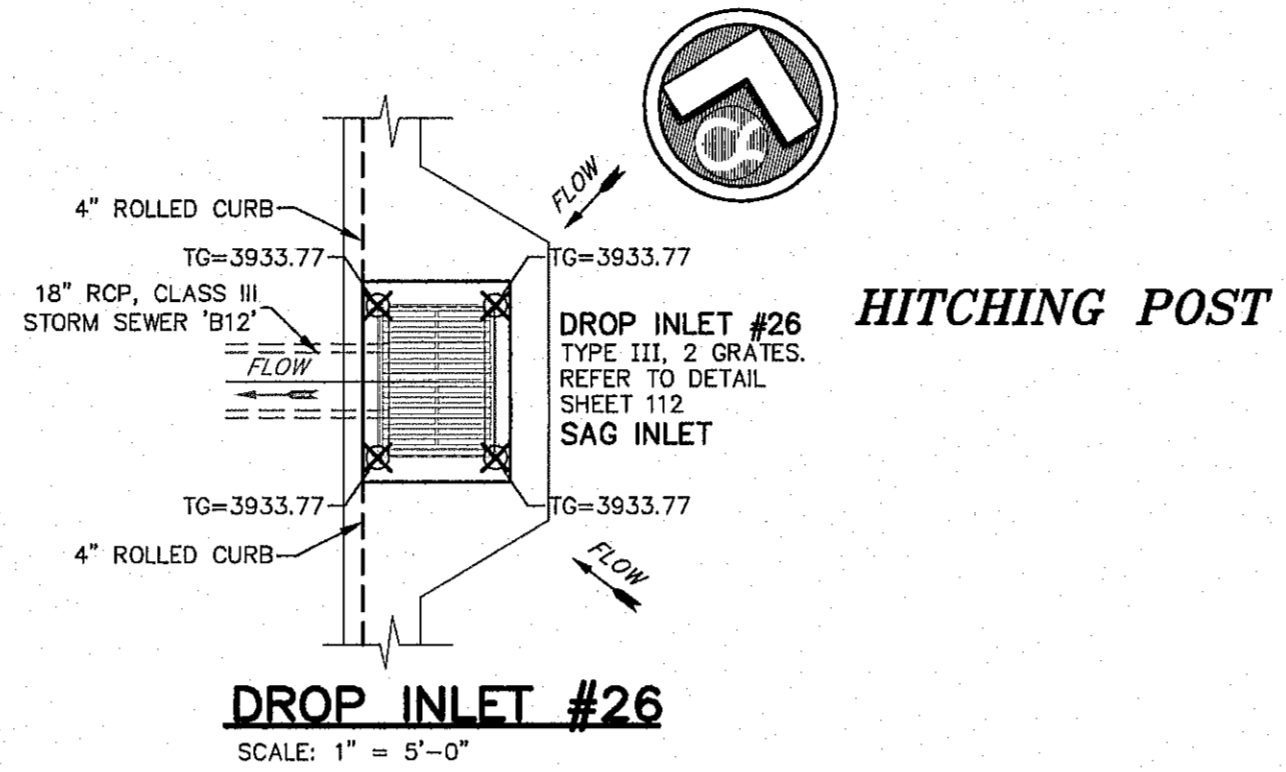
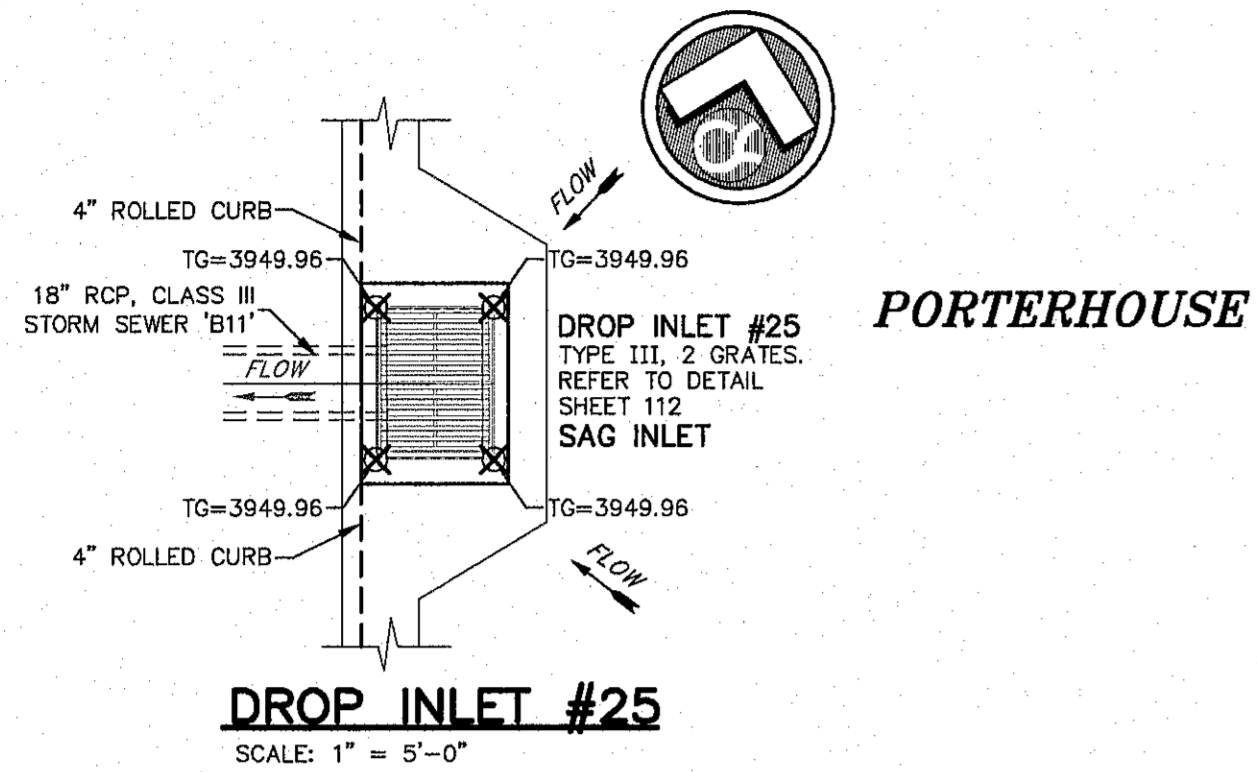
SHEET TITLE
**DROP
 INLETS
 12-24**

JOB NO.	1524
JOB-DM-DG	9/15/16
DATE	AS NOTED
SCALE	SCALE
SHEET NO.	98
TOTAL SHEETS	102 of 131

SEE SHEET 17 FOR HYDRAULIC
 DATA AND CALCULATIONS
 RELATIVE TO CAPACITY, BYPASS
 AND CLOGGING FOR INLETS.



Final Approval



SEE SHEET 17 FOR HYDRAULIC DATA AND CALCULATIONS RELATIVE TO CAPACITY, BYPASS AND CLOGGING FOR INLETS.

BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYS LAUNDING DRIVE. ELEVATION = 3923.5 (E. PASO CITY DATUM)

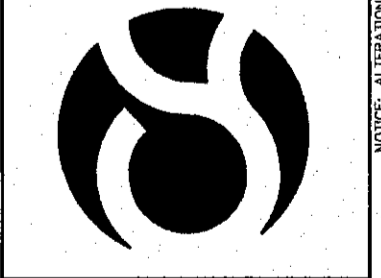
NO.	DATE	DESCRIPTION	BY
1	9/15/16	1st City Submittal	DAE
2	11/01/16	2nd City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 545-5720
TEXAS GAS SERVICE 544-9300
TEXAS GAS EMERGENCY HOTLINE 562-9411/562-2003
EL PASO WATER (CABLE) 1-800-DIG-1111
TIME WARNER (CABLE) 775-7414
EL PASO NATURAL GAS COMPANY 1-800-336-3939
TEXAS EXCAVATION SAFETY SYSTEM 1-800-427-8277



csa design group, inc.
Texas Registered Engineering Firm # 0987
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel | (915) 877.4155
fax | (915) 877.4834
www.csaengineers.com



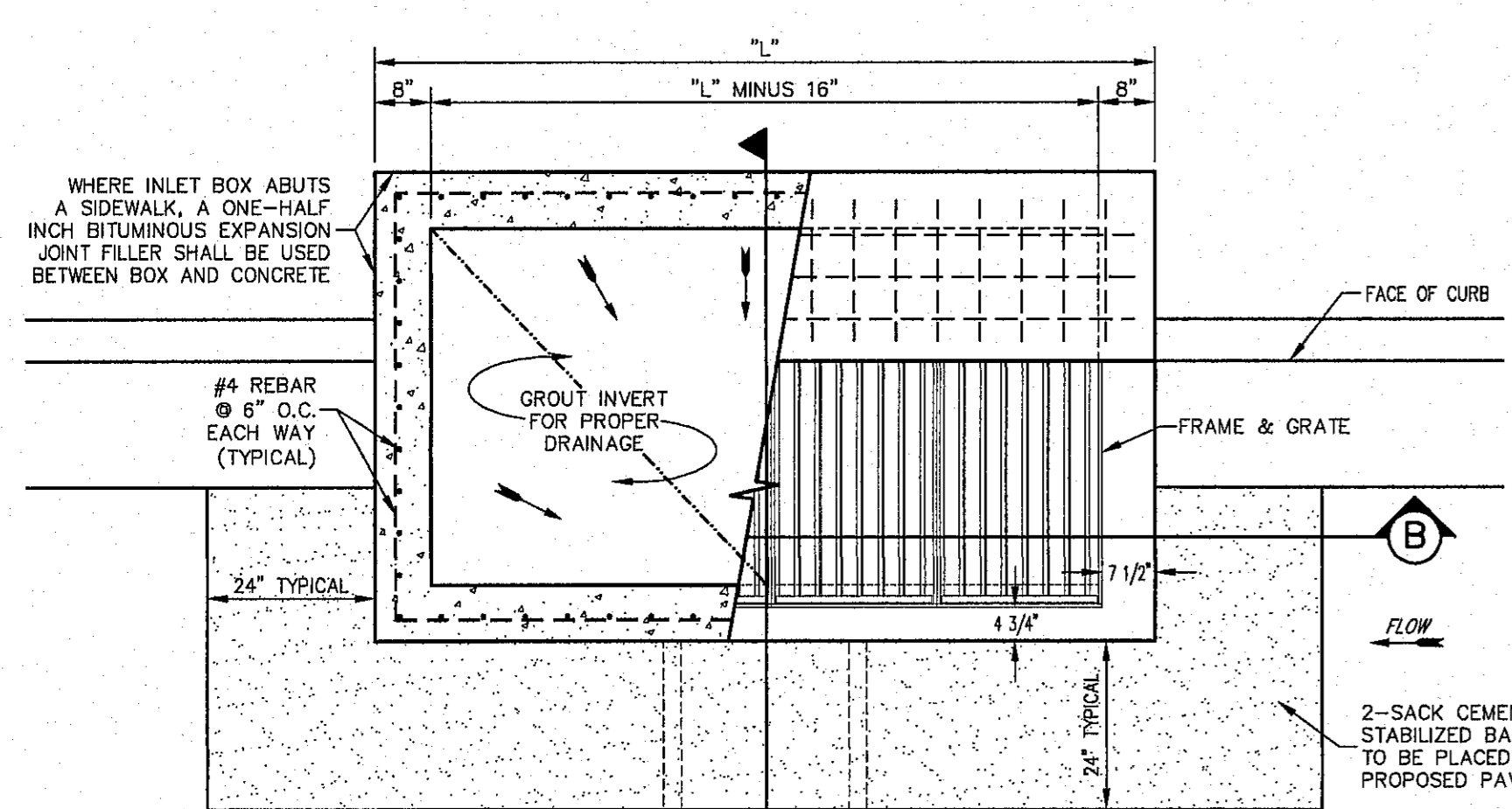
CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
DROP INLETS 25-31

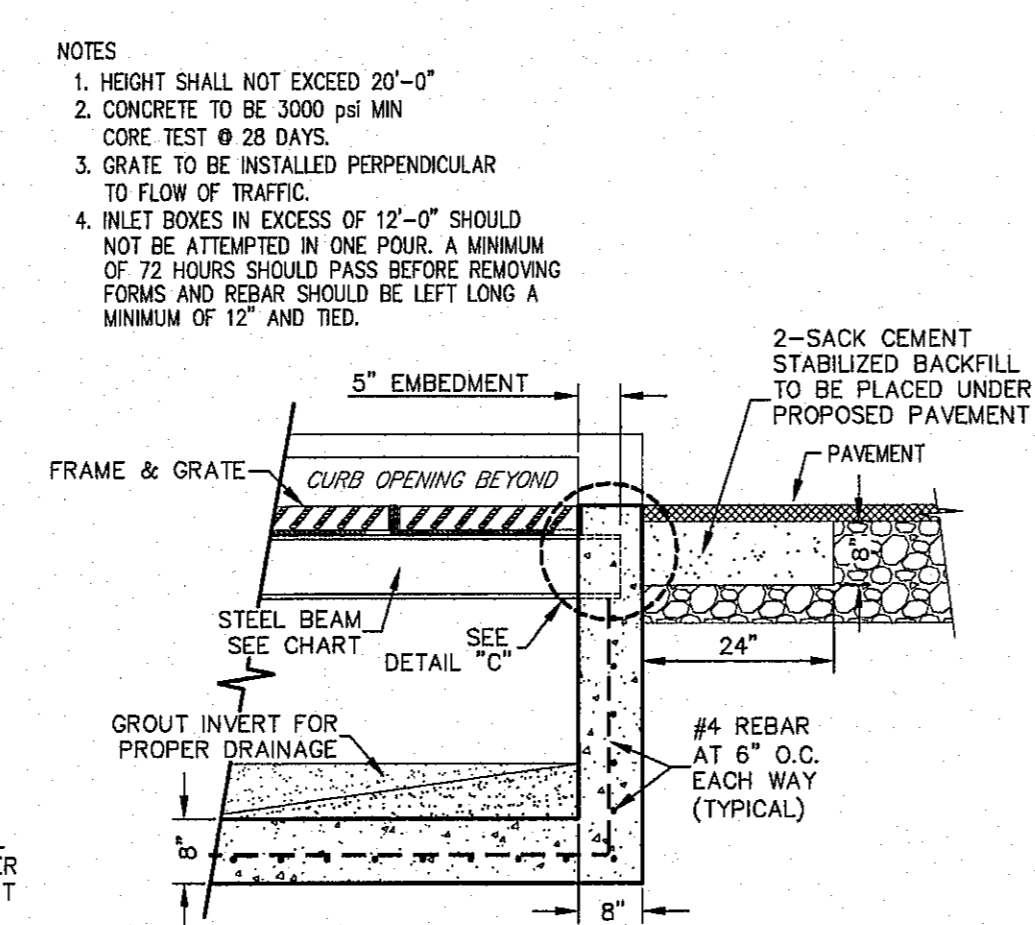
JOB NO.	1524
DESIGN BY	JCK
DATE	9/15/16
DESIGNED BY	DAE
CHECKED BY	AS NOTED
SCALE	AS NOTED
SHEET NO.	99
TOTAL SHEETS	103 OF 131



Final Approval

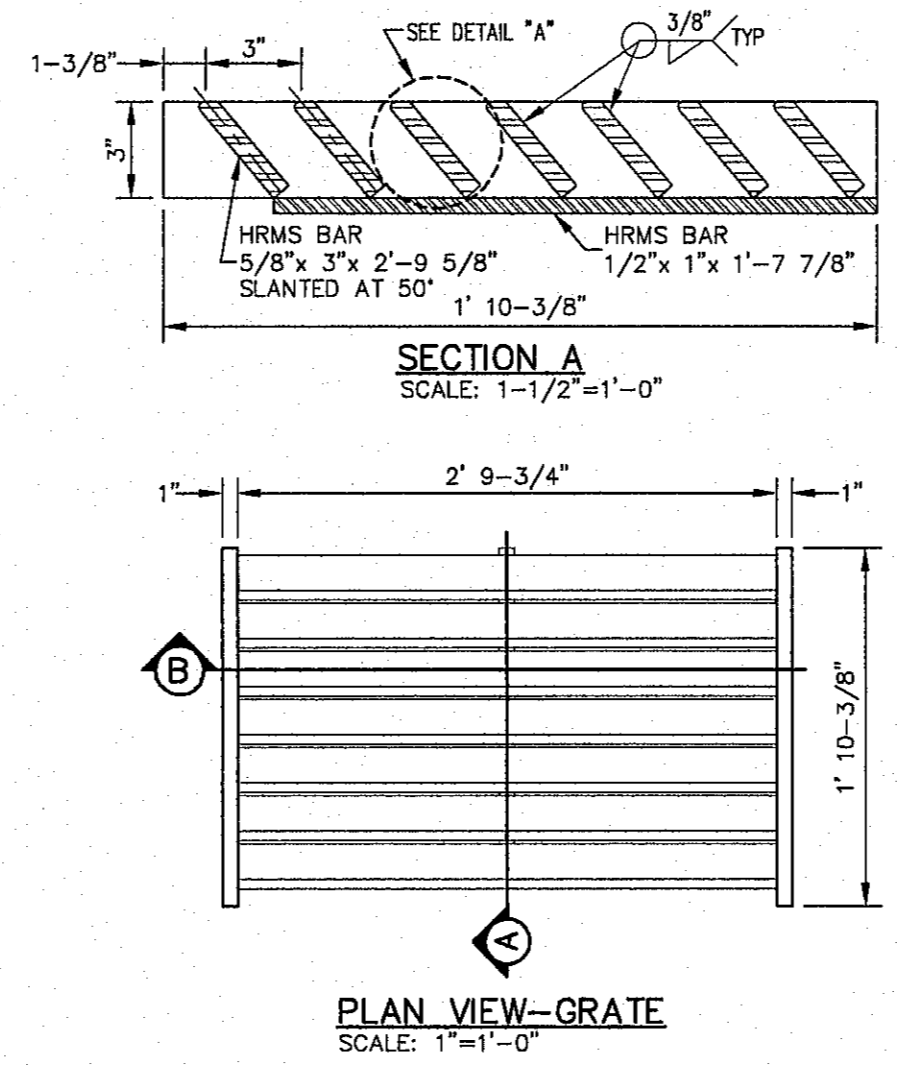


PLAN VIEW TYPE I DROP INLET
SCALE: 1/2"=1'-0"



SECTION A
SCALE: 1-1/2"=1'-0"

SECTION B
SCALE: 1/2"=1'-0"



TYPICAL WELDED STEEL FRAME GRATE FOR TYPE I INLETS
SCALE: AS NOTED

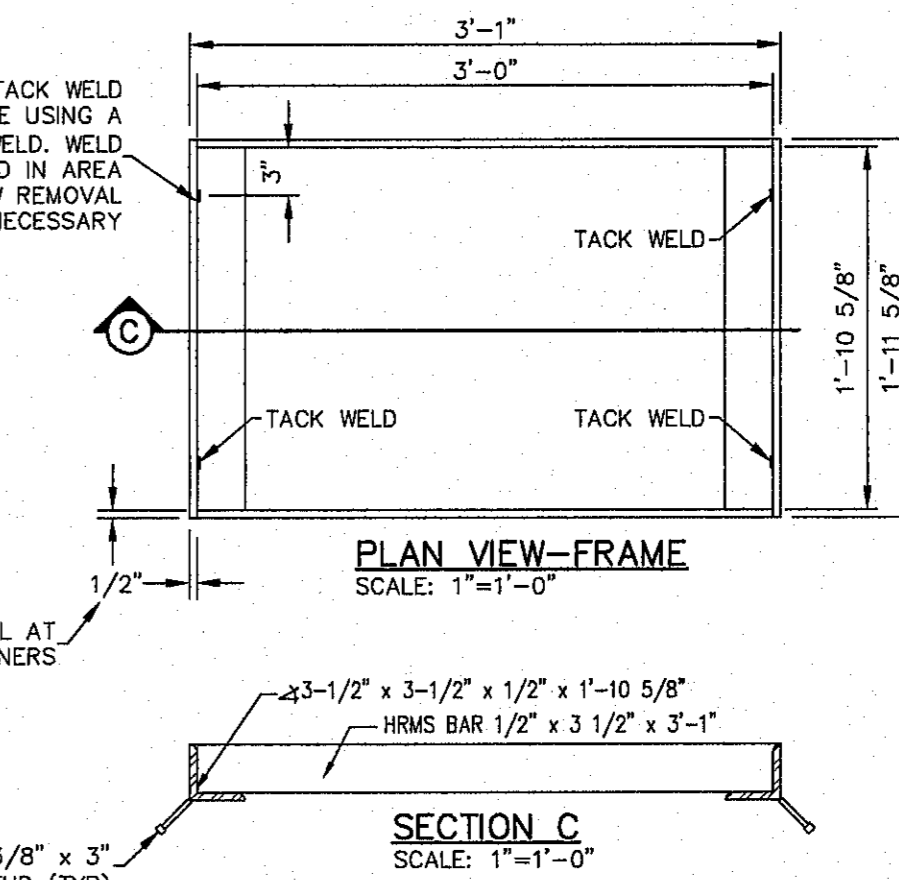
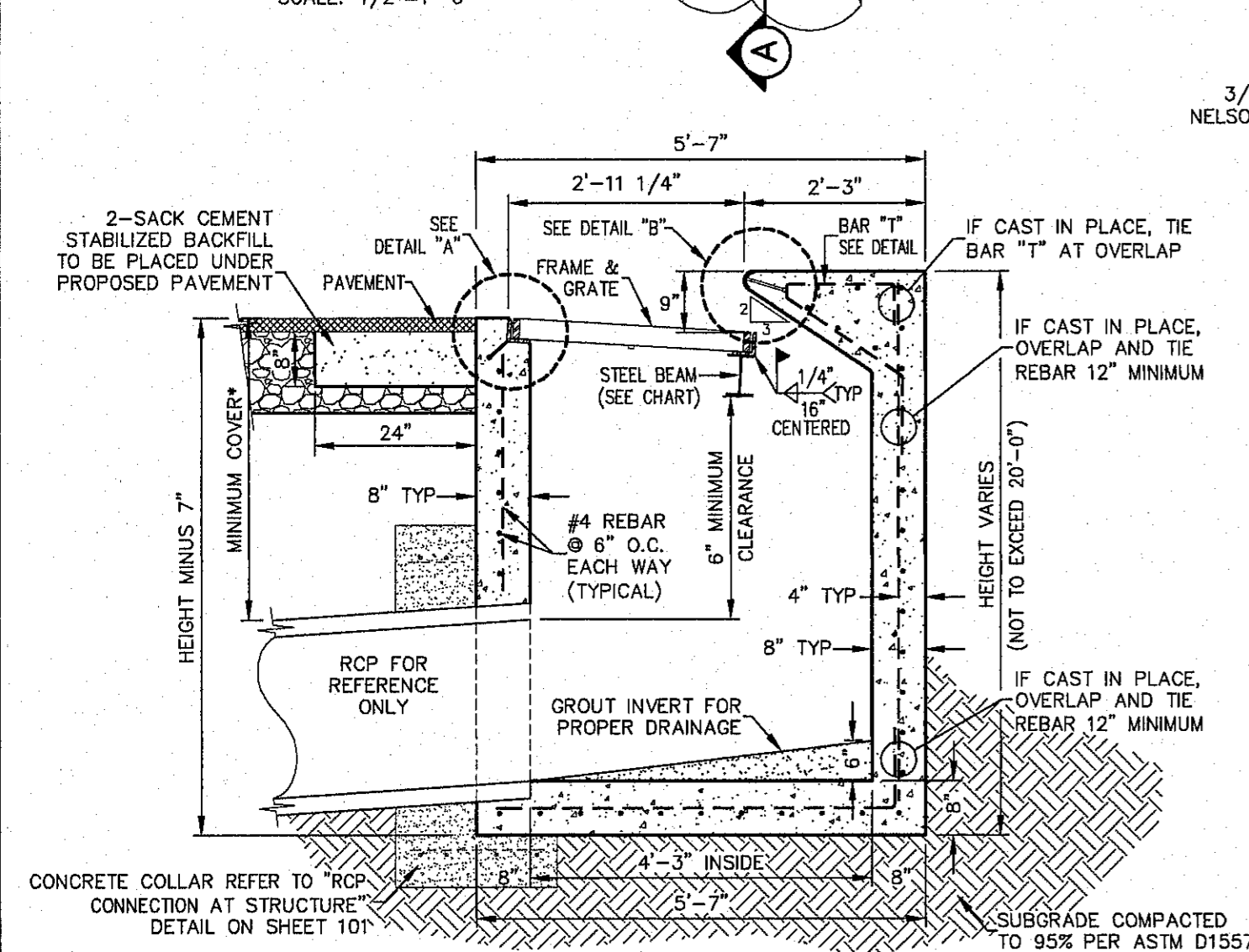


TABLE			
D	L	T	
12"	1.0	4"	
18"	1.0	5"	
24"	1.0	6"	
30"	1.5	7"	
36"	1.5	8"	
48"	1.5	10"	
57"	1.5	10"	
60"	1.75	11"	
66"	1.75	11"	
72"	2.00	12"	
78"	2.00	12"	
84"	2.50	14"	

NOTE:

- A CONCRETE COLLAR IS REQUIRED WHERE PIPES OF DIFFERENT DIAMETERS OR MATERIALS ARE JOINED, OR WHERE THE CHANGE IN ALIGNMENT OR GRADE EXCEEDS THAT ALLOWED FOR AN ORDINARY JOINT.
- WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L&T SHOULD BE THOSE OF THE LARGER PIPE, D₁ OR D₂ WHICHEVER IS GREATER.
- FOR PIPE SIZES NOT LISTED USE NEXT SIZE LARGER.
- WHERE REINFORCING IS REQUIRED THE DIAMETER OF THE CIRCULAR TIES SHALL BE D+(2xWALL THICKNESS)+8"
- FIELD CLOSURES OF PIPE OF THE SAME DIAMETER AND WITHOUT CHANGE IN GRADE OR ALIGNMENT SHALL BE MADE WITH A CONCRETE COLLAR.

CONCRETE PIPE COLLAR
SCALE: 1"=1'-0"



SECTION A
SCALE: 1/2"=1'-0"

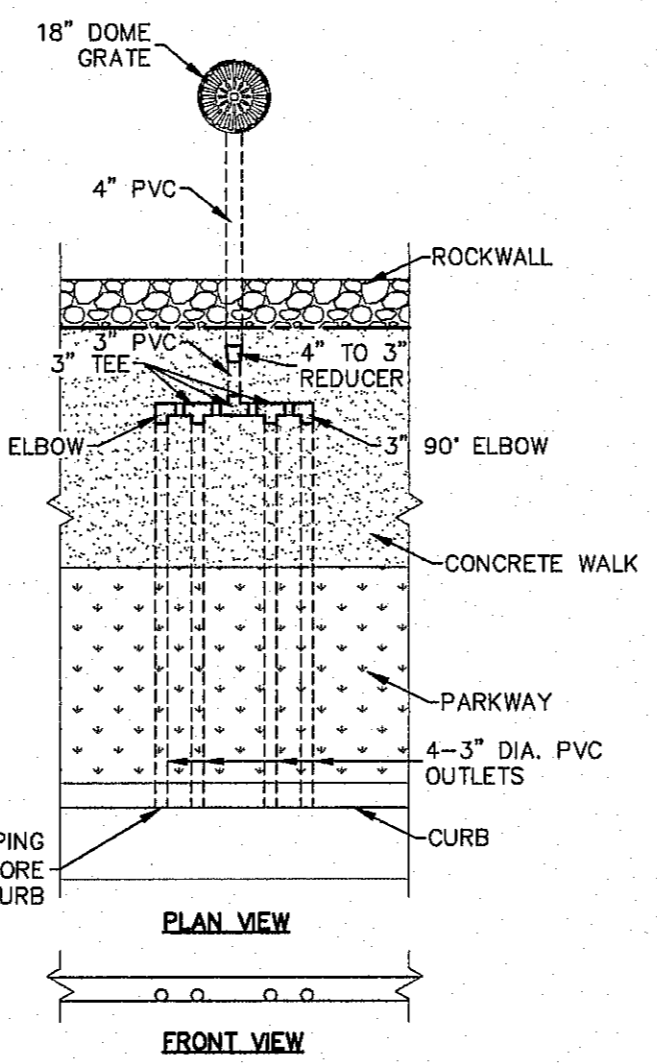
DROP INLET TYPE I
AS NOTED

NO. OF GRATES	L'	B E A M	
		LENGTH	MINIMUM SIZES
2	5'- 1 1/8"	4'- 7 1/8"	W6x12, S6x12.5, MC6x15.1
3	7'- 0 1/4"	6'- 5 1/8"	W8x15, S7x15.3, MC7x17.6
4	8'- 9 7/8"	8'- 3 7/8"	W9x18, S8x18.4, MC10x21.9
5	10'- 8"	10'- 2"	W12x16, S8x21, MC10x21.9
6	12'- 6 5/8"	12'- 0 5/8"	W12x19, S8x23, MC10x25

DROP INLET NOTES

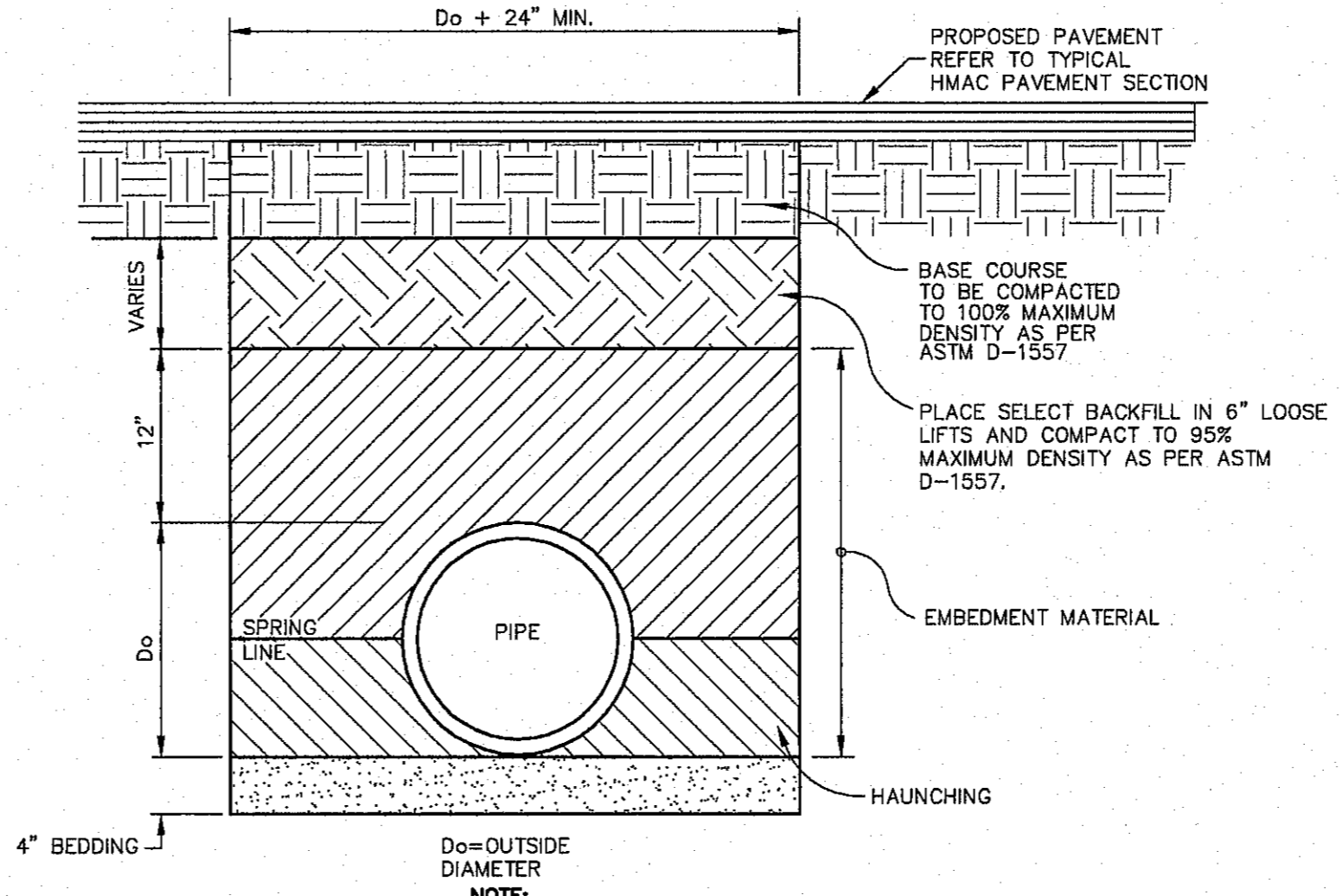
- WELDED STEEL OR CAST GRATES AS DETAILED ARE ALL ACCEPTABLE GRATES. MIXING OF ALTERNATE TYPES OF GRATES ON THE SAME PROJECT WILL BE PERMITTED WITH THE APPROVAL OF THE CITY ENGINEER.
- ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS.
- SHARP EDGES RESULTING FROM FABRICATION SHALL BE DULLED BY ANY ACCEPTABLE METHOD FOR SAFETY AND HANDLING.
- GRATES SHALL BE INSTALLED IN FRAME WITH FLOW ARROW POINTING DOWNSTREAM OR TOWARD THE LOW POINT IN A SUMP.
- WELDED GRATES SHALL BE STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M-183 OR OF CORROSION RESISTANT STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M-161 OR M-222 OR BE MADE OF OTHER APPROVED STEELS OF EQUAL QUALITY. MIXING GRATES OF STEEL ON THE SAME GRADE WILL NOT BE PERMITTED.
- GRATES MADE OF M-183 STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111 SPECIFICATIONS OR SHALL BE PAINTED WITH INORGANIC ZINC PAINTS, MEETING THE REQUIREMENTS OF CURRENT STANDARD SPECIFICATIONS.
- ALL WELDS SHALL BE A MINIMUM OF 1/4" FILLET AND SHALL CONFORM TO THE SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND TO THE AWS STRUCTURAL WELDING CODE. ELECTRODES SHALL BE COMPATIBLE TO THE DIFFERENT GRADES OF STEEL THAT COMPRISE THE GRATE MEMBERS.
- CAST GRATES SHALL BE CAST STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M-103, GRADE 65-35 OR OF DUCTILE IRON CONFORMING TO THE REQUIREMENTS OF ASTM A-536, SPECIAL GRADE 60-45, OR OF GRAY IRON CONFORMING TO THE REQUIREMENTS OF AASHTO M-105, CLASS 35B OR ASTM A-48 CLASS 35B. THE SPECIFICATIONS OF GENERAL APPLICATION FOR CAST STEEL GRATES SHALL BE AASHTO M-103 SCOPE 1.2.1, GRADE N-1.
- FERROUS CASTINGS SHALL BE OF UNIFORM QUALITY, FREE OF BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE DISTORTION OR OTHER DEFECTS. THEY SHALL BE SMOOTH AND WELL CLEANED BY SHOT BLASTING OR OTHER APPROVED CLEANING METHOD. AFTER CLEANING THEY SHALL BE COATED WITH ASPHALT BASE PAINT RESULTING IN A SMOOTH COATING, TOUGH AND TENACIOUS WHEN COLD, NOT TACKY NOR BRITTLE.
- ALL CASTINGS SHALL BE MANUFACTURED TRUE TO PATTERN. COMPONENT PARTS SHALL FIT TOGETHER IN A SATISFACTORY MANNER.
- ALL CONCRETE TO BE A MINIMUM OF 3000 p.s.i. CHAMFER ALL EXPOSED EDGES 3/4". ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
- MINIMUM CONCRETE COVER SHALL BE 1 1/2" FOR STEEL REINFORCING.
- EXPANSION MATERIAL TO BE 1/2" BITUMINOUS FIBER AND TO BE PLACED WHERE PROPOSED CONCRETE COMES IN CONTACT WITH ANY EXISTING OR PROPOSED CONCRETE OR MASONRY STRUCTURE.
- STRUCTURAL STEEL SHALL BE SHOP PAINTED IN ACCORDANCE WITH T.H.D. ITEM 446 "PAINT AND PAINTING".
- SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN GRADE AND TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO INLETS.
- ALL REINFORCING BARS TO BE # 4 BARS AT 6" O.C. (UNLESS NOTED OTHERWISE) GRADE 60. BEND BARS AROUND PIPE OPENINGS.
- INLETS TO BE DESIGNATED IN PLANS BY NUMBER OF GRATES REQUIRED.
- LOCATION OF SEWER PIPES SHOWN ELSEWHERE IN PLANS.
- 2 - 3/8" DIA. x 4" LONG CONC. ANCHOR STUDS REQUIRED FOR EACH SIDE OF FRAME, WHERE RESTING ON CONCRETE, USE NELSON STUDS OR EQUAL.
- THE GRATES OF ALL INLETS WITHIN THE STREET PAVEMENT MUST BE CONSTRUCTED WITH THE GRATE BARS PERPENDICULAR TO THE CURB.
- EXCAVATION WHICH WILL EXCEED FIVE (5) FEET IN DEPTH SHALL PROVIDE FOR TRENCH SAFETY AS PER OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

DUE TO THE RECENT HIGH INCIDENTS OF CONSTRUCTION SITE THEFTS, IT IS HIGHLY RECOMMENDED THAT THE CONTRACTOR TACK WELD GRATES TO THE FRAME AS SHOWN ON THIS SHEET AS SOON AS IS POSSIBLE FOLLOWING INSTALLATION AND INSPECTION OF ALL STORM SEWER DRAINAGE INLETS.

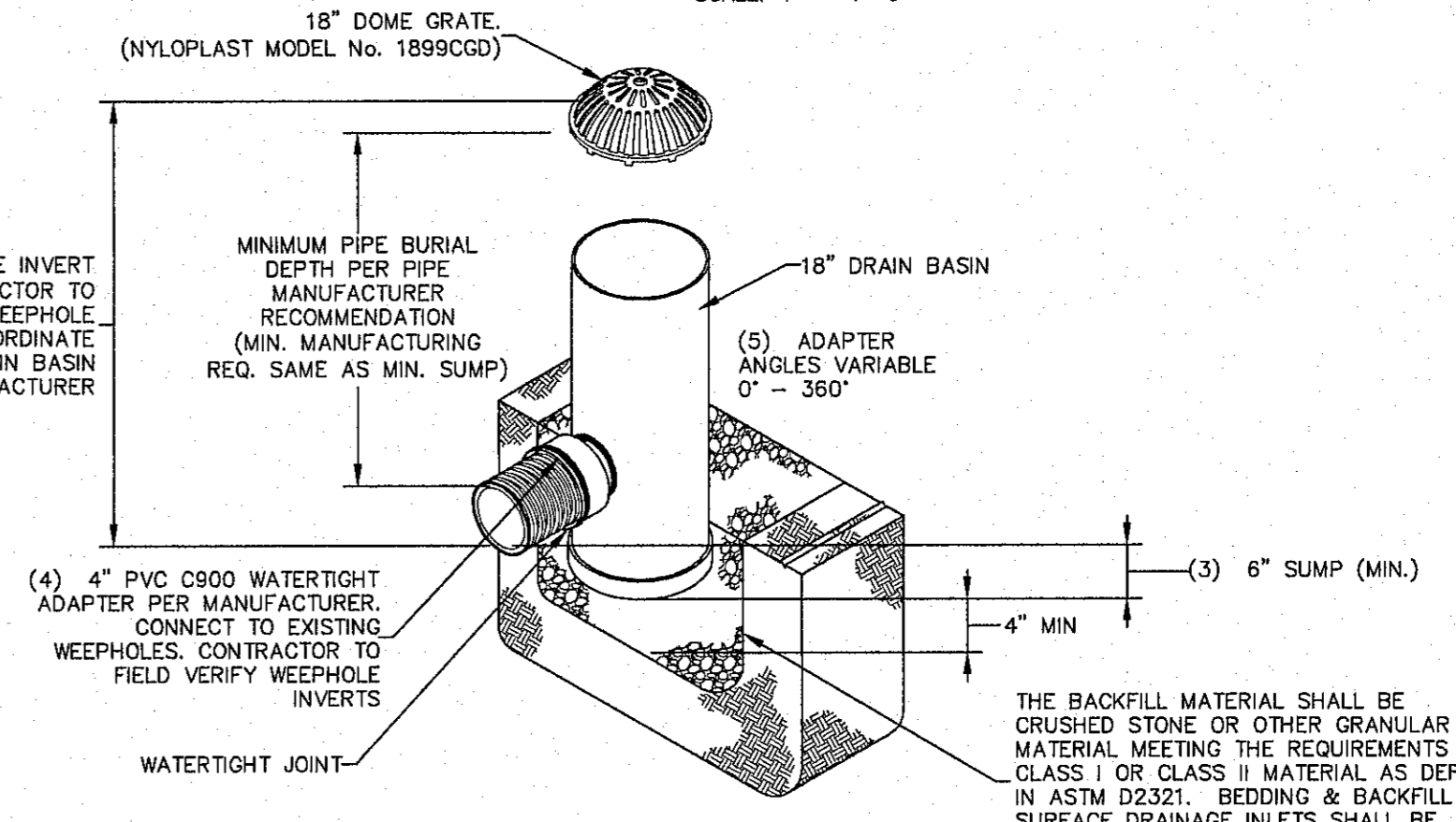


PVC MANIFOLD
SCALE: 1/4"=1'-0"

TYPICAL TRENCH BACKFILL FOR STORM SEWER INSTALLATION
SCALE: 1"=1'-0"



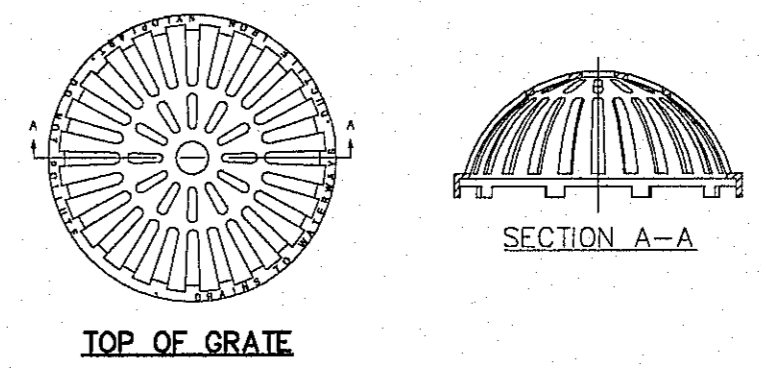
TYPICAL TRENCH BACKFILL FOR STORM SEWER INSTALLATION
SCALE: 1"=1'-0"



- NOTES:**
- CONTRACTOR SHALL USE NYLOPLAST BRAND OR APPROVED EQUAL.
 - GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 - FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS.
 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER.

18" DRAIN BASIN
SCALE: N.T.S.

18" DRAIN BASIN INSTALLATION
SCALE: N.T.S.



- NOTES:**
- CONTRACTOR SHALL USE NYLOPLAST BRAND OR APPROVED EQUAL.
 - DIMENSIONS ARE FOR REFERENCE ONLY.
 - ACTUAL DIMENSIONS MAY VARY DIMENSIONS ARE IN INCHES.
 - GRATE MEETS H-20 LOAD RATING QUALITY.
 - MATERIALS SHALL CONFORM TO ASTM A536 GRADE 70-50-05.
 - PAINT: CASTINGS ARE FURNISHED WITH A BLACK PAINT LOCKING DEVICE AVAILABLE UPON REQUEST SEE DRAWING NO. 7001-110-029.

18" DOME GRATE
SCALE: 1"=30'-0"



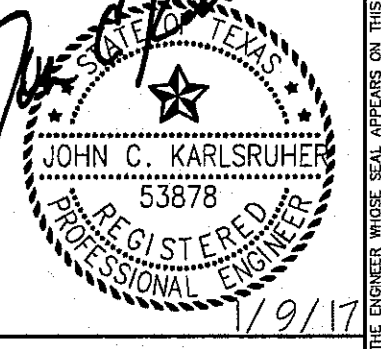
BENCHMARK: CITY MONUMENT AT THE CENTRE
INTERSECTION OF NORTHERN PASE DRIVE
ELEVATION = 3976.5 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/20/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 548-0400
EL PASO GAS SERVICE 544-8500
TEXAS GAS SERVICE 562-8411/562-2003
TGS EMERGENCY HOTLINE 562-8411/562-2003
AT&T 562-8411/562-2003
FIBER OPTIC SERVICE 562-8411/562-2003
TIME WARNER (CABLE) 562-8411/562-2003
EL PASO NATURAL GAS COMPANY 562-8411/562-2003
TEXAS EXCAVATION SAFETY SYSTEM 1-800-354-8847 (847-8877)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended to be reproduced for any other project or for any other purpose without the express, written permission of the design group. Any use of this document for any other purpose is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

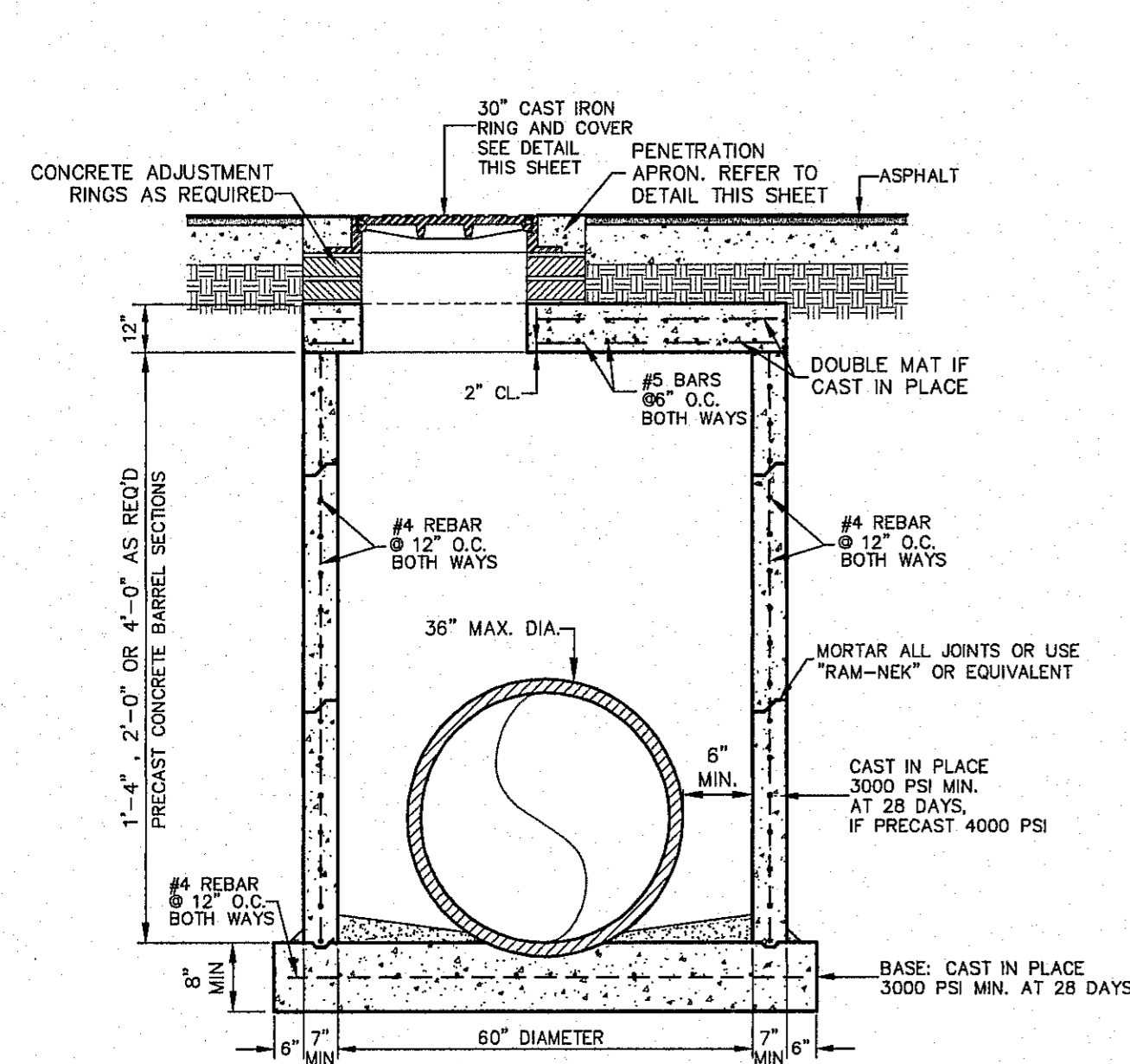


csa design group, inc.
Texas Registered Engineering Firm #5897
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: (915) 877.4155
Fax: (915) 877.4934
www.csaengineers.com

CIMARRON CANYON UNIT ONE SUBDIVISION
SHEET TITLE

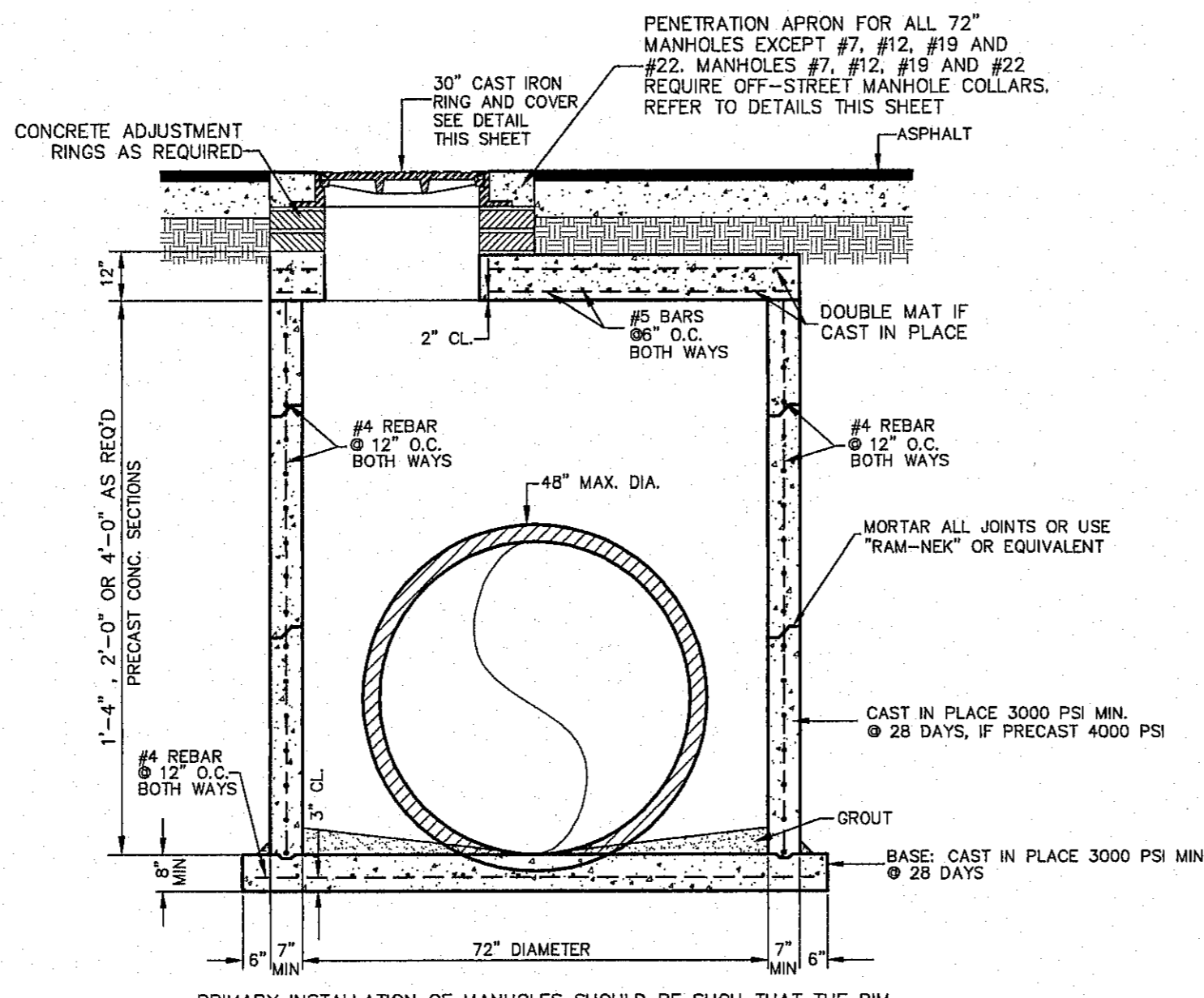
STORM SEWER DETAILS

COB	1524
DESIGN BY	DAE
COB-SM-DC	9/15/16
DRAWN BY	DAE
DATE	AS NOTED
CHECKED BY	DAE
SHEET NO.	100
TOTAL SHEETS	104 OF 131



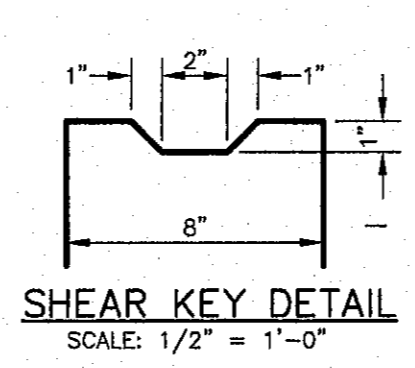
PRIMARY INSTALLATION OF MANHOLES SHOULD BE SUCH THAT THE RIM ELEVATION IS 2" - 16" BELOW THE RIM ELEVATION SHOWN ON THE PLAN AND PROFILES. FINAL ADJUSTMENT TO THE FINISHED PAVEMENT ELEVATION SHALL BE MADE WITH CONCRETE ADJUSTMENT RINGS AND LOCKED INTO PLACE WITH THE INSTALLATION OF THE PENETRATION APRON. PRE-FABRICATED CONCRETE ADJUSTMENT RINGS ARE AVAILABLE FROM 2"-8" IN HEIGHT.

60" PRE-CAST MANHOLE
SCALE: 1"=2'-0"

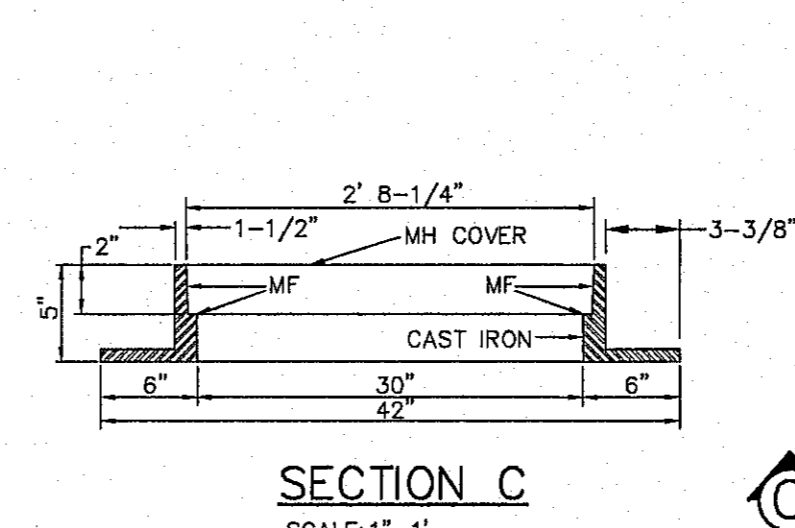


PRIMARY INSTALLATION OF MANHOLES SHOULD BE SUCH THAT THE RIM ELEVATION IS 2" - 16" BELOW THE RIM ELEVATION SHOWN ON THE PLAN AND PROFILES. FINAL ADJUSTMENT TO THE FINISHED PAVEMENT ELEVATION SHALL BE MADE WITH CONCRETE ADJUSTMENT RINGS AND LOCKED INTO PLACE WITH THE INSTALLATION OF THE PENETRATION APRON. PRE-FABRICATED CONCRETE ADJUSTMENT RINGS ARE AVAILABLE FROM 2"-8" IN HEIGHT.

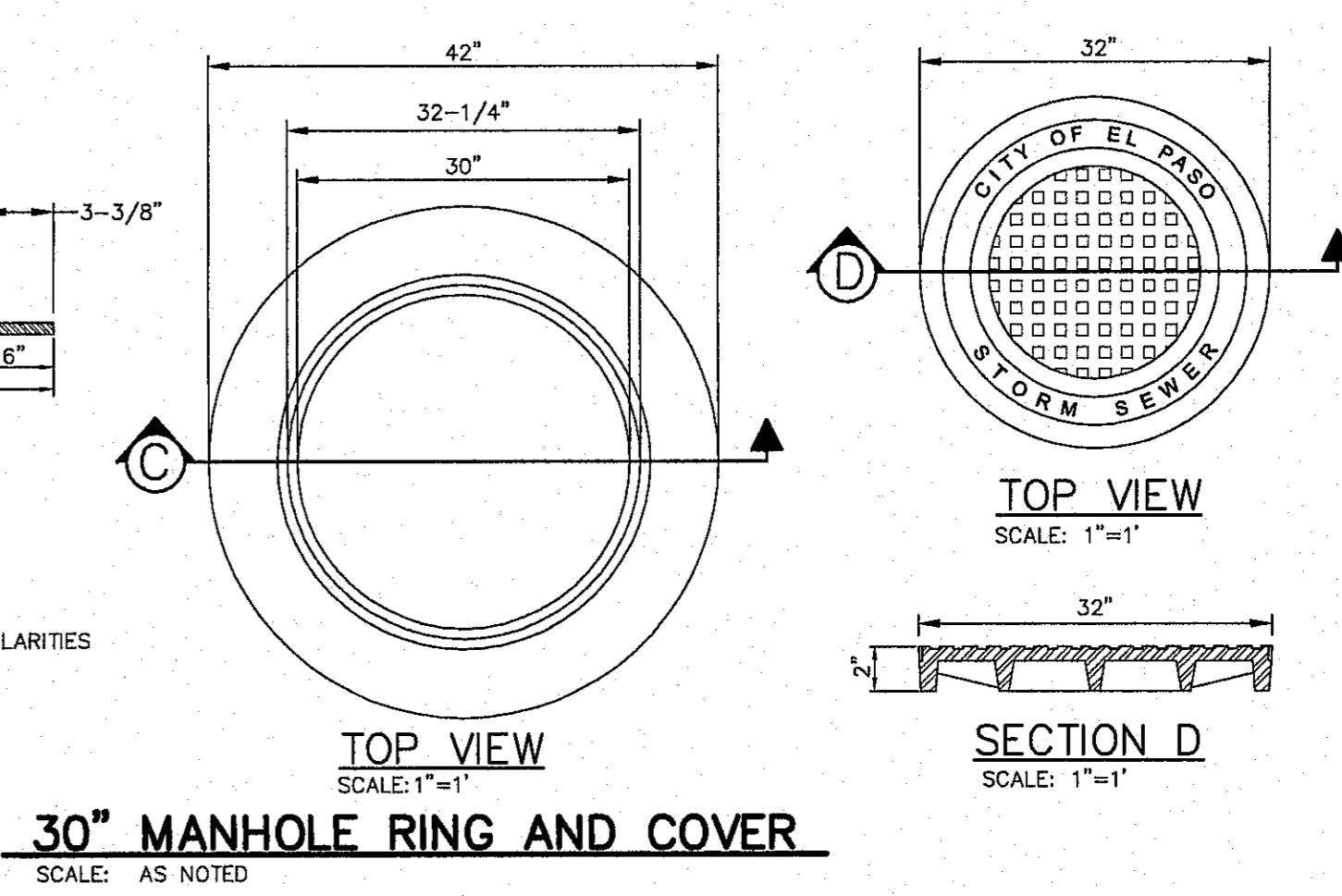
72" PRE-CAST MANHOLE
SCALE: 1"=2'-0"



ECCENTRIC CONES MAY BE SUBSTITUTED, HOWEVER, THE RIM ELEVATIONS IN THIS PLAN SET ARE BASED ON STANDARD MANHOLE CONES UNLESS NOTED OTHERWISE. IF ECCENTRIC CONES ARE USED THE CONTRACTOR MUST FIELD ADJUST THE RIM ELEVATION.



NOTE:
1. MATCHING SURFACES MARKED "MF" TO BE MACHINE FINISHED OF ANY IRREGULARITIES THAT WOULD PREVENT A SNUG FIT.
2. CASTING TO BE SMOOTH AND VOID OF AIR HOLES.

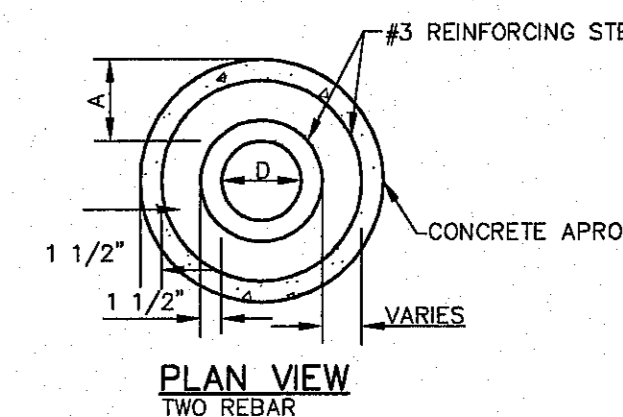
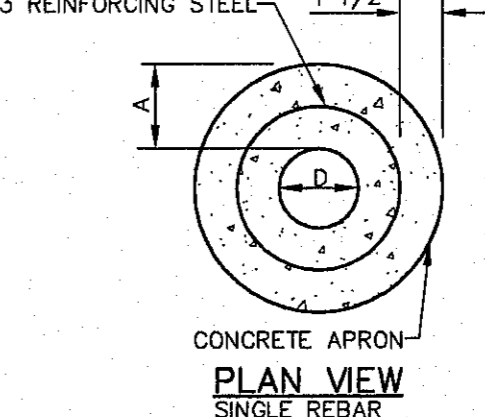
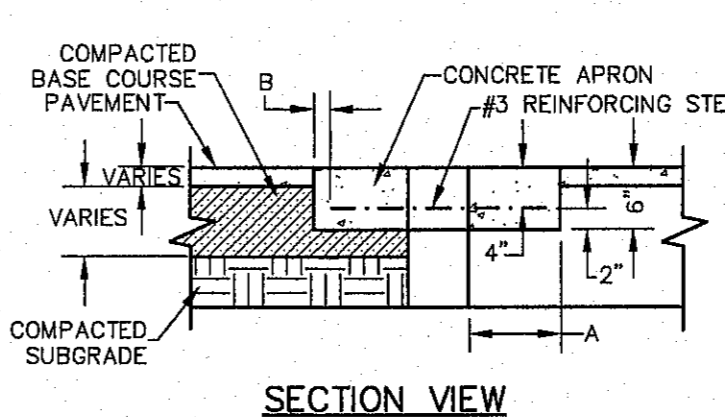
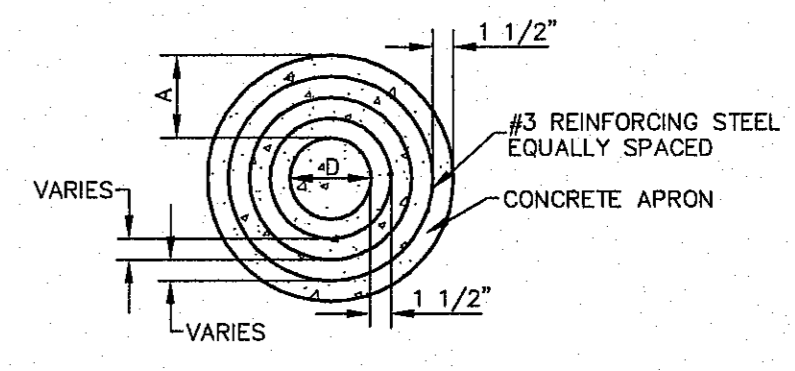


STORM WATER MANAGEMENT REQUIRES ALL MANHOLE RING AND COVERS TO BE 30" DIAMETER MINIMUM.

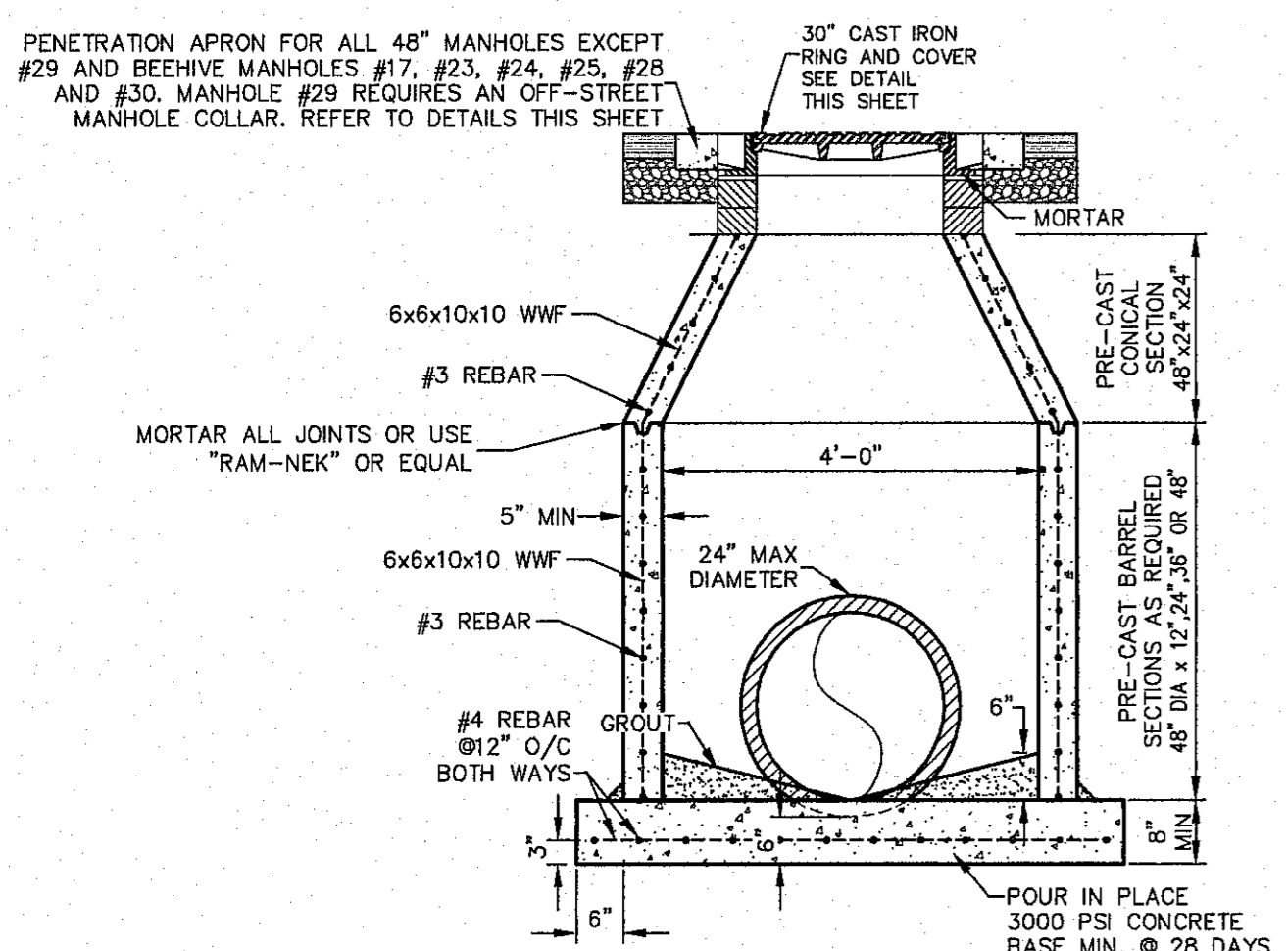
"D" DIAMETER OF PENETRATION (INCHES)	"A" CONCRETE HORIZONTAL DIMENSION FROM PENETRATION (INCHES)	NUMBER OF NO. 3 REINFORCING STEEL BARS (INCHES)	"B" MINIMUM CLEARANCE FROM EDGE OF CONCRETE APRON TO CENTER OF NEAREST REBAR (INCHES)	"C" MINIMUM CLEARANCE FROM PENETRATION EDGE TO CENTER OF NEAREST REBAR (INCHES)
0 TO 6.00	6	1 1/2	1 1/2	1 1/2
6.01 TO 18.00	8	2	1 1/2	1 1/2
18.01 AND OVER	12	3	1 1/2	1 1/2

- CONSTRUCTION NOTES:**
- ANY DISTURBED SUBGRADE UNDER THE CONCRETE APRON SHALL BE COMPACTED TO 95% DENSITY ± 3% OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.
 - ANY DISTURBED COARSE UNDER THE CONCRETE APRON SHALL BE COMPACTED TO 100% DENSITY ± 2% OPTIMUM MOISTURE CONTENT IN ACCORDANCE WITH ASTM D-1557.
 - PROVIDE A MINIMUM OF 1 1/2" OF CONCRETE COVER FOR ALL REINFORCEMENT STEEL.
 - REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (HS-20).
 - NO. 3 REINFORCING STEEL HOOPS SHALL BE SPACED EQUALLY.

- GENERAL NOTES:**
- THE PENETRATION APRON SHOULD BE CAST IN-PLACE CONCRETE. (MINIMUM 28 DAY COMPRESSIVE STRENGTH 4000 PSI. HIGH EARLY CONCRETE IS REQUIRED)
 - TOPS OF PENETRATION APRON SHALL BE FLUSH WITH ROADWAY SURFACE OR FINISH GRADE UNLESS OTHERWISE SPECIFIED BY THE CITY ENGINEER.

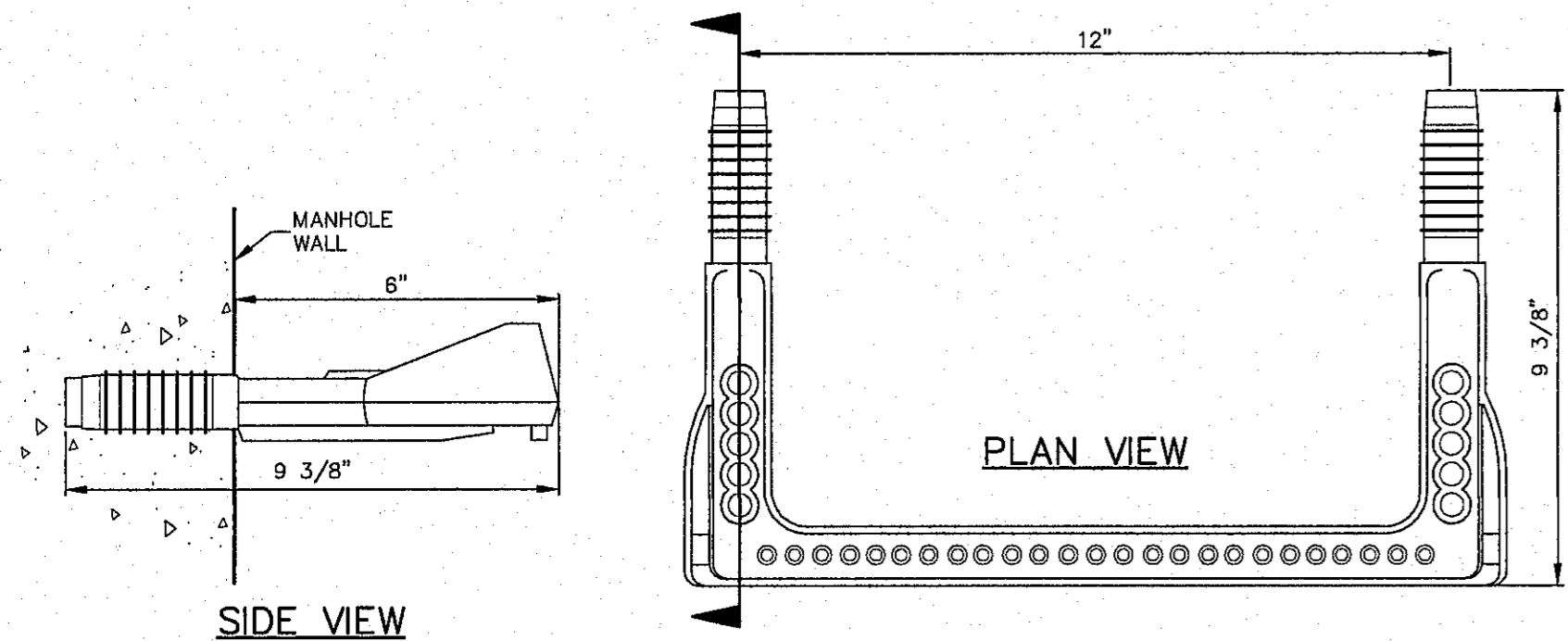


PENETRATION APRON
SCALE: N.T.S.



48" PRE-CAST MANHOLE
SCALE: 1"=2'-0"

- JUNCTION BOX NOTES**
- STANDARD STRUCTURAL DESIGN SHALL BE BASED ON AASHTO HS20 WHEEL LOADING.
 - THE PRE-CAST MANHOLE RISER AND CONICAL SECTIONS SHALL CONFORM TO ASTM SPECIFICATIONS C-478.
 - THE CONICAL SECTIONS SHALL BE ECCENTRIC WHERE LADDER RUNGS ARE REQUIRED.
 - THE PRE-CAST CONCRETE SHALL HAVE A MINIMUM ALLOWABLE COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 POUNDS PER SQUARE INCH FOR THE RISER AND CONICAL SECTIONS.
 - THE RISER SECTIONS SHALL BE REINFORCED WITH STEEL WIRE MESH 6x6, 10-10 AND THE CONICAL SECTION SHALL HAVE 6x6, 10-10 STEEL WIRE MESH REINFORCEMENT AND 3/8" ROD AT TOP AND BOTTOM (SEE ASTM STANDARDS PART 16-C-478). REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
 - REINFORCING STEEL FOR CAST IN PLACE JUNCTION BOX SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
 - ALL CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
 - ALL JUNCTION BOXES GREATER THAN 18' IN DEPTH MUST BE PRE-CAST.

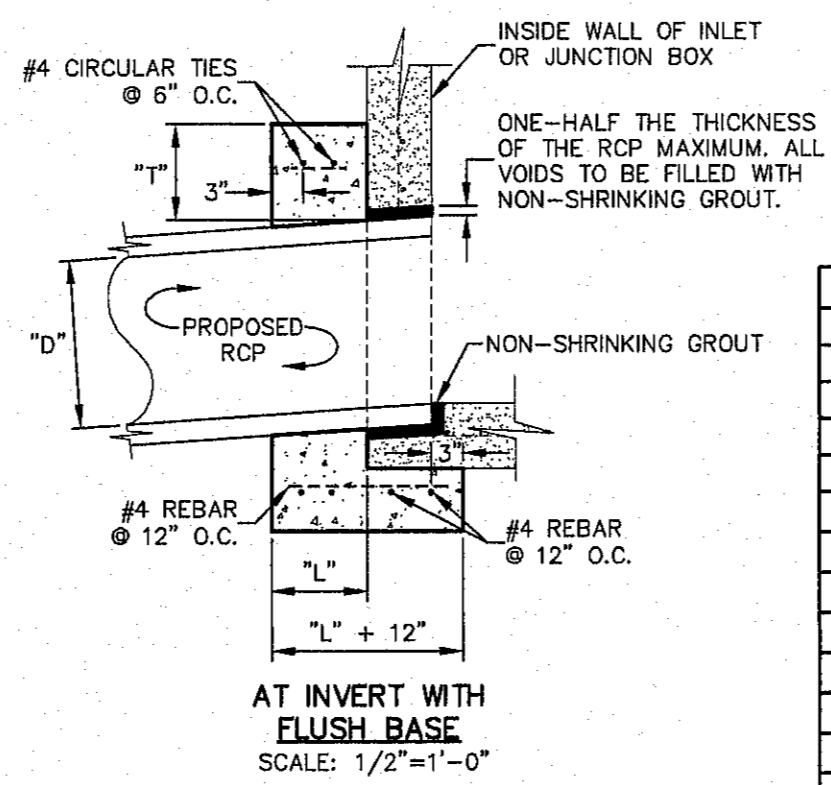


STEEL BAR IS A DEFORMED 1/2" REINFORCING BAR, GRADE 60, CONFORMING TO ASTM A-615

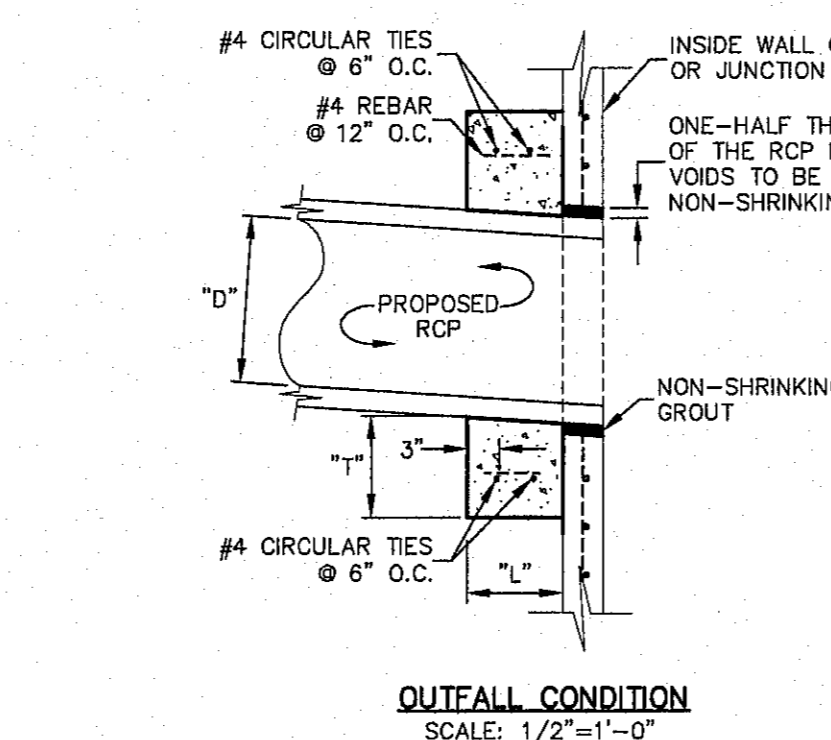
PLASTIC OUTER COATING MEETS ALL REQUIREMENTS OUTLINED IN ASTM D-4101 UNDER TYPE II

REAR VIEW
MANHOLE STEPS SHALL CONFORM TO ALL REQUIREMENTS OF ASTM C-478, C-497, D-4101, AND A-615 AND ARE REQUIRED FOR MANHOLES WITH DEPTHS OF 16" AND GREATER.

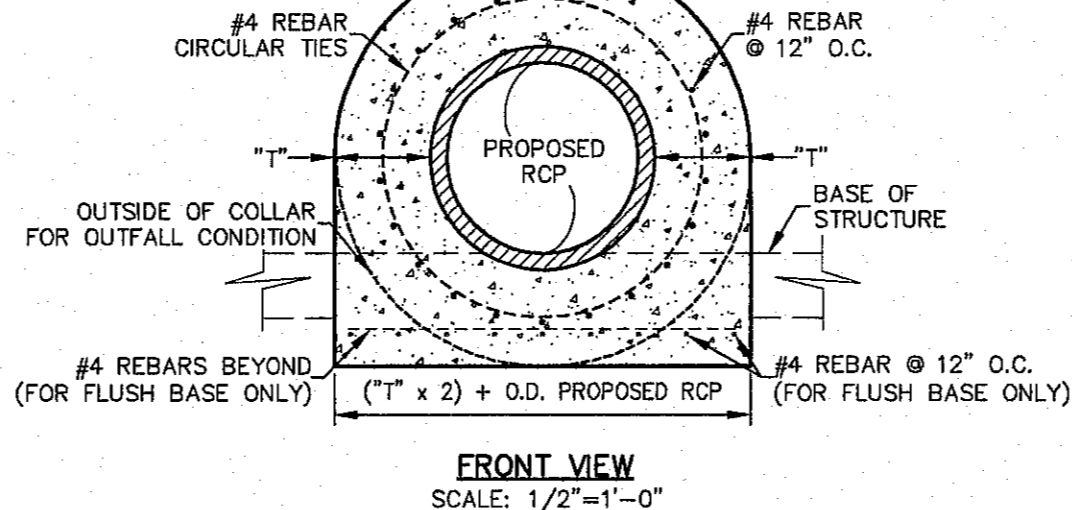
STEP SHOWN IS COPOLYMER POLYPROPYLENE PLASTIC MANHOLE STEP No. 93812R BY BOWCO INDUSTRIES, INC.



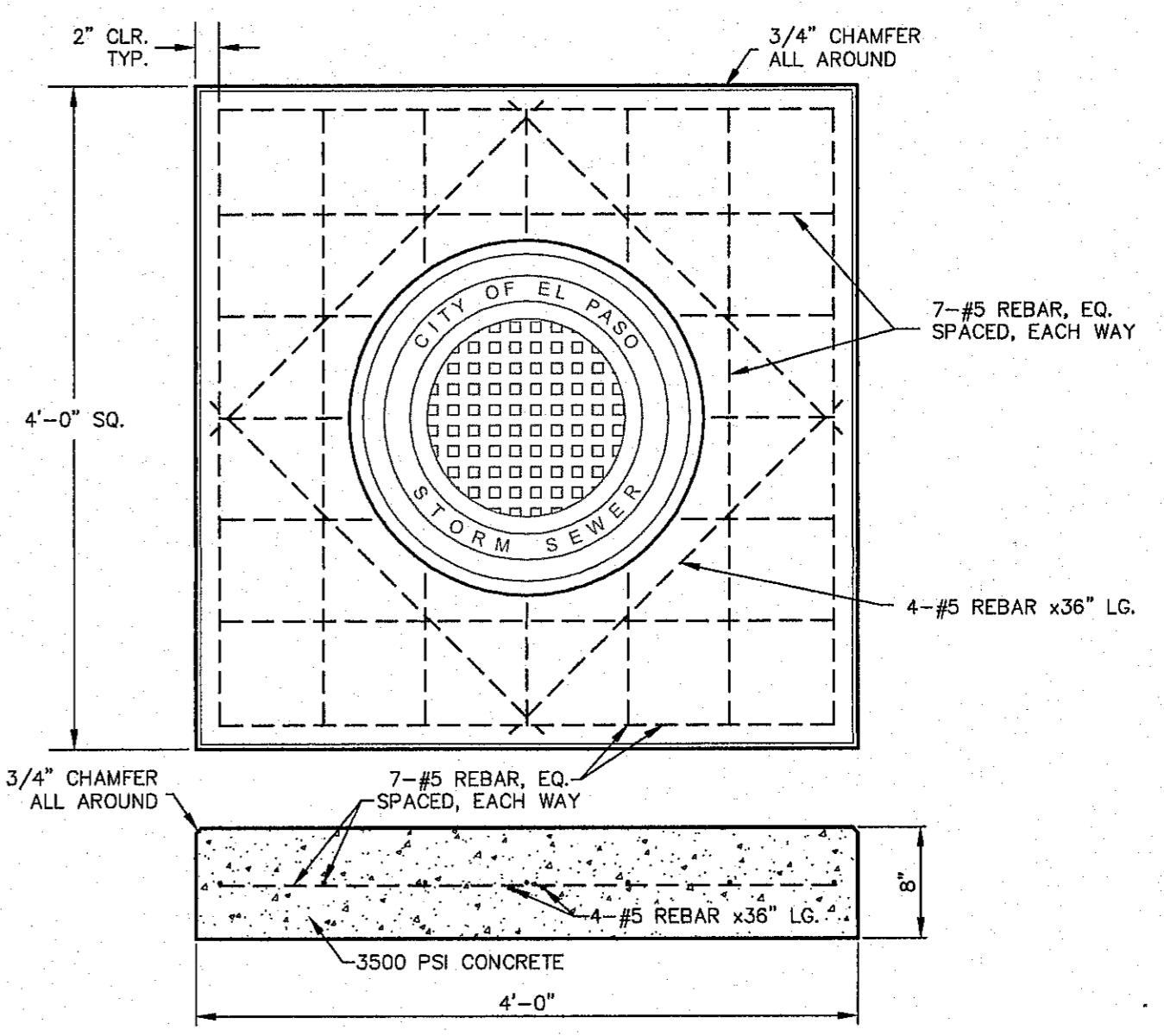
"D"	"L"	"T"
18"	12"	12"
24"	12"	12"
30"	12"	12"
36"	18"	18"
42"	18"	18"
48"	18"	18"
54"	20"	24"
60"	20"	24"
66"	24"	30"
72"	24"	30"
78"	24"	30"
84"	30"	30"



- NOTES:**
- ALL CONCRETE 3000psi MINIMUM.
 - HAND HELD VIBRATORS SHALL BE USED TO SETTLE CONCRETE AND ENSURE THE COLLAR IS CAST WITH NO VOIDS.
 - ALL COMPACTION AROUND THE FINISHED COLLAR SHALL BE A MINIMUM OF 95% PER ASTM D-1557.
 - COLLARS SHOWN ARE REQUIRED FOR PRE-CAST MANHOLES AND BOXES ONLY. RCP MAY BE CAST MONOLITHICALLY WITH CAST IN PLACE STRUCTURES.



RCP CONNECTION AT STRUCTURE
SCALE: AS NOTED



BENCHMARK CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE ELEVATION = 3978.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND PROJECTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 562-5770
AT&T 1-800-DIG-LESS 1-800-DIG-LESS
TEAS GAS SERVICE 562-5900
TEAS EMERGENCY HOTLINE 562-9411/562-2003
TEAS NATURAL GAS EMERGENCY (EPW) 562-5770
TIME WARNER (CABLE) 775-7414
EL PASO NATURAL GAS COMPANY 1-800-334-8847
TEAS EXCAVATION SAFETY SYSTEM 1-800-487-8877

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extension of such project or any other project. Any reuse, to include copying and/or modifying the content of this document without express, written permission from C&S Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

JOHN C. KARLSRUHER
REGISTERED PROFESSIONAL ENGINEER
53878
1/9/17

csa design group, inc.
Texas Registered Engineering Firm #5887
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877.4155
fax (915) 877.4334
www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

STORM SEWER DETAILS

COB	1524
DESIGN BY	9/15/16
COB-SM-DG	DATE
DRAWN BY	AS NOTED
DATE	SCALE
02/20/17	

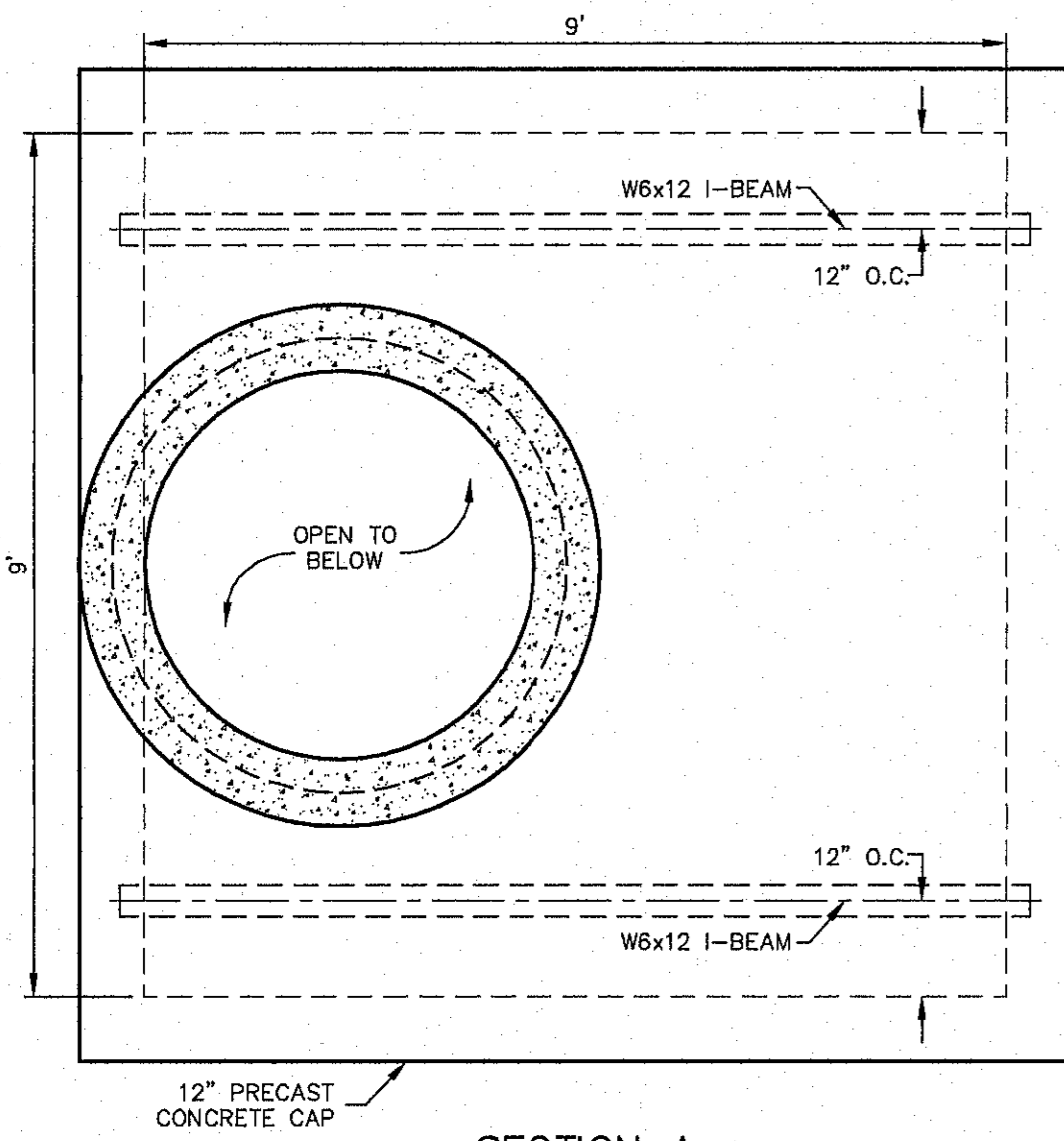
SHEET NO. **101**
SHEET SEQUENCES **105 OF 131**



Final Approval

LADDER RUNG NOTES:

- LADDER RUNGS WILL BE REQUIRED IF DEPTH OF MANHOLE EXCEEDS 16 FEET.
- LADDER RUNGS TO BE OF NON-CORROSIVE MATERIAL CONFORMING TO O.S.H.A. REGULATIONS.
- THE DISTANCE BETWEEN RUNGS SHALL NOT EXCEED 12" INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF LADDER.
- REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (H5-S0).
- LADDER RUNGS MUST HAVE A 3" EMBEDMENT MINIMUM.

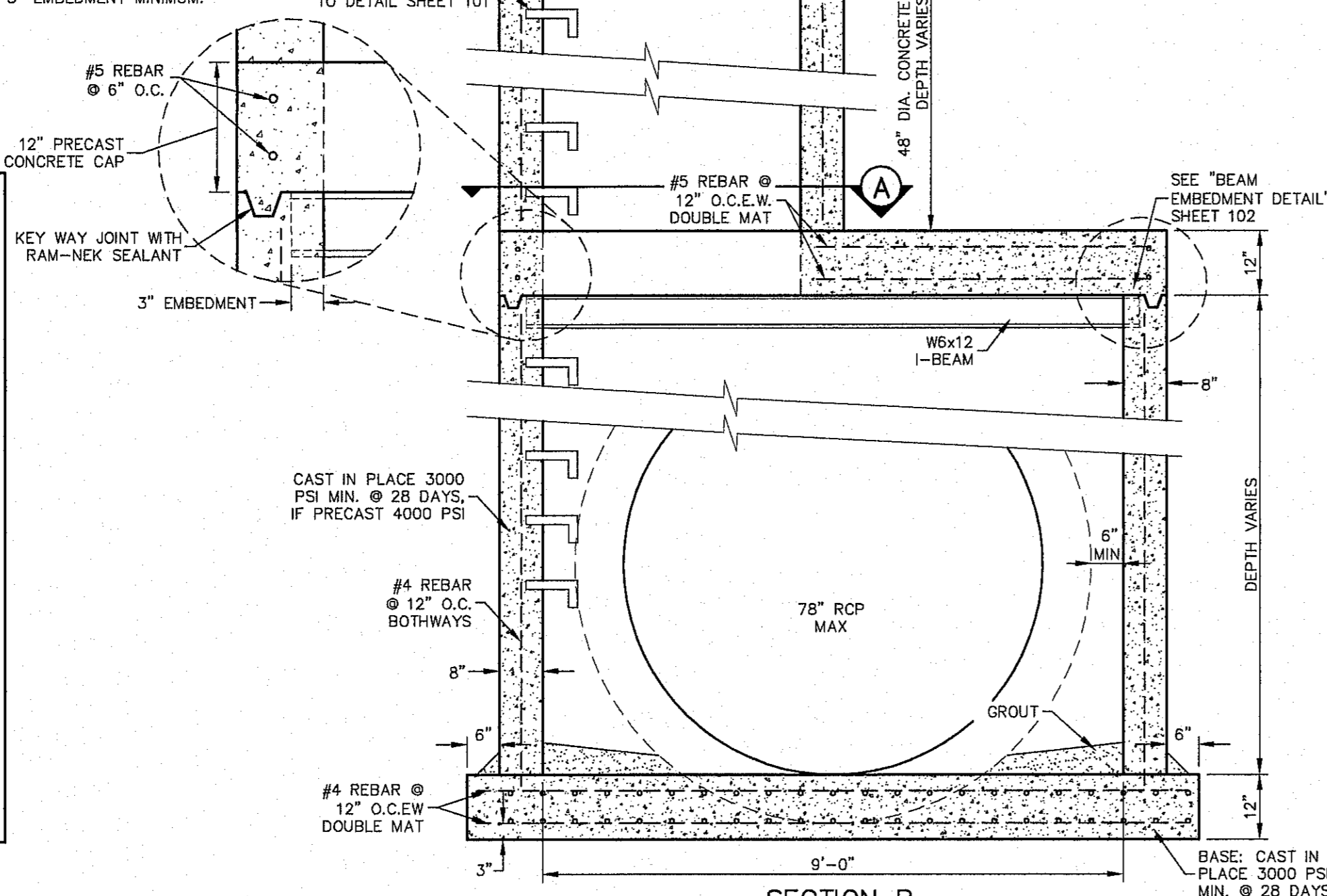


SECTION A

9' x 9' JUNCTION BOX
SCALE: 1/2" = 1'-0"

OFF-STREET MANHOLE COLLAR FOR JUNCTION BOX #13, #14 AND #15 ONLY. PENETRATION APRON FOR #7 ONLY. REFER TO DETAIL SHEET 101

LADDER RUNG. REFER TO DETAIL SHEET 101



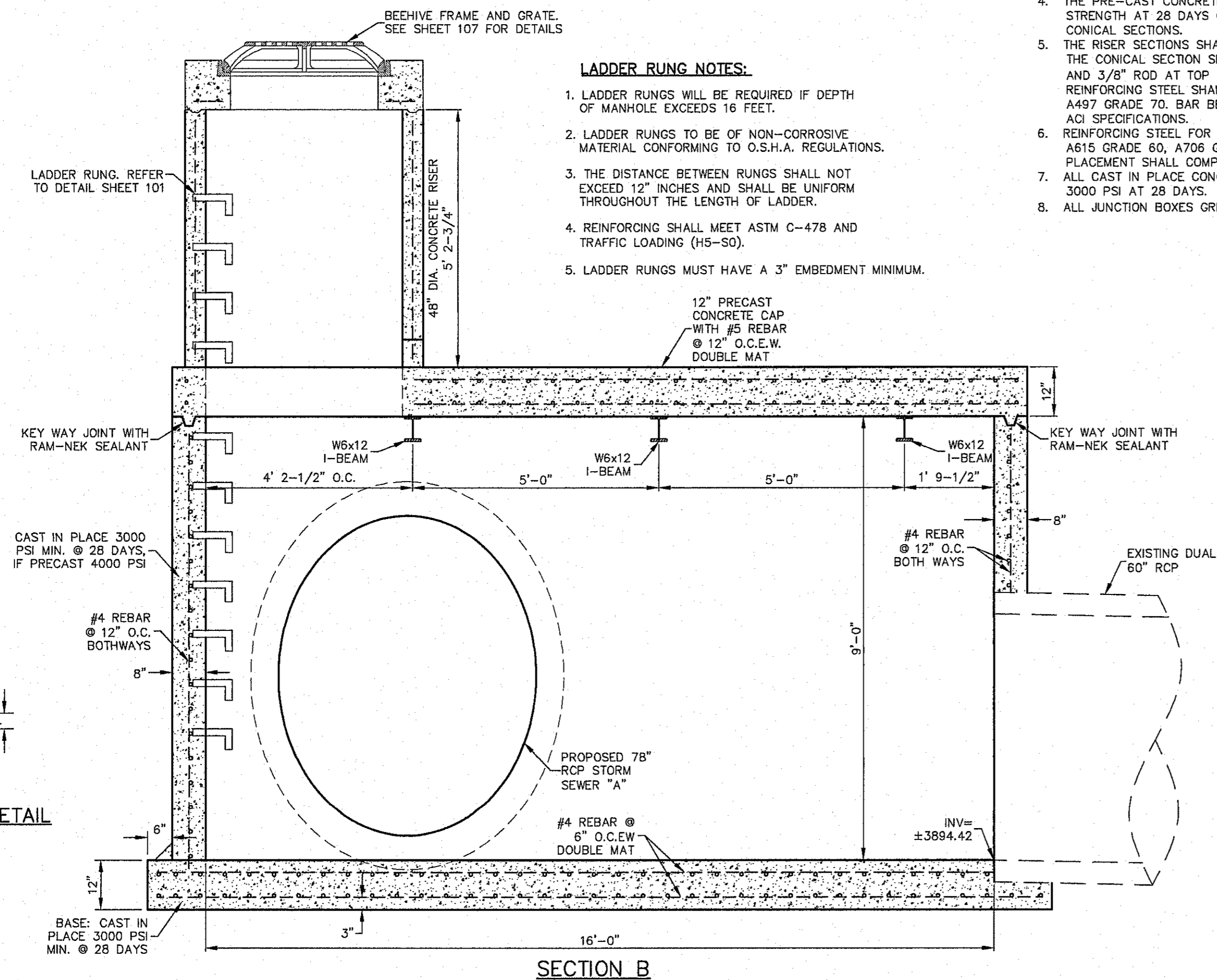
SECTION B

JUNCTION BOX NOTES:

- STANDARD STRUCTURAL DESIGN SHALL BE BASED ON AASHTO HS20 WHEEL LOADING.
- THE PRE-CAST MANHOLE RISER AND CONICAL SECTIONS SHALL CONFORM TO ASTM SPECIFICATIONS C-478.
- THE CONICAL SECTIONS SHALL BE ECCENTRIC WHERE LADDER RUNGS ARE REQUIRED.
- THE PRE-CAST CONCRETE SHALL HAVE A MINIMUM ALLOWABLE COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 POUNDS PER SQUARE INCH FOR THE RISER AND CONICAL SECTIONS.
- THE RISER SECTIONS SHALL BE REINFORCED WITH STEEL WIRE MESH 6x6, 10-10 AND THE CONICAL SECTION SHALL HAVE 6x6, 10-10 STEEL WIRE MESH REINFORCEMENT AND 3/8" ROD AT TOP AND BOTTOM (SEE ASTM STANDARDS PART 16-C-478). REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
- REINFORCING STEEL FOR CAST IN PLACE JUNCTION BOX SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
- ALL CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
- ALL JUNCTION BOXES GREATER THAN 18" IN DEPTH MUST BE PRE-CAST.

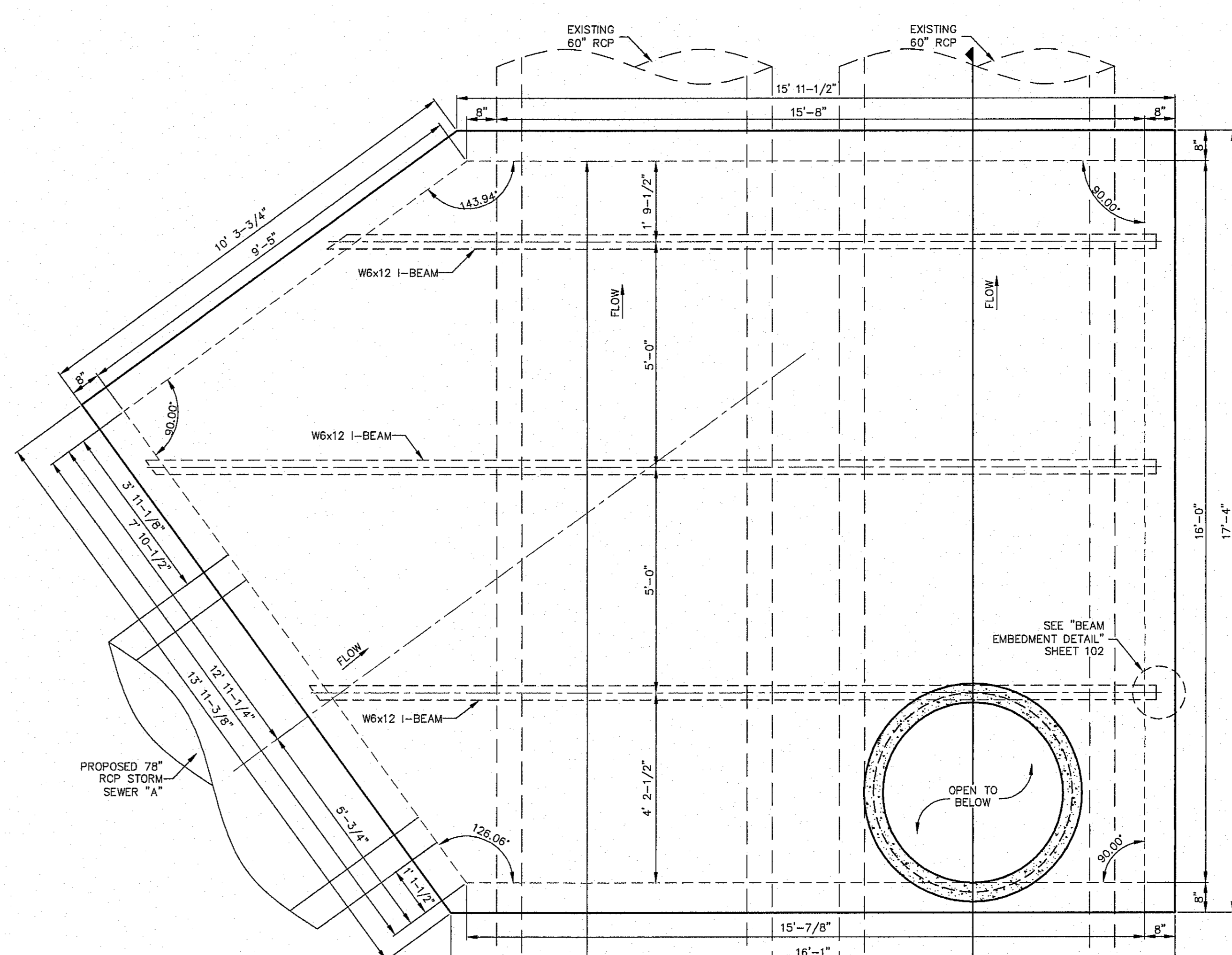
LADDER RUNG NOTES:

- LADDER RUNGS WILL BE REQUIRED IF DEPTH OF MANHOLE EXCEEDS 16 FEET.
- LADDER RUNGS TO BE OF NON-CORROSIVE MATERIAL CONFORMING TO O.S.H.A. REGULATIONS.
- THE DISTANCE BETWEEN RUNGS SHALL NOT EXCEED 12" INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF LADDER.
- REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (H5-S0).
- LADDER RUNGS MUST HAVE A 3" EMBEDMENT MINIMUM.



SECTION B

JUNCTION BOX #1 (MODIFIED)
SCALE: 1/2" = 1'-0"



OFFSET SHEAR KEY DETAIL
SCALE: 1/2" = 1'-0"

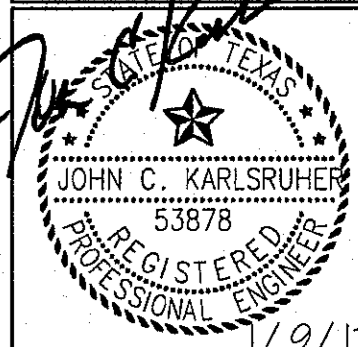
BENCHMARK: CITY MANHOLE AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND SPANISH VALLEY DRIVE
ELEVATION = 3895.5 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 540-720-1030
EL PASO GAS SERVICE 544-9300
TGS EMERGENCY HOTLINE 562-941/692-2008
EL PASO WATER UTILITY 544-9300
TIME WARNER (CABLE) 778-7414
EL PASO NATURAL GAS COMPANY 1-800-334-8847
TEXAS EXCAVATION SAFETY SYSTEM 1-800-267-8277

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of services in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm E-9897
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: [915] 877.4155
Fax: [915] 877.4334
www.csaengineers.com

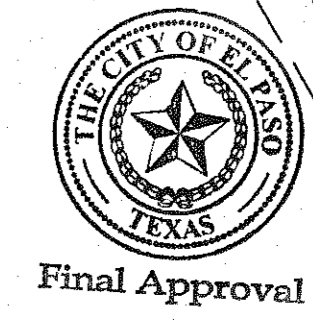


CIMARRON CANYON
UNIT ONE
SUBDIVISION

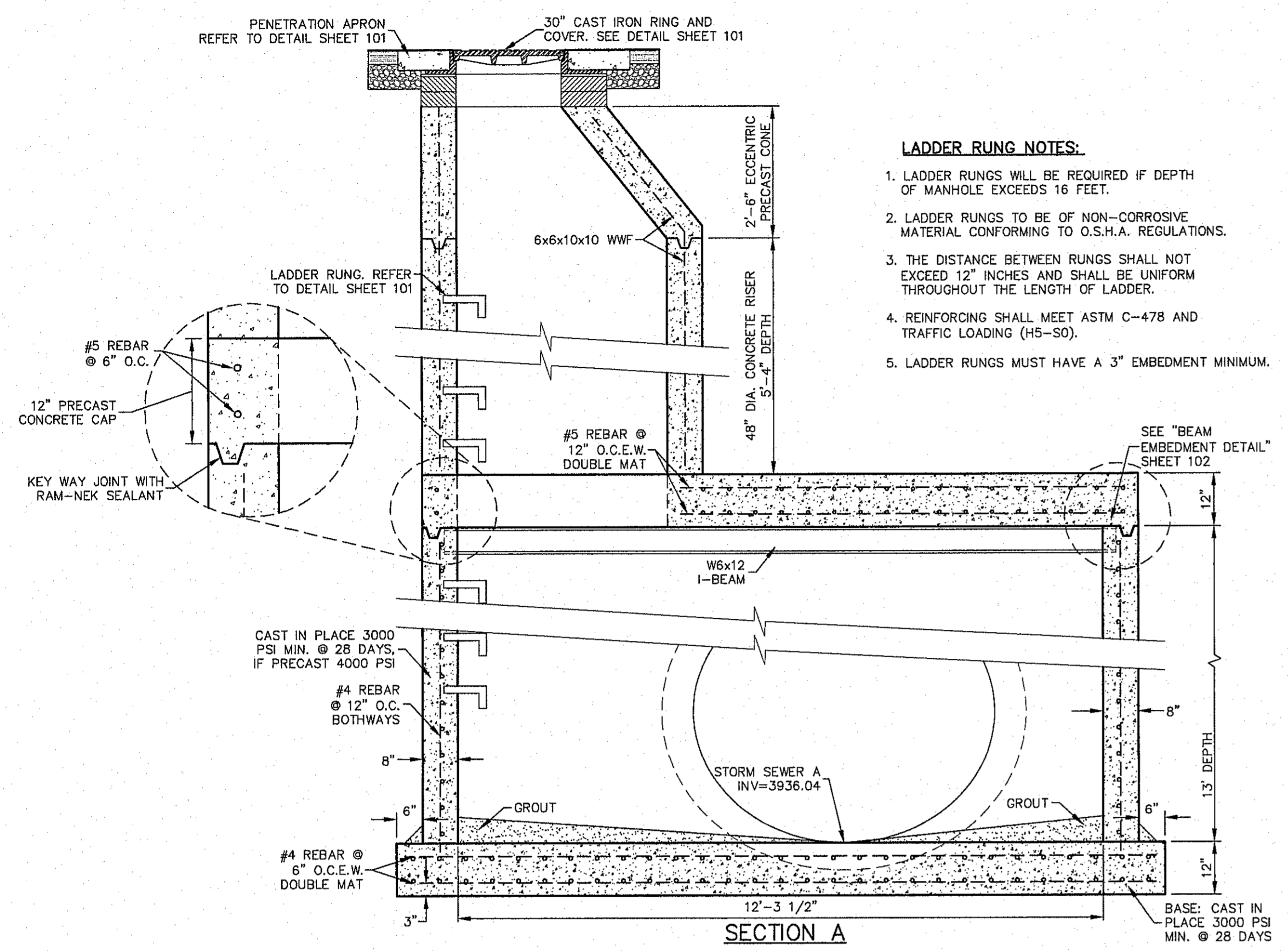
SHEET TITLE
**STORM
SEWER
DETAILS**

JOB	1524
DESIGN BY	JCK
JOB-SM-DG	9/15/16
DATE	AS NOTED
CREATED BY	JCK

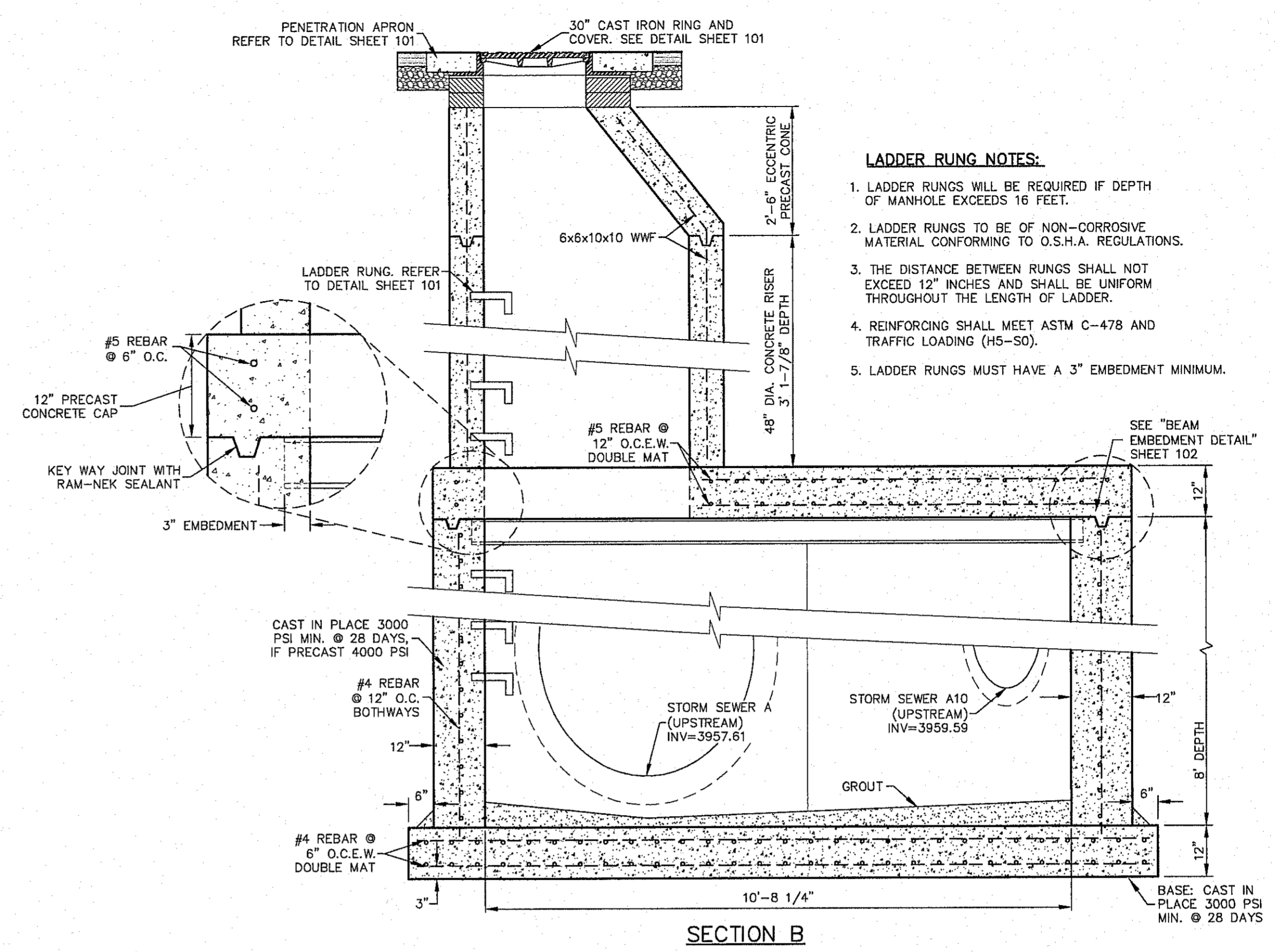
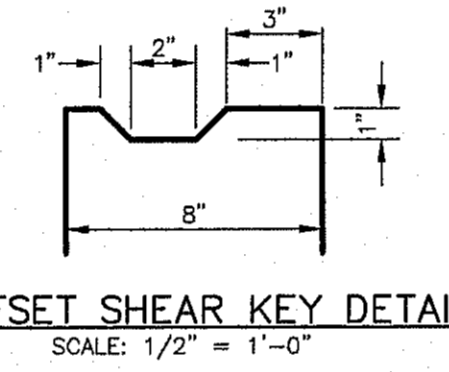
SHEET NO.
103
TOTAL SHEETS
107 of 131



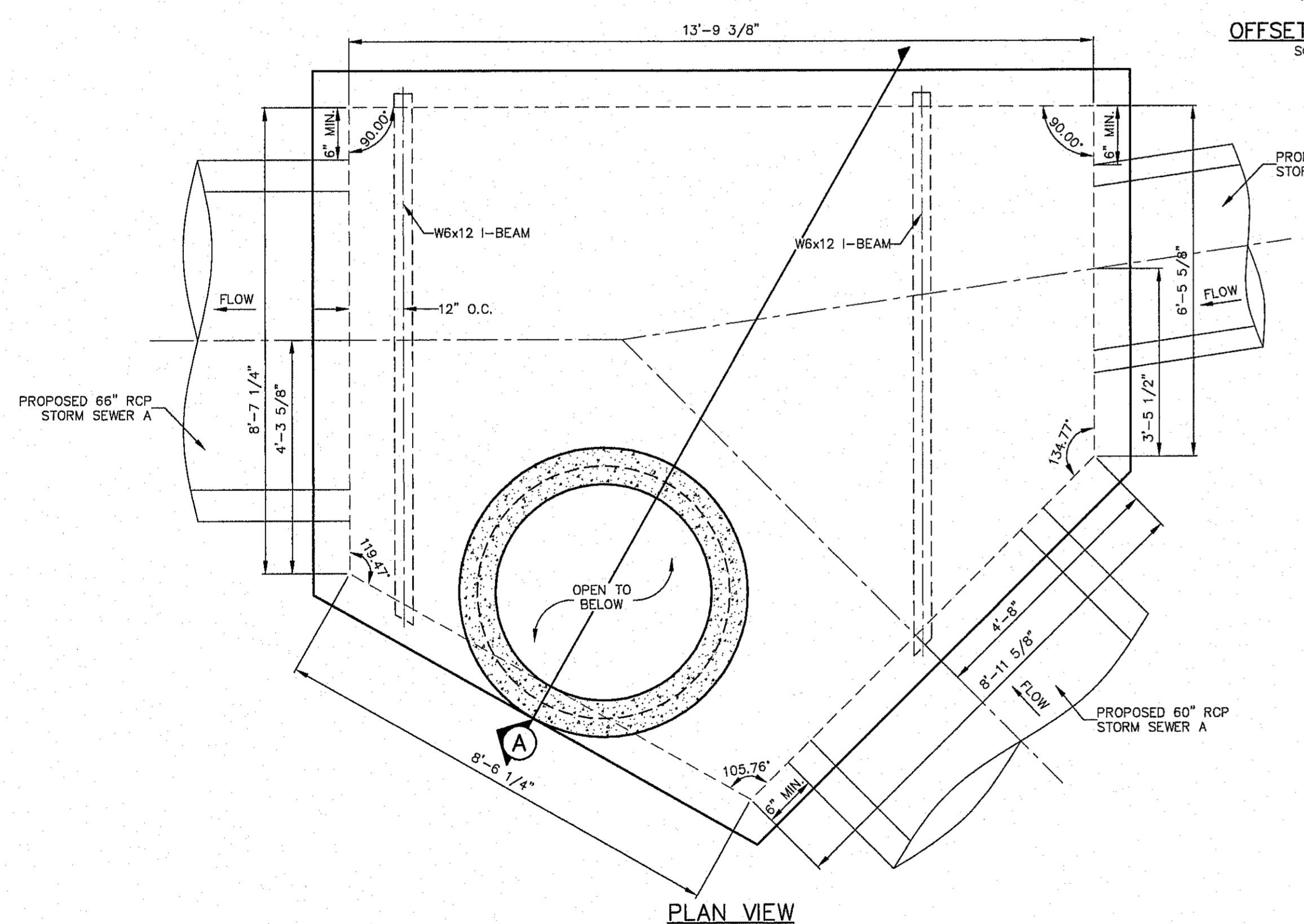
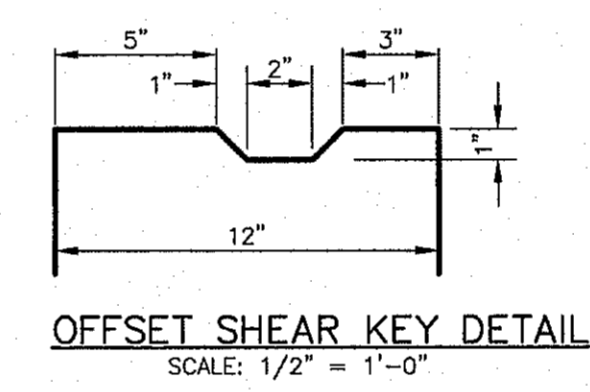
© CSA DESIGN GROUP, INC. - Jun 06, 2017 - 11:33am
 S:\Work\1524 Cimarron Canyon Unit One\1524_Sht 100-100A (Storm Sewer Details)dwg
 06/06/2017 11:33 AM



- LADDER RUNG NOTES:**
- LADDER RUNGS WILL BE REQUIRED IF DEPTH OF MANHOLE EXCEEDS 16 FEET.
 - LADDER RUNGS TO BE OF NON-CORROSIVE MATERIAL CONFORMING TO O.S.H.A. REGULATIONS.
 - THE DISTANCE BETWEEN RUNGS SHALL NOT EXCEED 12" INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF LADDER.
 - REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (HS-SO).
 - LADDER RUNGS MUST HAVE A 3" EMBEDMENT MINIMUM.

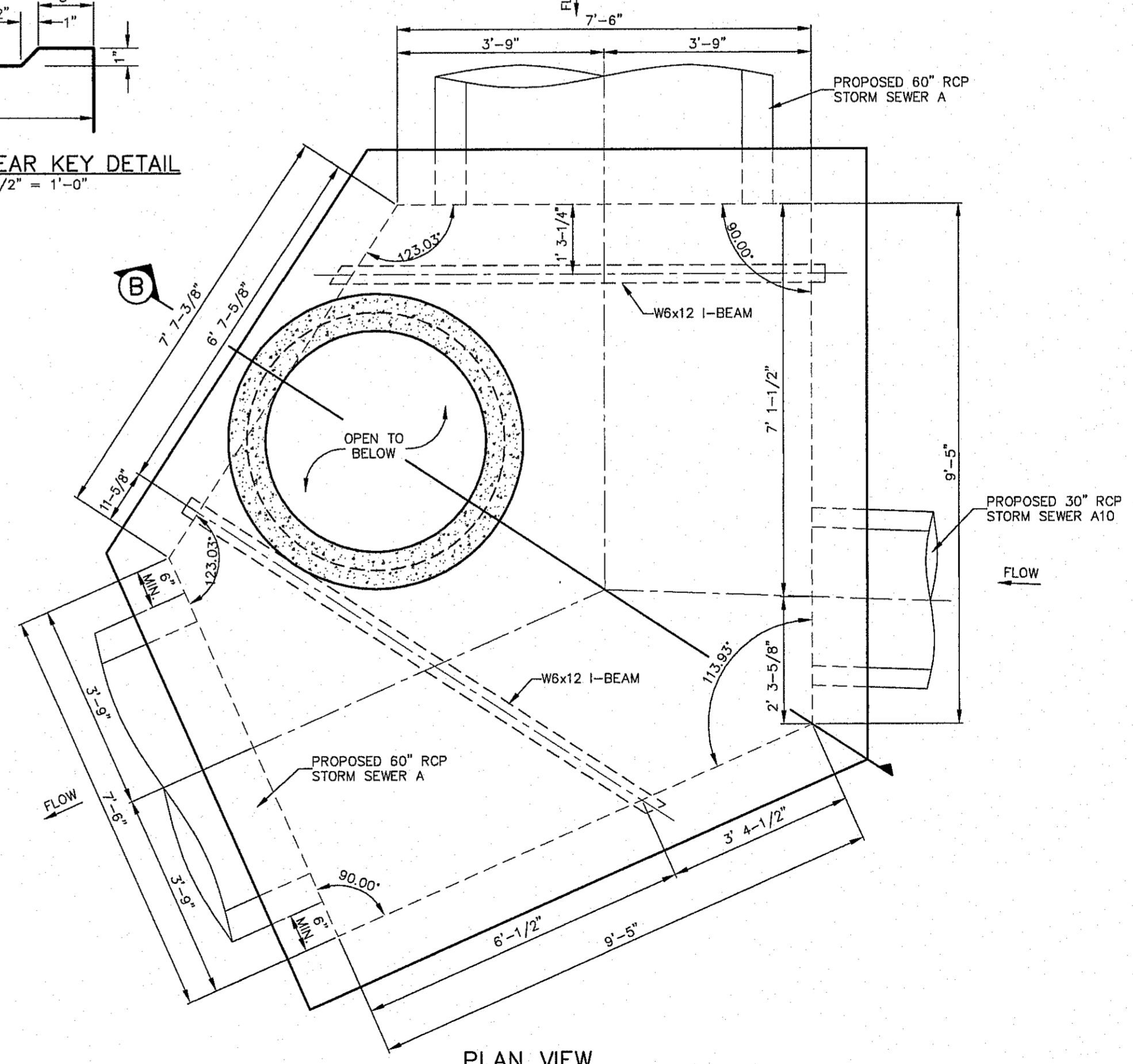


- LADDER RUNG NOTES:**
- LADDER RUNGS WILL BE REQUIRED IF DEPTH OF MANHOLE EXCEEDS 16 FEET.
 - LADDER RUNGS TO BE OF NON-CORROSIVE MATERIAL CONFORMING TO O.S.H.A. REGULATIONS.
 - THE DISTANCE BETWEEN RUNGS SHALL NOT EXCEED 12" INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF LADDER.
 - REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (HS-SO).
 - LADDER RUNGS MUST HAVE A 3" EMBEDMENT MINIMUM.



JUNCTION BOX #6 (MODIFIED)
 SCALE: 1/2" = 1'-0"

- JUNCTION BOX NOTES:**
- STANDARD STRUCTURAL DESIGN SHALL BE BASED ON AASHTO HS20 WHEEL LOADING.
 - THE PRE-CAST MANHOLE RISER AND CONICAL SECTIONS SHALL CONFORM TO ASTM SPECIFICATIONS C-478.
 - THE CONICAL SECTIONS SHALL BE ECCENTRIC WHERE LADDER RUNGS ARE REQUIRED.
 - THE PRE-CAST CONCRETE SHALL HAVE A MINIMUM ALLOWABLE COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 POUNDS PER SQUARE INCH FOR THE RISER AND CONICAL SECTIONS.
 - THE RISER SECTIONS SHALL BE REINFORCED WITH STEEL WIRE MESH 6x6, 10-10 AND THE CONICAL SECTION SHALL HAVE 6x6, 10-10 STEEL WIRE MESH REINFORCEMENT AND 3/8" ROD AT TOP AND BOTTOM (SEE ASTM STANDARDS PART 16-C-478).
 - REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
 - REINFORCING STEEL FOR CAST IN PLACE JUNCTION BOX SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
 - ALL CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
 - ALL JUNCTION BOXES GREATER THAN 18' IN DEPTH MUST BE PRE-CAST.



JUNCTION BOX #10 (MODIFIED)
 SCALE: 1/2" = 1'-0"

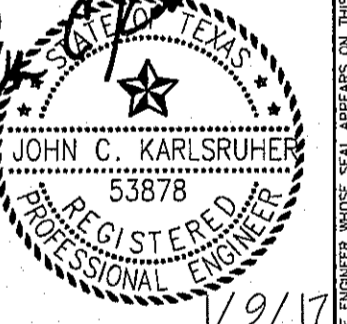
BENCHMARK CITY MONUMENT AT THE CENTERLINE
 INTERSECTION OF NORTHERN PASS DRIVE
 ELEVATION = 3976.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitter Find	JCK
2	11/01/16	2nd City Submitter	DAE
1	9/15/16	1st City Submitter	DAE

WARNING!
 BEFORE YOU DIG
 CONTRACTOR SHALL
 FIELD LOCATE ALL
 EXISTING UNDERGROUND
 IMPROVEMENTS IN
 PROJECT AREA

CALL
 BEFORE YOU DIG -
 EL PASO ELECTRIC COMPANY
 1-800-405-TESS
 544-5300
 TEXAS GAS SERVICE
 562-5411/562-2009
 500 DODDING TESS
 562-5411/562-2009
 AFTER HOURS EMERGENCY (EPW)
 775-7414
 1-800-354-8047
 EL PASO NATURAL GAS COMPANY
 1-800-487-8277
 (24/7)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm E-9897
 1845 Northwestern Dr. Ste C
 El Paso, Texas 79912
 tel (915) 877.4155
 fax (915) 877.4334
 www.csaengineers.com



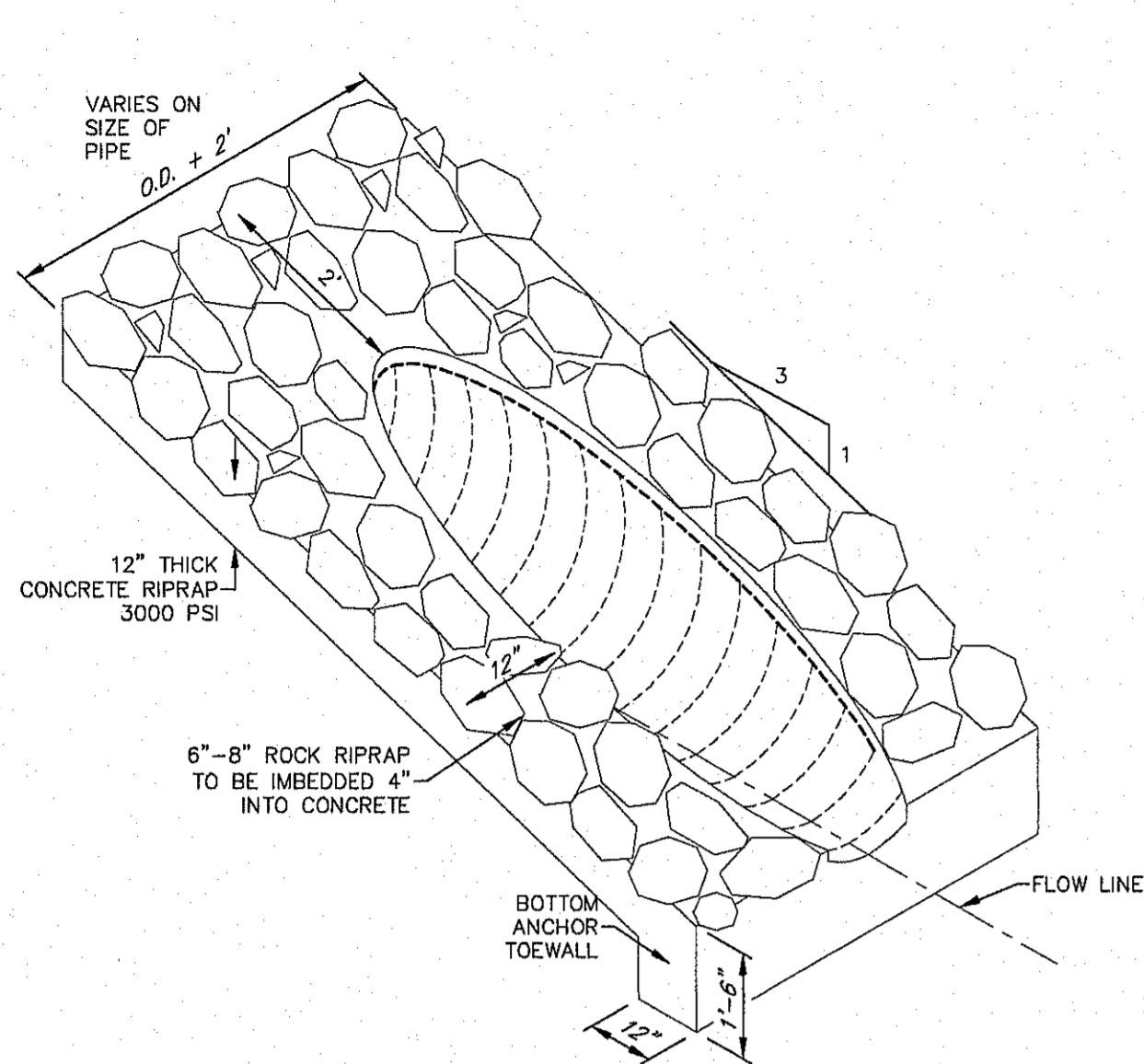
CIMARRON CANYON
 UNIT ONE
 SUBDIVISION
 SHEET TITLE

**STORM
 SEWER
 DETAILS**

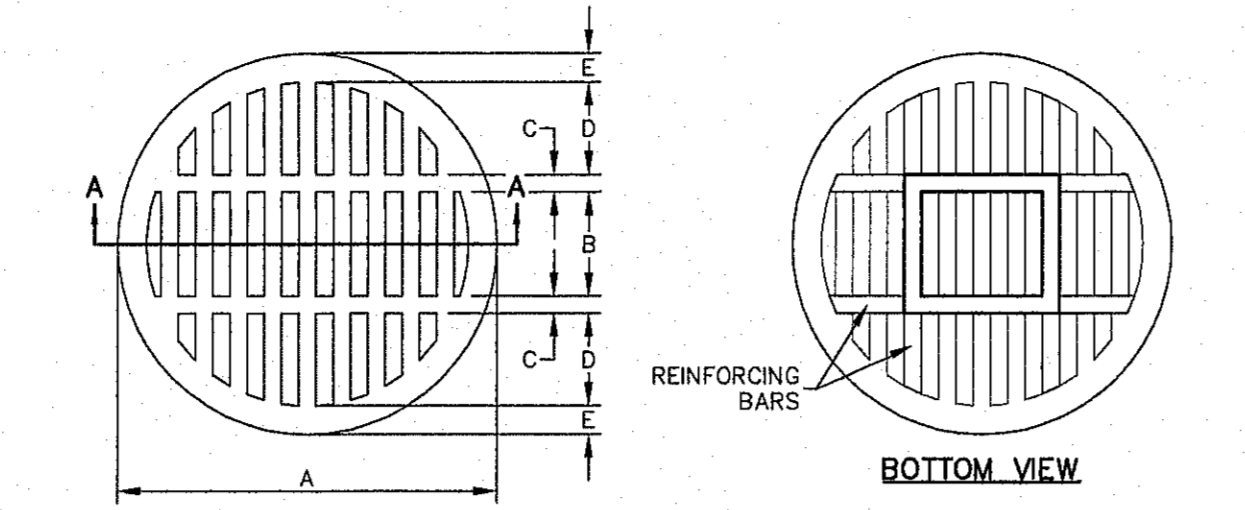
DOB	1524
DESIGN BY	JOB NO.
DOB-SM-DC	9/15/16
DAE	AS NOTED
SCALE	SCALE
SHEET NO. 105	
SHEET SEQUENCE 109 of 131	



© 2017 CSA DESIGN GROUP



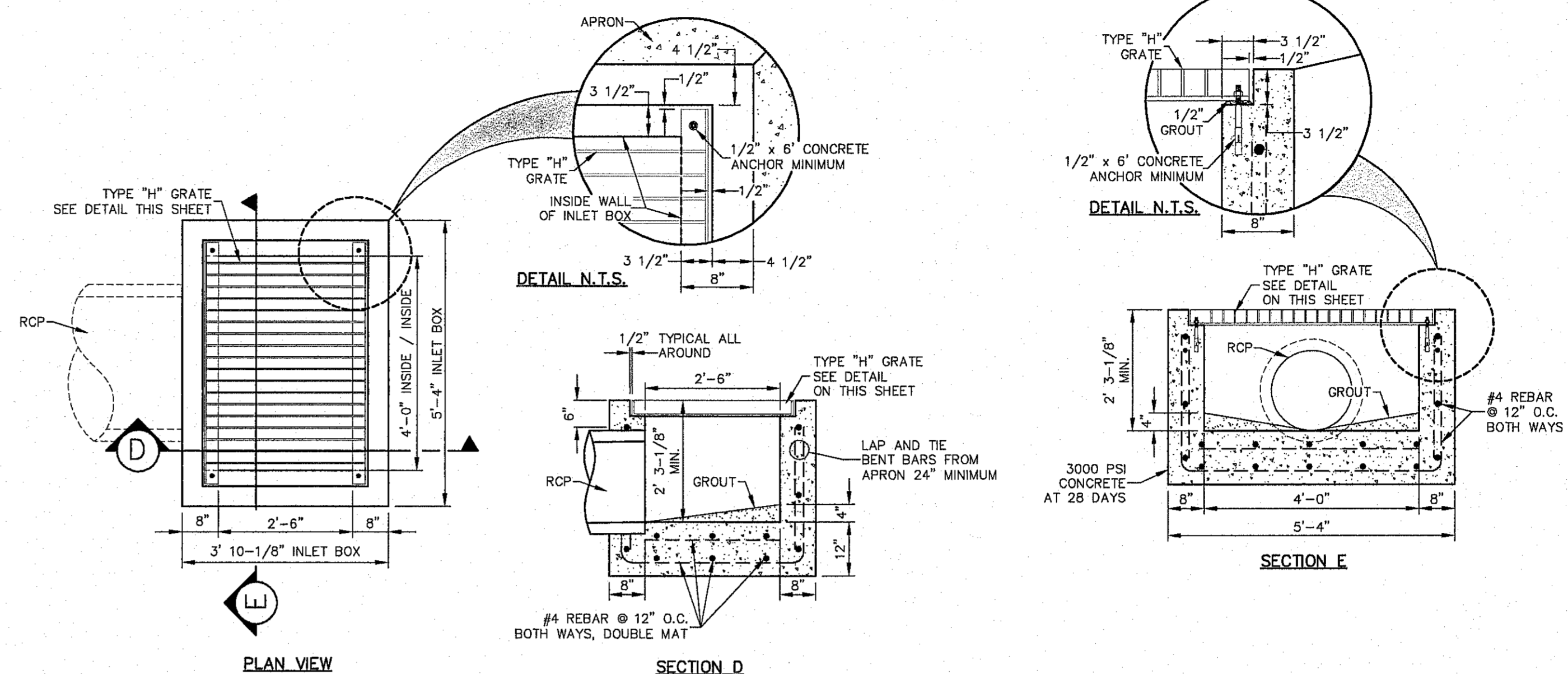
SAFETY END TREATMENT
NTS



NOTE: GRATED MANHOLE COVER IS DESIGNED TO FIT IN A STANDARD MANHOLE RING

MANHOLE COVER	48" MANHOLE	72" MANHOLE
WEIGHT	175 lbs	310 lbs
A	1'-11 3/4"	2'-7 1/8"
B	6 1/2"	9"
C	1"	1 1/2"
D	6"	8"
E	1 5/8"	1 5/8"
F	1 1/4"	1"
G	1 3/8"	1 3/8"
H	1"	1"

GRATED MANHOLE COVER
SCALE: 1" = 1.00'



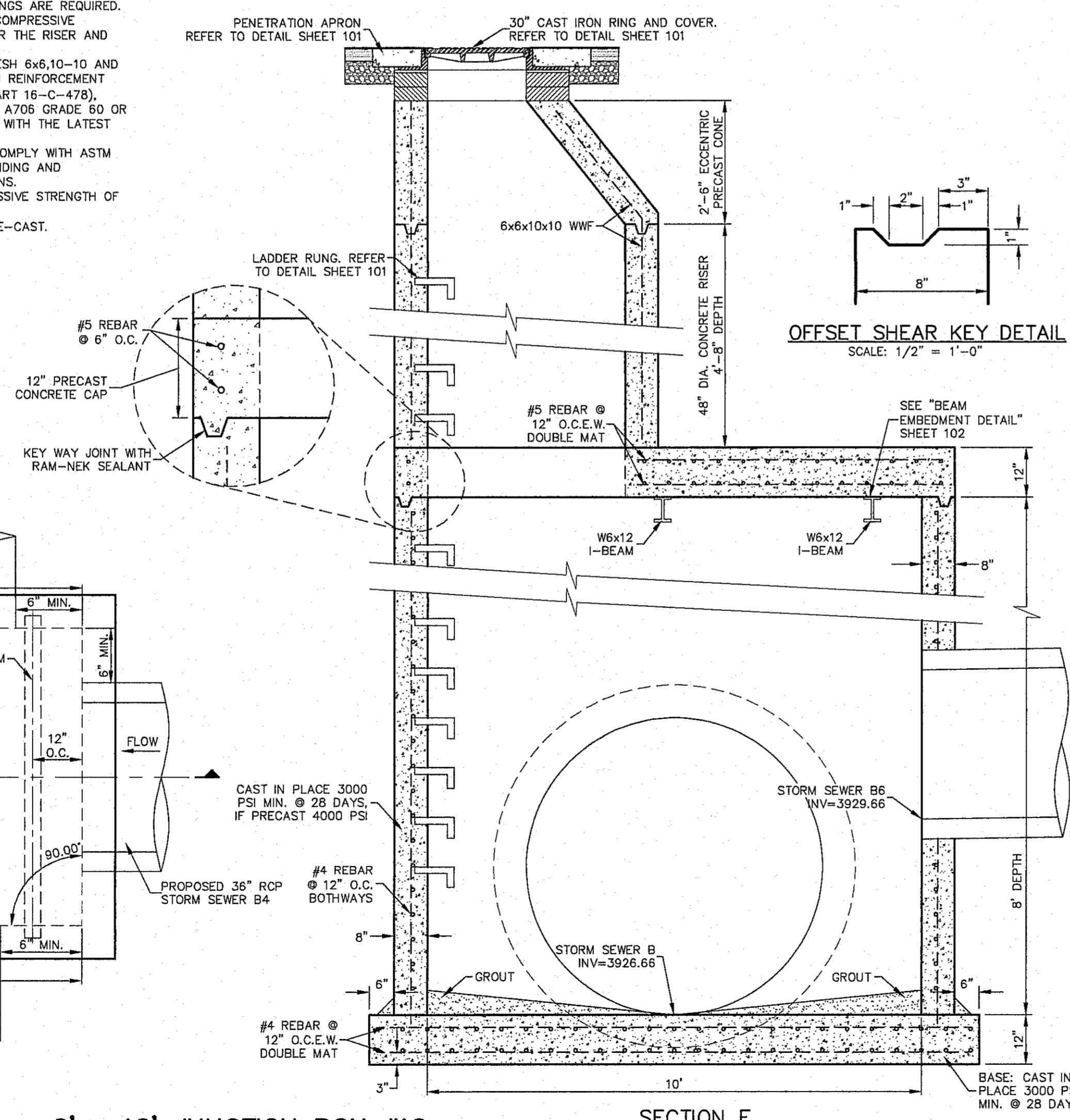
OFF-SITE INLET (TYPE "H")
SCALE: 1/2" = 1'-0"

JUNCTION BOX NOTES

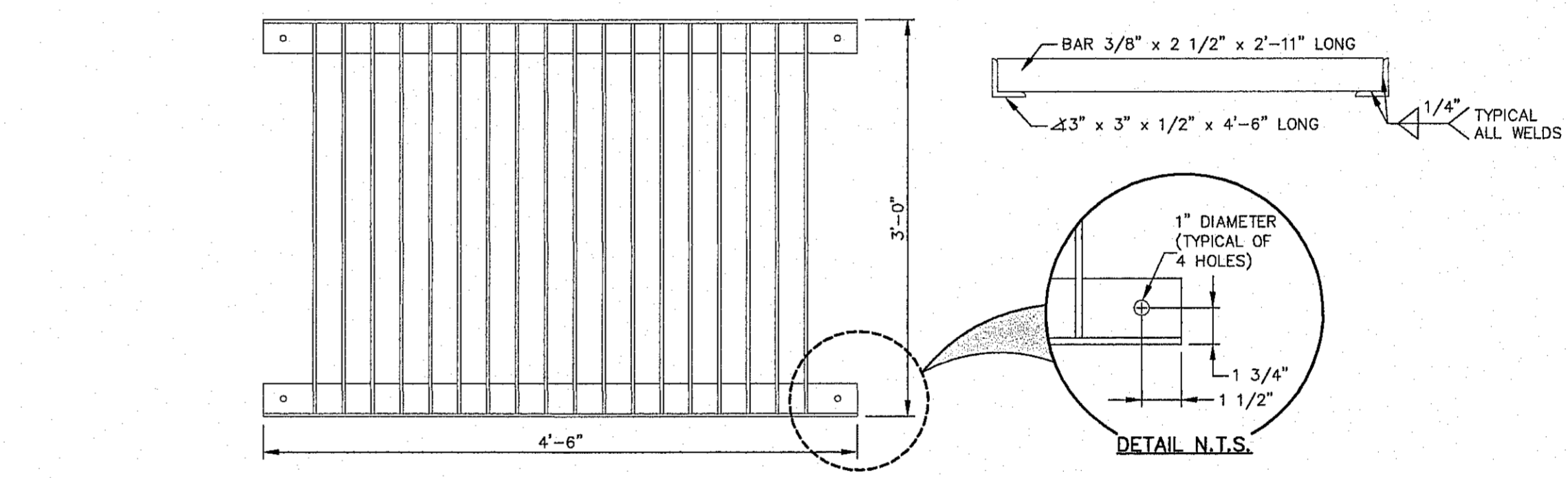
- STANDARD STRUCTURAL DESIGN SHALL BE BASED ON AASHTO HS20 WHEEL LOADING.
- THE PRE-CAST MANHOLE RISER AND CONICAL SECTIONS SHALL CONFORM TO ASTM SPECIFICATIONS C-478.
- THE CONICAL SECTIONS SHALL BE ECCENTRIC WHERE LADDER RUNGS ARE REQUIRED.
- THE PRE-CAST CONCRETE SHALL HAVE A MINIMUM ALLOWABLE COMPRESSIVE STRENGTH AT 28 DAYS OF 4000 POUNDS PER SQUARE INCH FOR THE RISER AND CONICAL SECTIONS.
- THE RISER SECTIONS SHALL BE REINFORCED WITH STEEL WIRE MESH 6x6, 10-10 AND THE CONICAL SECTION SHALL HAVE 6x6, 10-10 STEEL WIRE MESH REINFORCEMENT AND 3/8" ROD AT TOP AND BOTTOM (SEE ASTM STANDARDS PART 16-C-478). REINFORCING STEEL SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
- REINFORCING STEEL FOR CAST IN PLACE JUNCTION BOX SHALL COMPLY WITH ASTM A615 GRADE 60, A706 GRADE 60 OR A497 GRADE 70. BAR BENDING AND PLACEMENT SHALL COMPLY WITH THE LATEST ACI SPECIFICATIONS.
- ALL CAST IN PLACE CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
- ALL JUNCTION BOXES GREATER THAN 18' IN DEPTH MUST BE PRE-CAST.

LADDER RUNG NOTES:

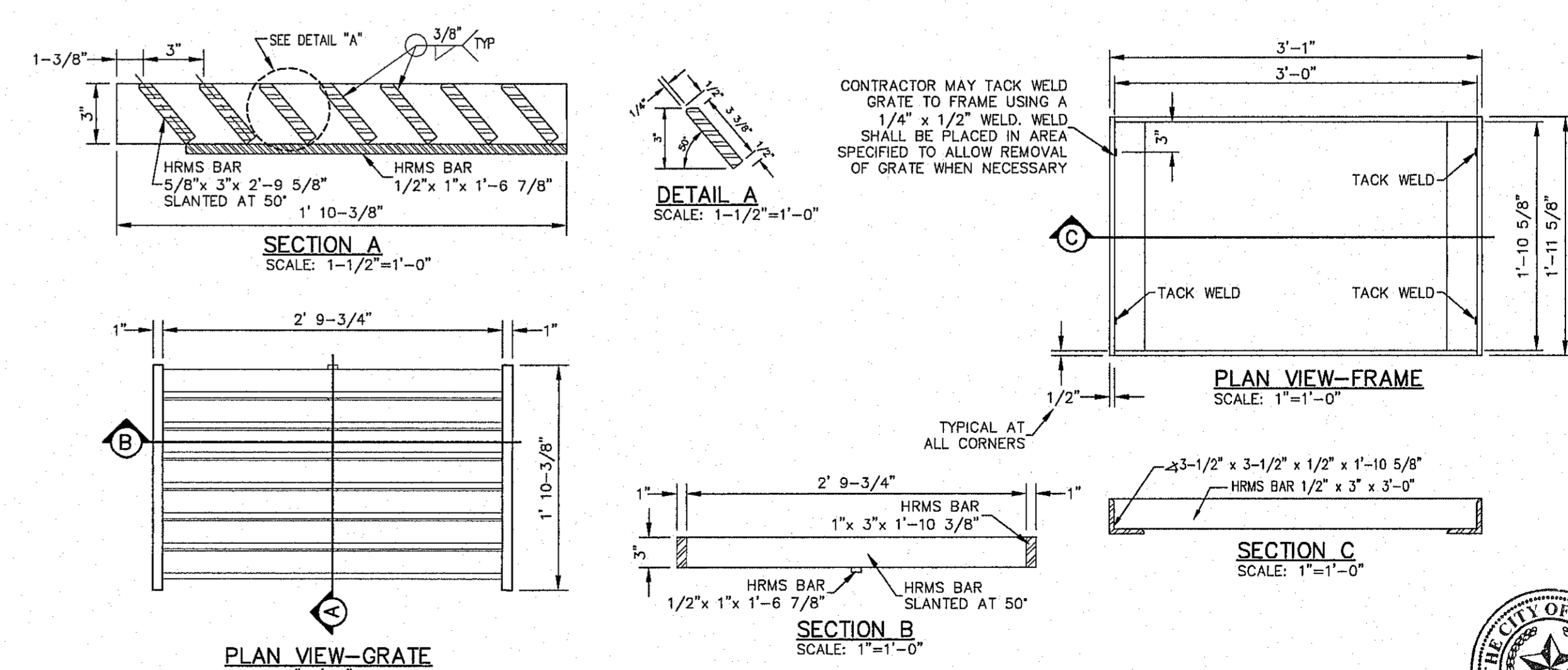
- LADDER RUNGS WILL BE REQUIRED IF DEPTH OF MANHOLE EXCEEDS 16 FEET.
- LADDER RUNGS TO BE OF NON-CORROSIVE MATERIAL CONFORMING TO O.S.H.A. REGULATIONS.
- THE DISTANCE BETWEEN RUNGS SHALL NOT EXCEED 12" INCHES AND SHALL BE UNIFORM THROUGHOUT THE LENGTH OF LADDER.
- REINFORCING SHALL MEET ASTM C-478 AND TRAFFIC LOADING (HS-20).
- LADDER RUNGS MUST HAVE A 3" EMBEDMENT MINIMUM.



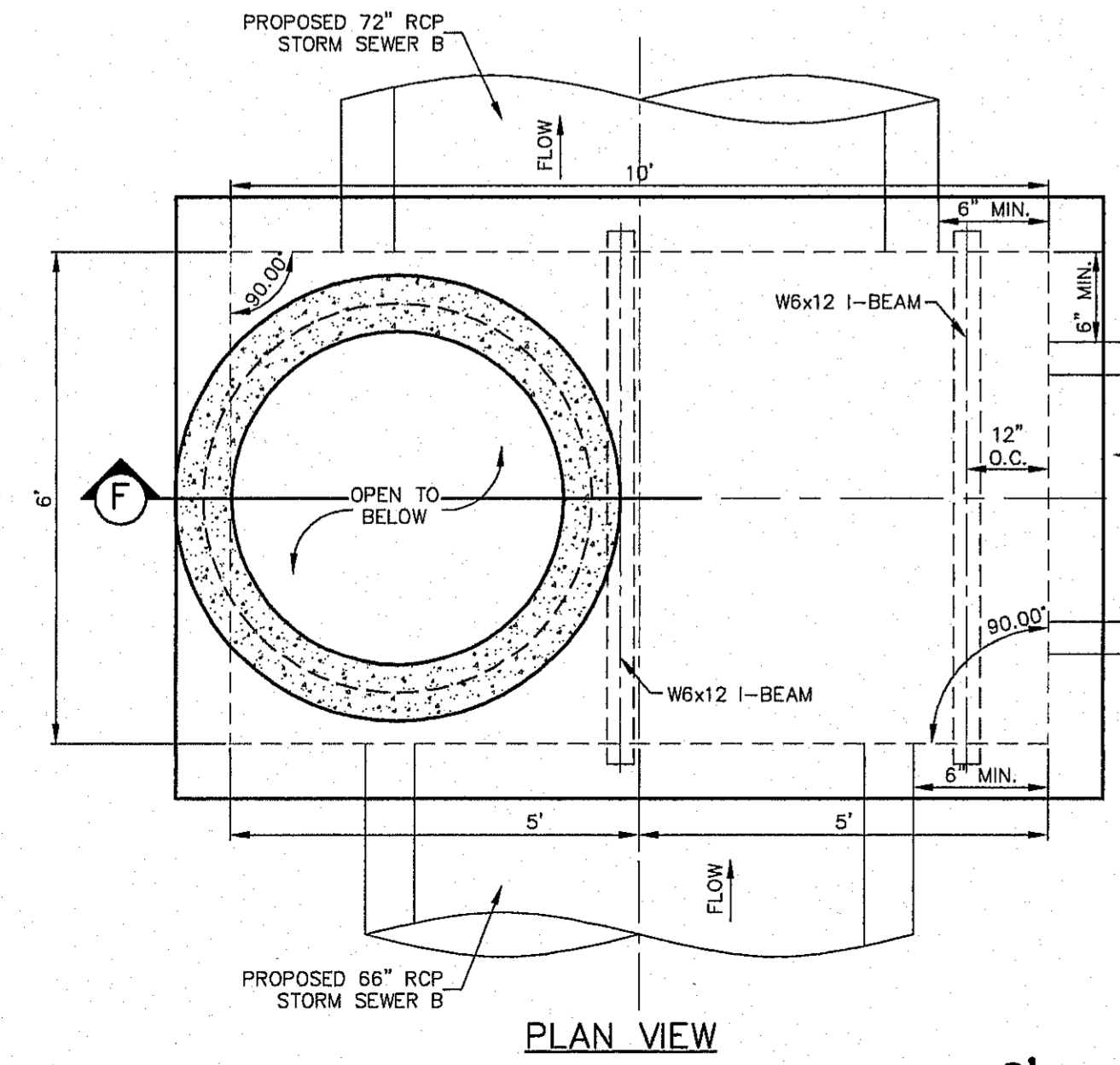
6' x 10' JUNCTION BOX #16
SCALE: 1/2" = 1'-0"



TYPE "H" GRATE
SCALE: 1" = 1'-0"



TYPICAL WELDED STEEL FRAME AND GRATE FOR OFF-SITE INLETS
SCALE: AS NOTED



PLAN VIEW

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
EL PASO GAS SERVICE
TEXAS EMERGENCY HOTLINE
AFTER HOURS EMERGENCY (EPW)
EL PASO NATURAL GAS COMPANY
TEXAS EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on any other project or for any other purpose without the express, written permission of the copyright owner. Any reuse, modification, or other use of this material for any reason may result in civil and/or criminal penalties.



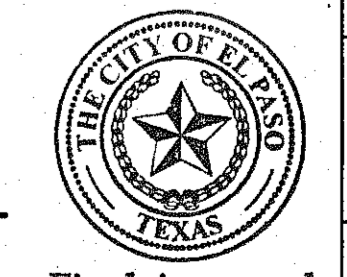
csa design group, inc.
Texas Registered Engineering Firm F-9897
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877.4155
fax (915) 877.4334
www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

STORM SEWER DETAILS

COB	1524
DESIGN BY	JOB NO.
COB-SM-DG	9/15/16
DATE	AS NOTED
DESIGNED BY	SCALE
DATE	SCALE
110	131

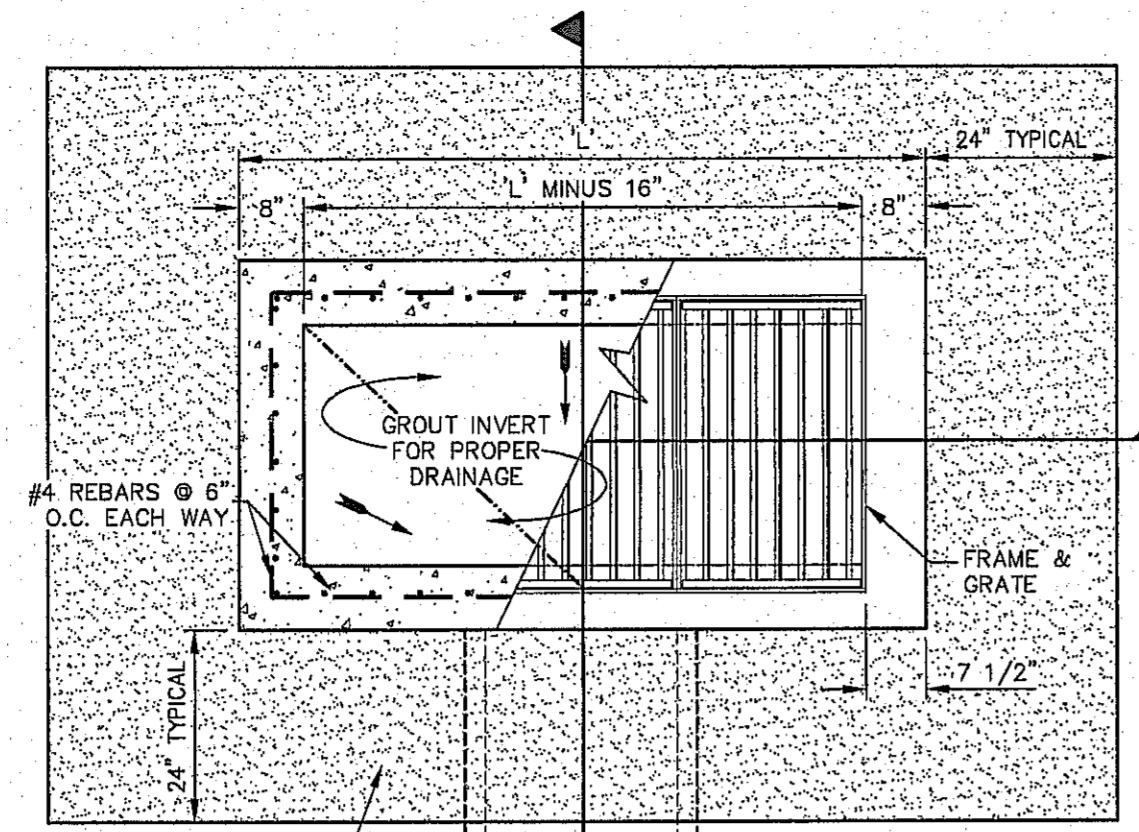


Final Approval

© CSA DESIGN GROUP, INC. - Jan 06, 2017 - 13:30pm
S:\proj\1524 Cimarron Canyon Unit One\1524 3rd City Submittal\CURRENT\1524 SH-100-108A (Storm Sewer Details)dwg

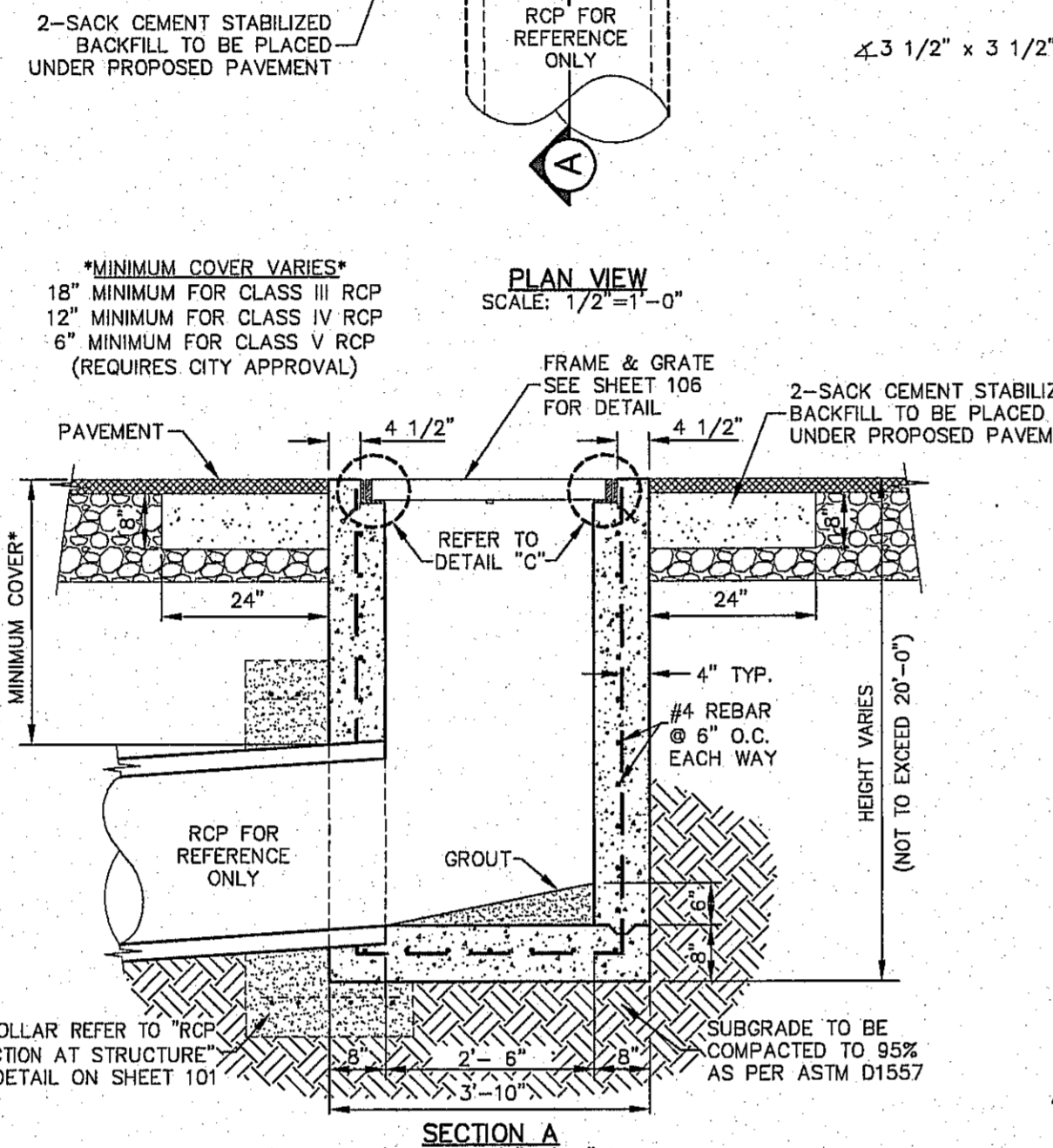
DROP INLET NOTES

1. WELDED STEEL OR CAST GRATES AS DETAILED ARE ALL ACCEPTABLE GRATES. MIXING OF ALTERNATE TYPES OF GRATES ON THE SAME PROJECT WILL BE PERMITTED WITH THE APPROVAL OF THE CITY ENGINEER.
2. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARD SPECIFICATIONS.
3. SHARP EDGES RESULTING FROM FABRICATION SHALL BE DULLED BY ANY ACCEPTABLE METHOD FOR SAFETY AND HANDLING.
4. GRATES SHALL BE INSTALLED IN FRAME WITH FLOW ARROW POINTING DOWNSTREAM OR TOWARD THE LOW POINT IN A SUMP.
5. WELDED GRATES SHALL BE STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M-183 OR OF CORROSION RESISTANT STRUCTURAL STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M-161 OR M-222 OR BE MADE OF OTHER APPROVED STEELS OF EQUAL QUALITY. MIXING GRATES OF STEEL ON THE SAME GRATE WILL NOT BE PERMITTED.
6. GRATES MADE OF M-183 STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M-111 SPECIFICATIONS OR SHALL BE PAINTED WITH INORGANIC ZINC PAINTS, MEETING THE REQUIREMENTS OF CURRENT STANDARD SPECIFICATIONS.
7. ALL WELDS SHALL BE A MINIMUM OF 1/4" FILLET AND SHALL CONFORM TO THE SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND TO THE AWS STRUCTURAL WELDING CODE. ELECTRODES SHALL BE COMPATIBLE TO THE DIFFERENT GRADES OF STEEL THAT COMPRISE THE GRATE MEMBERS.
8. CAST GRATES SHALL BE CAST STEEL CONFORMING TO THE REQUIREMENTS OF AASHTO M-103, GRADE 85-35 OR OF DUCTILE IRON CONFORMING TO THE REQUIREMENTS OF ASTM A-536, SPECIAL GRADE 60-45, OR OF GRAY IRON CONFORMING TO THE REQUIREMENTS OF AASHTO M-105, CLASS 35B OR ASTM A-48 CLASS 35B. THE SPECIFICATIONS OF GENERAL APPLICATION FOR CAST STEEL GRATES SHALL BE AASHTO M-103 SCOPE 1.2.1, GRADE N-1.
9. FERROUS CASTINGS SHALL BE OF UNIFORM QUALITY, FREE OF BLOWHOLES, POROSITY, HARD SPOTS, SHRINKAGE DISTORTION OR OTHER DEFECTS. THEY SHALL BE SMOOTH AND WELL CLEANED BY SHOT BLASTING OR OTHER APPROVED CLEANING METHOD. AFTER CLEANING THEY SHALL BE COATED WITH ASPHALT BASE PAINT RESULTING IN A SMOOTH COATING, TOUGH AND TENACIOUS WHEN COLD, NOT TACKY NOR BRITTLE.
10. ALL CASTINGS SHALL BE MANUFACTURED TRUE TO PATTERN. COMPONENT PARTS SHALL FIT TOGETHER IN A SATISFACTORY MANNER.
11. ALL CONCRETE TO BE 3000 p.s.i. CHAMFER ALL EXPOSED EDGES 3/4". ALL DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTER OF BARS.
12. MINIMUM CONCRETE COVER SHALL BE 1 1/2" FOR STEEL REINFORCING.
13. EXPANSION MATERIAL TO BE 1/2" BITUMINOUS FIBER AND TO BE PLACED WHERE PROPOSED CONCRETE COMES IN CONTACT WITH ANY EXISTING OR PROPOSED CONCRETE OR MASONRY STRUCTURE.
14. STRUCTURAL STEEL SHALL BE SHOP PAINTED IN ACCORDANCE WITH T.H.D. ITEM 446 "PAINT AND PAINTING".
15. SURFACE OF ALL EXPOSED CONCRETE SHALL CONFORM IN SLOPE AND GRADE TO EXISTING OR PROPOSED CURB AND WALK ADJACENT TO INLETS.
16. ALL REINFORCING BARS TO BE # 4 BARS AT 6" O.C. (UNLESS NOTED OTHERWISE) GRADE 60. BEND BARS AROUND PIPE OPENINGS.
17. INLETS TO BE DESIGNATED IN PLANS BY NUMBER OF GRATES REQUIRED.
18. LOCATION OF SEWER PIPES SHOWN ELSEWHERE IN PLANS.
19. 2 - 3/8" DIA. x 4" LONG CONC. ANCHOR STUDS REQUIRED FOR EACH SIDE OF FRAME, WHERE RESTING ON CONCRETE, USE NELSON STUDS OR EQUAL.
20. THE GRATES OF ALL INLETS WITHIN THE STREET PAVEMENT MUST BE CONSTRUCTED WITH THE GRATE BARS PERPENDICULAR TO THE CURB.
21. EXCAVATION WHICH WILL EXCEED FIVE (5) FEET IN DEPTH SHALL PROVIDE FOR TRENCH SAFETY AS PER OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) GUIDELINES.

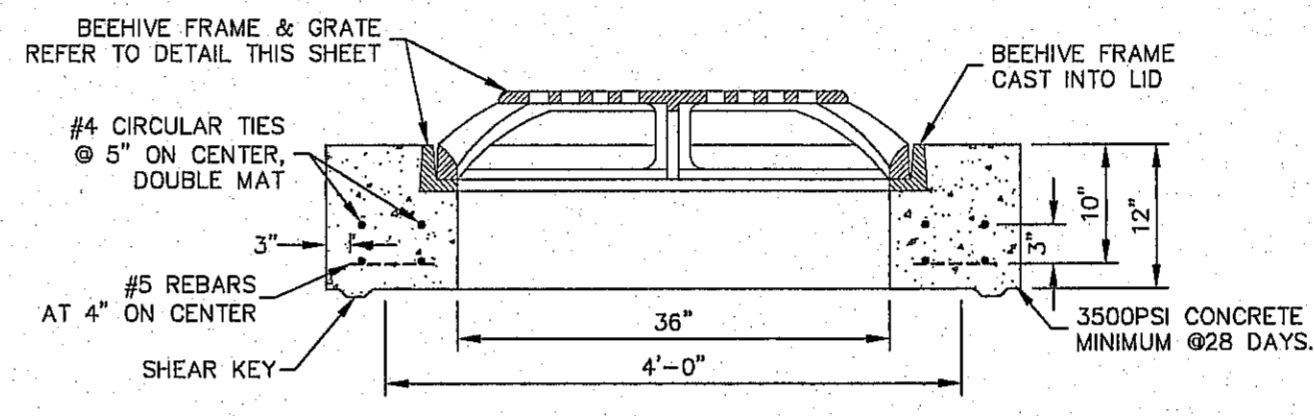
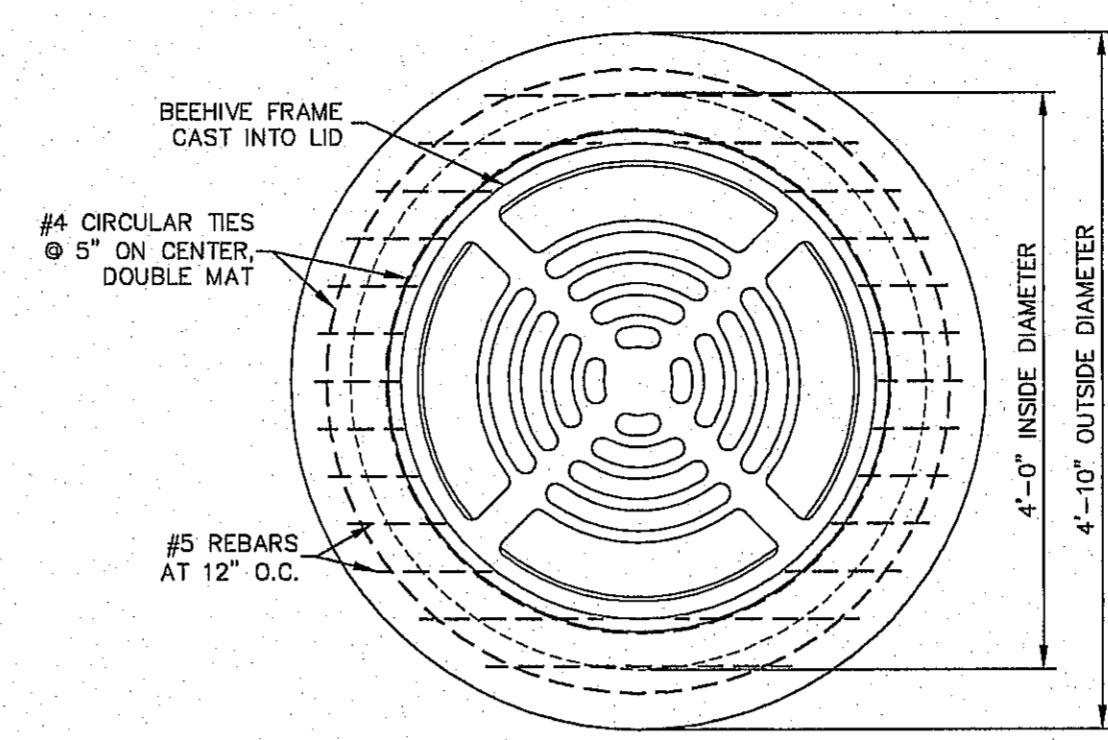


NUMBER OF GRATES	1'
2	5'-2 1/4"
3	7'-1 7/8"
4	9'-1 1/2"
5	11'-1 1/8"

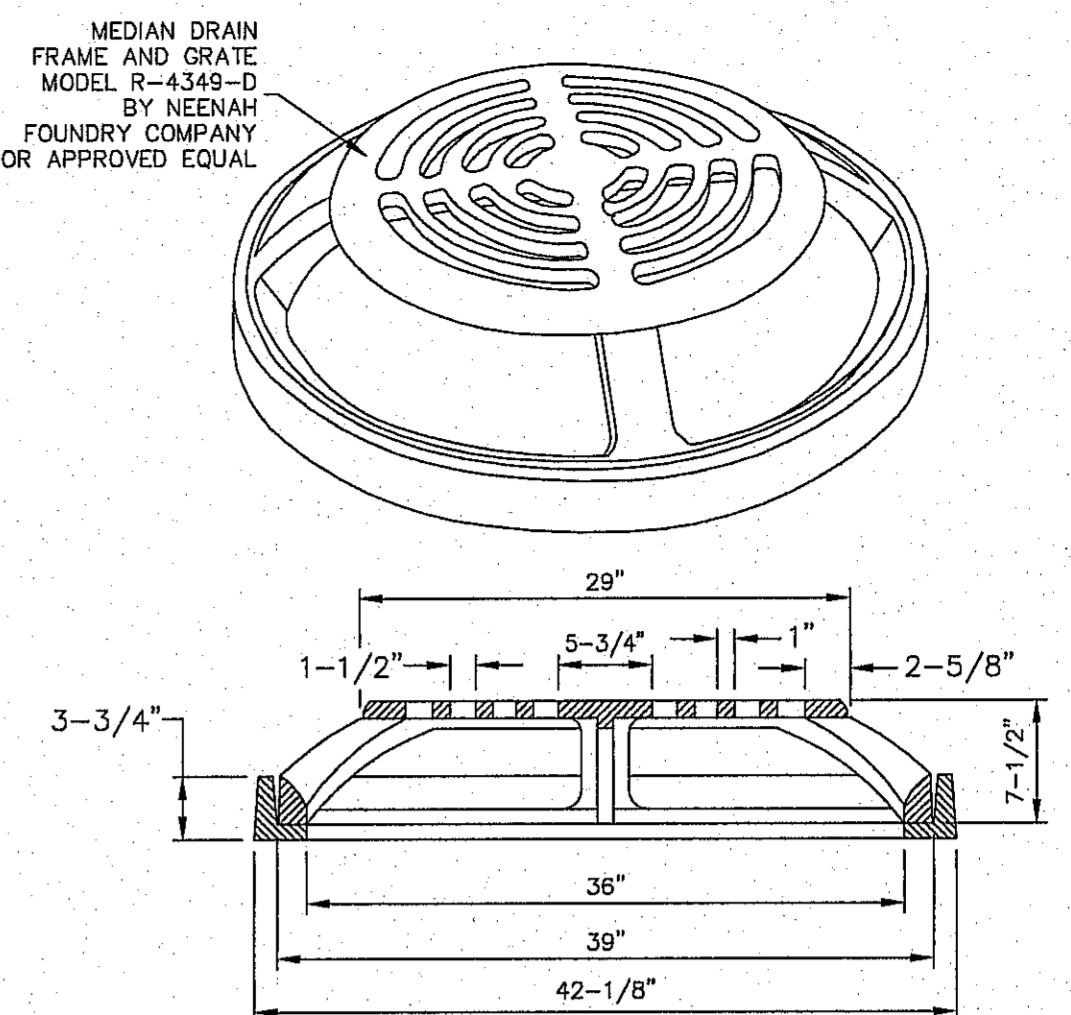
- NOTES**
1. HEIGHT SHALL NOT EXCEED 20'-0"
 2. CONCRETE TO BE 3000 PSI MIN. CORE TEST @ 28 DAYS.
 3. GRATE TO BE INSTALLED PERPENDICULAR TO FLOW OF TRAFFIC.
 4. INLET BOXES IN EXCESS OF 12'-0" SHOULD NOT BE ATTEMPTED IN ONE POUR. A MINIMUM OF 72 HOURS SHOULD PASS BEFORE REMOVING FORMS AND REBAR SHOULD BE LEFT LONG A MINIMUM OF 12" AND TIED.



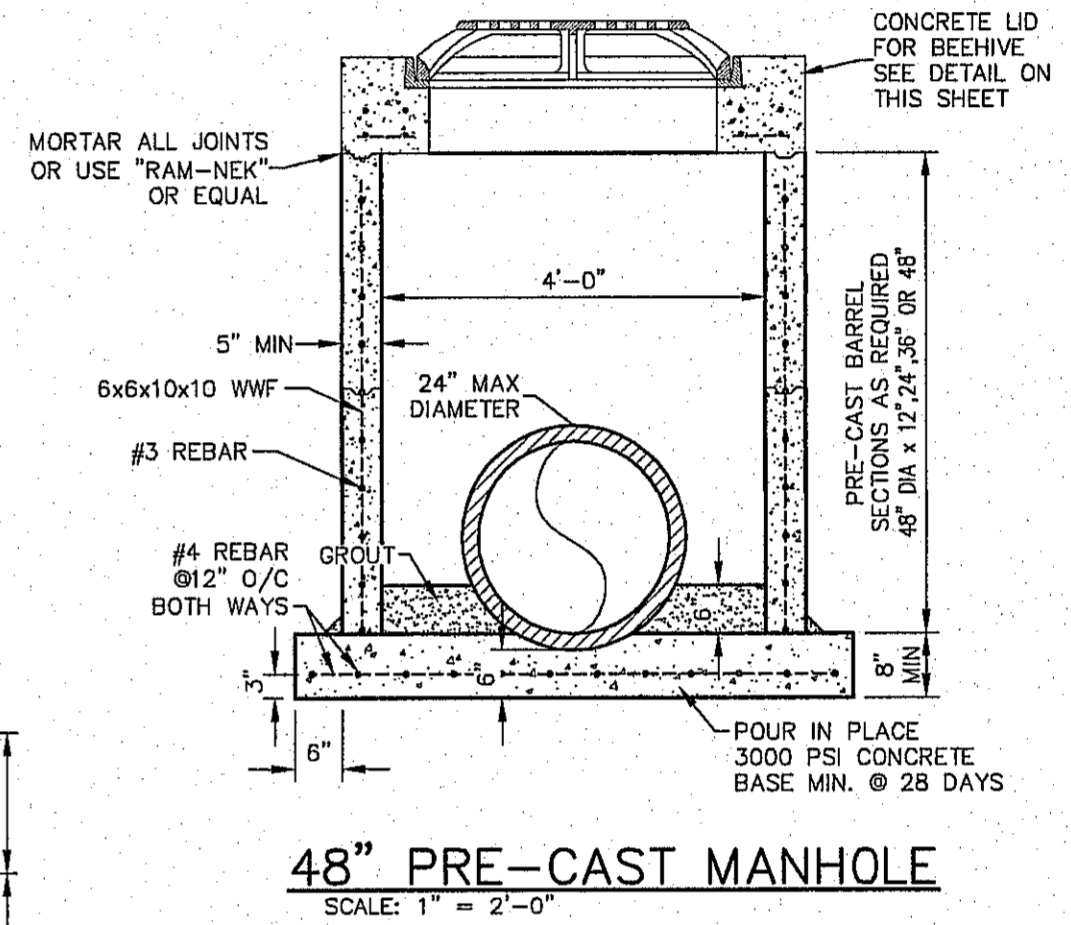
DROP INLET TYPE III
SCALE: AS NOTED



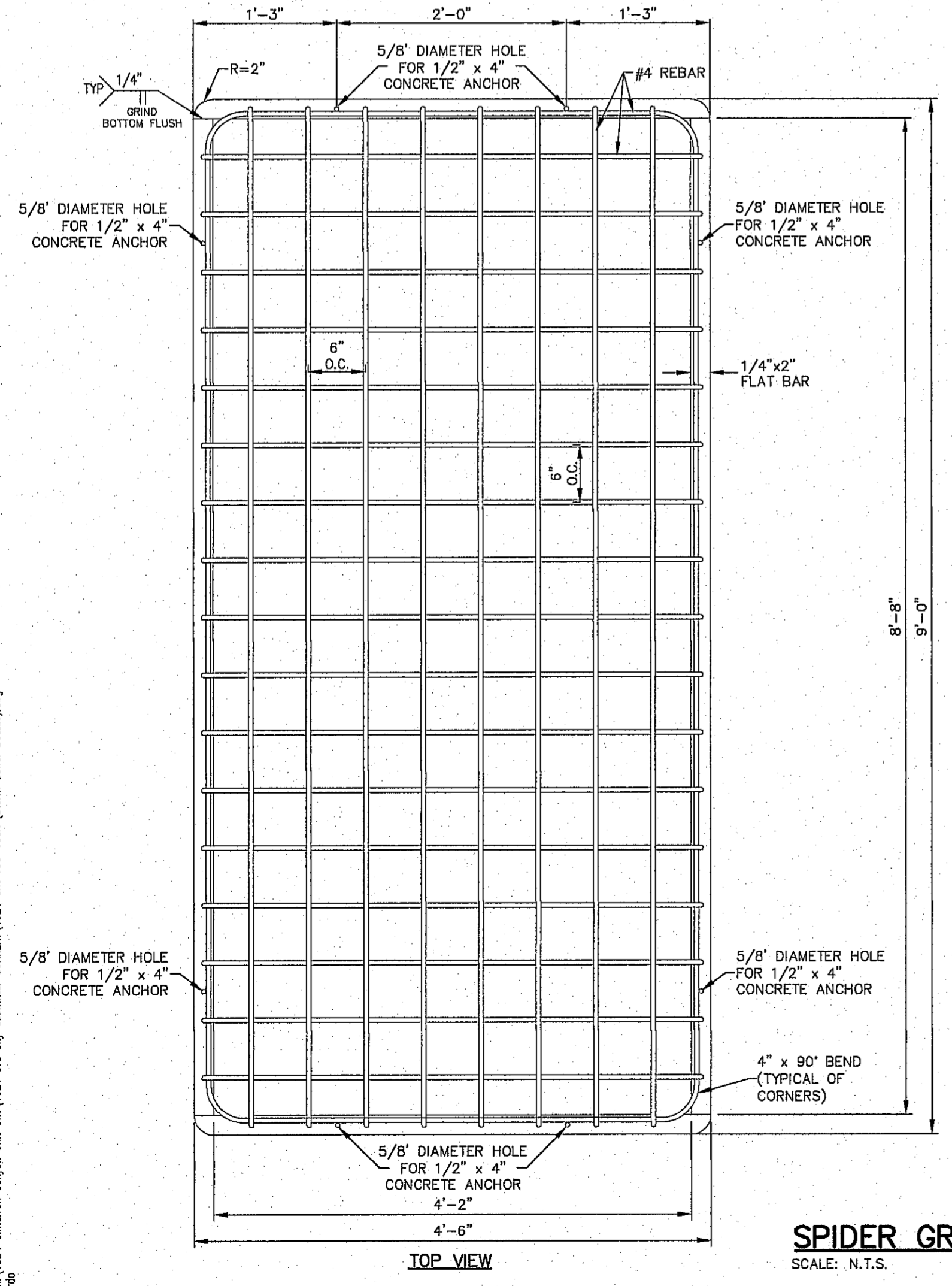
48" MANHOLE LID FOR BEEHIVE FRAME AND GRATE INLET
SCALE: 3/4" = 1'-0"



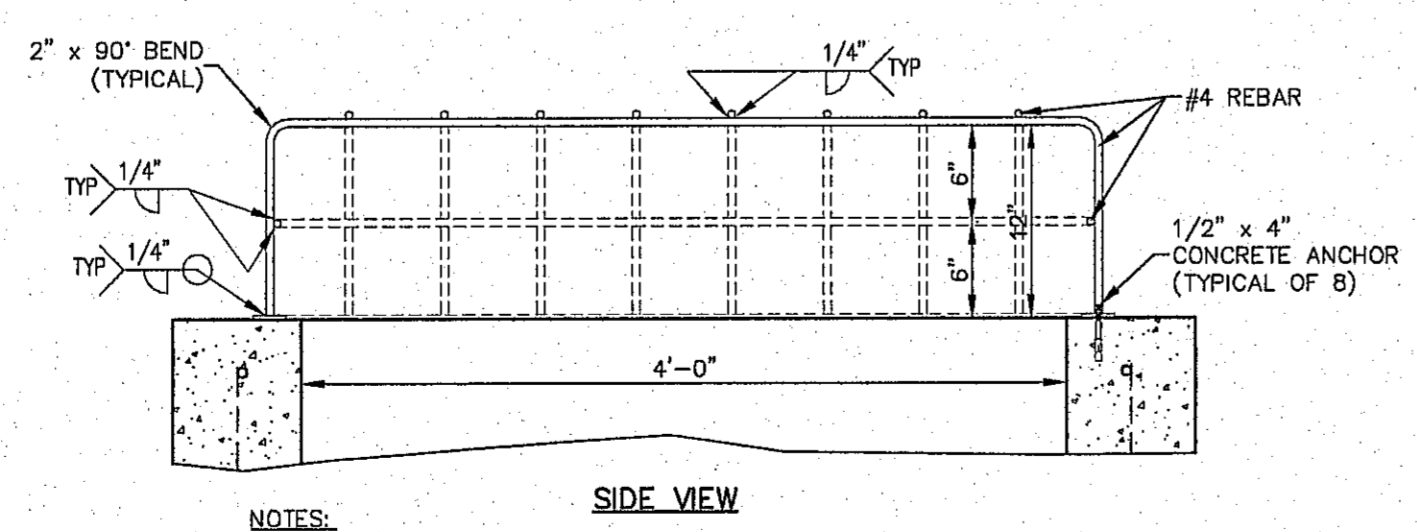
BEEHIVE FRAME AND GRATE
NTS



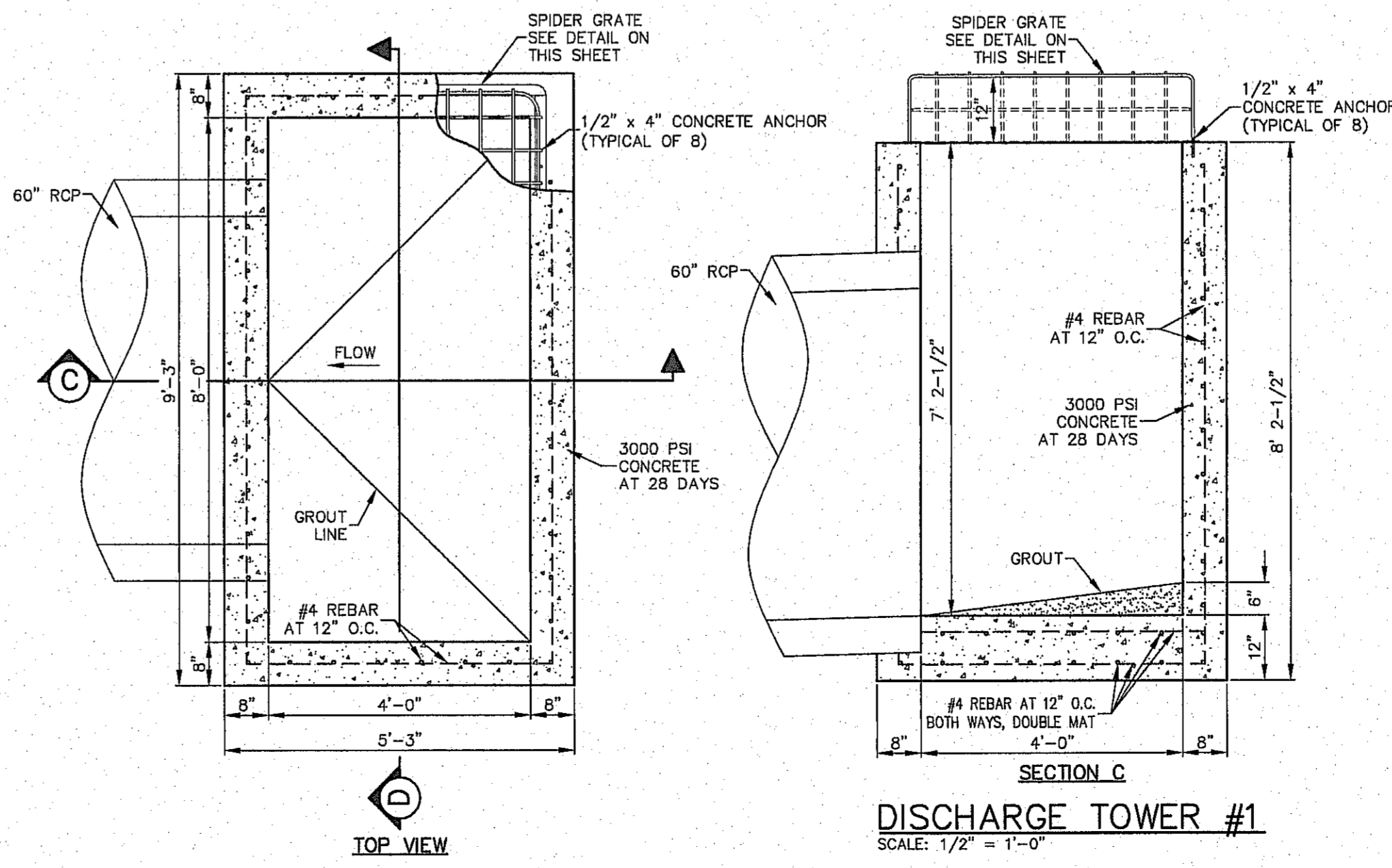
48" PRE-CAST MANHOLE
SCALE: 1" = 2'-0"



SPIDER GRATE
SCALE: N.T.S.



- NOTES**
1. SPIDER GRATE SHALL BE MOUNTED USING 1/2" CONCRETE ANCHOR BOLTS.
 2. ALL STEEL SHALL BE FREE OF SCALE AND RUST.
 3. ALL WELDS SHALL BE FREE OF SLAG AND PITS.
 4. SHOP PAINT WITH A RUST PROHIBITIVE OIL BASED PRIMER, RED OXIDE.
 5. CONTRACTOR SHALL BUILD SPIDER GRATE WITH LOCKING MECHANISMS TO INCLUDE HINGES, LOCKS, AND HASP.



DISCHARGE TOWER #1
SCALE: 1/2" = 1'-0"

CATALOG NUMBER	GRATE TYPE	MANHOLE #	DIMENSIONS IN INCHES							FRAME/LID NUMBER	SQ. FT. OPEN	WEIR PERIMETER LINEAL FEET
			A	B	C	E	F	G				
R-2560-E2	BEEHIVE	17, 32	25 3/4	7/8	24	35 7/16	7	9	R-1733	2.0	6.7	
R-2560-C	BEEHIVE	23, 24, 25	32	1 1/2	30	46	7	4	R-1740-B	1.5	8.4	

NEENAH R-2560 SERIES BEEHIVE COVER
N.T.S.

BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND 10TH STREET, EL PASO, TEXAS
ELEVATION = 3875.55 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitter Find	JCK
2	11/01/16	2nd City Submitter	DAE
1	9/15/16	1st City Submitter	DAE

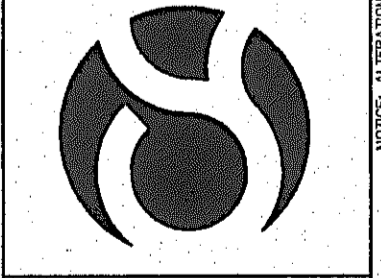
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
545-5720
544-8300
562-4411/562-2003
1-800-4DIG-TESS
EL PASO WATER (PWS)
775-7419
1-800-334-9847
EL PASO NATURAL GAS COMPANY
1-800-334-9847
1-800-427-7272
TEXAS GAS SERVICE
562-4411/562-2003
1-800-4DIG-TESS
EL PASO WATER (PWS)
775-7419
1-800-334-9847
EL PASO NATURAL GAS COMPANY
1-800-334-9847
1-800-427-7272

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the stated and project for which it was prepared. This document is not intended or authorized for reuse by any party on an extension of such project or any other project. Any reuse to include copying and/or modifying the contents of the document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

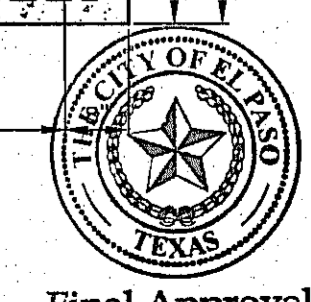
JOHN C. KARLSRUHER
REGISTERED PROFESSIONAL ENGINEER
53878
1/9/17

csa design group, inc.
Texas Registered Engineering Firm E-5997
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877.4155
tel (915) 877.4334
www.csaengineers.com

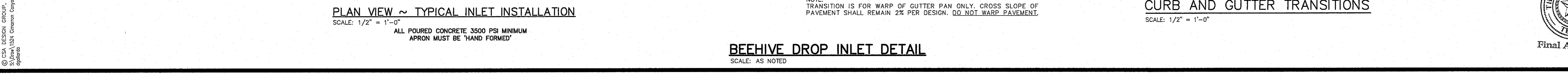
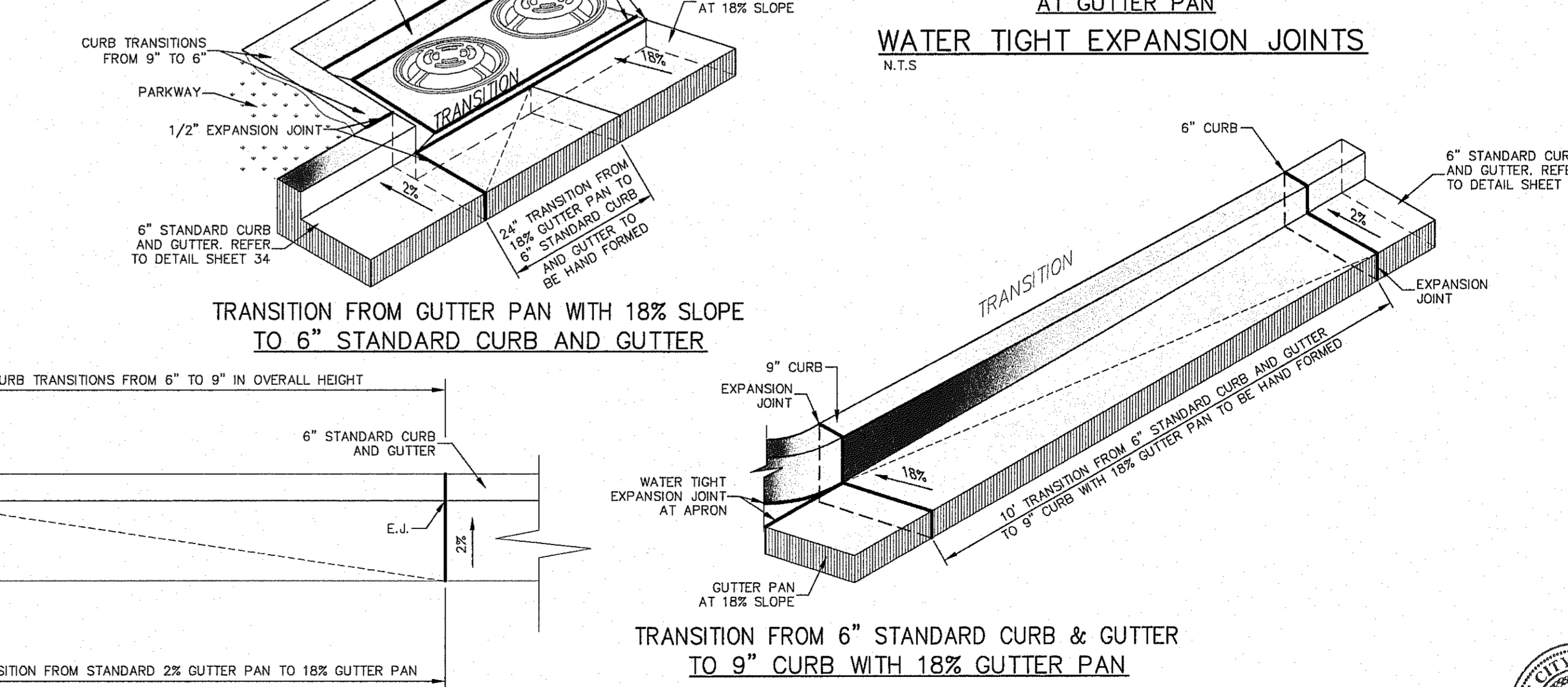
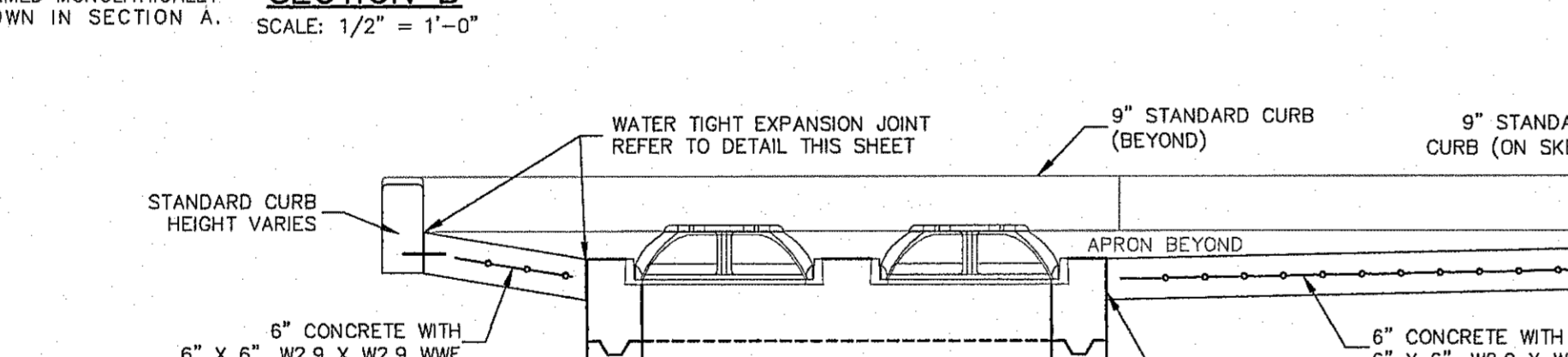
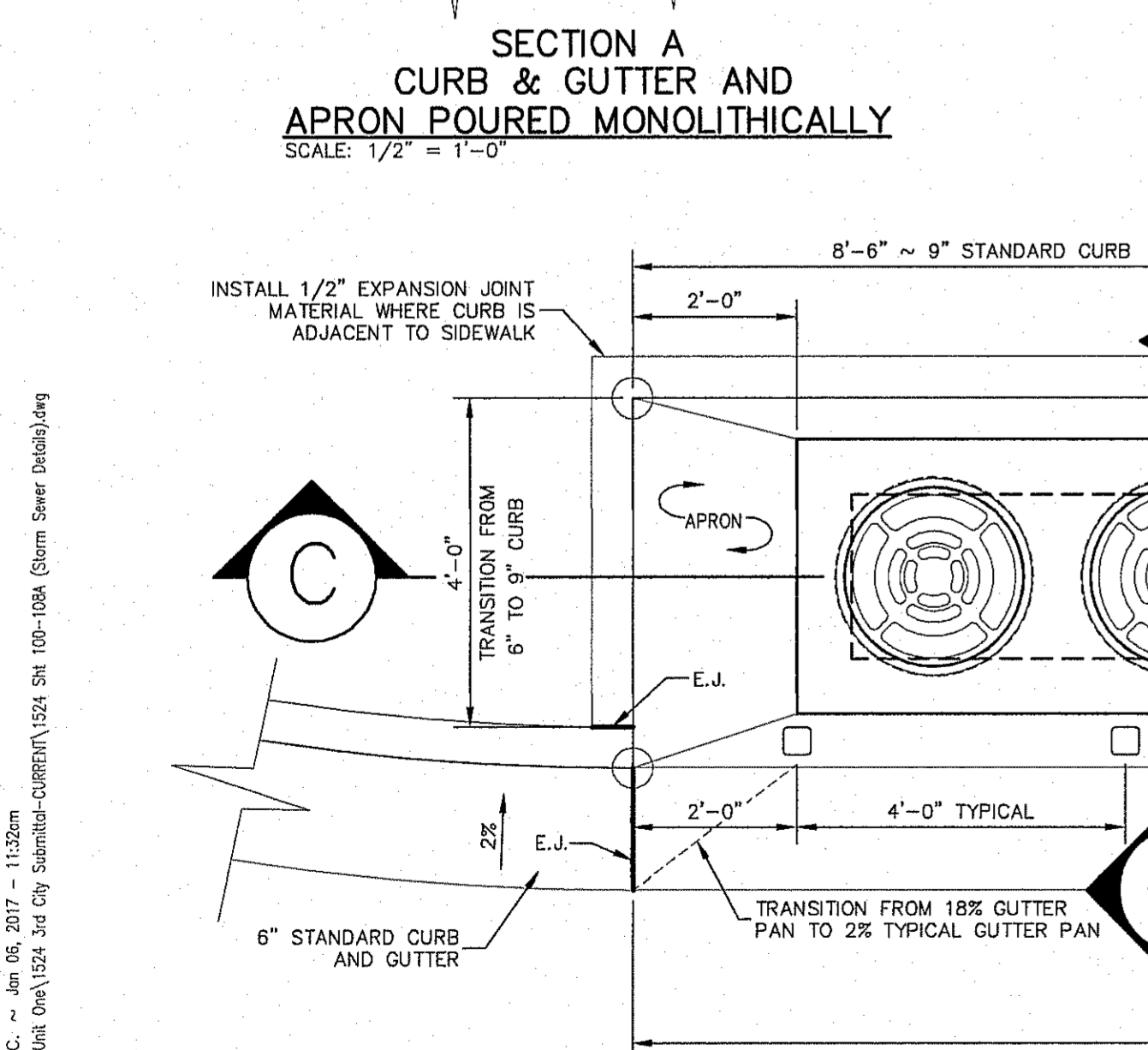
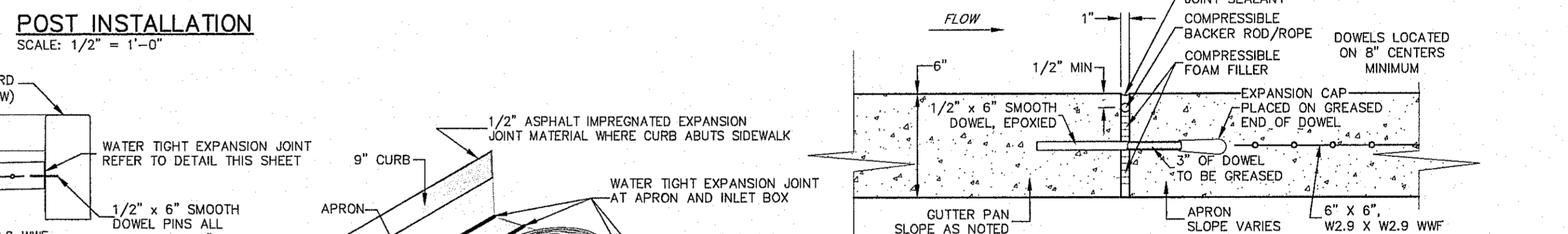
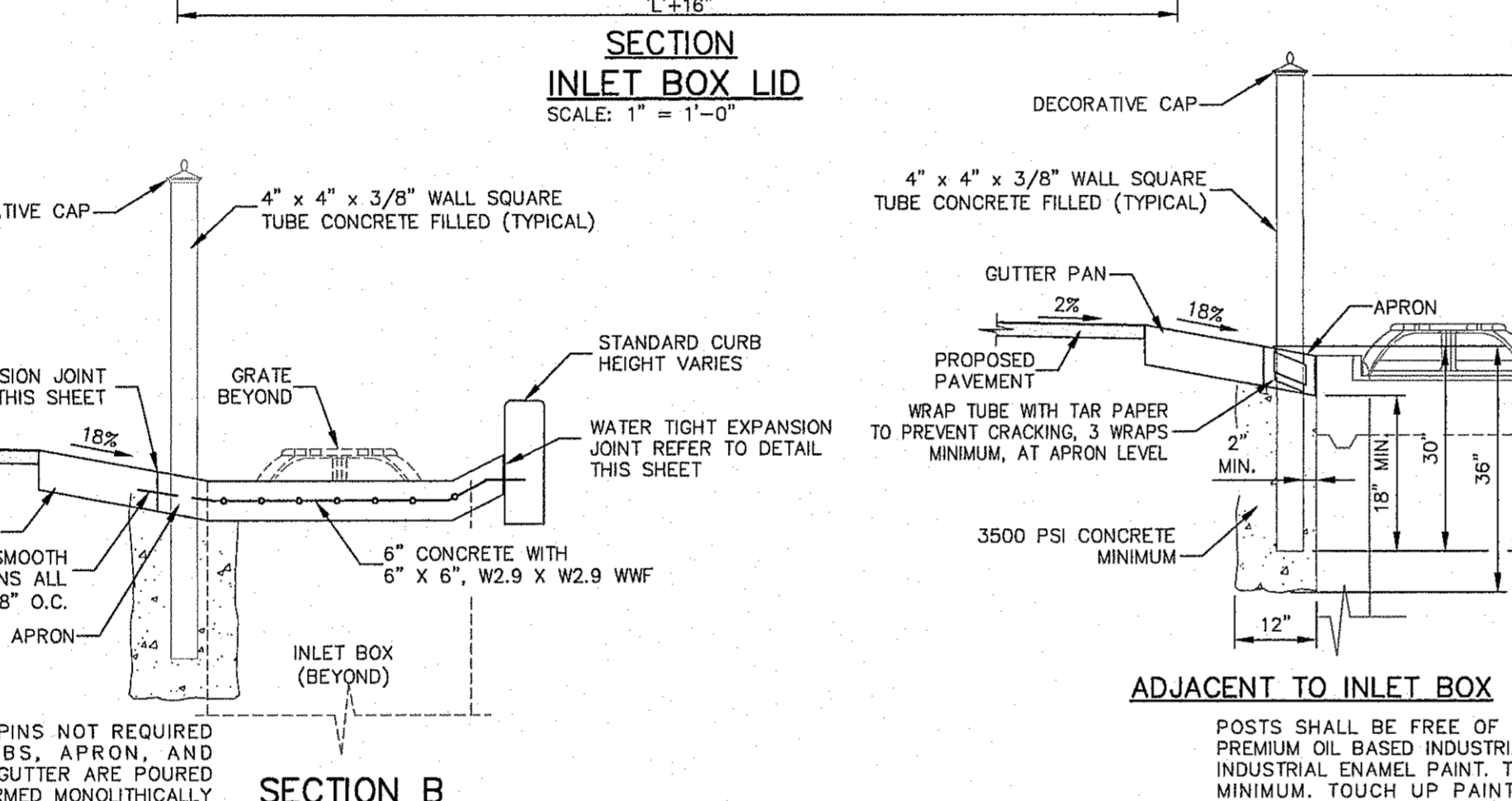
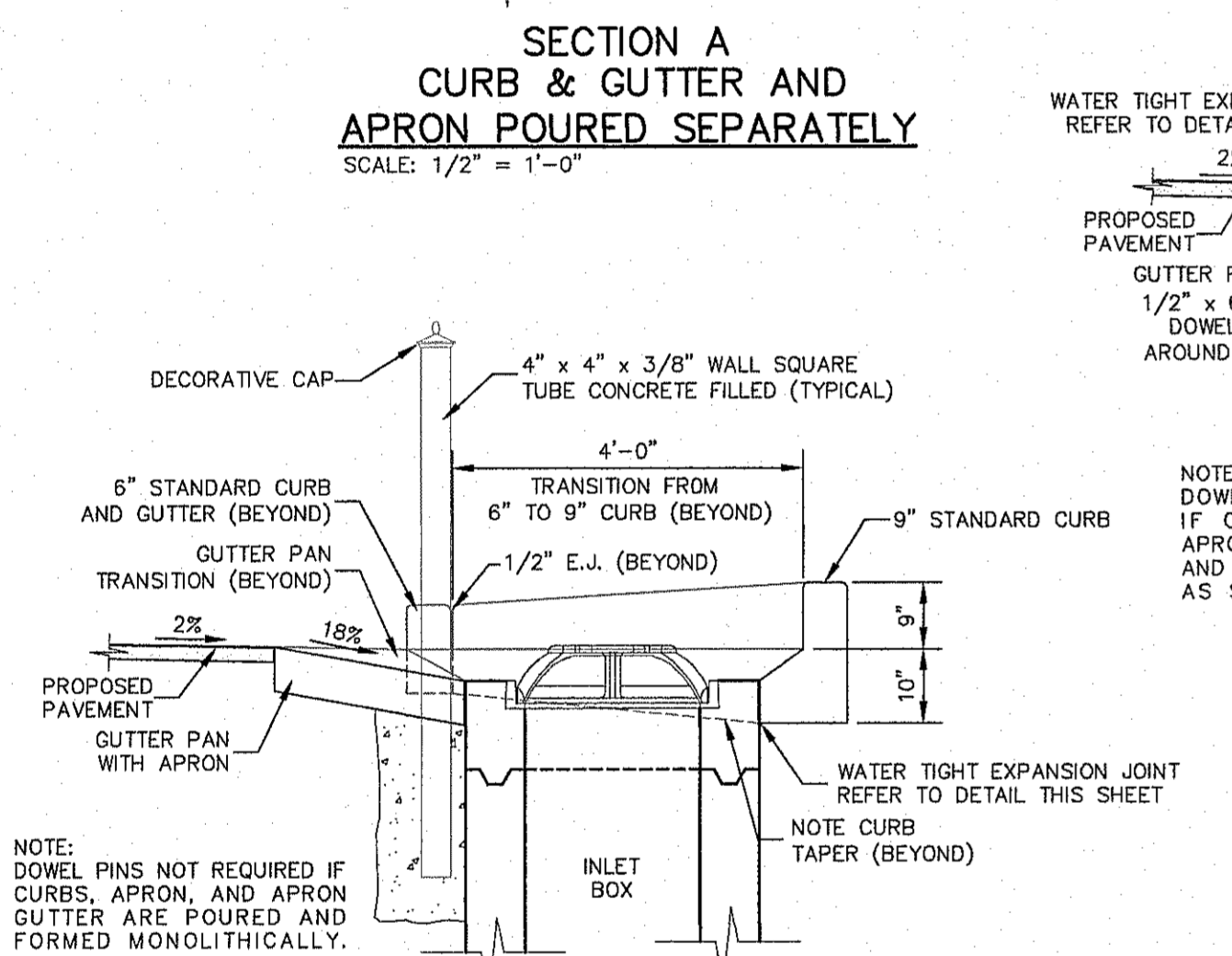
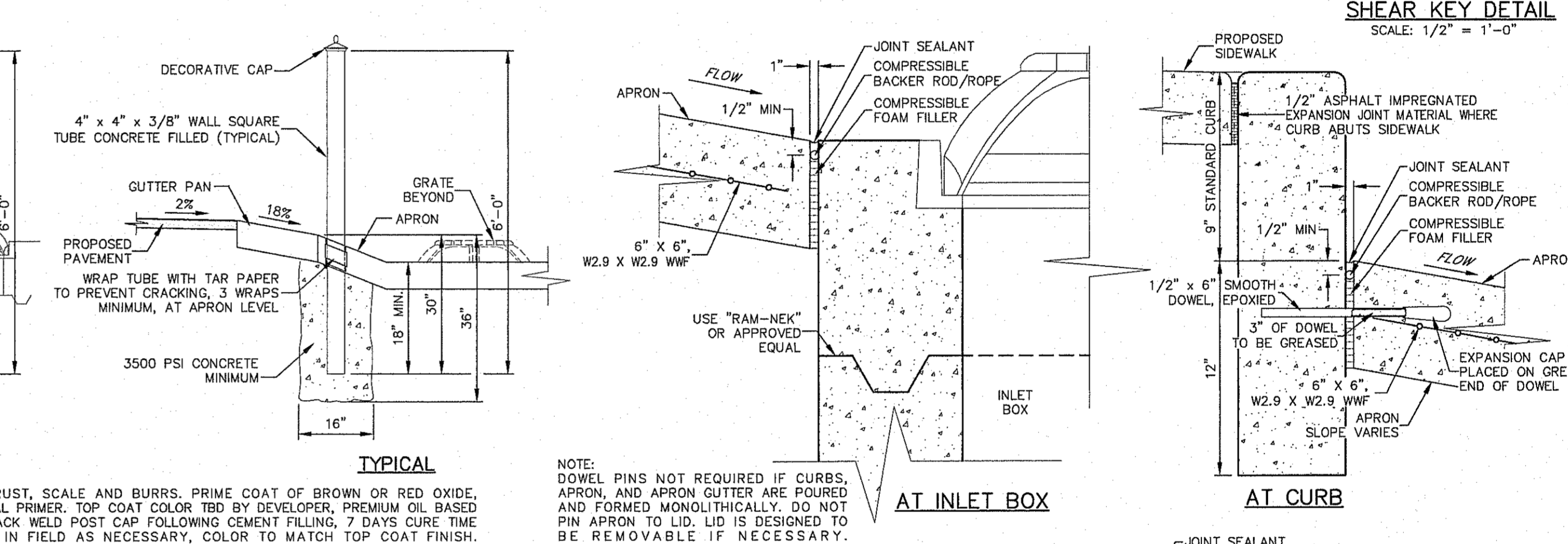
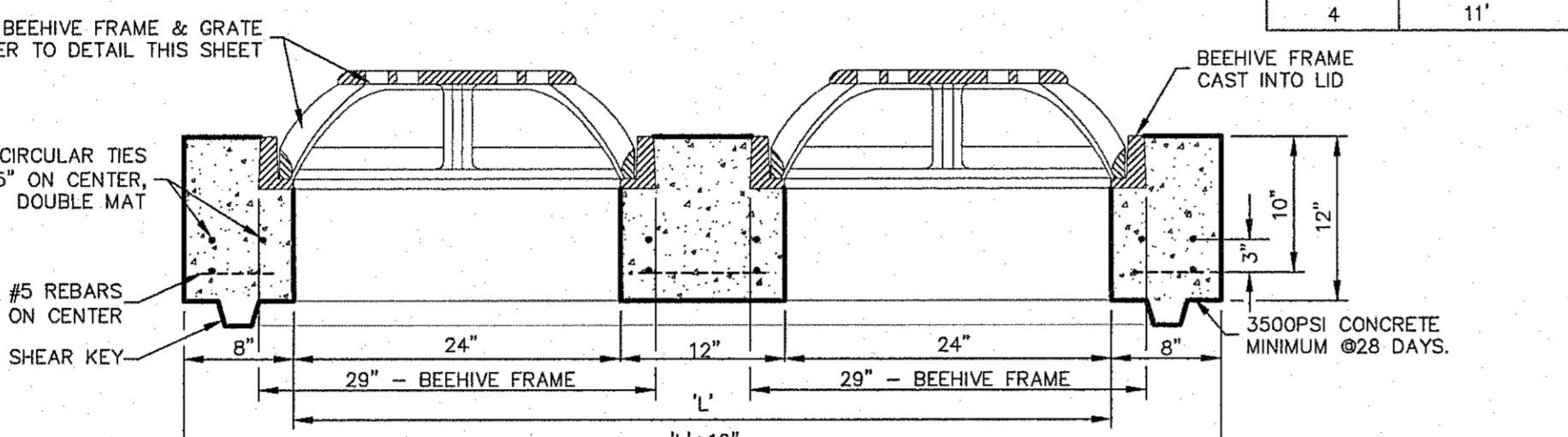
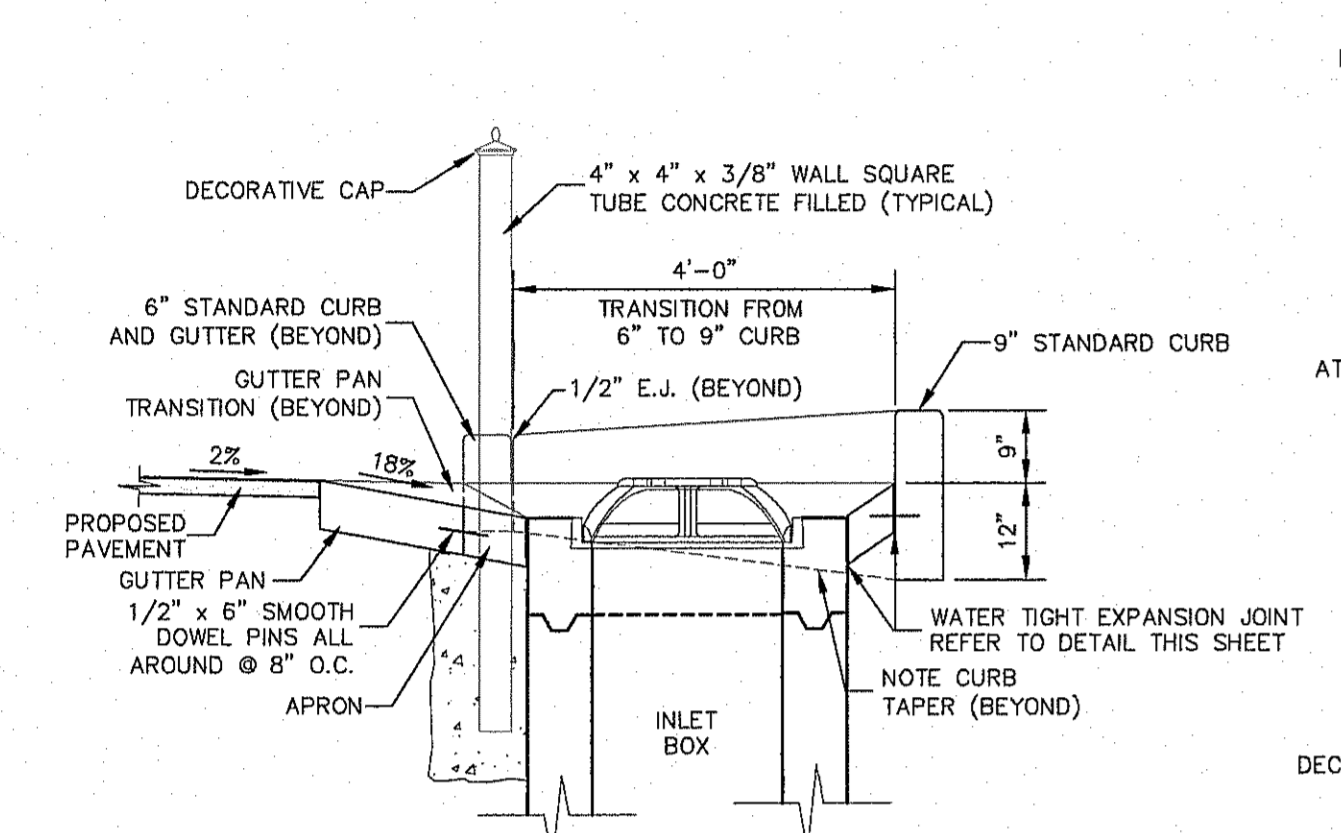
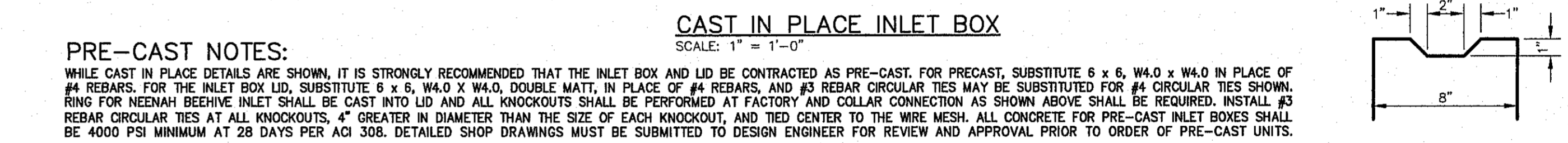
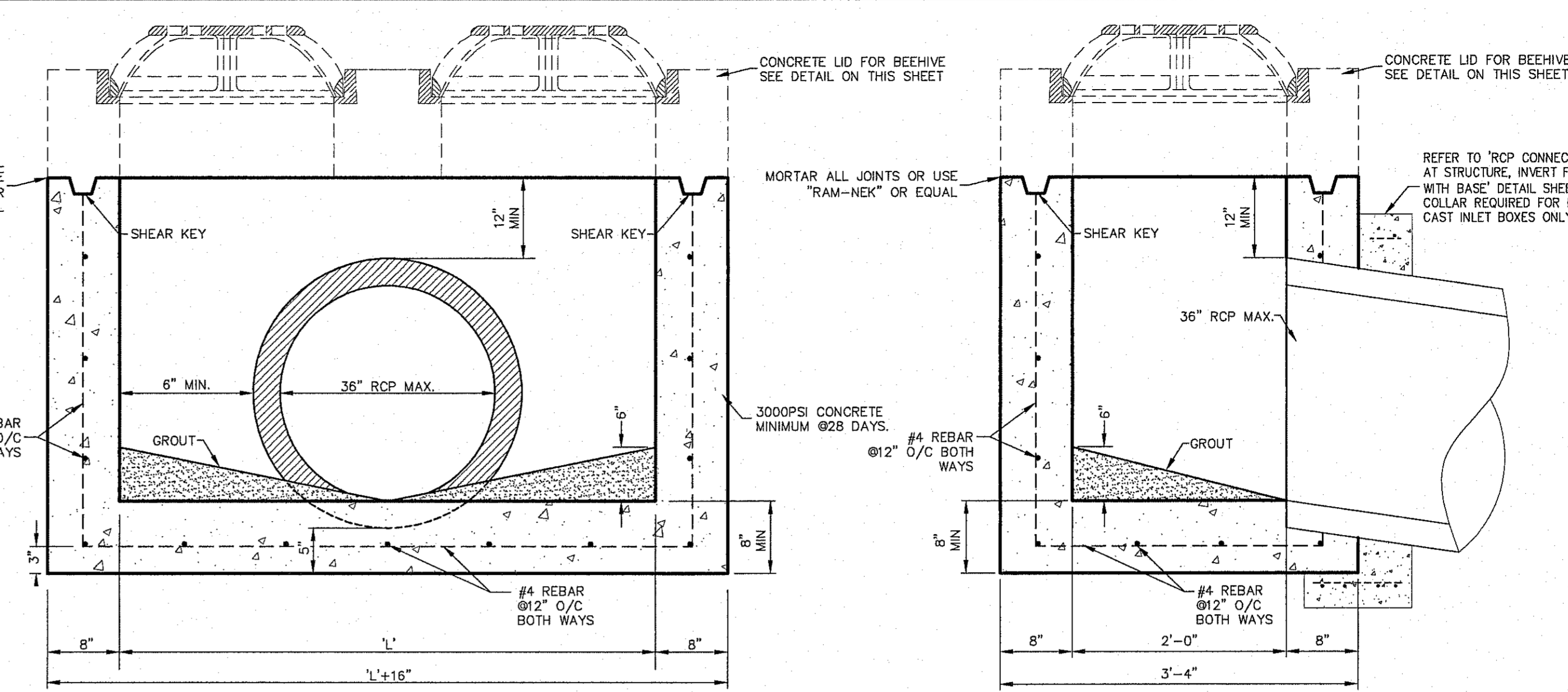
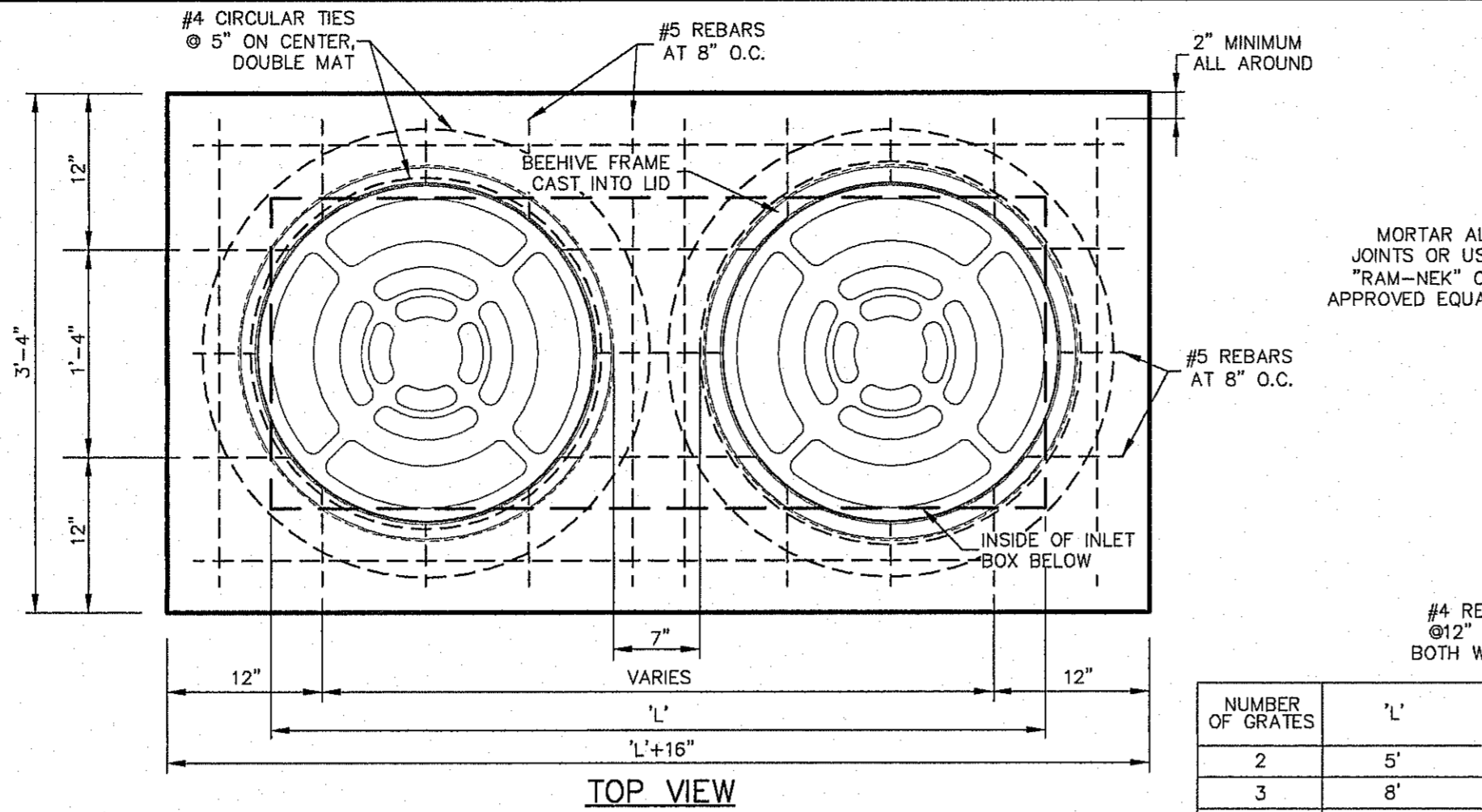
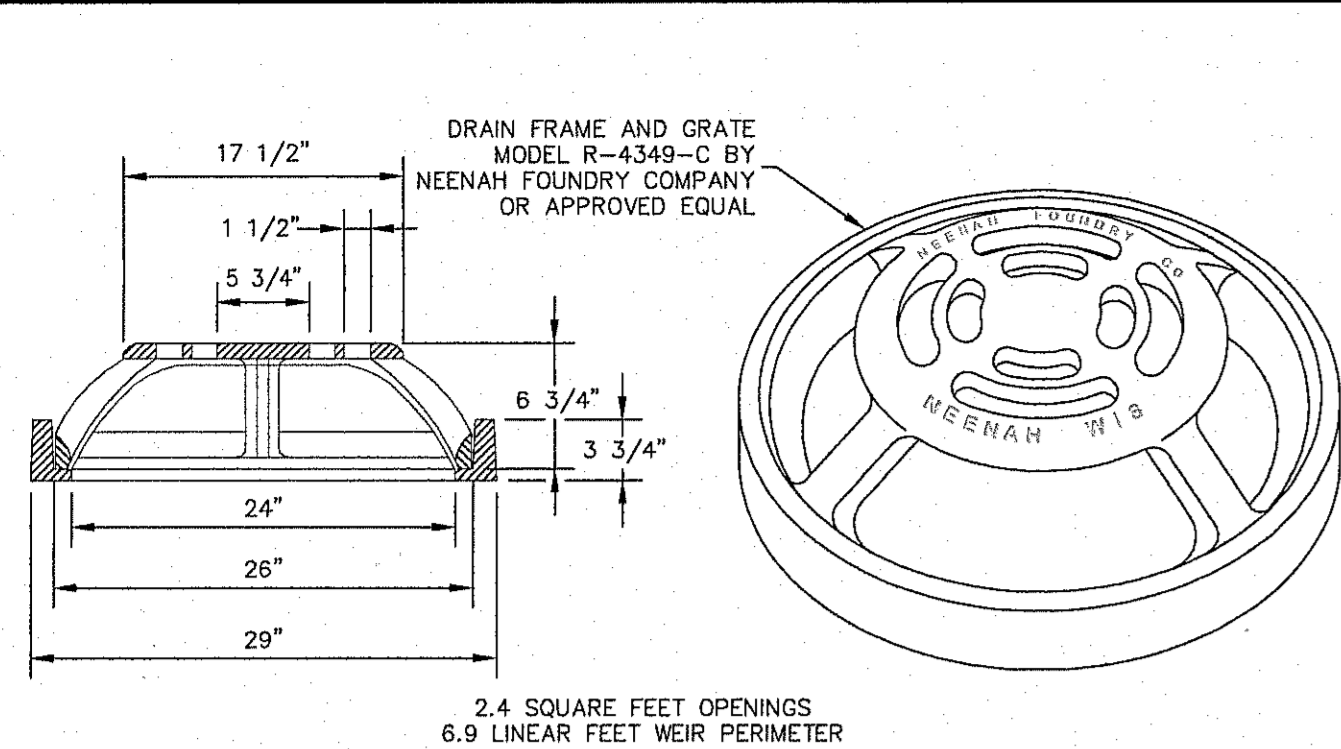


CIMARRON CANYON UNIT ONE SUBDIVISION
SHEET TITLE
STORM SEWER DETAILS

JOB NO.	1524
DESIGN BY	9/15/16
DATE	AS NOTED
SCALE	SCALE
SHEET NO.	107
TOTAL SHEETS	111 OF 131



Final Approval



ALL POURED CONCRETE 3500 PSI MINIMUM APRON MUST BE HAND FORMED

NOTE: TRANSITION IS FOR WARP OF GUTTER PAN ONLY. CROSS SLOPE OF PAVEMENT SHALL REMAIN 2% PER DESIGN. DO NOT WARP PAVEMENT.

BEEHIVE DROP INLET DETAIL
SCALE: AS NOTED

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 548-5720
EL PASO GAS SERVICE 544-9300
TEXAS GAS SERVICE 562-8411/562-2003
EL PASO WATER SERVICE 548-5720
TIME WARNER (CABLE) 775-7414
EL PASO NATURAL GAS COMPANY 1-800-334-8847
TEXAS EXCAVATION SAFETY SYSTEM (281) 487-8277

DESIGNER: csa design group, inc.
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
tel [915] 877.4155
fax [915] 877.4334
www.csaengineers.com

REGISTERED PROFESSIONAL ENGINEER
JOHN C. KARLSRUHER
53878
1/9/17

CIMARRON CANYON UNIT ONE SUBDIVISION
SHEET TITLE
STORM SEWER DETAILS

GOB 1524
DESIGN BY 1524
GOB-SM-DG 9/15/16
DRAWN BY AS NOTED
DATE 9/15/16
SCALE

NO. DATE DESCRIPTION BY
3 1/9/17 3rd City Submittal Fnd JCK
2 11/01/16 2nd City Submittal DAE
1 9/15/16 1st City Submittal DAE

108 SHEET SEQUENCE
112 OF 131

Final Approval

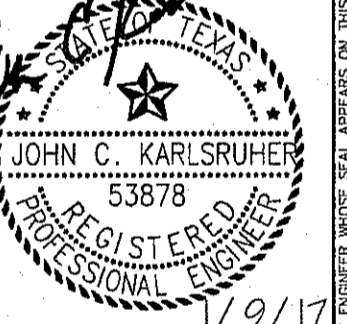
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND 3076.53 (EL PASO CITY DATUM)
ELEVATION = 3076.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUNDS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 544-8900-1233
EL PASO GAS SERVICE 544-8900
TEXAS GAS SERVICE 544-8900
TGS EMERGENCY HOTLINE 562-841/562-2003
BEFORE YOU DIG-TESS 800-333-7663
BEFORE YOU DIG-TESS 800-333-7663
TIME WARNER (CABLE) 775-7414
EL PASO NATURAL GAS COMPANY 1-800-354-8807
TEXAS EXCAVATION SAFETY SYSTEM 1-800-249-4877

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #-9877
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877.4155
fax (915) 877.4334
www.csaengineers.com

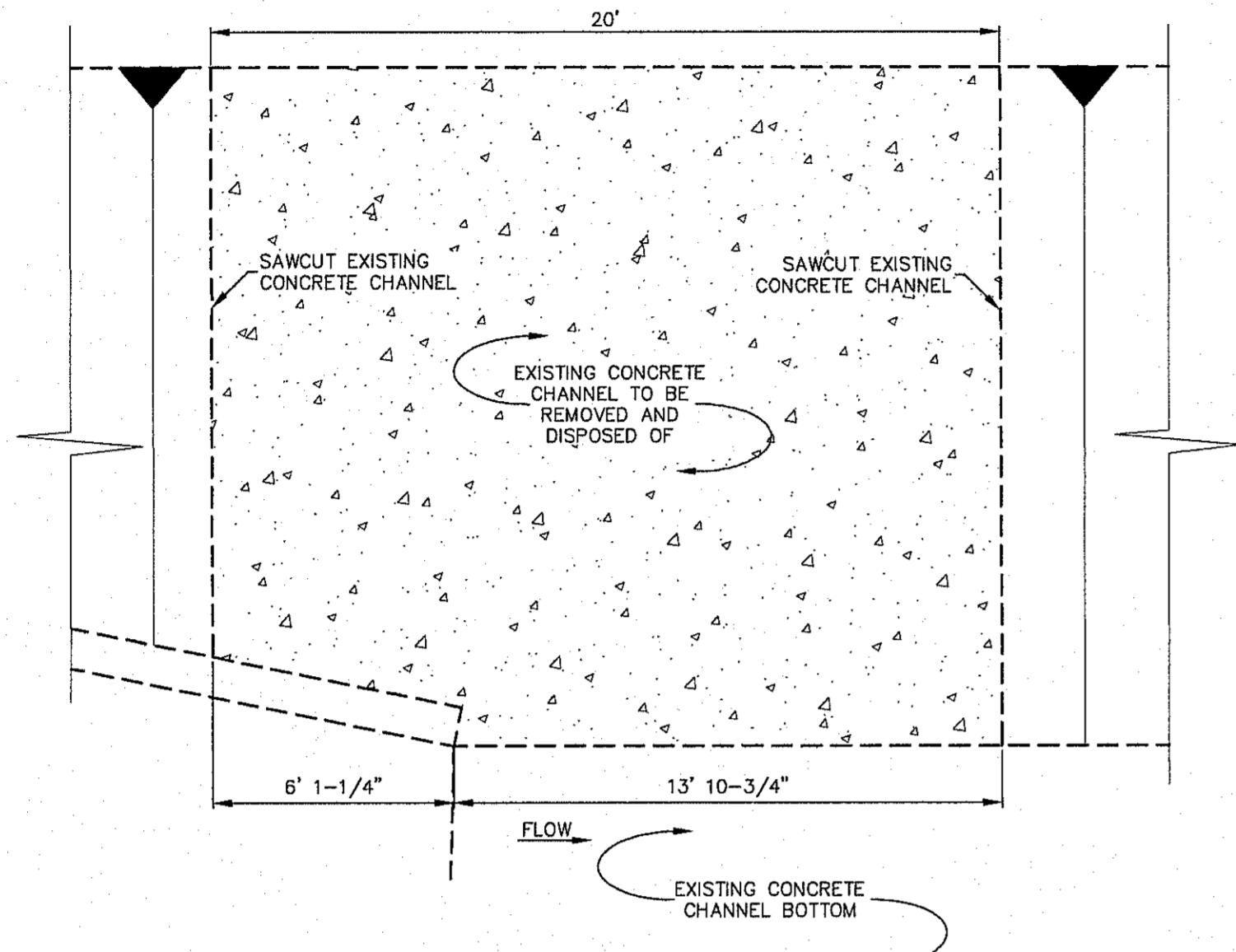


CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
**STORM
SEWER
DETAILS**

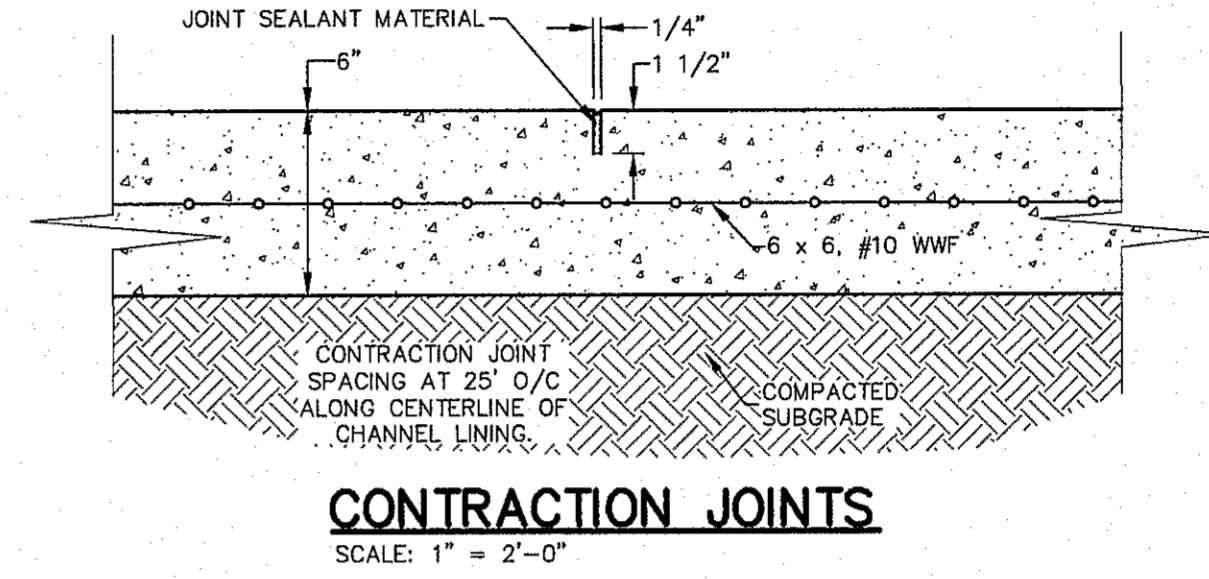
JOB NO.	1524
DESIGN BY	JCK
DATE	9/15/16
DESIGNED BY	DAE
CHECKED BY	AS NOTED

SHEET NO.
108A
SHEET SEQUENCE
113 OF **131**

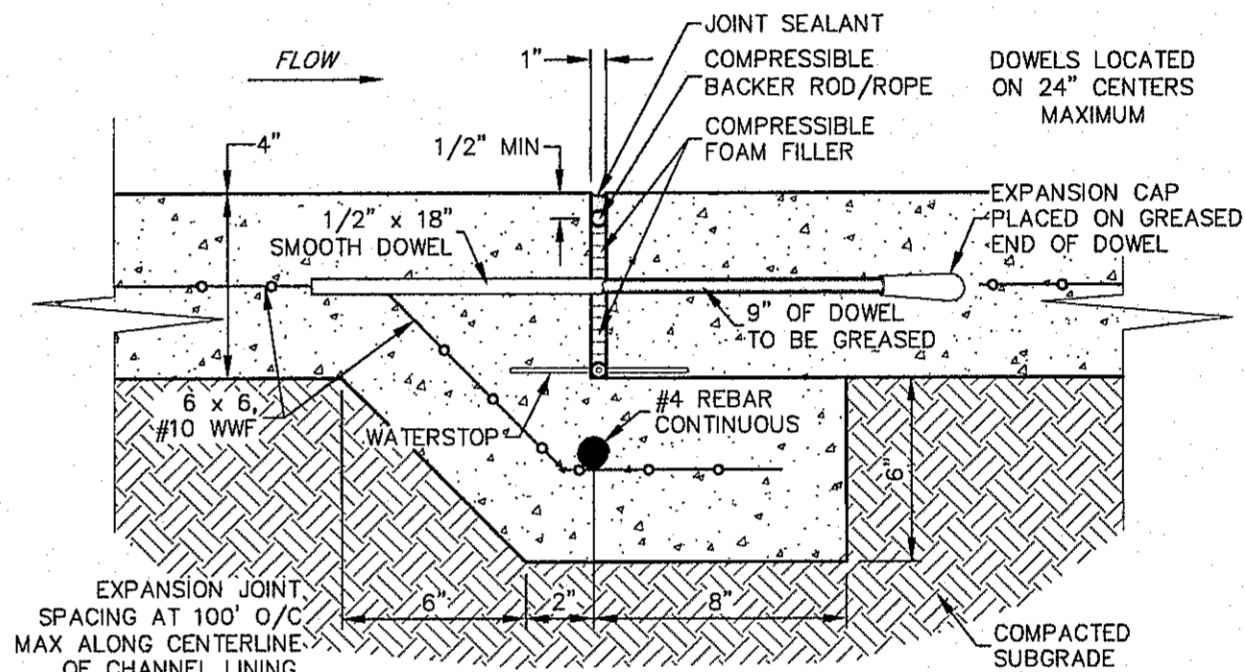


DEMOLITION OF CONCRETE CHANNEL
SCALE: 1/4" = 1'-0"

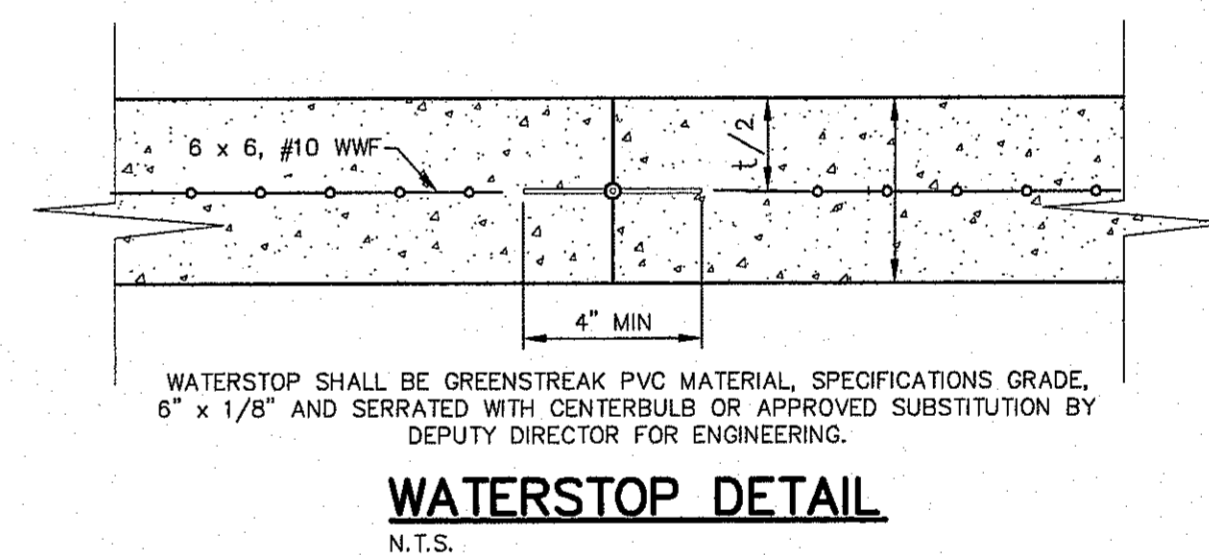
- CHANNEL COMPACTION NOTES:**
1. COMPACTION SHALL CONFORM TO ASTM D-1557.
 2. CONCRETE SHALL HAVE A SPECIFIED MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS.
 3. REINFORCING SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
 4. CONSTRUCTION JOINTS ARE REQUIRED AT END OF DAY OPERATIONS OR WHERE PAVEMENT PLACEMENT OPERATIONS ARE INTERRUPTED. CONSTRUCTION JOINTS SHALL NOT BE LOCATED LESS THAN 10 FEET FROM ANY OTHER JOINT.
 5. CONSTRUCTION JOINTS SHALL BE LOCATED AT 10 FEET ON CENTER. CONSTRUCTION JOINTS SHALL NOT BE MORE THAN 60 FEET IN LENGTH.



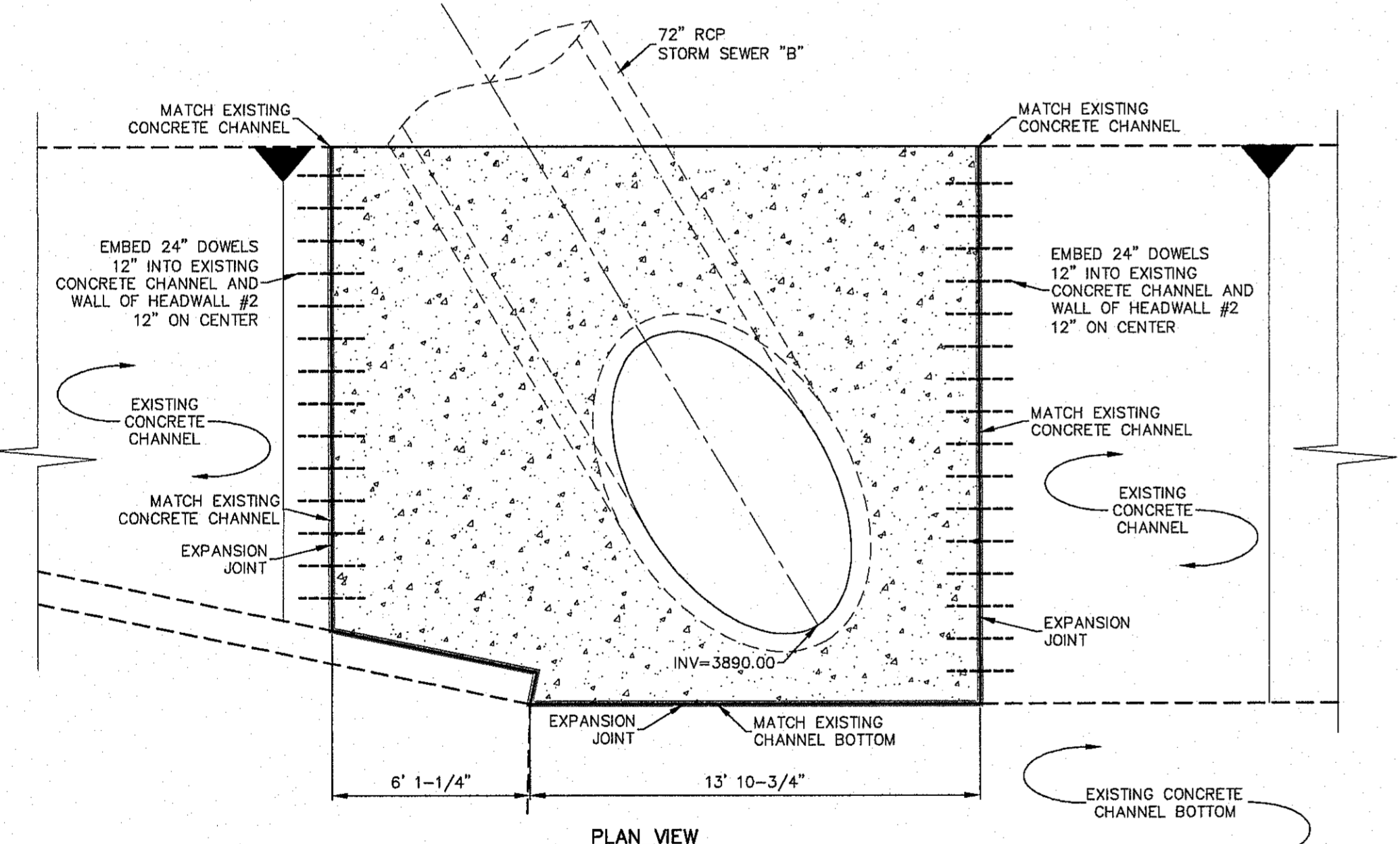
CONTRACTION JOINTS
SCALE: 1" = 2'-0"



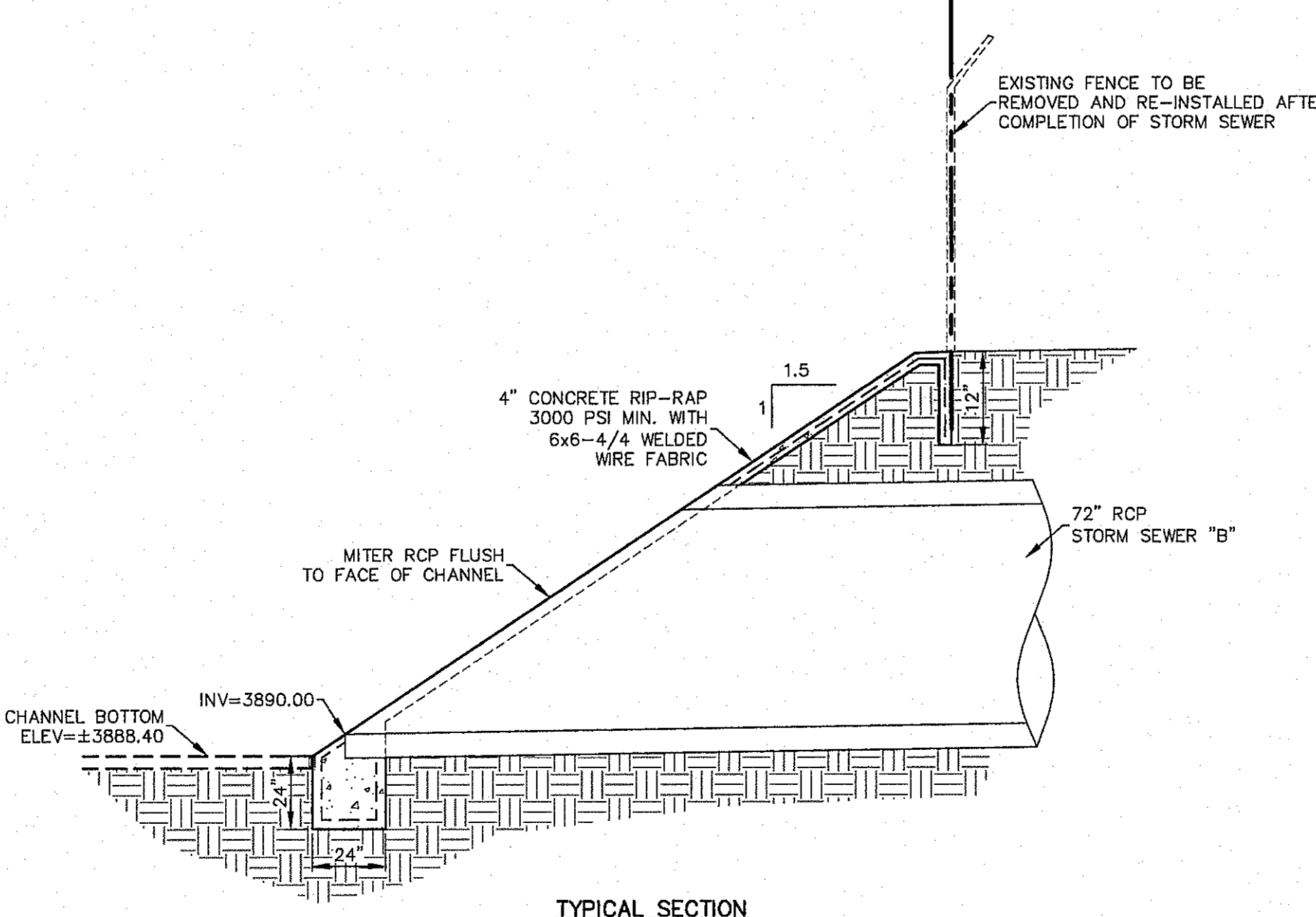
EXPANSION JOINTS
SCALE: 1" = 2'-0"



WATERSTOP DETAIL
N.T.S.



PLAN VIEW



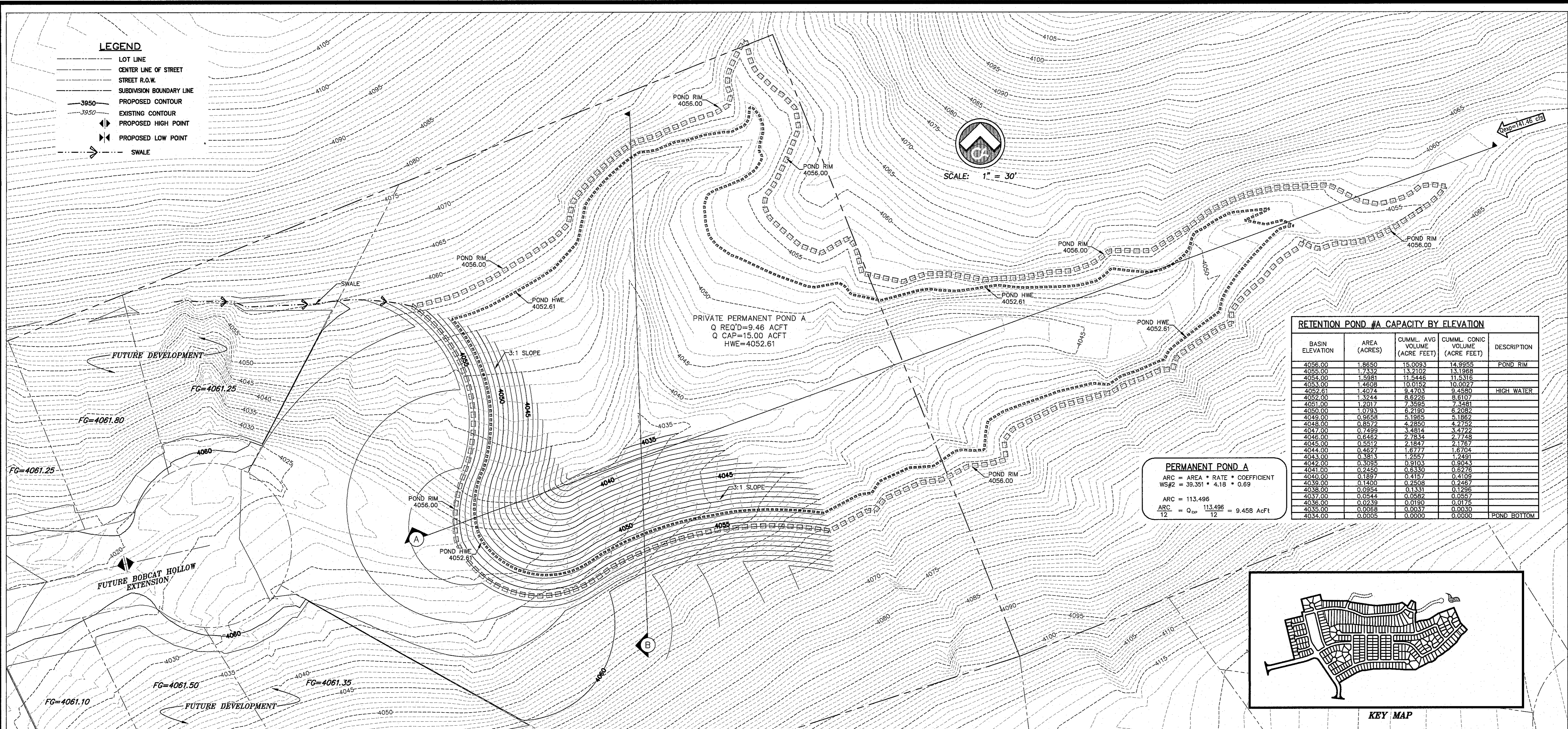
TYPICAL SECTION

INSTALLATION OF STORM SEWER "B" OUTFALL
SCALE: 1/4" = 1'-0"



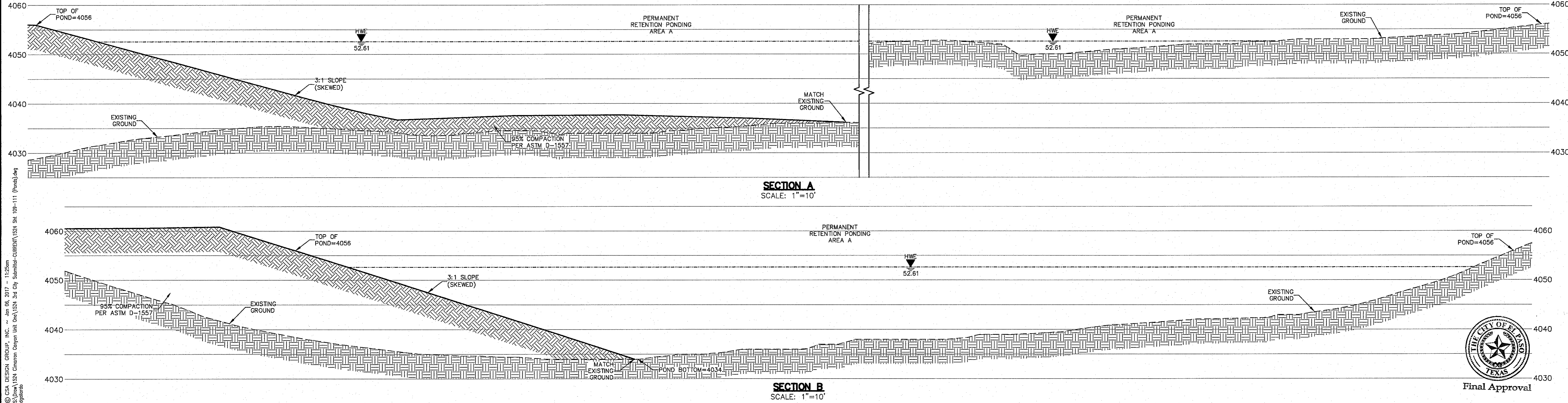
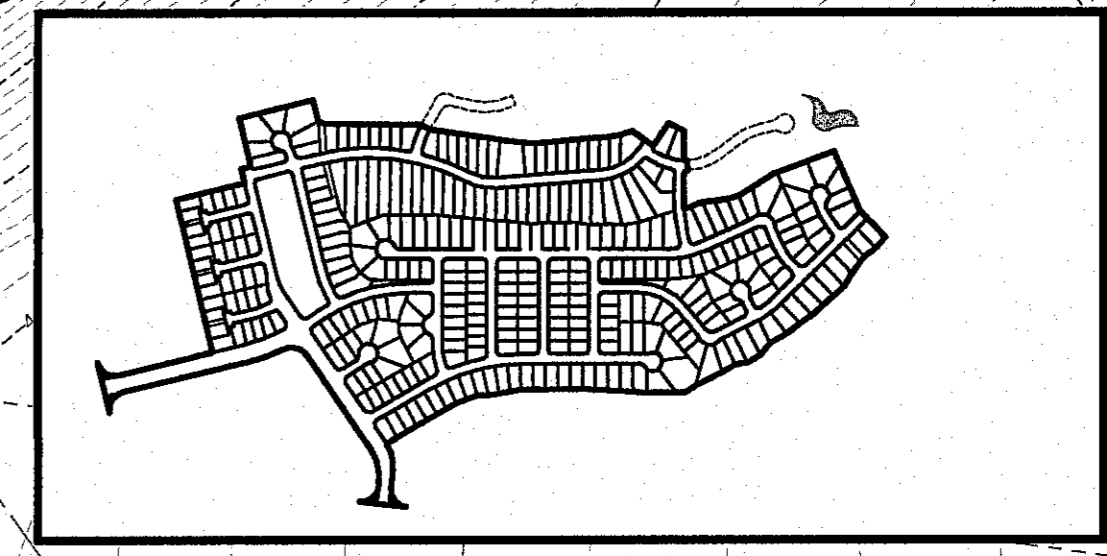
LEGEND

- LOT LINE
- CENTER LINE OF STREET
- STREET R.O.W.
- SUBDIVISION BOUNDARY LINE
- - - 3050 PROPOSED CONTOUR
- - - 3950 EXISTING CONTOUR
- ▲ PROPOSED HIGH POINT
- ▼ PROPOSED LOW POINT
- SWALE



PERMANENT POND A
 ARC = AREA * RATE * COEFFICIENT
 WS#2 = 39.351 * 4.18 * 0.69
 ARC = 113.496
 ARC = $Q_{avg} \cdot T$ = 9.458 AcFt
 12

RETENTION POND #A CAPACITY BY ELEVATION				
Basin Elevation	Area (Acres)	Cumml. Avg Volume (AcFt)	Cumml. Conic Volume (AcFt)	Description
4056.00	1.8650	15.0093	14.9955	POND RIM
4055.00	1.7437	13.2102	13.1988	
4054.00	1.5881	11.5446	11.5316	
4053.00	1.4608	10.0152	10.0027	
4052.61	1.4074	9.4703	9.4580	HIGH WATER
4052.00	1.3244	8.9298	8.9107	
4051.00	1.2017	7.3595	7.3481	
4050.00	1.0793	5.7190	5.7082	
4049.00	0.9568	4.1985	4.1882	
4048.00	0.8572	2.8550	2.8452	
4047.00	0.7499	1.4814	1.4722	
4046.00	0.6482	0.7834	0.7748	
4045.00	0.5512	0.2847	0.2774	
4044.00	0.4627	0.1777	0.1704	
4043.00	0.3813	0.1257	0.1249	
4042.00	0.3095	0.0703	0.0693	
4041.00	0.2450	0.0330	0.0326	
4040.00	0.1897	0.0177	0.0170	
4039.00	0.1430	0.0088	0.0087	
4038.00	0.0954	0.0031	0.0030	
4037.00	0.0544	0.0012	0.0012	
4036.00	0.0238	0.0004	0.0004	
4035.00	0.0094	0.0001	0.0001	
4034.00	0.0005	0.0000	0.0000	POND BOTTOM



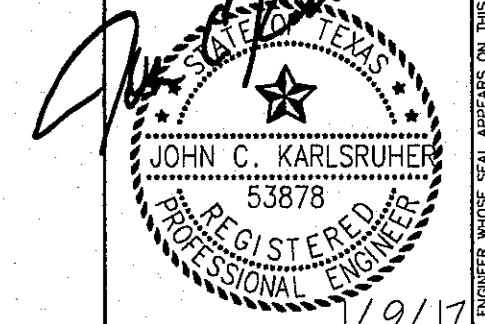
BENCHMARK: CITY MOUNTAIN AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYS LAJING DRIVE
 ELEVATION = 3995.5 (E. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
 BEFORE YOU DIG
 CONTRACTOR SHALL
 FIELD LOCATE ALL
 EXISTING UNDERGROUND
 IMPROVEMENTS IN
 PROJECT AREA

BEFORE YOU DIG - CALL
 EL PASO ELECTRIC COMPANY 948-5720
 TEXAS GAS SERVICE 544-4300
 TGS EMERGENCY HOTLINE 562-8411/562-2003
 EL PASO WATER (REGULATORY) 590-5100
 TIME WARNER (CABLE) 775-7414
 EL PASO NATURAL GAS COMPANY 1-800-334-9047
 EL PASO EXCAVATION SAFETY SYSTEM 1-800-248-9277

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the stated end project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or on other projects. Any reuse, to include copying and/or modifying the content of the document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm #4997
 1845 Northwestern Dr., Ste C
 El Paso, Texas 79912
 Tel: (915) 877.4166
 Fax: (915) 877.4334
 www.csaengineers.com



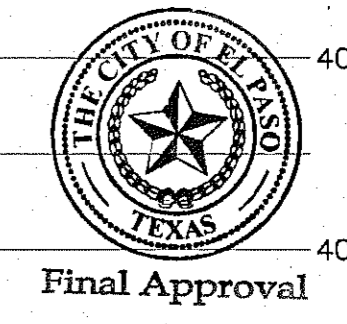
CIMARRON CANYON
 UNIT ONE
 SUBDIVISION

SHEET TITLE

PONDING AREA A

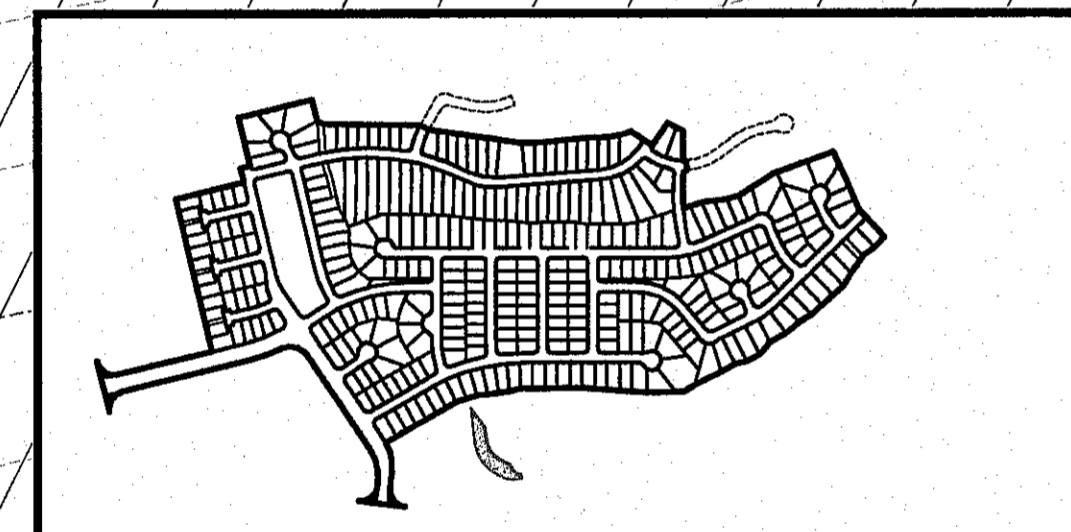
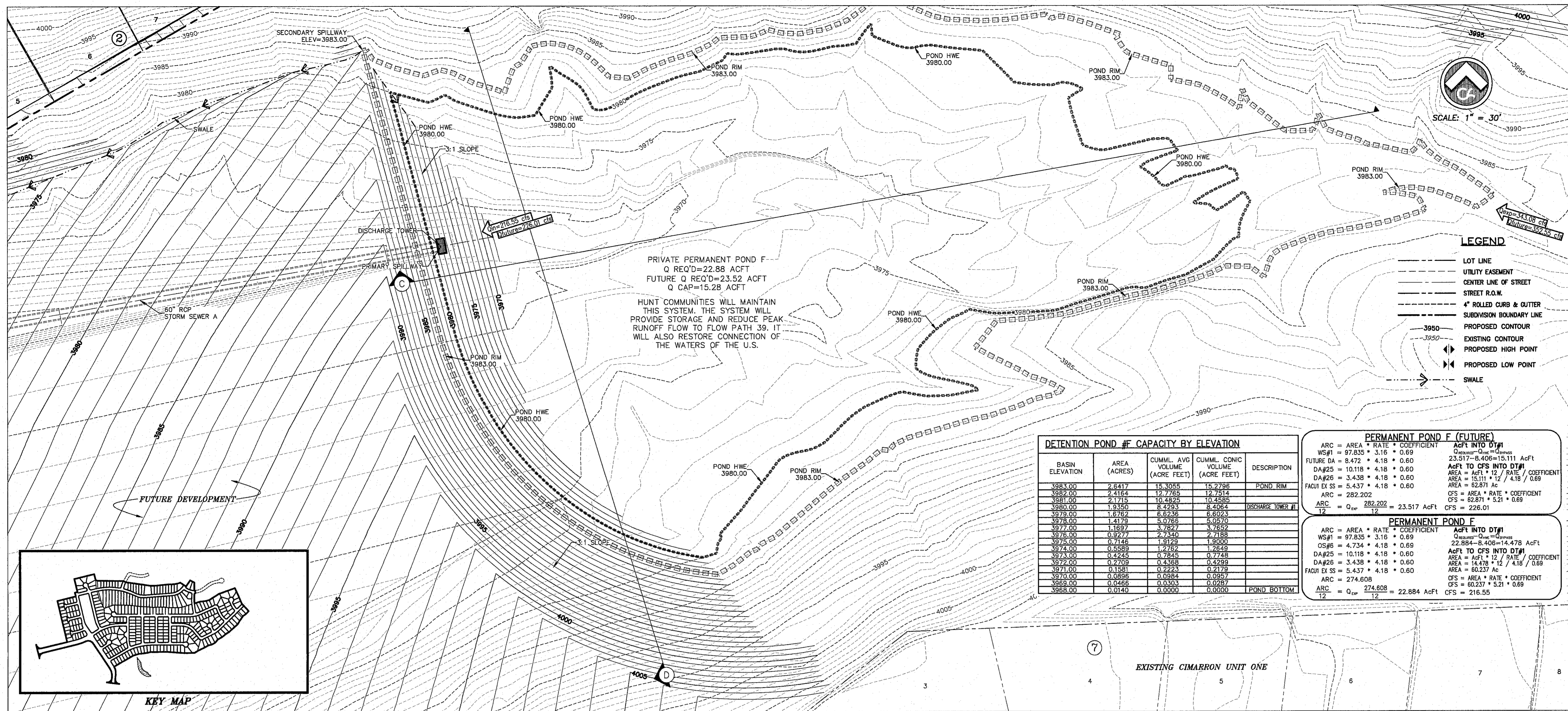
GOB	1524
DESIGN BY	JW/No
GOB-SM-DG	9/15/16
DRAWN BY	SAE
DATE	AS NOTED
SCALE	AS SHOWN

SHEET NO. **109**
 SHEET SEQUENCE
 114 OF 131



Final Approval

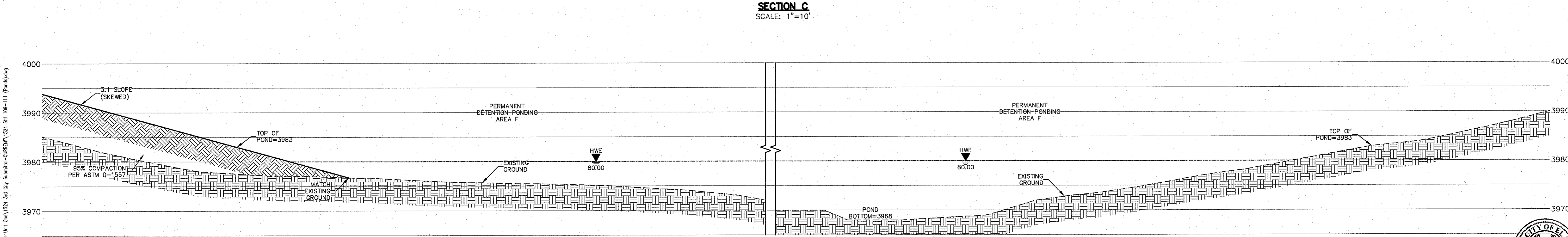
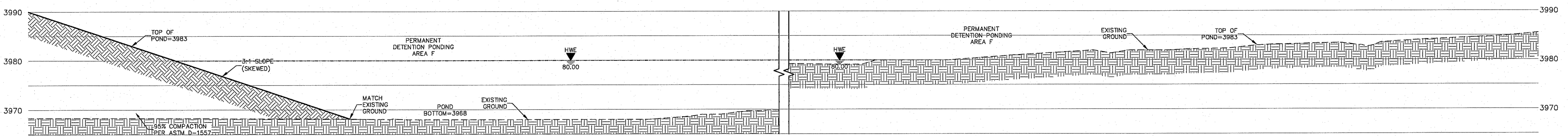
© CSA DESIGN GROUP, INC. - Jan 06, 2017 - 11:25am
 S:\Draw\1504 Cimarron Canyon Unit One\1504_3rd City Submittal\CSA\1504_Sht 109-111 (Ponding).dwg



BASIN ELEVATION	AREA (ACRES)	CUMMUL. AVG. VOLUME (ACRE FEET)	CUMMUL. CONIC VOLUME (ACRE FEET)	DESCRIPTION
3983.00	2.8417	15.3055	15.2796	POND RIM
3982.00	2.4164	12.7765	12.7514	
3981.00	2.1715	10.4526	10.4585	
3980.00	1.9350	8.4293	8.4064	DISCHARGE TOWER #1
3979.00	1.8762	6.6236	6.6023	
3978.00	1.4129	5.0765	5.0570	
3977.00	1.1937	3.7827	3.7652	
3976.00	0.9277	2.7340	2.7188	
3975.00	0.7146	1.9129	1.9000	
3974.00	0.5589	1.2782	1.2649	
3973.00	0.4245	0.7845	0.7748	
3972.00	0.2709	0.4368	0.4299	
3971.00	0.1581	0.2223	0.2179	
3970.00	0.0896	0.0984	0.0957	
3969.00	0.0466	0.0303	0.0287	
3968.00	0.0140	0.0000	0.0000	POND BOTTOM

PERMANENT POND F (FUTURE)	
ARC = AREA * RATE * COEFFICIENT	AcFt INTO DT#1
WS#1 = 97.835 * 3.16 * 0.69	Q _{avg} = Q _{avg}
FUTURE DA = 8.472 * 4.18 * 0.60	23.517 - 8.406 = 15.111 AcFt
DA#25 = 10.118 * 4.18 * 0.60	AcFt TO CFS INTO DT#1
DA#26 = 3.438 * 4.18 * 0.60	AREA = AcFt * 12 / RATE / COEFFICIENT
FAUJ EX SS = 5.437 * 4.18 * 0.60	AREA = 15.111 * 12 / 4.18 / 0.69
ARC = 282.202	AREA = 62.871 Ac
ARC = Q _{avg} * 12 = 23.517 AcFt	CFS = AREA * RATE * COEFFICIENT
T2 = 12	CFS = 62.871 * 5.21 * 0.69
	CFS = 226.01

PERMANENT POND F	
ARC = AREA * RATE * COEFFICIENT	AcFt INTO DT#1
WS#1 = 97.835 * 3.16 * 0.69	Q _{avg} = Q _{avg}
OS#6 = 4.734 * 4.18 * 0.69	22.884 - 8.406 = 14.478 AcFt
DA#25 = 10.118 * 4.18 * 0.60	AcFt TO CFS INTO DT#1
DA#26 = 3.438 * 4.18 * 0.60	AREA = AcFt * 12 / RATE / COEFFICIENT
FAUJ EX SS = 5.437 * 4.18 * 0.60	AREA = 14.478 * 12 / 4.18 / 0.69
ARC = 274.608	AREA = 60.237 Ac
ARC = Q _{avg} * 12 = 22.884 AcFt	CFS = AREA * RATE * COEFFICIENT
T2 = 12	CFS = 60.237 * 5.21 * 0.69
	CFS = 216.55



BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE ELEVATION = 3976.53 (EL. PASO CITY DATUM)

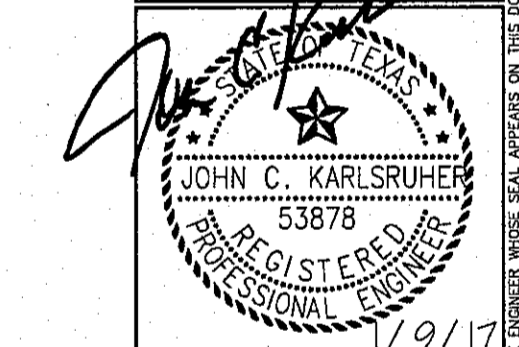
NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG - CALL

CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND UTILITIES IN PROJECT AREA

EL PASO ELECTRIC COMPANY
1-800-430-7655
544-8300
562-8411 (662-2008)
562-8411 (662-2008)
562-8411 (662-2008)
775-5414
1-800-384-6047
1-800-647-8277

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extension of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #697
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: (915) 877.4155
Fax: (915) 877.4334
www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

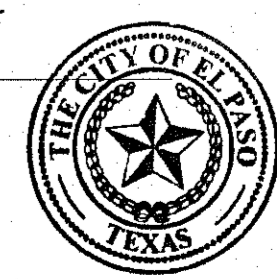
SHEET TITLE

PONDING AREA F

COB	1524
DESIGN BY	JCK
COB-SM-DG	9/15/16
DATE	AS NOTED
CREATED BY	DAE

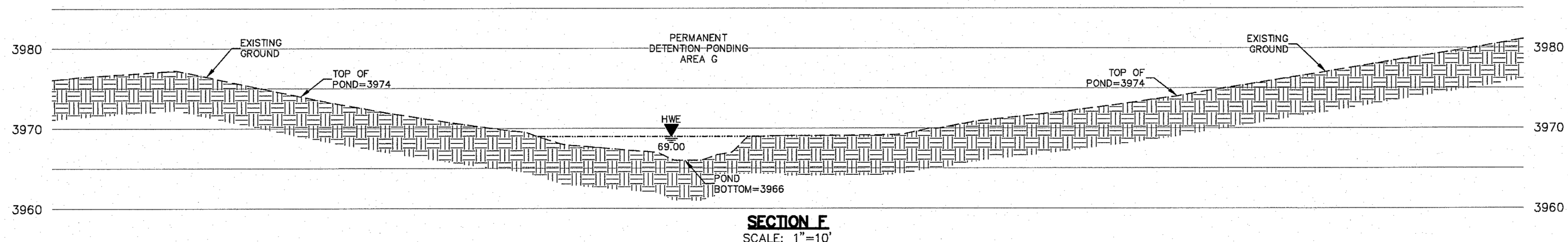
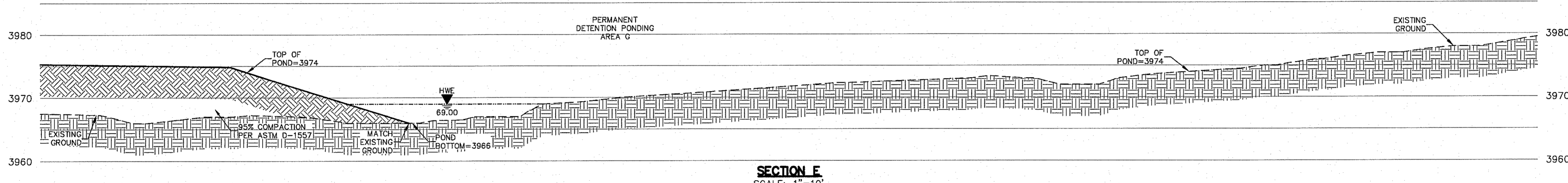
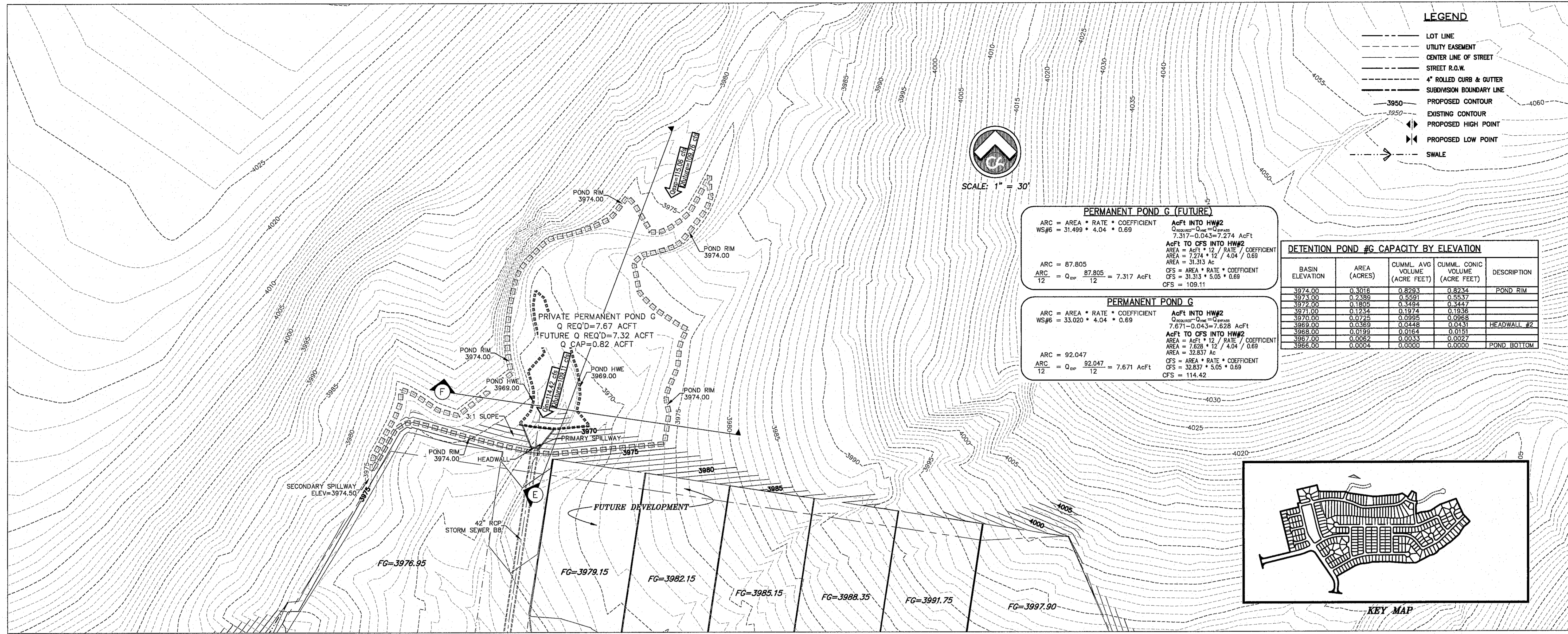
SHEET NO. **110**

115 of 131



Final Approval

© CSA DESIGN GROUP, INC. - Jan 06, 2017 - 11:25am
S:\09\1524_Cimarron Canyon Unit One\1524_3rd City Submittal-CURRENT\1524_Sht 109-111 (Ponding).dwg



BENCHMARK CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND 1ST CITY SUBMITTAL DRIVE ELEVATION = 3976.5 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Find	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
 BEFORE YOU DIG
 CONTRACTOR SHALL
 FIELD LOCATE ALL
 EXISTING UNDERGROUND
 IMPROVEMENTS IN
 PROJECT AREA

BEFORE YOU DIG - CALL

EL PASO ELECTRIC COMPANY
 540-020-1255

TEXAS GAS SERVICE
 544-9300

TGS EMERGENCY HOTLINE
 562-9411/562-2003

EL PASO WATER
 562-9400/562-1555

EL PASO NATURAL GAS COMPANY
 775-5414

TEXAS EXCAVATION SAFETY SYSTEM
 1-800-334-9847
 (261-2877)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extension of such project or any other project. Any reuse to include copying and/or modifying the content of the document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.

JOHN C. KARLSRUHER
 53878
 REGISTERED PROFESSIONAL ENGINEER
 1/9/17

csa design group, inc.
 Texas Registered Engineering Firm # 997
 1845 Northwestern Dr., Ste C
 El Paso, Texas 79912
 Tel: (915) 877.4155
 Fax: (915) 877.4334
 www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

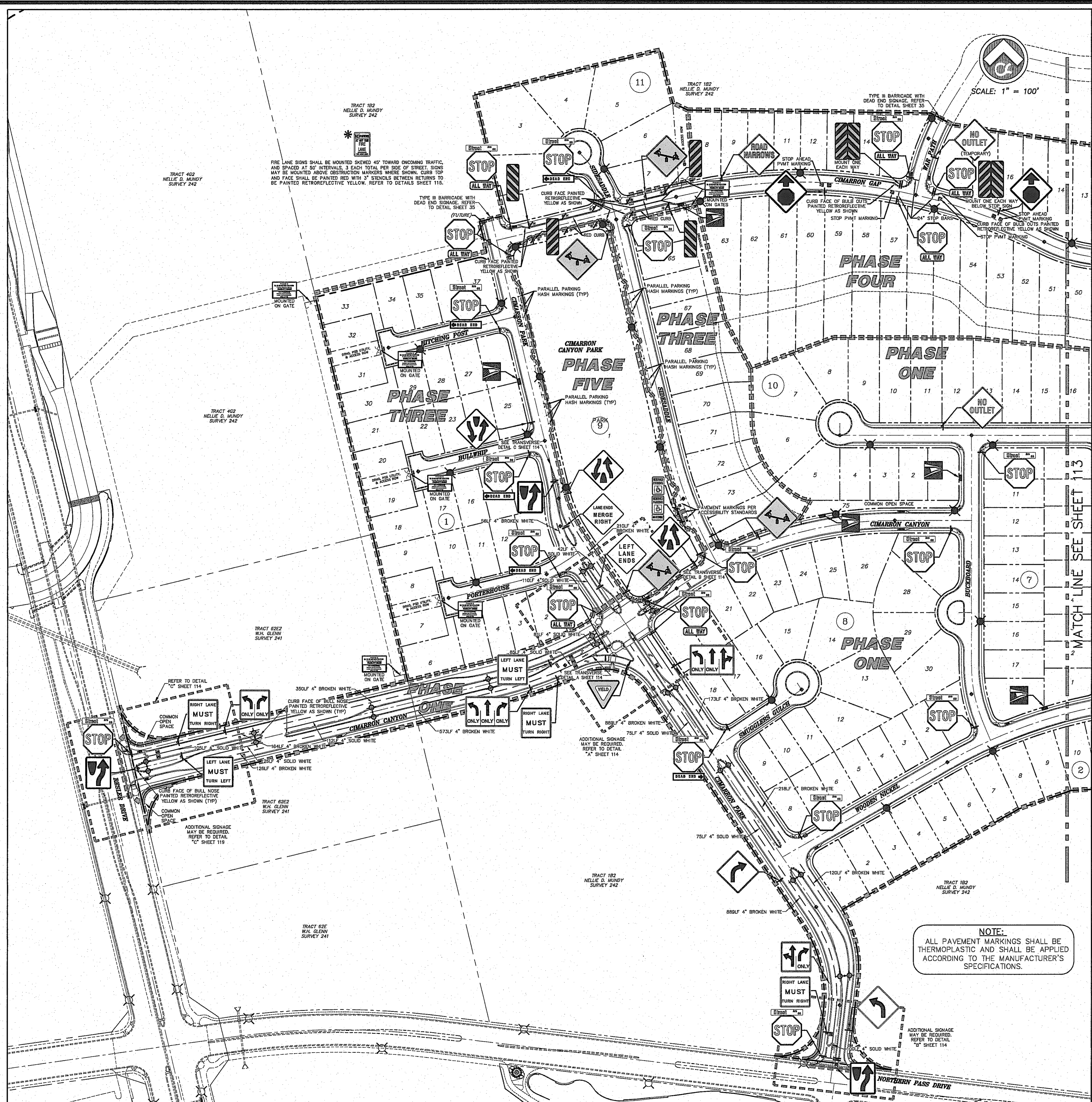
SHEET TITLE
PONDING AREA G

JOB NO.	1524
DESIGN BY	JCK
DATE	9/15/16
DESIGNED BY	AS NOTED
CHECKED BY	JCK

SHEET NO.
111
 116 of 131



Final Approval



ESTIMATED QUANTITY INSTALLATION OF TRAFFIC CONTROL DEVICES (SIGNAGE)

DESCRIPTION	PHASE 1	PHASE 2	PHASE 3	PHASE 4
36" STOP	5			
30" STOP	15	7	8	6
9" STREET NAME	15	8	7	3
STREET NAME BRACKET AND CAP	15	15	7	3
TRAFFIC CONTROL SIGN BRACKETS	20	7	8	6
18"x6" R1-4	7	2	4	
30"x30" W3-1a				5
30"x30" W1-1R		1		3
30"x30" W1-1L		1		
30"x30" W11-2	5	1	2	
30"x30" W15-1	1	1	3	3
30"x30" W1-2R	1	1		
30"x30" W1-2L	1	1		
30"x30" W9-1L			1	
30"x30" W9-2R			1	
30"x30" W4-2	1	2		1
30"x30" R3-7R				1
30"x30" R3-7L				1
30"x30" W5-1				2
24"x30" R4-7	7		1	
24"x30" R3-5L	2			
24"x24" CUSTOM WARNING				
24"x10" SLOW PLAQUE		4		2
12"x18" R7-BT			2	
12"x18" FIRE LANE			8	5
12"x6" R7-8A			1	
30"x20" SITE SIGN NO TRESPASSING		2	5	2
36"x36" W6-1			1	
36"x36" W6-2			1	
30"x30" R3-8 LR	1			
30"x30" R3-8 MR	1			
48"x30" LSR	1			
48"x30" LSK	1			
18"x18" R1-SL	1			2
12"x36" OM3-L			1	7
12"x36" OM3-R			1	4
36"x36"x36" YIELD R1-2			1	
2" I.D. GALVANIZED STEEL SIGN POST	44	13	30	33
2" I.D. GALVANIZED FORK POST	7			
18"x18" DEAD END SIGN WITH 3 PANEL BARRICADE, 3 POSTS AND 18R OF GUARDRAIL		1	1	3

ESTIMATED QUANTITY INSTALLATION OF TRAFFIC CONTROL DEVICES (PAVEMENT MARKINGS)

DESCRIPTION	PHASE 1	PHASE 2	PHASE 3	PHASE 4
STOP BAR	125 LF			57 LF
CROSSWALK BARS	543 LF			
CROSSWALK STRIPING				30 LF
4" BROKEN WHITE STRIPING	2624 LF		250 LF	
4" SOLID WHITE STRIPING	1063 LF		1420 LF	
4" CENTER LINE STRIPING			730 LF	
YIELD BARS	21 LF			17 LF
"STOP"				6
"AHEAD"				3
"SLOW"				2
"ONLY"	7			
"VAN"				1
HANDICAP SYMBOL			2	
TURN LANE-USE ARROW (L)	3			
TURN LANE-USE ARROW (R)	3			
TURN AND THROUGH LANE-USE ARROW	1			
THROUGH LANE-USE ARROW	1			
ACCESSIBLE ROUTE STRIPING				796 LF
PARALLEL PARKING HASH MARKINGS				366 LF
PAINTED CURB (YELLOW)	395 LF		384 LF	326 LF
PAINTED CURB (RED)			312 LF	337 LF
PAINTED CURB (ADA BLUE)				84 LF

SIGN PLACEMENT IS CRITICAL IN ORDER TO MAINTAIN ADA COMPLIANCE, A MINIMUM OF 36" UNOBSTRUCTED PASSAGE MUST BE MAINTAINED BETWEEN ANY STRUCTURES OR FIXTURES AND THE FACE OF CURB AND/OR BACK OF SIDEWALK.

ALL SIGNAGE AND STRIPING COMPLIES WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2011 EDITION.

ALL ROADWAYS INTERSECTING EXISTING PUBLIC ROADWAYS SHALL REMAIN COMPLETELY CLOSED FOR PUBLIC USE UNTIL ACCEPTED FOR MAINTENANCE BY THE COUNTY.

LEGEND

- PROPOSED STREET LIGHTS 57 REQUIRED AS PER ORDINANCE
- PROPOSED MEDIAN STREET LIGHTS 11 (DUAL COBRA HEAD)
- EXISTING STREET LIGHTS
- PROPOSED SIGN LOCATION
- NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNIT (NDCBU)

THE SUBDIVIDER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND ASSOCIATED COST OF ELECTRICAL ENERGY OF THE STREET LIGHTS UNTIL SUCH LIGHTS ARE ACCEPTED BY THE CITY OR COUNTY FOR MAINTENANCE. AS PROVIDED IN SECTION 10.36.010, THE CITY OR COUNTY SHALL ACCEPT THE STREET LIGHT FOR MAINTENANCE AND ELECTRICAL ENERGY COSTS AT THE TIME IT ACCEPTS THE STREET AND OTHER PUBLIC IMPROVEMENTS WITHIN THE SUBDIVISION FOR MAINTENANCE.

PRIOR TO THE ACCEPTANCE OF THE STREET LIGHTS FOR MAINTENANCE BY THE CITY OR COUNTY, AN AMENDED ILLUMINATION PLAN SHOWING THE FINAL LOCATION OF THE STREET LIGHT INSTALLED BY THE SUBDIVIDER SHALL BE SUBMITTED TO THE DEPUTY DIRECTOR FOR ENGINEERING OR COUNTY ENGINEER.

THIS SUBDIVISION SHALL RECEIVE MAIL DELIVERIES VIA NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNITS (NDCBU) AS INDICATED IN THE PLAN VIEW. THE NUMBER, STYLE, AND FINAL LOCATION OF THE NDCBU'S SHALL BE DETERMINED AT A LATER DATE BY PERSONNEL WITH THE U.S. POSTAL SERVICE.

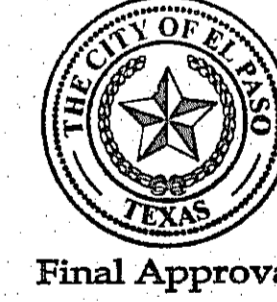
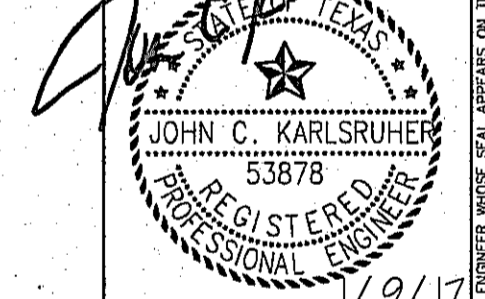
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND CIMARRON CANYON PARKWAY. ELEVATION = 5895.5 (AS PASD CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
3	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

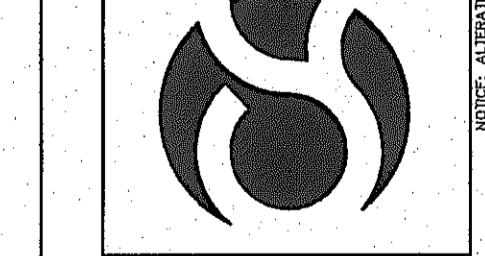
CALL BEFORE YOU DIG -
EL PASO ELECTRIC COMPANY
948-3720
544-9300
562-9411/662-2008
590-5216
562-7414
1-800-334-9847
1-800-642-9279

This document, whether in hard copy or electronic readable format, is copyrighted and an instrument of service in respect to the stated end project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



Final Approval

John C. Karlstruher
Professional Engineer
No. 53878



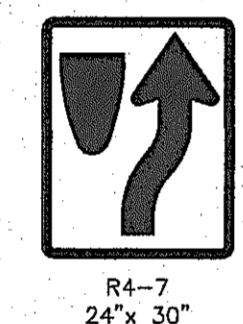
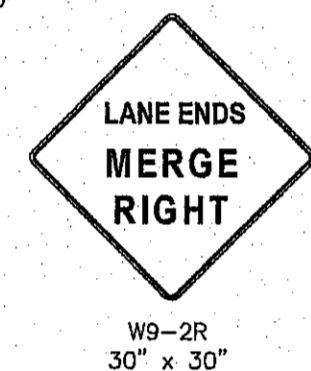
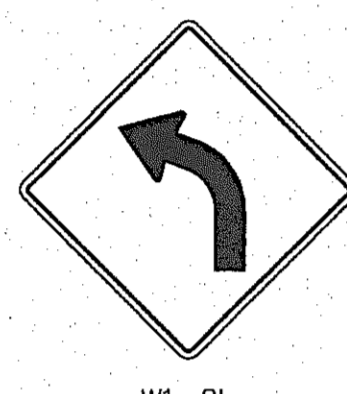
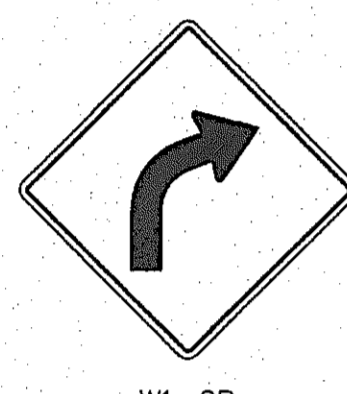
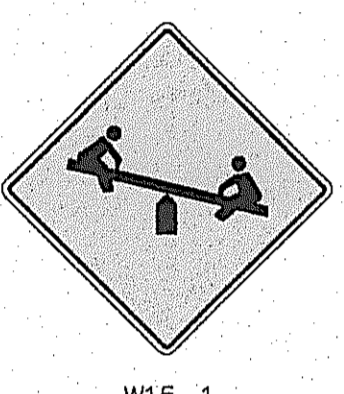
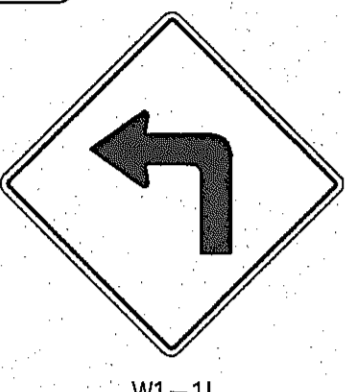
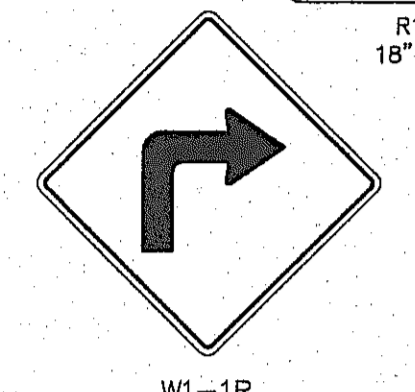
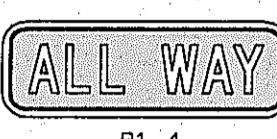
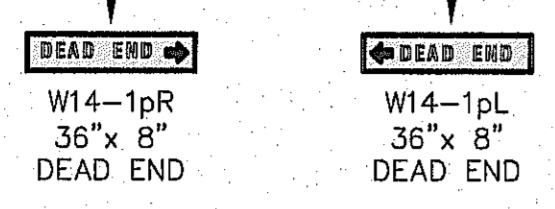
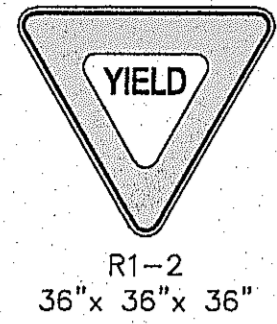
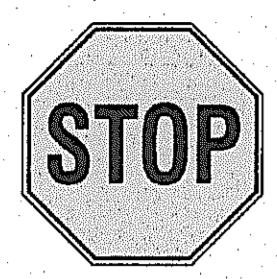
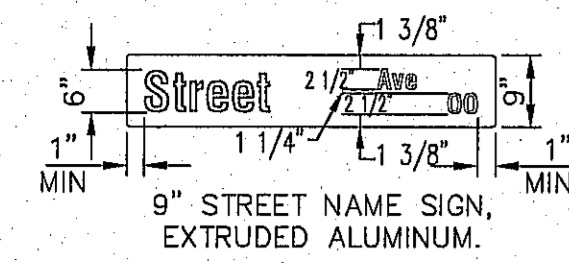
CSA design group, inc.
Texas Registered Engineering Firm #4987
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
Tel: [915] 877.4155
Fax: [915] 877.4334
www.csaengineers.com

CIMARRON CANYON UNIT ONE SUBDIVISION

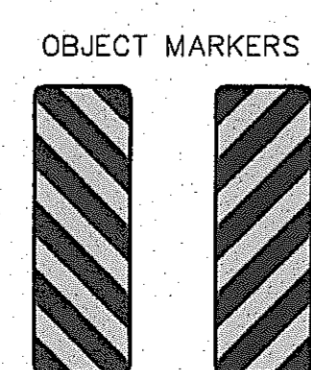
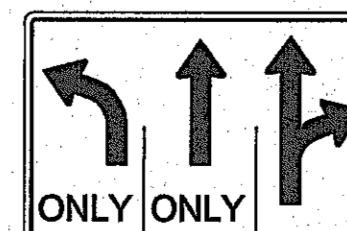
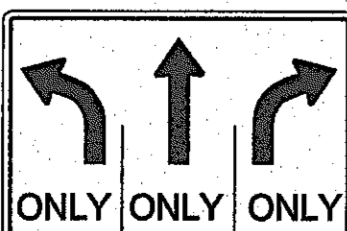
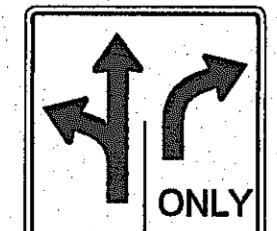
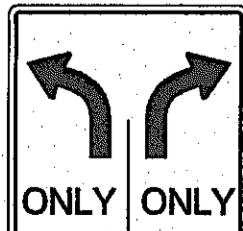
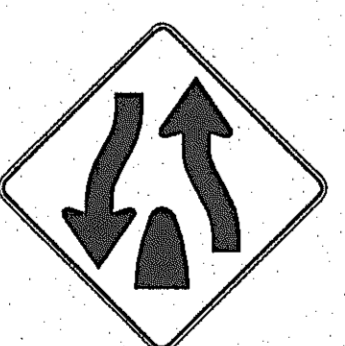
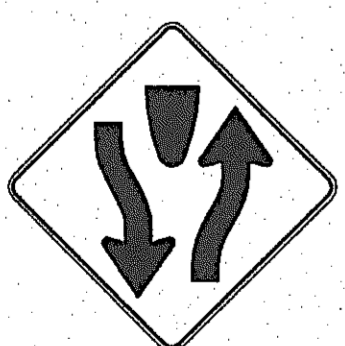
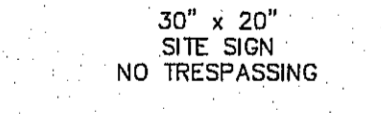
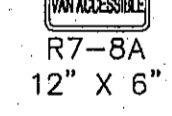
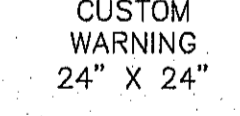
SHEET TITLE

SIGNAGE, STRIPING AND ILLUMINATION PLAN

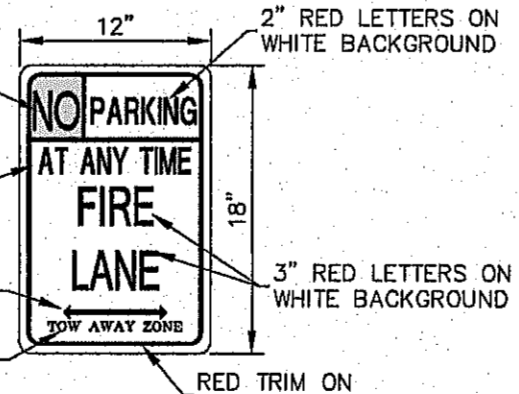
DOB	1524
DESIGN BY	JCK
DOB-SM-DG	9/15/16
DATE	9/15/16
SCALE	AS NOTED
PROJECT NO.	112
SHEET NUMBER	117 of 131



WHITE LETTERS ON BLUE BACKGROUND



FIRE LANE SIGN
SCALE: 1" = 1'-0"



THE SUBDIVIDER SHALL BE RESPONSIBLE FOR THE MAINTENANCE AND ASSOCIATED COST OF ELECTRICAL ENERGY OF THE STREET LIGHTS UNTIL SUCH LIGHTS ARE ACCEPTED BY THE CITY OR COUNTY FOR MAINTENANCE AS PROVIDED IN SECTION 18.06(d). THE CITY OR COUNTY SHALL ACCEPT THE STREET LIGHT FOR MAINTENANCE AND ELECTRICAL ENERGY COSTS AT THE TIME IT ACCEPTS THE STREET AND OTHER PUBLIC IMPROVEMENTS WITHIN THE SUBDIVISION FOR MAINTENANCE.

PRIOR TO THE ACCEPTANCE OF THE STREET LIGHTS FOR MAINTENANCE BY THE CITY OR COUNTY, AN AMENDED ILLUMINATION PLAN SHOWING THE FINAL LOCATION OF THE STREET LIGHT INSTALLED BY THE SUBDIVIDER SHALL BE SUBMITTED TO THE DEPUTY DIRECTOR FOR ENGINEERING OR COUNTY ENGINEER.

THIS SUBDIVISION SHALL RECEIVE MAIL DELIVERIES VIA NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNITS (NDCBU) AS INDICATED IN THE PLAN VIEW. THE NUMBER, STYLE, AND FINAL LOCATION OF THE NDCBU SHALL BE DETERMINED AT A LATER DATE BY PERSONNEL WITH THE U.S. POSTAL SERVICE.

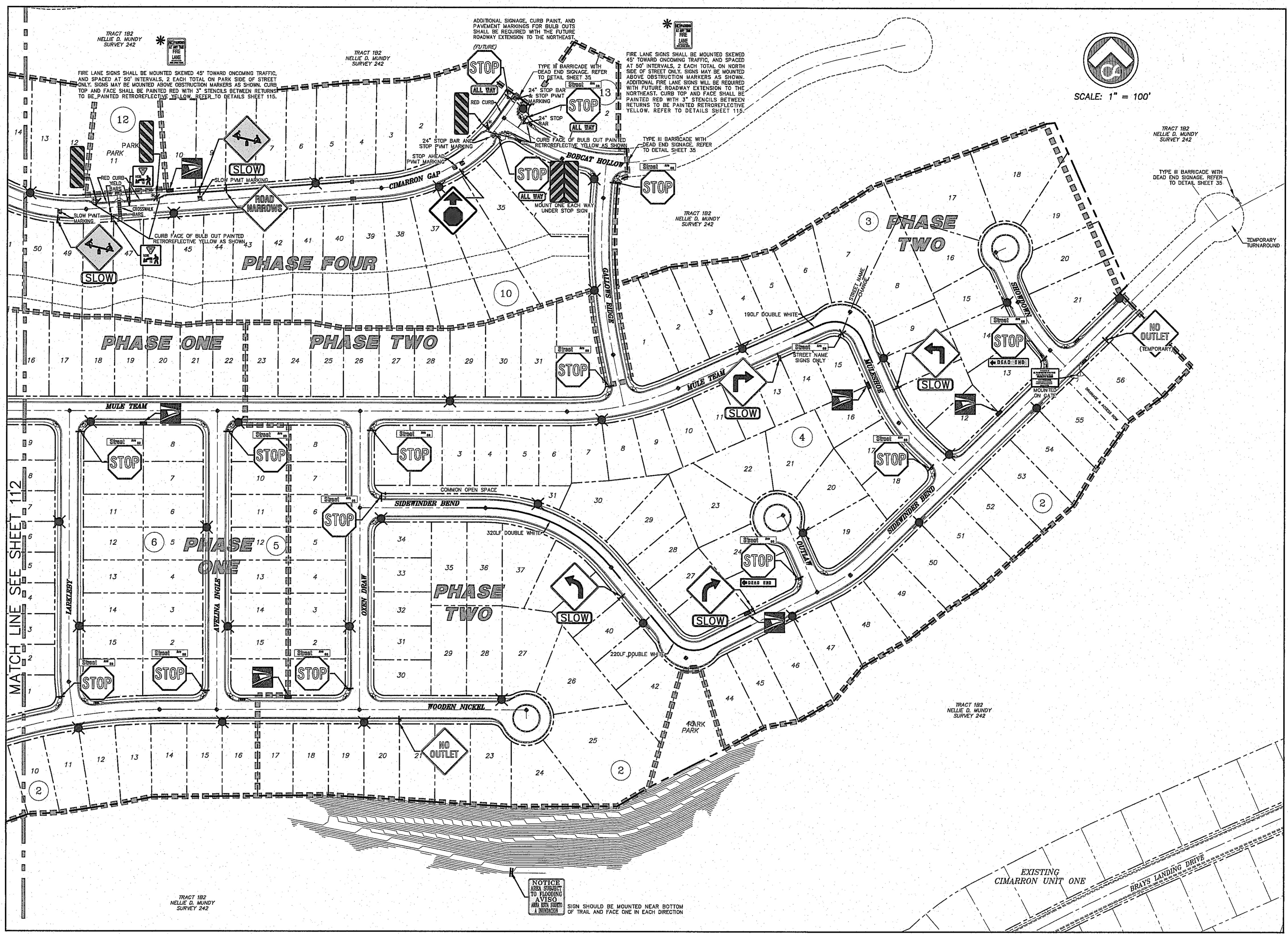
ALL SIGNAGE AND STRIPING COMPLIES WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2011 EDITION.

ALL ROADWAYS INTERSECTING EXISTING PUBLIC ROADWAYS SHALL REMAIN COMPLETELY CLOSED FOR PUBLIC USE UNTIL ACCEPTED FOR MAINTENANCE BY THE COUNTY.

SIGN PLACEMENT IS CRITICAL. IN ORDER TO MAINTAIN ADA COMPLIANCE, A MINIMUM OF 36" UNOBSTRUCTED PASSAGE MUST BE MAINTAINED BETWEEN ANY STRUCTURES OR FIXTURES AND THE FACE OF CURB AND/OR BACK OF SIDEWALK.

NOTE: ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AND SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

LEGEND	
	PROPOSED STREET LIGHTS 57 REQUIRED AS PER ORDINANCE
	EXISTING STREET LIGHTS
	PROPOSED SIGN LOCATION
	NEIGHBORHOOD DELIVERY AND COLLECTION BOX UNIT (NDCBU)



BENCHMARK: CITY MONUMENT AT THE CENTRELINE INTERSECTION OF NORTHERN PASS DRIVE AND 11TH STREET (EL PASO CITY DATUM)
ELEVATION = 5378.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	9/15/16	1st City Submittal	DAE
2	11/01/16	2nd City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

WARNING!
BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

CALL BEFORE YOU DIG -
EL PASO ELECTRIC COMPANY 469-5770
TEXAS GAS SERVICE 644-6300
TGS EMERGENCY HOTLINE 692-5411 (9:00-5:00)
AFTER HOURS EMERGENCY (EPW) 774-7414
EL PASO NATURAL GAS COMPANY 1-800-305-8867
EL PASO EDUCATION SWEET SYSTEM 1-800-644-8377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. The document is not intended as a contract for any project or any other project. Any reuse, to include copying and/or modifying the content of the document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.

JOHN C. KARLSRUHER
REGISTERED PROFESSIONAL ENGINEER
1/9/17

csa design group, inc.
Texas Registered Engineering Firm E-6899
1845 Northwest Blvd. Ste C
El Paso, Texas 79912
Tel: (915) 877-4155
Fax: (915) 877-4534
www.csaengineers.com

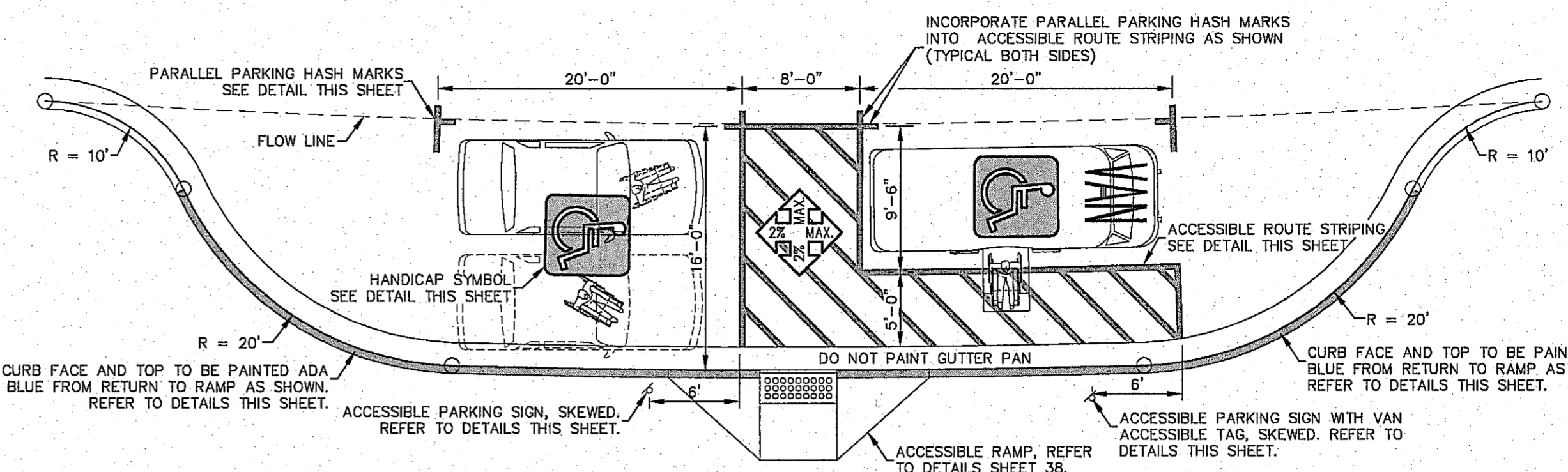
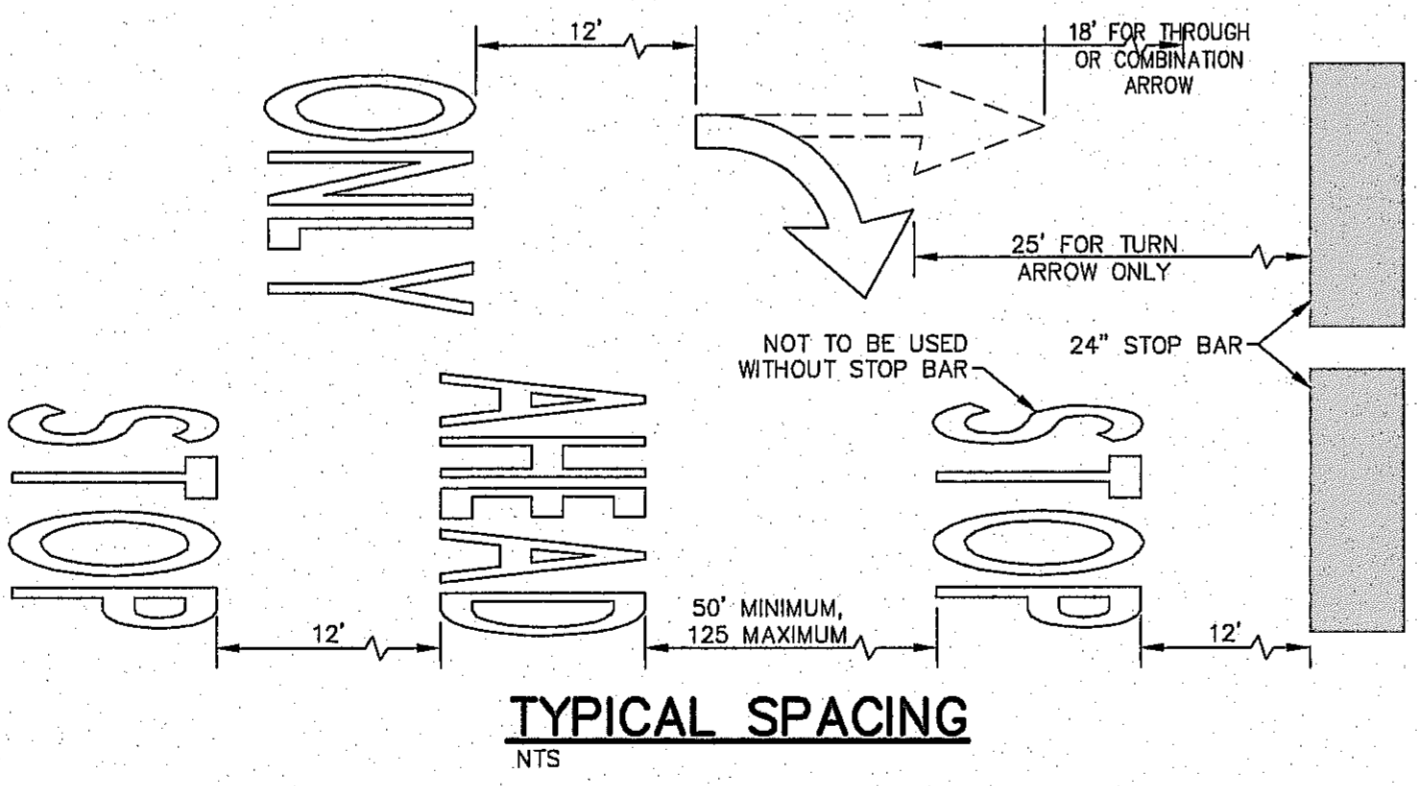
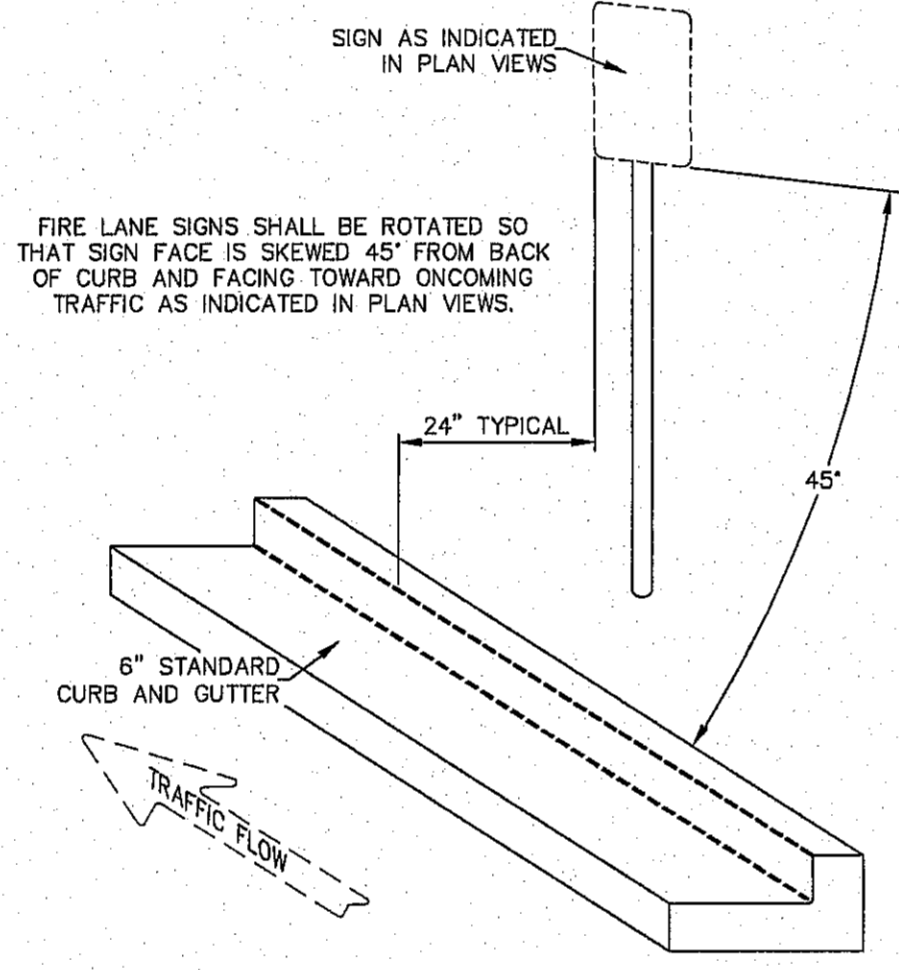
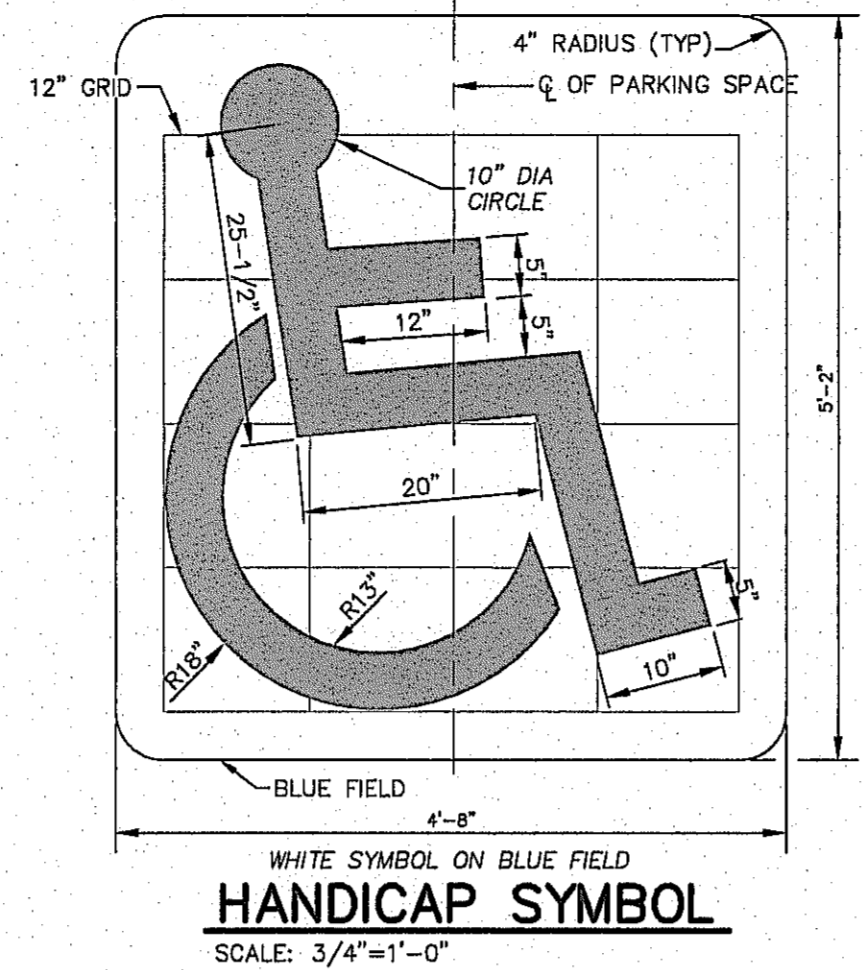
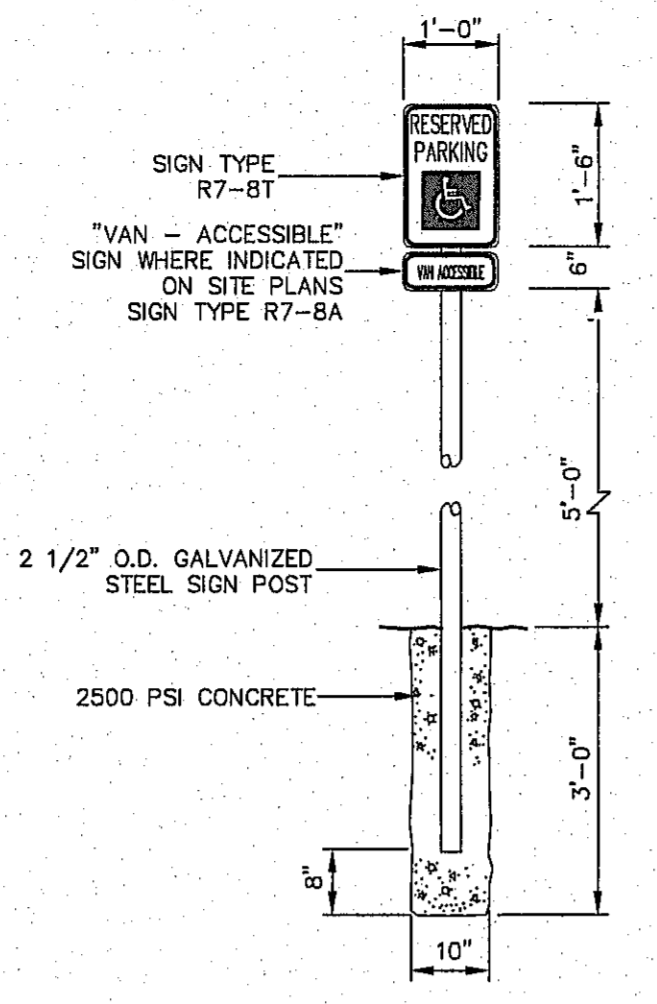
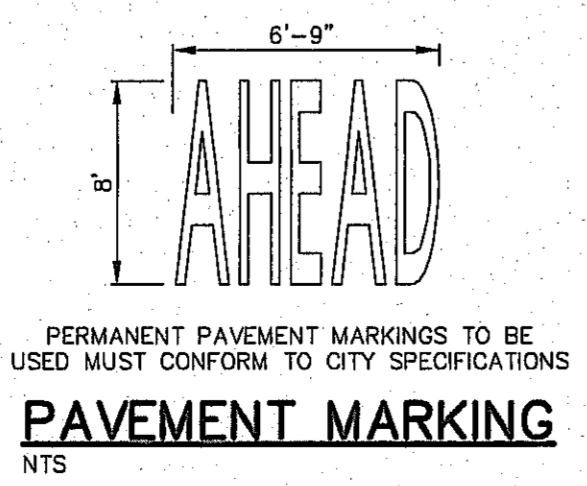
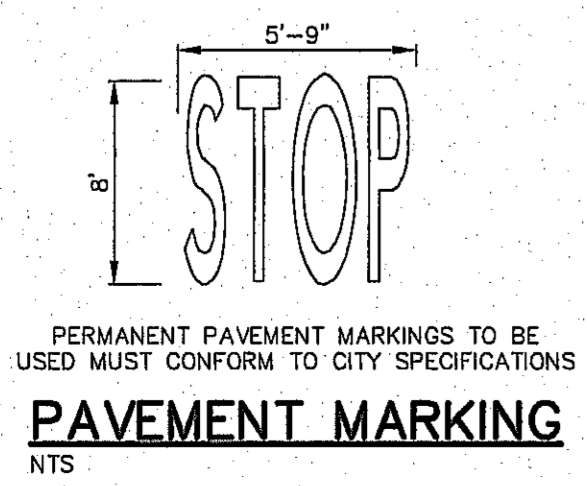
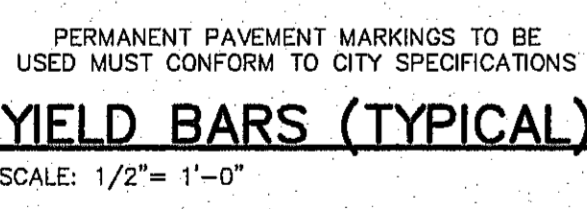
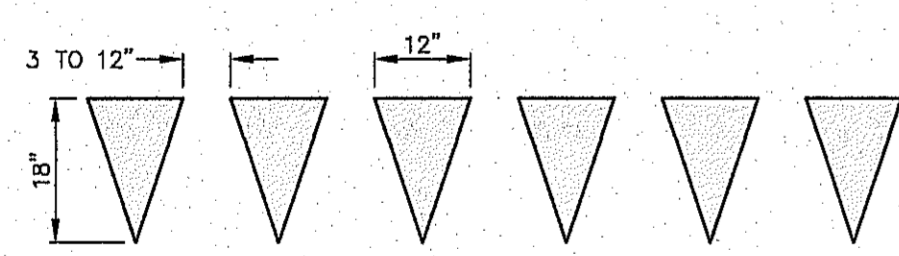
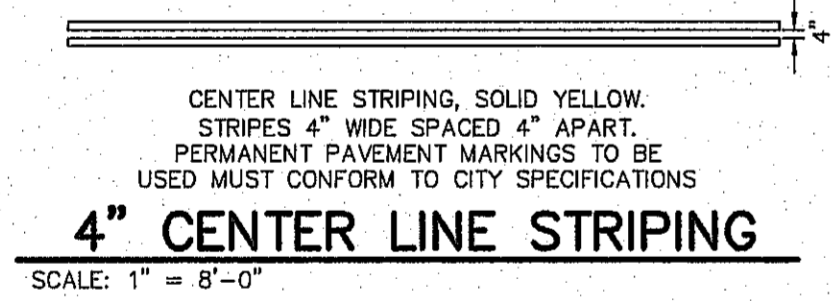
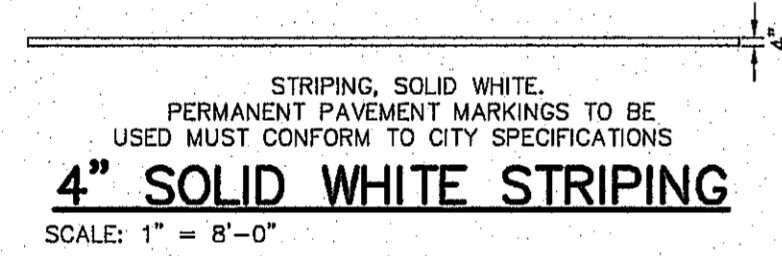
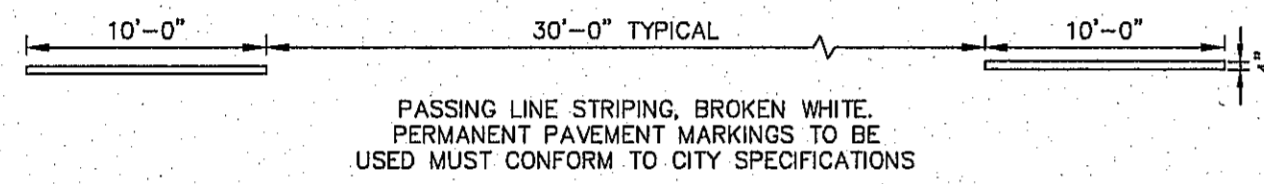
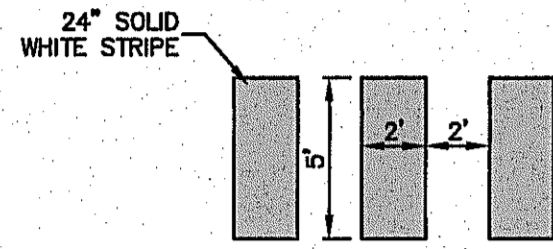
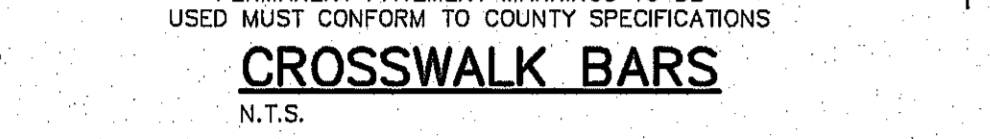
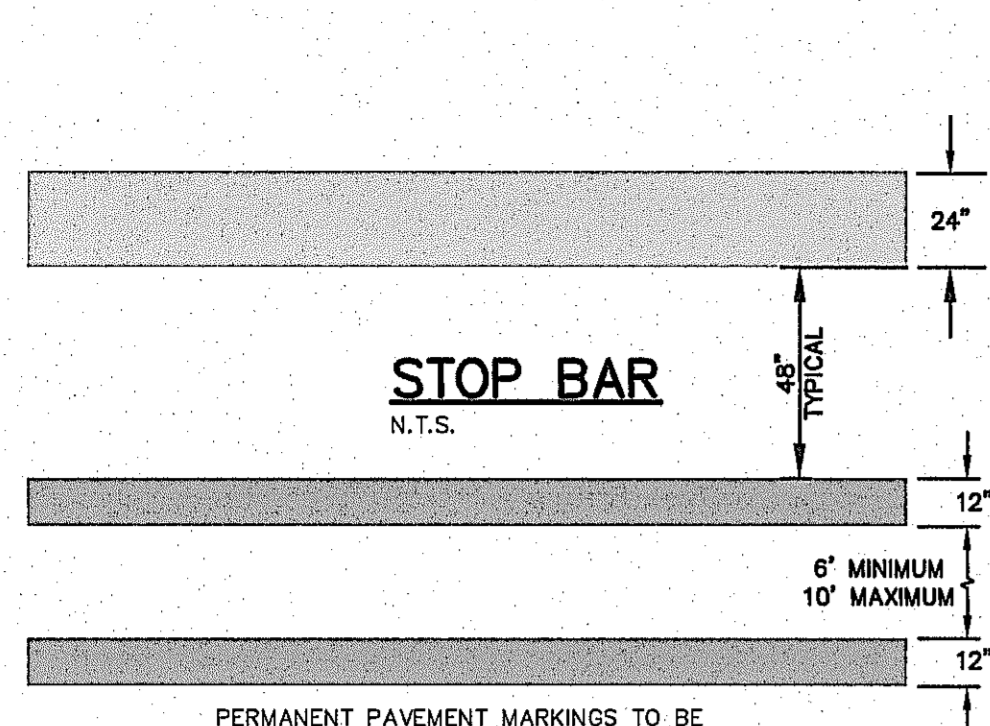
THE CITY OF EL PASO, TEXAS
Final Approval

CIMARRON CANYON UNIT ONE SUBDIVISION

SHEET TITLE
SIGNAGE, STRIPING AND ILLUMINATION PLAN

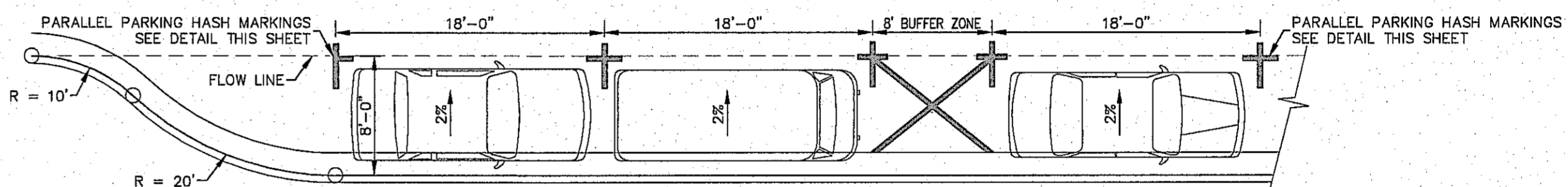
GOB 1524
DESIGN BY GGB-SM-DC 9/15/16
DRAWN BY DAE
CHECKED BY DAE
SCALE AS NOTED

SHEET NUMBER
113
SHEET REQUIRED
118 of 131

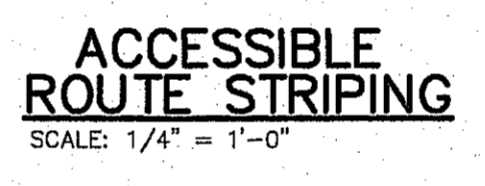
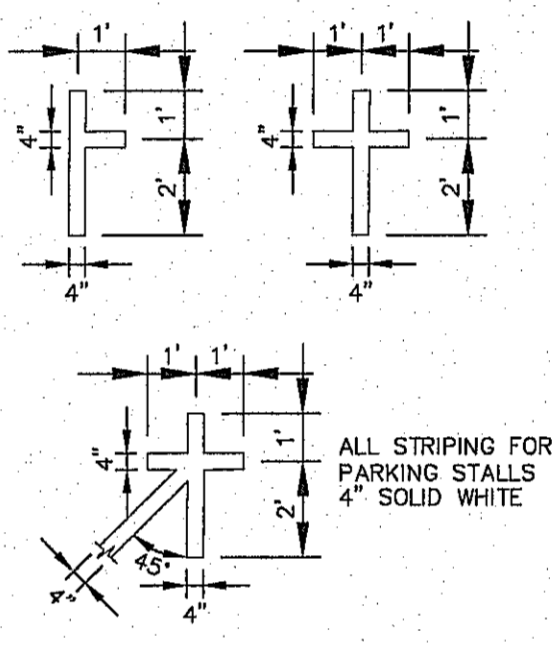
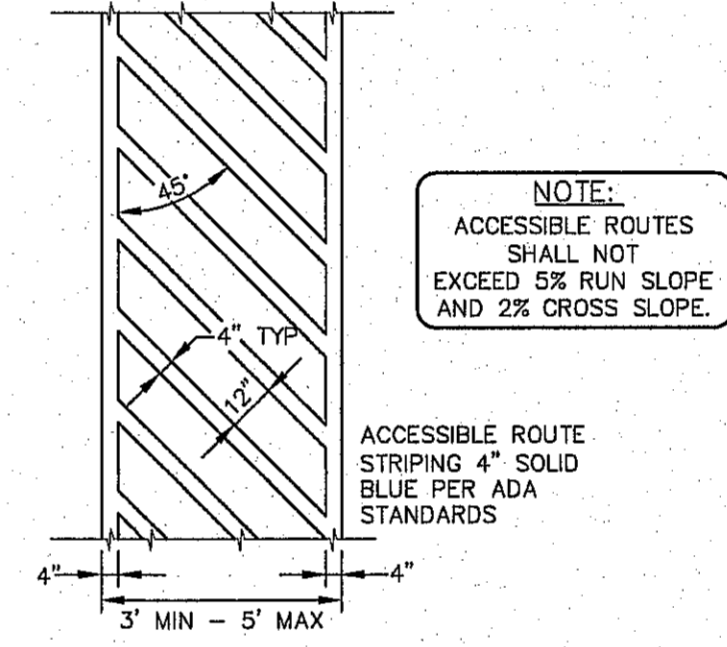
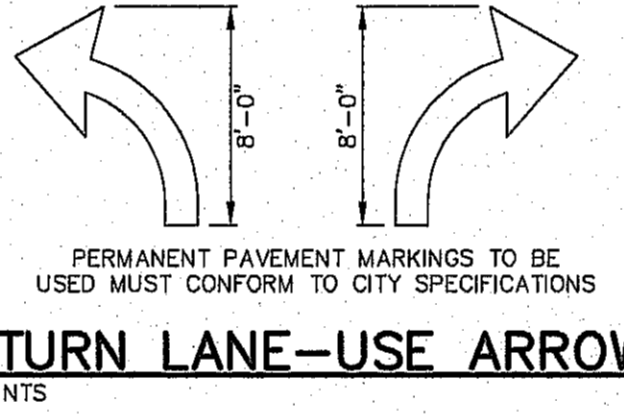
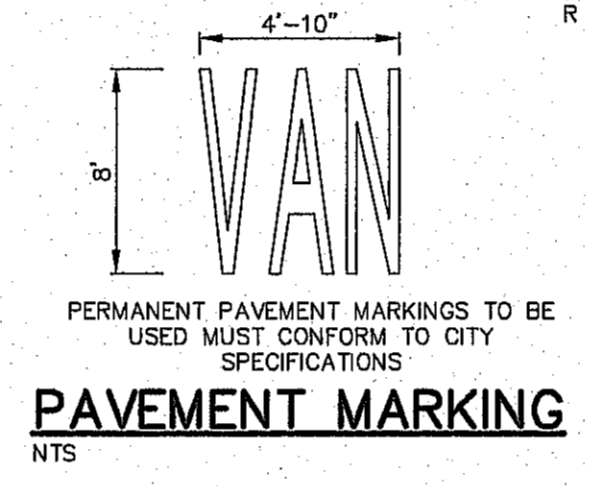


- NOTES:**
1. ACCESSIBLE SPACE FOR AUTOMOBILES IS PURPOSELY LEFT WIDE GIVING THE DRIVER CHOICE OF WHICH SIDE OF AUTOMOBILE IS UTILIZED FOR OFF LOADING.
 2. ACCESSIBLE ROUTE STRIPING IS USED IN VAN ACCESSIBLE SPACE TO DENOTE LIMITS OF LOADING ZONE.
 3. CROSS SLOPE OF PARKING SPACES AND ACCESSIBLE ROUTE SHALL NOT EXCEED A MAXIMUM OF 2%.

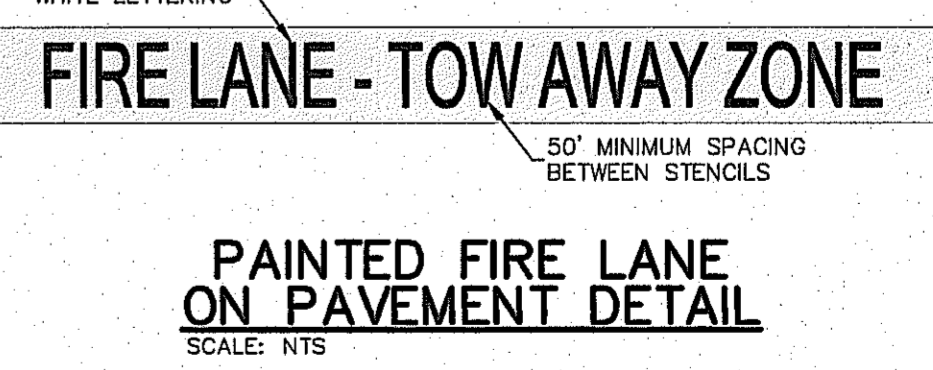
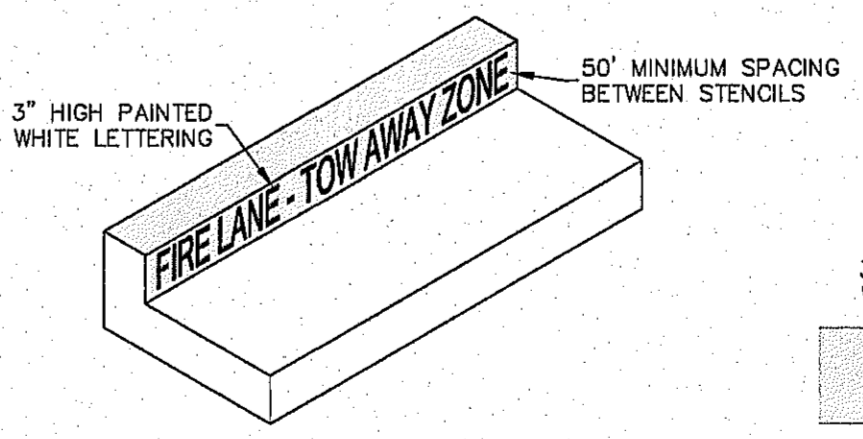
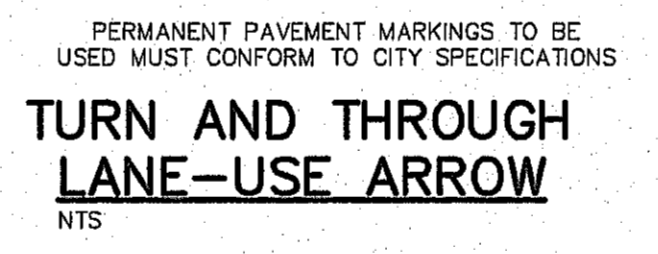
PER STREETS AND MAINTENANCE, SIGNAGE AND STRIPING FOR ACCESSIBLE SPACES SHALL NOT BE INSTALLED PRIOR TO COMPLETION OF THE PARK IMPROVEMENTS



NOTE: NO MORE THAN TWO VEHICLE SPACES ARE PERMITTED WITHOUT A BUFFER ZONE.



NOTE: ALL MEDIAN BULL NOSES SHALL BE PAINTED YELLOW WITH RETROREFLECTIVE GLASS BEADS FROM RETURN TO RETURN, AND IN OTHER AREAS SUCH AS BULB OUTS AS NOTED. OTHER CURBS PAINTED RED FOR FIRE LANES AND NO PARKING ZONES, OR BLUE FOR ADA AS SPECIFIED.



NOTE: ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC AND SHALL BE APPLIED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.

BENCHMARK CITY MONUMENT AT THE CENTRELINE INTERSECTION OF NORTHERN PASS DRIVE AND 1ST CITY SUBMITTAL DRIVE. ELEVATION = 3975.5 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Find	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING! BEFORE YOU DIG CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

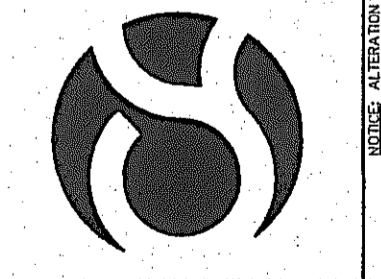
BEFORE YOU DIG - CALL

EL PASO ELECTRIC COMPANY 538-1234
AT&T 538-1234
TEXAS GAS SERVICE 538-1234
TGS EMERGENCY HOTLINE 538-1234
AFTER HOURS EMERGENCY (EPW) 538-1234
EL PASO NATURAL GAS COMPANY 1-800-334-8847
TEXAS EVACUATION SAFETY SYSTEM 1-800-847-8877

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on an extension of such project or any other project. Any reuse, to include copying and/or modifying the content of this document without express, written permission from CSD Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unlawful use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Town Registered Engineering Firm P-8887
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
tel [915] 877.4155
fax [915] 877.4334
www.csaengineers.com



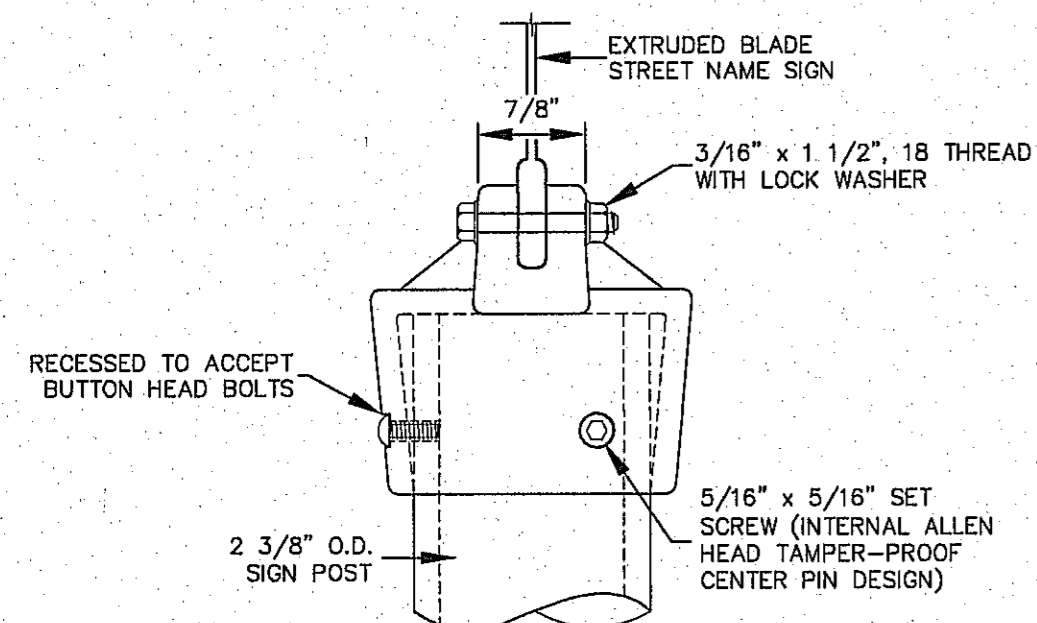
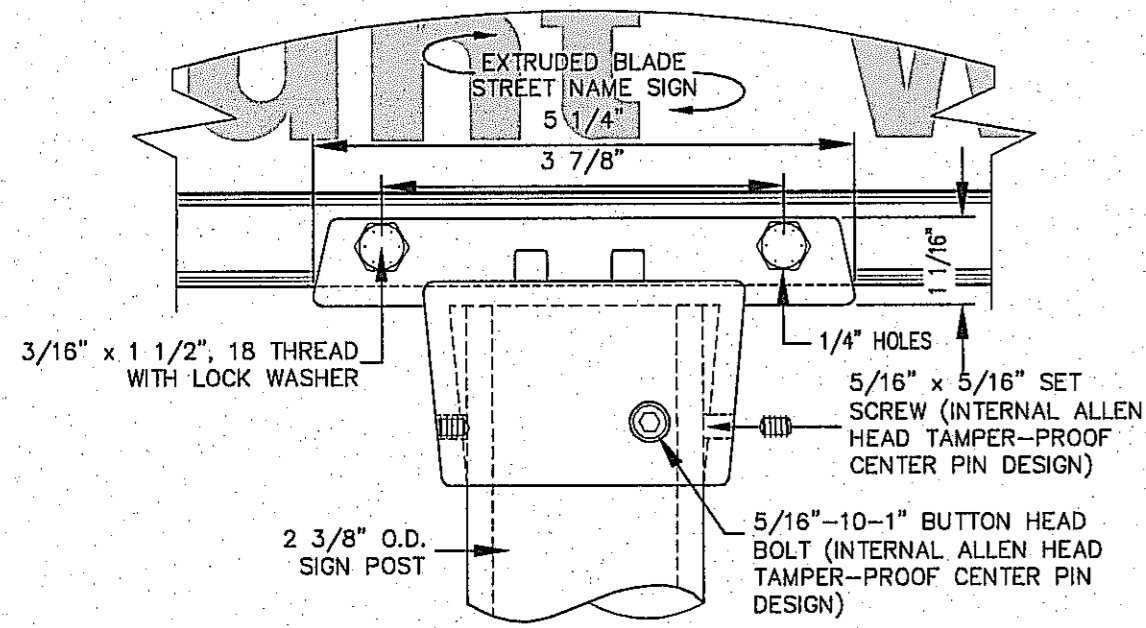
CIMARRON CANYON UNIT ONE SUBDIVISION

SHEET TITLE

STRIPING DETAILS

COB	1524
COB-SM-DC	9/15/16
DATE	AS NOTED
CREATED BY	DATE

SHEET NO. **115**
TOTAL SHEETS **120** OF **131**

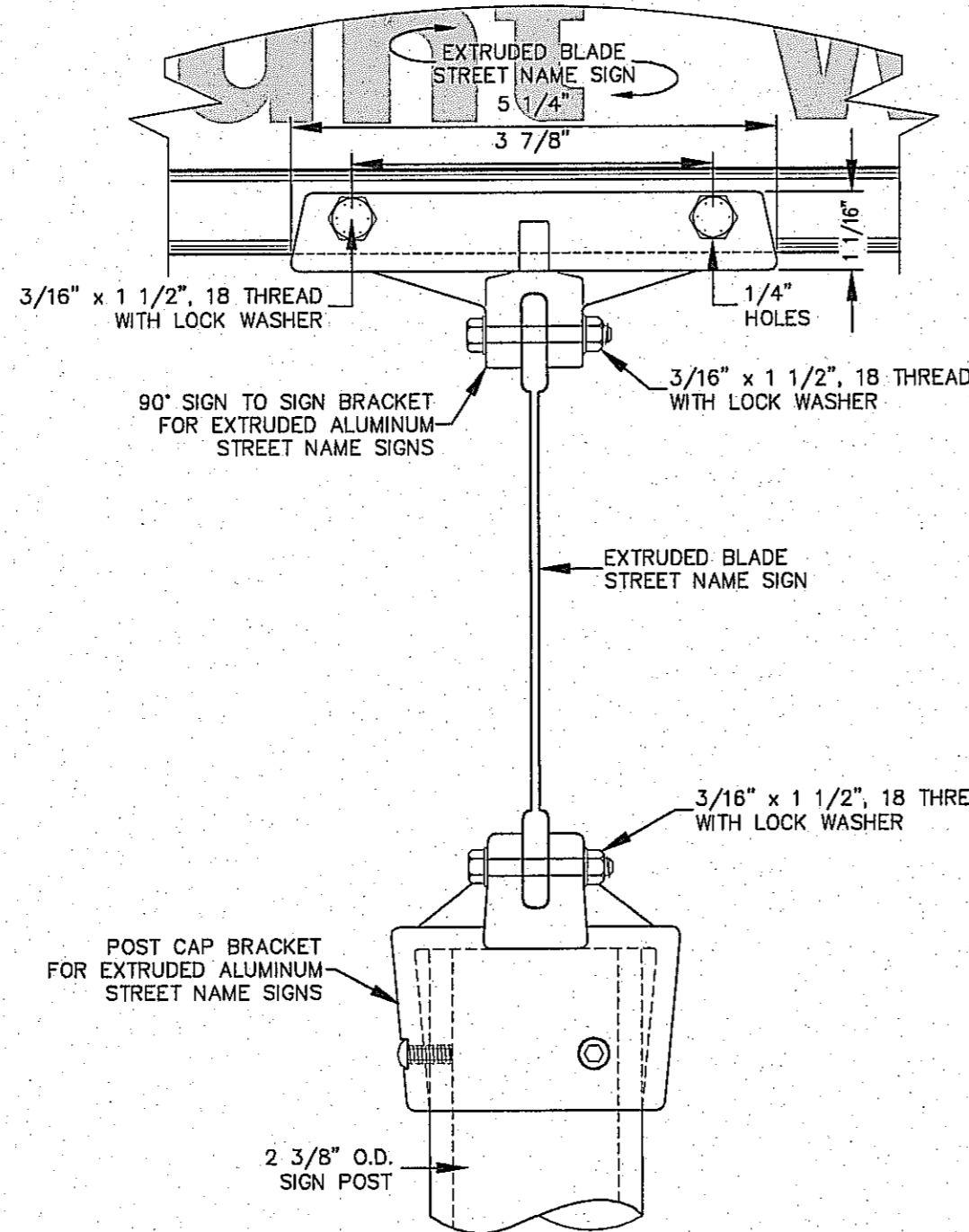


NOTES:

- BRACKET MATERIALS SHALL BE 305 ALUMINUM ALLOY WITH A TENSILE STRENGTH OF 4900 PSI.
- DIACAST SHALL BE FREE OF BURRS, PITS, AND HOLES.

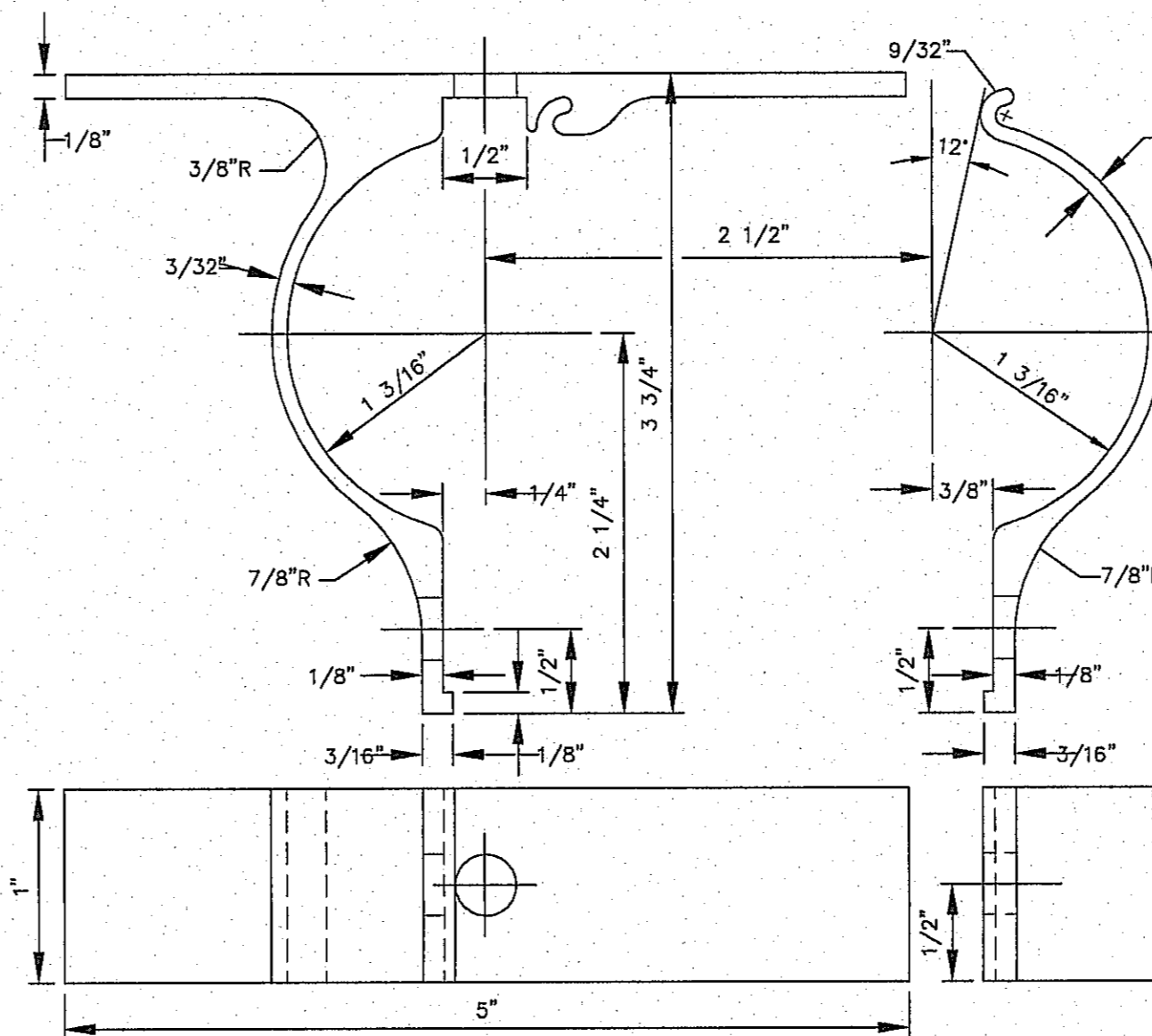
POST CAP BRACKET FOR EXTRUDED STREET NAME SIGNS

SCALE: N.T.S.



90° SIGN TO SIGN BRACKET FOR EXTRUDED STREET NAME SIGNS

SCALE: N.T.S.

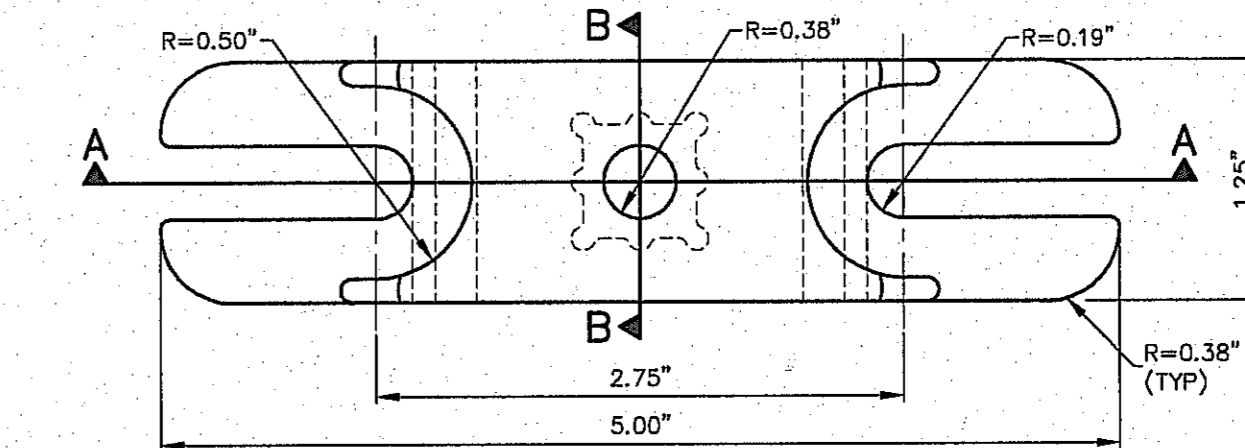


NOTES:

- ALL HOLES 3/8" PUNCH.
- FILLETS AND ROUNDS 1/16" RADIUS.
- FURNISH THE FOLLOWING HARDWARE WITH EACH BRACKET:
 - 1 EA. 5/16" x 3/4" BOLT
 - 1 EA. 5/16" x 1/4" BOLT
 - 2 EA. 5/16" NUTS AND LOCK WASHERS
 - 2 EA. FLAT WASHERS

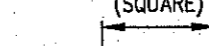
ALUMINUM SIGN CLAMP BRACKET FOR TRAFFIC CONTROL SIGNS

SCALE: N.T.S.



SECTION A-A

(SQUARE)



SECTION B-B

(NOT TO SCALE)

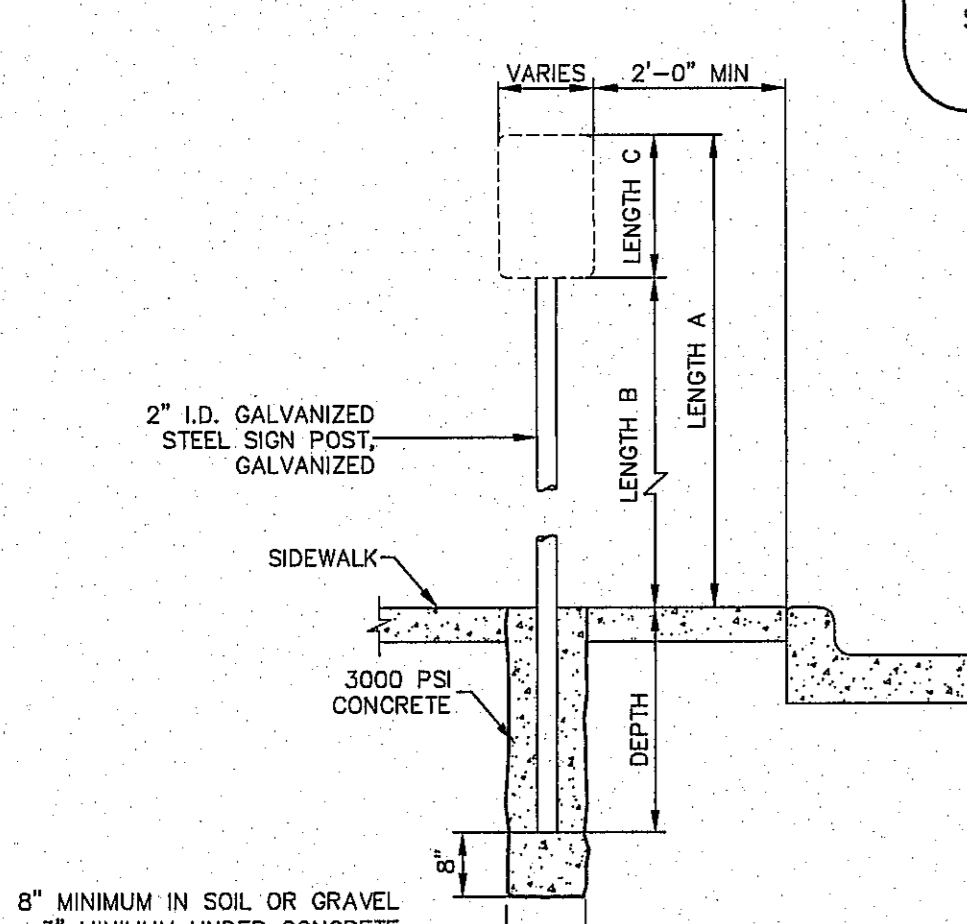


SIGN CLAMP CASTING SHALL MEET ASTM B85 ALLOY 360.0 OR A360.0, ASTM B26 ALLOY 356.0-F, OR ASTM B108 ALLOY 356.0-F OR A444.0-T4.

UNIVERSAL SIGN CLAMP

NOT TO SCALE

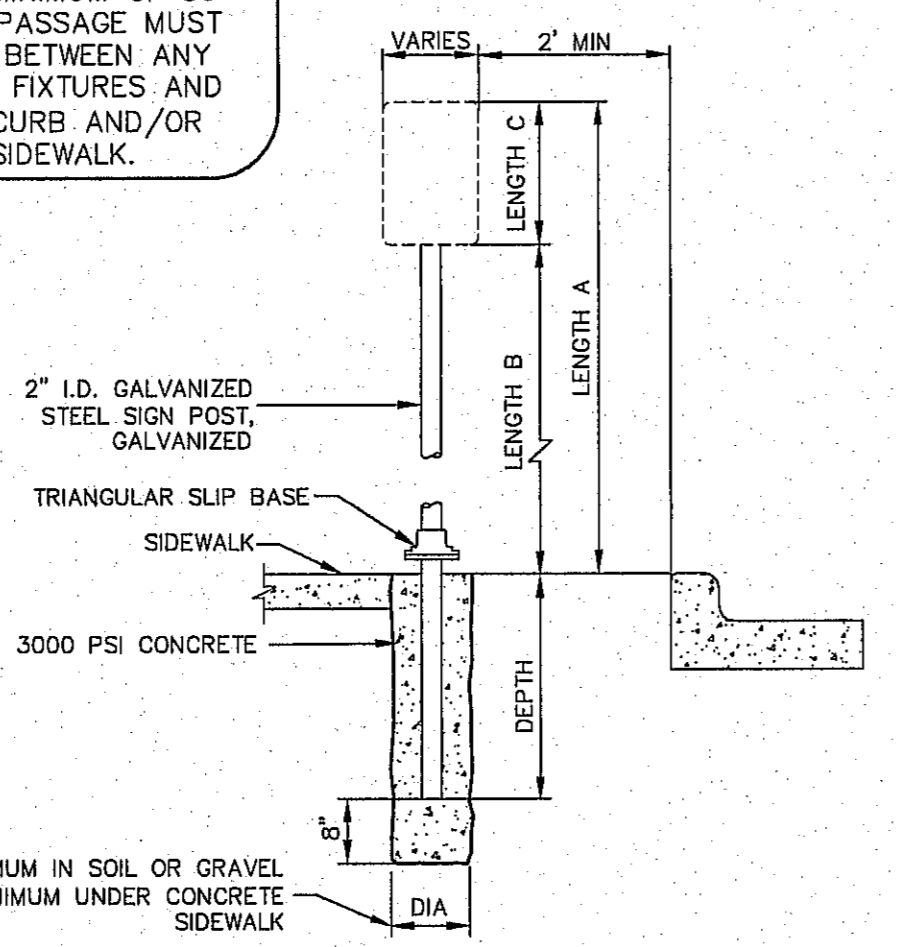
SIGN PLACEMENT IS CRITICAL. IN ORDER TO MAINTAIN ADA COMPLIANCE, A MINIMUM OF 36" UNOBSTRUCTED PASSAGE MUST BE MAINTAINED BETWEEN ANY STRUCTURES OR FIXTURES AND THE FACE OF CURB AND/OR BACK OF SIDEWALK.



LENGTH A	LENGTH B	LENGTH C	DEPTH
10 FEET	7 FEET	LARGER THAN 24"	2 FEET
9 FEET	7 FEET	SMALLER THAN 24"	3.5 FEET
8 FEET	7 FEET	SMALLER THAN 24"	1.5 FEET

STANDARD SIGN POST INSTALLATION

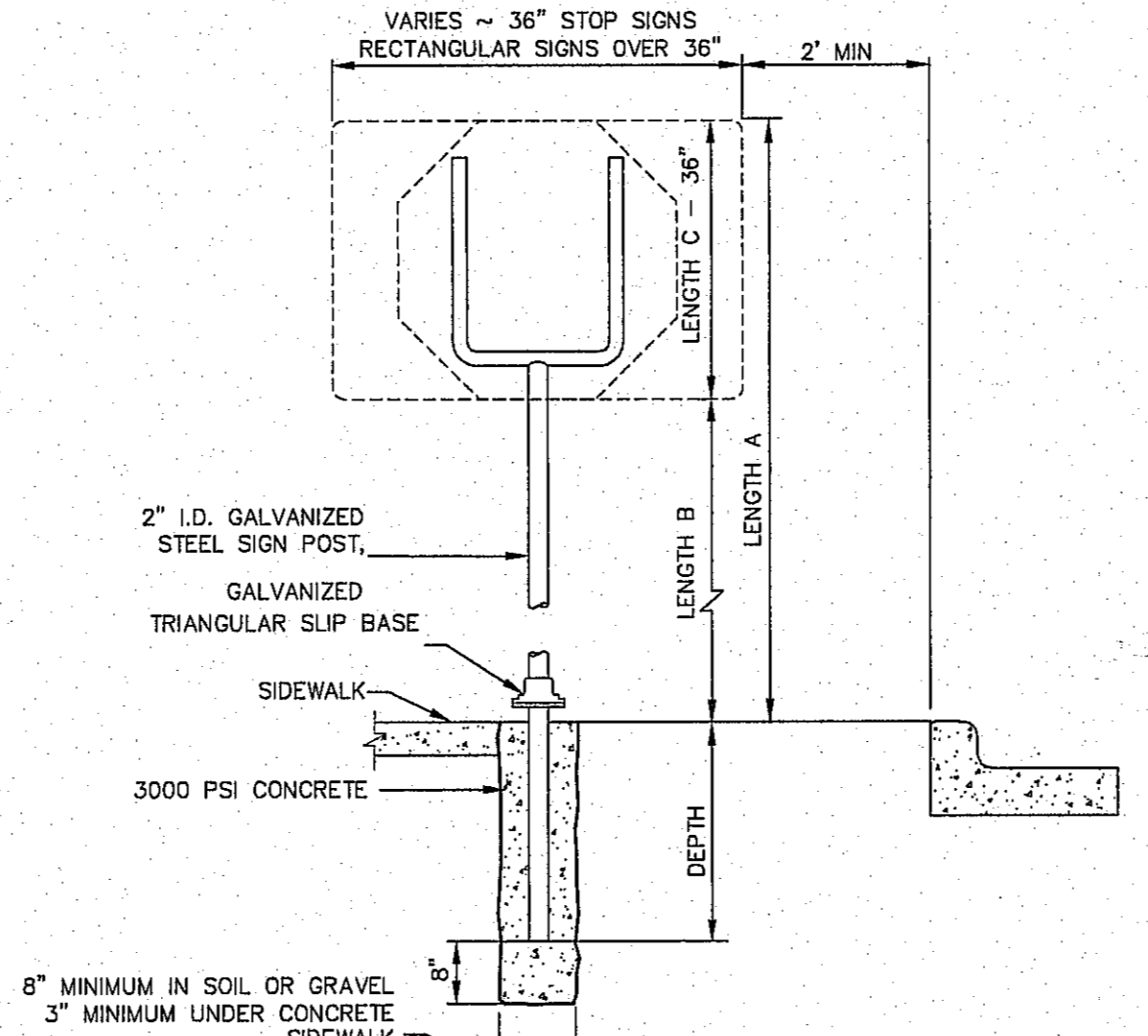
SCALE: 1/2"=1'-0"



LENGTH A	LENGTH B	LENGTH C	DEPTH
10 FEET	7 FEET	LARGER THAN 24"	3.5 FEET
9 FEET	7 FEET	SMALLER THAN 24"	3.5 FEET
4 FEET	1 FOOT	OBJECT MARKERS ONLY	3.5 FEET

SIGN POST INSTALLATION WITH TRIANGULAR SLIP BASE

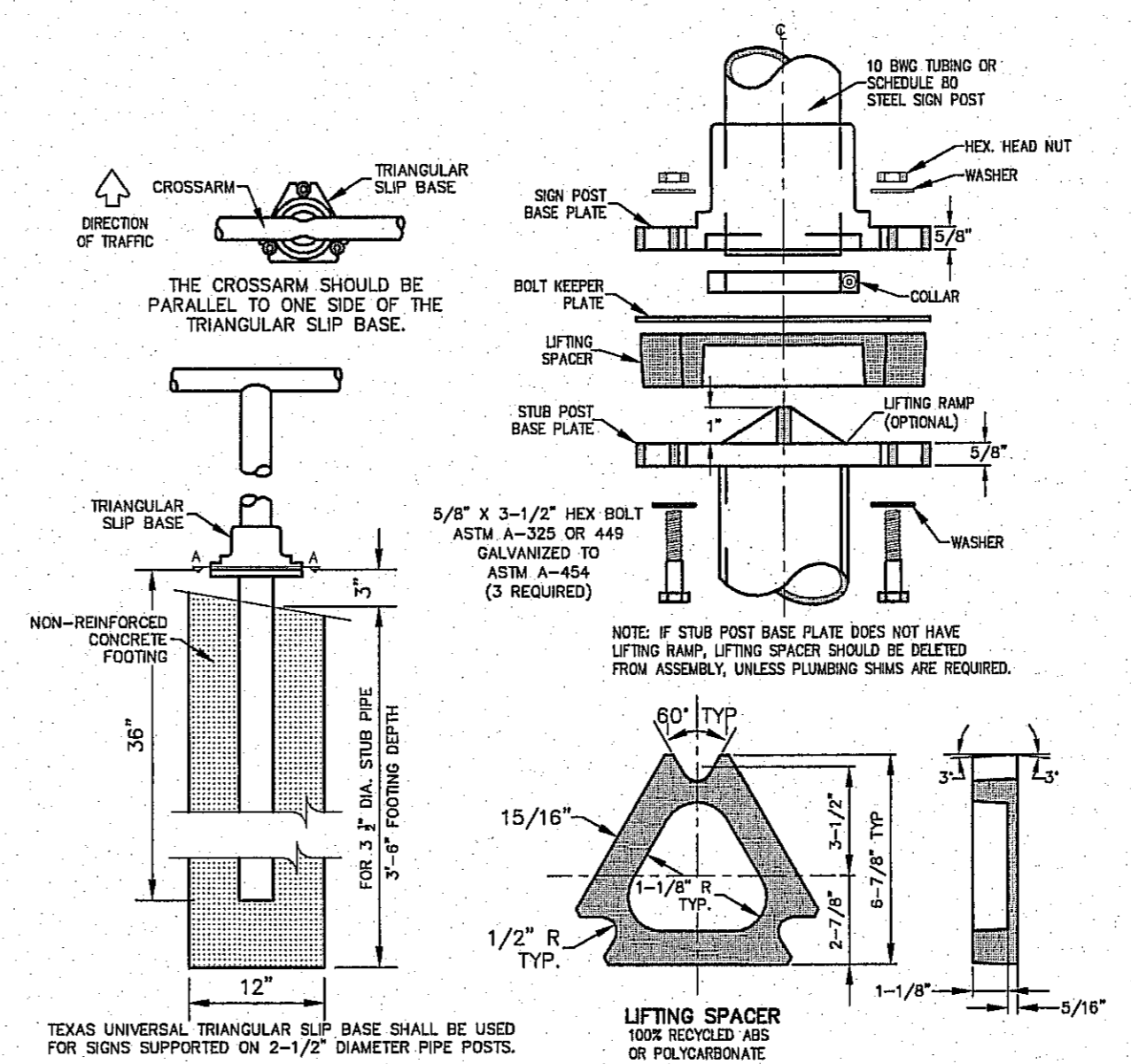
SCALE: 1/2"=1'-0"



FOR USE WITH 36" OR LARGER STOP SIGNS AND FOR RECTANGULAR SIGNS GREATER THAN 36" IN OVERALL WIDTH

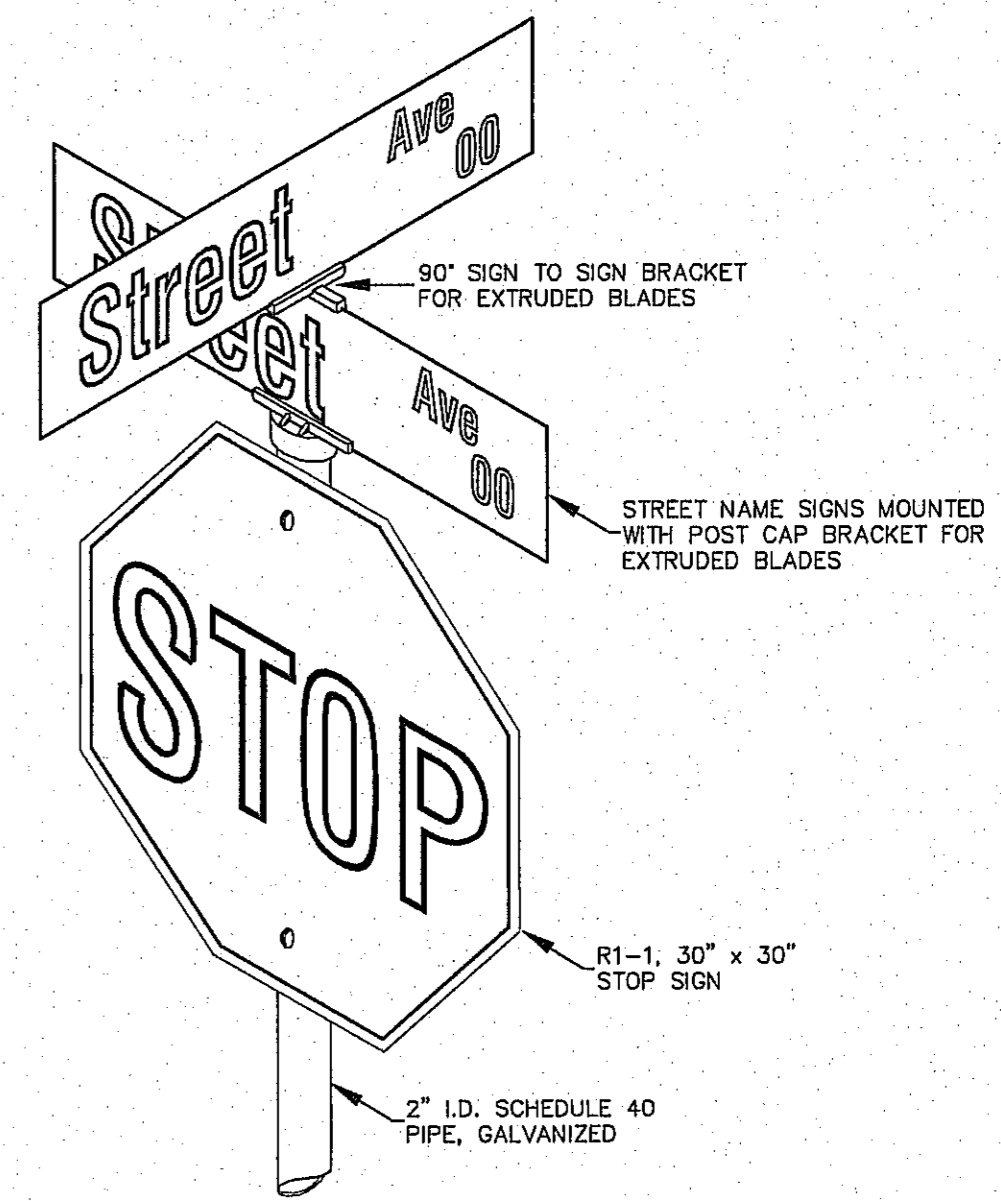
SIGN POST INSTALLATION WITH TRIANGULAR SLIP BASE

SCALE: 1/2"=1'-0"



TEXAS UNIVERSAL TRIANGULAR SLIP BASE

NOT TO SCALE

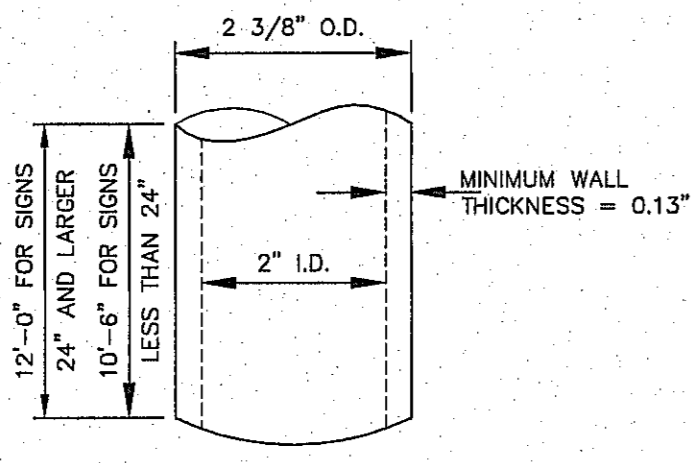


STOP SIGN WITH STREET NAME SIGNS

SCALE: N.T.S.

SIGN POST SPECIFICATIONS

SCALE: N.T.S.



NOTES:

- WELD ALONG LENGTH TO FORM VIRTUALLY SEAMLESS PIPE.
- POST SHALL BE HOT-DIPPED ZINC GALVANIZED UNIFORMLY ON THE OUTSIDE WITH A NOMINAL ZINC WEIGHT OF 1.0 OUNCE PER SQUARE FOOT.
- THE ZINC COATING IS TO BE OVER-COATED WITH A CHROMITE CONVERSION AND AN ACRYLIC TOP COAT TO PROVIDE RESISTANCE TO RUST AND CORROSION.
- THE INSIDE OF THE POST SHALL BE COATED WITH AN ORGANIC MATERIAL FOR PROTECTION AGAINST RUST.
- BOTH ENDS SHALL BE SQUARELY CUT WITHOUT FLARE.
- POST SHALL BE FREE OF WARPS, CORROSION, OR OTHER DEFECTS.
- RING WELDS OR SPLICES SHALL NOT BE ACCEPTABLE.
- BENDING STRENGTH AS SPECIFIED BY AASHTO FOR SCHEDULE 40 PIPE.
- POSTS SHALL BE BUNDLED WITH METAL STRAPS AND SHALL NOT EXCEED 37 POSTS PER BUNDLE.

BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND 10TH STREET, EL PASO, TEXAS
ELEVATION = 3076.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submitter Prod	JCK
2	11/01/16	2nd City Submitter	DAE
1	9/15/16	1st City Submitter	DAE

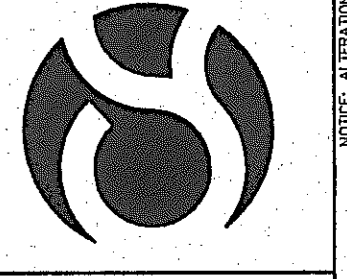
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

CALL BEFORE YOU DIG
EL PASO ELECTRIC COMPANY
1-800-876-TESS
544-8300
562-5411/662-2003
562-5411/66-TESS
AFTER HOURS EMERGENCY (EPW)
775-7414
1-800-354-4847
1-800-876-4877

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #997
1845 Northwestern Dr., Ste C
El Paso, Texas 79912
tel (915) 877.4166
fax (915) 877.4334
www.csaengineers.com



CIMARRON CANYON UNIT ONE SUBDIVISION

SIGNAGE DETAILS

GOB	1524
DESIGN BY	JCK
GOB-SM-DG	9/15/16
DATE	AS NOTED
SHEET NO.	116
SHEET QUANTITY	121 OF 131



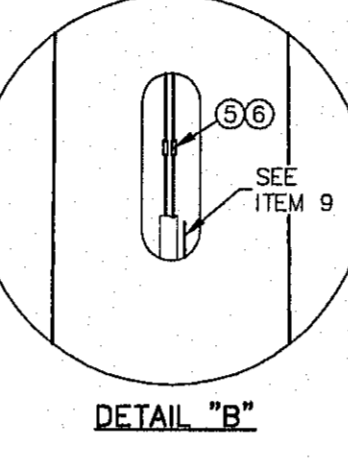
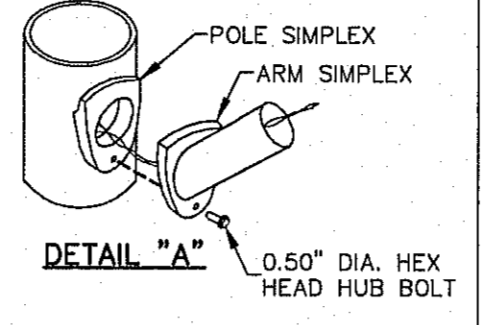
Final Approval

© CSA DESIGN GROUP, INC. Jan 05, 2017 - 11:20am
 S:\011424 Cimmarron Canyon Unit 124 - 3rd City Submittal-CORREX\124_Sht_112-118 (Illumination)dwg
 4/10/17

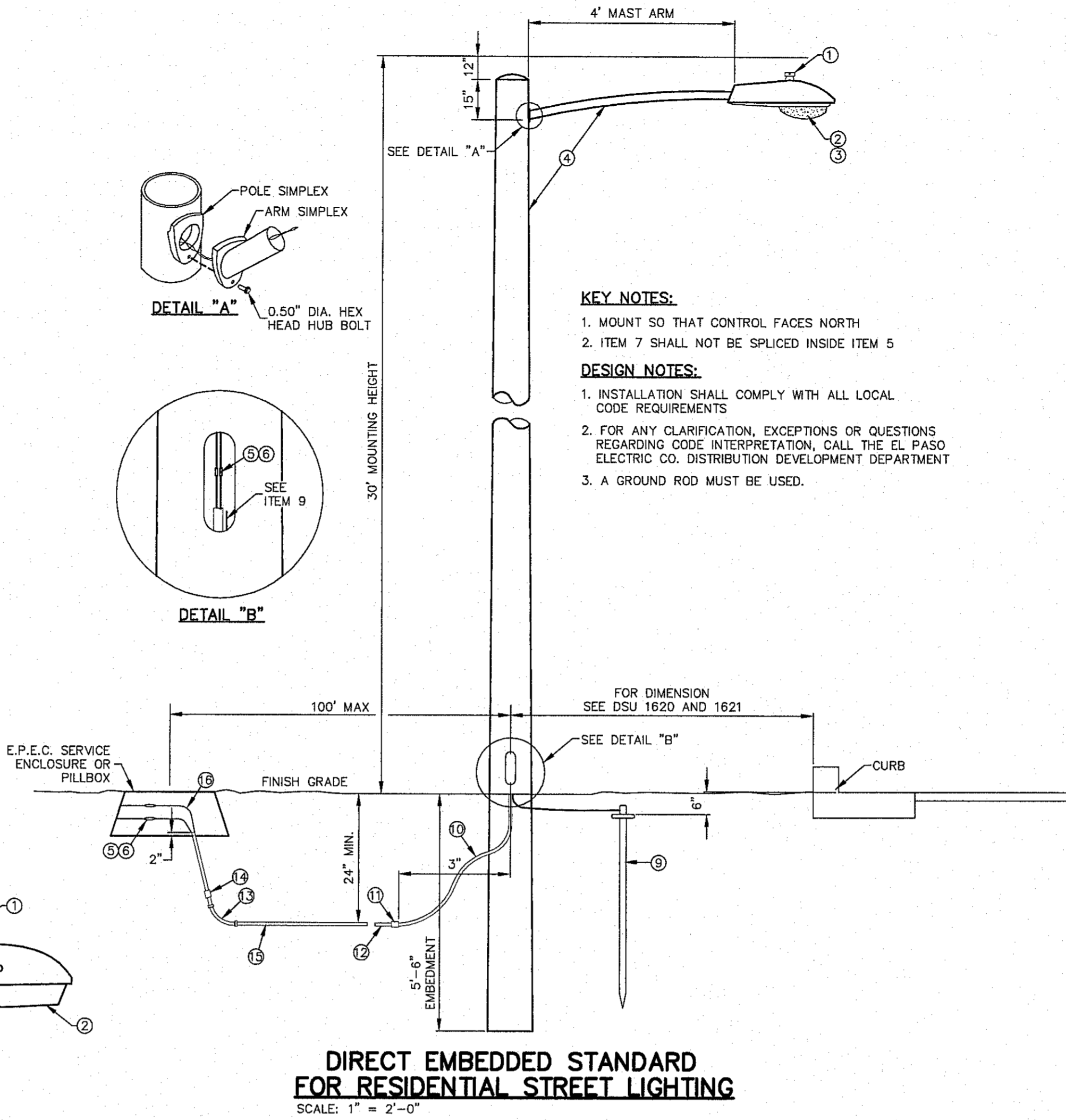
ALL OTHER STREET LIGHTS AS NOTED IN PLAN VIEW

ITEM No.	DESCRIPTION	STOCK/DSU No.	QTY PER UNIT	C/U CODE	MACRO CODE
1	PHOTO CELL, 240V - SEE NOTE 1	21-225	1		
2	HPS LAMP, 100W	21-085	1		
3	LUMINAIRE, 100W H.P.S.	21-335	1	LCOBRAHD	
4	SLEEVES, #12-10	05-140	2		
5	MAST ARM, 6' x 1 1/4"	21-200	1	LBRKT1*6	
6	MACHINE BOLT, 5/8" x 12"	02-470	1		
7	SQUARE GALV. WASHER, 2 1/4" x 2 1/4"	02-760	1		
8	COIL SPRING WASHER, 5/8"	02-786	1	LMBS/812	
9	LOCK NUT, 5/8"	02-705	1		
7	SERVICE ENTRANCE CAP FOR 1" PVC CONDUIT	17-281	1	LSVCCAP1	LCOBRAUG
8	LAG BOLT, 3/8" x 3"	02-343	2	LLAG38*3	
9	CABLE, #10, 2 CONDUCTOR, 600V UF	13-600	8'	L2C#10S	
10	COPPER CABLE, #12, 19 SOLID, 600V, BLUE	13-702	60'	LC#12CU	
11	SCHEDULE 80 1" PVC CONDUIT	17-280	30'	LSCH801	
12	PIPE STRAP FOR 1" PVC CONDUIT, 2 HOLE	17-283	9	LPVCSTRP	
13	NAIL, STAINLESS STEEL SCREW 2.5 IN.	14-247	.25#	LNAL14*2	
14	POLE, 35 FT. - CLASS 4	09-035	1	L35AUG	
15	1" PVC 90 DEGREE ELBOW	17-297	1	LEL901	
15	1" PVC 45 DEGREE ELBOW	17-298	1	LEL451	
16	1" PVC COUPLING	17-296	1	LCPLG1	
17	1" PVC CONDUIT	17-299	AS REQ'D	LPVC1	

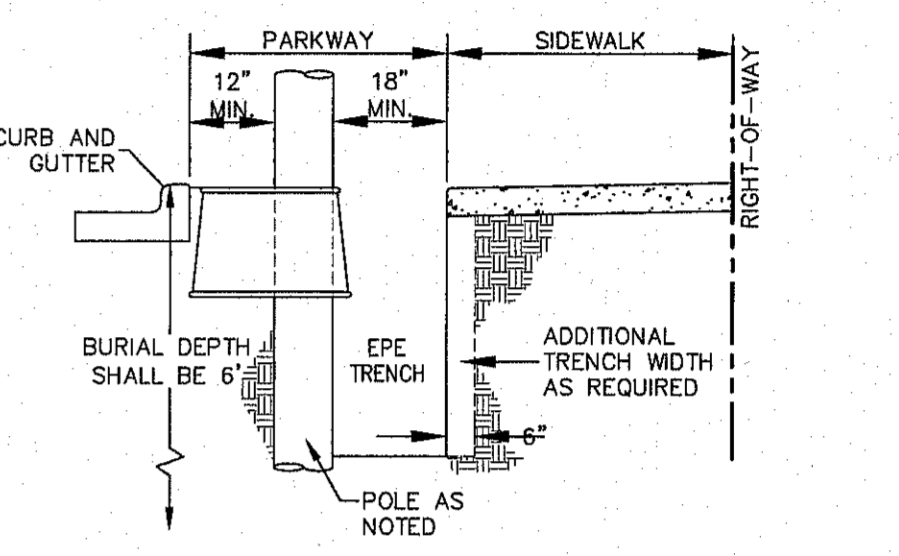
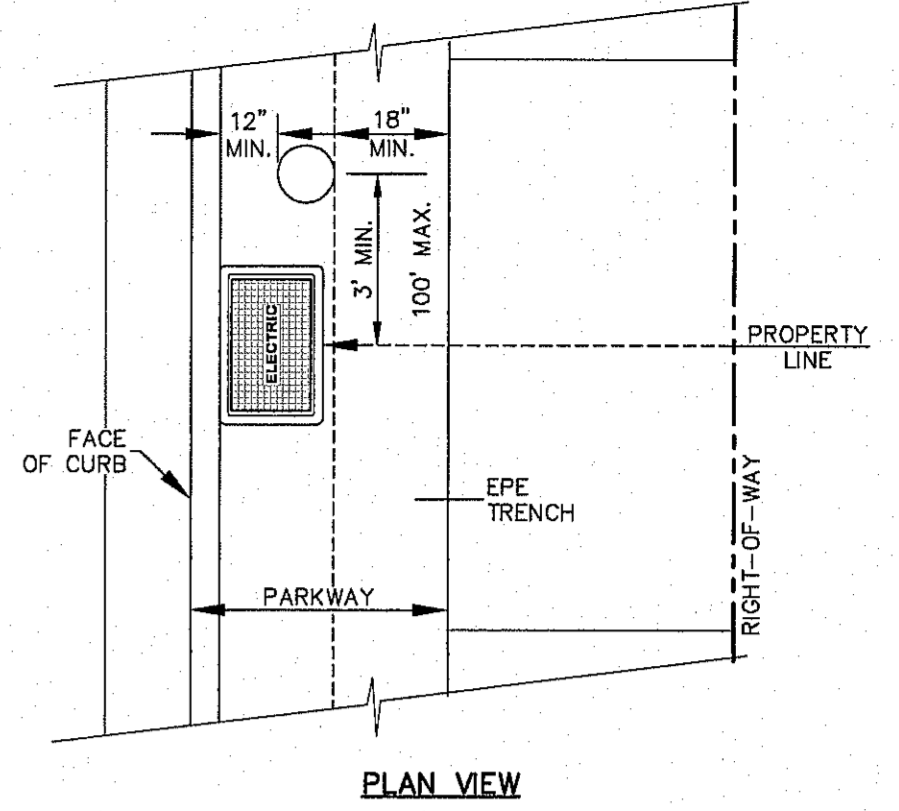
LED EQUIVALENTS MAY BE SUBSTITUTED FOR THE HIGH PRESSURE SODIUM LUMINAIRES NOTED. COORDINATE SUBSTITUTIONS WITH EL PASO ELECTRIC.



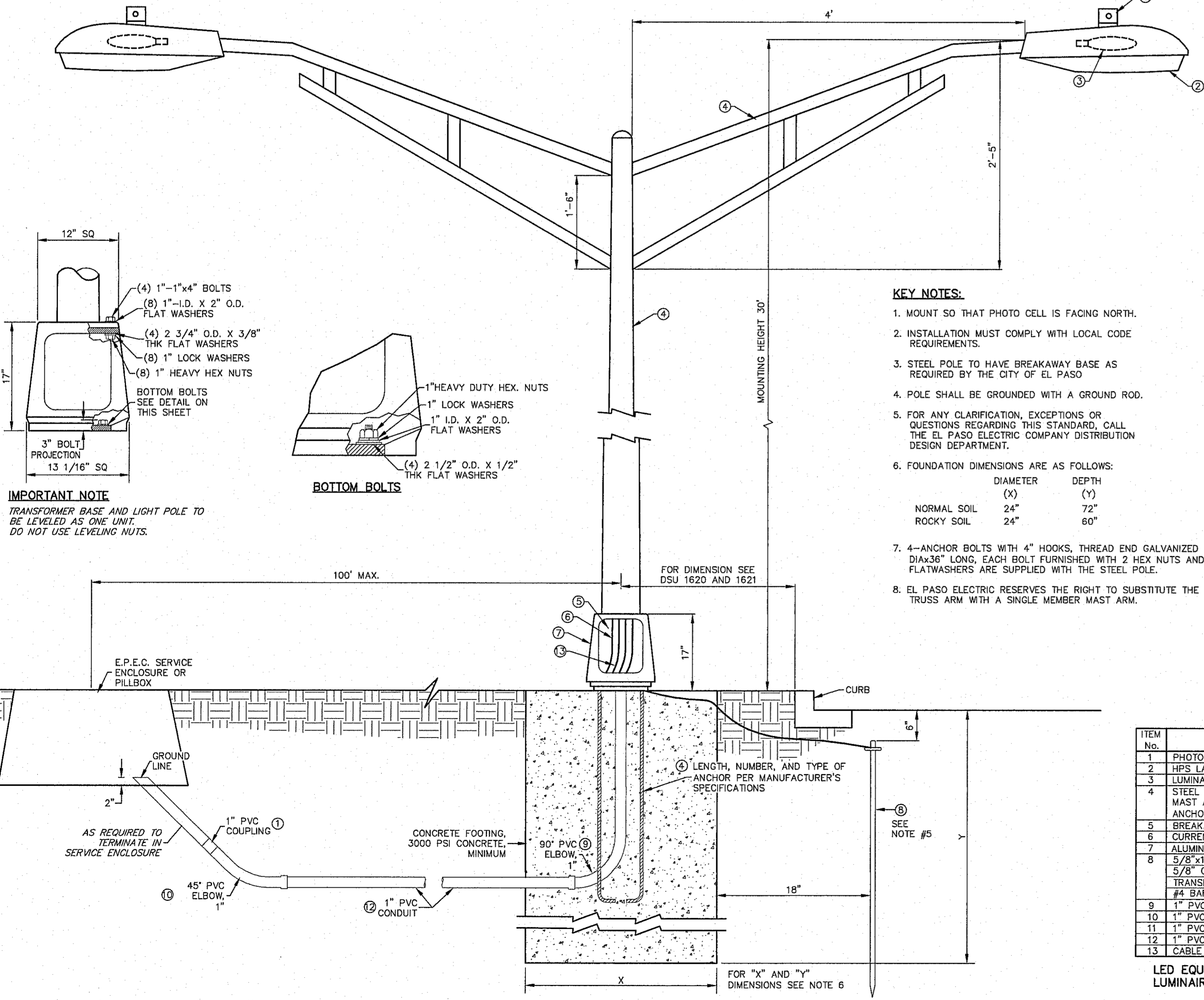
- KEY NOTES:**
1. MOUNT SO THAT CONTROL FACES NORTH
 2. ITEM 7 SHALL NOT BE SPLICED INSIDE ITEM 5
- DESIGN NOTES:**
1. INSTALLATION SHALL COMPLY WITH ALL LOCAL CODE REQUIREMENTS
 2. FOR ANY CLARIFICATION, EXCEPTIONS OR QUESTIONS REGARDING CODE INTERPRETATION, CALL THE EL PASO ELECTRIC CO. DISTRIBUTION DEVELOPMENT DEPARTMENT
 3. A GROUND ROD MUST BE USED.



DIRECT EMBEDDED STANDARD FOR RESIDENTIAL STREET LIGHTING
 SCALE: 1" = 2'-0"



TYPICAL (PRIMARY) TRENCH LOCATION ON LOCAL RESIDENTIAL STREET
 N.T.S.

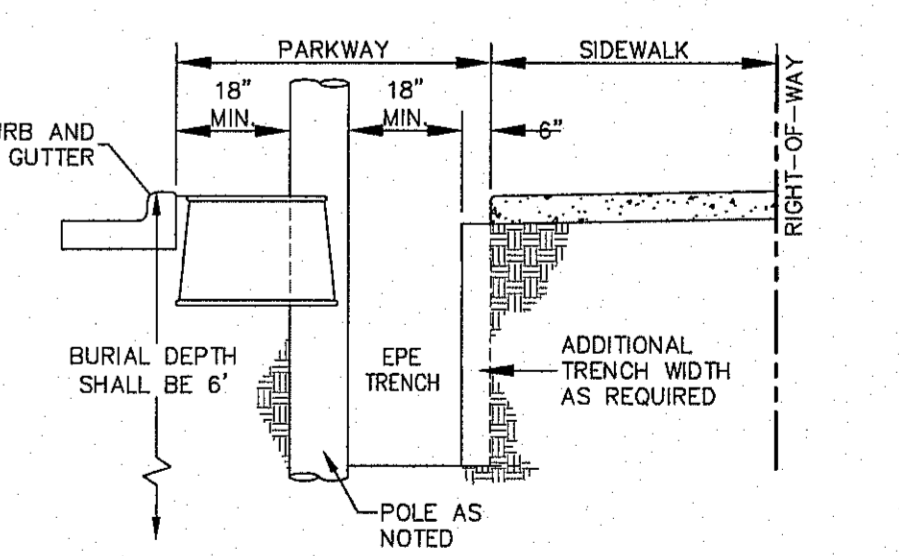
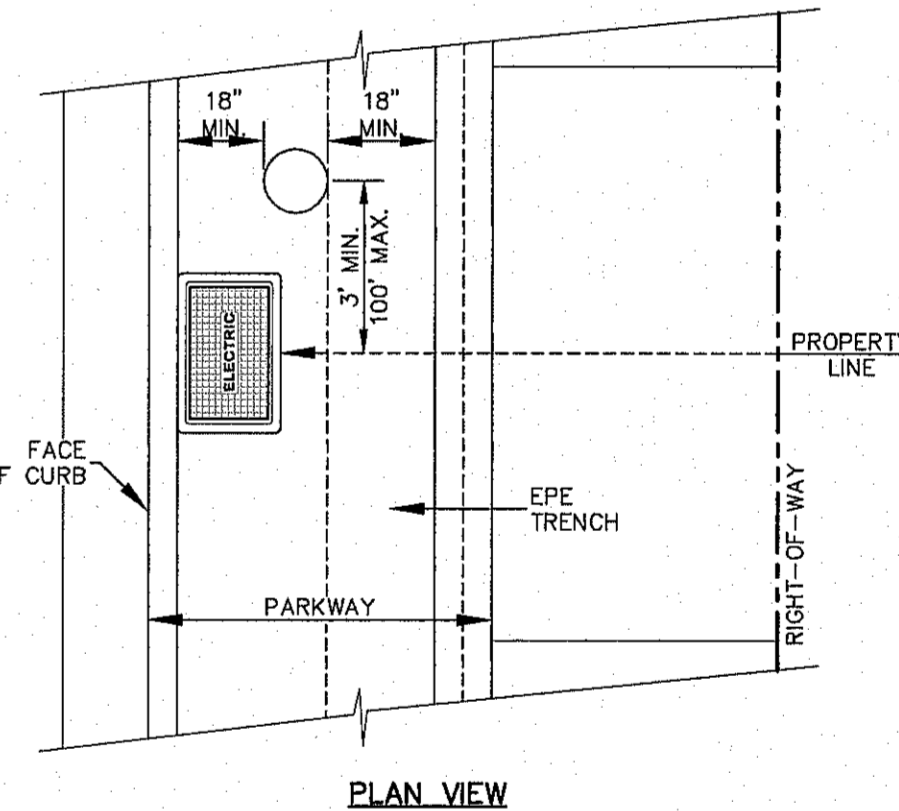


ARTERIAL STREET LIGHT POLE DETAIL
 N.T.S.

- KEY NOTES:**
1. MOUNT SO THAT PHOTO CELL IS FACING NORTH.
 2. INSTALLATION MUST COMPLY WITH LOCAL CODE REQUIREMENTS.
 3. STEEL POLE TO HAVE BREAKAWAY BASE AS REQUIRED BY THE CITY OF EL PASO
 4. POLE SHALL BE GROUNDED WITH A GROUND ROD.
 5. FOR ANY CLARIFICATION, EXCEPTIONS OR QUESTIONS REGARDING THIS STANDARD, CALL THE EL PASO ELECTRIC COMPANY DISTRIBUTION DESIGN DEPARTMENT.
 6. FOUNDATION DIMENSIONS ARE AS FOLLOWS:
- | | DIAMETER (X) | DEPTH (Y) |
|-------------|--------------|-----------|
| NORMAL SOIL | 24" | 72" |
| ROCKY SOIL | 24" | 60" |
7. 4-ANCHOR BOLTS WITH 4" HOOKS, THREAD END GALVANIZED 1" DIAx36" LONG, EACH BOLT FURNISHED WITH 2 HEX NUTS AND 2 FLATWASHERS ARE SUPPLIED WITH THE STEEL POLE.
 8. EL PASO ELECTRIC RESERVES THE RIGHT TO SUBSTITUTE THE TRUSS ARM WITH A SINGLE MEMBER MAST ARM.

ITEM No.	DESCRIPTION	STOCK/DSU No.	QTY	C/U Code	FEATURE
1	PHOTO CELL, 240V-SEE NOTE 1	21-225	2		ST. LT.100W
2	HPS LAMP, 250W	21-085	2	LCOBRAHD	HPS FOR STEEL POLE
3	LUMINAIRE, 250W H.P.S.	21-335	2		
4	STEEL POLE 31\"/>				

LED EQUIVALENTS MAY BE SUBSTITUTED FOR THE HIGH PRESSURE SODIUM LUMINAIRES NOTED. COORDINATE SUBSTITUTIONS WITH EL PASO ELECTRIC.



TYPICAL (PRIMARY) TRENCH LOCATION ON ARTERIAL STREET
 N.T.S.

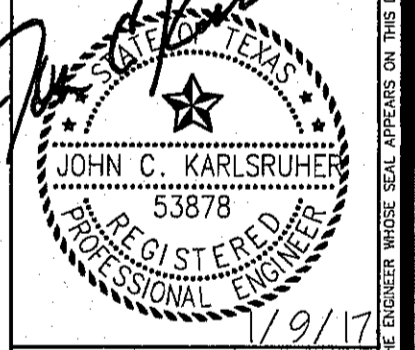
BENCHMARK CITY MOUNTAIN AT THE CENTERLINE INTERSECTION OF BRYAN LANDING DRIVE ELEVATION = 3976.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	11/01/16	1st City Submittal	DAE
2	11/01/16	2nd City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

WARNING!
 BEFORE YOU DIG
 CONTRACTOR SHALL
 FIELD LOCATE ALL
 EXISTING UNDERGROUND
 IMPROVEMENTS IN
 PROJECT AREA

BEFORE YOU DIG - CALL
 EL PASO ELECTRIC COMPANY 643-5720
 4-800-DIG-TESS 1-800-DIG-TESS
 A&T GAS SERVICE 643-5775
 TESS EMERGENCY HOTLINE 643-5775
 EL PASO WATER (PWS) 643-5775
 AFTER HOURS EMERGENCY (EPW) 643-5775
 EL PASO NATURAL GAS COMPANY 643-5775
 TEXAS EXCAVATION SAFETY SYSTEM 643-5775
 (644-8877)

This document, whether in hard copy or machine readable form, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material, by any means, may result in civil and criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm F-6997
 1845 Northwestern Dr, Ste C
 El Paso, Texas 79912
 tel (915) 877-4155
 fax (915) 877-4334
 www.csaengineering.com



CIMARRON CANYON UNIT ONE SUBDIVISION

SHEET TITLE
ILLUMINATION DETAILS

DOB	1524
DESIGN BY	484-94
DOB-SM-DC	9/15/16
DATE	
DAE	AS NOTED
SCALE	AS NOTED
SHEET NO.	117
SHEET SEQUENCE	122 of 131



Final Approval

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL EROSION CONSERVATION AND SILTATION ORDINANCES.
2. ALL EROSION CONTROL DEVICES (WITH THE EXCEPTION OF TEMPORARY BERMS AND SWALES) SHALL BE INSTALLED PRIOR TO SITE DISTURBANCE AND SHALL REMAIN IN PLACE UNTIL FINAL GRADING AND THE INSTALLATION OF PROPOSED STORM SEWERS ARE COMPLETE AND A STAND OF NATURAL VEGETATION WITH 70% COVERAGE IS ACHIEVED. TOP SOIL SHOULD BE RESERVED AND STOCKPILED DURING CLEARING AND GRUBBING OPERATIONS. THE RESERVED TOP SOIL SHOULD BE SPREAD EVENLY UPON THE FINISHED SURFACE ONCE GRADING OPERATIONS ARE COMPLETE IN ORDER TO PROMOTE A NATURAL REVEGETATION OF THE DISTURBED AREA.
3. PLACE INLET PROTECTION AROUND ALL PROPOSED DRAINAGE INLETS DURING CONSTRUCTION.
4. THE CONTRACTOR MUST USE SEDIMENT FILTERS OR OTHER MEASURES APPROVED BY THE ENGINEER TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM CLOGGING STORM SEWER LINES AND EXISTING AND/OR PROPOSED DRAINAGE INLETS. LIKEWISE, THE CONTRACTOR MUST USE SEDIMENT FILTERS OR OTHER MEASURES TO PREVENT SILT AND CONSTRUCTION DEBRIS FROM BEING TRANSPORTED TO ADJACENT PROPERTIES.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING ANY EROSION CONTROL DEVICE WHICH THEY DISTURB. THE CONTRACTOR SHALL CONTACT THE OWNER/DEVELOPER OR THEIR REPRESENTATIVE REGARDING ANY DEFICIENCIES IN THE ESTABLISHED EROSION CONTROL MEASURES WHICH MAY LEAD TO THE UNAUTHORIZED DISCHARGE OF STORM WATER, SEDIMENTATION, OR OTHER POLLUTANTS. THESE INCLUDE, BUT ARE NOT LIMITED TO, EXCESS CONCRETE DUMPING OR CONCRETE RESIDUE, ASPHALT REMAINS, PAINTS, SOLVENTS, GREASES, FUEL, AND LUBRICATION OILS, PESTICIDES, AND SOLID WASTE MATERIALS.
6. MAINTENANCE OF THE EROSION CONTROL DEVICES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION. REGULAR INSPECTION OF THE EROSION CONTROL DEVICES SHOULD BE MADE BY THE CONTRACTOR AND ACCUMULATED SILT IN DEVICES SHOULD BE REMOVED IN A TIMELY FASHION AND SHALL BE DISTRIBUTED ON SITE IN A MANNER THAT SHALL NOT CONTRIBUTE TO ADDITIONAL SILTATION.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING ANY SILT OR CONSTRUCTION DEBRIS FROM OFF-SITE PROPERTIES AND ROADWAYS THAT IS THE RESULT OF THE PROPOSED CONSTRUCTION.
8. THE CONTRACTOR SHALL CONSTRUCT A STABILIZED CONSTRUCTION ENTRANCE AT ALL PRIMARY POINTS OF ACCESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN THE STABILIZED CONSTRUCTION ENTRANCE AND FOR INSURING THAT ALL CONSTRUCTION TRAFFIC UTILIZES THE STABILIZED ENTRANCE AT ALL TIMES FOR INGRESS/EGRESS TO THE SITE.
9. THE CONTRACTOR SHALL TAKE ALL AVAILABLE PRECAUTIONS TO CONTROL DUST. THE CONTRACTOR MAY WATER DOWN THE SITE ON A REGULAR BASIS, OR UTILIZE OTHER MEANS AS APPROVED BY THE CITY ENGINEER AT NO ADDITIONAL COST TO THE OWNER.
10. CONTRACTOR STAGING AREA TO BE AGREED UPON BY THE OWNER PRIOR TO CONSTRUCTION.
11. BEFORE ANY EARTHWORK COMMENCES, THE CONTRACTOR SHALL STAKE OUT THE LIMITS OF CONSTRUCTION AND ANY OTHER ITEMS ESTABLISHED IN THESE PLANS. THE CONTRACTOR SHALL PROTECT AND PRESERVE THE CONTROL POINTS AT ALL TIMES DURING THE COURSE OF THE PROJECT. THE GRADING CONTRACTOR SHALL PROVIDE ALL NECESSARY ENGINEERING AND SURVEYING FOR LINE AND GRADE CONTROL POINTS RELATED TO EARTHWORKS.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING A CLEAN WORK SITE TO INCLUDE ALL EROSION CONTROL DEVICES UNTIL CONSTRUCTION IS COMPLETE AND THE OWNER/DEVELOPER HAS ACCEPTED THE SITE.
13. THE CITY ENGINEER, OR HIS REPRESENTATIVE, MAY MAKE REGULAR INSPECTIONS OF THE SITE AND RESERVES THE RIGHT TO REQUEST ADDITIONAL MEASURES.
14. IN ADDITION TO THE NOTES ABOVE, THE CONTRACTOR SHALL OBSERVE AND ADHERE TO ALL NOTES FOUND ON THE GRADING AND DRAINAGE PLAN, THE STORM WATER POLLUTION PREVENTION PLAN, OR ELSEWHERE IN THIS PLAN SET, AS WELL AS CHAPTER 15 OF THE ORDINANCE.

OWNER/DEVELOPER RESPONSIBILITY:

1. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER TO INSURE THAT THE CONTRACTOR ADHERES TO THE NOTES SET FORTH IN THIS PLAN SET. IN THE EVENT THAT A CONTRACTOR DEFAULTS ON THE PROJECT, THE OWNER/DEVELOPER SHALL ASSUME THE RESPONSIBILITIES OF THE CONTRACTOR FOR THE MAINTENANCE OF THE SITE.
2. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER TO NOTIFY THE CITY IN WRITING WHEN A SITE IS OR WILL BECOME IDLE FOR MORE THAN 180 CONSECUTIVE DAYS. DURING THIS TIME, THE PERMITTEE RESPONSIBLE FOR THE GRADING STABILIZATION PLAN SHALL MAKE REGULAR INSPECTIONS OF THE PROJECT AREA TO INSURE THE SITE IS PROPERLY MAINTAINED AND ADEQUATELY PROTECTED.
3. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER TO ASSUME THE MAINTENANCE OF THE SITE ONCE THE PROJECT IS CLOSED AND HAS BEEN ACCEPTED AS COMPLETE. THE OWNER/DEVELOPER SHALL ADDRESS THE NOTES SET FORTH IN THIS PLAN SET AND MAINTAIN THE SITE AT THEIR EXPENSE DURING THE WARRANTY PERIOD.
4. IT SHALL BE THE RESPONSIBILITY OF THE OWNER/DEVELOPER TO WATER THE SITE UNTIL THE ESTABLISHMENT OF VEGETATION AS TYPED IN THE EROSION CONTROL NOTES HAS BEEN ACHIEVED. LIKEWISE, THE OWNER/DEVELOPER SHALL WATER AS NECESSARY TO PREVENT WIND EROSION OF THE SITE. THE OWNER/DEVELOPER MAY UTILIZE OTHER MEANS TO CONTROL WIND EROSION AS APPROVED BY THE CITY ENGINEER.
5. THE OWNER/DEVELOPER SHOULD MAKE REGULAR VISITS TO THE SITE (AT LEAST ONCE EVERY SEVEN (7) CALENDAR DAYS) TO INSPECT THE EROSION CONTROL DEVICES DURING THE WARRANTY PERIOD. ADDITIONALLY, SITE VISITS SHOULD BE MADE WITHIN 24 HOURS PRIOR TO AN ANTICIPATED STORM EVENT AND IMMEDIATELY FOLLOWING A RAINFALL EVENT OF ONE-HALF INCH OR MORE, AND LIKEWISE, FOLLOWING A SIGNIFICANT WIND EVENT TO INSPECT THE EROSION CONTROL DEVICES. ANY DEVICES REQUIRING REPAIR OR REPLACEMENT SHOULD BE ADDRESSED WITHIN 24 HOURS FOLLOWING THE VISUAL INSPECTION.
6. THE OWNER/DEVELOPER SHALL MAINTAIN A CLEAN SITE BY REMOVING AND PROPERLY DISPOSING OF ANY TRASH, SOLID WASTE, OR OTHER DEBRIS THAT MAY ACCUMULATE ON THE PROPERTY.
7. THE OWNER/DEVELOPER MUST ADHERE TO TITLE 9 (HEALTH AND SAFETY), CHAPTER 9.04 (SOLID WASTE MANAGEMENT), ARTICLE XVII WEEDS AND VEGETATION, SECTION 9.04.860 (WEEDS AND VEGETATION PROHIBITED) AND MAINTAIN A SITE THAT IS FREE OF WEEDS AND VEGETATION OTHER THAN THOSE DEEMED AS "ACCEPTABLE" PER SECTION 9.04.870 (EXCEPTIONS).
8. THE CITY ENGINEER OR HIS REPRESENTATIVE, AS WELL AS REPRESENTATIVES OF THE SOLID WASTE MANAGEMENT DEPARTMENT MAY MAKE PERIODIC VISITS TO THE SITE DURING THE WARRANTY PERIOD AND RESERVE THE RIGHT TO REQUEST ADDITIONAL MEASURES PER TITLE 9 (HEALTH AND SAFETY) ARTICLE XVII - WEEDS AND VEGETATION, SECTION 9.04.880 (CITY ABATEMENT).

18.44.220 - PERMIT CLOSEOUT PROCEDURE

- AFTER THE PERMITTEE COMPLETES THE GRADING UNDER THE PERMIT, THE PERMIT SHALL BE CLOSED, AS A PART OF THE CLOSEOUT PROCEDURE, THE APPLICANT MUST SUBMIT THE FOLLOWING TO THE CITY:
- A STATEMENT FROM THE ENGINEER OF RECORD STATING THAT STATES, "THE GRADING OPERATION HAS BEEN SUBSTANTIALLY COMPLETED AND GENERALLY CONFORMS TO THE APPROVED SET OF PLANS." THE PERMITTEE SHALL CALL THE PERMIT OFFICIAL TO ESTABLISH THE BEGINNING OF THE WARRANTY PERIOD AND TO NOTIFY THE PERMIT OFFICIAL THAT THE GSP HAS BEEN IMPLEMENTED.
 - A COPY OF THE NOTICE OF TERMINATION FILED WITH THE STATE OR DATED CONSTRUCTION SITE NOTICE, IF APPLICABLE, IN ACCORDANCE WITH CHAPTER 15.

THE CITY WILL ISSUE A LETTER STATING GENERAL CONFORMANCE TO THE PERMIT HAS BEEN MET AND THAT THE WARRANTY PERIOD REQUIREMENTS WILL CONTINUE IN EFFECT.

18.44.090 - WARRANTY

ANY PERSON ISSUED A PERMIT SHALL AGREE WARRANT AND MAINTAIN THE AREA DESCRIBED IN THE PERMIT FOR A PERIOD OF TWO YEARS AFTER THE PERMIT IS CLOSED BY THE CITY PURSUANT TO SECTION 18.44.220, OR UNTIL A BUILDING PERMIT IS ISSUED FOR THE PURPOSE OF MAINTAINING A STABILIZED SITE IN ACCORDANCE WITH THE APPROVED GSP OR WHICHVER (THE "WARRANTY" OR "WARRANTY PERIOD"). THE CITY MAY CONDUCT INSPECTIONS OF THE PERMITTED AREA THROUGHOUT THE WARRANTY PERIOD AND REQUIRE MAINTENANCE AND CORRECTION OF THE WORK BY THE PERMIT HOLDER. FAILURE OF THE PERMIT HOLDER TO CORRECT THE WORK SHALL CONSTITUTE A FAILURE TO COMPLY WITH THE PROVISIONS OF THIS CHAPTER.

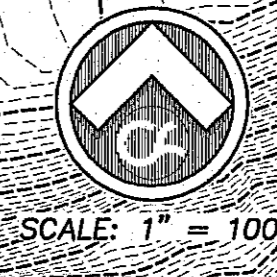
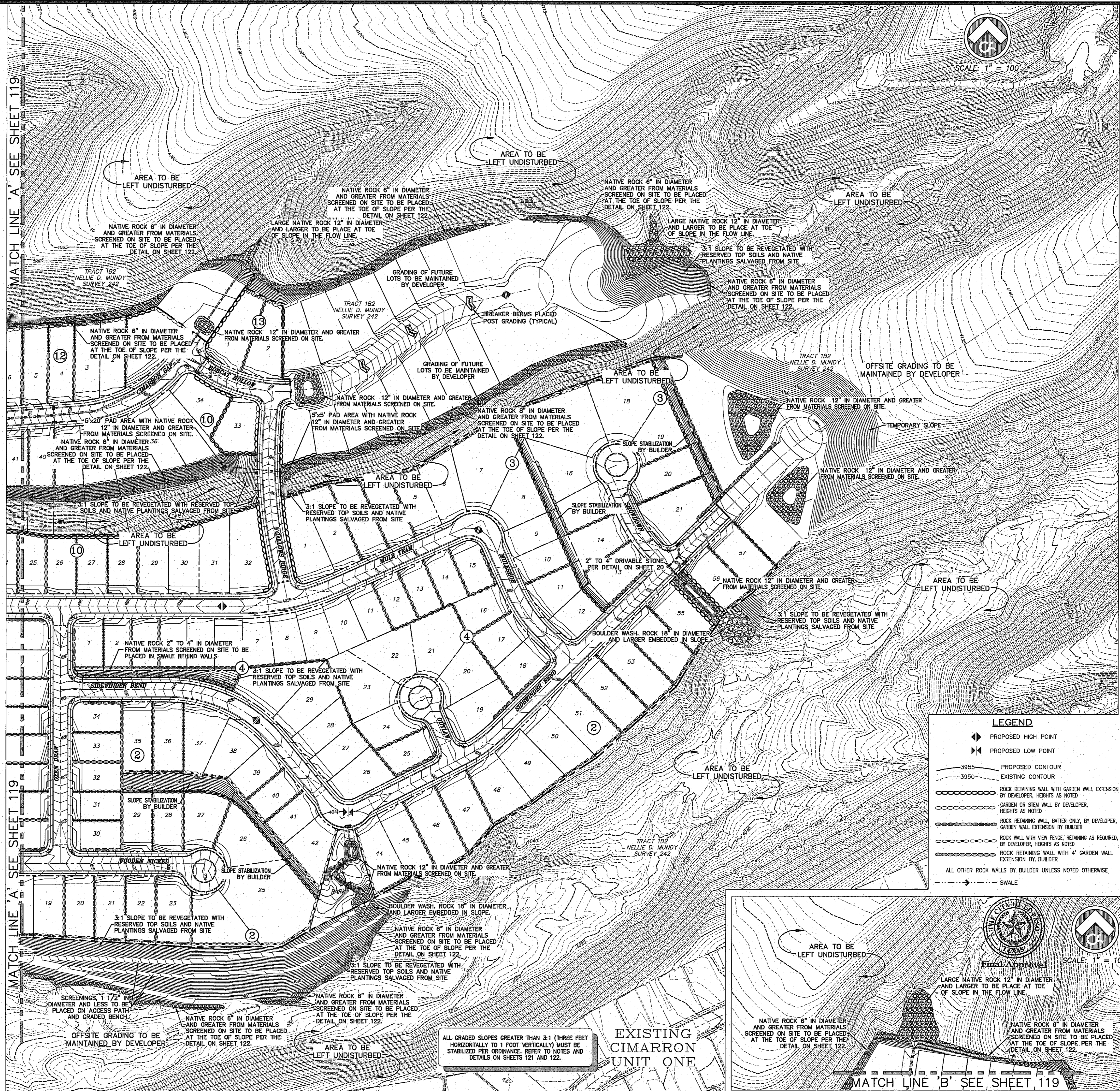
PENALTY - SEVERABILITY

ANY PERSON VIOLATING CHAPTER 18 (GRADING ORDINANCE) SHALL BE DEEMED GUILTY OF A MISDEMEANOR AND SHALL BE PUNISHED BY A FINE NOT TO EXCEED TWO THOUSAND DOLLARS. IN THE CASE OF A CONTINUING VIOLATION, EACH DAY'S VIOLATION SHALL BE DEEMED A SEPARATE OFFENSE (PER SECTION 18.44.210) THE SEVERABILITY PROVISIONS OF SECTION 1.04.060 APPLY.

FOR INFORMATION REGARDING SOILS, REFER TO THE PRELIMINARY SOILS EVALUATION REPORT FOR CIMARRON CANYON UNIT ONE SUBDIVISION (PROJECT No. SPG11178 DATED OCT 3, 2011); AND THE STREET PAVEMENT DESIGN (PROJECT No. SPG11043 DATED APR 4, 2011) PREPARED BY SPEESOIL, INC.

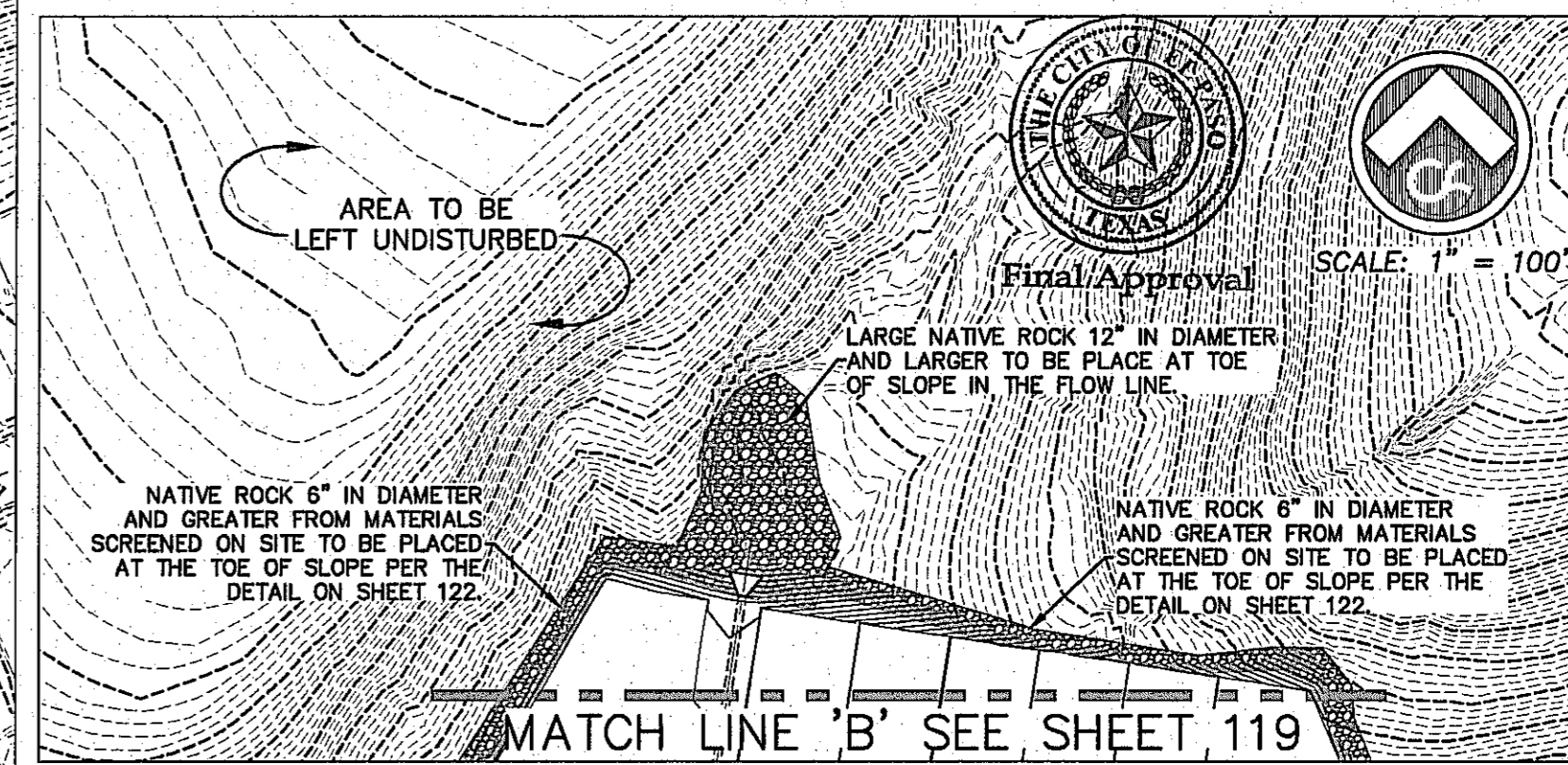


Know what's below.
Call before you dig.



LEGEND

- PROPOSED HIGH POINT
- PROPOSED LOW POINT
- 3955 - PROPOSED CONTOUR
- 3950 - EXISTING CONTOUR
- ROCK RETAINING WALL WITH GARDEN WALL EXTENSION BY DEVELOPER, HEIGHTS AS NOTED
- GARDEN OR STEM WALL BY DEVELOPER, HEIGHTS AS NOTED
- ROCK RETAINING WALL, BATTER ONLY, BY DEVELOPER, GARDEN WALL EXTENSION BY BUILDER
- ROCK WALL WITH VIEW FENCE, RETAINING AS REQUIRED, BY DEVELOPER, HEIGHTS AS NOTED
- ROCK RETAINING WALL WITH 4" GARDEN WALL EXTENSION BY BUILDER
- ALL OTHER ROCK WALLS BY BUILDER UNLESS NOTED OTHERWISE
- SWALE



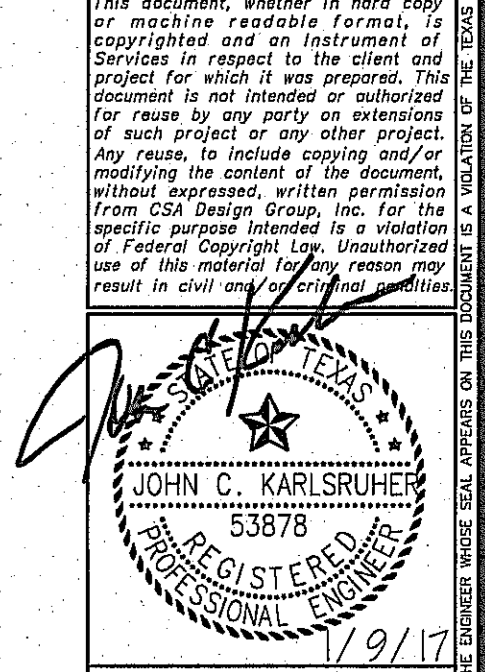
BENCHMARK CITY MONUMENT AT THE CENTERLINE INTERSECTION OF W. BRAYS LANDING DRIVE AND W. PASO CITY DAIRY ELEVATION = 3976.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	11/01/16	2nd City Submittal	DAE
2	11/01/16	3rd City Submittal	JCK
3	1/9/17	3rd City Submittal Final	JCK

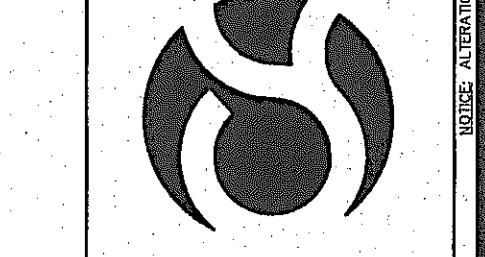
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

CALL - BEFORE YOU DIG

EL PASO ELECTRIC COMPANY 845-5720
EL PASO WATER 845-5800
TEXAS GAS SERVICE 845-5800
EL PASO WATER (FIBER) 845-5800
EL PASO DIG-TESS 845-5778
THE WARNER CABLE COMPANY 775-7444
TEXAS EXCAVATION SAFETY SYSTEM 1-800-DIG-TESS (694-8977)



csa design group, inc.
Texas Registered Engineering Firm F-9987
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel: (915) 877-4155
Fax: (915) 877-4334
www.csaengineers.com



CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
**GRADING
STABILIZATION
PLAN**

GOB	1524
DESIGN BY	GOB-SM-DC
DATE	9/15/16
DRAWN BY	AS NOTED
DATE	9/15/16
DESIGNED BY	DAE
SCALE	AS NOTED
SHEET NUMBER	120
TOTAL SHEETS	131

SITE PREPARATION:

- PRIOR TO GRADING OF THE SITE, NATIVE PLANTS THAT ARE OF A DESIRABLE SPECIES AND THAT ARE OF SUFFICIENT MATURITY WILL BE TAGGED FOR EASE OF IDENTIFICATION. THESE PLANTS WILL BE HARVESTED, REMOVED FROM THE SITE, AND RESERVED FOR THE PURPOSES OF REVEGETATING GRADED SLOPES AND OTHER AREAS THAT ARE IDENTIFIED ON THE PLAN, OR OTHER AREAS THAT MAY HAVE BEEN DISTURBED BY GRADING OPERATIONS AND NOT IDENTIFIED ON THE PLAN.
- THE SITE SHOULD BE CLEARED OF ALL TRASH, RUBBISH, AND DEBRIS THAT IS NOT OF NATURAL ORIGIN. THIS SHOULD INCLUDE BUT IS NOT LIMITED TO PLASTICS, PAPER, CARDBOARD, CANS AND OTHER METAL CONTAINERS, PACKING MATERIALS, PALLETS, LUMBER AND OTHER CONSTRUCTION DEBRIS, TIRES, DISCARDED FURNISHINGS, APPLIANCES, ETC., AND CONCRETE OR ASPHALT RUBBLE. ALL SHOULD BE PLACED IN APPROPRIATE TRANSPORT CONTAINERS AND REMOVED TO A DISPOSAL SITE AUTHORIZED TO ACCEPT THE REFUSE.
- ONCE CLEARED OF UNDESIRABLE MATERIALS, TOPSOILS WITHIN THE LIMITS OF DISTURBANCE IS TO BE REMOVED TO A DEPTH OF 6" TO 12" AND RESERVED IN STOCKPILES AT AREAS WITHIN THE SITE AS IDENTIFIED IN THE PLAN VIEWS. THE TOPSOILS ARE NOT TO BE SCREENED AND ANY ORGANIC MATERIALS SCRUBBED IN THE GRADING OPERATIONS ARE TO BE LEFT INTERMINGLED WITHIN THE RESERVED MATERIALS. THE MATERIALS THAT ARE RESERVED WILL SERVE AS THE SEED BANK AND WILL BE THE BASE FOR OPERATIONS THAT WILL BE PERFORMED FOLLOWING THE GRADING OF AREAS NOTED FOR REVEGETATION ON THE PLANS.
- ANY NATIVE ROCK THAT MAY BE GATHERED WITH THE TOPSOILS ARE TO BE LEFT WITH THE MATERIALS RESERVED. THIS NATIVE ROCK IS A CRUCIAL MEMBER OF THE SOILS MAKE UP WILL AND HELP TO INTERLOCK THE SOIL MATERIALS WHEN TRANSFERRED AND PLACED ON NEWLY GRADED AREAS. ONLY LARGER DIAMETER STONES THAT ARE ENCOUNTERED (12" DIAMETER AND LARGER) SHALL BE REMOVED FROM THE MATERIALS THAT ARE TO BE STOCKPILED. THESE LARGER STONES SHOULD BE SET ASIDE AND RESERVED FOR USE ELSEWHERE ON SITE AS SHOWN IN THE DETAILS ON THESE SHEETS.
- AREAS IDENTIFIED AS STOCKPILES FOR THE SEED BANK ON THE PLANS SHALL BE THOROUGHLY WETTED PRIOR TO PLACING THE TOPSOILS IN RESERVE. MATERIALS SHALL BE SPREAD LOOSELY AND LEFT UNCOMPACTED IN LAYERS NOT GREATER THAN 4" TO 6" IN DEPTH. RESERVED MATERIALS SHALL BE RETWETTED PRIOR TO PLACING ADDITIONAL MATERIALS ONTO THE STOCKPILE. MATERIALS STOCKPILED SHALL NOT EXCEED FOUR (4) FEET IN OVERALL HEIGHT. ONCE MATERIALS HAVE BEEN STOCKPILED, THE SEED BANK SHALL BE WATERED ON A FAIRLY REGULAR BASIS, NOT LESS THAN ONCE PER WEEK, UNTIL SUCH TIME THE MATERIALS ARE REMOVED FOR PLACEMENT WITHIN THE GRADED AREAS NOTED ON THE PLANS. FREQUENCY OF WATERING AND WATER VOLUMES SHALL BE AS DIRECTED BY THE BOTANIST.
- DURING THE PERIOD THAT THE SEED BANK IS IN RESERVE, ONLY UNDESIRABLE GROWTH THAT MAY OCCUR SHALL BE REMOVED. PLANTS SUCH AS TUMBLEWEEDS AND OTHER SPECIES AS IDENTIFIED IN THE CITY CODE AS UNDESIRABLE SHALL BE REMOVED. {REF. TITLE 9 (HEALTH AND SAFETY), CHAPTER 9.04 (SOLID WASTE MANAGEMENT), SECTION 9.04.860 (WEEDS AND VEGETATION PROHIBITED) AND MAINTAIN A SITE THAT IS FREE OF WEEDS AND VEGETATION OTHER THAN THOSE DEEMED AS 'ACCEPTABLE' PER SECTION 9.04.870 (EXCEPTIONS).}
- PLANT HARVESTING, RESERVATION AND PRESERVATION OF THE SEED BANK, AND THE REVEGETATION OF THE AREAS NOTED IN THE PLAN SHALL BE PERFORMED UNDER THE SUPERVISION OF MICHAEL GAGLIO, BOTANIST AND MANAGING MEMBER OF HIGH DESERT NATIVE PLANTS AND MAY BE CONTACTED VIA EMAIL AT mike@hd-env.com.

GENERAL GRADING NOTES:

- AREAS NOTED ON THE PLANS AS 'TO BE LEFT UNDISTURBED' SHOULD BE CORDONED OFF USING ORANGE CONSTRUCTION FENCING AND ALL MECHANIZED EQUIPMENT SHOULD BE RESTRICTED FROM OPERATIONS WITHIN THESE AREAS.
- ON HIGHER GROUND, GRADING OPERATIONS SHOULD BE CATEGORIZED AS 'HILL TOPPING' AND THE LIMITS OF GRADING SHOULD NOT EXTEND BEYOND WHAT IS SHOWN ON THE PLANS, ESPECIALLY THE GRADING SHOWN WITHIN BLOCKS 2 AND 10. INITIAL GRADING CAN BE PERFORMED UTILIZING SCRAPERS, BUT AS THE FINISHED GRADE IS APPROACHED, GRADING AT THE EDGE OF THE LOTS SHOULD BE 'RAKED' IN TOWARD THE LOT. RAKED MATERIALS PULLED IN FROM THE EDGE OF SLOPE CAN BE REMOVED UTILIZING SCRAPERS, LEAVING A CLEAN CUT TO NATURAL GRADE IN THE NOTED AREAS IS CRUCIAL TO THE LOOK DESIRED AS A PART OF THE GRADING DESIGN.
- WHILE NOT EXPECTED, IT IS POSSIBLE THAT CLAYS OR OTHER SOILS WITH HIGHER PLASTICITY CAN BE ENCOUNTERED, ESPECIALLY WHEN GRADING OPERATIONS ARE PERFORMED WITHIN LOWER AREAS NEAR RESLER DRIVE AND WITHIN WATER COURSES AND WASHES. REMOVAL AND REPLACEMENT OF THESE SOILS WILL ONLY BE NECESSARY WHERE PAVEMENT IS PROPOSED, OR WHERE IT WILL IMPOSE ISSUES UPON THE PLACEMENT OF FOUNDATIONS BY THE BUILDERS. IT WILL NOT BE NECESSARY TO MITIGATE THESE SOILS WHERE FILL IS PROPOSED AND ENCAPSULATION OF THE UNDESIRABLE SOILS WILL OCCUR.

SCREENING OPERATIONS:

- DURING SCREENING OPERATIONS PERFORMED THROUGHOUT THE DURATION OF CONSTRUCTION, NATIVE ROCK OF ALL SIZES SHALL BE RESERVED AND STOCKPILED FOR FUTURE PLACEMENT ON SITE AS SHOWN ON THE PLAN AND PER THE DETAILS SHOWN ON THESE SHEETS.
- NATIVE ROCK SHOULD BE SORTED BY SIZE AND KEPT SEPARATED DURING THE PERIOD THE MATERIAL IS STOCKPILED. A SIGNIFICANT AMOUNT OF NATIVE ROCK PLACEMENT IS SPECIFIED AS A PART OF THE STABILIZATION PLAN AND ALL EFFORTS SHOULD BE MADE BY THE CONTRACTOR TO SORT AND RESERVE ALL NATIVE ROCK AS IS PERMITTED BY TIME AND BUDGETARY CONSTRAINTS.
- IN THE EVENT THAT SIGNIFICANTLY SIZED SANDSTONE CAPS ARE ENCOUNTERED DURING GRADING OPERATIONS, EFFORTS SHOULD BE MADE TO RESERVE SLABS OF THE SANDSTONE INTACT. LARGE SLABS MAY BE INCORPORATED INTO THE PARKS AS PART OF THE NATIVE DESIGN SCHEMES BEING PROPOSED.

GRADED SLOPES:

- ALL GRADED SLOPES GREATER THAN 3:1 (THREE FEET HORIZONTALLY TO 1 FOOT VERTICALLY) MUST BE STABILIZED PER ORDINANCE. OTHER GRADED SLOPES THAT ARE 3:1 OR LESS SHALL BE STABILIZED PER THE RECOMMENDATIONS OF THE SLOPE STABILITY REPORT PERFORMED BY THE GEOTECHNICAL ENGINEER.
- AS A STANDARD, THE CONTRACTOR SHOULD MAINTAIN REGULAR CONTACT WITH THE GEOTECHNICAL ENGINEER AND REQUEST TESTING OF SOILS TO BE USED IN THE CONSTRUCTION OF FILL SLOPES. WHENEVER POSSIBLE, IT IS DESIRABLE TO PLACE SOILS WITH HIGHER PLASTICITY LEVELS AT THE LOWER LEVELS OF FILL AND RESERVE THE LESSER COHESIVE SOILS FOR PLACEMENT NEARER THE TOPS OF THE CONSTRUCTED SLOPES, ESPECIALLY WHERE THOSE SOILS WILL BE CONTAINED WITHIN RETAINING WALLS.
- CONSTRUCTED SLOPES (FILL) SHOULD INCORPORATE A SOILS STITCHING METHODOLOGY WHEN PLACING LIFTS. IN ADDITION TO THE TESTING OF SOILS, FILL SLOPES SHOULD BE INSPECTED ON A REGULAR BASIS BY THE GEOTECHNICAL ENGINEER DURING THE GRADING OPERATIONS. AT A MINIMUM FILL SLOPES SHOULD BE EVALUATED FOR SLOPE STABILITY BY THE ENGINEER UPON COMPLETION OF EVERY FIVE (5) FEET OF VERTICAL FILL.
- SIGNIFICANT CUT SLOPES ARE PROPOSED AS A PART OF THE GRADING OPERATIONS FOR THIS SUBDIVISION. GRADING CONTRACTOR SHALL PAY VERY CLOSE ATTENTION TO THE MATERIALS THAT ARE ENCOUNTERED WHEN CUTTING SLOPES. WHILE MATERIALS WITH HIGH COHESIVE VALUES ARE DESIRED, IN THE EVENT THAT FLOWABLE MATERIALS SUCH AS DUNE, BLOW, OR SUGAR SANDS ARE DISCOVERED DURING CONSTRUCTION, THE GRADING CONTRACTOR SHALL IMMEDIATELY CONTACT THE GEOTECHNICAL ENGINEER TO INSPECT THE SITE CONDITIONS AND RECOMMEND OPTIONS TO COMPLETE THE SLOPE AS DESIGNED. ALL GRADING OF THE CUT SLOPE SHALL CEASE UNTIL OPTIONS CAN BE OFFERED AND A PLAN IS IMPLEMENTED TO MITIGATE THE POOR SOIL CONDITION.
- ALL SLOPES WITHIN THESE PLANS SHALL BE RE-INSPECTED BY THE GEOTECHNICAL ENGINEER AND THE DESIGN ENGINEER UPON COMPLETION. AT THAT TIME, FURTHER RECOMMENDATIONS MAY BE MADE TO ENSURE THE FUTURE STABILITY OF THE COMPLETED SLOPES. THESE RECOMMENDATIONS MAY INCLUDE BUT ARE NOT LIMITED TO THE INCORPORATION OF SOIL RETENTION BLANKETS SUCH AS PYRAMAT OR OTHER GEOTEXTILE GRID MATERIALS, APPLICATION OF HAY OR OTHER ORGANIC MULCHES, SPRAY MULCH APPLICATIONS, OR SOILS BLENDING TO ENCAPSULATE AND PRESERVE THE FINISHED GRADE OF THE SLOPES.
- MOST SLOPES WITHIN THE DISTURBED LIMITS ARE TO BE REVEGETATED BY THE DEVELOPER UNLESS NOTED OTHERWISE IN THE PLANS. THE FIRST STEP IN THE REVEGETATION PROCESS IS THE APPLICATION OF TOPSOILS THAT HAVE BEEN RESERVED HELD IN STOCKPILE. APPLICATION OF THE TOPSOIL CAN BE PERFORMED AS THE SLOPES ARE DEVELOPED BUT ONLY AFTER INSPECTION OF THE PORTION OF THE SLOPE TO RECEIVE THE TOPSOIL HAS BEEN INSPECTED BY THE GEOTECHNICAL ENGINEER AND PASSED FOR STABILITY OF THE SLOPE SPECIFIED. APPLICATION OF THE TOPSOIL SHALL BE PERFORMED PER THE 'REVEGETATION OF SLOPES' NOTES IN THESE PLANS.
- SLOPES THAT ARE NOT NOTED FOR REVEGETATION IN THESE PLANS ARE TEMPORARY IN NATURE AND WILL BE FURTHER AMENDED BY FUTURE DEVELOPMENT OF THIS AREA, ALTHOUGH TEMPORARY, THESE SLOPES ARE TO BE EVALUATED BY THE GEOTECHNICAL ENGINEER UPON COMPLETION AS NOTED ABOVE, AND IF DEEMED NECESSARY, ADDITIONAL SLOPE STABILITY MEASURES WILL BE IMPLEMENTED PER THE ENGINEER'S RECOMMENDATIONS.
- ALL SLOPES, WHETHER CONSTRUCTED BY FILL, OR CREATED BY CUT, AND THAT ARE TO BE REVEGETATED OR LEFT NATURAL, SHALL BE REINFORCED AND PROTECTED BY PLACING NATIVE ROCK SCREENED FROM MATERIALS ON SITE AT THE TOE OF ALL SLOPES PER THE DETAILS IN THIS PLAN UNLESS NOTED OTHERWISE.

- ALL SLOPES THAT ARE NOTED TO BE STABILIZED BY BUILDER SHALL BE COMPLETED AND SHOULD BE CONSIDERED AS A PARAMETER TO BE COMPLETED PRIOR TO RECEIVING A CERTIFICATE OF OCCUPANCY. ALL WORK IS TO BE PERFORMED OR SUBCONTRACTED BY THE INDIVIDUAL BUILDER OF THE LOT IN WHICH A SLOPE IS INDICATED AND SHALL CONFORM TO THE INSTRUCTIONS CONTAINED IN THE 'SLOPE STABILIZATION FOR BUILDERS' NOTE.

REVEGETATION OF SLOPES AND OTHER SCARRED AREAS:

- WHILE THE EROSION OF LAND IS INEVITABLE AND CAN ONLY BE MITIGATED BUT NEVER ERADICATED, IN THAT RESPECT, THE REVEGETATION OF SLOPES AND OTHER AREAS LEFT SCARRED BY GRADING OPERATIONS IS A CRUCIAL PORTION OF THE GRADING STABILIZATION PROCESS AS DETAILED IN THIS PLAN. AS NOTED, THE REVEGETATION PROCESS IS TO BE PERFORMED BY THE DEVELOPER AS A FINAL STEP IN ABATING THE FUTURE EROSION OF SCARRED AREAS, ESPECIALLY GRADED SLOPES.
- ONCE GRADED SLOPES ARE COMPLETED, AND HAVE BEEN INSPECTED BY THE GEOTECHNICAL ENGINEER PER THE OTHER NOTES AND DETAILS IN THIS PLAN, TO INCLUDE THE APPLICATION OF ANY ADDITIONAL RECOMMENDATIONS REQUIRED BY THE SLOPE STABILITY ANALYSIS PERFORMED BY THE ENGINEER, THE REVEGETATION PROCESS CAN BEGIN.
- THE FIRST STEP IN THE REVEGETATION PROCESS IS THE PLACEMENT OF RESERVED TOPSOILS STOCKPILED AS THE SEED BANK UPON SCARRED AREAS LEFT UNPROTECTED TO THE ELEMENTS. IN PREPARATION FOR THIS STEP, THE SCARRED AREA SHOULD BE 'TRACK WALKED' TO PROVIDE A FOOT HOLD FOR THE SOILS TO BE APPLIED, WHERE TRACK WALKING MAY NOT BE POSSIBLE, THE USE OF A SHEEPSFOOT ROLLER DRUM ATTACHED TO AN EXCAVATOR CAN BE AN EFFECTIVE ALTERNATIVE. AT THIS TIME, ANY ADDITIONAL APPLICATION OF MULCHES SUCH AS HAY BEDDING SHALL BE PLACED AND THE SCARRED AREA SHALL BE WETTED THOROUGHLY BEFORE APPLYING THE RESERVED TOPSOILS. HYDROSEEDING SHOULD ONLY BE CONSIDERED IF A NATIVE SEED BLEND CAN BE OBTAINED.
- PRIOR TO REMOVING TOPSOILS FROM THE SEED BANK, THE STOCKPILE SHALL ALSO BE THOROUGHLY WETTED. IN THE EVENT THAT THE RESERVED MATERIAL HAS SETTLED TO A POINT WHERE IT HAS BECOME HARDPAN, THE MATERIAL SHALL BE SCARIFIED PRIOR TO WETTING. AT THIS TIME, ANY SOIL AMENDMENTS THAT MAY HAVE BEEN RECOMMENDED SHALL BE INCORPORATED INTO THE MATERIAL. THE RESERVED MATERIALS ARE TO BE REMOVED FROM THE SEED BANK IN LIFTS RELATIVE TO THE DEPTH IN WHICH THEY WERE PLACED. THIS SHOULD ENSURE A DEPTH OF SEEDING RELATIVE TO THAT WHICH WAS NATURAL WHEN THE MATERIALS WERE HARVESTED.
- ONCE THE MATERIALS ARE TRANSPORTED TO THE SITE THAT IS TO BE REVEGETATED, THE MATERIAL SHALL BE PLACED UPON THE EXPOSED SOILS AT A DEPTH OF NOT MORE THAN SIX TO EIGHT INCHES. THE APPLIED MATERIAL SHOULD BE TRACK WALKED BUT SHOULD ONLY BE COMPACTED TO A POINT AT WHICH A FIRM ADHESION TO THE SCARRED AREA IS ACHIEVED. THE TOPSOIL SHALL BE RETWETTED AS NECESSARY TO ADDITIONALLY ENSURE A FIRM ADHESION. THE USE OF SPRAY MULCH TACKIFIERS, OR AN UNDERLAYMENT OF JUTE, BURLAP, OR OTHER NATURAL DIAPHANOUS BIODEGRADABLE MATERIAL, OR SYNTHETIC POLYGRIDS, PRIOR TO THE PLACEMENT OF MATERIALS MAY ALSO BE CONSIDERED TO ENSURE ADHESION OF THE TOPSOIL TO THE GRADED SLOPES. THE REVEGETATED AREA SHALL BE RETWETTED ONE FINAL TIME ONCE THE APPLICATION OF THE TOPSOIL IS COMPLETE. WATERING SHOULD BE PERFORMED FROM THE TOE OF SLOPE AND UPWARD TO PREVENT POSSIBLE SLIDING OF WETTER SOILS TOWARDS THE TOP OF SLOPE.
- AREAS THAT HAVE RECEIVED TOPSOILS FROM THE SEED BANK SHALL BE WATERED BY THE DEVELOPER ON A REGULAR BASIS TO PROMOTE NEW GROWTH WITHIN THE APPLIED SOILS. ADDITIONAL SOIL AMENDMENTS MAY BE RECOMMENDED AND APPLIED DURING THIS PROCESS. WHILE IRRIGATION OF THE AREAS SLATED FOR REVEGETATION ARE NOT A PART OF THIS PLAN, A LOW WATERING IRRIGATION SYSTEM MAY BE INSTALLED AS A PERMANENT IN-GROUND APPLICATION, OR INSTALLED AS AN ABOVE-GROUND TEMPORARY MEASURE. IT IS HIGHLY RECOMMENDED THAT A PERMANENT DRIP IRRIGATION SYSTEM BE INSTALLED WITHIN THE COMMON OPEN SPACE AREAS, LOT 31, BLOCK 4 AND LOT 75 BLOCK 10 SINCE THEY WILL BE MAINTAINED BY THE HOME OWNERS ASSOCIATION FOR THE SUBDIVISION. THE USE OF PUMICE WICKS, POLYMER PRODUCTS, OR DIATOMACEOUS EARTH CAN BE CONSIDERED FOR USE TO ENHANCE THE WATER RETENTION OF THE TOPSOILS.
- ONCE THE APPLIED TOPSOILS HAVE BECOME WELL ESTABLISHED, NATIVE PLANTS THAT WERE HARVESTED FROM THE SITE PRIOR TO THE COMMENCEMENT GRADING OPERATIONS WILL BE RETURNED FOR REPLANTING. THE PLANTING OF THE VEGETATION SHOULD BE SUCH THAT IT APPEARS RANDOM. ANY SOIL AMENDMENTS THAT MAY BE REQUIRED OR THAT HAS BEEN RECOMMENDED WILL BE APPLIED AT THE TIME REPLANTING OCCURS. EXCAVATED PLANTING PITS WILL BE THOROUGHLY WETTED PRIOR TO PLACEMENT OF PLANTS AND WILL BE WETTED AGAIN ONCE COVERED. DEVELOPER WILL KEEP NEWLY REPLANTED VEGETATION WATERED UNTIL THE ROOT SYSTEM HAS BECOME WELL REESTABLISHED. THIS PERIOD MAY VARY AS COULD THE AMOUNT AND FREQUENCY OF WATERING AND SHALL BE PERFORMED PER THE RECOMMENDATIONS OF THE SUPERVISING BOTANIST.
- ON GRADED SLOPES, PLANTING BENCHES MAY BE INCORPORATED AS AN ADDED ENHANCEMENT. IF USED, THESE AMENITIES SHOULD BE INSTALLED IN A RANDOM PATTERN AND SHALL BE CONSTRUCTED PER THE DETAILS SHOWN IN THIS PLAN.
- AT THE SAME TIME OF THE REPLANTING OF THE HARVESTED PLANTS, SMALLER DIAMETER NATIVE ROCK RETAINED FROM MATERIALS SCREENED ON SITE SHALL BE PLACED RANDOMLY IN REVEGETATED AREAS. ON SLOPE, NATIVE ROCK OF NOT GREATER THAN EIGHT (8) INCHES IN DIAMETER MAY BE PLACED BY SIMPLY TAMPING THE STONE INTO THE SURFACE. LARGER STONE CAN BE INCORPORATED, BUT SHALL BE EMBEDDED PER THE BOULDER EMBEDMENT DETAIL ON THIS PLAN.
- IN THE EVENT A SOIL RETENTION BLANKET HAS BEEN INSTALLED AS A SLOPE STABILITY MEASURE PER THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER, THE BLANKET SHALL BE CUT AND REPINNED PER THE MANUFACTURER'S DETAILS AND SPECIFICATIONS IN AREAS WHERE PLANTING PITS OR BOULDER EMBEDMENTS ARE REQUIRED.

NATIVE ROCK, BOULDERS, AND RIP-RAP NOTES:

- WHERE INDICATED IN THE PLAN VIEW, NATIVE ROCK OBTAINED FROM MATERIALS SCREENED ON SITE SHALL BE PLACED PER THE DETAILS CONTAINED IN THIS PLAN. NATIVE ROCK OF SIMILAR AVERAGE DIAMETER SHALL BE USED AS SPECIFIED, AND SMALLER NATIVE ROCK OF NOT LESS THAN ONE HALF THE DIAMETER OF THE COBBLE SPECIFIED CAN BE USED AS INFILL. INFILL NATIVE ROCK SHALL NOT EXCEED THIRTY (30) PERCENT OF THE OVERALL VOLUME OF THE INDICATED COBBLE FIELD. NATIVE ROCK SHALL BE PLACED TO A DEPTH OF AT LEAST ONE AND A HALF TIMES THE SIZE OF THE COBBLE DIAMETER SPECIFIED UNLESS NOTED OTHERWISE.
- WHERE A MIXTURE OF SIZES IS NOTED, THE MIX SHALL CONSIST OF SIXTY (60) PERCENT OF THE LARGER DIAMETER AND FORTY (40) PERCENT OF THE SMALLER DIAMETER. INFILL NATIVE ROCK USED SHALL NOT BE OF A LESSER DIAMETER OF THE LARGER COBBLE SPECIFIED AND SHALL NOT BE CONSIDERED IN THE CALCULATIONS FOR THE DIAMETER MIXTURE.
- MOST OF THE LOOSE COBBLE SPECIFIED IS TO BE PLACED ON FINISHED GRADE. THE EXCEPTION TO THIS RULE IS WHERE NATIVE ROCK ARE USED IN SWALES. THE AREAS INDICATED TO FUNCTION AS SWALES SHALL BE OVER EXCAVATED ONE HALF THE DIAMETER OF THE COBBLE SPECIFIED, ONE HALF THE DIAMETER OF THE LARGEST DIAMETER SPECIFIED IF A MIX IS NOTED, AND THE COBBLE IS TO BE PLACED EMBEDDED.
- THE USE OF SALVAGED COBBLE IS AN EXTENSIVE PART OF THIS PLAN. IN THE EVENT THAT COBBLE RESERVES ARE DEPLETED, ATTEMPTS SHOULD BE MADE BY THE CONTRACTOR TO RECEIVE SCREENED MATERIALS FROM OTHER JOB SITES THAT MIGHT OTHERWISE BE DISCARDED BY ANOTHER DEVELOPER. IN THE EVENT THAT STONE MUST BE PURCHASED FROM A SUPPLIER TO SUPPLEMENT NEEDED COBBLE, THE STONE PURCHASED SHOULD NOT BE A QUARRIED ROCK IF AT ALL POSSIBLE. HOWEVER, WHAT IS GENERALLY MARKETED AS 'RIVER ROCK' BY SUPPLIERS SHOULD BE AVOIDED, AS A NATURAL LOOK TO THE LAND IS THE DESIRED RESULT. PURCHASED ROCK SHOULD BE OF THE SAME APPEARANCE AS THE NATIVE ROCK SCREENED FROM THE SITE. STONE SPOILS THAT A SUPPLIER MAY HAVE SLATED FOR THE ROCK CRUSHER IS LIKELY AN ACCEPTABLE ALTERNATIVE. PURCHASED ROCK SHOULD BE AS INEXPENSIVE AS IS POSSIBLE.
- GEOTEXTILE FABRIC UNDERLAYMENT IS NOT REQUIRED FOR THE PLACEMENT OF NATIVE ROCK. PLANT GROWTH IS DESIRED WITHIN THE LOOSE COBBLE FIELDS SPECIFIED. RANDOM PLANT GROWTH SHOULD BE ANTICIPATED AND WILL ADD TO THE NATURAL LOOK OF THE COMPLETED INSTALLATIONS.
- STONE 30" IN DIAMETER AND GREATER SHALL BE CLASSIFIED AS BOULDERS. IN FLAT AREAS, THESE SHALL BE EMBEDDED PER THE DETAIL IN THIS PLAN. ON SLOPES 4:1 (ONE FOOT VERTICALLY TO FOUR FEET HORIZONTALLY) AND GREATER, ALL STONE 12" IN DIAMETER AND GREATER SHALL BE EMBEDDED.
- WHERE BOULDER WASHES ARE INDICATED ON THIS PLAN, NATIVE ROCK OF THE SPECIFIED DIAMETER SHALL BE USED AND EMBEDDED PER THE DETAIL IN THIS PLAN. NATIVE ROCK NOT LESS THAN TWELVE (12) INCHES IN DIAMETER MAY BE USED AS INFILL IN BOULDER WASHES. AS SPECIFIED ABOVE, THE INFILL SHALL NOT ACCOUNT FOR MORE THAN THIRTY (30) PERCENT OF THE BOULDER FIELD INDICATED.
- RIP-RAP, AND ROCK NOTED TO BE DRIVABLE STONE SHALL BE CLASSIFIED AS PURCHASED ROCK AND MAY BE QUARRIED STONE. THIS ROCK SHOULD BE GRAY, BROWN, OR OTHER NEUTRAL COLOR UNLESS IT IS SPECIFIED OTHERWISE IN THE PLANS. IF DEPTHS OF PLACEMENT ARE NOT INDICATED, THE DEPTH SHALL BE A MINIMUM OF ONE AND ONE HALF THE DIAMETER OF THE STONE SPECIFIED. AS WITH THE NATIVE ROCK, WHERE A RANGE OF SIZES IS INDICATED, THE MIX SHALL CONSIST OF SIXTY (60) PERCENT OF THE LARGER DIAMETER AND FORTY (40) PERCENT OF THE SMALLER DIAMETER SPECIFIED.
- GEOTEXTILE UNDERLAYMENT SHALL BE REQUIRED BENEATH ALL RIP-RAP OR DRIVABLE STONE. ONLY PERMEABLE FABRICS SUCH AS WOVEN OR NEEDLE PUNCHED MATERIALS SHALL BE USED. NON PERVIOUS PLASTICS OR OTHER MATERIALS SHALL NOT BE ACCEPTED.

- SCREENING MAY BE RECOMMENDED BY THE GEOTECHNICAL ENGINEER FOR PLACEMENT ON TRAILS, OR ON BENCHES AS AN ADDITIONAL ANTI-EROSIVE MEASURE. SCREENINGS PLACED ON WALKABLE SURFACES SUCH AS TRAILS SHOULD BE GREATER THAN ONE INCH IN DIAMETER AND PLACED IN A MINIMUM LIFT OF TWO (2) INCHES. NO. 57 STONE SHALL BE CONSIDERED AS AN ACCEPTABLE ALTERNATIVE SHOULD ROCK BE PURCHASED FOR PLACEMENT ON WALKABLE SURFACES.

SLOPE STABILIZATION FOR BUILDERS:

GRADED SLOPES AS SHOWN ON THE GRADING PLAN HAVE BEEN ENGINEERED, BASED ON A GEOTECHNICAL SOILS INVESTIGATION REPORT, TO STAND AT THE SLOPE INDICATED. HOWEVER, EROSION IS INEVITABLE ON ANY SLOPE, EVEN IN HIGHLY COHESIVE SOILS. PROPERTY OWNERS ARE RESPONSIBLE FOR THE MAINTENANCE OF SLOPES WITHIN THEIR LOTS. IF NO MEASURES HAVE BEEN TAKEN PRIOR TO PURCHASE, IT IS HIGHLY RECOMMENDED THAT THE PROPERTY OWNER PROVIDE ANTI-EROSION CONTROLS ON GRADED SLOPES WITHIN THE BOUNDS OF THEIR LOT. THESE MAY INCLUDE BUT ARE NOT LIMITED TO CONCRETE RIP-RAP, MORTARED ROCK RIP-RAP (REQUIRED ON SLOPES 1:1 OR GREATER), LOOSE ROCK RIP-RAP OF A SPECIFIED DIAMETER, SOIL RETENTION BLANKETS, PLANTINGS OF NATIVE SPECIES. (SOD AND OTHER GRASSES ARE NOT RECOMMENDED ON SLOPES GREATER THAN 4:1). BEFORE PERFORMING ANY WORK, PROPERTY OWNERS SHOULD CONSULT A LICENSED, PROFESSIONAL CIVIL ENGINEER. ADDITIONALLY, IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER TO CLEAN AND MAINTAIN ANY WEED HOLES THAT HAVE BEEN INSTALLED IN WALLS OR RIP-RAP. WEED HOLES ARE AN INTEGRAL COMPONENT OF DRAINAGE SO AS TO PREVENT GROUND SATURATION BEHIND WALLS AND RIP-RAP THAT COULD CAUSE STRUCTURAL FAILURES. PROPERTY OWNERS SHOULD PERFORM REGULAR INSPECTIONS, ESPECIALLY AFTER HEAVY RAINS, AND CLEAR WEED HOLES OF ANY SILT AND DEBRIS. PROPERLY INSTALLED WEED HOLES SHOULD ALLOW THE PASSAGE OF ANY STORM WATER RUN OFF THAT MAY ACCUMULATE BEHIND WALLS OR BENEATH RIP-RAP AS A RESULT OF INFILTRATION. WIRE ENCASED GRAVEL FILTERS WRAPPED IN A GEOTEXTILE FABRIC SHOULD PREVENT LARGE DEBRIS FROM BLOCKING THE WEED HOLE. HOWEVER, THE PASSAGE OF SILT, SAND, AND OTHER FINE PARTICULATE MATERIAL UP TO ONE-QUARTER INCH IN DIAMETER SHOULD BE CONSIDERED NORMAL. UNDER NO CIRCUMSTANCES SHOULD THE WEED HOLES BE INTENTIONALLY BLOCKED TO PREVENT PASSAGE OF STORM WATER.

REFERENCE:

DRYLAND SEEDING IS A COMMON TECHNIQUE USED IN ATTEMPTS TO RESTORE VEGETATION ON DISTURBED SITES IN ARID REGIONS. COX AND OTHERS (1992) STUDIED DRYLAND SEEDING ATTEMPTS ON MULTIPLE SITES IN THE CHIHUAHUAN DESERT AND CONCLUDED THAT SIGNIFICANT PLANT ESTABLISHMENT COULD BE EXPECTED ONLY ONCE OUT OF EVERY TEN ATTEMPTS. GRANITZ AND OTHERS (1998) INVESTIGATED THE EFFECTIVENESS OF UTILIZING THE SEED BANK METHOD TO MITIGATE DUST ON RETIRED CROPLAND IN THE MOJAVE DESERT OF CALIFORNIA. THEY CONCLUDED THAT THIS METHOD CAN LEAD TO PLANT ESTABLISHMENT IN YEARS WITH ABOVE AVERAGE RAINFALL BUT IS LIKELY TO YIELD MINIMAL RESULTS IN MOST YEARS. BAINBRIDGE AND OTHERS (1995) STATE THAT REVEGETATION OF LAND WITHOUT SUPPLEMENTAL IRRIGATION CAN BE A COST EFFECTIVE RESTORATION STRATEGY, ALTHOUGH PERFORMED WITH LIMITED RESULTS WHEN ATTEMPTED IN ARID LANDS BECAUSE OF UNPREDICTABLE AND INFREQUENT OCCURRENCE OF CONDITIONS FAVORABLE FOR SEED GERMINATION AND SEEDLING ESTABLISHMENT. TESTING PROVED THAT THE INSTALLATION OF MINIMALIST IRRIGATION SYSTEMS IN AREAS WHERE SEED BANK APPLICATIONS ARE UTILIZED VASTLY IMPROVED THE LIKELIHOOD OF SUCCESS FOR A REESTABLISHMENT OF NATIVE GROWTH IN SCARRED AREAS. WHERE SLOPES WERE THE RESTORATION OF VEGETATION WAS PROPOSED, BAINBRIDGE FOUND THAT A SINGLE DRIP IRRIGATION LINE PLACED IN AN 'ESS' PATTERN AND SPACED ONE PER EVERY TEN FEET OF VERTICAL RISE WAS EFFICIENT ENOUGH TO PROMOTE AN ESTIMATED 50% INCREASE IN THE EXPECTED GROWTH.

SALVAGE EXISTING NATIVE PLANT MATERIAL PRIOR TO CONSTRUCTION. THE SPECIES TO BE SALVAGED DEPENDS ON LOCATION, SOILS AND ANALYSIS OF PLANT VALUE INCLUDING THE POTENTIAL SURVIVAL RATE. SALVAGED PLANTS CAN READILY IMPROVE THE AESTHETICS OF A SITE BY PROVIDING MATURE PLANTS THAT WOULD NORMALLY TAKE MANY YEARS TO ESTABLISH. IN ADDITION, ENSURE NATIVE TOPSOIL IS COLLECTED AND STORED FOR REUSE. NATIVE TOPSOIL PROVIDES A SEED SOURCE AND IMPORTANT BACTERIA FOR SALVAGED PLANT ESTABLISHMENT AND GROWTH. CAREFULLY REMOVE, STOCKPILE, AND STORE THE NATIVE TOP SOIL OF NEW CONSTRUCTION PROJECTS TO BE USED AS FINAL BEDDING MATERIAL. ENSURE NATIVE SOIL STOCKPILES ARE PROTECTED FROM THE WIND TO AVOID EROSION AND THE CREATION OF A DUST HAZARD.

EVERY REVEGETATION PROJECT REQUIRES A PRESCRIBED SOIL TREATMENT. SOIL TREATMENTS INCLUDE PLOWING, DISKING, HARROWING, FURROWING, HYDROSEEDING, APPLYING MULCHES (SUCH AS STRAW), AND USING TACKIFIERS (SUCH AS JUTE OR DARK COLORED NETTING) TO FIRMLY ANCHOR THE MULCHES TO THE SITE. SOILS SHOULD BE TROUGHED BEFORE AND AFTER PLANTING TO CREATE FAVORABLE SEED SITES, PARTICULARLY FOR GRASS AND FORB SEEDS. IN SILTY CONDITIONS, A SOIL STABILIZER, SUCH AS A HYDROMULCH OR A MATTING MATERIAL SHOULD BE APPLIED TO REDUCE POTENTIAL DUST PROBLEMS. SOME SITES REQUIRE DEEP RIPPING IN ORDER TO LOOSEN HARDPAN AND IMPROVE SEEDING SUCCESS. IN CONDITIONS OF STEEP CUT AND SLOPES GREATER THAN 40 PERCENT, SLOPE DISKING IS REQUIRED TO CREATE SEED POCKETS.

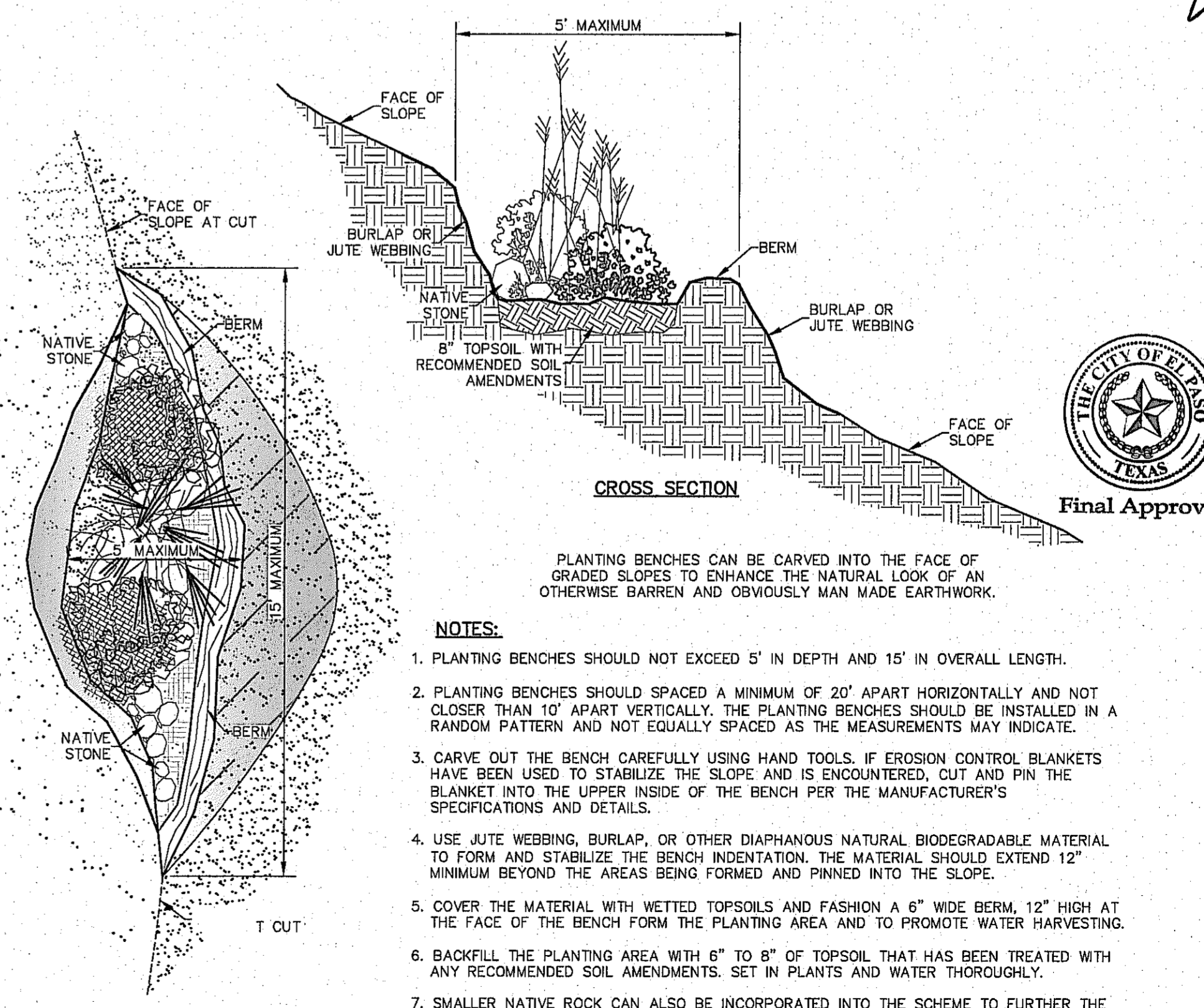
IN MOST CASES, ORGANIC MATERIAL WILL NEED TO BE ADDED TO THE SITE TO IMPROVE SOIL QUALITY. EACH SITE SHOULD BE CAREFULLY ANALYZED TO DETERMINE THE TYPE OF FERTILIZER APPLICATION. ON SITES WITH HARDPAN AND SALTS NEAR THE SURFACE, AN AMENDMENT TO CONTROL OR AMELIORATE pH SHOULD BE APPLIED. SCATTERED ROCK MULCH IS TO BE USED WITH THIS SOFTSCAPE TYPE AS GROUND COVER. IT WILL PROVIDE SEED POCKETS AND PROTECTION THAT WILL ASSIST IN THE ESTABLISHMENT OF SEED.

BAINBRIDGE DA, FIDELIUS M, MACALLER R. 1995. TECHNIQUES FOR PLANT ESTABLISHMENT IN ARID ECOSYSTEMS. RESTORATION AND MANAGEMENT NOTES 13:190-197.

COX JR, MORTON HL, JOHNSON TN, JORDAN CL, MARTIN SC, FIERRO LC. 1982. VEGETATION RESTORATION IN THE CHIHUAHUAN AND SONORAN DESERTS OF NORTH AMERICA. TUCSON (AZ): USDA AGRICULTURAL RESEARCH SERVICE. AGRICULTURAL REVIEWS AND MANUALS NO. 28. 37 P.

GRANTZ DA, VAUGHN DL, FARMER R, KIM B, ZELDIN M, VANGUREN T, CAMPBELL R. 1998. SEEDING NATIVE PLANTS TO RESTORE DESERT FARMLAND AND MITIGATE FUGITIVE DUST AND PM10. JOURNAL OF ENVIRONMENTAL QUALITY 27:1209-1218

SHANTZ HL, PHEMSEL RL. 1924. INDICATOR SIGNIFICANCE OF THE NATURAL VEGETATION OF THE SOUTHWESTERN DESERT REGIONS. JOURNAL OF AGRICULTURAL RESEARCH 28:721-801.



NOTES:

- PLANTING BENCHES SHOULD NOT EXCEED 5' IN DEPTH AND 15' IN OVERALL LENGTH.
- PLANTING BENCHES SHOULD SPACED A MINIMUM OF 20' APART HORIZONTALLY AND NOT CLOSER THAN 10' APART VERTICALLY. THE PLANTING BENCHES SHOULD BE INSTALLED IN A RANDOM PATTERN AND NOT EQUALLY SPACED AS THE MEASUREMENTS MAY INDICATE.
- CARE OUT THE BENCH CAREFULLY USING HAND TOOLS. IF EROSION CONTROL BLANKETS HAVE BEEN USED TO STABILIZE THE SLOPE AND IS ENCOUNTERED, CUT AND PIN THE BLANKET INTO THE UPPER INSIDE OF THE BENCH PER THE MANUFACTURER'S SPECIFICATIONS AND DETAILS.
- USE JUTE WEAVING, BURLAP, OR OTHER DIAPHANOUS NATURAL BIODEGRADABLE MATERIAL TO FORM AND STABILIZE THE BENCH INDENTATION. THE MATERIAL SHOULD EXTEND 12" MINIMUM BEYOND THE AREAS BEING FORMED AND PINNED INTO THE SLOPE.
- COVER THE MATERIAL WITH WETTED TOPSOILS AND FASHION A 6" WIDE BERM, 12" HIGH AT THE FACE OF THE BENCH FORM THE PLANTING AREA AND TO PROMOTE WATER HARVESTING.
- BACKFILL THE PLANTING AREA WITH 6" TO 8" OF TOPSOIL THAT HAS BEEN TREATED WITH ANY RECOMMENDED SOIL AMENDMENTS. SET IN PLANTS AND WATER THOROUGHLY.
- SMALLER NATIVE ROCK CAN ALSO BE INCORPORATED INTO THE SCHEME TO FURTHER THE NATURAL LOOK OF THE SLOPES THAT IS DESIRED.

PLANTING BENCHES
N.T.S

NO.	DATE	DESCRIPTION	BY
1	11/01/16	2nd City Submittal	DAE
2	11/01/16	1st City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

CALL - BEFORE YOU DIG -
EL PASO ELECTRIC COMPANY
4-845-7270
1-800-DIG-TESS
ALBERT GABRIELSON
1-800-DIG-TESS
1-800-DIG-TESS
1-800-DIG-TESS
EL PASO WATER UTILITY
944-5775
AFTER HOURS EMERGENCY (EPW)
EL PASO NATURAL GAS COMPANY
1-800-534-8047
EL PASO UTILITY SYSTEM
1-800-DIG-TESS
(644-8877)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service. It is the property of the client and project for which it was prepared. This document is not to be used, copied, or reproduced in any form without the written consent of the preparer. Any use of this document for any other project or purpose without the written consent of the preparer is a violation of Federal Copyright Law. Unauthorized use of this material may result in civil and criminal penalties.

JOHN C. WATSON
REGISTERED PROFESSIONAL ENGINEER
5378
1917

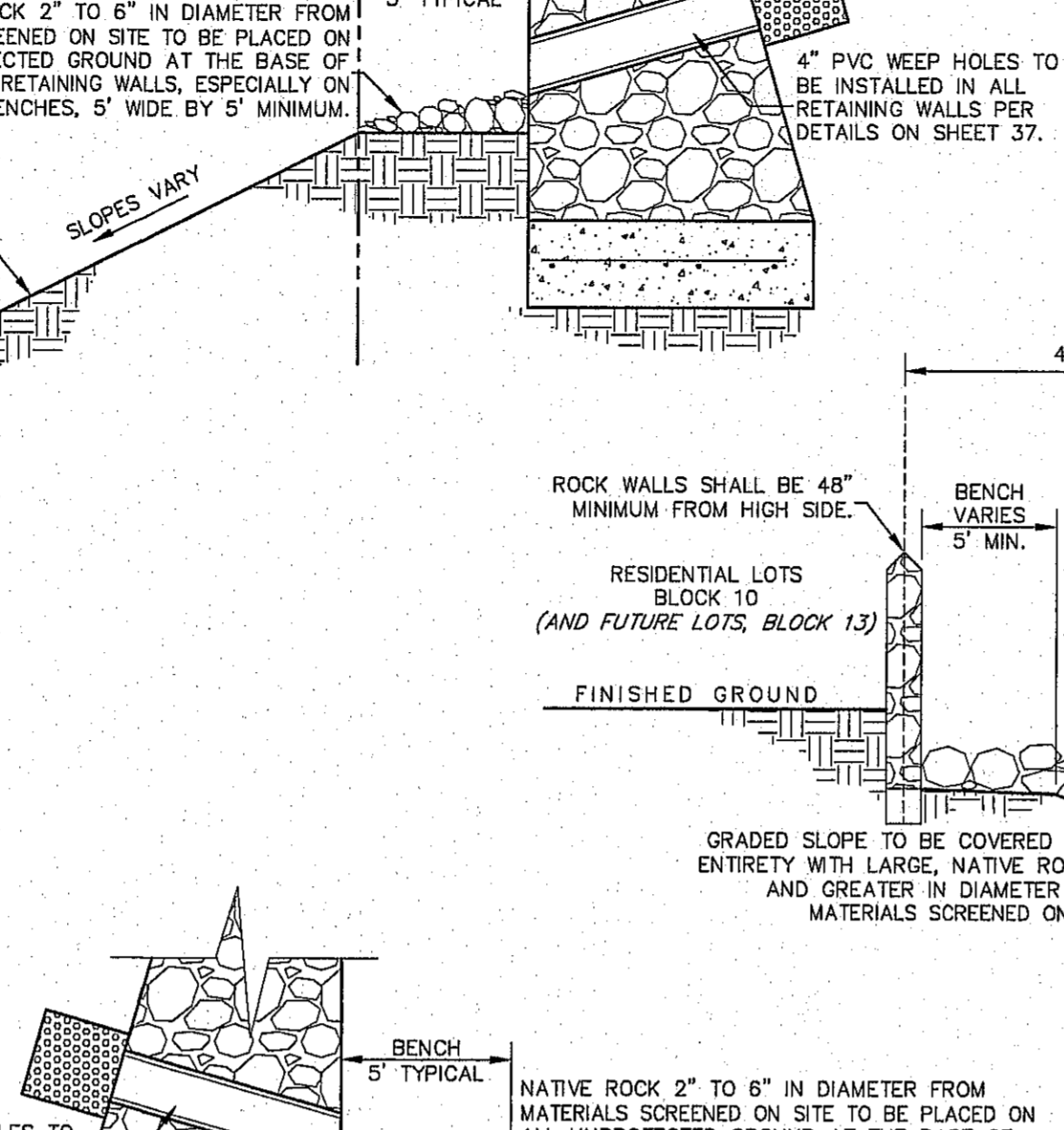
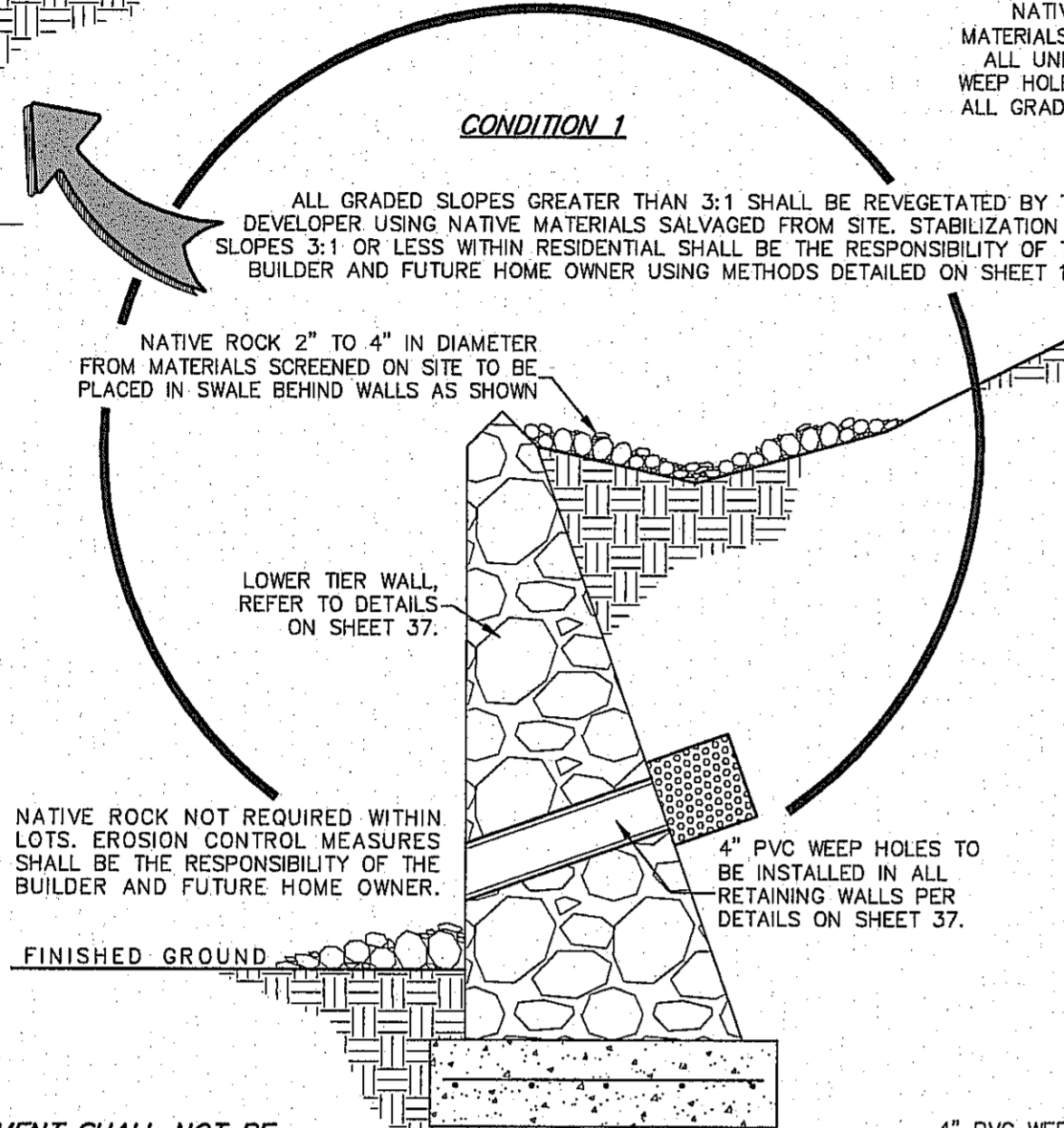
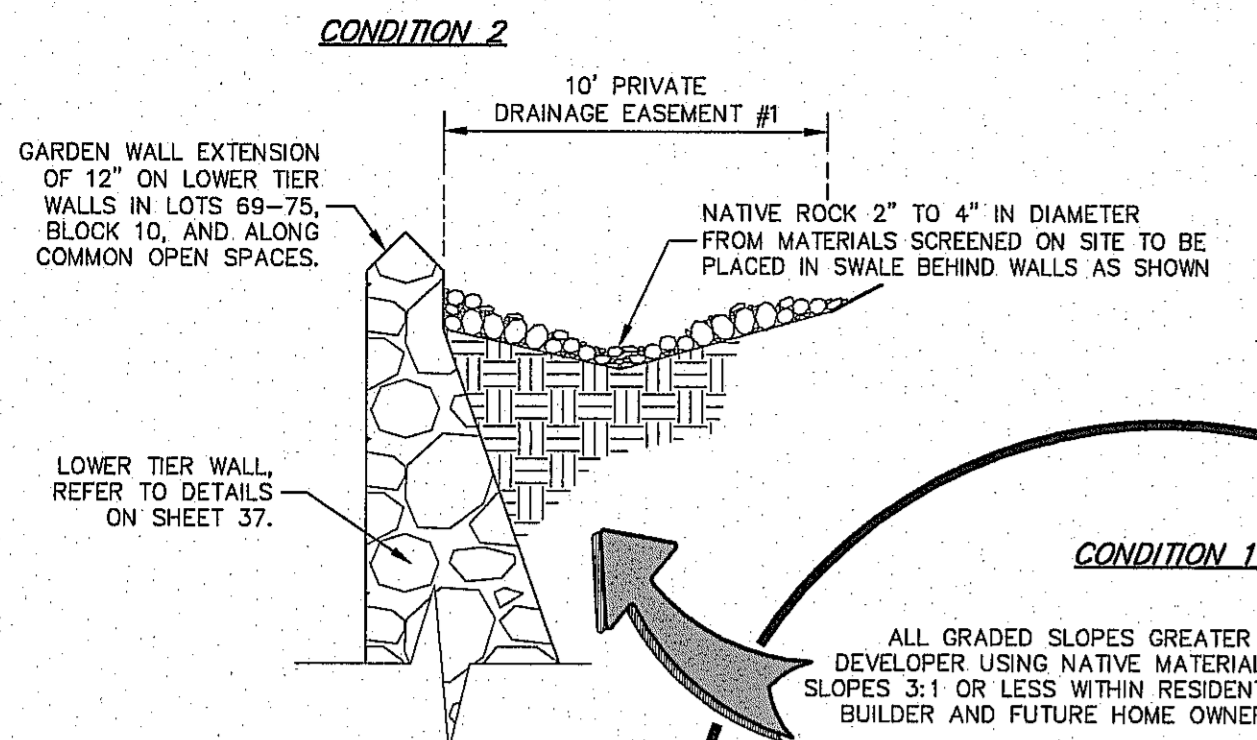
CSA design group, inc.
Texas Registered Engineering Firm F-6997
1945 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877-4165
fax (915) 877-4334
www.csaengineers.com

CIMARRON CANYON
UNIT ONE
SUBDIVISION

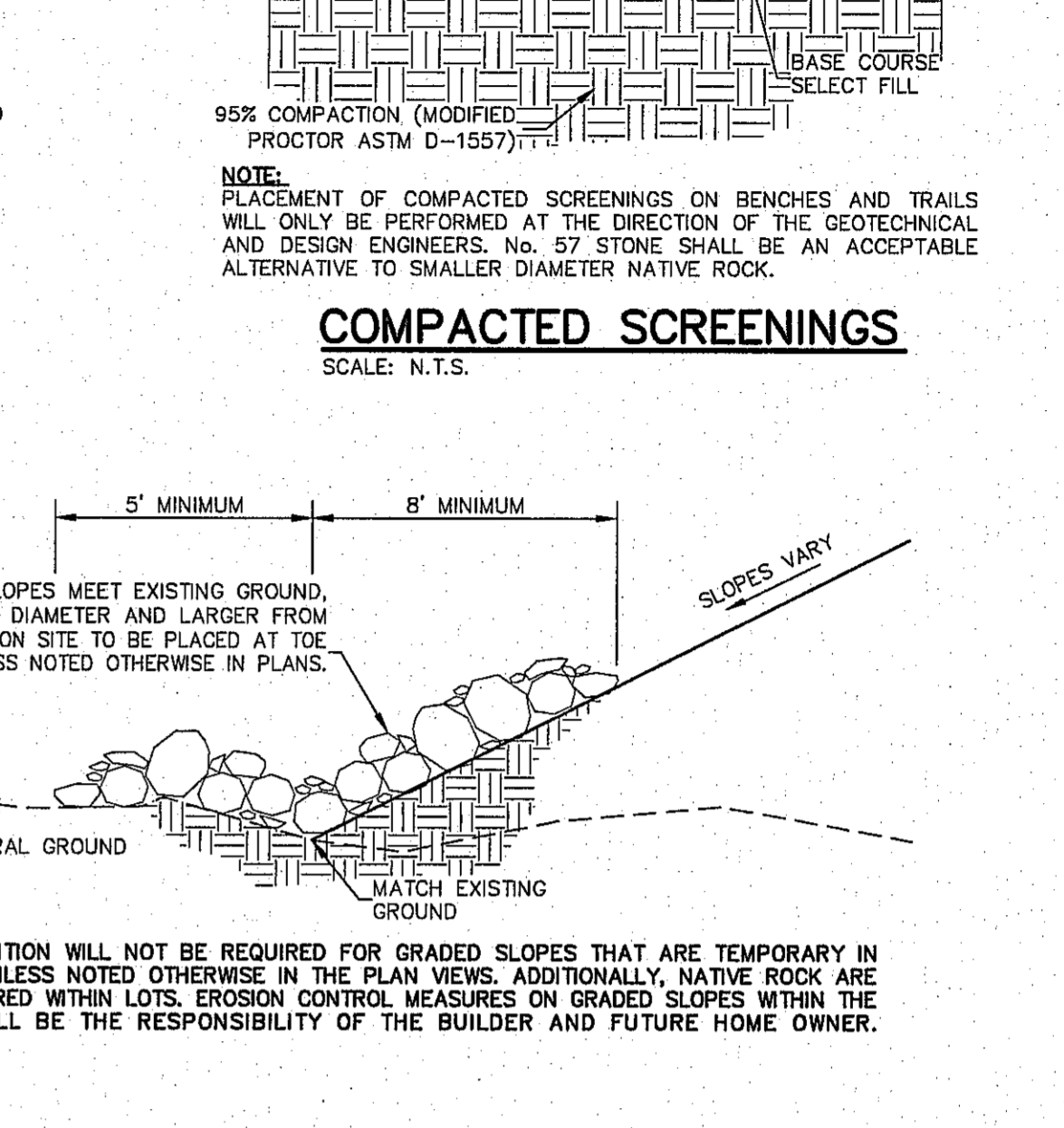
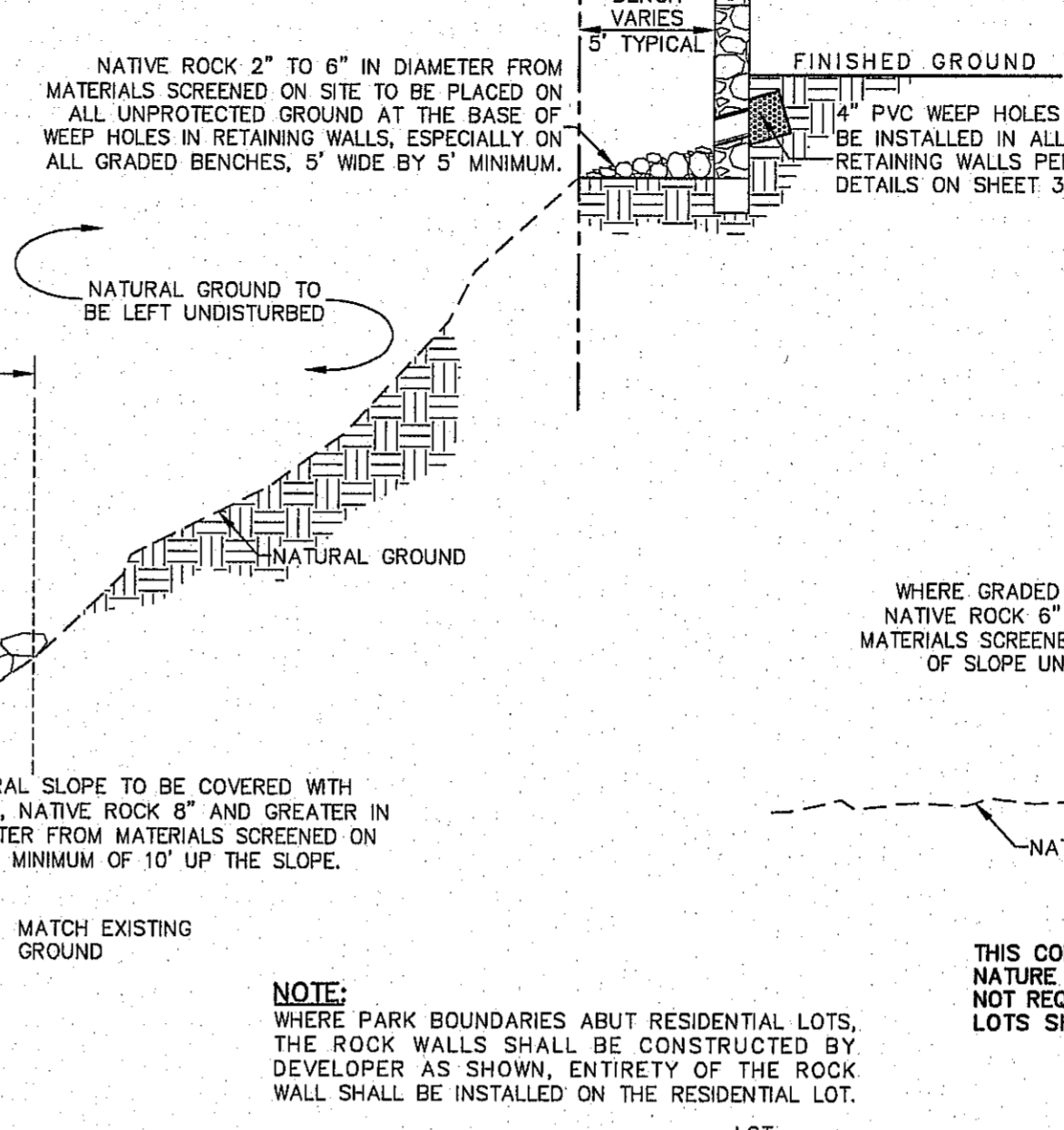
SHEET TITLE
GRADING STABILIZATION NOTES AND DETAILS

DATE	1524
REVISED	48
DATE	9/15/16
DATE	AS NOTED
DATE	AS NOTED

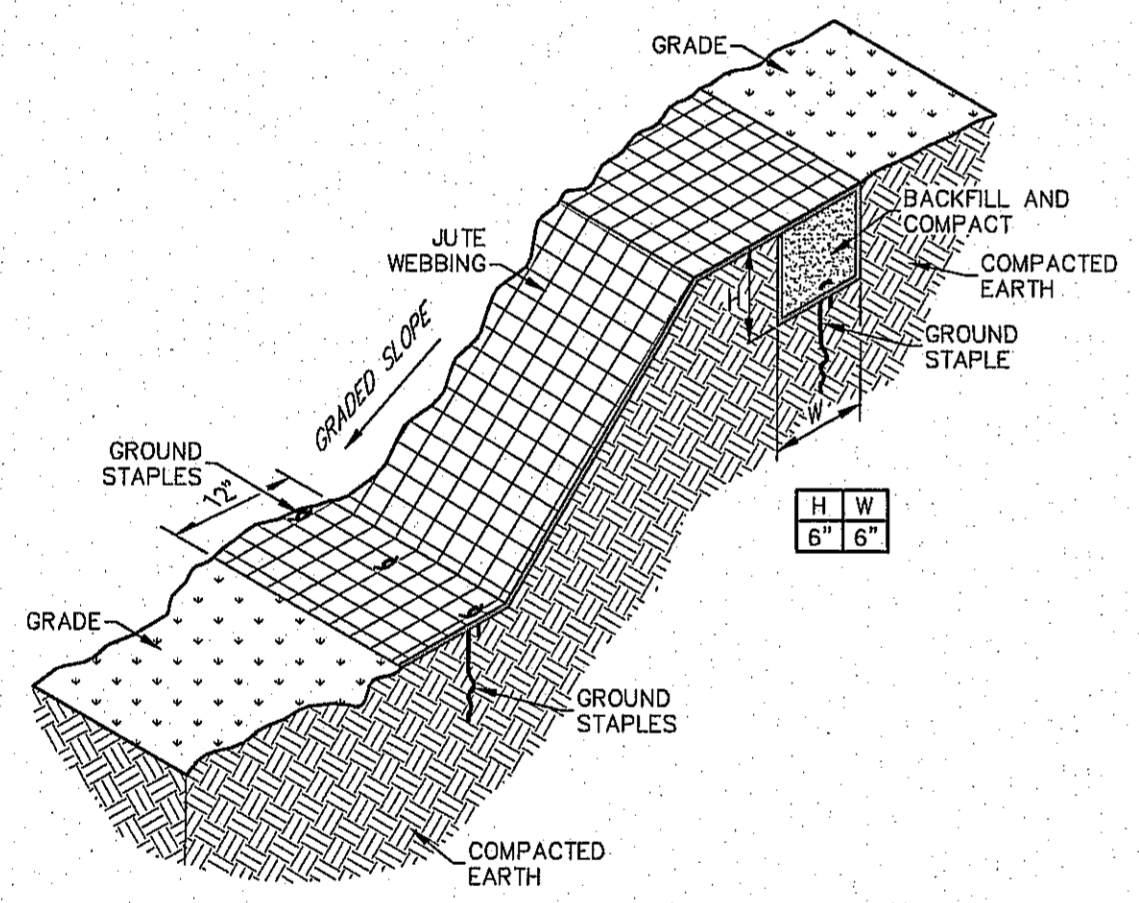
121
SHEET NUMBER
126 OF 131



ALL GRADED SLOPES GREATER THAN 3:1 (THREE FEET HORIZONTALLY TO 1 FOOT VERTICALLY) MUST BE STABILIZED PER ORDINANCE.

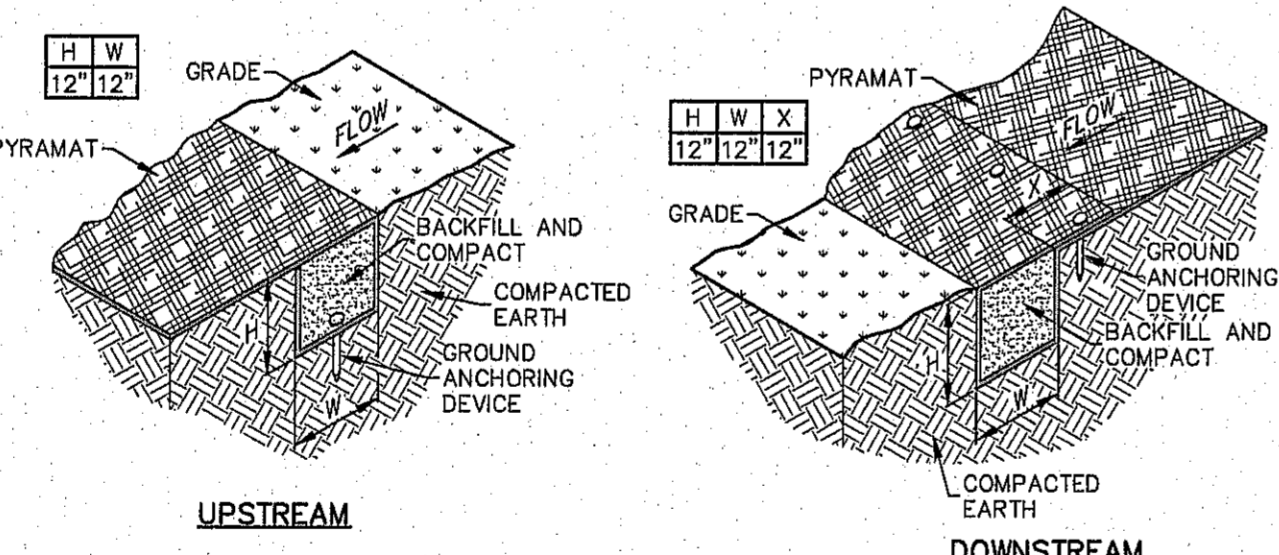


GEOTEXTILE FABRIC UNDERLAYMENT SHALL NOT BE REQUIRED FOR 'LOOSE COBBLE' APPLICATIONS (TYPICAL). REFER TO SHEET 37 FOR ADDITIONAL ROCK WALL DETAILS.



TACKIFIERS, HYDROMULCHES, AND NETTING

SPRAY APPLIED TACKIFIERS AND HYDROMULCHES SUCH AS 'EARTHBOUND' PRODUCTS MANUFACTURED BY LSC ENVIRONMENTAL PRODUCTS, LLC / TERRA NOVO OR 'GUARDIAN' AND 'SUPER TACK' BY RANTEC CAN BE CONSIDERED. RANTEC ALSO CARRIES A FULL LINE OF BOTH SYNTHETIC AND NATURAL SOIL WEBBINGS, AND CONWED GLOBAL NETTING SOLUTIONS HAS A FEATURE LINE OF WEBBING AND OTHER PRODUCTS THAT ARE EXCELLENT FOR SOIL STABILIZATION. GROW ORGANIC CARRIES JUTE WEBBING BY THE ROLL THAT IS QUITE INEXPENSIVE AND VERY EFFECTIVE FOR USE IN SOIL STABILIZATION. ENVIROSCAPE ECM, LTD. CARRIES A FULL LINE OF NATURAL EROSION CONTROL BLANKETS THAT INCLUDE AGRICULTURAL STRAW, ASPEN SHAVINGS, AND COCONUT FIBERS. ALL ARE ENCASED IN PHOTO OR BIODEGRADABLE NETTINGS, AND PROVIDE PROTECTION FROM 12 TO 36 MONTHS. THEIR COIR SERIES BLANKETS ARE SPECIFICALLY ENGINEERED FOR SLOPES OF 1:1 OR GREATER AND FOR USE AS LININGS FOR CHANNELS WITH HIGH RATES OF FLOW.



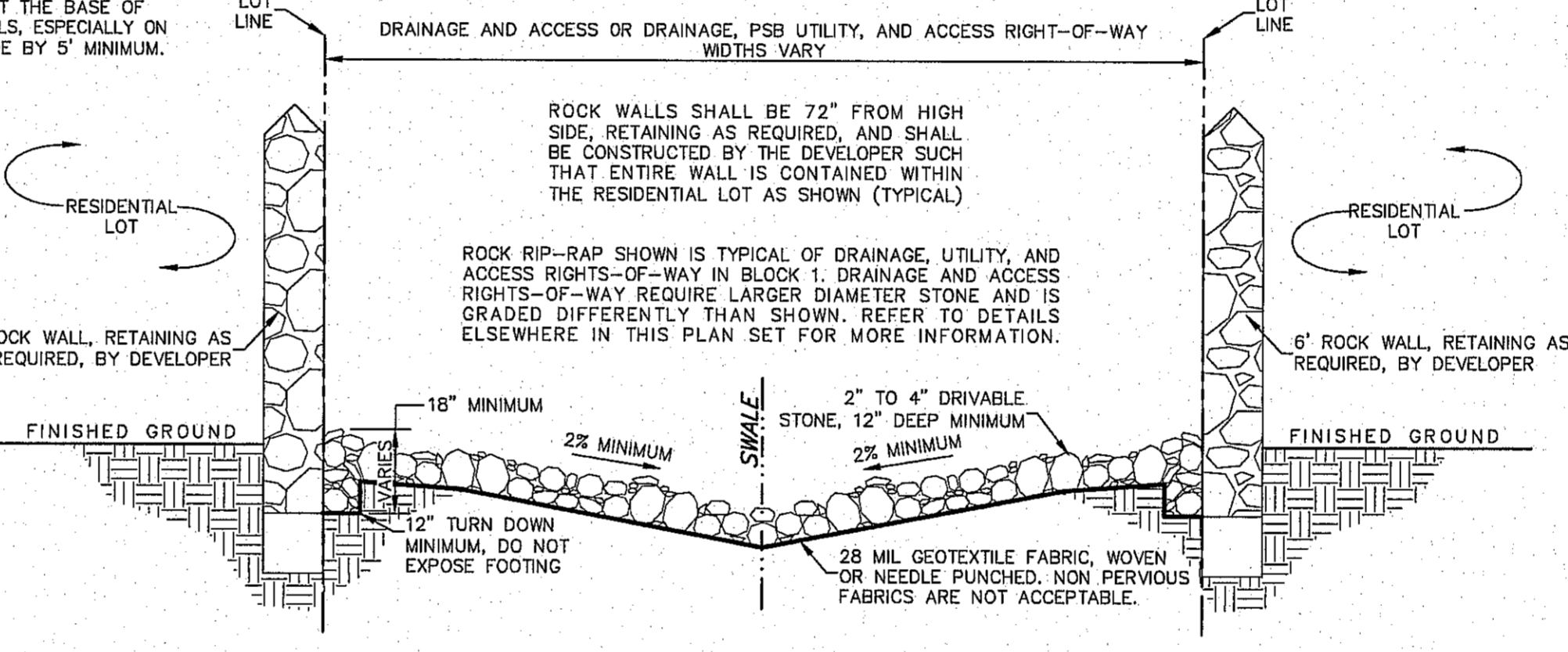
1. PREPARE THE SURFACE TO BE PROTECTED BY THE JUTE WEBBING EROSION CONTROL BLANKET. REMOVE LARGE STONES AND SLOPE THE GROUND TO THE DESIRED GRADE YOU WANT WHEN FINISHED. YOU CAN USE HAND TOOLS FOR A SMALL JOB OR MAY NEED TO USE A TRACTOR OR BOBCAT FOR A LARGE JOB.
2. ADD ANY SOIL AMENDMENTS BEFORE YOU INSTALL THE JUTE WEBBING EROSION CONTROL BLANKET. FOR EXAMPLE, YOU MAY NEED TO AMEND THE SOIL WITH LIME OR ADD FERTILIZER.
3. PLACE RESERVED TOPSOILS ON GROUND PER SPECIFICATIONS AND DETAILS.
4. DIG A SMALL TRENCH ACROSS THE TOP OF THE SLOPE WHERE YOU WILL INSTALL THE ROLLS OF JUTE EROSION CONTROL BLANKET. THE TRENCH ACTS AS AN ANCHOR FOR THE BLANKET. DIG THE TRENCH APPROXIMATELY 6 INCHES WIDE BY 6 INCHES DEEP THE FULL WIDTH OF THE SLOPE.
5. INSTALL THE JUTE ROLL OF EROSION CONTROL BLANKET IN THE TRENCH YOU'VE JUST DUG. PLACE AT LEAST 12 INCHES OF THE BLANKET ABOVE THE HILL. INSTALL ANCHORING STAPLES THROUGH THE BLANKET AND INTO THE BOTTOM OF THE TRENCH. THE STAPLES SHOULD BE PLACED NO MORE THAN A FOOT APART IN THE TRENCH. THE ANCHORS OR STAPLES ARE USUALLY SOLD WITH THE EROSION CONTROL BLANKET. IF THE SOIL IS LOOSE OR SANDY, MAKE SURE THE ANCHORS ARE LONG ENOUGH TO INSTALL DEEPER IN THE TRENCH.
6. BACKFILL THE TRENCH WITH DIRT AND MAKE SURE IT'S COMPACTED TO HELP HOLD THE JUTE EROSION CONTROL BLANKET IN PLACE. AFTER THE SOIL IN THE TRENCH HAS BEEN COMPACTED, SEED THE DIRT COVERING THE TRENCH. BRING THE 12 INCHES OF BLANKET DOWN OVER THE SEEDED TRENCH AND INSTALL MORE STAPLES OR STAPLES, A FOOT APART, ACROSS THE LENGTH OF THE BLANKET.
7. UNROLL THE REMAINING JUTE EROSION CONTROL BLANKET OVER THE SLOPE YOU'VE SEED. IF YOU NEED MORE THAN ONE ROLL OF BLANKET, INSTALL IT AS YOU WOULD ROOF SHINGLES, WITH AN OVERLAP OF AT LEAST 3 INCHES.
8. OVERLAP BY AT LEAST 3 INCHES WHEREVER THE JUTE EROSION CONTROL BLANKET ENDS AND ANOTHER BEGINS, WHETHER HORIZONTALLY OR VERTICALLY. OVERLAP ALL SEAMS AS WELL.
9. INSTALL STAPLES OR STAPLES AT EVERY SEAM. STAPLES THAT ARE PLACED ACCORDING TO DIRECTIONS HELP DECREASE THE WEIGHT AND PULL ON THE JUTE WEBBING EROSION CONTROL BLANKET.

JUTE WEBBING
N.T.S.

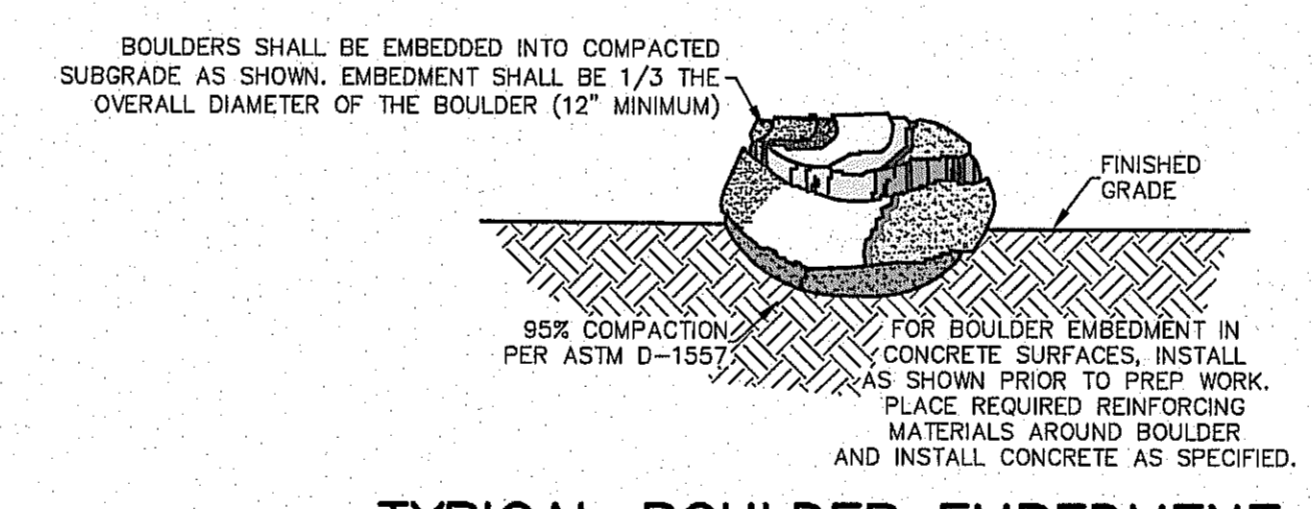
PYRAMAT EROSION CONTROL MATTING
N.T.S.

DETAILS SHOWN ARE ACCEPTABLE EXAMPLES OF SLOPE STABILIZATION AND WILL ONLY BE INSTALLED AT THE DIRECTION OF AND PER THE METHOD(S) PRESCRIBED BY THE GEOTECHNICAL AND DESIGN ENGINEERS.

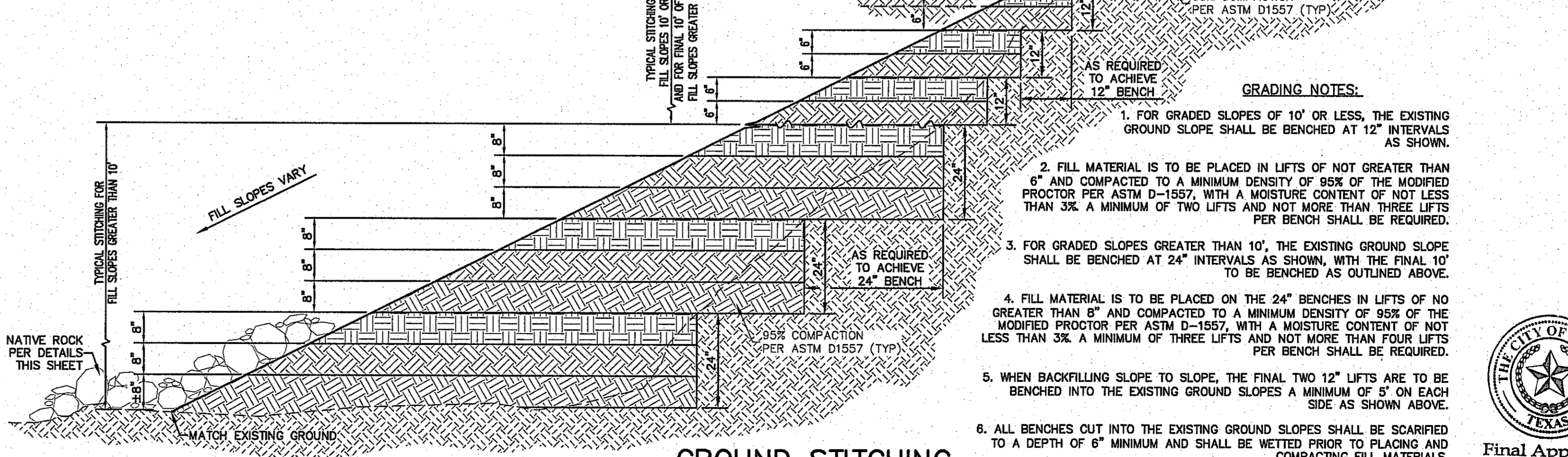
SLOPE STABILIZATION METHODS
N.T.S.



LOOSE COBBLE AND RIP-RAP APPLICATIONS
NOT TO SCALE



TYPICAL BOULDER EMBEDMENT
NOT TO SCALE



GROUND STITCHING
SCALE: 1" = 2'-0"

- GRADING NOTES:**
1. FOR GRADED SLOPES OF 10' OR LESS, THE EXISTING GROUND SLOPE SHALL BE BENCHED AT 12" INTERVALS AS SHOWN.
 2. FILL MATERIAL IS TO BE PLACED IN LIFTS OF NOT GREATER THAN 6" AND COMPACTED TO A MINIMUM DENSITY OF 95% OF THE MODIFIED PROCTOR PER ASTM D-1557, WITH A MOISTURE CONTENT OF NOT LESS THAN 3% A MINIMUM OF TWO LIFTS AND NOT MORE THAN THREE LIFTS PER BENCH SHALL BE REQUIRED.
 3. FOR GRADED SLOPES GREATER THAN 10', THE EXISTING GROUND SLOPE SHALL BE BENCHED AT 24" INTERVALS AS SHOWN, WITH THE FINAL 10' TO BE BENCHED AS OUTLINED ABOVE.
 4. FILL MATERIAL IS TO BE PLACED ON THE 24" BENCHES IN LIFTS OF NO GREATER THAN 8" AND COMPACTED TO A MINIMUM DENSITY OF 95% OF THE MODIFIED PROCTOR PER ASTM D-1557, WITH A MOISTURE CONTENT OF NOT LESS THAN 3%. A MINIMUM OF THREE LIFTS AND NOT MORE THAN FOUR LIFTS PER BENCH SHALL BE REQUIRED.
 5. WHEN BACKFILLING SLOPE TO SLOPE, THE FINAL TWO 12" LIFTS ARE TO BE BENCHED INTO THE EXISTING GROUND SLOPES A MINIMUM OF 5' ON EACH SIDE AS SHOWN ABOVE.
 6. ALL BENCHES CUT INTO THE EXISTING GROUND SLOPES SHALL BE SCARIFIED TO A DEPTH OF 6" MINIMUM AND SHALL BE WETTED PRIOR TO PLACING AND COMPACTING FILL MATERIALS.

BENCHMARK CITY MANUMENT AT THE CENTERLINE INTERSECTION OF BRADY AND MAIN STREETS ELEVATION = 5976.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	11/01/16	1st City Submittal	DAE
2	11/01/16	2nd City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 432-5720
EL PASO GAS SERVICE 432-5720
EL PASO WATER (PWS) 432-5720
EL PASO WATER (PWS) 432-5720
EL PASO WATER (PWS) 432-5720
EL PASO WATER (PWS) 432-5720
EL PASO WATER (PWS) 432-5720
EL PASO WATER (PWS) 432-5720
EL PASO WATER (PWS) 432-5720



csa design group, inc.
Texas Registered Engineering Firm F-8997
1945 Northwest Dr. Ste C
El Paso, Texas 79912
tel (915) 877-4134
fax (915) 877-4334
www.csaengineers.com



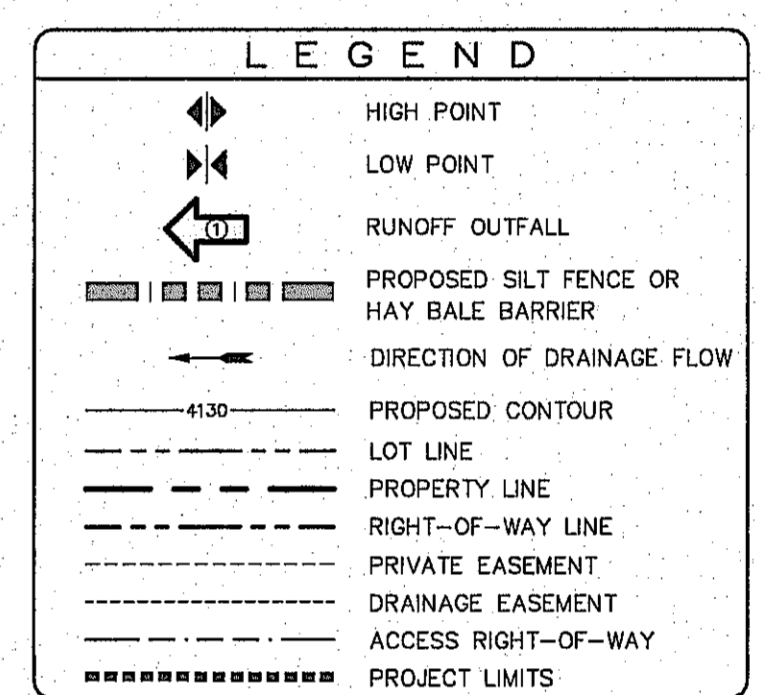
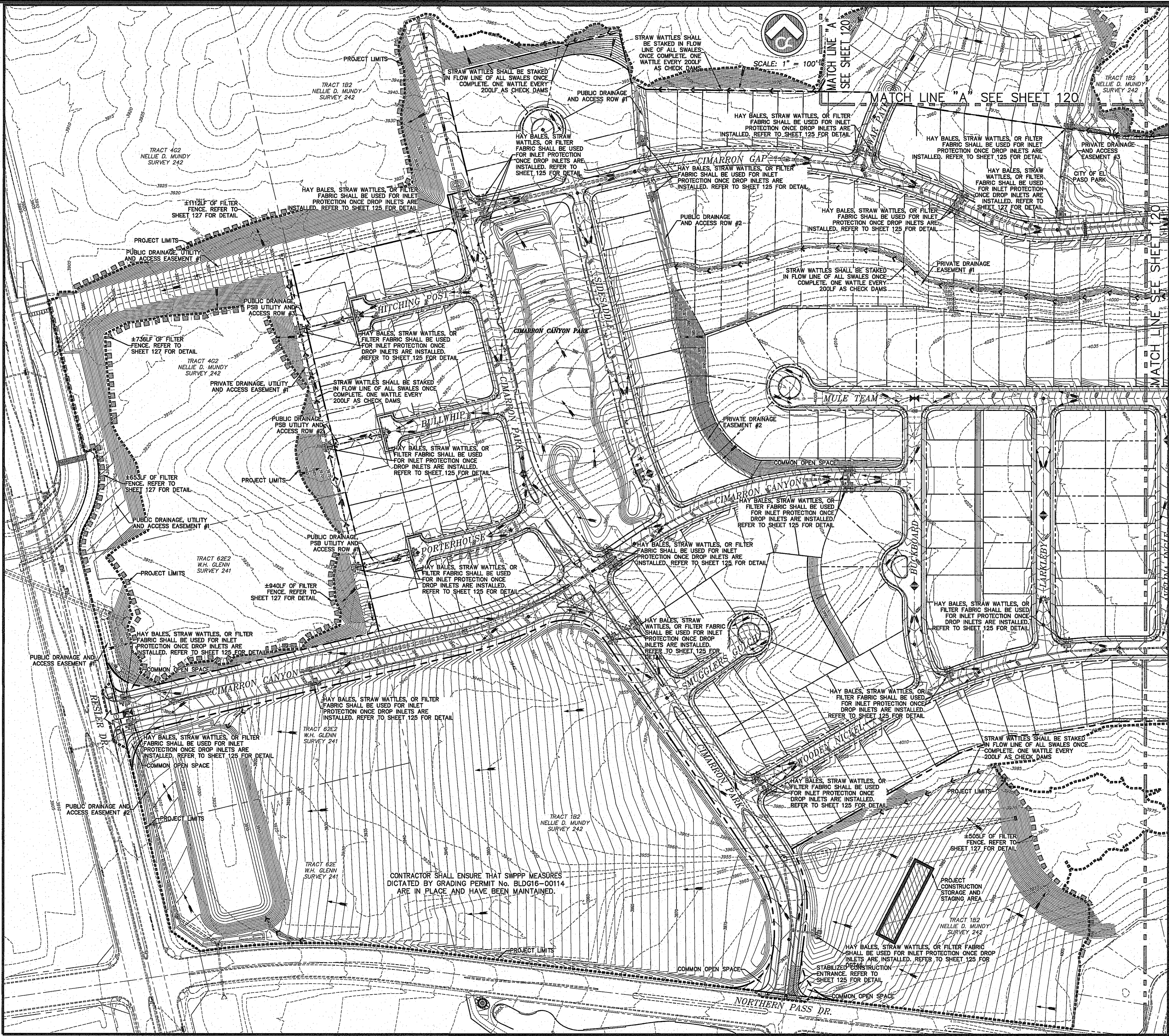
**CIMARRON CANYON
UNIT
SUBDIVISION**

**GRADING
STABILIZATION
NOTES AND
DETAILS**

G09	1524
G09-SM-DG	9/15/16
DAE	AS NOTED
DAE	AS NOTED
SHEET NO.	122
SHEET SEQUENCE	127 of 131



Final Approval

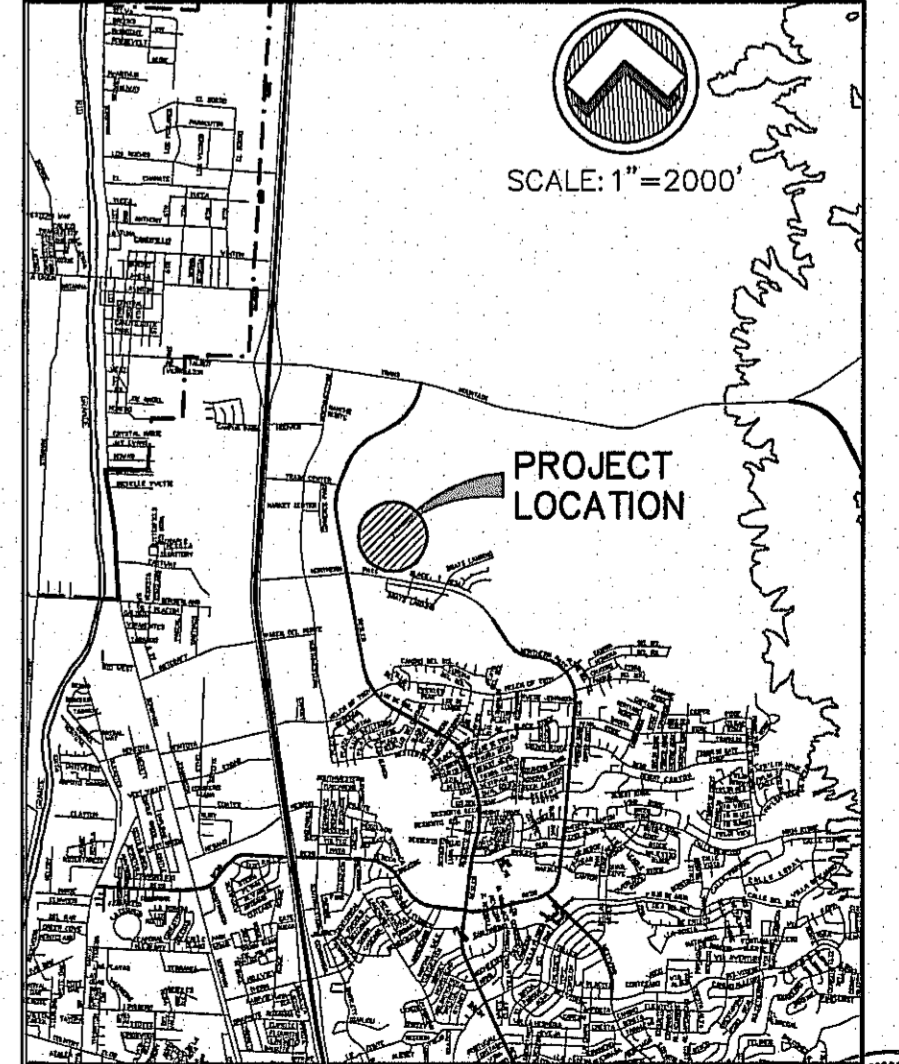


DRAINAGE NOTE:
REFER TO CIVIL DRAINAGE PLAN FOR DRAINAGE AREAS AND DISCHARGE COMPUTATIONS.

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREPARATION AND SUBMITTAL OF ALL STORM WATER POLLUTION CONTROL PERMITS. THE CONTRACTOR SHALL SUBMIT A NOI AND SOPOP APPLICATION FORM PRIOR TO CONSTRUCTION. AFTER COMPLETION OF PROJECT, CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION FORM TO COMPLETE NPDES REQUIREMENTS.

STAGING AREA SHALL PROVIDE ADEQUATE SPACE FOR TRAILER STORAGE, FUEL/LUBRICANT STORAGE, PORTABLE RESTROOMS, EQUIPMENT STORAGE AND MAINTENANCE, ETC.

DUST AND EROSION CONTROL NOTE:
CONTRACTOR SHALL MAKE PROVISIONS FOR TEMPORARY DUST AND EROSION CONTROL WHERE EXTENSIVE DIRT OR DUST OPERATIONS ARE PERFORMED. USE WATER SPRINKLING AND OTHER METHODS TO LIMIT DUST AND DIRT MIGRATION. COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.



VICINITY MAP
Approx. Latitude = 31°53'28"N
Approx. Longitude = 106°24'34"W

BENCHMARK CITY MONUMENT AT THE CENTRELINE INTERSECTION OF CENTRE DRIVE AND BRAYS LANDING DRIVE. ELEVATION = 3976.63 (EL. PASO CITY DATUM)

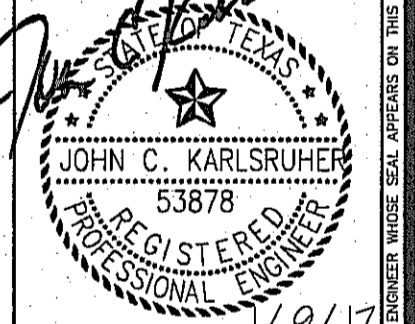
NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
649-5720
1-800-DIG-TESS
649-5800
1-800-DIG-TESS
649-5775
1-800-DIG-TESS
649-5847
1-800-DIG-TESS
(649-8877)

EL PASO ELECTRIC COMPANY
AT&T
TESS GAS SERVICE LINE
EL PASO WATER (PSB)
AFTER HOURS EMERGENCY (EPW)
EL PASO WEST TEXAS GAS COMPANY
TEXAS EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service to the client and project for which it was prepared. This document is not to be used or authorized for reuse by any party other than the client of this document. Any reuse, to include copying and/or modifying the content of this document, without express, written permission from CSA Design Group, Inc. constitutes a violation of the copyright laws of the United States. Use of this material for any other purpose may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm F-9997
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel: (915) 877-4155
fax: (915) 877-4334
www.csaengineers.com



CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
**STORM
WATER
POLLUTION
PREVENTION
PLAN**

DOB	1524
DESIGN BY	JCK
DOB-SM-DC	9/15/16
DATE	9/15/16
DAE	AS NOTED
CHECKED BY	DAE

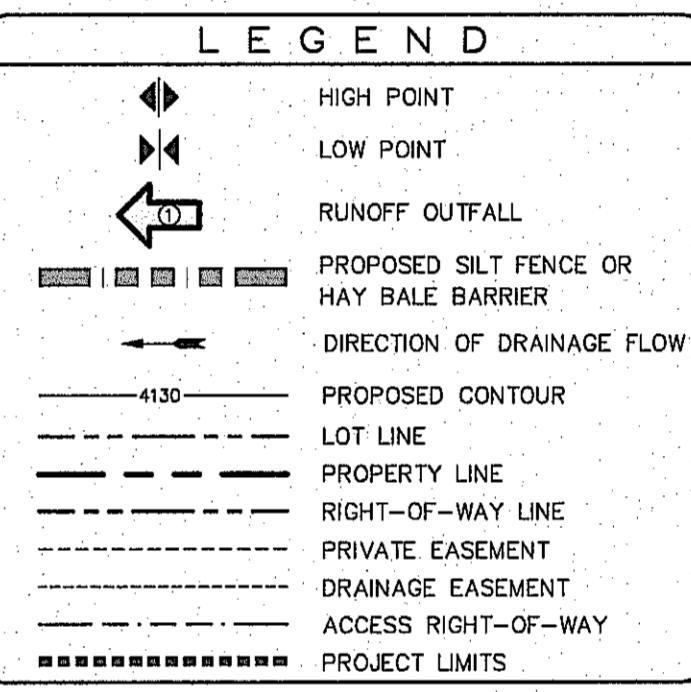
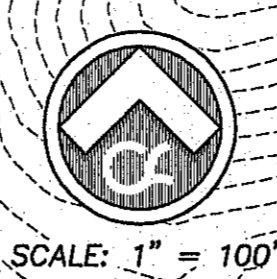
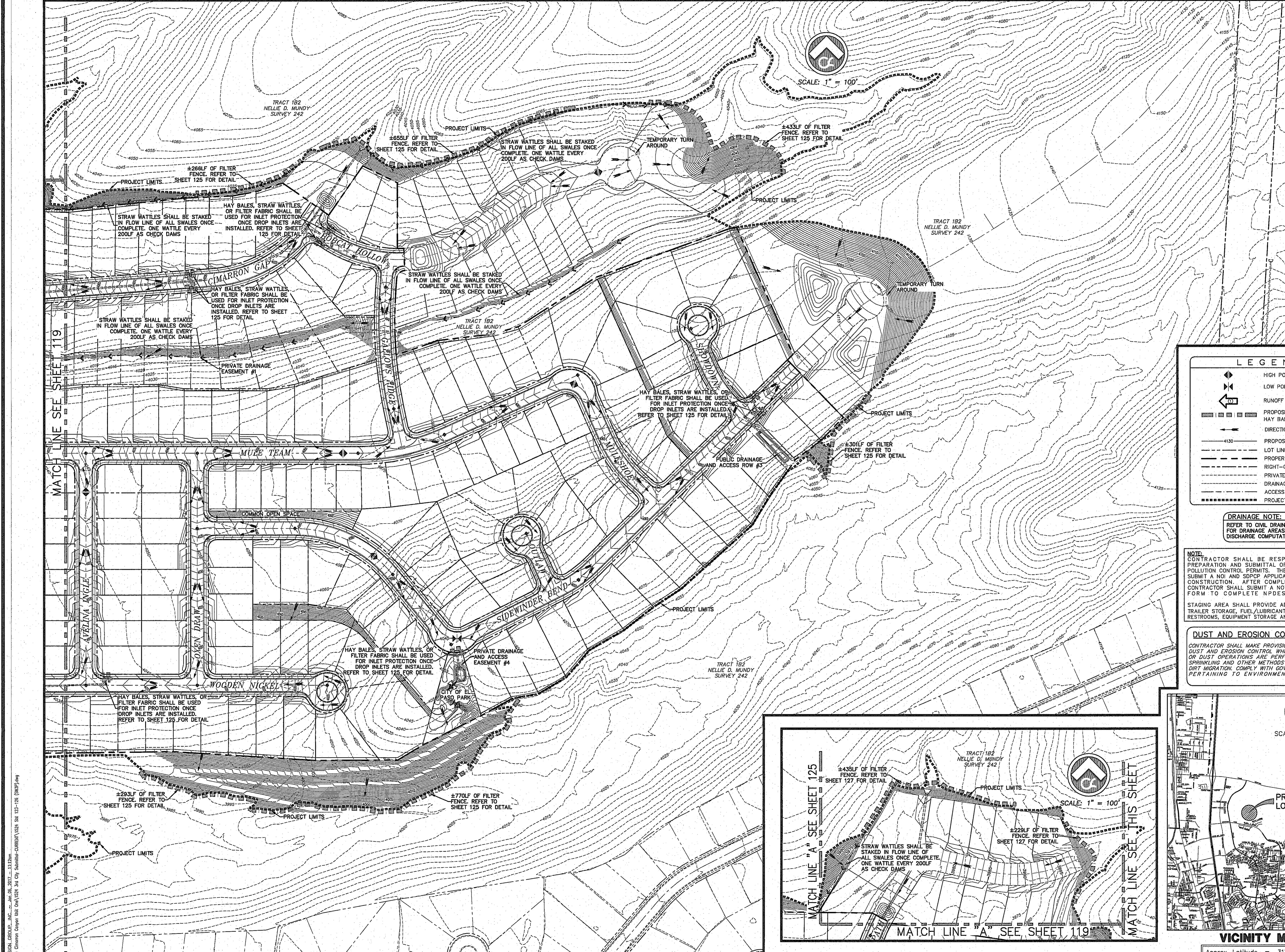
SHEET NO.
123
128 of 131



Final Approval

STORM WATER POLLUTION PREVENTION PLAN

© CSA DESIGN GROUP, INC. - JAN 06, 2017 - 11:50am
S:\Urban\1926_Cimarron Canyon Unit One\1924_1st City Submittal - CDR\DWG\1924_123-128 (SWPP)dwg.dgn

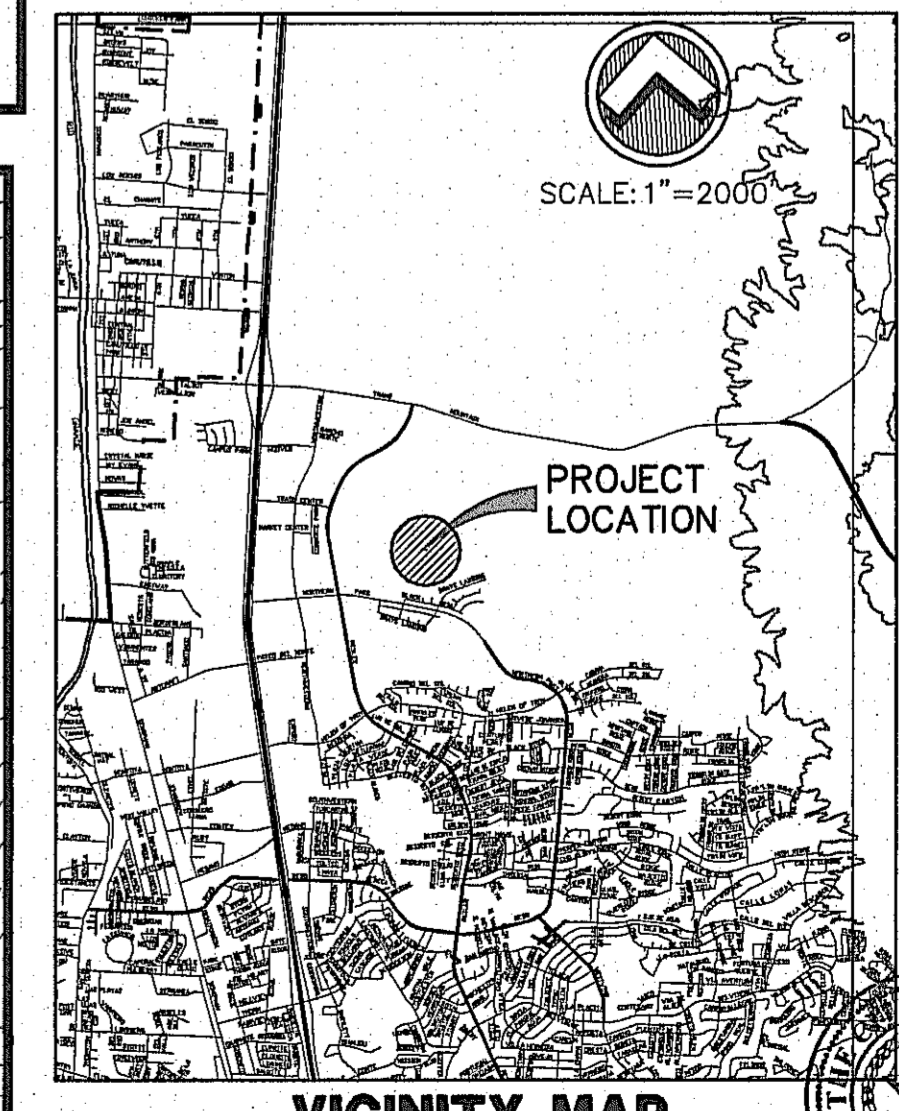
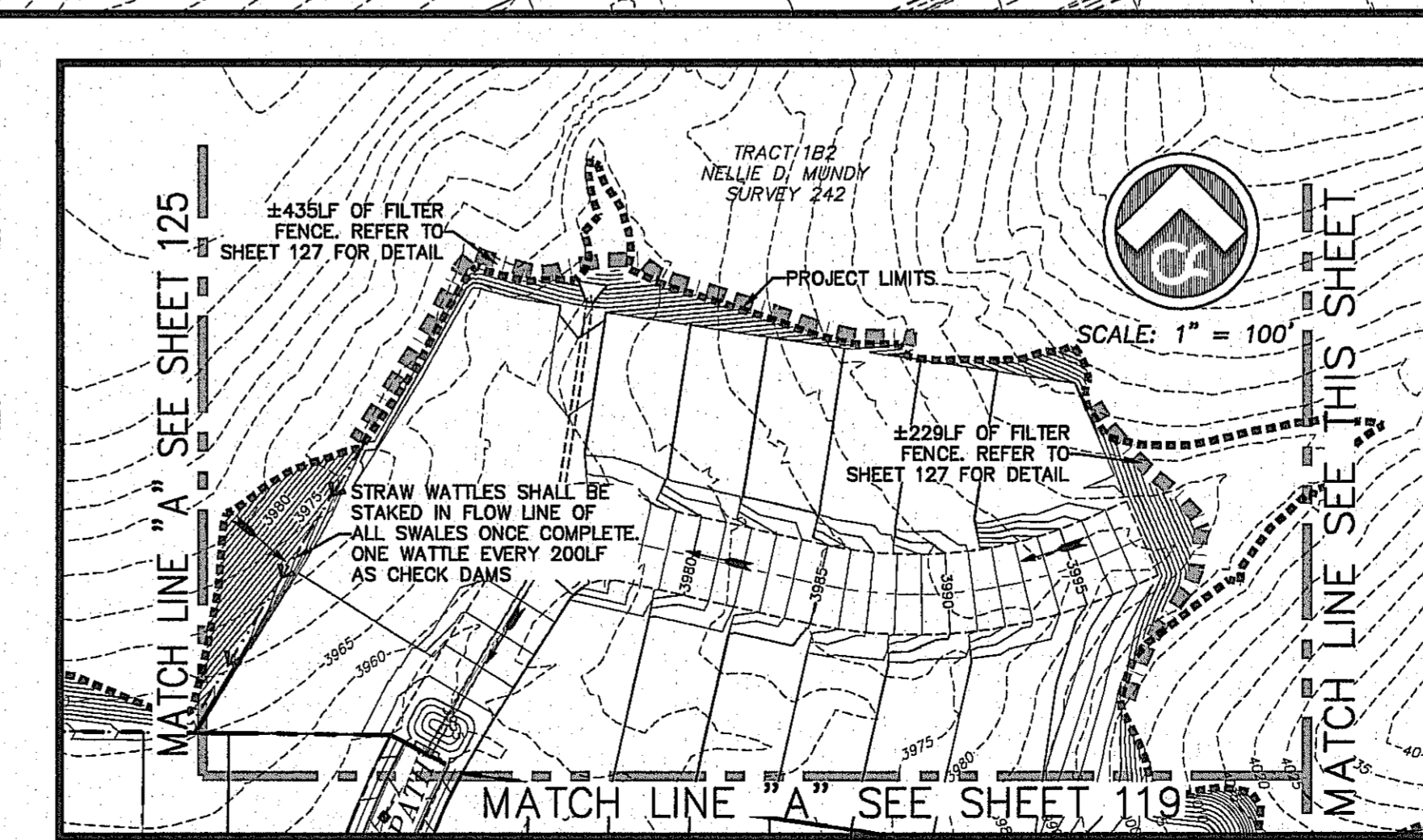


DRAINAGE NOTE:
REFER TO CIVIL DRAINAGE PLAN FOR DRAINAGE AREAS AND DISCHARGE COMPUTATIONS.

NOTE:
CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREPARATION AND SUBMITTAL OF ALL STORM WATER POLLUTION CONTROL PERMITS. THE CONTRACTOR SHALL SUBMIT A NOI AND SDPCP APPLICATION FORM PRIOR TO CONSTRUCTION. AFTER COMPLETION OF PROJECT, CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION FORM TO COMPLETE NPDES REQUIREMENTS.

STAGING AREA SHALL PROVIDE ADEQUATE SPACE FOR TRAILER STORAGE, FUEL/LUBRICANT STORAGE, PORTABLE RESTROOMS, EQUIPMENT STORAGE AND MAINTENANCE, ETC.

DUST AND EROSION CONTROL NOTE:
CONTRACTOR SHALL MAKE PROVISIONS FOR TEMPORARY DUST AND EROSION CONTROL WHERE EXTENSIVE DIRT OR DUST OPERATIONS ARE PERFORMED. USE WATER SPRINKLING AND OTHER METHODS TO LIMIT DUST AND DIRT MIGRATION. COMPLY WITH GOVERNING REGULATIONS PERTAINING TO ENVIRONMENTAL PROTECTION.



VICINITY MAP
Approx. Latitude = 31°53'28"N
Approx. Longitude = 106°24'34"W

BENCHMARK CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NE BRAYS LANDING DRIVE AND BRAYS LANDING DRIVE
ELEVATION = 3976.63 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

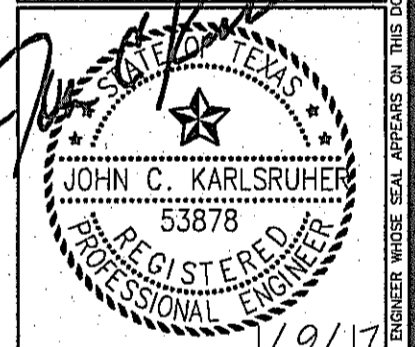
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL

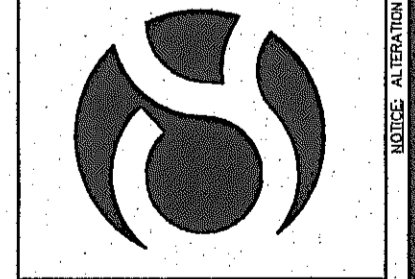
648-5720
1-800-DIG-TESS
AT&T
648-5900
1-800-DIG-TESS
694-5775
757-7416
1-800-DIG-TESS
(561-6877)

EL PASO ELECTRIC COMPANY
TEXAS GAS SERVICE
EL PASO WATER (PSB)
AFTER-HOURS EMERGENCY (EPW)
TIME WARNER (CABLE)
TELECOM COMPANY
TEXAS EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project as another project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from C&S Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm F-5997
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877-4155
fax (915) 877-4334
www.csaengineering.com

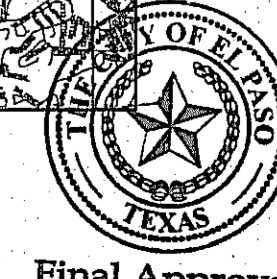


CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
**STORM
WATER
POLLUTION
PREVENTION
PLAN**

DOB	1524
DESIGN BY	JCK
DOB-SM-DC	9/15/16
DRAWN BY	DAE
DATE	AS NOTED
DATE	2016

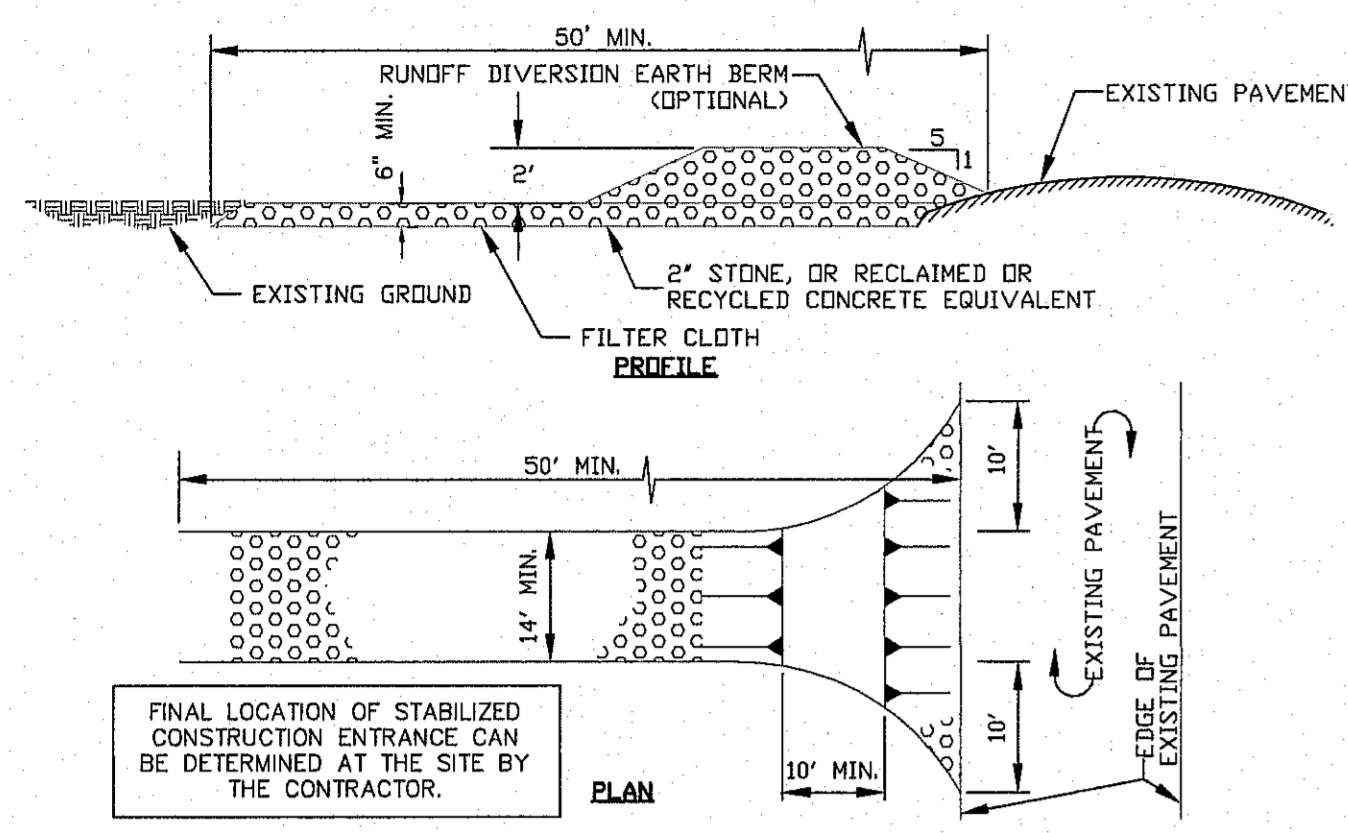
SHEET NO.
124
OF
131



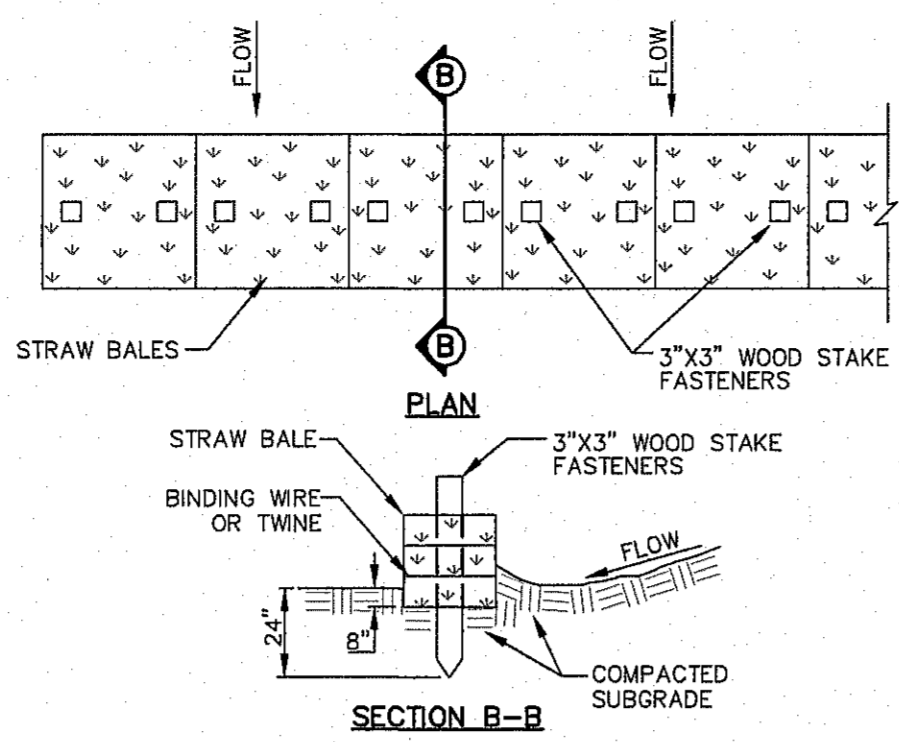
Final Approval

STORM WATER POLLUTION PREVENTION PLAN

© C&S DESIGN GROUP, INC. 11/16
S:\Data\1924_Cimarron_Canyon_Unit_One\1924_Unit_One_Submittal-CORRECTED\1924_S01_123-125_CSWPP.dwg
dplano

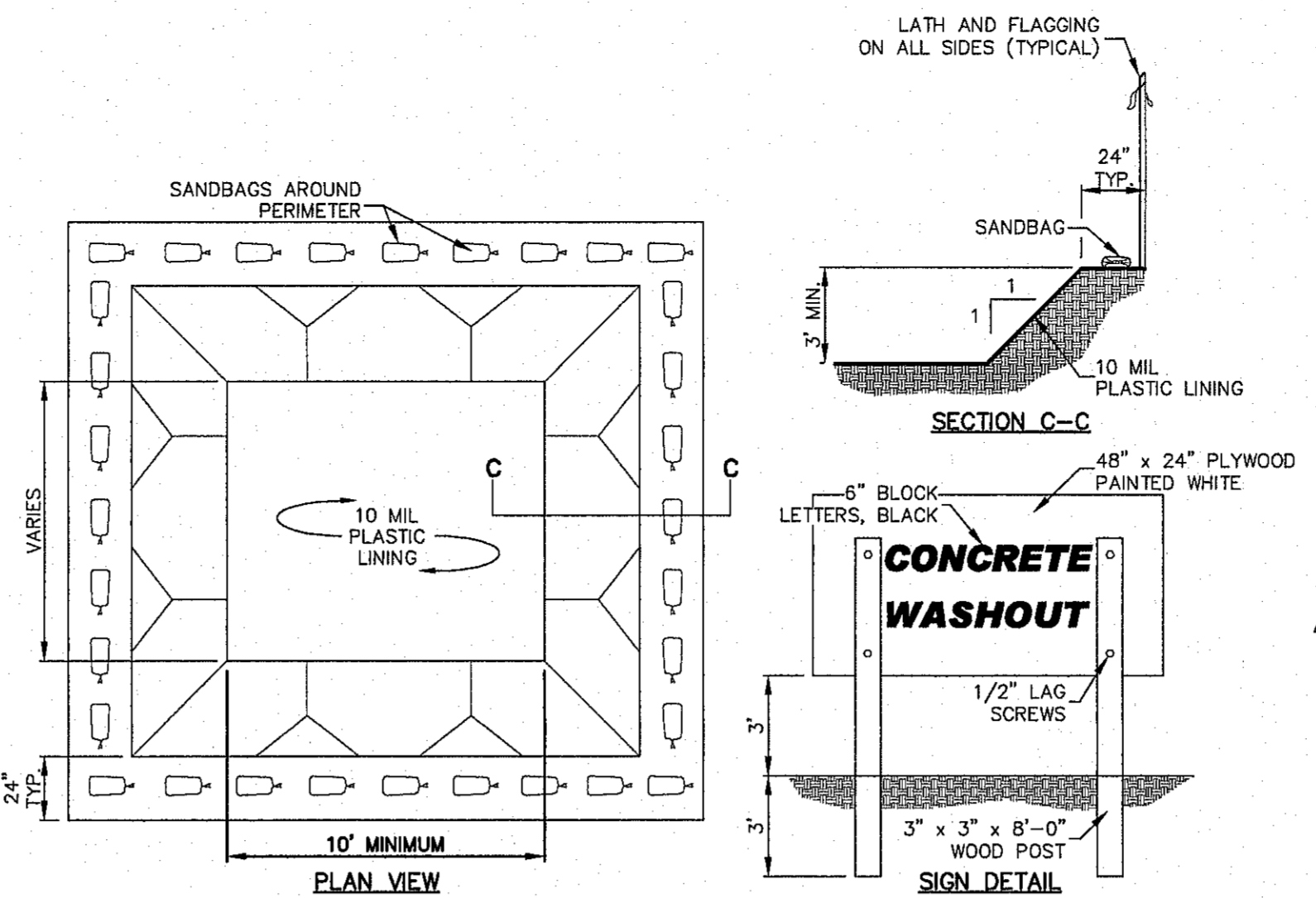


STABILIZED CONSTRUCTION ENTRANCE
SCALE: 1" = 2'-0"



- NOTES (BALE BARRIER):**
- BALES TO BE PLACED PERPENDICULAR TO FLOW. HAY BALES PLACED IN "V" DITCH MUST BE STAGGERED.
 - BALES MUST BE FIRMLY STAKED INTO THE ENTRENCHMENT AND THE ENTRENCHMENT BE PROPERLY BACKFILLED.
 - BALES MUST BE PLACED END TO END AND THERE CAN BE NO GAPS BETWEEN THE BALES.
 - BARRIERS MUST BE INSPECTED AND REPAIRED IMMEDIATELY AFTER EACH RAINFALL OR DAILY IF THERE IS PROLONGED RAINFALL.
 - DAMAGED STRAW BALES REQUIRE IMMEDIATE REPLACEMENT.
 - TRAPPED SEDIMENTS MUST BE REMOVED AND DISPOSED OF PROPERLY.

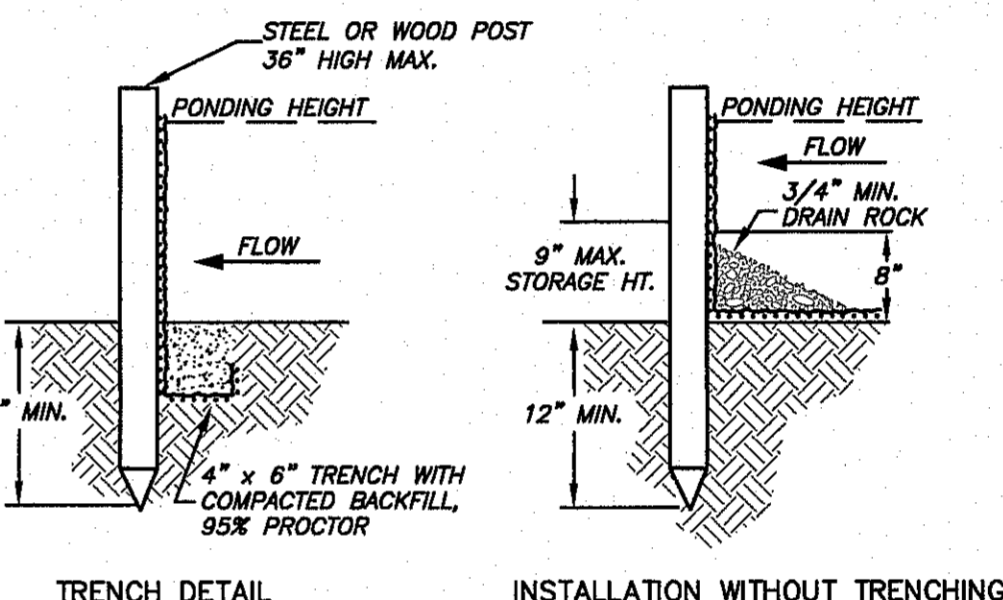
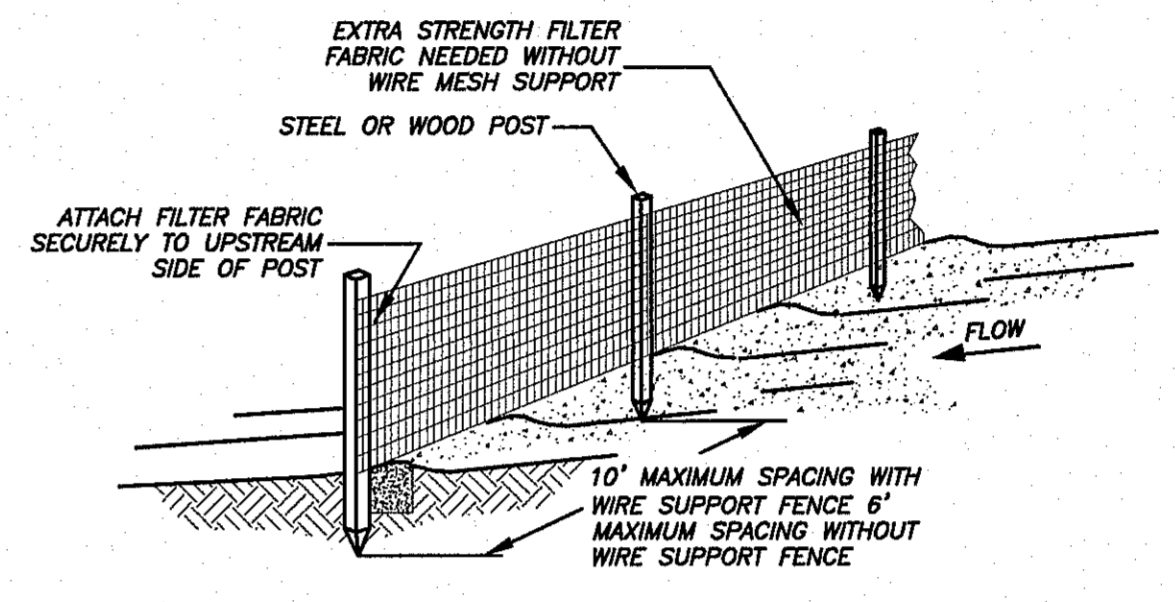
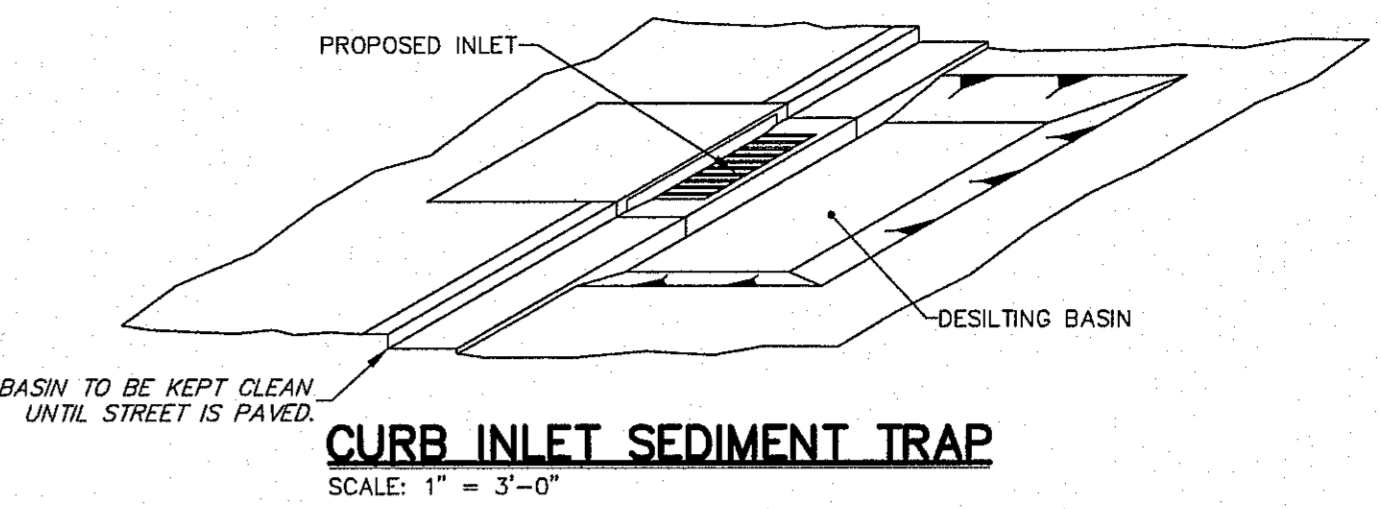
STRAW BALE BARRIER
SCALE: 1" = 5'-0"



ACTUAL LAYOUT TO BE DETERMINED BY THE CONTRACTOR IN THE FIELD. WASHOUT SHALL BE INSTALLED PRIOR TO ANY CONCRETE WORK.

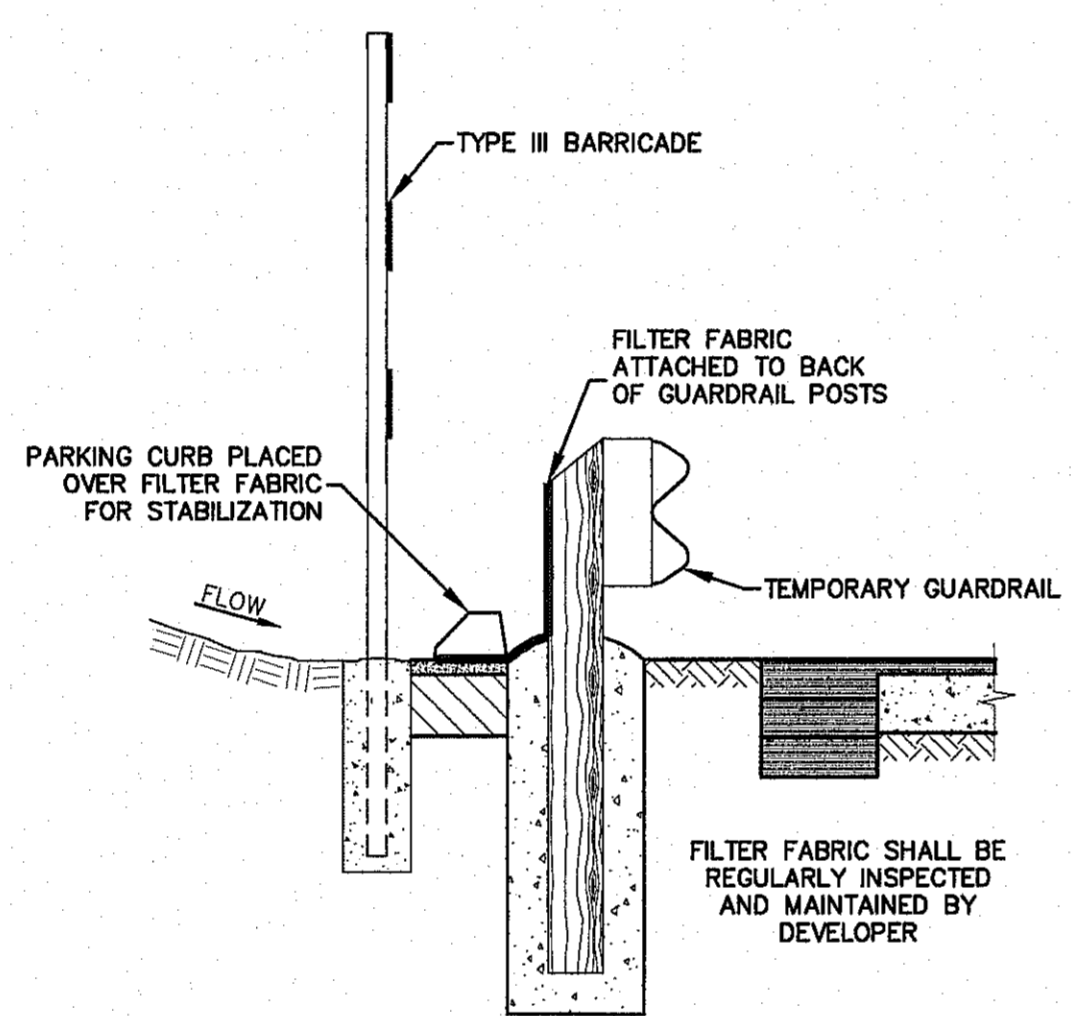
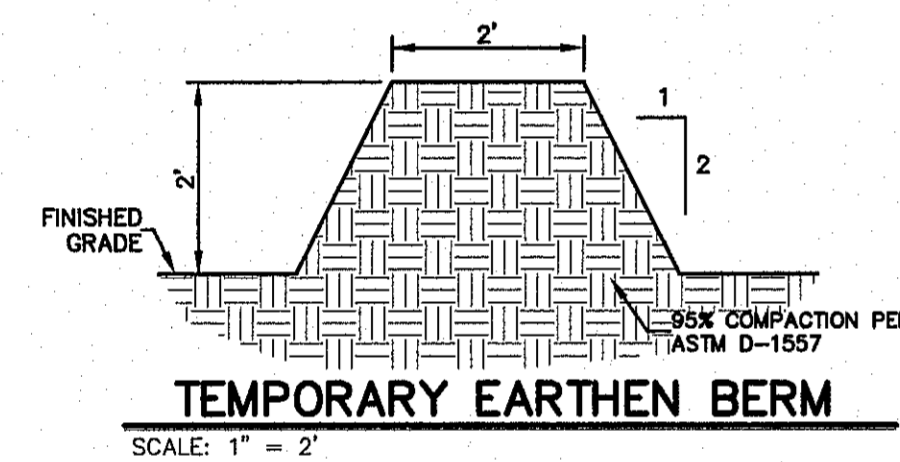
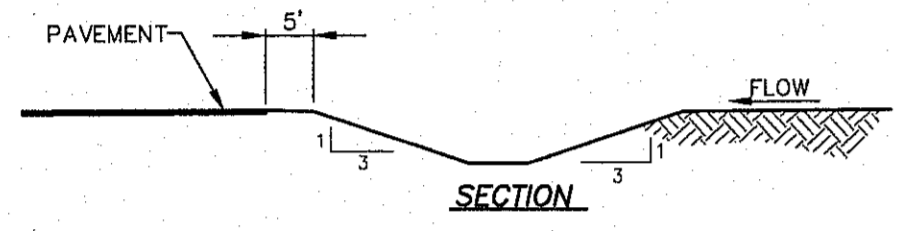
CONCRETE WASHOUT
N.T.S.

SIGN SHALL BE LOCATED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

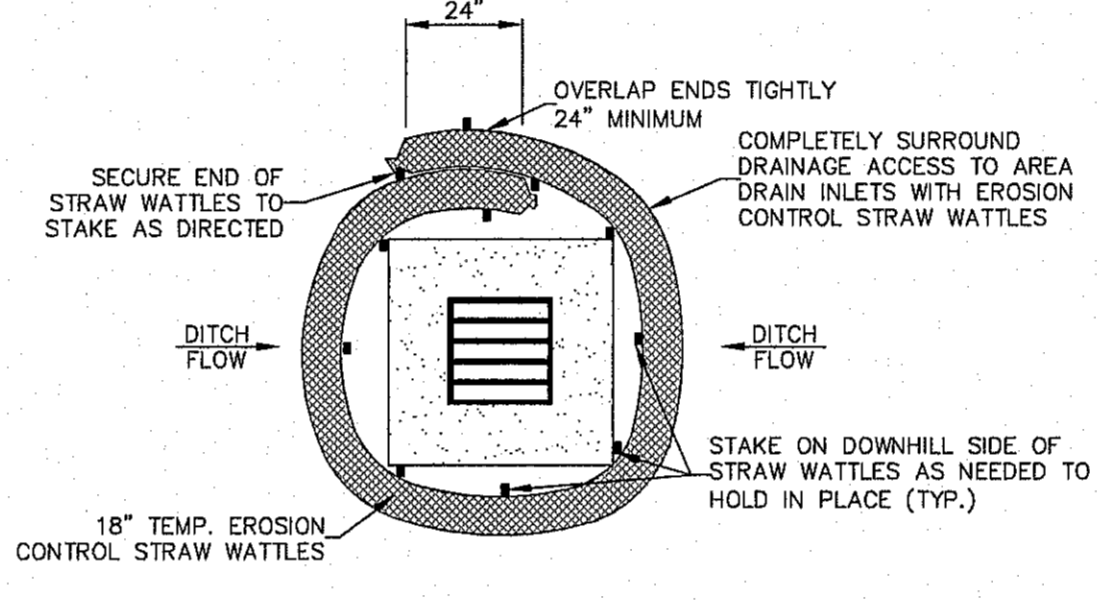


- NOTES:**
- THE FENCE REQUIRES FREQUENT INSPECTION AND PROMPT MAINTENANCE TO MAINTAIN ITS EFFECTIVENESS.
 - INSPECT THE FENCE AFTER EACH RAINFALL.
 - CHECK FOR AREAS WHERE RUN-OFF HAS ERODED A CHANNEL BENEATH THE FENCE, OR WHERE THE FENCE WAS CAUSED TO SAG OR COLLAPSE.
 - ALL NEEDED REPAIRS SHALL BE PERFORMED IMMEDIATELY.
 - REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN IT IS ONE-THIRD TO ONE-HALF THE HEIGHT OF THE FENCE OR AFTER EACH STORM.
 - 4" MIN. STEEL OR WOOD POSTS SPACED AT 6' O.C. SOFTWOOD POSTS SHALL HAVE A 3" MIN. DIAMETER OR NOMINAL 2"x4". HARDWOOD POSTS SHALL HAVE A MINIMUM CROSS SECTION OF 1.5"x1.5".

INSTALLATION WITHOUT TRENCHING
SCALE: 1" = 5'-0"

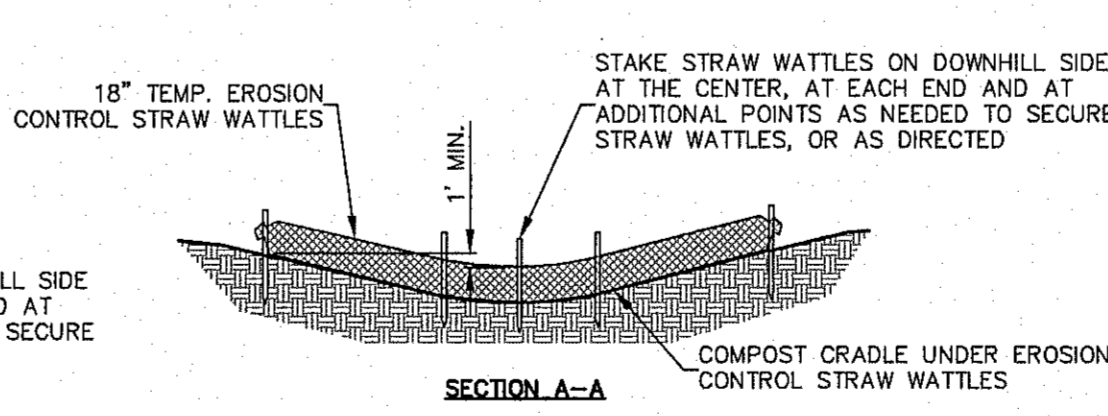
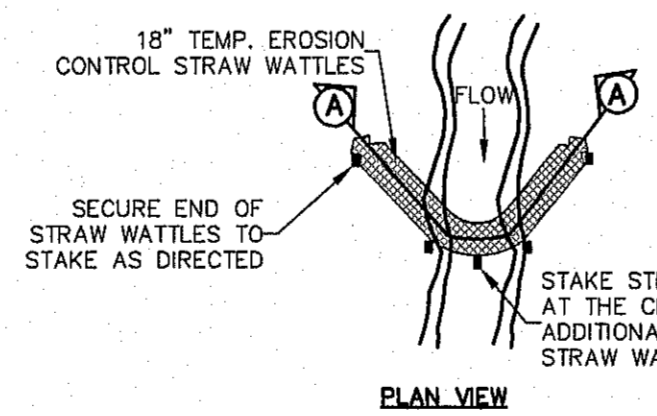
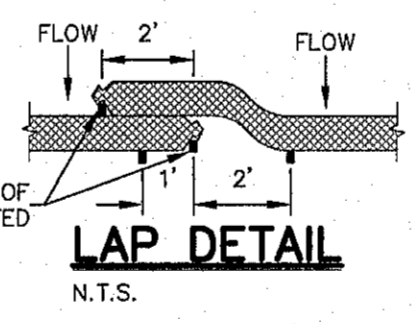


INSTALLATION WITHOUT TRENCHING
SCALE: 1" = 2'-0"

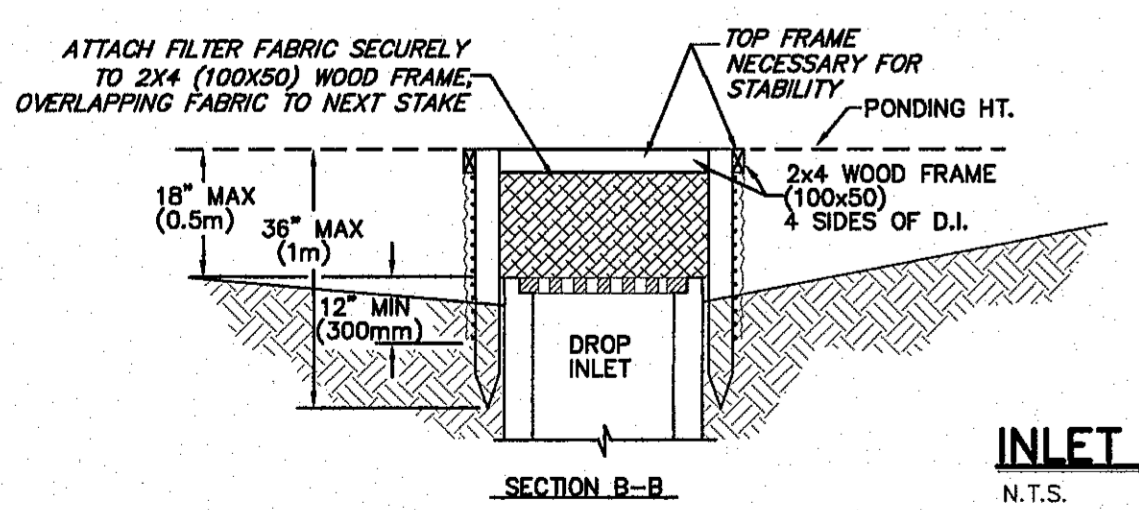
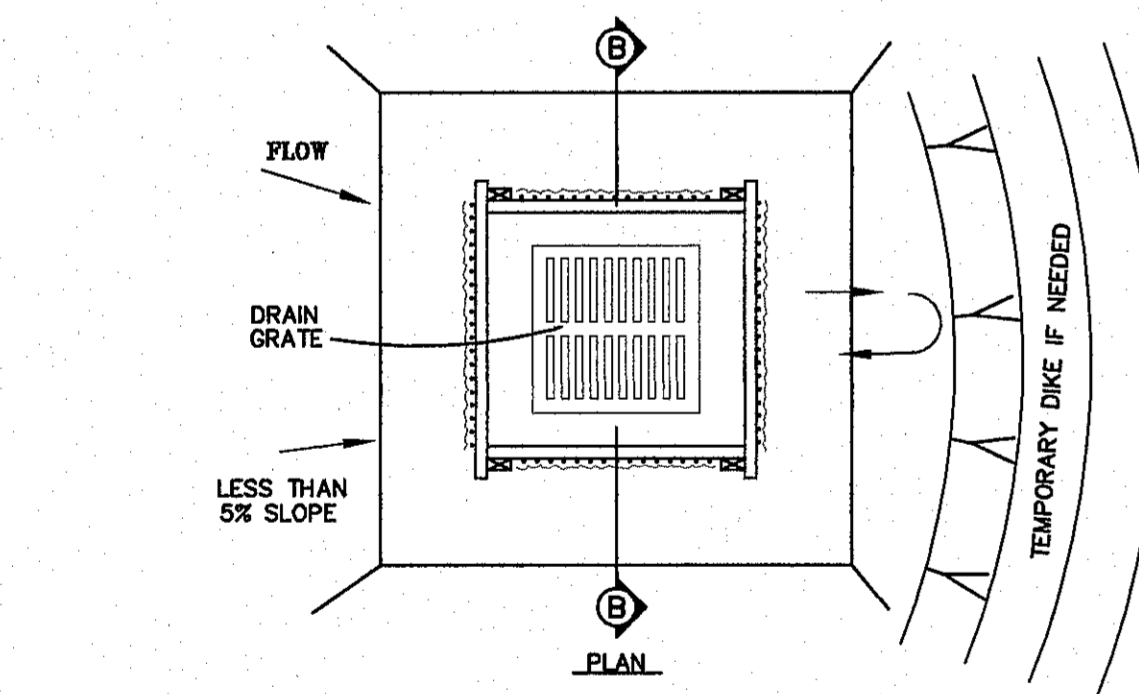


- NOTES:**
- LENGTHS OF EROSION CONTROL STRAW WATTLES SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND AS REQUIRED FOR THE PURPOSE INTENDED. MAXIMUM LENGTH OF STRAW WATTLES SHALL BE 60' FOR 18" DIAMETER OR 30' FOR 12" DIAMETER STRAW WATTLES.
 - UNLESS OTHERWISE DIRECTED, USE BIODEGRADABLE OR PHOTODEGRADABLE CONTAINMENT MESH ONLY WHERE STRAW WATTLES WILL REMAIN IN PLACE AS PART OF A VEGETATIVE SYSTEM. FOR TEMPORARY INSTALLATIONS, USE RECYCLABLE CONTAINMENT MESH.
 - STUFF STRAW WATTLES WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE DENSITY THAT WILL HOLD SHAPE WITHOUT EXCESSIVE DEFORMATION.
 - STAKES SHALL BE 2" x 2" WOOD OR #3 REBAR, 4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE STRAW WATTLES, OR AS DIRECTED.
 - DO NOT PLACE STAKES THROUGH CONTAINMENT MESH.

INSTALLATION WITHOUT TRENCHING
N.T.S.



EROSION CONTROL STRAW WATTLE CHECK DAM
N.T.S.



INLET PROTECTION
N.T.S.

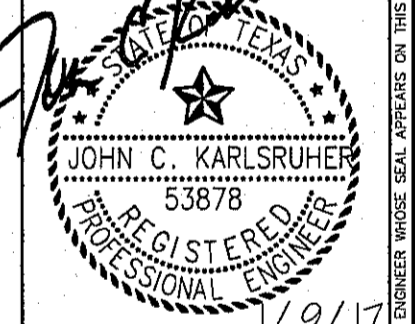
- NOTES:**
- THE FENCE REQUIRES FREQUENT INSPECTION AND PROMPT MAINTENANCE TO MAINTAIN ITS EFFECTIVENESS.
 - INSPECT THE FENCE AFTER EACH RAINFALL.
 - CHECK FOR AREAS WHERE RUN-OFF HAS ERODED A CHANNEL BENEATH THE FENCE, OR WHERE THE FENCE WAS CAUSED TO SAG OR COLLAPSE.
 - ALL NEEDED REPAIRS SHALL BE PERFORMED IMMEDIATELY.
 - REMOVE AND PROPERLY DISPOSE OF SEDIMENT WHEN IT IS ONE-THIRD TO ONE-HALF THE HEIGHT OF THE FENCE OR AFTER EACH STORM.
 - 4" MIN. STEEL OR WOOD POSTS SPACED AT 6' O.C. SOFTWOOD POSTS SHALL HAVE A 3" MIN. DIAMETER OR NOMINAL 2"x4". HARDWOOD POSTS SHALL HAVE A MINIMUM CROSS SECTION OF 1.5"x1.5".

NO.	DATE	DESCRIPTION	BY
1	9/15/16	1st City Submittal	DAE
2	11/20/16	2nd City Submittal	DAE
3	1/9/17	3rd City Submittal Final	JCK

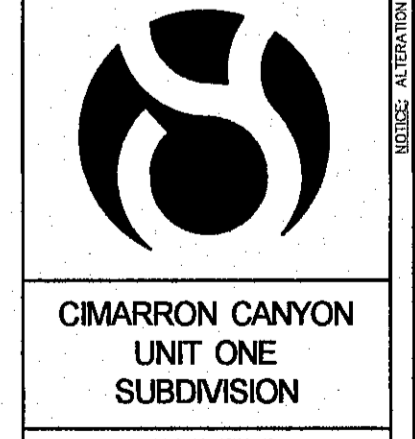
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
UTILITIES IN
PROJECT AREA

CALL
BEFORE YOU DIG -
EL PASO ELECTRIC COMPANY
EL PASO GAS SERVICE
EL PASO WATER (PWS)
TIME WARNER (CABLE)
TEXAS EXCAVATION SAFETY SYSTEM

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. The document is not intended or authorized for use by any party on extensions of such project or any other project. Any reuse, to include copying and/or modification of the content of this document without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #2897
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel: (915) 877-4155
Fax: (915) 877-4334
www.csaengineering.com



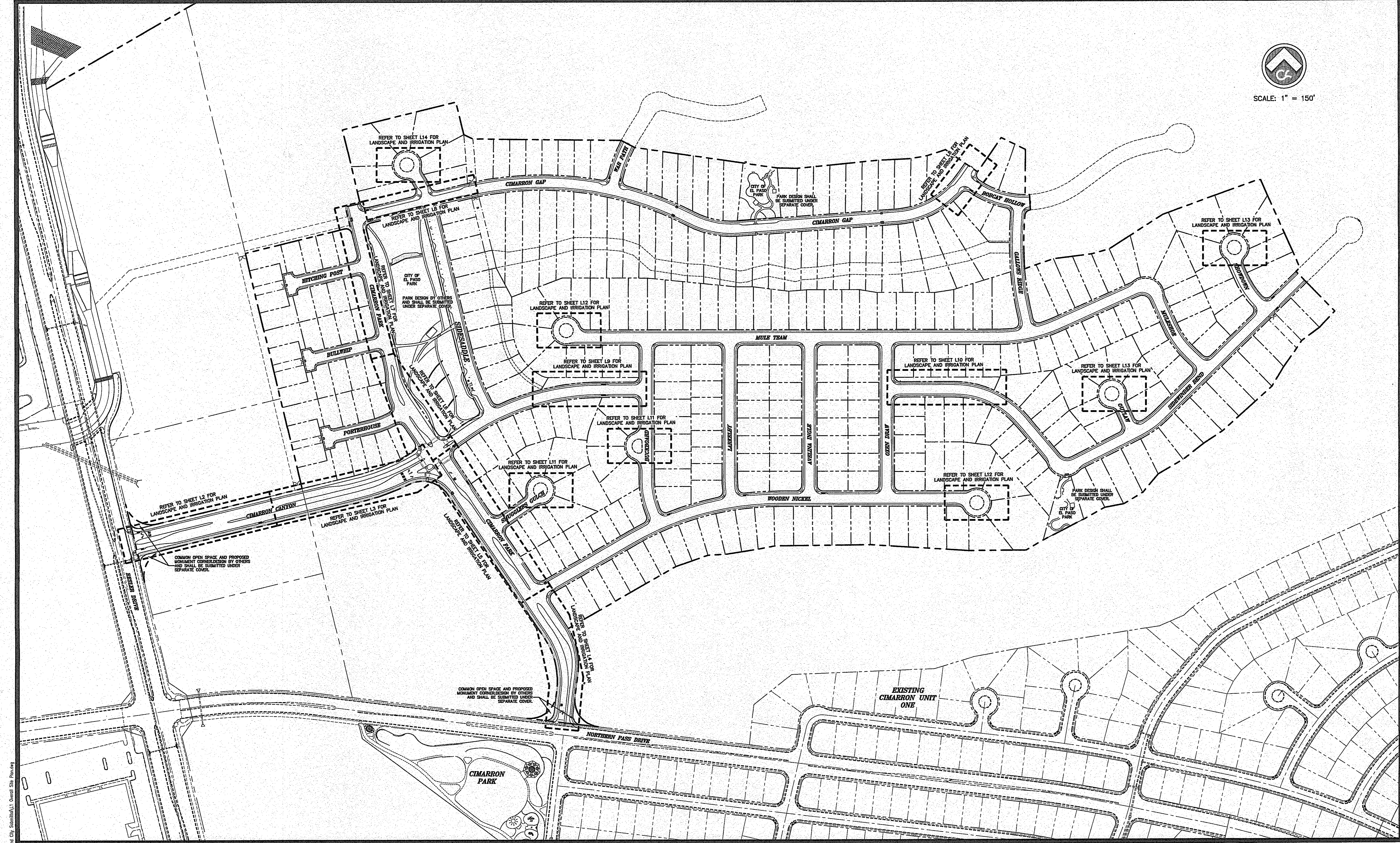
STORM WATER POLLUTION PREVENTION PLAN DETAILS

JOB NO.	1524
DESIGN BY	9/15/16
DATE	AS NOTED
CHECKED BY	SCALE

SHEET NO. **125**
OF 131



Final Approval



SCALE: 1" = 150'

LANDSCAPE AND IRRIGATION OVERALL SITE PLAN

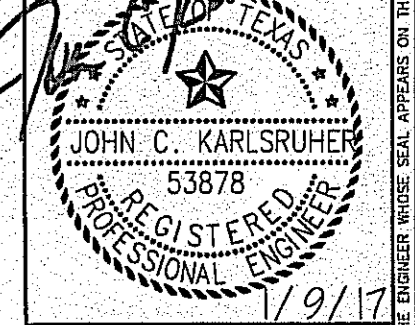
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF INTERSTATE 10 AND BRAYS LANDING DRIVE ELEVATION = 3976.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
3	1/9/17	3rd City Submittal Final	JCK
2	11/01/16	2nd City Submittal	DAE
1	9/15/16	1st City Submittal	DAE

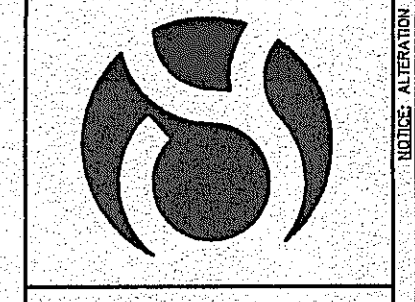
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
543-5720
1-800-DIG-TESS
544-8300
544-8300
EL PASO WATER UTILITY LINE
AFTER HOURS EMERGENCY (EPM)
775-7414
775-7414
TEXAS NATURAL GAS COMPANY
1-800-DIG-TESS
(844-8377)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. The document is not intended as authorization for any party to reproduce, copy, or otherwise use the information contained herein for any other project or any other purpose. Any reuse to include copying and/or modifying the content of the document without express written permission from CSA Design Group, Inc. for the specific project is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm # 2287
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel (915) 877-4155
Fax (915) 877-4334
www.csaengineers.com



CIMARRON CANYON
UNIT ONE
SUBDIVISION

SHEET TITLE
**OVERALL
SITE PLAN**

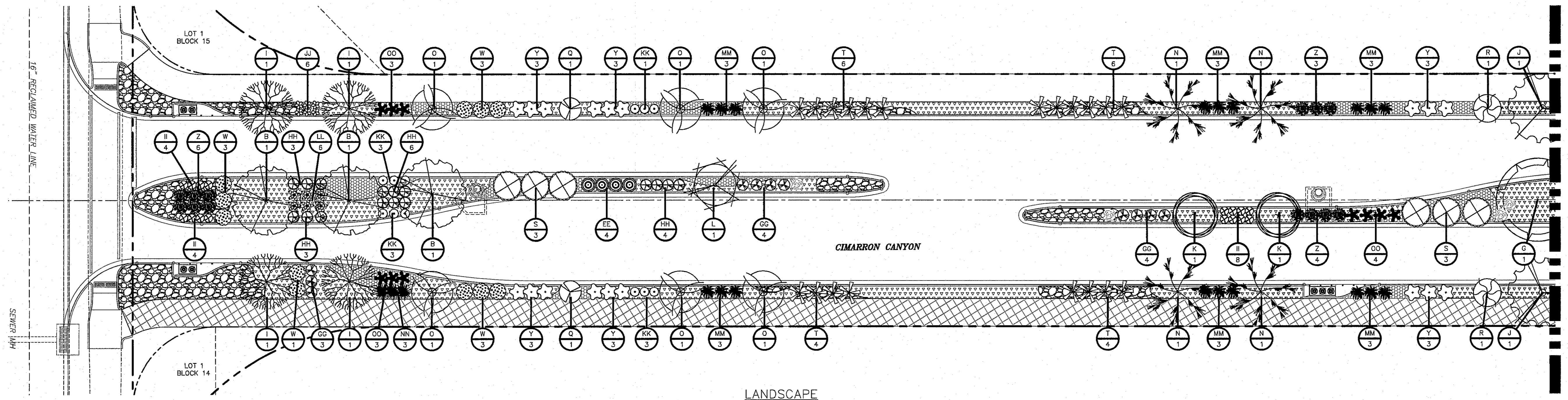
GOB	1524
DESIGN BY	9/15/16
DATE	AS NOTED
SCALE	SCALE

SHEET NO.
L1
SHEET SEQUENCE
1 OF **131**

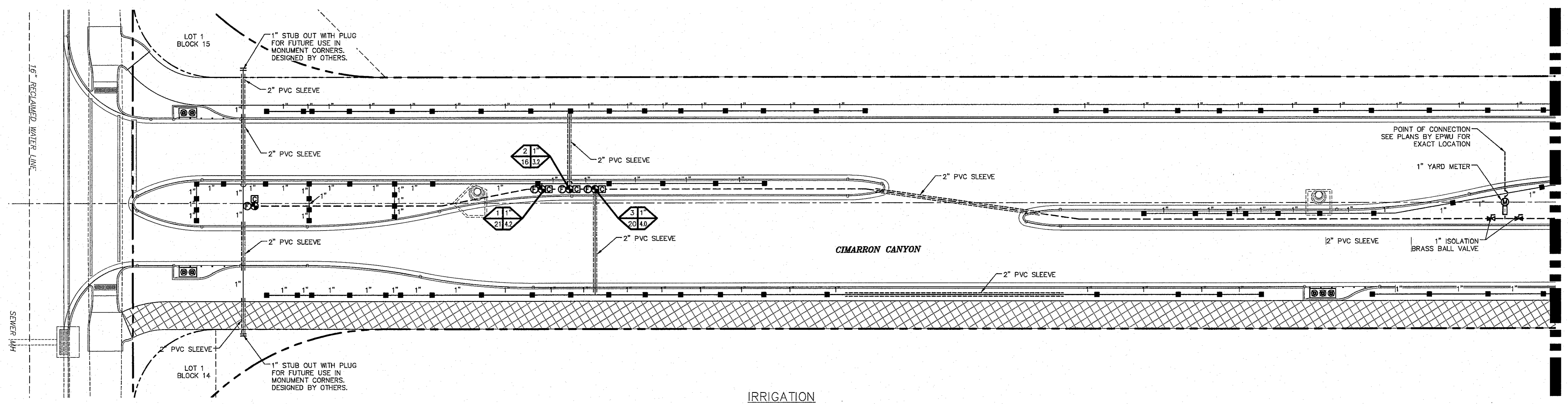


Final Approval

© CSA DESIGN GROUP, INC. - Jan 09, 2017 - 2:28pm
C:\Users\jcarroll\OneDrive\Documents\Projects\Cimarron Canyon Unit One\1501 Landscape & Irrigation\Landscapes - 2nd City Submittal\01 Overall Site Plan.dwg



LANDSCAPE



IRRIGATION

ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
B		ARIZONA CYPRESS	CUPRESSUS ARIZONICA (C. GLABRA)	EVERGREEN	40'	30'	2" CAL	3	T		ORANGE JUBILEE	TECOMA X ALATA	DECIDUOUS	10'	8'	5 GAL	20	---	R.O.W. LINE
G		HONEY MESQUITE	PROSOPIS GLANDULOSA VAR. GLANDULOSA	DECIDUOUS	30'	30'	3" CAL	1	W		CREOSOTE BUSH	LARREA TRIDENTATA	EVERGREEN	8'	6'	5 GAL	11	---	PROPERTY LINE
I		DESERT WILLOW	CHILOPSIS LINEARIS	DECIDUOUS	25'	20'	2" CAL	4	Z		PINK PARADE	HESPERALOE FUNIFERA x PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	13	---	STREET CENTERLINE
J		SWEET ACACIA	ACACIA FARNESIANA (A. SMALLII)	DECIDUOUS	25'	25'	2" CAL	2	EE		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	4		2'-3" PADRE CANYON RED BOULDER
K		TEXAS PISTACHE	PISTACIA MEXICANA (P. TEXANA)	SEMI-EVERGREEN	20'	15'	2" CAL	2	HH		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	11		3/8" PADRE CANYON CHAT
L		CATCLAW ACACIA	ACACIA GREGGII (A. WRIGHTII)	DECIDUOUS	18'	15'	2" CAL	1	II		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	16		2" PADRE CANYON SCREENING
N		PALO VERDE	PARKINSONIA X CERODIUM "DESSERT MUSEUM"	DECIDUOUS	20'	25'	2" CAL	4	JJ		INDIAN HAWTHORN	RHAPHIOLEPIS INDICA	EVERGREEN	5'	3'	5 GAL	6		3"-6" GREY KICKER STONE
O		ROCKY MOUNTAIN JUNIPER	JUNIPERUS SCOPULORUM	EVERGREEN	35'	15'	3" CAL	6	KK		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	12		SIDEWALK BY DEVELOPER
Q		BLUE POINT JUNIPER	JUNIPERUS CHINENSIS	EVERGREEN	20'	8'	2" CAL	2	LL		FAXON YUCCA	YUCCA FAXONIANA	EVERGREEN	5'	6'	3 GAL	6		CONCRETE
R		DWARF YAUPON HOLLY	ILEX VOMITORIA	EVERGREEN	15'	10'	3" CAL	2	NN		VAREGATED AGAVE AMERICANA	MARGINATA AFAVACEAE	EVERGREEN	5'	5'	3 GAL	18		
S		PROSTRATE ACACIA	ACACIA REDOLENS	EVERGREEN	3'	10'	3 GAL	6	OO		YUCCA PENDULA	YUCCA RECURVIFOLIA	PERENNIAL	8'	6'	5 GAL	3		
											BRAVE RIVER SAGE	LEUCOPHYLLUM CULTIVAR	EVERGREEN	5'	5'	3 GAL	10		

PATTERN	DESCRIPTION
---	1" TYPE K COPPER WATER LINE
---	PVC SCH 40 IPS PLASTIC PIPE WATER LATERAL (SIZE AS NOTED)
---	PVC SCH 40 SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
---	1" YARD METER
	FEBCO 825YD 1" RPBA W/ HYDROCOIL ENCLOSURE
	RAIN SENSOR
	STATION CONTROLLER
	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
	AMAD 1" WYE FILTER & WILKINS 600 SERIES PRESSURE REGULATOR
	3"-6" GREY KICKER STONE
	2"-1/2" XERIBIRD 8 EMITTER
	PIPE SIZE AS NOTED
	STUB OUT AND CAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
	ISOLATION BRASS BALL VALVE

Final Approval

(IRRIGATION IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13087 AUSTIN, TEXAS 78711-3087 (512) 239-6719)

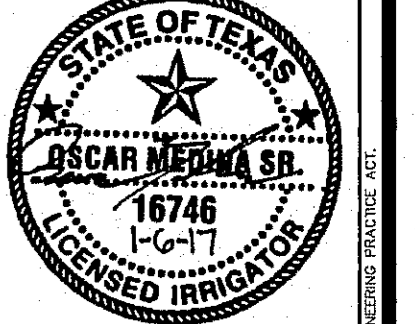
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND W 15TH STREET, EL PASO, TEXAS. ELEVATION = 8978.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	08/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
450 W. 11TH STREET
450-2000 TESS
EL PASO, TEXAS 79901
TEXAS GAS SERVICE
544-6300
952-9411 (952-2903)
TGS EMERGENCY HOTLINE (TGS)
952-9411 (952-1855)
AFTER HOURS EMERGENCY (EPWU)
952-9411
TIME WARNER (CABLE)
EL PASO NATURAL GAS COMPANY
1-800-336-6847
TEXAS EXCAVATION SAFETY SYSTEM
1-800-342-8377

This document, whether in hard copy or machine reproducible form, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.

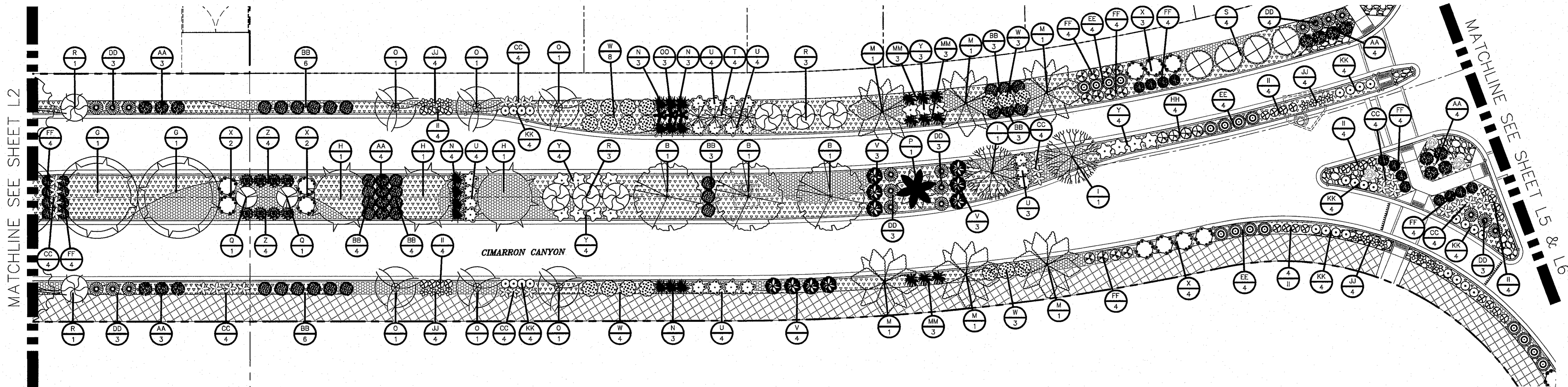


csa design group, inc.
Texas Registered Engineering Firm E-0897
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel (915) 877,4155
Fax (915) 877,4334
www.csaengineers.com

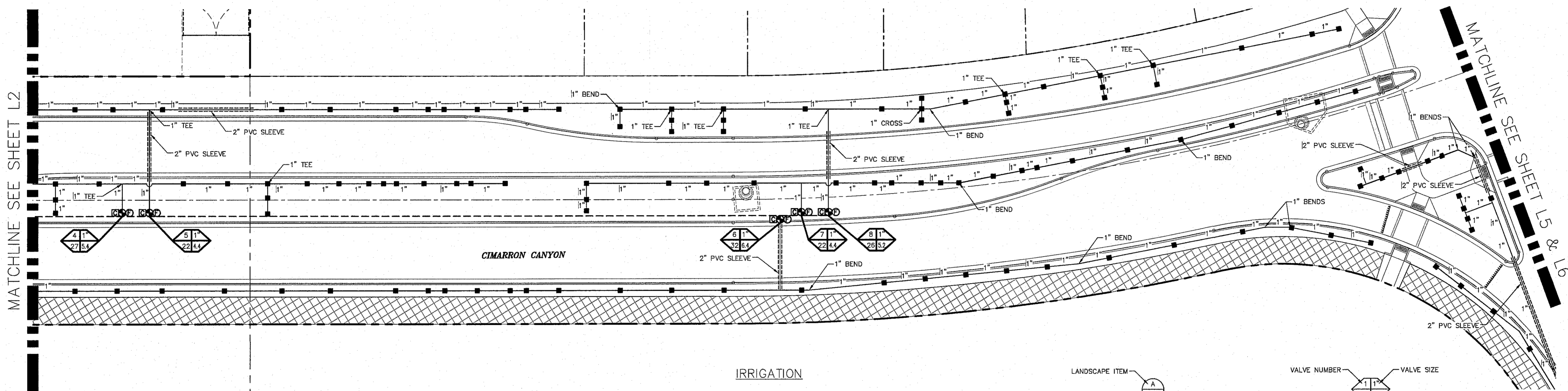
CIMARRON CANYON UNIT ONE LANDSCAPE & IRRIGATION
SHEET TITLE

DATE	BY
10/27/16	OM
AS NOTED	AS NOTED
12	15

© CSA DESIGN GROUP, INC. - Jan 08, 2017 - 1:35pm
Drawn by: Oscar Medina Sr.
Checked by: Oscar Medina Sr.
Reviewed by: Oscar Medina Sr.
Approved by: Oscar Medina Sr.



LANDSCAPE



IRRIGATION

ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
B		ARIZONA CYPRESS	CUPRESSUS ARIZONICA (C. GLABRA)	EVERGREEN	40'	30'	2" CAL	3	W		CREOSOTE BUSH	LARREA TRIDENTATA	EVERGREEN	8'	6'	5 GAL	18	---	R.O.W. LINE
G		HONEY MESQUITE	PROSOPIS GLANDULOSA VAR. GLANDULOSA	DECIDUOUS	30'	30'	3" CAL	2	X		SILVER CASSIA	SENNA ARTEMISIOIDES	EVERGREEN	6'	6'	5 GAL	11	---	PROPERTY LINE
H		VITEX	VITEX AGNUS-CASTUS	DECIDUOUS	25'	20'	2" CAL	3	Y		CIMARRON SAGE	LEUCOPHYLLUM ZYGOPHYLLUM	EVERGREEN	5'	6'	3 GAL	15	---	BOUNDARY LINE
I		DESERT WILLOW	CHILOPSIS LINEARIS	DECIDUOUS	25'	20'	2" CAL	2	Z		PINK PARADE	HESPERALOE FUNIFERA x PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	8	---	STREET CENTERLINE
M		TEXAS REDBUD	CERCIS CANADENSIS VAR. TEXANA	DECIDUOUS	20'	20'	2" CAL	6	AA		DAMIANITA	CHRYSACTINIA MEXICANA	PERENNIAL	2'	2'	1 GAL	14	---	2'-3" PADRE CANYON RED BOULDER
O		ROCKY MOUNTAIN JUNIPER	JUNIPERUS SCOPULORUM	EVERGREEN	35'	15'	3" CAL	6	BB		REGAL MIST PINK MUHLY	MUHLENBERGIA CAPILLARIS	DORMANT	2'	2'	1 GAL	29	---	3/8" PADRE CANYON CHAT
P		TEXAS MOUNTAIN LAUREL	SOPHORA SECUNDFLORA	EVERGREEN	10'	15'	2" CAL	1	CC		COYOTE BUSH	BACCHARIS PILULARIS	EVERGREEN	3'	5'	1 GAL	28	---	2" PADRE CANYON SCREENING
Q		BLUE POINT JUNIPER	JUNIPERUS CHINENSIS	EVERGREEN	20'	8'	2" CAL	2	DD		DWARF COYOTE BUSH	BACCHARIS PILULARIS x SAROTHIROIDES	EVERGREEN	2'	5'	1 GAL	19	---	2" AZTEC SCREENING
R		DWARF YAUPON HOLLY	ILEX VOMITORIA	EVERGREEN	15'	10'	3" CAL	8	EE		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	12	---	3"-6" GREY KICKER STONE
S		PROSTRATE ACACIA	ACACIA REDOLENS	EVERGREEN	3'	10'	3 GAL	4	FF		CAPE (BLUE) PLUMBAGO	PLUMBAGO AURICULATA	PERENNIAL	4'	4'	3 GAL	20	---	SIDEWALK BY DEVELOPER
T		ORANGE JUBILEE	TECOMA X ALATA	DECIDUOUS	10'	8'	5 GAL	4	GG		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	12	---	CONCRETE
U		TECOMA YELLO BELLS	TECOMA STANS VAR. ANGUSTATA	DESCRIPTION	6'	4'	3 GAL	19	HH		HEAVENLY BAMBOO	NANDINA DOMESTICA	EVERGREEN	5'	3'	3 GAL	4	---	
V		GOLDEN EUONYMUS	EUONYMUS JAPONICA	EVERGREEN	8'	6'	5 GAL	10	II		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	20	---	
									JJ		INDIAN HAWTHORN	RHAPHIOLEPIS INDICA	EVERGREEN	5'	3'	5 GAL	16	---	
									KK		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	24	---	
									MM		VARIEGATED AGAVE AMERICANA	MARGINATA AFAVACEAE	EVERGREEN	5'	5'	3 GAL	9	---	
									NN		YUCCA PENDULA	YUCCA RECURVIFOLIA	PERENNIAL	8'	6'	5 GAL	13	---	
									OO		BRAVE RIVER SAGE	LEUCOPHYLLUM CULTIVAR	EVERGREEN	5'	5'	3 GAL	3	---	

PATTERN	DESCRIPTION
---	1" TYPE K COPPER WATER LINE
---	PVC SCH 40 IPS PLASTIC PIPE WATER LATERAL (SIZE AS NOTED)
---	PVC SCH 40 SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
●	1" YARD METER
□	FEBCO 825YD 1" RPA W/ HYDROCOOL ENCLOSURE
■	RAIN SENSOR
■	STATION CONTROLLER
●	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
●	AMAD 1" WYE FILTER & WILKINS 600 SERIES PRESSURE REGULATOR
●	XERIBIRD 8 EMITTER
2-1/2"	PIPE SIZE AS NOTED
---	STUB OUT AND CAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
■	ISOLATION BRASS BALL VALVE

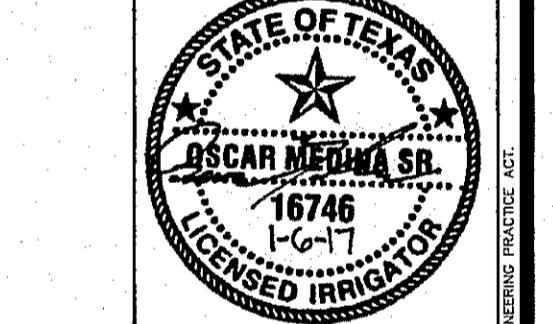
BY	DESCRIPTION
OM	1st City Submittal
OM	2nd City Submittal

NO.	DATE
1	09/15/16
2	11/01/16

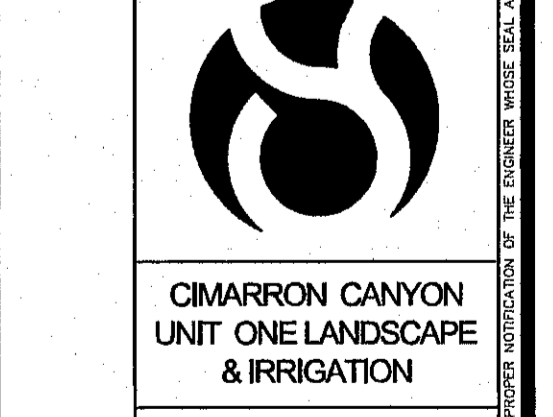
WARNING!
BEFORE YOU DIG
 CONTRACTOR SHALL
 FIELD LOCATE ALL
 EXISTING UNDERGROUND
 IMPROVEMENTS IN
 PROJECT AREA

BEFORE YOU DIG - CALL
 EL PASO ELECTRIC COMPANY
 4-800-231-TESS
 544-6300
 562-8411 (952-2903)
 TGS GAS SERVICE
 TGS EMERGENCY HOTLINE (888)
 AFTER HOURS EMERGENCY (888)
 TIME WARNER (CABLE)
 EL PASO NATURAL GAS COMPANY
 1-800-334-8847
 1-800-334-8847

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, in whole or in part, without express, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm E-5897
 1845 Northwestern Dr. Ste C
 El Paso, Texas 79912
 tel (915) 877,4155
 fax (915) 877,4334
 www.csadesigngroup.com



OM	1524
CSA-SM-DD-OM	10/27/16
DATE	
GB	AS NOTED
CREATED BY	SCALE
SHEET NO.	
L3	
TOTAL SHEETS	
3	15

Final Approval



(IRRIGATION IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13087 AUSTIN, TEXAS 78711-3087 (512) 239-6719)

© CSA DESIGN GROUP, INC. - Jan 06, 2017 - 1:30pm
 1845 Northwestern Dr. Ste C El Paso, Texas 79912
 tel (915) 877,4155 fax (915) 877,4334
 www.csadesigngroup.com

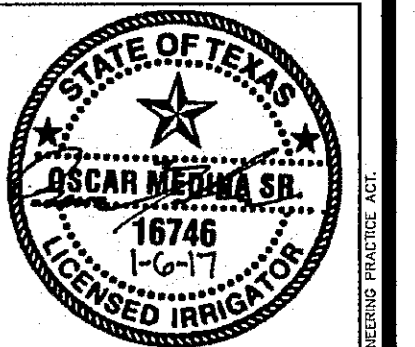
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND WOODEN NICKEL DRIVE (ELEVATION = 5978.53 (EL PASO CITY DATUM))

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
440-210-1000
EL PASO GAS SERVICE
544-6300
TGS EMERGENCY HOTLINE (24 HRS)
950-3411 (RPS)
AFTER HOURS EMERGENCY (RPS)
994-5775
TIME WARNER (CABLE)
1-800-336-8647
EL PASO NATURAL GAS COMPANY
1-800-336-8647
TEXAS EXCAVATION SAFETY SYSTEM
1-800-342-8377

This document, whether in hard copy or machine reproducible form, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unlawful use of this material for any reason may result in civil and/or criminal penalties.

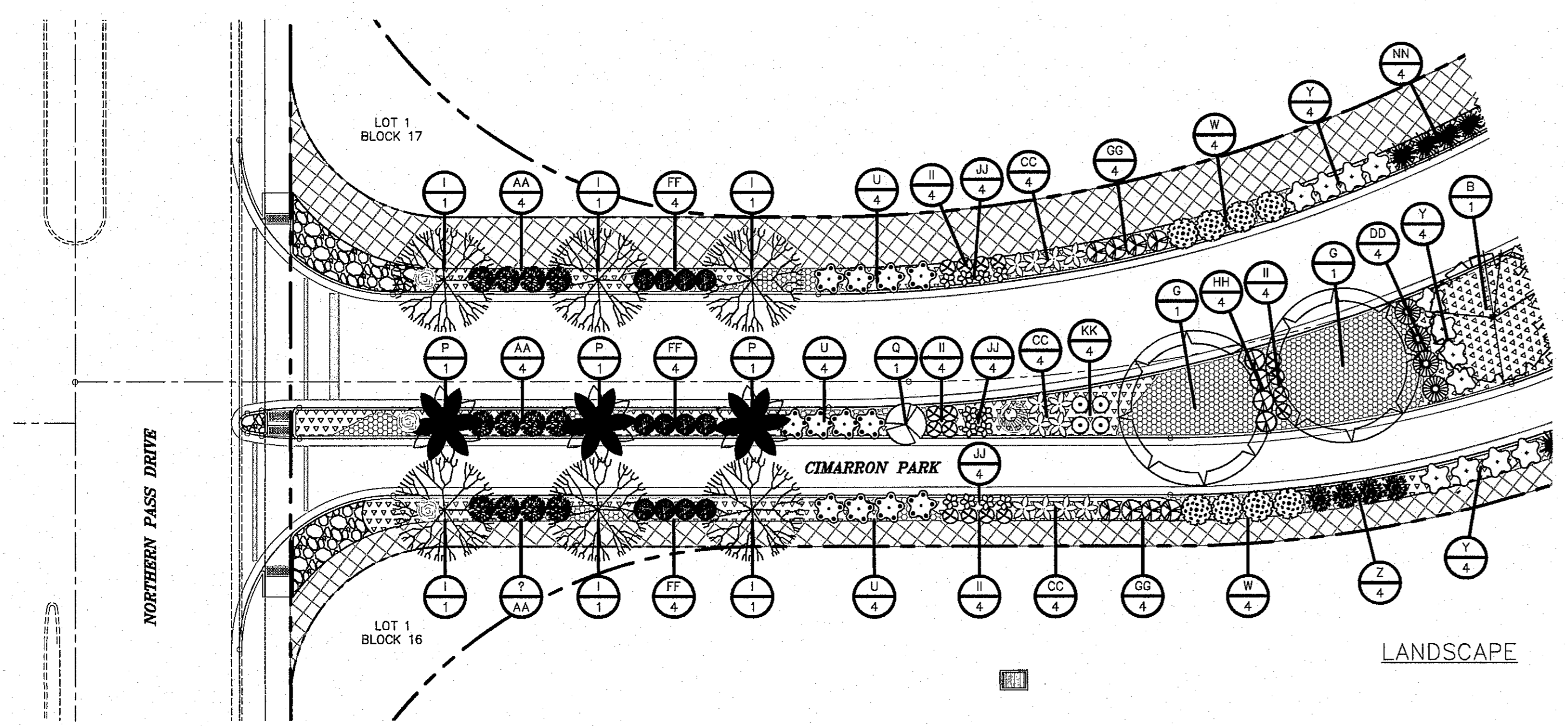


csa design group, inc.
Texas Registered Engineering Firm E-5897
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877,4155
fax (915) 877,4334
www.csaengineers.com

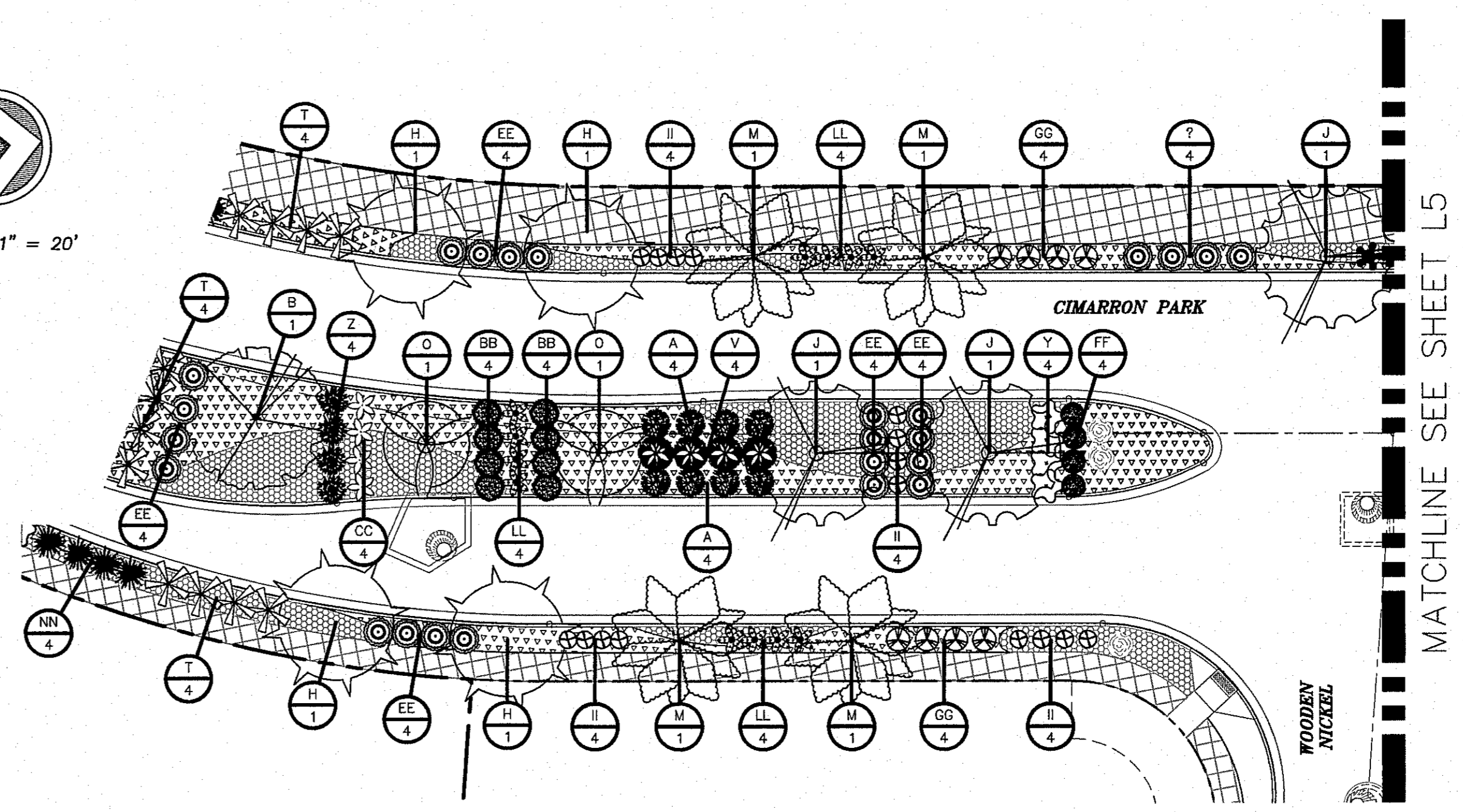


OM	1524
DESIGNED BY	DATE
10/27/16	
SCALE	
AS NOTED	
SHEET NO.	
L4	
SHEET SEQUENCE	
4	15

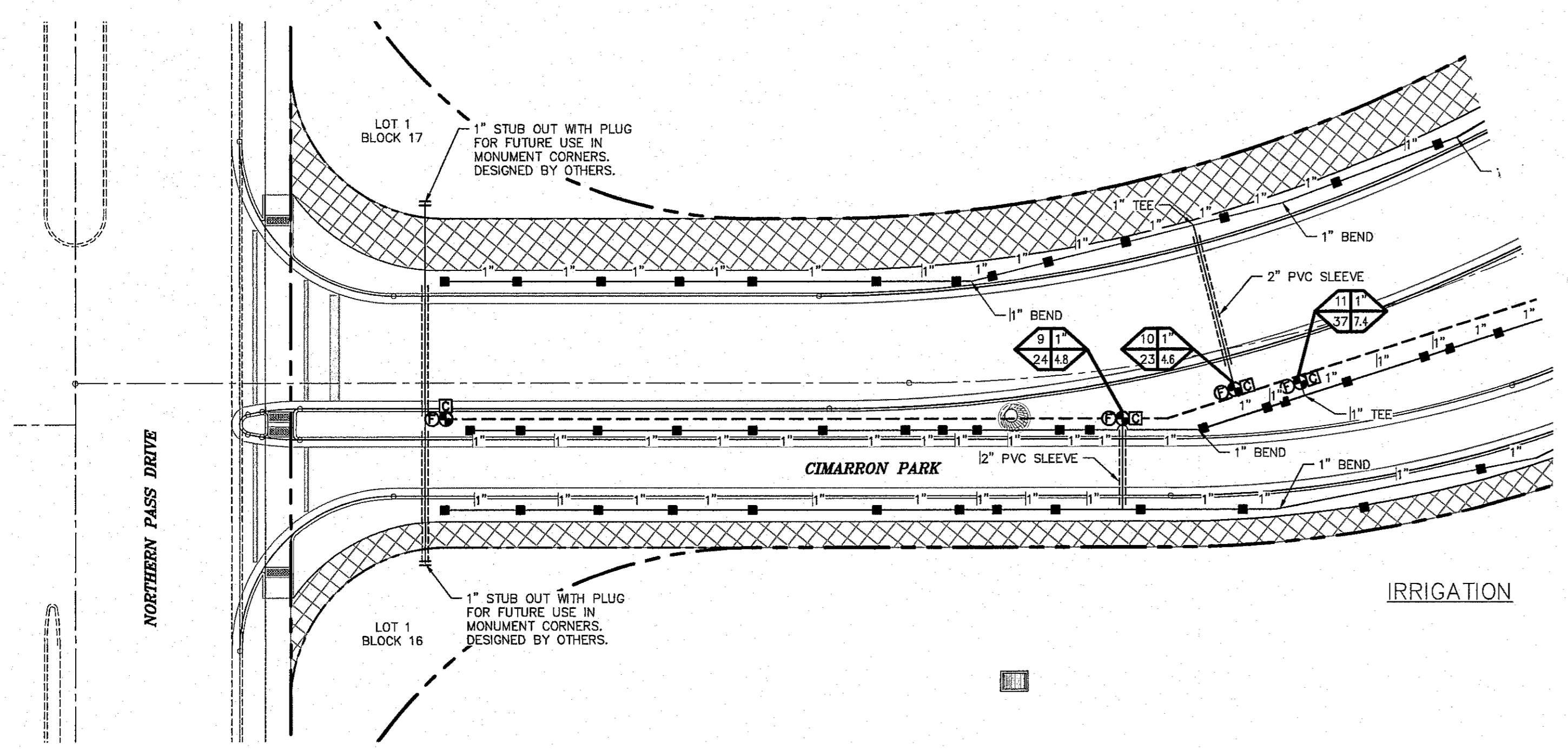
Final Approval



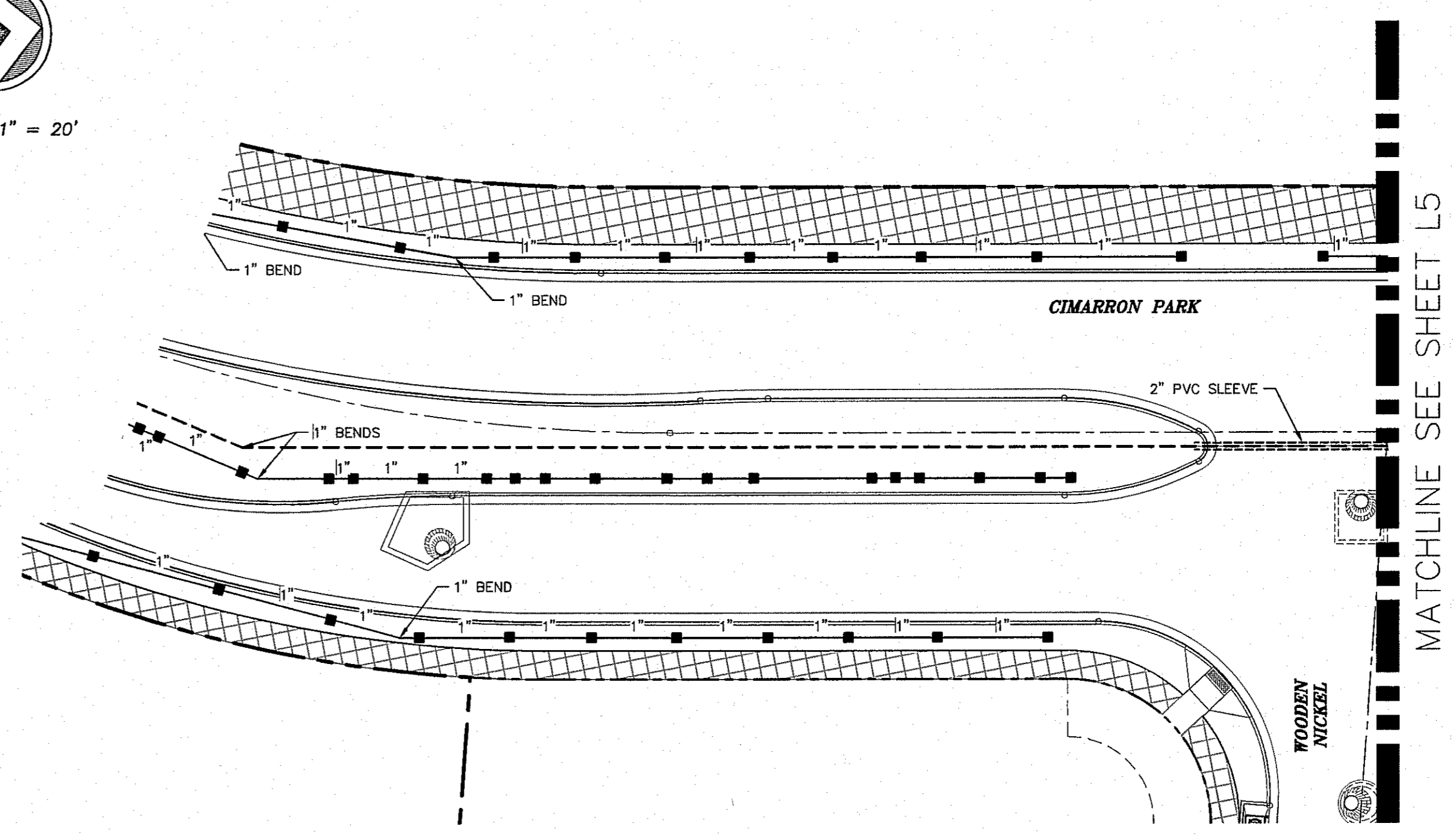
SCALE: 1" = 20'



SCALE: 1" = 20'



SCALE: 1" = 20'

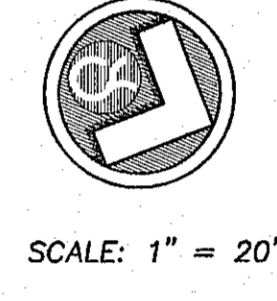
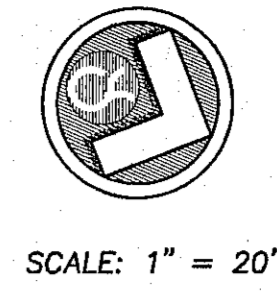
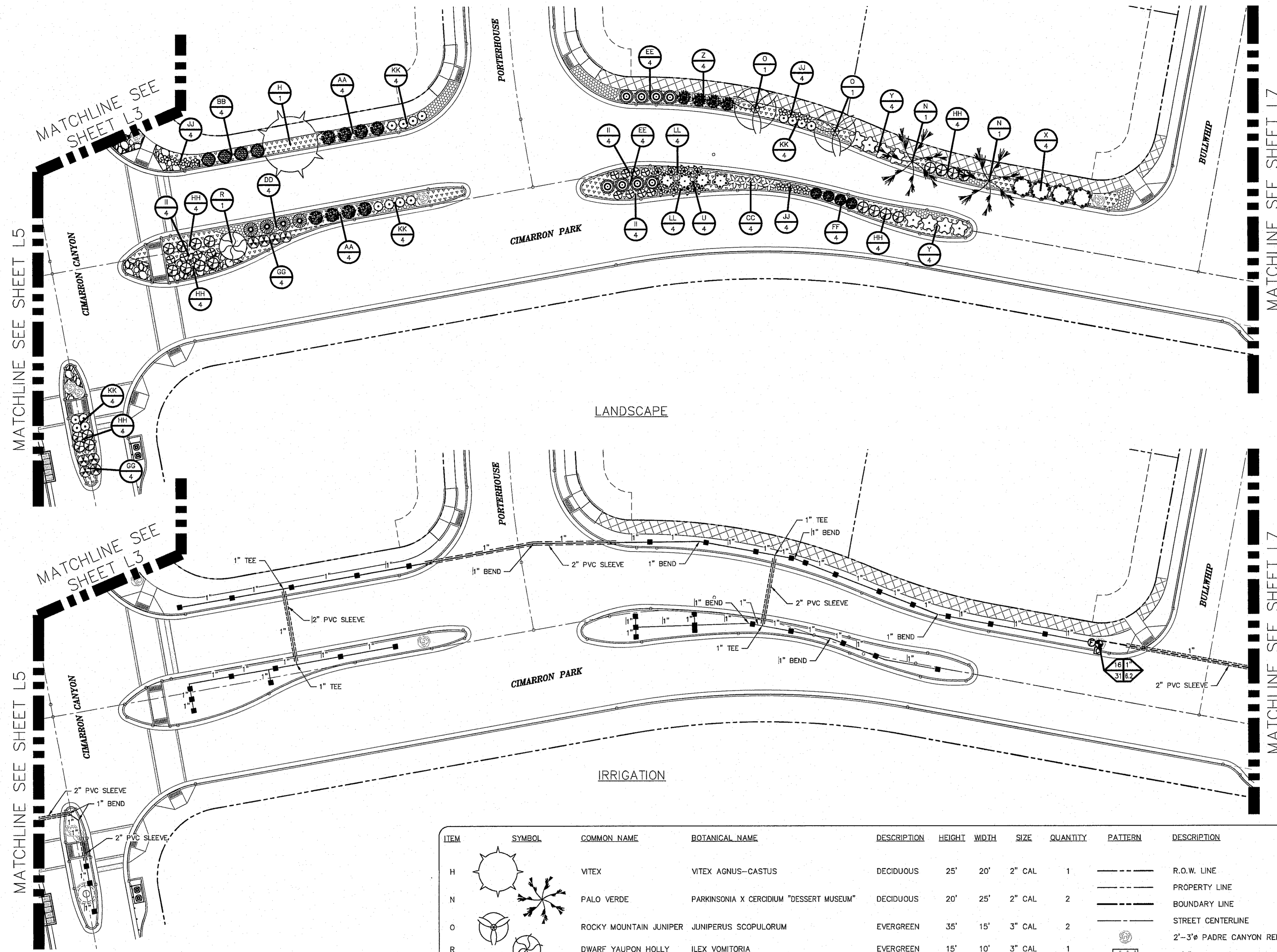


SCALE: 1" = 20'

ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
B		ARIZONA CYPRESS	CUPRESSUS ARIZONICA (C. GLABRA)	EVERGREEN	40'	30'	2" CAL	2	V		GOLDEN EUONYMUS	EUONYMUS JAPONICA	EVERGREEN	8'	6'	5 GAL	4	---	R.O.W. LINE
G		HONEY MESQUITE	PROSOPIS GLANDULOSA VAR. GLANDULOSA	DECIDUOUS	30'	30'	3" CAL	2	W		CREOSOTE BUSH	LARREA TRIDENTATA	EVERGREEN	8'	6'	5 GAL	8	---	PROPERTY LINE
H		VITEX	VITEX AGNUS-CASTUS	DECIDUOUS	25'	20'	2" CAL	4	Y		CIMARRON SAGE	LEUCOPHYLLUM ZYGOPHYLLUM	EVERGREEN	5'	6'	3 GAL	16	---	BOUNDARY LINE
I		DESERT WILLOW	CHILOPSIS LINEARIS	DECIDUOUS	25'	20'	2" CAL	6	Z		PINK PARADE	HESPERALOE FUNIFERA x PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	8	---	STREET CENTERLINE
J		SWEET ACACIA	ACACIA FARNESIANA (A. SMALLII)	DECIDUOUS	25'	25'	2" CAL	3	AA		DAMIANITA	CHRYSACTINIA MEXICANA	PERENNIAL	2'	2'	1 GAL	20		2'-3" PADRE CANYON RED BOULDER
M		TEXAS REDBUD	CERCIS CANADENSIS VAR. TEXANA	DECIDUOUS	20'	20'	2" CAL	4	BB		REGAL MIST PINK MUHLY	MUHLENBERGIA CAPILLARIS	DORMANT	2'	2'	1 GAL	8		3/8" PADRE CANYON CHAT
O		ROCKY MOUNTAIN JUNIPER	JUNIPERUS SCOPULORUM	EVERGREEN	35'	15'	3" GAL	2	CC		COYOTE BUSH	BACCHARIS PILULARIS	EVERGREEN	3'	5'	1 GAL	16		2" PADRE CANYON SCREENING
P		TEXAS MOUNTAIN LAUREL	SOPHORA SECUNDIFLORA	EVERGREEN	10'	15'	2" CAL	3	DD		DWARF COYOTE BUSH	BACCHARIS PILULARIS X SAROTROIDES	EVERGREEN	2'	5'	1 GAL	4		3"-6" GREY KICKER STONE
Q		BLUE POINT JUNIPER	JUNIPERUS CHINENSIS	EVERGREEN	20'	8'	2" CAL	1	EE		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	20		SIDEWALK BY DEVELOPER
T		ORANGE JUBILEE	TECOMA X ALATA	DECIDUOUS	10'	8'	5 GAL	12	FF		CAPE (BLUE) PLUMBAGO	PLUMBAGO AURICULATA	PERENNIAL	4'	4'	3 GAL	16		CONCRETE
U		TECOMA YELLO BELLS	TECOMA STANS VAR. ANGSTATA	DESCRIPTION	6'	4'	3 GAL	12	GG		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	16		
									HH		HEAVENLY BAMBOO	NANDINA DOMESTICA	EVERGREEN	5'	3'	3 GAL	4		
									II		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	32		
									JJ		INDIAN HAWTHORN	RHAPHIOLEPIS INDICA	EVERGREEN	5'	3'	5 GAL	12		
									KK		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	4		
									LL		FAXON YUCCA	YUCCA FAXONIANA	EVERGREEN	5'	6'	3 GAL	12		
									NN		YUCCA PENDULA	YUCCA RECURVIFOLIA	PERENNIAL	8'	6'	5 GAL	8		

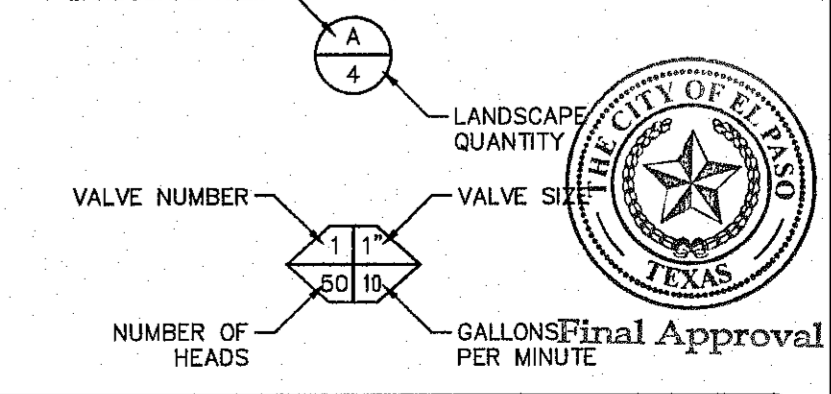
PATTERN	DESCRIPTION
---	1" TYPE K COPPER WATER LINE
---	PVC SCH 40 IPS PLASTIC PIPE WATER LATERAL (SIZE AS NOTED)
---	PVC SCH 40 SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
○	1" YARD METER
□	FEBCO 825VIO 1" RPSA W/ HYDROCOLM ENCLOSURE
■	RAIN SENSOR
■	STATION CONTROLLER
○	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
○	AM/AD 1" WYE FILTER & WILKINS 600 SERIES PRESSURE REGULATOR
○	XERIBIRD 8 EMITTER
2-1/2"	PIPE SIZE AS NOTED
	STUB OUT AND CAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
⊕	ISOLATION BRASS BALL VALVE

(IRRIGATION IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13087 AUSTIN, TEXAS 78711-3087 (512) 239-6719)



ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
H		VITEX	VITEX AGNUS-CASTUS	DECIDUOUS	25'	20'	2" CAL	1	---	R.O.W. LINE
N		PALO VERDE	PARKINSONIA X CERIDIUM "DESSERT MUSEUM"	DECIDUOUS	20'	25'	2" CAL	2	---	PROPERTY LINE
O		ROCKY MOUNTAIN JUNIPER	JUNIPERUS SCOPULORUM	EVERGREEN	35'	15'	3" CAL	2	---	BOUNDARY LINE
R		DWARF YAUPON HOLLY	ILEX VOMITORIA	EVERGREEN	15'	10'	3" CAL	1	---	STREET CENTERLINE
U		TECOMA YELLO BELLS	TECOMA STANS VAR. ANGUSTATA	DESCRIPTION	6'	4'	3 GAL	4	---	2'-3" PADRE CANYON RED BOULDER
X		SILVER CASSIA	SENNA ARTEMISIOIDES	EVERGREEN	6'	6'	5 GAL	4	---	3/8" PADRE CANYON CHAT
Y		CIMARRON SAGE	LEUCOPHYLLUM ZYGOPHYLLUM	EVERGREEN	5'	6'	3 GAL	8	---	2" PADRE CANYON SCREENING
Z		PINK PARADE	HESPERALOE FUNIFERA x PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	4	---	2" AZTEC SCREENING
AA		DAMIANITA	CHRYSACTINIA MEXICANA	PERENNIAL	2'	2'	1 GAL	8	---	3"-6" GREY KICKER STONE
BB		REGAL MIST PINK MUHLY	MUHLENBERGIA CAPILLARIS	DORMANT	2'	2'	1 GAL	4	---	SIDEWALK BY DEVELOPER
CC		COYOTE BUSH	BACCHARIS PILULARIS	EVERGREEN	3'	5'	1 GAL	4	---	CONCRETE
DD		DWARF COYOTE BUSH	BACCHARIS PILULARIS X SAROTHIROIDES	EVERGREEN	2'	5'	1 GAL	4	---	
EE		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	8	---	
FF		CAPE (BLUE) PLUMBAGO	PLUMBAGO AURICULATA	PERENNIAL	4'	4'	3 GAL	4	---	
GG		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	8	---	
HH		HEAVENLY BAMBOO	NANDINA DOMESTICA	EVERGREEN	5'	3'	3 GAL	20	---	
II		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	12	---	
JJ		INDIAN HAWTHORN	RHAPHIOLEPIS INDICA	EVERGREEN	5'	3'	5 GAL	12	---	
KK		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	16	---	
LL		FAXON YUCCA	YUCCA FAXONIANA	EVERGREEN	5'	6'	3 GAL	8	---	

PATTERN	DESCRIPTION
---	1" TYPE K COPPER WATER LINE
---	PVC SCH 40 1/2" PLASTIC PIPE WATER LATERAL (SIZE AS NOTED)
---	PVC SCH 40 SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
●	1" YARD METER
□	FEBCO 825YD X" RPBA W/ HYDROCOOL ENCLOSURE
■	RAIN SENSOR
■	STATION CONTROLLER
●	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
●	AMHAD 1" WYE FILTER & MILKINS 600 SERIES PRESSURE REGULATOR
■	XERIBIRD 8 EMITTER
2-1/2"	PIPE SIZE AS NOTED
---	STUB OUT AND CAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
■	ISOLATION BRASS BALL VALVE



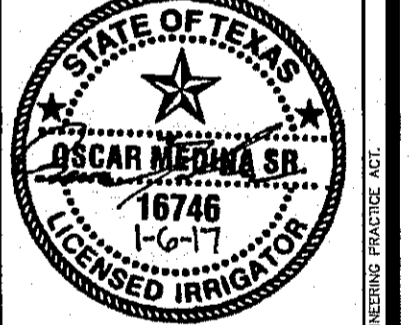
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BULLHEAD DRIVE
 ELEVATION = 8796.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
 BEFORE YOU DIG
 CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

BEFORE YOU DIG - CALL
 EL PASO ELECTRIC COMPANY
 445-7700
 TEXAS GAS SERVICE
 544-6300
 TGS EMERGENCY HOTLINE (888) 552-8411 (888) 2903
 TGS EMERGENCY (888) 552-8411 (888) 2903
 BEFORE YOU DIG EMERGENCY (888) 552-8411
 TIME WARNER (CABLE) (888) 775-7114
 EL PASO NATURAL GAS COMPANY
 1-800-334-8047
 TEXAS EXCAVATION SAFETY SYSTEM
 1-800-842-8377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without express, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
 Texas Registered Engineering Firm - F-5887
 1845 Northwestern Dr. Ste C
 El Paso, Texas 79912
 tel (915) 877.4155
 fax (915) 877.4334
 www.csadesign.com

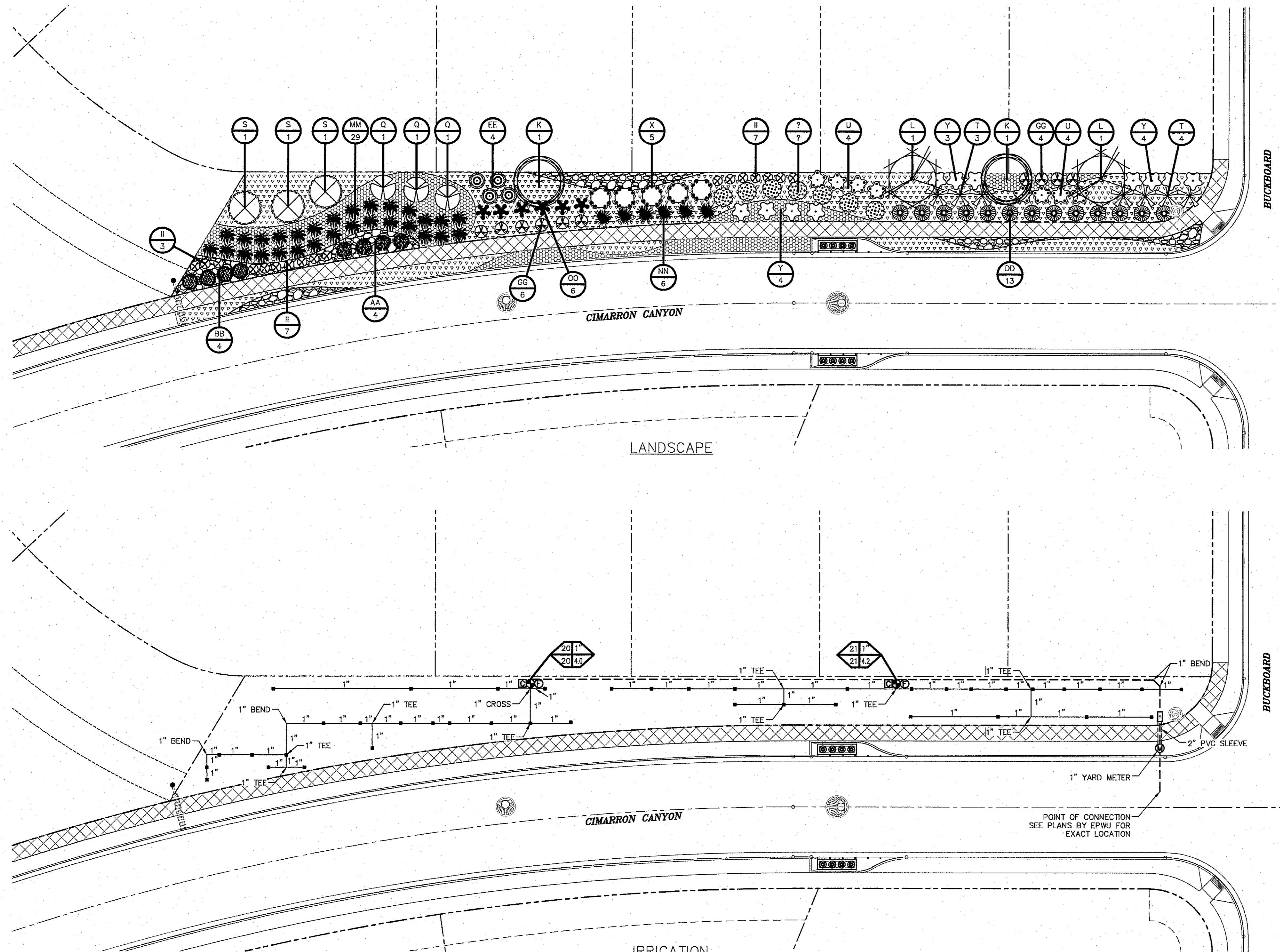


CIMARRON CANYON UNIT ONE LANDSCAPE & IRRIGATION

SHEET TITLE
LANDSCAPE AND IRRIGATION PLAN

OM	DATE	SCALE
1524	10/27/16	AS NOTED
1524	10/27/16	SCALE

SHEET NO. **L6**
 SHEET SEQUENCE 6 OF 15



SCALE: 1" = 20'

SCALE: 1" = 20'

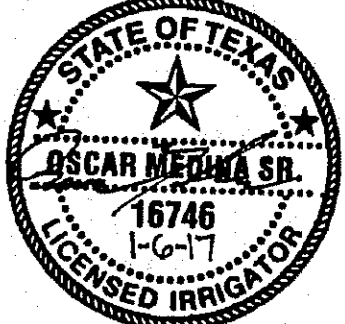
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND BRAYS LANDING DRIVE ELEVATION = 3975.5 (EL. PADO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
439-4300
EL PASO GAS SERVICE
544-6300
TGS EMERGENCY HOTLINE
855-8411652/2003
AFTER HOURS EMERGENCY (EPWU)
775-7414
EL PASO NATURAL GAS COMPANY
1-800-334-8047
TEXAS EXCAVATION SAFETY SYSTEM
1-800-824-8377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #5987
1845 Northwestern Dr, Ste C
El Paso, Texas 79912
tel (915) 877,4155
fax (915) 877,4334
www.csaengineers.com



**CIMARRON CANYON
UNIT ONE LANDSCAPE
& IRRIGATION**

SHEET TITLE
**LANDSCAPE AND
IRRIGATION PLAN**

OM	1524
DESIGN BY	10/27/16
DATE	
GB	AS NOTED
SCALE	

SHEET NO.
L9
SHEET SEQUENCE
9 OF 15

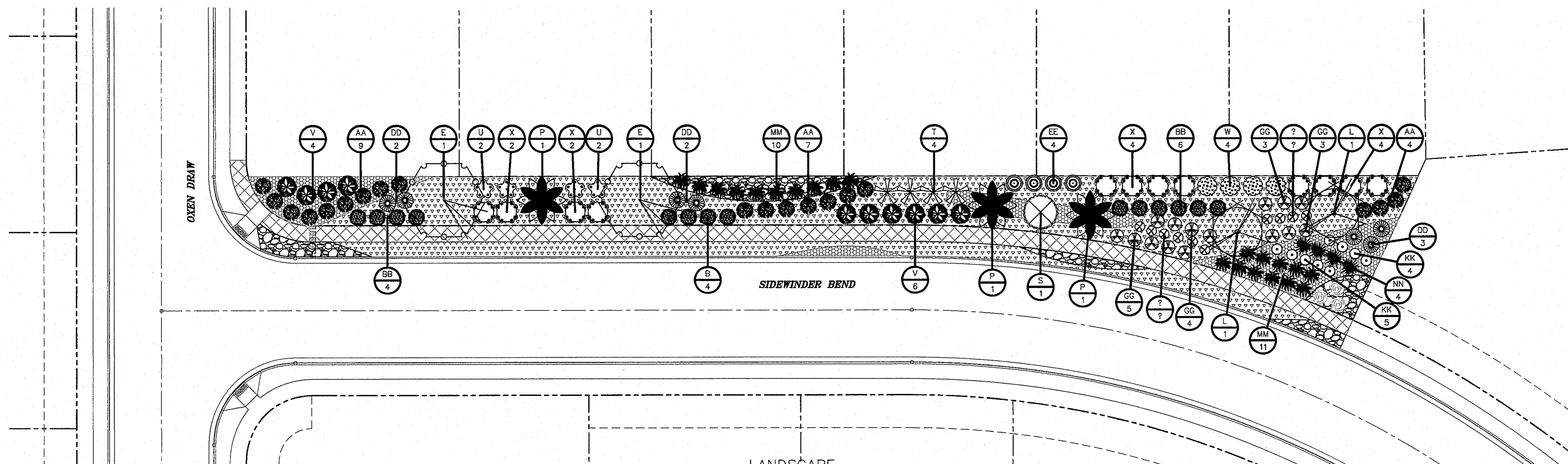
ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
K		TEXAS PISTACHE	PISTACIA MEXICANA (P. TEXANA)	SEMI-EVERGREEN	20'	15'	2" CAL	2	AA		DAMIANITA	CHRYSACTINIA MEXICANA	PERENNIAL	2'	2'	1 GAL	4	---	R.O.W. LINE
L		CATCLAW ACACIA	ACACIA GREGGII (A. WRIGHTII)	DECIDUOUS	18'	15'	2" CAL	2	BB		REGAL MIST PINK MUHLY	MUHLBERGIA CAPILLARIS	DORMANT	2'	2'	1 GAL	4	---	PROPERTY LINE
Q		BLUE POINT JUNIPER	JUNIPERUS CHINENSIS	EVERGREEN	20'	8'	2" CAL	3	DD		DWARF COYOTE BUSH	BACCHARIS PILULARIS X SAROTHIODES	EVERGREEN	2'	5'	1 GAL	13	---	BOUNDARY LINE
S		PROSTRATE ACACIA	ACACIA REDOLENS	EVERGREEN	3'	10'	3 GAL	3	EE		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	4	---	STREET CENTERLINE
T		ORANGE JUBILEE	TECOMA X ALATA	DECIDUOUS	10'	8'	5 GAL	7	GG		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	10		2'-3" PADRE CANYON RED BOULDER
U		TECOMA YELLO BELLS	TECOMA STANS VAR. ANGUSTATA	DESCRIPTION	6'	4'	3 GAL	8	II		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	17		3/8" PADRE CANYON CHAT
W		CREOSOTE BUSH	LARREA TRIDENTATA	EVERGREEN	8'	6'	5 GAL	7	MM		VARIEGATED AGAVE AMERICANA	MARGINATA AFAVACEAE	EVERGREEN	5'	5'	3 GAL	29		2" PADRE CANYON SCREENING
X		SILVER CASSIA	SENNA ARTEMISIOIDES	EVERGREEN	6'	6'	5 GAL	5	NN		YUCCA PENDULA	YUCCA RECURVIFOLIA	PERENNIAL	8'	6'	5 GAL	6		3"-6" GREY KICKER STONE
Y		CIMARRON SAGE	LEUCOPHYLLUM ZYGOPHYLLUM	EVERGREEN	5'	6'	3 GAL	11	OO		BRAVE RIVER SAGE	LEUCOPHYLLUM CULTIVAR	EVERGREEN	5'	5'	3 GAL	6		SIDEWALK BY DEVELOPER

PATTERN	DESCRIPTION
	1" TYPE K COPPER WATER LINE
	PVC SCH 40 IPS PLASTIC PIPE WATER LATERAL (SIZE AS NOTED)
	PVC SCH 40 SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
	1" YARD METER
	FEBCO 825YD 1" RPBA W/ HYDROCOL ENCLOSURE
	RAIN SENSOR
	STATION CONTROLLER
	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
	AMAD 1" WYE FILTER & WILKINS 600 SERIES PRESSURE REGULATOR
	XERIBIRD 8 EMITTER
	PIPE SIZE AS NOTED
	STUB OUT AND CAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
	ISOLATION BRASS BALL VALVE

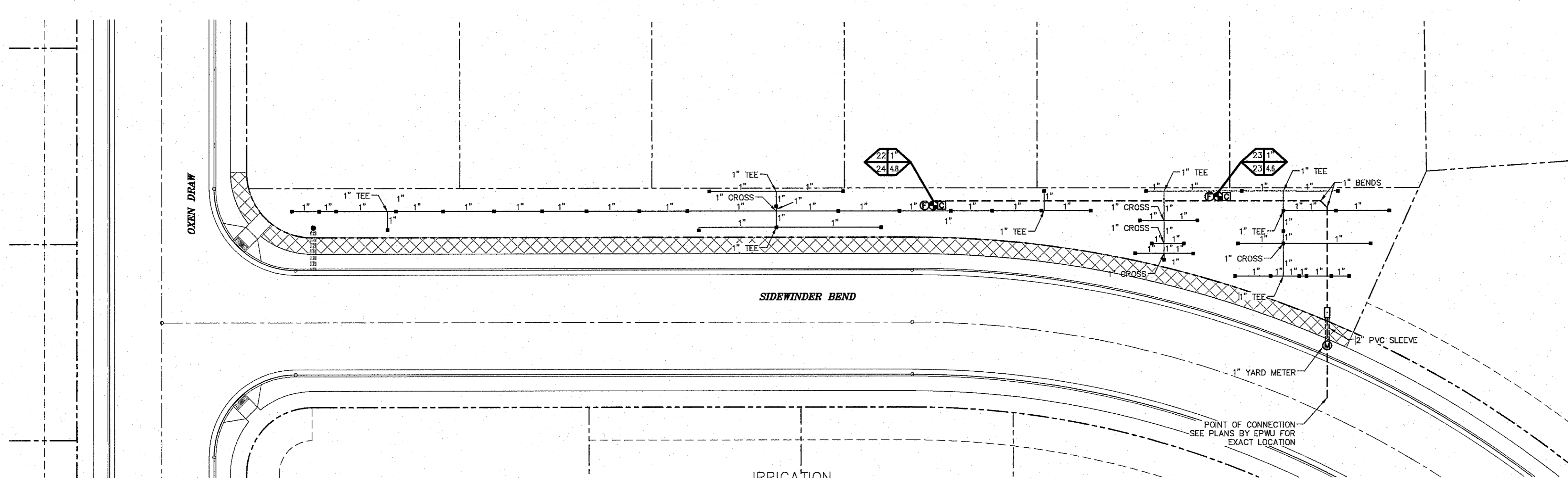
IRRIGATION IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13087 AUSTIN, TEXAS 78711-3087 (512) 239-6719

Final Approval

CSA DESIGN GROUP, INC. - 10/15/2017 - 10:45 AM
C:\Users\jcsa\OneDrive\Documents\Irrigation\Irrigation\Irrigation\Irrigation.dwg
D:\Users\jcsa\OneDrive\Documents\Irrigation\Irrigation\Irrigation\Irrigation.dwg



SCALE: 1" = 20'



SCALE: 1" = 20'

ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
E		SHOESTRING ACACIA	ACACIA STENOPHYLLA	EVERGREEN	30'	20'	2" GAL	2	X		SILVER CASSIA	SENNA ARTEMISIODES	EVERGREEN	6'	6'	5 GAL	12	---	R.O.W. LINE
L		CATCLAW ACACIA	ACACIA GREGGII (A. WRIGHTII)	DECIDUOUS	18'	15'	2" GAL	2	AA		DAMIANA	CHRYSACTINIA MEXICANA	PERENNIAL	2'	2'	1 GAL	20	---	PROPERTY LINE
P		TEXAS MOUNTAIN LAUREL	SOPHORA SECUNDFLORA	EVERGREEN	10'	15'	2" GAL	3	DD		REGAL MIST PINK MUHLY	MUHLENBERGIA CAPILLARIS	BORNDORMANT	2'	2'	1 GAL	14	---	BOUNDARY LINE
S		PROSTRATE ACACIA	ACACIA REDOLENS	EVERGREEN	3'	10'	3 GAL	1	EE		DWARF COYOTE BUSH	BACCHARIS PILULARIS X SAROTHIROIDES	EVERGREEN	2'	5'	1 GAL	7	---	STREET CENTERLINE
T		ORANGE JUBILEE	TECOMA X ALATA	DECIDUOUS	10'	8'	5 GAL	4	GG		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	4	---	2'-3" PADRE CANYON RED BOULDER
U		TECOMA STANS VAR. ANGUSTATA	TECOMA STANS VAR. ANGUSTATA	DESCRIPTION	6'	4'	3 GAL	4	II		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	15	---	3/8" PADRE CANYON CHAT
V		GOLDEN EUONYMUS	EUONYMUS JAPONICA	EVERGREEN	8'	6'	5 GAL	10	KK		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	10	---	2" PADRE CANYON SCREENING
W		CREOSOTE BUSH	LARREA TRIDENTATA	EVERGREEN	8'	6'	5 GAL	4	NN		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	9	---	2" AZTEC SCREENING
									MM		VARIEGATED AGAVE AMERICANA	MARGINATA AFAYACEAE	EVERGREEN	5'	5'	3 GAL	21	---	3"-6" GREY KICKER STONE
									NN		YUCCA PENDULA	YUCCA RECURVIFOLIA	PERENNIAL	8'	6'	5 GAL	4	---	SIDEWALK BY DEVELOPER

PATTERN	DESCRIPTION
---	1" TYPE K COPPER WATER LINE
---	PVC SCH 40 IPS PLASTIC PIPE WATER LATERAL (SIZE AS NOTED)
---	PVC SCH 40 SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
○	1" YARD METER
□	FEBCO 825YD 1" RPBA W/ HYDROCOLM ENCLOSURE
□	RAIN SENSOR
□	STATION CONTROLLER
○	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
○	AMAD 1" WYE FILTER & WILKINS 800 SERIES PRESSURE REGULATOR
○	XERIBIRD 8 EMITTER
---	PIPE SIZE AS NOTED
---	STUB OUT AND GAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
---	ISOLATION BRASS BALL VALVE

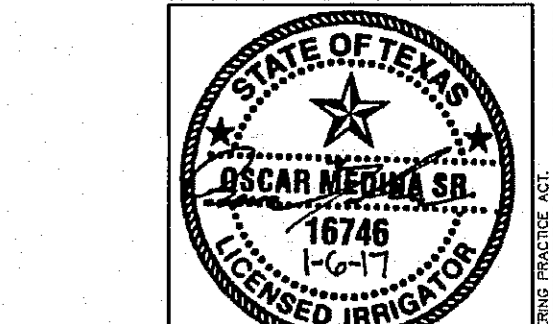
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND W. 10TH STREET
ELEVATION = 8979.53 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

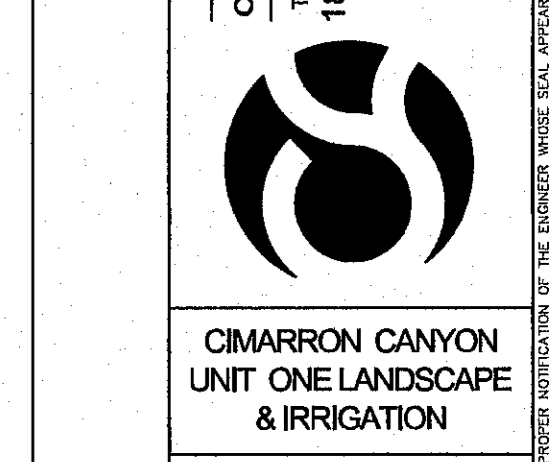
WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
444-5770
4-800-DIG-TESS
544-6300
TEXAS GAS SERVICE
956-9411/956-2903
TGS EMERGENCY HOTLINE (PSS)
956-9411/956-1655
AFTER HOURS EMERGENCY (EPWU)
775-7414
EL PASO NATURAL GAS COMPANY
1-800-242-6657
TEXAS EXCAVATION SAFETY SYSTEM
1-800-242-6377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.

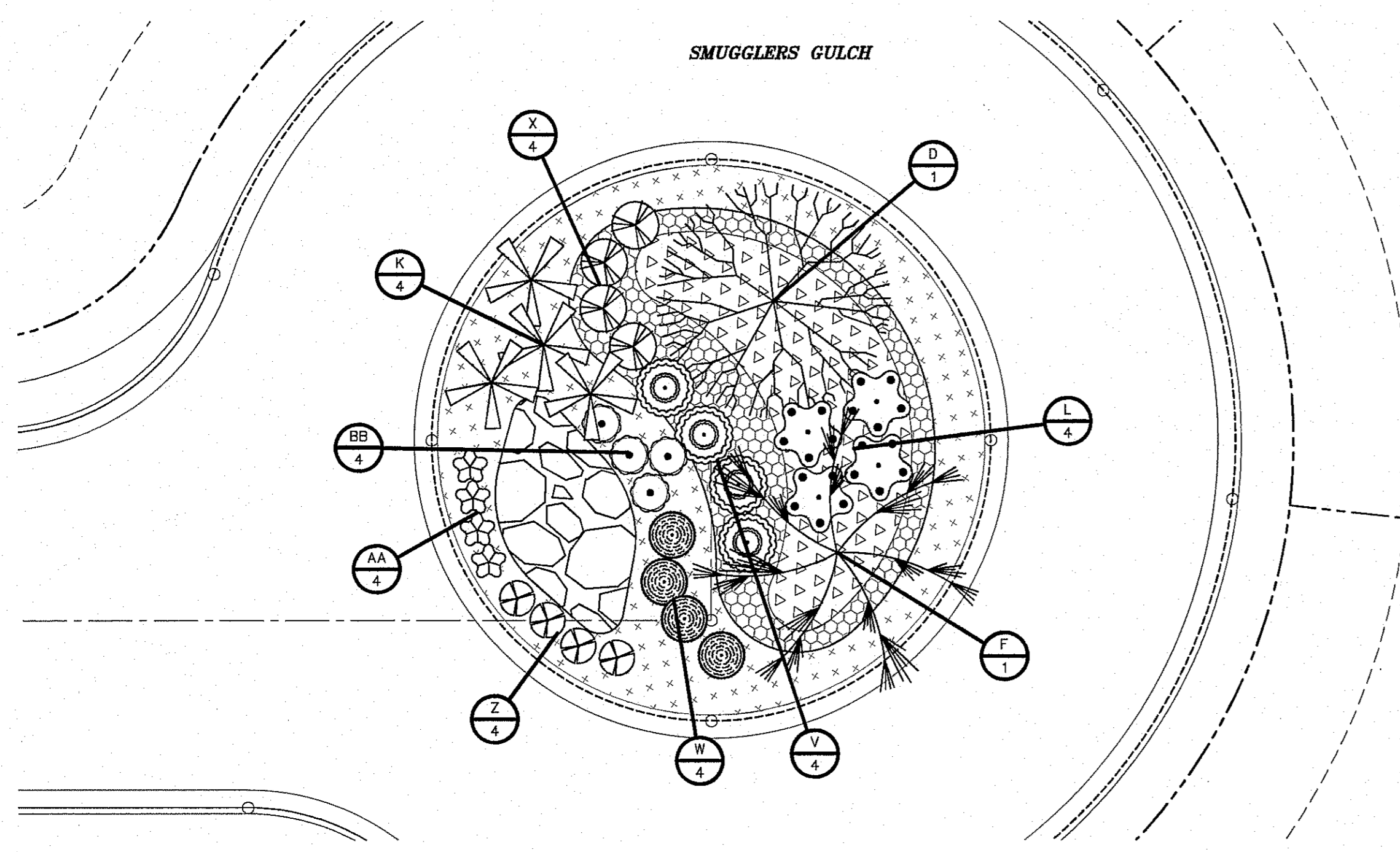


csa design group, inc.
Texas Registered Engineering Firm #6887
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel (915) 877-4155
Fax (915) 877-4334
www.csaengineers.com

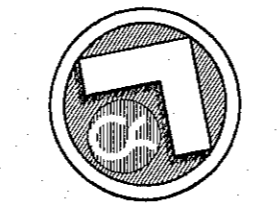


SHEET TITLE
LANDSCAPE AND IRRIGATION PLAN

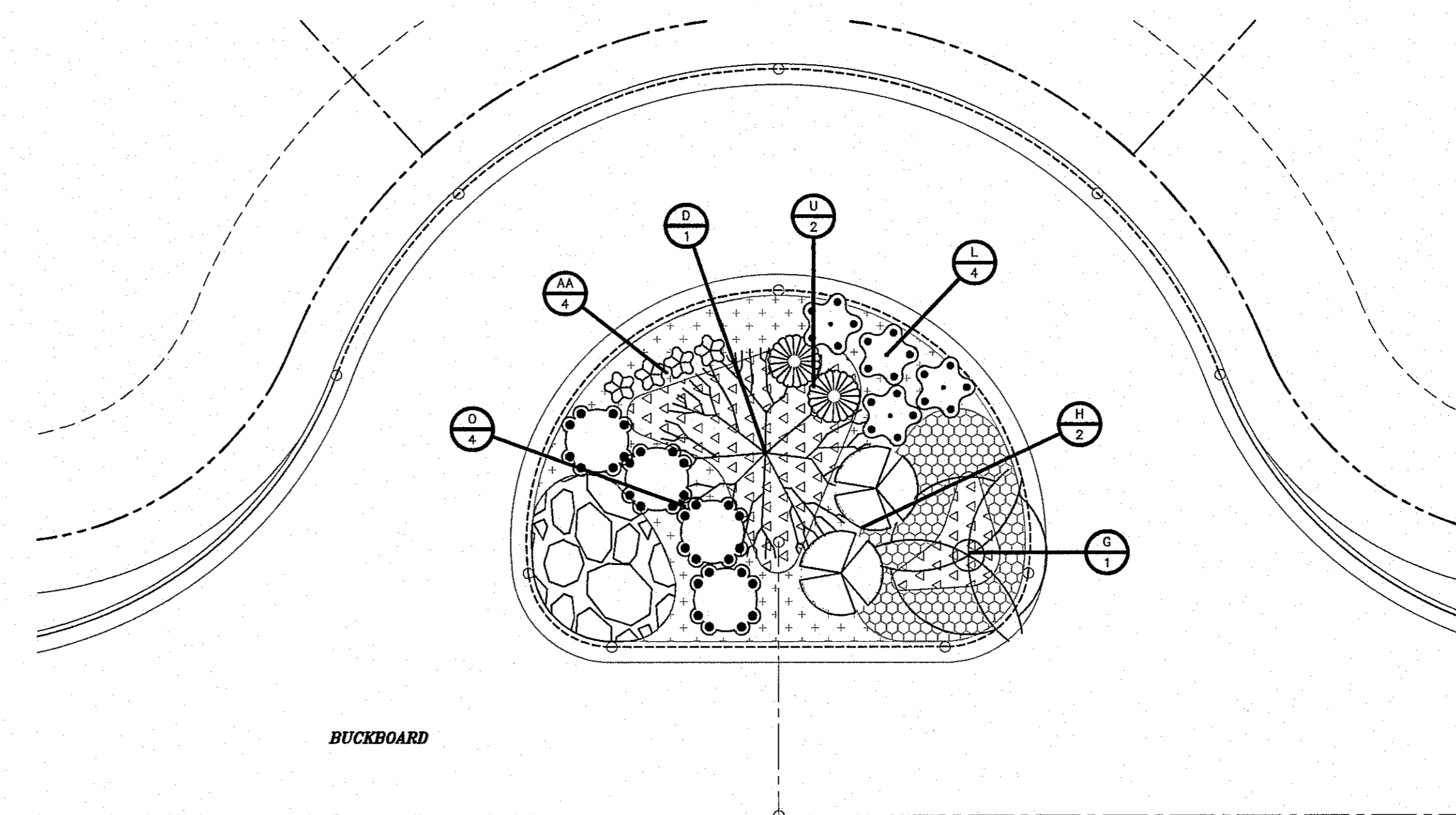
DESIGNED BY	DATE	SHEET NO.
OM	1524	
CSA-SM-DG-OM	10/27/16	
GB	AS NOTED	
CSA	SCALE	



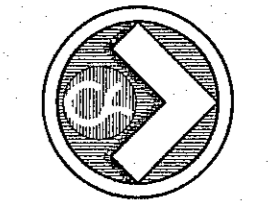
LANDSCAPE



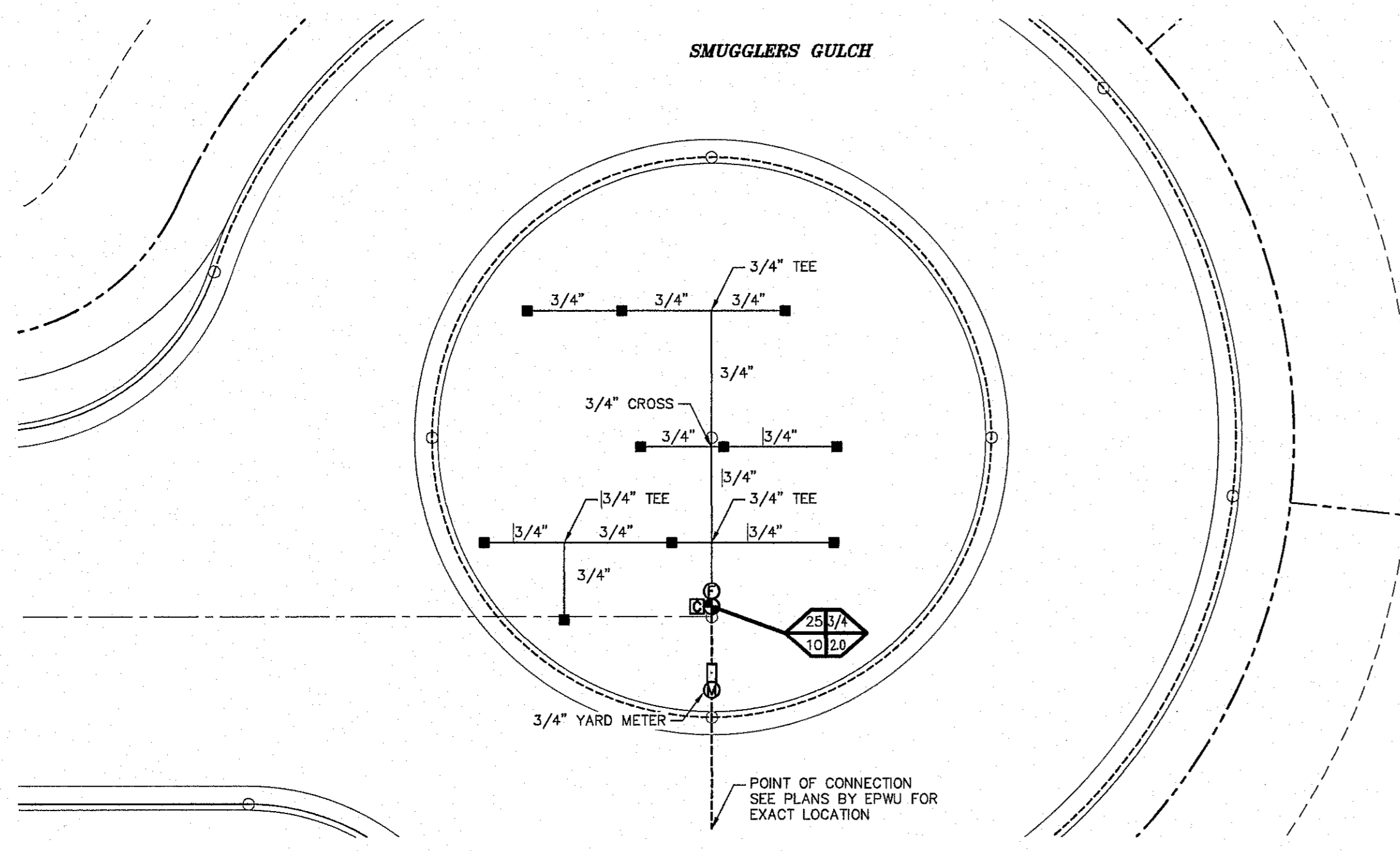
SCALE: 1" = 10'



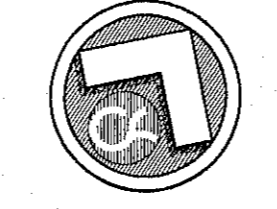
LANDSCAPE



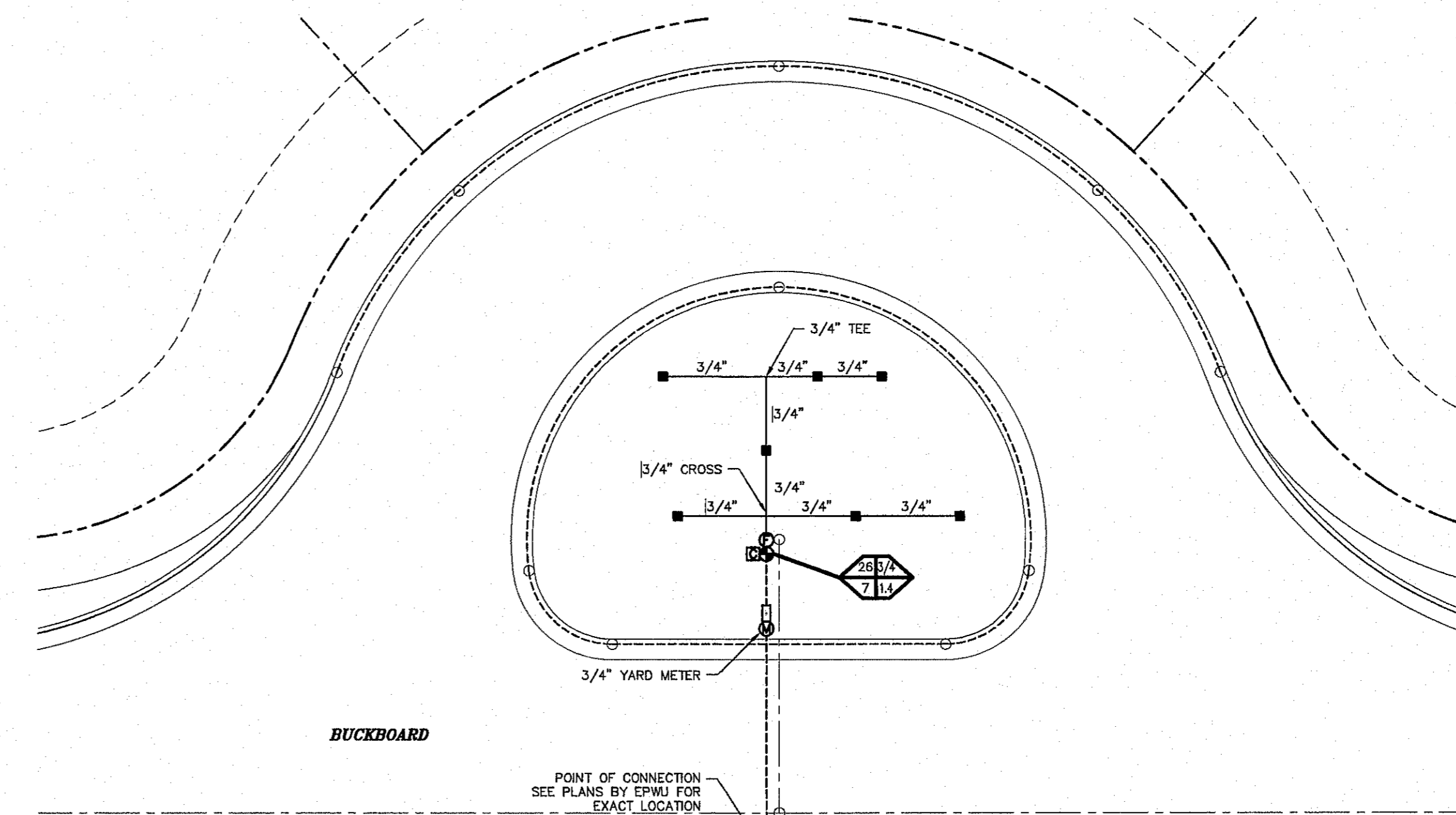
SCALE: 1" = 10'



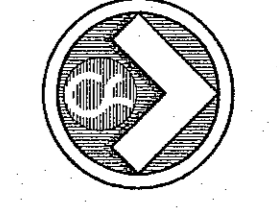
IRRIGATION



SCALE: 1" = 10'

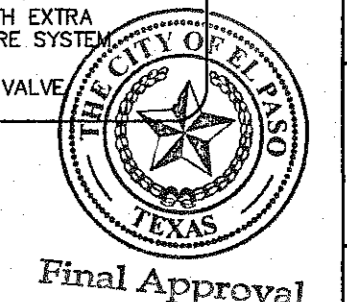
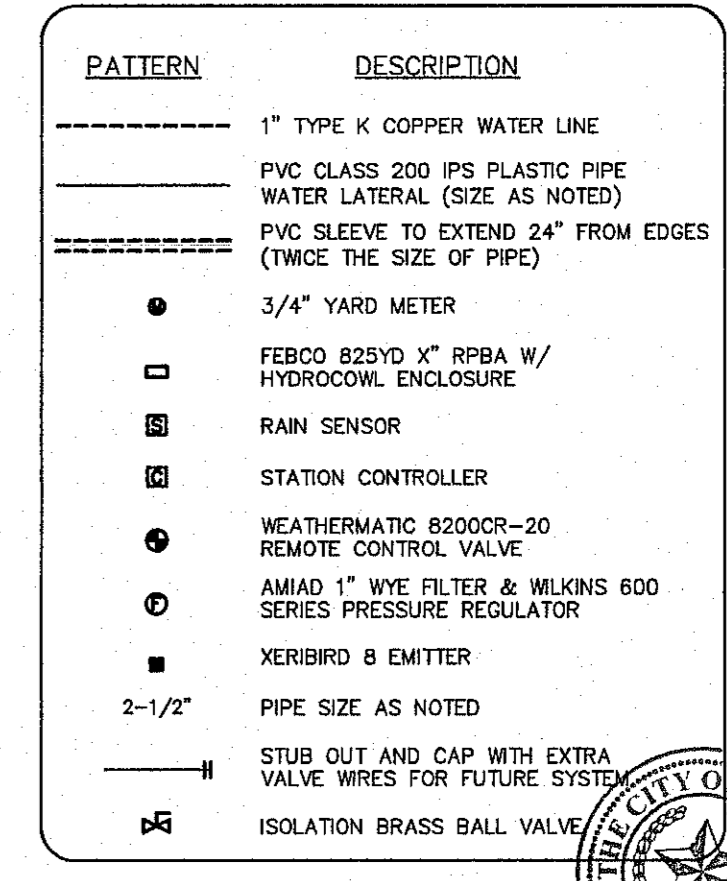
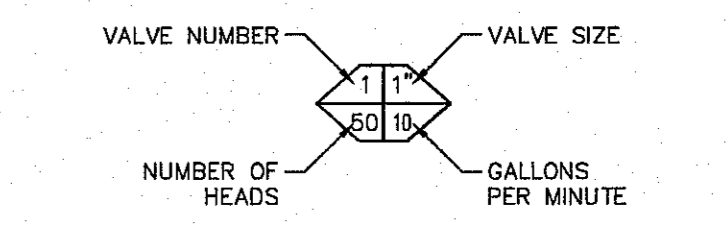


IRRIGATION



SCALE: 1" = 10'

ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
D		DESERT WILLOW	CHILOPSIS LINEARIS	DECIDUOUS	25'	20'	2" CAL	2	---	R.O.W. LINE
F		PALO VERDE	PARKINSONIA X CERCIIDIUM "DESSERT MUSEUM"	DECIDUOUS	20'	25'	2" CAL	1	---	PROPERTY LINE
G		ROCKY MOUNTAIN JUNIPER	JUNIPERUS SCOPULORUM	EVERGREEN	35'	15'	3" CAL	1	---	BOUNDARY LINE
H		BLUE POINT JUNIPER	JUNIPERUS CHINENSIS	EVERGREEN	20'	8'	2" CAL	2	---	STREET CENTERLINE
K		ORANGE JUBILEE	TECOMA X ALATA	DECIDUOUS	10'	8'	5 GAL	4	---	2"-3" PADRE CANYON RED BOULDER
L		TECOMA YELLO BELLS	TECOMA STANS VAR. ANGUSTATA	DESCRIPTION	6'	4'	3 GAL	8	---	3/8" PADRE CANYON CHAT
O		SILVER CASSIA	SENNA ARTEMISIOIDES	EVERGREEN	6'	6'	5 GAL	4	---	2" PADRE CANYON SCREENING
U		DWARF COYOTE BUSH	BACCHARIS PILULARIS	EVERGREEN	2'	5'	1 GAL	2	---	2" AZTEC SCREENING
V		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	4	---	3"-6" GREY KICKER STONE
W		BLUE PLUMBAGO	PLUMBAGO AURICULATA	PERENNIAL	4'	4'	3 GAL	4	---	SIDEWALK BY DEVELOPER
X		TRAILING ROSEMARY	ROSMARINUS OFFICINALIS	EVERGREEN	3'	4'	3 GAL	4	---	CONCRETE
Z		RED TIP YUCCA	HESPERALOE PARVIFLORA	DESCRIPTION	5'	4'	3 GAL	4	---	
AA		INDIAN HAWTHORN	RHAPHIOLEPIS INDICA	EVERGREEN	5'	3'	5 GAL	8	---	
BB		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	4	---	



Final Approval

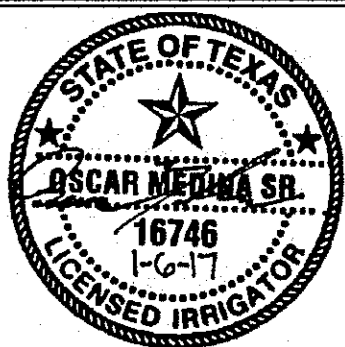
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASS DRIVE AND W. 14TH STREET, EL PASO, TEXAS. ELEVATION = 5978.3 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY 4-800-DIG-TESS
TEXAS GAS SERVICE 644-6300
TGS EMERGENCY HOTLINE 952-8411/852-2803
TGS EMERGENCY HOTLINE (RPS) 952-8411/852-2803
AFTER HOURS EMERGENCY (EPWU) 694-5775
TIME WARNER (CABLE) 775-7114
EL PASO NATURAL GAS COMPANY 1-800-334-8047
TEXAS EVACUATION SAFETY SYSTEM 1-800-642-8377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of this document, without expressed, written permission from CSM Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm E-6887
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel [915] 877.4155
Fax [915] 877.4334
www.csaengineers.com



CIMARRON CANYON
UNIT ONE LANDSCAPE
& IRRIGATION

SHEET TITLE
LANDSCAPE AND
IRRIGATION PLAN

DATE	BY
1524	28 FEB 17
10/27/16	DATE
AS NOTED	SCALE
L11	SHEET NO.
11	15

(IRRIGATION IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13087 AUSTIN, TEXAS 78711-3087 (512) 239-6719)

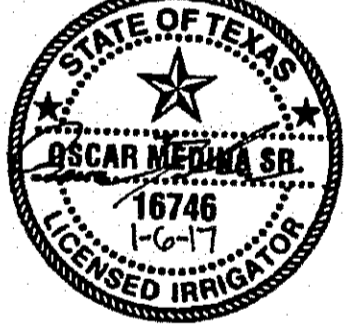
BENCHMARK: CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASSES DRIVE AND W 10TH ST. (EL. PASO CITY DATUM) ELEVATION = 5974.53 (EL. PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL
FIELD LOCATE ALL
EXISTING UNDERGROUND
IMPROVEMENTS IN
PROJECT AREA

BEFORE YOU DIG - CALL
EL PASO ELECTRIC COMPANY
480-230-1255
480-230-1255
TEXAS GAS SERVICE
562-3411 (662-2903)
TGS EMERGENCY HOTLINE (TGS)
562-3411 (662-1555)
AFTER HOURS EMERGENCY (EPWU)
775-5114
TIME WARNER (CABLE)
1-800-334-4847
EL PASO NATURAL GAS COMPANY
1-800-334-4847
TEXAS EXCAVATION SAFETY SYSTEM
1-800-334-8377

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project. Any reuse, to include copying and/or modifying the content of the document, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended is a violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm E-5887
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
tel (915) 877,4155
fax (915) 877,4334
www.csadesigngroup.com



CIMARRON CANYON
UNIT ONE LANDSCAPE
& IRRIGATION

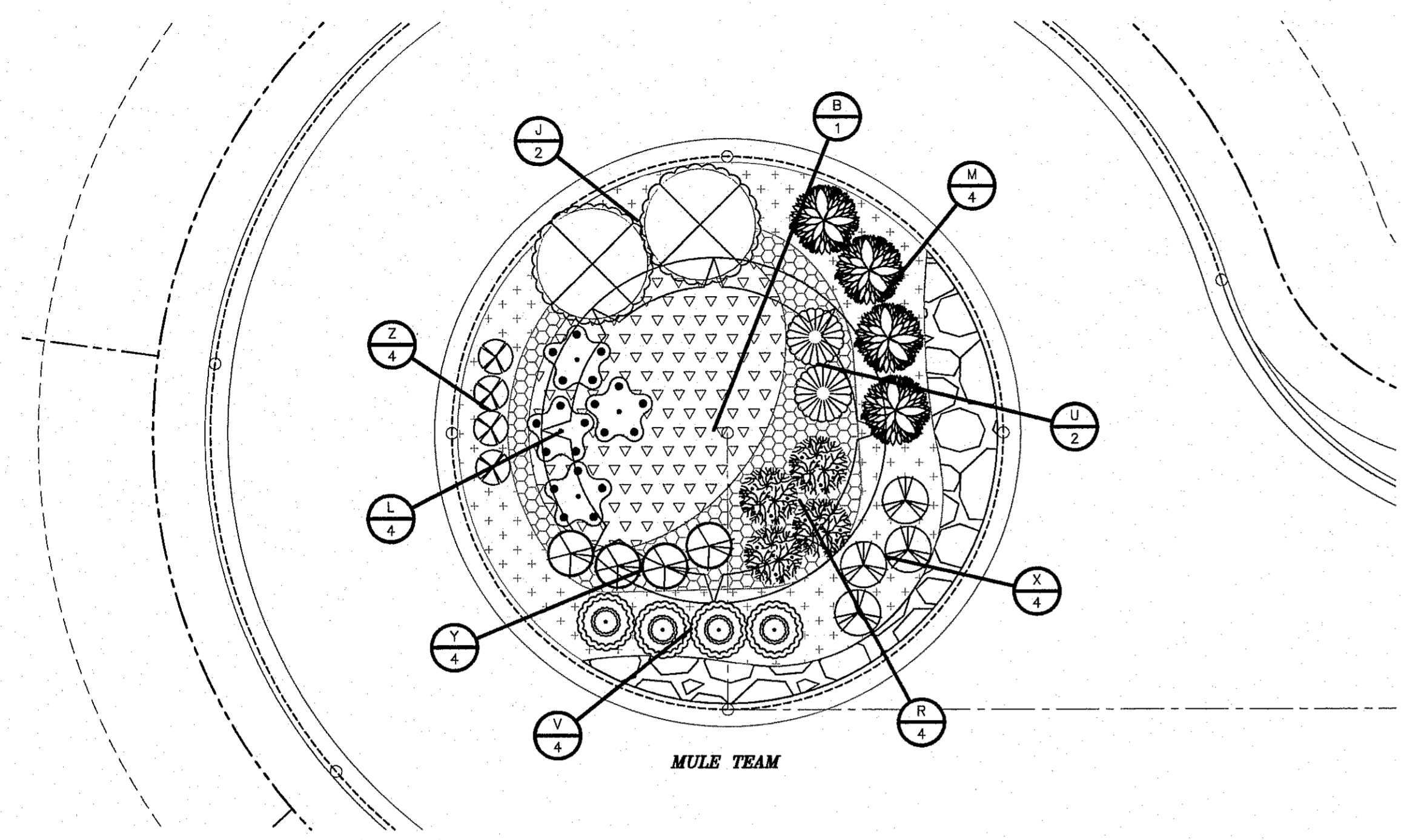
SHEET TITLE

LANDSCAPE AND
IRRIGATION PLAN

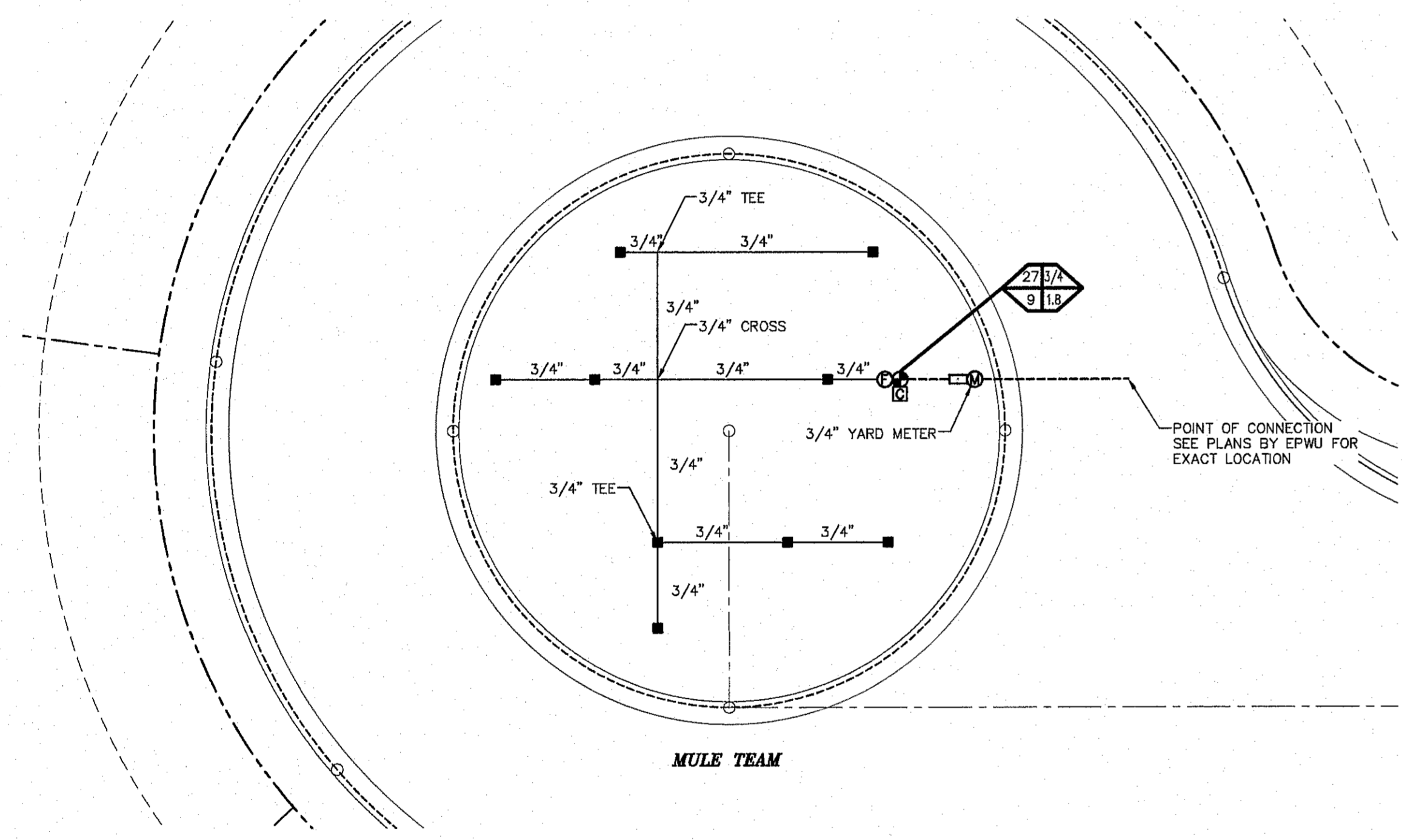
OM 1524
DOB-SM-DG-OM 10/27/16
DATE
GB AS NOTED
SCALE

SHEET NO.
L12

Final Approval
12 of 15



LANDSCAPE



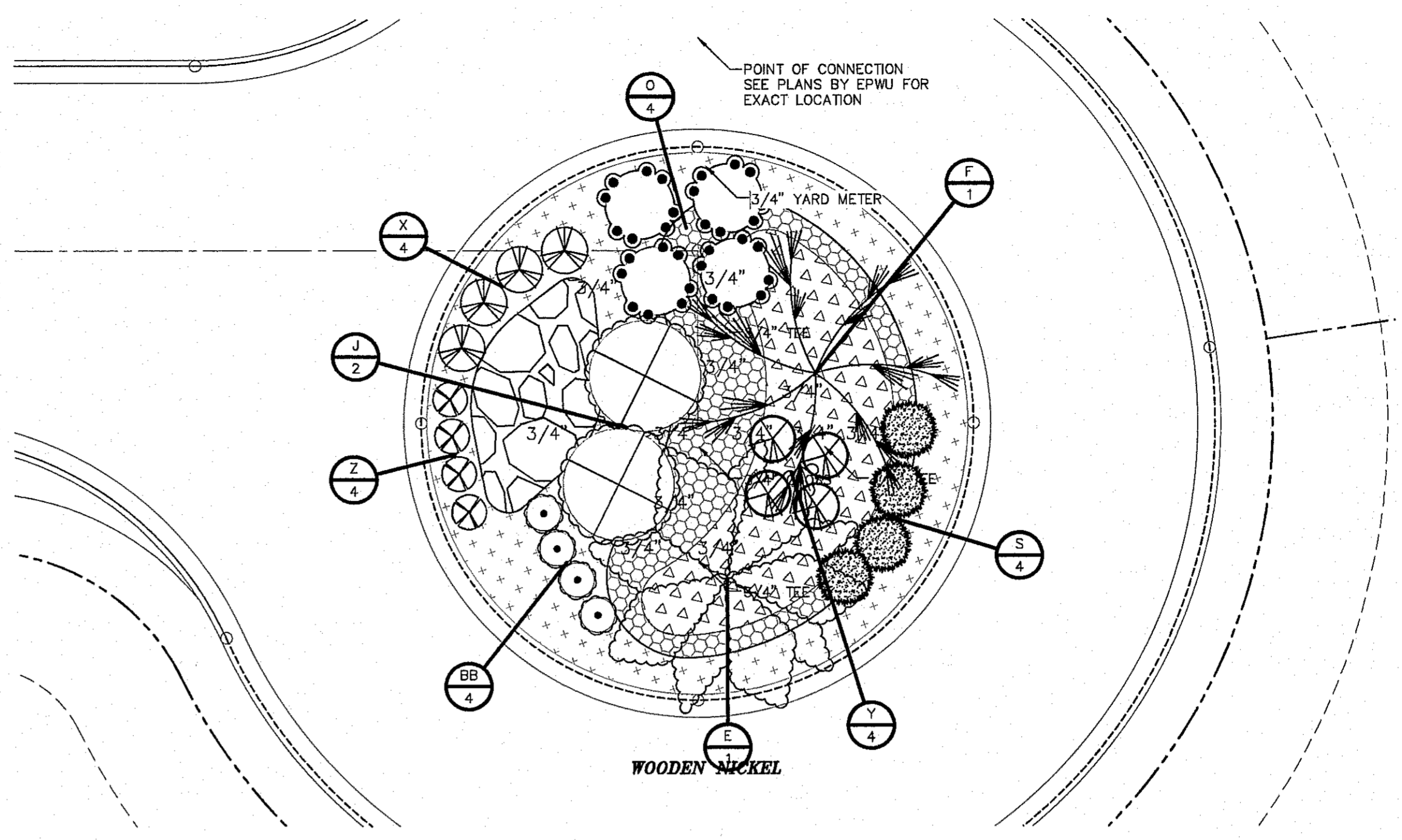
IRRIGATION



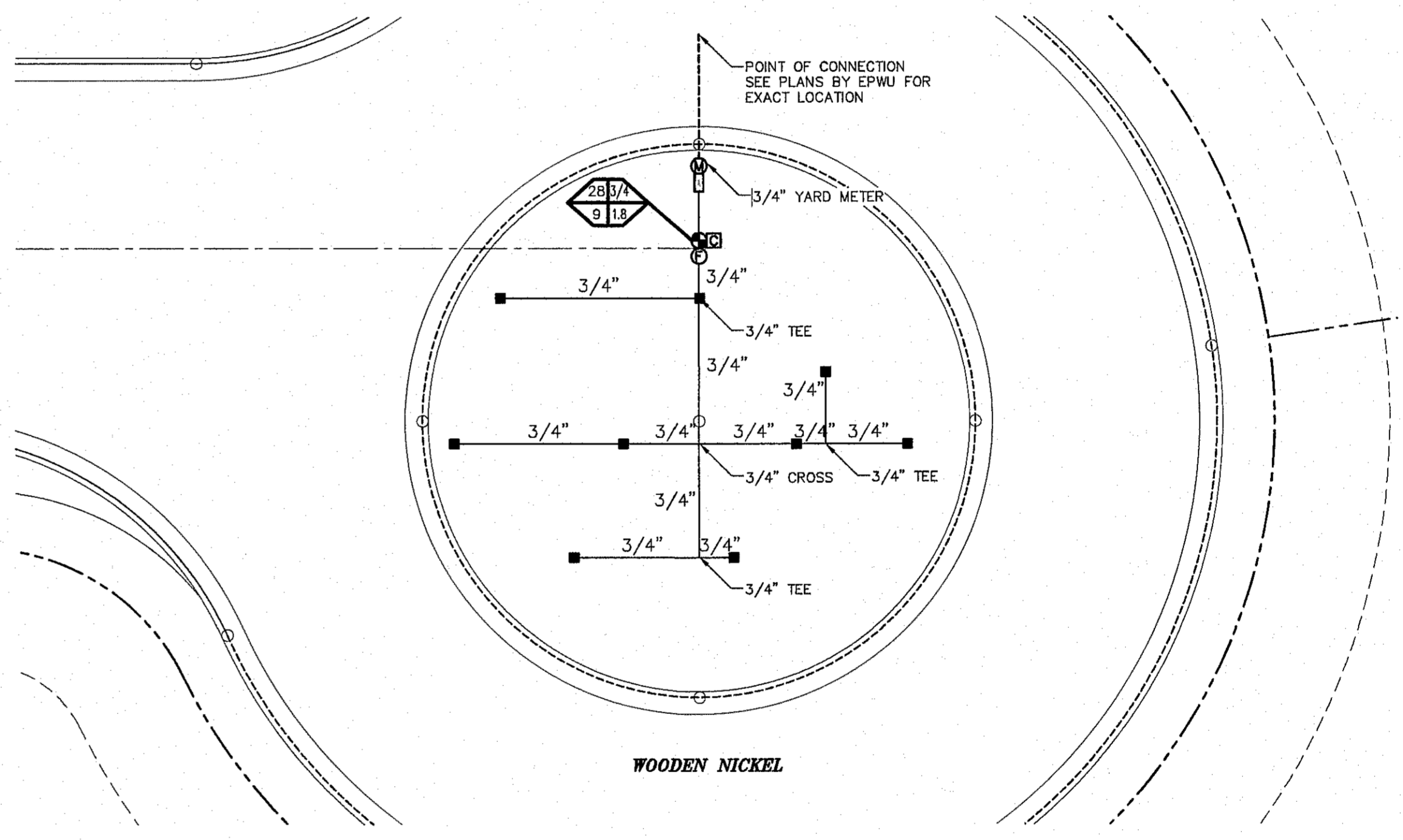
SCALE: 1" = 10'



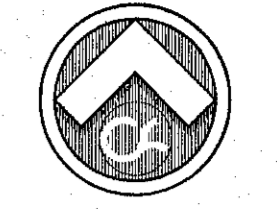
SCALE: 1" = 10'



LANDSCAPE



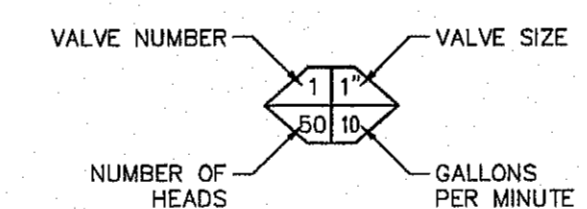
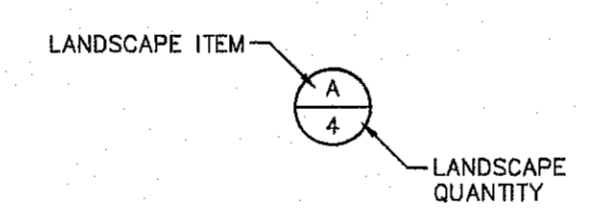
IRRIGATION



SCALE: 1" = 10'



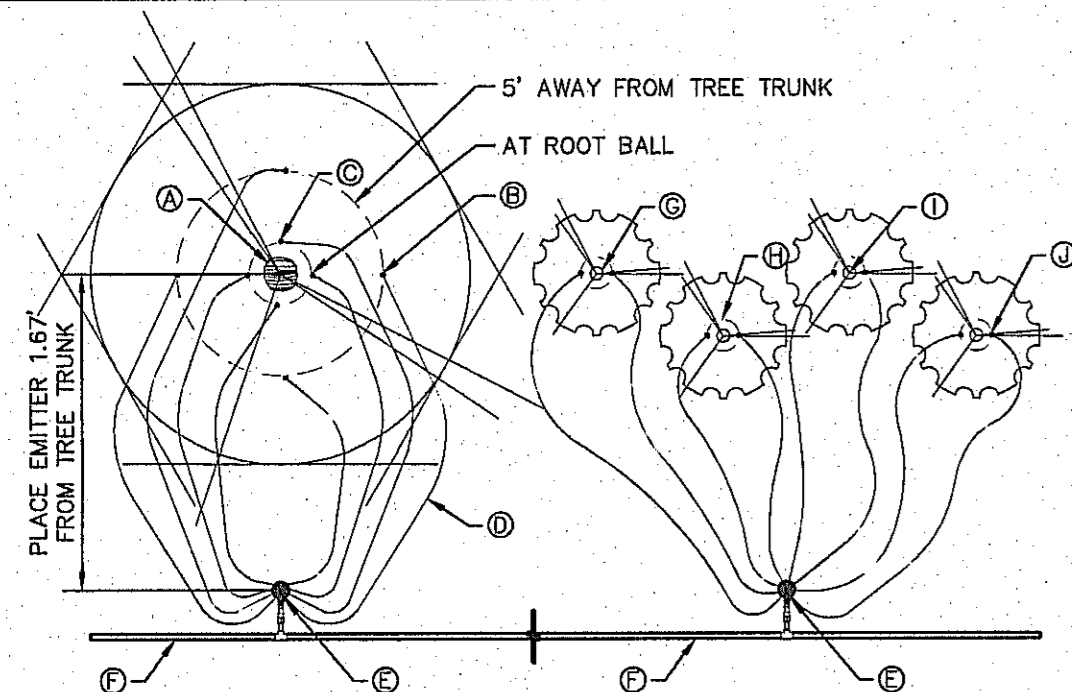
SCALE: 1" = 10'



ITEM	SYMBOL	COMMON NAME	BOTANICAL NAME	DESCRIPTION	HEIGHT	WIDTH	SIZE	QUANTITY	PATTERN	DESCRIPTION
B		HONEY MESQUITE	PROSOPIS GLANDULOSA VAR. GLANDULOSA	DECIDUOUS	30'	30'	3" CAL	1	---	R.O.W. LINE
E		TEXAS REDBUD	CERCIS CANADENSIS VAR. TEXANA	DECIDUOUS	20'	20'	2" CAL	1	---	PROPERTY LINE
F		PALO VERDE	PARKINSONIA X CERCIIDIUM "DESSERT MUSEUM"	DECIDUOUS	20'	25'	2" CAL	1	---	BOUNDARY LINE
J		PROSTRATE ACACIA	ACACIA REDOLENS	EVERGREEN	3'	10'	3 GAL	4	---	STREET CENTERLINE
L		TECOMA YELLO BELLS	TECOMA STANS VAR. ANGUSTATA	DESCRIPTION	6'	4'	3 GAL	4	---	2"-3" PADRE CANYON RED BOULDER
M		GOLDEN EUONYMUS	EUONYMUS JAPONICA	EVERGREEN	8'	6'	5 GAL	4	---	3/8" PADRE CANYON CHAT
O		SILVER CASSIA	SENNA ARTEMISIOIDES	EVERGREEN	6'	6'	5 GAL	4	---	2" PADRE CANYON SCREENING
R		DAMIANITA	CHRYSACTINIA MEXICANA	PERENNIAL	2'	2'	1 GAL	4	---	2" AZTEC SCREENING
S		REGAL MIST PINK MUHLY	MUHLENBERGIA CAPILLARIS	DORMANT	2'	2'	1 GAL	4	---	3"-6" GREY KICKER STONE
U		DWARF COYOTE BUSH	BACCHARIS PILULARIS	EVERGREEN	2'	5'	1 GAL	2	---	SIDEWALK BY DEVELOPER
V		LYNN'S LEGACY SAGE	LEUCOPHYLLUM LANGMANIAE	EVERGREEN	5'	5'	3 GAL	4	---	CONCRETE
X		HEAVENLY BAMBOO	NANDINA DOMESTICA	EVERGREEN	5'	3'	3 GAL	8	---	
Y		BAJA FAIRY DUSTER	CALLIANDRA ERIOPHYLLA	DECIDUOUS	3'	4'	3 GAL	8	---	
Z		RED TIP YUCCA	HESPERALOE PARVIFLORA	EVERGREEN	5'	4'	3 GAL	8	---	
BB		TURPENTINE BUSH	ERICAMERIA LARICIFOLIA	EVERGREEN	3'	3'	1 GAL	4	---	

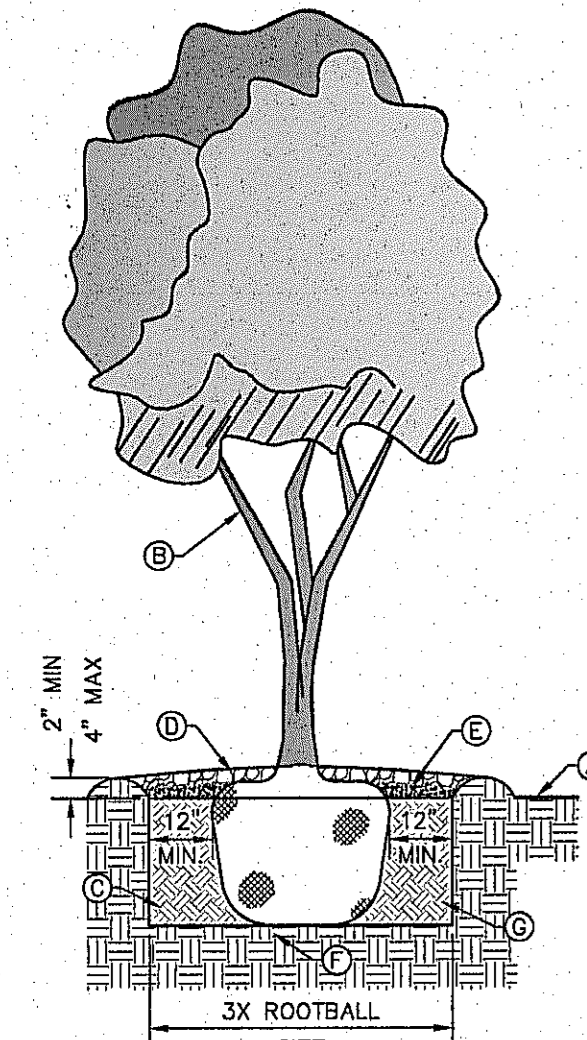
PATTERN	DESCRIPTION
---	1" TYPE K COPPER WATER LINE
---	PVC CLASS 200 IPS PLASTIC PIPE
---	WATER LATERAL (SIZE AS NOTED)
---	PVC SLEEVE TO EXTEND 24" FROM EDGES (TWICE THE SIZE OF PIPE)
●	3/4" YARD METER
□	FEBCO 825YD X" RPBA W/ HYDROCOL ENCLOSURE
■	RAIN SENSOR
■	STATION CONTROLLER
●	WEATHERMATIC 8200CR-20 REMOTE CONTROL VALVE
●	AMAD 1" WYE FILTER & WILKINS 600 SERIES PRESSURE REGULATOR
■	XERIBIRD 8 EMITTER
---	PIPE SIZE AS NOTED
---	STUB OUT AND CAP WITH EXTRA VALVE WIRES FOR FUTURE SYSTEM
■	ISOLATION BRASS BALL VALVE

(IRRIGATION IS REGULATED BY THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY, P.O. BOX 13087 AUSTIN, TEXAS 78711-3087 (512) 239-6719)



EMITTER PLACEMENT
SCALE: 1"=3"

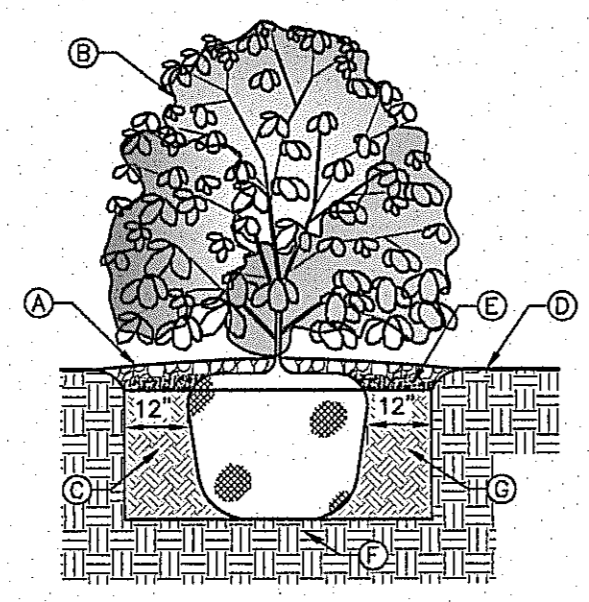
- (A) TREE TRUNK
- (B) EMITTER 5' FROM TREE TRUNK (1 OF 4)
- (C) EMITTER @ ROOT BALL (1 OF 4)
- (D) 1/4" CAPILLARY TUBING (0.170 I.D. X 0.250 O.D.)
- (E) 8 OUTLET EMITTER
- (F) PVC SUPPLY LATERAL FROM ZONE CONTROL VALVE
- (G) ROOT BALL
- (H) PLANT PIT
- (I) SHRUB CENTER
- (J) EMITTER TUBING PLACEMENT



TREE PLANTING DETAIL
SCALE: 1"=3"

- (A) FINISH GRADE.
- (B) TREE.
- (C) PLANTING SOIL MIXTURE (SEE NOTE 17).
- (D) WATER RETENTION BASIN
- (E) 4" DEPTH OF BARK MULCH.
- (F) SOIL BELOW ROOT BALL TO REMAIN UNDISTURBED TO PREVENT TREE FROM SETTLING.
- (G) PRIOR TO BACKFILLING ROOT BALL, CUT AND REMOVE ALL BURLAP FROM THE TOP AND SIDES. REMOVE ALL WIRE, ROPE AND SYNTHETIC MATERIALS FROM THE PLANTING PIT.

NOTE:
TOP OF ROOTBALL INDICATES LEVEL AT WHICH TREE WAS GROWN AND DUG. THIS REPRESENTS THE LEVEL AT WHICH THE TREE SHOULD BE INSTALLED. THAT LEVEL MAY ONLY BE EXCEEDED BY A ONE INCH LAYER OF MULCH.

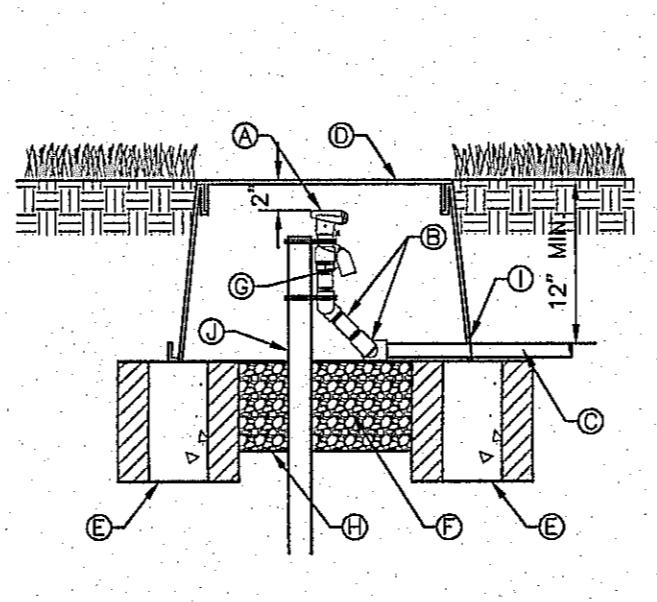


SHRUB PLANTING DETAIL
SCALE: 1"=3"

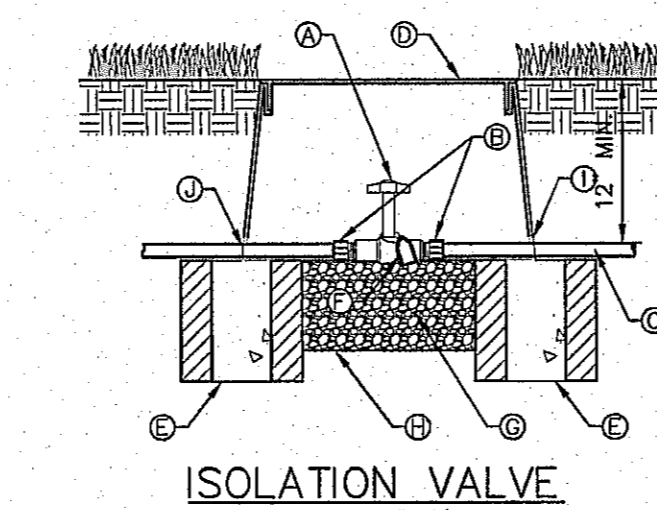
- (A) FINISH GRADE.
- (B) SHRUB.
- (C) PLANTING SOIL MIXTURE (SEE NOTE 17)
- (D) WATER RETENTION BASIN
- (E) 4" DEPTH OF BARK MULCH.
- (F) STABILIZE SOIL BELOW ROOT BALL TO PREVENT SHRUB FROM SETTLING.
- (G) PRIOR TO BACKFILLING ROOT BALL, CUT AND REMOVE ALL BURLAP FROM THE TOP AND SIDES. REMOVE ALL WIRE, ROPE AND SYNTHETIC MATERIALS FROM THE PLANTING PIT.

1. LANDSCAPE NOTES:

2. THE CONTRACTOR SHALL BE RESPONSIBLE TO FAMILIARIZE HIMSELF WITH CITY OF EL PASO SPECIFICATION FOR CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY THE OWNER AND/OR THE DESIGNER IN THE EVENT OF A CONFLICT BETWEEN THESE PLANS AND THE STANDARDS.
3. TREES, SHRUBS OR GROUND COVER SUBSTITUTIONS SHALL NOT BE MADE WITHOUT THE WRITTEN PERMISSION OF THE OWNER. THE USE OF MATERIALS DIFFERING IN QUALITY OR SIZE FROM THAT SPECIFIED WILL ONLY BE ALLOWED AFTER OWNER IS CONVINCED THAT ALL MEANS OF OBTAINING THE SPECIFIED MATERIAL HAVE BEEN EXHAUSTED. AT THE TIME BIDS ARE SUBMITTED, THE CONTRACTOR IS ASSUMED TO HAVE LOCATED THE MATERIALS NECESSARY TO COMPLETE THE JOB AS SPECIFIED. ALL REQUESTS FOR SUBSTITUTIONS MUST BE SUBMITTED NO LATER THAN TWO WEEKS PRIOR TO THE INITIATION OF WORK.
4. ALL PLANT MATERIAL SHALL BE INSTALLED AS PER DETAILS ON THIS SHEET.
5. PRO-5 WEED FABRIC UNDERLAYMENT SHALL BE PINNED 3" ON CENTER THROUGHOUT EVERY 12" ALONG SEAMS AND EDGES. SEAMS SHALL BE OVERLAPPED A MINIMUM OF 12"
6. TREES, SHRUBS OR GROUND COVER QUALITY, SIZE AND CONDITION SHALL BE IN ACCORDANCE WITH AMERICAN STANDARD FOR NURSERY STOCK, 1980 EDITION, AS PUBLISHED BY THE COMMITTEE ON HORTICULTURAL STANDARDS OF THE AMERICAN ASSOCIATION OF NURSEYMEN, INC.
7. TREES, SHRUBS OR GROUND COVER SHALL BE TYPICAL OF THEIR SPECIES OR VARIETY. ALL PLANTS SHALL HAVE NORMAL, WELL DEVELOPED BRANCHES AND VIGOROUS ROOT SYSTEMS. THEY SHALL BE SOUND, HEALTHY, VIGOROUS, FREE FROM DEFECTS, DISTURGING KNOTS, ABRASIONS OF THE BARK, SUNSCALD INJURIES, PLANT DISEASES, INSECT EGGS, BORES AND ALL OTHER FORMS OF INFECTIONS.
8. UNLESS OTHERWISE NOTED ON THE DRAWINGS OR APPROVED BY THE OWNER, ALL PLANTS SHALL BE NURSERY GROWN AND SHALL BE TAGGED WITH NURSERY LABELS INDICATING SPECIES AND VARIETY. EXISTING PLANTS SHALL NOT BE REUSED UNLESS NOTED ON THESE DRAWINGS.
9. CONTAINER GROWN PLANT MATERIAL SHALL HAVE BEEN ESTABLISHED IN ITS CONTAINER FOR NO MORE THAN TWO YEARS AND NO LESS THAN SIX MONTHS.
10. NON-CONTAINER GROWN PLANTS SHALL HAVE A SOLID BALL OF EARTH OF MINIMUM SPECIFIED SIZE AND HELD IN PLACE SECURELY BY BURLAP AND A STOUT TWINE OR ROPE. SEE TREE AND SHRUB PLANTING DETAIL ON THIS UNLESS SPECIFICALLY NOTED ON THIS DRAWING. ALL TREES SHALL HAVE A SINGLE TRUNK THAT IS STRAIGHT AND FREE OF "DOG-LEGS" "CROOKS" "Y-CROUCHES", OR OTHER DISTURGING SHAPES. THE CENTRAL LEADER OF ALL TREES SHALL NOT HAVE BEEN PRUNED. TREES WITH DOUBLE LEADERS ARE NOT ACCEPTABLE, UNLESS SPECIFIED AS MULTI-TRUNKED.
11. ALL PLANT MATERIAL SHALL HAVE A UNIFORM SHAPE AROUND ITS COMPLETE CIRCUMFERENCE. PLANT MATERIAL WITH IRREGULAR BRANCHING PATTERNS OR WITH BRANCHING PATTERNS MORE HIGHLY DEVELOPED ON ONE SIDE THAN ON OTHER SIDES SHALL NOT BE ACCEPTABLE.
12. THE DESIGNER AND CITY OF EL PASO REPRESENTATIVE SHALL INSPECT ALL PLANT MATERIAL PRIOR TO DELIVERY, DURING PLANTING OR AFTER PLANTING AT THE JOB SITE.
13. THE CONTRACTOR SHALL BE THE JUDGE OF THE QUALITY AND ACCEPTABILITY OF ALL PLANT MATERIALS. ALL REJECTED MATERIAL SHALL BE IMMEDIATELY REMOVED FROM THE SITE AND REPLACED BY THE CONTRACTOR WITH ACCEPTABLE MATERIALS AT NO ADDITIONAL COST TO THE OWNER.
14. THE DEVELOPER IS RESPONSIBLE FOR THE CARE AND MAINTENANCE OF ALL LANDSCAPING ALONG CIMARRON MEDICAL DRIVE. THE CONTRACTOR SHALL REPLACE ANY DEAD OR UNHEALTHY PLANTS WITHIN 10 WORKING DAYS OF WRITTEN NOTIFICATION AT NO EXPENSE TO THE OWNER. THE CONTRACTOR SHALL NOT BE RESPONSIBLE FOR VANDALIZED PLANT MATERIAL.
15. ALL PLANTING BEDS SHOWN ON PLANS SHALL BE MULCHED. NO BEDS WILL BE LEFT UNCOVERED OR NOT TOP DRESSED, UNLESS OTHERWISE SPECIFIED. SEE SHRUB/TREE PLANTING DETAIL ON THIS SHEET.
16. TREE LOCATIONS SHOWN ARE SCHEMATIC AND MAY VARY BASED ON UTILITIES AND OTHER CONSTRAINTS. PLANT MATERIAL LOCATIONS SHALL COMPLY WITH ALL JURISDICTIONAL ORDINANCES WHICH APPLY.
17. FOR SOIL MIX PREPARE PLANTING SOIL MIX USED FOR BACKFILL IN THE FOLLOWING PROPORTIONS: MIX EXISTING NATIVE SOIL EXCAVATED FROM THE PLANT PIT AT A 2 PART NATIVE SOIL/TOP SOIL AND ONE PART POTTING SOIL MIX.
18. ALL LANDSCAPE MATERIAL SHALL BE MAINTAINED TO NOT DISTURB TRAVEL PATH FOR PEDESTRIANS, VEHICLES AND/OR LINE OF SIGHT. HEIGHT AND WIDTH OF LANDSCAPE ON LEGEND ARE BASED ON FULL MATURE SIZE AND ARE FOR INFORMATION PURPOSES ONLY.



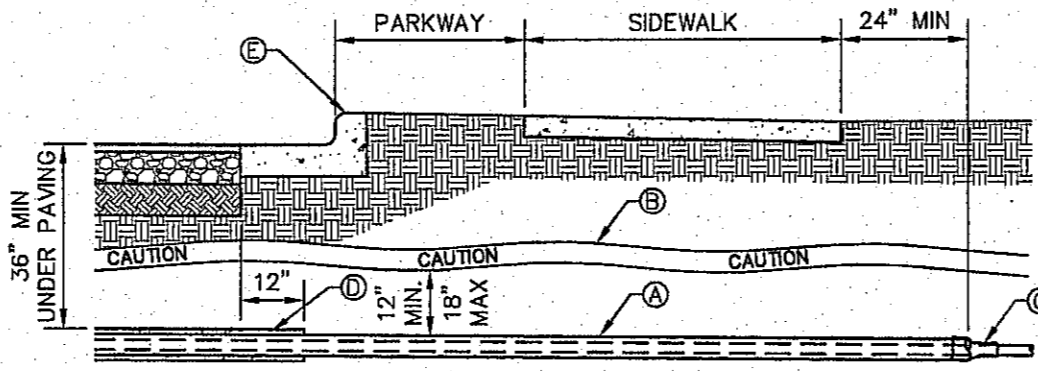
QUICK COUPLER VALVE
SCALE: 1"=1"



ISOLATION VALVE
SCALE: 1"=1"

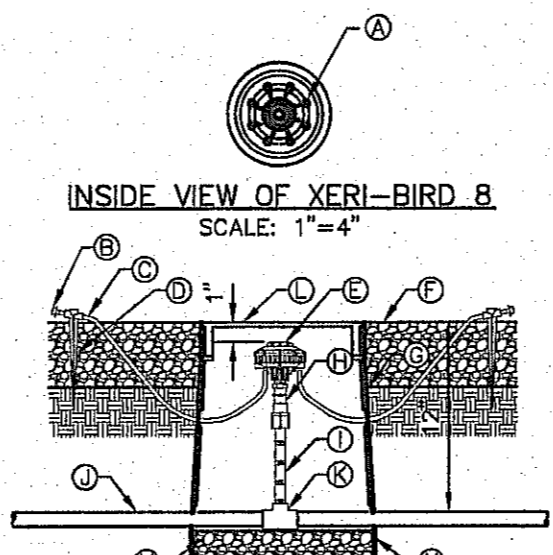
- (A) BUCKNER DOUBLE LUG QUICK-COUPLING VALVE WITH PURPLE CAP
- (B) LASCO PRE-ASSEMBLED SWING JOINT WITH SNAP LOCK STABILIZER ASSEMBLY AND BRASS FITTING
- (C) PVC LATERAL
- (D) 1419 PURELE CARSON VALVE BOX W/ FLAT LID
- (E) SOLID BRICK BLOCK AT EACH CORNER
- (F) 3/8" PEA GRAVEL, 4" DEEP (NO SOIL IN BOX)
- (G) WATER PROOF TAGS THAT READ "NON-POTABLE WATER"
- (H) PROVIDE WEED BARRIER FABRIC 'DeWITT PRO 5' UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS
- (I) 6 mm BLACK POLYETHYLENE PLASTICTAPE TO ALL INLET AND OUTLET PIPE
- (J) PVC PIPE STABILIZER

- (A) ISOLATION BRASS BALL VALVE (SAME SIZE AS PIPE)
- (B) THREADED MALE ADAPTERS
- (C) PVC LATERAL
- (D) 419 PURELE CARSON VALVE BOX W/ FLAT LID
- (E) SOLID BRICK BLOCK AT EACH CORNER
- (F) WATER PROOF TAGS THAT READ "NON-POTABLE WATER"
- (G) 3/8" PEA GRAVEL, 4" DEEP (NO SOIL IN BOX)
- (H) PROVIDE WEED BARRIER FABRIC 'DeWITT PRO 5' UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS
- (I) 6 mm BLACK POLYETHYLENE PLASTICTAPE TO ALL INLET AND OUTLET PIPE



PIPE SLEEVE UNDER PAVING AND SIDEWALKS
SCALE: 1"=3"

- (A) 2" PVC SCHEDULE 40 SLEEVE
- (B) BURY "CAUTION" TAPE ON TOP OF SLEEVES
- (C) WRAP ENDS WITH 4 MIL PLASTIC AND TAPE WITH WEATHERPROOF TAPE
- (D) 6" CONCRETE ENCASUREMENT
- (E) CURB



XERI-BIRD 8 WITH PC EMITTERS AT GRADE
SCALE: 1"=1"

NOTE:
WHERE TAPING IS SPECIFIED, CONTRACTOR SHALL USE 2" WIDE 3M BRAND, HEAVY DUTY PLASTIC TAPE. UNLESS NOTED OTHERWISE DUCT TAPE OR BLACK ELECTRICIANS TAPE SHALL NOT BE ACCEPTABLE.

IRRIGATION NOTES

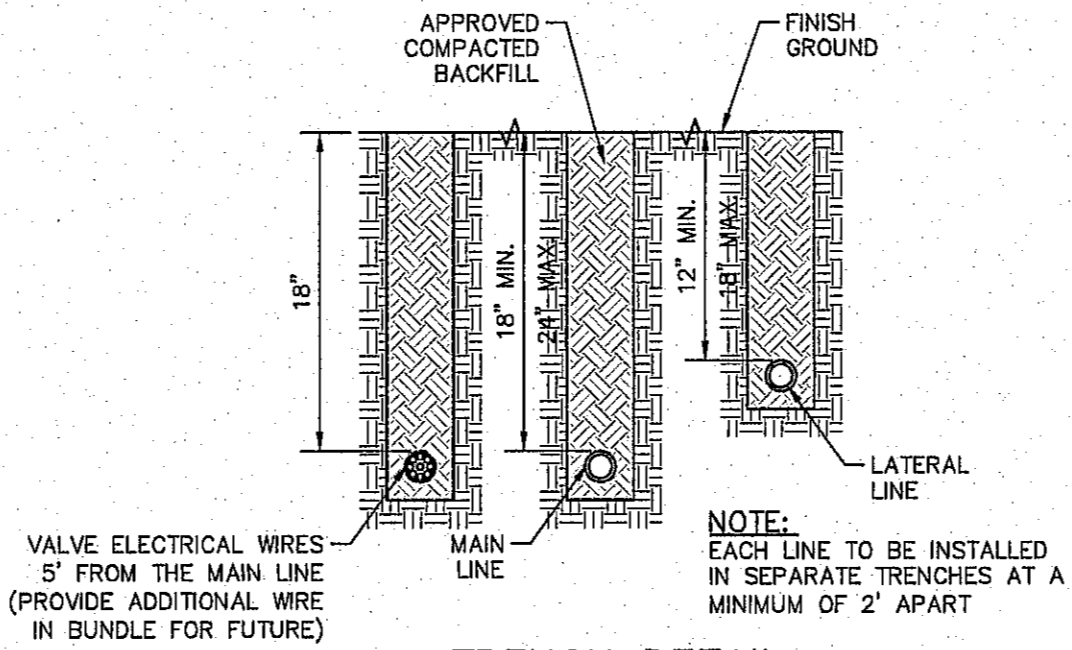
1. ALL WORK MUST BE IN COMPLIANCE WITH THE TEXAS COMMISSION ON ENVIRONMENTAL QUALITY RULES AND REGULATIONS.
2. ANY DAMAGE CAUSED BY THE CONTRACTOR SHALL BE REPAIRED OR REPLACED BY CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PROVIDE ALL EQUIPMENT, TOOLS, PRODUCTS, MATERIALS, LABOR, TRANSPORTATION AND OBTAIN ALL PERMITS AND PAY ALL REQUIRED FEES TO COMPLETE THE WORK.
4. ALL PAVEMENT TRENCHING SHALL BE PERFORMED TO THE CITY OF EL PASO STANDARDS FOR PUBLIC WORK CONSTRUCTION.
5. BOOSTER PUMP SHALL BE RAINBIRD LP SERIES OR APPROVED EQUAL.
6. CONTRACTOR SHALL VERIFY PUMP WILL PROVIDE A MINIMUM OF 30 PSI TO VALVE #3.
7. PIPING UNDER HARDSCAPES (DRIVEWAYS, SIDEWALKS, etc.) SHALL REQUIRE SLEEVING. GENERALLY TWO SIZES LARGER THAN IRRIGATION PIPING AND ONE FOOT BEYOND EDGE OF HARDSCAPE.
8. ALL EMITTERS ADJACENT TO HARDSCAPES SHALL BE PLACED A MINIMUM OF ONE FOOT FROM EDGE OF SURFACING.
9. SOME PIPES, VALVES, BACKFLOWS, etc. HAVE BEEN SHOWN IN PAVING, SIDEWALKS OR OUTSIDE THE BOUNDARY FOR CLARITY ONLY.
10. IRRIGATION DESIGN BASED ON A MINIMUM OF 40 PSI AT POC. THE CONTRACTOR/INSTALLER SHALL FIELD VERIFY THE STATIC PRESSURE OF THE WATER SUPPLY. THE CONTRACTOR SHALL BE RESPONSIBLE TO IMMEDIATELY CONTACT THE LICENSED IRRIGATOR IF STATIC PRESSURE OR FIELD CONDITIONS IS DIFFERENT IN THE FIELD THAN SHOWN ON PLANS.
11. CONTRACTOR IS REQUIRED TO APPLY FOR AND OBTAIN IRRIGATION PERMIT FROM EPAI.
12. KEEP A MINIMUM DISTANCE OF 24" FROM IRRIGATION LATERAL AND FIBER OPTIC CABLE.

SOLVENT WELDING

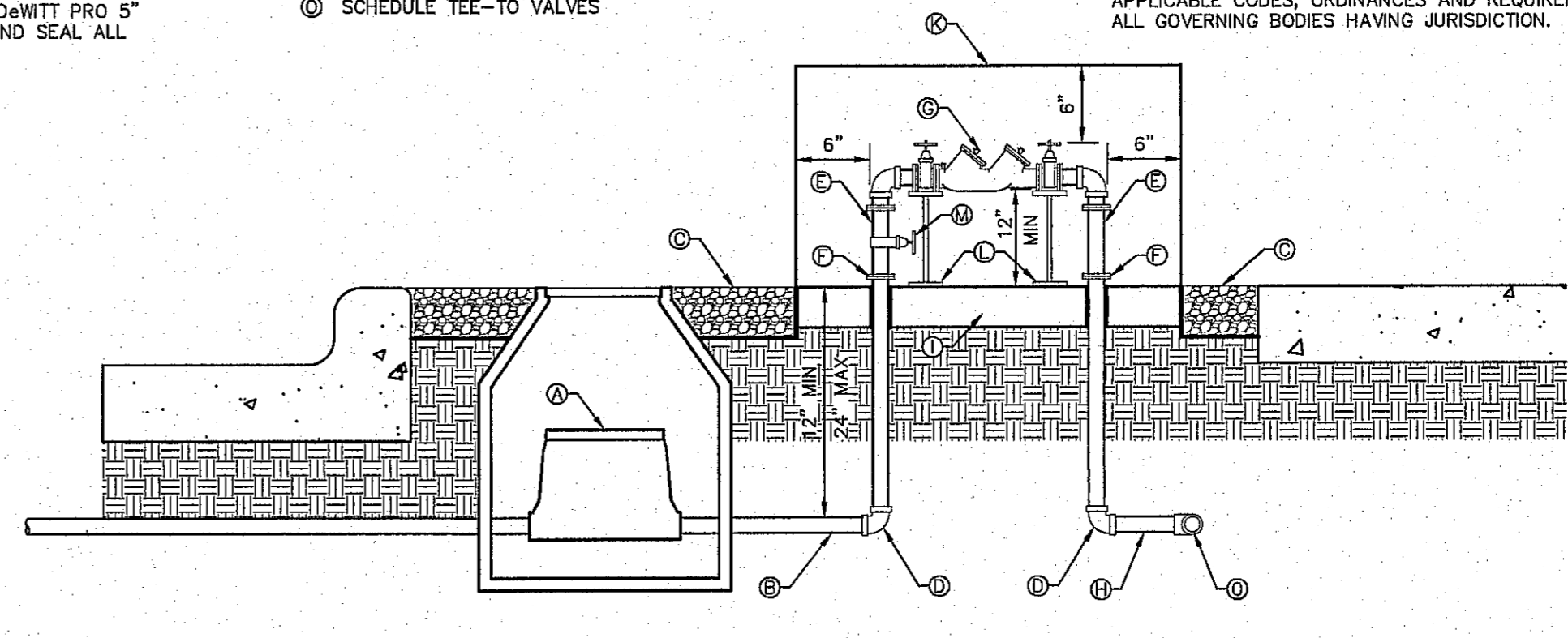
1. PIPE BENDS AND FITTINGS MUST BE INSPECTED DURING PRESSURE TEST. SOLVENT WELDING IS REQUIRED ON ALL PIPE BENDS AND FITTINGS. INSTALL ACCORDING TO MANUFACTURERS SPECIFICATIONS.
2. LACK OF SUFFICIENT SOLVENT WILL RESULT IN A WEAK CONNECTION. EXCESS SOLVENT WILL WEAKEN THE STRUCTURE. USE THE RIGHT AMOUNT OF SOLVENT FOR A SOUND INSTALLATION.
3. CLEAN OFF ALL BURRS FROM PIPE CUTS, BEVEL THE END OF THE MAIN LINE.
4. USE PRIMER TO CLEAN AND PREPARE THE PIPES BEING JOINED, WIPE EXCESS SOLVENT FROM JOINT.

ELECTRICAL WIRING

1. WIRES SHOULD NOT BE STRETCHED TIGHT IN THE TRENCHES, ALLOW EXTRA WIRE FOR SHARP TURNS IN THE TRENCHES.
2. WIRING SHALL BE FOR DIRECT BURIAL AND SIZED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
3. DIRECT BURIAL WIRE SPLICES MUST BE WATERPROOF AS PER MANUFACTURER'S SPECIFICATIONS.
4. WIRES SHALL BE LABELED WITH WATERPROOF TAGS AT THE CONTROLLER AND VALVE BOXES.



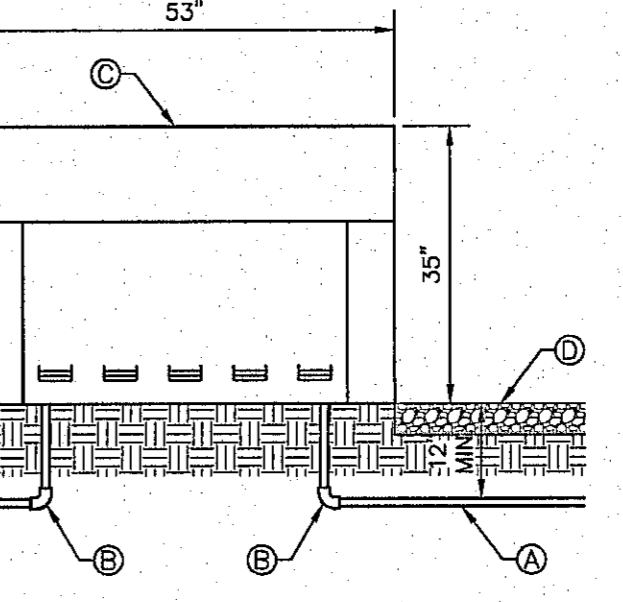
TRENCH DETAIL
SCALE: 1"=1"



REDUCED PRESSURE BACKFLOW PREVENTOR AND ENCLOSURE DETAIL
SCALE: 1"=2"

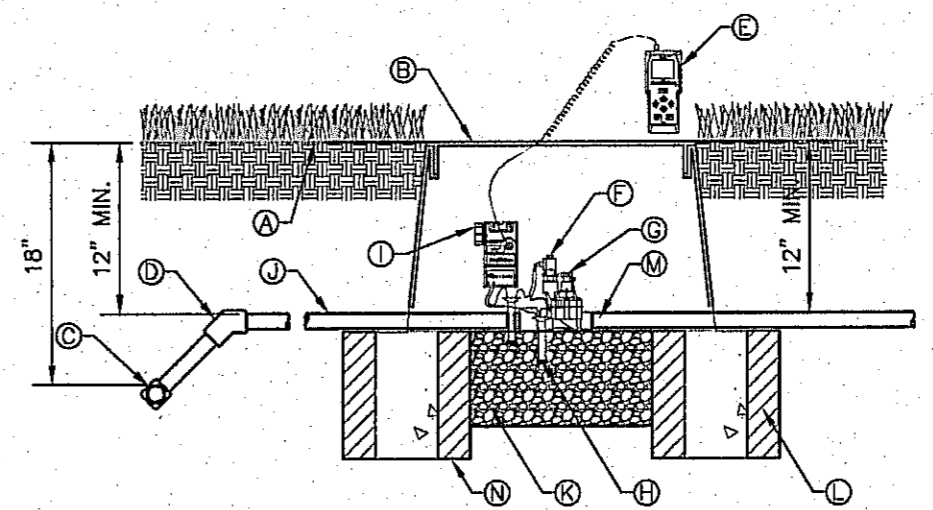
GENERAL NOTES:

1. ENCLOSURE MUST NOTE ASSE#1060 FOR BACKFLOW DEVICE.
 2. DO NOT INSTALL IN FLOOD PRONE AREAS.
 3. METAL RISER PIPING REQUIRED.
 4. JOINTS TO BE ADEQUATELY RESTRAINED.
 5. HORIZONTAL INSTALLATION REQUIRED AS SHOWN.
 6. RPPB SHALL BE SUPPORTED AT ALL TIMES DURING AND AFTER INSTALLATION. PIPES ARE NOT TO BARE WEIGHT OF RP DEVICE. BACKFLOW PREVENTION DEVICE SHALL BE PROPERLY SUPPORTED BY BRACKETS AND NOT COPPER RISERS OR COPPER RISERS WILL BE REPLACED.
- ELECTRICAL NOTES:**
CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING, COORDINATING, AND INSTALLING ALL ELECTRICAL AND ELECTRICAL SUPPLIES NECESSARY FOR THE INSTALLATION AND OPERATION OF THE IRRIGATION SYSTEM SPECIFIED.
ALL ELECTRICAL SHALL BE IN COMPLIANCE WITH ALL APPLICABLE CODES, ORDINANCES AND REQUIREMENTS OF ALL GOVERNING BODIES HAVING JURISDICTION.



LOW PROFILE PUMP IN ALUMINUM ENCLOSURE
SCALE: 1"=2"

- (A) 1" MAINLINE
- (B) 1" ELL
- (C) RAINBIRD LP SERIES PUMP WITH ALUMINUM MARINE ENCLOSURE WITH POWDER COATED PIPING OR APPROVED EQUAL
- (D) FINISH GRADE



BATTERY OPERATED CONTROLLER AND VALVE TBOS WITH TRANSMITTER
SCALE: 1"=1"

- (A) FINISH GRADE
- (B) 1419 PURELE CARSON VALVE BOX WITH LID AND BOLT, IRRIGATION MAINLINE.
- (C) SCHEDULE 80 PVC ELBOW.
- (D) RAIN BIRD TBOS CONTROL MODULE
- (E) RAIN BIRD TBOS SOLEOID
- (F) RAINBIRD 100-PESB REMOTE CONTROL VALVE
- (G) WATERPROOF CONNECTION: RAIN BIRD "QUICK CONNECT" DBY (1 OF 2)
- (H) RAINBIRD TBOS FIELD TRANSMITTER
- (I) LATERAL LINE.
- (J) 1 CUBIC FOOT 1" DIAMETER WASHED ROCK
- (K) 8"X8"X16" SOLID CMU BLOCK.
- (L) 6 mm BLACK POLYETHYLENE PLASTIC TAPE TO ALL INLET AND OUTLET PIPE.
- (M) PROVIDE WEED BARRIER FABRIC 'DeWITT PRO 5' UNDER AND AROUND VALVE BOX AND SEAL ALL PIPE PENETRATIONS.

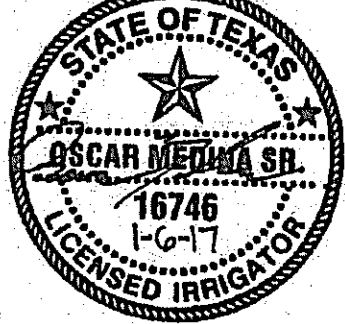
BENCHMARK CITY MONUMENT AT THE CENTERLINE INTERSECTION OF NORTHERN PASSES DRIVE ELEVATION = 8794.53 (EL PASO CITY DATUM)

NO.	DATE	DESCRIPTION	BY
1	09/15/16	1st City Submittal	OM
2	11/01/16	2nd City Submittal	OM

WARNING!
BEFORE YOU DIG
CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UNDERGROUND IMPROVEMENTS IN PROJECT AREA

CALL BEFORE YOU DIG -
EL PASO SERVICE COMPANY
4800 DUBOIS
4800 DUBOIS TESS
544-6300
562-8411 (RES-2003)
781-8411 (RES-2003)
781-8411 (RES-2003)
781-8411 (RES-2003)
781-8411 (RES-2003)
781-8411 (RES-2003)
781-8411 (RES-2003)
781-8411 (RES-2003)

This document, whether in hard copy or machine readable format, is copyrighted and an instrument of service in respect to the client and project for which it was prepared. This document is not intended or authorized for reuse by any party on extensions of such project or any other project, without expressed, written permission from CSA Design Group, Inc. for the specific purpose intended. A violation of Federal Copyright Law. Unauthorized use of this material for any reason may result in civil and/or criminal penalties.



csa design group, inc.
Texas Registered Engineering Firm #3887
1845 Northwestern Dr. Ste C
El Paso, Texas 79912
Tel (915) 877-4155
Fax (915) 877-4334
www.csaengineers.com



LANDSCAPE & IRRIGATION DETAILS

OM	1524
CSG-SM-DD-CM	10/27/16
GB	AS NOTED
DESIGNED BY	SCALE
SHEET NO. L15	
SHEET TOTAL 15 OF 15	

