

PARK 1, 4, 10 OREM UT PARK STAKE PARKING AND DRAINAGE UPGRADE

50 SOUTH 750 WEST
OREM, UTAH 84058
PROPERTY # 505069319020101

JULY 2019



PARK 1, 4, 10
The Church of Jesus Christ of Latter-Day Saints
OREM UT PARK STAKE
50 SOUTH 750 WEST
OREM, UT 84058

REVISIONS	
REV	DESCRIPTION

PROJECT NO: 18107
DRAWN BY: MGS/DTS
CHECKED BY: RJP/CEG
DATE: JULY 2019
PROP NO: 505069319020101

COVER SHEET

G1.00

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GENERAL NOTES

- 1.1 COMPLIANCE
1. ALL WORK TO CONFORM TO GOVERNING MUNICIPALITY'S STANDARDS, SPECIFICATIONS AND REQUIREMENTS.
2. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS AND THE MOST RECENT, ADOPTED EDITIONS OF THE FOLLOWING...

- 14. THE CONTRACTOR SHALL TAKE REASONABLE MEASURE TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER/OWNER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
1.5 MATERIALS
1. SITE CONCRETE SHALL BE A MINIMUM 4500 P.S.I. @ 28 DAYS, 4" MAXIMUM SLUMP WITH 5 + OR - 1% AIR ENTRAINMENT, UNLESS SPECIFIED OTHERWISE...

- 1.6 GRADING / SOILS
1. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS AND THE RECOMMENDATIONS SET FORTH IN THE SOILS REPORT, WHICH BY REFERENCE ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND IN CASE OF CONFLICT SHALL TAKE PRECEDENCE...

- 1.7 UTILITIES
1. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES EITHER DIRECT OR THROUGH BLUE STAKE TO LOCATE THEIR FACILITIES PRIOR TO STARTING CONSTRUCTION...

SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE
3. CONTRACTOR MUST START AT LOW END OF ALL NEW GRAVITY UTILITY LINES. MECHANICAL SUB-CONTRACTOR MUST BE PROVIDED CIVIL SITE DRAWINGS FOR COORDINATION AND TO CHECK THE FLOW FROM THE LOWEST POINT IN BUILDING TO THE FIELD VERIFIED CONNECTION AT THE EXISTING MAIN. NO EXTRA COMPENSATION IS TO BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO FAILURE TO COMPLY WITH THESE REQUIREMENTS.

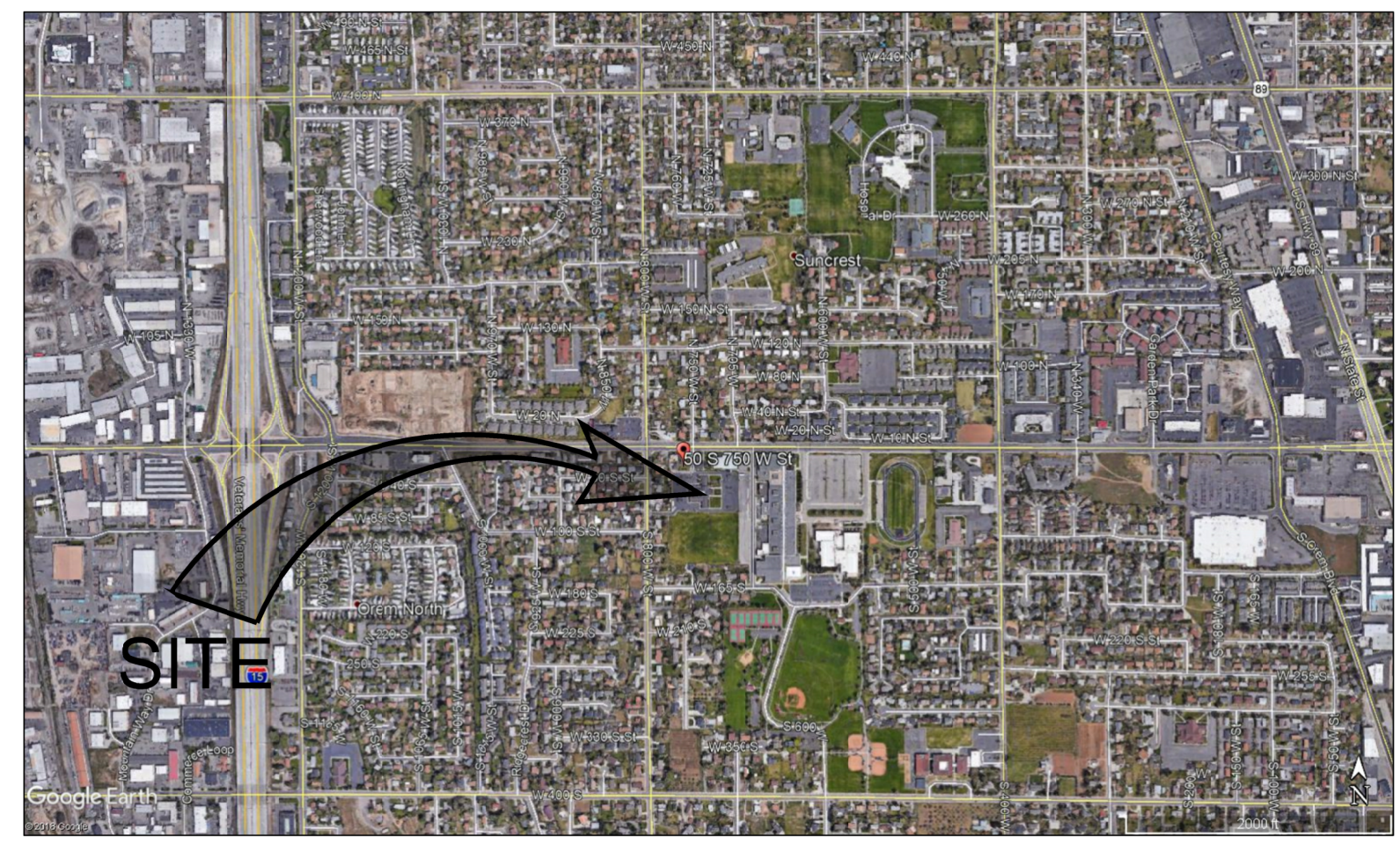
1.8 SURVEY CONTROL
1. CONTRACTOR MUST PROVIDE A REGISTERED LAND SURVEYOR OR PERSONS UNDER THE SUPERVISION OF A REGISTERED LAND SURVEYOR TO SET STAKES FOR THE ALIGNMENT AND GRADE OF EACH MAIN AND/OR FACILITY AS SHOWN ON THE PLANS. THE STAKES SHALL BE MARKED WITH THE HORIZONTAL LOCATION (STATION) AND VERTICAL LOCATION (GRADE) WITH CUTS AND/OR FILLS TO BE A 1/4" ABOVE LIP OF ALL GUTTER AFTER COMPACTION.

1.9 AMERICAN DISABILITIES ACT
1. PEDESTRIAN/ADA ROUTES SHALL MEET THE FOLLOWING SPECIFICATIONS:
"ROUTES SHALL HAVE A 2.00% (1:50) MAXIMUM CROSS SLOPE.
"ROUTES SHALL HAVE A 5.00% (1:20) MAXIMUM RUNNING SLOPE.
"RAMPS SHALL HAVE A 8.33% (1:12) MAXIMUM RUNNING SLOPE.

LEGEND
NEW EXISTING
MONUMENT LINE
CENTER LINE
SUBJECT PROPERTY LINE
ADJACENT PROPERTY LINE
EASEMENT LINE
DITCH FLOWLINE
FENCE LINE
ATMS CABLE
CABLE TV LINE
COMMUNICATIONS LINE
FIBER-OPTIC CABLE
FIRE LINE
NATURAL GAS LINE
IRRIGATION LINE
OVERHEAD POWER LINE
POWER LINE
POWER/COMMUNICATIONS LINE
POWER/TELEPHONE LINE
POWER/TELE/COMM LINE
ROOF DRAIN LINE
SECONDARY WATER LINE
SANITARY SEWER LINE
STEAM LINE
STORM DRAIN LINE
TELEPHONE LINE
TELEPHONE/COMM LINE
UNDERGROUND POWER LINE
WATER LINE
CONTOUR LINE
CURB & GUTTER (STD)
CURB & GUTTER (OUTFALL)
CONCRETE PAVEMENT
STD. DUTY ASPHALT

ABBREVIATIONS

Table listing various abbreviations and their corresponding full names, such as ACRE, AMERICANS WITH DISABILITIES ACT, ADVANCED TRAFFIC MGMT. SYSTEM, BAR & CAP, BUILDING CORNER, BLUE STAKED ELECTRIC, BLUE STAKED FIBER OPTIC, BLUE STAKED NATURAL GAS, BLUE STAKED IRRIGATION, BLUE STAKED STORM DRAIN, BLUE STAKED SANITARY SEWER, BLUE STAKED TELEPHONE, CABLE TELEVISION, CONCRETE BARRIER, CURB CUT, COLUMN, COMMUNICATIONS, CONCRETE, CONSTRUCTION, CORRUGATED METAL PIPE, CONTROL POINT, CONIFEROUS TREE, CUBIC FOOT, CUBIC YARD, DELINEATOR, DIAMETER, DIA or Ø, DUCTILE IRON PIPE, DECIDUOUS TREE, DOUBLE YELLOW LINE, EAST GRADE BREAK, ELECTRIC BOX, ENERGY GRADE LINE, ELEVATION, ELECTRIC METER, ELECTRIC MANHOLE, EDGE OF ASPHALT, EDGE OF CONCRETE, EDGE OF GRAVEL, EDGE OF LAWN, EXISTING, FIRE, FOUNDATION CORNER, FOUND, FIRE DEPT CONNECTION, FOUND MONUMENT, FOUND SECTION CORNER, FINISHED FLOOR ELEVATION, FINISHED GRADE, FLOW LINE, FLOW POINT, FENCE, CHAIN LINK FENCE, IRON FENCE, VINYL FENCE, WOOD FENCE, WIRE FENCE, FIBER OPTIC, FRONT OF WALK, FEET, NATURAL GAS, GARAGE, GRADE BREAK, GROUND LIGHT, GAS METER, GAS MANHOLE, GUY WIRE, HIGH DENSITY POLYETHYLENE, HEADGATE, HYDRAULIC GRADE LINE, HIGH POINT, HEADWALL or HIGH WATER, HIGHWAY, IRRIGATION CLEANOUT, IRRIGATION CONTROL VALVE, INVERT ELEVATION, IRRIGATION, LINEAR FEET, LIP OF GUTTER, LOW POINT or LIGHT POLE, RANGE, REINFORCED CONCRETE PIPE, ROOF DRAIN, MONITORING WELL, NORTH, NATURAL GROUND, NG AT RETAINING WALL, NAIL & RIBBON, NAIL & WASHER, NOT TO SCALE, ORIGINAL GROUND, OVERHANG, OVERHEAD BOX, COMMUNICATIONS, OVERHEAD POWER, OVERHEAD TELEPHONE, OVERHEAD TELEVISION, PROPERTY LINE, POWER BOX, POINT OF CURVATURE, POINT OF COMPOUND CURVE, POINT OF INTERSECTION, PARKING METER, POWER POLE, POINT OF REVERSE CURVE, POINT OF VERTICITY, POINT OF CONNECTION, POINT OF TANGENCY, POWER, POLYVINYL CHLORIDE PIPE, RANGE, REINFORCED CONCRETE PIPE, ROOF DRAIN, REVISION, RIGHT-OF-WAY RAILROAD, SOUTH, SEE ARCHITECTURAL DRAWINGS, STORM DRAIN, STORM DRAIN CATCH BASIN, STORM DRAIN CLEAOUNT BOX, STORM DRAIN MANHOLE, SECTION, SPECIFICATIONS, SALT LAKE BASE & MERIDIAN, SQUARE, SQUARE FEET, SQUARE YARD, SANITARY SEWER, SANITARY SEWER CLEANOUT, SANITARY SEWER MANHOLE, STEAM, STATION, STANDARD, STORM, SOLID YELLOW LINE, SOLID WHITE LINE, TOWNSHIP, TOP BACK OF CURB, TELEPHONE, TOP FACE OF CURB, TREE LINE, TELEPHONE MANHOLE, TOA, TOC, TOE, TOP OF CONCRETE, TOE OF SLOPE, TOP OF SLOPE or TOP OF PIPE, TOP OF WALL, TELEPHONE RISER, TELEVISION, TRANSFORMER, TRAFFIC SIGNAL POLE, TRAFFIC SIGNAL BOX, UNDERDRAIN, UNDERGROUND, UNDERGROUND COMMUNICATIONS, UNDERGROUND POWER, UNDERGROUND TELEVISION, UNDERGROUND TELEVISION UNLESS NOTED OTHERWISE, UTILITY POLE, VITRIFIED CLAY PIPE, VERTICAL PIPE, WEST of WATER, WATER METER, WATER MANHOLE, WATER SURFACE, WATER, WATER VALVE, WATERWAY



VICINITY MAP N.T.S.

DRAWING INDEX

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AS5.01 DETAIL SHEET

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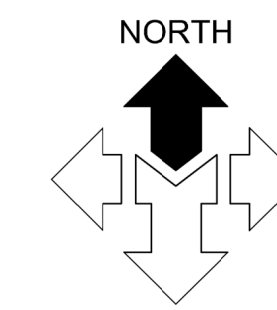
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Table with columns: REV, DATE, DESCRIPTION.
Includes a list of revisions with dates and descriptions.

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GENERAL NOTES, LEGEND, AND ABBREVIATIONS

G1.01

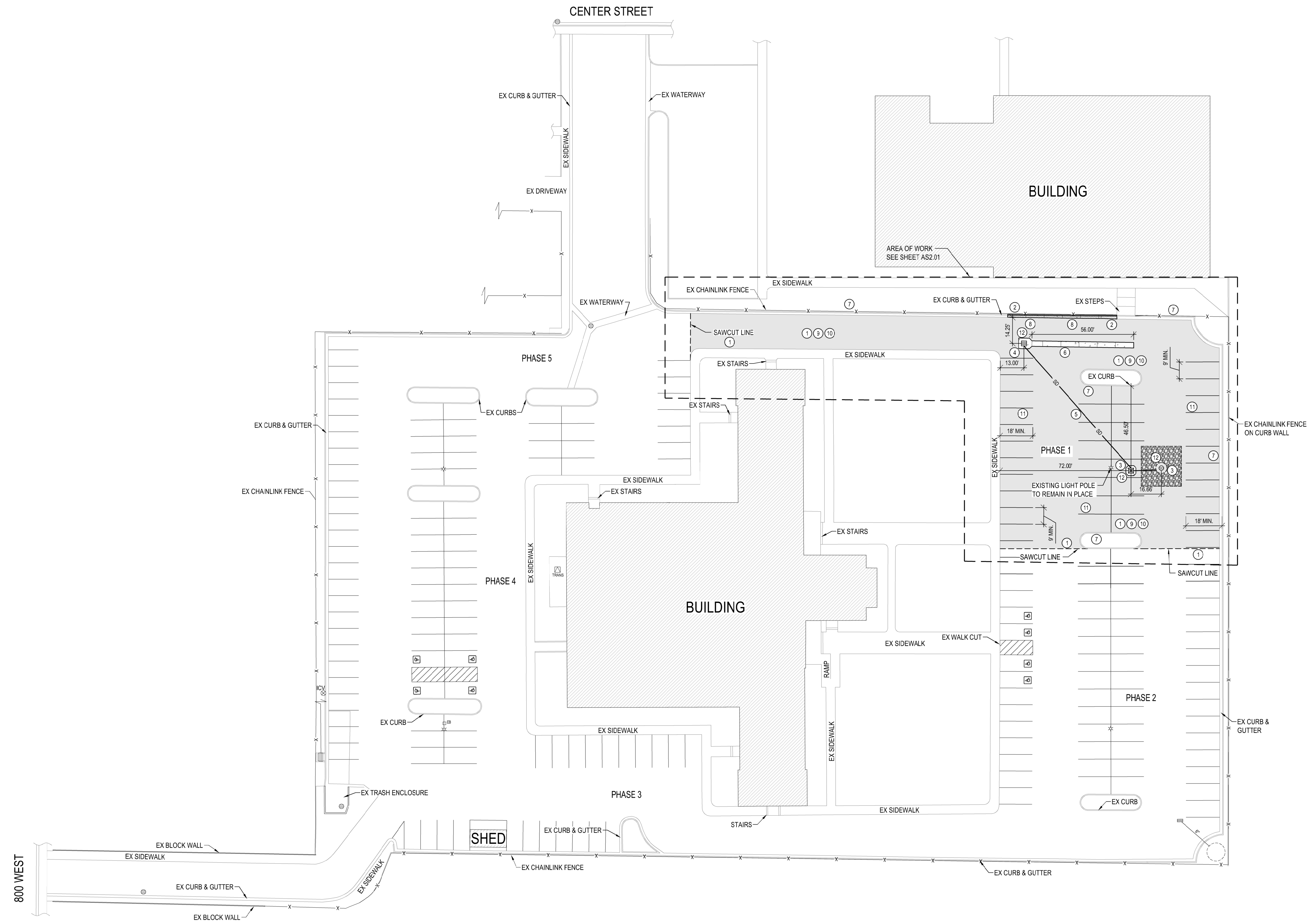


SCALE: 1" = 30'



SCOPE OF WORK:
PROVIDE, INSTALL AND/OR CONSTRUCT THE FOLLOWING PER THE SPECIFICATIONS GIVEN OR REFERENCED AND THE DETAILS NOTED AND AS SHOWN ON THE CONSTRUCTION DRAWINGS:

- ① SAWCUT EXISTING ASPHALT PAVEMENT. REMOVE ASPHALT PAVEMENT AND ROAD BASE DOWN 9" BELOW FINISH GRADE AND PROPERLY DISPOSE.
- ② SAWCUT, REMOVE, AND DISPOSE OF EXISTING CONCRETE CURB AND GUTTER.
- ③ INSTALL NEW 3' x 3' x 9" STORM DRAIN CATCH BASIN AND NEW SLOTTED HEAVY DUTY BICYCLE SAFE METAL GRATE WITH NSW (2) 5'-0" DIA. x 3'-0" TALL, PRE-CAST CONCRETE DRYWELL RINGS AND SOLID LID PER DETAIL 'OREM CITY DETAIL 3D-3' AND CALCS. SHEET ASS.01. COMPACT AND CONTINUE TO FILL REMAINING EXCAVATED AREA WITH CLEAN, 2" CLEAN WASHED STONE UNTIL LEVEL WITH TOP OF DRY WELL COVER INCLUDING FILTER FABRIC. INSTALL NEW CONCRETE APRON AROUND NEW STORM DRAIN CATCH BASIN. SEE DETAIL '3', SHEET ASS.01.
- ④ INSTALL NEW PRECAST STORM DRAIN CATCH BASIN WITH HEAVY DUTY METAL, BICYCLE SAFE GRATE. SEE DETAIL '5', SHEET ASS.01. INSTALL NEW CONCRETE APRON AROUND NEW STORM DRAIN CATCH BASIN. SEE DETAILS '4', SHEET ASS.01.
- ⑤ CONNECT NEW STORM DRAIN CATCH BASINS WITH NEW 8" DIAMETER HDPE STORM DRAIN LINE. GROUT CONNECTIONS WATER-TIGHT.
- ⑥ INSTALL 3'-0" WIDE CONCRETE WATERWAY. SEE DETAIL '1', SHEET ASS.01.
- ⑦ CLEAN ORGANIC MATERIALS OUT OF ALL EXPANSION JOINTS LARGER THAN 1/4" WITHIN EXISTING CONCRETE CURB AND GUTTER, AND CURB WALL IN AREA OF CONSTRUCTION. APPLY A PRE-EMERGENT HERBICIDE AT ALL LOCATIONS. INSTALL BACKER ROD AND FILL WITH APPROVED SEALANT.
- ⑧ INSTALL NEW 30" CONCRETE RELEASE CURB AND GUTTER. SEE DETAIL '2', SHEET ASS.01.
- ⑨ PROOF ROLL EXPOSED SUB-GRADE. IF ANY SOFT SPOTS DISCOVERED NOTIFY CONSULTANT AND OWNER. SCARIFY PER GENERAL NOTES. PROVIDE IN BASE BID TO OVEREXCAVATE 170 CU. YD. OF SOFT SUBGRADE APPROX. (12" DEEP). INSTALL 4,630 SQ. FT. OF STABILIZATION FABRIC (MIRAFI 160N) AND FILL WITH PIT-RUN MATERIAL. COORDINATE ALL WORK WITH CONSULTANT.
- ⑩ GRADE WITH UNIFORM SLOPE PER PLAN AND INSTALL 6" ROAD BASE WITH 3" ASPHALT PAVEMENT.
- ⑪ PAINT 4" WIDE SOLID PARKING STALL STRIPE LINES PER SPECIFICATION. TYPICAL STALL TO BE 9'x18' (MIN).
- ⑫ CLEAN OUT ALL DEBRIS FROM STORM DRAIN CATCH BASIN AND SUMP IN AREA OF CONSTRUCTION AT COMPLETION OF PROJECT. CHECK ALL PIPE CONNECTIONS INTO BOXES THAT THEY ARE SEALED WATERTIGHT. SEAL AS REQUIRED.



SITE PLAN
SCALE: 1" = 30'-0"

REV	DATE	DESCRIPTION

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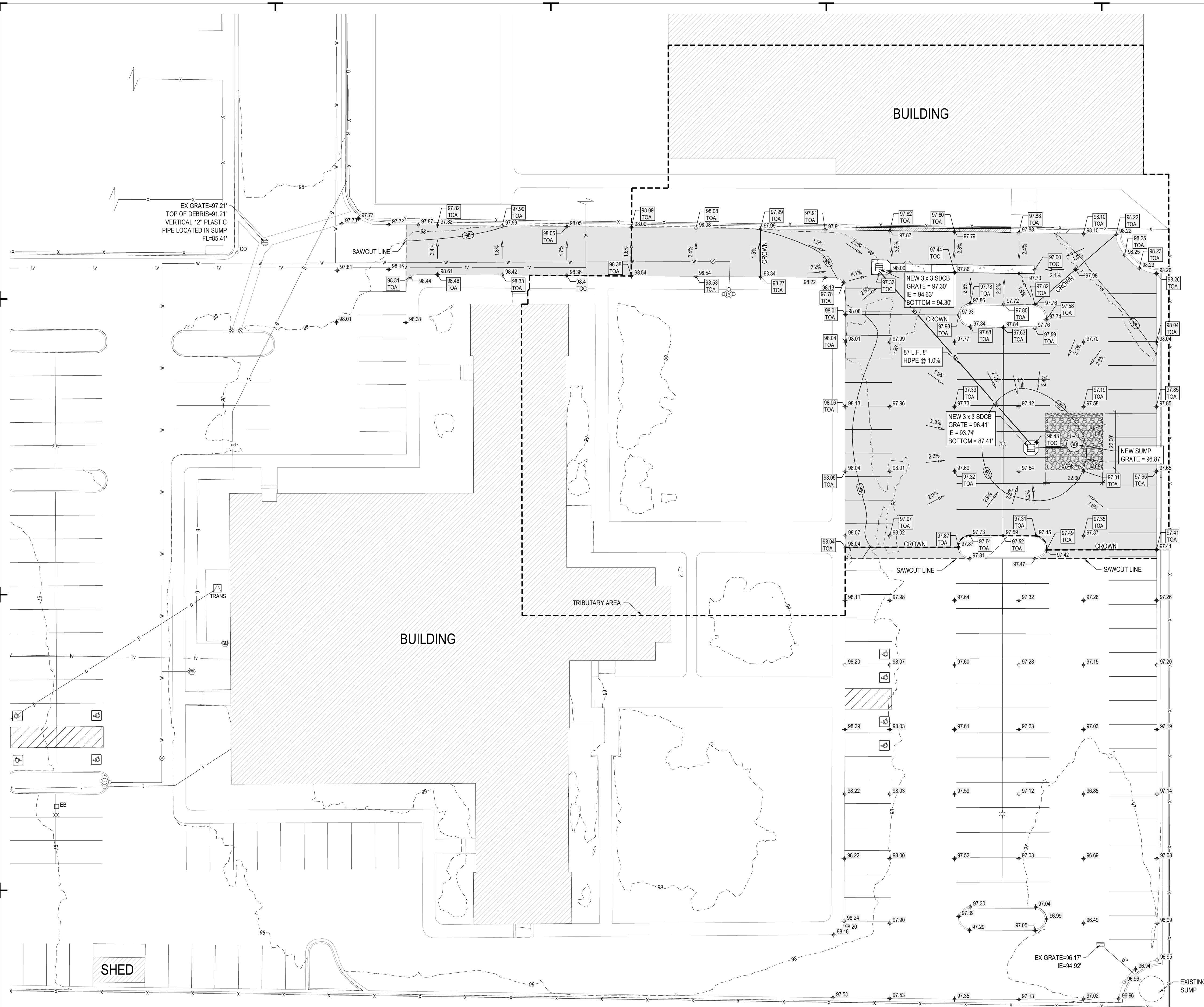
SITE PLAN

AS1.01

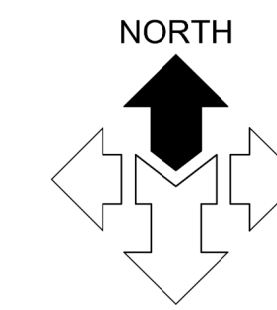


NOTICE!
 THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE LOCATION, PROTECTION, AND RESTORATION OF ALL BURIED OR ABOVE GROUND UTILITIES, SHOWN OR NOT SHOWN ON THE PLANS.

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GRADING AND DRAINAGE PLAN
SCALE: 1" = 20'-0"



SCALE: 1" = 20'



LEGEND

- NEW
- EXISTING
- SPOT ELEVATION

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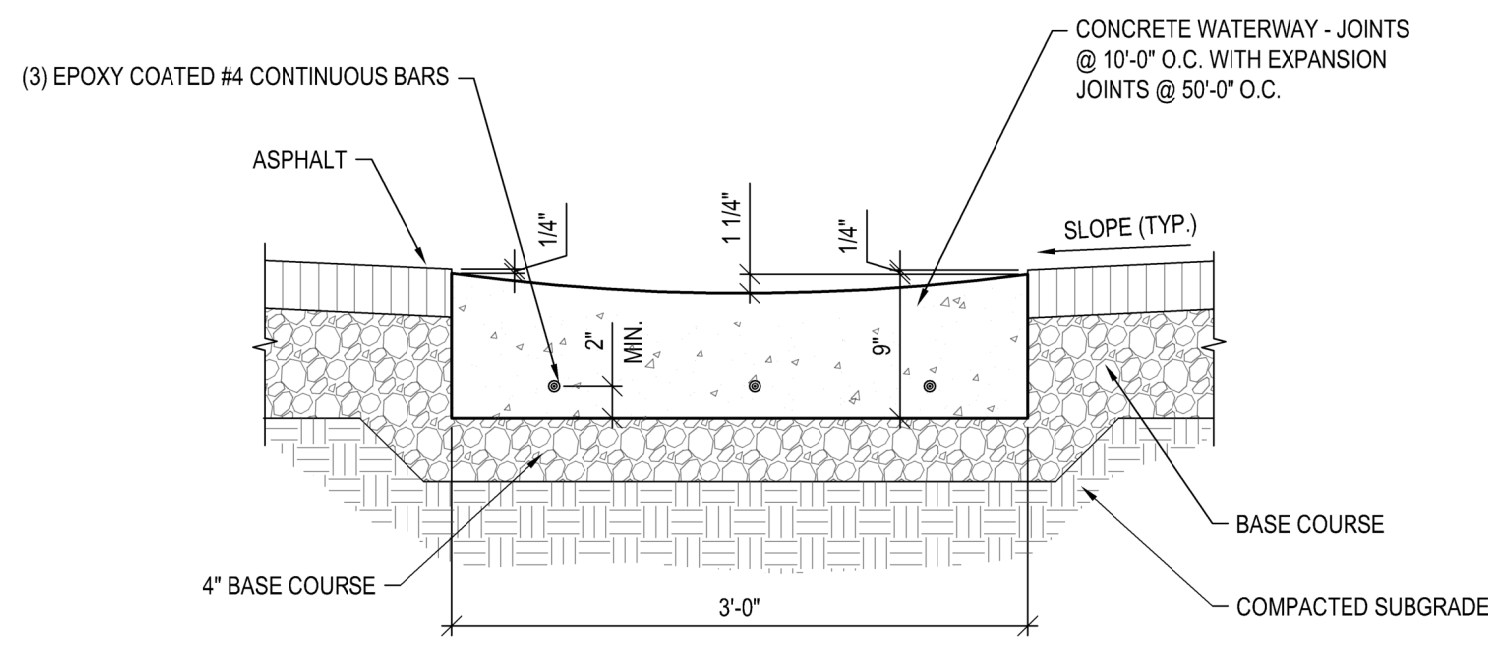
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GRADING AND DRAINAGE PLAN

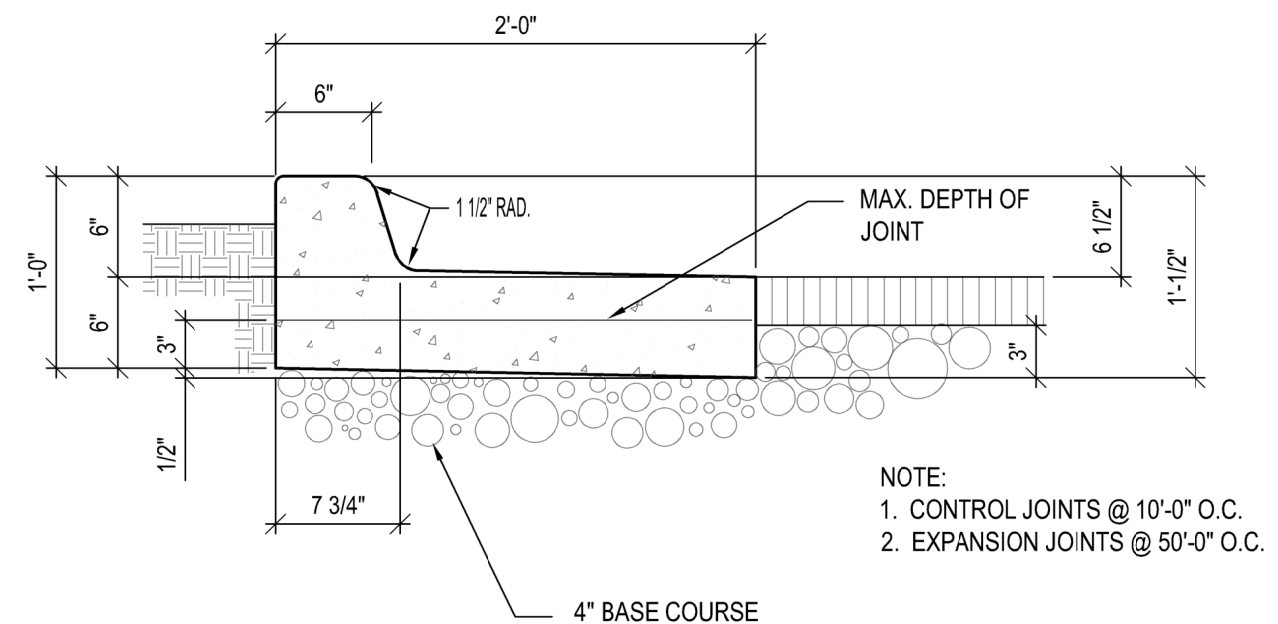
AS2.01

Blue Stakes of UTAH811
BlueStakes.org

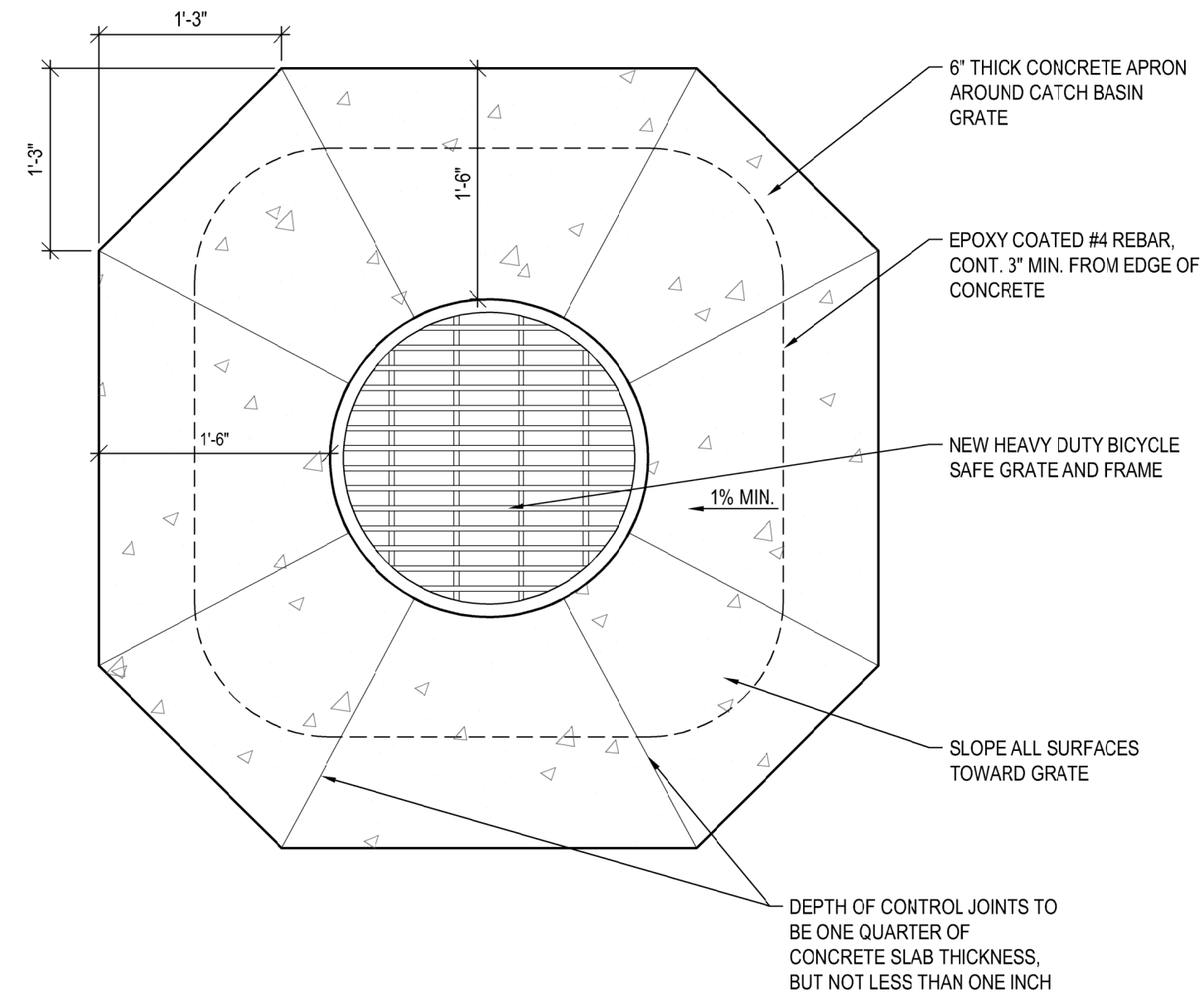
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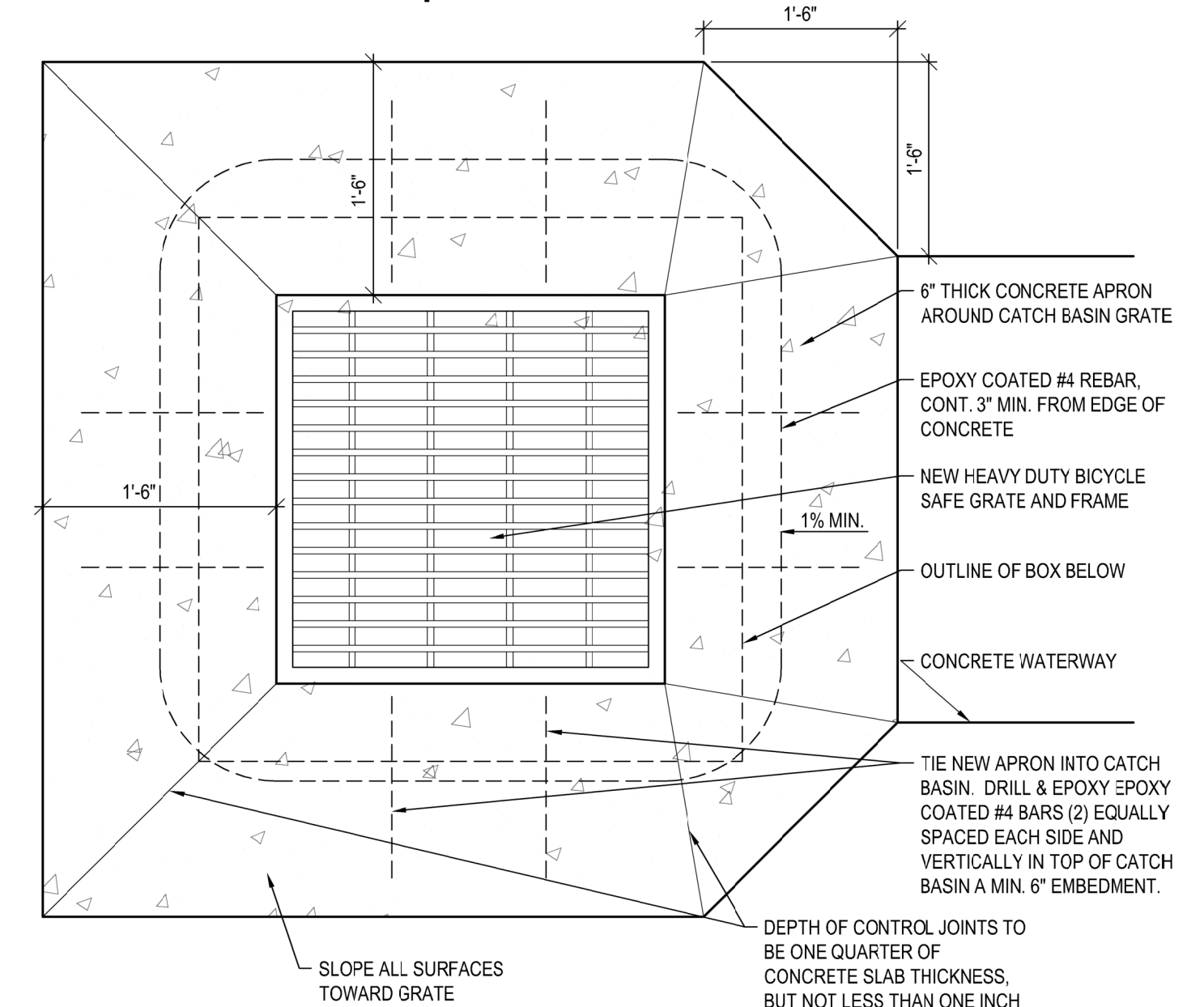
1 CONCRETE WATERWAY
SCALE: N.T.S.



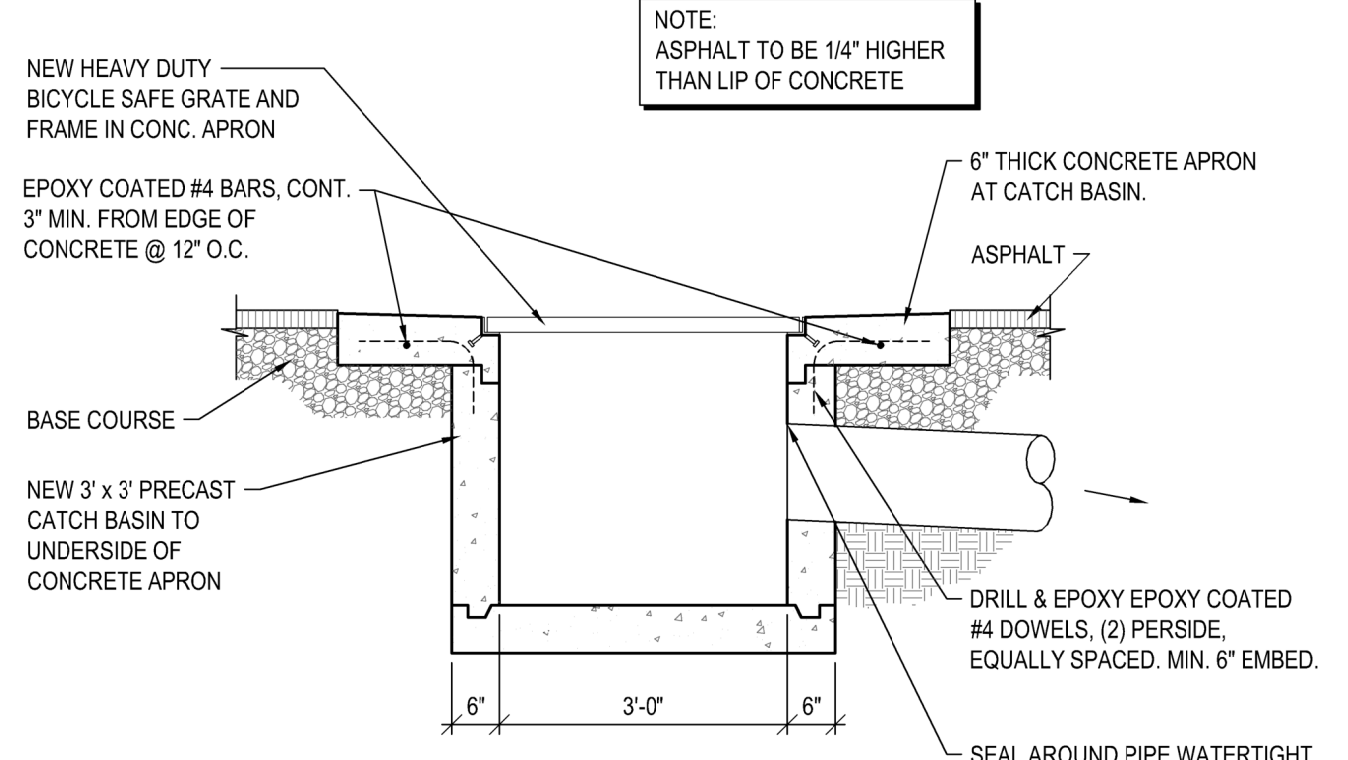
2 RELEASE CURB AND GUTTER
SCALE: N.T.S.



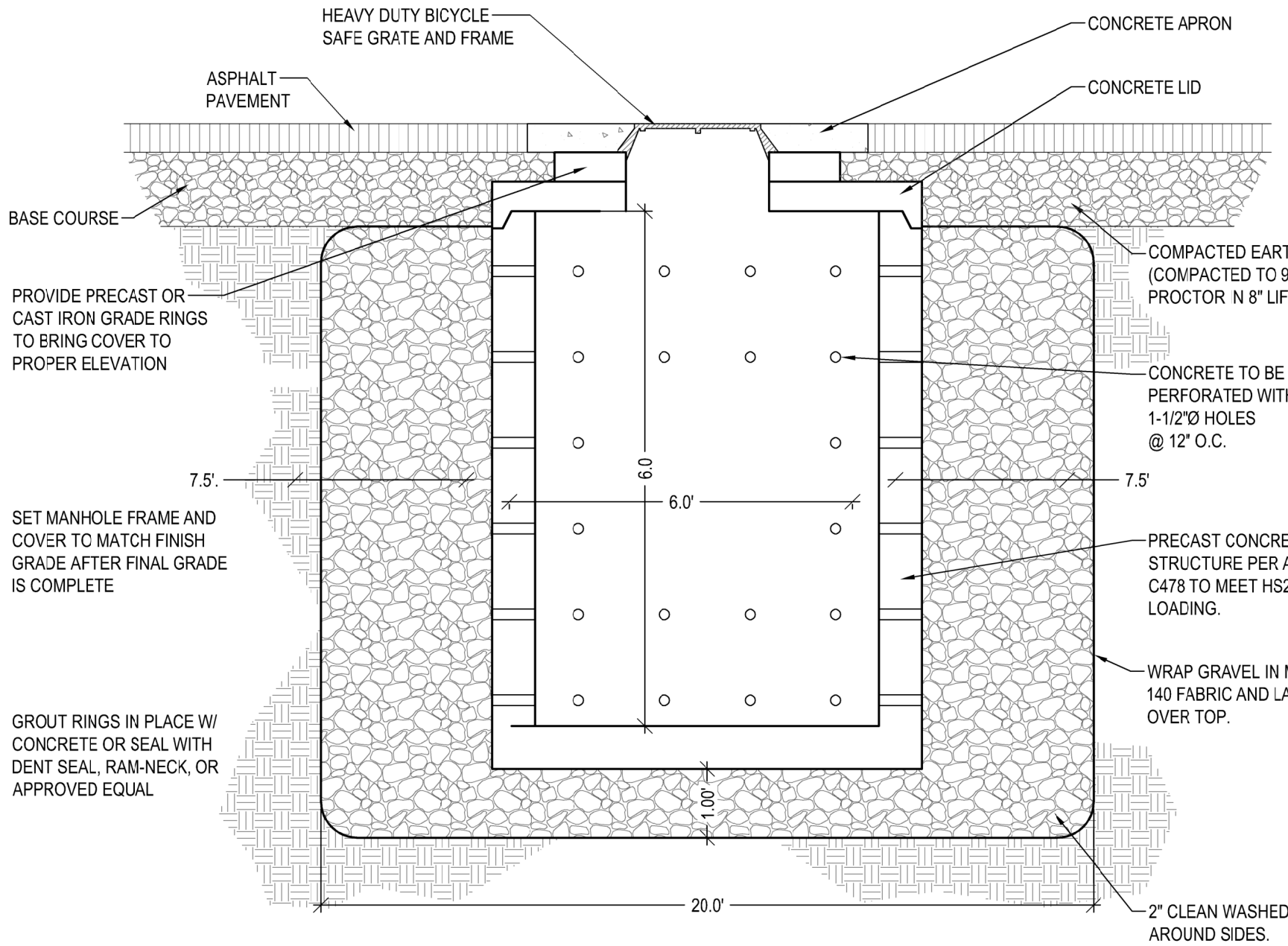
3 CATCH BASIN APRON DETAIL
SCALE: N.T.S.



4 CATCH BASIN APRON WATERWAY END
SCALE: N.T.S.



5 CATCH BASIN DETAIL
SCALE: N.T.S.



6 DRYWELL SUMP
SCALE: N.T.S.

DRAINAGE CALCULATIONS

Design	3.00 min/inch
Percolation rate (min/inch)	0.896 cfs
Discharge Rate Beneath Sumps	100 year
Design Storm	
Rainfall Data from NOAA	

Storm water within the tributary area will sheet flow to the parking area and then to the catchbasin with pre-treatment before being conveyed to the drainage sump. The percolation test report "1 min inch. To be conservative 3 min/inch was used in the calculations. This will increase the longevity of the sump and reduce the chance of failure during slightly larger events.

Solution using Rational Formula:

TRIBUTARY AREA 1

Q = CIA where
 C_{roof} = 0.85
 C_{paved} = 0.90
 C_{landscaped} = 0.15

I = Rainfall Intensity
 A = Tributary Area

Roof Area = 11,611
 Paved Area = 21,094
 Landscape Area = 13,587
Total Tributary Area = 46,292

Weighted Coefficient (C) = 0.67
 C * A = 30,892

100 yr Design Storm

Time (min)	Rate (in/hr)	Rainfall (Inches)	Accum. Flow (cu.ft.)	Discharge (cu.ft)	Req'd Storage (cu.ft.)
5	6.24	0.52	1,339	269	1,070
10	4.74	0.79	2,034	538	1,496
15	3.92	0.98	2,523	807	1,716
30	2.64	1.32	3,398	1,613	1,785
60	1.63	1.63	4,196	3,227	969
120	0.89	1.77	4,557	6,453	0
180	0.61	1.82	4,685	9,680	0
360	0.33	1.95	5,020	19,360	0
720	0.19	2.24	5,767	38,720	0
1,440	0.11	2.52	6,487	77,440	0

New Sump Capacity per Design

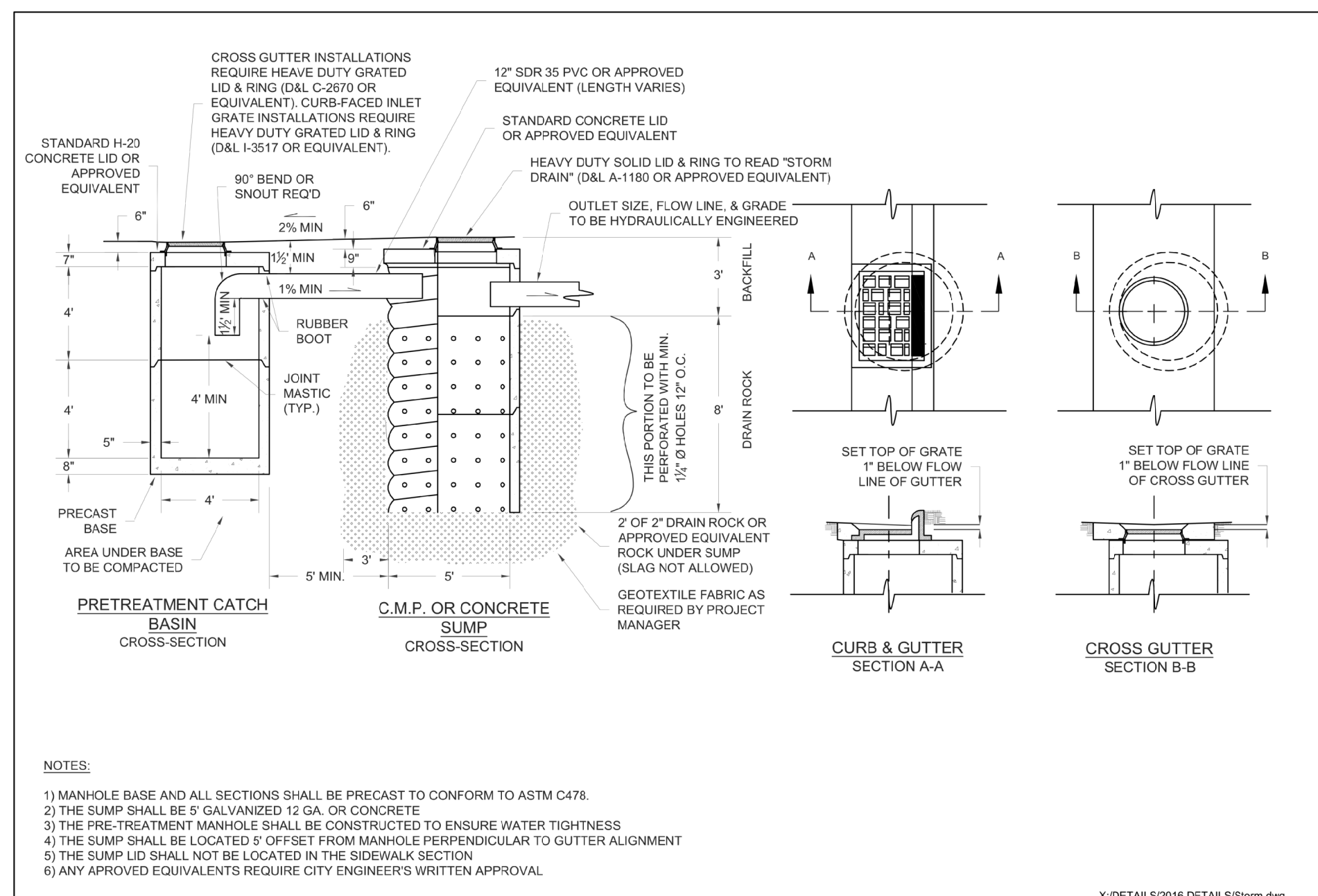
Diameter of Sump (ft)	6 ft
Depth of sump (ft)	6
Depth of Gravel (ft)	7 ft
Storage in concrete sump=	170 cf
depth of side considered for infiltration	4
Fraction of side wall considered	0.57

length (ft)	Width (ft)	Area (sq.ft)	Vol (cu.ft.)	infil area s.f.
22	22.0	484	3218 cuft	1,936

Water storage in gravel assuming (40% voids) = 1287 cuft
 Total Storage in sump and gravel= 1457 cuft
 Total Storage in parking area = 330
 Total Storage = 1787 cuft

Infiltration rate (cfs) = 0.896 cfs
 Infiltration rate is based on infiltration through the bottom and the lower 4' of the sides. To be conservative head was neglected

Storage Required: 1,785 Vol Cu.yds
 Storage Available: 1,787 okay



CONSTRUCTION STANDARDS AND SPECIFICATIONS
CITY OF OREM
PRE-TREATMENT CATCH BASIN & SUMP
REV. 6/2016
SD-3

REVISIONS

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