

PROJECT: LIVING THE WORD INTERNATIONAL CHURCH

STORMWATER RUN-OFF CALCULATIONS

FORMULAS USED

(1) RATIONAL METHOD: $Q=Aci$

Where: Q = Peak discharge of water in cubic feet per second (CFS) due to maximum storm runoff
 A = Area of watershed in acres
 C = Coefficient of runoff [2]
 i = Intensity of rainfall in inches per hour based on concentration time [3]

[4] $TC = \left(\frac{L^{0.8} (1000 - S)}{11400 C^{0.5}} \right)$

Where: TC = Time of concentration - time required for rain falling at most remote point to reach discharge point
 L = Slope coefficient based on conditions shown
 S = Percent slope of catchment
 C = Percent slope of catchment

PRIOR DEVELOPMENT

100 Year Frequency

Weighted surfaces: $C(1) = 0.9$ $sqft = 0.798$ Acres
 Green Space: $C(2) = 0.25$ $sqft = 2.280$ Acres
 Green Space: $C(3) = 0.15$ $sqft = 0.191$ Acres
 Summary: $C = 0.40$ $sqft = 3.260$ Acres

POST DEVELOPMENT

25% reduction **1.443** **46**

100 Year Frequency

Weighted surfaces: $C(1) = 0.9$ $sqft = 2.398$ Acres
 Green Space: $C(2) = 0.25$ $sqft = 0.138$ Acres
 Green Space: $C(3) = 0.15$ $sqft = 0.791$ Acres
 Summary: $C = 0.69$ $sqft = 3.280$ Acres

DEFLECTION REQUIREMENTS

Deflection required: $CH-024-2501 = 0.002$ in/in

DEFLECTION DIMENSIONS

WIDTH: 60 feet
 LENGTH: 240 feet
 DEPTH: 1.41 feet

DISCHARGE END AREA REQUIREMENTS

100 Year Frequency

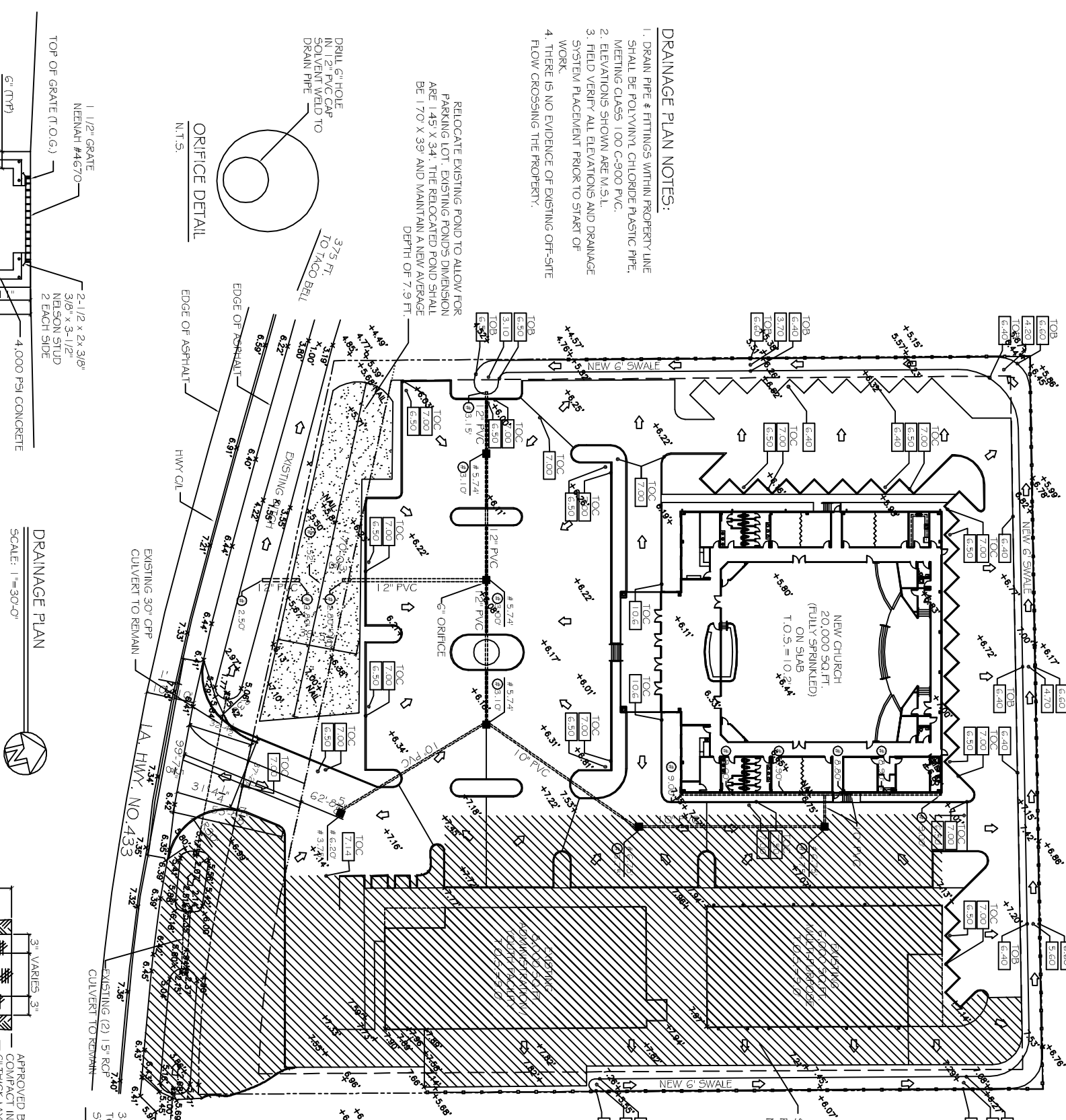
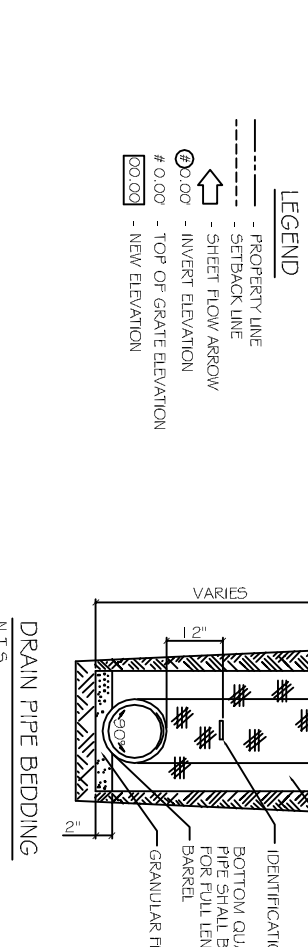
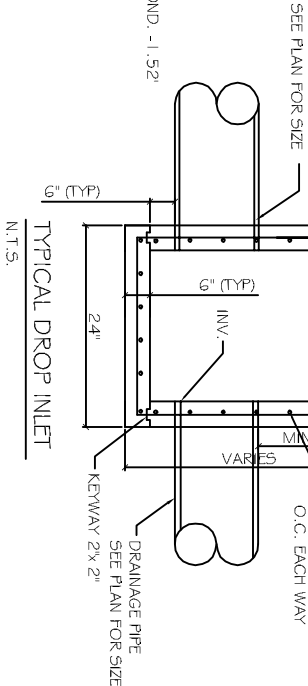
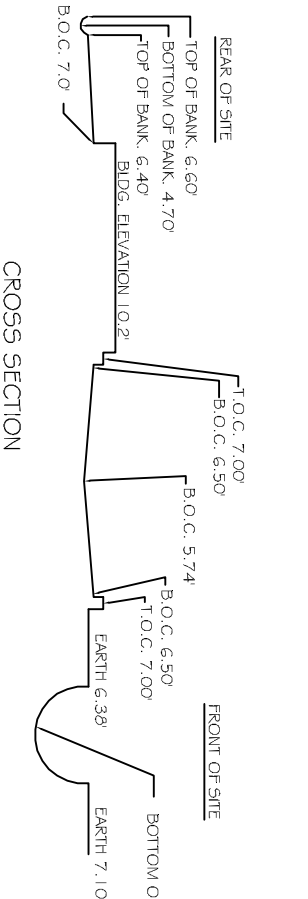
Where: A = Discharge area required
 G = Acceleration of gravity
 C = Discharge coefficient
 H = Hydraulic head
 Q = Flow volume from the off

Pipe serving area: $Q = 5.622$ cfs
 $A = 0.632$ coefficient
 $g = 32.16$ feet/sec²

REQUIRED CONDUIT = 10.681 inch inside diameter

References:

1. Chen, W.F. The Civil Engineering Handbook, 1985, Eqn 9.1.1, Pg. 1068
2. Seeger, Elyne. Data Book for Civil Engineers, Vol 1 1980, Table B.19, Pg. 18-02
3. Seeger, Elyne. Data Book for Civil Engineers, Vol 1 1980, Fig. B.19, Pg. 18-01
4. Chen, W.F. The Civil Engineering Handbook, 1995, Table 31.2, Page 40-01 (3)
5. Chen, W.F. The Civil Engineering Handbook, 1995, Eqn. 38.52, Pg. 48-59



- DRAINAGE PLAN NOTES:**
1. DRAIN PIPE & FITTINGS WITHIN PROPERTY LINE SHALL BE POLYVINYL CHLORIDE PLASTIC PIPE, MEETING CLASS 100 C-900 PVC.
 2. ELEVATIONS SHOWN ARE M.S.L.
 3. FIELD VERIFY ALL ELEVATIONS AND DRAINAGE SYSTEM PLACEMENT PRIOR TO START OF WORK.
 4. THERE IS NO EVIDENCE OF EXISTING OFF-SITE FLOW CROSSING THE PROPERTY.

RELOCATE EXISTING POND TO ALLOW FOR PARKING LOT. EXISTING POND'S DIMENSION ARE 145' X 34'. THE RELOCATED POND SHALL BE 170' X 39' AND MAINTAIN A NEW AVERAGE DEPTH OF 7.9 FT.

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

- LEGEND**
- PROPERTY LINE
 - SETBACK LINE
 - SHEET FLOW ARROW
 - INVERT ELEVATION
 - TOP OF GRATE ELEVATION
 - NEW ELEVATION

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DRAINAGE PLAN

REV: 07-25-12

SCALE: AS NOTED

JOB#: 2128

DATE: 01-27-12

SHEET 6