

Drawing-by-Drawing Report of a Custom *KeenLook*SM Coordination/Constructibility Review

Completed on *<Blanked out Date>*

for

<Blanked out Client>

Project Name

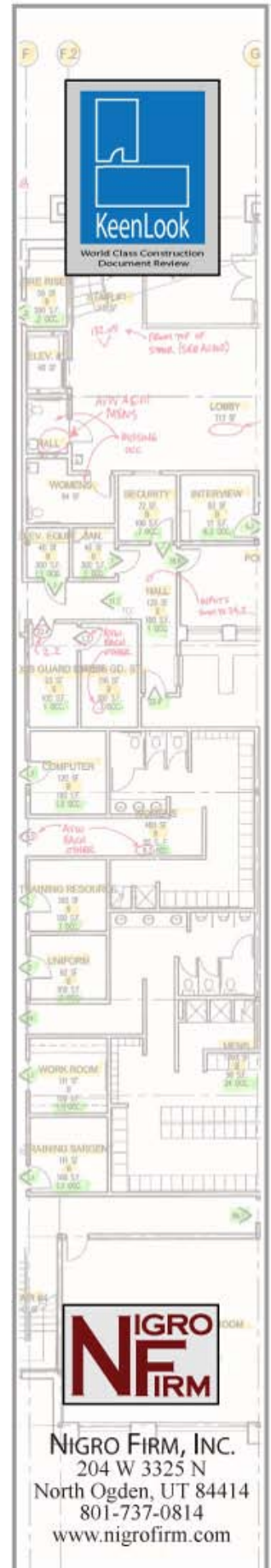


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SCOPE OF THE REVIEW

This *KeenLookSM* custom coordination/constructibility review looked at the construction documents (drawings and specs that are near completion, in this case 95%) and focused on coordination errors, omissions, variances, and discrepancies. It is performed between disciplines, as well as within disciplines. *KeenLookSM* is also performed between the drawings and specifications.

This review does not cover code or design issues. It does not include checking for technical adequacy such as design calculations of structural members or mechanical equipment.

As a broad overview, our *KeenLookSM* review:

- ✓ Verifies that data which appears in two or more places matches.
- ✓ Verifies that systems (mechanical, plumbing, electrical, security, A/V, fire alarm, etc.) and architectural and structural elements are consistent and complete.
- ✓ Verifies that items and elements given in one discipline are supported in all other required disciplines.
- ✓ Verifies that two or more different items are not shown to be in the same location.
- ✓ Verifies that information is logical and makes sense.
- ✓ Points out areas that appear to be missing sufficient detail or information to build.

This construction document coordination review is not intended to reduce the responsibilities of the design professionals to produce their documents in accordance with general industry standards.

Executive Summary Report

The comments in this report are for reference only. It should prove to be a useful tool... to give an overview of our findings. It lists interesting items and larger or significant coordination errors, conflicts, variances, discrepancies, and omissions found during the review. We'd like to caution you, though, not all comments shown on the drawings and in the specifications are in this report. Instead, the marked-up construction documents should be used for correction of the discrepancies found.

When reviewing the documents and our comments, you and/or your designer should determine which discrepancies need corrections and the impact of those discrepancies on all other aspects of the project (i.e., cascade the changes).

REVIEW CONVENTIONS

The following conventions were used to mark your construction documents during our *KeenLookSM* custom coordination/constructibility review:

- ✓ All the reviewer comments are marked in red on the drawings and specifications. Whenever possible, a conflict is noted in both locations that disagree with each other. In essence, they “point” to each other.
- ✓ The first sheet of each discipline will generally list all of the abbreviations used during the review of that discipline. If necessary, general comments that apply to the discipline will also be listed.
- ✓ Common abbreviations that may be used in this report and on the reviewed construction documents are:

AVW – At Variance With;
CNL – Could Not Locate;
CNR – Could Not Read;
CNV – Could Not Verify;

DIM – Dimension;
INC – Incomplete;
IR – Incorrect Reference.

- ✓ We use different colors of highlighters for internal review purposes and they have no meaning for the end-product review.
- ✓ When there are repeated inconsistencies on a drawing, they may be noted with a Keyed Comment. The legend to these comments occurs on the sheet or the first sheet of the sub-series (i.e., first sheet of the RCP’s) or first sheet of the discipline (i.e., first sheet of the Architectural series).
- ✓ For your convenience, red stars have been put on the drawings next to the comments considered to be significant or interesting. Please note that our reviewers are not familiar with the owner’s requirements or the history of the project and we may not view “significance” in the same way as the owner or designer. Keep in mind that non-starred comments may have a high level of importance.
- ✓ Pages in the specifications that have more significant comments are marked with a color tab at the top of the left page. Less significant comments are marked with a tab on the side of the left page.

CIVIL

1. General for Civil Drawings
 - A. Because of lack of gridlines reviewer will use N, E, S and W for the compass directions for giving locations of discrepancies on the drawings.
 - B. Many items that are shown in generic details are not in Division 2 Spec (e.g., drain basins, curb inlets, etc).
2. Drawing G1
 - A. NE Corner:
 - "See mechanical plans" for trench drain is AVW P1.00 (CNL).
 - Driveway into loading dock is AVW L1.01, Struct Drawings, Arch Drawings and Civil Drawings (CNL info about concrete for driveway).
 - B. N Middle – Handicap ramps are shown but CNL any details of ramps.
 - C. Fountain Area:
 - Six inch cast-in-place trench drain is AVW L1.05 (15" trench drain).
 - Customized grate "to be coordinated with Architect" is AVW Arch Drawings (CNL info on grate).
 - D. S Middle – Trench drain at face of planter is AVW 1/L1.30 and 1/L3.00 (CNL trench drain).
3. Drawing G2
 - A. Loading Dock Detail – Refer to sheet ST3 for trench drain connection is AVW ST3 (CNL connection).
 - B. West Pocket Park Detail – See red marked detail for several locations where the height given of the wall is AVW L1.41.
4. Drawing UT1
 - A. N Middle – Type 'R' inlet to be modified is AVW ST3 (CNL info on modification).
 - B. SE Corner:
 - Proposed 12" RCP storm sewer is AVW ST1 (CNL).
 - Proposed 12" RCP storm sewer is AVW ST1 (18").
 - C. S Middle – Proposed 10" PVC is AVW ST1 (12" RCP).
5. Drawing ST1
 - A. Profile – Manhole B1 – Invert out of 8161.00 is AVW ST4 (8162.10).
6. Drawing ST2
 - A. Profile – 40.70 LF of 8" PVC pipe is AVW Plan (37.38 LF).

7. Drawing ST3
 - A. Plan – Reference to Mechanical for 12” pre-sloped trench drain is AVW P1.00 (CNL).

8. Drawing W1
 - A. Profile – 320.01 LF of 12” water main is AVW Plan (325.91 LF).
 - B. Detail – New fire hydrant is AVW FS1 (existing to remain).

9. Drawing U1
 - A. SE Corner:
 - New fire hydrant is AVW L1.01 (existing to remain).
 - Existing fire hydrant to be removed is AVW L1.01 (hydrant to remain).
 - B. S Middle – Reference to plumbing for 8” and 10” stub and plug is AVW P1.00 (CNL).
 - C. SW Corner – New fire hydrant is AVW L1.01 (existing to remain).

10. Drawing R1
 - A. CNL legend.
 - B. CNL abbreviation list...there are many abbreviations used including PCR, PT, PC, C&G, T.O.V., etc.
 - C. Many PCR’s, PT’s, PC’s, etc shown on plan are not shown on profile.
 - D. Some VPC’s, HP’s, VPI’s, and VPT’s are shown on the profile but not shown on the plan.

11. Drawing R2
 - A. CNL detail for sign posts and mounting of signs.
 - B. CNL schedule for traffic signs.

LANDSCAPE

1. General Notes for Landscape Drawings
 - A. Because of lack of gridlines, reviewer will use N, E, S and W for the compass directions for giving locations of discrepancies on the drawings.
 - B. CNL abbreviation list. Some abbreviations used were: P.A., TOV, TOB, FG, TOW, BOW, FFE, LP, BOS, and TOS.
 - C. CNL any irrigation information on drawings.
 - D. The use of the term “by others” was often confusing. Sometimes when it was used it appeared to be for items typically built or installed by another discipline (Arch, Struct, Elec, etc.). Sometimes the term “by Arch”, “by Struct”, etc. was also used which implies that “by others” means someone outside the typical contractors. Some items like electrical hook-ups stated “by others”...these hook-ups appear to be within the scope of Elec so it would make sense for them to be done “by Elec”. Suggest being consistent when using this term and only using it when the scope of work lies outside the traditional contractors. Also could be interpreted to mean “by owner”.
 - E. These plans show a great deal of concrete work that does not appear on Structural Drawings

2. Drawing L1.01
 - A. NW Corner – Reference to Arch for wall is AVW A2.09 (CNL wall).
 - B. W Middle:
 - CMU wall is AVW 4/L3.00 (cast-in-place wall).
 - Configuration of stairs is AVW A2.09.
 - C. SW Corner – CNL detail of granite clad stairs.

3. Drawing L1.05
 - A. NE Corner – 20 fog emitters is AVW W1.1 (84 fog emitters).
 - B. SW Corner – N/E given of N-4574.32, E-5616.62 is AVW 3/L1.40 (N-4574.36, E-5616.70).

4. Drawing L1.20
 - A. NW Corner – Refer to 5B/L3.00 for double gate is AVW 5B/L3.00 (CNL info about double gate).

5. Drawing L1.30
 - A. Plan 2 – See Stone Schedule E for stone sizes is AVW Stone Schedule E (stones are not labeled and do not appear in schedule E).

- B. Plan 3, Stone Schedule C, D and E – Elevation column is incomplete.
 - C. Plan 4 – Reference to 7/L3.10 for block area is AVW L3.10 (CNL detail 7).
6. Drawing L1.41
- A. Plan 2:
 - Configuration of wall is AVW A2.08.
 - Stairs list 6@6”R;7@15”T which is AVW 3/L3.30 (6@7”R;5@13”T).
7. Drawing L1.50
- A. NW Corner – Reference to water feature drawings for water feature is AVW W4.1 (landscape is building much of this water feature).
 - B. W Middle – CNL detail of stairs shown.
 - C. NE Corner – “Stabilized crusher fines” is AVW Spec (CNL).
8. Drawings L2.10 thru L2.40
- A. See red marked drawings for:
 - Count of plants given that are AVW number shown.
 - Two different symbols used for same plant.
 - Plants missing abbreviation and count.
9. Drawing L2.10
- A. Legend of Plants:
 - Only 3” deciduous trees is AVW Plant Table (2”, 3” and 4”).
 - Ten foot evergreen trees is AVW Plant Table (5’, 6’, 8’ and 12’, no 10’).
 - Missing 4 foot high deciduous shrubs.
 - One gallon ornamental grasses is AVW Plant Table (5 gallon).
 - B. Plant Table, Definitions of Plant types:
 - “OS=Ornamental Shrub” is AVW Plant Table (CNL).
 - Ornamental Tree is AVW Legend of Plants (CNL Symbol).
 - C. Enlargement 2:
 - Abbreviations of plants PI BS and PO AR is AVW Plant Table (CNL).
 - Many times throughout the Landscape Plans, plants do not match Legend. One example is PI BB is an Evergreen Tree according to the Plant Table but is drawn on the plan with the symbol for an “Evergreen Shrub” according to the “Legend of Plants”. Not all occurrences are marked.
10. Drawing L3.00
- A. Section 2 – Foundation for sculpture by L.Ardent, See Artist Drawings is AVW Drawing Set (CNL Artist Drawings).
 - B. Section 3 – This section was called out several times and in several different locations, none of which matched exactly.

- C. Section 5A:
 - “Granite drain cover” for trench drain is AVW Spec (CNL).
 - “Snowmelt” to go with sand under pavers is AVW Spec (CNL).
 - Geofom for buildup around fountain to “reference Structural” is AVW Structural (CNL info about Geofom).
 - Outside edge of winter ice rink island RE: Argent Studios Drawings is AVW Drawing Set (CNL Argent Studios Drawings).
 - D. Section 5B:
 - 1/2” frosted lexan illumination strip for toe kick is AVW 3/E4.09 (3/16”).
 - Polycarbonate cover and 3/4” poly/acrylic panel for toe kick is AVW Spec Division 2 and 16 (CNL).
 - E. Section 6A – Missing all dimensions for inner blocks of garage entrance sign.
 - F. Section 6B:
 - Missing most dimensions for height of block.
 - Bronze lantern for parking garage entrance sign is AVW Spec Division 2 and E1.00 (CNL, E1.00 shows power for lantern but not lantern).
 - CNL detail of sign and how it attaches to base.
 - G. Section 7:
 - Contractor to fabricate “drain access box” is AVW Drawings (CNL details to fabricate box).
 - Roof drain reference mechanical is AVW P1.00 (CNL).
 - Overflow drain with cover is AVW Spec (CNL cover).
11. Drawing L3.10
- A. In general it appears that this sheet is not done. Sections 1, 3 and 4 were not called out on Drawings and CNL where occurred in project. Plan 2, Axom 2A & 2B and Section 2C & 2D are missing notes, dimensions and material callouts.
12. Drawing L3.20
- A. Five details on this sheet were left blank and three others did not appear to be complete.

WATER FEATURE

1. General for Water Feature Drawings
 - A. CNL legend for the various symbols used on plans.
 - B. CNL abbreviation list. Some abbreviations used were: FIC, TDH, TFB, C and VFD.
 - C. CNL water feature section in Spec. Therefore reviewer was unable to verify items that are typically found in Spec. These include:
 - Fog pump.
 - Air Compressor.
 - Display Pump.
 - Filter Pump.
 - Chlorine Feeder.
 - Level sensor.
 - Control Panels.
 - UV Filters.
 - High pressure lines.
 - Fog nozzles.
 - Various piping, valves, etc.
 - D. Drawings use inconsistent numbering conventions. For example, FP1 and FP-1 are often used interchangeably which could cause confusion and double bidding.

2. Drawing W1.1
 - A. Fog line in 1" conduit is AVW W4.0 (3/4").
 - B. 32 fog nozzles is AVW count (3 per can with 16 cans equals 48).

3. Drawing W1.4
 - A. 1" supply line is AVW U1 (CNL).
 - B. Location of 4" suction line is AVW B/W3.1.

4. Drawing W2.0
 - A. Filter Pump – This area is complex. It has no flow arrows, some items are not identified and there is no controller information. Without these items it makes it difficult to determine what is happening in this “filter” station.
 - B. See red-marked drawings for symbols used that do not appear on “symbols for design” list.

- C. Equipment Key Notes:
 - Note 14 – 2” pro-strainer is AVW W3.0, Equipment Note 20 (3” strainer).
 - Note 15 – 74 GPM pump is AVW W3.0, Equipment Note 22 (63 GPM).
- D. Section showing 3 floor drains is AVW P2.01UG (1 floor drain).

- 5. Drawing W2.1
 - A. 3” piping to storm and sanitary is AVW P2.09 (4”).

- 6. Drawing W3.0
 - A. Equipment Keynote 15 and 17 – Notes state to reference Structural for concrete cistern and ladder rungs which are AVW S2.06 and S2.12 (CNL any information about this equipment room on Struct Drawings).

- 7. Drawing W4.0
 - A. Section A – 1” electrical conduit is AVW C/W4.0 (3/4”).

- 8. Drawing W4.1
 - A. Section A – 2 water wall lights is AVW F/W4.1 (5 wall lights).
 - B. Section B – “Refer landscape” for cobble and boulder is AVW L1.50 (Landscape references water feature drawings).
 - C. Detail C – “Refer landscape” for cobble is AVW L1.50 (Landscape references water feature drawings).
 - D. Detail D – “Refer landscape” for stone lintel is AVW L1.50 (Landscape references water feature drawings).

- 9. Drawing W5.0
 - A. Detail F – Detail shows a light pole for the fountain’s anemometer to attach to. However, CNL which light pole anemometer is to attach too. Looking at E1.00 it is not obvious which pole to use.

- 10. Drawing W6.0
 - A. Layout A – Conduit and shielded cable for anemometer is AVW B/W6.1 (metallic conduit or shielded cable).
 - B. Plan B – Wire called out “8 #14, 8 #16 and GND” is AVW A/W6.0 (2 #8, 2 #10, 8 #16 and GND).

FIRE PROTECTION

1. General for Fire Protection Drawings
 - A. Antifreeze systems with expansion tanks are AVW Spec 15300 (CNL).
 - B. Flow switches are AVW Fire Alarm floor plans (CNL).
 - C. Pipes next to standpipes in stairs are not labeled; if these are drain lines, it is unclear how they connect to system.
 - D. Many sprinkler types (Dry/Wet) are AVW the system they are connected to (Wet/Dry).
 - E. See red marked drawings for:
 - Items not found in spec.
 - Pipe continuation discrepancies thru floors.
 - Areas of piping not connected to the rest of the fire protection system.
 - Missing sections of piping.
 - Listed pipe sizes that are AVW pipe size logic (smaller pipes feeding larger pipes).
 - Items missing tags.
 - F. Overall plans are missing matchlines and references to enlarged plans.
 - G. Missing many gridlines.

2. Drawing FAFP0.01
 - A. Fire Department Connection Detail:
 - Missing dimension above finished grade for fire alarm light and horn.
 - 6" Fire main is AVW plans (8").
 - Fire department connection and fire alarm light and horn are AVW exterior architectural elevations (CNL).
 - B. Fire Pump Room Detail:
 - Fire Pump and Jockey Pump are AVW Spec 15300 (CNL).
 - 100 HP for fire pump is AVW E0.03 (125 HP).
 - 2" main drain routed to nearest floor drain is AVW P2.21 (CNL floor drain in fire pump room).

3. Drawing FAFP0.02, FA riser
 - A. Missing air supervisory switch connection to dry sprinkler pipe is AVW FAFP0.01, detail.
 - B. Level 1:
 - Elevator recall primary, alternate and elevator shunt trip control modules are AVW FA floor plans (CNL).
 - Duct smoke detectors are AVW the floor plans (CNL).
 - 3rd FAP panel is AVW FA0.01 thru FA0.05 (CNL).

- C. Level 3:
 - Phones lines are AVW the FA floor plans (CNL).
 - “See sheet FAFP0.03 for riser diagram” is AVW the drawings (CNL sheet FAFP0.03).
- D. Level 4 – Missing 3rd FAP panel is AVW FA4.02.
- E. Level 9:
 - FAP panels are AVW FA9.01 thru FA9.04 (CNL).
 - Circuits to FAP panel are AVW FA9.03 (fed from eighth floor FAP).

- 4. Drawing FP0.01
 - A. “Route piping in heated chase through the garage” for fire main is AVW A2.02, A7.02, M2.02 (CNL heated chase).

- 5. Drawing FP1.05
 - A. Near 23/T – Verify two rooms are not to receive fire protection.

- 6. Drawing FP3.02
 - A. Fire Pump Room:
 - Extent of room is AVW A2.21.
 - Missing drain piping is AVW FAFP.01.
 - Verify piping does not interfere with door.

FIRE ALARM

1. General for Fire Alarm Drawings
 - A. Missing elevator recall primary, alternate and elevator shunt trip control modules are AVW FAFP0.02, the riser.
 - B. Missing exterior fire alarm light and horn is AVW FAFP0.01, detail.
 - C. Missing air supervisory switch connection to dry sprinkler pipe is AVW FAFP0.01, detail.
 - D. Missing all control modules are AVW FAFP0.02, riser.
 - E. Missing all fire and fire/smoke dampers are AVW the mechanical floor plans.
 - F. Missing all flow and tamper switches are AVW FAFP0.02, riser, and the fire protection floor plans.
 - G. Missing fireman's phone jack is AVW Spec 16721 par 2.20.A.
 - H. Drawings FA3.05, FA4.05, FA5.01, FA6.01, FA7.01, FA9.02 and FA9.04, the reviewer CNL any FA devices on the floor plans.
 - I. Missing flow switch locations are AVW the fire protection floor plans.
 - J. Overall plans are missing matchlines and references to enlarged plans. Furthermore, matchlines are faint and hard to see.
 - K. Missing many gridlines and gridline tags.
2. Drawing FA4.02
 - A. FAP panel is AVW FAFP0.02 (CNL on riser).
3. Drawing FA9.00
 - A. Circuits down to the 8th level are AVW FAFP0.02, riser (fed from 9th floor FAP panels).
 - B. Missing (2) FAP panels are AVW FAFP0.02, riser.

PROJECT MANUAL

1. General for Project Manual Pages
 - A. There are several Sections that have “brackets” and incomplete data. The brackets appear to be selections of different data that are there to be chosen from and the extras removed, but these edits have not yet been done.
2. Section 02085
 - A. Par 2.6.B.6 – Steps made with FRP or 1/2” steel incased with PP are AVW ST5 (extruded aluminum or plastic coated steel).
3. Section 02300
 - A. Part 2 – Missing “crusher fines” is AVW 5/L3.40.
4. Section 02510
 - A. Par 1.2.D.3 – Division 2 Section “Hot Mix Asphalt Paving” is AVW Division 2 (CNL).
5. Section 02810
 - A. Par 1.02.A – “Section 02222-Excavation, Backfill, and Compacting for Utilities” is AVW Spec (CNL).
 - B. Par 1.02.B – “Section 02660-Water Distribution Systems” is AVW Spec (CNL).
 - C. Par 1.02.C – “Section 02900-Landscaping” is AVW Spec (CNL).
6. Section 02810
 - A. Par 2.09.A – Automatic sprinkler controllers shall be “installed per detail drawings” is AVW Drawings (CNL detail).
7. Section 02870
 - A. Par 1.2.A – Section including “seating” and “ash receptacle” is AVW body of section (CNL).
8. Section 02920
 - A. Par 1.2.B.1 – Division 2 Section “Site Clearing” is AVW Spec Division 2 (CNL).
 - B. Par 1.2.B.4 – Division 2 Section “Porous Unit Paving” is AVW Spec Division 2 (CNL).

9. Section 02930
 - A. Part 2 – Missing “evergreen shrubs” is AVW L2.10.
 - B. Par 2.2.C.1 – Stem form: Clump is AVW details on L3.40 (CNL detail for deciduous tree without balled roots).
 - C. Par 2.6.B – Subparagraphs below for examples of ornamental grasses is AVW paragraph (CNL any subparagraphs).
 - D. Par 2.7 – Perennials of size indicated on Drawings is AVW L2.10 (perennials are “by others”).
 - E. Par 2.13 – Missing 1/2” diameter by 6” long white PVC pipe section to put on all guying for tree stabilization is AVW 3/L3.40.

10. Section 13175
 - A. Par 1.1.C – The ice rink refrigeration system is AVW Water Feature Drawings (CNL on Drawings).
 - B. Par 2.14.A – Brine and water piping as indicated on Drawings is AVW Landscape Drawings (CNL any info other than diameter of pipes).

11. Section 15300
 - A. Par 1.01.C:
 - Water supply line location of “Village Center Road” is AVW UT1 (I-70 Frontage Road).
 - Back flow prevention device within 10 feet of entry into building is AVW FP0.01 and FP2.02 (CNL).
 - B. Par 1.04.I – “Sprinklers shall be installed at the bottom of elevator shafts” is AVW plans (CNL).
 - C. Par 1.05.B&C – Automatic system outlets and hose connections are AVW plans (CNL).
 - D. Par 2.05.A.5 – “At least two dry type automatic sprinklers at every balcony” is AVW plans (CNL any on balconies).
 - E. Par 2.11.A – Three fire department connections for automatic and standpipe systems are AVW plans (two for sprinkler system, five for standpipe).

12. Section 16721
 - A. Par 1.3.B.5 and 2.10 – “In duct” smoke detectors are AVW the FA floor plans (CNL, found on riser only).
 - B. Par 2.20.A and 2.20.A.1 – Fireman’s phone jacks, as indicated on the drawings, are AVW the FA floor plans (CNL).