LITTLE
DIVERSIFIED ARCHITECTURAL CONSULTING

ADDENDUM NO. 1

TRACK & FIELD IMPROVEMENTS

LITTLE JOB #612-12353-05

DSA: A# 03-120287 File #56-H4

Channel Islands High School
1400 Raiders Way.
Oxnard, CA 93033

April 24, 2020

LITTLE
1300 Dove Street, Suite 100
Newport Beach, CA 92660

Architect- Jay R. Tittle, C- 12955

1. PART 1 - GENERAL

1.1. The following revisions and/or clarifications shall be made to the Bidding Requirements and Contract Documents. Revise and amend the Documents for the above named project in accordance with this Addendum. The bid shall reflect these addendum changes and each bidder shall make reference in their bid to this addendum.

1.2. All Bidding Requirements and Contract Documents shall apply to this addendum as originally indicated in the applicable portions of the contract documents, unless otherwise modified by this addendum.

1.2.1. Previous Addendum #0 issued April 10, 2020; clarifying the bid scope for all bidders.

1.3. GENERAL CLARIFICATIONS

1.3.1. The following clarifications are issued to all bidders as information for use in preparing bids:

1.3.1.1. ACAD files will be provided to successful Bidder.

1.3.1.2. Specification section 11 68 33.43 – Track and Field Equipment – The following equipment are excluded from the scope of work for this bid:

1.3.1.2.1. Pole Vault landing system and standards.

1.3.1.2.2. Pole Vault Box with cover plug.

1.3.1.2.3. Discus / Shot Put.

1.3.1.3. Add 'Partial Underground Utility Map' (sheets 1 – 4), for reference noting the following: '***DSA approved construction documents were prepared using Armstrong & Brooks Consulting Engineers, Inc. survey files where majority of the existing utilities were mapped using available records and some were verified at field. Recently, 'C-below' was contracted to perform Underground Utility survey and they have provided us with their maps for Contractor's reference. For bidding purposes, Contractor shall consider information shown on these maps in addition to what is shown on DSA approved plans as some of the existing utilities within work area will be impacted by proposed improvements***.'

1.3.1.4. Add 'TOPOGRAPHIC SITEPLAN' (sheets 1 – 6), for reference noting the following: '***DSA approved construction documents were prepared using Armstrong & Brooks Consulting Engineers, Inc. topo survey files where the linework on their survey files were mostly from aerial survey. Recently, surveyor was tasked to update their topographic survey files to include linework on their survey maps where detailed foot survey was performed at field. Attached are updated topographic survey files for reference. For bidding purposes, contractor shall consider information shown on these maps in addition to what is shown on DSA approved plans.'***

2. PART 2 - PROJECT MANUAL

2.1. CHANGES TO PROJECT MANUAL TABLE OF CONTENTS

2.1.1. Division 00 01 10, TABLE OF CONTENTS

2.1.1.1. Delete in its entirety and replace with the attached Table of Contents.

2.2. SPECIFICATIONS ISSUED

2.2.1. Section 11 68 43.13, Outdoor Scoreboard - Delete Section 11 68 43.13 originally issued, in its entirety.

2.2.2. Section 11 68 43.15, Video Display Scoreboard - Add new Section 11 68 43.15 (attached).

2.2.3. Section 26 56 68, Exterior Athletic Lighting – Add new Section 26 56 68 (attached).

2.2.4. Section 27 41 16, Integrated Audio Systems and Equipment - Add new Section 27 41 16 (attached).

3. PART 3 – DRAWINGS

3.1. GENERAL DRAWINGS ISSUED

3.1.1. Narrative changes to General Drawings are issued as follows:

3.1.1.1. Drawing G0.1.1 - Modify as follows:

3.1.1.1.1. Sheet Index – Field Scoreboard; Modify 'FIELD SCOREBOARD PER PC#04-116017' to read as 'FIELD SCOREBOARD PER PC#02-116492'

3.1.1.1.2. Sheet Index – Field Scoreboard; Delete sheets 1, 2, and 6.

3.1.1.1.3. Sheet Index – Field Scoreboard; Add the following sheets:

3.1.1.1.3.1. SB0.1 COVER SHEET

3.1.1.1.3.2. SB0.2 EXAMPLE SCOREBOARD WORKSHEET & NEVCO PART NUMBERS

3.1.1.1.3.3. SB0.3 STRUCTURAL NOTES & SPECIAL INSPECTIONS

3.1.1.1.3.4. SB2.3 TWO COLUMN MAT FOOTING

3.1.1.1.3.5. SB5.1 ATTACHMENT DETAILS

3.1.1.1.4. Sheet Index – Audio Visual; Add the following sheets:

3.1.1.1.4.1. AV0.1 GENERAL NOTES AND SHEET INDEX

3.1.1.1.4.2. AV0.2 ABBREVIATIONS NOTES AND SYMBOLS

3.1.1.1.4.3. AV1.1 ENLARGED AV SITE PLAN

3.1.1.1.4.4. AV1.2 AV SPEAKER COVERAGE PLAN

3.1.1.1.4.5. AV1.5 AV ENLARGED LAYOUTS

3.1.1.1.4.6. AV2.1 AV ENLARGED LAYOUTS

3.1.1.1.4.7. AV2.2 AV ENLARGED PLANS

3.1.1.1.4.8. AV3.1 AV RISER DIAGRAM

3.1.1.1.4.9. AV4.0 WIRING SCHEME AND SYMBOL KEY

3.1.1.1.4.10. AV4.1 AV ONELINE DIAGRAM

3.1.1.1.4.11. AV5.0 AV TYPICAL SEISMIC AND GROUNDING DETAILS

3.1.1.1.4.12. AV6.1 AV DETAILS

3.1.1.1.4.13. AV6.2 AV DETAILS

3.1.1.1.4.14. AV6.3 AV DETAILS

3.2. CIVIL DRAWINGS ISSUED

3.2.1. The following Addendum ("AD") Drawings, marked Delta 1, are issued:

3.2.1.1. Drawing C1.0: Revise currently issued Drawing per AD1-C1.

3.2.1.2. Drawing C1.1: Replace with Drawing AD1-C2.

3.2.1.3. Drawing C3.0: Revise currently issued Drawing per AD1-C3.

3.2.1.4. Drawing C5.0: Replace with Drawing AD1-C4.

3.2.1.5. Drawing C5.2: Revise currently issued Drawing per AD1-C5.

3.2.1.6. Drawing C5.3: Replace with Drawing AD1-C6.

3.2.1.7. Drawing C5.5: Revise currently issued Drawing per AD1-C7.

3.2.1.8. Drawing C5.6: Replace with Drawing AD1-C8.

3.3. ARCHITECTURAL DRAWINGS ISSUED

3.3.1. The following Addendum ("AD") Drawings, marked Delta 1, are issued:

3.3.1.1. Drawing A1.0.1: Replace with Drawing AD1-A1.

3.3.1.2. Drawing A1.1.1: Replace with Drawing AD1-A2.

3.3.1.3. Drawing A1.3.5: Revise currently issued Drawing per AD1-A3.

3.3.1.4. Drawing A1.3.5: Revise currently issued Drawing per AD1-A4.

3.3.1.5. Drawing AD1-A5: New Detail/Sheet.

3.3.1.6. Drawing AD1-A6: New Detail/Sheet.

3.3.1.7. Drawing AD1-A7: New Detail/Sheet.

3.4. ELECTRICAL DRAWINGS ISSUED

3.4.1. The following Addendum ("AD") Drawings, marked Delta 1, are issued:

3.4.1.1. Drawing E-001: Replace with Drawing AD1-E1.

3.4.1.2. Drawing E-200: Replace with Drawing AD1-E2.

3.5. MUSCO STADIUM LIGHTING DRAWINGS ISSUED

3.5.1. The following Addendum ("AD") Drawings, marked Delta 1, are issued:

3.5.1.1. Drawing MT1: Replace with Drawing AD1-MT1.

3.5.1.2. Drawing MS1: Replace with Drawing AD1-MS1.

3.5.1.3. Drawing MS2: Replace with Drawing AD1-MS2.

3.6. FIELD SCOREBOARD DRAWINGS ISSUED

3.6.1. The following Addendum ("AD") Drawings, marked Delta 1, are issued:

3.6.1.1. Drawing (SB0.1) AD1-SB1: New Sheet.

3.6.1.2. Drawing (SB0.2) AD1-SB2: New Sheet.

3.6.1.3. Drawing (SB0.3) AD1-SB3: New Sheet.

3.6.1.4. Drawing (SB2.3) AD1-SB4: New Sheet.

3.6.1.5. Drawing (SB5.1) AD1-SB5: New Sheet.

3.7. AUDIO VISUAL DRAWINGS ISSUED

3.7.1. The following Addendum ("AD") Drawings, marked Delta 1, are issued:

3.7.1.1. Drawing (AV0.1) AD1-AV1: New Sheet.

3.7.1.2. Drawing (AV0.2) AD1-AV2: New Sheet.

3.7.1.3. Drawing (AV1.1) AD1-AV3: New Sheet.

3.7.1.4. Drawing (AV1.2) AD1-AV4: New Sheet.

3.7.1.5. Drawing (AV1.5) AD1-AV5: New Sheet.

3.7.1.6. Drawing (AV2.1) AD1-AV6: New Sheet.

3.7.1.7. Drawing (AV2.2) AD1-AV7: New Sheet.

3.7.1.8. Drawing (AV3.1) AD1-AV8: New Sheet.

3.7.1.9. Drawing (AV4.0) AD1-AV9: New Sheet.

3.7.1.10. Drawing (AV4.1) AD1-AV10: New Sheet.

3.7.1.11. Drawing (AV5.0) AD1-AV11: New Sheet.

3.7.1.12. Drawing (AV6.1) AD1-AV12: New Sheet.

3.7.1.13. Drawing (AV6.2) AD1-AV13: New Sheet.

3.7.1.14. Drawing (AV6.3) AD1-AV14: New Sheet.

END OF ADDENDUM NO. 1

Enclosures:

I) Reference Plans Issued:
   a) 'Partial Underground Utility Map' (sheets 1 – 4)
   b) 'TOPOGRAPHIC SITE PLAN' (sheets 1 – 6)

II) New Project Manual Documents Issued:
   a) Section 00 01 10
   b) Section 11 68 43.15
   c) Section 26 56 68
   d) Section 27 41 16

III) New full-size Drawings Issued:
   a) Drawings AD1-C2, AD1-C4, AD10C6, and AD1-C8, Delta 1.
   b) Drawings AD1-A1 and AD1-A2, Delta 1.
   c) Drawings AD1-E1 and AD1-E2, Delta 1.
   d) Drawings AD1-MT1, AD1-MS1 and AD1-MS2, Delta 1.
   e) Drawings AD1-SB1 through AD1-SB5, Delta 1.
   f) Drawings AD1-AV1 through AD1-AV14, Delta 1.

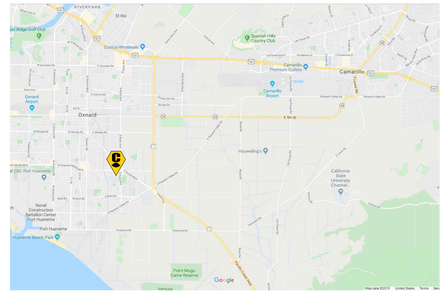
IV) New 11 x 17 Drawings Issued:
   a) Drawings AD1-C3, and AD1-C7, Delta 1.
   b) Drawings AD1-A3 through AD1-A7, Delta 1.

V) New 8-1/2 x 11 Drawings Issued:
   a) Drawings AD1-C1, and AD1-C5, Delta 1.

UNDERGROUND UTILITY MAP

WITHIN THE CITY OF EASTVALE, COUNTY OF RIVERSIDE, CALIFORNIA
PREPARED FOR:

OXNARD UNION HIGH SCHOOL DISTRICT



VICINITY MAP
NOT TO SCALE

UTILITY QUALITY LEVELS NOTES

INFORMATION PROVIDED FROM AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) CI/ASCE 38-02 MANUAL.

UTILITY QUALITY LEVEL A

PRECISE HORIZONTAL AND VERTICAL LOCATION OF UTILITIES OBTAINED BY THE ACTUAL EXPOSURE (OR VERIFICATION OF PREVIOUSLY EXPOSED AND SURVEYED UTILITIES) AND SUBSEQUENT MEASUREMENT OF SUBSURFACE UTILITIES, USUALLY AT A SPECIFIC POINT. MINIMALLY INTRUSIVE EXCAVATION EQUIPMENT IS TYPICALLY USED TO MINIMIZE THE POTENTIAL FOR UTILITY DAMAGE. A PRECISE HORIZONTAL AND VERTICAL LOCATION, AS WELL AS OTHER UTILITY ATTRIBUTES, IS SHOWN ON PLAN DOCUMENTS. ACCURACY IS TYPICALLY SET TO 15-MM VERTICAL AND TO APPLICABLE HORIZONTAL SURVEY AND MAPPING ACCURACY AS DEFINED OR EXPECTED BY THE PROJECT OWNER.

UTILITY QUALITY LEVEL B

INFORMATION OBTAINED THROUGH THE APPLICATION OF APPROPRIATE SURFACE GEOPHYSICAL METHODS TO DETERMINE THE EXISTENCE AND APPROXIMATE HORIZONTAL POSITION OF SUBSURFACE UTILITIES. QUALITY LEVEL B DATA SHOULD BE REPRODUCIBLE BY SURFACE GEOPHYSICS AT ANY POINT OF THEIR DEPICTION. THIS INFORMATION IS SURVEYED TO APPLICABLE TOLERANCES DEFINED BY THE PROJECT AND REDUCED ONTO PLAN DOCUMENTS.

UTILITY QUALITY LEVEL C

INFORMATION OBTAINED BY SURVEYING AND PLOTTING VISIBLE ABOVE-GROUND UTILITY FEATURES AND BY USING PROFESSIONAL JUDGMENT IN CORRELATING THIS INFORMATION TO QUALITY LEVEL D INFORMATION.

UTILITY QUALITY LEVEL D

INFORMATION DERIVED FROM EXISTING RECORDS OR ORAL RECOLLECTIONS.

UTILITY NOTES

1. FACILITIES (UTILITY LINES) SHALL BE LOCATED AND MARKED PRIOR TO EXCAVATION. CALL (800) 90-BELOW.
2. CONTRACTOR SHALL HAND-EXPOSE TO A POINT OF NO CONFLICT 24" ON EITHER SIDE OF THE UNDERGROUND FACILITY, REGARDLESS OF THE ESTIMATED DEPTH.
3. DEPTHS SHOWN ARE APPROXIMATE. ESTIMATED DEPTHS ARE FROM THE GROUND SURFACE TO THE CENTER OF THE FACILITY, INVERT OF WASTE LINES, OR TO THE FACILITY TRACER WIRE. DEPTH ESTIMATES SHOULD BE USED WITH CAUTION AND MAY VARY ALONG THE LENGTH OF THE FACILITY.
4. UTILITY BRACKETS ARE SHOWN TO DEMONSTRATE MULTIPLE LINES TRAVELING TOGETHER IN EITHER A DUCTBANK OR BUNDLE.
5. THE SCOPE OF THIS SURVEY DOES NOT INCLUDE FACILITY SIZE OR NUMBER OF CONDUIT IN MULTIPLE CONDUIT RUNS. IRRIGATION LINES ARE NOT INCLUDED IN THIS SURVEY.
6. THE BACKGROUND SITE PLAN USED IN PREPARING THIS MAP WAS PREPARED BY OTHERS AND PROVIDED TO C BELOW BY THE CLIENT. C BELOW MAKES NO REPRESENTATION AS TO THE ACCURACY OF THE PLAN.
7. IN THE EVENT THE INFORMATION SHOWN IN THIS PLAN VARIES FROM THE ACTUAL SITE CONDITIONS, C BELOW SHALL BE NOTIFIED WITHIN 24 HOURS AFTER DISCOVERY OF THE CONFLICT.

UNDERGROUND LINE LEGEND

UTILITY QUALITY LEVEL B:

ELECTRICAL	E
GAS	G
COMMUNICATION	C
WATER	W
SANITARY SEWER	SS
STORM DRAIN	SD
POSSIBLE LINE LOCATION, BASED ON GPR DETECTION	U
STREET LIGHT	SL
AIR	AIR
TRAFFIC SIGNAL	TS
FIRE WATER	FW
CHILLED WATER	CHW
DOMESTIC WATER	DW
HOT WATER	HW

UTILITY QUALITY LEVEL C:

ELECTRICAL	E
GAS	G
COMMUNICATION	C
WATER	W
SANITARY SEWER	SS
STORM DRAIN	SD
STREET LIGHT	SL
AIR	AIR
TRAFFIC SIGNAL	TS
FIRE WATER	FW
CHILLED WATER	CHW
DOMESTIC WATER	DW
HOT WATER	HW

UTILITY QUALITY LEVEL D:

ELECTRICAL	E
GAS	G
COMMUNICATION	C
WATER	W
SANITARY SEWER	SS
STORM DRAIN	SD
STREET LIGHT	SL
AIR	AIR
TRAFFIC SIGNAL	TS
FIRE WATER	FW
CHILLED WATER	CHW
DOMESTIC WATER	DW
HOT WATER	HW

KEY NOTES

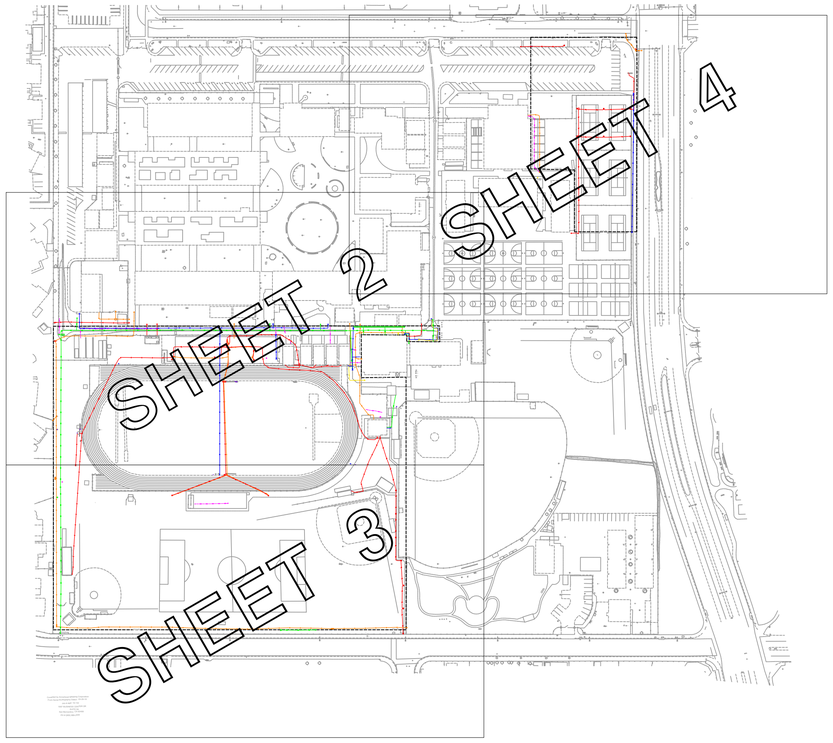
1. NON-CONDUCTIVE, UNABLE TO LOCATE PAST THIS POINT.
2. NO ACCESS, UNABLE TO LOCATE PAST THIS POINT.
3. CANNOT PUSH FURTHER PAST THIS POINT.
4. AT BUILDING
5. AT DROP
6. AT RISER
7. CANNOT OPEN, UNABLE TO LOCATE PAST THIS POINT.

ABBREVIATIONS

BFP	BACKFLOW PREVENTER
CAB	CABINET
CO	CLEAN OUT
COMM	COMMUNICATION
EGRN	ELECTRIC GROUND
ELEC	ELECTRIC
FDC	FIRE DEPARTMENT CONNECTION
GM	GAS METER
ICV	IRRIGATION CONTROL VALVE
MH	MANHOLE
PIV	POST INDICATOR VALVE
SD	STORM DRAIN
SS	SANITARY SEWER
TRN	TRANSFORMER
TS	TRAFFIC SIGNAL
UNK	UNKNOWN
VLT	VAULT
WTR	WATER
WVB	WATER VALVE BOX

LEGEND/SYMBOL

	BACKFLOW PREVENTER
	CLEAN OUT
1'-6"	DEPTH FROM SURFACE
	FIRE HYDRANT
	LIGHT POLE
	MANHOLE
	METER
	POWER POLE
	PULL BOX
	VALVE
	VAULT



KEY MAP
NOT TO SCALE

DRAWING SHEETS	
SHEET NO.	SHEET TITLE
1	COVER SHEET
2-4	UTILITY MAP

UTILITY DEPICTION

UNDERGROUND UTILITY DEPICTION SHOWN HEREON IS BASED ON LOCAL CONTROL AND/OR ON THE SMARTNET RTK NETWORK, UNLESS STATED OTHERWISE.

C BELOW SUBSURFACE IMAGING
14280 EUCLID AVE
CHINO, CA 91710
P: 888-902-3569
F: 909-606-6555
www.cbelow.com
GROUND PENETRATING RADAR (GPR)
UTILITY LOCATING
RADIOGRAPHY
POTHOLING
MAPPING

NOTES: The services provided by C Below, Inc. do not relieve the Client and/or property owner of the responsibility of having to comply with California Government Code §§4216-4216.9. It is expressly understood by the Client and/or owner that CBSI services are not a substitute for compliance with California Code §§4216-4216.9.

PROJECT:
PARTIAL UNDERGROUND UTILITY MAP FOR:
CHANNEL ISLAND HIGH SCHOOL
1400 RAIDERS WAY
OXNARD, CA 93033

CLIENT:
OXNARD UNIFIED SCHOOL DISTRICT
309 SOUTH K STREET
OXNARD, CA 93030

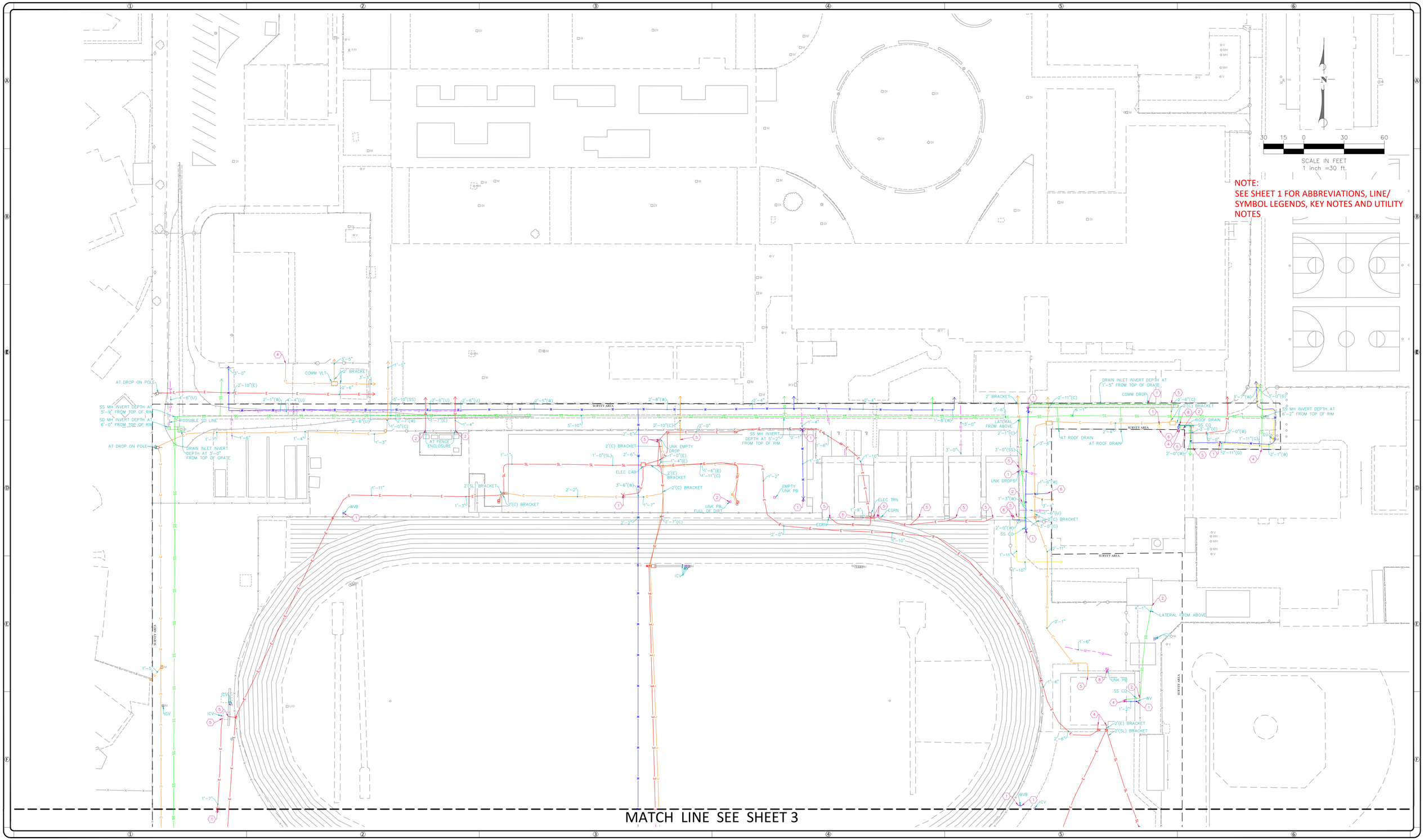
REVISIONS

NO	DATE	BY	DESCRIPTION

DATE LOCATED:	10/2019
DRAWN BY/DATE:	OG 11/01/2019
TECHNICIAN CHECK BY/DATE:	B. TRAHAN
QC CHECKED BY/DATE:	LB 11/08/2019
DRAWING NAME:	COVER SHEET
PROJECT NO:	19-0976

SHEET 1 OF 4
SCALE: N.T.S.

ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY



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REVISIONS

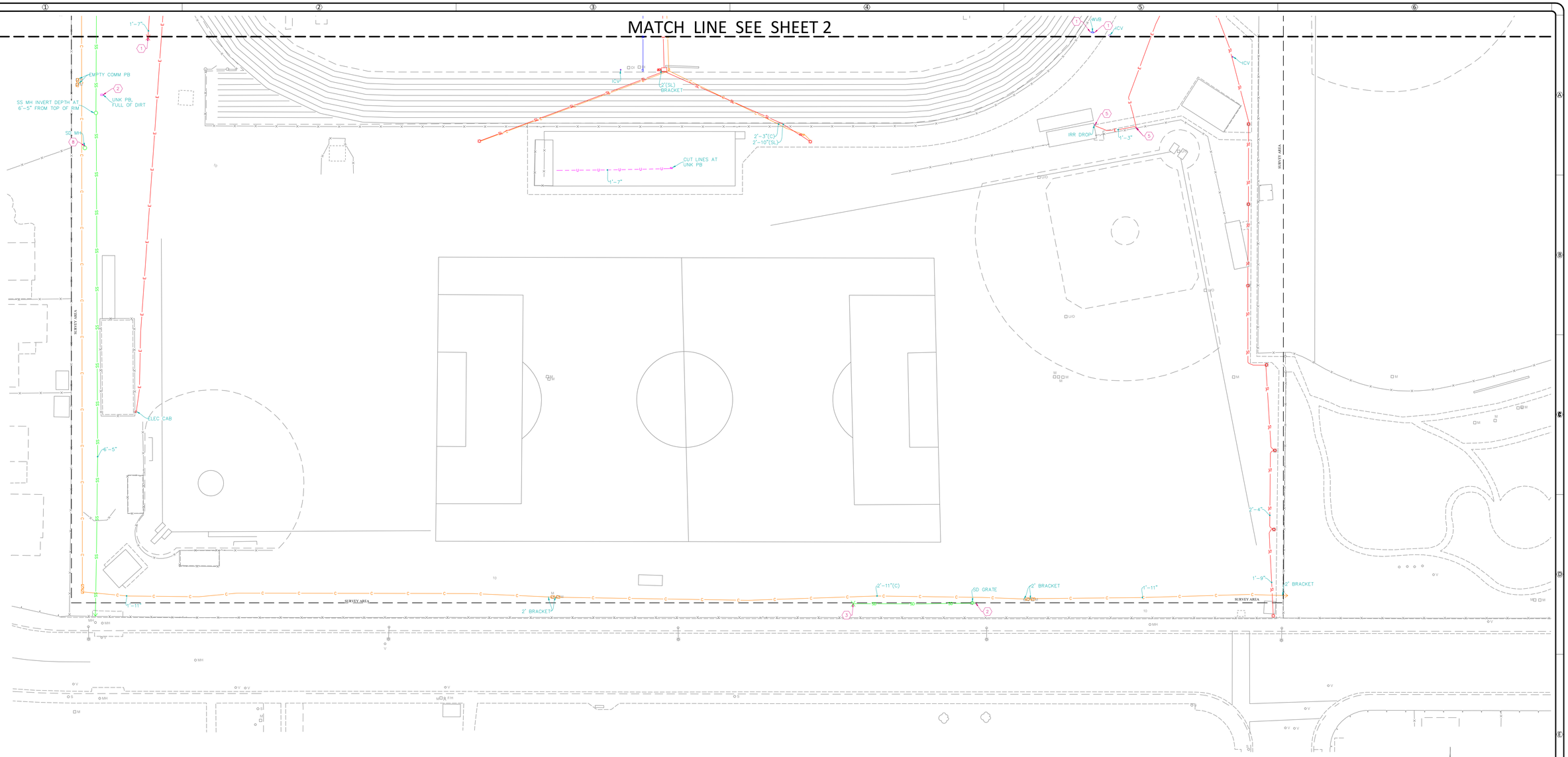
NO	DATE	BY	DESCRIPTION

DATE LOCATED: 10/2019
DRAWN BY/DATE: OG 11/01/2019
TECHNICIAN CHECK BY/DATE: B. TRAHAN
QC CHECKED BY/DATE: LB 11/08/2019
DRAWING NAME: UTILITY MAP
PROJECT NO: 19-0976
SCALE: 1" = 30'

SHEET 2 OF 4

ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY

MATCH LINE SEE SHEET 2



Compiled by Arrowhead Mapping Corporation
From Aerial Photography Dated : 03-29-18
Job # AMC 19-132
1887 BUSINESS CENTER DR
SUITE 5A
San Bernardino, CA 92408
PH # (909) 889-2420

NOTE:
SEE SHEET 1 FOR ABBREVIATIONS, LINE/ SYMBOL LEGENDS, KEY NOTES AND UTILITY NOTES

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CLIENT:
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REVISIONS

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TECHNICIAN CHECK BY/DATE: B. TRAHAN
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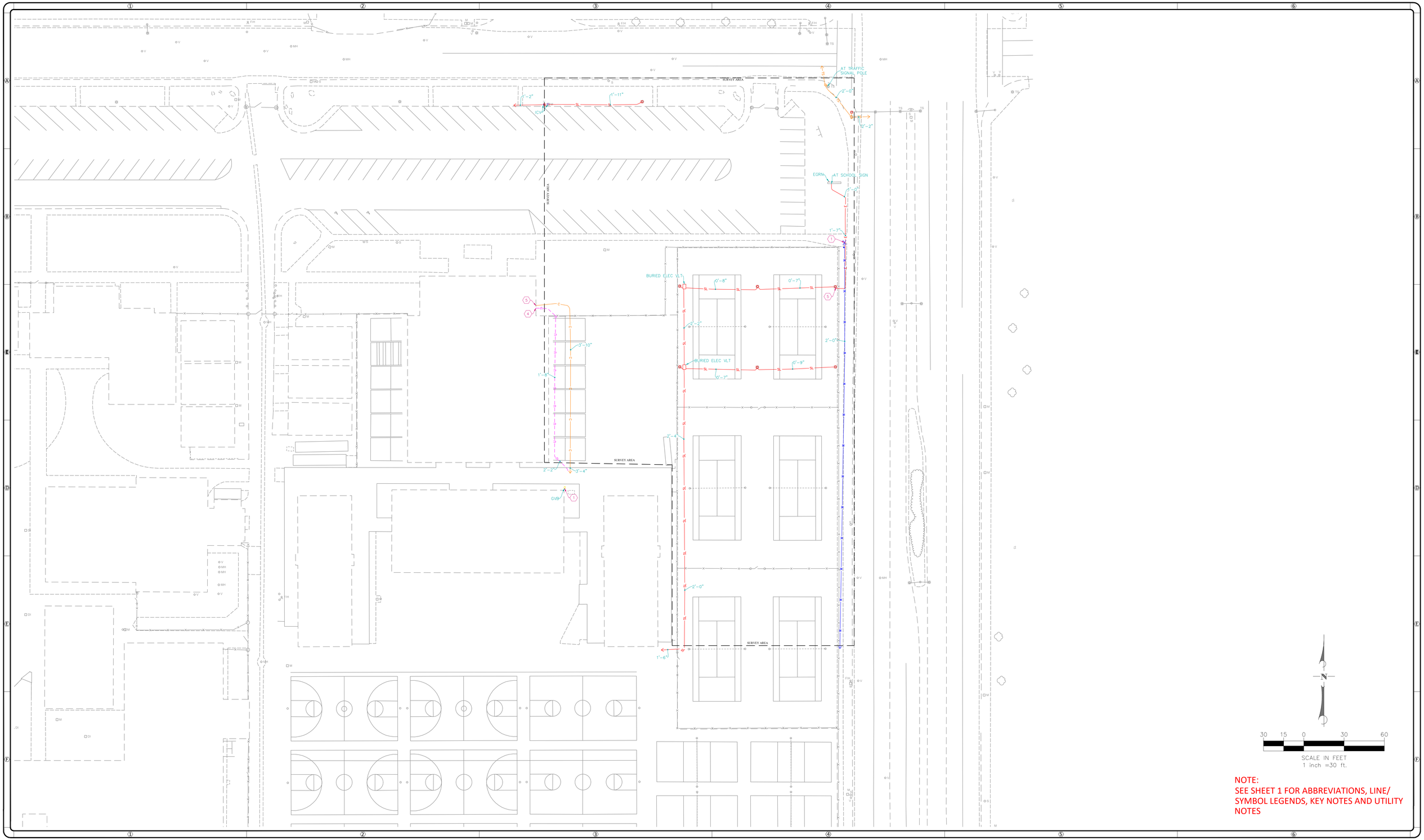
DRAWING NAME: UTILITY MAP
PROJECT NO: 19-0976
SCALE: 1" = 30'

ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY



NOTE:
SEE SHEET 1 FOR ABBREVIATIONS, LINE/ SYMBOL LEGENDS, KEY NOTES AND UTILITY NOTES

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REVISIONS

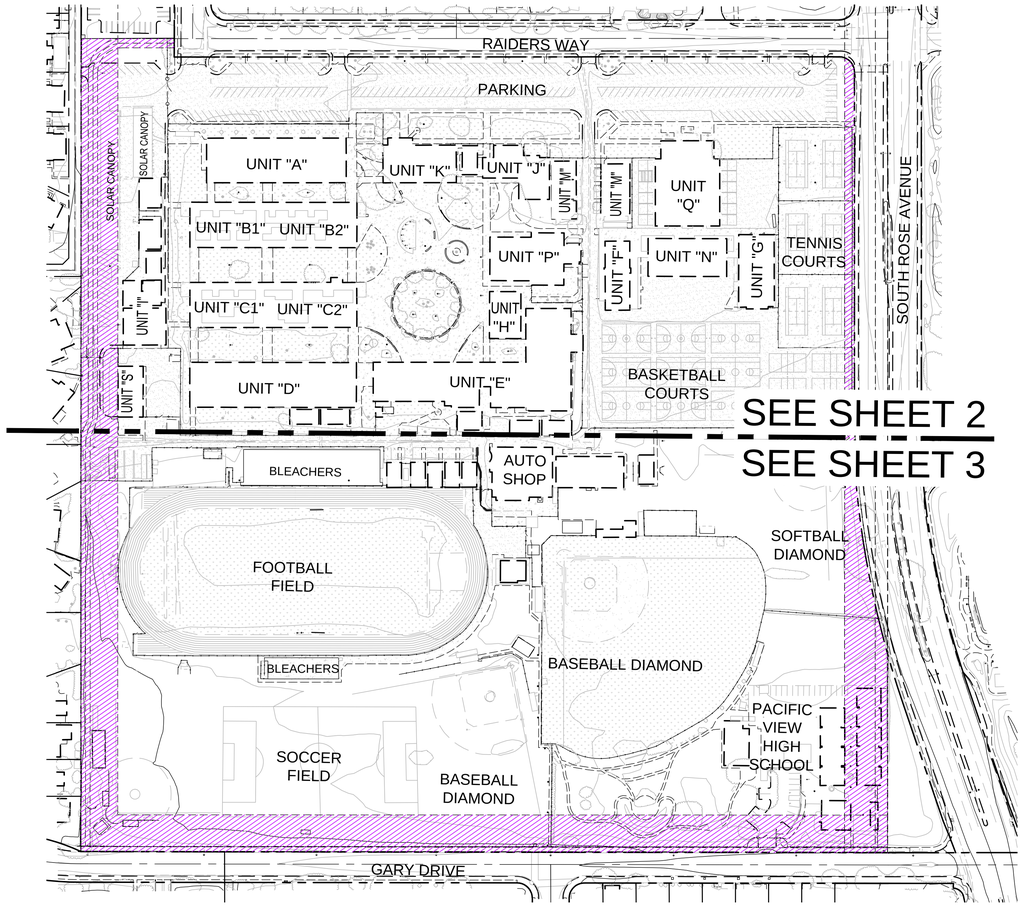
NO	DATE	BY	DESCRIPTION

DATE LOCATED: 10/2019
DRAWN BY/DATE: OG 11/01/2019
TECHNICIAN CHECK BY/DATE: B. TRAHAN
QC CHECKED BY/DATE: LB 11/08/2019
DRAWING NAME: UTILITY MAP
PROJECT NO: 19-0976
SCALE: 1" = 30'

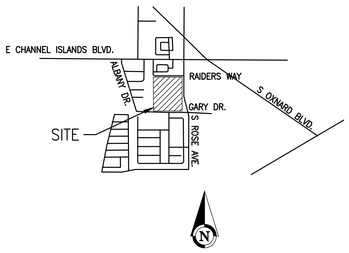
SHEET 4 OF 4

ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY

TOPOGRAPHIC SITEPLAN
FOR
CHANNEL ISLANDS HIGH SCHOOL
OXNARD, CA



INDEX MAP
1"=100'



VICINITY MAP
NTS

LEGAL DESCRIPTION (FROM TITLE REPORT)

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF VENTURA, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

THAT PORTION OF SUBDIVISION 44 OF THE RANCHO EL RIO DE SANTA CLARA O' LA COLONIA, IN THE CITY OF OXNARD, COUNTY OF VENTURA, STATE OF CALIFORNIA, AS PER PARTITION MAP FILED IN THE OFFICE OF THE COUNTY CLERK OF SAID COUNTY IN THE ACTION ENTITLED "THOMAS A. SCOTT ET AL., PLFFS. VS. RAFAEL GONZALES ET AL., DEFTS.", DESCRIBED AS FOLLOWS:

BEGINNING AT THE SOUTHEAST CORNER OF THE LAND CONVEYED TO FRANK GOODE BY DEED RECORDED IN BOOK 106, PAGE 524 OF DEEDS; THENCE ALONG THE EAST LINE OF SAID LAND OF GOODE.

1ST: NORTH 1894.30 FEET TO A 6-INCH PIPE FILLED WITH CONCRETE IN THE SOUTH LINE OF DEMPSEY ROAD, 50.00 FEET WIDE; THENCE ALONG THE SOUTH LINE OF SAID ROAD,

2ND: NORTH 89°58' EAST 1315.38 FEET TO A 4" X 4" REDWOOD STAKE MARKET F.P.3 AT THE NORTHWEST CORNER OF THE LAND DESCRIBED IN THE DEED TO FRANK PETIT RECORDED IN BOOK 17, PAGE 167 OF DEEDS; THENCE ALONG THE WEST LINE OF SAID LAND OF PETIT;

3RD: SOUTH 1895.62 FEET TO THE SOUTHWEST CORNER THEREOF, SAID POINT BEING THE SOUTHEAST CORER OF THE LAND CONVEYED TO FREDERICK KRUMENBERG AND WIFE, BY DEED RECORDED IN BOOK 9, PAGE 331 OF OFFICIAL RECORDS; THENCE ALONG THE SOUTH LINE OF THE LAND LAST REFERRED TO,

4TH: NORTH 89°59' WEST 1315.38 FEET TO THE POINT OF BEGINNING.

EXCEPT THEREFROM THE NORTHERLY 17.187 ACRES, THE SOUTHERLY LINE OF SAID 17.187 ACRES BEING PARALLEL TO THE SOUTHERLY LINE OF DEMPSEY ROAD

ALSO EXCEPT ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES AND MINERALS, BUT WITHOUT ANY RIGHT TO ENTER UPON THE SURFACE OR SUBSURFACE WITHIN FIVE HUNDRED (500) FEET BELOW THE SURFACE.

APN: 221-0-040-235

TOPOGRAPHY

EXISTING SITE TOPOGRAPHY HAS BEEN GENERATED FROM FROM AN AERIAL SURVEY COMPILED FROM PHOTOGRAPHY BY ARROWHEAD MAPPING CORPORATION DATED MARCH 29, 2019 AND FIELD TOPOGRAPHIC SURVEY PERFORMED BY ARMSTRONG & BROOKS CONSULTING ENGINEERS, INC. DATED MAY 9, 2019.

BENCHMARK

CITY OF OXNARD GARY 2000

ELEVATION: 9.732 (NAVD 88)

DESCRIPTION: BRASS DISK STAMPED "GARY 2000"

LOCATION: BRASS DISK STAMPED "GARY 2000" SET ON TOP OF CURB AT THE SOUTHWEST CORNER OF THE INTERSECTION OF ROSE AVENUE AND GARY DRIVE. THE DISK IS 5.5 FEET SOUTH OF THE SOUTHERLY CURB RETURN (ECR).

BASIS OF BEARING

N89°55'34"W BEING THE CENTERLINE OF GARY DRIVE PER MAP RECORDED IN BOOK 78, PAGES 34 THROUGH 37, OF MISCELLANEOUS RECORDS, IN THE OFFICE OF THE COUNTY RECORDER OF VENTURA COUNTY, STATE OF CALIFORNIA.

EXISTING UTILITIES NOTE

THE EXISTENCE AND LOCATION OF ANY UNDERGROUND UTILITY PIPES, CONDUITS, OR STRUCTURES SHOWN ON THESE PLANS WERE OBTAINED BY A SEARCH OF AVAILABLE RECORDS. IN ORDER TO TAKE PRECAUTIONARY MEASURES TO PROTECT ALL UTILITY LINES SHOWN AND NOT SHOWN ON THESE DRAWINGS, IT IS RECOMMENDED TO CALL IN A LOCATION REQUEST TO UNDERGROUND SERVICE ALERT (USA) PH. 811, TWO (2) WORKING DAYS PRIOR TO ANY DIGGING.

SITE ADDRESS

1400 RAIDERS WAY
OXNARD, CA 93033

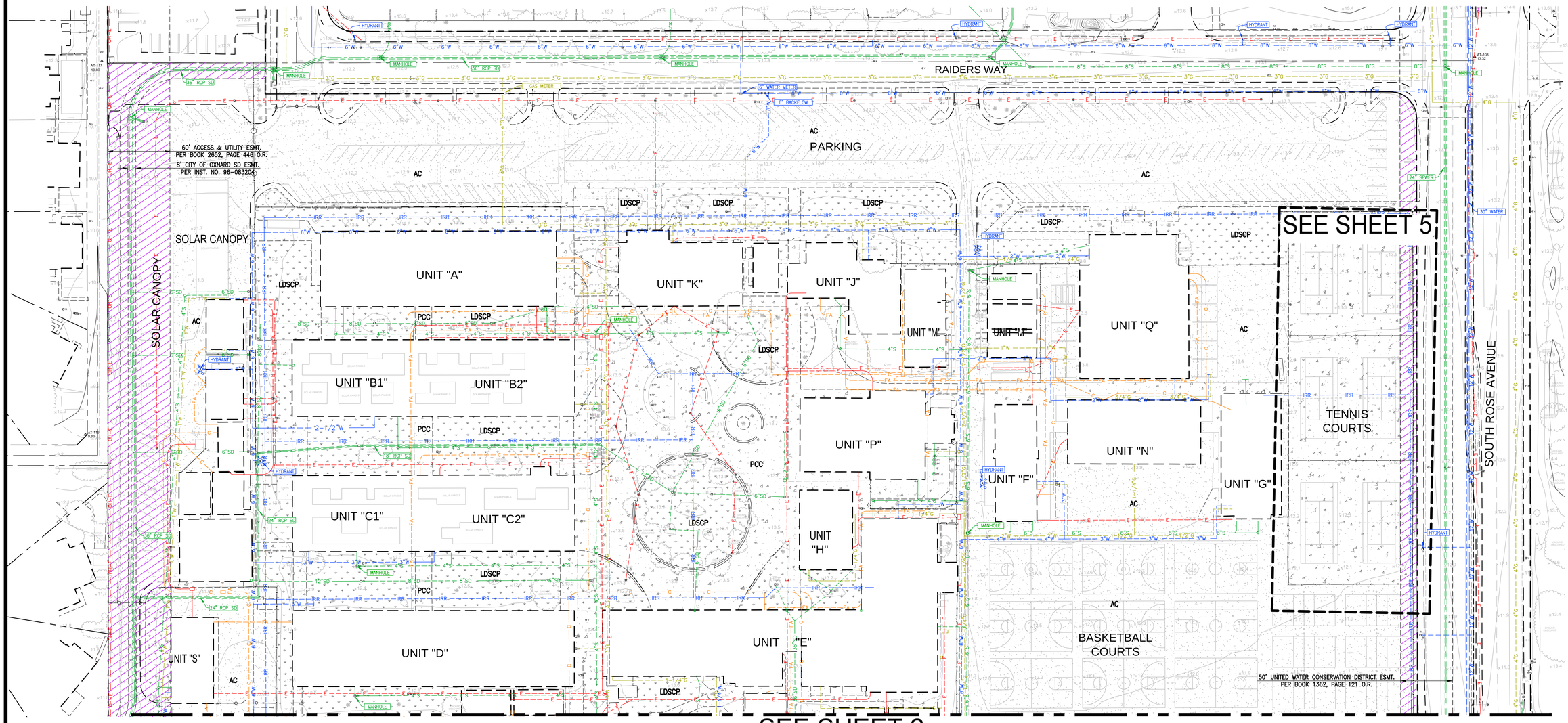
LEGEND

E	EXISTING ELECTRICAL
C	EXISTING COMMUNICATION
G	EXISTING GAS (SIZE PER PLAN)
S	EXISTING SEWER (<12"-SIZE PER PLAN)
S	EXISTING SEWER (>12"-SIZE PER PLAN)
W	EXISTING WATER (<12"-SIZE PER PLAN)
W	EXISTING WATER (>12"-SIZE PER PLAN)
FW	EXISTING FIRE WATER (SIZE PER PLAN)
SD	EXISTING STORM DRAIN (<12"-SIZE PER PLAN)
SD	EXISTING STORM DRAIN (>12"-SIZE PER PLAN)
X	EXISTING C.L. FENCE
	EXISTING W.I. FENCE
	EASEMENT (TYPE PER PLAN)
AC	ASPHALT CONCRETE
AP	ANGLE POINT
AT	AERIAL TARGET
BC	BEGIN CURVE
BEG	BEGINNING
BLD/BLDG.	BUILDING
BM	BENCHMARK
BW	BACK OF WALK
BX	BOTTOM X
CHSL	CHISEL
CL	CENTER LINE
CONC	CONCRETE
COR	CORNER
CP	CONTROL POINT
DIA	DIAMETER
EC	END CURVE
EG	EDGE OF GUTTER
ELECT	ELECTRIC
EP	EDGE OF PAVEMENT
FF	FINISH FLOOR
FG	FINISH GRADE
FL	FLOWLINE
FNC	FENCE
FS	FINISH SURFACE
GI	GRATE INLET
GT	GATE
ICB	IRRIGATION CONTROL BOX
IN	INCH
INV	INVERT
IRR	IRRIGATION
MON	MONUMENT
N/E	NORTH EAST
N/W	NORTH WEST
PED	PEDESTAL
PLL	PARALLEL
POL	POINT ON LINE
S/E	SOUTH EAST
S/W	SOUTH WEST
SD	STORM DRAIN
SL	STREET LIGHT
SN	SIGN
SW	SIDEWALK
TC	TOP OF CURB
TR	TREE
VZN	VERIZON
TX	TOP X
WM	WATER METER
WV	WATER VALVE
	PCC
	LANDSCAPED AREA
	AC

TOPOGRAPHIC SITEPLAN
FOR
CHANNEL ISLANDS HIGH SCHOOL
OXNARD, CA

SHEET 1
OF 6

PREPARED BY:
Armstrong & Brooks Consulting Engineers, Inc.
Civil Engineering · Water Resources · Surveying
1350 E. Chase Drive, Corona, CA 92881
Mail: P.O. Box 78088, Corona, CA 92887
Ph. (951) 372-8400, Fax (951) 372-8430



TOPOGRAPHIC SITEPLAN

FOR

CHANNEL ISLANDS HIGH SCHOOL

OXNARD, CA

SHEET 2

OF 6

SCALE 1" = 40'

PREPARED BY:

Armstrong & Brooks Consulting Engineers, Inc.

Civil Engineering · Water Resources · Surveying

1350 E. Chase Drive. Corona, CA 92881

Mail: P.O. Box 78088, Corona, CA 92887

Ph. (951) 372-8400, Fax (951) 372-8430

ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY


SEE SHEET 2
SEE SHEET 4
SEE SHEET 5
60' ACCESS & UTILITY ESMT. PER BOOK 2652, PAGE 446 O.R.
8' CITY OF OXNARD SD ESMT. PER INST. NO. 96-083204
BLEACHERS
AUTO SHOP
PCC
PCC
AC
AC
FOOTBALL FIELD
SOFTBALL DIAMOND
BASEBALL DIAMOND
50' UNITED WATER CONSERVATION DISTRICT ESMT. PER BOOK 1362, PAGE 121 O.R.
20' ACCESS & UTILITY ESMT. PER BOOK 2652, PAGE 446 O.R.
PCC
BLEACHERS
BASEBALL DIAMOND
PACIFIC VIEW HIGH SCHOOL
SOCCER FIELD
60' ACCESS & UTILITY ESMT. PER BOOK 2652, PAGE 446 O.R.
SOUTH ROSE AVENUE
GARY DRIVE
8' CITY OF OXNARD ROAD ESMT. PER BOOK 5306, PAGE 827 O.R.

40 0 40 80

SCALE 1" = 40'

TOPOGRAPHIC SITEPLAN FOR CHANNEL ISLANDS HIGH SCHOOL OXNARD, CA	SHEET 3 OF 6

PREPARED BY:

Armstrong & Brooks Consulting Engineers, Inc.
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ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY

DETAIL NO. 4
SEE SHEET 6

DETAIL NO. 1
SEE SHEET 6

BLEACHERS

FOOTBALL FIELD

BLEACHERS

BASEBALL DIAMOND

UNIT "U"

60' ACCESS & UTILITY ESMT.
PER BOOK 2652, PAGE 446 O.R.
8' CITY OF OXNARD SD ESMT.
PER INST. NO. 96-083204

SCALE 1" = 20'

TOPOGRAPHIC SITEPLAN

FOR

CHANNEL ISLANDS HIGH SCHOOL
OXNARD, CA

SHEET 4
OF 6

PREPARED BY:
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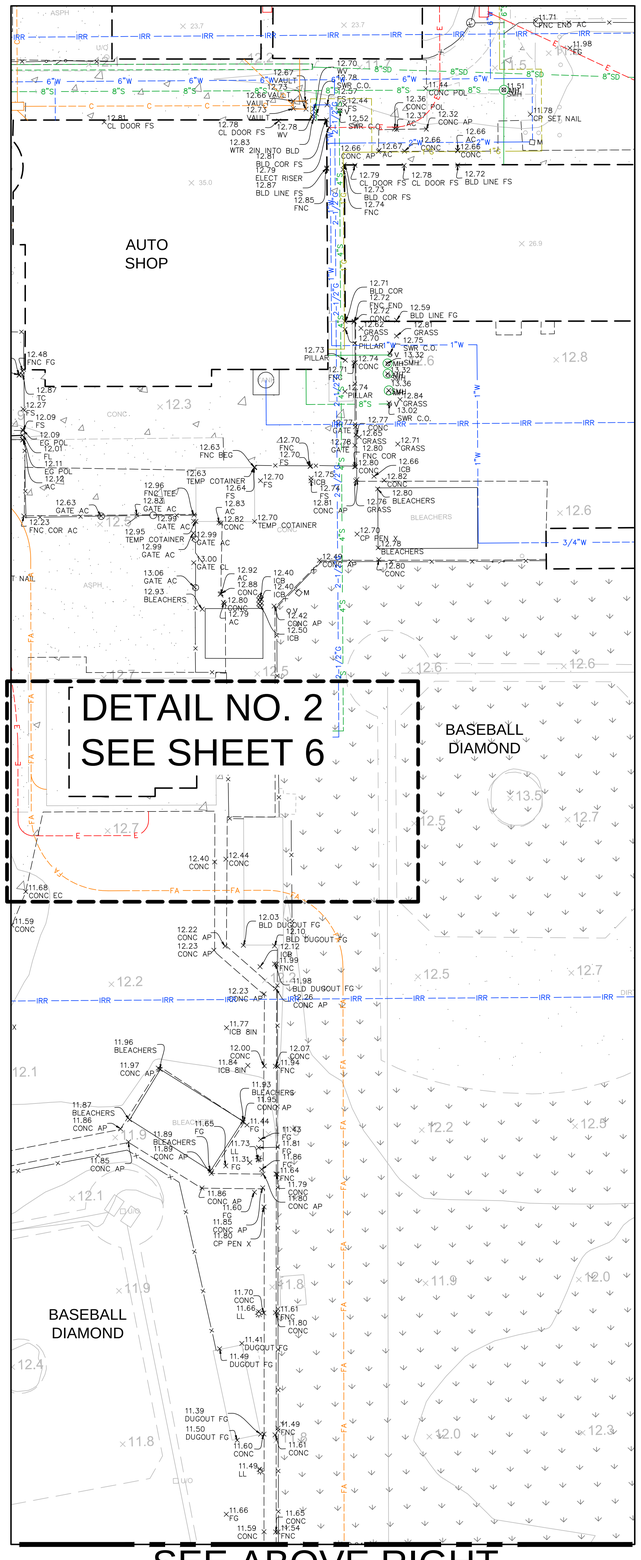
ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY



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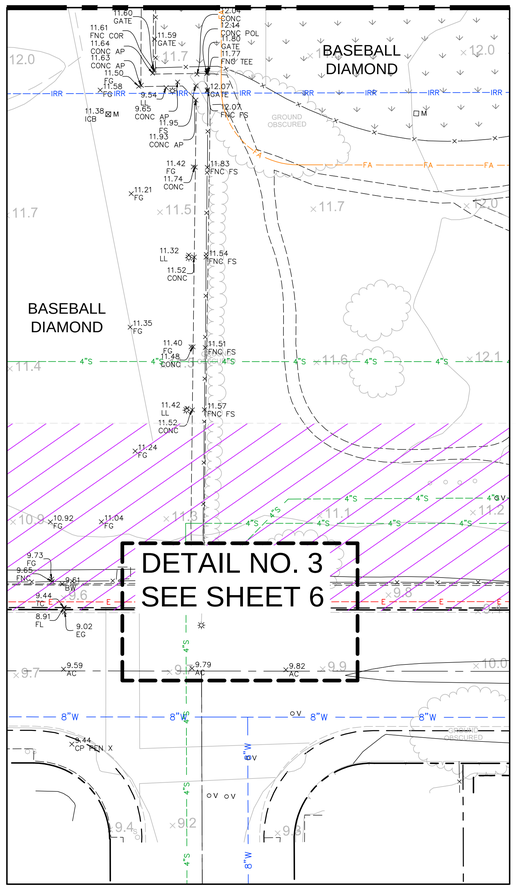

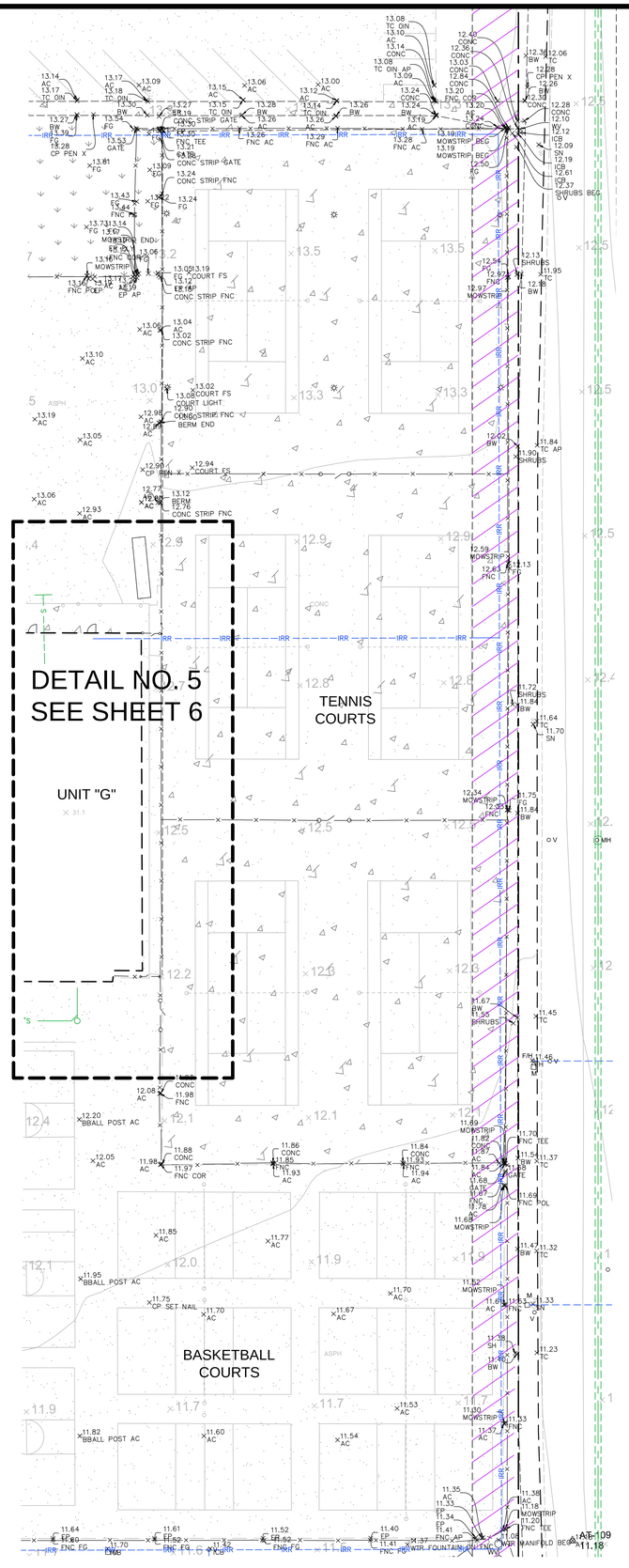

SCALE 1" = 20'

TOPOGRAPHIC SITEPLAN

FOR

CHANNEL ISLANDS HIGH SCHOOL
OXNARD, CA

SHEET 5
OF 6

PREPARED BY:
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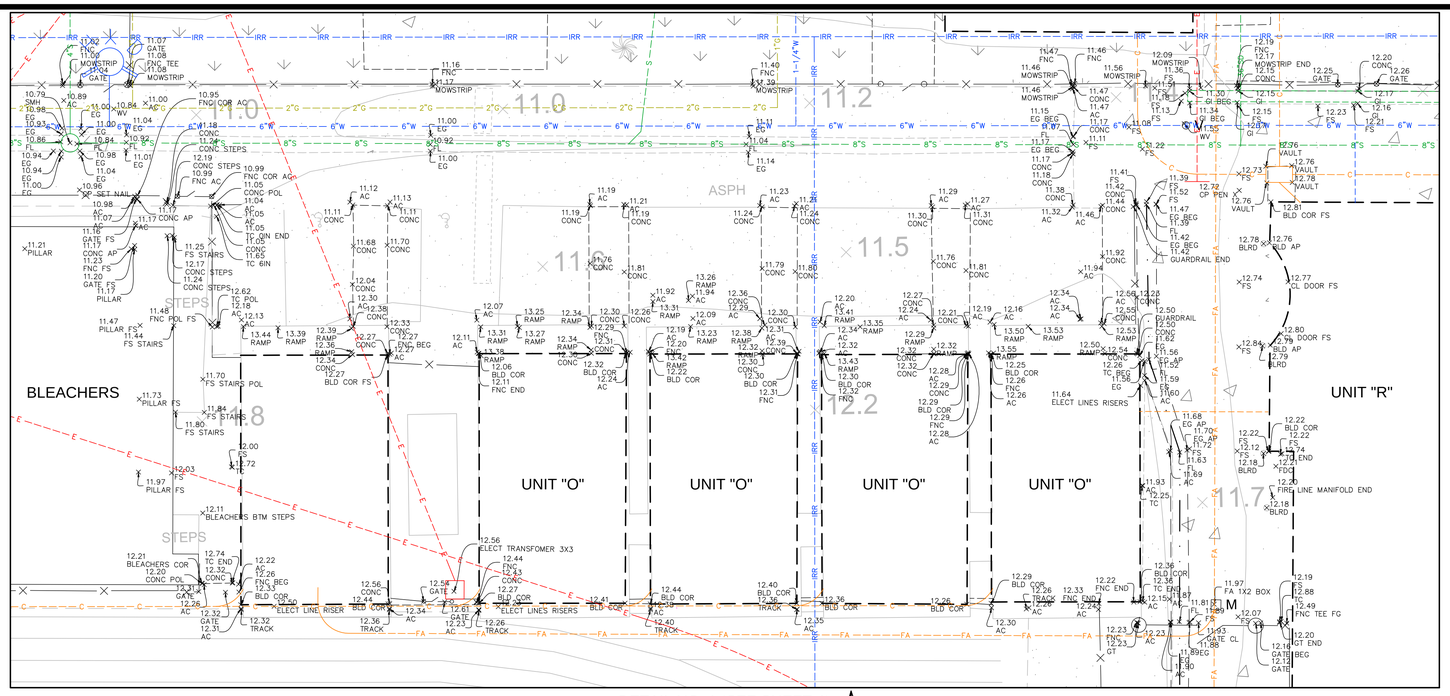
ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY



DETAIL NO. 1 (SEE SHEET 4)
1"=10'

DETAIL NO. 2 (SEE SHEET 5)
1"=10'

DETAIL NO. 3 (SEE SHEET 5)
1"=10'

DETAIL NO. 5 (SEE SHEET 5)
1"=10'

DETAIL NO. 4 (SEE SHEET 5)
1"=10'

TOPOGRAPHIC SITEPLAN
FOR
CHANNEL ISLANDS HIGH SCHOOL
OXNARD, CA

SHEET
6
OF
6

PREPARED BY:
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ISSUED WITH ADDENDUM 1 - FOR REFERENCE ONLY

SECTION 00 01 10

TABLE OF CONTENTS

END OF SECTION

SECTION 11 68 43.15
VIDEO DISPLAY SCOREBOARD

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Sports Video Scoreboard

B. Control System.

C. Identification and Sponsor Signage.

D. Service and support.

1.02 RELATED SECTIONS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 30 00 - Cast-in-Place Concrete: Footings and placement.

D. Section 05 12 00 - Structural Steel Framing.

E. Section 05 50 00 - Metal Fabrications.

F. Section 06 10 00 - Rough Carpentry.

G. Section 09 96 00 - High-Performance Coatings.

H. Divsion 26 - Electrical: Electrical conduits, boxes, wiring, devices, and connections.

I. Divsion 27 - Communications: Cables, devices, and connections other than supplied by signage supplier.

1.03 REFERENCE STANDARDS

A. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

C. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2014, with Editorial Revision (2017).

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2014.

1. Use 2008 as indicated in 2016 CBC Ch. 35 Referenced Standards.

E. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2018.

F. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2018.

G. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011 (Reapproved 2015).

H. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2018.

I. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2018.

J. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2015, with Errata (2016).

K. SSPC-PA 1 - Shop, Field, and Maintenance Painting of Steel; 2016.

L. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer; 1999 (Ed. 2004).

M. UL (DIR) - Online Certifications Directory; Current Edition.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Operation and maintenance data.
5. Product data for scoreboards, controls, displays and accessories.

C. Shop Drawings: Submit plan, section, elevation, and perspective view details as necessary to depict proper field fabrication and installation, and provide details on connections, terminations and joints.

D. Finish Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors.

E. Design Data: Supply DSA Pre-Approved Structural Plans and Calculations (PC Plans) designed with both pier and spread footings and stamped by a Licensed California Structural Engineer ready for DSA over the counter submittal and review.

F. Maintenance Materials: Furnish the following for District's use in maintenance of project:

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Spare Parts
   a. Supply a parts inventory containing no less than of 3% spare parts for LED modules, cables and power supplies. Note: All LED modules must come from the same BIN Code as the equipment supplied.
   b. Manufacturer of the LED display components shall continue to make all parts necessary for the continued functioning of the system for a minimum of ten (10) years after acceptance of this project.

1.05 QUALITY ASSURANCE

A. Confirm all specifications with the factory prior to order.

B. Single Source Responsibility: Single supplier shall provide all components required to install the products specified in this section.

C. Manufacturers Qualifications: Company specializing in manufacturing electronic scoreboards and video display systems with 10 years minimum successful experience and maintaining a factory authorized service office/warehouse within 20 miles of the stadium.

D. Installer Qualifications: Specializing in installing and adjusting equipment with a minimum of five years of DSA experience approved by the manufacturer. Contractor shall provide at least one person who will act in the capacity as the Project Construction Manager and who shall be present at all times during execution of this portion of the Work, who shall be thoroughly familiar with the type of materials being installed and the proper materials and methods.

E. Welders: AWS certified.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Physical inspection of items required at time of delivery; any shipping damages must be reported at delivery prior to storage.

C. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 PROJECT CONDITIONS

A. Work shall commence only after associated trade work has been sufficiently completed and will not interfere with the installation of the equipment specified in this section.

B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

C. Do not install when threatening weather conditions exist.

D. Owner shall furnish soil tests as necessary to determine suitability for installation.

E. Owner shall clearly mark all underground utilities and notify the appropriate parties prior to work commencement.

1.08 WARRANTY

A. Provide manufacturer's standard warranty affirming that products specified in this section shall be free from defects in material and workmanship under normal use provided they are installed in accordance with all current application requirements.

1. Duration and scope: Five (5) years.

B. Provide installer warranty providing assurances that all installation work be free from defects in installation materials, processes and workmanship.

1. Duration and scope: One (1) years.

C. Provide on-site service warranty covering parts and labor.

1. Duration and scope: One (5) years.

D. Service Support Requirement:

1. Include a manufacturer’s warranty including 5 years factory-exchange and Help Desk support.

2. Include one on-site project manager at all times during installation and 1 on-site supervisor for final hook-ups.

3. Include five (5) years on-site service.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design: Nevco Sports; Pre-Approved Model SA PC-90 02-116492: www.nevco.com; or approved equal.

1. Local Sales Representation and Service Provider: CSM Sales LLC and ABV Scoreboard Services Inc., (805) 389-3403.

B. Substitutions: See Section 01 60 00 - Product Requirements.

1. The Bidder shall provide a complete, workable and operational system including all labor, equipment, tools, materials, engineering, supervision, licenses and bonds to design manufacture and install fully functional scoring system.

2.02 EQUIPMENT

A. Contractor is responsible for:

1. Demolition and disposal of the existing scoreboard, provision and installation of all structural steel required for accommodation of the new system.
2. Providing all display equipment shown on noted drawings and all architectural treatment required to give the entire video scoreboard the general appearance as shown on drawings.
3. Assembly and mounting of all display components onto Bidder supplied structure. The Bidder will provide all for data distribution and final terminations for both electrical and data.
4. Provide for all data distribution and final terminations for both electrical and data.

2.03 PERFORMANCE REQUIREMENTS

A. Comply with or exceed CBC 2016 115 MPH exposure C requirements and ASCE 7.

B. Scoreboard, display and other electrical components shall be certified for use in the United States and Canada to the UL (DIR) standards.

2.04 SPORTS VIDEO SCOREBOARD

A. Wide-angle, Full-Color Sports Displays:

1. Pixel resolution: 16mm physical pixel resolution.
   a. No less than 270 pixels in height and 420 pixels in length.
2. Minimum Active Display Area: 22.05 feet wide by 14.62 feet tall.
3. Color capability: Minimum 550 billion colors.
4. Frame speed: At or greater than 60 frames per second.
5. Display intensity: Adjustable to 32 levels).
6. Minimum brightness: 7000 nits.
7. Operating temperature: -40 degrees F – 150 degrees F
8. Viewing angle: 140 Horizontal, 60 Vertical

9. Contrast ratio: Minimum 2000: 1
10. Refresh rate: Greater than 2400+Hz.
11. LED life expectancy: Minimum of 100,000 hours.
12. Provide front service accessibility for all components.
13. Provide redundant power and signal capability.
14. Display face: Low-glare features to optimize display contrast.

2.05 CONTROL ROOM EQUIPMENT

A. Model HS-1300 Mobile Studio:

1. 6-input mobile studio with built-in HD switcher that accepts choices of input boards for HDMI and HD-SDI.
    a. Includes built-in 17.3" monitor.
    b. 2 each remote control PTZ cameras.
    c. Instant Replay with dual monitors.
    d. Live streaming and recording.
    e. Built-in transitions and animations.
    f. Picture-In-Picture capability.
    g. Hard plastic protective mobile cases.
    h. All equipment to be portable and light enough to be hand-carried in and out on game day.

2.06 DISPLAY DIRECTOR CONTROL SOFTWARE

A. WINDOWS® based video control software and laptop PC for creating and modifying messages, animations, photos, pre-recorded video and live content on large full color video displays. Nevco Display Director.

1. Functionality:
    a. Animate at up to 60 frames per second.
    b. Supports most standard computer graphics file types (.bmp, .jpeg, .gif, .avi, mpg, mov, etc).
    c. Message scheduling.
    d. Include ability to control, prioritize and change graphic layouts and messages on multiple signs while allowing the user to toggle between tasks.
    e. Include ability to allow broadcasting of live or recorded video feeds in real time.
    f. Split displays into multiple zones for simultaneous messaging and scoring.
    g. Sports templates for Football, Soccer, Track and Lacrosse.
    h. Includes FinishLynx track timing interface.
    i. Includes 15 hours of custom animation creative services provided by Hype Creative Services.
    j. Includes standard library of animations and graphics.

2.07 SCORING CONSOLE

A. Nevco MPCW-7 Controller:

1. Capable of scoring multiple sports including football, soccer and lacrosse.
2. Include remote hand switch for game clock control.
3. Integrates with Display Director Software and PC.

2.08 IDENTIFICATION SIGNAGE

A. Field Identification Signage.
   1. Sign Type: Internally Illuminated.
      a. Internally illuminated with LED lighting.
   2. Dimensions: Not to exceed 25.05 feet wide by 2 feet tall.
   3. Qty: 1.

B. Architectural Elements and Decorative Work.
   1. Provide decorative arched truss sign mounted on top of the scoring system as shown on drawings. Dimensions shall be up to 4' high total and 22.05 feet wide and include internally illuminated center mount mascot logo.

2.09 MATERIALS

A. Column Structural Shapes: ASTM A992/A992M, 50 ksi.

B. Structural steel components: in accordance with ASTM A36/A36M or ASTM A572/A572M.

C. Steel Tubing (Bracing): ASTM A500/A500M, Grade B cold-formed structural tubing.
   1. Cover all tube ends with light gauge end caps.

D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black and hot-dip galvanized finish, as indicated.

E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
   1. Weld steel using E70XX electrodes. Prime and paint all welds following installation.
   2. Welds: Continuous 1/4 inch fillet welds; unless otherwise specified in the drawings, .

F. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.

G. Bolts, Nuts, and Washers: ASTM A307, Grade A, galvanized to ASTM A153/A153M where connecting galvanized components; minimum.

H. Anchor Bolts: ASTM F1554, Grade 105.

I. Formwork: Comply with requirements of Section 03 10 00.

J. Reinforcement Materials: Comply with requirements of Section 03 20 00.

K. Concrete: Type specified in Section 03 30 00.

L. Non-Shrink Cementitious Grout: See Section 03 30 00 - Cast-in-Place Concrete.

M. All new steel shall be primed and painted with a color selected by the Architect.

N. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
   1. Comply with SSPC-PA 1. Coordinate with requirements specified in Section 09 96 00 - High-Performance Coatings .

a. Coordinate primer with finish paint and coating, as applicable, to provide sound foundation for field-applied topcoats despite prolonged exposure during construction.
    1) Shop primer for ferrous metal at exposed exterior locations: Tnemec 90E-92, ethyl silicate zinc primer, or equal.
b. Apply primer immediately following surface preparation.
c. Spray apply shop prime without holidays, drips, runs.
d. Provide two coats where product is not to be finish painted or is to be concealed in completed work.
e. Apply an additional coat to corners, welds, edges, and fasteners.
f. Allow primer to dry and cure before handling.

2.10 EXTRA MATERIALS

A. Provide other materials as necessary for complete installation, as recommended by manufacturer and selected by Contractor, subject to approval of Architect.

B. Contractor is responsible for providing all hardware, sealants, welding materials and other secondary installation products required for installation. Architect shall approve each product before or during the pre-installation conference.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Examine all soils and footings to ensure solid and secure footings.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Install concrete footings at all locations noted on the drawings.

C. No chlorides shall be added to the concrete mixture. Grade surrounding landscape prior to installation of scoreboards.

D. Prepare surfaces using the methods recommended to achieve the best result based on project conditions.

3.03 INSTALLATION

A. Follow manufacturer's current application requirements for installation under conditions specific to the project.

B. Install all structural steel components in accordance with manufacturers application instructions where specified on the drawings.

C. Install all electrical equipment in accordance with all federal, state and local building codes.

D. Where manufacturer's requirements and building codes are in direct conflict, the more restrictive method of application shall prevail.

3.04 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 26 56 68
EXTERIOR ATHLETIC LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Lighting System with LED Light Source

B. Work covered by this section of the specifications shall conform to the contract documents, engineering plans as well as state and local codes.

C. The purpose of these specifications is to define the lighting system performance and design standards for Channel Island High School Football Retrofit in Oxnard, CA using an LED Lighting source. The manufacturer / contractor shall supply lighting equipment to meet or exceed the standards set forth in these specifications.

D. The sports lighting will be for the following venues:

1. Football/Soccer Field
2. Track
3. North/South Seating
4. Path of Egress

E. The primary goals of this sports lighting project are:

1. Guaranteed Light Levels: Selection of appropriate light levels impact the safety of the players and the enjoyment of spectators. Therefore light levels are guaranteed to not drop below specified target values for a period of 10 years.
2. Environmental Light Control: It is the primary goal of this project to minimize spill light to adjoining properties and glare to the players, spectators and neighbors.
3. Cost of Ownership: In order to reduce the operating budget, the preferred lighting system shall be energy efficient and cost effective to operate. All maintenance costs shall be eliminated for the duration of the warranty.
4. Control and Monitoring: To allow for optimized use of labor resources and avoid unneeded operation of the facility, customer requires a remote on/off control system for the lighting system. Fields should be proactively monitored to detect luminaire outages over a 10-year life cycle. All communication and monitoring costs for 10-year period shall be included in the bid.

1.02 RELATED REQUIREMENTS

A. Section 02 41 00 - Demolition: Selective demolition, site demolition, structure removal.

B. Division 26 - Electrical: Wiring and control devices.

1.03 REFERENCE STANDARDS

A. AASHTO LTS - Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signal; 2013 (Revised 2019).

B. ASCE 7-10 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; 2010.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2017.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2016a.

E. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).

F. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; 2015, with Errata (2017).

G. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; 2008.

H. IES LM-63 - IESNA Standard File Format for Electronic Transfer of Photometric Data and Related Information; 2002 (Reaffirmed 2008).

I. IES RP-6 - Recommended Practice for Sports and Recreational Area Lighting; 2015, with Errata (2017).

J. IESNA LM-5 - Photometric Measurements of Area and Sports Lighting Installations; 2004 (Reaffirmed 2007).

K. NFPA 780 - Standard for the Installation of Lightning Protection Systems; 2017.

L. UL 96 - Lightning Protection Components; Current Edition, Including All Revisions.

M. UL 96A - Standard for Installation Requirements for Lightning Protection Systems; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of athletic lighting with size, location and installation of service utilities.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.

1. LED Luminaires:
    a. Include estimated useful life, calculated based on IES LM-80 test data.
    b. Include IES LM-79 test report upon request.
2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IES LM-63 standard format upon request.

3. Lamps: Include rated life and initial and mean lumen output.
4. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.

C. Shop Drawings:
1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
2. Provide photometric calculations where luminaires are proposed for substitution upon request.
3. Provide structural calculations for each pole proposed for substitution.

D. Field Test Reports: Indicate Light levels.

E. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

F. Project Record Documents: Record actual locations of connections and poles.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least ten years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

D. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. 10-Year Warranty: Each manufacturer shall supply a signed warranty covering the entire system for 10 years from the date of shipment. Warranty shall guarantee specified light levels. Manufacturer shall maintain specifically-funded financial reserves to assure fulfillment of the warranty for the full term. Warranty does not cover weather conditions events such as lightning or hail damage, improper installation, vandalism or abuse, unauthorized repairs or alterations, or product made by other manufacturers. The owner of the field is responsible of the structural integrity of the existing poles on site.

C. Maintenance: Manufacturer shall monitor the performance of the lighting system, including on/off status, hours of usage and luminaire outage for 10 years from the date of equipment shipment. Parts and labor shall be covered such that individual luminaire outages will be repaired when the usage of any field is materially impacted. Manufacturer is responsible for removal and replacement of failed luminaires, including all parts, labor, shipping, and equipment rental associated with maintenance. Owner agrees to check fuses in the event of a luminaire outage.

PART 2 PRODUCTS

2.01 SYSTEM

A. Basis of Design Manufacturer: Musco Lighting.

B. Design Criteria:

1. Wind Loads: Wind loads shall be based on the 2016 California Building Code. Wind loads to be calculated using ASCE 7-10, a design wind speed of 115 mph.

2. Pole Structural Design: The stress analysis and safety factor of the poles shall conform to 2009 AASHTO Standard Specification for Structural Supports for Highway Signs, Luminaires, and Traffic Signals (AASHTO LTS).

3. Foundation Design: The foundation design shall be based on soils that meet or exceed those of a Class 5 material as defined by 2016 CBC Table 1806A.2.

C. Lighting Performance:

1. Illumination Levels and Design Factors: Playing surfaces shall be lit to an average target illumination level and uniformity as specified in the chart below. Lighting calculations shall be developed and field measurements taken on the grid spacing with the minimum number of grid points specified below. Appropriate light loss factors shall be applied and submitted for the basis of design. Average illumination level shall be measured in accordance with the IESNA LM-5-04 (IESNA Guide for Photometric Measurements of Area and Sports Lighting Installations). Illumination levels shall not to drop below desired target values in accordance to IES RP-6-15, Page 2, Maintained Average Illuminance and shall be guaranteed for the full warranty period.

Area of Lighting	Average Target Illumination Levels	Maximum to Minimum Uniformity Ratio	Grid Points	Grid Spacing
Football Field	50 footcandles	2:1	72	30’x30’
Soccer Field	50 footcandles	2:1	84	30’x30’
Track	17 footcandles	--	50	30’x30’
North Seating	7 footcandles	--	132	10'x10'
Away Bleachers	9 footcandles	--	48	10'x10'
Path of Egress	3 footcandles	--	71	30’x30’

2. Color: The lighting system shall have a minimum color temperature of 5700K and a CRI of 75.

3. Mounting Heights: To ensure proper aiming angles for reduced glare and to provide better playability, minimum mounting heights shall be as described below. Higher mounting heights may be required based on photometric report and ability to ensure the top of the field angle is a minimum of 10 degrees below horizontal.

# of Poles	Pole Designation	Pole Height
2	F1, F2 (all poles are existing)	80 ft.

2	F3, F4 (all poles are existing)	70 ft.

D. Environmental Light Control

1. Light Control Luminaires: All luminaires shall utilize spill light and glare control devices including, but not limited to, internal shields, louvers and external shields. No symmetrical beam patterns are accepted.
2. Spill Light and Glare Control: To minimize impact on adjacent properties, spill light and candela values must not exceed the following levels taken at 3 feet above grade.
3. Glare Control: Maximum candela viewed from any one luminaire shall not exceed 30,000 candela at a distance of 150' from the playing field. Environmental glare impact scans must be submitted showing the maximum candela from the field edge on a map of the surrounding area until 30,000 candela or less is achieved at 150'.
4. Spill Scans: Spill scans must be submitted indicating the amount of horizontal and vertical footcandles along the specified lines. Light levels shall be taken at 30-foot intervals along the boundary line. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense bank of lights. Illumination level shall be measured in accordance with the IESNA LM-5-04 after 1 hour warm up.
5. The first page of a photometric report for all luminaire types proposed showing horizontal and vertical axial candle power shall be provided to demonstrate the capability of achieving the specified performance. Reports shall be certified by a qualified testing laboratory with a minimum of five years experience or by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products. A summary of the horizontal and vertical aiming angles for each luminaire shall be included with the photometric report.

2.02 SPORTS LIGHTING SYSTEM CONSTRUCTION

A. Manufacturing Requirements: All components shall be designed and manufactured as a system. All luminaires, wire harnesses, drivers and other enclosures shall be factory assembled, aimed, wired and tested.

B. Durability: All exposed components shall be constructed of corrosion resistant material and/or coated to help prevent corrosion. All exposed carbon steel shall be hot dip galvanized per ASTM A123/A123M. All exposed aluminum shall be powder coated with high performance polyester or anodized. All exterior reflective inserts shall be anodized, coated, and protected from direct environmental exposure to prevent reflective degradation or corrosion. All exposed hardware and fasteners shall be stainless steel, passivated and coated with aluminum-based thermosetting epoxy resin for protection against corrosion and stress corrosion cracking. Structural fasteners may be carbon steel and galvanized meeting ASTM A153/A153M and ISO/EN 1461 (for hot dipped galvanizing), or ASTM B695 (for mechanical galvanizing). All wiring shall be enclosed within the cross-arms, pole, or electrical components enclosure.

C. System Description: Lighting system shall consist of the following:

1. All poles are existing 70 ft. and 80 ft. poles.
2. Manufacturer will supply all drivers and supporting electrical equipment

a. Remote drivers and supporting electrical equipment shall be mounted approximately 10 feet above grade in aluminum enclosures. The enclosures shall be touch-safe and include drivers and fusing with indicator lights on fuses to notify when a fuse is to be replaced for each luminaire. Disconnect per circuit for each pole structure will be located in the enclosure. Integral drivers are not allowed.

b. Manufacturer shall provide surge protection at the pole equal to or greater than 40 kA for each line to ground (Common Mode) as recommended by IEEE C62.41.2-2002.

3. Wire harness complete with an abrasion protection sleeve, strain relief and plug-in connections for fast, trouble-free installation.

4. All luminaires, visors, and cross-arm assemblies shall withstand 150 mi/h winds and maintain luminaire aiming alignment.

5. Contactor cabinet to provide on-off control.

6. Manufacturer shall provide lightning grounding as defined by NFPA 780 and be UL Listed per UL 96 and UL 96A.

a. Integrated grounding via concrete encased electrode grounding system.

b. If grounding is not integrated into the structure, the manufacturer shall supply grounding electrodes, copper down conductors, and exothermic weld kits. Electrodes and conductors shall be sized as required by NFPA 780.The grounding electrode shall be minimum size of 5/8 inch diameter and 8 feet long, with a minimum of 10 feet embedment. Grounding electrode shall be connected to the structure by a grounding electrode conductor with a minimum size of 2 AWG for poles with 75 feet mounting height or less, and 2/0 AWG for poles with more than 75 feet mounting height.

1) All system components shall be UL listed for the appropriate application.

2.03 ELECTRICAL

A. Electric Power Requirements for the Sports Lighting Equipment:

1. Electric Power: As indicated on Drawings.

2. Maximum total voltage drop: Voltage drop to the disconnect switch located on the poles shall not exceed three (3) percent of the rated voltage.

B. Energy Consumption: The kW consumption for the field lighting system shall be 50.36kW for Football/Soccer/Track, 8.62 kW for South and North Seating and 8.62 kW for Path of Egress.

2.04 CONTROL

A. Instant On/Off Capabilities: System shall provide for instant on/off of luminaires.

B. Lighting contactor cabinet(s) constructed of NEMA Type 4 aluminum, designed for easy installation with contactors, labeled to match field diagrams and electrical design. Manual off-on-auto selector switches shall be provided.

C. Dimming: System shall provide for 3-stage dimming (high-medium-low). Dimming will be set via scheduling options (Website, app, phone, fax, email) or via an onsite user interface tablet or device.

D. Remote Lighting Control System: System shall allow owner and users with a security code to schedule on/off system operation via a web site, phone, fax or email up to ten years in

advance. Manufacturer shall provide and maintain a two-way TCP/IP communication link. Trained staff shall be available 24/7 to provide scheduling support and assist with reporting needs.

1. The owner may assign various security levels to schedulers by function and/or fields. This function must be flexible to allow a range of privileges such as full scheduling capabilities for all fields to only having permission to execute “early off” commands by phone. Scheduling tool shall be capable of setting curfew limits.
2. Controller shall accept and store 7-day schedules, be protected against memory loss during power outages, and shall reboot once power is regained and execute any commands that would have occurred during outage.

E. Remote Monitoring System: System shall monitor lighting performance and notify manufacturer if individual luminaire outage is detected so that appropriate maintenance can be scheduled. The controller shall determine switch position (manual or auto) and contactor status (open or closed).

F. Management Tools: Manufacturer shall provide a web-based database and dashboard tool of actual field usage and provide reports by facility and user group. Dashboard shall also show current status of luminaire outages, control operation and service. Mobile application will be provided suitable for IOS, Android and Blackberry devices.

1. Hours of Usage: Manufacturer shall provide a means of tracking actual hours of usage for the field lighting system that is readily accessible to the owner.
   a. Cumulative hours: shall be tracked to show the total hours used by the facility
2. Report hours saved by using early off and push buttons by users.

G. Communication Costs: Manufacturer shall include communication costs for operating the control and monitoring system for a period of 10 years.

H. Communication with luminaire drivers: Control system shall interface with drivers in electrical components enclosures by means of powerline communication

PART 3 EXECUTION

3.01 EXAMINATION

A. Soil Quality Control:

1. It shall be the Contractor’s responsibility to notify the Owner if soil conditions exist other than those on which the foundation design is based, or if the soil cannot be readily excavated. Contractor may issue a change order request / estimate for the Owner’s approval / payment for additional costs associated with:
   a. Providing engineered foundation embedment design by a registered engineer in the State of CA for soils other than specified soil conditions;
   b. Additional materials required to achieve alternate foundation;
   c. Excavation and removal of materials other than normal soils, such as rock, caliche, etc.

3.02 PREPARATION

A. Delivery Timing:

1. Delivery Timing Equipment On-Site: The equipment must be on-site 6-8 weeks from receipt of approved submittals and receipt of complete order information.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Provide manufacturer's field representative to test:

1. Illumination Measurements: Upon substantial completion of the project and in the presence of the Contractor, Project Engineer, Owner's Representative, and Manufacturer's Representative, illumination measurements shall be taken and verified. The illumination measurements shall be conducted in accordance with IESNA LM-5-04.

C. Field Light Level Accountability

1. Light levels are guaranteed not to fall below the target maintained light levels for the entire warranty period of 10 years. These levels will be specifically stated as “guaranteed” on the illumination summary provided by the manufacturer.

2. The contractor/manufacturer shall be responsible for conducting initial light level testing and an additional inspection of the system, in the presence of the owner, one year from the date of commissioning of the lighting.

3. The contractor/manufacturer will be held responsible for any and all changes needed to bring these fields back to compliance for light levels and uniformities. Contractor/Manufacturer will be held responsible for any damage to the fields during these repairs.

D. Correcting Non-Conformance: If, in the opinion of the Owner or his appointed Representative, the actual performance levels including foot candles and uniformity ratios are not in conformance with the requirements of the performance specifications and submitted information, the Manufacturer shall be required to make adjustments to meet specifications and satisfy Owner.

3.05 PRE-BID SUBMITTAL REQUIREMENTS (NON-MUSCO)

A. Design Approval: The owner / engineer will review pre-bid submittals per paragraph B from all the manufacturers to ensure compliance to the specification prior to bid. If the design meets the design requirements of the specifications, a letter and/or addendum will be issued to the manufacturer indicating approval for the specific design submitted.

B. Approved Product: Musco’s Sports-Cluster System with TLC for LED(TM) is the approved product. All substitutions must provide a complete submittal package for approval as outlined in Submittal Information at the end of this section prior to bid. Special manufacturing to meet the standards of this specification may be required. An addendum will be issued prior to bid listing any other approved lighting manufacturers and designs.

C. All listed manufacturers not pre-approved shall submit the information at the end of this section prior to bid. An addendum will be issued prior to bid; listing approved lighting manufacturers and the design method to be used.

D. Bidders are required to bid only products that have been approved by this specification or addendum by the owner or owner's representative. Bids received that do not utilize an approved system/design, will be rejected.

3.06 ATTACHMENTS

A. Substitution Checklist.

END OF SECTION

REQUIRED SUBMITTAL INFORMATION FOR ALL MANUFACTURERS (NOT PRE-APPROVED) PRIOR TO BID

All items listed below are mandatory, shall comply with the specification and be submitted according to pre-bid submittal requirements. Complete the Yes/No column to indicate compliance (Y) or noncompliance (N) for each item. ***Submit this checklist with substitution submittal.***

Yes/ No	Tab	Item	Description
	A	Letter/ Checklist	Listing of all information being submitted must be included on the table of contents. List the name of the manufacturer's local representative and his/her phone number. Signed submittal checklist to be included.
	B	Equipment Layout	Drawing(s) showing field layouts with pole locations
	C	On Field Lighting Design	Lighting design drawing(s) showing: a. Field Name, date, file number, prepared by b. Outline of field(s) being lighted, as well as pole locations referenced to the center of the field (x & y), Illuminance levels at grid spacing specified c. Pole height, number of fixtures per pole, horizontal and vertical aiming angles, as well as luminaire information including wattage, lumens and optics d. Height of light test meter above field surface. e. Summary table showing the number and spacing of grid points; average, minimum and maximum illuminance levels in foot candles (fc); uniformity including maximum to minimum ratio, coefficient of variance (CV), coefficient of utilization (CU) uniformity gradient; number of luminaries, total kilowatts, average tilt factor; light loss factor.
	D	Off Field Lighting Design	Lighting design drawing showing initial spill light levels along the boundary line (defined on bid drawings) in footcandles. Lighting design showing glare along the boundary line in candela. Light levels shall be taken at 30-foot intervals along the boundary line. Readings shall be taken with the meter orientation at both horizontal and aimed towards the most intense bank of lights.
	E	Photometric Report	Provide first page of photometric report for all luminaire types being proposed showing candela tabulations as defined by IESNA Publication LM-35-02. Photometric data shall be certified by laboratory with current National Voluntary Laboratory Accreditation Program or an independent testing facility with over 5 years experience.
	F	Performance Guarantee	Provide performance guarantee including a written commitment to undertake all corrections required to meet the performance requirements noted in these specifications at no expense to the owner. Light levels must be guaranteed to not fall below target levels for warranty period.
	G	Structural Calculations	Pole structural calculations and foundation design showing foundation shape, depth backfill requirements, rebar and anchor bolts (if required). Pole base reaction forces shall be shown on the foundation drawing along with soil bearing pressures. Design must be stamped by a structural engineer in the state of CA, if required by owner.
	H	Control & Monitoring System	Manufacturer of the control and monitoring system shall provide written definition and schematics for automated control system. They will also provide ten (10) references of customers currently using proposed system in the state of CA.

Yes/ No	Tab	Item	Description
	I	Electrical Distribution Plans	Manufacturer bidding an alternate product must include a revised electrical distribution plan including changes to service entrance, panels and wire sizing, signed by a licensed Electrical Engineer in the state of CA.
	J	Warranty	Provide written warranty information including all terms and conditions. Provide ten (10) references of customers currently under specified warranty in the state of CA.
	K	Project References	Manufacturer to provide a list of ten (10) projects where the technology and specific fixture proposed for this project has been installed in the state of CA. Reference list will include project name, project city, installation date, and if requested, contact name and contact phone number.
	L	Product Information	Complete bill of material and current brochures/cut sheets for all product being provided.
	M	Delivery	Manufacturer shall supply an expected delivery timeframe from receipt of approved submittals and complete order information.
	N	Non-Compliance	Manufacturer shall list all items that do not comply with the specifications. If in full compliance, tab may be omitted.
	O	Cost of Ownership	Document cost of ownership as defined in the specification. Identify energy costs for operating the luminaires. Maintenance cost for the system must be included. All costs should be based on 25 Years
	P	Environmental Light Control Design	Environmental glare impact scans must be submitted showing the maximum candela from the field edge on a map of the surrounding area until 30,000 candela or less is achieved at 150'.

The information supplied herein shall be used for the purpose of complying with the specifications for Rio Mesa High School Football in Oxnard, CA. By signing below I agree that all requirements of the specifications have been met and that the manufacturer will be responsible for any future costs incurred to bring their equipment into compliance for all items not meeting specifications and not listed in the Non-Compliance section.

Manufacturer: _____ **Signature:** _____

Contact Name: _____ **Date:** _____/_____/_____

Contractor: _____ **Signature:** _____

SECTION 27 41 16

INTEGRATED AUDIO SYSTEMS AND EQUIPMENT

PART 1 GENERAL

1.01 Summary

A. Provisions of Division 1 apply to this section.

B. Section Includes

1. Provide all labor, materials, transportation and equipment to complete the furnishing, installation, assembly, set up, and testing of the Audio and Control Systems work indicated on the drawings and specified herein. Notwithstanding any detailed information in this Section, provide complete, working systems. General design intent for this project is shown on the drawings and described in the specification.
2. All equipment requiring coordination with other trades must be tested and verified for proper operation. Contractor is fully responsible for the coordination and must resolve all conflicts with AV equipment that connect or interact with other systems.
3. Design, engineer and provide complete means of support, suspension, attachment, fastening, bracing, and seismic restraints (hereinafter "support") of the Work of this Section, including future installed equipment, in accordance with local building codes and regulations. Provide engineering of such support by parties licensed to perform work of this type in the Project jurisdiction. Contractor shall obtain the services of an engineer licensed to perform this work within the state or jurisdiction it is to be performed.
4. The Contractor shall include all costs associated with structural engineering required by code for work in this section.
5. Use skilled mechanics that can return surfaces to the appearance of new work when modifying millwork.
6. Conduit and common back boxes including four square, pull boxes, junction boxes, etc. are supplied and installed by Division 26 Electrical Contractor. Connection panels that install in these boxes are supplied by AV Contractor.
7. Provide all cable and wire associated with this specification section and related documents.
8. All systems shall be completely installed with all the necessary interconnection, power supplies, patch cords, snakes, portable equipment cables and wiring to provide a fully functioning system.
9. The governing overall requirement for this project is a complete and functional system.
10. Include work not usually shown or specified, but necessary for proper installation and operation of the system or piece of equipment.

C. Products Supplied But Not Installed Under This Section

1. Loose equipment or products supplied but not installed shall be turned-over to the Owner immediately upon delivery. Contractor is to supply a signed statement of transfer of this equipment to the consultant for record. Client must sign this statement acknowledging receipt of this equipment.
2. Specialty back boxes including but not limited to FSR, Steel City and speaker back boxes shall be provided to the General Contractor for installation.

D. Related Sections
1. Division 1.
2. Division 9.
3. Division 10.
4. Division 11.
5. Division 26.

E. Allowances
1. Refer to section 2.1.E for related requirements.
2. *Ensure that the statements used complement Division 1, Section 01210-Allowances.*

F. Measurement Procedures
1. Product quantity is as required. If a quantity is given, the Contractor will provide at least the given amount. Some products listed under this section may not be required to fulfill the obligations of the work.

1.02 References

A. Comply with all applicable governing codes.

B. Comply with the following applicable organizations and standards:

1. AES Audio Engineering Society
2. ANSI American National Standards Institute
3. ASTM American Society for Testing and Materials
4. BICSI Building Industry Consulting Service International, Inc.
5. BTSC Broadcast Television Stereo Committee
6. CBC California Building Code
7. CEDIA Custom Electronic Design and Installation Association
8. EIA Electronic Industries Alliance
   a. RS-310-C: (ANSI C83.9) Racks, Panels, and Associated Equipment
   b. RS-453: Dimensional, Mechanical, and Electrical Characteristics Defining Phone Plugs and Jacks
9. ETL Electrical Testing Laboratories, Inc.
10. FCC Federal Communications Commission
11. ICIA International Communications Industries Association
12. IEC International Electrotechnical Commission
13. IEEE Institute of Electrical and Electronic Engineers

14.	INCITS	International Committee for Information Technology Standards
15.	ISO	International Organization for Standardization
16.	ITU	International Telecommunications Union
17.	NAB	National Association of Broadcasters
18.	NCTA	National Cable and Telecommunications Association
19.	NEC	National Electrical Code
20.	NEMA	National Electrical Manufacturers Association
21.	NFPA	National Fire Protection Association
22.	NSCA	National Systems Contractors Association
23.	OSHA	Occupational Safety and Health Administration
24.	SMPTE	Society of Motion Picture and Television Engineers
25.	TIA	Telecommunications Industry Association
26.	UL	Underwriters Laboratories Inc.

1.03 Definitions

A. Definitions of Terms: The following definitions and conditions apply to each of the respective parameters and the measurements of those parameters, unless specifically stated otherwise:

1. Frequency Response: The minimum acceptable frequency band over which the amplitude response is within 3 dB (or any specified range), or the specified limits of the response relative to the reference frequency (1 kHz for audio) under design load conditions, at any operating level up to and including the specified maximum output while fully in compliance with all other performance specifications.
2. Maximum Output Level: The minimum acceptable maximum signal output level (voltage, current or power) attained under design load conditions attained while fully in compliance with all other performance specifications.
3. Harmonic Distortion: The maximum acceptable harmonic distortion measured at any operating level, up to and including the specified maximum output, with an applied sine wave signal of any frequency in the range of the specified frequency response.
4. Audio Intermodulation Distortion: The maximum acceptable intermodulation distortion resulting from the introduction of 60 Hz and 7 kHz signals in a ratio of 4:1 under design load conditions at any operating level up to and including the specified maximum output level.
5. Signal to Noise Ratio: The minimum acceptable ratio of signal to noise levels derived from broadband measurements under design load at maximum output over the entire range of the specified frequency response.
6. Clipping Level: The minimum acceptable maximum level of signal applied to the device under design load conditions while fully in compliance with all other performance specifications.

7. Sensitivity: The maximum acceptable level of input signal applied to the device that is necessary to provide the maximum output under design load conditions.

8. Design Load: The load (in ohms) specified by usage of the particular device input or output.

B. Signal Levels: The following voltage levels shall be considered the standard operating levels for the particular circuitry, unless specifically noted otherwise (0.775 Volt = O dBu = O dBm for a 600 ohms terminated circuit):

1. Microphone Circuits: -30 dBu or less.

2. Audio Line Level Circuits: -30 dBu to +24 dBu; equivalent to -30 dBm to +24 dBm for a 600 ohms terminated circuit.

3. Loudspeaker Level Circuits: More than +24 dBu.

C. Characteristic Impedances: The following operating impedances shall be considered to be the standard operating impedances for the particular circuitry, unless specifically noted otherwise:

1. Microphone Circuits: 50-250 ohms source, 150-1500 ohms terminating, electrostatically and electromagnetically balanced to ground.

2. Audio Line Level Circuits: 600 ohms maximum source, 600 ohms minimum. terminating, line to line, electrostatically and electromagnetically balanced to ground.

1.04 System Description

A. Design Requirements

1. General

a. All audio processing functions for the system shall be implemented with Digital Signal Processing equipment (DSP). Functions provided by this system include but are not limited level control, equalization, delay, routing, dynamics, filters, processors, presets, etc.

2. Stadium Seating Area

a. General

1) The system shall provide audio reinforcement for announcements and sporting events.

2) The system shall allow for local control of functions, including but not limited to volume adjustment and source selection.

3) A wall mounted keyed controller shall be provided in the Press Box to control the startup and shutdown of the Public Address system.

b. Sound Reinforcement System

1) The sound system shall utilize a distributed network of pole mounted loudspeakers.

2) A facility panel shall be provided for the connectivity of microphone and line level inputs.

3) Both a push-to-talk & a handheld wireless microphones shall be provided for voice reinforcement.

c. Assistive Listening

1) An assistive listening system shall be provided per ADA requirements. The system will consist of an RF transmitter, remote antennas and headsets to allow personal monitoring of the audio program.

B. Digital Signal Processor (DSP) Programming

1. DSP programming outlined below:

a. All audio processing functions for the system shall be implemented with Digital Signal Processing equipment (DSP). Functions provided by this system include but are not limited to level control, equalization, delay, routing, dynamics, filters, processors, presets, etc.

b. Sensitivity and gain controls must be applied to each input to allow level balancing.

c. The mixer shall allow for the level control of each input and routed to each output's composite mix.

d. The DSP system shall include password protection for system operation and maintenance privileges.

e. The Contractor shall allot 2 hours for on-site digital signal processor programming with the client's representative.

C. System Performance Standards and Requirements (meet or exceed)

1. Audio Systems:

a. Electrical Performance; Source Input to Power Amplifier Output:

1) Frequency Response (Equalizer flat): +/- 0.2 dB 20 Hz to 20 kHz.

2) Total Harmonic Distortion (THD): Less than 0.05%, 20 Hz to 20 kHz, 4 ohms.

3) Noise: At least -105 dB, 20 Hz to 20 kHz, referenced to input of +4 dBm.

4) Crosstalk: At least -60 dB, 20 Hz to 20 kHz.

5) Damping Factor: Greater than 500 (below 1 kHz)

b. Electro/Acoustic Performance; Distributed Systems: 103 dB Consistent with devices specified herein.

1) Equipment: Specified individually.

2) Audio signal paths: Shall not degrade performance of connected equipment.

c. NEC - Article 640: Audio Signal Processing, Amplification and Reproduction Equipment.

2. Data and Communications Systems:

a. TIA/EIA 568-C series: Commercial Building Telecommunications Cabling Standard.

b. ANSI J-STD-607-A: Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.

1.05 Submittals

A. General

1. In addition to the requirements of Division 1, submit all materials for review arranged in the same order as the Specification, individually referenced to the Specification paragraph and Contract Drawing number. Submit 8 1/2" x 11" items bound in volumes and drawings in edge-bound sets. Submit all drawings on sheets of the same size.
2. The Contractor is to provide two copies of each hardcopy submittal and an electronic format copy (Shop drawings must be submitted as .DWF. All other submittals shall be provided as .PDF). All submittals must be original files or documents, scanned copies will not be accepted.
3. Make each specified submittal as a coordinated package complete with all information specified herein. Incomplete or uncoordinated submittals will be returned with no review action.
4. Should the Contractor proceed with the Work of this Section in the absence of submittals for such work submitted and returned with action "No Exception Taken" or "Make Corrections As Noted", the Contractor proceeds at the Contractor's sole risk.
5. If the Contractor deviates from the design shown on the Contract Documents when preparing their shop drawings, the Contractor shall indicate with architectural style clouding, those deviations. The Contractor shall also submit with the Shop Drawings, a list of those deviations and substitutions, including the following:
    a. The deviation item number which shall also correspond to a number designation applied to each cloud on the shop drawings.
    b. Section of the specification that applies to these changes.
    c. The applicable shop drawing sheet number for each item.
    d. The corresponding audio-visual Contract Document sheet number for each item.
    e. A clear description of the deviation.
    f. The Contractor’s rational for the deviation (i.e. what benefit the deviation provides, why it is required, any cost impact, etc.).

B. Infrastructure

1. Provide drawings indicating boxes conforming and non-conforming to Consultant’s AV drawings.

C. Product Data

1. Manufacturer’s Product Data
    a. Contractor is to submit submittal in electronic format (i.e. PDF)
    b. List of materials (i.e. Table of Contents) categorized by room type: For each item specified in PART 2, include:
        1) Drawing device ID code.
        2) Manufacturer.
        3) Model number.

4) Listing: UL or other lab.

5) Quantity.

c. In sequence of List of Materials, provide a data sheet for each item, including all accessories marked for the proposed product.

D. Shop Drawings

1. Field (Installation) Drawings: Collate in sequence:

a. Contractor is to submit shop drawings in .DWF format.

b. Drawing index/symbol sheet.

c. Floor plans. At scale of Contract Documents. Show:

1) Device rough-in boxes with ID number.

2) Mounting height.

3) Conduit size.

4) Wire type.

5) Wire fill.

d. Sections/Elevations. At scale of Contract Documents:

1) Mounting location reference to nearest gridline.

a) Provide sections for each room containing AV equipment.

b) Provide elevations for each wall in rooms containing AV equipment.

c) Show all equipment, including speakers, monitors, projectors, podium, floor boxes, facility boxes, etc.

d) Provide vertical dimensions referenced above finished floor to each piece of equipment.

e) Provide horizontal dimensions reference to gridlines.

e. Enlarged Plans. At scale of Contract Documents or larger as required for trade coordination. Show:

1) Items indicated in "floor plans" above.

2) Architectural features.

3) Rack cabinets.

a) Ventilation details.

b) Power distribution detail.

4) System furniture.

5) Clearances required by applicable Code.

f. System Conduit Riser Drawing, Show:

1) Terminal cabinets.

2) Coordination with floor plans.

3) Wire runs not shown on floor plans.

4) Wire type.

5) Wire fill.

g. Mounting details:

1) Stamped and signed by an Engineer licensed in the Project jurisdiction for work of this type, where required by code.

2) Show loads, type and strength of connections, sizes, dimensions, materials, etc.

3) Show calculations on drawings or in bound volume for review by Authorities having jurisdiction.

4) Provide details for:

a) Equipment rack anchorage.

b) Loudspeaker mounts.

c) Attachment to building structure.

h. Installation details as required:

1) Terminal cabinets: Terminations.

2) Audio-Visual panel details.

i. Wire run sheets. Show:

1) Wire number.

2) Source.

3) Designation.

4) Signal type.

5) Wire type.

6) Operating level or voltage.

7) Timing reference, where applicable.

8) Physical length.

2. Shop (Fabrication) Drawings: Collate in sequence:

a. Contractor is to submit shop drawings in .DWF format.

b. Drawing index/symbol sheet (if separate set from Field Drawings).

c. System functional drawings. Submit separate drawings for each system/subsystem. Show at least:

1) Equipment:

a) Function, make, model.

b) Rack number, module frame and slot number.

2) Field device information

a) Terminal cabinets.

b) Pull boxes.

c) Audio-visual panel connector designations.

3) Wiring

a) Wire number.

b) Wire type.

4) Shield condition at both ends (float, ground, location of ground).

5) Connector wiring details, each type.

6) Audio: Nominal operating level, Polarity. Note deliberate polarity inversions where required to maintain absolute polarity.

7) Twisted pair, transmit and received devices: Transmission range at 60 Hz., cable length and signal quality.

d. Provide drawings for the following systems, if applicable:

1) Audio.

2) Data transmission.

3) Coordinated grounding scheme.

e. Equipment rack elevations: Show:

1) All racks scaled at 1 1/2" equals 1 foot, or larger.

2) Rack: Make, model.

3) Equipment: Function, make, model.

f. Rack wiring drawings: For each rack, show:

1) Power strip: Receptacles, circuiting.

2) Sequencing power and surge suppression systems.

3) Equipment.

4) Grounding.

5) Wiring, all systems.

6) Wiring harness scheme.

7) Ventilation detail.

g. Fabrication details: Submit for:

1) Receptacles.

2) Panels.

3) Special mounting provisions.

h. Legends/engraving details. Half or full size:

1) Receptacles.

2) Audio-visual panels.

3) Equipment designations.

E. Samples

1. Of all finishes/materials that will be visible to the public, including but not limited to:

a. Receptacles and controls with associated trim plate.

b. Each type of loudspeaker baffle and/or grille.

c. All audio-visual panels.

d. Audio-visual devices in public areas.

F. Shop and Project Site Test Reports

1. Contractor is to provide submittal in electronic format (i.e. PDF)
2. Schedule: Submit test reports in a timely manner relative to the Project schedule such that the representative of the Owner may conduct Verification of Submitted Test Data without delay of progress.
    a. Shop test report: Submit prior to shipping completed equipment racks to Project Site.
    b. Project Site test report: Submit project site test report for this section after system completion and prior to Acceptance Review and Testing.
3. Content: Include at least:
    a. Time and date of start of burn-in.
    b. Time and date of test.
    c. Personnel conducting test.
    d. Test equipment, including serial and date of calibration.
    e. Procedures used.
    f. Results of test - numerical or graphical presentation.

G. Close Out Submittal

1. Contractor is to provide submittals in electronic format (i.e. PDF)
2. Operation and Maintenance Manuals
    a. Index.
    b. Systems operating instructions.
    c. Reduced set of system Record Drawings.
    d. Key schedule.
    e. Maintenance and spare parts schedules.
    f. Shop and Field Test Reports.
    g. Equipment manuals. Collate alphabetically by manufacturer. Provide manufacturer's original operation, instruction and service manuals in color for each equipment item. Provide tabbed dividers between each product. Manuals provided by the Manufacturer in an individual binder may be submitted in that form.
3. Framed Operating and Maintenance Instructions: Provide adjacent to each ensemble of equipment racks. Provide sturdy frame with clear glass or non-scratching plastic cover. Provide permanent, non-fading media. Blueprints shall not be acceptable. Include:
    a. Sequence for system start-up and shutdown.
    b. System Functional Diagrams.
    c. Signal levels and impedance at accessible system signal and test ports, where applicable.

4. Record Drawings
    a. As work progresses, maintain records of "as installed" conditions. Update the set at least weekly. After successful completion of Project Site testing specified herein, and after completion of Punch List corrections, copy all records of "as installed" conditions on to final Record Document drawings, as specified in Division 1.
    b. Content: All drawings required under "Field and Shop Drawings". Show "as installed" condition. Where room designations according to Project permanent signage differ from construction designations in the Contract Documents, show both designations.
5. Provide four copies on SD card containing the “as built” drawings, all manuals, training manual and programming code.
    a. Submit un-compiled programming code.
6. Training Submittal
    a. Provide all training materials for review prior to scheduling training sessions.
        1) Training manual.
        2) Agenda for the training session.
        3) The final punch list, indicating that all equipment is fully functional.
    b. See the section under Owner’s Instructions for training manual requirements.
    c. No training session will be scheduled until final punch list is completed and submitted.
7. Warranty Certificates
    a. Comply with Division 1.

1.06 Quality Assurance

A. Qualifications
1. The bidder shall, prior to the bid, in accordance with the Instruction to Bidders, submit at least the following information to verify that the bidder has the necessary experience and qualifications to perform the specified work:
    a. A detailed brochure describing the bidder’s capabilities in terms of facilities, personnel (include a personnel organization chart followed by resumes), experience, background, examples of similar installations (at least two projects within the past two years), distribution arrangements with manufacturers and financial capability, including certificates of insurance and satisfaction of the project bonding requirements.
    b. Contractor must, at the time of this bid submittal, have distribution or a dealership agreement with all manufactures whose products are specified in the bid documents. Contractor must also have completed manufactures training and certification before bids are submitted.
    c. AIA Document A305 “Contractor’s Qualification Statement”.

d. Information identifying any and all local agents and/or subcontractors that will assist in the work and their role in the project.

e. Identification of sources of labor for all fabrication and installation throughout the duration of the project.

f. Evidence that he has acquired all necessary licenses, certificates and approvals to perform the specified work within the state or jurisdiction the work is to be performed.

2. Projects that include Digital Signal Processing (DSP) equipment will require the Contractor to submit evidence of qualification from the manufacturer of said equipment. This would include completion of manufacturer's training courses, the name of the person or persons who completed said training and prior projects completed using DSP technology. If the Contractor is not approved for the DSP programming, they may hire a qualified programmer approved by the consultant.

3. The Contractor shall provide information on how and by whom the requirements of the warranty period will be fulfilled.

4. The submittal must justify, in the judgment of the Consultant, the Architect, and the Owner, that the Contractor has the capability to manage and install a project of this size and scope and that he is capable of the necessary business and technical arrangements for this installation and the pursuant warranty service. Contractor may be disqualified as a bidder if all of the submittal does not meet the approval of the Owner and his/her representative.

5. Company: Work of this Section shall be performed by a Sound or Audio-Visual Systems Contractor who has at least five years direct experience with the devices, equipment and systems of the type and scope specified herein, and who has a fully staffed and equipped maintenance and repair facility, and who is licensed to perform work of this type in the Project jurisdiction.

6. Personnel: Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section. Supervisors shall have at least five years direct experience in similar work. Installation and maintenance personnel shall have at least three years direct experience in similar work.

7. Designated Supervisor: Provide a designated supervisor present and in responsible charge in the fabrication shop and on the Project Site during all phases of installation and testing of the Work of this Section. This supervisor shall be the same individual throughout the execution of the Work unless illness, loss of personnel, or other circumstances reasonably beyond the control of the Contractor intervene.

8. Staff Engineer: The Contractor shall have on his full-time payroll at least one staff engineer having five years minimum experience as an electronics engineer covering systems and projects comparable in substance and complexity to the project described herein. The staff engineer shall have NICET certification in Electrical/Electronics Engineering Technology and Audio Systems or equivalent. The signature of that engineer shall appear on all shop drawings and submittals.

9. Coordination: Coordinate the Work of this Section with the Work of all other Separate Contracts. Comply with Division 1.

B. Cutting and Patching

1. Cut, patch and extend existing work using skilled mechanics that are capable of matching existing quality of workmanship.
2. Assign work of moving, removal, cutting and patching, to trades qualified to perform the work in a manner to cause least damage to each type of work, and provide means of returning surfaces to appearance of new work.
3. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work. Cut finish surfaces such as masonry, tile, plaster or metals, by methods to terminate surfaces in a straight line at a natural point of division.
4. When new work abuts or finishes flush with existing work, make a smooth and workmanlike transition. Patched work shall match existing adjacent work in texture and appearance so that the patch or transition is invisible.
5. Protect existing finishes, equipment, and adjacent work that are scheduled to remain, from damage.
6. Promptly repair damages caused to adjacent facilities by demolition operations, at no change in Contract Amount.

C. Painting

1. Use skilled mechanics that are capable of painting audio-visual equipment and hardware to match architectural surroundings, where applicable.

D. Regulatory Requirements

1. Regulations Applicable: including but not limited to those defined in Division 1.
2. Comply with all applicable federal, state, and local labor regulations, and applicable local union and trade regulations.
3. Installation practices shall be in accordance to industry-accepted standards (ANSI, Cal-OSHA, IEC, IEEE, FCC, NEC, NFPA, ICIA, NSCA, CEDIA, BICSI) or local acts, codes and standards enforced at the place of work, whichever is most stringent.
4. Procure and pay for all necessary permits, licenses, inspections, and observe any requirements stipulated therein.
5. Provide UL/ULC fire rated enclosures around all audio-visual floor and back boxes where required by code.

E. Programming

1. User Group Interview:
    a. Conduct interviews with the end-users to acquire programming requirements. Submit written results of the interview and the requirements set forth by the user group. Associate the user group requirements into the programming of each sub system. Submit to the Consultant a report that outlines the interviews conducted.

F. Pre-installation Meetings

1. Attend a pre-installation meeting at the project site with the Owner and his representatives in order to coordinate related work and scheduling issues.

G. Verification

1. Verify dimensions and conditions at the Project Site. Submit any conflicts in timely manner for resolution.

H. Shop Fabrication and Testing

1. Assemble and fully wire equipment racks at a fabrication shop off the Project Site. Burn-in for not less than 120 hours. Following burn-in, perform specified adjustment procedures. Provide test equipment and test according to procedures specified herein. Submit verification of shop test in timely manner. Following verification of shop test and when installation locations are ready as specified herein, deliver equipment racks and equipment to the Project Site and install.

I. Project Site Installation and Testing

1. Install as specified herein.

a. Perform specified adjustment procedures. Provide test equipment and test according to procedures specified herein. Request verification of Project Site test in timely manner.

J. Verification of Submitted Test Data

1. Re-test in presence of designated representative(s) of the Owner at reasonable mutual convenience. Provide services of the designated supervisor and an additional technician familiar with work of this Section. Provide all test equipment. Provide complete set of latest stamped submittals of record for reference. Provide complete set of Shop and Project Site Test Reports, as applies. Provide a complete set of manufacturer's original operation, instruction and service manuals for each equipment item for reference.

K. Reference/Project Record Documents

1. At all times when the work is in progress, maintain at the workplace, fabrication shop or Project Site as applies, a complete set of the latest stamped, action submittals of record for reference. Also maintain a separate, clean, undamaged set for preparation of Project Record Documents. Also maintain at the workplace a complete set of manufacturer's original operation, instruction and service manuals for each equipment item for reference.

1.07 Delivery, Storage and Handling

A. Packing, Shipping, Handling and Unloading

1. Deliver materials in manufacturer's original undamaged packages or in bulk packing which provides equivalent protection from rough handling, dust and dirt.

2. Deliver all assembled equipment racks in custom manufactured wood crates to avoid damage during shipping.

3. All packing, shipping, insurance, handling and storage costs of equipment and materials shall be the responsibility of the Contractor.

4. The Contractor shall be responsible for insuring all equipment and installation materials stored in their shop facilities until it is delivered to the Project Site and a delivery acknowledgement is received from the Owner or its authorized representative.

5. Equipment unpacked for inspection but not ready for permanent installation must be returned into its protective packing.
6. The Contractor shall be responsible for furnishing a temporary substitute for equipment that could not be delivered in time for system operation. All costs associated for renting, shipping and handling temporary substitute equipment shall be the responsibility of the Contractor.
7. In the event the equipment or installation material delivery is delayed, the Contractor must employ the fastest means of delivery service available to deliver the equipment on time. All costs for expediting the delivery of equipment shall be the responsibility of the Contractor.
8. Store packaged materials off of the ground or slab in a manner to protect them from elements, especially moisture damage.
9. Deliver completed, wired, tested equipment racks to associated equipment rooms at the Project Site when major work of all other separate contracts is complete, equipment room ventilation is operating with clean filters in place, the area is clean and free from airborne contaminates, and continuing work of other trades will not produce airborne contaminates or permit transport of such airborne contaminates to the equipment rooms.

B. Acceptance at Site
1. All equipment and installation material delivered to the Owner shall be properly documented in the form of delivery receipts.
2. Equipment delivered to the Project Site must include a delivery acknowledgement receipt signed by the Owner or its representative. Issue a signed copy of the delivery receipt to the Owner and file the signed copy for future reference.
3. The Contractor shall be responsible for the insurance coverage and security of equipment delivered to the Project Site until it receives an acknowledgement of delivery from the Owner or its authorized representative.

C. Storage and Protection
1. The Contractor shall provide a safe and secure storage location for all equipment and installation materials until they are delivered to the Project Site and it receives an acknowledgement of delivery from the Owner or its authorized representative.
2. For equipment assembled and tested at the Contractor's shop facility and delivered to the Project Site, ensure that the equipment is properly protected from improper handling, rain, water, humidity, moisture, heat, direct exposure to sunlight, dust and dirt during delivery and storage on or off the Project Site.
3. Do not remove protective packing from equipment until they are ready to be installed.
4. If, after equipment is installed, the Project Site cannot be cleaned or is still not clean because of on-going work by others, provide protective covering and protection to prevent airborne dust and dirt originating from damaging equipment.

1.08 Project Site Conditions

A. Environment Requirements

1. The spaces where audio-visual system assemblies are installed shall meet the following requirements:

a. Free from dust generated from construction.

b. The room temperature shall be within the specified operating temperature recommended by the manufacturer.

B. Existing Conditions

1. Contractor is to visit the job site to access existing conditions. All cutting, patching and painting are the responsibility of the Contractor. Contractor must work around owners work schedule and submit a schedule of projected work hours with this proposal. Contractor must thoroughly inspect existing job site conditions for acceptable wire ways and ability to install equipment in proposed location per plans and allow sufficient labor hours to complete project. All new cable and wire ways will be recessed into walls or ceiling area. No cable or conduit will be run exposed to public view. Contractor must report, to the owner, the feasibility of cable runs as laid out in these contract documents. Contractor will in no way claim additional fees for items related to existing condition assessment.

1.09 Sequencing

A. Submit all testing documentation to the Owner's Representative for review prior to requesting the Fabrication Inspection and Substantial Completion inspections.

B. Allow adequate time for corrections to be made after inspections to maintain the Project Schedule.

1.10 Scheduling

A. Comply with the Project schedule.

B. Make all Submittals specified herein in a timely manner. Failure to make timely submittals complete as specified herein is considered to be lack of substantial progress of the Work of this Section. Contractor is to work around client schedule throughout the duration of the project.

C. Deliver all equipment, devices and materials required for the Work of this Section and install, test and ready all work for Acceptance Testing at least fourteen days prior to the completion date for the associated area of the Project, unless specifically instructed otherwise by the Owner.

D. Temporary Equipment: Provide and operate, without claim for additional cost or time, temporary equipment and/or systems to provide reasonably equivalent function, as determined by the Owner, in lieu of the Work of this Section which is incomplete or found not in conformance with the Contract Documents as of seven days prior to the completion date. Provide such temporary equipment until Acceptance of the Work of this Section. Thereafter, remove such temporary equipment.

E. It shall be a common understanding that there is a time constraint when executing this work. The Contractor shall use all means and resources to complete this project on or before the specified schedule at no additional cost to the Owner. This includes working beyond normal business hours and days, additional manpower, additional tools, etc.

1.11 Warranty Service

A. Warrant all Work of this Section to be free from defects in materials and workmanship for a minimum of 1 year from the date of Owner acceptance of the Work of this Section.

B. All manufacturers' equipment warranties shall be activated in the Owner's name and shall commence on the date of system acceptance. In the case of Contractor modified equipment, the manufacturer's warranty may be voided. In such cases, provide a warranty equivalent to that of the original manufacturer.

C. All high-level software shall follow the warranty conditions specified by the manufacturer. Immediately update or upgrade the Owner's installed software as soon as new versions, updates or patches become available from the manufacturer at no additional cost to the Owner within this warranty period.

D. Response Time: Provide a qualified technician familiar with the work at the Project Site within 12 hours after receipt of a notice of malfunction. Provide the Owner with the telephone number attended 8 hours a day, 5 days a week, and an answering service or equivalent facility attended 24 hours a day, 7 days a week, to be called in the event of a malfunction. Provide repairs at no expense to the Owner and at the Owner's request, alternate facilities, services and systems for the duration of the repairs to any defective work of this Section. Provide a complete and operational System, within 48 hours after notification of a malfunction.

E. All work requested due to warranty issues shall be performed during regular working hours unless the Owner agrees to pay the difference in labor rates for overtime or night time work.

F. The Contractor shall use qualified service personnel to respond to all warranty issues or calls.

G. Off Site Service: Conduct all warranty repairs and services at the Project Site, unless in violation of manufacturer's standard product warranty. Provide substitute systems, equipment, and/or devices acceptable to the Owner for the duration of off-site repairs. Provide transportation for substitute and/or test systems, equipment, devices, materials, parts and personnel to and from the Project Site.

1.12 Owner's Instructions

A. General

1. Conduct training on the completed system at a reasonable convenience of the Owner during normal Owner business hours. Contractor is to assess the complexity of the system and shall fully train the operation and maintenance staff named by the Owner.

2. Do not start training until all systems have been commissioned, training manuals are approved and an agenda along with schedule of each departmental training session has been submitted to the owner.

3. Training shall be conducted in the actual room that is the topic of the training session.
4. The client asserts legal and beneficial ownership of all training materials which are specifically commissioned for this project.

B. Operator Training – Do not start training before system is in full operation and all components have been signed off by owner's representative. Use the items covered in the commissioning portion of this specification as a basis for the training curriculum.
   1. At least two 2-hour sessions of instruction will be given in order to familiarize the Owner with the operation of the system.

C. Maintenance Training
   1. At least two 2-hour sessions of instruction will be given in order to learn how to maintain and troubleshoot the system. A maintenance binder shall be provided by the Contractor with all manufacturer-specific operating and maintenance information for each piece of equipment used. On large jobs, the binders will be sub-divided into individual audio, and control binders. Provide training on at least the following system features:
      a. Firmware upgrades
      b. Complete use of system as outlined in the Commissioning section plus advanced troubleshooting.

D. Training Video
   1. A training video shall be produced and cover all aspects of the systems operation.
   2. Each page of all user interfaces shall be explained and recorded while gestures are made on the screen. Each button on the user interface shall be explained and demonstrated.
   3. All portable equipment that connects to the system shall be demonstrated both in their physical connection and routing method at the user interface.
   4. All source equipment shall be explained in both physical loading of media and transport control as well as user interface control.
   5. Demonstrate on basic troubleshooting.
   6. Provide training on items as outlined in the Commissioning section of this document.
   7. Demonstrate system start up and shut down.
   8. Audio and video files shall be combined and burned to DVD for distribution to each department.
   9. Provide professional MP4 with searchable index of topics covered.
   10. Provide label with client's logo, room name/number, title, length and topics covered.

E. A training manual specific to this system will be written covering the basic and advanced functional techniques necessary to operate the system in a reliable and fully-functional condition. The Contractor shall submit hard color copies of the training manual as well as a soft copy in PDF or DOC format. Provide a hard copy of the training manual for each person to be trained. This manual shall include:
   1. All contact information, including emergency and after hours phone and pager numbers, for requesting service assistance from the Contractor.

2. A 11x17 set of as-built drawings of the completed project (a full-sized set will be issued to the client for their use, a half-size set will be attached to the inside back door of the main equipment rack).
3. A table of contents at the beginning of the manual.
    a. The manual will begin by explaining basic information such as manual references, abbreviations, any assumptions made by the author, prerequisites required, numbering convection, etc.
    b. It will then proceed to the manual objectives.
    c. Explain what the end user should understand after reading the manual.
    d. It will cover the basics of the user interface including start up and shut down procedures, log on procedures, access privileges, operator password, levels of security, file structure, etc.
    e. The manual shall proceed to describe each user interface and its function. It will cover every layer of the interface and how to navigate through them.
    f. Each of the system presets shall be explained and the physical setup of the equipment and floor plan during presets shall be illustrated. Source equipment shall have their routing scheme explained and illustrated. Portable equipment and its connection to the system shall be explained and illustrated.
    g. The manual will end by explaining basic troubleshooting procedures and equipment care instruction.
4. The Contractor's maintenance instructions, which will include the manufacturer's maintenance instructions found on the factory manuals to keep the manufacturer's warranty in force.
5. A list of consumables (batteries, etc.) required to keep the system operating over time, along with sources of supply (if not readily available).
6. The Contractor shall compile and submit all factory warranty registration forms or cards for each piece of equipment furnished for this project.
7. A form requesting feedback from the end user as to how the manual can be improved and a section to report errors discovered.
    a. The Contractor shall make the corrections and improvement suggestions after receiving feedback from the users. This will be completed at no charge to the client. The manual will contain a date stamp and version number. Each feedback and error correction manual reissue will include a new version number.

F. Initial Use Support
1. Provide standby trainer/system engineer during the first two public events.

1.13 Maintenance

A. The Contractor shall, within the warranty period, schedule two visits to inspect and perform preventive maintenance on the system. The first visit shall be six months after the commencement of the warranty period. The last visit shall be just prior to the end of the warranty period.

B. The Contractor shall use qualified service personnel to conduct all maintenance work.

C. All maintenance work shall be performed during regular working hours unless the Owner agrees to pay the difference in labor rates for overtime or night time work.

PART 2 - PRODUCTS

2.01 General

A. Quality of Products

1. Materials and equipment specified herein have been selected as the basis of acceptable quality and performance and have been coordinated to function as components of the specified systems.
2. Where a particular material, device, piece of equipment or system is specified directly, the current manufacturer's specification for the same shall be considered to be a part of these specifications, as if completely contained herein in every detail.
3. Each material, device or piece of equipment provided herein shall comply with all of the manufacturer's published specifications for that item.
4. Equipment shall be from the manufacturers' current stock and shall not be stored longer than 1 year prior to installation, unless written approval to do otherwise is provided by the manufacturer and submitted for review by the Owner.
5. All products shall be a product of firms regularly engaged in the manufacturing of electrical, electronic or optical equipment. The equipment shall be the latest model or type offered which meets the applicable specifications at the time of the submittal. Discontinued items replaced by newer models or versions are prohibited and should not be submitted for review.
6. Quality of workmanship and fabrication of all equipment and components, which are custom fabricated, shall be comparable to professional equipment produced by specialized manufacturers of the trade involved and will be verified by inspection. Only firms having 5 years of experience in all aspects of the fabrication and installation of similar systems will be allowed to perform the work.
7. All materials and products shall be new and of professional quality. Unless specifically stated in the drawings or specifications, no existing or used materials will be installed.

B. Quantity

1. Provide the quantity of products as shown on the Contract Drawings, or as otherwise indicated herein.
2. The equipment listed in section 2.02 consists of all major equipment for the project. The Contractor shall integrate into the system design and provide any additional components, wiring, programming, etc., to complete a functional system operating as described within the specifications and the for construction drawings.

3. Components or equipment not specified or indicated on the drawings that are required to make a fully functional systems per the Owner's requirements and the design intent, shall be furnished and installed by the Contractor, and shall be submitted for Owner review.

C. Preference

1. Where more than one manufacturer is listed herein as acceptable or equivalent, no preference is intended or implied by the order of listing.

D. In the event that a specified piece of equipment or product has been superseded, discontinued or is no longer available from the manufacturer, the Contractor shall submit a request for substitution of the originally specified product. The substitute product shall be the manufacturer's most current model of the specified product, or if the line has been discontinued, a product by the same manufacturer with specifications meeting or exceeding, and as close as possible to those of the originally specified product. Refer to Alternatives and Substitutes section for clarification.

E. Provide Complete

1. Provide all auxiliary and incidental materials and equipment necessary for the operation and protection of the Work of this Section as if specified in full herein.

F. Provide New

1. All materials provided under the Work of this Section shall be new, shall be the manufacturer's latest design/model, and shall be permanently labeled with the manufacturer's name, model number and serial number.

2. Products and materials shall be clean, free of defects, damage and corrosion.

G. Similar

1. Similar devices shall be of the same manufacturer, unless specifically noted otherwise in these specifications.

H. Safety Agency Listing

1. All devices provided under the Work of this Section that are connected to the Project electrical system shall be listed by Underwriters Laboratories (UL) or other Nationally Recognized Electrical Testing Laboratory acceptable to the Authorities having jurisdiction at the Project site, and shall be so labeled. Absent such listing, comply with Regulatory Requirements applicable to Unlisted Equipment.

I. Power Rating

1. All devices provided under the Work of this Section that are connected to the Project electrical system shall provide stable performance in full accordance with these specifications when operated on main service which complies with ANSI standard tolerances for voltage, frequency, transients and related parameters.

J. Circuit Protection

1. All active devices shall include integral fuse or circuit breaker protection.

2. All circuit breakers shall be fully magnetic.

3. Protection devices shall be located to facilitate examination, resetting and/or replacement without the need to disassemble or demount the associated device.

4. Contractor-fabricated items shall be provided with either indicating type circuit breakers or fuses of the clear glass cartridge type, mounted in fuse holders which will indicate a blown or defective fuse.

K. Continuous Use

1. All active circuitry shall be solid state and shall be rated for continuous use. All circuit components shall be operated in full compliance with the manufacturer's recommendations and shall contain sufficient permanent identification to facilitate replacement.

L. Construction

1. All electronic equipment shall be of the "dead-front" type and shall be designed for standard 19" EIA rack mounting, unless otherwise indicated.
2. Steel frames and enclosures shall be designed and wired to eliminate all induced currents within both the units and the systems.
3. All bolted connections shall be made with self-locking devices.
4. Coordinate all consoles and panels so that the general appearance is similar, or as directed by the Owner.
5. All operating panels shall be at least 1/8" thick aluminum.
6. Provide locking panel covers on all recessed, semi-recessed or surface mounted control panels not located in the equipment rooms, unless specifically noted otherwise. Panel locks shall be flush with no protrusions beyond the panel face when the door is closed. Recessed control panels shall be recessed within the back box to a depth sufficient to permit a locking hinged panel cover to completely close without affecting any device within the enclosed area.

M. Identification

1. Provide permanent intelligible identification on, or adjacent to, all connectors, receptacles, controls, fuses, circuit breakers, patching jacks, and the like. This identification shall clearly and distinctly indicate the function of the item and shall be numbered or lettered to correspond with the function, circuit and location consistent with field and shop drawings.

N. Keys

1. Key all boxes, cabinets, enclosures, panels, controls, doors and related provided for similar usage within a system identically. For each unique key type, provide a quantity of ten. Stamp each key with a reference designation.
2. Submit a schedule of keying to the Owner. Where so noted, provide Project Standard lock cylinders and keys; coordinate with the work of other Sections.

O. Assistive Listening System (RF)

1. An assistive listening system using wireless radio frequency (RF) transmitter and headsets will allow personal monitoring of the audio program for the hearing impaired. The transmitter will be a frequency agile unit with no less than 30-channel capability and will broadcast the main audio program to personal headsets used by hearing impaired audience members. The system and quantity of headsets supplied shall conform to the ADA requirements (section 219 and 706) for the space. Stereo headset type and hearing aid compatible (T-Coil) listening devices are required; ear-bud type

devices are not acceptable. Supply a drop-in type battery charging system capable of servicing multiple receivers, with sufficient charging capacity to charge each receiver simultaneously. Follow the table below for quantity requirements.

Capacity of Seating in Assembly Area	Minimum Number of Required Receivers	Minimum Number of Required Hearing Aid Compatible Receivers
50 or Less	2	2
51 to 200	2, plus 1 per 25 seats over 50 Seats *1	2
201 to 500	2, plus 1 per 25 seats over 50 Seats *1	1 per 4 Receivers *1
501 to 1000	20, plus 1 per 33 seats over 500 *1	1 per 4 Receivers *1
1001 to 2000	35, plus 1 per 50 seats over 1000 seats *1	1 per 4 Receivers *1
2001 and over	55, plus 1 per 100 seats over 2000 seats *1	1 per 4 Receivers *1

*1 Or fraction thereof

P. Provide enclosure systems including, but not limited to racks, cabinets, cases and related panels and accessories as specified herein, or approved equivalent. Provide size and quantity as shown on drawings. Provide color as specified by Architect. If no color is shown on drawings, submit manufacturer's standard color chips for selection.

Q. Cable Tray: Provide aluminum ladder style cable tray with flange in side rails where called out in drawings. Size the cable tray to accommodate all wire that must pass through it. Provide all supporting hardware and accessories.

1. Ladder Style Cable Tray
    a. P-W Industries.
    b. Equal by Hubbell.
    c. Approved equal.

R. Floor Mounted Equipment Racks: Provide each bay with basic frame, vented locking rear door, top panel with single 10” fan, certified seismic floor anchor kit, ganging hardware, except where otherwise indicated, at each ensemble of bays, provide end (side) panels to provide complete enclosure.

1. Rack cabinet, heavy duty welded 14ga. CRS, single bay of maximum dimensions 83-1/8"(H) x 24"(W) x 32.5"(D); floor supported with accessory louvered side rack side panel.
    a. Mid Atlantic WRK Series.
    b. Equal by Atlas/Soundolier.
    c. Approved equal.

2. Turret cabinet:
    a. Mid Atlantic Slim 2 Series.
    b. Equal by Atlas/Soundolier.
    c. Equal by Hammond Manufacturing.
3. Wall Mounted cabinet:
    a. Atlas/Soundolier 300 Series.
    b. Mid Atlantic DWR Series.
    c. Equal by Hammond Manufacturing.

S. Rack Panels and Accessories: Rack Mounting Screws: Screws 10-32; length as required for at least 1/4" excess when fully seated; oval head with black plastic non marring cup washer or equivalent ornamental head; nickel, cadmium or black plated; Phillips, Allen Hex, Square-Tip or Torx drive. Slotted screws are not acceptable.
1. Blank Panels:
    a. Atlas/Soundolier S19 Series.
    b. Zero ZP112000 Series.
    c. House of Metal Enclosures (HOME) Series PM.
    d. Middle Atlantic Products BL, SB or HBL Series.
2. Vent Panels:
    a. Middle Atlantic ETF Series.
    b. Equal by Atlas/Soundolier.
    c. Equal by Zero.
    d. Equal by House of Metal Enclosures (HOME).
3. Shelf:
    a. Middle Atlantic Products U Series.
    b. Atlas/Soundolier SH19 Series.
    c. Zero A52 Series.
4. Drawer:
    a. Atlas/Soundolier SD Series.
    b. Middle Atlantic Products UD Series.
    c. House of Metal Enclosures (HOME) SD Series.
    d. Zero A43/A36 Series.
5. Equipment Custom Rackmount Shelf: Middle Atlantic Products Model RSH-4A Series.
    a. Mid Atlantic LBP-IR4, LBP-1S, LBP-1P.
    b. Equal by Atlas/Soundolier.

T. Equipment Enclosure Ventilation: Provide UL Recognized devices. Connect to enclosure power, comply with applicable Codes.
1. Fan panel, 5 1/4" high painted steel rack panel with 4" diameter fans, each fan with chrome plated finger guard, low speed air flow, two fans per panel, total 120 CFM:

a. Mid Atlantic QFP-2 Series.

b. Atlas/Soundolier ES/IS Series.

c. BGW Systems.

2. Thermostatic Fan control module, user definable temperature range with status LED's, temperature sensing probe.

a. Middle Atlantic FC Series.

b. Atlas/Soundolier CFT Series.

U. Equipment Enclosure Power and Signal Grounding: Comply with applicable Codes and applicable portions of Division 26. Provide UL Listed devices, Specification or Hospital Grade. Provide all junction boxes, raceway, fittings, wire, supports and fastenings as required for complete installation. Unless otherwise noted, provide receptacles of NEMA 5-15R configuration.

1. Full height receptacle strip, Isolated Ground:

a. Wiremold 3000 Plugmold IG Series.

b. Middle Atlantic PD series vertical power strips.

2. Full height receptacle strip, three or more circuits, Isolated Ground:

a. Wiremold 3000 Series with Specification Grade IG 5262 Series receptacles.

b. Middle Atlantic PD series vertical power strip.

3. Wireway, lay in, NEMA 1: Any meeting NEMA 1 and UL870. Size as required.

4. Flexible metal conduit: Comply with Division 26.

5. Sequencing Power System:

a. The Contractor is to design and build power sequencing and surge suppression systems that will control and distribute power in the equipment racks. The system will be designed to sequentially connect power to all of the audio-visual equipment in the equipment racks. Outlets are mounted to the unit's back plate or on a remote strip. If the project utilizes a control system, the sequencing power system will be controlled by the software configurable control system. The touch panel's shut down button will prompt a second time asking "Are you sure you want to shut the system down?" A positive response will activate system shut down. A push button control station's shut down button will be pressed twice to shut down the system. If the project does not include a control system, the Contractor is to provide a dedicated sequential controller in the equipment racks.

1) 15 amp or greater power capacity.

2) 3-prong 15 amp 120VAC isolated ground outlets (provide required amount).

3) Individual sequencing steps for each outlet.

4) Adjustable power-up time delay and outlet sequencing intervals.

5) Modular power raceway systems shall be constructed of 18-gauge min-spangle galvanized steel.

6) Remote controllable via contact closures (if applicable).

7) Status indicator on touch panel (if applicable).

b. Approved subject to above:

1) Middle Atlantic RLM-XX, RM-XX, R-XX or M-XX Modular Power Raceway Series.

2) Middle Atlantic USC-6R Universal Sequencing Controller.

3) Equal by Atlas Soundolier.

6. Signal Grounding bus bar, insulated from enclosure frame:

a. Atlas/Soundolier BBG Series mounted on standoff insulators.

b. Zero A32 Series.

c. Middle Atlantic.

d. Panelboard Isolated Ground bus kit by manufacturer of Project Panelboards specified in Division 26.

7. Multi-Outlet Assembly, Surge Suppressing, UL Listed. Comply with ANSI/IEEE C62.41-1980. Provide at least six receptacles. Provide equivalent to:

a. Surgex SX RT series.

b. EFI Electronics Corporation Model 153.

c. MCG Electronics, Inc. Model 296 (subject to UL Listing).

d.

2.02 Products

A. Major System Components

DEVICE ID	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
AIU1	AUDIO INTERFVACE UNIT (BLUETOOTH)	ATTEROTECH OR EQUAL	unBT2A	
AIU2	AUDIO INTERFVACE UNIT	ATTEROTECH OR EQUAL	AXIOM ML1	
ALA	ASSISTIVE LISTENING ANTENNA	LISTEN TECH OR EQUAL	LA-122	
ALR	ASSISTIVE LISTENING RECEIVER	LISTEN TECH OR EQUAL	LA-4200-216	LA-402 HEADPHONE
ALT	ASSISTIVE LISTENING TRANSMITTER	LISTEN TECH OR EQUAL	LT-800-216-01	LA-326 RACK MOUNTING KIT, LA-381 CHARGING STATION
BOB1	BREAK OUT BOX	ATTEROTECH OR EQUAL	AXIOM AXP20	
ERK1	EQUIPMENT RACK	MIDDLE ATLANTIC OR EQUAL	SR-24-28	PLEXI DOOR AND LOCK
GNM1	GOOSENECK MICROPHONE	AKG OR EQUAL	DST99 S	

DEVICE ID	DESCRIPTION	MANUFACTURER	MODEL	ACCESSORIES
MIX1	MIXER	SHURE OR EQUAL	SCM262	
NL	NECK LOOP	LISTEN TECH OR EQUAL	LA-430	
PA1000/4V	POWER AMPLIFIER	QSC OR EQUAL	CXD4.5	
PEC	PORTABLE EQUIPMENT CASE	PELICAN CASE OR EQUAL	iM2400	
PSQ	POWER SEQUENCER	FURMAN OR EQUAL	CN-2400S	
RC1	REMOTE CONTROL	FURMAN OR EQUAL	RS-2	
SP1	SPEAKER	JBL OR EQUAL	AWC129	MOUNTING BRACKETS & MOUNTS AS NECESSARY
SP2	SPEAKER	JBL OR EQUAL	AW295	MOUNTING BRACKETS & MOUNTS AS NECESSARY
WLM	WIRELESS MICROPHONE	AUDIO-TECHNICA OR EQUAL	ATW-T3202/C710	
WMA	WIRELESS MIC ANT	AUDIO-TECHNICA OR EQUAL	DFINB	MOUNTING BRACKET
WMR	WIRELESS MIC RECEIVER	AUDIO-TECHNICA OR EQUAL	ATW-R3210	

B. The above list of Major System Components only outlines the major items necessary to allow the system to function as designed. It lists no power supplies, balancing transformers, power splitters, modular cards or other auxiliary components required to achieve a functioning system. Contractor is required to supply all components needed to provide a complete and operable system as outlined in the contract documents. The full set of construction documents are to be used when preparing a bid. This list is not intended to provide a full bill of materials.

C. Patch bays shown on plans and elevations are for placeholder information only. Contractor is to determine the exact amount of patch needed as per single line diagrams.

2.03 Finishes

A. Any item or component of the Work of this Section which is visible shall comply with the following. Finishes noted or scheduled on the Contract Drawings shall take precedence. Submit all color samples of all items visible to public for approval.

1. Where finishes are not noted or otherwise defined in the Contract Documents, submit manufacturer's standard finish samples for selection by the Owner.

2. Paint loudspeaker cabinets to match exactly the surrounding and adjacent surfaces. Submit paint sample to Owner's representative for approval.

3. Unless otherwise noted, receptacle or device plates subject to connection or operating force shall be stainless steel or hard anodized aluminum. Provide plates which generally match the appearance of project standard receptacle or device plates in view in the same area. For anodized aluminum, submit samples of standard colors for selection by Owner.

4. Operating panels shall be steel, primed, painted with thermosetting epoxy paint, with legends silk-screened in contrasting color, and coated with clear epoxy thermosetting coating; or aluminum, hard anodized, with legends engraved and filled with contrasting color, all coated with clear epoxy thermosetting coating.

5. All steel surfaces shall be treated with primer equivalent to zinc phosphate and finish painted with baked enamel or painted with a thermo setting epoxy paint.

6. All aluminum surfaces, except those used as operating surfaces, shall be anodized and then painted with a thermo setting epoxy paint.

B. Custom Fabricated Plate Screws

1. Match the finish of the screws used to mount the custom fabricated plates with the finish of the custom fabricated plate.

C. Equipment or Cover Plates

1. Paint equipment or cover plate to match exactly the surrounding and adjacent surfaces when require by architect.

D. Manufacturer's logos

1. Remove all manufacturers' names, logos, or other symbols from speakers or other objects placed in view of the public.

2.04 Alternatives and Substitutes

A. Substitutions of equal equipment beyond the alternatives listed will be permitted only in accordance with Division 1. If a requested substitution requires a change in any of the contract drawings, a revised drawing must be submitted as part of the substitution request. The Owner's Representative shall be the final judge of the acceptability of substitutions. The burden of proof of equivalence is the responsibility of the Contractor.

B. Acceptance of a product shall not, in any form or manner, relax the system performance requirements of this Specification and the performance characteristics of the product.

C. The Contractor shall submit for review a complete list of proposed substitutions for approved equipment listed in Part 2.

D. For all substitutions, the Contractor shall provide the manufacturer's independent test data to demonstrate that the proposed alternatives to the approved equipment comply with the specifications. Specifications shall contain at least all information available for the specified product.

E. The Contractor shall submit a description and drawings showing all changes to the Contract Documents that the proposed substitution will require for proper functionality and operation.

F. Proposed substitutions shall not affect dimensions shown on the Contract Document except as submitted for review and approved by the Owner.

G. Any redesign or construction costs required to integrate the proposed substitution shall be the responsibility of the Contractor. Any costs incurred by the Owner, Owner's representatives, Architect, Engineers or Consultants attributable to the integration of a proposed substitution shall be borne by the Contractor.

H. Any proposed substitution shall have no adverse effect on other trades, the construction schedule or specified warranty requirements.

I. The functionality, performance, general appearance and quality of the proposed substitution shall be equivalent to or superior to those of the specified item.

J. Any change to the Contract (deductive or additive cost) associated with a proposed substitution shall be submitted to the Owner for review at the time the substitution is proposed and accompanying a substitution request documentation.

K. The Contractor shall provide the same warranty for the substitution that the Contractor would for the specified product.

L. The Contractor shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects equal to the designed system before the substitution was made. In the event that the substituted material or equipment fails to meet performance testing standards after installed, the Contractor shall replace substituted material or equipment with those initially specified.

PART 3 - EXECUTION

3.01 General

A. Perform the Work of this Section in accordance with acknowledged industry and professional standards and practices, and the procedures specified herein.

B. Furnish and install (herein, "provide") all materials, devices, components, and equipment required for complete, operational systems.

C. Contractor is to supervise the installation of back boxes and terminal cabinets installed by the Division 26 Contractor. Contractor is to verify that correct boxes are installed in their proper locations before any drywall has been installed.

3.02 Examination

A. Immediately report to the Consultant any discrepancies between the specifications and drawings. This includes discrepancies between the technical specification documents and actual field dimensions or findings that may hinder installation work, conflict with other trades, or cause delays.

B. Carefully examine all details that affect all aspects of the systems described in the specifications and drawings.

1. Examine, coordinate and confirm all drawings and details.

2. Examine, coordinate and confirm all electrical power requirements, conduits, raceways, boxes, and etc.

3. Examine, coordinate and confirm work of other trades that may influence the outcome of the design, specification, and performance of the systems.

3.03 Preparation

A. This installation section is only meant as a guideline for the Contractor. The Contractor shall be responsible for executing all installation work in a manner that is in accordance to industry-accepted standards or governing codes, whichever is more stringent. Installation activities shall be executed in an organized and orderly manner. These steps include, but are not limited to, pre-delivery testing, delivery, unloading, installation, equipment / cable labeling, programming, set-up / calibration / alignment / adjustment, testing, commissioning, training, and documentation.

B. Protect all existing work surfaces, furniture, equipment, fixtures and etc. before commencing installation work. Any damage to the existing physical and electrical property due to installation work shall be the responsibility of the Contractor.

C. Immediately hand over any de-installed equipment to the Owner for safe-keeping if equipment is to be reused.

D. Carefully remove any obstructions such as fixed seating, ceiling tiles, furniture, equipment and etc. that would obstruct or hinder the installation work. Damage caused by undue care in moving these items shall be responsibility of the Contractor.

E. Examine, coordinate, and confirm the cleanliness of the work site before commencing the portion the installation work that involves dust-sensitive electronic or electrical equipment such as audio mixers, switchers, etc. Dust-sensitive equipment that is installed in a work site with air borne dust and dirt shall be properly protected. For example, a video camera on a wall-mounted bracket is protected by a clean plastic bag to prevent dust from contaminating it. Seal the bag's opening using adhesive tape.

F. Prior to commencing installation work, ensure that the surrounding areas are clean and promote ease of installation work.

G. Ensure that all equipment rack and equipment locations are clean before commencing installation work.

H. Unless specified otherwise, furnished products / equipment shall be tested, delivered and installed. And, all systems shall be tested and commissioned to fully operational and properly configured condition.

I. All electrical equipment shall be burned-in or tested at the Contractor's shop before delivery. This pre-installation test shall reveal any equipment that is faulty, malfunctioning or dead out of the box ahead of time.

J. All radio frequency (RF) operated devices shall be tested on-site prior to installation to determine blind spots, RF interference, or any other transmission / reception problems. The Contractor shall be responsible for costs associated with providing additional support or accessory equipment (antennas, amplifiers, cables, etc.) and / or services to improve signal transmission / reception.

K. Provide all support equipment (ladders, man-lifts, tools, etc.) required to complete the installation work in a safe and expeditious manner.

L. Obtain any plan approvals, permits and licenses required by inspection authorities prior to execution of any installation work. The Contractor shall be responsible for all associated fees and costs incurred while fulfilling this requirement.

M. Ensure that all equipment is accessible for operation and maintenance work. Under no circumstance shall equipment be inaccessible or inconveniently located.

N. Aside from the systems' operational features, provide equal attention to the overall aesthetics of the installed equipment and cabling. Special attention to aesthetics shall be extended to equipment or cabling in public spaces.

O. Firmly secure all fixed equipment and hardware in place and ensure that they are plumb and / or square. An exception to this shall be portable or movable equipment.

P. Structurally mounted equipment: All equipment shall be mounted in accordance to all applicable safety codes, standards and practices. The one that provides for the most stringent rule shall prevail. All mounting hardware shall have a load rating by, at least, a factor of 5 (500% or greater) in reference to the weight of the equipment to be mounted or suspended. An exception to the rule shall be existing local safety codes or standards requiring greater load capacities.

Q. Seismic restraints: Abide by all the seismic restraint requirements described in all applicable building codes in force at the work site. If no provisions exist for a particular situation, follow these minimal recommendations.

1. Fixed equipment: Mount and brace to the building structure to minimize potential hazards to personnel and damage to property during any kind of seismic event.
2. Floor mounted equipment: Bolt equipment securely to the floor to prevent from toppling during any kind of seismic event
3. Vertical-mounted columns: Apply braces to the vertical column in four opposing directions back to the mounting surface. This will minimize sway in any direction. Provide a separate, flexible restraint (e.g. aluminum braided aircraft cable) with a capacity of 5 times the weight of the total mounting system. The same applies to the anchor to which the flexible restraint is attached and the method of attachment to the structure.
4. No equipment, equipment supports, or mounts must fail before the structure fails.
5. Seismic restraint measure must not interfere with fire stopping.
6. Notwithstanding compliance with these minimum recommendations, it is the Contractor's responsibility to ensure that the seismic restraint measures taken are adequate for the circumstances, including, if required, verification by an independent structural engineer. The cost of all such engineering shall be the responsibility of the Contractor.
7. Penetration of the Slab: Verify that any mounting or restraint work that requires deep or thorough penetration of the slab shall not damage embedded materials including, but not limited to, slab tensioning devices or conduit. Verify the slab by X-ray or other method before proceeding. The Contractor shall be responsible for all costs associated with this investigation.

3.04 Installation

A. Follow manufacturer's instructions for installing, operating, configuring, and programming their equipment. Do not perform modifications to equipment that would void its warranty.

B. Pull and terminate all cables, and interconnect all equipment and components in accordance with approved drawings. Install audio-visual cover plates and faceplates onto all boxes.

C. Loudspeaker Assembly Installation

1. Loudspeakers:

a. Verify proper installation of loudspeaker enclosures and related support.

b. Verify that no loudspeaker assembly is subjected to stresses or loading effects in any way contributing to possible extraordinary failure.

c. Connect loudspeaker assemblies to the appropriate 70 volt-line transformer tap as applies. Verify specified polarity. Use insulated crimp connectors or insulated "bobtail" splices applied with manufacturer's recommended ratchet tooling. Wago Wall-Nuts 773 Series or equal are acceptable. Wire nuts or "Scotchlock" connectors shall not be acceptable.

d. Verify that loudspeaker grille openings and loudspeaker components are clear of paint after finishing.

e. Perform preliminary loudspeaker tests specified herein. Correct non-conforming conditions.

f. Adjust 70 volt-line transformer taps as required to realize uniform sound pressure level as specified herein. Document final 70 volt-line transformer taps on the Record Drawings.

g. Correct all conditions giving rise to noise, rattle or other extraneous sounds owing to operation of a loudspeaker assembly under any specified operating condition.

2. Packaged Loudspeakers:

a. Design, engineer and provide complete, all means of support, suspension, attachment, fastening, bracing, and restraint (hereinafter "support") of packaged loudspeakers. Provide engineering of such support by parties licensed to perform work of this type in the Project jurisdiction. Submit in timely manner.

1) Comply with applicable Code and the requirements of the Authorities having jurisdiction.

2) Provide safety factor greater than six or as required by Code, whichever is greater.

b. Mounting shall:

1) Permit each packaged loudspeaker to be re-oriented at least plus or minus 5^{o} from angles shown on the Contract Drawings for optimum coverage.

2) Maintain precise location and orientation of each packaged loudspeaker component after such adjustment when subject to vibration of loudspeaker components due to operation at full specified system output

level, and when subject to normal building motion and Code defined seismic induced building motion.

3) Use rigid metal support members, such as threaded rod with locking nuts.

c. Test each packaged loudspeaker prior to installation at design locations. Test at least polarity and freedom from buzzes, rattles and objectionable distortion, using procedures specified herein. Correct non-conforming conditions.

d. Do not apply any load to building structure without first obtaining written approval of the Owner. Obtain per Project procedures.

e. During Acceptance Testing, adjust orientation of packaged loudspeakers as directed to achieve optimum coverage. Provide workers and ladders as required. Perform such adjustment with no claim for additional cost or time.

f. Do not suspend or orient the loudspeaker cluster prior to verification by the Owner or Owner's representative, that the intended location is correct with respect to as-built conditions such as the final dimensions of the space.

3.05 Labeling and Identification

A. All cables and connecting blocks shall be clearly, logically and permanently marked and identified by the following means:

1. Use cable labels similar to the Panduit Polyolefin Self-laminating Labels for inkjet or LaserJet printers or any other means acceptable to the Consultant. Cable labels should be machine printed and not handwritten.
2. Cable labels should be placed approximately 12 cm. from each end of the cable.
3. Labeling conventions shall be clear, logical, and must be acceptable to the Consultant.
4. Include all cable identification numbers on all wiring diagrams and cable schedules.
5. For fiber optic cables, use cable identification products such as the Panduit Label Core series or any other means acceptable to the Consultant.
6. For connector and terminal blocks, label using Wago, Phoenix or any means acceptable to the Consultant.

B. All cover plate, switches, panels, outlets, etc. labeling shall be engraved and filled, or silk-screened or by any other means acceptable to the Consultant. Do not use Dymo, Brother Ptouch, or other similar labeling products.

C. Protective Devices

1. Identification of fuses and circuit breakers shall indicate protected circuitry, rating of protective device and voltage across open circuited protected device.

D. Panels and Receptacles

1. Panel surfaces shall be engraved and filled or silk screened with identification, or shall be provided with 1/16 inch (minimum) thick laminated plastic labels with engraved block characters at least 1/8 inch high fastened to the equipment by stainless steel screws or rivets. Provide white characters on black background unless otherwise noted. Do not use Dymo, Brother Ptouch, or other similar labeling products.

E. All equipment shall be labeled in a clear, logical manner or by any other means acceptable to the Consultant.

1. For equipment identification, use 'badges' made of aluminum or plastic or any other acceptable material with engraved and filled, or silk-screened labeling. Stick these badges using industrial-strength doubled-sided 3M adhesive tape. Label schemes should be clear, logical, and simple or by any other means acceptable to the Consultant. Indicate equipment labeling schemes on all elevation and plan drawings showing the front and / or rear of the equipment racks. The reader should be able to easily reference the label description to specific equipment in the Operation and / or Maintenance Manuals. Do not use Dymo, Brother Ptouch, or other similar labeling products.

3.06 Wiring

A. General

1. This section does not apply if the drawings incorporate a wire schedule.

B. Audio Signal Wiring Classification:

1. Type A-l: Microphone level wiring less than -30 dBu, 20 Hz to 20 kHz.
2. Type A-2: Line level wiring -30 dBu to +24 dBu, 20 Hz to 20 kHz.
3. Type A-3: Loudspeaker level or circuit wiring greater than +24 dBu, from 20 Hz to 20 kHz.

C. Control Signal Wiring Classifications:

1. Type C-1: DC control wiring 0 to 50 volts.
2. Type C-2: Synchronous control or data wiring 0 to 40 volts, peak-to-peak.
3. Type C-3: AC control wiring 0 to 48 volts, 60 Hz.

D. Additional Wiring Classifications:

1. Type M-1: DC power wiring 0 to 48 volts.
2. Type M-2: AC power wiring greater than 50 volts, 60 Hz.

E. Wiring Combinations: Except as indicated herein, conduit, wire ways and cable bundles shall contain only wiring of a single classification. The following combinations are acceptable in conduit, or cable harnesses. Additional acceptable combinations may be indicated on the Contract Drawings.

1. Types A-1, C-1, and M-1.
2. Types A-2, C-l, C-2, and M-l, runs less than 20 feet.
3. Types A-2, C-1, and M-1.
4. Types A-3, C-1, C-2, and M-1.
5. Types A-2, V-1, and V-3.
6. Types V-1, V-2, V-3, and C-1.
7. Types M-2 and C-3.

3.07 Wire and Cable Installation

A. Provide permanent identification of run destination at all raceway terminations.

B. All wire and cable shall be continuous and splice-free for the entire length of run between designated connections or terminations.

C. All shielded cables shall be insulated. Do not permit shields to contact conduit, raceway, boxes, panels, connector shell or equipment enclosures.

D. Within buildings, make splices only in designated terminal cabinets and/or on designated equipment backboards. Outside buildings, make splices only in designated manholes and/or hand holes. Protect splices outside of buildings with splicing kits equivalent to Scotch-cast Re-enterable. Make splices only with connectors or terminal devices specified herein. Document all splices on Record Drawings.

E. Verify that all raceway has been de-burred and properly joined, coupled, and terminated prior to installation of cables. Verify that all raceway is clear of foreign matter and substances prior to installation of wire or cable.

F. Inspect all conduit bends to verify proper radius. Comply with Code for minimum permissible radius and maximum permissible deformation.

G. Apply a chemically inert lubricant to all wire and cable prior to pulling in conduit. Do not subject wire and cable to tension greater than that recommended by the manufacturer. Use multi-spool rollers where cable is pulled in place around bends. Do not pull reverse bends.

H. Provide a box loop for all wire and cable routed through junction boxes or distribution panels. Provide tool formed thermal expansion loops at cable at manholes, handholes and at both sides of all fixed mounted equipment. Cable loops and bends shall not be bent at a radius greater than that recommended by the manufacturer.

I. Secure all wire and cable run vertically for continuous distances greater than 30 feet. Secure robust non-coaxial cables with screw-flange nylon cable ties or similar approved devices appropriate to weight of cable. For all other cables, provide symmetrical conforming nonmetallic bushings or woven cable grips appropriate to weight of cable.

J. All Category type cable, connectors and plugs shall be color coded for easy visual distinction. Color coded insert type boots shall be installed on all Category type plugs. A colored coded ring will be provided on all chassis connectors (i.e. Neutrik ACRF-#). Cable connecters shall be equipped with Neutrik BSE-# color coded bushings. The Color code shall be as follows:

1.	LAN	=Yellow
2.	Audio Network	=Red
3.	AV Local Area Network	=Orange
4.	Computer Training KVM	=Grey
5.	AV UTP	=White

3.08 Connector and Signal Polarity Convention

A. Maintain consistent absolute signal polarity at all connectors, patch points and connection points accessible in the system. Where applicable, a positive polarity electrical signal shall yield positive acoustic pressure from the loudspeakers.

B. Audio signal connector convention: AES14-1992 (ANSI S4.48-1992) AES standard for professional audio equipment - Application of connectors, Part 1, XLR-type polarity and gender.

Signal		Connector	Wire
Signal Phase		Pin 2	Red or White
Signal Anti-Phase	Pin 3		Black
Signal Ground		Pin 1	Drain Wire

C. RF Connector Convention:

Signal		Connector	Wire
Signal Phase		Center Pin	Center conductor
Signal Anti-Phase	Shell		Shield
Signal Ground		Shell	Shield

D. Voice/Data Connector Convention: Comply with EIA/TIA-568C.

3.09 Wiring Practice

A. Land all non-coaxial field wiring entering each equipment rack at specified terminal devices prior to connection to any equipment or devices within racks. At Contractor's option, such terminals may be located in the equipment racks or at backboards provided. Coordinate such selection with Project construction sequence and test procedures specified herein.

B. Identify all wire and cable clearly with permanent labels wrapped about the full circumference within one inch of each connection. Indicate the number designated on the associated field or shop drawing or run sheet, as applies. Assign wire or cable designations consistently throughout a given system. Each wire or cable shall carry the same labeled designation over its entire run, regardless of intermediate terminations. Provide any of the following:

1. Continuous permanent imprint; equivalent to Clifford of Vermont, Inc. "Quik-Pull".
2. Direct hot stamp.
3. Heat shrinkable factory hot stamped; equivalent to Brady sleeve Heat shrink.
4. Adhesive strip printed labels wrapped the full circumference of the wire and sealed with clear heat shrink tubing; equivalent to Thomas and Betts or Panduit Insta-code with clear heat-shrunk tubing equivalent to Alpha.

C. Apply all crimp connectors only with manufacturer's recommended ratchet type tooling and correct crimp dies for connector and wire size. Plier type crimp tooling shall not be acceptable.

D. Coordinate insulation displacement (quick connect) terminal devices with wire size and type. Comply with manufacturer's recommendations. Make connections with automatic impact type tooling set to recommended force.

E. Make all connections to screw-type barrier blocks with insulated crimp-type spade lugs. Lugs are not required at captive compression terminal type blocks. Provide permanent designation strips designed for use with the terminal blocks provided. Make neat, intelligible markings with indelible markers equivalent to "Sharpie".

F. Tin terminated shield drain wires and insulate with heat shrinkable tubing.

G. Use only rosin core 60/40 tin/lead solder for all solder connections.

H. Dress, lace or harness all wire and cable to prevent mechanical stress on electrical connections. No wire or cable shall be supported by a connection point. Provide service loops where harnesses of different classes cross, or where hinged panels are to be interconnected.

I. Termination and build out resistors and related circuit correction components shall be visible. Do not install in connector shells or internally modify equipment. Show locations on Record Drawings.

J. Correct any and all of the following unacceptable wiring conditions:

1. Deformed, brittle or cracked insulation.
2. Insulation shrunken or stripped further than 1/8-inch away from the actual point of connection within a connector, or on a punch block.
3. Cold solder joints.
4. Flux joints.
5. Solder splatter.
6. Non-grommet, non-bushed, or non-insulated wire or cable entries.
7. Deformation or improper radius of wire or cable

3.10 Signal Grounding Procedures

A. Comply with National Electrical Code.

B. Unless otherwise noted maintain a unipoint ground scheme.

C. Signal and electrical system grounds shall be isolated except at the Project ground field connection.

D. Equipment enclosures shall not be permitted to touch each other unless bolted together and electrically bonded.

E. Ground and bond equipment racks and similar equipment enclosures containing powered equipment exclusively via the Isolated Ground conductors provided under Division 26. INSULATE RACK MOUNTING, ANCHORAGE, AND RACEWAY CONNECTIONS.

F. At each rack, provide an Isolated Ground bus within the rack. At each rack, provide a lug bonded to the rack frame with a #8 TW stranded wire to the rack Isolated Ground bus.

G. At each ensemble of racks, provide a single labeled Isolated Ground tubular-clamp bus bar terminal strip to land the individual rack Isolated Ground bus ground conductors. Connect the main Isolated Ground conductor from the Technical Power panel board at this point.

H. Equipment signal ground shall be to the Isolated Ground System via the green wire of the equipment power cord. Where equipment uses two wire power cord, provide #12 green bond wire to rack IG bus bar. At equipment, provide crimp lug and suitable hardware for bonding.

I. Shielded cables of this section shall be grounded exclusively to Isolated Ground by a single path. Shield shall be tied to Isolated Ground at one end only, i.e., at the low potential (receiving) end of run, unless otherwise noted.

J. Unless otherwise noted, at audio jackfields, tie source shield at jackbay frame. Float shields at connections to output jacks. Bus each row of jack frames and run individual #12 green ground wire for each row to rack IG bus bar.

K. Signal Ground provisions shall realize less than 0.15 ohms to the primary ground connection.

3.11 Equipment Enclosure (Rack) and Equipment Backboard Fabrication

A. Combustible material, other than incidental trim of indicated equipment, is prohibited within equipment racks.

B. Within each equipment enclosure, provide a full-height multi-circuit ISOLATED GROUND outlet strip with branch circuit count as shown on drawings; locate on the left side of the equipment enclosure, as viewed from the rear. In each enclosure provide number of receptacles required by present and future equipment indicated on drawings, plus at least two spare receptacles. Provide flexible steel raceway and junction box for connection of power service. Bond internal raceway to rack frame.

C. Provide a permanent label on the front of each equipment rack including the rack designation, and the circuit breaker number and associated electrical distribution panel designation servicing same.

D. Maintain separation of wiring classifications as specified herein. Separately dress, route and land microphone and line level cables and related on the right side of the equipment enclosure, as viewed from the rear; dress, route, and land loudspeaker level and control cables on the left side of the equipment enclosure, as viewed from the rear.

E. Access shall not require demounting or de-energizing of equipment. Install access covers, hinged panels, or pull-out drawers to insure complete access to terminals and interior components.

F. Fasten removable covers containing any wired component with a continuous hinge along one side, with associated wiring secured and dressed to provide an adequate service loop. Provide an appropriate stop locks to hold all hinged panels and drawers in a serviceable position.

G. Provide permanent labels for all equipment and devices. Where possible, fasten such labels to the rack frame or to blank or vent panels which will remain in place when active equipment is removed for possible service.

H. At jackfields, provide service loop to permit removal of jackfields from rack sufficient to conveniently access all jack contacts for routine cleaning and maintenance. Organize the service loop and harness such that reasonable reconnection of jacks and jack normals is possible without cutting apart the harness.

I. Coordinate the design and execution of wire harnessing of multi-bay rack ensembles with conditions of delivery to installation locations at Project Site, and with the requirement herein for test of the completely wired system in the shop prior to delivery to the Project Site. Organize the wiring harnesses such that they will fold within one shippable unit without risk of damage, or provide polarized multipin connectors and related interconnect systems as specified elsewhere herein.

J. At each equipment backboard, provide UL Listed surge suppressing multi-outlet assembly with at least six receptacles.

3.12 Adjusting and Testing

A. Test Equipment

1. Furnish, store and maintain test equipment at the fabrication shop and the job site for both routine and Acceptance Testing of the Work of this Section. Maintain all test equipment at the job site while work is in progress from installation of equipment racks until Owner Acceptance of this Work; thereafter remove all of this test equipment from the job site. Provide all required test cables, jigs and adapters. Provide at least one of the following items or approved functional equivalents:

2. Audio Systems:

   a. Wide Band Oscilloscope (Tektronix THS700 Series).

   b. True RMS Analog / Digital Volt-Ohm Multimeter (Fluke 187 Series or equal).

   c. Low Distortion Audio Frequency Sine Wave Oscillator (Gold Line TS1).

   d. Measurement Microphones (Earthworks M30, Bruel & Kjaer 4007, Josephson 550).

   e. Sound System Optimization and Acoustic Measurement Analyzer (Goldline TEF, Meyers SIM, SIA Smaart, WinMLS, EASERA).

   f. Harmonic Distortion Analyzer (Sound Technology or Tektronix AA 501A) or Swept Spectrum Analyzer, HP 3580A, or Swept Test System, Audio Precision or Neutrik).

3. Communications and Related:

   a. Level II, Cat5e Cable Pair Tester (Microtest, HP, Scope, Fluke or Siemons set up to meet Category 5e parameters).

   b. Outside Plant Voice Cabling Plant Tester – capable of detecting shorts, opens, reversals, mis-wiring and crosstwists (Siemon STM-8 or equal by Mod-Tap).

   c. Metallic cable pair tester (Wavetek Corporation, Instruments Division, model LANTech 100).

   d. Tone Test Set.

   e. Optical Time Domain Reflectometer (OTDR) for fiber optics.

   f. Any other items of equipment or materials required to demonstrate conformance with the Contract Documents.

B. System Performance Testing and Adjusting Procedures

1. Upon completion of the installation of all equipment in an area, perform the following tests and record results. Verify safe and proper operation of all components, devices, or equipment, establish nominal signal levels within the systems and verify the absence of extraneous or degrading signals. Make all preliminary adjustments and document the setting of all controls, parameters of all corrective networks, voltages at key system interconnection points, gains and losses, as applicable. Submit test report. Correct all non-conforming conditions prior to requesting Acceptance Review and Testing. Perform at least the following procedures:
2. Mechanical: Verify:
    a. Integrity of all support provisions.
    b. Absence of debris of any kind, tools, etc.
3. Power and Isolated Ground: Verify:
    a. Isolation of Isolated Ground system from raceway and related ground.
    b. Grounding of devices and equipment. Integrity of signal and technical power system ground connections.
    c. Proper provision of power to devices and equipment.
4. Signal Wiring: Verify:
    a. Integrity of all insulation, shield terminations and connections.
    b. Integrity of soldered connections. Absence of solder splatter, solder bridges.
    c. Routing and dressing of wire and cable.
    d. Continuity, including conformance with wire designations on running sheets, field and shop drawings.
    e. Absence of ground faults.
    f. Polarity.
5. Use the proper sequence of energizing systems to minimize the risk of damage.
6. Audio Systems:
    a. Electronic Tests; confirm:
        1) Gain at 1 kHz.
        2) Maximum output.
        3) Input clipping level.
        4) Frequency response.
        5) Total harmonic distortion.
        6) Signal-to-Noise ratio.
        7) Signal-to-Crosstalk ratio.
    b. Electro/Acoustic Tests:
        1) Uniformity of coverage.

2) Electronic and acoustic frequency response/one-third octave equalization. Transfer function measurement shall be as close to flat as possible. Measure at ear level. Representative of the Owner will direct final adjustment.

3) Maximum continuous sound pressure level (in the reverberant field). Drive systems with broadband pink noise. Sustain for at least five minutes with no system damage. Measure for "A" and "C" weightings at ear level on loudspeaker axis. Turn off noise.

4) Acoustic signal-to-noise ratio referenced to the specified maximum continuous sound pressure level in the reverberant field. Measure for "A" and "C" weightings at ear level on loudspeaker axis with mechanical systems operating. Present comparison with previous measurement.

5) Acoustic gain before feedback. Locate acoustic source (4 inch loudspeaker/pink noise generator) two feet from system microphone. Measure at system microphone position and at most distant listener position at ear level. Present comparison.

7. Diagnostic Monitoring System:

   a. Demonstrate complete operation.

8. System Overall:

   a. Verify levels.

   b. Provide permanent "wedge" type labels on all controls, as applies, to indicate correct settings after systems performance testing and adjustment procedures have been successfully completed.

C. Loudspeaker Assembly Testing and Adjusting Procedures

1. Upon completion of the installation of all loudspeakers in an area, perform the following tests and record results. Correct non-conforming conditions, unless the cause is clearly outside the Work of this Section, in which case submit the apparent cause to the Owner.

2. Loudspeaker Line Impedance: At terminal cabinets at equipment rooms, measure the impedance of each loudspeaker line. Sweep from at least 20 Hz to at least 16 kHz.

3. Loudspeaker Polarity: Test the acoustic polarity of all loudspeakers using an Acoustic Polarity Tester.

4. Freedom From Buzzes, Rattles and Objectionable Distortion: Individually apply to each loudspeaker line a slow sine wave sweep from 50 Hz to 5 kHz at a level of 6 dB below rated power amplifier output voltage. Listen carefully for buzzes, rattles and objectionable distortion.

5. Uniformity of Coverage: Apply broadband Pink Noise. Adjust level to approximately 70-80 dBA at measurement locations. Measure in 4 kHz octave band at ear level. Adjust loudspeaker aiming and 70 Volt loudspeaker taps for uniformity of coverage.

D. Equipment Rack and Equipment Testing and Adjusting Procedures

1. Conduct procedures in fabrication shop. Verify safe and proper operation of all components, devices, or equipment, establish nominal signal levels within the systems and verify the absence of extraneous or degrading signals. Make all preliminary adjustments and document the setting of all controls, parameters of all corrective networks, voltages at key system interconnection points, gains and losses, as applicable. Submit test report with color photographs of each equipment rack, front and back. Perform at least the following procedures:

2. Preliminary: Verify:

   a. Grounding of devices and equipment. Integrity of signal and electrical system ground connections.

   b. Proper provision of power to devices and equipment.

   c. Integrity of all insulation, shield terminations and connections.

   d. Integrity of soldered connections. Absence of solder splatter, solder bridges.

   e. Absence of debris of any kind, tools, etc.

   f. Routing and dressing of wire and cable.

   g. All wiring, including polarity and continuity, including conformance with wire designations on running sheets, field and shop drawings.

   h. Mechanical integrity of all support provisions.

3. Rig temporary power and grounding: Comply with all applicable Codes, regulations and ordinances.

4. Determine the proper sequence of energizing systems to minimize the risk of damage. Energize. Burn in for at least 120 hours.

E. Telecommunications Cabling Testing

1. Perform telecommunications cabling inspection, verification, and performance tests in accordance with TIA-568-C.1, TIA-568-C.2 and TIA-568-C.3. Perform optical fiber field inspection tests via attenuation measurements on factory reels and provide results along with manufacturer certification for factory reel tests. Remove failed cable reels from project site upon attenuation test failure.

2. Visually inspect UTP and optical fiber jacket materials for UL or third party certification markings. Inspect cabling terminations in telecommunications rooms and at workstations to confirm color code for T568A or T568B pin assignments, and inspect cabling connections to confirm compliance with TIA-568-C.1, TIA-568-C.2 and TIA-568-C.3. Visually confirm Category 6 marking of outlets, cover plates, outlet/connectors, and patch panels.

3. Perform testing for each outlet as follows:

   a. Perform Category 6 link tests in accordance with TIA-568-C.1 and TIA/EIA-568-B.2. Tests shall include wire map, length, insertion loss, NEXT, PSNEXT, ELFEXT, PSELFEXT, return loss, propagation delay, and delay skew.

   b. Optical fiber Links. Perform optical fiber end-to-end link tests in accordance with TIA-568-C.3. E. Final Verification Tests

c. Perform verification tests for UTP and optical fiber systems after the complete telecommunications cabling and workstation outlet/connectors are installed.

3.13 Cleaning

A. Clean each section or area of where the work was conducted after completion to permit immediate use of the area. Remove and discard all refuse, rubbish, and debris.

B. The Contractor shall ensure that all recyclable and environmentally-hazardous waste materials are disposed properly.

C. Make good all existing structures, surfaces, and utilities affected by cutting, coring, mounting, drilling, or other new work.

D. Clean all furnished equipment of dust, dirt, finger prints, smudge, and other material prior to calling for a Substantial Performance of Work Review or Completion of Work Review.

3.14 Protection

A. During the installation phase and up to the date of achieving Substantial Performance of Work, protect finished or unfinished work against damage or loss. In the event of such damage or loss, immediately replace or repair such work or equipment at no cost to the Owner.

3.15 Acceptance Review, Testing Procedures and Commissioning

A. Complete all Work of this Section. Submit Test Report. Submit review copies of Operating and Maintenance Manuals, less reduced set of Record Drawings. Notify the Owner in writing that the Work of this Section is complete and fully complies with the Contract Documents. Request Acceptance Review and Testing by returning Attachment “A” to the Design Consultant. The representative of the Owner will conduct Verification of Submitted Test Data, and otherwise direct testing and adjustment of this Work. These Procedures may be performed at any hour of the day or night as required by the representative of the Owner to comply with the Project Schedule and avoid conflict with these procedures from possible ongoing work of other Separate Contracts and/or the Owner's operations. Provide all specified personnel and equipment at any time without claim for additional cost or time.

B. Personnel: Provide services of the designated supervisor and additional technicians familiar with work of this Section. Provide quantity of technicians as required to comply with Project Schedule.

C. In Addition, Provide:

1. Set of hand and power tools appropriate for performance of adjustment of and corrections to this Work.
2. Include spare wire and connectors and specified tooling for application.
3. Ladders, scaffolding and/or lifts as required to access loudspeakers and other high devices.
4. Test equipment to include but not limited to:
    a. Dual channel FFT-based audio analyzer
    b. Category cable tester, cable length, short, open and miswire test.

5. Complete set of latest stamped, actioned submittals of record for reference.
6. Complete set of Shop and Project Site Test Reports.
7. Complete set of manufacturer's original operation, instruction and service manuals for each equipment item for reference.

D. Demonstrate: Complete operation of all systems and equipment, including Portable Equipment.

1. General
   a. Configure room for each type of event and demonstrate audio-visual system.
   b. Connection of portable equipment. (Laptop, document camera, etc.)
   c. Demonstrate to the Consultant that all functions and equipment for the system work properly when installed as a complete system.
   d. The Contractor shall demonstrate the satisfactory operation of all controls and adjustment circuits of the system.
   e. Demonstrate system startup and shut down procedures.
2. Audio
   a. Route audio to program speakers.
   b. Connect microphone to each panel input and route through system.
   c. Demonstrate and document gain structure through the system.
   d. Demonstrate and document with a dual channel FFT-based audio meter the following:
      1) Polarity of each driver in each cabinet.
      2) Crossover point of high, mid and low section of each loudspeaker.
      3) dB SPL levels from 1-4 kHz at various position in the audience area.
      4) dB SPL level of high, mid, low and sub frequency bandwidth at crossover.
   e. Wireless microphones.
   f. Demonstrate that the audio system is properly time aligned and equalized.
   g. Assistive listening system.
3. The Contractor 's personnel and test equipment shall be made available to the Consultant in order that:
   a. Selected tests and measurements previously made by the Contractor can re-run.
   b. Other tests may be made at Consultant's discretion.
   c. Additional tests or measurements may be made due to changes in field conditions.
4. It is estimated that the acceptance tests and demonstrations will require approximately *two hours*, unless construction or installation problems or deviations from the specifications are discovered.

E. Adjust: As directed by the representative of the Owner.

F. Correct: In timely manner, failure to comply with the Contract Documents, as reasonably determined by the representative of the Owner.

G. Acceptance Documentation

1. Official acceptance of the system covered by this specification will occur when the Design-Builder receives the following written documents:

a. A letter from the Consultant to the Architect acknowledging Final Acceptance of the system stating compliance with all articles of the specifications.

b. A letter from the Architect to the Contractor stating that all related work has been completed to his satisfaction. Until these documents are received, the installation is not formally complete. The official date of acceptance shall be the date of the letter from the Architect to the Contractor described above.

3.16 Closeout

A. Punch List: Perform any and all remedial work, at no claim for additional cost or time. Where required, retest and submit Test Report. Notify Owner of completion of Punch List.

B. Portable Equipment: Furnish all portable equipment and spares to the designated representative of the Owner, along with complete documentation of the materials presented. Where applicable, furnish portable equipment in the original manufacturer's packing.

C. Operating and Maintenance Data: Install framed operating and maintenance instructions. Submit Manuals.

D. Project Record Documents: Submit.

E. Keys: If applicable, replace construction locks with permanent locks. Transmit keys to Owner.

F. Training: Conduct specified training and submit training manuals.

G. Warranty: Submit Warranty dated to run from date of Acceptance of the Work of this Section.

3.17 Owner's Right to Use Equipment

A. Acceptance of the Work of this Section will be after completion of corrections and adjustments required by the "Punch List" which results from Acceptance Review and Testing of the completed installation. The Owner reserves the right to use equipment, material and services provided as part of the Work of this Section prior to Acceptance without incurring any obligation to Accept any equipment or completed systems until all Punch List work is complete and all systems comply with the Contract Documents; or accept any claim for additional cost or time.

Attachment "A"

NOTICE OF COMPLETION

&

REQUEST FOR FINAL INSPECTION

We hereby give notice that the work associated with the Audio-Visual system, at the project named below, is completed and fully complies with the contract documents issued to the Contractor. The required submittals below have been marked as completed.

- ☐ Programming
- ☐ Test Reports
- ☐ Operation Manual
- ☐ Maintenance Manual
- ☐ Training Manual
- ☐ Training
- ☐ Warranty Certificates
- ☐ Record Drawings

We request commissioning and verification testing be scheduled with the Owner's Representative for final system sign off. Attached is a list of test equipment for review and acceptance.

PROJECT INFORMATION

Project Name:	
Project Phase:	

CONTRACTOR INFORMATION

Name:	Company:
Address:	

Note to Contractor: Provide all test equipment for final inspection as described in the specification.

Please complete and fax or email this form to Veneklasen Associates attention AV Department

Fax (310) 396-3424 **Email dyoung@veneklasen.com**

END OF SECTION

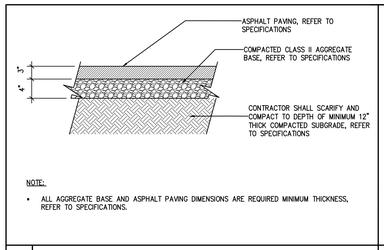
GENERAL NOTES

1

12. NEW CONCRETE WILL BE CONFORMING WITH REQUIREMENTS OUTLINED IN THESE PLANS AND THE PROJECT MANUAL.

A#03–120287
CHANNEL ISLAND HIGH SCHOOL
ADDENDUM#1
SHEET NO.: AD1–C1

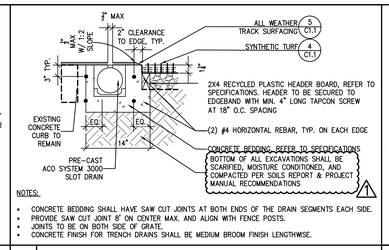
REF. DWG.: C1.0
DATE: 4/24/20



NOTE:

- ALL AGGREGATE BASE AND ASPHALT PAVING DIMENSIONS ARE REQUIRED MINIMUM THICKNESS, REFER TO SPECIFICATIONS.

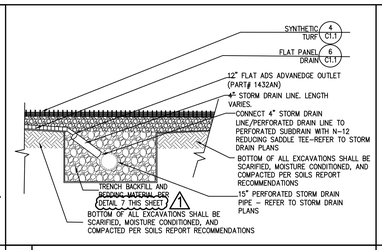
1 ASPHALT PAVING UNDER TRACK SURFACE N.T.S



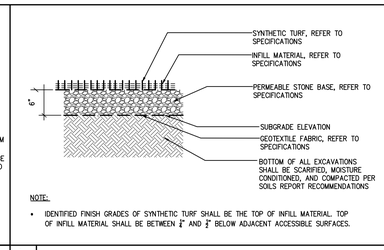
NOTES:

- CONCRETE BEDDING SHALL HAVE SAW CUT JOINTS AT BOTH ENDS OF THE DRAIN SEGMENTS EACH SIDE.
- PROVIDE SAW CUT JOINT 8" ON CENTER MAX. AND ALIGN WITH FENCE POSTS.
- JOINTS TO BE ON BOTH SIDE OF GRATE.
- CONCRETE FINISH FOR TRENCH DRAINS SHALL BE MEDIUM BROOM FINISH LENGTHWISE.

2 TRACK TRENCH DRAIN N.T.S



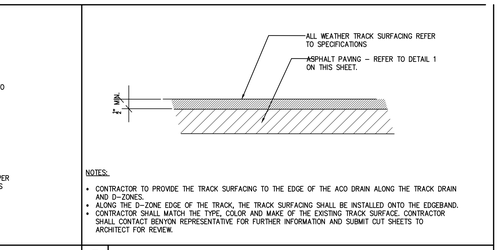
3 FLAT DRAIN CONNECTION N.T.S



NOTE:

- IDENTIFIED FINISH GRADES OF SYNTHETIC TURF SHALL BE THE TOP OF INFILL MATERIAL. TOP OF INFILL MATERIAL SHALL BE BETWEEN ½" AND ¾" BELOW ADJACENT ACCESSIBLE SURFACES.

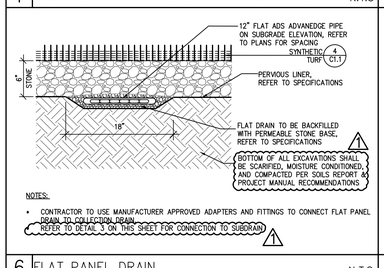
4 SYNTHETIC TURF N.T.S



NOTES:

- CONTRACTOR TO PROVIDE THE TRACK SURFACING TO THE EDGE OF THE ACO DRAIN ALONG THE TRACK DRAIN AND D-ZONES.
- ALONG THE D-ZONE EDGE OF THE TRACK, THE TRACK SURFACING SHALL BE INSTALLED ONTO THE EDGEBAND.
- CONTRACTOR SHALL MATCH THE TYPE, COLOR AND MAKE OF THE EXISTING TRACK SURFACE. CONTRACTOR SHALL CONTACT BENYON REPRESENTATIVE FOR FURTHER INFORMATION AND SUBMIT CUT SHEETS TO ARCHITECT FOR REVIEW.

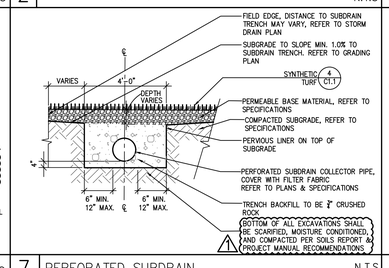
5 ALL WEATHER TRACK SURFACING N.T.S



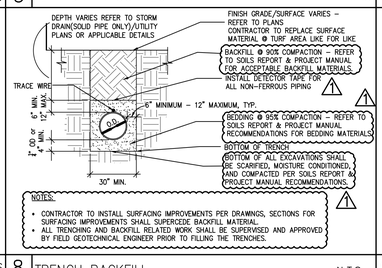
NOTES:

- CONTRACTOR TO USE MANUFACTURER APPROVED ADAPTERS AND FITTINGS TO CONNECT FLAT PANEL DRAIN TO COLLECTOR DRAIN.
- REFER TO DETAIL 3 ON THIS SHEET FOR CONNECTION TO SUBDRAIN

6 FLAT PANEL DRAIN N.T.S



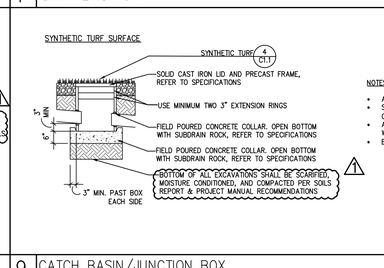
7 PERFORATED SUBDRAIN N.T.S



NOTES:

- CONTRACTOR TO INSTALL SURFACING IMPROVEMENTS PER DRAWINGS, SECTIONS FOR SURFACING IMPROVEMENTS SHALL SUPERCEDE BACKFILL MATERIAL.
- ALL TRENCHING AND BACKFILL RELATED WORK SHALL BE SUPERVISED AND APPROVED BY FIELD GEOTECHNICAL ENGINEER PRIOR TO FILLING THE TRENCHES.

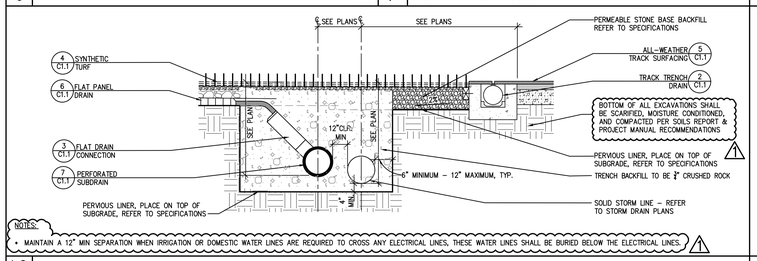
8 TRENCH BACKFILL N.T.S



NOTES:

- ALL GRATES SHALL BE FITTED WITH LOCK-DOWN MECHANISMS OR BOLT-DOWN COVERS.
- SURFACE TREATMENT TO RECEIVE SYNTHETIC TURF BACKING GLUED TO TOP OF LID
- CERTAIN LID SIZES AND/OR ADA COMPLIANT LIDS MAY NOT BE AVAILABLE AND MAY NEED TO BE FABRICATED
- ALL GRATES LOCATED WITHIN VEHICULAR TRAFFIC AREAS ARE TO BE TRAFFIC-RATED. ALL GRATES LOCATED WITHIN PEDESTRIAN TRAFFIC AREAS ARE TO BE ADA COMPLIANT AND HEAL PROOF.
- ENSURE PROPER COMPACTION AROUND BASIN/BOX IN SYNTHETIC TURF TO PREVENT SETTLING AROUND EDGE.

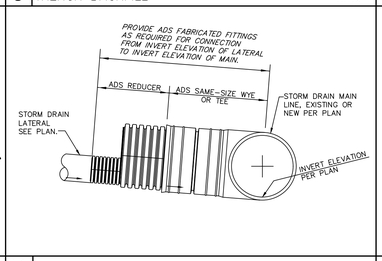
9 CATCH BASIN/JUNCTION BOX N.T.S



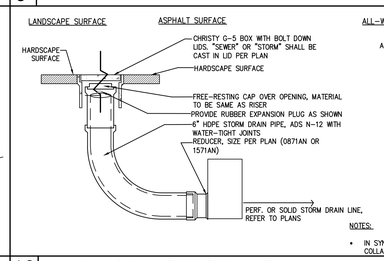
NOTES:

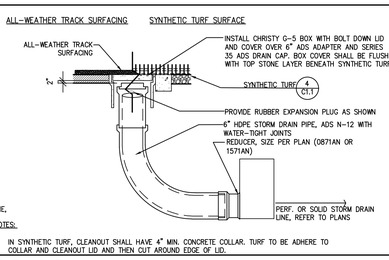
- MAINTAIN A 12" MIN SEPARATION WHEN IRRIGATION OR DOMESTIC WATER LINES ARE REQUIRED TO CROSS ANY ELECTRICAL LINES. THESE WATER LINES SHALL BE BURIED BELOW THE ELECTRICAL LINES.

10 TYPICAL FIELD & PIPE SECTION WITH VERTICAL TRENCH N.T.S



11 CONNECTION OF STORM DRAIN PIPES OF DIFFERENT SIZES N.T.S

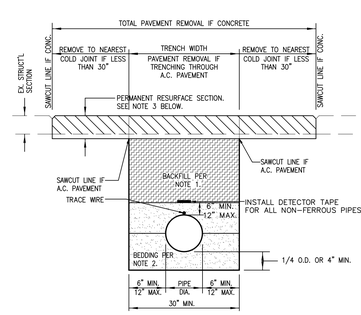




NOTES:

- IN SYNTHETIC TURF, CLEANOUT SHALL HAVE 4" MIN. CONCRETE COLLAR, TURF TO BE ADHERE TO COLLAR AND CLEANOUT LID AND THEN CUT AROUND EDGE OF LID.

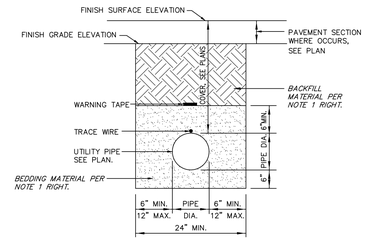
12 SANITRAY/STORM/PERF/FRENCH/ROCK DRAIN CLEANOUT N.T.S



NOTES:

1. *PROVIDE BACK FILL MATERIAL IN UTILITY TRENCH PER GEOTECH REPORT & PROJECT MANUAL RECOMMENDATIONS.*
2. *PROVIDE BEDDING MATERIALS IN UTILITY TRENCH PER GEOTECH REPORT & PROJECT MANUAL RECOMMENDATIONS*
3. *PERMANENT RESURFACE NOTE:*
   a. *IF TRENCH IS IN EXISTING AC PAVEMENT, THE RESURFACE SECTION SHALL MATCH THAT OF THE EXISTING STRUCTURAL SECTION.*
   b. *IF TRENCH IS IN EXISTING CONCRETE PAVEMENT, THE RESURFACE SECTION SHALL MATCH THAT OF THE EXISTING STRUCTURAL SECTION.*
4. *ALL TRENCHING AND BACKFILL RELATED WORK SHALL BE SUPERVISED AND APPROVED BY FIELD GEOTECHNICAL ENGINEER PRIOR TO FILLING THE TRENCHES.*

13 SINGLE UTILITY TRENCH DETAIL AT EXISTING PAVEMENT LOCATION N.T.S



NOTES:

1. *PROVIDE BACK FILL MATERIAL IN UTILITY TRENCH PER GEOTECH REPORT & PROJECT MANUAL RECOMMENDATIONS.*
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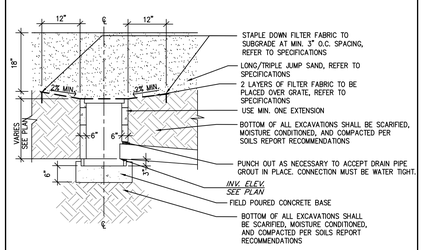
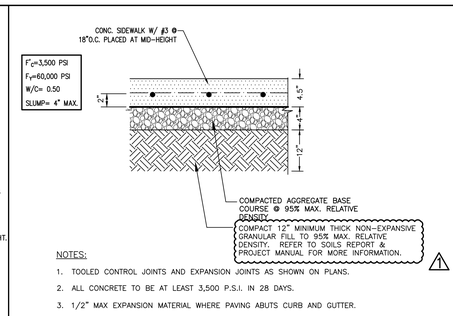
   b. *IF TRENCH IS IN EXISTING CONCRETE PAVEMENT, THE RESURFACE SECTION SHALL MATCH THAT OF THE EXISTING STRUCTURAL SECTION.*
4. *ALL TRENCHING AND BACKFILL RELATED WORK SHALL BE SUPERVISED AND APPROVED BY FIELD GEOTECHNICAL ENGINEER PRIOR TO FILLING THE TRENCHES.*

14 SINGLE UTILITY TRENCH DETAIL AT NEW PAVEMENT LOCATION N.T.S



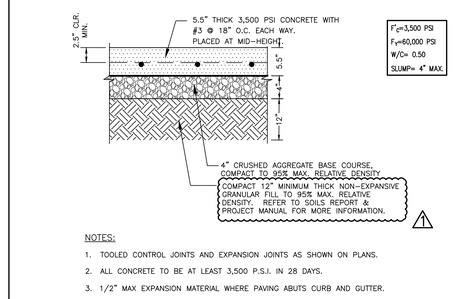
15 SAND PIT CATCH BASIN N.T.S



NOTES:

1. TOOLED CONTROL JOINTS AND EXPANSION JOINTS AS SHOWN ON PLANS.
2. ALL CONCRETE TO BE AT LEAST 3,500 P.S.I. IN 28 DAYS.
3. 1/2" MAX EXPANSION MATERIAL WHERE PAVING ABUTS CURB AND GUTTER.
4. W/C = 0.50

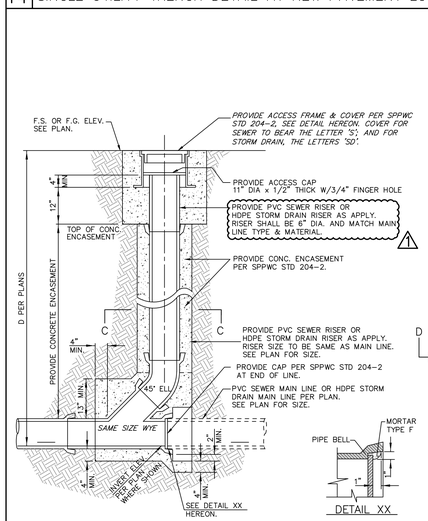
16 PEDESTRIAN CONCRETE PAVEMENT DETAIL N.T.S

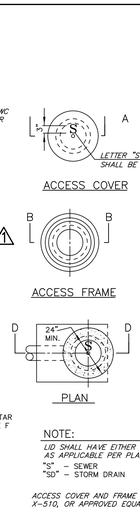


NOTES:

1. TOOLED CONTROL JOINTS AND EXPANSION JOINTS AS SHOWN ON PLANS.
2. ALL CONCRETE TO BE AT LEAST 3,500 P.S.I. IN 28 DAYS.
3. 1/2" MAX EXPANSION MATERIAL WHERE PAVING ABUTS CURB AND GUTTER.
4. W/C = 0.50

17 VEHICULAR CONCRETE PAVEMENT N.T.S

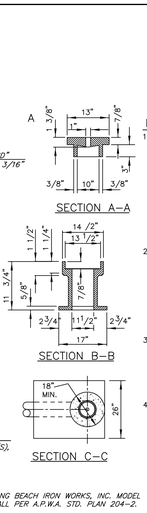




NOTE:

LID SHALL HAVE EITHER LETTER(S), AS APPLICABLE PER PLAN.
"S" – SEWER
"SD" – STORM DRAIN

ACCESS COVER AND FRAME PER LONG BEACH IRON WORKS, INC. MODEL X-510, OR APPROVED EQUAL. INSTALL PER A.P.W.A. STD. PLAN 204-2.



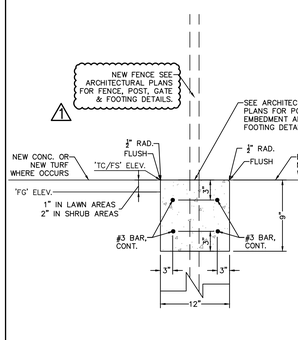
NOTES:

1. *PIPE AND FITTINGS, UNLESS OTHERWISE NOTED, SHALL BE OF THE SAME MATERIALS AS THE SEWER, UNLESS APPROVED ADAPTORS ARE USED, AND MAY BE ANY OF THE FOLLOWING.*
   A. VC PIPE
   B. PE PIPE
   C. ABS SOLID WALL PIPE
   D. ABS COMPOSITE PIPE
   E. PVC PLASTIC PIPE
2. *PIPE FITTINGS SHALL BE BEDDED AND ENCASED IN PCC AS SHOWN. PCC SHALL BE CLASS 450-C-2002(265-C-14). JOIN AND ALIGN PIPE AND FITTINGS BEFORE PLACING CONCRETE. MAINTAIN ALIGNMENT WHILE PLACING AND ALLOWING PCC TO SET.*
3. *THE ACCESS FRAME, COVER AND CAP SHALL BE CAST IRON. THE FINGER HOLES MAY BE DRILLED OR BLOCKED OUT PRIOR TO CASTING. THEY SHALL NOT BE PUNCHED OUT.*
4. *THE CONTRACTOR MAY PLACE EITHER CIRCULAR OR SQUARE CONCRETE PIPE WALL SUPPORTS.*

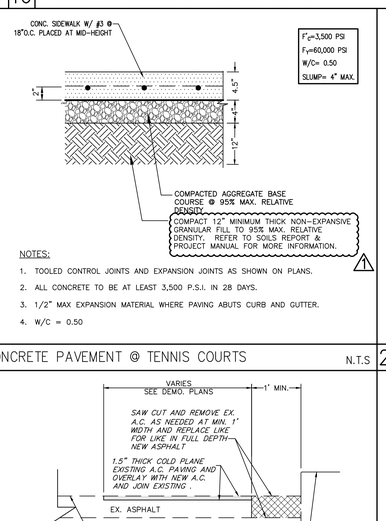
18 CLEANOUT DETAIL N.T.S

NOTE:
1. SEE GRADING PLANS FOR ELEVATIONS.

F'c=3,500 PSI
Fy=60,000 PSI



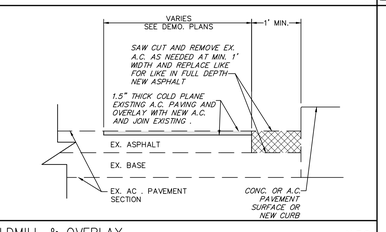
19 12" WIDE MOW CURB W/ FENCE N.T.S



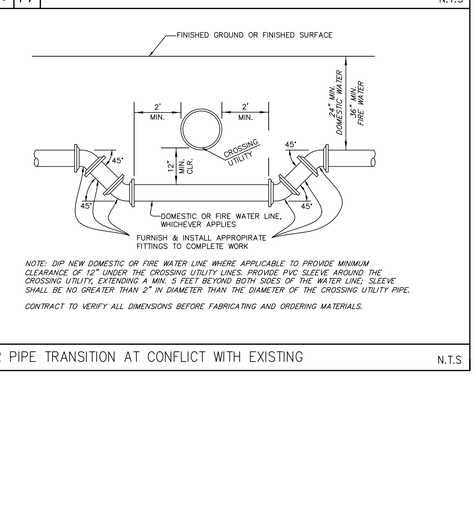
NOTES:

1. TOOLED CONTROL JOINTS AND EXPANSION JOINTS AS SHOWN ON PLANS.
2. ALL CONCRETE TO BE AT LEAST 3,500 P.S.I. IN 28 DAYS.
3. 1/2" MAX EXPANSION MATERIAL WHERE PAVING ABUTS CURB AND GUTTER.
4. W/C = 0.50

20 CONCRETE PAVEMENT @ TENNIS COURTS N.T.S



21 COLDMILL & OVERLAY N.T.S



NOTE: DIP NEW DOMESTIC OR FIRE WATER LINE WHERE APPLICABLE TO PROVIDE MINIMUM CLEARANCE OF 12" UNDER THE CROSSING UTILITY LINES. PROVIDE PVC SLEEVE AROUND THE CROSSING UTILITY, EXTENDING A MIN. 5 FEET BEYOND BOTH SIDES OF THE WATER LINE; SLEEVE SHALL BE NO GREATER THAN 2" IN DIAMETER THAN THE DIAMETER OF THE CROSSING UTILITY PIPE.

CONTRACT TO VERIFY ALL DIMENSIONS BEFORE FABRICATING AND ORDERING MATERIALS.

22 WATER PIPE TRANSITION AT CONFLICT WITH EXISTING N.T.S

NOTES:

1. *PROVIDE BACK FILL MATERIAL IN UTILITY TRENCH PER GEOTECH REPORT & PROJECT MANUAL RECOMMENDATIONS.*
2. *PROVIDE BEDDING MATERIALS IN UTILITY TRENCH PER GEOTECH REPORT & PROJECT MANUAL RECOMMENDATIONS*
3. *PERMANENT RESURFACE NOTE:*
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   b. *IF TRENCH IS IN EXISTING CONCRETE PAVEMENT, THE RESURFACE SECTION SHALL MATCH THAT OF THE EXISTING STRUCTURAL SECTION.*
4. *ALL TRENCHING AND BACKFILL RELATED WORK SHALL BE SUPERVISED AND APPROVED BY FIELD GEOTECHNICAL ENGINEER PRIOR TO FILLING THE TRENCHES.*

AGENCY REVIEW

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DIVERSIFIED ARCHITECTURAL CONSULTING
1300 Dove Street, Suite 100
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www.littleonline.com

CLIENT NAME

OXNARD UNION HIGH SCHOOL DISTRICT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS
1400 RAIDERS WAY, OXNARD, CA. 93033

CONSULTANT

SEAL

ISSUE FOR

A#03-120287

ISSUE DATE

03/09/20

REVISIONS

NO.	REASON	DATE
1	ADD#1	4/24/20

PROJECT TEAM

PRINCIPAL IN CHARGE
BB
PROJECT MANAGER
BB
DESIGN TEAM
SA, ML, VS, AT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS + GATEWAY IMPROVEMENTS

PROJECT NO.

6121235305

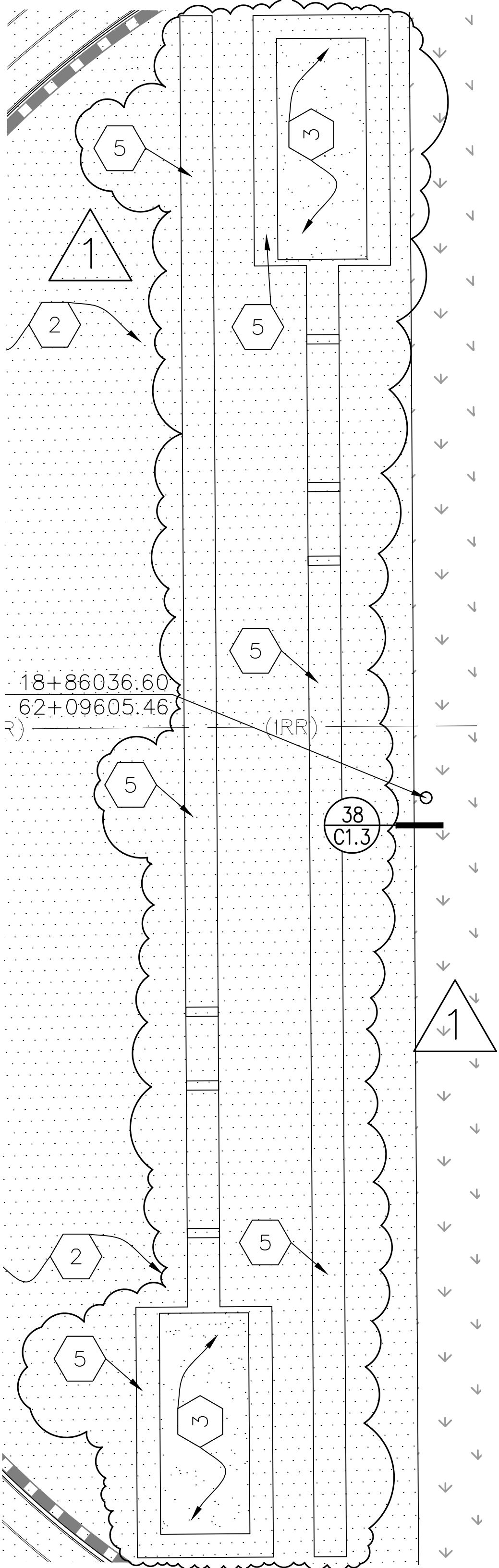
SHEET TITLE

DETAILS

SHEET NUMBER

C1.1

AD1–C2



LICENSED ARCHITECT
JAY R. TITTLE
NO. C12955
REN. 11-30-21
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
BARSIN BET GOVARGEZ
No. 81751
Exp. 3/31/22
CIVIL
STATE OF CALIFORNIA

NORTH

SCALE=1”=10’

A#03-120287
CHANNEL ISLAND HIGH SCHOOL
ADDENDUM#1
SHEET NO.: AD1-C3

REF. DWG.: C3.0
DATE: 4/24/20

STORM DRAIN LEGEND:

	SOLID STORM DRAIN PIPE
	PERFORATED STORM DRAIN PIPE
	TRACK TRENCH DRAIN
	FLAT PANEL DRAIN
PDCO	PERFORATED DRAIN CLEANOUT AT SYNTHETIC TURF
SPCB	SAND PIT CATCH BASIN
JB	JUNCTION BOX
SDCO	STORM DRAIN CLEAN-OUT
	GRATE INLET CATCH BASIN
	STORM DRAIN MANHOLE
	CHECK VALVE

STORM DRAIN KEYNOTES:

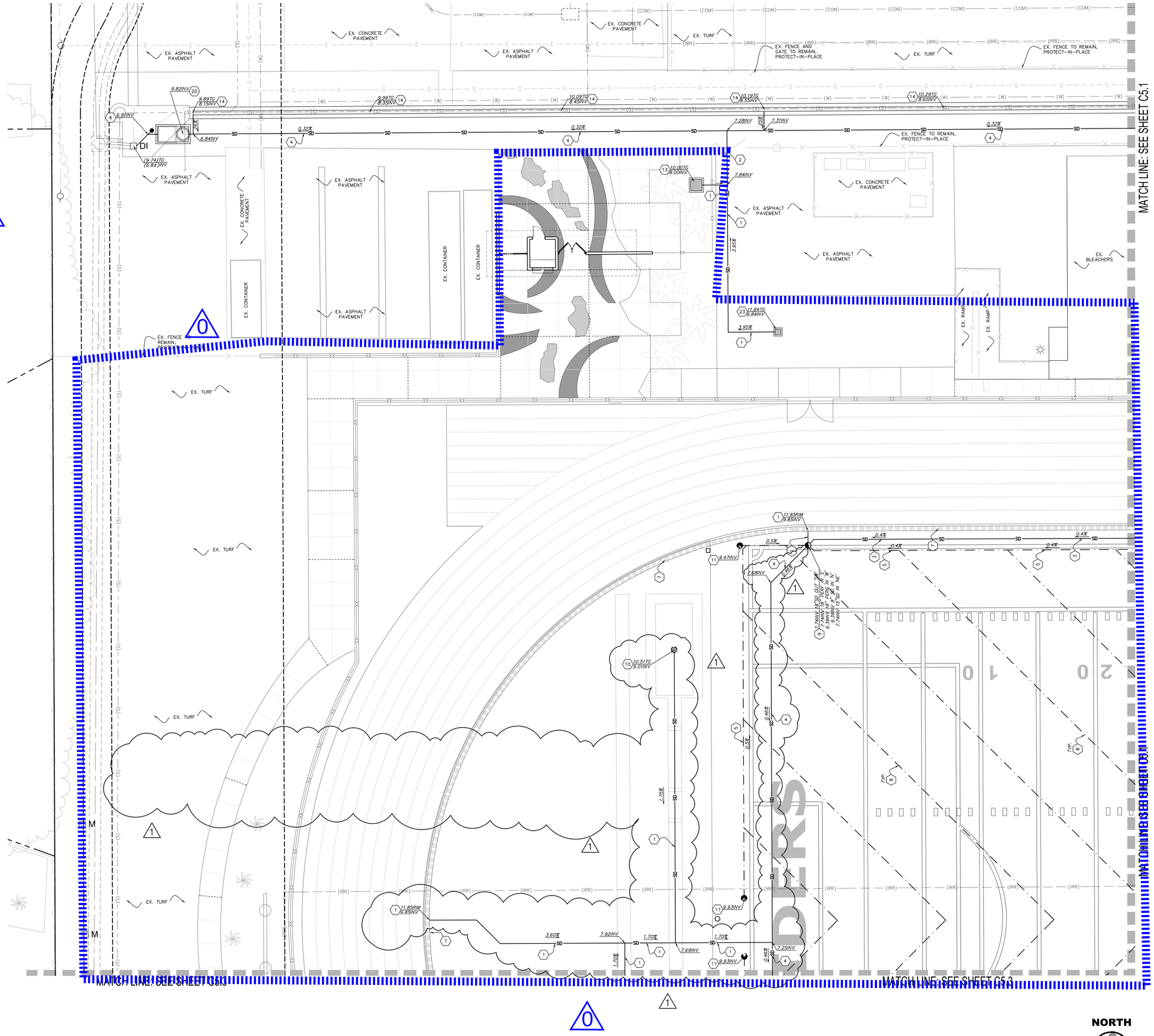
1	NEW 8" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
2	NEW 12" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
3	NEW 15" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
4	NEW 18" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
5	NEW 18" HDPE PERFORATED STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
6	NEW STORM DRAIN CLEAN-OUT (SDCO)	18 / D11
7	NEW TRACK TRENCH DRAIN	1 / D11
8	NEW FLAT PANEL DRAIN	1 / D11
9	NEW JUNCTION BOX (JB) PER DETAIL 9/C1.1' OR NEW NYLOPLAST BASIN, INLINE DRAIN OR ENDLINE DRAIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.	9 / D11
10	NEW SAND PIT CATCH BASIN (SPCB) PER DETAIL 15/C1.1' OR NYLOPLAST ENDLINE DRAIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.	15 / D11
11	NEW PERFORATED DRAIN CLEAN-OUT AT SYNTHETIC TURF (PDCO)	12 / D11
12	NEW STORM DRAIN MANHOLE PIPE-TO-PIPE PER S.P.P.W.C. STD. PLAN NO. 320-2.	27 / D12
13	NEW 36" SQ. CONC. DRAIN INLET, BROOKS 36X36 WITH GLAV. STEEL, SCREWED-DOWN, VANDAL-PROOF, HEEL PROOF, H-10 RATED, ADA GRATE OR APPROVED EQUAL WITH INLET OR OUTLET AS REQUIRED.	26 / D12
14	NEW STORM DRAIN TRENCH DRAIN, TYP. K300. GRATE SHALL BE TRAFFIC RATED, ADA COMPLIANT, HEAL PROOF. INSTALL BOTTOM OUTLET TYPE AT OUTLET POINT REFER TO GRADING & STORM DRAIN PLANS FOR FURTHER INFORMATION.	28 / D12
15	NEW GRATING CATCH BASIN PER S.P.P.W.C. STANDARD PLAN NO. 305-2 WITH ONE(1) ADDITIONAL GRATE. W = 4'-3" + 2'-2", MAX.V = 4'; t = 6"	29 / D12
16	NEW 24" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
17	NEW 12" MULTIFLOW COLLECTOR PIPE. PROVIDE MINIMUM 12" COVER OVER PIPE. THE DRAINAGE MEDIA SHALL BE SLOPED AT 0.5% MINIMUM.	30 / D12
18	ONE (1) NEW DEBRIS SEPARATING BAFFLE BOX, BIOCLEAN PRODUCT. MODEL DSBB-4-6. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL. RIM TO BE FLUSH WITH NEW ADJACENT TURF.	31 / D12
19	NEW CATCH BASIN WITH ADA COMPLIANT GRATE BOLTED DOWN VANDAL PROOF. ROCK SHAFT DIAMETER = 6'. SEE DETAIL 23/C1.2'. SEE PLAN FOR INLET AND OUTLET LOCATION AND ELEVATION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW.	32 / D12
20	ONE (1) NEW DEBRIS SEPARATING BAFFLE BOX, BIOCLEAN PRODUCT. MODEL DSBB-4-8. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL. RIM TO BE FLUSH WITH NEW ADJACENT TURF.	33 / D12
21	CONNECT EXISTING STORM DRAIN LINE TO NEW MANHOLE MAINTAINING EXISTING INLET AND OUTLET INVERT ELEVATIONS. CONTRACTOR SHALL POTHOLE AND FIELD VERIFY DEPTH, AND FURNISH & INSTALL ALL NECESSARY MATERIALS.	
22	NEW STORM DRAIN TRENCH DRAIN, TYP. K200. GRATE SHALL BE TRAFFIC RATED, ADA COMPLIANT, HEAL PROOF. INSTALL BOTTOM OUTLET TYPE AT OUTLET POINT REFER TO GRADING & STORM DRAIN PLANS FOR FURTHER INFORMATION.	27 / D12
23	NEW 12" SQ. CONC. DRAIN INLET, BROOKS 12X12 WITH GLAV. STEEL, SCREWED-DOWN, VANDAL-PROOF, HEEL PROOF, H-10 RATED, ADA GRATE OR APPROVED EQUAL WITH INLET OR OUTLET AS REQUIRED. INSTALL FLOWGUARD GRATED INLET STYLE CATCH BASIN INSERT FILTER. MODULE NUMBER FGP-12F. SEE DETAIL 17/C1.1'.	

NOTES:

1. CONTRACTOR TO FIELD VERIFY LOCATION, SIZE, AND DEPTH OF EXISTING UTILITY LINES RUNNING THROUGH THE WORK AREA IN ORDER TO DETERMINE WHETHER THE UTILITIES WILL CONFLICT WITH PROPOSED IMPROVEMENTS. IF THE UTILITIES ARE DETERMINED TO BE IN CONFLICT, CONTRACTOR SHALL CONTACT ENGINEER OF RECORD.
2. CONTRACTOR SHALL RESTORE THE PAVEMENT, CURB, CURB & GUTTER, FENCING, LANDSCAPE OR TURF LIKE FOR LIKE WHERE STORM DRAIN PIPING TRENCHING OCCURS.
3. WHEN TRANSITIONING TO A SMALLER DIAMETER PIPE, PROVIDE AN ECCENTRIC REDUCING FITTING TO MINIMIZE THE GRADE CHANGE ACROSS THE FITTING. SEE DETAIL 11 ON SHEET C1.1.
4. PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE WORK.
5. WHERE EXISTING WATER OR GAS PIPING ARE IN CONFLICT WITH PROPOSED SUBSURFACE DRAINAGE SYSTEM FOR FIELD OR STORM DRAIN PIPING CONTRACTOR SHALL LOWER GAS OR EXISTING WATER PIPING AND CROSS THEM UNDER STORM DRAIN PIPING WITH MINIM 12" CLEARANCE BETWEEN TOP OF WATER OR GAS PIPE TO BOTTOM OF STORM DRAINAGE PIPING AND SYSTEM.

LEGEND:

EX. STORM DRAIN (SD)
EX. GAS (G)
EX. ELECTRIC (E)
EX. WATER (W)
EX. SEWER (S)
EX. COMMUNICATIONS (COM)
EX. IRRIGATION MAIN LINE (IRR)
EX. OVERHEAD ELECTRICAL OH-E
EX. FIRE ALARM FA



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CONSULTANT

KEVIN BET EDWARDS
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CIVIL
STATE OF CALIFORNIA

SEAL

LICENSED ARCHITECT
JAY K. YITE
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1	ADD#1	4/24/20

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PROJECT MANAGER
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SA, ML, VS, AT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS + GATEWAY IMPROVEMENTS

PROJECT NO.

6121235305

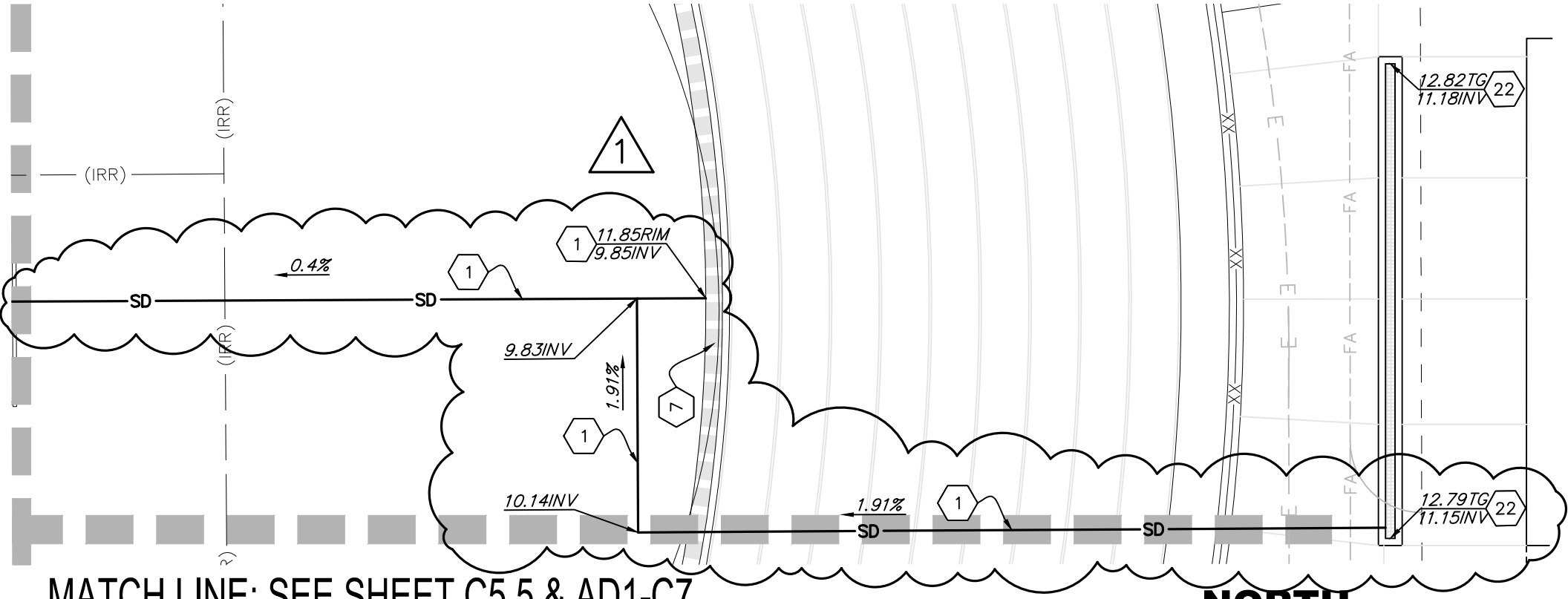
SHEET TITLE

STORM DRAIN PLAN

SHEET NUMBER

C5.0 AD0-C14

AD1—C4



MATCH LINE: SEE SHEET C5.5 & AD1-C7

NORTH

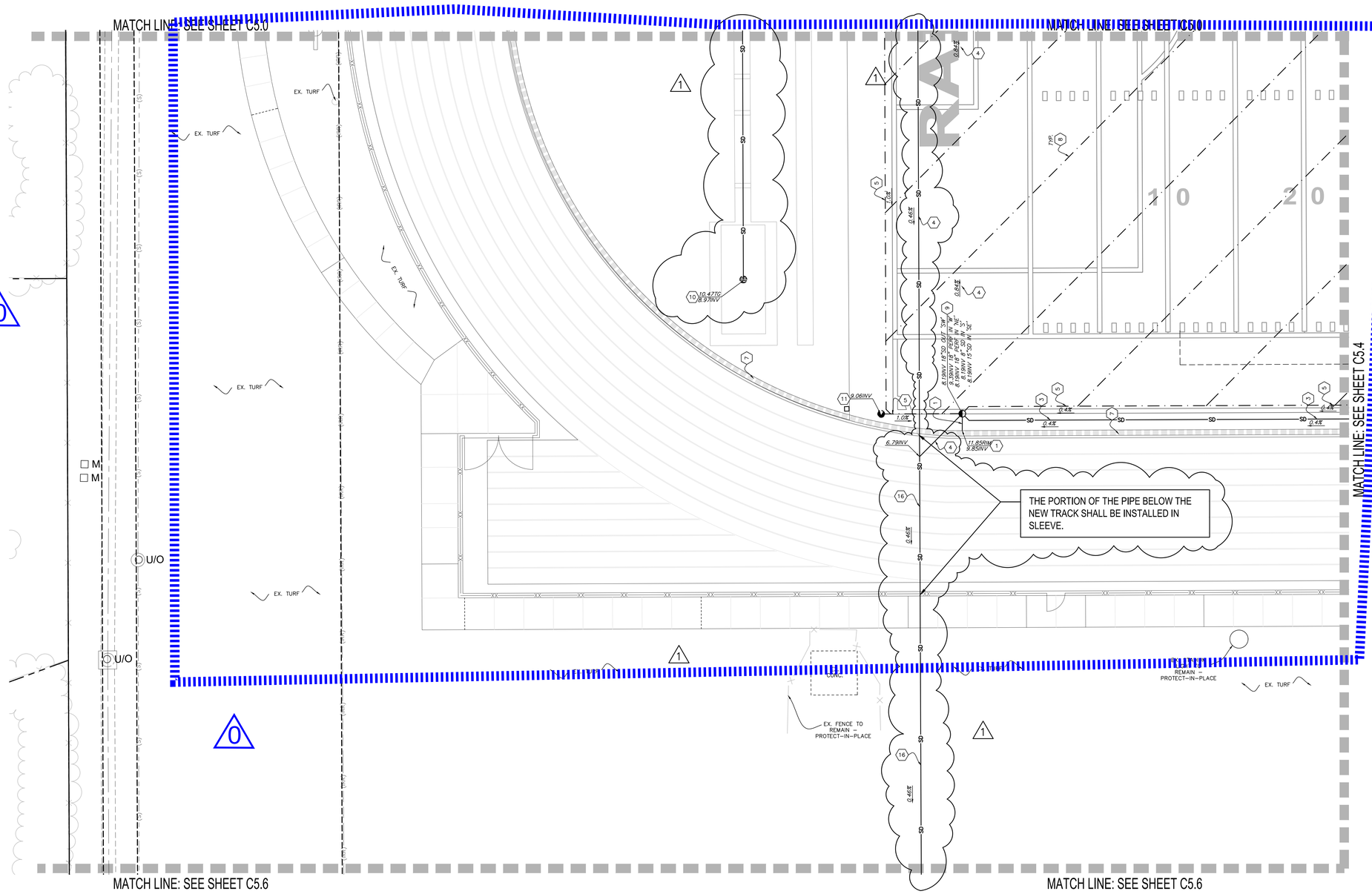
SCALE=1"=10'

REGISTERED PROFESSIONAL ENGINEER
BARSIN BET GOVARGEZ
No. 81751
Exp. 3/31/22
CIVIL
STATE OF CALIFORNIA

LICENSED ARCHITECT
JAY R. TITTLE
NO. C12955
REN. 11-30-21
STATE OF CALIFORNIA

A#03-120287
CHANNEL ISLAND HIGH SCHOOL
ADDENDUM#1
SHEET NO.: AD1-C5

REF. DWG.: C5.2
DATE: 4/24/20



STORM DRAIN LEGEND:

	SOLID STORM DRAIN PIPE
	PERFORATED STORM DRAIN PIPE
	TRACK TRENCH DRAIN
	FLAT PANEL DRAIN
PDCO	PERFORATED DRAIN CLEANOUT AT SYNTHETIC TURF
SPCB	SAND PIT CATCH BASIN
JB	JUNCTION BOX
SDCO	STORM DRAIN CLEAN-OUT
	GRATE INLET CATCH BASIN
	STORM DRAIN MANHOLE
	CHECK VALVE

STORM DRAIN KEYNOTES:

1	NEW 8" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
2	NEW 12" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
3	NEW 15" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
4	NEW 18" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
5	NEW 18" HDPE PERFORATED STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
6	NEW STORM DRAIN CLEAN-OUT (SDCO)	10 / C11.1
7	NEW TRACK TRENCH DRAIN	1 / C11.1
8	NEW FLAT PANEL DRAIN	3 / C11.1
9	NEW JUNCTION BOX (JB) PER DETAIL '9/C1.1' OR NEW NYLOPLAST BASIN, INLINE DRAIN OR ENDLINE DRAIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.	9 / C11.1
10	NEW SAND PIT CATCH BASIN (SPCB) PER DETAIL '15/C1.1' OR NYLOPLAST ENDLINE DRAIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.	15 / C11.1
11	NEW PERFORATED DRAIN CLEAN-OUT AT SYNTHETIC TURF (PDCO)	12 / C11.1
12	NEW STORM DRAIN MANHOLE PIPE-TO-PIPE PER S.P.P.W.C. STD. PLAN NO. 320-2.	22 / C17
13	NEW 36" SQ. CONC. DRAIN INLET, BROOKS 360X8 WITH GLAV. STEEL, SCREWED-DOWN, VANDAL-PROOF, HEEL PROOF, H-10 RATED, ADA GRATE OR APPROVED EQUAL WITH INLET OR OUTLET AS REQUIRED.	26 / C17
14	NEW STORM DRAIN TRENCH DRAIN, TYP. K300. GRATE SHALL BE TRAFFIC RATED, ADA COMPLIANT, HEAL PROOF. INSTALL BOTTOM OUTLET TYPE AT OUTLET POINT REFER TO GRADING & STORM DRAIN PLANS FOR FURTHER INFORMATION.	25 / C17
15	NEW GRATING CATCH BASIN PER S.P.P.W.C. STANDARD PLAN NO. 305-2 WITH ONE(1) ADDITIONAL GRATE. W = 4'-3⅜" + 2'-2", MAX.V = 4; t = 6"	28 / C17
16	NEW 24" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
17	NEW 12" MULTIFLOW COLLECTOR PIPE. PROVIDE MINIMUM 12" COVER OVER PIPE. THE DRAINAGE MEDIA SHALL BE SLOPED AT 0.5% MINIMUM.	29 / C17
18	ONE (1) NEW DEBRIS SEPARATING BAFFLE BOX, BIOCLEAN PRODUCT , MODEL DSBB-4-6. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL. RIM TO BE FLUSH WITH NEW ADJACENT TURF.	31 / C17
19	NEW CATCH BASIN WITH ADA COMPLIANT GRATE BOLTED DOWN VANDAL PROOF. ROCK SHAFT DIAMETER = 6". SEE DETAIL '23/C1.2'. SEE PLAN FOR INLET AND OUTLET LOCATION AND ELEVATION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW	23 / C17
20	ONE (1) NEW DEBRIS SEPARATING BAFFLE BOX, BIOCLEAN PRODUCT, MODEL DSBB-4-8. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR ENGINEERS REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL. RIM TO BE FLUSH WITH NEW ADJACENT TURF.	33 / C17
21	CONNECT EXISTING STORM DRAIN LINE TO NEW MANHOLE MAINTAINING EXISTING INLET AND OUTLET INVERT ELEVATIONS. CONTRACTOR SHALL POTHOLE AND FIELD VERIFY DEPTH, AND FURNISH & INSTALL ALL NECESSARY MATERIALS.	
22	NEW STORM DRAIN TRENCH DRAIN, TYP. K200. GRATE SHALL BE TRAFFIC RATED, ADA COMPLIANT, HEAL PROOF. INSTALL BOTTOM OUTLET TYPE AT OUTLET POINT REFER TO GRADING & STORM DRAIN PLANS FOR FURTHER INFORMATION.	27 / C17
23	NEW 12" SQ. CONC. DRAIN INLET, BROOKS 12X12 WITH GLAV. STEEL, SCREWED-DOWN, VANDAL-PROOF, HEEL PROOF, H-10 RATED, ADA GRATE OR APPROVED EQUAL WITH INLET OR OUTLET AS REQUIRED. INSTALL FLOWGUARD GRATED INLET STYLE CATCH BASIN INSERT FILTER. MODULE NUMBER FGP-12F. SEE DETAIL 17/C1.1.	

LEGEND:

EX. STORM DRAIN (SD)
EX. GAS (G)
EX. ELECTRIC (E)
EX. WATER (W)
EX. SEWER (S)
EX. COMMUNICATIONS (COM)
EX. IRRIGATION MAIN LINE (IRR)
EX. OVERHEAD ELECTRICAL OH–E
EX. FIRE ALARM FA

NOTES:

1. CONTRACTOR TO FIELD VERIFY LOCATION, SIZE, AND DEPTH OF EXISTING UTILITY LINES RUNNING THROUGH THE WORK AREA IN ORDER TO DETERMINE WHETHER THE UTILITIES WILL CONFLICT WITH PROPOSED IMPROVEMENTS. IF THE UTILITIES ARE DETERMINED TO BE IN CONFLICT, CONTRACTOR SHALL CONTACT ENGINEER OF RECORD.
2. CONTRACTOR SHALL RESTORE THE PAVEMENT, CURB, CURB & GUTTER, FENCING, LANDSCAPE OR TURF LIKE FOR LIKE WHERE STORM DRAIN PIPING TRENCHING OCCURS.
3. WHEN TRANSITIONING TO A SMALLER DIAMETER PIPE, PROVIDE AN ECCENTRIC REDUCING FITTING TO MINIMIZE THE GRADE CHANGE ACROSS THE FITTING. SEE DETAIL 11 ON SHEET C1.1.
4. PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE WORK.
5. WHERE EXISTING WATER OR GAS PIPING ARE IN CONFLICT WITH PROPOSED SUBSURFACE DRAINAGE SYSTEM FOR FIELD OR STORM DRAIN PIPING CONTRACTOR SHALL LOWER GAS OR EXISTING WATER PIPING AND CROSS THEM UNDER STORM DRAIN PIPING WITH MINIM 12" CLEARANCE BETWEEN TOP OF WATER OR GAS PIPE TO BOTTOM OF STORM DRAINAGE PIPING AND SYSTEM.

NORTH

SCALE=1"=10'

0 5 10 20 30

AD1–C6

AGENCY REVIEW

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CLIENT NAME

OXNARD UNION HIGH SCHOOL DISTRICT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS

1400 RAIDERS WAY, OXNARD, CA. 93033

CONSULTANT

SEAL

ISSUE FOR

A#03-120287

ISSUE DATE

03/09/20

REVISIONS

NO.	REASON	DATE
1	ADD#1	4/24/20

PROJECT TEAM

PRINCIPAL IN CHARGE
BB
PROJECT MANAGER
BB
DESIGN TEAM
SA, ML, VS, AT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS + GATEWAY IMPROVEMENTS

PROJECT NO.

6121235305

SHEET TITLE

STORM DRAIN PLAN

SHEET NUMBER

C5.3 AD0-C17

MATCH LINE: SEE SHEET C5.2 & AD1-C5

10.14INV
1.91%
SD
1
SD
12.79TG
11.15INV
22
FA
E
1
1
(IRR)
(IRR)
(IRR)
(IRR)
(IRR)
(IRR)
(IRR)
11.10TG
9.35INV
13
1.5%
SD
1
8.86INV
0.8%
SD
4
1
EX. TURF
FA
FA
EX. TURF

NORTH

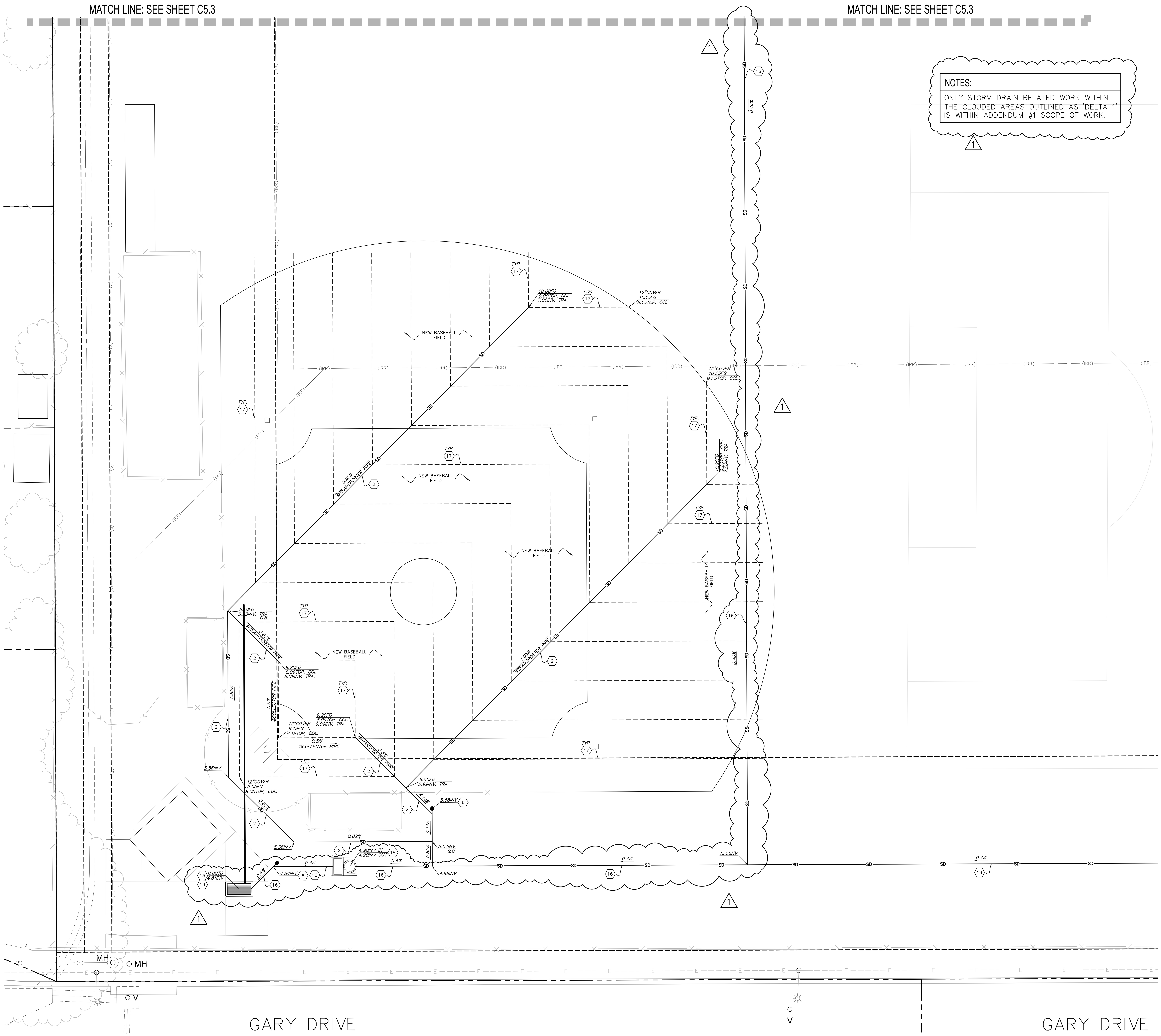
SCALE=1"=10'

REGISTERED PROFESSIONAL ENGINEER
BARSIN BET GOVARGEZ
No. 81751
Exp. 3/31/22
CIVIL
STATE OF CALIFORNIA

LICENSED ARCHITECT
JAY R. YITTLE
NO. C12955
REN. 11-30-21
STATE OF CALIFORNIA

A#03-120287
CHANNEL ISLAND HIGH SCHOOL
ADDENDUM#1
SHEET NO.: AD1-C7

REF. DWG.: C5.5
DATE: 4/24/20



STORM DRAIN LEGEND:

Symbol	Description
	SOLID STORM DRAIN PIPE
	PERFORATED STORM DRAIN PIPE
	TRACK TRENCH DRAIN
	FLAT PANEL DRAIN
PDCO	PERFORATED DRAIN CLEANOUT AT SYNTHETIC TURF
SPCB	SAND PIT CATCH BASIN
JB	JUNCTION BOX
SDCO	STORM DRAIN CLEAN-OUT
	GRATE INLET CATCH BASIN
	STORM DRAIN MANHOLE
	CHECK VALVE

STORM DRAIN KEYNOTES:

No.	Keynote	Detail
1	NEW 8" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
2	NEW 12" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
3	NEW 15" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
4	NEW 18" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
5	NEW 18" HDPE PERFORATED STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
6	NEW STORM DRAIN CLEAN-OUT (SDCO)	18/C1.1
7	NEW TRACK TRENCH DRAIN	2/C1.1
8	NEW FLAT PANEL DRAIN	6/C1.1
9	NEW JUNCTION BOX (JB) PER DETAIL '9/C1.1' OR NEW NYLOPLAST BASIN, INLINE DRAIN OR ENDLINE DRAIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.	9/C1.1
10	NEW SAND PIT CATCH BASIN (SPCB) PER DETAIL '15/C1.1' OR NYLOPLAST ENDLINE DRAIN. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL.	15/C1.1
11	NEW PERFORATED DRAIN CLEAN-OUT AT SYNTHETIC TURF (PDCO)	12/C1.1
12	NEW STORM DRAIN MANHOLE PIPE-TO-PIPE PER S.P.P.W.C. STD. PLAN NO. 320-2.	27/C1.2
13	NEW 36" SQ. CONC. DRAIN INLET, BROOKS 36X36 WITH GLAV. STEEL, SCREWED-DOWN, VANDAL-PROOF, HEEL PROOF, H-10 RATED, ADA GRATE OR APPROVED EQUAL WITH INLET OR OUTLET AS REQUIRED.	26/C1.2
14	NEW STORM DRAIN TRENCH DRAIN, TYP. K300. GRATE SHALL BE TRAFFIC RATED, ADA COMPLIANT, HEAL PROOF. INSTALL BOTTOM OUTLET TYPE AT OUTLET POINT REFER TO GRADING & STORM DRAIN PLANS FOR FURTHER INFORMATION.	25/C1.2
15	NEW GRATING CATCH BASIN PER S.P.P.W.C. STANDARD PLAN NO. 305-2 WITH ONE(1) ADDITIONAL GRATE. $W = 4'\text{-}3\frac{1}{2}" + 2'\text{-}2"$; MAX V = 4'; t = 6"	28/C1.2
16	NEW 24" HDPE STORM DRAIN PIPE, ADS N-12 WITH WATER-TIGHT JOINTS OR APPROVED EQUAL.	
17	NEW 12" MULTIFLOW COLLECTOR PIPE. PROVIDE MINIMUM 12" COVER OVER PIPE. THE DRAINAGE MEDIA SHALL BE SLOPED AT 0.5% MINIMUM.	29/C1.2
18	ONE (1) NEW DEBRIS SEPARATING BAFFLE BOX, BIOCLEAN PRODUCT, MODEL DSBB-4-6. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL. RIM TO BE FLUSH WITH NEW ADJACENT TURF.	33/C1.3
19	NEW CATCH BASIN WITH ADA COMPLIANT GRATE BOLTED DOWN VANDAL PROOF. ROCK SHAFT DIAMETER = 6". SEE DETAIL '23/C1.2'. SEE PLAN FOR INLET AND OUTLET LOCATION AND ELEVATION. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW	23/C1.2
20	ONE (1) NEW DEBRIS SEPARATING BAFFLE BOX, BIOCLEAN PRODUCT, MODEL DSBB-4-8. INSTALL PER MANUFACTURER'S INSTALLATION GUIDELINES. SUBMIT SHOP DRAWINGS FOR ENGINEER'S REVIEW AND APPROVAL PRIOR TO ORDERING MATERIAL. RIM TO BE FLUSH WITH NEW ADJACENT TURF.	33/C1.3
21	CONNECT EXISTING STORM DRAIN LINE TO NEW MANHOLE MAINTAINING EXISTING INLET AND OUTLET INVERT ELEVATIONS. CONTRACTOR SHALL POTHOLE AND FIELD VERIFY DEPTH, AND FURNISH & INSTALL ALL NECESSARY MATERIALS.	
22	NEW STORM DRAIN TRENCH DRAIN, TYP. K200. GRATE SHALL BE TRAFFIC RATED, ADA COMPLIANT, HEAL PROOF. INSTALL BOTTOM OUTLET TYPE AT OUTLET POINT REFER TO GRADING & STORM DRAIN PLANS FOR FURTHER INFORMATION.	27/C1.2
23	NEW 12" SQ. CONC. DRAIN INLET, BROOKS 12X12 WITH GLAV. STEEL, SCREWED-DOWN, VANDAL-PROOF, HEEL PROOF, H-10 RATED, ADA GRATE OR APPROVED EQUAL WITH INLET OR OUTLET AS REQUIRED. INSTALL FLOWGUARD GRATED INLET STYLE CATCH BASIN INSERT FILTER. MODULE NUMBER FGP-12F. SEE DETAIL '17/C1.1'.	

NOTES:

1. CONTRACTOR TO FIELD VERIFY LOCATION, SIZE, AND DEPTH OF EXISTING UTILITY LINES RUNNING THROUGH THE WORK AREA IN ORDER TO DETERMINE WHETHER THE UTILITIES WILL CONFLICT WITH PROPOSED IMPROVEMENTS. IF THE UTILITIES ARE DETERMINED TO BE IN CONFLICT, CONTRACTOR SHALL CONTACT ENGINEER OF RECORD.
2. CONTRACTOR SHALL RESTORE THE PAVEMENT, CURB, CURB & GUTTER, FENCING, LANDSCAPE OR TURF LIKE FOR LIKE WHERE STORM DRAIN PIPING TRENCHING OCCURS.
3. WHEN TRANSITIONING TO A SMALLER DIAMETER PIPE, PROVIDE AN ECCENTRIC REDUCING FITTING TO MINIMIZE THE GRADE CHANGE ACROSS THE FITTING. SEE DETAIL 11 ON SHEET C1.1.
4. PROVIDE ALL NECESSARY FITTINGS TO COMPLETE THE WORK.
5. WHERE EXISTING WATER OR GAS PIPING ARE IN CONFLICT WITH PROPOSED SUBSURFACE DRAINAGE SYSTEM FOR FIELD OR STORM DRAIN PIPING CONTRACTOR SHALL LOWER GAS OR EXISTING WATER PIPING AND CROSS THEM UNDER STORM DRAIN PIPING WITH MINIM 12" CLEARANCE BETWEEN TOP OF WATER OR GAS PIPE TO BOTTOM OF STORM DRAINAGE PIPING AND SYSTEM.

LEGEND:

EX. STORM DRAIN	(SD)
EX. GAS	(G)
EX. ELECTRIC	(E)
EX. WATER	(W)
EX. SEWER	(S)
EX. COMMUNICATIONS	(COM)
EX. IRRIGATION MAIN LINE	(IRR)
EX. OVERHEAD ELECTRICAL	OH-E
EX. FIRE ALARM	FA

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CLIENT NAME
OXNARD UNION HIGH SCHOOL DISTRICT

PROJECT NAME
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS
1400 RAIDERS WAY, OXNARD, CA. 93033

CONSULTANT
No. 81751

SEAL
LICENSED ARCHITECT JAY R. TITTLE NO. C12955 REN. 11-30-21 STATE OF CALIFORNIA

ISSUE FOR
A#03-120287

ISSUE DATE
03/09/20

REVISIONS

NO.	REASON	DATE
1	ADD#1	4/24/20

PROJECT TEAM
PRINCIPAL IN CHARGE
BB
PROJECT MANAGER
BB
DESIGN TEAM
SA, ML, VS, AT

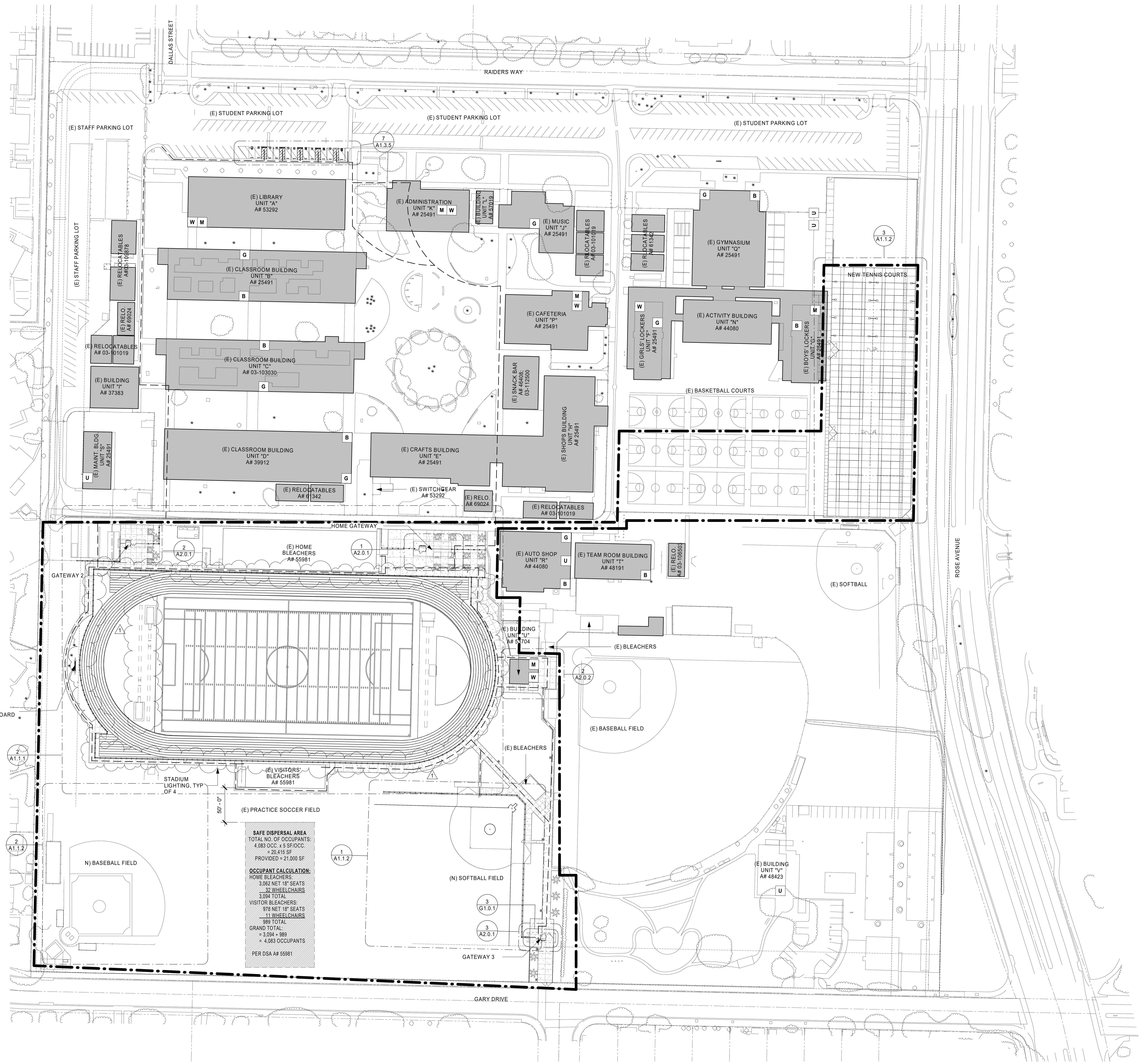
PROJECT NAME
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS + GATEWAY IMPROVEMENTS

PROJECT NO.
6121235305

SHEET TITLE
STORM DRAIN PLAN

SHEET NUMBER
C5.6

AD1–C8



OVERALL SITE PLAN 1
1" = 60'-0" A1.0.1

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ACCESSIBILTY NOTES

1. ARCHITECT TO VERIFY PATH OF TRAVEL REQUIREMENTS ARE MET FOR P.O.T. FROM ACCESSIBLE PARKING AND PUBLIC WAY TO RESTROOMS, DRINKING FOUNTAINS, SCHOOL ADMINISTRATION BUILDING, ACCESIBLE SEATING AND INSIDE TRACK AS INDICATED. ANY DEVIATION FROM P.O.T. DEFINITION LISTED BELOW SHALL BE BROUGHT INTO COMPLIANCE BY THE ARCHITECT PREPARING A CCD AND SUBMITTING IT TO DSA FOR APPROVAL.

2. PATH OF TRAVEL (P.O.T.) AS INDICATED IS A BARRIER-FREE ACCESS WITHOUT ANY ABRUPT VERTICAL CHANGES EXCEEDING 1/2" BEVELED AT 1:2 MAXIMUM SLOPE, EXCEPT THAT LEVEL CHANGES DO NOT EXCEED 1/4" VERTICAL AND IS AT LEAST 48" WIDE. SURFACE IS SLIP-RESISTANT, STABLE, FIRM, AND SMOOTH. CROSS-SLOPE DOES NOT EXCEED 2% AND SLOPE IN THE DIRECTION OF TRAVEL IS LESS THAN 5%, UNLESS OTHERWISE INDICATED. P.O.T. SHALL MAINTAIN FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (2016 CBC 11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM THE WALL AND ABOVE 27" AND LESS THAN 80" (CBC 11B-307). ARCHITECT TO VERIFY THAT ALL BARRIERS IN THE PATH OF TRAVEL HAVE BEEN REMOVED OR WILL BE REMOVED UNDER THIS PROJECT, AND PATH OF TRAVEL COMPLIES WITH CHAPTER 11 DIVISION 4 OF THE 2016 CBC .

3. ALL NEW PAVING AND SURFACING TO BE FLUSH TO EXISTING PAVING EDGE.

4. FOR GRADE ELEVATIONS, SEE CIVIL DRAWINGS.

5. FOR DEMOLITION WORK, SEE CIVIL DRAWINGS.

6. DIMENSIONS ARE TO BE FIELD VERIFIED.

7. ALL EXISTING ELEMENTS TO REMAIN SHALL BE PROTECTED IN PLACE, TYP.

STATEMENT BY DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE

"THE P.O.T. IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T. WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE P.O.T. THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.
DURING CONSTRUCTION, IF P.O.T. ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE 2016 CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT."

LEGEND

Symbol	Description
(grey box)	(E) BUILDING TO REMAIN
(dash-dot line)	EXTENT OF SCOPE OF WORK
(dashed line)	ACCESSIBLE PATH OF TRAVEL 4'-0" WIDE MIN. CONCRETE OR A.C. PAVED. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION ON MATERIAL, SLOPES AND ELEVATIONS.
U	UNISEX RESTROOM
W	WOMEN'S RESTROOM
M	MEN'S RESTROOM
G	GIRLS' RESTROOM
B	BOYS' RESTROOM
DF	DRINKING FOUNTAIN

PARKING ANALYSIS

TOTAL SPACES PROVIDED:	302		
(E) STAFF PARKING LOT:		97	
ACCESSIBLE SPACES:		REQUIRED:	4
		PROVIDED:	5
VAN ACCESSIBLE SPACES:		REQUIRED:	0
		PROVIDED:	0
(E) STUDENT PARKING	205		
ACCESSIBLE SPACES:		REQUIRED:	7
		PROVIDED:	11
VAN ACCESSIBLE SPACES:		REQUIRED:	2
		PROVIDED:	2

DSA CERTIFICATIONS

DSA A#	STATUS
03-103030	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #2, 11/17/2010
03-109496	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #2, 01/29/2010
03-109175	CERTIFICATION AND CLOSE OF FILE, VOID, 10/06/2005
03-103165	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #1, 09/01/2010
03-112158	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #2, 11/10/2014
03-112500	CERTIFICATION AND CLOSE OF FILE, VOID, 05/31/2016
03-109878	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #1, 06/11/2015
03-113824	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #1, 08/14/2013
03-113024	CERTIFICATION AND CLOSE OF FILE, LETTER TYPE #1, 07/09/2013
03-119339	SUBMITTED 12/11/2018, OPEN

AGENCY REVIEW

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OXNARD, CA. 93033

CONSULTANT

SEAL

REN. 11-30-21
STATE OF CALIFORNIA

ISSUE FOR

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ISSUE DATE

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REVISIONS

NO.	REASON	DATE
1	ADDENDUM 1	04/24/20

PROJECT TEAM

PRINCIPAL IN CHARGE
JT

PROJECT MANAGER
LEB

DESIGN TEAM
FM/ RG/ JR/ CL/ TA

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS

PROJECT NO.

6121235305

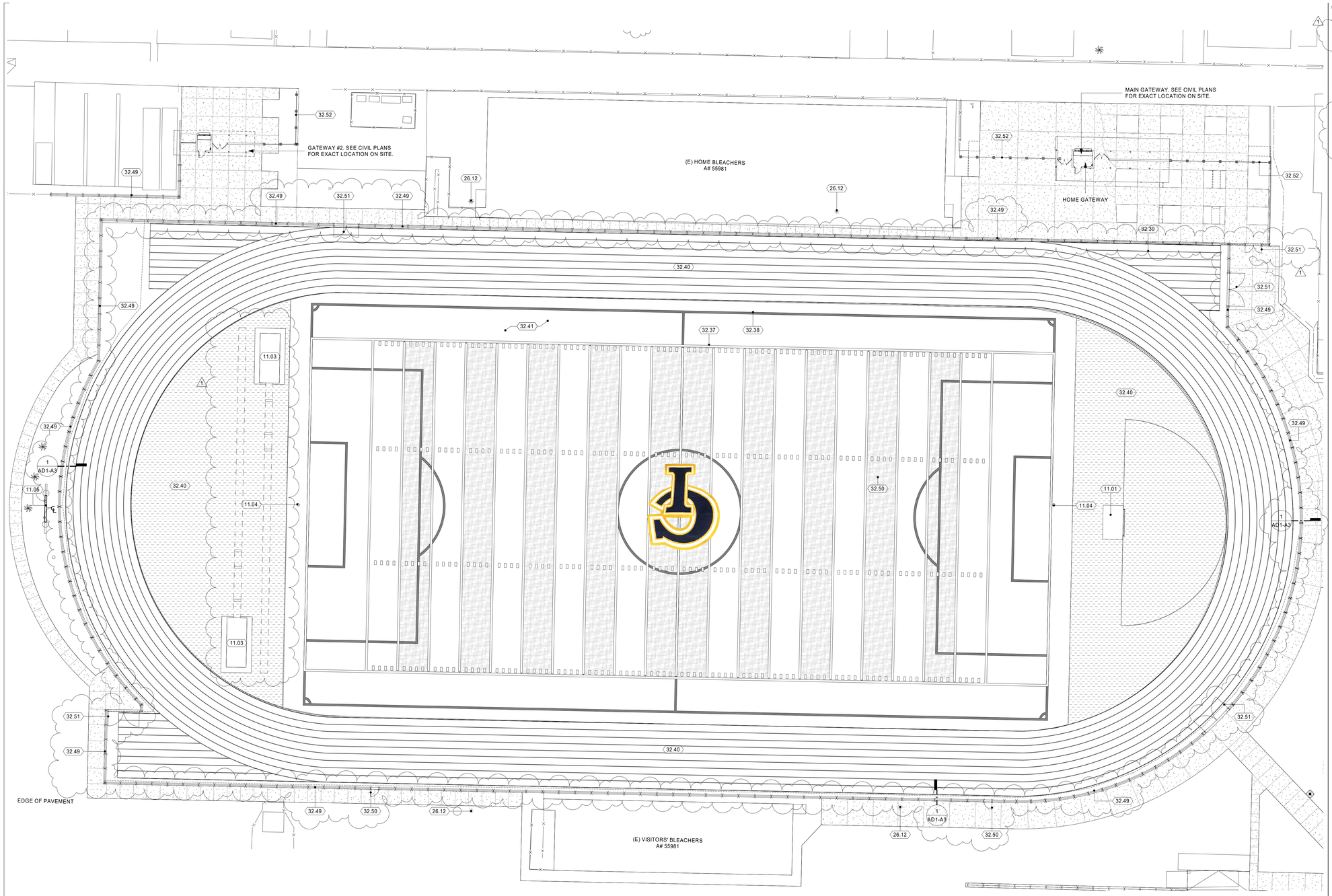
SHEET TITLE

OVERALL SITE PLAN

SHEET NUMBER

(A1.0.1)

AD1-A1



ENLARGED SITE PLAN - TRACK & FIELD 2
1" = 20'-0" A1.1.1

KEYNOTES

11.01	NEW HIGH JUMP, SEE DETAIL 7/A1.3.2 - 11 68 33.43
11.03	NEW LONG/TRIPLE JUMP, 140' MIN. RUNWAY LENGTH - 11 68 33.43
11.04	NEW GOAL POST, SEE DETAIL 9/A1.3.3 - 11 68 33.13
11.05	NEW SCOREBOARD, SEE DETAIL 13/A1.3.3 - 11 68 43.13
26.12	NEW SITE LIGHTING FIXTURE
32.37	FOOTBALL FIELD STRIPING, SEE DETAIL 2/A1.3.2 - 32 18 23.29
32.38	SOCCER FIELD STRIPING, SEE DETAIL 1/A1.3.2 - 32 18 23.29
32.39	RUNNING TRACK STRIPING, SEE DETAIL 3/A1.3.2 - 32 18 23.33
32.40	SYNTHETIC RUNNING TRACK SURFACING - 32 18 23.33
32.41	SYNTHETIC TURF - 32 18 23.29
32.49	NEW CHAIN LINK FENCE. SEE DETAIL 9/A1.3.1.
32.50	NEW CHAIN LINK PEDESTRIAN SINGLE GATE. SEE DETAIL 1/AD1-A4.
32.51	NEW CHAIN LINK DOUBLE GATE. SEE DETAIL 1/AD1-A5
32.52	NEW FABRICATED METAL FENCE, SEE DETAIL 4/A1.3.4.

LEGEND

- CONCRETE PAVING
- TRACK SURFACE
- SYNTHETIC TURF
- CHAIN LINK FENCE
- FABRICATED METAL FENCE

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CONSULTANT

SEAL

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JT

PROJECT MANAGER
LEB

DESIGN TEAM
FM/ RG/ JR/ CL/ TA

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS

PROJECT NO.

6121235305

SHEET TITLE

ENLARGED SITE PLAN

SHEET NUMBER

(A1.1.1)

AD1-A2

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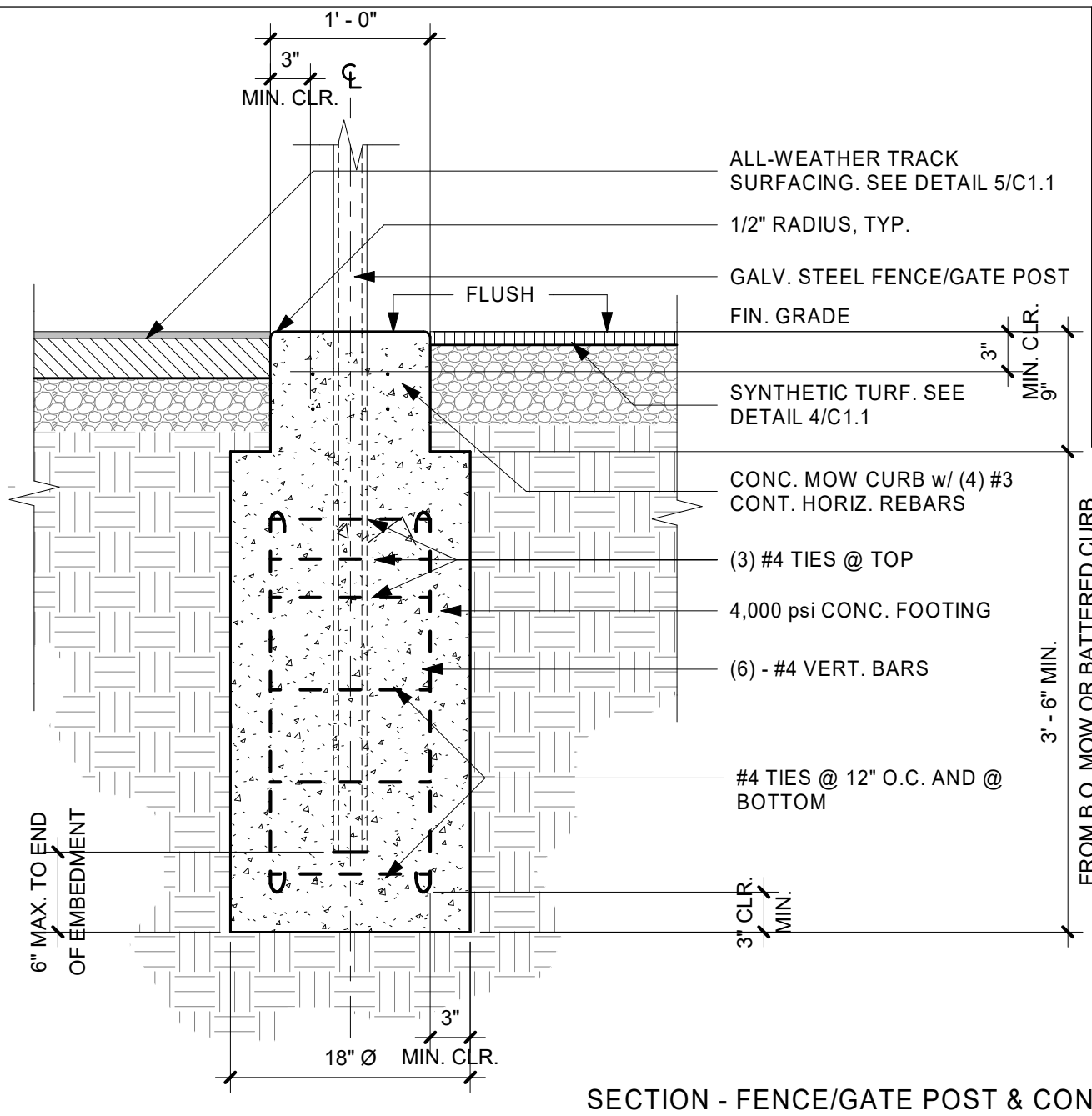
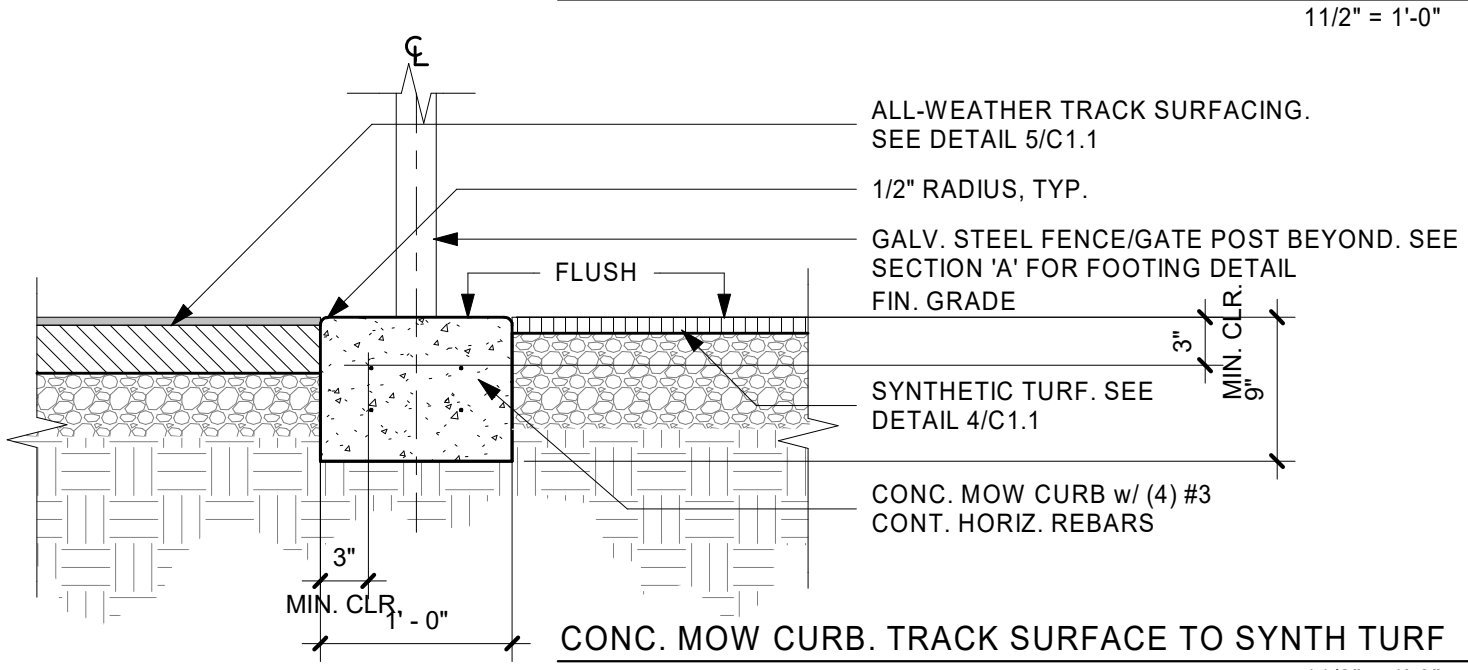
AGENCY REVIEW



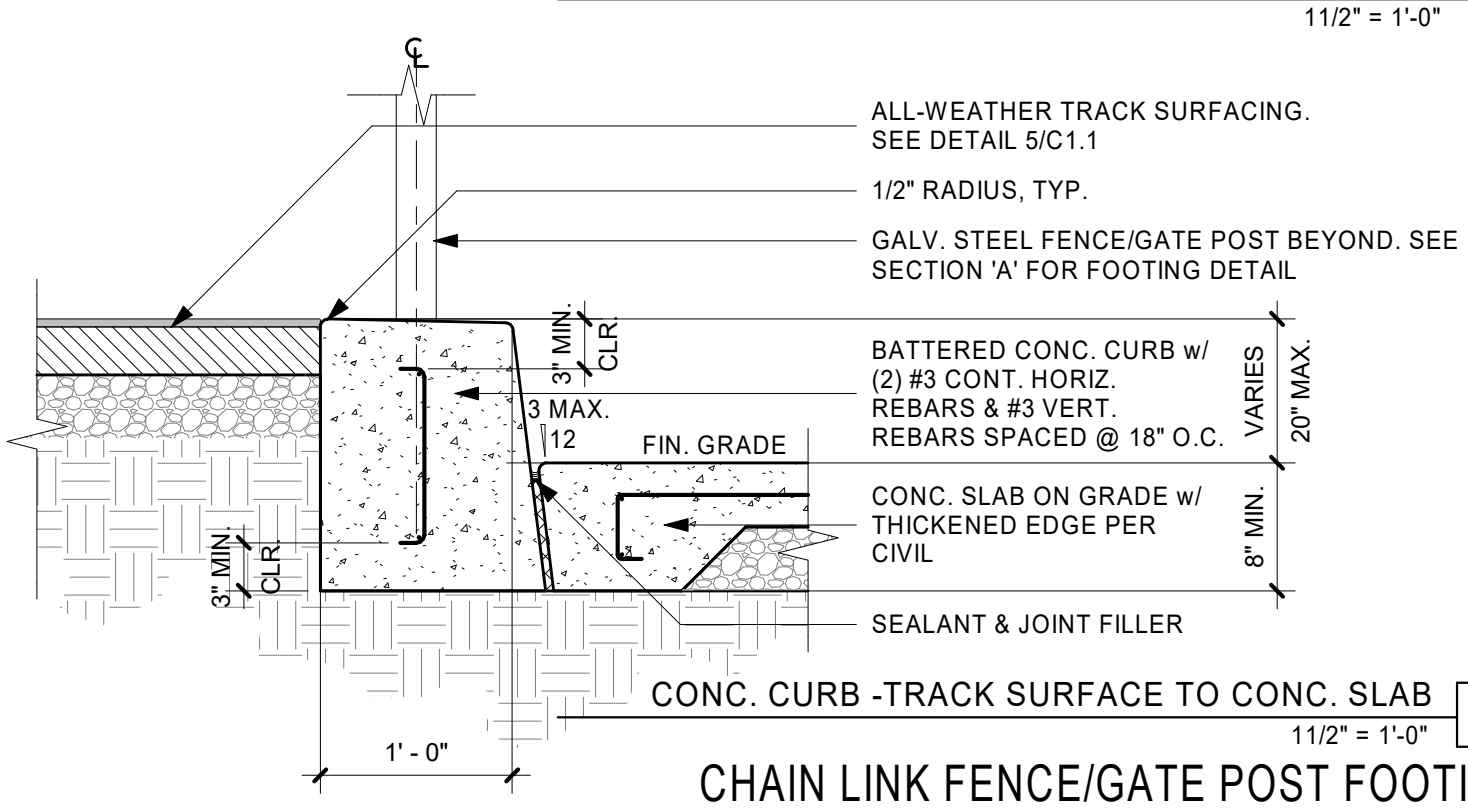
SECTION - FENCE/GATE POST & CONC. CURB **A**

11/2" = 1'-0"



CONC. MOW CURB. TRACK SURFACE TO SYNTH TURF **B**

11/2" = 1'-0"



CONC. CURB -TRACK SURFACE TO CONC. SLAB **C**

11/2" = 1'-0"

CHAIN LINK FENCE/GATE POST FOOTING & CONC. CURB

1

1" = 1'-0" AD1-A3

LICENSED ARCHITECT JAY R. LITTLE NO. C12955 REN. 11-30-21 STATE OF CALIFORNIA

LITTLE
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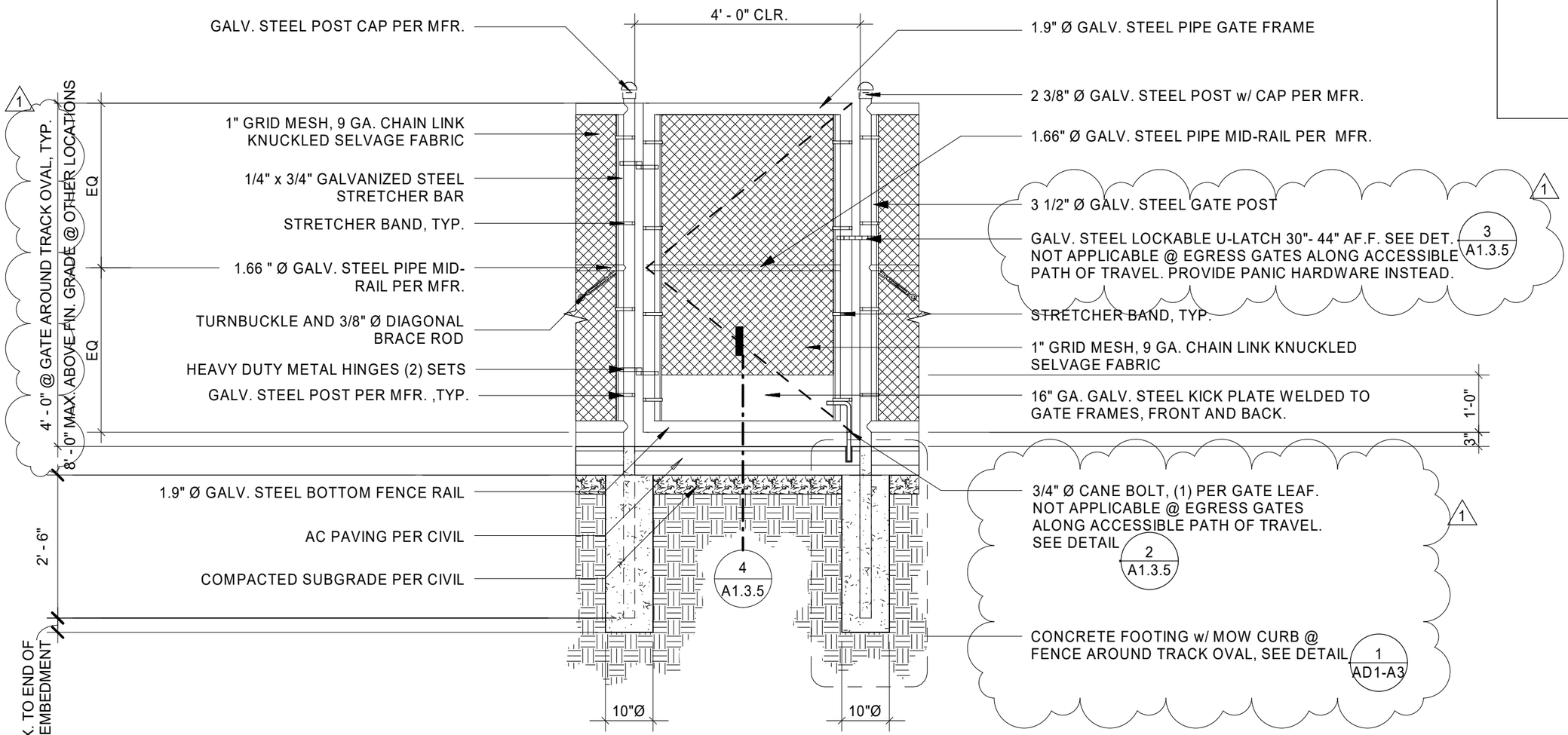
PRINCIPAL IN CHARGE: Designer
PROJECT MANAGER: Checker
DESIGN TEAM: Author

PROJECT NAME	PROJECT NO.
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS 03-120287	6121235305
1 ADDENDUM 1	ISSUE DATE 04/24/20
DESCRIPTION	REFERENCE
SITE DETAILS	6/A1.3.5
1	DRAWING NO. AD1-A3

AGENCY REVIEW



CHAIN LINK SINGLE PEDESTRIAN GATE w/ MOW CURB

1/2" = 1'-0"

1
AD1-A4

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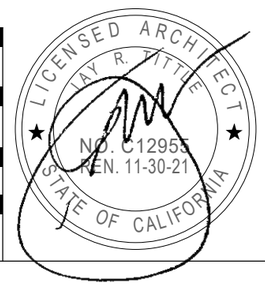
PROJECT NAME	PROJECT NO.
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS 03-120287	6121235305
	ISSUE DATE
1 ADDENDUM 1	04/24/20
DESCRIPTION	REFERENCE
SITE DETAILS	1/A1.3.5
	BULLETIN DRAWING
	AD1-A4



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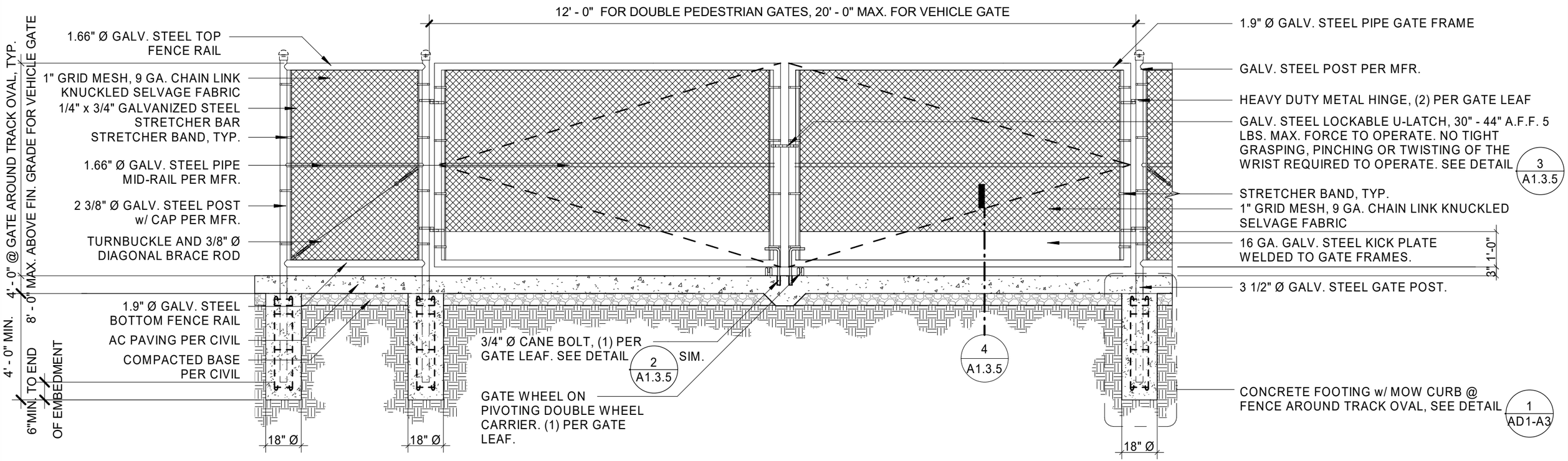

CHAIN LINK FENCE AND DOUBLE GATE w/ MOW CURB

3/8" = 1'-0"

1 / AD1-A5

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PROJECT MANAGER: Checker
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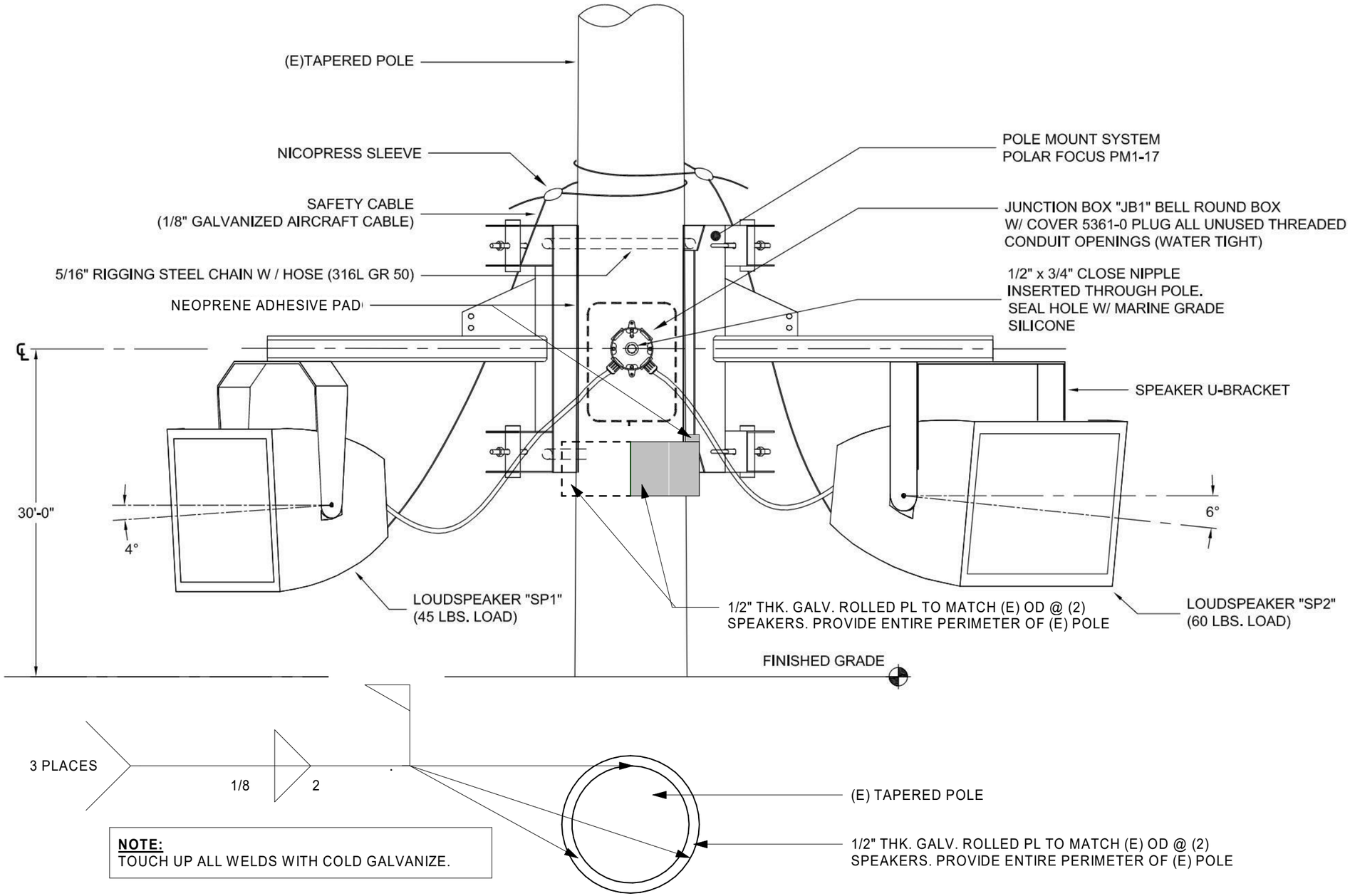
PROJECT NAME	PROJECT NO.
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS 03-120287	6121235305
1 ADDENDUM 1	ISSUE DATE 04/24/20
DESCRIPTION	REFERENCE
SITE DETAILS	1 BULLETIN DRAWING AD1-A5

LICENSED ARCHITECT JAY R. LITTLE NO. C12955 REN. 11-30-21 STATE OF CALIFORNIA

AGENCY REVIEW



NOTE:
TOUCH UP ALL WELDS WITH COLD GALVANIZE.

HOME LOUDSPEAKER POLE MOUNT DETAIL

1/2" = 1'-0"

1
AD1-A6

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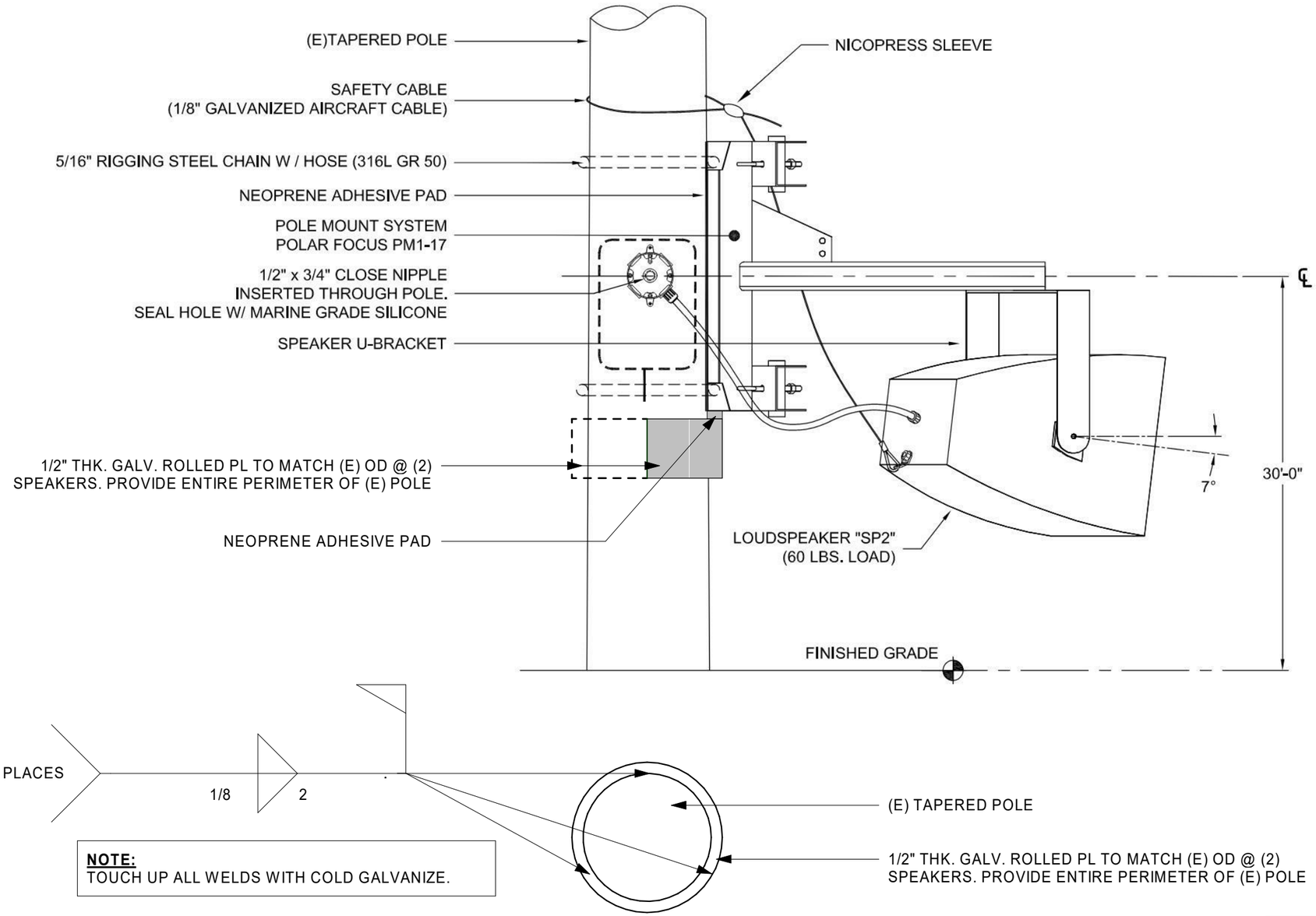
PROJECT NAME	PROJECT NO.
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS 03-120287	6121235305
1 ADDENDUM 1	ISSUE DATE 04/24/20
DESCRIPTION	REFERENCE
HOME LOUDSPEAKER POLE MOUNT DETAIL	1
	BULLETIN DRAWING AD1-A6

LICENSED ARCHITECT
CHAD BUTTLE
No. C12955
REN. 11-30-21
STATE OF CALIFORNIA

AGENCY REVIEW



NOTE:
TOUCH UP ALL WELDS WITH COLD GALVANIZE.

VISITOR LOUDSPEAKER POLE MOUNT DETAIL

1/2" = 1'-0"

1

AD1-A7

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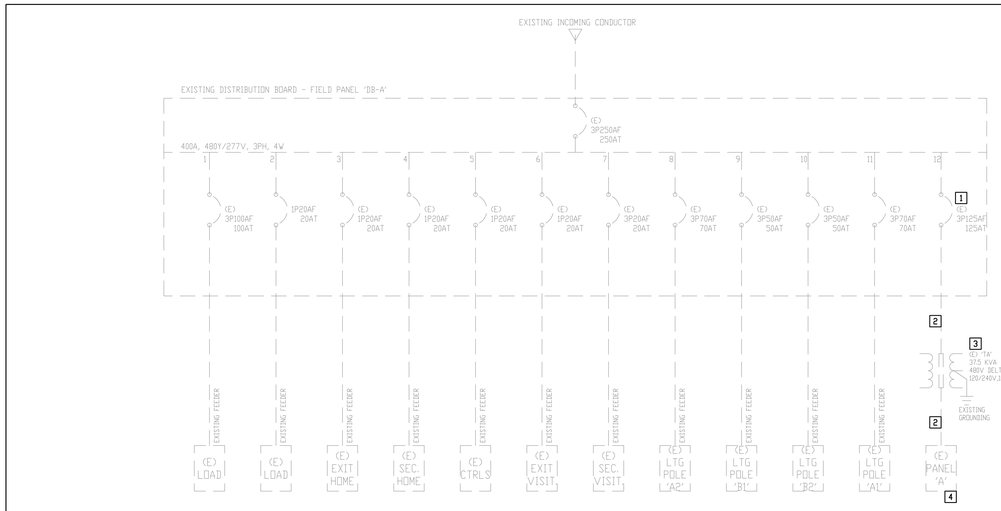
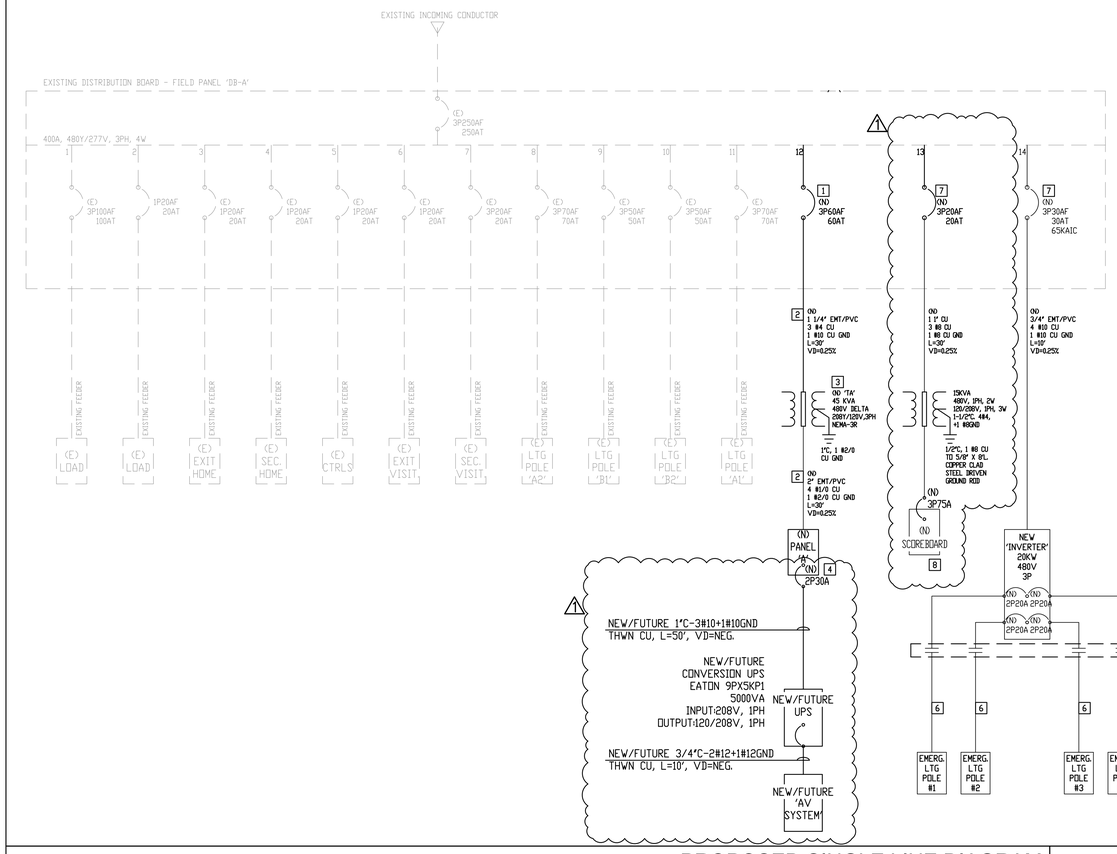
DESIGN TEAM: Author

PROJECT NAME	PROJECT NO.
CHANNEL ISLANDS HIGH SCHOOL TRACK & FIELD IMPROVEMENTS 03-120287	6121235305
1 ADDENDUM 1	ISSUE DATE 04/24/20
DESCRIPTION	REFERENCE
VISITOR LOUDSPEAKER POLE MOUNT DETAIL	1 BULLETIN DRAWING AD1-A7

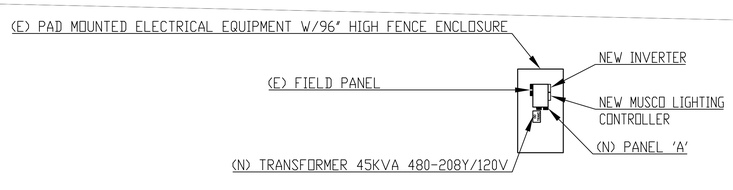
LICENSED ARCHITECT
JAY R. LITTLE
No. C12955
REN. 11-30-21
STATE OF CALIFORNIA



DEMO SINGLE LINE DIAGRAM | SCALE: NONE | 1



PROPOSED SINGLE LINE DIAGRAM | SCALE: NONE | 2



(E) HOME BLEACHERS
A# 55981

ENLARGED ELECTRICAL ARRANGEMENT LAYOUT | SCALE: 1/8"=1'-0" | 3

PANELBOARD: A (NEW) — NEMA 3R

BUS AMPS: 125A
MAIN SIZE/TYPE: 125A MCB
VOLTS/PHASE: 208Y/120V, 3PH, 4W
SECTION: 1

FAULT CURRENT: REFER TO ONE-LINE DIAGRAM
AIC RATING: 10000 FULLY RATED
SERVES: FIELD AREA
MOUNTING: SURFACE
LOCATION: FIELD AREA

CKT NO.	DESCRIPTION	VOLTAMPS/PHASE A	B	C	WIRE NO.	BKR AMP	P	P	BKR AMP	WIRE NO.	VOLTAMPS/PHASE A	B	C	DESCRIPTION	CKT NO.
1						20	1	1	20		900			*EXISTING LOAD*	2
3	*EXISTING LOAD*		900			20	1	1	20			900		*EXISTING LOAD*	4
5	*EXISTING LOAD*			1,000		20	2	1	20						6
7		1,000						1	20						8
9							1	1	100			9,600		*EXISTING LOAD*	10
11							1	1					9,600		12
13	GATEWAY POWER	1,200				20	1	1	20		1,200			FIELD JUNCTION BOX	14
15	GATEWAY POWER		1,200			20	1	1	20			1,200		FIELD JUNCTION BOX	16
17							1	1	20				1,200	FIELD JUNCTION BOX	18
19							1	1	20		1,200			FIELD JUNCTION BOX	20
21							1	1	20			1,200		FIELD JUNCTION BOX	22
23							1	1	20				1,200	FIELD JUNCTION BOX	24
25							1	1	20		1,200			FIELD JUNCTION BOX	26
27							1	1	20			1,200		FIELD JUNCTION BOX	28
29							1	1							30
31							1	1							32
33							1	1							34
35							1	1							36
37							1	1							38
39	NEW/FUTURE		2,500			30	2	1							40
41	CONVERSION UPS			2,500				1							42
	SUBTOTAL	2,200	4,600	3,500							4,500	14,100	12,000	SUBTOTAL	

TOTAL PHASE A - VA	8,700	LOAD	CONN. VA	DF	LOAD	CONN. VA	DF		
AMPS	56	COOLING		1.00	REFRIGERATION		1.00		
TOTAL PHASE B - VA	18,700	HEATING		0	SIGN/DISPLAY		1.25		
AMPS	156	LIGHTING		1.25	KITCHEN		1.00		
TOTAL PHASE C - VA	15,500	RECEPTACLES		1.0/.5	EXISTING		1.00		
AMPS	129	MOTORS		1.00	LARGE MOTOR		1.25	TOTAL DEMAND	
TOTAL PNLBD - VA	40,900	SUPP HEAT		1.00	SHOW WINDOW		1.25	40,900 VA	
AMPS	114	MISC EQUIP	40,900	1.00	LTG TRACK		1.00	114 A	

PANELBOARD NOTES

PANEL SCHEDULE | SCALE: NONE | 4

STADIUM/BLEACHERS EMERGENCY LIGHTING CALCULATION			
FIXTURE TYPE	POWER(W)	QUANTITY	TOTAL POWER
TLC-LED-400	400W	6	2.4KW
TOTAL CONNECTED LOAD X 1.25%			3KW
SELECTED NEW INVERTER RATING @ 277/480V, 3PH, 4W			20KW

INVERTER CALCULATION | SCALE: NONE | 5

KEYNOTES GENERALLY CORRESPOND TO SPECIFICATION SECTIONS BY MEANS OF THE FIVE-DIGIT NUMBER IDENTIFYING THE SPECIFICATION SECTION AS A MATTER OF REFERENCE AND CONVENIENCE. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL WORK INDICATED HEREIN PURSUANT TO THE GENERAL CONDITIONS AND TECHNICAL SPECIFICATIONS OF THE CONTRACT, REGARDLESS OF WHETHER OR NOT THE KEYNOTE(S) SPECIFICALLY CORRESPOND TO ANY SPECIFICATION DIVISION PROVIDED IN THE TECHNICAL SPECIFICATIONS.

1. ALL EQUIPMENT TO BE SQUARE D OR EQUAL BY SIEMENS, CUTLER-HAMMER, G.E., OR RSC-SIERRA.
2. ALL ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH SPECIFIED AND APPROPRIATE UL LISTING BASED ON THE ENVIRONMENT IN WHICH THE EQUIPMENT IS TO BE MOUNTED.
3. ALL ELECTRICAL EQUIPMENT SHALL BE PROVIDED WITH AND BRACED FOR REQUIRED FAULT CURRENT RATINGS BASED ON THEIR VOLTAGE AND LOCATION WITHIN THE SYSTEM. SHOP DRAWINGS TO INCLUDE FAULT CURRENT RATINGS FOR ALL ELECTRICAL EQUIPMENT. NO SERIES RATING SHALL BE ALLOWED.
4. ALL TERMINATIONS AND ENCLOSURES SHALL BE RATED FOR USE WITH 75 DEGREES CELSIUS CONDUCTORS.
5. ALL SERVICE ENTRANCE EQUIPMENT/DISTRIBUTION BOARDS/SWITCHBOARDS RATED AT 600A OR GREATER SHALL BE PROVIDED WITH A SOLID STATE MAIN OVER-CURRENT PROTECTIVE DEVICE AND BUSSING RATED AT 100% OPERATION.
6. ALL SWITCH/DISTRIBUTION BOARDS SHALL BE PROVIDED WITH:
   A. COPPER BUSSING WITH RECTANGULAR CROSS SECTION. HORIZONTAL AND VERTICAL BUSSING SHALL BE FULL LENGTH AND HAVE PROVISIONS FOR FUTURE EXTENSIONS WERE APPLICABLE. ALL BUSSING SHALL HAVE A MINIMUM WITHSTAND RATING EQUAL TO AVAILABLE FAULT CURRENT INDICATED ON THE AIC CALCULATION. ALL VERTICAL AND HORIZONTAL BUSSING SHALL BE RATED AT FULL CAPACITY IN ALL SWITCHBOARD AND DISTRIBUTION BOARD ASSEMBLIES. PROVIDE 100% NEUTRAL BUSSING MINIMUM – UNLESS OTHERWISE NOTED. PROVIDE FULL LENGTH GROUND BUSS, AND WHERE INDICATED ON PLANS, ISOLATED GROUND BUSSING. PROVIDE REAR WIRE WAY IN ALL SWITCHBOARD SECTIONS – UNLESS OTHERWISE NOTED OR REQUIRED.
   B. LUGS SHALL BE SUITABLE FOR USE WITH BOTH COPPER AND ALUMINUM CONDUCTORS AND 75 DEGREE CELSIUS AMPACITY CONDUCTORS.
   C. PERMANENT PLACARDS(S) MARKED PER THE SPECIFICATION AND PER NEC (CEC – WHERE ADOPTED SECTIONS 225.37, 230.2(E), 690.56(B) & (C), 692.56,700.8, 701.9, AND 702.8 DENOTING PRESENCE OF ADDITIONAL SERVICES, PHOTOVOLTAIC SYSTEMS, FUEL CELLS, EMERGENCY OR STAND-BY POWER SOURCES, ETC. AS APPLICABLE.
7. CONTRACTOR SHALL PROVIDE SWITCHBOARD SHOP DRAWINGS TO SERVING UTILITY COMPANY PRIOR TO FABRICATION OR EQUIPMENT. CONTRACTOR SHALL SECURE CONFIRMATION PROPOSED SWITCHBOARD COMPLIES WITH ELECTRICAL UTILITY COMPANY REGULATIONS.
8. ELECTRICAL EQUIPMENT SUBMITTALS SHALL BE ACCOMPANIED BY A 1/4" = 1'-0" SCALED DRAWING WHICH REFERENCES ALL ELECTRICAL EQUIPMENT ROOMS AND EQUIPMENT. DRAWING SHALL CLEARLY IDENTIFY ADEQUATE SPACE IS PROVIDED IN ELECTRICAL ROOMS TO ACCOMMODATE THE INSTALLATION OF ELECTRICAL EQUIPMENT WHILE MAINTAINING ALL REQUIRED CODE CLEARANCES. ALL SUBMITTALS NOT ACCOMPANIED BY SCALED DRAWING WILL BE REJECTED AS INCOMPLETE.
9. EC SHALL CONDUCT, WITH ASSISTANCE OF SWITCHGEAR MANUFACTURER, AN ELECTRICAL HAZARD ANALYSIS CONSISTING OF AN ARC FLASH, SHORT CIRCUIT, AND COORDINATION STUDY TO DETERMINE APPROPRIATE LEVELS OF PERSONNEL PROTECTIVE EQUIPMENT (PPE) AS REQUIRED BY NFPA 70E AND IEEE STD 1584, AND TO ENSURE PROPER COORDINATION (INCLUDING GROUND FAULT COORDINATION) EXISTS BETWEEN ALL OVER- CURRENT PROTECTIVE DEVICES SHOWN ON SINGLE-LINE DIAGRAM. ADDITIONALLY:
   A. STUDY SHALL INCLUDE ALL PORTIONS OF ELECTRICAL SINGLE-LINE DIAGRAM. NORMAL SYSTEM CONNECTIONS AND THOSE THAT RESULT IN MAXIMUM FAULT CONDITION SHALL BE ADEQUATELY COVERED IN THE STUDY. PERFORM STUDY WITH THE AID OF A COMPUTER PROGRAM, SKM CAPTOR, OR EQUAL. STUDY SHALL IDENTIFY SELECTIVE COORDINATION SUCH THAT DEVICE CLOSEST TO FAULT WILL TRIP FIRST. GROUND FAULT PORTION OF THE STUDY SHALL DEMONSTRATE COORDINATION OF MAIN BREAKER AND ANY FEEDER GROUND FAULT DEVICES WITH DOWNSTREAM CIRCUIT BREAKERS 30A AND LESS.
   B. EC SHALL BE RESPONSIBLE TO RECOMMEND SETTINGS OF ALL DEVICES AND TO INCLUDE GROUND FAULT SETTINGS NECESSARY TO ACHIEVE SYSTEM COORDINATION. CONTRACTOR SHALL FIELD ADJUST DEVICES ACCORDINGLY UTILIZING A QUALIFIED MANUFACTURER'S REPRESENTATIVE.
   C. DURING THE CONSTRUCTION PHASE OF THE PROJECT ALL GROUND FAULT RELAYS SHALL BE SET AT SHORTEST AVAILABLE TIME DELAY.
   D. RESULT OF COORDINATION STUDY SHALL BE SUBMITTED AS PART OF OVERALL SWITCHGEAR SUBMITTAL AND SHALL INCLUDE PROTECTIVE DEVICE TIME VERSUS CURRENT COORDINATION CURVES, GROUPING APPROPRIATE DEVICES TOGETHER, TABULATIONS OF RELAY AND CIRCUIT BREAKER TRIP SETTINGS, FUSE SELECTION, AND COMMENTARY REGARDING SAME.
   E. A GROUND FAULT SYSTEM TEST SHALL BE CONDUCTED BY AN INDEPENDENT TESTING AGENCY PER NEC (CEC – WHERE ADOPTED) 230.95(C). GROUND FAULT SYSTEM TEST SHALL BE PERFORMED IN PRESENCE OF LOCAL AHJ. VERIFICATION OF DEVICE SETTINGS PER THE COORDINATION STUDY SHALL BE PERFORMED BY SAME INDEPENDENT TESTING AGENCY. GROUND FAULT TEST RESULTS SHALL BE DELIVERED TO ENGINEER OF RECORD.
   F. PERFORM ARC FLASH ANALYSIS TO DETERMINE FLASH BOUNDARY, FLASH HAZARD CATEGORY, PPE REQUIREMENTS, AND MINIMUM ARC RATING (CAL/SQUARE CM). ABOVE IN FORMATION SHALL BE INDICATED AT EACH ARC FLASH SOURCE ON A NEC (CEC WHERE ADOPTED) COMPLIANT ARC FLASH HAZARD LABEL(S) AS MANUFACTURED BY BRADY.
10. GROUND ALL ELECTRICAL EQUIPMENT, BRANCH CIRCUITS, FEEDERS, PANEL AND DISTRIBUTION BOARDS, ELECTRICAL SERVICES, ETC. PER ADOPTED NEC ARTICLE 250.
11. FEEDER SPECIFICATIONS ARE BASED ON USE OF COPPER CONDUCTORS AND SHALL BE PROVIDED WITH A CODE SIZED COPPER GROUNDING CONDUCTOR.
12. ALL MAIN SWITCHBOARDS, PANELBOARDS, DISTRIBUTION BOARDS, ETC SHALL BE PROVIDED WITH A COPPER BUSS RATED AT SPECIFIED AMPACITY. ALL SWITCHBOARDS AND DISTRIBUTION BOARDS SHALL ALIGN IN FRONT. ALL PANELBOARDS SHALL BE PROVIDED WITH BOLT-ON BREAKERS, DEADFRONT COVERS WITH LOCKABLE DOORS, FACTORY INSTALLED MAIN CIRCUIT BREAKERS (IF APPLICABLE), AND PANEL DIRECTORY PER THESE DOCUMENTS.
13. ALL ELECTRICAL EQUIPMENT (I.E. SWITCHGEAR, TRANSFORMERS, DISTRIBUTION BOARDS, PANELBOARDS, DISCONNECT SWITCHES, ETC.) SHALL BE PROVIDED WITH A PHENOLIC NAMEPLATE WITH ENGRAVED WHITE LETTERS REFERENCING FOLLOWING INFORMATION:

    LINE 1 – 'EQUIPMENT NAME'
    LINE 2– 'FED FROM ...'
    LINE 3– 'VOLTAGE, AMPACITY, PHASE'
    LINE 4– 'DATE INSTALLED'

    NAMEPLATES SHALL BE SIZED BASED ON FOLLOWING:

    SWITCHBOARDS, DISTRIBUTION BOARDS, TRANSFORMERS:

    * LINE 1 = 1/2" LETTERS, LINES 2, 3, & 4 = 1/4" LETTERS

    PANELBOARDS, MOTOR CONTROL CENTERS, DISCONNECTS, STARTERS, ETC:

    * LINE 1 = 3/8" LETTERS, LINES 2, 3, & 4 = 1/4" LETTERS

    NAMEPLATE COLORS SHALL BE AS FOLLOWS:

    BLACK = NORMAL POWER
    RED = LIFE SAFETY/EMERGENCY POWER
    BLUE = STANDBY POWER
    GREEN = INVERTER POWER

    ALL NAMEPLATES SHALL BE FASTENED WITH A MINIMUM OF TWO (2) MACHINE SCREWS. NO SELF ADHESIVE NAMEPLATES ARE ALLOWED.
14. ELECTRICAL DESIGN COMPUTES VOLTAGE DROP BASED ON FEEDER LENGTHS REFERENCED ON SINGLE-LINE DIAGRAM. EC TO NOTIFY ENGINEER OF RECORD IN EVENT FIELD CONDITIONS CAUSE A SUBSTANTIAL INCREASE IN OVERALL FEEDER LENGTH.
15. ANY FLOOR-STANDING ELECTRICAL EQUIPMENT (I.E. INVERTERS, DISTRIBUTION BOARDS, SWITCHBOARDS, ATS SWITCHES, MOTOR CONTROL CENTERS, TRANSFORMERS ETC.) ARE TO BE MOUNTED ON A MINIMUM 4" HIGH HOUSEKEEPING PAD WHICH EXTENDS 4" BEYOND EQUIPMENT IN ALL DIRECTIONS.
16. ALL MOTOR RELATED CIRCUITS ARE TO BE PROVIDED WITH PROTECTIVE RELAYS FOR PHASE FAILURE AND UNDER-VOLTAGE.
17. ELECTRICAL CONTRACTOR TO INCLUDE IN BID ALL ASSOCIATED COSTS FOR THIRD PARTY TESTING OF ELECTRICAL EQUIPMENT, GROUND FAULT, CONDUCTORS, ETC..
18. ALL FEEDER DISTANCES REFERENCED ON DRAWINGS ARE FOR DESIGN PURPOSES ONLY. LENGTHS AS INDICATED ARE NOT TO BE UTILIZED IN MATERIAL TAKE-OFFS.

SINGLE LINE DIAGRAM NOTES | SCALE: NONE | 6

1. EXISTING 125A, 3P BREAKER TO BE REMOVED, DELIVERED TO DISTRICT AND REPLACED WITH NEW 60A, 3P BREAKER. NEW BREAKER SHALL BE SQUARE D AND MATCH AIC RATING WITH THE EXISTING BREAKERS TO BE FULLY RATED.
2. EXISTING FEEDER TO BE REMOVED AND REPLACED WITH THE PROPOSED FEEDERS, CONDUCTORS AND CONDUITS.
3. EXISTING 37.5KVA TRANSFORMER TO BE REMOVED, DELIVERED TO DISTRICT AND REPLACED WITH NEW 45KVA TRANSFORMER WITH PROPOSED SPECIFICATIONS.
4. EXISTING SINGLE PHASE PANEL TO BE REMOVED, DELIVERED TO DISTRICT AND REPLACED WITH NEW 125A, 208Y/120V, 3PH, 4W PANEL. EXISTING LOADS TO BE RECONNECTED TO THE NEW PANEL.
5. INTERCONNECTION BETWEEN MUSCO LIGHTING CONTROLLER.
6. NEW 2#10+1#10GND TO EMERGENCY LIGHTS. SAME CONDUITS FOR NORMAL LIGHTS COULD BE USED. REFER TO SITE LIGHTING PLAN A#03-12000B FOR CONDUIT ROUTE. CONTRACTOR SHALL VERIFY AT SITE AND COORDINATE WITH MUSCO LIGHTING PRIOR BID/CONSTRUCTION.
7. NEW BREAKER SHALL MATCH WITH AIC RATING OF THE EXISTING BREAKER. CONTRACTOR SHALL VERIFY AT SITE PRIOR BID/CONSTRUCTION.
8. 100A, 30 CKT WEATHERPROOF LOAD CENTER. AMPACITY AND QUANTITY OF BRANCH CIRCUIT BREAKERS SHALL BE COORDINATED WITH MANUFACTURER AND CONTRACTOR.

SLD KEYNOTES | SCALE: NONE | 7

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OXNARD UNION HIGH SCHOOL DISTRICT

CHANNEL ISLANDS HIGH SCHOOL
TRACK & FIELD IMPROVEMENTS

1400 RAIDERS WAY,
OXNARD, CA. 93033

LICENSED ARCHITECT — NO. C12955 — REN. 11-30-21 — STATE OF CALIFORNIA
REGISTERED PROFESSIONAL ENGINEER — NO. E-21460 — EXP. 3-31-2022 — ELECTRICAL — STATE OF CALIFORNIA

Engineous Group, Inc.
751 N. Fair Oaks Ave., Suite 201
Pasadena, CA 91103
Phone: (626) 696-3850

03-120287

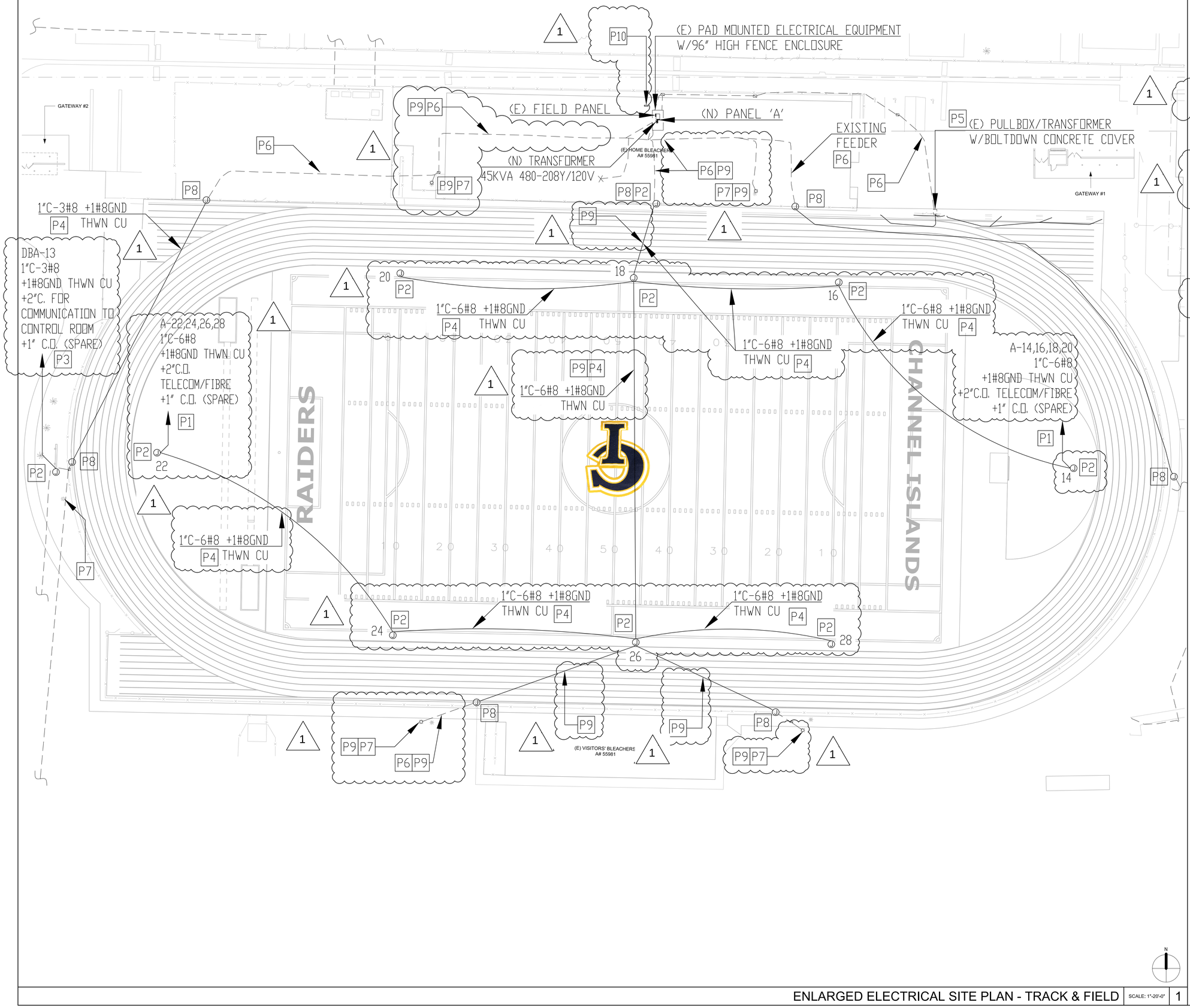
04/24/20

NO.	REASON	DATE
1	ADDENDUM 1	04/24/20

PRINCIPAL IN CHARGE: B.E.S./A.O.
PROJECT MANAGER: A.O.
DESIGN TEAM: J.H.

SINGLE LINE DIAGRAM, ELECTRICAL LAYOUT, AND PANEL SCHEDULES

(E-001) AD1-E1



POWER GENERAL NOTES

1. ALL CONDUITS SHALL BE RUN NEATLY AND PARALLEL OR PERPENDICULAR TO STRUCTURAL MEMBERS. CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATIC AND IS INTENDED TO SHOW POSSIBLE FUNCTIONAL ROUTE OF CONDUITS AND CONDUCTORS. IN SOME CASES THE DRAWING SHOWS ROUTING WHICH MAY NOT BE PARALLEL OR PERPENDICULAR TO BUILDING STRUCTURAL MEMBERS, THIS IS FOR CLARITY OF CIRCUITING AND NOT INTENDED TO APPROVE ANY DEVIATION FROM NEAT WORKMANSHIP.
2. COMBINING OF HOMERUNS AND OTHER CIRCUITS OTHER THAN WHAT IS SHOWN ON PLAN WILL NOT BE APPROVED.
3. CONDUITS AND ROUTING FOUND OBJECTIONABLE BY THE ARCHITECT WILL BE REWORKED AT ELECTRICAL CONTRACTORS EXPENSE.
4. ELECTRICAL CONTRACTOR SHALL PROVIDE APPROVED SEISMIC STRUCTURAL SUPPORTS AS CURRENTLY ADOPTED BY IBC OR CBC WHERE APPLICABLE FOR ALL FIXTURES, BOXES AND OTHER ELECTRICAL EQUIPMENT.
5. ELECTRICAL CONTRACTOR SHALL VERIFY LOCATIONS AND MOUNTING HEIGHTS OF ALL OUTLETS AND EQUIPMENT WITH ARCHITECTURAL PLANS, ELEVATIONS AND DETAILS.

POWER PLAN KEYED NOTES (NOT ALL MAY APPLY)

P1 1"C. 6#8+1#8GND THWN CU +2" CONDUIT FOR TELELCOM/FIBER USE AND 1"C. FOR SPARE USE. CONDUITS SHALL BE BURIED 24" BELOW GRADE ENCASED IN CONCRETE. CONTRACTOR SHALL VERIFY EXISTING UNDERGROUND CONDUITS TO BE USED OR INTERCEPTED TO CLOSEST POWER PANEL, IF POSSIBLE, PRIOR BID/CONSTRUCTION.

P2 NEW JUNCTION BOXES (24"X36") FOR POWER/TV/DATA/PA TO BE INSTALLED BELOW GRADE OUTDOOR RATED WITH RUBBERIZED TRACK SURFACE MATCHING EXISTING TYPE AND COLOR OF THE TRACK. CONTRACTOR SHALL VERIFY DISTRICT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

P3 1"C-3#8+1#8GND THWN CU +2" CONDUIT FOR SCOREBOARD COMMUNICATION USE, AND 1"CU FOR SPARE USE, TO NEAREST POWER PANEL. CONDUITS SHALL BE BURIED 24" BELOW GRADE ENCASED IN CONCRETE.

P4 1"C-6#8+1#8GND THWN CU +2" FIBER BETWEEN JUNCTION BOXES AND 1"CU FOR SPARE USE. CONDUITS SHALL BE BURIED 24" BELOW GRADE. CONTRACTOR SHALL VERIFY EXISTING UNDERGROUND CONDUITS TO BE USED OR INTERCEPTED, IF POSSIBLE, PRIOR BID/CONSTRUCTION.

P5 EXISTING CONCRETE PULL BOX WITH BOLTDOWN CONCRETE COER, QUICKSET #ED-24.

P6 EXISTING FEEDER TO REMAIN AS IS. CONTRACTOR SHALL REPLACE WITH THE NEW ONE IF FEEDER GETS DAMAGED DURING CONSTRUCTION.

P7 EXISTING LIGHT POLE TO BE RETROFITTED. CONTRACTOR SHALL VERIFY EXISTING CONDITION AND NEW REQUIREMENTS WITH DISTRICT PRIOR BID/CONSTRUCTION.

P8 INTERCEPT NEW CONDUITS AND CONDUCTORS WITH EXISTING CONDUCTORS AND CONDUITS.

P9 PROVIDE 1-1/2" CONDUIT FOR AV SYSTEM POWER AND LOW VOLTAGE WIRES. FUTURE MAIN AV EQUIPMENT IS LOCATED IN THE PRESS ROOM AND FUTURE SPEAKERS ON LIGHTING POLE.

P10 FUTURE AV EQUIPMENT AND ISOLATION TRANSFORMER/UPS LOCATED IN THE PRESS ROOM.

ENLARGED ELECTRICAL SITE PLAN - TRACK & FIELD | SCALE: 1"-20'-0" | 1

LITTLE
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www.littleonline.com

OXNARD UNION HIGH SCHOOL DISTRICT

CHANNEL ISLANDS HIGH SCHOOL
TRACK & FIELD IMPROVEMENTS

1400 RAIDERS WAY,
OXNARD, CA. 93033

LICENSED ARCHITECT — NO. C-12955 — REN. 11-30-21 — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — MARTIN OSMAN — NO. E-21460 — EXP. 3/31/2020 — ELECTRICAL — STATE OF CALIFORNIA

Engineous Group, Inc.
751 N. Fair Oaks Ave., Suite 201
Pasadena, CA 91103
Phone: (626) 696-3850

03-120287

04/24/20

NO.	REASON	DATE
AS#1	ADDENDUM 1	**04/24/20**

PRINCIPAL IN CHARGE
B.E.S./A.O.

PROJECT MANAGER
A.O.

DESIGN TEAM
J.H.

TRACK & FIELD
ELECTRICAL SITE PLAN

(E-200) AD1-E2

GENERAL NOTES:

SCOPE OF WORK

Remove all existing light fixtures, cross–arm supports, speakers, security light fixtures, exit illumination lights from (4) existing poles and replace with new LED light fixtures, new cross–arm supports, speaker, ball trackers, and security lights as indicated. Remove existing ballast boxes & add ballast boxes as indicated.

APPLICABLE BUILDING CODE

All construction and workmanship shall conform to the 2016 California Building Code, California Code of Regulations – Title 24, Parts 1 & 2.

This pole and foundation standard has been designed for lateral loads on the completed structure as follows:

Wind Design Data:
- Vult = 110 MPH (Exposure C); Vasd = 85 MPH (Exposure C)
- Risk Category = II

Seismic Design Data:
- I_e = 1.0
- Risk Category = II (Self Supporting Poles)
- S_s = 2.347
- S_1 = 0.834
- Site Class = D
- S_{DS} = 1.565
- S_{D1} = 0.834
- Seismic Design Category = E
- Basic Seismic–Force–Resisting System = Non–Building Structure, not similar to buildings
- Cs = 0.445 (STRENGTH LEVEL)
- R = 1.5
- Analysis Procedure = Equivalent Lateral Force Procedure
- See Pole Foundation Schedule for maximum pole seismic forces.

GENERAL CONSTRUCTION

These notes shall be used in conjunction with the plans and any discrepancies shall be brought to the attention of the Engineer.

Contractor must check all dimensions, clearances and job conditions before starting work. Engineer shall be notified immediately of any discrepancies or possible deficiencies.

The drawings and specifications represent the finished structure. All bracing, temporary supports, shoring, etc., is the sole responsibility of the Contractor. Observation visits to the job site by the Engineer do not include inspection of construction procedures. The Contractor is solely responsible for all construction methods and for safety conditions at the worksite. These visits shall not be construed as continuous and detailed inspections.

Design, material, equipment, and products other than those described below or indicated on the drawings may be considered for use, provided prior approval is obtained from the School District, Engineer, and the Division of the State Architect.

All changes In approved plans shall be made by means of construction change documents (CCD) approved by the Division of State Architect, as required by Section 4–338, Part 1, Title 24, CCR. All CCD documents shall be signed by the Architect and Owner. Addenda shall be signed by the design professional in general responsible charge.

Substitutions shall be considered as a CCD and shall be approved by DSA prior to fabrication or use.

A Class 1 or Class 2 Project Inspector employed by the District (Owner) and approved by the Division of State Architect shall provide continuous inspection of the work, the duties of the Inspector are defined In Section 4–342, Part 1, Title 24, CCR.

All Tests And Inspections shall be performed by an Independent lab employed by the School District and approved by DSA.

Reference pole location drawings provided by the Architect, Structural Engineer, or Electrical Engineer for actual pole placement and site location.

STEEL POLE

All miscellaneous structural steel items confrom to AISC 360–10.

All weldment conforms with AWS D1.1 specification for GMAW fillet utilizing E70S–X filler metal or SAW fillet utilizing F7XX–EXXX or F8XX–EXXX filler metal.
GMAW procedure conforms to AWS A5.18.
SAW procedure conforms to AWS A5.23.

All field welding shall be in compliance with AWS D1.1 specification.

All welding shall be continously inspected by an AWS CWI certified inspector approved by DSA.

All exposed steel shall be hot dipped galvanized to ASTM A123 latest standards.

TESTING AND INSPECTION

Testing and inspection in accordance with Title 24, Part 1 & Part 2.

STEEL MATERIALS:
Structural steel – 2203A.1 & 2205A.1
Cold formed steel – 2210A.1
Identification – 2203A.1

STEEL QUALITY:
Tests of structural steel & cold formed steel – 2203A.1
Non–destructive weld tests – 1705A.2.5 & DSA IR–17–2

STRUCTURAL STEEL INSPECTIONS: Table 1705A.2.1
Shop fabrication inspection – 1704A2.5
Welding – 1705A.2.5, DSA IR 17–3 and AWS D1.1.

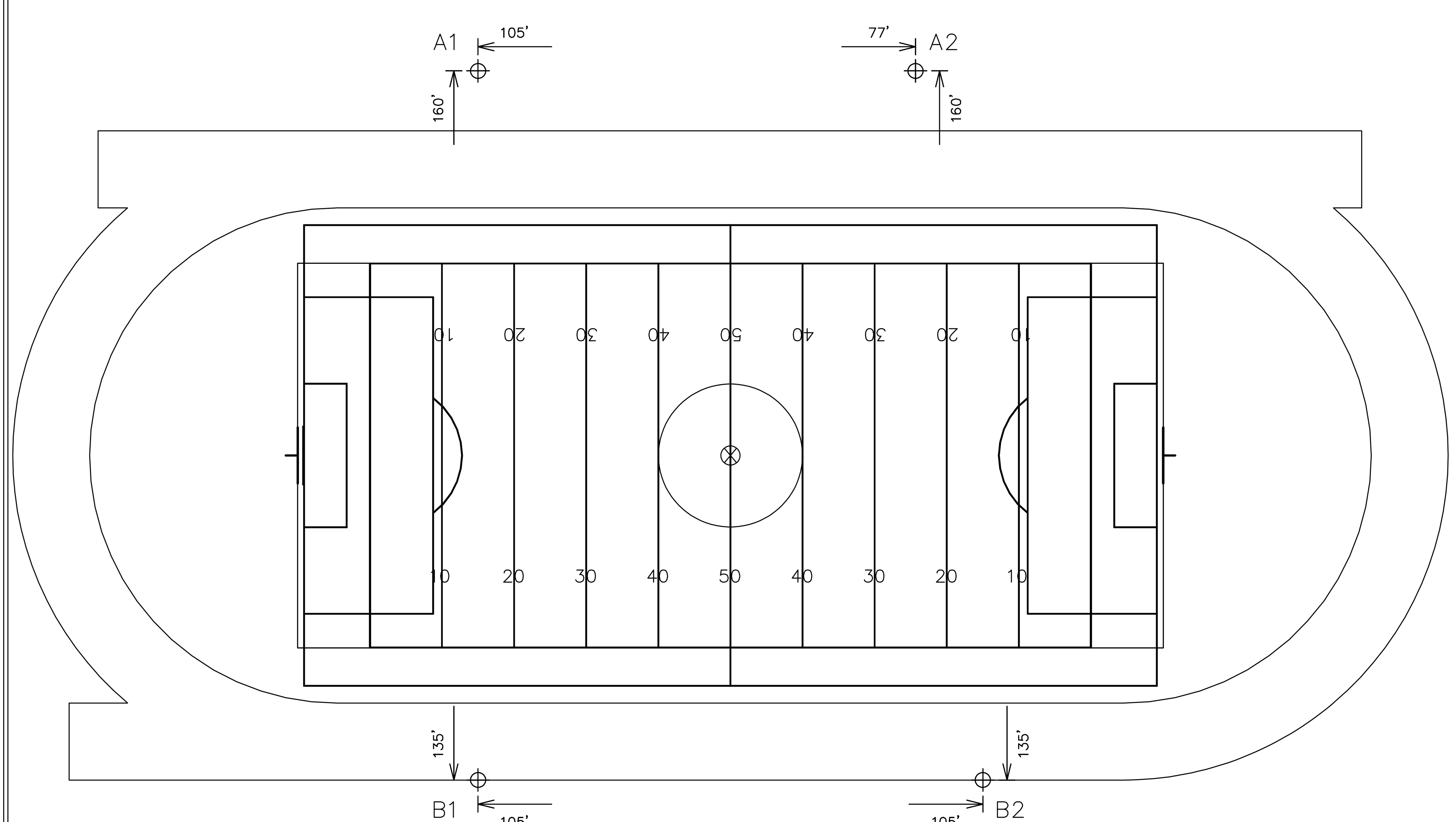
NOTE: Field verify existing pole conditions & repair any defects, if found. Repair procedures and details to be reviewed and approved by Structural Engineer of Record and DSA.

These plans are for construction approval. An application number and approval of these drawings by the Division of The State Architect of California must be secured to build from these plans.

INDEX OF SHEETS

Exist Pole (As–Built)	Type Fixtures	Number fixtures	EPA/Fixture sq ft (1)	Total EPA sq ft	Weight/fixture lbs(2)	Total Fixtures Weight lbs	Weight Elect. Ballast Per Fixture lbs	Total ballast Weight lbs	Pole weight lbs	Total weight lbs	Max. % Weight Difference	Max. % EPA Difference
A1, A2	SC–2(3)	16	3.2	51.2	20	320	50	800	2,965	4,145		
	Security light(3)	1	3.2	3.2	20	20	–	–				
	Speaker(3)	1	1.0	1.0	20	20	–	–				
	Exit illumination light(3)	1	0.5	0.5	20	20	–	–				
B1, B2	SC–2(3)	16	3.2	51.2	20	320	50	800	2,512	3,692		
	Security light(3)	2	3.2	6.4	20	40	–	–				
	Exit illumination light(3)	1	0.5	0.5	20	20	–	–				
Exist Pole (As–Modified)	**Type Fixtures**	**Number fixtures**	**EPA/ Fixtures sq ft**	**Total EPA sq ft**	**Weight/fixture lbs**	**Total Fixtures Weight lbs**	**Weight Elect. Driver Per Fixture lbs**	**Total Elect. Driver Weight lbs**	**Pole weight lbs**	**Total weight lbs**		
A1, A2	LED1500	5	3.4	16.9	92.8	464	20	260	2,965	~~4,447~~ 4,503 △1	~~7.3~~ 8.6	~~–14.9~~ –8.5
	LED1500	4	3.4	13.5	92.8	371						
	LED600	2	2.4	4.8	60.5	121						
	LED575	2	2.3	4.6	54.5	109						
	(1) JBL AW295 & (1) JBL AW129 Speaker △1	~~1~~ 2	~~7.7~~ 5.7	~~7.7~~ 11.3	~~157~~ 106.5	~~157~~ 213						
B1, B2	LED1500	5	3.3	16.4	92.8	464	20	240	2,512	~~3,767~~ 3,881	~~2.0~~ 5.1	–24.2 26.0
	LED1500	4	3.3	13.1	92.8	371						
	LED600	1	2.1	2.1	71.0	71						
	LED575 △1	2	2.3	4.6	54.5	109						
	JBL AW295 Speaker	1	~~7.7~~ 6.7	~~7.7~~ 6.7	~~157~~ 114	~~157~~ 114	–	–				

1. EPA VALUES OF EXISTING FIXTURES WERE TAKEN FROM DSA APPROVED DRAWINGS A#51471.
2. WEIGHTS OF EXISTING FIXTURES WERE TAKEN FROM ORIGINAL CALCULATIONS
3. ALL EXISTING FIXTURES AND ATTACHMENTS TO BE REMOVED FORM ALL POLES.



POLE ORIENTATION PLAN

N.T.S.

NOTE: THIS PLAN IS A PICTORAL REPRESENTATION OF THE SITE LAYOUT. REFERENCE APPROPRIATE ARCHITECTURAL SITE PLAN FOR ALL NECESSARY INFORMATION.

Channel Islands HS FB
FIELD LIGHTING
Oxnard,CA

REGISTERED PROFESSIONAL ENGINEER ★ STATE OF CALIFORNIA ★ STRUCTURAL No. 4506 Exp. 6–30–21

CONSULTANT
KNA STRUCTURAL ENGINEERS
9931 Muirlands Boulevard, Irvine, CA 92618
Tel (949) 462-3200 • Fax (949) 462-3201
www.KNAstructural.com
KNA JOB NO.: 363.542

MUSCO Lighting
CORPORATE OFFICE:
P.O. Box 808
100 1st Avenue West
Oskaloosa, Iowa 52577
800/825–6020

DRAWING TITLE: NOTES, RETROFIT CONFIGURATION
SCALE: SEE PLAN
REVISIONS: △1 ADDENDUM 1
REFERENCE:

PROJECT NO. 201820

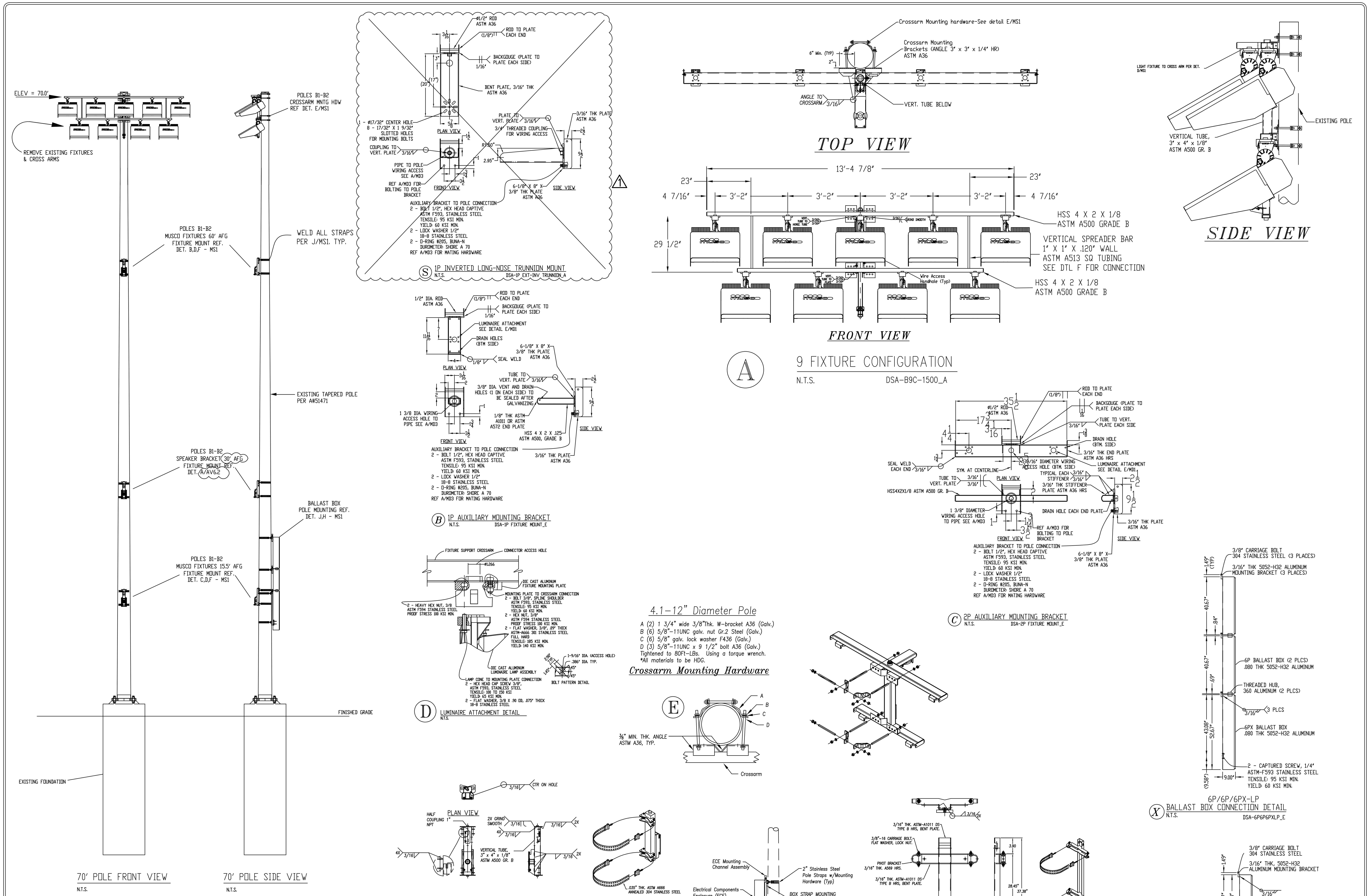
DATE: 04/24/2020

DRAWN BY: DCL

DRAWING NO. (MT1) AD1-MT1
1 OF 3

DSA–TITLE1_E

03-120287



ELEV = 70.0'
REMOVE EXISTING FIXTURES & CROSS ARMS
POLES B1-B2 CROSSARM MNTG HDW REF DET. E/MS1
POLES B1-B2 MUSCO FIXTURES 60' AFG FIXTURE MOUNT REF. DET. B,D,F - MS1
WELD ALL STRAPS PER J/MS1. TYP.
EXISTING TAPERED POLE PER A#51471
POLES B1-B2 SPEAKER BRACKET 30' AFG FIXTURE MOUNT REF DET. A/AV6.2
BALLAST BOX POLE MOUNTING REF. DET. J,H - MS1
POLES B1-B2 MUSCO FIXTURES 15.5' AFG FIXTURE MOUNT REF. DET. C,D,F - MS1
FINISHED GRADE
EXISTING FOUNDATION
70' POLE FRONT VIEW
N.T.S.
70' POLE SIDE VIEW
N.T.S.
S 1P INVERTED LONG-NOSE TRUNNION MOUNT
N.T.S. DSA-1P EXT-INV TRUNNION_A
B 1P AUXILIARY MOUNTING BRACKET
N.T.S. DSA-1P FIXTURE MOUNT_E
D LUMINAIRE ATTACHMENT DETAIL
N.T.S.
TOP VIEW
FRONT VIEW
SIDE VIEW
A 9 FIXTURE CONFIGURATION
N.T.S. DSA-B9C-1500_A
13'-4 7/8"
23"
4 7/16"
3'-2"
29 1/2"
HSS 4 X 2 X 1/8 ASTM A500 GRADE B
VERTICAL SPREADER BAR 1" X 1" X .120" WALL ASTM A513 SQ TUBING SEE DTL F FOR CONNECTION
4.1-12" Diameter Pole
A (2) 1 3/4" wide 3/8"Thk. W-bracket A36 (Galv.)
B (6) 5/8"-11UNC galv. nut Gr.2 Steel (Galv.)
C (6) 5/8" galv. lock washer F436 (Galv.)
D (3) 5/8"-11UNC x 9 1/2" bolt A36 (Galv.)
Tightened to 80Ft-LBs. Using a torque wrench.
*All materials to be HDG.
Crossarm Mounting Hardware
E
C 2P AUXILIARY MOUNTING BRACKET
N.T.S. DSA-2P FIXTURE MOUNT_E
F AUX. FIXTURE MOUNTING
N.T.S.
ELEVATION VIEW
SIDE VIEW
J BALLAST BOX CONNECTION DETAIL
N.T.S.
H BOTTOM BOX STRAP MOUNTING
N.T.S.
6P/6P/6PX-LP
X BALLAST BOX CONNECTION DETAIL
N.T.S. DSA-6P6P6PXLP_E
4PX
O BALLAST BOX CONNECTION DETAIL
N.T.S. DSA-4PX_E

1. CONTAINS COMBINED EPA OF LIGHT FIXTURES, CROSS ARM AND MISCELLANEOUS FIXTURE MOUNTING APPARATUS.

FIXTURE WEIGHT 92.80 LBS. THIS INCLUDES THE WEIGHT OF FIXTURE, CROSS ARM & MISC. MOUNTING APPARATUS. ELECTRICAL BALLAST BOX WEIGHT 20 LBS PER FIXTURE SERVICED

POLE SCHEDULE

SITE LOCATION	POLE MARK	REFERENCE LOCATION	POLE TYPE	FIXTURE CONFIGURATION	TOTAL EPA[1]	BALLAST BOX REQUIREMENTS
SEE SITE PLAN (BY OTHERS)	B1-B2	SEE POLE ORIENTATION PLAN	--	9 - SEE DETAIL A/MS1	29.6	SEE DETAIL X,O/MS1

DSA-POLESCHE_C

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Oxnard, CA

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KNA STRUCTURAL ENGINEERS

musco Lighting
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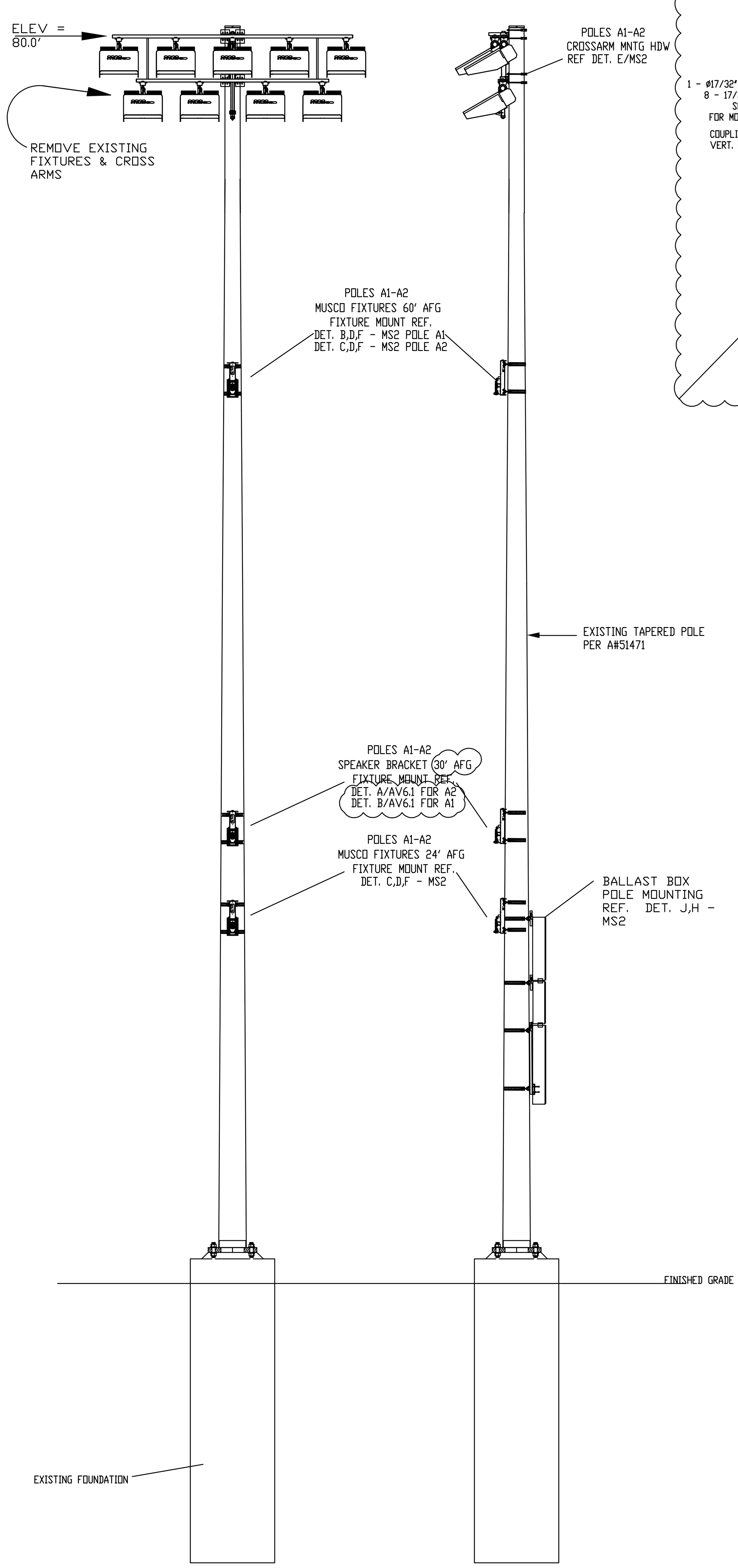
P.O. Box 808
100 1st Avenue West
Oskaloosa, Iowa 52577
800/825-6020

DRAWING TITLE: ATTACHMENT DETAILS
SCALE: SEE PLAN
REVISIONS: 1 ADDENDUM 1
REFERENCE:

PROJECT NO. 201820
DATE: 04/24/2020
DRAWN BY: DCL
DRAWING NO. (MS1) AD1-MS1
2 OF 3

03-120287



80' POLE FRONT VIEW

N.T.S.

80' POLE SIDE VIEW

N.T.S.

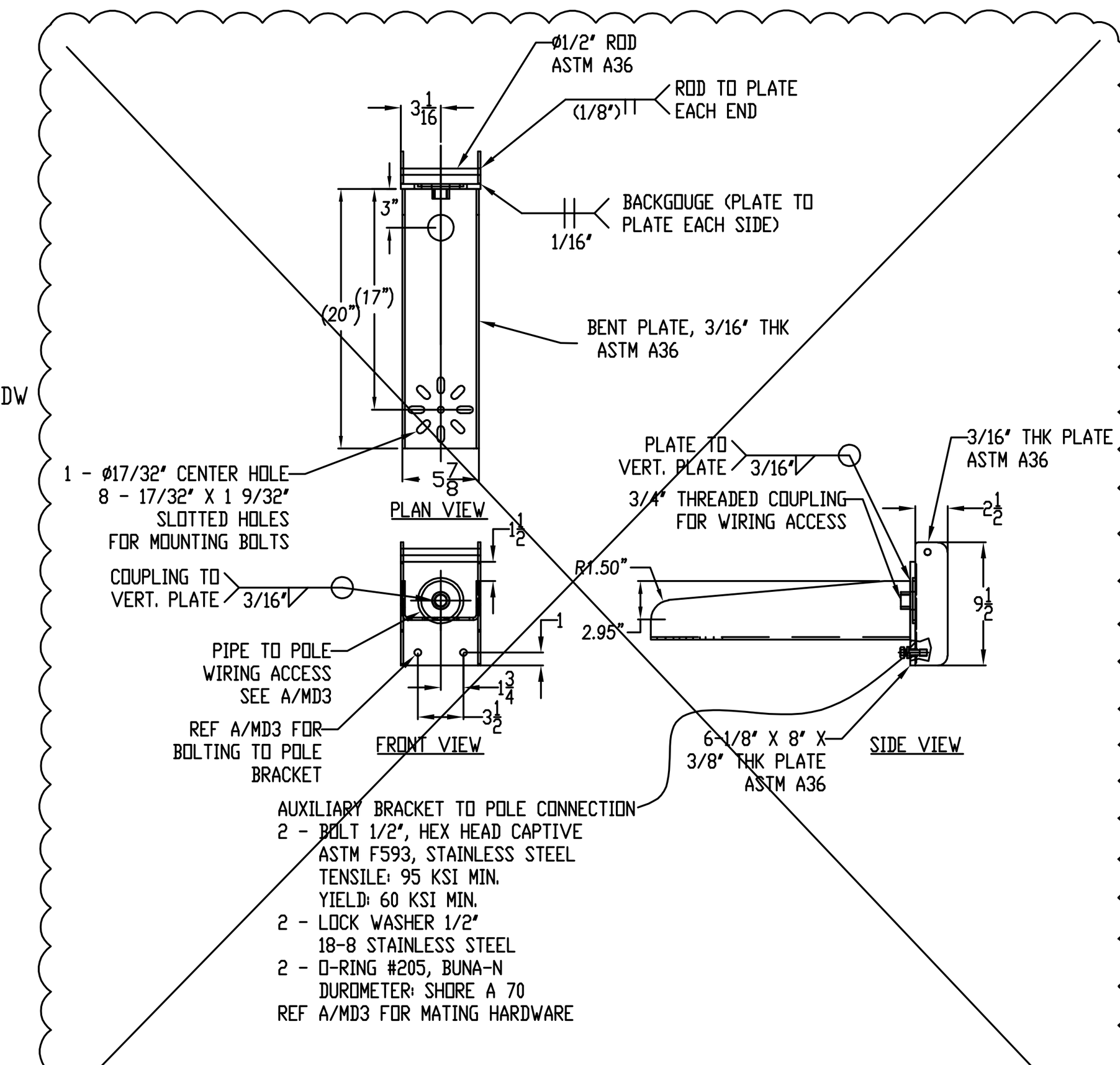
1. CONTAINS COMBINED EPA OF LIGHT FIXTURES, CROSS ARM AND MISCELLANEOUS FIXTURE MOUNTING APPARATUS.

FIXTURE WEIGHT 92.80 LBS. THIS INCLUDES THE WEIGHT OF FIXTURE, CROSS ARM & MISC. MOUNTING APPARATUS. ELECTRICAL BALLAST BOX WEIGHT 20 LBS PER FIXTURE SERVICED

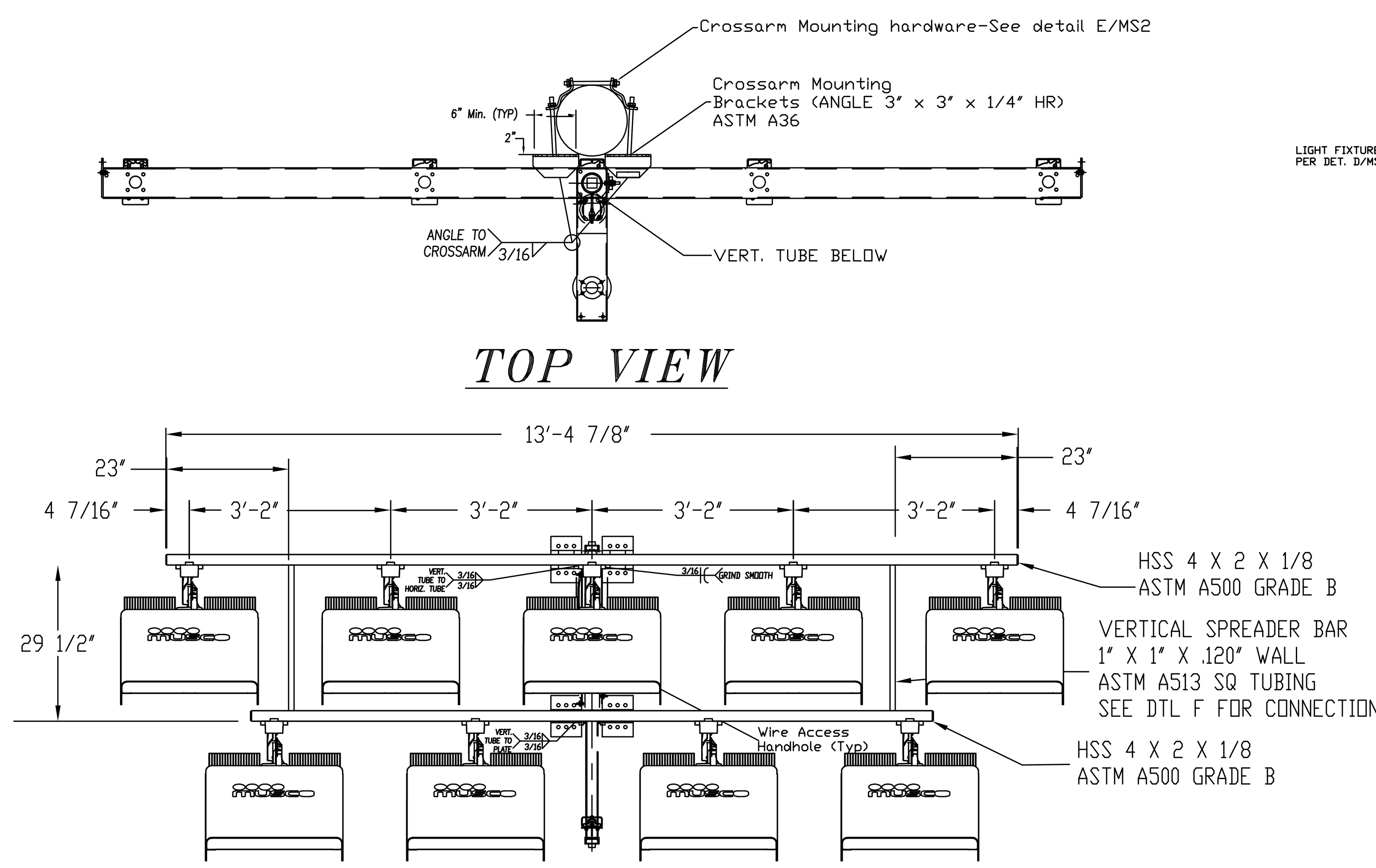
POLE SCHEDULE

SITE LOCATION	POLE MARK	REFERENCE LOCATION	POLE TYPE	FIXTURE CONFIGURATION	TOTAL EPA[1]	BALLAST BOX REQUIREMENTS
SEE SITE PLAN (BY OTHERS) A1-A2	SEE POLE ORIENTATION PLAN	--	9 - SEE DETAIL A/MS2	30.5		SEE DETAIL X,O/MS2

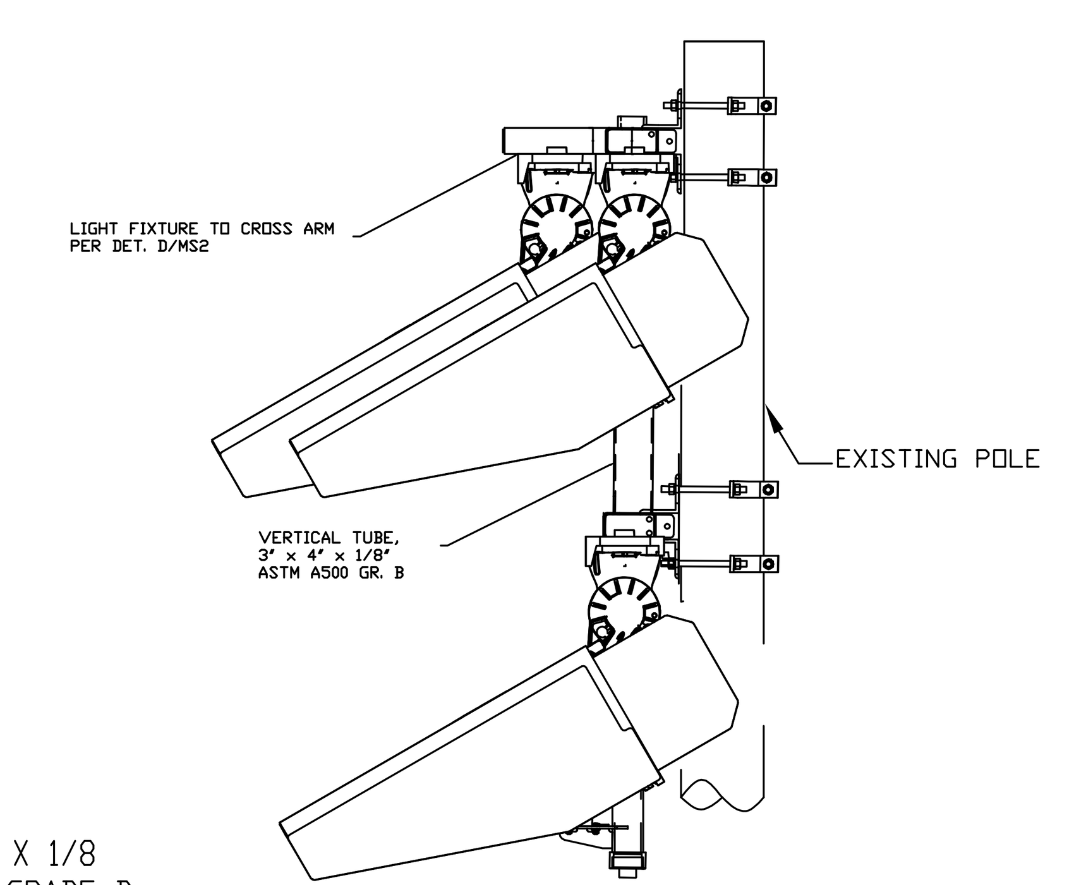
DSA-POLESCHE_C

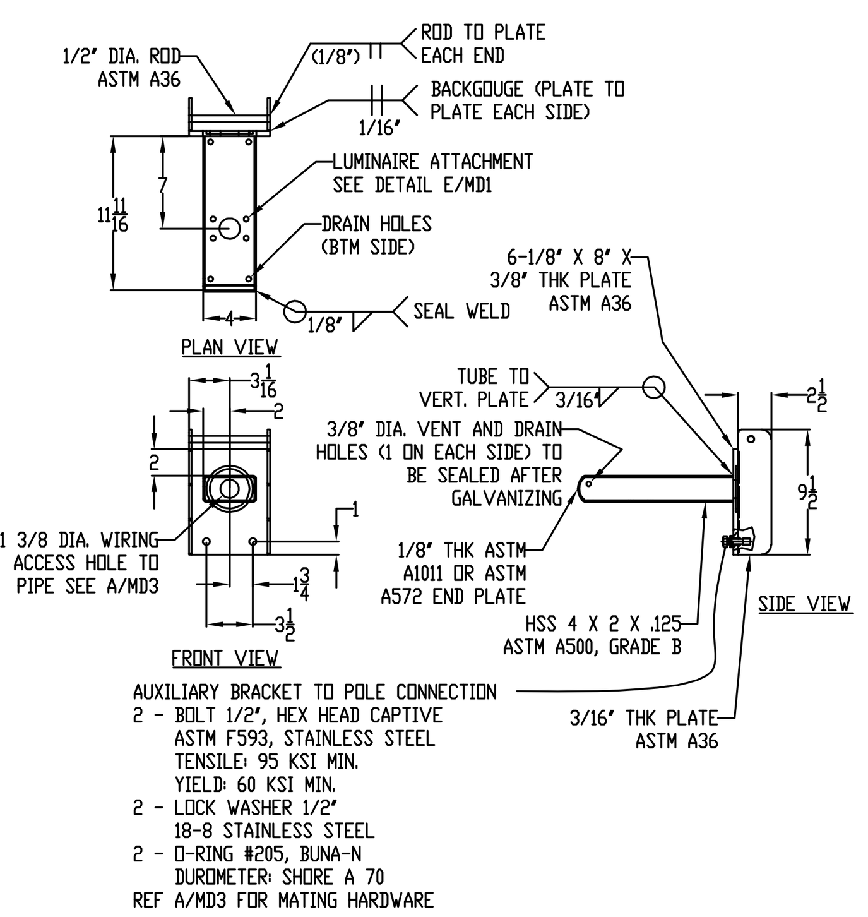


S 1P INVERTED LONG-NOSE TRUNNION MOUNT
N.T.S. DSA-1P EXT-INV TRUNNION_A

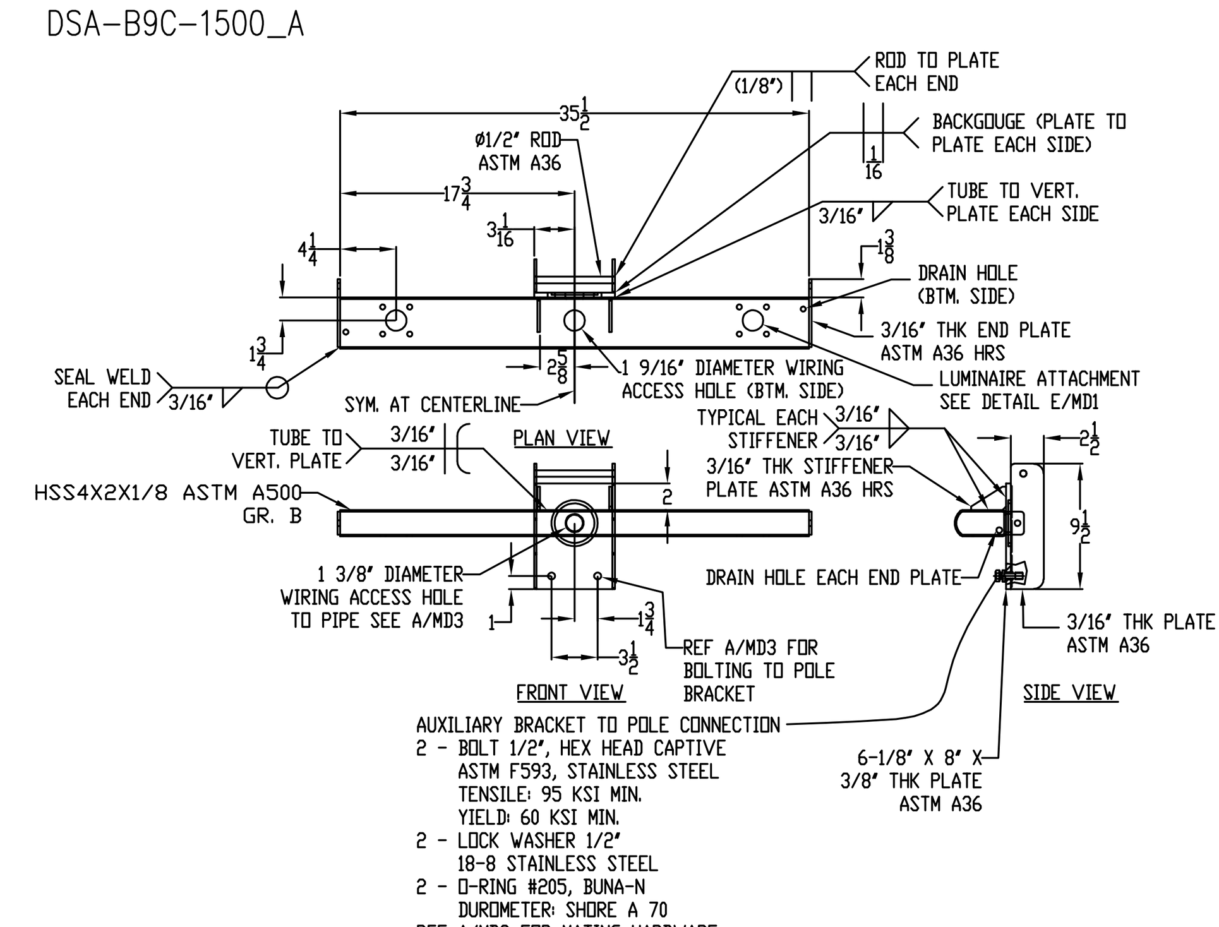


A 9 FIXTURE CONFIGURATION
N.T.S. DSA-B9C-1500_A

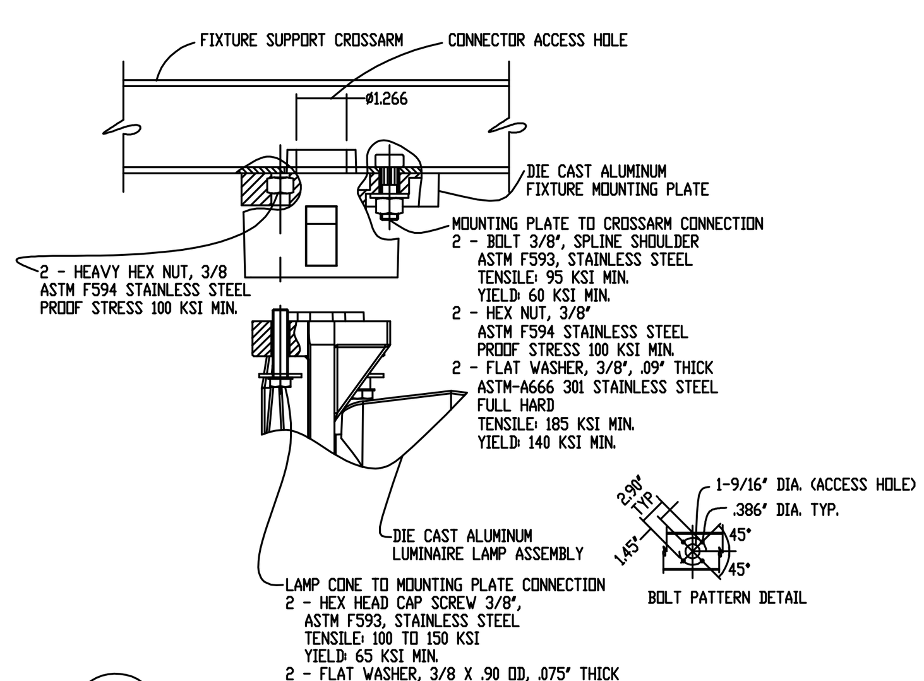




B 1P AUXILIARY MOUNTING BRACKET
N.T.S. DSA-1P FIXTURE MOUNT_E



C 2P AUXILIARY MOUNTING BRACKET
N.T.S. DSA-2P FIXTURE MOUNT_E

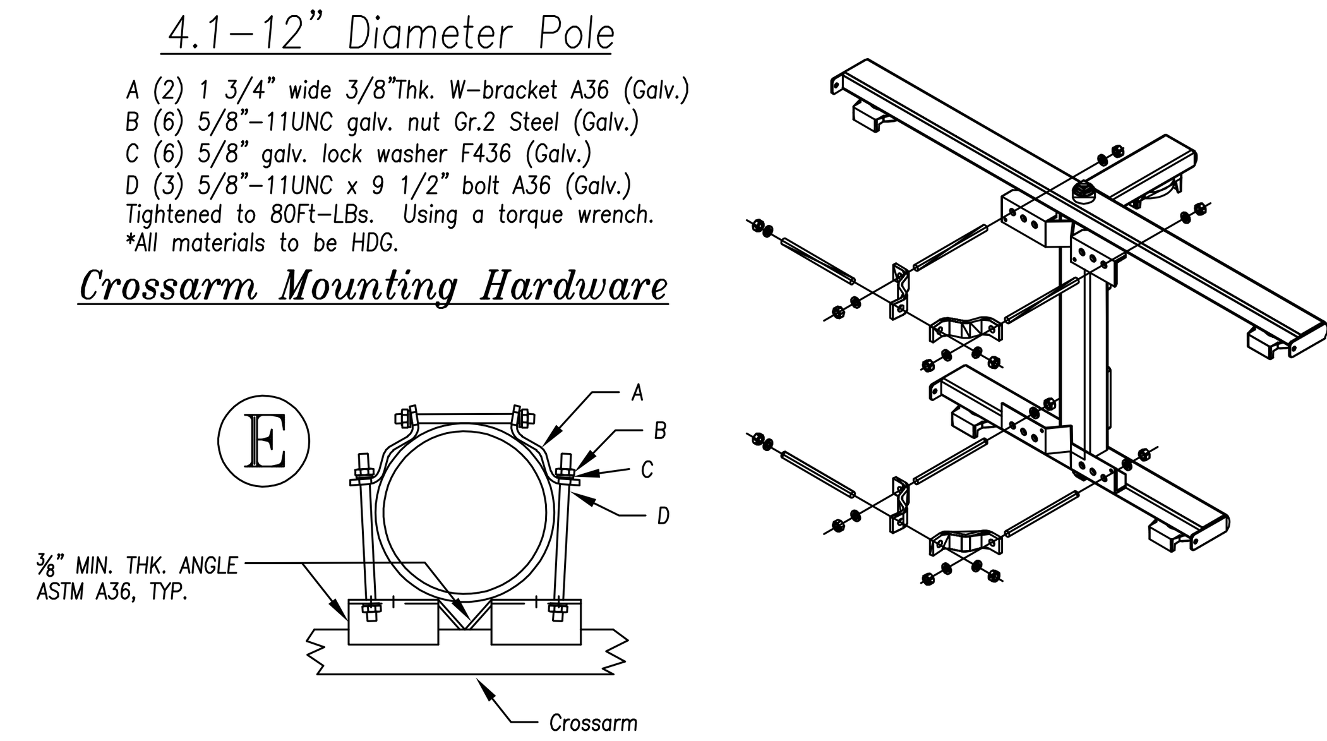


D LUMINAIRE ATTACHMENT DETAIL
N.T.S.

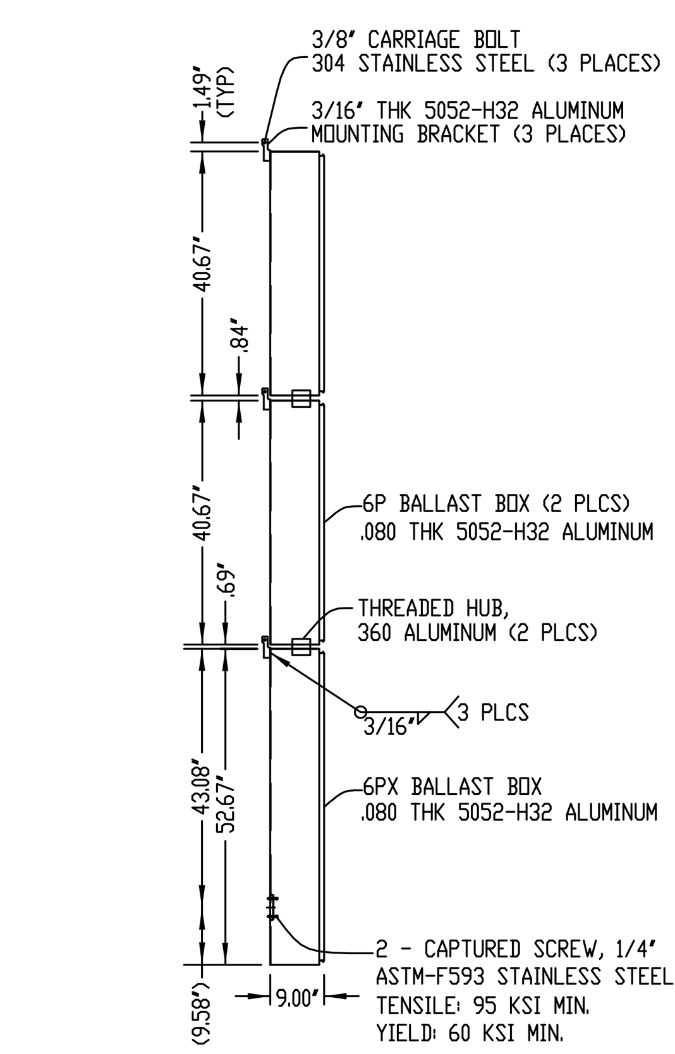
4.1-12" Diameter Pole

A (2) 1 3/4" wide 3/8"Thk. W-bracket A36 (Galv.)
B (6) 5/8"-11UNC galv. nut Gr.2 Steel (Galv.)
C (6) 5/8" galv. lock washer F436 (Galv.)
D (3) 5/8"-11UNC x 9 1/2" bolt A36 (Galv.)
Tightened to 80Ft-LBs. Using a torque wrench.
*All materials to be HDG.

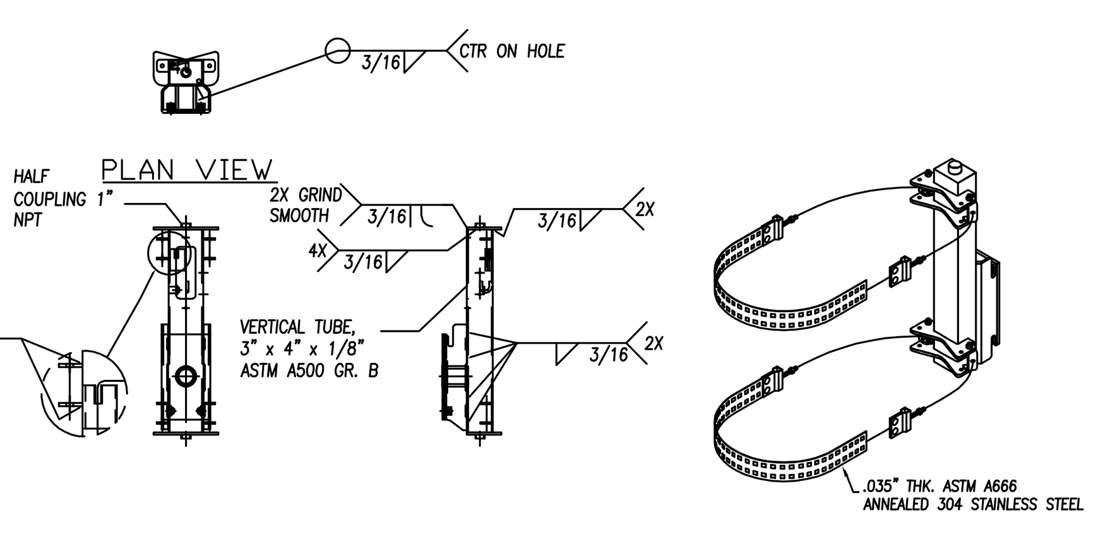
Crossarm Mounting Hardware



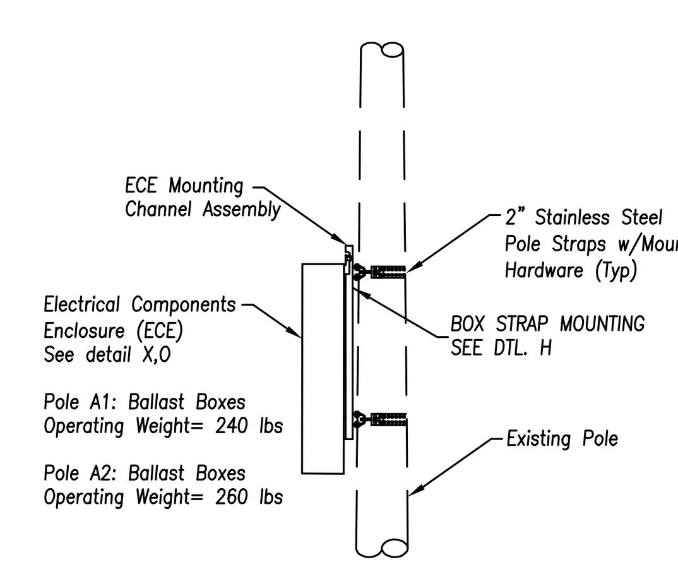
E



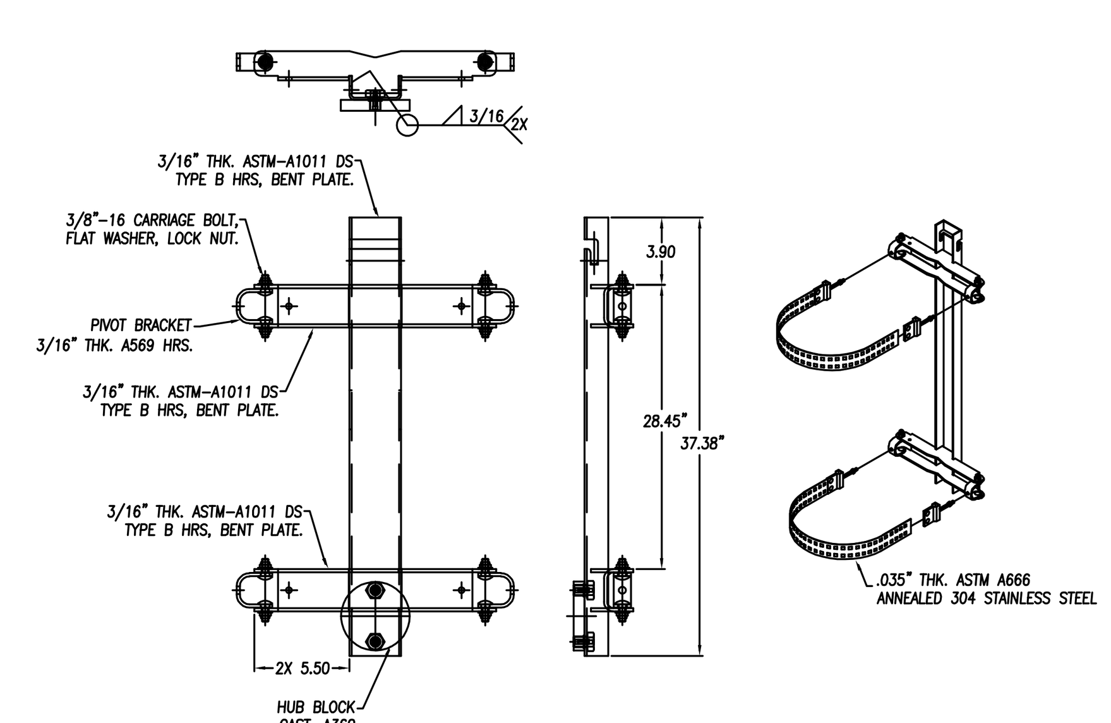
6P/6P/6PX-LP
X BALLAST BOX CONNECTION DETAIL
N.T.S. DSA-6P6P6PXLP_E



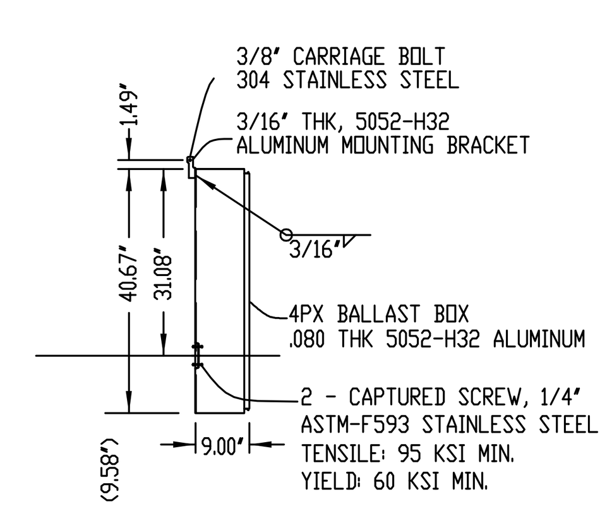
F AUX. FIXTURE MOUNTING
N.T.S.



J BALLAST BOX CONNECTION DETAIL
N.T.S.



H BOTTOM BOX STRAP MOUNTING
N.T.S.



4PX
O BALLAST BOX CONNECTION DETAIL
N.T.S. DSA-4PX_E

Channel Island HS
FIELD LIGHTING
Oxnard, CA

CONSULTANT
KNA STRUCTURAL ENGINEERS
KNA JOB NO.: 363.342

MUSCO Lighting

CORPORATE OFFICE:
P.O. Box 808
100 1st Avenue West
Oskaloosa, Iowa 52577
800/825-6020

DRAWING TITLE: ATTACHMENT DETAILS
SCALE: SEE PLAN
REVISIONS: ⚠1 ADDENDUM 1
REFERENCE:

PROJECT NO. 201820

DATE: 04/24/2020

DRAWN BY: DCL

DRAWING NO. (MS2) AD1-MS2
3 OF 3

03-120287

NEVCO

STATEMENT OF GENERAL CONFORMANCE

FOR ARCHITECTS/ENGINEERS WHO UTILIZE PLANS, INCLUDING BUT NOT LIMITED TO SHOP DRAWINGS, PREPARED BY OTHER LICENSED DESIGN PROFESSIONALS AND/OR CONSULTANTS

The drawings or sheets listed on the sheet index under: 'FIELD SCOREBOARD PER PC#02-116492'

have been prepared by other design professionals or consultants who are licensed and/or authorized to prepare such drawings in this state. It has been examined by me for:

1) design intent and appears to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications prepared by me, and

2) coordination with my plans and is acceptable for incorporation into the construction of this project.

The Statement of General Conformance "shall not be construed as relieving me of my rights, duties, and responsibilities under Sections 17302 and 81138 of the Education Code and Sections 4-336, 4-341 and 4-344" of Title 24, Part 1. (Title 24, Part 1, Section 4-317 (b))

I certify that all drawings listed on the sheet index under: 'FIELD SCOREBOARD PER PC# 02-116492'

are in general conformance with the project design, and have been coordinated with the project plans.

Signature: [signature] Date: 4/13/2020

Architect or Engineer designated to be in responsible charge

Print Name: JAY R. TITTLE, AIA

License Number: C 12955 Expiration Date: 11-30-21

TESTS AND INSPECTION (DSA 103)

Note: References are to the 2016 edition of the California Building Code (CBC) unless otherwise noted.

REQUIRED	TEST OR SPECIAL INSPECTION	TYPE[1]	PERFORMED BY[2]	CODE REFERENCE AND NOTES
-	**SOILS**			
-	**1. GENERAL:**	Table 1705A.6		
X	a. Verify that: • site has been prepared properly prior to placement of controlled fill and/or excavations for foundations, • foundation excavations are extended to proper depth and have reached proper material, and • materials below footings are adequate to achieve the design bearing capacity.	Periodic	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
-	**2. COMPACTED FILLS:**	Table 1705A.6		
X	b. Verify use of proper materials, densities and inspect lift thicknesses, placement, and compaction during placement of fill.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative.
X	c. Test compaction of fill.	Test	LOR*	* Under the supervision of the geotechnical engineer.
-	**4. CAST-IN-PLACE DEEP FOUNDATIONS (PIERS):**			Table 1705A.8
X	a. Inspect drilling operations and maintain complete and accurate records for each pier.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
X	c. Verify pier locations, diameters, plumbness, bell diameters (if applicable), lengths, and embedment into bedrock (if applicable). Record concrete or grout volumes.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
X	d. Confirm adequate end strata bearing capacity.	Continuous	GE*	* By geotechnical engineer or his or her qualified representative. (See Appendix for exemptions.)
X	e. Concrete piers.	Provide tests and inspections per CONCRETE section below.		
-	**CONCRETE**	Table 1705A.3, ACI 318-14 Sections 26.12 & 26.13		
-	**7. CAST IN PLACE CONCRETE**			
	Material Verification and Testing:			
X	a. Verify use of required design mix.	Periodic	SI*	**Table 1705A.3 Item 5, 1910A.1** (1909.2.3+). * To be performed by qualified batch-plant inspector and concrete sampling technician
X	b. Identifiy, sample, and test reinforcing steel.	Test	LOR	**1910A.2** (1909.2.4+); ACI 318-14 Section 26.6.1.2. DSA IR 17-10.16
X	c. During concrete placement, fabricate specimens for strength tests,perform slump and air content tests, and determine the temperature of the concrete.	Test	LOR	**Table 1705A.3 item 6**; ACI 318-14 Sections 26.5 & 26.12
X	d. Test concrete (f'_c).	Test	LOR	**1905A.1.16** (1909.3.7+); ACI 318-14 Section 26.12.
	Inspection:			
X	e. Batch plant inspection (●) Continuous ( ) Periodic	See Notes	SI	Default of **'Continuous'** per **1705A.3.3**; If approved by DSA, batch plant inspection may be reduced to **'Periodic'** subject to requirements in Section **1705A.3.3.1** or eliminated per **1705A.3.3.2.** (See Appendix for exemptions.)
+	**MASONRY**	TMS 402-13/ACI 530-13/ASCE 5-13 Table 3.1.3 & TMS 602-13/ACI 530.1-13/ASCE 6-13 Table 5		
-	**STEEL, ALUMINUM**	Table 1705A.2.1, AISC 303-10, AISC 360-10, AISC 341-10, AISC 358-10, AISI S100-07/S2-10		
-	**17. STRUCTURAL STEEL, COLD-FORMED STEEL, AND ALUMINUM USED FOR STRUCTURAL PURPOSES**			
	Material Verification:			
X	a. Verify identification of all materials and: • Mill certificates indicate material properties that comply with requirements, • Material sizes, types and grades comply with requirements.	Periodic	*	**2203A.1** (2203.1+), **Table 1705A.2.1 Item 3a-3c;** AISI S100-07/S2-10 Section A2.1 & A2.2, AISI S200-12 Section A3, AISI S220-11 Section A4. * By special inspector or qualified technician when performed off-site.
X	b. Test unidentified materials	Test	LOR	**2203A.1** (2203.1+).
	Inspection:			
X	e. Verify and document steel fabrication per DSA approved construction documents.	Periodic	SI	Not applicable to cold-formed steel light-frame construction, except for trusses (**1705A.2.4**).
-	**19. WELDING:**			**1705A.2.5, Table 1705A.2.1 Items 4 & 5;** DSA IR 17-3, AWS D1.1 and AWS D1.8 for structural steel, AWS D1.2 for Aluminum, AWS D1.3 for cold-formed steel, AWS D1.4 for reinforcing steel. (See Appendix for exemptions.)
	Verification of Materials, Equipment, Welders, etc:			
X	a. Verify weld filler material identification markings per AWS designation listed on the DSA approved documents and the WPS.	Periodic	SI	DSA IR 17-3.
X	b. Verify weld filler material manufacturer's certificate of compliance.	Periodic	SI	DSA IR 17-3.
X	c. Verify WPS, welder qualifications and equipment.	Periodic	SI	DSA IR 17-3.
-	**19.1 SHOP WELDING:**			
X	a. Inspect groove welds, multi-pass fillet welds, single pass fillet welds > 5/16", plug and slot welds	Continuous	SI	**Table 1705A.2.1 Item 5a1-4.** Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
X	b. Inspect single-pass fillet welds ≤ 5/16", floor and roof deck welds	Periodic	SI	**1705A.2.2, Table 1705A.2.1 Item 5a.5 & 5a.6.** Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
-	**19.2 FIELD WELDING:**			
X	b. Inspect single-pass fillet welds ≤ 5/16"	Periodic	SI	**Table 1705A.2.1 Item 5a.5.** Per AISC 360-10 (and AISC 341-10 as applicable). DSA IR 17-3.
-	**23. ANCHOR BOLTS, ANCHOR RODS, & OTHER STEEL:**			
X	a. Anchor Bolts and Anchor Rods	Test	LOR	IR 17-11 Sample and test anchor bolts and anchor rods not readily identifiable.
+	**WOOD**			
-	**OTHER**			
X	**28. Test non-shrink grout strength**	Test	LOR	
X	**29. Installation of non-shrink grout**	Periodic	SI	

List of required verified report(s):

1 Soils testing and Inspection: Geotechnical Verified Report - Form DSA-293
2 All Structural Testing: Laboratory Verified Report - Form DSA-291
3 Concrete Batch Plant Inspection: Laboratory Verified Report - Form DSA-291
4 Shop Welding Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292
5 Field Welding Inspection: Laboratory Verified Report - Form DSA-291, or, for independently contracting SI, Special Inspection Verified Report - Form DSA-292

KEY to Columns

1 Type -	2 Performed By -
Continuous – Indicates that a continuous special inspection is required	**GE** – Indicates that the special inspection is to be performed by a registered geotechnical engineer or his or her authorized representative
Periodic – Indicates that a periodic special inspection is required	**LOR** – Indicates that the test or inspection is to be performed by a testing laboratory accepted in the DSA Laboratory Evaluation and Acceptance (LEA) Program. See section 4-335, 2013 CCR Title 24, Part 1.
Test – Indicates that a test is required	**SI** – Indicates that the special inspection is to be performed by a special inspector

Name of Architect or Engineer in general responsible charge

Name of Structural Engineer (When structural design has been delegated)

Signature of Architect or Structural Engineer date

IDENTIFICATION STAMP
DIV OF THE STATE ARCHITECT
APP. #
AC N/A F/LS N/A SS
DATE

TABLE B - STRUCTURAL DESIGN VALUES

All values reported are unfactored and strength level, unless noted otherwise

Gravity Design Data	Value
Dead Loads:	
Sign Dead Load	PER SCHEDULE
Snow Loads:	
Ground Snow Load, P_g (Maximum)	30 psf
Deflection Criteria:	
Sign, Wind Load	H/360

Wind Design Data	Value
Design Wind Speed (3-sec gust), V_{ULT}	115 mph
Design Wind Speed (3-sec gust), V_{ASD}	90 mph
Risk Category	II
Exposure Category	C
Applicable Internal Pressure Coefficient	± 0.18
Design Wind Pressure(s) for Components & Cladding (Not specifically designed by the Registered Design Professional, and to be modified by applicable factors per ASCE 7)	q_z=28.8xK_z psf K_zVARIES

Earthquake Design Data	Value
Risk Category	II
Importance Factor, I_e	1.0
Mapped Spectral Response Accelerations (Maximum)	S_s= 3.73 g S_1= 1.0 g
Site Class	A through E
Spectral Response Coefficients (Maximum)	S_{DS}= 2.49 g S_{D1}= 1.0 g
Seismic Design Category	E
Analysis Procedure Used: Equivalent Lateral Force Procedure (ASCE 7, 12.8)	
Basic Seismic-Force Resisting System: Non-Building Structure, ASCE 7-10 Chapter 15	
Response Modification Factor, Signs and Billboards Table 15.4-2	R= 3.0
Seismic Response Coefficient	C_s= 0.83
Design Base Shear	V= C_S w_D

Flood Design	Value
When the scoreboard is located in a flood zone other than Zone X, a letter stamped and signed from a GeotechnicalEngineer is needed to validate allowable soil values specified in the PC are still applicable.	

Geotechnical Design Data	Value
Geotechnical Design Based on: 2016 California Building Code, Chapter 18A, Table 1806.A.2 (Class 5 Material)	
Allowable Soil Bearing Pressure (DL + LL)	1,500 psf
Design Passive Pressure, P_p (Tabular value has been increased per CBC Section 1806A.3.4 for pier design)	100 pcf
Design Skin Friction, f_s	100 psf

TABLE C - SITE SPECIFIC SEISMIC AND WIND VALUES

EARTHQUAKE DESIGN DATA

Mapped Spectral Response Accelerations (Maximum)	S_s= ______ g S_1= ______ g
Site Class	
Spectral Response Coefficients (Maximum)	S_{DS}= ______ g S_{D1}= ______ g

Wind Design Data	Value
Design Wind Speed (3-sec gust), V_{ULT}	______ mph
Exposure Category	C

TABLE D - SITE SPECIFIC SOIL EXPOSURE CLASS

THIS SECTION NOT REQUIRED IF CONCRETE f'c = 4500psi, w/c = 0.45

Circle exposure class applicable: F0, S0, W0, C0, C1

Geotechnical Engineer: ______________________

Letter Dated: ______________________

TABLE E - SITE FLOOD ZONE

THIS SECTION NOT REQUIRED IF SITE IS IN FLOOD ZONE X

Geotechnical Engineer: ______________________

Letter Dated: ______________________

SCOREBOARD ASSEMBLY WORKSHEET INSTRUCTIONS

STEP 1: DETERMINE DESIRED SCOREBOARD ASSEMBLY. FILL OUT SCOREBOARD ASSEMBLY TABLE (TABLE A BELOW). PROVIDE NEVCO PART NUMBERS, PART HEIGHT, PART WIDTH, AND PART WEIGHTS.

STEP 2: DETERMINE TOTAL ASSEMBLY HEIGHT, WIDTH, AND WEIGHT

STEP 3: BASED ON TOTAL ASSEMBLY WIDTH, DETERMINE THE NUMBER OF REQUIRED COLUMNS.
SEE SHEETS SB1.X FOR 1 COLUMN ASSEMBLY OPTIONS
SB2.X FOR 2 COLUMN ASSEMBLY OPTIONS
SB3.X FOR 3 COLUMN ASSEMBLY OPTIONS
SB4.X FOR 4 COLUMN ASSEMBLY OPTIONS

STEP 4: PICK FOUNDATION TYPE (CAISSON WITH EMBEDDED COLUMN, CAISSON WITH BOLTED COLUMN, OR MAT FOOTING) AND BRACED OR UNBRACED COLUMN OPTION. MARK APPLICABLE SHEET ON SHEET INDEX, SB0.1

STEP 5: MARK APPLICABLE CHECK BOX ON DETAIL 'A' OF SELECTED COLUMN/FOUNDATION OPTION

STEP 6: FILL IN SITE SPECIFIC SEISMIC AND WIND VALUES TABLE C ON SB0.1.

STEP 7: FILL IN SITE SPECIFIC SOIL EXPOSURE CLASS TABLE D ON SB0.1 (OPTIONAL)

STEP 8: FILL IN SITE SPECIFIC FLOOD ZONE AS REQUIRED, TABLE E ON SB0.1

STEP 9: VERIFY ALL APPLICABLE SHEETS ARE MARKED ON SHEET INDEX, SB0.1. INCLUDE ALL MARKED SHEETS AS PART OF DSA SUBMITTAL

TABLE A - SCOREBOARD ASSEMBLY WORKSHEET (1)

Nevco Part No.or Description	Part Height [ft.]	Part Width [ft]	Part Weight [lb]
ARCHED TRUSS	4	22.05	203
ADL SIGN	2	22.05	180
16MM VIDEO DISPLAY	14.62	22.05	3,063
Total			

TOTAL ASSEMBLY DIMENSIONS & WEIGHT (2)

Total Assembly Height =	20 ft. 7 5/8 in.		
Total Assembly Width =	22 ft. .05 in.		
Total Assembly Weight =	3,446 lbs.		
Distance from Finish Grade to Bottom of Sign =	10 ft. 0 in.	Total Height = Total Assembly Height + Distance from Finish Grade to Bottom of Sign =	30 ft. 7 5/8 in.

SCOREBOARD ASSEMBLY FOOTNOTES

1. Verify part number, dimensions, and weight with Nevco
2. See Step 3 of Scoreboard Assembly Worksheet Instructions

SITE SPECIFIC SUBMITTAL REQUIREMENTS

SEE DSA POLICY PL 07-02 FOR ADDITIONAL INSTRUCTIONS REGARDING USE AND APPLICATION OF THIS PRE-CHECK DOCUMENT. ALL SITE SPECIFIC SUBMITTALS SHALL INCLUDE:

1. COMPLETED DSA 1 APPLICATION AND FILING FEE AND COPY OF THE PRE-CHECK DOCUMENT WITH APPLICABLE DESIGN OPTION MARKED ON THE MARQUEE, TWO COLUMN, THREE COLUMN OR FOUR COLUMN ASSEMBLY SCHEDULES.
2. SITE PLAN OF FACILITY IDENTIFYING ALL STRUCTURES BY DSA APPLICATION NUMBER. LOCATION OF SCOREBOARD SHALL BE IDENTIFIED. ELECTRICAL PANEL SERVING THE SCOREBOARD SHALL BE LOCATED AND IDENTIFIED.
3. WHERE WIRELESS CONTROLLERS ARE NOT SPECIFIED, AN ACCESSIBLE PATH OF TRAVEL AND ACCESSIBLE SEATING FOR THE SCOREBOARD OPERATOR SHALL BE IDENTIFIED AND PROVIDED.
4. PROVIDE AN ELEVATION OF PROPOSED SCOREBOARD IDENTIFYING ALL INSTALLED DISPLAY COMPONENTS, SIGNAGE, TRUSSES, AND ADDITIONAL COMPONENTS IN THE PRE-CHECK DOCUMENT. ALL ELEMENT WEIGHTS SHALL BE SPECIFIED.
5. THE APPLICABLE SHEETS SHALL BE IDENTIFIED BY MARKING APPROPRIATE CHECK BOX ON THIS SHEET.
6. THE APPLICABLE CONFIGURATION SHALL BE IDENTIFIED BY MARKING APPROPRIATE CHECK BOX ON THE 'A' DETAILS ON THE APPLICABLE SHEET.
7. PROVIDE CUT SHEETS OF THE BOARDS, BOXES, AND EQUIPMENT TO BE MOUNTED ON THE STRUCTURE. CUT SHEETS SHALL INCLUDE WEIGHTS AND DIMENSIONS
8. SITE SPECIFIC SEISMIC DESIGN CRITERIA SHALL BE PROVIDED IN THE DRAWINGS.
9. SITE SPECIFIC BASIC DESIGN WINDSPEED AND SITE EXPOSURE SHALL BE PROVIDED ON THE DRAWINGS.
10. STEEL COATING SPECIFICATIONS FOR WEATHER PROTECTION IF DIFFERENT THAN NOTED ON SB0.3
11. A GEOHAZARD REPORT IS NOT REQUIRED PER IR A-4.13. IF A SCOREBOARD IS LOCATED IN A FLOOD ZONE OTHER THAN ZONE X, A LETTER STAMPED AND SIGNED BY A GEOTECHNICALENGINEER IS REQUIRED VALIDATING THE ALLOWABLE SOIL VALUES. IF THE CONCRETE COMPRESSIVE STRENGTH OPTION OF f'c = 3000psi IS USED, A GEOTECHNICALENGINEER SHALL PROVIDE A STAMPED AND SIGNED LETTER CONFIRMING THE SOIL EXPOSURE CLASS.
12. PROVIDE A SITE SPECIFIC DESIGN FOR STRUCTURES THAT DO NOT MEET THE MINIMUM SETBACK REQUIREMENTS.
13. PROVIDE A SITE SPECIFIC DESIGN FOR STRUCTURES LOCATED IN AN AREA WITH LIQUEFIABLE SOIL OR SITE CLASS F.

SHEET INDEX

FIELD SCOREBOARD PER PC# 02-116492

CHECK ALL THAT APPLY	SHEET	
■ (REQ'D)	SB0.1	COVER SHEET
■ (REQ'D)	SB0.2	EXAMPLE SCOREBOARD WORKSHEET & PART NUMBERS
■ (REQ'D)	SB0.1	STRUCTURAL NOTES & SPECIAL INSPECTION
☐	~~SB1.1~~	~~MARQUEE CAISSON - EMBEDDED~~
☐	~~SB1.2~~	~~MARQUEE CAISSON - BOLTED~~
☐	~~SB1.3~~	~~MARQUEE MAT FOOTING~~
☐	~~SB2.1~~	~~TWO COLUMN CAISSON - EMBEDDED~~
☐	~~SB2.1b~~	~~TWO COLUMN, BRACED, CAISSON - EMBEDDED~~
☐	~~SB2.2~~	~~TWO COLUMN CAISSON - BOLTED~~
☐	~~SB2.2b~~	~~TWO COLUMN, BRACED, CAISSON - BOLTED~~
☒	SB2.3	TWO COLUMN MAT FOOTING
☐	~~SB2.3b~~	~~TWO COLUMN, BRACED, MAT FOOTING~~
☐	~~SB3.1~~	~~THREE COLUMN CAISSON - EMBEDDED~~
☐	~~SB3.1b~~	~~THREE COLUMN, BRACED, CAISSON - EMBEDDED~~
☐	~~SB3.2~~	~~THREE COLUMN CAISSON - BOLTED~~
☐	~~SB3.2b~~	~~THREE COLUMN, BRACED, CAISSON - BOLTED~~
☐	~~SB3.3~~	~~THREE COLUMN MAT FOOTING~~
☐	~~SB3.3b~~	~~THREE COLUMN, BRACED, MAT FOOTING~~
☐	~~SB4.1~~	~~FOUR COLUMN CAISSON - EMBEDDED~~
☐	~~SB4.1b~~	~~FOUR COLUMN, BRACED, CAISSON - EMBEDDED~~
☐	~~SB4.2~~	~~FOUR COLUMN CAISSON - BOLTED~~
☐	~~SB4.2b~~	~~FOUR COLUMN, BRACED, CAISSON - BOLTED~~
☐	~~SB4.3~~	~~FOUR COLUMN MAT FOOTING~~
☐	~~SB4.3b~~	~~FOUR COLUMN, BRACED, MAT FOOTING~~
■ (REQ'D)	SB5.1	ATTACHMENT DETAILS

CODE INFORMATION

2016 CALIFORNIA BUILDING STANDARDS CODE (TITLE 24, CCR):

2016 ADMINISTRATIVE CODE, PART 1, TITLE 24 CODE OF REGULATIONS (CCR)
2016 CALIFORNIA BUILDING CODE VOLUMES 1 &2, PART 2, TITLE 24 CCR
2016 CALIFORNIA ELECTRICAL CODE, PART 3, TITLE 24 CCR
2016 CALIFORNIA MECHANICAL CODE, PART 4, TITLE 24 CCR
2016 CALIFORNIA PLUMBING CODE, PART 5, TITLE 24 CCR
2016 CALIFORNIA ENERGY CODE, PART 6, TITLE 24 CCR
2016 CALIFORNIA FIRE CODE, PART 9, TITLE 24 CCR
2016 CALIFORNIA GREEN BUILDING STANDARDS CODE, PART 11, TITLE 24 CCR
2016 CALIFORNIA REFERENCED STANDARDS CODE, PART 12, TITLE 24 CCR

REFERENCED CODE SECTIONS FOR APPLICABLE STANDARDS:
2016 CALIFORNIA BUILDING CODE, CHAPTER 35
2016 CALIFORNIA FIRE CODE, CHAPTER 80

GENERAL REQUIREMENTS

1. THE ARCHITECT OR PROFESSIONAL ENGINEER IN GENERAL RESPONSIBLE CHARGE SHALL SIGN AND SEAL ALL DRAWINGS AND SPECIFICATIONS PER TITLE 24, PART 1, SECTIONS 4-316(E) AND 4-317 (H).
2. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY ADDENDA, OR CONSTRUCTION CHANGE DOCUMENTS APPROVED BY THE DIVISION OF THE STATE ARCHITECT (DSA), AS REQUIRED BY TITLE 24, PART 1, SECTION 4-338.
3. THE DISTRICT SHALL EMPLOY A CLASS 2 PROJECT INSPECTOR WHEN OVERALL STRUCTURE HEIGHT IS 35 FEET OR GREATER, OTHERWISE A CLASS 3 PROJECT INSPECTOR MAY BE USED. THE PROJECT INSPECTOR SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK , AND SHALL SUBMIT VERIFIED REPORTS ON A DSA-6 FORM. THE DUTIES OF THE PROJECT INSPECTION ARE DEFINED IN TITLE 24, PART 1, SECTION 4-342.
4. ALL SCOREBOARD CONTROLS SHALL BE FULLY ACCESSIBLE VIA WIRELESS CONTROL OR AS DEMONSTRATED IN THE SITE-SPECIFIC APPLICATION.
5. ALL ASSEMBLIES SHALL HAVE ELECTRICAL DISCONNECT PER CEC 600.6 AND BE ELECTRICALLY GROUNDED PER CEC 600.7, SEE DETAIL B/SB5.1
6. IN FLOOD ZONES, LOCATION OF ELECTRICAL ELEMENTS SHALL CONFORM TO ASCE 24, SECTION 7.2 PER DSA PR-14-01 SECTION 1.2.1.

GENERAL NOTES AND MATERIAL SPECIFICATIONS

SEE FOLLOWING PAGE, SB0.3, FOR ALL MATERIAL SPECIFICATIONS AND NOTES.

SSG structural engineers
811 El Capitan Way, Suite 240
San Luis Obispo, CA 93401
8405 North Fresno Street, Suite 120
Fresno, CA 93720
www.ssgse.com
805.439.2110

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. PAROLINI No. 5405 STRUCTURAL STATE OF CALIFORNIA

SEOR SEAL DATE SIGNED: 10.16.18

NEVCO
301 East Harris Avenue, Greenville, Illinois 62246
Phone: (618) 664-0360
www.nevco.com

PRE-CHECK (PC) DOCUMENT
CODE: 2016

A separate project application for construction is required.

DSA FILE NUMBER: PC-90
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02-116492
AC [signature] FLS [initials] SS [initials]
DATE: 10/16/18
SSS: Stephen Ito
FLS: Greg Cobabe
ACS: Alex Ellescas
DSA STAMP

COVER SHEET

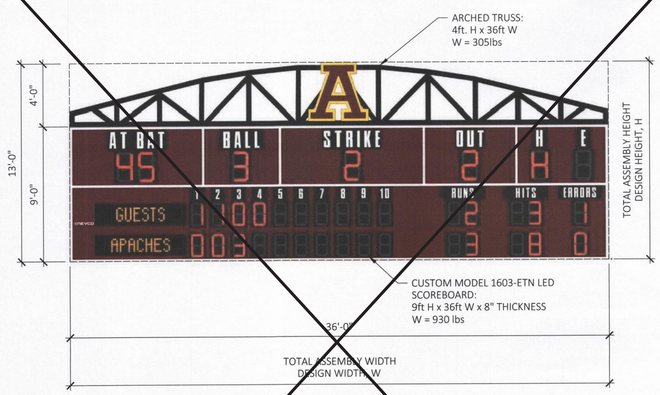
ADDENDUM 1 03-120287

SHEET INFORMATION

DATE	10.16.18
DRAWN	JMK / JMM
CHECKED	JMM / MEP
SSG JOB #	S17015
SHEET	SB0.1 (AD1-SB1)

SCOREBOARD & WORKSHEET EXAMPLES

EXAMPLE 3



SCOREBOARD ASSEMBLY WORKSHEET [1] - EXAMPLE 3

Nevco Part No. or Description	Part Height [ft.]	Part Width [ft]	Part Weight [lb]
ARCHED TRUSS	4 ft	36 ft	305 lbs.
MODEL 1603-ETN LED SCOREBORD	9 ft	36 ft	930 lbs.
Total	13 ft	36 ft	1235 lbs.

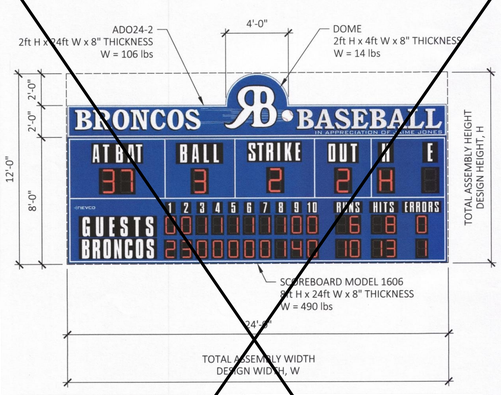
TOTAL ASSEMBLY DIMENSIONS & WEIGHT [2]

Total Assembly Height =	13 ft. 0in.		
Total Assembly Width =	36 ft. 0in.		
Total Assembly Weight =	1235 lbs.		
Distance from Finish Grade to Bottom of Sign =	10 ft. 0in.	Total Height = Total Assembly Height + Distance from Finish Grade to Bottom of Sign =	23 ft. 0in.

SCOREBOARD ASSEMBLY FOOTNOTES

1. Verify part number, dimensions, and weight with Nevco
2. See Step 3 of Scoreboard Assembly Worksheet Instructions

EXAMPLE 2



SCOREBOARD ASSEMBLY WORKSHEET [1] - EXAMPLE 2

Nevco Part No. or Description	Part Height [ft.]	Part Width [ft]	Part Weight [lb]
DOME	2 ft	4 ft	14 lbs.
ADO24-2	2 ft	24 ft	106 lbs.
MODEL 1606	8 ft	24 ft	490 lbs.
Total	12 ft	24ft	610 lbs.

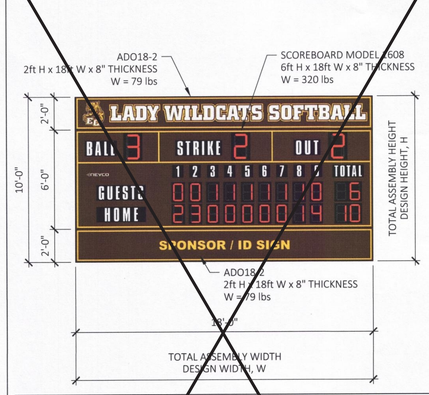
TOTAL ASSEMBLY DIMENSIONS & WEIGHT [2]

Total Assembly Height =	12 ft. 0in.		
Total Assembly Width =	24 ft. 0in.		
Total Assembly Weight =	610 lbs.		
Distance from Finish Grade to Bottom of Sign =	8 ft. 6in.	Total Height = Total Assembly Height + Distance from Finish Grade to Bottom of Sign =	20 ft. 6in.

SCOREBOARD ASSEMBLY FOOTNOTES

1. Verify part number, dimensions, and weight with Nevco
2. See Step 3 of Scoreboard Assembly Worksheet Instructions

EXAMPLE 1



SCOREBOARD ASSEMBLY WORKSHEET [1] - EXAMPLE 1

Nevco Part No. or Description	Part Height [ft.]	Part Width [ft]	Part Weight [lb]
ADO18-2	2 ft	18 ft	79 lbs.
Model 1608	6ft	18 ft	320 lbs.
ADO18-2	2 ft	18 ft	79 lbs.
Total	10 ft	18ft	478 lbs.

TOTAL ASSEMBLY DIMENSIONS & WEIGHT [2]

Total Assembly Height =	10 ft. 0in.		
Total Assembly Width =	18 ft. 0in.		
Total Assembly Weight =	478 lbs.		
Distance from Finish Grade to Bottom of Sign =	6 ft.8in.	Total Height = Total Assembly Height + Distance from Finish Grade to Bottom of Sign =	16 ft. 8in.

SCOREBOARD ASSEMBLY FOOTNOTES

1. Verify part number, dimensions, and weight with Nevco
2. See Step 3 of Scoreboard Assembly Worksheet Instructions

SCOREBOARD ASSEMBLY WORKSHEET INSTRUCTIONS

STEP 1: DETERMINE DESIRED SCOREBOARD ASSEMBLY. FILL OUT SCOREBOARD ASSEMBLY TABLE. PROVIDE NEVCO PART NUMBERS, PART HEIGHT, PART WIDTH, AND PART WEIGHTS.

STEP 2: DETERMINE TOTAL ASSEMBLY HEIGHT, WIDTH, AND WEIGHT

STEP 3: BASED ON TOTAL ASSEMBLY WIDTH, DETERMINE THE NUMBER OF REQUIRED COLUMNS.
SEE SHEETS SB1.X FOR 1 COLUMN ASSEMBLY OPTIONS
SB2.X FOR 2 COLUMN ASSEMBLY OPTIONS
SB3.X FOR 3 COLUMN ASSEMBLY OPTIONS
SB4.X FOR 4 COLUMN ASSEMBLY OPTIONS

STEP 4: PICK FOUNDATION TYPE (CAISSON WITH EMBEDDED COLUMN, CAISSON WITH BOLTED COLUMN, OR MAT FOOTING) AND BRACED OR UNBRACED COLUMN OPTION. MARK APPLICABLE SHEET ON SHEET INDEX, SB0.1

STEP 5: MARK APPLICABLE CHECK BOX ON DETAIL 'A' OF SELECTED COLUMN/FOUNDATION OPTION

STEP 6: FILL IN SITE SPECIFIC SEISMIC AND WIND VALUES TABLE C ON SB0.1.

STEP 7: FILL IN SITE SPECIFIC SOIL EXPOSURE CLASS TABLE D ON SB0.1 (OPTIONAL)

STEP 8: FILL IN SITE SPECIFIC FLOOD ZONE AS REQUIRED, TABLE E ON SB0.1

STEP 9: VERIFY ALL APPLICABLE SHEETS ARE MARKED ON SHEET INDEX, SB0.1. INCLUDE ALL MARKED SHEETS AS PART OF DSA SUBMITTAL

NEVCO PART NUMBERS

SCOREBOARD PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
1600	5 ft	16 ft	8 in	260 lbs.
1603	9 ft	36 ft	8 in	930 lbs.
1604	8 ft	28 ft	8 in	570 lbs.
1606	8 ft	24 ft	8 in	490 lbs.
1608	6 ft	18 ft	8 in	320 lbs.
1609	6 ft	16 ft	8 in	290 lbs.
1610	4 ft	10 ft	8 in	130 lbs.
1612	5 ft	10 ft	8 in	160 lbs.
1615	7 ft	16 ft	8 in	350 lbs.
1617	7 ft	16 ft	8 in	350 lbs.
1620	4 ft	10 ft	8 in	130 lbs.
1625	5 ft	10 ft	8 in	160 lbs.
1630	8 ft	18 ft	8 in	410 lbs.
1632	5 ft	12 ft	8 in	180 lbs.
1635	6 ft	16 ft	8 in	290 lbs.
1640	8 ft	18 ft	8 in	410 lbs.
1650	3 ft	8 ft	8 in	90 lbs.
3600	8 ft	18 ft	8 in	420 lbs.
3602	5 ft	12 ft	8 in	150 lbs.
3604	10 ft	30 ft	8 in	535 lbs.
3614	8 ft	18 ft	8 in	420 lbs.
3615	8 ft	24 ft	8 in	570 lbs.
3616	10 ft	36 ft	8 in	1020 lbs.
3617	8 ft	24 ft	8 in	570 lbs.
3618	8 ft	24 ft	8 in	570 lbs.
3619	8 ft	24 ft	8 in	270 lbs.
3620	8 ft	32 ft	8 in	760 lbs.
3621	8 ft	20 ft	8 in	585 lbs.
3625	9 ft	18 ft	8 in	460 lbs.
3634	8 ft	18 ft	8 in	420 lbs.
3650	4 ft	10 ft	8 in	130 lbs.
3655	5 ft	16 ft	8 in	250 lbs.
3656	8 ft	18 ft	8 in	420 lbs.

SCOREBOARD PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
3657	10 ft	32 ft	8 in	665 lbs.
3658	5 ft	16 ft	8 in	250 lbs.
3680	8 ft	18 ft	8 in	555 lbs.
3682	8 ft	20 ft	8 in	690 lbs.
3685	8 ft	24 ft	8 in	640 lbs.
3688	8 ft	32 ft	8 in	830 lbs.
5625	8 ft	12 ft	8 in	280 lbs.
5632	4 ft	18 ft	8 in	240 lbs.
5633	2 ft	18 ft	8 in	150 lbs.
5634	6 ft	18 ft	8 in	405 lbs.
5635	8 ft	18 ft	8 in	555 lbs.
5642	3 ft	24 ft	8 in	200 lbs.
5643	5 ft	24 ft	8 in	350 lbs.
7604	10.5 ft	18 ft	8 in	590 lbs.
7605	10.5 ft	24 ft	8 in	790 lbs.
7614	10.5 ft	18 ft	8 in	590 lbs.
7615	10.5 ft	24 ft	8 in	790 lbs.
7616	10 ft	36 ft	8 in	1220 lbs.
7620	8 ft	32 ft	8 in	820 lbs.
7624	10.5 ft	18 ft	8 in	590 lbs.
7625	10.5 ft	24 ft	8 in	790 lbs.
7630	8 ft	24 ft	8 in	650 lbs.
7631	8 ft	24 ft	8 in	650 lbs.
7632	8 ft	24 ft	8 in	650 lbs.
7680	10.5 ft	18 ft	8 in	610 lbs.
7685	8 ft	24 ft	8 in	670 lbs.
7688	8 ft	32 ft	8 in	930 lbs.
9605	3 ft	6 ft	8 in	60 lbs.
9620	3.5 ft	4 ft	8 in	45 lbs.
9650	10 ft	16 ft	8 in	430 lbs.
9651	4 ft	5 ft	8 in	60 lbs.
9652	4 ft	9 ft	8 in	110 lbs.
9660	6 ft	10 ft	8 in	235 lbs.

TRUSSES - HEIGHT AND WIDTH TO BE SPECIFIED BY USER

Nevco Model No.	Part Height, h [ft.]	Part Width, w [ft]	Part Depth [in]	Part Weight [lbs/s.f.]	Part Weight [lbs] = Part Weight lb/s.f. x h x w
ARCHED TRUSS	4 ft	22.05 ft	4 in	2.5 lbs./s.f.	203 lbs.
	____ ft	____ ft	4 in	2.5 lbs./s.f.	____ lbs.

DELAY OF GAME PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
DGT	4 ft	4 ft	8 in	50 lbs.
DGT-T14	5 ft	4 ft	8 in	60 lbs.

FIELD TIMER PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
FT-24	4 ft	4 ft	8 in	55 lbs.
FT-30	4 ft	4 ft	8 in	55 lbs.
FT-T14	5 ft	4 ft	8 in	65 lbs.

PITCH COUNT PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
PCD-1	3 ft	5 ft	8 in	50 lbs.
PCD-08-1	1.5 ft	8 ft	8 in	50 lbs.
PCD-10-1	2 ft	10 ft	8 in	80 lbs.
PCD-16-1	2 ft	16 ft	8 in	130 lbs.
PCD-18-1	2 ft	18 ft	8 in	150 lbs.

PITCH SPEED PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
PSD	4 ft	4 ft	8 in	50 lbs.

SOUND SYSTEM PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
SP-1000	4 ft	9 ft	43 in	710 lbs.
SP-2000	4 ft	19 ft	43 in	1420 lbs.

CUSTOM PART

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]

SIGNS - HEIGHT AND WIDTH TO BE SPECIFIED BY USER

Nevco Model No.	Part Height, h [ft.]	Part Width, w [ft]	Part Depth [in]	Part Weight [lbs/s.f.]	Part Weight [lbs] = Part Weight lb/s.f. x h x w
ADO SIGN	2 ft	22.05 ft	8 in	3.2 lbs./s.f.	180 lbs.
	____ ft	____ ft	8 in	3.2 lbs./s.f.	____ lbs.

ADO SIGN PART NUMBERS

Nevco Model No.	Part Height [ft.]	Part Width [ft]	Part Depth [in]	Part Weight [lb]
ADO8-1	1 ft	8 ft	8 in	18 lbs.
ADO6-2	2 ft	6 ft	8 in	26 lbs.
ADO8-2	2 ft	8 ft	8 in	35 lbs.
ADO10-2	2 ft	10 ft	8 in	44 lbs.
ADO12-2	2 ft	12 ft	8 in	53 lbs.
ADO14-2	2 ft	14 ft	8 in	62 lbs.
ADO16-2	2 ft	16 ft	8 in	70 lbs.
ADO18-2	2 ft	18 ft	8 in	79 lbs.
ADO20-2	2 ft	20 ft	8 in	88 lbs.
ADO22-2	2 ft	22 ft	8 in	97 lbs.
ADO24-2	2 ft	24 ft	8 in	106 lbs.
ADO28-2	2 ft	28 ft	8 in	123 lbs.
ADO30-2	2 ft	30 ft	8 in	132 lbs.
ADO32-2	2 ft	32 ft	8 in	140 lbs.
ADO6-3	3 ft	6 ft	8 in	40 lbs.
ADO8-3	3 ft	8 ft	8 in	53 lbs.
ADO10-3	3 ft	10 ft	8 in	66 lbs.
ADO12-3	3 ft	12 ft	8 in	80 lbs.
ADO14-3	3 ft	14 ft	8 in	93 lbs.
ADO16-3	3 ft	16 ft	8 in	106 lbs.
ADO18-3	3 ft	18 ft	8 in	120 lbs.
ADO20-3	3 ft	20 ft	8 in	132 lbs.
ADO22-3	3 ft	22 ft	8 in	146 lbs.
ADO24-3	3 ft	24 ft	8 in	160 lbs.
ADO28-3	3 ft	28 ft	8 in	185 lbs.
ADO30-3	3 ft	30 ft	8 in	200 lbs.
ADO32-3	3 ft	32 ft	8 in	212 lbs.
ADO36-3	3 ft	36 ft	8 in	239 lbs.

MESSAGE CENTERS - HEIGHT AND WIDTH TO BE SPECIFIED BY USER

Nevco Model No.	Part Height, h [ft.]	Part Width, w [ft]	Part Depth [in]	Part Weight [lbs/s.f.]	Part Weight [lbs] = Part Weight lb/s.f. x h x w
	____ ft	____ ft	8 in	8.5 lbs./s.f.	____ lbs.
	____ ft	____ ft	8 in	8.5 lbs./s.f.	____ lbs.

VIDEO BOARDS - HEIGHT AND WIDTH TO BE SPECIFIED BY USER

Nevco Model No.	Part Height, h [ft.]	Part Width, w [ft]	Part Depth [in]	Part Weight [lbs/s.f.]	Part Weight [lbs] = Part Weight lb/s.f. x h x w
16MM	14.62 ft	22.05 ft	8 in	9.5 lbs./s.f.	3063 lbs.
	____ ft	____ ft	8 in	9.5 lbs./s.f.	____ lbs.

SSG structural engineers
811 El Capitan Way, Suite 240
San Luis Obispo, CA 93401
8405 North Fresno Street, Suite 120
Fresno, CA 93720
www.ssge.com
805.439.2110

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. MARTIN — No. 5405 — STRUCTURAL — STATE OF CALIFORNIA

SEOR SEAL — DATE SIGNED: 10.16.18

nevco
301 East Harris Avenue, Greenville, Illinois 62246
Phone: (618) 664-0360
www.nevco.com

PRE-CHECK (PC) DOCUMENT
CODE: 2016

A separate project application for construction is required.

DSA FILE NUMBER: PC-90
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02-116492
AC FLS 42 SS SI
DATE: 10/16/18
DSA STAMP

EXAMPLE SCOREBOARD WORKSHEET & NEVCO PART NUMBERS

⚠ ADDENDUM 1 03-120287

SHEET INFORMATION

DATE: 10.16.18
DRAWN: JMK / JMM
CHECKED: JMM / MEP
SSG JOB #: S17015
SHEET: SB0.2 ⚠ AD1-SB2

STRUCTURAL NOTES

GENERAL NOTES

1. The following notes, typical details and schedules shall apply to all phases of this project unless otherwise shown or noted.
2. Specific notes and details shall take precedence over general notes and typical details.
3. All materials and workmanship shall conform to the minimum standards of the 2016 edition Title 24 of the California Building Code (CBC) and such other regulating agencies exercising authority over any portion of the work. The contractor shall have a current copy of the CBC on the job site.
4. The "Contract or Construction Documents" shall consist of these notes, details, schedules, plans, and drawings, as well as attached specifications.
5. All specifications, including but not limited to materials and products, shall be those put forth in the "Contract or Construction Documents". No substitutions shall be permitted to be used or assumed to be used in the bidding or construction process without written approval by the Structural Engineer of Record.
6. The contractor shall examine the "Contract or Construction Documents" and shall notify the Architect or Structural Engineer of Record of any discrepancies he may find before proceeding with the work.
7. All information on existing conditions shown on drawings are based on best present knowledge available, but without guarantee of accuracy. The Contractor shall verify and be responsible for all dimensions and conditions at the site and shall notify the Architect or Structural Engineer of Record of any discrepancies between actual site conditions and information shown on or in the "Contract or Construction Documents" before proceeding with work.
8. The Contractor shall immediately notify the Architect or Structural Engineer of Record of any condition which in his opinion might endanger the stability of the structure or cause distress of the structure.
9. All work shall conform to the best practice prevailing in the various trades comprising work. The Contractor shall be responsible for coordinating the work of all trades.
10. These "Contract or Construction Documents" represent the finished structure, and do not indicate the method of construction. The Contractor shall supervise and direct the work and shall be solely responsible for construction means, methods, techniques, sequences and procedures.
11. Inspection and approval for fabricator's shops used for fabrication of structural load bearing members, components, materials or assemblies shall conform to CBC Section 1704A.2.5.
    A. Labeling (as required or specified) shall be provided in accordance with CBC Section 1703A.5.
    B. Evaluation and follow-up inspection services (as required or specified), shall conform to CBC Section 1703A.6.
12. The Contractor shall refer to the specifications for information not covered by these drawings and General Notes.
13. The Contractor shall provide temporary bracing and shoring for all structural members as required for structural stability of the structure during all phases of construction.
14. The Contractor shall take all steps necessary to ensure proper alignment of the structure after the installation of all structural and finish materials. This shall include any necessary preloading of the structure to determine final position of the completed work.
15. Observation visits to the project site by field representatives of Architect and/or Structural Engineer of Record (support services) shall not include inspections of safety or protective measures, nor construction procedures, techniques or methods. Any support services performed by Architect or Structural Engineer of Record during any phase of construction, shall be distinguished from continuous and detailed inspection services (as required by any regulating governmental agency, e.g. the Authority Having Jurisdiction) provided by others, these support services, whether of material or work, are performed solely for the purpose of assisting in quality control and in achieving conformance with contract documents, but do not guarantee Contractor's performance and shall not be construed as supervision of construction.
16. Provide openings and supports as required per typical details and notes for mechanical, plumbing, and electrical equipment, vents, ducts, piping, etc. All mechanical, plumbing and electrical equipment shall be properly "sway braced" against lateral forces.
17. These notes, details, drawings and specifications (Contract or Construction Documents) do not carry necessary provisions for construction safety. These documents and all phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the current California Occupational Safety and Health Act.
18. Where any conflict occurs between the requirements of federal, state and local laws, codes, ordinances, rules and regulations, the most stringent shall govern.
19. Written dimensions shall have precedence over scaled dimensions.
20. Drawings (notes, schedules, details and plans) shall have precedence over Structural Calculations.
21. In the event that certain features of the construction are not fully shown on the drawings or called for in the General Notes or Specifications, then their construction shall be of the same character as for similar conditions that are shown or called for.
22. ASTM designation and all standards refer to the latest amendments.
23. These structural "Contract or Construction Documents" shall not be modified without prior written approval of the Structural Engineer of Record.
24. Only structural working drawings approved by the Authority Having Jurisdiction are permitted to be used for construction on this project. All other drawings or documents are obsolete and are not permitted on the job site, nor shall they be used for any construction purposes. Contractors using unapproved drawings or documents are solely responsible for all work not performed in accordance with the "approved" drawings.
25. A Division of the State Architect certified project inspector employed by the District (Owner) and approved by the Division of the State Architect shall provide continuous inspection of the work. The duties of the inspector are defined in Section 4-342, Part 1, Title 24 California Code of Regulations.

FOUNDATION NOTES

1. Basis: See Structural Design Values Chart, Sheet SB0.1 Table B
2. Unexpected soil conditions: Allowable values and foundation design are based upon the minimum values provided in Table 1806A.2 of the 2016 California Building Code. See SB0.1 for values
3. Excavate to required depths and dimensions (as indicated in drawings), cut square and smooth with firm level bottoms. Care shall be taken not to over-excavate foundation at lower elevation and prevent disturbing of soils around higher elevation.
4. Footings shall be poured in neat excavations, without side forms whenever possible.
5. Carry all foundations to required depths into compacted fill or natural soil (as per Structural Plans and Details).
6. All foundation excavations shall be inspected and approved by the Inspector of Record or Geotechnical Engineer prior to forming and placement of reinforcing or concrete.
7. Foundations shall not be poured until all required reinforcing steel, sleeves, inserts, conduits, pipes, etc. and formwork is properly placed and inspected by the Authority having Jurisdiction.
8. The sides and bottoms of excavations which are to have concrete contact must be moistened several times just prior to pouring upon them.
9. De-water footings, as required, to maintain dry working conditions.

REINFORCING STEEL

1. All reinforcing steel shall be deformed intermediate grade bars conforming to ASTM A615, Grade 60 (f_y = 60 ksi) unless noted otherwise.
    A. Grade 40 (f_y = 40 ksi) may be used for #3 bars and smaller.
2. Reinforcing steel shall not be welded, unless specifically noted otherwise.
3. Welding of reinforcing steel (where specifically noted or detailed) shall conform to ACI 318-14, Section 26.6.4 and AWS D1.4. Welded rebar shall be low-alloy steel conforming to ASTM A706.
4. To hold reinforcing bars in their true position and prevent displacement, standard tie and anchorage devices must be provided. Placing of reinforcement shall conform to ACI 318-14 Section 26.6.2.
5. Shop drawings for fabrication of any reinforcing steel shall be approved by Contractor and submitted to Project Specific Architect or Project Specific Structural Engineer of Record, for their review, prior to fabrication.
6. Refer to typical details for minimum splice length and minimum radius of bend of reinforcing steel.
7. All reinforcing steel splices shall be staggered 24", unless specifically noted or detailed otherwise.
8. All reinforcing bar bends shall be made cold.
9. Fabrication, erection and placement of reinforcing steel shall conform to Concrete Reinforcing Steel Institute of Standard Practice.
10. All welded wire mesh shall conform to ASTM A185. Lap all wire mesh two modules.
11. Reinforcing steel shall be clean of rust, grease or other material likely to impair bond.
12. Epoxy-coated reinforcement (where specifically noted or detailed) shall conform to ASTM A775.

CONCRETE

1. All concrete shall have a minimum ultimate compressive strength (f'_c) as outlined below at 28 days. All concrete shall be regular weight (unless specifically noted otherwise).
    A. Concrete for footings: 4,500 psi w/c = 0.45 max. (see note 2)
2. For sites subject to soil with exposure class F0, S0, W0, C0, and C1 per ACI 138 19.3.1.1, the following design strength is permissible. The Geotechnical Engineer shall provide written verification of the soil exposure class. Provide exposure class in Table D on SB0.1
    A. Concrete for footings: 3,000 psi w/c = 0.45 max.
3. Maximum Fly Ash content shall be 15%, by weight, of total cementitious materials and shall conform to ASTM C618.
4. All concrete work shall comply with CBC Chapter 19A and ACI 318-14 and latest edition of ACI Manual of Concrete Practice.
5. Special Inspection (as required or specified) shall conform to CBC Chapter 17A.
6. Cement shall be portland cement Type V and shall conform to ASTM C150.
7. Aggregates shall conform to ASTM C33, provide aggregates from a single source.
8. Water shall conform to ASTM C94 and be potable.
9. All splices are to be Class B unless specifically noted otherwise.
10. Where not specifically detailed, the minimum concrete cover on reinforcing steel shall be:
    A. Concrete cast against and permanently exposed to earth or weather: 3"
11. Reinforcing bars larger than #8 are not permitted unless specifically detailed or noted otherwise.
12. Location of all construction joints, other than specified, shall be approved by Architect/Structural Engineer of Record prior to pouring. Construction joints shall be thoroughly air and water cleaned and heavily roughened so as to expose coarse aggregates. All surfaces to receive concrete shall be maintained continuously wet at least three hours in advance of pouring.
13. All reinforcing steel, anchor bolts, dowels, inserts and any other hardware to be set in concrete shall be well secured in position prior to pouring of concrete.
14. Vibrate all concrete as it is placed, with a mechanical vibrator operated by experienced personnel. The vibrator shall be used to consolidate the concrete, not transport it. Reinforcing and forms shall not be vibrated.
15. Formwork design and removal shall conform to ACI 318-14 Section 26.11. Remove forms in accordance with the following minimum schedule:
    A. Side forms of footings: Minimum 48 hours
    B. Column and pier forms: 72 hours & 70% of design strength
16. Concrete shall not free fall more than six feet. Use tremie, pump or other approved methods.
17. Concrete shall be maintained in a moist condition for a minimum of 5 days after placement.
18. The Contractor may use concrete admixtures as a construction means and methods to execute "Contract or Construction Documents". Use of admixture is solely the responsibility of the Contractor.
19. Mix designs shall be prepared by an approved testing laboratory, signed by a licensed engineer and shall be submitted to the Project Specific Structural Engineer of Record for approval.
20. Only one grade of concrete shall be allowed on project site at any one time
21. Concrete strength shall be verified by standard cylinder tests (in accordance with CBC Section 1905A.1.16) made by an approved testing laboratory.
22. Concrete placed when the air temperature has fallen to, or is expected to fall below 40° shall conform to ACI 318-14 Section 26.5.4, and ACI 306R-16.
23. Concrete placed during hot weather shall conform to ACI 318-14 Section 26.5.5, and ACI 305R-14.
24. Conduits and sleeves placed within structural concrete shall not be tied directly to structural reinforcement.
    A. 1" concrete cover shall be maintained around all reinforcement.
25. No stakes shall be permitted within the footing section.

DRILLED CAISSON/PIER AND GRADE BEAM NOTES

1. Excavations for drilled caissons/pier shall be performed in compliance with local grading codes and ordinances as well as CBC Chapters 18A and 33A.
2. Provide Special Inspection in accordance with CBC Section 1705A.8 and Table 1705A.8.
3. Excavations for all drilled caissons/piers shall be approved by the Project Geotechnical Engineer prior to placing of concrete.
4. Reinforcement for drilled caissons/pier shall be approved by the Structural Engineer of Record prior to placing in caisson/pier excavation.
5. De-water caisson/pier footings and building excavation as required to maintain dry working conditions.
6. Caisson/piers are to be poured by end of day after completion of drilling operation. All concrete for a particular caisson/pier shall be on the job site prior to drilling the pile hole.
7. The Contractor shall be responsible for all shoring, bracing, etc. necessary to support cut and/or fill banks, and existing structures during excavation, and the forming and placement of concrete.
8. Bottom of caissons/piers shall be thoroughly cleaned prior to placement of concrete.
9. Grade beam reinforcement:
    A. Stagger splices in horizontal reinforcement.
    B. Locate splices between the ¼ and ½ spans (between caisson/piers) of grade beams, unless noted otherwise.

STRUCTURAL STEEL AND WELDING

1. All structural steel construction shall conform to AISC 360-10 and AISC 341-10.
    A. Fabrication of all structural steel shall be done in the shop of an approved fabricator. Inspection and approval for fabricator's shops used for fabrication of structural load bearing members, components, materials or assemblies shall conform to CBC Section 1704A.2.5.
2. All structural steel shall conform to the following specifications:
    A. Angles, channels, plates, bars, rounds, and other miscellaneous shapes: Shall conform to ASTM A36 and shall have a minimum yield stress (F_y) of 36 ksi.
    B. Wide-flange shapes: Shall conform to ASTM A992 and shall have a minimum yield stress (F_y) of 50 ksi.
    C. Structural tubes: Shall be ASTM A500, Grade B, and shall have a min. yield stress (F_y) of 46 ksi.
3. All structural steel fasteners shall conform to the following specifications:
    A. Bolts shall conform to ASTM A307
    B. Anchor Bolts shall conform to ASTM F1554, Grade as noted in drawings
    C. Carbon steel nuts shall conform to ASTM A563
    D. Stainless steel nuts shall conform to ASTM F594
    E. Washers shall conform to ASTM F436
4. Special Inspection shall be provided for all structural steel and welding, in accordance with CBC Chapter 17A.
5. All structural steel shall be fabricated, erected and welded in accordance with AISC Specifications for Structural Steel Buildings (AISC 360-10) and Code of Standard Practice for Steel Buildings and Bridges (AISC 303-10).
6. All welding shall be done by qualified and certified welders.
7. No field welding permitted, unless specifically noted otherwise.
8. Shop drawings for the fabrication of any structural steel shall be approved by the Contractor and submitted to Project Specific Architect or Project Specific Structural Engineer of Record for their review, prior to fabrication.
9. No holes other than those specifically detailed shall be allowed through structural steel members. Burning of holes is not permitted.
10. All welding shall conform to 'AWS D1.1' specifications for welding. (E-70XX Electrodes).
11. Where fillet weld size is not indicated, use 'AWS' minimum size based on the thickness of the thinner part being welded, as specified in AISC Specifications for Structural Steel Buildings (AISC 360-10), Section J2.2.
12. All butt welds to be complete joint penetration, unless specifically noted otherwise.
13. Welder qualification requirements, welding procedure and welding electrodes for all structural steel (except structural sheet steel, see steel decking) shall conform to CBC Sections 1705A.2.1 and 2204A.1.
14. Provide 3" minimum concrete cover around all structural steel below grade.
15. Structural steel embedded into concrete shall be uncoated.
16. Structural steel shall be hot-dip galvanized (minimum ASTM A123 or A153 Class D) or painted with zinc-rich primer, undercoat, and finish coat; or equivalent paint system.
17. All exposed steel fasteners, including cast-in-place anchor bolts/rods, shall be stainless steel (Type 304 minimum), hot-dip galvanized (ASTM A153, Class D minimum or ASTM F2329), or protected with corrosion-preventive coating that demonstrated no more than 2% of red rust in minimum 1,000 hours of exposure in salt spray test per ASTM B117. Zinc plated fasteners do not comply with this requirement.

ABBREVIATIONS

A.B.	Anchor Bolt		
ABV.	Above	HORIZ.	Horizontal
ACI	American Concrete Institute	HSS	Hollow Steel Section
ADJ.	Adjacent	HT.	Height
AHJ	Authority Having Jurisdiction		
AISC	American Institute of Steel Construction	ICC	International Building Code International Code Council
AOR	Architect of Record	ID	Inside Diameter
APPROX.	Approximate(ly)	IN.	Inch, Inches
ASCE	American Society of Civil Engineers	INT.	Interior
ARCH.	Architect, Architecture	ksi	Kips per Square Inch
ASTM	American Society of Testing and Materials	LL	Live Load
ATR	All Thread Rod		
AWS	American Welding Society	MAX.	Maximum
		MB	Machine Bolt
B.O.	Bottom of _____	MFR.	Manufactured, Manufacturer
BOT.	Bottom	MIN.	Minimum
b/t	Between	MPH	Miles per Hour
CAC	California Administrative Code	N/R	Not Required
CBC	California Building Code	N.T.S.	Not to Scale
CIP	Cast-in-place		
CJP	Complete Joint Penetration	o.c.	On Center
℄	Centerline	o/	Over
CLR.	Clear	OD	Outside Diameter
COL.	Column		
CONC.	Concrete	PEN.	Penetration
CONN.	Connection	PL.	Plate
CONST.	Construction	PJP	Partial Joint Penetration
CONT.	Continue, Continuous	psi	Pounds per Square Inch
		PSF	Pounds per Square Foot
Ø	Diameter		
DBL.	Double	REBAR	Reinforcing Bar
DET.	Detail	REINF.	Reinforcement
DL	Dead Load	REQ'D	Required
DSA	Division of State Architect		
DWGS.	Drawings	S.F.	Square Feet
		SHT.	Sheet
EA.	Each	SIM.	Similar
E.F.	Each Face	SMS	Sheet Metal Screw
ELEC.	Electric, Electrical	SQ.	Square
ELEV.	Elevation	STAGG'D	Staggered
EMBED.	Embedded, Embedment	STD.	Standard
EOR	Engineer of Record	STL.	Steel
EQ.	Equal	SEOR	Structural Engineer of Record
EQUIP.	Equipment		
E.S.	Each Side	T&B	Top and bottom
E.W.	Each Way	THR'D	Threaded
EXT.	Exterior	T.O.	Top of _____
		TYP.	Typical
FAB.	Fabricated		
FDN.	Foundation	U.N.O.	Unless Noted Otherwise
F.G.	Finish Grade		
F.O.	Face of _____	VERT.	Vertical
FRMG.	Framing	VIF	Verify in Field
FT.	Foot,Feet		
FTG.	Footing	w/	With
		w/c	Water/Cement Ratio
GA.	Gauge	WSS	Welded Steel Stud
GALV.	Galvanized	WT.	Weight
GEOR	Geotechnical Engineer of Record		

SPECIAL INSPECTION

GENERAL NOTES

1. All Special Inspection shall be provided in accordance with CBC Section 1704A and 1705A.
2. Where Special Inspection is required, all inspection or testing shall be provided by an approved Special Inspection Agency in accordance with CBC Section 1702A.1, 1703A.1 and 1704A.1.
3. A Division of the State Architect accepted testing laboratory directly employed by the District (Owner) shall conduct all the required tests and inspections for the project.
4. Special Inspectors shall keep records of inspections. The Special Inspector shall furnish inspection reports to the Division of the State Architect, and to the Architect or Engineer of Record. Reports shall indicate that work inspected was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Division of the State Architect and to the Architect or Engineer of Record prior to the completion of that phase of work. A final report documenting required Special Inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon by the permit applicant and the Division of the State Architect prior to the start of work.
5. Special Inspectors shall be approved by the Division of the State Architect in accordance with CBC Section 1704A.2.1 and CAC Section 4-335(f)

CAST-IN-PLACE DEEP FOUNDATIONS[a]

Verification and Inspection	Continuous	Periodic
1. Inspect drilling operations and maintain complete and accurate records for each element.	✓	
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end bearing strata capacity. Record concrete or grout volumes.	✓	
3. For concrete elements, perform additional inspections and see Concrete Construction chart, this sheet, in accordance with CBC Section 1705A.3.		

Notes: Cast-in-place Deep Foundations
a. CBC Section 1705A.8 and Table 1705A.8

CONCRETE CONSTRUCTION[a][Q]

Verification and Inspection	Continuous	Periodic
1. Inspection of reinforcing steel including prestressing tendons, and placement.[c]		✓
2. Inspection of reinforcing steel welding in accordance with Table 1705A.2.2. item 5b.[d]		✓
3. Inspection of anchors cast in concrete.[e]		✓
4. Verifying use of required design mix.[g]		✓
5. At the time fresh concrete is sampled to fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.[h]	✓	
6. Inspection of concrete placement for proper application techniques.[i]	✓	
7. Inspection for maintenance of specified curing temperature and techniques.[j]		✓
8. Inspect formwork for shape, location and dimensions of the concrete member being formed.[n]		✓
9. Batch Plant Inspection.[q]	✓	

Notes: Concrete Construction
a. Where applicable, see also CBC Section 1705A.12, Special Inspections for seismic resistance
b. Specific requirements for Special Inspection shall be included in the research report for the anchor issued by an approved source in accordance with ACI 318-14 Section 17.8.2 or other requirements. Where specific requirements are not provided, Special Inspection requirements shall be specified by the Registered Design Professional and shall be approved by the Building Official prior to the commencement of the work.
c. ACI 318: Ch. 20, 25.2, 25.3, 26.5-1-26.5.3, CBC: 1908.4
d. AWS D1.4, ACI 318: 26.5.4
e. ACI 318: 17.8.2
f. ACI 318: 17.8.2.4, 17.8.2
g. ACI 318: Ch. 19, 26.4.3, 26.4.4, CBC: 1904.1, 1904.2
h. ASTM C172, ASTM C31, ACI 318: 26.4.5, 26.12, CBC: 1908.10, 1908.2, 1908.3
i. ACI 318: 26.4.5, CBC: 1908.6, 1908.7, 1908.8
j. ACI 318: 26.4.7-26.4.9, CBC: 1908.9
k. ACI 318: 26.9.2.1, 26.9.2.3
l. ACI 318: Ch. 26.8
m. ACI 318: 26.10.2
n. ACI 318: 26.10.1 (b)
o. CBC Section 1705A.3 and Table 1705A.3
p. See Special Cases Special Inspection for more requirements
q. Continuous batch plant inspection may be waived by the Authority Having Jurisdiction, subject to the enforcement agency under the following condition: The concrete plant complies fully with the requirements of ASTM C94, Sections 9 and 10, and has a current certificate from the National Ready Mixed Concrete Association or another agency acceptable to the enforcement agency. The certification shall indicate that the plan has automatic batching and recording capabilities
When continuous batch plant inspection is waived, the following requirements shall apply :
1. An approved agency shall check the first batch at the start of the day to verify materials and proportions conform to the approved mix design.
2. A licensed weighmaster shall positively identify quantity of materials and certify each load by a batch ticket.
3. Batch tickets, including material quantities and weights shall accompany the load and shall be transmitted to the inspector of record by the truck driver with load identified thereon. The load shall not be placed without a batch ticket identifying the mix. The inspector of record shall keep a daily record of placements, identifying each truck, its load, and time of receipt at the jobsite, and approximate location of deposit in the structure and shall maintain a copy of the daily record as required by enforcement agency.

STEEL CONSTRUCTION[a][b]

Verification and Inspection	Continuous	Periodic
Required verification and inspection of steel construction		
1. Material verification of structural steel, cold-formed steel deck, high-strength bolts, nuts and washers:		
a. For structural steel, identification markings to conform to AISC 360, or ASTM Standards Specified in approved Construction Documents. Manufacturer's certificate of compliance required.		✓
2. Material verification of structural steel:		
a. Identification markings to conform to ASTM standards specified in the approved construction documents.		✓
b. Manufacturer's certified test reports.		✓
3. Material verification of weld filler materials:		
a. Identification markings to conform to AWS specification in the approved Construction Documents		✓
b. Manufacturer's certificate of compliance required		✓
4. Inspection of welding:		
a. Structural steel and cold formed steel deck:		
1) Complete and partial joint penetration groove welds	✓	
2) Multi-pass fillet welds	✓	
3) Single-pass fillet welds > 5/16"	✓	
5) Single-pass fillet welds < 5/16"		✓
5. Inspection of steel frame joint details for compliance:		
a. Details such as bracing and stiffening		✓
b. Member locations		✓
c. Application of joint details at each connection		✓
Inspection tasks prior to welding		
1. Welding procedure specifications (WSPs) available	✓	
2. Manufacturer certifications for welding consumables available	✓	
3. Material identification (type/grade)		✓
4. Welder identification system[e]		✓
5. Fit-up of groove welds (including joint geometry) Joint preparation, dimensions, cleanliness, tacking, backing type and fit		✓
6. Configuration and finish of access holes		✓
7. Fit-up of fillet welds Dimensions, cleanliness, tacking		✓
8. Check welding equipment		
Inspection tasks during welding		
1. Use of qualified welders		✓
2. Control and handling of welding consumables Packaging, exposure control		✓
3. No welding over cracked tack welds		✓
4. Environmental conditions Wind speed within limits, precipitation and temperature		✓
5. WPS followed Settings on welding equipment, travel speed, selected welding materials, shielding gas type/flow rate, preheat applied, interpass temperature maintained min./max.),proper position (F, V, H, OH)		✓
6. Welding techniques Interpass and final cleaning, each pass within profile limitations		✓
Inspection tasks after welding		
1. Welds cleaned		✓
2. Size, length and location of welds	✓	
3. Welds meet visual acceptance criteria Crack prohibition, weld/base-metal fusion, crater cross section, weld profiles, weld size, undercut, porosity	✓	
4. Arc strikes	✓	
5. k-Area[f]	✓	
6. Backing removed and weld tabs removed (if required)	✓	
7. Repair activies	✓	
8 Document acceptance or rejection of welded joint or member	✓	

STEEL CONSTRUCTION, CONTINUED

Verification and Inspection	Continuous	Periodic
Inspection tasks prior to bolting[g]		
1. Manufacturer's certifications available for fastener materials	✓	
2. Fasteners marked in accordance with ASTM requirements		✓
3. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)		✓
4. Proper bolting procedure selected for joint detail		✓
5. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements		✓
6. Pre-installation certification testing by installation personnel observed and documented for fastener assemblies and methods used		✓
7. Proper storage provided for bolts, nuts, washer and other fastener components		✓
Inspection tasks during bolting		
1. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required		✓
2. Joint brought to the snug-tight condition prior to the pretensioning operation		✓
3. Fastener component not turned by the wrench prevented from rotating		✓
4. Fasteners are pretensioned in accordance with the RCSC specification, progressing systematically from the most rigid point toward the free edges, see Minimum Bolt Pretension table below		✓
Inspection tasks after bolting		
1. Document acceptance or rejection of bolted connections	✓	

Notes: Steel Construction
a. CBC Section 1705A.2 and Table 1705A.2.2
b. CBC Section 1707A.11.1
c. AWS D1.3
d. AWS D1.4, ACI 318: Section 3.5.2
e. The fabricator or erector, as applicable, shall maintain a system by which a welder who has welded a joint or member can be identified. Stamps, if used, shall be the low-stress type.
f. When welding of doubler plates, continuity plates or stiffeners has been performed in the k-area, visually inspect the web k-area for cracks within 3 inches of the weld
g. All methods of installation for high strength bolts shall require verification of pre-tension by a Skidmore-Welhelm calibrator for each batch or source of bolts used (see minimum pre-tension chart below).

Minimum Bolt Pretension (kips)

Bolt size , inches	Group A (A325, etc.)	Group B (A490, etc.)
½" Diameter	12	15
⅝" Diameter	19	24
¾" Diameter	28	35
⅞" Diameter	39	49
1" Diameter	51	64
1⅛" Diameter	56	80
1¼" Diameter	71	102
1⅜" Diameter	85	121
1½" Diameter	103	148

SSG structural engineers
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REGISTERED PROFESSIONAL ENGINEER DANIEL E. MALONEY No. 5405 STRUCTURAL STATE OF CALIFORNIA
SEOR SEAL
DATE SIGNED: 10.16.18

nevco
301 East Harris Avenue, Greenville, Illinois 62246
Phone: (618) 664-0360
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PRE-CHECK (PC) DOCUMENT
CODE: 2016

A separate project application for construction is required.

DSA FILE NUMBER: PC-90

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02-116492
AC FLS SS SI
DATE: 10/16/18

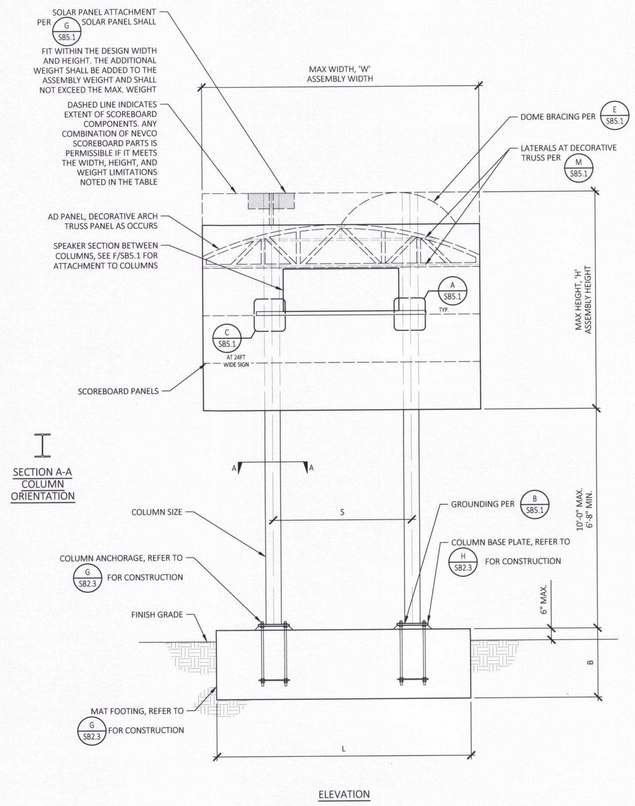
DSA STAMP

STRUCTURAL NOTES & SPECIAL INSPECTIONS

ADDENDUM 1 03-120287
SHEET INFORMATION

DATE 10.16.18
DRAWN JMK / JMM
CHECKED JMM / MEP
SSG JOB # S17015
SHEET SB0.3 AD1-SB3

TWO COLUMN ASSEMBLY								
ASSEMBLY CRITERIA						MAT FOOTING CRITERIA		
ASSEMBLY WIDTH, W	CHECK OPTION THIS APPLICATION	MAX. WEIGHT	ASSEMBLY HEIGHT, H	COLUMN SPACING, S	COLUMN SIZE	WIDTH, A	DEPTH, B	LENGTH, L
8'-0"		565 lbs.	≤ 8'-0"	6'-0"	W8x21	6'-0"	3'-0"	10'-0"
		845 lbs.	≤ 12'-0"	6'-0"	W10x30	7'-0"	3'-0"	12'-0"
		1,130 lbs.	≤ 16'-0"	6'-0"	W12x40	8'-6"	3'-0"	12'-0"
		1,410 lbs.	≤ 20'-0"	6'-0"	W14x48	9'-6"	3'-0"	14'-0"
9'-0"		635 lbs.	≤ 8'-0"	8'-0"	W8x21	6'-0"	3'-0"	10'-0"
		955 lbs.	≤ 12'-0"	8'-0"	W10x33	7'-0"	3'-0"	12'-0"
		1,270 lbs.	≤ 16'-0"	8'-0"	W12x40	8'-6"	3'-0"	14'-0"
		1,584 lbs.	≤ 20'-0"	8'-0"	W14x53	9'-6"	3'-0"	15'-0"
10'-0"		705 lbs.	≤ 8'-0"	8'-0"	W10x22	6'-0"	3'-0"	10'-0"
		1,060 lbs.	≤ 12'-0"	8'-0"	W12x35	7'-0"	3'-0"	13'-0"
		1,410 lbs.	≤ 16'-0"	8'-0"	W14x43	8'-6"	3'-0"	14'-0"
		1,760 lbs.	≤ 20'-0"	8'-0"	W14x61	10'-0"	3'-0"	16'-0"
12'-0"		845 lbs.	≤ 8'-0"	8'-0"	W10x26	6'-0"	3'-0"	11'-0"
		1,270 lbs.	≤ 12'-0"	8'-0"	W14x38	8'-0"	3'-0"	12'-0"
		1,690 lbs.	≤ 16'-0"	8'-0"	W14x48	10'-0"	3'-0"	14'-0"
		2,115 lbs.	≤ 20'-0"	8'-0"	W14x61	11'-0"	3'-0"	17'-0"
16'-0"		1,130 lbs.	≤ 8'-0"	8'-0"	W10x30	7'-0"	3'-0"	13'-0"
		1,690 lbs.	≤ 12'-0"	8'-0"	W12x45	8'-0"	3'-0"	14'-0"
		2,255 lbs.	≤ 16'-0"	8'-0"	W14x61	10'-0"	3'-0"	17'-0"
		2,820 lbs.	≤ 20'-0"	8'-0"	W16x77	11'-0"	3'-0"	20'-0"
18'-0"		1,270 lbs.	≤ 8'-0"	10'-0"	W12x30	7'-0"	3'-0"	14'-0"
		1,905 lbs.	≤ 12'-0"	10'-0"	W14x43	9'-0"	3'-0"	15'-0"
		2,535 lbs.	≤ 16'-0"	10'-0"	W14x61	10'-0"	3'-0"	16'-0"
		3,170 lbs.	≤ 20'-0"	10'-0"	W16x77	12'-0"	3'-0"	17'-0"
24'-0"		1,690 lbs.	≤ 8'-0"	14'-0"	W14x34	7'-0"	3'-0"	17'-0"
		2,535 lbs.	≤ 12'-0"	14'-0"	W14x48	9'-0"	3'-0"	19'-0"
		3,380 lbs.	≤ 16'-0"	14'-0"	W16x67	10'-0"	3'-0"	20'-0"
		4,225 lbs.	≤ 20'-0"	14'-0"	W18x86	12'-0"	3'-0"	21'-0"
		5,070 lbs.	≤ 24'-0"	14'-0"	W18x106	12'-0"	4'-0"	22'-0"

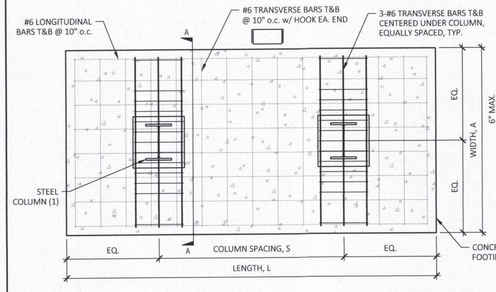


ELEVATION

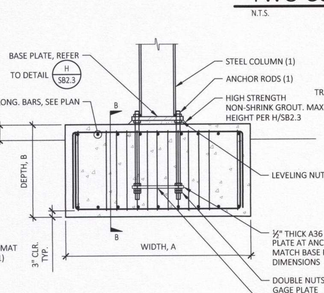
TWO COLUMN SCOREBOARD INSTALLATION

N.T.S.

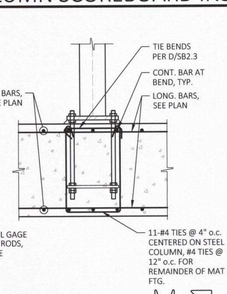
A



PLAN VIEW



SECTION A-A



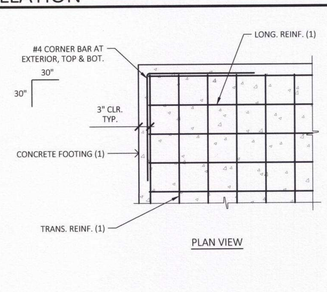
SECTION B-B

NOTES: (#)
1. SEE SCOREBOARD ELEVATION A/SB2.3

MAT FOOTING CONSTRUCTION AND ANCHORAGE

N.T.S.

G



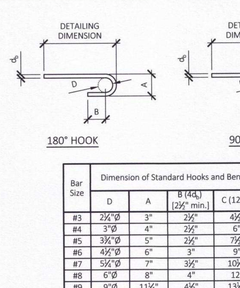
PLAN VIEW

NOTES: (#)
1. SEE G/SB2.3

TYP. FOOTING CORNER

N.T.S.

F

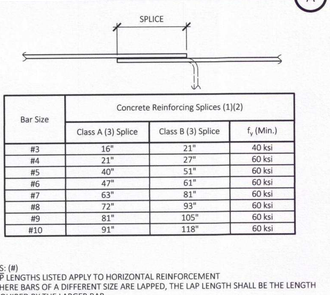


Bar Size	Dimension of Standard Hooks and Bends			
	D	A	B ($4d_b$) [2½" min.]	C ($12d_b$)
#3	2½"Ø	3"	2½"	4½"
#4	3"Ø	4"	2½"	6"
#5	3¾"Ø	5"	2½"	7½"
#6	4½"Ø	6"	3"	9"
#7	5¼"Ø	7"	3½"	10½"
#8	6"Ø	8"	4"	12"
#9	9"Ø	11¼"	4½"	13½"
#10	10"Ø	12½"	5"	15"

REBAR HOOKS & BENDS

N.T.S.

C



Bar Size	Concrete Reinforcing Splices (1)(2)		
	Class A (3) Splice	Class B (3) Splice	f'_c (Min.)
#3	16"	21"	40 ksi
#4	21"	27"	60 ksi
#5	40"	51"	60 ksi
#6	47"	61"	60 ksi
#7	63"	81"	60 ksi
#8	72"	93"	60 ksi
#9	81"	105"	60 ksi
#10	91"	118"	60 ksi

NOTES: (#)
1. LAP LENGTHS LISTED APPLY TO HORIZONTAL REINFORCEMENT
2. WHERE BARS OF A DIFFERENT SIZE ARE LAPPED, THE LAP LENGTH SHALL BE THE LENGTH REQUIRED BY THE LARGER BAR
3. ALL SPLICES SHALL BE CONSIDERED CLASS B UNLESS SPECIFICALLY NOTED OTHERWISE

TYPICAL LAP SPLICES

N.T.S.

B

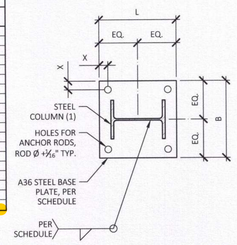
BASE PLATE SCHEDULE									
COLUMN SIZE	BASE PLATE				ANCHOR ROD				
	THICKNESS, t	WIDTH, B	LENGTH, L	WELD	QUANTITY & DIAMETER	GRADE	EDGE DISTANCE, X	GROUT HEIGHT	EMBED.
W8x21	1"	16"	16"	5/16" FILLET	4-1"Ø	F1554 - Gr.36	2"	1½"	30"
W10x22	1"	20"	20"	5/16" FILLET	4-1"Ø	F1554 - Gr.36	2"	1½"	30"
W10x26	1"	20"	20"	5/16" FILLET	4-1"Ø	F1554 - Gr.36	2"	1½"	30"
W10x30	1¼"	20"	20"	¼" FILLET	4-1⅛"Ø	F1554 - Gr.36	2½"	2"	30"
W10x33	1¼"	20"	20"	¼" FILLET	4-1⅛"Ø	F1554 - Gr.36	2½"	2"	30"
W12x30	1¼"	20"	22"	¼" FILLET	4-1⅛"Ø	F1554 - Gr.36	2½"	2"	30"
W12x35	1¼"	20"	22"	¼" FILLET	4-1⅛"Ø	F1554 - Gr.36	2½"	2"	30"
W12x40	1¼"	20"	22"	¼" FILLET	4-1⅛"Ø	F1554 - Gr.36	2½"	2"	30"
W12x45	1½"	20"	24"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3"	2"	30"
W14x34	1½"	20"	24"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3"	2"	30"
W14x38	1½"	20"	24"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3"	2"	30"
W14x43	1½"	20"	24"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3"	2"	30"
W14x48	1⅝"	20"	24"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3"	2"	30"
W14x53	1½"	20"	24"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3"	2"	30"
W14x61	1⅝"	24"	26"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3½"	2½"	30"
W16x67	2"	24"	30"	¼" FILLET	4-1⅜"Ø	F1554 - Gr.55	3½"	2½"	30"
W16x77	2"	24"	28"	¼" FILLET	4-2"Ø	F1554 - Gr.105	3½"	2½"	30"
W18x86	2"	30"	34"	¼" FILLET	4-2"Ø	F1554 - Gr.105	3½"	2½"	30"
W18x106	2½"	30"	34"	¼" FILLET	4-2"Ø	F1554 - Gr.105	3½"	2½"	42"

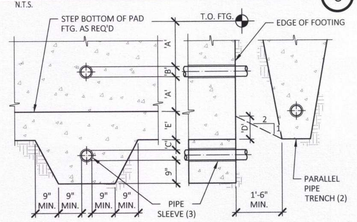
NOTES: (#)
1. SEE SCOREBOARD ELEVATION, A/SB2.3

BASE PLATE

N.T.S.

H



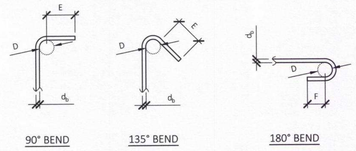


NOTES: (#)
1. DIMENSION - 'A' ½ MIN. OVERALL FOOTING DEPTH
'B' ½ MAX. OVERALL FOOTING DEPTH
'C' 4" MIN.
'D' 9" MIN.
'E' NO PIPE TO BE PLACED IN THIS AREA
2. PIPE TRENCHES PARALLEL TO FOOTING NOT PERMITTED BETWEEN LINES ON EACH SIDE OF FOOTING
3. G.I.S.M. OR EQUIVALENT PIPE SLEEVE, WITH 1" CLEAR ALL AROUND PIPE

PIPE THROUGH FOOTING

N.T.S.

E



Bar Size	Dimension of Standard Bends		
	D	E	F ($6d_b$) [3" min.]
#3	1½"Ø	3"	3"
#4	2"Ø	3"	3"
#5	2½"Ø	3¼"	3¼"

TIE AND STIRRUP BENDS

N.T.S.

D

SSG structural engineers
811 El Capitan Way, Suite 240, San Luis Obispo, CA 93401 | www.ssgse.com | 805.439.2110
8405 North Fresno Street, Suite 120, Fresno, CA 93720

REGISTERED PROFESSIONAL ENGINEER — MICHAEL E. [illegible] — No. 5405 — STRUCTURAL — STATE OF CALIFORNIA

SEOR SEAL — DATE SIGNED 10.16.18

nevco
301 East Harris Avenue, Greenville, Illinois 62246
Phone: (618) 664-0360
www.nevco.com

PRE-CHECK (PC) DOCUMENT
CODE: 2016

A separate project application for construction is required.

DSA FILE NUMBER: PC-90

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02-116492
AC FLS SS SI
DATE: 10/16/18

DSA STAMP

TWO COLUMN MAT FOOTING

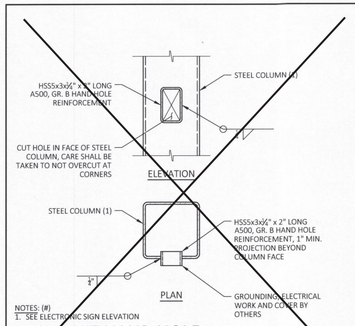
ADDENDUM 1 03-120287
SHEET INFORMATION

DATE	10.16.18
DRAWN	JMK / JMM
CHECKED	JMM / MEP
SSG JOB #	S17015
SHEET	SB2.3

AD1-SB4

CONDUIT HAND HOLE (H)

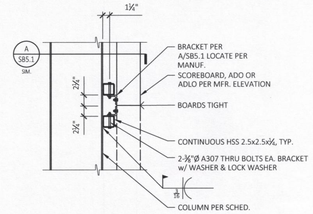
N.T.S.



NOTES: (#)
1. SEE ELECTRONIC SIGN ELEVATION

ALT. BOARD ATTACHMENT (C)

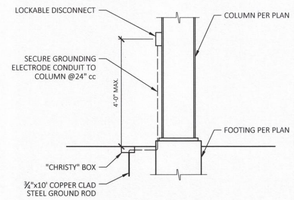
N.T.S.



24' WIDE BOARD AT TWO COLUMN INSTALLATION
32' WIDE BOARD AT THREE COLUMN INSTALLATION
40' AND 44' WIDE BOARD AT FOUR COLUMN INSTALLATION

GROUNDING DETAIL (B)

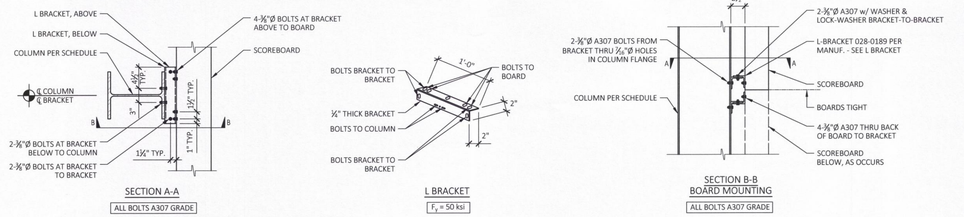
N.T.S.



ALL DISPLAYS MUST BE GROUNDED WITH NO MORE THAN 10 OHMS GROUND RESISTANCE

SCOREBOARD, ADO AND ADLO ATTACHMENTS (A)

N.T.S.

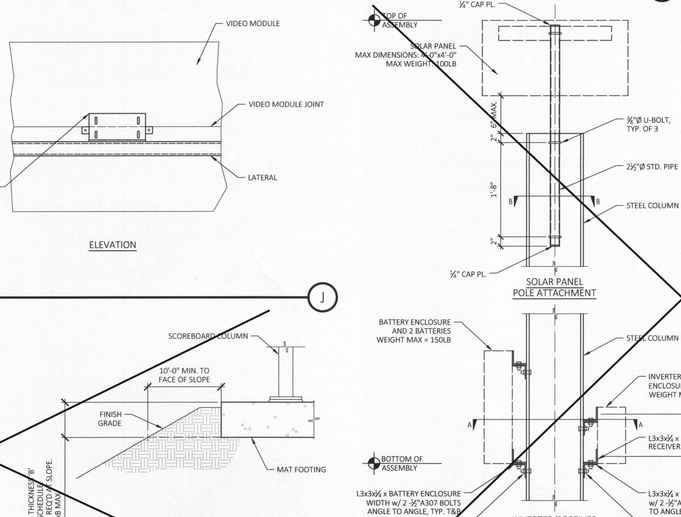


L BRACKETS (K)

N.T.S.

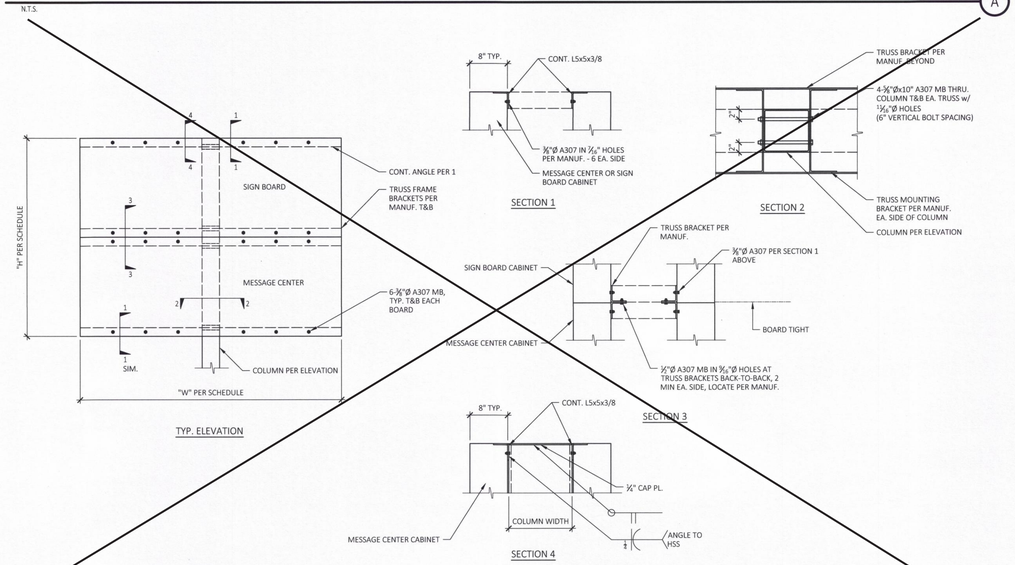
SPEAKER ATTACHMENT (F)

N.T.S.



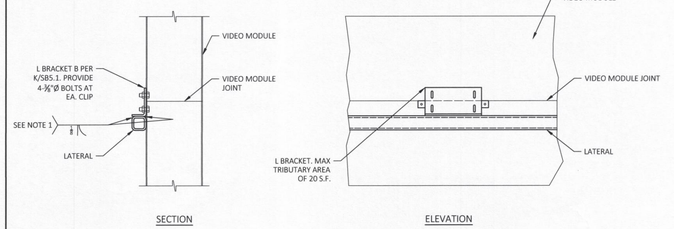
SIGN/MESSAGE CENTER INSTALLATION (D)

N.T.S.



VIDEO BRACKET ATTACHMENT (J)

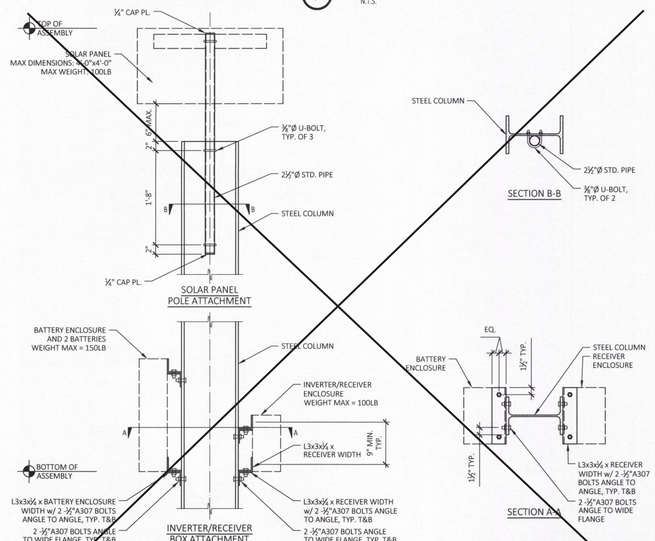
N.T.S.



NOTES:
1. PROVIDE FILLET WELD WHERE LATERAL WIDTH EXCEEDS BRACKET WIDTH

SOLAR PANEL/BATTERY/ INVERTER/RECEIVER ATTACHMENT (G)

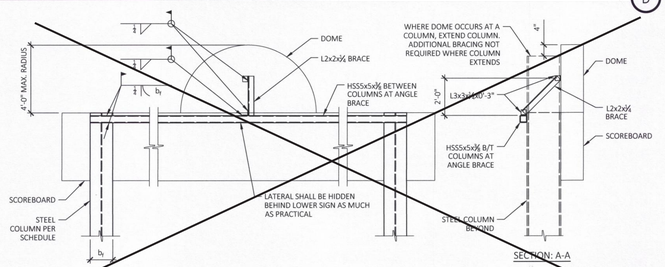
N.T.S.



NOTES:
1. THE SOLAR PANEL, BATTERIES AND ENCLOSURE, AND INVERTER/RECEIVER DIMENSIONS SHALL FIT WITHIN THE PERMITTED EXTENT OF SCOREBOARD AS INDICATED IN THE SCOREBOARD ELEVATION AND SCHEDULE.
2. THE SOLAR PANEL, BATTERIES AND ENCLOSURE, AND INVERTER/RECEIVER WEIGHT ALONG WITH ALL OTHER SCOREBOARD COMPONENTS SHALL NOT EXCEED THE WEIGHT INDICATED IN THE SCOREBOARD SCHEDULE.

DOME BRACING (E)

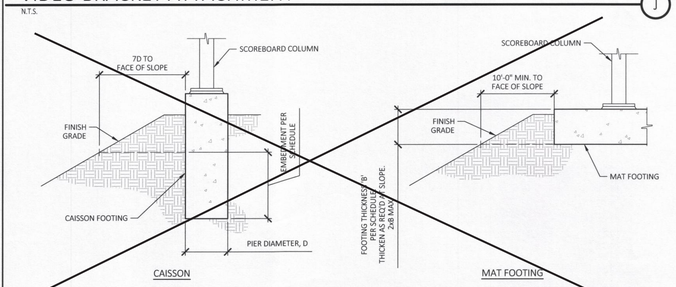
N.T.S.



NOTES: (#)
1. SEE SCOREBOARD ELEVATION AND NOTES

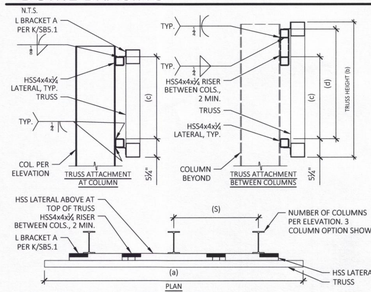
DISTANCE TO SLOPE (L)

N.T.S.



TRUSS ATTACHMENT (M)

N.T.S.



TRUSS ATTACHMENT CHART

TRUSS WIDTH (a)	TRUSS HEIGHT (b)	LATERAL HEIGHT (c)	LATERAL HEIGHT (d)	COLUMN SPACING (S)	ESTIMATED WEIGHT	NUMBER OF COLUMNS
18'-0"	3'-0"	28 13/16"	31 5/8"	10'-0"	145 lbs.	2
16'-0"	3'-8 3/8"	34 3/8"	36 1/8"	8'-0"	136 lbs.	2
18'-0"	4'-0"	38 3/16"	40 1/8"	10'-0"	165 lbs.	2
12'-0"	2'-6"	18 13/16"	20 5/8"	8'-0"	90 lbs.	2
10'-0"	2'-6"	18 3/8"	20 1/4"	8'-0"	64 lbs.	2
8'-0"	2'-6"	18 3/8"	20 1/4"	6'-0"	58 lbs.	2
14'-0"	2'-0"	18 3/8"	20 1/4"	8'-0"	78 lbs.	2
28'-0"	4'-0"	30 13/16"	42 7/16"	10'-0"	257 lbs.	3
24'-0"	4'-0"	27 3/8"	42 7/16"	8'-0"	220 lbs.	3
24'-0"	3'-0"	19 13/16"	30 13/16"	8'-0"	185 lbs.	3
20'-0"	4'-0"	25 3/8"	44 3/4"	9'-0"	110 lbs.	3
32'-0"	4'-0"	24 13/16"	41 15/16"	8'-0"	294 lbs.	4
36'-0"	4'-0"	15 3/8"	39 15/16"	10'-0"	331 lbs.	4
40'-0"	4'-0"	28 3/8"	41 3/8"	10'-0"	367 lbs.	4

SSG structural engineers
811 El Capitan Way, Suite 240
San Luis Obispo, CA 93401
8405 North Fresno Street, Suite 120
Fresno, CA 93720
www.ssgse.com
805.439.2110

REGISTERED PROFESSIONAL ENGINEER MICHAEL E. [illegible] No. 5405 STRUCTURAL STATE OF CALIFORNIA
DATE SIGNED: 10.16.18
SEOR SEAL

nevco
301 East Harris Avenue, Greenville, Illinois 62246
Phone: (618) 664-0360
www.nevco.com

PRE-CHECK (PC) DOCUMENT
CODE: 2016

A separate project application for construction is required.

DSA FILE NUMBER: PC–90
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
02–116492
AC FLS SS
DATE: 10/16/18
DSA STAMP

ATTACHMENT DETAILS

ADDENDUM 1 03-120287
SHEET INFORMATION
DATE 10.16.18
DRAWN JMK / JMM
CHECKED JMM / MEP
SSG JOB # S17015
SHEET SB5.1 AD1-SB5

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

OXNARD UNION HIGH SCHOOL DISTRICT

OXNARD, CA

GENERAL NOTES

REFER TO AUDIO VISUAL SPECIFICATION SECTION FOR COMPLETE REQUIREMENTS

1. ELECTRICAL

   A. All conduits, junction boxes, back boxes, pull string and power outlets by Division 26 contractor as required.
   B. All power to AV equipment to originate from dedicated audio video load center in accordance with the latest local and national codes referencing "technical power systems", NEC Article 640.
   C. Branch circuits feeding audio-visual equipment must not originate from load centers connected to inductive loads.
   D. Provide all AV circuits with isolated ground, dedicated neutral.

2. COORDINATE

   A. Coordinate with the work of all sections. Coordinate the location of blocking and backing required by this section. Make reasonable minor adjustments to preserve architectural symmetry and alignment with adjacent features at no claim for additional cost or time. Present conflicts in timely manner for resolution.
   B. Relocation, revision or correction caused by failure of the contractor to coordinate the work shall not be subject to claim for additional cost or time.
   C. Power receptacles shown on the AV drawings outside of equipment racks are shown for coordination information only. Refer to Division 26 documents for construction.
   D. These drawings show scope. The exact location & elevations of loudspeakers, receptacles and devices must be coordinated with the architectural drawings.
   E. Conduit, back boxes and pull boxes supplied and installed by electrical contractor under supervision of AV contractor.
   F. General contractor shall coordinate the conduit, devices, pathways and junction boxes for the AV system with other trade to avoid any conflicts.

3. LOCATIONS AND DIMENSIONS

   A. Locations and dimensions shown on architectural drawings take precedence over these AV drawings. In case of apparent conflict or ambiguity, submit to the Architect in timely manner for resolution.
   B. Dimensions take precedence over scale. Large scale drawings take precedence over small. Report all conflicts before installation.
   C. Unless otherwise noted, dimensions are shown height x width x depth.
   D. Verify all dimensions, locations and conditions in the field prior to starting work. Notify Architect of any apparent discrepancies.

4. SUPPORT

   Provide all blocking, bridging, ties, fasteners and related support provisions for all work of this section. Comply with applicable code requirements for means of support of electrical equipment of the same weight under the same mounting conditions. Do not apply any load to building structure without first obtaining written approval of the project Structural Engineer. Obtain per project procedures. Supports for raceway system by Division 26 contractor.

5. BOX, PANEL AND ENCLOSURE INSTALLATION

   A. Coordinate the location of all boxes, panels, enclosures and related raceway with the work of other sections.
   B. Verify access to boxes, panels and enclosures comply with applicable code.
   C. Coordinate and correct all conditions of occlusion of all loudspeaker assemblies. Where more than one (1) flush mounted ceiling loudspeaker has been scheduled, none shall be located closer to any fixed wall than one-half (1/2) of the adjacent clear height, except at ceiling discontinuities, or where specifically shown on the drawings.
   D. Install boxes, panels and enclosures square and plumb. Set flush mounted units so that the face of the cover, Bezel or Escutcheon, is in the same plane as the surrounding finished surface. Mount boxes, panels and trim so that there are no gaps, cracks or obvious lines between the trim and the adjacent finished surface.
   E. Unless otherwise noted, provide steel boxes, panels and enclosures. Comply with Division 26 requirements and applicable code.
   F. Unless otherwise noted, boxes and enclosures shall be not less than 2-1/8 inches deep. Provide the larger of the size required by applicable code or as shown on drawings. Coordinate wire and cable bend radius with box and enclosure size.
   G. Pull boxes: Provide as required by the most restrictive of applicable code or the provisions of Division 26. Coordinate with wire and cable bend radius.
   H. Provide required fire rated junction boxes or fire stop box guards at all fire rated walls.

6. RACEWAY

   A. For all work of this section, raceway above ground shall be EMT, raceway below ground shall be PVC.
   B. Raceway shall be ¾ inch diameter trade size unless otherwise noted.
   C. All conduit runs over 100 ft. must have large radius bends.
   D. A maximum of two 90 degree elbows in each conduit run.
   E. Conduit with fiber optic cable installed, must conform to the minimum bend radius as specified by the manufacturer of the cable. Division 26 contractor is to apply radius bends where needed. Fiber bend radius shall be a minimum long-term low-stress radius not less than 20 times the cable diameter.
   F. Keep a minimum of 12" clear between electrical conduit and low voltage conduit.
   G. Provide fire rated conduit penetration seals at all fire rated walls.
   H. Conduit and accessories must be installed plumb and true with uniform fastening, fully dressed and finished.

7. GROUNDING AND BONDING

   Comply with all applicable codes and ordinances.
   Refer to National Electrical Code Section 250.

   A. Bond raceway and related boxes, panels, enclosures and cabinets as required by applicable code and Division 26.
   B. Make raceway connections to equipment racks and similar equipment enclosures containing powered equipment with isolated fittings.
   C. Ground and bond equipment racks and similar equipment enclosures containing powered equipment exclusively via the isolated equipment grounding conductors provided under Division 26. Size such conductors according to applicable code. For each technical branch circuit, the isolated equipment grounding conductor shall be copper of the same gauge as supply and neutral conductors. Main isolated equipment grounding conductor to each ensemble of equipment racks shall be copper, sized as required by applicable code.
   D. D.C. resistance between the isolated equipment grounding bus at equipment room technical power panels and the main project ground field shall not exceed 0.15 OHMS.
   E. For community antenna television and master antenna television systems and related provisions, comply with Article 800, National Electrical Code.

8. CABLE AND WIRE

   A. All low voltage cable and wire by Audio-Visual Contractor.
   B. Use plenum rated wire where required by code.
   C. Cable splicing not allowed in any pullboxes.

9. GENERAL

   A. In the event that these plans, notes or details or any part or portion thereof are used by any third-party without the express authorized permission of VENEKLASEN ASSOCIATES, the unauthorized user and anyone benefiting therefrom, shall defend, indemnify and hold harmless VENEKLASEN ASSOCIATES and its Agents, Principals, Employees and Consultants from and against any and all claims, including attorneys' fees arising out of said unauthorized use.
   B. Furthermore, the unauthorized use of these plans, notes, details or any part or portion therefore is expressly prohibited and VENEKLASEN ASSOCIATES retains a copyright over any and all documents prepared by VENEKLASEN ASSOCIATES.
   C. In the event that the installer deviates from the plans and specifications prepared by VENEKLASEN ASSOCIATES which results in damage to persons or property of any kind, Installer hereby agrees to defend, indemnify and hold harmless VENEKLASEN ASSOCIATES, its Agents, Principals, Employees and Consultants from and against any and all claims, including attorneys' fees caused by such failure to follow the plans and specifications prepared by VENEKLASEN ASSOCIATES, excepting only the damages to persons or property which are caused by the sole negligence or willful misconduct of VENEKLASEN ASSOCIATES.
   D. Drawings are diagrammatic and are intended to convey Scope of Work and to indicate general arrangement. There are not intended to show every detail including offset or fitting or every structural difficulty that may be encountered during the work. Except as otherwise indicated, locations of items are approximate only. Exact locations necessary to secure proper conditions and results must be determined at project site and must be approved by the Owner's representative.
   E. Except as otherwise indicated, make reasonable modifications in layout as needed to prevent conflict with other work or proper execution of work.
   F. Include work not usually shown or specified, but necessary for proper installation and operation of a system or piece of equipment in work.

BOX SCHEDULE

DEVICE ID	DESCRIPTION	BOX TYPE	BOX SIZE	INSTALL METHOD	ELEVATION
AIP/PSQ	AUDIO INPUT PANEL AND POWER SEQUENCER JUNCTION BOX	FSR WB-4G WITH COVER & KEY	8.9 x 8.9 x 3.75	WALL	8" ABOVE COUNTER
ALA	ASSISTIVE LISTENING ANTENNA	N/A	N/A	CEILING	N/A
ERK1	EQUIPMENT RACK	N/A	N/A	WALL	N/A
JB#	JUNCTION BOX	BELL 4" ROUND WEATHERPROOF BOX 5361-0 W/ 5361 COVER	5.5 x 5.5 x 1.5	POLE MOUNTED	SEE DETAIL ON AV6.1 AND AV6.2
WMA	WIRELESS MIC ANTENNA JUNCTION BOX	N/A	N/A	CEILING	N/A

NOTE: CONTRACTOR IS TO PROVIDE BLANK PANELS FOR ALL BOXES THAT ARE DESIGNATED FOR FUTURE USE. BOXES THAT ARE ABLE TO ACCEPT STANDARD SIZE BLANK PANELS SHALL BE PROVIDED WITH SAME (SGMR, 2GMR, SWITCH BOXES, ETC). NON STANDARD SIZE BOXES (I.E. TOUCH PANELS) WILL BE PROVIDED WITH ANODIZED ALUMINUM BLANK PANELS. SEE SPECIFICATION FOR REQUIREMENTS (I.E. COLOR COORDINATION). CONTRACTOR TO LABEL ALL CONDUIT STUBS AND FUTURE BACK BOXES WITH PERMANENT MARKER. SEE SPECIFICATION FOR DETAILS.

SHEET INDEX

Sheet Index

AGENCY REVIEW

LITTLE™
DIVERSIFIED ARCHITECTURAL CONSULTING

1300 Dove Street, Suite 100
Newport Beach, CA. 92660
T: 949.698.1400

www.littleonline.com

CLIENT NAME

OXNARD UNION HIGH SCHOOL DISTRICT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

1400 RAIDERS WAY, OXNARD, CA. 93033

CONSULTANT

Veneklasen Associates
AV | IT | Security | Low Voltage Department
1711 Sixteenth Street
Santa Monica, CA 90404
(310) 450-1733
www.veneklasen.com

SEAL

LICENSED ARCHITECT
JAY R. TITTLE
NO. C12955
REN. 11-30-21
STATE OF CALIFORNIA

ISSUE FOR

03-120287

ISSUE DATE

REVISIONS

1 04/24/2020	ADDENDUM 1	

PROJECT TEAM

PRINCIPAL IN CHARGE:
JACK SHIMIZU

PROJECT LEADER:
PABLO AMEZQUITA

DESIGN TEAM:
VENEKLASEN ASSOCIATES

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

6121235311

SHEET TITLE

GENERAL NOTES AND SHEET INDEX

SHEET NUMBER

(AV0.1) 1 AD1-AV1

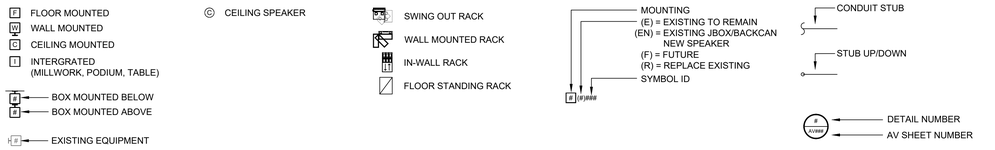
DEVICE / BOX ID

Device ID	Description	CPP	Central Paging Processor			MPL	Music Player	RPT	Repeater	TP	Twisted Pair
1GMR	1 Gang Mud Ring	CPU	Central Processing Unit	GEQ	Graphic Equalizer	MPN	Monitor Panel	RSC	RGB System Controller	TPC	Touch Panel Control
2GMR	2 Gang Mud Ring	CRC	Camera Remote Control	GNM	Gooseneck Microphone	MPS	Motorized Projection Screen	RSI	RGB Switching Interface	TPM	Telepromptor
3DTV	3D Television	CRK	Control Rack			MPY	Media Player	RSRS	Rotating Sliding Rail System	TPR	Twisted Pair Receiver
3GMR	3 Gang Mud Ring	CS	Conference Station	HP	Headphone	MR	Message Repeater	RSW	RGB Switcher	TPT	Twisted Pair Transmitter
4GMR	4 Gang Mud Ring	CSF	Call Signal Flasher	HDTV	High Definition Television	MRP	MD Recorder Player	RTP	Remote Truck Panel	TR	Talent Receiver
		CT	Control	HDW	Hardware	MSC	Main System Controller	RX	Receiver	TRC	Transceiver
A	Audio	CTM	Control Module	HFS	High Frequency Speaker	MSF	Master Fader			TS	Touch Screen
ABA	Audio Buffer Amplifier	CTN	Cable Tuner	HHM	Hand Held Microphone	MSP	Microphone Splitter	S	Speaker Level	TT	Turn Table
AC	Audio Combiner	CTR	Controller	HPR	Headphone Remote Station	MSR	Microphone Splitter Rack	SA	Aquatic Speaker	TTP	Table Top Panel
ACM	Audio Card Module	CTS	Computer Training System	HRB	Headset Remote Box	MSV	Media Server	SAN	Storage Area Network	TV	Television
ACN	Audio Control Network	CVM	Computer Video Monitor	HS	Headset	MSW	Matrix Switcher	SAT	Satellite Receiver	TVP	TV Panel
ACR	Audio Control Relay			HTS	Home Theater System	MXP	Mixer Pre-Amplifier	SB	Bass Speaker	TVT	TV/RF Tuner
ACS	Audio Conferencing System	DA	Distribution Amp					SC	Ceiling Speaker	TX	Transmitter
ADA	Audio Distribution Amplifier	DAB	Digital Audio Bus	IAA	Integrated Audio Amplifier	NADU	Network Audio Distribution Amp	SCB	Cinema Speaker Bass		
ADB	Audio Distribution Box	DAO	Digital to Analog Output	IBP	Intercom Belt Pack	NET	Network Outlet	SCD	Speaker Control Distribution	UBC	Unbalance to Balance Converter
ADI	Analog to Digital Input	DAR	Digital Audio Recorder	IBS	Intercom Base Station	NHB	Network Hub	SCF	SC Fiber Connector	UC	Up Converter
ADK	Audio Ducker	DAS	Digital Audio Source	IC	Intercom	NI	Network Interface	SCN	Cinema Speaker	UCD	Unified Communication Device
ADP	Adaptor	DAT	Digital Audio Tape Unit	ICS	Intercom Station	NMCPU	Network Manager CPU	SCP	System Control Pad	UP	Usher Panel
AE	Audio Extractor	DB	Direct Box	ID	Interactive Display	NSG	Noise Gate	SDA	SDI Distribution Amplifier	UPS	Uninterruptible Power Supply
AFT	AM/FM Tuner	DC	Document Camera	IFC	Interface Card	NSS	Network Source Switch	SDB	Speaker Distribution Box	USB	Universal Serial Bus
AIM	Audio Input Module	DCA	Digital Controlled Amplifier	IH	Intercom Handset	NT	Network Terminator	SDD	Solid State Disk Dock	USBX	Universal Serial Bus Extender
AIP	Audio Input Panel	DCC	Data Control Card	IHS	Intercom Head Set	NWS	Network Switch	SE	Effects Speaker		
AIU	Analog Interface Unit	DCM	Digital Cart Machine	IMS	Intercom Main Station			SER	Serial	V	Video
AL	Audio Left	DCN	Divider Combiner Network	IOP	Input/Output Panel	OPJ	Optical Projector	SES	Sound Enhancement Speaker	VC/SS	Volume Control / Selector Switch
ALA	Assistive Listening Antenna	DCPU	Digital Central Processing Unit	IPC	IP Camera			SFF	Front Fill Speaker	VCA	Voltage Controlled Amplifier
ALR	Assistive Listening Receiver	DCR	Digital Capture Recorder	IR	Infrared	P	Power	SG	Ground Speaker	VCC	Video Conference Camera
ALS	Assistive Listening System	DD	Dimmer Doubler	IRB	IR Broadcast	PA	Power Amplifier	SGEN	Sync Generator	VCM	Video Card Module
ALT	Assistive Listening Transmitter	DDL	Digital Delay	IRE	IR Emitter	PAD	Pad	SGMR	Single Gang Mud Ring	VCR	Video Cassette Recorder
AM	Audio Monitor	DEB	De-Embedder	IRM	IR Modulator	PB	Push Button	SGP	Signal Processor	VCS	Video Conferencing System
AMS	Audio Monitor Speaker	DEC	Decoder	IRR	IR Receiver	PBR	Play Back Rack	SGS	Signage Server	VCU	Video Conferencing Unit
AMX	Auto Mixer	DEQ	Dynamic Equalizer	IRS	Intercom Remote Station	PC	Personal Computer	SH	Horn Speaker	VD	Video Display
ANT	Antenna	DFR	Digital File Recorder	IRT	IR Transmitter	PCB	Patch Cable	SHF	Shelf	VDA	Video Distribution Amplifier
AOB	Analog Output Bridge	DIM	Dimmer Module	ISDN	Integrated Service Digital Network	PCC	Personal Computer Control	SI	Sensor Interface	VDR	Video Disk Recorder
AOP	Audio Output Panel	DIU	Digital Interface Unit	ITR	Isolation Transformer	PCD	Power Conditioner	SIS	Set Integrated Speaker	VE	Video Encoder
AP	Access Point	DJCC	Digital Joystick Camera Control			PCLD	Projector Controller With Line Doubler	SIW	In-Wall Speaker	VEH	Video Encoder Hub
APB	Audio Patch Bay	DM	Digital Mixer	JB	Junction Box	PCT	Portable Cart	SJB	Speaker Junction Box	VF	View Finder
APD	Antenna Power Distribution	DMR	Dimmer Rack			PD	Plasma Display	SLA	Speaker Line Array	VFX	Video Effects Processor
APM	Audio Program Monitor	DMX	DMX	KB	Keyboard	PDL	Plasma Display Lift	SMP	Stage Manager Panel	VIC	Visual Concert
AR	Audio Right	DMXC	DMX Control Cable	KM	Keyboard & Mouse	PEC	Portable Equipment Case	SMR	Stage Manager Rack	VIP	Video Input Panel
ASP	Antenna Splitter	DMXN	DMX Node	KMI	Keyboard & Mouse Interface	PEQ	Parametric Equalizer	SMS	Scaling Matrix Switcher	VL	Voice Lift
ASV	Audio Server	DPB	Disc Publisher	KMK	Keyboard & Mouse Kit	PGM	Program Monitor	SMSW	Satellite Multiswitch	VLCF	Voice Lift Card Cage Frame
ASW	Audio Switcher	DRC	Door Control	KVM	Keyboard, Video & Mouse	PGS	Paging System	SMX	Splitter Mixer	VM	Video Monitor
AT	Audio Tie Line	DREC	Digtial Recorder	KVME	Keyboard, Video & Mouse Extender	PI	Power Injector	SO	Speaker Overhead	VMS	Video Matrix Switcher
ATI	Audio Teleconference Interface	DSD	Data Stroage Device			PJL	Projector Lift	SP	Speaker	VOL	Volume Control
ATN	Attenuator	DSMP	Digital Signage Media Player	LAN	Local Area Network	PJS	Projection Screen	SPCL	Speaker Cluster	VOP	Voice Over Paging Module
AV	Audio Video	DSP	Digital Signal Processor	LC	Lighting Console	PM	Paging Microphone	SPG	Program Speaker	VPB	Video Patch Bay
AVC	Auto Volume Controller	DSS	Digital Satellite System	LD	Line Doubler	PMIC	Presentation Microphone	SPJ	Slide Projector	VPJ	Video Projector
AVD	Audio Video Distribution	DTP	Digital Twisted Pair	LDP	Laser Disc Player	PMP	Podium Microphone Panel	SPL	Splitter	VPJRM	Video Projector Rotating Mount
AVI	Audio Video Interface	DVC	DVD/VCR Combo	LDR	Line Driver	PNWS	Power Network Switch	SPN	Stage Panel	VPM	Video Program Monitor
AVIM	Audio Video Input Module	DVD	Digital Versatile Device	LEC	Lectern	POD	Podium	SPP	Speaker Patch Panel	VPS	Video Production Switcher
AVN	Audio Video Network	DVHS	Digital Cassette Recorder	LED	Light Emitting Panel	PP	Podium Panel	SPR	Speaker Processor	VSC	Video Scan Converter
AVP	Audio Video Panel	DVP	Digital Video Processor	LFS	Low Frequency Speaker	PPS	Phantom Power Supply	SPT	Speaker Portable	VSL	Video Scaler
AVR	Audio Video Router	DVR	Digital Video Recorder	LI	Lighting Interface	PRE	Pre Amplifier	SR#	Surround Rear	VSP	Video Signal Processor
AXF	Auto Transformer	DVS	Digital Video Scaler	LL	Line Level	PRK	Portable Rack	SRA	Stereo Receiver Amp	VSPC	Video Screen Panel Control
		DWR	Drawer	LM	Line Module	PS	Power Supply	SS	Surround Sound Speaker	VSS	Video System Switcher
BAT	Battery			LP	Lectern Panel	PSB	Powered Subwoofer	SS#	Surround Sound Side	VSV	Video Server
BC	Battery Charge	EBD	Embedder	LPM	Lapel Microphone	PSC	Projection Screen Control	SSA	Solid State Audio Source	VSW	Video Switcher
BDP	Blu-Ray Disc Player	EBF	Expanded Beam Fiber Connector	LPT	Laptop	PSD	Paging Station Desk Mount	SSF	Sliding Shelf	VT	Video Tie Line
BOB	Break Out Box	EC	Expansion Card	LTF	Line Transformer	PSLR	Program Select & Level Remote	SSV	Streaming Server	VW	Video Wall
BP	Belt Pack	EDB	Electrical Distribution Box	LTP	LCD Touch Panel	PSP	Powered Speaker	SSW	Serve Switch	VWP	Video Wall Processor
		EFX	Effects Processor	LVR	Line Voltage Regulator	PSQ	Power Sequencer	ST#	Surround Top		
C	Conduit	ELTC	Emergency Lighting Transfer Cabinet			PSR	Paging Station Rack Mount	STB	Stage Box	WAA	Wireless Antenna Amplifier
CAM	Video Camera	EN	Ethernet	MA	Mixer Amplifier	PSW	Paging Station Wall Mount	SUM	Summing Amplifier	WAD	Wireless Antenna Distribution
CAS	Cassette Deck	ENC	Encoder	MAL	Media Archive Library	PTC	Pan & Tilt Camera	SV	S-Video	WAS	Wireless Antenna Splitter
CASR	Cassette Deck Recorder	ENG	Electronic News Gathering	MATV	Master Antenna Television	PVM	Preview Video Monitor	SVC	Slide to Video Converter	WB	White Board
CATV	Community Antenna Television	EQ	Equalizer	MCS	Media Collaboration System	PWS	Power Strip	SVD	Signage Video Display	WBC	Window Blind Control
CBT	Cable Tray	ERK	Equipment Rack	MCT	Main Cabler Tray	PXS	Proximity Switch	SVDA	S-Video Distribution Amp	WBP	Wireless Belt Pack
CC	Contact Closure	ERT	Ethernet Router	MCV	Media Converter	PZM	Pressure Zone Microphone	SVHS	S-Video Cassette Recorder	WC	Word Clock
CCC	Contact Closure Card	EXG	Expander/Gate	MD	Mini Disc			SVMS	S-Video Matrix Switcher	WER	Wireless Ethernet Router
CCF	Card Cage Frame	EXT	Extender	MDCF	Matrix Digital Card Frame	RAS	RGB Auto Switcher	SVS	S-Video Switcher	WFM	Waveform Monitor
CCU	Camera Control Unit			MDR	Motion Detector	RC	Remote Control	SVSS	S-Video Separator Switcher	WGA	Wireless Gateway Antenna
CDB	Crestron Distribution Block	F	Fiber	MFP	Microphone Facility Panel	RDA	RGB Distribution Amp	SW	Wall Mounted Speaker	WGW	Wireless Gateway
CDC	Compact Disc Changer	FB	Floor Box	MFS	Mid Frequency Speaker	REC	Record	SWG	Switch Glass	WIA	Wireless Intercom Antenna
CDP	Compact Disc Player	FBS	Feed Back Suppresser	MI	Midi Interface	REV	Reverb	SWH	Sound Web Hub	WLM	Wireless Microphone
CG	Character Generator	FLM	Floor Monitor	MIC	Microphone	RF	Radio Frequency	SYSW	System Switcher	WLU	Wireless Unit
CIM	Control Interface Module	FMA	FM Antenna	MIDI	MIDI	RFA	RF Amplifier			WM	Wireless Mouse
CIU	Computer Interface Unit	FMR	FM Receiver	MIX	Mixer	RFAS	RF Antenna Splitter	TAM	Telephone Access Module	WMA	Wireless Mic Antenna
CL	Camera Lens	FMT	FM Tuner	MKB	Monitor Keyboard Sliding Shelf	RFDA	RF Distribution Amplifier	TB	Terminal Box	WMAP	Wireless Mic Antenna Panel
CM	Card Module	FMTA	FM Transmitting Antenna	MM	Microphone Module	RFS	RF Splitter	TBC	Time Base Corrector	WMG	Wire Manager
CME	Control Module Extended	FMTR	FM Transmitter	MMC	Media Matrix Computer	RFT	RF Transmitter	TBU	Tape Backup	WMKA	Wireless Mic Keyboard Antenna
CMIC	Ceiling Microphone	FOH	Front Of House	MMP	Monitor Mix Panel	RFTA	RF Transmitting Antenna	TC	Programmable Time Clock	WMKS	Wireless Mouse Keyboard Antenna
CMP	CD/Media Player	FP	Facility Panel	MMPA	Measurement Mix Pre Amplifier	RGB	RGBHV	TCB	Terminal Cabinet	WMR	Wireless Mic Receiver
CN	CobraNet	FPL	Floor Panel	MNP	Masking Noise Processor	RIP	Rack Input Panel	TCR	Transcoder	WP	Wall Plate
CNT	Control Network	FPP	Fiber Patch Panel	MOB	Monitor Out Box	RK	Rack Lights	TCS	Teleconferencing System	WPG	Wireless Presentation Gateway
COD	Codec Unit	FREC	Fiber Receiver	MOD	Modulator	RKM	Rack Mount	TEL	Telephone Output	WPN	Wall Panel
CON	Converter	FSC	File System Controller	MON	Monitor	RM	Relay Module	TI	Telephone Interface	WSI	Work Station Interface
CP	Conduit Pocket	FT	Fiber Tie Line	MOU	Mouse	RMS	RGB Matrix Switcher	TJB	Transformer Junction Box	WTA	Wireless Touch Panel Adapter
CPIS	Control Plug In Station	FTP	Fiber Tie Panel	MP	Media Panel	RPM	Retractable Projector Mount	TM	Table Microphone		
CPL	Compressor/Limiter	FW	Firewire	MPA	Microphone Pre-Amplifier	RPN	Rack Panel	TMB	Table Microphone Box		

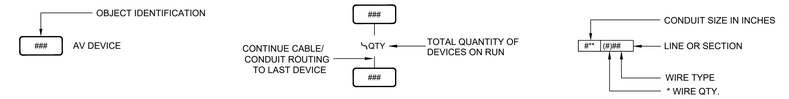
ABBREVIATIONS

(E)###	Existing	CLG	Ceiling			NTS	Not To Scale		
(F)	Future	CM	Construction Manager	GC	General Contractor			SECT	Section
		CO	Conduit Only			OC	On Center	SHP	Shielded Pair
A 0	Above Zero Floor Level			HR	Home Run	OD	Outer Diameter	SIM	Similar
ACT	Above Counter Top	DIA	Diameter			OFCI	Owner Furnished Contractor Installed	SM	Stage Manager
AFB	Above Floor Below	DR	Door	IW	In Wall	OFE	Owner Furnished Equipment	STD	Standard
AFC	Above Finished Ceiling					OFOI	Owner Furnished Owner Installed		
AFF	Above Finished Floor	E.C.	Empty Conduit	LP	Lightning Protector			TPD	Tripod
AH	Above Header	EC	Electrical Contractor	LRR	Lightning Room Rack	P/O	Part Of	TST	Test Set
AS	Above Slab	EL	Elevation	LTG	Lighting	PF	Press Feed	TYP	Typical
		ELEC	Electrical			POC	Point of Connection		
BFC	Below Finished Ceiling	EOL	End Of Line	MISC	Miscellaneous	PRG	Program	UBC	Uniform Building Code
BGM	Background Music	EQUIP	Equipment	MOM	Momentary	PROJ	Project	UON	Unless Otherwise Noted
BOH	Back Of House			MTD	Mounted	PSCH	Project Standard Control Height		
BTU	British Thermal Units	FAN	Fan Panel	MTF	Mounting Termination Fabrication	PSRH	Project Standard Receptacle Height	VIF	Verify In Field
		FBO	Furnished By Owner	MTL	Metal	PSSH	Project Standard Switch Height		
CAB	Cabinet	FCA	Finished Ceiling Above			PST	Pull String	WP	Weather Proof
CATV	Cable TV	FIN	Finished	NC	Normally Closed	PWR	Power		
CBC	California Building Code	FOH	Front Of House	NIC	Not In Contract				
CL	Center Line	FSF	Folding Shelf	NO	Normally Open	RCP	Reflected Ceiling Plan		

FACILITY INPUT SYMBOL SCHEDULE AND DESCRIPTIONS FOR FLOOR AND CEILING PLANS



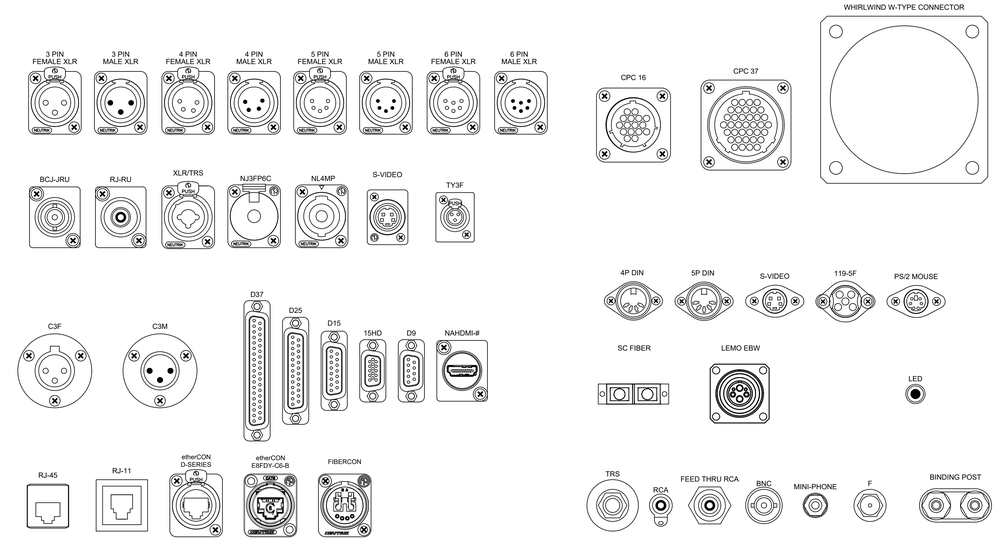
RISER SYMBOL SCHEDULE AND DESCRIPTIONS



* QUANTITY (1) UNLESS OTHERWISE NOTED

** ONE CONDUIT PER LINE OR SECTION UNLESS OTHERWISE NOTED

FACILITY PANEL CONNECTOR LEGEND



WIRE SCHEDULE

NOTES:
1. CONTRACTOR TO USE PLENUM RATED CABLE WHERE REQUIRED BY CODE.
2. WIRING TO BE INSTALLED BY AV CONTRACTOR

TYPE	APPLICATION	DESCRIPTION (FIXED INSTALL CABLE)	O.D.	MANUF.	PART NO.
A1	AUDIO ANALOG/DIGITAL CABLE	ANALOG/DIGITAL AUDIO CABLE, MICROPHONE AND LINE LEVEL WIRING, LESS THAN +24 dBu, FROM 20Hz TO 20kHz, 24 AWG, IMPEDANCE 110Ω ±20%, CAPACITANCE 26pF/FT, 100% SHIELDED, STRANDED TWISTED PAIR	0.177	BELDEN	1800B
C2	CONTROL/PWR SUPPLY	CONTROL CABLE AC/DC, 22 AWG, 2 PAIR, TWISTED, TINNED COPPER	0.233	BELDEN	9744
D3	CAT 6 DATA NETWORK CABLE	CATEGORY 6 DATA CABLE, 23 AWG, UNBONDED PAIR CABLES, SOLID BARE COPPER, MAX. ATTENUATION 28.3dB/100m @ 200MHz, MAX DELAY SKEW 45ns/100 m , NOM MUTUAL CAPACITANCE @ 1KHz 15pF/FT, MAX DC RESISTANCE 8.2Ω/100m	0.220	BELDEN	2412
R1	LOW LOSS 50Ω WIRELESS	RG58C/U, 20 AWG, 50Ω, 95% BRAIDED SHIELD, NOM ATTN -21.5dB/100ft @ 1GHz	0.195	BELDEN	8262
S4	SPEAKER	LOUDSPEAKER LEVEL OR CIRCUIT WIRING GREATER THAN +24dBu, FROM 20Hz TO 20kHz, 10 AWG, STRANDED, TWISTED PAIR WITH PVC JACKET.	0.356	BELDEN	5T00UP

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ISSUE DATE

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1 04/24/2020	ADDENDUM 1	

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PROJECT LEADER: PABLO AREJZQUITA

DESIGN TEAM: VENEKLASEN ASSOCIATES

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

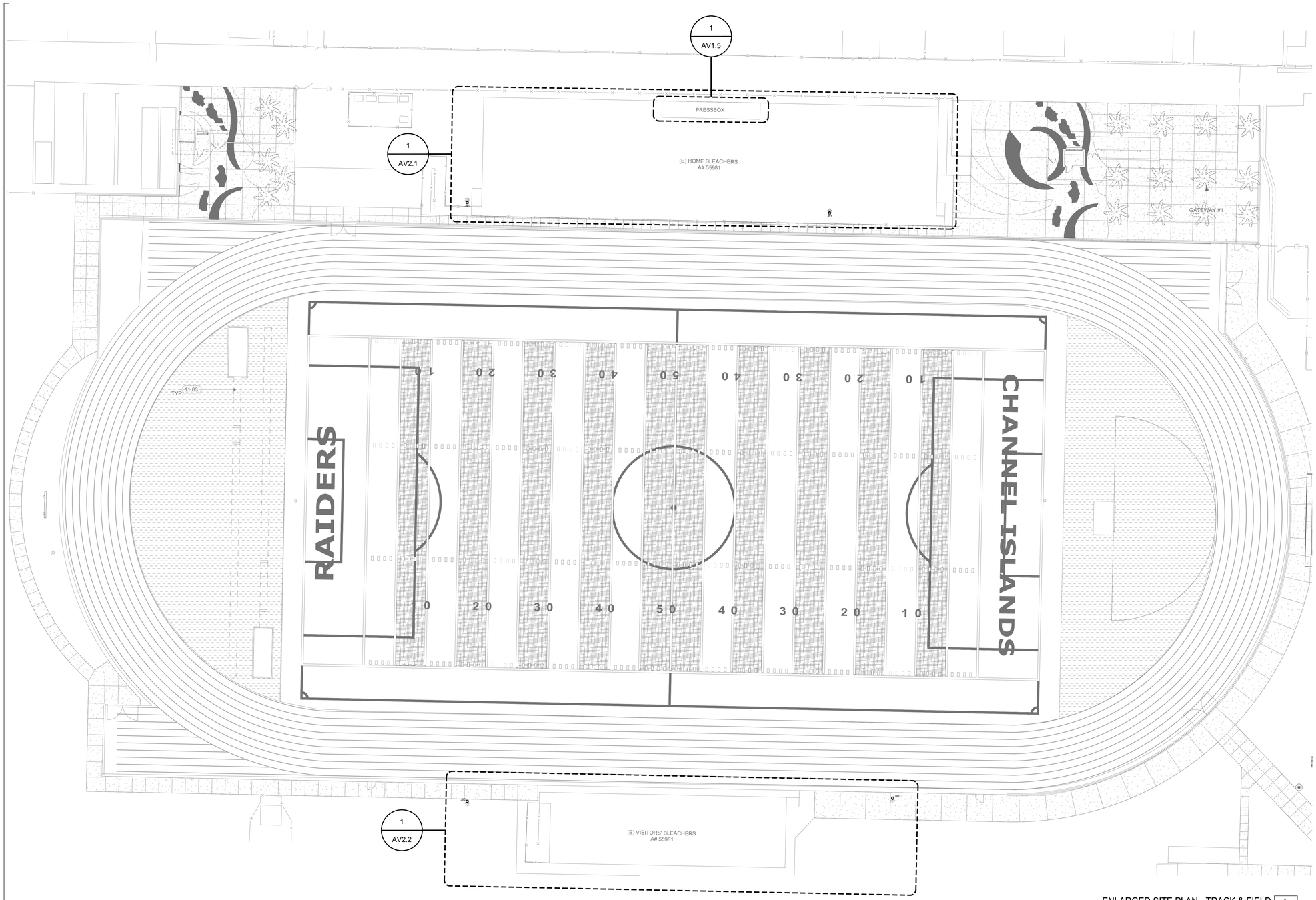
6121235311

SHEET TITLE

ABBREVIATIONS NOTES AND SYMBOLS

SHEET NUMBER

(AV0.2) AD1-AV2



ENLARGED SITE PLAN - TRACK & FIELD 1 / AV1.1
1" = 20'-0"

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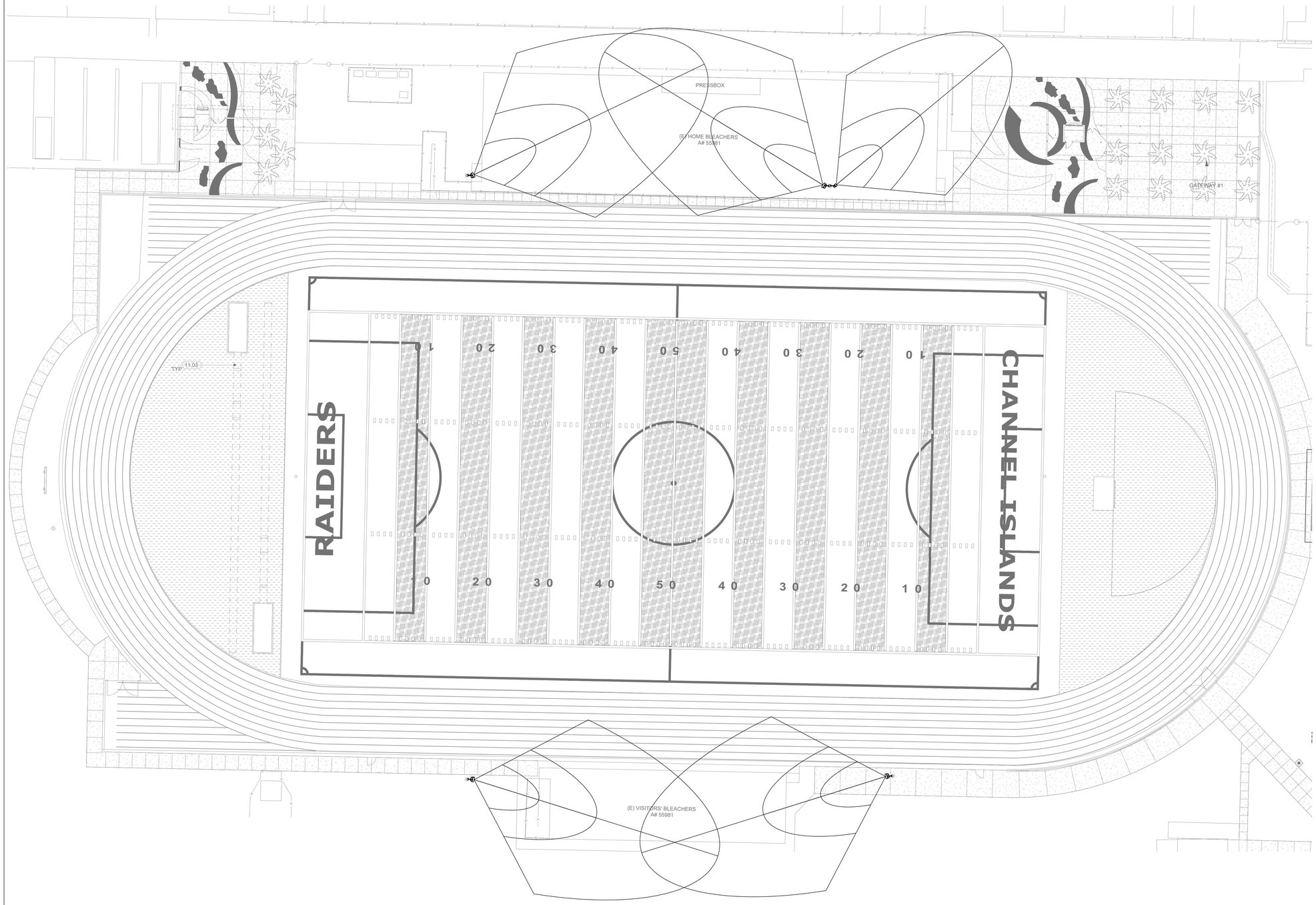
SHEET TITLE

ENLARGED AV SITE PLAN

SHEET NUMBER

(AV1.1) AD1-AV3



ENLARGED SITE PLAN - TRACK & FIELD | 1
1" = 20'-0" | AV1.2

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PROJECT NO.

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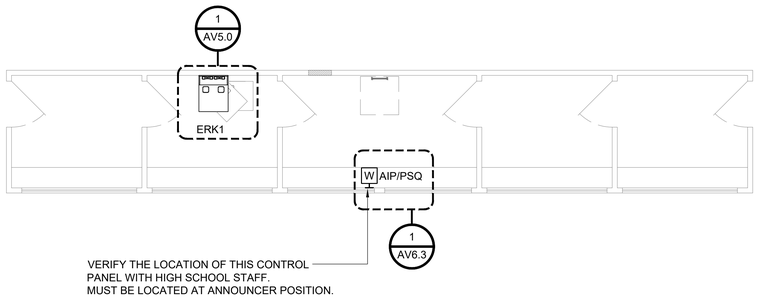
SHEET TITLE

AV SPEAKER COVERAGE PLAN

SHEET NUMBER

(AV1.2) 1 AD1-AV4



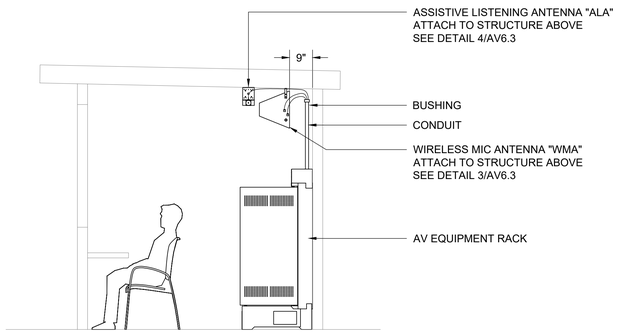
NOTE:
FIELD VERIFY CONDITIONS
AND CONFIRM ALL LOCATIONS
WITH CLIENT & ARCHITECT PRIOR TO INSTALLATION

N

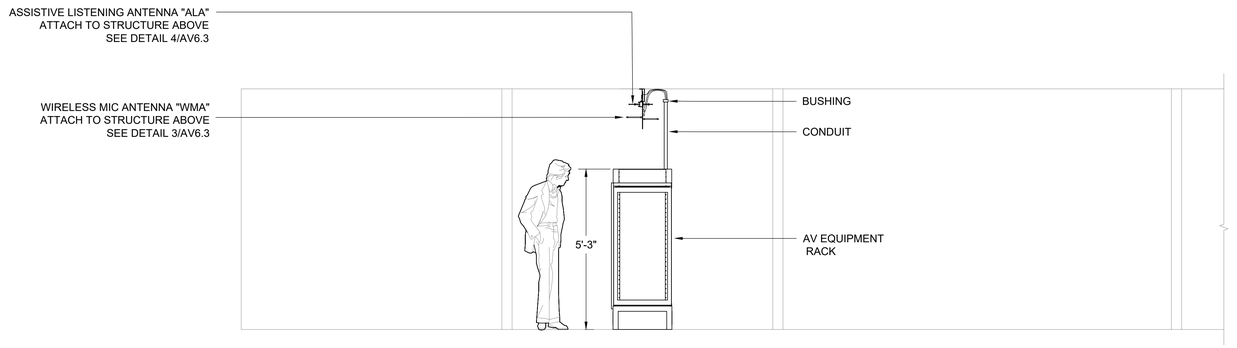
PRESS BOX - ENLARGED AV LAYOUT

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

1



SECTION



FRONT VIEW

PRESS BOX SECTION - ENLARGED AV LAYOUT

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

2

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6121235311

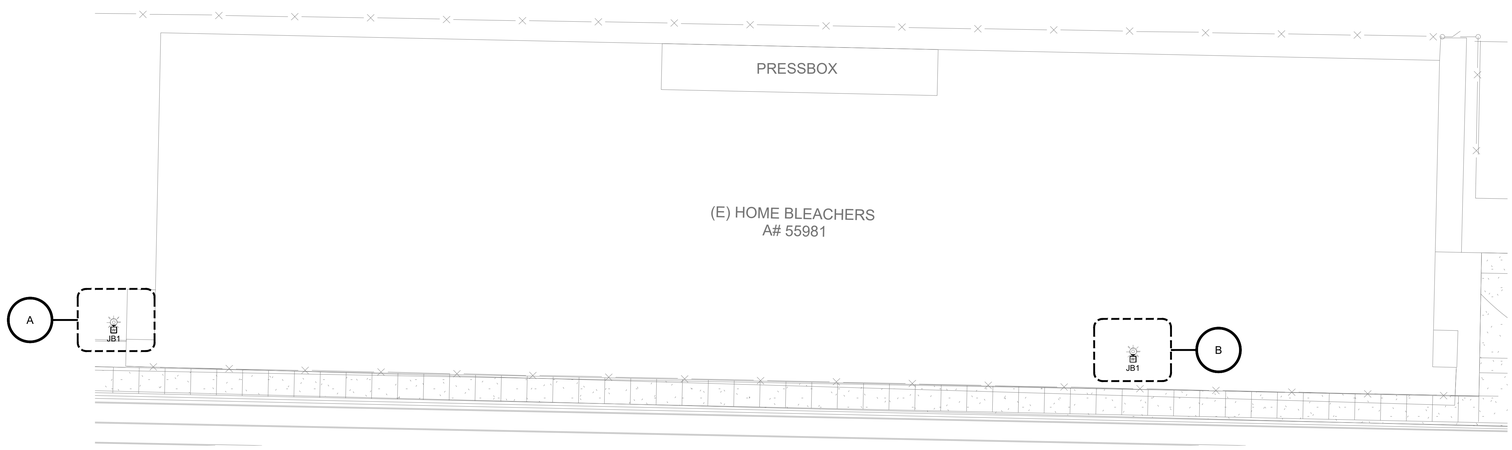
SHEET TITLE

AV ENLARGED LAYOUTS

SHEET NUMBER

(AV1.5)

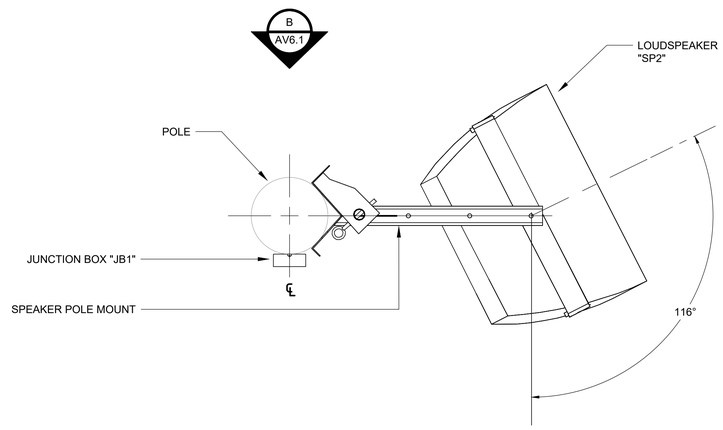
AD1-AV5



N

HOME BLEACHERS - ENLARGED AV PLAN

SCALE: 3/32" = 1'-0" | 1



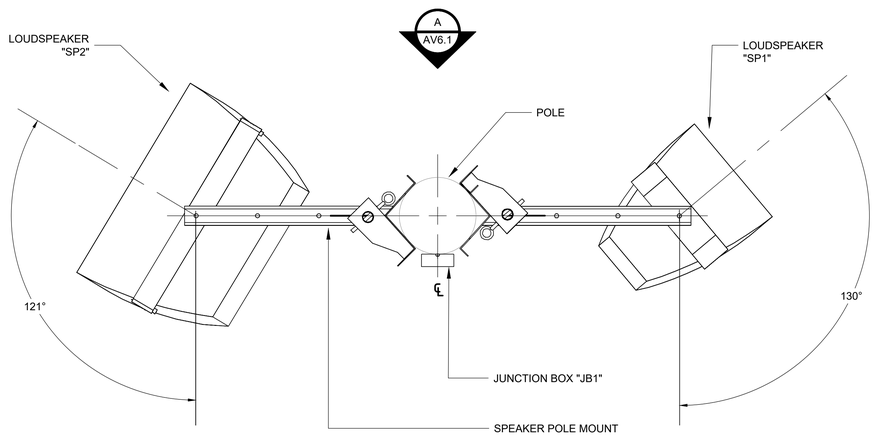
*SEE DETAIL 1 /AV6.1

N

NOTE:
ALL AIMING ANGLES ARE
RELATIVE TO PLAN NORTH

HOME WEST POLE - LOUDSPEAKERS PLAN VIEW

SCALE: NTS | A



*SEE DETAIL 1 /AV6.1

N

NOTE:
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RELATIVE TO PLAN NORTH

HOME EAST POLE - LOUDSPEAKERS PLAN VIEW

SCALE: NTS | B

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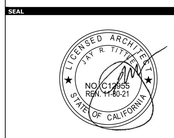

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PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

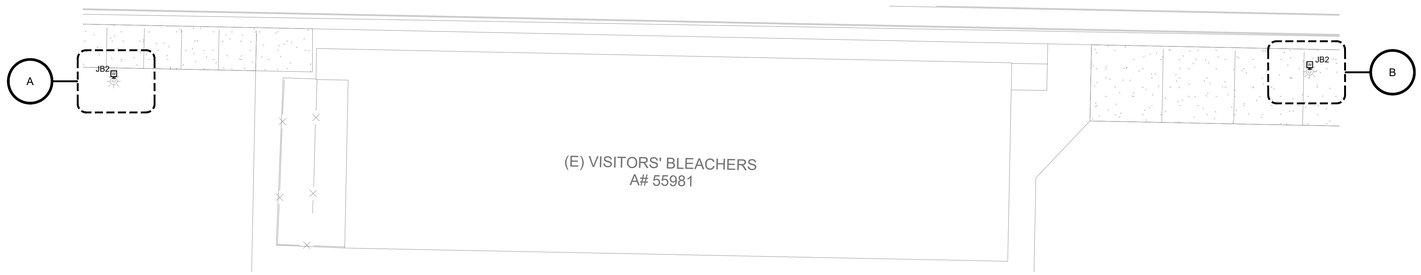
6121235311

SHEET TITLE

AV ENLARGED LAYOUTS

SHEET NUMBER

(AV2.1) 1 AD1-AV6

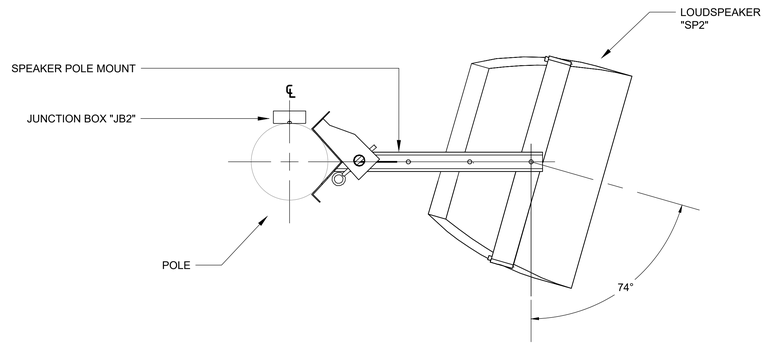


N

VISITORS' BLEACHERS - ENLARGED AV PLAN

SCALE: 3/32" = 1'-0"

1



*SEE DETAIL 1 /AV6.2

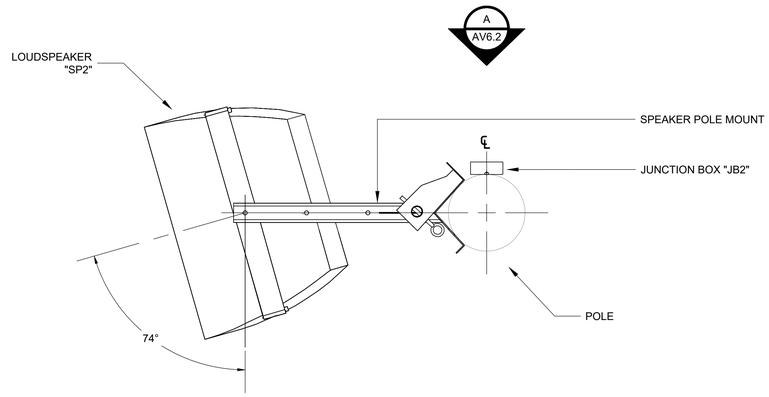
N

NOTE:
ALL AIMING ANGLES ARE RELATIVE TO PLAN NORTH

VISITORS' WEST POLE - LOUDSPEAKERS PLAN VIEW

SCALE: NTS

A



*SEE DETAIL 1 /AV6.2

N

NOTE:
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VISITORS' EAST POLE - LOUDSPEAKERS PLAN VIEW

SCALE: NTS

B

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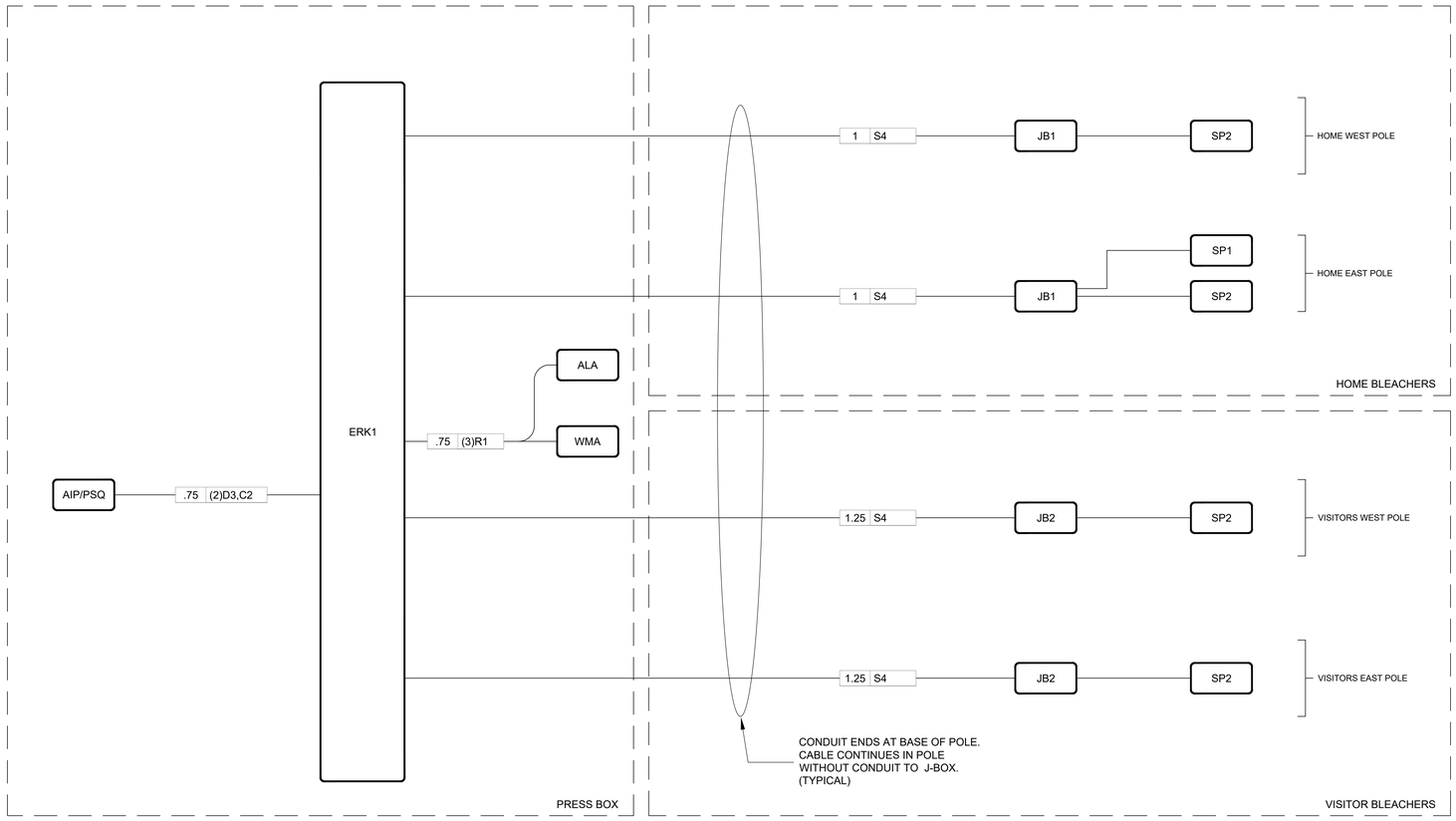
SHEET TITLE

AV ENLARGED PLANS

SHEET NUMBER

(AV2.2)

AD1-AV7



RISER DIAGRAM

SCALE: NTS

1

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PROJECT NO.

6121235311

SHEET TITLE

AV RISER DIAGRAM

SHEET NUMBER

(AV3.1) AD1-AV8

SPEAKERS

CEILING SPEAKER

CEILING SPEAKER W/TRANSFORMER

MONITOR SPEAKER

HORN

OVERHEAD SPEAKER

OVERHEAD SPEAKER W/TRANSFORMER

MID & LOW SPEAKER

2 WAY SPEAKER

3 WAY SPEAKER

HORN W/TRANSFORMER

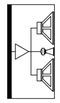
SINGLE SUB WOOFER

DUAL SUB WOOFER

QUAD SUBWOOFER

SELF POWERED SPEAKER

3-WAY POWERED SPEAKER



3-WAY SPEAKER

IN-WALL SPEAKER

PLASMA SPEAKER

POWERED LINE ARRAY SPEAKER

LINE ARRAY SPEAKER

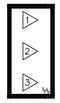
PLANTER SPEAKER

AMPLIFIERS

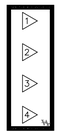
SINGLE CHANNEL

DUAL CHANNEL

3 CHANNEL



4 CHANNEL



BRIDGE

TOP HALF

MIDDLE HALF

BOTTOM HALF

VIDEO

VIDEO PROJECTOR

PAN & TILT CAMERA

VIDEO CAMERA

DOCUMENT CAMERA

VIDEO / TV DISPLAY

PROJECTION SCREEN

SATELLITE

DEVICES

DEVICE

TOP HALF

BOTTOM HALF

MIDDLE HALF

JUNCTION BOXES

J-BOX

MISCELLANEOUS SYMBOLS

FULL COMPUTER

COMPUTER MONITOR

CPU

KEYBOARD

MOUSE

LAPTOP PC

KEYBOARD VIDEO MOUSE

WIRELESS MOUSE

TOUCH PANEL

WIRELESS TOUCH PANEL

DOCK ABLE TOUCH PANEL

TABLE TOP MICROPHONE

HAND HELD MICROPHONE

WIRELESS HAND HELD MICROPHONE

LAVALIERE MICROPHONE

CEILING MICROPHONE

GOOSENECK MICROPHONE

PAGING MICRHOPHONE

BELT PACK

HEADSET BELTPACK

HEADSET PLUGIN

NECK LOOP

ANTENNA

INFRA RED EMITTER

MICROPHONE ARRAY

ATTENUATOR

TRANSFORMER

10K POT

LIGHTING PROTECTION

SYMBOL KEY

SCALE: NTS

1

LINE CONVENTIONS

AREA

AUDIO LINE

CONTROL LINE

DATA

INTERCOM

MULTI

SPEAKER

RACK

RF

VIDEO LINE

WIRE BUSS

'Y' CONNECTION

DRAWING AND SIGNAL NAVIGATION

PAGE TO (TO DEVICE / PAGE TO ID NUMBER)

PAGE FROM (PAGE FROM ID NUMBER / FROM DEVICE)

FROM EXTERNAL SYSTEM

TO EXTERNAL SYSTEM

AUDIO PATCH POINTS

HALF NORMAL BRIDGING

HALF NORMAL

FULL NORMAL

IN (LEFT ON PATCH BAY)

OUT (LEFT ON PATCH BAY)

I/O CONNECTIONS

SCREW TERMINAL

TERMINAL — DEVICE INPUT

TERMINAL — DEVICE OUTPUT

CONNECTOR/CONNECTION POINT

WIRING KEY

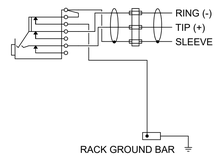
SCALE: NTS

2

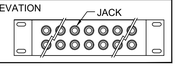
JACK SINGLE, MICROPHONE TRUNK

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



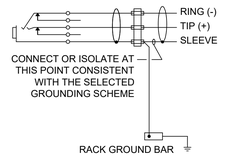
JACK BAY ELEVATION



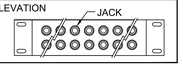
JACK SINGLE

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



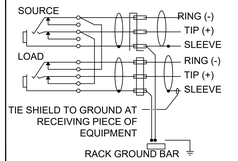
JACK BAY ELEVATION



JACK PAIR

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



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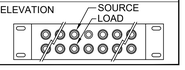
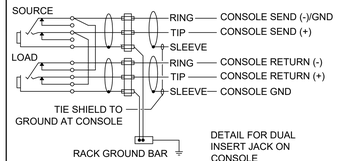


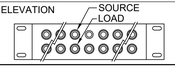
JACK PAIR, CONSOLE INSERT

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



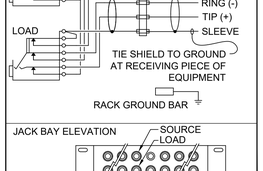
JACK BAY ELEVATION



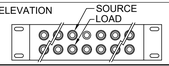
JACK PAIR, MICROPHONE TRUNK

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



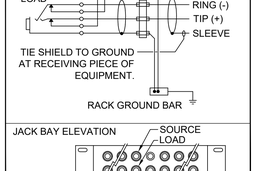
JACK BAY ELEVATION



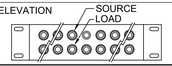
JACK DOUBLE

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



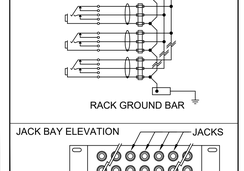
JACK BAY ELEVATION



JACK MULTIPLE, (MULT)

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



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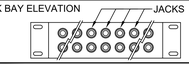
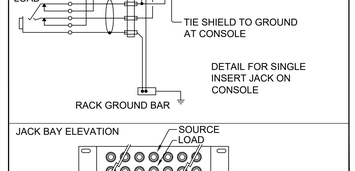


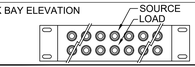
JACK PAIR, CONSOLE INSERT

GRAPHIC SYMBOL

SCHEMATIC DIAGRAM



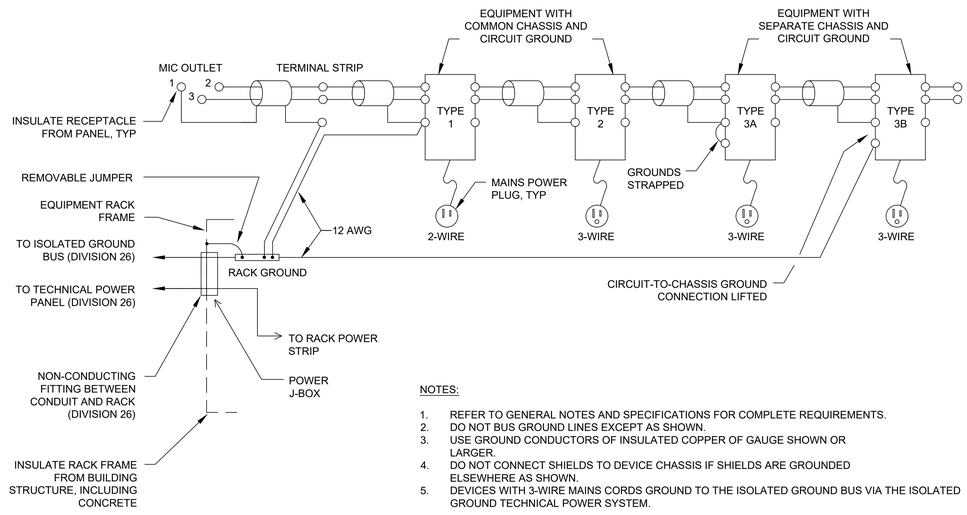
JACK BAY ELEVATION



GROUNDING DIAGRAM SCHEMES

SCALE:

3



NOTES:

1. REFER TO GENERAL NOTES AND SPECIFICATIONS FOR COMPLETE REQUIREMENTS.
2. DO NOT BUS GROUND LINES EXCEPT AS SHOWN.
3. USE GROUND CONDUCTORS OF INSULATED COPPER OF GAUGE SHOWN OR LARGER.
4. DO NOT CONNECT SHIELDS TO DEVICE CHASSIS IF SHIELDS ARE GROUNDED ELSEWHERE AS SHOWN.
5. DEVICES WITH 3-WIRE MAINS CORDS GROUND TO THE ISOLATED GROUND BUS VIA THE ISOLATED GROUND TECHNICAL POWER SYSTEM.

GROUNDING DETAIL

SCALE: NTS

4

AGENCY REVIEW

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1300 Dove Street, Suite 100
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CLIENT NAME

OXNARD UNION HIGH SCHOOL DISTRICT

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

1400 RAIDERS WAY, OXNARD, CA. 93033

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SEAL

ISSUE FOR

03-120287

ISSUE DATE

REVISIONS

1	04/24/2020	ADDENDUM 1

PROJECT TEAM

PRINCIPAL IN CHARGE: JACK SHIMIZU

PROJECT LEADER: PABLO AMEZQUITA

DESIGN TEAM: VENEKLASEN ASSOCIATES

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

6121235311

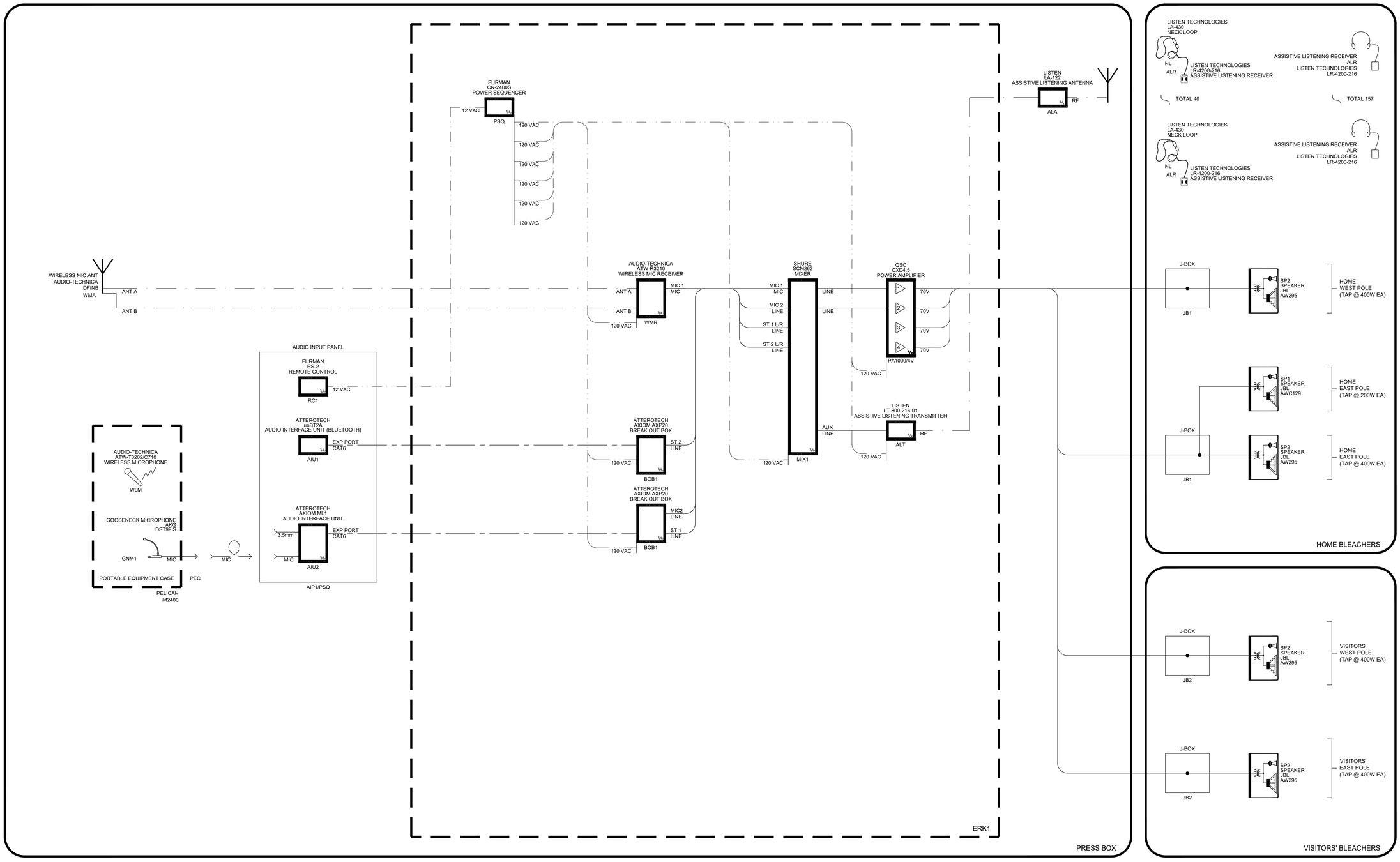
SHEET TITLE

WIRING SCHEME AND SYMBOL KEY

SHEET NUMBER

(AV4.0)

AD1-AV9



ONELINE DIAGRAM

SCALE: NTS

1

(AV4.1) AD1-AV10

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1 04/24/2020	ADDENDUM 1	

PROJECT TEAM

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JACK SHIMIZU

PROJECT LEADER:
PABLO AMEZQUITA

DESIGN TEAM:
VENEKLASEN ASSOCIATES

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

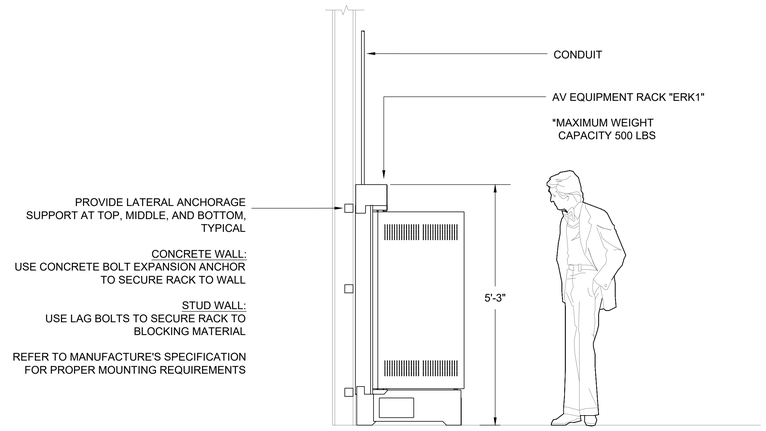
6121235311

SHEET TITLE

AV ONELINE DIAGRAM

SHEET NUMBER

(AV4.1) AD1-AV10



NOTE:
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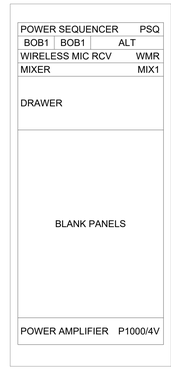
TYPICAL WALL MOUNTED AV EQUIPMENT RACK DETAIL

SCALE: NTS

1



AV EQUIPMENT RACK "ERK1" ELEVATION

SCALE: NTS

2

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VENEKLASEN ASSOCIATES

PROJECT NAME

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PROJECT NO.

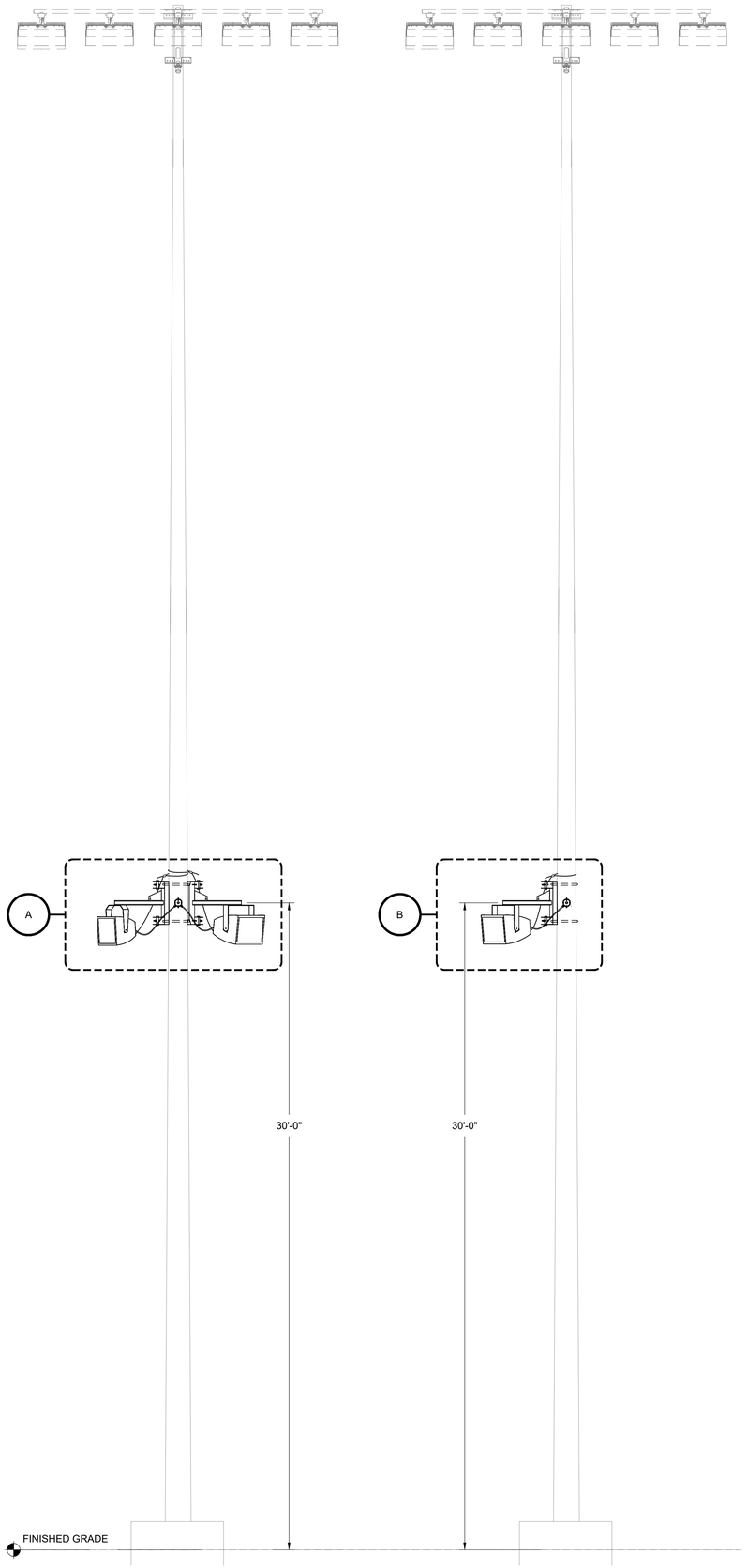
6121235311

SHEET TITLE

AV TYPICAL SEISMIC AND GROUNDING DETAILS

SHEET NUMBER

(AV5.0) 1 AD1-AV11

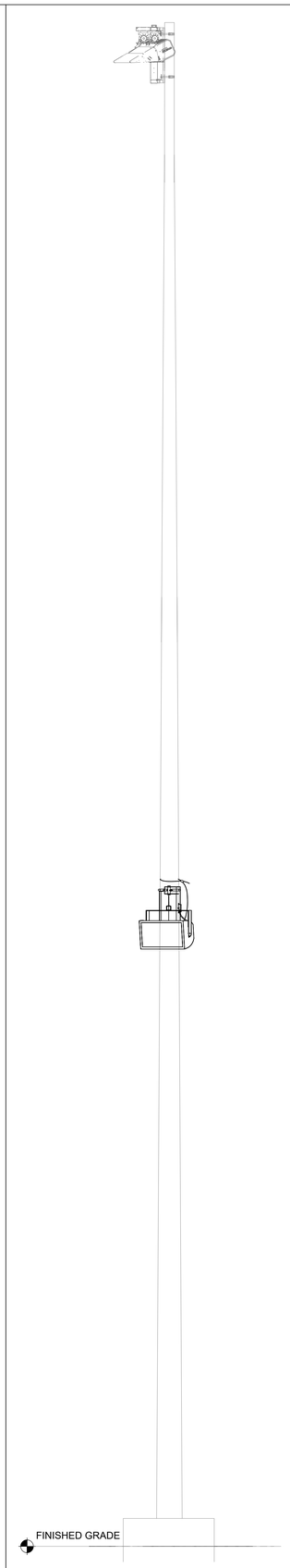


EAST POLE - FRONT VIEW

WEST POLE - FRONT VIEW

HOME POLE - FRONT VIEW

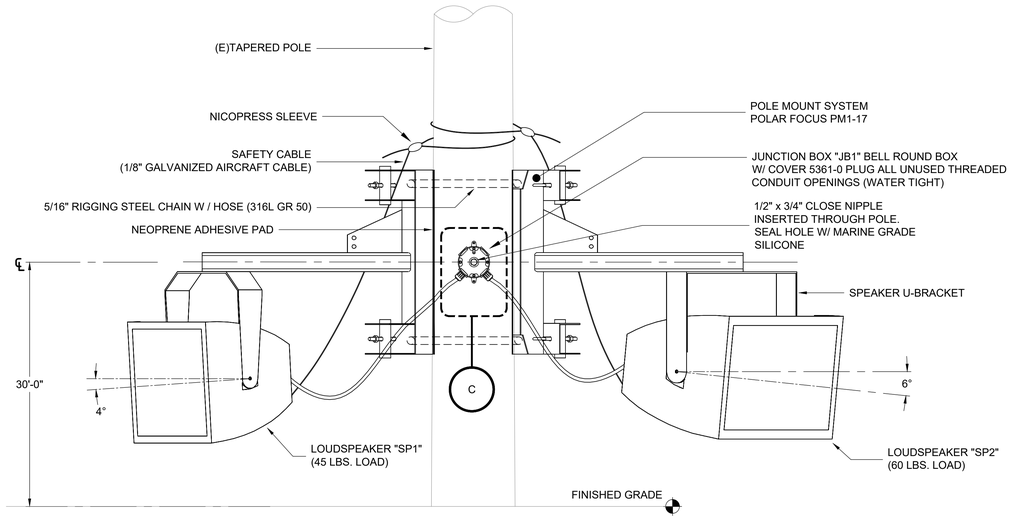
SCALE: 3/8" = 1'-0" | 1



HOME POLE - SIDE VIEW

SCALE: 3/8" = 1'-0" | 2

*REFER TO DETAIL 1/AD1-A6



NOTE:
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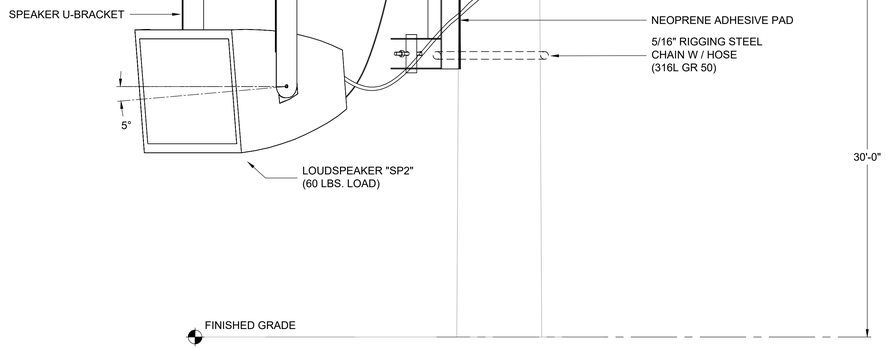
FULLY ENGINEERED BY A LICENSED STRUCTURAL ENGINEER

LOUDSPEAKER POLE MOUNT DETAIL

SCALE: NTS | A

*REFER TO DETAIL 1/AD1-A7



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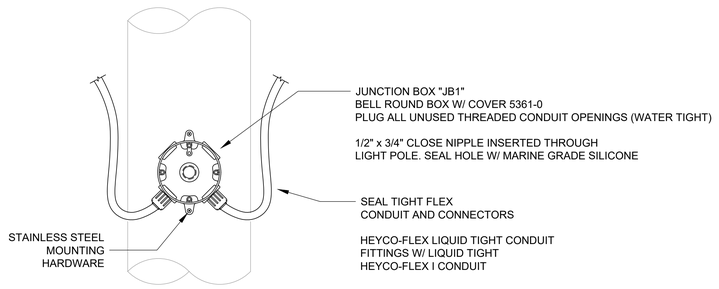
FULLY ENGINEERED BY A LICENSED STRUCTURAL ENGINEER

LOUDSPEAKER POLE MOUNT DETAIL

SCALE: NTS | B



TYPICAL POLE MOUNTED J-BOX "JB1" DETAIL

SCALE: NTS | C

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1 04/24/2020	ADDENDUM 1	

PROJECT TEAM

PRINCIPAL IN CHARGE:
JACK SHIMIZU

PROJECT LEADER:
PABLO AREZQUITA

DESIGN TEAM:
VENEKLASEN ASSOCIATES

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

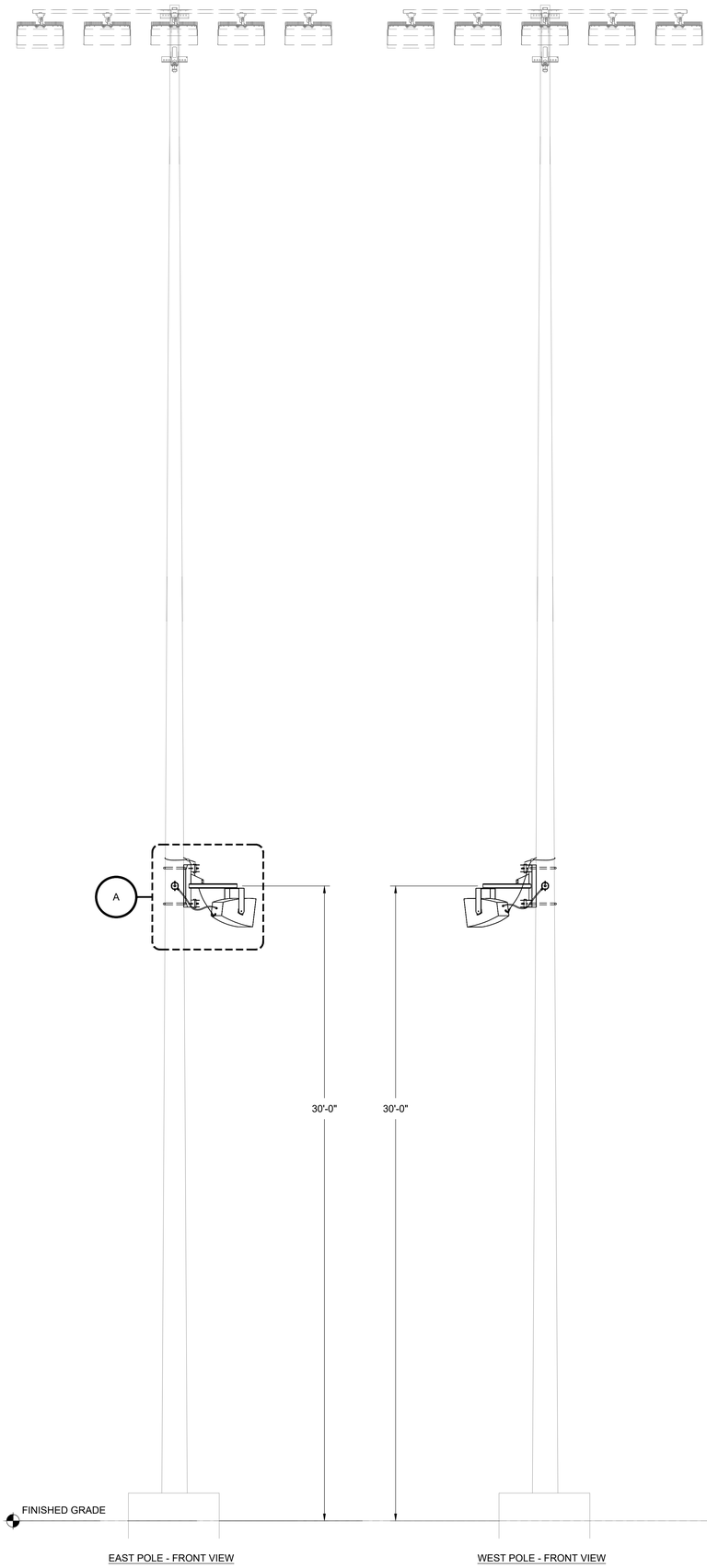
6121235311

SHEET TITLE

AV DETAILS

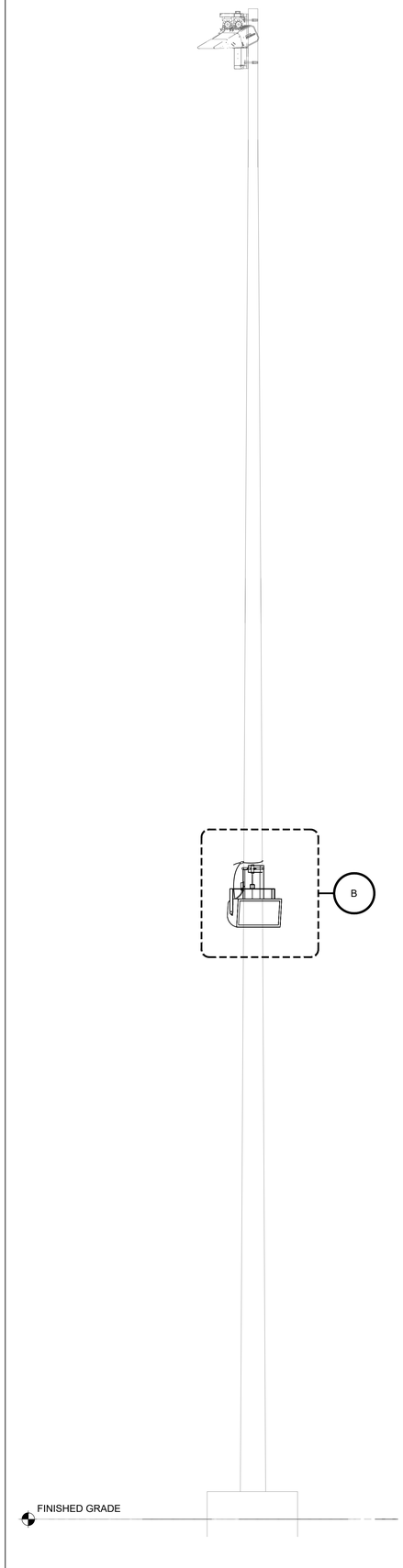
SHEET NUMBER

(AV6.1) AD1-AV12



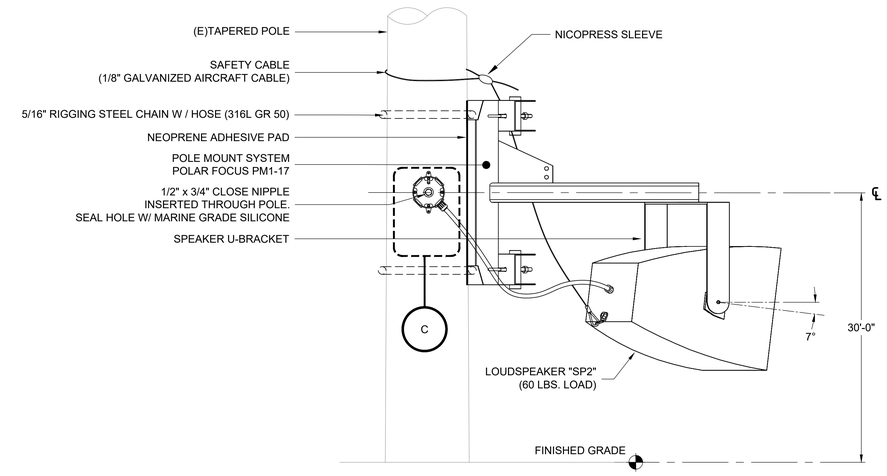
EAST POLE - FRONT VIEW | WEST POLE - FRONT VIEW

VISITORS POLE - FRONT VIEW | SCALE: 3/8" = 1'-0" | 1



VISITORS POLE - SIDE VIEW | SCALE: 3/8" = 1'-0" | 2

*REFER TO DETAIL 1/AD1-A7



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LOUDSPEAKER POLE MOUNT DETAIL | SCALE: NTS | A

*REFER TO DETAIL 1/AD1-A7

NOTE:
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FULLY ENGINEERED BY A LICENSED STRUCTURAL ENGINEER

LOUDSPEAKER POLE MOUNT DETAIL | SCALE: NTS | B

TYPICAL POLE MOUNTED J-BOX "JB2" DETAIL | SCALE: NTS | C

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04/24/2020	ADDENDUM 1	

PROJECT TEAM

PRINCIPAL IN CHARGE:
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PROJECT LEADER:
PABLO AMEZQUITA

DESIGN TEAM:
VENEKLASEN ASSOCIATES

PROJECT NAME

CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

PROJECT NO.

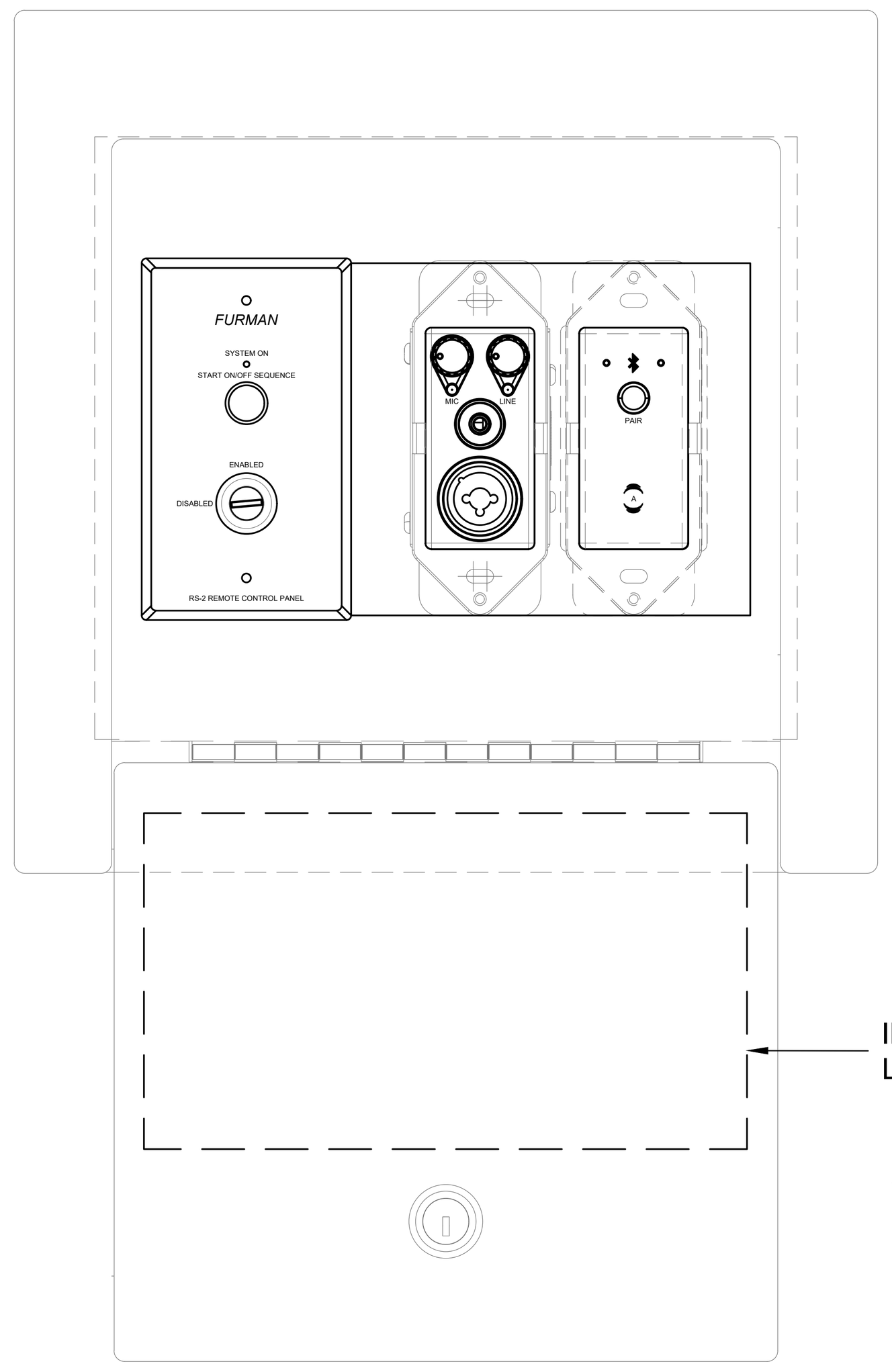
6121235311

SHEET TITLE

AV DETAILS

SHEET NUMBER

(AV6.2)
AD1-AV13



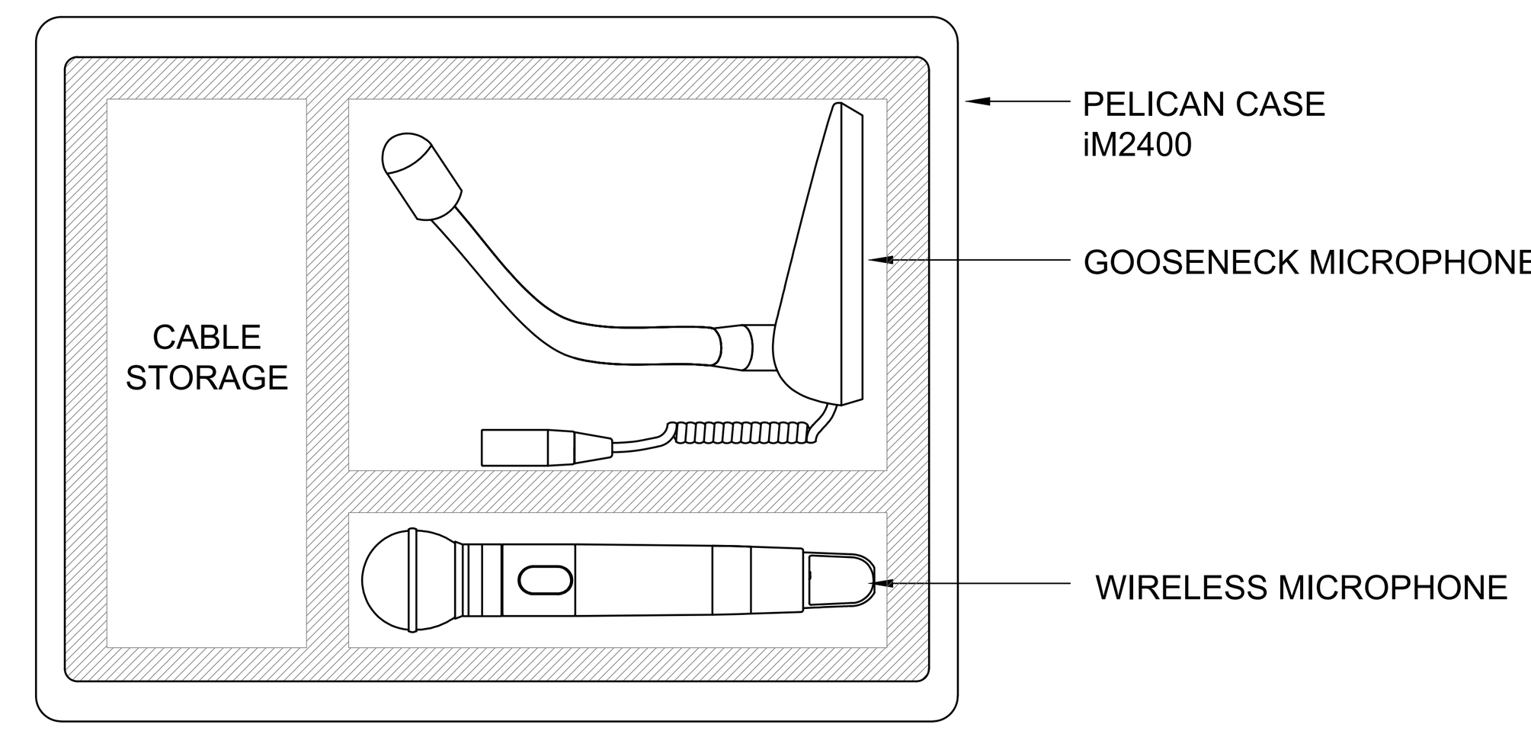
INSTRUCTIONS TO THE THE SYSTEM ARE TO BE LAMINATED ON INSIDE COVER:

To turn system ON
1. Connect desktop microphone to microphone panel.
2. (Optional) Connect portable audio player via 3.5mm cable.
3. Turn key to "ENABLE."
4. Press "START ON/OFF SEQUENCE"
5. (Optional Bluetooth) Connect portable audio player by holding down the "Pair" button.
6. Adjust mic volume via upper left knob.
7. Adjust portable device volume via upper right knob.
8. Adjust Bluetooth device's volume accordingly.

To turn system OFF
1. Press "START ON/OFF SEQUENCE"
2. Turn key to "DISABLE."

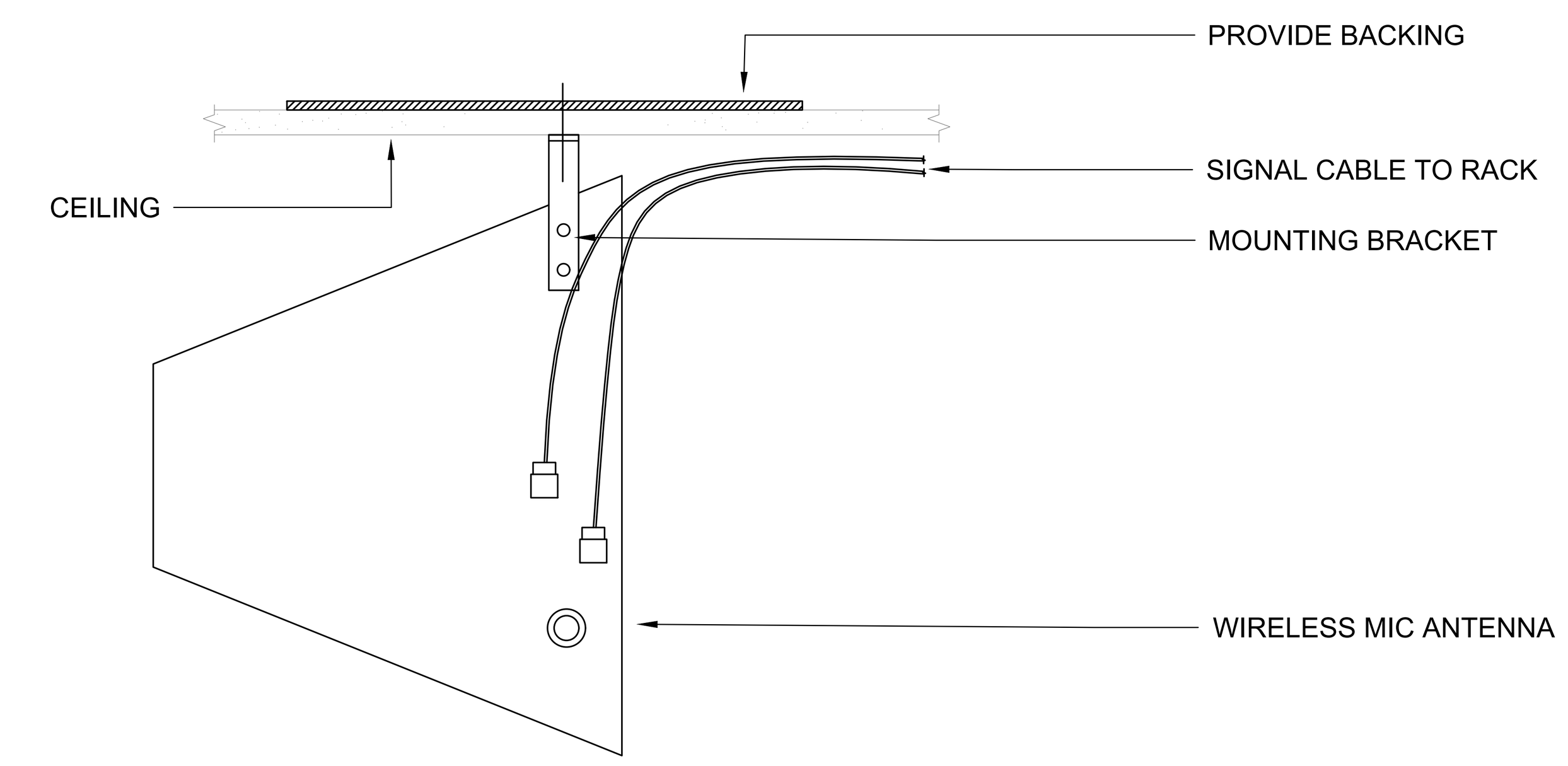
NOTE:
VERIFY THE LOCATION OF THIS CONTROL PANEL WITH HIGH SCHOOL STAFF.
MUST BE LOCATED AT ANNOUNCER POSITION.

AUDIO INPUT PANEL "AIP/PSQ" DETAIL	SCALE: NTS	1

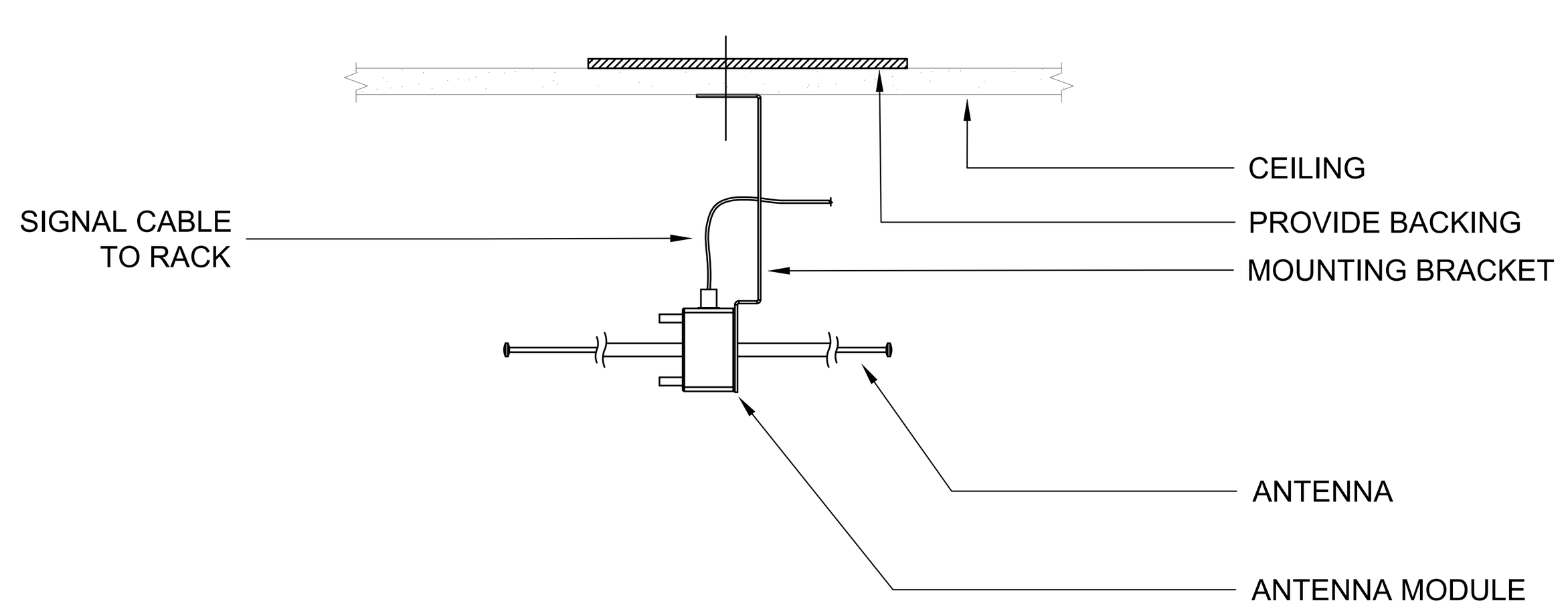


TOP VIEW

PELICAN CASE FOR MICROPHONES	SCALE: NTS	2



TYPICAL WIRELESS MIC ANTENNA "WMA" MOUNTING DETAIL	SCALE: NTS	3



TYPICAL ASSISTIVE LISTENING ANTENNA "ALA" MOUNTING DETAIL	SCALE: NTS	4

AGENCY REVIEW

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NO. C12935
REN. 11-30-21
STATE OF CALIFORNIA

ISSUE FOR
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REVISIONS

1 04/24/2020	ADDENDUM 1	

PROJECT TEAM
PRINCIPAL IN CHARGE: JACK SHIMIZU
PROJECT LEADER: PABLO AMEZQUITA
DESIGN TEAM: VENEKLASEN ASSOCIATES

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CHANNEL ISLANDS HIGH SCHOOL STADIUM SOUND SYSTEM

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6121235311

SHEET TITLE
AV DETAILS

SHEET NUMBER
(AV6.3) AD1-AV14