GENERAL STRUCTURAL NOTES

DESIGN CRITERIA

The 2015 edition of the International Building Code (IBC) with City of Centennial (**Authorty having Jurisdiction**) amendments (the **Building Code**) was followed by Knott Laboratory, LLC (the **Structural Engineer**) in the design of the completed project depicted on the structural plans, details, and notes (the **Structural Documents**). All materials and workmanship by the general contractor (the **Contractor**) and sub-contractors shall be in accordance with the requirements of the Building Code and the Structural Documents.

Vertical Loads:		Horizontal Loads: WIND and SEISMIC	
Roof live load(Pf snow)	=30 psf	Basic wind speed:	115mph (Vult)
Roof dead load =	15 psf total	Wind Exposure category:	C
Floor live load =	40 psf	Seismic design category:	B
Floor dead load =	12 psf total	Soil site class (seismic):	D
Ground snow load =	30 psf		

CONSTRUCTION GENERAL NOTES

1. The following general requirements for materials and workmanship apply unless noted otherwise on the Structural Documents or subsequent documents issued by the Structural Engineer.
2. Periodic construction observations by the Structural Engineer do not constitute "Special Inspections" nor do they necessarily meet the Authority Having Jurisdiction's requirements for inspections. The Contractor is responsible for receiving and passing the inspections required by the Authority Having Jurisdiction.
3. The Contractor shall be responsible for contacting the Structural Engineer to schedule site observation visits. The Structural Engineer reserves the right to perform observations of the ongoing construction activity for purposes of verification and documentation.
4. Product substitutions or changes to the Structural Documents must be approved by the Structural Engineer in writing. Deviation from the Structural Documents does not imply acceptance by the Structural Engineer.
5. The Contractor is responsible for the means, methods, techniques, sequences, and procedures of construction.
6. The Structural Engineer assumes no liability for jobsite safety.
7. The Structural Documents indicate the completed structure with the elements in their final position. The Contractor shall assemble the structural elements, in the proper sequence and will be responsible for providing safe and adequate temporary bracing and shoring necessary to withstand all loads to which the structure may be subjected, including lateral loads, stockpiles of materials, and equipment. Temporary bracing shall remain in place until all structural framing and diaphragms are in place with connections completed. The Contractor shall add all erection framing, bolts, stabilizer plates, etc. as may be necessary to comply with OSHA requirements.
8. Do not scale the Structural Documents for dimensions. The Contractor shall verify all dimensions on the Structural Documents in the field.
9. The Contractor shall verify all penetrations in structural members with the individual trades and the Structural Engineer. The Contractor shall not cut, notch, or otherwise modify structural framing members or the foundation without the written consent of the Structural Engineer of Record.
10. Conditions not specifically shown on the Structural Documents shall be constructed in a manner similar to the details that are shown for like conditions. Conditions that may not be adequately detailed shall be brought to the Structural Engineer's attention for review and clarification prior to construction. The Structural Engineer assumes no liability for waterproofing or flashing requirements.
11. Despite significant efforts to provide a complete and clear set of construction documents, discrepancies or omissions may occur. Release of the Structural Documents anticipates cooperation and continued communication between the Structural Engineer, the Contractor, and the Owner to achieve successful completion of the project. The Structural Documents have been prepared for use by a qualified Contractor experienced in the construction techniques and systems depicted herein.
12. The Contractor shall notify the Structural Engineer of omissions, conflicts, or discrepancies between the Structural Documents and the drawings for other trades or existing conditions.

SOILS, BACKFILL, and FOUNDATION GENERAL NOTES

1. The foundation design parameters used for structural design based on prescriptive soil parameters.
   1.1. Allowable soil bearing pressure = 1500psf Frost depth = 36" minimum below finish grade
2. Foundation excavations shall be observed by a Geotechnical Engineer prior to placing concrete, and a copy of the Geotechnical Engineer's observations and recommendations shall be provided to the Structural Engineer for re-evaluation of the foundation design.
3. Footings shall bear below frost depth on natural undisturbed soil or approved compacted fill. All compaction beneath footings shall be completed to 95% modified proctor. All compaction in backfill zone shall be completed to 90% modified proctor.
6. Backfill both sides of foundation walls below grade concurrently. Backfill shall not be placed behind retaining walls until concrete has attained 100 percent of the 28-day compressive strength specified on the Structural Documents. Backfill material must be approved by the Geotechnical Engineer and the Structural Engineer.
7. Slope backfill away from the foundation a minimum of 5% for the first 10 feet adjacent to the foundation. This slope should be maintained throughout the life of the structure. Roof drains must discharge away from the foundation. Do not allow water to pond or stand near the foundation. Do not flood the backfill.
8. All footings shall be the exact size as shown on the drawings. No footings or foundation wall shall be placed without adequate notification to allow the Structural Engineer to observe reinforcing if he deems necessary.

TIMBER GENERAL NOTES

1. Sawn Lumber: Sawn lumber for structural framing shall conform to the NFPA's "National Design Specification for Wood Construction", (NDS) latest edition and shall comply with the grading rules of the Western Wood Products Association (WWPA) or the West Coast Lumber Inspection Bureau (WCLIB). Sawn lumber products shall bear the grade stamp of an approved lumber grading agency.

1.1. Maximum moisture content at time of install is 19%. Wood framing members in contact with concrete, masonry, or soil, or in exposed exterior applications shall be pressure treated, or a naturally decay resistant species may be used with Engineer's approval. Nailer plates installed over concrete or steel shall be ripped to match the width of the concrete or steel.

1.2. 2x, 3x, and 4x framing lumber shall be Hem Fir (HF) #2 grade or better.

1.3. 6x and larger framing members shall be Douglas Fir-Larch (DF-L)#1 Grade or better.

CONCRETE GENERAL NOTES

1. Concrete material and workmanship shall conform to the specifications of ACI's "Building Code Requirements for Structural Concrete" (ACI 318), latest edition, and the other applicable sections of the Building Code.
2. **Concrete Mixing:** No fly ash additives may be used in flatwork or exterior concrete. At other areas, fly ash shall be limited to 10% of cementitious materials and shall have a replacement factor of 1.2 relative to cement. Calcium chloride or other chloride salts shall not be added to fresh concrete
   2.1. Foundations (footings, stem walls, and grade beams) shall be normal-weight concrete having a minimum 28-day compressive strength of **4,000psi** mixed with 3/4" aggregate, Type II Portland cement, less than 0.45 water-to-cement ratio, 5% to 7% air content, less than 0.3% water soluble chloride ion content, and less than 4-inch slump without plasticizer.
   2.2. Interior Flatwork (slabs on grade and topping slabs) shall be normal-weight concrete having a minimum 28-day compressive strength of **4,000psi** mixed with 3/4" aggregate, Type I/II Portland cement, less than 0.45 water-to-cement ratio, 3% to 7% air content, less than 1% water soluble chloride ion content, and less than 4-inch slump without plasticizer.
3. **Concrete Placing:** Cold weather concreting procedures shall be provided as recommended in the ACI "Standard Specification for Cold Weather Concreting" (ACI 306). No concrete shall be placed in an excavation containing water or on frozen ground. Mechanically vibrate freshly placed concrete. The Contractor shall not cast foundations, stem walls, or retaining walls against excavated vertical side surfaces without written approval of the Structural Engineer.
   3.1. Concrete slabs on grade shall be bound by control joints (keyed or cut), as shown on the foundation plan and/or details, such that the enclosed area does not exceed 225 square feet and the spacing does not exceed 36 times the slab thickness. Keyed joints are required at exposed edges during placement; other joints may be saw cut. Cast a closure pour around columns after the dead load of the structure is applied.
   3.2. The contractor is responsible for determining when it is safe to remove formwork and shoring. Forms and shoring must not be removed until the concrete can support its own weight and the superimposed loads. For foundation walls, this typically requires at least 72 hours of curing at a temperature of at least 50°F or more. There should be no damage, distortion, deflection, or discoloration of the concrete when the forms and shoring are stripped away. Removal of forms and shoring shall be in accordance with the ACI "Guide to Formwork for Concrete" (ACI 347).
4. **Anchors in Concrete:** Anchors for base plates and bearing plates shall be placed with setting templates.
   4.1. Anchor rods embedded in concrete shall be ASTM F1554 Gr. 36 with a hooked end. Provide flat washers between nuts and baseplate surfaces.
   4.2. Anchors for wood sill plates shall be at least 1/2-inch-diameter steel bolts with at least 7-inches embedment into the concrete. Provide one anchor rod within 4 to 12 inches from each end of each sill and 6'-0" on center maximum. Reduce anchor rod spacing to 4'-0" maximum at shear walls or as noted on the Structural Documents. Provide at least two anchors per sill plate piece. Each anchor rod shall firmly attach the sill plate to the concrete with a properly sized nut and washer.
   4.3. Expansion anchors for concrete shall be Hilti "Kwik Bolt 3", Simpson "Titen HD", or Redhead "Trubolt" anchors or other equivalent product pre-approved by the Structural Engineer of Record. Epoxy anchors for concrete shall be Hilti "HY-200" or Simpson "SET XP" high strength anchoring adhesive or other equivalent product pre-approved by the Structural Engineer of Record.
   4.4. Unless noted otherwise in the Structural Documents, 1/2" bolts shall have at least 2½" embedment, 3" spacing, and 4" edge distance. 5/8" bolts shall have at least 3" embedment, 3" spacing, and 4" edge distance. 3/4" bolts shall have at least 4" embedment, 4" spacing, and 4" edge distance.

REINFORCING STEEL GENERAL NOTES

1. Detailing, fabrication, and placing of reinforcing steel shall be in accordance with ACI's "Building Code Requirements for Structural Concrete" (ACI 318), latest edition, and ACI's "Details and Detailing of Concrete Reinforcement" (ACI 315), latest edition, and the other applicable sections of the Building Code.
2. Reinforcing steel, shall conform to ASTM A615, Grade 60, unless noted otherwise. Reinforcing bar sizes shown are English designation (not Metric). Reinforcing shall not be tack welded or welded in any manner unless specifically detailed on the structural plans.
3. Bar supports shall be provided in accordance with ACI 315, latest edition and be placed in proper location, and wired adequately at intersections to hold bars firmly in position while concrete is placed. Vertical dowels shall be supported in place prior to placing concrete. Bar supports and spacers which rest on or against exposed surface shall be hot dipped galvanized or plastic coated.
4. Form ties shall be either of the threaded or snap-off type so that no metal will be left within 1" of the surface of the wall. Following removal of form ties, recesses are to be carefully filled and pointed with mortar.
5. See architectural, mechanical and electrical drawings for additional openings, depressions, curbs, floor finishes, inserts and other embedded items.
6. Slabs shall be reinforced with smooth welded wire fabric that conforms to ASTM A185. Provide in flat sheets only. Slabs may be reinforced with polypropylene fibers at manufacturer's recommended dosage, pending Engineer's written approval.
7. Welded Wire Fabric (W.W.F.) shall conform to ASTM A185 and shall lap minimum of one full mesh plus 2 inches (6 inches minimum) at side and end laps and shall be securely wire together, unless otherwise shown.
8. Reinforcing bars shall be in physical contact at splices. Do not use mechanical splices or welded splices unless approved by the Structural Engineer.
9. Continuous bars shall lap and dowels shall project adequately to provide lap lengths as shown below unless shown otherwise on the Structural Documents. Do not splice near maximum stress locations. Coordinate cold joint locations and reinforcing splice locations with Structural Engineer.
10. Horizontal reinforcing bars shall be continuous at supports. Use corner bars at corners and intersections with lap lengths as shown below at each leg. Reinforce around openings and steps in concrete with (2) #5 bars.
11. Minimum Concrete coverage for reinforcing steel:
    11.1. Concrete cast against and permanently exposed to earth = 3"
    11.2. Concrete exposed to earth or weather: #4 and smaller = 1.5", #5 and larger = 2"
    11.3. Concrete not exposed to earth or weather: Slabs, walls, and joists = 1.5" Beams and columns = 3"
12. Typical minimum reinforcing bar lap lengths

Bar Size (Fy=60ksi)	#3	#4	#5	#6	#7	#8	#9	#10	#11
3000psi concrete	18"	24"	28"	34"	50"	56"	65"	72"	80"
4000psi concrete	16"	20"	24"	30"	44"	48"	55"	62"	70"

VICINITY MAP

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REV	DATE	DESCRIPTION
1	5/31/2019	PRICING SET

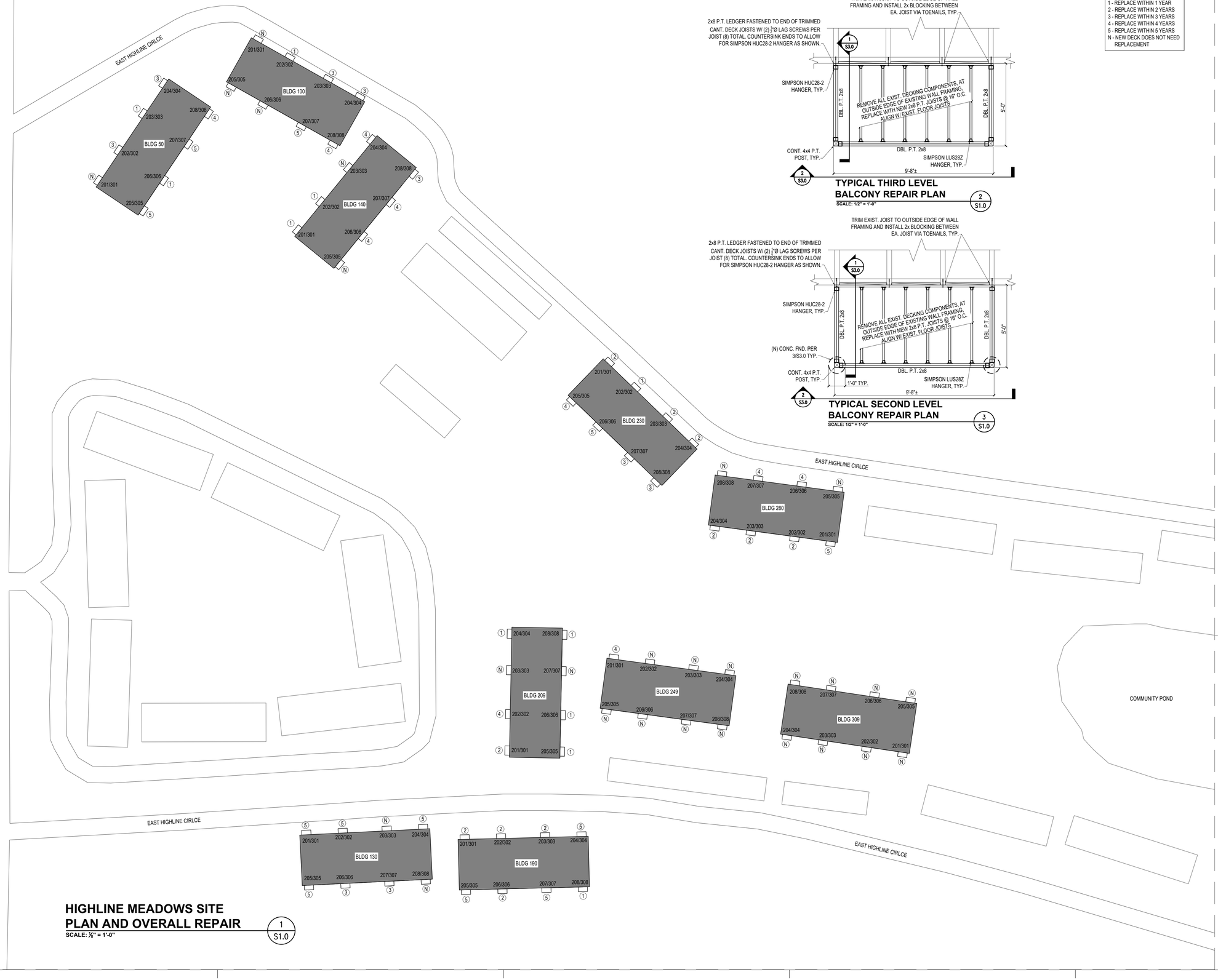
Deck Repair Plan

Highland Meadows
50 309 E Highline Circle
Centennial, Colorado 80122

KL JOB: 17355 Padilla	
FILE NAME: 17355 Padilla Sheet	
SCALE: AS SHOWN	DATE: 05/31/2019
DESIGNED BY: EAB	DRAWN BY: EAB
SUBMITTED BY: CRC	REVIEWED BY: CRC

S0.0

SHEET 1 OF 6



HIGHLINE MEADOWS SITE PLAN AND OVERALL REPAIR

SCALE: 1/64" = 1'-0"

1 / S1.0

TYPICAL THIRD LEVEL BALCONY REPAIR PLAN

SCALE: 1/2" = 1'-0"

2 / S1.0

TYPICAL SECOND LEVEL BALCONY REPAIR PLAN

SCALE: 1/2" = 1'-0"

3 / S1.0

NOTES: PRIORITY SCALE
1 - REPLACE WITHIN 1 YEAR
2 - REPLACE WITHIN 2 YEARS
3 - REPLACE WITHIN 3 YEARS
4 - REPLACE WITHIN 4 YEARS
5 - REPLACE WITHIN 5 YEARS
N - NEW DECK DOES NOT NEED REPLACEMENT

Address(Building-unit)	Prioritization
50-201/301	N
50-202/302	3
50-203/303	1
50-204/304	3
50-205/305	5
50-206/306	1
50-207/307	5
50-208/308	4
100-201/301	N
100-202/302	1
100-203/303	3
100-204/304	3
100-205/305	N
100-206/306	N
100-207/307	5
100-208/308	4
130-201/301	5
130-202/302	5
130-203/303	N
130-204/304	5
130-205/305	5
130-206/306	3
130-207/307	3
130-208/308	N
140-201/301	1
140-202/302	1
140-203/303	N
140-204/304	4
140-205/305	N
140-206/306	4
140-207/307	4
140-208/308	3
190-201/301	2
190-202/302	2
190-203/303	2
190-204/304	5
190-205/305	5
190-206/306	2
190-207/307	5
190-208/308	1
209-201/301	2
209-202/302	4
209-203/303	N
209-204/304	1
209-205/305	1
209-206/306	1
209-207/307	N
209-208/308	1
230-201/301	2
230-202/302	1
230-203/303	2
230-204/304	2
230-205/305	4
230-206/306	5
230-207/307	3
230-208/308	3
249-201/301	4
249-202/302	N
249-203/303	N
249-204/304	N
249-205/305	N
249-206/306	N
249-207/307	N
249-208/308	N
280-201/301	5
280-202/302	2
280-203/303	2
280-204/304	2
280-205/305	N
280-206/306	4
280-207/307	4
280-208/308	N
309-201/301	N
309-202/302	N
309-203/303	N
309-204/304	N
309-205/305	N
309-206/306	N
309-207/307	N
309-208/308	N

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Deck Prioritization and Typical Repair

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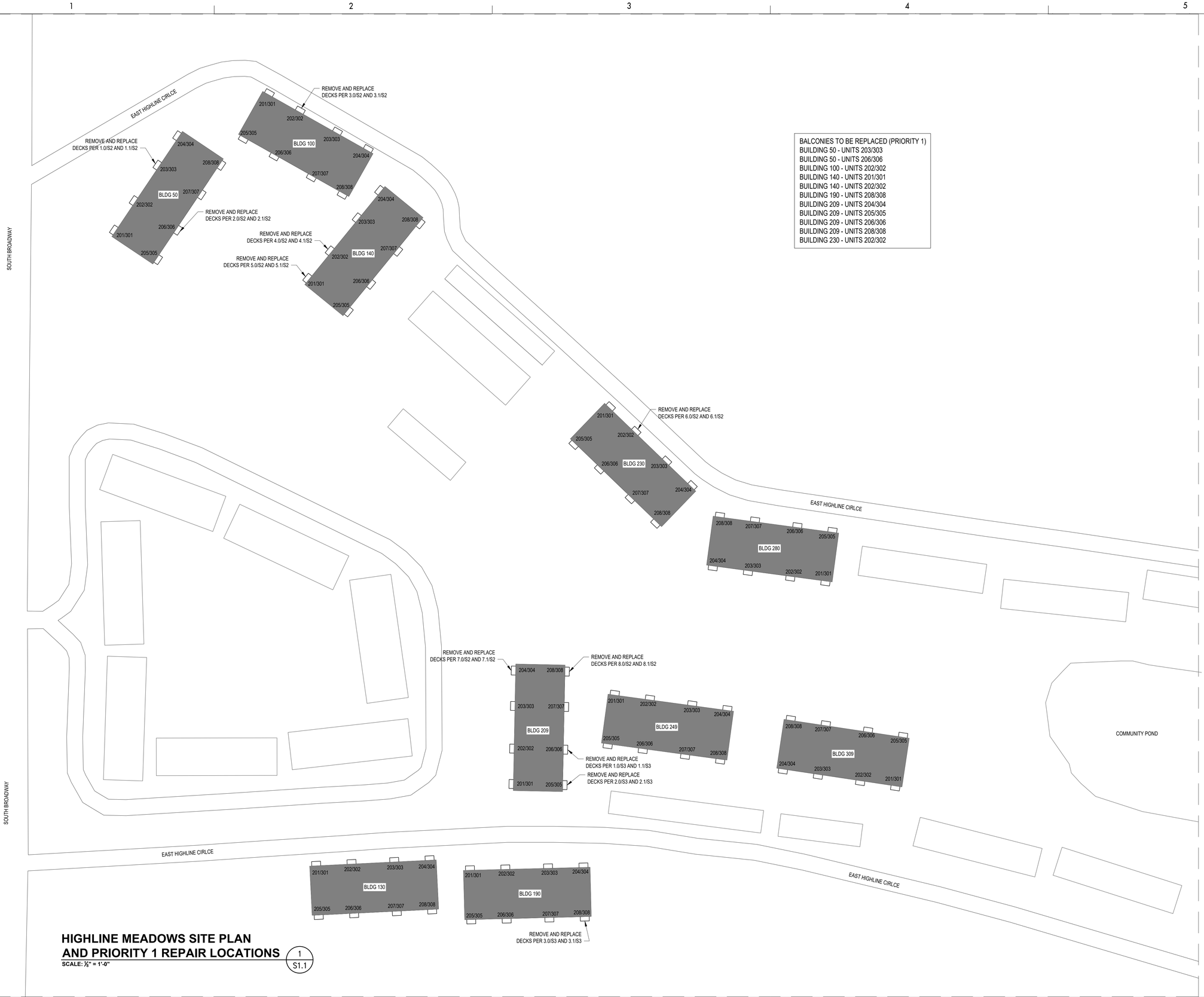

BALCONIES TO BE REPLACED (PRIORITY 1)
BUILDING 50 - UNITS 203/303
BUILDING 50 - UNITS 206/306
BUILDING 100 - UNITS 202/302
BUILDING 140 - UNITS 201/301
BUILDING 140 - UNITS 202/302
BUILDING 190 - UNITS 208/308
BUILDING 209 - UNITS 204/304
BUILDING 209 - UNITS 205/305
BUILDING 209 - UNITS 206/306
BUILDING 209 - UNITS 208/308
BUILDING 230 - UNITS 202/302

HIGHLINE MEADOWS SITE PLAN AND PRIORITY 1 REPAIR LOCATIONS

1 / S1.1

SCALE: 1/8" = 1'-0"

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1	5/31/2019	PRICING SET

Deck Repair Plan

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50-309 E Highline Cirlce
Centennial, Colorado 80122

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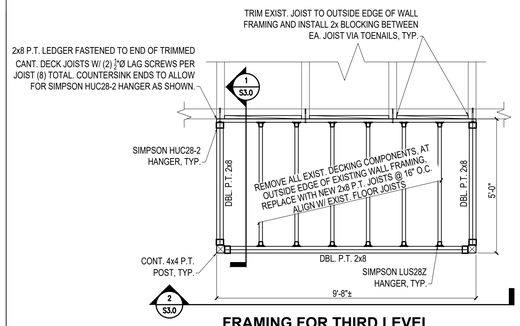
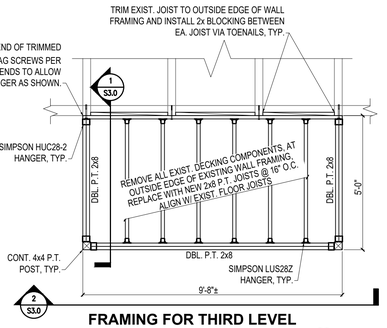
FILE NAME: 17355 Padilla Sheet
SCALE: AS SHOWN
DESIGNED BY: EAB
SUBMITTED BY: CRC
DATE: 05/31/2019
DRAWN BY: EAB
REVIEWED BY: CRC

S1.1

SHEET 3 OF 6



FRAMING FOR THIRD LEVEL BALCONY BLDG 50 UNIT 303 1.0 S2.0
SCALE: 1/2" = 1'-0"



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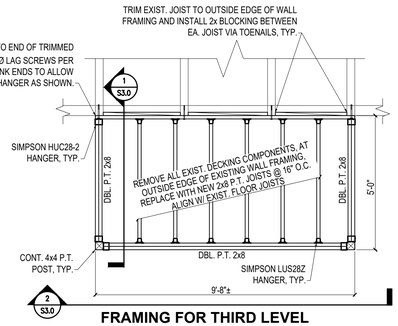

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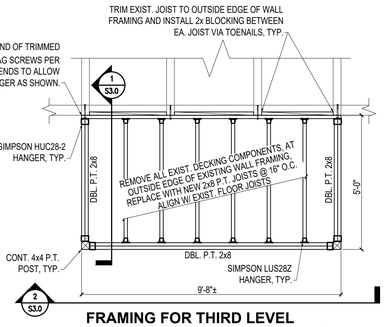

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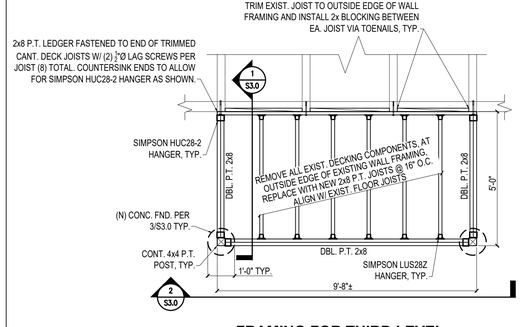

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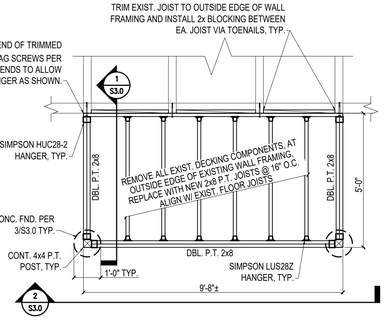

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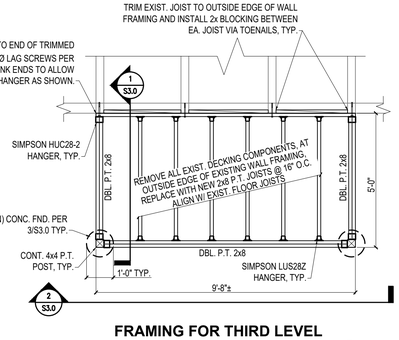

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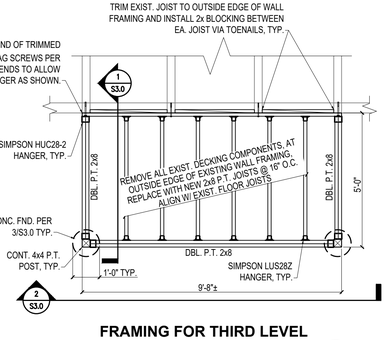

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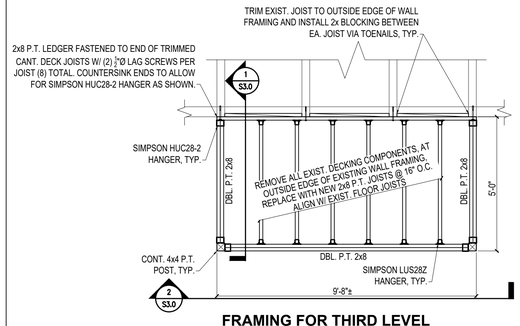

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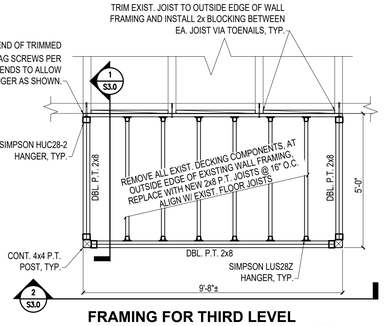

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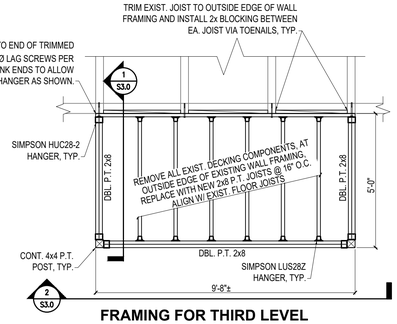

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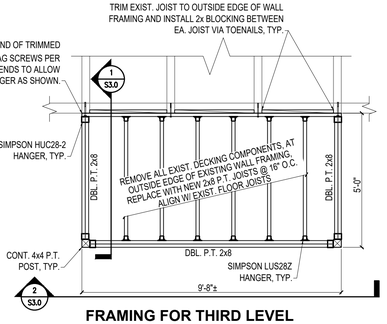

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FRAMING FOR THIRD LEVEL BALCONY BLDG 230 UNIT 202 6.1 S2.0
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FRAMING FOR THIRD LEVEL BALCONY BLDG 209 UNIT 204 7.1 S2.0
SCALE: 1/2" = 1'-0"

FRAMING FOR THIRD LEVEL BALCONY BLDG 209 UNIT 208 8.1 S2.0
SCALE: 1/2" = 1'-0"

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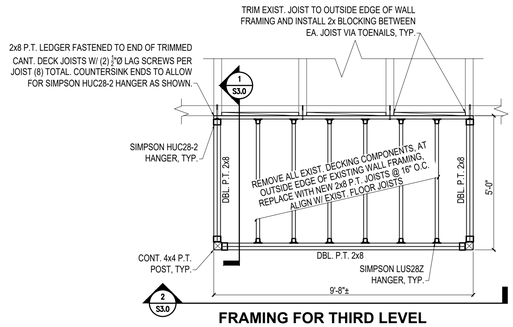
REV	DATE	DESCRIPTION
1	5/31/2019	PRICING SET

Deck Repair Plan

Highland Meadows
50-309 E Highline Cirkce
Centennial, Colorado 80122

KL JOB: 17355 Padilla
FILE NAME: 17355 Padilla Sheet
SCALE: AS SHOWN
DESIGNED BY: EAB
SUBMITTED BY: CRC
DATE: 05/31/2019
DRAWN BY: EAB
REVIEWED BY: CRC

S2.0
SHEET 4 OF 6



FRAMING FOR THIRD LEVEL BALCONY BLDG 209 UNIT 306 (1.0 / S2.1)

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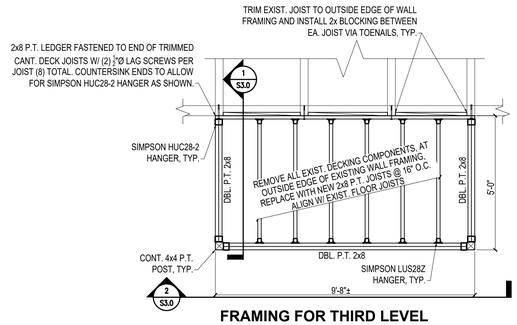

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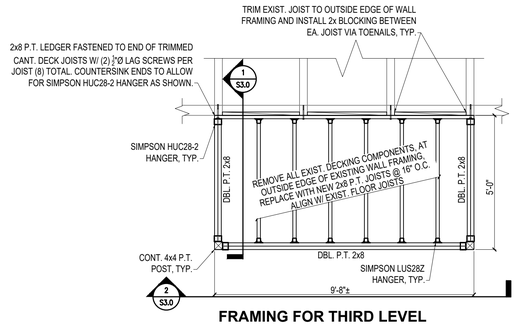

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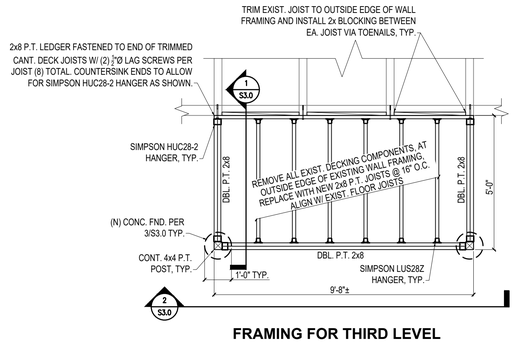
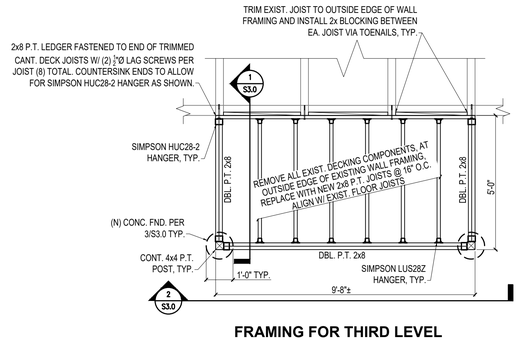


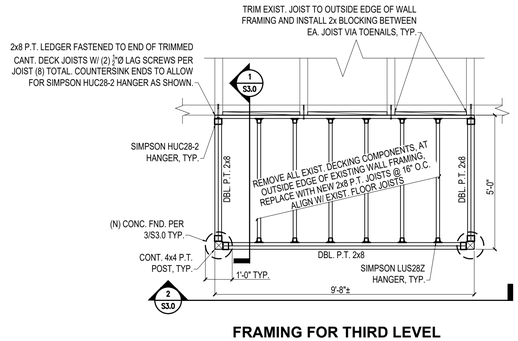
FRAMING FOR THIRD LEVEL BALCONY BLDG 209 UNIT 206 (1.1 / S2.1)

SCALE: 1/2" = 1'-0"



FRAMING FOR THIRD LEVEL BALCONY BLDG 209 UNIT 205 (2.1 / S2.1)

SCALE: 1/2" = 1'-0"



FRAMING FOR THIRD LEVEL BALCONY BLDG 209 UNIT 208 (3.0 / S2.1)

SCALE: 1/2" = 1'-0"

KNOTT LABORATORY, LLC
Forensic Engineering & Animation
7185 South Tucson Way
Centennial, Colorado 80112
P.: 303-925-1900 F.: 303-925-1901
www.knottlab.com

REV	DATE	DESCRIPTION
1	5/31/2019	PRICING SET

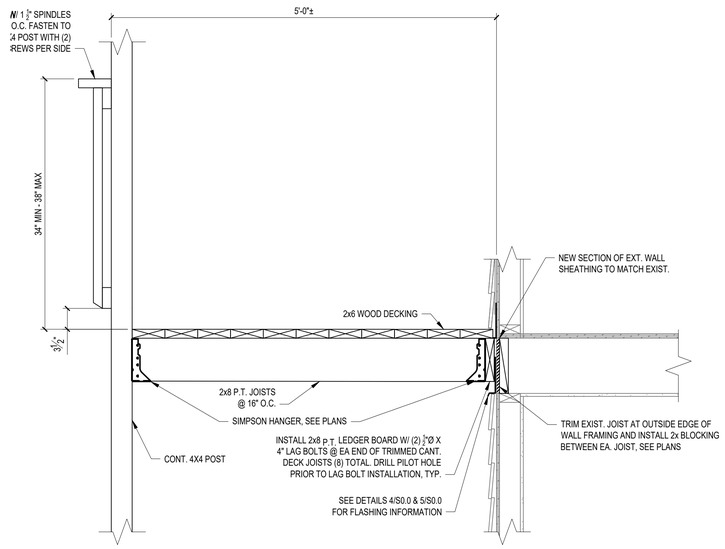
Deck Repair Plan

Highland Meadows
50-309 E Highline Cirlce
Centennial, Colorado 80122

KL JOB: 17355 Padilla
FILE NAME: 17355 Padilla Sheet
SCALE: AS SHOWN
DESIGNED BY: EAB
SUBMITTED BY: CRC
DATE: 05/31/2019
DRAWN BY: EAB
REVIEWED BY: CRC

S2.1

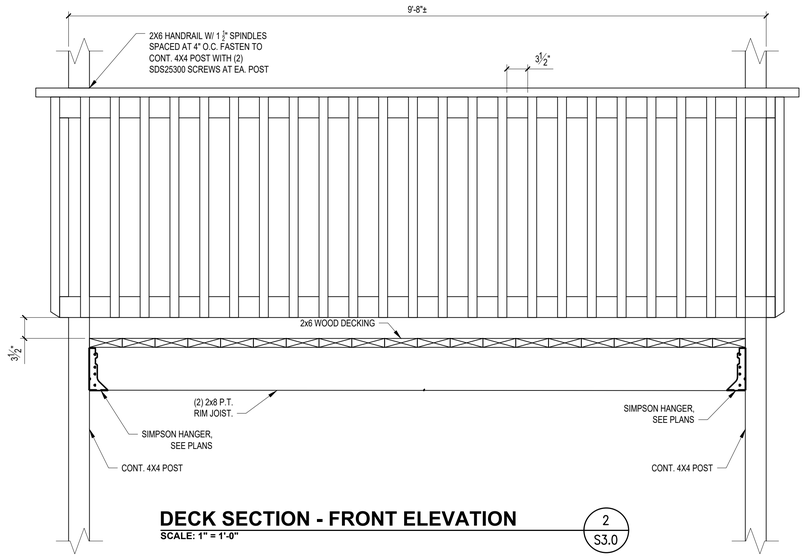
SHEET 5 OF 6



DECK SECTION W/ LEDGER ATTACHMENT

1 / S3.0

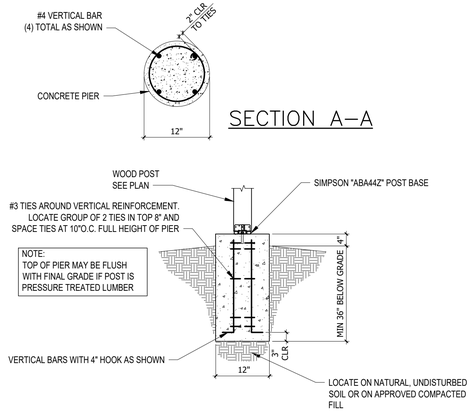
SCALE: 1" = 1'-0"



DECK SECTION - FRONT ELEVATION

2 / S3.0

SCALE: 1" = 1'-0"

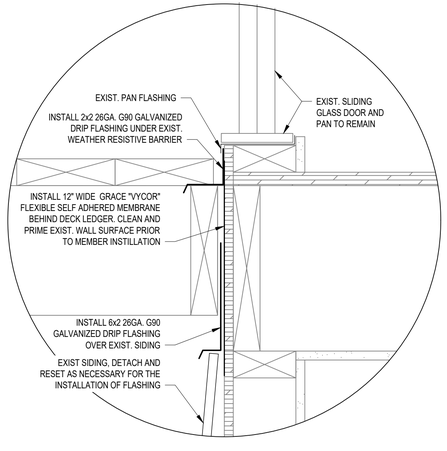


SECTION A–A

TYP. CONC. PIER FOUNDATION

3 / S3.0

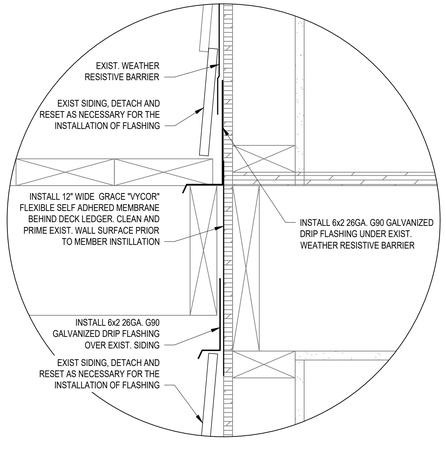
SCALE: ¾" = 1'-0"



FLASHING DETAIL AT SLIDING GLASS DOOR

4 / S3.0

SCALE: 3" = 1'-0"



FLASHING DETAIL AT SIDING

5 / S3.0

SCALE: 3" = 1'-0"

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REV	DATE	DESCRIPTION
1	5/31/2019	PRICING SET

Deck Details

Highland Meadows
50-309 E Highline Circle
Centennial, Colorado 80122

KL JOB: 17355 Padilla
FILE NAME: 17355 Padilla Sheet
SCALE: AS SHOWN
DESIGNED BY: EAB
SUBMITTED BY: CRC
DATE: 05/31/2019
DRAWN BY: EAB
REVIEWED BY: CRC

S3.0