

CITY OF FLAGSTAFF GENERAL NOTES

1. APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS FOR A ONE (1) YEAR PERIOD, SUBSEQUENT TO THE DATE OF APPROVAL. IF CONSTRUCTION WORK IS NOT STARTED WITHIN THE ONE (1) YEAR PERIOD, OR HAS BEEN DISCONTINUED FOR ANY REASON FOR LONGER THAN ONE (1) YEAR, THE PLANS SHALL BE RESUBMITTED FOR REVIEW AND RE-APPROVAL.

2. PLAN REVIEW BY THE CITY DOES NOT EXTEND TO MATERIAL QUANTITIES SHOWN ON THE PLANS.

3. A PUBLIC WORKS PERMIT, ISSUED BY THE CITY, IS REQUIRED FOR ALL WORK IN CITY RIGHTS-OF-WAY OR EASEMENTS AND FOR CONSTRUCTION OF ANY IMPROVEMENTS INTENDED TO BECOME PUBLIC PROPERTY.

4. THE CITY SHALL BE NOTIFIED TWENTY-FOUR (24) HOURS PRIOR TO BEGINNING DIFFERENT PHASES OF CONSTRUCTION SO THAT CITY INSPECTORS MAY BE SCHEDULED.

5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH TITLE 13, ENGINEERING DESIGN STANDARDS AND SPECIFICATIONS FOR NEW INFRASTRUCTURE, CURRENT MAG UNIFORM STANDARD SPECIFICATIONS AND DETAILS FOR PUBLIC WORKS CONSTRUCTION, THE CITY OF FLAGSTAFF, STORMWATER DESIGN MANUAL, AND WITH GENERALLY ACCEPTED ENGINEERING DESIGN AND CONSTRUCTION PRACTICE. ALL WORK AND MATERIALS, WHICH DO NOT CONFORM TO THE STANDARDS AND SPECIFICATIONS, ARE SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE. THE CONTRACTOR IS RESPONSIBLE FOR REVIEWING CHAPTER 13-21, WHICH MAKES MINOR MODIFICATIONS TO CERTAIN MAG SPECIFICATIONS AND DETAILS.

6. ANY WORK PERFORMED WITHOUT THE KNOWLEDGE AND APPROVAL OF THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE IS SUBJECT TO REMOVAL AND REPLACEMENT AT THE CONTRACTOR'S EXPENSE.

7. THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE MAY SUSPEND THE WORK BY WRITTEN NOTICE WHEN, IN HIS JUDGMENT, PROGRESS IS UNSATISFACTORY, WORK BEING DONE IS UNAPPROPRIATE, ADEQ ENGINEERING WEATHER CONDITIONS ARE UNSUITABLE, OR THERE IS DANGER TO THE PUBLIC HEALTH OR SAFETY.

8. THE CITY ENGINEER MAY ORDER ANY OR ALL MATERIALS USED IN THE WORK TO BE TESTED ACCORDING TO THE AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) AND THE AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS. THE CONTRACTOR SHALL, AT HIS EXPENSE, SUPPLY ALL SAMPLES REQUIRED FOR TESTING.

9. ACCESS THAT MEETS SECTION 13-13-004-0001, FIRE ACCESS, SHALL BE IN PLACE AND APPROVED BEFORE AND AT ALL TIMES DURING ON-SITE COMBUSTIBLE CONSTRUCTION AND/OR PRIOR TO ISSUANCE OF BUILDING PERMITS IN NEW SUBDIVISIONS. FIRE DEPARTMENT AND ENGINEERING SECTION APPROVAL IS REQUIRED FOR OBSTRUCTION OF ACCESS OR WATER SYSTEM SHUTDOWN.

10. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF THE STREETS AND OF PARTIALLY COMPLETED PORTIONS OF THE WORK UNTIL FINAL ACCEPTANCE OF THE WORK. THE CONTRACTOR SHALL SUBMIT TO THE CITY ENGINEER FOR APPROVAL A CONSTRUCTION SCHEDULE FOR ANY STREETS REQUIRED TO BE CLOSED OR PARTIALLY CLOSED FOR THE CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL REOPEN THE STREETS NO LATER THAN THE OPENING DATE SHOWN ON THE CONSTRUCTION SCHEDULE OR UPON ORDER OF THE CITY ENGINEER. THE REGULATION AND CONTROL OF CONSTRUCTION TRAFFIC SHALL BE AS DIRECTED BY THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.

11. APPROVAL OF A PORTION OF THE WORK IN PROGRESS DOES NOT GUARANTEE ITS FINAL ACCEPTANCE. TESTING AND EVALUATION MAY CONTINUE UNTIL WRITTEN FINAL ACCEPTANCE OF A COMPLETE WORKABLE UNIT. ANY DEFECTS WHICH APPEAR IN THE WORK WITHIN ONE (1) YEAR FROM THE DATE OF ACCEPTANCE AND WHICH ARE DUE TO IMPROPER WORKMANSHIP OR INFERIOR MATERIALS SUPPLIED SHALL BE CORRECTED BY OR AT THE EXPENSE OF THE OWNER/DEVELOPER OR THE CONTRACTOR.

12. ACCEPTANCE OF COMPLETED PUBLIC IMPROVEMENTS WILL NOT BE GIVEN UNTIL DEFECTIVE OR UNAUTHORIZED WORK IS REMOVED, AND FINAL CLEAN-UP IS COMPLETE.

13. LOCATION OF UNDERGROUND UTILITIES BEFORE WORK IS BEGUN IS TO BE ACCOMPLISHED IN ACCORDANCE WITH A.R.S. SECTION 40-360.22.

14. IF WORK IS DONE ON PRIVATE PROPERTY IN RELATION TO A PROJECT CONSTRUCTED UNDER THESE STANDARDS, THE CONTRACTOR WILL PROVIDE THE CITY WITH WRITTEN AUTHORIZATION FROM THE PROPERTY OWNER TO DO SO.

15. THE ESTABLISHMENT AND USE OF TEMPORARY CONSTRUCTION YARDS SHALL CONFORM TO THE CURRENT CITY ZONING CODE STANDARDS FOR TEMPORARY USES.

16. ALL EXCAVATED MATERIAL SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE CITY CODES AND REGULATIONS. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED CITY APPROVALS AND AS DEEMED NECESSARY BY THE CITY TO DISPOSE OF EXCAVATED MATERIAL.

17. ALL CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR/DEVELOPER AND PERFORMED UNDER THE DIRECT SUPERVISION OF A REGISTERED LAND SURVEYOR OR CIVIL ENGINEER.

18. ALL TRAFFIC SIGN SHEETING SHALL BE TYPE VII AS DESIGNED BY ASTM D4956-07E1 STANDARD SPECIFICATIONS FOR RETROREFLECTIVE SHEETING FOR TRAFFIC CONTROL, UNLESS SPECIFIED OTHERWISE ON THE CONSTRUCTION PLANS.

19. WHEN THE CONSTRUCTION PLANS SPECIFY GRAFFITI CONTROL ON BRIDGES OR OTHER STRUCTURES, THE CONTRACTOR SHALL SEAL THE STRUCTURE FIRST USING MONOCHEM AQUASEAL #12 AND THEN APPLY MONOCHEM OR PERMASHIELD, SACRIFICIAL GRAFFITI CONTROL SYSTEM (OR APPROVED EQUAL).

20. ALL AREAS DISTURBED DURING CONSTRUCTION SHALL BE STABILIZED AND RESEEDED IN ACCORDANCE WITH CHAPTER 13-17, IN THE EVENT THAT THE CONSTRUCTION ACTIVITY DISTURBS MORE THAN ONE (1) ACRE, A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) SHALL BE PREPARED IN ORDER TO OBTAIN A CONSTRUCTION GENERAL PERMIT FROM ADEQ. (ORD. 2017-22, REP&REEN, 07/05/2017)

21. ALL SURVEY MONUMENTS WITHIN OR AROUND THE CONSTRUCTION AREA SHALL BE PROTECTED IN PLACE. ANY MONUMENTS THAT ARE DISTURBED OR DISPLAYED BY CONSTRUCTION SHALL BE RESET BY THE PLS AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH CITY OF FLAGSTAFF ENGINEERING STANDARDS SECTION 13-03-005-0004 AND A.R.S. 33-103.

CITY OF FLAGSTAFF WATER AND SEWER NOTES

ALL DESIGN, CONSTRUCTION, TESTING AND INSPECTION SHALL CONFORM TO THE ADEQ REQUIREMENTS: WATER DISTRIBUTION IN ACCORDANCE WITH BULLETINS 10 AND 8, AND SEWER COLLECTION IN ACCORDANCE WITH AAC TITLE 18. IN THE EVENT THE ADEQ REQUIREMENTS CONFLICT WITH THESE STANDARDS, THE MORE RESTRICTIVE SHALL APPLY.

A. ROUGH GRADING SHALL BE COMPLETED WITHIN ONE-TENTH (1/10) OF A FOOT OF PLAN GRADE AND APPROVED BY THE CITY ENGINEER'S AUTHORIZED REPRESENTATIVES PRIOR TO INSTALLATION OF UNDERGROUND UTILITIES.

B. NO TRENCH SHALL BE FILLED WITH BEDDING MATERIAL OR BACKFILL UNTIL THE EXCAVATION AND PIPE LAYING, RESPECTIVELY, HAVE BEEN APPROVED BY THE CITY ENGINEER'S AUTHORIZED REPRESENTATIVE.

C. A WATER PRESSURE TEST IS REQUIRED OF ALL WATER LINES AND A HYDROSTATIC OR AIR TEST IS REQUIRED OF ALL SEWER LINES AND MANHOLES. TESTS ARE TO BE CONDUCTED AFTER BACKFILLING IS COMPLETE AND COMPACTED ON ALL PUBLIC AND/OR PRIVATE UNDERGROUND UTILITIES.

D. WATER AND SEWER SERVICE LINES ARE TO BE MARKED AS SHOWN ON THE STANDARD SERVICE DETAILS.

E. WATER LINE DISINFECTION IS TO BE ACCOMPLISHED AS OUTLINED IN ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) "BULLETIN NO. 8."

F. WATER PIPE CLASSIFICATION SHALL BE CLASS 305 FOR A.W.W.A. C-900 PVC AND CLASS 350 FOR DUCTILE IRON UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER. C-900 SHALL CONFORM TO CAST-IRON-EQUIVALENT OUTSIDE DIAMETER AND HAVE ELASTOMERIC GASKETS AND COUPLINGS. ALL DUCTILE IRON PIPE SHALL BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MAG SPECIFICATIONS.

G. ALL MATERIALS THAT COME INTO CONTACT WITH DRINKING WATER SHALL CONFORM TO NSF STANDARD 61 INCLUDING, BUT NOT LIMITED TO, GASKETS, LUBRICANTS, PIPE FITTINGS, AND VALVES (NSF-PW SEAL) (R18-4-1198).

H. ALL PUBLIC SANITARY SEWER LINES AND PRIVATE SEWER SERVICE LINES WITHIN A PUBLIC UTILITY EASEMENT OR RIGHT-OF-WAY WILL BE INSPECTED PRIOR TO ACCEPTANCE BY THE CITY.

I. WATER AND SEWER MAINS SHALL BE SEPARATED IN ORDER TO PROTECT PUBLIC WATER SYSTEMS FROM POSSIBLE CONTAMINATION. ALL DISTANCES ARE MEASURED PERPENDICULARLY FROM THE OUTSIDE OF THE SEWER MAIN TO THE OUTSIDE OF THE WATER MAIN. SEPARATION REQUIREMENTS ARE AS FOLLOWS:

1. A WATER MAIN SHALL NOT BE PLACED:

a. WITHIN SIX (6) FEET, HORIZONTAL DISTANCE, AND LESS THAN TWO (2) FEET, VERTICAL DISTANCE, ABOVE THE TOP OF A SEWER MAIN UNLESS EXTRA PROTECTION IS PROVIDED. EXTRA PROTECTION SHALL CONSIST OF CONSTRUCTING THE SEWER MAIN WITH MECHANICAL JOINT DUCTILE IRON PIPE OR WITH SLIP-JOINT DUCTILE IRON PIPE IF JOINT RESTRAINT IS PROVIDED. ALTERNATE PROTECTION SHALL CONSIST OF ENCASED PIPE WITHIN THE WATER AND SEWER MAINS IN AT LEAST SIX (6) INCHES OF CONCRETE FOR AT LEAST TEN (10) FEET BEYOND THE AREA COVERED BY THIS SUBSECTION.

b. WITHIN TWO (2) FEET HORIZONTALLY AND TWO (2) FEET BELOW THE SEWER MAIN, WHEN A WATER MAIN IS PLACED BELOW A SEWER MAIN, EXTRA PROTECTION IS ALWAYS REQUIRED REGARDLESS OF THE VERTICAL SEPARATION.

2. NO WATER PIPE SHALL PASS THROUGH OR COME INTO CONTACT WITH ANY PART OF A SEWER MANHOLE. THE MINIMUM HORIZONTAL SEPARATION BETWEEN WATER MAINS AND MANHOLES SHALL BE SIX (6) FEET, MEASURED FROM THE CENTER OF THE MANHOLE.

3. THE MINIMUM SEPARATION BETWEEN WATER MAINS OR PRESSURE SEWERS AND WATER MAINS SHALL BE TWO (2) FEET VERTICALLY AND SIX (6) FEET HORIZONTALLY UNDER ALL CONDITIONS. WHERE A SEWER FORCE MAIN CROSSES ABOVE OR LESS THAN SIX (6) FEET BELOW A WATER LINE, THE SEWER MAINS SHALL BE ENCASED IN AT LEAST SIX (6) INCHES OF CONCRETE OR CONSTRUCTED USING MECHANICAL JOINT DUCTILE IRON PIPE FOR TEN (10) FEET ON EITHER SIDE OF THE WATER MAIN.

4. EVEN WHEN EXTRA PROTECTION IS UTILIZED, THE MINIMUM CLEARANCE BETWEEN WATER AND SEWER SHALL BE ONE (1) FOOT.

5. THE SEPARATION REQUIREMENTS DO NOT APPLY TO BUILDING, PLUMBING, OR INDIVIDUAL HOUSE SERVICE CONNECTIONS.

J. WHEN HYDROSTATIC TESTING IS PERFORMED, SEWER LINES SHALL BE TESTED FOR INFILTRATION/EXFILTRATION IN ACCORDANCE WITH ADEQ ENGINEERING BULLETIN NO. 11. MANHOLES SHALL BE TESTED BY FILLING THE MANHOLE WITH WATER. THE APPLICANT SHALL ENSURE THAT THE DROP IN WATER LEVEL DOES NOT EXCEED ONE-THOUSANDTH (0.001) OF THE TOTAL MANHOLE VOLUME IN ONE (1) HOUR.

K. SEWER PIPE SHALL BE SDR 35, ASTM D3034 FOR PVC PIPE, OR CLASS 150 DIP LINED WITH PROTECTO 401 CERAMIC EPOXY OR HDPE ASTM F894. ALL DUCTILE IRON PIPELINES SHALL BE POLYETHYLENE ENCASED IN ACCORDANCE WITH MAG SPECIFICATIONS. SPECIAL DESIGN CONSIDERATIONS MAY REQUIRE A HIGHER CLASS RATING OF DIP.

L. NO WATER SETTLING OF TRENCH FILL MATERIAL IS ALLOWED.

M. ALL WATER AND SEWER DESIGN AND CONSTRUCTION SHALL CONFORM TO THE CURRENT ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) REQUIREMENTS, WHEN ADEQ REQUIREMENTS ARE IN CONFLICT WITH THESE STANDARDS, THE MORE RESTRICTIVE SHALL APPLY.

N. TRACER WIRES AND TAPES SHALL BE INSTALLED PRIOR TO TESTING THE WATER OR SEWER MAIN AS REQUIRED BY SECTION 13-09-001-0002. (STRIP WIRE TWO (2) INCHES AT TERMINATION OF THE SERVICE.)

O. WATER VALVES SHALL BE ADJUSTED IN ACCORDANCE WITH CITY OF FLAGSTAFF ENGINEERING DETAIL NO. 9-03-060 AND MANHOLES SHALL BE ADJUSTED IN ACCORDANCE WITH CITY OF FLAGSTAFF ENGINEERING DETAIL NO. 9-03-062.

P. ONE HUNDRED PERCENT (100%) OF THE SEWER LINE SHALL BE TESTED FOR UNIFORM SLOPE BY REMOTE CAMERA AND TESTED FOR SHORT-TERM DEFLECTION.

1. WHEN A SEWER SERVICE IS REQUIRED TO BE ABANDONED, IT SHALL BE ABANDONED AT THE PROPERTY LINE AND CAPPED USING THE APPROPRIATE MATERIALS (PVC, CLAY, OR CONCRETE);
2. WHEN AN EXISTING WATER SERVICE IS REQUIRED TO BE ABANDONED, IT SHALL BE ABANDONED AT THE MAIN, THE SADDLE AND CORP. STOP SHALL BE REMOVED AND THE MAIN CLAMPED WITH AN APPROVED FULL CIRCLE REPAIR CLAMP.

Q. THE LOCATION OF WATER SERVICES SHALL BE IDENTIFIED BY BRANDING A "W" ON THE TOP OR FACE OF CURB.

R. SEWER SERVICE LOCATIONS SHALL BE IDENTIFIED BY BRANDING AN "S" ON THE TOP OR FACE OF THE CURB. (ORD. 2017-22, REP&REEN, 07/05/2017)

CITY OF FLAGSTAFF PAVING NOTES

A. EXACT POINT OF MATCHING TERMINATION AND OVERLAY, IF NECESSARY, SHALL BE DETERMINED IN THE FIELD BY THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE. WHEN A LONGITUDINAL JOINT ASSOCIATED WITH A TRENCH PATH, PAVEMENT MATCHUP OR OTHER OCCURS ON A STREET THAT INCLUDES A BIKE LANE, THE JOINT SHALL BE LOCATED OUTSIDE THE BIKE LANE.

B. NO JOB WILL BE CONSIDERED COMPLETE UNTIL:
1. ALL CURBS, PAVEMENTS, SIDEWALKS, CATCH BASINS, STORM DRAINS, AND MANHOLES HAVE BEEN CLEANED OF ALL DIRT AND DEBRIS;
2. SURVEY MONUMENTS ARE INSTALLED AND STAMPED; AND
3. ALL FRAMES, COVERS, AND VALVE BOXES ARE ADJUSTED TO GRADE.

C. NO PAVING CONSTRUCTION SHALL BE STARTED UNTIL ALL UTILITY LINES ARE COMPLETED AND APPROVED UNDER PROPOSED PAVED AREAS.

D. BASE COURSE WILL NOT BE PLACED UNTIL SUBGRADE HAS BEEN APPROVED BY THE CITY ENGINEER OR HIS AUTHORIZED REPRESENTATIVE.

E. THE LOCATION OF ALL WATER VALVES, FIRE HYDRANTS, AND MANHOLES MUST AT ALL TIMES DURING CONSTRUCTION BE REFERENCED AND MADE ACCESSIBLE TO THE CITY.

F. UTILITY FACILITIES IN CONFLICT WITH THIS WORK WILL BE RELOCATED BY THE PERMITTEE OR THE UTILITY OWNER. THIS ACTIVITY SHALL BE COORDINATED WITH THE OWNER OF THE UTILITY TO PREVENT ANY UNNECESSARY INTERRUPTION OF SERVICE TO EXISTING CUSTOMERS.

G. EXISTING STREET NAME SIGNS, TRAFFIC SIGNS AND DEVICES ASSOCIATED WITH THE PROJECT SHALL BE MAINTAINED DURING CONSTRUCTION AND RELOCATED BY THE CONTRACTOR AS SHOWN ON THE APPROVED PLANS.

H. ANY CHANGES OR ADDITIONS TO PAVEMENT MARKINGS CAUSED BY PAVEMENT OVERLAY, CHIP SEAL, OR INSTALLATION OF UNDERGROUND FACILITIES SHALL BE SHOWN ON THE APPROVED PLANS.

I. ON PROJECTS WHERE THE CONTRACTOR CAUSES EXCESSIVE DAMAGE TO AN EXISTING PAVED STREET OR THERE ARE MULTIPLE STREET CUTS (MAXIMUM OF FOUR (4) IN FIVE HUNDRED (500) FEET) AN ASPHALT OVERLAY SHALL BE REQUIRED.

J. A PRIME COAT IS NOT REQUIRED UNLESS SO SPECIFIED IN THE SOILS AND PAVEMENT REPORT AND/OR SHOWN ON THE PLANS.

K. ALL CURB AND GUTTER, SIDEWALK, DRIVEWAYS, AND SIDEWALK RAMPS SHALL BE CONSTRUCTED ON A MINIMUM THREE (3) INCHES OF AGGREGATE BASE COURSE (ABC). THE ABC SHALL BE CONSTRUCTED IN ACCORDANCE WITH MAG SECTION 310, AND SHALL BE COMPACTED TO NINETY-FIVE PERCENT (95%) RELATIVE DENSITY. ALL PRECAST STRUCTURES SUCH AS MANHOLE BASES, CATCH BASINS, AND BOX CULVERTS SHALL BE CONSTRUCTED ON A MINIMUM OF THREE (3) INCHES OF ABC.

L. PERMANENT PAVEMENT MARKINGS.
1. LONGITUDINAL PAVEMENT MARKINGS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 13-16-008-0001.
2. TRANSVERSE PAVEMENT MARKINGS SUCH AS STOP BARS, CROSSWALKS, ARROWS, AND LEGENDS SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 13-16-006-0002.
M. TEMPORARY PAVEMENT MARKINGS.
1. TEMPORARY PAVEMENT MARKINGS, WHEN APPROVED, SHALL BE INSTALLED IN ACCORDANCE WITH SECTIONS 13-16-006-0001 AND 13-16-006-0002.
NOTES:
1. THE USE OF TEMPORARY MARKINGS IS STRONGLY DISCOURAGED AND MAY ONLY BE USED WITH PRIOR APPROVAL WHEN IT IS USED, THE CONTRACTOR MUST BE AVAILABLE TO RESTRIPE AS NEEDED UNTIL THE PERMANENT MARKINGS CAN BE INSTALLED.
2. WHEN IT IS IMPRACTICABLE FOR THE CONTRACTOR TO PROVIDE PERMANENT MARKINGS, THE CITY PUBLIC WORKS DEPARTMENT MAY INSTALL THE MARKINGS ON BEHALF OF THE CONTRACT PROVIDED THE FEE FOR THE WORK IS AGREED UPON AND PAID FOR IN ADVANCE.

N. THE MAXIMUM THICKNESS OF A SINGLE LIFT OF PAVEMENT SHALL BE FOUR (4) INCHES. (ORD. 2017-22, REP&REEN, 07/05/2017)

GENERAL NOTES

WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST CURRENT EDITION(S) OF THE FOLLOWING SPECIFICATIONS AND THESE PLANS: MAG UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, MAG UNIFORM STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, CITY OF FLAGSTAFF ENGINEERING DESIGN AND CONSTRUCTION STANDARDS WITH MAG ADDENDUM AS APPROPRIATE, ADEQ ENGINEERING BULLETINS NO. 8, 10, 11 AND 12, A.W.W.A. STANDARDS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.), A.D.O.T. STANDARD SPECIFICATIONS AND DRAWINGS.

IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN COPIES OF THE ABOVE STANDARDS, SPECIFICATIONS AND DETAILS, AS WELL AS ALL OTHER STANDARDS AND SPECIFICATIONS WHICH MAY BE NECESSARY TO COMPLETELY AND ACCURATELY INTERPRET THESE PLANS.

ALL QUANTITIES SHOWN ARE APPROXIMATE AND ARE FURNISHED SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THEY DO NOT NECESSARILY CORRESPOND TO BID SCHEDULE ITEMS. PAYMENT WILL BE BASED ON BID SCHEDULE ITEMS THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR INDEPENDENTLY ESTIMATED QUANTITIES PRIOR TO BIDDING.

THE LOCATION OF EXISTING FEATURES INDICATED ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL NOT BE RELIEVED OF RESPONSIBILITY FOR MAKING COMPLETE AND ACCURATE ON-SITE DETERMINATIONS OF THE LOCATIONS OF ALL UTILITIES, STRUCTURES AND FIELD CONDITIONS, WHICH MAY AFFECT THE PROGRESS OF THE WORK.

THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING WHAT PERMITS WILL BE REQUIRED FOR THE WORK AND OBTAINING AT HIS OWN EXPENSE ALL PERMITS REQUIRED UNLESS STATED OTHERWISE IN THE CONTRACT.

BUILDING, DRAINAGE, AND WATER/SEWER PLANS

PURINA FACILITY NEW ENTRANCE

APN: 113-28-004F

FLAGSTAFF, AZ, 86004

DEVELOPMENT NAME: PURINA FACILITY NEW ENTRANCE
SITE ADDRESS: 111
ASSESSOR'S PARCEL NUMBER: APN: 113-28-004F
PROPERTY OWNER: 801 CHECKERBOARD SQUARE TAX DEPT 4C SAINT LOUIS, MO 63164
APPLICANT: NESTLE PURINA INC.
PREPARER: HIGH COUNTRY ENGINEERING, INC. TYLER DERZAY 2112 S HUFFER LN. FLAGSTAFF, AZ 86001 (928) 123-4567

FEMA INFORMATION
THIS PARCEL HAS A ZONE "X" CLASSIFICATION (AREA OF MINIMAL FLOOD HAZARD) PER FEMA FIRM PANEL 8827.
LID CALCULATIONS
TOTAL ADDED IMPERVIOUS AREA = 33,207 SF
TOTAL VOLUME = 6,000 CU.FT.



VICINITY MAP
NOT TO SCALE

SHEET INDEX

- C1A COVER
- C1B GENERAL NOTES (CONT.)
- C2A DETAILS (RETAINING WALL)
- C2B DETAILS (RETAINING WALL) (CONT.)
- C2C DETAILS (STORMTECH CHAMBERS)
- C2D DETAILS (STORMTECH CHAMBERS) (CONT.)
- C3 GENERAL SITE PLAN
- C4 CONSTRUCTION PLAN (RETAINING WALL)
- C5 CONSTRUCTION PLAN (CHAMBERS)
- C6 ROAD PROFILE

CITY APPROVAL

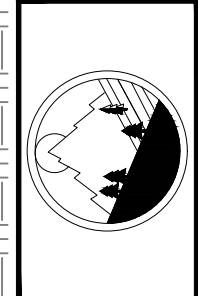
CONCEPT APPROVAL
THE CITY APPROVES THESE PLANS FOR CONCEPT ONLY. THE CITY SHALL NOT BE LIABLE FOR ERRORS OR OMISSIONS OF THE DESIGN ENGINEER

CONSTRUCTION AUTHORIZATION

APPROVAL BY THE CITY OF FLAGSTAFF IS REQUIRED PRIOR TO BEGINNING OF CONSTRUCTION. WITHOUT C.O.P. APPROVAL THESE PLANS HAVE NOT BEEN COMPLETED WITH RESPECT TO AGENCY REVIEW. ADDITIONALLY, IT IS THE OWNER/CONTRACTORS RESPONSIBILITY TO OBTAIN THE NECESSARY PERMITS PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES ON THIS PROJECT.

| | |
|-------------------------|------|
| CITY ENGINEER | DATE |
| PUBLIC WORKS DIRECTOR | DATE |
| WATER SERVICES DIRECTOR | DATE |
| LANDSCAPE DESIGNER | DATE |

BY SIGNING THESE PLANS THE DESIGNER OF THE LANDSCAPING PLANS CONFIRMS THAT THESE GRADING PLANS HAVE BEEN REVIEWED, IS AWARE OF THE SCOPE OF THE PROJECT, AND HAS IDENTIFIED AND ADDRESSED ANY POTENTIAL CONFLICT BETWEEN THE LANDSCAPING AND GRADING PLAN.



HIGH COUNTRY ENGINEERING, INC.
2112 S HUFFER LN
FLAGSTAFF, ARIZONA 86001
PHONE (928) 123-4567

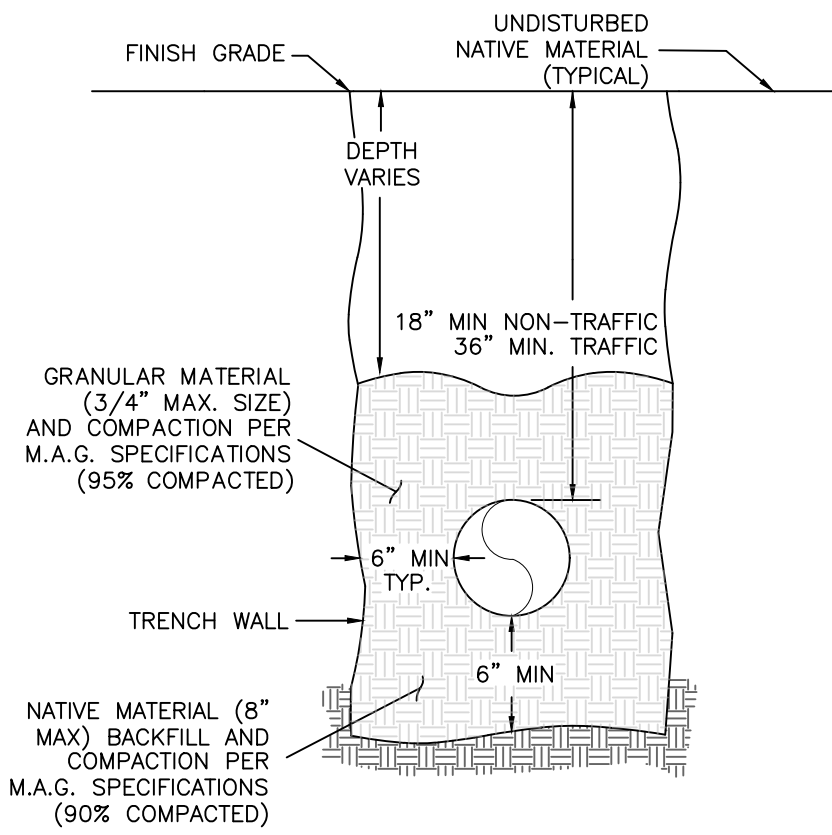
COVER SHEET AND NOTES
PURINA FACILITY NEW ENTRANCE
APN: 113-28-004F
4700 E NESTLE PURINA AVE
FLAGSTAFF, AZ, 86004

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

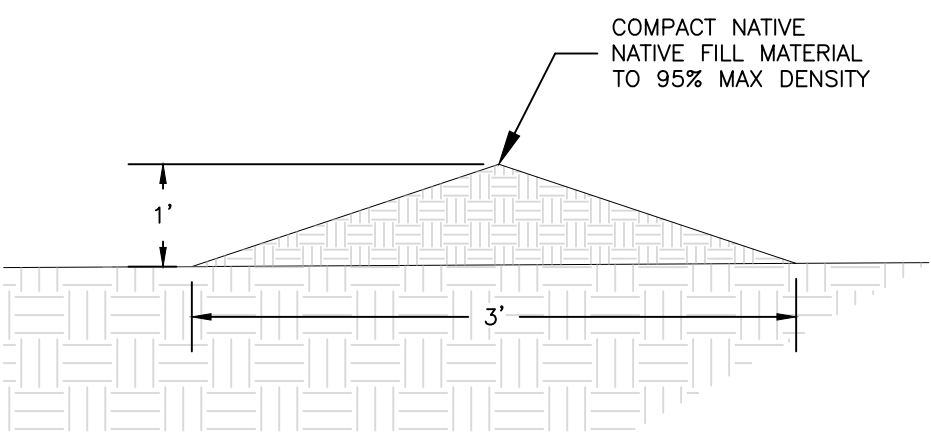
CALL TWO WORKING DAYS BEFORE YOU DIG
DIAL 811
BLUE STAKE CENTER

project: PURINA ENTRANCE
proj. #: 22-486C
drawing name: COVER SHEET AND NOTES
drawn by: TLD
reviewed by: TLD
date: 12/01/2022

revisions:
date:
date:
date:



A TRENCH DETAIL
NOT TO SCALE



B BERM DETAIL
NOT TO SCALE

UTILITIES

UNDERGROUND UTILITY LOCATIONS SHOWN ON THESE PLANS WERE DETERMINED FROM FIELD MEASUREMENTS, CONSTRUCTION PLANS, RECORD PLANS, OR UTILITY MAPS FURNISHED BY OTHERS. LOCATIONS OF UNDERGROUND UTILITIES ARE TO BE REGARDED AS APPROXIMATE ONLY.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO ESTABLISH IN THE FIELD THE ACTUAL LOCATIONS OF ALL UNDERGROUND LINES WHICH MAY IN ANY WAY AFFECT THE WORK.

IT IS NOT WITHIN THE SCOPE OF THE PLANS FOR THE ENGINEER TO LOCATE, IDENTIFY OR FORESEE EVERY UTILITY CONFLICT WHICH MAY ARISE DURING THE CONSTRUCTION PHASE OF THE PROJECT. BUT IT IS THE INTENT OF THE OWNER TO REASONABLY COMPENSATE THE CONTRACTOR FOR WORK REQUIRED TO RELOCATE OR ADJUST UTILITIES CONFLICTING WITH THE CONSTRUCTION OF THE PROJECT. TO THAT END, UTILITIES (AS DEFINED IN MAG 101.2) WHICH ARE ENCOUNTERED WILL BE ADDRESSED AS FOLLOWS:

1. UTILITY RELOCATIONS OR ADJUSTMENTS NOTED ON THE PLANS SHALL BE PAID FOR PER THE BID SCHEDULE.
2. UTILITY RELOCATIONS OR ADJUSTMENTS NOT NOTED ON THE PLANS SHALL BE ADDRESSED ON A CASE BY CASE BASIS. THE ENGINEER SHALL DETERMINE WHAT WORK IS REQUIRED TO PRODUCE THE DESIRED FINAL PRODUCT. IF A UNIT BID PRICE DOES NOT EXIST THEN COMPENSATION MUTUALLY ACCEPTABLE TO THE OWNER, CONTRACTOR, AND ENGINEER SHALL BE MADE.

IN EITHER SITUATION, WORK ON THE SPECIFIC CASE SHALL NOT PROCEED UNTIL THE AMOUNT OF COMPENSATION IS AGREED UPON.

COMPENSATION FOR UTILITY RELOCATIONS AND ADJUSTMENTS SHALL NOT INCLUDE COSTS FOR REPAIR TO THE UTILITY DAMAGED BY THE CONTRACTOR OR HIS SUBCONTRACTOR(S). THE CONTRACTOR IS NOT RELIEVED OF THE RESPONSIBILITY FOR DETERMINING THE LOCATION OF ALL UTILITIES AFFECTING THE WORK.

THE APPROPRIATE UTILITY COMPANIES SHALL BE NOTIFIED BY THE CONTRACTOR PRIOR TO ANY CONSTRUCTION. "BLUE STAKE" NUMBER IS 1-800-STAKEIT. THE CONTRACTOR SHALL ALLOW TWO WORKING DAYS AFTER "BLUE STAKE" IS NOTIFIED, BEFORE COMMENCING ANY EXCAVATION WORK IN THE PROXIMITY OF BURIED UTILITIES.

AT LEAST 48 HOURS PRIOR NOTICE IS REQUIRED BEFORE DISRUPTING EXISTING UTILITY SERVICE TO MAKE CONNECTIONS OR DISCONNECTIONS. THE NOTICE MUST INCLUDE THE EXACT TIME OF THE DISRUPTION OF SERVICE AND THE EXPECTED DURATION OF THE LOSS OF SERVICE.

CERTAIN UTILITIES ARE TO REMAIN IN SERVICE DURING THE CONSTRUCTION OF THE FILL AND UPON COMPLETION OF THIS CONTRACT. THESE UTILITIES SHALL BE PROTECTED DURING THE CONSTRUCTION AND CUT OR FILL PLACEMENT SHALL NOT PROHIBIT MAINTENANCE ACCESS TO THESE UTILITIES.

MISCELLANEOUS REMOVALS AND OTHER WORK

REMOVALS NECESSITATED BY THE WORK AS IT PROGRESSES AND NOT SPECIFICALLY CALLED OUT ON THE PLANS WILL BE CONSIDERED INCIDENTAL WORK.

CLEANUP AND DUST CONTROL

THROUGHOUT ALL PHASES OF THE CONSTRUCTION THE CONTRACTOR SHALL KEEP THE WORK AREA, ADJACENT PROPERTIES AND STREETS CLEAN AND FREE FROM RUBBISH, EXCESS MATERIALS, DUST AND DEBRIS GENERATED BY THE CONSTRUCTION ACTIVITY.

WATER SUPPLY

THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR AND PROVIDE ALL NECESSARY WATER FOR HIS CONSTRUCTION OPERATION AT HIS OWN EXPENSE.

DRAINAGE MAINTENANCE DURING CONSTRUCTION

ADEQUATE DRAINAGE OF THE CONSTRUCTION AREA SHALL BE PROVIDED AT ALL TIMES. CONSTRUCTION DRAINS SHALL BE PROVIDED AS NEEDED TO ENABLE WATER TO DRAIN FROM THE CONSTRUCTION AREA RAPIDLY AND WITHOUT DAMAGING OF THE WORK IN PROGRESS. TO FURTHER PROMOTE GOOD DRAINAGE OF THE SITE, DRAINAGE CHANNELS, CULVERTS, AND STRUCTURES SHALL BE CONSTRUCTION FROM DOWN STREAM TO UPSTREAM. IS SUCH A WAY THAT DURING CONSTRUCTION THEY DO NOT IMPEDE THE FLOW OF WATER FROM THE CONSTRUCTION AREA.

DAMAGE TO ADJACENT PROPERTIES OR TO ANY PORTION OF THE WORK CAUSED BY THE CONTRACTOR'S FAILURE TO PROVIDE ADEQUATE DRAINAGE OF THE CONSTRUCTION AREA OR TO ORDER THE WORK SO AS TO MINIMIZE THE POSSIBLE EXTENT OF SUCH DAMAGE SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. NO EXTENSION OF TIME SHALL BE GRANTED ON ACCOUNT OF THE TIME REQUIRED TO MAKE SUCH REPAIRS.

ADOT IMPROVEMENTS

NO IMPROVEMENTS WILL BE PERFORMED IN ADOT R.O.W.

GENERAL STRIPING NOTES

ALL PAVEMENT STRIPING SHALL CONFORM TO THE APPLICABLE ADOT SPECIFICATIONS FOR PAINT. ALL PARKING STALL STRIPING SHALL BE 4" WIDE, WHITE PAINT, TREATED FOR REFLECTIVITY. ALL STRIPING SHALL BE IN CONFORMANCE WITH THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", LATEST EDITION.

GRADING AND DRAINAGE STATEMENT

ADEQUATE DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES, BEST MANAGEMENT PRACTICES, AND/OR OTHER STORMWATER MANAGEMENT FACILITIES SHALL BE PROVIDED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. DAMAGES TO ADJACENT PROPERTY AND/OR THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR'S OR PROPERTY OWNER'S FAILURE TO PROVIDE AND MAINTAIN ADEQUATE DRAINAGE AND EROSION/SEDIMENT CONTROL FROM THE CONSTRUCTION AREA SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND/OR PROPERTY OWNER.

RIGHT-OF-WAY AND TRAFFIC CONTROL

THE CONTRACTOR SHALL PROVIDE ANY NECESSARY TRAFFIC CONTROL DEVICES REQUIRED FOR THE CONTROL OF VEHICLE AND PEDESTRIAN TRAFFIC AFFECTED BY THE CONSTRUCTION. ALL TRAFFIC CONTROL PLANS MUST BE APPROVED BY THE OWNER OR HIS REPRESENTATIVE PRIOR TO IMPLEMENTATION.

CONSTRUCTION STAKES, LINES AND GRADES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR RETAINING A REGISTERED LAND SURVEYOR, LICENSED TO PRACTICE IN ARIZONA, WHO SHALL BE RESPONSIBLE FOR PROVIDING ALL STAKES NECESSARY TO ESTABLISH CONSTRUCTION LINES AND GRADES. STAKES PROVIDED SHALL BE OF SUFFICIENT NUMBERS TO SATISFY THE ENGINEER THAT THE WORK MAY BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS.

ALL COSTS ASSOCIATED WITH STAKING ARE TO BORNE BY THE CONTRACTOR. NO ADDITIONAL PAYMENT TO THE CONTRACTOR FOR EXTRA STAKES OR FOR RESTAKING WILL BE ALLOWED.

COF EROSION CONTROL NOTES

EROSION CONTROL SHOULD BE PROVIDED PER CHAPTER 13-17 OF THE CITY OF FLAGSTAFF CITY CODE.

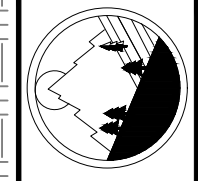
FROM CITY OF FLAGSTAFF CODE DIVISION 13-17-001:

EROSION CONTROL APPLIES TO IMPROVEMENTS WITHIN THE CITY AND AS PART OF THE EROSION CONTROL SECTION OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). MATERIALS, MEANS AND METHODS FOR EROSION CONTROL AND STABILIZATION, BEST MANAGEMENT PRACTICES (BMPs), EROSION CONTROL PLANS (ECPs), AND SWPPPS ARE DESCRIBED IN THE CITY OF FLAGSTAFF STORMWATER DESIGN MANUAL.

THE OWNER, DEVELOPER AND/OR CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PROGRAM. THIS GENERALLY INCLUDES SUBMITTAL OF A NOTICE OF INTENT TO THE ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY (ADEQ) AND NOTICE OF TERMINATION TO ADEQ FOR THE PROJECT. PREPARATION AND IMPLEMENTATION OF A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR THE SITE IS REQUIRED IN ACCORDANCE WITH ADEQ AND CITY OF FLAGSTAFF ENGINEERING STANDARDS.

ALL DISTURBED AREAS WITHIN THE PROJECT SITE AND AS SHOWN ON THE PLANS SHALL BE STABILIZED. WORK SHALL BE PERFORMED ACCORDING TO THE PROVISIONS OF THIS SECTION AND SHALL INCLUDE BUT NOT BE LIMITED TO THE FURNISHING, HAULING, PLACEMENT AND APPLICATION OF EROSION CONTROL MATERIALS.

IT IS RECOMMENDED THAT CONTRACTORS SEE THE ADEQ SMART NOI (NOTICE OF INTENT) PROGRAM WEBSITE FOR INFORMATION AND PROCESSES. ([HTTP://AZ.GOV/WEBAPP/NOI/MAIN.D0](http://AZ.GOV/WEBAPP/NOI/MAIN.D0)) (ORD. 2017-22, REP&REEN, 07/05/2017)



HIGH COUNTRY ENGINEERING, INC.
2712 S HUFFER LN
FLAGSTAFF, ARIZONA 86001
PHONE (928) 123-4567

GENERAL NOTES (CONT) AND DETAILS
PURINA FACILITY NEW ENTRANCE
APN: 113-28-004F
4700 E NESTLE PURINA AVE
FLAGSTAFF, AZ, 86004

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

CALL TWO WORKING DAYS BEFORE YOU DIG
DIAL #11
BLUE STAKE CENTER

| | |
|---------------|----------------------|
| project: | PURINA ENTRANCE |
| proj. #: | 22-486C |
| drawing name: | GENERAL NOTES (CONT) |
| drawn by: | TLD |
| reviewed by: | TLD |
| date: | 12/01/2022 |

| | |
|------------|--|
| revisions: | |
| date: | |
| date: | |
| date: | |



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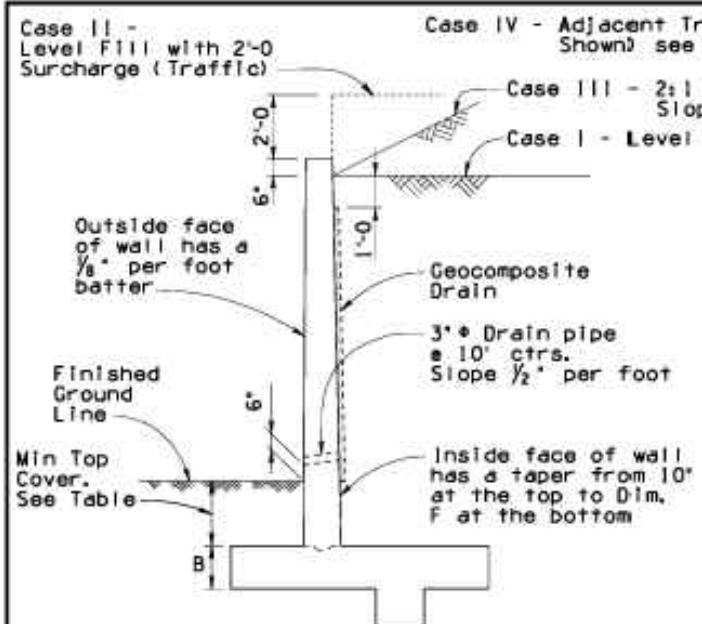
RETAINING WALL STRUCTURAL DETAILS AND NOTES
 PURINA FACILITY NEW ENTRANCE
 APN: 113-28-004F
 4700 E NESTLE PURINA AVE
 FLAGSTAFF, AZ, 86004

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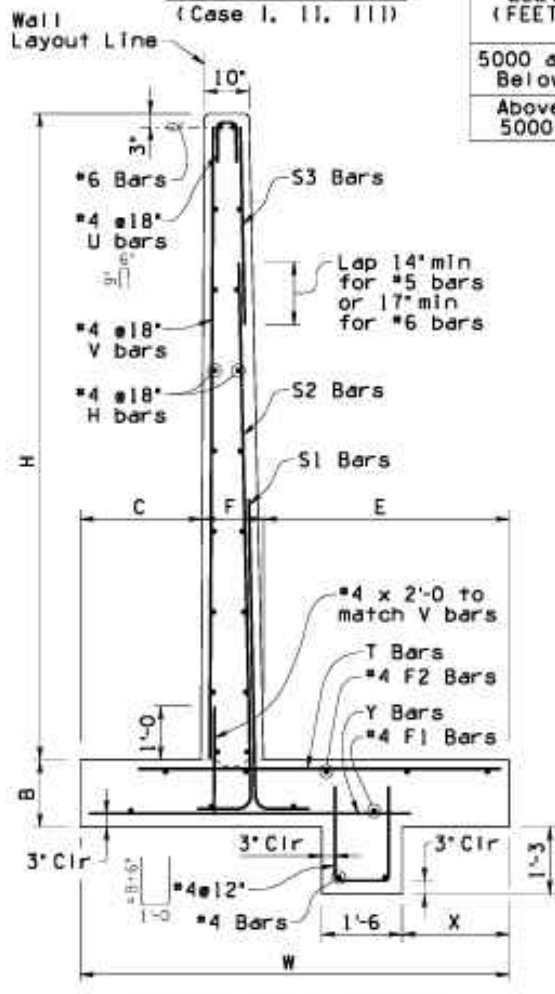
PROJECT: PURINA ENTRANCE
 PROJ #: 22-486C
 DRAWING NAME:
 RET WALL DETAILS & NOTES
 DRAWN BY: TLD
 REVIEWED BY: TLD
 DATE: 12/01/2022

REVISIONS
 DATE:
 DATE:
 DATE:

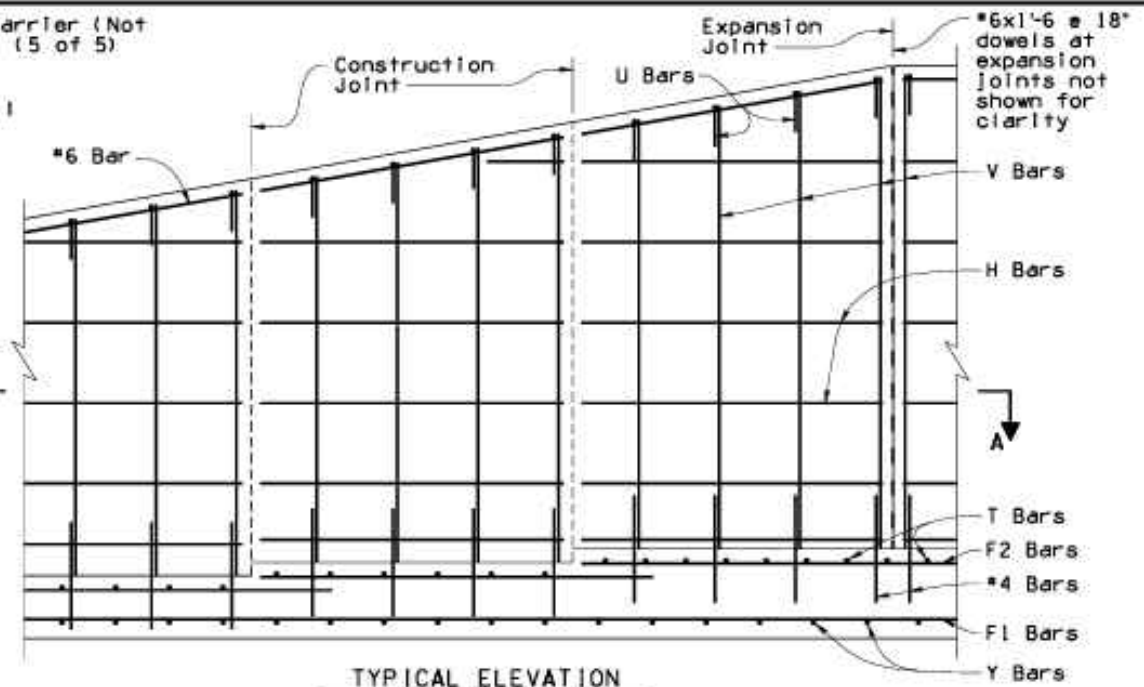


TYPICAL SECTION (Case I, II, III)

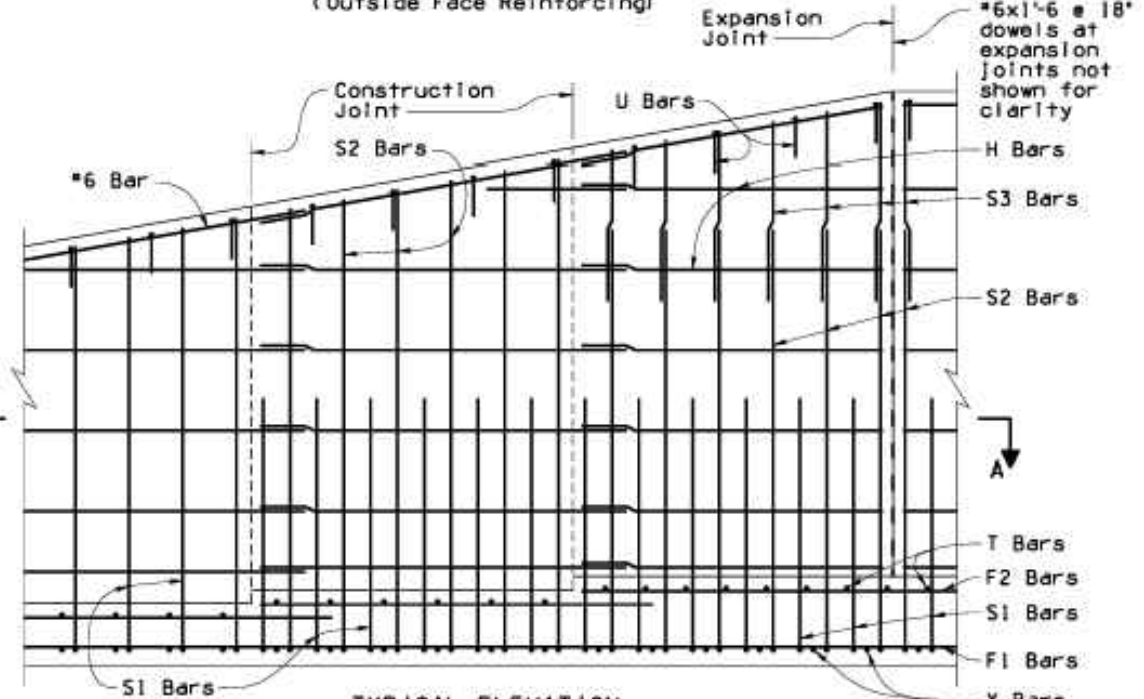
| ELEV (FEET) | Min Top Cover (FEET) |
|----------------|----------------------|
| 5000 and Below | 1'-6" |
| Above 5000 | 2'-6" |



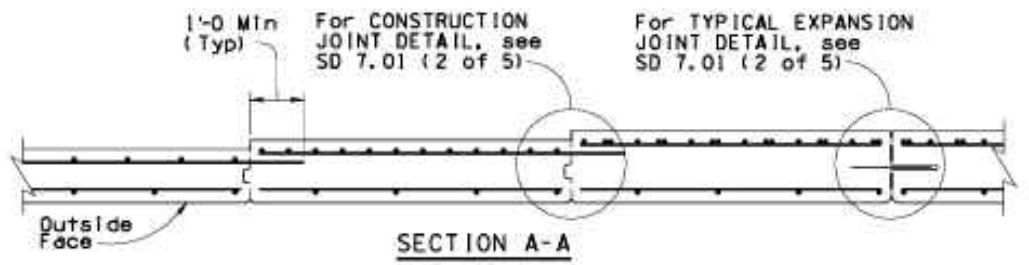
TYPICAL WALL DETAILS



TYPICAL ELEVATION (Outside Face Reinforcing)



TYPICAL ELEVATION (Inside Face Reinforcing)



GENERAL NOTES:
 Construction Specification - Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.
 Design Specifications - AASHTO LRFD Bridge Design Specifications, 8th Edition, 2017.

Design:
 Soil weight = 120 p.c.f.
 Backfill angle of internal friction = 33°
 Existing ground angle of internal friction = 31°

All Concrete shall be Class "S" ($f'c = 3000$ psi).
 Reinforcing steel shall conform to ASTM Specification A615. All reinforcing shall be furnished as Grade 60.

All bends and hooks shall meet the requirements of AASHTO LRFD Article 5.10. All bend dimensions for reinforcing steel shall be out-to-out of bars.

All placement dimensions for reinforcing steel shall be to center of bars unless noted otherwise.
 All reinforcing steel shall have 2 inch clear cover unless noted otherwise.

Chamfer all exposed corners $\frac{1}{4}$ " unless noted otherwise.

Compact structure backfill for footing and wall base minimum 100 percent of ASTM D698 maximum dry density.

See Project Plans for wall layout, top of footing and finished grade elevations, footing step and wall joint locations. Construction joints shall match the locations of construction joints.

See Project Plans for wall surface treatment. Increase the wall thickness at the face for the depth of surface treatment.

Dimensions shall not be scaled from drawings.

Pay Item measure of square foot of wall constructed will be measured along the front face of the wall from top of footing to top of wall cap.

| | |
|----------|---|
| Item | RETAINING WALL (REINFORCED CONCRETE CANTILEVER) |
| Item No. | 9140178 |
| Measure | Square Foot |

NOTES:
 For Retaining wall dimensions, quantities and additional details, see SD 7.01 sheets 2 thru 5.
 For Structural Excavation and Structure Backfill Limits, see SD 7.01 (4 of 5).

| | |
|--|--|
| STRUCTURAL ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER APPROVED D. EBERHART STANDARDS COMMITTEE APPROVED FOR DISTRIBUTION DATE: 12/21 | ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING RETAINING WALL REINFORCED CONCRETE CANTILEVER DRAWING NO. SD 7.01 (1 of 5) |
|--|--|

Note to Designer: This information presented in this Standard Drawing has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer, architect, or other qualified person in the proper jurisdiction. The user shall be responsible for all such verification.

PROJECT DISTRIBUTION DATE: 01/15



HIGH COUNTRY ENGINEERING, INC.
2112 S HUFFER LN
FLAGSTAFF, ARIZONA 86001
PHONE (928) 123-4567

RETAINING WALL STRUCTURAL NOTES
PURINA FACILITY NEW ENTRANCE
APN: 113-28-004F
4700 E NESTLE PURINA AVE
FLAGSTAFF, AZ, 86004

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

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BLUE STAKE CENTER

PROJECT: PURINA ENTRANCE
PROJ. #: 22-486C
DRAWING NAME: RET WALL NOTES
DRAWN BY: TLD
REVIEWED BY: TLD
DATE: 12/01/2022

REVISIONS
DATE: _____
DATE: _____
DATE: _____

CASE I - LEVEL FILL

| Dimensions | | | | | | | Steel List | | | | | | | | | | | | Service Limit State | | | Strength Limit State | | | | | | | | | |
|------------|-------|-------|------|-------|-------|-------|------------|---------|--------|----------|---------|--------|----------|---------|--------|----------|--------|----------|---------------------|------------|----------|----------------------|------------|--------|-----------|-----------|-------|-------|------|------|------|
| H | W | B | C | F | E | X | S1 | | S2 | | S3 | | H | V | Y | F1 | T | F2 | Qtveu-SERV | Qnveu-SERV | B'SERV | Qtveu-STR | Qnveu-STR | B'STR | | | | | | | |
| | | | | | | | Bar Size | Spacing | Length | Bar Size | Spacing | Length | Bar Size | Spacing | Length | Number # | Length | Bar Size | Spacing | Length | Number # | Qtveu-SERV | Qnveu-SERV | B'SERV | Qtveu-STR | Qnveu-STR | B'STR | | | | |
| 4' | 3'-0 | 1'-0 | 1'-0 | 1'-0 | 1'-4 | 8" | 5 | 12" | 5'-6 | | | | | | 4 | 3'-9 | 5 | 12" | 2'-3 | 2 | 5 | 12" | 2'-3 | 3 | 840 | 480 | 2.46 | 1130 | 650 | 2.36 | |
| 5' | 3'-6 | 1'-0 | 1'-0 | 1'-0 | 1'-8 | 9" | 5 | 12" | 6'-6 | | | | | | 6 | 4'-9 | 5 | 12" | 2'-9 | 2 | 5 | 12" | 2'-9 | 3 | 920 | 560 | 2.91 | 1240 | 760 | 2.79 | |
| 6' | 4'-0 | 1'-0 | 1'-2 | 1'-0 | 2'-0 | 10" | 5 | 12" | 7'-6 | | | | | | 6 | 5'-9 | 5 | 12" | 3'-3 | 2 | 5 | 12" | 3'-3 | 3 | 1010 | 650 | 3.31 | 1380 | 900 | 3.16 | |
| 7' | 4'-6 | 1'-0 | 1'-4 | 1'-0 | 2'-4 | 11" | 5 | 12" | 8'-6 | | | | | | 8 | 6'-9 | 5 | 12" | 3'-9 | 3 | 5 | 12" | 3'-6 | 3 | 1110 | 750 | 3.70 | 1530 | 1040 | 3.52 | |
| 8' | 5'-0 | 1'-2 | 1'-6 | 1'-0 | 2'-8 | 1'-0 | 5 | 12" | 9'-9 | | | | | | 10 | 7'-9 | 5 | 12" | 4'-3 | 3 | 5 | 12" | 4'-0 | 3 | 1270 | 890 | 4.01 | 1750 | 1240 | 3.79 | |
| 9' | 5'-6 | 1'-2 | 1'-9 | 1'-0 | 2'-9 | 1'-2 | 5 | 12" | 10'-9 | | | | | | 10 | 8'-9 | 5 | 12" | 4'-6 | 3 | 5 | 12" | 4'-0 | 3 | 1350 | 970 | 4.40 | 1880 | 1370 | 4.14 | |
| 10' | 6'-0 | 1'-2 | 1'-9 | 1'-0 | 3'-3 | 1'-4 | 6 | 12" | 11'-9 | | | | | | 12 | 9'-9 | 5 | 12" | 4'-9 | 3 | 5 | 12" | 4'-6 | 4 | 1510 | 1130 | 4.73 | 2100 | 1590 | 4.45 | |
| 11' | 6'-6 | 1'-2 | 2'-0 | 1'-0 | 3'-6 | 1'-6 | 5 | 12" | 4'-3 | 5 | 12" | 12'-9 | | | 14 | 10'-9 | 5 | 12" | 5'-3 | 4 | 5 | 12" | 4'-9 | 4 | 1590 | 1210 | 5.12 | 2230 | 1710 | 4.81 | |
| 12' | 7'-0 | 1'-3 | 2'-0 | 1'-0 | 4'-0 | 1'-8 | 6 | 12" | 5'-3 | 5 | 12" | 13'-9 | | | 14 | 11'-9 | 5 | 12" | 5'-6 | 4 | 6 | 12" | 5'-6 | 5 | 1770 | 1380 | 5.42 | 2490 | 1960 | 5.08 | |
| 13' | 7'-6 | 1'-3 | 2'-3 | 1'-0 | 4'-3 | 1'-10 | 7 | 12" | 6'-6 | 5 | 12" | 14'-9 | | | 16 | 12'-9 | 5 | 12" | 5'-9 | 4 | 6 | 9" | 5'-9 | 5 | 1860 | 1470 | 5.81 | 2620 | 2090 | 5.43 | |
| 14' | 8'-0 | 1'-3 | 2'-3 | 1'-2 | 4'-7 | 2'-0 | 7 | 12" | 7'-0 | 5 | 12" | 15'-9 | | | 18 | 13'-9 | 5 | 12" | 6'-3 | 4 | 7 | 12" | 6'-9 | 5 | 2020 | 1630 | 6.14 | 2850 | 2320 | 5.74 | |
| 15' | 8'-6 | 1'-3 | 2'-6 | 1'-3 | 4'-9 | 2'-2 | 7 | 12" | 8'-0 | 5 | 12" | 16'-9 | | | 18 | 14'-9 | 6 | 12" | 6'-6 | 5 | 7 | 12" | 7'-0 | 5 | 2100 | 1710 | 6.53 | 2970 | 2450 | 6.10 | |
| 16' | 9'-0 | 1'-4 | 2'-6 | 1'-4 | 5'-2 | 2'-4 | 7 | 12" | 7'-3 | 6 | 12" | 8'-9 | 5 | 12" | 10'-9 | 20 | 15'-9 | 6 | 12" | 6'-9 | 5 | 8 | 12" | 8'-3 | 6 | 2300 | 1900 | 6.82 | 3250 | 2710 | 6.36 |
| 17' | 9'-6 | 1'-4 | 2'-9 | 1'-5 | 5'-4 | 2'-6 | 7 | 12" | 6'-0 | 7 | 12" | 9'-9 | 5 | 12" | 10'-9 | 22 | 16'-9 | 6 | 9" | 7'-3 | 5 | 8 | 12" | 8'-6 | 6 | 2380 | 1980 | 7.21 | 3380 | 2840 | 6.72 |
| 18' | 10'-0 | 1'-5 | 2'-9 | 1'-6 | 5'-9 | 2'-8 | 7 | 12" | 7'-0 | 7 | 12" | 10'-6 | 5 | 12" | 11'-0 | 22 | 17'-9 | 6 | 9" | 7'-6 | 5 | 7 | 8" | 8'-6 | 6 | 2580 | 2170 | 7.50 | 3660 | 3110 | 6.99 |
| 19' | 10'-6 | 1'-6 | 3'-0 | 1'-7 | 5'-11 | 2'-10 | 8 | 12" | 8'-0 | 7 | 12" | 10'-3 | 6 | 12" | 12'-9 | 24 | 18'-9 | 6 | 9" | 8'-0 | 6 | 8 | 9" | 9'-3 | 7 | 2690 | 2270 | 7.86 | 3830 | 3260 | 7.30 |
| 20' | 11'-0 | 1'-6 | 3'-0 | 1'-8 | 6'-4 | 3'-0 | 8 | 12" | 7'-6 | 8 | 12" | 11'-6 | 6 | 12" | 12'-9 | 26 | 19'-9 | 6 | 8" | 8'-3 | 6 | 8 | 8" | 9'-6 | 7 | 2860 | 2440 | 8.19 | 4070 | 3500 | 7.61 |
| 21' | 11'-6 | 1'-7 | 3'-3 | 1'-9 | 6'-6 | 3'-2 | 8 | 12" | 8'-3 | 8 | 12" | 12'-6 | 6 | 12" | 12'-9 | 26 | 20'-9 | 7 | 12" | 8'-9 | 6 | 9 | 9" | 10'-6 | 7 | 2970 | 2540 | 8.54 | 4240 | 3660 | 7.92 |
| 22' | 12'-0 | 1'-8 | 3'-3 | 1'-10 | 6'-11 | 3'-4 | 9 | 12" | 9'-6 | 8 | 12" | 13'-6 | 6 | 12" | 13'-0 | 28 | 21'-9 | 7 | 12" | 9'-0 | 6 | 9 | 9" | 11'-0 | 7 | 3180 | 2740 | 8.83 | 4530 | 3940 | 8.18 |
| 23' | 12'-6 | 1'-9 | 3'-6 | 2'-0 | 7'-0 | 3'-6 | 10 | 12" | 12'-3 | 7 | 12" | 14'-0 | 6 | 12" | 13'-3 | 30 | 22'-9 | 8 | 12" | 9'-3 | 6 | 8 | 6" | 10'-3 | 7 | 3290 | 2840 | 9.18 | 4700 | 4100 | 8.49 |
| 24' | 13'-0 | 1'-10 | 3'-6 | 2'-2 | 7'-4 | 3'-8 | 9 | 12" | 9'-3 | 9 | 12" | 15'-6 | 6 | 12" | 13'-6 | 32 | 23'-9 | 8 | 12" | 9'-6 | 7 | 8 | 6" | 10'-6 | 8 | 3500 | 3040 | 9.47 | 5000 | 4380 | 8.76 |
| 25' | 13'-6 | 2'-0 | 3'-9 | 2'-4 | 7'-5 | 3'-10 | 9 | 12" | 10'-3 | 9 | 12" | 16'-6 | 6 | 12" | 13'-6 | 32 | 24'-9 | 8 | 12" | 10'-0 | 7 | 8 | 6" | 10'-9 | 8 | 3650 | 3170 | 9.78 | 5220 | 4580 | 9.02 |
| 26' | 14'-0 | 2'-3 | 3'-9 | 2'-6 | 7'-9 | 4'-0 | 10 | 12" | 13'-0 | 8 | 12" | 17'-6 | 6 | 12" | 13'-9 | 34 | 25'-9 | 8 | 12" | 10'-3 | 7 | 8 | 6" | 11'-0 | 8 | 3920 | 3410 | 9.99 | 5630 | 4940 | 9.19 |
| 27' | 14'-6 | 2'-6 | 4'-0 | 2'-8 | 7'-10 | 4'-2 | 10 | 12" | 12'-3 | 9 | 12" | 18'-6 | 6 | 12" | 14'-3 | 34 | 26'-9 | 8 | 12" | 10'-6 | 7 | 8 | 6" | 11'-0 | 8 | 4110 | 3570 | 10.26 | 5910 | 5180 | 9.41 |
| 28' | 15'-0 | 2'-9 | 4'-0 | 2'-10 | 8'-2 | 4'-4 | 10 | 12" | 13'-3 | 9 | 12" | 19'-9 | 6 | 12" | 14'-3 | 36 | 27'-9 | 8 | 12" | 11'-0 | 7 | 8 | 6" | 11'-6 | 8 | 4390 | 3820 | 10.47 | 6330 | 5550 | 9.58 |
| 29' | 15'-6 | 3'-0 | 4'-3 | 3'-0 | 8'-3 | 4'-6 | 10 | 12" | 12'-0 | 10 | 12" | 21'-0 | 6 | 12" | 14'-3 | 38 | 28'-9 | 8 | 12" | 11'-3 | 7 | 8 | 6" | 11'-9 | 9 | 4580 | 3980 | 10.73 | 6610 | 5800 | 9.79 |
| 30' | 16'-0 | 3'-3 | 4'-3 | 3'-2 | 8'-7 | 4'-8 | 10 | 12" | 13'-0 | 10 | 12" | 22'-3 | 6 | 12" | 14'-3 | 38 | 29'-9 | 8 | 12" | 11'-6 | 8 | 8 | 6" | 11'-9 | 9 | 4860 | 4230 | 10.94 | 7040 | 6180 | 9.97 |

QUANTITIES

| H | Concrete C.Y./Ln.Ft. | Steel Lbs./Ln.Ft. | Steel (Horiz. Lap) Lbs./Splice |
|-----|----------------------|-------------------|--------------------------------|
| 4' | .30 | 27 | 10 |
| 5' | .35 | 31 | 12 |
| 6' | .40 | 33 | 12 |
| 7' | .45 | 38 | 14 |
| 8' | .53 | 42 | 15 |
| 9' | .61 | 44 | 15 |
| 10' | .67 | 53 | 17 |
| 11' | .72 | 57 | 19 |
| 12' | .80 | 66 | 20 |
| 13' | .86 | 78 | 21 |
| 14' | .96 | 84 | 22 |
| 15' | 1.04 | 92 | 23 |
| 16' | 1.16 | 108 | 25 |
| 17' | 1.25 | 119 | 26 |
| 18' | 1.37 | 128 | 26 |
| 19' | 1.50 | 153 | 29 |
| 20' | 1.61 | 171 | 30 |
| 21' | 1.75 | 185 | 30 |
| 22' | 1.90 | 203 | 32 |
| 23' | 2.09 | 229 | 33 |
| 24' | 2.29 | 236 | 34 |
| 25' | 2.54 | 248 | 36 |
| 26' | 2.84 | 264 | 37 |
| 27' | 3.16 | 279 | 37 |
| 28' | 3.50 | 294 | 38 |
| 29' | 3.85 | 317 | 40 |
| 30' | 4.22 | 328 | 41 |

LIMIT STATE NOTES:

Qtveu-SERV = Total equivalent uniform vertical bearing stress to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.
 Qnveu-SERV = Net equivalent uniform vertical bearing stress to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.
 B'SERV = Effective footing width to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.
 Qtveu-STR = Total equivalent uniform vertical bearing stress to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.
 Qnveu-STR = Net equivalent uniform vertical bearing stress to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.
 B'STR = Effective footing width to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

For other applicable limit states, perform project specific analysis using the procedures in ADOT SF-1 (Spread Footing: Bearing Resistance and Settlement).

ADOT SF-1 memorandum is found on the Bridge Group website (Geotech Services LRFD Design Memorandums).

QUANTITIES NOTE:

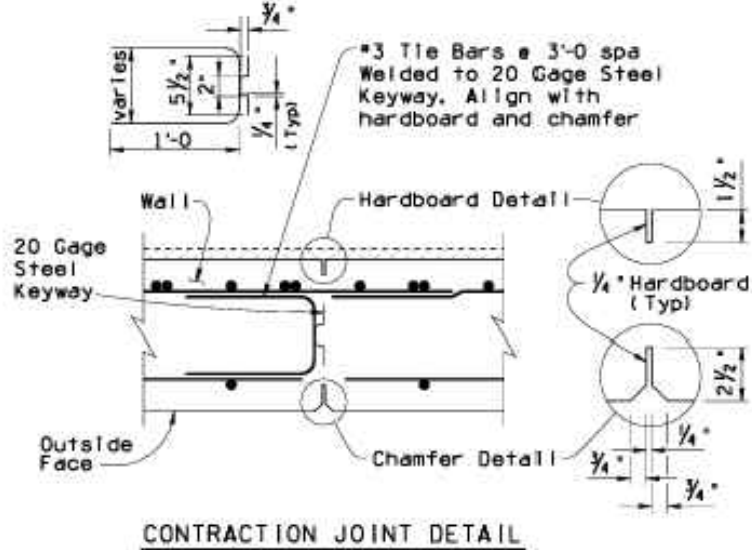
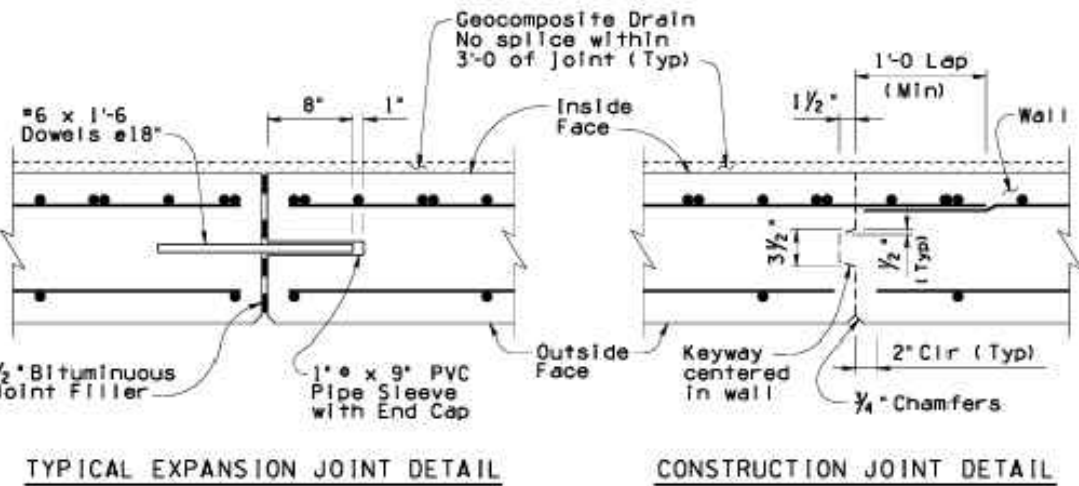
Quantities are shown for information purposes only. The pay item is measured per square foot of wall.
 Quantities are for one L.F. of wall except for horizontal steel lap splices and footing steps.

Steel quantities for horizontal lap splices shall be added for wall segments greater than 30 feet, and add a splice for each additional wall segment greater than 30 feet. Horizontal 1'-0 lap splices occur at construction or contraction joints.

Steel and concrete quantities for footing steps shall be added to those shown in the table.

DOWEL NOTE:

Dowel placement includes furnishing and placing PVC pipe sleeves in the concrete forms, and placing metal dowels in the PVC pipe sleeves.



| Bar Size | Dimension | A | D |
|----------|-----------|--------|---|
| 5 | 1'-0 | 3 1/2" | |
| 6 | 1'-0 | 4 1/2" | |
| 7 | 1'-2 | 5 1/4" | |
| 8 | 1'-4 | 6" | |
| 9 | 1'-8 | 9" | |
| 10 | 1'-10 | 10" | |
| 11 | 2'-0 | 11" | |

S2 BAR S1 BAR

JOINT NOTES:

All retaining walls shall have construction joints or contraction joints spaced at not more than 30'-0 apart or as shown. Contraction joints may be substituted for construction joints for wall pours longer than 30'-0.
 Expansion joints shall be provided at intervals not exceeding 90'-0.
 Footings may be continuous with no joints (except at footing step locations).

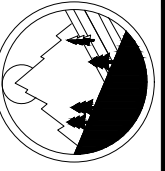
NOTES:

For General Notes, Typical Elevations, Sections and Details see SD 7.01 (1, 3, and 4).
 For Structural Excavation Limits and Structure Backfill Limits, see SD 7.01 (4 of 5).

| | |
|---|--|
| STRUCTURAL ENGINEER A. ALZUBI RECOMMENDED FOR APPROVAL GROUP MANAGER D. EBERHART APPROVED STRUCTURES COMMITTEE APPROVED FOR DISTRIBUTION 12/21 DATE | ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STANDARD DRAWING RETAINING WALL REINFORCED CONCRETE CANTILEVER DRAWING NO. SD 7.01 (2 of 5) |
|---|--|

Note to Designer: The information presented in this Standard Drawing has been prepared in accordance with recognized engineering practices and is for general use. It should not be used for specific applications without professional engineering consultation and verification of the suitability and applicability by a licensed professional engineer. Conditions which the user should be aware of are shown.

PRINT DISTRIBUTION DATE 01/15



HIGH COUNTRY ENGINEERING, INC.
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ADS STORMTECH CHAMBER DETAILS AND NOTES
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DIAL #11
BLUE STAKE CENTER


project: PURINA ENTRANCE
proj. #: 22-486C
drawing name: CHAMBER DETAILS & NOTES
drawn by: TLD
reviewed by: TLD
date: 12/01/2022

revisions:
date:
date:
date:



ADS
Advanced Drainage Systems, Inc.

SiteAssistSM
INSTRUCTIONS
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INSTALLATION APP



MC-7200 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-7200.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPIDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12.1 ARE MET FOR 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE 1) INSTANTANEOUS (1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER; 2) MAXIMUM PERMANENT (75-YR) COVER LOADS; AND 3) ALLOWABLE COVER WITH PARKED (1 WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
 - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTERNAL INTERLOCKING STAKING LUGS.
 - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1/2".
 - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 480 LB-IN/IN. THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 480 LB-IN/IN. THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 480 LB-IN/IN. THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 480 LB-IN/IN.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER. THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
 - THE STRUCTURAL EVALUATION SHALL BE SIGNED BY A REGISTERED PROFESSIONAL ENGINEER.
 - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.5 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
 - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT NOTES FOR THE BIDDING AND INSTALLATION OF MC-7200 CHAMBER SYSTEM

- STORMTECH MC-7200 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLER.
- STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONEHOOPER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BEING ANCHORED ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HCC OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM 2" (50 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE SHALL BE BROUGHT UP BEHIND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF TELESTORM CATCH 10" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANIFOLD SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-7200 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO NUMBER-TWO LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
- FILL 8" (200 mm) OF EMBEDDED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-800-882-2868 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT

- INSPECTION PORTS (IF PRESENT)
- REMOVE AND CLEAN FLEETFORM FILTER IF INSTALLED
- USING A FLUKE RESIST AND STAIN RULER, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
- LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
- IF SEDIMENT IS AT, OR ABOVE, 2" (50 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

B. ALL ISOLATOR ROW PLUS ROWS

- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
- USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
- IMPROVES ON PILES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
- IF SEDIMENT IS AT, OR ABOVE, 2" (50 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

C. CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS

- A FRESH GILVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED. PIPE PHASES OF JETVAC UNITS BACKLUSH WATER IS CLEAN
- ANY VACUUM STRUCTURE BUMP AS REQUIRED
- VACUUM STRUCTURE BUMP AS REQUIRED

STEP 2) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS. RECORD OBSERVATIONS AND ACTIONS.

STEP 3) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

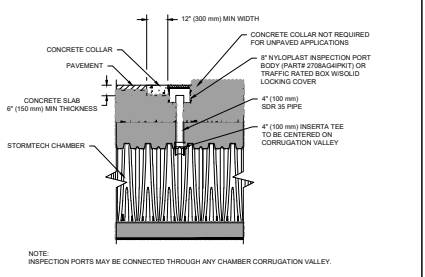
- INSPECT EVERY MONTH DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACUUMING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

| MATERIAL LOCATION | DESCRIPTION | AASHTO MATERIAL CLASSIFICATIONS | COMPACTION / DENSITY REQUIREMENT |
|-------------------|---|--|---|
| D | FINAL FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEEVABLE INVERT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PERMITTED SUBBASE MAY BE PART OF THE 'D' LAYER. | ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS. | N/A PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRONGER MATERIAL AND PREPARATION REQUIREMENTS. |
| C | FINAL FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('E' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER. | GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <3% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN L&U OF THIS LAYER. | AASHTO M45 ¹ A-1, A-2.4, A-3 OR AASHTO M47 ¹ 3, 307, 4, 467, 5, 56, 57, 6, 57, 68, 7, 78, 8, 88, 9, 10 NO COMPACTION REQUIRED. |
| B | EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE. | CLEAN, CRUSHED, ANGULAR STONE AASHTO M43 ¹ 3, 4 | NO COMPACTION REQUIRED. |
| A | FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE (UP TO THE FOOT (BOTTOM) OF THE CHAMBER. | CLEAN, CRUSHED, ANGULAR STONE AASHTO M43 ¹ 3, 4 | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{1,2} |

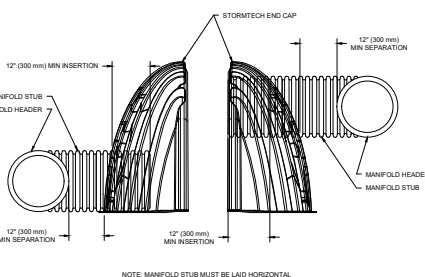
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAXIMUM LIFTS USING TWO FULL COVERSAGES WITH A VIBRATORY COMPACTOR.
3. WHERE THE FINISH SURFACE MAY BE COMPACTION FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY SHAKING OR DRAGGING WITHOUT COMPACTOR.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

MC-7200 ISOLATOR ROW PLUS DETAIL



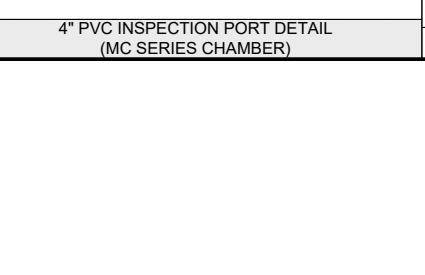
NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

MC-SERIES END CAP INSERTION DETAIL



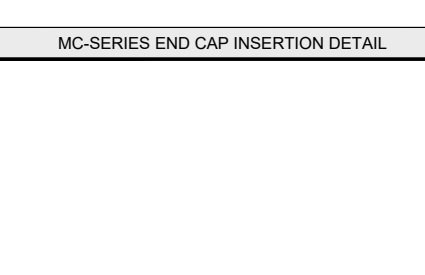
NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT AND END CAP OPENING.

4" PVC INSPECTION PORT DETAIL (MC SERIES CHAMBER)



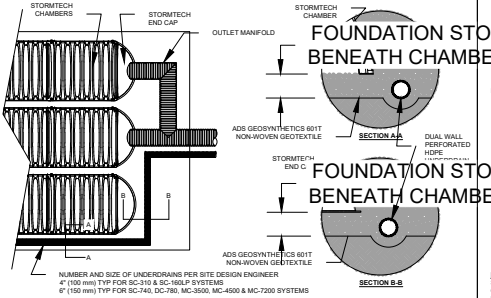
NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

MC-7200 CROSS SECTION DETAIL



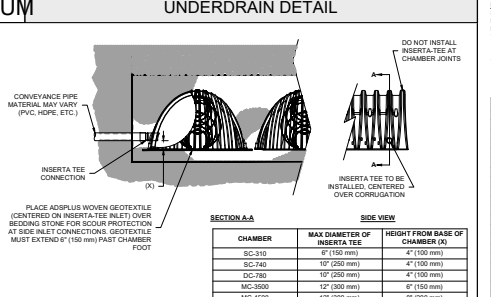
NOTE: PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

FOUNDATION STONE BENEATH CHAMBERS



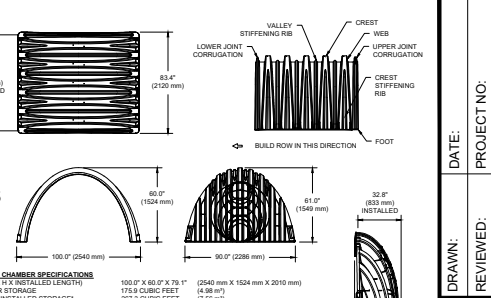
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UNDERDRAIN DETAIL



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FOUNDATION STONE BENEATH CHAMBERS



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MC-7200 TECHNICAL SPECIFICATIONS

| PART # | STUB | B | C |
|-------------|---------------|------------------|----------------|
| MC7200EPF08 | 8" (200 mm) | 42.54" (1081 mm) | 0.85" (22 mm) |
| MC7200EPF10 | 10" (250 mm) | 40.50" (1029 mm) | 1.01" (26 mm) |
| MC7200EPF12 | 12" (300 mm) | 38.37" (975 mm) | 1.33" (34 mm) |
| MC7200EPF14 | 14" (350 mm) | 35.89" (912 mm) | 1.59" (40 mm) |
| MC7200EPF16 | 16" (400 mm) | 32.72" (831 mm) | --- |
| MC7200EPF18 | 18" (450 mm) | 29.34" (746 mm) | 1.70" (43 mm) |
| MC7200EPF20 | 20" (500 mm) | --- | 1.87" (48 mm) |
| MC7200EPF24 | 24" (600 mm) | 23.05" (585 mm) | --- |
| MC7200EPF28 | 28" (700 mm) | --- | 2.30" (59 mm) |
| MC7200EPF36 | 36" (900 mm) | --- | 2.95" (75 mm) |
| MC7200EPF48 | 48" (1200 mm) | --- | 3.72" (95 mm) |
| MC7200EPF60 | 60" (1500 mm) | --- | 4.50" (114 mm) |

NOTE: ALL DIMENSIONS ARE NOMINAL.

4" PVC INSPECTION PORT DETAIL (MC SERIES CHAMBER)



NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

MC-7200 CROSS SECTION DETAIL



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FOUNDATION STONE BENEATH CHAMBERS



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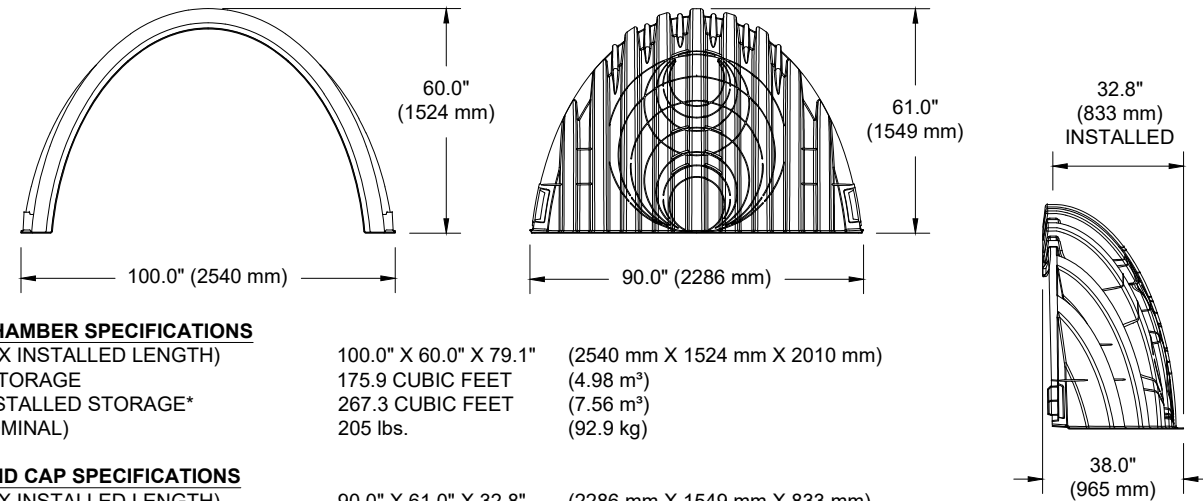
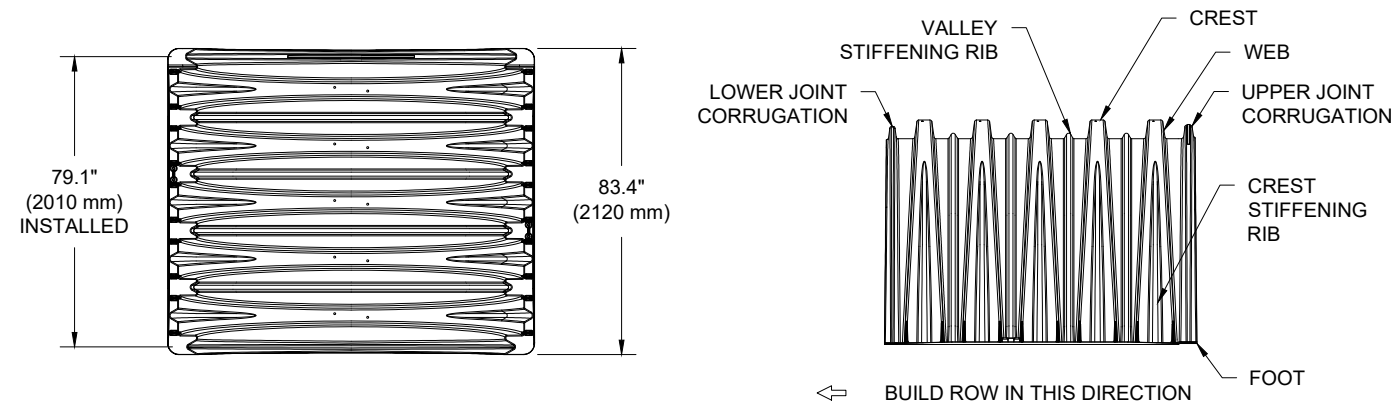
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| MC7200EPF28 | 28" (700 mm) | --- | 2.30" (59 mm) |
| MC7200EPF36 | 36" (900 mm) | --- | 2.95" (75 mm) |
| MC7200EPF48 | 48" (1200 mm) | --- | 3.72" (95 mm) |
| MC7200EPF60 | 60" (1500 mm) | --- | 4.50" (114 mm) |

NOTE: ALL DIMENSIONS ARE NOMINAL.

FOUNDATION STONE BENEATH CHAMBERS

MC-7200 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

| | | |
|---------------------------------|------------------------|-------------------------------|
| SIZE (W X H X INSTALLED LENGTH) | 100.0" X 60.0" X 79.1" | (2540 mm X 1524 mm X 2010 mm) |
| CHAMBER STORAGE | 175.9 CUBIC FEET | (4.98 m³) |
| MINIMUM INSTALLED STORAGE* | 267.3 CUBIC FEET | (7.56 m³) |
| WEIGHT (NOMINAL) | 205 lbs. | (92.9 kg) |

NOMINAL END CAP SPECIFICATIONS

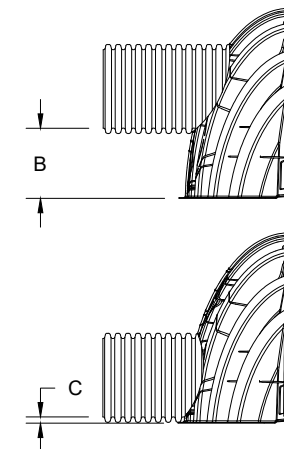
| | | |
|---------------------------------|-----------------------|------------------------------|
| SIZE (W X H X INSTALLED LENGTH) | 90.0" X 61.0" X 32.8" | (2286 mm X 1549 mm X 833 mm) |
| END CAP STORAGE | 39.5 CUBIC FEET | (1.12 m³) |
| MINIMUM INSTALLED STORAGE* | 115.3 CUBIC FEET | (3.26 m³) |
| WEIGHT (NOMINAL) | 90 lbs. | (40.8 kg) |

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

| PART # | STUB | B | C |
|----------------|---------------|------------------|---------------|
| MC7200IEPP06T | 6" (150 mm) | 42.54" (1081 mm) | --- |
| MC7200IEPP06B | | --- | 0.86" (22 mm) |
| MC7200IEPP08T | 8" (200 mm) | 40.50" (1029 mm) | --- |
| MC7200IEPP08B | | --- | 1.01" (26 mm) |
| MC7200IEPP10T | 10" (250 mm) | 38.37" (975 mm) | --- |
| MC7200IEPP10B | | --- | 1.33" (34 mm) |
| MC7200IEPP12T | 12" (300 mm) | 35.69" (907 mm) | --- |
| MC7200IEPP12B | | --- | 1.55" (39 mm) |
| MC7200IEPP15T | 15" (375 mm) | 32.72" (831 mm) | --- |
| MC7200IEPP15B | | --- | 1.70" (43 mm) |
| MC7200IEPP18T | 18" (450 mm) | 29.36" (746 mm) | --- |
| MC7200IEPP18TW | | --- | 1.97" (50 mm) |
| MC7200IEPP18B | | --- | --- |
| MC7200IEPP18BW | | --- | --- |
| MC7200IEPP24T | 24" (600 mm) | 23.05" (585 mm) | --- |
| MC7200IEPP24TW | | --- | --- |
| MC7200IEPP24B | | --- | 2.26" (57 mm) |
| MC7200IEPP24BW | | --- | --- |
| MC7200IEPP30BW | 30" (750 mm) | --- | 2.95" (75 mm) |
| MC7200IEPP36BW | 36" (900 mm) | --- | 3.25" (83 mm) |
| MC7200IEPP42BW | 42" (1050 mm) | --- | 3.55" (90 mm) |

NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.



HIGH COUNTRY ENGINEERING, INC.
 2712 S HUFFER LN
 FLAGSTAFF, ARIZONA 86001
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ADS STORMTECH CHAMBER DETAILS AND NOTES (CONT)
 PURINA FACILITY NEW ENTRANCE
 APN: 113-28-004F
 4700 E NESTLE PURINA AVE
 FLAGSTAFF, AZ, 86004

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

CALL TWO WORKING DAYS BEFORE YOU DIG
 DIAL #11
 BLUE STAKE CENTER

project: PURINA ENTRANCE
 proj. #: 22-486C
 drawing name: CHAMBER DETAILS & NOTES
 drawn by: TLD
 reviewed by: TLD
 date: 12/01/2022

revisions:
 date:
 date:
 date:

LEGEND

- - MINOR CONTOUR
- - MAJOR CONTOUR
- - PROPERTY LINE
- - ROAD CENTERLINE
- - EXCAVATION BOUNDARIES
- XXX - NOTE

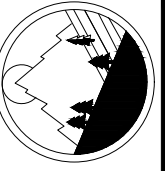
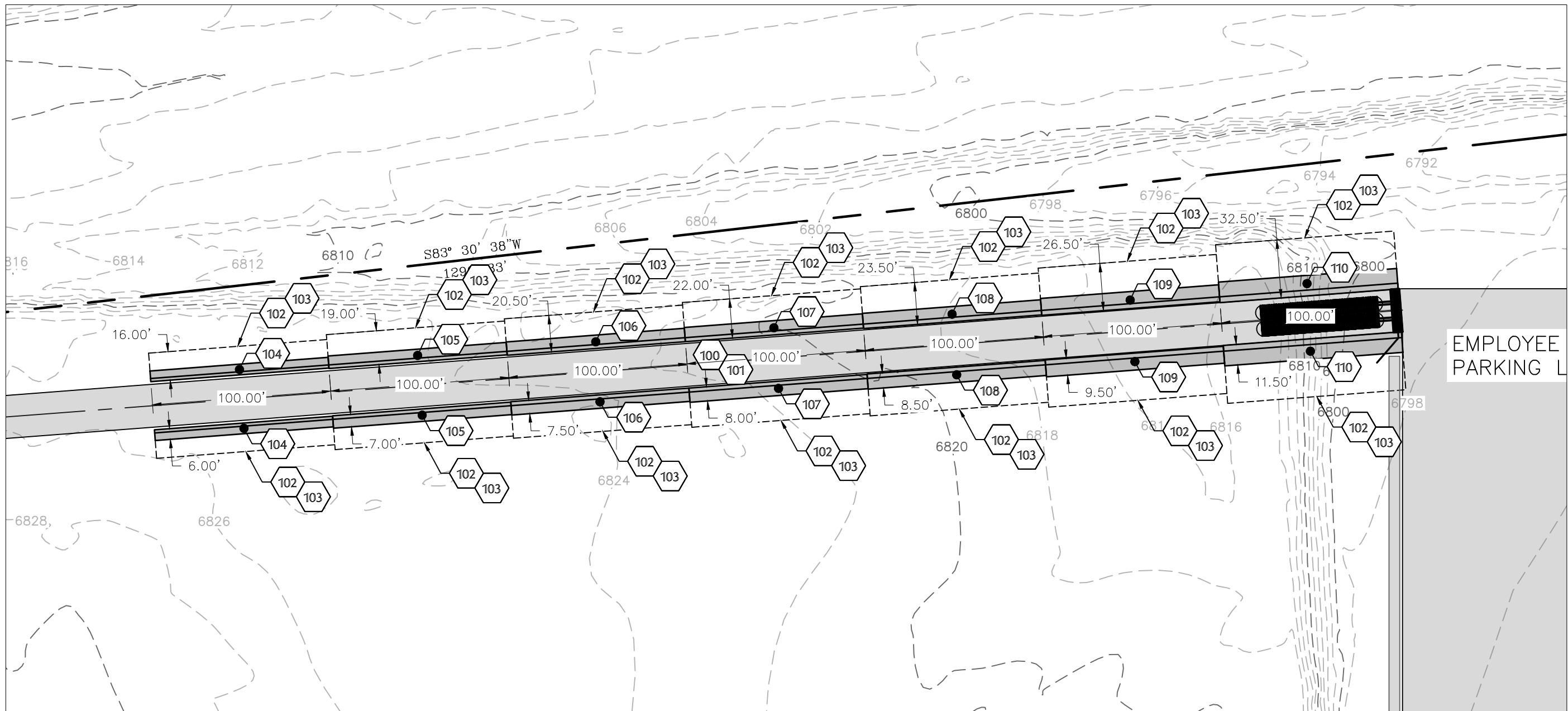


SCALE: 1" = 60'



CONSTRUCTION NOTES

| | | | |
|-----|--------|----|---|
| 100 | 1 | LS | CLEAR AND GRUB SITE: SEE NOTES SHEET, 'C1'. |
| 101 | 1 | LS | ALL AREAS DISTURBED BY CONSTRUCTION SHALL BE RE-SEEDED TO PREVENT EROSION. SEE C.O.F. GENERAL NOTES #20. |
| 102 | 14,417 | CY | CUT: SEE NOTES SHEET, 'C2'. CUT SHOWN DOES NOT INCLUDE BUILDING QUANTITIES. SEE NOTES BELOW. |
| 103 | 9,475 | CY | FILL: SEE NOTES SHEET, 'C2'. FILL SHOWN DOES NOT INCLUDE BUILDING QUANTITIES. SEE NOTES BELOW. |
| 104 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 10' HEIGHT PER 'C4'. |
| 105 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 12' HEIGHT PER 'C4'. |
| 106 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 13' HEIGHT PER 'C4'. |
| 107 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 14' HEIGHT PER 'C4'. |
| 108 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 15' HEIGHT PER 'C4'. |
| 109 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 17' HEIGHT PER 'C4'. |
| 110 | 200 | LF | CONSTRUCT RETAINING WALL PER PROFILE ON SHEET 'C9' & STRUCTURAL DRAWING ON SHEET 'C3' & DIMENSIONS PER 21' HEIGHT PER 'C4'. |



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RETAINING WALL CONSTRUCTION PLAN
 PURINA FACILITY NEW ENTRANCE
 APN: 113-28-004F
 4700 E NESTLE PURINA AVE
 FLAGSTAFF, AZ, 86004

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CALL TWO WORKING DAYS BEFORE YOU DIG
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project: PURINA ENTRANCE
 proj #: 22-486C
 drawing name:
 RET. WALL CONST. PLAN
 drawn by: TLD
 reviewed by: TLD
 date: 12/01/2022

revisions:
 date:
 date:
 date:

LEGEND

- - MINOR CONTOUR
- - MAJOR CONTOUR
- - PROPERTY LINE
- - ROAD CENTERLINE
- - EXCAVATION BOUNDARIES
- XXX - NOTE

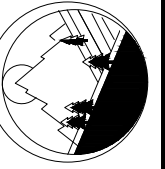
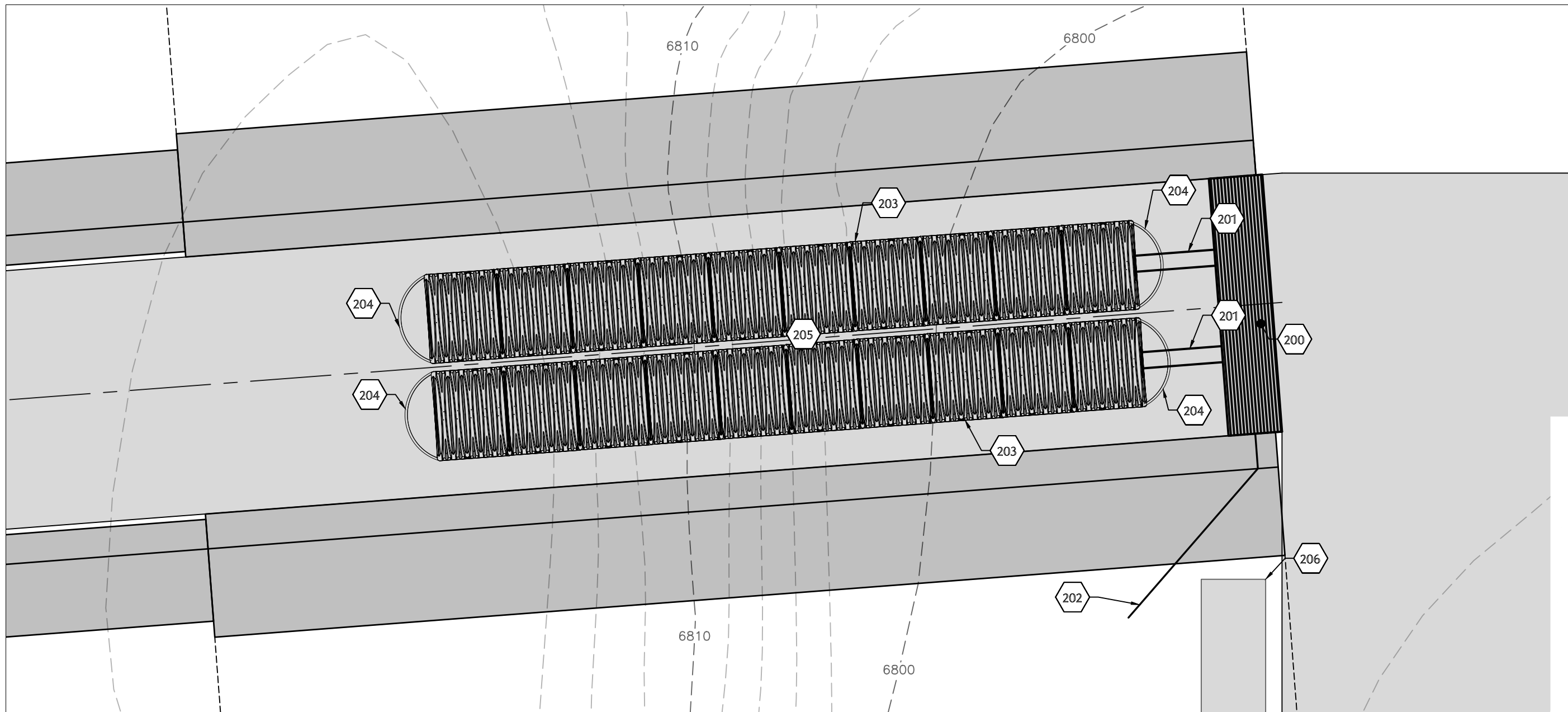


SCALE: 1" = 10'



CONSTRUCTION NOTES

| | | | |
|-----|-----|----|---|
| 200 | 1 | EA | 24' WIDE X 3' LONG X 5' DEEP CUSTOM CATCH BASIN |
| | 1 | EA | 12" TRASH WEIR TO PREVENT DEBRIS FROM ENTERING DISPOSAL. OWNER MUST CONTRACT WITH A CERTIFIED TRASH PUMPER FOR TRASH REMOVAL AS NEEDED. |
| 201 | 2 | EA | 18" STUB PIPES TO DISPOSAL |
| 202 | 1 | EA | 8" BYPASS PIPE 24" ABOVE BOTTOM OF CATCH BASIN |
| 203 | 20 | EA | ADS STORMTECH MC-7200 UNDERGROUND STORMWATER CHAMBERS |
| | 1 | LS | CONSTRUCT CHAMBERS PER PROFILE ON SHEET 'C9' & DETAIL DRAWINGS ON SHEET 'C5' & 'C6'. |
| 204 | 4 | EA | ADS STORMTECH MC-7200 UNDERGROUND STORMWATER END CAPS |
| 205 | 383 | CY | CLEAN CRUSHED STONE SUCH AS PAVEMENT SUBBASE UNDER, SURROUNDING AND ABOVE CHAMBERS. SEE DETAILS ON SHEET 'C5'. |
| 206 | 762 | LF | CONSTRUCT BERM PER DETAIL 'B' ON SHEET 'C2'. |



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CHAMBER STORAGE CONSTRUCTION PLAN
 PURINA FACILITY NEW ENTRANCE
 APN: 113-28-004F
 4700 E NESTLE PURINA AVE
 FLAGSTAFF, AZ, 86004

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

CALL TWO WORKING DAYS BEFORE YOU DIG
 DIAL 811
 BLUE STAKE CENTER

project: PURINA ENTRANCE
 proj #: 22-486C
 drawing name:
 CHAMBER CONST. PLAN
 drawn by: TLD
 reviewed by: TLD
 date: 12/01/2022

revisions:
 date:
 date:
 date:



HIGH COUNTRY ENGINEERING, INC.
 2712 S HUFFER LN
 FLAGSTAFF, ARIZONA 86001
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ROAD PROFILE
 PURINA FACILITY NEW ENTRANCE
 APN: 113-28-004F
 4700 E NESTLE PURINA AVE
 FLAGSTAFF, AZ, 86004

**PRELIMINARY NOT
 FOR
 CONSTRUCTION
 OR
 RECORDING**



project: PURINA ENTRANCE
 proj #: 22-486C
 drawing name:
 ROAD PROFILE
 drawn by: TLD
 reviewed by: TLD
 date: 12/01/2022

revisions:
 date:
 date:
 date:

Elevation

Elevation

