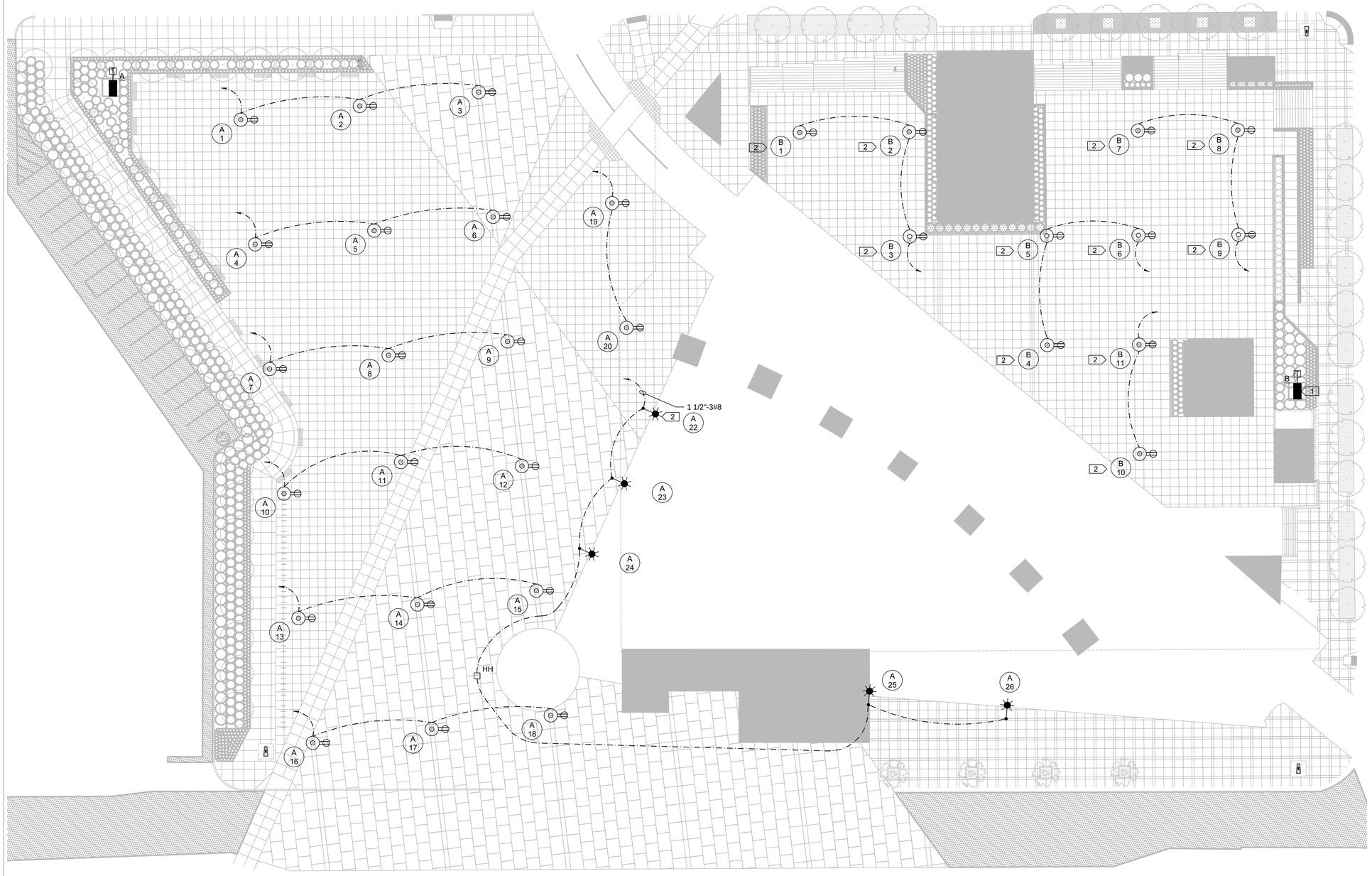
GENERAL NOTES:

1. ALL CONDUIT ON THIS PLAN SHEET SHALL BE 1 1/2" NMC SCHEDULE 40 UNLESS OTHERWISE NOTED. ALL CONDUCTORS SHALL BE COPPER, TYPE XHHW-2, #8 AWG AND #8 AWG GND.
2. PROVIDE AND COORDINATE SERVICE CONNECTION TO UTILITY TRANSFORMER PER XCEL ENERGY REQUIREMENTS.
3. ALL MATERIAL AND WORK SHALL BE IN ACCORDANCE WITH THE N.E.C.
4. ALL MATERIALS SHALL BE UL LISTED.
5. THIS WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE CONSTRUCTION OF A COMPLETE AND OPERATIONAL LIGHTING SYSTEM.
6. PROVIDE AS-BUILT PLANS WITH ACCURATE LOCATIONS, CIRCUITRY AND UNDERGROUND CONDUIT ROUTING.
7. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND UTILITY COORDINATION.
8. LIGHTING UNITS SHALL BE PLACED ON POLE BASE SHOWN IN DETAIL 3/S9.01 UNLESS NOTED OTHERWISE BY KEYNOTE 2.

KEYNOTES:

1. SERVICE CABINET AND TRANSFORMER IN PLANTER AREA BETWEEN TWO WALLS, SEE RETAINING WALL SECTION 8/S9.02. PROVIDE 20' UFER GROUND IN SHORT WALL FOR SERVICE ENTRANCE DISCONNECT GROUND. GROUND ROD(S) SHALL BE ADDED AS NEEDED TO REACH REQUIRED 25 OHMS. PLACE RODS UNDER SIDEWALK BETWEEN 12" STORM PIPE AND R.O.W. PROVIDE TESTWELL IN CONCRETE SIDEWALK OVER TOP OF ROD FOR ACCESS TO ROD CONNECTION.
2. PROVIDE POLE BASE SHOWN IN DETAIL 2/S9.01. NO PENETRATIONS ALLOWED THROUGH DECK OR HORIZONTAL PORTION OF REINFORCED FOOTINGS (CONDUIT MUST BE PLACED ON TOP OF HORZ. PORTION OF FOOTING).



ELECTRICAL SYMBOL LEGEND

A	UTILITY TRANSFORMER
A	SERVICE CABINET
	UNDERGROUND CONDUCTORS IN CONDUIT
HH	HANDHOLE
	CONDUIT STUB
	10' GROUND ROD
	PLAZA LIGHTING UNIT
	AREA LIGHTING UNIT
A 1	SERVICE CABINET ID LIGHTING UNIT NUMBER
L-1,3 R-2	LIGHTING CIRCUIT NUMBERS RECEPTACLE CIRCUIT
	RECEPTACLE

1 E1 ELECTRICAL - SITE PLAN

SCALE: 1:20

NORTH

0 20 40

SCALE IN FEET

PLOT DATE: 11/5/2015 3:26:54 PM

HKS

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MINNESOTA SPORTS FACILITIES AUTHORITY
900 SOUTH 5th STREET, MINNEAPOLIS, MN 55415

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WAYFINDING
SELBERT PERKINS DESIGN
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MINNESOTA MULTI-PURPOSE STADIUM

CERTIFICATION

I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name: Thomas D. Honer
Reg. No.: 45519
Date: 02/01/2016
Signature:

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
16246.000

DATE
FEBRUARY 01, 2016

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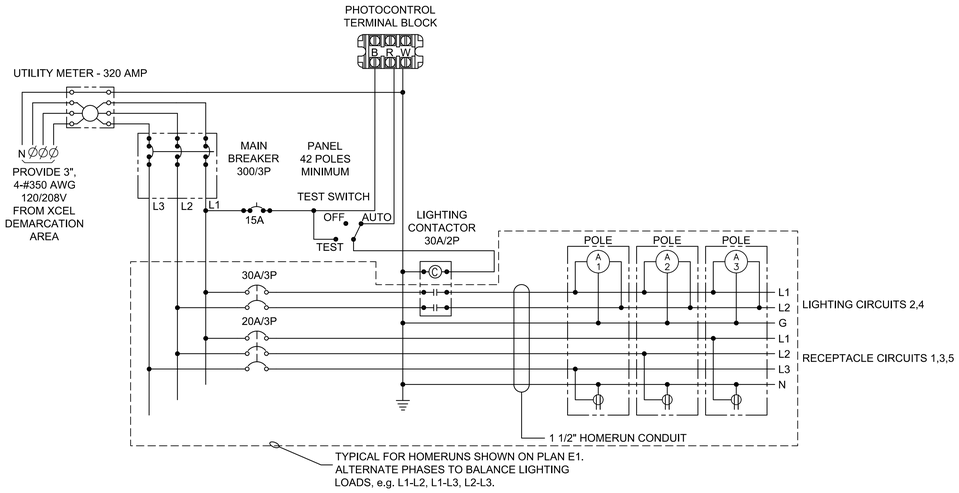
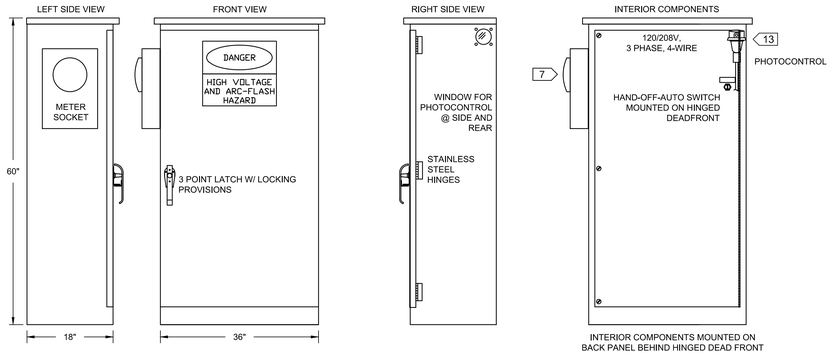
SHEET TITLE
ELECTRICAL - SITE PLAN

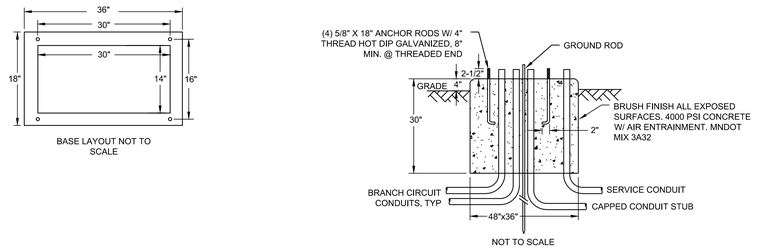
SHEET NO.
E9.01



1 / E2 SERVICE CABINET (TYPICAL) - WIRING DIAGRAM

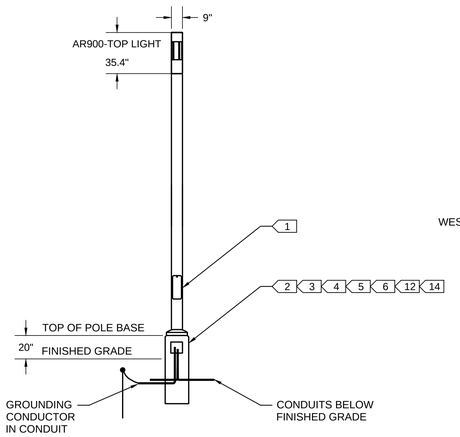
SCALE: NONE





2 / E2 SERVICE CABINET (TYPICAL) - ELEVATION & DETAILS

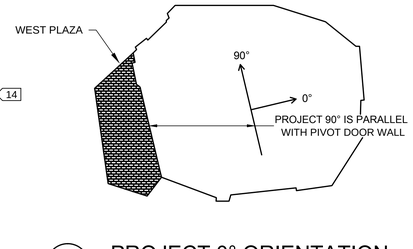
SCALE: NONE



3 / E2 LIGHT & RECEPTACLE POLE

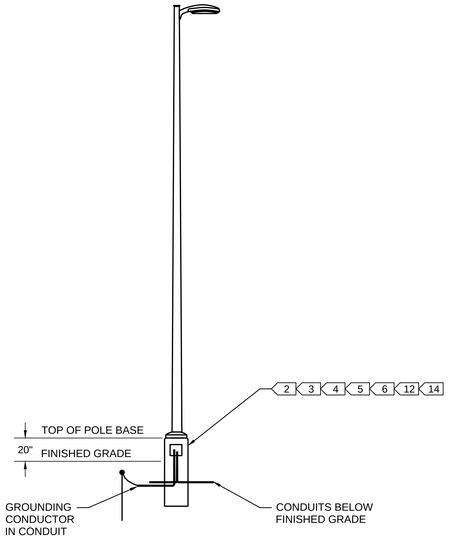
SCALE: NONE

○ = PLAN SYMBOL



4 / E2 PROJECT 0° ORIENTATION

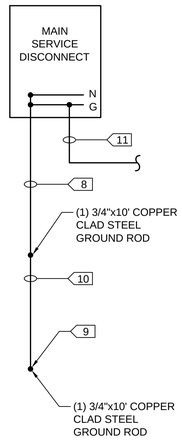
SCALE: NONE



5 / E2 AREA LIGHTING UNIT

SCALE: NONE

✶ = PLAN SYMBOL



6 / E2 BONDING AND GROUNDING

SCALE: NONE

NOTE: SERVICE CABINET B MAY USE UFER GROUND AND/OR GROUND ROD(S).

LIGHTING FIXTURE SCHEDULE

TYPE	LAMP	MOUNTING	DESCRIPTION	VOLTAGE	MANUFACTURER
○	(1) 150W MH, 4000K, CRI 80+	30' POLE	ARCHITECTURAL LIGHT COLUMN, EXTRUDED ALUMINUM HOUSING, STAINLESS STEEL HARDWARE, SYMMETRIC 360 DEGREE METAL HALIDE LUMINAIRE. MATTE BLACK FINISH.	208	HESS AMERICA: CE230/28-AR900/L1.1S-150M/T6-208-CR02/25-VD-BLK-LP/4K-EFAB-GFCI
✶	(1) TYPE 4, LED, NEUTRAL WHITE, 4000K	30' POLE	ARCHITECTURAL LIGHT COLUMN, EXTRUDED ALUMINUM HOUSING, STAINLESS STEEL HARDWARE, SYMMETRIC 360 DEGREE METAL HALIDE LUMINAIRE, *TECH BASE- SEE DETAILS. MATTE BLACK FINISH.	208	LUMINAIRE: PHILIPS #GL18-DIM-1-4-80LA-4853-NW-UNV-BLPRPA2 POLE: PHILIPS #USS8050C30

GENERAL NOTES:

A. ALL CONDUIT ON THIS PLAN SHEET SHALL BE 1_1/2" NMC SCHEDULE 40 UNLESS OTHERWISE NOTED. ALL CONDUCTORS SHALL BE COPPER, TYPE XHHW-2, #8 AWG AND #8 AWG GND.

B. PROVIDE AND COORDINATE SERVICE CONNECTION TO UTILITY TRANSFORMER PER XCEL ENERGY REQUIREMENTS.

C. ALL MATERIAL AND WORK SHALL BE IN ACCORDANCE WITH THE N.E.C.

D. ALL MATERIALS SHALL BE UL LISTED.

E. THIS WORK SHALL CONSIST OF FURNISHING ALL LABOR, EQUIPMENT, AND MATERIALS FOR THE CONSTRUCTION OF A COMPLETE AND OPERATIONAL LIGHTING SYSTEM.

F. PROVIDE AS-BUILT PLANS WITH ACCURATE LOCATIONS, CIRCUITRY AND UNDERGROUND CONDUIT ROUTING.

G. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY PERMITS AND UTILITY COORDINATION.

H. THE CONTRACTOR SHALL COAT ALL THREADED HARDWARE WITH AN APPROVED ZINC-BASED ANTI-SEIZE COMPOUND PRIOR TO ASSEMBLY.

SERVICE CABINET NOTES:

A. PROVIDE CABINET MANUFACTURED BY POVOLNY SPECIALTIES INC. 651.452.7335. WITH DIMENSIONS AS REQUIRED TO FIT EQUIPMENT PROPOSED.

B. ETL LISTED IN ACCORDANCE WITH UL508A.

C. NEMA 3R FREE STANDING CABINET OF 1/8" ANODIZED ALUMINUM WITH DURANODIC BLACK FINISH.

D. NEOPRENE GASKETED DOORS WITH 3-POINT LATCHES, STAINLESS STEEL HARDWARE.

E. COPPER BUS WITH SOLID BOLTED CONNECTIONS - 1/4" X 2" COPPER GROUND BUS END-TO-END.

F. LINE AND LOAD BUSSING PHASED A-B-C, FRONT TO BACK, TOP TO BOTTOM AND LEFT TO RIGHT WHEN VIEWED FROM THE FRONT OF CABINET.

G. INTERIOR COMPONENTS MOUNTED ON BACK PANEL BEHIND DEAD FRONT

H. CIRCUIT BREAKERS SHALL BE 120/208 VOLT AC, 60Hz AND SHALL BE CLEARLY MARKED WITH THE "ON" AND "OFF" POSITIONS AND IDENTIFIED WITH THE LOAD WHICH IT IS CARRYING.

I. SHORT CIRCUIT RATING - 65,000 AIC SYMMETRICAL.

J. 3-POSITION SELECTOR SWITCH ALLEN BRADLEY #800T-J2A.

K. LIGHTING CONTACTORS SHALL HAVE A 208 VOLT RATING, WITH 120 VOLT COIL.

L. PROVIDE A 25-OHM GROUND AT CABINET AS PER NEC.

M. PROVIDE 20A WR-RATED GFCI RECEPTACLE MOUNTED TO CABINET BACK-PANEL.

N. BOTH PHOTOCONTROL AND ITS SOCKET SHALL BE 3 TERMINAL, POLARIZED, TWIST-LOCK TYPE. IT SHALL BE EQUIPPED WITH A MOVRO TYPE LIGHTNING ARRESTER.

O. TIMESWITCH - ELECTRONIC 208V 24-HOUR 2-CHANNEL WITH CAPACITOR BACKUP POWER AND FLICK WARNING - TORK EW-201B W/ LDS LIGHTING DELAY SWITCH.

KEYNOTES:

1. PROVIDE POLE HAND HOLE AND 20A WEATHER PROOF GFCI RECEPTACLE BEHIND LOCKABLE IN-USE COVER. HAND HOLE PLATE SHALL HAVE "LOCKABLE GFCI" ENGRAVED ON COVER PLATE BY MANUFACTURER AND WILL BE ORIENTED PARALLEL TO PROJECT 270° BASED ON DETAIL 4 THIS SHEET.
2. PROVIDE POLE BASE AS REQUIRED BY POLE LOCATION AND PER STRUCTURAL DETAILS. SEE SHEET S9.01.
3. SPLICING SHALL BE PERFORMED USING BURNDY UNITAP SPLICING HARDWARE OR APPROVED EQUAL.
4. PROVIDE BUSSMANN TYPE HEX-AW-DRLC-A FUSE HOLDER AND 6-AMP FUSES IN FEED LEADS OF POLE LUMINAIRE RISER WIRES.
5. PROVIDE (3)#12 STRANDED XHHW CONDUCTORS FROM POLE BASE TO LUMINAIRE AND RECEPTACLES.
6. PROVIDE ADEQUATE CONDUCTOR LENGTH TO ENABLE SPLICES AND FUSE HOLDERS TO BE REMOVED FROM POLE HANDHOLE FOR MAINTENANCE.
7. PROVIDE METER SOCKET PER UTILITY COMPANY REQUIREMENTS.
8. SIZE MAIN GROUNDING CONDUCTOR PER NEC OR 12.5% OF TOTAL CROSS SECTIONAL AREA OF MAIN SERVICE CONDUCTORS PER PHASE.
9. EXOTHERMIC WELD ALL CONNECTIONS OF CONDUCTORS TO GROUND RODS.
10. GROUND RODS SHALL BE SPACED A MINIMUM OF 6 FEET APART. CONDUCTOR CONNECTING THE GROUND RODS SHALL BE A MINIMUM OF #2/0 AWG BARE CU.
11. BONDING CONDUCTOR PER NEC FOR CONNECTION TO SERVICE CABINET AND ALL OTHER AREAS REQUIRED TO BE BONDED TO GROUNDING.
12. PROVIDE ANCHOR BOLTS AND AND ANCHOR BOLT CIRCLE PER POLE MANUFACTURER.
13. TWO LEXAN WINDOWS FOR PHOTOCELL.
14. PROVIDE CARLON 12"X12"X8" OR APPROVED EQUIVALENT TECHNOLOGY JUNCTION BOX. BOX WILL BE ORIENTED PARALLEL WITH PROJECT 270° BASED ON DETAIL 4/E2.

HKS

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MINNESOTA VIKINGS MULTI-PURPOSE STADIUM

CERTIFICATION

I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name: Thomas D. Honer
Reg. No.: 45519
Date: 02/01/2016
Signature:

REVISION

NO.	DESCRIPTION	DATE

HKS PROJECT NUMBER
16246.000

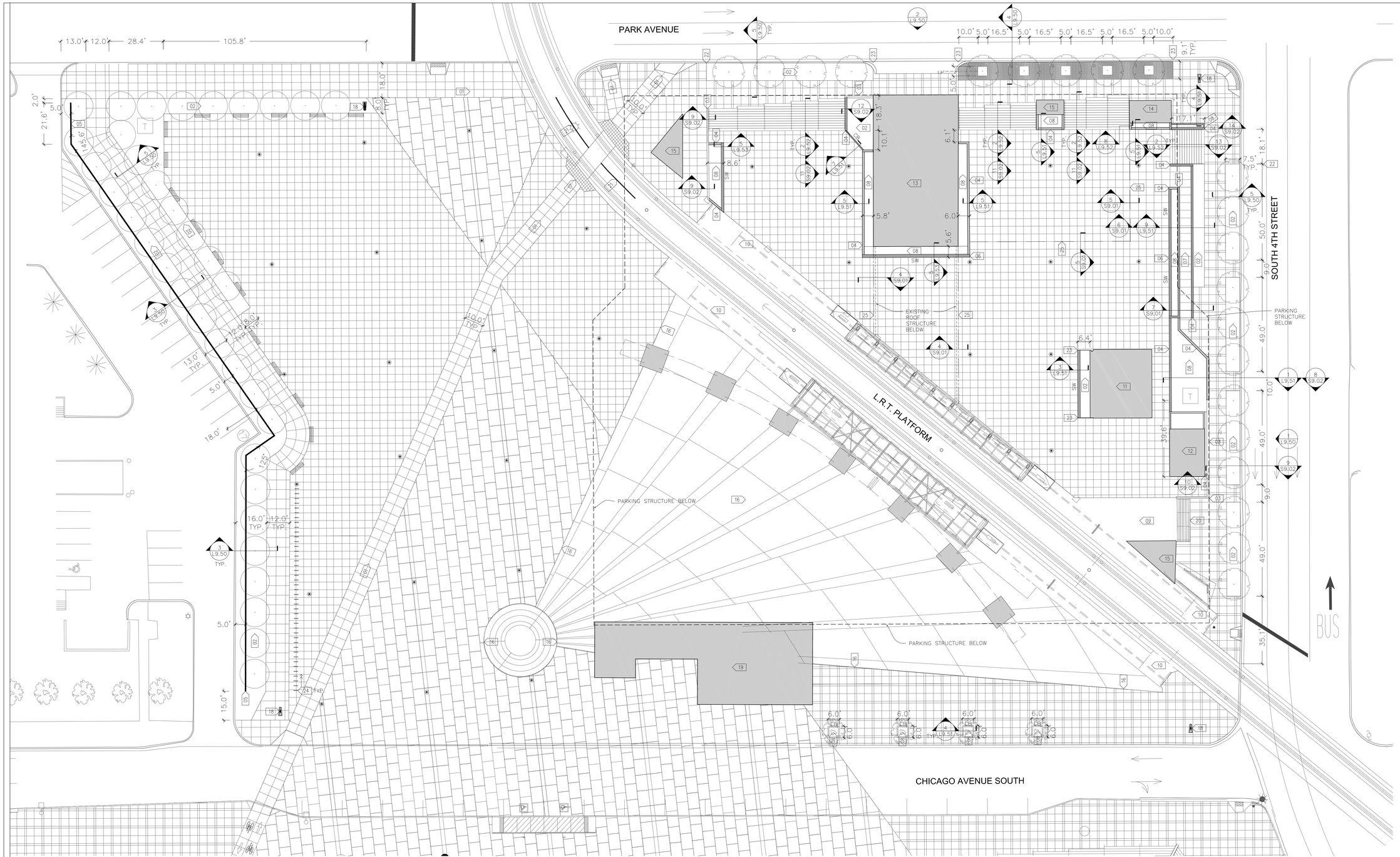
DATE
FEBRUARY 01, 2016

ISSUE
CCD-347 - CD SET

SHEET TITLE
ELECTRICAL DETAILS

SHEET NO.
E9.02

PLOT DATE:
11/5/2015 3:26:54 PM



LEGEND

- DETAIL KEY (01 / L1.0)
- CB — CURB
- PROPOSED CONC. WALL
- SW — SEAT WALL
- BENCH
- BIKE RACK
- PROPOSED LIGHT POLE, SEE ELECTRICAL
- T — TRANSFORMER, SEE CIVIL
- EXISTING STRUCTURES TO REMAIN

NOTES

1. SEE L9.20 FOR MATERIAL INFORMATION.
2. SEE L9.30 FOR FURNISHING INFORMATION.
3. SEE L9.40 FOR PLANTING INFORMATION.
4. SEE STRUCTURAL FOR TYPICAL RETAINING WALL DETAILS.
5. SEE L9.30 FOR GUARDRAIL LOCATIONS.

KEYNOTES

KEY	CONTENT
01	PROPOSED BIKE PATH, SEE L9.20 FOR BIKE PATH SURFACE
02	PLANTING BED, SEE L9.40 FOR PLANTING INFORMATION
03	EXISTING CONCRETE WALL TO REMAIN. CUT AND REPAIR. SEE CIVIL AND STRUCTURAL
04	PROPOSED CONCRETE WALL, SEE SECTION DETAILS FOR WALL CONDITION. SEE CIVIL FOR GRADING AND STRUCTURAL FOR REINFORCEMENT.
05	FENCE, SEE L9.30
06	SEAT WALL, SEE L9.30
07	ADA COMPLIANT WALK
08	PLANTER, SEE L9.40 FOR PLANTING INFORMATION
09	EXISTING PAVERS TO REMAIN
10	LIGHT RAIL PLATFORM, N.I.C.
11	PEDESTRIAN BRIDGE LANDING, N.I.C.
12	PEDESTRIAN BRIDGE ELEVATOR TOWER, N.I.C.
13	EXISTING ENTRANCE/EXIT TO GARAGE BELOW TO REMAIN
14	EXISTING STAIR WELL TO GARAGE BELOW TO REMAIN

KEY	CONTENT
15	EXISTING VENT TO REMAIN
16	EXISTING ARCH AND BRICK PAVEMENT TO REMAIN
17	NEW LRT CROSSING LOCATION, SEE CIVIL
18	SIGNAGE, SEE SIGNAGE AND WAYFINDING
19	EXISTING BUILDING TO REMAIN
20	EXISTING STEPS AND HANDRAIL TO REMAIN
21	REVISED LRT FENCE LOCATION BY OTHERS
22	ALIGN PAVEMENT EDGE WITH FACE OF WALL
23	ALIGN PAVEMENT EDGE WITH BUILDING CORNER
24	BIKE RACK
25	ADD ALTERNATE WALL, SEE CIVIL

NORTH

0 20 40
SCALE IN FEET

PLOT DATE:
1/18/2016 3:26:54 PM

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432 CULVER BLVD., PLAYA DEL REY, CA 90293

CIVIL ENGINEERING SUBCONSULTANT
COMPANY NAME, INC.
COMPANY ADDRESS

Minnesota MULTI PURPOSE STADIUM

CERTIFICATION
I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the State of Minnesota,
Name: TADD KREUN
Reg. No.: 24862
Date: 02/01/2016
Signature:

REVISION

NO.	DESCRIPTION	DATE

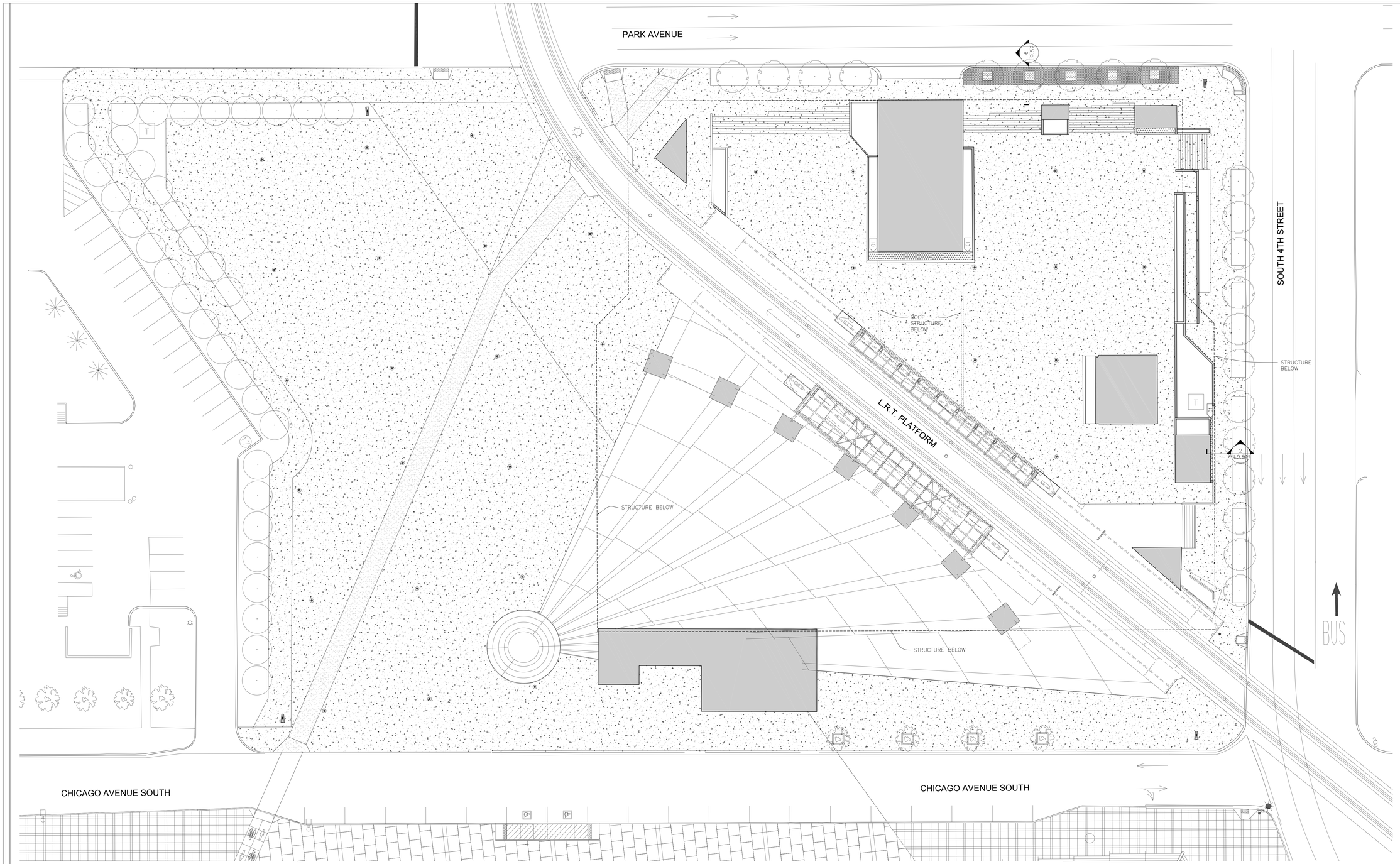
HKS PROJECT NUMBER
16246.000

DATE
FEBRUARY 01, 2016

ISSUE
CCD - 347 - CD SET

SHEET TITLE
LAYOUT PLAN

SHEET NO.
L9.10



LEGEND

01 / L1.0 – DETAIL KEY

NOTES

1. SEE L9.10 FOR LAYOUT INFORMATION.
2. SEE L9.30 FOR FURNISHING INFORMATION.
3. SEE L9.40 FOR PLANTING INFORMATION.
4. ALL CONTROL JOINTS TO BE SAW CUT, TYP.
5. SEE CIVIL FOR TYPICAL PAVING SECTIONS.

KEYNOTES

KEY	CONTENT
01	LANDSCAPE EDGING

MATERIALS

KEY	CONTENT
	STANDARD CONCRETE
	ROCK MULCH TYPE 1
	ARCHITECTURAL CONCRETE
	PERMEABLE PAVER
	PAVER JOINT MATERIAL

NORTH

0 20 40
SCALE IN FEET

PLOT DATE:
1/5/2016 12:06:54 PM

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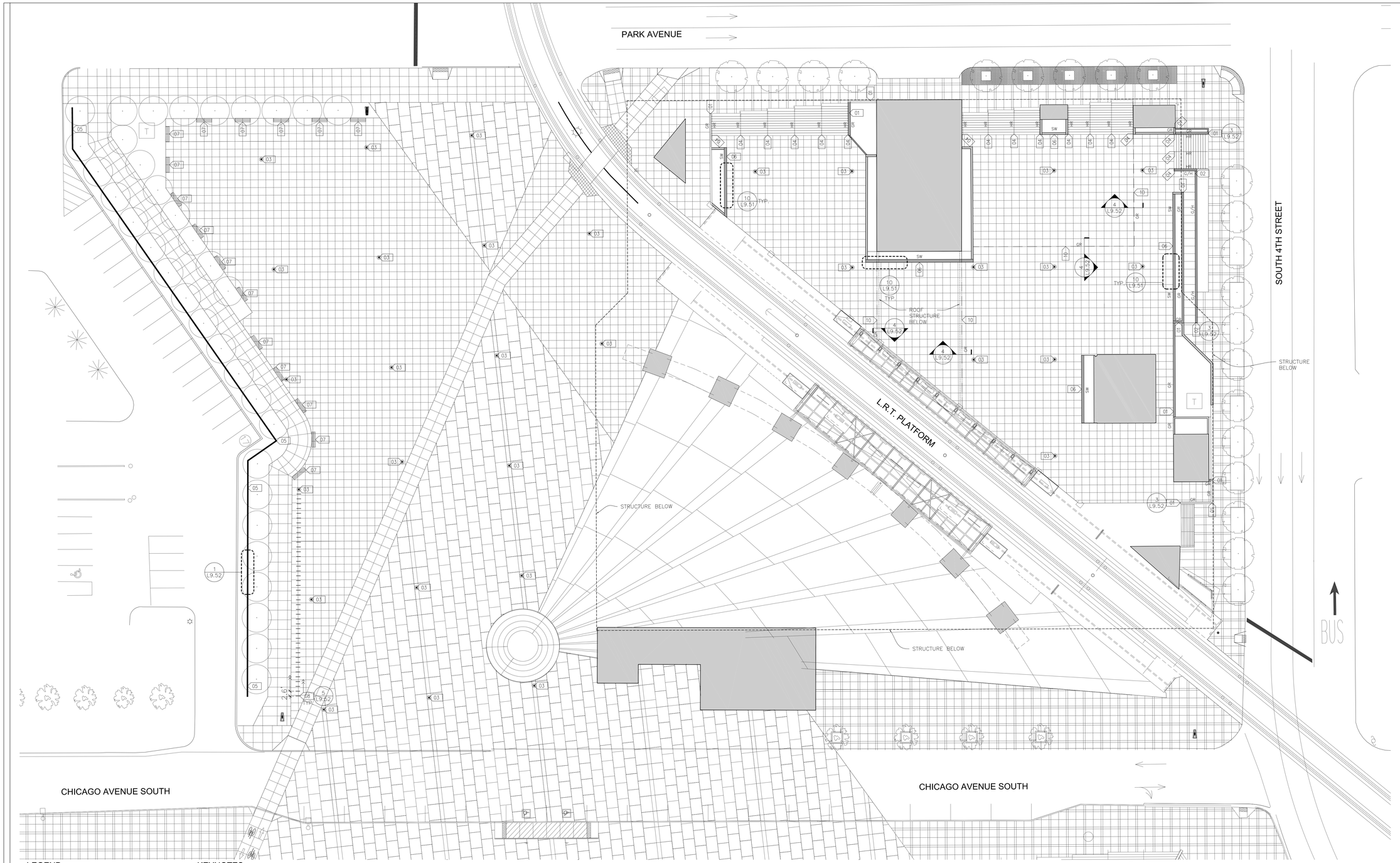
SHEET TITLE
SITE MATERIALS PLAN

SHEET NO.
L9.20



LEGEND

- 01 / L1.0 — DETAIL KEY
- HR — HANDRAIL
- G/H — GUARDRAILL WITH ATTACHED HANDRAIL
- GR — GUARDRAIL
- SW — SEAT WALL
- BENCH
- BIKE RACK
- PROPOSED LIGHT POLE, SEE ELECTRICAL

KEYNOTES

KEY	CONTENT
01	GUARDRAIL
02	GUARDRAIL WITH ATTACHED HANDRAIL
03	LIGHT POLE
04	HANDRAIL
05	FENCE
06	SEAT WALL
07	BENCH
08	BIKE RACK
09	NOT IN USE
10	ADD ALTERNATE WALL, SEE CIVIL

NOTES

1. SEE L9.10 FOR LAYOUT INFORMATION.
2. SEE L9.20 FOR MATERIAL INFORMATION.
3. SEE L9.40 FOR PLANTING INFORMATION.

NORTH

0 20 40
SCALE IN FEET

PLOT DATE:
11/5/2015 3:26:54 PM

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DATE
FEBRUARY 01, 2016

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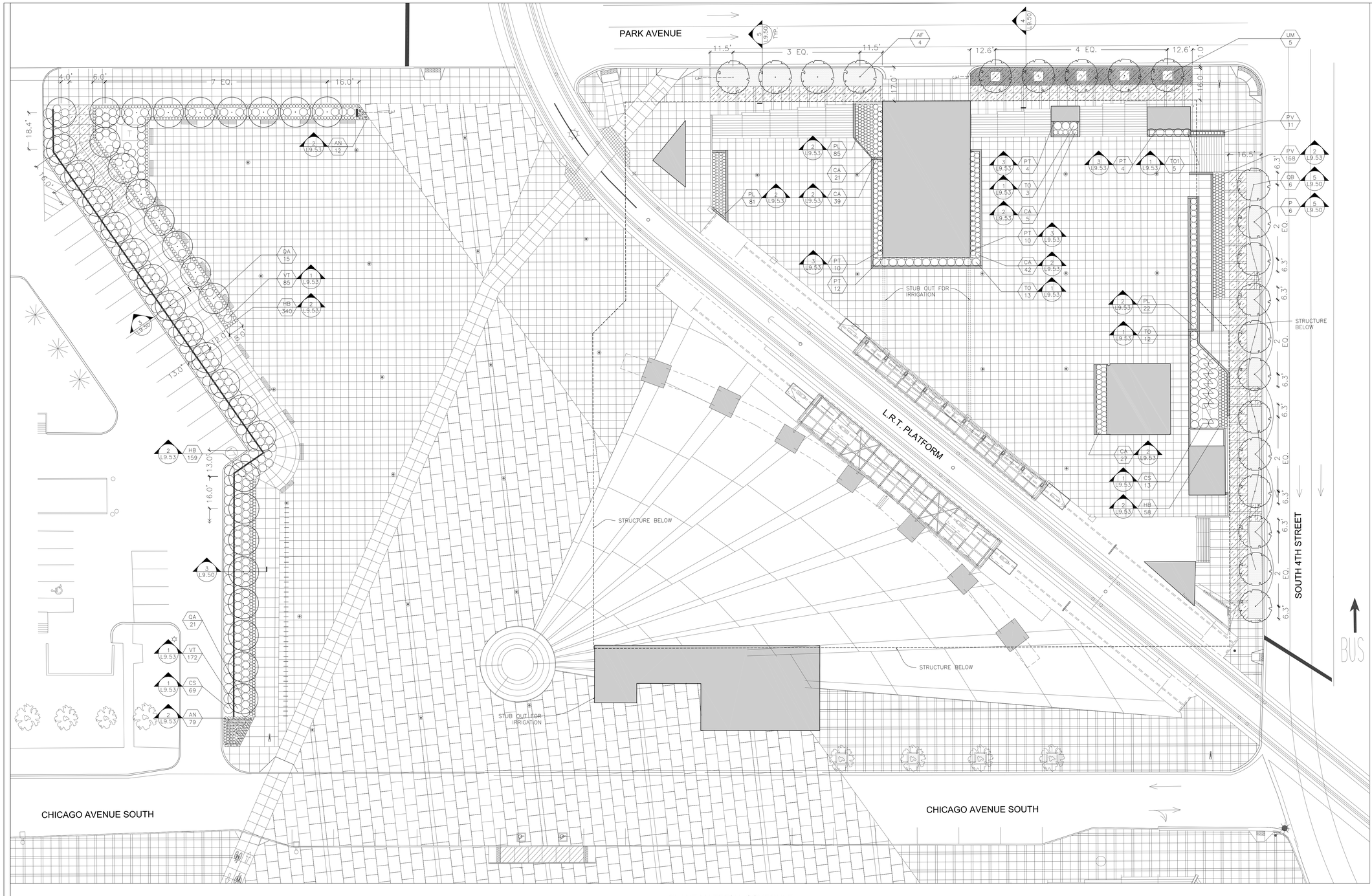
SHEET TITLE
FURNISHING PLAN

SHEET NO.
L9.30



LEGEND

- DETAIL KEY (01 / L1.0)
- EXISTING TREE TO REMAIN
- PROPOSED LARGE SIZE TREE
- PROPOSED MEDIUM SIZE TREE
- GROUNDCOVER AREA
- STRATAVAULT SYSTEM
- PLANTING SOIL EXPANSION AREA PROVIDE 4' DEPTH OF PLANTING SOIL IN DESIGNATED AREA

NOTES

1. SEE L9.10 FOR LAYOUT INFORMATION.
2. SEE L9.20 FOR SURFACING MATERIAL INFORMATION.
3. SEE L9.30 FOR FURNISHING INFORMATION.
4. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS SHOWN IN THE PLANT MATERIALS SCHEDULE AND THE PLANS, THE PLANS SHALL GOVERN.
5. RESTORE ALL AREAS DISTURBED BY CONSTRUCTION UNLESS NOTED OTHERWISE.
6. CONTRACTOR SHALL STAKE OUT LOCATION OF ALL PROPOSED TREES AND SHRUBS FOR APPROVAL BY ARCHITECT PRIOR TO CONSTRUCTION.
7. PROVIDING FULLY AUTOMATIC IRRIGATION SYSTEM FOR ALL PLANTINGS AND MEETING MINNESOTA B3 REQUIREMENT.
8. PROVIDE ROOT ZONE WATERING SYSTEM TO EXISTING TREES ALONG CHICAGO AVE TYP.
9. PROVIDE ROOT WATERING SYSTEM TO PROPOSED TREES ALONG SOUTH 4TH STREET AND PARK AVE TYP.
10. PROVIDE DRIP IRRIGATION FOR SHRUBS, PERENNIALS, GRASSES, AND GROUNDCOVER PLANTED AREA, TYP.
11. THE PLANTING GROWTH MEDIA SHOULD BE "ROOFTOP SOIL MIX" FOR PLANTING AREA OVER EXISTING PARKING LOT STRUCTURE. SEE PLANTING SPECIFICATION.
12. THE PLANTING GROWTH MEDIA SHOULD BE "PLANTING SOIL" FOR PLANTING AREA NOT OVER EXISTING PARKING LOT STRUCTURE, SEE PLANTING SPECIFICATION.

PLANT MATERIAL SCHEDULE

TREES

KEY	COMMON\BOTANICAL NAME	QTY	ROOT	SIZE	REMARKS
AF	AUTUMN BLAZE MAPLE Acer x freemanii 'Jeffersred'	4	B&B	3"	MATCHED SPECIMEN, 1,200 C.F. PLANTING SOIL PER TREE
P	QUAKING ASPEN Populus tremuloides	6	B&B	3"	MATCHED SPECIMEN, 1,200 C.F. PLANTING SOIL PER TREE
QA	CRIMSON SPIRE OAK Quercus alba x Quercus robur	21	B&B	2.5"	MATCHED SPECIMEN, 800 C.F. PLANTING SOIL PER TREE
QB	SWAMP WHITE OAK Quercus bicolor	6	B&B	3"	MATCHED SPECIMEN, 1,200 C.F. PLANTING SOIL PER TREE
UM	TRIUMPH ELM Ulmus 'Morton Glossy'	5	B&B	2.5"	MATCHED SPECIMEN, 1,200 C.F. PLANTING SOIL PER TREE

* 48" PLANTING SOIL TYP.

SHRUBS

KEY	COMMON\BOTANICAL NAME	QTY	ROOT	SIZE	REMARKS
CS	ISANTI DOGWOOD Cornus sericea 'Isanti'	82	CONT	#5	MATCHED SPECIMEN
TO	TECHNITO ARBORVITAE Thuja occidentalis 'BaiJohn'	28	B&B	5' TALL	MATCHED SPECIMEN
TO1	LITTLE GIANT ARBORVITAE Thuja occidentalis 'Little Giant'	5	CONT	#5	MATCHED SPECIMEN
VT	COMPACT AMERICAN VIBURNUM Viburnum trilobum 'Bailey Compact'	257	CONT	#5	MATCHED SPECIMEN

* 16" OF PLANTING GROWTH MEDIA TYP. SEE NOTES FOR MEDIA TYPE

PERENNIALS / VINE/GOUNDCOVERS

KEY	COMMON\BOTANICAL NAME	QTY	ROOT	SIZE	REMARKS
AN	NEW ENGLAND ASTER Aster novae-angliae 'Purple Dome'	91	CONT	#1	
CA	KARL FOERSTER FEATHER REED GRASS Calamagrostis x acutiflora 'Karl Foerster'	134	CONT	#1	
HB	DAYLILY Hemerocallis 'Bodacious Returns'	557	CONT	#1	
PL	RUSSIAN SAGE Perovskia 'little Spire'	188	CONT	#1	
PT	BOSTON IVY Parthenocissus tricuspidata	40	CONT	#1	
PV	NORTHWIND SWITCH GRASS Panicum virgatum 'Northwind'	169	CONT	#1	
VM	BOWLE'S COMMON PERIWINKLE Vinca minor 'Bowles'	2,238	CONT	6PK	SPACING 12" O.C.

* 12" OF PLANTING GROWTH MEDIA TYP. SEE NOTES FOR MEDIA TYPE

NORTH

0 20 40
SCALE IN FEET

PLOT DATE:
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CIVIL ENGINEERING SUBCONSULTANT
COMPANY NAME, INC.
COMPANY ADDRESS

Minnesota MULTI-PURPOSE STADIUM

CERTIFICATION
I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the State of Minnesota,
Name: TADD KREUN
Reg. No.: 24862
Date: 02/01/2016
Signature:

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
16246.000

DATE
FEBRUARY 01, 2016

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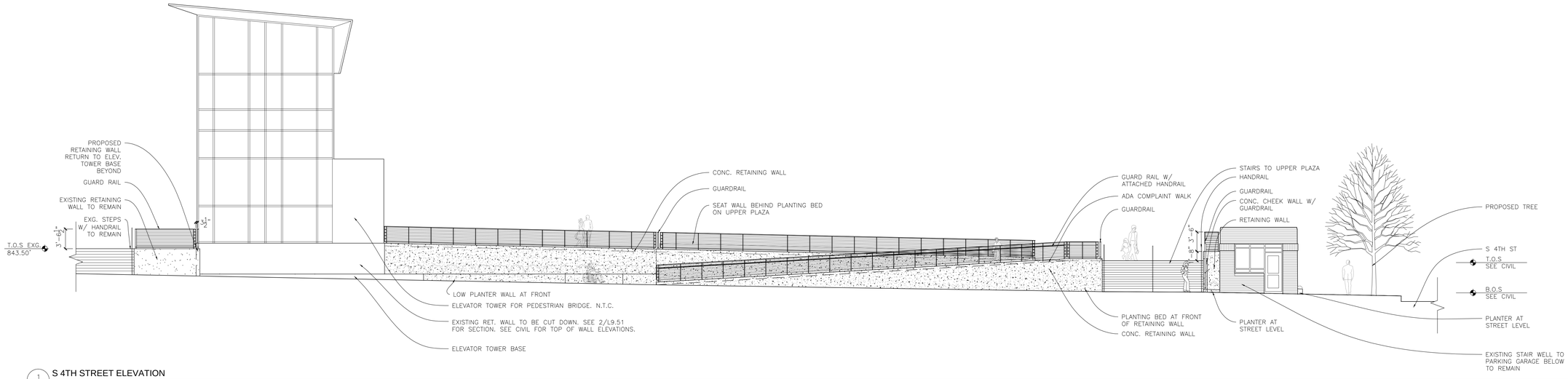
SHEET TITLE
PLANTING PLAN

SHEET NO.
L9.40



1 / L9.50 S 4TH STREET ELEVATION
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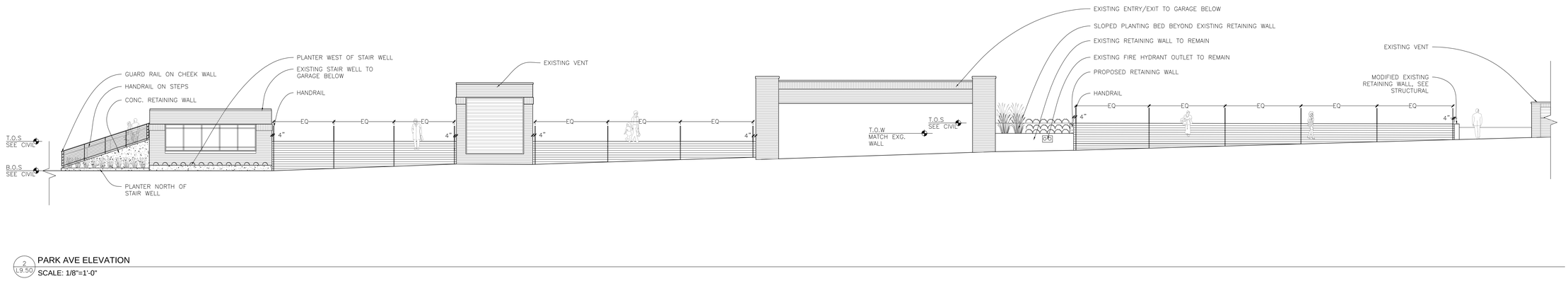

2 / L9.50 PARK AVE ELEVATION
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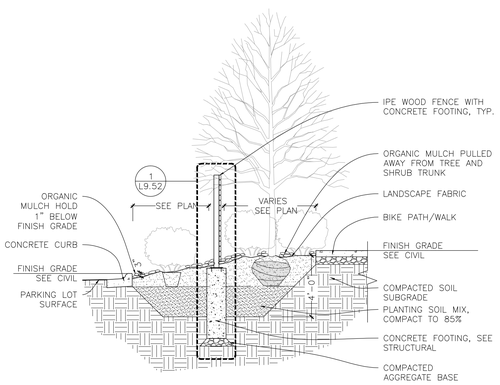
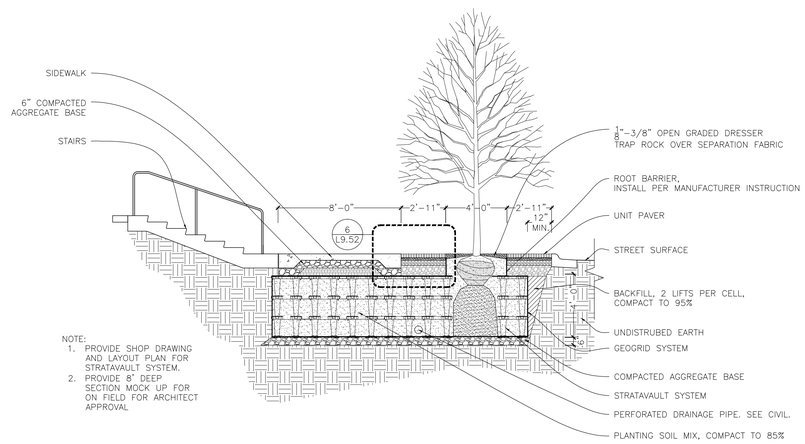
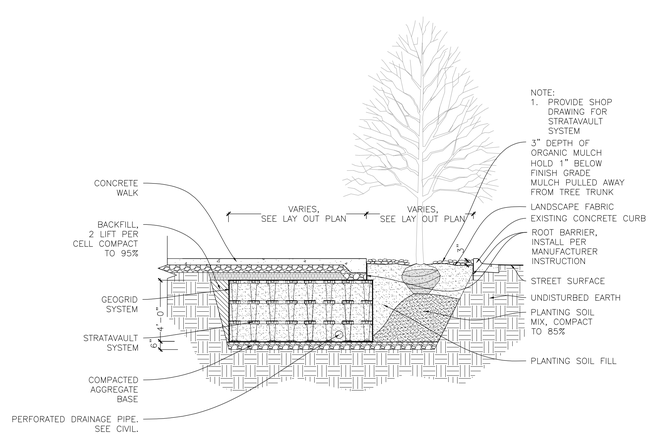


3 / L9.50 SITE SECTION
SCALE: 1/4"=1'-0"



4 / L9.50 SITE SECTION
SCALE: 1/4"=1'-0"



5 / L9.50 SITE SECTION
SCALE: 1/4"=1'-0"

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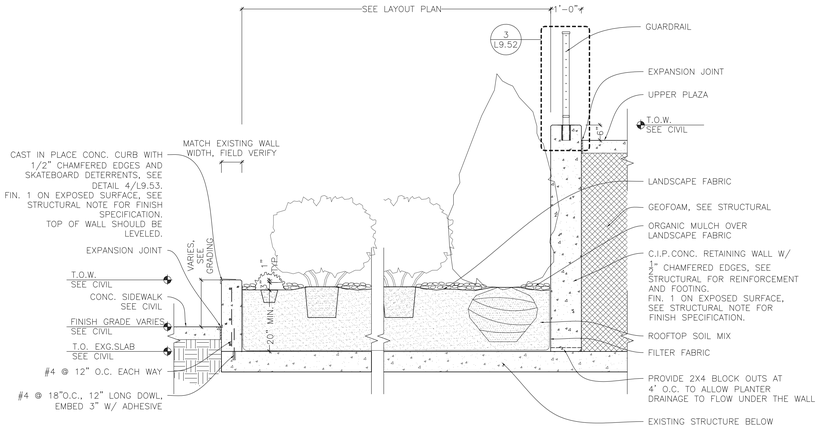
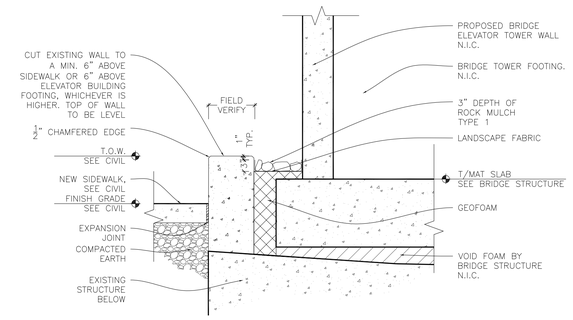
SHEET TITLE
DETAILS

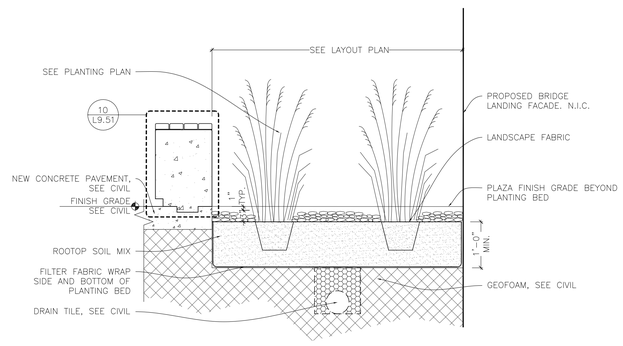
SHEET NO.
L9.50



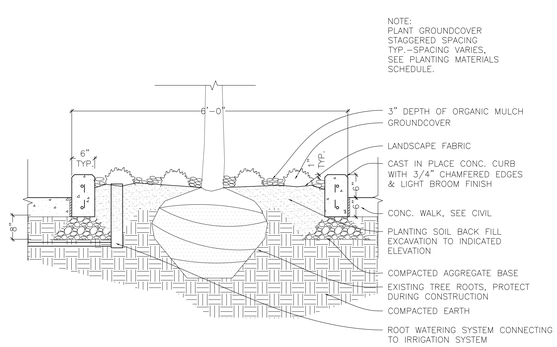
1 L9.51 SITE SECTION
SCALE: 1/2"=1'-0"



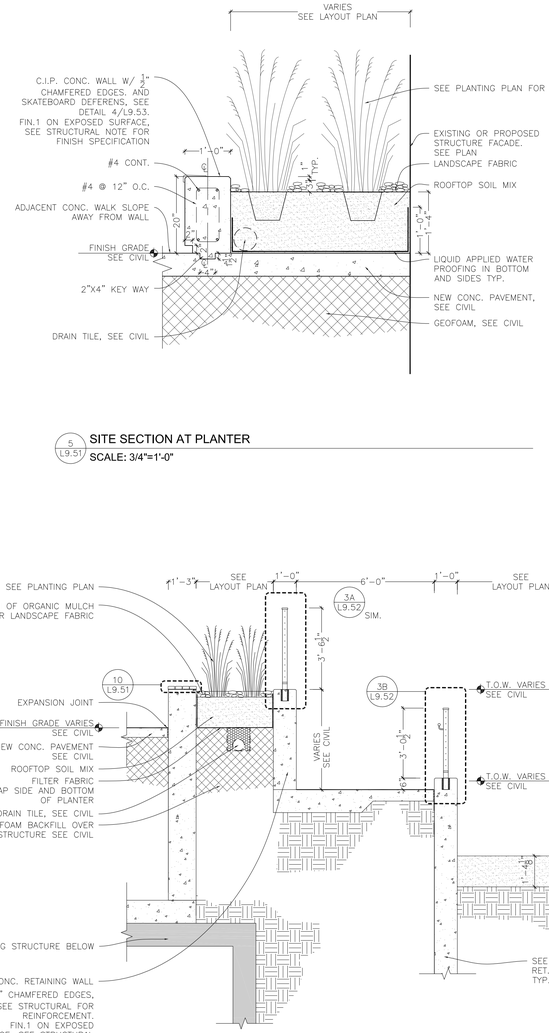
2 L9.51 ROCK MULCH NEAR PEDESTRIAN ELEVATOR TOWER
SCALE: 3/4"=1'-0"



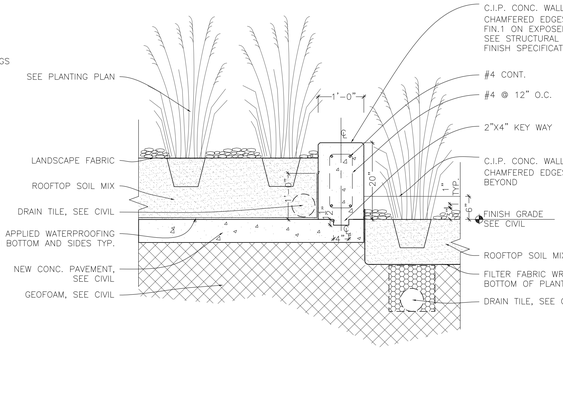
3 L9.51 SEAT WALL WITH PLANTING BED DETAIL
SCALE: 3/4"=1'-0"



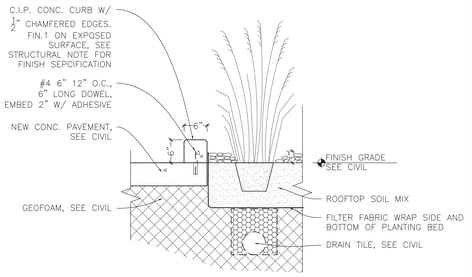
4 L9.51 TYPICAL PERENNIAL/ GRASS CURB PLANTER DETAIL
SCALE: 3/4"=1'-0"



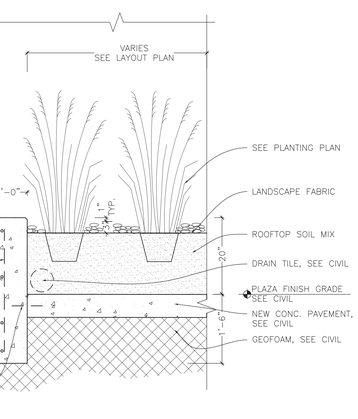
5 L9.51 SITE SECTION AT PLANTER
SCALE: 3/4"=1'-0"



6 L9.51 SITE SECTION AT PLANTER
SCALE: 3/4"=1'-0"

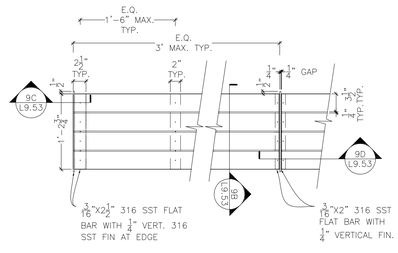


7 L9.51 SITE SECTION AT PLANTING BED
SCALE: 3/4"=1'-0"

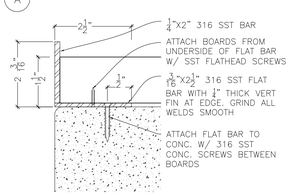


8 L9.51 WALL SECTION AT STAIRS
SCALE: 3/4"=1'-0"

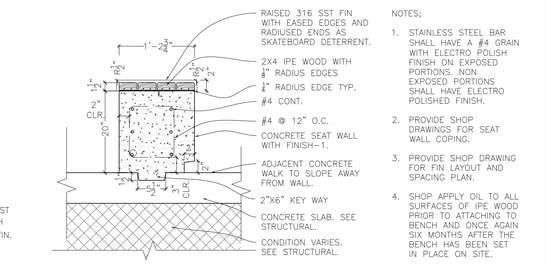
9 L9.51 SITE SECTION
SCALE: 3/8"=1'-0"



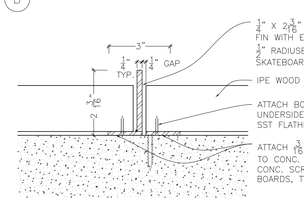
A LAYOUT DETAIL 1"=1'-0"



C END FLAT BAR WITH VERTICAL FIN DETAIL N.T.S.



B TYPICAL SEATWALL SECTION 1"=1'-0"



D INTERMEDIATE FLAT BAR WITH VERTICAL FIN DETAIL N.T.S.

NOTES;

1. STAINLESS STEEL BAR SHALL HAVE A #4 GRAIN WITH ELECTRO POLISH FINISH ON EXPOSED PORTIONS. NON EXPOSED PORTIONS SHALL HAVE ELECTRO POLISHED FINISH.
2. PROVIDE SHOP DRAWINGS FOR SEAT WALL COPING.
3. PROVIDE SHOP DRAWING FOR FIN LAYOUT AND SPACING PLAN.
4. SHOP APPLY OIL TO ALL SURFACES OF IPE WOOD PRIOR TO ATTACHING TO BENCH AND ONCE AGAIN SIX MONTHS AFTER THE BENCH HAS BEEN SET IN PLACE ON SITE.
5. APPLY END GRAIN SEALANT TO ALL ENDS OF BOARDS TO PREVENT CHECKING.

10 L9.51 SEAT WALL AND WOOD COPING DETAIL
SCALE: SEE DRAWING

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Reg. No.: 24852
Date: 02/01/2016
Signature:

REVISION NO. | DESCRIPTION | DATE

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DETAILS

SHEET NO.
L9.51

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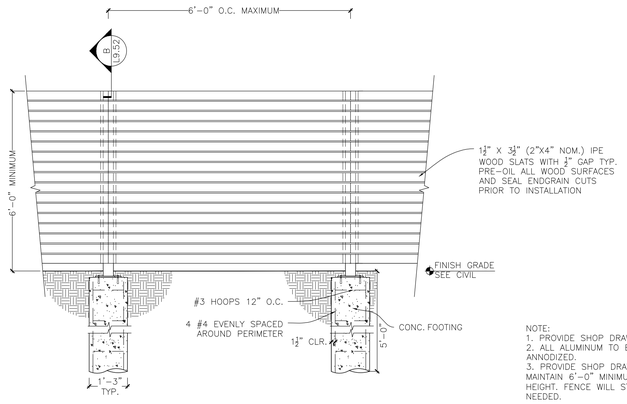
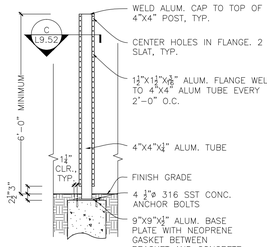
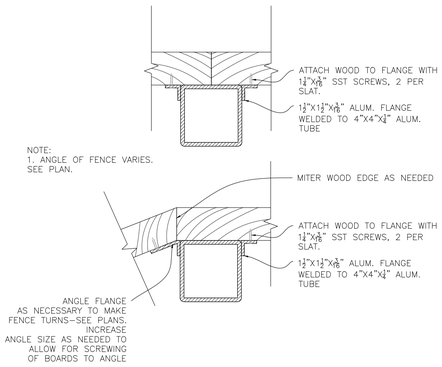


NOTE:
1. PROVIDE SHOP DRAWINGS.
2. ALL ALUMINUM TO BE CLEAR ANNODIZED.
3. PROVIDE SHOP DRAWINGS TO MAINTAIN 6'-0" MINIMUM FENCE HEIGHT. FENCE WILL STEP AS NEEDED.

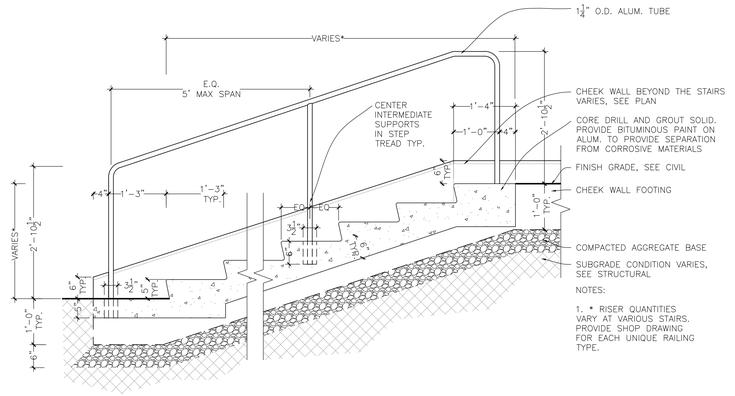
A WOOD PANEL DETAIL 1/2"=1'-0"



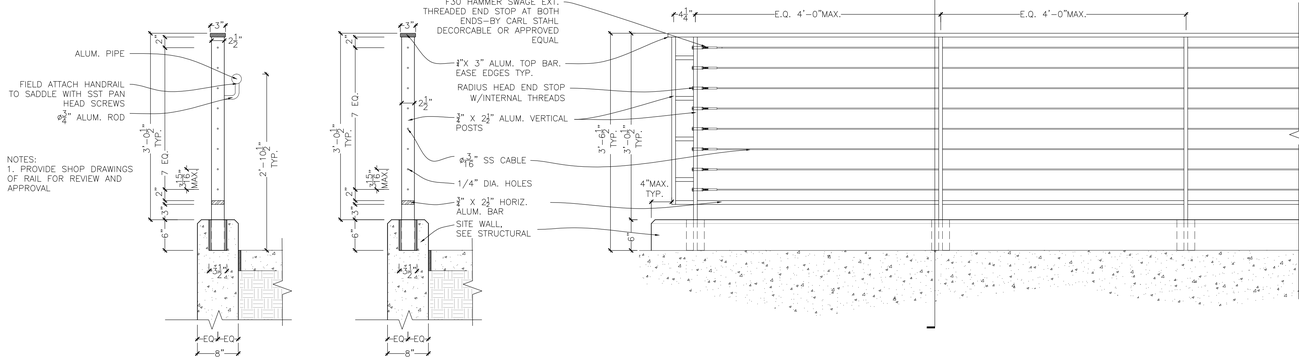
B MIDDLE POST WITH FLANGE DETAIL 1/2"=1'-0"



C POST AND FLANGE ATTACHMENT DETAIL NTS



1 L9.52 FENCE DETAIL
SCALE: SEE DRAWING

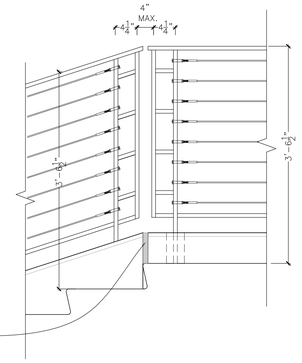


A TYPICAL GUARDRAIL WITH ATTACHED HANDRAIL SECTION

B TYPICAL GUARDRAIL SECTION

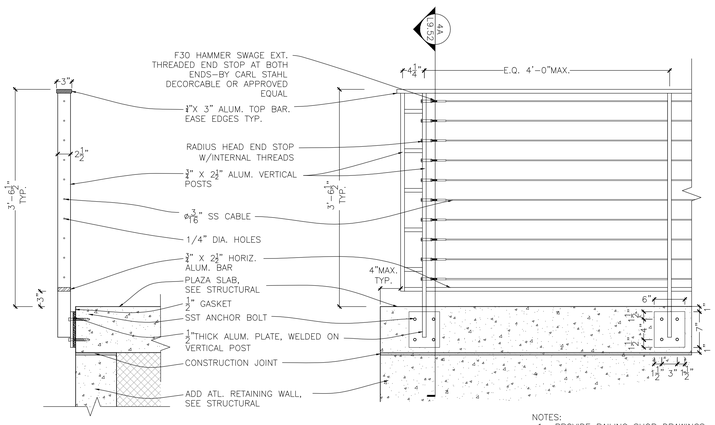
C TYPICAL GUARDRAIL ELEVATION

2 L9.52 TYPICAL STEPS WITH HANDRAIL DETAIL
SCALE: 3/4"=1'-0"



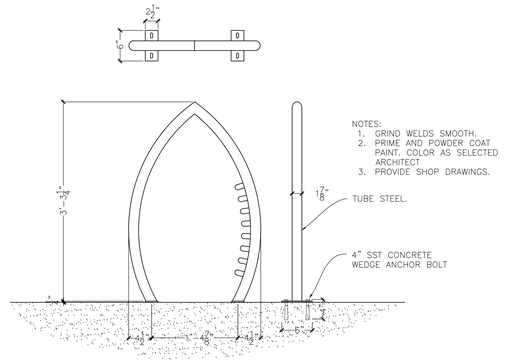
D TYPICAL GUARDRAIL ELEVATION ALONG STEPS

3 L9.52 TYPICAL GUARDRAIL DETAIL
SCALE: 1"=1'-0"

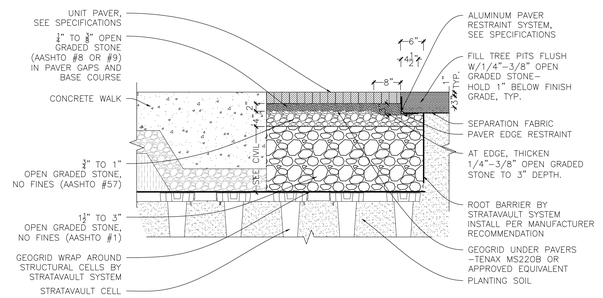


NOTES:
1. PROVIDE RAILING SHOP DRAWINGS.

4 L9.52 GUARDRAIL AT ADD ALTERNATE RETAINING WALLS
SCALE: 1"=1'-0"



5 L9.52 BIKE RACK DETAIL
SCALE: 1"=1'-0"



6 L9.52 PERMEABLE PAVER DETAIL OVER STRATAVAULT SYSTEM
SCALE: 1"=3/4'-0"

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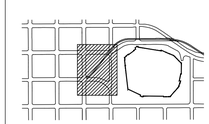

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NO. DESCRIPTION DATE

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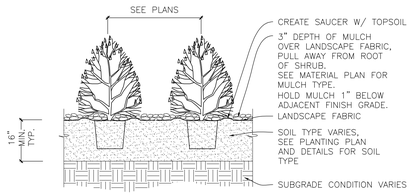
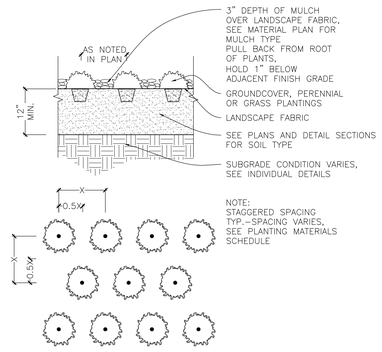
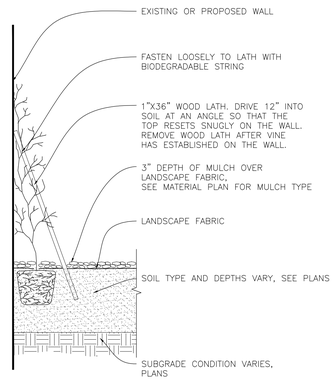


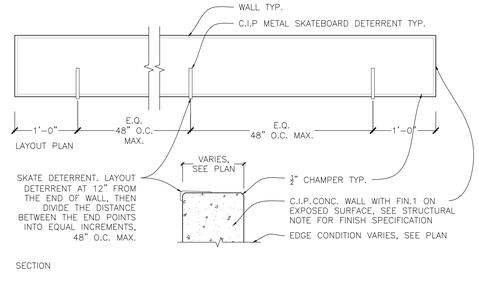
1 L9.53 TYPICAL SHRUB PLANTING DETAIL
SCALE: 1/2" = 1'-0"



2 L9.53 TYPICAL PERENNIAL PLANTING DETAIL
SCALE: 3/4" = 1'-0"



3 L9.53 TYPICAL VINES PLANTING DETAIL
SCALE: 3/4" = 1'-0"



4 L9.53 SKATE DETERRENT DETAIL
SCALE: 1/1" = 1'-0"

5 L9.53 SEAT WALL WITH RAISED PLANTER BEHIND
SCALE: 1/2" = 1'-0"

PLOT DATE:
11/5/2015 3:26:54 PM

HKS

OWNER
MINNESOTA SPORTS FACILITIES AUTHORITY
900 SOUTH 5th STREET, MINNEAPOLIS, MN 55415

OWNER
MINNESOTA VIKINGS FOOTBALL, LLC
9500 VIKING DR., EDEN PRAIRIE, MN 55344

ARCHITECT
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CIVIL ENGINEER
EVS, INC.
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LANDSCAPE ARCHITECT
OSLUND AND ASSOCIATES
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10901 RED CIRCLE DR, STE 300 MINNETONKA, MN 55343

ELECTRICAL ENGINEER
SEH INC.
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WAYFINDING
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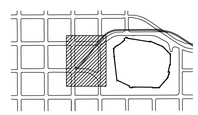
CIVIL ENGINEERING SUBCONSULTANT
COMPANY NAME, INC.
COMPANY ADDRESS

Minnesota MULTI-PURPOSE STADIUM

CERTIFICATION
I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the State of Minnesota.
Name: TADD KREUN
Reg. No.: 24862
Date: 02/01/2016
Signature:



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
16246.000
DATE
FEBRUARY 01, 2016
ISSUE
CCD - 347 - CD SET

SHEET TITLE
DETAILS

SHEET NO.
L9.53

GENERAL STRUCTURAL NOTES

THESE NOTES ARE IN PLACE OF SPECIFICATIONS AND ARE TO BE READ WITH THE DRAWINGS. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE TWO SHALL BE BROUGHT TO THE ATTENTION OF THE SER FOR RESOLUTION.

THESE DRAWINGS ARE FOR *THIS SPECIFIC PROJECT* AND NO OTHER USE IS AUTHORIZED. CONTACT SER, JEFF JOHNSON AT SEH 651-490-2078.

GOVERNING BUILDING CODE:

1. 2015 MINNESOTA STATE BUILDING CODE.
2. 2012 INTERNATIONAL BUILDING CODE AS ADOPTED AND AMENDED BY THE STATE BUILDING CODE
3. ACI - 350 ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
4. ACI - 318
5. AISC - 360, 303

CONSTRUCTION LOADS

1. CONSTRUCTION LOADING ON THE EXISTING PARKING GARAGE ROOF SHALL NOT EXCEED THESE STRUCTURE DESIGN LIVE AND DEAD LOADS:
   a. UNIFORM LIVE LOAD 250 PSF
   b. UNIFORM SUPERIMPOSED DEAD LOAD 135 PSF
   c. CONCENTRATED LIVE LOADS ARE NOT TO EXCEED AN ISOLATED HS20-44 AXLE LOADING; ALSO NOT IN COMBINATION WITH THE DESIGN UNIFORM LIVE LOAD OR OTHER CONCENTRATED LOADS.

DESIGN LOADS

1. LIVE LOAD:
   - FLOOR SLABS 150 PSF U.N.O.
   - ELEVATED WALKWAYS 100 PSF
2. SNOW LOADS:
   - GROUND SNOW LOAD 50 PSF
   - ROOF SNOW LOAD 35 PSF + DRIFTING & UNBALANCED PER IBC
   - SNOW ON OVERHANG 70 PSF + DRIFTING & UNBALANCED PER IBC
   - SNOW EXPOSURE FACTOR 1.0
   - IMPORTANCE FACTOR 1.10 (BASED ON OCC CAT III)
   - THERMAL FACTOR 1.00
   - RAIN LOADS N/A
3. WIND LOADS: (ASCE 7-10)
   - WIND SPEED (3 SEC GUST) 120.00 MPH
   - WIND IMPORTANCE FACTOR 1.10 (BASED ON OCC CAT III)
   - WIND EXPOSURE C
   - INTERNAL PRESS COEF N/A
4. SEISMIC LOADS: NOT APPLICABLE
   - SITE CLASS D
   - Ss 0.046 G
   - S1 0.030 G
   - Fa 1.6
   - Fv 2.4
   - Sds 0.128 G
   - Sd1 0.08 G
   - Ie 1.0
   - RISK CATEGORY II
   - SEISMIC DESIGN CATEGORY A
5. SOIL CRITERIA:
   - ALLOWABLE SOIL BEARING PRESSURE 1,500 PSF
   - DEWATER AS REQUIRED TO KEEP EXCAVATIONS DRY
   - FROST DEPTH 42 INCHES
   - ANTICIPATED MAX DIFFERENTIAL SETTLEMENT 1/2 INCH
   - ANTICIPATED MAX TOTAL SETTLEMENT 1 INCH

   SAND BACKFILL
   - WET UNIT WEIGHT 115 PCF
   - FRICTION ANGLE 35 DEGREES
   - AT-REST PRESSURE 50 PCF

   CLAY BACKFILL
   - WET UNIT WEIGHT 120 PCF
   - FRICTION ANGLE 25 DEGREES
   - AT-REST PRESSURE 70 PCF
   - PASSIVE PRESSURE 300 PCF
   - SLIDING COEFFICIENT 0.35
   - SUBGRADE MODULUS 150 PCI

DESIGN / CONSTRUCTION CRITERIA

1. THE CONTRACTOR SHALL VERIFY DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES, INCONSISTENCIES, OR DIFFICULTIES AFFECTING THE WORK BEFORE PROCEEDING.
2. ALL MATERIAL, WORKMANSHIP, AND DETAILS SHALL BE IN ACCORDANCE WITH TYPICAL COMPETENT CONSTRUCTION PRACTICES, CURRENT MANUFACTURERS RECOMMENDATIONS, AND ALL APPLICABLE CODES AND GOVERNMENT REGULATIONS. SPECIAL STRUCTURAL INSPECTION IS REQUIRED AS SCHEDULED AND PER IBC CHAPTER 17. CONTRACTOR SHALL COORDINATE WITH *OWNER'S/CONTRACTOR'S* TESTING AGENCY.
3. *ANY MATERIAL USED IN CONTACT WITH DRINKING WATER SHALL BE DEMONSTRATED TO MEET NSF 61.*
4. THE CONTRACTOR SHALL COORDINATE ALL DISCIPLINES, VERIFYING SIZE AND LOCATION OF ALL OPENINGS, WHETHER SHOWN ON STRUCTURAL DRAWINGS OR NOT, AS CALLED FOR ON ARCHITECTURAL, MECHANICAL, OR ELECTRICAL DRAWINGS. ALL CONFLICTS, INCONSISTENCIES, OR OTHER DIFFICULTIES AFFECTING STRUCTURAL WORK SHALL BE CALLED TO THE ARCHITECT AND ENGINEER'S ATTENTION FOR DIRECTION BEFORE PROCEEDING.
5. EQUIPMENT AND STRUCTURAL ANCHOR BOLT SIZES, TYPES, EMBEDMENT, AND PATTERNS SHALL BE VERIFIED WITH THE MANUFACTURER OR FABRICATOR. ALL BOLTS PATTERNS SHALL BE TEMPLATED TO ENSURE ACCURACY OF PLACEMENT.
6. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY TEMPORARY BRACING, SHORING, GUYING, OR OTHER MEANS TO AVOID EXCESSIVE STRESSES AND TO HOLD STRUCTURAL ELEMENTS IN PLACE DURING CONSTRUCTION.
7. JOB SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR & THEIR SUBCONTRACTORS.
8. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PRACTICES. WHERE DRAWINGS AND DETAILS IMPLY THIS, THEY ARE PROVIDED TO SHOW FINAL CONSTRUCTION. IF CONTRACTOR DESIRES TO USE DIFFERENT MEANS AND METHODS THAN IMPLIED BY THESE DRAWINGS, SUBMIT SIMILAR DETAILS FOR REVIEW.
9. STANDARD OR TYPICAL STRUCTURAL DETAILS ARE INTENDED TO ILLUSTRATE DESIGN CONCEPTS AND TO SPECIFY MATERIAL AND REQUIRED PHYSICAL DIMENSIONS MATCHING OR SIMILAR TO THE REFERENCED LOCATIONS IN THE DRAWING SET.
10. ALL ARCHITECTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS SHALL BE DESIGNED AND INSTALLED TO RESIST THE CONTROLLING CONDITION OF OPERATIONAL FORCES OR SEISMIC FORCES IN ACCORDANCE WITH IBC AND THESE NOTES. COMPONENT SEISMIC ATTACHMENTS SHALL BE BOLTED, WELDED, OR OTHERWISE POSITIVELY FASTENED WITHOUT CONSIDERATION OF FRICTIONAL RESISTANCE DUE TO GRAVITY. A CONTINUOUS LOAD PATH OF SUFFICIENT STRENGTH AND STIFFNESS SHALL BE PROVIDED BETWEEN THE COMPONENT AND SUPPORTING STRUCTURE. CONNECTIONS FOR BOTH ORTHOGONAL HORIZONTAL DIRECTIONS SHALL BE SHALL BE DESIGNED AND SEALED BY THE CONTRACTOR'S ENGINEER, CURRENTLY LICENSED IN THE COMMONWEALTH OF VIRGINIA. COMPONENT REACTION FORCES SHALL BE SUBMITTED TO THE SER FOR CONFIRMATION THAT SUPPORTING STRUCTURE CAN WITHSTAND REACTION FORCES.
11. THERE IS NO PROVISION FOR FUTURE VERTICAL EXPANSION IN THE DESIGN.

FOUNDATIONS

1. CAUTION: EXISTING UNDERGROUND UTILITIES MAY EXIST ANYWHERE ON THE SITE. NOTIFY *GOPHER ONE-CALL (800) 252-1166 / DIGGER'S HOTLINE (800) 242-8511 (wisconsin) / INDIANA HOLEY MOLEY (811) / NORTH DAKOTA ONE-CALL (800) 795-0555 / MISS DIG (800) 482-7171 (michigan))*/ MISS VIRGINIA VA811 (811 OR 800-552-7001) PRIOR TO DISTURBING ANY GRADE OR EXCAVATION.
2. STRUCTURAL FOUNDATIONS CONSIST OF SPREAD FOOTINGS ESTABLISHED ON MATERIAL CAPABLE OF SAFELY SUPPORTING 1.5 KSF. THE STRUCTURAL ENGINEER IS NOT RESPONSIBLE FOR THE ACCURACY OR CONTENT OF THE SUBSURFACE SOIL CONDITIONS DESCRIBED IN THE SPECIFICATIONS, TEST BORINGS, OR GEOTECHNICAL REPORT. THE *CONTRACTOR/OWNER* SHALL EMPLOY A CERTIFIED GEOTECHNICAL ENGINEER DURING CONSTRUCTION TO TEST, INSPECT AND VERIFY ALL ASSUMED SOIL CONDITIONS.
3. WHEN PLACING COMPACTED FILL ADJACENT TO FOUNDATION AND PIERS, PLACE BACKFILL AT EQUAL RATES ON BOTH SIDES TO PREVENT OVERTURNING OR STRUCTURAL DAMAGE.
4. CONTRACTOR SHALL PROVIDE FOR DEWATERING AT EXCAVATIONS FROM EITHER SURFACE WATER OR SEEPAGE.
5. MOISTURE CONTENT IN SOILS BENEATH BUILDING LOCATIONS SHOULD NOT BE ALLOWED TO CHANGE AFTER FOOTING EXCAVATIONS AND AFTER GRADING FOR SLABS ON GRADE ARE COMPLETED. IF SUBGRADE MATERIALS BECOME DESICCATED OR SOFTENED BY WATER OR OTHER CONDITIONS, REMOVE AND REPLACE WITH ENGINEERED FILL AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER. DO NOT PLACE CONCRETE ON FROZEN GROUND, NOR ALLOW GROUND BENEATH FOUNDATIONS TO FREEZE. ALL FOUNDATION WORK SHALL BE PLACED ON SUBSTRATE APPROVED AND TESTED BY GEOTECHNICAL ENGINEER OF RECORD.
6. DO NOT PLACE BACKFILL ON FROZEN SUBGRADE. DO NOT PLACE FROZEN BACKFILL.
7. GRADING: WHERE NOT SPECIFICALLY SHOWN ON THE PLANS, IT IS INTENDED THAT ALL EXCAVATED AND BACKFILLED AREAS SHALL BE GRADED TO SLOPE AWAY FROM BUILDINGS AND OTHER STRUCTURES.

CONCRETE

1. CONCRETE AND ITS PLACEMENT SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE FOLLOWING:
   - ACI 350 ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES
   - ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE
   - ACI 301 SPECIFICATIONS FOR STRUCTURAL CONCRETE
   - ACI MCP MANUAL OF CONCRETE PRACTICE
2. AN INDEPENDENT TESTING AGENCY SHALL CAST 4 SIX INCH TEST CYLINDERS OR AN EQUIVALENT NUMBER OF FOUR INCH CYLINDERS FOR EACH 75 CUBIC YARDS OF EACH CONCRETE MIX PLACED OR FOR EACH DAY'S OPERATION, WHICH EVER IS THE LESSER AMOUNT. THE TESTING AGENCY SHALL CAST, CURE, AND TEST THE SPECIMENS IN ACCORDANCE WITH ASTM C31 AND ASTM C39. AIR AND SLUMP SHALL BE TESTED FOR EACH TRUCKLOAD AT THE FINAL LOCATION (TEST AFTER PUMP, NOT AT TRUCK).
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN OF FORM WORK TO COMPLY WITH THE DIMENSIONS INDICATED ON THE PLANS, MAINTAINING PROPER ALIGNMENT DURING CONCRETE POURING OPERATIONS. SPECIAL CARE SHALL BE TAKEN WITH FORMWORK FOR SELF-CONSOLIDATING CONCRETE.
4. ALL CONCRETE SHALL DEVELOP MINIMUM ULTIMATE COMPRESSIVE DESIGN STRENGTH OF 4000 PSI IN 28 DAYS. CONCRETE USED IN WALLS AND FOOTINGS SHALL HAVE A MAXIMUM W/C (WATER/ CEMENT + POZZOLAN) RATIO OF 0.45, *AND A MAXIMUM OF 4 INCHES OF SLUMP BEFORE ADDITION OF ADMIXTURES*. CONCRETE USED IN SLAB ON GRADE STRUCTURAL SLABS SHALL HAVE A MAXIMUM W/C RATIO OF 0.45, *AND A MAXIMUM OF 4 INCHES OF SLUMP BEFORE ADDITION OF ADMIXTURES*.
5. CLSM (CONTROLLED LOW STRENGTH MATERIAL) SHALL HAVE A MIN. STRENGTH OF 50 PSI, MAXIMUM 1000 PSI AT 28 DAYS.
6. THE PRECEEDING MINIMUM MIX REQUIREMENTS MAY HAVE WATER-REDUCING ADMIXTURES CONFORMING TO ASTM C494 ADDED TO THE MIX AT MANUFACTURER'S DOSAGE RATES FOR IMPROVED WORKABILITY. NO CHLORIDE CONTAINING ADMIXTURES WILL BE ALLOWED. DO NOT ADD WATER TO CONCRETE AT THE JOBSITE WITHOUT WRITTEN APPROVAL OF THE S.E.R.
7. ALL CONCRETE IS NORMAL WEIGHT UNLESS SPECIFICALLY NOTED OTHERWISE. CEMENT SHALL BE PORTLAND CEMENT TYPE 1 CONFORMING TO ASTM C150. UP TO 30% CEMENT CAN BE REPLACED WITH FLYASH. AND UP TO 50% WITH GGBFS (50% COMBINED MAX.). AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. WATER IS TO BE POTABLE OR DEMONSTRATED TO HAVE NO HARMFUL EFFECTS ON CONCRETE. FLY ASH SHALL BE DEMONSTRATED BY TEST TO CONTAIN MINIMUM 18 PERCENT CaO EXCEPT AS NOTED IN NEXT PARAGRAPH. FLY ASH USED IN CONCRETE TO BE AIR ENTRAINED SHALL HAVE AIR ENTRAINING ADJUSTED AS REQUIRED FOR LOI PER RECENT EXPERIENCE OF READY MIX SUPPLIER.
8. ALL CONCRETE IS NORMAL WEIGHT UNLESS SPECIFICALLY NOTED OTHERWISE. *FOR STRUCTURES EXPOSED TO HYDROGEN SULFATE OR SOIL SULFATES, CEMENT SHALL BE PORTLAND CEMENT TYPE 2 CONFORMING TO ASTM C150, WITH C3A CONTENT LESS THAN 8% BY MASS. BETWEEN 30% AND 40% OF CEMENT SHALL BE REPLACED WITH CLASS "F" FLYASH WITH CaO CONTENT NOT EXCEEDING 15%; AND UP TO 10% WITH GGBFS WITH Al2O3 CONTENT LESS THAN 11 PERCENT BY MASS (50% COMBINED FLY AND GGBFS MAX.). MAXIMUM W/(C+P)=0.40. AIR ENTRAIN 7% +/-1.5%, ADJUSTING AS REQUIRED FOR FLY ASH CONTENT.* AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33. WATER IS TO BE POTABLE OR DEMONSTRATED TO HAVE NO HARMFUL EFFECTS ON CONCRETE. FLY ASH USED IN CONCRETE TO BE AIR ENTRAINED SHALL HAVE AIR ENTRAINING ADJUSTED AS REQUIRED FOR LOI PER RECENT EXPERIENCE OF READY MIX SUPPLIER.
9. MEASURED FROM THE TIME WATER AND CEMENT ARE BATCHED TOGETHER, NO MORE THAN 90 MINUTES SHALL ELAPSE UNTIL CONCRETE IS PLACED. THIS TIME SHALL BE REDUCED BY ONE MINUTE FOR EVERY DEGREE THAT CONCRETE TEMPERATURE EXCEEDS 75 DEGREES FAHRENHEIT.
10. WET CURE (POLY AND BURLAP KEPT MOIST DAILY) FOR A MINIMUM OF 7 DAYS; FOOTINGS MAY BE BURIED AFTER 24 HOURS. ADD ONE DAY OF CURE FOR CLASS 'C' FLYASH IN EXCESS OF 15 PERCENT OR GGBFS IN EXCESS OF 10 PERCENT OF CEMENTITIOUS, AND TWO DAYS FOR CLASS 'F' FLYASH IN EXCESS OF 15 PERCENT.
11. PROTECT CONCRETE IN ACCORDANCE WITH ACI 305 AND ACI 306 FOR HOT WEATHER CONCRETING AND COLD WEATHER CONCRETING RESPECTIVELY. IN COLD WEATHER, HEAT IS REQUIRED IF OUTSIDE TEMPERATURE FALLS BELOW 30 DEGREES ANY TIME DURING FIRST THREE DAYS. REINFORCING SHALL BE 40 DEGREES OR WARMER AT TIME OF CONCRETE PLACEMENT. CONCRETE TEMPERATURE SHALL BE RECORDED EVERY MORNING AND SHALL BE KEPT ABOVE 40 DEGREES IN ALL LOCATIONS FOR 7 DAYS. CONCRETE SHALL NOT BE EXPOSED TO COMBUSTION PRODUCTS (USE ELECTRIC HEAT, DUCTED HEATER OR GROUND THAW). KEEP PROTECTION IN PLACE MINIMUM 24 HOURS AFTER CESSATION OF HEATING TO PROVIDE GRADUAL COOL-DOWN.
12. CONCRETE BEING PLACED SHALL BE PROTECTED FROM RAIN. IF RAIN FALLS ON CONCRETE BEFORE IT HAS SET, OR WITHIN 3 HOURS OF PLACEMENT IN ANY EVENT, CONTRACTOR SHALL BEAR COST OF TESTING TO PROVE CONCRETE IS UNAFFECTED, AND SHALL REMOVE AND REPLACE AFFECTED CONCRETE TO THE SATISFACTION OF THE ENGINEER.
13. COORDINATE WITH OTHER TRADES FOR SLEEVES, CONDUIT, ELECTRICAL GROUNDING WIRES, INSERTS, UNDERGROUND UTILITIES, AND OTHER ITEMS TO BE EMBEDDED INTO CONCRETE AND VERIFY THAT THEY ARE PROPERLY INSTALLED AND SUPPORTED BEFORE CASTING CONCRETE. DIAMETER OF CONDUIT AND PIPE RUNNING WITHIN SLAB OR WALL SHALL NOT EXCEED 1/6 THE SLAB OR WALL THICKNESS AND SHALL BE PLACED IN THE CENTER OF THE MEMBER. PLACEMENT OF SUCH ITEMS SHALL BE COORDINATED WITH REINFORCING PLACEMENT WHERE THEY WOULD OTHERWISE DISPLACE EACH OTHER. FOR INSTANCE, IN AREAS WITH A SINGLE MAT OF REINFORCING, EAST-WEST CONDUIT SHOULD BE PLACED WITH EAST-WEST REINFORCING, THEN NORTH-SOUTH CONDUIT IS PLACED WITH NORTH-SOUTH REINFORCING.
14. NO UNCOATED ALUMINUM ITEMS SHALL BE EMBEDDED IN ANY CONCRETE. ALL ALUMINUM SURFACES IN DIRECT CONTACT WITH CONCRETE SHALL RECEIVE ONE 8-12 MIL DRY FILM THICKNESS BITUMASTIC.
15. UNLESS SHOWN ON DRAWINGS, CONCRETE SHALL BE PLACED WITHOUT CONSTRUCTION JOINTS EXCEPT WHERE SPECIFICALLY SHOWN ON SHOP DRAWINGS APPROVED BY THE ENGINEER. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING ADDITIONAL OR ALTERNATE CONSTRUCTION JOINT LOCATIONS TO THE ENGINEER FOR APPROVAL.
16. BEVEL ALL EXPOSED CORNERS OF CONCRETE 3/4"X3/4".
17. VERIFY SIZE AND LOCATION OF ALL BASES.
18. WHERE PLACING NEW CONCRETE AGAINST PREVIOUSLY EXISTING CONCRETE, BUSH-HAMMER EXISTING TO LEAVE A PROFILE OF 1/8 INCH AND BLOW CLEAN WITH OIL-FREE COMPRESSED AIR OR WATER BLAST. TO THE EXTENT POSSIBLE, LEAVE A SMOOTH ZONE UNDER HYDROPHILIC WATERSTOP. THIS DOES NOT APPLY TO RECENTLY PLACED CONCRETE AT A CONSTRUCTION JOINT.
19. FINISHES ABOVE GRADE SHALL BE ORDINARY SURFACE FINISH (FIN 1), GRIND ALL FINS FLUSH, PATCH TIE HOLES AND DEFECTS LARGER THAN 1/8-INCH IN DIAMETER AND/OR 1/8-INCH DEEP, AND GROUT SACK RUB SURFACE.

REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE DETAILED, FABRICATED, AND INSTALLED IN ACCORDANCE WITH THE FOLLOWING STANDARDS AND CODES: ACI 315 "DETAILS AND DETAILING OF CONCRETE REINFORCING" ACI 318 "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" MSP2 "CRSI MANUAL OF STANDARD PRACTICE" AWS D1.4 "STRUCTURAL WELDING CODE- REINFORCING STEEL" WRI "WELDED WIRE FABRIC MANUAL OF STANDARD PRACTICE"
2. ALL CONCRETE IS REINFORCED CONCRETE UNLESS SPECIFICALLY CALLED OUT AS UNREINFORCED. REINFORCE ALL CONCRETE NOT OTHERWISE SHOWN WITH SAME STEEL AS IN SIMILAR SECTIONS OR AREAS. ANY DETAILS NOT SHOWN SHALL BE DETAILED PER ACI 315 AND MEET REQUIREMENTS OF ACI 318, CURRENT EDITIONS.
3. ALL REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615 OR A706 GRADE 60, EPOXY COATED STEEL. REINFORCING TO BE WELDED SHALL ONLY BE WELDED TO STRUCTURAL STEEL, NOT OTHER REINFORCING, UNLESS SPECIFICALLY NOTED ON THE DRAWINGS, AND SHALL BE A706. WELDED PLAIN WIRE FABRIC SHALL BE SUPPLIED IN SHEETS, NOT ROLLS, AND CONFORM TO THE REQUIREMENTS OF ASTM A185.
4. CLEAR MINIMUM COVER OF CONCRETE OVER REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS SPECIFICALLY NOTED OTHERWISE:
   - CONCRETE PLACED AGAINST EARTH 3"
   - ALL OTHER CONCRETE 2"
5. ALL FOOTING DOWELS SHALL BE ACCURATELY POSITIONED AND WIRED IN PLACE BEFORE CASTING FOOTING CONCRETE. WHERE NOT NOTED, PROVIDE AND INSTALL DOWELS OF SAME SIZE AND SPACING AS VERTICAL REINFORCEMENT IN ALL COLUMNS AND WALLS. POSITION ALL ANCHOR BOLTS WITH TEMPLATES.
6. BAR LAP LENGTHS IN CONCRETE AND 90 DEGREE END HOOKS SHALL BE IN ACCORDANCE WITH THE TABLE BELOW UNLESS NOTED OTHERWISE. THIS TABLE LISTS CLASS 'B' LAPS. FOR EPOXY COATED REINFORCING STEEL, INCREASE LAP LENGTH BY 50% WITH C-C BAR SPACING < 6Db AND COVER TO CENTER OF BAR <3Db, OTHERWISE INCREASE BY 20%. FOR MASONRY REINFORCING, USE "WALL TOP BAR" VALUES.

REINF.	WALL, COLUMN OR SLAB		BEAMS		90 DEGREE
BAR SIZE	BAR LAP	* TOP BAR	BAR LAP	* TOP BAR	END HOOK
#3	19 IN	24 IN	28 IN	36 IN	6 IN
#4	25 IN	32 IN	37 IN	48 IN	8 IN
#5	31 IN	40 IN	46 IN	60 IN	10 IN
#6	37 IN	48 IN	56 IN	72 IN	12 IN
#7	54 IN	70 IN	81 IN	105 IN	14 IN
#8	62 IN	80 IN	93 IN	120 IN	16 IN
#9	70 IN	90 IN	104 IN	135 IN	18 IN
#10	78 IN	102 IN	117 IN	152 IN	20 IN
#11	86 IN	113 IN	130 IN	169 IN	22 IN

7. BARS MARKED CONTINUOUS, CORNER BARS, AND ALL VERTICAL STEEL SHALL BE LAPPED IN ACCORDANCE WITH TABLE ABOVE AT SPLICES AND EMBEDMENTS, UNLESS SHOWN OTHERWISE. SPLICE TOP BARS NEAR MIDSPAN AND SPLICE BOTTOM BARS OVER SUPPORTS, UNLESS NOTED OTHERWISE.
8. BAR SUPPORT ACCESSORIES SHALL BE AS SPECIFIED IN LATEST EDITION OF THE ACI DETAILING HANDBOOK AND THE CONCRETE REINFORCING STEEL INSTITUTE DESIGN HANDBOOK. MAXIMUM ACCESSORY SPACING SHALL BE 4'-0" ON CENTER, AND ALL ACCESSORIES ON EXPOSED SURFACES SHALL HAVE PLASTIC COATED ENDS. WWF SHALL BE SUPPORTED BY CONTINUOUS BOLSTERS OR BARS ON CHAIRS SUFFICIENTLY CLOSE TO PREVENT SHEETS FROM SAGGING APPRECIABLY DURING CONCRETE PLACEMENT.
9. ALL SLABS AND STAIRS NOT SHOWN OTHERWISE SHALL BE 6" THICK WITH #4 BARS AT 12" ON CENTER EACH WAY. ALL EXTERIOR STOOPS NOT OTHERWISE DETAILED MAY BE CONSTRUCTED IN ANY STANDARD MANNER, SOLID OR HOLLOW, BUT MUST BE REINFORCED WITH EPOXY COATED #4 BARS AT 12" ON CENTER EACH WAY MINIMUM. PORCHES AND STOOPS SHALL BE DOWELED TO ADJACENT WALLS OR GRADE BEAMS WITH #4 BARS AT 12" ON CENTER, HOOKED OR EMBEDDED 40 DIAMETERS INTO BOTH MEMBERS. SLOPE STOOPS 1/8" PER FOOT FOR DRAINAGE UNLESS NOTED OTHERWISE.

CONCRETE REPAIR

1. LOCATE AND REMOVE AREAS OF LOOSE, DELAMINATED, OR DAMAGED CONCRETE. SAWCUT OUTSIDE PERIMETER OF DAMAGED AREAS TO A MINIMUM DEPTH OF APPROXIMATELY 3/4 INCH; DO NOT CUT REINFORCING. TALLY AREAS REMOVED FOR PAYMENT. SANDBLAST AREA TO BE PATCHED AND BLOW CLEAN. PROTECT SURROUNDINGS AND WORKERS FROM DUST AND HAZARDS ASSOCIATED WITH THIS WORK.
2. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar to provide minimum 3/4 inch clearance BEHIND BAR. CLEAN AND COAT EXPOSED SUFACE OF BAR WITH BONDING AGENT (SIKA ARMATEC 110, SONOPREP, OR EUCLID CORR-BOND).
3. DAMPEN PATCH AREA AND APPLY MORTAR SCRUB COAT, KEEPING MOIST UNTIL PATCH IS APPLIED.
4. PATCH WITH POLYMER-MODIFIED CEMENTITIOUS PATCHING MORTAR (Dayton SUPERIOR hd-50, Euclid verti-coat, mASTER bUILDERS emaco r320, sikatop 121, OR sonopatch 100). CURE ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.

POST INSTALLED ANCHOR RODS AND DOWELS

1. UNLESS NOTED OTHERWISE, ANCHORS AND REINFORCING DOWELS INSTALLED IN CONCRETE OR CONCRETE MASONRY SHALL BE AS NOTED BELOW. ANCHORS NOT SHOWN OR NOTED ON THE DRAWINGS, THOSE REQUIRED BY THE CONTRACTOR SOLELY FOR HIS MEANS AND METHODS, OR THOSE REQUIRED BY MECHANICAL/ELECTRICAL AND CARRYING LESS THAN 100 POUNDS, DO NOT REQUIRE SPECIAL INSPECTION.
2. APPROVED MANUFACTURERS ARE: HILTI, ITW/REDHEAD, SIMPSON, AND POWERS/RAWL. SUBMIT PRODUCT DATA AND CURRENT ICC ES REPORT OR IAPMO REPORT SHOWING PRODUCT IS COMPLIANT WITH PROJECT CODE REQUIREMENTS FOR REVIEW. CONTRACTOR SHALL ARRANGE FOR MANUFACTURER'S REP TO TRAIN ALL INSTALLERS ON THE COMPLETE INSTALLATION PROCESS. A LETTER OF PROCEDURE STATING METHOD OF DRILLING, THE PRODUCT FOR USE, THE COMPLETE INSTALLATION PROCEDURE, MANUFACTURER TRAINING DATE AND A LIST OF THE PERSONNEL TRAINED ON ANCHOR INSTALLATION SHALL BE SUBMITTED TO THE ENGINEER.
3. PERMANENT ANCHORS EXPOSED TO EARTH, WEATHER, OR CORROSIVE ENVIRONMENTS, INCLUDING ALL ANCHORS IN WWTP AND WATER TREATMENT PLANT WORK, AND ANCHORS ENGAGING STAINLESS STEEL OR ALUMINUM MEMBERS, SHALL BE STAINLESS STEEL TYPE 304 OR 316; ANCHORS IN CONTACT WITH SEWAGE OR CHLORIDE DE-ICER RUNOFF SHALL BE TYPE 316. OTHERWISE, ANCHORS SHALL BE ZINC PLATED, MINIMUM ASTM A36 MATERIAL UNLESS ASTM A193 GRADE B7 IS NOTED IN THE DRAWINGS, AND SHALL BE ACCORDING TO ASTM F1554. REINFORCING DOWELS SHALL BE OF THE SAME MATERIAL AND COATING (IF ANY) AS THE CONTINUING REINFORCING.
4. WHERE EXPANSION ANCHORS ARE CALLED FOR, CONTRACTOR MAY SUBSTITUTE SCREW TYPE ANCHORS WITH SELF-TAPPING THREADS OR ADHESIVE ANCHORS OF THE SAME SIZE AND EMBEDMENT, SUBJECT TO REVIEW OF CAPACITY BY THE ENGINEER FOR THE PRODUCT SUBSTITUTED. WHERE ADHESIVE ANCHORS ARE CALLED FOR, OTHER TYPES SHALL NOT BE SUBSTITUTED.
5. ADHESIVE SHALL HAVE A CURRENT ICC ES REPORT. USE HIGH VISCOSITY ADHESIVE AND PLACEMENT DEVICES IN CONSULTATION WITH THE MANUFACTURER FOR OVERHEAD WORK. OVERHEAD INSTALLATION SHALL BE SUBJECT TO CONTINUOUS SPECIAL INSPECTION DURING INSTALLATION AND SHALL ONLY BE DONE BY CERTIFIED ADHESIVE ANCHOR INSTALLERS. USE LOW TEMPERATURE FORMULATIONS FOR COLD WEATHER WORK. DO NOT APPLY SIGNIFICANT LOAD TO ANCHORS IN COLD WEATHER UNTIL THEIR CAPACITY HAS BEEN ASSURED.
6. ANCHORS INSTALLED IN CONCRETE MASONRY AND PRECAST HOLLOWCORE CONCRETE SHALL BE INSTALLED IN CORES GROUTED SOLID. MINIMUM GROUT STRENGTH Fg' = 3000 PSI. MINIMUM 6 INCHES OF GROUT EACH WAY ALONG HORIZONTAL CORES FROM ANCHOR. VERTICAL CORES SHALL BE GROUTED FULL HEIGHT. ANCHORS INSTALLED IN MASONRY SHALL NOT BE INSTALLED WITHIN 1 1/2 INCHES OF ANY HEAD JOINT UNLESS BLOCK ARE SQUARE END AND MORTARED ACROSS FULL WIDTH OF HEAD JOINT, OR FILLED BOND BEAM.
7. HOLES SHALL BE DRILLED, CLEANED, AND MAINTAINED UNTIL INSTALLATION IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS USING STANDARD ROTARY-IMPACT BITS AND OIL-FREE COMPRESSED AIR; DIAMOND CORE BITS SHALL NOT BE USED UNLESS SPECIFICALLY APPROVED BY THE MANUFACTURER. LOCATE AND AVOID REINFORCING BARS AND PT TENDONS. MAINTAIN SPACING (MINIMUM 8 INCHES) AND EDGE/CORNER DISTANCES (MINIMUM 4 INCHES) AS RECOMMENDED BY MANUFACTURER UNLESS SPECIFICALLY NOTED OTHERWISE IN THE DRAWINGS.
8. UNLESS NOTED OTHERWISE, ANCHORS SHALL BE INSTALLED TO THE FOLLOWING EMBEDMENTS:

	DIAMETER	CIP CONCRETE	GROUTED CMU
EXPANSION/SCREW:	1/2 INCH	3 1/2 INCHES	4 1/2 INCHES
	5/8 INCH	4 INCHES	5 INCHES
	3/4 INCH	5 INCHES	6 INCHES
ADHESIVE:	1/2 INCH	4 1/2 INCHES	5 1/2 INCHES
	5/8 INCH	5 INCHES	6 INCHES
	3/4 INCH	6 INCHES	7 INCHES (6" IN 8" CMU)

9. EXCEPT AS NOTED, ALL ANCHORS SHALL HAVE INTERMITTENT SPECIAL STRUCTURAL INSPECTION BY ONE OF THE FOLLOWING. LOAD TESTS SHALL BE TO 150 PERCENT OF SERVICE CAPACITY OR 50 PERCENT OF ULTIMATE STRENGTH, WITH NO APPRECIABLE SLIP OR PERMANENT DEFORMATION. ANCHORS WHICH FAIL THIS TEST SHALL BE REPLACED AT NO COST TO THE PROJECT. TWO FAILURES IN A GIVEN INSTALLATION SHALL RESULT IN MANDATORY LOAD TESTING AT DOUBLE THE RATE NOTED BELOW.

   EXPANSION AND SCREW ANCHORS:
   - WITNESS INSTALLATION WITH TORQUE WRENCH ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS OF ICC REPORT
   - TEST ALL ANCHORS WITH TORQUE WRENCH AFTER INSTALLATION (INCLUDING LOAD TEST OF 5 PERCENT OF INSTALLED ANCHORS)
   - LOAD TEST OF 10 PERCENT OF INSTALLED ANCHORS BY SUPPLIER OR THIRD PARTY INSPECTOR

   ALL ADHESIVE ANCHOR RODS AND DOWELS SHALL HAVE SPECIAL STRUCTURAL INSPECTION (INTERMITTENT EXCEPT AS NOTED FOR OVERHEAD INSTALLATION) BY ONE OF THE FOLLOWING:
   - WITNESS INSTALLATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS OF ICC REPORT
   - LOAD TEST OF 10 PERCENT OF INSTALLED ANCHORS BY SUPPLIER OR THIRD PARTY INSPECTOR

GEOFOAM FILL

SUMMARY

1. SECTION INCLUDES:
   - DELEGATED DESIGN AND ENGINEERING OF STABILITY OF GEOFOAM SYSTEM BASED ON SPECIFIED PERFORMANCE REQUIREMENTS.
   - GEOFOAM FILL SYSTEM, INCLUDING MANUFACTURED EXPANDED POLYSTYRENE BLOCKS (INSUL-14), DRAINAGE BOARDS, AND OTHER SYSTEM COMPONENTS.
   - MOLDED SHEET DRAIN

REFERENCES

1. ASTM D 6817 - STANDARD SPECIFICATION FOR RIGID CELLULAR POLYSTYRENE GEOFOAM
2. ASTM D 7557 - STANDARD PRACTICE FOR SAMPLING EXPANDED POLYSTYRENE GEOFOAM SPECIMENS
3. ASTM D 1622 - STANDARD TEST METHOD FOR APPARENT DENSITY OF RIGID PLASTICS
4. ASTM D 1621 - STANDARD TEST METHOD FOR COMPRESSIVE PROPERTIES OF RIGID CELLULAR PLASTICS
5. ASTM C 272 - STANDARD TEST METHOD FOR WATER ABSORPTION

ADMINISTRATIVE REQUIREMENTS

1. SEQUENCING: ENSURE THAT PLACEMENT DRAWINGS AND OTHER INFORMATION REQUIRED FOR INSTALLATION OF GEOFOAM ARE FURNISHED TO AFFECTED TRADES IN TIME TO PREVENT INTERRUPTION OF CONSTRUCTION PROGRESS.
2. COORDINATION: COORDINATE WORK DIRECTLY WITH OTHER SUBCONTRACTORS AS NECESSARY TO INSURE PROPER FITTING, JOINING AND REQUIRED CLEARANCES OF OTHER WORK.
   - EXCHANGE AND COORDINATE SHOP DRAWINGS
   - COORDINATE FABRICATION SCHEDULE.
3. COVER GEOFOAM THAT IS ANTICIPATED TO BE EXPOSED TO SUNLIGHT FOR MORE THAN SIX MONTHS WITH AN OPAQUE MATERIAL TO PREVENT ULTRAVIOLET LIGHT DEGRADATION. REMOVE MATERIAL THAT IS EXPOSED FOR EXCESSIVE PERIOD BEYOND SIX MONTHS.
4. BALLAST OR ANCHOR GEOFOAM MATERIAL AS REQUIRED TO PREVENT UNCONTROLLED MOVEMENT OF MATERIAL.
5. DO NOT OPERATE OR PERMIT OPERATION OF HEAVY CONSTRUCTION EQUIPMENT OR VEHICLES DIRECTLY ON GEOFOAM.

WARRANTY

1. EXISTING WARRANTIES: PROVIDE WORK WITH EXISTING CONSTRUCTION BY METHODS AND WITH MATERIALS SO AS NOT TO VOID EXISTING WARRANTIES. REVIEW OWNER'S APPLICABLE EXISTING WARRANTIES TO COORDINATE SUCH WORK.
2. SPECIAL WARRANTY: MANUFACTURER AND CONTRACTOR AGREE TO PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE COMPONENTS OF GEOFOAM FILL SYSTEM THAT DO NOT COMPLY WITH SPECIFIED PERFORMANCE REQUIREMENTS OR THAT FAIL IN MATERIALS OR WORKMANSHIP WITHIN SPECIFIED WARRANTY PERIOD, AND TO PROVIDE SUCH CORRECTIONS AT NO COST TO OWNER AND WITHOUT DISRUPTION OF OWNER'S DAILY OPERATIONS.
3. EXTENT: SPECIAL WARRANTY INCLUDES GEOFOAM MATERIALS, PHYSICAL PROPERTIES OF EXPANDED POLYSTYRENE GEOFOAM MATERIALS, OR COMPONENTS AS SPECIFIED AND INSTALLED AS PART OF WORK OF THIS SECTION.
   - REMOVAL AND REPLACEMENT OF MATERIAL FOR INSPECTION OR REPAIR WORK TO GEOFOAM FILL SYSTEM; INCLUDING LABOR AND MATERIALS.
4. FAILURE INCLUDES DETERIORATION, DEGRADATION AND COLLAPSE OF GEOFOAM FILL WITHIN WARRANTY PERIOD.
5. WARRANTY PERIOD: 10 YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

DESIGN CRITERIA AND PERFORMANCE REQUIREMENTS

1. DELEGATED DESIGN: DESIGN AND ENGINEERING OF THE STABILITY OF GEOFOAM FILL SHALL BE PERFORMED BY THE CONTRACTOR'S QUALIFIED PROFESSIONAL ENGINEER. DESIGN GEOFOAM FILL STABILITY TO PREVENT GROUND MOVEMENT.
   - CONFIGURATION OF BLOCKS, ATTACHMENT DEVICES AND INSTALLATION REQUIREMENTS SHALL BE PERFORMED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER.
   - STABILITY OF GEOFOAM FILL: ANALYZE THE STABILITY OF THE ENTIRE GEOFOAM FILL MASS UNDER ALL CONDITIONS DURING CONSTRUCTION AND PERMANENT CONFIGURATION. PROVIDE INTERLOCKING BLOCKS AND/OR OTHER MEASURES REQUIRED TO CREATE SHEAR CAPACITY THROUGH INTERFACE PLANES THROUGH THE FILL. PROVIDE A MINIMUM FACTOR OF SAFETY OF 1.5 AGAINST SLIDING AND OVERTURNING.

SOURCE QUALITY CONTROL

1. OWNER WILL ENGAGE A QUALIFIED INDEPENDENT TESTING AGENCY TO PERFORM FIELD QUALITY-CONTROL TESTING IN ACCORDANCE WITH SECTION 014533 - STRUCTURAL TESTING AND SPECIAL INSPECTIONS; INCLUDING THE FOLLOWING
   - COMPRESSIVE STRENGTH TESTING IN ACCORDANCE WITH ASTM D 1621.
   - DENSITY AND DIMENSIONAL TOLERANCE TESTING IN ACCORDANCE WITH ASTM D 1622.
2. FACTORY TESTING: AT THE DISCRETION OF MANUFACTURER, PERFORM GEOFOAM MATERIAL TESTING AT MANUFACTURER'S FACILITY. MANUFACTURER SHALL BORE THE COSTS FOR THE INDEPENDENT TESTING LABORATORY PERSONNEL TRAVEL BETWEEN PROJECT SITE AND MANUFACTURER'S FACILITY.
3. OWNER, ARCHITECT, AND STRUCTURAL ENGINEER OF RECORD RESERVE THE RIGHT TO REJECT MATERIAL NOT COMPLYING WITH THE CONTRACT DOCUMENTS AT ANY TIME.

PRODUCTS AND MANUFACTURERS

1. SOURCE LIMITATIONS: PROVIDE COMPLETE GEOFOAM FILL SYSTEM FROM SINGLE SOURCE MANUFACTURER.
2. MATERIAL COMPATIBILITY: SYSTEM MATERIALS SHALL BE COMPATIBLE WITH ONE ANOTHER AND WITH ADJACENT MATERIALS UNDER CONDITIONS OF SERVICE AND APPLICATION REQUIRED, AS DEMONSTRATED BY MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
3. (INSUL-14) EXPANDED POLYSTYRENE GEOFOAM FILL: RIGID, EXPANDED POLYSTYRENE BLOCKS CONFORMING TO ASTM D 6817. BLOCKS SHALL BE FABRICATED FROM VIRGIN FEEDSTOCK MATERIAL WITH NOT MORE THAN FIVE PERCENT REGRIND CONTENT. CUT BLOCKS AT FACTORY PRIOR TO SHIPPING.
   - COMPRESSIVE RESISTANCE: 7.3 PSI MINIMUM AT 1% COMPRESSIVE STRAIN.
   - FLEXURAL RESISTANCE: 35.0 PSI MINIMUM.
   - WATER ABSORPTION: 3% MAXIMUM BY TOTAL IMMERSION.
   - BLOCK SURFACES SHALL BE SMOOTH AND FLAT WITH VARIANCE IN SHOP-CUT SURFACES TO BE NO MORE THAN 1/16-INCH.
   - GEOFOAM FILL SHALL CONTAIN A FIRE RETARDANT ADDITIVE AND SHALL HAVE UL CERTIFICATION OF CLASSIFICATION AS TO EXTERNAL FIRE EXPOSURE AND SURFACE BURNING CHARACTERISTICS.
   - PRODUCTS AND MANUFACTURERS: SUBJECT TO COMPLIANCE WITH SPECIFIED REQUIREMENTS, PRODUCTS THAT MAY BE INCORPORATED INTO THE WORK INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

   AFM TECHNOLOGIES
   ACH FOAM TECHNOLOGIES
   LNSULFOAM
   STYROTECH

ACCESSORIES

1. MOLDED-SHEET DRAINAGE PANELS: THREE-DIMENSIONAL, NONBIODEGRADABLE, MOLDED HDPE.
   - MINIMUM COMPRESSIVE STRENGTH: 21,000 LBF/SQ. FT. WHEN TESTED ACCORDING TO ASTM D 1621.
   - MINIMUM IN-PLANE FLOW RATE: 23 GPM/FT. OF UNIT WIDTH WHEN TESTED ACCORDING TO ASTM D 4716.
   - BASIS OF DESIGN: J-DRAIN 700 BY JDR ENTERPRISES.

EXAMINATION

1. FIELD MEASUREMENTS: TAKE FIELD MEASUREMENTS OF THE EXISTING UNDERGROUND STRUCTURES TO VERIFY THE EXISTING ELEVATIONS AND DIMENSIONS SHOWN IN THE CONTRACT DOCUMENTS PRIOR TO FABRICATION. REVISE SHOP DRAWINGS AS REQUIRED TO INCORPORATE FIELD MEASUREMENTS. COORDINATE FABRICATION SCHEDULE WITH CONSTRUCTION PROGRESS TO AVOID DELAYING THE WORK.
2. ENGAGE A LICENSED SURVEYOR TO ENSURE THAT THE PROPER LOCATION IS OBTAINED FOR ALL GEOFOAM FILL PLACEMENT.
3. EXAMINATION AND ACCEPTANCE OF CONDITIONS:
   - BEFORE PROCEEDING WITH INSTALLATION, EXAMINE SUBSTRATE TO RECEIVE WORK AND OTHER CONDITIONS FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS AFFECTING PERFORMANCE.
   - EXAMINE STRUCTURES, SUBSTRATES, AREAS AND CONDITIONS, WITH INSTALLER PRESENT, FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES, REQUIRED CLEARANCES, AND OTHER CONDITIONS AFFECTING PERFORMANCE OF THE WORK.
   - PROCEED WITH INSTALLATION ONLY AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. PROCEEDING WITH THE WORK INDICATES ACCEPTANCE OF SURFACES AND CONDITIONS.

PREPARATION

1. FIELD-CUTTING: FIELD MODIFIED BLOCKS SHALL BE CUT USING A HOT WIRE.
   - ALTERNATIVE CUTTING MEASURES SHALL BE APPROVED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER.
   - COSTS RELATED TO FIELD CUTTING OF GEOFOAM ARE CONSIDERED INCIDENTAL TO THE WORK.

INSTALLATION

1. INSTALLATION, GENERAL: PLACE GEOFOAM FILL TO THE LINES AND GRADES SHOWN IN THE SHOP DRAWINGS AND AS DIRECTED BY THE CONTRACTOR'S PROFESSIONAL ENGINEER.
   - OFFSET BLOCKS FROM ADJACENT ROWS OF THE SAME LAYER, AS SHOWN ON THE SHOP DRAWING.
   - AVOID CONTINUOUS JOINTS FROM LAYER TO LAYER AND FROM ROW TO ROW.
   - ROTATE SUBSEQUENT LAYERS ON THE HORIZONTAL PLANE 90 DEGREES FROM THE DIRECTION OF PLACEMENT OF THE PREVIOUS LAYER PLACED.
   - CANTILEVERED BLOCKS:

   CANTILEVERING GEOFOAM A DISTANCE OF 12 INCHES MAX. IS ACCEPTABLE FOR BLOCKS THAT ARE A MINIMUM OF 2FT. IN HEIGHT.

   CANTILEVERING IS NOT PERMITTED FOR BLOCKS LESS THAN 2 FT. IN HEIGHT. BLOCKS THAT CANTILEVER SHALL BE AS LARGE AS POSSIBLE WITH AT LEAST 3 FT. UN-CANTILEVERED DIMENSION IN BOTH PLAN DIRECTIONS THAT HAS SIMILAR SOIL LOADING AS THE CANTILEVER.

   ONLY ONE CANTILEVER IS ACCEPTABLE IN A STACK OF BLOCKS.
2. INSTALLATION TOLERANCES:
   - ACCURATELY FIT GEOFOAM BLOCKS TO ADJACENT BLOCKS.

   MAXIMUM GAP AT VERTICAL JOINTS: 1 INCH.
   - SURFACE TOLERANCES: INSTALL GEOFOAM BLOCKS SUCH THAT THEIR FINISHED SURFACES ARE IN COMPLIANCE WITH SPECIFIED REQUIREMENTS BELOW. VERIFY FINISH SURFACES USING LASER-OPERATION SURVEY INSTRUMENTS, IF REQUESTED BY ARCHITECT.

   TYPICAL FINISH SURFACES AND SURFACES OF BLOCKS RECEIVING SUBSEQUENT BLOCK INSTALLATION: MAXIMUM VARIATION OF 3/4 INCH IN ANY 10'-0" INTERVAL.

   IMMEDIATELY UNDER PAVEMENT: MAXIMUM VARIATION OF 2" FROM INDICATED GRADE.

   AT SLOPES RECEIVING SOIL COVERAGE: MAXIMUM VARIATION OF 3-1/2" FROM INDICATED GRADE.
3. PROVIDE TEMPORARY BALLAST AND/OR GUYING AS NECESSARY UNTIL ALL THE BLOCKS ARE BUILT INTO A HOMOGENEOUS MASS AND COVER MATERIAL IS PLACED.

INSTALLED WORK

1. PROTECTION: PROVIDE FINAL PROTECTION IN ACCORDANCE WITH APPROVED SUBMITTALS, AND MAINTAIN CONDITIONS THAT ENSURE INSTALLED WORK IS WITHOUT DAMAGE OR DETERIORATION AT TIME OF SUBSTANTIAL COMPLETION.
2. DO NOT OPERATE HEAVY EQUIPMENT OR CONDUCT OTHER DAMAGING CONSTRUCTION OPERATIONS DIRECTLY ON TOP OF GEOFOAM FILL.

SHOP DRAWING REVIEW

1. SHORT ELLIOTT HENDRICKSON INC. (SEH) WILL REVIEW THE GENERAL CONTRACTOR'S (GC) SHOP DRAWINGS AND RELATED SUBMITTALS (AS INDICATED BELOW) WITH RESPECT TO THE ABILITY OF THE DETAILED WORK, WHEN COMPLETE, TO BE A PROPERLY FUNCTIONING INTEGRAL ELEMENT OF THE OVERALL STRUCTURAL SYSTEM DESIGNED BY SEH. IN GENERAL, SUBMITTALS WILL NOT BE REVIEWED FOR CORRECT QUANTITIES OR CONSTRUCTION CONSIDERATIONS.
2. PRIOR TO SUBMITTAL OF A SHOP DRAWING OR ANY RELATED MATERIAL TO SEH, THE GC SHALL:
   - REVIEW EACH SUBMISSION FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES AND OPERATIONS OF CONSTRUCTION AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE GC.
   - REVIEW AND APPROVE EACH SUBMISSION.
   - STAMP EACH SUBMISSION AS APPROVED.
3. SEH SHALL ASSUME THAT NO SUBMISSION COMPRISES A VARIATION FROM THE CONTRACT DOCUMENTS UNLESS THE GC ADVISES SEH WITH WRITTEN DOCUMENTATION. SHOP DRAWINGS AND RELATED MATERIAL (IF ANY) REQUIRED ARE INDICATED BELOW. SHOULD SEH REQUIRE MORE THAN TEN (10) WORKING DAYS TO PERFORM THE REVIEW, SEH SHALL SO NOTIFY THE GC. SUBMITTALS SHALL INCLUDE:
   - CONCRETE MIX DESIGNS AND MATERIAL CERTIFICATES INCLUDING ADMIXTURES AND COMPOUNDS APPLIED TO THE CONCRETE AFTER PLACEMENT.
   - AGGREGATE TESTS AND CONCRETE TEST HISTORY FOR EACH MIX DESIGN, WITH THE SUBMISSION OF CONCRETE MIX DESIGNS.
   - REINFORCING STEEL SHOP DRAWINGS INCLUDING ERECTION DRAWINGS AND BENDING DETAILS. BAR LIST WILL NOT BE REVIEWED FOR CORRECT QUANTITIES.
   - ELEVATIONS OF ALL REINFORCED CONCRETE MASONRY WALLS AND ALL CONCRETE WALLS WITH FOOTING STEPS OR OTHER ELEVATION CHANGES, AT A SCALE NO SMALLER THAN 1/8" = 1'-0" SHOWING ALL REQUIRED REINFORCING.
   - GROUT MIX DESIGNS (FOR CMU).
   - STRUCTURAL STEEL SHOP DRAWINGS INCLUDING ERECTION DRAWINGS AND PIECE DETAILS. INCLUDE JOIST, DECKING AND CONNECTOR SUBMITTALS. INCLUDE MISCELLANEOUS FRAMING SPECIFIED ON DRAWINGS. JOIST SHOP DRAWINGS FOR JOISTS CARRYING NON-UNIFORM LOADS SHALL INCLUDE DESIGN CALCULATIONS SIGNED AND SEALED BY AN ENGINEER REGISTERED IN THE STATE OF THE PROJECT.
   - STRUCTURAL STEEL CONNECTION DESIGN CALCULATIONS, WHERE REQUIRED (SIGNED AND SEALED BY ENGINEER REGISTERED IN STATE OF THE PROJECT).
   - SEALED DESIGN CALCULATIONS, STANDARD DETAILS, AND BRIDGING INFORMATION FOR LIGHT GAGE METAL FRAMING. ERECTION PLANS AND DETAILS FOR LIGHT GAGE METAL JOISTS AND LINTELS SPANNING MORE THAT 6'-0" SHALL BE SUBMITTED. STANDARD INTERIOR NON-LOADBEARING WALL FRAMING NEED NOT BE SUBMITTED.
   - PRECAST SHOP DRAWINGS INCLUDING REINFORCING, BEARING DETAILS.
   - PRECAST DESIGN CALCULATIONS SIGNED AND SEALED BY AN ENGINEER REGISTERED IN STATE OF PROJECT
   - PRE-MANUFACTURED WOOD TRUSS SHOP DRAWINGS
   - PRE-MANUFACTURED WOOD TRUSS DESIGN CALCULATIONS SIGNED AND SEALED BY ENGINEER REGISTERED IN STATE OF PROJECT
   - SEH SHALL REVIEW SHOP DRAWINGS AND RELATED MATERIALS WITH COMMENTS PROVIDED THAT EACH SUBMISSION HAS MET THE ABOVE REQUIREMENTS. SEH SHALL RETURN WITHOUT COMMENT UNREQUIRED MATERIAL OR SUBMISSIONS WITHOUT GC APPROVAL STAMP.

SPECIAL INSPECTION

DESCRIPTION	TESTING		INSPECTING		NA
	YES	NO	YES	NO	
1 METAL CONSTRUCTION					
WELDING		•	•		
DETAILS: BRACING, LOCATIONS, ETC.		•	•		
BOLTING		•	•		
2 CONCRETE CONSTRUCTION					
CONCRETE	•		•		
PRECAST/PRESTRESSED CONCRETE	•		•		
REINFORCEMENT: SIZE AND SPACING		•	•		
BOLTS INSTALLED IN CONCRETE		•	•		
3 MASONRY CONSTRUCTION					
REINFORCEMENT: SIZE AND SPACING		•	•		
PRISMS	•		•		
DETAILS: GROUTING, LINTELS, ETC.		•	•		
4 WOOD CONSTRUCTION					•
5 GRADING, EXCAVATION AND FILLING	•		•		
6 PILING, PIERS AND CAISSONS	•		•		

A. SPECIAL INSPECTIONS IN ACCORDANCE WITH IBC CHAPTER 17 SHALL BE PERFORMED.

HKS

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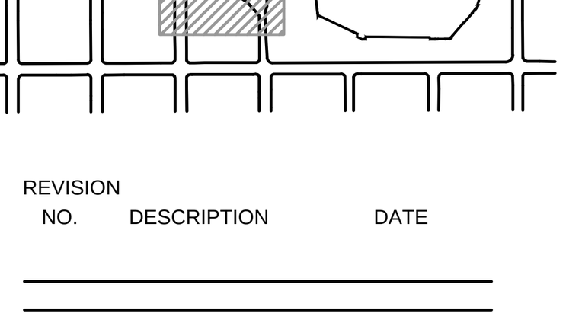
CIVIL ENGINEERING SUBCONSULTANT
COMPANY NAME, INC.
COMPANY ADDRESS

MINNESOTA MULTI- PURPOSE STADIUM

CERTIFICATION
I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Name: Jeff A Johnson
Reg. No.: 17280
Date: 2/1/2016



REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
16246.000

DATE
FEBRUARY 1, 2016

ISSUE
CCD-347 - CD SET

SHEET TITLE
SITE STRUCTURAL NOTES

SHEET NO.
S9.00

PLOT DATE:
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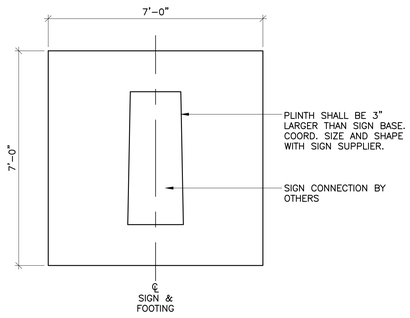
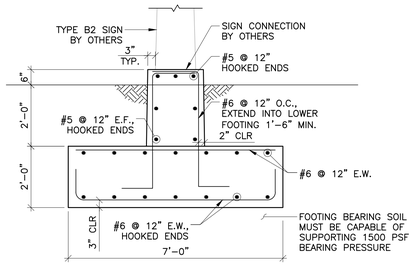


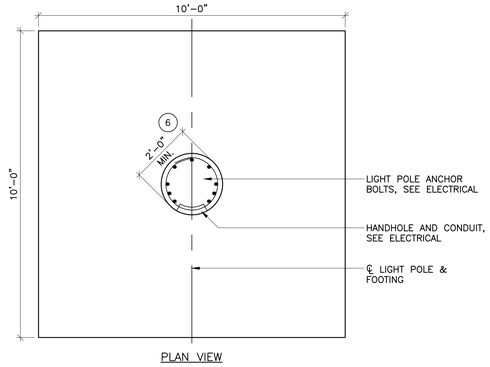
PLAN VIEW



SECTION VIEW

1 MONUMENT SIGN B2 FOUNDATION DETAILS

SCALE: NONE



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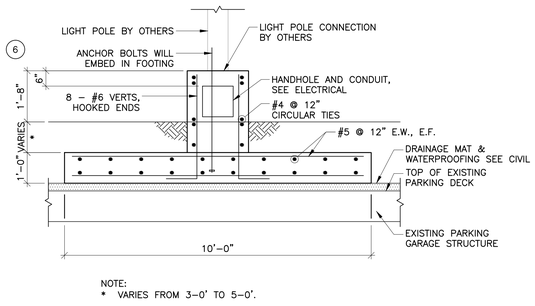
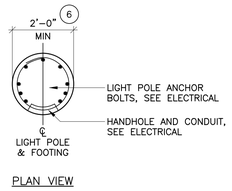


NOTE:
* VARIES FROM 3–0" TO 5–0".

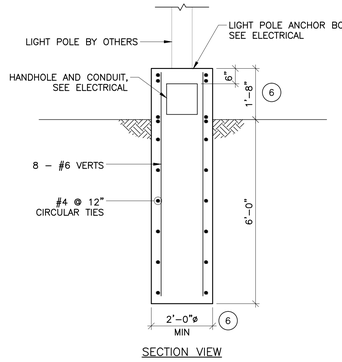
SECTION VIEW

2 LIGHT POLE OVER PARKING GARAGE FOUNDATION DETAILS

SCALE: NONE



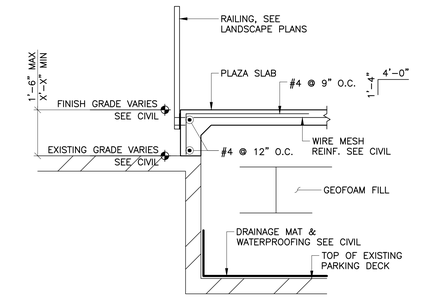
PLAN VIEW



SECTION VIEW

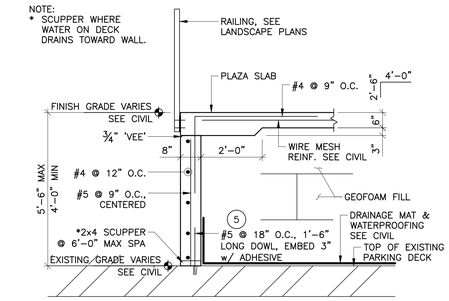
3 LIGHT POLE IN SOIL FOUNDATION DETAILS

SCALE: NONE



4 RETAINING WALL SECTION

SCALE: NONE



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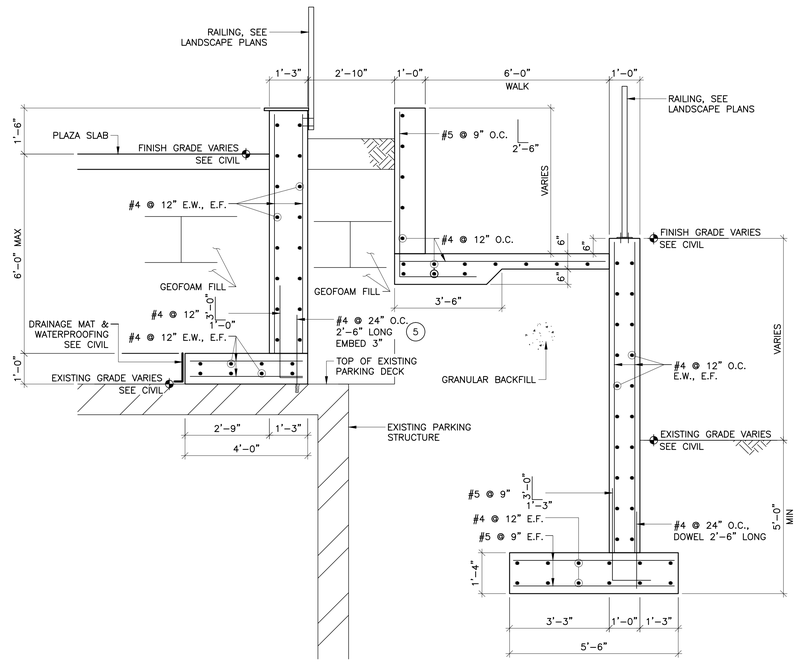

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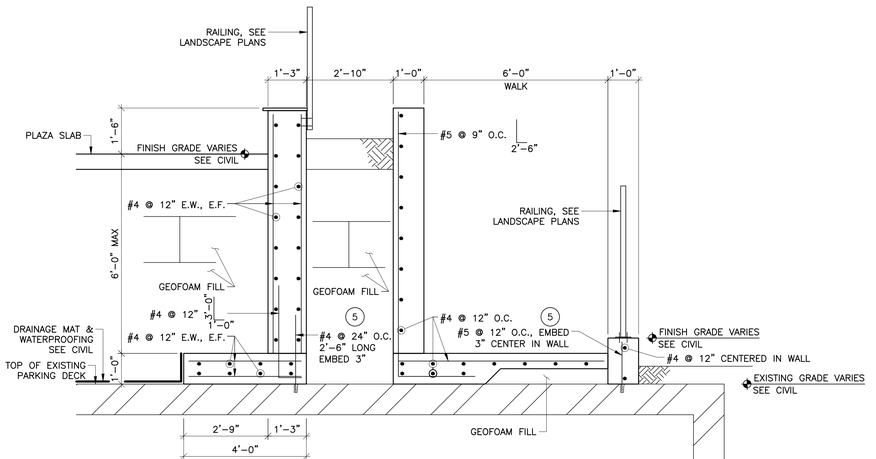

7 RETAINING WALL SECTION

SCALE: NONE

PLOT DATE:
1/20/2016 3:26:54 PM

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CIVIL ENGINEERING SUBCONSULTANT
COMPANY NAME, INC.
COMPANY ADDRESS

MINNESOTA MULTI PURPOSE STADIUM

CERTIFICATION

I hereby certify that the plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name: Jeff A Johnson
Reg. No.: 17280
Date: 2/1/2016

REVISION

NO.	DESCRIPTION	DATE

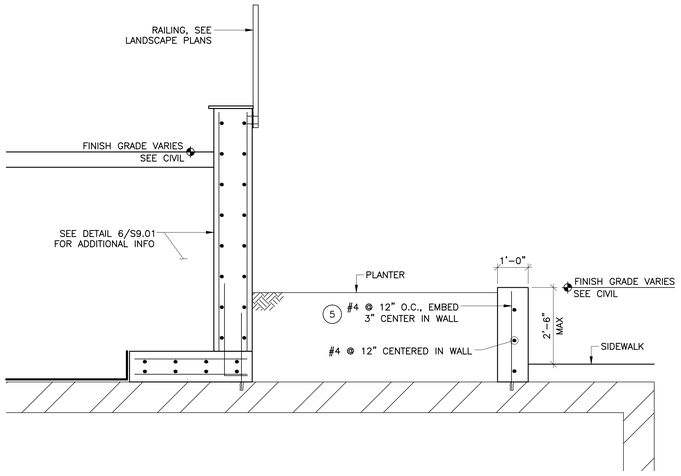
HKS PROJECT NUMBER
16246.000

DATE
FEBRUARY 1, 2016

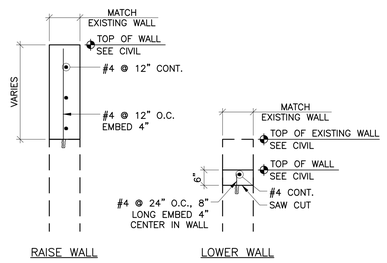
ISSUE
CCD-347 - CD SET

SHEET TITLE
SITE STRUCTURAL FOUNDATIONS

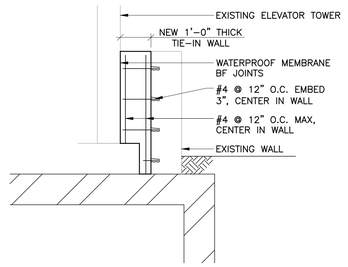
SHEET NO.
S9.01



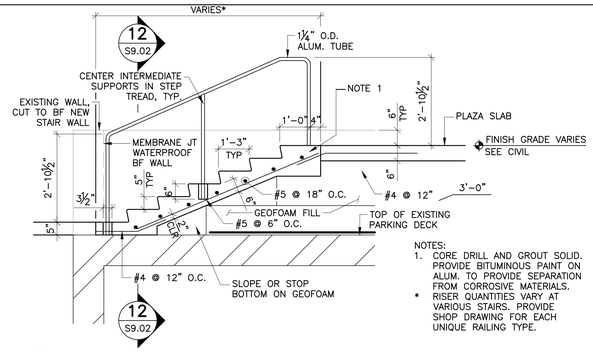
8 RETAINING WALL SECTION
SCALE: NONE



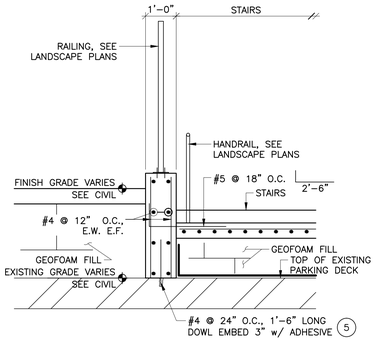
9 RAISE OR LOWER EXISTING WALL – SECTION
SCALE: NONE



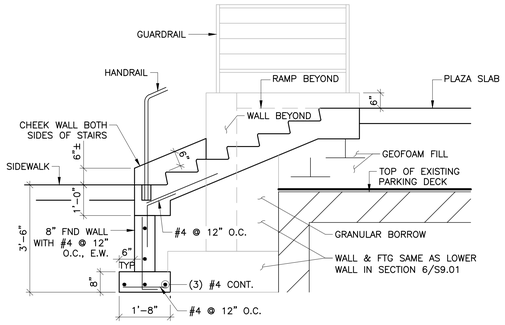
10 TIE-IN WALL AT ELEVATOR TOWER
SCALE: NONE



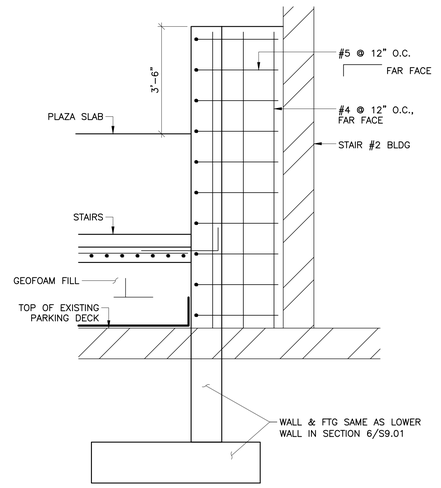
11 STAIRS ON PARKING DECK
SCALE: NONE



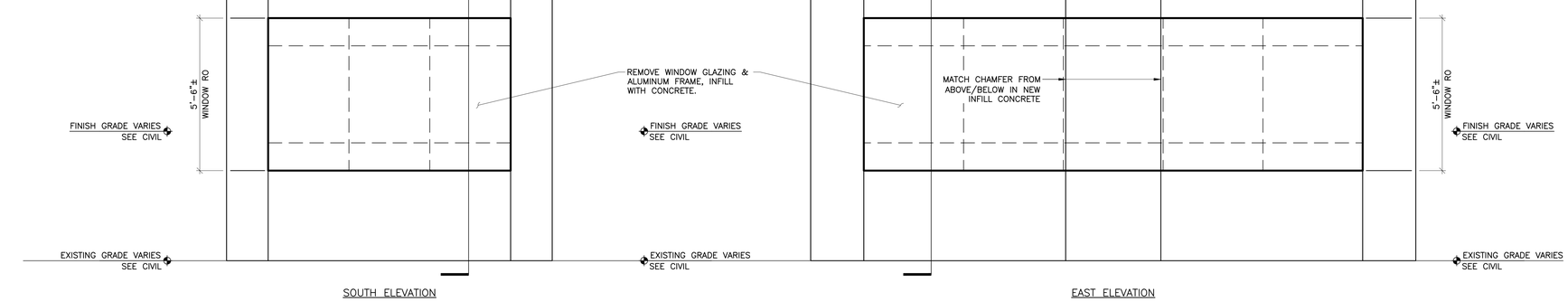
12 STAIRS ON PARKING DECK
SCALE: NONE



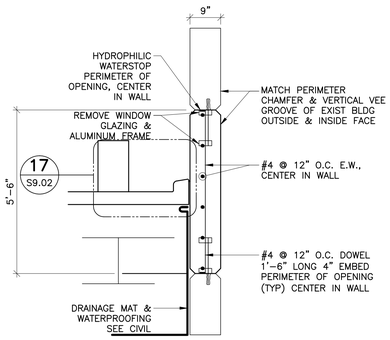
13 STAIRS NEAR PARKING STAIR #2 (4TH & PARK AVE)
SCALE: NONE



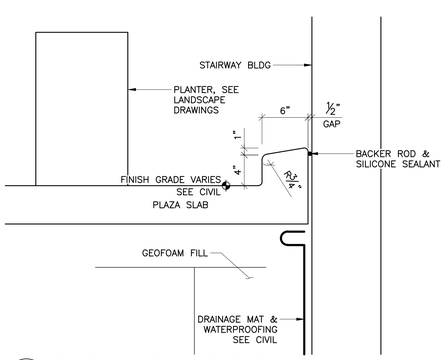
14 STAIRS NEAR PARKING STAIR #2 – SECTION
SCALE: NONE



15 STAIR #2 – PARK AVE & 4TH ST.
SCALE: NONE



16 STAIR #2 WALL SECTION
SCALE: NONE



17 PLAZA CURB AT STAIR BUILDING
SCALE: NONE

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CIVIL ENGINEERING SUBCONSULTANT
COMPANY NAME, INC.
COMPANY ADDRESS

Minnesota MULTI PURPOSE STADIUM

CERTIFICATION
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Name: Jeff A Johnson
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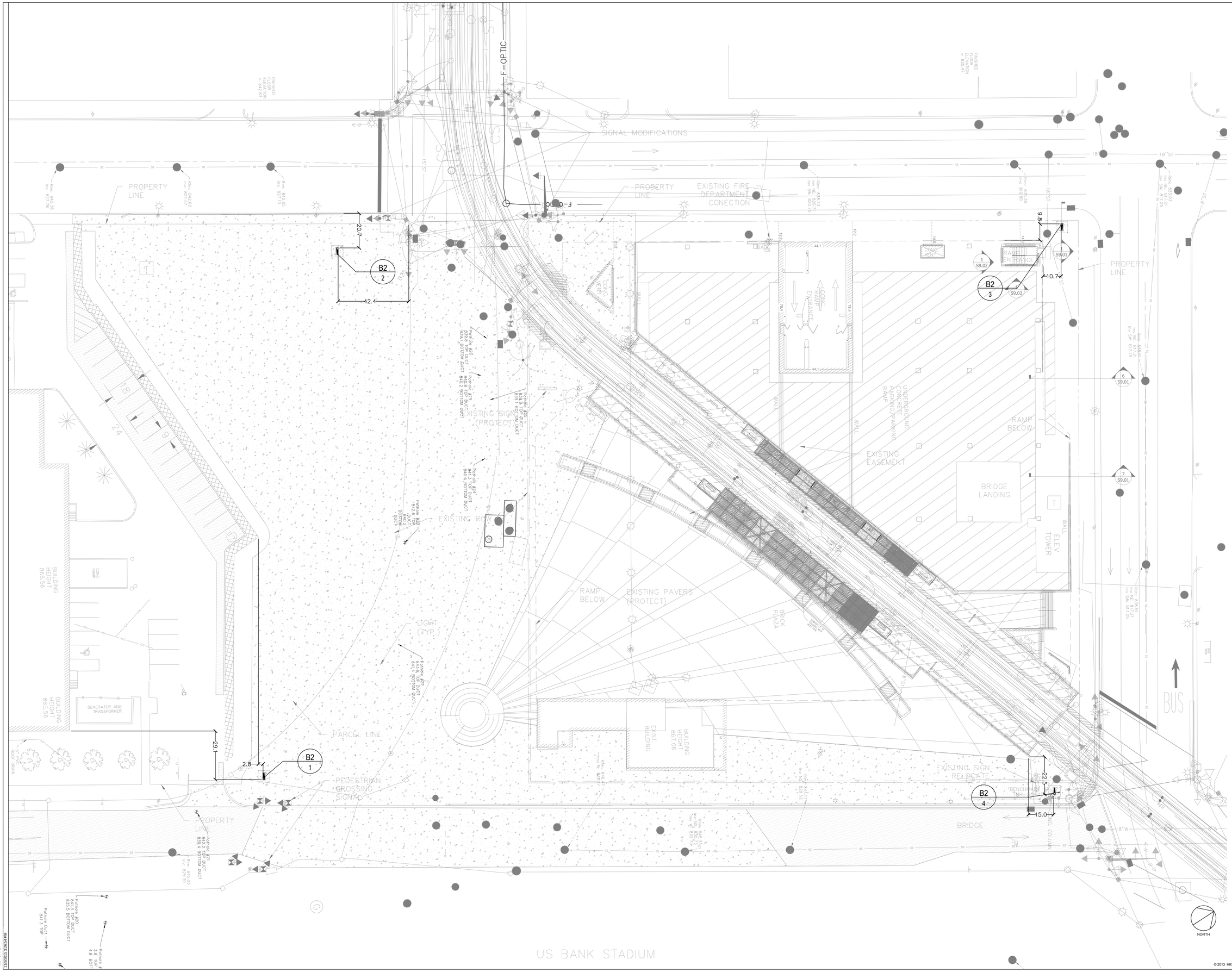
Date: 2/1/2016

REVISION
NO. DESCRIPTION DATE

HKS PROJECT NUMBER
16246.000
DATE
FEBRUARY 1, 2016
ISSUE
CCD-347 - CD SET

SHEET TITLE
SITE STRUCTURA FOUNDATIONS

SHEET NO.
S9.02



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Minnesota
MULTI-PURPOSE STADIUM

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Name: _____
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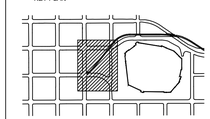
KEY PLAN



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16246.000

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FEBRUARY 01, 2016

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SHEET TITLE
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EG1-0101

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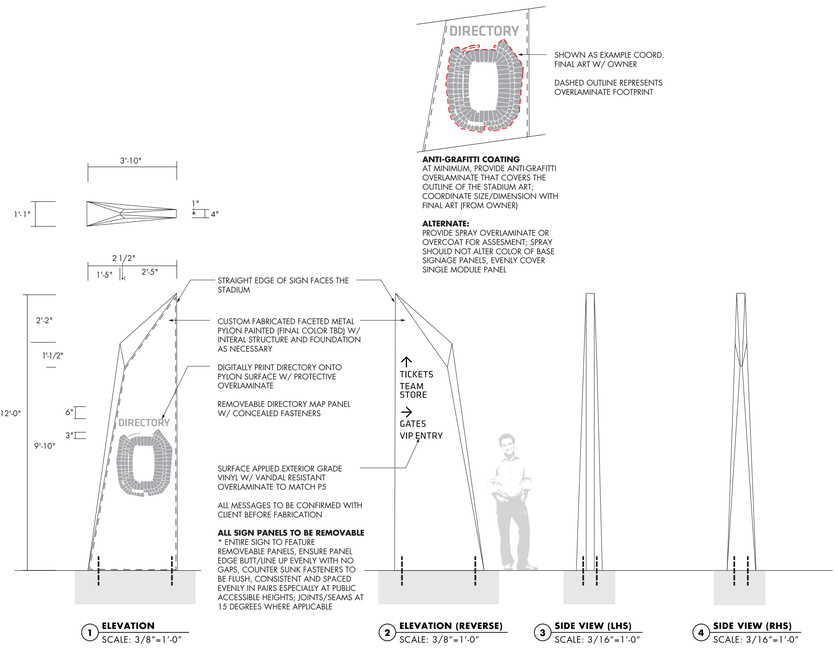

B2 PEDESTRIAN DIRECTION - FREESTANDING

NORTH

PLOT DATE:
1/15/2015 2:26:54 PM

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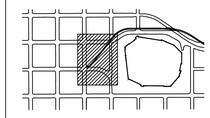

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HKS PROJECT NUMBER
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DATE
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ISSUE
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SHEET TITLE
SIGN TYPE B

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EG3.201A