# GENERAL CONSTRUCTION NOTES

**CODE:**
VAULT DESIGN AND CONSTRUCTION SHALL CONFORM TO THE PROVISIONS OF THE 2018 IBC AS ADOPTED BY THE CITY OF PUYALLUP, WASHINGTON.

**GENERAL DETAILS:**
CONSTRUCTION DETAILS NOT FULLY SHOWN OR NOTED SHALL BE SIMILAR TO DETAILS SHOWN FOR SIMILAR CONDITIONS.

**DISCREPANCIES:**
THE CONTRACTOR SHALL NOTIFY ENGINEER UPON FINDING ANY DISCREPANCY OR OMISSION IN THE DRAWINGS OR SPECIFICATIONS.

**SHORING & EXCAVATION:**
THE CONTRACTOR SHALL BE SOLEY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES, INCLUDING LAGGING, SHORING AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS AND UTILITIES.

**WALL BACKFILL:**
PRIOR TO BACKFILLING VAULT WALLS THE CONTRACTOR SHALL HAVE PLACED THE LID PLANKS AND PROVIDED A MINIMUM OF 5 DAYS OF CURE ON THE PLANK VOID FILL.

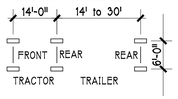
**BACKFILL SOIL:**
SEE THE GEOTECHNICAL REPORT FOR WALL BACKFILL MATERIAL REQUIREMENTS AND PLACEMENT AND COMPACTION REQUIREMENTS. ALL COMPACTION OCCURING WITHIN 5' OF THE WALL SHALL BE COMPLETED USING HAND OPERATED MACHINERY.

# DESIGN CRITERIA

**VERTICAL LOADS ON VAULT LID:**

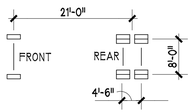
***UNIFORM LIVE LOAD :** = 150PSF

***HS20 TRUCK WHEEL LOADS :**




TRACTOR :
FRONT AXLE = 8,000 lb.
SINGLE REAR AXLE = 32,000 lb.
TRAILER :
SINGLE REAR AXLE = 32,000 lb.

***FIRE TRUCK WHEEL LOADS :**




FRONT AXLE = 22,000 lb.
REAR AXLES = 53,000 lb.
(DUAL TANDEM)
26,500 lbs EA AXLE

***OUTRIGGER PAD POINT LOAD:**
45,000lbs DISTRIBUTED OVER 18"x18" PAD @ 15'-0" o/c

* DESIGN UNIFORM LIVE LOAD, HS-20, FIRE TRUCK & OUTRIGGER LOADS TO BE APPLIED INDEPENDENTLY AND IN COMBINATION WITH THE SOIL COVER DEAD LOAD.

**AT GRADE GRATING:**
SAME AS LID LOADING EXCLUDING OUTRIGGER LOAD.

**IMPACT & FATIGUE:**
DUE TO THE LOW SPEEDS OF SERVICE VEHICLES OVER THE LID, AND THE SOIL COVER OVER THE LID, INCREASES IN VEHICLE LOADS TO ACCOUNT FOR IMPACT & FATIGUE ARE NOT REQUIRED.

**SOIL COVER FOR LID DESIGN:**
PLANK MANUFACTURER SHALL BE RESPONSIBLE FOR DETERMINING THE SOIL COVER DEPTHS USED IN THE LID DESIGN BASED ON THE VAULT AND FINISHED GRADE ELEVATIONS AS SHOWN ON THE PERMITTED SET OF CIVIL DWGS.

**SOIL COVER FOR SUBSTRUCTURE DESIGN:**
THE SUBSTRUCTURE WAS DESIGNED FOR A SOIL COVER OF 1.5FT MIN TO 3.3FT MAX OVER THE VAULT.

**FOUNDATION DESIGN:**
FOUNDATION DESIGN IS BASED ON THE FOLLOWING VALUES PROVIDED BY TERRA ASSOCIATES IN THEIR GEOTECHNICAL REPORT DATED 01-12-2022, REVISED 06-23-2023 AND E-MAIL CORRESPONDENCE OF 02-07-2024

ALLOWABLE BEARING PRESSURE: 2,500 PSF

LATERAL EARTH PRESSURES ON VAULT WALLS:
AT REST CONDITION: 55 PCF EFW DRAINED BACKFILL
90 PCF EFW SATURATED BACKFILL
SEISMIC PRESSURE COMPONENT: E = 8H PSF UNIFORM
SATURATED SOIL DENSITY: 125 PCF
HIGH GROUND WATER EL: 53.00

# WATERSTOP

**PVC WATERSTOP**
WATERSTOPS SHALL BE 4" RIBBED WITH CENTER BULB AS MANUFACTURED BY GREENSTREAK, INC - OR EQUIVALENT - AND SHALL BE FORMULATED FROM VIRGIN RAW MATERIAL AND SHALL MEET THE THE ARMY CORPS OF ENGINEERS STANDARD SPECIFICATION CRD-C 572-74. INSTALL WATERSTOP IN ACCORDANCE WITH ALL OF THE MANUFACTURERS RECOMMENDATION. SPLICING OF THE WATERSTOP SHALL BE ACCOMPLISHED WITH A THERMOSTATICALLY CONTROLLEDE SPLICING IRON IN ACCORDANCE WITH THE MANUFACTURERS DIRECTION AND RECOMMENDATIONS.

**BENTONITE CLAY WATERSTOP**
WATERSTOP SHALL BE RX-101 AS MANUFACTURED BY CETCO OR EQUIVALENT. INSTALL WATERSTOP IN ACCORDANCE WITH ALL OF THE MANUFACTURERS RECOMMENDATIONS. WATERSTOP SHALL BE ATTACHED TO THE CONCRETE SURFACE USING A CONTINUOUS BEAD OF CETCO CETSEAL OR SHALL BE MECHANICALLY FASTENED TO THE CONCRETE SURFACE WITH CETCO REVO-FIX AS REQUIRED BY THE TECHNICAL DATA SHEET FOR WATERSTOP-RX. WATERSTOP SHALL BE PROTECTED AGAINST EXPOSURE TO WATER FROM ANY SOURCE UNTIL THE CONCRETE ENCASING THE WATERSTOP IS PLACED AT THE JOINT.

# CONCRETE

**CONCRETE REQUIREMENTS:**

| LOCATION | STRENGTH | MAX W/C RATIO |
|---|---|---|
| WALLS & C.I.P. LID | 4000PSI @ 28 DAYS | 0.50 |
| FTGS & GRADE SLAB | 4000PSI @ 56 DAYS | 0.53 |
| PLANK VOID FILL | TO MEET PLANK MFGR'S REQUIREMENTS* | |
| PLANK JOINT GROUT | TO MEET PLANK MFGR'S REQUIREMENTS* | |

* MINIMUM STRENGTH SHALL BE 3000PSI @ 28 DAYS.

AIR CONTENT:
CONCRETE EXPOSED TO WEATHER SHALL CONTAIN 5% +/-1% ENTRAINED AIR.

MIX DESIGN:
SHALL BE BASED ON FIELD EXPERIENCE OR TRIAL MIXTURES IN CONFORMANCE WITH THE SPECIFICATIONS.

SUBMITTALS:
PROVIDE MIX DESIGNS TO THE ENGINEER FOR REVIEW PRIOR TO PLACEMENT.

**MATERIAL REQUIREMENTS:**
CEMENT: ASTM C150. ADMIXTURES: ACI 301.
AGGREGATES: ASTM C33. WATER: ASTM C94.

**EXPOSURE CATEGORIES:**
FREEZING THAWING F0
SULFATE S0
IN CONTACT w/ WATER W1
CORROSION PROTECTION C1

**PLACING REQUIREMENTS:**

PLACING:
PLACE CONCRETE AS NEARLY AS PRACTICABLE TO ITS FINAL POSITION TO AVOID SEGREGATION.

DEBRIS:
REMOVE ALL DEBRIS FROM FORMS PRIOR TO PLACING CONCRETE.

CONSOLIDATION:
CONSOLIDATE CONCRETE BY SUITABLE MEANS. THOROUGHLY WORK CONCRETE AROUND EMBEDDED ITEMS AND INTO CORNERS OF FORMS.

CURING REQUIREMENTS:

CURING:
CONCRETE SHALL BE MAINTAINED IN A MOIST CONDITION FOR A SUITABLE PERIOD OF TIME AFTER PLACEMENT.

WEATHER CONDITIONS:
ADEQUATE PRECAUTIONS SHALL BE TAKEN DURING HOT AND COLD WEATHER IN ACCORDANCE WITH THE SPECIFICATIONS.

**LID PLANK PLACEMENT:**
IN NO CASE SHALL THE LID PLANKS BE PLACED BEFORE THE WALLS HAVE BEEN ALLOWED A MINIMUM OF 3 DAYS OF CURE. WHEN AVERAGE AMBIENT TEMPERATURES ARE LESS THAN 50 DEGREES FAHRENHEIT, THE CONTRACTOR MUST ALLOW A MINIMUM CURE TIME OF 7 DAYS OR PROVIDE AN ADDITIONAL SET OF CYLINDERS TO BE BROKEN AT THE TIME OF LID PLACEMENT DEMONSTRATING A MINIMUM CONCRETE STRENGTH OF 1,000 PSI HAS BEEN REACHED.

**FINISH:**
a. CONCRETE FINISH TO BE SMOOTH WITH NO FINS, VOIDS, ROCK POCKETS, OR OTHER IRREGULARITIES.
b. CONE SNAP TIES OR EQUIVALENT ARE REQUIRED AND ARE TO BE REMOVED AND SEALED AT ALL INTERIOR WALL SURFACES. NO FLAT TIES ALLOWED.

WABO certified inspection agency meets qualifcation requirements of the 2018 IBC.

# SPECIAL INSPECTION PLAN

**GENERAL:**
SPECIAL INSPECTION BY A QUALIFIED INSPECTOR IS REQUIRED IN ACCORDANCE WITH THE 2018 IBC.

**QUALIFICATION:**
THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL.

**REQUIRED VERIFICATION & INSPECTION:**
THE SPECIAL INSPECTOR SHALL PERFORM THE VERIFICATIONS & INSPECTIONS NOTED IN THE SCHEDULE BELOW

## INSPECTION & TESTING SCHEDULE

| TYPES OF WORK | FREQ. | 2018 IBC SECTION |
|---|---|---|
| CAST IN PLACE CONC | | |
| REINFORCING STEEL, PLACEMENT. | P | 1705.3 |
| INSTALLATION & FASTENING OF PRECAST PANELS | P | 1705.3 |
| PLACEMENT OF CONCRETE | C | 1705.3 |
| VERIFYING USE OF REQUIRED DESIGN MIX | P | 1705.3 |
| TESTING OF THE CONCRETE FOR SPECIFIED STRENGTH, AIR CONTENT AND SLUMP | C | 1705.3 |
| STRUCTURAL STEEL | | |
| STRUCTURAL STEEL ( GRATING ) FABRICATION | P | 1704.2.5 |
| SOILS | | |
| VERIFICATION OF SOIL-BEARING CAPACITY: INSTALLATION OF DRAINAGE SYSTEM: | P | 1705.6 |
| PLACEMENT & COMPACTION OF WALL BACKFILL: | P | 1705.6 |

**FREQUENCY LEGEND**
C = CONTINUOUS P = PERIODIC
SEE REFERENCES AND STANDARDS LISTED WITHIN THE VERIFICATION & INSPECTION SCHEDULE FOR MEANING OF PERIODIC AND CONTINUOUS INSPECTIONS.

**CERTIFICATE OF COMPLIANCE:**
THE SPECIAL INSPECTION AGENCY SHALL PROVIDE A FINAL LETTER CERTIFICATE OF COMPLIANCE STATING THAT THE REVIEWED WORK WAS COMPLETED IN ACCORDANCE WITH THE PERMITTED DOCUMENTS.

**SUBMITTAL OF REPORTS:**
ALL SPECIAL INSPECTION REPORTS AND TESTING REPORTS SHALL BE SUBMITTED TO THE OWNER, SITE STRUCTURES AND THE BUILDING OFFICIAL BY THE AGENCY PERFORMING THE INSPECTION OR TESTING.

# HOLLOW CORE PLANK

**SCOPE OF WORK:**
THE WORK INCLUDED IS THE DESIGN, MANUFACTURE AND DELIVERY OF PRECAST PRESTRESSED CONCRETE UNITS. DESIGN PLANK FOR THE MOST CRITICAL OF THE LOADING CONDITIONS AS SHOWN WITHIN THE DESIGN CRITERIA NOTE.

THE MANUFACTURER SHALL SUBMIT STRUCTURAL CALCULATIONS AND PLACEMENT DRAWINGS SIGNED BY A WASHINGTON STATE REGISTERED CIVIL ENGINEER FOR REVIEW PRIOR TO FABRICATION.

THE MANUFACTURER SHALL INSTALL ALL BLOCK OUTS REQUIRED FOR STRUCTURAL CONNECTIONS AS INDICATED ON THESE DRAWINGS. NO OTHER PENETRATIONS ARE ALLOWED WITHOUT THE PRIOR APPROVAL OF THE PLANK MANUFACTURER.

ALL HOLLOW CORE JOINTS SHALL BE GROUTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

# DEFERRED SUBMITTALS

THE FOLLOWING AREAS OF WORK SHALL BE CONSIDERED AS "DEFERRED SUBMITTALS" AS DEFINED IN THE 2018 IBC

PRECAST PRESTRESSED HOLLOW CORE PLANK

ALL DEFERRED SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF A CIVIL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WASHINGTON WHO HAS CURRENT DESIGN EXPERIENCE IN THE TYPE OF WORK REVIEWED.

THE DEFERRED SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED BY THE ENGINEER OF RECORD.

COPIES OF THE APPROVED DEFERRED SUBMITTAL DOCUMENTS SHALL BE MAINTAINED ON SITE BY THE GENERAL CONTRACTOR AND MADE AVAILABLE FOR REVIEW AS REQUESTED.

# STRUCTURAL STEEL

**MATERIALS:**
a. STEEL WF SHAPES SHALL CONFORM TO ASTM A992 Fy=50KSI
b. OTHER STRUCTURAL STEEL SHAPES & PLATES SHALL CONFORM TO ASTM A36.
c. WELD STUDS SHALL CONFORM TO ASTM A 108

**WELDING:**
CONFORM TO AWS D1.1 "STRUCTRUAL WELDING CODE - STEEL". WELDERS SHALL BE CERTIFIED IN ACCORDANCE WITH WABO REQUIREMENTS. USE E70 ELECTRODES OF TYPE REQUIRED FOR MATERIALS TO BE WELDED.

**GALVANIZING:**
ALL STEEL SECTIONS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION CONFORMING TO ASM A-123. REPAIRS SHALL CONFORM TO ASTM A-780 USING ZINC RICH PAINT. THE COATING THICKNESS FOR THE PAINT MUST BE 50% MORE THAN THE SURROUNDING COATING THICKNESS, BUT NOT GREATER THAN 4.0 MILS.

# REINFORCING BAR

**MATERIAL REQUIREMENT:**

**REINFORCING BARS:**
USE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60, EXCEPT AS NOTED ON THE DRAWINGS.

**FABRICATION AND PLACING REQUIREMENTS:**

**BENDING:**
BARS SHALL BE BENT COLD. BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE FIELD BENT UNLESS NOTED OR SHOWN OTHERWISE OR AUTHORIZED BY THE ENGINEER.

**PLACING:**
REINFORCEMENT SHALL BE SUPPORTED AND TIED TO PREVENT DISPLACEMENT BY CONSTRUCTION LOADS OR BY PLACING OF CONCRETE. MAXIMUM SPACING OF SUPPORTS SHALL BE 3'-6".

**CONCRETE COVER:**
MINIMUM CONCRETE COVER FOR REINF. SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:

CONCRETE CAST AGAINST EARTH_____ 3"
CONCRETE CAST AGAINST FORMS AND EXPOSED TO EARTH_____ 2"

**WET SETTINGS:**
REINFORCEMENT ANCHOR BOLTS, OR ANY EMBEDDED ITEM WITHIN THE CONCRETE, MAY NOT BE SET INTO THE CONCRETE AFTER IT HAS BEEN POURED WITHIN THE FORMS.

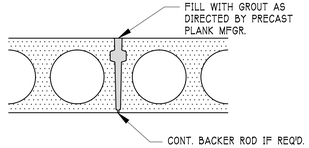
**LAP SPLICES:**
LAP ALL BARS 28" MIN UNLESS SHOWN OTHERWISE ON THESE DRAWINGS.

**SUBMITTALS:**
PROVIDE REINFORCING BAR FABRICATION AND PLACEMENT SHOP DRAWINGS TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.

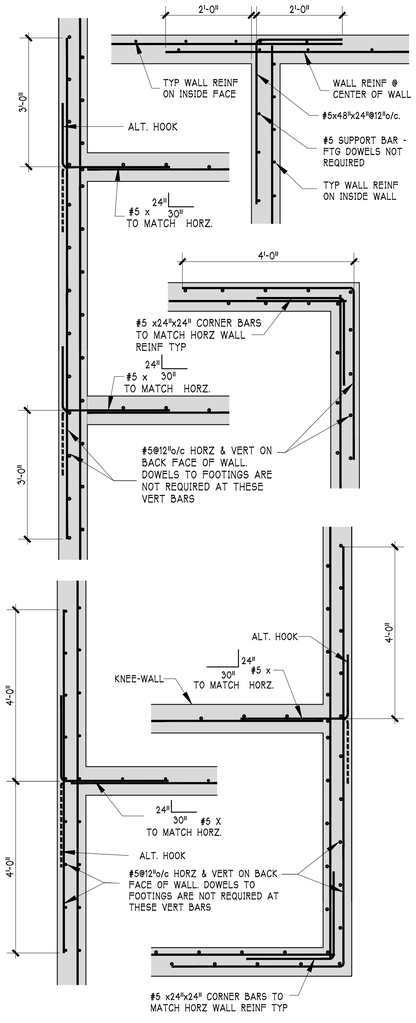
# OPEN METAL GRATING

OPEN METAL GRATING SHALL BE WELDED STEEL BAR GRATING AS SPECIFIED ON THE DRAWINGS. ALL STEEL GRATING AND GRATING COMPONENTS INCLUDING ITEMS EMBEDED WITHIN THE CONCRETE SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION. SEE STRUCTURAL STEEL NOTES FOR GALVANIZING REQUIREMENTS.

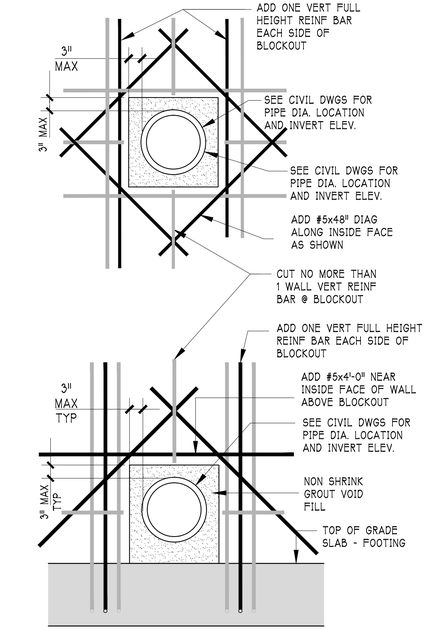
SUPPLIER SHALL PROVIDE ALL COMPONENTS NECESSARY TO INSTALL AND SECURE THE GRATING IN PLACE & SHALL PROVIDE SHOP DRAWINGS DETAILING ALL COMPONENTS OF THE INSTALLATION.

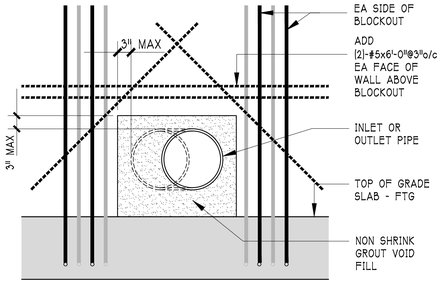



1/S1 TYP PLANK JOINT DETAIL
SCALE 1"=1'-0"

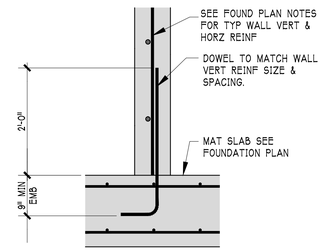



2/S1 TYP WALL CORNER REINF.
NTS




3/S1 WALL REINF @ PIPE PENETRATION
3/4"=1'-0"




4/S1 KNEEWALL DOWELS TO MAT
SCALE 3/4"=1'-0"

| DATE: | DESCRIPTION: | CLOUDED |
|---|---|---|
| 02-08-2024 | ISSUED FOR CONST PERMIT APPLICATION | NA |

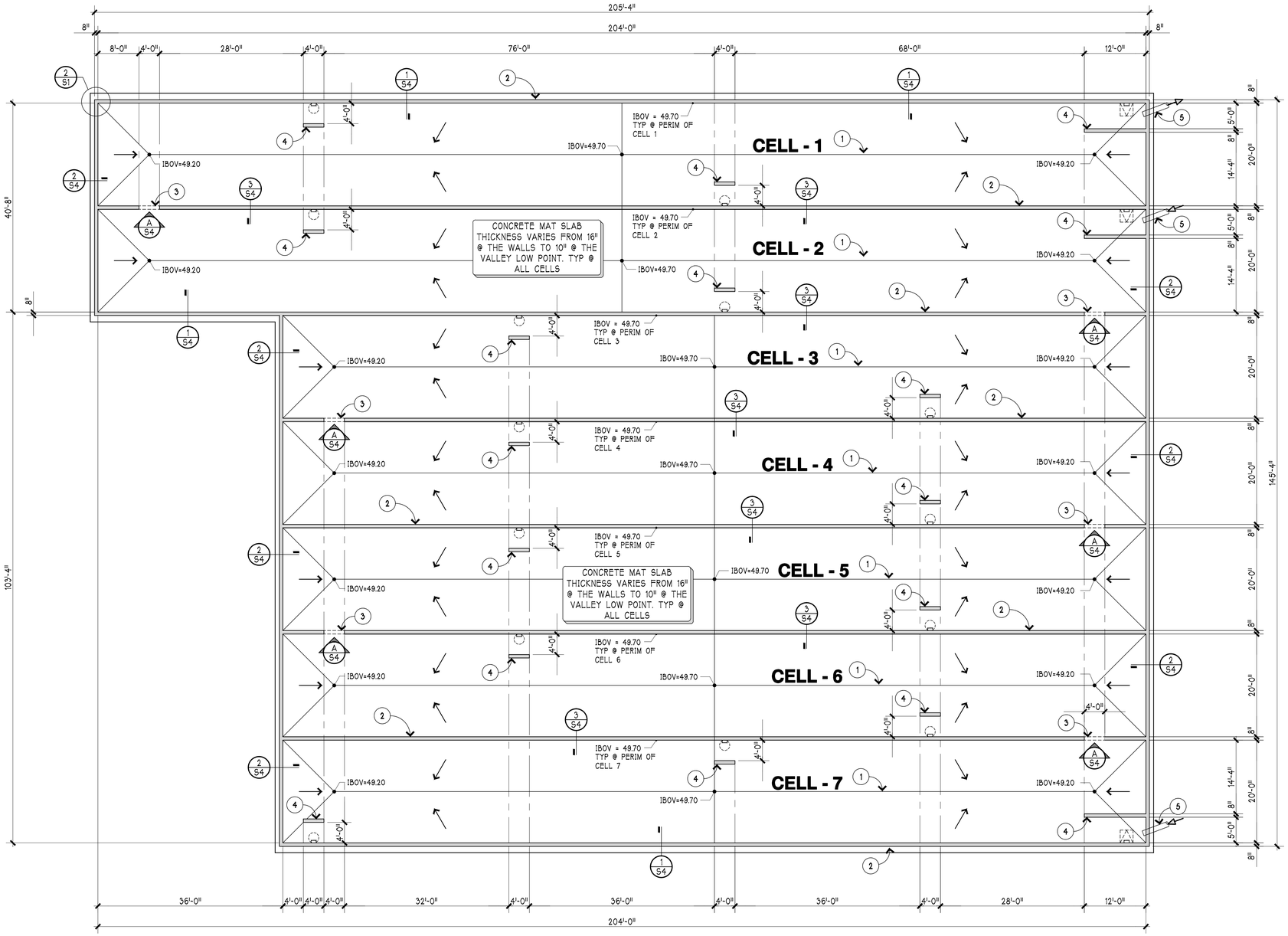

Site Structures
A Division of Koenik Engineering PC
10506 19th AVE SE, SUITE D
EVERETT, WASHINGTON 98208
PH: (425) - 357 - 9600
e-mail: dan@koenik.com


02-08-2024
DANIEL J. KOENIK
STATE OF WASHINGTON
20764
PROFESSIONAL ENGINEER

FORTRESS - PUYALLUP
STORM WATER DETENTION VAULT
CITY OF PUYALLUP, WASHINGTON

STRUCTURAL NOTES TYP DETAILS

SHEET:
S1 OF 5
S-24-007




## VAULT FOUNDATION PLAN

SCALE 3/32" = 1'-0"

0' 2' 4' 8' 16' 24'

## PLAN KEYNOTES

1. MAT FOUNDATION THICKNESS VARIES FROM 16" @ THE CELL WALLS TO 10" @ THE VALLEY LOW POINTS. SEE B & C/S4 FOR REINFORCING. CONTRACTOR TO PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE w/ 5/S4 AS REQUIRED BY THE POUR SEQUENCE - SUBJECT TO THE ENGINEERS REVIEW AND APPROVAL.
2. C.I.P. CONCRETE WALLS AT THE PERIMETER & INTERIOR OF THE VAULT. SEE WALL SECTIONS FOR THICKNESS & REINFORCING. PROVIDE ADDED REINF AT PIPE PENETRATIONS AS SHOWN IN 3/S1. PROVIDE REINF @ ALL WALL CORNERS AS SHOWN IN 2/S1. CONTRACTOR TO PROVIDE CONSTRUCTION JOINTS IN ACCORDANCE w/ 6 & 7/S4 AS REQUIRED BY THE POUR SEQUENCE SUBJECT TO THE ENGINEERS REVIEW AND APPROVAL.
3. 4'-0" WIDE OPENING WITHIN INTERIOR WALLS. SEE A/S4 FOR WALL REINF. @ OPENING.
4. 8" THICK KNEE-WALL. REINF w/ #5@12"o/c HORZ. AND VERT. PLACED AT THE CENTER OF THE WALL. PROVIDE (2)-#5 HORZ AT THE TOP OF THE WALL & (2)-#5 VERT AT THE FREE ENDS OF THE WALL. EXTEND VERT BARS 10" INTO THE 12-1/2" THICK LID CLOSURE POUR. SEE 4/S1 FOR DOWELS TO MAT SLAB.
5. PIPE INLET OR OUTLET TO VAULT. SEE CIVIL DWGS FOR PIPE DIAMETER, LOCATION & INVERT ELEVATION. SEE 3/S1 FOR WALL REINF @ PENETRATION. ADDITIONAL REINF IS NOT REQUIRED FOR PIPES LESS THAN 8"ø PROVIDED THEY ARE PLACED BETWEEN THE TYPICAL WALL REINFORCING.

## LEGEND

IBOV INSIDE BOTTOM OF VAULT [ TOP OF MAT SLAB ]

CIP CONCRETE WALL

## DIMENSIONS & ELEVATIONS

THE CONTRACTOR AND HIS SUBCONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND ELEVATIONS SHOWN ON THESE DRAWINGS WITH THE CURRENT PERMITTED SET OF CIVIL DRAWINGS, AND SHALL NOTIFY BOTH THE CIVIL & STRUCTURAL ENGINEERS IN WRITING OF ALL DISCREPANCIES BETWEEN THE CIVIL DWGS AND THESE DWGS PRIOR TO CONSTRUCTION.

| DATE: | DESCRIPTION: | CLOUDED |
|---|---|---|
| 02-08-2024 | ISSUED FOR CONST PERMIT APPLICATION | NA |


Site Structures
A Division of Koenik Engineering PC
10505 19th AVE SE, SUITE D
EVERETT, WASHINGTON 98208
PH: (425) - 357 - 9600
e-mail: dan@koenik.com


02-08-2024 DANIEL J. KOENIK STATE OF WASHINGTON 20764 PROFESSIONAL ENGINEER

**FORTRESS - PUYALLUP**

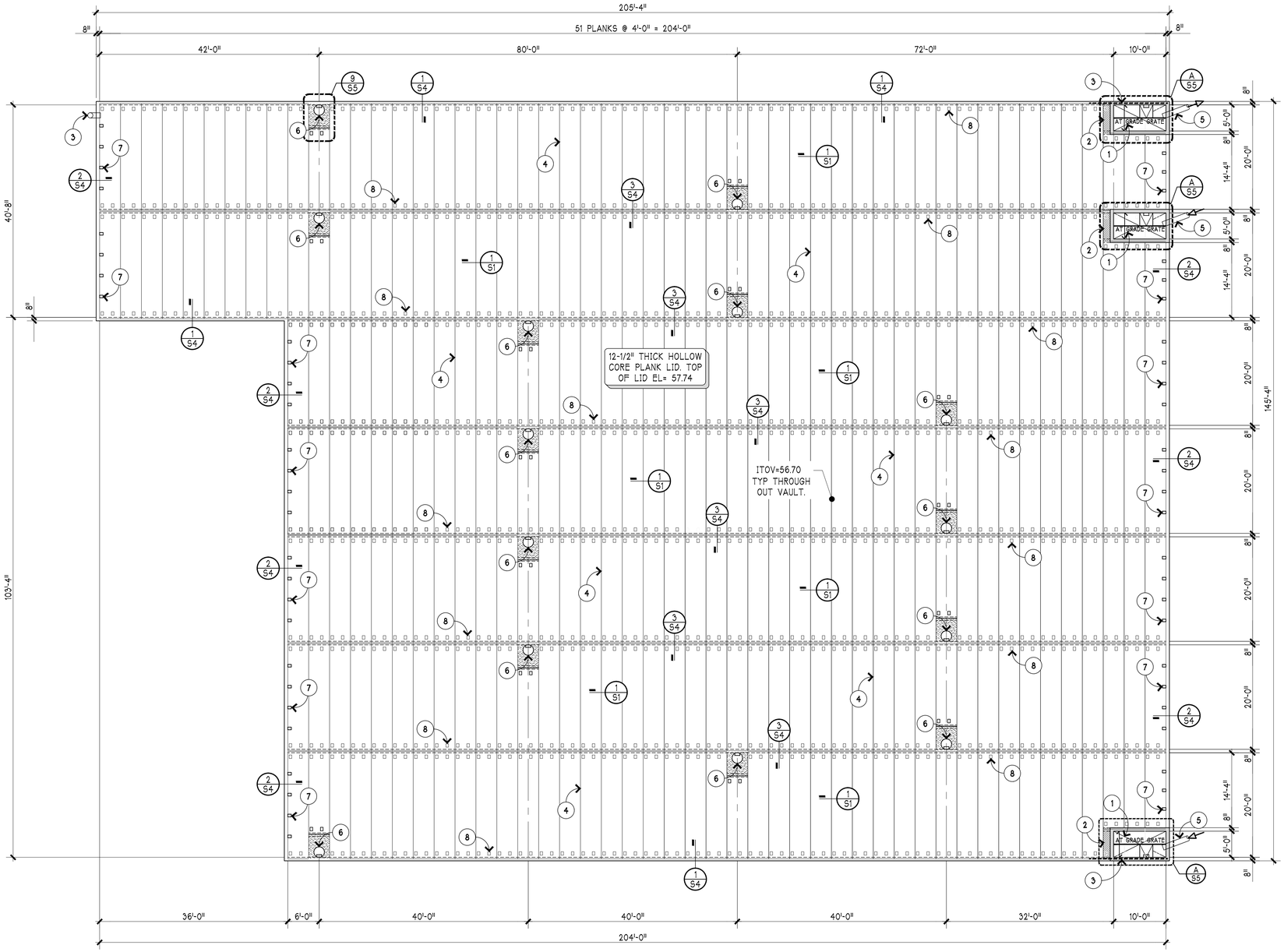
**STORM WATER DETENTION VAULT**

**CITY OF PUYALLUP, WASHINGTON**

**VAULT FOUNDATION PLAN**

SHEET: **S2** OF 5

S-24-007




## VAULT LID PLAN

SCALE 3/32" = 1'-0"

2' 8' 24'
0' 4' 16'

## PLAN KEYNOTES

1. 5'-0"x10'-0" OPNG TO RECEIVE OPEN METAL BAR GRATING w/ INTEGRAL 30"x30" HINGED ACCESS HATCH AND LADDER RUNGS. SET TOP OF GRATING FLUSH WITH THE ADJACENT FINISHED GRADE. SEE A/S5 FOR GRATING ASSEMBLY INFORMATION.
2. HATCHED AREA REPRESENTS A 24" WIDE x 12-1/2" THICK CAST IN PLACE CONCRETE SLAB BM. SEE 3/S5 FOR REINF.
3. 12"ø OPNG THRU WALL FOR ACTIVE VENTILATION DURING VAULT SERVICING. SEE 8/S5 FOR VENT DETAIL.
4. 12-1/2" THICK PRECAST HOLLOW CORE PLANK. SEE DESIGN CRITERIA NOTES ON SHEET S1 FOR PLANK LOADING REQUIREMENTS.
5. PIPE INLET OR OUTLET TO VAULT. SEE CIVIL DWGS FOR PIPE DIAMETER, LOCATION & INVERT ELEVATION. SEE 3/S1 FOR WALL REINF @ PENETRATION. ADDITIONAL REINF IS NOT REQUIRED FOR PIPES LESS THAN 8"ø PROVIDED THEY ARE PLACED BETWEEN THE TYPICAL WALL REINFORCING.
6. 24" DIAMETER OPNG w/ KNEEWALL TO ACCEPT RISERS, LADDER, RING AND LOCKING MANHOLE COVER PER CIVIL DRAWINGS. SEE 9/S5 FOR LID REINF AT OPENING. CONTRACTOTR SHALL PROVIDE, TO THE CIVIL ENGINEER, MATERIAL SUBMITTALS FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
7. PROVIDE BLOCKOUTS IN THE EDGE CELL OF THE PLANK PARALLEL TO THE PERIMETER VAULT WALLS. LOCATE BLOCKOUTS APPROXIMATELY AS SHOWN ON THIS PLAN. SEE WALL SECTIONS FOR REINFORCING.
8. POUR SLOTS IN TOP OF PLANK. MANUFACTURER TO PROVIDE A MINIMUM OF 2 SLOTS @ EACH END OF EACH PLANK. PLANK MANUFACTURER MAY REQUIRE GROUTING OF ADDITIONAL CELLS BEYOND THE MINIMUM SHOWN. THE GENERAL CONTRACTOR SHALL INCLUDE GROUTING OF THESE ADDITIONAL CELLS IN HIS BID. SEE WALL SECTIONS FOR REINFORCING.

## LEGEND

ITOV INSIDE TOP OF VAULT [ BOT OF LID - TOP OF WALL ]

GRATING SPAN DIRECTION

## CONSTRUCTION LOADS

THE VAULT LID HAS BEEN DESIGNED TO CARRY THE "DESIGN LOADS" ONLY AFTER VAULT CONSTRUCTION IS COMPLETE, ALL DESIGN CONCRETE AND GROUT STRENGTHS HAVE BEEN ACHIEVED, AND ALL COVER HAS BEEN PLACED OVER THE VAULT WITHIN THE LIMITS SPECIFIED ON THIS DRAWING. "BOBCAT" OR OTHER LIGHT EQUIPMENT SHALL BE USED FOR PLACEMENT OF MATERIALS OVER THE VAULT LID.

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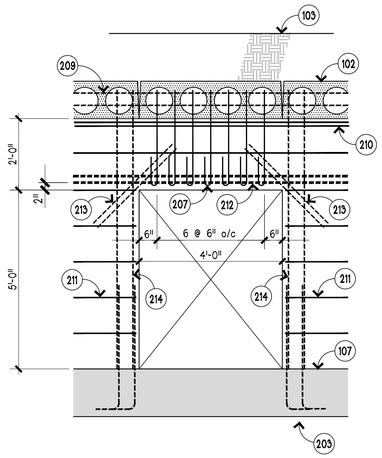
Site Structures
A Division of Koenik Engineering PC
10505 19th AVE SE, SUITE D
EVERETT, WASHINGTON 98208
PH: (425) - 357 - 9600
e-mail: dan@koenik.com

02-08-2024 DANIEL J. KOENIK STATE OF WASHINGTON 20744 PROFESSIONAL ENGINEER

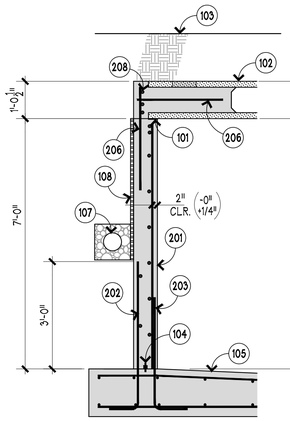
**FORTRESS - PUYALLUP**
**STORM WATER DETENTION VAULT**
**CITY OF PUYALLUP, WASHINGTON**

**VAULT LID PLAN**

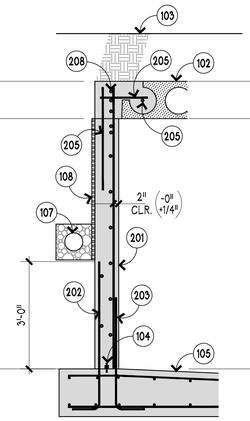
**SHEET:**
**S3** OF 5
S-24-007



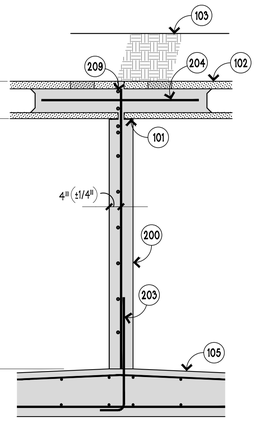

A/S4 WALL REINFORCING @ OPENING
SCALE 1/2"=1'-0"




1/S4 TYP WALL SECT
SCALE 1/2"=1'-0"




2/S4 TYP WALL SECT
SCALE 1/2"=1'-0"



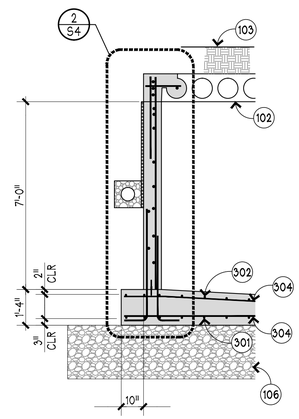

3/S4 TYP WALL SECT
SCALE 1/2"=1'-0"

## SECTION GENERAL KEYNOTES

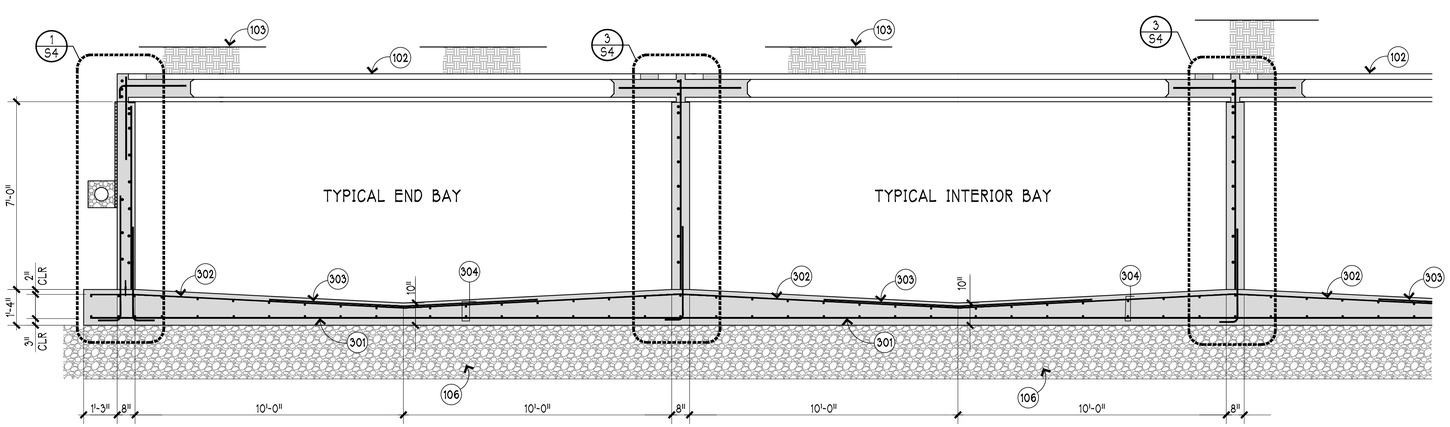
101. PLANK TO BEAR 3" MINIMUM ONTO THE TOP OF THE CONCRETE WALL. SEE PLANK MANUFACTURER'S DRAWINGS FOR FINAL BEARING LENGTH. INSTALL BEARING PAD AS DETAILED ON THE PRECAST PLANK PLACEMENT DRAWINGS.
102. 12-1/2" THICK PRECAST HOLLOW CORE PLANK.
103. FINISHED GRADE OVER THE LID. ELEVATION VARIES. SEE DESIGN CRITERIA ON SHEET S1 FOR APPROXIMATE SOIL DEPTHS OVER THE VAULT LID IN ADDITION TO THE CIVIL DWGS FOR FINAL GRADE ELEVATIONS.
104. 4" PVC RIBBED WATERSTOP w/ CENTER BULB AT ALL PERIMETER WALLS OF THE VAULT. INSTALL AT THE CENTER OF THE WALL, IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS.
105. SEE VAULT SECTIONS B & C/S4 FOR MAT FOUNDATION REINFORCING.
106. 2.0FT THICK STABALIZATION ROCK BASE BELOW VAULT IF REQUIRED BY THE GEOTECHNICAL ENGINEER. SEE GEOTECHNICAL REPORT FOR ALL INFORMATION.
107. 6"ø PERFORATED PVC FTG DRAIN SET IE=53.00 WRAPPED IN 18"x18" MINIMUM DRAIN ROCK BEDDING & FILTER FABRIC. ROUTE DRAIN TO DISCHARGE POINT AS SHOWN ON THE CIVIL DWGS.
108. APPLY PREFABRICATED DRAINAGE PANEL TO ALL PERIMETER VAULT WALLS. EXTEND DRAINAGE PANEL OVER THE HEIGHT OF THE WALL AS SHOWN. SEE GEOTECHNICAL ENGINEER FOR MATERIAL SPECIFICATIONS.

## WALL REINFORCING KEYNOTES

200. 8" THICK CONCRETE WALL REINF w/ #5@12"o/c HORZ & #5@14"o/c VERT. PLACE VERT REINF @ THE CENTER OF THE WALL. PROVIDE (2)-#5 CONT HORZ BARS @ THE TOP OF THE WALL. EXTEND BARS 10" INTO LID CLOSURE POUR WHERE POSSIBLE.
201. 8" THICK CONCRETE WALL REINF w/ #5@12"o/c HORZ & #5@14"o/c VERT. PLACE VERT REINF NEAR THE INSIDE FACE OF THE WALL. PROVIDE (2)-#5 CONT HORZ BARS @ THE TOP OF THE WALL. EXTEND BARS 10" INTO LID CLOSURE POUR WHERE POSSIBLE.
202. #4@14"o/c MAT SLAB TO WALL DOWELS. PROVIDE STD HOOK AT END OF BAR CAST INTO SLAB & EMBED 13" INTO 16" THICK MAT. EXTEND INTO WALL 36". PROVIDE (2)-#4 CONT. HORZ BARS PLACED AS SHOWN. SET 1-1/2" CLR FROM BACKFILLED FACE OF WALL. SEE 4/S4 FOR PLACEMENT REQUIREMENTS.
203. #5 MAT SLAB TO WALL DOWELS TO MATCH WALL VERTICAL REINFORCING SPACING. PROVIDE STD HOOK @ END OF BAR CAST INTO FOOTING. DOWELS SHALL BE EMBEDDED A MINIMUM OF 13" INTO 16" THICK MAT FOUNDATION & SHALL EXTEND INTO THE WALL 24" MIN. SEE 4/S4 FOR DOWEL PLACEMENT REQUIREMENTS.
204. #5x4'-0" PLACED SUCH THAT EACH 48" WIDE PLANK RECEIVES (2) BARS. LOCATE BARS IN VOIDS WITH POUR SLOTS AS SHOWN ON THE PRECAST PLANK PLACEMENT DWGS. PROVIDE ADDITIONAL BARS @ EACH PLANK IF REQ'D AND SHOWN ON THE PRECAST PLANK SHOP DWGS.
205. LID & WALL TO CLOSURE POUR REINF. @ VOID BLOCKOUT. SEE 7/S5.
206. LID & WALL TO CLOSURE POUR REINF @ END VOID FILL. SEE 6/S5.
207. #4@6"o/c VERT w/ 180 DEG HOOK & BOT.
208. (3)-#6 CONT IN CLOSURE POUR. LAP 48" AT ALL SPLICE LOCATIONS.
209. (2)-#5 CONT IN CLOSURE POUR. LAP 36" AT ALL SPLICE LOCATIONS.
210. (2)-#5 CONT AT TOP OF WALL.
211. #5@12"o/c TYP HORZ REINF IN CELL DIVIDER WALL.
212. (2)-#6 @ 2"o/c. EXTEND 30" MIN PAST EA JAMB.
213. (2)-#5x4'-0"@3"o/c DIAG. BARS EA CORNER PLACED @ THE CENTER OF THE WALL
214. PROVIDE (2)-#5@6"o/c VERT EA JAMB OF OPENING



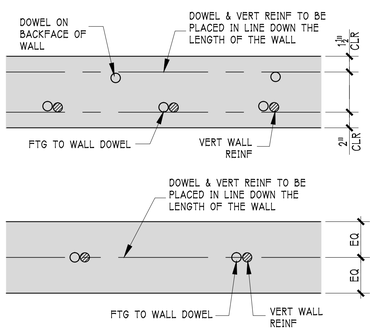

B/S4 MAT FND @ END WALLS
SCALE 3/8"=1'-0"



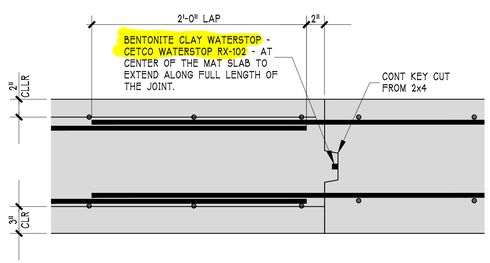

C/S4 TYP - MAT FOUNDATION REINFORCING & VAULT SECTION
SCALE 3/8"=1'-0"

## MAT SLAB REINFORCING KEYNOTES

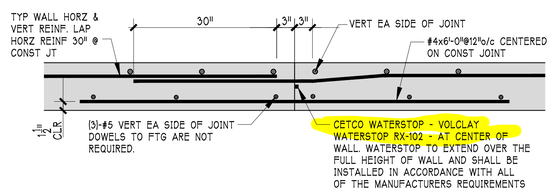
301. #5@14"o/c BOT CONTINUOUS TRANSVERSE REINF. SET 3" CLR +/-1/4" FROM THE BOTTOM OF THE MAT. LAP BARS 28" AT ALL SPLICE LOCATIONS.
302. #4@14"o/c TOP CONTINUOUS TRANSVERSE REINF. DRAPE REINF TO FOLLOW MAT SURFACE SLOPE. SET BAR 2" CLR +/-1/4" FROM THE MAT SURFACE. LAP BARS 24" AT ALL SPLICE LOCATIONS.
303. #4x10'-0"@28"o/c TOP AT MIDSPAN OF THE CELL - CENTERED ON THE VALLEY. PLACE BETWEEN THE #4@14"o/c CONT TOP REINF. REINF TO FOLLOW MAT SURFACE SLOPE. SET BAR 2" CLR +/-1/4" FROM THE MAT SURFACE.
304. #5@16"o/c BOT AND #4@16"o/c TOP LONGITUDINAL REINF. PLACE ON TOP OF THE TRANSVERSE BOTTOM BARS & BELOW THE TRANSVERSE TOP BARS. LAP 28" @ ALL SPLICE LOCATIONS.



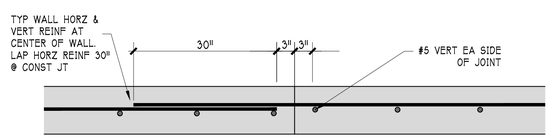

4/S4 TYP FTG DOWEL PLACEMENT DETAIL
SCALE 1"=1'-0"




5/S4 MAT SLAB CONST. JT.
SCALE 1-1/2"=1'-0"




6/S4 TYP PERIMETER WALL CONSTRUCTION JOINT
SCALE 1"=1'-0"




7/S4 TYP INTERIOR WALL CONSTRUCTION JOINT
SCALE 1"=1'-0"

| DATE: | DESCRIPTION: | CLOUDED |
|---|---|---|
| 02-08-2024 | ISSUED FOR CONST PERMIT APPLICATION | NA |

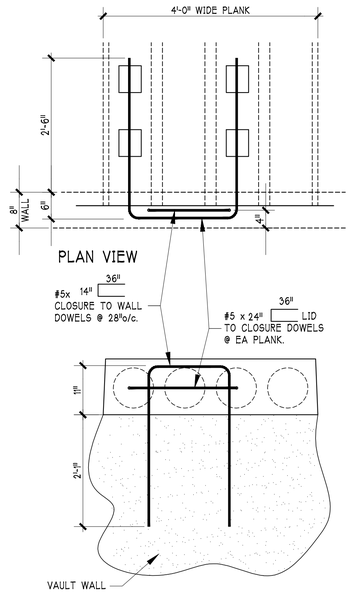

Site Structures
A Division of Koenik Engineering PC
10606 19th AVE SE, SUITE D
EVERETT, WASHINGTON 98208
PH: (425) - 357 - 9600
e-mail: dan@koenik.com


02-08-2024 DANIEL J. KOENIK STATE OF WASHINGTON 20764 PROFESSIONAL ENGINEER

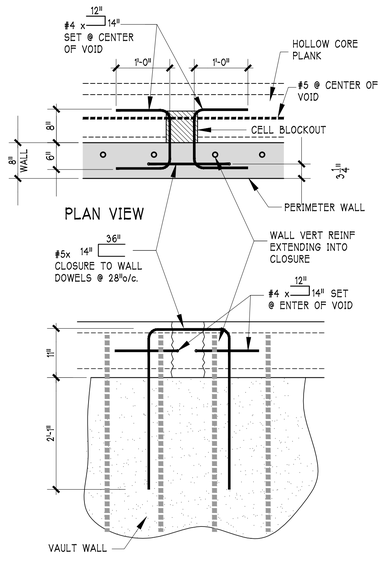
FORTRESS - PUYALLUP
STORM WATER DETENTION VAULT
CITY OF PUYALLUP, WASHINGTON

WALL SECTIONS & DETAILS

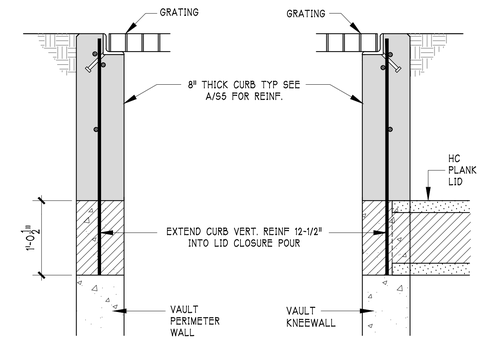
SHEET:
S4 OF 5
S-24-007




6 S5 LID & WALL TO CLOSURE DOWELS AT PLANK VOID END FILL - 8" WALL
SCALE 3/4"=1'-0"



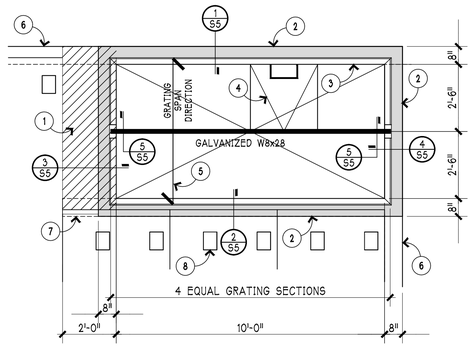

7 S5 LID & WALL TO CLOSURE DOWELS AT VOID BLOCKOUTS - 8" WALL
SCALE 3/4"=1'-0"



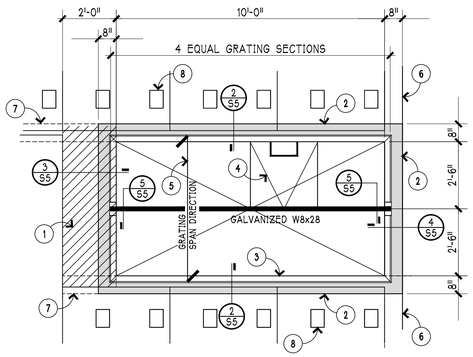

1 S5 CURB @ OPNG
SCALE 1"=1'-0"

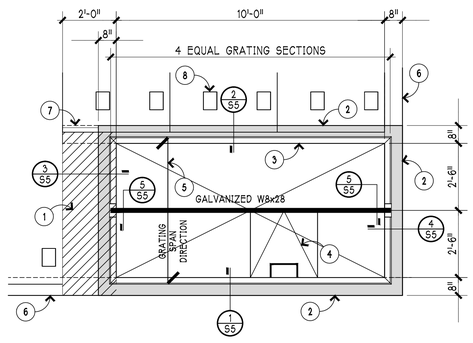


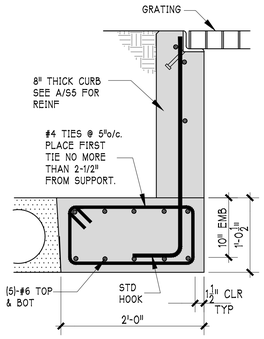

2 S5 CURB @ OPNG
SCALE 1"=1'-0"



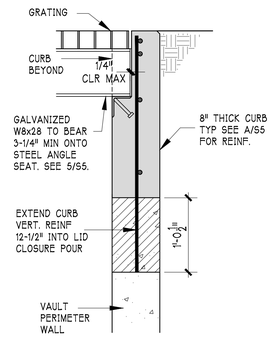

A S5 GRATING & CURB @ 5'x10' OPNG
SCALE 3/8"=1'-0"



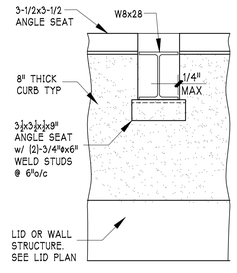



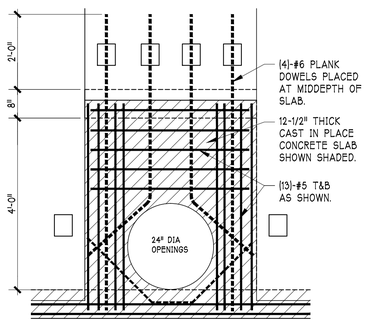

3 S5 CURB & SLAB BM @ OPNG
SCALE 1"=1'-0"

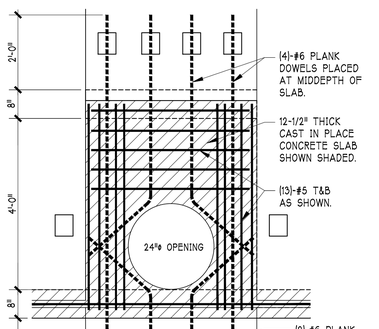



4 S5 CURB @ OPNG
SCALE 1"=1'-0"

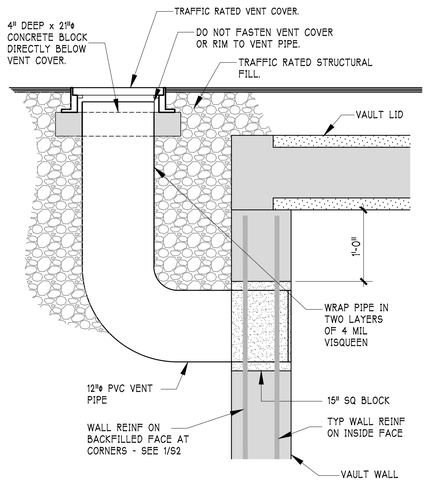



5 S5 TYP BM SEAT
SCALE 1"=1'-0"

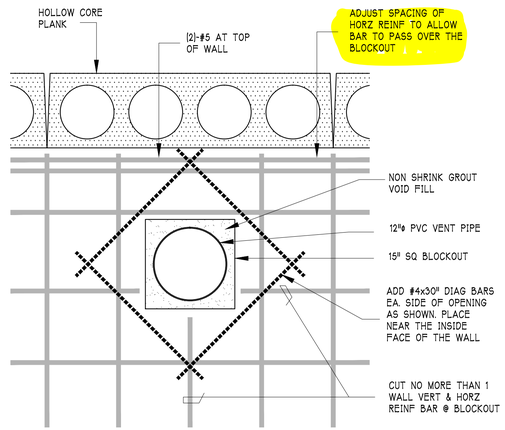



9 S5 LID REINF @ MANHOLE w/ KNEE-WALL
SCALE NTS




8 S5 THRU WALL VENT PIPE DETAIL
SCALE 1"=1'-0"




## GRATED OPNG KEYNOTES

1. 24" WIDE SLAB BM SEE 3/S5 FOR REINFORCING.
2. 8" THICK CURB TYP @ THE PERIMETER OF THE OPENING. REINF w/ #5@12"o/c HORZ. & VERT. PROVIDE (2)-#5 CONT HORZ BARS @ THE TOP OF THE CURB. PROVIDE #5x18"x18" CORNER BARS AT ALL HORZ REINF. PLACE REINF AT THE CENTER OF THE CURB.
3. GALVANIZED STEEL ANGLE SEAT 3-1/2x3-1/2x1/2 w/ 1/2"ø x4" HEADED WELD STUDS AT 12"o/c. PLACE THE 1ST STUD NO MORE THAN 6" FROM EACH CORNER. BREAK ANGLE SEAT AT W8x28 BEAM SEAT.
4. PROVIDE 30"x30", HINGED SECTION OF GRATING @ ACCESS LADDER.
5. GALVANIZED STEEL GRATING W-19-4 w/ 3"x1/4" BRG BARS.
6. VAULT PERIMETER WALL.
7. KNEE-WALL OR CELL DIVIDER WALL AT GRATED OPENING.
8. HOLLOW CORE PLANK LID ADJACENT TO OPENING.

| DATE: | DESCRIPTION: | CLOUDED |
|---|---|---|
| 02-08-2024 | ISSUED FOR CONST PERMIT APPLICATION | NA |

Site Structures
A Division of Koanik Engineering PC
10505 19th AVE SE, SUITE D
EVERETT, WASHINGTON 98208
PH: (425) - 357 - 9600
e-mail: dan@koanik.com

02-08-2024 DANIEL J. KOS STATE OF WASHINGTON 20741 REGISTERED PROFESSIONAL ENGINEER

FORTRESS - PUYALLUP
STORM WATER DETENTION VAULT
CITY OF PUYALLUP, WASHINGTON

DETAILS

SHEET:
S5 OF 5
S-24-007